VoIP

AP-MG5000 Next Generation Media Gateway



Technical Sales and Marketing

AddPac Technology

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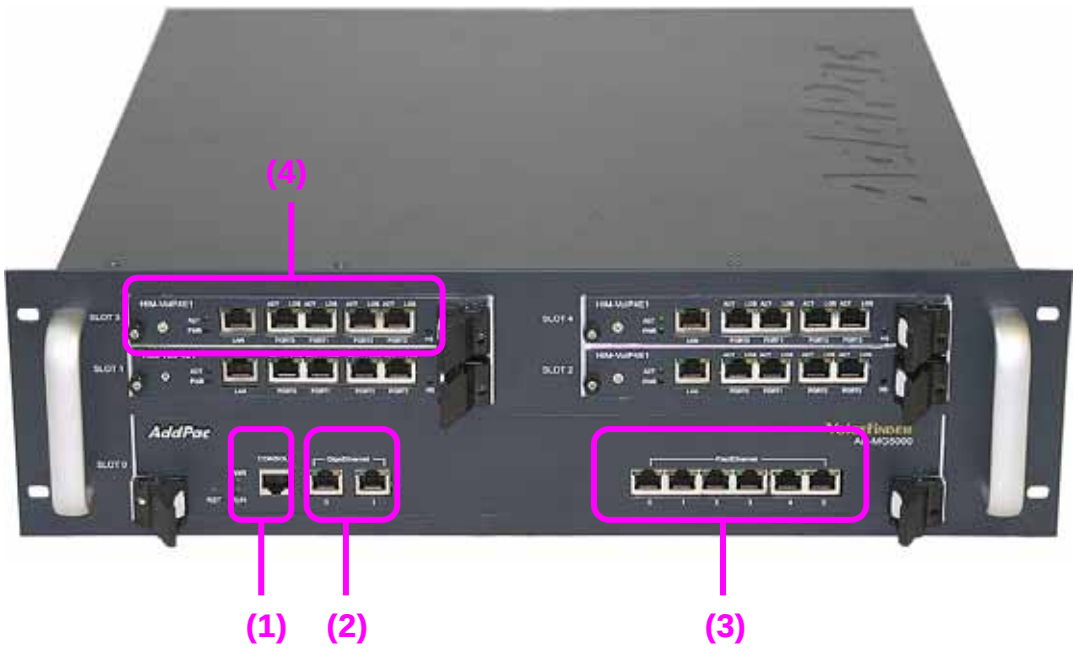
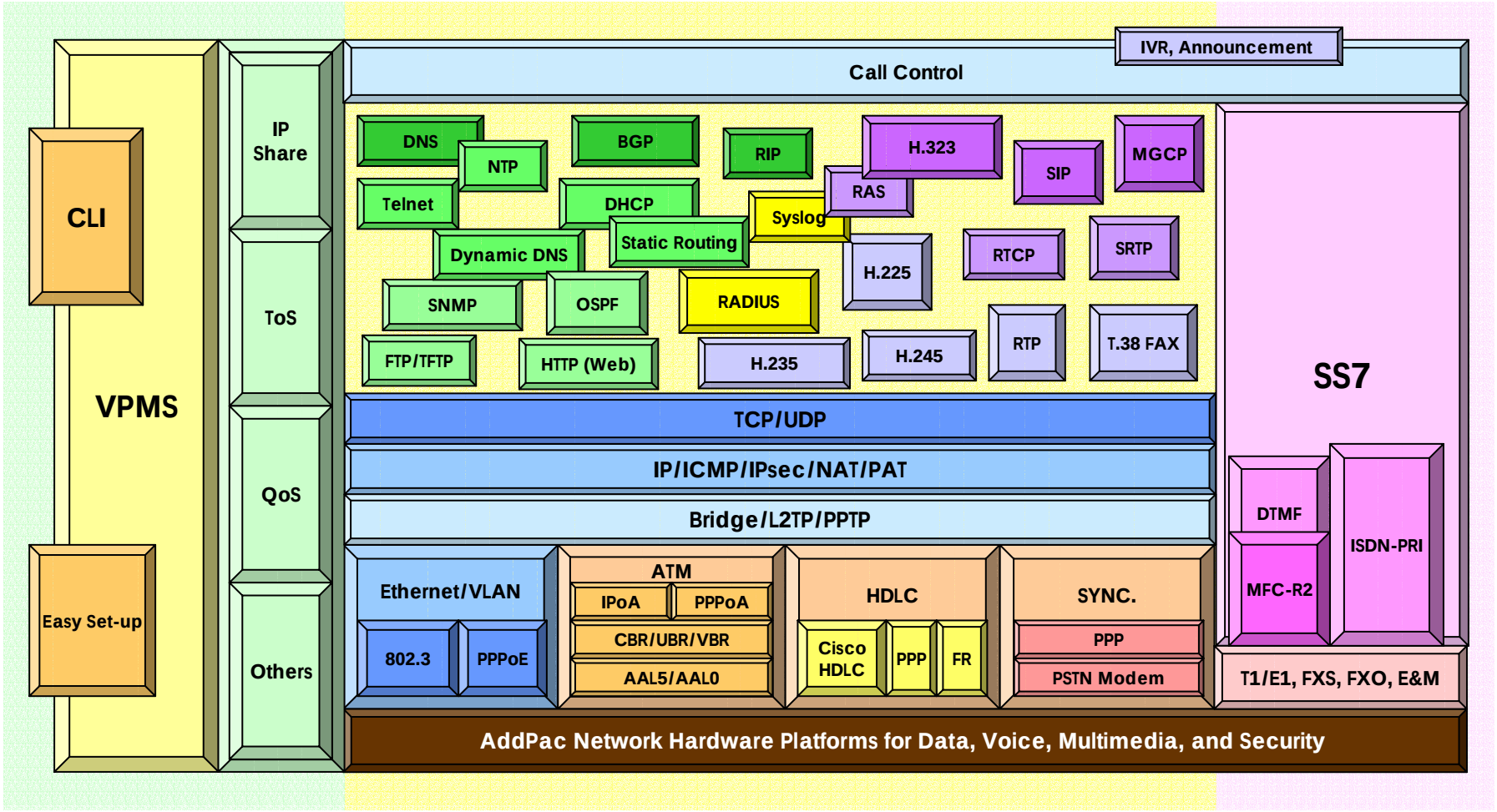
AP-MG5000 Next Generation Media Gateway



No.	Interface	Explanation
(1)	Asynchronous Serial	One(1) RS-232C serial ports for Local system management
(2)	Gigabit Ethernet	Two(2) 10/100/1000Mbps Gigabit Ethernet Ports for LAN interface
(3)	Fast Ethernet Switch	Six(6) 10/100 Fast Ethernet Ports for LAN interface
(4)	Module Slot 0-3	Four(4) Digital E1/T1 Interface, One(1) 10/100Mbps Fast Ethernet

AP-MG5000 Media Gateway Product Overview

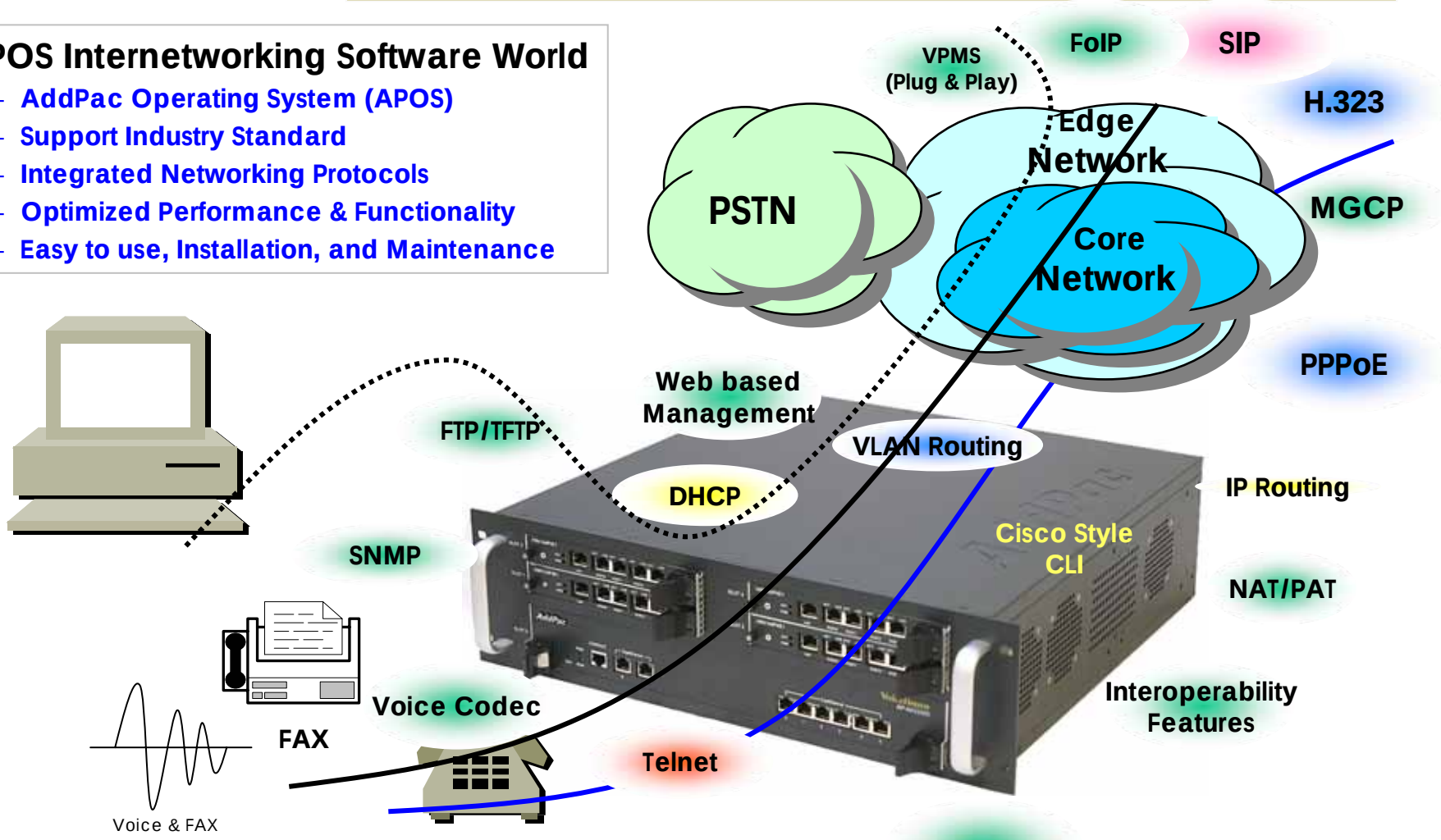
APOS Internetworking Protocol Stack



AP-MG5000 Media Gateway Product Overview

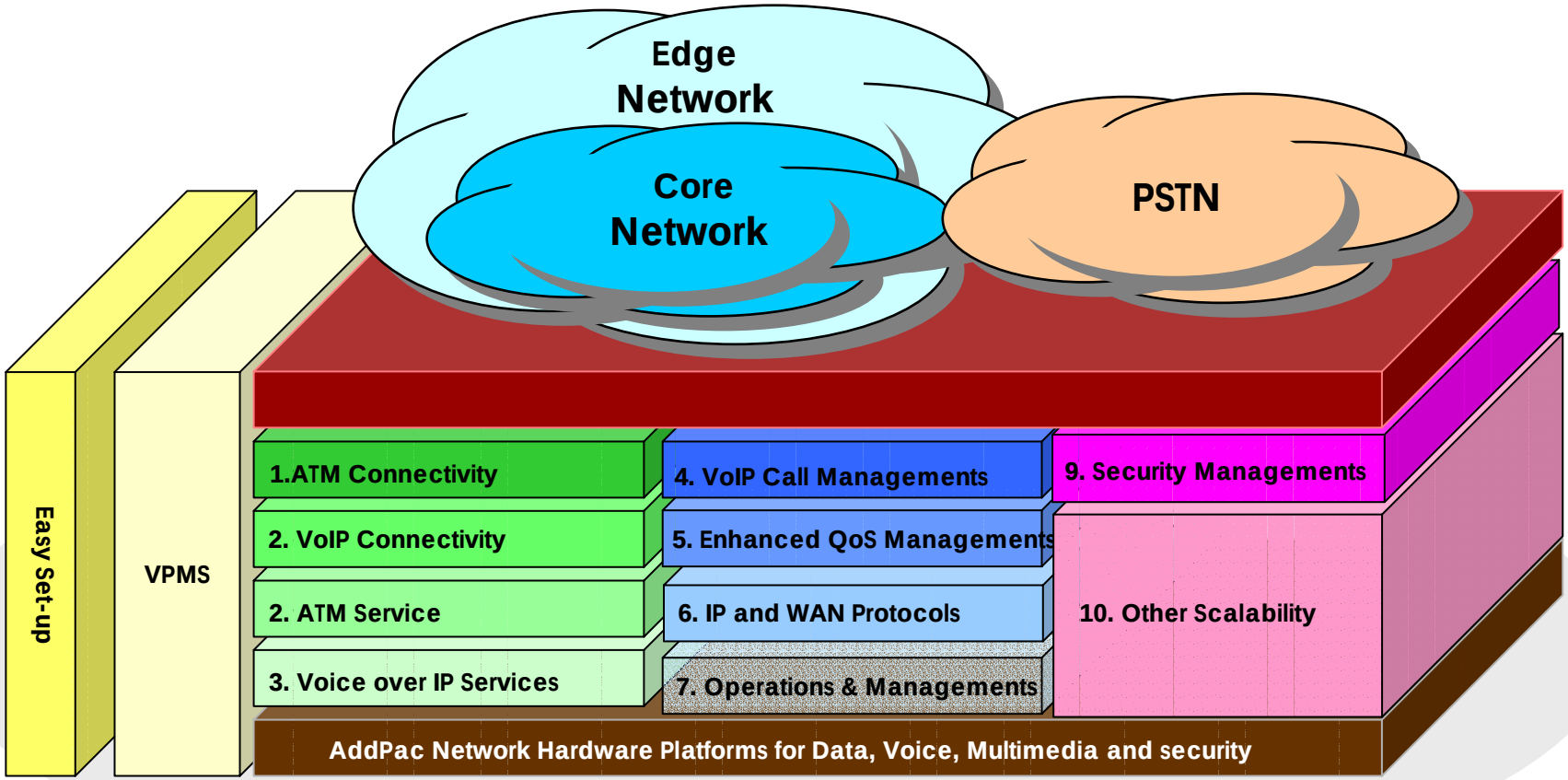
APOS Internetworking S/W World

- **APOS Internetworking Software World**
  - AddPac Operating System (APOS)
  - Support Industry Standard
  - Integrated Networking Protocols
  - Optimized Performance & Functionality
  - Easy to use, Installation, and Maintenance



AP-MG5000 Media Gateway Product Overview

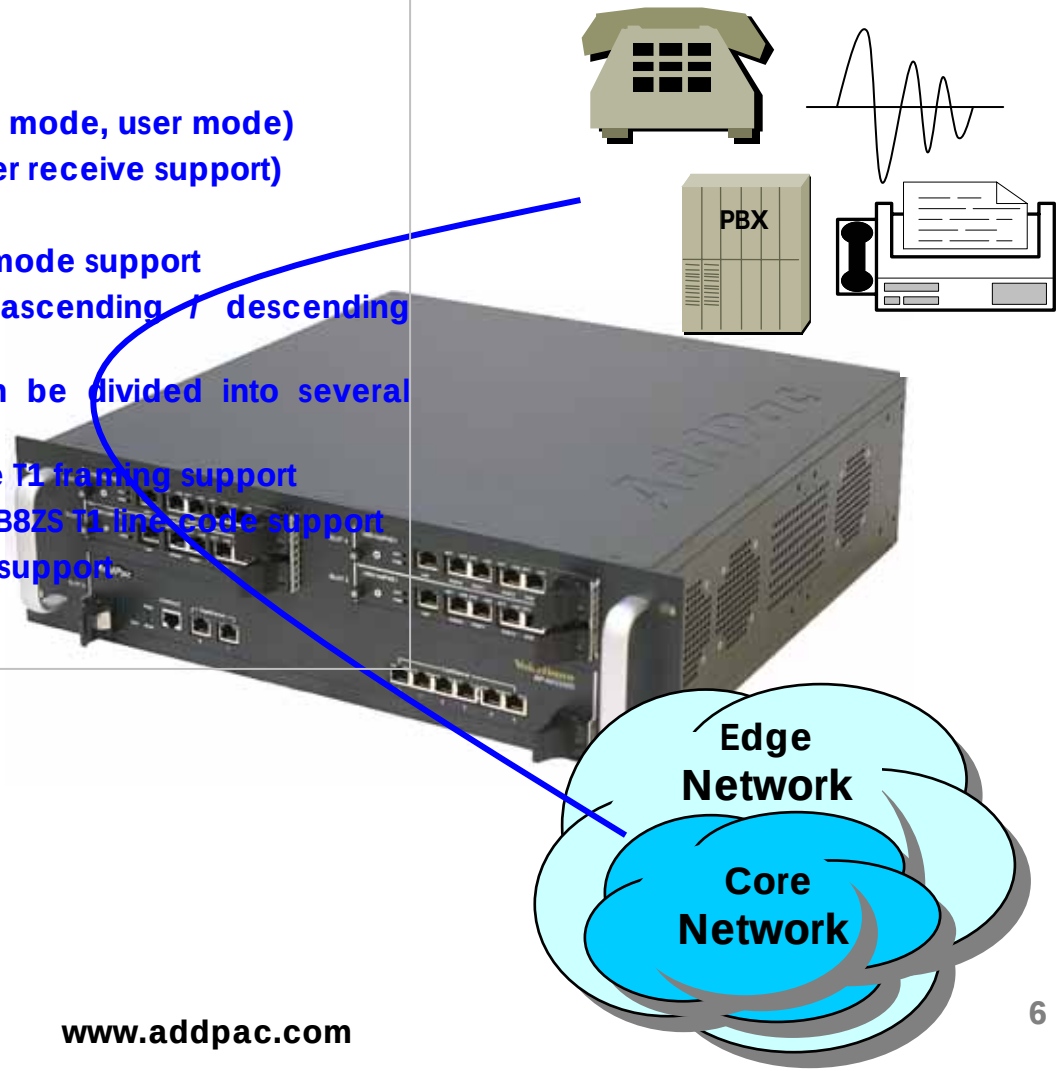
APOS Internetworking S/W World (cont.)



AP-MG5000 Media Gateway Product Overview

Digital E1/T1 Interface Connectivity

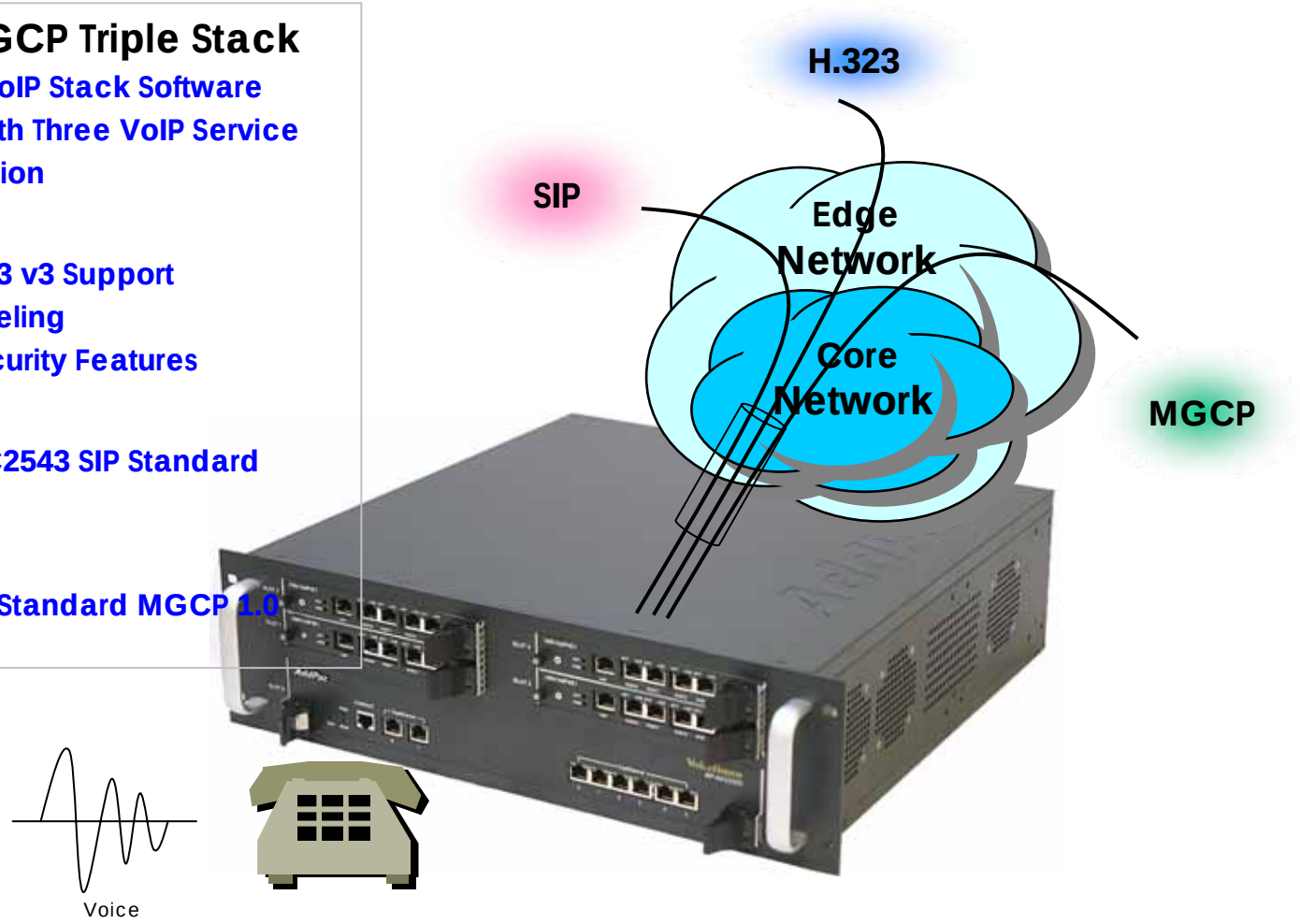
- **E1/T1**
  - ISDN PRI signaling support (network mode, user mode)
  - R2 signaling support (calling number receive support)
  - DTMF signaling support
  - Clock source master mode, slave mode support
  - In case of channel allocation, ascending / descending random support
  - One physical E1/T1 interface can be divided into several logical channel groups
  - Super frame, extended super frame T1 framing support
  - AMI, AMI-BELL, AMI-GTE, AMI-DDS, B8ZS T1 line code support
  - Immediate, Wink-start T1 CAS type support
  - SS7*



AP-MG5000 Media Gateway Product Overview

Voice over IP Service

- **H.323, SIP, and MGCP Triple Stack**
  - Concurrent Triple VoIP Stack Software
  - Single Hardware with Three VoIP Service
  - New APOS-NX Version
- **H.323**
  - ITU-T Standard H.323 v3 Support
  - Support H.245 Tunneling
  - Including H.235 Security Features
- **SIP**
  - IETF RFC3261 or RFC2543 SIP Standard
- **MGCP**
  - IETF RFC2705bis-02 Standard MGCP 1.0



AP-MG5000 Media Gateway Product Overview

Voice over IP Service (cont.)

- **H.323**
  - Fast connect, normal connect support
  - H.245 tunneling support
  - Q.931 response message setting for inbound VoIP calls
  - H.245 logical channel open timing selection function
  - Start H.245 procedure support
  - DTMF / Hook flash relay with H.245 alphanumeric / signal
  - Secondary gatekeeper support
  - Gatekeeper assignment according to the domain name
  - Gatekeeper discovery with multicast
  - Lightweight RRQ support
  - Signaling TCP port assignment
  - Resource threshold setting with RAI
  - H.235 clear-token, crypto-token support
  - canMapAlias support
  - Technical prefix (supported prefix) support
  - Public IP assignment in NAT environment

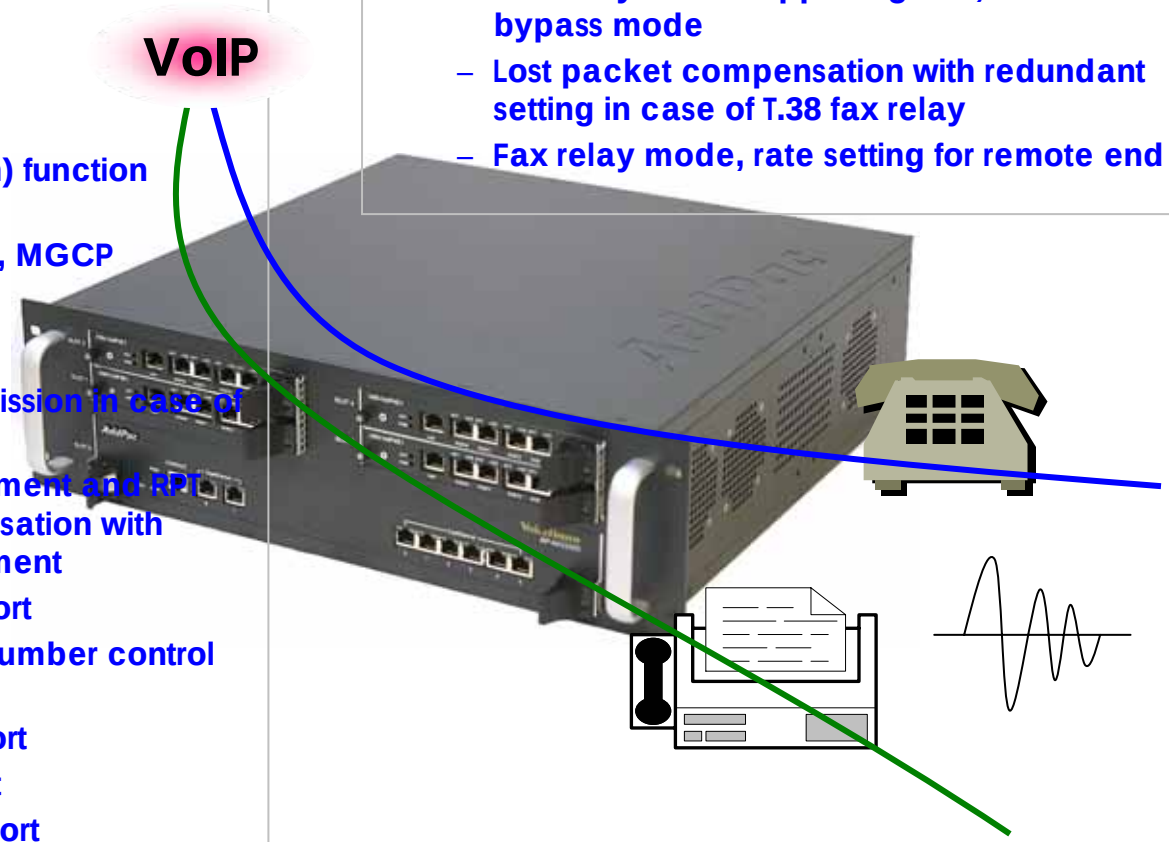
- **SIP**
  - Gateway-based / Endpoint-based registration support
  - Secondary proxy-server assignment function
  - SIP signaling port change function
  - SIP proxy server assignment according to the domain name
  - T.38 real-time fax relay support
  - DTMF relay support with RFC2833 / OPTION message
  - Re-INVITE support
- **MGCP**
  - Secondary call agent assignment function
  - Default package assignment
  - Announcement Server Package, Generic Media Package, Handset Package, Line Package, Trunk Package support
  - MGCP call agent assignment according to the domain name
  - T.38 real-time fax relay support
  - DTMF relay support based on RFC2833

AP-MG5000 Media Gateway Product Overview

Voice over IP Service (cont.)

- **Voice Codec**
  - G.711 A-Law, G.711 U-Law
  - G.726 r16, G.726 r32
  - G.729A
  - G.723.1 r63, G.723.1 r53
  - VAD (Voice Activity Detection) function support
  - DTMF relay support (H.323, SIP, MGCP common) based on RFC2833
- **RTP**
  - Redundant RTP packet transmission in case of severe packet loss
  - Dynamic jitter buffer management and RPT packet jitter and loss compensation with heuristic & DSP error concealment
  - Static jitter buffer setting support
  - Voice frame per RTP packet number control for each codec
  - In-band ring-back tone support
  - Virtual ring-back tone support
  - Tone parameter change support

- **FAX**
  - Fax relay mode supporting T.38, inband-T.38, bypass mode
  - Lost packet compensation with redundant setting in case of T.38 fax relay
  - Fax relay mode, rate setting for remote end

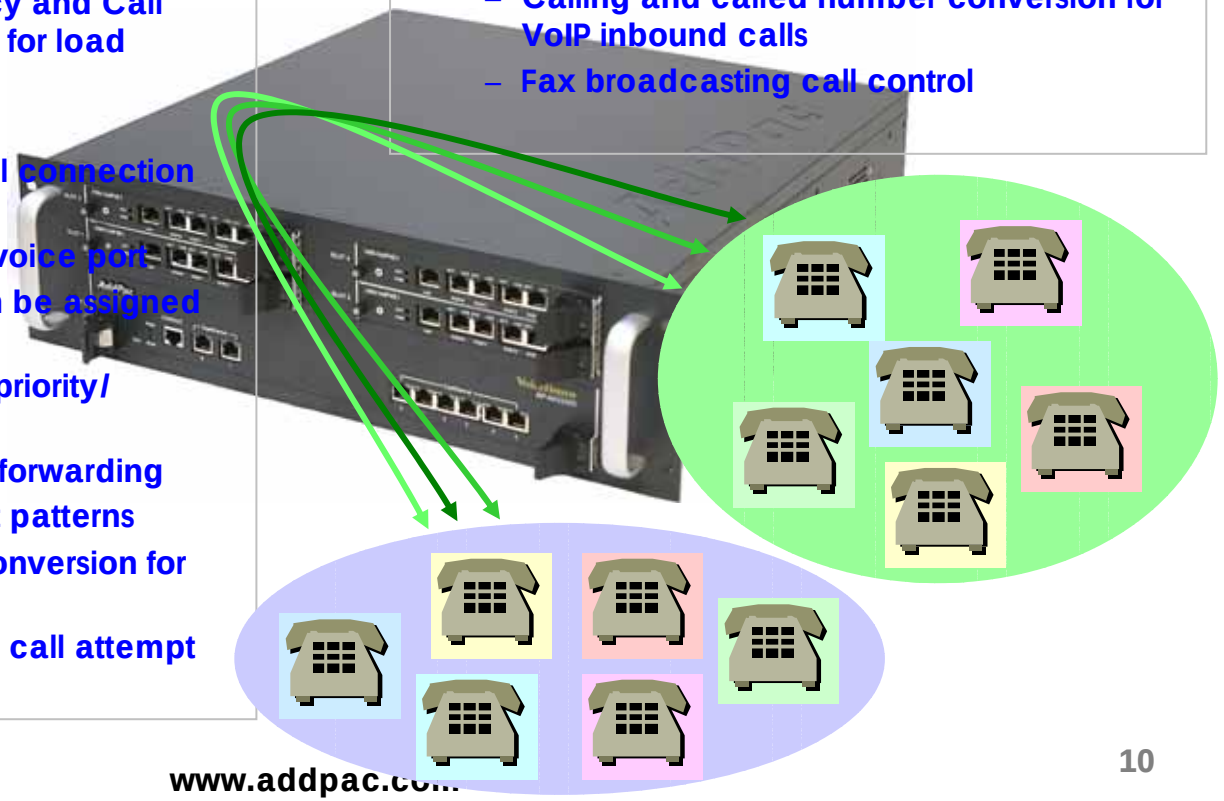


AP-MG5000 Media Gateway Product Overview

VoIP Call Managements

- **VoIP Call Controls**
  - Hot line connection function with PLAR (Private Line Auto Ring Down)
  - Leased line emulation function
  - Connection monitoring function
  - Fault tolerant with Redundancy and Call Distribution among Gateways for load balancing
  - Call attempt with IP address
  - H.323, SIP, MGCP inbound call connection for each voice port
  - Multiple E.164 setting for one voice port
  - One E.164 or digit pattern can be assigned to more than one voice port
  - Hunting with Longest match/ priority/ sequence/ random
  - One stage call setup by Digit forwarding
  - Call barring with specific digit patterns
  - Calling and called number conversion for PSTN outbound calls
  - PSTN rerouting in case of VoIP call attempt failure

- **VoIP Call Controls (cont.)**
  - Call transfer for internal calls
  - Call pickup for internal calls
  - Calling and called number conversion for VoIP outbound calls
  - Calling and called number conversion for VoIP inbound calls
  - Fax broadcasting call control

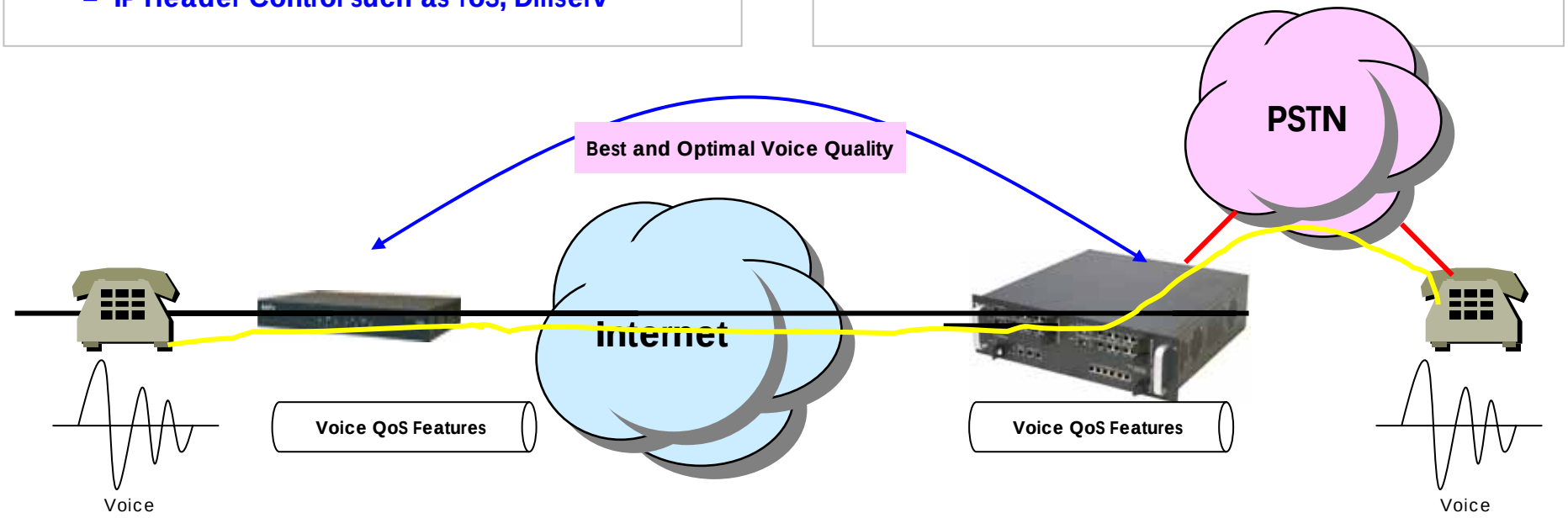


AP-MG5000 Media Gateway Product Overview

Enhances QoS Managements

- **Enhances Transmit Voice QoS Features**
  - Voice Traffic Priority Queuing
  - QoS Service Profiling
  - Providing Virtual Network Transmit Algorithm
  - Real-time Voice Traffic QoS Support
  - RTP Packet Transmit Interval Control
  - Supporting RTP Packet Redundancy Scheme
  - IP Header Control such as ToS, Diffserv

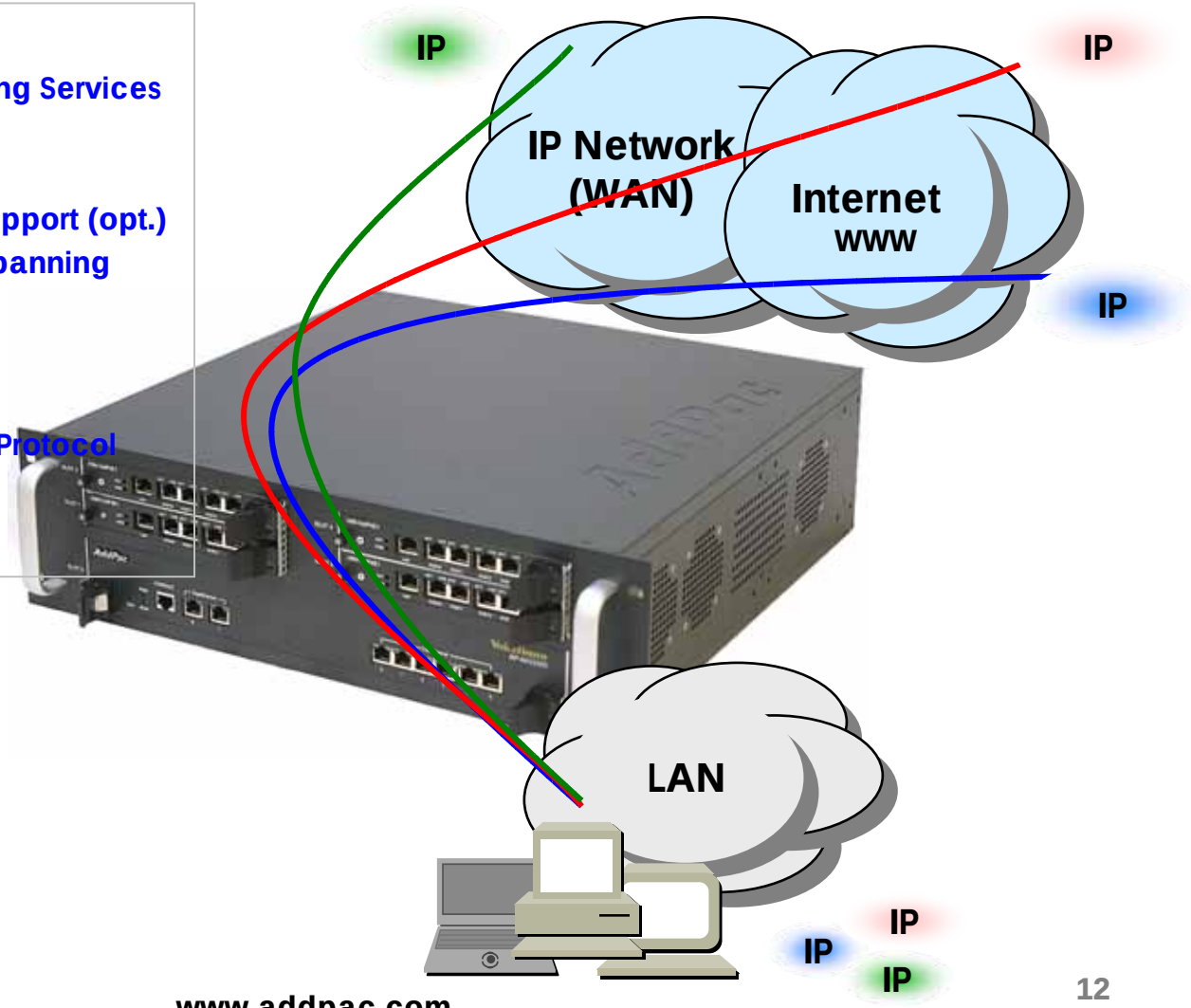
- **Enhances Receive Voice QoS Features**
  - Dynamic Jitter Buffer Management
  - Error Concealment
  - Support T.38 FAX Data Error Recovery Scheme



AP-MG5000 Media Gateway Product Overview

IP and WAN Protocols

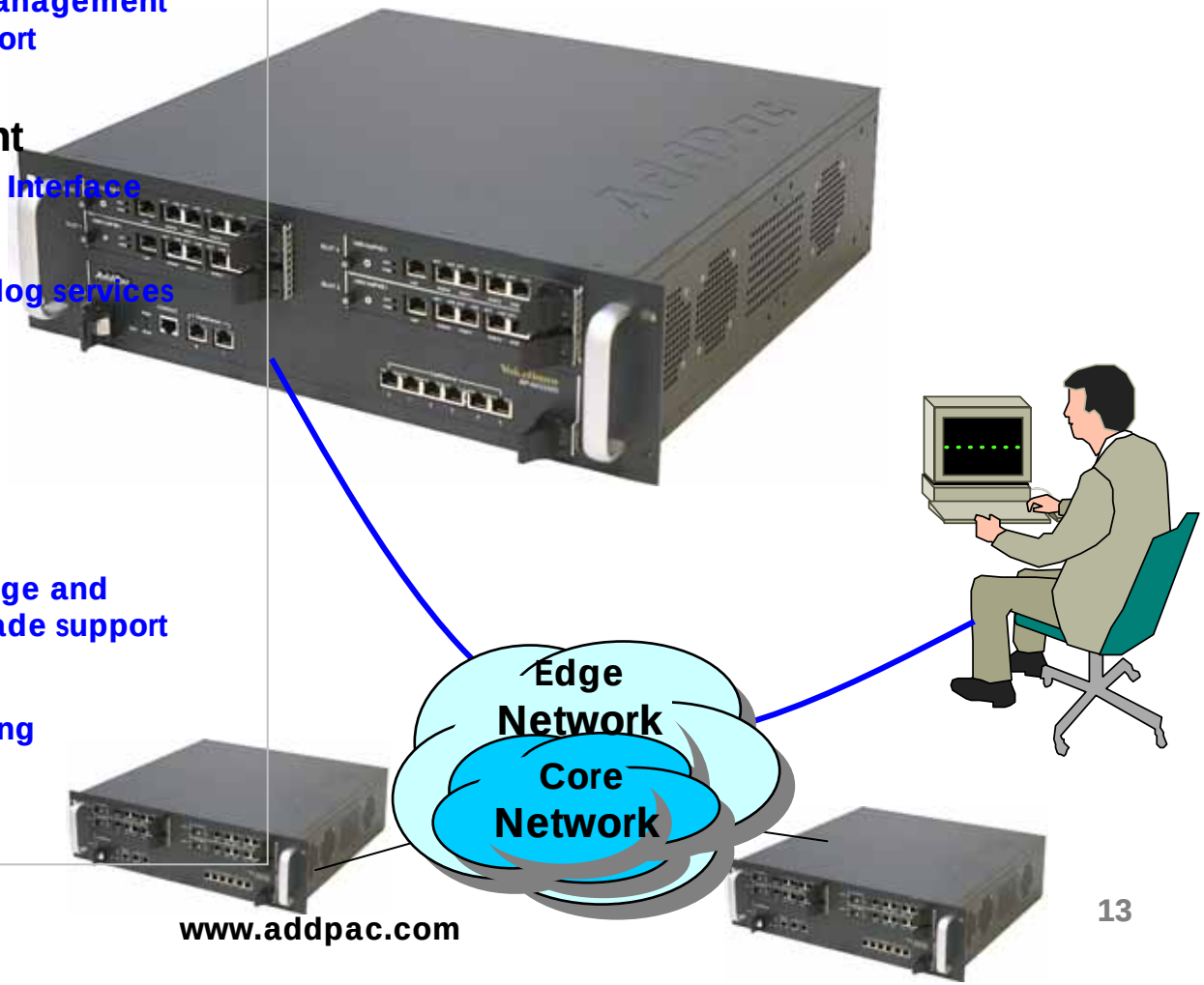
- **IP Routing Protocols**
  - Multi-protocol Internetworking Services
  - Static IP routing
  - RIP v1/v2 (opt.)
  - OSPF v2 routing protocols support (opt.)
  - Transparent Bridging (IEEE Spanning Tree Protocol)
- **WAN Protocols**
  - Point-to-Point over Ethernet Protocol (PPPoE)



AP-MG5000 Media Gateway Product Overview

Network Managements

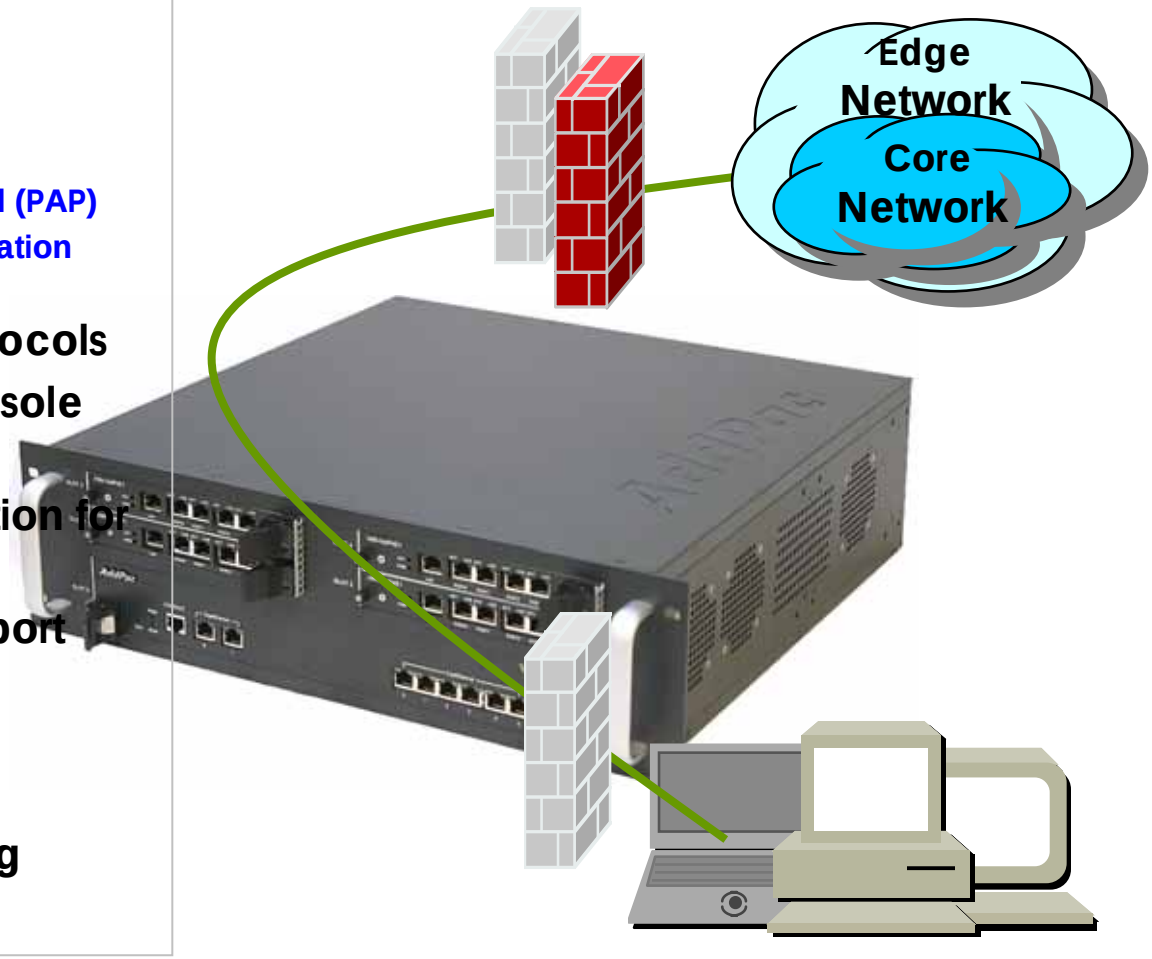
- **SNMP**
  - Standard Simple Network Management Protocol(SNMP) Agent support
  - MIB v1 and v2 Support
- **Web-based Management**
  - Standard Digital E1/T1 Voice Interface
- **Watch-dog Function**
  - Hardware, Software watch-dog services
- **Remote Management**
  - Telnet
  - Rlogin
  - Console
- **Auto Upgrade Service**
  - HTTP server based APOS image and configuration file auto-upgrade support
- **Batch Job Function**
  - Text based script downloading



AP-MG5000 Media Gateway Product Overview

Security Managements

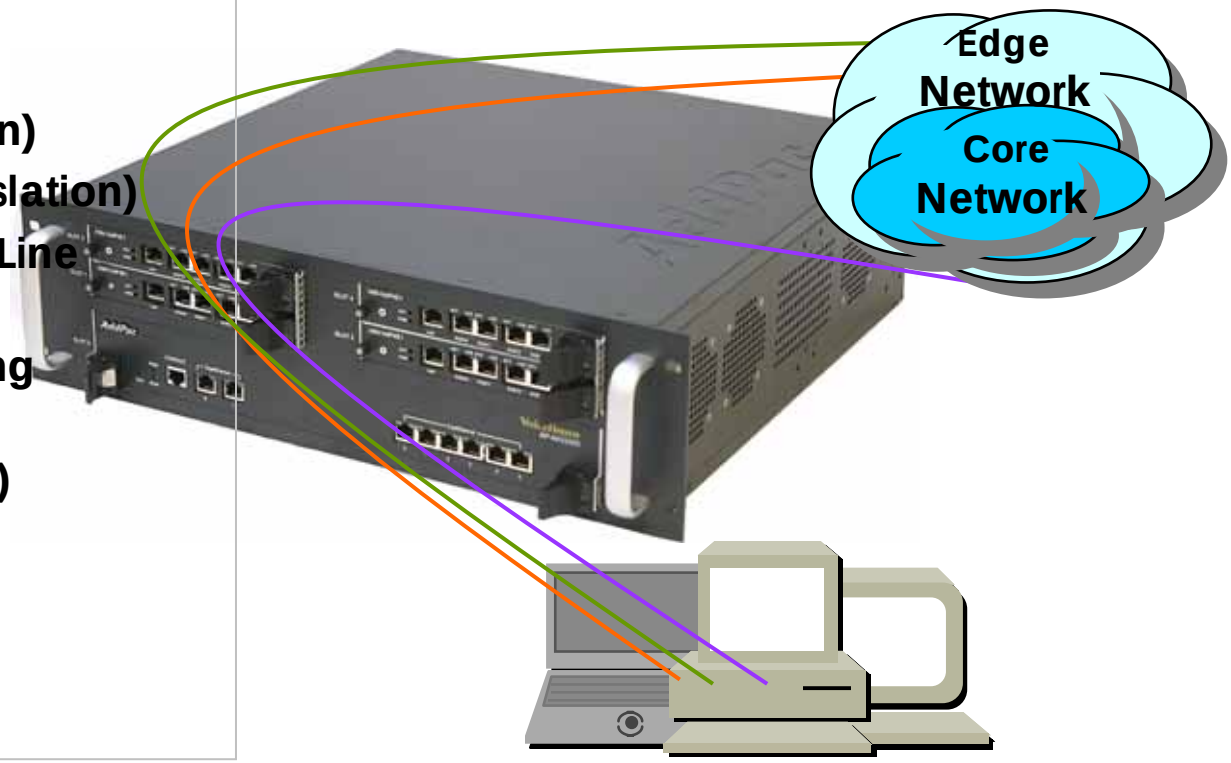
- IP packet filtering
- IP access list
- User authentication function
  - Password Authentication Protocol (PAP)
  - Challenge Handshake Authentication Protocol (CHAP)
- Enable/Disable specific protocols
- Auto-square connect of console and Telnet session
- Account Management function for multi-level user
- SNMP/TELNET/FTP/HTTP/TFTP port assignment function
- SNMP/TELNET/FTP access list management
- Boot mode security checking function



AP-MG5000 Media Gateway Product Overview

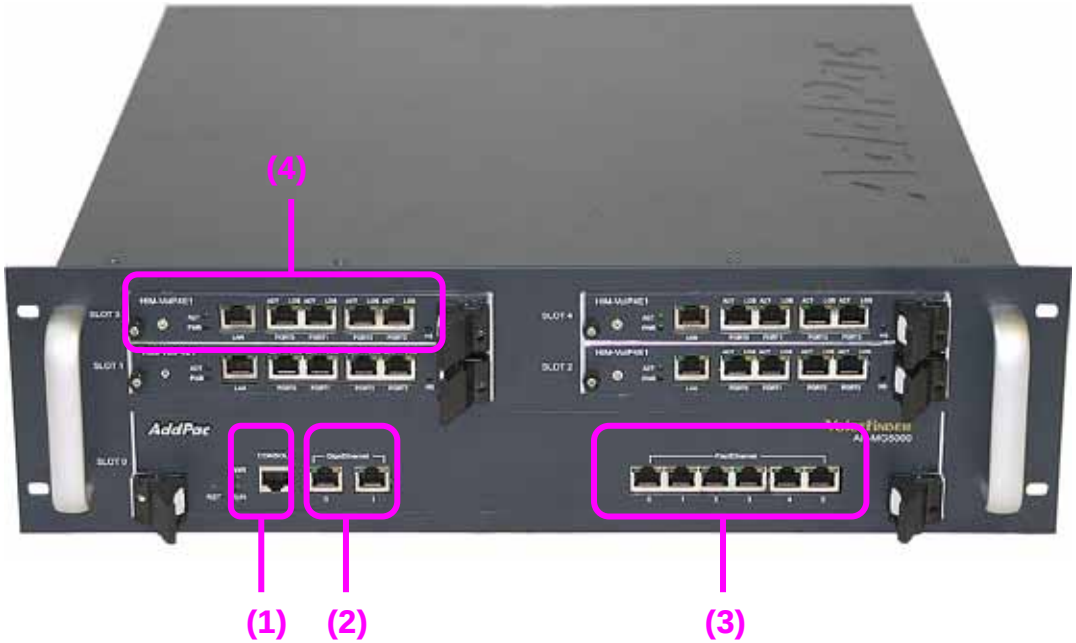
Network Scalability

- Bridging Service
  - Spanning Tree Bridging protocol (IEEE) support
- DHCP
  - Server and Relay
- IP Accounting
- PAT (Port Address Translation)
- NAT (Network Address Translation)
- Cisco Style CLI (Command Line Interface)
- PPTP (Point-to-Point Tunneling Protocol)
- NTP (Network Time Protocol)
- FTP/TFTP
  - Server and Client support
- DNS
  - Dynamic DNS Client support



AP-MG5000 Next Generation Media Gateway

AP-MG5000 Hardware Specification



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(3)	Fast Ethernet Switch	Six(6) 10/100 Fast Ethernet Ports for LAN interface
(4)	Module Slot 0-3	Four(4) Digital E1/T1 Interface, One(1) 10/100Mbps Fast Ethernet

AP-MG5000 Next Generation Media Gateway

AP-MG5000 4E1 DSP Module



4E1 DSP Module	Processor	64bit Communication Microprocessor	
	Memory	SDRAM	64Mbyte High Speed SDRAM
		Boot Memory	512Kbyte Flash Memory
	Network Interface	Six(6) 10/100 Fast Ethernet Ports for LAN interface	
		1-Port 10/100Mbps Fast Ethernet Interface (1 x RJ45)	

AP-MG5000 Next Generation Media Gateway

AP-MG5000 System CPU board



MG5000 Main Board	Processor	64bit High-End Microprocessor	
	Memory	Flash Memory	16Mbyte
		SDRAM	128Mbyte High Speed SDRAM
		Boot Memory	512Kbyte Flash Memory
	Network Interface	Two(2) 10/100/1000M Giga Ethernet Ports	
		Six(6) 10/100 Fast Ethernet Ports	
		One(1) RS-232C serial ports for Local system management	

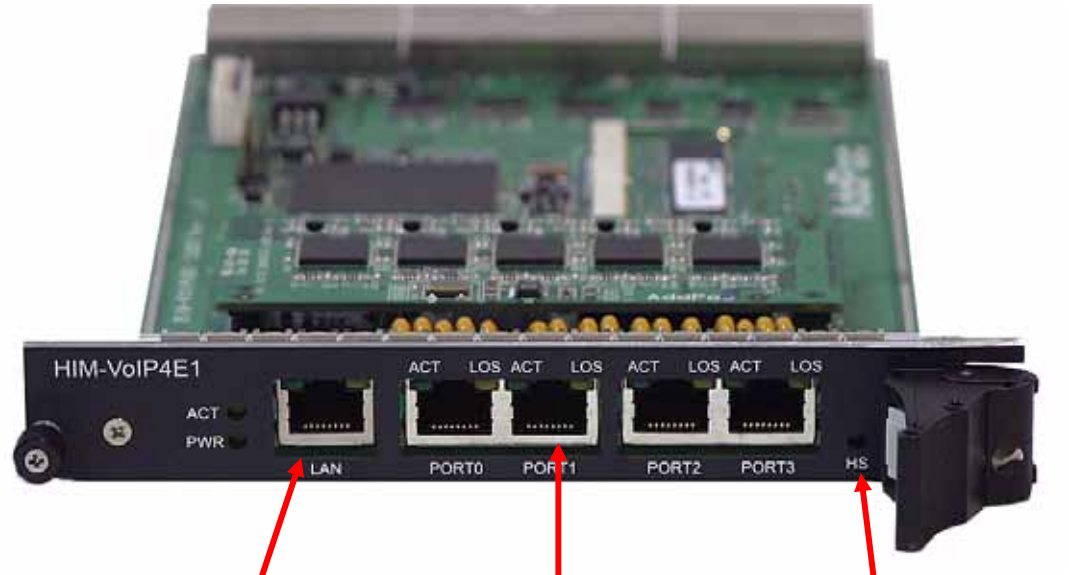
AP-MG5000 Next Generation Media Gateway

AP-MG5000 Dual Power Supply



AP-MG5000 Media Gateway Product Overview

AP-MG5000 4E1/T1Digital Voice Module



Fast Ethernet Port

E1/T1 Digital Voice Interface

Hot-Swap Indication LED

AP-MG5000 Hardware Specification

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		SDRAM	128Mbyte High Speed SDRAM
		Boot Memory	512Kbyte Flash Memory
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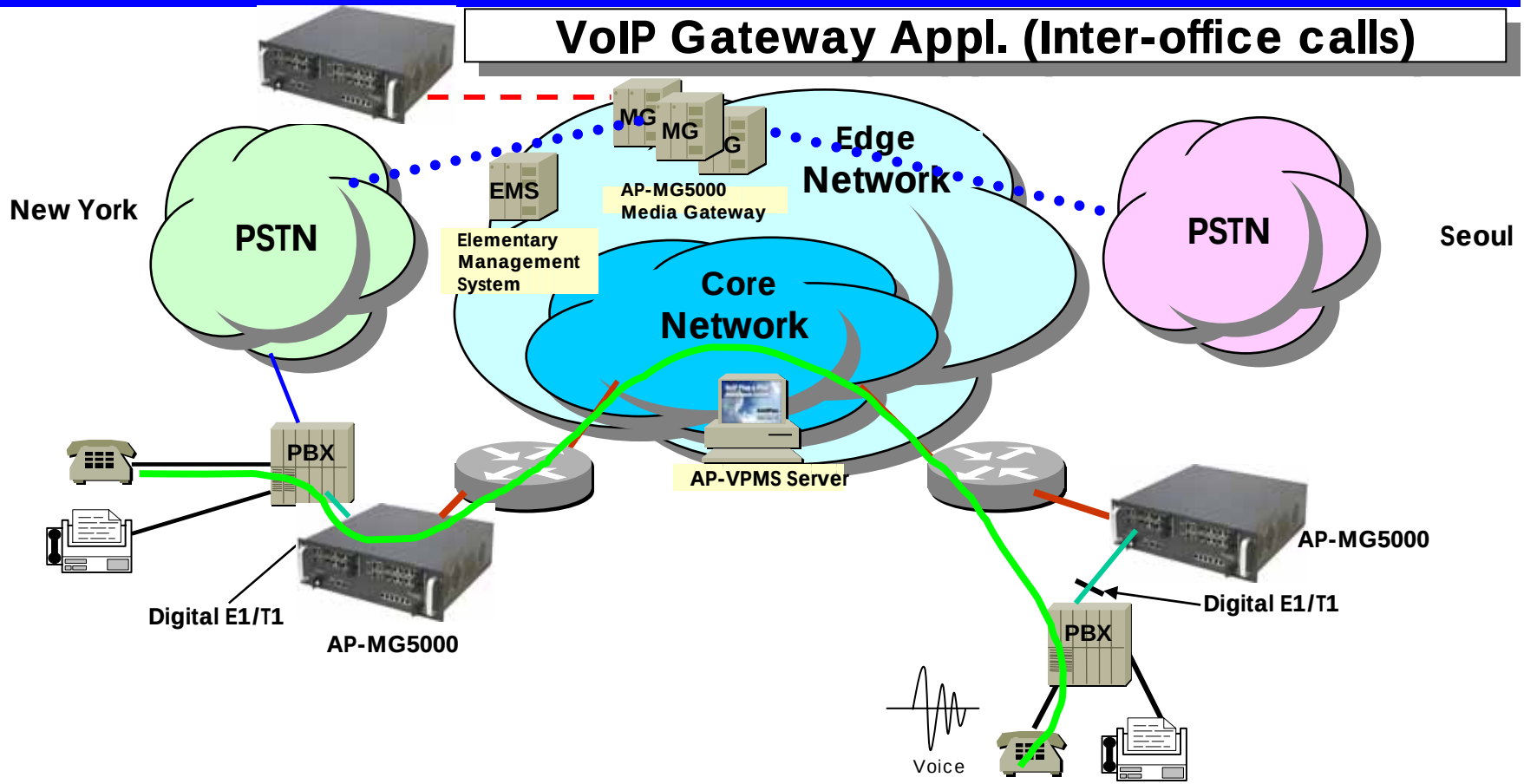
		Six(6) 10/100 Fast Ethernet Ports	
		One(1) RS-232C serial ports for Local system management	
4E1 DSP Module	Processor	64bit Communication Microprocessor	
	Memory	SDRAM	64Mbyte High Speed SDRAM
		Boot Memory	512Kbyte Flash Memory
	Network Interface	Six(6) 10/100 Fast Ethernet Ports for LAN interface	
		1-Port 10/100Mbps Fast Ethernet Interface (1 x RJ45)	
Power Input		VAC 110~220V Free Voltage, 50/60Hz,Dual Power Supply Unit	
Operating Temperature		0°C ~ 50°C	
Storage Temperature		-40°C ~ 85°C	
Width x Depth x Height		132 mm x 445 mm x 435 mm,3U x 19" Rack Mountable Chassis	
Weight		12kg	

AP-MG5000 Voice Networking Configuration

VoIP Gateway Appl. (Inter-office calls)



Voice Call Flow

PSTN Interface

Voice+Data, Ethernet or WAN Interface

TRUNK n x E1 Voice Interface for PSTN Interworking

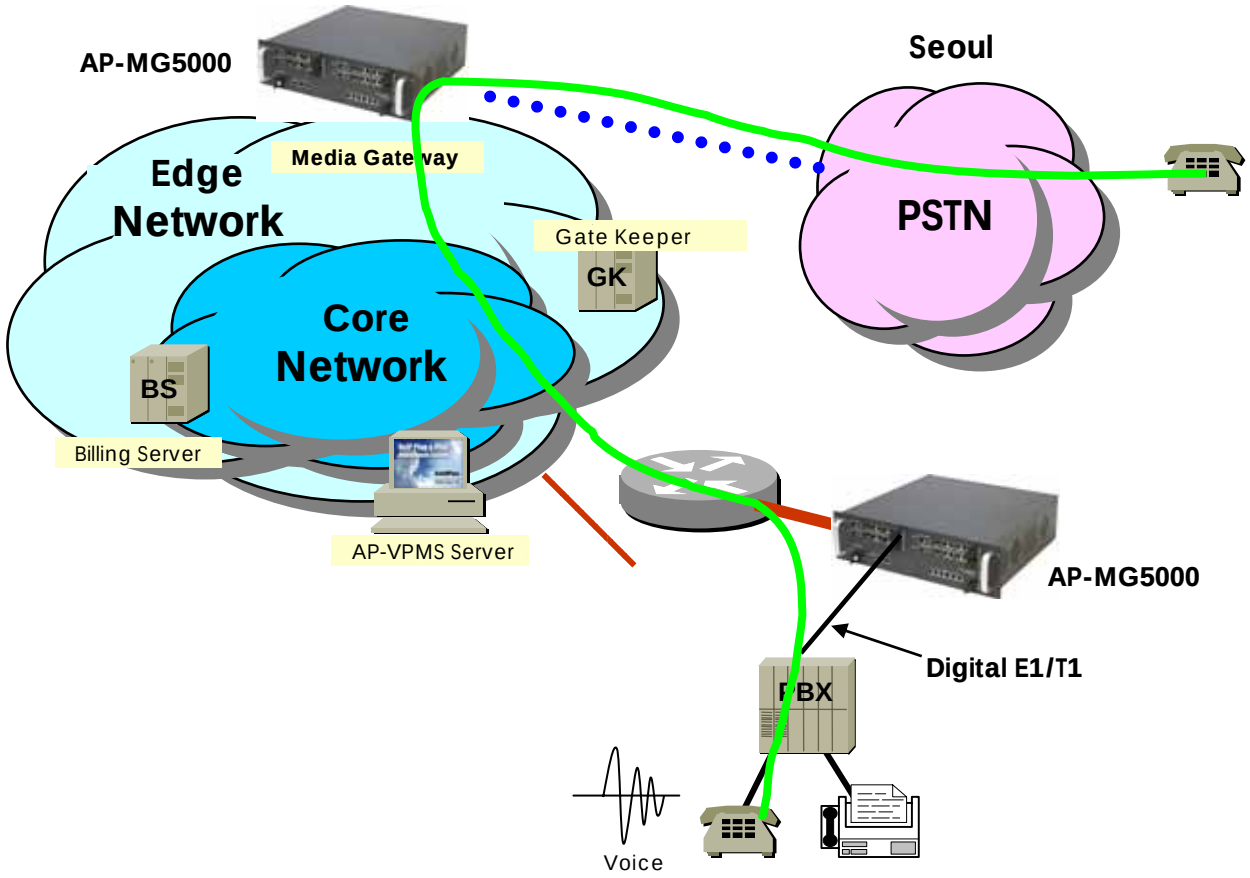
Leased Line/ATM/Frame-Relay/IP Router, xDSL/Cable Modem, etc.

AddPac AP-MG5000 Media Gateway

Analog Phone

AP-MG5000 Networking Configuration

VoIP Gateway Appl.(VoIP to PSTN Inter-working Call Flow)



FXS Analog Voice Interface

Voice Call Flow

Voice+Data, Ethernet or WAN Interface

TRUNK n x E1 Voice Interface for PSTN Interworking

Leased Line/ATM/Frame-Relay/IP Router, xDSL/Cable Modem, etc.

AddPac AP-MG5000 Media Gateway

Analog Phone

AP-MG5000 Media Gateway Product Overview

AP-MG5000 Ordering and Pricing

- **AP-MG5000 Media Gateway**

  AP-MG5000-01 : AP-MG5000 Standard Configuration

  - Two(2) Gigabit Ethernet Interface
  - Six(6) Fast Ethernet Interface
  - One(1) RJ45 Console Port
  - 64bit RISC CPU, 16MB Flash, 128MB SDRAM
  - APOS v5.xx with Operation Manual
  - Including CAB-LAN, CAB-CON



MG5000-4E1 : 4 Port Digital E1 Interface Module
MG5000-4T1 : 4 Port Digital T1 Interface Module
CAB-LAN :RJ45 Ethernet Cable
CAB-CON :RJ45 RS-232C Console Cable

AP-MG5000 Media Gateway Product Overview

AP-MG5000 Comparison Table

	AP-MG5000 Media Gateway
▶ Digital 4E1 /T1 VoIP Module	Up to 4
▶ 10/100/1000 Mbps Ethernet Ports	2
▶ 10/100 Mbps Ethernet Ports	6
▶ Console Port	1
▶ Main CPU	High-End Power PC 64Bit RISC
▶ Main Flash Memory	16Mbyte
▶ Main Memory	128Mbyte
▶ Internetworking OS	APOS
▶ H.323, SIP, MGCP VoIP Protocol, T38 FAX	YES
▶ PPPoE, PPTP Network Protocols	YES
▶ Enhanced QoS Management Feature	YES
▶ IP Routing Protocols Including NAT	YES

Thank you !

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