

ALCATEL OMNIPCX OFFICE

TECHNICAL DOCUMENTATION

**ALCATEL OMNIPCX
OFFICE**

**TECHNICAL
DOCUMENTATION**

REF3EH 21000 BSAA Ed. 04

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Alcatel OmniPCX Office

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GENERAL INDEX

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TERM : Section Terminals
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HARD : Section Hardware
FEATURES : Section CALL SERVER : Telephone features
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Alcatel OmniPCX Office

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ALCATEL OMNIPCX OFFICE

PRELIMINARY

Section Preliminary

REASONS FOR CHANGING ISSUE

FILE 1

CLAUSES

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ALCATEL OMNIPCX OFFICE

SECTION PRELIMINARY (INDEX)

PRELIMINARY

Section Preliminary (Index)

CLAUSES

FILE 2

REASONS FOR CHANGING ISSUE

FILE 1

REASONS FOR CHANGING ISSUE

File

1

In relation to issue 03 of the technical documentation, this issue 04 adds the following changes:

- **"Product presentation" section:**
 - **"Capacities and limits" file:** miscellaneous updates ; addition of boards implementation and power supply limits.
 - **"Environment compatibility between Alcatel OmniPCX Office" file:** addition of this new file.
- **"Hardware" section:**
 - **"Main power supplies" file:** addition of batteries maintenance recommendations.
- **"CALL SERVER: Telephone features" section:**
 - **"Making/Answering a call" file:** addition of the configuration of broadcast on external loudspeaker.
 - **"List of services offered":** miscellaneous updates (no loudspeaker on 4003 and First sets).
- **"CALL SERVER: Mobility" section:**
 - **"Traffic counters" file:** updates of the PM5 examples.
- **"e-SERVER: Internet applications" section:**
 - **"Electronic messaging" file:** addition of Email addresses description.
 - **"VPN" file":** informations on the IPsec interoperability.
- **"Applications" section:**
 - **"Starting-up an Elitecost 64-128:** addition of this new file.
- **"PM5: System configuration": section**
 - **"Installation procedures" file:** miscellaneous updates.
 - **"Voice prompts management" file:** addition of this new file.
- **"Software keys" section:**
 - **"Software keys" file:** miscellaneous updates.
- **"Maintenance" section:**
 - **"System messages" file:** update of the description of message 125.
 - **"Data restorations" file:** addition of this new file.
 - **"Start and stop a system" file:** addition of this new file.

- **"Data transfer problem with Windows NT4" file:** addition of this new file.

CLAUSES

File
2

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CLAUSES

PRELIMINARY

Alcatel OmniPCX Office

SECTION

PRODUCT PRESENTATION

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ALCATEL OMNIPCX OFFICE

PRODUCT PRESENTATION

Section Product presentation

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ALCATEL OMNIPCX OFFICE

**SECTION PRODUCT PRESENTATION
(INDEX)**

PRODUCT PRESENTATION

Section Product presentation (Index)

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GENERAL DESCRIPTION

File

1

Alcatel OmniPCX Office is an "e-communication server", a new "all-in-one" concept combining proven telephony functions with data management and access to all the resources of the Internet. This "multi-purpose" server provides a turnkey global communication solution for small and medium-scale enterprises with 6 to 200 employees.

MAIN FEATURES

Voice:

- voice mail
- automatic exchange
- CTI server
- Voice over IP

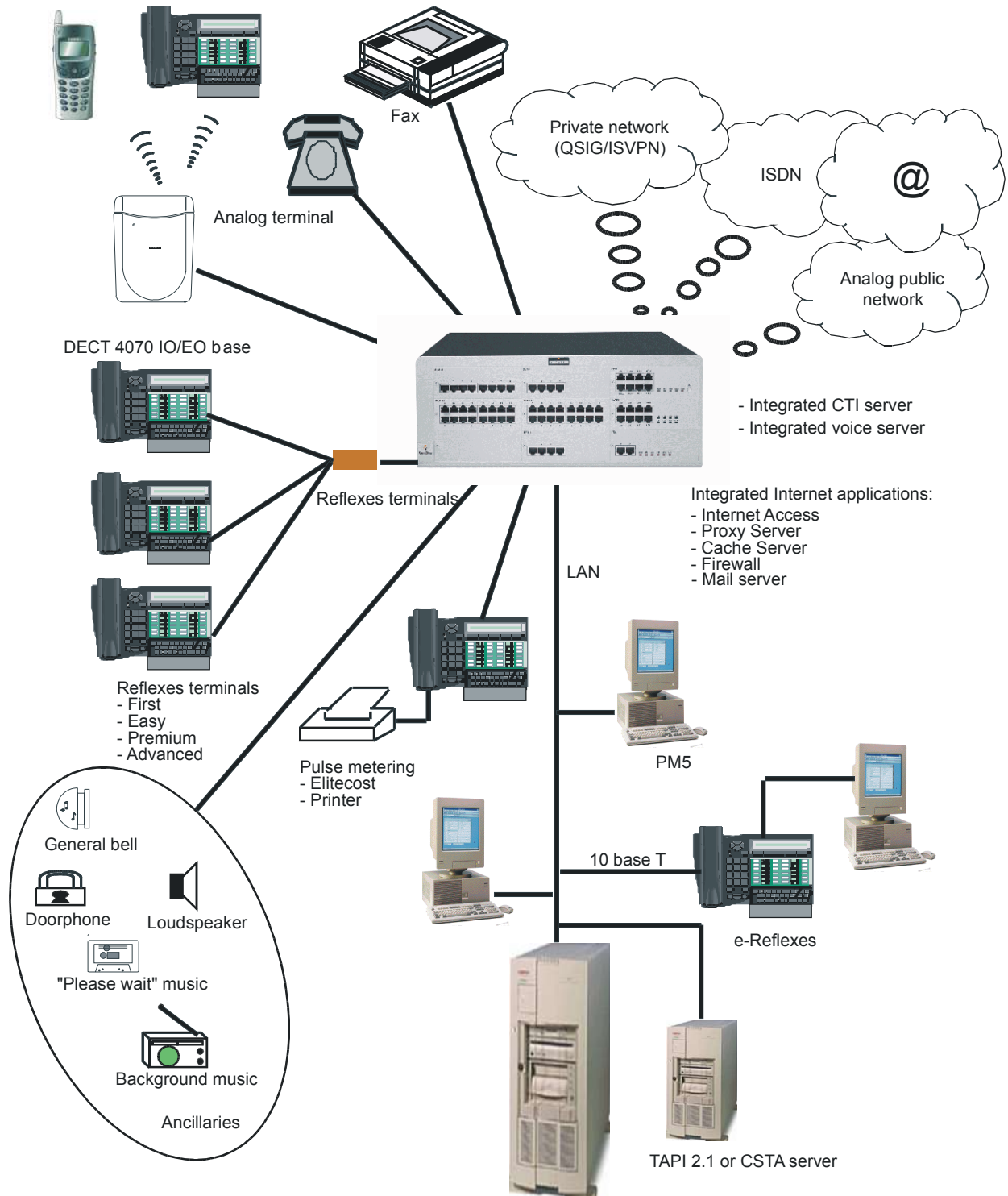
Data:

- LAN switch
- router and integrated firewall
- DHCP and DNS server

Internet:

- shared access to the Internet (ISDN or xDSL connection)
- Proxy server
- Cache server
- Mail server
- VPN

INSTALLATION SYNOPSIS



PRODUCT PRESENTATION

GENERAL DESCRIPTION

HARDWARE DESCRIPTION

In order to cover the entire market segment for small and medium-sized enterprises (6 to 200 users), Alcatel OmniPCX Office is available in 3 modules in 19" rack format, which can be mounted in a computer cabinet or placed on a shelf:

Rack 1



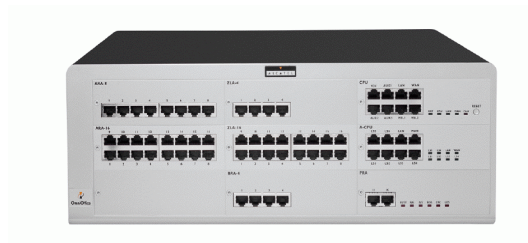
- 28 ports
- 1 CPU slot + 2 general-purpose slots (no SLI16 board)
- Energy consumption: 1 A / 70 W.
- Dimensions: H = 66 mm; W = 442 mm; D = 400 mm.
- Weight: 6 kg.

Rack 2



- 48 ports
- 1 CPU slot + 5 general-purpose slots
- Energy consumption: 2 A / 100 W.
- Dimensions: H = 110 mm; W = 442 mm; D = 400 mm.
- Weight: 11 kg.

Rack 3



- 96 ports
- 1 CPU slot + 4 specific general-purpose slots (no UAI16 and MIX boards)
- Energy consumption 2,3 A / 150 W.
- Dimensions: H = 154 mm; W = 442 mm; D = 400 mm.
- Weight: 13 kg.

Maximum capacity:

The system can be extended by adding one or two modules to the main module. All combinations are possible, with a maximum of 3 modules. The maximum capacity is 236 stations.



PRODUCT PRESENTATION
GENERAL DESCRIPTION
PRODUCT LINE-UP

Different solutions exist for each model, depending on the desired level of service:

VOICE SOLUTIONS - Alcatel OmniPCX Office S, M, L and XL

Based on a mature product offering meeting telephony requirements (conventional automated attendant), these packages include:

- a basic voice mail unit (2 ports, 20 minutes of recording) providing a voice mailbox to all users equipped with dedicated Alcatel Reflexes terminals
- an automated attendant
- a CTI server

The RACK x modules are equipped with a standard CPU board with 32MB of SDRAM.

e-SOLUTIONS - Alcatel OmniPCX Office e-S, e-M, e-L and e-XL

Based on more advanced telephony requirements (voice mail service on 6 or 8 ports), these packages allow upgrading to provide the most comprehensive Internet services (electronic mail server, Proxy and cache server, VPN and Voice over IP). Alcatel OmniPCX Office thus becomes an e-communication server.

The RACK x modules are equipped with a CPUe (enhanced) board with 64MB of SDRAM.

Nota : Refer to the "Capacities" sheet for a detailed description of the functions offered by each package.

These solutions allow the system to be built up by adding modules, boards, applications and software keys.

BOARDS AND OPTIONS

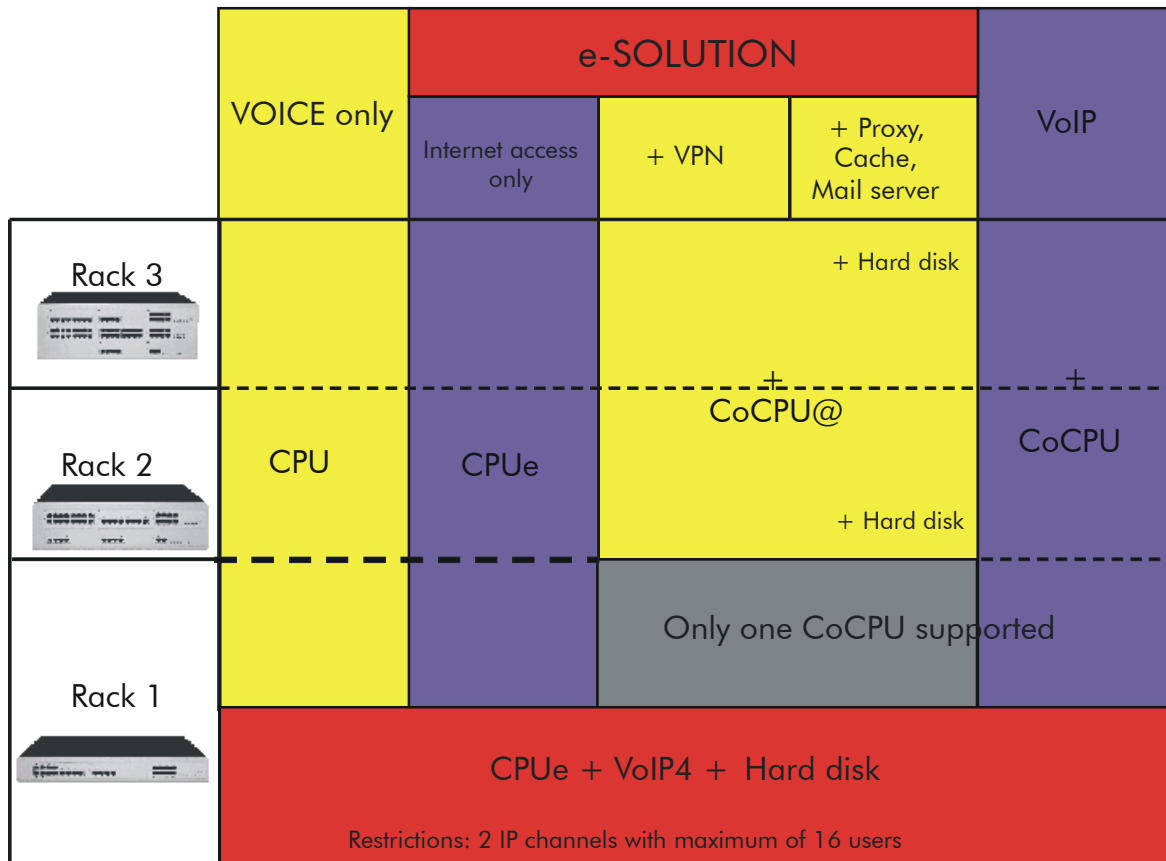
Board	Function	Optional boards	Connections
ATA2 ATA4	2 or 4 analog trunk line interfaces	MET: pulse meter receiver	Analog trunk line (TL), TL-PS diversion
BRA2 BRA4 BRA8	2, 4 or 8 T0 basic accesses		ISDN network
CPU, CPUe	Processing Unit	HSL1, HSL2: interconnection with add-on modules XMEM: memory extension and/or IDE interface for the hard disk VoIP: Voice over IP for e-XS model AFU: auxiliary functions	Lanswitch or Ethernet terminal Please-wait message player Tuner for background music Alarm Doorphone Loudspeaker General call ringer Pulse metering device PC PM5
CoCPU, CoCPU@	CoProcessing Unit	VoIP: Voice over IP SLANX: mini-switch (CPU/CPUe - CoCPU/CoCPU@ link) WAN: additional Ethernet link	Lanswitch or Ethernet terminal
LanX8 LanX16	8 or 16 10/100 BT Ethernet ports		@ Phones, Hub, Lanswitch, PC, etc.
MEX (equipped with an HSL1 board)	Add-on module controller		
MIX244 MIX484 MIX448 MIX044 MIX084 MIX048	0, 2 or 4 T0 basic accesses + 4 or 8 UA interfaces + 4 or 8 Z interfaces		ISDN network, analog Z terminals and Alcatel Reflexes stations
PRA-T2 PRA-T1 DASS2 DLT2	PRA -T2, DASS2, DLT2: 30 B-channels + 1 D-channel; 2048 kbps) PRA-T1: 23 B-channels + 1 D-channel; 1544 kbps		PRA-T2: ISDN network DASS2: UK public/private network DLT2: Private QSIG network PRA-T1: Hong-Kong ISDN network

PRODUCT PRESENTATION

GENERAL DESCRIPTION

Board	Function	Optional boards	Connections
SLI4 SLI8 SLI16	4, 8 or 16 Z interfaces		Analog Z terminals
UAI4 UAI8 UAI16	4, 8 or 16 UA interfaces		Alcatel Reflexes stations Multi-Reflexes 4070 IO/EO DECT base stations

FUNCTIONS PROVIDED AND HARDWARE REQUIRED





GENERAL DESCRIPTION

PRODUCT PRESENTATION

CAPACITIES AND LIMITS



The following table gives the capacities provided by the various Alcatel OmniPCX Office solutions.

	S / e-S	M / e-M	L / e-L	XL / e-XL	Maximum limits
System					
Type of module	Rack 1	Rack 2	Rack 3	Rack 3 + extension Rack 3	3 modules, all combinations possible
Total number of slots (with CPU and MEX boards)	3	6	9	18	27
Available slots	2	5	8	16	24
Total number of CPU/CPUe boards	1				
Total number of UAI16 boards	1	3	4	8	12
Total number of SLI16 boards	0	2	5	10	12
Total number of UAI16 + MIX boards	2	5	4	8	12
Co-processing CPU (CoCPU) including 1 CoCPU@ maximum per system	1	2	2	5	6
IP channels	16	32	32	80	88
VOIP daughterboards	1	2	2	5	6
Hard disk	1	2			
Hard disk capacity	6 Gbytes minimum				
Communication ports					
Users' ports (Reflexes + Z)	28	56	96	192	200
Multi-Reflexes 4099	6	6	6	12	18
Lanswitch boards	1 LanX16	1 LanX16 + 1 LanX8	2 LanX16	4 LanX16	6 LanX16
Available Ethernet ports (*)	14	20	28	56	84
Analog trunk lines (**)	4	16	24	48	72

CAPACITIES AND LIMITS

PRODUCT PRESENTATION

	S / e-S	M / e-M	L / e-L	XL / e-XL	Maximum limits
Primary T2 access	1	3	3	6	9
Basic T0 access	8	12			
IP trunks	16	32	32	80	96
Total trunk lines and B-channels	34	90	120	120	120
Terminals + Work stations					
User directory numbers (***)	250				
Reflexes terminals + simple terminals (Z)	28	56	96	192	236
Reflexes terminals	24	56	96	192	236
Simple terminals (Z)	16	32	80	160	196
Mobile Reflexes (****)	235				
IP subscribers (IP Reflexes + PIMphony IP)	55	120	120	200	200
Client PC H.323	55	120		150	
PIMphony clients with integrated CTI server	25				
CTI server					
CSTA sessions	25				
CSTA supervision	208				
Reflexes terminal options					
Add-on modules (max. 2/terminal)	10	40	60	120	136
S0, Z, V24 metering interfaces	12	24	42	48	48
V24 metering interface	1				
Mobility equipments (full wireless configurations)					
Remotely supplied DECT 4070 RF bases	7	14	24	48	60
DECT 4070 LF bases	23	47	60	60	60
Call server					
Voice mail ports	from 2 to 8				
Voice mail storage capacity	from 20 to 80 minutes				
Voice mail storage capacity with hard disk	up to 200 hours				

PRODUCT PRESENTATION
CAPACITIES AND LIMITS

	S / e-S	M / e-M	L / e-L	XL / e-XL	Maximum limits
Preannouncement	from 4 to 8				
Languages	from 2 to 4				
Directory entries	3000				
Speed dial numbers	2200				
Basic on hold music	16 seconds				
Customizable on hold music	up to 2 minutes				
On hold music with hard disk	up to 10 minutes				
Multiple EDN per S0	98				
Entries in ARS table	500				
Account codes	250				
Metering tickets	up to 1,000 tickets				
NMC tickets with hard disk	up to 30,000 tickets				
Groups (terminals + broadcasting + pick-ups)	50 with maximum of 32 users per group				
Operator groups	8 with maximum of 8 operator stations per group				
Conference	3 simultaneously				
e-server					
Shared Internet access - ISDN - ADSL modem or external router (**)	up to 128 kbps (2 B-channels) up to 2 Mbps				
Internet users	28	200			
Simultaneous Internet accesses	Depends on available bandwidth (e.g.: up to 20 over a 128-kbps link)				
Web page cache capacity (****)	500 Mb	1.5 GB			
E-mailboxes (****)	28	200			
E-mail storage capacity (****)	2.2 GB	3.7 GB			
Simultaneous PPTP teleworkers	2	5			
LAN networking via the Internet (IP sec)	1	2			

(*): 2 Ethernet ports are used for:

- interconnecting the LAN with the CPU

- cascading of the LAN switches (Uplink = always reserved on each LAN board)

(**): Available from version R1.1 onwards

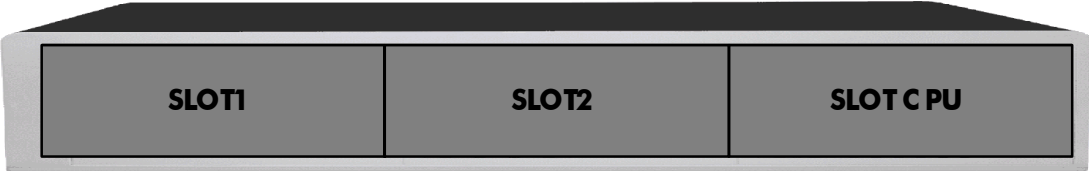
(***): Subscribers numbers include all terminals and virtual users 13 auxiliary ports (VMU, Internet access, Remote access), main operator terminal number.

(****): Hard disk obligatory

(*****): Be aware that radio base station number dimensionning is adapted to mobile sets number.

BOARDS IMPLEMENTATION

Rack 1



BOARD	SLOT 1	SLOT 2	CPU SLOT
CPU, CPUe, MEX	No	No	Obligatory
MIX x/y/z	Yes +	Yes	No
UAI4, UAI8, UAI16	Yes +	Yes	No
SLI4, SLI8	Yes +	Yes	No
SLI16	No	No	No
PRA-T2, PRA-T1, DASS2, DLT2	Yes	Yes +	No
ATA2, ATA4	Yes	Yes +	No
BRA2, BRA4, BRA8	Yes	Yes +	No
CoCPU, CoCPU@	Yes	Yes +	No
LANX8, LANX16	Yes	Yes +	No
Empty slot blanking cover	Yes	Yes	No

Yes +: recommended slot

Rack 2



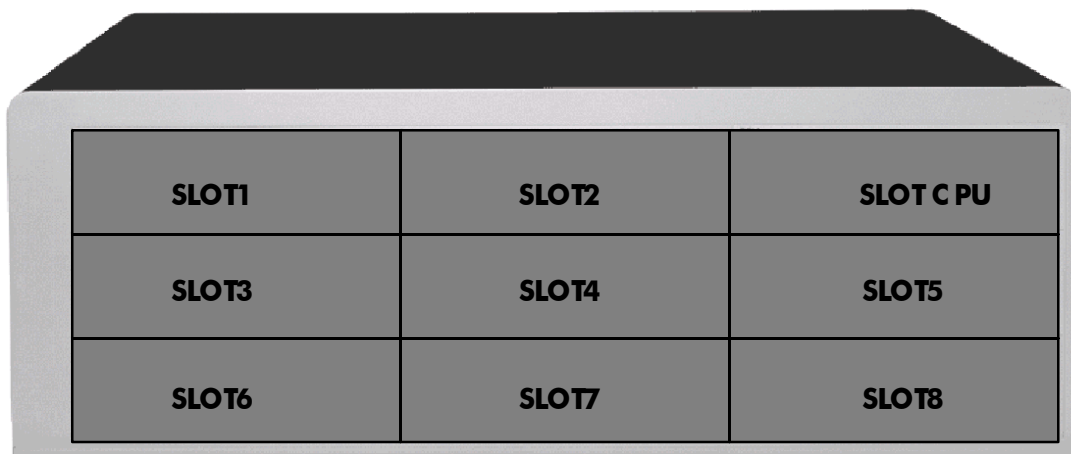
CAPACITIES AND LIMITS

PRODUCT PRESENTATION

BOARD	SLOT 1-3	SLOT 2-4	SLOT 5	CPU SLOT
CPU, CPUe, MEX	No	No	No	Obligatory
MIX x/y/z	Yes +	Yes	Yes	No
UAI4, UAI8, UAI16	Yes +	Yes	Yes	No
SLI4, SLI8, SLI16	Yes +	Yes	Yes	No
PRA-T2, PRA-T1, DASS2, DLT2	Yes	Yes +	Yes	No
ATA2, ATA4	Yes	Yes +	Yes	No
BRA2, BRA4, BRA8	Yes	Yes +	Yes	No
CoCPU, CoCPU@	Yes	Yes	Yes +	No
LANX8, LANX16	Yes	Yes	Yes +	No
Empty slot blanking cover	Yes	Yes	Yes	No

Yes +: recommended slot

Rack 3



BOARD	SLOT 1-2-3-4	SLOT 5-8	SLOT 6-7	CPU SLOT
CPU, CPUe, MEX	No	No	No	Obligatory
MIX x/y/z	Yes	No	No	No
UAI4, UAI8	Yes +	Yes	Yes	No
UAI16	Yes +	No	No	No
SLI4, SLI8, SLI16	Yes +	Yes	Yes	No

PRODUCT PRESENTATION

CAPACITIES AND LIMITS

PRA-T2, PRA-T1, DASS2, DLT2	Yes	Yes	Yes +	No
ATA2, ATA4	Yes	Yes	Yes +	No
BRA2, BRA4, BRA8	Yes	Yes	Yes +	No
CoCPU, CoCPU@	Yes	Yes +	Yes	No
LANX8, LANX16	Yes	Yes +	Yes	No
Empty slot blanking cover	Yes	Yes	Yes	No

Yes +: recommended slot

POWER SUPPLY LIMITS

The following tables give the details power consumption of the different items (boards and terminals) and the limit not to be exceeded for each model (all values are in W unit).

The maximum budget at the charger level is also indicated for each model and you have just to add the values for all items presents in the system. The configuration will be in the power supply limits if the total obtained is less or equal to the maximum budget allowed to the type of rack used :

- maximum budget for Rack 1 = 34 W
- maximum budget for Rack 2 = 57 W
- maximum budget for Rack 3 = 85 W

Boards and terminals	Rack 1	Rack 2	Rack 3
CPU boards			
CPU/CPUe	5,16		6,40
CoCPU/CoCPU@	5,73		7,10
MEX	1,32		1,64
Daughter boards			
XMEM	0,10		0,12
VOIP 16 channels	1,74		2,16
VOIP 8 channels	1,01		1,25
VOIP 4 channels	0,65		0,81
HSL	0,30		0,37
WAN	0,73		0,91
Hard Disk	2,33		2,89
SLANX	1,62		2,01
AFU	0,55		0,68
Trunk boards			
BRA 8		0,97	
BRA 4		0,56	
BRA 2		0,33	
Metering		0,06	
PRA - T2/T1		0,33	
ATB 4		1,42	
ATB 2		0,78	

PRODUCT PRESENTATION
CAPACITIES AND LIMITS

Boards and terminals	Rack 1	Rack 2	Rack 3
Datacom boards			
LANX 8	3,64		4,51
LANX 16	6,88		8,53
Mixed boards			
4T0/8UA/4Z		2,90	
4T0/4UA/8Z		3,45	
4T0/4UA/4Z		2,13	
8UA/4Z		2,39	
4UA/8Z		2,96	
4UA/4Z		1,86	
Extension boards			
UAI 16		2,21	
UAI 8		1,32	
UAI 4		0,87	
SLI 16		5,00	
SLI 8		2,51	
SLI 4		1,26	
Terminals			
Reflexes (UA) keystation	0,45		0,39
Add-on module	0,24		0,21
Multi Reflexes UA	0,61		0,53
CTI/AP option	0,92		0,80
S0 option	1,23		1,07
4070 (IBS) remote feeding (from PABX)	2,90		2,52
4070 (IBS) local feeding (with power supply)	0,00		0,00
Analog terminal	0,21		0,18



CAPACITIES AND LIMITS

PRODUCT PRESENTATION

COMPLIANCE WITH STANDARDS



SAFETY DECLARATION

Compliance with IEC 60950 3rd ed. standards

Interface classification	Interface location
TNV-3	<ul style="list-style-type: none"> - Z interface (SLI board) - Z interface for Alcatel Reflexes station (AP board) - Analog trunk line interface (ATA board)
SELV	<ul style="list-style-type: none"> - Alcatel Reflexes station interface (UAI board or Multi-Reflexes option 4099) - 4070 IO/EO base station interface (UAI board) - T0 interface (BRA board) - T2/T1 interface (PRA board) - S0 interface (S0 board) - Please-wait or background music interface (CPU/CPUe board) - Alarm interface (CPU/CPUe board) - General bell interface (CPU/CPUe board) - Doorphone interface (CPU/CPUe board) - Loudspeaker interface (CPU/CPUe board) - V24 interface (CPU/CPUe board) - CTI interface for Alcatel Reflexes station (CTI or V24/CTI board) - 10/100 base T Ethernet interface (CPU/CPUe or CoCPU/CoCPU@ board) - 4070 IO/EO base station (inputs-outputs) - 4097 CBL UA/DECT adapter

SELV: Safety Extra Low Voltage

TNV-3: Telecommunication Network Voltage

To maintain safety levels, it is essential to connect up circuits of the same nature and to ensure that all means of connection comply with the constraints laid down for each circuit type.

ESSENTIAL REQUIREMENTS

This product complies with the core requirements of European Community R&TTE Directive 1999/5/EC.

Electromagnetic compatibility :

- EN 5502 Ed. 1998 class B: Limits and methods of measuring the characteristics of radioelectric disturbances produced by information technology equipment.
- EN 55024 Ed. 1998: Information technology equipment: immunity characteristics.
- EN 61000-3-2 Ed. 1995: Electromagnetic compatibility: harmonic current emission limits.
- EN 61000-3-3 Ed. 1995: Electromagnetic compatibility: voltage fluctuation and flicker limits in low voltage networks.

Safety:

- IEC 60950 Ed. 3: Safety of information technology equipment.

ENVIRONMENT COMPATIBILITY BETWEEN ALCATEL OMNIPCX OFFICE

File

4

On the new generation Alcatel OmniPCX Office, it is possible to re use some equipments and terminals from the Alcatel Office range.

TERMINAL COMPATIBILITY ON THE ALCATEL OMNIPCX OFFICE

Compatible Alcatel Reflexes

- The complete range 2G : 4001, 4003, 4011, 4012, 4023, 4034, 4081L, 4081M and 4088.
- The complete range Beta 2G.
- The complete range 3G : Advanced (4035), Premium (4020), Easy (4010, and First (4004), 4097 CBL.
- All sub-devices behind Alcatel Reflexes : 4083 ASM, 4084 IS, 4084 ISW, 4085 AB, 4091, 4093 ASY, 4094 ISW, 4095 AP.
- **Sub-devices CTI 4091 support only the UA protocol. SPI for TAPI interface is not implemented anymore.**

Compatible Alcatel Reflexes IP terminals

- Alcatel IP Enabler 4098 FRE.

Compatible Alcatel mobile terminals

- Terminals DECT 2G : 4073 GS, 4074 GB, GBEx, GH, GI and SGAP.
- Terminals DECT Mobile 100 and 200.
- Reflexes DECT terminals with 4097 CBL.
- Alcatel intelligent base station 4070 IO/EO (IBS) and gain antennas.

COMPATIBLE APPLICATIONS ON ALCATEL OMNIPCX OFFICE

- Cost control:
 - Eltecost
 - Alcatel 4715 release 4.4.14
 - Alcatel 4740 release 4.4.14
- CTI applications CTI Third party only:
 - PIMphony offer (with TAPI 2.0 SPI connected on LAN)
 - TAPI & CSTA servers
- **The Alcatel Office Call Center is compatible, except the AOCC built-in voice mail, in release 1.0. It is fully compatible in release 1.1.**

INCOMPATIBLE HARDWARE PARTS ON ALCATEL OMNIPCX OFFICE

- The complete range of Alcatel Reflexes 1G (first generation).
- Alcatel mobile DECT sets 4075, 4074 B, 4074 Bex, 4074 H.
- Base station DECT RBS Alcatel 4070 IA and 4070 EA.
- The complete range Alcatel 160 sets.
- The complete range Alcatel 4120 (900B) sets.
- Voice mail of Alcatel Office Call Center in release 1.0.

Alcatel OmniPCX Office

SECTION
HARDWARE

REF3EH 21000 BSAA Ed. 04



ALCATEL OMNIPCX OFFICE

HARDWARE

Section Hardware

RACK 1 - RACK 2 - RACK 3 MODULES	FILE 1
CPU - CPUE BOARDS	FILE 2
MEX BOARD	FILE 3
COCPU - COCPU@ BOARDS	FILE 4
BRA BOARD	FILE 5
PRA BOARD	FILE 6
ATA BOARD	FILE 7
MIX BOARD	FILE 8
UAI BOARD	FILE 9
SLI BOARD	FILE 10
LANX BOARD	FILE 11
MAIN POWER SUPPLIES	FILE 12



ALCATEL OMNIPCX OFFICE

SECTION HARDWARE (INDEX)

HARDWARE

Section Hardware (Index)

ATA BOARD	FILE 7
BRA BOARD	FILE 5
COCPU - COCPU@ BOARDS	FILE 4
CPU - CPUE BOARDS	FILE 2
LANX BOARD	FILE 11
MAIN POWER SUPPLIES	FILE 12
MEX BOARD	FILE 3
MIX BOARD	FILE 8
PRA BOARD	FILE 6
RACK 1 - RACK 2 - RACK 3 MODULES	FILE 1
SLI BOARD	FILE 10
UAI BOARD	FILE 9

RACK 1 - RACK 2 - RACK 3 MODULES

File
1

RACK 1

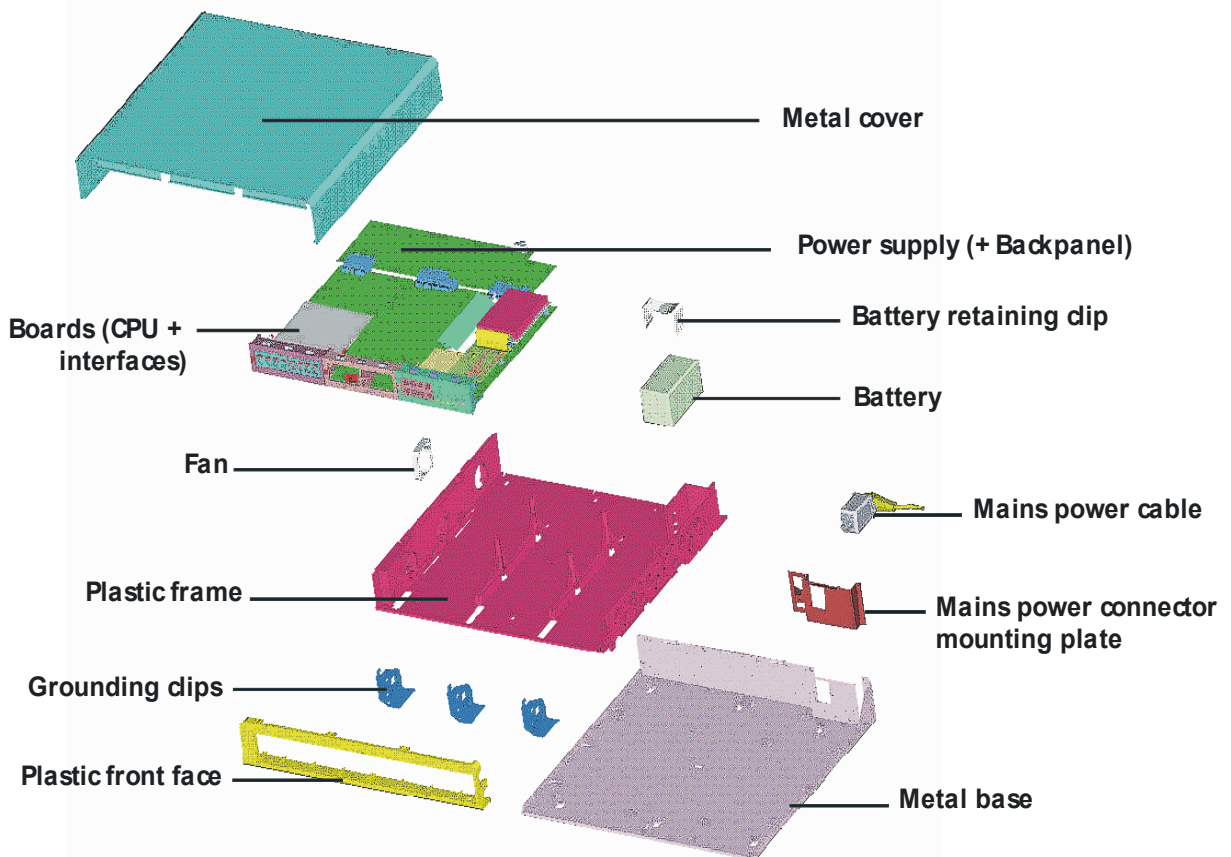
The RACK 1 module consists essentially of a plastic frame.

The plastic frame receives all the parts for attaching the power supply board, the fans, the battery and the mains power connector, and everything needed to facilitate the routing of the cables.

There is no backplane board: the metric connectors are on the power supply module.

The enclosure comprises 3 parts: metal cover and base, plastic front face.

Access to the fans, the power supply module and the battery is gained by disconnecting the mains cable and removing the top metal cover (it is vital to removal all the boards before opening the cover).

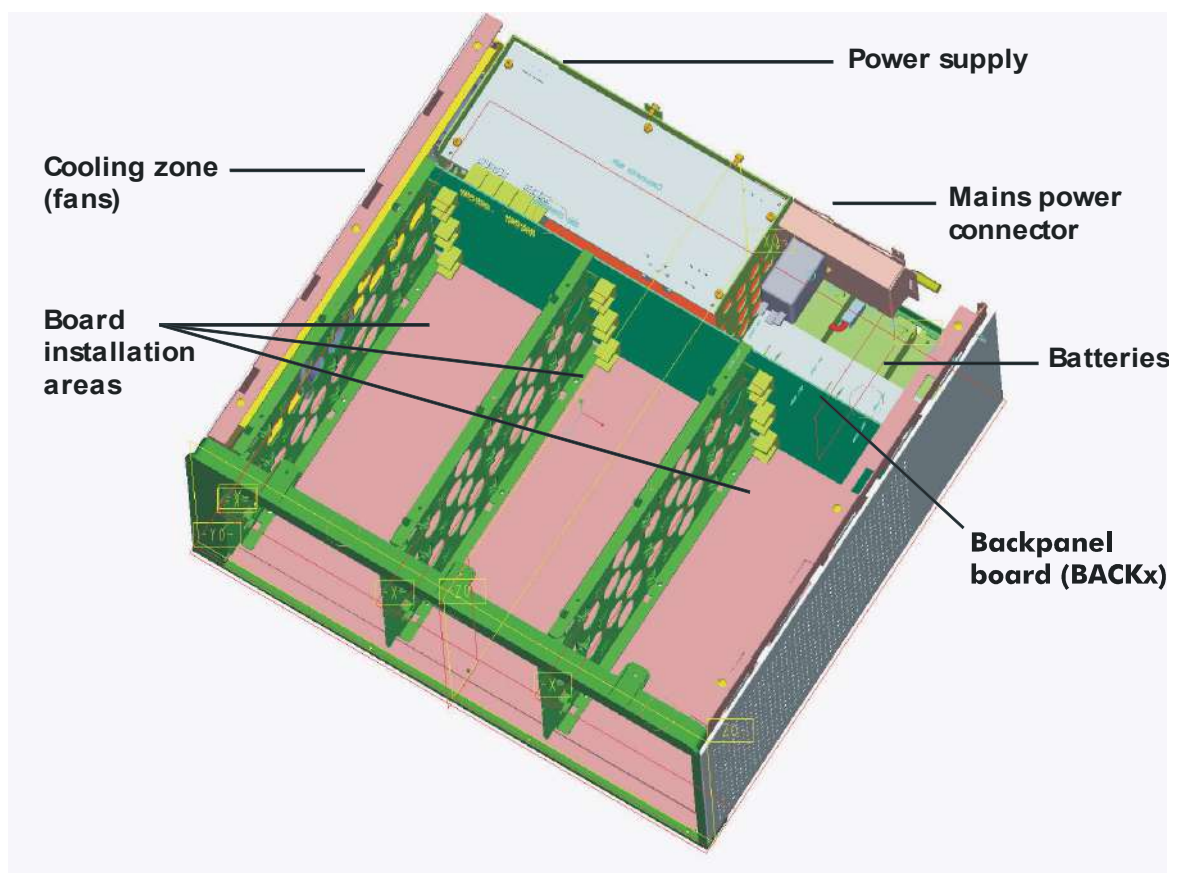


RACK 2 AND RACK 3

The frame consists of a "U"-shaped sheath closed on the top by a riveted plate. The boards are guided by 2 (Rack 2) or 3 (Rack 3) rails riveted vertically to the frame.

The enclosure consists of a metal top part, two metal side parts and a plastic front face.

Access to the fans, the power supply module and the batteries is gained by disconnecting the mains cable and unscrewing the back panel.

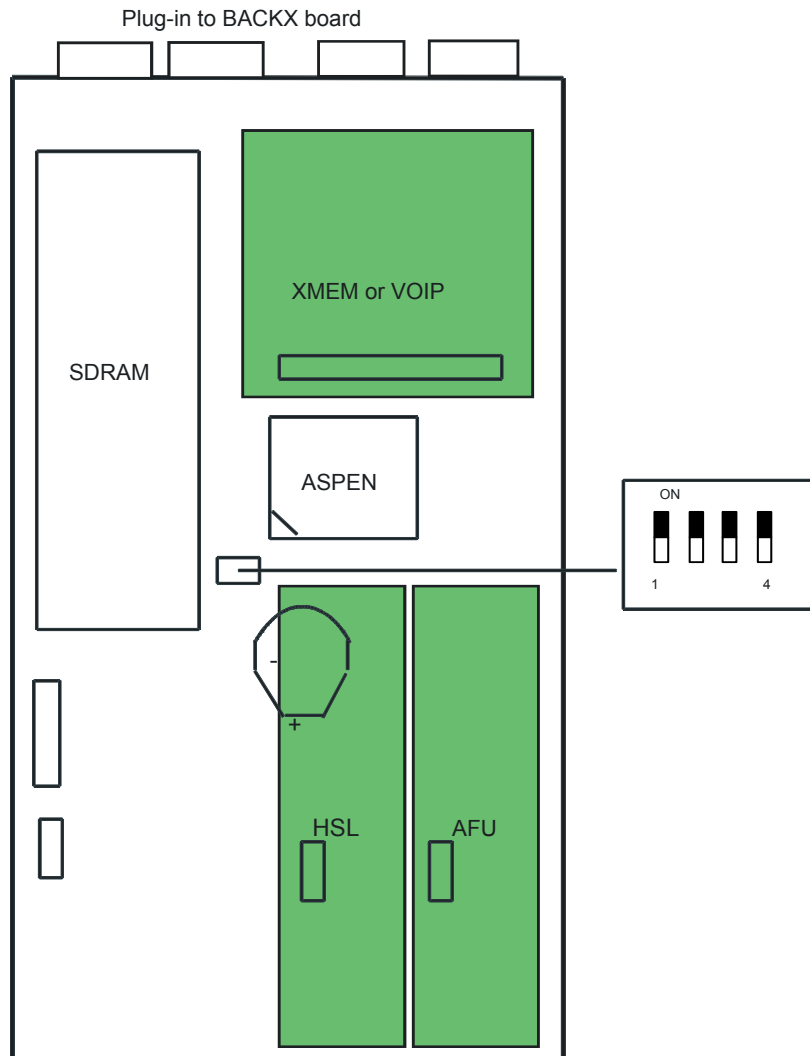


CPU - CPUe BOARDS

File
2

The CPU and CPUe boards (Processing Unit) present the following characteristics:

- CPU: call handling, 100-MHz processor, 32 MB SDRAM.
- CPUe: call handling, management of the router function for accessing the Internet, 133 MHz processor, 64 Mb S-DRAM, more powerful DSPs.



DAUGHTER BOARDS

The CPU - CPUe boards can take the following daughter boards:

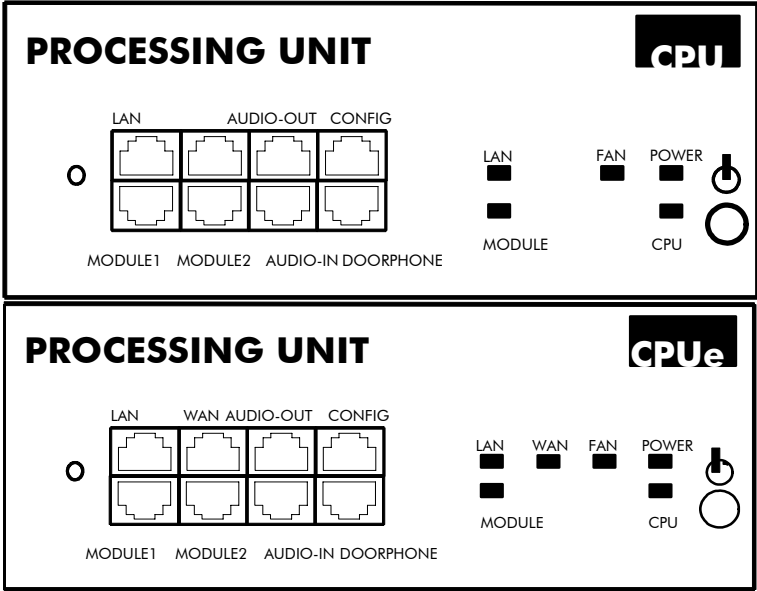
- HSL (High Speed Link): for cabinet interconnections
- XMEM (eXtended MEMory): memory extension + 2.5-inch hard drive connection
- VoIP (Voice over IP): converts voice signals into data packets and back again
- AFU (Auxiliary Function Unit): support for auxiliary functions: general bell, doorphone, audio In, audio Out, etc.

DAUGHTER BOARDS	CPU	CPUe
XMEM	YES	YES
VoIP	NO	YES for model e-XS
HSL1	YES	YES
HSL2	YES	YES
AFU	YES	YES
HARD DRIVE	YES	YES

SDRAM CAPACITY

Capacity	CPU	CPUe
SDRAM32	YES	NO
SDRAM64	NO	YES
SDRAM128	NO	YES on CPUe model e-XS only

OUTPUT PORTS (BOARD STIFFENER)



Available functions:

- LAN: 10/100 base T Ethernet port (MDI-II/straight)
- AUDIO-OUT: loudspeaker, alarm and general bell interfaces; 12V output
- AUDIO-IN: please-wait message and background music interfaces
- DOORPHONE: doorphone interfaces
- CONFIG: RS232 for MMC, NMC and PPP connections
- MODULE1: HSL to add-on module 1
- MODULE2: HSL to add-on module 2

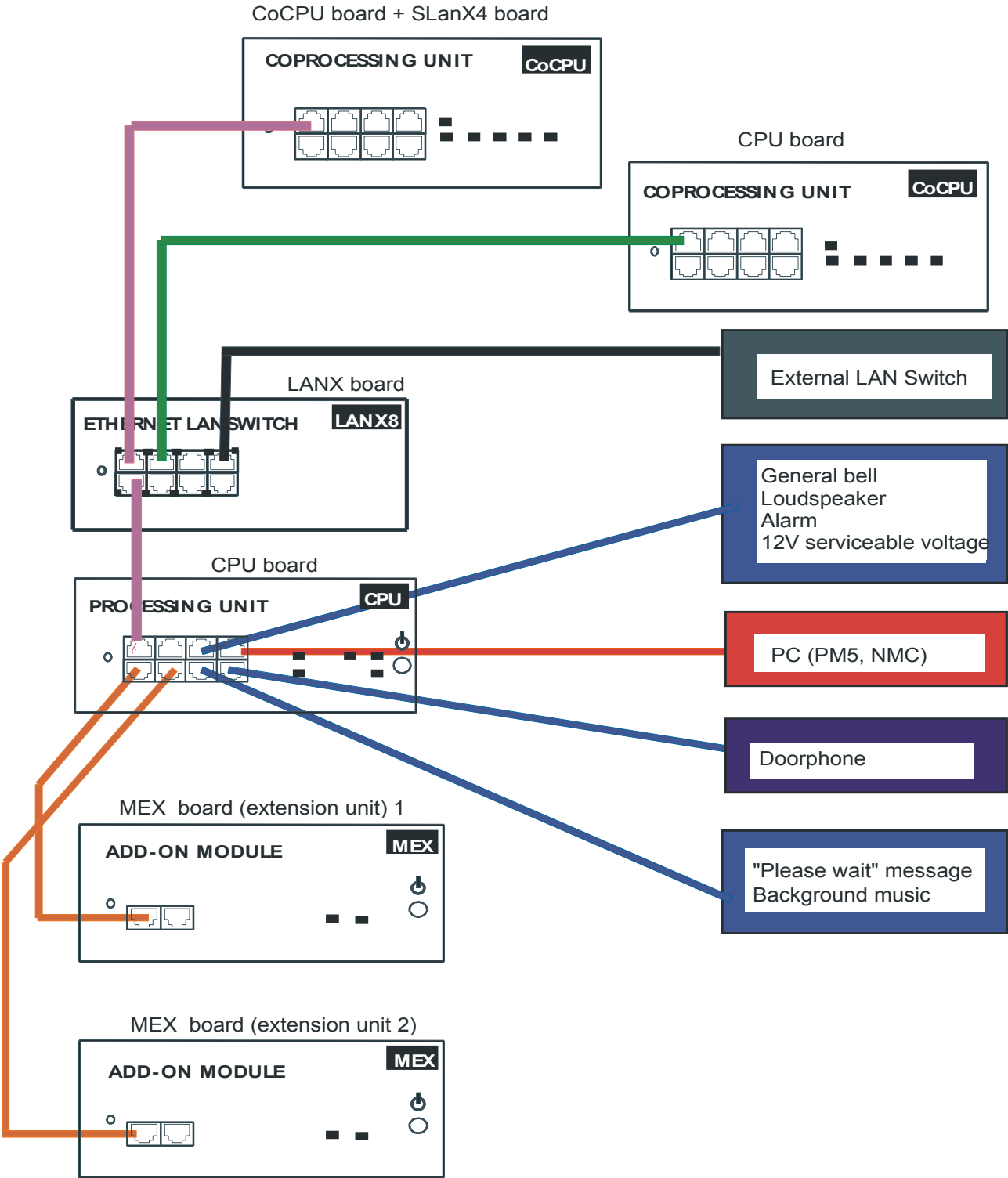
RJ45 pin	1	2	3	4	5	6	7	8
LAN outputs	TX+	TX-	RX+			RX-		
AUDIO-OUT out-puts	Audio Out A	Audio Out B	Alarm A	CenRg A	CenRg B	Alarm B	Ground	+12 V
CONFIG outputs	CTS	DSR	RX	Ground	Ground	TX	DTR	RTS
MODULE1 out-puts	TX+	TX-	RX+			RX-		
MODULE2 out-puts	TX+	TX-	RX+			RX-		
AUDIO-IN outputs	Audio In A	Audio In B	Audio Ctrl A			Audio Ctrl B		
DOORPHONE outputs			Door PHB1	DoorPH A1	DoorPH A2	Door PHB2		

MEANING OF THE LED INDICATIONS

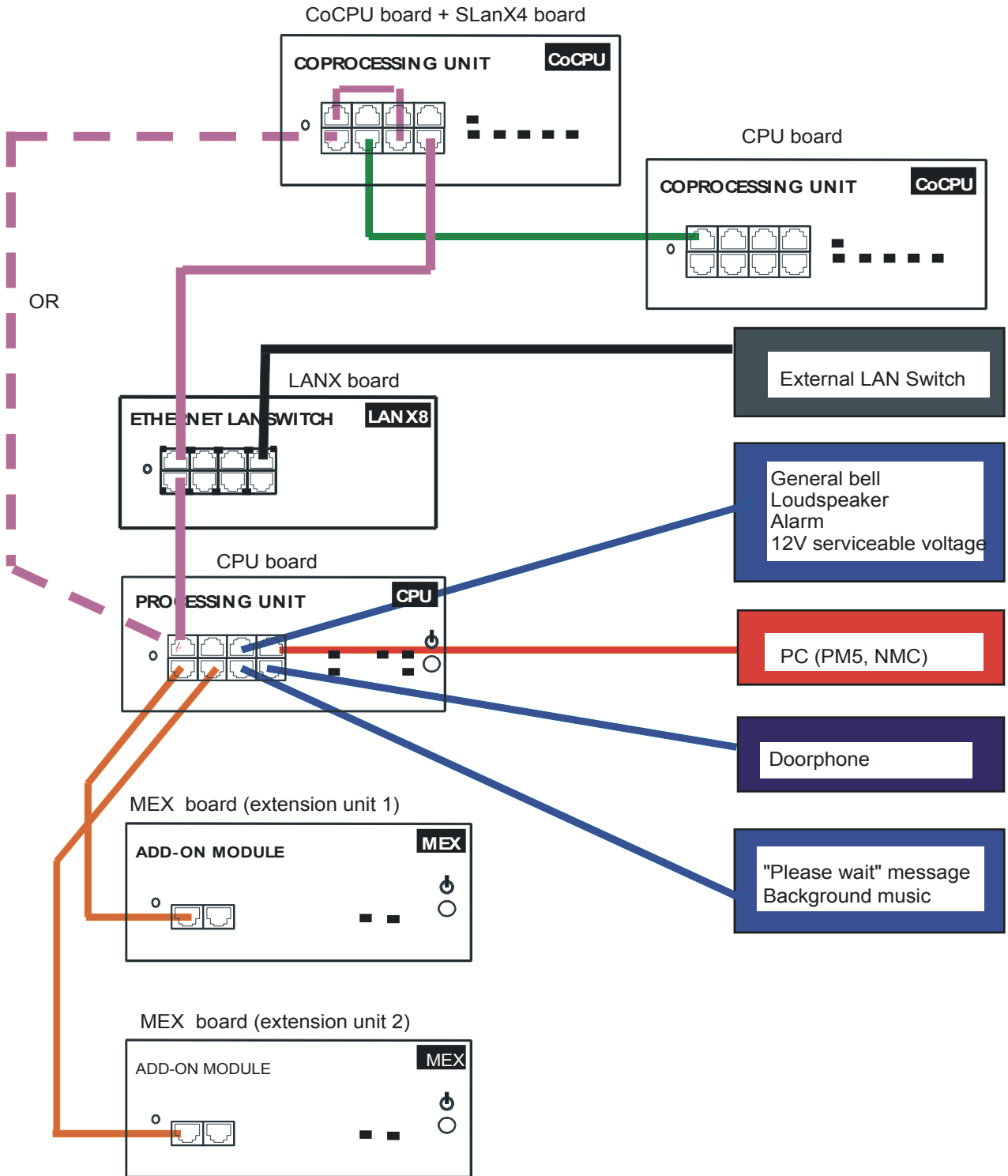
Name	Color	Function
CPU	Green	CPU functioning LED (flashing)
POWER	Red/Green	<ul style="list-style-type: none"> - Mains operation: steady green LED - Battery operation: steady yellow LED - Idle: flashing red LED
FAN	Red/Green	<ul style="list-style-type: none"> - Both fans functioning: steady green LED - 1 or both fans down: steady red LED
LAN	Green	LAN functioning LED (flashes when there is traffic)
MODULE	Green	Presence of HSL board
WAN	Green	Not Used

GENERAL CONNECTION DIAGRAM

Configuration without SLANX4 (recommended configuration)

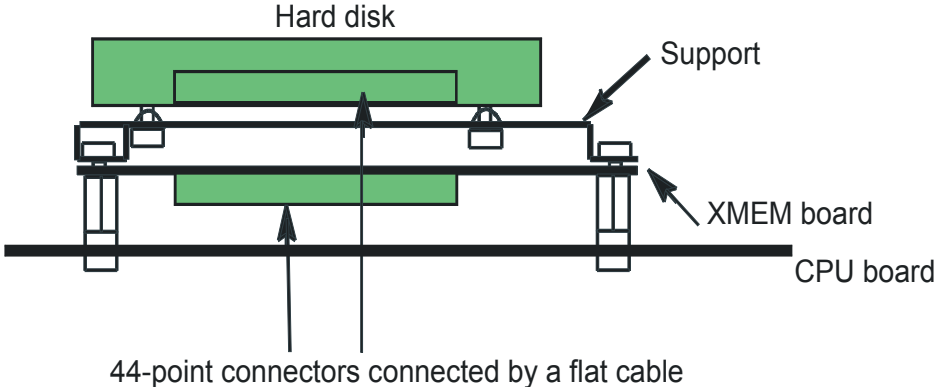


Configuration with SLANX4



CONNECTING A HARD DISK

Hard disks are fitted using an XMEM board.

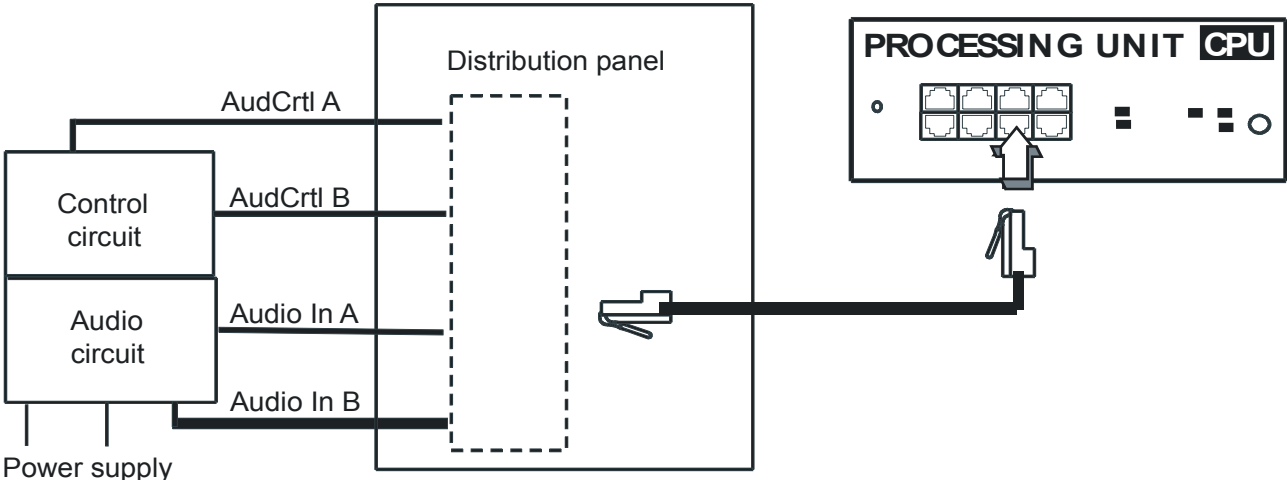


Important : During installation, always take anti-static precautions (wristband, heelpiece, etc.) before handling the hard disk. **Electrostatic discharges shorten the life of the disk.**

When going into stand-by mode, wait for red Power LED to stop flashing before you remove the module's CPU board. **Extracting the disk before the switch to standby is completed can destroy part of the disk or damage its contents.** Never handle the hard disk until the motor has stopped completely (about 4 seconds after the red Power LED stops flashing).

CONNECTING A PLEASE-WAIT MESSAGE PLAYER

This is connected via the **AUDCTRL** output (control contact open when idle) and the **AUDIN** input of the AUDIO-IN connector.



Audio input characteristics:

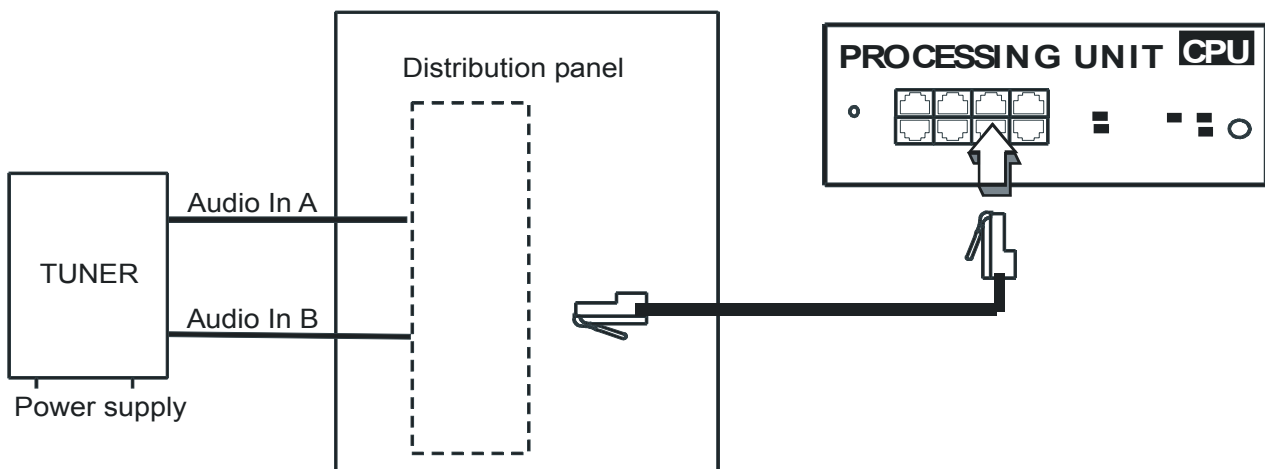
- Input impedance: 600 Ohms

Contact characteristics (same characteristics for the alarm and doorphone control contacts):

- Max. power: 10 W
- Max. voltage: 100 V
- Max. current: 500 mA

CONNECTING A BACKGROUND MUSIC TUNER

This is connected via the **AUDIN** input of the AUDIO-IN connector.



Audio input characteristics:

- Input impedance: 600 Ohms
- Input level: access +10 dBr

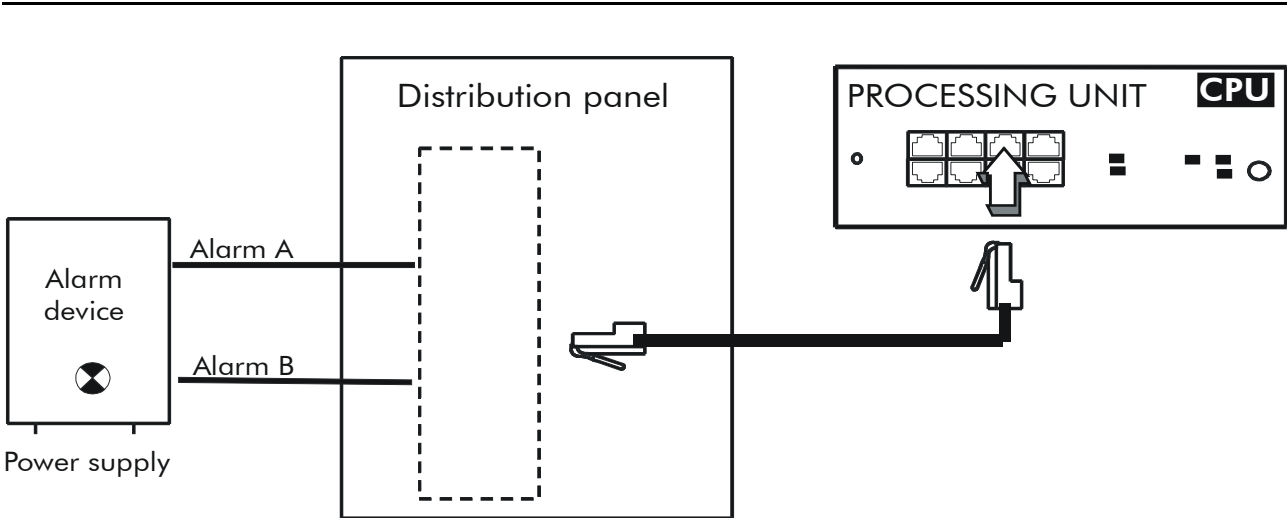
CONNECTING AN ALARM

The alarm is activated under the same conditions as TL forwarding (power outage or software command).

It is connected via the **ALARM** output (control contact closed when idle) of the AUDIO-OUT connector.

HARDWARE

CPU - CPUE BOARDS



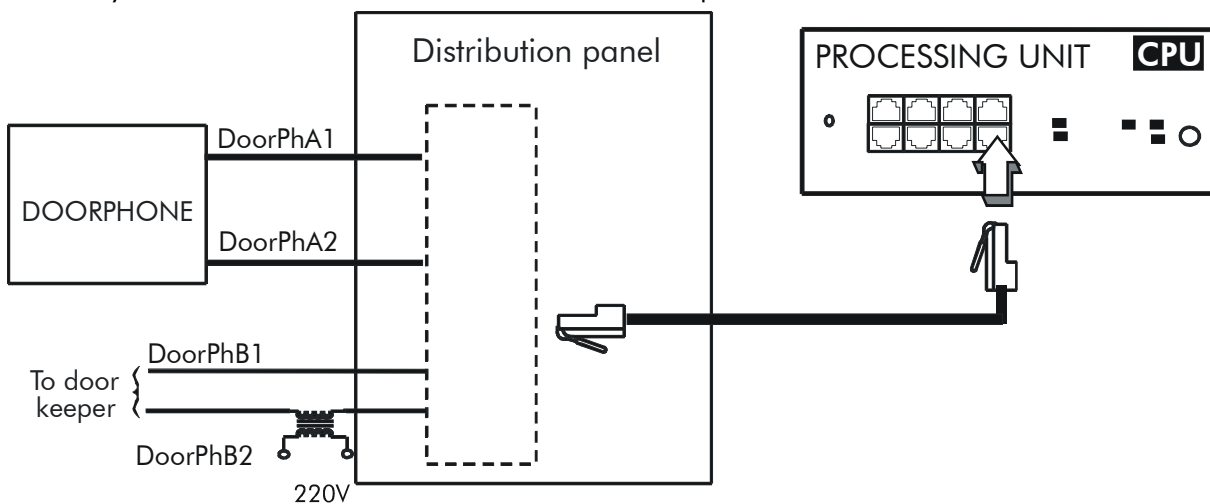
CONNECTING A DOORPHONE

The doorphone interface comprises an intercom and an optional doorstrike powered by the mains supply through a SELV (Safety Extra Low Voltage) transformer.

It is connected via the **DOORPHA** and **DOORPHB** outputs (control contacts open when idle) of the DOORPHONE connector.

Connecting an NPTT doorphone

- A single doorphone with doorstrike may be connected to the system.
- The system also allows for the connection of 2 doorphones without doorstrikes.



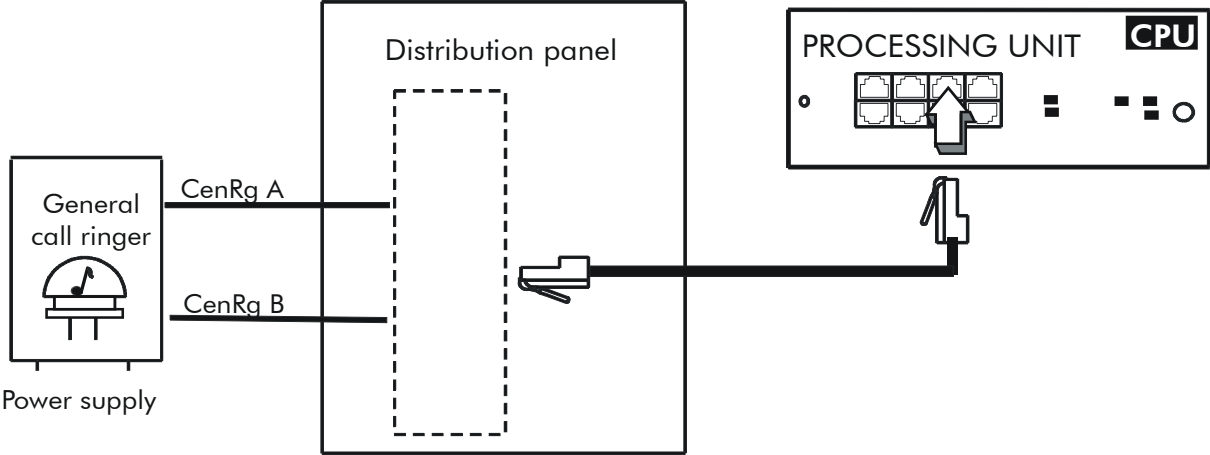
Connecting Telemini and Universal Doorphones

These doorphones only require the use of a Z station interface.

- Several of these doorphones can be connected to the system; the limit is determined by the maximum number of analog stations the system can support.
- A system cannot have TELEMINI and UNIVERSAL doorphones at the same time.

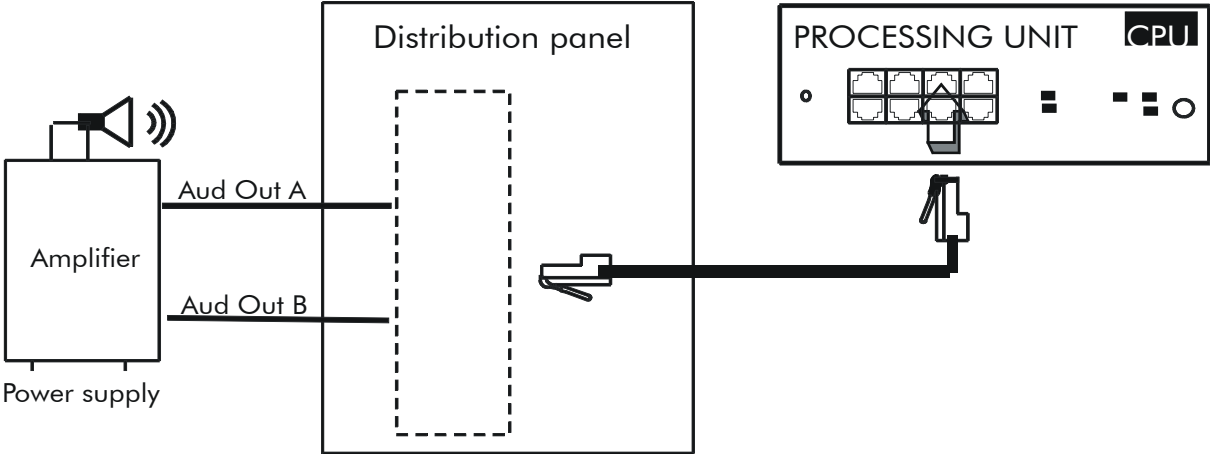
CONNECTING A GENERAL BELL

The general bell is connected via the **CENRG** output of the AUDIO-OUT connector.



CONNECTING A BROADCAST LOUDSPEAKER

Broadcast loudspeakers are connected via the **AUDOUT** output of the AUDIO-OUT connector.



- Output impedance: < 500 Ohms
- Output level: access + 3 dBr

USING THE 12V OUTPUT

The **GROUND** and + **12V** outputs on the AUDIO-OUT connector allow for the connection of an external 12V device with a maximum energy consumption of 150 mA (Rack 1 and Rack 2) or 300 mA (Rack 3).



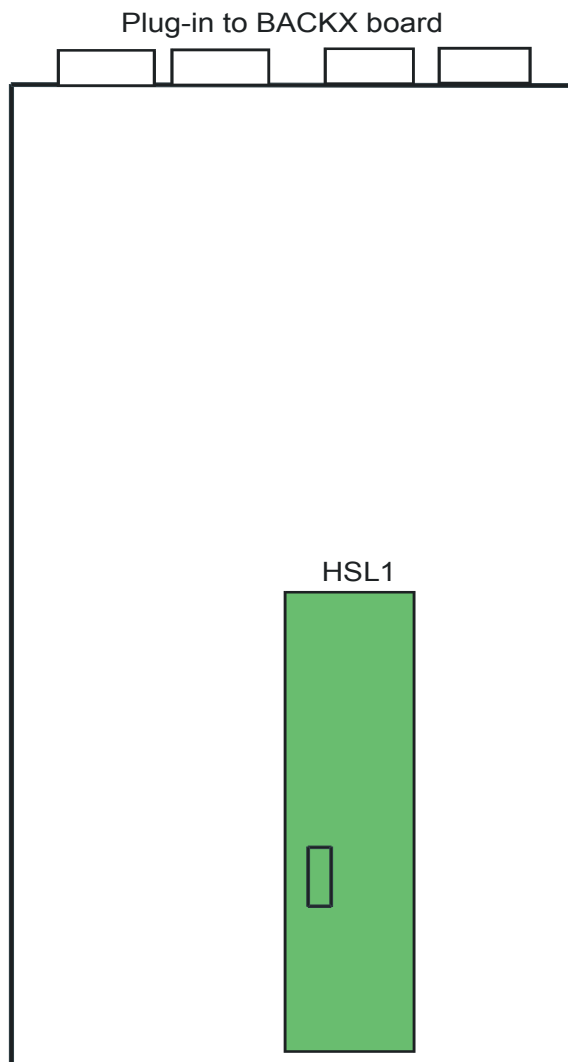
CPU - CPUE BOARDS

HARDWARE

MEX BOARD

File
3

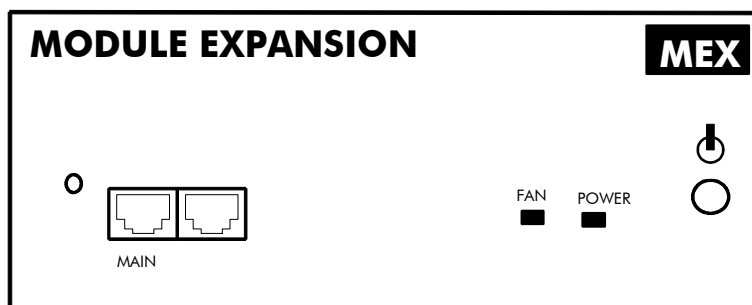
The MEX board (Module EXpansion) performs the controller functions in the add-on modules.



DAUGHTER BOARD

The MEX board is equipped with an HSL1 (High Speed Link) board for interconnecting with the basic module.

OUTPUT PORTS (BOARD STIFFENER)



Available functions:

- MAIN: HSL to basic module.

RJ45 pin	1	2	3	4	5	6	7	8
MAIN outputs	TX+	TX-	RX+			RX-		

MEANING OF THE LED INDICATIONS

Name	Color	Function
POWER	Red/Green	<ul style="list-style-type: none"> - Mains operation: steady green LED - Battery operation: steady yellow LED - Idle: flashing red LED
FAN	Red/Green	<ul style="list-style-type: none"> - Both fans functioning: steady green LED - 1 or both fans down: steady red LED

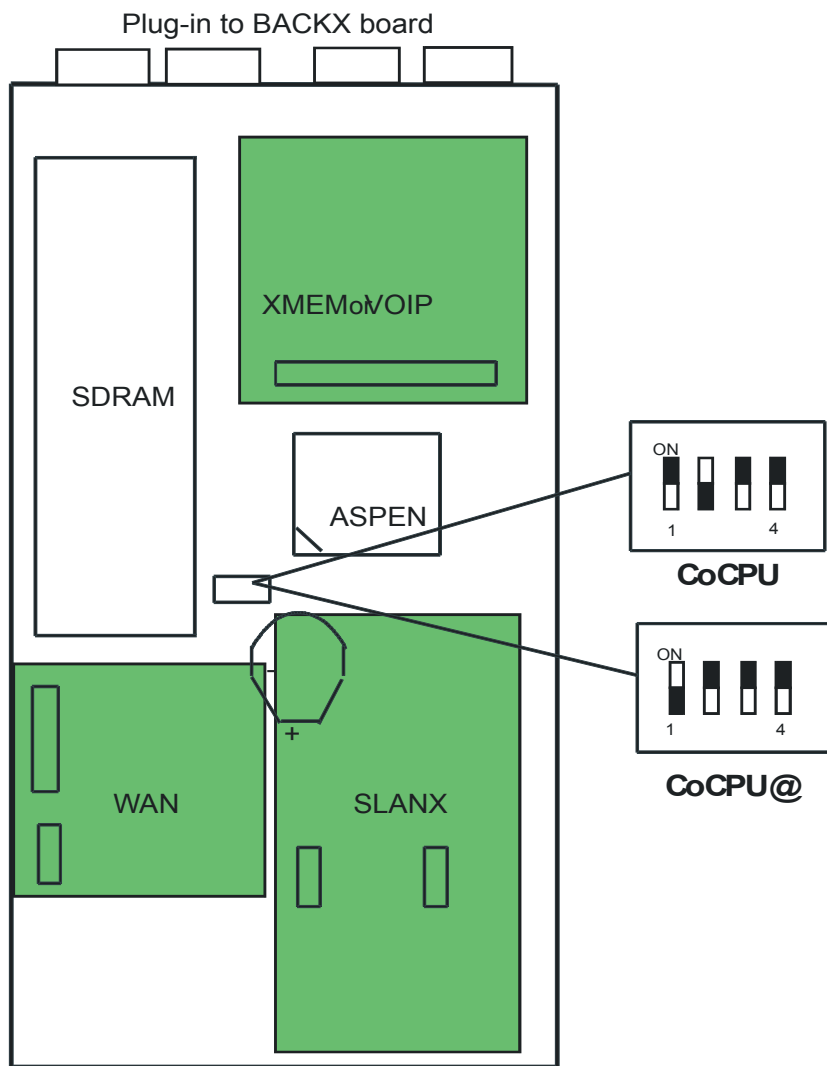
CONNECTION

The MEX board is connected to the **MODULE 1** or **MODULE 2** connector on the CPU/CPUe board. See also the General Diagram in the section on CPU-CPUe boards.

CoCPU - CoCPU@ BOARDS

File
4

The CoCPU and CoCPU@ (CoProcessing Unit) boards offer applications such as Voice over IP and access to the Internet and to Internet services.



DAUGHTER BOARDS

The CoCPU - CoCPU@ boards can take the following daughter boards:

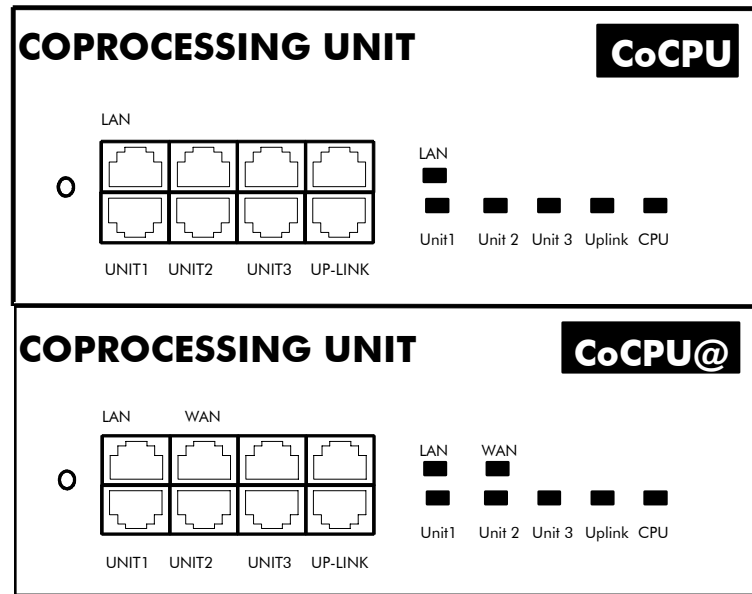
- VoIP (Voice Over IP): Gateway H323 with integrated Gatekeeper function; supports the management of CODECs and DSPs for IP telephony and IP Trunk (IP trunk lines) applications
- SLANX (Switched LANX): 4 LAN switch ports
- WAN: Ethernet link allowing the connection of an external DSL modem or an external router

DAUGHTER BOARDS	CoCPU	CoCPU@
VoIP	YES	NO
WAN	NO	YES
SLANX4	YES	YES
HARD DRIVE	NO	YES

SDRAM CAPACITY

Capacity	CoCPU	CoCPU@
SDRAM32	YES	NO
SDRAM128	NO	YES

OUTPUT PORTS (BOARD STIFFENER)



Available functions:

- LAN: 10/100 base T Ethernet port (MDI-II/straight)
- WAN: Ethernet 10/100 Base T port (MDI-II/straight); connection to an ADSL modem (available from version R1.1 onwards)
- UNIT1, UNIT2, UNIT3: ports on integrated LAN switch (MDI-X/crossover)
- UPLINK: Integrated LAN switch uplink port (MDI-II/straight).

RJ45 pin	1	2	3	4	5	6	7	8
LAN/WAN outputs	TX+	TX-	RX+			RX-		
Uplink outputs	TX+	TX-	RX+			RX-		
Unit 1 to 3 outputs	RX+	RX-	TX+			TX-		

MEANING OF THE LED INDICATIONS

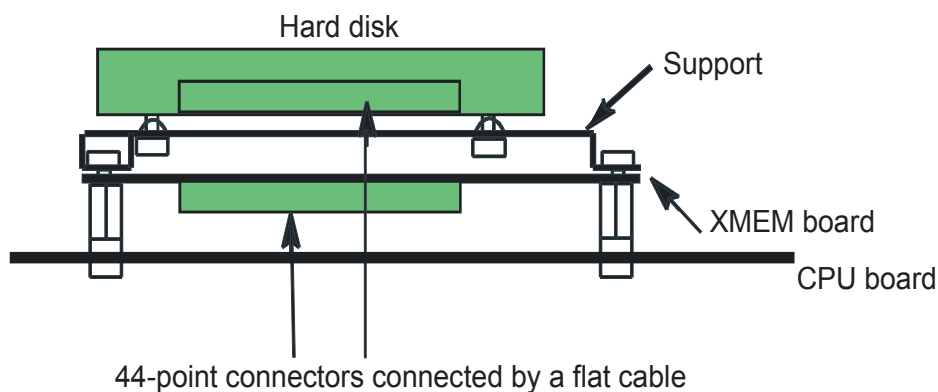
Name	Color	Function
CPU	Green	CPU functioning LED (flashing)
LAN	Green	LAN functioning LED (flashes when there is traffic)
WAN	Green	WAN functioning LED (flashes when there is traffic); LED used if an ADSL modem is connected, available from version R1 onwards
UNITS 1 - 4 UPLINK	Green	LAN switch interfaces 1 to 4 functioning LED (flashes when there is traffic)

CONNECTION

The CoCPU boards are connected either to the CPU board (LAN port) or to a LAN switch port. See General Diagram in the CPU - CPUe board section.

CONNECTING A HARD DISK

Hard disks are fitted using an XMEM board.



Important : During installation, always take anti-static precautions (wristband, heelpiece, etc.) before handling the hard disk). **Electrostatic discharges can shorten the life of the disk.**

When going into stand-by mode, wait for red Power LED to stop flashing before you remove the module's CPU board. **Extracting the disk before the switch to standby is completed can destroy part of the disk or damage its contents.** Never handle the hard disk until the motor has stopped completely (about 4 seconds after the red Power LED stops flashing).

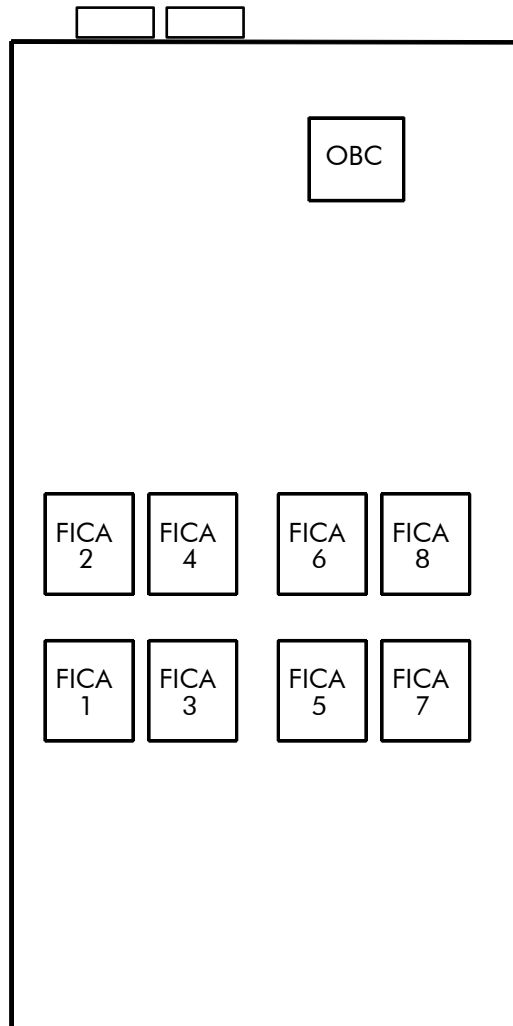
BRA BOARD

File
5

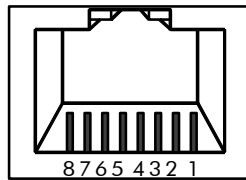
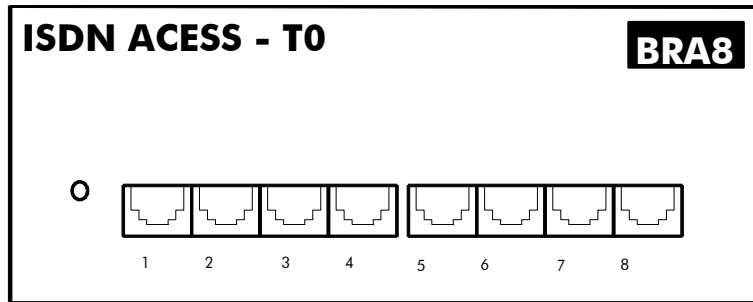
The BRA board The BRA (Basic Rate Access) board provides the basic access points (2 x 64-Kbps B-channels + 1 x 16-Kbps D-channel per access) for connecting the system to the ISDN digital public network (point-to-point or multipoint T0 link). 3 board versions are available:

- BRA2: 2 T0 accesses
- BRA4: 4 T0 accesses
- BRA8: 8 T0 accesses

Plug-in to BACKX board



OUTPUT PORTS (BOARD STIFFENER)

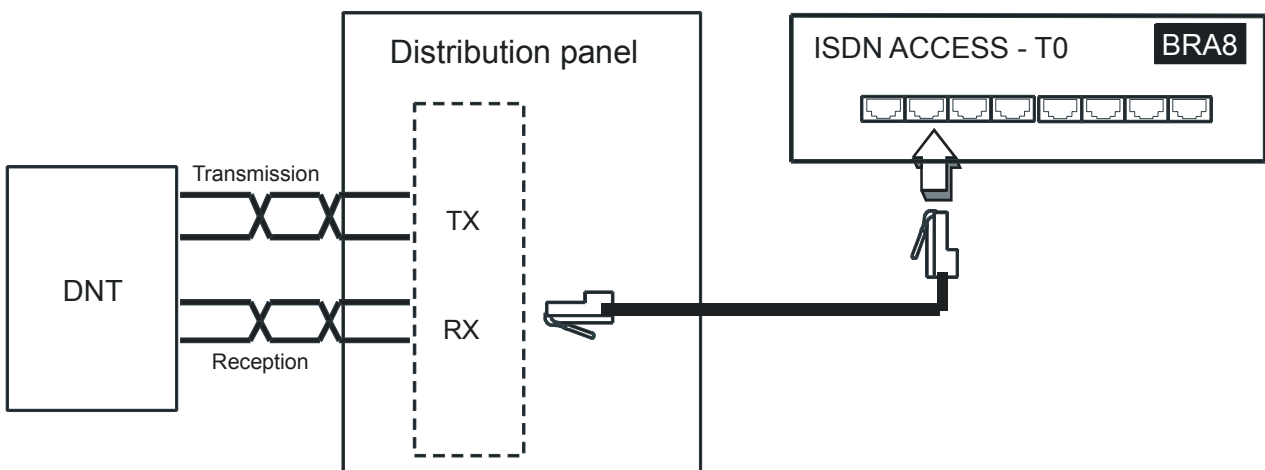


Female RJ45, front

RJ45 pin	1	2	3	4	5	6	7	8
Outputs			TX+	RX+	RX-	TX-		

CONNECTING A T0 ACCESS

The Alcatel OmniPCX system can be installed near the digital network termination or at a certain distance (up to 350 m), as required.



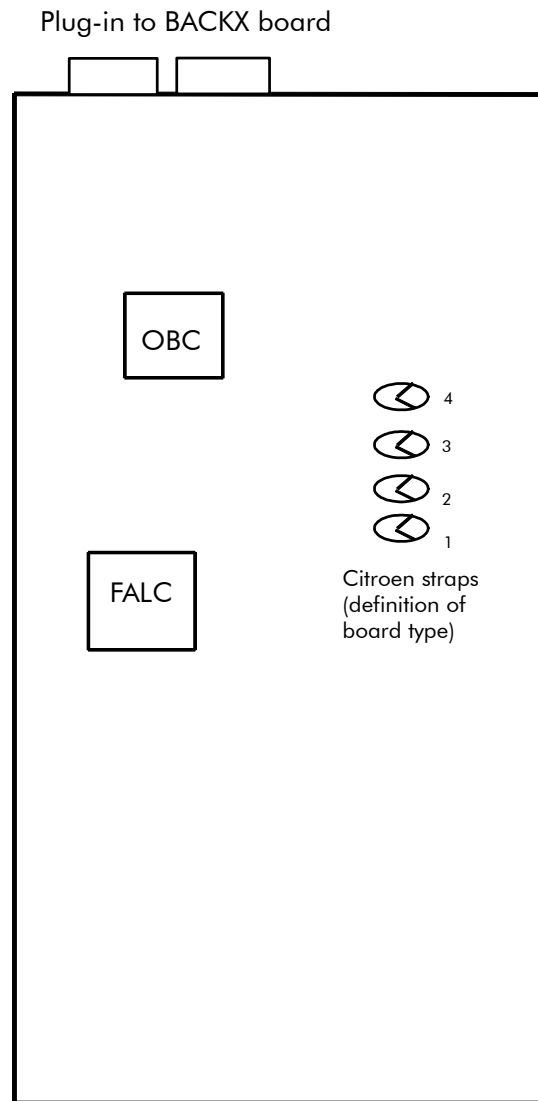
PRA BOARD

File
6

The PRA (Primary Rate Access) board provides 1 primary access for connecting the Alcatel OmniPCX system to the ISDN digital public network or to private networks:

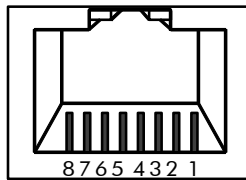
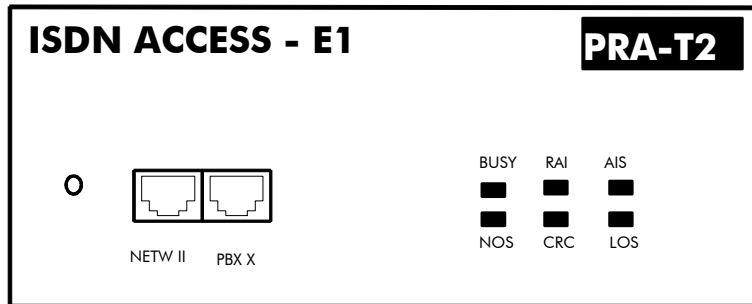
- PRA -T2, DASS2, DLT2: 30 B-channels + 1 D-channel; 2048 kbps)
- PRA-T1: 23 x 64-Kbps B-channel + 1 x 64-Kbps D-channel

There are several connection options: T2 120-ohm symmetrical pairs and T1 100-ohm symmetrical pairs. A coaxial 75-ohm connection is available using an external adapter kit.



OUTPUT PORTS (BOARD STIFFENER)

T2 board example



Female RJ45, front

RJ45 pin	1	2	3	4	5	6	7	8
NETW outputs	RX+	RX-		TX+	TX-			
PBX outputs	TX+	TX-		RX+	RX-			

NETW: connection to public network DLT.

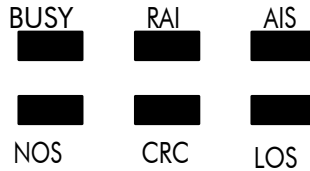
PBX: network operation (QSIG).

BOARD TYPE DEFINITION (CITROËN STRAPS)

The board type is defined by the Citroën strap solder:

- T2 (ex-factory) : no solders
- T1 : solder on strap 1
- CAS-T1 : solders on straps 2 and 3
- DLT2 : solder on strap 2
- DASS2 : solder on strap 3
- CAS-T2 : solder on strap 4

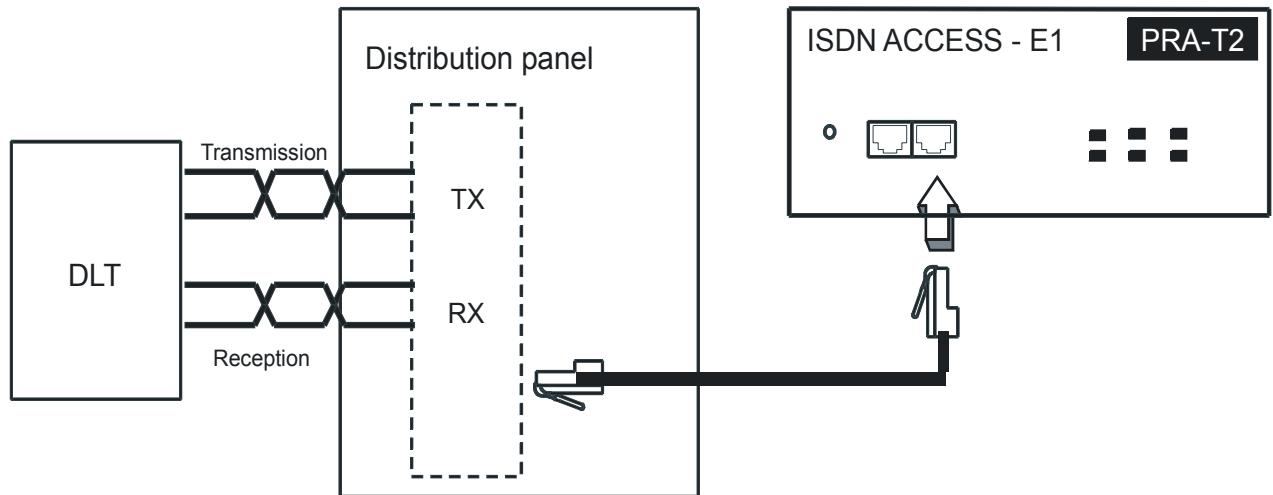
ALARM LEDS



T2 Name	T1 Name	Function
BUSY	BUSY	B-channels busy (red LED lights up if at least 1 B-channel is busy)
RAI (ATD)	RAI	Remote frame alarm (red LED lights up on alarm)
AIS (SIA2M)	AIS	Too many "1"s in the 2-Mbit binary train (red LED lights up on alarm)
NOS (MS)	NSIG	Absence of 2-Mbit signal (red LED lights up on alarm)
CRC (TE)	CRC	CRC error (red LED lights up on alarm)
LOS (PVT)	NSYN	Loss of frame alignment (red LED lights up on alarm)

In brackets: French abbreviations

CONNECTION (120- OHM SYMMETRICAL PAIRS)



The PRA board is connected to a digital line termination (DLT) by 2 reinforced symmetrical pairs.

Cable impedance: 120 Ohms +/- 20% between 200 kHz and 1 MHz; 120 Ohms +/- 10% at 1 MHz.
We recommend using an L120-series cable (or the L204 equivalent).

The distance T2-DLT is limited by the amount of loss between the DLT and T2, which must not exceed 6 dB at 1024 kHz.



PRA BOARD

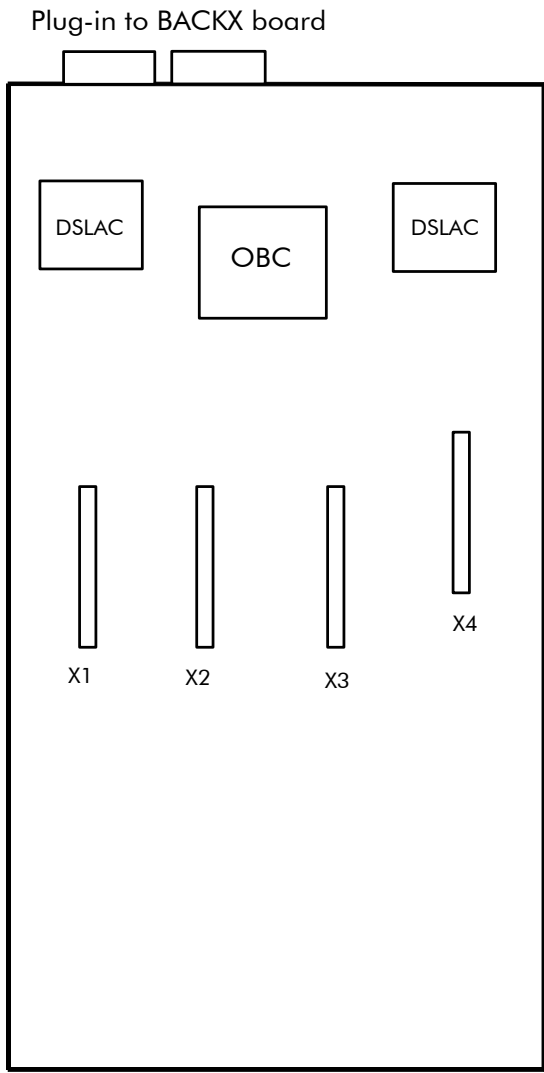
HARDWARE

ATA BOARD



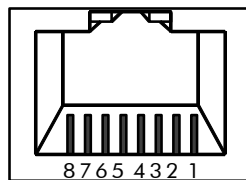
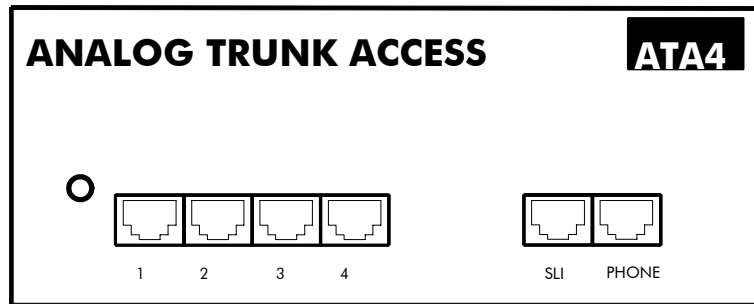
The ATA (Analog Trunk Access) board serves to connect analog trunk lines (TL). 2 board versions are available:

- ATA-2: 2 trunk lines
- ATA-4: 4 trunk lines



X1, X2, X3, X4: plug-in connectors for MET daughter boards (call charge metering receivers).

OUTPUT PORTS (BOARD STIFFENER)

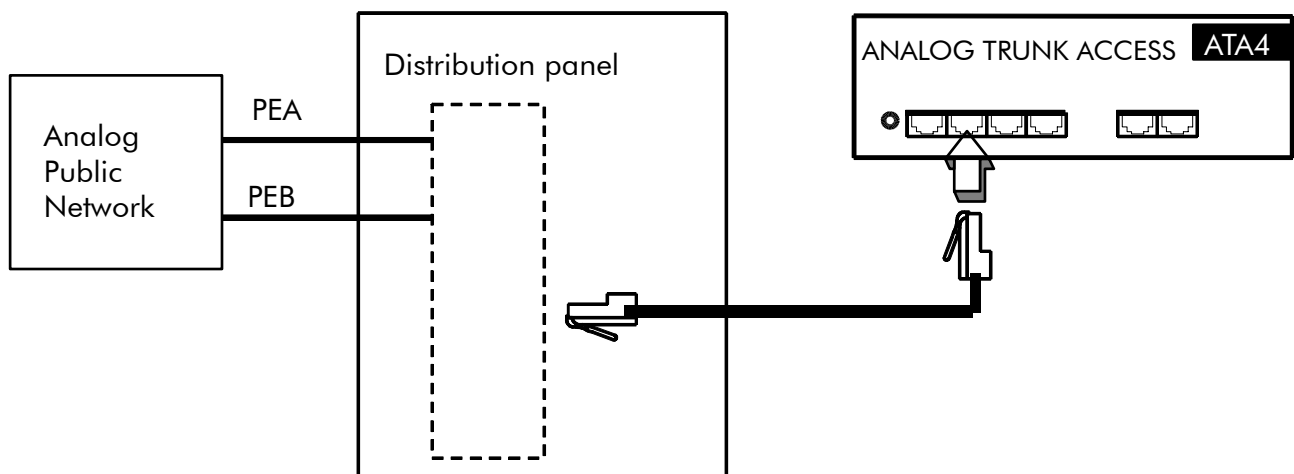


Female RJ45, front

RJ45 pin	1	2	3	4	5	6	7	8
Outputs 1 to 4				PEA	PEB			
SLI outputs				ZA	ZB			
PHONE outputs				ZSETA	ZSETB			

CONNECTING A TL

Without TL forwarding

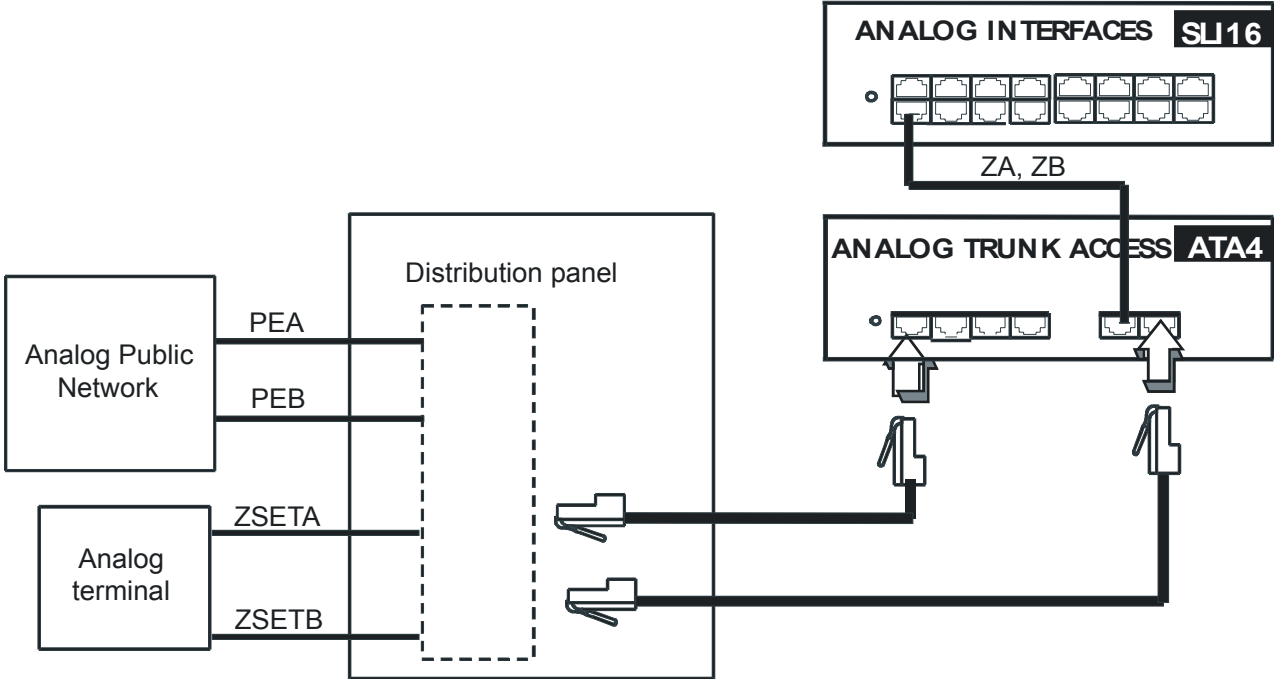


HARDWARE

ATA BOARD

With TL forwarding

In the event of a power cut or CPU failure, this solution forwards the analog line connected to device 1 on the ATA board to another analog set in the system.



ADAPTATION TO UK PROTOCOLS

In accordance with the UK analogue public network, 2 types of ATA boards are available:

- ATA board (2 or 4 equipments) equipped with polarity inversion detectors.
- ATA LCG board (2 or 4 equipments) equipped with calibrated power failure detectors.

Protocol	Board type		Supported functionality	
	ATA	ATA LCG	Detection release of remote	Detection disconnect of remote
"Loop calling unguarded clear" protocol	YES	YES	NO	NO
"Loop calling guarded clear" protocol	NO	YES	YES	NO
IP protocol	YES	NO	NO	YES

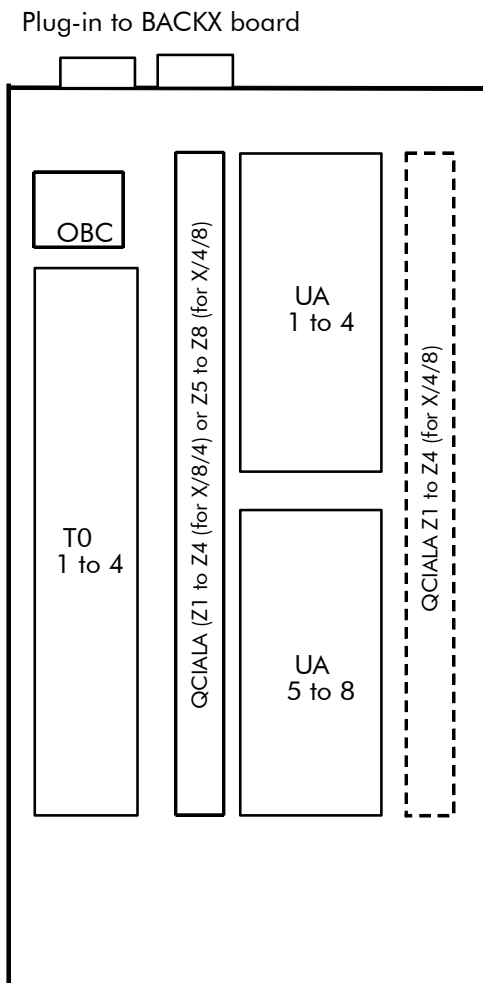
MIX BOARD

File
8

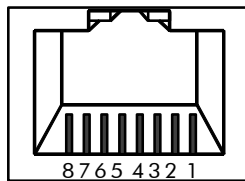
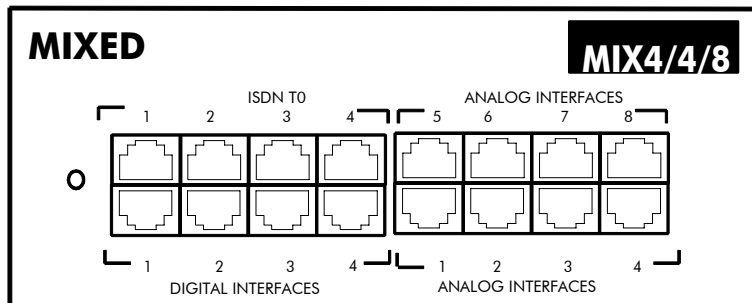
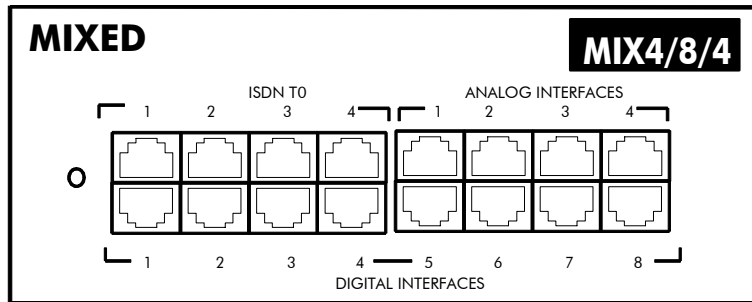
The MIX board The MIX (Mixed Lines) board serves to connect ISDN basic accesses (T0), Alcatel Reflex stations (UA) and 2-wire analog terminals (Z). 6 board versions are available:

- MIX244: 2 T0 accesses, 4 UA interfaces and 4 Z interfaces
- MIX484: 4 T0 accesses, 8 UA interfaces and 4 Z interfaces
- MIX448: 4 T0 accesses, 4 UA interfaces and 8 Z interfaces
- MIX044: 4 UA interfaces and 4 Z interfaces
- MIX084: 8 UA interfaces and 4 Z interfaces
- MIX048: 4 UA interfaces and 8 Z interfaces

E.g. MIX484 board



OUTPUT PORTS (BOARD STIFFENER)



Female RJ45, front

RJ45 pin	1	2	3	4	5	6	7	8
Z outputs				ZA	ZB			
UA outputs				L1	L2			
T0 outputs			TX+	RX+	RX-	TX-		

CONNECTING AN ANALOG STATION (Z)

Follow the rules in the "SLI board" section.

CONNECTING AN ALCATEL REFLEXES STATION

Follow the rules in the "UAI board" section.

CONNECTING A T0 BASIC ACCESS

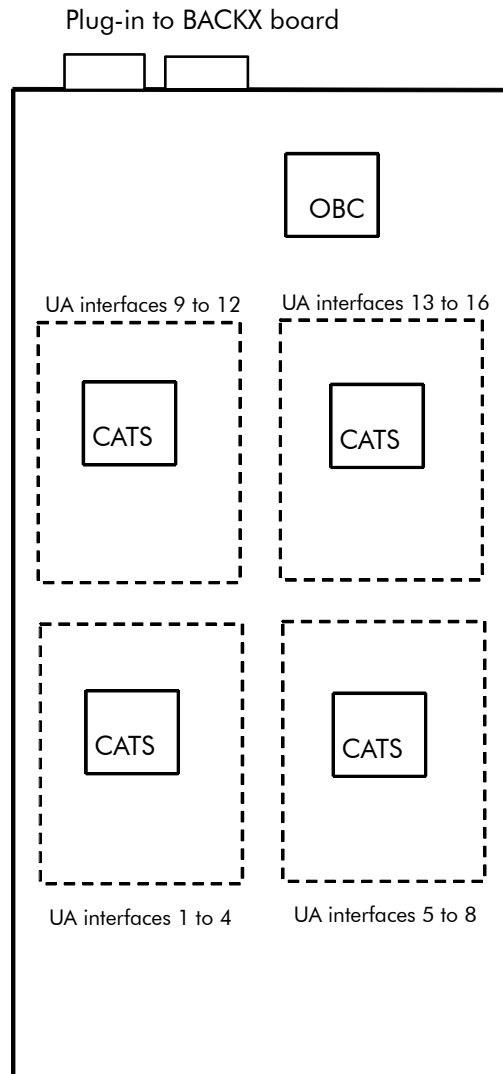
Follow the rules in the "BRA board" section.

UAI BOARD

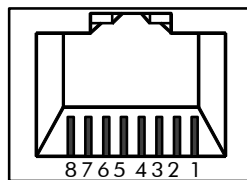
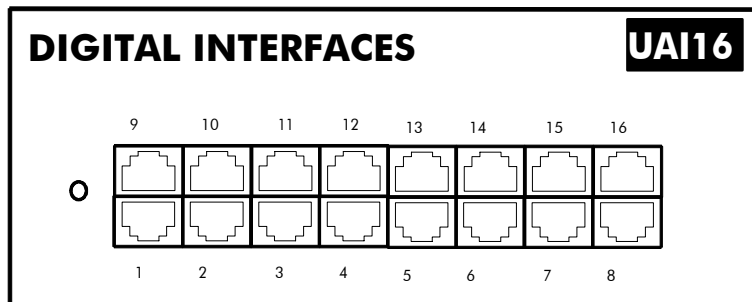
File
9

The UAI board allows the connection of Alcatel Reflexes stations (UA). 3 board versions are available:

- UAI4: 4 UA interfaces
- UAI8: 8 UA interfaces
- UAI16: 16 UA interfaces



OUTPUT PORTS (BOARD STIFFENER)



Female RJ45, front

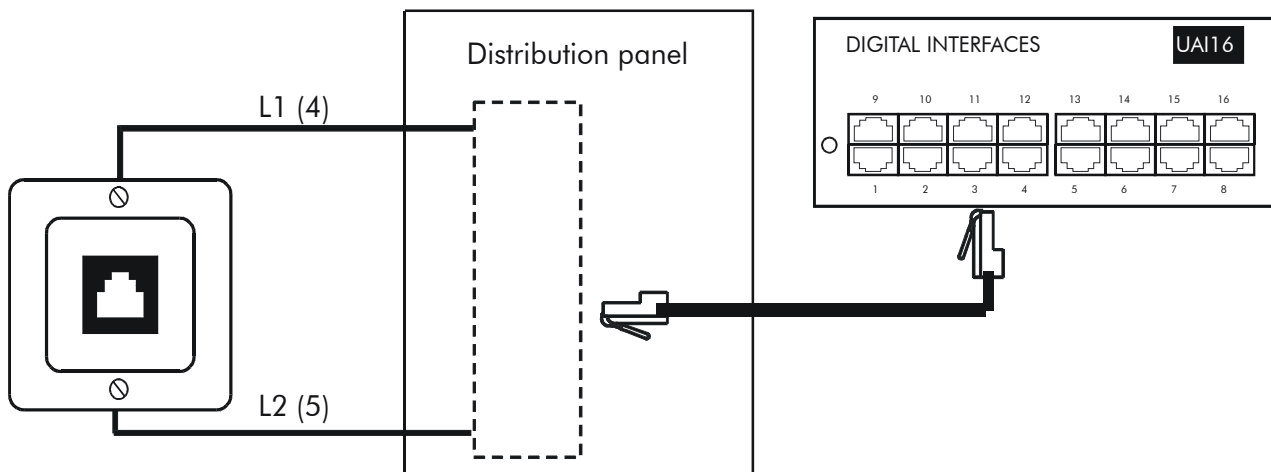
RJ45 pin	1	2	3	4	5	6	7	8
Outputs				L1	L2			

CONNECTING A REFLEXES STATION

The terminals are equipped with a cable and a self-acting switch that plugs into the wall socket. Each terminal is connected up by a pair of 0.5 or 0.6 mm diameter wires.

System - Reflexes station distances:

- 0.5 mm SYT type cable: 800 m (station without option) or 600 m (station with S0 or Z option)
- 278 type 0.6 mm cable: 1200 m (station without option) or 850 m (station with S0 or Z option)

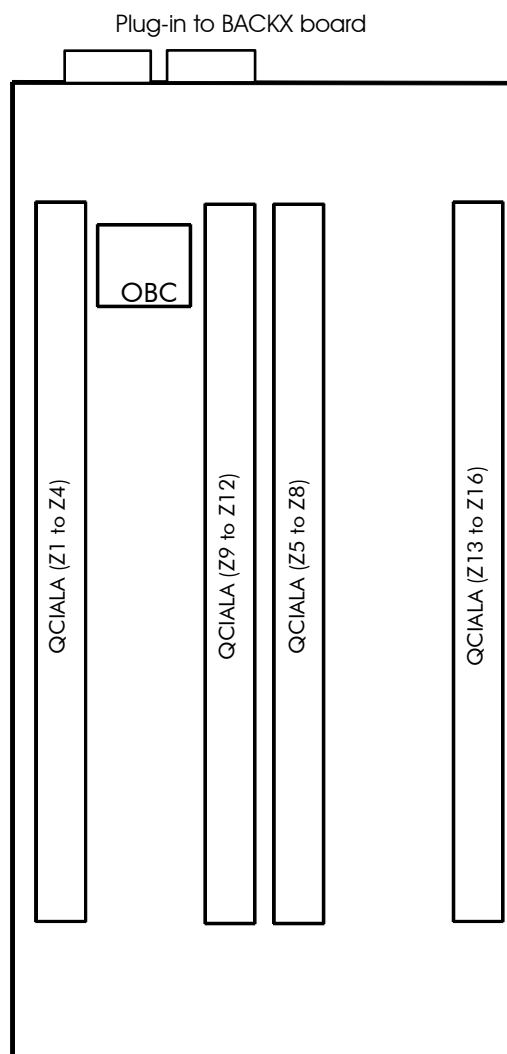


SLI BOARD

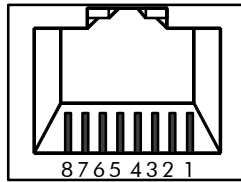
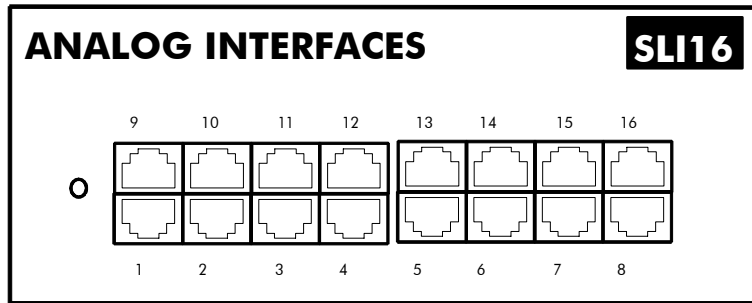
File
10

The SLI board (Single Line) allows the connection of 2-wire analog terminals (Z). 3 board versions are available:

- SLI4: 4 Z interfaces
- SLI8: 8 Z interfaces
- SLI16: 16 Z interfaces



OUTPUT PORTS (BOARD STIFFENER)

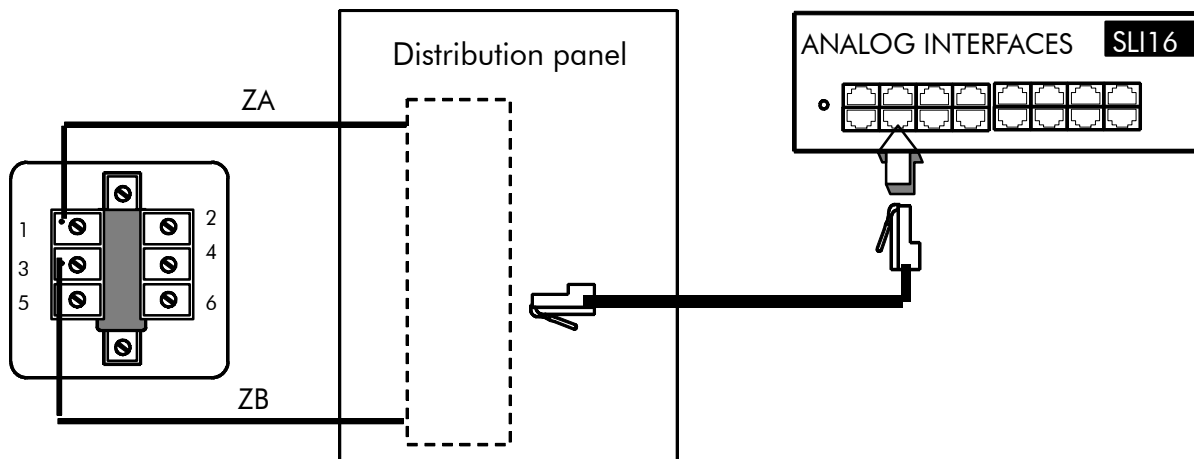


Female RJ45, front

RJ45 pin	1	2	3	4	5	6	7	8
Outputs				ZA	ZB			

CONNECTING AN ANALOG Z STATION

The sets are equipped with a cable and self-acting switch for connection to a wall socket. Each set is connected up with a pair of 0.5 or 0.6-mm wires (the maximum distance with 0.5-mm cabling is 1.3 km).



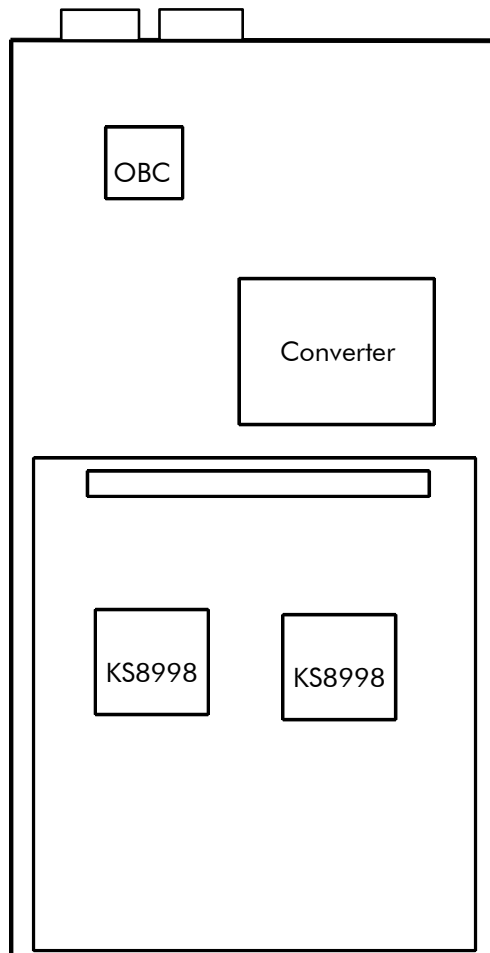
LANX BOARD

File
11

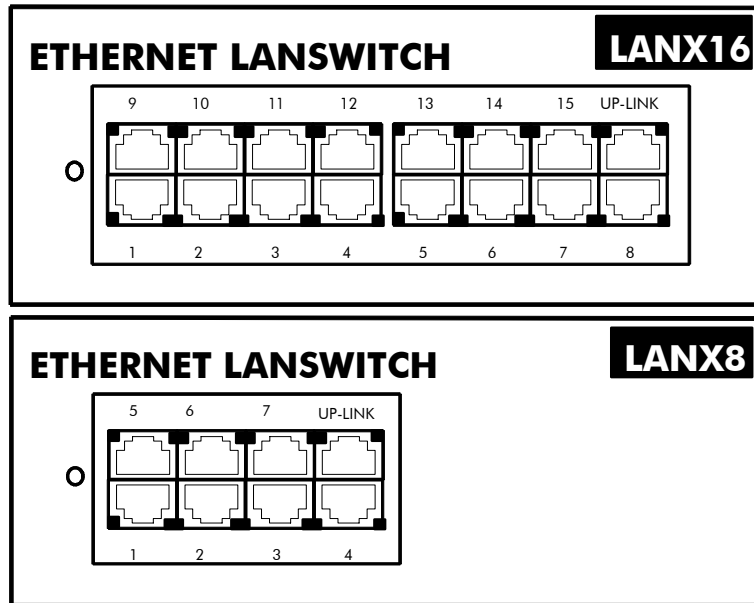
The LanX board (Ethernet LAN Switch) serves to connect Ethernet terminals (IEEE 802.3 compatible). 2 board versions are available:

- LanX8: eight 10/100 BT Ethernet ports (ports 1 to 7: MDI-X/crossover; Uplink: MDI-II/straight)
- LanX16: sixteen 10/100 BT Ethernet ports (ports 1 to 15: MDI-X/crossover; Uplink: MDI-II/straight)

Plug-in to BACKX board

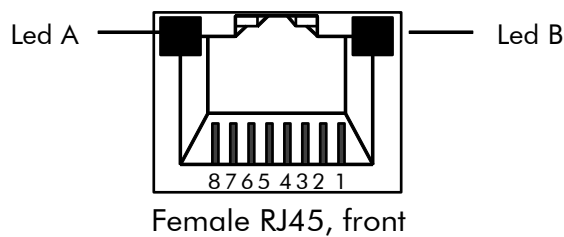


OUTPUT PORTS (BOARD STIFFENER)



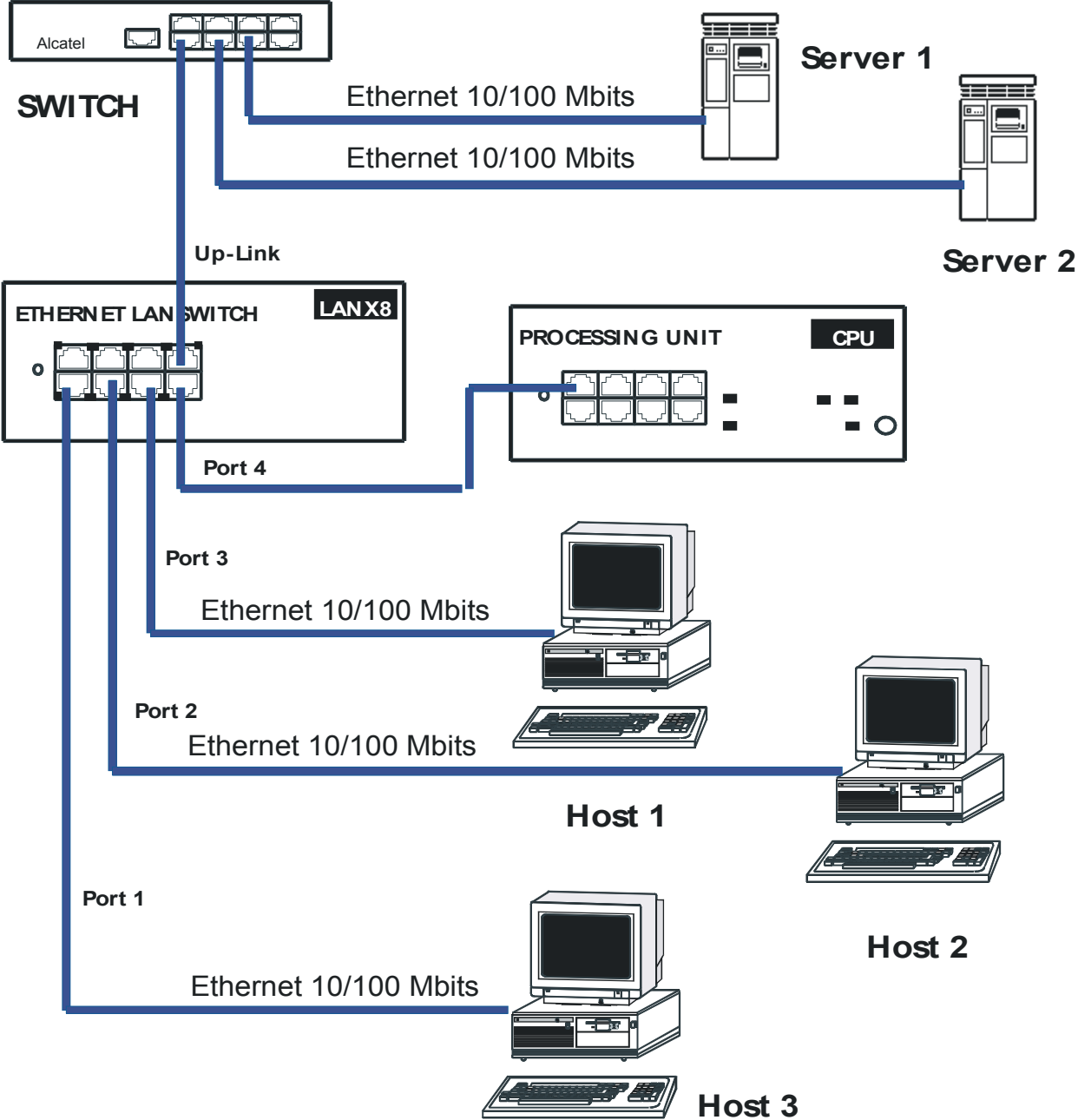
Each category-5 RJ45 connector has 2 green LEDs:

- LED A = link status and activity:
 - off: link disconnected
 - on: link connected
 - blinking: link active
- LED B = full duplex/collision:
 - off: Half Duplex
 - on: Full Duplex
 - blinking: collision



RJ45 pin	1	2	3	4	5	6	7	8
Port outputs (ports 1 to 15)	RX+	RX-	TX+			TX-		
Up-Link output	TX+	TX-	RX+			RX-		

CONFIGURATION EXAMPLE





LANX BOARD

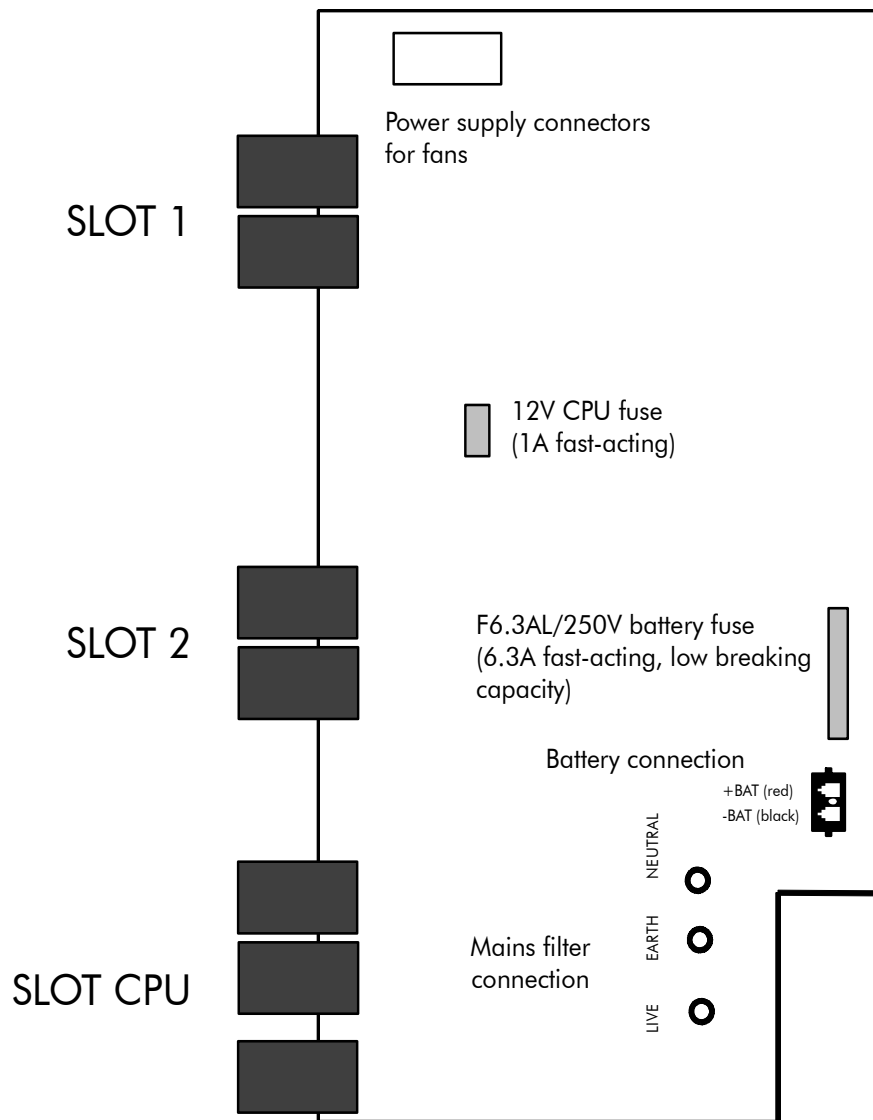
HARDWARE

MAIN POWER SUPPLIES

File
12

POWER SUPPLY PS1

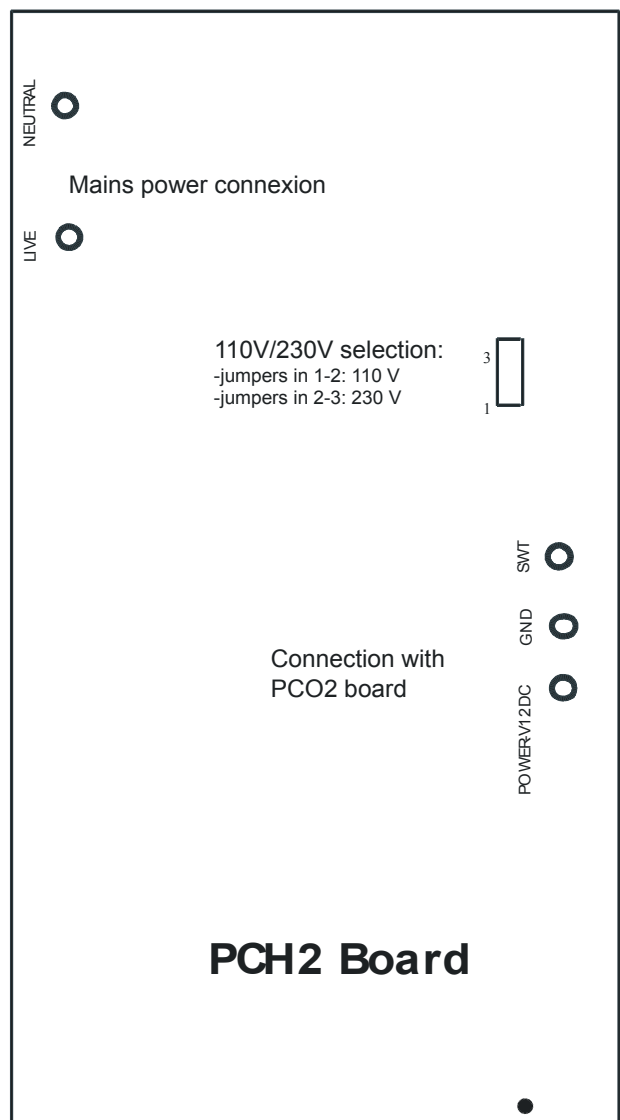
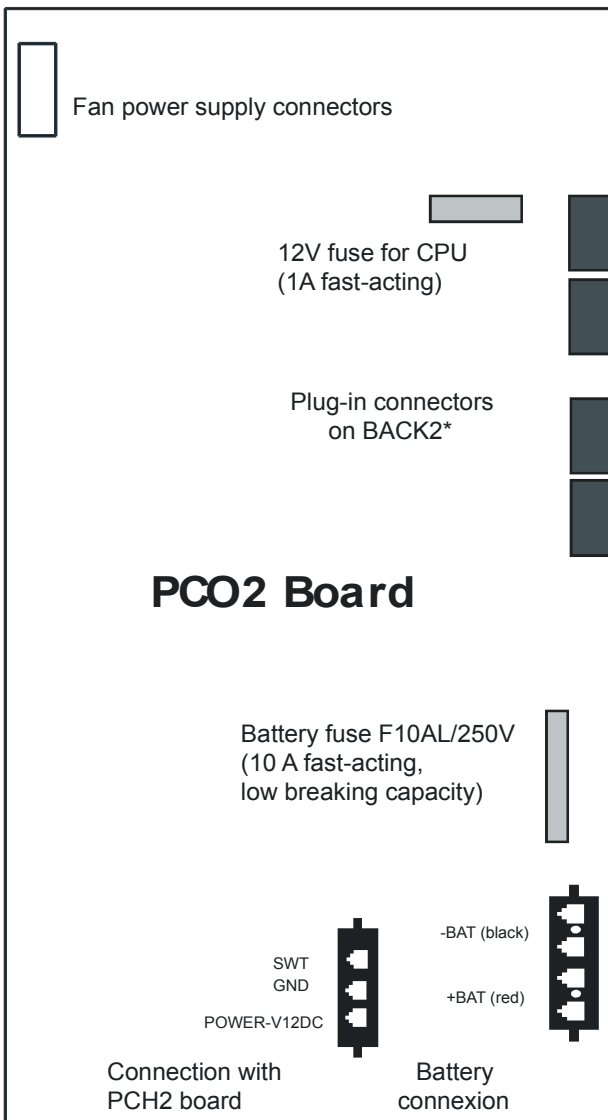
Power supply PS1 provides the different voltages required to operate a Rack 1 module and also acts as a backplane board (slots 1, 2 and CPU).



POWER SUPPLY PS2

Power supply PS2, which provides the different voltages required to operate a Rack 2 module, comprises 2 boards:

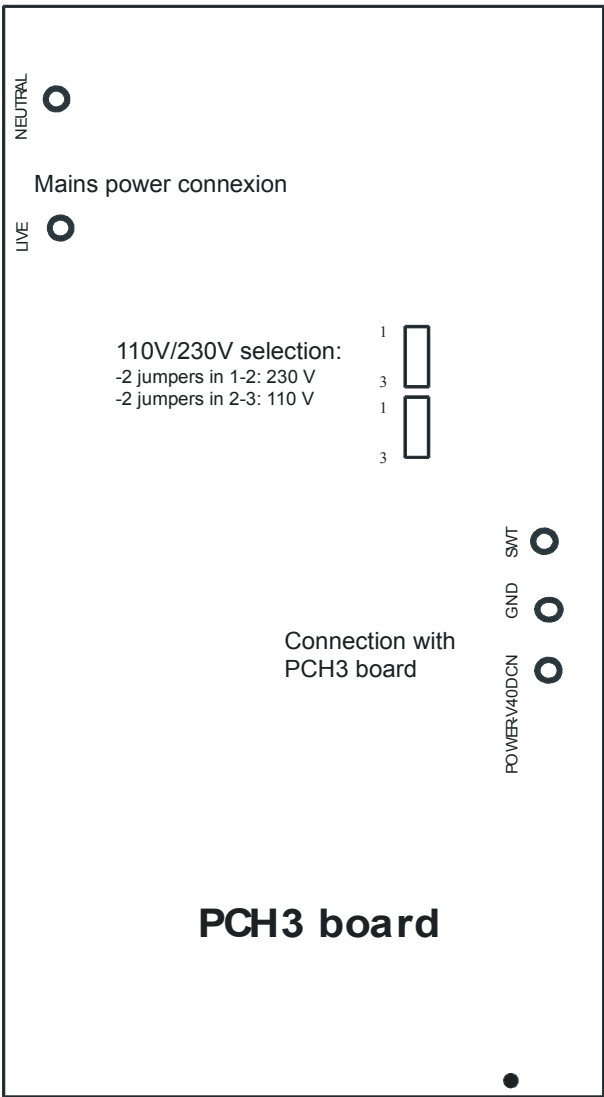
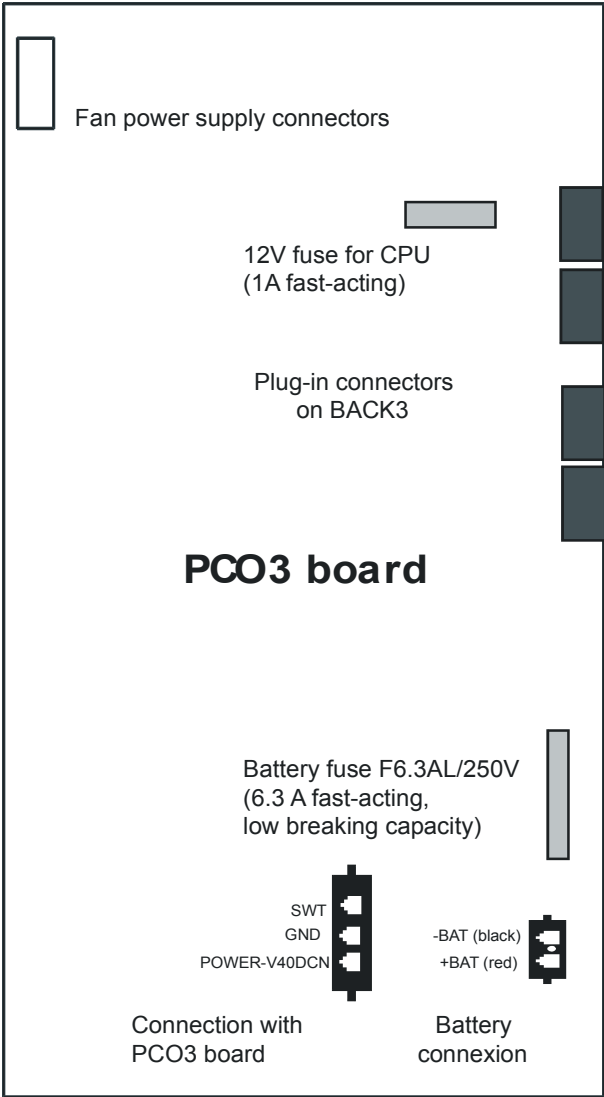
- PCH2 :charger board
- PCO2 :converter board



POWER SUPPLY PS3

Power supply PS3, which provides the different voltages required to operate a Rack 3 module, comprises 2 boards:

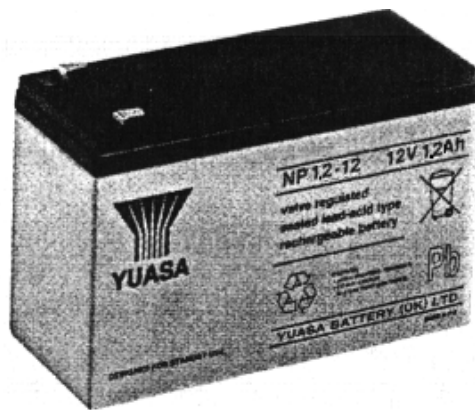
- PCH3 :charger board
- PCO3 :Converter board



BATTERIES

Equipment:

- Rack 1: 1 battery
- Rack 2: 2 batteries mounted in parallel
- Rack 3: 3 batteries mounted in series



Battery characteristics:

- sealed lead battery
- 1.2 Ah / 12 V
- fire resistance better than or equal to UL94-V2

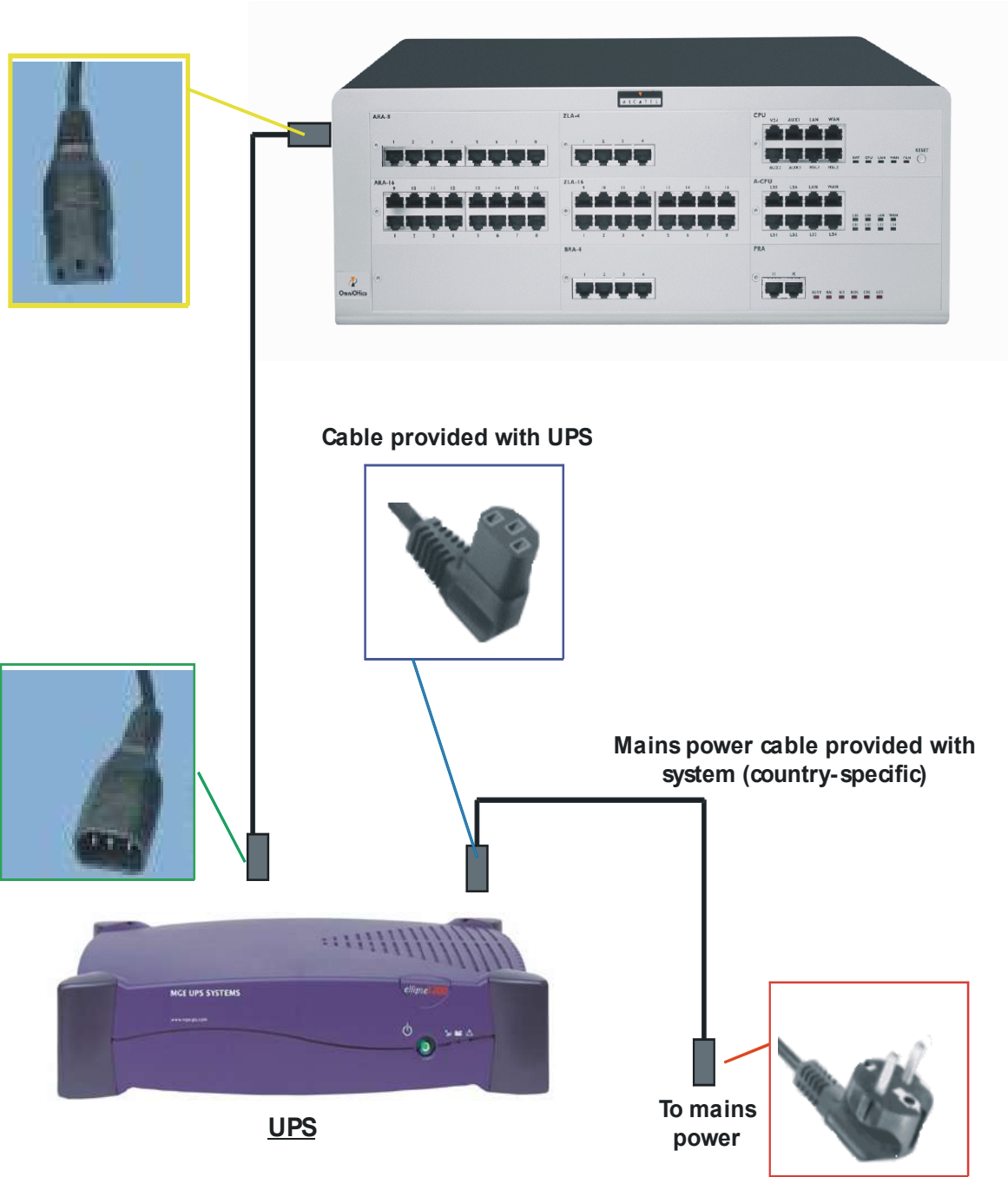
Maintenance

To guarantee system shutdown without data loss in the event of a mains power failure or the mains plug is unplugged at the wall socket, replace the batteries every two years. This maintenance operation is vital to guarantee sufficient power autonomy to allow the files to be saved before the system shuts down.

In the case of only voice module, (without Hard Disk or CoCPU board), the autonomy time is equal to 20 minutes.

UPS (Uninterruptible Power Source)

A Pulsar ellipse UPS (Uninterruptible Power Source) increases the backup time generally provided by the system batteries. A maximum of 2 Alcatel OmniPCX modules can be connected to a UPS.



Equipment:

The following table indicates the UPS models to use with each Alcatel OmniPCX Office system for a power autonomy of about 1 hour (40 minutes for the XL model used with a standard configuration).

System	UPS
Alcatel OmniPCX model S	Pulsar ellipse 300
Alcatel OmniPCX model M	Pulsar ellipse 650S
Alcatel OmniPCX model L	Pulsar ellipse 1200S
Alcatel OmniPCX model XL	Pulsar ellipse 1200S

Choice of UPS

The following table indicates for each Alcatel OmniPCX system (in extreme configurations) the consumption that is used to choose a UPS from the various models offered by UPS manufacturers.

System	Configuration	Primary consumption
Alcatel OmniPCX model S	24 terminals	50 W
	12 terminals + 1 CoCPU board	55 W
Alcatel OmniPCX model M	48 terminals	70 W
	48 terminals + 1 CoCPU board	85 W
Alcatel OmniPCX model L	96 terminals	105 W
	96 terminals + 1 CoCPU board	120 W
Alcatel OmniPCX model XL	192 terminals	210 W
	192 terminals + 2 CoCPU boards	230 W

Alcatel OmniPCX Office

SECTION
TERMINALS

REF3EH 21000 BSAA Ed. 04



ALCATEL OMNIPCX OFFICE

TERMINALS

Section Terminals

ALCATEL REFLEXES 3G TERMINALS	FILE 1
MULTI-REFLEXES 4099 HUB	FILE 2
DECT 4070 IO/EO BASE STATIONS	FILE 3
MOBILE REFLEXES 100/200 HANDSETS	FILE 4
FAST IP REFLEXES TERMINALS	FILE 5
PIMPHONY REFLEXES WORKSTATIONS	FILE 6
VBTEL VISUALLY IMPAIRED OPERATOR STATION	FILE 7
EARLIER GENERATION SETS	FILE 8



ALCATEL OMNIPCX OFFICE

SECTION TERMINALS (INDEX)

TERMINALS

Section Terminals (Index)

ALCATEL REFLEXES 3G TERMINALS	FILE 1
DECT 4070 IO/EO BASE STATIONS	FILE 3
MOBILE REFLEXES 100/200 HANDSETS	FILE 4
PIMPHONY REFLEXES WORKSTATIONS	FILE 6
EARLIER GENERATION SETS	FILE 8
FAST IP REFLEXES TERMINALS	FILE 5
MULTI-REFLEXES 4099 HUB	FILE 2
VBTEL VISUALLY IMPAIRED OPERATOR STATION	FILE 7

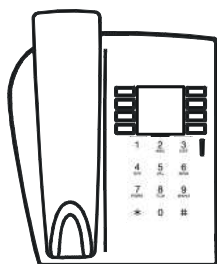
ALCATEL REFLEXES 3G TERMINALS

File

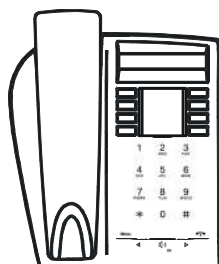
1

TERMINAL FEATURES

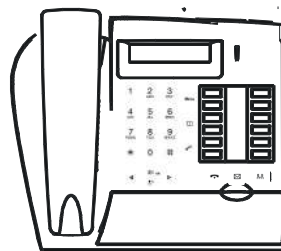
FEATURE	DEDICATED DIGITAL SETS			
	FIRST	EASY	PREMIUM	ADVANCED
Handset	YES	YES	YES	YES
Loudspeaker	-	YES	YES	YES
Buzzer	YES	-	-	-
1 x 20 character display	-	YES	YES	-
2 x 40 character display	-	-	-	YES
Pictograms associated with programmable keys	-	-	12	24
Soft keys	-	-	-	5
Programmable keys	8	8	12	24
Fixed function keys	-	5	10	7
Navigator	-	-	-	YES
Numerical keypad keys	12	12	12	12
Green LED	YES	YES	-	-
Two-colored LED	-	-	YES	YES
Internal alphabetical keyboard	-	-	YES	YES
4090M or 4090L add-on module	-	-	Optional	Optional
Optional modules (plugware)	External	External	Internal/external	Internal/external
Wall mounting	Integrated	Integrated	Optional	Optional
4097 CBL UA/DECT adapter	-	-	Optional	Optional



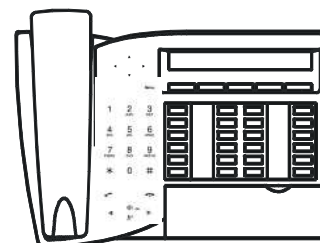
Station 4004/FIRST



Station 4010/EASY



Station 4020/PREMIUM



Station 4035/ADVANCED

4097 CBL ADAPTER

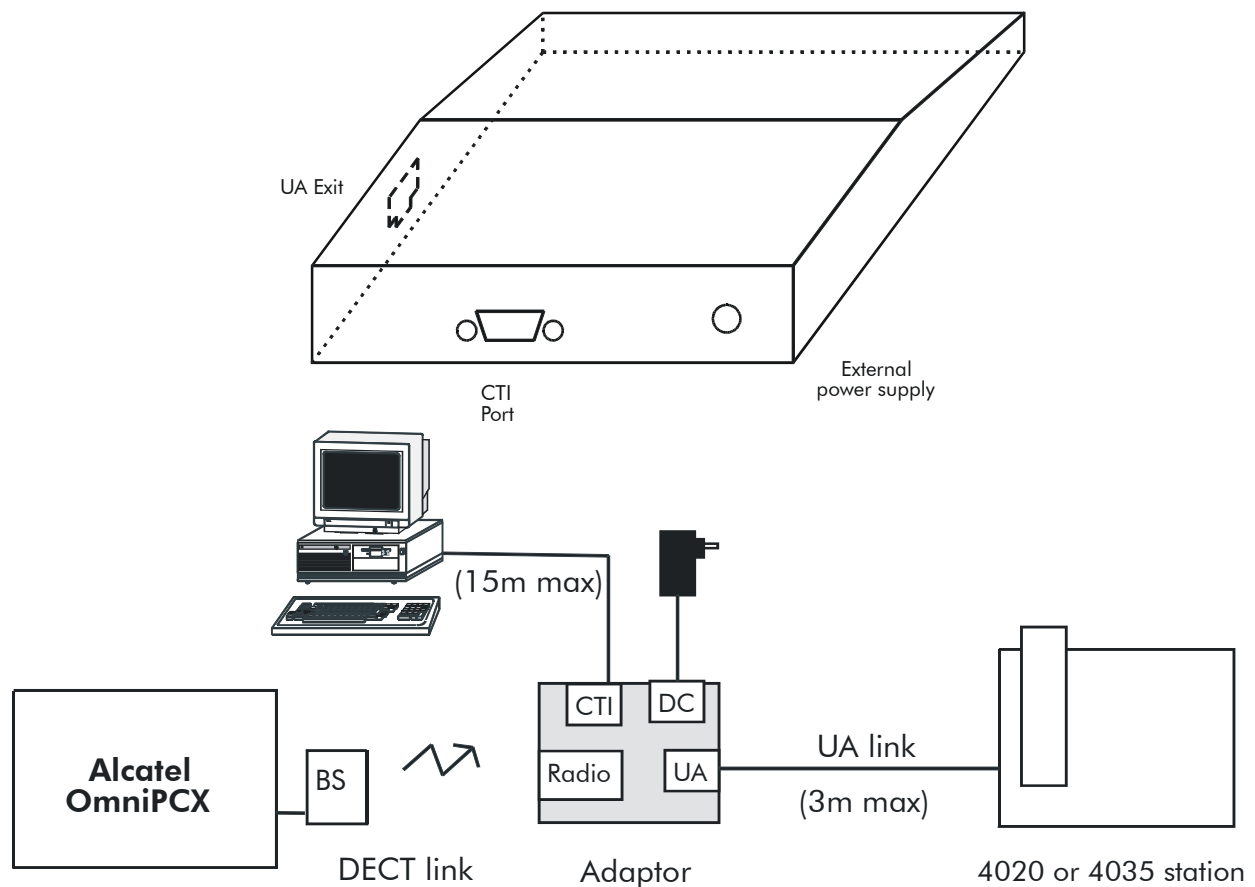
Alcatel Advanced sets can be equipped with a 4097 CBL UA/DECT adapter and can therefore communicate with the system over a DECT radio link. This device means you no longer have to worry about cabling constraints. An RS232 link is also advisable for CTI applications.

The Advanced set and its adapter are jointly called Advanced DECT/4036.

The 4097 CBL adapter is powered by a 220V AC/42V DC mains adapter. This mains adapter is also a power splitter. The base of the power socket must be positioned as close to the adapter as possible, and must also be easily accessible.

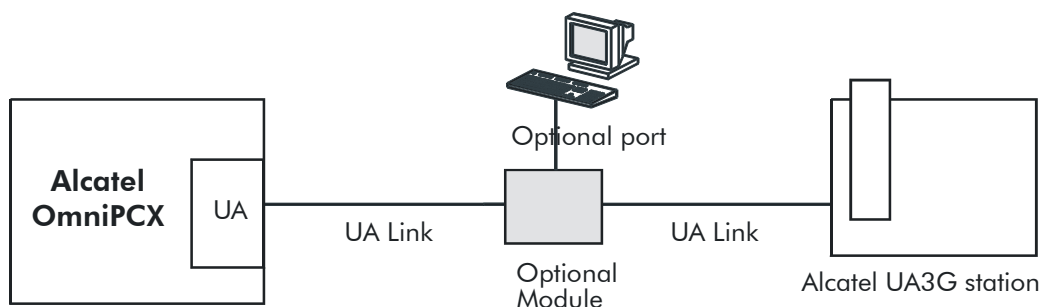
Notas : This adapter can also be used with an Alcatel Premium set (internal installation) or First or Easy sets (external installation).

Connection



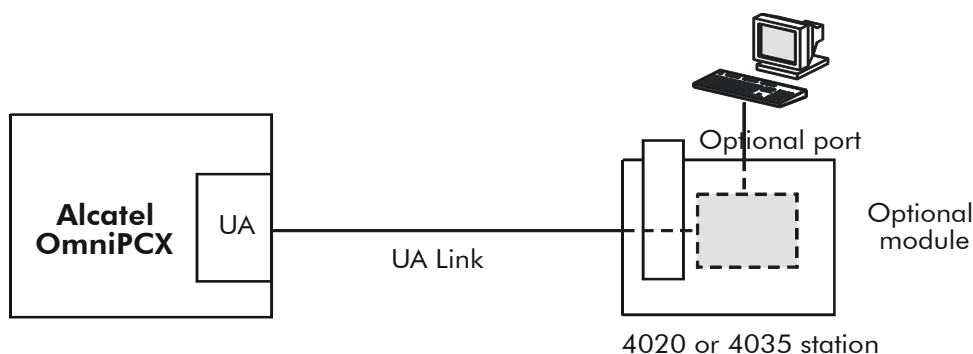
OPTIONAL MODULES (PLUGWARE)

The optional modules are modules which are inserted in the UA link, in series, between a PABX and a dedicated UA set. They provide an interface for connecting terminals to the system.



Notas : The optional modules can also be used with Reflexes2G sets (the previous generation).

Alcatel Premium and Advanced sets have a slot under the panel for the optional module.



The optional modules available are:

- 4093 ASY-CTI
- 4094 ISW
- 4095 AP

Notas : When the option is used in stand-alone as a TA (Terminal Adapter) interface, you have to move the red jumper to the other connector position inside the module.

TERMINALS

ALCATEL REFLEXES 3G TERMINALS

4093 ASY-CTI module

This module allows the device to be connected to the system via a UA link, a PC-type peripheral device by means of an RS232 link (CTI port) and an DTE data terminal (V24 port).

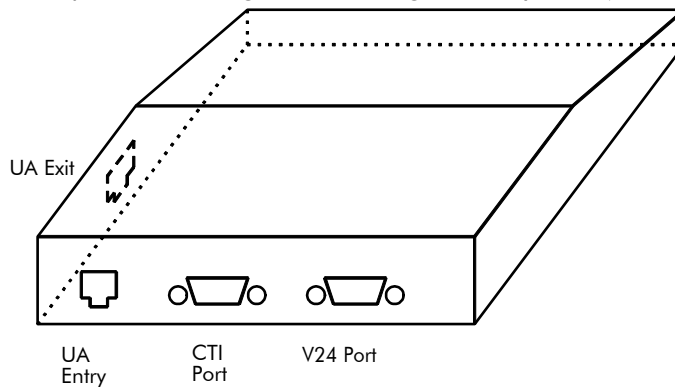
CTI Port

The RS232 link carries the signaling (up to 9600 bit/s) and allows telephony functions such as call management and call supervision.

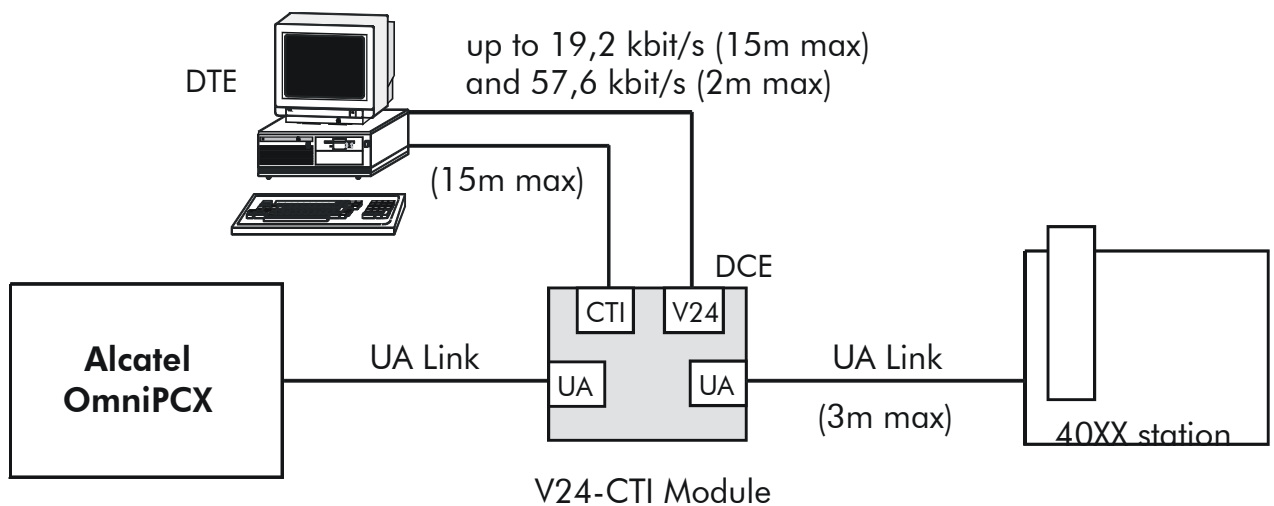
The audio function is performed by the associated dedicated set.

V24 Port

The V24 port is regarded as a DCE and supports asynchronous V24 transmission up to 19200 bps (ECMA 102) and 57600 bps (V14e). The electrical interface conforms to ITTCC recommendation V28. This port is used to connect up the metering data management system (connection cable provided).



Connection



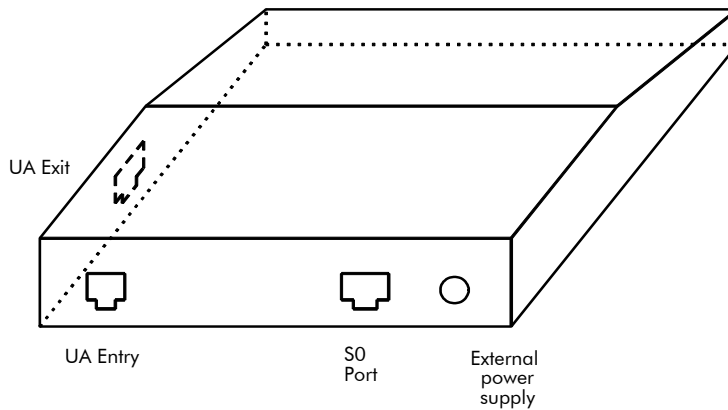
4094 ISW module

This module connects an S0 terminal to the system via a UA link.

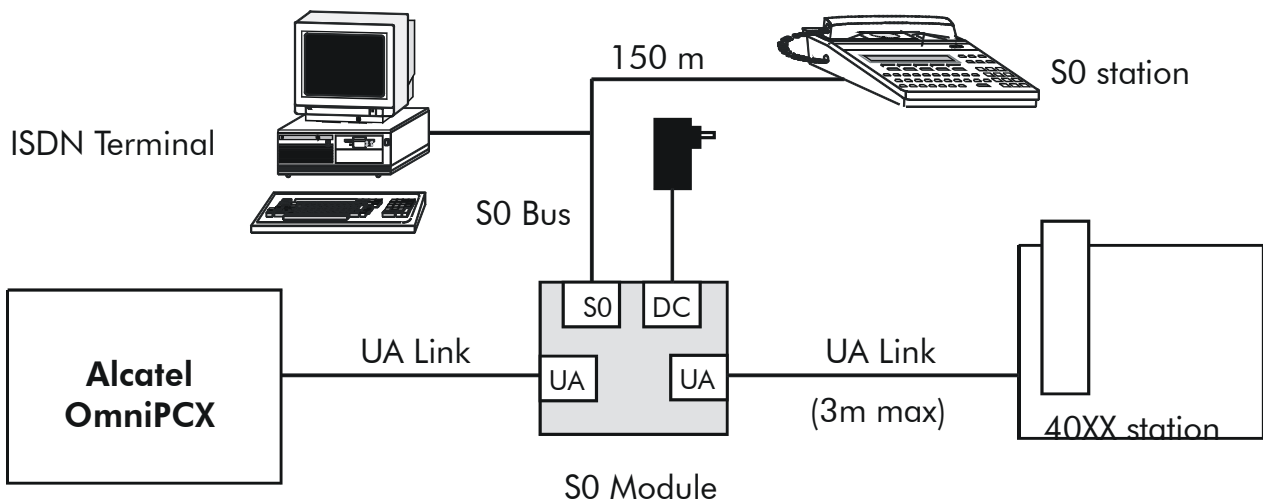
This optional module provides an S0 power bus which requires an external power supply (230V AC/42V DC adapter), allowing terminals without their own power supply (ISDN terminals, etc.) to be connected to the bus.

The mains supply transformer serves as a sectioning mechanism for the S0 interface. It must therefore remain easily accessible.

The S0 bus can be a point to point or short passive bus covering 150 m (up to 5 terminals, of which a maximum of 2 may be powered remotely). Operation is not guaranteed in the event of a power outage.



Connection



TERMINALS

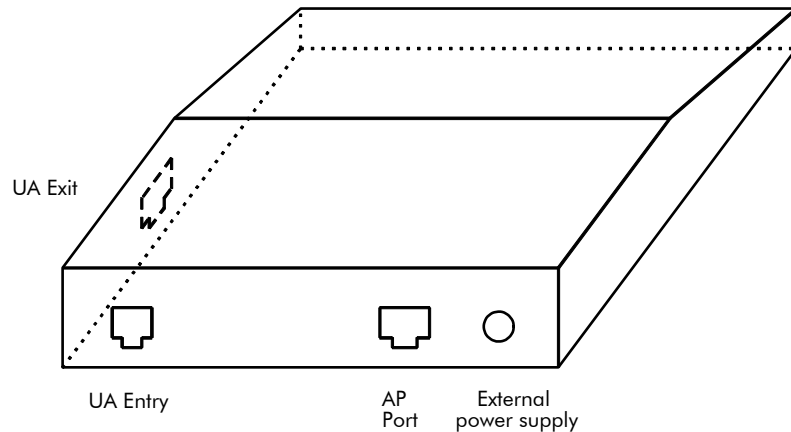
ALCATEL REFLEXES 3G TERMINALS

4095 AP module

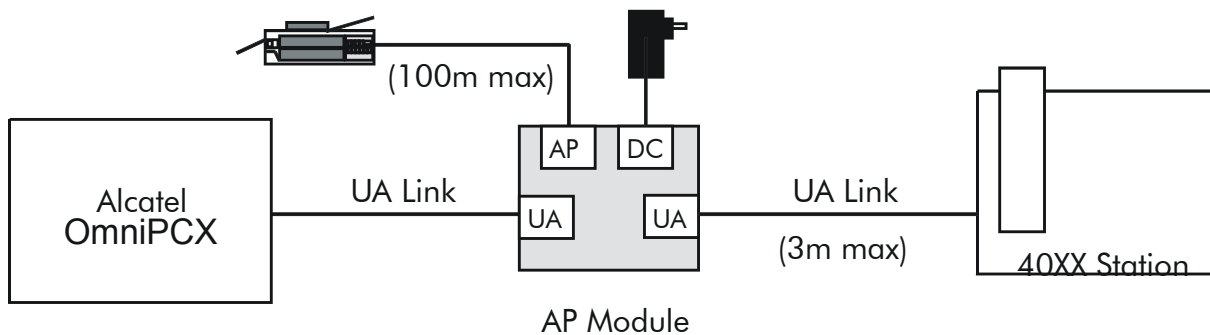
This interface connects an analog peripheral such as a modem, teletext or answering machine to the system via a UA link.

The optional module supplies the terminal (DTMF signaling, ringer) and therefore requires an external power supply (230V AC/30V DC mains adapter).

The mains supply transformer serves as a sectioning mechanism for the AP interface. It must therefore remain easily accessible. Operation is not guaranteed in the event of a power outage.



Connection

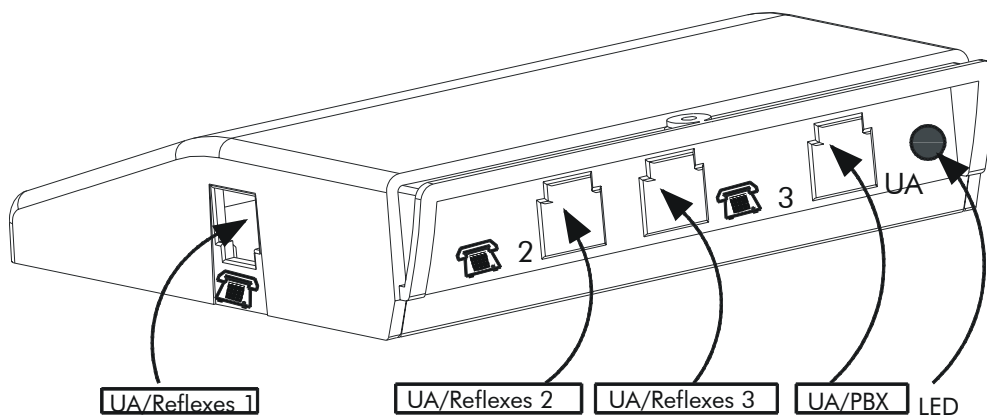




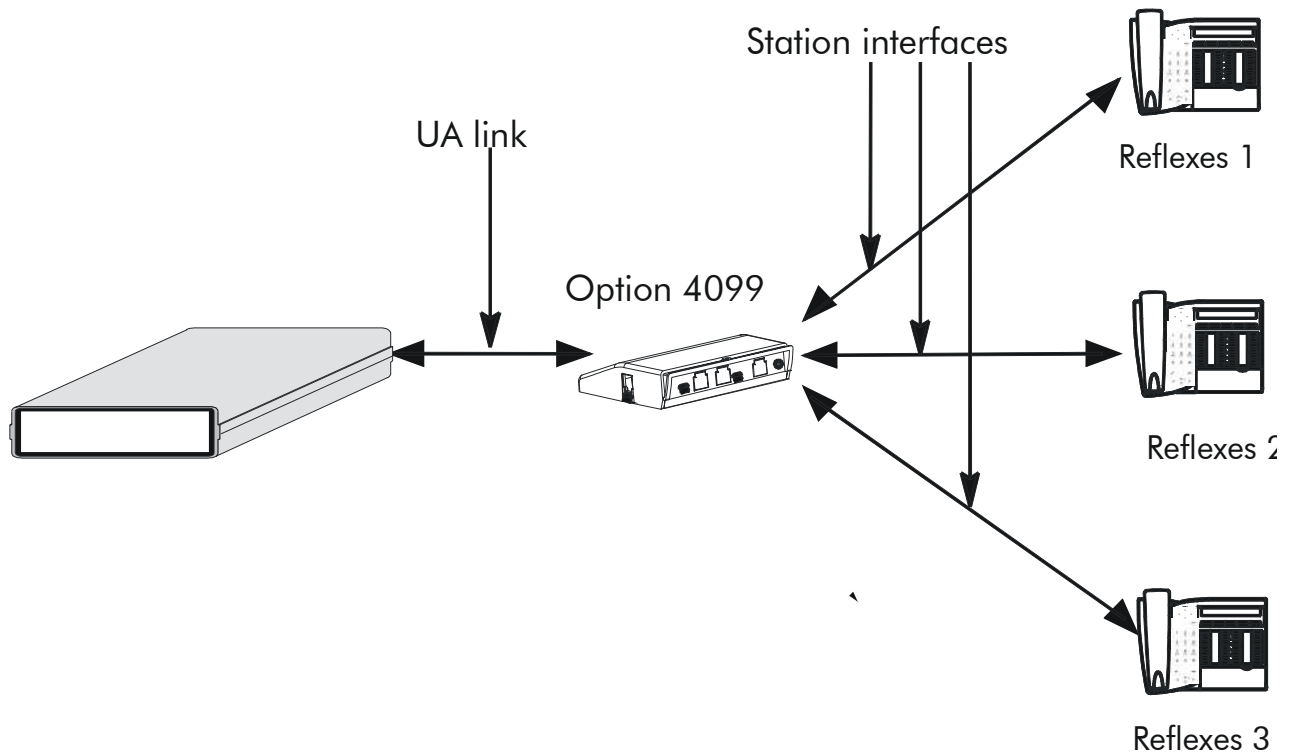
MULTI-REFLEXES 4099 HUB

File
2

Multi-Reflexes option 4099 connects up 3 Alcatel Reflexes terminals using just one UA system link; this option makes it easier to install additional Reflexes terminals.



Option 4099 separates out the 3 B-channels of the UA interface into 3 terminal interfaces.



The following terminals can be connected to option 4099:

- Alcatel Reflexes 2G sets with or without add-on modules (a maximum of 3 modules per option 4099).
- Alcatel Reflexes 3G sets with or without add-on modules or the 4091 CTI option (the 2 sub-groups are mutually exclusive).
- a 4088 adapter with a V24 4083 ASM board.

The following terminals cannot be connected to option 4099:

- DECT 4070 IO/EO base stations
- Alcatel Reflexes 2G sets with options 4084 IS/ISW or 4085 AB and
- Alcatel Reflexes 3G sets with options 4093 ASY-CTI, 4094 ISW, 4094 ISW-CTI or 4095 AP.

Maximum distances from system to set

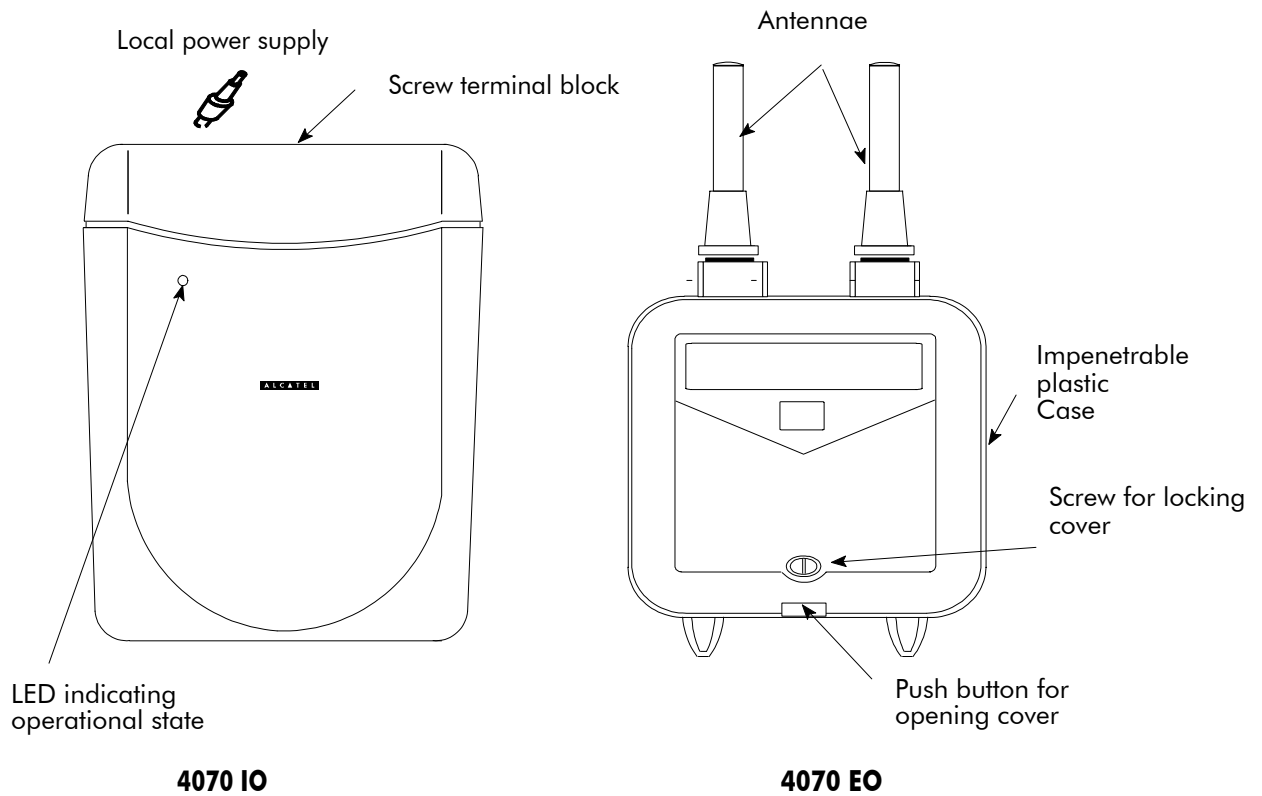
- 0.4-mm cable: 325 m
- 0.5-mm cable: 500 m
- 0.6-mm cable: 730 m

DECT 4070 IO/EO BASE STATIONS

File
3

The DECT 4070 IO/EO (internal/external) base station can be connected to:

- 1 UA interface: 3 DECT channels
- 2 UA interfaces: 6 DECT channels



Maximum connection distances with remote power supply:

- 600 m with SYT 0.5 mm cable
- 850 m with LY278 0.6 mm cable

Local power supply

It is possible to connect a local power supply (230V/42V – 150 mA adapter) to an accessible socket on the lower part of the 4070 IO/EO base.

The local power supply is used in the following cases:

- main power supply not authorized on the line's wires (depending on specific installation requirements)
- to increase the cable length between the interface and the station
- reduction in the system's electrical consumption.

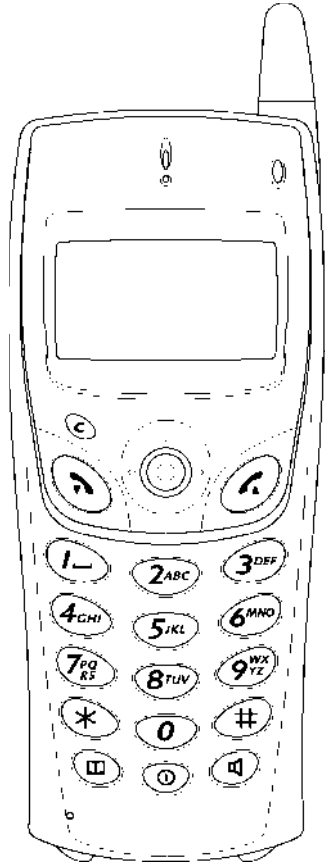
When the external power supply is connected, the base passes automatically to local power supply mode. In the event of a power cut, the base is not supplied.

States of the correct operation LED

State of the base station	State of the LED
No power supply (local or remote) or fault on base	Off
Fault after auto-test, base not operational	On
Auto-test OK, base station operational. Normal operation for a base with 2 links.	1 s on / 1 s off
Auto-test OK, base station operational. Normal operation for a base with one Master link only.	1 s on / 200 ms off
Master link not connected, local power supply or slave link connected.	50 ms on / 50 ms off

<h2 style="margin: 0;">MOBILE REFLEXES 100/200 HANDSETS</h2>	<div style="background-color: black; color: white; border-radius: 50%; width: 60px; height: 60px; display: flex; flex-direction: column; align-items: center; justify-content: center; margin: 0 auto;"> File 4 </div>
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FEATURE	Mobile Reflexes 100	Mobile Reflexes 200/ 200 Ex
Graphic matrix display: 96 x 48 pixels	YES	YES
Backlighting	NO	YES
Vibrator	NO	YES (except Mobile Reflexes 200 Ex)
Navigator	YES	YES
Headset socket	YES	YES
Loudspeaker	YES	YES
Belt clip	YES	YES
Color	Dark green	Aluminum
Battery pack	Ni-MH	Li-Ion







TERMINALS

**MOBILE REFLEXES 100/200
HANDSETS**

CHARGERS

Mobile Reflexes handsets are listed separately from the various battery charging devices available. The charger must therefore be ordered separately and selected from the models on offer, all of which are compatible with the Ni-MH or Li-Ion batteries used in Mobile Reflexes handsets. The Mobile Reflexes 200 Ex handset does not support battery charging and therefore has to be used in conjunction with a "Dual-desktop " charger (for recharging the battery outside the handset).

Whichever charger is used, the maximum charge time (battery connected to mobile) is identical: Mobile Reflexes 100: 5 hrs; Mobile Reflexes 200/200 Ex: 3 hrs.

	<p>The "Corded" charger:</p> <ul style="list-style-type: none"> - the simplest model: calls can be made while the handset is on charge - consists of a cable with a connector at one end and an AC/DC mains adapter at the other.
	<p>The "Basic Desktop" charger:</p> <ul style="list-style-type: none"> - a simple model that acts as a base for the handset - consists of a base unit with a built-in power supply cable terminated by an AC/DC mains adapter.
	<p>The "Dual Desktop" charger:</p> <ul style="list-style-type: none"> - simultaneously recharges the handset battery and one other battery - the charger comprises: <ul style="list-style-type: none"> • a base unit with two slots (for the handset and additional battery) and a battery charge indication light - a removable power cable with AC/DC mains adapter. <p>Note: the max. charge time in the battery-only slot is 2h30.</p>
	<p>The "Voice Desktop" charger:</p> <ul style="list-style-type: none"> - simultaneous battery charging and high quality hands-free communication functions - the charger comprises: <ul style="list-style-type: none"> • a one-slot support base with integrated loudspeaker and microphone, two volume adjustment buttons (+/-) and a call monitoring indicator (on line, mute) - a removable power cable with AC/DC mains adapter.



**MOBILE REFLEXES 100/200
HANDSETS**

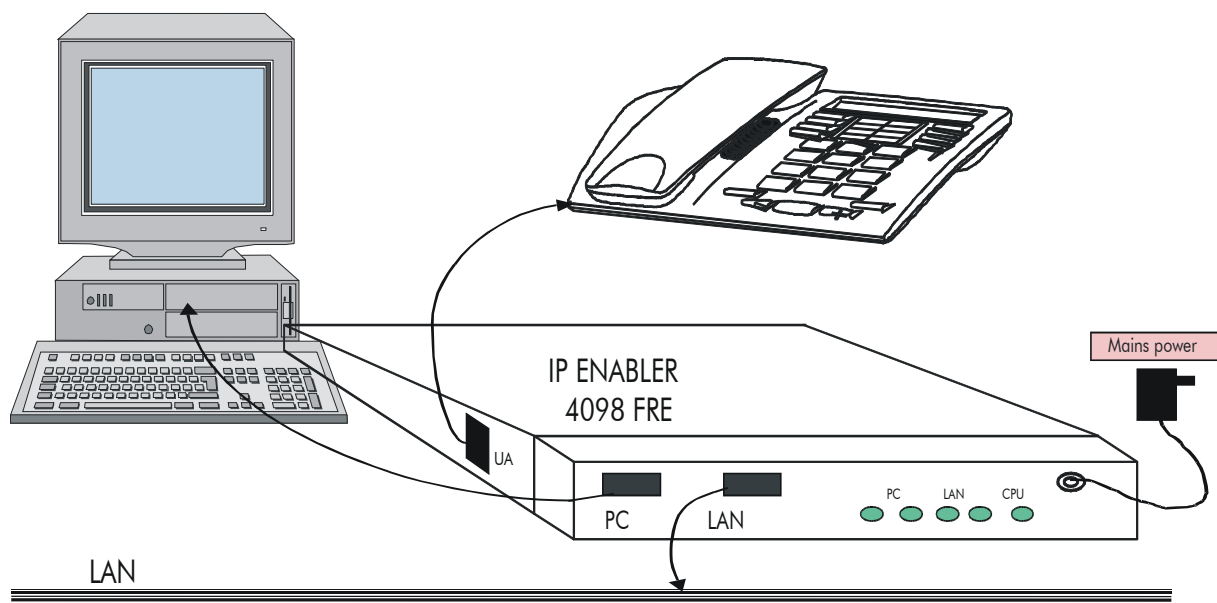
TERMINALS

FAST IP REFLEXES TERMINALS

File
5

Fast IP Reflexes terminals are Reflexes sets with a 4098 FRE ("IP Enabler") module. There are two models:

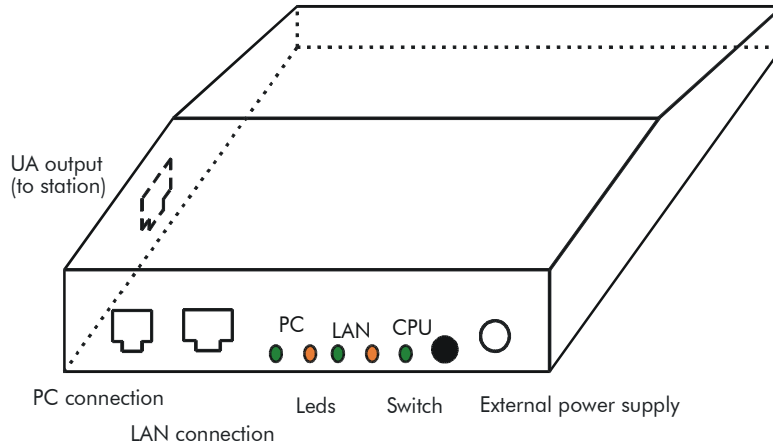
- Fast IP Advanced Reflexes / 4037F
- Fast IP Premium Reflexes / 4022F



Characteristics

- The IP Enabler is connected to the LAN via an RJ45 connector (10 Mbps Ethernet link for IP Enabler V1.0 and 10/100 Mbps for IP Enabler V1.5).
- The module is initialized in dynamic (DHCP) or static IP address mode by downloading the binary into the IP Enabler from the master VoIP CoCPU board, which is treated as a TFTP server.
- The IP Enabler is then recognized by the PABX as a Reflexes terminal in its own right. Voice and signal data are encapsulated in UDP packets, enabling the "e-Reflexes" terminal to communicate with any other type of terminal: Reflexes, DECT handsets, analog sets, other e-Reflexes, H.323 terminals or gateways (e.g. PC NetMeeting), PIMphony IP Edition, networks, etc.

4098 FRE MODULE (IP Enabler)

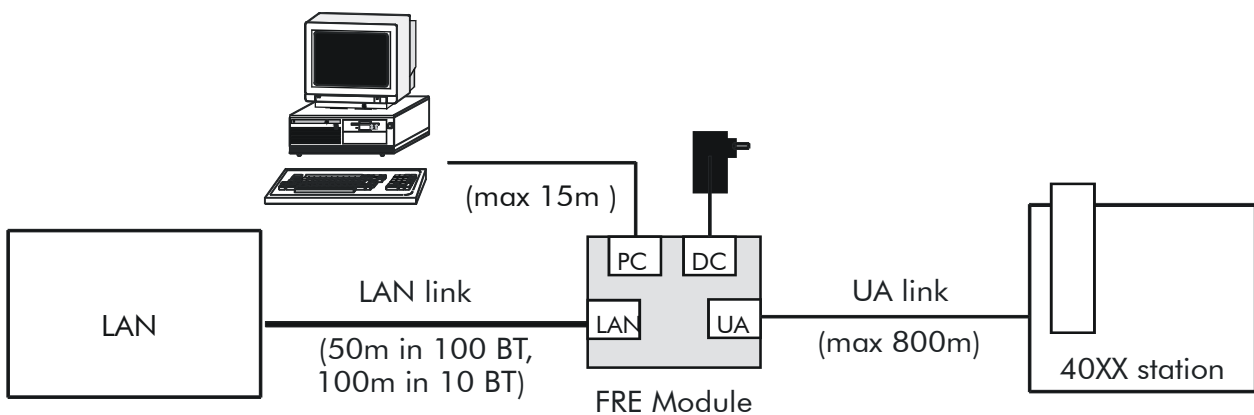


The switch can be used to reset the module with the previous software version (only possible in boot phase).

Function of the LEDs

- PC: green LED on steady when the PC link is active; orange LED lit if 100 BT, off if 10 BT.
- LAN: green LED on steady when the LAN link is active; orange LED lit if 100 BT, off if 10 BT.
- CPU: green LED blinking slowly when the module is active; on steady during the initialization phase; blinking rapidly when downloading new software.

Connection



Configuring the module

See the "Voice over IP" section for more details.

PIMPHONY REFLEXES WORKSTATIONS

File
6

The standard Alcatel OmniPCX Office offering includes an integrated CTI server (TAPI 2.0) that opens up a broad range of third party CTI applications.

PIMphony Reflexes is a PC-based workstation equipped with the following PIMphony applications:

- PIMphony Basic
- PIMphony Pro
- PIMphony Team

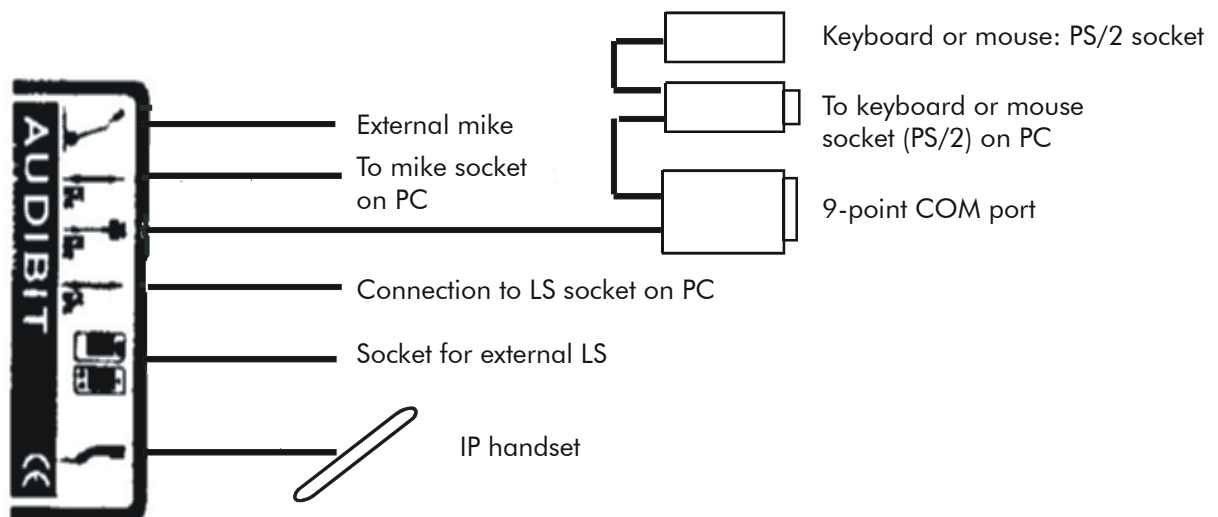
They are installed from the CD-ROM provided in each system. PIMphony does not require a software key.

These applications can be used from an IP Comfort handset.

Connecting the Comfort handset

To connect the Comfort handset you need a full duplex sound card.

This handset system uses the loudspeaker and external mike for hands-free operation. The handset also supports automatic on-hook and off-hook detection via the COM port. This system requires a power supply, conveyed via the keyboard or mouse PS/2 connection.





**PIMPHONY REFLEXES
WORKSTATIONS**

TERMINALS

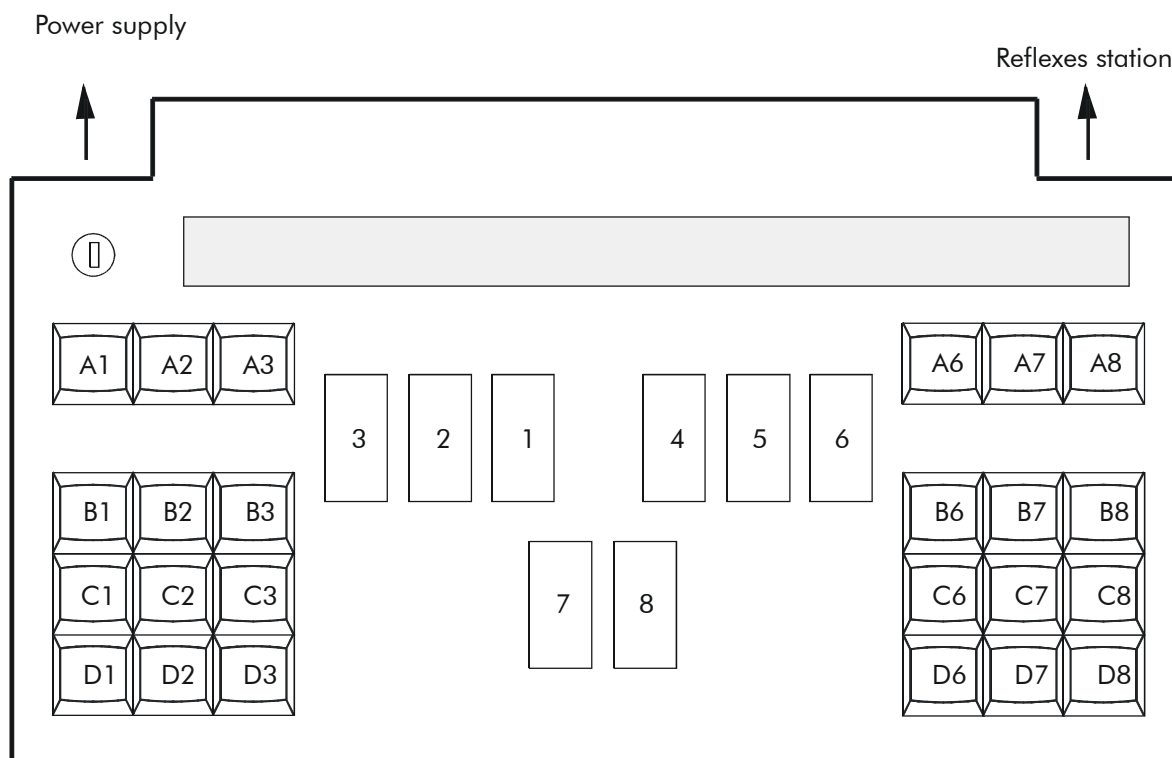
VBTEL VISUALLY IMPAIRED OPERATOR STATION

File
7

The VBTEL terminal is designed to act as a display for visually impaired operators, conveying the information presented on Reflexes terminals. There are 2 models:

- VBTEL 20: equipped with a piezoelectric Braille touchpad with 20 characters and 32 command keys.
- VBTEL 40: equipped with a piezoelectric Braille touchpad with 40 characters and 32 command keys.

The information read in Braille on the terminal enables the operator to use the system entirely via a Reflexes terminal; all the operations (dialing, transfers, line seizures, etc.) are performed from the Reflexes terminal.



Description

The on button is located at the top left of the terminal.

The groups of 12 keys on the right and left side of the terminal make up the command keyboard; the keys are designated by a row letter and a column number (columns 4 and 5 are not used).

The Braille keyboard, in the center, consists of 8 keys, of which the first 6 are the 6 Braille points in

VBTEL VISUALLY IMPAIRED OPERATOR STATION

TERMINALS

Perkins alphabetical order, the 2 others being the backspace (7) and space keys (8).

A set of 20 or 40 piezoelectric cells located above the Braille keyboard enables Braille characters to be displayed. Each cell contains 8 points: points 1 to 6 serve to form the 64 characters of the Braille alphabet; when points 7 and 8 are raised simultaneously, they represent the cursor.

EARLIER GENERATION SETS

File

8

TERMINALS NOT SUPPORTED

The following terminals are not supported by Alcatel OmniPCX Office:

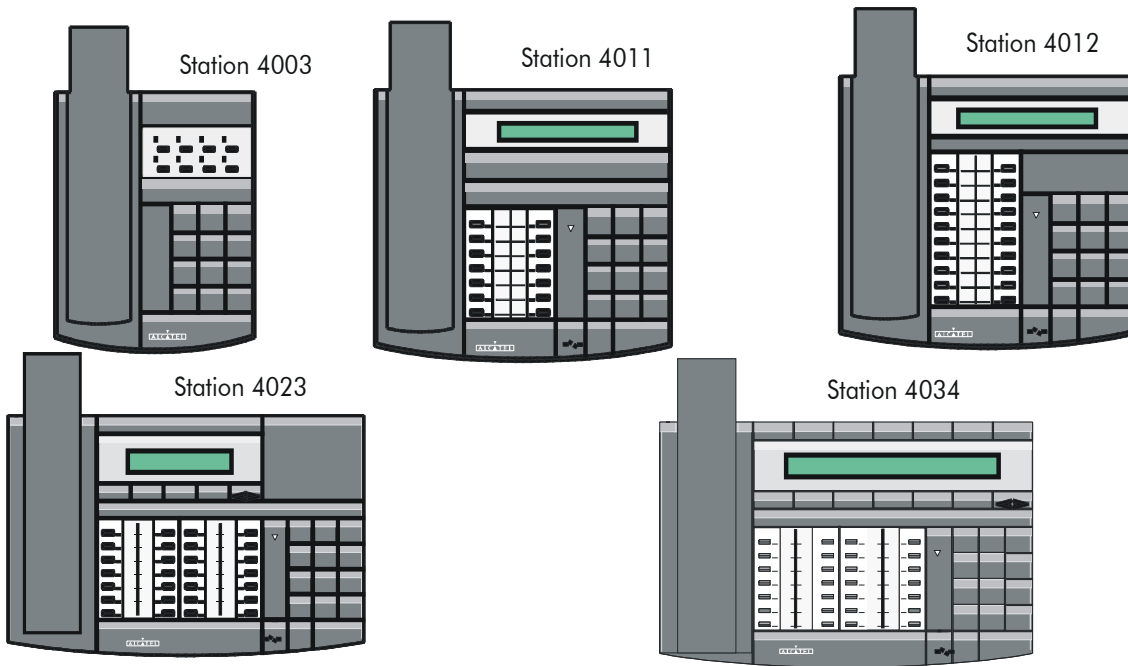
- Reflexes 1G sets
- DECT 4075, 4074B, 4074H and 4074 BEx mobile sets
- Alcatel 160 sets
- Alcatel 4120 sets (900A and 900B)

REFLEXES 2G 40XX* SETS

Reflexes terminals from the 2G range are supported by Alcatel OmniPCX Office for migration purposes.

*Depending on country/distribution network

FEATURE	Characteristics				
	4003	4011	4012	4023	4034
Handset	YES	YES	YES	YES	YES
Loudspeaker	YES	YES	YES	YES	YES
Display	-	1 x 20	1 x 20	2 x 20	2 x 40
Pictograms	-	2 x 7	2 x 10	4 x 7	4 x 7
Soft keys and arrows	-	-	-	3 + 1	10 + 1
Programmable keys	5	6	10	18	18
Fixed function keys	3	10	12	12	12
Numerical keypad keys	12	12	12	12	12
3-coloured LED	-	YES	YES	YES	YES
4087 IFA internal alphabetical keyboard	-	-	-	YES	YES
4087 EFA external alphabetical keyboard	-	-	Optional	Optional	Optional
Interface: 4083 ASM or 4083 PCT, 4084 IS/ISW or 4085 AB	-	-	Optional	-	Optional
4081L or 4081 M add-on module	-	-	Optional	Optional	Optional
Wall mounting	Optional	-	-	-	-



TERMINALS

EARLIER GENERATION SETS

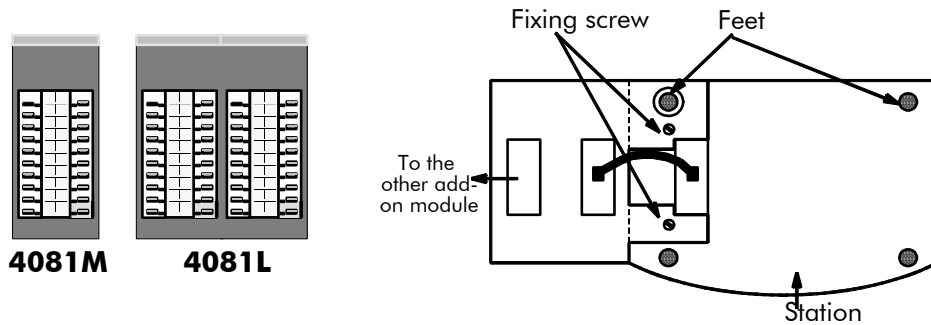
MOUNTING THE ADD-ON MODULES

A kit (a 10-cm cable with two 8-pin modular jacks) connects the 4081M or 4081L add-on modules to 4012, 4023 and 4034 sets (there is no limit on the number of add-on modules in the system).

Procedure

- Turn the set and the module upside down
- Connect the cable to the set and the module
- Join the module to the set using the 2 screws provided in the kit

The same method is used to connect the 2 modules to each other.

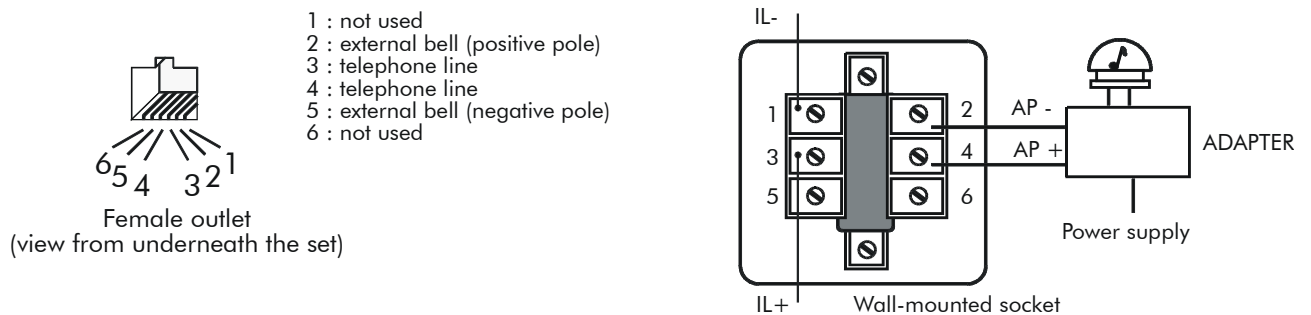


CONNECTING UP AN EXTERNAL BELL

It is possible to connect, on the wall-mounted socket, an external call reinforcing bell to 4011, 4012, 4023 and 4034 sets.

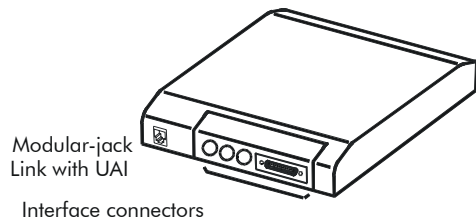
The standard connecting cable is 3 m long and has 2 conductors. To connect an external bell, replace this cable with an optional cable, 5 m long and with 4 conductors.

Available power: 2 mA under 5V (an adapter is therefore necessary).



CONNECTING THE 4088 ADAPTER

The 4088 adapter is connected directly to an Alcatel UA set interface and enables the installation of an optional 4083 ASM, 4083 PCT, 4084 IS/ISW or 4085 AB board.



Output pins of the 6-pin Modular jack for connection to UAI :

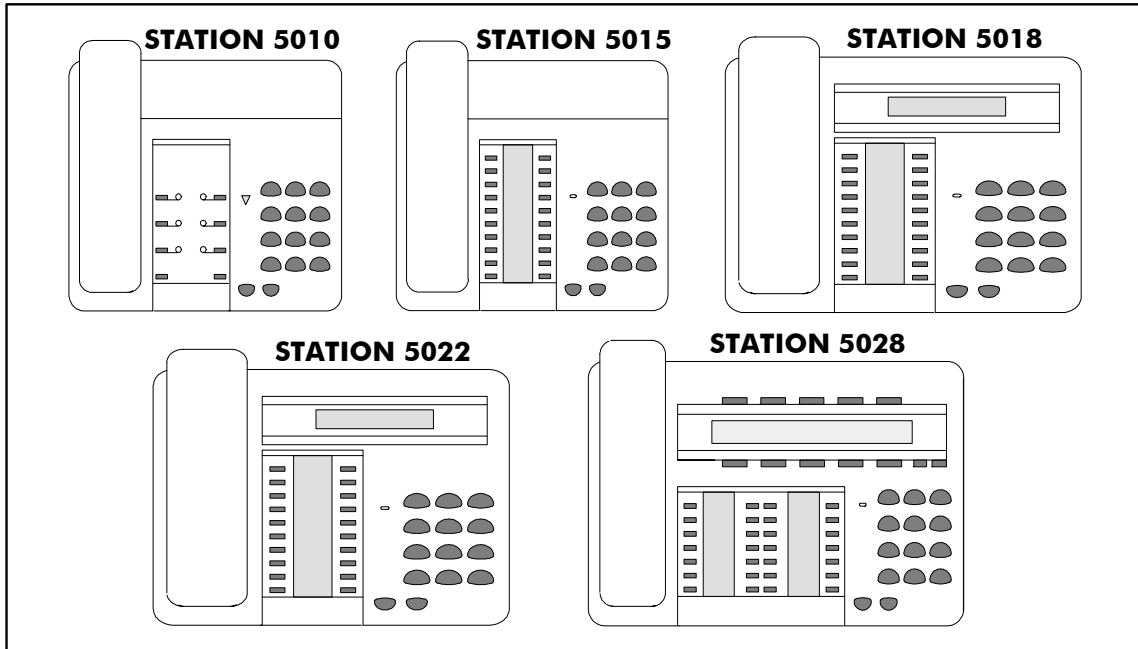
- 1 -not used
- 2 -not used
- 3 - IL+
- 4 - IL-
- 5 - not used
- 6 - not used

TERMINALS
EARLIER GENERATION SETS
REFLEXES 2G 50XX * SETS

Reflexes terminals from the 2G range are supported by Alcatel OmniPCX Office for migration purposes.

*Depending on country/distribution network

FEATURE	Characteristics				
	5010	5015	5018	5022	5028
Handset	YES	YES	YES	YES	YES
Loudspeaker	YES	YES	YES	YES	YES
Display	-	-	1 x 20	1 x 20	2 x 40
Pictograms	-	2 x 10	2 x 10	2 x 10	4 x 7
Soft keys and arrows	-	-	-	-	10 + 1
Programmable keys	5	10	10	10	18
Fixed function keys	5	12	12	12	12
Numeric keypad keys	12	12	12	12	12
LED	YES	YES	YES	YES	YES
Internal alphabetical keyboard	-	-	-	-	YES
External alphabetical keyboard	-	-	Optional	-	Optional
V24/MAC PC 5083, S0 (2B + D) 5081/5082 or Z 5088 interface	-	-	Optional	-	Optional
40-key add-on module	-	-	Optional	-	Optional



TERMINALS

EARLIER GENERATION SETS

OPTIONS FOR UA 2G SETS

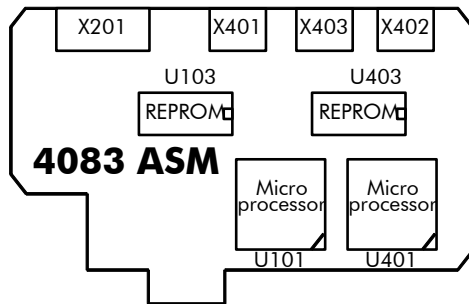
4012, 4034, 5022 and 5028 sets on the Alcatel OmniPCX system can take an optional interface that plugs into the rear of the set:

- 4083 (or 5083) ASM: V24 - MAC/PC option
- 4083 PCT: PC option
- 4084 (or 5081/5082) IS/ISW: S0 - MAC/PC option
S0 (2 B channels and 1 D channel) is available via a 4084 IS/ISW option installed on a 40XX set which is connected to a DLC16 board (16, 8 or 4 devices).
S0* (1 B channel and 1 D channel) is available via a 4084 IS/ISW option installed on a 40XX set which is connected to a DLC4/8 board with an S01B daughter board.
- 4085 (or 5088) AB: Z option

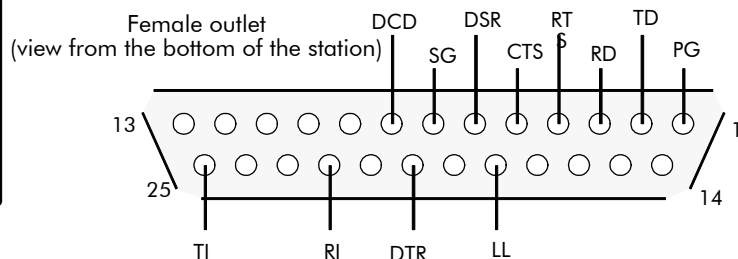
Connecting V24 and MAC/PC terminals

V24 terminals are connected using the X201 connector of board 4083 ASM installed in the set.

MAC/PC terminals are connected using connectors X401, X402 and X403 of boards 4083 ASM and 4084 IS.



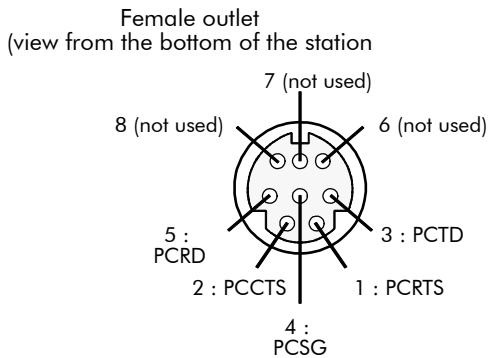
X201 : V24 output 25-pin SUB D female connector



Function	Circuit	Signal
Protection ground	101	PG
Transmitting data	103	TD
Receiving data	104	RD
Request to send	105	RTS
Clear to send	106	CTS
Data set ready	107	DSR
Signaling ground	102	SG
Carrier detection	109	DCD
Local loop	141	LL
Data terminal ready	108/1, 2	DTR
Call indicator	125	RI
Test indicator	142	TI

Maximum distances between terminal and set: 15m at 19200 bps
2 m at 57600 bps

X401: 8 pin female connector for PCs



Pin	Signal	Function	Circuit
1	PCRTS	Request to send	105
2	PCCTS	Clear to send	106
3	PCTD	Data transmission	103
4	PCSG	Signalling ground	102
5	PCRD	Data reception	104
6			
7			
8			

X402, X403: 4 pin female connector for Macs

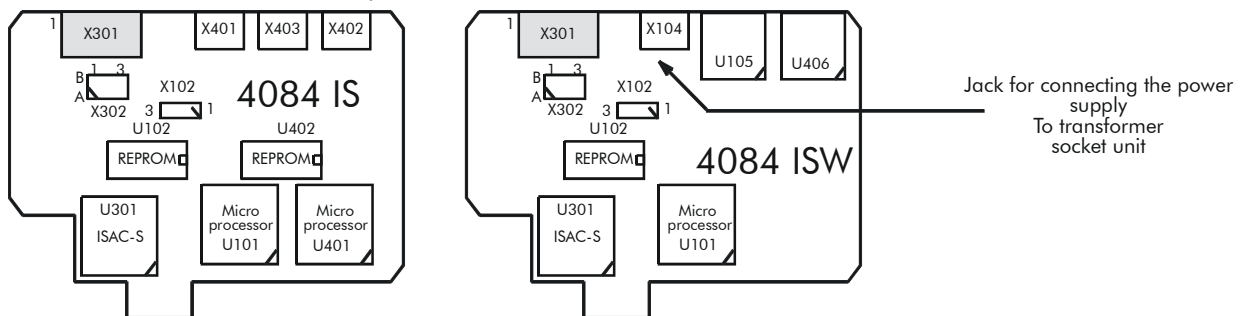
The maximum length of the ADB link is 5 m.

These two connectors enable the terminal and keypad to be connected up separately.

Connecting S0 terminals

Options 4084ISW and 4084 IS enable the connection of S0 terminals supplied remotely or otherwise.

The terminals are connected using the 8 pin connector (X301) of boards 4084 IS and 4084 ISW. The type of bus is specified by the positioning of the X102 connector jumpers. X302 defines the termination resistance of the 2 connection pairs.



X104: connector for the power supply

- 1: - 48 V
- 2: + 48V

TERMINALS

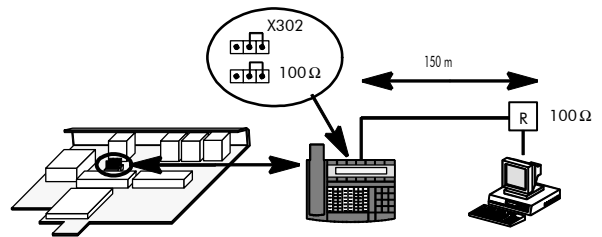
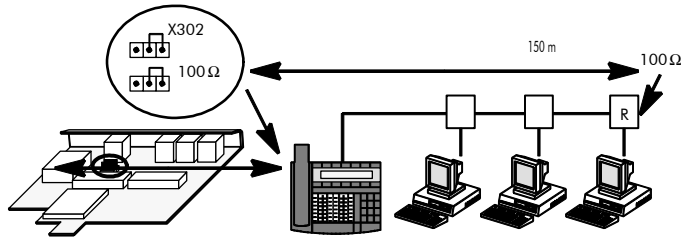
EARLIER GENERATION SETS

X301: connector for the S0 bus

- 1 and 2 - not used
- 3 - RX +
- 4 - TX +
- 5 - TX -
- 6 - RX -
- 7 and 8 - not used

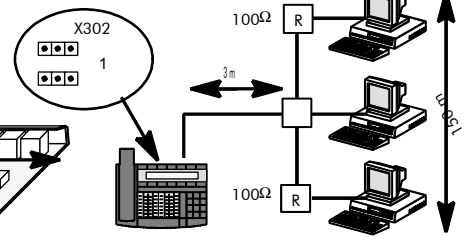
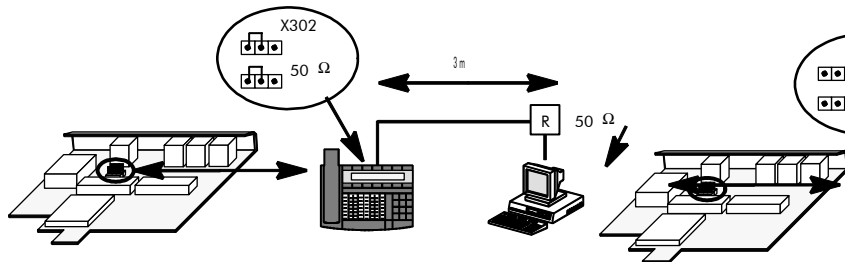
Short passive bus across 2-3)

Long point-to-point bus (X102 across 1-2) (X102 across 2-3)



Short point-to-point bus

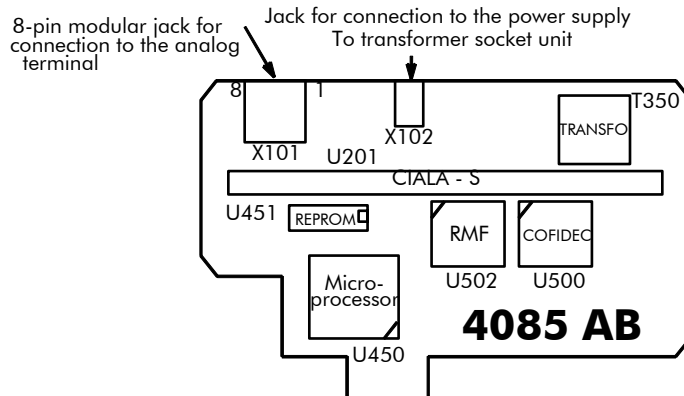
Extended bus (X102 across 1-2) (X102 across 2-3)



Connecting analog terminals

The Z station interface is of type TNV (Telecommunication Network Voltage) with mains supply. The connection distance of an analog terminal to this interface is limited to 20 meters.

The user of a set connected to this interface has the same operation possibilities as a user using a classic Z interface (restriction: the set's Message LED cannot be used).



X101: 8 pin modular jack for connection to the analog terminal

- 1: GND
- 2: not used
- 3: not used
- 4: L1 line wire
- 5: L2 line wire
- 6: not used
- 7: not used
- 8: not used

X102: connector for the power supply

- 1: - 48 V
- 2: + 48V

Various terminal cables

The cables below can be used for connecting terminals to UA sets (references 3AK..... represent the group of 5 cables described in the table).

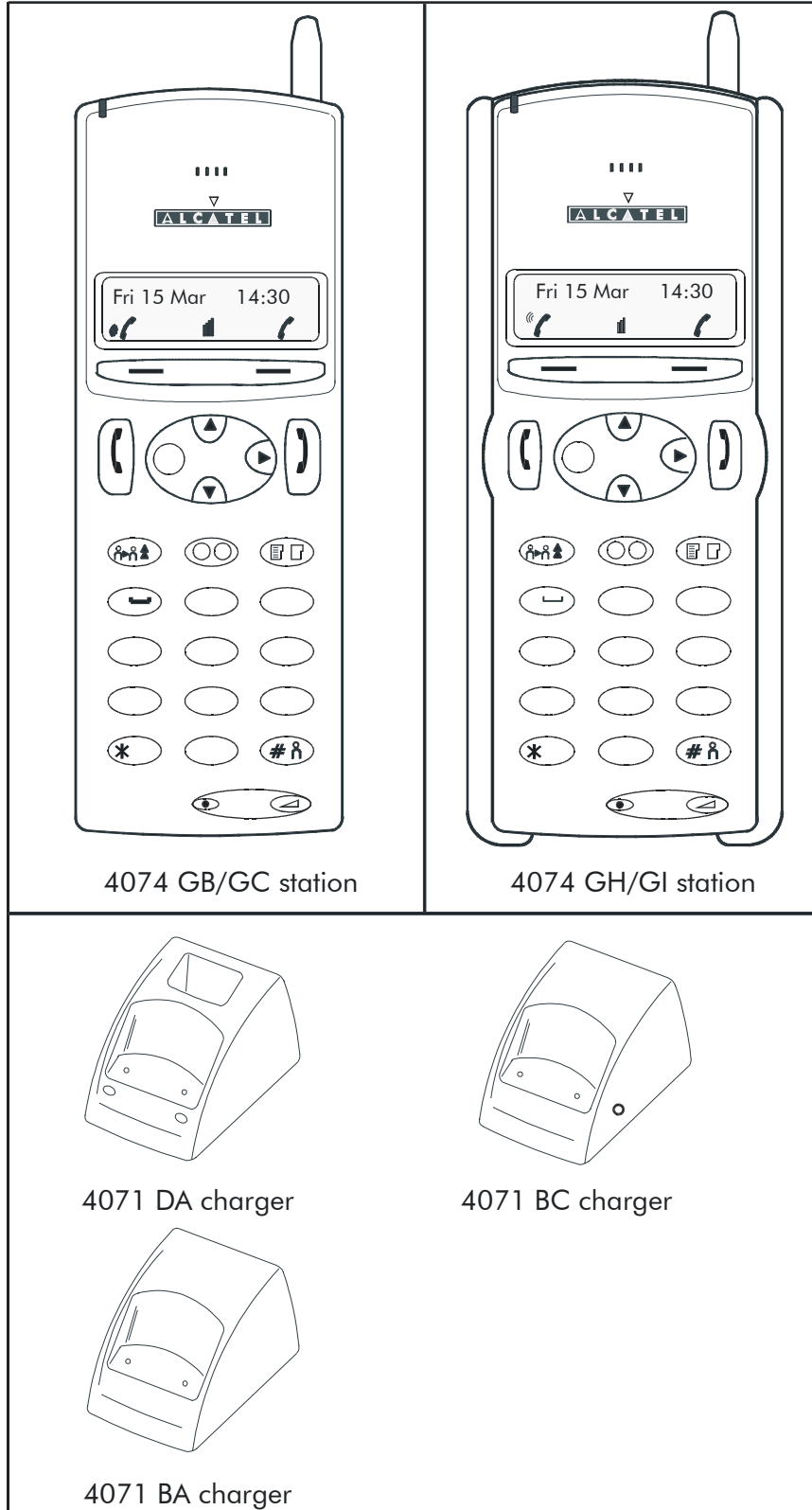
CABLE	CONNECTORS	REFERENCE	LENGTH
S0	8 pin modular jack - 8 pin modular jack	1AB 04521 0024	3 m
V24 DCE	25 pin SUBD male - 25 pin SUBD female	1AB 05412 0016	2 m
V24 DTE	25 pin SUBD male - 25 pin SUBD male	1AB 05412 0018	2 m
PC	8 pin mini din male - 9 pin SUBD female	1AB 07871 0003	2 m
MAC	4 pin mini din male - 4 pin mini din male	9191500	2 m

TERMINALS

EARLIER GENERATION SETS

DECT 4074 HANDSETS

FEATURE	DECT HANDSETS			
	4074 GB	4074 GH	4074GI	4074GC
Handset with adjustable volume	YES	YES	YES	YES
ON/OFF switch (or keys)	YES	YES	YES	YES
16 character display	YES	YES	YES	YES
Numeric keypad keys	12	12	12	12
Line keys	2	2	2	2
Programmable keys	2	2	2	2
Navigator keys	YES	YES	YES	YES
Headset socket	--	YES	YES	--
Keypad backlighting	--	YES	YES	--
Protective cover	--	YES	YES	--
Integrated vibrator	--	--	YES	YES
Charger	4071BA 4071DA	4071DA	4071 DA	4071BC
Hands free	--	--	--	YES

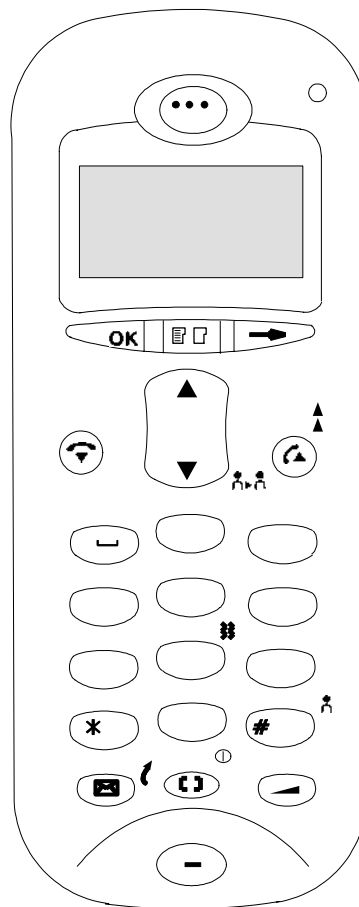


TERMINALS

EARLIER GENERATION SETS

4073 GS SMART DECT HANDSET

FEATURE	4073 GS SMART
Handset	YES
On/Off Key	YES
Display: 2 x 16 alphanumeric characters + 1 line of 8 icons	YES
Numeric keypad keys	12
Navigator keys	YES
Function keys	8
Vibrator	YES





EARLIER GENERATION SETS

TERMINALS

Alcatel OmniPCX Office

SECTION

CALL SERVER : TELEPHONE

FEATURES

REF3EH 21000 BSAA Ed. 04

Section CALL SERVER : Telephone features

RESOURCE KEYS (ASSOCIATED OPERATING MODES)	FILE 1
TRUNK GROUPS	FILE 2
HUNTING GROUPS	FILE 3
OPERATOR STATIONS (OPERATOR GROUPS)	FILE 4
SPECIFIC OPERATOR STATION SERVICES	FILE 5
LINK CATEGORIES	FILE 6
BARRING	FILE 7
END OF DIALING DETECTION	FILE 8
SPLITTING	FILE 9
CALL DISTRIBUTION (DYNAMIC ROUTING)	FILE 10
NORMAL AND RESTRICTED SERVICE	FILE 11
AUTOMATIC WELCOME (PRE-ANNOUNCEMENT)	FILE 12
DIRECT DIALING INWARDS	FILE 13
CLASS COMPATIBILITY	FILE 14
ISDN SERVICES	FILE 15
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CALL SERVER : TELEPHONE FEATURES

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RESOURCE KEYS (ASSOCIATED OPERATING MODES)

File
1

DESCRIPTION

A resource key is used to take a line in order to make or receive a call.

When a station has at least two resource keys, it is said to be **multiline**. In this mode, the user presses the resource key associated with the correspondent he wants to contact (using the shuttle call function, for example). Multiline stations can also operate in **Key system** or **PABX** mode.

A station which does not have resource keys is said to be **monoline**. These resources (3) are "virtual". In this mode, the user enters a code programmed in the "Features in Conversation" table, to activate a function such as a shuttle call.

Characteristics of the different modes:

Type of subscriber	Normal		
Mode	Monoline	Key system	PABX
Default resource keys	3 "virtual" resource keys	2 RGMints (**) n (*) RSPs (**)	2 RGMints (**) 2 RSBs (**)
Simultaneous management	1 conversation 1 hold 1 camp-on	1 conversation (n+1) holds + camp-ons	1 conversation 3 holds + camp-ons

(*) n = number of analog lines and B channels (within the station key limit).

(**) see explanation overleaf.

CONFIGURATION

▼ Programming the resource keys on each station:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Keys.**
- by MMC-Station: **Subscr -> Keys.**

▼ Programming the monoline, multiline, "key system" or "PABX" mode:

**RESOURCE KEYS (ASSOCIATED
OPERATING MODES)**

CALL SERVER : TELEPHONE FEATURES

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Profiles.**
- by MMC-PM5 (Easy view): **Subscriber profiles**
- by MMC-Station: **TerPro.**

CALL SERVER : TELEPHONE FEATURES

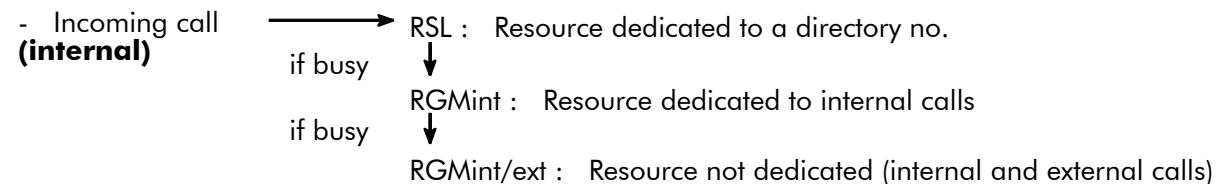
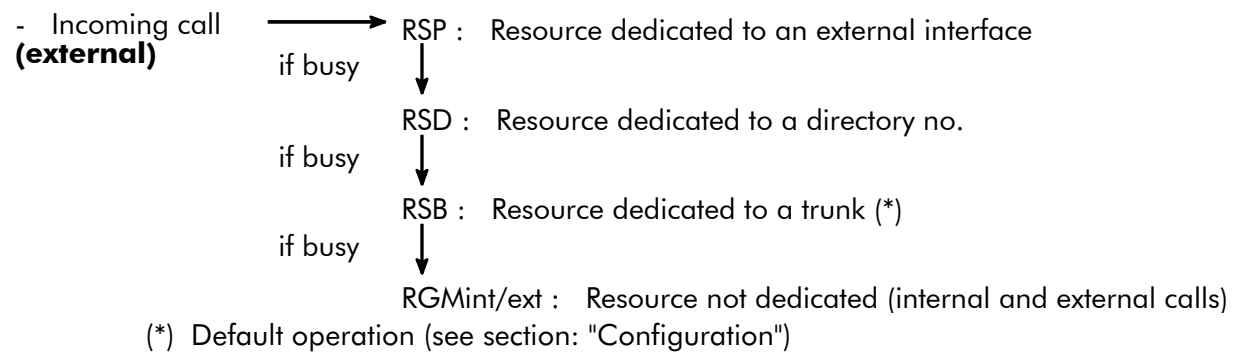
RESOURCE KEYS (ASSOCIATED OPERATING MODES)

▼ Authorize or cancel selection of an RSB if the external call arrives on a line which does not belong to the trunk programmed for this key:

- by MMC-PM5 (Expert View):
System Miscellaneous -> Memory Read/Write -> Misc. Labels -> SelRSBsig.
- by MMC-Station: **Global -> Rd/Wr -> Address s -> "SelRSBsig" -> Return -> Memory**

ACTIVATION/USE

Incoming, the system uses the resource keys in the following order of priority:



Outgoing, a call can be made:

- without pressing a resource key (the system selects the most appropriate key as soon as the user dials)
- by pressing a resource key (before dialing the number), whether:
 - for an **external** outgoing call:
 - an RSD (dedicated to a trunk or an "Automatic Route Selection")
 - an RSB (dedicated to a trunk or an "Automatic Route Selection")
 - an RSP (dedicated to an external interface)
 - an RGO (dedicated to outgoing calls)
 - an RGMint/ext (not dedicated)
 - for an **internal** outgoing call:
 - on an RSL (dedicated to a directory n°): the system automatically dials the programmed number
 - an RGMint (dedicated to internal calls)
 - an RGO (dedicated to outgoing calls)
- an RGMint/ext (not dedicated)

Notas : The MMC-Station labels RGI, RGO and RGM (MMC station) are equivalent to RGX in MMC-PM5 (+ definition of "Call Sense" field).

More details about the abbreviations RGM, RGO, RSL, etc. can be found in the glossary.

ADDITIONAL INFORMATION

- A resource key manages only one communication at a time.
- Z and First Reflexes stations are monoline; all other stations are multiline.
- The Reflexes 2G 4003 can be either monoline or multiline.

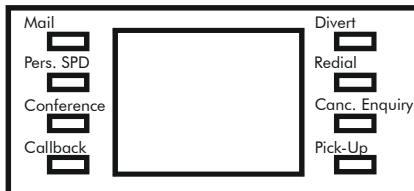
PROFILES FOR ALCATEL REFLEXES 3G STATIONS

The first Alcatel Reflexes station (call number 100) is the Operator station; this Advanced Reflexes station is part of all active Operator Groups as well as the default Operator Group.

The second Alcatel Reflexes station is a Secretary terminal and the third is a Manager terminal. Only Advanced or Premium Reflexes stations can provide the Manager/Secretary facility.

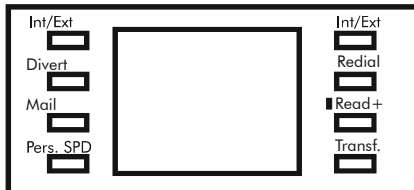
First Reflexes station profile

First Reflexes stations operate in monoline mode.



Easy Reflexes station profile

Easy Reflexes stations cannot be used as Manager, Secretary or Operator stations.



Premium Reflexes station profiles

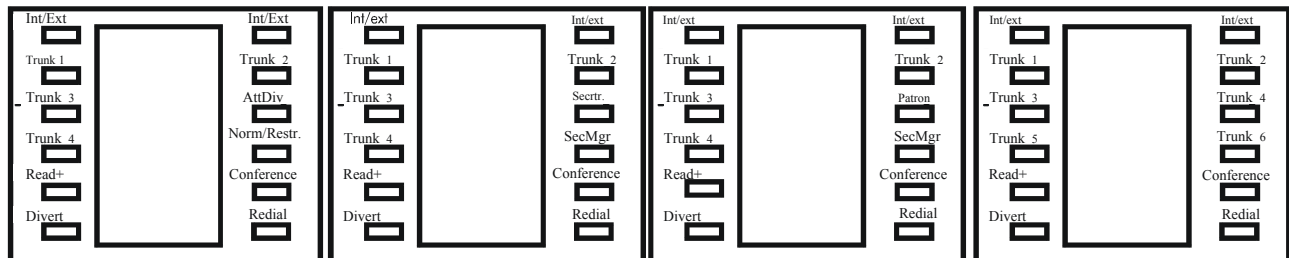
Key system mode

Operator Station

Manager Station

Secretary Station

Normal Station



RESOURCE KEYS (ASSOCIATED OPERATING MODES)

CALL SERVER : TELEPHONE FEATURES

PABX mode

Differences from Key system mode:

- the first 2 line keys are replaced by "Ext. Call" (access to the public network with 9);
- the other line keys are replaced by undefined call keys; these can be programmed with an internal destination (station) or external destination (number preceded by public network access prefix).

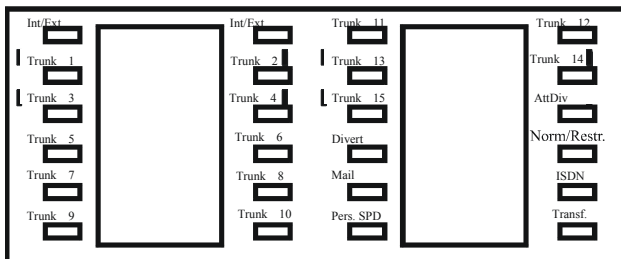
To program a call key (you can also use the station User Guide), proceed as follows:

- press the key .
- press the key you want to program.
- delete the old settings, if necessary, then enter the new number and validate. The station goes back to idle.

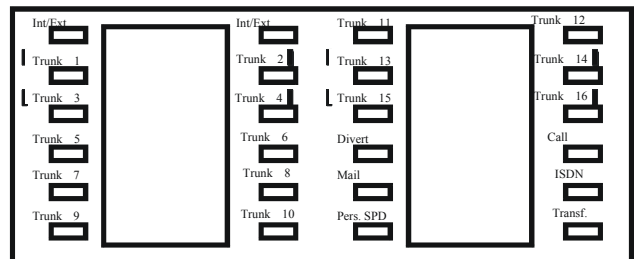
Advanced Reflexes station profiles

Key system mode

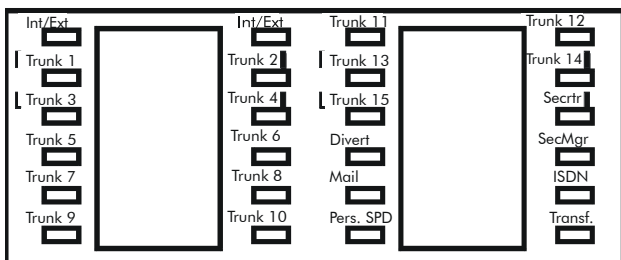
Operator Station



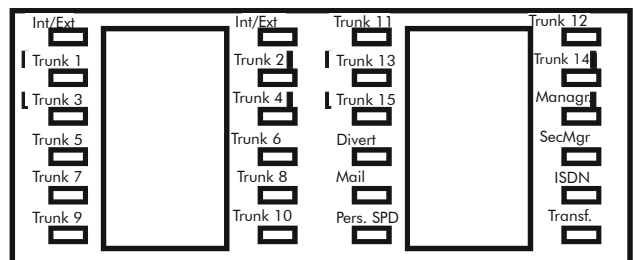
Normal Station



Manager Stations



Secretary Station



PABX mode

The same differences apply with regard to Key System mode as for a Premium Reflexes set.

TRUNK GROUPS

File

2

DESCRIPTION

Trunk groups are used to make calls to the network. A trunk group is made up of at least one analog line or B channel.

Each bundle has:

- a directory number defined in the main numbering plan
- a management type: cyclic or sequential
- barring and traffic sharing link categories (see "Link Categories")

CONFIGURATION

▼ Configuring the trunk groups:

- by MMC-PM5 (Expert View): **External Lines -> Trunk Groups -> Details**
- by MMC-Station: **TrGp**

▼ Defining the trunk group management type:

- by MMC-PM5 (Expert View): **External Lines -> Trunk groups**
- by MMC-Station: **TrGp**

▼ Modifying the default traffic sharing link categories (value 1 to 16):

- by MMC-PM5 (Expert View):
 - for the users: **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Barring**
 - for the trunk groups: **External Lines -> Trunk Groups -> Details -> Link-Cat**
- by MMC-Station:
 - for the users: **Subscr -> BarTyp (last 2 values)**
 - for the trunk groups: **TrGp -> Catego**

▼ Modify the "Traffic Sharing Matrix", if necessary, using MMC-PM5 (Expert View):

System Miscellaneous -> Traffic Sharing and Barring -> Traffic Sharing Matrix

TRUNK GROUPS

CALL SERVER : TELEPHONE FEATURES

▼ To specify whether or not to authorize all the users to seize an analog line with predetermined routing for outgoing calls:

- by MMC-PM5 (Expert View):
System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "TonPrRng"
- by MMC-Station:
Global -> Rd/Wr -> Address -> "PRIOR_LRP" -> Return -> Memory

ACTIVATION/USE

To make a call to the network, a user can:

- dial a trunk group number
- press an RSD or RSB resource key (see "Resource keys")

If connection between the user and the trunk group is authorized (analysis of barring and traffic sharing link categories: see "Link Categories" and "Barring"), the system selects a line (or channel) in the trunk group as follows:

Management type	cyclic	sequential
Trunk line used in the trunk group	1st free line following the last selected	1st free line (*), in the programmed order

(*) Priority is given to "outgoing" lines, then "mixed lines".

ADDITIONAL INFORMATION

- The maximum number of trunk groups in a system is 120.
 - 1 main trunk group
 - the others being secondary trunk groups
- The maximum number of lines or channels in a trunk group is 120.
- The total number of lines/channels across all the trunk groups must not exceed 500.
- The trunk group with index 120 may be reserved for Operator Groups (see "Operator stations").
- For an outgoing call, an analog line with predetermined routing (LRP) can be used either exclusively or in priority by the destination user of this LRP.

HUNTING GROUPS



DESCRIPTION

Creating Hunting Groups makes it possible to call several stations using a single directory number; a single member of the group answers the call for the whole group.

Each group has:

- a directory number defined in the main numbering plan
- a parallel, cyclic or sequential management type
- an operation type, either "setup" (without supervision key, for calls destined for the group) or "signaling" (with supervision key)

CONFIGURATION

▼ Configuring the groups:

- by MMC-PM5 (Expert View): **Hunting Groups**
- by MMC-Station: **Groups -> Subscr.**

▼ Defining the group management type:

- by MMC-PM5 (Expert View): **Hunting Groups**
- by MMC-Station: **Groups -> Subscr.**

▼ To select the operating mode for (hunting AND operator) groups: with or without a "Group Supervision" programmed key:

- by MMC-PM5 (Expert View):
System Miscellaneous -> Feature Design -> Group called with signalisation mode

▼ Programming the "group supervision" keys on each station (one for every group to which the station belongs):

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Keys**
- by MMC-Station: **Subscr -> Keys**

- ▼ To authorize the immediate group forwarding or withdrawal (see "Forwarding") of group calls from the last member of a group (only with MMC-PM5 (Expert View)):

System Miscellaneous -> Feature Design -> "Disconnect Last Group Member Allowed"

- ▼ Defining the dynamic routing parameters of a group:

- by MMC-PM5 (Expert View): **Hunting Groups -> Dyn. Rout.**
- by MMC-Station: **Groups -> Hunt -> DynRou**

- ▼ To authorize external calls to camp on the group, (MMC-PM5 only):

- call arriving on an analog interface (TL, ATL, DDI, etc):
External Lines -> Protocols -> Parameters -> "Ringing Mandatory": deselect the box to authorize holding
- call arriving on a digital interface (T0, T2, etc) :
System Miscellaneous -> Feature Design -> "Call waiting/Automatic Camp-on": select the box to authorize camp-on

- ▼ To define the response in the event of failure – MMC-PM5 (Expert View) only:

- call arriving on an analog interface (TL, ATL, DDI, etc):
External Lines -> Protocols -> Parameters -> from "Reaction on missing incoming digit" to "Reaction on out of service"
- call arriving on a digital interface (T0, T2, etc):
External Lines -> Incoming Call Handling

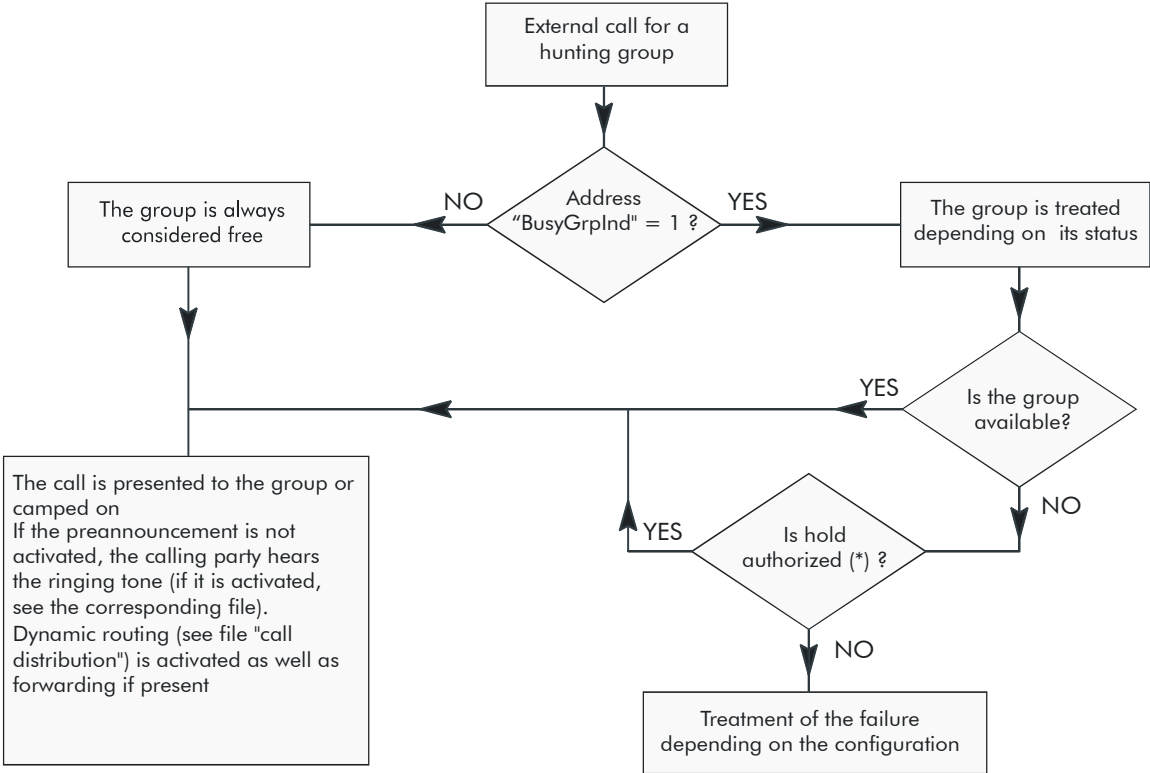
- ▼ To define whether the Hunting Group is still considered free, depending on its status:

- by MMC-PM5 (Expert View):
System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "BusyGrpInd"
- by MMC-Station:
Global -> Rd/Wr -> Address -> "BusyGrpInd" -> Return -> Memory

ACTIVATION/USE

Depending on the management type chosen for the group, the system makes the stations ring as follows:

Management type	parallel	cyclic	sequential
Stations rung	all the free stations in the group	1st free station following the last selected	1st free station in the programming order
For a group in SETUP mode, the call is camped on	on all busy stations	on all the stations in the group, if all are busy	
A busy station goes into idle status	the call with the highest priority is presented		
To answer a call	go off-hook or press Handsfree or the "Group Supervision" programmed key		
For a group in SIGNALING mode, the call is camped on	if all stations are busy, on the first station in the group		



*** parameter: "Ringing Mandatory" ou "Call Waiting/Autom"**

ADDITIONAL INFORMATION

- The maximum number of groups in a system is 50 (Hunting Groups + Broadcast Groups + pickup groups).
- The maximum number of stations in a group is 32.
- In SETUP mode and if the address "BusyGrpInd" = 1, the maximum number of calls camped onto a Hunting Group is equal to the number of members in the group.

OPERATOR STATIONS (OPERATOR GROUPS)



DESCRIPTION

An operator station basically makes it possible to distribute calls arriving on the network. Such a station has the following characteristics:

- camp-on always authorized
- intrusion always authorized
- access to certain programming features

Any station connected to the system can be an Operator Station, but, to have all the features of an operator, the station must:

- be part of an Operator Group
- have one of the "operator" profiles (see "Resource keys" and "Station profiles"):

Operator profile in mode ...	Key system	PABX
Resource keys	2 RGMints n RSPs (*)	2 RGMints 2 RSBs dedicated to the internal trunk group 1 RAV (**)
Function keys	Group supervision Normal/Restricted mode	Group supervision Normal/Restricted mode
LED (***)	Traffic overload	Traffic overload

(*) n = number of external interfaces; to monitor all the system's external interfaces, connect add-on modules to each operator station.

(**) Virtual Access Resource: used only for camped-on calls.

(***) The "overload" LED only applies to stations with a three-color LED (Reflexes range with the exception of 4003); it indicates:

- : level 1 traffic overload (1 call camped on).
- : station test.
- : level 2 traffic overload (one call camped on for at least 20 seconds, or more calls camped on than there are operators).
- : presence of a system message indicating a serious equipment fault or several less serious system messages.
- : presence of a message (voice, written) or presence of a call in the non answered calls repertory.

OS groups are managed in parallel.

All Operator Groups have the same call numbers (a single Operator Group is active during any particular time range (see "Time Ranges")).

An Operator Group can have:

- stations
- the general bell (see "Connection of a general bell")
- 1 dissuasion message (see "Automatic Welcome /Pre-announcement")

Default Operator Group

This group (index 8):

- is available no matter what the time range
- can have up to 8 members including the general bell
- comes into service ... (see "Activation/Use")

General level

The general level is made up of:

- the Operator Group active in the applicable time range (may include the general bell)
- stations with the "General Monitoring" feature activated (see "Call Monitoring")

It is activated automatically:

- via the dynamic routing mechanism (see "Call distribution")
- via the operator recall mechanism (when a user's station in an external communication is switched off or the activation of a service has failed)
- in accordance with the predefined settings, in the case of a misdial or when an ISDN access is completely busy.

By default, the following are programmed:

- OS groups are managed in parallel.
- Operator Groups of index 1 and 2, including the first station of the first board recognized by the system
- the default group (index 8) including:
 - the first station of the first board recognized by the system
 - the general call bell

CONFIGURATION

▼ Configuring the Operator Groups:

- by MMC-PM5 (Expert View): **Attendant Group List**
- by MMC-Station: **Groups -> OpGrp**

▼ Modifying the internal call number of the Operator Groups:

- by MMC-PM5 (Expert View): **Numbering -> Internal Numbering Plan**
- by MMC-Station: **NumPln -> IntNum**

▼ Programming the external call number of the Operator Groups (N.B.: base identical to that of an internal call number):

- by MMC-PM5 (Expert View): **Numbering -> Public Numbering Plan**
- by MMC-Station: **NumPln -> PubNum**

▼ Programming the operator profile:

- by MMC-PM5 (Expert view): **Subscribers/Basestations List -> Subscribers/Basestations List -> Profiles**
- by MMC-Station: **TerPro -> Attend**

▼ Assigning an Operator Group to each time range:

- by MMC-PM5 (Expert view): **Time Ranges**
- by MMC-Station: **TimeRa**

▼ To select the management type for Operator Groups and Hunting Groups: with ("signaling" mode) or without ("setup" mode) the "Group Supervision" programmed key:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "GrpCalWSig"**
- by MMC-Station: **Global -> Rd/Wr -> Address -> "GrpCalWSig" -> Return -> Memory**

▼ To authorize the immediate group forwarding or withdrawal (see "Forwarding") of group calls from the last member of a group (with MMC-PM5 only):

System Miscellaneous -> Feature Design -> "Disconnect last Group Member allowed"

▼ Defining the dynamic routing parameters (see "Call distribution") for an Operator Group:

- by MMC-PM5 (Expert view): **Attendant Group List -> Dyn. Rout.**
- by MMC-Station: **Groups -> AttGrp -> DynRou**

OPERATOR STATIONS (OPERATOR GROUPS)

CALL SERVER : TELEPHONE FEATURES

- ▼ To authorize external calls arriving on an analog interface (TLC, ATL, DDI, etc) to camp on the group (or prevent them from doing so) – MMC-PM5 (Expert View) only:

External Lines -> Protocols -> Parameters -> "Ringing Mandatory":

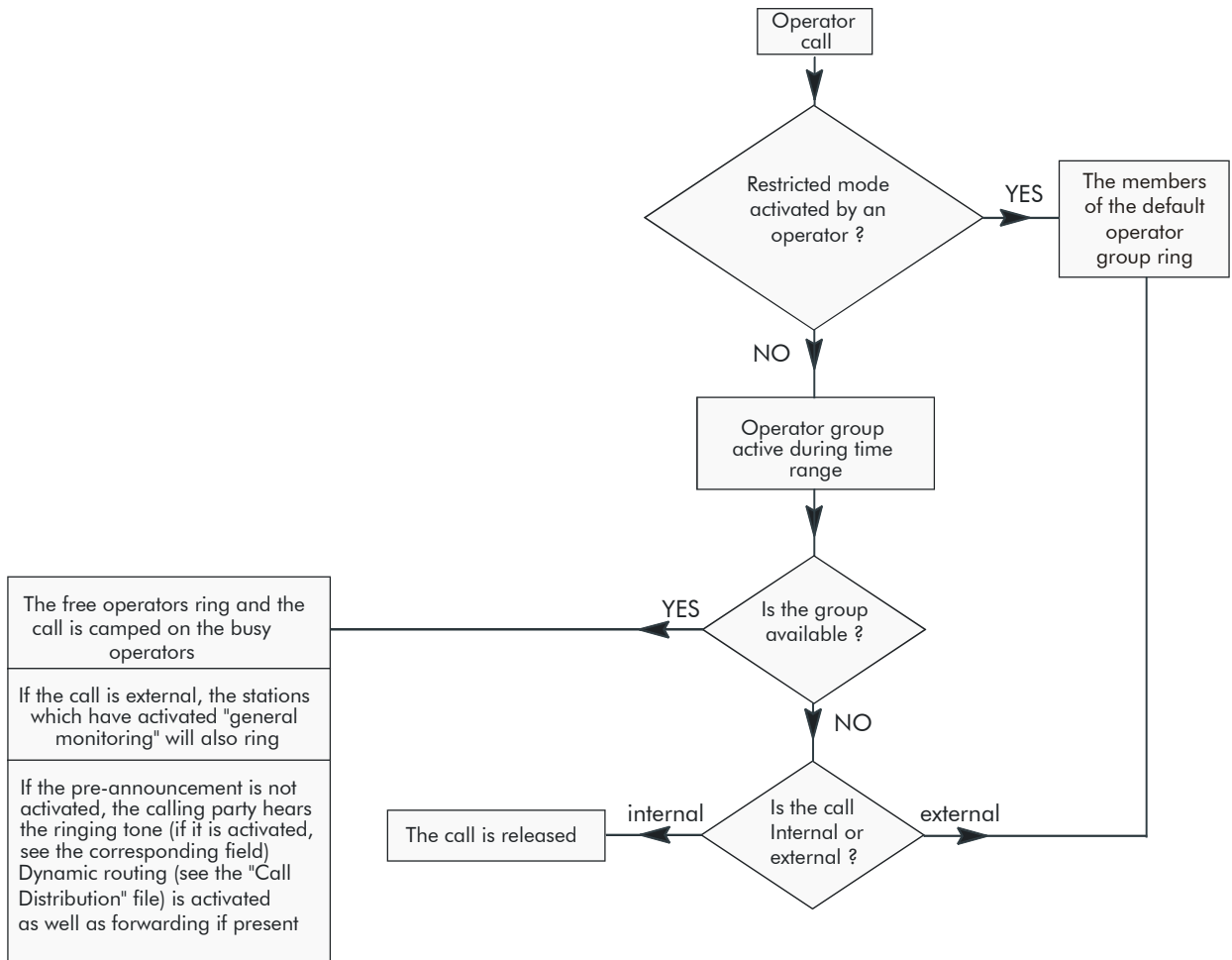
- ▼ To authorize external calls arriving on a digital interface (T0, T2, etc), to camp on the group (or prevent them from doing so) – MMC-PM5 (Expert View) only:

System Miscellaneous -> Feature Design -> "Call Waiting/Automatic camp-on"

- ▼ To define the response in the event of failure – MMC-PM5 (Expert view) only:

- call arriving on an analog interface (TL, ATL, DDI, etc):
External Lines -> Protocols -> Parameters -> from "Reaction on missing incoming digit" to "Reaction on out of service"
- call arriving on a digital interface (T0, T2, etc):
External Lines -> Incoming Call Handling

ACTIVATION/USE



ADDITIONAL INFORMATION

- The maximum number of Operator Groups in a system: 8, default operator included.
- The maximum number of stations in an Operator Group: 8.
- Forwarding of the last member of the Operator Group (except for the default Operator Group) can be authorized by programming.
- The destination of an immediate forwarding of Operator Group calls (see "Forwarding") does not have the characteristics of an operator.

SPECIFIC OPERATOR STATION SERVICES

File

5

DESCRIPTION

An Operator Station can:

- switch the entire installation to normal or restricted mode, independently of the time range (see "Normal/Restricted service (system level)")
- reserve a trunk group (the last) for exclusive use of the Operator Stations. Each O.S. in the active group can use this trunk group for communications with the network.
- activate the background music, coming from a tuner on an external loudspeaker connected to the system.
- activate forwarding of all internal and external calls intended for the O.S. group to a network destination, defined by a common speed dial number or an internal destination, either:
 - by switching the installation into restricted mode (using a programmed key)
 - or using a programmed Attendant diversion key

This forwarding can also be automatically activated according to the time range.

The system can be used to program 3 different forwarding destinations:

- the first, for automatic activation by scheduling: this is valid for all time ranges
- the second, for manual activation, by switching the installation to restricted mode on one of the O.S. in the active group
- the third, by using the operator calls forwarding key pre-programmed with the local or collective speed dial number for which the calls are intended

Operator call diversion is activated and deactivated in accordance with the following descending order of priority:

- by forwarding key
- by normal/restricted mode key
- by scheduling.

CONFIGURATION

- ▼ For each time-range, define whether attendant diversion is activated when the OS switches manually to restricted mode – MMC-PM5 (Expert View) only:

Time Ranges -> "All Days"

- ▼ To define the type of mechanism used to forward external incoming calls to a network number: rerouting or joining (see "External Forwarding" for more details on the 2 types of forwarding):

- by MMC-PM5 (Expert View): **System Miscellaneous -> Feature Design -> Part 2 -> "External Diversion Mode"**
- by MMC-Station: **Global -> Joing -> Forwd**

- ▼ When the selected mechanism for forwarding external incoming calls to a network number is "joining", fill out the connectivity matrix by MMC-PM5 (Expert View) only:

Traffic Sharing and Barring -> Joining

- ▼ Program the number (internal or collective speed dial) to which the operator calls are forwarded following automatic activation by scheduling – MMC-PM5 (Expert View) only:

Time Ranges -> "Destination for time ranges"

- ▼ Program the number (internal or collective speed dial) to which the operator calls are forwarded following manual activation with the "NRmode" programmed key – MMC-PM5 (Expert View) only:

Time Ranges -> "Destination if restr. mode manually activated"

- ▼ On the OSs, program one or more "Attendant diversion" keys with a number (internal or collective speed dial) to which the operator calls are to be forwarded:

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Keys -> "Attendant Diversion"**
- by MMC-Station: **Subscr -> Key -> Option -> ExtFwd**

ACTIVATION/USE

P.K.: Programmed Key – defined using MMC-PM5 (expert View) or MMC-Station

Switch to restricted mode	When the system operates in normal mode, P.K.: NRMode + operator code
Reservation of last trunk group	P.K.: Reserv + operator code
Broadcasting music on an external loud speaker	P.K.: BkgMus + operator code
Attendant diversion	Automatic, by scheduling or P.K.: NRMode when installation is in "Normal" mode + operator code or P.K.: Attendant diversion + destination if necessary + operator code

CANCELLATION

By switching to normal mode	When the system is in restricted mode, P.K.: NRMode + operator code
Reservation of last trunk group	P.K.: Reserv + operator code
Broadcasting music on an external loud speaker	P.K.: BkgMus + operator code
Attendant diversion	Depending on activation mode: Automatic, by scheduling or P.K.: NRMode when installation is in "Restricted" mode + operator code or P.K.: Attendant diversion + operator code

ADDITIONAL INFORMATION

- There is no particular signal to indicate attendant diversion when it is activated by scheduling.
- The icon or the LED associated with the NRmode programmed key is lit when one of the O.S. has used this key.
- The icon or LED associated with all of the "Attendant diversion" programmed keys signals activation of forwarding by this key.
- No checks are run on the collective speed dial rights, the barring or the traffic sharing on forwarding to an external number.
- When the O.S. call is the result of the dynamic routing mechanism (see "Incoming call distribution"), the call is forwarded and the initial call destination and level 1 destination are released.
- When calls to the O.S. are forwarded:
 - there is no overflow to the default O.S. group
- pre-announcement is not used.

LINK CATEGORIES

File
6

DESCRIPTION

Link categories enable the system to authorize or inhibit connection between an internal user and a network subscriber.

There are 3 types of link category:

- speed dial rights: access to the collective speed dial numbers
- barring link category: access to dialing prefixes
- traffic sharing link category: access to bundles (see also file "Bundles")

Link categories are attributed as follows:

Type of Link Category	Class	Class	Barring LC	Traffic sharing LC
Attributed to ...	each station	each speed dial number	- each station - each trunk group	- each station - each trunk group
...depending on the mode, normal or restricted...	1 value per mode	1 value per mode	1 value per mode	1 value per mode
...and the type of comm. (voice or data)	1 value per type of communication	1 value per type of communication	1 value per type of communication	-
Value	authorized or unauthorized, for each class in the collective speed dial list	0 to 8 (*)	1 to 16	1 to 16

(*) Collective speed dial numbers with class = 0 are emergency numbers to which all of the stations have access.

CONFIGURATION

- ▼ Modifying the default speed dial rights:

LINK CATEGORIES

CALL SERVER : TELEPHONE FEATURES

- by MMC-PM5 (Expert View):
 - for the users: **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Collective Speed Dial**
 - for access: **External Lines -> List of Accesses -> Details -> Speed Dial**
- by MMC-Station:
 - for access: **Access -> RepEnt**

CALL SERVER : TELEPHONE FEATURES

LINK CATEGORIES

▼ Modifying the default barring link categories:

- by MMC-PM5 (Expert View):
 - for the users: **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Barring**
 - for the trunk groups: **External Lines -> Trunk Groups -> Details -> Link-Cat**
 - for access: **External Lines -> List of Accesses -> Details -> Link-Cat.**
- by MMC-Station:
 - for the users: **Subscr -> BarTyp**
 - for the trunk groups: **TrGp -> Catego**
 - for access: **Access -> Catego**

▼ Modifying default traffic sharing link categories:

- by MMC-PM5 (Expert View):
 - for the users: **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Barring**
 - for the trunk groups: **External Lines -> Trunk Groups -> Details -> Link-Cat**
 - for access: **External Lines -> List of Accesses -> Details -> Link-Cat.**
- by MMC-Station:
 - for the users: **Subscr -> BarTyp (last 2 values)**
 - for the trunk groups: **TrGp -> Catego (last 2 values)**
 - for access: **Access -> Catego (last 2 values)**

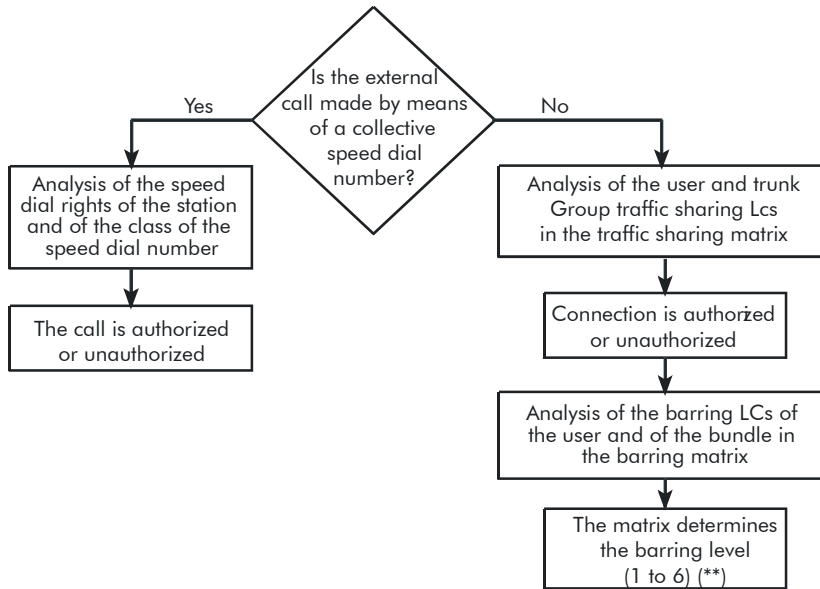
▼ To modify the "Barring Matrix" – MMC-PM5 (Expert View) only:

Barring -> Barring Matrix

▼ To modify the "Traffic Sharing Matrix" – MMC-PM5 (Expert View) only:

Barring -> Traffic Sharing Matrix

ACTIVATION/USE



(**) See "Barring"

ADDITIONAL INFORMATION

- Special case – transit: a call arriving on DLTx/Tx/TL/ATL is automatically routed by the system to a DLTx/Tx/TL/ATL trunk group. In this case, the line used for the incoming call acts as a gateway with respect to barring; its own link category is used rather than that of the trunk group to which it belongs.
- The emergency numbers predefined in the software on leaving the factory are valid regardless of the barring mechanisms.

BARRING

File
7

DESCRIPTION

Barring comes into effect after the system has authorized connection between the user and the entered trunk group (following analysis of the traffic sharing link categories: see "Link Categories").

Barring makes it possible to define whether an internal user (or an access, in the case of transit) is authorized to make a call to the network, or not (other than by using the collective speed dial numbers), depending on the prefix (i.e. the first few digits) of the called number.

To do this, the system uses barring link categories (see "Link Categories") and barring tables.

The system has 6 barring tables, numbered 1 to 6: each table corresponds to a level of barring and can have "authorized" or "unauthorized" prefixes.

The system also uses two barring counters, C1 and C2:

- C1 states the maximum number of authorized digits if an authorized prefix has been recognized or if there is no authorized prefix in the level of barring associated with the call. The default value is 22.
- C2 states the maximum number of digits authorized if the dialed prefix is not programmed in the level of barring associated with the call., while this level has at least one authorized prefix. The default value is 4.

CONFIGURATION

▼ Modifying the default barring link categories:

- by MMC-PM5 (Expert View):
 - for the users: **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Barring**
 - for the trunk groups: **External Lines -> Trunk Groups -> Details -> Link-Cat**
 - for access: **External Lines -> List of Accesses -> Details -> Link-Cat.**
- by MMC-Station:
 - for the users: **Subscr -> BarTyp**
 - for the trunk groups: **TrGp -> Catego**
 - for access: **Access -> Catego**

▼ To modify the "Barring Matrix" – MMC-PM5 (Expert View) only:

Barring -> Barring Matrix

BARRING

CALL SERVER : TELEPHONE FEATURES

- ▼ Creating barring tables (adding a "!" authorizes or inhibits a complete barring level) – MMC-PM5 (Expert View) only:

Barring -> Barring Tables

- ▼ To authorize or deny access to the network by transfer, for each station – MMC-PM5 (Expert View) only:

Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Transfer to External"

- ▼ To authorize or deny access to the network, for each station – MMC-PM5 (Expert View) only:

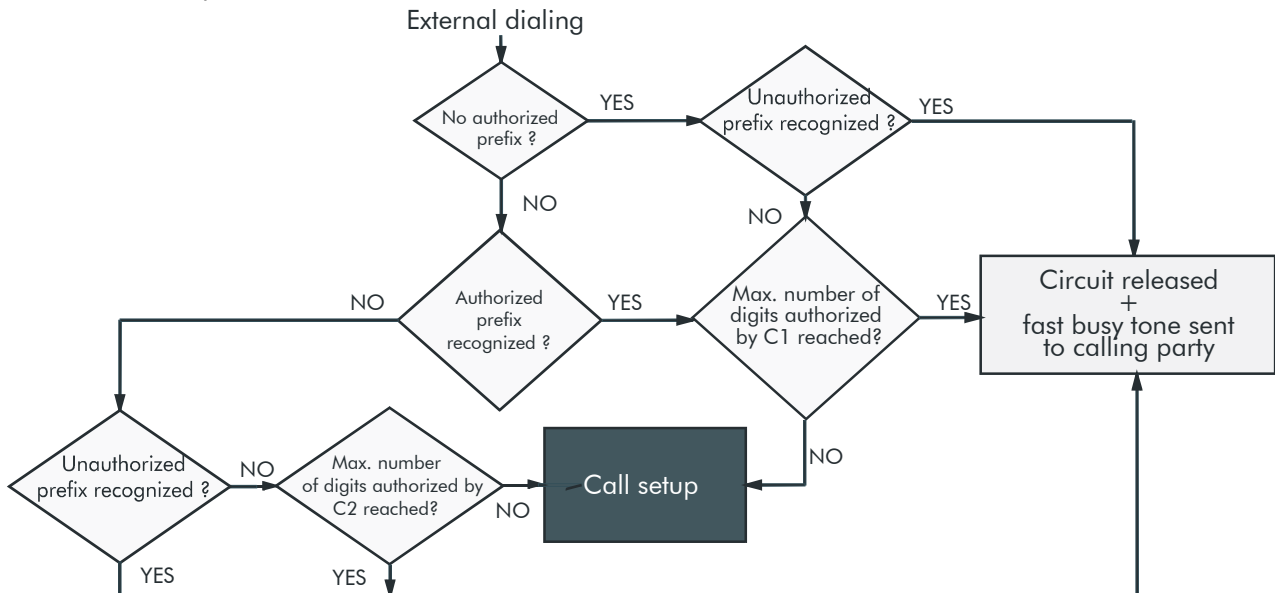
Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Private Subscriber"

- ▼ To modify the length of barring counters – MMC-PM5 (Expert View) only:

Barring -> Barring Tables

ACTIVATION/USE

Having determined the barring level of a call, the system compares the requested number as it is being dialed, with the prefixes in the table associated with this level of discrimination:



ADDITIONAL INFORMATION

- The 6 prefix tables altogether (or barring levels) can have over 100 prefixes.
- Each prefix has a maximum of 10 digits (0 to 9, * and #).
- A private subscriber cannot be connected to the network (nor receive calls from or make calls to the network).
- The emergency numbers predefined in the software on leaving the factory are valid regardless of the barring mechanisms.



BARRING

CALL SERVER : TELEPHONE FEATURES

END OF DIALING DETECTION



DESCRIPTION

On analog trunk lines, end of dialing detection makes it possible to define the moment when the system can release the DTMF receivers and carry out the bi-directional switching of the line.

The system uses the end of dialing prefix table to ascertain the length (number of digits) of the numbers transmitted. A counter, equal to or superior than 0, is associated with each prefix.

When a prefix has not been configured in this table, the system uses a reference counter.

On digital trunk lines, the trunk sends a message telling the system to carry out the two-way switching. By default, the system carries out this commutation after a time-out simulating going off-hook.

CONFIGURATION

▼ Programming the end of dialing prefix table:

- by MMC-PM5 (Expert View): **Numbering -> End of Dialing Table**
- by MMC-Station: **EODPfx -> EODial -> Prefix**

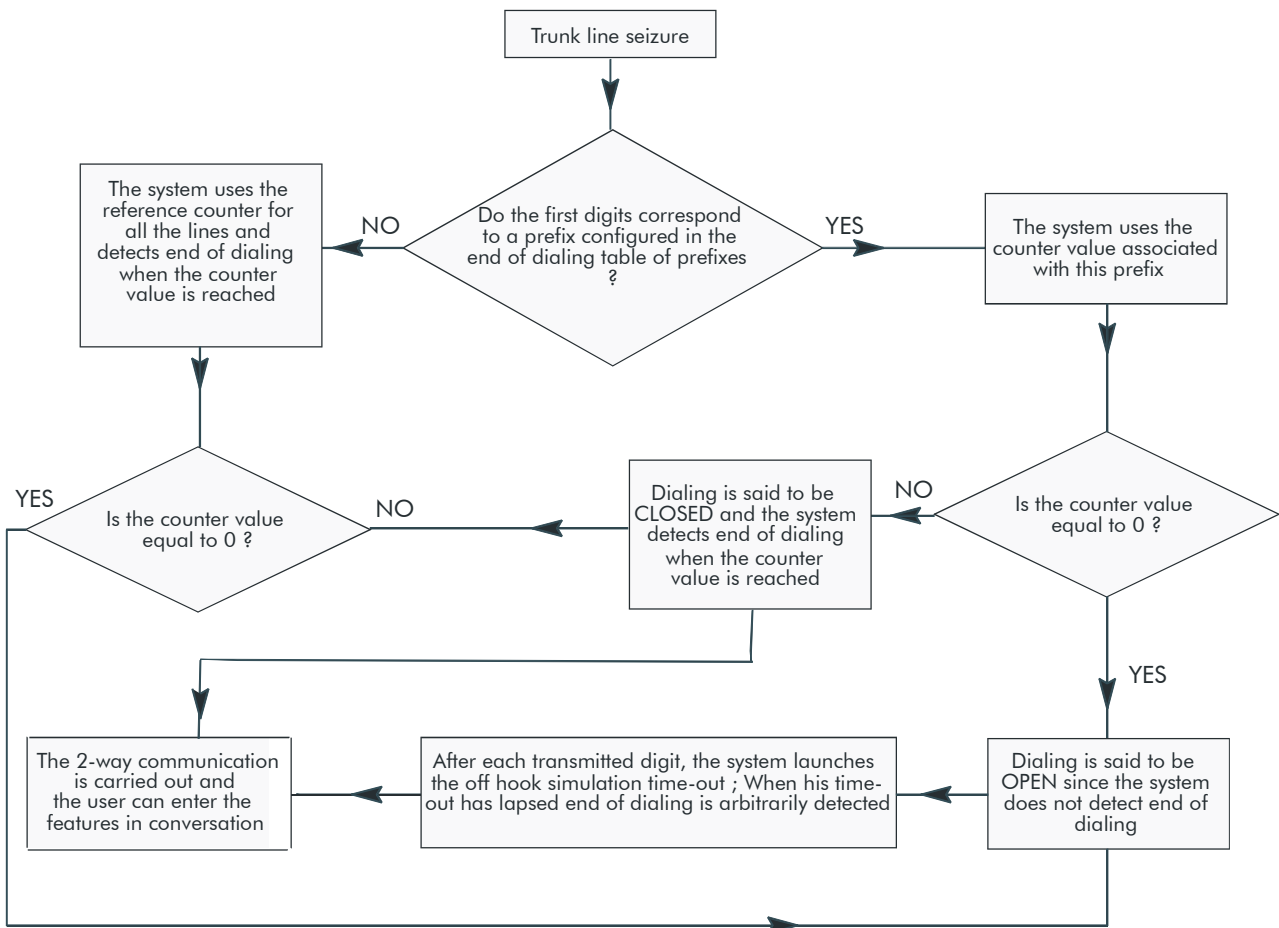
▼ Modifying the reference counter value on all analog lines:

- by MMC-PM5 (Expert View): **Numbering -> End of Dialing Table**
- by MMC-Station: **EODPfx -> EODial -> RefCnt**

▼ Modifying the off hook simulation time-outs:

- call on an analog interface (TL, ATL, DDI, etc): **External Lines -> Protocols -> Analog Trunks -> Timers -> Modify**
- call on a digital interface (T0, T2, etc):
 - by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Timer Labels -> "OffHookSim"**
 - by MMC-Station: **Global -> Rd/Wr -> Timer -> "OffHookSim" -> Return -> Memory**

ACTIVATION/USE



ADDITIONAL INFORMATION

- Maximum number of prefixes in the table of end of dialing prefixes: 20.
- Maximum number of digits per prefix: 6.
- This mechanism does not concern lines or trunks declared in the system as being connected behind a PABX.

SPLITTING

File

9

DESCRIPTION

The splitting mechanism enables a user to dial a number on an analog trunk line or behind a PABX, without having to wait for any dialing splits.

It is accessed:

- by manual dialing
- by automatic dialing (last number redial, temporary memory number, speed dial number)

Splitting can be of two types:

- tone detection: TONE in the splitting prefix table
- pause: PAUSE in the splitting prefix table.

The mechanism applies at three levels:

- During line seizure:
 - if the splitting is TONE, dialing is possible as soon as the PABX has recognized the tone transmitted by the trunk during a validation time-out. If, after expiry of a time-out, no tone has been recognized, the system releases the line.
 - if the splitting is PAUSE, dialing is transmitted after expiry of a programmable time-out, (different for private or public trunk lines).
- Intermediary splitting prefixes:
Dialing according to the prefixes in the splitting prefix table, is transmitted after tone detection or after a splitting time-out with the same principles as for the line seizure.
- Splitting prefixes defined in the personal or collective speed dial numbers:
A personal or collective speed dial number can have one splitting character (symbolized by "!"). The splitting method used (TONE or PAUSE) is the one programmed in the splitting prefix table.

CONFIGURATION

▼ Programming the line seizure type of splitting:

- by MMC-PM5 (Expert View): **Numbering -> Splitting Table**
- by MMC-Station: **EODPfx -> EODial -> Split -> TonDet**

▼ Programming or modifying the splitting prefix table:

- by MMC-PM5 (Expert View): **Numbering -> Splitting Table**
- by MMC-Station: **EODPfx -> EODial -> Split -> prefix**

▼ To modify the pause time-out – MMC-PM5 (Expert View) only:

External Lines -> Protocols -> Analog Trunks -> Timers -> Modify -> "Pause after Seizure Trunk", "Pause after Seizure Main/Sat", "Pause Fractioning" (Part 2)

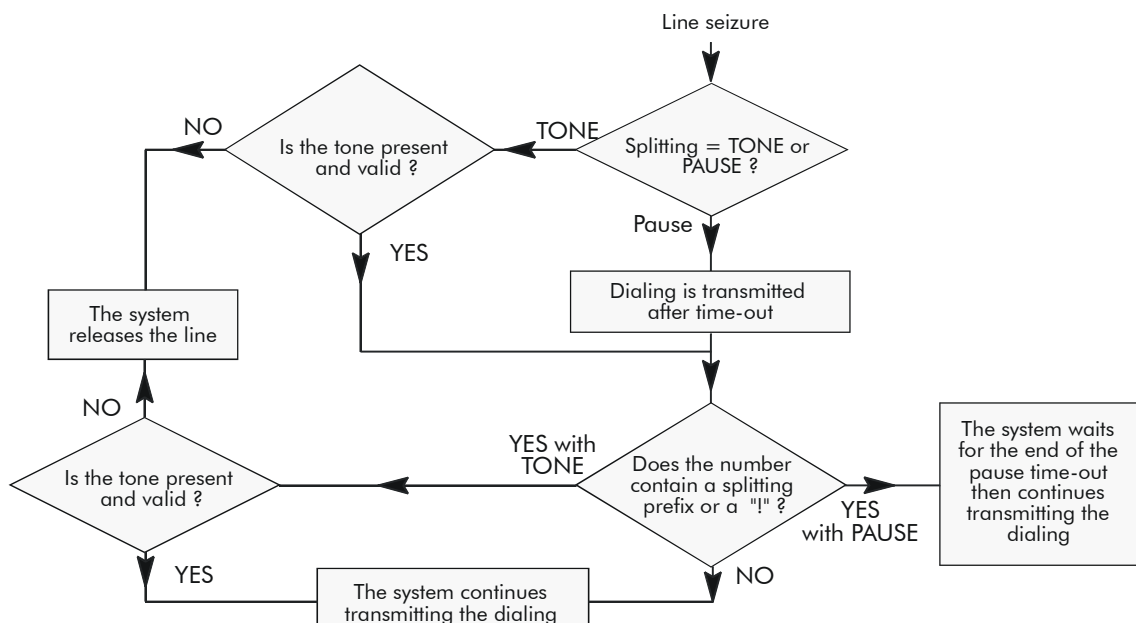
▼ To modify the tone detection time-out – MMC-PM5 (Expert View) only:

External Lines -> Protocols -> Analog Trunks -> Timers -> Modify -> "Tone Detection"

▼ To modify the tone non-detection time-out – MMC-PM5 (Expert View) only:

External Lines -> Protocols -> Analog Trunks -> Timers -> Modify -> "TO if no Tone Detection"

ACTIVATION/USE



ADDITIONAL INFORMATION

- Maximum number of prefixes in the table of splitting prefixes: 16.
- Maximum number of digits per prefix: 4.



SPLITTING

CALL SERVER : TELEPHONE FEATURES

CALL DISTRIBUTION (DYNAMIC ROUTING)

File

10

DESCRIPTION

The system can automatically re-route:

- a call from the network and destined for the active Operator Group, or the default Operator Group (see "Operator stations")
- a call arriving from the network and currently in transit
- a DDI call (Direct Dialing Inward) from the network and destined for a station or a Hunting Group
- an external call on a "personalized" or "reserved" line: all calls arriving on a personalized external line are routed directly to a station or Hunting Group, depending on the system's normal or restricted mode. Furthermore, a "personalized" line may be "reserved", i.e. a call on this line can neither be picked up nor monitored
- an internal call
- a call from the private network

The system treats simultaneous calls destined for an Operator Group according to the following priorities:

- external hold recall, delayed or otherwise
- internal hold recall, delayed or otherwise
- external callback
- external call
- internal callback
- call from an operator station
- internal call
- Operator Group call
- Hunting Group call

The system routes an **internal** incoming call depending on the following criteria:

- directory number of the destination station programmed in the main numbering plan
- type of call: private or not
- station accessible or not
- destination station resource keys (see "Resource keys")
- status of the resources: free or busy (see "Resource keys")
- features active on the destination set: internal forwarding (see "Forwarding"), monitoring (see "Call Monitoring"), filtering (see "Manager/secretary screening"), external forwarding (see "External Forwarding")
- dynamic routing parameters programmed for a resource, the station or the hunting group

The system routes an **external** incoming call depending on the following criteria:

- PABX forwarding activated by an operator (see "PABX forwarding")

CALL DISTRIBUTION (DYNAMIC ROUTING)

CALL SERVER : TELEPHONE FEATURES

- system in normal or restricted service (see "Normal / restricted service (system level)")
- dissuasion message programmed in the active Operator Group (see "Automatic welcome")
- welcome message transmitted or not (see Automatic Welcome (Pre-announcement))
- destination station directory number: programmed in the public, private numbering plan (see "Incoming transit") or main only
- type of call: for a private subscriber or not
- station accessible or not
- destination station resource keys (see "Resource keys")
- status of the resources: free or busy (see "Resource keys")
- features active on the destination set: internal forwarding (see "Forwarding"), monitoring (see "Call Monitoring"), filtering (see "Manager/secretary screening"), external forwarding (see "External Forwarding")
- dynamic routing parameters programmed for a resource, the station or the hunting group
NB: the dynamic routing programming on a resource key is duplicated on all the resources of the same type. To cancel this programming, erase all the keys of this type and re-program.

CONFIGURATION

- ▼ Configuring a "personalized" line i.e. a line with predetermined routing:

- by MMC-PM5 (Expert View):
 - complete the DDI numbering plan: **Numbering -> Public Numbering Plan**
 - associate the number programmed in the DDI numbering plan with the appropriate line in normal and/or restricted mode: **External Lines -> List of Accesses -> Details -> Call-Dist.**
- by MMC-Station:
 - complete the DDI numbering plan: **NumPln -> PubNum**
 - associate the number programmed in the DDI numbering plan with the appropriate line in normal and/or restricted mode: **Access -> CalDis**

- ▼ Configuring a "reserved" line by attributing the feature "private subscriber" to the DDI number programmed for a personalized line:

- by MMC-PM5 (Expert View): **Numbering -> Public Numbering Plan**
- by MMC-Station: **NumPln -> PubNum**

CALL SERVER : TELEPHONE FEATURES

CALL DISTRIBUTION (DYNAMIC
ROUTING)

▼ Defining the dynamic routing parameters for a resource key:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Keys -> Resource Key -> Dyn. Rout.**
- by MMC-Station: **Subscr -> Keys -> Modify -> Resou -> DynRou**

▼ Defining the dynamic routing parameters for a station:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Dyn. Rout.**
- by MMC-Station: **Subscr -> DynRou.**

▼ Defining the dynamic routing parameters for a Hunting Group:

- by MMC-PM5 (Expert View): **Hunting Groups -> Dyn. Rout.**
- by MMC-Station: **Groups -> Hunt -> DynRou.**

▼ To select the active Operator Group with the general call ringer as level 2 destination:

- by MMC-PM5 (Expert View): check the **Gen. Bell to Gen. Level.** box in the "Dynamic Routing" window
- by MMC-Station: **GenBel** so that the display indicates "GENBELL" in capital letters

▼ To choose between the called party mail box and the automated attendant as destination level 1 when D1 is the directory number of the group containing the two voice mail accesses:

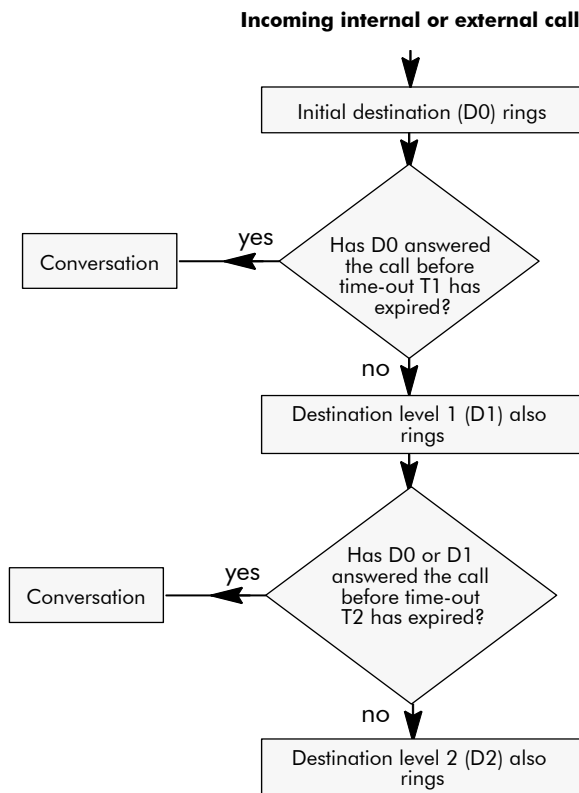
- by MMC-PM5 (Expert View): **VMU as Auto. Attendant (level 1):**
 - box selected: the automated attendant is called in D1
 - box not selected: the destination station's mail box is called in D1
- by MMC-Station: **VMUBeh -> Level 1:**
 - Level 1 = Auto-Sec: the automated attendant is called in D1
 - Level 1 = Message: the destination station's mail box is called in D1

▼ To choose between the called party mail box and the automated attendant as destination level 2 if the voice mail belongs to the Operator Group called in D2:

- by MMC-PM5 (Expert view): **VMU as Auto. Attendant (level 2):**
 - box selected: the automated attendant is called in D2
 - box not selected: the destination station's mail box is called in D2
- by MMC-Station: **VMUBeh -> Level 2:**
 - Level 2 = Auto-Sec: the automated attendant is called in D2
 - Level 2 = Message: the destination station's mail box is called in D2

ACTIVATION/USE

Dynamic forwarding general principle



The initial destination D0 can be:

- a station
- a Hunting Group
- the general level (see "Operator stations")

If D0 is a station or a Hunting Group:

- D1 can be a station, a Hunting Group, the voice mail unit (mail box or automated attendant) or a collective speed dial number
- D2 is the active Operator Group (see "Operator stations") with (only if the call is external) or without the general call ringer programmed in this group

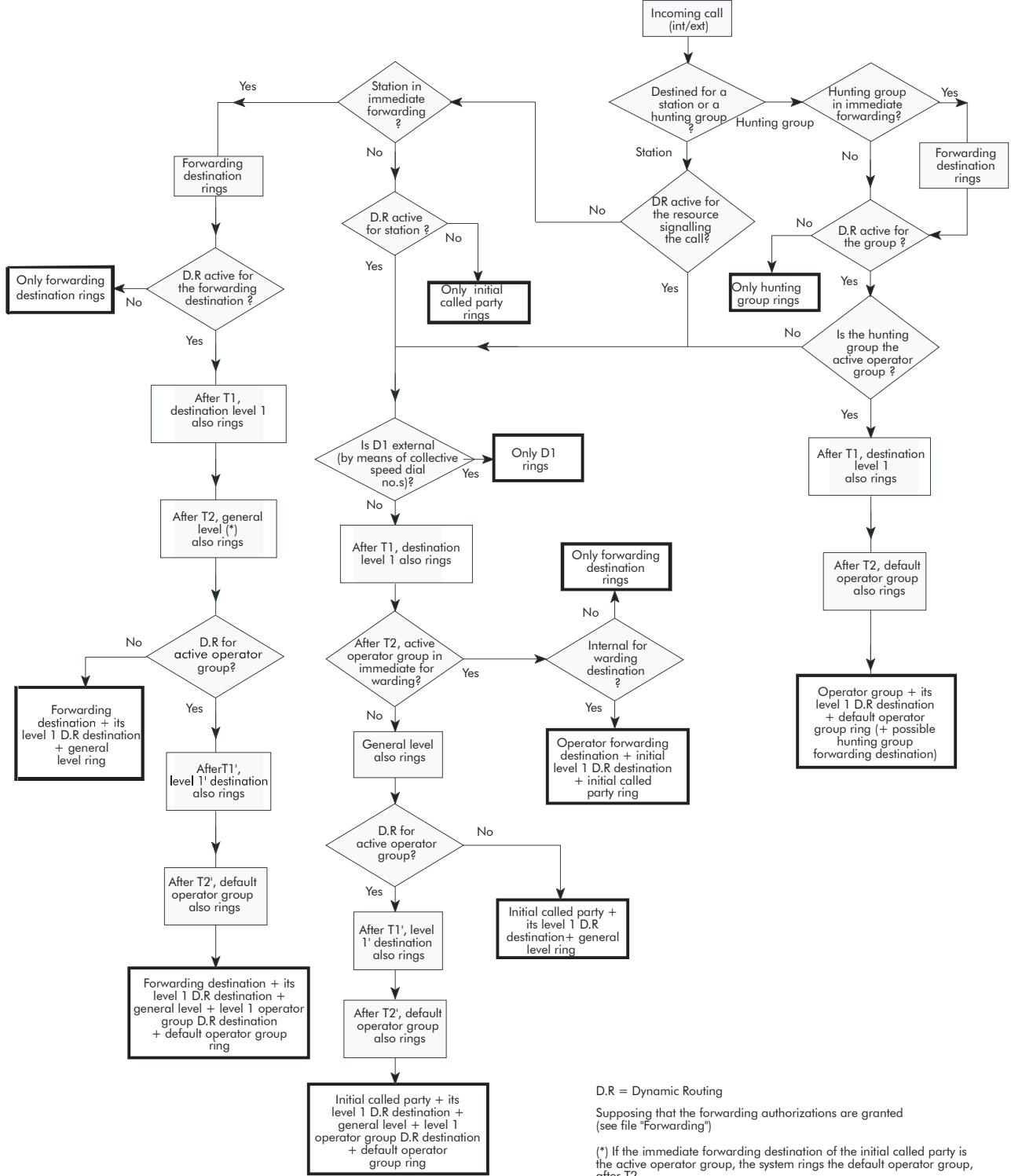
If D0 is the general level:

- D1 can be a station, a Hunting Group or a collective speed dial number
- D2 is the default Operator Group (see "Operator stations") with (only if the call is external) or without the general call ringer programmed in this Hunting Group

CALL SERVER : TELEPHONE FEATURES

CALL DISTRIBUTION (DYNAMIC ROUTING)

Dynamic routing and call forwarding (see "Forwarding")



D.R. = Dynamic Routing
Supposing that the forwarding authorizations are granted (see file "Forwarding")

(*) If the immediate forwarding destination of the initial called party is the active operator group, the system rings the default operator group, after T2

ADDITIONAL INFORMATION

- The sub-address and User to User Signaling (UUS) are not re-routed after a forwarding, a transfer or a call pick-up.
- When dynamic routing is active but D1 or D2 is not programmed, or T1 or T2 is not used, the system moves onto the next stage.
- The active and default Operator Groups may contain both integrated voice mail accesses (see corresponding file).
- Calls from the private network are handled with the INTERNAL call dynamic routing parameters.

NORMAL AND RESTRICTED SERVICE

File

11

NORMAL AND RESTRICTED SERVICE - SYSTEM LEVEL

Description

The service mode affects the way in which the system distributes incoming calls and controls users' outgoing calls.

A day can be divided into a maximum of 7 time ranges each varying in duration. The following are associated with each time range:

- a system operating mode: normal or restricted service
- an Operator Group (see "Operator stations" and "Specific operator services")

Switching from NORMAL MODE to RESTRICTED MODE and vice versa depends on the following parameters:

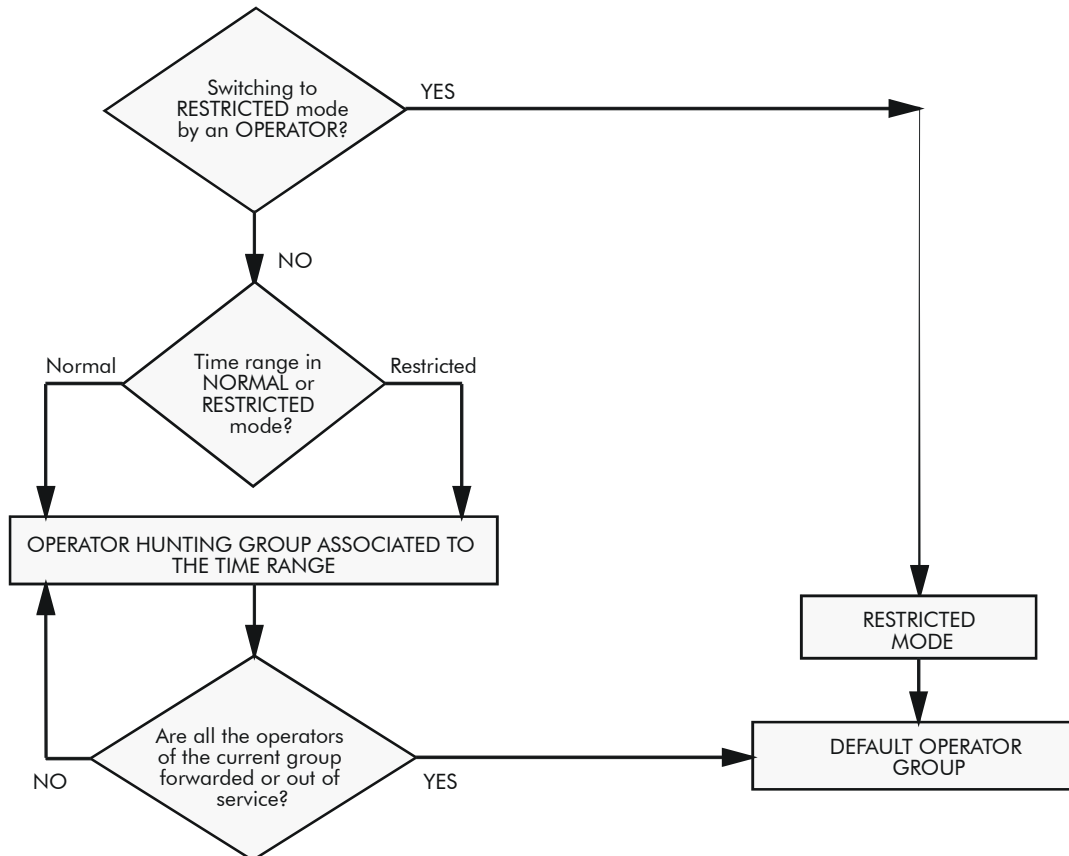
- the time (and therefore the time range)
- the Normal/Restricted mode function on the Operator Station

Configuration

- ▼ Modifying the time ranges (beginning of time range, normal or restricted mode associated, active Operator Group):

- by MMC-PM5 (Expert view): **Time Ranges**
- by MMC-Station: **TimeRa**

Activation/Use



Additional Information

When the switchover to restricted mode is carried out from an Operator Station, users who do not have "Inhibition Flag" feature rights are forced into "user" restricted mode.

FORWARDING OF ALL EXTERNAL INCOMING CALLS

The system is made up of two public numbering plans, one of which is used in normal service while the other is used in restricted service.

The restricted public numbering plan can be configured in such a way that certain DDI numbers are redirected to external destinations (using the group directory or the ARS mechanism) while others (Fax for example) reach their intended internal destinations.

Configuring the public numbering plan in restricted mode

The public numbering plan for restricted service mode can contain a maximum of 99 entries (0 by default).

- by MMC-PM5 (Expert View): **Numbering -> Restricted numbering plan**
- by MMC-Station: **NumPln -> ResNum**

The configuration (beginning and end of range, base, NMT) is identical to that of the public numbering plan for normal service mode (PubNum).

If the destination of the DDI number is the same in normal and in restricted service, the 2 numbering plans must have the same configurations.

For more details, see "Numbering Plans" in the MMC-Station section.

Activation/Deactivation

Forwarding can be activated/deactivated from any station with an **N/R Mode** key. After pressing this key, dial the operator code.

Notas :

It can also be activated by configuring the time ranges.

Example of use

Normal service public numbering plan

Begin	End	Base	Function
120	170	120	Station
200	230	200	Station
500	525	500	Hunting Group

Restricted service public numbering plan

Begin	End	Base	Function
120	170	120	Station
200	210	0	Collective Speed Dial
211	211	10	Collective Speed Dial
212	212	10	Collective Speed Dial
213	230	200	Station
500	524	500	Hunting Group
525	525	10	Collective Speed Dial

Internal numbering plan

Begin	End	Base	Function
8000	8010	0	Collective Speed Dial

Collective Speed Dial

Speed dial number	Level	Called number
8000	8	59242
8001	8	59243
.....
8009	8	59251
8010	8	59252

In this example, the public numbering plan for restricted service uses the collective speed dial table.

The numbers 120 to 170 and 213 to 230 keep their normal destinations when the system is in restricted service mode, as do calls to the range 500 to 524.

The external incoming calls to stations 200 to 209 are forwarded to the destinations defined by the first 10 entries in the collective speed dial table (8000 to 8009). Calls to numbers 210, 211, 212 and calls to group 525 are forwarded to the destination defined by the entry 8010 in the collective speed dial table.

NORMAL AND RESTRICTED SERVICE – USER LEVEL

Description

Depending on the time range, the system operates in either normal or restricted mode. The service mode affects the way in which the system distributes incoming calls and controls users' outgoing calls.

The installer can also configure the operation in "user" restricted mode for each station and in each time range.

Configuration

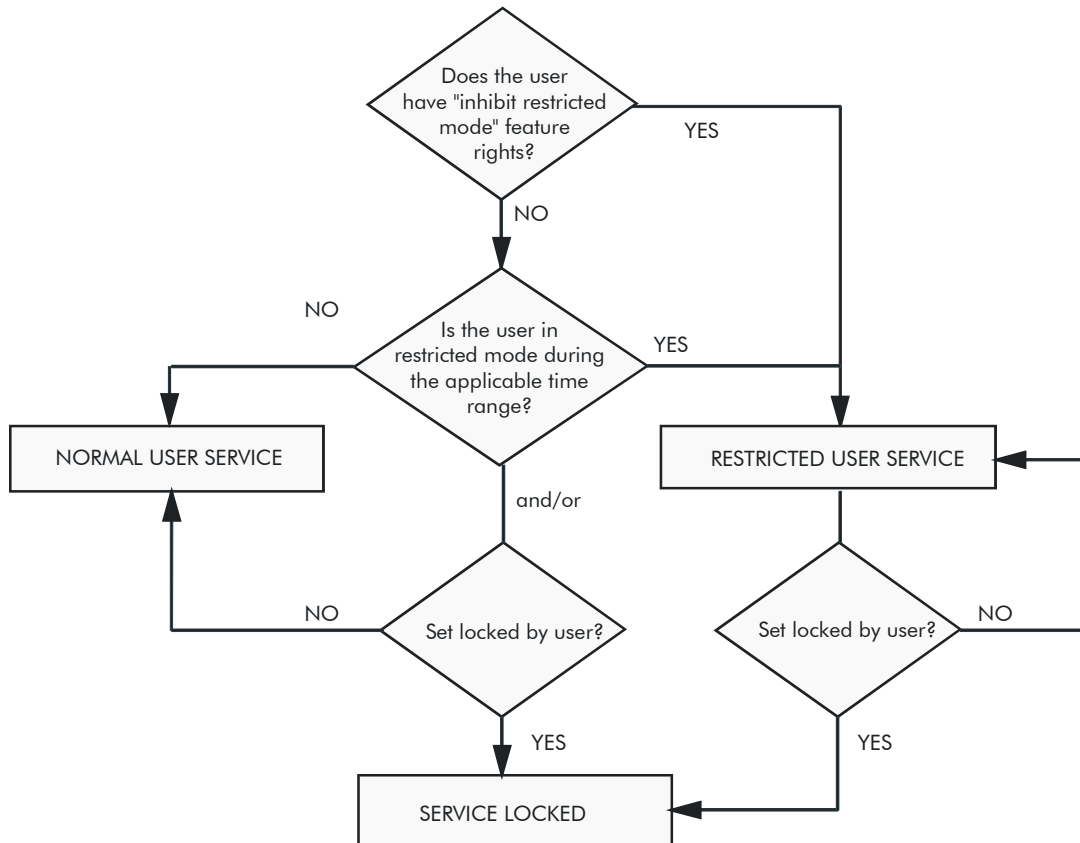
▼ Define the time ranges during which a station operates in restricted service:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Barring -> "Time Ranges (outgoing traffic)"**
- by MMC-Station: **Subscr -> NorRes -> NorRes**

▼ To specify whether or not to inhibit the switch to restricted service when the system is switched to restricted service by an operator; see "Specific operator station services", in the "Telephone services" section:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Inhibition Flag"**
- by MMC-Station: **Subscr -> NorRes -> Inhibi -> Choice**

Activation/Use



Additional Information

A station in **restricted** service and **unlocked** (see "Station comfort features", "Telephone services" section) switches to user normal service when the code for **unlocking** the station is entered: this station can no longer be switched manually to restricted service but it can be locked.

AUTOMATIC WELCOME (PRE-ANNOUNCEMENT)

File

12

DESCRIPTION

This feature makes it possible to send a spoken message to a network caller before connecting him to the called party. The called party can be:

- a station
- a Hunting Group (see "Hunting Groups")
- an Operator Group (see "Operator stations")

The message can be sent to the caller either:

- before the destination station rings: this is mode 1
- while the destination station is ringing: this is mode 2

and, either:

- only if the called party is busy
- no matter what status the called party is in: free or busy

The system allows you to play up to 8 pre-recorded messages. These messages can be:

- welcome messages
- dissuasion messages
- voice prompts (for DISA transit for example)

The pre-announcement can be defined for:

- 15 DDI numbers (individual pre-announcement)
- all the system's users (general pre-announcement)

The installer can allocate a maximum of one message for each of the 7 time ranges.

CONFIGURATION

▼ Selecting the source for the please wait music:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Messages and Music -> Music on Hold**
- by MMC-Station: **Voice -> MusSrc -> Stndrd, VoicPr or Tape**

▼ Recording RAM welcome and dissuasion messages – MMC-Station only:

Voice -> RecMsg -> Msg1 to Msg8 -> Record

AUTOMATIC WELCOME (PRE-ANNOUNCEMENT)

CALL SERVER : TELEPHONE FEATURES

- ▼ Listening to recorded RAM welcome and dissuasion messages – MMC-Station only:

Voice -> RecMsg -> Msg1 to Msg8 or Music -> Listen

- ▼ Defining DDI numbers, for individual pre-announcement:

- by MMC-PM5 (Expert View): **Numbering -> Numbering Plans -> Public Numbering Plan**
- by MMC-Station: **NumPln -> PubNum**

- ▼ Assigning welcome messages:

- by MMC-PM5 (Expert View): **Misc. Subscribers -> Pre-announcement**
- by MMC-Station: **PreAnn -> Add -> Msg**

- ▼ Defining the pre-announcement mode (none, mode 1 or mode 2) depending on the time range:

- by MMC-PM5 (Expert View): **Misc. Subscribers -> Pre-announcement**
- by MMC-Station: **PreAnn -> Add -> Mode**

- ▼ To define whether the message is sent only if the called party is busy, or regardless of status, depending on the time range – MMC-PM5 (Expert View) only:

Subscribers Misc. -> Preannouncement

- ▼ To modify the pre-announcement time-outs:

- by MMC-PM5 (Expert View): **Subscribers -> Pre-announcement -> Timers**
- by MMC-Station: **Global -> Rd/Wr -> Timers -> "AnsMsgTim" -> Return -> Memory**

- ▼ To select transmission of ringing tone or "please wait" music (for a free station):

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "TonPrRng"**
- by MMC-Station: **Global -> Rd/Wr -> Address -> "TonPrRng" -> Return -> Memory**

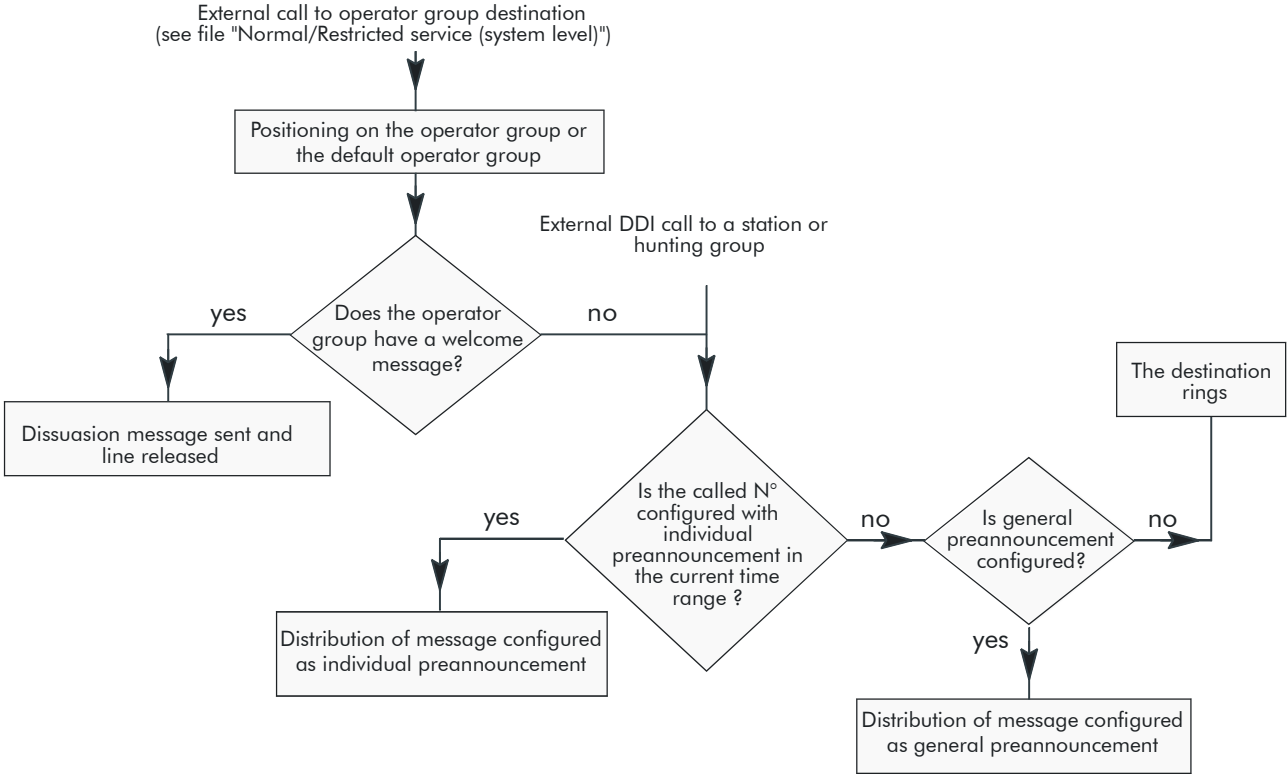
- ▼ To select transmission of ringing tone or "please wait" music for a busy station:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "TonPrCmp"**
- by MMC-Station: **Global -> Rd/Wr -> Address -> "TonPrCmp" -> Return -> Memory**

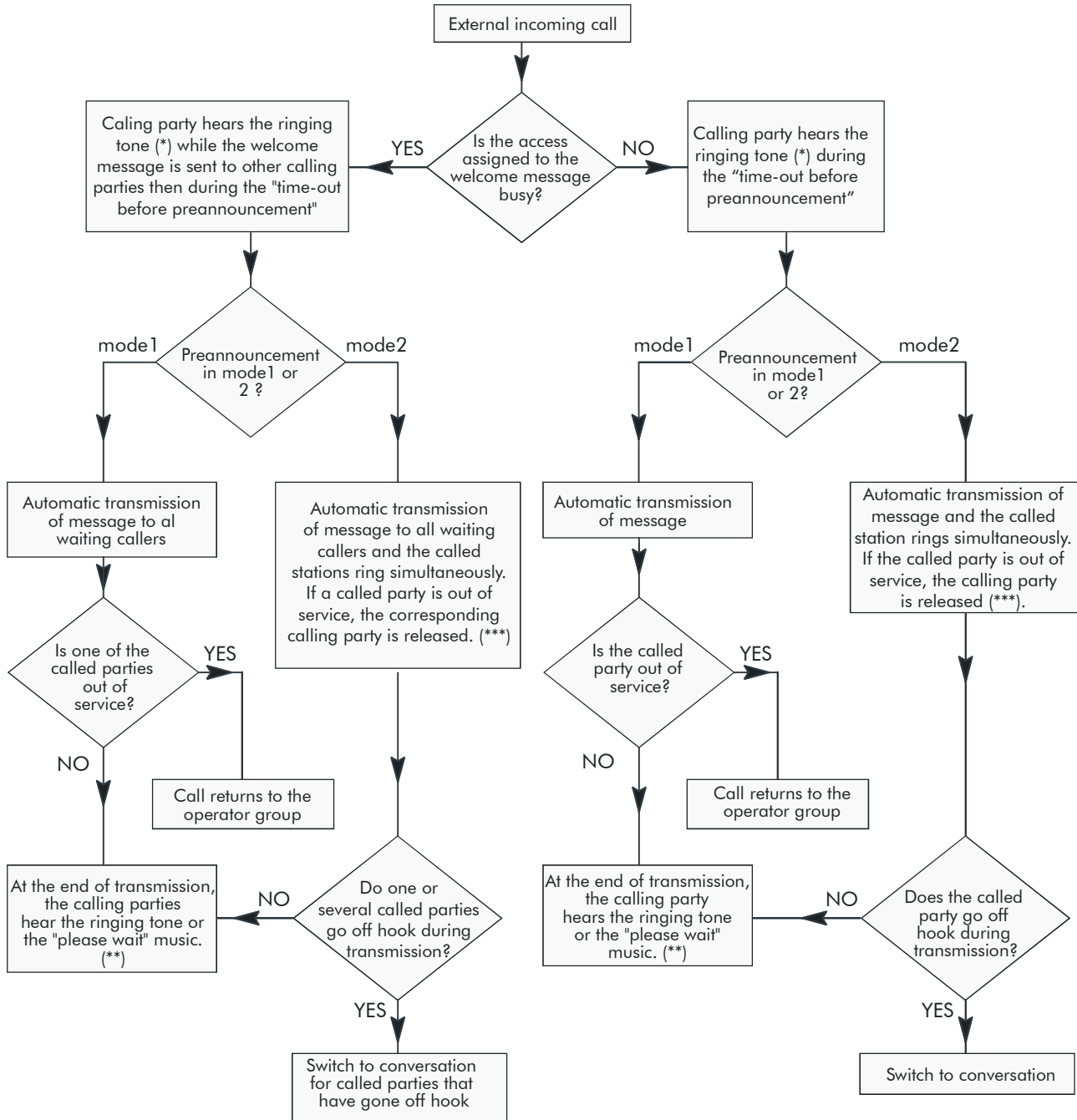
- ▼ To select transmission of ringing tone or "please wait" music for a Hunting Group (free or busy):

- by MMC-PM5 **System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "TonPrGrp"**
- by MMC-Station: **Global -> Rd/Wr -> Address -> "TonPrGrp" -> Return -> Memory**

ACTIVATION/USE



Tree diagram operational after the system has determined the type of pre-announcement:



(*) sent by the public exchange

(**) The ringing tone or the "please wait" music is heard:

- by a caller on an analog TL up until the "Release after pre-announcement (norm or restr mode)" time-out has lapsed
- by a caller on digital access up until the called party goes off hook.

(***) ISDN calls only

ADDITIONAL INFORMATION

- Duration of default "please wait" music: 16 s
- Maximum duration of the customizable "please wait" music: 2 min by default and up to 10 min with a hard disk
- Maximum duration of a welcome or dissuasion message: 16 s
- Maximum number of pre-announcement messages: 8
- The automatic welcome is not activated when the called party has activated text answering or paging
- An empty Hunting Group can no longer use the Automatic Welcome service.
- The automatic welcome only concerns voice type calls.
- The automatic welcome does not concern calls from the private network
- In mode 1, an external call released by the caller before being presented to the initial destination, is not recorded in the repertory of unanswered calls.
- An external call on an analog line, received with transmission of the welcome message and remaining unanswered, is released by the system after a time-out.
- Metering units arriving during the transmission of the welcome message are assigned to the called party.
- Under no circumstances will the external call receive two welcome messages.
- An error message appears on the station display when the automatic welcome cannot transmit the message to the incoming call.



**AUTOMATIC WELCOME (PRE-
ANNOUNCEMENT)**

CALL SERVER : TELEPHONE FEATURES

DIRECT DIALING INWARDS

File

13

DDI numbers can:

- contain up to 8 digits.
- use the numbering recovery mechanism described below.

NUMBERING RECOVERY

Description

When, in an existing installation, a new range of DDI numbers needs to be added, and the new sequence allocated by the public exchange overlaps the existing range, the installer can make use of the "DDI with more than 4 digits" mechanism.

Exemple :

Consider an existing system with the DDI numbers (XX = any possible "intercity prefix", "intercity code" and "recall prefix" – these can vary from country to country):

- XX 1 41 23 40 10 to XX 1 41 23 40 19 assigned to stations 120 to 129
- XX 1 41 23 41 00 to XX 1 41 23 41 19 assigned to stations 130 to 149

The exchange allocates the new range XX 1 41 33 40 15 to XX 1 41 33 40 24: these numbers are assigned to stations 150 to 159.

As described below, the numbering plan does not allow:

- use of the whole DDI range available; in actual fact, in order to route a DDI number to a called station, the system only analyzes the last 4 digits of the number received from the network and the DDI sequences XX 1 41 23 40 10 and XX 1 41 33 40 15 have in common, the range of the last 4 digits 40 15 to 40 19.
- transmission of the exact number of the caller (see "ISDN services") since the system would require two installation numbers (XX 1 41 23 and XX 1 41 33) in order to operate correctly, which is impossible.

Configuration

▼ Configuring the installation number:

- by MMC-PM5 (Expert View): **Numbering -> Installation Numbers**
- by MMC-Station: **Global -> InsNum -> Public**

▼ Filling in the substitution table:

- by MMC-PM5 (Expert View): **Numbering -> DDI Number Modification Table**
- by MMC-Station: **Num Pln -> PubNMT**

▼ Completing the DDI numbering plan:

- by MMC-PM5 (Expert View): **Numbering -> Public Numbering Plan**
- by MMC-Station: **NumPln -> PubNum**

Activation/Use

Functional analysis

A "DDI with more than 4 digits" mechanism is based on the analysis of all the received digits. They are modified using a substitution table and analyzed by the Public numbering plan. Programming such a mechanism requires you to have a global view of your DDI sequences.

Procedure to follow

- check the DDI sequences
- deduce the installation number by removing the "intercity prefix", "intercity code" if found
- deduce the minimum number of digits required to cover the DDI ranges
- analyze the remaining digits and create the DDI modification table
- configure the DDI numbering plan
- activate the mechanism

Application using the above example

- DDI sequences:
 - 1st sequence: 1 41 23 40 10 to 1 41 23 40 19 for stations 120 to 129
 - 2nd sequence: 1 41 23 41 00 to 1 41 23 41 19 for stations 130 to 149
 - 3rd sequence: 1 41 33 40 15 to 1 41 33 40 24 for stations 150 to 159
- Deduction of the installation number:
 Digits 1 41 are common to the 3 sequences of DDI numbers: these 3 digits will make up the installation number. THE "INSTALLATION NUMBER" FIELD CAN BE LEFT EMPTY IF THERE IS NO COMMON DIGIT.
- Deduction of the minimum number of digits to cover the DDI ranges:
 1 or 2 digits, at least, are necessary in order to join a series of stations.
 - 1st sequence: 1 41 23 40 1 **0** to 1 41 23 40 1 **9**: 10 stations with 1 digit (0 to 9)
 - 2nd sequence: 1 41 23 41 **00** to 1 41 23 41 **19**: 20 stations with 2 digits (00 to 19)
 - 3rd sequence: 1 41 33 40 **15** to 1 41 33 40 **24**: 10 stations with 2 digits (15 to 24)
- analysis of the remaining digits (by removing the installation number and the digits necessary to

CALL SERVER : TELEPHONE FEATURES

DIRECT DIALING INWARDS

cover the DDI ranges) and creation of the DDI modification table:

- 1st sequence: 1 41 **23 40 10** to 1 41 **23 40 19**
- 2nd sequence: 1 41 **23 41 00** to 1 41 **23 41 19**
- 3rd sequence: 1 41 **33 40 15** to 1 41 **33 40 24**

The remaining digits are to be replaced by the substitution digits ,which, themselves, will be analyzed in the DDI numbering plan. To do this, apply the following rule:

Minimum number of digits to cover the DDI range + Length of the substitution number = 4 (i.e. the maximum number of digits as defined in the DDI numbering plan).

For example, one can:

- for the 1st sequence: substitute "23 40 1" by "810" (in fact, "810" + 1 digit from 0 to 9 = 4 digits)
- for the 2nd sequence: substitute "23 41" by "82" (in fact, "82" + 2 digits from 00 to 19 = 4 digits)
- for the 3rd sequence: substitute "33 40" by "83" (in fact, "83" + 2 digits from 15 to 24 = 4 digits)
- Creation of the DDI numbering plan (from the DDI numbers modification table):

Function	Begin	End	Base
Station	--	9	120
Station	--	--	130
Station	--	--	150

Result of the above example

The DDI number received from the network (here, XX 1 41 33 40 20) is analyzed by the system as follows:

- removal of any intercity prefix, etc... as well as the installation number: leaves the number 33 40 20.
- analysis of this number in the substitution table (the mechanism being authorized, this analysis is carried out automatically for all DDI numbers received): the system deducts the number 8320
- analysis of the DDI number thus obtained in the DDI numbering plan: the system makes station 155 ring.

Additional Information

- Maximum number of entries in the modification table of DDI numbers: 18
- Maximum number of digits for an entry in the modification table of DDI numbers: 16.
- Maximum number of digits in a substitution number: 4.

CLASS COMPATIBILITY

File

14

DEFINITION

This feature allows information (from the public ISDN network or internal system network) to be presented on analog CLASS terminals connected to Alcatel OmniPCX Office.

In idle, when ringing or during a call, analog CLASS terminals have access to:

- date and time of the system
- CLIP (calling line identification)
- calling line identification restriction management
- caller's name (if available in the system directory)
- management of the Message LED

HARDWARE REQUIREMENTS

- CLASS terminals connected to SLI boards

CONFIGURATION

▼ Specifying the analog station as a CLASS terminal:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Classiq. (class)**
- by MMC-Station: **Subscr -> Termnl -> Class**

▼ Activating the name display:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> Name Display**



CLASS COMPATIBILITY

CALL SERVER : TELEPHONE FEATURES

ISDN SERVICES

File

15

DESCRIPTION

The default dialing mode on ISDN lines is digit by digit. At the press of a key, users can employ block dialing to access a range of services:

- addition of a **sub-address** to the number dialed
- activation of **calling line identification restriction**, i.e. the caller's identity is not transmitted to the called party
- for a station with soft keys only, transmission of **user-to-user signaling (UUS)**, i.e. a text message on a station with a display.

The "**Calling Line Identification Restriction**" function can also be activated in digit-by-digit dialing mode for all stations (see "Making/Answering a call").

When a call is received, the "**malicious call identification**" **service is available** service can be used. This service, available by subscription to the network, involves the network operator recording certain call details during the communication, (numbers of both parties; date and time of call; sub-address of caller if applicable).

The **keypad dialing features** offer access (in transparent fashion) to the services provided by the public network operator (the functional services of the particular operator).

CONFIGURATION

- ▼ For each station, to specify whether or not to permanently activate "calling line identification restriction":

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Identity Secrecy"**

ISDN SERVICES

CALL SERVER : TELEPHONE FEATURES

▼ For each station, to specify whether or not to authorize reception of User to User Signaling:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "UUS Allowed"**

▼ To modify the maximum time-out, after going on hook, for requesting recording of the caller's identity – MMC-PM5 (Expert View) only:

External Lines -> Protocols -> ISDN Trunk -> Layer 3 -> "T305 Disconnect Supervision"

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

F.K.: Fixed Key

S.K.: Soft Key

Type of station Service	Z	Without display	With display, no soft keys	With soft keys
Activate calling line identification restriction before dialing, in sequential or block dialing modes	--	P.K.: CLIR	P.K.: CLIR	P.K.: CLIR
Switch to block dialing mode	--	--	F.K.: ISDN or P.K.: BMdial	F.K.: ISDN
Delete digit preceding the cursor in block mode dialing (number and sub-address)			F.K.: Mute	S.K.: Rubout
Add a sub-address in block dialing mode	--	--	P.K.: SubAdd	S.K.: SubAdd
To validate the sub-address, in block dialing mode	--	--	P.K.: SubAdd	S.K.: OK
Add UUS, in block dialing mode	--	--	--	S.K.: Text + n° of message (from 0 to 27) (*)
Activation of calling line identification restriction, in block dialing mode	--	--	--	S.K.: Secret
To set up the call in block dialing mode (with or without sub-address, with or without UUS).	--	--	F.K.: ISDN or P.K.: BMdial	S.K.: Send
Activate malicious call identification		Function code		S.K.: MCID

(*) Messages 1 to 27 are pre-defined in the system. Some of them have a variable part which must be completed (return time, room number, etc.). Message n° "0" can be made up completely from the alphabetic keypad (up to 32 characters).

ADDITIONAL INFORMATION

- When the user has activated the block dialing mode, he cannot select a specific access via an RSP (see "Resource Keys").
- In block dialing mode, if the dialing transmitted is incomplete, the line used is released as no digit can be added to the dialing.
- Only a station with soft keys can receive UUS: it can be consulted during the conversation by pressing the "Msg" soft key.
- Malicious call identification is not available to stations behind a private network
- Malicious call identification cannot be requested after a call transfer or suspension.
- The user is informed by the network of the reason for the rejection of a malicious call identification request.

KEYPAD DIALING FEATURES

In certain countries, the public ISDN operator provides services that can be activated using the ETSI ETS 300 122 protocol (in addition to these generic services, each public operator defines how these services are handled in their national specifications).

To access these services, the system establishes transparent communications between the public exchange and the internal users, who can then key in codes and receive a response from the public exchange.

This service is available with all station types on an Alcatel OmniPCX system directly connected to the public exchange (not through a private network).

To activate the service:

- with the station in idle, dial the ISDN trunk group seizure code
- press * or #
- dial the service code (22 digits maximum) or press a key programmed with this code. The response from the public exchange is displayed for 5 seconds.

configuration

- To activate the service at system level:

- | |
|---|
| <ul style="list-style-type: none">- by MMC-PM5 (Expert View):- by MMC-Station: Global -> KeyPad |
|---|

VN7 COMPATIBILITY



This section lists the compatibilities between Alcatel OmniPCX Office and version VN7 of the French ISDN network (RNIS).

BASIC CALLS

Basic calls (incoming and outgoing) are supported on the S0 and T0/T2 accesses.

COMPLEMENTARY SERVICES

The compatibility of complementary services varies according to whether the service is required on the user side (S0) or on the network side (T0/T2)

Service	S0 side compatibility	T0/T2 side compatibility
AOC-E Advice Of Charge at the End of the call	YES	NO
AOC-D Advice Of Charge During the call	YES	YES
CLIP Calling Line Identification Presentation	YES	YES
DDI Direct Dialing In	YES	Not applicable
MSN Multiple Subscriber Number	YES (in Point to Multipoint)	YES
TP Terminal Portability	Not applicable	YES (locally, on the same access)
SUB Sub-Address	YES (limited to 4 digits)	YES (limited to 4 digits)
CW Call Waiting	NO	NO
HOLD	NO	YES

VN7 COMPATIBILITY
CALL SERVER : TELEPHONE FEATURES

MCID Malicious Call Identification	YES (Reflexes and S0 terminals)	YES
UUS1 User to User Signaling	YES (limited to 32 characters)	YES (limited to 32 characters)
CFB Call Forwarding on Busy	NO	NO
CFU Call Forwarding Unconditional	YES (in Point to Point)	YES
CFNR Call Forwarding on No Reply	NO	NO
CD Call Deflection	YES (in Point to Multipoint)	NO
CCBS Call Completion on Busy Subscriber	YES (in Point to Point)	NO
3PTY 3 Party conference	NO	NO
ECT Explicit Call Transfer	NO	NO
CNIP Caller Name Identification Presentation	NO	NO

CCBS – COMPLETION OF CALLS TO BUSY SUBSCRIBER



DESCRIPTION

CCBS - Completion of Calls to Busy Subscriber - is a complement of the ETSI service provided by the system on T0/T2 public exchange connections.

This function can be considered like an extension of the "Automatic call back on busy set" service. CCBS requires a service subscription with the operator offering this function and can be activated equally well for an incoming call as for an outgoing call.

CONFIGURATION

▼ CCBS on outgoing call: authorize the set to use the service or not:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Callback"**

▼ CCBS on incoming call: check the following settings:

- by MMC-PM5 (Expert View): **External Lines -> Incoming Call Handling -> Public Line -> On Busy = Release System Misc. -> Feature Design -> Call Waiting/Automatic Camp-On (not selected)**
- by MMC-Station: **IncCal -> Public -> Busy -> ReacPu -> Release Global -> CalExt -> Mode (Ext Call Waiting YES / No)**

▼ Modify (or not) the timeout during which the CCBS is active in the system (30 minutes by default); at the end of the timeout, the CCBS is cancelled:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Timer Labels -> "BookBusTim"**
- by MMC-Station: **Global -> Rd/Wr -> Timer -> "BookBusTim" -> Return -> Memory**

CCBS – COMPLETION OF CALLS TO BUSY SUBSCRIBER

CALL SERVER : TELEPHONE FEATURES

▼ Modify (or not) the timeout during which the party requesting a CCBS on an outgoing call is rung (25 seconds by default); at the end of the timeout the CCBS is cancelled:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Timer Labels -> "BookRecTim"**
- by MMC-Station: **Global -> Rd/Wr -> Timer -> "BookRecTim" -> Return -> Memory**

CCBS ACTIVATION/CANCELLATION ON OUTGOING CALLS

When a call is made to a public network user B whose line is busy, CCBS enables a user A with an Alcatel OmniPCX Office system to leave a call back request at the public exchange. When the public exchange informs the Alcatel OmniPCX Office system that B is free, Alcatel OmniPCX Office calls back A, and when A answers, it makes an automatic call back to B.

Type of station Type of service	All stations (including Z)	Without display (≠ Z)	With display, no soft keys	With soft keys
CCBS request	Automatic call back request code	P.K.: Automatic call-back request	P.K.: OCback	S.K.: OCback
CCBS cancellation	Cancellation prefix	P.K.: Cancel callback	P.K.: ICback	S.K.: ICback , before or during callback

Attention :

Only one automatic call back request can be activated on a set: automatic call back to busy set, automatic call back to busy trunk or CCBS. Any new CCBS request cancels the previous one.

CCBS ACTIVATION/CANCELLATION ON INCOMING CALLS

When a public network user (A) calls a busy Alcatel OmniPCX Office system set (B), A can activate the CCBS service provided by the public exchange. When the Alcatel OmniPCX Office system informs the public exchange that B is free, the public exchange calls back A, and when A answers it makes an automatic call back to B.

ADDITIONAL INFORMATION

- CCBS cannot be activated on incoming calls to a group, or to a set with call forwarding activated
- CCBS is deactivated automatically in the following cases:
 - CCBS on outgoing call:
 - expiry of the timeout during BookRecTim; 25 seconds by default
 - expiry of the BookBusTim timeout; 30 minutes by default
 - expiry of the public exchange timeout T-CCBS6 (timeout during which the public exchange user must free the line; 60 minutes)
 - CCBS on incoming call:
 - expiry of the BookBusTim timeout; 30 minutes by default
 - expiry of the public exchange timeout T-CCBS5 (timeout during which the public exchange user must free the line; 60 minutes)
- There is no second call back attempt if the line is busy when the CCBS call back is made. The CCBS request is cancelled; another request can be made.
- A CCBS can be cancelled during the CCBS initiator call-back phase.
- CCBS is only available on the ISDN accesses of an Alcatel OmniPCX Office system; the service is not available on a "slave" system accessing the network by break-out.
- CCBS is not supported by the T0 basic accesses configured in Point-to-Multipoint mode.
- A CCBS call-back cannot be intercepted.



**CCBS – COMPLETION OF CALLS TO
BUSY SUBSCRIBER**

CALL SERVER : TELEPHONE FEATURES

SPECIFIC FEATURES OF SO STATIONS

File

18

DESCRIPTION

The PABX provides the following services for S0 stations:

- suspension, which consists in suspending an internal or external communication in progress on a basic access and picking it up later from the same S0 station relocated on the basic access or another S0 station connected to the same basic access. The communication can be identified by a code before being suspended. This code is used to locate the call.
- call waiting, which enables an S0 station to be informed that an external call is intended for it even if no B channel is available on its basic access. The S0 station can ignore, reject or accept the call.
- malicious call identification subscription so that the network operator can be asked to record the caller's identity during the communication or for a programmable time after going on hook.
- forwarding of calls on no answer, enables the internal and/or external calls to be routed to the programmed destination.

CONFIGURATION

- ▼ To modify the default maximum suspension time-out – MMC-PM5 (Expert View) only:

System Miscellaneous -> Feature Design -> Part 3 -> "Suspension"

- ▼ To authorize or inhibit camp-on on S0 stations – MMC-PM5 (Expert View) only:

System Miscellaneous -> Feature Design -> "Call Waiting/Automatic camp-on"

- ▼ To modify the maximum time-out, after going on hook, for requesting recording of the caller's identity – MMC-PM5 (Expert View) only:

External Lines -> Protocols -> ISDN Trunk -> Layer 3 -> "T305 Disconnect Supervision"

ACTIVATION/USE

Activation of the various services depends on the S0 station ; refer to the station user guide.

cancellation

Cancellation of the various services depends on the S0 station; refer to the station user guide.

ADDITIONAL INFORMATION

- A communication which is suspended and not retrieved after expiry of the suspension time-out is released if internal and re-routed to the general level (see "Operator Stations") if external.
- A user cannot suspend a call if he or she already has a correspondent on hold.
- The user who suspended a call is charged for the entire communication, before suspension and after retrieval.
- The number of calls suspended simultaneously is limited and depends on the size of the cabinet.
- Call waiting on an S0 station is limited by a non-modifiable time-out.
- The number of calls waiting on the same access is limited to 2.
- Malicious call identification cannot be requested after a call transfer or suspension.
- The user is informed by the network of the reason for the rejection of a malicious call identification request.
- Apart from the caller's identity, the network records the time of identification request activation and the number dialed by the caller.
- Multiple directory numbers: when an S0 option (Reflexes stations) is initialized, the system assigns 1, 2 or 3 directory numbers, depending on the country. With PM5, you can:
 - add users for the S0 option (individually or in groups), up to the system capacity. There is no automatic renumbering after adding users, so the installer should be careful to preserve the coherence of the numbering plan;
 - delete individual users (NB: the first user of an option cannot be deleted separately; deleting the first user erases all the other users of the same option).

CALL SERVER : TELEPHONE FEATURES





SPECIFIC NUMBERING PLANS

CALL SERVER : TELEPHONE FEATURES

SPECIFIC NUMBERING PLANS

8 DIGIT NUMBERING PLANS

Station and hunting group call numbers, as well as collective speed dial numbers, can have up to 8 digits.

STAR NUMBERING

To use a 2, 3 or 4-figure default numbering plan, you can choose between a country-specific numbering plan or a generic numbering plan in which most codes (service codes or Features in Conversation) start with *; this structure provides several ranges for allocating DDI numbers to sets.

The default star numbering plans are described in the following pages.

Configuration

▼ To select the default numbering plan:

- by MMC-PM5 (Expert View): **Numbering -> Default Numbering Plan**
- by MMC-Station: **NumPln -> Nbdigi**

Notas : The default numbering plan can also be selected using PM5 EasyView once the system is running.

Codes common to all countries
Internal numbering plan

Functions	2-digit	3-digit	4-digit
Cancel all forwardings	#21	#21	#21
Cancel "follow me" forwarding	#27	#27	#27
Immediate call forwarding	* 21	* 21	* 21
Forward on busy	* 22	* 22	* 22
Do Not Disturb	* 23	* 23	* 23
Forward to pager	* 24	* 24	* 24
Group call forwarding	* 25	* 25	* 25
Disconnect from group	* 26	* 26	* 26
Rejoin the group	# 26	# 26	# 26
Follow-me	* 27	* 27	* 27
Selective forwarding	* 28	* 28	* 28
Cancel callback	# 5	# 5	# 5
Voice Mail Unit (secret code)	**6	**6	**6
Voice Mail Unit (secret code)	*#6	*#6	*#6
Redial last number	**0	**0	**0
Room status	* 70	* 70	* 70
Lock/unlock	* 71	* 71	* 71
Appointment reminder (prog.)	* 72	* 72	* 72
Protect against intrusion	* 73	* 73	* 73
Replace set	* 78	* 78	* 78
Move set	* 79	* 79	* 79
Individual call pick-up	* 81	* 81	* 81
Pick up group	* 82	* 82	* 82
General Call Answer	* 83	* 83	* 83
Parked call retrieval	* 84	* 84	* 84
Programming mode	* 87	* 87	* 87
Text mail	* 88	* 88	* 88
Group broadcast	* 01 to *08	* 01 to *08	* 01 to *08
Subscriber calls	10 to 79	100 to 799	1000 to 7999

CALL SERVER : TELEPHONE FEATURES

SPECIFIC NUMBERING PLANS

Seize secondary trunk groups	* 50 to *53	* 500 to *534	* 500 to *534
Hunting Group calls	* 54 to *59	* 540 to *565	* 540 to *565
Collective speed dial	8000 to 8999	8000 to 8999	8000 to 8999

Feature code table

Consulting camped calls	* 9	* 9	* 9
Trunk line allocation	#11 to #17	#11 to #17	#11 to #17
Trunk allocation + MTR	#21 to #27	#21 to #27	#21 to #27
Call Parking	* 84	* 84	* 84
Malicious call identification	* 89	* 89	* 89
Cancel enquiry	* 1	* 1	* 1
Shuttle	* 2	* 2	* 2
Conference	* 3	* 3	* 3
Intrusion	* 4	* 4	* 4
Automatic callback request	* 5	* 5	* 5
DTMF end-to-end signaling	* 6	* 6	* 6
Main PABX recall (calibrated loopbreak)	* 7	* 7	* 7

Country specific
Operator call and main trunk group seizure

Different codes for operator calls and for seizing the main trunk group apply in each country. This results in different ranges of subscriber numbers.

Country	OS call	Seize trunk group	2/3/4-digit subscriber	Paging type
Austria	10	0	11/110/1100	prefix
Australia	9	0	10/100/1000	prefix
Belgium	11	0	12/120/1200	suffix
Switzerland	11	0	12/120/1200	prefix
Germany	10	0	11/110/1100	prefix
Denmark	9	0	10/100/1000	prefix
Spain	9	0	10/100/1000	suffix
Finland	9	0	10/100/1000	suffix
France	9	0	10/100/1000	suffix
Britain	0	9	10/100/1000	suffix
Greece	10	0	11/110/1100	prefix
Ireland	10	0	11/110/1100	prefix
Italy	9	0	10/100/1000	prefix
Netherlands	9	0	10/100/1000	prefix
Norway	9	0	10/100/1000	prefix
Portugal	9	0	10/100/1000	prefix
Sweden	9	0	10/100/1000	prefix
SMBI	10	0	11/110/1100	prefix

CALL SERVER : TELEPHONE FEATURES

SPECIFIC NUMBERING PLANS

Paging type

Paging can be by prefix or by suffix.

Paging by prefix: the internal numbering plan has to have 2 codes: one for the "Prefix Paging Activation" function and one for the "Paging Answer Selective" function.

Paging by suffix: a "paging answer general" code is added to the internal numbering plan and a "suffix paging activation" code is added to the features plan.

Paging by suffix: Internal numbering plan entries

Function	2-digit	3-digit	4-digit
Answer paging general	* 85	* 85	* 85

Paging by suffix: features plan entries

Function	2-digit	3-digit	4-digit
Suffix paging activation	* 86	* 86	* 86

Paging by prefix: internal numbering plan entries

Function	2-digit	3-digit	4-digit
Answer paging selective	* 85	* 85	* 85
Prefix paging activation	* 86	* 86	* 86



SPECIFIC NUMBERING PLANS

CALL SERVER : TELEPHONE FEATURES

ALTERNATIVE CLIP AND COLP NUMBERS

File
20

CLIP and COLP are services that depend upon the public network (France: COLP is not provided)

These functions are provided by Alcatel OmniPCX Office systems connected to a public ISDN network (T0/T2 access).

Definitions

CLIP (Calling Line Identification Presentation): identification number sent by the caller when making an outgoing ISDN call.

COLP (Connected Line Presentation): identification number returned by the called party to the caller.

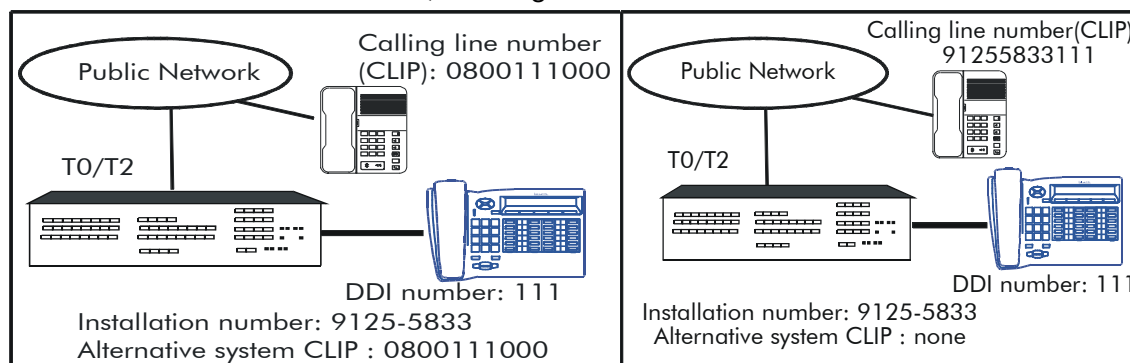
ALTERNATIVE SYSTEM CLIP

Description

This function is used to configure the calling number (CLIP) sent to correspondents on outgoing ISDN calls. For example, it enables a company with several sites always to send the same number to external called parties.

On an outgoing external call, the number transmitted is:

- the installation number completed by the DDI number of the caller (or the Operator Group number), if the "Alternative CLIP number" is not configured.
- the "Alternative CLIP number", if configured.



Without "Alternative CLIP number"

With "Alternative CLIP number"

Configuration

▼ Configure the Alternative system number (22 digits maximum according to ISDN protocol):

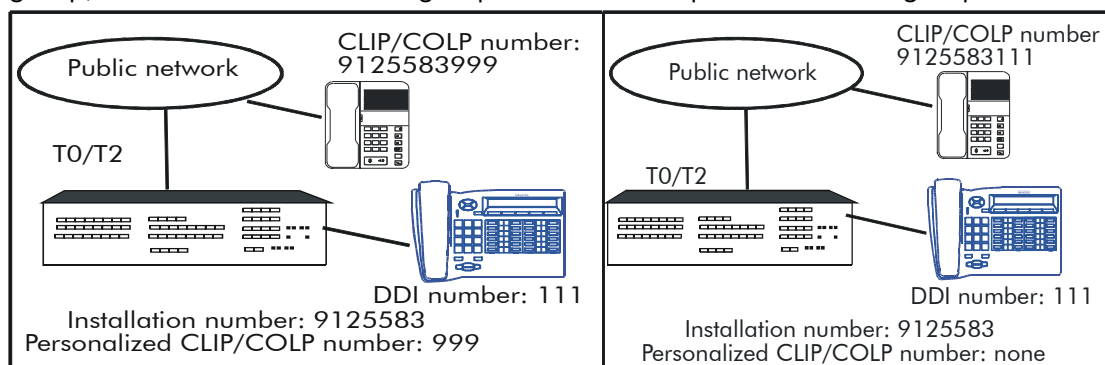
- by MMC-PM5 (Expert View): **Numbering -> Installation Numbers -> Alternative System CLIP**
- by MMC-Station: **Global -> InsNum -> AltCLI**

ALTERNATIVE CLIP/COLP NUMBERS

Description

This function enables CLIP/COLP numbers other than the users' DDI numbers (or Operator Group number if a DDI number has not be specified for this set) to be sent.

Thus with a group of sets it is possible to configure CLIP/COLP numbers with the DDI number of the group, and therefore to call the group rather than a specific set in the group.



Without personalized CLIP/COLP number

With personalized CLIP/COLP number

Configuration

▼ Configure the alternative CLIP/COLP number for each set (4 digits maximum) – MMC-PM5 (Expert View) only:

- Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Misc. -> Alternative CLIP/COLP number**

Additional Information

- Simultaneous alternative system CLIP and alternative CLIP/COLP numbers: in this case, the alternative system CLIP is used whether or not there is an alternative CLIP/COLP number already defined.

BUSY GREETING ON VOICE MAILBOX

File
21

DESCRIPTION

This feature makes it possible to immediately route an external incoming call to the called party's voice mailbox if the line is busy (Busy degree 1 or degree 2). The caller hears a specific welcome message and can, if he/she wishes, leave a message in the called party's voice mailbox.

Dynamic routing to the voice mailbox is immediate even when the dynamic routing timer is configured.

The service is activated if there is an incoming call to a busy set and:

- for all the sets if the "DynRoutBsy" flag = 1
- or if "DynRoutBsy" = 0, but only on the sets that have access to this function

CONFIGURATION

▼ To globally activate the service, or not:

- by MMC-PM5 (Expert View):
System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "DynRoutBsy"
- by MMC-Station:
Global -> Rd/Wr -> Address -> "DynRoutBsy" -> Return -> Memory

0: service inactive

1: service active; all incoming calls to a busy user are immediately forwarded to the called party's voice mailbox

▼ To activate the service or not, set by set – MMC-PM5 (Expert View) only:

- Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Dyn. Rout.**

▼ Configuring the VMU grouping as Level 1 called party in the case of dynamic routing

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Dyn. Rout.**
- by MMC-Station: **Subscr -> DynRou.**

ADDITIONAL INFORMATION

Summary table

	Service active (flag DynRoutBsy = 1)		Service inactive (flag DynRoutBsy = 0)
	Called party busy	Called party free	
Routing to voice mailbox	IMMEDIATE	NO	NO
Level 1 dynamic routing	Does not start	T1 timer	T1 timer
Level 2 dynamic routing	Does not start	T2 timer	T2 timer

Call forwarding

Routing to a voice mailbox is not performed if the user called has programmed the forward function on his/her set. The service becomes valid when the forward function is cancelled.

Forward on busy

If the user has programmed his/her voice mailbox as the destination of Call forwarding on busy, the internal or external caller will also hear the message.

Default value

After a cold reset, the "DynRoutBsy" flag is set to 0 (service inactive) by default and set-by-set activation is cancelled (active in France).

Attention :

The mechanism is also active if the destination of T1 dynamic routing is a set instead of the VMU. In this case, the destination of dynamic routing will be rung immediately if the set called is busy.

There is no indication of service activation on the sets.

MAKING/ANSWERING A CALL

File

22

DESCRIPTION

A call can be either:

- internal, or
- external.

MAKING A CALL

Only an internal call can have 3 types of destination:

- a station
- a station in a Hunting Group (operator or stations)
- all the stations in a Broadcast Group, in the case of a **broadcast call**

To make a call, the user can either choose to go off hook first (obligatory if the station does not have a loudspeaker) or not.

Then, depending on the user's station, an internal or external call can be made either by:

- manual dialing:
 - on the numeric keypad, or
 - on the alphabetic keypad (**Dial by name function**): this concerns the numbers programmed in the internal directory or collective speed dial list)
- pre-recorded dialing:
 - direct call key
 - repetition of last number (**Redial**) function ; the last number emitted by the station is automatically memorized with its corresponding sub-address
 - transmission of the number stored in the temporary memory; the last number transmitted from a station can be transferred from the "Redial" memory to a **"temporary memory"**
 - transmission of a **personal speed dial** number
 - call back a number in the **directory of unanswered calls**: this directory contains the unanswered external calls, with or without User to User Signaling (see "ISDN Services") and the internal calls with UUS (see "ISDN Services") automatically memorized by the system.
 - for external calls only, transmission of a **collective speed dial** number (including emergency numbers and collective speed dial numbers with speed dial rights = 0: see "Link Categories" file) created by MMC.
 - for external calls only, transmission of an **emergency number** - one of 5 factory preset numbers which cannot be modified by MMC. These numbers are different from those programmed as collective speed dial numbers.

When making a call, the user can:

- **protect the call** protect this call (in particular data communications) against the camp-on tone and third party intrusion (see "Camp-on on busy station or group" and "Intercom intrusion on free"). These measures can be programmed for each station and for all calls.
- opt not to disclose the caller's identity; this "**Calling line identification restriction**" can be activated permanently by programming it into each station for all calls, or it can be activated call by call, using a programmed key.

Auto. call setup on going off hook: this service enables an authorized user to call a correspondent pre-programmed by MMC, simply by going off-hook or pressing the Handsfree key, either immediately or after a time-out. The destination can be:

- an internal user (individual)
- a Hunting Group or Operator Group,
- an external user (by collective speed dial number)

Broadcast call: this service enables an "emitting" user belonging to a Broadcast Group to send a spoken message lasting no more than 20 seconds to the free stations in this group equipped with a loudspeaker. The destination stations are unable to answer this message.

RECEIVING A CALL

An incoming call is signaled by ringing of the station. The ringing rate varies according to whether the call is internal or external.

A **monoline** station (see "Resource keys") can only receive one call at a time. The user of this type of station can only answer this call by going off hook.

A **multiline** station (see "Resource keys") can take several calls at once. The answer mode can be:

- manual: the user can select the call he wishes to answer and even ignore all incoming calls if he wishes to make a call
- a hotline call: the system determines what type of call is at the station (see "Answering camped-on calls")
- auto-answer or **Intercom mode** (on a set with the Hands-Free feature and for internal calls only): the station "answers" the call with the highest priority after a specific ring tone, and goes into hands free mode (see also "Headset Features").

CONFIGURATION

▼ To specify whether or not to authorize the "Automatic call setup on going off hook" feature for each station:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Misc. -> Hotline**
- by MMC-Station: **Subscr -> AutoCa -> Active**

▼ If the "Automatic call setup on going off hook" feature is authorized, define whether the call is immediate or after a time-out and define the call destination for each station:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Misc. -> Hotline**
- by MMC-Station: **Subscr -> AutCa -> Temp**

▼ To modify the default time-out for the "delayed" automatic call setup on going off hook – MMC-PM5 (Expert View) only:

System Miscellaneous -> Feature Design -> Part 3 -> "Timer for delayed Automatic Call Setup" (hotline)"

▼ To create the personal speed dial numbers for each station:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Pers. SPD**
- by MMC-Station: **Subscr -> PerSpd**
- by customization: **PerSpd**

▼ To create the collective speed dial numbers:

- by MMC-PM5 (Expert View): **Collective Speed Dial**
- by MMC-Station: **ComSpd**

▼ To create the internal directory:

- by MMC-PM5 (Expert View): **Directory**
- by MMC-Station: **Global -> Name**

▼ For each station, all calls can be protected against intrusion and the camp-on tone:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Intrusion Protection" and "Warntone Protection"**

MAKING/ANSWERING A CALL

CALL SERVER : TELEPHONE FEATURES

▼ For each station, the caller's identity can be restricted for all communications:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Identity Secrecy"**

▼ To create the Broadcast Groups:

- by MMC-PM5 (Expert View): **Broadcast Groups**
- by MMC-Station: **Groups -> Broadc**

▼ Broadcast on external loudspeaker:

This feature is not controlled by a software key. To realise this feature, the system must be fitted with an AFU daughterboard on the CPU/CPUe board (the hardware can be check via PM5 menu -> Main CPU -> Details -> Daughterboards):

- In the **Broadcast Groups** menu, select one group and press **Details**.
- Press **Add** to add memembers into the group. If the system is equipped with a AFU daughterboard, we will find **Loudspeaker subscriber** in the list.
- Add **Loudspeaker subscriber** with attribute **Receive** or **Send/Receive** and all other subscribers allowed to make/receive the broadcast message.

▼ The ringing time-out before going to hands free mode when intercom is activated can be modified using MMC-PM5 Expert View (only):

System Miscellaneous -> Feature Design -> Part 3 -> "Time before connection without headset"

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

F.K.: Fixed Key

S.K.: Soft Key

Prefix: Code programmed in the internal numbering plan

ACTIVATING THE SERVICES

Type of station Type of service	Z	Without display (≠ Z) and without Hands-Free feature	Without display (≠ Z) but with Hands-Free feature	4011	With display, no soft keys, except 4011	With soft keys
Intercom mode	--	--	P.K.: AutAns	--	F.K.: Intercom , or P.K.: AutAns	F.K.: Auto-answer mode (intercom mode)
Communication protection	Prefix	F.K.: Data or P.K.: ProCom				
Identification restriction	--	P.K.: CLIR				F.K.: ISDN + S.K.: Secret
Transfer to temporary memory	--	P.K.: Temporary number	P.K.: TmpRep		S.K.: NbSave	

CALL SERVER : TELEPHONE FEATURES

MAKING/ANSWERING A CALL

ANSWERING A CALL

Type of station Type of service	Z	Without display (≠ Z) and without Hands-Free feature	Without display (≠ Z) but with Hands-Free feature	4011	With display, no soft keys, except 4011	With soft keys
In manual mode	--	Press the resource key				
In automatic mode	Go off hook	Go off hook	Off hook or press F.K.: Handsfree	Go off hook	Off hook or press F.K.: Hands-free	
In intercom mode	--		Automatic connection	--	Automatic connection	

MAKING A CALL

Type of station Type of service	Z	Without display (≠ Z)	DECT	With display, no soft keys	With soft keys
Auto. call setup on going off hook	Go off hook	Go off hook or press F.K.: Handsfree	Go off hook	Go off hook or press F.K.: Handsfree	
Dial by name	--	--	F.K.: Dial by name , then enter name, then F.K.: OK	P.K.: Dirtry , then enter name, then F.K.: LS or Mute to confirm	Enter the name, then "Return"
Redial	Prefix	F.K. or P.K.: Redial	F.K.: Redial		S.K.: Redial
Temporary memory	--	P.K.: Personal speed dial + P.K.: Temporary number	F.K.: Personal speed dial + P.K.: TmpRep		S.K.: NbSend
Personal speed dial numbers	--	P.K.: Personal speed dial + index 0 to 9	F.K.: Personal speed dial + index 0 to 9		F.K.: Personal speed dial + S.K. associated with number
Non answered calls repertory	--		F.K.: Mail + 2 + F.K.: OK	F.K.: Mail or P.K.: TxtMsg + 2 + F.K.: LS	F.K.: Mail + S.K.: Text + S.K.: Read + S.K.: Call
Collective speed dial numbers (including emergency numbers)	Prefix				
Emergency numbers not belonging to the common speed dial numbers	Dial the emergency number				
Broadcast call	Broadcast Group number	P.K.: Direct call			

ADDITIONAL INFORMATION

- To use the directory of unanswered calls in a parallel group of stations (see "Hunting Groups"), the first station in the group, on creation by MMC, must be a station with a display.
- In "Answering a call: manual connection" mode, an automatic callback or a hold reminder have priority: the user cannot answer another call.
- During group broadcasting, all the stations involved are considered to be busy.
- To stop broadcasting to his own station, a user can go off hook or press the "Release" key.
- A forwarded station receives the broadcast message.
- If all members of the called Broadcast Group are busy, the broadcast call will be unsuccessful.
- The first Z station is considered as a fax and is therefore protected by default against intrusion and the camp-on tone.
- Specific to Brazil: The **DDC Protection** flag (Subscribers/Basestations List -> Details -> Features (part 2)) rejects all incoming calls which the caller tries to charge to the called party.

PRIORITY CALLS

File

23

DESCRIPTION

2 types of priority call can be made:

- a call from a bank alarm system
- a voice call (or a call through a preprogrammed key)

Call from a bank alarm system (automatic call)

The bank alarm device is connected to the PABX by means of an SLI-board Z interface.

The call is triggered by the Z subscriber going off-hook.

The external destination is called using a collective speed dial number. The call is subject to checks on barring and traffic sharing link categories as well as collective speed dial rights (see "Link Categories").

The call takes priority over ordinary calls in progress. If all lines are busy, the system releases an ordinary call in order to set up a priority call.

Call from a programmed key (manual call)

The call destination (collective speed dial number or external number) is associated with a programmed key on a Reflexes or DECT terminal.

Priority levels are defined to ensure that an automatic or manual call cannot cut off a higher-level call.

CONFIGURATION

▼ To declare the bank alarm system:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Misc. -> "Special Function = Bank Alarm"**
- by MMC-Station: **Subscr -> SpeDev -> Choice -> Bank Alarm**

▼ Define whether the call is a hotline call or normal:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Misc. -> "Hotline"**
- by MMC-Station: **Subscr -> AutoCa -> Active**

▼ Define the destination for the automatic call:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Misc. -> "Hotline" -> "Destination n°"**
- by MMC-Station: **Subscr -> AutoCa -> Desti**

▼ To activate or inhibit metering:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Metering**

▼ Modify the bank alarm device's default speed dial rights, if necessary:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Collective Speed Dial**

▼ Modify the default barring link categories, if necessary:

- by MMC-PM5 (Expert View):
 - for the bank alarm device: **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Barring**
 - for the trunk groups: **External Lines -> Trunk groups -> Details -> Link-Cat**
- by MMC-Station:
 - for the bank alarm device: **Subscr -> BarTyp**
 - for the trunk groups: **TrGp -> Catego**

CALL SERVER : TELEPHONE FEATURES

PRIORITY CALLS

▼ Modify the default traffic sharing link categories, if necessary:

- by MMC-PM5 (Expert View):
 - for the users: **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Barring**
 - for the trunk groups: **External Lines -> Trunk groups -> Details -> Link-Cat.**
- by MMC-Station:
 - for the users: **Subscr -> BarTyp (last 2 values)**
 - for the trunk groups: **TrGp -> Catego (last 2 values)**

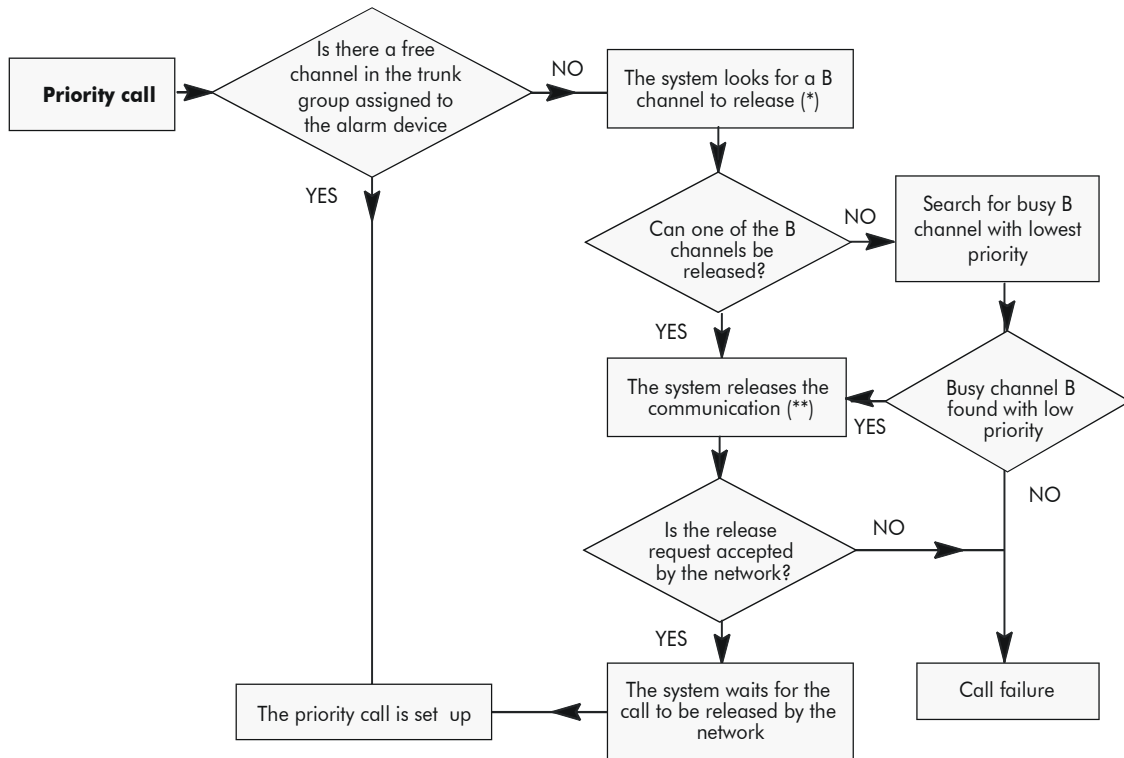
▼ To create a priority call key:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Keys = Priority Call**
- by MMC-Station: **Subscr -> Keys**

▼ Define the priority level (0 to 7 with 7 = highest priority):

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Misc.**
- by MMC-Station: **Subscr -> Prio**

PRIORITY CALL MADE BY A USER



The trunk group can also include analog lines (TL)

(*) only a basic call (i.e. not a call which is on hold or camped on, nor a call which is engaged in a three-party call, etc...).

(**) the released line cannot be assigned to a user who has left an automatic call-back request on a busy trunk group

ADDITIONAL INFORMATION

- The bank alarm device cannot be connected to a Z interface behind a Reflexes station.
- Several priority calls can be set up simultaneously
- A priority call may fail if the public exchange is saturated, if the destination is busy or if it collides with an incoming call during the "setup" phase.
- The event "R_PRIORITY_CALL" – specifying the number of the station on which the call was released – is generated in the PABX history table whenever a call is released to make way for a priority call.
- The bank alarm device's directory number cannot be a private one.
- To avoid the system releasing a basic call on a B channel belonging to the trunk group assigned to the bank alarm device, when a B channel is free in another trunk group, it is advisable to configure all the accesses on a single trunk group.
- All calls made from an S0 terminal are considered as priority calls if a priority level >0 is defined

CAMP-ON ON BUSY STATION OR GROUP

File

24

DESCRIPTION

A user is automatically camped-on on the station he is calling when the following conditions are met:

- it is busy, in other words in conversation with a correspondent
- it has at least one resource free (see "Resource keys" file)
- it is not protected against camp-on
- the caller is authorized to camp-on

A user is automatically camped-on on a Hunting Group which he is calling when the following conditions are met:

- it is in "setup" mode (see "Hunting Groups").
- all the stations in the group are busy, i.e. in conversation with a correspondent
- at least one of the stations in the group has a free resource (see "Resource keys" file)
- the stations in the group are not protected against camp-on
- the caller is authorized to camp-on

A caller camped-on can:

- release the call, possibly leaving a text message (see "Text mail/Call back request")
- leave an **automatic callback request** with the called party, if the station supports
- **intrusion** into the existing conversation, if the caller is authorized and if the station is not protected against intrusion
- transfer his correspondent if on-hold (see "Conference")

CONFIGURATION

▼ To specify whether or not to protect a station against camp-on:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Camp-On Protection"**

▼ To specify whether or not to protect a station against the camp-on tone:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Warntone Protection"**

▼ To specify whether or not to authorize camp-on for a station:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Camp-On Allowed"**

▼ To specify whether or not to protect a station against intrusion:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Intrusion Protection"**

▼ To specify whether or not to authorize intrusion for a station:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Intrusion Allowed"**

▼ To specify whether or not to authorize a station to leave an automatic call back request:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Callback"**

CALL SERVER : TELEPHONE FEATURES

**CAMP-ON ON BUSY STATION OR
GROUP**

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station
F.K.: Fixed Key
S.K.: Soft Key
Code: Code programmed in the "Features in Conversation" table

Type of station Type of service	All stations including Z	Without display (≠ Z)	With display, no soft keys	With soft keys
Automatic call back request (*)	Function code	P.K.: Automatic call-back request	P.K.: OCback	S.K.: OCback
Intrusion	Function code	P.K.: Intrusion	P.K.: Intru	S.K.: OIntru

(*) When the called party becomes free, the station which requested call back is rung. If it goes off hook, the called party station rings in turn.

CANCELLATION

Prefix: Code programmed in the internal numbering plan

Type of station Type of service	All stations including Z	Without display (≠ Z)	With display, no soft keys	With soft keys
Automatic call back (**)	Prefix	P.K.: Cancel callback	P.K.: nCback	S.K.: nCback , before or during callback
Intrusion	Activation code	P.K.: Intrusion	P.K.: Intru	S.K.: nIntru

(**) The automatic call back request is also cancelled if:

- the person requesting call back does not go off hook within 15 seconds or presses the "Release" key during these 15 seconds
- the called station does not release within 30 minutes.

ADDITIONAL INFORMATION

- When camp-on is allowed and the called party is not protected against the camp-on tone, the camped caller hears the camp-on tone and the called party hears a single beep every 20 seconds.
- If the automatic call back request is accepted, the user hears the dial tone if he is off hook and switches to the idle status in hands-free mode.
- An authorized station can only request a single automatic call back at a time.
- A station can only receive a single automatic call back request at a time.
- A call back request does not follow a call forwarding.
- The identity of the intruding station is displayed on the stations which are already in conversation.
- Intrusion is refused (the user then remains camped-on) if:
 - the called party is in a conference call
 - the called party is intruding on another conversation
 - at least one of the stations is protected against intrusion
- An operator station always has the authority to camp on and to intrude.
- When the user intrudes while having a correspondent on hold, he returns to this correspondent by canceling the intrusion then going on hook and returning to the call on hold.
- The first Z station is considered as a fax and is therefore protected by default against intrusion and the camp-on tone.

ANSWERING CAMPED-ON CALLS



DESCRIPTION

When one or more callers (if the station has the necessary resources) are camped on a subscriber (see "Camp-on on busy station or group"), the subscriber can either:

- **consult the identity of the camped callers**, if the station has soft keys
- answer (consult) one or more camped-on calls, without releasing the current communication, or
- answer a camped-on call by releasing its current communication. In this case, the system determines which camped-on call is presented to the station according to the priority of the calls camped-on.

The level of priority depends on three criteria:

- the type of caller: internal, external or OS (for example, if a station has a caller camped on but has no resources left, an OS call "breaks" the first camp-on and is itself camped on)
- the type of called party: Operator Group, Hunting Group or station
- the type of call: simple call, recall (for example after transfer failure, see "Conference") or hold reminder

The system allocates the following descending order of priority:

- external hold recall, delayed or otherwise
- internal hold recall, delayed or otherwise
- external callback
- external call
- internal callback
- call from an operator station
- internal call
- Operator Group call
- Hunting Group call

CONFIGURATION

▼ To specify whether or not to protect a station against camp-on:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Camp-On Protection"**

▼ To specify whether or not to protect a station against the camp-on tone:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Warntone Protection"**

ANSWERING CAMPED-ON CALLS

CALL SERVER : TELEPHONE FEATURES

▼ To specify whether or not to authorize camp-on for a station:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Camp-On Allowed"**

ACTIVATION/USE

S.K.: Soft Key

Code: Code programmed in the "Features in Conversation" table

Type of station Type of service	All stations including Z	Without display (≠ Z)	With display, no soft keys	With soft keys
Consultation of camped-on caller identities		--		S.K.: Queue
Answer after consultation of identity (*)		--		S.K.: Answer(**)
Answer a camped-on call (*)	Function code		Resource key	

(*) "Manual" answering of a camped-on caller entails exclusive hold (see "Three-party calls" file) of the current communication.

(**) When the identity of the caller to be consulted is displayed.

CANCELLATION

Type of station Type of service	All stations including Z	Without display (≠ Z)	With display, no soft keys	With soft keys
Return to initial correspondent after consulting a camped-on caller	Enquiry or shuttle call cancellation code(*)		Resource key of correspondent on hold	

(*) In the first case, the caller is released and in the second, placed on exclusive hold.

ADDITIONAL INFORMATION

- A station which has activated paging or which is in a conference call (see "Conference") or intrusion (see "Camp-on on busy station or group"), cannot answer a camped-on call.
- When consulting the identity of the camped-on callers, a station with soft keys can also consult the User to User Signaling (UUS) of the caller (see "ISDN Services").

THREE PARTY CALLS

File

26

DESCRIPTION

3-party calls are:

- enquiry, prior to the following
- shuttle
- conference
- transfer

Enquiry/Hold

A station involved in an internal or external conversation can make a new internal or external call using either:

- one of the means described in "Making/Answering a call"
- or by answering a camped-on call (see "Camp-on on busy station or group")
- or by picking up a call intended for another station (see "Call Pick-Up" and "Call Parking/Parked Call Retrieval")

The current correspondent is automatically placed on hold by the system. This type of **hold** is said to be "**exclusive**" because only the user which activated it can retrieve the correspondent.

A user can place a correspondent on exclusive hold when:

- he is in conversation with the correspondent
- he has called the correspondent and hears the ringing tone
- he has called the correspondent and hears the camped-on tone

"Manual" call holding is also possible. In this case, it is said to be "**common**" because all the users supervising the resource on hold can retrieve the correspondent (RSP resource only).

A user can only place a correspondent with whom he is in conversation on common hold.

Hold recall: When a user goes on hook with a correspondent on hold, the system recalls the user. This can be either immediate (overlooked hold) or time-delayed. When the hold recall is time-delayed, the user can make an outgoing call or answer an incoming call: the hold recall will take place at the end of the time-out or at the end of the new communication.

Shuttle

This service enables the user to speak alternately with his correspondent on line and a correspondent on hold.

Conference

This service enables an authorized user in an enquiry call to set up a call with two correspondents simultaneously.

Transfer

This service enables a call to be setup between the correspondent on hold and the correspondent on line. This latter was not necessarily in conversation with the user! Transfer can take place either:

- after conversation with the second correspondent
- when the user hears the ringing tone (the second correspondent has not answered)
- when the user is camped-on on the second correspondent's station
- when the user has activated paging for this second correspondent (who has not answered)
- during the routing phase of the second call, after dialing an **external** number

CONFIGURATION

▼ Choose between immediate or delayed hold recall:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "TimedHldEn"**
- by MMC-Station: **Global -> Rd/Wr -> Address -> "TimedHldEn" -> Return -> Memory**

▼ To modify the implicit value of the delayed hold recall time-out:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Feature Design -> Part 3 -> Duration of Hold Recall Ringing**
- by MMC-Station: **Global -> Rd/Wr -> Timer -> "OnHoldTim" -> Return -> Memory**

▼ For the system, specify whether or not the conference is authorized in the system and if it is, the type of conference authorized:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Feature Design -> Part 2-> Conference (prohibited, internal only or Ext & Int)**
- by MMC-Station: **Global -> Conf**

▼ To specify whether or not each station is authorized to take conference calls (by default , all stations have this facility):

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> Conference**

CALL SERVER : TELEPHONE FEATURES

THREE PARTY CALLS

- ▼ For the system as a whole, to authorize or inhibit the transfer of incoming or outgoing trunk lines to an outgoing network line (be careful with subscriber rights and trunk group link categories):

- by MMC-PM5 (Expert View): **System Miscellaneous -> Feature Design -> "Transfer Ext/Ext"**
- by MMC-Station: **Global -> Joing -> Transf**

- ▼ To authorize transfer of an incoming or outgoing network line to an outgoing network line, for each station:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> Part 2 -> "Join Incoming and Outgoing" and "Join Outgoing and Outgoing"**

- ▼ To define the type of system reaction in the event of transfer failure (operator or initiator recall, also called "transfer master"):

- by MMC-PM5 (Expert View): **System Miscellaneous -> Feature Design -> "Go to initiator if transfer fails"**
- by MMC-Station: **Global -> MasRec -> Choice**

- ▼ Modify the implicit value of the rerouting time-out at general level in the event of transfer failure:

- by MMC-PM5 **System Miscellaneous -> Memory Read/Write -> Timer Labels -> "TransfeTim"**
- by MMC-Station: **Global -> Rd/Wr -> Timer -> "TransfeTim" -> Return -> Memory**

- ▼ Authorize connection of two external lines by transfer (connection matrix):

Traffic Sharing and Barring -> Joining

- ▼ To specify whether or not to authorize transfer by going on-hook with a multiline station:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Feature Design -> Transfer by on hook**

- ▼ To specify whether or not to authorize Ext/Ext transfer (intersite transfers) by going on-hook with a Z station:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Feature Design -> Transfer Ext/Ext by on hook**

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

F.K.: Fixed Key

S.K.: Soft Key

Code: Code programmed in the "Features in Conversation" table

Type of station Type of service	Z	Monoline (≠ Z)	Without display and multiline	With display, no soft keys	With soft keys
Enquiry	F.K.: R + call	Call			
Exclusive hold	Automatic on enquiry, shuttle or reply to a camped-on call				
Common hold	--	--	P.K.: Hold		S.K.: Hold
Shuttle	Function code		Resource key		
Conference	Function code	P.K.: Conference	F.K. or P.K.: Conference		S.K.: 0Conf
Transfer	On hook		F.K.: Transfer		S.K.: Transf

cancellation

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

F.K.: Fixed Key

S.K.: Soft Key

Code: Code programmed in the "Features in Conversation" table

Type of station Type of service	Z	Monoline	Without display and multiline	With display, no soft keys	With soft keys
Enquiry Shuttle	F.K.: R + Code Cancel enquiry	Code Cancel enquiry	F.K.: End + resource key of initiator		
Common Hold Retrieval or Voice Transfer	--	--	Resource key		
Conference, with return to conversation preceding the conference	Function code	P.K.: Conference	F.K. or P.K.: Conference		S.K.: nConf
Conference, with release of both correspondents	--	On hook			

ADDITIONAL INFORMATION

- A correspondent on hold hears the please-wait music if external and the hold tone if internal.
- It is impossible to place on hold:
 - a network call in the routing phase
 - a broadcast call
 - an intrusion
 - a paging call
- At hold recall, the user's station rings and if he does not answer before the expiry of the hold recall time-out:
 - the call is returned to the general level if external
 - the call is released if internal
- A shuttle call is refused when the user has intruded into a conversation, or is involved in a conference or paging call
- A user cannot put another correspondent on exclusive hold when he hears the ringing or camp-on tone, only to return to the first correspondent on hold
- If one of the stations involved in a conference goes on hook and is not the initiator of this conference, the remaining two correspondents stay in communication
- The system allows 3 simultaneous conferences
- The services attributed to the stations must be of the "telephone" type, otherwise holding may be refused.



THREE PARTY CALLS

CALL SERVER : TELEPHONE FEATURES

INTERCOM INTRUSION

File

27

DESCRIPTION

When an internal user calls another internal user who does not answer, he can force the destination station to switch to hands free mode, if it supports this function.

The intercom call ringing tune rings the destination station for a programmed length of time and the latter switches automatically to hands free mode.

Notas :

For the activation of the "Intercom" function, see "Making/Answering a Call".

CONFIGURATION

▼ To specify whether or not to protect a station against intercom intrusion on free:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Intrusion Protection"**

▼ To specify whether or not to authorize a station to activate intercom intrusion:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Intrusion Allowed"**

▼ To modify the duration for the intercom call ringer:

- by MMC-PM5 **System Miscellaneous -> Memory Read/Write -> Timer Labels -> "Auto-AnsTim"**
- by MMC-Station: **Global -> Rd/Wr -> Timer -> "AutoAnsTim" -> Return -> Memory**

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station


S.K.: Soft Key

Type of station	Z	Without display and multiline	With display, no soft keys	With soft keys
Activation of intercom intrusion on free when the user hears the ringing tone	--	P.K.: Intercom intrusion on free	P.K.: Forced	S.K.: OIntru

ADDITIONAL INFORMATION

- The "Intercom Intrusion on Free" or "Forced" programmed key can be replaced by a macro programmed key "Macro1 = direct call of an internal number + intercom intrusion on free on the called station".
- The right to intercom intrusion is the same as that for intrusion (see "Camp-on on busy station or group").

FORWARDING



DESCRIPTION

Forwarding enables personal (individual) or group calls to be re-routed immediately. The type of calls, internal and/or external, affected by the active forwardings can be selected by configuration.

- **Follow-me:** forwarding is activated from the destination station.
- **Do Not Disturb:** the user is not taking calls: internal calls are released and external calls rerouted to the operator station.
- **Immediate group call forwarding:** calls intended for groups to which the user belongs are routed to another destination (programmed in advance or on activation of the service).
- **Immediate call forwarding (individual):** individual calls are routed to another destination (whether set, group or VMU) programmed in advance or on activation of the service.
- **Forward to text answering:** internal calls are released after display of a text message, and external calls are routed to the operator station.
- **selective forwarding:** depending on the callers' identification (call number), the calls may or may not be routed to a pre-programmed destination.
- **Forward to pager:** calls are routed to the called party's pager.
- **Forward on busy:** when the station is busy, calls are routed to another destination (programmed in advance or on activation of the service).
- **Withdraw from group:** the user refuses calls intended for one or more Hunting Groups or Operator Groups to which he belongs.

Type of forwarding	Incoming call type	Initial destination	Personal or group forwarding	Final destination	Feature rights
follow me	Internal/external	Station	personal	internal station	-
Do Not Disturb	Internal	Station	personal	-	-
	External			Operator station	
Immediate	Internal	Station	personal	int. or ext. station or group	-
		GrpPic	Group	internal station	
	External	Station	personal	Int. or ext. station (*) (*) station or group	Yes for external forwarding
		GrpPic	Group	internal station	
Text answering	Internal	Station	personal	-	-
	External			Operator station	
Selective	Internal	Station	personal	Int. or ext. station (*) (*)	Yes
	External				
Paging	Internal/external	Station	personal	Paging "Bleep"	-

Type of forwarding	Incoming call type	Initial destination	Personal or group forwarding	Final destination	Feature rights
Forwarding on busy	Internal/external	Station	personal	Internal or external station or group	Yes
Withdraw from group	Internal/external	GrpPic	Group	-	-

(*) External forwarding requires a particular configuration detailed in the "External Forwarding" file.

CONFIGURATION

▼ For each station, select the type of calls (local, external or both) to be forwarded:

- by customization
- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Dyn. Rout -> "Diversion Apply"**
- by MMC-Station: **Subscr-> DynRou -> Ext or Local**

▼ For each station, program the caller lists for selective forwarding (CLIP diversion), and the internal or external destination for each list. Lists can be unused, active (until deactivated by the station), inactive (until validated by the station), validated (programmed but not usable), negative or otherwise (a negative list is one where forwarding is activated by subscribers other than those on the caller list):

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Clip. Div.**

▼ To specify whether or not to authorize forwarding of the last member of a group – MMC-PM5 (Expert View) only:

System Miscellaneous -> Feature Design -> "Disconnect Last Group Member Allowed"

▼ For each station, external forwarding can be authorized:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "External Diversion"**

CALL SERVER : TELEPHONE FEATURES

FORWARDING

ACTIVATION/USE

P.K.: Programmed Key

F.K.: Fixed Key

S.K.: Soft Key

Prefix: Code programmed in the internal numbering plan

Type of forwarding	All stations including Z	Without display (≠ Z)	With display, no soft keys	With soft keys
Follow-me	Prefix + station n° to be forwarded	P.K.: Follow Me + n° of station to be forwarded	P.K.: Follo + n° of station to be forwarded	S.K.: Divert + Follo + n° of station to be forwarded
Do Not Disturb	Prefix	P.K.: Do Not Disturb	P.K.: DND	S.K.: Divert + DND
Immediate forwarding of personal calls	Prefix + Destination n°	F.K.: Divert or (pre-)programmed (Master) indiv. immediate forwarding + Destination n°	F.K.: Divert or (pre-)programmed M Immd or Immed (indiv.) + Destination n°	S.K.: Divert + Immed + Destination n°
Forward to text answering	--	--	P.K.: Text	S.K.: Divert + Text
Forward to pager	Prefix	P.K.: Paging	P.K.: Page	S.K.: Divert + Page
Forward on busy	Prefix + Destination n°	P.K.: Forward on busy (master) + Destination n°	P.K.: Mbusy or Busy + Destination n°	S.K.: Divert + Busy + Destination n°
Immediate forwarding of group callst	Prefix + Destination n°	P.K.: (Master) Immediate call forwarding (group) + Destination n°	P.K.: M Grp or Immed (group) + Destination n°	
Withdraw from group	Prefix + n° of group to quit	P.K.: Withdraw from group + number of the group to quit	P.K.: GrpWd + number of the group to quit	
Selective forwarding	Prefix	P.K.: Selective forwarding	P.K.: Selfwd	

CANCELLATION

P.K.: Programmed Key

F.K.: Fixed Key

S.K.: Soft Key

Prefix: Code programmed in the internal numbering plan

Type of forwarding	All stations including Z	Without display (≠ Z)	With display, no soft keys	With soft keys
All, except "withdraw from group"	Prefix Cancel all forwardings	P.K.: Cancel all forwardings	P.K.: All	S.K.: Divert + Cancld + type of forwarding
Follow-me (from the destination station)	Prefix Cancel follow-me + n° of forwarded station	Prefix Cancel follow-me + n° of forwarded station	Prefix Cancel follow-me + n° of forwarded station	S.K.: Divert + Cancld + Follo + n° of forwarded station
Rejoin the group	Prefix + n° of group to rejoin	P.K.: Withdraw from group + number of group withdrawn from	P.K.: GrpWd + number of group withdrawn from	

ADDITIONAL INFORMATION

- Only one personal forwarding active per station: activation of a personal forwarding supersedes the previous one.
- A station can simultaneously activate personal forwarding, immediate group forwarding, selective forwarding and as many group withdraws as is desired.
- Authorization to forward the last station of a group can be programmed (see "Configuration").
- The "follow-me" service can be cancelled from the destination station or the forwarded station.
- The "Withdraw from group" service is not available on S0 stations.
- A "Master forwarding" or "Selective forwarding" key (M. Immd', M. Busy', M. Grp') makes it possible to activate or cancel the corresponding forwarding. Furthermore, the icon or LED associated with this key, indicates when a forwarding is activated. All the preprogrammed or fixed keys are such keys.
- The same station may have a "personal call forwarding" Master key and a "Group call forwarding" Master key.
- A "text answering" forwarding can only be activated on a station with a display.
- The "local" type of calls to be forwarded includes internal calls as well as those coming from the private network.
- Forward to text answering when a network call from a station without UUS capability (a Z station for example) arrives at a station that has activated forwarding to text answering, the call is forwarded to the Operator station, which also receives the message from the called station.

CALL SERVER : TELEPHONE FEATURES
FORWARDING

- Prefixes for the forwarding functions in the numbering plans. The basic value may differ according to the local version of the software; the following values apply in France:
 - Forwarding: base 0 = cancel forwarding
 - Forwarding: base 1 = immediate forwarding
 - Forwarding: base 2 = forwarding on busy
 - Forwarding: base 3 = do not disturb
 - Forwarding: base 4 = forward to pager
 - Forwarding: base 5 = group call forwarding
 - Forwarding: base 6 = disconnect from group
 - Forwarding: base 7 = rejoin group
 - Forwarding: base 8 = follow me
 - Forwarding: base 9 = cancel follow-me
 - Forwarding: base 10 = selective forwarding



FORWARDING

CALL SERVER : TELEPHONE FEATURES

MANAGER/SECRETARY SCREENING

File

29

DESCRIPTION

The system can be used to create relations between manager-secretary stations so that the "secretary" station can screen calls intended for the "manager" station, in other words, answer calls intended for the manager station and then put the correspondents through if necessary.

In a manager-secretary relation, the "secretary station" can be a Hunting Group (see "Hunting Groups").

All the stations in a manager-secretary relation must be multiline.

CONFIGURATION

▼ To create the manager-secretary relations:

- by MMC-PM5 (Expert View): **Manager-secretary Relations**
- by MMC-Station: **TerPro -> MgrSec**

▼ For each station, authorize the type of calls (local, external, or both) to be screened:

- by MMC-PM5: **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Dyn. Rout. -> "Diversion Apply"**
- by MMC-Station: **Subscr -> DynRou.**

ACTIVATION/USE

P.K.: Programmed Key – defined using MMC-PM5 (Expert View) or MMC-Station

Type of station Service	Monoline	Multiline without soft keys	With soft keys
By the manager or secretary station	--	P.K.: Screening	P.K.: Filter

cancellation

Type of station Service	Monoline	Multiline without soft keys	With soft keys
By the manager or secretary station	--	P.K.: Screening	S.K.: Filter

ADDITIONAL INFORMATION

- In order to differentiate between screened calls and direct calls to the secretary station:
 - create a second directory number for the secretary
 - program the screening with this second directory number
- create, on the secretary station, an RSD resource key programmed with this second number in order to receive the screened calls there
- A secretary station can belong to several manager-secretary relations: the secretary station then has a filter key (also on the corresponding manager's station) and an RSL key for each manager station.
- A manager station can belong to several manager-secretary relations: the manager station then has, for each secretary station, a filter key (also on each secretary station) and an RSL key.
- When the secretary station in a manager-secretary relation is a Hunting Group, the manager station has a single filter key but as many RSL keys as there are members in the group.
- Any activation of individual forwarding on the secretary station or the manager station cancels and replaces the previously active screening.
- Any request for activation of screening is rejected on a secretary station which has already activated individual call forwarding.

FORWARDING TO VOICE MAIL UNIT

File
30

DESCRIPTION

Users can activate unconditional call forwarding or forwarding on busy for their own calls (see "Forwarding"), diverting them to the integrated Voice Mail Unit.

If the voice mail unit is configured as an answering device, the callers can leave a spoken message.

CONFIGURATION

▼ Select the type of calls (local, external, or both) to be forwarded:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Dyn. Rout. -> "Diversion Apply"**
- by MMC-Station: **Subscr -> DynRou -> "Div"**

▼ For each station, program the forwarding keys:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Keys**
- by MMC-Station: **Subscr -> Keys**

ACTIVATION/USE

P.K.: Programmed Key

F.K.: Fixed Key

S.K.: Soft Key

Prefix: Code programmed in the internal numbering plan

Type or station Service	Z	Without display	With display, no S.K.s	With soft keys
Immediate forwarding of personal calls to voice mail unit (VMU)	Prefix Immediate call forwarding of personal calls + function code Voice Mail	F.K.: Divert or (pre-)programmed (Master) indiv. immediate forwarding + P.K.: Voice mail unit	F.K.: Divert or (pre-)programmed M Immed or Immed (indiv.) + P.K.: Voice mail unit	S.K.: Divert + Immed + P.K.: Voice mail unit
Forwarding on busy to voice mail unit (VMU)	Prefix Forward on busy + function code Voice Mail	P.K.: Forward on busy (master) + P.K.: Voice mail unit	P.K.: Mbusy or Busy + P.K.: Voice mail unit	S.K.: Divert + Busy + P.K.: Voice mail unit
Message present	Specific voice prompt + Specific dailtone + LED on Reflexes without display		Flashing of 3-colour LED and icon corresponding to F.K.: Mail	
Access voice mail	Prefix access voice mail	P.K.: Access voice mail	F.K.: Message + 1	F.K.: Mail + S.K.: Voice

CANCELLATION

P.K.: Programmed Key

F.K.: Fixed Key

S.K.: Soft Key

Prefix: Code programmed in the internal numbering plan

Type of station / Type of forwarding	All stations including Z	Without display (≠ Z)	With display, no soft keys	With soft keys
"Immediate" or "On busy"	Prefix Cancel all forwardings	P.K.: Cancel all forwardings	P.K.: All	S.K.: Divert + Cancel

ADDITIONAL INFORMATION

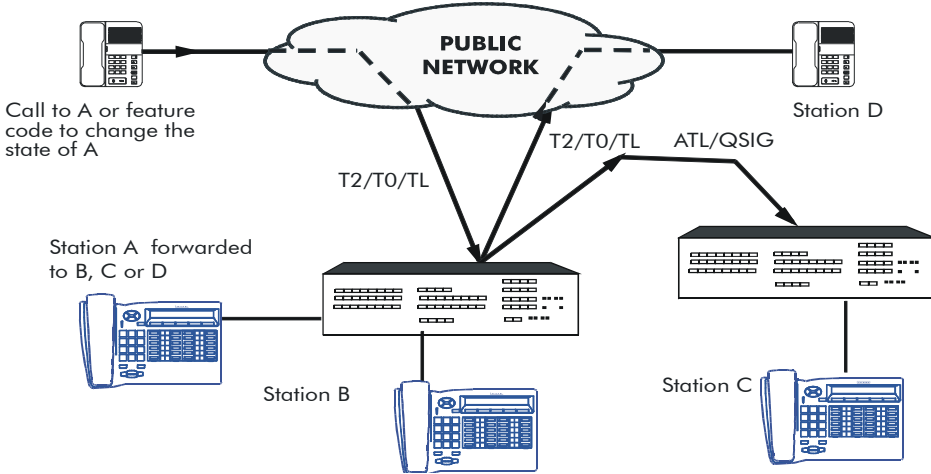
For more details on the Alcatel OmniPCX Office integrated Voice Mail Unit, see "Integrated Voice Mail Unit".

REMOTE FORWARDING

File
31

DESCRIPTION

The **remote forwarding** service enables an employee who is outside of the business premises, or at home to modify or cancel, from a DTMF dialing set, the unconditional internal or external forwarding active on his station, as if he were at work.



CONFIGURATION

▼ For each set, to authorize or deny use of the "Remote Substitution" feature:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Remote Substitution"**

▼ To validate the service in the public numbering plan (operates without base or NMT):

- by MMC-PM5 (Expert View): **Numbering -> Public Numbering Plan -> Remote Substitution**
- by MMC-Station: **NumPln -> PubNum -> Disa**

▼ To define the service access code – MMC-PM5 (Expert View) only:

- External Lines -> Remote substitution -> Access control code**

REMOTE FORWARDING

CALL SERVER : TELEPHONE FEATURES

- ▼ To define the voice guidance message (none, message 1 to 8) – MMC-PM5 (expert View) only:

External Lines -> Remote Substitution -> Voice Guidance Message

- ▼ To define the system reaction if no DTMF receiver is available (Call Waiting or Release) – MMC-PM5 (Expert View) only:

External Lines -> Remote Substitution -> Wait for DTMF Receiver

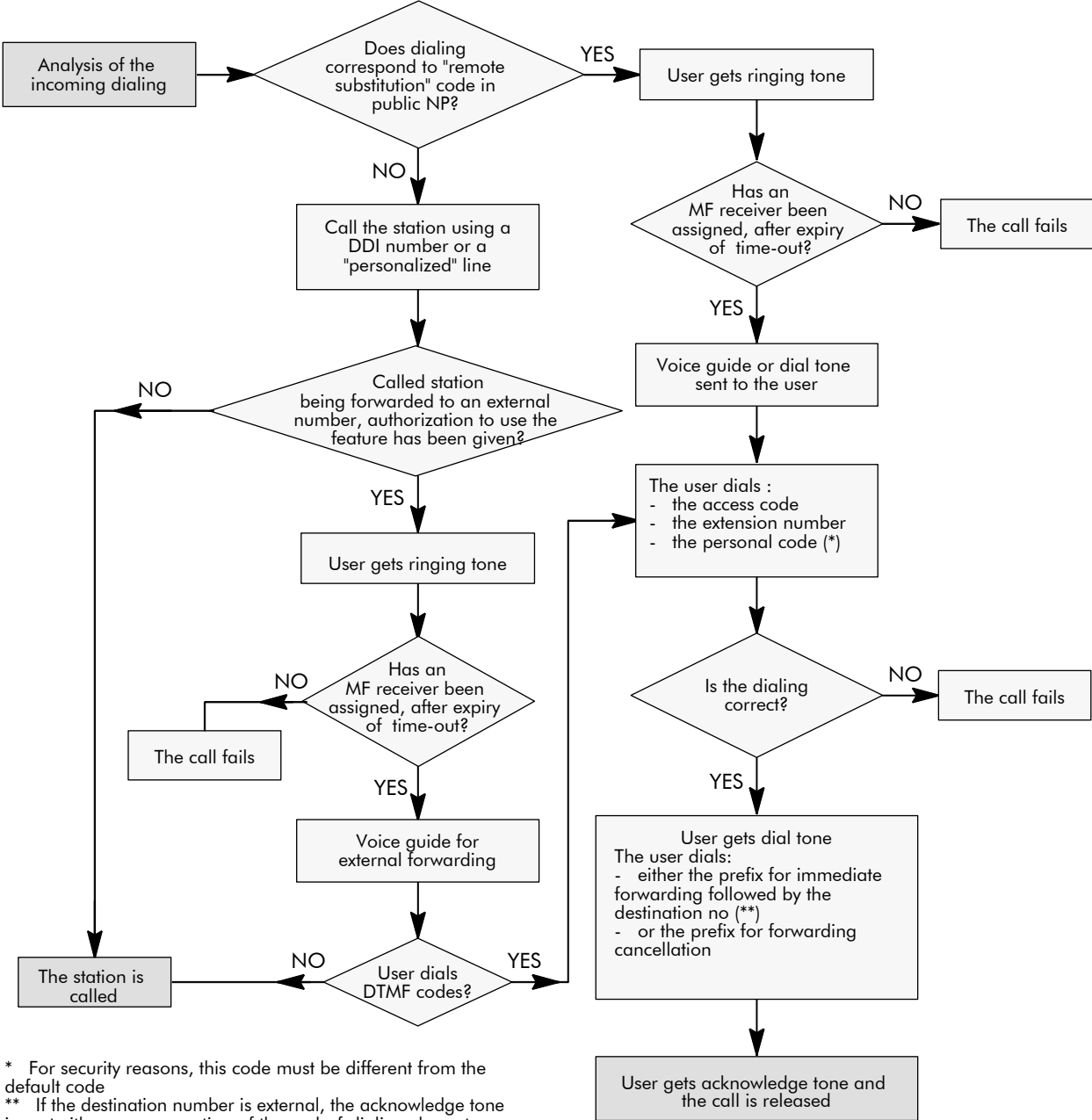
CALL SERVER : TELEPHONE FEATURES

REMOTE FORWARDING

ACTIVATION/USE

Users can modify their station state remotely by:

- calling their station (necessarily in external forwarding mode). The user can then either **modify** the immediate forwarding destination number or **cancel** forwarding, or
- dialing the feature code for "remote substitution". The user can then **activate** immediate forwarding, **modify** the immediate forwarding destination number or **cancel** forwarding.



* For security reasons, this code must be different from the default code
 ** If the destination number is external, the acknowledge tone is sent either upon reception of the end-of-dialing character (#, by default) or upon expiry of the interdigit time-out

ADDITIONAL INFORMATION

- The "Remote Forwarding" feature uses elements of the "Remote Substitution" and "External Forwarding" features; see both corresponding files.
- A single DTMF receiver is available at any given time.
- This service can be used to cancel the "Do Not Disturb (DND)" function.

EXTERNAL FORWARDING

File

32

DESCRIPTION

When external forwarding is activated on a station, its internal and external personal incoming calls are routed to a network destination, programmed in advance or at activation of the service.

For external incoming calls, the system can manage 2 types of external diversion:

- by joining: the incoming analog line (or B channel) is switched to the outgoing line (or B channel) by the PABX, the latter handles the barring and traffic sharing link categories of the destination station and the lines to be joined (see "Link Categories") and subsequently the connectivity matrix. Both resources are busy during the entire duration of the call. This type of forwarding does not need a subscription..
- by re-routing, for ISDN DDI calls only, and on subscription from the network operator: the system informs the network that the station called is forwarded and specifies the destination. The network then manages the forwarding (no busy lines). The system takes account of the barring and traffic sharing link categories of the destination station and the trunk group programmed into the destination number.

For internal incoming calls, the system performs forwarding by joining.

CONFIGURATION

▼ For each station, program the forwarding keys:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Keys**
- by MMC-Station: **Subscr -> Keys**

▼ For each station, external forwarding can be authorized:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details - Features -> "External Diversion"**

▼ Define the type of mechanism used for forwarding an external incoming call to a network number, re-routing or joining:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Feature Design -> Part 2 -> "External Diversion Mode"**
- by MMC-Station: **Global -> Joing -> Divert**

EXTERNAL FORWARDING

CALL SERVER : TELEPHONE FEATURES

▼ When the selected mechanism for forwarding external incoming calls to a network number is "joining", fill out the connectivity matrix by MMC-PM5 (Expert View) only:

Traffic Sharing and Barring -> Joining

▼ Define the type of identity retransmitted to the forwarding destination:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Feature Design ->"CLI for external diversion" or "CLI is diverted party"**

▼ To specify whether or not the caller hears a pre-announcement message before being forwarded – MMC-PM5 (Expert View) only:

Subscribers Misc. -> Pre-announcement -> Voice Guidance for Diversion to External

ACTIVATION/USE

P.K.: Programmed Key

F.K.: Fixed Key

S.K.: Soft Key

Prefix: Code programmed in the internal numbering plan

Type of station Service	All stations including Z	Without display (≠ Z)	With display, no soft keys	With soft keys
Immediate external forwarding	Code + Destination n° (*)	F.K.: Divert or (pre-)programmed (master) indiv. immediate forwarding + Destination n° (*)	F.K.: Divert or (pre-)programmed M ImmD[⊘] or Imm-med[⊘] (indiv.) + Destination n° (*)	S.K.: Divert + Imm-med[⊘] + Destination n° (*)

(*) If not a collective speed dial number, the external n° must contain a trunk group number or an RSP or RSB key

CANCELLATION

Type of station Service	All stations including Z	Without display (≠ Z)	With display, no soft keys	With soft keys
Immediate external forwarding	Prefix Cancel all forwardings	P.K.: Cancel all forwardings	P.K.: All	S.K.: Divert + Cancld[⊘]

ADDITIONAL INFORMATION

- Any activation of an individual forwarding supersedes the previous one.
- If the station which activates the forwarding has a display, it will show the forwarding and the Destination n°.
- The icon or LED associated with the "Forwarding selection" or "Master Forwarding" programmed key indicates activation of forwarding with this key.
- The "Master Forwarding" or "Forwarding Selection" programmed key for individual calls can also be used to cancel an external forwarding.
- When the link categories do not allow external forwarding:
 - an external caller is re-routed to the O.S.
 - an internal caller is released
- Two analog lines can only be joined if they are configured with Polarity Reversal and if the public exchange sends the corresponding IP.
- When a digital line (ISDN or SIG) is forwarded, it is possible to select which identity is retransmitted by the system to the forwarding destination, either that of the initial caller or that of the forwarded station.

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features**

✓ CLI for external diversion o CLI is diverted party	= Identity of caller
o CLI for external diversion ✓ CLI is diverted party	= Identity of forwarded station

- The caller can hear a pre-announcement message before being forwarded (see "Configuration").
- A private station can neither activate an external forwarding nor be forwarded externally.
- Neither the possible UUS nor the sub-address (see "ISDN Services") are retransmitted to the forwarding destination.
- External forwarding can not be activated with an account code.



EXTERNAL FORWARDING

CALL SERVER : TELEPHONE FEATURES

PABX FORWARDING *

File

33

* Depending on country; not available in France.

DESCRIPTION

All the external calls from the digital network (T0 or T2 accesses) intended for the stations in the installation can be re-routed to a destination on the network.

First of all, the system manager will have subscribed to "Call Forwarding Unconditional" with the network operator. There are two subscription formulae:

- for **fixed** forwarding, i.e. the forwarding destination is programmed into the public exchange and is always the same.
- for a **variable** forwarding, i.e. the forwarding destination is specified at activation of the service and can thus be different at each activation.

Access to the service is controlled by a password, either:

- in the public exchange: the password given by the network operator is retransmitted to the public exchange on activation of forwarding.
- at system level: the password is that of the system operator and is not retransmitted to the public exchange.

To configure the service in the system (so that it correctly transmits the PABX forwarding activation request) the configuration in the public exchange must take account of the installation's digital links. This can be of 3 types:

- **type 0** configuration: all the digital links connecting the installation to the public exchange are configured into a single "group" (equivalent to a trunk group) in the public exchange.
- **type 1** configuration: the installation is connected to the public exchange by "groups" of links **and** isolated digital links.
- **type 2** configuration: the installation is connected to the public exchange by several "groups" of digital links.

Depending on the type of configuration in the public exchange, it waits for one or more PABX forwarding activation requests:

- in a **type 0** configuration, a single activation request for the entire group of links
- in a **type 1** configuration, an activation request for each link connecting the installation to the exchange
- in a **type 2** configuration, an activation request for each group of links

The activation request is made via a trunk group containing one of the installation's digital links, defined either:

- on programming the "PABX forwarding" key and, failing which, at the time of service activation, in a **type 0** configuration
- only if the diversion is **variable**, at programming of the "PABX forwarding" key and, failing which, at the time of service activation, in a **type 1 or 2** configuration
- only if diversion is **variable**, on programming the "PABX diversion" key and, failing which, at the time of service activation, in a **type 2** configuration; However, in this type of configuration, the system will not use this trunk group, but that programmed in address "PbxDBdl" which should contain a single digital link for each of the "groups" in the public exchange allocated to the installation.

CONFIGURATION

▼ Define the type of PABX forwarding, fixed or variable:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "PbxDFix"**
- by MMC-Station: **Global -> Rd/Wr -> Address -> "PbxDFix" -> Return -> Memory**

▼ Define the type of password used, network or system:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "PbxDPwdNet"**
- by MMC-Station: **Global -> Rd/Wr -> Address -> "PbxDPwdNet" -> Return -> Memory**

▼ Define the type of configuration used by the public exchange, 0, 1 or 2:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "PbxDTReq"**
- by MMC-Station: **Global -> Rd/Wr -> Address -> "PbxDTReq" -> Return -> Memory**

▼ If the configuration used by the public exchange is type 2, create the trunk group containing a digital link of each of the groups assigned to the installation by the public exchange:

- by MMC-PM5 (Expert View): **External Lines -> Trunk Groups -> Details**
- by MMC-Station: **TrGp**

▼ If the configuration used by the public exchange is type 2, define the trunk group index:

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "PbxDBdl"**
- by MMC-Station: **Global -> Rd/Wr -> Address -> "PbxDBdl" -> Return -> Memory**

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

	Type of station	Station without display (except Z)	Station with display
Service			
PABX forwarding		P.K.: Div PABX + password (*)	P.K.: PABX^E + password (*)

- (*) dial also, if not already pre-programmed in the "forwarding" key, either:
- the directory n° of the trunk group containing the activation request if forwarding is **fixed** or of **type 1**
 - or the directory n° of the trunk group containing the activation request and the forwarding destination if forwarding is **variable**.

CANCELLATION

	Type of station	Station without display (except Z)	Station with display
Service			
PABX forwarding		P.K.: Div PABX + password	P.K.: PABX^E + password

ADDITIONAL INFORMATION

- Activation of PABX forwarding is signaled:
 - on the displays of all stations in the installation
 - for a type 1 configuration, by the icon or LED of the forwarded RSP keys.
- After activation of PABX forwarding, outgoing calls are still authorized.
- Two metering statements are printed out: one at activation of the service, the other at cancellation of it.
- The activation request for a "group" in which all the links are busy is rejected. The same applies to an isolated link.
- For countries without this feature, PABX forwarding can be managed using a restricted public numbering plan in which every DDI number corresponds to a station which will divert to the outside.



PABX FORWARDING *

CALL SERVER : TELEPHONE FEATURES

AUTOMATIC CALLBACK ON BUSY TRUNK GROUP

File
34

DESCRIPTION

When a user makes a network call (public or private) by:

- using an external RSD or RSB resource key (see "Resource Keys")
- dialing a trunk group number
- using the "Dial by Name" feature
- pressing a direct call key
- using the personal and collective speed dial numbers
- using the "Redial" and "Temporary Memory" features

and hears the busy tone for the selected trunk group, he can leave an **automatic call back request** on this trunk group.

CONFIGURATION

▼ To specify whether or not to authorize a station to leave an automatic call back request:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Callback"**

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

S.K.: Soft Key

Code: Code programmed in the "Features in Conversation" table

Type of station Type of service	All stations (including Z)	Without display (≠ Z)	With display, no soft keys	With soft keys
Automatic call back request (*)	Function code	P.K.: Automatic call-back request	P.K.: OCback	S.K.: OCback

(*) When a line in the trunk group is released, the subscriber requesting callback is rung. When he picks up the handset, he hears the dial tone. He then needs simply to dial the number without entering the trunk group number.

When the automatic callback request was left following an automatically dialed call (by personal speed dial, for example), the dialing is transmitted automatically by the system once the requester has answered the callback.

CANCELLATION

Prefix: Code programmed in the "Features in Conversation" table

Type of station / Type of service	All stations (including Z)	Without display (≠ Z)	With display, no soft keys	With soft keys
Automatic call back (**)	Prefix	P.K.: Cancel callback	P.K.: nCback	S.K.: nCback , before or during callback

(**) The automatic call back request is also cancelled if:

- the person requesting call back does not go off hook within 25 seconds or presses the "Release" key during these 25 seconds
- no line in the trunk group becomes free within 30 minutes
- all the resources of the person requesting call back are busy
- after the person requesting the callback has answered, all the lines in the trunk group return to busy.

ADDITIONAL INFORMATION

- A user can leave only one type of automatic call back request at a time: on busy station or trunk group.
- If the automatic call back request is accepted, the user hears the dial tone if he is off hook and switches to the idle status in hands-free mode.
- An automatic call back request does not follow call diversion (not even a "Do Not Disturb").
- The system accepts as many automatic call back requests on a busy trunk group as it contains lines.
- Automatic call back cannot be picked up (see "Call pick-up").
- Automatic call back which the requesting party does not answer is not recorded in the directory of unanswered calls.

TRANSMISSION OF DTMF CODES (OR END-TO-END SIGNALING)

File

35

DESCRIPTION

A station can dial either:

- in decadic mode, or
- in DTMF (dual-tone multi-frequencies)

In order to use the services of a server or a telephone answering device, a station must use DTMF dialing so that the PABX can forward the digits dialed to this server without analyzing them.

A DTMF dialing station does this implicitly since it generates the DTMF dialing itself.

A decadic dialing station must activate the **DTMF end-to-end signaling** function. The digits dialed are then converted into DTMF dialing.

"DTMF end-to-end signaling" can be activated either:

- manually, during internal or external conversation
- automatically, via a pre-recorded number in which a "**forced DTMF end-to-end signaling**" character is programmed, possibly followed by digits to be transmitted in DTMF:
 - in the personal speed dial numbers (internal or external number)
 - in the collective speed dial numbers (external number)
- on a direct call key (internal or external number)
- automatically, during an internal or external conversation, via DTMF end-to-end signaling programming for each station or system.

CONFIGURATION

▼ To modify the value of the time-out during which DTMF end-to-end signaling is active:

- by MMC-PM5 (Expert View):
System Miscellaneous -> Memory Read/Write -> Timer Labels -> "IntDgMfTim"
- by MMC-Station:
Global -> Rd/Wr -> Timers -> "IntDgMfTim" -> Return -> Memory

TRANSMISSION OF DTMF CODES (OR END-TO-END SIGNALING)

CALL SERVER : TELEPHONE FEATURES

▼ To modify the value of the time-out during which forced DTMF end-to-end signaling is active:

- by MMC-PM5 (Expert view):
System Miscellaneous -> Memory Read/Write -> Timer Labels -> "ForceMFTim"
- by MMC-Station:
Global -> Rd/Wr -> Timer -> "ForceMFTim" -> Return -> Memory

▼ Create the Features in Conversation making it possible to activate the end-to-end signaling and to resend the * in DTMF:

- by MMC-PM5 (Expert View): **Numbering -> FAC Numbering Plan**
- by MMC-Station: **NumPln -> Code -> Funct -> "Send MF num"**

▼ To specify whether or not to activate DTMF end-to-end signaling for a given station (service deactivated by default):

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> MF Transparency**

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

S.K.: Soft Key

Code: Code programmed in the "Features in Conversation" table

Type of station Service	Z decadic	Without display	With display, no S.K.s	With soft keys
Manual activation during communication	Code DTMF end-to-end signaling	P.K.: DTMF end-to-end signaling	P.K.: ODTMF	S.K.: ODTMF
Automatic activation	By collective speed dial numbers	All types of pre-recorded dialing	All types of pre-recorded dialing	All types of pre-recorded dialing

cancellation

Type of station Service	Z decadic	Without display	With display, no S.K.s	With soft keys
When activation has been done manually	Automatic deactivation on "IntDgMfTim" time-out.	P.K.: DTMF end-to-end signaling	P.K.: ODTMF	S.K.: nDTMF
When activation was automatic	Automatic deactivation on "ForceMFTim" time-out when the system encounters the "/" character or manual deactivation by key.			

ADDITIONAL INFORMATION

- When "DTMF end-to-end signaling" is forced in a pre-recorded number, the digits then to be sent in voice frequencies can be either pre-recorded or dialed by the user when he makes the call.
- The character symbolizing "Forced DTMF end-to-end signaling" is the slash ("/"). This character also introduces a 5-second pause (non-modifiable) before sending the rest of the number in DTMF end-to-end signaling; to introduce a 10 second pause: xxxx // xxxx.
- When a number with "Forced DTMF end-to-end signaling" is recorded in the "Redial" or "Temporary number" memory, the number is transmitted and the end-to-end signaling service activated when the content of these memories is recalled. However, the digits to be sent in voice frequencies are not retransmitted if they were dialed by the user at the time of making the call.
- The number of "Forced DTMF end-to-end signaling" characters and digits to be sent in voice frequency format depend on the total number of digits authorized in programming a speed dial entry or call key and the number of digits forming the directory number of the called server.
- The system makes it possible to program the DTMF end-to-end signaling feature in conversation which, when it is dialed, enables the activation of the end-to-end signaling and the transmission of the character "***", frequently requested by the voice servers (see "Configuration").
- DTMF end-to-end signaling:
 - when DTMF end-to-end signaling is active for the system or station in conversation, access to the features in conversation is no longer offered (except for DTMF analog stations that have access to these features via the intermediate of the "R" key).
 - to carry out an enquiry call on a monoline station, DTMF end-to-end signaling must first be cancelled by pressing on a key programmed "DTMF end-to-end signaling". A multiline station uses a resource key.
- DTMF end-to-end signaling can be deactivated for the current call by pressing a soft key or DTMF programmed key n (access to features in conversation and to enquiry calls is performed as it was before activating this function).



**TRANSMISSION OF DTMF CODES (OR
END-TO-END SIGNALING)**

CALL SERVER : TELEPHONE FEATURES

<h1 style="margin: 0;">CALL PICK-UP</h1>	<div style="background-color: black; color: white; border-radius: 50%; width: 60px; height: 60px; display: flex; flex-direction: column; align-items: center; justify-content: center; margin: 0 auto;"> File 36 </div>
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DESCRIPTION

When a station rings, another user can answer the call in place of the destination station. This call is "picked up". There are various types of pick-up:

- a call to a station outside a pick-up group: this is an **individual pick-up**
- a call to a station within a pick-up group: this is a **group pick-up**
- a call arriving at the general level: this is a **general call answer**

CONFIGURATION

▼ To create the pick-up groups:

- by MMC-PM5 (Expert View): **Pickup Groups**
- by MMC-Station: **Groups -> Pick Up**

▼ To specify whether or not to authorize a station to pick up a call:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Call Pickup Allowed"**

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

S.K.: Soft Key

Prefix: Code programmed in the internal numbering plan

Type of station Type of service	Multiline	All stations (including Z)	Without display (≠ Z)	With display, no soft keys	With soft keys
Individual pick-up (*)	--	Code + n° of station ringing	P.K.: Individual pickup + n° of station ringing	P.K.: IndPic + n° of station ringing	S.K.: Pickup + S.K.: IndPic + n° of station ringing
Group pick-up (*)	--	Prefix	P.K.: Group pick-up	P.K.: GrpPic	S.K.: Pickup + S.K.: GrpPic
General call answer (*)	--	Prefix	P.K.: General Call Answer	P.K.: GenBel	S.K.: Pickup + S.K.: GenBel

(*) If the pick-up is accepted, the user converses with the caller, if not, he hears the fast busy tone.

ADDITIONAL INFORMATION

- A private subscriber can only pick up internal calls.
- A private call cannot be picked up.
- A call intended for a Hunting Group with cyclic or sequential management (see section "system features" file "Hunting Groups") can be picked up like an individual pick-up.
- A call intended for a group of operator stations can only be picked up by individual pick-up.
- Prefixes for pick-up functions in the numbering plans: the basic value may vary depending on the local software version. The French settings are as follows:
 - Pick-up: base 0 = individual pick-up
 - Pick-up: base 1 = group pick-up
- Pick-up: base 2 = general call pick-up

CALL PARKING/PARKED CALL RETRIEVAL

File
37

DESCRIPTION

A user in conversation with an external correspondent can suspend this conversation and retrieve the correspondent later on from the same station or another station in the installation.

CONFIGURATION

- ▼ Modify, if necessary, the default timeout before rerouting of the parked call (90 seconds) – MMC-PM5 (Expert View) only:

System Miscellaneous -> Feature Design -> Part 3 -> "Time before parked call is rerouted"

The rerouting of parked calls depends on the contents of **Incoming Call Handling -> Public Caller -> Go to Attendant or Release**

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

S.K.: Soft Key

Code: Code programmed in the "Features in Conversation" table

Service \ Type of station	All stations including Z	Without display	With display, no soft keys	With soft keys
Parking of an external correspondent	Prefix (*)	P.K.: Call Parking (*)	P.K.: Park (*)	S.K.: Park (*)
Parked call retrieval	Prefix Call Parking + n° of station from which the call was parked	P.K.: Call Parking + n° of station from which the call was parked	P.K.: Park + n° of station from which the call was parked	S.K.: Pickup + S.K.: Park + n° of station from which the call was parked

(*) If the request is accepted, the external correspondent is placed on hold and hears the please-wait music.

ADDITIONAL INFORMATION

- When a user is involved in a conference or an intrusion, call parking is refused.
- An internal call cannot be parked.
- When the external correspondent is parked for more than the default value of 90 seconds, the call is routed to the general level (see "Operator Station").
- The system allows as many parked calls as there are network lines.
- Prefix for the Call Parking function in the numbering plans = Pick-up prefix + base 3. (For France: the basic value may vary according to the local version of the software).

PAGING

File

38

DESCRIPTION

An authorized user can inform another internal user with a portable receiver (or "bleep") that he is trying to contact him on the telephone.

Paging is carried out depending on the paging device connected to the PABX, either:

- by suffix, i.e. after calling the user to be paged, with the latter not answering the telephone
- par "mode 4" prefix: the caller dials the paging prefix then, depending on the device, makes a voice announcement or dials a pager number. The called party dials the paging answer number
- by "mode 2" prefix (using the ESPA protocol): the caller dials the paging number followed by the number for the device (it is a good idea to make pager numbers match station numbers). The called party dials the answer number followed by his station number.

CONFIGURATION

▼ To specify whether or not to authorize a station to carry out paging by suffix:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> "Paging"**

▼ To program the "bleep" numbers for users with pagers:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Misc. -> "Paging Code/Phone Card Password"**
- by MMC-Station: **Subscr -> Paging**

▼ To configure the type of paging device connected to the PABX – MMC-PM5 (Expert View) only:

- System Miscellaneous -> Feature Design -> "Paging Type"**

- ▼ To modify the paging no-answer time-out value if required out – MMC-PM5 (Expert View) only:

System Miscellaneous -> Feature Design -> Part 2 -> "Maximum Waiting Time for Paging"

- ▼ If necessary modify the value of the paging device busy time-out – MMC-PM5 (Expert View) only:

System Miscellaneous -> Feature Design -> Part 3 -> "Maximum Connection Time for Paging"

- ▼ To define the paging activation code:

- by MMC-PM5 (Expert View): **Numbering -> Internal Numbering Plan -> Paging Activation**

- ▼ To define the answer code:

- by MMC-PM5 (Expert View): **Numbering -> Internal Numbering Plan -> Paging Answ. (Gen.)**

- ▼ For "by suffix" paging, configure the analog line to which the paging device is connected:

- by MMC-PM5 (Expert View): **External Lines -> Trunk List -> Details -> "Paging"**
 - by MMC-Station: **Access -> Paging**

- ▼ For "by prefix, mode 4" or mode 2" paging, configure the SLI interface to which the paging device is connected:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Misc. -> "Special Function"**
 - by MMC-Station: **Subscr -> SpeDev**

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station
Prefix: Code programmed in the internal numbering plan or the "Features in Conversation" table

Service \ Type of station	All stations including Z	Without display	With display, no soft keys	With soft keys
Paging by suffix, in ringing phase, the correspondent called does not answer	Prefix Paging by suffix (*)	P.K.: Paging by suffix (*)	P.K.: Page (*)	
Paging by prefix, mode 4	Prefix Paging by prefix + n° of pager(**)	P.K.: Paging by prefix + n° of pager(**)	P.K.: PgPfx + n° of pager(**)	
Paging by prefix, mode 2	Prefix Paging by prefix + n° of station paged (*)	P.K.: Paging by prefix + n° of station paged (*)	P.K.: PgPfx + n° of station paged (*)	
Answering paging by suffix	Prefix Selective paging answer + n° of station paged	P.K.: Selective paging answer + n° of station paged	P.K.: PgaSel + n° of station paged	
Answering paging by prefix, mode 4	Prefix General Paging Answer	P.K.: General Paging Answer	P.K.: PgaGen	
Answering paging by prefix, mode 2	Prefix Selective paging answer + n° of station paged	P.K.: Selective paging answer + n° of station paged	P.K.: PgaSel + n° of station paged	

(*) The requesting party stays on line and waits for the paged party to answer. Conversion of the set number into paging receiver number is carried out by the system, which informs the paging device.
(**) The requesting party stays on line and waits for the paged party to answer.

ADDITIONAL INFORMATION

- A user can only activate a single paging operation at a time.
- For the "by suffix" type of paging, the system allows 4 simultaneous answer attempts by default.
- Paging must be answered before the "Maximum Waiting Time for Paging" time-out expires.



PAGING

CALL SERVER : TELEPHONE FEATURES

MAIN PABX RECALL

File
39

DESCRIPTION

If a user wishes to use the services offered by the analog network operator, he must transmit a calibrated loopbreak over the line.

This procedure must also be followed when the system is connected to a PABX of larger capacity via analog network lines.

CONFIGURATION

- ▼ For each analog network line, configure the value of the calibrated loopbreak using MMC-PM5 Expert View (only):

External Lines -> List of Accesses -> Details -> "Cut off Type"

- ▼ To modify the default value for the activation of the time-out for the calibrated loopbreak if no figure has been transmitted:

- by MMC-PM5 **System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "IntCILpTim"**
- by MMC-Station: **Global -> Rd/Wr -> Address -> "IntCILpTim" -> Return -> Memory**

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

F.K.: Fixed Key

S.K.: Soft Key

Code: Code programmed in the "Features in Conversation" table

Type of station	Z	Without display	With display, no soft keys	With soft keys
Main PABX recall	F.K.: R. + Code (*)	P.K.: Main PABX recall (*)	P.K.: OPBX. (*)	S.K.: OPBX. (*)

(*) the system then transmits a main PABX recall to the local PABX and the following digits.

CANCELLATION

Type of station	Z	Without display	With display, no soft keys	With soft keys
Cancel main PABX recall	Automatic (*)	P.K.: Main PABX recall	P.K.: OPBX.	S.K.: nPBX.

(*) after the expiry of a time-out of:

- 5 seconds, programmable, if no figure has been entered
- 10 seconds if a figure has been entered (normal time-out for figures)

ADDITIONAL INFORMATION

The "Main PABX Recall" programmed key or "oPBX" key can be replaced by a macro command programmed key "Macro3 = Main PABX recall + transmission of a number or code".

TEXT MAIL/DELAYED CALLBACK REQUEST



DESCRIPTION

Text mail

A user who has a station with display can send a to another internal user who has a display and Message LED, either:

- whilst out of communication
- during call setup phase, whatever the called party's status

The system offers 27 pre-programmed messages. Some of these include a variable part (for example, a date or room number, etc.) that has to be filled in. A user who has a station with soft keys can also create a complete message using the alphabetic keypad.

When the recipient has a station without a display (but with a Message LED), the text message becomes a "delayed callback request".

Delayed call-back request

A user whose set does not have a display but which has a "Delayed call-back request key" can leave a delayed call-back request for another user whose set has a Message LED. The call-back request can only be left in call setup phase as long as the called party has still not answered.

CONFIGURATION

▼ To modify the pre-defined messages – MMC-PM5 (Expert View) only:

System Miscellaneous -> Messages and Music -> Mailing Messages

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

F.K.: Fixed Key

S.K.: Soft Key

Prefix: Code programmed in the internal numbering plan

Static Service or Function	Z	Without display (≠ Z)	With display, no S.K.s	With soft keys
Choice of text message (*)	--	--	F.K.: Mail or P.K.: MsgLED + 3 + Destination n° if requested + F.K. i + 3 + Message n°	F.K.: Mail + S.K.: Text + n° of destination if requested + S.K.: MsgNo + Message n°
Modify language for the message	--	--	F.K. i + 4	S.K.: Lang
To validate the chosen message	--	--	F.K.: LS	S.K.: OK
To validate the variable part	--	--	F.K.: LS	S.K.: OK
Read text messages received (*)	--	--	F.K.: Mail + 3	F.K.: Mail + S.K.: Text + S.K.: Read
Send a delayed call-back request	Code +1	P.K.: Delayed call-back request + 1		--
Presence of a text message or delayed call-back request	Flashing Message LED		Flashing 2-colour LED and Mail	
Answer a delayed call-back request	Prefix	P.K.: Delayed call-back request		--

(*) When the set is idle, the system gives priority to "reading" the messages received (voice messages first, then text).

ADDITIONAL INFORMATION

- On a Z station intended to receive a delayed call-back request, a "virtual" "Master Mailing" key must be configured with MMC-PM5 (Expert View), or an "MsgLed" with MMC-Station.
- Calls from external Z users to stations in text answering diversion mode are forwarded to the Operator Station; the text message is shown on the OS display.

STATION COMFORT FEATURES

File

41

DESCRIPTION

User comfort involves:

- the ability to cut oneself off from the other party, i.e. to deactivate the microphone (in the handset or the hands-free function) by activating "**mute**"
- for a station with display, the option of reading the number assigned to the station and the associated name programmed into the internal directory using the "**Station Identity**" function
- for a station in the Reflexes range with a display, the ability to read the number associated with the option connected to the station (V24, S0, Z, etc.) using the "**Sub-Device**" function
- the option of preventing use of one's own station (programming, making external calls, access to text messages and non-answered calls repertory, activation and cancellation of call diversion) by activating **locking** of the station
- the ability to use the station's loudspeaker with **amplified reception**, and to adjust the volume.
- for Reflexes stations, the option of adjusting the conversation volume at the handset.

CONFIGURATION

- ▼ On each station, the personal code can be modified by customization only.
- ▼ For Reflexes stations, to specify whether or not to authorize adjustment of the handset volume:

- by MMC-PM5 **System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "GainCtrlON"**
- by MMC-Station: **Global -> Rd/Wr -> Address -> "GainCtrlON" -> Return -> Memory**

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

F.K.: Fixed Key

S.K.: Soft Key

Prefix: Code programmed in the internal numbering plan

<div style="text-align: center;"> Type of station <hr style="border: none; border-top: 1px solid black;"/> Service </div>	Z	Without display, without "mute" F.K.: and/or without LS	Without display, with "mute" F.K.: and/or with LS	With display, no S.K.s	With soft keys
Communication mute	--	--	F.K.: Mute	F.K.: Mute	
Station identity	--	--	--	2 presses on key i	F.K.: i + S.K.: WhoAml
Option identity	--	--	--	2 presses on key i	F.K.: i + S.K.: SubDv?
Locking	Prefix + personal code	P.K.: Lock/Unlock + personal code		P.K.: Lock + personal code	S.K.: Lock + personal code
Amplified reception	--	--	F.K.: LS or F.K.: LS+	F.K.: LS	
Adjust the loudspeaker volume or, for 40XX stations only, the handset volume	--	--	F.K.: LS- and LS+ or F.K.: LS+/-	F.K.: LS- and LS+	

CANCELLATION

<div style="text-align: center;"> Type of station <hr style="border: none; border-top: 1px solid black;"/> Service </div>	Z	Without display, without "mute" F.K.: and/or without LS	Without display, with "mute" F.K.: and/or with LS	With display, no S.K.s	With soft keys
Communication mute	--	--	F.K.: Mute	F.K.: Mute	
Unlocking	Prefix + personal code	P.K.: Lock/Unlock + personal code		P.K.: Lock + personal code	S.K.: Lock + personal code
Amplified reception	--	--	F.K.: LS or F.K.: LS-	F.K.: LS	

(*) Mute is also deactivated at the end of the communication.

BACKGROUND MUSIC

File
42

DESCRIPTION

When a radio or cassette recorder is connected to the system, a user can activate the broadcast of music through the loudspeaker on his station when it is idle.

ACTIVATION/USE

Type of station	Without loudspeaker	With loudspeaker
Service		
Background music	--	F.K.: LS or LS+
Adjust the volume	--	F.K.: LS+ and LS- or LS+/-

cancellation

Type of station	Without loudspeaker	With loudspeaker
Service		
Background music	--	F.K.: LS or LS+

ADDITIONAL INFORMATION

The transmission of the music is stopped automatically when a call arrives on the station or when the user makes a call.



BACKGROUND MUSIC

CALL SERVER : TELEPHONE FEATURES

HEADSET FEATURES

File

43

DESCRIPTION

The user of a station with the Handsfree function can use a headset, connected instead of the handset (for a wired station) and use the functions normally accessible from his or her station.

"Headset mode" must be activated by station customization.

To answer a call, three connection modes can be used, either:

- manual: the user answers the call manually by pressing the resource key signaling the call or the Handsfree key
- a hotline call: the system determines what type of call is at the station (see "Answering camped-on calls")
- in automatic **Intercom** mode: after ringing, the station "answers" the call of highest priority by switching to hands free mode.

CONFIGURATION

▼ To modify the time-out before connection in automatic mode – MMC-PM5 (Expert View) only:

System Miscellaneous -> Feature Design -> Part 3 -> "Time before auto. conn. in headset mode"

▼ To activate headset mode (MMC-Station Administrator session only)

Subscr -> n° of station -> Headst -> Choice

Nota : Headset mode can also be activated by customizing the stations; see "Customizing Stations" for how this is done, depending on the type of Reflexes station.

HEADSET FEATURES

CALL SERVER : TELEPHONE FEATURES

USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

F.K.: Fixed Key

Service / Type of station	Without Hands-Free feature,	With Hands-Free feature
Answer a call manually	--	Resource Key or F.K.: Handsfree
Activate automatic answer mode (*)	--	F.K.: Intercom or P.K.: AutAns or Intercom

(*) When a caller is camped-on on the station in automatic answer mode, the user goes into conversation with the caller after pressing the "End" key and the transmission of a beep.

APPOINTMENT REMINDER/WAKE-UP
CALL

File
44

DESCRIPTION

A user can have his station ring at a time he can program himself. This is the "Appointment Reminder" function in the case of companies and the "Wake-Up" call in the case of a hotel (in the various numbering plans, it is referred to as "Wake-Up").

The "Appointment reminder" can be activated either:

- every day at the programmed time: this is a "permanent" appointment
- or only once in the 24 hours following programming: this is a "temporary" appointment.

CONFIGURATION

▼ To program the time of the appointment or wake-up call for a station:

S.K.: Soft Key

Prefix: Code programmed in the internal numbering plan

Service \ Type of station	Without display	With display, no soft keys	With soft keys
Permanent appointment reminder	--	Key i + function " Appmnt " then function " Perm + 4-digit permanent call time	S.K.: Appmnt + S.K.: Param + 4-digit permanent call time
Temporary appointment reminder	Prefix Wake-up activation + 4-digit wake-up call time	Key i + function " Appmnt " + 4-digit temporary reminder time	S.K.: Appmnt + 4-digit temporary reminder time

▼ To define the number of times temporary appointment reminders/wake-up calls should be repeated (3 by default):

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Timer Labels -> "WakeUpRetr"**
- by MMC-Station: **Global -> Rd/Wr -> Address -> "TonPrCmp" -> Return -> Memory**

APPOINTMENT REMINDER/WAKE-UP CALL

CALL SERVER : TELEPHONE FEATURES

▼ To define the ringing duration (15 seconds by default):

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Timer Labels -> "TmAppAnTim (temporary appointment) or PmAppAnTim (permanent appointment)"**

▼ To define the timing between 2 wake-up calls (1 minute by default):

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Timer Labels -> "TmAppWaTim (temporary appointment) or PmAppWaTim (permanent appointment)"**

▼ To define the timing between 2 groups of 5 wake-ups when there are too many simultaneous requests (2 seconds by default):

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Timer Labels -> "InAnnAppTim"**

▼ To define the reaction in the event of a problem with a wake-up call on a room station (Hotel version)

- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "WakUpPrbRg"**
- by MMC-Station: **Global -> Rd/Wr -> Address -> "WakUpPrbRg" -> Return -> Memory**

If YES is selected, the reception station rings with a specific call tone and the display shows "Wake-up problem".

ACTIVATION/USE

At the appointment or wake-up time, the station rings and the display shows the appointment.

Ringling stops when the user acknowledges the appointment reminder or wake-up call, for example by going off hook. If there is no acknowledgement, the station rings for 15 seconds (default setting) and then again one minute later (also by default) and then a third time (by default) after a further minute.

Whether acknowledged or not, a temporary appointment reminder or wake-up call is cancelled and a permanent appointment reminder is retained for the following day at the same time.

CANCELLATION

S.K.: Soft Key
Prefix: Code programmed in the internal numbering plan

	Type of station	Without display	With display, no soft keys	With soft keys
Service				
Permanent appointment reminder		--	Key i + function " Appmnt " then function " Perm " + F.K.: "Cancellation" + F.K.: "OK"	S.K.: Appmnt + S.K.: Perm S.K.: Clear + S.K.: OK
Temporary appointment reminder		Prefix Wake-up activation	Key i + function " Appmnt " then function " Temp " + F.K.: "Cancellation" + F.K. "OK"	S.K.: Appmnt + S.K.: Temp + S.K.: Clear + S.K.: OK

ADDITIONAL INFORMATION

- When the station is busy at the time the appointment reminder or wake-up call is made, the station does not ring but the user hears a specific tone.
- To avoid traffic overload, stations that have placed wake-up call requests are called in groups of 5, with a default time lapse of 2 seconds between 2 groups
- Number of analog stations called simultaneously: maximum of 4 per SLI board
- You can consult the appointment reminder/wake-up call status for each station in: **Subscribers/Basestations List -> Details -> WakUp.**



**APPOINTMENT REMINDER/WAKE-UP
CALL**

CALL SERVER : TELEPHONE FEATURES

CALL MONITORING



DESCRIPTION

A user can help one or more other users to manage their communications, by means of:

- **supervision** of one or more resource keys on these users' stations, with or without **supervised call ringing**: the incoming calls on the supervised resource key are signaled in the same way as on the associated supervision key
- the **selective monitoring**: the user also receives the calls intended for the selected directory numbers
- **subscriber monitoring**: the user also receives all the calls for the station monitored
- **general monitoring**: the user also receives external calls intended for the operator stations

CONFIGURATION

▼ For a Z station wishing to use general monitoring, program a virtual key using MMC-PM5 (Expert View):

Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Virtual Key -> "General Monitoring"

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

Prefix: Code programmed in the internal numbering plan

Type of station Service	Z	Without display and multiline	Without display and multiline	With display
Supervised call ringing	--	--	P.K.: Supervision melody or Ring	P.K.: Supervision melody or Ring
Selective monitoring	--	--	P.K.: Selective monitoring	P.K.: Monit
Answer calls from selective monitoring	--	--	P.K.: Selective monitoring when the associated LED flashes	P.K.: Monit when the associated LED or icon flashes
Subscriber monitoring	--	--	P.K.: SubMon or Subscriber monitoring	
Answer calls from subscriber monitoring	--	--	Off-hook or press "Hands Free"	
General monitoring	Prefix Programming mode + 6 (*)	P.K.: General monitoring		P.K.: GenMon
Answer calls from General monitoring	Go off hook	Go off hook	P.K.: General monitoring when associated LED or icon flashes	P.K.: GenMon when associated LED or icon flashes

(*) If a "General Monitoring" virtual key is programmed on the station.

CANCELLATION

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

Prefix: Code programmed in the internal numbering plan

Service	Type of station	Z	Without display and monoline	Without display and multiline	With display
Supervised call ringing		--	--	P.K.: Supervision melody or Ring	P.K.: Supervision melody or Ring
Selective monitoring		--	--	P.K.: Selective monitoring	P.K.: Monit
Subscriber monitoring		--	--	P.K.: SubMon or Subscriber monitoring	
General monitoring		Prefix Programming mode + 7	P.K.: General monitoring		P.K.: GenMon

ADDITIONAL INFORMATION

- A "Selective Monitoring" programmed key can monitor up to 8 directory numbers (a user can have several directory numbers for a single station: for example, an internal number defined in the main numbering plan, and an external number defined in the DDI numbering plan. Thus, in order to monitor both internal and external calls, both directory numbers must be programmed on one or two selective monitoring keys).
- A station can have several selective monitoring keys.
- Selective or subscriber monitoring of a group of stations is impossible. However, when subscriber monitoring is active for a station belonging to a parallel or sequential group, the group calls for this station are monitored.
- Selective monitoring does not work for diverted or monitored calls.
- Subscriber monitoring does not work for calls coming from automatic call back on busy station or trunk group, or from those coming from master recall if transfer fails.
- When all the station resources are busy, new monitored calls are lost.
- A programmed "subscriber monitoring" key can be used to monitor up to 8 directory numbers (if a station has several call numbers, simply program one of them on a "subscriber monitoring" key for all the numbers on this station to be monitored).
- So that a Z station can use general monitoring, the installer must configure a "virtual" General Monitoring key on it.

CUSTOMIZING STATIONS

File

46

DESCRIPTION

Customization only affects the station on which it is performed (you cannot customize remote stations).

Switching to Customization mode

Depending on the type of station, press **Custo** (2nd page, Advanced Station in Idle) or **i + 5**, or dial the "Programming Mode" function code.

The following pages describe the tree structures available for each type of station; navigation is done using soft keys or codes (with the help of voice guides).

Additional Information

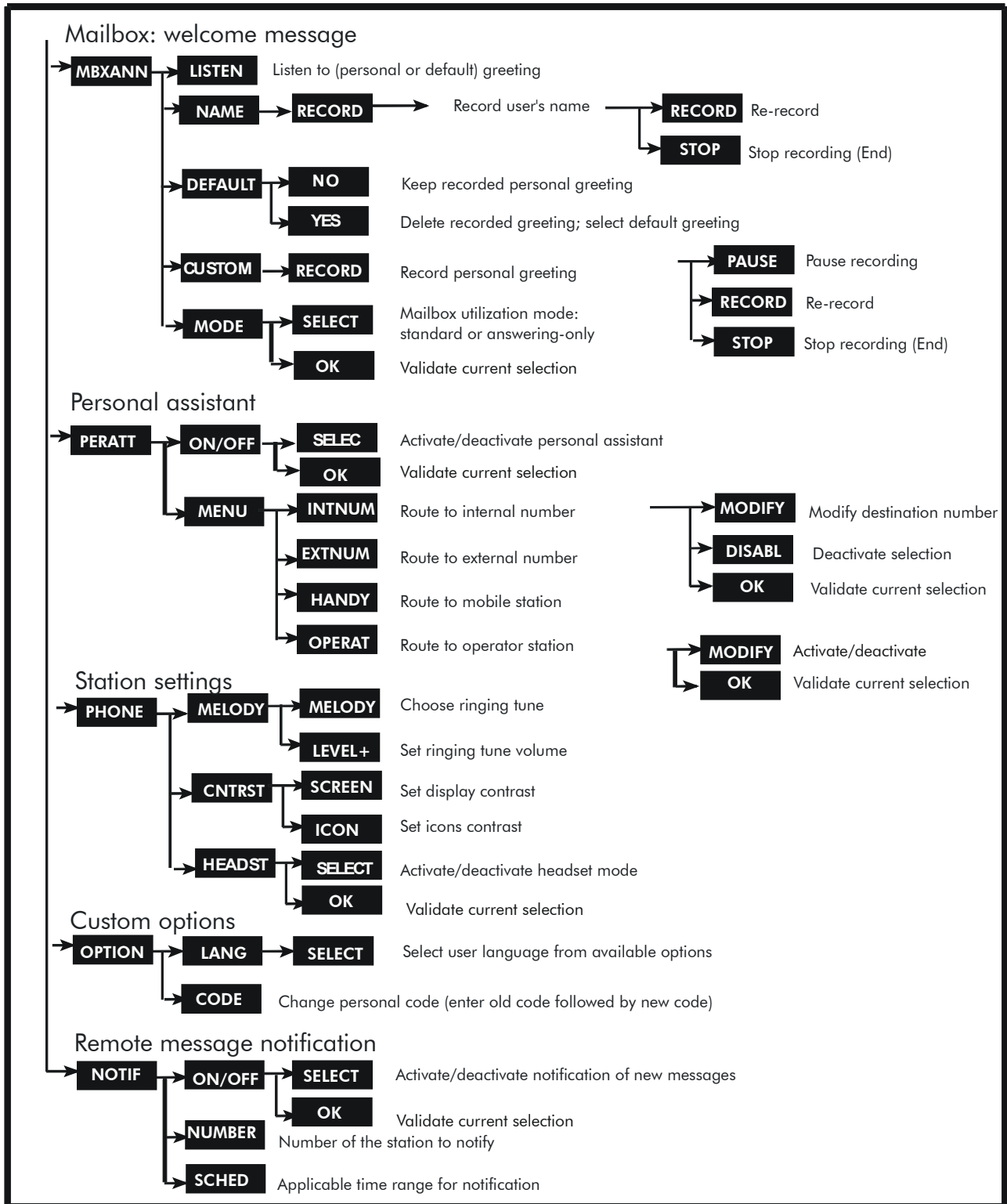
- Answer Only mode: activating or deactivating "Answer Only" mode does not modify the greeting in the voice mailbox ; the user has to select the appropriate default message or re-record a new one that corresponds to the selected mode of operation.
- Destination number (personal assistant or message notification):
 - external numbers must include the network access prefix
 - external numbers are subject to barring controls
 - if the pre-defined number is invalid or barred, the call is automatically put through to the destination mailbox (personal assistant) or is not connected (remote notification).
- Time ranges: on initialization, the start time is 00:00 and the end time is 24:00
- Customization validation key: **OK** for stations with soft keys, **#** for stations without soft keys, **9** for decadic stations.

Other available features:

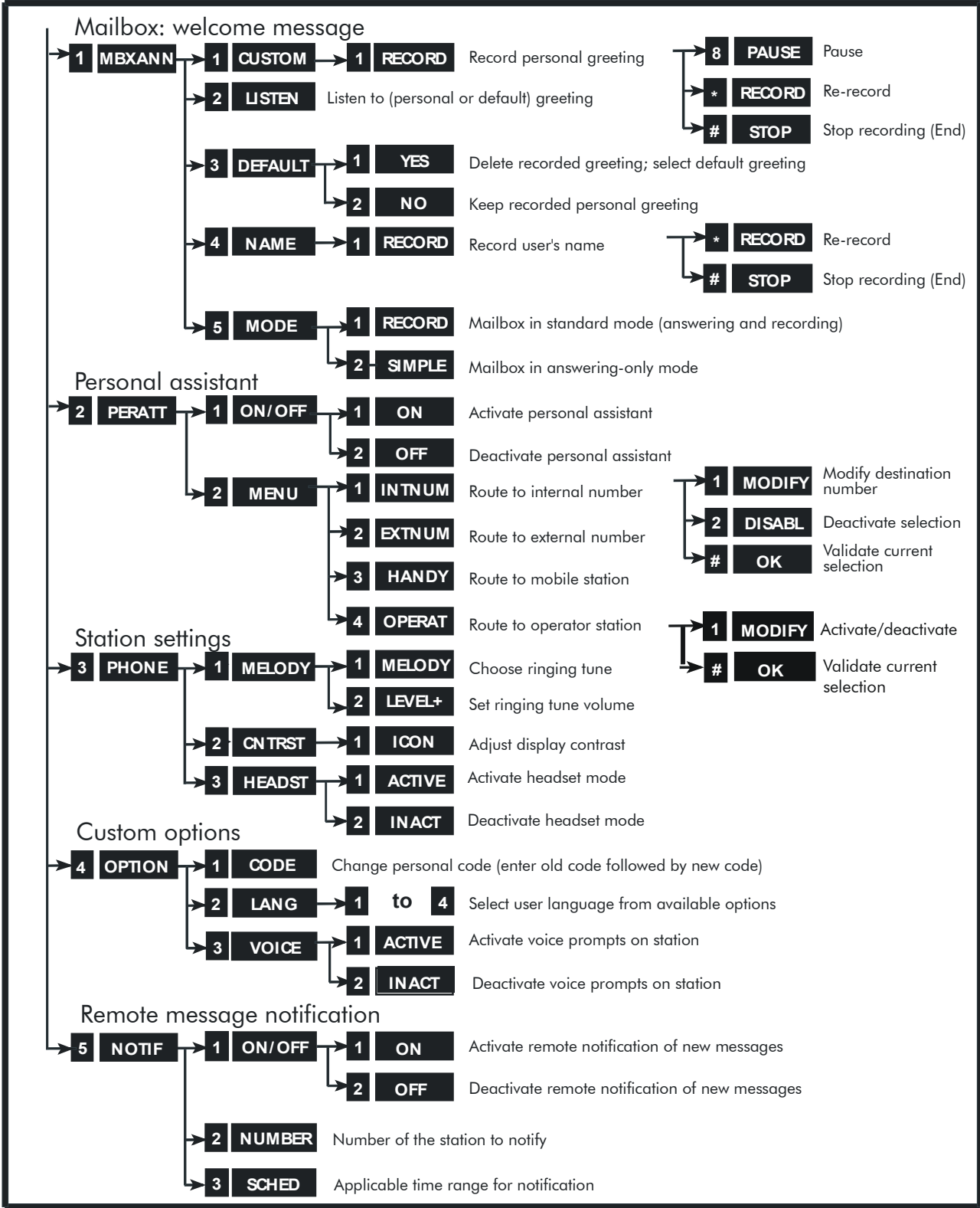
- **i** key + key programmed with a specific parameter: modify the parameter value.
- Repertory key + **i** key: program personal speed dials.
- **i** key + Appmnt key: program a reminder call.
- **i** key + Divert key: program call types to be forwarded.

Nota : For a detailed description of how to set up these functions (passing from one function to another, deleting a value, etc), refer to the user guide for the relevant terminal.

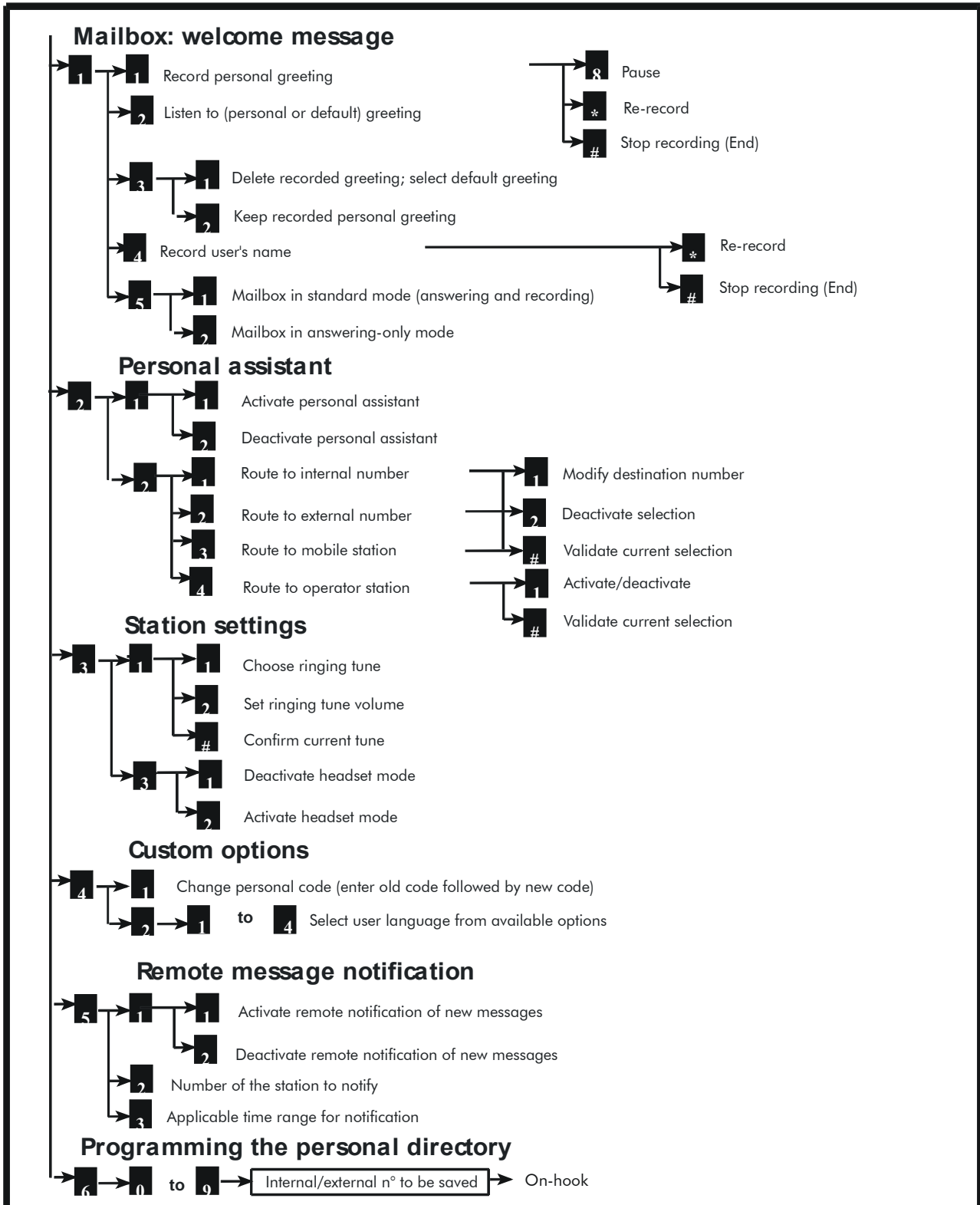
Stations with soft keys



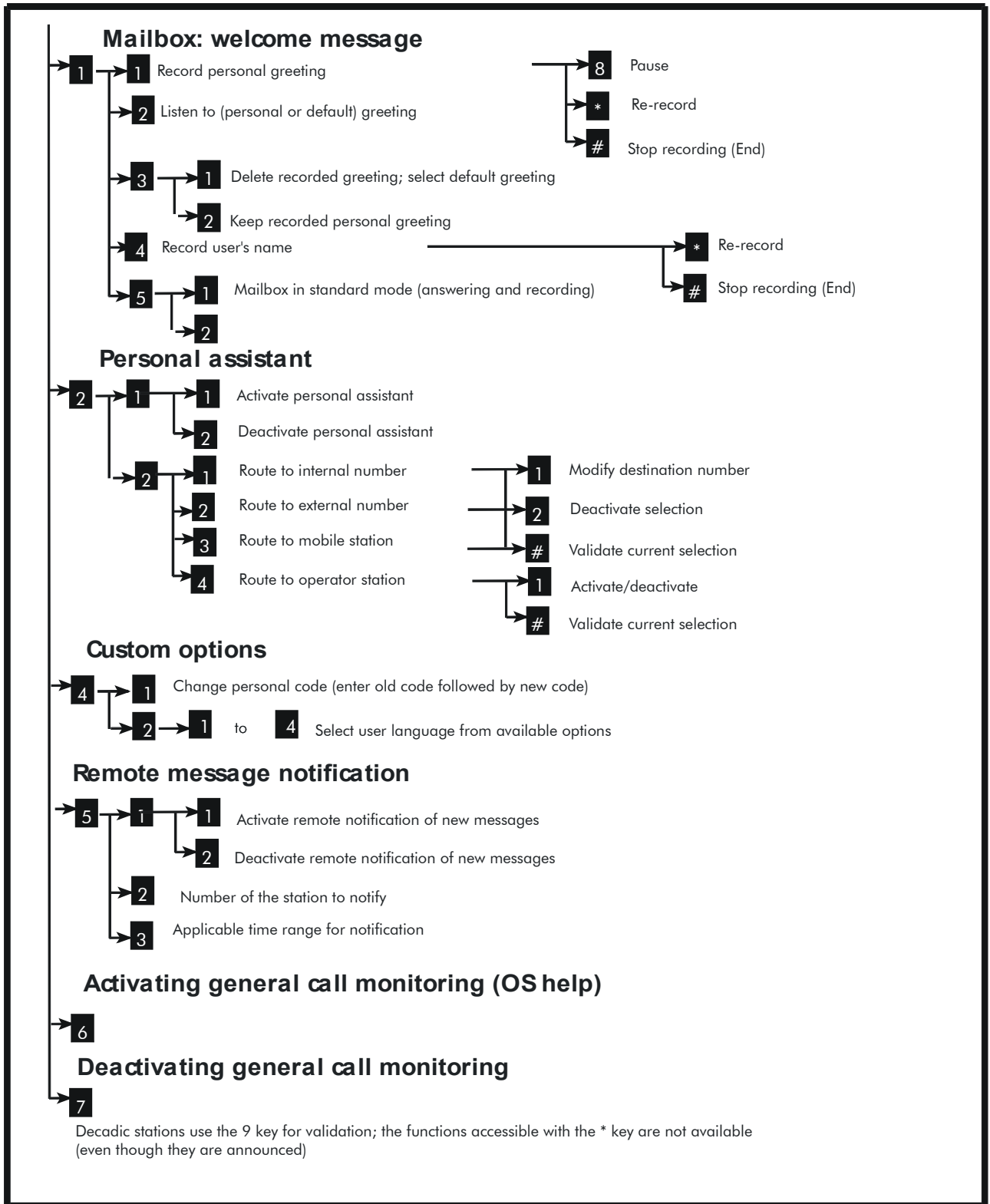
Stations without soft keys but with displays



Stations without displays or soft keys



Analog Z stations





CUSTOMIZING STATIONS

CALL SERVER : TELEPHONE FEATURES

TEAMWORK



DESCRIPTION

Teamwork simplifies the call management of all the members in a "work group" by equipping each station with:

- as many RSL keys as there are members in the group less one. Each RSL is programmed with the number of one of the other members of the group. These keys enable:
 - monitoring of the other stations, i.e. knowing whether they are free or occupied
 - direct calls to other members of the group
- one or more selective call monitoring keys (one key makes it possible to monitor up to 8 directory numbers) (see "Call Monitoring")
- a group call pick-up key (see "Call pick-up")

CONFIGURATION

▼ To create a work group – MMC-Station only:

TerPro -> TeamWk -> Add

ADDITIONAL INFORMATION

- Group call pick-up is used when selective call monitoring is deactivated for the station which is ringing.
- A work group is "virtual", i.e. there is no directory number. To remedy this, it is preferable to create a Hunting Group with parallel management (see "Hunting Groups").
- By adding monitoring resource keys to the other stations in the work group, each member of the group can monitor the other member's calls.



TEAMWORK

CALL SERVER : TELEPHONE FEATURES

ACCOUNT CODE/SUBSTITUTION



DESCRIPTION

Account code

An account code makes it possible to charge the cost of an external communication to a client account.

During a communication, a dedicated station can modify the account code or add one ; a Z station cannot.

All the account codes are configured in the account code table. For each account code, the installer can state:

- whether or not the client account is identified by a name which can be printed on the metering statement instead of the name of the call initiator
- whether or not the initiator of the call is to be identified by his directory number
- whether or not the initiator of the call must enter a password, either:
 - his personal code, if the user's identity is required ("User-ID" field in MMC-PM5 = User)
 - the personal code of the station on which the call is made, if the user's identity is not required ("User-ID" field by MMC-PM5 = No)
- whether the barring and traffic sharing link categories (see "Link Categories" and "Barring") used for the call are:
 - those of the 'set' on which the call is made
 - those of the 'Guest' (MMC-PM5 label), i.e. of the station identified for this call
 - the barring link category of the client account (between 1 and 16) and traffic sharing link category of the station on which the call is made
 - no barring: no barring link category but the system uses the traffic sharing link category of the station on which the call is made
- the number of digits of the external number, masked on the metering statement:
 - all: all the digits are masked (priority field in relation to the "Mask last 4 digits" field in the "Metering Printout" menu)
 - 0, 1, ...,9: from 0 to 9 digits masked (priority field relative to the "Mask last 4 digits" field in the "Metering Printout " menu)
 - default: value of the "Mask last 4 digits" field in the "Metering Printout" menu (either 0 or 4 digits masked).

Furthermore, an account code can be:

- defined: in this case, it is composed exclusively of digits (e.g. "987654")
- partially defined: in this case, it is composed of digits and asterisks (e.g.: "1345*****"), the asterisks represent the variable part ; the number of digits in the account code entered must be equal to the number of digits of the defined and asterisk part
- variable: in this case, it is composed exclusively of asterisks ; the number of digits in the account code entered must be equal to the number of asterisks.

When an account code is entered, the system checks first of all, whether it exists as a "defined" code, if not, a "partially defined" code, and finally as a "variable" code.

The installer can configure a code for activating the "Account Code" service in the main numbering plan. The "Base" field can be either:

- empty: in this case, the user enters the code associated with the client account himself
- 4 digits long, 0000 to 9999: in this case, the base refers to an account code configured in the account code table. The four digits of the base can correspond either to the 4 digits of a defined account code or to a variable code of 4 asterisks.

Substitution

This makes it possible to authorize a user to make **an external call** from any station in the installation, even barred or locked, as if he were making the call from his own station.

Substitution is a particular account code case for which:

- the user's identity is required
- barring and traffic sharing link categories are those of the "guest"
- the password may be required.

CONFIGURATION

▼ To create the code for activating the "Account Code" feature in the internal numbering plan:

- by MMC-PM5 (Expert View): **Numbering -> Internal Numbering Plan ->"Account Code New"**
- by MMC-Station: **NumPln -> IntNum -> Accoun**

▼ To create the account code table:

- by MMC-PM5 (Expert View): **Traffic Sharing and Barring -> Account Code Table**

▼ Select the name printed on the metering ticket ; that of the client account or of the initiator of the call – MMC-PM5 (Expert View) only:

Metering -> Printout -> Fields -> "Subscriber Name"

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

Prefix: Code programmed in the internal numbering plan

Type of station Service	Z	Without display	With display
Before setting up the call	Prefix New account code + account code if necessary + n° directory (if identity required) + personal code if required + external n°	P.K.: New account code (*) + account code if requested + directory n° if identity requested + personal code if requested + external n°	P.K.: AccNew (*) + account code if requested + directory n° if identity requested + personal code if requested + external n°
During communication	--	P.K.: Account code during communication + account code if requested + directory n° if identity requested + personal code if requested + external n°	P.K.: AccCom + account code if requested + directory n° if identity requested + personal code if requested + external n°

(*) the programmed keys, such as the numbering plan activation prefix, can contain the desired account code.

ADDITIONAL INFORMATION

- The system rejects all calls with an account code using the default personal code.
- An account code can have up to 16 digits or asterisks.
- Partially defined account codes in formats "12**34", "1***6***" or "***88" are forbidden.
- FORCED ACCOUNT CODE: the installer can authorize the user to only make external calls using an account code, by:
 - assigning barring link categories specific to the account code on one hand and to the user on the other
 - configuring account code parameters in the following manner: the user's identity is required, barring and traffic sharing link categories are those of the "station" and a password is also required
- The "New Account Code" and "AccNew" programmed key can be replaced by "Macro2" keys containing the external code .
- The account code is not memorized with the number in the Last Number Redial and Temporary memories.
- An account code can be modified several times during communication and until the user enters a "defined" or "partially defined" code.
- Masking of several or of all the digits in the external number dialed makes it possible to keep a call confidential.
- The "names" of the account codes do not figure in the internal directory.
- An account code remains active after activation of a paging, after a recall in the case of a transfer failure, after a call parking, a call pick-up, a forwarding or a transfer.
- The "Account Code" field can only be printed on statements with 132 columns.
- An S0 station cannot use these services.
- What not to do – example of an ineffective account code configuration: the user's identity is required, the barring and traffic sharing link categories are those of the "guest" and the personal code may or may not be required.

ALLOCATION OF A TRUNK LINE

File

49

DESCRIPTION

An authorized user can lease one of the trunk lines in the main trunk group to another barred user so that he may make a single external call. This user keeps his call confidential since he dials the number himself.

The authorized user must be in an internal communication with the user before leasing him the line.

The authorized user can also:

- select the barring level assigned to the call made after allocation of the line: no barring or level 1 to 6
- lease a line with metering reminder (see "Meter Total Recall")
- assign an account code to the communication that the other user is about to make (see "Account Code")

CONFIGURATION

▼ To specify whether or not to authorize a station to allocate one of the lines in the main trunk group:

- by MMC-PM5 (Expert View):
Subscribers/Basestations List -> Details -> Features -> Part 2 -> "Trunk Allot"

▼ For each station, to specify whether or not to program the keys for trunk line allocation, with or without meter total recall:

- by MMC-PM5 (Expert View):
Subscribers/Basestations List -> Details -> Keys -> "Trunk Allot" or "Trunk Allot MTR"
- by MMC-Station: **Subscr -> Keys -> "AllotN" or "AllotM"**

▼ To create the features in conversation for allocation of the trunk line, with a barring level from 1 to 7 (level 7 being "no barring"), with or without meter total recall:

- by MMC-PM5 (Expert View):
Numbering -> FAC Numbering Plan -> "Trunk Allot (1 to 7)" or "Trunk Allot MTR (1 to 7)"
- by MMC-Station: **NumPln -> Code -> "AllotN Cat (1 - 7)" or "AllotM Cat (1 - 7)"**

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

Prefix: Code programmed in the internal numbering plan

Service \ Type of station	Z	Without display (except Z)	With display
During a local communication, the authorized user uses...	Prefix Trunk allocation with or without MTR, and with or without barring	P.K.: Trunk allocation with or without MTR, and with or without barring (*)	P.K.: Trunk allocation with or without MTR, and with or without barring (*)
then the other user...	hears the public network dial tone and makes the external call		
If a meter total recall has been requested...	--	--	the authorized user's station rings and the display indicates the metering

(*) Addition of an account code and the associated parameters must be done before activation of the "trunk allocation" service.

ADDITIONAL INFORMATION

- The authorized user and the beneficiary user of the service must be connected to the same PABX.
- The beneficiary user of the service must have an available resource for the external communication.
- Meter total recall can only be requested on a station with display.
- If the service is refused, the beneficiary user hears the fast busy tone.
- The service is refused if the beneficiary station is locked or private without authorization to transfer.
- The allocated line is an analog trunk line or a digital access.
- The beneficiary user cannot use block dialing mode after trunk allocation.
- An S0 station cannot activate the service nor be a beneficiary user of the service.

METER TOTAL RECALL

File
50

DESCRIPTION

A user who has a station with a display can request to be called back automatically to find out the cost of an external communication made by another system user.

Meter total recall can be activated either:

- manually: in this case, meter total recall is requested before a single external call is setup.
- automatically, for each station in the installation: in this case, meter total recall is activated after all the external calls on "monitored" stations.

The ringer for a meter total recall is the same as that for an appointment reminder.

CONFIGURATION

▼ To create the prefix for activating "Meter Total Recall" in the internal numbering plan:

- by MMC-PM5 (Expert View):
Numbering -> Internal numbering plan -> "Meter Total Recall"
- by MMC-Station: **NumPln -> IntNum -> Funct -> "MTR"**

▼ To specify whether or not to authorize the printing of a metering ticket during a meter total recall:

- by MMC-PM5 (Expert View):
System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "MTR_Print"
- by MMC-Station:
Global -> Rd/Wr -> Address -> "MTR_Print" -> Return -> Memory

▼ To specify whether or not to monitor a station after each external communication:

- by MMC-PM5 (Expert View):
Subscribers/Basestations List -> Details -> Metering ->Monitoring

▼ For each station, define the meter total recall destination for all external communications:

- by MMC-PM5 (Expert View):
Subscribers/Basestations List -> Subscribers/Basestations List -> Details ->Metering ->Metering Total Recall ->Destination n°
Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Metering ->Metering Total Recall ->Active

ACTIVATION/USE

P.K.: Programmed Key – defined by MMC-PM5 (Expert View) or MMC-Station

S.K.: Soft Key

Type of station Service	Without display	With display, no soft keys	With display, with soft keys
Activating in manual mode, during communication (local)	--	P.K.: MTR + external n° + F.K.: Transfer	
Activating in manual mode, when idle	--	P.K.: MTR + external n° then, when the outside party answers, internal n° + F.K.: Transfer	
Activating in automatic mode	--	Automatic	
During recall, reading the directory n° of the "monitored" station	--	P.K.: Read +	P.K.: Read + if required
Printing a metering ticket	--	2	S.K.: Print.
Stopping the ringer and keeping the metering information on the display	--	1	S.K.: MTR-OK
Acknowledging the meter total recall	--	1	S.K.: MTR-OK

ADDITIONAL INFORMATION

- The recall is presented for 25 seconds ; if the recall is not acknowledged, the system temporarily cancels the recall: it is presented again after any operation carried out on the station.
- If the destination station for the recall is busy, the metering information is temporarily displayed and a sound signal is transmitted. As soon as it is free, the destination station for the recall should receive the metering information.
- When a station is the destination for several meter total recalls, the one which has been there the longest is presented first.
- The service can only be used on external lines providing metering information (hence, not on analog ATLs).
- A meter total recall does not follow a call forwarding.
- A "meter total recall" can be combined with a "trunk allocation" (see corresponding file).
- The character "#" precedes the number of the metering ticket printed on a meter total recall.

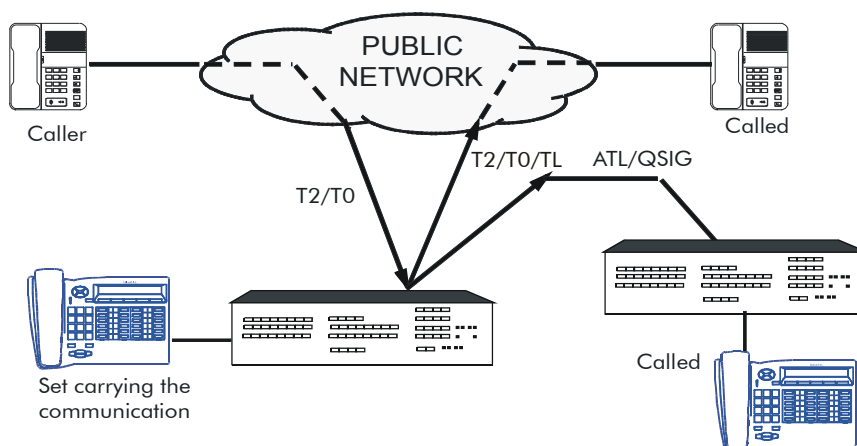
REMOTE SUBSTITUTION

File
51

DESCRIPTION

The **remote substitution** service enables an employee who is outside of the business premises or at home to call a correspondent on the public network from a DTMF set (via the TL/T0/T2 access) or a user on a remote PABX on the same private network (via the ATL or the QSIG accesses) as if he were at work.

The user must pay for the call to the system; the company is charged for the call between the system and the external correspondent.



CONFIGURATION

▼ To authorize or deny access to the service, for each station:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> Part 2 -> "Remote Substitution"**

▼ To validate the service in the public numbering plan (operates without base or NMT):

- by MMC-PM5 (Expert View): **Numbering -> Public Numbering Plan -> Remote Substitution**
- by MMC-Station: **NumPln -> PubNum -> Disa**

▼ To define the service access code – MMC-PM5 (Expert View) only:

- External Lines -> Remote substitution -> Access control code**

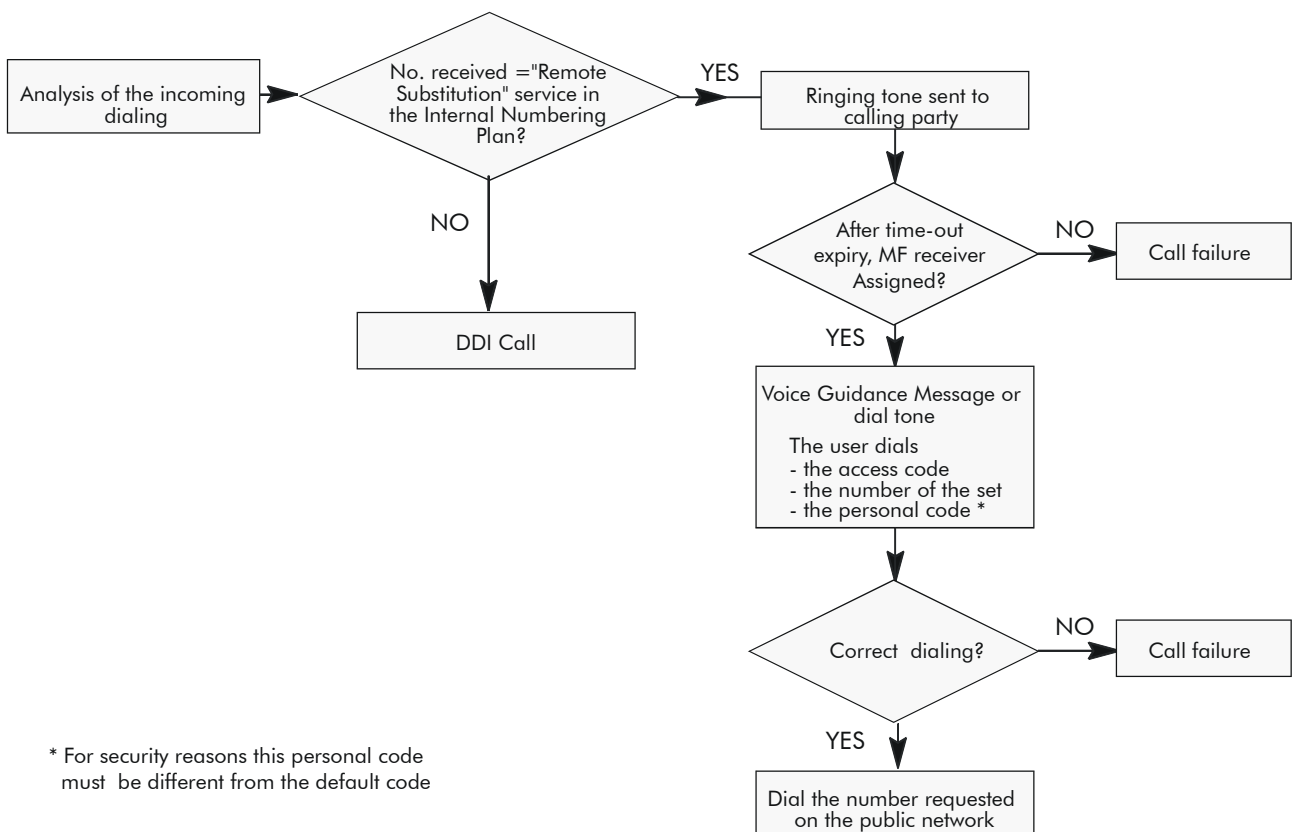
▼ To define the voice guidance message (none, message 1 to 8) – MMC-PM5 (Expert View) only:

External Lines -> Remote Substitution -> Voice Guidance Message

▼ To define the system reaction if no DTMF receiver is available (Call Waiting or Release) – MMC-PM5 (Expert View) only:

External Lines -> Remote Substitution -> Wait for DTMF Receiver

ACTIVATION/USE



ADDITIONAL INFORMATION

- The traffic sharing and barring link categories are those of the local user.
- A single DTMF receiver is available at any given time.
- Metering: Every call generates 2 statement lines: one line for the incoming call (with Type = incoming transit call using remote substitution <SI>), the other is for the outgoing call (with Type = outgoing transit call using remote substitution IS>).

FAX CALL ROUTING

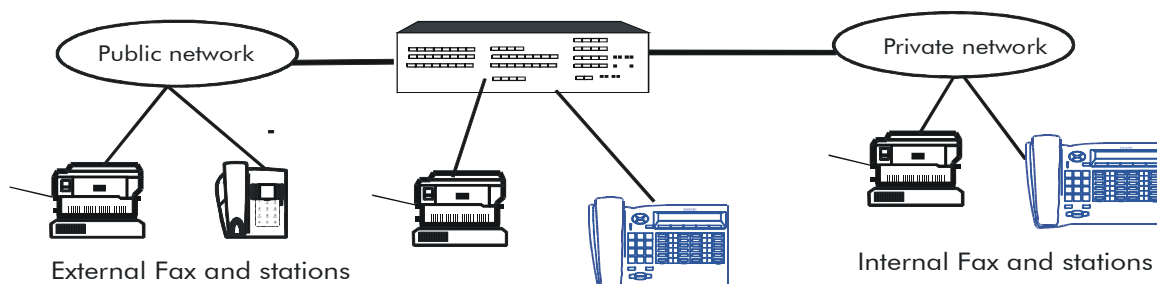
File
52

DESCRIPTION

This feature enables Alcatel OmniPCX Office users to receive voice and fax calls on the same number: their correspondents use a single number for either function. Once configured:

- all voice calls make the set ring;
- all fax calls are routed to the associated fax number. A text message advises the user that a fax has arrived.

Modem type calls are also detected ; these calls are answered by the recipient (modem connected to an analog access) or by an integrated modem if configured in the OS group. The call is refused if no modem is present.



ACTIVATION/DEACTIVATION

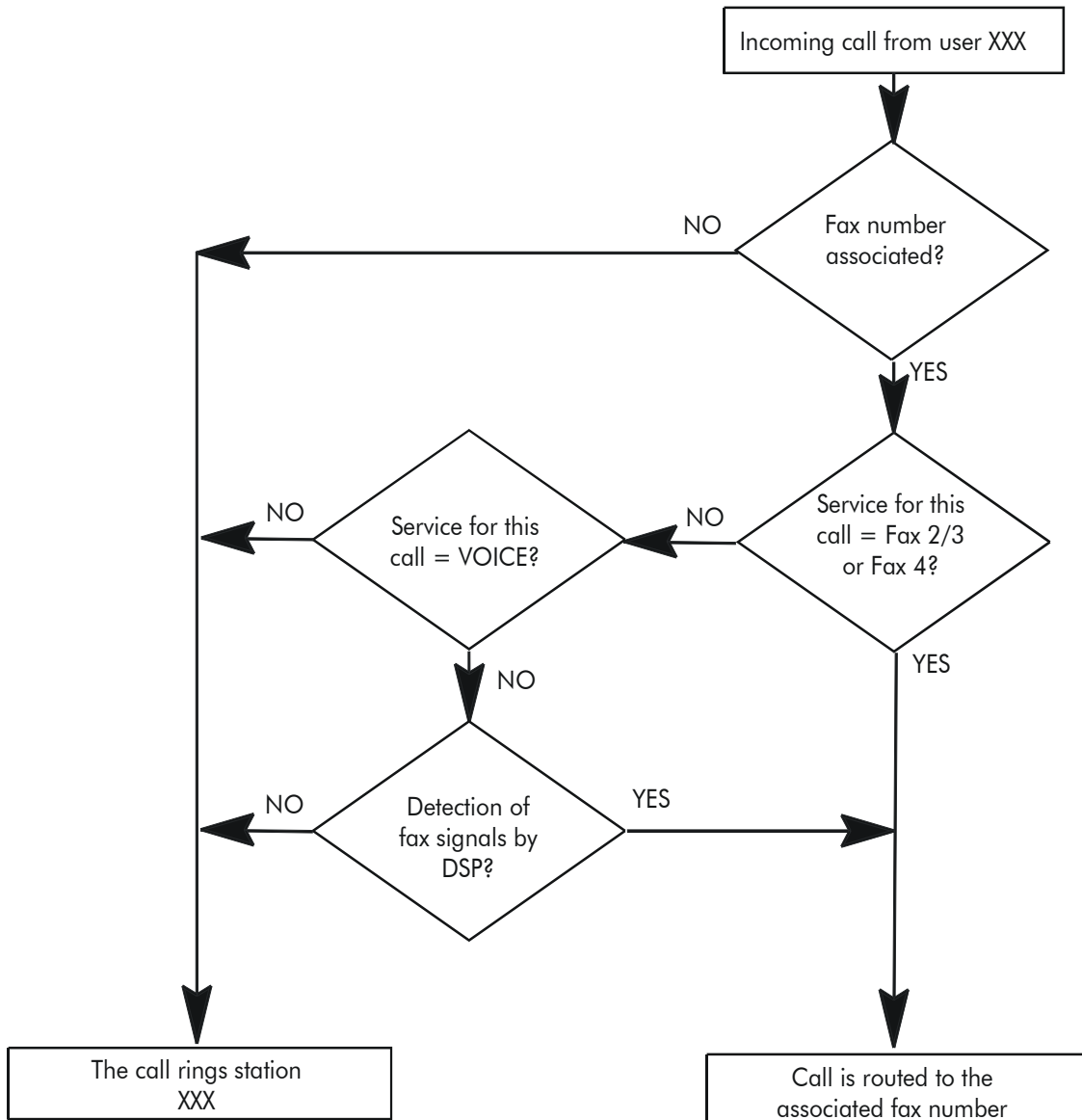
This feature requires that a destination fax number be configured for every user wishing to take advantage of this service; the number is attached to the station's DDI number in the public numbering plan.

A greeting (general pre-announcement) has to be configured to keep the correspondent waiting during the fax detection phase.

Handling calls to the OS group

- If the general pre-announcement message is configured, every incoming call is assessed for possible routing.
- There is no need to associate a fax or modem number; fax calls are routed to the first analog interface in the system and modem calls to the integrated modem (default configuration).

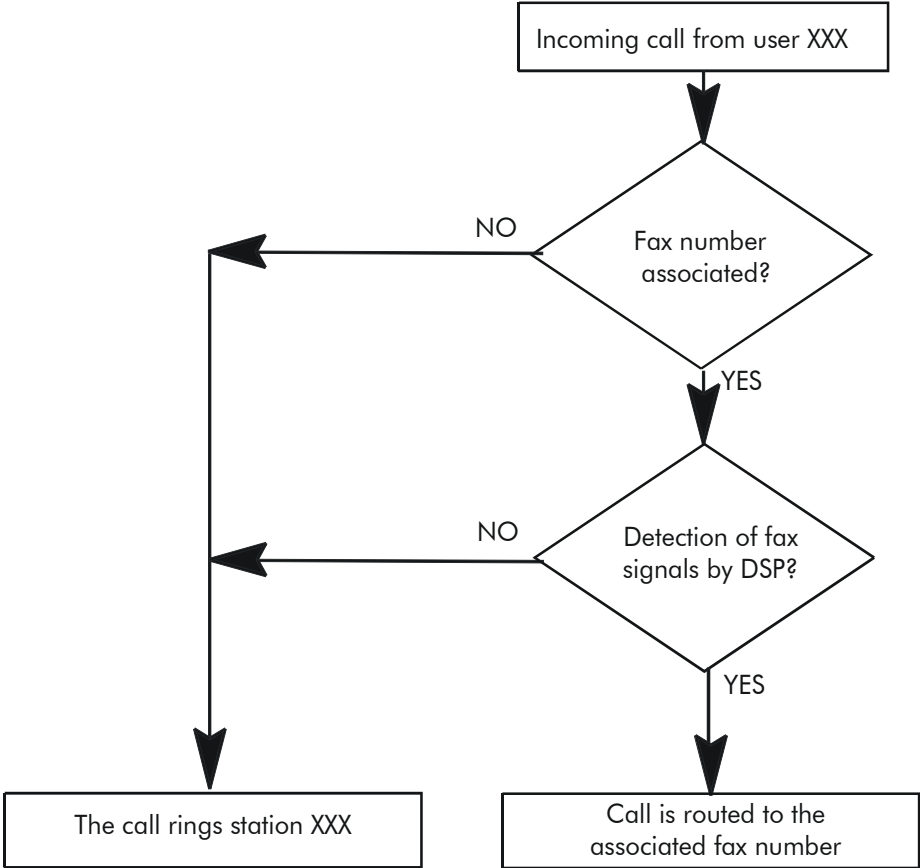
ISDN CONNECTION



Notas :

If the service is not active (no associated fax number), any call with a service other than VOICE will be refused (service incompatibility).

ANALOG CONNECTION



Notas :

If the service is not active (no associated fax number), fax calls (with VOICE service) are put through to the user station.

CONFIGURATION

▼ Enter the destination fax number:

- by MMC-PM5 (Expert View): **Numbering -> Numbering Plans -> Public Numbering Plan -> Fax**
- by MMC-Station: **NumPln -> PubNum -> FaxRou**

▼ Assigning welcome messages:

- by MMC-PM5 (Expert View): **Subscribers Misc. -> Preannouncement**
- by MMC-Station: **PreAnn -> Add -> Msg**

▼ To define the pre-announcement mode (none, mode 1- before call distribution or mode 2- during call distribution) in accordance with the time range:

- by MMC-PM5 (Expert View): **Subscribers Misc. -> Preannouncement**
- by MMC-Station: **PreAnn -> Add -> Mode**

Notas :

It is always the general pre-announcement that is used for fax call routing, even if there is a personal pre-announcement message configured.

Whatever the pre-announcement configuration, the message will be broadcast once and once only, always before call distribution.

The "**Busy**" flag (accessed via PM5 -> Subscribers Misc. -> Pre-announcement ->Details) does not apply to fax call routing.

ADDITIONAL INFORMATION

- Fax call routing cannot be used simultaneously with CCBS.
- Fax call routing can be used simultaneously with fax notification (see that section): in this case, the user receives 2 messages signaling the receipt of a fax.
- There may be a slight delay between the moment the call reaches the system and the moment it is put through to the station or fax; this is due to the workload on the DSPs in charge of fax detection.

FAX NOTIFICATION

File

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DESCRIPTION

The **fax notification** service informs users (whose stations have displays and Message LEDs) when they have just received a fax.

CONFIGURATION

- ▼ Program the "Fax Notification" table by creating the Fax n° <-> Subscriber n° links with:
 - fax numbers from the internal, public or private numbering plans
 - subscriber numbers from the internal numbering plan.

- by MMC-PM5 (Expert View): **Subscribers Misc.** -> **Fax Notification for Subscribers**
- by MMC-Station: **Global** -> **FaxTab** -> **ReSubs** and **FaxNum**

ACTIVATION/USE

When a fax has been received, the system displays the message: "**Incoming Fax**" on the recipient subscriber's station (depending on the configuration of the "Fax Notification" table) along with the number of the receiving fax machine.

ADDITIONAL INFORMATION

- A subscriber can supervise several fax numbers.
- A fax n° can be supervised by several subscribers.
- The "Fax Notification" table is limited to 30 entries.
- To deactivate fax notification on a subscriber station, break the Fax n° <-> Subscriber n° link configured in the "Fax Notification" table.



FAX NOTIFICATION

CALL SERVER : TELEPHONE FEATURES

LIST OF SERVICES OFFERED

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<div style="display: flex; justify-content: space-between;"> Station Service </div>	4003 First	4011 Easy	4012 Pre- mium	4023	4034 Advan- ced	Z	DECT
Account code before setting up a call	•	•	•	•	•	•	•
Account code during communication	•	•	•	•	•		•
Amplification of the handset audio	•	•	•	•	•		
Amplified reception		•	•	•	•		•
Answering a call (automatic connection)	•	•	•	•	•	•	•
Answering a call (manual connection)		•	•	•	•		•
Answering camped-on calls	•	•	•	•	•	•	•
Appointment reminder		•	•	•	•		•
Auto. call setup on going off hook	•	•	•	•	•	•	•
Auto-answer mode (intercom mode)			•	•	•		
Automatic call-back request on busy station	•	•	•	•	•	•	•
Automatic call-back request on busy trunk group	•	•	•	•	•	•	•
Background music		•	•	•	•		
Block dialing mode		•	•	•	•		•
Broadcast call (receive)		•	•	•	•		
Broadcast call (send)	•	•	•	•	•	•	•
Call by collective speed dial number	•	•	•	•	•	•	•
Call parking and parked call retrieval	•	•	•	•	•	•	•
Call pick-up within a group	•	•	•	•	•	•	•
Calling Line Identification Restriction (CLIR)	•	•	•	•	•	•	•
Camp-on on busy station or group	•	•	•	•	•	•	•
Cancel all active forwardings	•	•	•	•	•	•	•
Common hold (and retrieval)	•	•	•	•	•		•
Communication mute		•	•	•	•		•
Conference	•	•	•	•	•	•	•

LIST OF SERVICES OFFERED
CALL SERVER : TELEPHONE FEATURES

<div style="display: flex; justify-content: space-between;"> Service Station </div>	4003 First	4011 Easy	4012 Pre- mium	4023	4034 Advan- ced	Z	DECT
COnnected Line identification Presentation (COLP)		•	•	•	•		•
COnnected Line identification Restriction (COLR)	•	•	•	•	•	•	•
Connection handover							•
Consultation of camped-on caller identities				•	•		
Contrast of the display and icons		•	•	•	•		
Deferred call-back request (leave a)	•	•	•	•	•	•	•
Deferred call-back request (receive a)	•	•	•	•	•	if LED	•
Dial by name		•	•	•	•		•
Digit-by-digit dialing mode	•	•	•	•	•	•	•
Direct internal or external call by program- med key	•	•	•	•	•		•
Display correspondent's name or number		•	•	•	•		•
Display date and time		•	•	•	•		•
Do Not Disturb (DND)	•	•	•	•	•	•	•
DTMF end-to-end signaling	•	•	•	•	•	•	•
Dynamic routing	•	•	•	•	•	•	•
Enquiry call	•	•	•	•	•	•	•
Exclusive hold (and retrieval)	•	•	•	•	•	•	•
External forwarding	•	•	•	•	•	•	•
Fax Notification		•	•	•	•		•
Follow-me	•	•	•	•	•	•	•
Forced DTMF end-to-end signaling	•	•	•	•	•	•	•
Forward on busy	•	•	•	•	•	•	•
Forwarding to pager	•	•	•	•	•	•	•
Gain switch forcing	•	•	•	•	•		
General monitoring	•	•	•	•	•	•	
Handsfree			•	•	•		•
Headset mode manual or automatic res- ponse			•	•	•		
Identity of the station (number and name)		•	•	•	•		•

CALL SERVER : TELEPHONE FEATURES

LIST OF SERVICES OFFERED

<div style="display: flex; justify-content: space-between;"> Service Station </div>	4003 First	4011 Easy	4012 Pre- mium	4023	4034 Advan- ced	Z	DECT
Identity of the sub-device connected to the station		•	•	•	•		
Immediate forwarding of group calls	•	•	•	•	•	•	•
Immediate forwarding of personal calls	•	•	•	•	•	•	•
Indication of the cost of a communication		•	•	•	•		•
Individual call pick-up	•	•	•	•	•	•	•
Intercom intrusion on free	•	•	•	•	•		•
Internal group call	•	•	•	•	•	•	•
Internal station call	•	•	•	•	•	•	•
Intrusion	•	•	•	•	•	•	•
Keypad dialing features		•	•	•	•		•
Main PABX recall (calibrated loopbreak)	•	•	•	•	•	•	•
Malicious call identification	•	•	•	•	•	•	•
Meter total recall		•	•	•	•		•
Non answered calls repertory		•	•	•	•		•
On-hook dialing	•	•	•	•	•		
PABX forwarding	•	•	•	•	•	•	•
Paging	•	•	•	•	•	•	•
Personal Assistant	•	•	•	•	•	•	•
Personal code	•	•	•	•	•	•	•
Personal speed dial numbers	•	•	•	•	•		•
Private call	•	•	•	•	•	•	•
Programmable function keys	•	•	•	•	•		•
Protection of a call against camp-on and camp-on tone	•	•	•	•	•	•	•
Redial (last emitted number redial)	•	•	•	•	•	•	•
Release-reseize		•	•	•	•		
Remote forwarding	•	•	•	•	•	•	•
Remote substitution	•	•	•	•	•	•	•
Roaming							•
Screening (manager station)		•	•	•	•		

LIST OF SERVICES OFFERED
CALL SERVER : TELEPHONE FEATURES

<div style="display: flex; justify-content: space-between;"> Service Station </div>	4003 First	4011 Easy	4012 Pre- mium	4023	4034 Advan- ced	Z	DECT
Screening (secretary station)		•	•	•	•		
Seamless handover							•
Select the display language		•	•	•	•		•
Select the ringing tune and adjust its volume level	•	•	•	•	•		•
Select the type of alphabetical keyboard				•	•		
Select the type of calls to be forwarded	•	•	•	•	•		•
Selective forwarding	•	•	•	•	•	•	•
Selective monitoring		•	•	•	•		
Shuttle	•	•	•	•	•	•	•
Station lock/unlock	•	•	•	•	•	•	•
Sub-address		•	•	•	•		•
Supervised call ringing		•	•	•	•		•
Supervised transfer	•	•	•	•	•	•	•
Switch to normal or restricted mode					•		
Teamwork		•	•	•	•		•
Temporary memory	•	•	•	•	•		
Text answering		•	•	•	•		
Text mail		•	•	•	•		•
Transfer of two external lines	•	•	•	•	•	•	•
Trunk allocation	•	•	•	•	•	•	•
Unassigned night answer	•	•	•	•	•	•	•
Unsupervised transfer (on camp-on)	•	•	•	•	•	•	•
Unsupervised transfer (on no answer)	•	•	•	•	•	•	•
User-to-User Signaling (receiving)		•	•	•	•		•
User-to-User Signaling (sending)				•	•		
Voice mail unit	•	•	•	•	•	•	•
Wake-up	•					•	
Withdraw from group	•	•	•	•	•	•	•

Alcatel OmniPCX Office

SECTION

CALL SERVER : INTEGRATED

VOICE MAIL UNIT

REF3EH 21000 BSAA Ed. 04



ALCATEL OMNIPCX OFFICE

**CALL SERVER : INTEGRATED VOICE
MAIL UNIT**

Section CALL SERVER : Integrated Voice Mail Unit

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SERVICES AVAILABLE TO USERS	FILE 3
"VISUAL MAILBOX" INTERFACE	FILE 4
EXTERNAL VOICE MAIL UNIT	FILE 5



ALCATEL OMNIPCX OFFICE

**SECTION CALL SERVER : INTEGRATED
VOICE MAIL UNIT (INDEX)**

**CALL SERVER : INTEGRATED VOICE
MAIL UNIT**

Section CALL SERVER : Integrated Voice Mail Unit (Index)

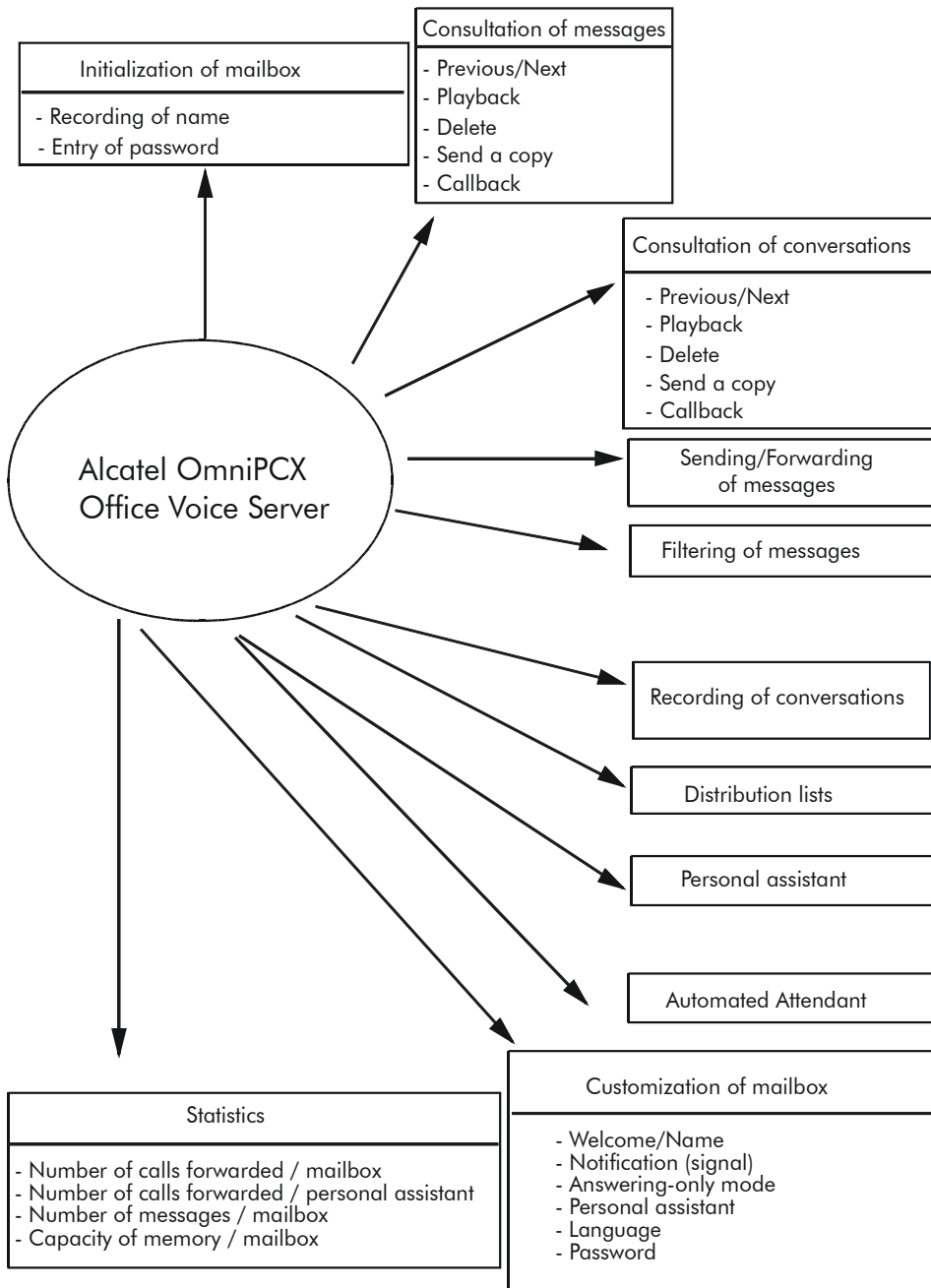
"VISUAL MAILBOX" INTERFACE	FILE 4
EXTERNAL VOICE MAIL UNIT	FILE 5
OVERVIEW	FILE 1
SERVICES AVAILABLE TO USERS	FILE 3
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OVERVIEW



ENVIRONMENT

The voice server (or VMU: Voice Mail Unit) is an integrated Alcatel OmniPCX Office application (built into the CPU board) that offers the following functions:



**CALL SERVER : INTEGRATED VOICE
MAIL UNIT**
OVERVIEW
FEATURES
BASIC SERVICES

- **Voice mail unit:** all the standard voice mail features are provided, including filtering, personal assistants, and a mailbox for every user.
- **VMU ports:** 2 ports are provided for voice mail access in Connected mode; they are included in the VMU group (1st system group) and in the default OS (Operator Station) group.
- **Message storage capacity:** 20 minutes

OPTIONAL SERVICES

The following services can be accessed with the appropriate software licenses:

- **VMU ports:** up to 8 ports; each new port is added to the VMU group and the default OS group automatically (or by the installer).
- **Message storage capacity:** the message storage capacity can be extended up to 80 minutes with an XMEM64 board and up to 200 hours with a hard disk.
- **Automated Attendant and Audiotex**
- **Distribution lists**
- **Recording of conversations.**

Nota : If the Automated Attendant is not open, calls go through to the general mailbox.

OPERATING MODES: CONNECTED/APPLICATION/CSTA

Application mode (or VMU user with the Mail key)

This mode can only be used by Alcatel OmniPCX Office system subscribers. The voice server is not affected by incoming calls, but is activated like any other system application – in this case, by a Mail key or by dialing the Mail code defined in the internal numbering plan.

If the required DSP resources (monitoring, recording, and MF detection for analog terminals) are unavailable, the server will not be activated.

User interface

In this mode, the method for navigating through the voice server menus depends on the type of terminal:

- **4023, 4034 and Advanced terminals:** all operations are performed using soft keys and are guided by hints on the display.
- **4011, 4012, Easy and Premium terminals:** all operations are performed using the keypad and are guided by hints on the display as well as by voice prompts and the dynamic menu called up by the **i** key.
- **4003, First and analog terminals:** all operations are performed using the keypad and are guided by voice prompts.

Port allocation

Analog ports are not used in Application mode.

Connected mode (or user with VMU group access code)

In this mode:

- the VMU is accessed by dialing the VMU group directory number (in France, 500).
- the Automated Attendant is accessed by dialing the OS group (in France, 9)
- Audiotex is accessed via the numbering plans DDI and internal.

If the required DSP resources (monitoring, recording, silence/noise, DTMF) are unavailable, the activation of the server is postponed and the user is camped on.

User interface

In this mode, navigation is performed with the aid of voice prompts, whatever type of terminal is used.

CALL SERVER : INTEGRATED VOICE MAIL UNIT

OVERVIEW

Port allocation

The CPU board provides from 2 to 8 ports, meaning that up to 8 users in Connected mode can simultaneously access the Voice Mail Unit, the Automated Attendant and Audiotex.

Port addresses: 91-001-1 to 91-008-1; all ports are seen at all times; those that are not "In Service" are seen as "Out of Service".

Each service is called up using the number of a group containing one or more ports. The same port can be assigned to 1, 2 or 3 groups.

Reaction on VMU busy

If the server is called by a port directory number, the system recognizes two kinds of busy status:

- 1st-degree busy (up to 2 calls on the same port): new calls are camped on until the port is released;
- 2nd-degree busy (more than 2 calls on the same port): new calls are immediately rejected.

If the server is called by a group number, the call distribution mechanisms on group busy are applied; the caller is camped on the group, depending on the number of terminals in the group.

CSTA mode

This is the mode used when the server is accessed via the CSTA interface; for details of how this mode is used, see "Visual Mailbox Interface".

SYSTEM LIMITS

Global constraints (dependent on software keys)

- 2 to 8 VMU ports
- Storage capacity 20 minutes (CPU), 80 minutes (with XMEM64) or 200 hours (with hard disk)
- 2 to 4 languages

Voice mail

- 250 user mailboxes + 1 general (or common) mailbox
- up to 51 distribution lists (including one broadcast list for all users)
- recording times are limited:

Service	Limit	Default value
Welcome message	Max.30 seconds, and depending on available memory: <ul style="list-style-type: none"> - basic CPU: 250 seconds - with XMEM64: 1000 seconds - with hard disk: 8750 seconds 	None
Mailbox name	Max. 5 seconds	None
Message recording	Max. 180 seconds	120 seconds
Recording a conversation	Unlimited	Depends on voice server storage capacity
Remote notification message	Max. 20 seconds	

- access to certain features may be barred or dependent on access rights

Service	Barring	Access right
Remote message notification	YES	YES
Remote consultation of a mailbox after message notification	N/A	YES
Recording a conversation	N/A	YES
Personal assistant	YES for external destinations	NO

**CALL SERVER : INTEGRATED VOICE
MAIL UNIT**
OVERVIEW
Automated Attendant

- recording times are limited:

Service	Limit	Default value
Enterprise welcome message	Max. 120 seconds	None
Announcement menus and sub-menus	Max. 120 seconds	None
Good-bye message	Max. 20 seconds	None

Audiotex - information messages

- up to 50 information messages
- recording times are limited:

Service	Limit	Default value
Enterprise welcome message	Max. 20 seconds	None
Good-bye message	Max. 20 seconds	None
Information message	Max. 240 seconds	120 seconds

CONFIGURATION TOOLS

The voice server is configured using the system configuration tool PM5. **The configurator PC must have a sound card** to record the welcome messages and the Automated Attendant menus.

If the PC does not have a sound card, the MMC-station can be used to record enterprise welcome messages and good-bye messages, Automated Attendant menus and sub-menus, Audiotex messages, distribution list names and the welcome message for the general mailbox.



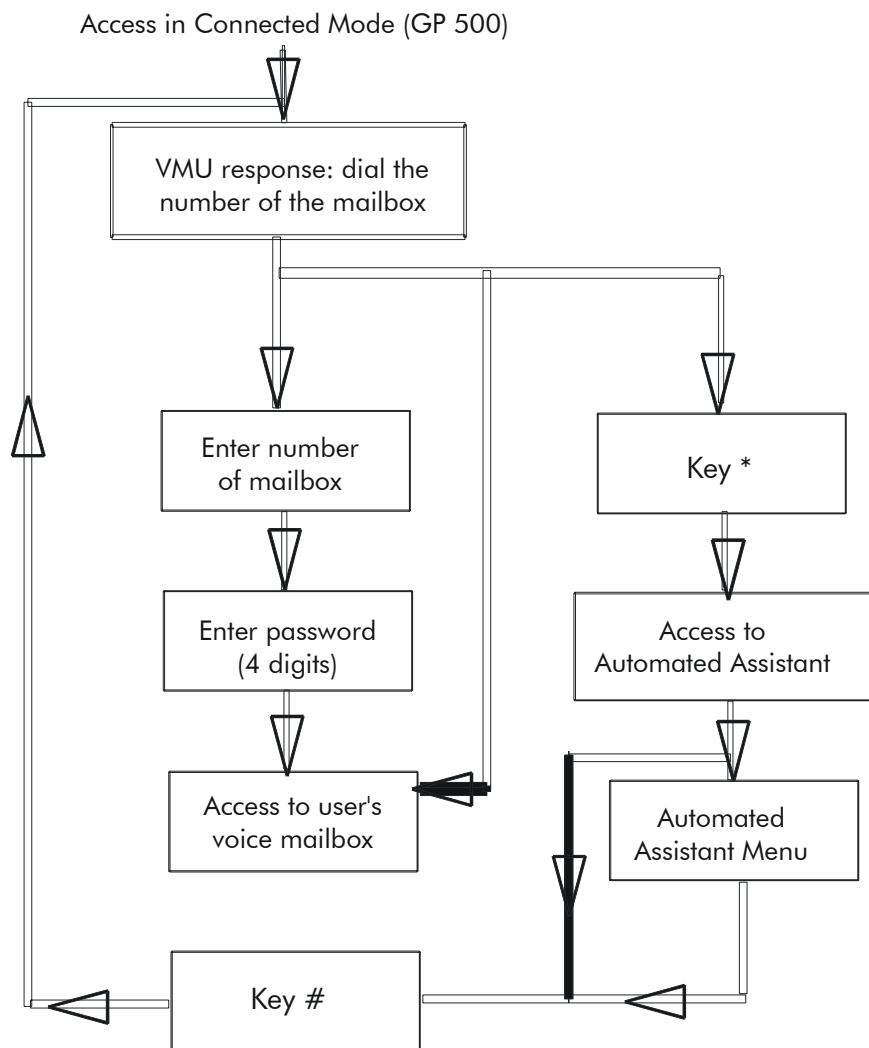
OVERVIEW

**CALL SERVER : INTEGRATED VOICE
MAIL UNIT**

SYSTEM FEATURES

File
2

ACCESS TO THE VMU OR TO THE AUTOMATED ATTENDANT



Nota : You can switch from the VMU to the Automated Assistant at any time by pressing the * key and back again by pressing the # key.

AUTOMATED ATTENDANT

Description

The Automated Attendant is only accessible in voice server Connected mode:

- by dialing the enterprise's public number (outgoing call);
- or by dialing the VMU group number (internal call) or the directory number for the VMU port. The user then presses the * key to access the Automated Attendant Main menu;
- or exclusively by dialing the VMU group number if the Mailbox Consultation flag (**PM5 -> Voice Processing -> General Parameters -> Mailbox Consultation**) is inactive;
- or by dynamic routing:
 - level 1: an internal or external call is routed through to the user's mailbox, if one exists: if not, the 'no mailbox' default function is activated and the call goes through to the Automated Attendant;
 - level 2: an external call is routed through to the OS group; if there is no answer, the default OS group is used and the call goes through to the Automated Attendant (provided the VMU ports are included in the default OS group).

The Automated Attendant greets the caller with the enterprise welcome message and transfers the call to the appropriate destination. To establish communication, all the possibilities open to the caller are set out in a Main voice menu and/or sub-menus.

The Automated Attendant can be customized to suit the individual requirements of the enterprise. For this reason, the range of options available during working hours is different from that offered out of hours. There are consequently two Automated Attendant menus, completely independent from each other. The switch between the "Opening Hours" menu and the "Closing Hours" menu can be made either manually by the Administrator (by forcing restricted or normal mode) or automatically, according to a pre-programmed schedule defined in the system opening hours settings (opening hours = normal mode, closing hours = restricted mode).

The Automated Attendant is multilingual: The voice prompt language can be selected by the caller.

Call processing example

For a more detailed look, let's take the example of a caller picked up by the Automated Attendant. First of all, he hears the enterprise welcome message. Then he is instructed to press the star key (optional).

The "Press Star" question is a specific function for establishing whether the correspondent has a set with a voice frequency keyboard.

He can then select the language for the voice prompts (optional).

**CALL SERVER : INTEGRATED VOICE
MAIL UNIT**

SYSTEM FEATURES

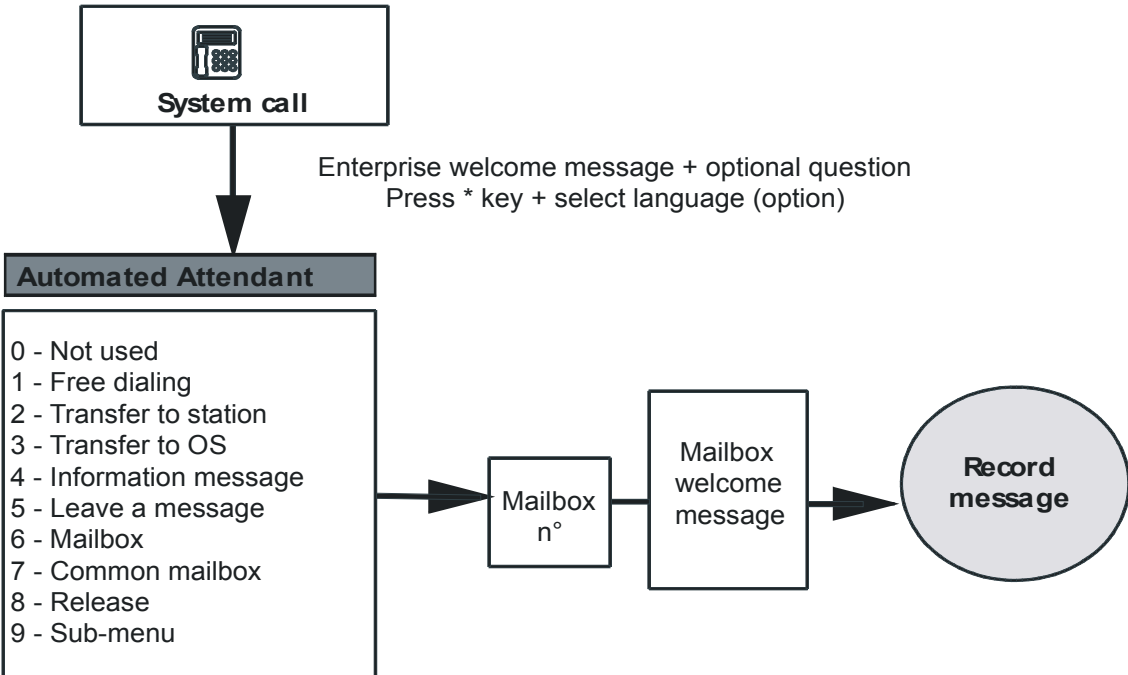
The caller now comes to the Automated Attendant Main menu, in which specific menus are assigned to the keyboard keys. He can choose from the proposed Main menu functions:

- Free dialing: the caller is prompted to dial an internal destination number.
- Transfer to subscriber: the caller is routed to a predefined internal number.
- Transfer to operator station: the caller is routed to the OS.
- Information message: the caller hears an information message (which may chain up with additional information messages).
- General mailbox: the caller is routed to the general mailbox.
- Leave a message: the caller is prompted to enter a mailbox number in order to leave a message.
- Mailbox: the caller is routed to a predefined mailbox.

Notas :

The possibilities available on initialization are specific to each country.

Example of Automated Attendant structure



Default function

The "Default function" is obtained when the caller fails to choose a function from the proposed list or when the application cannot interpret his choice (the caller may not have a voice frequency terminal).

On initialization, the default function is "Transfer to Attendant".

Direct call

The Automated Attendant can be used at a simple level, replacing the Main menu with a single possibility. The Direct Call function routes the caller directly to a predefined function after the welcome message and the optional "Press Star" and "Select Language" questions.

Consulting a mailbox

Once he has got through to the Automated Attendant, the caller can access his mailbox directly (if he has one) by pressing the # key and entering his subscriber number and password. For a more detailed description, see the "Consulting a mailbox" section under "Services available to users".

Notas :

This possibility is not announced by the voice server.

Configuration

▼ To record the 2 welcome messages (opening hours/closing hours):

- By MMC-PM5 (Expert View): **Voice Processing -> Automated Attendant -> Greeting -> Opening Hours/Closing Hours-> Voice Prompt - Greeting**
- By MMC-station: **VMU -> AutoAt -> Day or Night**

▼ To record the good-bye message:

- By MMC-PM5 (Expert View): **Voice Processing -> Automated Attendant -> Good Bye -> Voice Prompt - Good Bye**
- By MMC-station: **VMU -> AutoAt -> GdBye**

▼ To enable/disable the "Press Star" question:

- By MMC-PM5 (Expert View): **Voice Processing -> Automated Attendant -> Greeting -> Opening Hours/Closing Hours -> "Press Star" question**

**CALL SERVER : INTEGRATED VOICE
MAIL UNIT****SYSTEM FEATURES**

▼ To enable/disable the "Select Language" question:

- By MMC-PM5 (Expert View): **Voice Processing -> Automated Attendant -> Greeting -> Opening Hours/Closing Hours -> "Select Language" Question**

▼ To define the "Direct Call" function (opening hours/closing hours):

- By MMC-PM5 (Expert View): **Voice Processing -> Automated Attendant -> Greeting -> Opening Hours/Closing Hours -> Single Function AA**

▼ To define the action to be taken in the event of transfer to a non-existent mailbox or in answering-only mode:

- By MMC-PM5 (Expert View): **Voice Processing -> Automated Attendant -> Greeting -> Opening Hours/Closing Hours -> Mailbox Function**

▼ To define the "Default" function (opening hours/closing hours):

- By MMC-PM5 (Expert View): **Voice Processing -> Automated Attendant -> Greeting -> Opening Hours/Closing Hours -> AA Function**

Additional information

- For internal calls, only the semi-supervised type of call transfer is available
- The Automated Attendant only transfers calls to available internal users:
 - If the user doesn't answer: the call is transferred and dynamic routing is activated;
 - If the user is busy (degree 1 or 2): the call is not transferred and the user is returned to the Automated Attendant Main menu.
- For external calls, the Automated Attendant transfers the call and goes back on hook regardless of the called party status; if the call doesn't get through (e.g. if the line is busy), it comes back to the Automated Attendant Main menu.
- Role of the * key
 - on connection to the Automated Attendant: the enterprise welcome message and the "Press Star" question are skipped and the caller is prompted to select his preferred language (if configured) or is put through directly to the Main menu.
 - while listening to an information message:
 - if the caller accessed the information message from the Automated Attendant Main menu, pressing the * key while listening to the message brings him back to the Main menu, where all the options are listed anew;
 - if the caller accessed the information message from one of the Automated Attendant sub-menus, pressing the * key while listening to the message brings him back to the sub-menu, where all the options are listed anew.
- Role of the # key
 - on connection to the Automated Attendant: the caller can consult his mailbox (if he has one);

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- the enterprise greeting, "Press Star" question and "Select Language" question are skipped.
- while listening to an information message: enables the user to skip the message.

AUDIOTEX

Description

An Audiotex consists of a sequence of information messages.

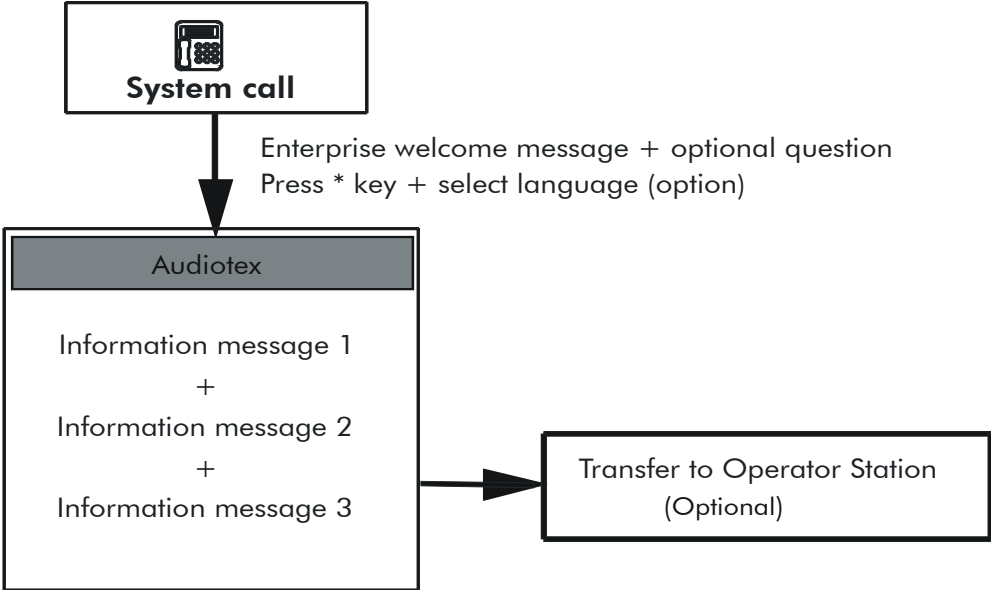
Two mutually independent Audiotex services are provided: one for opening hours, the other for the company's closing hours.

One can switch between them either manually or automatically, using the same time ranges as defined in the Alcatel OmniPCX Office system.

Activation

Audiotex can be accessed in either of 2 ways (if a menu is available for access to an information message):

- by an external call - dialing the Audiotex DDI number, or
- by an internal call - dialing the internal number for the Automated Attendant.



When the caller dials the DDI number for the Audiotex service, he automatically hears the enterprise welcome message. The next two stages are optional:

- He is asked to press the * key to check that he has a voice frequency terminal (this option can be configured by PM5);
- Then he can select his preferred language for navigating in Audiotex (configurable using PM5).

Finally he will be put through to the first information message; this message may be chained with others or followed by forwarding to the OS, for example.

Default function

The default function is obtained when the application cannot interpret the numbers dialed by the caller (for example, at the end of an information message, the caller is prompted to dial the number of the person he wants to contact). This default function is identical to the one used for the Automated Attendant and must be configured from within the Automated Attendant (see "Default function" in the "Automated Attendant" chapter).

Role of the * and # keys

- * key:
 - on connection to Audiotex: the enterprise welcome message and "Press Star" question are skipped and the caller is prompted to select his preferred language (if configured) or is played the first information message;
 - while listening to a message: the voice server is released after playing a good-bye message.
- # key: skips the current information message and moves on to the next

Configuration

▼ To set the first information message:

- By MMC-PM5 (Expert View): **Voice Processing -> Information Messages -> Audio Text**

▼ To set the information messages:

- By MMC-PM5 (Expert View): **Voice Processing -> Information Messages**

Number of configurable messages: 50.

The various functions at the end of the welcome message are only available with PM5:

- Not used: if the caller is in the Automated Attendant, then he is returned to the previous level; if the caller is in Audiotex, the good-bye message is played and the voice server is released.
- Free dialing: the caller is prompted to dial an internal destination number.
- Transfer to subscriber: the caller is routed to a predefined internal number.
- Transfer to operator station: the caller is routed to the OS.
- Information message: the caller is played an information message.
- General mailbox: the caller is routed to the general mailbox.
- Leave a message: the caller is prompted to enter a mailbox number in order to leave a message.
- Mailbox: the caller is routed to a predefined mailbox.
- Release: the call is released after playing a good-bye message.

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▼ To record the information messages:

- By MMC-PM5 (Expert View): **Voice Processing -> Information Messages**
- By MMC-station: **VMU -> InfMsg**

▼ To record the 2 welcome messages (day and night):

- By MMC-station: **VMU -> AudTx -> Day or Night**

▼ To record the good-bye message:

- By MMC-station: **VMU -> AudTx -> GdBye**

▼ To enable/disable the "Press Star" question:

- By MMC-PM5 (Expert View): **Voice Processing -> Information Messages ->Audio Text -> Opening Hours/Closing Hours -> "Press Star" question**

▼ To enable/disable the "Select Language" question:

- By MMC-PM5 (Expert View): **Voice Processing -> Information Messages ->Audio Text -> Opening Hours/Closing Hours ->"Select language" question**

MANAGING MAILBOXES

Description

On initialization, every subscriber in the installation (except analog Z terminals) is automatically allocated a mailbox.

Each mailbox can operate in any of 3 modes. The operating mode of each mailbox is configured by the installation Administrator (standard mode on initialization):

- **Mailbox in standard mode**

This mode provides access to a range of functions. The owner can switch between standard mode and answering-only mode, but not into guest mode.

- **Mailbox in guest mode**

This mode, designed for Hotel use, offers more limited functions. Only the "Leave Message" and "Consult Message" functions are available; any caller can leave a message to be consulted by the guest, but under no circumstances can the guest send any messages. The password is only required when the guest consults his mailbox remotely. The guest cannot switch his mailbox into standard or answering-only mode.

- **Mailbox in answering-only mode**

This mode can be adopted by users who don't want to receive messages; the caller hears only the welcome message but cannot leave a message, then the server releases the call (if a personal greeting has been recorded).

The owner of a mailbox in answering-only mode can switch it into standard mode and vice versa (see "Customization"), but not into guest mode.

First consultation

When the mailbox is used for the first time, the messaging service must be activated from the terminal in Application mode. The user is then asked to enter a password and register his name; the mailbox is then initialized.

If the user accidentally activates the voice mail unit in Connected mode, he will find that he is refused access to his mailbox.

Subsequent consultations can be made in Application mode or Connected mode (see "Operating modes: Connected/Application/CSTA" section).

Nota : The password is only required if the parameter **Password required for mailbox consultation** (PM5 -> Voice Processing -> General Parameters) is validated; if not, the password is not necessary.

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Deleting a mailbox

The Administrator can delete mailboxes. If the mailbox contains messages (read or unread), these are kept for X minutes and can be consulted by the user in Application mode; if the mailbox is allocated to someone else within the period of X minutes, the messages are lost.

Dead mailbox timeout durations:

- System in "Business" mode: timeout X = 5 minutes
- System in "Hotel" mode: timeout X = 50 minutes

This value can be modified in PM5 (unit = 100 milliseconds; min value = 0; max value = 32767 i.e. about 54 minutes): **System Miscellaneous -> Memory Read/Write -> Timer Labels -> DeadM-bTo**

Non-Existent Mailbox function

This function offers the following possibilities in the event of a call being forwarded or put through by the Automated Attendant to a non-existent mailbox:

- Not used: the caller is routed to the Automated Attendant (default setting).
- Free dialing: the caller is prompted to dial an internal destination number.
- Transfer to subscriber: the caller is routed to a predefined internal number.
- Transfer to operator station: the caller is routed to the OS.
- Information message: the caller is played an information message chained to the welcome message.
- General mailbox: the caller is routed to the general mailbox.
- Leave a message: the caller is prompted to enter a mailbox number in order to leave a message.
- Mailbox: the caller is routed to a predefined mailbox.
- Release: the call is released after playing the good-bye message.

Nota : This function is also activated for mailboxes in Answer Only mode when the user has not personalized the greeting.

Configuration

▼ To define the type of each mailbox:

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Mailbox -> Options -> Mailbox Mode**
- With the Customization function: **MbxAnn -> Mode -> Select**

▼ To define the action to be taken in the event of transfer to a non-existent mailbox or in answering-only mode:

- By MMC-PM5 (Expert View): **Voice Processing -> Automated Attendant -> Greeting -> Opening Hours/Closing Hours -> Mailbox Function**

MANAGING THE GENERAL MAILBOX

Description

On initialization, a general (or common) mailbox is created. This mailbox, accessible in consultation-only mode from the operator station, enables the messages left there to be forwarded to other users in the installation.

The caller accesses the general mailbox via the Automated Attendant or Audiotex, providing the General mailbox function has been configured by the Administrator.

Activation

The general mailbox is accessed from an operator station (equipped with soft keys) by:

- pressing the fixed Mail key
- pressing the GalMbx soft key
- entering the Operator/Attendant password ('help1954' by default).

Nota : For sets without soft keys but with a number pad, proceed as follows:

- press the fixed Mail key or dial the corresponding code
- press the * key
- enter the general mailbox number (= operator/attendant call number as defined in the internal numbering plan).
- enter the Operator/Attendant password ('help1954' by default).

Additional information

- Not being assigned to any individual subscriber, the general mailbox cannot be customized; only the welcome message can be configured.
- For the operator, there is no difference in the way general mailbox and private mailbox messages are notified.
- As with other mailboxes, the general mailbox can only be consulted by one operator station at a time.
- When the operator forwards messages left in the general mailbox, the transfer data (identification, date and time) are those of the initial message.

Configuration

▼ To record the general mailbox welcome message:

- By MMC-PM5 (Expert View): **Voice Processing -> Mailboxes -> General Mailbox -> Voice Prompt - General Mailbox**
- By MMC-station: **VMU -> GalMbx**

DISTRIBUTION LISTS

Description

Distribution lists enable users to send and copy messages to all the members on the list simply by dialing the list name or number.

The system allows for a maximum of 51 lists to be compiled:

- 1 general broadcast list (number 000); this list is used to send a message to every voice mailbox in the system
- 50 distribution lists (001 to 050)
- distribution lists can only be configured by the installation Administrator.

Configuration

▼ To configure the distribution lists by means of users' directory numbers:

- By MMC-PM5 (Expert View): **Voice Processing -> Mailboxes -> Distribution Lists**
- By MMC-station: **VMU -> List**

Notas :

The content of distribution lists cannot be deleted or modified by the users.

▼ To record the distribution list names:

- By MMC-PM5 (Expert View): **Voice Processing -> Mailboxes -> Distribution Lists**
- By MMC-station: **VMU -> List -> Record**

▼ To key in the distribution list names:

- By MMC-PM5 (Expert View): **Voice Processing -> Mailboxes -> Distribution Lists -> Name**
- By MMC-station: **VMU -> List -> Edit -> Name**

STATISTICS

Description

The statistics are intended for:

- the administrator or operator (i.e. the person responsible for managing the messaging service on the client side)
- the maintenance service (the distributor, for example).

The statistical function gathers data on the voice server and how it is used. The counter readings correspond to the server activity since the last Reset.

Depending on the results, appropriate changes can be made to the settings in order to improve the service.

Statistics on the Automated Attendant

▼ To read and reset the counters:

- By MMC-PM5 (Expert View): **Voice Processing -> Statistics -> Automated Attendant**

- Number of calls received by the Automated Attendant (= number of times the welcome message was heard).
- Duration of calls for the Automated Attendant.
- Number of failed calls (no response to the "Press Star" question or no caller selection in the Automated Attendant Main menu).

Nota : All of these counters can be reset using the **Reset** function.

Statistics on Audiotex

▼ To read and reset the counters:

- By MMC-PM5 (Expert View): **Voice Processing -> Statistics -> Audiotex**

- Number of calls received by Audiotex (= number of times the welcome message was heard).
- Length of calls for Audiotex.
- Number of aborted calls (no response to the "Press Star" question or no selection by caller in the Audiotex main menu).

Nota : These statistics are provided for opening and closing hours. All of these counters can be reset using the **Reset** function.

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Information messages statistics

▼ To read and reset the information message counters:

- By MMC-PM5 (Expert View): **Voice Processing -> Statistics -> Information Messages**

- Number of times each information message was heard (via the Automated Attendant or Audiotex).

Mailbox statistics

▼ To read and reset the mailbox counters for all subscribers:

- By MMC-PM5 (Expert View): **Voice Processing -> Statistics -> Mailboxes**

- Number of calls received by each subscriber (= number of times the welcome message was heard).
- Number of calls received by the personal assistant of each terminal.
- Number of messages left by callers.
- Length of recording of the messages not read by each subscriber.
- Length of recording of the messages read by each subscriber.
- Length of recording of conversations by each subscriber.

Statistics on VMU resources

▼ To read and reset the counters:

- By MMC-PM5 (Expert View): **Voice Processing -> Statistics -> Resources**

- Cumulative total for voice messages as a percentage of available memory capacity.
- Record of use over the last 7 days.

HOTEL FEATURES

This chapter deals exclusively with the features provided in Hotel mode (as opposed to Business mode, which concerns all the other chapters).

Check-in

When guests check in, they are automatically allocated a mailbox; its mode of operation (guest mode), the password, and the language used for the voice prompts are all assigned automatically on check-in.

On consulting the mailbox for the first time, the guest must enter a password and register his or her name. The guest cannot consult the mailbox until the user name and password have been registered.

Consulting the mailbox

First consultation

Until the user name and password have been registered, the guest cannot access his or her mailbox. The first consultation must be in Application mode (by dialing the Mail code or pressing the Mail key); the guest is put directly through to his mailbox and must only register his name.

Subsequent consultations

The mailbox can subsequently be consulted in Application mode or in Connected mode (by dialing the VMU or port number).

In Connected mode, the guest has to enter his mailbox number followed by his password. In Application mode, the guest is directly connected to his messages.

The messages received are automatically played back in sequence. The guest can replay messages and use the Return, Pause, Next or Delete functions. Messages that have been listened to but not deleted are kept.

Check-out

When the guest checks out, the mailbox is automatically unallocated if it contains no messages. If any messages remain, they are kept for 50 minutes, after which time the mailbox is definitively deleted. However, these messages can only be consulted by activating the VMU in Application mode from the hotel room terminal.

SERVICES AVAILABLE TO USERS

File

3

USER INTERFACES

Description

The interface available for using the voice server depends on the type of terminal:

- **sets without displays (First, 4003, 5010, 5015 and Z)**: voice prompts only; the options proposed by the voice prompts are selected using the keypad.
- **sets with displays but without soft keys (Easy, Premium, 4011, 4012, 5018, 5022 and DECT)**: voice prompts as well as display menus (using the keypad to navigate).
Voice prompt guidance can be disabled with the Customization function (it is enabled on initialization).
- **sets with soft keys (Advanced, 4023, 4034 and 5028)**: navigation exclusively with soft keys, depending on the menus displayed.

Specific functions

The # key can be used for:

- confirming the previous data
- skipping the current voice prompt and moving on to the next (e.g. skipping a mailbox greeting to go straight to the recording stage, or skipping a message in order to access the processing options: replay, delete, call back, send a copy, etc).
- consulting a mailbox from within the Automated Attendant.

Nota : For decadic terminals, the 9 key is used in place of the # key.

The * key can be used for:

- deleting an item of data
- returning to the previous menu.
- returning to the Automated Attendant menu from the Mailbox menu.

The 0 key can be used to access any additional menu options when a user consults his or her mailbox.

Configuration

▼ To set the maximum waiting time for a response from the user. Input a value (5 seconds by default): configurable from 5 to 15 seconds in 1-second increments:

- By MMC-PM5 (Expert View): **Voice Processing -> General Parameters -> Timeout for user's response**

▼ To set the number of times the server should repeat messages requiring a response from the user (to input a value, for example): 2 by default, configurable from 0 to 5:

- By MMC-PM5 (Expert View): **Voice Processing -> General Parameters -> Number of warnings if no response**

INITIALIZING MAILBOXES

Description

Mailboxes are initialized by their owners when they entering their individual passwords and register their names. These operations are performed when the mailbox is first opened (**Application mode only**).

Activation

Type of station Service	Sets without soft keys	Sets with soft keys (SK)
Initialization on first access	Mail FK (or "Mail" code) + Password + Record name	Mail FK + Password + Record name

Additional information

- On first opening the mailbox: while recording the name, the user can (these options are displayed, but not announced in the voice prompt):
 - restart the recording from the beginning (* key);
 - stop and terminate the recording (# key).

CONSULTING A MAILBOX (STANDARD MODE)

The diagram on the next page summarizes the mailbox consultation stages and options.

Description

This service enables users to call their mailbox and listen to any messages received (whether new or already heard), listen to recorded conversations and send messages.

This service is protected by a password (the same as for the subscriber); in Application mode, however, consultation is possible without a password, depending on the state of the mailbox consultation flag (**PM5 -> Voice Processing -> General Parameters -> Mailbox Consultation**).

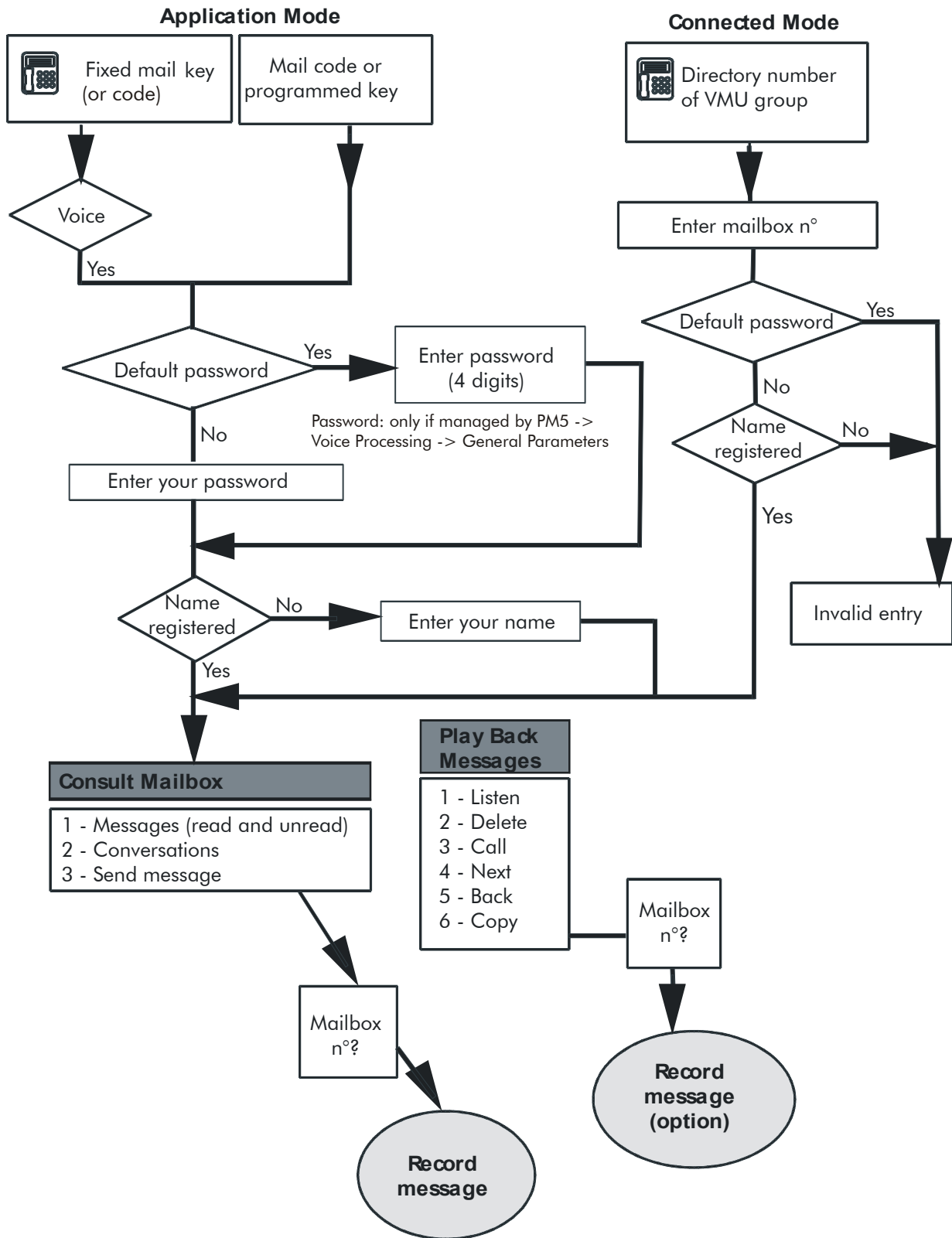
Activation

Users access their mailboxes:

- in Application mode:
 - sets with a fixed Mail key: using this key (or the appropriate code)
 - sets with displays: Voice key + password.
 - sets without displays: password.
- sets without a fixed Mail key: Mail service code or programmed key + password.

Additional information

- The new message notification mode (voice prompt on going off-hook, LED or icon) depends on the type of terminal; for analog sets with a LED, a virtual key has to be created. Conversation recordings are not notified.
- Number of messages/conversations:
 - sets with displays: the number of messages (old and new) and the number of conversations recorded are displayed at the start of the consultation.
 - sets without displays:
 - case 1: mailbox containing new messages only: a voice prompt indicates the number of new messages.
 - case 2: mailbox containing old messages only: a voice prompt indicates the number of messages already heard.
 - case 3: mailbox containing new and old messages: only the number of new messages is announced.
 - case 4: the number of conversations is never announced.
- When accessing the mailbox (Connected or Application mode) the "Mailbox -> Please enter the mailbox number" menu can be opened by pressing the * key before entering the password (this enables users to access their chosen mailbox).



PLAYING BACK MESSAGES

Description

If at least one message has been left, the user can play back the messages in his mailbox, using a range of possible functions (delete, next, replay, send a copy, call back, etc).

Messages are played back in two series: the new messages first, then the old ones. Each series is in chronological order.

Caller identification

While the messages are played back, the terminal display indicates:

- the name of the caller - if known, and if the user has the corresponding feature rights
- otherwise, the caller's number
- **** if the caller has activated the CLIR or "Secrecy" service
- "Unknown" if the caller number is not recognized by the system.

The identity of the caller is never announced.

Date and time

The date and time of arrival are displayed on the terminal and announced before the message is played back.

Call-back

When the caller's identity is known to the system (CLIP: Calling Line Identification Presentation), this service enables the user to immediately call back correspondents (whether internal or external) who leave a message. The call-back number can contain a maximum of 20 digits. Call-back can be requested while still listening to the message, or afterwards.

There are several possibilities:

- **Internal call:** internal callers can be called back without restriction.
 - If the VMU was activated in Connected mode, the transfer is of the semi-supervised type:
 - If the user doesn't answer: the call is transferred and dynamic routing is activated.
 - If the user is busy (degree 1 or 2): the call is not transferred and the user is returned to the message playback menu.
- If the VMU was activated in Application mode, the transfer is of the blind type: the application transfers the call regardless of caller status and immediately goes on-hook; if the call-back fails, the user has to hang up and call back the VMU (or press Redial).
- **External call:** The call-back of external callers is governed by barring mechanisms. The VMU transfers the call when the connection is established (correspondent off-hook) or simulated.

SENDING MESSAGES

Description

From the consultation menu, the user can send a voice message directly to the recipient's mailbox by performing the following operations:

- pressing the Send soft key or dialing code 3
- defining the destination(s) for the message
- recording the message; validating the message sends it to its destination.

Defining the destination

The destination can be:

- the user's name (display terminals only)
- a distribution list name (display terminals only)
- the user's directory number (up to 8 digits)
- a distribution list number (000 to 050).

Notas :

If the terminal has soft keys, the user can browse the destination list. He can then:

- go to the next member
- go back to the previous member
- delete a member
- delete all the members in the list
- insert a distribution list.

Recording the message

While recording the message, the user can pause (key 8) and then continue the recording (key 8 again). He can also stop the recording (# key) or start over from the beginning (* key). These options are available even though they are not announced (they are displayed, however).

SENDING COPIES OF MESSAGES

Description

This function is identical to sending a message except that the user can also add an introduction (a comment telling the recipient that the message is a copy).

FILTERING MAIL

Description

This function enables users, with the terminal on idle, to monitor messages being left and answer a call if desired.

Activation/deactivation

Service	Activation/deactivation
To activate filtering	PK: VMU: Screening + Password
Deactivate filtering	PK: VMU: Screening
Deactivate call monitoring	PK: VMU: Screening : stops monitoring and deactivates filtering. Fixed End key: monitoring of the filtered call is deactivated; the user cannot replay the message currently being filtered, but filtering remains active for other incoming calls, which can still be monitored.

Additional information

- The set's speaker is automatically activated when the message is left.
- This function is only available for idle sets with programmable keys and a loudspeaker.
- The messages that can be filtered correspond to calls to users with fixed or dynamic routing on their lines; messages sent from a mailbox cannot be filtered.
- The general mailbox cannot be filtered; messages sent from the "Mailbox" menu cannot be filtered.
- Filtering can only be activated for a single message at a time.
- If filtering is activated while a message is being left, there is no effect.
- The call can be answered by pressing the "Hands Free" key or going off-hook. The part of the message left before answering is wiped. After going back on hook, filtering remains active for any new incoming call.

REMOTE NOTIFICATION (OR SIGNALING)

Description

This feature notifies users when someone has left a message for them; a call is emitted by the voice server. When the recipient answers, he can consult his mailbox directly, if the service is active.

Notification can be validated for a given time period.

Configuration

▼ To enable external notification, for each subscriber:

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Mailbox -> Notification -> check o Subscriber is allowed to activate notification**

In the case of external notification, the call is subject to barring mechanisms.

▼ To activate remote notification of messages in mailbox, for each subscriber:

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Mailbox -> Notification -> check o Notification activated**
- With the Customization function: **Notif (or 5) -> On/Off (or 1)**

▼ To set the internal or external destination to be notified, for each subscriber (in the case of external numbers: 22 digits max., including trunk code):

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Mailbox -> Notification -> -> Notification Destination**
- With the Customization function: **Notif (or 5) -> Desti (or 2)**

▼ To define the type of notification, for each subscriber (with or without consultation of mails):

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Mailbox -> Notification -> Kind of Notification**

▼ To define the applicable time range for notification, for each subscriber:

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Mailbox -> Notification -> Notify Destination**
- With the Customization function: **Notif (or 5) -> Sched (or 3)**

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▼ To define, for all subscribers, the delay before the 2nd and 3rd notification call (the default values are country-specific):

- By MMC-PM5 (Expert View): **Voice Processing -> Mailboxes -> Miscellaneous-> Notification: Minutes till second/third alert**

RECORDING A CONVERSATION

Description

This function enables authorized users to record ongoing telephone conversations. The recorded conversation is stored, with its date and time stamp, in the user's mailbox.

Activation/deactivation

Type of station Service	Sets without soft keys	Sets with soft keys
To activate recording	PK: VMU: Conversation Recording or dial the function code	Record SK with pause and re-record options
Deactivate recording (the conversation continues)	PK: VMU / Conversation Recording or dial the function code	Stop SK

Configuration

▼ To authorize conversation recording, for each subscriber:

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Mailbox -> Options -> check o Recording of conversation allowed**

▼ To program a key with the "Conversation recording" function:

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Keys -> Voice Mail: Conversation recording**

Additional information

- The maximum recording time depends on the server's memory capacity.

PLAYING BACK RECORDED CONVERSATIONS

Description

This function enables authorized users to listen to the conversations they have recorded, using replay, delete, send a copy, call-back, etc.

Conversations are played back in reverse chronological order.

Activation/Deactivation

Type of station Service	Sets without soft keys (with display)	Sets with soft keys
To activate playback	Fixed Mail key + 1 + Password + 2	Fixed Mail key + Voice SK + Password + Conv SK

PERSONAL ASSISTANT

Description

Incoming calls forwarded to the voice server are routed to the user's mailbox or the user's personal assistant (depending on the configuration).

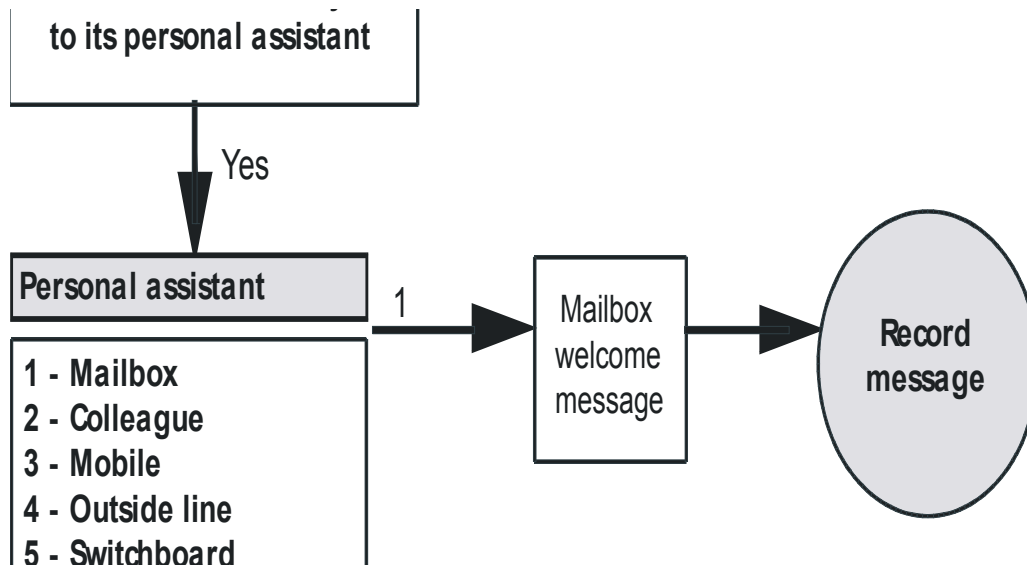
If the call is forwarded to the personal assistant, the caller is put through to the Main menu, enabling him for example to leave a message (so that he can be called back) or to be transferred to the recipient's mobile terminal.

For the caller, forwarding to the mailbox or personal assistant is guided by voice prompts only.

If the personal assistant is activated:

- the caller is informed that the person cannot be reached
- he then listens to the various options offered by the personal assistant (transfer to the operator station or to a predefined internal/external destination)
- then he hears the voice prompt for his chosen option.

Forwarding to the personal assistant is immediate, and is activated from the set customization menu; the personal assistant voice prompt is pre-recorded and cannot be customized.



Notas : Option 1 - Mailbox is proposed automatically, even if the personal assistant has not been configured, whenever the function is validated.

Even if the personal assistant has not been validated, the Operator station can still be reached by dialing the attendant (operator) number during the mailbox announcement (blind transfer to OS).

Configuration

▼ To activate the personal assistant, for each subscriber:

- With the Customization function: **Assist (or 2) -> On/Off (or 1)**

▼ To configure, for each subscriber, the options proposed by the personal assistant (in the case of external numbers: 22 digits max., including trunk code):

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Mailbox -> Personal Assistant -> Transfer to secretary/operator/home/mobile phone**
- With the Customization function: **Assist (or 2) -> Menu (or 2)-> IntNum, ExtNum, Mobile or Operat (or 1, 2, 3 or 4)**

▼ To enable an external caller getting through to a personal assistant to reach an outside number. If these parameters are not configured, the external-to-external transfer will fail (see "Additional information"):

- For each VMU port:

- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> Part 2 -> "Join Incoming and Outgoing"**

- For the system as a whole:

- By MMC-PM5 (Expert View): **System Miscellaneous -> Feature Design -> check Transfer Ext/Ext**

- By MMC-PM5 (Expert View): **System Miscellaneous -> Feature Design -> check Transfer Ext/Ext by on-hook**

Additional information

- Blind transfers are used.
- If the external/external transfer fails, the system's response will depend on the configuration and in particular on the **Go to initiator if transfer fails** flag (accessible via PM5 under **System Miscellaneous -> Feature Design**):
 - If the flag is not positioned (the default setting for France, Italy and Spain), the call is routed to the OS;
 - If the flag is positioned (the default setting for all other countries), the voice server is called back in Automated Attendant mode. If the Automated Attendant is not open, the call goes through to the general mailbox.
- Destination number:
 - external numbers must include a network access prefix.
 - external numbers are subject to barring checks.
 - if the predefined number is invalid or barred, the call is returned to the personal assistant menu.

CUSTOMIZATION

Description

Customization allows users to define their own set, voice mail and personal assistant settings.

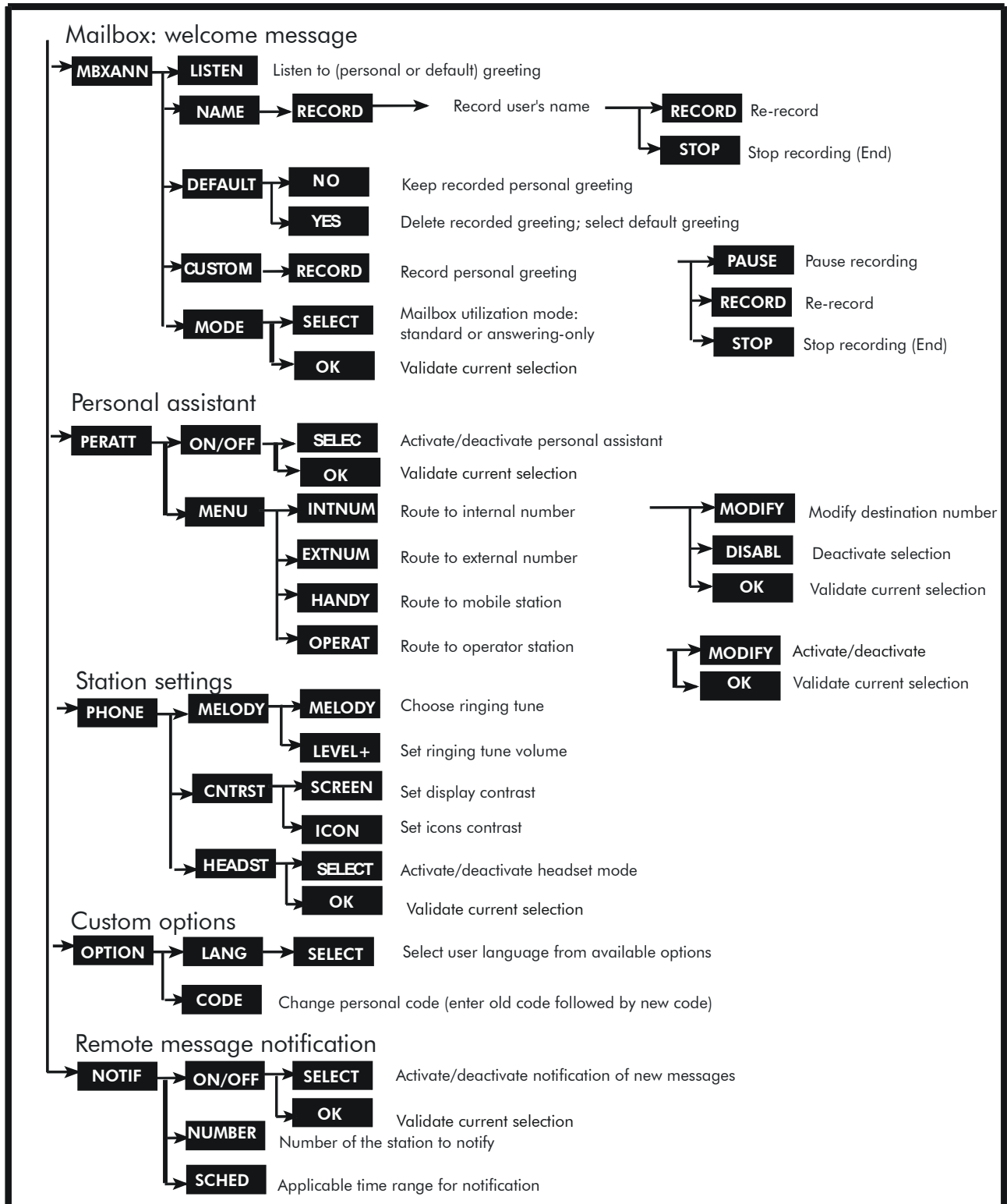
Entering customization mode

Depending on the type of terminal, press the **Custo** key (2nd page, Advanced terminal on idle) or **i + 5** or dial the "Enter programming mode" function code.

The following pages set out the proposed branching structures for each type of terminal; navigation is done using soft keys or by codes (with assistance from voice prompts).

Additional information

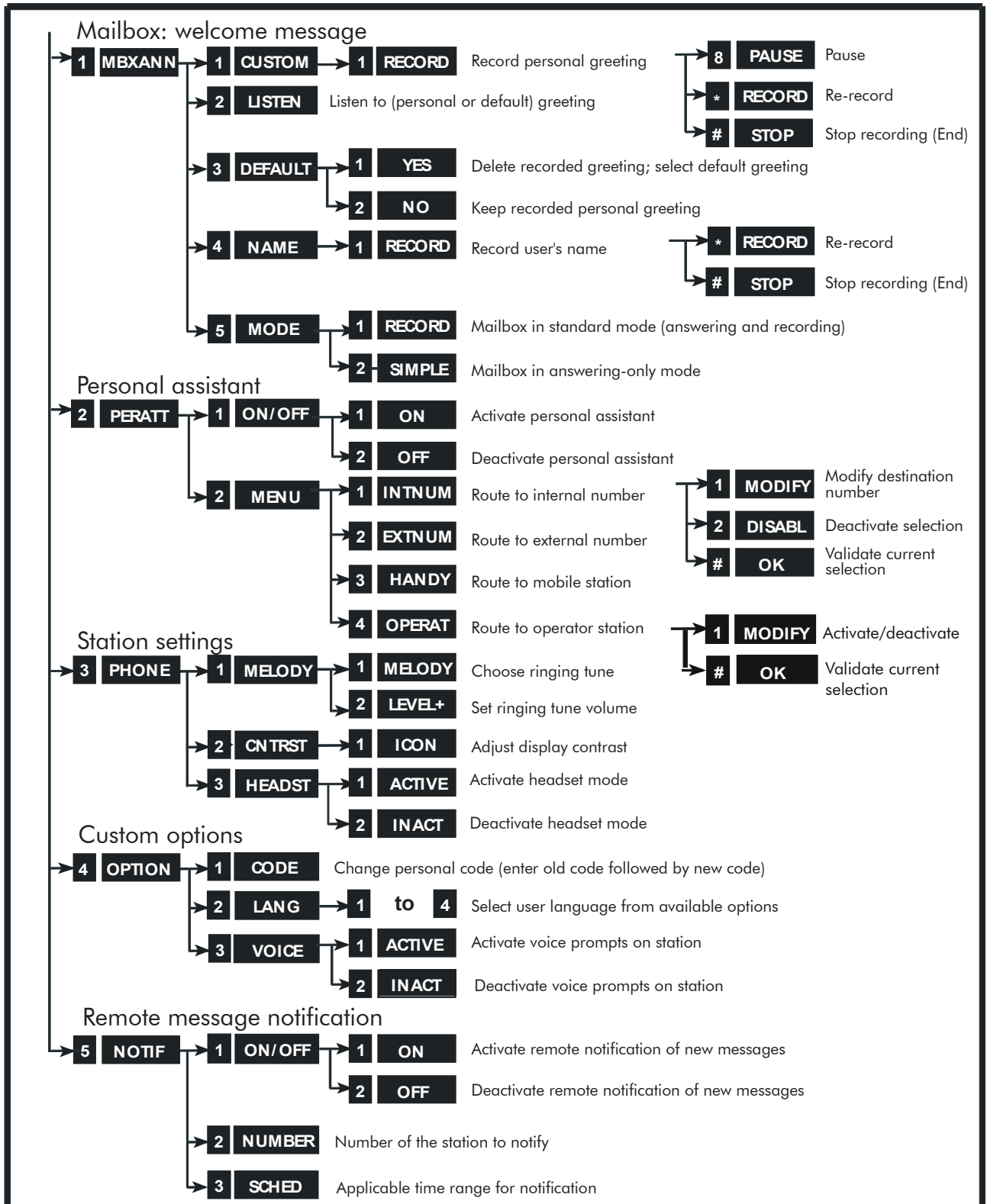
Sets with soft keys



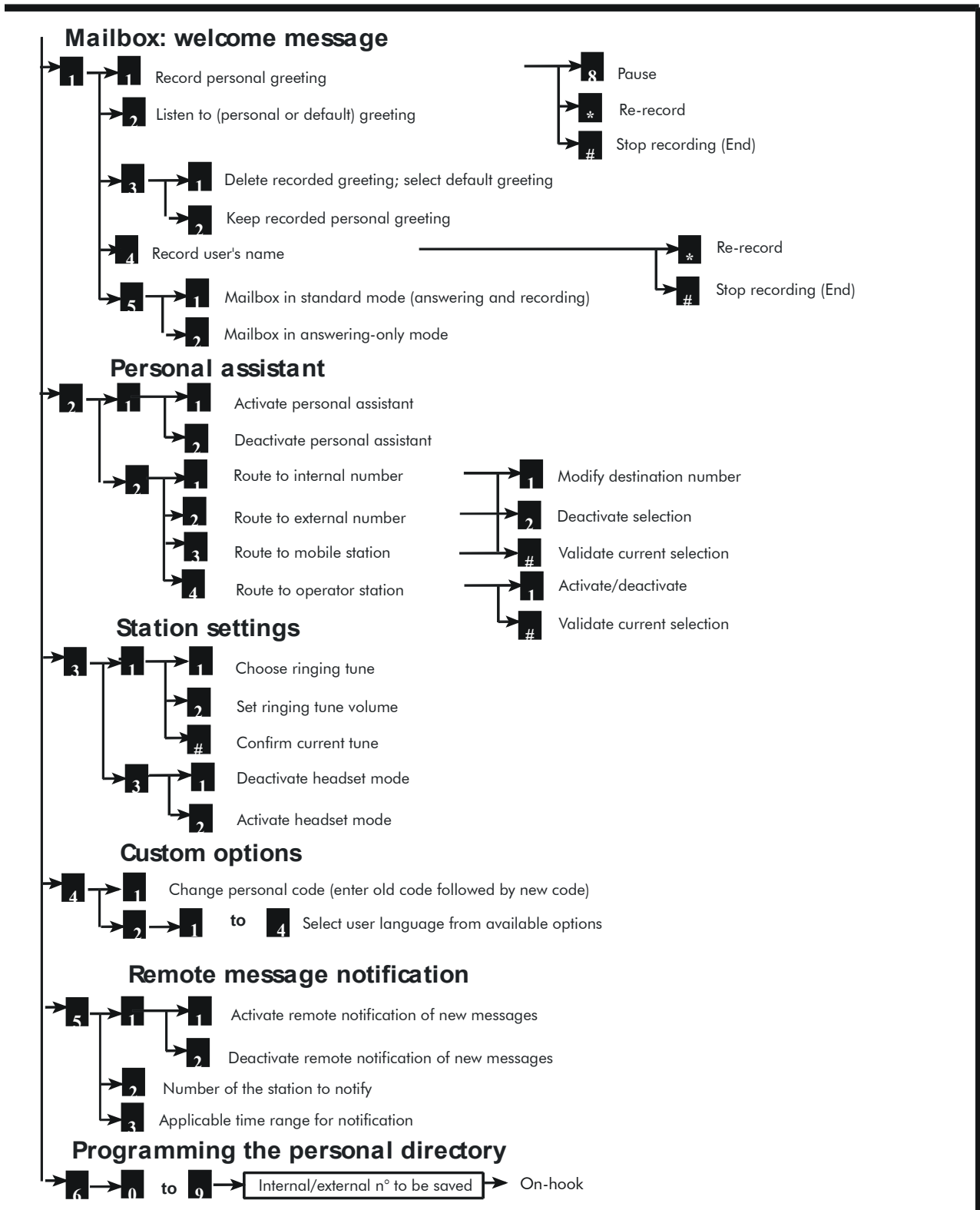
CALL SERVER : INTEGRATED VOICE
MAIL UNIT

SERVICES AVAILABLE TO USERS

Sets without soft keys but with displays



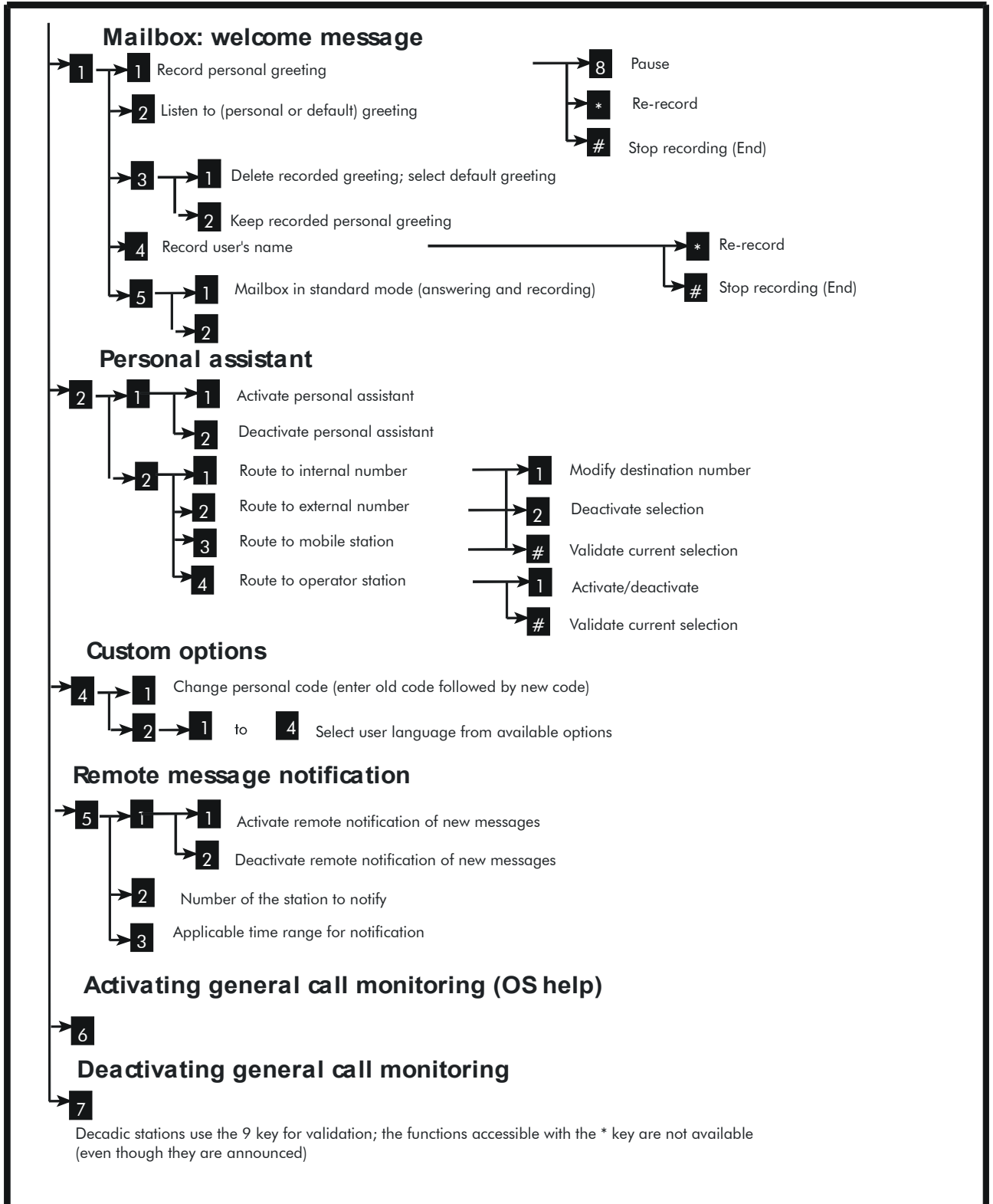
Sets without displays and without soft keys



**CALL SERVER : INTEGRATED VOICE
MAIL UNIT**

SERVICES AVAILABLE TO USERS

Analog Z terminals





SERVICES AVAILABLE TO USERS

**CALL SERVER : INTEGRATED VOICE
MAIL UNIT**

"VISUAL MAILBOX" INTERFACE

File

4

OVERVIEW

Description

The "Visual Mailbox" interface gives Alcatel OmniPCX Office users access to mailboxes via the PC-based application PIMphony. It provides:

- easier and more intuitive navigation thanks to the services offered by the integrated voice server;
- direct access to voice server functionality without having to manipulate the telephone.

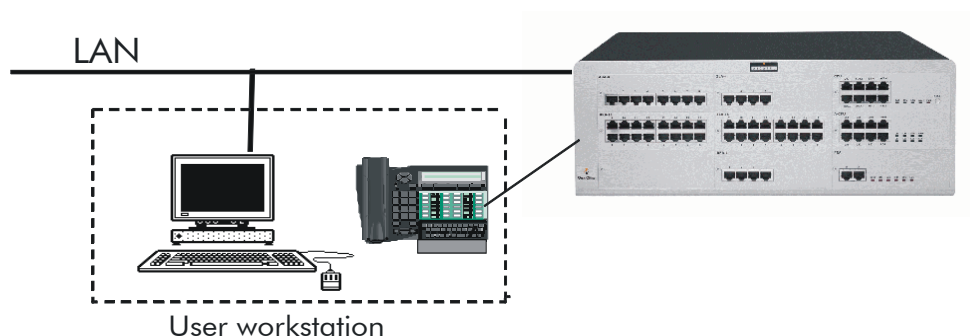
The main services available are:

- Backup messages/conversations on the PC
- Consult new mail
- Consult recorded conversations
- Insert into Outlook
- Send mail
- Record new messages.
- Copy messages with or without adding a comment.

The "Visual Mailbox" interface can be used either:

- on the telephone terminal, or
- on the PC, if it has a sound card.

Environment



The user workstation consists of:

- a Z, DECT or Reflexes terminal (connected to the system by a UA, DECT, analog or IP link) and a PC connected to the LAN (the system must also be connected to the LAN);
- or simply a multimedia PC (PIMphony IP Edition) connected to the LAN.

SERVICES PROVIDED

The application enables you to initialize and configure the password required for access to the messages window.

Mailbox supervision

The "Mailbox" icon in the toolbar indicates whether all the messages have been heard or whether there is at least one new message.

Clicking the icon opens the "Visual Mailbox" window, containing information on all the messages and conversations stored in the mailbox:

- date and time of message
- type of message: voice mail or recorded conversation
- caller identity: name registered in PIMphony, PABX name or number
- the length of the message
- message status: new or old.

The information list is updated dynamically each time a message arrives in, or is deleted from, the mailbox, or changes status from "new" to "read". This is represented by 2 distinct icons: the application also synchronizes the status of the LED on the set (signaling the presence or absence of new messages).

Handling messages

Messages/conversations are viewed in list form in the "Visual Mailbox" window.

A set of static buttons are available for:

- deleting items
- playing them back
- copying them, with or without a comment
- recording a new message
- creating or displaying the caller's Outlook file
- calling back the person who left the message (if their identity is linked to the voice message).

Dynamic buttons appear during playback.

Remote notification of new messages (copy to Outlook mail client)

The "Follow Me" function enables authorized users to receive e-mail on the local PC to advise them that a new message has arrived in their mailbox.

The voice message is inserted as an attachment to a new message in the main Outlook message list.

This option is configurable.

This function requires Outlook to be installed locally.

MANAGING THE TERMINAL

Entering VMB mode

The terminal acts as the audio input/output for recording and playback services.

When a new voice mail is detected, the server informs the terminal (the LED flashes) and the PC (the "Mailbox" icon changes state). Pressing the "Listen" key in the "Visual Mailbox" window has the following effect:

- the terminal goes directly to Hands Free mode; alternatively, it rings and the user has to pick up the receiver. The user then hears the new message.
- the display is updated ("Visual Mailbox").
- all the terminal keys except End, Loud+, Loud-, off-hook and on-hook are disabled.
- the terminal is now considered busy (incoming calls entrants are camped on); with PIMphony, calls can still be taken.

Quitting VMB mode

The terminal quits this mode after:

- going on-hook or pressing END
- closing the VMB window
- after an inactivity timeout of 2 min 30 sec.



"VISUAL MAILBOX" INTERFACE

**CALL SERVER : INTEGRATED VOICE
MAIL UNIT**

EXTERNAL VOICE MAIL UNIT

File

5

From version R1.1 onwards, an External Voice Mail Unit ("external VMU"), using the VPS protocol, can be utilized in place of the integrated voice server.

The external VMU is connected to the Alcatel OmniPCX Office system by analog links (SLI boards).

The following integrated voice server features are no longer available when an external VMU is used:

- Personal Assistant
- conversation recording
- voice mail filtering
- Audiotex
- integrated Automated Attendant
- general mailbox
- visual mailbox (PIMphony)

ACTIVATION/DEACTIVATION

Activating the external Voice Mail Unit

Activating the external VMU has the following effects:

- The keys and other data defined for the integrated voice server are not used by the external VMU;
- on each terminal, the number of messages received is set at 0 and the Message LED is off.

Reactivating the integrated voice server

When reactivated using PM5, and provided the settings are coherent, the voice server takes up from where it left off (with all statuses and voice mail recorded) before the switch to the external VMU.

CONFIGURATION

The integrated voice server is used by default.

With PM5 (but not with MMC-station), the integrated voice server can be deactivated in order to operate with the external VMU. This deactivation has to be confirmed; using the external VMU calls for the following additional adjustments:

- defining the links between the external VMU and the SLI equipment
- allocating the external VMU ports to the OS group and VMU group
- checking that the VPS codes are compatible with the numbering plan
- reprogramming the VMU access keys
- adapting the dynamic routing settings to the VMU for each user with a mailbox.

▼ To deactivate the integrated voice server:

- By MMC-PM5 (Expert View): **Voice Processing -> Activate Voice Processing -> Deactivate Voice Processing -> click Yes** to confirm

▼ To specify the SLI equipment for connection to the external VMU:

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Misc -> Special function = Voice Mail Unit**

▼ To check, for each SLI device, that camp-on on busy is authorized and that it has intrusion and warntone protection:

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Features -> check Camp-On Allowed, Intrusion Protection Warntone Protection**

▼ To add the directory numbers of the Voice mail equipment to the OS group in order to run the Automated Attendant function with the external VMU:

- By MMC-PM5 (Expert View): **List of operator groups -> Details -> Modify -> Add**

▼ To create a VMU group:

- By MMC-PM5 (Expert View): **List groups -> Details -> Modify -> Add**

**CALL SERVER : INTEGRATED VOICE
MAIL UNIT**

EXTERNAL VOICE MAIL UNIT

- ▼ For Reflexes terminals and analog sets with a Message LED: to create a "Voice Mail" key (virtual in the case of analog terminals) assigned with the VMU group number:

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Keys -> Function Keys = Voice Mail Unit (or Vir. keys -> check Voice Mail Unit and enter the VMU group number)**

- ▼ To adapt dynamic routing of level 1 and/or 2 (forwarding to general level): if the box is checked, the call is forwarded to the Automated Attendant on the external VMU; otherwise it goes through to the user's mailbox.

- By MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Dyn. Rout. -> check or uncheck VMU as Auto. Attendant (lev 1) and/or VMU as Auto. Attendant (lev. 2)**

- ▼ To check the coherence of the internal numbering plan for the "Mail Booking" and "Cancel Mail Booking" functions (used by the VPS protocol):

- By MMC-PM5 (Expert View): **Numbering -> Numbering Plans -> Internal Numbering Plan**

- ▼ To check the values of the other VPS codes defined by labeled addresses relative to the numbering plan:

- By MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Other labels -> VMCodBsyTo, VMCodCall, VMCodCnsTo, VMCodDiaTo, VMCodDirCl, VMCodFwdCl, VMCodOosTo, VMCodRecCl, VMCodRecal, VMCodRelea, VMCodRgToE, VMCodRngTo**

- ▼ To return to integrated voice server mode (check that the settings are coherent!):

- By MMC-PM5 (Expert View): **Voice Processing -> Activate Voice Processing -> Activate Voice Processing**

ADDITIONAL INFORMATION

For systems operating with an external VMU, the following particularities needed to be taken into consideration:

- Message notification: as with the integrated voice server, the presence of new messages is signaled by icon/LED or by voice prompt on going off-hook, depending on the type of terminal.
- Number of messages: with the external VMU, users are not shown the number of messages:
 - sets with displays: the sign "+ 1" means at least one message is available;
 - sets without displays: on picking up the handset, the user hears a specific tone signaling the presence of new messages.
- Consulting the mailbox: mailbox consultation is still accessed by pressing the Mail key or by dialing the Mail function code; on connection to the external Voice Mail Unit, the user is guided by the voice prompts (soft key navigation is no longer available).
- Customization: all the voice server options contained in the customization tree structure are disabled.
- General Mailbox soft key: the display on terminals in the OS group no longer offers a soft key for calling the general mailbox.

Alcatel OmniPCX Office

SECTION

CALL SERVER : MOBILITY

REF3EH 21000 BSAA Ed. 04



ALCATEL OMNIPCX OFFICE

CALL SERVER : MOBILITY

Section CALL SERVER : Mobility

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ALCATEL OMNIPCX OFFICE

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GENERAL

File
1

ETSI STANDARD

The DECT protocol is based on pico-cellular technology (cells of 30 to 150 m depending on the environment) allowing high traffic throughput: up to 10000 E/km².

The frequency band used is between 1880 MHz and 1900 MHz (UHF) i.e. a passband of 20 MHz. These 20 MHz are split into 10 radio channels.

The passband of a radio channel is 1.728 MHz and radio channels are spaced 2 MHz apart to avoid interference between adjacent channels.

The DECT system is based on the use of FDMA (frequency multiplexing) and TDMA (time multiplexing) techniques. It thus has a maximum capacity of 120 simultaneous communication channels (10 radio frequencies x 12 time slots).

GAP (Generic Access Profile): part of the DECT protocol required for interworking by cordless handsets from different manufacturers.

PRINCIPLES

The DECT features integrated into the Alcatel OmniPCX Office system allow for the creation of a wireless PABX.

The DECT features are offered by 4070 IO/EO base stations connected to UA Reflexes interfaces (UAI boards).

A radio base station can support up to 6 communication channels simultaneously, on 2 UA links.

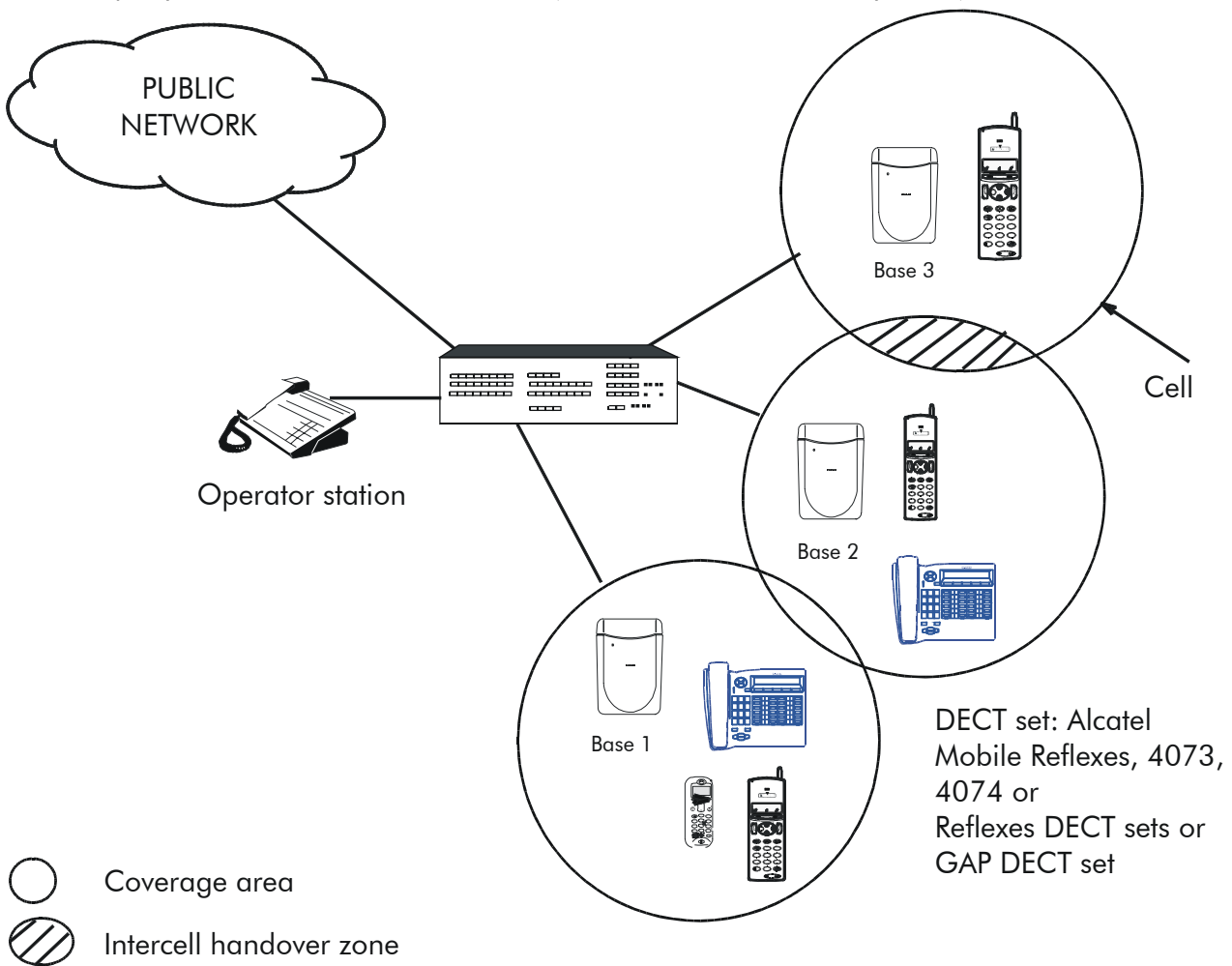
The base stations have a range of:

- 150 meters over open ground
- 30 to 50 meters horizontally and 7.5 meters vertically in an enclosed space

DECT UA/GAP SYSTEM

A DECT system managing the UA/GAP (Generic Access Profile) protocols allows simultaneous use of the following cordless handsets:

- DECT UA + GAP cordless handsets (Mobile Reflexes, 4073 GS, 4074 Gx handsets; Reflexes DECT sets)
- third party DECT GAP cordless handsets (the available features may differ).



AVAILABLE FEATURES

Mobility management

- roaming
- intracell handover (on the same base station)
- intercell handover (between base stations).

System access and dynamic channel selection

Before making or receiving calls, the handset must obtain information about the environment in which it is being used to ensure that it does in fact have access to the system.

To enable the handset to synchronize itself with the system, each base station is always active on at least one radio channel (the dummy bearer), broadcasting information concerning the system and its identity.

Any handset will thus be able to recognize the system coverage area in which it is working. When on standby, each handset is tuned to the nearest base station, receptive to search messages indicating an incoming call.

Channels are allocated dynamically when requested by the handset. Once synchronized with the system, the handset decides on the most appropriate channel for a communication. It chooses the least disrupted of the free channels.

Inter- and intra-cell handover procedures

The coverage radius of a DECT radio base station forms a "cell".

Intercell handovers to another cell are commanded by the handset when the signal from the active base is weak and there is a stronger base in the vicinity. During the communication, the mobile requests an appropriate available channel from the second base. Once the second link has been established, it releases the first one, maintaining the communication on the second base.

If transmission errors arise, an intracell handover is performed on the same base station towards a higher quality channel.

GAP MODE: GENERAL

By default, Alcatel DECT GAP handsets operate in proprietary mode (i.e. like Reflexes sets); third party DECT GAP handsets usually operate in basic mode (though some may operate in advanced mode):

- basic mode: this mode offers a reduced level of operation (no enquiry call, no call waiting, no display management, etc.)
- advanced mode: this mode offers access to a level of operation essentially equivalent to that of an analog Z terminal (all functions defined by feature access codes).

With PM5, the mode of each set can be modified individually at the registration stage.



GENERAL

CALL SERVER : MOBILITY

INSTALLING 4070 IO/EO BASE STATIONS

File
2

CAPACITIES

The following limits must be respected (number of bases remotely supplied by the system) for each Alcatel OmniPCX Office solution:

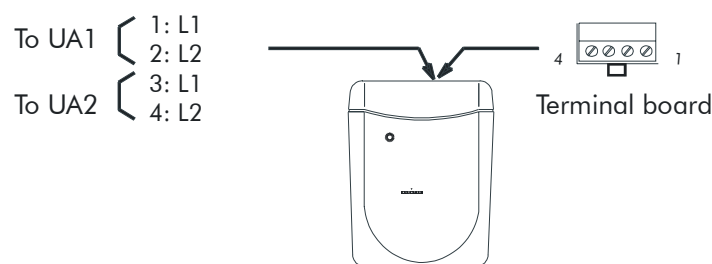
e-Xs	S / e-S	M / e-M	L / e-L	XL / e-XL	Max. limits
4	4	8	20	40	60

CONNECTION

The 4070 IO base station is designed for internal installation, and the 4070 EO for external installation. They are connected up to the RJ45s on the UAI board.

A 4070 IO/EO base station with a single UA link can be connected up to any UAI board interface; the UA link will be connected to the "master" (wires 1 and 2).

Wiring



Local Power Supply

- The mains adapter serves as a sectioning device
- The surface socket must be installed as close to the base as possible and must be easily accessible.

CONFIGURATION

- Define the length of the line: because the connection distances between the modules and the base stations (1200m max.) differ, you must compensate by making the propagation length more or less identical. The following choices are available:
 - short line: 0 to 400 m (default value)
 - medium line: 400 to 800 m
 - long line: 800 to 1200 m

By MMC-PM5, select:

Subscribers/Basestations List -> Subscribers/Basestations List -> IBS Master -> Details -> Line Length.

This programming operation is necessary to install the base station. If modified during use, the base station will be reset (regardless of any communication in progress).

- Define the number of antennae used: it may be necessary to cancel antenna diversity for specific needs.

By MMC-PM5, select:

Subscribers/Basestations List -> Subscribers/Basestations List -> IBS Master -> Details -> Antenna Diversity -> No Diversity = 1 antenna; Diversity = 2 antennae.

In the event of modification during use, the base station will be reset (regardless of any communication in progress).

- Define the DECT frequencies used: a 4070 IO/EO base station can operate with 1, 2, 4, 5, 8, or 10 frequencies. When booted up, all 10 frequencies are available.

By MMC-PM5, select:

System Miscellaneous -> Memory Read/Write -> Debug Labels -> "Dect_Freq" -> enter the 2-byte value corresponding to the mask for the desired frequencies.

CALL SERVER : MOBILITY

INSTALLING 4070 IO/EO BASE STATIONS

The default value of the mask is 03FF (all 10 frequencies used); this value must only be modified under particular installation conditions, normally outside Europe.

PROGRAMMING				EFFECT ON SYSTEM			
Value of mask ("Dect_Freq" address)		Chosen frequencies		Mask validated by the system		Validated frequencies	
Hex	Binary	Number	Range	Hex	Binary	Number	Range
03FF	0000 0011 1111 1111	10	1 - 10		0000 0011 1111 1111	10	1 - 10
003F	0000 0000 0011 1111	6	1 - 6		0000 0000 0000 1111	4	1 - 4
0282	0000 0010 1000 0010	3	2, 8, 10		0000 0000 1000 0010	2	2, 8
0000	0000 0000 0000 0000	0	none		0000 0011 1111 1111	10	1 - 10
003C	0000 0000 0011 1100	4	3 - 6		0000 0000 0011 1100	4	3 - 6

Carry out a warm reset of the system, or reboot each base station individually.

INSTALLING THE BASE STATIONS

To install the base stations, follow the steps below:

- position the base stations (depending on the result of the coverage studies)
- connect the base stations
- power down the system
- by MMC-PM5:
 - . if necessary, modify the numbering plan and the account codes table
 - . give a name to each station installed
 - . if necessary, modify the value associated with the "Line length" parameter
 - . create the DECT accesses then declare the type of station (DECT UA) or use automatic registration (DECT GAP)
 - . the default value being the same for all the systems, modify (if necessary) the PABX ARI value by configuring it with the ARI from the manufacturer
 - . complete the system settings (trunk groups, call barring, etc).



**INSTALLING 4070 IO/EO BASE
STATIONS**

CALL SERVER : MOBILITY

CONFIGURING THE SYSTEM

File
3

Configuring the system's DECT mobile functionality consists in programming the ARI number and the GAP authentication code (if necessary). Both of these parameters must be completed before registering a set on the system.

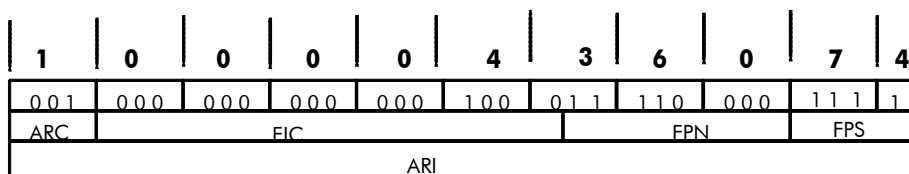
Before starting the DECT configuration, the numbering plan must be defined and the hardware configuration (installing interface boards, recognizing sets, etc) completed.

ARI NUMBER

The ARI (Access Right Identifier) number identifies the system uniquely to mobiles. It contains 11 octal digits (base 8). This number, assigned to an ETSI base by the installer, must be entered on installing the system.

It is structured as follows:

- the ARC (Access Right Code) specifies the usage environment (private, public, etc); in the case of Alcatel OmniPCX Office, a type-B ARI is allocated by the DECT protocol (ARC = 1, non modifiable)
- the EIC (Equipment Installer Code) is the number assigned by ETSI to each maker or distributor offering DECT systems
- the FPN/S (Fixed Part Number/Subnumber) is a number entered by the installer: each system installed by the same installer must have a different number.



- To enter the system ARI number with PM5 (Expert View):

Select: **System Miscellaneous-> DECT ARI/GAP Authentication->** enter the ARI number (the system deduces the EIC, FPN and FPS fields automatically).

- To enter the system ARI number with MMC Station:

Select **DECT -> ARI ->** enter the ARI number and validate by clicking **OK**

Important : The ARI number must be modified by the installer (in accordance with the above rules)



CONFIGURING THE SYSTEM

CALL SERVER : MOBILITY

before registering any DECT sets.

GAP AUTHENTICATION

This service secures data exchange between the system and the DECT GAP handsets.

An authentication code can be sent by the mobile to the system during the registration procedure. This code is then compared with the one configured in the system. If it matches, the registration of the set can continue; if not, it is stopped.

- To define an authentication code with PM5 (Expert View):

Select: **System Miscellaneous-> DECT ARI/GAP Authentication->** check o **Activate GAP Authentication** -> enter a code of between 4 and 8 digits in **Authentication code**

- To define an authentication code with MMC Station:

Select **DECT -> AuthCd** -> enter a code of between 4 and 8 digits and validate by clicking **OK**

Select **DECT -> Authen** -> activate or deactivate with **Choice** and validate by clicking **OK**

REGISTERING A GAP HANDSET

DECT sets are identified by their IPUI N (International Portable User Identity type N). Each handset has a different IPUI N number, used when the set is declared to the system.

In the case of a DECT GAP handset, the IPUI N and ARI parameters are exchanged automatically during the registration procedure. It is through these parameters that the system recognizes the handset, and vice versa.

Procedure with PM5

Select: **Subscribers/Basestations List-> Subscribers/Basestations List-> Add** -> add the required number of DECT accesses by selecting **DECT handsets** and the number of devices, then validate by clicking **OK**

Select **Subscribers/Basestations List -> Subscribers/Basestations List -> GAP Reg.** -> The GAP registration procedure is under way when the **Register GAP Handsets** window appears.

On the mobile

Launch the registration procedure on the handset (refer to the accompanying documentation).

As soon as the mobile's IPUI number appears, select an unassigned number mobile and click **Assign**. The IPUI number, preceded by the mobile number, then appears in the **Assigned Handsets** window

Procedure with MMC Station

Select **DECT** -> **Add** -> **GAP** -> The message "In Progress..." is displayed; the registration procedure is under way.

Launch the registration procedure on the handset (refer to the accompanying documentation).

When the mobile's IPUI number appears, validate by clicking **OK**.

The mobile is registered and a number is automatically assigned to it.

Basic GAP and Advanced GAP

In certain instances, the handset shown in the Unassigned IPUIs window may be a GAP type set; if so, you can select the preferred mode: basic or advanced.

Select the IPUI number and click **Modify Mode**.

IMPLEMENTING MOBILE REFLEXES HANDSETS

File
4

REGISTERING THE HANDSET

In new sets, the battery included is factory pre-charged. When the terminal is brought into service, the residual charge level is usually enough to power the registration stage.

Fit the battery into the handset and check that the level of charge is adequate (full or half-charge icon); if not, put it on charge.

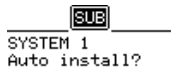
Start the registration procedure on the PABX.

When the system is ready, continue with the handset.

Step A

Turn on the handset by a long press on and observe the screen display.

- If the set is new (never been assigned) and has enough battery charge, the display shows "SYSTEM



1 Auto install ?" ; go to **Step B**.

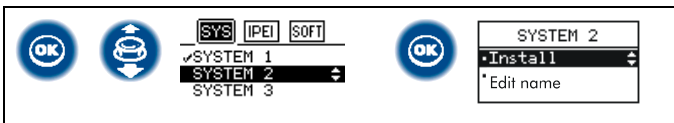
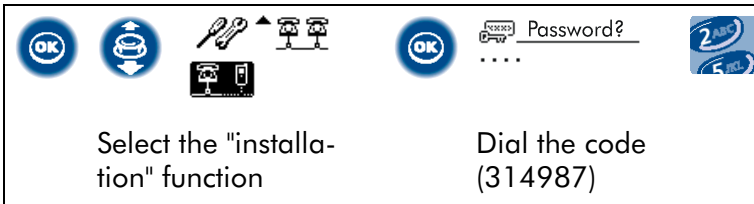
- If the set does not display "SYSTEM 1 Auto install ?", it is already assigned on another system; go to **Step C**.

Step B

- If the installation doesn't use the authentication function (AC code), go directly to **Step D** for the simplified procedure.
- If the system uses an authentication code, configure the AC code as described below, and move on to **Step D** to complete the association process.

Select "AC" option		Dial the "AC" code

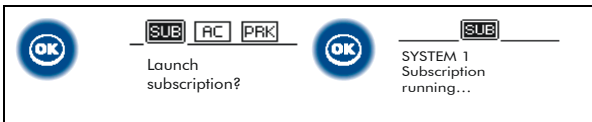
Step C



Select a free system Select the "Install" function and proceed with step D

Step D

Launch the registration procedure.



Launch the association process


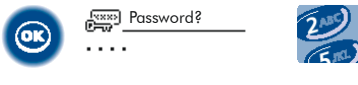
After registration, the set switches automatically to the main language of the PABX.

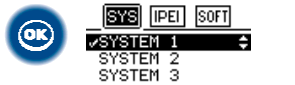
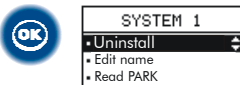
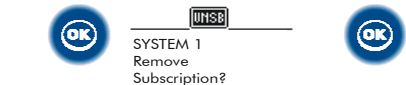
UNINSTALLING HANDSETS

It may be necessary to uninstall a handset when it is no longer used on the system or when the terminal is replaced. The operation must be performed simultaneously on the system and on the terminal.

IMPORTANT



We recommend performing the operation on the terminal (as described below) before deleting it from the system. If this sequence is reversed, it is still possible to delete data from the terminal, but this has to be done outside the radio coverage area.

 <p>Select the "installa- tion" function</p>	 <p>Dial the code (314987)</p>
---	---

 <p>Select the system to be uninstalled</p>	 <p>Validate the "Unins- tall" option</p>	 <p>Confirm the uninstall operation</p>
---	---	--

UTILIZATION / AVAILABLE FUNCTIONS

Basic terminal functions (accessible in GAP or AGAP mode)

- Lock / unlock keypad (long press on )
- Activate/deactivate keypad beep, key beep, radio beep, vibrator * back lighting **
- Quick switching from ringer to vibrator * (long press on )
- 3-level reception volume adjustment with storage of the most recent setting
- Registration possible on 5 different GAP systems
- Special radio test function (see "Radio Test Mode ")

* Mobile Reflexes 100

** Mobile Reflexes 200/200 Ex

Functions specific to simplified GAP mode

In GAP mode, the following functions should be available (unless inhibited by system constraints):

- Manual language selection for the local menu
- Choice of ringing tunes
- Personal speed dial
- Local redial
- DTMF end-to-end signaling
- Calibrated loop

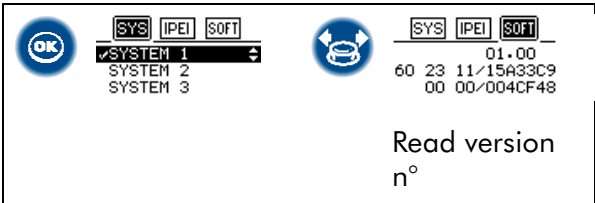
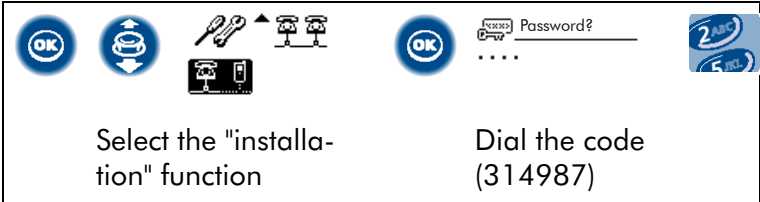
Functions specific to AGAP advanced mode

Outline of the main functions available, built into the PABX:

- Diversion and cancel diversion
- Audio and text message consultation
- Dial by name / collective speed dial
- Personal speed dial (system numbers)
- Automatic language configuration
- Choice of ringing tunes
- Interactive features in conversation

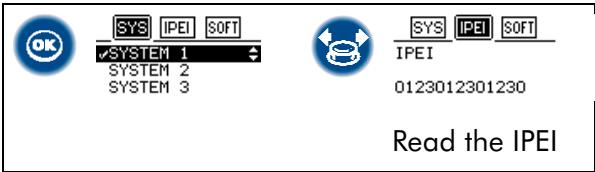
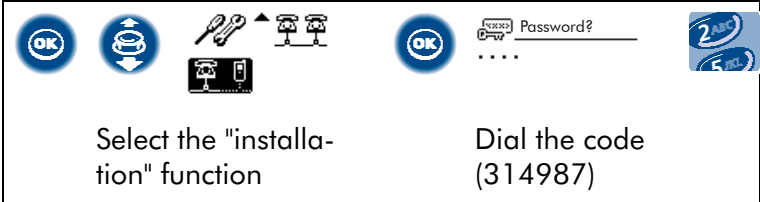
MAINTENANCE OPERATIONS

Reading the handset software version number



Note: each terminal model has its own identification prefix: 70 xxxx for Mobile Reflexes 100 models and 60 xxxx for the Mobile Reflexes 200 models.

Reading the handset IPEI number (handset ID)



Resetting the EEPROM

This function restores the terminal to its factory settings, i.e. associated with no system and containing no saved data.

- Turn the handset off and on again, simultaneously pressing On-hook, Off-hook and i.
- Select **EEPROM Reset** and validate.

Quitting battery security mode

The set can activate automatic security mode on the battery in the event of a short circuit, a critically flat battery (after several weeks without charging) or an excessive charge voltage. Some of these incidents may arise when the handset suffers a violent impact.

When security mode is activated, the mobile is powered down and will not come back on.






To deactivate security mode:

- remove the battery and replace it in the mobile
- place the handset (turned off) on the charger
- press the handset "on" key without removing it from the charger.

RADIO TEST MODE

Activating radio test mode

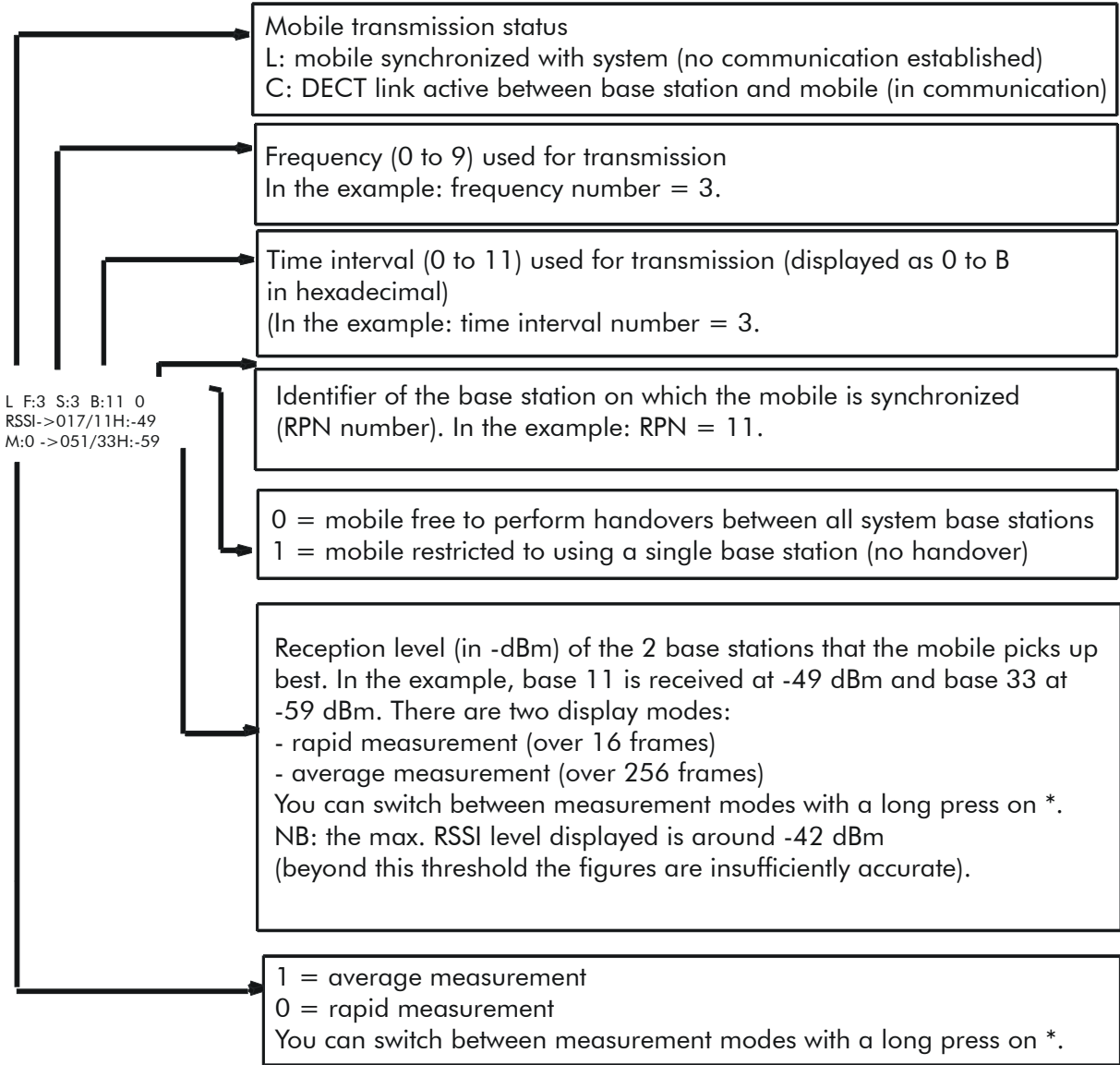
To activate radio test mode:

- turn off the mobile by a long press on 
- turn it back on by pressing simultaneously on ,  and 
- when the display comes on, do a long press on 

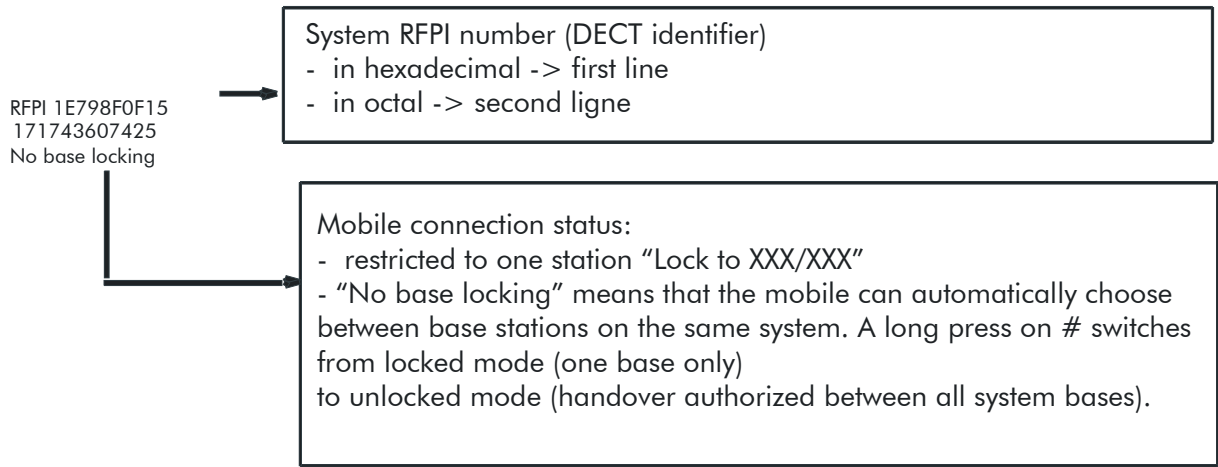
The screen displays the state and reception level measurements.

Description of radio test mode functions

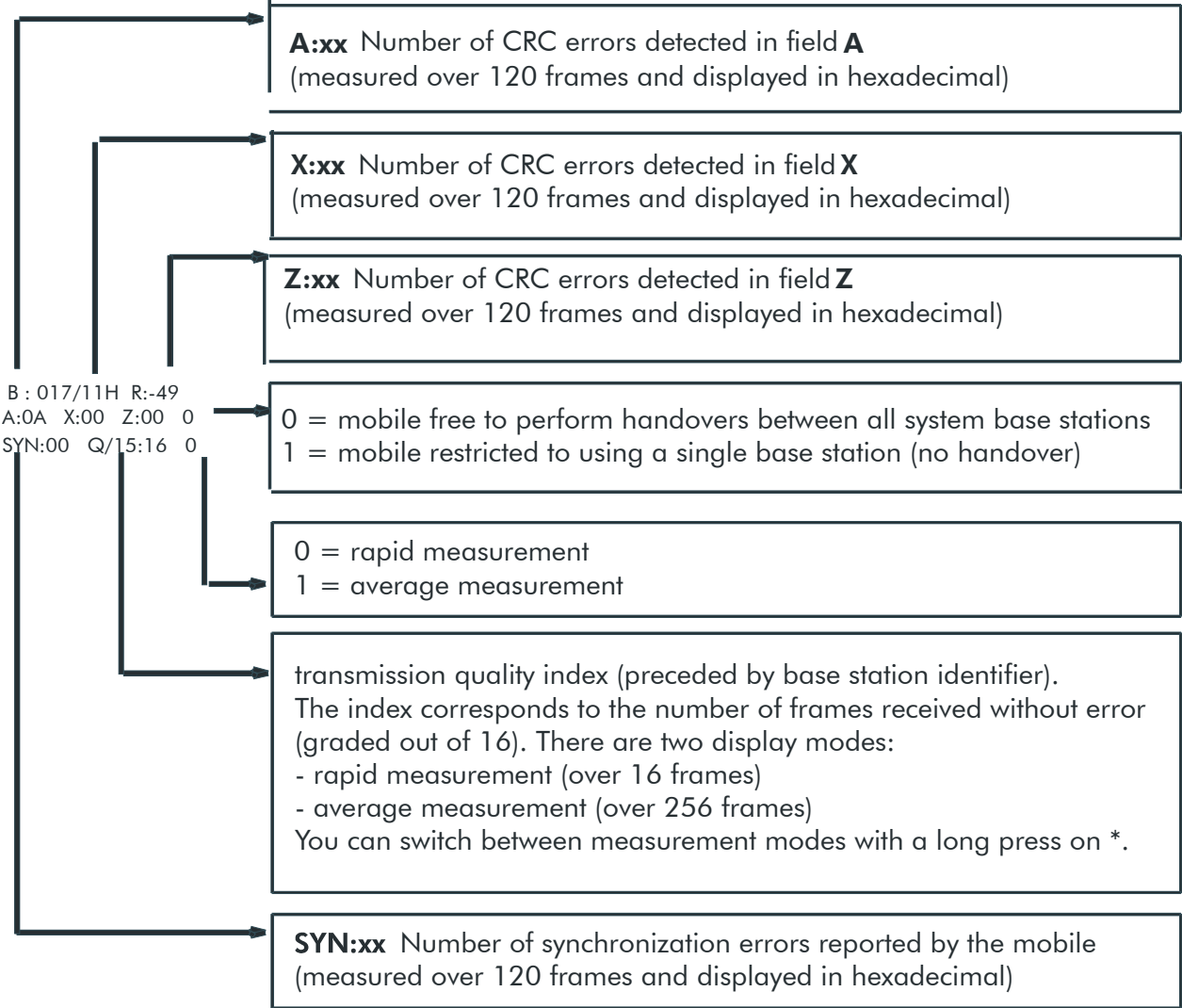
STATE / RSSI (state / reception level)



IDENTITY (system RFPI number) / CONNECTION STATUS



QUALITY (reception quality)



Note: the quality index gives an objective picture of the communication quality in order to determine the practical range limits (depending on the distance from the handset and the nature of the environment).

In practice, you have to select this function (preferably the averaged measurement), set up a call, and observe the index value (Q): at a given location, the quality can be considered good if the value displayed is equal to or greater than 12 on a stable basis.

CONNECTION STATUS (synchronization)

LOCK TO BASE
 Unlocked xx



Wed 16 Aug 11:00

Mobile connection status:

- synchronized on a system (LOCK) -> first line
- Unlocked xx means that the mobile can automatically choose between base stations on the same system. A long press on # switches from locked mode (one base only) to unlocked mode (handover authorized between all system bases)

This function makes it easier to determine the coverage area of a base station.

IMPLEMENTING REFLEXES DECT SETS

File

5

INSTALLING A REFLEXES DECT SET

The registration of a Reflexes DECT set (with the 4097 CBL option) is performed by radio data exchange with the system. Before attempting the association, it is therefore important to check that the DECT bases are operational and that the sets are located in a zone with adequate coverage.

In order to limit traffic during installation of the sets, it is advisable to register the Reflexes DECT sets in sequence, one after the other.

Notas :

The DECT-GAP authentication procedure (described in file 3) is not available with Reflexes DECT sets.

REGISTRATION PROCEDURE FOR A NEW SET

New sets are delivered from the factory without any registration data; they are brought into service using a simplified procedure.

After adding a DECT set, go into GAP registration mode (MMC-Station or MMC-PM5) and initialize the association procedure up to "Subscription running".

Then switch on the set's power supply, connecting the transformer block to the mains and check the red indicator LED at the back of the set: the LED should emit a short series of "long ON/short OFF" flashes, then go out as soon as the set is synchronized with a base station.

At this point, the registration request is performed automatically by the set. The terminal identifier appears on the system's MMC and the operator only needs to validate the directory number and confirm the registration.

Note: after the registration phase, if the directory number of a Reflexes DECT set has to be changed, its power supply block must be disconnected, then reconnected, after the modification has been made in the system.

REGISTRATION PROCEDURE FOR A PREVIOUSLY REGISTERED SET

If, during a registration attempt, the red indicator LED flashes "short ON/ long OFF", this means that the set contains configuration data. To delete the data, proceed as follows:

- disconnect / reconnect the power supply;
- 2-3 seconds after switching on the power supply again, enter the following sequence of digits on the keyboard: **##86734##** (which corresponds to the alphabet code **##UNREG##** using the number keys); the first character must be entered within 10 seconds;
- again disconnect / reconnect the power supply; automatic registration as described in the paragraph above is initialized.

General conditions of installation

- **location:** this office set must be located in an environment with limited risk of electro-magnetic disturbance and which allows for good quality radio transmission. For example, avoid placing the set near items such as dense metal structures, television, fluorescent strips, halogen lamps, PC monitors, etc.
- **PABX limits:** a Reflexes DECT set is considered both as a Reflexes line set and a DECT terminal. The installation must include a Reflexes corded set in order to perform the Operator function.
- **radio operation:** the Reflexes DECT set operates in dynamic DECT link mode (just like a conventional DECT mobile) or static mode (just like a corded set). The communication channel is set up with the base station each time there is a need to exchange data with the PABX. At the end of an exchange, when the set is in stand-by mode, the radio link and communication channel resources are released and made available to the base station.
- **coverage study:** this is performed in the conventional way, just as for a system equipped with DECT mobile terminals. Apart from the specific use of the terminal as a static office set, it is recommended that a sufficient radio level be maintained in order to guarantee excellent communication quality.
- **limits for standard traffic needs:** the maximum number of Reflexes DECT terminals that can operate in the same zone is the following:
 - for a zone covered by one radio base station (NOTE 1)
 - 4070IO/EO base station with 3 channels: 4 sets
 - 4070IO/EO base station with 6 channels: 12 sets
 - for a zone covered by a group of co-located base stations (NOTE 2)
 - cluster of two 4070IO/EO base stations with 6 channels: 30 sets
 - cluster of three 4070IO/EO base stations with 6 channels: 50 sets

Notas :

1. irrespective of the model of the DECT set (any type of 4074, or Reflexes DECT)
2. the topology of co-located base stations is a specific solution that makes it possible to increase traffic capacity in a given zone: this specific zone is thus identically covered by the various base stations that make up the cluster. To set up a base station cluster it is necessary to make sure that the DECT sets are compatible with this topology, which requires an overflow function not available on some DECT set models.

Remarques :

- Operating and programming limits at system level (**inherent in the dynamic DECT link opera-**

ting mode of Reflexes DECT sets).

- Avoid allocating Reflexes DECT sets to hunting groups; however, if the use of this type of set is inevitable, limit their number to 4 per group.
- Number of Reflexes DECT sets in manager-secretary configurations: 4 manager sets and 4 secretary sets.
- Do not allocate Reflexes DECT sets to broadcast groups.
- Do not use Reflexes DECT sets as call monitoring sets (selective or general) nor to monitor resources.
- Programming the RSP keys is impossible on Reflexes DECT sets.
- Status signaling (free or busy) for sets monitored on RSL keys is unavailable except for sets allocated to manager-secretary configurations.
- Background music is not available on Reflexes DECT sets.
- After a time change made by MMC or after reception of the time sent by the public exchange, it is possible that this modification will not be taken into account immediately by all the Reflexes DECT sets; in this case, a simple user action (going off-hook, making a call, etc.) is enough to reset the time synchronization on the display.

MOVING A REFLEXES DECT SET

To move a Reflexes DECT set, it is necessary to disconnect the mains power supply block before installing it in another place.

Reconnect the set for normal use (the set's number and programming will be kept).

Make sure the terminal is relocated in a zone with an adequate radio reception level, one that can cope with the traffic requirements.

DECT MODULE 4097 CBL INDICATOR LED

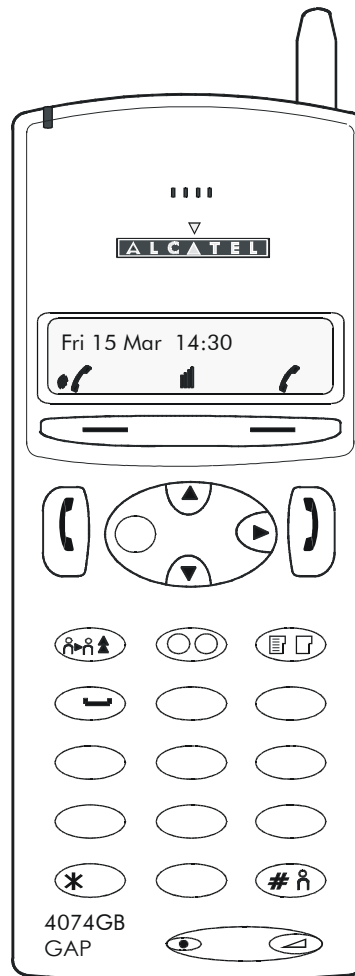
The red indicator LED at the back of the Reflexes DECT terminal shows the operational status of the module at any given moment:

LED constantly lit (ON)	4097 CBL module defect
LED unlit (OFF)	The module power supply is switched off or the module is correctly synchronized with a base station
Flashing long ON / short OFF	The module is not registered with the system and is searching for radio synchronization
Flashing short ON / long OFF	The registered module is searching for radio synchronization

IMPLEMENTING 4074 GX HANDSETS

File

6




REGISTERING A 4074 GX HANDSET

System: consult the system administrator or user manual to obtain all the necessary details. Attention should be paid to the start up procedure; also check whether registration requires a particular access code (authentication code) to be entered on the station.

Set: the 4074 Gx can be programmed to manage up to 5 different DECT systems (labeled SYS1 to SYS5). As a general rule, the first entry (SYS1) is reserved for your Alcatel PABX and must not be modified. New data relating to another GAP system must be introduced on a free entry (SYS5 for simplicity).


Simplified registration procedure

This method can be used if the PABX does not use an authentication code or if the code is 0000. In case of doubt, you can always try to use this method; if it doesn't work, then the specific code procedure must be used.

- **Activate the registration phase on the fixed system**
- Switch on the 4074 Gx: long press on 
- **7** (long press): **PASSWORD** is displayed
- Key in the code **123456** followed by **OK** (long press): displays **1: SYSTEM NUMBER**
- **OK**: displays **ENTER 1-5: 1**
- **5** then **OK**: displays **1: SYSTEM NUMBER**
- **6** then **OK**: displays **SUBSCR. #5 OK?**
- **OK**: displays **subscr. Running**


Specific code registration procedure

The GAP system uses an authentication code with a value different from 0000.

- **Activate the registration phase on the fixed system**
- Switch on the 4074 Gx: long press on 
- **7** (long press): **PASSWORD** is displayed
- Key in the code **123456** then **OK** (long press): displays **1: SYSTEM NUMBER**
- **OK**: displays **ENTER 1-5: 1**
- **5** then **OK**: displays **1: SYSTEM NUMBER**
- **3**: displays **3: CONFIG SYSTEM**
- **OK**: displays **1: TERMINAL TYPE**
- **OK**: displays **SYS 5 TYPE: FREE**
- **t (4 times)**: displays **SYS 5 TYPE: UNDEF**
- **OK**: displays **1: TERMINAL TYPE**
- **7**: displays **7: AC**
- **OK**: displays **SYS 5AC: 0000**
- Type the authentication code followed by **OK**: displays **1: TERMINAL TYPE**
- **y** on the navigator: displays **1: SYSTEM NUMBER**
- **6** then **OK**: displays **SUBSCR. #5 OK?**
- **OK**: displays **Subscr. Running**


Registration completed/failed


After a few seconds (one or two minutes maximum), if the registration is successful, the radio field icon and **subsc. accepted** are displayed. The 4074 Gx terminal is now ready to function in GAP mode with the new system.


In the case of failure, if after several minutes the message **subsc. accepted** is not obtained, or if the message **subsc. Rejected** appears, switch off the terminal (long press on ) and restart the process.


PROGRAMMING THE PERSONAL SPEED DIAL NUMBERS ON A 4074 GX HANDSET

It is possible to compile a directory of 12 numbers maximum (names and telephone numbers); programming is carried out when the station is idle.

Press , the display is positioned on the first entry. To select another entry press 1 to 9, 0, * or # or use the navigator's t or s keys.


To enter a name, press  (the ? symbol flashes). Enter the name (8 characters maximum) by pressing once or several times on the appropriate key (marked with letters of the alphabet).

For example, pressing on  displays **A**. Pressing several times on this key successively displays **B C a b c 2**.

To enter a number, press  (the ? symbol flashes). Enter the number (20 digits maximum) with the keypad.

To insert a pause in a number do a long press on the **1** key (a dash appears on the display).
To insert a flashing character, press t (an "R" appears on the display).

When entering a name or number the s key enables you to delete the last character entered. Pressing repeatedly it deletes the whole entry.

To validate programming press **OK**; the programmed name is displayed. To return to idle, press the red  key.

USING A 4074 GX HANDSET

Except for specific cases, the operations described above correspond to the options offered by the 4074 Gx in liaison with the obligatory features available on a fixed GAP system.


Automatic radio cell transfer



This feature, offered by the 4074 Gx, allows you to move from one base station to another without interrupting communication. Nevertheless, this possibility depends on the fixed system's own limits, particularly its capacity to manage several bases.

Role of the display



When calling from the handset, the figures dialed on the keypad are displayed. When receiving a call, the display indicates the caller's number, if the fixed system offers this feature, otherwise the display remains empty.

Receiving a call


An incoming call is signaled by the station's ringing tone as well as the flashing green lights and the  icon on the display.

To answer the call, . To go off hook and end the communication, .

Calling by dialing manually


, then dial the number on the keypad. The line seizure icon  lights up on the display. It is also possible to dial the number directly; in this case, the line is seized automatically.

Calling by personal speed dial

Press : the display shows the first entry in the directory.

To dial this number press **OK**. To select a different entry use the navigator's t or s keys then validate the number to be dialed by pressing **OK**.

Last number redial

When the set is idle, do a long press on the  key.

Flashing (calibrated cutoff)

Press t. When you press the Flashing key, the letter R appears on the display. Depending on the options offered by the fixed system, the flashing feature can be an essential step in activating other options (example: transferring communication to another station).

SELECTING A FIXED SYSTEM

Programming the system entries

Your 4074 Gx set can be programmed to operate on 5 different DECT systems. The first entry is generally reserved for use with your main Alcatel system. To allocate the other entries, it is recommended that you respect a descending order saving the most frequently used systems on the entries corresponding to the lower numbers (entries 2 to 5).

Automatic/manual selection

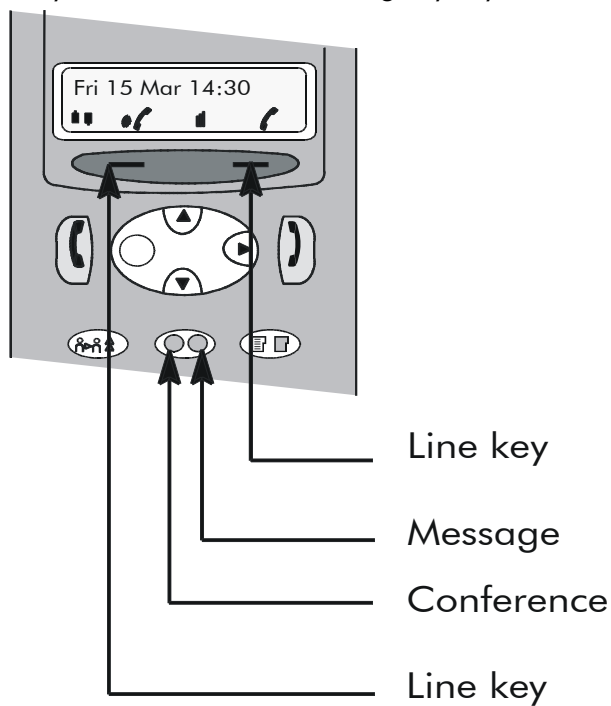
When the systems used are installed on remote sites (far away from each other and without overlap zones), the system is selected automatically when the set is turned on. In contrast, when fixed systems share geographic zones, system selection can be modified by the user in the following way:

- **9** (long press): displays **1: SYSTEM NUMBER**
- **OK**: displays **ENTER 1-5: X** (X: value between 0 and 5 indicating the number of the active system).
- **Y** (Y: value between 1 and 5 representing the number of the new system to be used): displays **ENTER 1-5: Y**
- **OK**: displays **1: SYSTEM NUMBER**
- **t**: displays **2: TERMINAL TYPE**
- **t**: displays **3:SYS TO LOCK ?**
- **OK**: displays **SYS Y OK ?**
- **OK**:the station's green light starts flashing and the radio field icon disappears temporarily. After a few seconds, when the handset has homed in on the new system, the green light goes off and the radio field icon reappears. The display indicates **1: SYSTEM NUMBER**.
- **0** to return to idle state. Your station is ready to operate on the selected system.

DEFAULT FUNCTION OF PROGRAMMABLE KEYS

The 4074 has 2 programmable keys.

On creating the handset, the system creates the following keys by default:



REGISTERING THE HANDSET



For new handsets, the battery included is factory pre-charged; the level of charge is sufficient to register the terminal. Fit the battery into the handset and check that the level of charge is adequate (full or half-charge icon); if not, put it on the charge base.

Start the registration procedure on the PABX. When the system is ready, continue with the handset.

Step A

Long press on **i** to turn on the handset.

If the set is new (never been assigned) and has enough battery charge, the display shows "Auto install system 1-OK ? ", there are two possibilities:

- if the installation doesn't use the authentication function (AC code), go directly to step C for the simplified procedure
- if the system uses an authentication code, press briefly on the "On-hook" key,   and move on to step B.

If the set does not display "Auto install system 1-OK ? " (it is already assigned on another system), go to step B.

Step B

Long press on **'#'**, for enter in the handset's local menu.

Press briefly on **'t'**, to enter the 'System' sub-menu.

Press briefly on **'OK'** to enter the 'Install' sub-menu.

Use the navigator to select a free position for the system to occupy (1, 2 or 3).

Press briefly on **'OK'** to validate.

Enter the AC code, if the system uses one; otherwise go to step C.

Step C

Press briefly on **'OK'** to validate and launch the registration request

When the set identifier appears on the MMC system window, validate the entry to complete the operation. Registration becomes effective once the set has been turned on and off, or after an outgoing call has been made (the call attempt will fail).

USING THE HANDSET

The 4073 GS Smart operates at optimal effectiveness with a DECT PABX from the Alcatel OmniOffice range: under these conditions, the handset uses an advanced proprietary protocol (AGAP) which gives it access to a large number of PABX functions.

It can nonetheless be used in reduced operating mode (GAP mode) on DECT GAP systems.

Functions specific to the terminal (accessible in either operating mode)

Lock / unlock keypad (long press on "On-hook" key)

- Activate/deactivate keypad beep, key beep, radio beep, vibrator
- Quick switching from ringer to vibrator (long press on 8).
- 3-level reception volume adjustment with storage of the most recent setting
- Registration possible on 3 different GAP systems
- Manual or automatic system selection
- Special radio test function (see "Radio Test Mode ")

GAP reduced mode

These functions should be available (unless inhibited by system constraints):

- Manual language selection for the local menu
- Choice of ringing tunes
- Personal speed dial list: 10 internal numbers
- Redial
- DTMF end-to-end signaling
- Calibrated loop

AGAP advanced mode functions

Outline of the main functions available:







- Diversion or cancel diversion key
- Audio or text message consultation key
- Dial by name key
- Personal speed dial key (10 system numbers)
- Automatic language configuration for the local menu
- Choice of ringing tunes
- Features in conversation:
 - Taking waiting calls by a long press on 'OK'
 - Broker function by a long press on '->'
 - Transfer by a long press on 't'
- 3-party conferencing by a long press on 's'
- Redial
- MF codes
- Calibrated loop

MAINTENANCE OPERATIONS

Reading the handset software version number





- Long press on '#' to enter the handset's local menu  
- Press briefly on 'ok' to go into 'mobile'  
- Press briefly on '#' to display the handset software version  
Typical display: "POCKET PRO DECT 4-0-42-17".

Reading the handset IPEI number (handset ID)

- Long press on '#' to enter the handset's local menu  
- Press briefly on 'ok' to go into 'mobile'  
- Press briefly on '*' to display the handset's IPEI number  
Typical display: "IPEI: 0810700014881 "

Resetting the handset (restoring the factory settings)

To delete the handset configuration data (recordings, customization, etc.):

- Long press on 'i' to turn off the handset  
- Press simultaneously on 'On-hook', '#' and 'i' until the display lights up
- Long press on 6, until the display turns itself off again.  

RADIO TEST MODE

Presentation

The terminal software has a "radio test" mode for gauging the radio transmission parameters. This test mode is restricted to technical personnel: it is essential for coverage studies, or for maintenance operations on existing sites.

Note: thanks to this function, the 4073 GS Smart can be used with existing coverage tools.

Limitations of radio test mode



The radio test mode is active in idle mode or in communication. The second line of the display is used for radio measurement values; some of the function keys are rendered inoperative (only the simple call setup function is maintained).

The available measurement functions serve to monitor handovers performed by the handset, to identify local base stations and to measure the perceived reception level on the 2 closest base stations. There is also a new function which provides an objective quality index for any given call in order to validate the practical range limits.

All 4073 GS Smart terminals include the measurement function; no provision is made for after-sales re-calibration. Depending on the tolerance of the components, the theoretical maximum variation of RSSI measurements is +/- 7 dBm between several handsets. In practice, the RSSI measurement variance over several 4073 GS Smart terminals is generally within +/- 3dBm.

Entering and quitting radio test mode

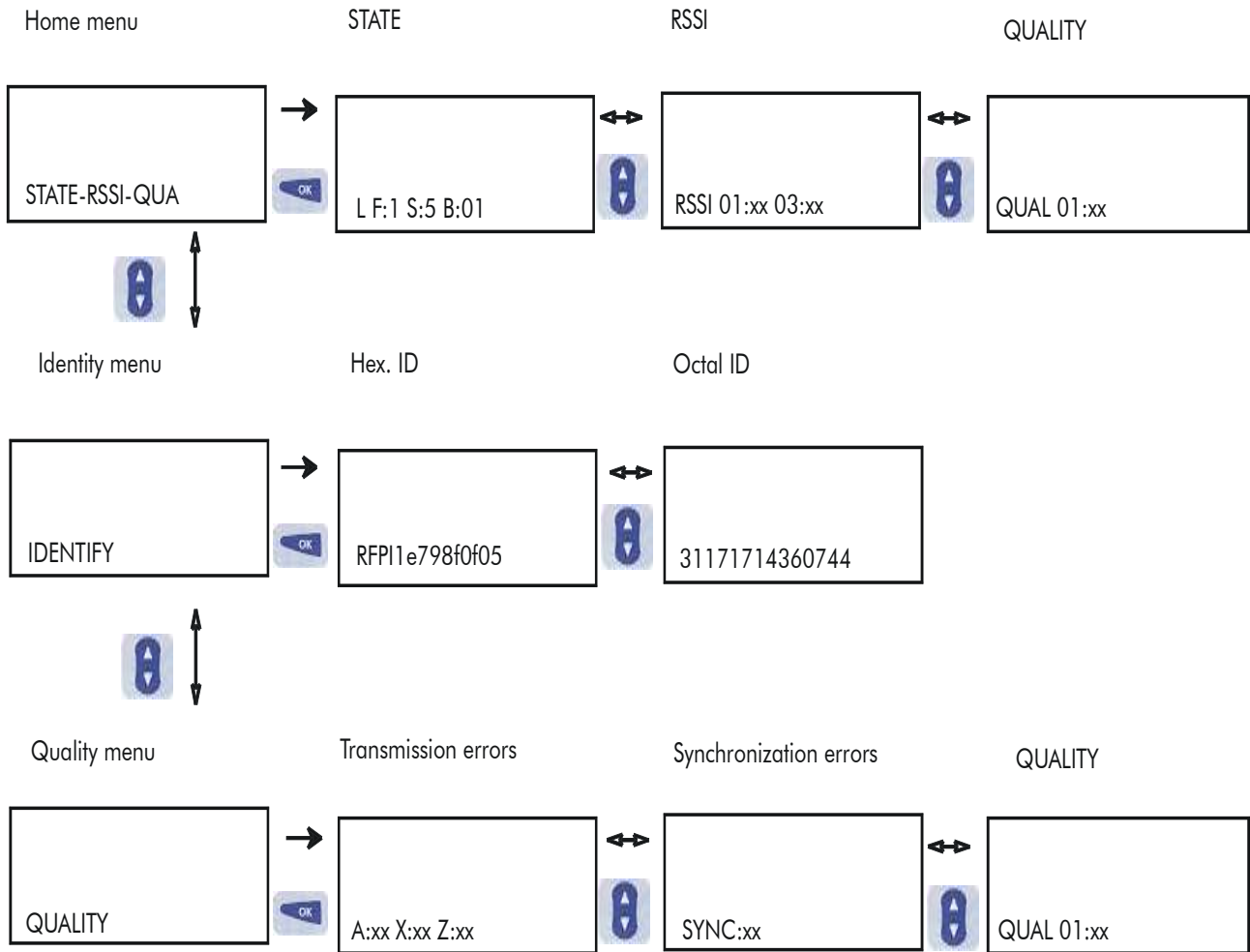
To enter radio test mode (the handset must already be registered on the system):

- Long press on 'i' to turn off the handset  
- Press simultaneously on 'On-hook', 'S' and 'i' until the display starts up (2nd line: "STATE-RSSI-QUA").

To quit radio test mode:

- Long press on 'i' to turn off the handset  

Structure of radio test mode menus



IDENTITY (system identity)

RFPI 1e798f0f05

System RFPI number: in hexadecimal.

31171714360744

System RFPI number: in octal.

QUALITY (global DECT quality)

A:xx X:xx Z :xx

Z:xx Number of CRC errors detected in field Z (Value measured on 120 frames and displayed in hexadecimal).

X:xx Number of CRC errors detected in field X (Value measured on 120 frames and displayed in hexadecimal).

A:xx Number of CRC errors detected in field A (Value measured on 120 frames and displayed in hexadecimal).

SYNC:xx

SYNC:xx Number of synchronization errors reported by the mobile. (Value measured on 120 frames and displayed in hexadecimal).

QUAL 01:xx

Transmission quality index (preceded by base station ID n°). See previous page: the index corresponds to the number of frames received without error. There are two display modes:

- rapid measurement (on 16 frames). Obtained by briefly pressing 'Speed Dial'
- averaged measurement (on 256 frames). Obtained by a long press on 'Speed Dial'

TRAFFIC COUNTERS

File
8

The Alcatel OmniPCX Office PABX manages a set of DECT traffic counters. These specific counters are mainly used to ascertain that there are enough DECT devices in an installation (correct quantity and location given the traffic to be handled, number of communications per handset, etc.). They can also be used during active maintenance, for example to monitor any link loss problems with a base station or handset.

DECT counters are read with MMC-PM5, using the labeled addresses (this displays the content of a specific memory area in table form).

The address **System Miscellaneous -> Memory Read/Write -> Other Labels -> DectCntOn** activates or deactivates the traffic counters when using the system:

- 01: active counters (CAUTION: incrementing the counters may have an impact on the response time of an already heavily loaded system)
- 00: inactive counters (default value)

GENERAL OPERATION

To measure the DECT traffic, 7 counters are associated with each active DECT base station (connected and in service) and another 6 are associated with each DECT set. Each of these counters gives specific traffic data. When there is a cold system reset, the content of the counters is automatically reset.

The counters associated with the radio base stations ("**base station counters**") and those associated with the handsets ("**handset counters**") are placed in two separate tables.

The start address of each of these tables varies from one system to another, depending on the software version. This address must therefore be read beforehand by the usual means: "**Memory Read/Write -> Debug Labels**":

- the start address of the base station counters is given by the label **DectBasCnt** (005BED0 in the next example).
- the start address of the handset counters is given by the label **DectHdsCnt** (0053CBC4 in the next example).

Label:	Address	Rel:	Len:	Value:	Format
DectHdsCnt	0053CBC4		2	0A 01 01 35	Hex.
DectBasCnt	005BED0		2	5C 01 0B 00	

Remarques :

- In MMC-PM5, the content of a traffic counter is always a hexadecimal (base 16) value encoded over several consecutive addresses. To obtain the corresponding decimal value, the values displayed must be converted manually (see following examples).
- On the first initialization, during the installation startup, all the addresses corresponding to the DECT counters contain the value zero (00 hex.). Only the addresses "**position**" and "**device**" contain a fixed value other than zero at this stage.

All counters are automatically reset to zero when there is a cold system reset. It is however possible to reset one or more base station or handset counters manually, by assigning the value 00 to the corresponding addresses.

BASE STATION COUNTERS

Start address
given by
content of
pointer
DectBasCnt

Byte nbr		Content
1		<i>board position</i>
2		<i>device</i>
3	a	nbr calls $nb = (b \times 256) + a$
4	b	
5	a	nbr simult calls $nb = (b \times 256) + a$
6	b	
7	a	nbr saturations $nb = (b \times 256) + a$
8	b	
9	a	saturation time (ms)
10	b	
11	c	$nb = (((d \times 256) + c) \times 256) + b) \times 256) + a$
12	d	
13	a	nbr inter handovers $nb = (b \times 256) + a$
14	b	
15	a	nbr intra handovers $nb = (b \times 256) + a$
16	b	
17	a	nbr links lost $nb = (b \times 256) + a$
18	b	
19		<i>position next board</i>
		<i>device</i>

DESCRIPTION OF FIELDS

Board position:

To find the board's physical address from the counters' "board position", convert into decimal and apply the following rule: $board\ position / 2 + 1 = physical\ address$.

Example:

- For 00: $00 / 2 + 1 = 01$ -> the board is in the first slot.
- For 02: $02 / 2 + 1 = 02$ -> the board is in the second slot.

Device:

Base index in hexadecimal on the board.

N° of calls:

The cumulative total of calls achieving connected status on the base in question.

N° of simultaneous calls:

The maximum number of simultaneous communications recorded on the base station.

N° of saturations: total (sat1 + sat2)

sat1 = number of times all the channels in the base were in simultaneous use.

sat2 = number of times all the available channels were in simultaneous use.

Saturation time:

The cumulative time (in ms) for sat1 saturations.

N° of inter handovers:

The cumulative total of handovers between the base and other bases.

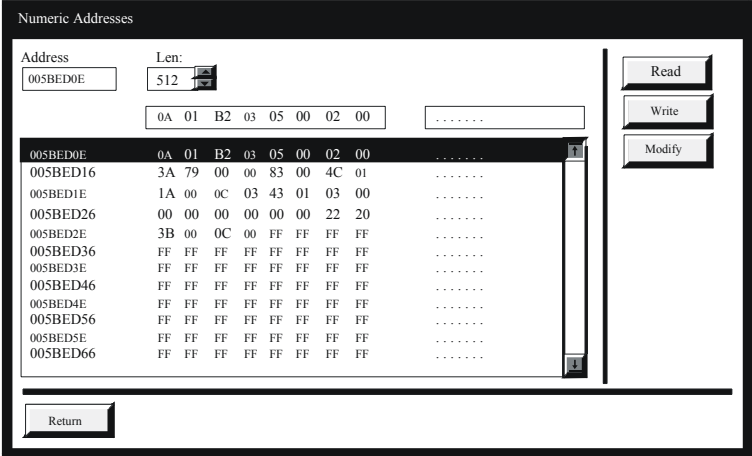
N° of intra handovers:

The cumulative total of handovers performed on the base.

N° of links lost:

The total number of radio links cut off accidentally.

Example: How to read the base station counter table



For the minimum length of the memory area to be listed, assume 18 bytes per base station, hence: (minimum value to be entered in "Length" field) = 18 x total number of base stations.

In the example, the results recorded for the first base station are as follows:

- board position: 0A hex (10 dec); slot number 6
- device : 01 hex (1 dec); first device on the UAI board
- n° of calls : 03 B2 hex (946 dec)
- n° of simult calls: 00 05 hex (5 dec)
- n° of saturations: 00 02 hex (2 dec)
- saturation time: 00 00 79 3A hex (31.034 seconds)
- n° of inter handovers: 00 83 hex (131 dec)
- n° of intra handovers: 01 4C hex (332 dec)
- n° of links lost: 00 1A hex (26 dec)

HANDSET COUNTERS

Byte nbr	Content	
1	<i>position (fixed value = 5C h)</i>	
2	<i>device</i>	
3	a	nbr links $nb = (b \times 256) + a$
4	b	
5	a	nbr calls $nb = (b \times 256) + a$
6	b	
7	a	nbr coms lost $nb = (b \times 256) + a$
8	b	
9	a	nbr links lost $nb = (b \times 256) + a$
10	b	
11	a	nbr inter handovers $nb = (b \times 256) + a$
12	b	
13	a	nbr intra handovers $nb = (b \times 256) + a$
14	b	
15	<i>position</i>	
16	<i>device</i>	

Start address given by
content of pointer
DectHdsCnt



DESCRIPTION OF FIELDS

Position:

The virtual slot: its value is always 5C (92 in decimal).

Device:

The handset index (in order of creation).

N° of links:

The cumulative total of radio links established by the handset.

N° of calls:

The cumulative total of calls achieving connected status on the handset in question.

N° of coms lost:

The number of communications cut off in conversation (lost signal).

N° of links lost:

The total number of radio links cut off accidentally.

CALL SERVER : MOBILITY

TRAFFIC COUNTERS

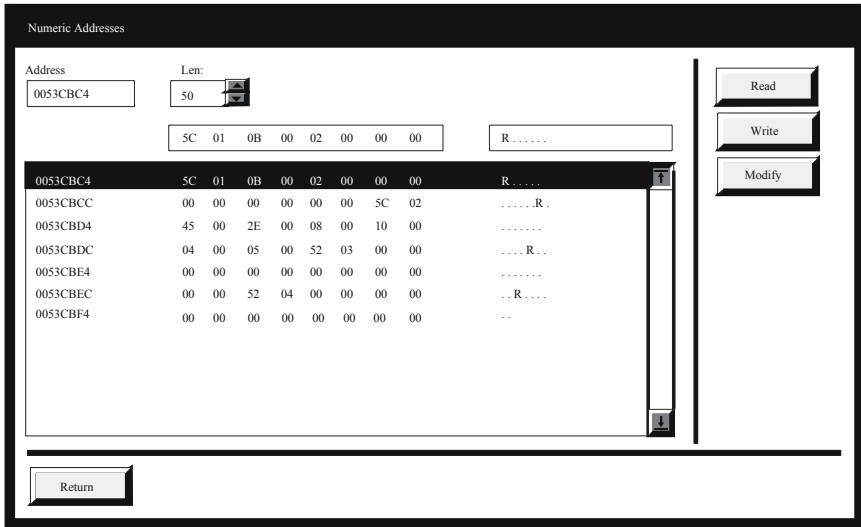
N° of inter handovers:

The cumulative total of handovers performed by the handset between different base stations.

N° of intra handovers:

The cumulative total of handovers performed by the handset on the same base.

Example: How to read the handset counters table



For the minimum length of the memory area to be listed, assume 14 bytes per handset, hence: (minimum value to be entered in "Length" field) = 14 x total number of handsets.

- First handset : position:5C h (92 dec)
- device : 01 h (1 dec). See Subscriber menu in MMC-PM5 to read the corresponding directory number.
- n° of links : 00 0B h (11 dec)
- n° of calls : 00 02 h (2 dec)
- n° of coms lost: 00 00 h
- n° of links lost: 00 00 h
- n° of inter handovers: 00 00 h
- n° of intra handovers: 00 00 h

- Second handset: position: 5C h (92 dec)
- device : 02 h (2 dec)
- n° of links : 00 45 h (69 dec)
- n° of calls : 00 2E h (46 dec)
- n° of coms lost: 00 08 h (8 dec)
- n° of links lost: 00 10 h (16 dec)
- n° of inter handovers: 00 04 h (4 dec)
- n° of intra handovers: 00 05 h (5 dec)



TRAFFIC COUNTERS

CALL SERVER : MOBILITY

Alcatel OmniPCX Office

SECTION

CALL SERVER : VOICE ON IP

REF3EH 21000 BSAA Ed. 04



ALCATEL OMNIPCX OFFICE

CALL SERVER : VOICE ON IP

Section CALL SERVER : Voice on IP

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DIMENSIONING - LIMITS	FILE 3
MAINTENANCE	FILE 4



ALCATEL OMNIPCX OFFICE

**SECTION CALL SERVER : VOICE ON IP
(INDEX)**

CALL SERVER : VOICE ON IP

Section CALL SERVER : Voice on IP (Index)

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SERVICES AND TOPOLOGIES

File

1

SERVICES

Alcatel OmniPCX Office provides 2 services that can be combined:

- Voice over IP is based on the Integrated H.323 Gateway, the core of Voice over IP (VoIP), which allows communication between the conventional telephony world and the data world.
- IP telephony enables an enterprise to share its data infrastructure (local IP network) between the data world and the telephone world by means of an adapter known as an "IP Enabler" which connects up an Alcatel Reflexes station on the LAN and/or a Windows application on a Multimedia PC (PIMphony IP Edition) to simulate a LAN PC station. The level of service offered by the IP Enabler is identical to that of standard Reflexes stations.

The Voice over IP services are provided by one or more CoCPU (CoProcessing Unit) VoIP boards (max. 6). This board integrates an H.323 gateway which has the following main characteristics:

- from 4 to 96 DSP channels for the H.323 gateway and IP Telephony services (DSP channels for coding / decoding the audio signal).
- supports the audio compression algorithms G711, G729a and G723.1.
- IP communications in Full Duplex mode.
- a V2-compatible H.323 gateway that complies with the following recommendations:
 - supports Q.931/Q932 signaling.
 - supports the H.225 v2 protocol for establishing signaling channels between H.323 gateways (including Fast Connect).
 - use of the H.245 v4 protocol to monitor communications: establishing channels, negotiating the Codec, etc.
- RAS signaling for communications with the H.323 internal gatekeeper (H.323 v2) to the product or to the outside (authentication, authorization, bandwidth management).
- use of RTP/RTCP to send audio signals in real time.
- echo suppression.
- silence suppression (VAD).

The gateway also integrates an H.323 v2 gatekeeper that provides the following functions:

- RAS (Registration Admission Status) server.
- protection and authentication of recording sequences (H.235).
- testing the presence of remote H.323 gateways (ICMP or H.323 packets).

Nota : All communications and VoIP signals transit through the VoIP CoCPU board, except in the case of PC to PC or terminal to terminal communications.

The Alcatel OmniPCX Office VoIP offer does not provide:

- specific services such as optimization of call transfers or forwarding such as exist with the ISVPN; likewise, H.450 protocol is not supported.
- the FoIP (Fax over IP) service. A Fax (or Data) call must not be routed via Voice over IP; fax transmission is not guaranteed.
- the encrypting of VoIP channels.

Quality of Service (QoS)

Mechanisms in the system's ARS determine whether a VoIP call to a remote H.323 gateway can be made without degradation of the bandwidth (see "Installation - Configuration" File).

The aim of quality of service in the network sense is to provide "end-to-end" QoS for all the audio IP packets.

To achieve this, the system supports the IP ToS (IP Type of Service): each IP VoIP packet contains a 3-bit precedence field indicating a level of priority. This information can be used by the network equipment (routers, gateways, etc.) to assign a level of priority to the IP voice packets with respect to the IP data packets. Alcatel OmniPCX Office also supports "DiffServ" (RFC 2475).

Nota : End-to-end quality of service can only be guaranteed if all the items of equipment in the network are IP ToS or DiffServ compatible.

Principle of operation of the CoCPU board

The CoCPU board fulfils the following functions:

(Masterboard) TFTP Server / DHCP Server	
H.323 Gateway / Gatekeeper	
T C P / U D P / I P	
Boot/BIOS Operating System Kernel / R T	

Environment

The H.323 gateway (VoIP CoCPU board) connects either to a 10 Mbps Ethernet LAN or to a 100 Mbps Fast Ethernet LAN via an RJ45 cable, while the IP Enablers provide a 10 Mbps Ethernet connection (IP Enabler V1) or a 10/100 Mbps Ethernet connection (Enabler V1S) and integrate a 2-port Hub (V1) or switch (V1S) permitting chaining with a PC.

H.323 GATEWAY SERVICE

This service can be implemented in 2 ways:

- using Alcatel OmniPCX Office as a router to the Internet with integrated Proxy and Firewall; in this case, a CoCPU@ board is necessary;
- using an external router to the Internet or to a dedicated link providing the same level of service as the Office R42 range.

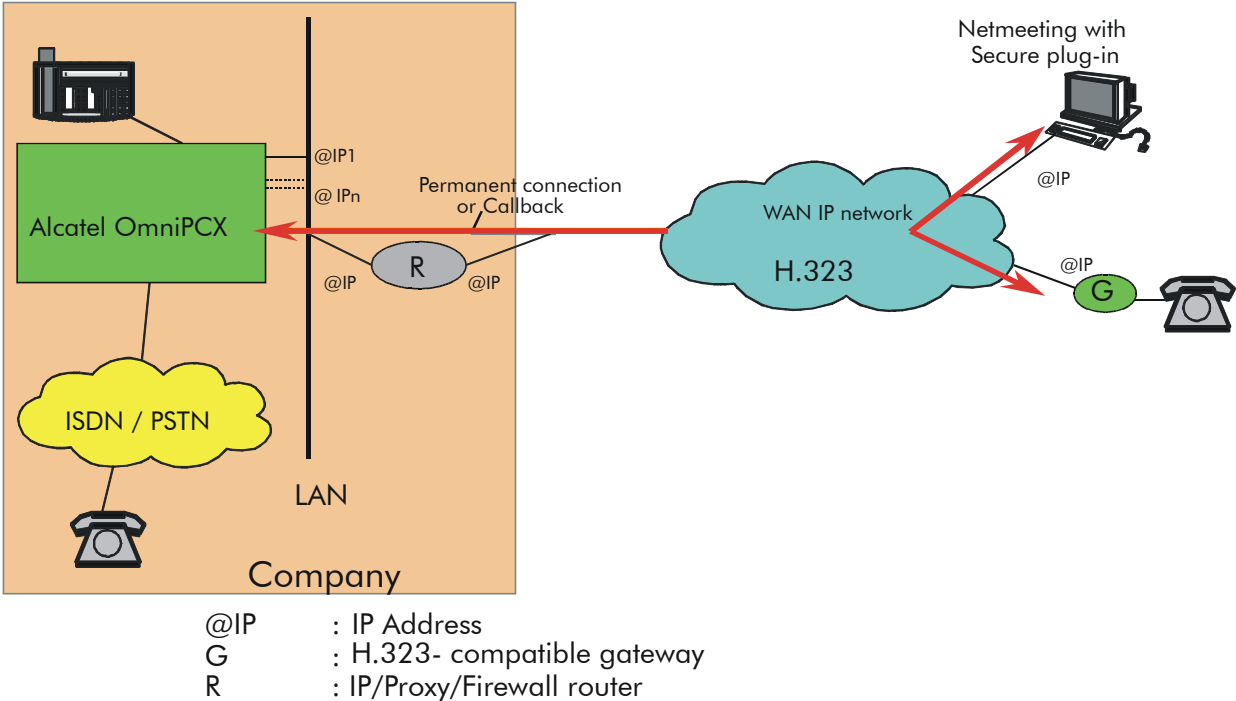
Nota : In the following diagrams, Alcatel OmniPCX Office is used for the Internet connection configuration and the external router is used for other types of connection (leased line, ADSL, etc.).

The Alcatel OmniPCX Office H.323 Gateway service can be implemented in either of 2 contexts:

- H.323 gateway integrated into a standalone configuration.
- H.323 gateway integrated into an H.323 zone.

H.323 gateway integrated into a standalone configuration

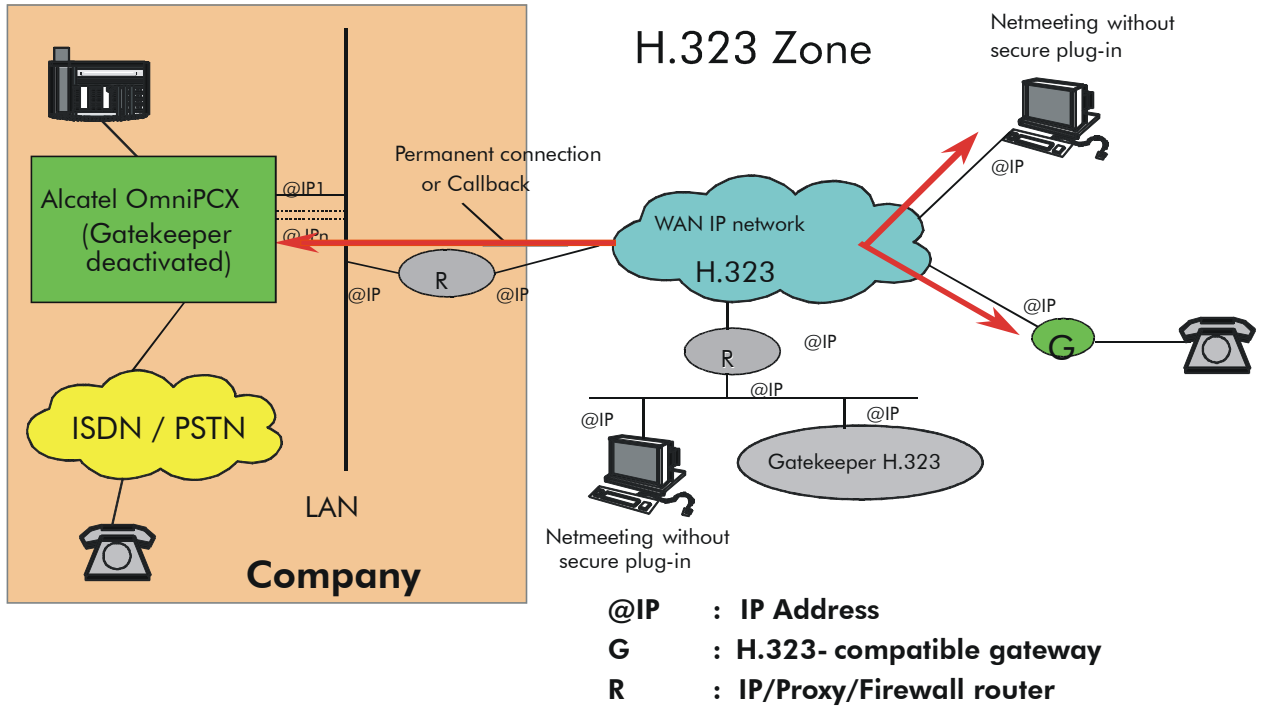
In a standalone configuration the integrated gatekeeper is alive; it is masked to the exterior and cannot be managed from the LAN.



- Nota :**
- The integrated gatekeeper does not manage H.323 zones.
 - In this topology, only the PCs with NetMeeting and equipped with the Alcatel secure plug-in can make PC to Station calls.

Gateway in a H.323 zone

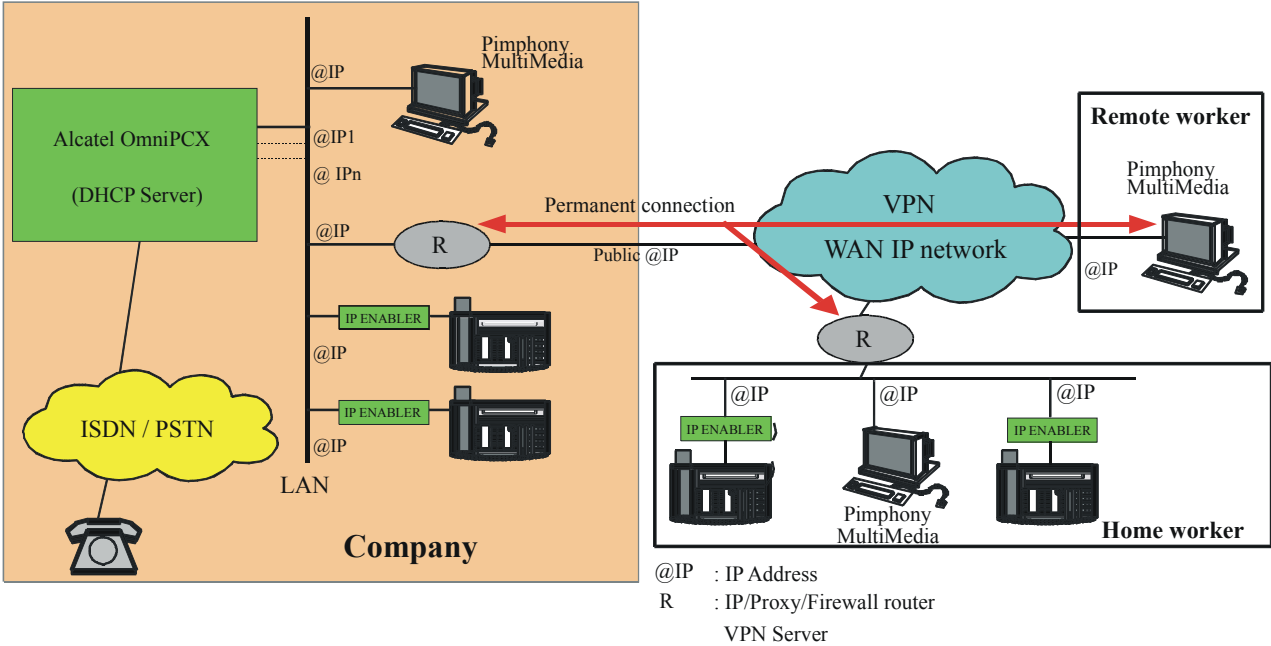
In a network topology like the one below, the H.323 gateway of Alcatel OmniPCX Office can be integrated into an H.323 zone managed by an external gatekeeper.



In this configuration, the gatekeeper integrated into Alcatel OmniPCX Office must be deactivated and the network administrator must supply the IP address of the external gatekeeper.

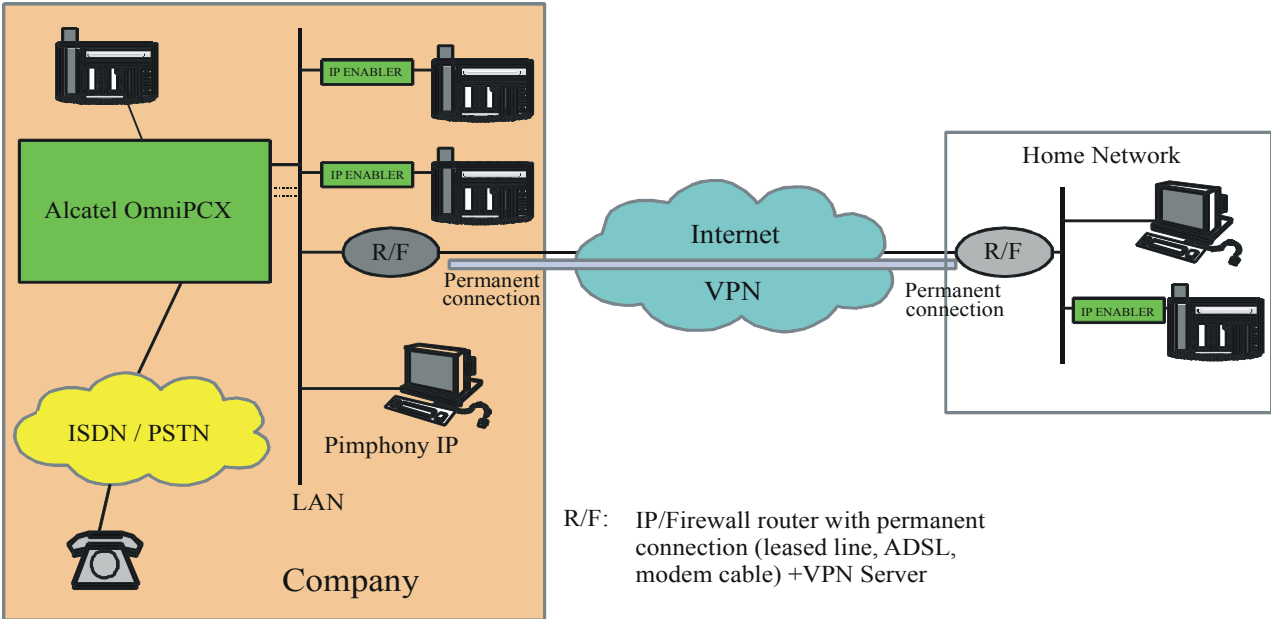
IP TELEPHONY

This service does not require any specific external equipment (IP and/or Proxy/Firewall Router), unless it is provided for Remote/Home Workers.



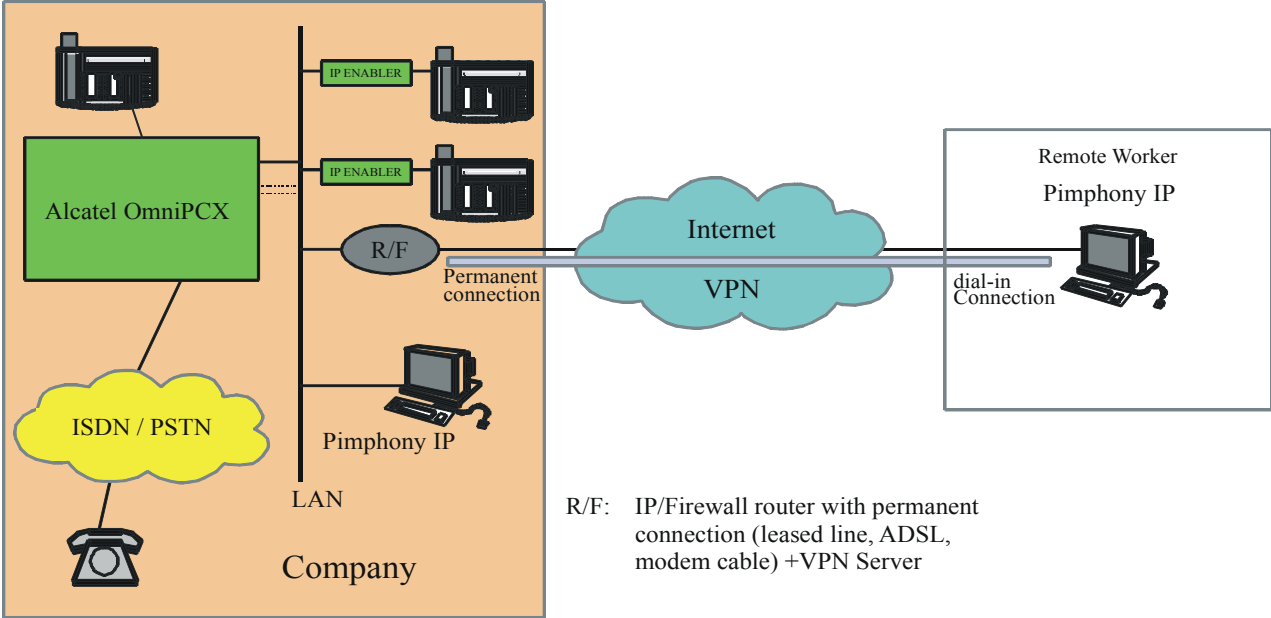
The IP router (R) connected to the Intranet can be a simple IP router. The reservation of bandwidth is "guaranteed" if this router supports IP ToS (DiffServ). The number of remote IP Enablers or PIMphony IP subscribers depends on the line bandwidth (not more than 2 simultaneous communications for 64 Kbps, not more than 5 for 128 Kbps).

HOME WORKER (remote IP Telephony via a VPN)



The connection between the Home Worker and the Internet must be 'always-on' (ADSL, cable, etc.). It is indispensable to have an IP/Proxy/Firewall router or VPN server on the Home Worker side. The IP router (R/F) at the front end of the VPN must offer Proxy/Firewall and VPN server functionality (IPSec with 3DES encryption for interoperability with the system's built-in router). The number of remote IP Enablers or PIMphony IP subscribers depends on the line bandwidth (not more than 2 simultaneous communications for 64 Kbps, not more than 5 for 128 Kbps).

REMOTE WORKER (PIMphony IP via a VPN)



The connection between the remote PC (PIMphony IP Edition) and the Internet is of the "dial-on-demand" type (V90 analog, ISDN BRA or ADSL modem). The remote PC first establishes a connection with the nearest access provider, then a PPTP connection with the company's VPN server.

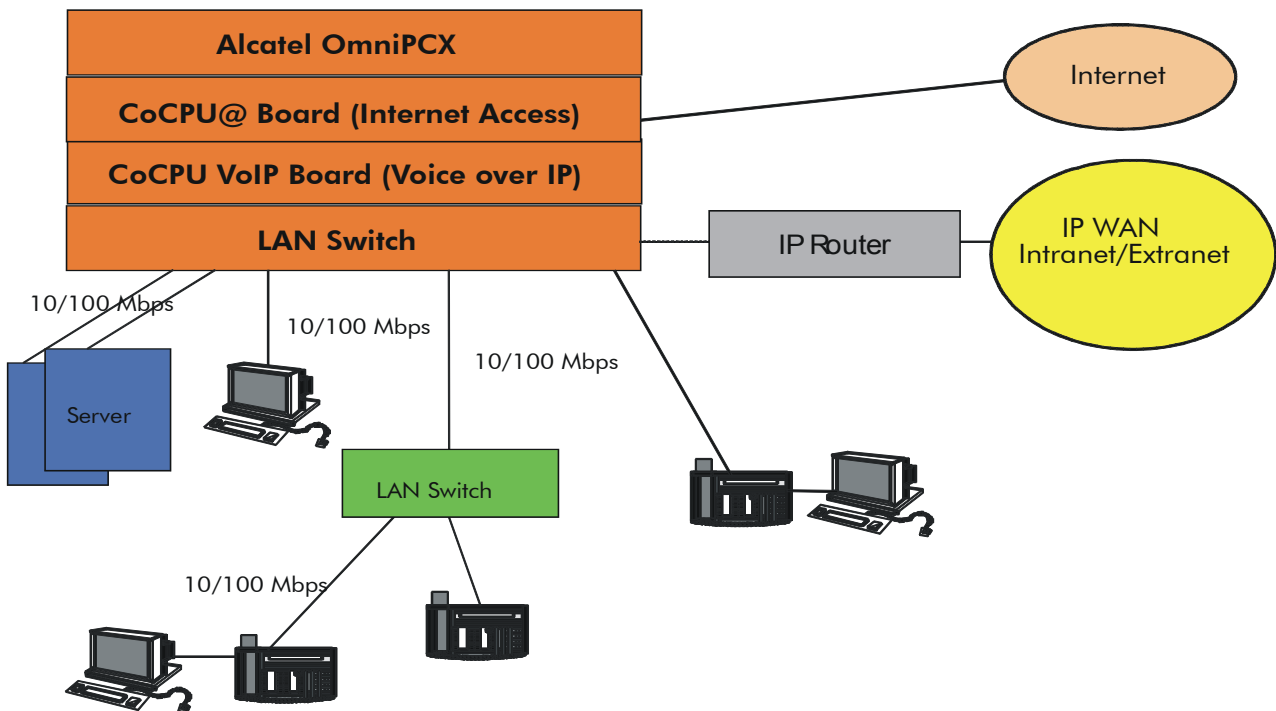
PC with Microsoft NetMeeting

The remote NetMeeting PC establishes a PPTP connection with the company's VPN server.

TOPOLOGIES

This section describes typical IP network architectures for implementing the Alcatel OmniPCX Office Voice over IP services.

The following topology is recommended for connecting up an Alcatel OmniPCX Office:



The bandwidth of an Ethernet LAN can be 10 or 100 Mbps. If the network operates at 100 Mbps, adding terminals operating at 10 Mbps risks downgrading the bandwidth used by VoIP and hence audio quality: you might need to isolate these devices on external LAN switches hooked up to the system. CoCPU boards are connected to the local client network using a LAN switch; this solution helps reduce Ethernet traffic on the CoCPU board.

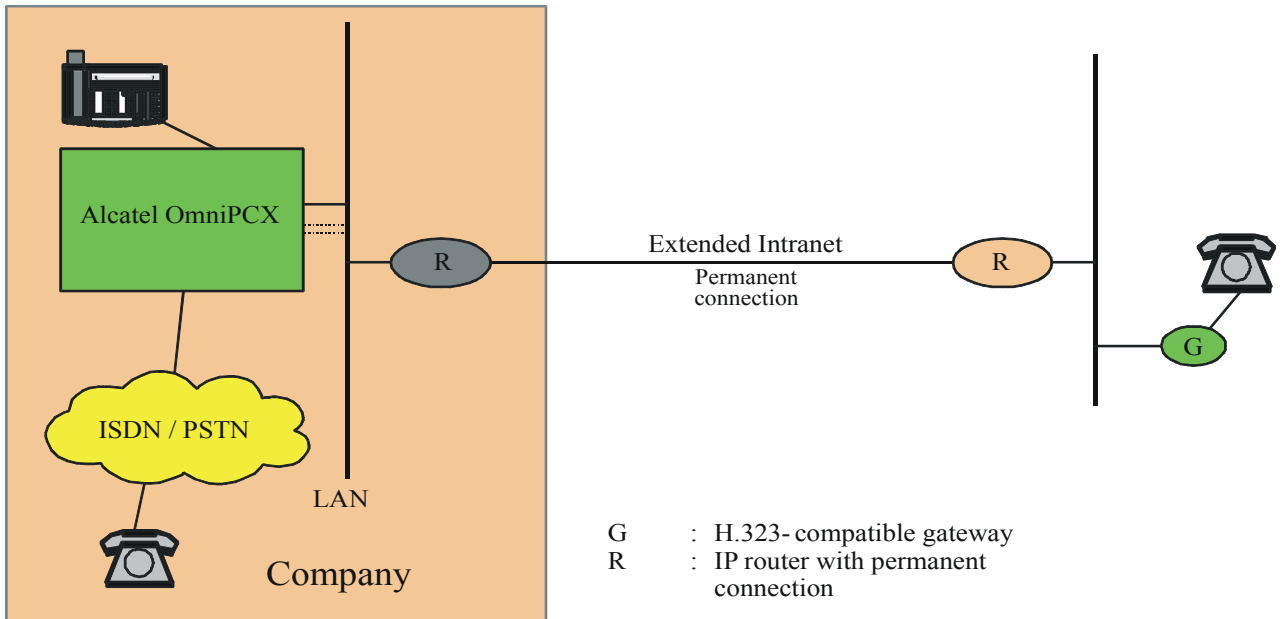
CALL SERVER : VOICE ON IP

SERVICES AND TOPOLOGIES

Multi-site configurations

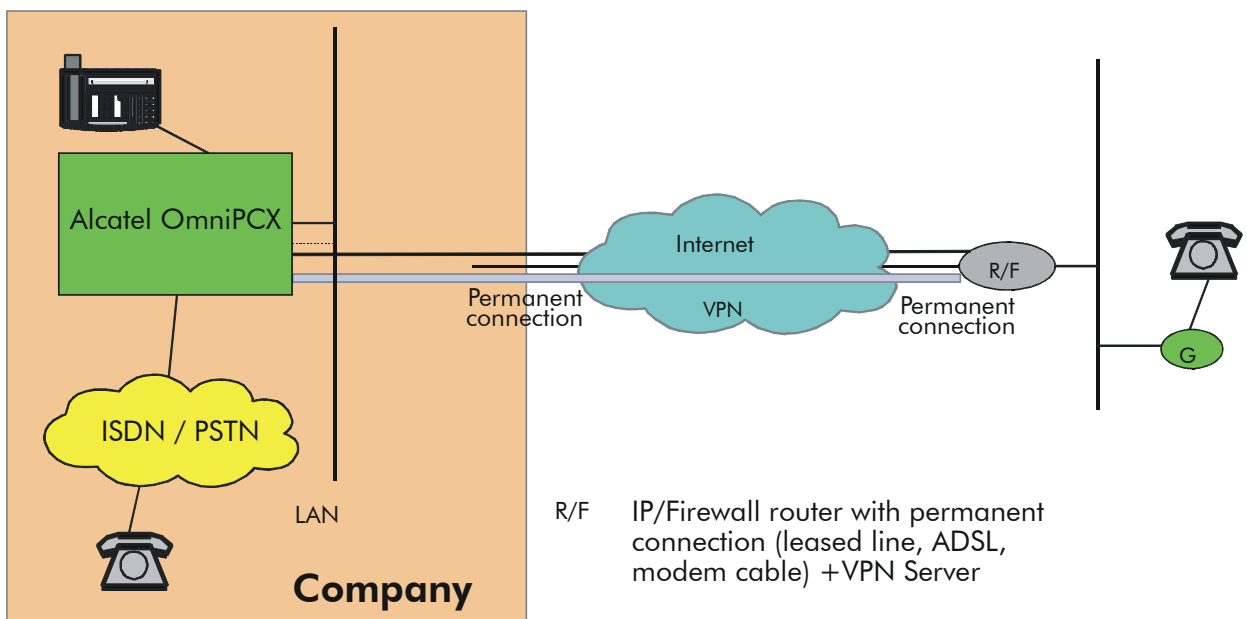
A multi-site configuration is possible via an extended Intranet or an Internet VPN.

H.323 gateway integrated into an extended Intranet



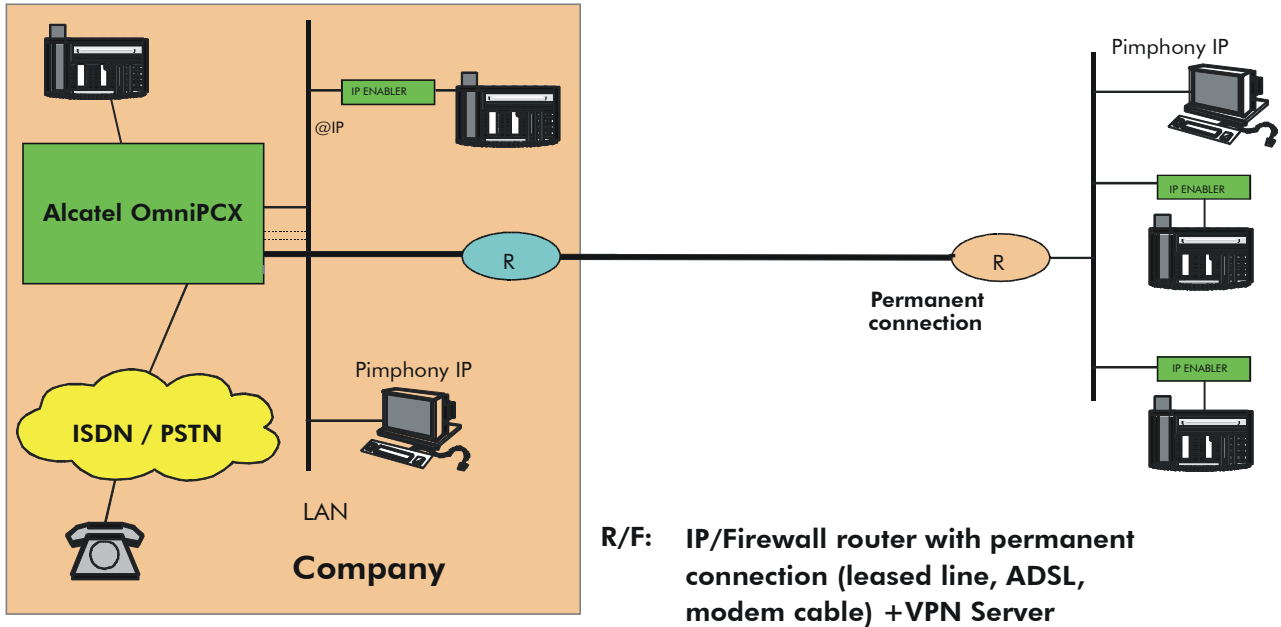
The IP router (R) connected to the Intranet can be a simple IP router. The reservation of bandwidth is "guaranteed" if this router supports Ipv4 ToS (DiffServ).

H.323 gateway integrated into a VPN



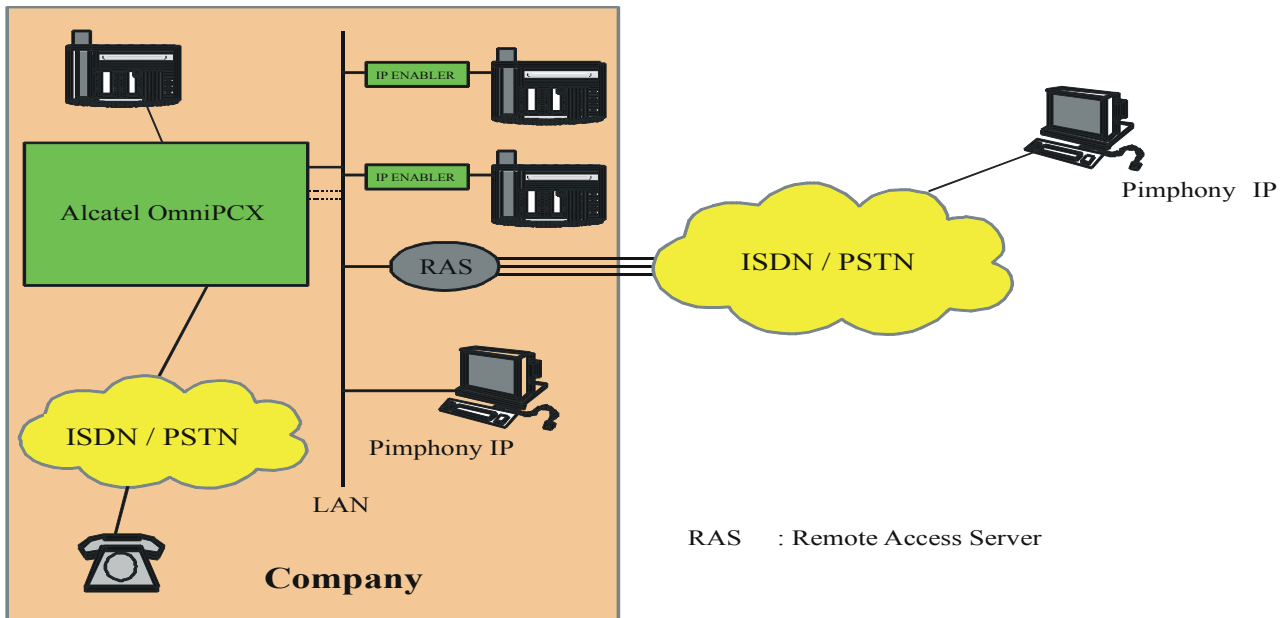
The IP router (R/F) at the front end of the VPN must offer Proxy/Firewall and VPN server functionality (IPSec with 3DES encryption for interoperability with the system's built-in router).

IP telephony in an extended Intranet



Nota : See also the Home Worker and Remote Worker topologies described earlier.

PIMphony IP through RAS (Remote Access Server)



The RAS is equipped with a pool of modems or a T0 / T2. The RAS client PC is authenticated by a PAP/CHAP authentication procedure, then is called back by the RAS (call back).

CALL SERVER : VOICE ON IP**SERVICES AND TOPOLOGIES**

PC with Microsoft NetMeeting

A NetMeeting PC can connect to the company via the VPN (PPTP connection on Internet) or directly by an RAS connection via the telephone network (PSTN/ISDN).



SERVICES AND TOPOLOGIES

CALL SERVER : VOICE ON IP

INSTALLATION - CONFIGURATION

File

2

INSTALLATION GUIDE

Preliminary

A few precautions must be taken when inserting a machine into a local network to ensure the lasting compatibility and quality of the network.

The starting point for the integration and configuring of the PBX on a LAN is the knowledge of the network structure, its characteristics and the equipment. After that it is necessary to collect the significant parameters and characteristics of the LAN.

Below is a non-exhaustive list of the parameters to be collected:

VoIP CoCPU board

- Hostname: DNS name or alias of the board.
- IP Address: IP address of the board.
- IP Subnet Mask: subnet mask of the LAN.

General

- Number of IP trunk DSP channels: number of channels associated with remote H.323 gateway access.
- Number of IP subscriber DSP channels: number of channels associated with the IP Telephony service.
- Implicit router address: default address of router.
- Quality of service: type of quality of service to be implemented according to the LAN equipment.

Gatekeeper

- Gatekeeper integrated into the PBX: use of an integrated gatekeeper or not.
- Identification of gatekeeper: IP address of external gatekeeper.

DHCP

- Activate integrated DHCP server: use of the integrated DHCP server or not.
- Dynamic Range: dynamic IP address range for IP telephony (IP Enabler).

INSTALLING THE VoIP CoCPU BOARD

You can install up to 6 VoIP CoCPU boards (2 per unit) connected to a given Ethernet LAN via RJ45 connectors. Each board has its own IP address.

If several boards are installed, one of them is the "master" board: its IP address and software characteristics serve as a reference. The other VoIP CoCPU boards are known as "slaves".

Default IP addresses

- Master VoIP CoCPU: 192.168.92.248
- Slave VoIP CoCPU: 192.168.92.249 to 192.168.92.253

Nota : Whatever the configuration, there is at least one master board and up to 5 slave boards:
The CoCPU boards can only be inserted when the system is powered down.

General software configuration

The general configuration defines the minimum parameters to be set regardless of the VoIP service to be implemented:

- H.323 gateway only.
- IP telephony only.
- H.323 gateway and IP telephony.

VoIP CoCPU board

General network parameter settings

- Hostname: DNS name or alias of the board (optional parameter).
- IP Address: IP address of the board.
- IP Subnet Mask: subnet mask of the board.
- Master/Slave: (read-only parameter) the master / slave role of the CoCPU boards is determined by their order of appearance in the PBX.

Configuring the parameters of a CoCPU board using PM5

- by MMC-PM5 (Expert View): **Hardware and Limits -> IP Boards**

- You can enter the IP addresses of the VoIP CoCPU boards together with their DNS name.
- Indication of subnet mask common to all the VoIP CoCPU boards.

General network parameters

- by MMC-PM5 (Expert View): **System Miscellaneous -> VoIP -> Parameters -> General** tab

Significant parameters:

- **Default router address:** IP address of the CoCPU@ (Internet Access) board or of the external router.
- **Subnet Mask (read only):** subnet mask on which the PBX is located. This is the parameter programmed in the IP Boards menu.

These fields are necessary to access the WAN.

Configuring the DSPs (optional)

- by MMC-PM5 (Expert View): **System Miscellaneous -> VoIP -> Parameters -> DSP** tab

It is recommended not to change these parameters.

Meaning of parameters:

- **Law Mode:** Law A or Law μ compression (read only).
- **Echo Cancellation:** cancellation of the echo (yes by default).
- **Voice Active Detection:** cancellation of silence (no by default).

CONFIGURING THE INTEGRATED H.323 GATEWAY

H.323 Gateway: this application layer forms the interface between the IP telephony (H.323 stack) and switched telephony worlds (Alcatel OmniPCX Office PBX call manager).

Configuring the PBX as the H.323 gateway

After an initialization by default all the DSPs are assigned to the pool of VoIP subscriber channels (IP telephony).

In a pure H.323 gateway configuration, all the DSPs of the PBX VoIP daughter boards will be used for "IP network" accesses.

- by MMC-PM5 (Expert View): **System Miscellaneous -> VoIP -> Parameters -> General** tab

Number of VoIP access channels (IP trunks): Number of channels for VoIP access, i.e. 1 DSP channel for 1 "network access" (generally for small configurations; see also the abacus in the "Dimensioning - Limits" section).

Quality of service: selection of the type of QoS used for the remote H.323 gateway VoIP calls.

If all the network equipment items support the IP ToS, one can choose an IP priority from 1 to 7:

If all the network equipment items are "DiffServ" compatible, one can choose from:

- DiffServ PHB Best Effort Forwarding (BE) (priority bits: 00000000),
- DiffServ PHB Expedited Forwarding (EF) (priority bits: 10111000).

Nota : Each DSP placed in the "VoIP access" pool is considered as a "network access" by the PBX, i.e. 1 VoIP DSP = 1 B-channel. As there can be a maximum of 6 VoIP daughter boards, each with 16 DSPs, there can be no more than 96 VoIP access DSPs.

Network accesses (T0, T2, analog TL, DLT2, analog ATL) + VoIP Accesses ≤ 120

Configuring the gatekeeper (optional)

- by MMC-PM5 (Expert View): **System Miscellaneous -> VoIP -> Parameters -> Gatekeeper** tab

- **Integrated gatekeeper:** if the H.323 gateway is in Stand-alone configuration, the gatekeeper is integrated into the PBX; check the box.
- **IP Address:** if the PBX is a gateway in an H.323 zone, one must use an external gatekeeper that is the manager of the H.323 zone it covers, indicating its IP Address provided by the network administrator.
- **Reset Code:** allows the resetting of a password on NetMeeting PCs that have a safety Plug-in.

Configuring the Gateway timeouts (optional)

- by MMC-PM5 (Expert View): **System Miscellaneous -> VoIP -> Parameters -> Gateway** tab

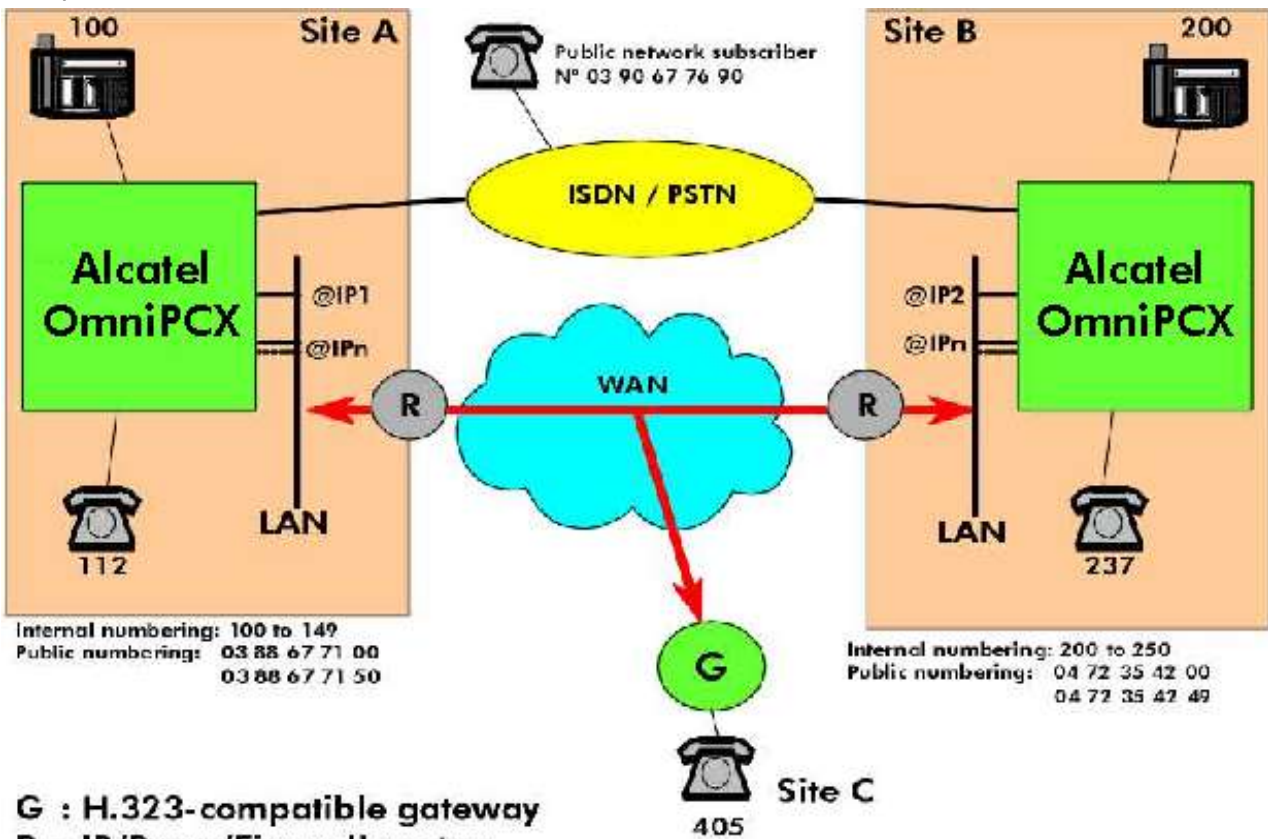
NB: The parameters have standardized values, do not change them without prior analysis.

- **RAS Request Timeout:** maximum authorized response time for an RAS request ("Registration, Admission, Status") made to the gatekeeper; between 10 and 180; default value = 20.
- **Remote Gateway Presence Timeout:** determines the presence of a remote Gateway; value between 10 and 600; default value = 50.
- **Connect Timeout:** maximum authorized time interval between initialization and connection; value between 10 and 1200; default value = 500.
- **H.245 Request Timeout:** maximum authorized response time for an H.245 request; value between 10 and 60; default value = 40.

REMOTE H.323 GATEWAY

Configuring outgoing communication (ARS table)

The choice of routing a telephone communication between a public network access or a VoIP access and the busy trunk overflow feature are defined in the ARS table. Like conventional outgoing telephone calls, a VoIP call is subject to the ARS mechanisms: link categories, ARS time slot management, overflow on busy, etc. In the diagram below sites A and B are Alcatel OmniPCX Offices. Site C is a remote system integrating an H.323 gateway.



- @IP1: IP address of the master VoIP CoCPU board at site A - @IPn: IP address of slave board(s)
- @IP2: IP address of the master VoIP CoCPU board at site B, e.g. 192.189.50.120

Base call

The site A stations call the site B stations by dialing their internal numbers:
Internal numbering plan (site A):

Function	Start	End	Base	NMT	Priv
Secondary trunk group	2	2	ARS	Keep	Yes

CALL SERVER : VOICE ON IP

INSTALLATION - CONFIGURATION

ARS table:

Network	Prefix	Ranges	Substitute	List. Trunk group list	Called/HH	User Comment
Priv.	2	00-49	2	4	Het	H.323 to site B

- The "Called/HH" field has the value "Heterogeneous" by default: the notions of ISVPN do not apply to VoIP calls.
- The "User Comment" field enables a comment to be associated with the ARS input (20 characters maximum).

Nota : The IP parameters in the ARS table are accessed by right-clicking and selecting "IP parameters".

Destination	IP Type	IP Address	Hostname	Gateway Alive Protocol	Gateway Alive Timeout	Bandwidth	Gateway Alive Status
Gateway	Static	192.189.50.120	option	ICMP	300	128 Kbits (5 calls)	Alive

- The "Destination" field of an ARS input to VoIP accesses must be of the "Gateway" type (H.323 gateway).
- For a "Gateway" destination, the "IP Type" must be a static IP address (non-modifiable field).
- The "IP Address" field must be that of the remote H.323 gateway. In the example, this value corresponds to the IP address of the master VoIP CoCPU board at site B.
- The name associated with the remote gateway is optional ("Hostname" field optional).
- Gateway Alive Protocol / Gateway Alive Timeout:
The integrated gateway tests the presence of the remote gateway every 300 seconds (Gateway Alive Timeout, from 0 to 3600 seconds). The test protocol (Gateway Alive Protocol) used by default is ICMP: the H.323 test protocol can only be used if the remote gateway is H.323 V2-compatible!

Nota : Gateway Alive Timeout: if this field is at 0, the "Gateway Alive Protocol " mechanism is inhibited. This option is to be used in the specific situation where it is impossible to use ICMP or H.323 to test for the presence of the remote gateway; but in this case, there is no means whatsoever of knowing whether the remote gateway is alive or out of service.

It can, however, turn out to be judicious to deactivate the mechanism if one is sure of network reliability (IP connectivity between the 2 gateways), in order to reduce the traffic.

- Gateway Bandwidth / QoS: for each ARS input to a remote H.323 gateway, a bandwidth must be reserved for the Voice over IP to the remote H.323 gateway. The number of simultaneous communications that can be held depends on this value:

Bandwidth	Number of simultaneous communications possible
None	No communication possible Default value
55.6 Kbps	1
64 Kbps	2
128 Kbps	5
256 Kbps	10
512 Kbps	20
≥ 1024 Kbps	> 20

E.g. if the total bandwidth corresponding to the data rate to a remote gateway is 256 Kbps and the mean traffic level is 50%, it is wise to define a bandwidth of 128 Kbps for Voice over IP.

Remark concerning the quality of service - QoS

If we take our example, site A can make H.323 calls to sites B and C. One assumes that the bandwidths reserved for Voice over IP at the LAN/WAN gateways of each site are:

- bandwidth reserved for VoIP on site A: 1024 Kbps (20 calls or more)
- bandwidth reserved for VoIP on site B: 128 Kbps (5 simultaneous calls)
- bandwidth reserved for VoIP on site C: 64 Kbps (2 simultaneous calls)

In this configuration one sees that it is possible to make 7 simultaneous calls from site A to the remote H.323 gateways: 5 to site B and 2 to site C.

7 DSPs can therefore be assigned in the "VoIP access" pool for site A (7 being the number of DSPs needed to call sites B and C simultaneously).

However, let us assume that there is no ongoing communication between sites A and C, and that 5 calls are established between A and B. The total number of VoIP network access DSPs consumed in PBX A is 5: therefore 2 DSPs remain available to establish two other calls to site B.

Yet in this example we exceed the bandwidth reserved for Voice over IP at the LAN/WAN gateway of site B: the quality of service is no longer guaranteed.

To avoid downgrading the VoIP service, the system uses the "Gateway Bandwidth" field of the ARS table associated with the input to the remote H.323 gateway of site B, which will be configured at 128 Kbps (5 calls), as quality indicator (QoS): although there are still 2 DSPs available, the PBX will refuse a 6th call to site B.

Nota : This service is not available if an external gatekeeper is used.

CALL SERVER : VOICE ON IP

INSTALLATION - CONFIGURATION

Nota : To optimize management of this ARS table parameter, it is vital to have information about the bandwidth available (reserved) for VoIP calls that is as precise as possible.

- Gateway Alive Status: this regularly updated read-only field indicates the status of the remote gateway:
 - Alive: remote gateway present
 - Deactivated: remote gateway absent / out of service.

It can, however, turn out to be judicious to deactivate the mechanism if one is sure of network reliability, in order to reduce the traffic.

Incoming call

An incoming "VoIP access" call is analyzed in the private numbering plan. In our example:
Private numbering plan of site B:

Function	Start	End	Base	NMT	Priv
Local call	200	249	200		No

Forcing a public call to the H.323 gateway

LCR: Least Cost Routing

When a site A subscriber dials the public number of the site B station, the call can be forced to the VoIP network accesses:

Internal numbering plan of site A:

Function	Start	End	Base	NMT	Priv
Main trunk group	0	0	ARS	Drop	No

ARS table:

Network	Prefix	Ranges	Substitute	List. Trunk group list	Called/HH	User Comment
Pub.	04723542	00-49	2	4	Het	H.323 to site B

Overflow

When a site A subscriber calls a site B station by its internal number, ARS routing enables the calls to be re-routed to the public network when it is no longer possible to call via the VoIP accesses. The following criteria render a "VoIP access" trunk group inaccessible:

- the VoIP CoCPU board of site A is out of service.
- no more DSPs associated with the VoIP accesses are available.
- the remote H.323 gateway is out of service (VoIP CoCPU board of site B out of service).
- the quality of service (QoS) to the remote gateway is poor (exceeding of the possible simultaneous communication threshold for the bandwidth reserved for Voice over IP for this remote H.323 gateway).

ARS table of site A:

Calling the site B station by its internal number:

Network	Prefix	Ranges	Substitute	List. Trunk group list	Called/HH	User Comment	Destination
Priv.	2	00-49	2	4	Het	H.323 to site B	Gateway
			04723542	1	Het	ISDN Access	No IP

Calling the site B station using its public number:

Network	Prefix	Ranges	Substitute	List. Trunk group list	Called/HH	User Comment	Destination
Pub.	04723542	00-49	2	4	Het	H.323 to site B	Gateway
			04723542	1	Het	ISDN Access	No IP
Pub.	04723542	50-99	04723542	1	Het	ISDN Access	No IP

*: As the public numbers 04723542 50 to 99 do not belong to site B, they must be routed to the public network.

Break In

The break-in service enables the PBX to re-route a public number from site A to site B. In our example, the public network subscriber dials the number 03 88 67 71 50 which is routed to station 250 on site B: Public numbering plan (site A):

Function	Start	End	Base	NMT	Priv
Secondary trunk group	7150	7150	ARS	Keep	No

ARS table:

CALL SERVER : VOICE ON IP

INSTALLATION - CONFIGURATION

Network	Prefix	Ranges	Substitute	List. Trunk group list	Called/HH	User Comment
Pub.	0388677150		250	4	Het	H.323 to site B

Reminder: it is vital for the PBX "Installation number" field to be configured; e.g. for site A: 388677100.

Break Out

The break-out service enables proximity calls to be made. In our example a site A station dials a public number starting with 04, the call is routed to site B via the H.323 gateway, then routed to the public network from site B, configuration:

Internal numbering plan of site A:

Function	Start	End	Base	NMT	Priv
Main trunk group	0	0	ARS	Drop	No

ARS table of site A:

Network	Prefix	Ranges	Substitute	List. Trunk group list	Called/HH	User Comment	Destination	
Pub.	04		004	4	Het	H.323 to site B	Gateway	*
			04	1	Het	ISDN Access	No IP	* *

*: as the prefix 0 is dropped in the internal numbering plan, 004 must be substituted for 04,

** : this sub-line allows overflow to the public network lines of site A if the VoIP access calls are inaccessible.

As an incoming VoIP access call is analyzed in the private numbering plan, the following must be programmed in the private numbering plan of site B:

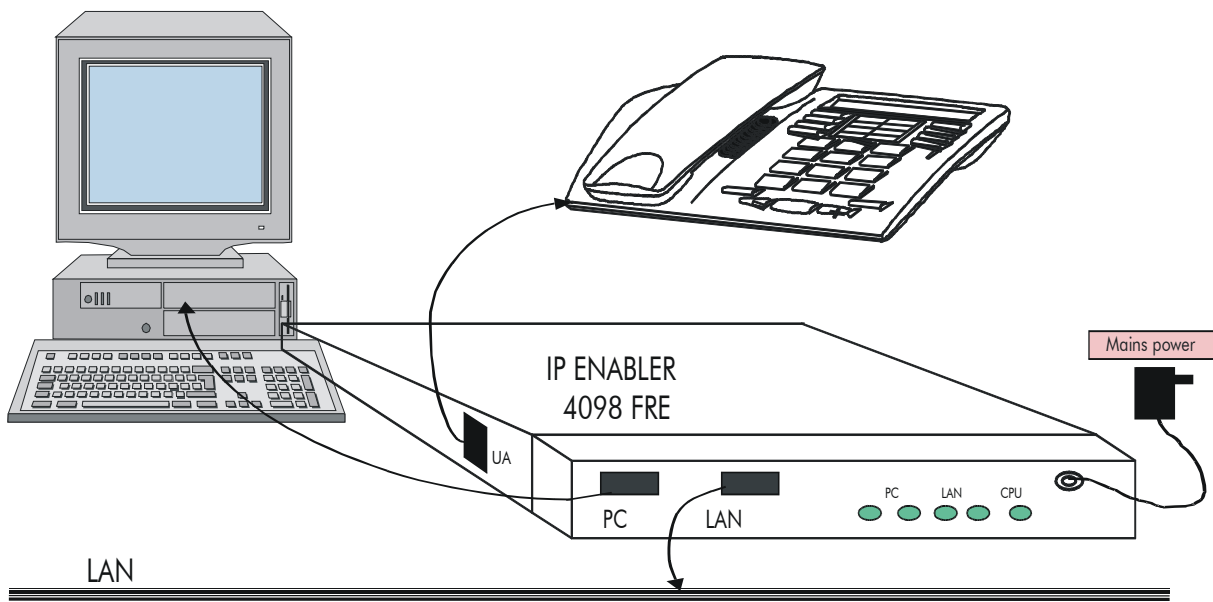
Function	Start	End	Base	NMT	Priv
Main trunk group	0	0	0	Drop	No

IP TELEPHONY

IP Enabler

IP Enabler connection hardware

The IP Enabler is an optional interface that plugs into the back of Alcatel Reflexes 3G sets. It is connected as shown below:



- The IP Enabler is connected to the LAN via an RJ45 connector with 10 Mbps Ethernet access for IP Enabler V1.0, and 10/100 Mbps for IP Enabler V1S.
- Initialization, through static or dynamic IP addressing via DHCP, involves downloading the binary file into the IP Enablers from the master VoIP CoCPU board, which is considered as a TFTP server.
- The PABX then considers an IP Enabler as a "fully-fledged" Reflexes station. Voice and signaling are encapsulated in UDP packets and enable communications:
 - IP Phone with UA / DECT / analog stations and network accesses.
 - IP Phone with IP Phone.
 - IP Phone with an H.323 terminal or an H.323 gateway (e.g.: NetMeeting PC).
- IP Phone with a PIMphony IP Edition.

Nota : The bandwidth of an Ethernet LAN can be 10 or 100 Mbps. If the network operates at 100 Mbps, adding terminals operating at 10 Mbps risks downgrading the bandwidth and hence VoIP performance quality: it might be necessary to isolate these terminals on external LAN Switches.

CONFIGURING AN IP ENABLER

Depending on the network topology, the configuring of the IP Enablers can be:

- completely automatic, if they are on the same subnet as the PBX: simply connect the IP Enabler to the LAN and connect the power supply unit. The DHCP server allocates the dynamic IP addresses and the TFTP server integrated into the CPU/CPUe board downloads the binary into the IP Enabler.
- manual, if the IP Enablers are connected to a different subnet of Alcatel OmniPCX Office, or if the DHCP server integrated into the VoIP CoCPU board is deactivated: in this case the three IP parameters and the TFTP server address have to be entered on the terminals.

General IP Telephony parameter settings

- by MMC-PM5 (Expert View): **System Miscellaneous -> VoIP -> Parameters -> General** tab

Significant parameter:

Number of VoIP-Subscriber Channels: number of channels dedicated to IP subscribers: 1 channel = 1 access (generally for small configurations; see also the abacus in the "Dimensioning - Limits" section).

These channels are used by the IP Enabler for communications between the IP Enabler and the system terminals and client PC H.323 IP Enabler.

Activating/deactivating the DHCP server

- by MMC-PM5 (Expert View): **System Miscellaneous-> VoIP ->Parameters -> DHCP** tab

Significant parameters:

Enable Integrated DHCP Server: if the box is ticked, it is the internal DHCP that assigns the IP addresses dynamically; otherwise, the DHCP is inhibited and the IP addresses have to be entered manually.

Dynamic Range: when DHCP is in service, the following two parameters delimit the range of available IP addresses.

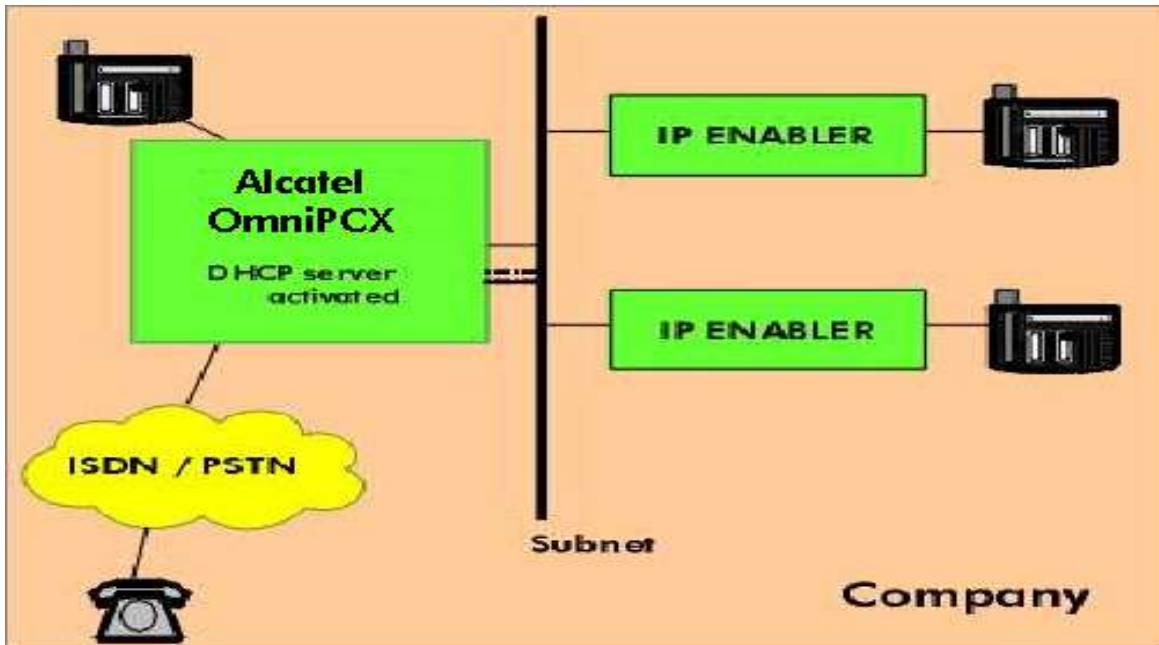
Start IP Address: start of the address range.

End IP Address: end of the address range.

Nota :

- no address in the range must be assigned to any other LAN equipment!
- the integrated DHCP server only manages IP Enablers.

IP Enabler connected to the same Subnet as the PBX



The IP Enabler is connected to the same LAN as the PBX and the integrated DHCP server is activated: the recording sequence is automatic. This sequence is displayed on the station display and runs in 6 phases. Each phase is represented by a flashing block on the display:

- Phase 1: IP initialization
- Phase 2: downloading of the configuration file (TFTP)
- Phase 3: downloading of the binary file (TFTP)
- Phase 4: binary flashing (not systematic). Remark: the binary is only flashed when there is a change of version in the TFTP server (VoIP CoCPU board).
- Phase 5: downloading of the starting file
- Phase 6: establishing of UA signaling

At the end of phase 6, the station is initialized and appears on the list of terminals of the MMC-PM5.

Nota : Creation of the station is automatic, the system automatically assigns the first free directory number (it is not necessary to create an IP terminal beforehand).

If an error occurs during the initialization sequence, a specific error message "Error x.yy" is displayed: see "Maintenance" File.

CALL SERVER : VOICE ON IP

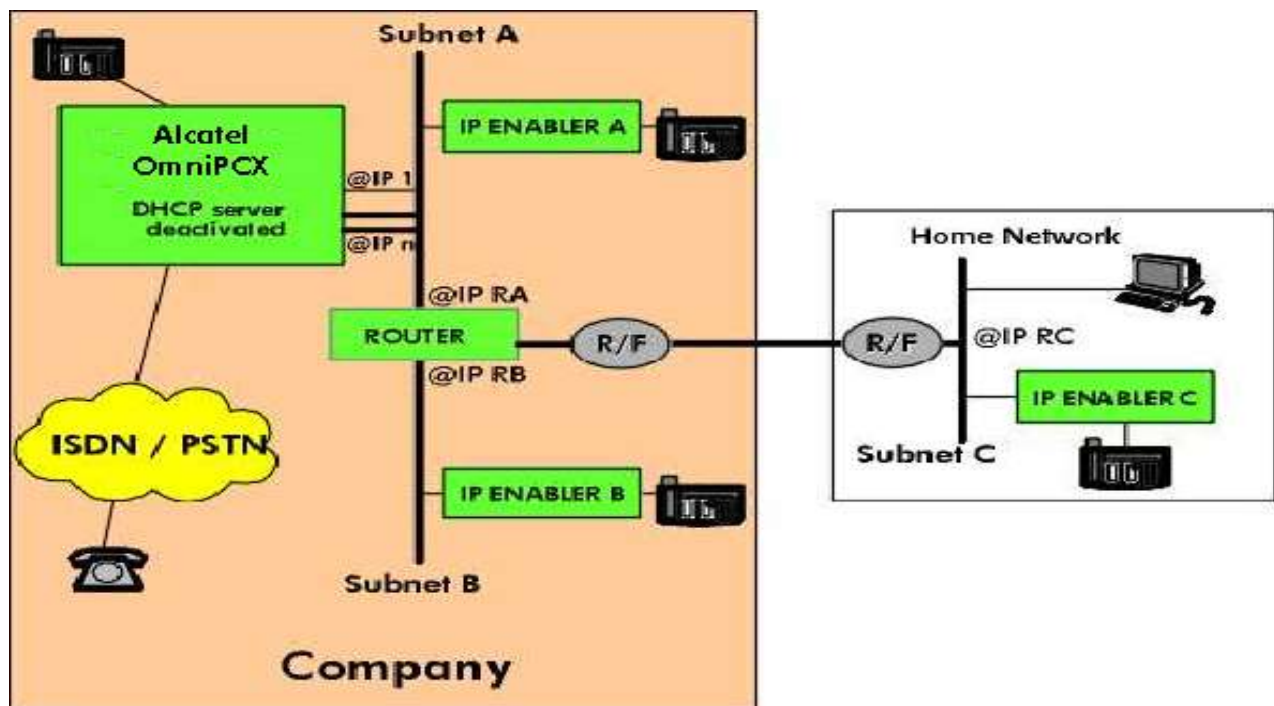
INSTALLATION - CONFIGURATION

IP Enabler connected to another subnet than the PBX

The following example shows the cases where IP Enablers have to be installed manually:

- The IP Enabler (A) is connected to the same subnet as the H.323 gateway (VoIP CoCPU board), but the integrated DHCP server is not active: manual initialization will be necessary.
- The IP Enablers (B and C) are not connected to the same subnet as the PABX: the registration sequence will have to be manual (even if the Alcatel OmniPCX Office integrated DHCP server is active).

Nota : an IP Enabler cannot be managed by an external DHCP server.



- @IP 1: IP address of the master VoIP CoCPU board (e.g. 192.168.90.110)
- @IP n: IP address of the slave VoIP CoCPU board (1 to 5 boards) (e.g. 192.168.90.111)
- @IP RA: IP address of the router, subnet A side (e.g. 192.168.90.1)
- @IP RB: IP address of the router, subnet B side (e.g. 192.168.75.1)
- @IP RC: IP address of the router, subnet C side (e.g. 192.168.122.10)

CONFIGURATION

An IP Enabler has a configuration interface that can be used to program the IP parameters to establish the link with the PBX if necessary. The configuration menu is accessed by pressing the **i** and **#** keys in succession, immediately after connecting the IP Enabler mains power adapter. The following commands are used in the menus:

- **#**: validation and return to previous menu;
- **0**: return to previous menu / exit;
- *****: cancellation and return to previous menu;
- **HP-** and **HP+** keys: previous screen / next screen (signaled by the symbols ` /).

Access to the configuration menu is inhibited as soon as phase 5 of the initialization sequence begins.

Access the configuration menu by pressing the **i** then **#** keys in succession, immediately after connecting the IP Enabler mains power adapter.

Main menu:

1 .	M A C A d d r e s s					3 .	V e r s i o n s				
2 .	I P P a r a m e t e r s					4 .	O t h e r s				

- 1. Mac Address: display of the MAC address of the IP Enabler (read only).
- 2. IP Parameters: display and modification of the IP parameters.
- 3. Versions: displays of the different software versions.
- 4. Others: display of the IP Enabler status.

Accessing the IP parameters menu: Option 2 - Parameters

- Press key 1 to switch from Dynamic mode to Static mode:
- Access the IP address configuration menu, option 2. Enter the IP address of the IP Enabler and confirm by pressing **#** (validation and return to previous menu) or quit by pressing *****. E.g.
 - IP Enabler A: 192.168.90.100
 - IP Enabler B: 192.168.75.6
- IP Enabler C: 192.168.122.201

Nota : An address such as 192.168.75.6 will have to be entered as follows: 192 168 **075006**. To confirm the data entry, press **#**, the display returns to the previous menu.

- Access the subnet mask configuration menu, option 3. Enter the subnet mask and confirm by pressing **#** (validation and return to the previous menu). E.g.
 - IP Enabler A: 255.255.255.0
 - IP Enabler B: 255.255.255.0
- IP Enabler C: 255.255.255.0

CALL SERVER : VOICE ON IP
INSTALLATION - CONFIGURATION

- Access the default router configuration menu, option 4. Enter the IP address of the default router and confirm by pressing # (validation and return to previous menu). In our example:
 - IP Enabler A: @IP RA = 192.168.90.1
 - IP Enabler B: @IP RB = 192.168.75.1
 - IP Enabler C: @IP RC = 192.168.122.10
- Access the TFTP server configuration menu, option 5. Press # to enter the IP address of the TFTP server and confirm by pressing # (validation and return to previous menu). In our example:
 - IP Enabler A: 192.168.90.110
 - IP Enabler B: 192.168.90.110
 - IP Enabler C: 192.168.90.110
- After configuring the 4 parameters, return to the main menu by pressing 0, then validate the configuration by selecting 0 again in the main menu, the display will propose the confirmation screen "Save modification":
 - press " * " to cancel and restart the configuring procedure
 - press " # " to save the parameters, the terminal will display the 2 screens "Modification saved" and "IPPhone will reset" in turn before reinitializing itself:

Nota : The IP Enabler power supply must not be disconnected during this phase.

- On restarting the IP Enabler will perform 6 registration phases:
 - Phase 1: IP initialization
 - Phase 2: downloading of the configuration file
 - Phase 3: downloading of the binary file
 - Phase 4: flashing of the binary
 - Phase 5: downloading of the starting file
 - Phase 6: establishing of IP signaling

At the end of phase 6, the station is initialized and the terminal appears in the list of the PM5 stations. Creation of the station is automatic, the system automatically assigns the first free directory number (it is not necessary to create an IP terminal beforehand).

If an error occurs during the initialization sequence, a specific error message "Error x.yy" is displayed: see "Maintenance" File.

PIMPHONY IP EDITION

A PC equipped with PIMphony IP is considered by the PBX as an IP subscriber, in the same way as an IP Enabler. No specific programming is needed.

After installing the PIMphony IP software on a PC (conventional installation procedure by Wizard), a "Multimedia PC" type IP terminal is automatically created in the list of subscribers, with the first free directory number. Unlike the IP Enablers, Alcatel OmniPCX Office does not manage the IP address of a Multimedia PC; only its MAC address is registered at the first connection. No software (firmware) is transferred between the system and PIMphony IP during the registration procedure.

Registration is an "uncovered" mechanism based on the IP protocol: the PC generates a Multicast request and waits for the reply from a VoIP CoCPU board. During the reply / registration phase, the VoIP CoCPU board indicates its IP address to the PC and the PC transmits its Ethernet address (MAC Address) to the PBX.

If there is no reply (e.g. IP routing problems), the PC generates the Multicast request several times, and if no reply is obtained, PIMphony IP enters a "failure" mode. The user is then asked to indicate the IP address of the master VoIP CoCPU board; if the address is incorrect, another request is made.

Once registration has been performed, the IP address of the VoIP CoCPU board is stored in the Windows register base, and will be used for all the future connections. If a problem arises, such as a change of the IP address of the VoIP CoCPU board, a new registration sequence (Multicast request) is initiated.

After initialization of PIMphony IP, IP connectivity must be permanent, otherwise the PBX considers the PC to be out of service.

PC H.323

A PC equipped with NetMeeting can establish PC - Station and Station - PC communications. Only the base station can be called with a PC equipped with NetMeeting.

A NetMeeting PC is not seen by the PBX as an IP Enabler but as a private directory number by the PBX, and requires a specific entry in the ARS table to be authenticated and have access to the PBX services. A NetMeeting PC uses a DSP from the "VoIP access (IP trunks)" pool for these communications with the PBX and with a remote H.323 gateway.

A call to a NetMeeting PC is transparent for the user.

If the integrated gateway is used, the secure plug-in is required in order for the PC to establish communication.

The configuration of a NetMeeting PC can be either:

- Static: its IP address serves as a reference, or
- Dynamic: the number (or the range) in the ARS entry is used for the connection.

NetMeeting PC in "static" configuration

PC with static IP addressing (permanent): authentication is based on the IP address of the PC.

ARS table:

Netwo rk	Prefix	Ranges	Substitute	List. Trunk group list	Destina- tion	IP Type	IP Address	Hostname
Priv.	258		258	4	PC	Static	192.189.50 .120	option

- The "network" field must be "Private" when a PC is involved.
- In the case of a static IP address, only one PC can be registered, therefore there is only one directory number: "prefix" field = "substitute", the "ranges" field is empty.
- List of trunk groups: corresponds to the index of the table containing the VoIP access trunk group,
- The destination field must be "PC" and its IP addressing type is static,
- IP address field: contains the IP address of the PC,
- None of the other parameters, Gateway Alive Protocol, Gateway Alive Timeout, etc., are applicable in this configuration.

Notas : - only the "Destination - IP Type - IP Address" fields are obligatory. The hostname field is optional. None of the other IP fields in the ARS table are applicable.

- during communications in the PBX, the name associated with PC n° 124 (Remote PC) will be used except where a name has already been registered in the PBX directory for n° 124.

NetMeeting PC in "dynamic" configuration

- Dynamic addressing: authentication of the PC is based on its directory number (125 to 126) and a password: this configuration requires a proprietary Alcatel Secure Plug-In in NetMeeting.

Network	Prefix	Ranges	Substitute	List. Trunk group list	Destination	IP Type	IP Address	Hostname
Priv.	26	0-5	26	4	PC	Dynamic	--	--

- The "network" field must be "Private" when a PC is involved.
- In the case of a dynamic IP address, several PCs can connect: "prefix" field = "substitute", the "ranges" field contains the range of private numbers assigned to the PCs.
- None of the other parameters, IP Address, Hostname, Gateway Alive Protocol, etc., are applicable in this configuration.

In both cases, remember that in the private numbering plan: there is no network between different PA-BXs.

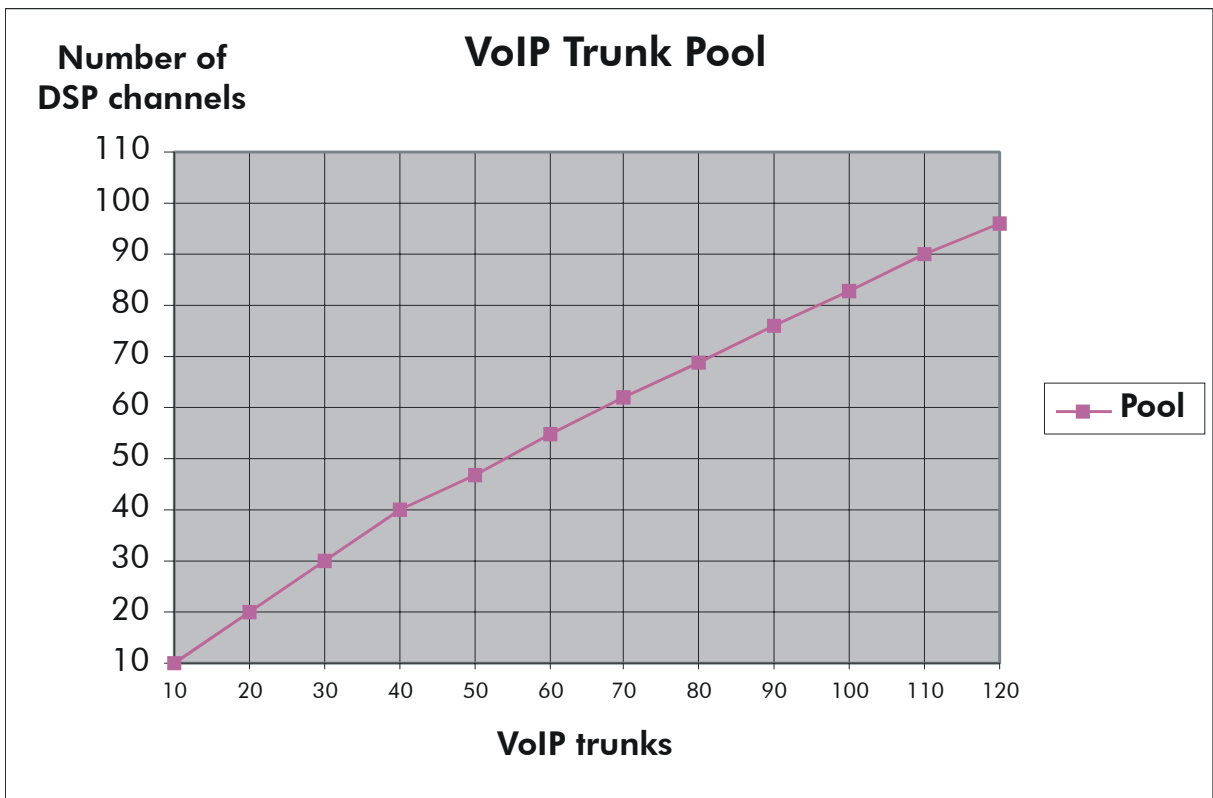
Function	Start	End	Base	NMT	Priv
Main trunk group	258	258	ARS	Keep	Yes

DIMENSIONING - LIMITS

File
3

SYSTEM DIMENSIONING

DSP channels required for IP Trunk services



The following table indicates the mean number of DSPs required depending the number of IP Enablers one wishes to install. The mean number of DSPs required is called "A":

Number of IP Trunks	5	10	15	20	25	30	35	40	45	50
Number of DSPs (A)	5	10	15	20	25	30	35	40	44	47

DIMENSIONING - LIMITS

CALL SERVER : VOICE ON IP

Number of IP Trunks	55	60	65	70	75	80	85	90	95	100
Number of DSPs (A)	51	55	59	62	66	69	73	76	80	83

Number of IP Trunks	105	110	115	120
Number of DSPs (A)	87	90	93	96

The number of DSP channels (VoIP ports) required depends on the system configuration and the VoIP services to be implemented.

The main situations are as follows:

- H.323 gateway only

The number of DSP channels is equal to the number of IP network accesses required, in accordance with the IP trunk abacus above.

Nota : The desired number of DSP channels can be limited by the bandwidth reserved for VoIP accesses. E.g. if the reserved bandwidth is 64 Kbps, only 2 calls can be made simultaneously; the number of VoIP accesses can thus be limited to 2 channels.

In the case of PC-to-PC or IP Phone-to-PC communications using H323 PCs, the number of IP trunks is as defined by the abacus + 30 % of the number of PCs; for instance, you need to add 6 IP trunks in order to use 20 Net/Meeting PCs.

- IP Telephony only

The number of DSP channels needed is indicated in the following paragraph.

- Conventional telephony (UA / DECT / Z, etc.) and IP Telephony

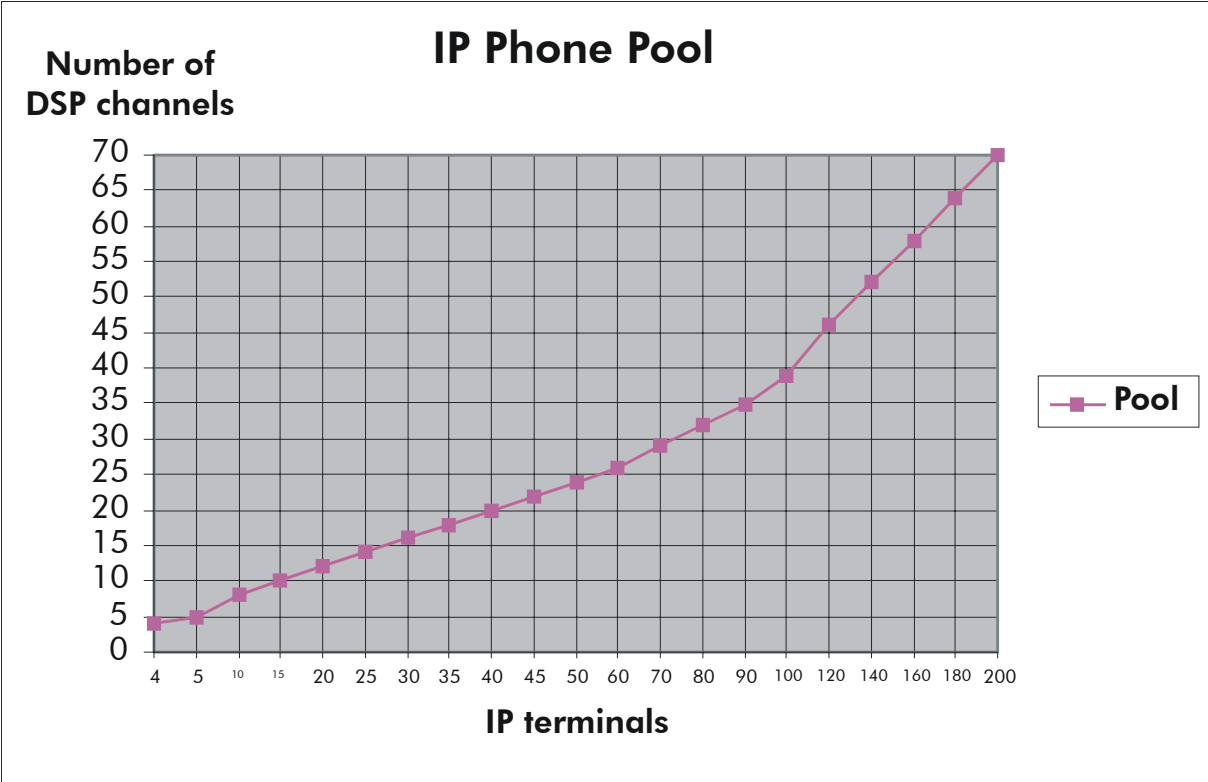
The number of DSP channels needed is indicated in the following paragraph.

- H.323 gateway and IP Telephony

The number of DSP channels needed is indicated in the following paragraph.

The number of DSP channels equals the desired number of IP network accesses.

Calculating the mean number of DSPs required (IP Telephony)



The following table indicates the mean number of DSPs required depending the number of IP Enablers (IP terminals) one wishes to install. The mean number of DSPs required is called "A":

Number of IP Enablers	4	5	10	15	20	25	30	35	40	45
Number of DSPs (A)	4	5	8	10	12	14	16	18	20	22

Number of IP Enablers	50	55	60	65	70	75	80	85	90	95
Number of DSPs (A)	24	25	26	28	29	31	33	34	35	37

Number of IP Enablers	100	105	110	115	120	125	130	135	140	145
Number of DSPs (A)	39	41	43	44	46	48	49	51	52	54

DIMENSIONING - LIMITS

CALL SERVER : VOICE ON IP

Number of IP Enablers	150	155	160	165	170	175	180	185	190	195
Number of DSPs (A)	55	57	58	60	61	63	64	66	67	69

Number of IP Enablers	200
Number of DSPs (A)	70

The mean number A must be reduced by the number of network accesses one wants to have in this system. A new value, called B, is calculated from the following formula:

$$B = \text{Total number of network accesses} - \text{int.}(B1/10) + \text{int.}(B2/20)$$

- B1 represents the total number of non-IP subscribers in the system (the number of IP Enablers in the system is not included)
- B2 represents the total number of IP Enablers in the system.
- Int(B1/10) represents the whole number resulting from dividing B1 by 10 and int(B2/20) the whole number resulting from dividing B2 by 20.

From the values A and B one obtains:

Mean number of DSP channels required for VoIP services = Min(A, absolute value of B)

Where Min(A, B) means: the smaller of the two values A and B.

Nota : The total number of DSP channels to be implemented for IP Telephony and/or IP network accesses will be increased to the next higher value out of the possible combinations of DSPs present in the system (reminder: a VoIP daughter board supports 4, 8 or 16 DSPs; the system contains from 2 to 96 DSPs, varying every 2, except for 92).

In the case of IP telephony and IP trunk mixing, simply total the DSPs.

Configuration examples

H.323 gateway only

- 1 Operator station (non-IP)
- 40 Reflexes stations (non-IP)
- 5 T0 accesses
- 6 VoIP network accesses (example: 2 to a site A with a bandwidth = 64 Kbps and 2 accesses to a site B with a bandwidth = 64 Kbps plus 2 other channels for NetMeeting PCs).

As all the DSP channels are associated with the H.323 gateway (no IP telephony), the number of DSP channels needed for this configuration corresponds to the number of VoIP accesses, i.e. 6 (increased to 8).

Small IP Telephony configuration

- 1 Operator station (non-IP)
- 20 IP Enabler stations
- 3 T0 (=6 channels)

In this case the mean number of DSPs associated with the 20 IP Enablers is: $A=12$.

$B = 6 - 0 + 1 = 7$.

The mean number of DSPs needed for this configuration is: $\text{Min}(12, 7) = 7$ (increased to 8).

Large IP telephony configuration

- 1 Operator station (non-IP)
- 70 IP Enabler stations
- 1 T2 access with 30 channels

$A = 29$; $B = 30 - 0 + 3 = 33$.

The mean number of DSPs needed for this configuration is: $\text{Min}(29, 33) = 29$ (increased to 32).

Mean configuration in mixed telephony: IP and conventional telephony

- 1 Operator station (non-IP)
- 25 IP Enabler stations
- 25 DECT stations
- 6 T0 accesses

$A = 14$; $B = 12 - 2 + 1 = 11$.

The mean number of DSPs needed for this configuration is: $\text{Min}(14, 11) = 11$ (increased to 16).

Mean configuration in mixed telephony: IP and conventional telephony

- 1 Operator station (non-IP)
- 5 IP Enabler stations
- 40 conventional Reflexes stations
- 6 T0 accesses

$A = 5$; $B = 12 - 4 + 0 = 8$.

The number of DSPs needed for this configuration is: $\text{Min}(5, 8) = 5$ (increased to 8).

Medium configuration for mixed telephony + H.323 gateway

- 1 Operator station (non-IP)
- 5 IP Enabler stations
- 40 conventional Reflexes stations
- 4 T0 accesses
- 5 VoIP network accesses

$A = 5; B = (8+5) - 4 + 0 = 9.$

- The number of DSP channels needed for IP telephony is: $\text{Min}(5, 9) = 5.$
- The H.323 gateway requires 5 additional DSP channels.

The mean number of DSPs needed for this configuration is 10 (increased to 16).

Bandwidth

In an H.323 gateway configuration, a bandwidth can be associated with each ARS table entry to a remote H.323 gateway.

Number of DSPs depending on communication type:

- IP Phone - IP Phone: 0 DSPs
- PC - PC: 0 DSPs
- PC with internal H323 gateway - PC with internal H323 gateway: 1 DSPs
- IP Phone in conference: 1 DSPs
- IP Phone or PIMphony IP - Reflexes station or analog/ISDN network: 1 DSPs
- IP Phone or PIMphony IP - PC H323 or H323gateway (IP trunk): 2 DSPs

The following table indicates the potential number of simultaneous communications depending on the bandwidth reserved for Voice over IP calls:

Data rate (bandwidth)	Number of simultaneous communications possible	CODEC used
55.6 Kbps (or less)	1	G.723.1/G729a
64 Kbps	2	G.723.1/G729a
128 Kbps	5	G.723.1/G729a
256 Kbps	10	G.723.1/G729a
512 Kbps	20	G.723.1/G729a
≥ 1024 Kbps	Depends on the number of IP trunks	G.723.1/G729a

LIMITS & RECOMMENDATIONS

VoIP services

Voice over IP services require a software key.

VoIP CoCPU board

There can be a maximum of 6 boards in a system: one "master" board and five "slave" boards. The "master" VoIP CoCPU board will be the first board seen by the system. If a VoIP CoCPU board is added to the system, it will be considered as a "slave" board.

A VoIP CoCPU board is equipped with a daughter board of 4, 8 or 16 DSPs maximum.

An Alcatel OmniPCX Office can contain a maximum of 96 DSPs.

If there is more than one VoIP CoCPU board in a system, each of the Ethernet ports of each board must be connected to the LAN and they must be connected to the same subnet.

It is possible to combine VoIP CoCPU boards with a different number of DSPs: if the system combines the IP Telephony and H.323 Gateway services, it is strongly recommended for the board with the largest number of DSPs to be the "master" board and that its IP address should be used as the reference for the remote H.323 gateways.

The VoIP CoCPU boards are to be connected via a LAN Switch: this solution reduces Ethernet access traffic.

DSP channels

After a cold reset, all the DSPs of the VoIP CoCPU board are assigned to the VoIP subscribers channels pool by default. The DSP allocation can be modified using MMC-PM5.

Any DSP allocated to the VoIP access pool is removed from the VoIP subscriber pool: it will therefore no longer be available for IP telephony. Conversely, a DSP from the VoIP subscriber pool will not be able to be used for H.323 gateway calls.

IP Enabler

The theoretical limit on the number of IP Enabler + PIMphony IP stations that can be connected is 200, however:

- it is obligatory for the operator station to be a Reflexes station connected to a UA link, which means that at least one UAI board must be installed in the system,
- the IP Enablers are "deducted" from the limit on Reflexes stations.

The Ethernet access of an IP Enabler is at 10 Mbps (IP Enabler V1) or 10/100 Mbps (IP Enabler V1S).

"VoIP Access" channels: H.323 gateway

A DSP channel of a VoIP CoCPU board assigned to the pool of VoIP access channels is considered by the system to be a public network access, that is to say "1 B channel".

Alcatel OmniPCX Office can have a maximum of 120 public network accesses: the maximum number of DSPs assigned to the VoIP access pool is 96.

Network accesses (T0, T2, DLT2, TL, ATL) + VoIP accesses ≤ 120

ARS entry

The number of entries in the ARS table with a remote H.323 gateway as destination is limited to 500. The number of entries in the ARS table that make reference to a PC (individual entry or with a range) is limited to 150.

Communication from station to NetMeeting PC

Station-to-PC and PC-to-Station communications depend on the configuration of the gatekeeper (integrated or external) and the presence of the secure plug-in on the NetMeeting PCs:

	PC with secure plug-in		PC without secure plug-in	
	Static IP Address	Dynamic IP Address	Static IP Address	Dynamic IP Address
Integrated gatekeeper	Yes	Yes	No	No
External gatekeeper	Yes (no Break-out security)	Yes (no Break-out security)	Yes (no Break-out security)	Yes (no Break-out security)

Yes: corresponds to a type of configuration that allows PC-to-Station and Station-to-PC communications, and Break-out calls from a PC.

No: corresponds to a type of configuration that does not allow PC-to-Station or Station-to-PC communications.

MAINTENANCE

File

4

VoIP SERVICES - VoIP CoCPU BOARD

System with a single VoIP CoCPU board

If the VoIP CoCPU board is out of service, none of the VoIP services (H.323 gateway and IP Telephony) are available.

Resetting the H.323 gateway (VoIP CoCPU board reset) releases all ongoing communications on the H.323 gateway; reinitializing the IP telephony service resets all the IP Enablers and the communications in progress on the Multimedia PCs.

Modifying the IP address associated with the VoIP CoCPU board resets the board and all the ongoing VoIP services.

System with several VoIP CoCPU boards

If the master VoIP CoCPU board is out of service, all the VoIP services (H.323 gateway and IP Telephony) are temporarily unavailable. The PBX "switches" the VoIP services over to a slave VoIP CoCPU board: the PBX assigns it the IP address of the faulty board (reference address for the VoIP services: H.323 gateway, TFTP server, etc.) thereby enabling the VoIP services to be maintained (the number of possible VoIP communications will however be limited to the number of DSPs remaining).

After replacing the faulty VoIP CoCPU board, it will automatically be assigned the old IP address, which is now free, of the master VoIP CoCPU board: the new board will be "slave"; the PBX does not return to the pre-failure configuration.

Nota : It is recommended that the master VoIP CoCPU board of a PBX should be the one that has the largest number of DSPs. For systems with 2 boards, such as a VoIP CoCPU board with 16 DSPs and a VoIP CoCPU board with 4 DSPs, if the 4-DSP VoIP CoCPU has become the system master board following a fault affecting the 16-DSP VoIP CoCPU board, then you should return to the original configuration after replacing the 16-DSP VoIP CoCPU board by unplugging the 4-DSP VoIP CoCPU board for a few minutes.

If a slave VoIP CoCPU board is out of service, all the VoIP services will be redirected to the master VoIP CoCPU board. However, the number of possible VoIP communications will be limited to the number of DSPs remaining.

IP TELEPHONY

Loss of IP connectivity

It takes several seconds for loss of connection to be detected: the IP Enabler attempts to restore the connection for several seconds. During this period the user may observe a slowing in the station displays resulting from repeated restoring and loss of connections.

Multimedia PC

If the "keep alive" mechanism detects a problem between a NetMeeting PC and the system (PBX reset, VoIP CoCPU board reset, IP connectivity problems), NetMeeting sends the user an error message: the user can either quit the application or wait to be reconnected.

IP Enabler: error messages

The following table gives the different causes of errors during the implementation of an IP Enabler (the "Num" field represents the number of the error message displayed on the station):

Num	LABEL	MEANING
1.0 1	NoMacAddress	There is no MAC Address in the flash memory.
1.0 2	NoDhcpServer	No response from the DHCP server.
1.0 3	BadLocalIpAddress	Incorrect IP address.
1.0 4	BadTftpIpAddress	Incorrect IP address of the TFTP server.
1.0 5	BadRouterIpAddress	Incorrect IP address of the router.
1.0 6	RouterNotResp	No response to the "ping" of the router.
1.0 7	IpInitError	IP Enabler initialization error.
1.0 8	EtherInitError	Ethernet interface initialization error.
1.0 9	IpDupli xxxxxxxxxxxxxx	IP address duplicated with the MAC address equipment xxxxxxxxxxxxxx.
2.0 1	LoadCfgNotResp	TFTP server not responding: impossible to download the configuration file.
2.0 2	LoadCfgRemoteError	Loading of the configuration file: remote-end error.

CALL SERVER : VOICE ON IP

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2.0 3	LoadCfgLocalError	Loading of the configuration file: local error (e.g.: memory allocation error).
3.0 1	LoadBinNotResp	TFTP server not responding: impossible to download the binary file.
3.0 2	LoadBinRemoteError	Remote-end error during downloading of binary file (e.g.: no binary file in the server, CPU not operational).
3.0 3	LoadBinChecksumError	Error in binary file downloading: the calculated checksum differs from that in the file header.
3.0 4	LoadBinLocalError	Downloading of the binary file: local error.
3.0 5	LoadBinHeaderError	Downloading of the binary file: length error, the size of the file differs from that indicated in the file header.
3.0 6	LoadBinFileTooLarge	Downloading of the binary file: the size of the file exceeds the capacity of the flash memory.
3.0 7	LoadBinGetErBadFile	Downloading of the binary file: incorrect file name.
4.0 1	BinUpdateFailed	Failure when placing the binary file in the flash memory.
5.0 1	LoadStartNotResp	TFTP server not responding: impossible to load the starting file.
5.0 2	LoadStartLocalError	Local error in the starting file (e.g.: memory allocation error).
5.0 3	LoadStartRemoteError	Remote-end error in the starting file (e.g.: incoherent port number).
6.0 1	UaLinkLost	Loss of the UA signaling link with the PBX (e.g.: master VoIP CoCPU board out of service).
6.0 2	AomNotSupported	AOM refused. Incorrect version of the Add On Module.

VoIP SERVICES ALARM MESSAGES

The NMC (Network Management Center) application Alcatel 4740 enables the following alarm messages specific to Voice over IP to be retrieved:

- Reset of VoIP CoCPU board xxxxx (message identical to those of the other boards in the system).
- VoIP CoCPU board xxxxx out of service.
 - Diagnosis: reset and/or replace the board.
- DSP of VoIP CoCPU board xxxxx out of service.
 - Diagnosis: reset and replace the VoIP CoCPU board if the fault persists or recurs.
- Ethernet interface of VoIP CoCPU board xxxxx Out of Service.
 - Diagnosis: check the connection to the LAN and possibly the LAN components (Hub, switch, etc.).
- Ethernet interface of VoIP CoCPU board xxxxx In Service.
- Remote gateway xxxxx Out of Service.
 - Diagnosis: check the IP connectivity with the remote gateway (LAN, intermediate IP router) and the status of the remote gateway.
- Remote gateway xxxxx In Service.
- External gatekeeper inaccessible.
 - Diagnosis: check the IP connection with the external gatekeeper (LAN, intermediate IP router) and the presence of the external gatekeeper.
- External gatekeeper refused.
 - Diagnosis: check that the external gatekeeper has been configured correctly to accept the registration of Alcatel OmniPCX Office
- Automatic overflow: too much traffic to/from remote gateway xxxxx.
 - Diagnosis: if this alarm occurs frequently, the bandwidth associated with this remote gateway in the ARS table and the number of DSPs assigned to VoIP accesses must be increased if possible.
- Automatic overflow: VoIP call to/from gateway xxxxx refused because "not enough VoIP access channels available".
 - Diagnosis: if this alarm occurs frequently, the dimensioning of the DSPs must be reviewed: either the bandwidth in the ARS table must be increased, or the number of DSPs assigned to VoIP accesses must be increased, or another VoIP CoCPU board must be added.
- IP Telephony failures: no more DSP channels available.
 - Diagnosis: if this alarm occurs frequently, the number of DSPs assigned to the IP subscriber pool must be increased (either by reducing the number of VoIP access DSPs or by adding a VoIP CoCPU board).
- The IP Enabler cannot be initialized because of a DHCP server fault (no IP addresses available).
 - Diagnosis: increase the number of IP addresses in the DHCP server range (this range of IP addresses must be greater than or equal to the number of IP Enablers to be installed).

VoIP SERVICES - TRAFFIC COUNTERS

The VoIP services feature the following specific traffic counters accessible via MMC-PM5 in the menu:
System Miscellaneous -> VoIP -> Traffic counters:

"General" tab:

- Number of incoming H.323 calls.
- Number of outgoing H.323 calls.
- Number of transiting H.323 calls (Break In, Break Out).
- Number of outgoing H.323 calls to H.323 gateway xxxxx refused because "insufficient bandwidth".
- Number of incoming H.323 calls to H.323 gateway xxxxx refused because "insufficient bandwidth".
- Number of outgoing H.323 calls to H.323 gateway xxxxx refused because "remote gateway out of service".
- Number of outgoing H.323 calls to remote gateway xxxxx refused because "all VoIP access channels busy".
- Number of incoming H.323 calls to gateway xxxxx refused because "all VoIP access channels busy".
- Number of failed IP Telephony (audio) communications: all the DSP channels reserved for IP Telephony are busy.

"Gateways" tab:

These counters indicate the number of VoIP calls to each of the remote H.323 gateways refused for the following reasons:

- Overflow on outgoing VoIP calls: VoIP CoCPU board(s) out of service.
- Overflow on outgoing VoIP calls: no more bandwidth available.
- Incoming VoIP calls refused: no more bandwidth available.



MAINTENANCE

CALL SERVER : VOICE ON IP

Alcatel OmniPCX Office

SECTION
CALL SERVER : PRIVATE
NETWORKS

REF3EH 21000 BSAA Ed. 04



ALCATEL OMNIPCX OFFICE

CALL SERVER : PRIVATE NETWORKS

Section CALL SERVER : Private networks

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ALCATEL OMNIPCX OFFICE

**SECTION CALL SERVER : PRIVATE
NETWORKS (INDEX)**

CALL SERVER : PRIVATE NETWORKS

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THE NETWORK OFFERING

Nota : Alcatel OmniPCX Office supports analog ATLS from release



R1.5 onwards; please bear this restriction in mind when reading the "Private Networks" section.

Global offering

Depending on the medium (or protocol) used, placing Alcatel OmniPCX Office systems on private networks offers the following main services:

- calls on Tls and ATLS: conversion from private dialing for outgoing calls.
- calls on ISDN, QSIG_BC and VPN lines: CLIP/COLP services, conversion into private dialing for outgoing and incoming calls.
- Public or Private ISVPN: in addition to the previous services, optimization of transfers and forwarding, additional information (transmission of the name, busy status, forwarding).
- ISVPN+: with regard to ISVPN services, addition of metering information.
- IP Networking: setting up an IP network using the existing data network to carry voice data at lower cost; for more details see the "Voice over IP" section.

The table below shows the principles of use for the various protocols, depending on the amount of traffic and the requested level of service.

	Integration of services →		
Voice traffic ↓	ISDN	Heterogeneous ISVPN	Public ISVPN
		VPN	Public VPN + ISVPN
	QSIG_BC		Private ISVPN ISVPN+
Voice + data traffic	IP Networking		

A private network can be homogenous or heterogeneous:

- homogenous: all the PABXs in the network belong to the same family (Alcatel OmniPCX Office, Alcatel Office or Alcatel OmniPCX 4400).
- heterogeneous: the PABXs in the network belong to different families (Alcatel and others).

SUPPORTED STANDARDS

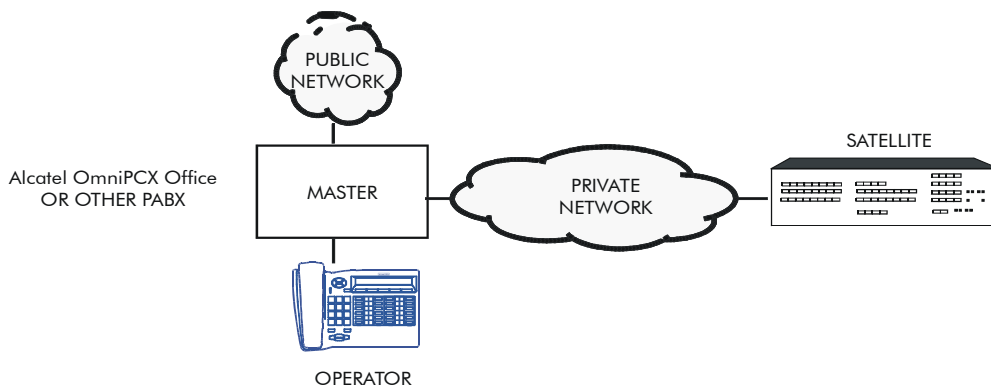
QSIG_BC: ETS 300-172 of ETSI specifications.

Colisée Performance specifications: CSE S 13-11 W.

DEFINITIONS

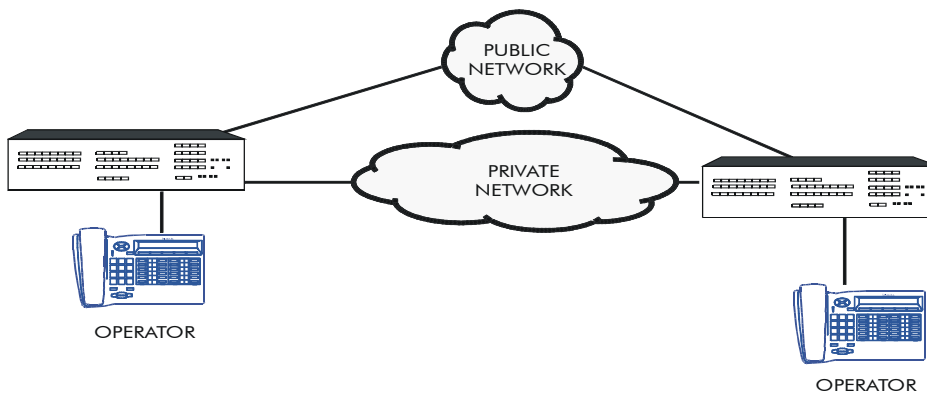
MASTER/SATELLITE CONFIGURATION

Only the master system has an operator station and incoming, external access. The satellite system uses the master system's external resources; The satellite can, however, have outgoing, external access. Several satellite systems can be connected to the same master system.



PEER TO PEER CONFIGURATION

In this topology, the 2 Alcatel OmniPCX Office systems each have their own Operator Station and their own incoming and outgoing external accesses.



DIGITAL PROTOCOLS

The following protocols can be used:

- QSIG-BC: protocol belonging to the QSIG family managing exchanges between private networks at basic communication level.
- ISVPN: proprietary protocol = ISDN protocol + additional information by means of UUS (User to User Signaling).
 - on public lines: public ISVPN
 - on leased lines: private ISVPN
- ISVPN+: proprietary protocol = QSIG + ISVPN protocol + additional information contained in the UUS. This protocol can only be used with Alcatel OmniPCX Office/Office systems. The additional information can be used by an Alcatel 4740 or Alcatel 4755 Management Center.

Nota :

All the accesses of the same DLT2 board (digital leased lines) can be used to connect several PABXs as long as they are all masters or slaves.

ENVIRONMENTS

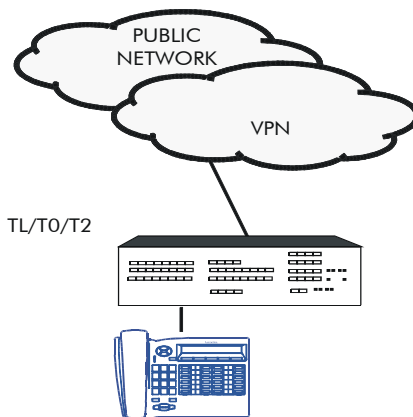
Nota :

The ATL - TL or QSIG-TL interconnection must be implemented with precaution in order to avoid any TL blocking (for example: a break-in by transfer between a TL without polarity inversion and an ATL joining on a remote user forwarded to an external number by another TL; in this case, there is no release of communications on these TLs).

VPNs ON PUBLIC LINKS

These virtual networks are specific to the country and the network operator. In these networks, which use the public operator protocols (analog or ISDN), private and public calls are routed on the same lines. Amongst these networks offering preferential rates, are:

- Fiat in Italy: analog or ISDN protocol
- Transgroupe (Collisée Performance) in France: ISDN only protocol



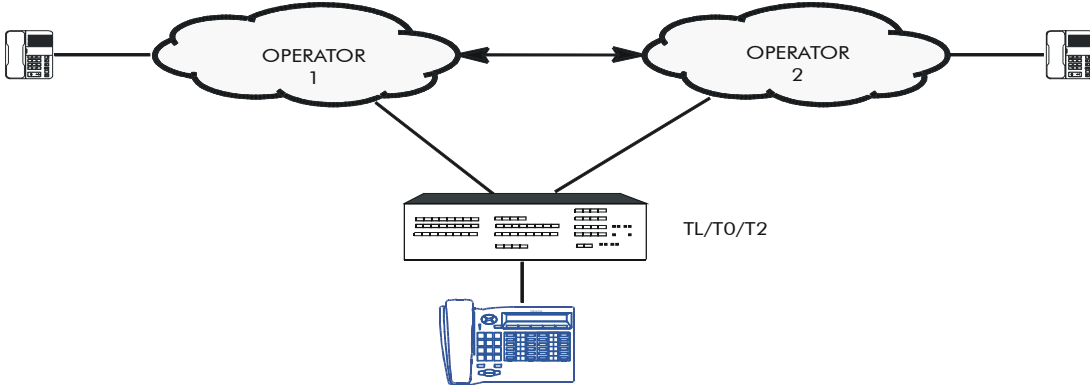
Characteristics of Transgroupe dialing

- public numbers are preceded by 0.
- private numbers are defined in a private numbering plan: closed dialing from 5 to 10 digits, with short numbers as an option (10 to 15, 160 to 169, 36XX).

MULTI-OPERATOR

With the ARS mechanisms, this environment enables:

- use of the cheapest operator to call a correspondent.
- overflowing through the other operator when the cheapest one is unavailable.

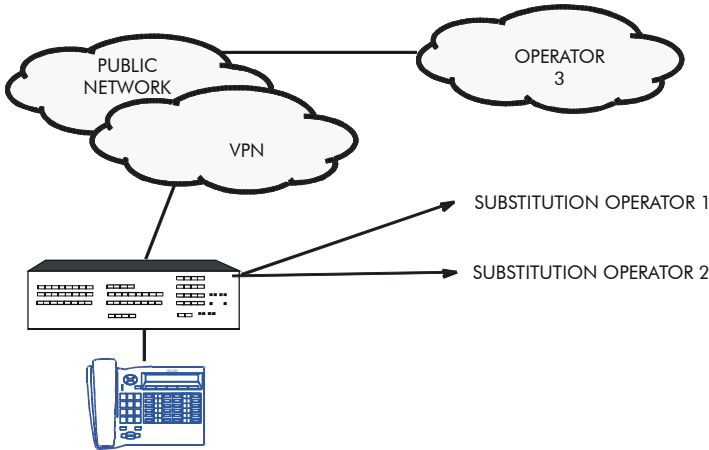


INDIRECT OPERATOR

This environment makes it possible to redirect calls to operators offering attractive rates, for international calls for example.

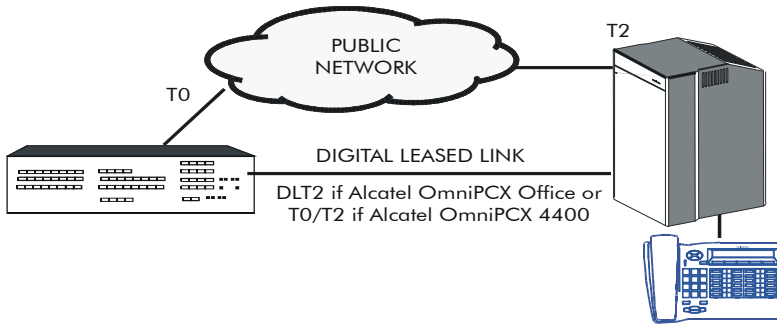
Depending on the analysis of the requested number, the ARS automatically redirects the call, transparently for the user, to another indirect substitution network and then retransmits the destination number as follows:

- seizure of a line in the network of the main operator
- dialing the access code or the number of the indirect operator
- waiting for an intermediary tone (or pause)
- switching into transparent MF dialing
- optional transmission of the account code (waiting for a 2nd tone or pause)
- waiting for a second intermediary tone (or pause)
- dialing the destination call number



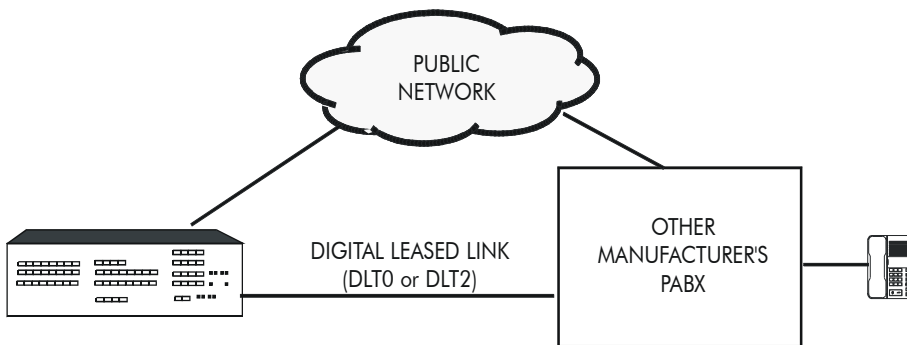
ISVPN ON LEASED/PUBLIC LINKS

Using the proprietary ISVPN protocol on leased digital links makes it possible to connect an Alcatel OmniPCX Office system with an Alcatel OmniPCX 4400 system or another Alcatel OmniPCX Office/Office system.



QSIG-BC

The QSIG protocol on digital leased links can be used for interconnecting an Alcatel OmniPCX Office with a system from another manufacturer.



Features

OPTIMIZED FORWARDING AND TRANSFER (digital networks only)

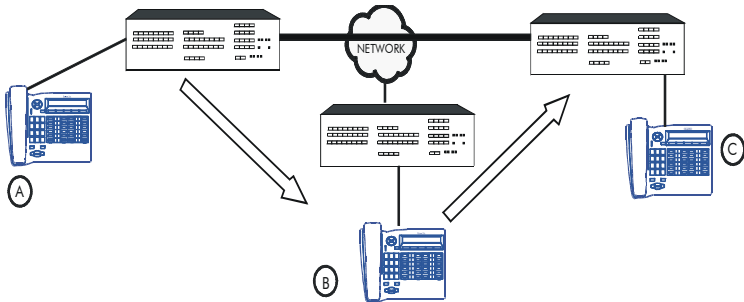
The path used by a call can be optimized in the following cases:

- immediate forwarding
- external dynamic forwarding
- external forwarding of operator calls
- transfer

Optimized immediate forwarding

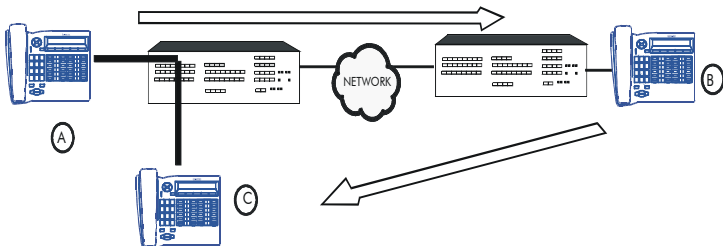
Optimization of the path is carried out by rerouting the call.

- Optimization of the path between 3 nodes



A (1st node) calls B (2nd node) forwarded on C (3rd node). The result of the optimization corresponds to a direct call from A to C.

- Optimization of the path between 2 nodes



A (1st node) calls B (2nd node) forwarded on C (1st node). The result of the optimization corresponds to a local call from A to C.

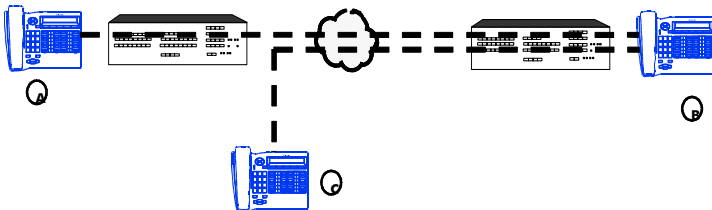
Nota :

The same rules apply to the other types of forwarding.
 If the forwarding destination calls the forwarding initiator, then the forwarding is overridden.
 The maximum number of successive forwardings can be defined with a flag (transmission threshold: 5 by default).

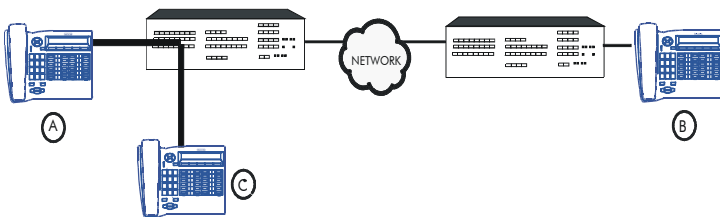
Optimized transfer

The optimization mechanism is applied when the 2 external correspondents are on the same ISVPN node; the transfer can be monitored (connected) or not (on ringer).

Situation: B (master) is in communication with 2 correspondents (A and C) on the same system.



Optimization: the 2 communications are released and resynchronized on the remote system: a local call is made from A to C.



NETWORK FORCING (forced dialing)

For reasons of cost, a call from a public network user can be made to use private links as a priority, followed by public lines if the private network is completely busy.

OVERFLOW

When a destination can be joined in several ways and one of the paths fails (no more resources available for example), the ARS automatically tries to take another path (private network -> public network or vice versa, from one public operator to another).

Overflow is controlled by the barring and traffic sharing mechanisms.

Overflow can also be applied to data communications after compatibility controls.

BREAK-IN / BREAK-OUT

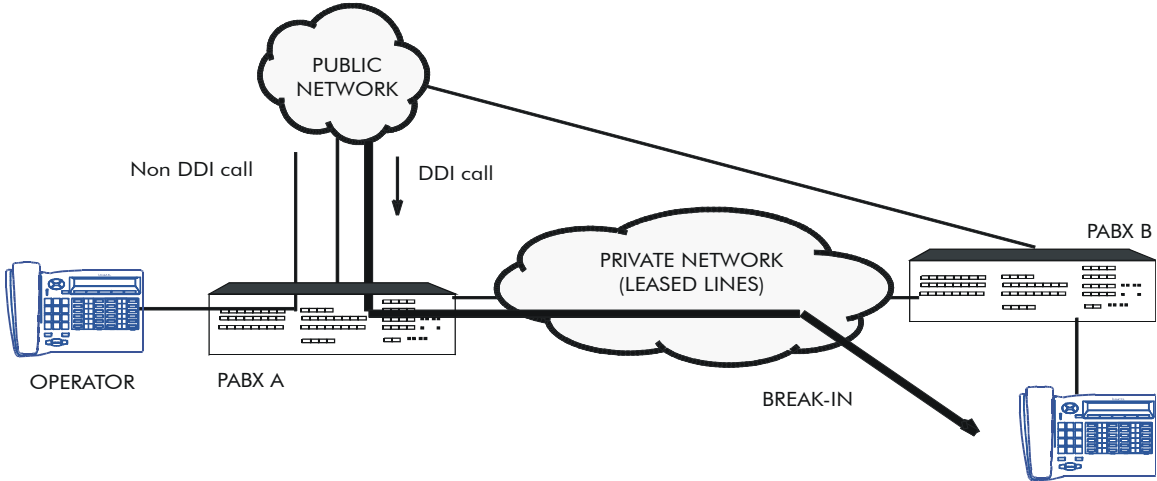
Break-in and break-out services make it possible to carry out inter-establishment communications from a private network; this is realized with the use of lines leased between 2 or more PABXs belonging to this private network.

Break-in

This service corresponds to the transit of incoming calls from the public network to a private network via leased lines; thus, an external correspondent can join a private network user who is not connected to the same system as the line on which the call is routed.

Break-in can be implemented in 2 ways:

- automatically by DDI numbers
- manually by the operator (joining by transfer)



For the caller, it is also possible to set up a simple directory (a single group of numbers to call all users from one or several sites).

Manual break-in

This is a joining by transfer between a T0/T2 access or a TL and a leased line.

In this case, the external correspondent accesses the line leased between PABXs A and B only through an operator; the operator of PABX A puts the caller on hold, establishes an enquiry call communication (seizure of the leased line + number of the remote subscriber) then carries out a transfer.

Settings:

▼ According to the environment (analog/digital), authorize the various joinings between external lines:

- by MMC-PM5 (Expert View), select: **System Miscellaneous-> Traffic Sharing and Barring -> Joining** -> check the boxes to authorize the necessary joinings.

▼ At system level, authorize external/external transfers select

- by MMC-PM5 (Expert View) select: **System Miscellaneous-> Feature Design** -> check Transfer Ext/Ext

▼ For each set, authorize external/external manual transfers select

- by MMC-PM5 (Expert View) select: **Subscribers/Basestations List-> Subscribers/Basestations List -> Details-> Cat. service** -> check "Join Incoming and Outgoing" and "Join Outgoing and Outgoing".

Automatic break-in

The public network correspondent joins a remote system subscriber using his DDI number (this service is only offered for calls routed on T0 or T2 access and personalized lines).

Configuring with MMC-PM5:

The numbering plan for public incoming calls and ARS mechanisms enable correspondence between the DDI number coming from the public network and the subscriber (or hunting group) directory number in the private network.

Remarques :

- there is no monitoring (barring, traffic sharing) on break-in calls
- if the break-in call fails, the call is handled depending on the configuration of the analog protocol or the table corresponding to incoming calls for digital leased lines (forwarded to operator or re-leased).
- manual call pick-up (with RSP key) from a member of the operator hunting group is impossible in call phase (before remote connection or re-routing to operator).
- distribution of a welcome message on a break-in call is impossible.

CALL SERVER : PRIVATE NETWORKS

THE NETWORK OFFERING

Break-out/Proximity break-out

- Break-out

A break-out makes it possible for the user of PABX A to call, via leased lines, a public network user by using lines external to PABX B.

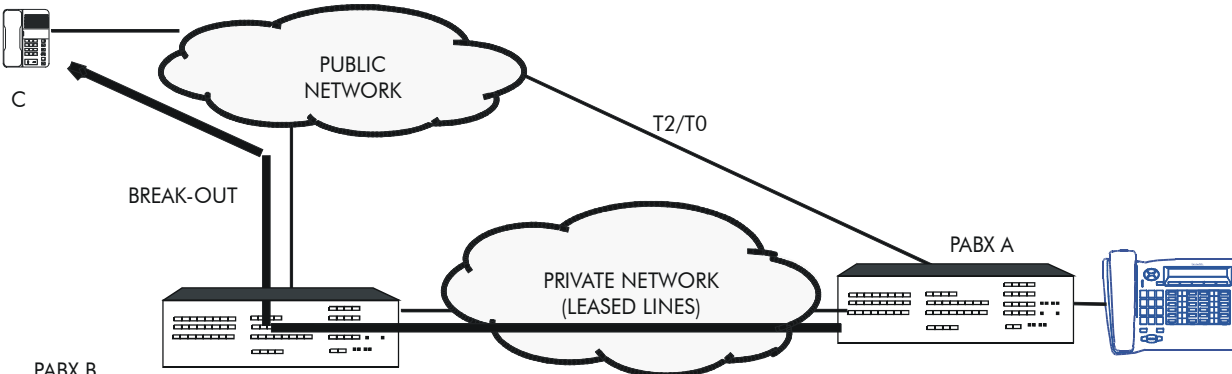
- Proximity break-out

A proximity break-out is a special use of the break-out: a call to the public network can be guided in order to exit via the public accesses which are closest to the destination.

Example: a PABX A user (STRASBOURG) calls C (PARIS); the call is redirected on the private network between PABXs A and B (PARIS) in such a way that it exits via B's public accesses.

This feature makes it possible to offer communications which are advantageous from a cost point of view; there are 2 ways of calling a public user from A:

- direct call by the public network; in this case, the communication is charged in full.
- exit via A; thanks to the line leased between the 2 PABXs, only the part of the call from PABX B is charged.



The following break-outs are possible:

- incoming call on leased line -> ISDN
- incoming call on leased line -> analog public network

The break-out can be implemented in 2 ways:

- automatically
- manually (transfer by operator for example)

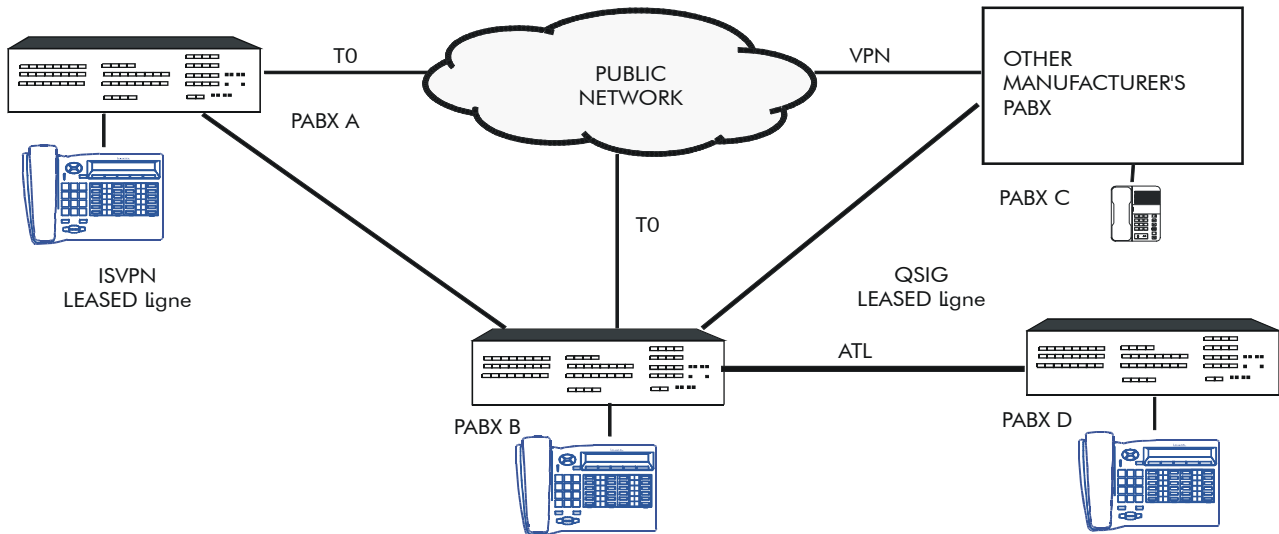
The ARS tables can be programmed so that the automatic break-out mechanism is used (overflow or forcing on the private network).

There is no monitoring (traffic sharing, barring) on break-out calls (PABX B); all these mechanisms must be set up on the caller side (PABX A).

There is no operator recall in the following cases of failure (the call is released):

- the trunk group is busy
- ISDN releases the call, the time-out for awaiting the 1st digit or interdigit having elapsed

TRANSIT



PABX B enables the transit of the following communications:

- from a user A to users of PABXs C and D
- from the public network to users of PABXs C and D

These communications are established by:

- public or private break-in -> private
- private break-out -> private or public

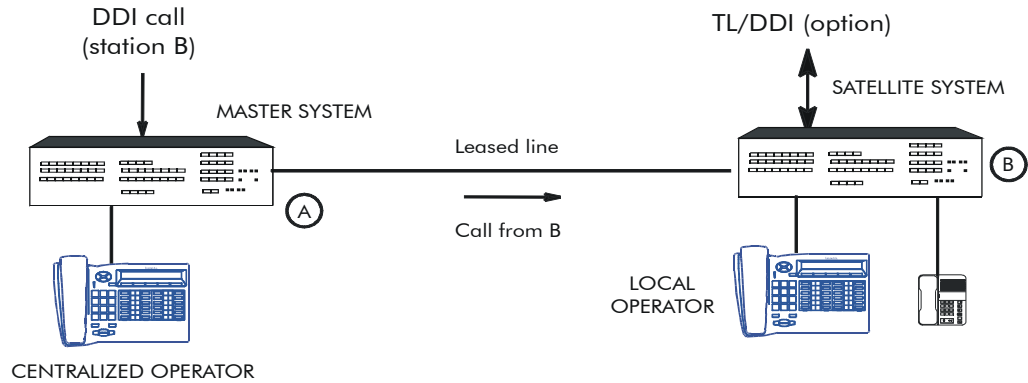
The transit system acts as an access between the different protocols used; the level of service offered depends on the protocols implied in the communication:

- QSIG <-> ISVPN: services offered by QSIG
- ISVPN on public line <-> ISVPN on leased line: ISVPN services
- VPN (ISDN) <-> ISVPN or QSIG: ISDN services

CENTRALIZED OPERATOR

An incoming call, in transit on a PABX or transferred whilst ringing (unsupervised transfer) on a leased line, which is not answered after a certain amount of time, is automatically re-directed to the operator of the system which received the call.

The CENTRALIZED OPERATOR, the name given to this feature, is organized around the PABXs connected to the network over leased lines. One of the PABXs, configured as the "Master", will have the CENTRALIZED OPERATOR STATION. The other "Satellite" PABXs may also have local operators.

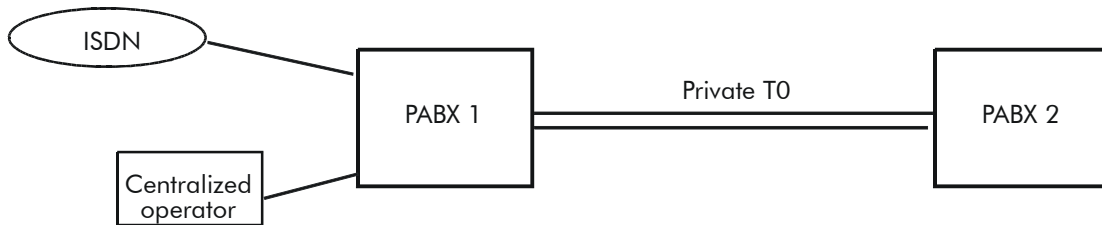


Environment

When installing this feature on a PABX network, the following must be taken into account:

- A specific programming procedure, performed for each PABX in the network, makes it possible to configure a Master PABX and Satellite PABXs. The operator of the PABX configured as the Master becomes the Centralized Operator.
- Only incoming calls issued from the TL, T0 or T2 network interfaces of the Master PABX go through the centralized operator mechanism. Nevertheless, Satellite PABXs can be equipped with network junctors and a local operator thus enabling autonomous management of their traffic.
- An incoming call routed to the centralized operator benefits from the welcome message mechanism, if it is active.
- The display on the centralized operator is usually provided for incoming calls which are routed to it.
- An incoming call which is considered as "non telephone" by the system, is not subject to the centralized operator mechanism. For example, an incoming T0 ISDN call a G4 Fax service.

Configuring a network with external lines on only one PABX



Only the ISDN external calls and the external communication transfers using these lines are taken into account.

The dynamic forwarding feature is used on these subscribers; forwarding is carried out by a speed dial number.

- program this new speed dial number in PABX 2 (N° 8000 for example) with the PABX 1 operator as destination; the trunk group assigned to this speed dial number must be a logical direction for optimization to be effective.

Numbering -> Collective Speed Dial -> Add -> Trunk Group No = X

- program the PABX 2 subscribers supporting dynamic forwarding.

Subscribers/Basestations List -> Subscriber (select) -> Details -> Dyn. Rout. -> Timer T1 = length of ring, External Calls level 1 = X in T1 use , Destination N° = 8000

The external calls concern DDI direct calls (break-in).

If the called subscriber replies before time-out and wants to transfer a call to PABX 1, then Transfer Ext/Ext must be authorized.

System Miscellaneous -> Feature Design -> Add -> X to Transfer Ext/Ext

If the same subscriber transfers to a PABX 2 user, two options are offered in the event of no reply:

- the set keeps ringing
- the call goes to the Centralized Operator; when this happens, program dynamic forwarding on the sets:

Subscribers/Basestations List -> Subscriber (select) -> Details -> Dyn. Rout. -> Timer T1 = XX, Internal Calls level 1 = X in T1 use, Destination N° = 8000

Disadvantage: local calls are also forwarded to the Centralized Operator.

- the operator's local calls (9) can also be transferred to the Centralized Operator:

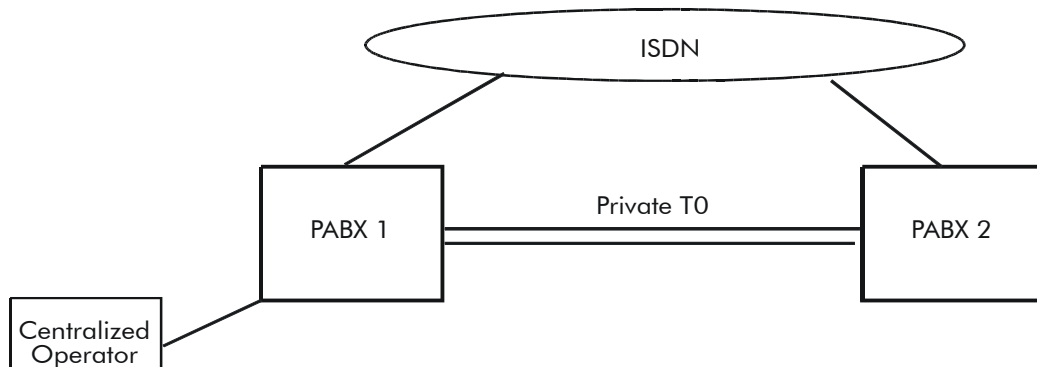
Numbering -> Internal Numbering Plan -> Function = Secondary Trunk Group, Start and End = 9, Base = 0, NMT = keep, Priv = yes

CALL SERVER : PRIVATE NETWORKS

THE NETWORK OFFERING

Numbering -> Automatic Routing Selection -> ARS Table -> Network = priv, Prefix = 9, Replace = Centralized operator number Trunk Groups List = private, Called = Hom

Configuring a network with external lines on each PABX



If there is no local operator in PABX 2, use the programming shown in the previous example.

When there is a local operator in PABX 2, this operator can be put in or out of service by using the "Attendant Diversion" key.

- the PABX 2 sets which have forwarding are in dynamic forwarding on their operator.

Subscribers/Basestations List -> Subscriber (select) -> Details -> Dyn. Rout. -> Timer T2 = XX, External Calls = X in T1 use, Level 2 = X in T2 use, X in Routing to Gen. Level, X in Diversion Apply

- to program an "Attendant Diversion" key.

Subscribers/Basestations List -> Subscriber (select OS) -> Details -> Keys -> Type = Function Key -> Function = Attendant Diversion, Number = 8000

Set up from the Operator:

- press the "Attendant Diversion" key
- operator code (1954 by default); the LED associated with the key flashes.
- to cancel: same procedure
- it is also possible to use the time ranges during which forwarding is active.

System Miscellaneous -> Time Ranges -> Auto Routing Destination = 8000, Activated Manually = yes in the Routing Time Ranges

The operator's internal calls (9) follow the diversion (not the internal calls).

Call handling

The table below describes the reactions of a centralized operator network with or without a satellite local operator.

SITUATION	SAT. WITHOUT LOCAL OPER.	SAT. WITH LOCAL OPER.
The call N° in the satellite does not exist or is incomplete	The centralized operator is rung	The time-out (ReroutOpe) starts up The local operator is rung
No ATL available	The centralized operator is rung	
No connection rights		
The called party is released	The time-out (ReroutOpe) starts up The set is rung	
The called party is grade 1 busy	The time-out (ReroutOpe) starts up If the satellite has the right to camp on, then the call is camped on; if not, the centralized operator is rung	The time-out (ReroutOpe) starts up If the satellite has the right to camp on, then the call is camped on; if not, the local operator is rung
The called party is grade 2 busy	The centralized operator is rung	The time-out (ReroutOpe) starts up The local operator is rung
The call N° is out of service		
The called party is in DND		
The time-out (ReroutOpe) expires	The call is directed to the centralized operator	
The incoming call is transferred to the satellite	The time-out (TransfeTim) starts up The set is rung	
The time-out (TransfeTim) expires	Depending on configuration of "Master recall" to the centralized operator the call is: - either routed to the centralized operator - or routed to the initiator of the transfer. When the time-out (Duration of Hold Recall Ringing) has lapsed, the call is directed to the centralized operator	

EXTERNAL FORWARDING OF OPERATOR CALLS

This service makes it possible to forward all operator calls (local calls, public and private incoming calls, operator recalls, dynamic forwardings) to a public or private external destination.

For a more detailed description, see the relevant section in "Telephone Features".

AUTOMATIC CALL-BACK ON BUSY TRUNK GROUP

If a call goes through ARS mechanisms and if all the configured trunk groups are busy, it is possible to activate an automatic call-back request on a busy trunk group. The user is called back as soon as a line in the first trunk group (traffic sharing) proposed by the ARS mechanisms is released.

DISTRIBUTION IN A PRIVATE DIGITAL NETWORK

- The handling of external calls (on public lines) and internal calls (on leased lines) can be configured differently.
- by MMC-PM5 (Expert View), select: **External Lines-> Incoming Call Handling**. For each type of line, you can define the actions (call released or forwarded to the operator) in the following situations:
 - depending on whether the caller is public or private
 - called party busy 2nd degree
 - other called party status (in Do Not Disturb forwarding, out of service, recall situation following a transfer failure)
 - misdial

In the case of unanswered calls on leased lines, the dynamic forwarding mechanisms of an internal (local) call relative to the called set are applied.

PRESENTATION OF CALLS

- Presentation to the called party
You can select the presentation mode for private calls:
 - presentation as local call:
 - internal ringer
 - number of the caller not memorized in the directory of last callers (except if the call has a UUS)
 - no welcome message option
 - presentation as external call:
 - external ringer
 - number of the caller memorized in the directory of last callers
 - welcome message option

- by MMC-PM5 (Expert View), select: **System Miscellaneous-> Feature Design -> Private Call Presentation**

- Presentation to the caller

On the caller's set, the display always shows the number dialed by the user (not the one after modifications by the ARS).

The number can be replaced by the name (name received if ISVPN, or name in the personal or collective speed dial numbers).

- Transfer

In case of a transfer within an ISVPN network, the ISVPN subscribers' displays are handled as if they were in the same system. Especially after a transfer of an incoming call from user A to user B in a different node, the display of B indicates the external caller rather than the user A.

- Diversion/Dynamic routing

If an incoming call to subscriber A is diverted to subscriber B in a different node, the call is presented to B with the name of A on the display. Currently, only the number of A is displayed.

CALLED PARTY STATUS

During an outgoing call, the ISVPN protocol makes it possible to signal to the caller whether the called party is busy; the called party's busy status is only indicated by a message on the caller's display; there is no audio indication (the caller always hears the call-back tone transmitted by the network).

INTRUSION

When the remote correspondent is busy, the ISVPN protocol makes it possible to intrude on this set (unless it is protected against intrusion).

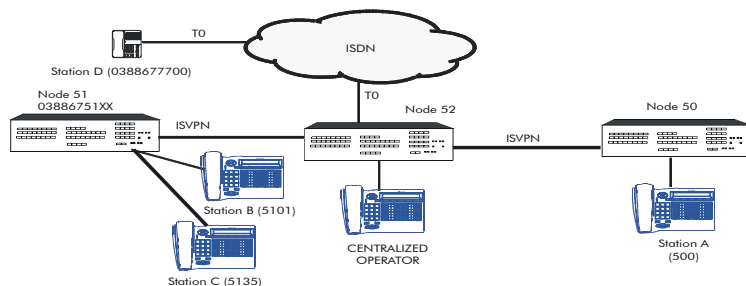
CALL SERVER : PRIVATE NETWORKS

THE NETWORK OFFERING

INFORMATION DISPLAYED

ISVPN on leased lines

Example:



Call	Number dialed	Number transmitted	Caller's display	Called party's display
A -> C	5135 (private network call)	5135 on leased line	Name of C	Name of A
B -> C	5135 (local call)	5135	Name of C	Name of B
B -> OPER.	9 (private network call)	9 on leased line	Name of operator	Name of B
B -> D	00388677700 (public network call)	0388677700 by break-out	0388677700 or name of D (if managed locally)	0388675101

Forwarding

For a call on digital lines (ISDN or QSIG) and if the called party is forwarded, it is possible to define, using MMC-PM5 (Expert View), the identity which is transmitted to the rung set:

- either that of the caller (set B in the example)
- or that of the called set (forwarded set A)

- by MMC-PM5 (Expert View), select: **System Miscellaneous** -> **Feature Design** -> check one of the 2 boxes o CLI Transmission or o CLI is Diverted Party.

SUMMARY TABLE

Features	VPN	ISVPN "Public"	ISVPN "Private"	QSIG	ISVPN+
Differentiation between public and private calls	YES	YES	YES	YES	YES
Internal or external incoming call handling	YES	YES	YES	YES	YES
Break-in/break-out	--	--	YES	YES	YES
CLIP/CLIR	YES	YES	YES	YES	YES
COLP/COLR	--	--	--	YES	YES
Non answered calls repertory	YES	YES	YES	YES	YES
Sub-addresses	YES	YES	YES	YES	YES
Display of caller	--	YES	YES	--	YES
Optimization of the transfer	--	YES	YES	--	YES
Optimization of forwarding	--	YES	YES	--	YES
Indication of forwarding on the centralized operator	--	YES	YES	--	YES
Transporting of the name in UUS	--	YES	YES	--	YES
Intrusion	--	YES	YES	--	YES
Information on metering sent to the master in Master/Satellite configurations	--	--	--	--	YES

PRINCIPLES OF ARS MECHANISMS

File

2

OVERVIEW

ARS is a mechanism which, during the routing of a call:

- forces the use of the most appropriate path according to the number dialed.
- chooses another path if the most appropriate one is overloaded.

This mechanism is applied independently of the type of:

- trunk group: public or private
- handling: analog or digital
- call: voice or data

ARS is completely transparent for the user; the number dialed is, if necessary, modified automatically according to the chosen itinerary.

The ARS mechanism can be applied for the following calls:

- outgoing call with manual dialing:
 - without specific line seizure
 - with specific public line seizure
 - using resource keys assigned to a trunk group
- outgoing call with automatic dialing:
 - call keys
 - personal and collective speed dial numbers, call by name
 - last number redial, temporary memory number
 - last callers directory
- all types of forwarding and routing to an external destination
- VPN configurations (Transgroupe/heterogeneous network) for converting a public number into a private number (incoming call) or vice versa (outgoing call).

CONFIGURING ARS PARAMETERS

ARS is implemented when the "Base" field is empty for the "Main trunk group seizure" and "Secondary trunk group seizure" features in the main numbering plan and the numbering plans for private and public incoming calls.

Main numbering plan

Start	End	Base	Function	NMT	Private
XXXX	XXXX		Main trunk group	Keep or Drop	Yes/No
XXXX	XXXX		Secondary trunk groups	Keep or Drop	Yes/No

Base: if this field is empty, the call is of type ARS; if not, it is a trunk group call.

NMT: this field defines whether the digits defined in the "Start" and "End" fields are absorbed or conserved.

Priv: this field is a reference for the "Network" parameter in the ARS table:

- Yes: the outgoing number in the numbering plan is compared to the entries in the ARS table with "Network" = Private.
- No: the outgoing number in the numbering plan is compared to the entries in the ARS table with "Network Identifier" = Public, Urg. or Code auth.

After analysis and possible modification by the NMT, the outgoing digits in the numbering plan are entered in the ARS table.



ARS TABLES

The installer determines the numbers or parts of numbers in front of the ARS handling. For each destination defined by a prefix, it creates a "trunk group list". For each index in the list, it is possible to assign one or several trunk groups and commands for modifying the dialing.

The ARS prefix replaces the external seizure prefix. On recognition of the prefix, the system determines the associated "trunk group list". The ARS mechanism therefore uses the route by activating the call on the corresponding trunk group. If the trunk group is busy, the next programmed route is used.

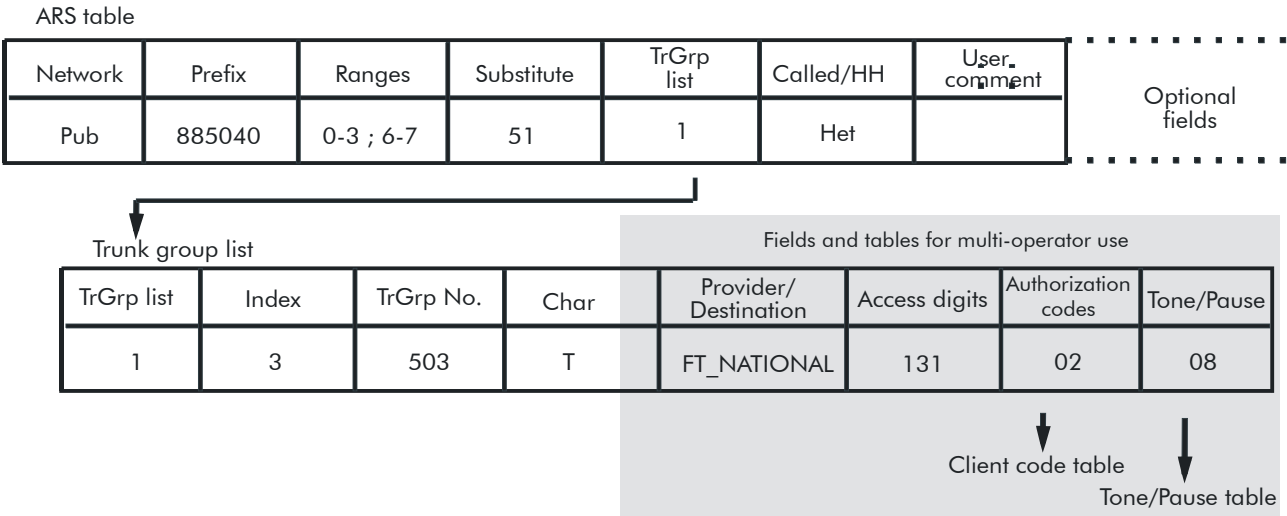
Nota : In some instances, the equivalent French acrostic "ADL" may be found instead of "ARS".

USE OF THE VARIOUS TABLES

- The various parameters required for ARS mechanisms are configured using MMC-PM5 (Expert View) only

- by MMC-PM5 (Expert View), select: **Numbering -> Automatic Routing Selection.** -> then configure the following tables:
- ARS table
 - Trunk groups list
 - Hours table
 - Day table
 - Providers / Destinations
 - Authorization codes
 - Tone/Pause
- ARS miscellaneous

- Structure of the main tables:



- Dimensions:

Max. number of prefixes (= number of lines in each of the 2 tables): 120

Max. number of entries in the trunk group lists (= number of lines in each of the 2 tables): 120

Max. number of ranges: 120.

ARS TABLE

Base fields:

These fields are necessary and sufficient for the majority of network topologies.

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Pub	885040	0-3; 6-7	51	2	Het.	
			885040	1		

As many trunk group lists as are authorized can be allocated to each prefix; by default no prefix is defined.

Network: this network identifier defines the prefixes as public prefixes (Pub), private prefixes (Priv), public emergency numbers (Urg) or public access codes (Code auth.).

Prefix: an empty field (default value) corresponds to the numbers which do not correspond to any prefix for the network identifier concerned.

Ranges: this is used both for outgoing and incoming calls; there is no range for public emergency numbers or public access codes. It is possible to enter several ranges (separate them using the ";" character) within the authorized limits (see previous page).

Substitute: the ARS prefix can be modified by the contents in this field.

- prefix = empty; replace = empty: transparent dialing in the ARS table.
- prefix = empty; replace = XXX: addition of digits XXX
- prefix = XXX; replace = empty: absorption of digits XXX
- prefix = XXX; replace = XXX: no modification (no addition nor absorption)
- prefix = XXX; replace = YYYY: XXX replaced by YYYY

TrGp list: this field defines the index for one or several selected trunk group lists. Priority is given to the trunk groups in the first list, in the order of programming, then to the second list, and so on.

Called/HH: the called party belongs to a homogenous network (Alcatel OmniPCX or Alcatel 4400) or a heterogeneous network (systems made by different manufacturers).

User comment: the information entered in this field is memorized in the system.

Optional fields:

Metering	Caller	Called/PP
	Priv	Pub
Overflow	Pub	Pub

Metering: only significant for a centralized metering application (NMC), this field is only used for entering additional information in the metering data:

- field empty
- overflow
- network (private network forcing)
- VPN
- VPN + network
- VPN + overflow

Description of the "Caller" and "Called" parameters

The following fields are to be filled in for specific network topologies (in the majority of cases, the default values are sufficient). These fields concern the coding and contents of the data sent in a call.

Caller: the caller's number corresponds to the private numbering plan (the caller's private number, made up from the private installation number, must be transmitted) or to the public numbering plan (the public number is made up from the public installation number).

Called/PP: the sent called party's number is public or private (field reserved mainly for VPNs; "Type of dialing plan" in the setup: Public network).

Important : Use of default values in the "Caller" and "Called" fields.

For appropriate use of default values in these fields, the installer must take the following remarks into account:

- The type of line must be configured correctly.
- By MMC-PC, select: **External Lines** -> **External Lines** ->select line -> **Details** ->select or deselect o Public Trunk:
 - a DLT2 access must be configured as a leased line (default value)
 - a T0 or T2 access must be configured as a public line (or a leased line if linked with an Alcatel OmniPCX 4400 system)
- On a private link, the caller's private number is transmitted by preference; nevertheless, if the private number is not available, the public number (break-out only) or the private installation number (call in the private network) is transmitted.
On a public link, the caller's public number is transmitted; if it is not available, no caller identification is supplied.
 - The default values are to be used for all outgoing calls to the public network (the 2 fields are public) and for all calls in the private network (the 2 fields are private).
On the other hand, it is recommended to use specific values for VPN calls (the 2 fields are private whilst the external line is public) or when the Alcatel OmniPCX Office is connected by a line leased to a particular system.

Possible combinations

This paragraph describes the significant combinations for the "Caller" and "Called" fields according to the network environment of an Alcatel OmniPCX Office system.

- for an outgoing call on a leased link (QSIG): only the following fields are significant:
 - caller = private or public
 - called = private (heterogeneous and homogenous values are also used).
- for an outgoing call on public link:
 - caller = private or public
 - called = values according to the table below:

Called/PP	Called/HH	Use
Public	Homogenous	Internal call from a user in a private network (homogenous ISVPN)
Public	Heterogen.	Outgoing call to the public network or internal call from a user in the private network (heterogeneous ISVPN)
Private	Heterogen.	Internal call from a user in the private network (heterogeneous VPN) or outgoing call to the public network by VPN private dialing (ISDN user also declared in VPN)
Private	Homogenous	Internal call from a user in a private network (homogenous VPN)

TRUNK GROUP LISTS

Each trunk group list can have as many trunk groups as are authorized within the global limits.

The "Access digits", "Authorization code" and "Tone/pause" fields are specific to MULTI-OPERATOR MODE

Example:

TrGp list	Index	TrGp. No.	Char.	Provider / Destination	Access digits	Authorization code	Tone/Pause
1	1	0		FT LOCAL			
	3	503	T	FT LOCAL	131	02	02

TrGp list: identifier for each trunk group list (see table of prefixes).

TrGp index: this field makes it possible to select one or several trunk groups identified by an index (1 to 120); for a list with several trunk groups, priority is given to the first index. LOCAL is used when no trunk is used to call the destination.

TrGp No.: this field automatically displays the directory number of each trunk group in the list.

Char: this field defines a character used in metering or on set displays (for example: T for Transgroupe).

Provider: the operator name used depends on the time range (see below).

If a label is defined for a trunk, the control system checks the validity of the label for the considered time range. If it is valid, the trunk group is selected if it respects the traffic sharing conditions. If not, there will be an overflow to the next trunk group. The presence of a label in this field implies the configuring of time slots, groups of days, etc.

Access digits: this field defines the code for accessing an indirect network.

Authorization code: index (1 to 24) in the "client code" table.

Tone/Pause: index (1 to 8) in the "Tone/Pause" table

NETWORK SERVICE PROVIDERS

This table defines the names of the various network service providers associated with a trunk group list for each time range. The table can also receive internal destinations.

TIME RANGES

The use of time ranges in the ARS allows the operator to select the route offering the best cost conditions at any given instant. Access to the operator can be direct (e.g. Cégétel) or indirect (e.g. Espadon).

Start	End	Day group	Provider / Destination 1	Provider / Destination 2	Provider / Destination 3	Provider / Destination 4
08:00		1	FT LOCAL	ESPADON	CEGETEL	
		2	CEGETEL			
		3				
12:00		1	FT LOCAL			
		2				
		3				

The table defines different time ranges and to associate providers with each day group in each range; it is also possible to enter internal destinations (the same as are indicated in the "Provider / Destinations" table).

4 providers can be associated with each combination of time range/day groups. If 2 labels out of the 4 relate to the same destination, the associated trunk groups must be different so as to enable overflow if one of the providers is busy.

If no provider is defined for a given combination, a route will be selected from amongst the trunk groups without associated provider labels, independently of the time ranges. The same mechanism applies for the days in the week or bank holidays not associated with a day group.

It is recommended to put one trunk group without provider in each trunk group list to be able to flow the call in all possible cases of figures.

Total number of time ranges: 500 maximum.

DAY GROUPS

This table defines an operating mode (carrying out a day group) for each day of the year.

- Days of the week:

In order to simplify management, the 7 days of the week are split into 7 groups (for example: the 5 working days = group 1, Saturday and Sunday = group 2)

Day of the week	Day	Month	Year	Day group
Monday				1
Tuesday				1
Wednesday				1
Thursday				1
Friday				1
Saturday				2
Sunday				2
	14	7	*	2
	1	5	*	2
	30	3	1997	2

- Bank holidays:

There is no need to define the year for fixed bank holidays (* character); for variable bank holidays, indicate the year (using 4 figures).

Nota : The data contained in this table can also be entered using MMC-Station.

AUTHORIZATION CODES (MULTI-OPERATOR MODE ONLY)

This table (24 entries of up to 10 characters) defines the secret access codes between the networks of different operators; these codes are used in establishing a specific charge for access from one network to another.

"TONE/PAUSE" (MULTI-OPERATOR MODE ONLY)

This table (8 entries max.) is indicated by the "Tone/Pause" parameter of trunk group lists. It defines the reactions when a call is redirected to an indirect network: pause duration or tone detection, automatic switch over to MF dialing.

Example:

Index	Time/Tone before Auth.(ms)	Time/Tone after Auth (ms)	Force MF
1	Tone	8	No
2	Tone		Yes

Time/Tone: the following values are possible:

- Tone: if value = 0, the PABX waits for the dial tone before transmitting the dialing on the line. Waiting for the tone is only possible on analog lines.
- XXX: the PABX waits XXX milliseconds (from 8 to 20000, in multiples of 8 ms) before transmitting the dialing on the line.

Force MF: after the access code, the network which is called indirectly can receive the digits in a signaling mode different from the one on the line in use. If the value in this field is YES, then all dialing transmitted after the access code is MF.

ARS MISCELLANEOUS (MULTI-OPERATOR MODE ONLY)

2 flags are proposed:

- Manual direct access: this flag is only analyzed if the "Prefix" field in the ARS table relates to a public access code (code auth). If the dialed number has a public access code and if the flag is not authorized, the call is rejected.
- Automatic indirect access: this flag is analyzed when the "Access digits" field in a trunk group list is filled in. When the flag is not authorized, the next line in the trunk group list is analyzed.

BASIC PRINCIPLES FOR UNDERSTANDING ARS MECHANISMS

For a particular prefix, it is possible to define several ranges

Network	Prefix	Ranges	Substitute
Priv	36	0-1; 22-23; 444-555; 6666-7777	03887766
Priv	36	24-25; 87-97	03884433
Priv	36	-	03881100

36123 dialed -> selection of the first entry (123 belonging to the range 0-1).

368899 dialed -> selection of the second entry (8899 belonging to the range 87-97).

3699 dialed -> selection of the third entry (99 not belonging to any range defined for the prefix 36).

If a range covers other prefixes for outgoing calls, the first range corresponding to the digits dialed is selected

Network	Prefix	Ranges	Substitute
Priv	36	5-6; 888-999	03887766
Priv	36	88-99	03884433
Priv	36	55-56	03881100

3655 dialed -> selection of the first entry (55-66 included in 5-6).

36889 dialed -> selection of the first entry (888-999 included in 88-99).

Different ranges cannot be defined between the fields "Prefix" and "Substitute"

36 [01-03] cannot be replaced by 03886777[51-53] -> 3 entries have to be created in the ARS table.

Network	Prefix	Ranges	Substitute
Priv	3601		0388677751
Priv	3602		0388677752
Priv	3603		0388677753

CALL SERVER : PRIVATE NETWORKS

PRINCIPLES OF ARS MECHANISMS

As soon as a prefix is recognized and if the digits dialed do not belong to the range, there is no overflow from one prefix to another

Network	Prefix	Ranges	Substitute
Priv	7	1000-7299	7
Priv	77	300-320	1

77299 dialed -> recognition of prefix 77: 299 not belonging to the range defined for this prefix, the dialed number is not taken into account by the ARS mechanisms (even though this number corresponds to entry 7[1000-7299]). To remedy this situation, configure the following ARS table:

Network	Prefix	Ranges	Substitute
Priv	7	1000-6999	7
Priv	77	000-299	77
Priv	77	300-320	77

Pay attention to overlaps in the "Substitute" field

Network	Prefix	Ranges	Substitute
Priv	36	00-99	03887766
Priv	3588	-	0388776688

There is an overlap between 03887766[00-99] and 0388776688. For incoming calls, there are 2 possible conversions of the public number 0388776688 into private numbers: 3688 and 3588. For example, to convert the public number into the private number 3588, configure the ARS table as follows:

Network	Prefix	Ranges	Substitute
Priv	36	00-87	03887766
Priv	3588	88-88	03887766
Priv	3689	89-99	03887766

For incoming calls, the public number received, 03887766XX is converted into the private number 35[88-99] if XX does not belong to the range 00-87.

Network	Prefix	Ranges	Substitute
Priv	36	00-87	03887766
Priv	35		03887766

ARS INTERACTIONS WITH OTHER SERVICES

LINE ALLOCATION

This feature is incompatible with ARS mechanisms.

BARRING AND TRAFFIC SHARING

The traffic sharing mechanism within a trunk group list or between trunk group lists can be used to authorize overflow between trunk groups for specific users.

When barring prohibits dialing on the selected trunk group, no overflow is possible and the call is released.

EMERGENCY NUMBERS

This paragraph only concerns the emergency numbers defined when the system is initialized (numbers installed in ROM).

ARS table base fields:

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Urg	-	-	-	XX		

The only possible configurations for emergency numbers ("Network" field = Urg.) are:

- prefix = empty; replace = empty: transparent dialing in the ARS table.
- prefix = empty; replace = XXX: addition of digits XXX (used for break-out).

The traffic sharing and barring mechanisms are not applied to emergency numbers (as with collective speed dial numbers).

If the emergency number is dialed after line seizure, the call goes through the ARS mechanisms if the line figures among the trunk groups in the ARS tables; if not, the number is transmitted on this line directly.

If the ARS table has no entry for emergency numbers, the trunk group associated with the default public prefix is used, if there is one; if not, the main trunk group is used.

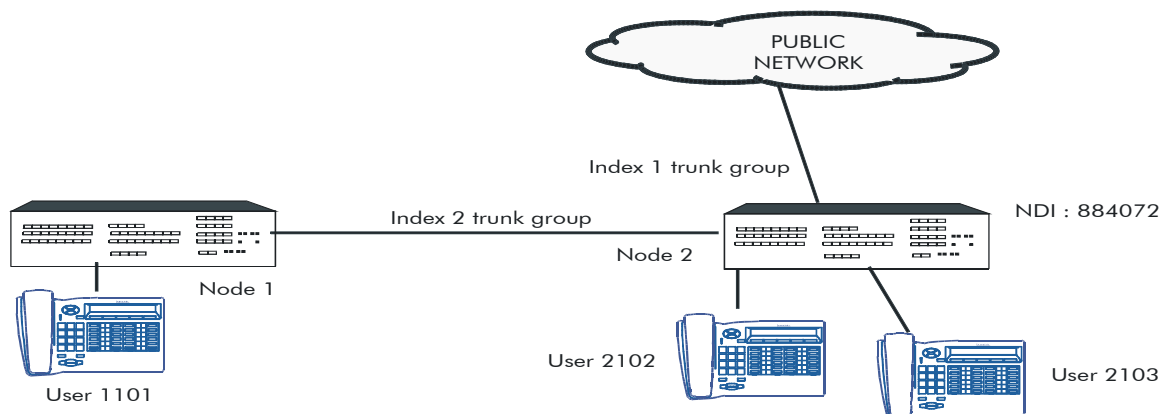
INTERNAL ARS DESTINATIONS

ARS mechanisms can handle internal destinations.

INTERNAL CALL FORCING

When a user tries to call a correspondent (connected to the same Alcatel OmniPCX Office system or belonging to the same private network) by dialing the correspondent's public number, the ARS mechanism converts the public number into an internal number, and an internal call is made.

Configuration example



"ARS Table" configuration:

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Pub	8840722	100 - 200	2			
Pub	8840721	100 - 200	1	1		

"Trunk group list" configuration:

TrGp list	Index	TrGp. No.	Char.	Provider / Destination	Access digits	Authorization code	Tone/Pause
1	2	500					

In this example:

- the public call from user 2102 to user 2103 (by dialing 08840722103) is converted into a local call by replacing 8840722 by 2; the system therefore sends the number 2103.
- the public call from user 2102 to user 1101 (by dialing 08840721101) is converted into a local call by replacing 8840721 by 1; the system therefore sends the number 1101 over trunk group 2 (as the 2 sets do not belong to the same PABX).

SELECTING THE DESTINATION ACCORDING TO THE TIME

It is also possible to route a call to different internal destinations depending on the date and time. This is achieved using overflow mechanisms between trunk group lists with the same index.

Configuration example

"ARS Table" configuration:

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Priv	5000		102	100		
			103	200		

"Trunk group list" configuration:

TrGp list	Index	TrGp. No.	Char.	Provider / Destination	Access digits	Authorization code	Tone/Pause
100	LOCAL			User 102			
200	LOCAL			User 103			

"Time Ranges" configuration:

Start	End	Day group	Provider / Destination 1	Provider / Destination 2	Provider / Destination 3	Provider / Destination 4
00:00	12:00	1	User 102			
12:00	00:00	1	User 103			

CALL SERVER : PRIVATE NETWORKS

PRINCIPLES OF ARS MECHANISMS

"Day Groups" configuration:

- All the days of the week are assigned to day group 1.

"Providers / Destinations" configuration:

Providers / Destinations
User 102
User 103

In this example, if an internal user dials 5000: a call made between 0 and 12.00 hours will be put through to set 102 and a call made between 12.00 and 0 hours will be put through to set 103.

- between 0 and 12 hours: trunk group list 100 is selected; 5000 is replaced by 102 and user 102 is called.
- between 12 and 0 hours: first of all trunk group list 100 is selected; 5000 is replaced by 102. Overflow occurs in the ARS table and the second entry (trunk group list 200) is selected. 5000 is replaced by 103 and user 103 is called.

REROUTING ON OPERATOR BUSY

Definition

When a call cannot get through because the operator is busy, this mechanism automatically reroutes it via another operator.

The rerouting mechanism is totally transparent to the user (no specific tone or display).

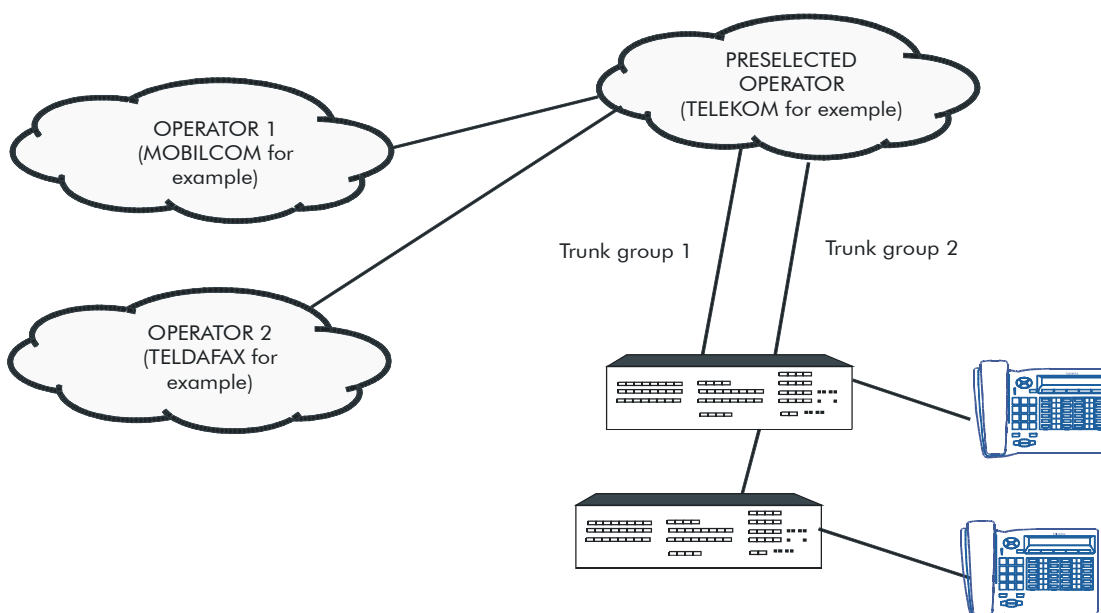
The mechanism is only offered for calls routed by ARS over ARS trunk groups (ISDN trunk groups only).

Automatic rerouting when the operator is busy is activated by the triggers defined by the "BsyPrvCaus" flag and refers to the ARS table settings.

Configuration example

In this example, at any moment of the week calls starting by 089 are processed by the operator Mobilcom, and by Teldafax if Mobilcom is busy. If Teldafax is also busy, these calls will be processed by the preselected operator Telekom.

All other external calls (calls not starting with 089) are processed by Telekom.



"Dialing plan" configuration:

- "Secondary trunk groups seizure" function: Start, End = 0; Base = ARS; NMT = Absorbed. All calls starting with 0 are ARS calls and the subsequent figures are analyzed by the ARS tables.

CALL SERVER : PRIVATE NETWORKS

PRINCIPLES OF ARS MECHANISMS

"ARS Table" configuration:

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Pub	089		089	1	Het	Operator
Pub				2		Telekom

"Trunk group list" configuration:

TrGp list	Index	TrGp. No.	Char.	Provider / Destination	Access digits	Authorization code	Tone/Pause
1	1	0		Mobilcom	01019	None	None
	1	0		Teldafax	01030	None	None
	1	0		None		None	None
2	1	0		None		None	None

"Time Ranges" configuration:

Start	End	Day group	Provider / Destination 1	Provider / Destination 2	Provider / Destination 3	Provider / Destination 4
00:00	00:00	1	Teldafax	Mobilcom	None	None
		2	None	None	None	None
		3	None	None	None	None

"Day Groups" configuration:

- All the days of the week are assigned to day group 1.

"Providers / Destinations" configuration:

Providers / Destinations
Mobilcom
Teldafax

Configuration

- Define the activation causes for the mechanism (5 causes maximum, FF indicating the end of the list of causes)

- | |
|--|
| <ul style="list-style-type: none">- by MMC-PM5 (Expert View): System Miscellaneous -> Memory Read/Write -> Misc. Labels -> "BsyPrvCaus"- by MMC-station: Global -> Rd/Wr -> Address -> "BsyPrvCaus" -> Back -> Memory |
|--|

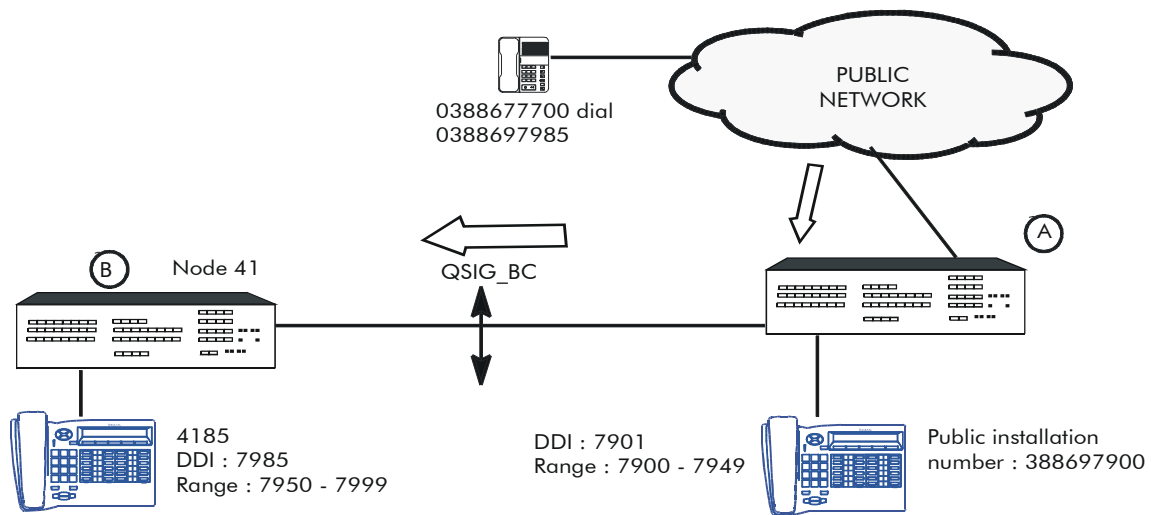
EXAMPLES USING ARS

File
3

ELEMENTARY CONFIGURATIONS

BREAK-IN

A public user calls a user of a remote system (B) by break-in in system (A).



Public numbering plan of (A)

Start	End	Base	Function	NMT	Private
7900	7949	100	Set	-	Yes
7950	7999	-	Secondary trunk group	Keep	No

ARS table of (A)

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Pub	03886979	-	41	1		

EXAMPLES USING ARS

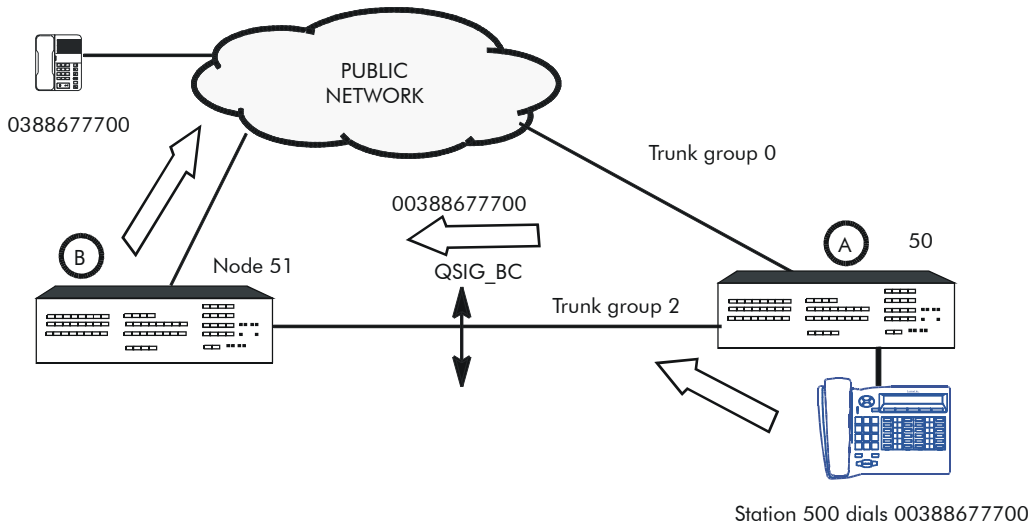
CALL SERVER : PRIVATE NETWORKS

Private numbering plan of (B)

Start	End	Base	Function	NMT	Private
4150	4199	100	Set	-	Yes

BREAK-OUT

Set 500 in system (A) (node 50) calls user 0388677700 on the public network. The ARS mechanisms force the call to use the private network.



Main numbering plan of (A)

Start	End	Base	Function	NMT	Private
0	0	-	Main trunk group	Absorb	No
51	51	-	Secondary trunk group	Keep	Yes
300	300	2	Secondary trunk group	Absorb	No

ARS table of (A)

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Pub	-	-	-	0		
Priv	51	-	51	2		
Pub	038867	-	0038867	2		
		-	038867	0		

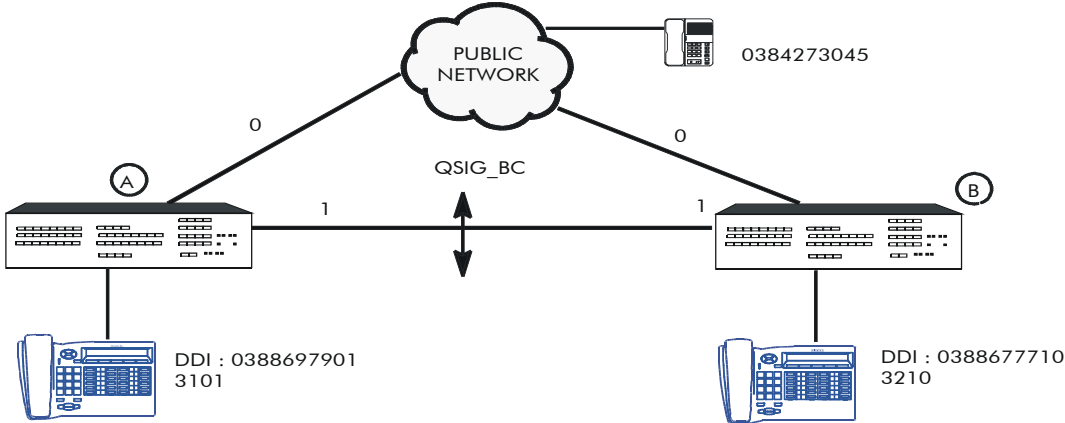
CALL SERVER : PRIVATE NETWORKS

EXAMPLES USING ARS

CONVERSION BETWEEN PUBLIC AND PRIVATE NUMBERING PLANS

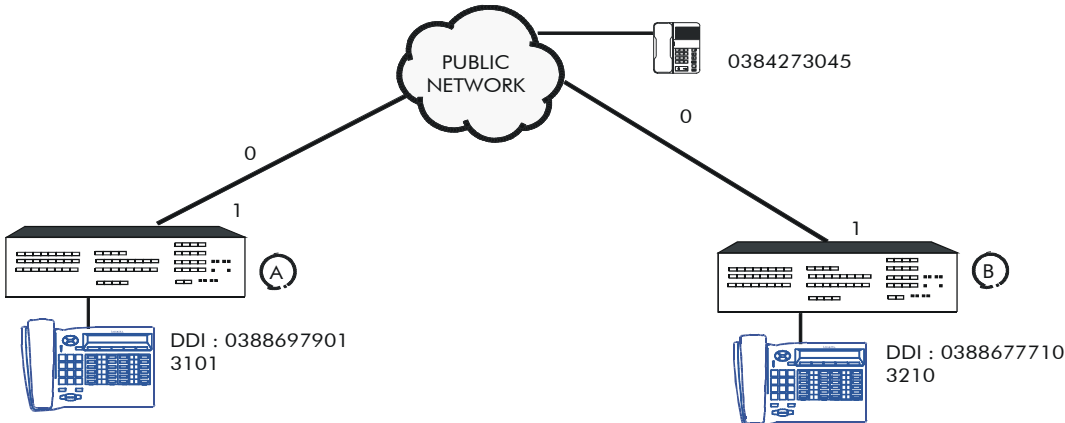
Case 1: Peer to peer - ISVPN and overflow

This configuration corresponds to a call in an ISVPN heterogeneous network or an overflow on a public link when the private QSIG-BC link is busy.



ARS table of (A) for overflow mechanism

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Pub	32	-	32	1	Heterogen.	
		00 - 99	03886777	0	Heterogen.	



ARS table of (A) for ISVPN

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Priv	32	00 - 99	03886777	0	Heterogen.	

This table entry, used for calls from (A) to (B), also makes it possible to guarantee the conversion of the caller's public number into a private one in the event of a call in the other direction.

Case 2: Peer to peer - private network forcing

ARS table of (B)

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Pub	03886979	-	31	1	Heterogen.	
		00 - 99	03886979	0	Heterogen.	

In this configuration, if user 3210 calls a user of (A) with his public number (0388697901), the call is forced to use the private link with the private number 3101.

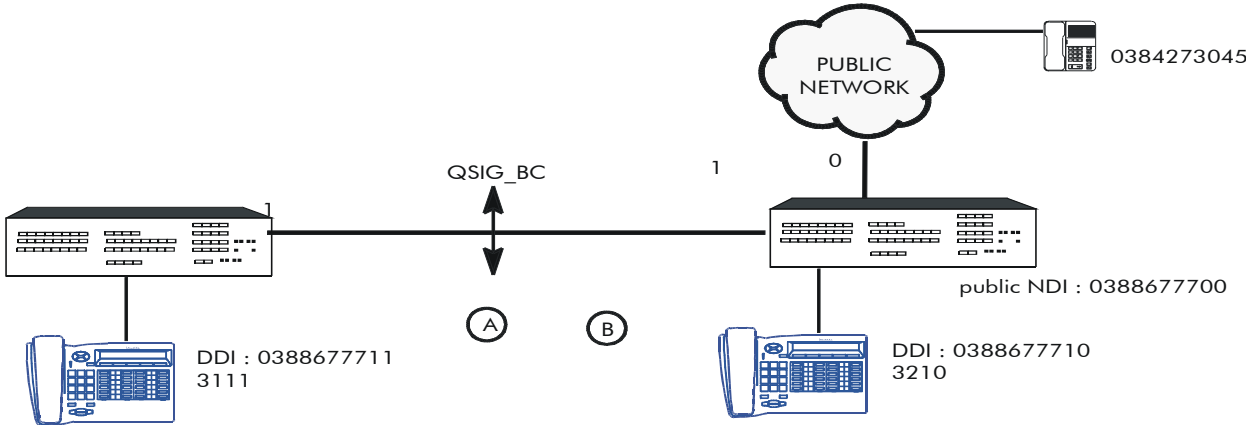
CALL SERVER : PRIVATE NETWORKS

EXAMPLES USING ARS

Case 3: master/satellite

In this configuration, the DDI numbers in (A) are managed remotely by (B); a public numbering plan in (A) is therefore not necessary if:

- (B) can convert a private number into a public number (for outgoing call by break-out).
- (B) can convert the private number of the connected set into a public number (incoming call by break-in).
- (B) can convert the public DDI number of a user of (A) into a private number (incoming DDI call by break-in destined for a (A) user).



Main numbering plan of (B)

Start	End	Base	Function	NMT	Private
0	0	-	Main trunk group	Absorb	No

Public numbering plan of (B)

Start	End	Base	Function	NMT	Private
7700	7710	100	Set	-	-
7711	7720	-	Secondary trunk group	Keep	No

ARS table of (B)

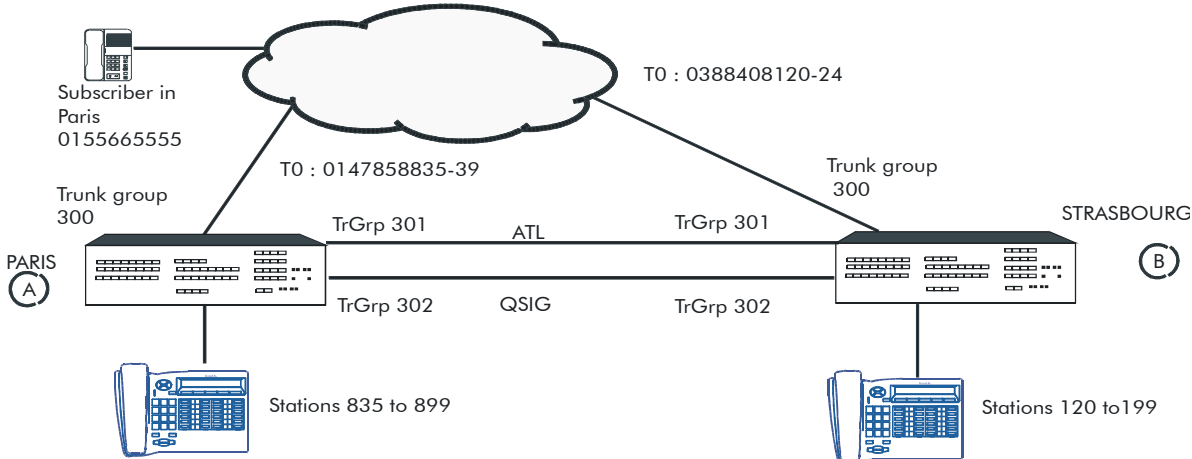
Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Pub	03886777	11 - 20	31	1	Heterogen.	

Nota : Private -> public conversion requires the full public number (ABPQMCDU) to be entered in the ARS (and not only the MCDU).

In **(B)**, these settings make the following services available:

- Break-in: a public network subscriber dials 0388677711. **(B)** receives the call and analyzes 7711 in the DDI numbering plan. The full number is handled by the ARS table and converted into the private number 3111. **(B)** can now make a private call on the QSIG link and join with the incoming public call.
- Private network forcing: for example, user 3210 dials the number 00388677711; the ARS converts this public number into the private number 3111.
- Break-out: user 3111 calls 0384273045; he dials 00384273045. The caller's number sent on the QSIG link is the private number 3111. In **(B)**, 3111 is converted by the ARS into the public number 0388677711.

TYPICAL NETWORK CONFIGURATION



OVERFLOW

Purpose:

The call from a user of (A) from a set in (B) must, in order of priority, use the QSIG link, then the analog ATL and finally the T0 public accesses.

Settings:

PABX (B)

- Main numbering plan

Start	End	Base	Function	NMT	Private
120	199	120	Set	-	No
835	839	ARS	Secondary trunk group	Keep	Yes (1)

- ARS table

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Private	8	35-39	8	1	Heterogen.	(2)
			01478588	2	Heterogen.	(4)

EXAMPLES USING ARS

CALL SERVER : PRIVATE NETWORKS

- TrGp list

TrGp list	Index	TrGp. No.	Char.	Access di- gits	Authoriza- tion code	Tone/Pau- se
1	4	302	-	-	-	- (3)
	3	301				
2	2	300	-	-	-	- (5)

- Private numbering plan

Start	End	Base	Function	NMT	Private
120	199	120	Set	-	No

PABX **(A)**

- Main numbering plan

Start	End	Base	Function	NMT	Private
835	899	835	Set	-	No

- Public numbering plan

Start	End	Base	Function	NMT	Private
8835	8899	835	Set	-	No

- Private numbering plan

Start	End	Base	Function	NMT	Private
835	839	835	Set	-	No

Call description:

- (1): a user of **(B)** dials **836**, number recognized as ARS call in the main numbering plan with conservation of the private prefix declared (836).
- (2): in the ARS table, the system consults the line corresponding to the private prefix **8** and compares the rest of the numbers with the range **35-39** (36 in this case).
- (3): the system guides the dialing to trunk group list 1 then tries to establish a communication with trunk group 302 (QSIG); if this trunk group is busy, the system tries to establish the communication with trunk group 301 (ATL).
- (4): if the ATL trunk group is busy, the system returns to consult the ARS table; it replaces **8** with **01478588** followed by **36**.
- (5): the dialing is guided to trunk group 2; the communication is established with the public T0 trunk group (if this trunk group is not available, the call is released).

CALL SERVER : PRIVATE NETWORKS

EXAMPLES USING ARS

Remarks:

- the 2 lines of the private numbering plans of (A) and (B) make it possible to display the internal number on the QSIG link.

NETWORK FORCING (forced dialing)

Purpose:

To force dialing on the QSIG link, then on the ATL and then on the public T0 accesses when a (B) user dials the public number **00147858835-39**.

Settings:

Add the following elements to the PABX settings (B):

- Main numbering plan

Start	End	Base	Function	NMT	Private
0	0	ARS	Main trunk group	Absorb	No (6)

- ARS table

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Public	01478588	35-39	8	1	Heterogen.	(7)
			01478588	2	Heterogen.	
Public	Empty	Empty	Empty	2	Heterogen.	(8)

Call description:

- (6): a user of (B) dials **00147858835-39**; 0 is interpreted by the main numbering plan as a public ARS call with absorption of the 1st 0 and sends the number to the ARS table.
- (7): **0147858835-39** is recognized in the ARS table; it is replaced by **835-39** and sent on trunk group list 1 (QSIG then ATL). If all of these trunk groups are busy, the system returns to consult the ARS table and **0147858835-39** is sent on trunk group list 2 (public T0 access - the same goes for overflow).
- (8): if the user dials a number other than **0147858835-39**, the system sends this number to the ARS table; the call is routed on the public T0 accesses.

EXAMPLES USING ARS

CALL SERVER : PRIVATE NETWORKS

BREAK-OUT (proximity break-out)

Purpose:

To use the T0 access of (A) if a user of (B) dials a number beginning with 01.

Settings:

Add the following to the ARS table of PABX (B):

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Public	01	-	001	1	Heterogen.	(9)

Add the following elements to the settings for PABX (A):

- Private numbering plan

Start	End	Base	Function	NMT	Private
0	0	ARS	Secondary trunk group	Keep	No (11)

- ARS table

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Public	0	-	-	1	Heterogen.	(12)

- Trunk Group list

TrGp list	Index	TrGp. No.	Char.	Access di-gits	Authoriza-tion code	Tone/Pau-se
1	2	300	-	-	-	- (13)

Call description:

- (9): if a user of (B) dials **001XXXXXX**; the first 0 is absorbed by the main numbering plan (see previous example); the system sends **01XXXXXX** back to the ARS table where it is replaced with **001XXXXXX** and sent on trunk group list 1.
- (11): in (A), the call is received in the ATL numbering plan where it is considered as a public ARS call.
- (12): in the ARS table of (A), **001XXXXXX** is truncated by cutting the 1st 0.
- (13): the number is sent on trunk group list 1 (public T0 accesses of (A)).

BREAK-IN

Purpose:

CALL SERVER : PRIVATE NETWORKS

EXAMPLES USING ARS

To make a call from **0388408124** on PABX **(B)** arrive at set **836** on PABX **(A)** (after someone has moved to new office, for example).

Settings:

Modification of the public numbering plan of PABX **(B)**:

Start	End	Base	Function	NMT	Private
8120	8123	120	Set	-	No (14)
8124	8124	ARS	Secondary trunk group	Keep	No (15)

In the ARS table of PABX **(B)**, add:

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Public	0388408124	-	836	1	Heterogen.	(16)

Call description:

- (14): the range of DDI numbers is modified in order to retrieve a number.
- (15): an incoming call for user **0388408124** is analyzed by the public numbering plan as an ARS call with conservation of the prefix.
- (16): the number arriving in the ARS table is changed to **836** then sent on trunk group list 1.

Nota : Identification of a public call as a private call.

In the event of overflow, during a call on the QSIG link from **(B)** to **(A)**, the display on a set belonging to **(A)** states the internal number of the user of **(B)** (for example: 121 calls 835; the display on set 835 states "121 calling").

On the other hand, if the call is sent via the T0 accesses (if QSIG and ATL busy), the display states the public number (in the example, the display on set 835 states "0388408121 calling").

EXAMPLES USING ARS

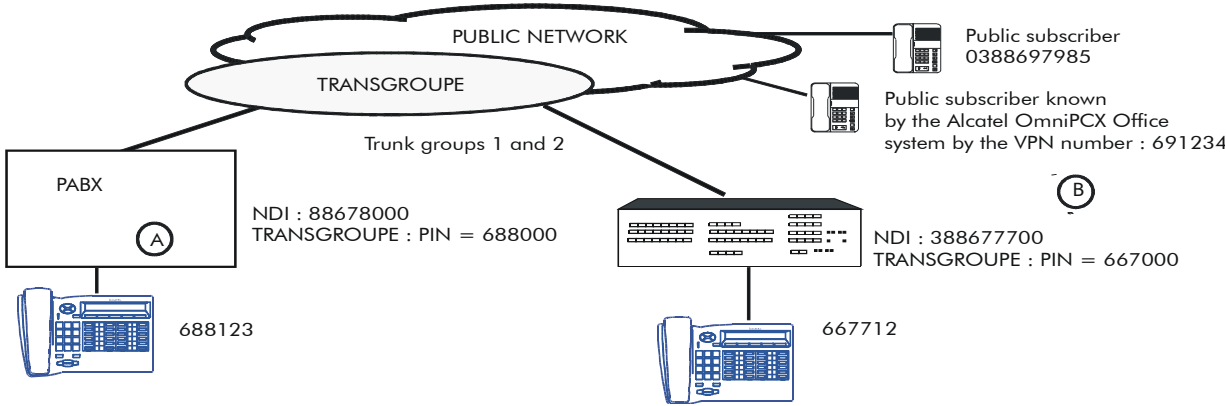
CALL SERVER : PRIVATE NETWORKS

To convert public numbers into private numbers, add the following line into the ARS table of **A**.

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Private	1	20-23	03884081	1	Heterogen.	

In this case, an incoming call **0388408120-23** is converted into the internal (private) number **120-23**.

TRANSGROUPE VPN



The Alcatel OmniPCX Office (B) system, as a member of Transgroupe (PIN = 667000) must be configured to:

- make direct private calls without prefix (internal destination).
- make public calls after dialing an outgoing prefix (0) with automatic insertion of the outgoing prefix on Transgroupe (0).

Main numbering plan of (B)

Start	End	Base	Function	NMT	Private
0	0	-	Main trunk group	Absorb	No
68	68	-	Secondary trunk group	Keep	Yes
69	69	-	Secondary trunk group	Keep	Yes

ARS table of (B)

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Pub		-	0	1	Heterogen.	
Priv	68	-	68	2	Heterogen.	
Priv	69	-	69	2	Heterogen.	

EXAMPLES USING ARS

CALL SERVER : PRIVATE NETWORKS

- Trunk group list 1

TrGp list	Index	TrGp. No.	Char.	Access di-gits	Authoriza-tion code	Tone/Pau-se
1	1	-	-	-	-	-

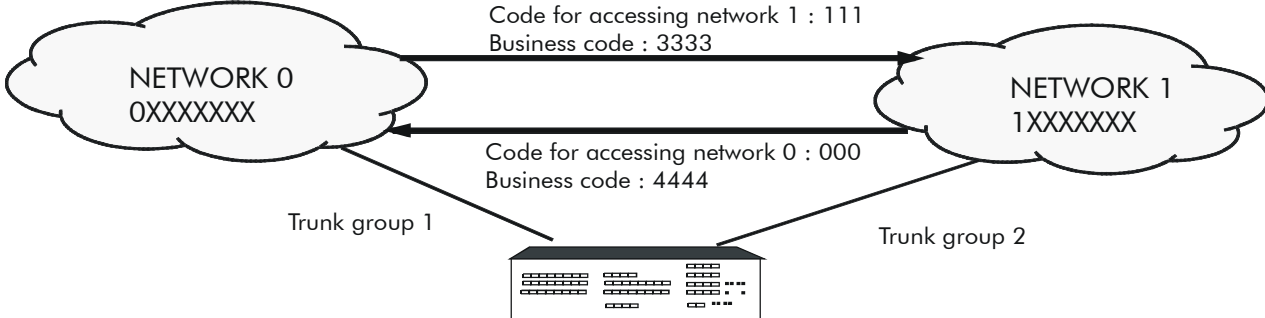
- Trunk group list 2

TrGp list	Index	TrGp. No.	Char.	Access di-gits	Authoriza-tion code	Tone/Pau-se
2	1	-	T	-	-	-

The table below summarizes the different types of possible outgoing calls with the values entered in the "called party number" and "caller number" fields (PABX **B**).

Outgoing calls	Called party number	Caller number
Call to public network	Number dialed: 0388697985 Num. plan: public	Public NDI + MCDU DDI: 388677700 + 7712 Num. plan: public
Internal call in Transgroupe	Number dialed: 688123 Num. plan: private	PIN prefix + MCDU DDI: 667000 + 7712 Num. plan: private
Call to public network by Transgroupe	Number dialed: 691234 Num. plan: private	PIN prefix + MCDU DDI: 667000 + 7712 Num. plan: private

MULTI-OPERATOR CONFIGURATION



When a number beginning with 1XXXXXXX (belonging to network 1) is dialed from network 0, the access prefix 111 and the client code 3333 are sent from network 0 to network 1.

Main numbering plan

Start	End	Base	Function	NMT	Private
0	0	-	Main trunk group (ARS)	Absorb	No

ARS table

Network	Prefix	Ranges	Substitute	TrGp list	Called/HH	User com.
Pub		-		1	Heterogen.	
Pub	0	-	0	2	Heterogen.	
Pub	1	-	1	3	Heterogen.	

- Trunk group list 1

TrGp list	Index	TrGp. No.	Char.	Access di-gits	Authoriza-tion code	Tone/Pau-se
1	1	-	-	-	-	-

- Trunk group list 2

TrGp list	Index	TrGp. No.	Char.	Access di-gits	Authoriza-tion code	Tone/Pau-se
2	1	-	-	-	-	-
	2	-	-	000	01	-

EXAMPLES USING ARS

CALL SERVER : PRIVATE NETWORKS

- Trunk group list 3

TrGp list	Index	TrGp. No.	Char.	Access di- gits	Authoriza- tion code	Tone/Pau- se
3	2	-	-	-	-	-
	1	-	-	111	02	-

Authorization code table

Index	Authorization code
01	4444
02	3333

When the user dials 0 0XXXXXXX, the ARS table forces the use of network 0 and sends the number 0XXXXXXX; the overflow mechanism allows the use of network 1 and sends the number 000 4444 0XXXXXXX.

When the user dials 0 1XXXXXXX, the ARS table uses public trunk group 2 and sends the number 1XXXXXXX; the overflow mechanism allows the use of public trunk group 1 and sends the number 111 3333 1XXXXXXX.

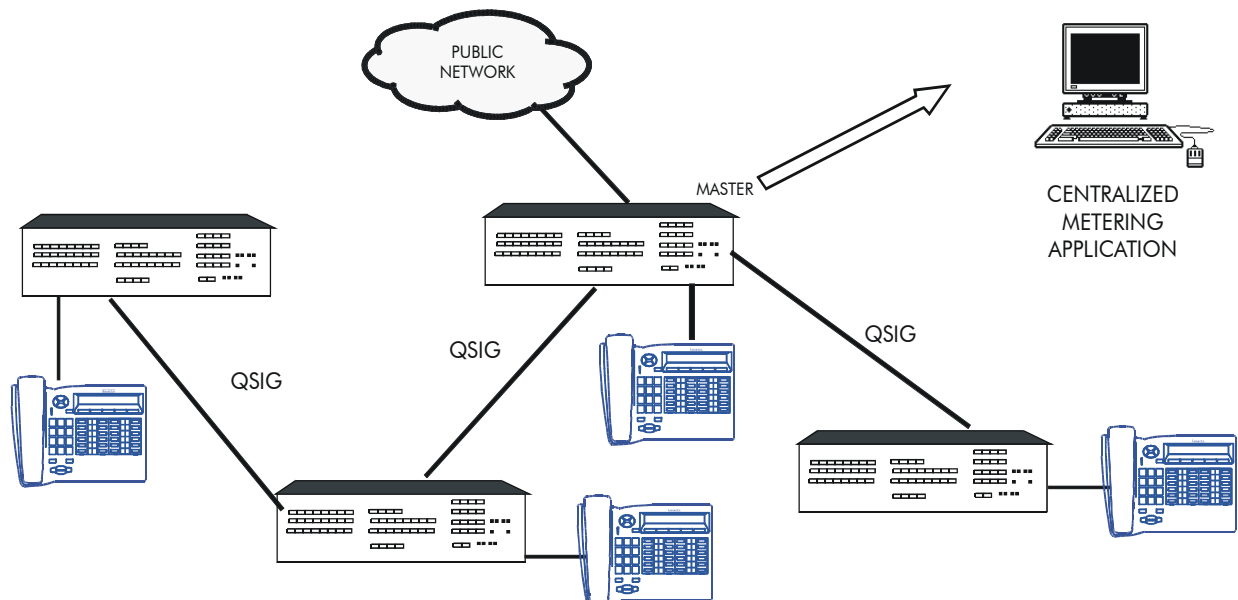
Any number beginning with 0X, where X is other than 0 or 1, uses public trunk group 1 (the default).

METERING - ISVPN+

File
4

ISVPN+ is used for a network of Alcatel OmniPCX Office systems linked together by digital leased lines with the QSIG-BC protocol.

The principal use of ISVPN+ is for centralized metering.



For all incoming and outgoing calls made within the network, the master system (the one connected to the public network) gathers the required information and sends it to a centralized metering application. The following information is transmitted to the master system:

- outgoing call: all the data presented in the following paragraph is managed at the caller's system level then transmitted to the master system. The flags characterizing the call are accumulated through the different systems during transmission to the master.
- incoming call: the number "transmitted" to the called party and the various flags are generated by the master system. During the setup of a communication with the called party, the flags characterizing the call are accumulated through the different systems. The number of the charged caller, the metering node number and the accumulated flags are forwarded to the master system with the connection message.

DATA TRANSMITTED

This paragraph describes the information which is transmitted to the master system by the other systems in the network; this data is conveyed by the QSIG protocol UUS.

Global data: Node number

This datum (unique value 0 to 127; by default: 255) identifies the system in the network.

- by MMC-PM5 (Expert View), select: **External Lines -> Protocols -> ISVPN Protocol -> Node Number**. This information is only used by the metering application (not used in a telephone context). The node number indicated is the one to which the charged user is connected.

Data relative to each communication

- "transmitted" number: number resulting from the NMT conversion of the number dialed after analysis in the main numbering plan (or NMT conversion of the number received after analysis in the incoming public call numbering plan); it is thus possible to compare the number sent (to the ARS table) by the system with the original number dialed.
- charged user: This datum depends on the type of call:
 - outgoing call or break-out: caller
 - incoming call or break-in: user having answered the call; this user may be different to the called user (forwarding, call pick-up, etc.)
- transfer: user who is the destination of the transfer
- flags characterizing an ARS call:

- by MMC-PM5 (Expert View), select: **Numbering -> Automatic Routing Selection -> ARS Table -> Option: Metering**:
 - forcing onto private network (private): this flag indicates whether an outgoing call has been rerouted onto leased lines by the ARS.
 - overflow: this flag indicates whether the trunk group used for the current call has been obtained after overflow by the ARS.

- complementary services: This data indicates the services activated in order to carry out the current call:
 - substitution (DISA transit)
 - use of the ARS table
 - homogenous ISVPN call
- VPN call (Transgroupe for example)
- supplementary network facility: indirect access to an operator
- on-line metering request in the event of break-out

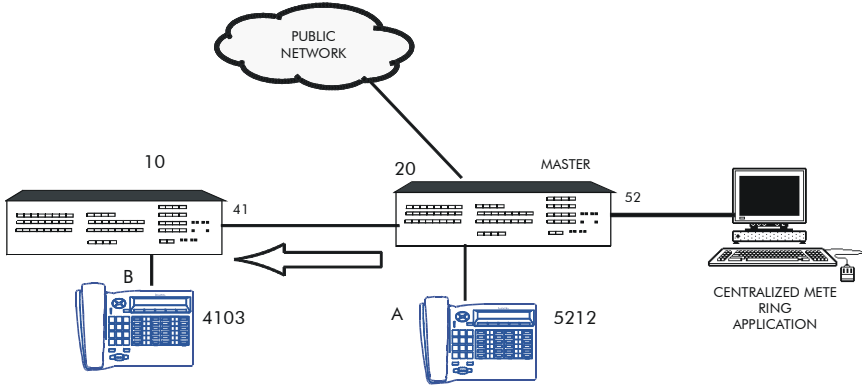
CALL SERVER : PRIVATE NETWORKS

METERING - ISVPN+

EXAMPLES

Local call in the network

A (5212) calls B (4103) by dialing 4103.

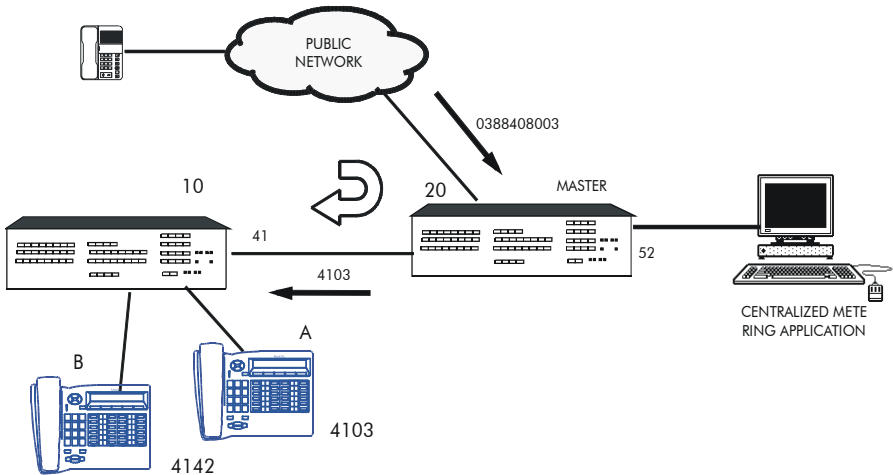


Information transmitted:

- Charged user: 5212
- Number of the metering node: 20
- Transmitted number: 4103

Break-in

A public network user calls A (4103) by dialing 0388408003. A is forwarded on B (4142).

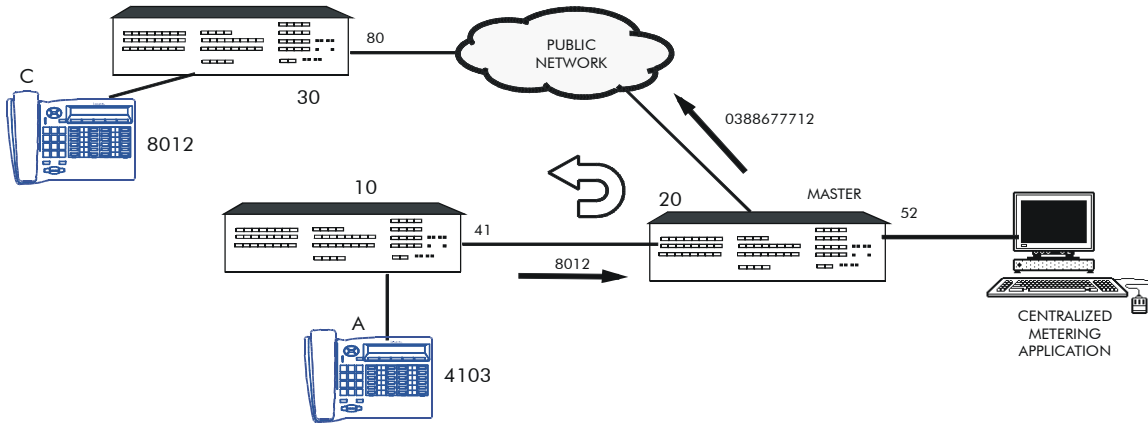


Information transmitted:

- Charged user: 4142
- Number of the metering node: 10
- Transmitted number: 4103

Break-out

A (4103) calls C (8012) by dialing 8012.



Information transmitted:

- Charged user: 4103
- Number of the metering node: 10
- Transmitted number: 8012

CLOCK SYNCHRONIZATION

File

5

SYNCHRONIZATION IN MODULES

The digital accesses (T0, T2, etc.) in an add-on module can under no circumstances serve as synchronizing accesses for the system (it is impossible to feed the clock back from an add-on module to the basic module CPU over an HSL link).

If the system includes digital accesses, then there are several eventualities:

- **Case 1:** No accesses in the base; they are all in the extensions:
 - The accesses will try to supply the clock to the system, and the system will refuse.
 - System message 51 - Clock Problem; the system operates on the local clock.
- **Case 2:** There is a T2 in the add-on module and a non-permanent level 1 T0 in the basic module:
 - If the T0 is in communication, its level 1 is therefore established and it is the T0 which provides the clock for the system.
 - If the T0 is not in communication, the T2 access will attempt to supply the clock to the system when it synchronizes with the network public (as in case 1). The clock supplied by T2 will be refused; a message 51 is generated; the system operates on the local clock.
- **Case 3:** There is a permanent T0 or a T2 in the basic module. Regardless of the accesses present in the add-on modules, the clock is supplied by one of the accesses in the basic module.

Conclusion: You need to equip at least one digital access in the basic module and, if possible, a permanent level 1 T2 with a priority higher than that of T0.

SYNCHRONIZATION IN NETWORKS

To avoid loopbacks in the synchronization paths, you need to define a hierarchy of network nodes.

DEFINITIONS

- Pilot node (= level 1): node with the most interfaces to the public network; preferably a T2.
- Level 2: node with at least one synchronizing link coming from a pilot node.
- Level 3: other nodes.

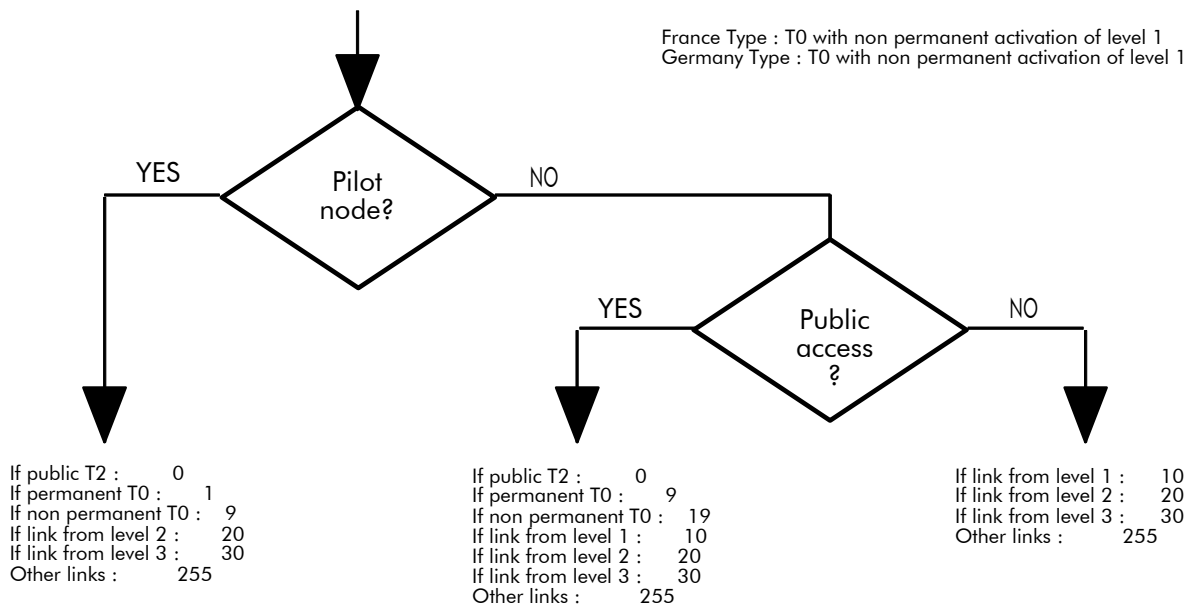
PRIORITY NUMBERS

To be able to modify and enlarge a network, you should construct a tree diagram for the synchronization of each node in the network.

A priority number must be assigned (P) to each node.

- by MMC-PM5 (Expert View), select: **System Miscellaneous -> Hardware -> Lineboard Details (part 2) -> Clock Priority ->** enter the number (0 to 255).

For the clock priority settings for the ISDN/Q_SIG boards to be taken into account, the system requires a warm reset.



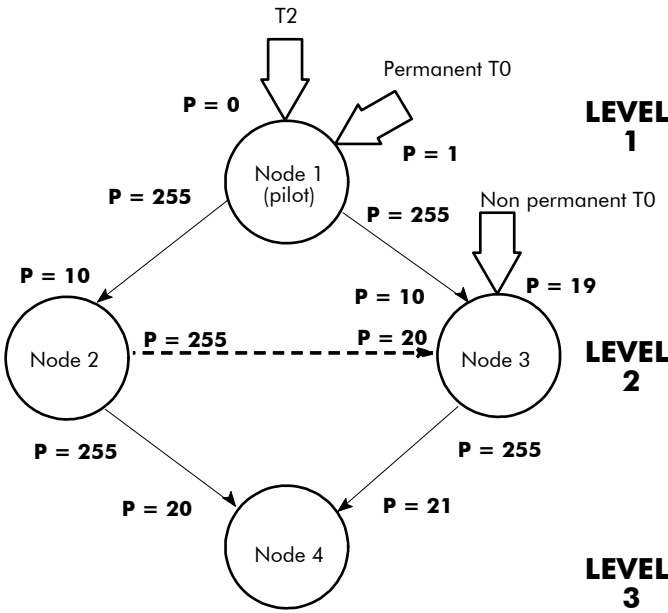
CALL SERVER : PRIVATE NETWORKS

CLOCK SYNCHRONIZATION

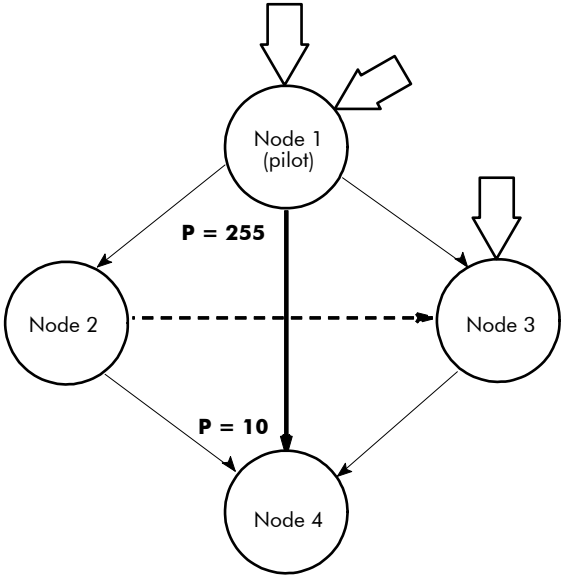
Principles which must be respected:

- to avoid 2 nodes from the same level synchronizing each other, assign priority 255 to the links between the 2 nodes on the system (synchronizing) side and a smaller priority value on the slave (synchronized) side.
- a node can only be enslaved on another node having an identical or lower hierarchic level.
- for any given node, assign a single priority number to links of the same type (T2, T0, leased lines).
- for any given node, a T2 link must always be assigned a smaller priority number than a T0 link.

EXAMPLES



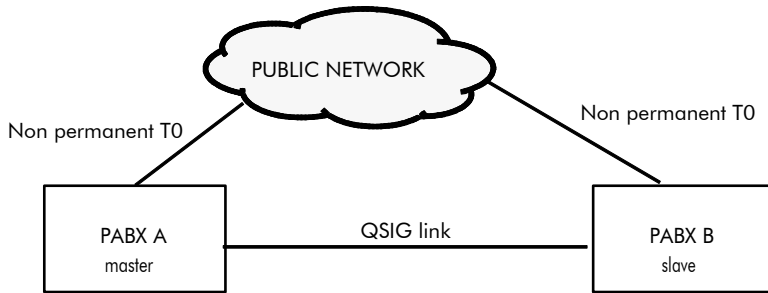
Network with 4 nodes and 3 hierarchic levels



Addition of a link between nodes 1 and 4 (no modifications in the existing configuration)

RESTRICTIONS

The 2 configurations below present situations which lead to operational restrictions.

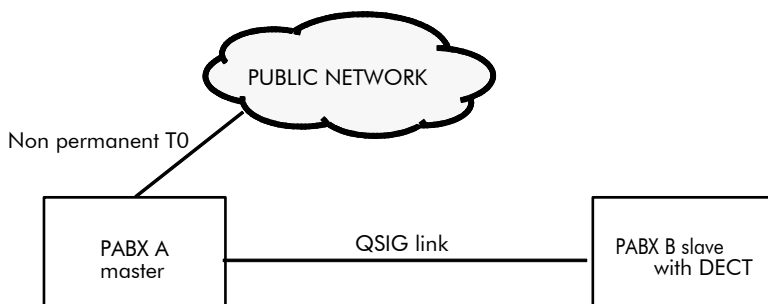


Synchronization of the QSIG on PABX B has priority over the synchronization of the T0 on PABX B:

- a subscriber belonging to A is in an external communication (simultaneously or not with subscribers on B) -> no problem.
- no external communication in A: A operates on the local clock.
A subscriber belonging to B makes an external call: B remains synchronized on A and is therefore not synchronous on the public network -> no data transmission from B to the network.

Synchronization of the T0 of PABX B has priority over the synchronization of the QSIG:

- a subscriber belonging to B is in an external communication (simultaneously or not with the subscribers on A) -> no problem.
- a subscriber belonging to B is in an external communication: A operates on the local clock -> no data transmission between B and A via the QSIG link.
- no external communication in A or B: A and B operate on their local clocks -> no data transmission between B and A via the QSIG link.



B is synchronized via the QSIG link of PABX A:

- a subscriber on A is in an external communication -> no problem.
- no external communication in A: A operates on the local clock; this clock is supplied to B -> DECT problems in B.
- if B has a non-permanent T0 link, the DECT problems will be compounded by the problems from the previous case.

Alcatel OmniPCX Office

SECTION

CALL SERVER : HOTEL

REF3EH 21000 BSAA Ed. 04



ALCATEL OMNIPCX OFFICE

CALL SERVER : HOTEL

Section CALL SERVER : Hotel

OVERVIEW	FILE 1
CONFIGURATION	FILE 2
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ALCATEL OMNIPCX OFFICE

**SECTION CALL SERVER : HOTEL
(INDEX)**

CALL SERVER : HOTEL

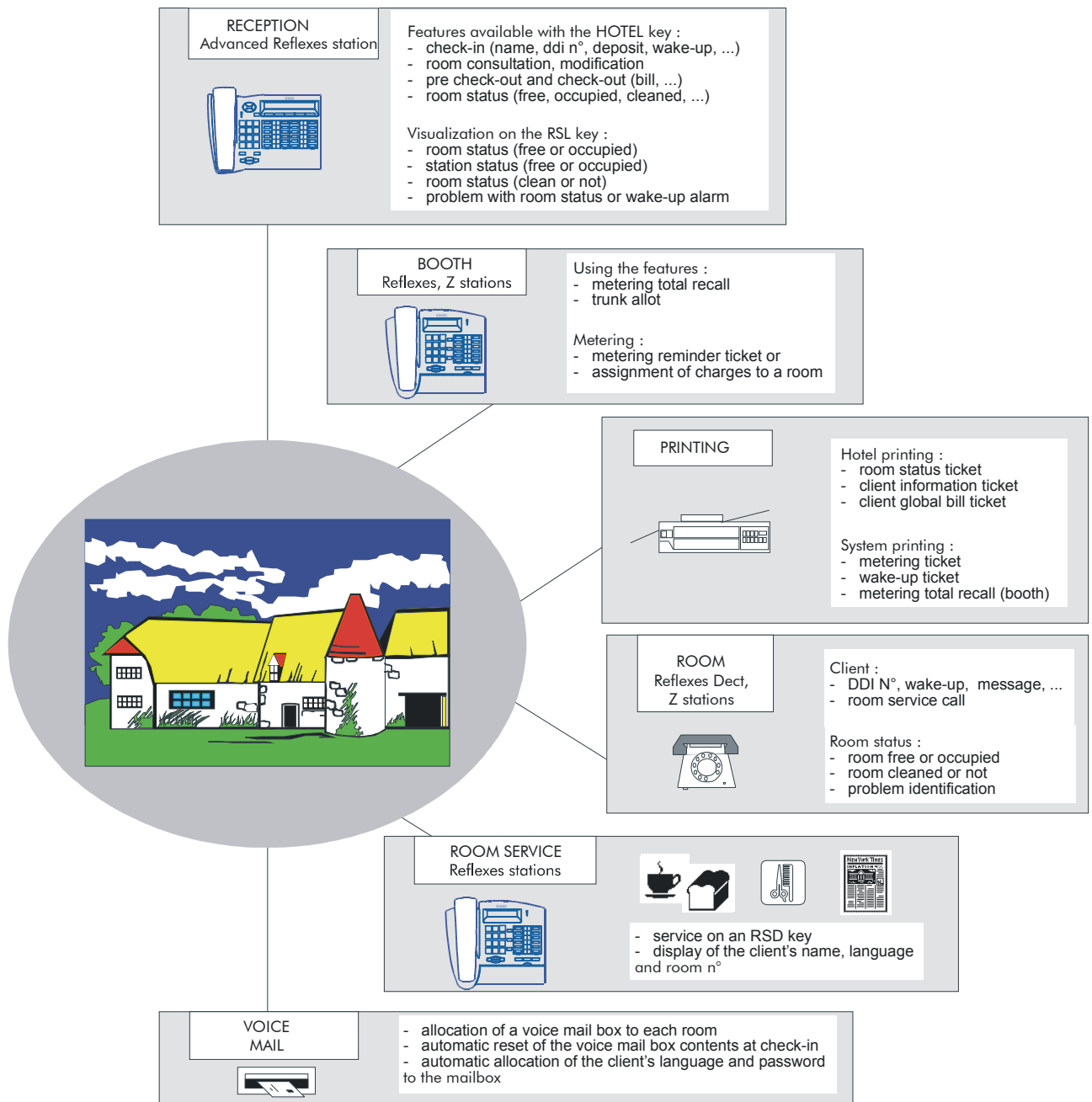
Section CALL SERVER : Hotel (Index)

CONFIGURATION	FILE 2
OVERVIEW	FILE 1
RECEPTION SET FEATURES	FILE 3

OVERVIEW

File
1

ENVIRONMENT



Sets in the installation

The sets of the installation are divided up according to their types and roles:

- Reception and Operator: Advanced Reflexes (or 4034) obligatory, fitted with add-on modules
- Administration and Rooms: Reflexes, DECT, Z
- Room Service: Reflexes
- Booths: Reflexes, Z

HOTEL INSTALLATION

When the system is brought into service, the PM5 Easy View session allows you to specify that the installation is a hotel installation. By doing this, the system automatically creates predefined profiles (Reception set, phone booth, room sets, administration sets, etc) described below:

- the first set is the Operator Station; this 4034/Advanced set in PABX mode belongs to all active operator groups as well as the default operator group.
This set has the profile of a Reception set: it has a direct call key for the booth station and, on the add-on-modules, a direct call key for each room set in the installation (up to 80 sets).
- the Reflexes sets are administration sets.
- the Z sets (except fax machines and booths) are room sets.
- dynamic routing level 1 for administration sets: any unanswered call is routed to the voice mail unit after 12 seconds.
- dynamic routing level 2 for administration sets: any unanswered external call is routed to the operator group after 24 seconds; for room sets, this mechanism only applies after customer check-in.
- OS calls overflow to general level (default operator group) after 24 seconds; for room sets, this mechanism only applies after customer check-in.
- the first Z interface is configured to connect a fax machine (VOICE and FAX2/3 services; no dynamic routing; protection against camp-on, intrusion and camp-on tone).
- the second Z interface is configured to connect a booth station (automatic call setup on going off-hook, delayed by 3 seconds, meter total recall at the operator station).
- the internal numbering plan is programmed with the prefixes for "room status," "room service" and "wake-up programming".
- the public numbering plan (if the public numbering system is "open") contains 2 ranges of DDI numbers: one for the OS, the other for the administration sets, the booth and the Z interface of the fax machine; the DDI numbers correspond to the internal call numbers of the sets.
The remaining ranges can be used for the room sets.
- the table of features in conversation is programmed with the default codes for the features "DND override", "trunk allot" and "meter total recall".
- all the programmable keys on Easy, Premium and Advanced sets are modifiable by the user (or by the installer).

Using the pre-defined profiles of the PM5 Easy View session means you can avoid some of the system programming described in the "Configuration" section.

See the "Starting Up" section of the installation manual for a description of the PM5 Easy View session; this session also enables you to configure some of the key Hotel application parameters (the DDI numbers, for example) right from the initialization stage.

FEATURES

The main services proposed are listed below.

Administrative aspects:

Room Status

Room Status (free, occupied, cleaned, problem with room).

Check-in

Name, language, allocation of a DDI n°, opening of the line, barring level (external outgoing calls), prepayment (metering credit), wake-up call, printout of an information ticket, etc.

Consultation of an occupied room

Guest prepayment status (metering credit), consultation of the guest's mail box (text mail, voice mail, Reception call-back request), printout of an information ticket, etc.

Pre-checkout and Check-out

Closing of the line, printout of a bill, room status, resetting of the parameters, etc.

The pre-checkout enables a guest to settle the telephone bill the day before an early morning departure, for example (external outgoing calls no longer possible), whilst at the same time keeping the features programmed on the phone (wake-up call, message, DDI N°, DND, etc).

METERING

Specific parameter settings for calculating the cost of communications on guest sets and booths.

Standard parameter settings for calculating the cost of communications on administration sets.
Surcharge for guest communications set up with the help of Reception.
Printout of a metering ticket with VAT.

New voice mail integrating the hotel features

Allocation of a voice mail box to each room.

Automatic reset of the contents of a voice mail box at check-in.
Automatic allocation of the guest language and password to the voice mail box.

Telephone aspects:**Programming of the wake-up call either by the guest or by Reception****Password**

Service enabling Reception to assign guests a password.

The password can be used by guests to lock their set (prohibit external calls), to remotely access their voice mail box and to establish communications with protected account codes.

Room Service

Certain services are accessible by a simple call: bar, dry cleaning, breakfast, for example.

Phone booth

Use of features: Trunk Allot (with meter recall) or Metering Total Recall.

During a metering total recall: printout of a metering ticket or allocation of charges to a set in the installation.

DND OVERRIDE

Service enabling Reception to override DND.

Account code with substitution

Service enabling a subscriber to set up a communication on one set with the account code allocated to another set.

The user establishes communication in the following way: **account code prefix** + **account code** + **n° of the substitution set** (optional) + **password** (optional) + **prefix for accessing the trunk group** + **called party's n°**



OVERVIEW

CALL SERVER : HOTEL

CONFIGURATION

File

2

PARAMETERS TO BE CONFIGURED

This chapter presents the main parameters that need to be configured for the hotel application.

Installation numbers

- Enter the installation number, the intercity code and the international access prefix

Numbering plans

- Internal numbering plan, enter the:
 - station numbers: administration, rooms, booths, fax, etc.
 - prefixes: wake-up call, main and secondary trunk group, Room status (see **System Parameters**), Reception call, etc.
- Public numbering plan, enter the:
 - station DDI numbers: administration, Reception, fax, etc.
 - room set DDI numbers (see the **VisFr** and **VisAl** features in **System Parameters**)
- Feature access codes, enter the suffixes for: enquiry call, shuttle call, DND override (see **System Parameters**), conference, etc.

Set categories

- Declare the sets: "Administration", "Guest" or "Phonebooth" (see the **Class** feature in **System Parameters**)

Reception set

- Create a "Hotel" key (see the **Hotel** feature in **System Parameters**)
- Create the "RSL" keys for the sets: rooms, booths, etc. (see the **RSL** feature in **System Parameters**)

Room service station

- Create the numbers for the service in the internal numbering plan
- Create a "RSD" key for each service on the Room service station (see the **RSD** feature in **System Parameters**)

Phone booth

- Configure the phone booth by using the features:
 - "Automatic call setup (on reception) on going off-hook" (or bar the line in order to exclude outside calls. To call out, the user dials the call number for reception).
 - "Metering total recall" in automatic mode (or using the manual mode from the Reception set)
- Configure the Reception set by using the features:
 - "Trunk allot" (use, for example, barring table n°2 which only authorizes local calls)
 - "Trunk allot with metering total recall" (use, for example, table n°4 which authorizes national and international calls)
 - "Metering total recall" in manual mode
- Authorize the feature rights: "trunk allot" and "metering total recall"
- Position the flag "metering total recall if there is no charge" (see the **Metering total recall** feature in **System Parameters**)

Analog room sets

- Allocate a "voice mail" virtual key to the analog sets which will light the LED when there is a call-back request from Reception or from the voice mail unit

Barring tables

- Check the link category on the sets installed
- Check the link category on the trunk group and network lines

Hotel Parameters

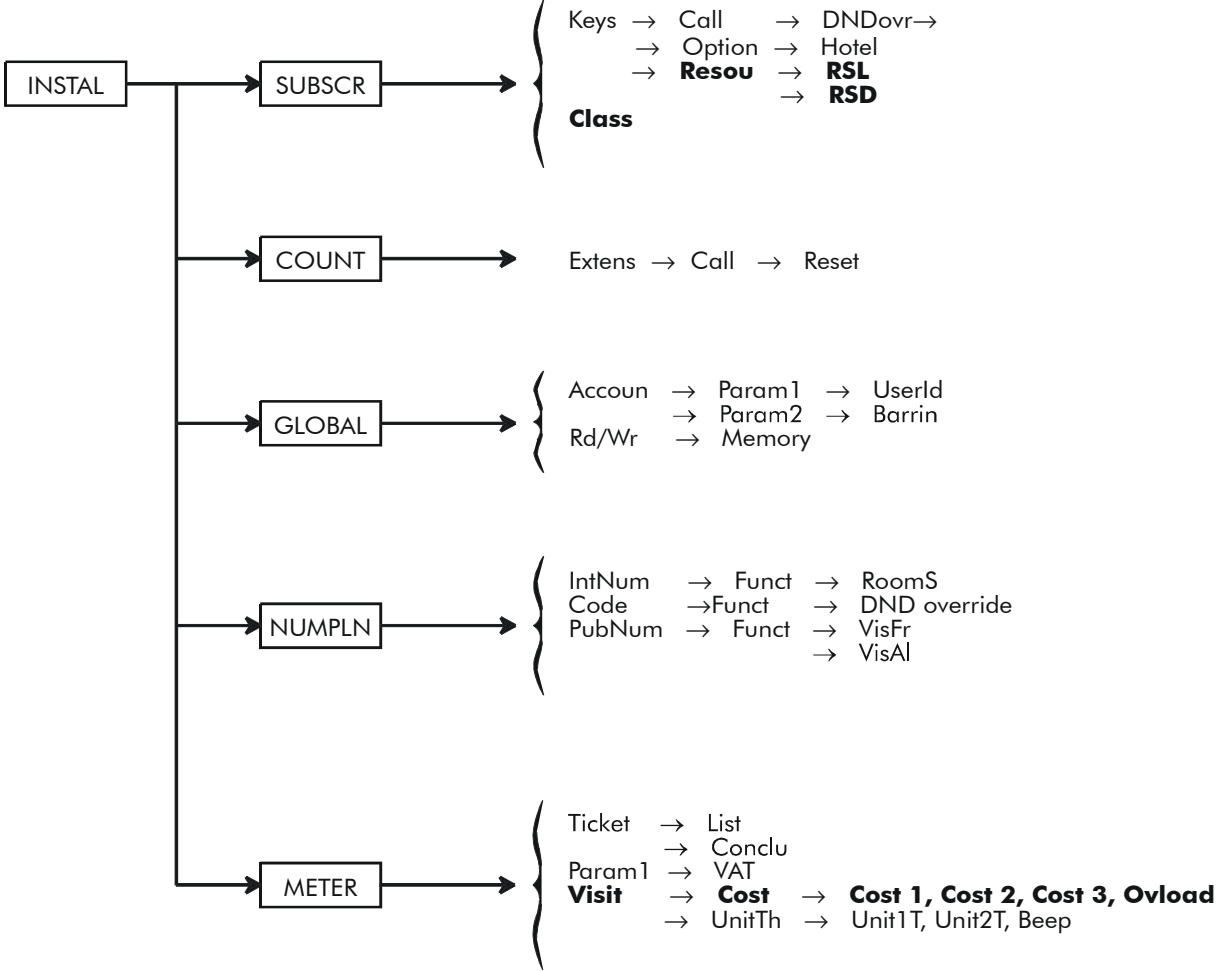
- Configure the parameters: "Wake-up", "DDI", "Language", "Barring", "DND", "Exit time" and "Check-in" (see **Customizing the configuration screens**)
- Configure the Room status parameters (see **Configuring room status**)

Guest metering

- Configure the parameters: "Deposit", "Currency" and "VAT" (see **Customizing the configuration screens**)
- Configure the parameters: "Room status" print out, Thank-you messages, VAT, Cost of communications, Surcharge and Cut-off (see the **Metering** features in **System Parameters**)

SYSTEM PARAMETERS

The following flow chart shows the required system parameters; they are only accessible in the installer session.



DND OVERRIDE

This service enables an authorized subscriber (Reception) to override a set's DND (Do Not Disturb) status. It is activated either with a function key or with a feature access code.

- To assign a feature access code to the service:

- by MMC-Station: **NumPln -> Code -> Funct -> DND override**
- by MMC-PM5 (Expert View): **Numbering -> FAC Numbering Plan -> DND Override**

- To assign the service to a key:

- by MMC-Station: **Subscr -> Keys -> Call -> DNDovr**
- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers -> Details -> Keys -> Function key -> DND Override**

- Authorize the service on the calling party set:

- by MMC-Station: **Subscr -> SubPro -> Featur -> High**
- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers -> Details -> Features -> Part2 -> check DND override allowed**

- Protect the called party against the service:

- by MMC-Station: **Subscr -> SubPro -> Featur -> High or Middle**
- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers -> Details -> Features -> Part2 -> check Protection against DND override**

HOTEL KEY

This feature enables Reception to enter the hotel application in order to enter, consult and/or print guest data.

- To assign the feature to a key:

- by MMC-Station: **Subscr -> Keys -> Option -> Hotel**
- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers -> Details -> Keys -> Function key -> Hotel Menu**

RSL KEY

The Reception set must be equipped with add-on modules. The modules are programmed with RSL resource keys (essentially room N°s) which allow Reception:

- to call a set in the installation directly
- to receive a call on the resource from a set in the installation
- to see the busy status of a set in the installation
- to find out the occupation status of a room (free or occupied)
- to view a problem with a room wake-up call
- to view the status of a set's ringer (internal or external call)
- to find out the status of a room (cleaned or uncleaned)
- to view a problem with the room

Notas :

The new features are accessible if the set has a Hotel key. They are detailed in "Reception set features".

- To assign RSL keys to the Reception set:

- by MMC-Station: **Subscr -> Keys -> Modify -> Resou -> RSL** -> enter a directory n° (that of a room set, for example)
- by MMC-PM5 (Expert View): **Subscribers/Basestations List -> Subscribers -> Details -> Keys -> Resource Key -> Local Call** -> enter a directory n° (that of a room set, for example)

RSD KEY

To call Room Service, the user dials a number corresponding to a service (the "breakfast" service for example). This number must be known by the system and must be assigned to the "Room Service" station.

- To assign service numbers to the "Room Service" station:

- by MMC-Station: **NumPln -> IntNum -> Subsc** feature-> n°of the service in **Begin** and **End** -> directory n° of the "Room Service" station in **Base**
- by MMC-PM5 (Expert View): **Numbering -> Internal Numbering Plan -> Subscriber** feature -> n°of the service in **Start** and **End** -> directory n° of the "Room Service" station in **Base**

The "Room Service" station is programmed with RSD resource keys which have the n°s of the services. It has a display showing the name, directory n° and language of the caller.

CONFIGURATION

CALL SERVER : HOTEL

- To assign RSD keys to the "Room Service" station:

- by MMC-Station: **Subscr** -> **Keys** -> **Modify** -> **Resou** -> **RSD** -> enter a service n° (the "breakfast" service, for example)
- by MMC-PM5 (Expert View): **Subscribers/Basestations List** -> **Subscribers** -> **Details** -> **Keys** -> **Resource key** -> **DDI call** -> enter a service n° (the "breakfast" service, for example)

CLASS

This feature assigns one of the following categories to each set in the installation: "Administration", "Guest" or "Phonebooth".

- To assign a role to the set:

- by MMC-Station: **Subscr** -> **Class** -> assign **Administration set**, **Guest set** or **Phone booth**
- by MMC-PM5 (Expert View): **Subscribers/Basestations List** -> **Subscribers** -> **Details** -> **Hotel** -> assign **Admin**, **Guest** or **Phonebooth**

Default value: Administration

CALL COUNTERS

This feature enables Reception to find out the number of charged calls made from a set in the installation and to reset the counter.

In the Hotel application, the call counter is automatically reset on check-in; the number of calls (charged communications) is given as a reminder on the printout of the "Guest Global Bill Ticket" and on the "Client Information Ticket".

- To read and reset a set's call counters:

- by MMC-Station: **Count** -> **Extens** -> **Call** to read the counter and -> **Reset** to reset it
- by MMC-PM5 (Expert View): **Subscribers/Basestations List** -> **Subscribers** -> **Details** -> **Metering** to read the counter and -> **Reset** to reset it

This feature also allows you to edit, on the screen, the call and cost counters for sets.

- To read the call and cost counters for all the sets:

- by MMC-PM5 (Expert View): **System Miscellaneous** -> **Metering** -> **Metering Counters**

ACCOUNT CODES

Use of this service involves a new parameter, USER-ID, which makes it possible to carry out "substitution" (charging to the account code of a set other than the one being used). This parameter means modifying the BARRING field and specifying the PROTECTION field.

- To select whether or not to assign an identification request for substitution to the account code:

- by MMC-Station: **Global -> Accoun -> Param1 -> Userld** ->select **NO** no identification or **YES** with identification
 - by MMC-PM5 (Expert View): **System Miscellaneous -> Traffic Sharing and Barring -> Account Code Table -> User-Id** -> select **none** no identification or **User** with identification

- To assign a barring category to the account code (see also the table below):

- by MMC-Station:
Global -> Accoun -> Param2 -> Barrin -> select **None**, a category between **1** and **16**, **SET** or **GUEST**
 - by MMC-PM5 (Expert View): **System Miscellaneous -> Traffic Sharing and Barring -> Account Code Table -> Bar.Lvl.** > select **none**, a category between **1** and **16**, **set** or **guest**

The table below shows, depending on the link category assigned to the account code, the system reactions on the various link categories.

<div style="display: flex; justify-content: space-between;"> Link categories of the system Account code, Possible barring level </div>	Traffic Sharing (LC3)	Barring Matrix(LC2)	Collective Speed Dial Rights (LC1)
Set	LC3 of the set (*)	LC2 of the set (*)	LC1 of the set (*)
Guest	LC3 of the guest (*)	LC2 of the guest (*)	LC1 of the guest (*)
Forced barring Cat. 1..16	LC3 of the set (normal service)	Fixed category Cat. 1..16	LC1 of the set (*)
None (no barring)	LC3 of the set (normal service)	Call not barred	LC1 of the set (*)

* Link Categories service operation: Normal or Restricted

Remarques :

- if the account code is with "Identification" then the n° of the substitution set is to be entered
- if the account code is with password, the password expected by the system is either that of the set in use or that of the substitution set

The user establishes communication in the following way: **account code prefix + account code + n° of the substitution set** (optional) + **password** (optional) + **prefix for accessing the trunk group + called party's n°**

METER TOTAL RECALL

The meter total recall (MTR) mechanism can recall the service beneficiary even if there is no charge.

- Recall the service beneficiary in all cases:

- by MMC-Station: **Global -> Rd/Wr -> Adress -> enter 01 in MtrNoCharg -> Memory**
- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Other Labels -> enter 01 in MtrNoCharg**

Default value: "00" (no recall if no charge)

WAKE-UP CALL

In the case of a wake-up problem, the system alerts Reception by sending a message and a ringing tone to the set which is repeated approximately every 30 seconds.

- Inhibiting the ringing and visual alarm mechanism:

- by MMC-Station: **Global -> Rd/Wr -> Adress -> enter 00 in WakUpPrbRg -> Memory**
- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Other Labels -> enter 00 in WakUpPrbRg**

Default value: "01" (alarm activated)

Notas :

With the hotel application, it is always possible to visualize a guest wake-up problem on the RSL keys on the set at Reception (see "Hotel Features").

CALL SERVER : HOTEL

CONFIGURATION

ROOM STATUS AFTER CHECK-OUT

After check-out the room is automatically switched to "uncleaned" status.

- Inhibiting the status changing mechanism:

- by MMC-Station: **Global -> Rd/Wr -> Address -> enter 00 in UnclChkOut -> Memory**
- by MMC-PM5 (Expert View): **System Miscellaneous -> Memory Read/Write -> Other Labels -> enter 00 in UnclChkOut**

Default value: "01" (switch to "uncleaned" status after check-out)

NUMBERING PLANS**Room Status**

The "Room Status" feature in the internal numbering plan allows you to define the "Room Status" prefix for the installation.

- To create the "Room Status" prefix:

- by MMC-Station: **NumPln -> IntNum -> RoomS** feature
- by MMC-PM5 (Expert View): **Numbering -> Internal Numbering Plan -> Room Status** feature

DND override

The "DND Override" feature in the "features in conversation" table serves to define the suffix for accessing the "DND Override" service.

- To create the "DND Override" service:

- by MMC-Station: **NumPln -> Code -> Funct -> DND Override**
- by MMC-PM5 (Expert View): **Numbering -> FAC Numbering Plan -> DND Override**

VisFr (DDI Deallocated)

The "DDI Deallocated" feature of the DDI numbering plan groups together all the DDI numbers assigned to the rooms in the hotel. The feature's base is 9. 9.

- To assign the DDI n°s to the Reception set:

- by MMC-Station: **NumPln -> PubNum -> VisFr** feature -> enter all the numbers in **Begin** and **End**, enter 9 in **Base**
- by MMC-PM5 (Expert View): **Numbering -> Public Numbering Plan -> Guest DDI deallocated** feature -> enter all the numbers in **Start** and **End**, enter 9 in **Base**

Remarques :

CONFIGURATION

CALL SERVER : HOTEL

- a DDI n° allocated to a room at check-in automatically switches from "DDI Deallocated" to "DDI Allocated"
- likewise, a DDI n° which is no longer assigned to a room at check- out automatically returns to its initial function, "DDI Deallocated". This mechanism allows you to route all the DDI calls for free rooms to the Reception set.

VisAI (DDI Allocated)

The "VisAI (DDI Allocated)" function in the DDI numbering plan adds a DDI n° to all the DDI n°s which are reserved for rooms and assign it directly to a room.

- To add a room DDI n°:

- by MMC-Station: **NumPln** -> **PubNum** -> **VisAI** feature-> enter the DDI number in **Begin** and **End**, enter the directory n° of the room in **Base**
- by MMC-PM5 (Expert View): **Numbering** -> **Public Numbering Plan** -> **Guest DDI allocated** feature -> enter the DDI number in **Start** and **End**, enter the directory n° of the room in **Base**

Notas :

As the previous note states, this DDI n° will automatically switch to "DDI Deallocated" on check-out. It will thus rejoin all the DDI n°s reserved for rooms.

METERING

Room Status Tickets

This feature allows you to define whether a "Room Status Ticket" or "Statement" should be printed automatically when a room changes status.

- To select whether or not to print out a "Room Status Ticket" or "Statement" automatically:

- by MMC-Station: **Meter -> Ticket -> List** -> select **RST** for automatic printout or **rst** for no printout
- by MMC-PM5 (Expert View): **System Miscellaneous -> Hotel -> Metering** -> select **Print Room Status Ticket...** for automatic printout

Default value: rst (no automatic printout)

A "Room Status Ticket" or "Statement" includes:

- the room n°
- the date and time of the status change
- the "Room status change" label
- a value (1 to 4 digits) representing the room status (free or occupied, problem n°)
- the name of the guest

Notas :

The Hotel application allows you to:

- program a precise time at which all rooms (or only those which are occupied) switch automatically to the "uncleaned" status,
- automatic switching, after check-out, of a room to "uncleaned" status.

These two operations do not involve the transmission of a "Room Status Ticket" or "Statement".

Conclusion String

This feature allows you to enter a thank-you message of up to 40 characters printed at the bottom of the "Guest Global Bill Ticket" or the "Guest Information Ticket".

- To enter the thank-you message:

- by MMC-Station: **Meter -> Ticket -> Conclu**
- by MMC-PM5 (Expert View): **System Miscellaneous -> Hotel -> Metering -> Guest Ticket Footnote**

Default value: THANKS FOR COMING

VAT

This feature allows you to enter the VAT rate to calculate the cost of communications.

The total VAT as well as the VAT rate are printed on the "Guest Global Bill Ticket", the "Phone Booth Bill" and the "Guest Information Ticket".

Notas :

The Hotel application also allows you to program the VAT.

- To program the VAT rate:

- by MMC-Station: **Meter -> Param1 -> VAT**
- by MMC-PM5 (Expert View): **Administration -> Hotel -> Metering -> Value Added Tax**

Default value: depends on the country

Visit: cost of the guest communication without VAT

First, the "Visit" feature enables the system to calculate the cost of communications (without VAT) made from the "Guest" or "Booth" sets in the installation.

Three basic metering and two cost thresholds can be programmed.

- To enter the first, second and third basic metering values:

- by MMC-Station: **Meter -> Visit -> Cost ->** assign a value (integers then decimals) to **Cost1 , Cost2 and Cost3**
- by MMC-PM5 (Expert View): **System Miscellaneous -> Hotel -> Metering ->** assign a value (integers then decimals) to **Charge Rate 1 , Charge Rate 2 and Charge Rate 3**

- To enter the first and second thresholds used for the 2nd and 3rd basic metering values:

- by MMC-Station: **Meter -> Visit -> UnitTh ->** assign a value (in minutes) to **Unit1T and Unit2T**
- by MMC-PM5 (Expert View): **System Miscellaneous -> Hotel -> Metering ->** assign a value (in minutes) to **Threshold 1 and Threshold 2**

With the "Visit" feature you can now assign a surcharge to communications set up by the operator and transferred to "Guest" and "Phonebooth" sets.

- To enter the surcharge:

- by MMC-Station: **Meter -> Visit -> Cost ->** assign a value (integers then decimals) to **Ovload**
- by MMC-PM5 (Expert View): **System Miscellaneous -> Hotel -> Metering ->** assign a value (integers then decimals) to **Additional Services**

Finally, the "Visit" feature allows you to cut off the active (metered) communication and prohibit other communications when a guest's overall communication cost reaches the prepayment total.

- To cut off the active communication:

CALL SERVER : HOTEL

CONFIGURATION

- by MMC-Station: **Meter** -> **Visit** -> **UnitTh** -> assign a value (number of pulses) other than 0 to activate the mechanism in **Beep**
- by MMC-PM5 (Expert View): **System Miscellaneous** -> **Hotel** -> **Metering** -> select **Cut if pre-payment consumed** to activate the mechanism, select a value (number of pulses) in **Beep at credit threshold**

Using the feature:

The system converts the guest's prepayment total into meter pulses (metering credit). When the metering credit reaches the value programmed in "Beep ", the system transmits a sound signal (succession of beeps) to the guest, for each pulse received.

When the metering credit is exhausted, the communication is cut off.

Default value:

- COST1, COST2 and COST3 = 0
- THRESHOLD1 and THRESHOLD2 = 0
- OVERLOAD = 0
- BEEP THRESHOLD = 0 (no communication cut off)

PRINTING THE GUEST'S TICKET AUTOMATICALLY

The automatic print of the "Guest Information Ticket" after the guest has checked in or the "Guest Global Bill Ticket" after check-out can be deleted.

- Inhibiting the automatic print mechanism:

- by MMC-PM5 (Expert View): **Admin** -> **Hotel** -> **Parameters** -> deselect **Print Check-In/Check-Out Ticket**

Notas :

It is always possible to print the tickets manually with the hotel application.

CUSTOMIZING THE CONFIGURATION SCREENS

The application requires a customized configuration, dedicated to the environment in which it is situated, in order to present the check-in screens, the guest consultation screens and the check-out screens as well as to calculate the cost of communications and activate the default features.

The application is customized using the default screens, which must be configured. These screens are accessible from Reception sets with a "Hotel" key or through MMC-PM5 (Expert View).

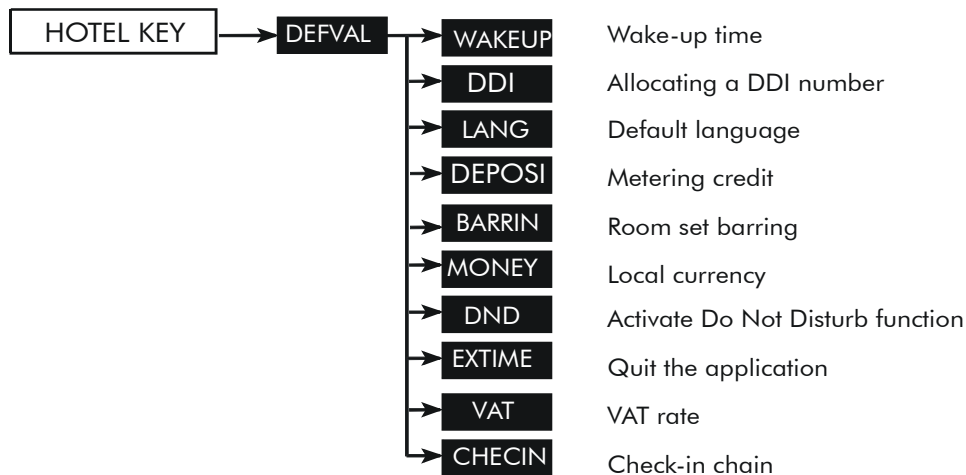
Notas :

Only programming which is done via a terminal is presented in this document. In MMC-PM5 (Expert View), the relevant data are proposed when you select **System Miscellaneous -> Hotel -> Parameters or Metering**.

- To configure the default screens:

- Reception set: **Hotel key -> DEFVAL**

The display presents the following flowchart menu.



Wake-up time - WAKEUP

This feature allows you to choose whether or not to define a default time for a wake-up call.

Enter **06: 45** for example, or press **CLEAR** --: -- so as not to have a default wake-up call. Validate.

Allocating a DDI number - DDI

This feature allows you to allocate a DDI n° by default.

Press **CHOICE** to select "DDI ALLOCATION BY DEFAULT" or "NO DDI BY DEFAULT". Validate.

Default language - LANG

This feature allows you to select a language by default.

Press **CHOICE** to select one of the languages offered. Validate.

Note: the language is automatically assigned to the guest's voice mail box and set (if it has a display).

Metering credit - DEPOSI

This feature allows you to choose whether or not to activate the "prepayment request" (metering credit) menu and enter a total corresponding to a default prepayment.

Enter a total or press **CLEAR** to inhibit the menu. Validate.

Notas :

When the menu is activated, a line reserved for the prepayment total is printed on the "Guest Global Bill Ticket" and on the "Guest Information Ticket".

Room set barring - BARRIN

This feature allows you to define a default barring for room sets.

Press **CHOICE** to select "INTERNATIONAL", "NATIONAL", "LOCAL" or "NO EXTERNAL". Validate.

Notas :

By MMC-PM5, under **System Miscellaneous -> Hotel -> Parameters**, the default barring on room sets takes the values **1** for "INTERNAL", **2** for "CITY", **3** for "NATIONAL" or **4** for "INTERNATIONAL"

Local currency - MONEY

This feature allows you to enter the country's monetary unit.

Enter **EUR** for example. Validate.

Notas :

The monetary unit is printed on the "Phone Booth Bill", the "Guest Global Bill Ticket" and on the "Guest Information Ticket".

Activate Do Not Disturb function - DND

This feature allows you to activate or deactivate the Do Not Disturb feature by default.

Press **CHOICE** to select "ACTIVE" or "INACTIVE". Validate.

Quit the application - EXTIME

This feature enables the Reception set to exit the Hotel application automatically if no action is carried out during the set time.

Enter **20** (minutes) for example. Validate.

VAT rate - VAT

This feature allows you to enter the country's VAT rate.

Enter **20.60** for example. Validate.

Notas :

The cost of communications with VAT, the total VAT, and the VAT rate are printed on the "Phone Booth Bill", the "Guest Global Bill Ticket" and the "Guest Information Ticket".

Check-in chain - CHECIN

This feature allows you to program the order in which six consultation screens – the ones most often used during check-in – appear (maximum of six from a choice of eight).

Position yourself on the field to be modified using **NEXT** or **PREV** then press **CHOICE** to select "DEPOSIT", "NAME", "WAKEUP", "DND", "LANGUAGE", "DDI", "BARRING", "PASSWORD" or "_" (no screen). Validate.

Notas :

The consultation screens which are not selected remain accessible at the end of check-in.

CONFIGURING ROOM STATUS

Configuring room status allows you to define whether all the rooms, or only those which are occupied, switch manually or automatically (at a programmed time) to "UNCLEANED" status.

- To enter the Room Status menu:

- Reception set: **Hotel key -> Status -> Global**

The display below shows the possible functions.



The first line of the screen recalls the configuration of the Room Status which may be as follows: **Only occupied rooms switch to "Uncleaned" status at 7:30**

Rooms concerned- ROOMS

This feature allows you to define the rooms which will switch to "UNCLEANED" status.

Press **ROOMS** to select "ALL BUSY ROOMS" or "ALL ROOMS". Validate.

Conditions - NOW, TIME

This feature allows you to define whether the rooms concerned (those in the "ROOMS" menu) switch to "UNCLEANED" status automatically or manually.

- Manual switch, press **NOW**
- Automatic switch, press **TIME** then enter **06: 30** for example, or press **CLEAR** --: -- to cancel the time. Validate.

Validate the operation.

Notas :

The feature is activated either immediately (manual mode), or at the time defined by the settings (automatic mode).



CONFIGURATION

CALL SERVER : HOTEL

RECEPTION SET FEATURES

File

3

The Hotel application is the direct interface between the guest and Reception. It manages a range of services such as check-in, room consultation (message, prepayment deposit, etc), check-out and room status.

The application is accessible on the Reception set (set equipped with a Hotel key) whether it be free, in communication or ringing.

CHECK-IN

- To select a free, cleaned room:

- Reception set: **Hotel key** -> **RSL** key or **directory n°** of the room

Depending on how the programmed consultation screens are chained, you must:

- fill in the "empty" fields (the NAME of the guest for example)
- modify the fields which do not correspond to the default values (the LANGUAGE for example)
- validate all the check-in screens as and when they are presented.

Validating the last consultation screen is equivalent to exiting CHECK-IN; the room is considered occupied, and a "Guest Information Ticket" is printed automatically.

Below are the screens which correspond to check-in (maximum of six screens from a choice of eight):

- Deposit: deposit total (metering credit) or select **NOPREP** (no prepayment)
- Guest name: guest name (10 characters maximum)
- Wake-up time: wake-up time or select **CLEAR**: no alarm
- DND Status : to activate (DND) or deactivate (dnd) the "Do Not Disturb" function
- Language : choice of language
- DDI number: allocation of a DDI N°, select **CHOICE** to allocate a new one
- External calls: line barring, select **CHOICE** to allocate a new one
- Password: allocation of a password, select **CHOICE** to allocate a new one

Notas :

All the consultation screens, including those not selected, are grouped together in the room consultation screens once the check-in is completed.

ROOM CONSULTATION

The application allows you to consult and modify a guest's data.

- Select an occupied room:

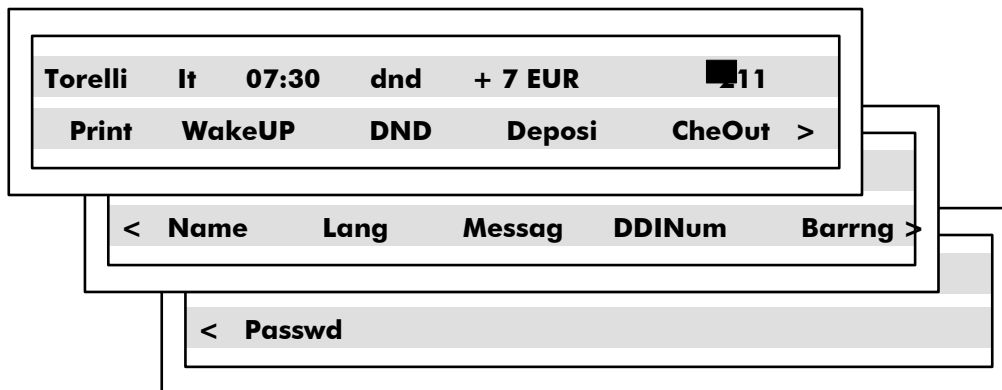
- Reception set: **Hotel key** -> **RSL key** or **directory n°** of the room

Notas :

To exit the application, press the Release key \overline{F} .

To consult another room without quitting the application, select an **RSL key** or enter a **directory n°**.

The display presents the guest data for the selected room. The data is displayed over three screens.



The first line of each screen gives:

- the name of the guest
- the guest's language
- the guest's wake-up call time (if programmed) and warning of any problem with the wake-up call
- the guest's DND (do not disturb) feature status
- the guest's prepayment status (signs + for "credit" and - for "debit") and the monetary unit used
- the segment , off or lit, representing the guest's mail status (text mail, voice mail and Reception call-back request)
- the directory number of the room

The second line of each display enables Reception to consult and/or modify guest data, or to print out an information ticket.

Print guest information ticket - PRINT

Press **PRINT** to print out the "Guest Information Ticket" which includes:

- the name of the guest
- the room n°
- the language
- the password
- the DDI n°
- the barring status
- the guest's overall deposit total (metering credit)
- the total remaining to be paid by the guest (debit) or to be reimbursed by the hotel (credit); total of the deposit paid minus the cost of the communications
- the VAT rate and the total VAT corresponding to the cost of the communications
- the number of communications made
- the active or inactive status of the DND feature
- the guest's mail status (messages present or not: text, voice and Reception call-back request)

Wake-up call time and status - WAKEUP

WAKEUP allows you to **read** and **modify** the guest's wake-up call time and **consult** the guest's wake-up call status.

Reading the wake-up call time:

The room consultation screen allows you to read the guest's wake-up alarm time.

Modifying the time:

Press **WAKEUP**. Enter **06: 45** for example or press **CLEAR** --: -- so as not to have an alarm. Validate.

Consultation of the alarm status, several choices are possible:

- LEFT-HAND SEGMENT OF THE ROOM RSL KEY
On the add-on module for example, the left-hand segment of a flashing room RSL key signals an undefined problem with the wake-up alarm.
- ROOM OCCUPATION SCREEN
The consultation screen of a room signals whether a wake-up time is programmed or whether there is an undefined problem with the wake-up call. Example:
 - **06: 45**: programmed wake-up time; wake-up time active if : (colon) flashes
 - **06: 45**: programmed wake-up time; wake-up time inactive if no character flashes
 - **--: --**: no programmed wake-up time (problem with wake-up call if all segments flash)
- **06: 45**: programmed wake-up time and problem with wake-up call if all characters flash

- WAKE-UP CALL STATUS

Press **WAKEUP**; the wake-up call status will then be one of the following:

- **active**: the wake-up call is active
- **---** (**inactive**): the wake-up call is inactive
- **busy**: problem – the set was busy during the three attempts
- **unanswered**: problem – the set did not answer during the three attempts
- **inaccessible**: problem – the set was inaccessible during the three attempts

- WAKE-UP CALL

In the case of a wake-up problem, the system alerts Reception by sending a message and a ringing tone to the set, repeated approximately every 30 seconds.

Do Not Disturb - DND

This feature allows you to **read** the status of the guest's DND feature and **modify** it.

Reading the status of the DND (Do Not Disturb) feature:

The room consultation screen allows you to read the DND status directly:

- **DND**: feature active
- **dnd**: feature inactive

Modifying the DND feature:

Press **DND** -> **CHOICE** to select "ACTIVE" or "INACTIVE". Validate.

Metering credit - DEPOSI

This feature allows you to read the guest's **credit** (after calculation of the cost of the guest's communications) and to enter the **amount** of a new deposit.

Guest credit (with use of metering credit only):

The room consultation screen allows you to read the guest's account. It is either:

- **+ xxxxx EUR**: positive (in credit)
- **- xxxxx EUR**: negative (in debit)

Amount of a new deposit (with use of metering credit only):

Press **DEPOSI** and enter a new amount.

Validate the operation; the system recalculates the total deposit and the remaining credit.

Checking out a guest - CHEOUT

See "Guest Check-out".

CALL SERVER : HOTEL

RECEPTION SET FEATURES

Guest name - NAME

This feature allows you to **read** the name of the guest and **modify** it.

Reading the name:

The room consultation screen allows you to read the name of the guest.

Modifying the name:

Press **NAME** and modify the name (10 characters maximum); validate the operation.

Guest language - LANG

This feature allows you to **read** the guest's language and **modify** it.

Reading the language:

The room consultation screen allows you to read the guest's language.

Modifying the language:

Press **LANG** -> **CHOICE** to select one of the languages offered. Validate.

Note: the language is automatically assigned to the guest's voice mail box and set (if it has a display).

Voice mail status - MESSAG

This feature allows you to **read** the guest's message status (message left or not), it enables the operator to leave the guest a **call-back request** (activation of the message LED) and find out the **type of message** left for this guest (operator call-back, voice mail or text mail).

Reading the guest's mail:

The room consultation screen allows you to find out whether a message has been left for the guest. To the right of the display and before the room n°, a segment provides information on this status:

- at least one message is waiting for the guest:
- no message is waiting for the guest:

Operator call-back request:

The operator can leave a call-back request on the guest's set. Press **MESSAG** -> **CHOICE** to:

- activate a call-back request:
- cancel the call-back request:

Validate the operation.

Reading the type of message left:

The operator can find out the type (voice or text message) of message left for the guest.

Press **MESSAG** and analyze the display according to the headers presented:

- **OPERATOR:** operator call-back request: or no call-back:
- **VOICE:** voice message waiting: or no message:
- **TEXT :** text message waiting: or no message:

Guest DDI number - DDINUM

This feature allows you to **read** the guest's DDI n° and **select** another one.

Reading the DDI n°:

Press **DDINUM**, the screen displays the guest's DDI n°.

Selecting another DDI n° for the guest:

Press **DDINUM** -> **CHOICE**, the system allocates another DDI n°. Validate.

Barring - BARRNG

This feature allows you to **read** and **modify** the barring for the guest's set.

Reading the barring:

Press **BARRNG**, the screen displays the guest's barring level.

Modifying the barring:

Press **BARRNG** -> **CHOICE** to select "INTERNATIONAL", "NATIONAL", "LOCAL" or "NO EXTERNAL". Validate.

Guest password - PASSWD

This feature allows you to **read** the guest's password and **select** another.

Reading the password:

Press **PASSWD**, the screen displays the guest's password.

Selecting another password:

Press **PASSWD** -> **CHOICE**, the system assigns another password. Validate.

Note: The password is automatically assigned to the guest's voice mail box and set. The guest can use it to:

- lock the set (block outside calls)
- make calls using a protected account code (with or without substitution)
- read his or her voice mail remotely

CHECK-OUT

The application allows you to free a room.

- Select an occupied room then the Check-out menu:

- Reception set: **Hotel key** -> **RSL** key or **directory n°** of the room -> **CheOut** menu

The following appears on the display:

Torelli	It	+ 7 EUR	211
Print	PreOut	CheOut	

The first line shows:

- the name of the guest
- the guest's language
- the guest's prepayment status (signs " +"for credit and " -" for debit) and the monetary unit used
- the directory number of the room

The second line enables Reception to print out an information ticket and perform "Pre-checkout" as well as Check-Out.

Print out a guest's telephone bill - PRINT

Press **PRINT**; the bill indicates:

- the name of the guest
- the room n°
- the guest's total deposit (metering credit)
- the number of communications made
- the total cost of the communications
- the VAT rate and the total VAT corresponding to the cost of the communications
- the total remaining to be paid by the guest (debit) or to be reimbursed by the hotel (credit); total of the deposit paid minus the cost of the communications

Pre-checkout of a guest - PREOUT

This feature enables a guest to settle the telephone bill the day before an early morning departure, for example, (external outgoing calls are then no longer possible) whilst at the same time keeping the features programmed on the phone (wake-up call, message, DDI N°, DND, etc).

Press **→** **PRE CHECK-OUT** to activate the pre-checkout features.

Caution: The pre-checkout cancels the guest's amount "Remaining to be paid", see the table below.

Check-out of a guest - CHEOUT

This feature enables Reception to make a room free; see the table below.

Press **CHEOUT** to reset the room's parameters; a "Guest Global Bill Ticket" is printed automatically.

The following table and analysis show the role of each of the features.

	Wake-up	Message	DND	Forward	DDI allocation	Barring	Room Status	Password	Name	Remaining to be paid
Pre-check-out	/	/	/	/	/	No external call	/	/	/	---
Check-out	Reset	1 hour	Reset	Reset	Reset	No external call	Free / Uncleaned	Reset	Room n°	---

Analysis of the table:

- / : this symbol means that the feature remains unchanged from the previous report.
- **No external call**: new room set barring. The set will return to its default configuration upon check-in.
Active communications, ringing, calls on hold etc. are cut off immediately upon activation of "PRE-CHECKOUT" or "CHECK-OUT".
- **---** in the **"Remaining to be paid" column**: the total remaining to be paid by the guest (debit) or reimbursed by the hotel (credit), resulting from the cost of the communications and the deposit given, is erased.
The guest's call counters, partial metering counter and partial cost counter are reset only upon check-in (input of a new guest) or by system command.
- **Reset**: reset of the features. The Wake-up, DND and Barring features return to their default value upon check-in.
- **1 Hour**: new messages are kept for 1 hour. Check-in resets the voice mail box.
- **Free / Uncleaned**: the room is assigned "Free" and "Uncleaned" status.
- **Room n°**: the guest name is replaced by the room number (directory update).

ROOM STATUS

The Room Status feature enables:

- the Room Manager: to inform Reception of the status of rooms
- Reception to:
 - find out the status of a room
 - change the status of a room
- see the status of the rooms on the Reception set (segments of an RSL key)
- print a Room Status ticket or statement

Use of Room Status by the Room Manager

The Room Manager informs Reception of the status of the rooms (cleaned, uncleaned, with or without problem) by using the room set to dial the "Room Status" code corresponding to its status.

- To enter the Room Status code for a room:

- On the room set: **Room Status prefix + 0 (cleaned) or 1 (uncleaned) + if necessary, N° of problem (3 digits max.; enter 000 to cancel the previous problem)**.

Use of Room Status by Reception

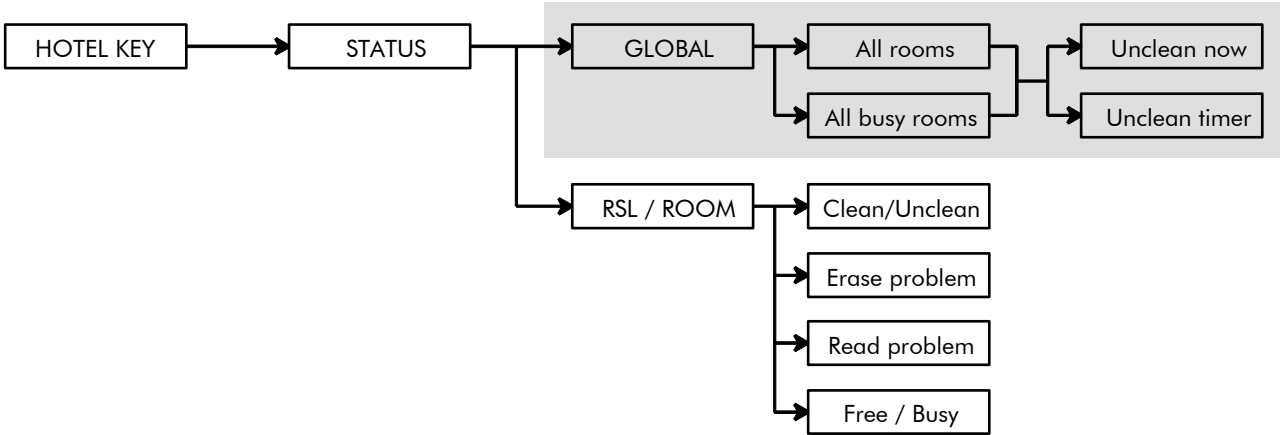
Reception enters the Room Status menu then selects "Global" or a room RSL key.

- To enter the Room Status menu:

- Reception set: **Hotel key -> Status**

Notas :

To exit the application, press the **Release** key.
 To consult the status of another room, select an **RSL** key.
 To return to room consultation, enter a **directory n°**



Configuring Room Status - GLOBAL

The grayed area represents the Room Status configuration. On the use of this service to switch rooms to "Uncleaned" status immediately or at a preset time, see "Configuring Room Status" in the "Configurations" section.

ROOM STATUS – RSL KEY OR DIRECTORY N°

The RSL key or directory n° allows you to **read** and **modify** the Room Status of a room. There is:

- its "Cleaned" or "Uncleaned" status
- its problem number, if there is indeed a problem
- its free or busy status (read only).

Reading the status of a room:

The screen displays the three types of status above.

Notas :

The CHECK-IN, PRE-CHECKOUT and CHECK-OUT operations do not reset the room problems.

Modifying room status:

- Press **CLEANS** to select "UNCLEANED" or "CLEANED"
 - Press **NOPROB** to erase the problem
 - Press **PROBLM** to enter a problem n°, **012** for example, and validate
- Validate the operation.

Printout of a Room Status Ticket or Statement

A **Room Status Ticket** or **Statement** can be printed automatically when a room changes status.

Below is an example of a "Room Status Statement".

ALCATEL

USER	LINE	HOUR	TAXES	FACILITIES	- -	USER NAME
TYPE	DATE	DURATION	SERV.	DIALLED NUMBER	- -	
A122	03/06/97	08:31		ROOM STATUS CHANGE 0034		TORELLI

The field ROOM STATUS CHANGE is specific and includes the following data:

- the first digit indicates the room status: **0**=room CLEANED or **1**=room UNCLEANED
- the other digits (3 maximum) represent the problem number, if there is one.

CALL SERVER : HOTEL

RECEPTION SET FEATURES




Function of the RSL key segments

The three-segment display associated with each RSL key not only allows you to see the telephone status (normal operation), but also provides at-a-glance information on the overall status of the room (free, occupied, cleaned, uncleaned or problem with wake-up call or room).

To access these types of status, the set must have a Hotel key. Each segment has a function:

- the first segment (on the left-hand side) indicates the free or occupied status of the room as well as a possible wake-up call problem
- the second segment indicates the telephone status of the room set
Note: if the segment is flashing, this indicates an internal or external call
- the third segment indicates the "cleaned" or "uncleaned" status of the room as well as a possible problem with the room

The table below sums up this information.

Segment N° Status	1st segment	2nd segment	3rd segment
 Not lit	Room free	Station free	Room cleaned
 Lit	Room occupied	Station busy	Room uncleaned
 Flashing	Wake-up problem	Station ringing	Room problem

ROOM SERVICE

To call Room Service, the user dials a number corresponding to a service (the "breakfast" service for example). This number, recognized by the system, is assigned to the "Room Service" station on an RSD key.

The "ROOM SERVICE" station has a display enabling the Room Service operative to read the name, directory n° and language of the caller.



RECEPTION SET FEATURES

CALL SERVER : HOTEL

Alcatel OmniPCX Office

SECTION

E-SERVER : INTERNET

APPLICATIONS

REF3EH 21000 BSAA Ed. 04



ALCATEL OMNIPCX OFFICE

E-SERVER : INTERNET APPLICATIONS

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ALCATEL OMNIPCX OFFICE

SECTION E-SERVER : INTERNET
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E-SERVER : INTERNET APPLICATIONS

Section e-SERVER : Internet applications (Index)

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GENERAL PRESENTATION

File

1

INTRODUCTION

Alcatel OmniPCX Office is a voice/data convergence product intended for small and medium-sized enterprises.. Alcatel OmniPCX Office can be administered locally or remotely and can be integrated into any LAN on a single site or a multiple site. Given its overall communication range, Alcatel OmniPCX Office offers an Internet access solution, and can be used to manage the following elements:

- the LAN.
- client terminals (PC) that can be used to access Internet resources.
- remote client terminals that can access the LAN via the VPN.

Alcatel OmniPCX Office does not required any special software for the Internet access installation, but it can only be integrated into a **TCP/IP environment** . The range of services proposed for Internet access are configured by means of an Internet navigator (Netscape Navigator, Internet Explorer...).

The administration tools and the integrated software programs are used to configure the network parameters (IP addresses, masks, domain names and DNS, routing tables...) corresponding to the installed hardware.

In this section, we shall deal in turn with the connections, the proposed service offers in terms of Internet access and LAN services, along with the associated hardware configurations.

CONNECTIONS

The LAN and Internet connections are required for the installation of Alcatel OmniPCX Office Internet access.

LAN connection

this is provided by a Base-T 10/100 Base Ethernet (RJ45) or by an internal switch installed in the Alcatel OmniPCX Office cabinet.

Internal connection

Alcatel OmniPCX Office is used to connect to the Internet by three types of access.

ISDN access

The ISDN functionality provides Internet access by means of a shared access (T0 or T2) that is limited to two B channels. Connection is usually by "call on demand", but can also be "permanent". The authorised bandwidth varies between 64 Kbps and 128 Kbps.

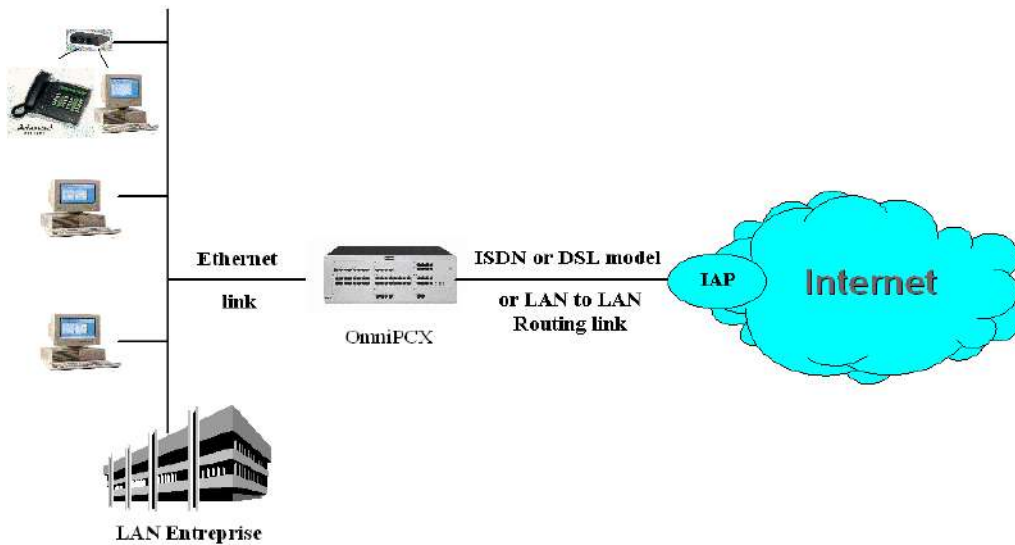
DSL modem access

The DSL modem functionality allows connection of Alcatel OmniPCX Office to an external IP network via an external DSL modem connected to the system by means of the WAN interface (second Ethernet interface of the CoCPU@) card). Connection is "permanent" if the protocol used is PPTP and optionally can be "permanent" or "on demand" if the protocol used is PPPoE. The authorised bandwidth is between 64 Kbps and 2 Mbps.

LAN access to LAN routing

The LAN to LAN routing functionality uses an external router to manage the connection to the Internet. The router is connected to Alcatel OmniPCX Office via the WAN interface (second Ethernet interface of the CoCPU@) card). The connection to the WAN can be of any sort, ISDN or ADSL for instance. Connection is generally "permanent", but can also be "call on demand". The authorised bandwidth is between 64 Kbps and 2 Mbps.

Nota : for the description of the Alcatel OmniPCX Office sub-systems, refer to the "Hardware" section.



SERVICES

The range of services available on the Alcatel OmniPCX Office Internet access is linked to the hardware and purchased software keys. It is made up of two main offers: a "Basic" offer with shared Internet access for all company users, and a "Full" service offer combining the "basic" offer and some extra services.

With the "Basic" offer, Alcatel OmniPCX Office provides users with fast access to the resources of the Internet world. It allows all users of the company to access the Internet simultaneously by using a single connection account. The functionalities associated with this offer are the LAN functions, integrated firewall protection and NAT.

With the "Full", Alcatel OmniPCX Office provides users with access to the resources of the Internet world, together with additional functionalities such as the Web cache, access control, electronic messaging and VPN.

All the available services are:

- **Internet access:** the system offers several methods of connection to the Internet Access Provider (IAP):
 - **Connection on demand:** connection to the IAP is provided in accordance with user demands (Internet access, sending electronic messages, etc...). It is disconnected when there is no more traffic. The speed chosen can be static (64 Kbps, 128 Kbps) or dynamic (bandwidth on demand between 64 and 128 Kbps).
 - **Connection on demand with call-back service ("Call-back"):** the IAP sends a signal to Alcatel OmniPCX Office that establishes the connection by return. This mechanism is validated by virtue of the ISDN caller identification where only authorised numbers can be called back. This type of connection must be used as part of the implementation of VPN services on an ISDN link (for more details, refer to the "VPN" section).
- **Permanent connection:** the link to the IAP is permanent.

The authentication protocols used are PAP/CHAP (ISDN and DSL modem). Similar to the case of the Router, if OmniPCX Office does not communicate directly with the IAP, there is no need for authentication.

- **Connection protocol:**
 - ISDN: MPPP
 - DSL modem: PPTP or PPPoE
- LAN to LAN routing: OmniPCX Office communicates with the IAP via the external Router. The protocol used depends on the external Router.
- **LAN functions** : integrated DNS and DHCP server.
- **NAT:** address translation is used to internally store private IP addresses and to use only one single public address.
- **Protection by integrated firewall:** the integrated packet filtering and IP address translation func-

tions offer protection to the LAN against the Internet.

- **Access control** : Alcatel OmniPCX Office offers control solutions for user access by integrated proxy. It is used to control Internet access and to provide related statistics (user, protocols, URL ...).
- **integrated cache**: this function is used to accelerate Internet requests and to reduce the costs of accessing the telephone network.
- **Electronic messaging server**: it allows users to make use of a personal electronic address in the company. It is possible to create as many messaging accounts as required within the limits of the system, while optimising the corresponding traffic to the Internet. The functions are as follows:
 - SMTP server
 - POP3 server
- **VPN** : this solution allows safe connections to the LAN via the Internet infrastructure . Consequently, remote users take advantage of all the resources of the LAN. Several sites can be remotely connected by VPN. The existing possibilities are:
 - Remote access to the LAN via Internet ("Client to LAN" configuration, PPTP protocol)
 - Access between two LAN ("LAN to LAN" configuration, IPSec protocol)

HARDWARE CONFIGURATIONS

Three CPU cards are used for Internet access: An "Enhanced" CPU (CPUe), a coprocessing CPU@ (Co-CPU@) and a coprocessing CPU@ with a 2nd LAN interface (CoCPU@). The configurations corresponding to Internet services are summarised in the table below (for more information, refer to the "Hardware" section).

Services	Card(s) used
Internet access via ISDN - Access (on demand/permanent/Call-Callback) - NAT - Firewall (packet filtering) - LAN (DHCP server, DNS server)	CPUe
Internet access via DSL modem or LAN to LAN Routing - Permanent access - NAT - Firewall (packet filtering) - LAN (DHCP server, DNS server)	CoCPU@ with a 2nd Ethernet interface
Web cache and access control(Proxy) - Cache - Restrictions	CoCPU@
Electronic messaging - Messaging server - Messaging cache - Internal SMTP server	CoCPU@
VPN - Client-LAN terminal - LAN-LAN	CoCPU@



GENERAL PRESENTATION

E-SERVER : INTERNET APPLICATIONS

INTERNET ACCESS

File

2

To take advantage of the shared Internet access on a client terminal, several steps have to be undertaken:

- Installation of Alcatel OmniPCX Office.
- Creation and configuration of an Internet connection.
- Configuration of the client terminal

PROCEDURE FOR INSTALLING ALCATEL OMNIPCX OFFICE

There are four stages to installing Alcatel OmniPCX Office:

- the necessary hardware on Alcatel OmniPCX Office.
- the equipment required at the client terminal.
- subscription with an IAP.
- the installation procedure.

The necessary hardware on Alcatel OmniPCX Office

- a CPUe card (Internet access only) or a CoCPU@ card (Internet access + Proxy, E mail, etc ...), in the case of an ISDN connection. In the case of an ADSL or LAN to LAN routing connection, a Co-CPU@ card fitted with a 2nd Ethernet interface is added.
- an ISDN T0 or T2 connection or an STN connection.
- a client terminal connected to the LAN.
- a LAN switch (LANX8, LAN X16 or external switch).

Items required on the client terminal

- the latest version of the PM5 software.
- an Internet navigator (Netscape Navigator or Internet Explorer version 4 or higher).

Subscription with an IAP

A subscription with an IAP is necessary to access the Internet.. After you have subscribed, the IAP sends you back the information **vital** for installing you Internet access. This information must be entered when configuring Alcatel OmniPCX Office.

The information required to install the Internet access varies according to the type of connection to be established.

ISDN connection	DSL model connection	LAN to LAN routing connection
Login	Login	IP address of router
Password	Password	IP address of system
Primary and secondary telephone number	Connection protocol	Network mask
Bandwidth	- If PPPoE:	Primary and secondary name server
Type de connection	• Type de connection	
IP address	- If PPTP	
Primary and secondary name server	• IP address of modem	
	• Network mask	
	- IP address of system	
	Primary and secondary name server	

All this information is described below.

- **Connection account**

This account is used when identifying the connection to the IAP. This account is unique, and is used to identify oneself when connecting to the access provider by giving the account and the related password.

- "Login": account delivered by the access provider. This account is used during the PAP/CHAP authentication process when connecting to the IAP. This account, a form of security used by the access provider, must be entered only once in Alcatel OmniPCX Office. It must not be confused with the user account and password, the parameters that are entered when requesting access to a Web site, and that allows the number of users with Internet access to be controlled. So there are two level of authentication:
 - authentication (client terminal) managed by Alcatel OmniPCX Office for each Internet user in the company.
 - authentication (Alcatel OmniPCX Office) managed by the access provider. Internet access is access that is shared by all users. Consequently, this authentication is unique and transparent for the users.
- "Password": password linked with the connection login.

- **Access provider's telephone number**

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- "Telephone number": telephone number dialled when connecting to the IAP.
- "Secondary telephone number (backup)" : it may or may not exist depending on the access provider used.. This number is dialled if the main telephone number is not available..

- **Bandwidth**

The allocated bandwidth corresponds to the throughput between Alcatel OmniPCX Office and the access provider for an ISDN type connection. . The bigger the bandwidth, the faster the throughput (connection costs will be higher in turn). Three choices are possible in the number of B channels used:

- "1 64 Kbps B channel": a single B channel is used statically.
- "2 128 Kbps B channels": two B channels are used statically. In this case, call charges are multiplied by two.
- "on demand (64-128 Kbits/s)": two B channels are used dynamically. The charges are identical to those applied to 128 Kbits/s, but the traffic is optimised to the bandwidth requirements. The throughput to the IAP must correspond to a 128 Kbps access. This option must not be chosen if the connection to the access provider is 64 Kbits/s.

- **Type de connection**

The type of link between Alcatel OmniPCX Office and the access supplier can be established with:

- "On demand call": the B channel(s) is (are) active in relation to user requests, and is (are) closed down when there is no more traffic. This type of connection avoids charges when there is no traffic.
- "Permanent": the connection between the IAP and Alcatel OmniPCX Office is permanent, it is like using a leased line from the telephone operator..
- "Callback": this option is chosen when a client terminal outside the LAN wishes to access Alcatel OmniPCX Office via Internet (See Section VPN). It allows Alcatel OmniPCX Office to dial automatically the call number of the IAP in order to establish connection.

- **IP address allocation**

The IP address is allocated to Alcatel OmniPCX Office by the access provider. This address is public. If the access provider manages the IP address negotiation, the "dynamic" option must be checked, otherwise enter the assigned IP address. A fixed IP address is required in the case of a permanent connection and in order to use a VPN.

- **DNS servers**

This information corresponds to the IP addresses of the DNS servers on the premises of the access provider. These servers are used to translate site names into IP addresses.

- "Address of primary DNS server".
- "Address of secondary DNS server".

- **Connection protocol**

This information is provided by the IAP for a connection using a DSL modem. In this case, a point to point connection is established between OmniPCX Office and the DSL model. Two types of communication protocols are available to manage this connection.

- PPPoE: this protocol is used to send PPP packets over Ethernet. This protocol allows "permanent" or "on-demand call" type connections.
- PPTP: This protocol consists of establishing an IP tunnel between Alcatel OmniPCX Office and the modem. This protocol allows only "permanent" connections.

- **Connection properties**

To define the connection parameters, the IAP gives the following elements:

- "DSL modem address" or "Router address": this is the IP address of the router or of the DSL modem.
- "Network mask": parameter determining the range of the network.
- "System IP address": this is the IP address of the WAN interface. These parameters must be consistent with the IP address of the router or of the DSL modem.

Instllation procedure

1. Connect the CPU card using an Ethernet cable:
 - either to an RJ45 jack available on the company's LAN.
 - or to the internal switch in the Alcatel OmniPCX Office cabinet. This switch can then be connected to another switch if Alcatel OmniPCX Office has several switches.

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2. If necessary, change the default IP addresses (192.168.92.246 for CPUe, 192.168.92.247 for Co-CPU@) and the mask of the sub-network to IP addresses that are compatible with the existing LAN (for more information, contact the company's network and system administrator). The IP addresses of the different cards can be accessed through the heading **PM5 -> PABX Client -> Hardware and limits-> IP cards**.
3. Internet access configuration:
 - either via the Internet navigator of a customer terminal connected to the LAN by entering the IP address of the CPU Main or CoCPU@ card in the address bar.
 - or via the PM5 software, from the **PM5 -> PABX Client -> Internet access configuration** menu.

CREATION AND CONFIGURATION OF AN INTERNET CONNECTION.

Alcatel OmniPCX Office provides three types of connection to access the Internet:

- ISDN
- DSL modem
- LAN to LAN routing

Configuration of an ISDN connection

- using WBM: **Assistants -> Internet access**

The different fields to be completed in the order of appearance on the configuration screens are the following.

- **Profile name** tab

- **"IAP profile name"** : this name identifies the new Internet connection managed by Alcatel OmniPCX Office. It holds all the parameters linked to this connection. It is recommended that a name that is representative of the created connection is entered, such as the name of the access provider.
- **"Type"** : this field is used to define the type of connection. Click on **"ISDN"**.

- **IPA configuration** tab

- **"Login"**: enter the account name sent by the access provider.
- **"Password"**: enter the password linked with the connection login.
- **"Confirm the password"**: password identical to the one entered earlier. This information is used to avoid keying errors.
- **"Telephone number"** : enter the telephone number dialled when connecting to the IAP. This number must contain the dialling prefix required to dial a number outside the company.

- **Access configuration** tab

- **"Bandwidth"**: three choices are possible in the number of B channels used:
 - "1 64 Kbps B channel"
 - "2 128 Kbps B channels"
- "on demand (64-128 Kbits/s)": this option must not be chosen if the connection to the access provider is 64 Kbits/s.

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- "**Connecyion**": three choices are possible:
 - "On demand call"
 - "Permanent":
- "Callback":

- **Internet configuration** tab

- "**IP address**": two choices are possible:
 - Check the "**dynamic**" option, if the access provider manages the IP address negotiation.
 - Enter the IP address provided in the "**fixed**" field
- "**Name server**": two choices are possible:
 - check the "**Dynamic**" option if the resolution of the DNS is automatic during connection.
 - Enter the IP address of the access provider's primary DNS. It is recommended that recognition of the IAP's DNS is left at automatic.

- **Summary** tab

This stage is used to verify the connection properties.

Click on "**Apply**" to accept these parameters and enable the profile. Click on "**Back**" to return to the last screens and modify the desired parameters.

A connection test is possible, and can be done by clicking on "**Test the connection** " after accepting the configuration.

Configuration of a DSL modem connection

- using WBM: **Assistants -> Internet access**

The different fields to be completed in the order of appearance on the configuration screens are the following.

- **Profile name** tab

This stage consists of defining the connection name and type.

- "**IAP profile name**": this name identifies the new Internet connection managed by Alcatel Omni-PCX Office. It holds all the parameters linked to this connection. It is recommended that a name that is representative of the created connection is entered, such as the name of the access provider.

- **"Type"** : This field is used to define the type of connection. Click on **"ISDN"**.

- **IPA configuration** tab

This stage is used to identify the IAP.

- **"Login"**: enter the account name sent by the access provider.
- **"Password"**: enter the password linked with the connection login.
- **"Confirm the password"**: password identical to the one entered earlier. This information is used to avoid keying errors.

- **Access configuration** tab

This stage is used to define the connection protocols.

Depending on your subscription, you will choose the protocol Over Ethernet (PPPoE) or Tunnelling (PPTP)

▼ **Over Ethernet protocol (PPPoE)**

Choose "on Demand" if your access is not permanent.

- **Internet configuration** tab

This stage is used to define Internet properties, i.e. the IP address and the name servers.

- **"Allocation of IP address"**: two choices are possible:
 - if the IAP gives an IP address, enter it in the **"fixedfield"**
 - Otherwise select the **"dynamic"** option.
- **"Primary DNS server"**: Two choices are possible:
 - Check the **"Dynamic"** option if the resolution of the DNS is automatic during connection.
 - Enter the IP address of the access provider's primary DNS. It is recommended that recognition of the IAP's DNS is left at automatic.

Click on **"Next"** to access the Summary screen. Click on **"Back"** to return to the last screens and modify the desired parameters.

- **Summary** tab

This stage is used to verify the connection properties.

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Click on **“Apply”** to accept these parameters and enable the profile. Click on **“Back”** to return to the last screens and modify the desired parameters.

A connection test is possible, and can be done by clicking on **“Test the connection ”**.

▼ **Tunnelling protocol (PPTP)**

- **Access configuration** tab

This stage is used to define the connection parameters between the DSL modem and Alcatel OmniPCX Office. Complete the following fields:

- **“DSL Modem IP address”**: enter the IP address of the external modem.
- **“System IP address”**: enter the IP address of the WAN interface.
- **“Network mask”**: enter the defined mask.

- **Summary** tab

This stage is used to verify the connection properties.

Click on **“Apply”** to accept these parameters and enable the profile. Click on **“Back”** to return to the last screens and modify the desired parameters.

A connection test is possible, and can be done by clicking on **“Test the connection ”** after accepting the configuration.

Configuration of a LAN to LAN routing connection

- using WBM: **Assistants -> Internet access**

The different fields to be completed in the order of appearance on the configuration screens are the following.

- **Profile name** tab

This stage is used to define the connection name and type.

- **“IAP profile name”**: this name identifies the new Internet connection managed by Alcatel OmniPCX Office. It holds all the parameters linked to this connection. It is recommended that a name that is representative of the created connection is entered, such as the name of the access provider.
- **“Type”**: this field is used to define the type of connection. Click on **“Ethernet to router”**.

- **Connection configuration** tab

This stage is used to define the parameters of the external IP router.

- "**Router address**": enter the IP address of the external router.
- "**Network mask**": enter the defined mask.

- **Internet Settings** tab

This stage is used to define the system's IP address.

- "**System's IP address**": enter the IP address of the WAN interface.
- "**Primary DNS**": Enter the IP address of the access provider's primary DNS.
- "**Secondary DNS**": Enter the IP address of the access provider's secondary DNS.

- **Summary** tab

This stage is used to verify the connection properties.

Click on "**Apply**" to accept these parameters and enable the profile. Click on "**Back**" to return to the last screens and modify the desired parameters.

A connection test is possible, and can be done by clicking on "**Test the connection** " after accepting the configuration.

Connection test

Click on "**Test the connection**". The connection test runs all the stages involved in connecting to an IAP, and gives the causes and related solutions to solve the problem if the connection fails. The following are tested in succession:

- test of the initial state: the system checks that the active IAP is in "Enabled" mode, and that connection is possible in accordance with the configured time ranges.
- Call to the IAP's telephone number, or ping to the DSL modem or router.
- Authentication verification: the system tests the login and password authentication in accordance with the protocol supported by the IAP (PAP/CHAP). This verification is tested during a connection using ISDN or DSL modem.
- Negotiation of IP addresses: the system sends back the IP addresses of Alcatel OmniPCX Office, and of the router on the IAP's premises. This negotiation is tested during a connection using ISDN or DSL modem.
- Testing the remote address by pinging the IAP's router. This test is used to verify that the router is working properly.
- Verification of the DNS configuration: this test is used to verify that the DNS configuration entered in the system is correct, and, if not, it is used to dynamically locate the DNS servers on the IAP's

premises.

- Resolution of the IP address of the URL www.ietf.org: is used to verify that the DNS resolution is working properly.
- Pinging the DNS: this test is conducted if the DNS resolution is not working. It is used to check if the problem is due to an incorrect IP address or the DNS service.
- Pinging www.ietf.org: is used to check accessibility of a site on the Internet.

Advanced configuration (R1.0)

- using WBM: **Configuration -> Internet access**

This menu gives access to several screens that are used to make more precise settings to the **the active profile**.

Depending on the type of connection of the active profile, advanced configuration can provide access to different settings.

- **Maintab**

- "**Hanging up**": time (seconds) after which the link to the IAP is cut in the absence of traffic on the ISDN link. This setting is used only for on-demand connections, and the default value is two minutes.

- **Access tab**

- "**Secondary telephone number**": IAP's second access telephone number. This parameter is optional. It is automatically dialed if the first telephone number is not available.
- "**Callback number**": this field is present only if the callback option was chosen earlier. It corresponds to the number authorised to call Alcatel OmniPCX Office, and is generally the IAP's access number.
- "**Secondary callback number**": corresponds to the second number authorised to call Alcatel OmniPCX Office. It is optional.
- "**Secondary DNS address**": this entry corresponds to the IP address of the IAP's secondary DNS server. It is optional.
- "**QoS (Quality of Service)**": click on "**Yes**" to activate this function, then enter the bandwidth.

- **Connectiontab**

- "**Compression (VJ)**": it corresponds to the compression of the IP headers. Check "**Yes**" if the IAP supports this functionality, "**No**" if not.

Click on "**Apply**" to accept the settings entered. It is recommended that the newly created connection is tested.

Connection management

If you wish to configure access to other IAP, you need only re-launch the operation from the **Assistants** -> **Internet access** menu. So it is possible to create several connections to various IAP with different types of connection. These connections (activation, test and deletion) are managed from the **Administration** -> **Access providers** menu. The configuration screen gives information on the list of profiles generated by the system and the active Internet connection.

The **Test**, **Activate** and **Delete** buttons are used to test in succession the connection corresponding to the active profile, to activate and delete the profile selected from the list of different profiles..

The **Modify** button (R1.1) is used to modify all the profile parameters of the selected IAP, including those set by default when creating this profile (see paragraph "Advanced configuration (R1.0)").

Using the **Welcome page** -> **Overall view**->**Communication** menu, it is possible to enable or disable the connection and to view the status of the connection to the active IAP as well as the incoming and outgoing traffic by clicking on connection status.

CLIENT TERMINAL CONFIGURATION

The client terminal needs to be configured in order to use Alcatel OmniPCX Office's shared Internet Access. The changes must be made to the network configuration (TCP/IP configuration), and to Internet navigator.

TCP/IP configuration

Alcatel OmniPCX Office is a routing element between LAN and Internet. Alcatel OmniPCX Office needs to be configured as the default gateway on the client terminal to access the Internet.

Example : configuration of a Windows 98 client terminal

- Click on the "**Network neighbourhood**" icon, and choose the "**Properties**" option from the context menu.
- In the "**Network**" window, double-click the "**TCP/IP**" icon under the "**Configuration**" tab.
- Enter Alcatel OmniPCX Office's IP address in the "**New gateway**" field ("Gateway" tab of the "TCP/IP properties" window).
- Click on "**Add**" then shut the windows by clicking "**OK**".
- Re-boot the client terminal to have the changes take effect.

Nota : This configuration is valid only if Alcatel OmniPCX Office is the main router in relation to the client terminal. In the case of other network configurations, contact the company's system administrator.

Configuration of the Internet navigator

The Internet navigator must be configured to take account of the existing LAN.

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Exemple : configuration Internet Explorer 5.0

- Run an Internet Explorer session.
- Choose the heading "**Internet options ...**" from the "Tools" menu.
- Click on the "**Connections**" tab of the "**Internet options**" window.
- Click on "**LAN settings...**"
- Change the options in the "**Local network (LAN) settings**" window.
- Click on "**OK**" to accept the changes.

Nota : If the proxy server is active on Alcatel OmniPCX Office, enter the IP address of the CoCPU@ card, otherwise enter the IP address of the client's proxy server.



INTERNET ACCESS

E-SERVER : INTERNET APPLICATIONS

LAN SERVICES

File

3

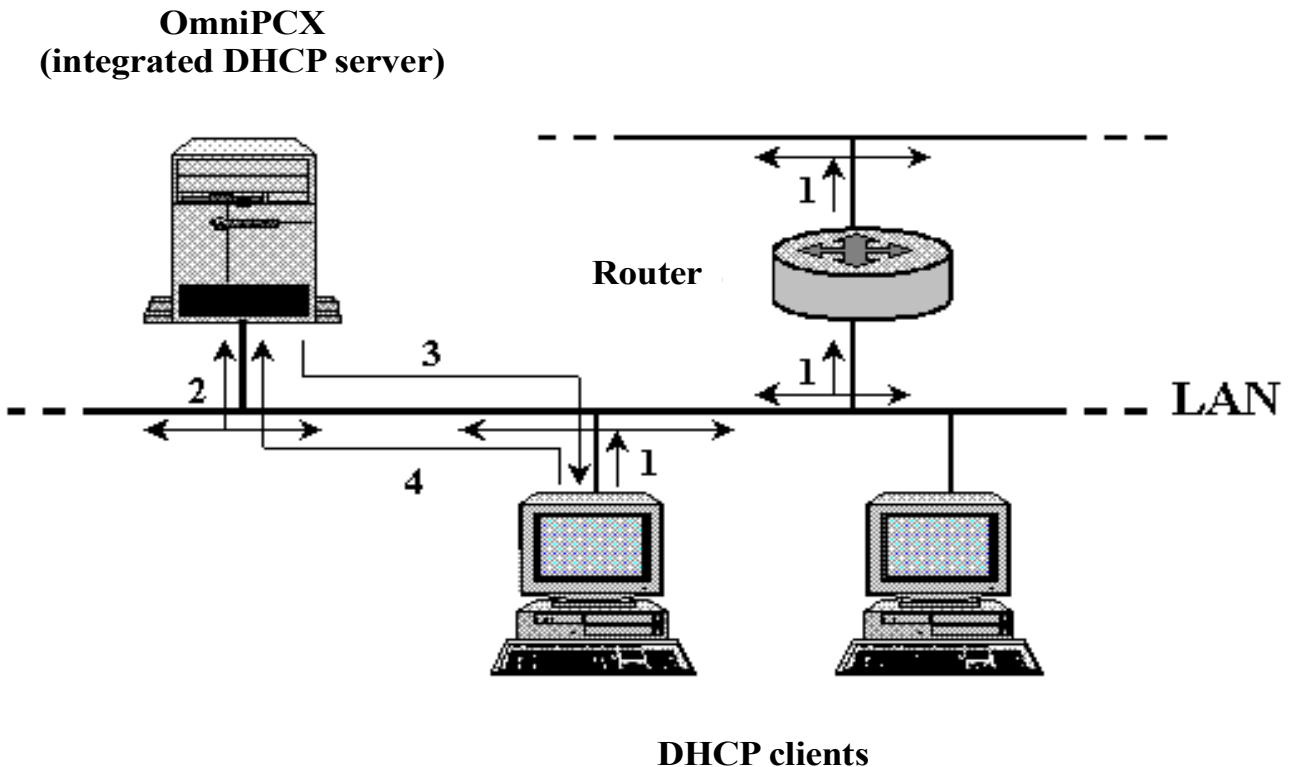
INTRODUCTION

Corporate internal networks – or local area networks (LANs) – are made up of different elements, or "host names", such as servers, client stations, routers, hubs, and so on. To be effectively integrated into a LAN, these devices are subject to integration rules that govern the definition of an IP address plan, the adoption of domain names and naming conventions, etc. OmniPCX provides features that facilitate integration into a LAN, whatever topology it may present. These features correspond to DNS and DHCP services. What follows is a general description of how these services work, before dealing with their configuration in OmniPCX.

DESCRIPTION

DHCP SERVER

The protocol usually implemented and run on LANs is TCP/IP, the standard protocol used on the Internet. In TCP/IP, each host name belonging to a network (LAN, WAN) has its own unique IP address enabling it to be recognized or called up by the other host names when they need to communicate with each other.



There are two types of IP address:

- public addresses: each public address is assigned and unique on the Internet;
- private addresses: these are assigned in a LAN and recognized within the LAN, but not recognized by elements outside the LAN.

Using private addresses in a LAN allows total freedom of choice in allocating addresses. A host name can have a fixed IP address, or it can be assigned one dynamically by a DHCP server each time it connects to the LAN. There are several stages in the LAN connection process (see diagram above):

1. the DHCP client connects up to the LAN, and requests an IP address allocation. The request is made by sending out ("broadcasting") a DHCP request over the LAN;
2. the DHCP server on the LAN receives the request and allocates an available IP address from the pre-defined range of addresses;
3. the allocated IP address is sent to the DHCP client;
4. the DHCP client accepts the IP address.

OmniPCX provides DHCP server functionality. The following parameters can be configured:

- the value range of IP addresses that the DHCP can allocate. These IP addresses are allocated for all the network elements: client stations, telephones and mobile terminals;

E-SERVER : INTERNET APPLICATIONS**LAN SERVICES**

- the lifespan or "lease" of a dynamically allocated IP address.

When integrating into a LAN, two types of situation are encountered:

- **there is no existing DHCP server:** if a DHCP server is required, an address plan must be defined with a range of fixed addresses for the specific network elements (servers, printers, routers, etc) and a range of DHCP-attributable addresses for the client stations;
- **there is already a DHCP server:** in this case OmniPCX requires no particular DHCP configuration.

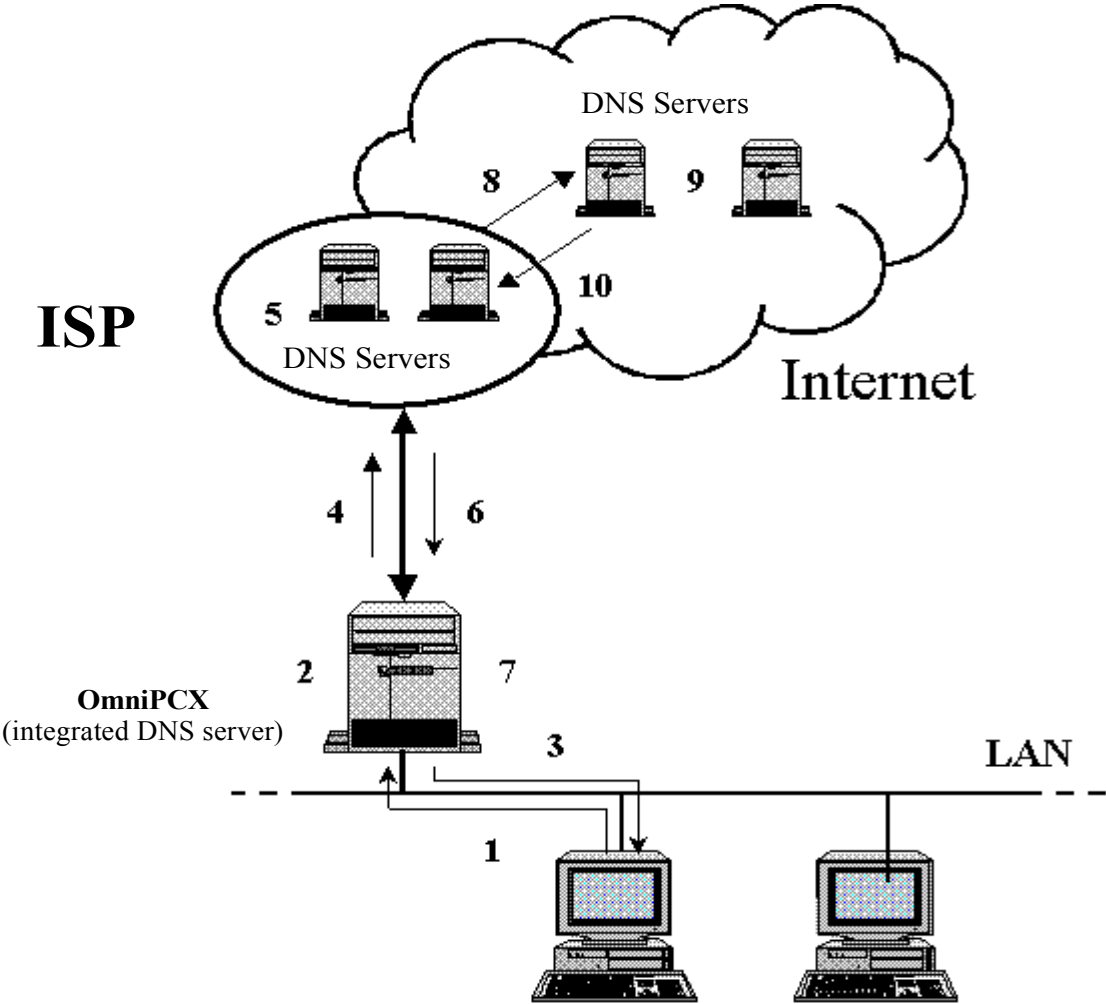
Nota : LANs can accommodate more than one DHCP server, so long as their IP address ranges don't overlap.

DNS SERVER

With its integrated DNS server, OmniPCX provides you with DNS server functionality on the LAN. DNS servers handle the correspondence between an IP address and the host name of a machine. DNS servers perform two main functions:

- DNS caching for the resolution of names external to the LAN. The cache is updated whenever a DNS request is resolved by DNS servers other than OmniPCX. This means that if an identical request is received, it can be resolved directly by OmniPCX without calling on the DNS servers at the ISP. The request is thus resolved faster, with a corresponding reduction in communications costs. The OmniPCX DNS also has a negative cache for memorizing name resolution failures. The lifespan of the information in the cache is kept short so that the user can make a new attempt at resolving these names;
- resolution of local host names with a fixed IP address on the LAN. These names are resolved on condition that the elements have been entered in OmniPCX.

Resolving DNS requests from client stations involves several stages (see diagram):



- The client station emits a DNS request (Step 1).
- The host name - DNS server IP address correspondence table is consulted (Step 2). If the host name is found, the DNS server sends the corresponding IP address back to the client station (Step 3). If not, the request is relayed to the ISP's DNS servers (Step 4).
- The ISP's DNS servers are consulted. If the request is resolved, the servers send the corresponding IP address back to the DNS server on the LAN (Step 6). The LAN DNS server updates the DNS cache to take account of the request (Step 7), and proceeds from Step 3.
- If the request can't be resolved by the ISP's DNS servers, it is relayed to other DNSs on the Internet (Step 8). At this stage, the request is continuously relayed until a DNS server manages to resolve the host name (Step 9). The resolved IP address is then returned to the ISP's servers (Step 10), from whence it follows the same route as before.

CONFIGURATION

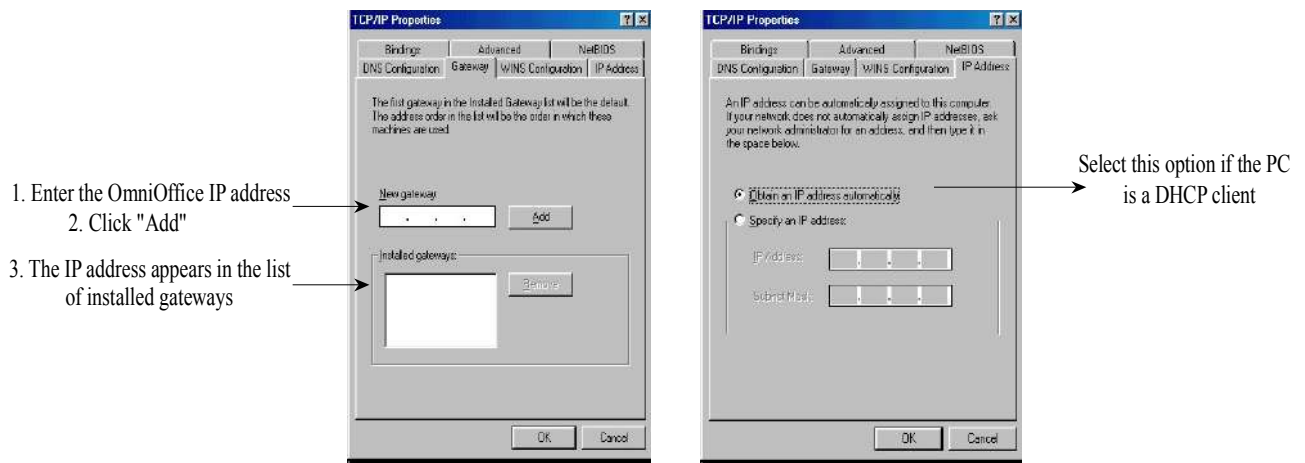
OmniPCX

Click on "**Network**" in the "**Settings**" menu inside the configuration menu. Enter the following settings:

- "**DNS**" tab
 - **Your Domain Name**: enter the internal domain name used on the LAN. The default setting is company.world.
 - **Association List**: the list of the host names on the LAN with a corresponding fixed IP address. Each new element entered with an IP address and host name will be added to the OmniPCX DNS table. To add an entry, enter the IP address and associated name, then validate by clicking "Add". The new element appears automatically in the list underneath.

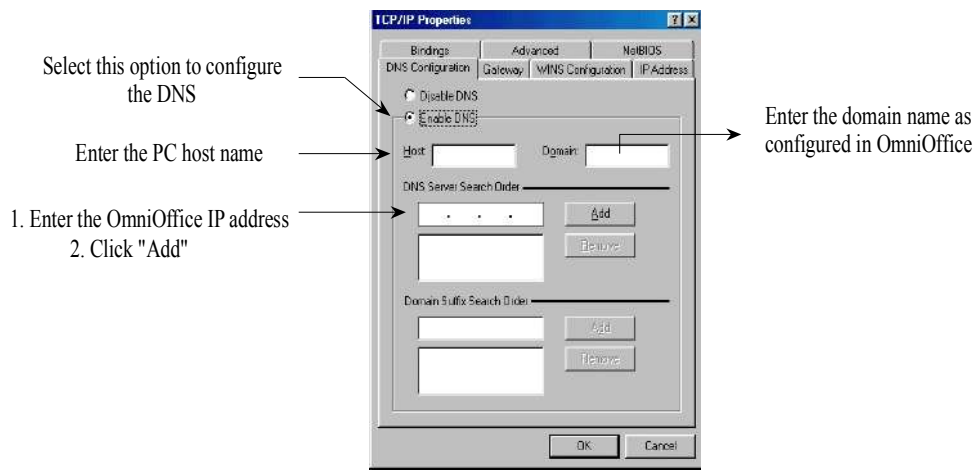
Important :DHCP clients must not be entered in this list.
- "**IP Address Allocation**" tab
 - **DHCP Lease Time**: the lapse of time after which an IP address allocated to a DHCP client that logs off is made available to another DHCP client. The shorter the lease time, the easier it will to redistribute the IP address pool dynamically to the client stations.
 - **Dynamic IP Address Allocation**: ranges of IP addresses allocated to LAN elements. These ranges are defined by a "begin" IP address and an "end" IP address. They are allocated to the PCs, phone terminals and VPN clients. To configure a range of IP addresses:
 - enter the IP address for the start of the range in "Begin";
 - enter the IP address for the end of the range in "End";
 - in "Type", choose "Computer" to assign the range to PCs, "IP Enabler" for telephones, or "Client to LAN" for remote PCs that access the LAN via a VPN tunnel;
 - click "Add" to validate. The newly configured range is added to those already defined;
 - repeat the operation as many times as there are ranges to define. After validation, ranges can be deleted by clicking "Remove".
- "**Routing Table**" tab. The routing table allows OmniPCX to direct the various IP packets it receives towards their respective destinations (Internet, LAN-based server or router, PC, etc). The table is in two parts:
 - A non-modifiable section ("Static Routes"), which covers the routes integrated by default at the OmniPCX level, i.e. OmniPCX, the LAN and the Internet.
 - a configurable section covering other IP routings. To configure an additional route, fill in the following fields:
 - "Destination": destination IP address;
 - "Gateway": IP address of the gateway to contact in order to reach the destination address;
 - "Mask": sub-network mask associated with the destination address;

3. Click the "Configuration" tab in the "Network" window.
4. Double click on "TCP/IP -> Ethernet controller" in the list for "The following network components are installed". This calls up the "TCP/IP Properties" window.
5. Modify the settings as shown below.
6. Close the windows by clicking "OK".
7. Reboot the computer to register the modifications.



"Gateway" tab

"IP Address" tab



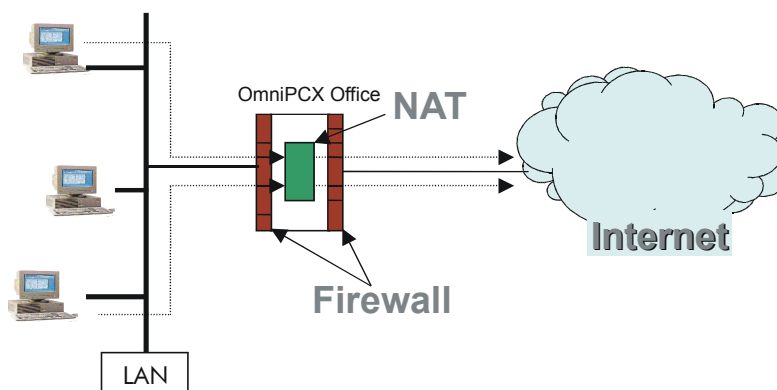
"DNS Configuration" tab

SECURITY

File
4

DESCRIPTION

As OmniPCX Office is the gateway between the company LAN and the Internet, it has to guarantee Internet access for LAN users while protecting all machines on the LAN from external intrusion. It is for this purpose that it incorporates the firewall and NAT (Network Address Translation) features described below.



FIREWALL

The OmniPCX Office integrated firewall works on the principle of packet filtering. As packets enter the system, they are filtered by type, source, destination and port (as declared in each packet) and are only authorized to leave the system if the firewall rules allow.

If the firewall is active, these rules are generated automatically when Internet access is first configured, and subsequently each time one or more security parameters are modified according to the following criteria:

- Contents of the software key (for example, if the proxy software key is present, it will be impossible to access the Internet or download a file without going through the proxy).

- Certain Internet access configuration options:
 - OmniPCX Office used as mail server (or not);
 - Explicit authorization of an application or protocol (cf. <Protocol Control>);
- Authorization or refusal of Internet access on the basis of the user's "position" in the local network (cf. <Services Access>).

NAT (Network Address Translation)

Definition:

- NAT is a mechanism devised to palliate the shortage of web addresses. It enables a group of computers in a local network to access the Internet using a single IP address, in this case that of OmniPCX Office, which makes it appear as the only system using the Internet connection.

Remarque : OmniPCX Office only has one official IP address at any given moment – the one provided by the currently active ISP. The correlation of addresses in the NAT process is therefore always of the type: n local addresses to 1 public address.

How it works:

- Computer X is instructed that OmniPCX Office is its default gateway.
- When a packet arrives in OmniPCX Office from X, it is assigned a new port number, and the OmniPCX Office IP address is declared in the packet header, without overwriting the original header. The modified packet is then sent to the Internet via the PPP interface.
- When a packet arrives in OmniPCX Office from the Internet, if the port number is one of the numbers assigned in the preceding stage, then the header is again modified to restore the original port numbers and IP addresses, and the packet is passed on to machine X.

Advantages:

- flexibility in the private address plan of the LAN;
- the shared use of a single public IP address for any number of private addresses in the LAN;
- tighter security by using only one IP address that can be identified on the Internet.

Restrictions:

These are of two kinds:

- An OmniPCX Office user (see User Management) is an Internet service client.

In this case certain protocols are incompatible with NAT, either because they make use of the port numbers or because they encode IP addresses. The table below lists applications or protocols and their compatibility with NAT.

E-SERVER : INTERNET APPLICATIONS

SECURITY

Application/Protocol	Functionality	Supported
Archie	FTP search	Yes
FTP	Download file	Yes
Gopher	Web search in text mode	Yes
Http	Web search	Yes
Nntp/snews	Discussion	Yes
Ping	Access host name	Yes
POP3/IMAP4	Receive mail	Yes
SMTP	Send/Receive mail	Yes
Ssh	Secure Telnet/FTP	Yes
Telnet	Remote connection	Yes
Traceroute	Internet routing	Yes
Vrml	3D web modeling	Yes
Wais	Database search	Yes
Windows Media Player	Audio/Video	Yes
RealG2	Audio	Yes
H323 applications	Internet telephony	No
Netscape Cooltalk	Internet telephony	No
IRC	Discussion	No
VDOLive	Video	No
Winamp	Audio	No
ICQ	Communication	No

- A computer on the local network hosts a service for clients on the Internet (i.e. acts as a web server).
The way NAT works rules out this kind of topology. However, thanks to OmniPCX Office's port forwarding functionality, a mail server and/or a VPN server can be hosted on the local network (by forwarding the SMTP and/or PPTP ports respectively). This functionality is activated automatically whenever one of these servers is declared (see the sections on e-mail and VPNs). With the current version of OmniPCX Office it is not, however, possible to host a web server on the LAN that is accessible from the Internet.

CONFIGURATION

The configuration for the firewall is done using the **Settings -> Security** menu.

- **Main tab:**

- **Firewall**

Choose Enable to activate the firewall (default setting), and Disable to deactivate it. If the firewall is deactivated, any packets transiting over OmniPCX Office will no longer be filtered. Access to OmniPCX itself, however, remains protected, and only the explicitly configured services will be accessible (Mail, VPN, DNS): all the others (Telnet, FTP, etc.) remain prohibited.

- **NAT**

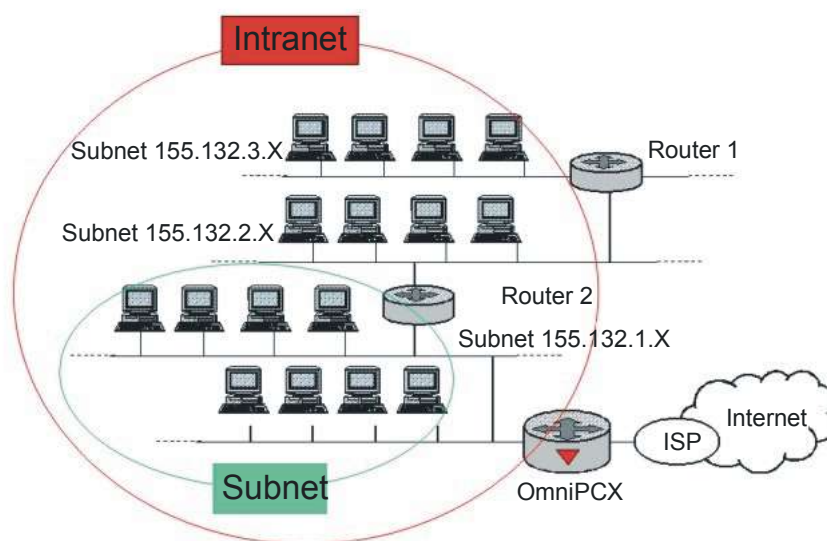
Choose Enable to activate NAT (default setting), and Disable to deactivate it. This service can be disabled if the local network computers that you want to use for Internet access have their own official IP addresses, or if the service is hosted by the ISP.

- **Services Access**

Services access discriminates between users on the basis of their situation on the enterprise computer network, and the type of service they request.

- Situation on the network:

Users accessing OmniPCX Office directly (from the Subnet) are distinguished from those accessing it through a router.



The data for defining the user situation are located in the computer's network parameters; if the default gateway is not declared, or if it corresponds to OmniPCX Office, then the user is in the Subnet.

- Type of service requested:

The configuration of Internet access is distinguished from the other services provided by OmniPCX Office (web browsing, messaging, etc).

On the "Configuration" line, click the Intranet button (default setting) to authorize Internet access administration from all the computers in the company, or click Subnet to restrict the service to the computers in the sub-network to which OmniPCX Office belongs. Proceed in the same way on the "Services" line for all the other services.

- **Protocol Control**

If the firewall is activated, all the protocols will be prohibited except those listed in the table below, which can be authorized or prohibited by the Internet access administrator.

Service	Filtered protocols	default
Web access	HTTP, HTTPS, Gopher	authorized
File transfer	FTP	authorized
Multimedia	Realg2	not authorized
News	NNTP, snews	not authorized
Remote connection	Telnet	not authorized
Messaging	SMTP, POP3, IMAP4	authorized if OmniPCX Office is the mail server

PROTOCOLS AND PRINCIPLES OF FILTERING

The table below presents the protocol filtering possibilities, depending on the OmniPCX Office configuration.

It sets out the options for inhibiting or allowing a particular protocol, as a function of the services present in OmniPCX Office.

Example : A client wants to inhibit the Real Audio Player protocol.

This protocol is one of those supported by NAT; its filtering principle depends on the firewall alone.

If the firewall is active, the **Security->Protocol Control [Multimedia]** box must not be checked; if it is inactive, the client cannot inhibit this protocol.

protocols/applications		Firewall activated?	Proxy present?	Omni-PCX Office = mail server?	NAT activated?	Filtering principles
Messaging	SMTP	YES	.....	.....	.....	Depends on configuration
	POP3					Security->Protocol ControlMail
		NO	.....	YES	.....	Depends on configuration Security->Protocol Control Mail
			NO	.....	Authorized protocols	

E-SERVER : INTERNET APPLICATIONS

SECURITY

protocols/applications		Firewall activated?	Proxy present?	Omni-PCX Office = mail server?	NAT activated?	Filtering principles
Internet navigation and	HTTP	YES	.....	.....	.....	Depends on configuration
	HTTPS					Security->Protocol Control
	Gopher					Web access
	FTP					(HTTP, HTTPS, Gopher)
	VDOLive(http)*					File Transfer
	ICQ(http)*					(FTP)
	Winamp(http)*	NO	YES	.....	.....	Depends on configuration
						Security->Protocol Control
						Web access
						(HTTP, HTTPS, Gopher)
						File Transfer
						(FTP)
			NO	.....	.....	Authorized protocols

SECURITY

E-SERVER : INTERNET APPLICATIONS

protocols/applications		Firewall activated?	Proxy present?	Omni-PCX Office = mail server?	NAT activated?	Filtering principles
protocols supported by NAT	Archie	YES	.....	.....	.....	Some protocols depend on the configuration Security->Protocol Control Multimedia (Real audio player, Windows Media Player) News (NNTP) Remote Connection (SSH, TELNET) Mail (IMAP4) The other protocols are not authorized
	NNTP		.....	.....	.....
	Ping					
	IMAP4					
	SSH					
	TELNET					
	TRACEROUTE					
	VRML					
	WAIS					
	Real Audio Player					
	Wds Media Player					
		NO	.....	.....	.....	Authorized protocols
protocols not	H.323	YES	.....	.....	.....	Unauthorized protocols
	IRC	NO	.....	.....	YES	Unauthorized protocols
	Netscape Cool-Talk				NO	Authorized protocols
	VDOLive					
	ICQ					
Winamp						
Other protocols		YES	.....	.....	.....	Unauthorized protocols
		NO	.....	.....	YES	To be tested
					NO	Authorized protocols

..... The functionality (columns) has no effect on the filtering of the protocols concerned (rows).

* Protocols used on top of HTTP (streaming).

To prohibit these protocols without affecting Internet navigation, you have to use the URL control principle provided by the proxy (see section on proxy -> configuration) by adding an appropriate rule to the "Control List" in the "Proxy/Cache Settings" menu.

For example, the rule "http://**.ext" will block the consultation of links corresponding to files with the extension ".ext".

The extensions for the main streaming applications are:

Windows Media Video: asf asx wmv wvx
Windows Media Audio: wma wax
Real Audio/Video: ra rm ram rmm rnx rv
Quicktime: qts qtx mov qt



SECURITY

E-SERVER : INTERNET APPLICATIONS

PROXY

File
5

INTRODUCTION

A proxy server is an application that gathers requests from client stations and passes them on to a remote server. The remote server's response is then relayed back to the local PCs. Because these servers handle communications, they are in a position to provide a number of services:

- they can record everything they do, with a view to compiling statistics on user access.
- they can filter access on the basis of the content of requested URLs.
- they can filter previously connected users.
- Proxy servers can also handle caching: i.e. storing the most recently downloaded or used files on a local disk for easier availability. This means a file need only be downloaded once from a web site, and can then be transferred locally at much greater speed in response to identical requests. The main advantage lies in reducing traffic to and from the Internet, and therefore the connection costs incurred by Alcatel OmniPCX.

Remarque : Where the proxy license is available, the web access (HTTP, HTTPS and Gopher) and file transfer (FTP) services are obliged to go through the proxy.

Description

Alcatel OmniPCX includes a HTTP and FTP proxy server with all the features described in the introduction.

- **User control**

Prior to each Internet connection, the user is asked for an account identifier and password; the account is associated with certain web access rights (see User Management). If user control is active, then accounts without the necessary rights will be rejected. An Internet navigation session is defined by the launch of a browser (Internet Explorer, Netscape Navigator), access to one or more web sites, and the closure of the browser. In sessions like these, the user account and password will be requested when the first web site is accessed.

- **URL control**

If URL control is active, there are two alternatives:

- Authorizing access to one or more sites specified in a list, and to no others. If the list is empty, then Internet navigation (http) and file transfers (ftp) will be impossible.
- Blacklisting certain URLs by indicating, for each list entry, either a complete name or a character

string within the name.

- **Connection statistics:** Alcatel OmniPCX provides a tool to enable the Administrator to get an overview of Internet activity and, using log file data, to compile statistics for a range of criteria, namely users, services and destinations. These statistics describe web access in terms of:
 - users: statistics on Internet use
 - services used: statistics on the traffic for each service (HTTP or FTP)
 - web sites: the list of web sites visited.

Nota : Access Control is only possible when the proxy option is selected

CONFIGURATION

The proxy is configured from within the **Settings -> Proxy/Cache** menu. There are two tabs:

- Main tab

- **Proxy Port Number:** the port number to which the http and ftp requests from the client stations are sent. The default number is 8000.
- **Properties:**

- User authentication required for web access

To activate the service, check the corresponding box.

If the service is activated, a username (login) and associated password will be requested at the start of each web browsing session. The required names and passwords are input when users are created (see User Management).

- URL Control List

To activate the service, check the corresponding box.

If the service is activated, access is controlled in accordance with the settings in the Control List tab.

- Control List tab:

- **Control Policy:** there are two control strategy options:
 - Forbidden: authorizes all sites except those containing character strings that match the regular expressions in the "List of RegExp". Regular expressions may contain:
 - alphanumeric characters;
 - wildcards: these characters stand for other characters or strings:
 - `.` represents any character;
 - `.*` represents a string of from 0 to n characters;

E-SERVER : INTERNET APPLICATIONS

PROXY

- + represents a string of from 1 to n characters;
- ? represents 0 or 1 character.
- Authorized: blocks all sites except those corresponding to the URLs in the "List of URLs"
E.g. www.alcatel.com

CONFIGURING THE CLIENT STATION

Using the Alcatel OmniPCX proxy features calls for some configuration of the web browser on the client stations.

The browser needs to be instructed that http and ftp requests are to be sent to the proxy: to this end, it is given the IP address of the proxy server (the OmniPCX IP address, on the LAN side) and the destination port number, which must correspond to the one entered in OmniPCX (**Settings -> Proxy/Cache -> Main -> Proxy Port Number**).

Internet Explorer configuration example

After launching Internet Explorer, the proxy settings can be reached by opening the **Tools -> Internet Options** menu and clicking on **LAN Parameters** in the Connections tab. Check "Use Automatic Configuration Script" and enter the following address in the Address field:

- http://<@CPU_IA>/proxy.pac

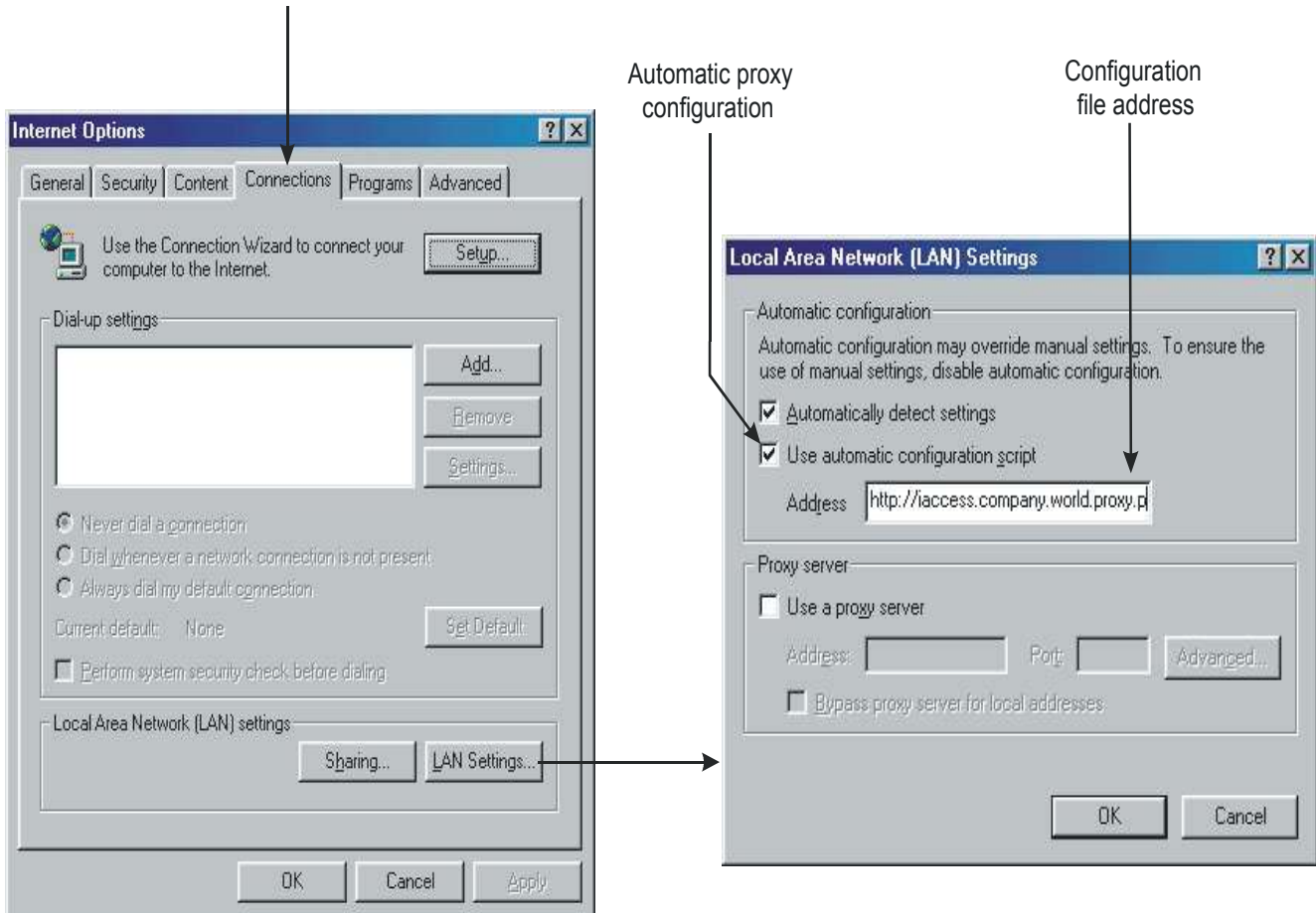
<@CPU_IA> represents the IP address or the name of the Internet Access CPU.

Exemple : http://192.168.92.247/proxy.pac

or

http://iaccess.company.world/proxy.pac

The default name for the IA CPU is iaccess.<domain_name>.



USER MANAGEMENT



Introduction

In Alcatel OmniPCX Office, users are defined by an account name or "login" and its associated password. The login and password are in a very real sense the user's ID card, and will be asked for in the following circumstances:

- By the e-mail server, in order to enable the user to collect mail from his local mailbox;
- By the proxy, if configured to require authentication (see Proxy chapter), in order to clear the user for Internet access;
- By the PPTP server, if the user wants to access the local network via the Internet (see VPN chapter);
- On each access to OmniPCX, in order to enable the user to modify certain account settings.

Configuration

Creating users

- by WBM: **Wizards -> User, Main Properties** tab

The various input fields – in the order in which the configuration screens appear – are as follows:

- **Identification** field

- **First Name:** the user's first name (optional)
- **Last Name:** the user's last name
- **Password:** the user's password.
- **Confirm Password:** the user's password again.

The account name (login) thus created will be:

- <First Name>.<Last Name> if the First Name field is not empty.
- <Last Name> if the First Name field is empty

- **User Type** field

the user created can be either a standard user or an administrator. Administrators have wider-ranging rights in terms of access to OmniPCX Office configuration.

- **POP3 Account** field

This tab only appears in the POP3 mail caching configuration (see E-Mail chapter). The corresponding parameters **Identification, Password, E-mail Address** enable OmniPCX Office to access the POP mailbox at the ISP. They are provided by the ISP when the user account is created. The identification and e-mail address are sometimes mixed up; in this case, fill in both fields with the available information.

- **Rights** field

- **Internet Access:** this field enables Internet access control if the authentication request function is active in the proxy (see Proxy chapter). If this box is checked, then the user can access the web sites authorized by the proxy filters (see "Proxy/Cache"). Some users, however, can override these filters to gain unrestricted access to all web sites by using an additional parameter accessible from the user administration interface described below.
- **Mail Vacation:** If this box is checked, then the user can employ the mail vacation service. This service consists in sending a message to anyone trying to contact the user in the latter's absence; it can only be activated by the user him or herself via their own WBM.
- **E-Mail Forwarding:** If this box is checked, then the user can employ the service that transfers mail automatically to another mailbox. This service is implemented by the users themselves.
- **Remote Worker:** users can connect to OmniPCX Office from a mobile terminal, establishing a VPN tunnel to the local network via the Internet.

User administration

- by WBM: **Administration -> Users**

The first screen lists all the users created in OmniPCX Office; users can be modified or deleted.

Once a user has been selected from the list, a number of tabs are available for modifying or extending the user data.

- **Main** tab

Remarque : This tab is also accessible from the users' WBM.

All the settings entered when the user was created can be modified; the account name cannot, however, be modified by the user him or herself: only the administrator has the right to do so.

- **POP3** tab

Remarque : Only available in POP3 caching configuration, this tab is also accessible from the users' WBM

The details of the POP3 account with the ISP can be entered or modified as described in the Creating Users section.

- **Rights** tab

For modifying the rights specified when the user was created (see Creating Users). Additionally, the administrator can grant Internet access to the user in such a way as to override the URL check performed by the proxy (see Proxy Management) by using **Internet Access: YES without URL checking**.

Remarque : For this parameter to be operational, user authentication has to be active at proxy level; otherwise URL checks will apply to every Internet access.

- **Absence** tab

Remarque : This tab is also accessible from the users' WBM.

For entering the absence message, consisting of a title (**subject**) and the content (**text**). For the message to be sent, the service must be authorized by the administrator (see **rights** in the Creating Users section) and activated by the user or administrator via this tab.

- **Forward** tab

Remarque : This tab is also accessible from the users' WBM.

For entering the e-mail addresses to which mail for the user is to be sent on; a copy can be kept at the user's base address. This service needs to be authorized by the administrator (see **rights** in the Creating Users section) and activated by the user or administrator via this tab.



USER MANAGEMENT

E-SERVER : INTERNET APPLICATIONS

ELECTRONIC MESSAGING

File

7

INTRODUCTION

Alcatel OmniPCX Office is used to offer an electronic messaging solution for all users in a company. To do this, it supports various configurations:

- it can be the company's messaging server,
- it can be integrated into the company network if it already has a messaging server, or
- it can facilitate access to an external messaging server.

These various possible configurations are described below:

PRINCIPLES OF OPERATION

Case 1 : ALCATEL OMNIPCX OFFICE IS THE MESSAGING SERVER

For the description of the available Email addresses (Stand alone, PO3 or SMTP subscription), see the ANNEX 2 at the end of this file.

Alcatel OmniPCX Office makes available to each user a local letter box, and manages the flow of messages between users of the local network and those to and from the Internet. The protocols used by this server are SMTP, to send messages, and POP3, to manage mail boxes.

Two possibilities must be considered:

- POP3 subscription: the IAP stores the mail messages (POP3 accounts),
- SMTP subscription: the IAP does not store the mail box.

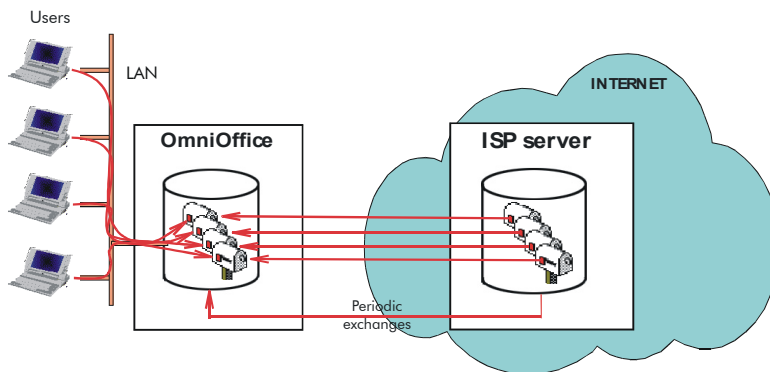
1 - POP3 SUBSCRIPTION: THE IAP STORES THE MAIL MESSAGES (POP3 ACCOUNTS)

Each user has available:

- a private mail box with the IAP,
- a mail box on Alcatel OmniPCX Office (local).

It is Alcatel OmniPCX Office messaging server that downloads the mail to the local mail boxes for each IAP connection or at pre-defined time intervals.

This principle, called **POP3 caching**, is used to optimise connections to the IAP: a user is not authorised to access his mail box directly with the FAI (since this would automatically create a connection), he has access only to his local mail box.



In addition to private mail boxes for each user, the IAP can also store a default mail box. This box, which is optional, receives all the mails for an addressee who does not have a private mail box. Alcatel OmniPCX Office retrieves the contents of this mail box and distributes it to different local mail boxes depending on the addressee. This function is called **Multidrop**.

Nota : Refer to case 1 - B of the Using the E-mail Assistant section

The mode of operation is as follows:

- **Outgoing mail**

The mail sent by a user is "entrusted" to Alcatel OmniPCX Office that sorts it in accordance with the following criteria:

- If the recipient's e-mail address corresponds to an address linked to a local user, the message is deposited in the addressee's local mail box.
- In all other cases, the message is stored temporarily in Alcatel OmniPCX Office, then sent during the next connection or by default, at time intervals pre-defined in the Configuration - >Email [Main tab] menu, the Activity field of the mail.

- **Incoming mail**

The mail deposited in the mail boxes with the IAP(user letter boxes or default letter boxes) is retrieved by Alcatel OmniPCX Office during the first connection following the depositing operation, or a pre-defined time intervals (as described above), and routed to local mail boxes. Each user will then be able to retrieve his mail in Alcatel OmniPCX Office.

Important : The type of connection can be "on demand", "on demand with callback" or "permanent". Alcatel OmniPCX Office's IP address can be static or dynamic.

2 - SMTP SUBSCRIPTION: THE IAP DOES NOT STORE MAIL BOXES

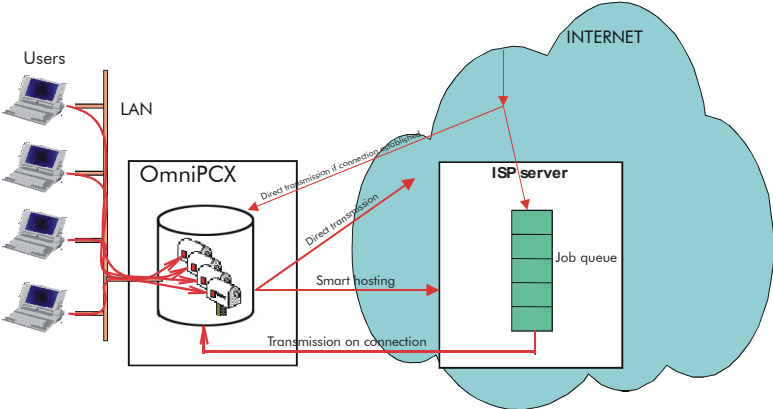
Mail boxes exist exclusively in Alcatel OmniPCX Office, and mail intended for users must be deposited directly in these boxes.

In the case of a non-permanent connection, this procedure is not possible for mail coming from the Internet without an additional service to store messages temporarily. This service, that is available for a large number of FAI, is called "SMTP relay".

Two possibilities must be considered depending on whether the IAP provides the SMTP relay service or not:

▼ **SMTP relay service provided by the IAP**

Nota : Refer to case 1 - A - a of the section on Using the E-mail Assistant



The mode of operation is as follows:

- **Incoming mail**

The SMTP relay service consists of temporarily storing messages intended for Alcatel OmniPCX Office users in a queue, then transferring them to local mail boxes as soon as the connection is established, or on explicit request from Alcatel OmniPCX Office by virtue of the ETRN (Extended Turn) command.

Nota : If the ETRN box has been checked, this command will be sent to the IAP's SMTP server whenever a connection is made (on expiry of the "mail activity" time or voluntary connections). The command will be ignored by the IAP in principle if the latter does not provide this service.

- **Outgoing mail**

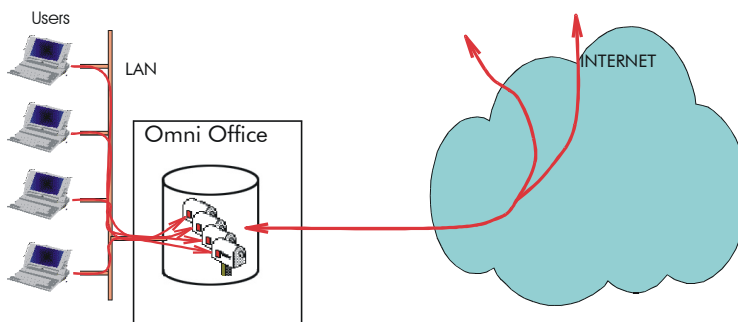
Outgoing company mail and mail intended for the Internet can also be relayed by the IAP SMTP server, and this service is called "smart hosting".

Nota : "Smart hosting" is accepted by most IAPs, and it is preferable initially to apply it systematically (check the "smart hosting" box) and to run the messaging configuration test.

Important : The type of connection can be "on demand", "on demand with callback" or "permanent". Alcatel OmniPCX Office's IP address must be static. The company must have its own domain name.

▼ **No SMTP relay service provided by the IAP (direct SMTP connection)**

Nota : Refer to case 1 - A - b of the section on Using the E-mail Assistant



Alcatel OmniPCX Office is the main messaging server, the mail from the Internet is deposited directly into the users' mail boxes.

Important : The type of connection must be "permanent". Alcatel OmniPCX Office's IP address must be static. The company must have its own domain name.

Case 2 : A MESSAGING SERVER EXISTS ALREADY ON THE LAN

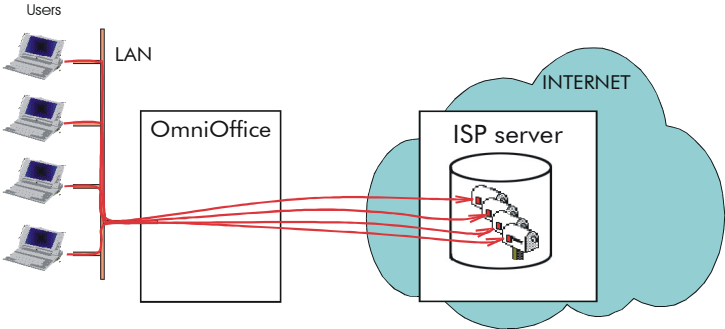
If the company is connected to the Internet via Alcatel OmniPCX Office, it is used as the gateway between the LAN and the Internet for the exchange of messages. The firewall allows use of the SMTP protocol when sending and receiving (see security chapter).

Important : The type of connection can be "permanent", "on demand" or "on demand with callback". Alcatel OmniPCX Office's IP address can be static or dynamic.

Case 3 : THE MESSAGING SERVER IS HOSTED ON THE IAP.

There is no messaging server in the company. The messaging server is hosted by the IAP.

Alcatel OmniPCX Office is used as the gateway between LAN and Internet. The firewall allows use of the SMTP, POP3 and IMAP4 protocols (see security chapter).



If the connection to the IAP is on demand, a connection will be established whenever a message is sent and whenever the mail box is consulted.

PROPOSED SERVICES

When Alcatel OmniPCX Office is the messaging server, the three following services are available:

- alias management,
- multi-domain management,
- routing to external users.

Alias management

This service is used to provide several recipient names per user.

When Alcatel OmniPCX Office receives messages, a recipient name / mail box correspondence table allows the messaging server to distribute the messages to suitable local mail boxes. For each local mail box this correspondence table contains the various recipient names that can be used to reach it.

This service is available:

- as an SMTP subscription, either with or without the SMTP relay service,
- as a POP3 subscription, only if the IAP hosts a default mail box and if Alcatel OmniPCX Office has multidrop management enabled.

Multi-domain management

This service is used to manage several domain names for the same company. A main domain name and one or more secondary domain names are defined in the IAP and in Alcatel OmniPCX Office.

This service is available irrespective of the chosen subscription (POP3 or SMPT).

- as a POP3 subscription: the messages are sorted in the iap and directed to the user mail boxes hosted on the IAP. The messages are then sorted when Alcatel OmniPCX Office retrieves them and forwards them to the local mail boxes.
- as a SMPT subscription: Alcatel OmniPCX Office sorts the messages when received; all messages whose address includes a pre-defined domain name (main or secondary) are accepted, and routed to users' local mail boxes.

Routing to external users

When Alcatel OmniPCX Office is the messaging server, it is possible to define users as "remote workers". These users have a personal mail box stored with the IAP, but they do not have a local mail box on Alcatel OmniPCX Office.

The mail intended for them is routed as follows:

- **mail from the company**

Alcatel OmniPCX Office recognises the address and routes the message to the IAP. The mail is stored in the remote user's personal mail box in the IAP, and is retrieved by the remote worker when he logs onto the IAP server.

- **Mail from the Internet**

The mail is stored in the remote user's personal mail box in the IAP, and is retrieved by the remote worker when he logs onto the IAP. This mail is not retrieved by Alcatel OmniPCX Office.

This service is available only in the case of a POP3 subscription:

CONFIGURATION

Configuration needs two stages:

- configuration of Alcatel OmniPCX Office
- configuration of client terminals

Prerequisites

The information needed to install the messaging server varies accordance to the configuration to be selected. Generally speaking, the parameters to know in relation to the IAP are as follows:

- Name of the POP3 server: server that hosts the mail boxes (POP3 accounts).
- Name of the SMTP server: server tasked with sending mail.
- Passwords of the POP3 accounts: each mail box (POP3 account) created in the IAP is password protected. Alcatel OmniPCX Office uses this password to download the mail before distributing it to users.
- Support for ETRN commands functionality supported by the IAP or not.
- Domain names: these domain names can be private (used internally only) or public (filed and registered with the authorities that manage the Internet domain names).

Configuration of Alcatel OmniPCX Office

Alcatel OmniPCX Office is configured using two menus:

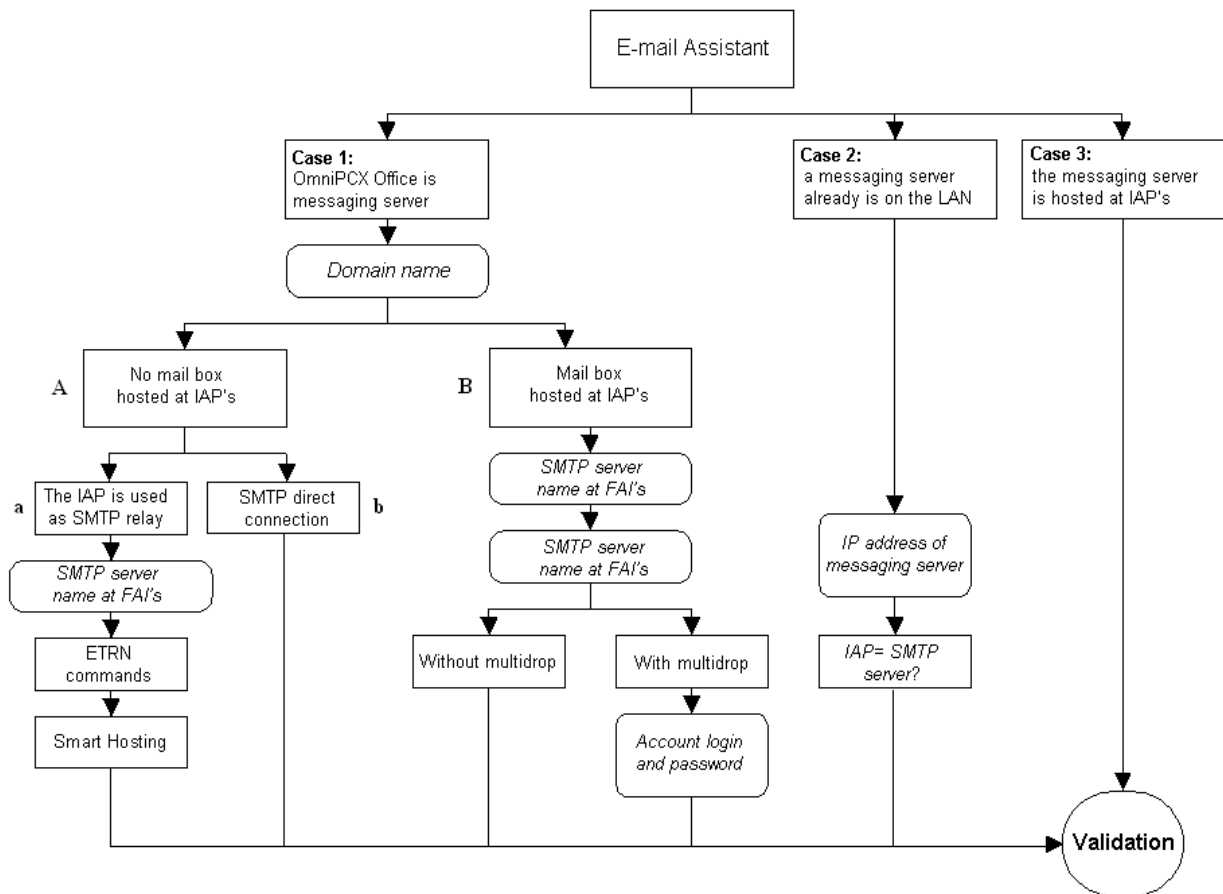
- Assistants --> E-mail: to make the e-mail settings,

- Assistants --> E-mail: to refine the setting of the parameters entered by the e-mail assistant (advanced configuration),
- Assistants --> User: to set parameters for the user accounts,
- Administration --> Users: to refine the parameters set for the user accounts (advanced configuration),
- Administration --> distribution lists: to create and set the parameters for the distribution lists.

Using the E-mail assistant

- using WBM: **Assistants --> E-mail:**

the following figure shows this assistant along with the parameters to be entered in accordance with the different ways of configuring Alcatel OmniPCX Office.



Notas : The rectangles correspond to the choices to be made for configuration, the rounded rectangles correspond to the data to be entered.

Advanced e-mail configuration:

- using WBM: **Configuration --> E-mail**

This menu is used to return to the parameters entered when configuring the messaging system via the assistant. The additional configurable parameters are:

- **"Main" tab, "Domain name" field:**

 this field is used to define several domain names for e-mail accounts managed by Alcatel OmniPCX Office. The main domain name is entered in the **"Main"**field. The secondary domain names are listed in the **"List of names"** field.

 To add a domain name, enter the new name in the **"New name "** field and click on the **"Add"** button. To delete a domain name, select the name to be deleted from the **"List of names "** field and click on the **"Destroy"** button.

- **"Main" tab, "Mail activity"field:**

 This field corresponds to the connection frequency (in minutes) used to send and retrieve electronic messages.

- **"Access" tab, "Envelope Field" field**

 In the case of a POP3 subscription with Multidrop option, Alcatel OmniPCX Office needs to know which enveloped field is being used. Alcatel OmniPCX Office uses the default parameter X-Envelope-To. If a different parameter is used, select the **"Other"** option and enter the parameter in the adjacent text entry area.

Nota : The IAP must provide the parameter used. If this should happen, you can send a message to a mail box using the default account, and consult the message header to find the parameter used.

- **"Message" tab, "Welcome message " field**

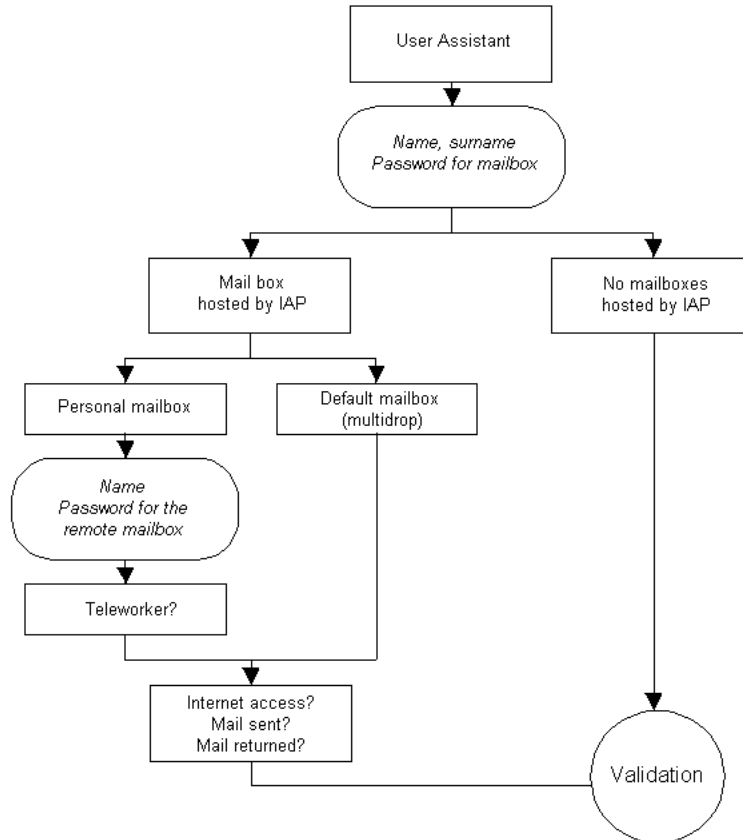
 As soon as a new mail box is created, a welcome message, the subject and body of which can be modified, is sent to the relevant user.

Using the User Assistant

- using WBM: **Assistants --> User:**

The User Assistant is used to create all local e-mail accounts when Alcatel OmniPCX Office is the messaging server.

The following figure shows this assistant and the parameters to be entered in relation to the choices made.



Notas : The rectangles correspond to the choices to be made for configuration, the rounded rectangles correspond to the data to be entered.

User advanced configuration

- using WBM: **Administration --> Users:**

This menu is used to return to the parameters entered when configuring the messaging system via the assistant. The additional configurable parameters are:

- **"Alias"** tab, **"Alias "** field:

This field is used to enter all the aliases that can be used for a user account, i.e. all the addresses that can be used to reach the same user account. All the aliases defined for the user are listed in the **"List of aliases"** field.

To add an alias, enter the new name in the **"New alias "** field and click on the **"Add"** button. To delete an alias, select the alias to be deleted from the **"List of aliases "** field and click on the **"Destroy"** button.

Distribution list management

Once the user and the messaging accounts have been created, Alcatel OmniPCX Office is used to

create and manage the distribution lists. A distribution list holds several electronic addresses under the same name, which allows users to fill in the name of the list as the recipient of a message (name of a service for instance), rather than having to fill in all the addresses of the individuals concerned.

- using WBM: **Administration --> distribution list:**

Using this menu, the administrator has the facility to create and manage distribution lists. It is then possible to add, delete or modify one or more existing distribution lists. During the operations and for the purpose of ergonomics, Alcatel OmniPCX Office displays the entire list of users held both on the system and in the distribution list being looked at, along with their related electronic address.

Nota : When electronic messages are sent to a distribution list, the name of the distribution list defined in Alcatel OmniPCX Office has to be entered in the "Recipient" field. The system then replaces the list with persons involved, and sends the message to these persons. The user needs to know the name of the distribution lists entered in OmniPCX Office, because he does not have direct access to this list from his workstation.

Configuration of the client terminal

The messaging client present on the client terminal (Messenger, Eudora, Outlook, Exchange, etc ...) must be configured to allow the LAN user to send and receive electronic messages from his PC.

Three possibilities can be considered in relation to the topologies encountered:

- Alcatel OmniPCX Office is the messaging server for the client terminals. In this case, the messaging client must be configured in order to include Alcatel OmniPCX Office as the POP3 and SMTP server.
- There is already an internal messaging server for the client terminals of the LAN. In this case, there is no need to re-configure the client terminals. Only the messaging server will need to be re-configured in order to talk to Alcatel OmniPCX Office and to send or receive electronic messages to and from the outside.
- The IAP is the messaging server, Alcatel OmniPCX Office is only a gateway. In this case, the messaging client must be re-configured to include the IAP's POP3 and SMTP servers together with the POP3 account of the user and his password.

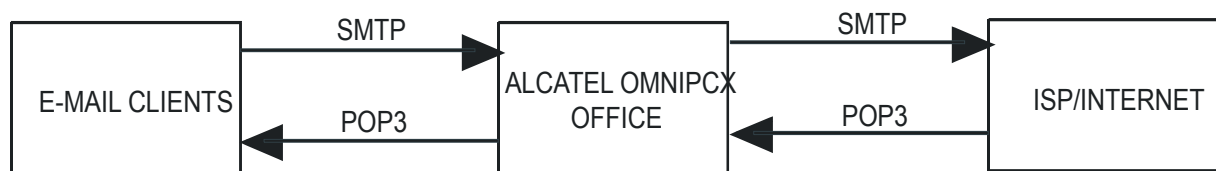
ANNEX 1 : SUMMARY OF THE DIFFERENT CONFIGURATIONS SUPPORTED

Case 1: Alcatel OmniPCX Office is the messaging server

POP3 subscription: the IAP stores the mail messages (POP3 accounts)

Is an e-mail server software key required?	Type of Internet connection that can be used	IP address required	E-mail services required from the IAP	Comments
YES	<ul style="list-style-type: none"> - Demand Dial - Callback - Permanent 	<ul style="list-style-type: none"> - Dynamic - Static 	<p>Hosting of electronic messaging with POP3 accounts customised for users, and possibly a default account (multidrop).</p> <p>The company can have its own domain name (company.com) or can use the IAP's (IAP.com)</p>	<p>If the company does not have its own domain name (company.com) and uses the IAP name (IAP.com):</p> <ul style="list-style-type: none"> - it is not necessary to fill in the "domain name" field in the e-mail creation assistant or in the mail configuration parameters. - The "POP3 account" field has to be completed for every user by specifying the domain name of the IAP (for example john.smith@IAP.com).

▼ Protocol supported in this configuration:



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ELECTRONIC MESSAGING

SMTP subscription: the IAP does not store mail boxes

The company uses an SMTP messaging relay service

Is an e-mail server software key required?	Type of Internet connection that can be used	IP address required	E-mail services required from the IAP	Comments
YES	<ul style="list-style-type: none"> - Demand Dial - Callback - Permanent 	- Static	SMTP electronic messaging relay service. The company must have its own domain name.	If the IAP does not provide an SMTP messaging relay service for outgoing company messages ("smart hosting"), the ISP SMTP field must not be completed in the assistant or in the mail configuration parameters. If the IAP does not provide a messaging relay service using the ETRN option, the corresponding field must be completed in the assistant or in the mail configuration parameters.

▼ Protocol supported in this configuration:



The company does not use an SMTP messaging relay service

Is an e-mail server software key required?	Type of Internet connection that can be used	IP address required	E-mail services required from the IAP	Comments
YES	- Permanent	- Static	The company must have its own domain name.	There is no help for incoming traffic if the line or the system are temporarily out of order.

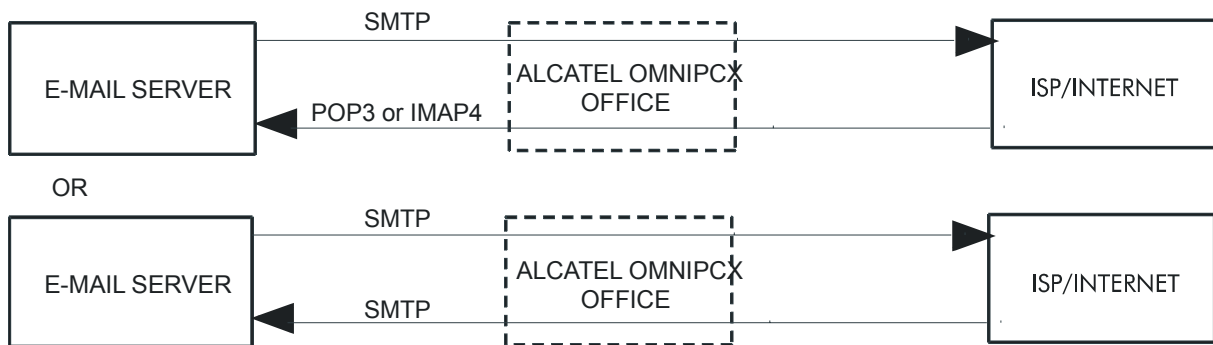
▼ Protocol supported in this configuration:



Case 2: A messaging server exists already on the LAN

Is an e-mail server software key required?	Type of Internet connection that can be used	IP address required	E-mail services required from the IAP	Comments
NO	<ul style="list-style-type: none"> - Demand Dial - Callback - Permanent 	<ul style="list-style-type: none"> - Dynamic - Static 	If they depend on the e-mail server used in the company then the IAP services supported by Alcatel OmnicPX Office in this configuration are: <ul style="list-style-type: none"> - Hosting of POP3 or IMAP4 accounts - SMTP messaging with or without relay service 	If the company uses an SMTP messaging relay in its own IAP, the "smtp relay" field must be checked,.

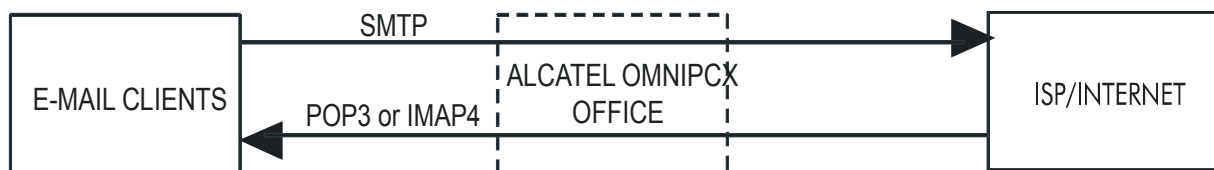
▼ Protocol supported in this configuration:



Case 3: The messaging server is hosted on the IAP.

Is an e-mail server software key required?	Type of Internet connection that can be used	IP address required	E-mail services required from the IAP	Comments
NO	<ul style="list-style-type: none"> - Demand Dial - Callback - Permanent 	<ul style="list-style-type: none"> - Dynamic - Static 	Hosting of electronic messaging with as many POP3 or IMAP4 accounts as users.	

▼ Protocol supported in this configuration:



ANNEX 2 : SUMMARY OF THE AVAILABLE EMAIL ADDRESSES

This annex present a summary of available Email addresses when Alcatel OmniPCX Office is the messaging server (cas 1).

Terminology

- **User part:** The user part is usually a person's name. The user part may be more than one string, such as john.smith. It could be also the name of a department, a team like team.research, an office, etc..
- **Domain part:** For Alcatel, "alcatel.com" is the "domain_part" in the address, and .com is the domain. The domain part tells you the Internet address of the company, and may be more than one string, such as "research.alcatel.com". ".com", the last part of the address, tells more about what kind of institution the address belongs to, or what part of the world it's from. For instance :
 - ".com" is usually a company or commercial institution
 - ".gov" means government site
 - ".net" gateways and other administrative hosts for a network
 - ".org" private organizations who don't easily fit into other categories
- **Internal_domain_name:** It is the name of the internal network (LAN) of the company.
- **External_domain_name:** It is the name of the private domain(s) of the company bought at an ISP/ASP.
- **ISP_domain_name:** The company hasn't bought a domain name part. The ISP defines the domain part. Very often, the domain name part corresponds to the name of the ISP. For example Wanadoo uses "wanadoo.fr" in France and the user John SMITH will have for email address "john.smith@wanadoo.fr".
- **User's login:** The login of an Alcatel OmniPCX Office account is built with the first name and the surname of the user. The login has the form: **first_name.surname**. Example: the Alcatel OmniPCX Office account login for JHN SMITH is "john.smith".
- **User part of a POP3 email address:**
 - **User managed on Alcatel OmniPCX Office:** The user has a POP3 account on the ISP email server. An email address is associated to this account with the format "user_part@domain_part". Most of time, the ISP's administrator could configure the user_part and uses the convention "first_name.surname".
 - **External user:** External users are only available if the Alcatel OmniPCX Office email server mode is configured in POP3. An external user has his private POP3 mailbox by the ISP/ASP. **Alcatel OmniPCX Office doesn't manage this mailbox** (this mailbox is not polled by the Alcatel OmniPCX Office email server). The user part of the external user's email address should be in accordance with the address defined by the ISP/ASP's administrator.
- **User's alias:** Alcatel OmniPCX Office administrator can define for each user, one or more aliases. An alias is an alternative name for a user. Example: user aliases for "john.smith" could be "jsm", "johns", "bigboss", etc...

- **mailing list name:** A mailing list contains one or more user's login and/or one or more email addresses. If an email is sent to this mailing list, the message will be broadcast to every member belonging to this list. Example: Members of the "team_rd" mailing list: "john.smith", "nicole.kidman", "mariane.seegelbrecht@end-puretec.de".

User part	Email from LAN	Email from ISP
STAND ALONE (System without Internet Access)		
user	login@internal_domain_part	not possible
user alias	useralias@internal_domain_part	not possible
mailing list	mailinglist@internal_domain_part	not possible
external user	not relevant	not relevant
SMTP SUBSCRIPTION		
user	login@internal_domain_part login@external_domain_part	login@external_domain_part
user alias	useralias@internal_domain_part useralias@external_domain_part	useralias@external_domain_part
mailing list	mailinglist@internal_domain_part mailinglist@external_domain_part	mailinglist@external_domain_part
external user	not relevant	not relevant
POP3 SUBSCRIPTION WITH PRIVATE DOMAIN NAME PART		
user with POP3 account	login@internal_domain_part login@external_domain_part user_part@external_domain_part	user_part@external_domain_part
user without POP3 account	login@internal_domain_part login@external_domain_part	not possible
user alias	useralias@internal_domain_part useralias@external_domain_part	not possible
mailing list with POP3 account	mailinglist@internal_domain_part mailinglist@external_domain_part	mailinglist@external_domain_part
mailing list without POP3 account	mailinglist@internal_domain_part mailinglist@external_domain_part	not possible
external user	receives email vis ISP: user_part@external_domain_part	user_part@external_domain_part
POP3 SUBSCRIPTION WITHOUT PRIVATE DOMAIN NAMES		
user with POP3 account	login@internal_domain_part user_part@isp_domain_part	user_part@isp_domain_part

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User part	Email from LAN	Email from ISP
user without POP3 account	login@internal_domain_part	not possible
user alias	useralias@internal_domain_part	not possible
mailing list with POP3 account	mailinglist@internal_domain_part mailinglist@isp_domain_part	mailinglist@isp_domain_part
mailing list without POP3 account	mailinglist@internal_domain_part	not possible
external user	receives email vis ISP: user_part@isp_domain_part	user_part@isp_domain_part
POP3 SUBSCRIPTION WITH MULTIDROP CAPABILITIES		
user with POP3 account	login@internal_domain_part login@external_domain_part user_part@external_domain_part	user_part@external_domain_part
user without POP3 account	login@internal_domain_part login@external_domain_part	login@external_domain_part
user alias	useralias@internal_domain_part useralias@external_domain_part	useralias@external_domain_part
mailing list with POP3 account	mailinglist@internal_domain_part mailinglist@external_domain_part	mailinglist@external_domain_part
mailing list without POP3 account	mailinglist@internal_domain_part mailinglist@external_domain_part	mailinglist@external_domain_part
external user	receives email vis ISP: user_part@external_domain_part	user_part@external_domain_part



ELECTRONIC MESSAGING

E-SERVER : INTERNET APPLICATIONS

VPN

File
8

OVERVIEW

A virtual private network is an extension to a private network incorporating one or more public network links such as the Internet. These links conserve the characteristics of a private point-to-point link by encapsulating data by means of tunneling protocols. Authentication methods are deployed to maintain the security of the private network, while the confidentiality of the data transiting over these links is guaranteed by encryption procedures. The idea behind VPNs is to offer companies exactly the same services as a private link at far less cost by utilizing a public infrastructure.

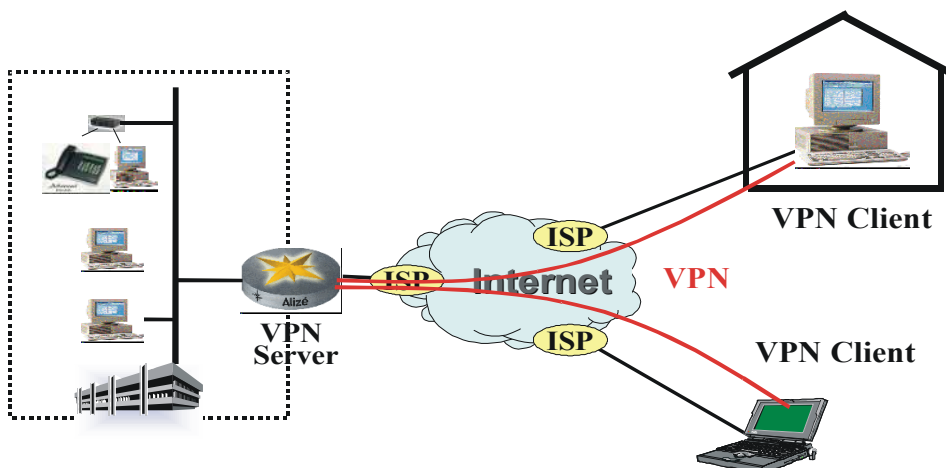
Alcatel OmniPCX offers two types of VPN:

- A remote-access VPN connection called "VPN Client to LAN"
- A router-to-router VPN connection called "VPN LAN to LAN"

VPN Client to LAN

Description

The remote user can connect up to the company LAN from fixed or mobile terminals. In this case, the user logs on to the Internet via the nearest point of presence and requests the creation of a VPN tunnel between his terminal and OmniPCX.



The protocol for managing this type of VPN tunnel is PPTP (Point to Point Tunneling Protocol), a data link layer protocol on the OSI (Open Systems Interconnection) model. The remote user is termed the "VPN client" and OmniPCX the "VPN server".

When the VPN client issues a connection request, the authentication protocol, client IP address and

data encryption method are all negotiated with the VPN server.

- Authentication

The protocol proposed by OmniPCX is MS-CHAP (Microsoft Challenge Handshake Authentication Protocol) version 2. Unless the client can provide this type of authentication, connection will be refused.

- Client IP address

The IPCP (Internet Protocol Control Protocol) negotiation process with the VPN server allocates an intranet IP address to the client. This address is configured beforehand in OmniPCX (see "Configuration for OmniPCX").

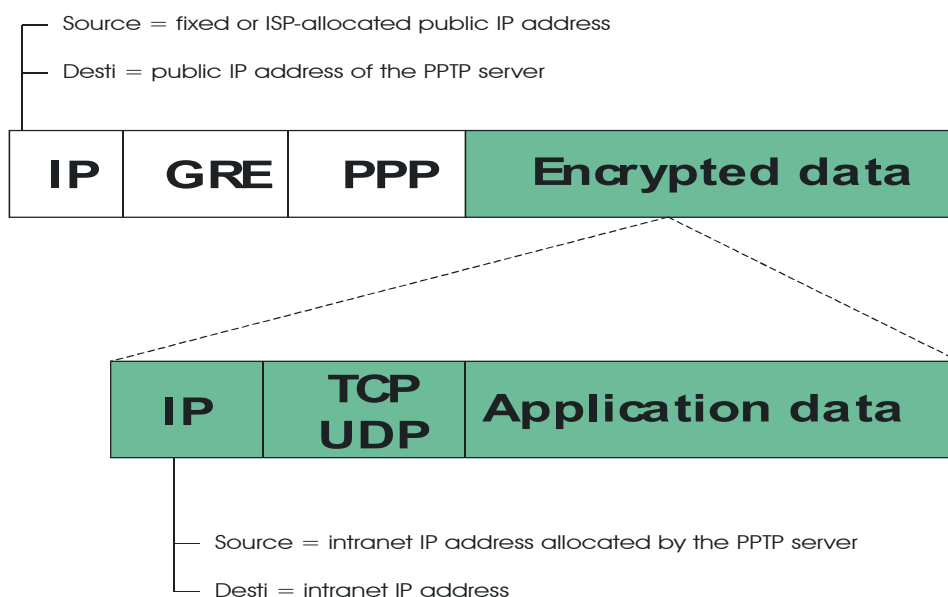
- Data encryption

The data encryption method used by OmniPCX is MPPE (Microsoft Point to Point Encryption) with continuous RSA RC4 encoding and 40-bit or 128-bit encryption keys. Connection attempts will be rejected if the client cannot use these methods.

- Data tunneling

After data encryption, a PPP header is added to create the PPP frame, which is then encapsulated with a modified GRE header (Generic Routing Encapsulation, RFC 1701 and 1702). The resulting frame is itself encapsulated with an IP header.

The diagram below illustrates a frame that has been tunneled by the VPN client:



The number of simultaneous connections depends on bandwidth. Alcatel OmniPCX carries out no checks on this, but the maximum number of remote connections for a 128-Kbps link should not exceed 5, otherwise the quality of service will be degraded.

Configuration for OmniPCX

The Client-to-LAN VPN is installed using the **Getting Started -> VPN Wizard** menu.

E-SERVER : INTERNET APPLICATIONS

VPN

- In Main Properties, select "Client to LAN with PPTP to be a road warrior? " and click Next
- In Client to LAN: (Topology) select OmniPCX as the PPTP server or key in the IP address of another PPTP server on the LAN, then click Next
- In Client to LAN: (IP Allocation) enter the range of IP addresses to be allocated to VPN clients and validate.

The VPN Client to LAN topology can subsequently be consulted and modified in the Settings -> VPN - Client to LAN tab. This menu also activates and deactivates the PPTP server. If it is deactivated, all VPN tunnel creation requests will be rejected.

The range of IP addresses for VPN clients can be consulted and modified in the Settings -> Network - IP Address Allocation tab by selecting the address type Client to LAN.

The VPN client must be declared as an OmniPCX user with the Remote Access option (see User Management chapter).

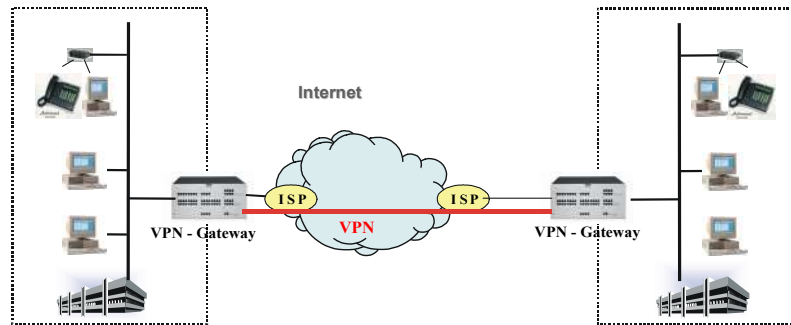
Attention : On the OmniPCX side, the Internet connection type must be "Callback" or "Permanent"

Configuring the client station

VPN LAN to LAN

Description

The idea behind a LAN-to-LAN VPN is to provide a secure connection between two remote sites while using a shared or public infrastructure. It utilizes a router-to-router connection on which all packets are encrypted and secured using negotiated methods.



The tunneling protocol used by OmniPCX is IPsec (Internet Protocol Security, RFC 1825 1826 1827), a network layer protocol on the OSI (Open Systems Interconnection) model, which works by encrypting IP packets and encapsulating them in an additional IP header before sending them over an IP network.

Configuration

The LAN-to-LAN VPN is installed using the **Getting Started -> VPN Wizard** menu. Check the **LAN to LAN with IPsec** option in the **Type of VPN** section, then click Next and fill in the various fields as follows:

- Tunnel Name: the identifier for the tunnel created between the two VPN servers
- Method of Authentication: the choice is between a PSK or RSA key:
 - RSA option: type in any keyname, then enter the public part of the RSA key (my_rsa_key) of the remote VPN server. The input method is at the configurator's discretion. A unique RSA key is generated automatically when OmniPCX boots. The public part of the key is stored in "my_rsa_key" and can be seen using the Administration -> Manage VPN IPsec menu: in VPN Keys select "my_rsa_key" and click "See". The key thus revealed can be saved to a file (copy->paste) and sent to the Administrator of the remote VPN server.
- PSK option: both ends of the tunnel must use the same key. Enter a keyname and generate the key at one end, then import it to the other end.
- Information on the remote network. If the remote gateway is an OmniPCX, this information can be found in Administration->Manage VPN IPsec->Data to Export. Otherwise, the Administrator of the remote gateway must send the information.

Administration

The **Administration -> manage VPN IPSec** menu is used for viewing and modifying earlier settings, but also – and in a less directive way than the VPN Wizard – for creating new tunnels.

The full range of administration possibilities:

VPN Keys

- view selected key
- delete selected key
- import key
- regenerate RSA key ("my_rsa_key") or generate new PSK key

VPN Tunnels

- create new VPN tunnel
- modify selected tunnel
- delete selected tunnel

Data to Export

- view network info for Administrator of remote gateway

Attention : If the tunnel-initiating gateway is deemed to be the VPN client and the remote gateway the VPN server, then the Internet connection (if used) on the server side must be a "Call-back" or "Permanent" connection with a fixed IP address. No such restrictions apply on the client side.

However, if both sides happen to initiate the VPN tunnel, then the restriction applies to them both.

The maximum number of simultaneous VPN tunnels is two.

INTEROPERABILITY WITH OTHER IPSEC GATEWAYS

IPsec Tunnel establishment phases

The IKE (Internet Key Exchange) protocol is used to establish secure IPsec connections. There are two phases in the protocol.

IKE phase 1

Phase 1 purpose is to establish a bi-directional secure connection between the two IPsec gateways, which is associated to an **ISAKMP SA** (Security Association). During this phase, the peers negotiate a set of parameters to be used to secure this connection (encrypton and hashing algorithms), create keys and authenticate each other.

The standards define two modes for Phase 1, namely Main Mode and Aggressive Mode. **Alcatel OmniPCX Office only support Main Mode**, which may sometime be referred as ID PROTECT.

IKE phase 2

The Phase 1 secure channel is then used to negotiate security parameters for a particular mechanism, e.g. IPsec ESP in our case. This is the Phase 2 of IKE and it allows establishing IPSEC SA, which will further be used to convey data securely between the two LANs.

The mode used for IKE Phase 2 is always **Quick Mode**.

Interoperability troubleshooting

This section describes the points in the IKE negotiation where interoperability problems are likely to arise. Information about the Alcatel OmniPCX Office features should help tuning the peer device's IPsec configuration and make the secure connection happen.

Foreward

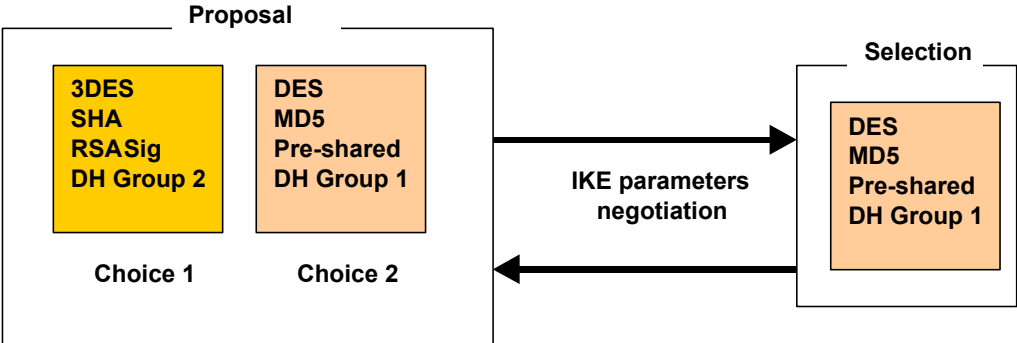
The configuration of the IPsec VPN feature has been voluntary simplified on Alcatel OmniPCX Office to feet the "Plug-and-Play" aspect and ease of configuration of product. This hides most of the technical aspects implied by IPsec, i.e. details of protocols and algorithms used, and makes Alcatel OmniPCX Office -Alcatel OmniPCX office IPsec connections straightforward.

However, this does not prevent interoperability with other products, as Alcatel OmniPCX Office includes support for the set of mandatory IPsec features required in the IETF standards. The only constraint is that parameter's tuning (other than IP parameters and authentication data) will have to be performed on the peer device, as the Alcatel OmniPCX Office configuration is rather static for the more "technical" details.

SA parameters negotiation

A security association gathers the parameters that are used to secure a connection. They contain algorithms, keys, peers addresses, etc ... As explained in the previous section, a SA negotiation is performed in each of the two IKE phases. They both follow the same negotiation, scheme, explained hereafter.

During negotiation, the initiator of the connection sends a list of proposals, i.e. combination of SA parameters it can accept. The responder then selects an acceptable proposal (if any) and tells the initiator about this choice.



- Phase 1 SA parameters

The table below depicts the parameters being negotiated during phase 1 and the possibilities offered by Alcatel OmniPCX Office.

Parameter	Purpose	Supported in Alcatel OmniPCX Office
Encryption Algorithm	Data confidentiality	DES 3-DES
Hash function	Data authentication + integrity	SHA-1 MD5
Diffie-Helman Group	Key computation	Group 1 (Oakley MODP768) Group 2 (Oakley MODP1024) Group 5 (Oakley MODP1536)
Authentication method	IPsec peers authentication	Pre-Shared secret (PSK) RSA signature using "raw" public keys
SA lifetime	Time before re-negotiation of this SA	Maximum 8 hours

Thing to know :

- The authentication method must be configured consistently on the two IPsec gateways. As the use of raw RSA public keys is not widely deployed aside from Linux Freeswan-based implementations, **PSK will be preferred way to authenticate with other implementations.** The shared secret typically consists in a character string password.
- **Authentication using digital certificates is not supported on R1.x.**
- Upon failure of a SA negotiation, a NO_PROPOSAL_CHOSEN informational message may be received by the Alcatel OmniPCX Office.
- **Phase 2 SA parameters**

The same parameters as in Phase 1 are negotiated, except the authentication method. **The mechanism used to protect the traffic for the VPN is always ESP, with tunnel mode encapsulation.**

Thing to know :

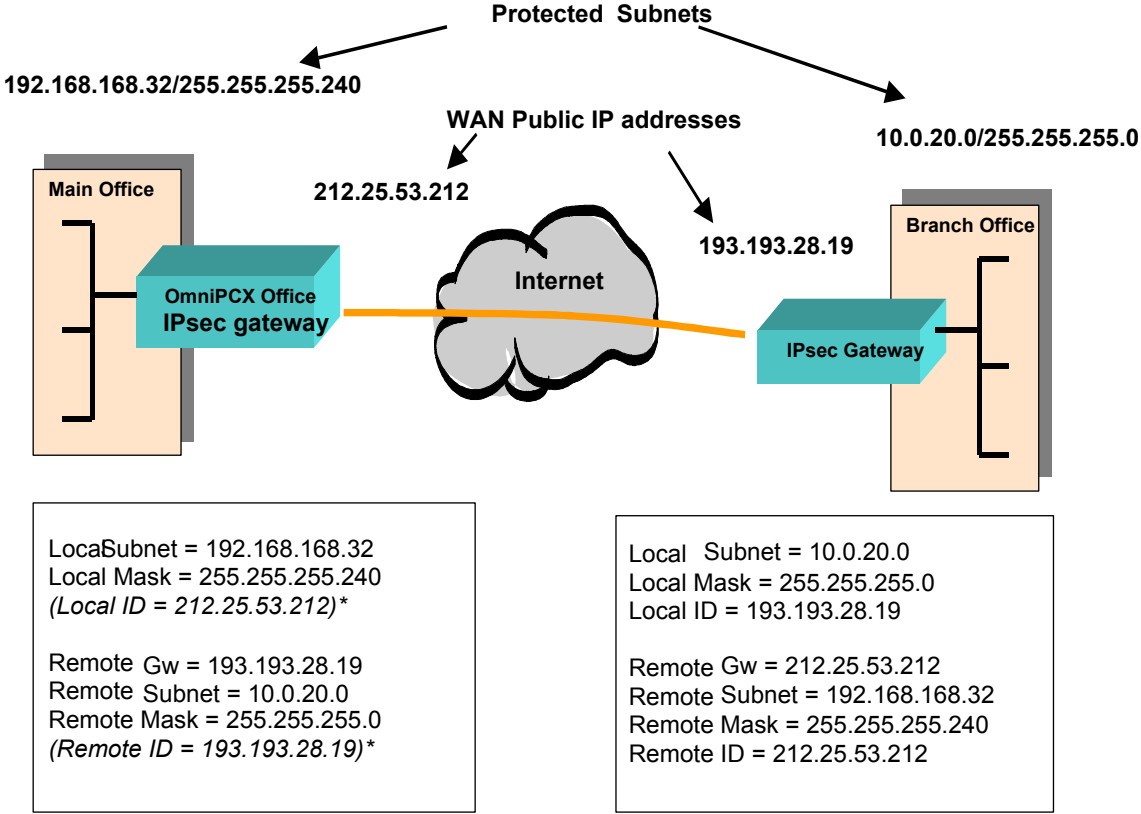
- AH is not used on Alcatel OmniPCX Office.
- **Perfect Forward Secrecy (PFS) must be enabled at the peer.**
- If ever it is possible to configure separate Diffie Helman groups for Phase 1 and Phase 2, it is highly recommended to set the same group for both phases.

Peers identity checking

Before Phase 2 can begin, the peer devices must authenticate each other. For this purpose, they use the method defined during the Phase 1 SA negotiation to compute some data that can be derived only by acknowledge of a secret (RSA private key or shared secret). This piece of data is sent along (and also depends on) an identity payload that identifies the IPsec gateway.

The Alcatel OmniPCX Office does not allow configuration of peer's identities, hence **identities are always the WAN IP addresses of the systems.**

It must be ensured that the remote system is configured to send its IP address to identify itself (often referred as "local id" parameter), and also uses an IP address to identify the remote Alcatel OmniPCX Office system. Such a configuration is shown in the next figure.



** These parameters are not configurable on the Alcatel OmniPCX Office*

Phase 2 identities

There is also an identity payload exchange during Phase 2, but this one only refers to the subnets being protected. Both parties send the IP parameters of the subnets (both local and remote) that are going to be protected by this tunnel. These parameters must match on the two sides for the exchange to be valide.

Any misconfiguration of remote subnet and/or remote mask may cause the remote to send an INVALID_ID information message.

Debugging tools

A VPN test tool is available from the Alcatel OmniPCX Office web-based management tool (WBM) : **Management -> Manage VPN IPsec -> VPN Tunnels**. It should help detecting the most frequent problems.

If it does not help, with a "no answer from peer" message, the first ping consists in verifying the IP addresses of the IPsec peers. This is particularly true in test environments where IP addresses may be dynamic, requiring modifications to the IPsec configuration each time a WAN re-connection occurs. If doubts subsist, testing this IP connectivity can be performed in different manners:

- From the Alcatel OmniPCX Office, by pinging the remote IPsec gateway address. Beware that this may not work if the remote does not answer to pings due to some firewall rules. This is the case for Alcatel OmniPCX Office.
- One way to verify that the peer device's IPsec packets reach the Alcatel OmniPCX Office system is to disable the Ipsec service on the latter and look for traces of firewall-dropped packets with peer's IP address as source and UDP port 500. These traces are available from WBM home page.

TROUBLESHOOTING

File

9

Implementing Alcatel OmniPCX and its functionalities brings into play three main elements which may lie behind any problems encountered on installation and configuration. They are:

- the client station;
- the system (OmniPCX);
- the Internet access provider.

INTERNET ACCESS

- Nothing works: check that all the network elements can communicate with each other.
 - Alcatel OmniPCX fails to respond to a ping from any of the PCs. Alcatel OmniPCX doesn't have access to the LAN. Check the Ethernet connections, and the IP address on the LAN side. Check that the LAN settings in the **Settings -> Network** menu are correct.
 - OmniPCX fails to respond to a ping from a particular PC. There is a network problem on the PC. Check the connections (network card and cable) and the settings (Network icon in the control panel).
- Alcatel OmniPCX responds to a ping from all the PCs. Alcatel OmniPCX is correctly configured at LAN level. The problem therefore lies in the Internet connection.
- OmniPCX can't connect up to the ISP:
 - Check the ISDN connection.
 - Check the connection settings provided by the ISP and configured in OmniPCX.
 - Check that the ISP profile is active, and that communication has not been deactivated.
- Use the OmniPCX connection testing tool (E-Mail Tests menu, Test Mail button): this tool goes through the ISP connection step by step and lists the main causes of the problem as well as the associated solutions if one of the connection steps fails.
- The browser on the PC can't access web sites.
 - OmniPCX fails to respond to a ping from the PC. See the instance above.
 - OmniPCX responds to a ping from the PC.
 - It may be a browser configuration issue. Check that the configuration is compatible with the OmniPCX security function (proxy software key active or not).
 - It may be a security issue:
 - If user access control is enabled, check that the user has been properly declared. If neces-

sary, change the password.

- If web access control is enabled, check that the site is authorized.
- If a particular protocol is being used, check that it is correctly configured in OmniPCX.

E-MAIL

When a client station can't send and/or receive e-mail, check the following:

1. The POP3 mailboxes are hosted by the ISP.
 - Check the mail server configuration on OmniPCX.
 - Check the POP account settings (name and password) for the user created in OmniPCX.
 - Test the mail server configuration using the testing tool included in OmniPCX. The tool will test the ISP's mail servers and suggest appropriate solutions in the event of failure.
 - Contact the ISP to check that the POP accounts are valid.
 - Check the mail client configuration. OmniPCX should be the POP3 and SMTP server. The POP3 logins and passwords entered on the client station should be as provided by the ISP.
2. The ISP is the SMTP relay for the messaging service.
 - Check the mail server configuration on OmniPCX.
 - Test the mail server using OmniPCX's integrated testing tool.
 - Contact the ISP.
 - Check the mail client configuration. OmniPCX should be the POP3 and SMTP server. The POP3 login and password for each user should correspond to the OmniPCX settings.
3. The ISP has a direct SMTP connection to OmniPCX. Check the configuration of OmniPCX, and of the ISP.

Alcatel OmniPCX Office

SECTION
APPLICATIONS

REF3EH 21000 BSAA Ed. 04



ALCATEL OMNIPCX OFFICE

APPLICATIONS

Section Applications

THIRD PARTY CTI - TAPI	FILE 1
THIRD PARTY CTI - CSTA	FILE 2
DOORPHONES	FILE 3
ALCATEL OFFICE CALL CENTER (AOCC)	FILE 4
CALL METERING SERVICES	FILE 5
STARTING-UP AN ELITECOST 64-128	FILE 6
NMC (NETWORK MANAGEMENT CENTER)	FILE 7
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ALCATEL OMNIPCX OFFICE

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APPLICATIONS

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THIRD PARTY CTI - TAPI



File
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SUPPORTED ENVIRONMENTS

Third Party CTI connectivity relies on a server/client model:

- TAPI 2.0: the application developer has to program the link between client and server
- TAPI 2.1: Microsoft provides the link (via Microsoft Windows Remote Service Provider) between the client PC and a server PC (an NT 4.0 server belonging to the NT domain) that hosts the Third Party TAPI service provider.

The Alcatel Third Party TAPI service provider is implemented like a CSTA and uses the Alcatel OmniPCX Office CSTA API.

Operating system	Microsoft TAPI version	Alcatel TAPI Third party SPI	Remarks
Windows 3.x	1.3 *	/	Not possible
Windows 95	2.1 *	5.0x	
Windows 98	2.1	5.0x	
Windows 98 Ed. 2 2	3.0	5.0x	
Windows Millennium	3.0	5.0x	
Windows NT 4.0 SP4	2.1 *	5.0x	
Windows 2000 Prof.	3.0	5.0x	

* TAPI version not delivered with Operating System but can be downloaded from <http://www.microsoft.com>.

Applications available

- PIMphony Basic, Pro or Team. PIMphony is capable of monitoring sets (analog, Reflexes or cordless) and of acting as an IP phone.

Supported terminals

- All the terminals supported by CSTA.

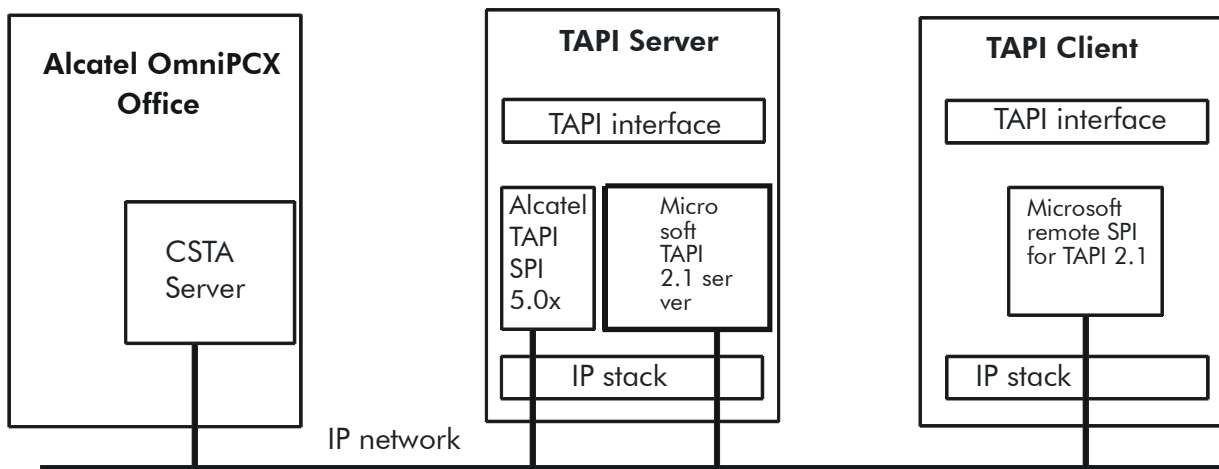
TAPI SERVER/CLIENT CONNECTIVITY

Microsoft TAPI 2.1 server

Various architecture solutions are available:

This architecture requires:

- Microsoft remote service provider on the client PC
- Microsoft TAPI 2.1 server and Alcatel TAPI SPI 5.0x on the server PC
- the CSTA server on Alcatel OmniPCX Office



Alcatel TAPI Server

In this case no TAPI server is required: the CPU board acts as a TAPI server. As each Alcatel TAPI SPI 5.0x requires an CSTA session, the number of clients is limited by the number of possible CSTA sessions.



APPLICATIONS
THIRD PARTY CTI - TAPI
Comparison between these 2 architectures

Service	Microsoft TAPI 2.1 server	Alcatel TAPI Server
Constraints on the client PC	<ul style="list-style-type: none"> - TAPI 2.1 remote SPI must be installed - Must belong to an NT domain - User must log into the NT domain 	<ul style="list-style-type: none"> - Must have TAPI 2.0 or later installed - Must have Alcatel TAPI SPI 5.0x installed on each client
Constraints on server PC	<ul style="list-style-type: none"> - Must have TAPI 2.1 installed - Must be an NT 4.0 server - Must belong to an NT domain - Must have Alcatel TAPI SPI 5.0x installed 	No server PC
Security	Yes	No
Centralized management	Yes	No
Mandatory configuration	<ul style="list-style-type: none"> - Client PC must be configured as a client of the TAPI 2.1 server - Server PC must be configured as a TAPI 2.1 server - Alcatel TAPI SPI 5.0x must be configured with the IP address of the Alcatel OmniPCX Office CPU board 	Alcatel TAPI SPI 5.0x must be configured with the IP address of the Alcatel OmniPCX Office CPU board
Number of client PCs	No limit (except server PC load)	Limited by number of CSTA sessions
Number of CSTA sessions used	1	Number of client PCs
Impacts on customer IT organization	Can be high	Very low
Cost	Can be expensive	Cheap



THIRD PARTY CTI - TAPI

APPLICATIONS

THIRD PARTY CTI - CSTA

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PRESENTATION

The CSTA protocol is proposed on an Ethernet TCP/IP link via the Alcatel OmniPCX Office system CPU board.

The CSTA application is built around an ECMA standard. This standard covers:

- a set of services for applications involving both telephone and computer (ECMA-179)
- a protocol for system/computer exchanges (ECMA-180) enabling the above-mentioned services to operate

Version implemented: version 1

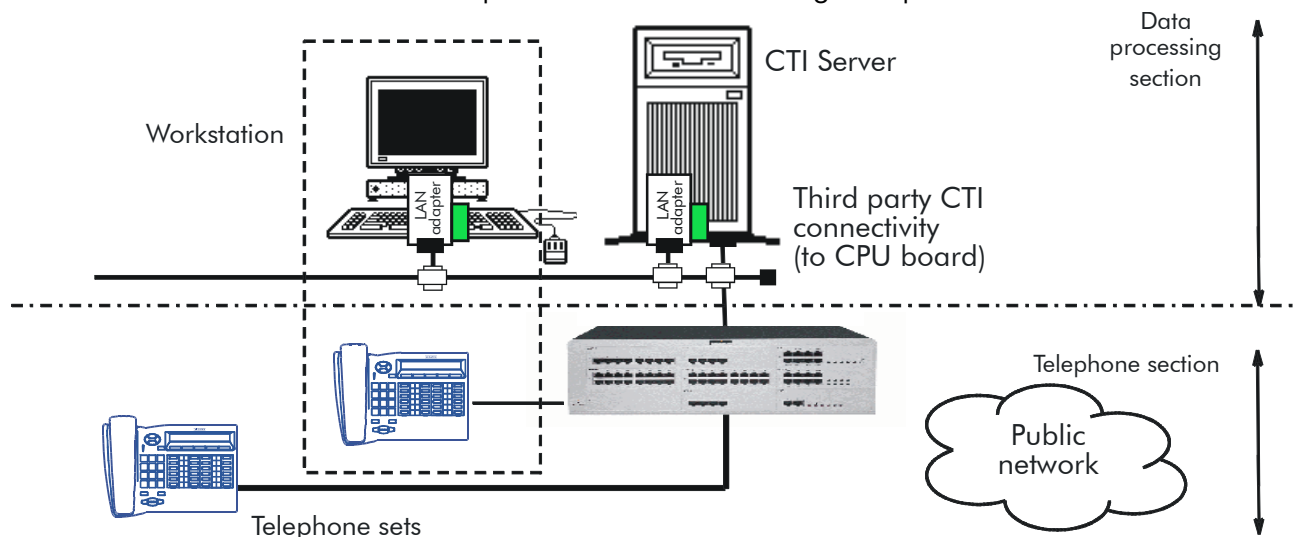
Applications available

- Alcatel Office Call Center (AOCC)

FUNCTIONAL ARCHITECTURE

A typical CSTA application involves:

- an Alcatel OmniPCX Office system which manages the application's telephone resources
- a CTI server on which the CSTA application is run. It is connected to the system's CPU board via a CTI link (third party connectivity).
- client PCs associated with the telephone sets and constituting the operator's workstation.



SOFTWARE ARCHITECTURE

The CSTA connection is made via a CSTA agent located in the system. The maximum number of simultaneous sessions is 28. The tasks performed by an agent are:

- management of connection with the CTI server
- ASN1 encoding/decoding of requests and events in compliance with ECMA 180
- recovery of telephone events for the monitored devices
- management of the connection between the telephone application and the system corresponding to the service request from the CTI server

CSTA DIALOGUE

CSTA dialogue is built around the Client/Server model. Each party (system, computer server) can send or reply to a service request and provide an event report.

CSTA MODEL

The CSTA standard makes the application independent of physical implementation of the switching networks used. To do this, it provides the applications it addresses with an abstract view of the underlying telephone assembly. This abstraction is obtained by modeling the switching part. The generic model developed to represent the working of the telephone part is built around three notions:

The Device

This notion refers to:

- physical devices such as: telephone sets, circuit groups, lines,
- logical devices: groups, ACD.
- **Device Type**
CSTA defines several types of devices which can be handled or observed (ACD, operator, circuit group, etc.).
- **Device Class**
The devices observed can belong to different families (data, image, voice, other)
- **Device Identifier**
The devices handled are referred to by a device identifier for the CSTA service. Depending on whether or not the device is involved in a call, the identifier will be dynamic or static.
- **Device State**
This is a set of connection states linked to a particular device.

APPLICATIONS

THIRD PARTY CTI - CSTA

Call

This is a switching relationship (generally) between two or more devices. It is also a CSTA object. In a CSTA domain, the behavior of telephone call establishment and release can be observed and handled. To characterize a call, two parameters are of use:

- **Call Identifier**
A call reference is automatically created by the switching domain as soon as a call appears.
- **Call State**
This is a list of connection states (see connection below) for all the devices involved in a particular call.

Connection

A Connection is a relationship between a call and a device. This relationship can be both monitored and handled. In fact, the various services provided by the CSTA protocol consist in observation and handling of connections. A connection is defined by an identifier and a state.

- **Connection Identifier**
The connection identifier consists of the pairing of a call identifier with a device identifier.
 - For each call, there are as many connection identifiers as there are devices connected.
 - For each device, there are as many connection identifiers as there are calls connected.
- **Connection state**
A state is allocated to each connection, to characterize the position of the connection. Changes in the state of the connection can be described using a states machine.

CAPACITIES

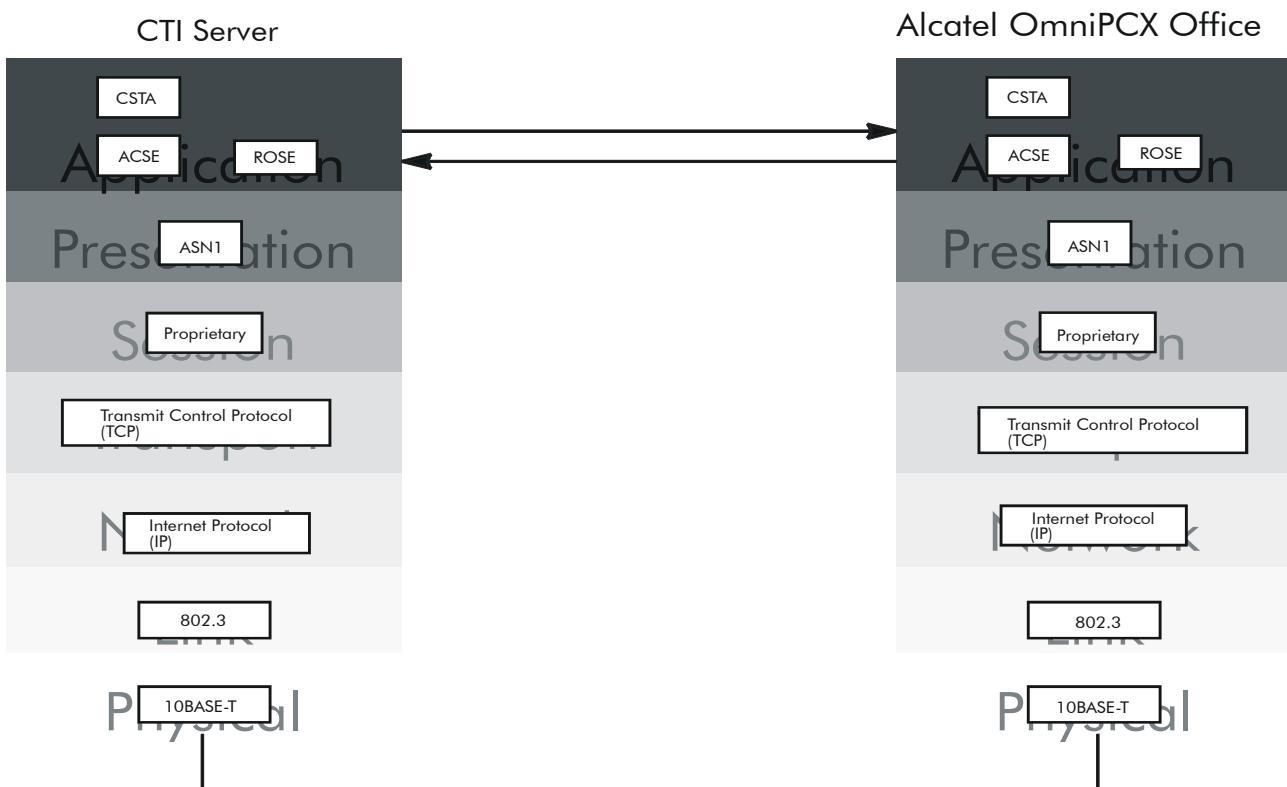
The CSTA processing capacities of the Alcatel OmniPCX Office system are listed in the following table:

Processing capacities	Maximum
Number of simultaneous CTI applications	25
Number of simultaneous monitoring requests for a terminal	208
Max. number of active simultaneous supervisions per node (Alcatel OmniPCX Office system)	208
Number of CSTA requests processed simultaneously	30
Number of CSTA events per second	10
Number of CSTA switching requests per second	2

DESCRIPTION OF THE CSTA LINK (SYSTEM <-> SERVER)

PRESENTATION

The CSTA link is the one which connects the system's CSTA server to the CTI server. It consists of an Ethernet link supporting a stack of BSD4.3 compatible TCP/IP protocols for the lower layers and OSI-compliant ACSE/ROSE/ASN1 for the higher layers. The RFC 1122 and RFC 1058 recommendations are also adhered to.



LINK MANAGEMENT

Initialization

To initialize the link, the CTI server must connect to the transport layer (TCP protocol) on TCP port 2555. Once this connection is made, the application identifies itself at session level (by sending the character 'B'), the system then responds by sending the character 'P'.

Message	Transmission direction	Meaning
B	CTI Server -> System	Identification of the application
P	System -> CTI Server	CPU
EXIT	CTI Server -> System	End of connection

APPLICATIONS

THIRD PARTY CTI - CSTA

Identification (future version)

The CSTA protocol falls into layer 7 (application) of the OSI model. Its implementation in the system uses the ACSE (Association Control Service Element) defined by OSI for managing application links.

In the association request (AARQ) the CTI application specifies the list of CSTA versions supported and the list of CSTA services and events used.

The association can be rejected by the system's CSTA server if:

- the ACSE versions are incompatible
- there is no common CSTA version between the CTI server and the system

When the association is accepted, the system sends back a reply (AARE) containing the chosen CSTA version and the list of usable CSTA services and events.

Connection release

The CTI application sends an association cancellation request (RLRQ ADPU); the system replies with RLRE ADPU.

The connection is then released by an EXIT message sent by the server. Each side then releases the TCP connection.

Surveillance

A surveillance mechanism is installed at application level, to ensure that the link is available. This mechanism enables the CTI server to detect any malfunctions (reboot) on the system side. This function exists in TCP but the reaction time is longer.

When there are no exchanges on the link, the system's CSTA server periodically (every 30 s) sends system status requests (bi-directional services). These requests must be acknowledged by the CTI server. If the requests are not transmitted or if the replies are not received, the link is considered to be faulty after two messages have been sent with no reply.

Failures

- Failure of the CTI server or failure of the link:
 - the calls established remain unchanged
 - the monitoring events are lost
 - the monitoring requests are cancelled
- the system's CSTA server cancels the connection context
The CTI server must reconnect and restart monitoring.
- Failure of a terminal (UA set, UA link or DLC board): the calls established are deleted. When the terminal returns to valid status, the CSTA server resumes the monitoring process.

- System reset:
 - all the calls are lost
 - the monitoring events are lost
 - the monitoring requests are cancelled
- The CTI server has to reconnect.

DEVICE IDENTIFIER

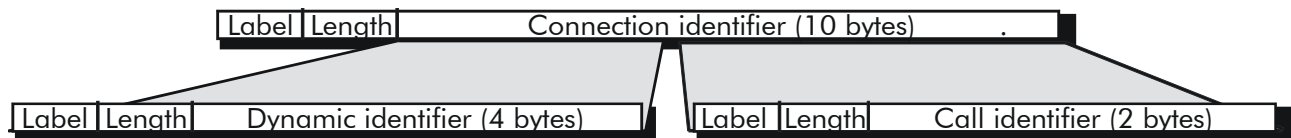
This paragraph describes the internal structure of the device identifiers used by the system's CSTA server.

Static Device Identifier

As long as a device is not involved in a call, it is designated by its directory number. Thus, to establish a call with "Make-Call", or request monitoring with "Monitor Start", the directory number of the device concerned is used.

Dynamic Device Identifier

As soon as the device concerned is involved in a call, reference must be made to it in the connection identifier, using the dynamic identifier. Thus, for a "Transfer-Call", the dynamic identifier obtained in the previous events is used.



DESCRIPTION OF CSTA SERVICES

The implementation of CSTA services in the Alcatel OmniOffice system uses the principle of device monitoring. Each monitoring request creates a "data stream" between the monitored system device and the CSTA application of the CTI server which made the request. All the events of all the connections in which the device is involved are reported by this "data stream" which is identified by a reference (cross_ref_id). All the events carried by the "data stream" are identified by this reference, which enables them to be routed through the CSTA application.

The CSTA services are available for the following elements:

- Alcatel multiline Reflexes sets (including DECT sets and IP Phones)
- Monoline Alcatel Reflexes sets
- Analogue Z terminals
- Virtual terminals

Nonetheless, devices not supported can be involved in communications with supported devices. In such cases, the CSTA service requests can only be made on the supported devices.

The switching services introduced by CSTA use those offered by the system. This means that from the viewpoint of the telephone set, the CSTA services behave in the same way as the equivalent telephone services provided manually.

To be able to activate switching services on a device, the device must be the subject of a valid supervision request.

SERVICES PROVIDED

The services offered by the CSTA protocol are of four types:

- **switching services** enable a computer to control the switching capacity of the system. For all these services, the server is, therefore, the system and the client is a computer on the network.
- **monitoring services** enable a client situated in the computing domain to receive information concerning calls or system devices situated in the switching domain.
- **computer services** enable a client situated in the computing domain to request routing of a call.
- **bi-directional services** allow installation of services not defined in the protocol.

SWITCHING SERVICES

Answer Call

This service can be used to connect a call presented or camped on.

Alternate Call

This service can be used to combine the "Hold Call" service followed by the "Retrieve Call" service. The call on hold becomes active while the current call is placed on hold.

Clear Connection

This service can be used to clear a call from a specific device (similar to going on-hook manually).

Consultation Call

This service can be used to combine the "Hold Call" service followed by the "Make Call" service. The call active on a device is placed on hold and a new call is made from the same device.

Hold Call

This service places an established connection on hold (similar to manually placing on hold).

Make Call

This service is used to generate a CSTA call between 2 devices.

The "Make Call" service is unaware of the device states (forwarded, controlled, etc.). The user can reject (soft key, End key, time-out) or accept the call (off-hook, soft key, hands-free key, time-out). The system can be programmed for automatic answer mode. After a time-out (5 seconds by default), the system simulates a "hands-free" mode on the original device. If the service is accepted, the application automatically dials on behalf of the user.

Query device

This service provides terminal status indications.

Reconnect Call

This service is used to combine the "Clear Connection" service with the "Retrieve Call" service.

Retrieve Call

This service is used to connect a call on hold (similar to the corresponding manual operation).

Transfer Call

This service transfers a holding call into an active call on the same device (similar to a supervised transfer).

Associate data

This service (available through use of the "Escape" service) associates information (project code, authorization, code, etc.) with a specific call (this information has no impact on the call).

Send DTMF tones

APPLICATIONS

THIRD PARTY CTI - CSTA

This service (available by using the "Escape" service) enables DTMF tones to be added after a call is connected.

Dial digits

This service (available by using the "Escape" service) allows a dialing sequence to be associated with a call (the call is initiated manually by going off-hook or via a "Make Call" or "Consultation Call" service).

Pick up Edn

This service (available by using the "Escape" service) camps a (ringing) call on a given terminal.

Get config

This service (available by using the "Escape" service) returns information about the system configuration.

Device status

This service (available by using the "Escape" service) enables you to:

- start monitoring the creation/deletion of a terminal on the system
- stop monitoring
- request a device status
- request the status for all the terminals.

A terminal status gives the following information: direct number, physical status of terminal, in service / out of service.

Nota : Particularities of mono-line terminals:

Certain CSTA services (Answer Call, Consultation Call, etc.) may be rejected by mono-line terminals, as a mono-line terminal can simultaneously manage only one connected call and one call on hold (or 1 or more camped calls).

Example: it cannot answer a camped call when another call is on hold.

SUPERVISION SERVICE

This service enables a CSTA client to receive messages concerning the CSTA events occurring on a monitored device.

- It must be activated by the event monitoring activation service, used to specify the device monitored.
- Monitoring stops by itself if the monitored device disappears (as is the case with a call) or can be stopped by the monitoring deactivation service.
- A client can find out the current state of a call or device simply by requesting it.
- The client may not necessarily receive all the events generated by the monitoring process, but simply a sub-set of them by activating a monitoring filter.

Monitor Start

This service activates Call Event Monitoring. There are two types of activation service:

- call monitoring activation: all events on the devices in which the call is involved are reported.

- device monitoring activation

When the CSTA server has accepted the monitoring activation request, it sends the client an on-the-fly data stream describing the CSTA events of the call or device being monitored. If a filter has been activated, only the chosen events will be transmitted. The server automatically ends supervision when the monitored object disappears, which can happen with a call.

The CSTA server also provides a reference: Cross Reference Id, associated with the monitoring process for as long as it lasts. This reference will be used whenever anything is done on the monitoring process (change filter, deactivate, etc.).

Monitor Stop

This service is used to stop the monitoring process for a given object (device or call). It can be invoked by a client who no longer wishes to receive information concerning a previously monitored object, or by a system no longer able to provide information about the object.

When the request is accepted by the server, the data stream describing the CSTA events for the monitored call or device ceases.

Change Monitor Filter

This service is used to change the monitoring filter on an existing monitoring process. The monitoring filters are used to define the information to be transmitted by the monitoring process.

Snapshot Device

This service is used to obtain information concerning a specified device. This information includes the list of calls involving the device and the state of each connection.

BI-DIRECTIONAL SERVICES

Escape

The escape procedure permits the installation of services not defined in the protocol.

System Status

This service identifies the system status, whether for the switching part or the computing part.

PROTOCOL CONFORMITY: PICS

The implementation of the CSTA protocol on the Alcatel OmniPCX Office system is set out in the following tables.

Nota :

This list is not exhaustive and the implementation of the protocol can change with time.

Refer to the PICS (Protocol Implementation Conformance Statement) for a description of the state of conformance of this implementation of the protocol compared with the standard.

APPLICATIONS

THIRD PARTY CTI - CSTA

<hr/>			
A	Initialization Services	Alcatel Omni- PCX Office	Remarks
A.1	Security services		
A.2	ACSE negotiation (Non ECMA V1 Ad- ditional Features)	✓	For version, service capability and authentication
<hr/>			
B	Switching Function Services	Alcatel Omni- PCX Office	Remarks
B.1	Answer call	✓	
B.2	Alternate call	✓	
B.3	Call completion	✓	Intrusion supported Callback supported
B.4	Clear call		Not applicable for Alcatel OmniPCX Office (use clear connection instead)
B.5	Clear connection	✓	In a basic call when you clear one con- nection of the call, the other one is automatically cleared.
B.6	Conference call	✓	
B.7	Consultation call	✓	Correlator data supported
B.8	Divert call	✓	Call deflection supported Individual call pickup supported Group pickup supported Correlator data supported
B.9	Hold call	✓	
B.10	Make call	✓	Correlator data supported AutoOriginate authorized
B.11	Make predictive call (group)		
B.12	Query device	✓	Device info supported (type and class) Forwarding supported Do Not Disturb supported
B.13	Reconnect call	✓	
B.14	Retrieve call	✓	

THIRD PARTY CTI - CSTA
APPLICATIONS

B.15	Set feature	✓	MsgWaiting supported Forwarding supported Do Not Disturb supported
B.16	Transfer call	✓	
	Non ECMA V1 Additional Features (using Escape service)		
B.17	Associate data	✓	Only for CSTA Application Correlator Data
B.18	Send DTMF tones	✓	
B.19	Dial digits	✓	
B.20	Pickup EDN	✓	
B.21	Get config	✓	
B.22	Device status	✓	

C	Status Reporting Services	Alcatel Omni- PCX Office	Remarks
C.1	Events reports		
C.1.1	Agent state event reports		
C.1.1.1	Logged on		
C.1.1.2	Logged off		
C.1.1.3	Not ready		
C.1.1.4	Ready		
C.1.1.5	Work not ready		
C.1.1.6	Work ready		
C.1.2	Call event reports		
C.1.2.1	Call cleared		Not applicable for Alcatel OmniPCX Office
C.1.2.2	Conferenced	✓	Correlator data supported
C.1.2.3	Connection cleared	✓	Correlator data supported
C.1.2.4	Delivered	✓	Correlator data supported Used B-channel supplied with private data (Network Time Slot) Group number supported Correspondent name supported

APPLICATIONS

THIRD PARTY CTI - CSTA

C.1.2.5	Diverted	✓	Correlator data supported
C.1.2.6	Established	✓	Correlator data supported
C.1.2.7	Failed	✓	Correlator data supported
C.1.2.8	Held	✓	Correlator data supported
C.1.2.9	Network reached	✓	Correlator data supported
C.1.2.10	Originated	✓	Correlator data supported
C.1.2.11	Queued	✓	Correlator data supported Used B-channel supplied with private data (Network Time Slot) Group number supported Correspondent name supported
C.1.2.12	Retrieved	✓	Correlator data supported
C.1.2.13	Service initiated	✓	
C.1.2.14	Transferred	✓	Correlator data supported
C.1.3	Feature event reports		
C.1.3.1	Call information	✓	
C.1.3.2	Do not disturb	✓	
C.1.3.3	Forwarding	✓	
C.1.3.4	Message waiting	✓	
C.1.4	Maintenance events		
C.1.4.1	Back in service	✓	
C.1.4.2	Out of service	✓	

C	Status Reporting Services	Alcatel Omni- PCX Office	Remarks
C.2	Monitor/snapshot		
C.2.1	Change monitor filter	✓	
C.2.2	Monitor start	✓	Device-type only, with filters on events
C.2.3	Monitor stop	✓	
C.2.4	Snapshot call		
C.2.5	Snapshot device	✓	

THIRD PARTY CTI - CSTA

APPLICATIONS

D	Computing Function Services	Alcatel Omni- PCX Office	Remarks
D.1	Re-route		
D.2	Route end		
D.3	Route request		
D.4	Route select		
D.5	Route used		

E	Bi-directional Services	Alcatel Omni- PCX Office	Remarks
E.1	Escape	✓	See associate data
E.2	System status	✓	Used for the keep-alive mechanism

CONFIGURATIONS

The CPU board IP address is configured in **PM5 -> Hardware and Limits -> IP Addresses**.

VIRTUAL TERMINALS

Definition

A virtual terminal (so called because the terminal does not physically exist) is not visible and can only be managed from a CSTA application. Created using MMC-PC (Expert View), it is assigned an internal directory number and has the same characteristics as a Reflexes set.

An Alcatel OmniPCX Office system can have a maximum of 24 virtual terminals.

Description

A virtual terminal can receive internal and external calls. Incoming calls can be answered via CSTA service requests; outgoing calls are also made in response to a CSTA service request.

A virtual terminal can form part of hunting group or an attendant (operator) group.

Default parameter setting:

- intercom profile (one resource key for each network access)
- 2 RGM keys for local calls
- 1 dedicated key for outgoing calls

A virtual terminal can have a maximum of 104 keys.

Configuration

- To create virtual terminals (max. 24) – MMC-PM5 (Expert view) only:

Subscribers -> Subscriber List -> Add -> Custom. Set: Add -> Virtual Terminals -> specify the number of virtual terminals you want to create.

The system assigns the available directory numbers to the virtual terminals.

All the set parameters (accessible by **Subscribers -> Subscriber List -> Details**), with the exception of the individual directories and personal codes, can be modified.



THIRD PARTY CTI - CSTA

APPLICATIONS

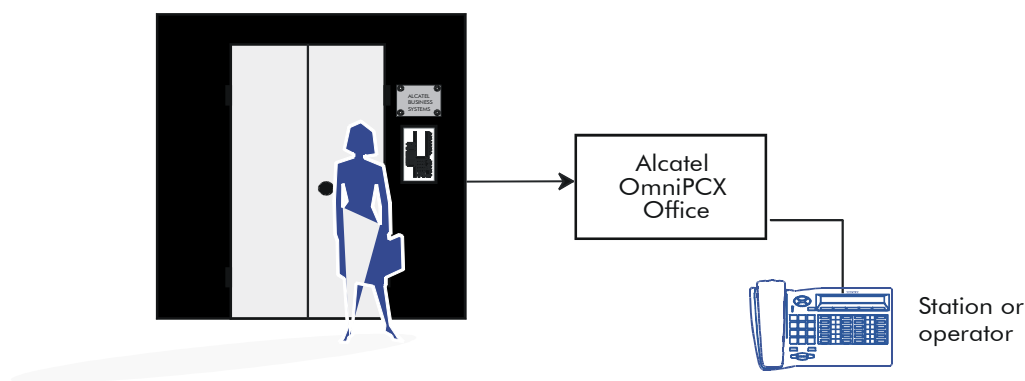
DOORPHONES

File

3

DESCRIPTION

With the doorphone, it is possible to identify the person who has pressed the button before opening the door. Identification is made after a communication has been set up between a set connected to the system and the doorphone.



2 doorphone types are available, depending on the operating mode used:

- Type A: relay-controlled doorphones (e.g. NPTT)
- Type B: doorphones controlled by MF Q23 signals (e.g. TELEMINI and UNIVERSAL DOORPHONE)

These doorphones are mutually exclusive on the same system. **A flag must be placed to define the operating mode in use.**

By MMC-PM5 (Expert View), select:

System Miscellaneous -> Memory Read/Write -> Misc. Labels -> flag DPHMode -> enter 00 (default value) for a TELEMINI or UNIVERSAL DOORPHONE or 01 for an NPTT doorphone.

A doorphone call is managed in the same way as all internal calls:

- it is indicated on the destination set display as another call
- a doorphone call may be intercepted, forwarded, put in a conference with other correspondents and camped on if the destination set is busy.

Notas :

The destination of a doorphone call can be an external number (defined using a collective speed dial number); in this case, the set in question cannot control the door opening mechanism.

USING A TELEMINI DOORPHONE

These doorphones must only be connected to a Z station interface.

Basic characteristics of these doorphones:

- recognition of the opening and closing of the loop and passing into conversation.
- no detection of the ringing current (incoming call) except for those that are MF Q23 programmable.
- recognition of MF Q23 signals or tones transmitted by the system (system -> doorphone dialog).
- possibility of configuring a directory n° (programmed in the memory) transmitted to the system.

Several doorphones may be connected to the system; the limit is defined by the maximum number of analog set interfaces that the system can contain.

A system cannot have TELEMINI and UNIVERSAL doorphones at the same time.

Operating principle

Pressing the doorphone call button sends an MF code (START) which, after validation by the system, maintains the call and triggers an off-hook signal on the doorphone destination set or group.

There is a specific key for answering the call, while another controls the automatic doorstrike (latch) by sending an MF code (LOCK).

Hardware requirements

- a free Z device on an SLI board
- 2 free keys on one or more Reflexes sets
- a Telemini doorphone with doorstrike

Programming

- defining the Z interface (for subscriber 111, for example).

By MMC-PM5 (Expert View), select:

Subscribers/Basestations List -> Subscriber -> 111 -> Details -> Misc. -> Special Function = Door Phone -> Hotline = Immediate -> destination n° = set or group Subscribers -> Subscriber -> 111 -> Details -> Features = protection against camp-on tone and intrusion (optional)

- the feature access code for controlling the doorstrike

By MMC-PM5 (Expert View), select:

Numbering -> Features in Conversation -> XX = Doorphone Unlock

APPLICATIONS

DOORPHONES

- to create specific keys on the set(s) linked to the doorphone
 - Supervision keys

By MMC-PM5 (Expert View), select:
Subscribers/Basestations List -> Subscribers/Basestations List (select doorphone destination set) -> Details -> Keys -> select a key -> Type = Resource Key -> Function = RSL -> Number = 111

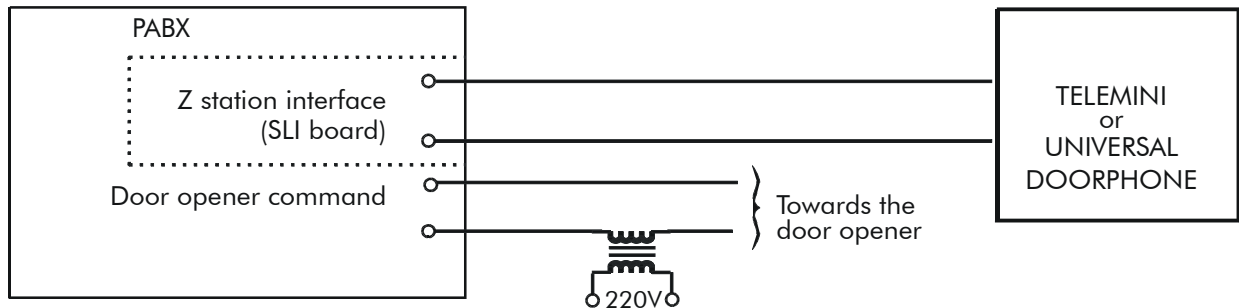
- Doorstrike key

By MMC-PM5 (Expert View), select:
Subscribers/Basestations List -> Subscriber (select set) -> Details -> Keys -> select a key -> Type = Function Key -> Function = Doorphone Unlock

- specific programming instances
 If the doorphone uses other MF command codes, refer to its instructions.

By MMC-PM5 (Expert View), select:
System Miscellaneous -> Doorphone Signals -> change MF code values (start/stop signal), if desired, add the ringing tone to the doorphone using Alert Signal / Tone

Connection diagram

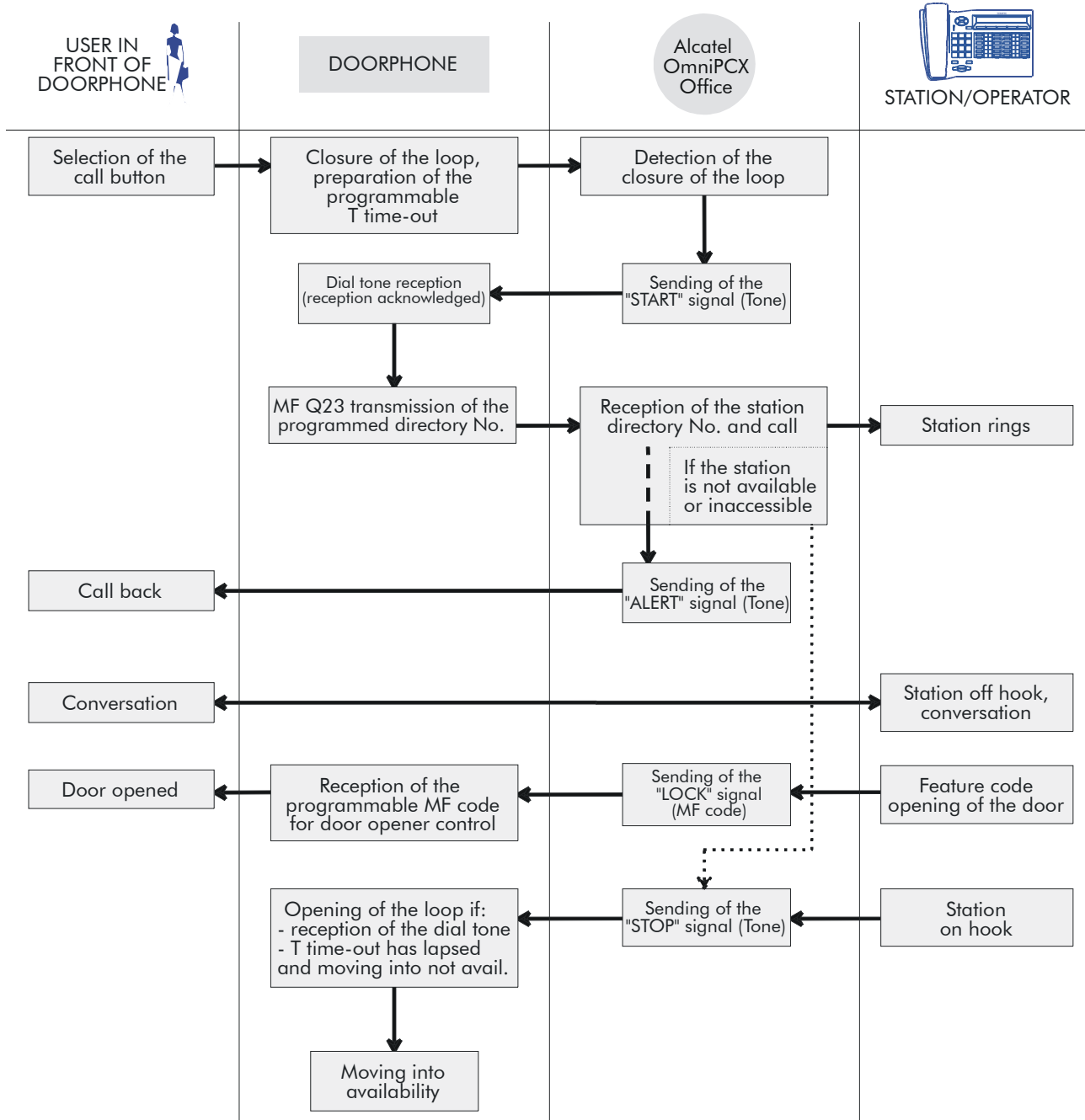


Functional description

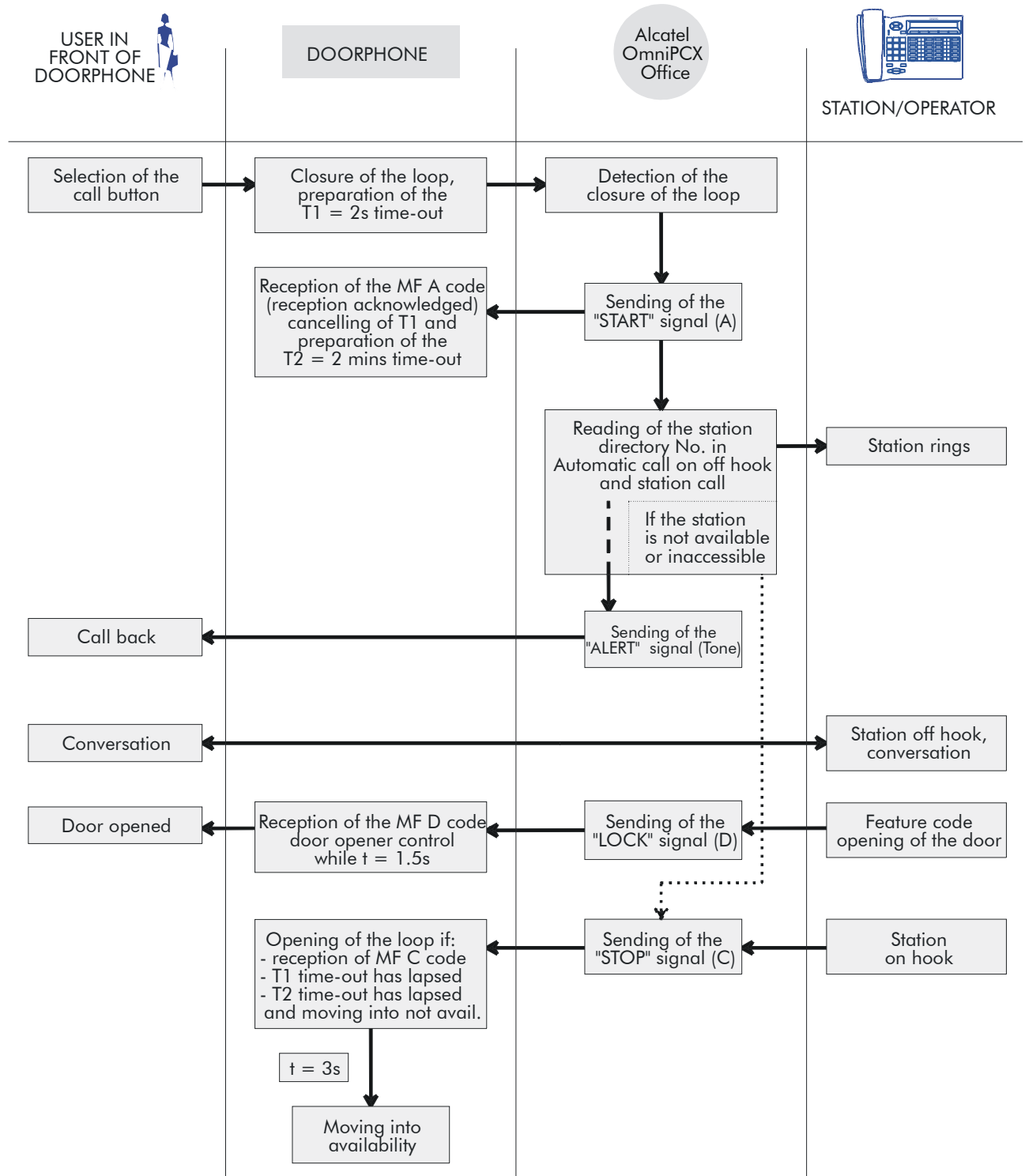
Setting up a doorphone requires a functional analysis of the device (expected signals or tones, system open to programmable signals), before moving on to the system configuration, or that of the doorphone.

Nota : It is recommended that you consult the doorphone installation manual.

Functional analysis of the "UNIVERSAL DOORPHONE"



Functional analysis of the "TELEMINI" doorphone



USING AN NPTT DOORPHONE

The doorphone interface comprises an intercom and an optional doorstrike powered by the mains supply through a SELV (Safety Extra Low Voltage) transformer.

A single doorphone with doorstrike may be connected to the system.

The system also allows for the connection of 2 doorphones without doorstrikes.

Operating principle

Pressing the doorphone call button triggers a loop on the associated Z terminal. The loop is maintained by relay 1 on the AFU board until the call is answered. The Z terminal is in immediate selection mode on the doorphone destination group or terminal.

There is a specific key for answering the call, while another controls the automatic doorstrike (latch) via relay 2 on the AFU board.

HARDWARE REQUIREMENTS

- an AFU board (a CPU daughter board)
- a free Z device on an SLI board
- 2 free keys on one or more Reflexes sets
- an NPTT doorphone
- a doorstrike with transformer

Programming with MMC-PM5

- set the flag "DPHMode" to 01.
This flag, with a default value of 00, enables the PABX to manage the type of doorphone interface employed. Only the values 00 and 01 are currently used.

By PC- PM5 (Expert View), select:
System Miscellaneous -> Memory Read/Write -> Misc. Labels -> DPHMode -> Details -> 01 -> Modify -> Write

- defining the Z interface (for subscriber 111, for example).

By MMC-PM5 (Expert View), select:
Subscribers/Basestations List -> Subscriber -> 111 -> Details -> Misc. -> Special Function = Door Phone -> Hotline = Immediate -> destination n° = set or group Subscribers -> Subscriber -> 111 -> Details -> Features = protection against camp-on tone and intrusion (optional)

- the feature access code for controlling the doorstrike

By MMC-PM5 (Expert View), select:
Numbering -> Features in Conversation -> XX = Doorphone Unlock

APPLICATIONS

DOORPHONES

- to create specific keys on the set(s) linked to the doorphone
 - Supervision keys

By MMC-PM5 (Expert View), select:
Subscribers/Basestations List -> Subscriber (select doorphone destination set) -> Details -> Keys -> select a key -> Type = Resource Key -> Function = RSL -> Number = 111

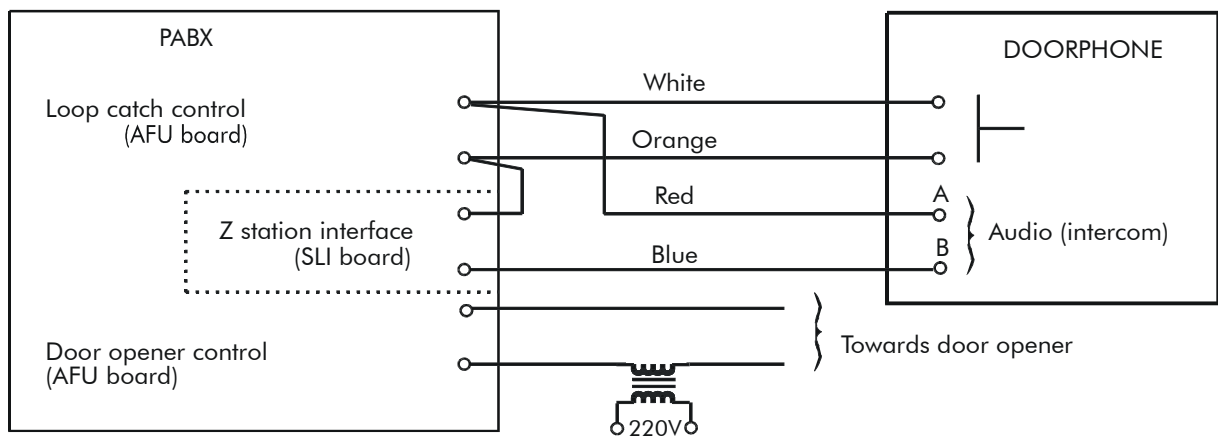
- Doorstrike key

By MMC-PM5 (Expert View), select:
Subscribers/Basestations List -> Subscriber (select set) -> Details -> Keys -> select a key -> Type = Function Key -> Function = Doorphone Unlock

- configuring the Auxiliaries board relays

By MMC-PM5 (Expert View), select:
Hardware and Limits -> Auxiliary Interfaces -> Doorphone 1: Hold Line = relay1 (maintain call), Doorstrike = relay2 (open doorstrike), N° = doorphone Z interface number (111)

Connection diagram





DOORPHONES

APPLICATIONS

ALCATEL OFFICE CALL CENTER
(AOCC)

File
4

Alcatel Office Call Center (AOCC) provides voice applications such as Voice Mail, Automatic Attendant, Audiotex, ACD (Automatic Call Distribution), etc.

CONNECTION

AOCC is connected to the Alcatel OmniPCX Office system by 2 types of link:

- analog connections, corresponding to analog set interfaces (SLI boards)
- a CSTA connection, corresponding to the LAN link to a LanX8/X16 board.

Analog connections

SLI boards

The SLI boards interface between the Alcatel OmniPCX 2-wire analog Z sets and the AOCC voice boards. For the SLI board connection details, see the relevant paragraph in "Hardware" section.

AOCC voice boards

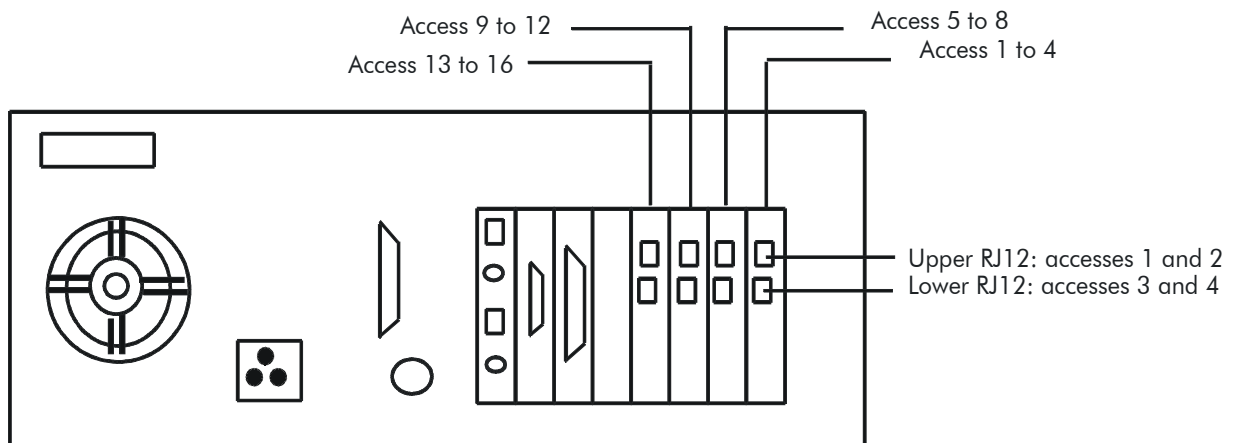
The voice board devices connect to the analog set outlets.

For 2 or 4-line boards, 1 or 2 double cables are supplied, with an RJ12 connector (6 positions, cabled) at each end.

For 2-wire analog accesses, the following cables are supplied:

- 1 board with 2 accesses: 2 CDR 4015 (RJ12) cables or 1 CDR 4029 (RJ45) cable.
- 1 board with 4 accesses: 2 CDR 4015 (RJ12) cables or 1 CDR 4029 (RJ45) cable.

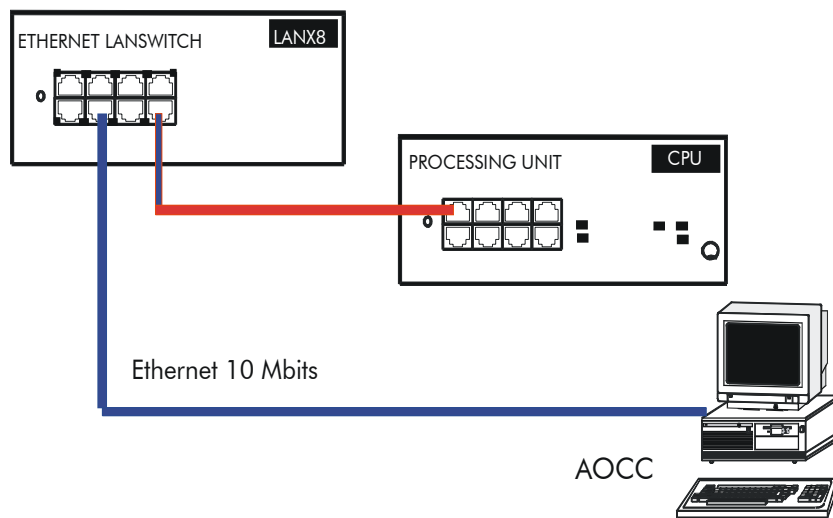
Connector locations:



CSTA connection

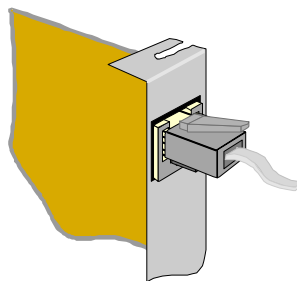
LanX8/X16 board

The AOCC application is connected to the system using a LanX8/X16 board via an 10 base T Ethernet link (straight cable).



AOCC network board

The PC network board is equipped with an RJ45 connector for connection to a 10 base T Ethernet link; the pins are numbered 1 to 8 from left to right (front view, clips on top).



Pin n°	Signal	Function
1	TX+	Transmission +
2	TX-	Transmission -
3	RX+	Reception +
6	RX-	Reception -

INSTALLATION

- Connect up the AOCC application (Ethernet link and analog links).
- Configure the system IP address (**PM5 -> Hardware and Limits -> IP Boards**); this address is usually supplied by the IT network administrator (when using an existing LAN) but it can be any address (in the case of direct connections) providing it matches the one entered in AOCC.

CONFIGURING THE SYSTEM SIDE

To ensure that the application works well, you need to modify a number of Alcatel OmniPCX settings:

- in **PM5 -> System Miscellaneous -> Feature Design**, make sure "o Group Called with Signa-
lisation Mode" and "o CLI for VPS" are unchecked.
- check that the "EnquiEButt" flag is set to 00H (applies particularly to Belgium)
- cancel dynamic routing on all the analog accesses used for the AOCC connection
- check that these analog accesses have the "Telephone" service
- a number of general rules have to be adhered to when configuring agent stations and analog ac-
cesses:
 - cancel all dynamic routing
 - prohibit intrusion
 - prohibit call pickup (a statistics issue)
 - prohibit conference calls
 - do not use forwarding (of whatever type)
 - if external transfer is used, authorize joining for the Z accesses used by AOCC
- check the barring levels and traffic sharing settings for the AOCC lines.

CONFIGURING THE AOCC SIDE

See the documentation supplied with the application.



**ALCATEL OFFICE CALL CENTER
(AOCC)**

APPLICATIONS

CALL METERING SERVICES

File

5

The CALL METERING module is used for collecting specific information concerning telephone communications and printing this information in various formats, depending on the type of management selected.

This section describes the implementation and use of call metering statements or tickets; these can be printed on any printer connected to a V24 4083 ASM or 4093 ASY-CTI option on a Reflexes terminal.

It is also possible to display data relating to communication.

Nota : **Not all the metering information supplied by the ISVPN+ protocol (operator, node, services: transit, overflow, ARS, etc.) appears on the tickets; this data can only be used from within a central management application (Alcatel 4740 or other).**

V24 metering printout:

▼ Metering printout parameters: format (information bits, parity, stop bits) and speed; by default: 8N1, 9600 bps).

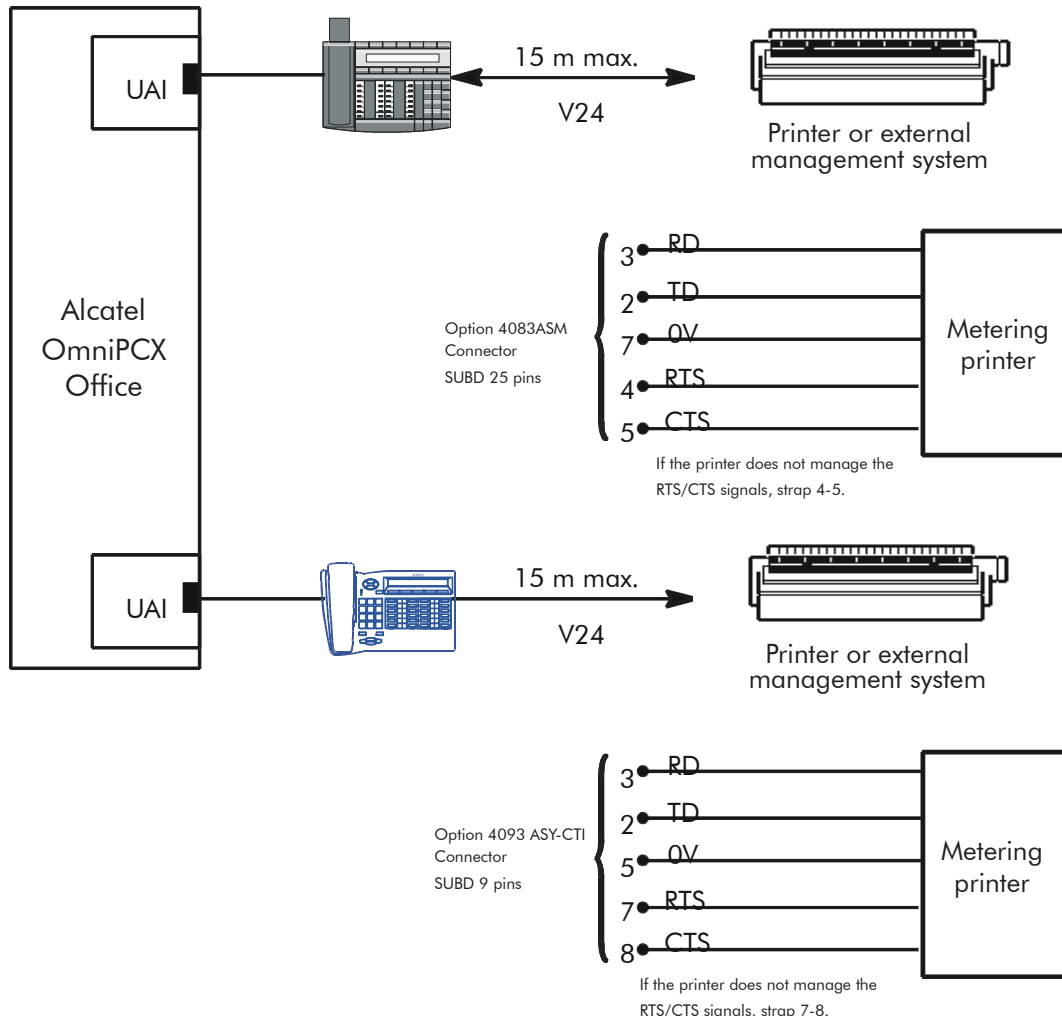
- By MMC-PM5 (Expert View), select: **Subscribers/Basestations List** -> **Subscribers/Basestations List** -> select V24 access -> **Details** -> **V24**

▼ Activating external metering: printing of tickets/statements is or is not activated (default setting)

- By MMC-PM5 (Expert View), select: **Metering** -> **Metering** -> **Printouts**->check **External Metering Activation**

Nota : The details on configuring the V24 metering printout can be found in the "Annexes" section.

Connection



APPLICATIONS
CALL METERING SERVICES
PRINCIPLES
Meter charging according to the operating phase

Operation	Meter charging method
Conversation	Metering units received on the line are charged to the subscriber in conversation with that line.
Park or Hold	Metering units received on a parked or holding line are charged to the subscriber who parked the call.
Retrieve from parking or hold	The metering units are charged to whomever activated the service. Subsequent metering units are charged to the user who retrieved the call.
Automatic forwarding	The system does not manage charges for external forwarding; this is managed by the public network.
Conference	Any conference costs are charged to the conference initiator.
Transfer	<p>If a transfer takes place on an external call, the cost of the communication is charged to the initial user until the external user is put through to the new correspondent.</p> <p>When a call is transferred while ringing or on busy, metering units are charged to the transfer destination.</p> <p>No units are charged to the OS when external calls are transferred to a system user; all the metering units are charged to the destination subscriber.</p> <p>However, if a call is meant for the OS (by transfer or callback), the communication is charged to the OS.</p>
Ext/Ext transfer	Metering units received after the transfer are charged to the user who made the second external call.
Transfer failure	A callback after a transfer failure is always treated as an incoming communication for the set to which the call is rerouted after the no-answer time-out.
External forwarding	When an internal call is made to a user whose calls are being diverted to an external number, the metering units are charged to the forwarded subscriber.

DURATION AND COST

Duration

The system counts two types of duration:

- Duration of the communication: this corresponds to the time during which the system considers that a line is allocated to a subscriber; this accounting occurs after the first switch to conversation mode by the subscriber with the line.
- Call phase duration: the system counts the call phase duration of an incoming external communication from the moment when the system detects the call to when the line changes to conversation with a system terminal. This information is used during external management.

Cost

The cost of a communication is calculated according to the number of units charged:

- The value of the basic metering unit may be constant, regardless of the length of the communication.
- The value of the basic metering unit may be variable: the cost of the first x metering units is calculated according to an initial basic metering unit value. As soon as a threshold number of metering units is reached, the cost is calculated according to a second metering unit value.

Notas :

The software allows the actual duration of the communication to be shown on the metering ticket:

- on receipt of a CONNECT message on digital networks
- on receipt of a polarity inversion or a metering pulse on analog networks.

In all other cases, the duration given is only approximate since it is calculated by an off-hook simulation mechanism.

Useful parameters for calculating the cost of a communication:

- ▼ Value of the basic metering unit before reaching the configured threshold (6 digits in the chosen monetary unit, of which 0 to 2 are decimals)

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Metering Options for Active Currency-> 1. Base Charge Rate**

- ▼ Threshold for using the second basic metering unit value (in metering numbers from 0 to 99)

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Metering Options for Active Currency-> N° of units for cost threshold**

APPLICATIONS

CALL METERING SERVICES

▼ Second basic metering unit value (6 digits of which 0 to 2 are decimals)

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Metering Options for Active Currency -> 2. Base Charge Rate**

▼ Number of decimals in the cost

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Metering Options for Active Currency -> Fractional Part Length for Costs**

Notas : If it has been decided to operate with a single metering unit value, the same value must be given to the second metering unit value.

COST OF ISDN SERVICES

Since the costs of some facilities are not transmitted by the public network, it is possible to assign a given value to the cost meter whenever such a service is activated.

Cost of ISDN services:

- ▼ Cost of on-line metering (in metering units) in the case of manual activation (if the network does not add the cost of the service at the beginning of the communication).

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Metering Options for Active Currency-> Online Metering**

- ▼ Cost of user to user signaling (in the chosen monetary unit, 6 digits – of which 0 to 2 are decimal).

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Metering Options for Active Currency-> User to User Information**

- ▼ Cost of PABX forwarding (in the monetary unit chosen, 6 digits – of which 0 to 2 are decimal).

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Metering Options for Active Currency-> Diversion Charge Rate**

Example of the calculation of the cost of a communication

This example shows the effect of using the "On-line metering" and "UUS" services in terms of communication costs.

Parameters configured:

- basic metering unit value: 1.70 F
- threshold: 1 metering unit
- second basic metering unit value after threshold: 2 F
- cost of on-line metering: 4 metering units
- cost of UUS: 5.10 F

Example of a statement:

A100 --> N01 23/10/9608:31 00:00:08 **8** ST TI 00388677700...**14.500**

The 8 metering units are made up as follows:

- **1** metering unit for the call; cost = **1.70 F**
- **4** metering units for activation of the on-line metering; cost = **7.70 F** (1 x 1.70 F + 3 x 2 F)
- **3** metering units for UUS (number of metering units = UUS/first basic metering unit value cost, i.e. 5.10/1.70 = 3); cost = **5.10 F**

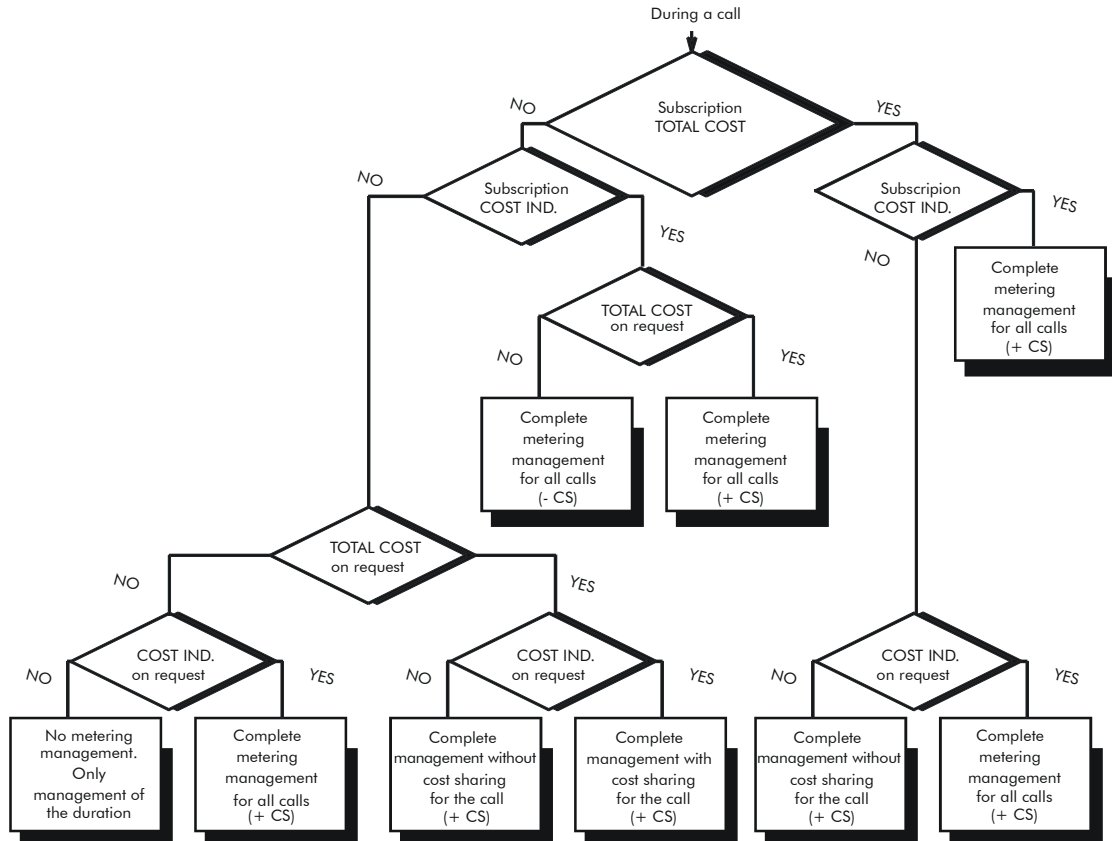
APPLICATIONS

CALL METERING SERVICES

COMPLEMENTARY SERVICES

- **On-line metering**

This complementary service includes the services TOTAL COST (display of the total cost on release of the communication) and COST INDICATION (display of the cost during a communication). Different cases are possible:



Subscription to the TOTAL COST or COST INDICATION service means that the complementary service is activated on subscription to the network operator.

TOTAL COST or COST INDICATION on request (call by call) signifies that the complementary service is activated by system configuration (MMC) or by activation from an S0 set.

+ CS signifies that the cost of complementary services (UUS, terminal forwarding) is managed by the system (-CS if not).

At each automatic or manual activation of an ON-LINE METERING request, a charge unit is assigned to the caller.

▼ **Activation of online metering during communication**

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Metering Options for Active Currency -> Advice of Charge -> check During the Call or At the End of the Call**

Notas : The "At the end of the call" field (TOTAL COST on demand) is not used in France.

- **User to User Signaling (I)**

The cost of this service is programmable by MMC.

It does not depend on the length of the message. It is assigned as soon as the UUS is transmitted (even if the called party has not answered). The cost is assigned to the user who initiated the call: it therefore only applies to outgoing calls.

Note: During such a call, the cost of outgoing and incoming messages is assigned to the initiating user.

- **Terminal forwarding or external forwarding (R)**

A ticket or statement is printed whenever this feature is activated or deactivated.

BEARER SERVICES

One of the metering ticket fields mentions the "bearer service" used for the communication.

The following bearer services are provided:

- **ST:** voice, group 3 facsimile, teletext and videotex type services.
- **T+:** group 4 facsimile, transparent data transmission.

INFORMATION DISPLAYED ON SETS

Temporary counters keep track of information destined to be displayed during a network conversation.

Information which can be displayed on all system terminals with displays (except S0 sets):

- duration
- duration + number of metering units (including for complementary services)
- duration + cost

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Metering Options for Active Currency -> Display on Sets**

Pulse meter

- This counter counts the number of metering units received on a line and assigns them to a given subscriber.
- It is reset when the line is released or the call is transferred to a new subscriber.

Duration counter

- This counter adds up the duration (in minutes) during which a given line is in connection with a given subscriber.
- It is reset when the line is released or allocated to a new subscriber.

Cost meter

- This counter records the cost of a communication (in local currency) between a given subscriber and a trunk line.
- It is reset when the line is released or allocated to a new subscriber.

Examples of displays

- 4034 and Advanced sets:

```
00388736458 xxx.yy Frs xxx' 11:00
Hold      jConf      jMF>
```

- 4023 set:

```
xxx.yy Frs xxx'
Hold
```

- 4011, 4012, Easy and Premium sets:

```
xxx.yy Frs xxx'
```

METERING COUNTERS

Description of the counters

The recording of the number of metering units and the cost of communications is done by 12 counters, distributed as follows:

- **10 set counters:**
 - 2 adding counters (one for the number of metering units and one for the cost):
 - read only
 - no reset possible
 - the number of metering units displayed returns to zero when the maximum number is reached
 - 8 partial counters (4 pulse meters, 4 cost meters) according to the on-line services defined:
 - read only
 - reset possible by MMC
 - the storage capacity of these counters is 65535 metering units
 - for a non S0 set, there is only one pulse and cost meter.
- **2 line counters:**
 - one partial pulse meter which can be reset
 - one adding pulse meter which cannot be reset
 - the storage capacity of these counters is 4 thousand million metering units.

All of these counters can be read from MMC-Station or from MMC-PM5 (the updating of metering counters at MMC-PM5 level can only be done during a PABX -> PC backup in a new file).

Metering counters

▼ Reading and resetting set counters

- By MMC-PM5 (Expert View), select: **Subscribers/Basestations List -> Subscribers/Basestations List -> subscriber identification -> Details -> Metering**

▼ Reading and resetting line counters

- By MMC-PM5 (Expert View), select: **External Lines -> List of Accesses -> line identification -> Details**

▼ Reading all the subscriber adding counters

- By MMC-PM5 (Expert View), select: **Metering -> Metering Counters**

Counter changes in break-out/transit

- normal break-out (leased line to public line): the line counter changes
- break-out by external forwarding (leased line to public line): the set counter changes
- normal transit (public line to public line): no counter change
- transit by hunting group external forwarding (public line to public line): the hunting group counter changes

Meter printouts

APPLICATIONS

CALL METERING SERVICES

The contents of the counters can also be printed out by the metering printer (by MMC-Station: **Instal/ Admin -> Count -> Subscr or Access**).

Set counters and operator counters

TAXES AND COST COUNTERS PER SUBSCRIBER - 12/08/00 14:05

USER	TAXES	:	C1	C2	C3	C4	TOTAL
	COST	:	C1	C2	C3	C4	TOTAL
A101			1203	20	0	400	2645
			2467.50	422.32	0	53	23577.45
G1			23	0	2	0	60
			47.05	0	23.76	0	458.32

FIELD	DESCRIPTION
USER	Terminal number (max. 9 characters, right justified); the number format is: - AXXX for a subscriber - GXX for a hunting group
C1-C2-C3-C4	Partial pulse and cost meters per subscriber/hunting group (5 characters)
TOTAL	Total cost meter per subscriber/hunting group (5 characters)

Line counters

TAX METERS PER ACCESS - 12/08/00 14:05

ACCESS	PARTIAL	TOTAL
L01	12030	26452584
N01	23532	6052487
L03	24543	6503452

FIELD	DESCRIPTION
ACCESS	Access number (max. 5 characters, right justified); the number format is: - LXX for an analog line during break in/break out - NXX in the case of a T0 basic access - PX in the case of T2 primary access
PARTIAL	Partial pulse meters per access (10 characters)
TOTAL	Total pulse meters per access (10 characters)

Notas :

- Once a counter printout has been launched, no statement or ticket can be printed.
- A form feed is automatically performed before and after a counter printout.
- If the installer wants the SUBSCRIBER and the ACCESS counters to be printed on the same page, the second printout request must be done before the end of processing the first printout.
- Pressing successively on the Subscr (or Access) key results in printing the counters twice. A third request is only taken into account when the first request has been printed.
- If a printout problem occurs (for example no more paper), any printout request is ignored.
- There is no specific display on the set for printer problems; only a system message is generated.

MANAGING METERING TICKETS AND STATEMENTS

The system enables metering tickets and statements to be printed out.

Selecting the type of metering printout

- ▼ line-by-line statement printout or ticket printout (1 ticket per call)

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Printouts -> Type of Printout**

Every call that meets the monitoring parameters defined for the various system terminals triggers a ticket printout.

If a communication is free of charge (incoming call for example) or if an incoming call remains unanswered, the transmitted ticket will specify the call history (ringing time, call duration, etc.).

Set monitoring

- ▼ Definition of the monitoring criteria values: cost threshold (monetary value), duration threshold (from 0 to 99 minutes), international prefix (4 digits maximum).

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Metering Options for Active Currency-> Activation Criteria**

- ▼ Assigning the type of monitored communications for each set (parameter to be defined set by set): none (no monitoring) or for all communications (outgoing and incoming) or all outgoing communications with monitoring criteria active; if this is the case, define the active criteria: duration threshold (in minutes), cost threshold (6 digits of which 0 to 2 are decimals) or monitored (international prefix).

- By MMC-PM5 (Expert View), select: **Subscribers/Basestations List -> Subscribers/Basestations List -> subscriber identification -> Details -> Metering**

- ▼ It is also possible to assign a profile defining the applied monitoring criteria to a group of sets.

- By MMC-PM5 (Expert View), select: **Subscribers/Basestations List -> Subscribers/Basestations List -> Profiles**

- ▼ To print out a ticket or statement if an incoming call is unanswered (default setting = no)

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Printouts->check or uncheck Print non-answered IC calls**

FUNCTION OF THE BUFFER MEMORY

This is used to temporarily store the different messages (output terminal not available, several simultaneous messages, etc.).

The maximum number of tickets or statements that can be stored is 1000.

Alarm activation threshold

▼ percentage of tickets or statements printed before the alarm is activated (between 0% and 99%: 70% by default)

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Printouts -> Printer alarm threshold**

As soon as the programmed threshold has been reached, an alarm is generated alerting the user (message in the call history + flashing of the operator LED).

When the buffer memory is full, any new information is lost.

XON/XOFF TRANSMISSION PROTOCOL

When the printer is ready to print, it transmits an XON control character. The data received is stored on a buffer. If there are only a certain number of bytes available on this buffer, the printer will transmit XOFF. It continues to receive characters and print before transmission halt. When part of the buffer is released, it transmits XON. The printer also transmits XOFF in the event of the following problems: printer off-line, no more paper, paper jam, etc.. It transmits XON when these problems have been resolved.

Notas : The printer DTR signal is connected to the interface CTS signal if XON is not received.

APPLICATIONS

CALL METERING SERVICES

STATEMENTS PRINTED LINE BY LINE

Each statement corresponds to a communication (16 fields maximum, separated by a space.)

Statement output format:

USER	LINE	TIME	TAXES	ADD. SERVICES	MODE	COST	USER NAME
TYPE |	DATE	| DURATION	| SERV |	DIALLED NUMBER	|	RING |	BUSIN. CODE |
A101 -->	L04	23/10/00 08:31	00:02:40	6 ST	00388677700	M 00:00	1.000

Definition parameters for a statement:

▼ language for the printout

- By MMC-PM5 (Expert View), select: **Metering -> Printouts -> Language**

▼ company name: max. 16 characters

- By MMC-PM5 (Expert View), select: **Metering -> Printouts -> Company Name**

▼ masking the last 4 digits of the number dialed

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Printouts -> check or uncheck Masking 4 last digits**

▼ maximum number of statements per page: 1 to 99 (50 by default)

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Printouts -> Proofs per page**

▼ form feed at the end of the day: yes/no (no by default)

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Printouts -> check or uncheck Form feed permitted**

▼ Select printing of a header on each page, on the first page or not at all

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Printouts -> Head**

Notas :

If the form feed is active, it will be performed:

- when the maximum number of statements per page has been reached
- at the end of the day: the number of statements printed in one day is indicated at the bottom of the page on the right-hand side (5 digits maximum)
- during startup if the header printing parameter is active

- ▼ fields to be printed on the statement; if none of the fields below have been defined, a default metering statement is printed. It includes all the fields preceded by an asterisk (*):

Selecting:

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Printouts -> Printed Fields ->** select each field:

- (*) charged user (yes/no)
- (*) communication type (yes/no)
- (*) trunk n° (yes/no)
- (*) date (yes/no)
- (*) time (yes/no)
- (*) duration (yes/no)
- (*) number of taxes (yes/no)
- (*) services (yes/no)
- (*) facilities (yes/no)
- (*) number dialed (yes/no)
- dialing mode (yes/no)
- ringing duration (yes/no)
- cost of communication (yes/no)
- business code (yes/no)
- subscriber name (yes/no)
- account code name (yes/no)
- initial user (yes/no)
- operator (yes/no)
- initial user – 8 digits (yes/no)
- charged user – 8 digits (yes/no)
- 4-digit line (yes/no)
- node (yes/no)

APPLICATIONS

CALL METERING SERVICES

DESCRIPTION OF THE FIELDS IN THE STATEMENT

FIELD	DESCRIPTION
INITIAL USER (1)	<p>5 characters (left justified)</p> <p>Outgoing call: empty field indicated by ****</p> <p>Incoming call: called number (hunting group or set)</p> <ul style="list-style-type: none"> - AXXXX for a subscriber (2, 3 or 4-digit numbering plans, or the last digits in the case of 8-digit numbering plans) - GX for a hunting group (G9 for the attendant group)
CHARGED USER (2)	<p>5 characters (left justified)</p> <p>Outgoing call: caller</p> <p>Incoming call: user who answered the call</p> <p>Trunk identity not supplied: access number</p> <ul style="list-style-type: none"> - AXXXX for the calling or called user * (2, 3 or 4-digit numbering plans, or the last digits in the case of 8-digit numbering plans) - LXX for an analog line during break in/break out - NXX for T0 access (no private/public distinction) - PXX for T2 primary access (no private/public distinction)
TYPE	<p>3 characters (left justified)</p> <p>Type of communication:</p> <ul style="list-style-type: none"> -->: outgoing call on public network <--: incoming call on public network CS+: request complementary service CS-: cancel complementary service
LINE	<p>3 characters</p> <p>Number of the line:</p> <ul style="list-style-type: none"> - LXX for a public analog line - NXX for a public or private T0 base access - PXX for a public or private T2 primary access <p>For wake-up calls: R (for room)</p>

CALL METERING SERVICES

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DATE	<p>8 characters</p> <p>Date of the communication, made up of 3 x 2 numbers separated by "/"</p>
TIME	<p>5 characters</p> <p>Start time of the communication, made up of 2 x 2 numbers separated by ":"</p>
DURATION	<p>8 characters</p> <p>Duration of the communication, 3 x 2 numbers separated by ":"</p> <p>For wake-up calls: programmed time</p>
TAXES	<p>5 characters</p> <p>Number of metering units</p>
SERV	<p>2 characters</p> <p>Bearer services:</p> <ul style="list-style-type: none"> - ST: telephone service (voice, G3 fax, teletex, videotex) - T+: G4 fax, transparent data transmission
FACILITIES	<p>Max. 6 characters (each character indicates one complementary service; all 6 complementary services can thus be activated together)</p> <p>Complementary service:</p> <ul style="list-style-type: none"> - I: user to user signaling - R: terminal forwarding (external forwarding) - T: on-line metering - S: substitution (DISA transit) - X: change correspondent (transfer) - N: PABX forwarding
EXTERNAL CORRESPONDENT NUMBER	<p>26 characters (left justified)</p> <p>Dialed number:</p> <ul style="list-style-type: none"> - outgoing call: the number transmitted on the line (public or private) - incoming call: the number received on the line (public or private) - the destination number for external forwarding <p>For wake-up calls: WAKE-UP PROGRAMMED, WAKE-UP CANCELLED, WAKE-UP ACKNOWLEDGED, WAKE-UP NOT ACKNOWLEDGED: FREE or BUSY, SET NOT AVAILABLE</p>

APPLICATIONS

CALL METERING SERVICES

MODE	<p>1 character</p> <p>Dialing mode</p> <ul style="list-style-type: none"> - M: manual dialing - I: individual (or personal) speed dial numbers - R: collective speed dial numbers
RING	<p>5 characters</p> <p>Duration of the ringer, for all incoming ringing phases, made up of 2 x 2 numbers separated by ":"</p>
COST	<p>10 characters</p> <p>Cost of the communication including ISDN service activation, where applicable</p>
BUSIN CODE	<p>16 characters (right justified)</p> <p>Charge account code specific to the communication</p>
SUBSCRIBER NAME	<p>16 characters</p> <p>User name:</p> <ul style="list-style-type: none"> - outgoing call: caller - incoming call: called party - name associated with the account code
NODE	Field not used
OPE.	<p>1 character</p> <p>Operator identifier</p>
INITIAL USER	<p>9 characters (left justified)</p> <p>Same functions as field 1; employed when using an 8-digit numbering plan</p>
CHARGED USER	<p>9 characters (left justified)</p> <p>Same functions as field 2; employed when using an 8-digit numbering plan</p>
LINE 4	Field used instead of LINE when identification requires 4 characters; in this case, the NXX and VXX identifiers from the LINE field are replaced by N** and V**.

CALL METERING SERVICES

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EXAMPLES OF STATEMENTS

Outgoing call

USER	LINE	TIME	TAXES	FACILITIES	MODE	COST	USER NAME
TYPE	DATE	DURATION	SERV	DIALLED NUMBER	RING	BUSIN CODE	
A101-->	N1	23/10/00 08:31	00:02:40	6 ST	00388677700	M 00:00 1.000	DUPONT

Transfer of an outgoing call

† A101 calls an external number then transfers the communication to 125.

USER	LINE	TIME	TAXES	FACILITIES	MODE	COST	USER NAME
TYPE	DATE	DURATION	SERV	DIALLED NUMBER	RING	BUSIN CODE	
A101-->	N1	23/10/00 08:31	00:02:40	6 ST	00388677700	M 00:00 1.000	DUPONT
A125-->	N1	23/10/00 08:31	00:03:20	8 STX	00388677700	M 02:00 1.000	MARTIN

Transit call

† A101 is forwarded on the private external number 751234.

USER	LINE	TIME	TAXES	FACILITIES	MODE	COST	USER NAME
TYPE	DATE	DURATION	SERV	DIALLED NUMBER	RING	BUSIN CODE	
A101CS+		23/10/00 08:31	00:00:00	0 ** R	751234	M 00:00 0.000	DUPONT
A101I->	N1	23/10/00 08:31	00:03:20	1 ST	751234	M 00:00 1.000	DUPONT
A101<-I	N1	23/10/00 08:31	00:03:20	0 ST		M 00:00 1.000	DUPONT

Incoming subscriber call

† Incoming call answered by the called subscriber.

USER	LINE	TIME	TAXES	FACILITIES	MODE	COST	USER NAME
TYPE	DATE	DURATION	SERV	DIALLED NUMBER	RING	BUSIN CODE	
A101A101<--	N1	23/10/00 08:31	00:02:40	0 ST	00388677700	M 00:04 0.000	DUPONT

† Incoming call answered by a subscriber (A125) other than the called subscriber (dynamic forwarding, interception, monitoring, immediate forwarding).

USER	LINE	TIME	TAXES	FACILITIES	MODE	COST	USER NAME
TYPE	DATE	DURATION	SERV	DIALLED NUMBER	RING	BUSIN CODE	
A125A101<--	N1	23/10/00 08:31	00:02:40	0 ST	00388677700	M 00:04 0.000	MARTIN

Incoming hunting group call

† Incoming answered hunting group call.

USER	LINE	TIME	TAXES	FACILITIES	MODE	COST	USER NAME
TYPE	DATE	DURATION	SERV	DIALLED NUMBER	RING	BUSIN CODE	
G50A125<--	N1	23/10/00 08:31	00:02:40	0 ST	00388677700	M 00:04 0.000	MARTIN

APPLICATIONS

CALL METERING SERVICES

External forwarding

† The operator is forwarded on the external number 0388677700; 125 calls the operator.

USER	LINE	TIME	TAXES	FACILITIES	MODE	COST	USER NAME	
	TYPE |	DATE	| DURATION	| SERV	|	DIALLED NUMBER	| RING |	BUSIN CODE |
G9	CS+	23/10/00	08:31	00:00:00	0 ** R	00388677700	M 00:00 0.000	PO
G9	-->	N1	23/10/00	08:31	00:03:20	1 ST	00388677700	M 00:00 1.000
G9	CS-	indicates forward cancelled						

METERING TICKETS

Printout format of a ticket

Number of the ticket printed during the day (here, it is the 19th ticket printed on 23/10/2000).

N 19	ALCATEL
SUBSCRIBER :	A122
DATE :	23.10.2000
LINE :	11
TIME :	08:35
NUMBER :	00388677700
COST :	3.50

Definition parameters for a ticket:

▼ language for the printout

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Printouts -> Language**

▼ company name: max. 16 characters

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Printouts -> Company Name**

▼ masking the last 4 digits of the number dialed

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Printouts -> check or uncheck Masking 4 last digits**

▼ number of lines between tickets (1 by default)

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Printouts -> Number of Blank Lines**

APPLICATIONS

CALL METERING SERVICES

Description of the fields in the metering ticket

FIELD	DESCRIPTION
SUBSCRIBER or TERMINAL	Number of the set or terminal (max. 8 characters) This number is preceded by A if it corresponds to a set
DATE	Current date. 8 characters: 3 x 2 digits separated by "/"
LINE	3 characters Number of the trunk line used (2 characters) - LXXX for a public analog line - NXXX for a public or private T0 base access - PXXX for a public or private T2 primary access - VXXX for an IP trunk
TIME	Start time of the communication, made up of 2 x 2 numbers separated by "H".
NUMBER	Number dialed (max. 26 characters)
COST	Cost of the communication or complementary service

WAKE-UP

Conditions for printing a ticket/statement for wake-up calls or temporary appointment reminders:

- wake-up activated
- wake-up cancelled
- wake-up failed
- wake-up answered

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Printouts-> Appointment printout for...**

Printout format for a ticket

```

N 19          ALCATEL
SUBSCRIBER :  A122
DATE       :   25.12.2000
TIME       :   08:35
ALARM ACKNOWLEDGED
    
```

CALL METERING SERVICES

APPLICATIONS

Printout format for a statement

USER	LINE	TIME	TAXES	FACILITIES	MODE	COST	USER NAME	NODE
	TYPE |	DATE	| DURATION	| SERV |	DIALLED NUMBER	| RING |	BUSIN CODE	| OPERAT. |
A122-->	R	25/12/00	08:31	07:45	ALARM PROGRAMMED			
A122-->	R	25/12/00	08:31		ALARM CANCELLED			
A122-->	R	25/12/00	08:35		ALARM ACKNOWLEDGED			
A140-->	R	25/12/00	08:31		ALARM NOT ACKNOWLEDGED : FREE			
A145-->	R	25/12/00	08:35		ALARM NOT ACKNOWLEDGED : BUSY			
A146-->	R	25/12/00	08:35		ALARM STATION NOT AVAILABLE			

The fields TYPE, TAXES, MODE, RING, COST, BUSIN CODE and SUBSCRIBER NAME are not significant. The DURATION field is only filled in if the time is programmed.

R = room.

APPLICATIONS

CALL METERING SERVICES

USING THE EURO

This paragraph describes the configurations which need to be carried out to accommodate for the future integration of the Euro in several European countries.

The following parameters need to be configured:

▼ the conversion rate with the current currency of the country:

- By MMC-PM5 (Expert View), select: **Metering -> Currency Conversion -> Exchange Rate**

▼ Specify whether the public network operator carries out this conversion at the same date.

- By MMC-PM5 (Expert View), select: **Metering -> Currency Conversion -> check No Conversion, User Defined or Immediately**

▼ the label used ("EUR", for example):

- By MMC-PM5 (Expert View), select: **Metering -> Metering -> Metering Options for Inactive Currency -> Currency Name**

▼ the date and time of the conversion:

- By MMC-PM5 (Expert View), select: **Metering -> Currency Conversion-> Conversion Date & Time (only on selecting User Defined**

At the date and time specified, the system will manage the following Euro conversions:

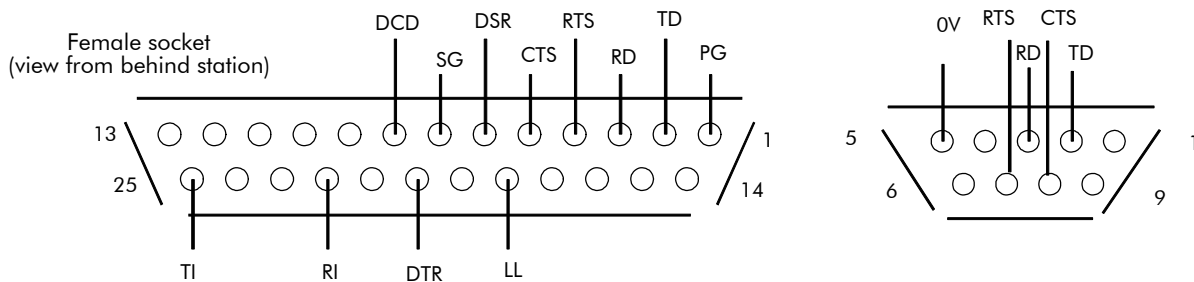
- partial counters and accumulators of sets and meter credit for Hotel clients.
- basic meter charge cost and cost thresholds (Business and Hotel), cost of VAT (Hotel).
- cost of metering reminder.

If the public operator carries out the conversion, then the conversion report between the system currency and the public network currency is equal to 1, and the following parameters are to be configured:

- real cost of the metering unit.
- cost of UUS and PABX forwarding.

ANNEX: V24 CONFIGURATIONS

V24 Signals



Functions performed by the various managed circuits (indications for 25-point connectors)

No of pin	No of circuit	Meaning	Abbreviation		Direction
			CCITT	EIA	
1	101	Protection Ground	TP	PG	
7	102	Signal Ground	TS	SG	
2	103	Transmit Data	ED	TD	DTE --> DCE
3	104	Receive Data	RD	RD	DTE <-- DCE
4	105	Request To Send	DPE	RTS	DTE --> DCE
5	106	Clear To Send	PAE	CTS	DTE <-- DCE
6	107	Data Set Ready	PDP	DSR	DTE <-- DCE
20	108/1	Connect Data Set Data Terminal Ready	CPD	(*)	DTE --> DCE
	108/2		TPD	DTR	DTE --> DCE
8	109	Data Carrier Detect	DS/DP	DCD	DTE <-- DCE
22	125	Ring Indicator	IA	RI	DTE <-- DCE
18	141	Local Loop	BL	LL	DTE --> DCE
25	142	Test Indicator	IT	TI	DTE <-- DCE

(*): pin not assigned in standard EIA-RS232

101 (1): Protection Ground (PG)

This pin ensures continuity between the earth on the cable and on the optional board (the protection and signal grounds are in this case connected to a joint reference).

APPLICATIONS

CALL METERING SERVICES

102 (7): Signal Ground (SG)

Reference potential for the junction circuits.

103 (2): Transmitting Data (TD)

The data signals from the DTE are transmitted to the DCE on this circuit.

104 (3): Receiving Data (RD)

The data signals from the DCE are transmitted to the DTE on this circuit.

105 (4): Request To Send (RTS)

This circuit commands the DCE to prepare to transmit on the data channel.

Closed status forces the DCE into transmission mode.

Open status forces the DCE into non transmission mode on the data channel once all the data transferred on circuit 103 has been transmitted.

When connecting a DTE without a circuit 105, you should loop circuits 105 and 106 on the DCE socket.

106 (5): Clear To Send (CTS)

This circuit indicates whether the DCE is ready to receive data signals on circuit 104 and to transmit them on the data channel.

Closed status indicates that the DCE is ready to receive data signals from the DTE on circuit 103.

Open status indicates that the DCE is not ready to receive data signals from the DTE on circuit 103.

In full-duplex mode, this circuit, in association with circuit 105, enables flux control during the data transfer phase. Closed status means that the remote unit authorizes transmission.

107 (6): Data Set Ready (DSR)

The closure of this circuit indicates that the DCE is ready to operate. This acknowledges the data channel trunk seizure.

In addition to the trunk seizure, this circuit indicates that the DCE is ready to exchange other signals to trigger the data exchange (initialize the dialog).

108/1 (20): Connect data set to line (CDSL)

This signal, transmitted by the DTE, forces the DCE to connect to the data channel.

Incoming call: As a general rule, the DTE emits this signal in response to an incoming call defined by the closure of circuit 125 on the DCE. The DCE then closes circuit 107 as soon as the line is seized, which triggers the dialog initialization phase. This circuit enables the DTE to remain in control of the response to incoming calls, postponing or barring trunk seizures during critical operating phases.

Outgoing call: The closed status of this circuit can be used to initialize an outgoing direct call with an automatic call DCE.

108/2 (20): Data Terminal Ready (DTR)

The DTE closes this circuit to tell the DCE it is ready to operate.

Incoming call: closing circuit 108/2 authorizes the DCE to take an incoming call. The DTE is advised accordingly by the closure of circuit 107 to indicate the trunk seizure. The dialog initialization phase now begins.

Outgoing call: the outgoing call is initialized between the DTE and the DCE by a local dialog exchanged on circuits 103 and 104.

109 (8): Data Carrier Detect (DCD)

Closing this circuit indicates that the carrier signal received on the data channel meets the relevant specifications.

This circuit can also be used in the closed state for DTE-DCE data exchanges when programming or controlling serial automatic call DCEs.

125 (22): Ring Indicator (RI)

This circuit is closed to tell the DTE that a call signal has been received by the DCE.

141 (18): Local Loop (LL)

This circuit controls type 3 test loops in the DCE.

The closure of the circuit loops the DCE transmission channel back to the reception channel, on the data channel side. On detecting that circuit 142 is closed, the DTE can then, in full-duplex mode, test the DCE transmission interfaces. This looping function is not yet available in the current state of development of the product.

142 (25): Test Indicator (TI)

The closure of circuit 142 indicates that the DCE is in test mode, which precludes any transmission with a remote DTE.

V24 metering printouts: configuration details
Physical characteristics

- Type of interface: V24
- Operating mode: asynchronous
- Interface function: DCE

Transmission characteristics

- Number of significant characters: 5, 6, 7 or 8 (default value)
- Parity: even, odd, no (default value), marked (set at 1) or spaced (set at 0)
- Number of stop bits: 1 (default value), 1.5 or 2
- Baudrate: 50, 75, 150, 300, 600, 1200, 2400, 4800, 9600 (default value), 14400, 19200
- Rate adaptation: V110 (default value), X31, V120 or V14E (for 57600 bps)

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CALL METERING SERVICES

Flux control

Possibilities available in either instance – flux control of the terminal by the adapter and vice versa:

- Mode: none (no flux control), inband (control with 2 characters - XON and XOFF by default) or circuit (control with the RTS and CTS signals)
- If Mode = inband, then decimal value for XON (17 by default) and XOFF (19 by default)

Implicit number of XON characters

This field defines the number of XON characters required to boot the equipment:

- Zero
- One
- Two
- Three
- Four
- XANY (non-significant option)

Echo

Check the box for a local or character by character echo in Command mode.

No input acknowledgement

Check the box to operate without V24 device input acknowledgements at the terminal.

Display caller address

Check the box to send the caller address to the terminal or DCE.

Escape sequence

This field defines a sequence of 3 characters maximum for switching the V24 device from CONNECTED (data transmission) mode to COMMAND mode. Each character is defined by entering its decimal value: the hexadecimal value and the character are displayed automatically.

Communication protocol

- Hayes
- Automatic
- V25 bis 108/1
- V25 bis 108/2

DSR option

This field defines the operating mode for the DSR signal:

- Always active
- Active during the call
- Inactive in release phase

DTR option

This field defines the reaction of the DTR signal:

- Normal
- Forced

RTS option

This field defines the reaction of the CTS signal when the RTS signal changes state:

- CTS tracks RTS
- RTS ignored, CTS ON

Inactivity timeout

This field defines, in 30-second increments, the period of inactivity after which the call is released.

Loopback mode

This field defines the test loopback employed:

- no loop
- loop 1 (as defined by the V54 recommendation)
- loop 2 (as defined by the V54 recommendation)

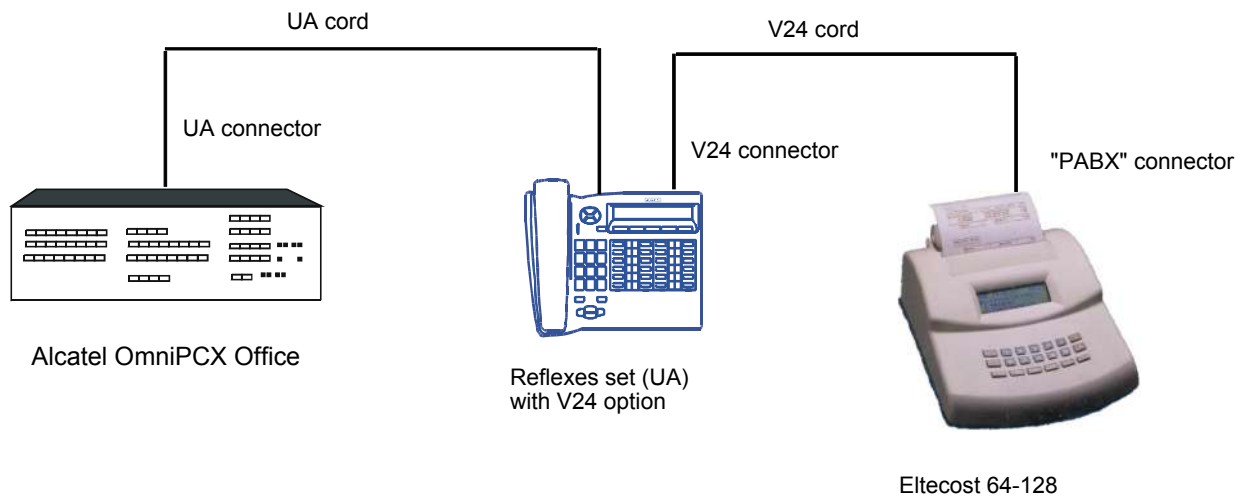
STARTING-UP AN ELITECOST 64-128

File
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The Elitecost 64-128 Enterprise (or Business), Guest or Hotel can be installed on the system Alcatel OmniPCX Office. It operates starting from the version 19.3 release R1.1.

CONNECTING THE ELITECOST 64-128

Connect the V24 cord supplied, from the DB9 "PBX" connector of the Elitecost 64-128 to the DB9 "V24" connector on the 4093 Box (V24 option).



PROGRAMMING OF ELITECOST 64-128

Refer to the Installation Manual of the Elitecost 64-128 section III page 38.

CONFIGURING THE ALCATEL OMNIPCX OFFICE

The Elitecost 64-128 Guest or Hotel operates only in the Hotel mode. To configure the system Alcatel OmniPCX Office, please perform the following operations via PM5 (Expert View):

- ▼ Check that the system is operating in the Hotel mode ; if not, perform a cold reset and run the "Wizard" to shift into the "Hotel" mode.
- ▼ Connect the PC with the system and open the "Communication path" session.
- ▼ Activate monitoring for alls calls on all subscribers:

- **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> Metering -> Monitoring -> select o All calls**

- ▼ Activate the external metering and choice the language:

- **Subscribers/Basestations List -> Subscribers/Basestations _> Details -> Metering -> activate o External Metering Activation, Language = English**

- ▼ In the **Printed Fields of Proof**, select all the fiels except **User 8** and **Trunk 4**.
- ▼ Manage appointment calls by Elitecost (applicable from Elitecost version 4.2 only:

- **Subscribers/Basestations List -> Subscribers/Basestations _> Details -> Metering -> Appointment printout for... : Activation, Cancellation, Failed, Complete**

Nota : Check the **Amount of taxes** field only if you have configured in the Elitecost te "4. Unit rat = 0 field in "3. Configuration" menu -> "3. Costing" -> "1. Costing parameter

- ▼ Set option V24/UA (ASM 4093) used for metering in**Metering -> Metering Transmission Characteristics** , ensure that the format is 9600 8 N1.
- ▼ For the V24 port, remove the flow control, check the transmission format and change the communication protocol to V25 bis 108/1

- **Subscribers/Basestations List -> Subscribers/Basestations List -> Details -> V24**

- ▼ Check printing check-in/check-out tickets:

- **System Miscellaneous -> Hotel parameters -> Print check-in/check-out**

NMC (Network Management Center)



The Alcatel 4740 network Management Center has been designed to enable telephone network managers to manage, administer and optimize one or several Alcatel OmniPCX Office communication systems remotely.

ENVIRONMENT

Connecting remote Alcatel OmniPCX Office systems (Management Center subscribers)

All remote Alcatel OmniPCX Office subscribed systems which are managed by the same Management Center are connected to the public network (PSTN or ISDN) through analog trunk lines or T0/T2 accesses.

Notas : ANALOG NMC:

The TL must be configured with Polarity Inversion to release the modem (the Management Center being the master of the communication).

Connecting the Management Center

The Alcatel 4740 station is connected to the Alcatel OmniPCX Office system by an Ethernet link (the client LAN).

CONFIGURATION AND IMPLEMENTATION

The **Network Management Control** option makes it possible to access the various configuration windows to set the network management parameters. To access the NMC home window from within the main menu:

Select the **Network Management Control** menus -> the following sub-menus are proposed:
Network Management, Urgent Alarms

Attention :

Programming the authorized callers also affects access to the system by NMC, as well as remote access by PM5.

"NETWORK MANAGEMENT" SUB-MENU

Network Management Active

Check the box to activate the central management feature (this avoids starting up the management feature before the end of the system configuration). By default, the feature is inhibited.

General

- **Access Type:** this field, not modifiable by PM5, indicates the access mode: direct or guarded.
- **NMC N°** for automatic alarm reporting (outside NMC sessions): the collective speed dial number (4 digits) of the Management Center to be dialed for automatic notification of alarms if there is no active NMC session.
- **Network Management Software Version:** this field, not modifiable, states the software release of the remote system.
- **System label:** this field, with a maximum of 30 characters, states the name of the remote system. The name is defined by the Management Center; it cannot be modified by PM5 (Expert View).

Notas :

The fields which are not modifiable by PM5 (Expert View) are defined either by the system or by the Management Center; thus, as a minimum, an "on-line" connection with the remote system is required so that these fields can be exploited.

Call Accounting

- **Active call accounting for:** Activation of the metering management according to the type of calls: the following choices are offered:
 - no call
 - incoming calls
 - outgoing calls
 - incoming and outgoing calls (default value)
- **Database threshold for alarm activation** (by default: 80 %):100 % = from 1,000 to 30,000 tickets, depending on the software license and the hardware configuration. When the assigned threshold is reached, an alarm is sent to the Management Center (on condition that automatic alarm reporting is activated and the 'NMC_THRESHOLD_METERING_TBL' alarm is configured as urgent); the Management Center reacts to the alarm and connects up to the remote system in order to collect and void the metering tickets.

Alarm Reporting (Only visible after clicking the "Part 2" button)

Alarm reporting enables the remote system to inform the Management Center as soon as an abnormal event arises with the PABX.

- **Automatic alarm reporting:** check the box to activate automatic alarm reporting; by default, this feature is inhibited.
- Reaction on erroneous call (for example, the call number does not correspond to that of the Management Center):
 - **Time before retry (min):** waiting time, in minutes, before trying again (value between 1 and 12 minutes inclusive, by default: 12 minutes)
 - **Max. number of retries:** maximum number of call backs (a single call back authorized)
- Reaction on non-answered calls (for example, the Management Center has not answered, as all the accesses are busy):
 - **Time before retry (min):** waiting time, in minutes, before trying again (value between 1 and 12 minutes inclusive, by default: 12 minutes)
 - **Max. number of retries:** maximum number of call backs (value between 1 and 99, by default: 50)
- Threshold for alarm reporting activation (by default, when the threshold is reached, an alarm is sent to the Management Center). The Management Center is connected to the remote system automatically so as to deduct the alarm information:
 - **History table:** by default 80 % (100 % = 400 history messages)
 - **HW anomaly table:** hardware messages, by default 80 % (100 % = 200 hardware messages)
 - **Urgent Alarm table:** by default 80 % (100 % = 200 urgent alarm messages)

"URGENT ALARMS" SUB-MENU

This window makes it possible to define the urgent alarms for hardware anomalies as well as historic messages.

Pre-defined urgent events in the Hardware Anomalies table:

- UNSUCCESSFUL ATTEMPT TO PRINT: Message emitted by the formatter (printer) after every 5 failed print attempts.
- T2_NO_SIGNAL: A signal shortage has been detected on a T2 access.
- T2_RECEIVE_REMOTE_ALARM: A remote alarm indication has been received on a T2 access.

RECOMMENDATIONS FOR IMPLEMENTATION OF THE NMC FEATURE (remote system)

The recommended procedure is as follows:

- activate network management (value deactivated by default or after a cold reset)
- enter the remote system's complete configuration:
 - station number for alarm reporting
 - validation of the automatic alarm reporting feature
 - definition of the various thresholds
 - definition of the urgent alarms
 - etc...
- activate the central management feature by checking the "**Network Management Active**" box in the "**Network Management**" window
- carry out a warm reset for table dimensioning
- check that the call number has been programmed properly.

POINT TO POINT / POINT TO MULTIPOINT TO

File
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DEFINITIONS

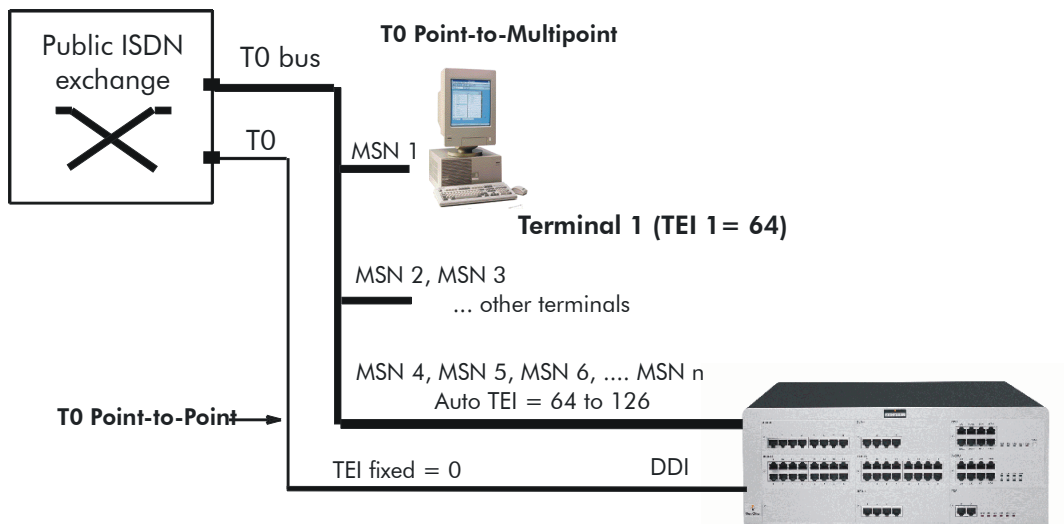
Point to Point link: a Point to Point link is a digital access to the public network used exclusively by Alcatel OmniPCX Office. The TEI settings are generally fixed, as there is only one terminal (Alcatel OmniPCX Office) for this access, but they can also be dynamic.

Point to Multipoint link: a Point to Multipoint link is a digital access to the public network shared by several terminals. In this type of configuration, each terminal is identified by its TEI and dedicated DDI sequence. The TEI management mode can be fixed or dynamic, depending on the public operator.

Both types of link can be supported simultaneously on the same system. The TEI management mode (fixed or automatic) is configured separately for each access.

Example of the environment

This example illustrates both connection types: Point to Point and Point to Multipoint.



DYNAMIC TEI

This feature assigns a TEI automatically to each T0 bus (mainly assured by the public network on multipoint accesses).

At each connection and at each reset, (cold or warm), each T0 "asks" the network to allocate it a TEI; this procedure is carried out by sending 2 level 2 messages: the "Identity Request" message sent by the system to the network, then the "Identity Assigned" message sent by the network. The value assigned is stored by the system until the next reset.

Possible TEI values (in accordance with ETS300 125)

- 0 to 63: fixed TEIs (values used on the system side)
- 64 to 126: automatic TEIs (values used on the network operator side)
- 127: value reserved for management operations

When changing from a digital access with fixed TEI management to automatic TEI management, it is essential to perform a warm reset so that the PABX sends the TEI allocation request to the public exchange; if not, the TEI management on the system will be unstable.

CONFIGURATION

T0 configured in Point to Point

▼ To define the management mode:

By MMC-PM5 (Expert View), select: **External Lines -> List of Accesses -> Details -> check o Fixed TEI or o Auto TEI**

▼ For fixed TEI, assign a value between 0 and 63 inclusive:

By MMC-PM5 (Expert View), select: **External Lines -> List of Accesses -> Details -> Value**

▼ Configuring the installation number:

- by MMC-PM5 (Expert View): **Numbering -> Installation Number**
- by MMC-Station: **Global -> Ins Num -> Public**

▼ Completing the substitution table (refer to the file concerning DDI with more than 4 digits in the "System Features" section):

- by MMC-PM5 (Expert View): **Numbering -> DDI Number Modification Table**
- by MMC-Station: **Num Pln -> PubNMT**

APPLICATIONS

**POINT TO POINT / POINT TO
MULTIPOINT TO**

▼ Fill in the public numbering plan:

- by MMC-PM5 (Expert View): **Numbering -> Numbering Plans -> Public Numbering Plan**
- by MMC-Station: **NumPln -> PubNum**

T0 configured in Point to Multipoint

- To configure the T0 access in Point to Multipoint:

- By MMC-PM5 (Expert View), select: **External Lines -> List of Accesses -> Details -> select o Point to Multipoint**

- To define the management mode:

- By MMC-PM5 (Expert View), select: **External Lines -> List of Accesses -> Details -> select o Fixed TEI or o Auto TEI**

- For fixed TEI, assign a value between 0 and 63 inclusive:

- By MMC-PM5 (Expert View), select: **External Lines -> List of Accesses -> Details -> Value**

- Configuring the installation number:

- by MMC-PM5 (Expert View): **Numbering -> Installation Number**
- by MMC-Station: **Global -> Ins Num -> Public**

- Completing the substitution table (refer to the file concerning DDI with more than 4 digits in the "System Features" section):

- by MMC-PM5 (Expert View): **Numbering -> DDI Number Modification Table**
- by MMC-Station: **Num Pln -> PubNMT**

- Fill in the public numbering plan:

- by MMC-PM5 (Expert View): **Numbering -> Numbering Plans -> Public Numbering Plan**
- by MMC-Station: **NumPln -> PubNum**

ADDITIONAL INFORMATION

- By default, the T0 accesses are in Point to Point with automatic TEI management for all countries.
- Once the system has been configured for automatic TEI and reset, the automatic TEI request is sent to the network. If there is no reply before the T202 timeout, the system switches back to fixed TEI mode; otherwise, it stays in automatic TEI mode.

PERMANENT LOGICAL LINK (PLL)

File

9

The Permanent Logical Link (PLL) service handles the simultaneous bi-directional transfer of data frames between a T interface (T0 or T2) and an S0 interface (ePLL) or between 2 S0 interfaces (iPLL), each interface being one extremity of a semi-PLL with:

- either a public network Packet Access Point (PAP) on the T interface side
- or an S0 terminal connected to the S0 bus on the S0 interface side.

The data packets are exchanged on this link in a transparent way through the D channels of these accesses.

The rate for this type of data transmission is limited to 9600 bps.

The link between the 2 Alcatel OmniPCX Office interfaces that connect the 2 semi-PLLs is established by configuring a routing table.

The S0 terminals are connected to 4084 or 4094 interfaces.

DEFINITIONS

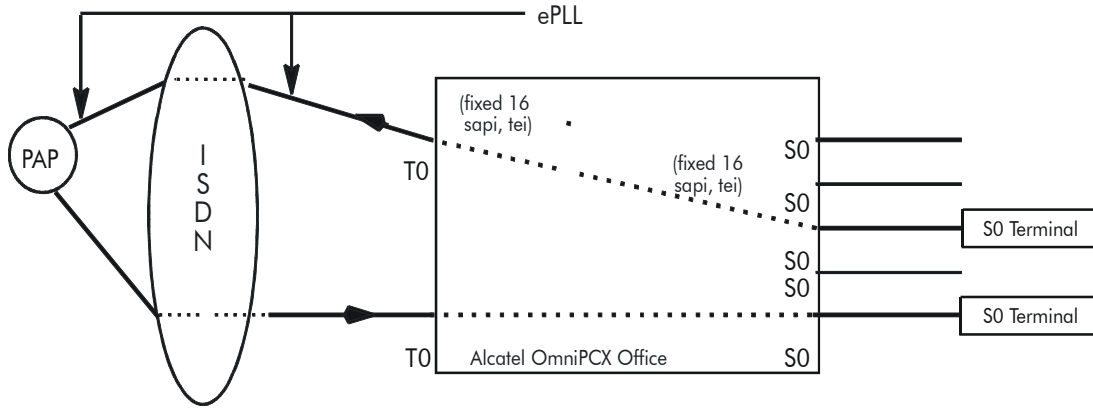
- SAPI: Service Access Point Identification; the value in the SAPI field identifies the type of information transported by the data link and, for this reason, identifies the targeted access point, source or frame destination. By default, a SAPI value of 16 is assigned to links carrying X25 type packets to the PAP.
- TEI: Terminal Extremity Identification

EXTERNAL PLLs

The system makes it possible to establish one or several external PLLs (ePLLs) between T accesses of the system and a data network access port and also to extend them to S0 accesses according to the following rules:

- each ePLL associates the trinome [Interface T, SAPI (16), TEI] with an [Interface S0, SAPI (16), TEI] trinome.
- a T or S0 interface can be used for several ePLLs (max. 4) by changing the TEI value.

General synopsis of an external PLL

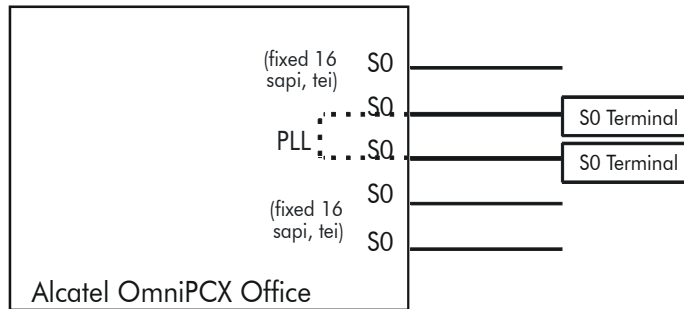


INTERNAL PLLs

The system makes it possible to establish one or several internal PLLs. The following rules apply to internal PLLs (iPLLs):

- each iPLL associates the trinome [Interface S0, SAPI (16), TEI] with an [Interface S0, SAPI (16), TEI] trinome.

General synopsis of an internal PLL



CONFIGURATION

Preliminary

Before configuring the PLL, the installer must:

- define the S0 and T0 accesses
- check that the interfaces to be used are present in the "Subscribers/Basestations List" screen (for S0 interfaces) and the "External Lines" screens (for T interfaces)

Creating a PLL

- by MMC-PM5 (Expert View), select: **Subscribers Misc. -> Permanent Logical Link**

To create a PLL, proceed as follows:

- choose the PLL caller from the list of declared accesses presented in the left-hand part of the window.
- enter the TEI of the caller PLL (SAPI = 16 is displayed, this value is not modifiable):
 - for an external access, the TEI is given on subscription by the public network operator and is between 0 and 63 inclusive.
 - for an internal access, the TEI is between 1 and 63 inclusive (depending on the configuration of the terminals).
- choose the PLL destination from the list of declared accesses presented in the right-hand part of the window.
- enter the TEI of the destination PLL (follow the same procedure as for the TEI of the caller PLL)
- click **Add** to establish the connection. If all the checks are OK (see below), the connections are added to the list of existing PLLs.

Checks

- The system can contain a maximum of 32 PLLs.
- The system cannot contain PLLs between 2 external accesses.
- The caller and the destination of the same PLL cannot be one and the same (same physical address and same TEI).
- 4 TEIs per basic access (S0/T0), 16 per primary access (T2); 2 PLLs associated with different accesses can have the same TEI (there is no check at MMC-PM5 level).

Overflow

It is possible to overflow onto a second destination if the initial destination is busy by configuring the same caller with 2 different called parties.

Nota : Once declared, an ePLL or iPLL is bi-directional, i.e. either interface can initiate a call.



PERMANENT LOGICAL LINK (PLL)

APPLICATIONS

Alcatel OmniPCX Office

SECTION
PM5 : SYSTEM
CONFIGURATION

REF3EH 21000 BSAA Ed. 04



ALCATEL OMNIPCX OFFICE

PM5 : SYSTEM CONFIGURATION

Section PM5 : System configuration

INSTALLATION PROCEDURES

FILE 1

FEATURES INCLUDED

FILE 2

VOICE PROMPTS MANAGEMENT

FILE 3



ALCATEL OMNIPCX OFFICE

SECTION PM5 : SYSTEM
CONFIGURATION (INDEX)

PM5 : SYSTEM CONFIGURATION

Section PM5 : System configuration (Index)

FEATURES INCLUDED	FILE 2
INSTALLATION PROCEDURES	FILE 1
VOICE PROMPTS MANAGEMENT	FILE 3

INSTALLATION PROCEDURES

File
1

PM5 is the unified administration and configuration tool for Alcatel OmniPCX Office; running on a PC, it can be used to program the system's voice functionality, voice mail, the network, Internet access, downloading... even the printing of mailing labels.

MINIMAL PC CONFIGURATION

- Pentium 166 MHz processor.
- RAM: 32 MB for Windows 95, 98 and 2000; 64 MB for Windows NT.
- Hard disk.
- Screen: 800 x 600 pixels
- 1 mouse.
- 1 serial port (connection to Alcatel OmniPCX Office for data transfer)
- 1 Ethernet board (IP mode).
- Operating system: Windows 95, 98, 2000 or NT4, pack 5 minimum.
- 64K PPP-compatible ISDN or V34 modem for remote access.

INSTALLING THE PM5 SOFTWARE

The PM5 software is installed from a CD-ROM.

The application is installed by making selections from the options proposed in the various windows.

When installation is completed, you access the application by double-clicking on the new icon created on the Windows desktop or:

- Select **Start** then **Program** then **Alcatel OmniPCX Office** then **PM5**.
- The window **Welcome to PM5** appears.

PM5 REMOTE ACCESS

Remote access with PM5 makes it possible to configure or download to an Alcatel Omni PCX Office system. This access can be managed with:

- an ISDN modem able to use ISDN PPP (point to point) protocol at 64 K.
- a V34 analog modem in Hayes protocol at 33600 bds.

These two modems are integrated on Alcatel OmniPCX Office.

It is implied that software PM5 will have to be installed before on the PC using remote maintenance.

REMOTE ACCESS BY ISDN MODEM

ISDN modem recommended

Alcatel OmniPCX Office is equipped with an 64 K ISDN modem using PPP protocol for remote access through the public network. It offers a point-to-point link accessible for standard LINUX protocols (SLIP, PPP...). The following modems has been validated:

- KORTEX NOVAFAX ISDN 128000/33600 with PPP protocol
- FRITZ! X CAPI 2.0 or any standard "FRITZ" modem
- Multitech I Way Hopper MTA 128 ST 128 Kbps ISDN

Usually, an ISDN modem from 64 to 128 K supporting PPP protocol will be compatible.

RAS installation process

The procedures described hereafter relate to PC under Windows NT4 having the "IP stack." option The use of remote access requires to have RAS (Remote Access Service) installed on the PC.

There are two phases for installation process:

- Install the RAS for the Alcatel modem (V24 modem)
- Install the ISDN modem and configure the RAS to use it.

Nota : To install the RAS, it is mandatory to have the Administrator rights , the Windows NT installation CD-ROM and service Pack 6.

RAS installation process

- Open the **Control panel**.
- Open the **Network** folder.
- Select **Services** tab
- Click on **Add**.
- Select in the list **Remote Access Services**.
- When asked by Windows NT"Set-up", select the driver's path or provide Windows NT installation CD Rom.
- Select in the modem list, **Com 1 Alizé direct connection 115000 Bds or Com 2 Alizé ...** for a future use of V24 PM5 connection
- Click on **Continue**
- Click on **Close**, then click on **continue**
- **CAUTION CAUTION CAUTION**
- At the end of the installation, the system asks "to restart the computer now"
- Click on **NO**.
- Now install service Pack 6 "spxi386.exe" with your Windows NT CD Rom Installation.
- Reboot the PC

ISDN modem installation process (example)

This is for a FRITZ modem.

- Insert the modem installation CD-ROM
- Click the **FRITZ !X PC Capi driver** installer icon
- In the Wizard mode, indicate the serial port to connect the modem.
- At the end of the Wizard, reboot the PC
- Insert the modem installer CD-ROM
- Click the **FRITZ !32 Communication Software** installer icon
- In the Wizard mode, select **Install and configure**
- Use the default installation (click on **Next** in each Wizard screen)
- At the end of the Wizard mode, check the **Install Capi-port driver** box
- Select **AVM ISDN1 Internet (PPP over ISDN)**
- Reboot the PC.

RAS configuration process

- Open the **Control panel**.
- Open the **Network** folder.
- Select **Services** tab
- Click on **Add**.
- Select in the list **Remote Access Services** or, if not installed, add "remote access service" using procedure described in previous paragraph.
- Click on **Properties**.
- The list shows **Com 1 Alizé Direct serial link connection**
- Add **FRITZ AWM ISDN1 Internet (PPP over ISDN)**. Important **If another modem is all ready installed on the port you decided to use, remove it and install the new one.**
- Click on **Continue**
- Click on **Close**
- Reboot the PC

Alcatel OmniPCX Office remote access creation

- Open the **My Computer** Windows.
- Select the **Dial up network** icon.
- Create a new connection using default parameters and entering a connection name (xxx)
- Verify that the modem used is well **AWM ISDN1 Internet (PPP over ISDN)**.
- Click on **Next**
- Do not enter any telephone number
- Click on **Finish**.
- Close the folder.

Use of the remote access with PM5

- Launch **PM5**.
- Select the **Expert** menu.
- Click on **Comm**.
- Select **Connect**.
- Click on **Modem direct**, then click on **OK**
- Click on **Dialing** and Select **AWM ISDN1 Internet (PPP over ISDN)**.
- Dial the customer phone number and click on **OK**.
- Write the password **pbxk1064**.

On the modem the LED PC & B1 have to be lit; the connection is establish.
The configuration session is open.

Remote access to the ISDN modem

When an ISDN modem is used, it is necessary to reserve a DDI number in the public numbering plan in order to be able to carry out a remote access.

If no DDI number is available, just check if the system ISDN modem access is present in the attendant group by default (default group). Consequently, it is not necessary to hold a DDI number.

Nota : if the modem is not in the current attendant group, it is interesting to position the flag " Re-routdata " with value 01H; the system then recognizes automatically the "ISDN Service" corresponding to the incoming call and search automatically in the default attendant group if a data terminal is present.

REMOTE ACCESS BY THE ANALOG MODEM

Analog modem recommended

Alcatel Omni PCX Office is equipped with an analog modem V34 for remote access through the public network. This one offers a point-to-point communication link accessible by standard protocols LINUX (SLIP, PPP...).

Its main characteristics are: Modem V34, 33600 bds transmission speed max., protocol Hayes.

In the current 1.1 version of the system, only the modem V34 "US Robotic" has been validated.

The " Multitech " modems are not compatible.

The other types of modems were not validated.

Installation process of the remote access by analog modem

Follow the same procedures described in previous paragraphs . in the preceding chapter but replace modem **FRITZ** by analog modem **US Robotics**.

Remote access to the analog modem

When the analog modem is used, it is necessary to hold a DDI number in the public numbering plan in order to be able to carry out a remote maintenance.

In the case of no DDI number is available, the access to the modem will be possible only via the operator transfer.

OPERATING MODE

- Open **PM5** on the remote access PC.
- Select the **Expert** menu.
- Click on **Comm.**
- Select **Connect**.
- Click on **Modem direct**, then click on **OK**.
- Select an entries already used in the .
- Or click on **Dialing**"Dialing" then select the modem to use by "used modem" then dial the customer remote access number in "dialing number".
- Write the system password **pbxk1064 by default**.
- Wait some seconds to have the connection established.

SECURITY

In the remote access, the protocol used in the "data link" OSI layer is PPP (Point-to-Point Protocol). The TCP/IP protocols are used respectively in the "transport" and "network" layers. For each layer, Alcatel OmniPCX Office carries out an access control.

Authentication

At the start of the connection (PPP), an account name (system masked) and password (pbxk1064) are required. This account name is automatically generated by PM5, the password is asked by PM5 for a direct connection (LAN) to Alcatel OmniPCX Office, all other authentication will be rejected.

Firewall

If the authentication is accepted by the system, connection PPP will be established, and all the data packets received on this interface will be filtered according to following rules:

All the packets are refused except:

- packages bound for Alcatel OmniPCX Office FTP server via two TCP ports preset for the PBX configuration by PM5.
- packages bound for Alcatel OmniPCX Office HTTP server via the HTTP port preset for the Internet access configuration by WBM(Web Based Management).
- control packets using the ICMP protocol (Internet Control Message Protocol).

LOCAL V24 ACCESS FOR PM5

It is possible to use PM5 software to dialog with OmniPCX Office using a V24 connection.

In this case the network connection is not necessary.

A specific cable has to be connected between the "Config" RJ45 connector on the system CPU to the Port Com of the PC using PM5.

Wiring of the connection cable:

RJ45	SUB D 9-point (F)
1	7
2	4
3	3
4	
5	5
6	2
7	6
8	8

Installation procedure

- Open **PM5** software on the PC.
- Select the **Expert** mode.
- Click on **Comm** menu.
- Select **Connect** menu.
- select **Local** menu
- The system proposes to install **Alcatel OmniPCX Office direct V24**
- click on **Yes**
- the system open the window **Modem properties**
- click on **Add**
- in Installation Window click on **Next** (put a cross in the box "do not detect the modem automatically")
- select **Alcatel** in the manufacturers list
- select **OmniPCX direct V24** for Windows NT or **OmniPCX direct V24/W9xMe** for Windows 95 or 98 and Millenium.
- select the Port Com used
- click on **Next**
- click on **Finish**
- click on **Close**
- back in PM5, click on **Com**
- the "local" box in now active and port Com is displayed
- click on **Ok** and enter the password
- wait for few seconds; the PM5 is now connected to the system.

LOCAL ACCESS BY LAN

When connected to the LAN port on the CPU/CPUe board via a UTP Category 5 100-ohm crossover cable, or to the switch on which the CPU/CPUe board is connected via a straight cable, the default IP address for the main CPU/CPUe board is 192.168.92.246.

The PC IP address and network mask must be compatible with the address of Alcatel OmniPCX Office; for example: 192.168.92.1 and 255.255.255.0.

DOWNLOADING THE SOFTWARE

Proceed as follows:

- Open PM5
- Open the **Tools** folder
- Open the **Software Download** application
- In the **Communication** window, select the type of download:
 - Local V24
 - Modem Direct
 - Modem Callback
- LAN
- Enter the password **alize**
- The **Software Download** window opens.

How to fill in the Software Download window fields:

- In the **Delivery file** field, select the directory containing the description file for the new software release; by default, the file will be in the BOOT directory.
- Check the **Download all files** box to download all the files or just those where the **Action** field contains the value **install**.
- Check the **Data saving** box (or not, as required). Warning: this option entails a cold system boot (in which the client configuration is lost).
- In the **Swap** field, define the software changeover mode: check **Immediate** for immediate switching, or specify the preferred date and time for the changeover. If you select immediate switching, it will take effect as soon as you quit the download application.
- The **Downloadable Item** area is read-only; it displays the various version numbers of the applications that make up Alcatel OmniOffice. The **Action** column lists the downloaded applications.
- The bottom part of the window tracks the progress of the download; each download or acknowledgement action gives rise to a message.

IMPORT/EXPORT

This function is used to import into Alcatel OmniPCX Office data files sent by clients (or files previously exported from an Alcatel Office system; for example, a file of collective speed dial numbers with the extension .CRP):

- Edit the file in EXCEL
- Check the syntax (the name must contain no punctuation, spaces, digits in the first 2 characters, or more than 15 characters)
- Select All
- Copy
- In PM5 (connected beforehand), select "Collective Speed Dial"
- Right-click
- Paste. The system checks the syntax and asks for confirmation before copying the data.

MIGRATING AN ALCATEL OFFICE CONFIGURATION TO AN ALCATEL OMNIPCX OFFICE CONFIGURATION

This section provides the information you need in order to carry over a maximum of configuration data when migrating from an Alcatel Office installation to an Alcatel OmniPCX Office system; the migration process is made easier by the 4-page **Database Transformation Wizard**.

Procedure

- Select **PM5 -> Tools -> Database Transformation**: page 1/4 **Source Database Selection** appears.
 - In this window, you select the database saved by PCMMC PAA422. The files may be compressed (*.cdb) or not (*.db).
 - The destination target (the name shown in the **Destination Target System** field) is selected in the **PM5 -> Options -> Target Product** menu.
- Restrictions: conversion from one country to another is impossible; within the same country, however, databases can be converted from one distributor to another.
- Press **Next**: the format of the selected file is checked. If everything is OK, the migration process is launched; if not, page 2/4 **Transformation Results** appears, indicating the state of the new database: what was kept, what was modified, and the errors detected. If no blocking errors are detected, the **Next** key is available.
- Press **Next**: a connection is established to the Alcatel OmniPCX Office system; the module, boards and user data are all read. The external lines are brought into conformity with the boards fitted (not the users).
- Page 3/4 **Subscriber Assignment** appears. Users have to be associated with physical addresses manually. Follow these rules:
 - the terminal type cannot be modified
 - the Reflexes option type (V24, S0 or Z) cannot be modified
- Reflexes options can be neither created nor modified.
- Press **Next**: page 4/4 **Assignment Results** appears, listing all the elements that couldn't be allocated (for example: networks not assigned to a board, or users in excess of the authorized limits).
- Press **Finish**: a confirmation window opens. The elements for printing can be selected by pressing **OK** ("Customer Information" and "Subscriber List" are checked by default). The **Save As** window opens. After saving, clicking **Yes** restores the database to the Alcatel OmniPCX Office system. If you click **No**, the restore is not launched and the database can be viewed off-line.



INSTALLATION PROCEDURES

PM5 : SYSTEM CONFIGURATION

FEATURES INCLUDED



PM5 provides a complete set of configuration tools for Alcatel OmniPCX Office systems.

2 packages are available:

Package	Corresponding views	Levels of use (passwords)
PM5 Expert	Expert View, EasyPlus View, Easy View	Manufacturer Installer (pbxk1064)
PM5 Easy	Easy View	Attendant (help1954)

Easy View offers Wizard-type configuration.

The Wizard (or configuration assistant) serves to configure the most commonly used system parameters; PM5 helps configure these parameters using a series of simple questions, with plenty of guidance and explanation. Indeed, using the default configuration avoids having to program a lot of the parameters.

For customized installation, there are links to Expert View menus from the pages of the Wizard, flagged by the "Advanced" and "Details" buttons in EasyPlus View. The configuration assistant is available on installation and throughout the life of the system.

Expert View gives you unrestricted access to all the configuration possibilities.

Features included		Easy	Expert
Tools		✓	✓
Client/supplier information			
.	Client information	✓	✓
.	Supplier information	✓	✓
Installation Typical			
.	Initial Wizard Business Installation	✓	✓
.	Front-end DECT initial Wizard Installation	✓	✓
.	Installation Wizard	✓	✓
Modification Typical			
.	Subscribers	✓	✓
.	Groups	✓	✓
.	System	✓	✓

FEATURES INCLUDED
PM5 : SYSTEM CONFIGURATION

Features included		Easy	Expert
.	Collective Speed Dial	✓	✓
.	External access	✓	✓
Numbering Plan			
.	Installation numbers: - Installation number - Customized caller number - Private installation number - VPN prefix to delete	✓	✓ ✓ ✓ ✓
.	Default numbering plans	✓	✓
.	Internal numbering plans		✓
.	Public numbering plan		✓
.	Restricted public numbering plan		✓
.	Private numbering plan		✓
.	Features in conversation		✓
.	DDI number modification table		✓
.	Number modification table		✓
.	Table of splitting prefixes		✓
.	Table of end of dialing prefixes		✓
.	Automatic Routing Selection (prefixes, trunk group lists, time ranges, day groups, operators/destinations, client codes, call tone/pause, miscellaneous)		✓
.	Public directory number conversions		✓
Collective Speed Dial		✓	✓
Directory			✓
Subscribers/Basestations List			
.	List of subscribers	✓	✓
.	Details		✓
..	Keys		✓
..	Service category		✓
..	Metering		✓
..	Personal Speed Dial		✓
..	Barring		✓
..	Dynamic forwarding		✓

PM5 : SYSTEM CONFIGURATION

FEATURES INCLUDED

Features included		Easy	Expert
..	DECT		✓
..	Voice mailbox		✓
..	V24		✓
..	Personal code		✓
..	ISDN		✓
..	Remote services		✓
..	Miscellaneous		✓
..	Forwardings		✓
..	Selective forwardings		✓
..	Hotel		✓
..	Wake-up call		✓
..	Mailbox		✓
..	IP		✓
Voice Processing			
.	Automated Attendant		✓
.	Mailboxes		✓
.	Information Messages		✓
.	General Parameters		✓
.	Statistics		✓
Time ranges			✓
List of operator groups			✓
List of hunting groups		✓	✓
List of broadcast groups		✓	✓
List of pick-up groups		✓	✓
Manager/secretary relationship			✓
Subscribers Misc.			
.	Pre-announcement		✓
.	Permanent Logical Links (PLLs)		✓
.	Fax notification for subscribers		✓
External Lines			

FEATURES INCLUDED

PM5 : SYSTEM CONFIGURATION

Features included		Easy	Expert
.	External access table: <ul style="list-style-type: none"> - Access to collective speed dial numbers - Call distribution - Link categories - T2 Alarms 	✓ ✓	✓ ✓ ✓ ✓
.	Trunk group list		✓
.	Remote substitution		✓
.	Traffic counters (number of outside calls)		✓
.	Protocols (TL time-outs and parameters, ATL time-outs, parameters, pulses and variants, levels 2 and 3 of public and private ISDN access, ISVPN protocols)		✓
.	Selection of analog protocols		✓
.	Incoming call processing		✓
Hardware and Limits			
.	Main cabinet		✓
.	Auxiliary interfaces		✓
.	IP Boards		✓
.	Licensed features		✓
Metering			
.	Printing		✓
.	Metering options for current monetary unit		✓
.	Currency conversion		✓
.	Metering counters		✓
Traffic Sharing and Barring			
.	Trunk access matrix		✓
.	Barring matrix		✓
.	Barring tables		✓
.	Joining		✓
.	Account code table		✓
Network Management Control			
.	Centralized management		✓
.	Urgent alarms		✓
Voice over IP			

PM5 : SYSTEM CONFIGURATION

FEATURES INCLUDED

Features included		Easy	Expert
.	VoIP: Parameters		✓
.	VoIP: Traffic counters		✓
Internet Access Configuration			
Hotel			
.	Parameters		✓
.	Metering		✓
System Miscellaneous			
.	PABX date and time adjustment		✓
.	System reset		✓
.	Features		✓
.	DECT ARI/GAP Authentication		✓
.	Memory Read/Write		✓
.	Message and Music		✓
.	Gatekeeper signals		✓
.	Manual normal/restricted mode		✓
.	Software Version		✓
Import/Export			
.	Data import/export		✓
.	Labels to export		✓
History & Anomalies			
.	History table		✓
.	Messages table (Hardware)		✓
Data Saving & Swapping			
.	Commands		✓
.	Data backup		✓
.	Downloading		✓



FEATURES INCLUDED

PM5 : SYSTEM CONFIGURATION

VOICE PROMPTS MANAGEMENT

File

3

On Alcatel Omni PCX Office, it is possible to manage "Voice prompts" using Alcatel software PM5.

The facility of importing, exporting and saving voice mail names and greetings, all automated attendant greetings and all information messages is offered by PM5.

The voice prompts are managed via sound files under "Wav" formats. Different formats are used according exportation or importation.

Access to these facilities depends of software licences and system hardware (Hard disk, ...).

"VOICE PROMPTS" EXPORTATION

Individual Voice prompts exportation is possible using different sub-menu in PM5 or collectively using a general "Save" procedure (see "Voice prompts importation").

All voice prompts used by the system are managed via sound files under the specific format **Alcatel Wav ADPCM G726**. It is usually not possible to edit files with this format on regular sound editors.

To have the possibility to listen, record and import sound files via standard PC's sound editors, it is necessary to convert them to more popular format.

This operation is done by PM5 software which converts file system from format **Alcatel Wav ADPCM G726** to format **Wav PCM 16 bit 8kHz mono**.

Knowing that each converting operation causes a loss of sound quality, it is advisable to use the ADPCM format as much as possible for an export/import of the same voice prompts.

"Voice prompts" exportation process

In order to export voice prompts (mail box greeting in this example) it is necessary to open the Alcatel PM5 software in direct connection and expert mode and use the following process:

- select the **Subscribers/Basestations list**
- select subscriber of your choice which as a mail box all ready personalized
- click on **Details**
- click on **Mailbox**
- select the property page **Option** in windows **Subscriber mailbox** select Combo box **Voice prompt - Personal greeting Transfer and save as**
- At this step, it is possible to:
 - export the voice prompt in different format
 - listen directly the message (click on "Play")
 - delete it (click on "Erase")
- Specify the destination path on your main drive (eg C:/Temp/Prompts) and the file name.
- Click on " export" ; at this step, the system will propose to use a standard Wav PC format or the regular Alcatel ADPCM format.
- The voice prompt is then transferred from the system to the PC; this operation may take few seconds according the size of the file). The voice prompt will be stored on your drive in format Alcatel ADPCM G726 or PCM 16 bit 8 kHz mono according your choice.

Nota : if no greeting has been prerecorded (no customization), the combo boxes "personal greeting" are Grey. This operation is possible for all voice prompts about Mail boxes, Automated Attendant and information messages. The procedure is the same as described before; just select the corresponding menu.

"VOICE PROMPT" COMPLETE SAVE

All "Voice prompts" may be saved used the following system save procedure:

- start the Alcatel PM5 software in direct or remote connection
- select the menu **Com -> Read from PBX -> Voice Prompts**
- click on **OK**
- wait until the end of the transfer.
- save the file selecting **File -> Save as**
- enter a file name and click on **OK**.

The "prompts" files stored this way are available under: C:/Program Files/Alcatel/PM5/R110-13.3/targetprod/afr100/customer.dbs/saved file name.

Nota : Directory "R110-13.3" corresponds to the PM5 version used during save procedure- ;directory "afr100" corresponds to "Target" system used during PM5 installation

"Wav" files stored after this procedure are in format Alcatel ADPCM G 726 and can't be listen to or modified only via specific software and Codec.

"VOICE PROMPT" IMPORTATION

As described in exportation procedure, it is necessary to convert "Wav" files from PCM to ADPCM format. This operation is done in PM5 during the transfer from the PC to the system.

If the prompt to be imported is in ADPCM format (file imported from a system) the conversion will not be necessary. If the prompt to be imported is in PCM format , the conversion will be automatically proceed during the PM5 transfer.

In this case, the format to use is **Wav PCM 16 bits 8 kHz Mono** these type of sounds file and formats can be generate on all PC types equipped with Sound baster music boards.

Importing procedure is the same as the exporting one described in the previous paragraph. It is only necessary to specify the exact path where the file to be imported is located.

Then click on "Import".

At any time, it is also possible to listen or erase the message (only the message present in the system. The transfer duration depends of the file size (or prompt duration).

RECORDING OF MUSIC ON HOLD (MOH)

It is possible to record the system music on hold using either a "Reflexes" set and it's microphone or using Internet explorer for importing sound files.

In the last case, the sound file must me in one of the following format:

- **.wav, ADPCM 32 kbps, 4 bit, mono**
- **.wav, PCM 8 kHz, 8 bit, mono**

PM5 : SYSTEM CONFIGURATION**VOICE PROMPTS MANAGEMENT**

- **.wav, CCITT A-law (PCM A law) 8 kHz, 8 bit, mono**
- **.wav, CCITT Mu-law (PCM Mu Law) 8 kHz 8 bit, mono**

The maximum size of the file (or the music) to import is 10 minutes.

Importing sound file for Music on Hold

- Select via PM5 or MMC set, the music on hold by default (standard; example via MMC set: menus "Voice", "SrcMus", "Stndart").
- Create a sound file for the new music on hold using a PC equipped with a sound baster board (for instance) with the correct format listed before. The format and the size of the file may be verified using "Windows recorder" (select file properties)
- (It is also possible to convert a sound file to the correct format using the same "Windows recorder" tool, and menus "save as", Choose the correct format in the list and Click on "Convert now")
- Open Internet browser and remove the proxy.
- Access to the main CPU with it's IP address (by default: 192.168.92.246:81)
- Enter the login **Operator**
- Enter the password **help1954**
- The system displays the following Windows
- "Alcatel OmniPCX Office" " Boards monitoring and music on hold"
- Select the sound file to be imported clicking on "Parcourir" or "Browse"
- Then click on "Submit" to import the file
- If the operation is successful, the following screen "MOH CODER : Success" appears (this operation may take few seconds according the size of the file)
- Then select with PM5 or MMC Set the recorded music; example via MMC Set: menus "Voice", ""Src-Mus", "Prvoice".
- The new music is available in the system.

Recording music on hold via MMC station

It is also possible to record the music on hold using the MMC station programming mode. To do so, proceed as follow

- enter in programming mode using 4034 or Advanced set
- enter in "System" session
- select "Instal" menu
- enter the password
- select "Voice" menu in the second page
- select "MOH" menu
- **select "Music" message by access on "Prev" or "Next" keys (Message 1 is selected by default).**
- press "Record" key twice in order to record the music on hold using the handset
- once the music on hold recorded, enable it using "Musrcr", VoicPr" and "OK" menus.

RECORDING PREANNOUNCEMENT MESSAGES 01 TO 08 VIA MMC STATION

It is also possible to record preannouncement messages 1 to 8 using the MMC MR2 programming mode as in the previous systems.

To do so, proceed as follow:

- enter in programming mode using 4034 or Advanced set
- enter in "System" session
- select "Instal" menu
- enter the password
- select "Voice" menu in the second page
- select "MOH" menu
- **select "Message 1 to 8 by access on "Prev" or "Next" keys (Message 1 is selected by default).**
- press "Record" key twice in order to record the message using the handset
- listen to the message and assign it with the normal procedure

Nota : It is not possible to import preannouncement messages.

SYSTEM LANGUAGE MODIFICATION

The list of languages present in the system Alcatel Omni Pcx Office is installed during software downloading in the manufacture. It depend of hardware and key (license) ordered:

- 2 languages are installed in case of no XMEM is equipped (no memory expansion)
- 4 languages are available if a XMEM or a hard disk is equipped.

It is possible to modify the number and the type of languages using the software downloading mechanism in PM5.

Procedure

In a first time it is necessary to choose a software version to be downloaded (usually the current software version already installed on the system). This way, only the languages will be loaded during the downloading.

Languages modification could also be done during a software downloading for a migration to a new version.

Proceed as follow:

- open PM5 software.
- select the "Tools" menu.
- select "Software Download".
- in the window "Software Download", choose the desired version in "Delivery file" (V19_09 for example).
- click on "OK".
- select the box "languages" in "Languages" menu, modify order and/or choice of languages.
- click on "OK".
- select "Data saving" box (if data saving is not performed, all customers datas will be lost after the swap).
- click on "Start"
- the system downloads the different languages and corresponding voice prompts. The new languages will be available at the end of downloading, swap and the system reset. All other configuration parameters will stay unchanged.

Notas : The list of available language can be easily checked using the customization mode on Reflexes set (menu Custom, option, language)

During languages downloading, the system does not check if the memory capacity is correct for the number of languages loaded; it is to installer to make sure the system configuration is correct for 4 languages max.

If one language is selected for a subscriber and after language downloading, the language is not present in the system anymore, silence will replace the missing language for this subscriber.

The primary default languages is always the first one in the list.



VOICE PROMPTS MANAGEMENT

PM5 : SYSTEM CONFIGURATION

Alcatel OmniPCX Office

SECTION
MMC STATION

REF3EH 21000 BSAA Ed. 04

MMC STATION

Section MMC Station

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ALCATEL OMNIPCX OFFICE

SECTION MMC STATION

MMC STATION

DISA

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ALCATEL OMNIPCX OFFICE

SECTION MMC STATION (INDEX)

MMC STATION

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WELCOME AND PLEASE-WAIT MESSAGES	FILE 15



The Man-Machine Conversation (MMC) by 4034/Advanced station enables modification of the parameters of the different system elements.

Notas :

- only a single 4034/Advanced station can be in MMC at a given moment.
- simultaneous access to the MMC by station and by PC is impossible.

The modifications are made in 2 ways:

- By introducing a numeric value (number of the station for example) or an alphanumeric value.
- By choosing one of the predefined values presented on the display using the soft keys.

ACCESS TO THE MMC

Access to the MMC is enabled by:


- entering the code 70 (by default) or by using a key programmed with this code, or by pressing the **SYSTEM** key (Advanced station).
- choosing the session: 3 sessions are offered: INSTALLER (**INSTALL** key), ADMINISTRATOR (**ADMIN** key) and OPERATOR * (**OPERAT** key). These different levels of access to the parameterizable features thus enable modifications to be authorized to cleared people only.
- entering the password corresponding to the chosen session.

Notas : * Only Installer and Administrator sessions are presented in this notice; for the Operator session, refer to the Installation guide.



Password default values

INSTALLER session	pbxk1064
ADMINISTRATOR session	kilo1987



CONFIGURABLE FEATURES

All the features configurable in the Installer session are described in the different files contained in the current guide. The features and sub-features available in the Administrator session are indicated by the symbol  positioned beside the titles of the configurable elements.

Each feature has a diagram describing the entry procedure (in Installer session). The features which are accessible by soft keys are indicated by:

-  soft key for moving through the MMC tree or for choosing a feature.
-  giving access to the drop-down menu.

Quitting the session

To quit the MMC session press the  key (4034 station) or the  key (Advanced station). You will quit the session automatically, after a time delay after the last key has been pressed.

GENERAL COMMANDS

Soft keys

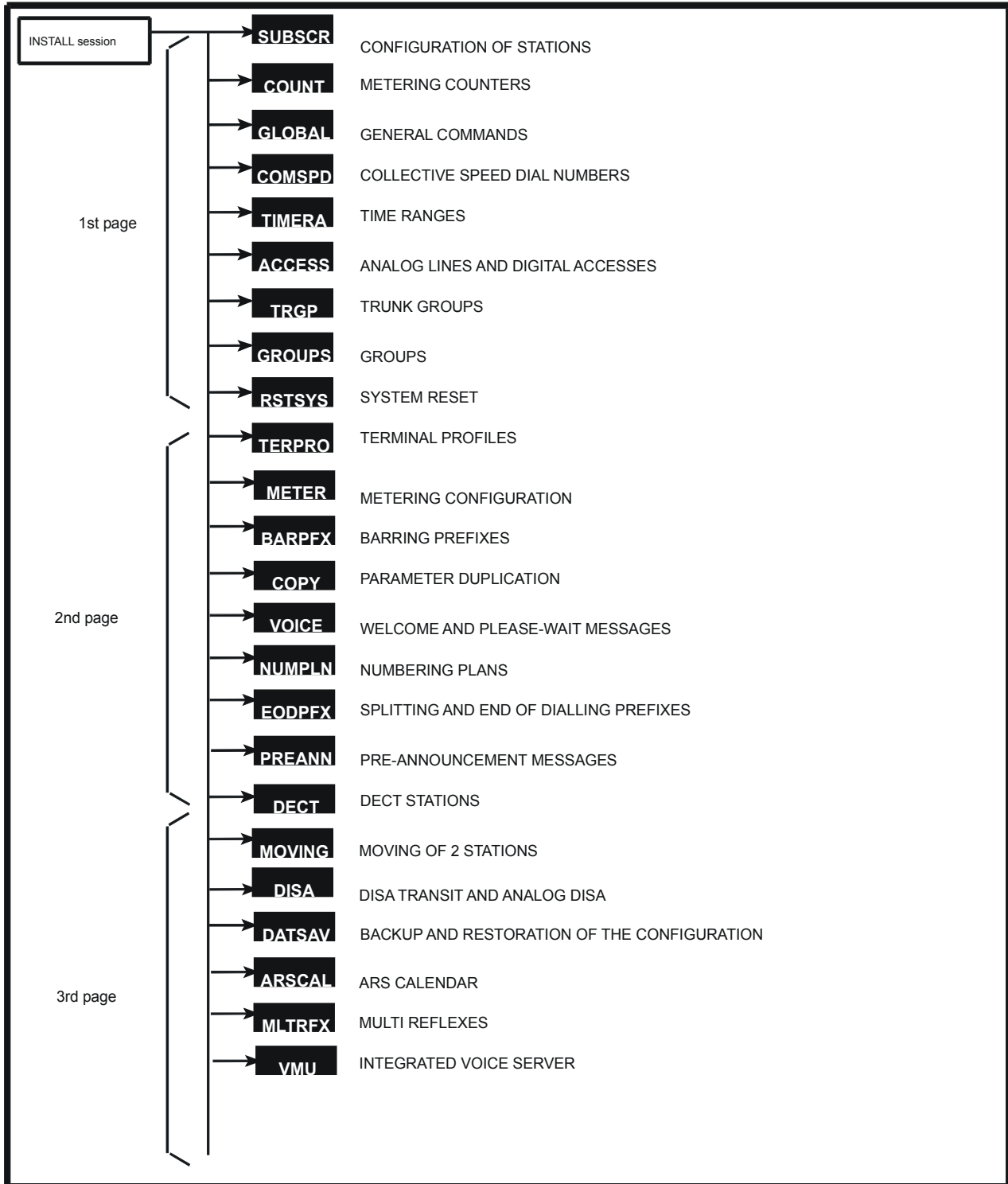
- ADD : adds an item to a list
- GOTO : moves quickly through a list
- READ+ : displays the next page
- CLEAR : cancels
- RUBOUT : corrects the last character
- MODIFY : modifies an item in a list
- NEXT : next entry in a list
- PREV : previous entry in a list
- BACK : returns to previous menu
- OK : validates an entry
- -> : forward cursor movement
- <- : backward cursor movement

Using the alphabetic keypad

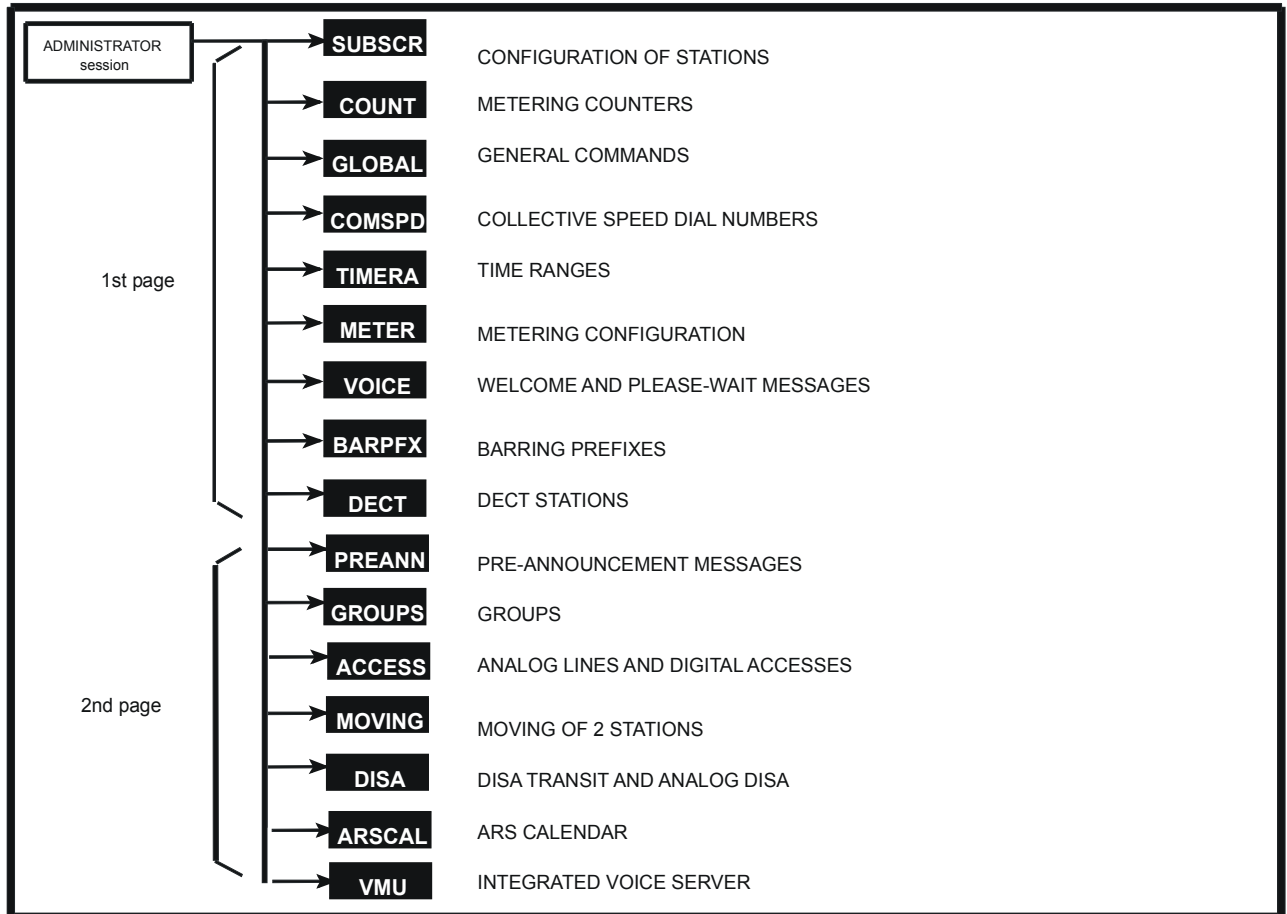
Each time you need to enter a name or a label associated to a key or a feature, use the alphabetic keypad. If the station does not have an alphabetic keypad, use the dialling keypad. To enter a letter, press the key which has the required letter on it: once for the first letter, twice for the second and three times for the third. To enter two consecutive letters on the same dialling key, press -> before entering the second letter. Entering special characters:

- "space" : press **1**
- "-" : press **1** twice
- "." : press **1** three times
- "#" : press **#**
- ":" : press **#** twice
- "=" : press **#** three times
- "*" : press *****
- "+" : press ***** twice
- "/" : press ***** three times
- "0" to "9" : press **#0** or **#9**

CONFIGURABLE FEATURES IN INSTALLER SESSION



CONFIGURABLE FEATURES IN ADMINISTRATOR SESSION





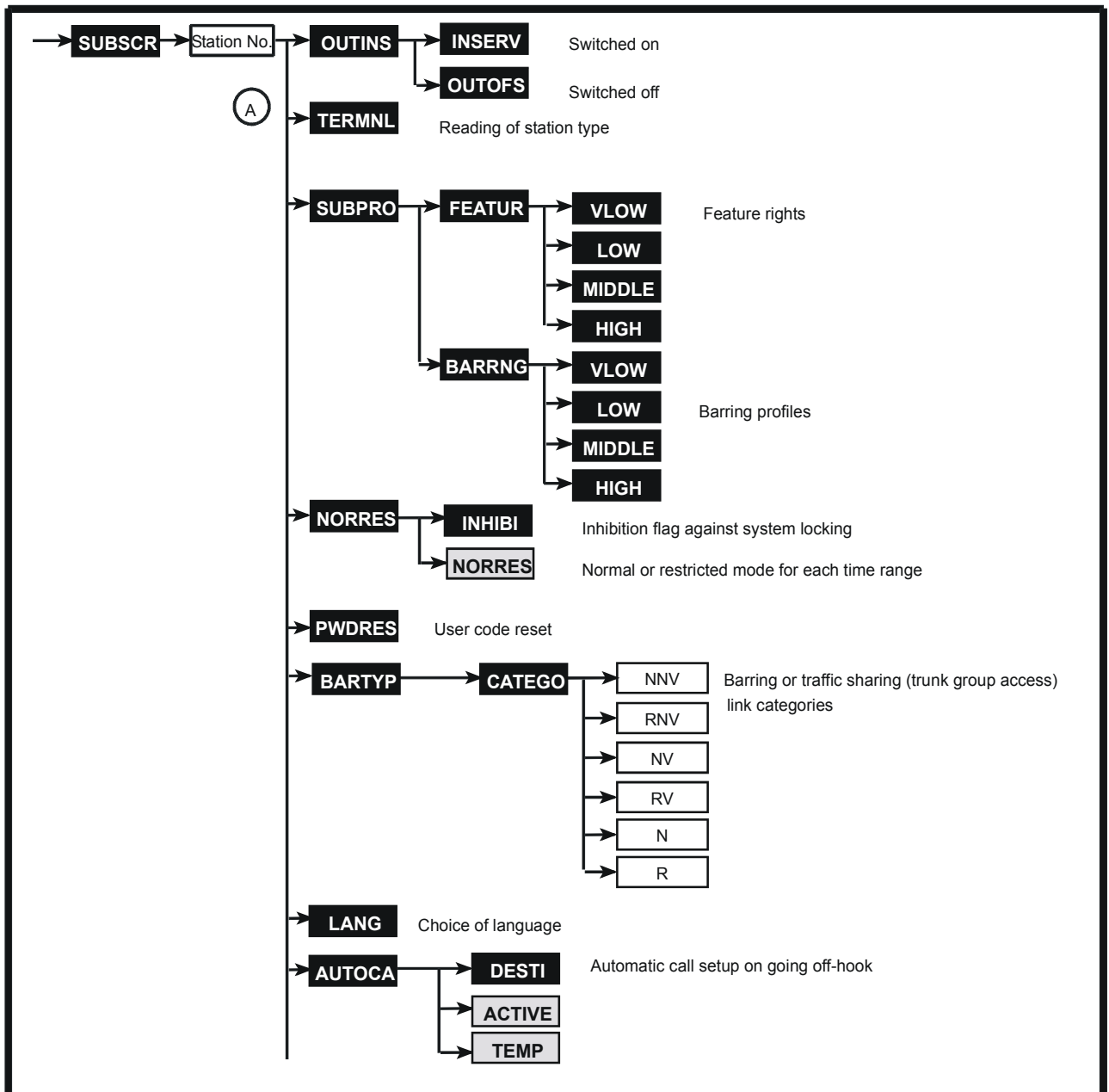
GENERAL

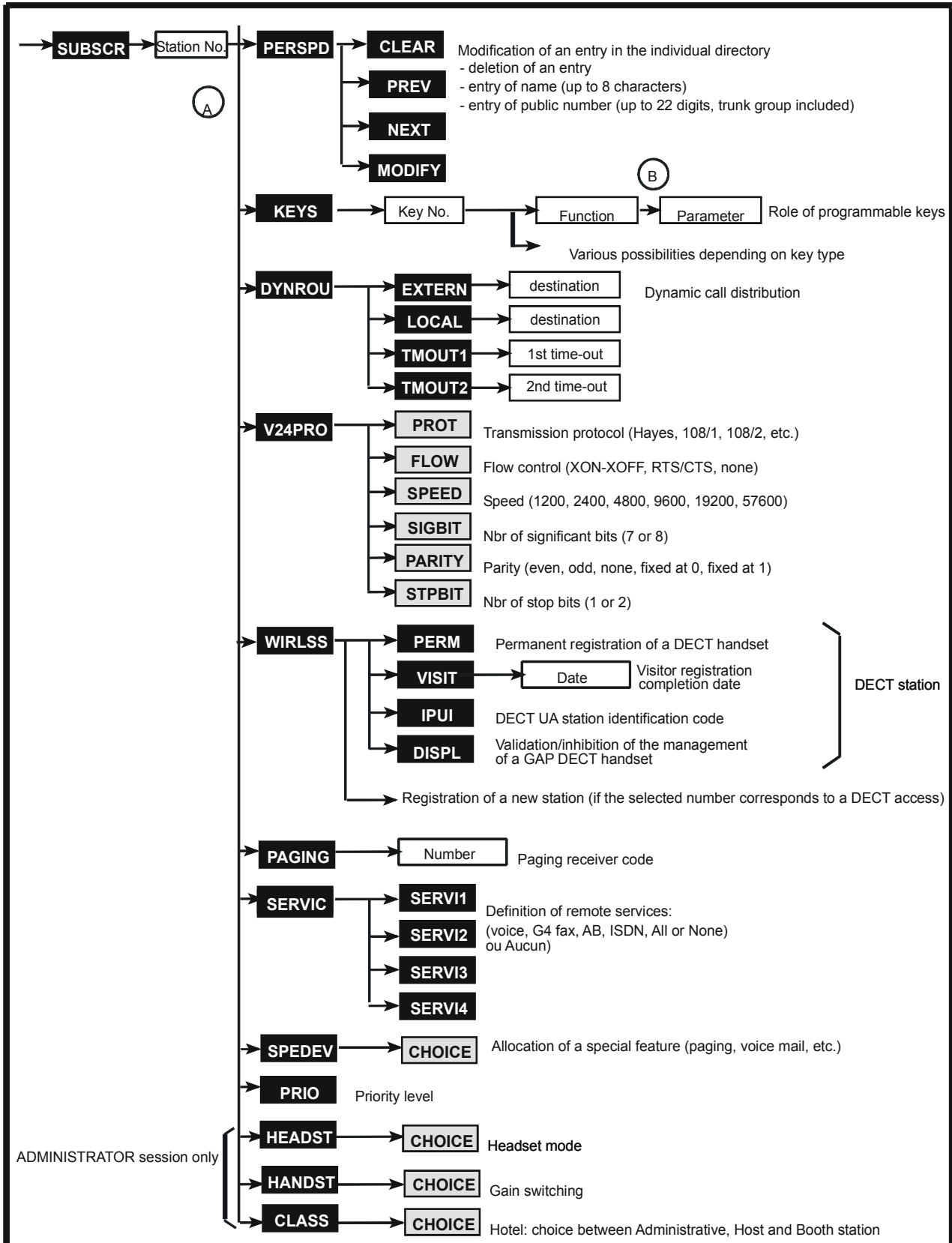
MMC STATION

CONFIGURATION OF STATIONS

File
2

This feature makes it possible to define particular characteristics for each station.





MMC STATION

CONFIGURATION OF STATIONS

Press **SUBSCR**.
Enter the directory number of the station concerned.

STATUS OF THE STATION - OUTINS A

Before allocating a terminal profile or carrying out a remote customization of a station, this station must be switched off by pressing **OUTINS** A. After allocation, the station can be switched on again.

The station can be:

- In Service
- Logical OOS
- Physical OOS/Logical OOS: station not operational
- Physical OOS/Logical IS: station not regarded by the system (not declared or disconnected) and switched off by the installer

Choosing **INSERV** + validation switches the station ON (IN SERVICE). Choosing **OUTOFS** + validation switches the station OFF (OUT OF SERVICE).

Nota : The Administrator session only allows the status of the station to be read.

TYPE OF STATION USED - TERMNL A

Press **TERMNL** A.

The station directory number, type and software version are displayed.

SUBSCRIBER PROFILE - SUBPRO A

Feature rights profile - FEATUR A

Press **SUBPRO** followed by **FEATUR**.

Choose the feature rights to be allocated to the station.

FEATURE RIGHTS	VERY LOW	LOW (de- fault)	MIDDLE	HIGH
Authorized camp-on		YES	YES	YES
Protection against camp-on	--	--	--	--
Authorized intrusion	--	--	YES	YES
Protection against intrusion (station busy) and protection against intercom (station free)	--	--	YES	YES
Protection against camp-on tone	--	--	--	YES
Conference	--	YES	YES	YES

CONFIGURATION OF STATIONS

MMC STATION

Automatic call back	YES	YES	YES	YES
Call pick-up authorized	--	YES	YES	YES
Paging	--	--	YES	YES
Calling line identity secrecy	--	--	--	YES
UUS reception authorized	--	--	YES	YES
Restricted mode inhibited	--	--	--	--
Private station	--	--	--	--
VM = automated attendant dyn. forward level 1	--	--	--	--
VM = automated attendant dyn. forward level 2	--	--	--	--
Name display	YES	YES	YES	YES
External accesses joining by transfer	--	--	--	--
Trunk access by transfer	YES	YES	YES	YES
Selective forwarding	--	YES	YES	YES
External forwarding	--	--	--	--
Allocation of a line	--	--	--	--
DISA Transit	--	--	--	--
Protection against DDC calls	--	--	--	--
Automatic call setup on going off hook (immediate or after time-out)	--	--	--	--
DND override authorized	--	--	--	YES
Protection against DND override	--	--	YES	YES
Assign authorization for cost (hotel: possibility of charging costs to a room telephone)	--	--	--	--

MMC STATION

CONFIGURATION OF STATIONS

Barring profile - BARRNG 

Press **SUBPRO**  followed by **BARRNG**.

Choose the barring profile to be allocated to the station.

CONTENT		VERY LOW	LOW (de- fault)	MIDDLE	HIGH
Traffic sharing (access to trunk groups)	Normal mode	No trunk group	Main trunk group	Main and even trunk groups	All trunk groups
	Restricted mode	No trunk group	No trunk group	Main trunk group	All trunk groups
Station traffic sharing	Normal mode (N)	16	12	8	4
	Restricted mode (R)	16	16	12	4
Barring level of trunk groups (result from the barring matrix with station barring below and trunk group barring by default)	Trunk groups 1 to 9, 50 to 57 and 98 to 105	1	2	3	4
	Trunk groups 10 to 17, 58 to 65 and 106 to 113	2	3	4	5
	Trunk groups 18 to 25, 66 to 73 and 114 to 120	3	4	5	6
	Trunk groups 26 to 33 and 74 to 81	4	5	6	1
	Trunk groups 34 to 41 and 82 to 89	5	6	1	2
	Trunk groups 42 to 49 and 90 to 97	6	1	2	3
Station barring (voice or data)	Normal mode (NV and NNV)	1	2	3	4
	Restricted mode (RV and RNV)	1	1	1	4
Station speed dial rights (voice or data)	Normal mode	10000000	11100000	11111000	11111111
	Restricted mode	10000000	11100000	11111000	11111111

NORMAL/RESTRICTED MODE FOR EACH STATION - NORRES A

NORRES A is used to define the time range operating mode.

INHIB makes it possible to inhibit the switch to restricted mode. By pressing successively on **CHOICE**, you can define whether changing the operating mode by operator command or by a key at central processing level is taken into account for this station:

NORRES by successively pressing this key, you can choose the operating mode for the time range concerned.

- inhibited: changing the operating mode is not possible for this station.
- possible: changing the operating mode is possible.

REINITIALIZATION OF THE USER CODE - PWDRES A

Press **PWDRES** A. Validating makes it possible to return to the default value for the personal code of the station concerned: 1515).

BARRING AND TRAFFIC SHARING CATEGORIES - BARTYP A

BARTYP A makes it possible to define barring and traffic sharing link categories for each station.

- NNV : barring link category for data communications in normal mode
- RNV : barring link category for data communications in restricted mode
- NV : barring link category for voice communications in normal mode
- RV : barring link category for voice communications in restricted mode
- N : traffic sharing link category in normal mode
- R : traffic sharing link category in restricted mode

Notas :

Barring link categories make it possible to define the controls carried out during a trunk seizure by a means other than the collective speed dial numbers or during the seizure of a trunk group. Traffic sharing link categories define the controls for accessing the trunk groups (outgoing traffic sharing).

Having pressed **CATEG**, enter the value (from 1 to 16) to be allocated to the category concerned then validate.

CHOICE OF LANGUAGE - LANG A

Having pressed **LANG** A, choose the display language for the station from the proposed languages.

AUTOMATIC CALL SETUP ON GOING OFF-HOOK - AUTOCA ^A

AUTOCA ^A makes it possible to define:

- the destination of an automatic call setup on going off-hook
- the type of call: immediate or after a time-out

DEST : enter the destination of an automatic call (station's directory or hunting group number or external number using a speed dial number).

ACTIVE : by successively pressing this key, you can define whether the automatic call is active (YES) or inactive (NO) for the station concerned.

TEMP : by successively pressing this key, you can define whether the automatic call is after a time-out (YES) or not (NO).

PERSONAL SPEED DIAL NUMBERS - PERSPD

PERSPD ^A makes it possible to create/modify the name and number stored in an entry in the individual directory of the station concerned (the complete entry of an entry with the line or trunk group used and sub-address is only possible through MMC PM5).

PREV and **NEXT** make it possible to select a personal directory entry (01 to 30 for a 4034/Advanced station, 01 to 15 for 4023 stations and 01 to 10 for other stations). If this entry is already configured, the name and associated public number (last 18 digits) are displayed.

MODIFY makes it possible to modify the data stored in a directory entry.

Enter the name (up to 8 characters) and press **OK**. Then enter the public number (up to 22 digits, including the trunk group number) and press **OK**.

CLEAR makes it possible to erase ALL the data of a directory entry (even those that can not be configured in this session).

ROLE OF THE PROGRAMMABLE KEYS - KEYS **A**

KEYS **A** makes it possible to define the role of the programmable keys.

Notas :

Before performing a remote customization of a station, the station must be switched off. It is advisable to cancel a key's current configuration before beginning a new configuration.

The display may show:

- the number (for example 01/98)
- the type of key (for example RGM)
- the rights associated with it (INS = installer)
- the current feature
- the possible parameter(s)

State the number of the key to be programmed (see location below) by pressing **GOTO** or by selecting the next or previous key.

MODIFY makes it possible to show the display which groups together all the **B** functions offered. Press the soft key corresponding to the list which contains the desired function.

Function list

Choosing **CALL** **B**

KEY	FUNCTION	PARAMETERS
oCback	Automatic call-back request	--
nCback	Cancellation of an automatic call-back request	--
Procom	Protection of a call against any intrusion	--
oIntru	Intrusion	--
Pgpfix	Paging call by prefix	--
Pgsfix	Paging call by suffix	--
CLIR	Calling line identity secrecy	--
BMdial	Block mode dialling	--
SubAdd	Sub address	--
DNDovr	Override DND/Priority call	--

MMC STATION

CONFIGURATION OF STATIONS

Choosing **ABBNUM** B

KEY	FUNCTION	PARAMETERS
Redial	Last number redial	--
TmpRep	Putting a number into a temporary memory	--
PerSpD	Access to personal speed dial numbers	--
Call	Direct local or external call	Trunk number External number (22 digits maximum) Sub-address (4 digits maximum)
Dir	Directory access	--
Macro1	Local call + intercom intrusion on free; equivalent to an incoming RSL	Station directory number Data for dynamic routing
Macro2	External call + business account code + business account code value	Trunk number External number (22 digits maximum) Sub-address (4 digits maximum) Business account code (16 digits maximum)
Macro3	Calibrated loopbreak + time-out + number	Number to be transmitted after the calibrated loop break
PrCall	Priority call	--

CONFIGURATION OF STATIONS

MMC STATION

Choosing **ANSWER** (B)

KEY	FUNCTION	PARAMETERS
IndPic	Individual call pick-up	Station directory number
GrpPic	Group call pick-up	--
GenBel	General bell answer	--
Monit	Selective monitoring	Station directory number (internal or DDI numbers) Type of calls monitored (local, external, all)
SubMon	Subscriber monitoring	Station directory number (internal or DDI numbers) Type of calls monitored (local, external, all)
GrpSup	General monitoring	Hunting group number
AutAns	Intercom mode answering	--
Ring	Supervised melody activation	--
Pgasel	Paging call answer	--
Pgagen	General paging answer	--
GenMon	Group supervision	--
2ndCal	Enquiry call (only for 4073 stations)	--

MMC STATION

CONFIGURATION OF STATIONS

Choosing DIVER B

KEY	FUNCTION	PARAMETERS
SelFwd	Selective forwarding	--
PABXĚ	PABX diversion	--
IndFwd	Access to personal call forwarding	Internal or external destination
- ImmedĚ	Immediate diversion	Internal or external destination
- BusyĚ	Diversion on busy	--
- TextĚ	Diversion to text mail	Number of the station concerned
- FolloĚ	Follow me	--
- PageĚ	Diversion to paging	--
- DND	"Do Not Disturb"	--
GrpFwd	Group forwarding	--
- ImmedĚ	Immediate group call forwarding	--
- GrpWd	Disconnect from group	Station number
MstFwd	Master forwarding keys	
- M ImmD	Immediate diversion	Internal destination
- M Busy	Diversion on busy	Number of the station or group
- M Grp	Group call diversion	Number of the station or group
ScrMgr	Screening	Directory number of the secretary station
ScrSec	Screening	Directory number of the manager station
DelAll	All diversion cancellation	--

Choosing **OPTION** **B**

KEY	FUNCTION	PARAMETERS
oConf	Conference	--
AccCom	Modification of the business account code during the call	Value of the code (16 digits maximum)
AccOut	Business account code entered before new outgoing call	Value of the code (16 digits maximum)
Mail K	Access to text mail	--
Read+	Display next screen	--
VMail	Access to Voice Mail	Number of the voice mail box
oPBX	Calibrated loopbreak	--
NRMode	Normal or restricted mode for attendant	--
Reserv	Trunk group reservation for attendant	--
Config	Switch to programming mode	--
Hold	Common hold for voice transfer	--
Transf	Transfer of a call	--
Digits	Putting dialling into a memory	--
Mail L	Access to mailing	--
oDTMF	Send MF code	Digits (22 max) to be sent in MF
Forced	Intercom intrusion on free	--
Lock	Station lock/unlock	--
Park	Call parking/retrieval	--
MTR	Metering reminder	--
AllotN	Allocation of a line	Barring level
AllotM	Allocation of a line with total meter recall	Barring level
AttDiv	External forwarding of operator calls	Internal or external destination
BkgMus	To choose the emitting source of please wait message	--
Door	Door opener control	--
Broker	Shuttle call (only for 4073 station)	--

MMC STATION

CONFIGURATION OF STATIONS

RecCal	Recording of conversations	--
MVScrn	Filtering of vocal messages	--

Choosing **RESOURCE** (B)

KEY	FUNCTION	PARAMETERS
RGI	Handles local incoming calls	Type of call: local, external, all Data for dynamic routing
RGO	Handles local outgoing calls	Type of call: local, external, all
RGM	Handles mixed calls (incoming-outgoing)	Type of call: local, external, all Data for dynamic routing
RSL	Handles local calls with a given station	Station directory number (4 digits max) Sub-address (4 digits maximum) Data for dynamic routing
RSD	Reception of local or external calls Outgoing seizure on a given trunk	Station directory number or hunting group directory number (local call) or DDI (external call) Trunk directory number or ARS for outgoing call (optional) Data for dynamic routing
RSB	Set up of an external call on a specific trunk group and reception of external call	Trunk directory number or ARS Data for dynamic routing
RSP	Reception and transmission of calls on a specific external interface	Line number Data for dynamic routing
SUP	Station monitoring	Monitored station directory number Monitored resource key address

PARAMETERS ASSOCIATED WITH RESOURCE KEYS

Notas :

This paragraph only describes the main parameters which can be defined according to the role assigned to the key; other parameters are possible (trunk number if RSD or RSB, station sub-address if RSL, type of monitoring key and number of the monitoring key if RSP).

o Dynamic routing

This sub-function is only provided for the MACRO1, RGI, RGM, RSL, RSD, RSB and RSP keys. **DYNROU** makes it possible to define the data necessary for the dynamic routing of calls managed by the key concerned. Press **MODIFY** :

- **TP1** : by successively pressing this key, you can define whether the time-out 1 is active (TP1) or

inactive (tp1).

- **TP2** : by successively pressing this key, you can define whether the time-out 2 is active (TP2) or inactive (tp2).
- **OPERAT** or **GENBEL** : by successively pressing on this key, you can define whether the system should route the call to the operator and/or the general bell after the non-response time-out TP2 has lapsed (active = ATTD or GBEL; inactive = attd or gbel).
- **DIVERT** makes it possible to authorize (DIVE) or not (dive) forwarding for this key.
- **NUMBER** makes it possible to define a destination station (or group) for the dynamic routing in the case of no answer after a time-out TP1 (12 seconds by default).

o Type of call

This sub-function is only provided for the RGI, RGO and RGM keys.

CALTYP makes it possible to determine the type of calls managed by the key concerned.

By successively pressing the **CALTYP** key, you can choose between Ext/Loc, External and Local.

o Number of the associated station

This sub-function is only provided for the RSL, RSD and SUP keys. **NUMBER** makes it possible to define the directory number of the associated station.

DYNAMIC ROUTING OF CALLS - DYNROU A

Dynamic routing of calls makes it impossible to have a call (internal, external, private, ...) remaining unanswered.

Press **DYNROU** A.

EXTERN and **LOCAL** make it possible to define whether the dynamic distribution (time-outs T1 and T2, destinations) criteria for each type of call (external or local) are active or not:

- **NUMBER** makes it possible to define a destination station (or group) for the dynamic routing in the case of no answer after a time-out TP1 (12 seconds by default).
- **TP1** : by successively pressing this key, you can define whether the time-out 1 is active (TP1) or inactive (tp1).
- **TP2** : by successively pressing this key, you can define whether the time-out 2 is active (TP2) or inactive (tp2).
- **OPERAT** or **GENBEL** : by successively pressing on this key, define whether the system should route the call to the operator and/or the general bell after the non-response time-out TP2 has lapsed (active = ATTD or GBEL; inactive = attd or gbel).
- **DIVERT** makes it possible to authorize (DIVE) or not (dive) forwarding for this key.

TMOU1 and **TMOU2** make it possible to define the time-outs in tenths of a second. The default value is 12 seconds.

CHARACTERISTICS OF THE V24 OUTPUT OF A DIGITAL STATION - V24PRO A

V24PRO A (when the selected station corresponds to a V24 interface) makes it possible to define the characteristics for the V24 option installed on a Reflexes station.

PROT : by successively pressing this key, you can choose the transmission protocol: 108/1, 108/2, Hayes or Dec. auto (Hayes by default).

FLOW : by successively pressing this key, you can choose the type of flow control: XON/XOFF, RTS/CTS or without (XON/XOFF by default).

SPEED : by successively pressing this key, you can choose the transmission speed: 1200, 2400, 4800, 9600, 19200 or 57600 bits/s (9600 bits/s by default).

SIGBIT : by successively pressing this key, you can choose the number of significant bits: 7 or 8 (8 by default).

PARITY : by successively pressing this key, you can choose the parity: 0, 1, even, uneven or no parity (no parity by default).

STPBIT : by successively pressing this key, you can choose the number of stop bits: 1 or 2 (1 by default).

CORDLESS DECT STATIONS - WIRLSS A

WIRLSS A (when the selected station is a DECT) makes it possible to define the parameters for DECT stations.

PERM makes it possible to select a permanent association to the system.

VISIT makes it possible to select a temporary association to the system ; enter the date on which the mobile is to be automatically disconnected from the system and validate.

IPUI makes it possible to modify the IPUI value of the DECT station ; enter 14 octal digits and validate.

DISPL makes it possible to validate or inhibit a GAP DECT display.

PAGING NUMBER - PAGING A

PGSEFX A makes it possible to define the number of the paging receiver for the station concerned.

REMOTE SERVICES - SERVIC A

SERVIC A makes it possible to define the remote service(s) accessible for the station concerned (4 services maximum).

By successively pressing on keys **SERV11** to **SERV14**, select the authorized remote service:

CONFIGURATION OF STATIONS

MMC STATION

- VOICE (telephone services)
- ALLSVC (all remote services)
- ABS (analog data service)
- FAX2/3
- FAX4
- V24AE (asynchronous V24)
- TLTX64 (64 kbits/s teletext)
- DATA64 (64 kbits/s data transmission)
- VIDEO
- X21
- X25
- Bdx
- BdxNw
- MixMod
- NOSERV

Only calls compatible with the services programmed are accepted for both outgoing and incoming calls. All other types of call are rejected and not presented when incoming. For non S0 stations, only service 1 is to be defined.

SPECIAL FEATURES - SPEDEV ^(A)

After pressing **SPEDEV** ^(A), by successively pressing on **CHOICE**, you can select features from those offered:

- Normal
- Paging Device
- Voice Mail Unit
- Doorphone
- Bank Alarm (priority call)
- Fix DTMF

PRIORITY LEVEL - PRIO

PRIO ^(A) makes it possible to define the priority level (0 to 7, 7 = highest level) for external calls (priority call feature).

FEATURES ONLY PROVIDED IN AN ADMINISTRATOR SESSION - HEADST, HANDST AND CLASS

Headset mode - HEADST

After pressing **HEADST** ^(A), by successively pressing on **CHOICE** you can tell whether or not the station operates with a headset. If it does, plug the headset into the handset slot.

Gain improvement - HANDST

After pressing **HANDST** ^(A), by pressing successively on **CHOICE** you can activate or cancel gain improvement on a station (improves hearing in noisy surroundings).

Hotel type telephone set - CLASS

After pressing **CLASS** ^(A), select Administrative, Host or Booth by successively pressing on **CHOICE**.



CONFIGURATION OF STATIONS

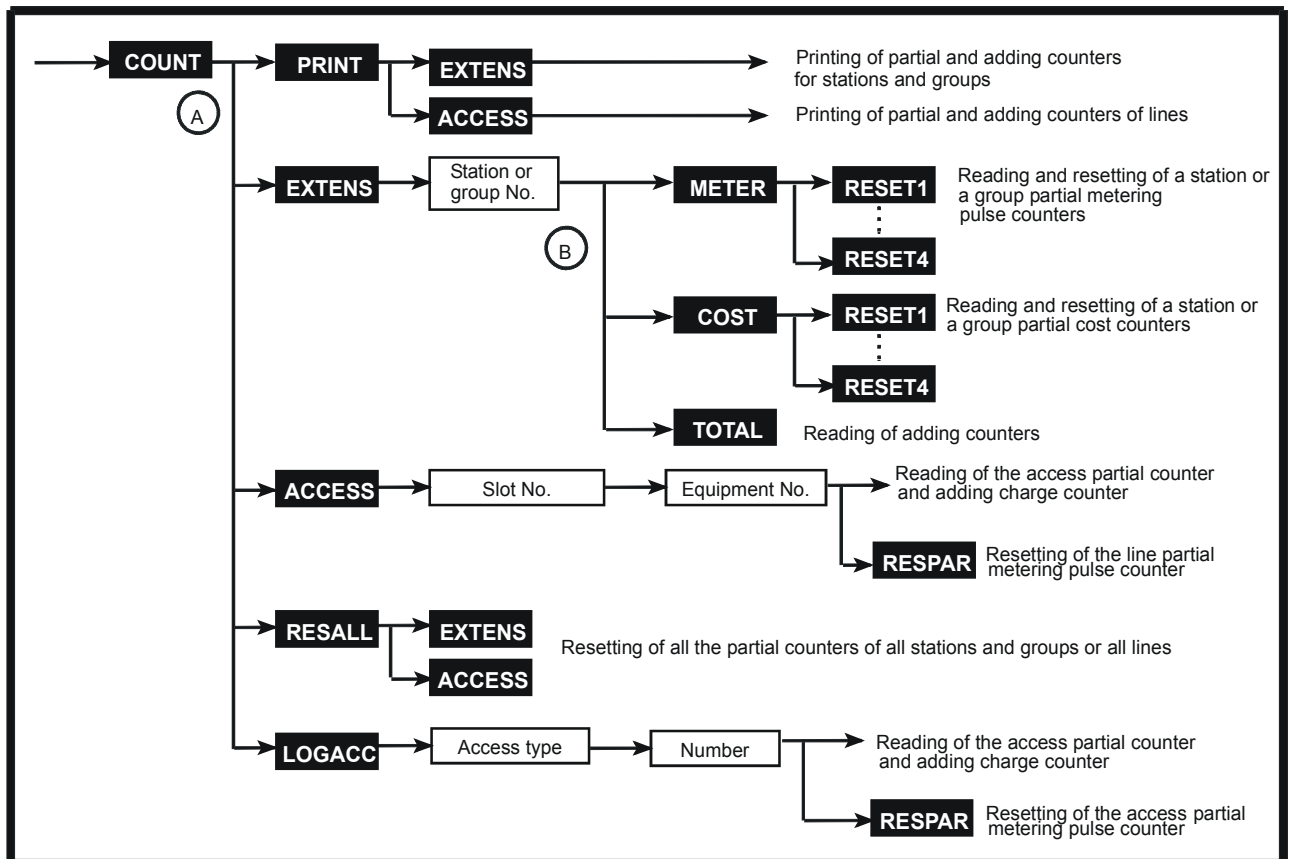
MMC STATION

METERING COUNTERS

File
3

The system sums up the following metering information in the form of partial and adding counters:

- For each station or group (stations or OS):
 - 4 partial charge counters and 4 partial cost counters
 - 1 adding charge counter and 1 adding cost counter
- For each line:
 - 1 partial charge counter
 - 1 adding cost counter



Press **ACCOUNT**.

PRINTING OF STATION/GROUP AND LINE COUNTERS - PRINT (A)

Press **PRINT** (A).

EXTENS makes it possible to print the partial and adding counters for the stations and groups.

ACCESS makes it possible to print the partial and adding counters for the lines.

READING OF A STATION'S/GROUP'S COUNTERS - EXTENS A

After pressing **EXTENS** A, enter the directory number of the station (or group) whose counter should be printed.

Reading and resetting of the meter pulse counters - METER A

METER B displays the contents of the 4 partial metering pulse counters for the station concerned.

RESET1 to **RESET4** make it possible to reset the 4 counters individually.

Reading and resetting of the cost counters - COST A


COST B displays the contents of the 4 partial cost counters for the station (or group) concerned.

RESET1 to **RESET4** make it possible to reset the 4 counters individually.

Readout of the adding counters - TOTAL A

TOTAL B displays the station adding and cost counter values.

READING AND RESETTING OF THE LINE COUNTERS (PHYSICAL ADDRESSES) - ACCESS

After pressing **ACCESS** , enter the data necessary for identification of the line whose partial and adding counters are to be displayed, validate.


Identification of interfaces:

- SLOT : slot number: 1 to 8 (basic module), 11 to 18 (extension module 1), 21 to 28 (extension module 2)
- EQUIP : equipment number: 1 to 8

The display then shows the values for the line metering pulse and cost adding counters.

RESPAR makes it possible to reset the line partial metering pulse counter.

RESETTING OF THE STATION/GROUP AND LINE PARTIAL COUNTERS - RESALL


RESALL  makes it possible to reset all the partial counters for the stations or lines.

EXTENS makes it possible to reset all the station or group partial counters.

ACCESS makes it possible to reset all the line partial counters.

Notas : Only the station partial counters can be reset in Administrator session.

READING AND RESETTING OF THE LINE COUNTERS (LOGICAL ADDRESSES) - LOGACC

After pressing **LOGACC** , enter the data necessary for identification of the access (access number and type) for which the partial and adding counters are to be displayed and then validate.

To enter the access type, press the L(AG) soft keys for a TL, N(T0) for a T0 access or P(T2) for a T2/ DLT2 access. The display then shows the values for the line partial and adding counters.

RESPAR makes it possible to reset the line partial metering pulse counter.



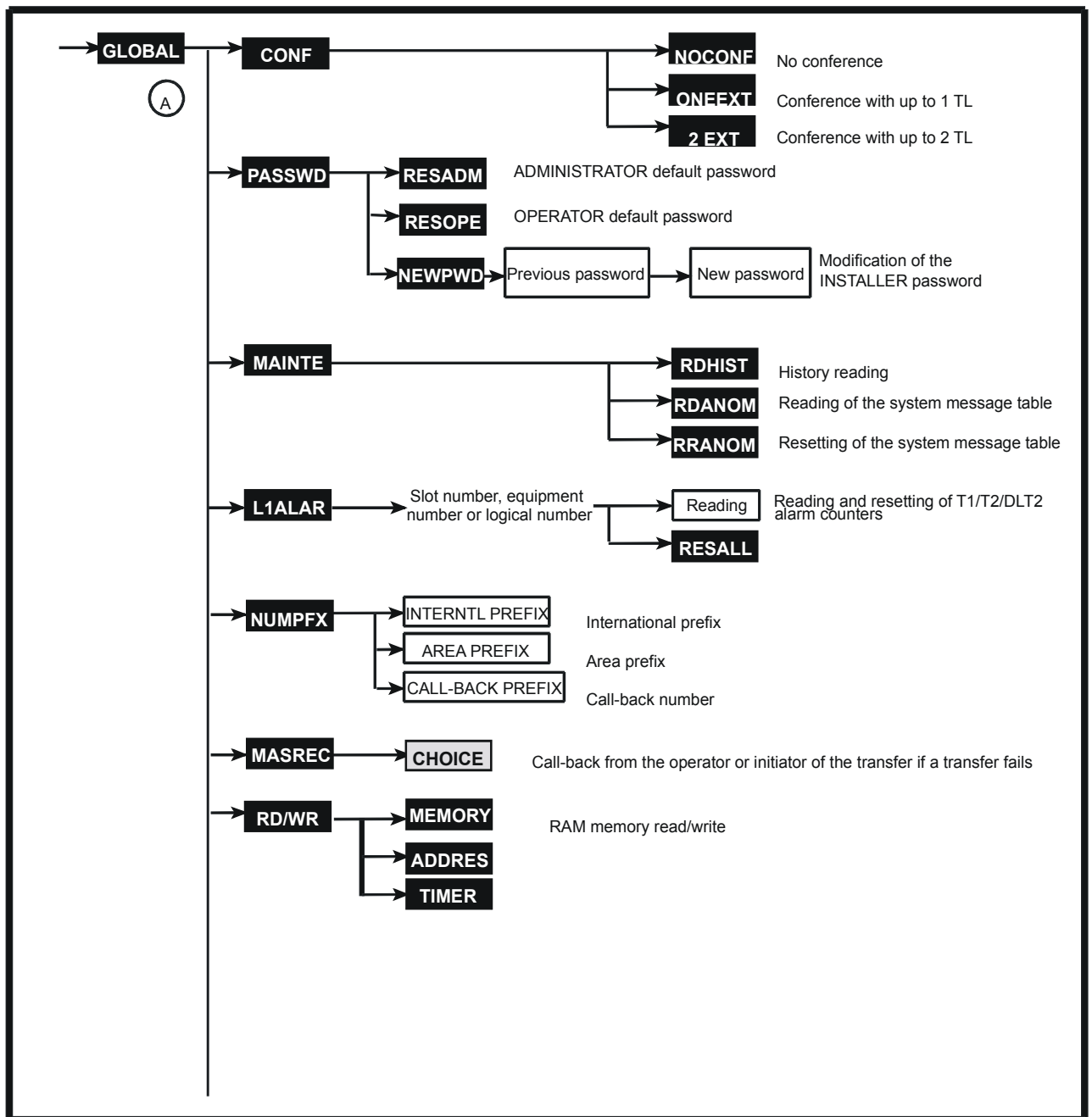
METERING COUNTERS

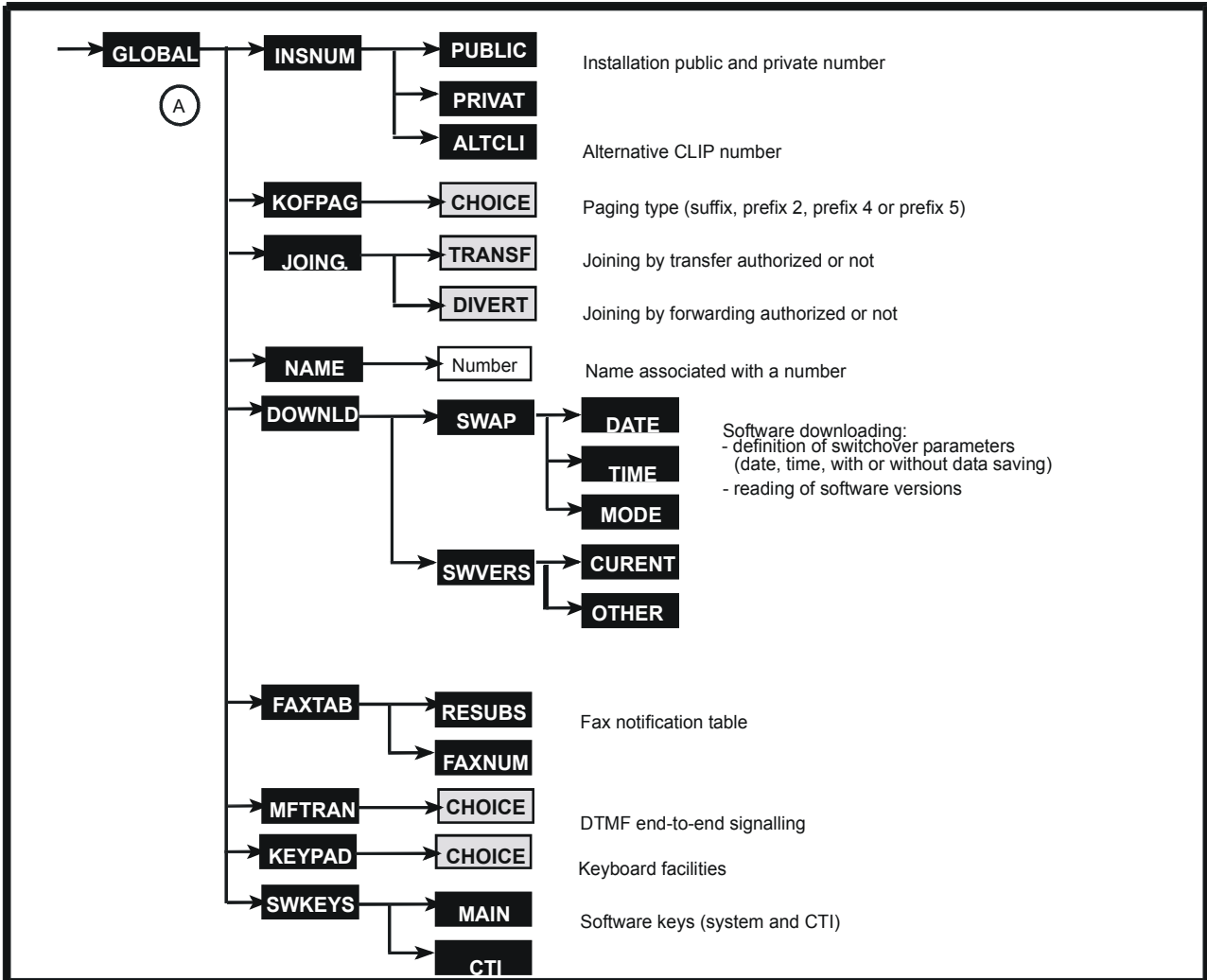
MMC STATION

GENERAL COMMANDS

File
4

This function is used for defining general elements which are common to the whole system.





Press **GLOBAL**.

CHOICE OF THE TYPE OF CONFERENCE - CONF (A)

After pressing **CONF** (A), choose the conference operating mode (no conference, with one external line, with 2 external lines); by default: with one external line.

PASSWORDS - PASSWD (A)

Press **PASSWD** (A).

Reinitializations of the passwords - RESADM and RESOPE

RESADM and **RESOPE** make it possible to return to the default password required for entering the ADMINISTRATOR and OPERATOR sessions.

MMC STATION

GENERAL COMMANDS

Modification of the Installer password - NEWPWD

NEWPWD makes it possible to change the INSTALLER password.

Enter the current password (8 characters).

Enter the new password (8 characters).

Confirm the password by entering it a second time.

Notas :

In the Administrator session, only the password of the current sessions can be modified, that of a lower level may be reinitialized.

HISTORY AND EQUIPMENT MESSAGES - MAINT A

Press **MAINT** A.

RDHIST makes it possible to read the table of historic messages.

RDANOM makes it possible to read the equipment messages.

RRANOM makes it possible to reset the system message table.

Notas :

For more details regarding the messages, refer to the Maintenance guide.

T1/T2/DLT2 ALARM COUNTERS- L1ALAR A

L1ALAR A makes it possible to read and reset the T1/T2/DLT2 alarm counters. Select the link (slot number + equipment number or logical number).

- NOS: NO Signal indication
- RRA: Receive Remote Alarm
- AIS: Alarm Indication Signal
- LOS: Loss of Synchronization
- FEC: Error rate
- LV1: Level 1 unavailable
- LV2: Level 2 unavailable

RESALL makes it possible to reset all the counters.

DIALLING PREFIXES - NUMPFX

Press **NUMPFX** A.

1st display: enter the international prefix, validate.

2nd display: enter the area prefix, validate.

3rd display: enter the call back prefix (4 digits max, number of trunk group used to make an outgoing call from the directory of callers), validate.

REACTION ON TRANSFER FAILURE - MASREC

Press **MASREC** **A**.

By pressing successively on **CHOICE**, you can choose the destination station to which the call will be routed during a transfer failure: ATTENDANT RECALL or MASTER RECALL (initiator of the transfer).

READ/WRITE IN MEMORY - RD/WR

RD/WR **A** makes it possible to read the contents of the system RAM memory noteworthy addresses. Modification of these contents makes it possible to parameterize certain particular system operations.

Entering a value at the wrong address may result in deterioration of system operation.

Write in memory - MEMORY

MEMEM makes it possible to modify the value of a noteworthy address. Enter the address (8 characters maximum) then validate.

Softkeys A, B, C, D, E and F are used to enter the hexadecimal noteworthy address.

Read memory (except timers and maintenance and debug addresses) - ADDRESS

CMADR makes it possible to read the contents of the system noteworthy addresses, except for the addresses which concern timers and maintenance and debug features.

GOTO makes it possible to position yourself on any index.

Reading the timers - TIMER

CMTIM makes it possible to read the contents of the noteworthy addresses concerning the system timers.

INSTALLATION NUMBERS - INSNUM

INSNUM **A** makes it possible to define the Alternative CLIP number and the public and private numbers of the installation.

PUBLIC : number up to 20 digits max, separators * not included; the * character separates the different fields: country indication, area number (optional field depending on country), PABX number. The size of the field depends on the country.

PRIVAT : number up to 10 digits max. without separators.

MMC STATION

GENERAL COMMANDS

ALTCN : Alternative CLIP number (20 digits max.); this number, if configured, is sent to the ISDN correspondent on an outgoing call in place of the installation number + DDI number of the calling party.

KIND OF PAGING - KOPFAG

Press **KOPFAG** **A**.

CHOICE : by successively pressing this key, you can define the operating mode for the paging:

- suffix: paging connected to a trunk line interface; selective paging.
- prefix 2
- prefix 4: paging connected to a Z station interface; general paging
- prefix 5

JOINING - JOING.

Press **JOING.** **A**.

TRANSF : by successively pressing this key, you can authorize or inhibit joining by transfer (transfer ext - ext).

DIVERT : by successively pressing this key, you can define the type of external forwarding: Joining or Re-routing.

DIRECTORY - NAME **A**

NAME **A** makes it possible to display all the names corresponding to a given number in the numbering plan, with the possibility of modifying these names.

MODIFY and **ADD** make it possible to modify/add a name; enter the user name (16 characters maximum) as "surname-space-first name" using the alphabetic keypad or the station's dialling keypad which will have automatically switched to "letters" mode.

DOWNLOADING - DOWNLD

Press **DOWNLD** (A).

SWAP makes it possible to configure the date, the time and the software switchover mode:

DATE : date of switchover

TIME : time of switchover

MODE : switchover mode; by successively pressing on **CHOICE**, define the switchover operating mode:

- normal with data saving
- normal without data saving
- forced with data saving (no restoration of the old version in the case of a transfer failure).

SWVERS makes it possible to read the software references of the CPU board:

CURRENT : current CPU software reference

OTHER : new CPU software reference

FAX NOTIFICATION TABLE - FAXTAB

This 30-entry table defines the relationships between the user numbers to be notified by a message in an incoming fax which is intended for them and the number of the receiving fax machine.

Press **FAXTAB** (A).

RESUBS makes it possible to define the number of the station to be called (sending a message saying that a fax has arrived).

FAXNUM makes it possible to define the number of the fax machine concerned.

DTMF END-TO-END SIGNALLING - MFTRAN

Press **MFTRAN** (A).

CHOICE : by successively pressing this key, you can define whether the DTMF end-to-end signalling is applied globally for all users, for no user or whether the passage in DTMF end-to-end signalling is carried out individually for the stations.

KEYBOARD FACILITIES - KEYPAD

Press **KEYPAD** .

CHOICE : by successively pressing this key, define whether the “Keyboard facilities” feature is activated or not in the system. For further information, refer to the “Supplementary Services” of the “Telephone services” section.

SOFTWARE KEYS - SWKEYS

Press **SWKEYS** .

MAIN makes it possible to configure the system software license (42 to 120 characters).

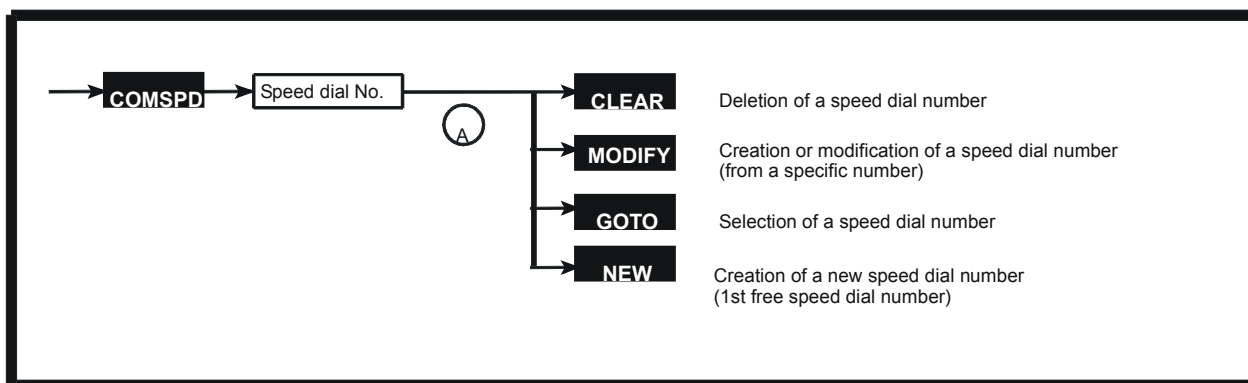
CTI makes it possible to configure the CTI software license (17 to 161 characters).

COLLECTIVE SPEED DIAL NUMBERS

File
5

The system makes it possible to create a general directory of 2000 numbers.

Each number can have 22 digits (trunk group number included).



Press **COMSPD**.

CLEAR makes it possible to delete the programming of a specific speed dial number.

MODIFY after pressing this key, enter the call recipient's name and validate; then enter the public number preceded by the trunk group number and validate.

Nota : A "pause" (character !) or an "MF forcing" (character /) can be entered in the public number entry screen using the alphanumeric keyboard.

GOTO provides direct access to a specific speed dial number; enter the call recipient's name or press the **NUMBER** key to provide access via the speed dial number, and then validate.

NEW after this key is pressed, the first free entry in the directory is displayed; the procedure is then identical to the procedure provided by the **MODIFY** key.



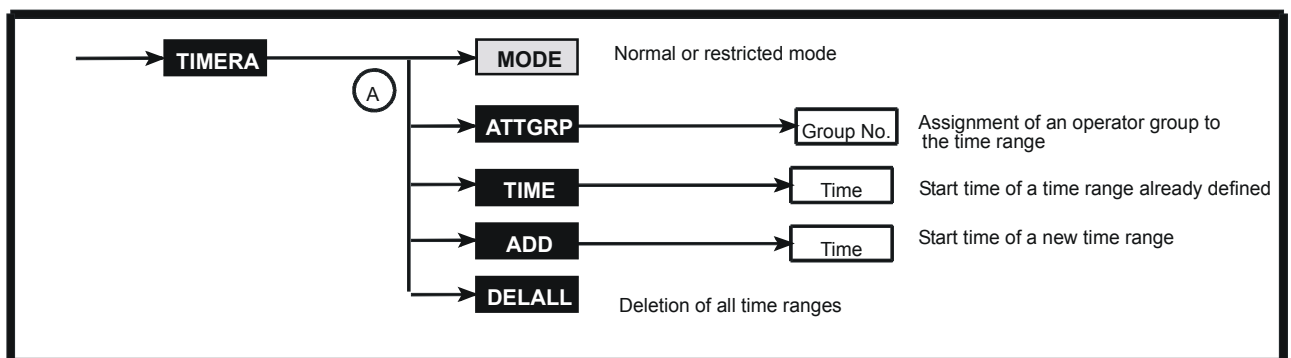
COLLECTIVE SPEED DIAL NUMBERS

MMC STATION

TIME RANGES

File
6

This function is used for dividing a day's 24 hours into a maximum of 7 time ranges defined by the starting time. Each range can be in normal or restricted mode. A group of a maximum of 8 operator stations can be assigned to each time range. At least one time range must be defined in the system.



Press **TIMERA**.

MODE (A) : by successively pressing this key, you can choose the desired operating mode: normal mode or restricted mode.

ATTGRP (A) makes it possible to state the operator group number (1 to 8) assigned to the time range concerned.

TIME (A) makes it possible to enter the start time of the time range.

ADD (A) makes it possible to add a new time range (if less than 7).

DELALL (A) makes it possible to delete all time ranges.



TIME RANGES

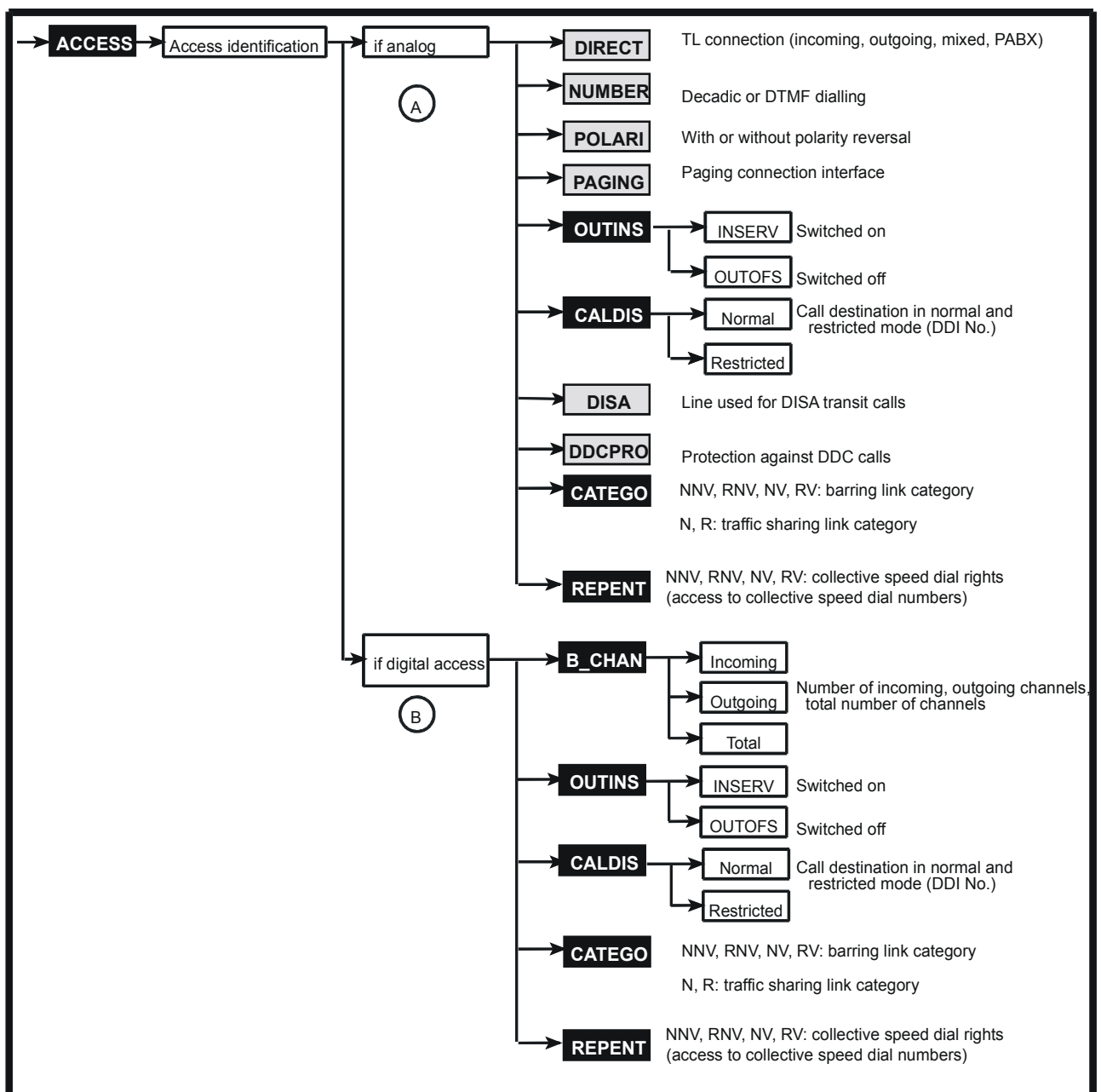
MMC STATION



ANALOG LINES AND DIGITAL ACCESSES

File
7

This function is used to define the characteristics of the analog lines (possibility provided from version R1.1 onwards) and T0/T2/DLT2 digital accesses.



Press **ACCESS**.

Enter the data necessary for identifying the access and validate:

Identification of interfaces:

- SLOT : slot number: 1 to 8 (basic module), 11 to 18 (extension module 1), 21 to 28 (extension module 2)
- EQUIP : equipment number: 1 to 8

ANALOG LINES (from version R1.1 onwards)

DIRECT **A** : by successively pressing this key, you can display the desired line connection mode:

- PBX : line behind PABX
- INC : incoming line
- OUT : outgoing line
- MIX : mixed line

NUMBER **A** : by successively pressing this key, you can display the desired dialling mode:

- DE : decadic dialling
- MF : MF dialling
- NO : no dialling

POLARI **A** : by successively pressing this key, you can display the desired characteristic:

- YES : with polarity reversal
- NO : without polarity reversal

PAGING **A** : by successively pressing this key, you can display the desired characteristic:

- YES : interface for connection of a paging device
- NO : TL interface

OUTINS **A** makes it possible to read the current access status: In Service, Out of Service, Physical OOS/ Logical OOS or Physical OOS/Logical IS.

Choosing INSERT + OK sets the access to LOGICAL IN SERVICE.

Choosing OUTOFS + OK sets the access to PHYSICAL OUT OF SERVICE/LOGICAL OUT OF SERVICE.

A **CALDIS** **A** : enter the DDI number of the destination station or hunting group for calls in normal mode. A second similar display is presented indicating the destination for calls in restricted mode.

DISA **A** : by successively pressing this key, state whether the line can be used for DISA calls or not.

MMC STATION

**ANALOG LINES AND DIGITAL
ACCESSES**

DDCPRO **A** : by successively pressing this key, it is possible to accept or refuse DDC calls when this line is used for a station external forwarding.

A CATEGO **A** makes it possible to define barring and traffic sharing link categories for each station.

NNV : barring link category for data communications in normal mode

RNV : barring link category for data communications in restricted mode

NV : barring link category for voice communications in normal mode

RV : barring link category for voice communications in restricted mode

N : traffic sharing link category in normal mode

R : traffic sharing link category in restricted mode

Enter a value from 1 to 16 to assign to the category concerned then press **APPLY**.

A REPENT **A** makes it possible to define the collective speed dial numbers which can be transmitted on each trunk. For example, a trunk with category 10100000 may be used to transmit speed dial numbers in categories 1 and 3.

NV : speed dial rights link category for voice communications in normal mode

NNV : speed dial rights link category for data communications in normal mode

RV : speed dial rights link category for voice communications in restricted mode

RNV : speed dial rights link category for data communications in restricted mode

FEATUR : by successively pressing this key, you can define whether the station concerned has the right (1) or not (0) to access the chosen directory list (**NV**, **NNV**, **RV**, **RNV**), then validate.

DIGITAL ACCESSES

B CHAN **(B)** : for T0/T2/DLT2 accesses, state the number of incoming (INC) or outgoing (OUT) channels as well as the total number of channels (value non modifiable for T0 access), then validate; the number of mixed (MIX) channels is deduced from the other data.

OUTINS **(B)** makes it possible to read the current access status: In Service, Out of Service, Physical OOS/Logical OOS or Physical OOS/Logical IS.

Choosing INSERTV + OK sets the access to LOGICAL IN SERVICE.

Choosing OUTOFS + OK sets the access to PHYSICAL OUT OF SERVICE/LOGICAL OUT OF SERVICE.

A CALDIS **(B)** : enter the DDI number of the destination station or hunting group for calls in normal mode. A second similar display is presented indicating the destination for calls in restricted mode.

A CATEGO **(A)** makes it possible to define barring and traffic sharing link categories for each access.

NNV : barring link category for data communications in normal mode

RNV : barring link category for data communications in restricted mode

NV : barring link category for voice communications in normal mode

RV : barring link category for voice communications in restricted mode

N : traffic sharing link category in normal mode

R : traffic sharing link category in restricted mode

Enter a value from 1 to 16 to assign to the category concerned then validate.

A REPERT **(A)** makes it possible to define the collective speed dial numbers which can be transmitted on each access. For example, an access with category 10100000 may be used to transmit speed dial numbers in the speed dial rights and traffic sharing categories.

NV : speed dial rights link category for voice communications in normal mode

NNV : speed dial rights link category for data communications in normal mode

RV : speed dial rights link category for voice communications in restricted mode

RNV : speed dial rights link category for data communications in restricted mode

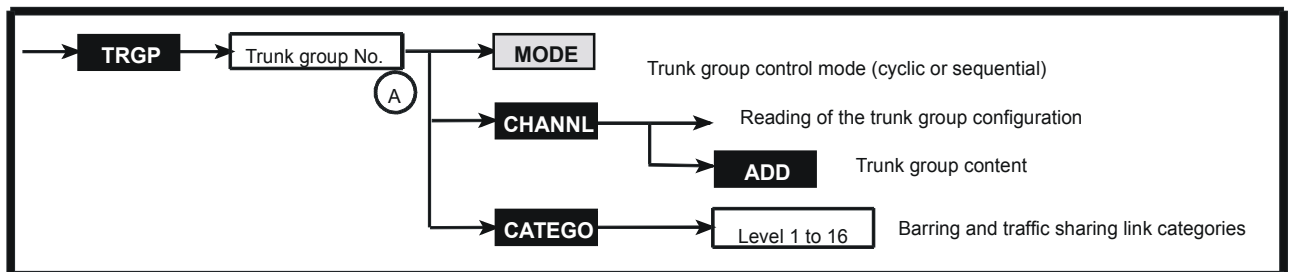
FEATUR : by successively pressing this key, you can define whether the station concerned has the right (1) or not (0) to access the chosen directory list (NV, NNV, RV, RNV), then validate.

TRUNK GROUPS

File
8

It is possible to create 120 trunk groups with up to 120 lines in each trunk group.

Each trunk group is allocated barring and traffic sharing link categories and a control mode (cyclic or sequential).



Press **TRGP**.

Enter the trunk group number (1 to 120), validate.

TRUNK GROUP CONTROL MODE - MODE

MODE (A) : by successively pressing on this key, you can choose the trunk group control mode: sequential (SEQ) or cyclic (CYC).

TRUNK GROUP CONFIGURATION - CHANNL

CHANNL (A) grants access to the trunk group configuration window.

ADD makes it possible to add a line (or an access) to the trunk group. Enter the data necessary for identification of the trunk group and validate:

Identification of interfaces:

- SLOT : slot number: 1 to 8 (basic module), 11 to 18 (extension module 1), 21 to 28 (extension module 2)
- EQUIP : equipment number: 1 to 8

BARRING AND TRAFFIC SHARING CATEGORIES - CATEGO

CATEGO ^(A) makes it possible to define the barring and traffic sharing link categories for each trunk:

- NNV : barring link category for data communications in normal mode
- RNV : barring link category for data communications in restricted mode
- NV : barring link category for voice communications in normal mode
- RV : barring link category for voice communications in restricted mode
- N : traffic sharing link category in normal mode
- R : traffic sharing link category in restricted mode

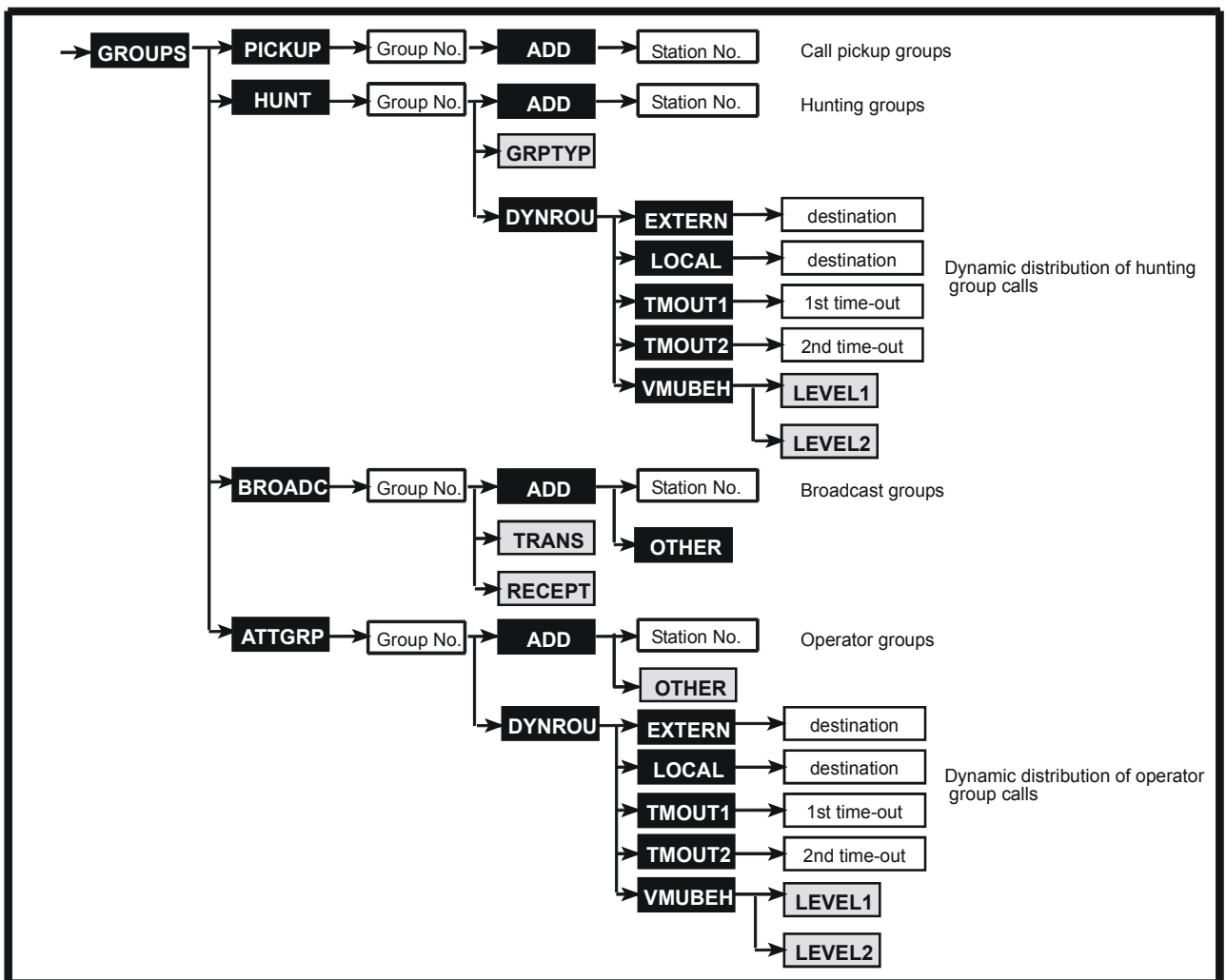
Enter a value from 1 to 16 to assign to the category concerned then validate.

GROUPS

File
9


This function is used to create:

- 50 hunting, call pickup or broadcast groups with up to 32 stations in each group.
- 8 groups of operator stations with up to 8 stations in each group.




Press **GRPPIC**.

CALL PICKUP GROUPS - PICKUP

After pressing **PICKUP** , enter the group index and validate. The directory number of the first station in the group is displayed.

ADD makes it possible to add a station directory number to the group. Enter the number of the station to be added to the group.

HUNTING GROUPS - HUNT

After pressing **HUNT** , enter the hunting group directory number. The directory number of the first station in the group is displayed.

ADD makes it possible to add a station directory number to the group. Enter the number of the station to be added to the group.

GRPTYP : by successively pressing this key, you can choose the type of group: parallel, sequential or cyclic then validate.

DYNROT makes it possible to define the dynamic routing mechanisms for hunting group calls:

- **EXTERN** and **LOCAL** make it possible to define whether the dynamic distribution (time-outs T1 and T2, destinations) criteria for each type of call (external or local) are active or not:
 - **NUMBER** makes it possible to define a destination station (or hunting group) or a collective speed dial number for the dynamic routing in the case where the call has not been answered after a time-out TP1 (12 seconds by default).
 - **TP1** : by successively pressing this key, you can define whether the time-out 1 is active (TP1) or inactive (tp1).
 - **TP2** : by successively pressing this key, you can define whether the time-out 2 is active (TP2) or inactive (tp2).
- **OPERAT** or **GENBEL** : by successively pressing this key, define whether the system should route the call to the operator and/or the general bell after the non-response time-out TP2 has lapsed (active = ATTD or GBEL; inactive = attd or gbel).
- **TMOUT1** and **TMOUT2** make it possible to define the time-outs in tenths of a second. The default value is 12 seconds.
- **VMUBER** makes it possible to define the role of the office communicator when it is used in a level 1 or 2 dynamic routing; by successively pressing **LEVEL1** or **LEVEL2**, you can choose between "Auto-sec" or "Mailbox".

BROADCAST GROUPS - BROADCAST

After pressing **BROADCAST** ^(A), enter the broadcast group directory number. The directory number of the first station in the group is displayed.

ADD makes it possible to add a station directory number to the group. Enter the number of the station to be added to the group; press **OTHER** to add the general bell to the group.

TRANS : by successively pressing this key, you can choose whether the station concerned can transmit a broadcast call.

RECEPT : by successively pressing this key, you can choose whether the station concerned is subjected to a broadcast call.

Notas : In a group with an external loudspeaker, the following rights must be observed: for the stations: transmission = YES, reception = NO; for the loudspeaker: transmission = NO, reception = YES

OPERATOR STATION GROUP - ATTGRP

After pressing **ATTGRP** ^(A), enter the group index and validate. The directory number of the first station in the group is displayed.

ADD makes it possible to add a station directory number to the group. Enter the number of the station to be added to the group.

OTHER proposes another destination; by successively pressing this key, you can choose the destination (General bell, Welcome 1 to 8) then validate.

DYNROU makes it possible to define the dynamic routing mechanisms for operator station group calls:

- **EXTERN** and **LOCAL** make it possible to define whether the dynamic distribution (time-outs T1 and T2, destinations) criteria for each type of call (external or local) are active or not:
 - **NUMBER** makes it possible to define a destination station (or hunting group) or a collective speed dial number for the dynamic routing in the case where the call has not been answered after a time-out TP1 (12 seconds by default).
 - **TP1** : by successively pressing this key, you can define whether the time-out 1 is active (TP1) or inactive (tp1).
 - **TP2** : by successively pressing this key, you can define whether the time-out 2 is active (TP2) or inactive (tp2).
- **OPERAT** or **GENBEL** : by successively pressing this key, define whether the system should route the call to the operator and/or the general bell after the non-response time-out TP2 has lapsed (active = ATTD or GBEL; inactive = attd or gbel).

GROUPS

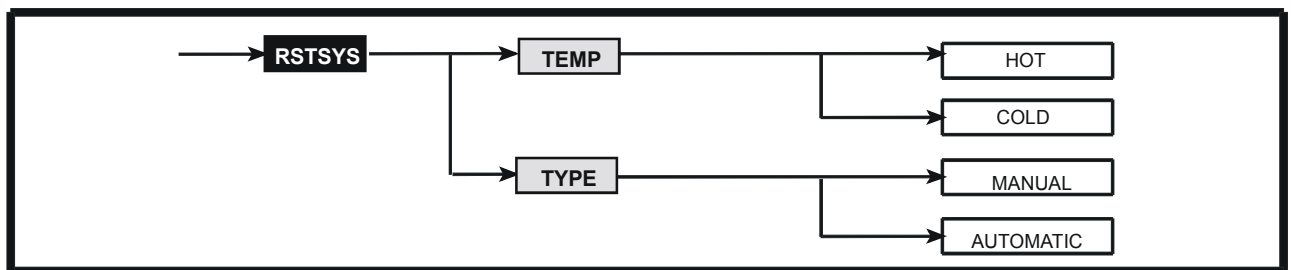
MMC STATION

- **TMOUT1** and **TMOUT2** make it possible to define the time-outs in tenths of a second. The default value is 12 seconds.
- **VMURFFH** makes it possible to define the role of the office communicator when it is used in a level 1 or 2 dynamic routing; by successively pressing **LEVEL1** or **LEVEL2**, you can choose between "Auto-sec" or "Mailbox".

SYSTEM RESET

File
10

This function is used for defining the conditions of the next system reset (warm, cold, manual or automatic).



Press **RSTSYS**.

TEMP : by successively pressing this key, you can display the type of reset to be carried out:

- warm reset: simple reset.
- cold reset: reset + loss of client configuration (return to default configuration).

TYPE : by successively pressing this key, you can display the condition for the next reset: manual or automatic.



SYSTEM RESET

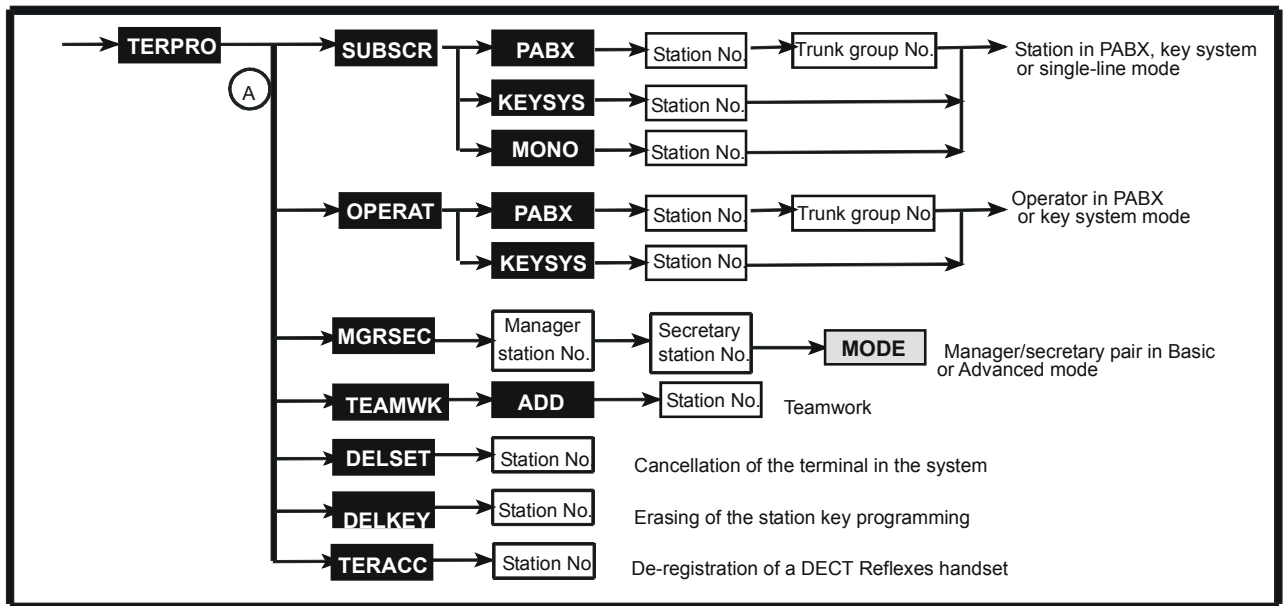
MMC STATION

TERMINAL PROFILES

File
11

This function is used for assigning a terminal profile to the stations, in the following order:

- assignment of a basic profile:
 - key system mode (operator and stations)
 - PABX mode (operator and stations)
 - single line (stations only)
- assignment of an advanced profile:
 - manager/secretary
 - teamwork



TERMINAL PROFILES AVAILABLE ACCORDING TO THE TYPE OF STATION

Station type	BASIC PROFILE			ADVANCED PROFILE		
	Single line	Multiline		Working group	Manager/Secretary couple	
		PABX	Key system		Manager	Secretary
Stations with display		YES	YES	YES	YES	YES
Multiline stations without display	Except 4003	YES	YES	YES		YES
Single line stations	YES	Except 4003	Except 4003			
Z Option	YES					

Press **TERPRO**.

STATION PROFILE - SUBSCR

After pressing **SUBSCR** (A), choose the profile to be assigned: single line, key system or PABX.

Enter the station directory number; for the PABX mode, state the trunk group number associated with the RSB keys and validate. To load the selected profile, validate.

OPERATOR PROFILE - OPERAT

After pressing **OPERAT** (A), choose the profile to be assigned: key system or PABX.

Enter the operator station directory number; for the PABX mode, state the trunk group number associated to the RSB keys and validate. To load the selected profile, validate.

MANAGER-SECRETARY PROFILES - MGRSEC

After pressing **MGRSEC** ^(A), enter the manager station's directory number followed by that of the secretary station.

MODE : by successively pressing this key, define the mode for the secretary station: **ADVANCED** or **BASIC**, then validate. After choosing **Basic**, each station in the pair has:

- A **Filter** key for activating or deactivating the filtering of manager station calls.
- An **RSL** key which allows both members of the couple to call the other member directly.

If the secretary station is to monitor the manager stations resources, choose **Advanced** mode instead of **Basic** mode.

To cancel the manager-secretary configuration, cancel the programmed **Filter** key and the **RSL** resource key on each station of the filtering pair.

TEAMWORK PROFILE - TEAMWK

Press **TEAMWK** ^(A).

ADD makes it possible to add a member to the group. Enter the station directory number. Validate. The display then states the number of station resources.

CANCELLATION OF DATA - DELSET AND DELKEY

DELSET ^(A) after a logical switchoff, makes it possible to erase the data from the station (station type, appointment reminders, messages, forwardings, etc.). Enter the station directory number. Validating erases the data from the station.

DELKEY ^(A) after a logical switchoff, makes it possible to cancel all programmings of the keys (MMC station or MMC PM5) so that a new profile may be loaded. Enter the station directory number. Validating cancels all key programming.

REMINDER OF FUNCTIONS AVAILABLE WITH THE RESOURCE KEY

A resource key is a line key that manages only one incoming/outgoing, local or external communication. Resource keys can be specialized or not. If a resource key is not specialized, that key can handle all types of call:

- mixed resource key (RGM): handles local and/or external calls, whether incoming or outgoing.
- outgoing resource key (RGO): handles local and/or external outgoing calls.
- incoming resource key (RGI): handles local and/or external incoming calls.

If the key is specialized, that key handles a particular type of call:

- resource key dedicated to external access (RSP): handles the calls coming from or going to that access.
- resource key specialized in destination (RSD):
 - dedicated to a directory number, handles local calls for this number.
 - dedicated to a DDI number, handles incoming calls for this number.
 - associated to a trunk number, handles the outgoing calls on this trunk.
- resource key dedicated to a station (RSL): handles the calls coming from and going to a particular station
- resource key dedicated to a trunk (RSB): for making external outgoing calls via a particular trunk and receiving all network calls.

TERMINAL PROFILE IN KEY SYSTEM MODE

This profile consists of:

- 2 mixed resource keys (RGM) for local and external calls
- as many network monitoring, physical resource keys (RSP) as trunks in the system.

TERMINAL PROFILE IN PABX MODE

This profile consists of:

- 2 mixed resource keys (RGM) for local and external calls
- 2 RSB keys for external calls

TERMINAL PROFILE IN SINGLE LINE MODE

This profile consists of 3 virtual keys (RGM) for local and external calls.

TEAMWORK PROFILE

assigning this profile gives stations:

- n-1 RSL keys ("n" being the number of members in the group)
- a selective ringing monitoring key
- a group call pickup key

MANAGER/SECRETARY TERMINAL PROFILES

Mode	MANAGER	SECRETARY
Basic	<ul style="list-style-type: none"> - key for direct call from the secretary station - FILTER key 	<ul style="list-style-type: none"> - key for direct call from the secretary station - FILTER key
Advanced	<ul style="list-style-type: none"> - key for direct call from the secretary station - FILTER key 	<ul style="list-style-type: none"> - key for direct call from the manager station - FILTER key - monitoring keys for all manager's resources

DE-RECORDING OF DECT REFLEXES STATIONS - TERACC

This function makes it possible to de-record a DECT Reflexes station.

Enter its directory number, erase it and then confirm the de-recording.



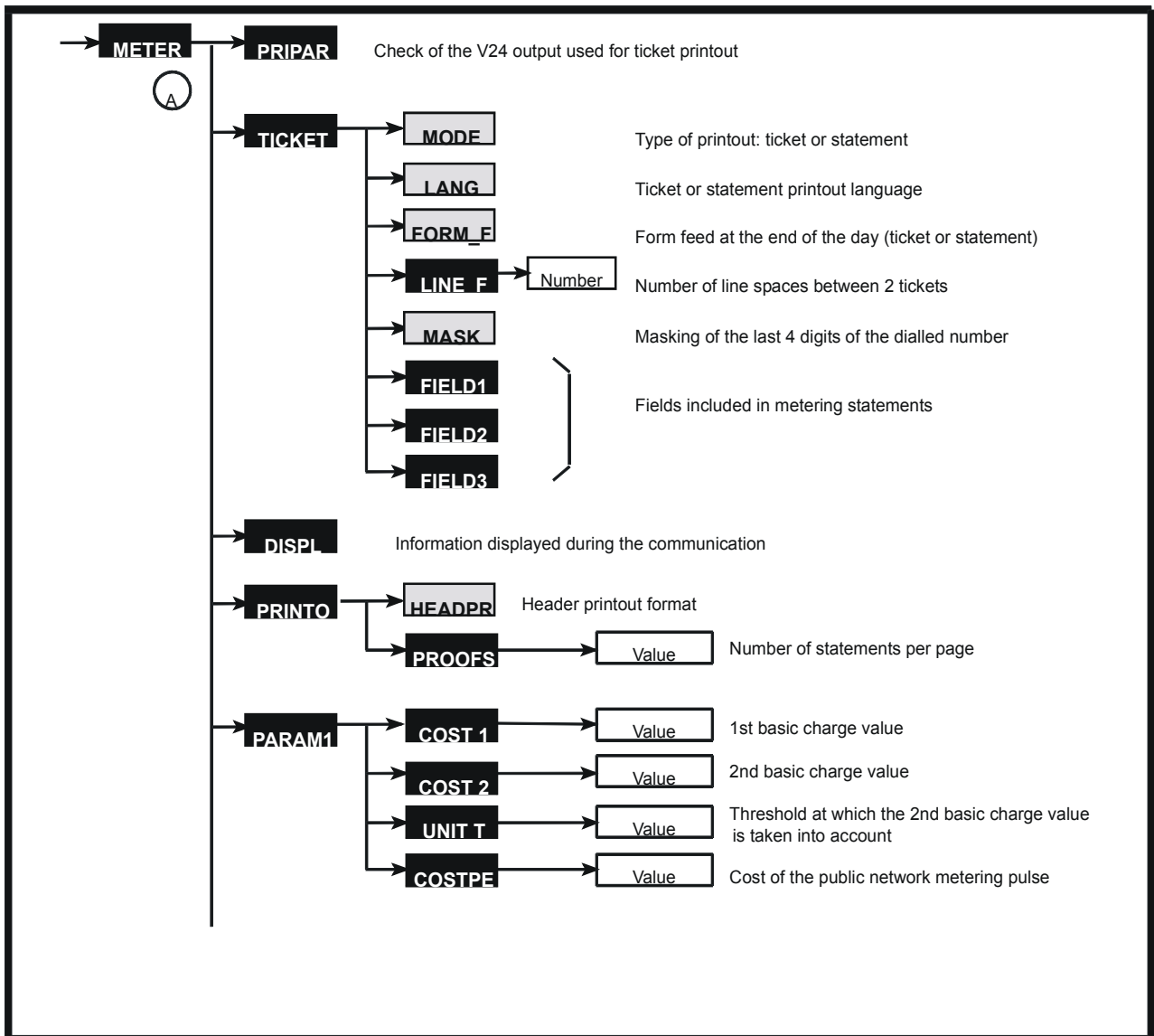
TERMINAL PROFILES

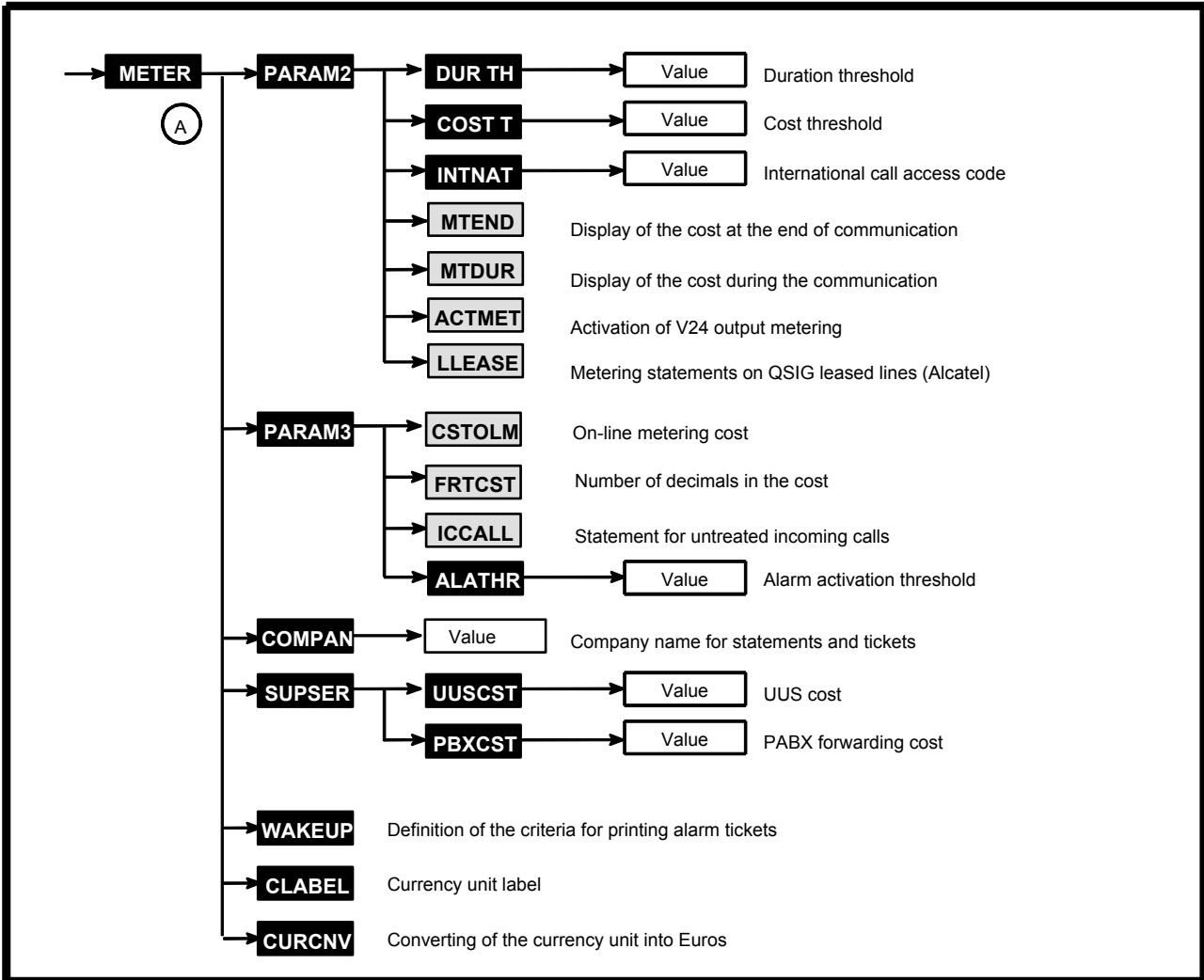
MMC STATION

METERING CONFIGURATION

File
12

This function defines all the parameters related to the pulse metering operation.





Press **METER**.

CHARACTERISTICS OF THE V24 METERING - PRIPAR

PRIPAR (A) makes it possible to check the V24 output used to print metering statements/tickets.

DEFINITION OF THE PRINTOUT TYPE AND FORMAT - TICKET

Press **TICKET** .

Various parameters - MODE, LANG, FORM_F, LINE_F, MASK

MODE : by successively pressing this key, define the type of printout: TICKET, LISTING or NETWORK.

LANG : by successively pressing this key, define the language for the ticket and statement printouts.

FORM_F : by successively pressing this key, define whether a form feed will (YES) or will not (NO) be performed at the end of the day for the printing of statements.

LINE_F : after pressing this key, state the number of lines you wish to have between each metering ticket.

MASK : by successively pressing this key, define whether the last 4 digits of the number dialled are to be masked (YES) or not (NO) in the printouts of statements and tickets.

Fields to be shown on a pulse metering statement - FIELD1, FIELD2 and FIELD3

FIELD1, **FIELD2** and **FIELD3** make it possible to define the fields which are to be shown on the metering statements.

o Field 1: **FIELD1**

SUB : station number
 TYP : call type
 TRK : trunk number
 DAT : date
 TIM : time
 DUR : call duration
 TAX : number of metering units
 SER : remote services

o Field 2: **FIELD2**

FAC : supplementary services
 DNU : dialled number
 DMO : dialling mode
 RIN : ringing duration
 CST : call cost
 ACC : account code
 SUN : printout of user name or business code or no printout

o Field 3: **FIELD3**

IUS : initial user (charged user)
 NOD : node number (modifiable only if MODE = NETWORK)
 CAR : operator
 SU8 : 8-digit user identification
 TR4 : 4-digit trunk identification

The selected field flashes.

FEATUR : by successively pressing this key, you can choose whether the flashing field must be included (label in capitals) or not (label in lower case letters) on the statement.

INFORMATION DISPLAYED ON A STATION DURING A CALL - DISPL

After pressing **DISPL** **A**, by successively pressing **DISPL**, you can choose the type of information to be displayed on the stations during a communication: duration (DISPLAY DURATION), units + duration (DISPLAY UNITS) or cost + duration (DISPLAY COST).

PRINTOUT FORMATS (HEADER AND NUMBER OF STATEMENTS/PAGE) - PRINTO **A**

After pressing **PRINTO** **A**, by successively pressing **HEADPR**, you can choose the type of printout for the header: on each page (EP), on the first page (FP) or no header printout (NO).

PROOFS makes it possible to define the number of statements (0 to 99) per page.

PARAMETERS CONCERNING THE COST OF A CALL - PARAM1 **A**

Press **PARAM1** **A**.

COST1: first basic charge value

COST2: second basic charge value

UNITT: threshold where the second basic charge value is taken into account (number of pulse meters)

COSTPE: cost of the meter pulse sent by the public exchange (this value is used to calculate the number of meter pulses to be displayed during or at the end of a call).

When choosing **COST1**, **COST2**, and **COSTPE**, state the value (value then decimal value).

When choosing **UNITT**, state the number of meter pulses after which the second basic charge value is taken into account.

THRESHOLD VALUES-V24 ON-LINE METERING - PARAM2 A

Press **PARAM2** A.

DURTH : state the duration threshold value (in minutes).

COSTT : state the threshold value (integer value then decimal value).

INTVAT : state the monitored business code.

MTEND : by successively pressing this key, you can choose whether the total cost is displayed at the end of the call (END) or not (end).

MYDUR : by successively pressing this key, you can choose whether the cost is to be displayed during the communication (DURC) or not (durc).

ACTMET : by successively pressing this key, you can choose whether the V24 metering is activated (TAX) or not (tax).

LEASE : by successively pressing this key, you can choose whether the pulse metering statements are to be printed (LEAS) or not (leas) on QSIG leased lines.

**ON-LINE METERING COST-NUMBER OF DECIMALS-ALARM THRESHOLD
- PARAM3 A**

Press **PARAM3** A.

CSTOLM : by successively pressing this key, you can choose the on-line metering cost (0 to 9 pulse meters).

FRTCST : by successively pressing this key, you can choose the number of decimals for the costs (0, 1 or 2).

ICCALL : by successively pressing this key, you can choose whether a statement is printed or not in the case of an untreated incoming call.

ALATHR : to define the percentage of statements stored before an alarm is activated (0 to 100, 0 = no alarm).

COMPANY NAME - COMPAN A

After pressing **COMPAN** A, enter the company name (16 alphanumeric characters maximum) shown on the statements and tickets and validate.

COST OF SUPPLEMENTARY SERVICES - SUPSER

Press **SUPSER** **A**.

UUSCST: cost of the user to user signalling (UUS)

PBXCST: cost of the PABX forwarding

For these 2 choices, state the value (value then decimal value).

PRINTOUT OF ALARM TICKETS - WAKEUP **A**

After pressing **WAKEUP** **A**, by successively pressing **FEATUR**, you can choose whether to validate the various printout criteria or not (a criterion is active when its label is displayed in capital letters on the first line of the display; if not, it is displayed in lower case letters):

ACT: alarm activated

CANC: alarm cancelled

FAIL: alarm aborted

ANSW: alarm answered

MONEY UNIT- CLABEL **A**

CLABEL **A** makes it possible to define the label for the present money unit used in the country and displays it on the stations.

CONVERTING THE MONEY UNIT - CURCNV **A**

Press **CURCNV** **A**.

This feature makes it possible to define the application methods for the change over to the Euro.

CLABEL : label displayed (Eur).

DATE : date of change over to Euro.

TIME : time of change over to Euro.

EXRATE : exchange rate of the Euro with the country's own money unit.

PARAM1 : cost of basic charge (COST 1 and COST 2); cost of charge sent by the public network (COSTPE); threshold of the basic charge's 2nd value (UNIT T).

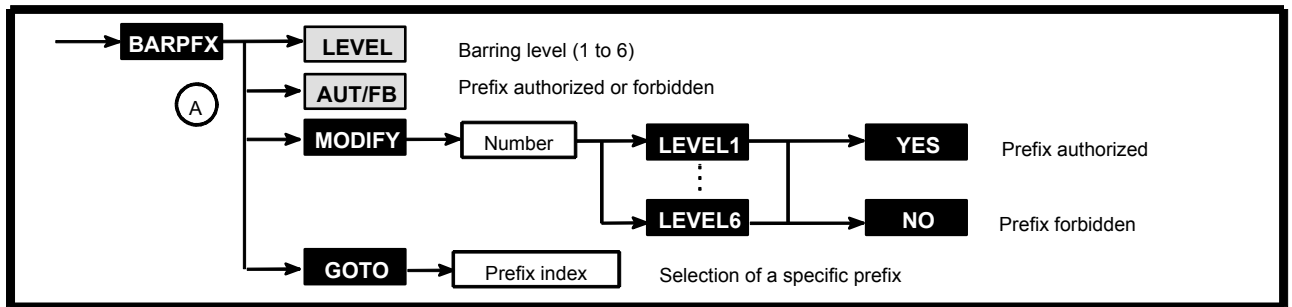
PARAM2 : cost of on-line metering and number of decimals.

SUPSER : cost of signalling from user to user and PABX forwarding.

BARRING PREFIXES

File
13

This function is used for defining a maximum of 100 barring prefixes.



Press **BARPFX**.

LEVEL : by successively pressing this key, you can change the prefix barring level.

AUT/FB : by successively pressing this key, you can change the type: FORBIDDEN or AUTHORIZED prefix.

After pressing **MODIFY** (A), enter the prefix value (10 digits max.) and validate. The following possibilities are offered:

- Choose the barring level (**LEVEL1** to **LEVEL6**).
- Choose the type of prefix: press **YES** for an authorized prefix or **NO** for a forbidden prefix.

GOTO makes it possible to position yourself at any position in the barring prefixes table.



BARRING PREFIXES

MMC STATION

PARAMETER DUPLICATION

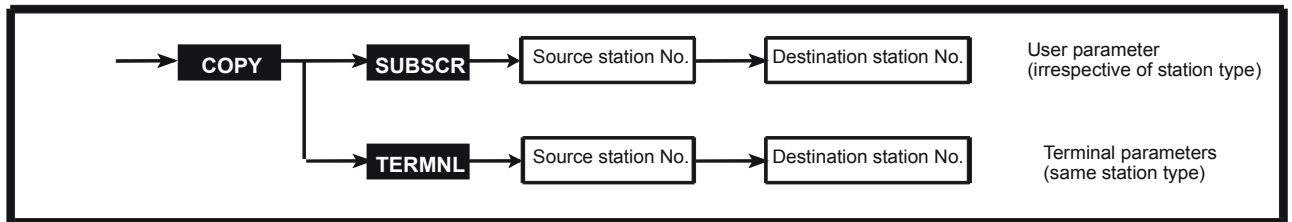
File
14

This function is used for assigning the parameters of a given station to other stations:

- duplicating user parameters (dynamic forwarding, metering profile, ...): the source and destination stations can be of different types.
- duplicating terminal parameters (keys); the source and destination stations must be of the same type.

Notas :

The personal speed dial numbers, RSL and RSD keys cannot be duplicated from one station to another.



Press **COPY**.

Choose the duplication type (**SUBSCR** or **TERMNL**). Enter the source station directory number followed by that of the destination station.



PARAMETER DUPLICATION

MMC STATION

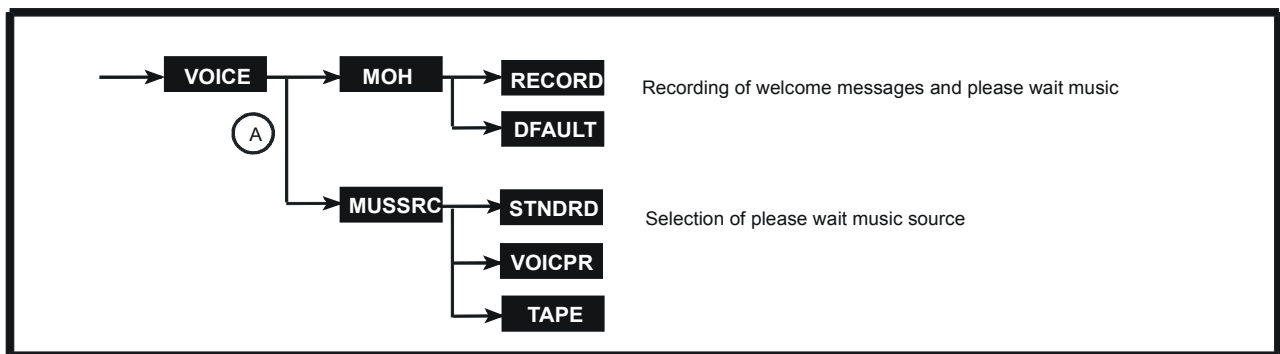


WELCOME AND PLEASE-WAIT MESSAGES

File
15

The please wait message music is subject to composer's rights. For further information, consult the appropriate body.

This function makes it possible to record welcome messages and define the source of the please-wait message.



Press **VOICE**.

RECORDING OF WELCOME MESSAGES - MOH A

MOH of A makes it possible to record 8 welcome messages and one please-wait message.

After selecting the type of message to be recorded, press **REGIST**.

Record the message using the station handset.

SPLIT makes it possible to stop the recording and then restart it by **CONTINI**. **STOP** lets you stop the recording.

DFAULT lets you return to the default welcome message.

LISTEN lets you listen to the recorded message.

EMITTING SOURCE OF THE PLEASE-WAIT MESSAGE - MUSSRC A

MUSSRC of A makes it possible to select the emitting source for the please wait message.

- **STNDRD** : default please-wait music (DEFAULT displayed on the first line of the display).
- **TAPE** : external please-wait music (EXTERN displayed on the first line of the display).
- **VOICPR** : customized please-wait music (CUSTO displayed on the first line of the display).



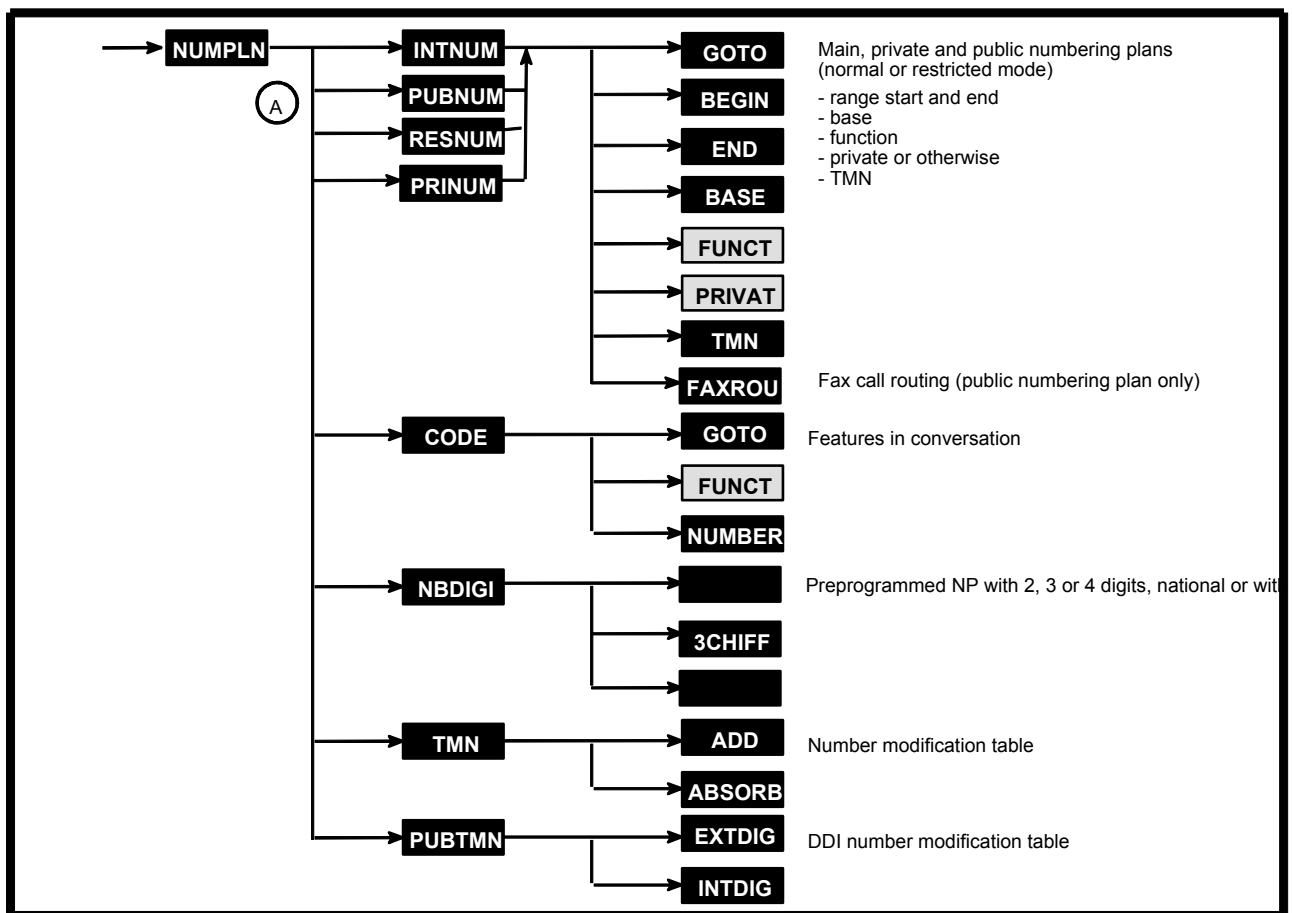
**WELCOME AND PLEASE-WAIT
MESSAGES**

MMC STATION

NUMBERING PLANS

File
16

This function is used for defining the codes associated to the features of the main numbering plan, the private numbering plan, the public numbering plan and the table of features in conversation.



Press **NUMPLN**.

NUMBERING PLANS - INTNUM, PUBNUM, RESNUM AND PRINUM

INTNUM grants access to the selected main numbering plan (99 ranges) for analysis of the dialling made on a terminal.

PUBNUM grants access to the public numbering plan in normal mode (99 ranges), **RESNUM** grants access to the public numbering plan in restricted mode (99 ranges); these plans are selected for analysis of the dialling received by the system via a T0/T2 access or to carry out call distribution (TL or T0/T2).

PRINUM grants access to the selected private numbering plan (36 ranges) for analysis of the dialling received by the system via a private line.

FUNCT lets you select a function from those offered.

DESIGNATION	Function	USE OF THE BASE	USE OF THE TMN
MTrG	Main trunk group seizure (private or not)	YES	YES (33)
Subsc	Station call (private or not)	YES	
STrG	Secondary trunk group seizure (private or not)	YES	YES (33)
Code	Collective speed dial numbers	YES	
Group	Group call	YES	
Broad	Broadcast group call	YES	
Prog	Switch to programming mode		
Pickp	Call pick-up	YES	
Rdial	Last number redial		
ProCo	Data connection protection against intrusion		
Forwd	Diversions	YES	
Attd	Operator call station		
PagS	Paging call answer		
Pagin	Answer to a general paging call		
PagP	Paging by prefix		
CClbk	Automatic call back on busy station cancellation		
Lock	Locking / Unlocking		
Mail	Text mail		
VMU	Voice mail unit LED lighting		
CVMU	Voice mail unit LED lighting off		
MTR	Metering reminder		
DESIGNATION	Function	USE OF THE BASE	USE OF THE TMN

MMC STATION

NUMBERING PLANS

Accou	Business account code for new outgoing call		
Disa	DISA Transit		
Appmt	Appointment reminder / Alarm		
CLoop	Loopback of dialling into current numbering plan		YES (1 to 32)
Main	Change of numbering plan (loopback of number in the main numbering plan)		YES (1 to 32)
VisAl	Temporary allocation of a DDI number to a room		
VisFr	Cancellation of the allocation of a DDI number to a room		
RoomS	Room status		
Replc	Station replacement		
Move	Station movement		
OwnVM	Mailbox call		
Audtx	Audiotex service DDI number	YES	

The VisAl, VisFr, Disa and Audtx functions are only provided in the public numbering plans (normal and restricted mode).

PRIVAT : by successively pressing this key, state whether the number is private or not; this parameter is only used for the Subsc, Main trunk groups and Secondary trunk groups functions.

TMMN makes it possible to enter the index (1 to 32) of the NMT table; enter 33 to retain the initial value (without modifications) for the Main trunk group and Secondary trunk group functions.

BEGIN makes it possible to enter the number which starts the range (0 to DDDD). The characters *, #, A, B, C, D are allowed in the fixed part of the range but not in the variable part (A00 to A99; 100 to 10B: incorrect).

END makes it possible to enter the number which ends the range (0 to DDDD).

BASE : used for working out the directory number. The base is included between 0 and 9999. For the functions which use the base, the calculation is done as follows: Directory number = Dialed number - Begin + Base

FAXROU followed by the destination Fax number: makes it possible to associate the user's DDI number with the Fax number to which incoming Fax calls must be routed. This function is only provided in the public numbering plan.

FEATURES IN CONVERSATION - CODE

These codes make it possible to access services during an established call.


Press **CODE** A.

NUMBER: makes it possible to enter the features in conversation value

FUNCT : makes it possible to select a function from those offered.

DESIGNATION	Function
PBX recall	Calibrated loopbreak
Canc enquiry	Enquiry call cancellation
Broker	Shuttle call
Callback	Automatic call back
Consult	Waiting call consultation
Conference	Conference
Intrusion	Intrusion on busy
Code paging	Paging
Resend MF	DTMF end-to-end signalling
Parking	Parking
Send MF num	Automatic switch DTMF end-to-end signalling and retransmission of this service access code
Doorphone	Open door
AllotN Cat 1 to 7	Allocation of line with barring category 1 to 7
AllotM Cat 1 to 7	Allocation of line with barring category 1 to 7 + Metering reminder
Mcid	Malicious call identification
DND override	Override Do not disturb
Conv record	Recording of conversations

Preprogrammed numbering plans - NBDIGI

NBDIGI  makes it possible to choose one of the preprogrammed numbering plans (2 to 4 digits, national or with *). Validate.

NUMBER MODIFICATION TABLE - TMN

TMN ^(A) makes it possible to define the modifications to be made to the incoming dialling. Position yourself at the beginning (index 1 to 32) of the table quoted by the main numbering plan function.

ADD : digits to be added (16 maximum).

ABSORB : number of digits to be deleted (4 maximum).

DDI NUMBER MODIFICATION TABLE - PUBTMN

PUBTMN ^(A) makes it possible to define the digits to be substituted before analysis by the DDI numbering plan (this function concerns DDI with more than 4 digits). Position yourself at the beginning (index 1 to 32) of the table quoted by the DDI numbering plan.

EXTDIG : digits to be deleted (16 maximum).

INTDIG : digits to be added (8 maximum).



NUMBERING PLANS

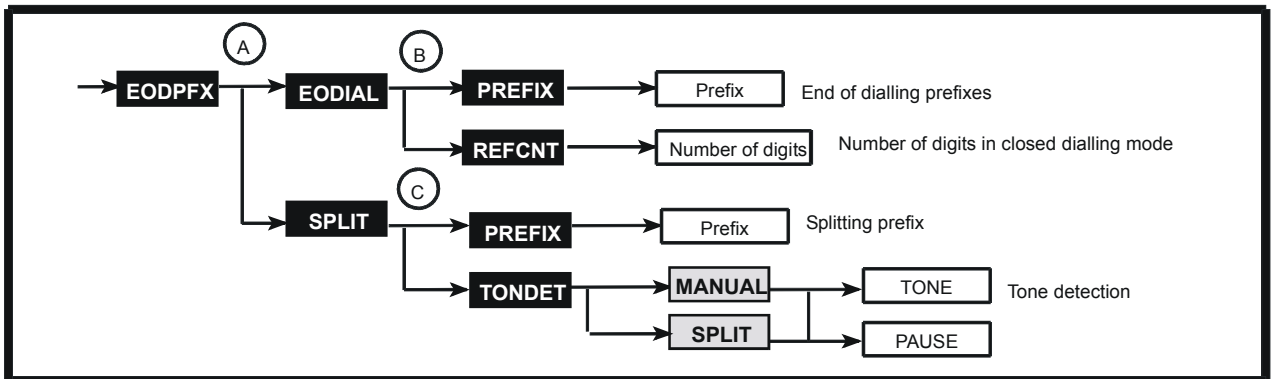
MMC STATION

SPLITTING AND END OF DIALLING

File
17

This function is used for defining the following elements:

- maximum number of digits in closed dialling mode
- 20 end of dialling prefixes and their associated counters
- 16 splitting prefixes for all lines (PABX or public network)



END OF DIALLING - EODIAL

Press **EODPFX** then **EODIAL** (A).

End of dialling prefixes - PREFIX


PREFIX (B) displays the end of dialling prefixes and value of the counters associated with the different prefixes.

After pressing **MODIFY**, enter the end of dialling prefix (6 digits max) and validate. Then state the value of the counter associated with the prefix and validate.


Reference counter - REFCNT

After pressing **REFCNT** (B), enter the value of the counter and validate.

SPLITTING - SPLIT

Press **PREFIX** then **SPLIT** .

Splitting prefixes - PREFIX

PREFIX of  displays the splitting prefixes.

After pressing **MODIFY**, enter the splitting prefix and validate.

By successively pressing **MODIFY**, define the type of connection associated with the prefix, PABX, PSTN, ALL or CTRYCD then validate.

Tone detection/pause - TONDET

Press **TONDET** .

TONE or PAUSE are provided by successively pressing **MANUAL** or **SPLIT** to define the operation in manual seizure mode (**MANUAL** key) or during dialling (**SPLIT** key).

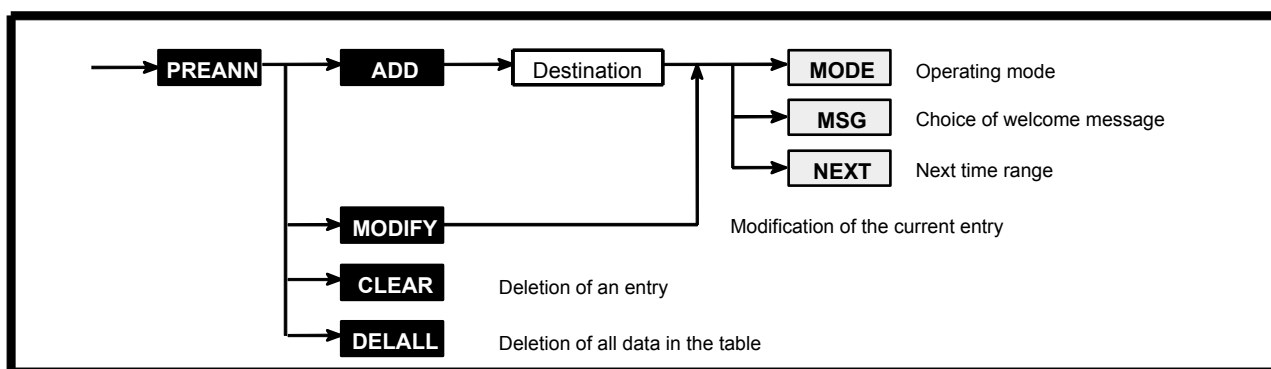
PAUSE: the system must insert a pause

TONE: the system uses the tone detection mechanism

PRE-ANNOUNCEMENT MESSAGES

File
18

This function makes it possible to assign up to eight 16-second welcome messages to stations or hunting groups (up to 15 entries with DDI numbers + 1 entry corresponding to all stations and hunting groups) with validity according to the time ranges.



Press **PREANN**.

After pressing **ADD** or **MODIFY**:

MODE makes it possible to choose the operating mode (OFF, MODE1, MODE2, MODE1 BUSY or MODE2 BUSY).

- MODE 1: the external correspondent hears the message from start to finish then the called station is rung.
- MODE 2: the external correspondent hears the message while the called station is being rung.
- MODE 1 BUSY: message broadcasted in mode 1 only if the station or hunting group is busy.
- MODE 2 BUSY: message broadcasted in mode 2 only if the station or hunting group is busy.
- OFF: no access to welcome message

MSG makes it possible to choose the welcome message: Msg 1 to Msg 8.

NEXT makes it possible to choose the time range (the starting time for the range is displayed).

CLEAR makes it possible to delete the data from the selected entry.

DELALL makes it possible to delete all the entries in the table.



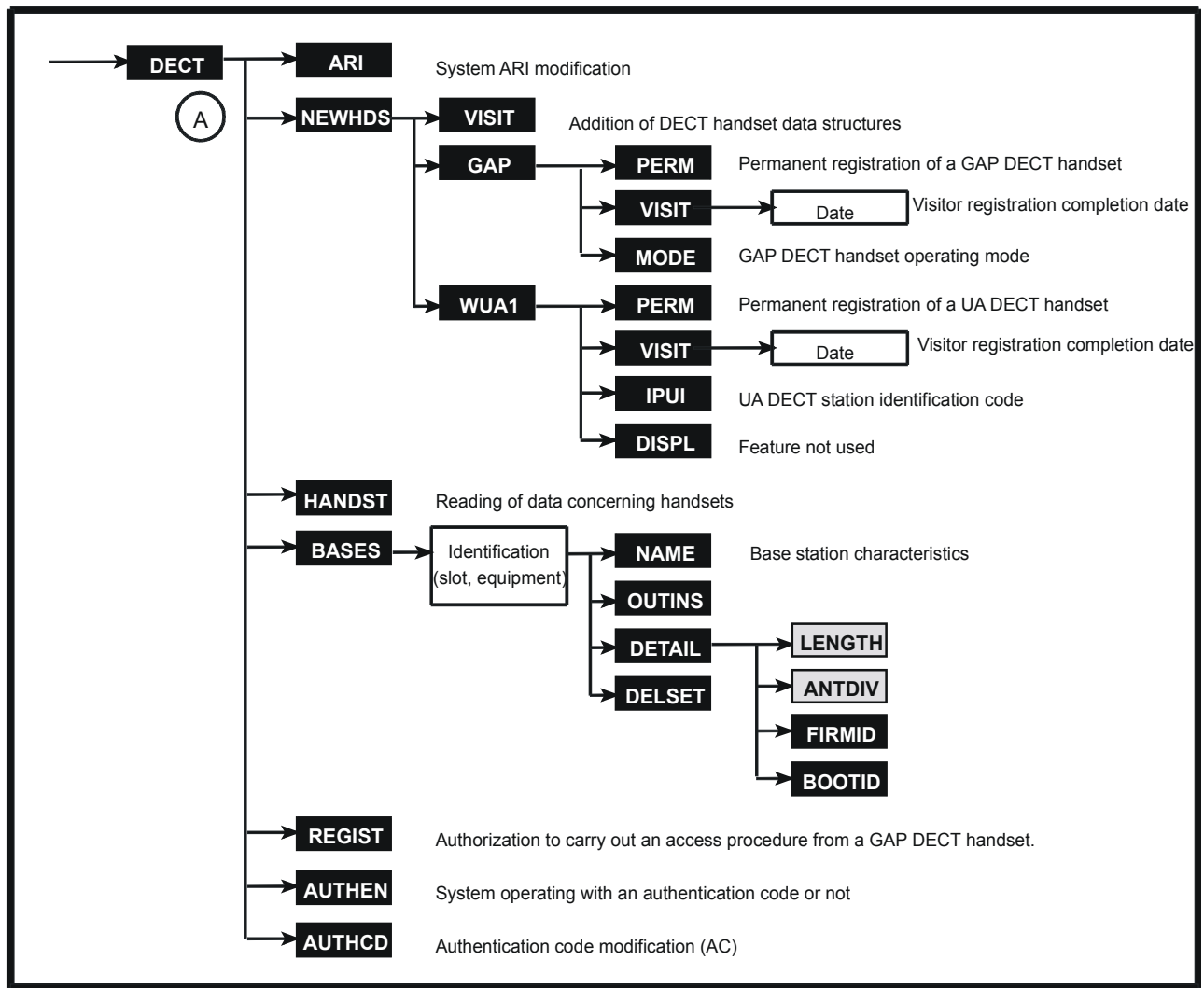
PRE-ANNOUNCEMENT MESSAGES

MMC STATION

DECT

File
19

This function is used to define the parameters for the use of DECT handsets.



Press **DECT**.

MODIFICATION OF THE SYSTEM ARI - ARI

When a system is put into service for the first time, its ARI (Access Right Identifier) has the default value. If there are two ALCATEL DECT systems which belong to two different clients but which have the same radio signalling zones, the default values must be modified and a different ARI value assigned to each one of the systems. After modification of the ARI, the base stations are informed of the new ARI.

After pressing **ARI**, enter 11 octal digits, the first being non-modifiable (always equal to 1) and the last being equal to 0 or 4.

ADDITION OF DECT MOBILE DATA - NEWHDS

ADD  makes it possible to create new data structures for DECT mobiles.

Data associated with a DECT access - VISIT

VISIT makes it possible to create data associated with a DECT access specified as a visitor. This DECT access is then used to record a DECT station subsequently (UA or GAP).

Data associated with a GAP DECT handset - GAP

This command makes it possible to automatically register a new GAP DECT handset. This registration is based on the reception of an access right sent by the GAP DECT handset (after a manoeuvre on the part of the user). Only one GAP DECT handset can be registered at a given time.

PERM makes it possible to select a permanent association to the system.

VISIT makes it possible to select a temporary association with the system; enter the date on which the mobile is to be automatically disconnected from the system and validate.

MODE makes it possible to define the operating mode for the GAP DECT handset: Bas, Enh or UA (WUA: significant choice for UA + GAP DECT).

Data associated with a UA DECT handset - WUA1

A UA DECT handset is registered manually by entering its IPUI.

PERM makes it possible to select a permanent association with the system.

VISIT makes it possible to select a temporary association with the system; enter the date on which the mobile is to be automatically disconnected from the system and validate.

IPUI makes it possible to modify the DECT handset IPUI value; enter 14 octal digits and validate.

READING OF THE DATA CONCERNING MOBILES - HANDST

HANDST ^(A) makes it possible to display the data (directory number, type of association with the system, IPU) relative to all the DECT mobiles declared in the system.

GOTO makes it possible to display the data of a specific mobile; enter the directory number of the mobile whose data you wish to see.

BASE STATION FEATURES - BASES

Press **BASES** ^(A) and then enter the slot number and the equipment number of the interface to which the base station to be parametered is connected.

NAME makes it possible to modify the name of the base station.

OUTINS makes it possible to display the status of the base station concerned. **INSERV** and **OUTOFS** make it possible to put the base station concerned in or out of service.

DETAIL displays the number of DECT channels (3 or 6) and gives access to the following sub-features for the 4070 IO base station:

- **LENGTH** : by successively pressing this key, indicate the connection distance from the base to the system: short line (0-400 m), average line (400-800 m) or long line (800-1200 m). This data is necessary for synchronization with frame DECT.
- **ANTDIV** : by successively pressing this key, indicate whether the 2 antennas (Diversity) or only the first (No diversity) are used.
- **FIRMD** : reading the software version currently on the base station.
- **BOOTD** : reading the software version for initialization of the base station.

DELST makes it possible to delete the data relating to the base station concerned.

ACCESS PROCEDURE FOR A GAP DECT HANDSET - REGIST

REGIST ^(A) makes it possible for a registered GAP DECT handset to carry out an access procedure. A particular piece of information is sent to the DECT handset enabling it to carry out this procedure.

MANDATORY AUTHENTICATION CODE - AUTHEN

AUTHEN ^(A) is used to define the system operating mode: recording of stations with or without an authentication code. **CHOICE** lets you switch from ON to OFF.

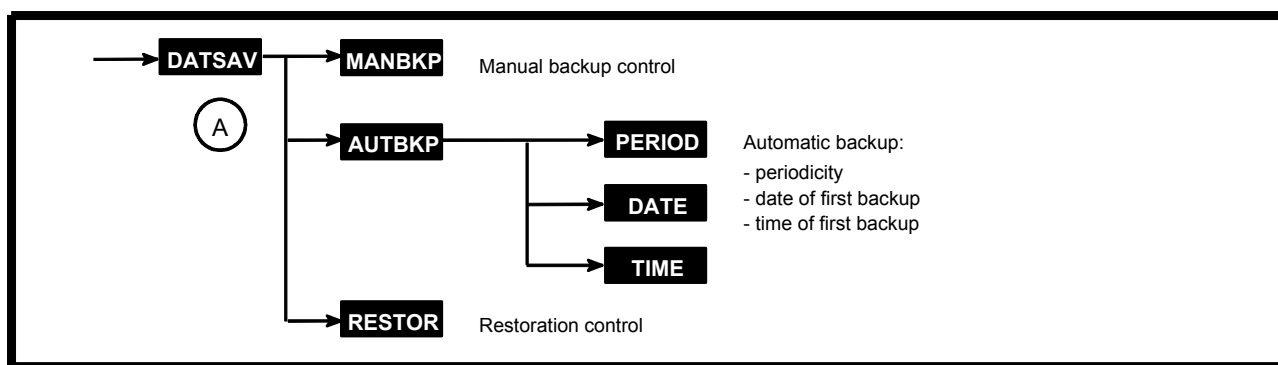
MODIFYING THE AUTHENTICATION CODE - AUTHCD

  makes it possible to modify the authentication code (up to 8 digit AC code) requested during system access.

BACKUP AND RESTORATION OF THE CONFIGURATION

File
20

This function provides manual backup controls and restoration controls and enables the definition of parameters enabling backup and restoration of the configuration.



Press **DATSAV**.

MANUAL BACKUP - MANBKP

Press **MANBKP** **(A)**. Validate; the backup starts.

AUTOMATIC BACKUP - AUTOBKP

AUTOBKP **(A)** makes it possible to define the date and time of the first automatic backup as well as the periodicity.

PERIOD makes it possible to state the interval (00 to 99 days) separating 2 automatic backups (00 corresponds to an infinite interval: no backup).

DATE makes it possible to state the date (as: Day 01-31/Month: 00-12) of the first backup.

TIME makes it possible to state the time (as: Hour 00-23/Minutes: 00-59) of the first backup.

AUTOMATIC RESTORATION - RESTOR

Press **RESTOR** **(A)**. Validate; the restoration starts.



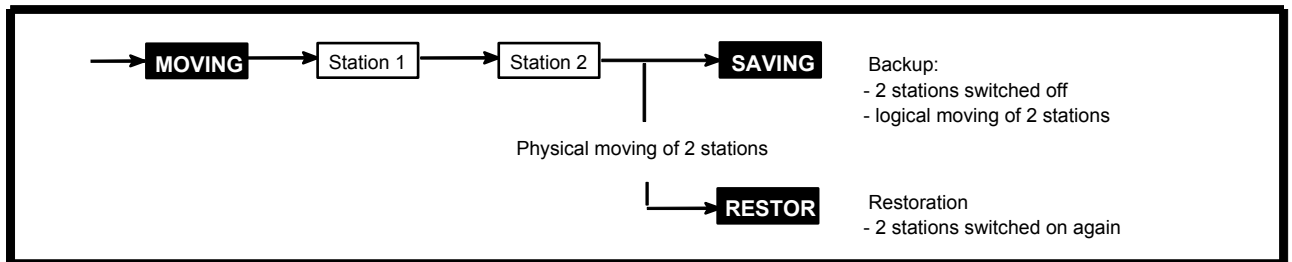
**BACKUP AND RESTORATION OF THE
CONFIGURATION**

MMC STATION

MOVING OF 2 STATIONS

File
21

This function is used to move the physical addresses of 2 stations of the same family.



Press **MOVING**.

Enter the directory number of station 1 (source station).

Enter the directory number of station 2 (destination station).

Follow this moving procedure:

- press **SAVING** : the 2 stations are put out of service and logically moved.
- physically move the 2 stations.
- press **RESTOR** : the 2 stations are put back in service.



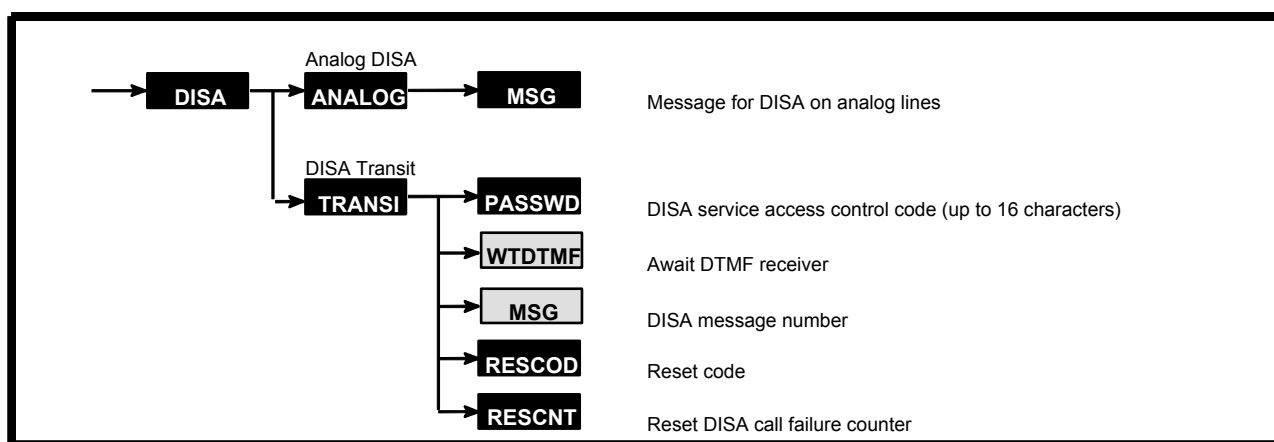
MOVING OF 2 STATIONS

MMC STATION

DISA

File
22

This function is used to define the various parameters necessary for analog DISA and DISA transit services.



Press **DISA**.

ANALOG DISA - ANALOG

Press **ANALOG**.

MSG by successively pressing this key, it is possible to select the message transmitted during a DISA call on an analog line: Msg1 to Msg8.

DISA TRANSIT - TRANSI

Press **TRANSI**.

PASSWD makes it possible to modify the personal code for accessing the DISA transit service. Enter the current code then the new code and validate.

WTDTMF by successively pressing this key, it is possible to define the system response in the case of an unavailable MF receiver for a DISA transit call: camp-on authorized or call failure and redistribution.

MSG by successively pressing this key, it is possible to select the message transmitted during a DISA transit call: Msg1 to Msg8.

RESCOD makes it possible to reset the DISA service access control code.

RESCNT makes it possible to reset the DISA call failure counter (this counter's value is not displayed).



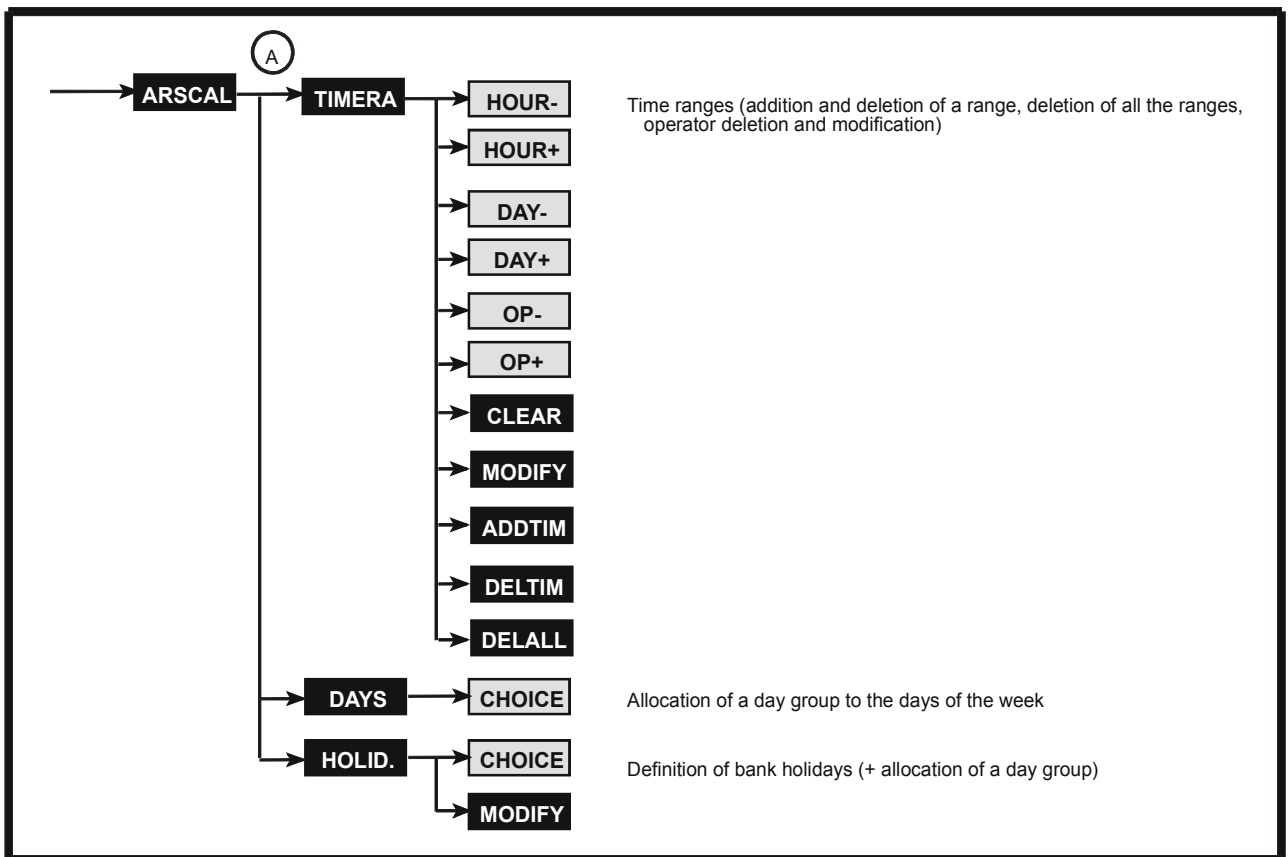
DISA

MMC STATION

ARS CALENDAR

File
23

This feature makes it possible to define the operation parameters by ARS mechanism time ranges.



Press **ARSCAL**.

TIME RANGES - TIMERA

Press **TIMERA** (A).

By successively pressing **HOUR-** and **TIME**, it is possible to switch to the previous and next time range.

By successively pressing **DAY-** and **DAY**, it is possible to switch to the group for the previous and next days (Day 1, Day 2, Day 3).

By successively pressing **OP-** and **OP**, it is possible to switch to the group for the previous and next operator (1 to 4) defined for the time range and for the current day's group.

CLEAR makes it possible to delete the name of the operator.

MODIFY makes it possible to modify the name of the operator; press **MODIFY** or enter the first letter of the

name of the operator using an alphabetic keypad.

ADDTIME makes it possible to add a time range by defining a start time (information in the current visible range is copied into this new time range).

DEFTIME makes it possible to delete the current time range (visible range).

DELTALL makes it possible to delete all the time ranges and their contents.

Notas :

The operators can only be defined by MMC PM5.

The 7 days of the week can be split up into 3 groups of days (example: Day 1 for Sunday, Day 2 for the 5 working days, Day 3 for Saturday); this makes it easier to allocate operators to the days of the week.

ALLOCATION OF A GROUP FROM DAY TO DAY IN THE WEEK - DAYS

Press **DAYS** (A).

NEXT makes it possible to switch to the next day of the week.

By successively pressing **CHOICE**, choose the group of days to be associated with the current day of the week.

DEFINITION OF BANK HOLIDAYS - HOLID.

HOLID. (A) makes it possible to enter bank holidays.

NEXT makes it possible to switch to the next bank holiday.

By successively pressing **CHOICE**, choose the group of days to be associated with the next bank holiday.

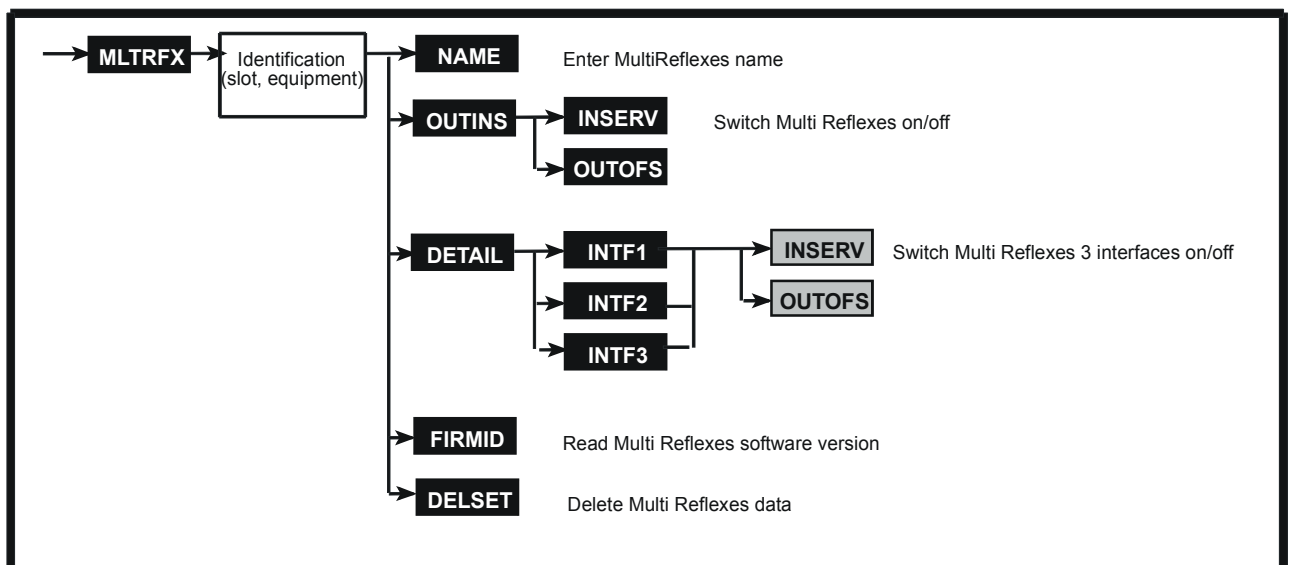
MODIFY makes it possible to modify or create a bank holiday.

- For changeable bank holidays (Easter for example): enter the date as DD/MM/YYYY.
- For set bank holidays (Christmas for example): enter the date as DD/MM (at the next consultation, the character * is displayed instead of the year).

MULTI REFLEXES

File
24

This feature makes it possible to define the parameters concerning each Multi Reflexes connected to the system; each Multi Reflexes allows 3 Reflexes stations to be connected.



Press **MLTRFX** and then enter the slot number and equipment number of the interface to which the Multi Reflexes to be parameterized is connected.

MULTI REFLEXES NAME - NAME

Press **NAME**.

Enter the Multi Reflexes name (18 characters):

- either using the alphabetic keypad
- or the station's numeric keypad which automatically switches to "letters" mode

MULTI REFLEXES STATUS - OUTINS

OUTINS lets you switch the Multi Reflexes off and then on again. Reminder: a Multi Reflexes is switched on automatically (as in the case of a Reflexes station).

If the secondary UA interfaces (see **DETAIL** function) are not declared as off, the Multi Reflexes cannot be switched off.

A Reflexes station cannot switch off the Multi Reflexes it is connected to.

The Multi Reflexes can be:

- In Service
- Out of Service
- Physical OOS/Logical OOS: Multi Reflexes not operational
- Physical OOS/Logical IS: Multi Reflexes not seen by the system (not declared or disconnected) or switched off by the installer

STATUS OF SECONDARY UA INTERFACES - DETAIL

DETAIL makes it possible to read the last 3 digits of directory numbers and declare the 3 secondary UA interfaces of the Multi Reflexes as on/off.

INSERV and **OUTOFS** make it possible to modify the state of each secondary UA interface.

SOFTWARE VERSION - FIRMID

FIRMID makes it possible to read the software version embedded in the Multi Reflexes.

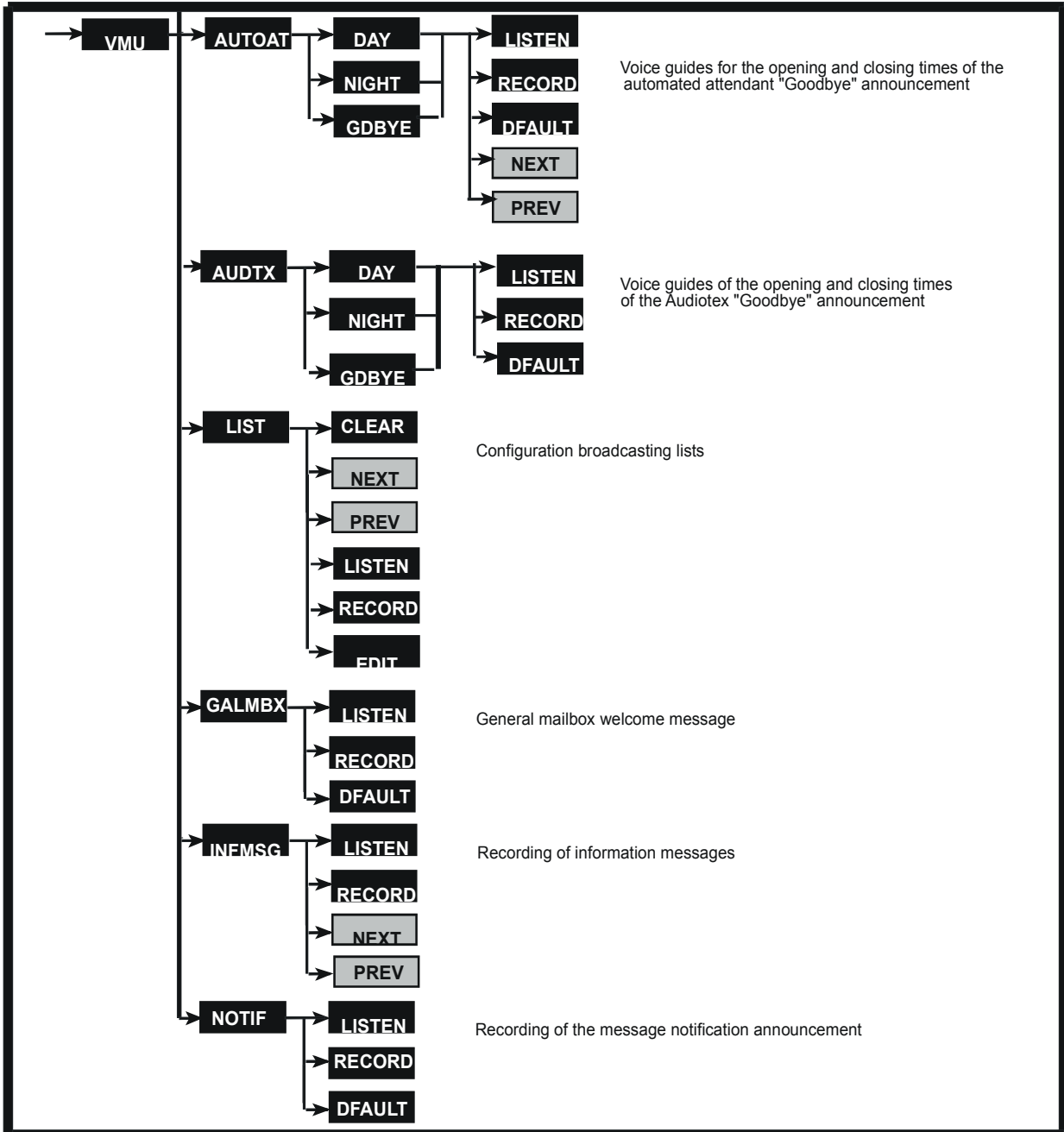
ERASING OF DATA - DELSET

FIRMID makes it possible to delete all Multi Reflexes data (this operation is only possible after the Multi Reflexes is switched off).

INTEGRATED VOICE SERVER

File
25

This feature makes it possible to manage voice guides and configure broadcasting lists.



Press **VMU**.

AUTOMATED ATTENDANT - AUTOAT

AUTOAT lets you define 3 different types of automated attendants:

- **DAY** : lets you access voice guides for opening times.
- **NIGHT** : lets you access voice guides for closing times.
- **GDYBYE** : lets you access voice guides for the "Goodbye" announcement.

For the **DAY** and **NIGHT** functions, the following possibilities are provided:

- **LISTEN** : lets you listen to the recorded or default voice guide.
- **PREV** : lets you return to the previous voice guide (main menu, sub-menu 0 to 9, welcome message).
- **NEXT** : lets you go on to the next voice guide (main menu, sub-menu 0 to 9, welcome message).
- **REGIST** : lets you record a customized voice guide.
- **DEFAULT** : lets you erase the recorded voice guide and replace it by the default voice guide; this key is only provided if recorded voice guides are available.
Select **YES** (return to default voice guide) or **NO**.

For the **GDYBYE** function (end of "Goodbye" announcement) the following possibilities are provided:

- **LISTEN** : lets you listen to the recorded or default voice guide.
- **REGIST** : lets you record a customized voice guide.
- **DEFAULT** : lets you erase the recorded voice guide and replace it by the default voice guide; this key is only provided if recorded voice guides are available.
Select **YES** (return to default voice guide) or **NO**.

AUDIOTEX - AUDTX

AUDTX lets you define 3 different Audiotex types.

- **DAY** : lets you access Audiotex voice guides for opening times.
- **NIGHT** : lets you access Audio voice guides for closing times.
- **GDYBYE** : lets you access the Audiotex "Goodbye" announcement voice guide.

The following possibilities are offered:

- **LISTEN** : lets you listen to the Audiotex recorded or default voice guide.
- **REGIST** : lets you record a customized Audiotex voice guide.
- **DEFAULT** : lets you erase the recorded voice guide and replace it by the Audiotex default voice guide; this key is only provided if a recorded voice guide is available.
Select **YES** (return to default voice guide) or **NO**.

BROADCASTING LISTS - LIST

LIST lets you customize broadcasting lists (51 possible lists including a general broadcasting list).

The following possibilities are offered:

- **CLEAR** : makes it possible to delete all data relative to a broadcasting list.
- **EDIT** : lets you create/modify the parameters of each broadcasting list.
 - **ADD** : lets you add a member to a broadcasting list.
 - **PREV** : lets you return to the previous member.
 - **NEXT** : lets you go on to the next member.
 - **CLEAR** : lets you delete a member from the list.
- **NAME** : lets you modify the name allocated to the list
- **LISTEN** : lets you listen to the broadcasting list name.
- **REGIST** : lets you record the broadcasting list name.

GENERAL MAILBOX - GALMBX

GALMBX lets you define the general mailbox welcome message:

- **LISTEN** : lets you listen to the recorded or default welcome message.
- **RECORD** : lets you record a customized welcome message.
- **DEFAULT** : lets you erase the recorded welcome message and replace it by the default message; this key is only provided if a recorded message is available.
Select **YES** (return to default message) or **NO**.

INFORMATION MESSAGES - INFMSG

INFMSG lets you record up to 50 information messages used by the Automated Attendant and the Audio-tex service (opening or closing times).

- **LISTEN** : lets you listen to the recorded information message.
- **REGIST** : lets you record an information message
- **PREV** : lets you return to the previous message.
- **NEXT** : lets you go on to the next message.

Nota : Other parameters (message name, end of message response) have to be configured by PM5.

MESSAGE NOTIFICATION ANNOUNCEMENT - NOTIF

This function makes it possible to define the announcement for a remote notification of messages:

- **LISTEN** : lets you listen to the recorded or default announcement.
- **RECORD** : lets you record a customized announcement.
- **DEFAULT** : lets you erase the recorded announcement and replace it by the default announcement; this key is only provided if a recorded announcement is available.
Select **YES** (return to default announcement) or **NO**.



INTEGRATED VOICE SERVER

MMC STATION

Alcatel OmniPCX Office

SECTION
SOFTWARE KEYS

REF3EH 21000 BSAA Ed. 04



ALCATEL OMNIPCX OFFICE

SOFTWARE KEYS

Section Software keys

SOFTWARE KEYS

FILE 1



ALCATEL OMNIPCX OFFICE

SECTION SOFTWARE KEYS (INDEX)

SOFTWARE KEYS

Section Software keys (Index)

SOFTWARE KEYS

FILE 1

SOFTWARE KEYS



DESCRIPTION

The Alcatel OmniPCX Office system a software key is represented by a string of alphanumeric characters which opens functionality's. To each Alcatel OmniPCX Office system (each Main CPU) are associated 2 software keys:

- The **MAIN Software key** for the main services
- The **CTI Software key** for the CTI services

The software key correspond to a text file where the name takes the CPU hardware number with the **.MSL** (MAIN key), or **.CSL** (CTI key).

Example: file 000068DA.msl and 000068DA.csl for CPU N° 000068DA.

Each system needs the Main and CTI Software keys even if no CTI application is used on the system. The systems are delivered with a default software key or with a client personalised key . The Distributor needs to load if necessary the personalised key on the non factory configured systems.

CONFIGURATION

The key downloading is necessary when CPU replacement or when modification for features enhancement on the System.

However, the installation can be adapted to meet new needs when the system is in place by entering a new software key:

- by MMC-PM5 (Easy View): **Modification Typical -> System -> Software License**
- by MMC-Station: **Global -> SwKeys -> Main/CTI**

Two software keys can be entered: one for the system functionalities (Main key, 42 to 120 characters), the other for CTI functionalities (CTI key, 17 to 161 characters).

Keys consist of:

- all upper-case letters except I and O
- all digits except 1 and 0
- the special characters #, \$, %, &, *, +, @, (and)

In some case it's necessary to do a warm reset for taking account the new key, a message is displayed for doing this reset. (See Table)

Nota : When reading out by PM5 the software key , the values displayed correspond to the actual opened services. The actual opened services are defined by both the software key and the

hardware configuration of the system and not just the values contained in the key.

SOFTWARE KEY CONTROL MECANISM ON THE SYSTEM

On starting up the system different cases are possible :

- **The services needed by the customer are open and work properly:** the software key present on the system is correct.
- **Services needed are not open**
- **The key is valid but some services are not opened** (verification done by MMC).
 - Check the Order to verify if it corresponds to the customer requirements, if not contact your Ordering Department. A new software key needs to be created including the news features.
 - When loading the key via PM5 a warning message is displayed. In this case the features can be reduced due to a missing of memory (Hard disk or XMEM)or CPU power (CPUe) .(See table below)
- **The software key present on the system is not correct :**
 - The software key checksum is correct but does not correspond to the CPU serial Number.The system works correctly with all features for 30 days . A message " Software Key Error " is displayed on the Operator. The pushing of the Alarm key indicates the expiring date.When loading a correct key (good CPU serial number)during this period the system goes to normal state. When no correct key is loaded after 30 days the system will restart in limited state with only the Operator working, all other sets are out of service.
 - The software key checksum is not correct. The system will start in limited state.When loading the correct Software key (with the good serial number) the system restarts with all functions working.

After loading a correct software key the system will restart with all functionality's

PROCEDURE IN CASE OF PROBLEM

To get the right key corresponding to the CPU you need to contact ALCATEL.. You have to indicate what is the problem.

- Customer CPU was changed (Indicate the old and new CPU N°)
- The system was delivered with a software key corresponding to the CPU but does not work
- Etc....

SOFTWARE KEYS
SOFTWARE KEYS
LIST OF SOFTWARE KEYS AND HARDWARE EQUIPMENT NECESSARY TO GET OPERATIONAL THIS FEATURES

APPLICATIONS	Hardware			Software keys
	To order	Extension to system with CPUe	Extension to system with CPU	
VOICE FEATURES				
2 system languages	No special hardware requirements			No key
4 system languages	CPU + XMEM64 or CPUe	No additional hardware	XMEM64 or Voice Hard disk	Add2 system languages
4 pre-announcement messages	No special hardware requirements			No key
8 pre-announcement messages	CPU + XMEM64 or CPUe	No additional hardware	XMEM64 or Voice Hard disk	No key
Default "Please Wait" music: 16 seconds	No special hardware requirements			No key
Customized "Please Wait" music: 2 minutes	No special hardware requirements			No key
Customized "Please Wait" music: 10 minutes	Voice Hard disk			No key
NMC with 1000 metering tickets	Voice Hard disk			1000 NMC tickets
ARS features	No special hardware requirements			No key
Reflexes terminal users	UAI boards			Add Reflexes users
DECT (or Reflexes DECT) users	4070 IO/EO base stations			DECT users
Analog terminals users	SLI boards			Add analog users
VOICE MAIL				
VMU: 2 ports - 20 minutes	No special hardware requirements			No key
Name announcement	No special hardware requirements			No key
Mailbox welcome messages	CPU = 10 mailboxes with welcome messages or CPU + XMEM64/CPUe = 50 mailboxes with welcome messages or Hard disk = up to 200 mailboxes with welcome messages			Welcome messages
VMU: 4 ports - 20 minutes	No special hardware requirements			Add2 ports
VMU: 4 ports - 80 minutes	CPU + XMEM64 or Voice Hard disk or CPUe	No special hardware requirements	XMEM64 or Voice Hard disk	Add2 ports + up to 80 minutes
VMU: 6 ports - 80 minutes	CPUe	No special hardware requirements	IMPOSSIBLE	Add4 ports + up to 80 minutes
VMU: 6 ports - 8 or 200 hours	CPUe + Hard disk	Hard disk	IMPOSSIBLE	Add4 ports + up to 8 or 200 hours
VMU: 8 ports - 8 hours	CPUe + Hard disk	Hard disk	IMPOSSIBLE	Add6 ports + up to 8 hours
VMU: 8 ports - 200 hours	CPUe + Hard disk	Hard disk	IMPOSSIBLE	Open all VMU features
Distribution lists	CPUe + Hard disk	Hard disk	IMPOSSIBLE	Open all VMU features
Recording of conversations	CPUe + Hard disk	Hard disk	IMPOSSIBLE	Open all VMU features

SOFTWARE KEYS

SOFTWARE KEYS

Pre-configured Automatic Attendant & Fax/Modem Switching	CPU + XMEM64 or Hard disk or CPUe	No special hardware requirements	XMEM64 or Voice Hard disk	Basic Automatic Attendant
Customized Automatic Attendant & Audiotex	CPU + XMEM64 or Voice Hard disk or CPUe	Hard disk	Hard disk	Full Automatic Attendant
INTERNET SERVICES				
Internet access	CPUe	No additional hardware	CoCPU@, XMEM64	Internet access
Proxy/Cache server	CoCPU@, Data Hard disk, SLanX4		XMEM64, CoCPU@, Data Hard disk, SLanX4	Full Internet service offering
VPN	CoCPU@, SLan X4		XMEM64, CoCPU@, Data Hard disk, SLanX4	Full Internet service offering
e-mail server	CoCPU@, Data Hard disk, SLanX4		XMEM64, CoCPU@, Data Hard disk, SLanX4	Full Internet service offering
CTI				
Integrated CTI server	No special hardware requirements			TAPI 2.0 interface
External TAPI 2.1 server	No special hardware requirements			TAPI 2.1 server (4 sessions, 10 monitoring)
CSTA interface	No special hardware requirements			Client CSTA (25 sessions, 25 monitoring)
PIMphony Basic	No special hardware requirements			PIMphony Basic
PIMphony Pro	No special hardware requirements			PIMphony Pro
PIMphony Team	No special hardware requirements			PIMphony Team
VoIP				
Voice over IP network	CPU + XMEM64, CoCPU, SLanX4, VoIP daughter boards	CoCPU, SLanX4	XMEM64, CoCPU, SLanX4	IP channels
IP Telephony with Fast IP Reflexes				e-Reflexes
IP Telephony with e-PIMphony				PIMphony Pro or Team + e-PIMphony Reflexes
NETWORK				
Private access	DLT2 or BRA			Add B-channels
ISVPN				ISVPN

SOFTWARE KEYS

SOFTWARE KEYS

RESTRICTIONS

The following table lists the services controlled by the "Main" software key, the "limited" mode values and the configuration modularity.

Controlled services	Values in "limited" mode	Modularity	Max	Limit without X-MEN		Limit with X-MEN 64		Limit with HARD DISK	
STANDARD TELEPHONY									
Number of Reflexes sets	According to selected model	+1	236	236		236		236	
Number of analog sets		+1	200	200		200		200	
MOBILITY									
Number of DECT + Reflexes DECT sets	0	+1	200	200		200		200	
CALL MANAGEMENT									
ARS	open	open		open		open		open	
DISA /Transit DISA	open	open		open		open		open	
ISVPN on ISDN	closed	open		open		open		open	
QSIG +	closed	open		open		open		open	
NETWORKS									
Number of B-channels	0	+1	120	120		120		120	
INTERNET ACCESS									
Internet and Intranet Access	closed	open							
Proxy: Web cache and Access control	closed	open							
E mail	closed	open							
VPN Internet	closed	open							
Internet Access on CoCPU	NO	YES							
LAN TELEPHONY									
Number of IP Phones	0	+1	200	0	0	0	200	200	200

SOFTWARE KEYS

SOFTWARE KEYS

Controlled services	Values in "limited" mode	Modularity	Max	Limit without X-MEN		Limit with X-MEN 64		Limit with HARD DISK	
Number of PIM-Telephony Multimedia terminals	0	+1	200	0	0	0	200	200	200
VoIP GATEWAY									
Number of VoIP channels	0	+1	120	120	120	120	120	120	120
VoIP									
VoIP on CoCPU	NO	YES							
VOICE MAIL UNIT AND AUTOMATED ATTENDANT									
Number of VMU ports	2 ports	+1	8	4	8	4	8	4	8
Storage capacity	20'	10'	200h	20'		1h20'		200h	
Automated Attendant	closed	open		closed		open & non-configurable*		open & configurable	
Audiotext	closed	open		closed		closed		open	
Fax switching	closed	open		open		open		open	
Mailbox welcome messages	closed	open		open		open		open	
Name in mailing lists	closed	open		closed		closed		open	
Recording of conversations	closed	open		closed		closed		open	
GREETING									
Number of messages (16")	4	+4	8	4	4	4	8	4	8
PLEASE-WAIT MUSIC									
Duration	2 min.	2 min.	10 min.	2		2		10	
METERING									
Number of NMC tickets	0	1000	30000	1000	1000	1000	1000	30000	30000

SOFTWARE KEYS

SOFTWARE KEYS

Controlled services	Values in "limited" mode	Modularity	Max	Limit without X-MEN	Limit with X-MEN 64	Limit with HARD DISK			
LANGUAGES									
Number of languages	2	2	4	2	2	4	4	4	4



SOFTWARE KEYS

SOFTWARE KEYS

Alcatel OmniPCX Office

SECTION
MAINTENANCE

REF3EH 21000 BSAA Ed. 04



ALCATEL OMNIPCX OFFICE

MAINTENANCE

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ALCATEL OMNIPCX OFFICE

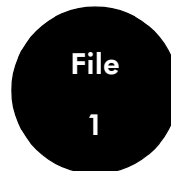
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MAINTENANCE

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PROBLEM-SOLVING METHODOLOGY



WARNING
NO INTERVENTION IN THE CABINET IS AUTHORIZED FOR THE USER. ONLY THE
INSTALLER OR THEIR REPRESENTATIVE IS AUTHORIZED TO INTERFERE WITH THE
CABINET

This section does not deal with failures caused by configuration errors nor with those caused by errors in the telephone features.

In either of these cases, refer to the sections on MMC-Station and Telephone Features. In all cases, a perfect knowledge of the system (architecture, distribution of function processing, etc.) and of its telephone features is essential, and in particular the limits of these features.

Faults concerning distribution must be eliminated first.

To avoid taking a wrong track when determining faults, it is vital to define the source of the fault from the outset:

- operating error by the user
- programming error by the user or operator
- programming error in implementation
- genuine system failure

TROUBLESHOOTING PROCEDURE

For any system failure, it is essential to make visual checks (LEDs for the various boards, data testing, automatic set testing), to check the power supply voltage (mains and battery) and to read the system messages.

The procedure is as follows:

- locate the terminal(s) affected by the fault. If several terminals are affected by the same fault, determine the common link which might be the cause (logical numbers of the same board, geographical distribution, same type of programming, etc.)
- determine at what level the faulty feature is occurring (local or external call, etc).

EXTENT OF FAILURE

A failure may be characterized by various aspects:

- Total system failure:
 - In this case, the fault can only be located in the module
 - The failure is most likely to come from the power supply or from the CPU (control unit); the next most likely cause is a set or network interface board interfering with the CPU.
- Total failure of a group of sets:
 - if all the sets are on the same board, then the fault probably lies in the board
 - if all the sets go out on the same cable, then the fault probably lies with the cable.
- Total failure of a single terminal: the fault is probably in the set itself. If not, check the equipment in question.
- Partial failure of a single terminal: the fault is probably due to the configuration or mode of operation.

DELIBERATE REPRODUCTION OF DEFAULTS

To make sure that your analysis of the fault is correct, it is essential to try to repeat the failure intentionally, unless it is unequivocal and permanent.

Once the fault is observed or repeated, and depending on the presumed source of the failure, replace the faulty element with a working one and try to repeat the original fault again.

If the fault remains, carry out the complete analysis of the failure again.

LOCATING FAULTS

Power supply problem

If the mains and battery operation LEDs are both out, check all the fuses.

If the fuses are correct, this means that the duration of the mains power outage has been longer than the battery autonomy.

CPU board problem

If the CPU board LEDs are off, or are on steady, the system control unit is not working.

Miscellaneous

For any fault signaled on a terminal (set, add-on module or optional terminal such as a printer, etc), the following operations will be necessary:

- Test of the maintenance terminal in place of the failed terminal
- Test of the terminal at the module level

ELEMENT SUBSTITUTION

RULES TO RESPECT

Any substitution (power supply, CPU station board, interface board, etc.) must be carried out with the system powered down.

With PM5 you can save and subsequently restore the configuration (see "Data Saving").

If replacing a PRA board, make sure that the configuration of the new board is consistent with the old one.

Powering up/down the system

- Press the ON/OFF button.
- Wait for the LED to go to steady red (about 30 seconds): system powered down
- Press ON/OFF to power up again after intervening (with the boards plugged back in). Wait 3 to 4 minutes for the system to initialize completely.



PROBLEM-SOLVING METHODOLOGY

MAINTENANCE

BOARD MANAGEMENT

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PLUGGING IN A BOARD

When a board is plugged in, the system allocates numbers to the board equipment (subscriber directory numbers or line numbers); these numbers are allocated in ascending order of free system numbers. The board equipment is initialized with the corresponding default configuration.

When a board is plugged into a slot previously taken up by another board, this board is managed in the following way:

- if the new board is of the same type (same scan point) as the board previously plugged in, the new board is assigned the same data (numbers and configuration) as the previous one
- if the new board is different from the previous one, the system deletes the previous board and associated data (the numbers allocated are now available and the default configuration is cancelled). The new board is then recognized as if it was plugged into a free slot (the equipment numbers are allocated in ascending order and the board initialized with the default configuration corresponding to the new board type).

UNPLUGGING A BOARD

The system should always be powered down before unplugging a board.

In general, unplugging a board from the module does not trigger an update of the data allocated to the board (directory numbers, key programming, line parameters, etc) ; the unplugged board is considered as "absent and accepted" (it is taken into account when the system checks the equipment limits) as long as no other board is plugged into this slot or a cold reset carried out on the system.

ALLOCATING DIRECTORY NUMBERS

When the system is booted, the directory numbers are assigned to the internal and virtual terminals on the basis of the default numbering plan, in the following order of appearance of interface boards and connected terminals:

- terminals connected to the SLI and UAI boards of the basic module
- terminals connected to the SLI and UAI boards of the add-on modules (if fitted)
- virtual terminals (XRA, DECT handsets, VMU, IP).

At the end of the system boot, the following numbers are assigned to the set options in order of appearance.

Example:

We have an Alcatel OmniPCX Office system comprising 2 modules:

- a basic module with 2 VMU ports and fitted with a UAI16 board (a V24 option is embedded in the Reflexes sets connected to board interfaces 1 and 16)
- an add-on module fitted with a UAI16 board (a V24 option is embedded in the set connected to the first board interface)
- after the system boot, 10 DECT handsets are added using MMC-PM5.

In the above configuration, and with a 3-digit numbering plan, the following directory numbers are assigned:

- 101 to 116: Reflexes sets on the basic module
- 117 to 132: Reflexes sets on the add-on module
- 133 and 134: VMU ports
- 135 and 136: V24 accesses on the basic module
- 137: V24 accesses on the add-on module
- 138 to 147: DECT handsets

Configuration checks

Every time a hardware or configuration change is made, the following limits are checked:

- **corded interfaces: maximum 236.** Any additional interface will be refused.
- **directory numbers: maximum 250.** Any attempt to add another number will be rejected. The directory numbers assigned to the auxiliaries (VMU, XRA, etc) are not covered by these checks, and are always accepted.
- **D-channels (T0/T1/T2/DASS2 interfaces): maximum 12.** Any additional interface (T0) or board (PRA) will be refused.
- **B-channels (TLs, ISDN access, VoIP access): maximum 120.** Any attempt to add another interface will be rejected (and the interface containing the B-channel in question declared out of service).
- **hard disks: maximum 2.**

INITIALIZING SETS

On powering up, Reflexes sets execute a self-test:

- display test
- test of the LEDs or icons of the set and add-on module, if any
- audio test

REPLACING/RELOCATING SETS

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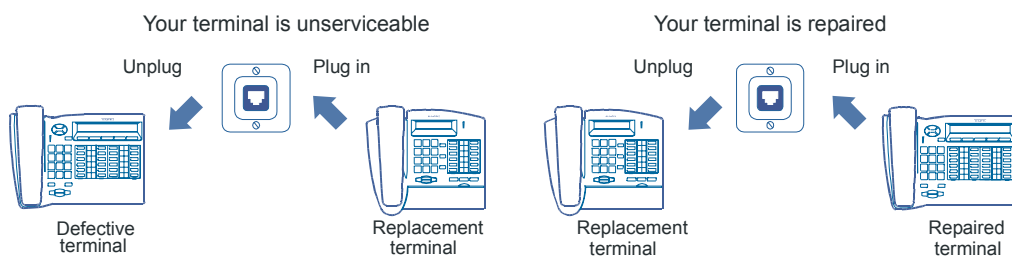
REPLACING A SET

You can replace your Reflexes set by connecting a set of the same family, but of a different type, into your phone socket. This substitution can be temporary or permanent.

Replacing an analog set by another analog set, or replacing a Reflexes set by a set of the same type, requires no special procedure (simple hardware exchange).

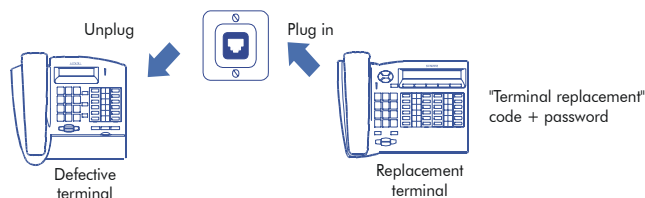
Temporary substitution

The replacement set keeps its own default functions (customized settings are not transferred). The data not transferred are stored in the Alcatel OmniPCX Office system until a set of the same type as the initial one is connected.



Permanent replacement

The maximum quantity of data from the initial set is transferred to the replacement. Data not transferred are deleted.



Characteristics preserved during temporary or permanent set substitution

- Rights (restricted features)
- Barring level
- Metering profile
- Messages and last caller repertories
- Destination set for metering reminder, forwarding and/or monitoring
- Set belonging to a hunting group and/or a Manager-Secretary relation
- Appointment reminder
- Locked or unlocked set
- Callbacks
- Active forwarding
- Last number redial

Data preserved during permanent set replacement
Replacement of Reflexes sets

Regardless of the type of the initial Reflexes set and that of the replacement, the function and resource keys are not preserved. The directory numbers are preserved in accordance with the size of the directories of the stations concerned (for example, when replacing a Reflexes Advanced set with a Reflexes Premium set, only the first 10 numbers are preserved).



The add-on modules are always transferred provided the substitution set supports these modules.

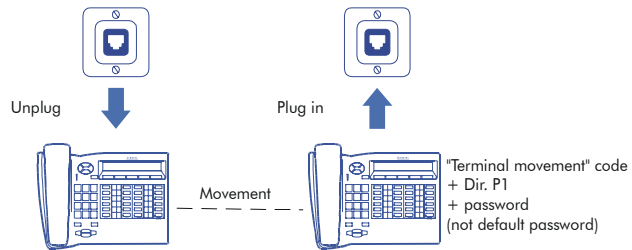
RELOCATING A SET

If you move office, you can move your set from one socket to another and still preserve all or part of its settings.

Before relocating the set:

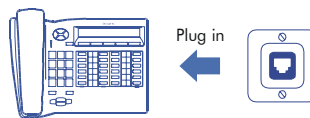
- You need to change the personal code, which must be different from the default code.
- It is advisable to lock the set.

Relocating a set to an unused socket



ADDING SETS

When adding sets, attention must be paid to the limits on the number of sets and the features offered by the system software key.



The set is recognized as soon as it has been plugged into the socket.



REPLACING/RELOCATING SETS

MAINTENANCE

DATA SAVING

File
4

OUTLINE

Configuration backup

The backup operation concerns all the parameters not reinitialized during a warm reset:

- global data (software version, backup time and date, etc)
- configuration data (types of boards and terminals, characteristics of terminals and groups, keys and repertory settings, numbering plans, directory, barring tables)
- data recorded by users (mail, appointment reminders, forwarding)
- metering counters

The configuration data backup can be activated in either of 2 ways:

- manually by the installer (MMC-PC or Station backup command)
- automatically and periodically, at a time programmed by the installer, using MMC-PC or Station

The backup session is exclusive of any MMC-PC or MMC-Station operation or customization session; any modification is ignored during backup. During the backup, avoid any activation or inhibition of services (appointment reminders are not protected, diversions and filtering are refused) which would modify the settings.

Any system data modification and any hardware modification by MMC PM5 or Station must be followed by a backup.

Duration of a backup session: about 20 seconds per module; more than a minute for a multi-module installation.

At the end of the session, a message appears in the hardware message table (to signal failure) or in the system history table (to signal success).

Configuration restore

The restore session is activated manually by the installer (MMC-PC or Station restore command). All the saved data are restored.

Duration of a restore session: 1 to 7 minutes.

At the end of the session, a message appears in the hardware message table (failure indication) or in the system history table (success indication).

CONFIGURATION

- **Manuel backup:**

- by MMC-PM5 (Expert View): **Data Saving & Swapping -> Commands ->** check Backup
- by MMC-Station: **DatSav -> ManBkp**

- **Automatic backup:**

- by MMC-PM5 (Expert View): **Data Saving & Swapping -> Data Saving ->** Enter date, time and periodicity
- by MMC-Station: **DatSav -> AutBkp ->** Enter date, time and periodicity

- **Restore:**

- by MMC-PM5 (Expert View): **Data Saving & Swapping -> Commands ->** check Immediate Restore
- by MMC-Station: **DatSav -> Restor**

SYSTEM MESSAGES

File

5

The system messages are divided into 2 tables:

- the hardware message table
- the history message table

INTERFACE MARKERS

XX # 1 for the first half-board of slot XX, XX # 2 for the second half-board, XX - YY for the YY access of slot XX, ***** concerning the system messages.

A board can be cut into 2 half boards, this means that the same board uses 2 LCP codes (one per half-board). The 2 half boards may or may not be identical.

FORMAT OF SYSTEM MESSAGES ON REFLEXES ADVANCED SETS

To see the messages, go into an Installer session and choose the **GLOBAL** feature out of the features offered. Choose the sub feature **MAINTE** then **RDHIST** to read the history messages, **RDANOM** to read the hardware messages or **RRANOM** to empty the hardware messages table.

30-12 15: 30 106 ** 01030000 001/005**

- 30-12: date
- 15: 30: time
- 106: type of message
- ****: location (XX - YYY: access YYY of slot XX, *****: system)
- 01030000: INFO 0 to INFO 3 hexadecimal (INFO 0 = 01; INFO 1 = 03; INFO 2 and 3 = 00)
- 001 / 005: message index in relation to the total number of saved messages

HARDWARE MESSAGES

All of the hardware faults detected locally by a board or by the CPU board are listed in this table.

When the table is full, a new fault is memorized in place of the most recent message (the table may be emptied by an MMC-PM5 command or by cold starting the system).

TYPE	MESSAGE	LOCA- TION	ADDITIONAL INFORMATION	ACTION
5	CONFIGURATION BACKUP FAILURE			
9	CONFIGURATION RESTORATION FAILURE			Check the configuration.
33	<p>KEY REDUCED</p> <p>The features normally associated with the active key have been reduced due to a hardware problem (CPU type, insufficient memory, etc)</p>	CPU board (80)	<p>INFO 0 = reduced feature set index</p> <ul style="list-style-type: none"> - 01: VMU storage capacity diminished - 02: number of VMU and Automated Attendant ports diminished - 03: Automated Attendant unavailable - 04: Audiotex unavailable - 05: welcome messages unavailable - 06: distribution list names unavailable - 07: recording of conversations unavailable - 08: duration of please-wait message diminished - 09: number of welcome messages diminished - 10: number of NMC metering statements diminished - 11: number of directory entries diminished - 12: number of languages diminished 	

MAINTENANCE

SYSTEM MESSAGES

TYPE	MESSAGE	LOCA- TION	ADDITIONAL INFORMATION	ACTION
34	SOFTWARE KEY CHANGE	CPU board (80)	<p>INFO 0 = type of key (0= main key; 1 = CTI key)</p> <p>INFO 1 = type of event</p> <ul style="list-style-type: none"> - 01: system booted with a key which doesn't correspond to the system: the services are open for a reduced period - 02: system booted with a valid key - 03: system booted with a key problem: the services are closed - 12: valid key entered - 13: the key present does not correspond to the system: end of reduced period -> services closed - 21: the key entered does not correspond to the system -> services open for a reduced period - 32: the services are closed, valid key entered -> services open 	
50	ISDN ACCESS REBOOT PROBLEM	Board location. Interface marker	INFO 0 = D-channel	
51	CLOCK PROBLEM Clock synchronization problem detected on an add-on module interface	Board location. Access marker	INFO 0 = type of interface: T0, T2, DASS2, etc.	
52	SPECIFIC ACCESS PROBLEM DETECTED BY AN ISDN BOARD LEVEL 2	Board location. Access marker	INFO 0 = 1: FCS (Frame Check Sequence) 2: CRC (Cyclic Redundancy Check)	If the fault recurs frequently, check the connection to the public network.

TYPE	MESSAGE	LOCATION	ADDITIONAL INFORMATION	ACTION
53	ALARM DETECTED ON A PRIMARY ACCESS	Board location. Access marker	INFO 0 = XX: type of alarm - 00: Level 1 synchronized; all systems go. - 01: Synchronization loss in "multiple frame" mode (synchronization in "double-frame" mode is correct). - 02: No multiple frames; T2 automatically starts "double-frame" mode. - 04: Remote Frame Alarm. - 05: Synchronization loss in "double-frame" mode. - 06: Alarm Indication Signal; sequence of "1"s received, interface not synchronized. - 07: Loss of Frame Alignment (occurs when the cable is disconnected). - 08: Temporary clock lag; synchronization established. - 09: Error rate; number of error frames > 5 in 1 second. - 10: Erroneous frames received in the checksum (CRC). - 11: The network emits this alarm when the FALC sends erroneous frames in the CRC.	Ensure that the alarm disappears. If the fault recurs frequently, check the connection to the public network.
54	EXTERNAL FAULT ON S0 External problem detected on an S0 access following release message giving cause as "deactivation of level 1"	Board location. Access marker		
55	INTERNAL FAULT ON S0 Internal problem detected on an S0 access following release message giving cause as "deactivation of level 1"	Board location. Access marker		If the fault keeps recurring, check the bus wiring.

MAINTENANCE

SYSTEM MESSAGES

TYPE	MESSAGE	LOCATION	ADDITIONAL INFORMATION	ACTION
58	ISDN BOARD FAULT A level 1 error was detected by the board's OBC	Board location. Access marker	INFO 0 = type of error (not significant)	
72	UNSUCCESSFUL ATTEMPT TO PRINT Message emitted by the formatter (printer) after every 5 failed print attempts.			Check the printer and its connection cable.
103	OBC FAULT	Board location.	INFO 0 and 1 = type of fault	
200	4070 IO/EO BASE: SLAVE LINK CONNECTED TO INVALID INTERFACE	Board location. Interface marker	INFO 0 = interface number invalid INFO 1 = base station operating status	Check the cables on the 2nd link in the base station
201	4070 IO/EO BASE: FREQUENCY REJECTION Discrepancy between the number of frequencies configured by the installer and the number of DECT frequencies processed	Board location. Interface marker	INFO 0 to 3 = bitmap of frequencies authorized and in use	
202	4070 IO/EO BASE: LOSS OF SYNCHRONIZATION ON UA LINK 0	Board location. Interface marker	INFO 0 = link status (0 = link KO; 1 = link OK)	
203	4070 IO/EO BASE: LOSS OF SYNCHRONIZATION ON UA LINK 1	Board location. Interface marker	INFO 0 = link status (0 = link KO; 1 = link OK)	
204	4070 IO/EO BASE: NO REPLY ON DSP PRESENT (RESET)	Board location. Interface marker		

TYPE	MESSAGE	LOCATION	ADDITIONAL INFORMATION	ACTION
205	4070 IO/EO BASE: TRANSMISSION ERRORS DETECTED ON SERIAL LINK TO DSP (RESET)	Board location. Interface marker		
206	4070 IO/EO BASE: ERRORS DETECTED DURING INIT PHASE OF BOOT PROGRAM (RESET)	Board location. Interface marker		
207	4070 IO/EO BASE: ERRORS DETECTED DURING SOFTWARE DOWNLOAD PHASE	Board location. Interface marker		
208	4070 IO/EO BASE: RECEPTION BUFFER FULL	Board location. Interface marker		
209	4070 IO/EO BASE: RECEPTION BUFFER FULL	Board location. Interface marker		
220	DSP OUT OF SERVICE ON ONE OF THE BOARDS	Board location.	INFO 0 = DSP number INFO 1 = cause (resource problem, DSP overload, etc)	

MAINTENANCE

SYSTEM MESSAGES

TYPE	MESSAGE	LOCA- TION	ADDITIONAL INFORMATION	ACTION
239	STORAGE MEMORY CHANGED OR LOST	CPU (80)	INFO 0 = type of error - 0: medium KO - 1: medium full - 2: checksum error - 3: system file control error INFO 1 = type of medium - 0: NAND FLASH CPU - 1: NAND FLASH XMEM - 2: HARD DISK INFO 2 = type of initial medium INFO 3 = affected memory area (me- tering, alarms, voice prompts, etc)	
242	ERROR ON OPENING VOI- CE PROMPT FILE	CPU (80)	INFO 0 to 3 = type and value of voice prompt	
243	ERROR ON CLOSING VOI- CE PROMPT FILE	CPU (80)	INFO 0 to 3 = type and value of voice prompt	
244	ERROR ON READING VOI- CE PROMPT FILE	CPU (80)	INFO 0 to 3 = type and value of voice prompt	
245	ERROR ON WRITING VOI- CE PROMPT FILE	CPU (80)	INFO 0 to 3 = type and value of voice prompt	
246	ERROR ON OPENING VOI- CE PROMPT FILE	CPU (80)	INFO 0 to 3 = type and value of voice prompt	
247	ERROR ON OPENING VOI- CE PROMPT FILE	CPU (80)	INFO 0 to 3 = type and value of voice prompt	

HISTORY MESSAGES

The events identified by the codes in the system history messages table concern modifications to the system hardware configuration (appearance/disappearance of boards or terminals, refusal of a board on exceeding equipment limits) or other events (reset execution, buffer fill rate attained, etc).

When the table is full, a new event is memorized in place of the oldest message.

This table is only emptied in the event of a cold system reset.

TYPE	MESSAGE	LOCATION	ADDITIONAL INFORMATION	ACTION
0	SYSTEM REBOOT		INFO 0 = cause of reboot <ul style="list-style-type: none"> - 1: MMC reset command - 2: reset due to hardware fault - 3 to 5: reset following software problem - 7: reset following software key problem (the values of the default key are used) - 11: reset following software swap or after restoration (following swap) - 12: too many one-way communications - 13: automatic reset programmed by MMC - 14: timeout expiry - 55: normal reset 	
1	DOWNLOAD INFORMATION	CPU (80)	INFO 0 = information <ul style="list-style-type: none"> - 1: begin download - 2: download finished - 3: download failure INFO 1 = cause of failure <ul style="list-style-type: none"> - 0: download complete - 9: date invalid - 11: file transfer error - 14: download incomplete 	

MAINTENANCE

SYSTEM MESSAGES

TYPE	MESSAGE	LOCA- TION	ADDITIONAL INFORMATION	ACTION
2	SWAP INFORMATION Program change-over	CPU (80)	INFO 0 = 1: swap OK; 2: data saving error; 3: fault during swap INFO 1 = type of swap: 0: normal with data saving; 1: normal without data saving; 2: forced with data saving INFO 2 = acknowledgement: 0: no problem; 1: save KO; 2: restore KO; 3: save/restore KO	
3	LAUNCH OF CONFIGURATION SAVE Data Saving	CPU (80)		
4	CONFIGURATION SAVE OK	CPU (80)		
6	AUTOMATIC CONFIGURATION SAVE REFUSED MMC session in progress	CPU (80)		End the MMC session. Save manually or wait for the next automatic save.
7	LAUNCH OF CONFIGURATION RESTORE Data Saving	CPU (80)		
8	CONFIGURATION RESTORE OK	CPU (80)		
10	DATA SAVING OPTION ABSENT Data saving refused	CPU (80)		
20	NOT ENOUGH RAM Available space < 15 %	CPU (80)		
21	MESSAGE POOL LEVEL	CPU (80)	INFO 0 = not significant INFO 1 = type of pool	

TYPE	MESSAGE	LOCATION	ADDITIONAL INFORMATION	ACTION
22	FLUX CONTROL ON A MEMORY POOL Exceeded size of memory allocated to flux control on a memory pool	Board location	INFO 0 = type of pool INFO 1 = state (95 = exceeded 95 % threshold; 75 = gone under 75 % threshold)	
30	DBMS SUICIDE	CPU (80)	INFO 0 to 3 = causes of suicide	
31	CURRENCY CONVERSION -> EURO	CPU (80)	INFO 0 = 1: conversion OK	
32	PRIORITY CALL	CPU (80)	INFO 0, INFO 1 = number of the set with which communication was lost in order to take a priority call	
56	ISDN BOARD FAULT The ISDN protocol management module detected a level 1 fault on an ISDN access	Board location. Access marker	INFO 0 = access status (0 = access KO, 1 = access OK)	
57	TEI DELETION	CPU (80)	INFO 0 = D-channel INFO 1 = TEI	Analyze the reason why the TEI was modified by the network operator.
70	METERING SPOOLER K.O. Message emitted by the spooler when the metering buffer (the array where the tickets are stored) is n% full (70% by default)			Check the printer and its cable connection
71	METERING SPOOLER O.K. Message emitted by the spooler when the metering buffer is available again(-n% full; -70% by default)			

MAINTENANCE

SYSTEM MESSAGES

TYPE	MESSAGE	LOCATION	ADDITIONAL INFORMATION	ACTION
90	ENTERING AN MMC SESSION	CPU (80)	INFO 0 = 1: ADMINISTRATOR password; 2: INSTALLER password; 3: OPERATOR password; 5: protected access	
91	QUITTING AN MMC SESSION	CPU (80)		
100	BOARD BACK IN SERVICE (Following a system stoppage or after being unplugged)	Board location	INFO 0 = type of board	
101	BOARD DISCONNECTION	Board location	INFO 0 = type of board (if known)	
104	TEMPORARY BOARD RESET	Board location	INFO 0 = 1: hardware fault; 2: no response from board; 3: fan fault; 4: running on battery; 5: license problem; 6: maintenance problem; 7: reason unknown INFO 1 = cause of reset	
105	PERMANENT BOARD RESET	Board location.	INFO 0 = 1: hardware fault; 2: no response from board; 3: fan fault; 4: running on battery; 5: license problem; 6: maintenance problem; 7: reason unknown; 8: power supply problem INFO 1 = cause of reset	Disconnect and reconnect the board. If the fault persists, replace the board
106	BOARD REFUSED The board has been refused and, in the case of a digital board, a permanent reset is performed on it	Board location	INFO 0 = type of board INFO 1 = cause of refusal	Check the hardware configuration (the system limits may have been exceeded)
107	MMC BOARD RESET The reset of an interface board processor has been requested by MMC	Board location		

TYPE	MESSAGE	LOCATION	ADDITIONAL INFORMATION	ACTION
108	POWER DOWN: LAUNCH OF BACKUP PROCEDURE FOR A GIVEN BOARD	Board location		
110	<p>APPEARANCE OF A TERMINAL</p> <p>A terminal has been recognized by the system. This terminal is now operational</p> <p>NB: this message will only be sent if the NMC is present and active</p>	<p>Board location.</p> <p>Interface marker</p>	INFO 0 = type of terminal	
111	<p>TERMINAL REFUSED</p> <p>Configuration limit attained</p>	<p>Board location.</p> <p>Interface marker</p>	<p>INFO 0 = type of terminal</p> <p>INFO 1 = cause of refusal</p> <p>INFO 2 = 1 (software license problem; in this case, INFO 1 = 255 (terminal not totally refused, because recognized by MMC)</p>	Check the hardware configuration (the system limits may have been exceeded).
112	FAULT ON A TERMINAL	<p>Board location.</p> <p>Interface marker</p>	<p>INFO 0 = type of terminal</p> <p>INFO 1 = type of error</p>	If the fault recurs frequently, check the terminal and its connections.
113	<p>INTERFACE REFUSED</p> <p>An interface was refused because the system limits were exceeded</p>	<p>Board location.</p> <p>Interface marker</p>	INFO 0 = type of interface	Check the hardware configuration (the system limits may have been exceeded).

MAINTENANCE

SYSTEM MESSAGES

TYPE	MESSAGE	LOCA- TION	ADDITIONAL INFORMATION	ACTION
120	MODULE BACK IN SERVICE	Control- ler board (81 or 82)	INFO 0 = type of backpanel board (4 = BACK1; 5 = BACK2; 6 = BACK 3 INFO 1 = module operating mode (0 = restricted mode, run- ning on battery; 1 = normal mo- de, running on the mains)	
121	MODULE REFUSED	Control- ler board (81 or 82)		
122	MODULE DISCONNECTED	Control- ler board (81 or 82)		
123	POWER SUPPLY FAULT	CPU (80)	INFO 0 = mains power state (0 = Mains KO - battery activated; 1 = mains OK)	
124	FAN FAULT		INFO 0 = module (0 = basic module; 1 = extension 1; 2 = extension 2) INFO 1 = fan identity (0 = fan 1; 1 = fan 2) INFO 2 = fan state (0 = KO; 1 = OK)	
125	POWER SAVING System in power saving mode ; only the 2 first Reflexes sets and the T0 access are taken account		INFO 0 = module (0 = basic module; 1 = extension 1; 2 = extension 2)	
126	DSP RESOURCE KO Message not processed by the DSP of one of the controller boards	CPU (80) or con- troller board (81 or 82)	INFO 0 = 0 or 1 (DSP0 or DSP1)	
127	DSP RESULT CODES These codes are used in confir- mation messages and by the re- ception buffer	CPU (80) or con- troller board (81 or 82)	INFO 0 = 0 or 1 (DSP0 or DSP1)	

TYPE	MESSAGE	LOCATION	ADDITIONAL INFORMATION	ACTION
128	DSP KO The DSP of one of the controller boards is out of service.	CPU (80) or controller board (81 or 82)	INFO 0 = 0 or 1 (DSP0 or DSP1)	
129	CPU KO CPU board not detected by the backpanel board 10 minutes after initialization		INFO 0 = type of CPU (0 = Internet access; 1 = VoIP) INFO 1 = number of CPU resets during the-10 minute period INFO 2 = CPU state INFO 3 = final byte of CPU board Internet address	
160	HARDWARE TABLE THRESHOLD The critical threshold (80 % by default) of the hardware fault table has been reached	CPU (80)		
161	HISTORY TABLE THRESHOLD The critical threshold (80 % by default) of the history fault table has been reached	CPU (80)		
162	METERING TABLE THRESHOLD The critical threshold (80 % by default) of the data metering buffer has been reached	CPU (80)		
163	URGENT TABLE THRESHOLD The critical threshold (80 % by default) of the urgent alarms table has been reached	CPU (80)		
164	HARDWARE TABLE FULL The hardware fault table is full	CPU (80)		
165	HISTORY TABLE FULL The history fault table is full	CPU (80)		
166	METERING TABLE FULL The data metering buffer is full	CPU (80)		

MAINTENANCE

SYSTEM MESSAGES

TYPE	MESSAGE	LOCA- TION	ADDITIONAL INFORMATION	ACTION
167	URGENT TABLE FULL The urgent alarms table is full	CPU (80)		
168	BEGINNING OF NMC CON- NECTION The NMC application has esta- blished a connection with the PABX	CPU (80)		
169	END OF NMC CONNECTION The NMC application has ended the connection with the PABX	CPU (80)		
170	UNAUTHORIZED CALL NMC call by analog XRA (prohi- bited)	CPU (80)		
171	INCORRECT NMC CALL The PABX tried to establish a call to an NMC but it was unsucces- ful	CPU (80)		
172	NMC CALL NOT ANSWERED The PABX tried to establish a call to an NMC, but the call was not answered	CPU (80)		
173	NMC COMMUNICATION FAILURE The PABX connected to an NMC and sent an INFO message saying that an urgent alarm should be read. The PABX did not respond to this message.	CPU (80)		
174	NMC COMMUNICATION FAILURE The PABX received no ack- nowledgement for the data sent in the message. The communica- tion failed.	CPU (80)		

TYPE	MESSAGE	LOCATION	ADDITIONAL INFORMATION	ACTION
175	<p>NMC COMMUNICATION FAILURE</p> <p>The PABX received no acknowledgement for the establishment request sent to the NMC</p>	CPU (80)		
176	<p>ALARM REPORT FAILURE</p> <p>The PABX attempted to call the NMC to send urgent alarms, but the NMC number was not specified</p>	CPU (80)		
177	<p>PABX NOT SAVED</p> <p>The PABX attempted to call the NMC, but the NMC refused the call because it didn't recognize the PABX</p>	CPU (80)		
178	<p>UNKNOWN ALARM</p> <p>There was an alarm on the PABX but it was not recognized by the NMC</p>	CPU (80)		
190	UNKNOWN IPUI	CPU (80)	INFO 0, INFO 1, INFO 2, INFO 3 = last 4 bytes of the IPUI	
221	ETHERNET LINK OUT OF SERVICE	<p>Board location</p> <p>Ethernet interface marker</p>		Check the LAN connection and, if necessary, the LAN elements (hub, switch).
222	ETHERNET LINK IN SERVICE	<p>Board location.</p> <p>Ethernet interface marker.</p>		

MAINTENANCE

SYSTEM MESSAGES

TYPE	MESSAGE	LOCA- TION	ADDITIONAL INFORMATION	ACTION
223	REMOTE GATEWAY OUT OF SERVICE		INFO 0 to INFO 3: bytes corresponding to the IP address	Check the IP connectivity to the remote gateway (LAN, intermediate IP router) and the remote gateway status.
224	REMOTE GATEWAY IN SERVICE		INFO 0 to INFO 3: bytes corresponding to the IP address	
225	TRAFFIC OVERLOAD TO OR FROM A REMOTE GATEWAY For each gateway, a traffic counter logs the overflow calls due to total occupation of the bandwidth; the step value N for generating this message can be defined for each labeled address.	CPU (80)	INFO 0 to INFO 3: bytes corresponding to the IP address	If this alarm keeps recurring, increase the bandwidth associated with the gateway in the ARS table, and the number of DSPs allocated to VoIP access.

TYPE	MESSAGE	LOCATION	ADDITIONAL INFORMATION	ACTION
226	EXTERNAL GATEKEEPER INACCESSIBLE			Check the IP connectivity to the remote gatekeeper (LAN, intermediate IP router) and check that the remote gatekeeper is indeed on line.
227	<p>VoIP CALL REFUSED</p> <p>All incoming and outgoing calls refused due to busy IP accesses (no DSP or B-channel available) are logged by a traffic counter; the step value N for generating this message can be defined for each labeled address.</p>	CPU (80)		If this alarm keeps recurring, increase the number of DSPs allocated to VoIP access, or increase the bandwidth in the ARS, or add a CoC-PU@ + VoIP board.

MAINTENANCE

SYSTEM MESSAGES

TYPE	MESSAGE	LOCA- TION	ADDITIONAL INFORMATION	ACTION
228	<p>VoIP CALL FAILED</p> <p>Calls made by IP Phones due to a lack of DSP channels are logged by a traffic counter; the step value N for generating this message can be defined for each labeled address.</p>	CPU (80)		<p>If this alarm keeps re-occurring, increase the number of DSPs allocated to the IP user pool (decrease the number of VoIP-access DSPs or add a Co-CPU@ + VoIP board).</p>
229	<p>IP ENABLER 4098 RE NOT INITIALIZED</p> <p>DHCP problem</p>			<p>Increase the number of IP addresses in the DHCP server range (this address range must be greater than or equal to the number of IP Enablers to be installed).</p>
230	EXTERNAL GATEKEEPER REFUSED			

TYPE	MESSAGE	LOCATION	ADDITIONAL INFORMATION	ACTION
240	VOICE MESSAGES UNAVAILABLE Detection error on RAM initialization by the BIOS	CPU (80)	INFO 0 = number of megabytes of DRAM detected by the BIOS.	
241	VMU MEMORY THRESHOLD The voice message recording memory area is nearly full.	CPU (80)	INFO 0 = 1 (ON) if there are just a few minutes of recording time left; 0 (OFF) end of the anomaly.	

INFORMATION DISPLAYED

The information given below concerns the hardware messages as well as those contained in the system history.

TYPES OF BOARD (INFO 0 of messages 100, 101, and 244)

82H: integrated voice server
 9EH: SLI board
 A0H: UAI board
 A1H: PRA board = E1
 A2H: PRA board = DLE1
 A3H: PRA board = T1
 A4H: PRA board = DASS2
 A5H: PRA board = MIC ISDN
 A7H: virtual XRA board
 A8H: virtual VoIP board on main CPU
 B0H: main or applications CPU board
 B1H: MIX board
 B2H: BRA board
 B3H: LanX board

TYPES OF TERMINAL (INFO 0 of messages 111 and 112)

00H: 4034 1G set
 02H: 4023 1G set
 06H: 4034 2G set
 07H: 5028 set
 08H: 4023 2G set
 0AH: 4012 set
 0BH: 5022 set
 0CH: 4011 set
 0EH: 4001 or 4003 set
 0FH: 5010 set
 12H: 5018 set
 14H: 5015 set
 15H: 4003 set
 16H: 4088 adapter
 17H: First set
 19H: Easy set
 1BH: Premium set
 1DH: Advanced set
 1FH: 4070 IO set
 20H: multi-Reflexes
 22H, 23H: 4081 L 40-key add-on module
 24H, 25H: 4081 M 20-key add-on module
 26H: MAC/PC option (UA2G set)
 27H: external keyboard (for Reflexes set)

28H: V24 option (Reflexes 3G sets)
 2AH: Z option (Reflexes 3G sets)
 2BH: DECT option (Reflexes 3G sets)
 2CH: S0 option (Reflexes 3G sets)
 3BH: Z standard 2-wire set
 3CH: Z-CLASS standard 2-wire set
 3DH: Alcatel GAP DECT handset without display
 3EH: Alcatel GAP DECT handset with 16-character display
 3FH: Third-party GAP DECT handset without display
 40H: Third-party GAP DECT handset with 16-character display
 41H: Reflexes set + 4097 CBL adapter
 42H: 4073 set
 43H: Mobile Reflexes 100/200 set
 44H: S0 set
 45H: CSTA virtual terminal

REASONS FOR BOARD REFUSAL (INFO 1 of message 106)

01H: consumption limits exceeded
 04H: unknown board type
 05H: board refused
 06H: no primary access in basic module
 07H: feature denied (rights linked to license)
 08H: max. number of applications CPUs attained

REASONS FOR TERMINAL REFUSAL (INFO 1 of message 111)

06H: UA devices exceeded(2 add-on modules per set and 4 options)
 07H: total number of terminals exceeded
 08H: number of users exceeded
 09H: max. number of B-channels exceeded
 0AH: max. number of T0 accesses exceeded
 0BH: max. number of primary accesses exceeded
 0DH: incompatible terminal
 0EH: number of programmable keys exceeded
 0FH: memory capacity exceeded
 10H: number of S0 accesses exceeded
 11H: unauthorized terminal
 13H: number of DLT2 accesses exceeded
 19H: max. number of DECT base stations exceeded
 1CH: exceeded equipment level in module in terms of available energy
 1DH: exceeded max. number of HSL resources in a module
 1EH: exceeded max. number of HDLC resources for the overall system

Additional information contained in message 112 (INFO 1: type of error)

01H: transmission fault (Reflexes sets)
03H: set not responding or response incorrect
04H: set no longer responding
05H: message flow too large for set (Reflexes sets)
07H: transmission fault (Reflexes sets)
08H: transmission fault (Reflexes sets)
09H: transmission fault (Reflexes sets)
10H: no more memory available to store the messages intended for the subscriber (Reflexes sets)

TYPES OF INTERFACE (INFO 0 of message 113)

01H: analog set interface
03H: T0 access interface
04H: T2 access interface
05H: S0 set interface
14H: Reflexes set interface
20H: master DECT base interface
21H: slave DECT base interface
22H: DECT Reflexes interface
25H: Multi-Reflexes interface
26H: IP interface
27H: IP network interface
2AH to 2DH: interfaces MSG1 to MSG4
2FH: Audio In interface
30H: Audio Out interface
31H: General bell interface
35H to 38H: interfaces MSG5 to MSG8
1DH: analog modem interface on RAXX board
1EH: ECMA 102 modem interface on RAXX board

MANAGEMENT OF TWO-COLOR LED ON OPERATOR STATION

The two-color LED on the operator station flashes quickly (orange) in the following cases:

- on detection of either of the 2 following T2 alarms (message 53):
 - MS : Missing Signal.
 - RFA:Remote Frame Alarm.
- the metering ticket storage buffer is 70% full (default value) (message 70)
- metering printer fault (message 72); this alarm is only transmitted if the "PrintFault" flag is other than 0.
- problem regaining ISDN access (message 50)
- mains power fault (message 123).
- the hardware message table is 80% full (message 160); this alarm is only transmitted if the "OperAlarm" flag is other than 0.
- erroneous NMC call (message 171).
- unanswered NMC call (message 172).
- NMC communication failure (messages 173, 174 or 175).
- NMC: alarm report failure (message 176).
- NMC: PABX not registered (message 177).
- NAND Flash memory (CPU or XMEM) or hard disk not detected (message 239).

URGENT ALARMS

The PABX will generate a call to the network management center (NMC) if any of the following alarms is detected:

- either of the 2 following T2 alarms (message 53):
 - MS : Missing Signal.
 - RFA: Remote Frame Alarm.
- the metering ticket storage buffer is 70% full (default value) (message 70)
- metering printer fault (message 72); this alarm is only transmitted if the "PrintFault" flag is other than 0.
- problem regaining ISDN access (message 50)
- mains power fault (message 125).
- the hardware message table is 80% full (message 160); this alarm is only transmitted if the "OperAlarm" flag is other than 0.
- NMC: history table full (message 165).
- NMC: metering ticket table 80% full (message 162).
- NMC: metering ticket table full (message 166).

DATA RESTORATIONS

File

6

In case of maintenance and exchange of CPU board (main CPU and/or CoCPU@), the data stored on the daughter board XMEM64 and/or the Hard Disk will or will not be restored depending on the conditions described hereafter.

PROCEDURE TO EXCHANGE A MAIN CPU BOARD

CPU with XMEM64 (no Hard Disk)

The XMEM64 is not faulty and doesn't have to be exchanged

- Install the old XMEM64 on the new main CPU board.
- All datas stored in the XMEM64 board are normally still available after the CPU exchange. However, data saved on the XMEM64 board (messages, conversations, metering tickets) will not be restored if for some reason it is not stored (see Nota). After which it will be required to make a cold reset of the system, launch the "Data saving" process via PM5 to restore the data configuration information (see paragraph A).

Nota : You could find a new/replacement CPU delivered from the factory which will not always restore the data from the XMEM. But normally it would only occur if the exchange CPU is not charged with a software version.

Paragraph A : The XMEM64 is faulty and has to be exchanged

When the new XMEM64 board is installed, launch the "Data restore" process via PM5 to restore the data configuration information.

Select **Comm -> Write to PBX**, select the box **Voice Prompts** (screen **"Write to PBX"**).

The data restored are :

- names and announcements of the voice mail unit.
- auto attendant announcements, greetings.

But, voice mail messages, NMC metering tickets and conversations recorded can not be restored.

CPU without XMEM64

Launch the "Data restore" process via PM5 to restore configuration information. The voice files will be available in the conditions of paragraph A (except for customizable voices announces used with Hard Disk or XMEM64).

CPU with Hard Disk

The Hard Disk is not faulty and doesn't have to be exchanged

- Install the old Hard Disk on the new main CPU board.
- After a cold reset of the system, launch the "Data restore" process via PM5 (see paragraph A). All informations saved on the Hard Disk are normally available (including voice messages and conversations recorded).
- The Internet Access configuration (FAI, users, proxy, security, ...) can be restored. Select the box "Internet Access Data" during the data base restore (screen **Write to PBX**).

The Hard Disk is faulty and has to be changed

- All messages, record conversations and NMC metering tickets are lost.
- The cache memory is also lost.
- E-mails are lost if the Internet Access is managed by the main CPU.
- Voice files (= Voice prompts) are available by respecting the condition explained in paragraph A.

PROCEDURE TO EXCHANGE A CoCPU BOARD

The Hard Disk is not faulty and doesn't have to be exchanged

Install the old Hard Disk on the new CoCPU board. All information saved on the Hard Disk are still available.


The Hard Disk is faulty and has to be exchanged

- E-mails and cache are lost.
- The Internet Access configuration (FAI, users, proxy, security, ...) can be restored. Select the box "Internet Access Data" during the data base restore (screen **Write to PBX**).

PRECAUTIONS

Handle Hard Disk carefully. Most failures are caused by shock : either electrical or physical.

START AND STOP OF A SYSTEM



File
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TIME EXAMPLES

Configuration	CPU	CoCPU	Application	Start	Stop
Rack 1	CPUe	No	Telephony	3 min. 30 sec.	15 sec.
Rack 3	CPUe + XMEM + Hard Disk	2 x VOIP	Telephony + VoIP	8 min.	
Rack 3	CPUe + XMEM + Hard Disk	VOIP	Telephony + VoIP + Internet Access	10 min.	2 min.
Rack 3	CPUe + XMEM	IA	Telephony + internet Access	8 min. 30 sec	10 sec.
3 x Rack 3	CPUe + XMEM + Hard Disk	No	Telephony	5 min.	

Notas : The given times are equivalent to hot or cold reset.

For the swap/restore procedure, count 2*(start+stop time)

The times given are only approximate times

START MONITORING

It is possible to follow the progress of the start in 2 ways:

- On the display of the Reflexes stations.
- Using the web browser

On station

On the display of the Reflexes station you will see the different steps of the system start with the following: Start x.y (x is the step and y the sequence)

Detail:

- Start 2-6: detection of the cards of the main cabinet
- Start 2-5 : search of extension 1 and loading of the DSP if the extension exists
- Start 2-4 : detection of the expander cards 1 (optional)
- Start 2-3: Search of extension 2 and loading of the DSP if the extension exists

- Start 2-2: detection of the expander cards 2 (optionnal)
- Start 2-1: end of detection of telephony (appearance of virtual cards XRA IVPS)
- UNBLOCKING of the telephony (stations are on operational duties)
- End if no CoCPU
- Start 1-0 : starting of the CoCPU
- End.

Web navigator (browser):

- 1) Disable the proxy used by your browser (navigator):
 - on Netscape: Edit/ Preferences/ Advanced/ Proxy
 - on Internet Explorer: Tools/ Internet options/ Connections/ LAN settings
- 2) In the address field enter: http://192.168.92.246 :81/ or http:// IP address of the CPU followed by " :81/ "
- 3) In the login window, enter:
 - user name: operator
 - password: pbxk1064
- 4) Click on Main monitoring on the left of the screen. On your right you will have the sequences of starting of the CPU

This operation is available as soon as the system is in phase 1-6 (as per the station display) and is memorized for later consultation.

EXAMPLE OF START MONITORING BY NAVIGATOR (BROWSER)

The main system is starting up. Please wait ...

```

-----
--- CPU TYPE: MAIN ---
-----

--- Start of BIOS ---
    Succeeded

--- Start of Linux kernel ---
Operating system: Linux 2.2.13-RTL2.0
    Succeeded

--- Ramdisk initialization ---
    Succeeded

--- Hardware detected ---
CPU: AuthenticAMD 486 DX/4-WB
CPU speed:133 MHz
  
```

MAINTENANCE

START AND STOP OF A SYSTEM

RAM size:64 Mb
 Flash size:30075 kb
 Xmem flash:present
 Xmem flash size:60879 kb
 Hard disk:present
 Hard disk size:5729 Mb
 Hard disk manufacturer: FUJITSU MHK2060AT

--- Start of the software ---

```
+++++
++ 8 ++ Start of Init of telephony ++ 8 ++
+++++
```

Type of reset : WARM
 Cti licence Status : open

```
+++++
++ 7 ++ Init controller Master ++ 7 ++
+++++
```

Dld DSP 0 : OK
 Type of Backpanel : RACK 3
 Dld DSP 1 : KO
 Power supply Status : MAIN

```
+++++
++ 6 ++ Detection of boards on controller Master ++ 6 ++
+++++
```

Slot : 2 - Board : EBUA - hb in slot : 1
 status : accepted

Slot : 3 - Board : EBZ_LH - hb in slot : 1
 status : accepted

Slot : 7 - Board : BRA - hb in slot : 1
 status : accepted

FAN1 Status : OK
 FAN2 Status : OK

```
+++++
++ 5 ++ Init controller Sat 1 ++ 5 ++
+++++
```

```
+++++
++ 3 ++ Init controller Sat 2 ++ 3 ++
+++++
```

```
+++++
```

```
++ 1 ++ End of Init of telephony ++ 1 ++
+++++
```

- > Creation of virtual boards :

```
Slot : 91 - Board :      XRA - hb in slot : 1
status : accepted
```

```
Slot : 92 - Board :      IVPS - hb in slot : 1
status : accepted
```

Comment : no restore, call handling is available

```
+++++
++ 0 ++ telephony is running ++ 0 +++
+++++
```

Comment : no restore, call handling is available

Comment : no restore, call handling is available

Comment : no restore, call handling is available

```
Slot : 6 - Board :      CPU - hb in slot : 1
status : accepted
```

```
Slot : 9 - Board :      CPU - hb in slot : 1
status : accepted
```

Comment : no restore, call handling is available

```
+ SLOT: 1 - CPU TYPE : MAIN
ANV number :      3EH73026ACAA 04
db1 : absent
db2 : xmem
db3 : absent
db4 : absent
CPU speed:   133 MHz
RAM size:    64 Mb
Flash size:  32 kb
Hard disk:   present
Hard disk size: 5729 Mb
Hard disk manufacturer: FUJITSU MHK2060AT
```

a_

```
+ SLOT: 5 - CPU TYPE : VOIP
ANV number :      3EH73026ACAA 04
db1 : absent
db2 : absent
db3 : absent
db4 : absent
```


MAINTENANCE

START AND STOP OF A SYSTEM

```

CPU speed:    133 MHz
RAM size:     64 Mb
Flash size:   32 kb
Hard disk:    absent
+ SLOT: 8 - CPU TYPE : INTERNET_ACCESS
ANV number :      3EH73026ACAA 04
db1 : absent
db2 : absent
db3 : absent
db4 : slanx4
CPU speed:    133 MHz
RAM size:     64 Mb
Flash size:   32 kb
Hard disk:    present
Hard disk size: 5729 Mb
Hard disk manufacturer: FUJITSU MHK2060AT      a_
    
```

```

Detected sets :
=====
UA           : 5
MUA          : 0
IBS          : 0
Z            : 8
mobile set   : 0
V24         : 0
TA          : 0
S0          : 0
AOM         : 0
    
```



START AND STOP OF A SYSTEM

MAINTENANCE

DATA TRANSFER PROBLEM WITH WINDOWS NT4

File

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PROBLEM DESCRIPTION

During data transfer from a PC under Windows NT4 pack 6 by using TCP protocol, the transfer can stop and the application can be blocked.

This is due to a loss of acknowledge frame during the transfer. This problem occurs during the transfer of a big file: downloading of a software version, global save of a configuration, ...

This problem is already identified in Microsoft under the number : **Q254930**.

SOLUTION

To solve this Microsoft problem, it is mandatory to load a patch of Windows NT4. Microsoft doesn't allowed us to send directly this patch to our distributors, so you must contact the Technical Support of Microsoft. We can only provide a procedure to contact Microsoft and request this patch.

PROCEDURE

- Go to the Microsoft Web site : www.microsoft.com
- Click to the page "Support"
- Click on the field List of phone numbers.
- Call the Microsoft Technical Support by using the phone number of the Welcome center.
- Describe the problem to the technician as it is written in the chapter "Description" and don't forget to give the anomaly number Q254930.
- Give your contact to the technician to receive the patch by mail.



**DATA TRANSFER PROBLEM WITH
WINDOWS NT4**

MAINTENANCE

Alcatel OmniPCX Office

SECTION
GLOSSARY

REF3EH 21000 BSAA Ed. 04



ALCATEL OMNIPCX OFFICE

GLOSSARY

Section Glossary

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FILE 1



ALCATEL OMNIPCX OFFICE

SECTION GLOSSARY (INDEX)

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GLOSSARY

FILE 1



A

ACSE

"Association Control Service Element". OSI convention used for establishing, maintaining and releasing connections between two applications.

ADN

Additional Designation Number.

AFU

"Auxiliary Function Unit". Daughter board of the CPU/CPUe board supporting ancillary functions such as general bell, doorphone, audio in, audio out, etc.

API

"Application Programming Interface".

ARI

"Access Right Identifier". System identification number (DECT feature).

ARS

"Automatic Route Selection". A logic direction is a set of trunks used for a call with the following facilities: seeking out the optimal path for a call, using the least-cost operator or network; overflow management: enables a PABX to find a new route to make an outgoing call when there are no resources available in the initial trunk.

ASN-1

"Abstract Syntax Notation 1". OSI language for describing data types independently of processor structures and technical representations.

ATA

"Analog Trunk Access". Board for connecting analog network lines (switched network).

B

BACKGROUND MUSIC

External device (e.g. radio tuner) that can broadcast music over the loudspeakers of idle terminals; broadcasting is stopped automatically if there is an incoming call to the terminal or if the user makes a call.

BACP

"Bandwidth Allocation Control Protocol". Control protocol associated with BAP.

BAP

"Bandwidth Allocation Protocol". PPP protocol that manages bandwidth by allocating it dynamically between two ports, i.e. between the two extremities of a point-to-point link.

BOD

"Bandwidth On Demand". Service that allocates bandwidth automatically in response to traffic volume.

BRA

"Basic Rate Access". Board for connecting T0 digital basic accesses; each access supports a data

rate of 144 kbps, structured as 2 B-channels at 64 kbps for voice and data transmission, and 1 D-channel at 16 kbps for signaling.

C
CCP

"Compression Control Protocol".

CHAP

"Challenge-Handshake Authentication Protocol". Security function supported on connections that use PPP encapsulation: prevents unauthorized access.

CLIP

"Calling Line Identification Presentation". Complementary service for digital protocols that allows the caller number to be presented to the called party.

CLIR/COLR

"Calling/COnnected Line Identification Restriction". Service that inhibits CLIP or COLP.

CNIP

"Calling Name Identification Presentation". Complementary service for private digital protocols (ISVPN or ABC-F) that allows the caller's name to be presented to the called party.

COLP

"COnnected Line identification Presentation". Complementary service for digital protocols that allows the number of the connected user (the one who answered the call) to be presented to the caller.

CONP

"COnnected Name identification Presentation". Complementary service for private digital protocols (ISVPN or ABC-F) that allows the name of the connected user (the one who answered the call) to be presented to the caller.

CPU

"Central Processing Unit". Term designating the processor or microprocessor. The central processing unit executes computer program instructions.

CSTA

"Computer Supported Telephony Application". ECMA standard that defines command exchanges between a PABX and a server.

CTI

"Computer-Telephone Integration". Interaction mechanism between 2 sections, namely a data processing section (computer) and a telecommunications section (PABX), independently of the physical layout of the 2 sections.

D
DASS2

"Digital Access Signaling Specification number 2"

DDI

"Direct Dialing In". Direct external call number for the system terminals (depending on the configuration with the public network operator).

DECT

"Digital Enhanced Cordless Telecommunication". European cordless telephony standard. DECT terminal: cordless terminal that complies with this standard.

DHCP

"Dynamic Host Configuration Protocol". Protocol that manages IP address allocation dynamically

GLOSSARY

GLOSSARY

so that addresses can be reassigned when no longer being used by LAN hosts.

DISA

"Direct Inward Station Access". Services (Analog DISA and Transit DISA) enabling outside callers to dial a specific number giving direct access to the system.

DLL

"Dynamic Link Library". Windows library linked dynamically to an application.

DLT2

"Digital Line T2". Private 2 MHz link in PRA mode (= digital ATL).

DNS

"Domain Name Server". System used on the Internet for converting domain names or machine names into IP addresses. A domain name, unlike an IP address, is an easily memorized Internet address.

E

ECMA

"European Computer Manufacturers Association".

ETHERNET

Local network (LAN) operating at 10 or 100 Mbps (10 base T or 100 base T) over a coaxial cable. Ethernet is similar to the IEEE 802.3-series standards.

F

FTP

"File Transfer Protocol". Standard protocol for exchanging files between remote computers over the Internet.

FTP/STP/UTP

"Foiled Twisted Pairs/Shielded Twisted Pairs/Unshielded Twisted Pairs". Types of connection cables to be used between an Alcatel OmniPCX and an external distribution panel.

G

GATEKEEPER

Secure directory server.

GATEWAY

Device connecting different networks.

GENERAL BELL

If the operator is absent, internal and external calls to the operator are directed to an external signaling device that lets any authorized terminal take these calls.

H

HSL

"High Speed Link". Link between the basic module and an add-on module; requires an HSL daughter board to be fitted on the CPU and MEX boards.

HTTP

"HyperText Transfer Protocol". Standard application protocol for exchanging files (text, images,

audio, video, etc) over the Internet.

HTTPS

"Secure HyperText Transfer Protocol". Secure version of HTTP: encrypts and decrypts pages containing user requests as well as pages retrieved from a web server.

H.323

ITU standard for multimedia communication (voice, video, data).

I
IAP

"Internet Access Provider". See ISP.

ICMP

"Internet Control Message Protocol". Network protocol that provides error reports and information on the processing of IP packets.

IMAP4

"Internet Message Access Protocol". A protocol of the same type as POP3, the difference being that the messages always stay on the ISP server, even after consultation. IMAP requires continuous access to the server while the messaging service is in use.

IN

Installation Number.

IPSec

"Internet Protocol Security". Standard taking network security into account. Protocol used in the implementation of VPNs, and for remote access by connection to a VPN.

ISDN

"Integrated Services Digital Network". Standard for the transmission of digital data over telephone cables or other communication vectors.

ISP

"Internet Service Provider". A company that provides Internet access for individuals and enterprises, along with other services, such as web site construction and hosting.

ISVPN

"Integrated Services Virtual Private Network". Protocol used in a private virtual digital network; it offers functions such as transfer optimization and the transmission of information such as the name, busy status or diversions.

ISVPN+

Includes metering information in addition to the usual ISVPN services.

ITU

International Telecommunications Union: global coordination body.

K
KEY SYSTEM (mode)

Reflexes terminal operating mode in which the terminal features as many resource keys (RSP) as there are network lines in the system.

L
LAN

GLOSSARY

GLOSSARY

"Local Area Network". Network of interconnected machines that share the resources of a processor or server in a relatively restricted geographical area, usually the premises of a company.

LOUDSPEAKER

External loudspeaker used for broadcasting messages.

M

MANAGER/SECRETARY

Set of specific services (profile, filtering, diversion) between a manager terminal and a secretary terminal.

MEX

Add-on module. Controller board for extension or 'add-on' module.

MIX

Mixed equipment board: T0 accesses, analog and reflexes terminal connection interfaces.

MPPP

"Multi-link PPP". A protocol that aggregates bandwidth from a number of links to obtain faster communication speeds.

MULTILINE TERMINAL

Terminal that has several lines for managing several calls at the same time.

N

NAT

"Network Address Translation". A service that converts the IP address used on one network into another IP address recognizable by another network. Address translation allows companies to keep their own private IP addresses for internal purposes while using just one IP address for communication with the outside.

NMC

"Network Management Center". Workstation allowing a communication server administrator to remotely manage, administer (storage of call metering tickets for example) and optimize one or more Alcatel OmniPCX Office systems.

NMT

"Numbering Modification Table".

NNTP

"Network News Transfer Protocol". Protocol used by computers to handle messages created in Usenet forums.

O

OS

"Operator Station". Dedicated Reflexes terminal for answering incoming calls from the public network.

P

PABX (mode)

Mode of operation of Reflexes terminals; in this mode, all the network lines are materialized by ge-

neral-purpose resource keys (RSB).

PAP

"Password Authentication Procedure". Procedure used by PPP servers to validate connection requests.

PASSWORD

Code acting as a password, controlling access to the voice mail unit and the terminal locking function.

PAT

"Port Address Translation".

PCBT

"PC Based Telephony".

PE

"Public Exchange".

PLEASE WAIT MESSAGE

An audio component of the system (or an external device, such as a cassette player) which plays a message or piece of music while keeping an external correspondent on hold.

POP3

"Post Office Protocol". Standard Internet protocol for receiving electronic messages. POP3 is a client/server protocol in which the messages are received and hosted by the ISP. When a message is read, it is transferred to the client terminal and is no longer hosted by the ISP.

PPP

"Point-to-Point Protocol". Protocol used in communication between two computers using a serial interface (typically a PC connected to a server via a telephone line).

PRA

"Primary Rate Access". Board for connecting a T2 digital primary access; the access supports 48 kbps structured as 30 B-channels at 64 kbps for voice and data transmission, and 1 D-channel at 64 kbps for signaling.

PROXY

A proxy server is used as an interface between a user and the external Internet network.

PSTN

"Public Switched Telephone Network".

PTN(X)

"Private Telecommunications Network (eXchange)". A private network consisting of switches and terminals connected together by telephone links.

Q**QOS**

"Quality Of Service". Network characteristics (transmission speed, etc.) can be measured, improved and, to an extent, guaranteed in advance.

QSIG

"Q Signaling Protocol". Set of standard signaling protocols between the private PBXs of a telephone network (Q reference point) interconnected by digital ATLS.

R**RADIUS**

"Remote Authentication Dial-In User Service". A client/server protocol that enables remote access

GLOSSARY

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servers to communicate with a central server in order to authenticate remote users before allowing them access to the systems or services they have requested.

RGO, RGI, RGM

General resource keys supporting local and or/external calls, whether outgoing (RGO), incoming (RGI) or mixed (RGM).

ROSE

"Remote Operations Service Element".

RSB

Resource key dedicated to a trunk group (bundle); used for making external outgoing calls on a particular trunk group and receiving all network calls.

RSD

Resource key for a particular destination; supports local calls for this number if assigned to a speed dial number, incoming calls for the number if assigned to a DDI number or outgoing calls on a trunk group if assigned to a trunk group.

RSL

Resource key dedicated to a set; supports calls to and from a particular set.

S

S0 BUS

Type of connection for S0 digital terminals (passive short bus, long/short point-to-point bus, extended bus); S0 buses and terminals are connected up via an S0 option embedded in an Alcatel Reflexes terminal.

SELV

"Safety Extra Low Voltage". Classification of interfaces in accordance with standards EN60950 and IEC 950.

SLAN

"LAN Switch". Daughter board for mounting on a CoCPU/CoCPU@ board to enable it to communicate with the CPU/CPUe.

SLI

"Single Line Interface". Board allowing the connection of analog terminals (also known as Z terminals).

SMTP

"Simple Mail Transfer Protocol". Standard protocol used for sending and receiving mail.

SPI

"Service Provider Interface".

SSH

"Secure Shell". A UNIX interface protocol for obtaining secure access to remote computers.

T

TAPI

"Telephony Application Programming Interface". Standard defined by Microsoft.

TCP/IP

"Transmission Control Protocol/Internet Protocol". Standard protocol used on the Internet. TCP corresponds to the Transport layer (layer 4) of the OSI model. IP corresponds to the Network layer (layer 3) of the OSI model.

TERMINAL GROUP

Series of terminals grouped under the same directory number. Any call to that number is routed to a free terminal line.

TFTP

"Trivial File Transfer Protocol". The simplest network application for transferring files.

TL

"(Analog) Trunk Line" connecting the system to the public switched network.

TSAPI

"Telephony Services API". Standard defined by Novell, based on ECMA's CSTA standard.

U
UAI

"Universal Alcatel Interface". Board used for connecting up Alcatel Reflexes terminals or DECT 4070 IO/EO base stations.

URL

"Uniform Resource Locator". Address of a resource (file, program, image, etc) accessible on the Internet.

UUS

"User to User Signaling". Information carried clear end-to-end by ISDN to enable exchanges between network subscribers; the ISVPN protocol is contained within this information.

V
VMU

Voice Mail Unit. The integrated voice server provides a voice mailbox for each user as well as a general voice mailbox and features such as Personal Assistant, Automatic Attendant and Audiotex.

VoIP

"Voice over IP". Term designating voice transmission over a data network using the Internet protocol.

VPN

"Virtual Private Network". Private data network that uses the public telecommunications infrastructure (e.g. the Internet) while maintaining confidentiality by means of tunneling protocols and security procedures.

W
WAN

"Wide Area Network". A geographically dispersed telecommunications network. The term WAN is used in contrast to LAN.

WINS

"Windows Internet Naming Service". In Windows environments, the service that manages the correspondence between client station names and LAN locations relative to their IP addresses.

X
XMEM

"eXpansion Memory". Daughter board of the CPU board that extends the memory capacity and allows a hard disk to be connected.