

Warm Welcome

A decorative graphic consisting of several teal circles of varying sizes, arranged in a loose, diagonal pattern from the middle right towards the bottom right of the slide.

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Matrix Eternity: PLCC Switch

IP based Digital ISDN EPAX For PLCC Applications

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Agenda

- ETERNITY PLCC EPAX Variants
- System Architecture
- Built-in Resources
- Interfaces and Applications
- PLCC Features
- Application Diagrams
- Other Features
- Valued Customer

A cluster of approximately ten teal circles of varying sizes, arranged in a loose, organic pattern in the bottom right corner of the slide.

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ETERNITY PLCC EPAX Variants



ETERNITY GE6S

- 6 Universal Slots
- Expandable Up to 120 Ports



ETERNITY ME10S

- 10 Universal Slots + 03 Slots for Redundancy Cards
- Expandable Up to 324 Ports



ETERNITY ME16S

- 16 Universal Slots
- Expandable Up to 516 Ports

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ETERNITY GE6S



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ETERNITY ME10S





ETERNITY ME16S





ETERNITY-System Architecture

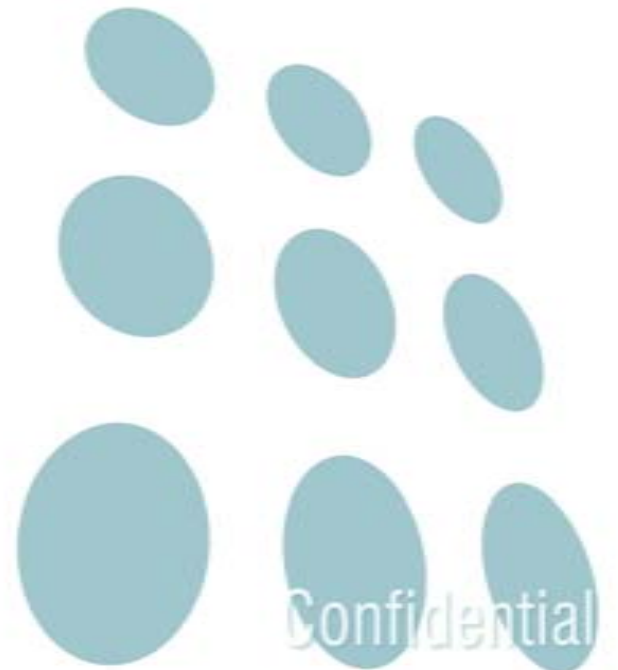
- Digital PCM-TDM Technology
- High Density Digital 1024 x 1024 Switching
- 100% Non-Blocking
- 32 Bit RISC Processor
- 64MB Memory (32 MB SDRAM + 32 MB Flash)
- Distributed Processing Architecture
- SLIC and SMT Design
- Embedded Linux Platform
- Built-in HTTP server for Remote Programming
- High Density Cards

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ETERNITY-Intelligence

- Cutting Edge Features
- Built-in Hardware
- Multi Networks Operation
- Self Diagnostic Tests
- Watch Dog
- Mixed Ports Cards
- Various Port for Computer Connectivity
- Capable of carrying Voice and Data Traffic
- In-SkinVoice Mail Features
- Built-in Auto Attendant Functionality





ETERNITY-Reliability

- Primary and Secondary Protections
- Hot-Swapping (Optional)
- Redundancy (only in ETERNITY ME10S)

(Master Card, Switch Card and Power Supply Cards)

- System Events Log / Faults Log
- Wider Input Range for Power Supplies
- No Internal Cables or Wires
- All Aluminum Enclosure
- Watch Dog

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MATRIX ETERNITY - Flexibility

- Flexible Numbering for Station and Extensions
- Flexible Programming
- Many Programming Options
(SLT, DKP, RS232C, Ethernet)
- Universal Slots to Expand the Capacity at on site
- To work as PLCC EPAX and PBX
- Multi Network Interface and Operation
(POTS, E&M, GSM, ISDN, E1/T1 PRI, BRI, VoIP)
- Various Cards to Choose Having Mixed Ports
- Various Auxiliary Ports : AIP, AOP, DIP, DOP
- Power Supply Options: 48VDC and 90-265VAC
- Mounting Options : Wall, Table-Top, 19" Rack

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Built-in Resources

- External Music Port (AIP)
- Public Address System (PAS) Port (AOP)
- Sensor Connectivity Port (DIP)
- Relay Control Device Port (DOP)
- Digital Key Phone Ports (DKP) *
- Ethernet Port – 1
- USB Port – 1 (*For Future Applications Use*)
- RS232C Port – 2 *
- Printer Port – 1 *

** Model Dependant*

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PLCC Features

- Alternate Route Selection
- Auto Attendant functionality
- Call Routing Progression Tone
- E&M Dial-Up/Tie Line Integration
- E&M Express Line Integration (Optional)
- Elaborate Routing Table with 250 Entries
- Flexible Numbering for Extensions
(1 to 6 digits or Mix of All)
- Mixed Length of Station ID
- Multiple SID for Same EPAX

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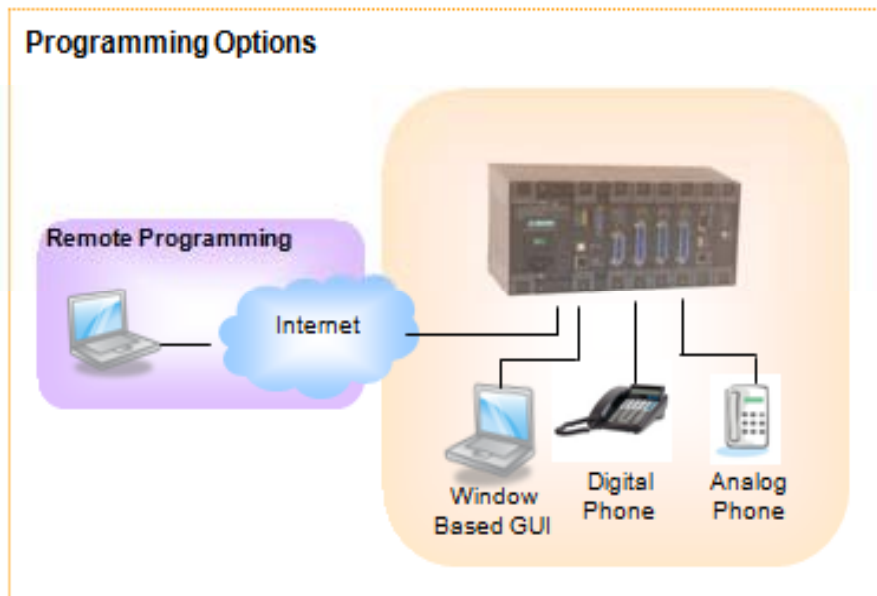
PLCC Features

- PLCC and Normal PBX Operation Simultaneously
- Priority Over E&M Lines
- Priority within a System
- Programmable Pulse
(Engage, Released, Ringer, Dialed Digit)
- Programmable Station ID - SID *(1 to 6 Digits)*
- User Restricted Dialing to Selected Destinations
- Transit Barring
- Out-of-Order Trunk Disable
- Trunk Groups to Restrict Ordinary Traffic on a Certain Trunks/Routes

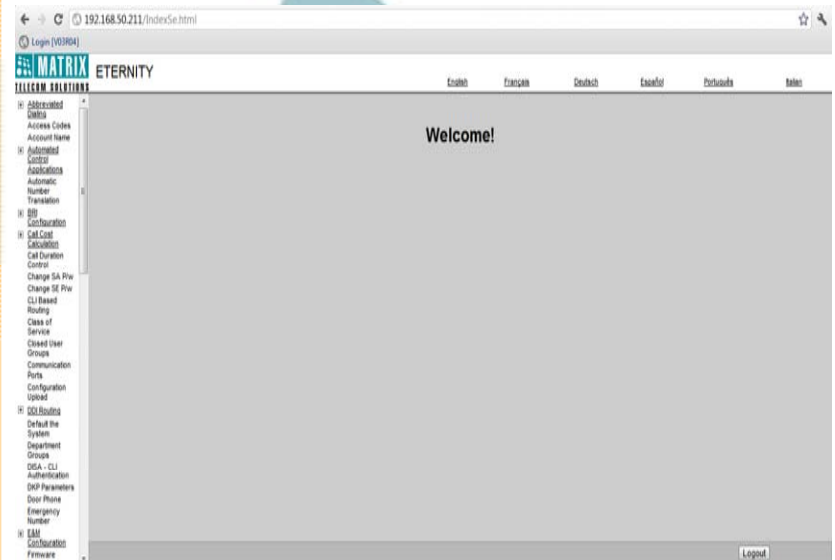
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Programming Options

- Programming Using Analog Telephone
- Programming Using Digital Key Phone
- Window Based GUI Software Tool
- Remote Programming

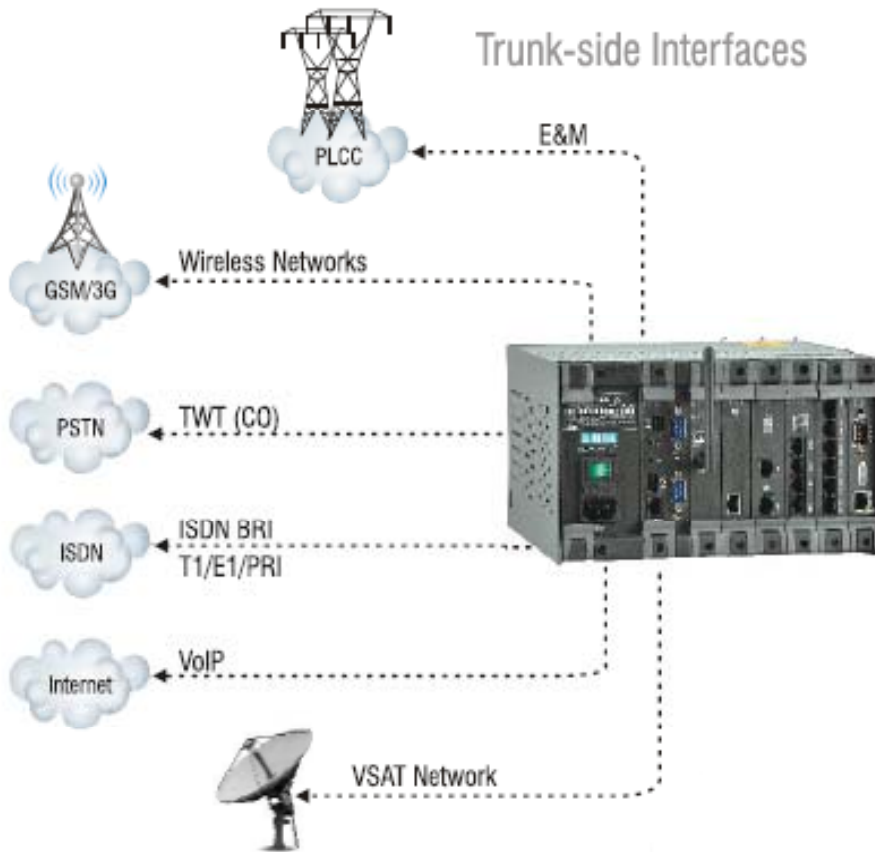


Web Based GUI Tool



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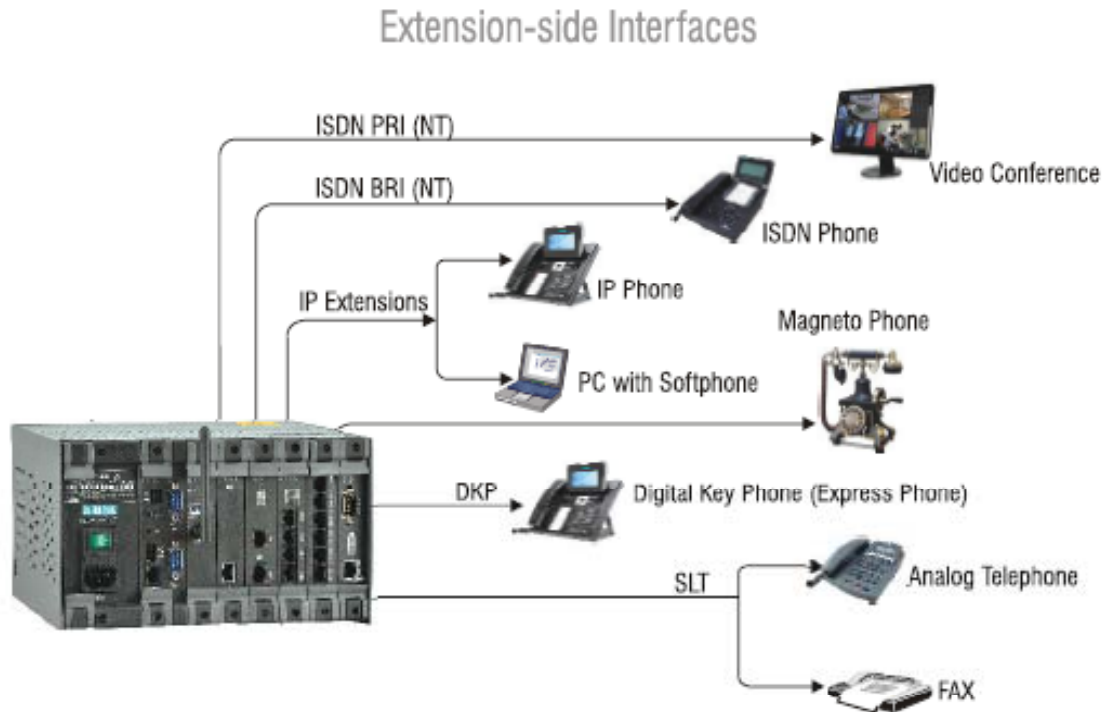
Trunk Line Interfaces



- E&M Dial-in / Tie Line
- E&M Express
- VSAT Network (Through E&M)
- 2W TWT (CO)
- ISDN PRI (30B+D or 23B+D)
- ISDN BRI (2B+D)
- E1 / T1
- GSM (SIM)
- VoIP (SIP)
- Magneto

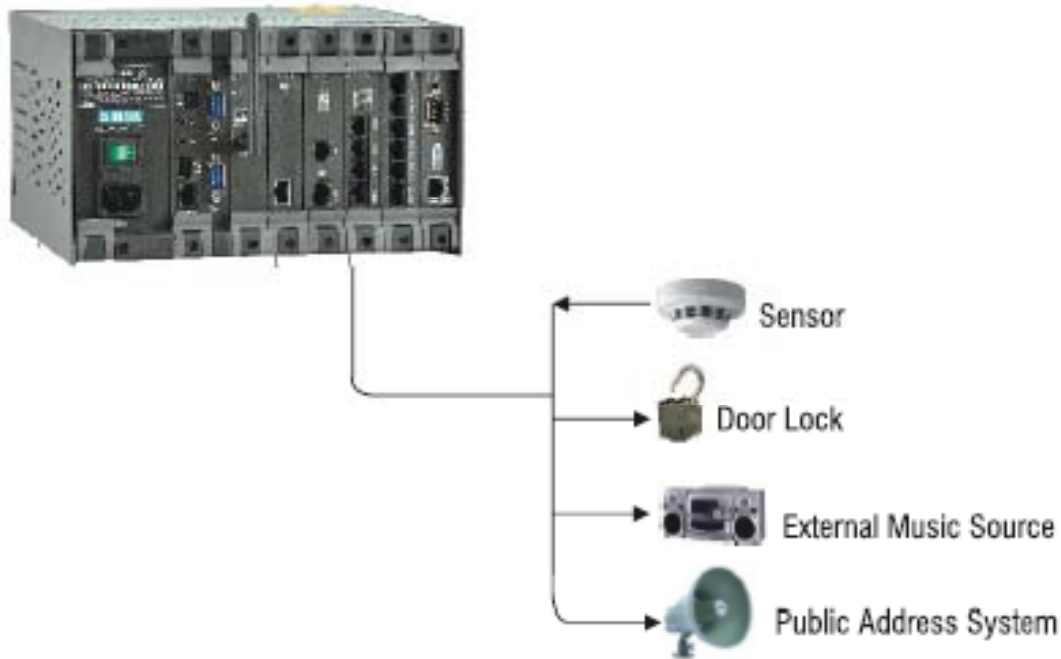
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Extension (Station) Interfaces



- 2W Analog Extension (FXS)
- 2W Digital Extension (DKP)
- ISDN BRI (NT Mode)
- ISDN PRI (NT Mode)

Auxiliary Interfaces

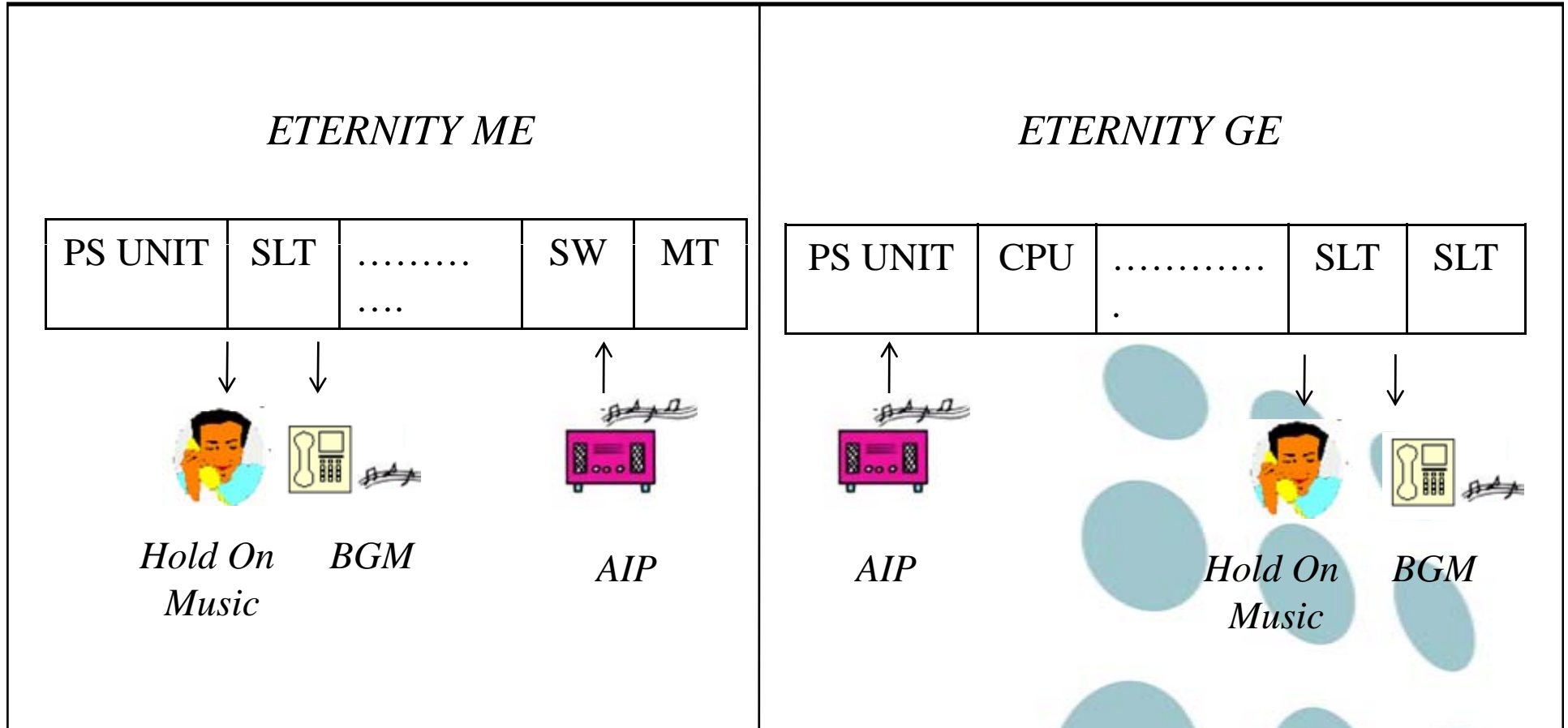


- Analog Input Port (AIP)
- Analog Output Port (AOP)
- Digital Input Port (DIP)
- Digital Output Port (DOP)

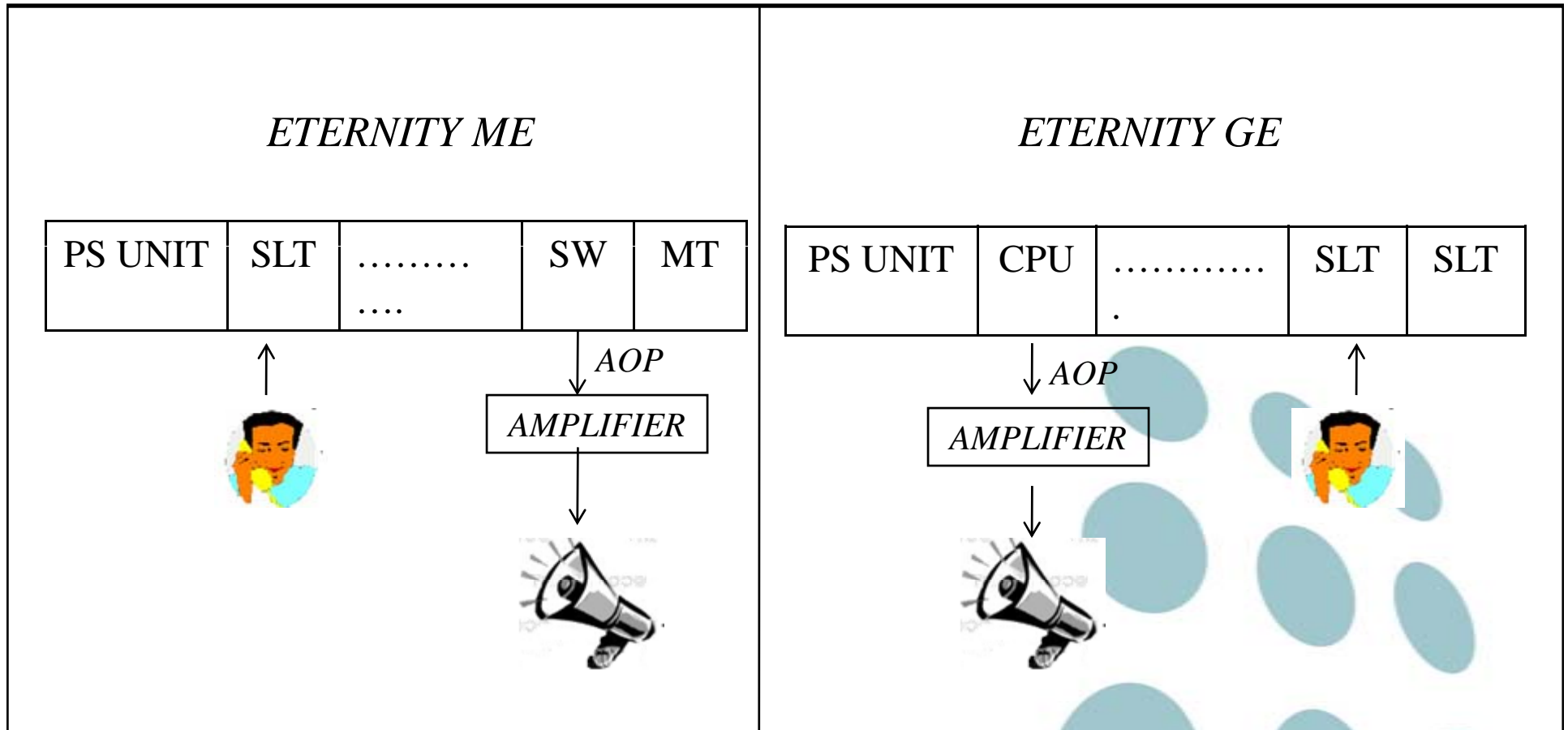
System Built-in Resources

System Resources	ETERNITY		
	GE6S	ME10S	ME16S
DKP/DSS Port	-	4	4
RS232C Port	2	2	2
Parallel Printer Port	-	1	1
Analog Input Port	1	1	1
Analog Output Port	1	1	1
Digital Input Port	1	1	1
Digital Output Port	1	1	1
Ethernet Port	1	1	1
Voice Modules	16 Modules of 16 Sec. Each	16 Modules of 16 Sec. Each	16 Modules of 16 Sec. Each
Conference	15 Participants	21 Participants	21 Participants
Redundancy	NA	Available for Master Card, Switch Card & PS48VDC	NA

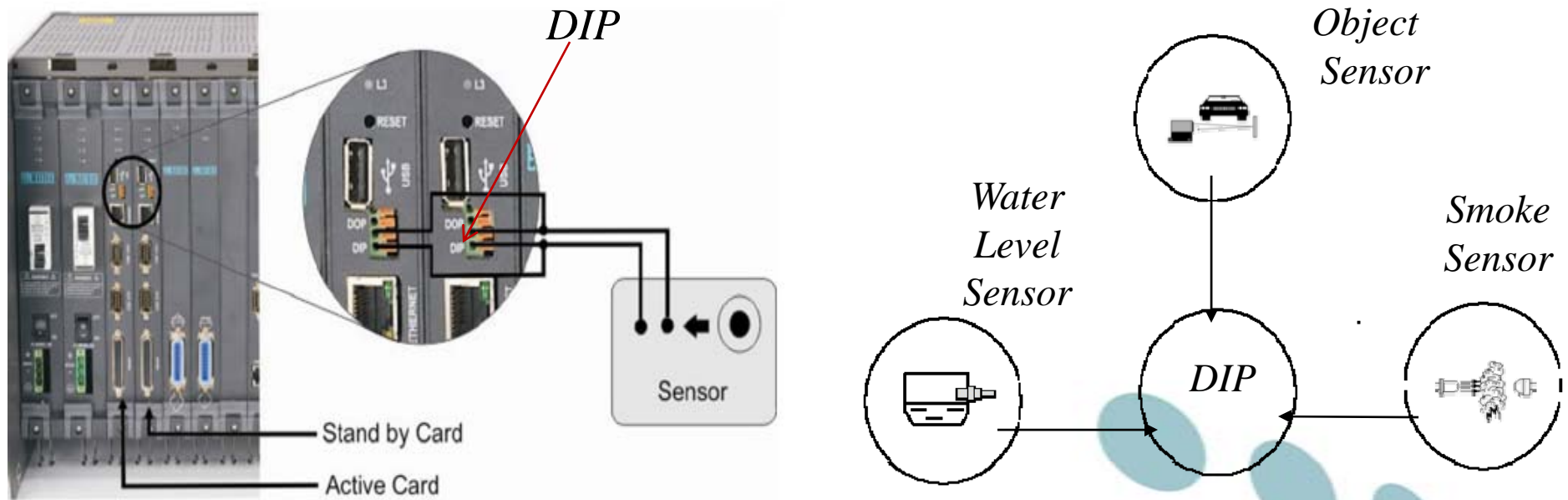
Analog Input Port (AIP): Application Diagram



Analog Output Port (AOP): Application Diagram



Digital Input Port (DIP): Application Diagram

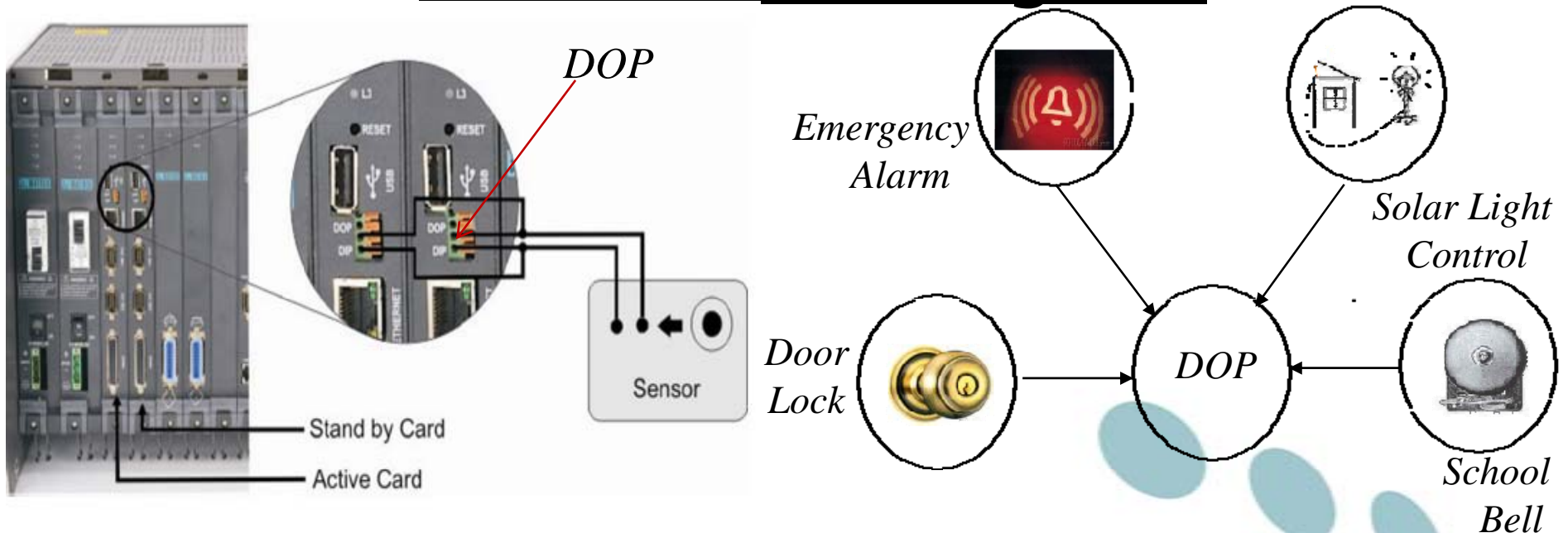


Digital Input Port (DIP): Technical Specification

Type : Loop Open/Close Sensing

Loop Current: 7mA (max)

Digital Output Port: Application Diagram



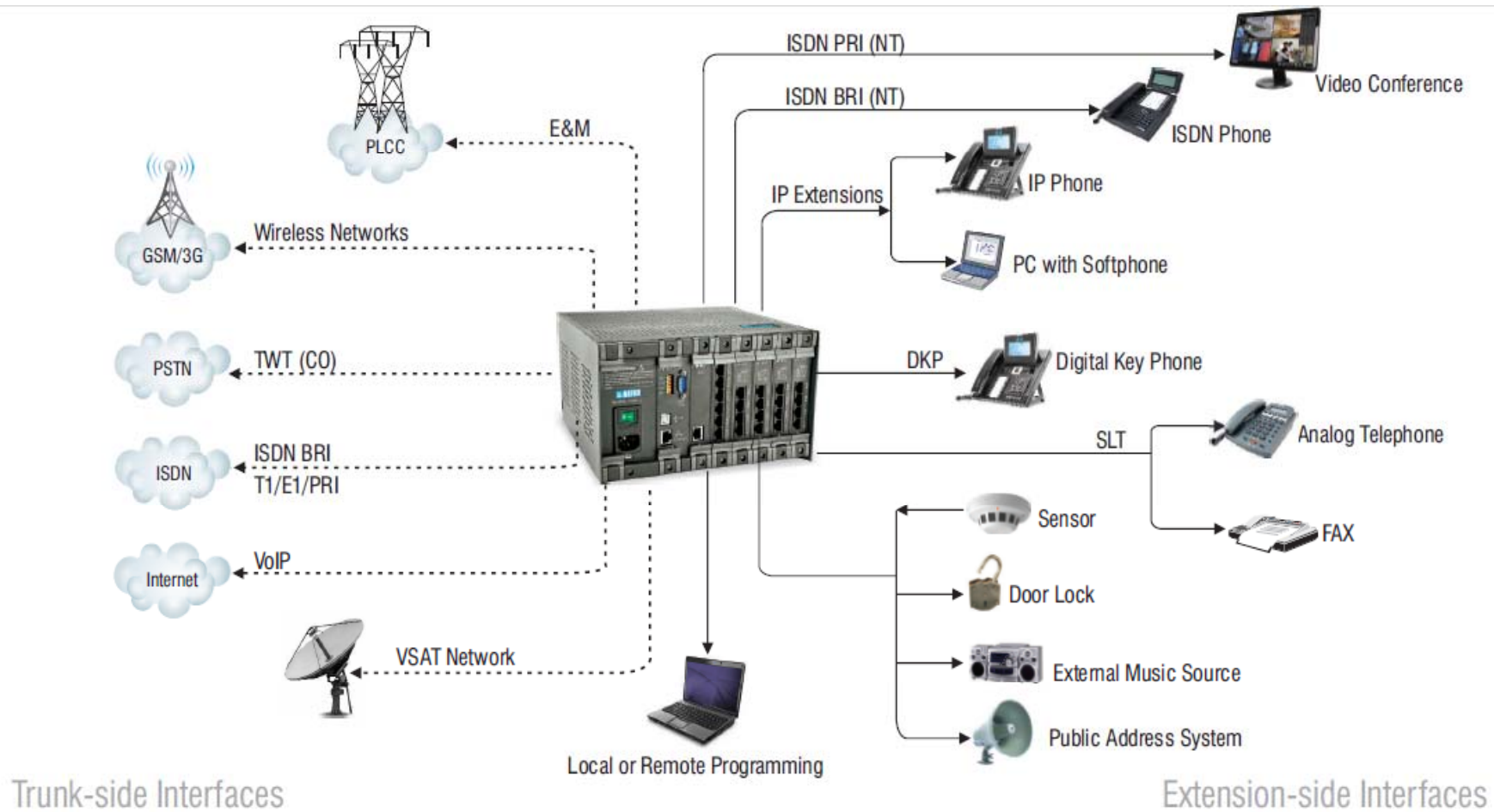
Digital Output Port: Technical Specification

Relay Type : Solid State Relay

Contact Rating: 60 V DC @ 150mA

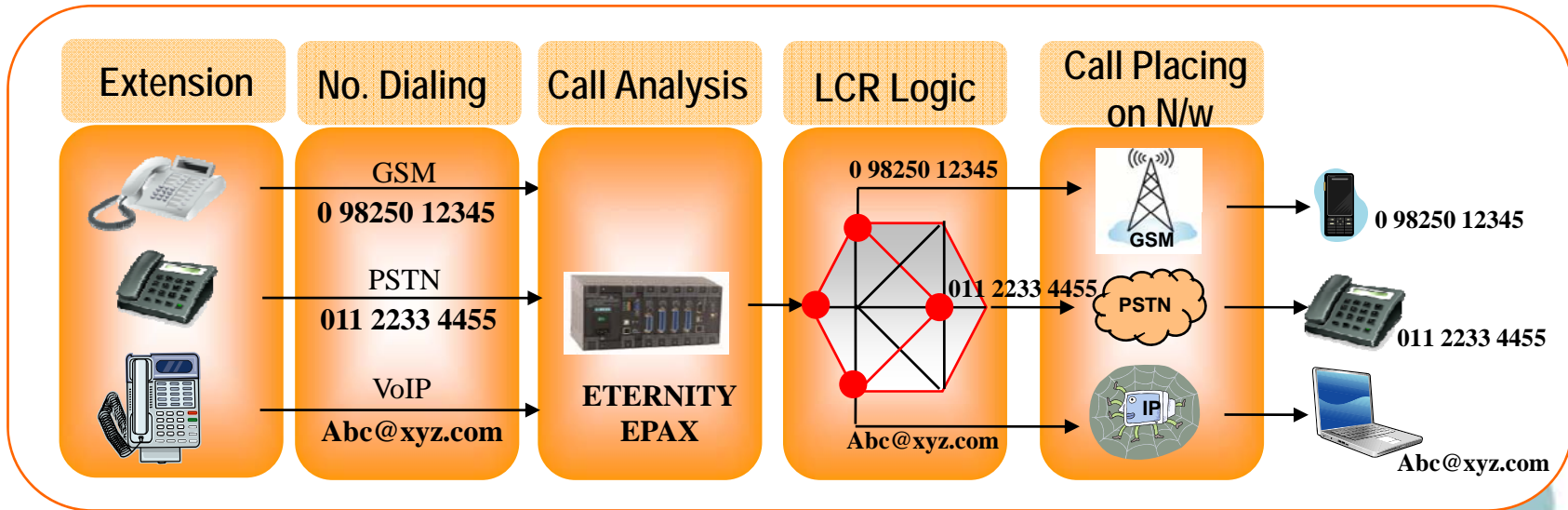
Operation Time: 5 ms

ETERNITY – Interfaces & Applications

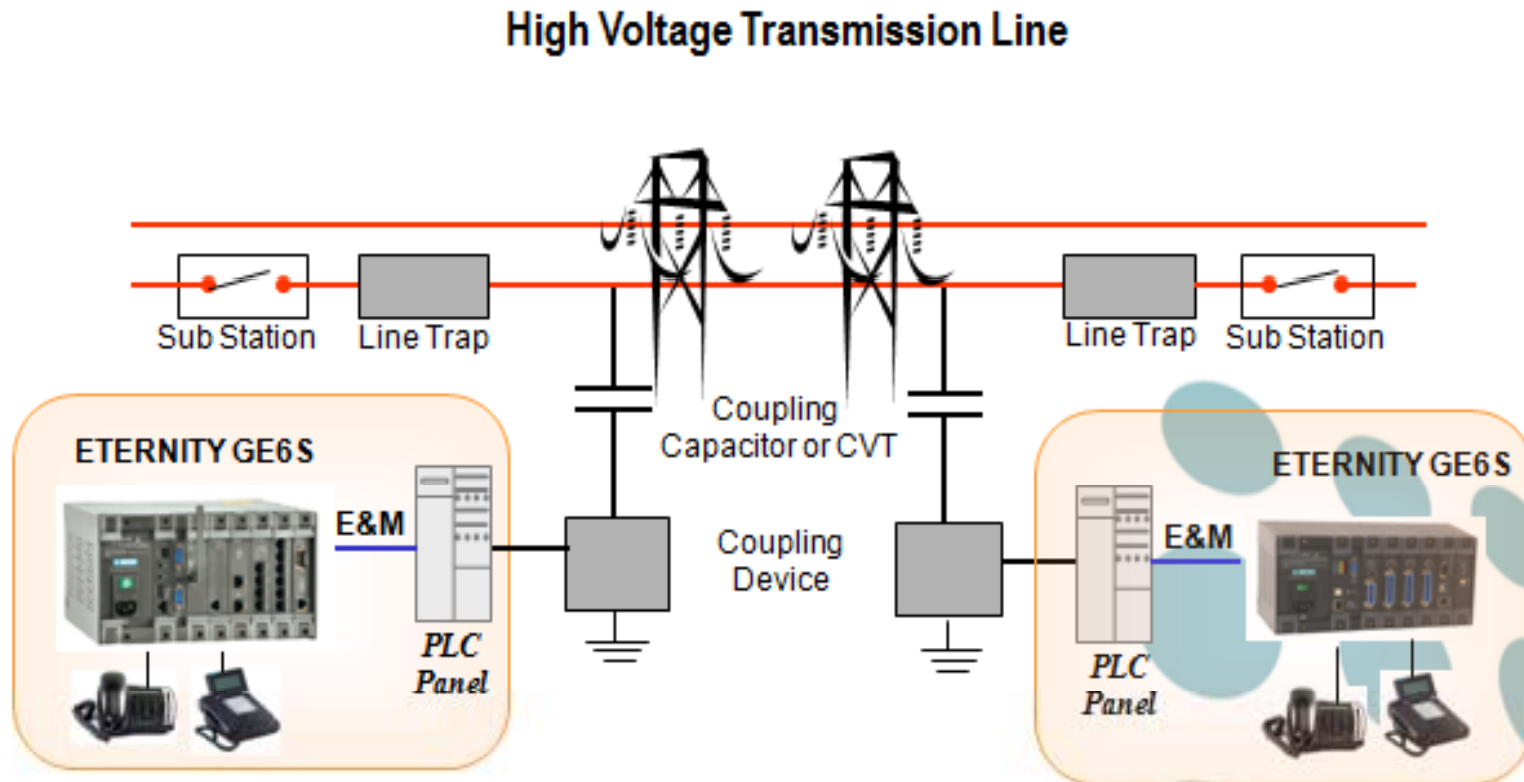


ETERNITY Offers Universal Connectivity

LCR Functioning in ETERNITY EPAX

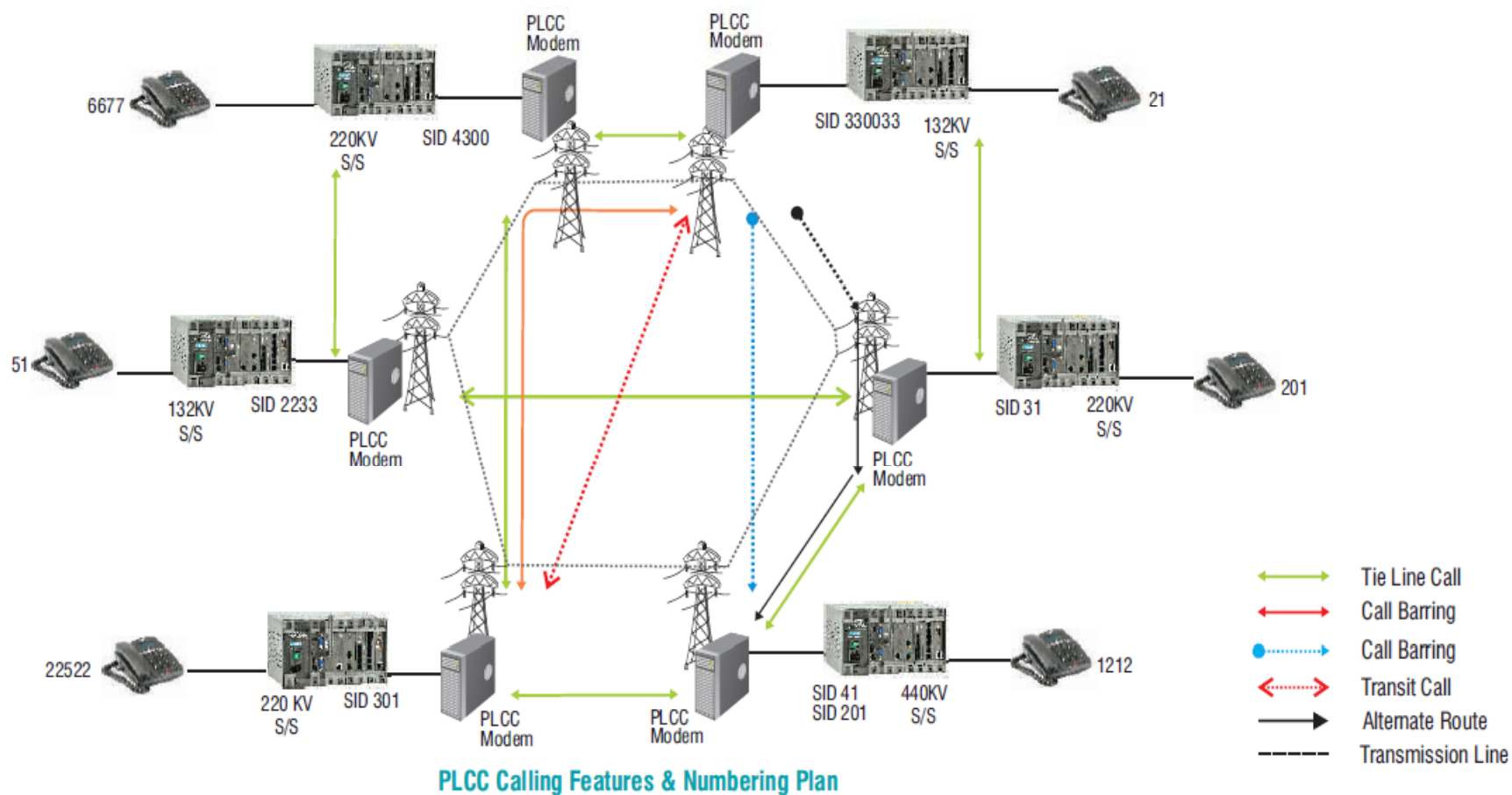


ETERNITY - Integration over HVT Lines

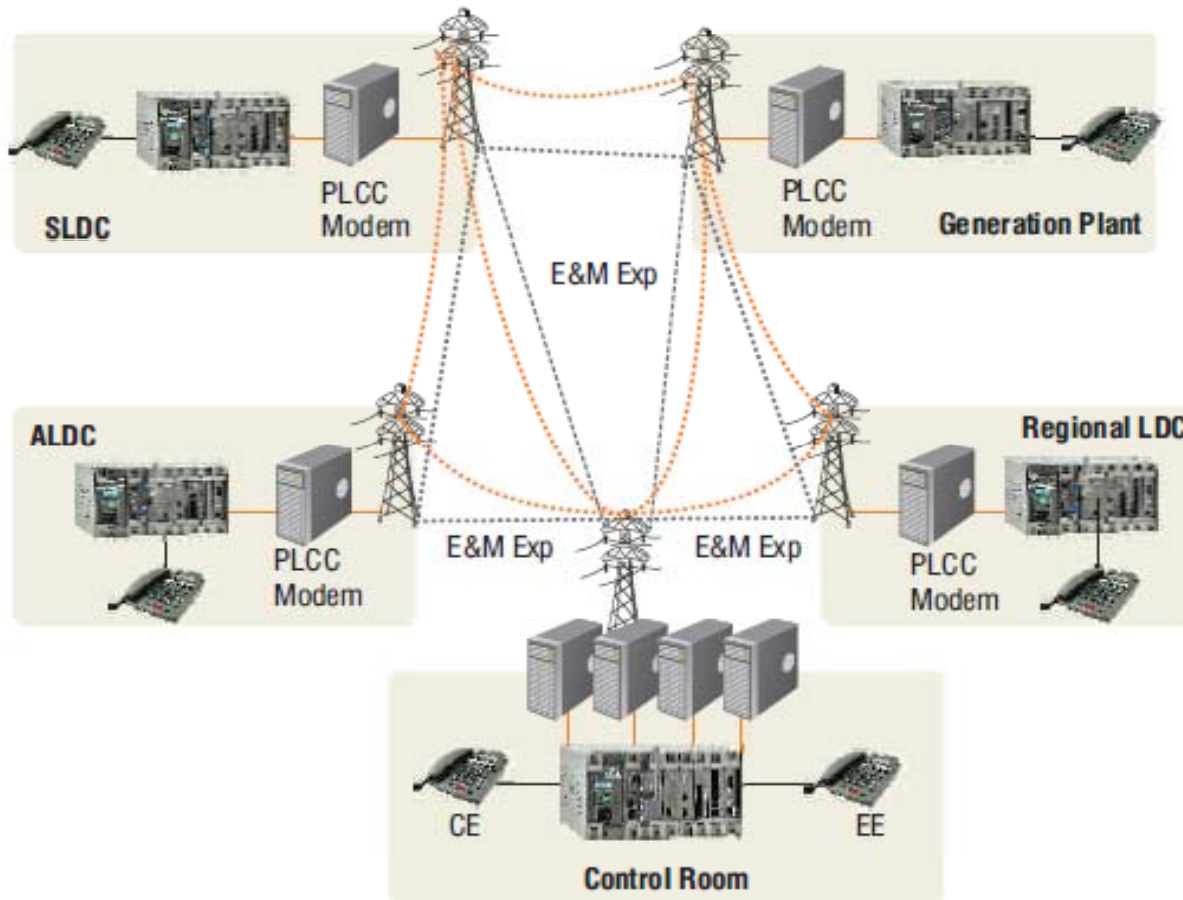


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E&M Lines - Calling Features & Numbering Plan



ETERNITY in PLCC Express Line Network



CE: Chief Engineer
EE: Executive Engineer
LDC: Load Dispatch Center

— E&M - Express Lines

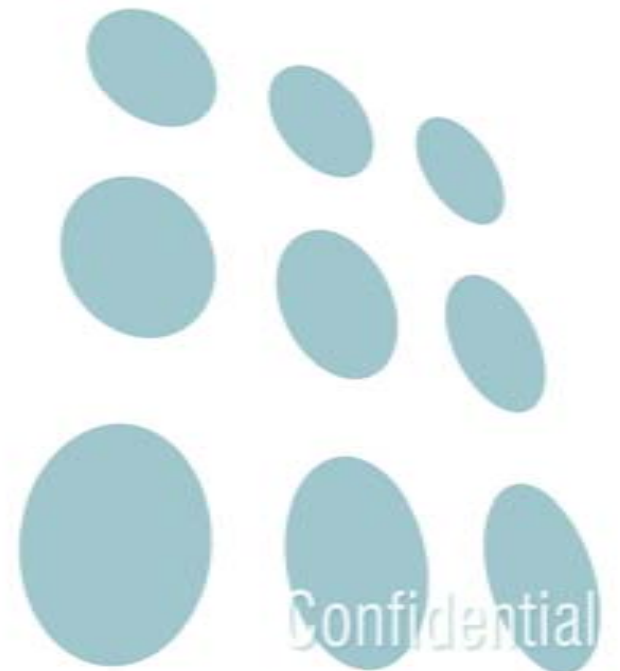
Integration of ETERNITY in PLCC EXPRESS Line Network



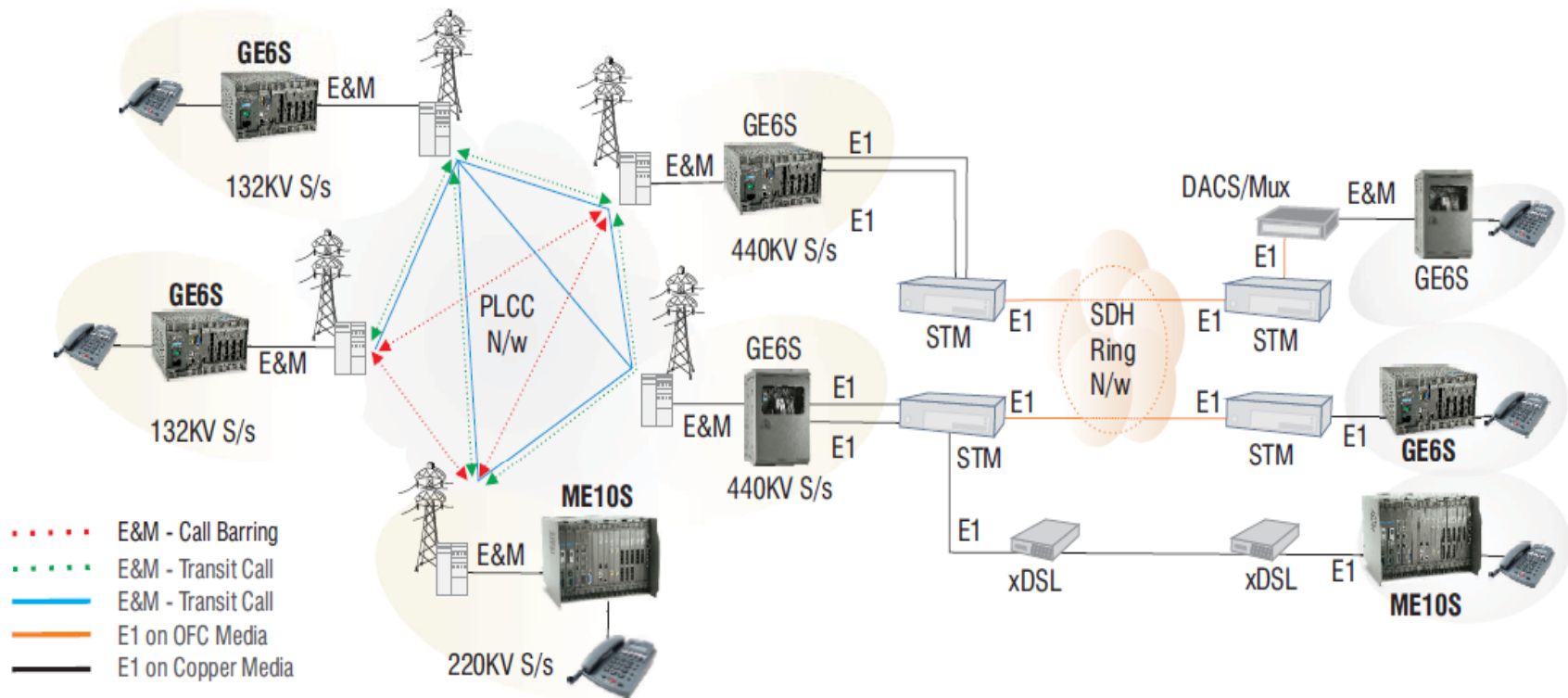


PLCC Express - Benefit

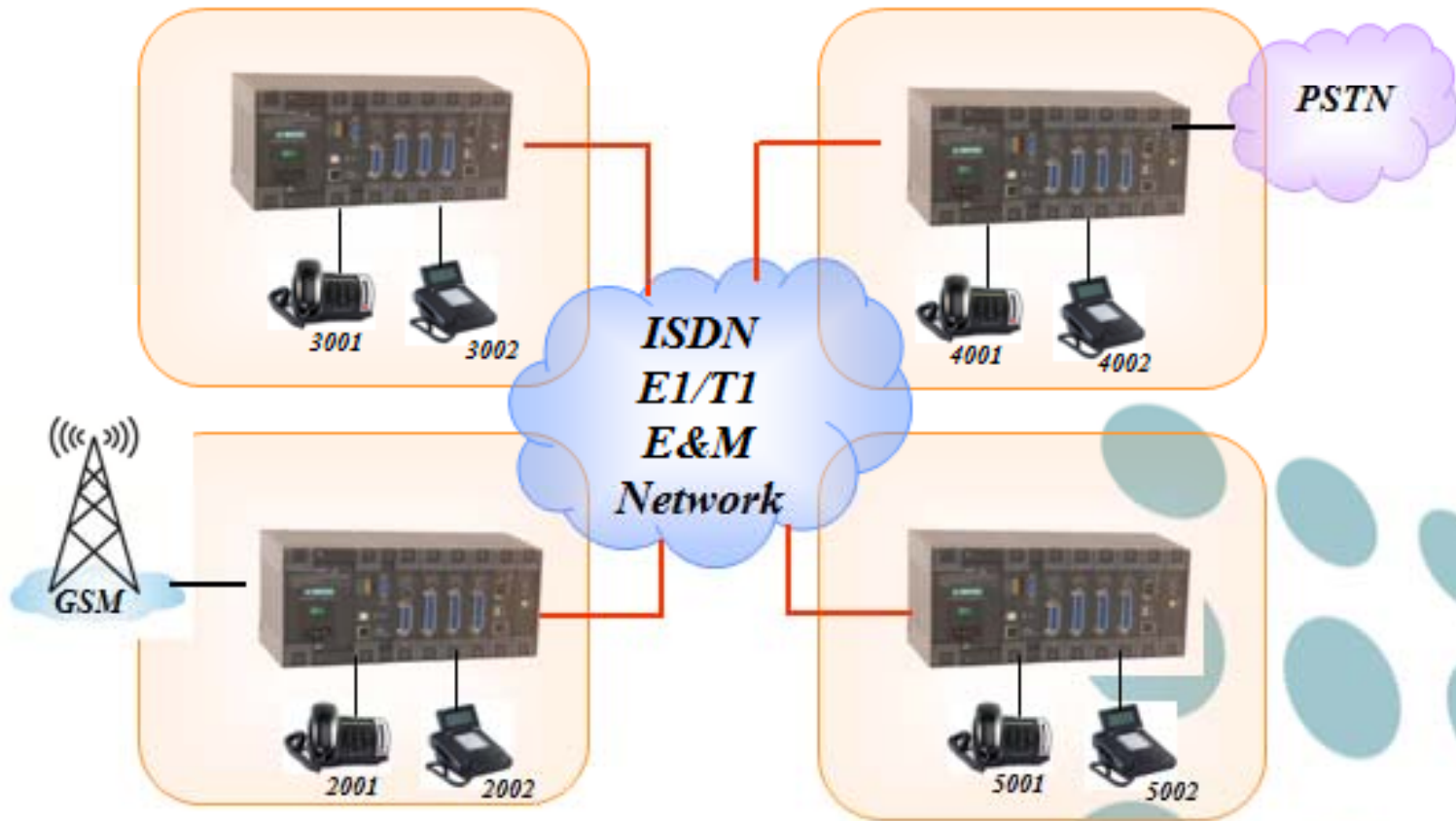
- Single Touch Dialing (*like Hotline Dialing*)
- Calling Destination Name display on Digital Phone Screen
- Dedicated Key for Each Destinations
- Route / Call Status on Key's LED
- No need to have Separate Phone for each Express Lines
- Single Phone for all Express Lines
- Eliminates Bunch of Cables
- Parallel Ringing Two Digital Phone
- Call Transfer to Any Other Extensions
- Conference Services
- Faulty Line Parking
- Ring Acknowledgement



Deployment of ETERNITY in PLCC & Carrier N/w



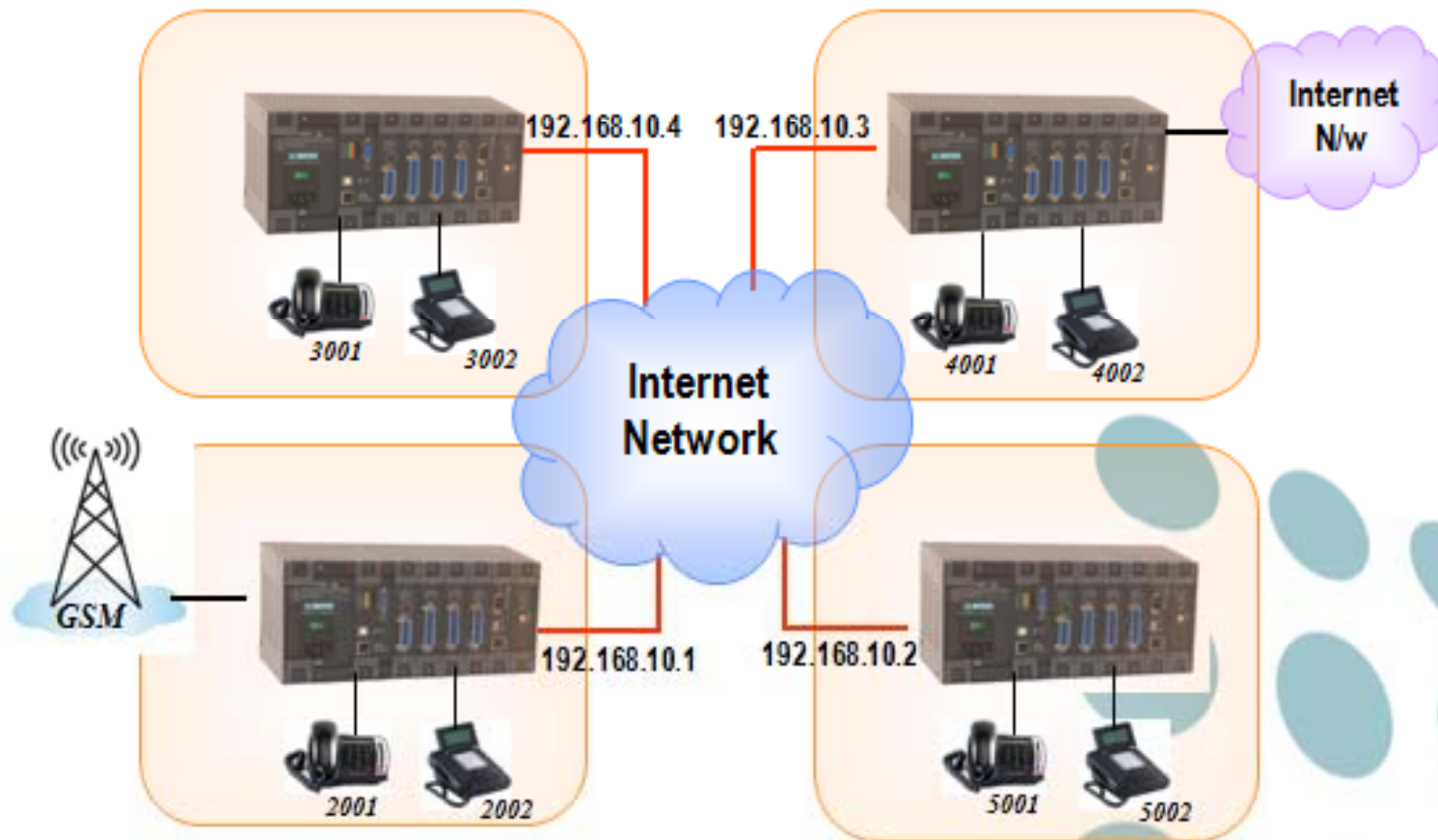
ETERNITY-Inter Networking Using (Internet)



Inter Networking using VoIP Card or VoIP Gateway Device

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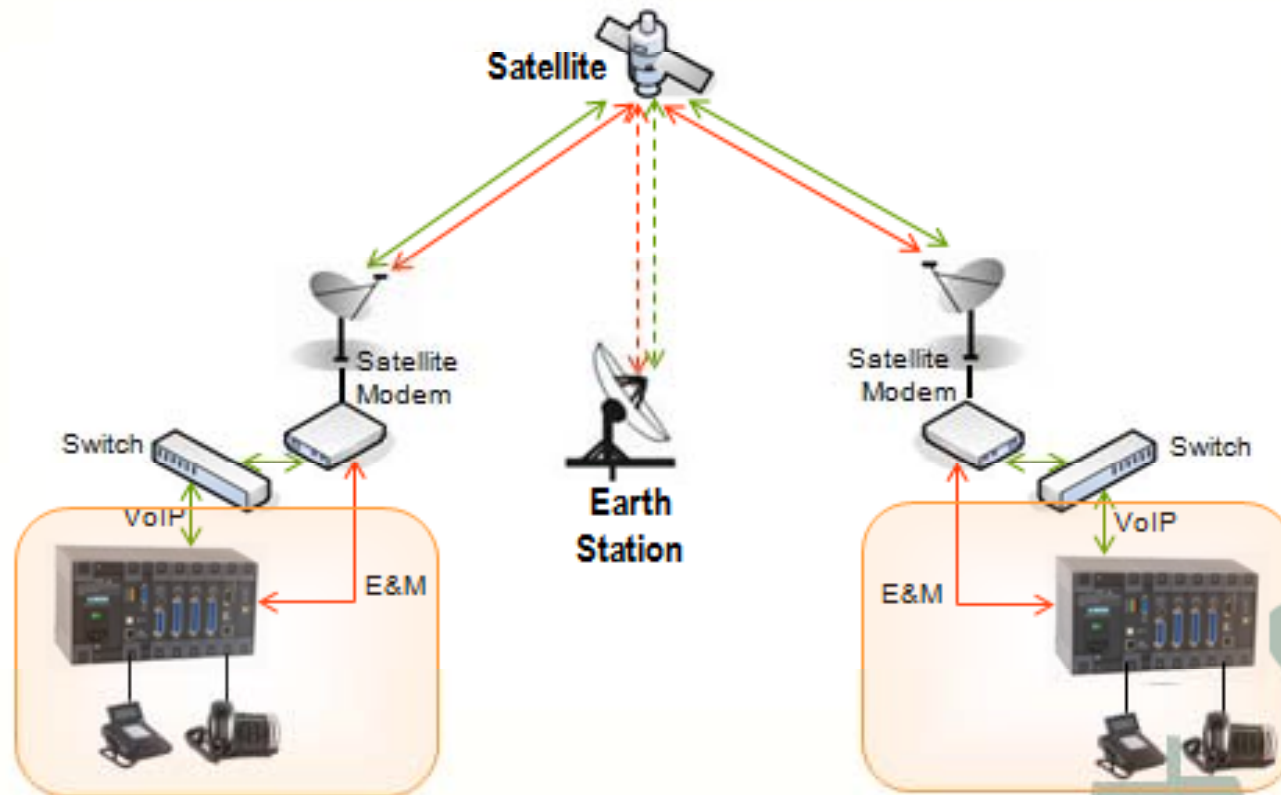
ETERNITY-Inter Networking



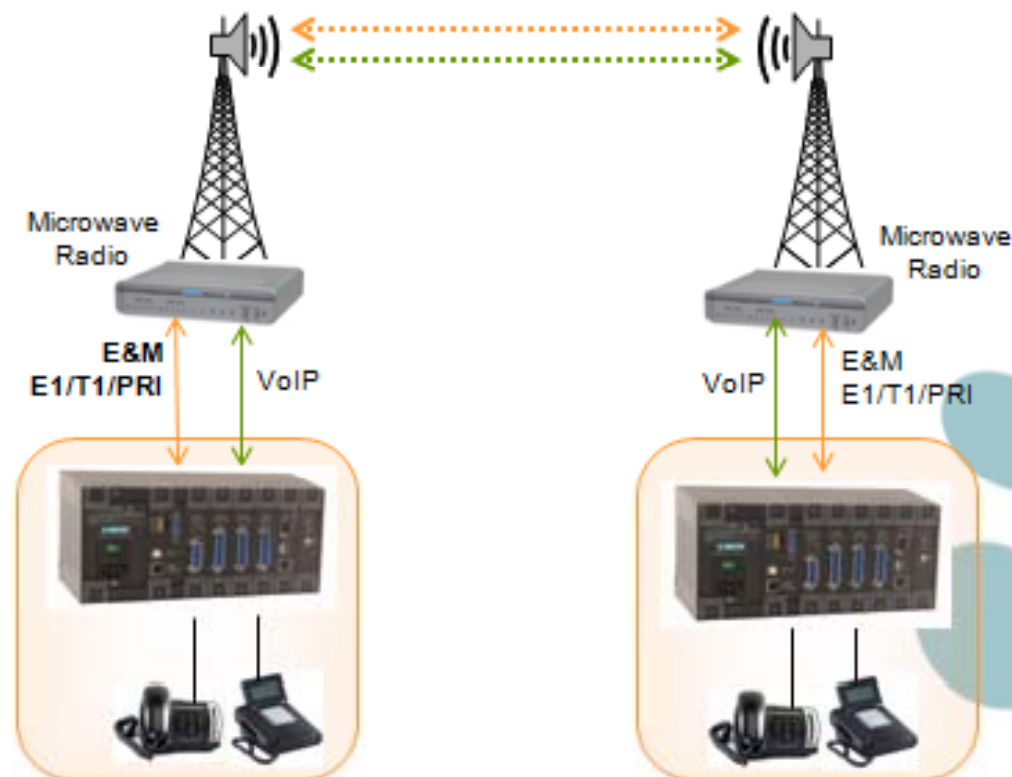
Inter Networking using VoIP Card or VoIP Gateway Device

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ETERNITY-Inter Networking Using VSAT

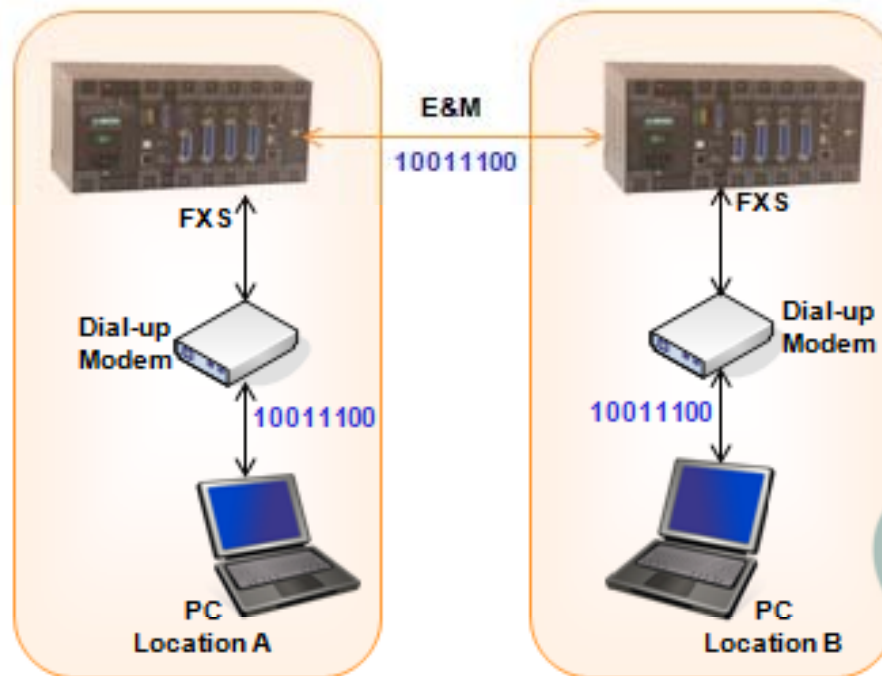


ETERNITY-Inter Networking Using Radio Link



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ETERNITY-Data Transfer Using Dial-up Modem



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Traditional Express V/s Matrix Express

Parameter	Traditional Express EPAX	Matrix Express EPAX
Wiring	6 wires for 01Express E&M	2 Wires for 20 Express E&M
No. of Phones	Separate Phone for Each Express	One Phone for 20 Express
Type of Phone	Analog Phone	Digital Phone and Analog Phone
Indication	No Indication	LED indication for status of call
Display	No Display	LCD to display CLI
Dialing	Entire Number (Digits) to dial	One Touch Dialing
Call Hold	Not Possible	Yes. By Single Touch
Call Transfer	Not Possible	Yes. By Single Touch
Call Forward	Not Possible	Yes. By Single Touch
Call Conference	Not Possible	15 Party Conference
Priority	Not Available	9 Level Priority

Traditional Express V/s Matrix Express

Parameter	Traditional Express EPAX	Matrix Express EPAX
Music On Hold	Not Possible	Yes. Desired Music Can be Played
Simultaneous Ringing	Yes. But Same Ring Tones	Yes. Multiple Ringtone to Distinguish Priority Locations
Selective Call Pick-up	Not Possible	Call can be picked up from any phone
Programmable Ring Timer	Not Available	Programmable from 1 to 255 Seconds
Flexible E&M Port	Not Available	Same E&M port can be used for E&M Dial-in line or E&M Express line
Faulty Line Parking	Not Available	Yes. Faulty Line will be parked and as soon as it gets restored, automatically comes in to service



ETERNITY PLCC EPAX Key Features



Call Conferencing



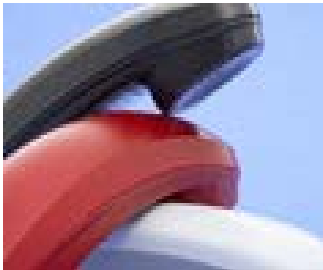
Call Hold



Multiple Call



Call Swap



Priority



One Touch Dialing



Call Transfer



Call Forward

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ETERNITY PLCC EPAX Key Features



Integrated MDF



LCR



*1 Cable Pair for
20 Express Phone*



Gateway



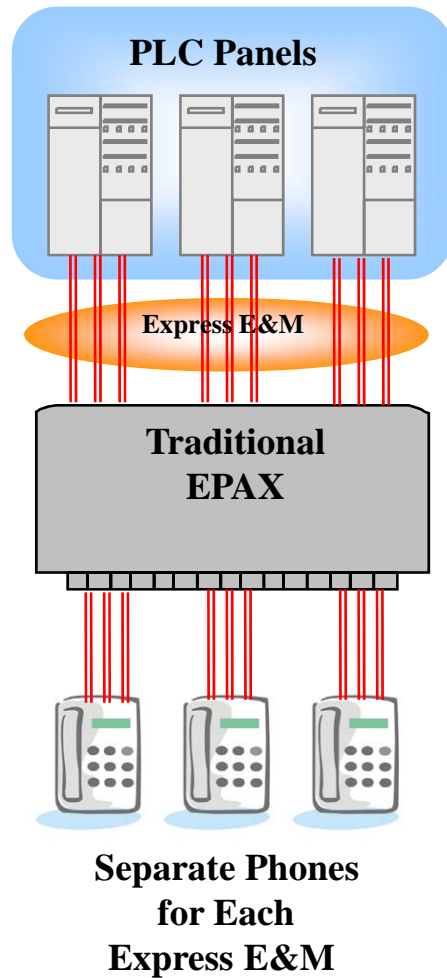
CLI Display



*Multiple Network
Integration*

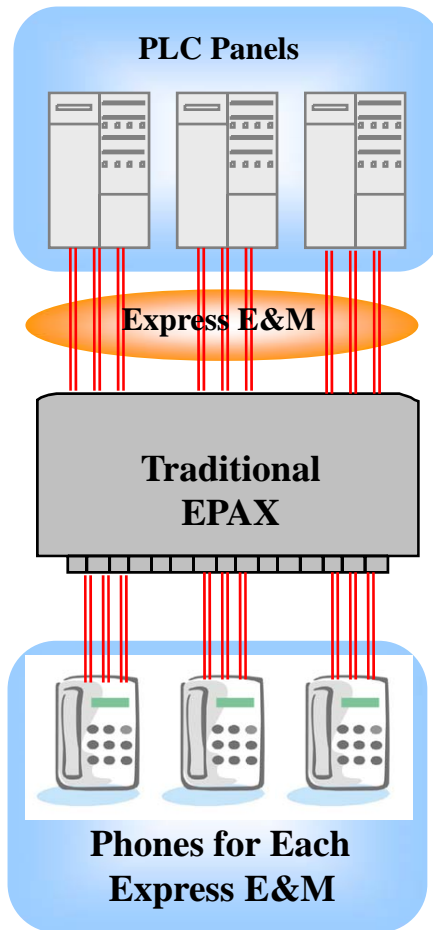
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Traditional Express V/s Matrix Express EPAX



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Traditional Express E&M EPAX



Bulky Wiring:

All 6 Wires Required to be Connected with Phone

- Results in Bulky / Messed-up Wiring
- Higher Chances of Fault

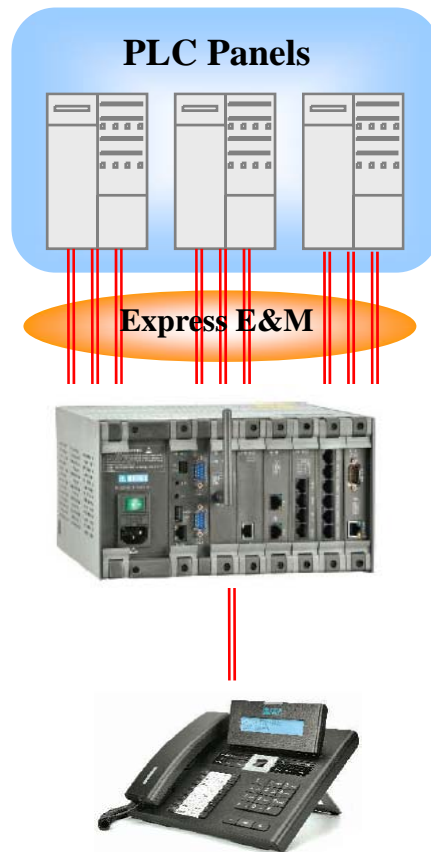
Multiple Analog Phone:

Each E&M Line Required Dedicated Phone

- Results in Multiple Phones on the Desk
- Difficult to attend Multiple Calls at Same Time
- Call can not Kept on Hold so Chances of Miss Call



Matrix - Express E&M EPAX



**Single Phone
for All
Express E&M**

Neat & Clean Wiring:

Only 2 Wires Required to be Connected with Phone

- Reduced Wiring, Less Maintenance
- Higher Reliability, Seamless Communication

Single Digital Phone:

Only One Phone for All Express E&M

- One Phones on the Desk
- Multiple Calls Can be Attended at Same Time
- Calls Can be kept on Hold.
- No Missed Call
- Each Call Status on LED
- CLI on LCD Display

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E&M Express Lines User Terminals

- Single Line Telephones (Analog Extensions)
- IP Phones
- Digital Key Phones
- PC Based Key Phone
- Direct Station Selection (DSS) Console

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IP Phone – SETU VP

- 3 SIP Accounts
- 2 Ethernet Ports
- Programmable Keys
- Auto Configuration
- Message Wait Indication
- Auto Answer with Headset Interface
- Conference
- G.711, G.722, G.723, G.726, G.729AB
- Web Configuration
- DHCP, PPPoE, NAT and STUn
- Voice Mail Key
- Web Configuration



SETU VP248PE

6x24 Character LCD Display with POE



SETU VP248SE

2x24 Character LCD Display with PoE

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Digital Key Phones – EON48

- LCD Contrast and Brightness Control
- 16 Programmable Keys
- 17 Touch-Sense Keys
- Touch-Sense Keys for Navigation and One-touch Feature Access
- Full Duplex Speaker Phone
- Headset Interface
- English, French, German, Spanish, Portuguese and Italian Language Support
- Multiple Call Handling – EON48P
- 3-Position Desktop Mounting
- Wall Mounting



EON48P

6x24 Character LCD Display



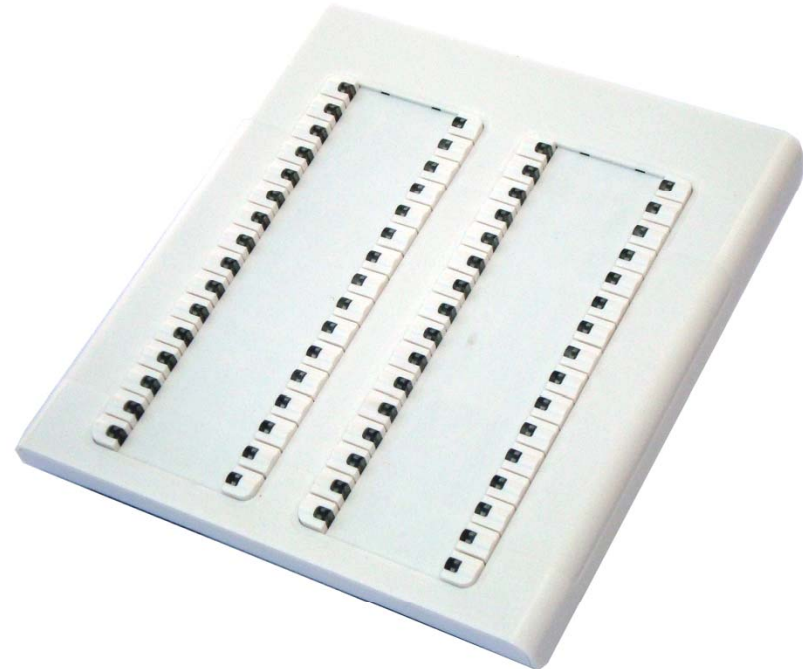
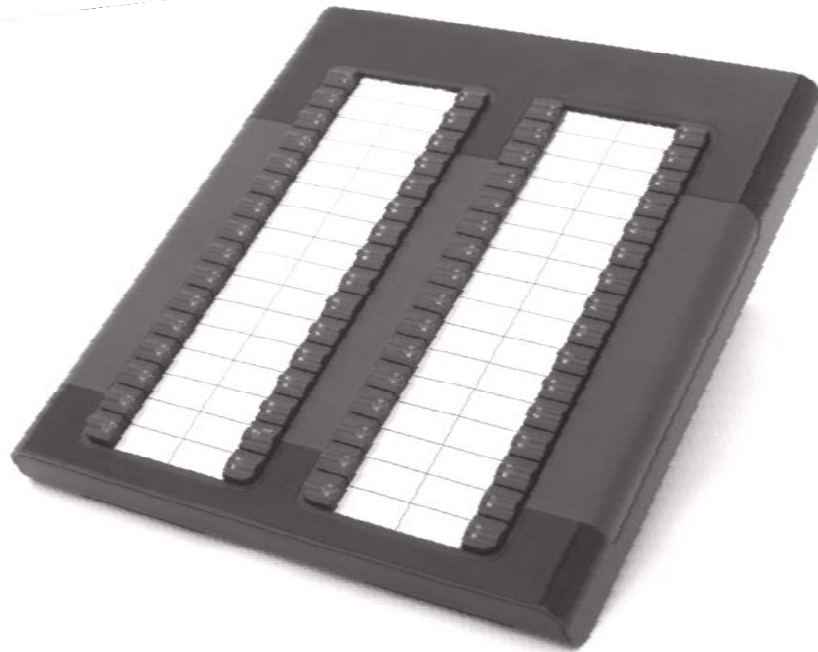
EON48S

2x24 Character LCD Display

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Direct Station Selection – DSS16X4



- Companion DSS for EON48
- 64 Keys for Direct Station Selection
- DSS16X4 Use One DKP Port
- Dual Color LEDs for Port Status





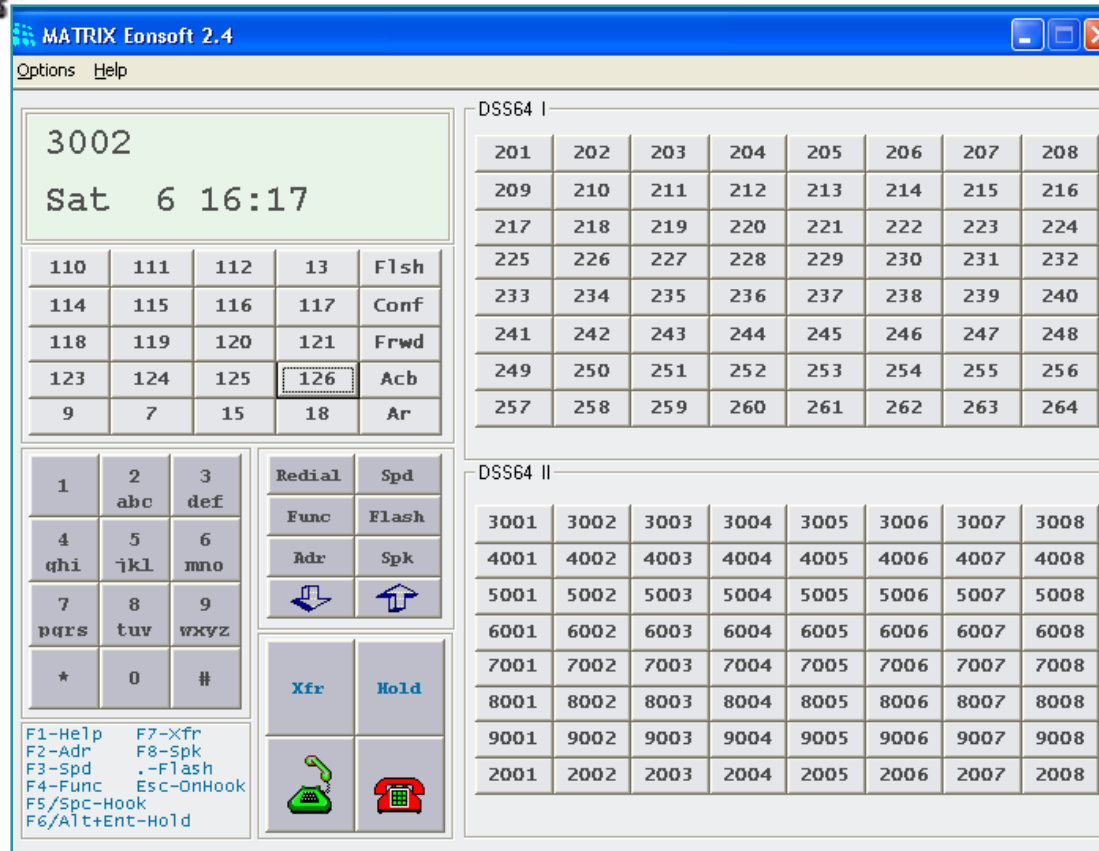
PC Based Digital Key Phone – EONSOFT

- *PC Based Digital Key Phone*
- *20 Programmable Keys*
- *Use One DKP Port*
- *Dual Color Button Display for Port Status*



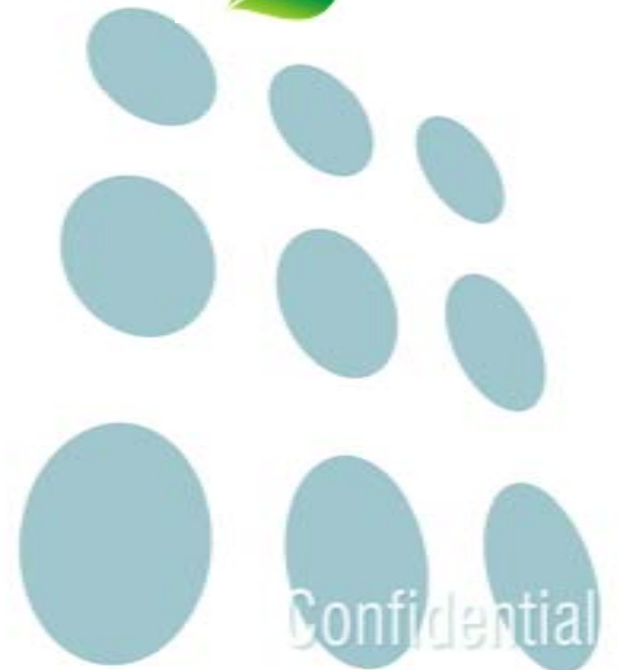
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EONSOFT-Operator



- Runs on Microsoft Windows
- 148 Keys for Direct Station Selection
- Use Only One DKP Port
- Dual Color Button Display for Port Status

Compliances



Customer List - SEBs



- Andhra Pradesh State Electricity Board
- Assam State Electricity Board
- Chattisgarh State Electricity Board
- Gujarat State Electricity Board
- Himachal Pradesh State Electricity Board
- Karnataka State Electricity Board
- Madhya Pradesh State Electricity Board
- Maharashtra State Electricity Board
- Pondichery State Electricity Board
- Rajasthan State Electricity Board
- Tamilnadu State Electricity Board
- Uttar Pradesh State Electricity Board
- Uttranchal State Electricity Board
- West Bengal State Electricity Board

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Customer List



EPCs

- Adani
- Alstom
- Areva T&D
- BRG Iron
- Crompton Greaves
- EMCO
- Enercon India
- LAPP India
- Larsen & Tubro Limited
- Siemens
- Suzlon
- Torrent
- Vestas
- Voltech

National Projects

- Bharat Heavy Electrical Ltd.
- National Hydro Power Corporation Ltd.
- National Thermal Power Corporation Ltd.
- Power Grid Corporation of India Ltd.

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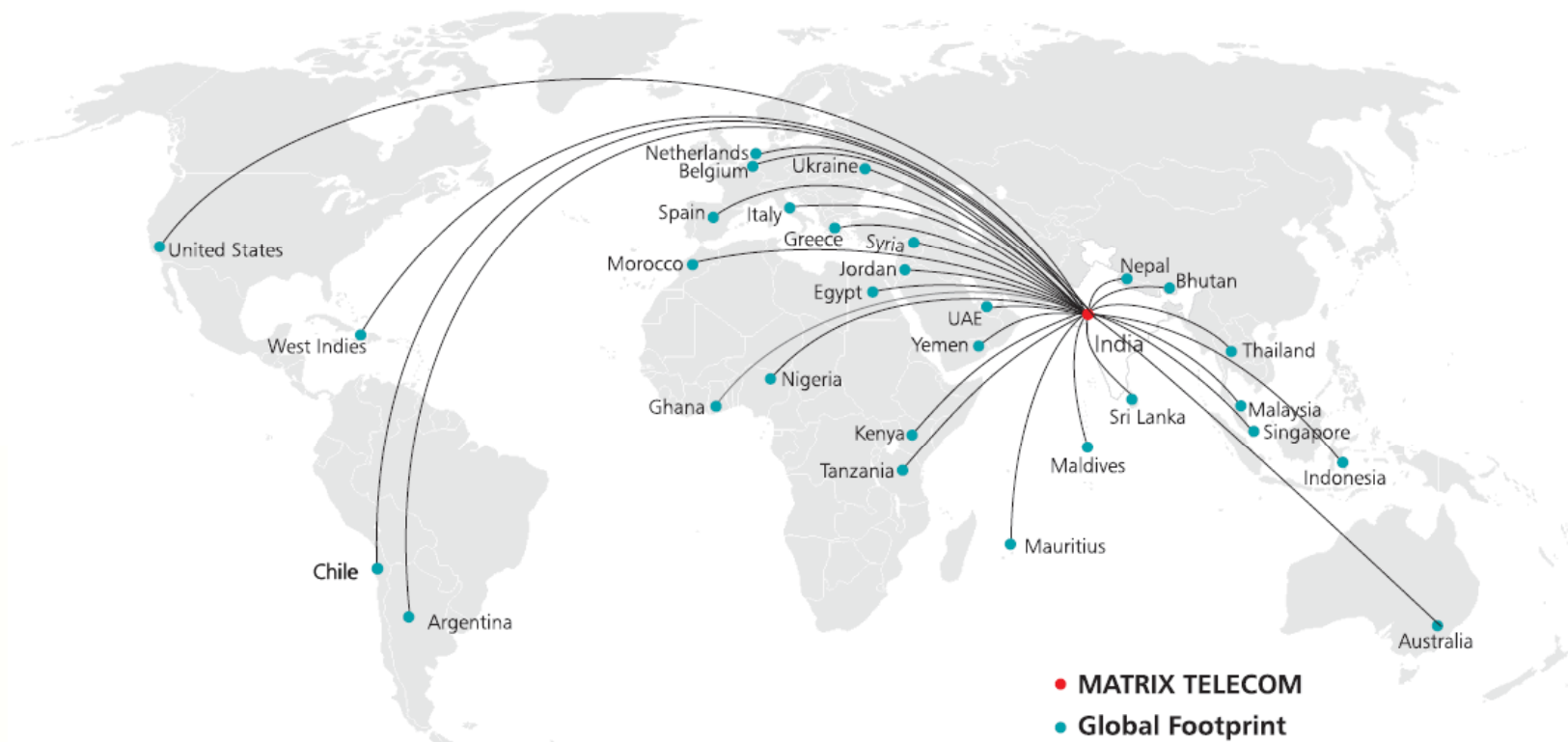
Customer List – Overseas



- Zimbabwe Electricity Transmission & Distribution Co. Ltd. (ZETDC)
- Power Holding Company of Nigeria (PHCN)
- Bhutan Power Corporation (BPC)
- Gunkul Engineering, Burma
- Gunkul Engineering, Thailand
- Kabul Transmission Corporation, Afghanistan
- Myanmar Electric Power Enterprise, Myanmar
- Tala-Bhutan Hydro Projects, Nepal
- Wuhan Research Institute (WRI), China

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Matrix – Global Footprint





Thank You

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