



# VoIP



July 2003

Technical Sales and Marketing

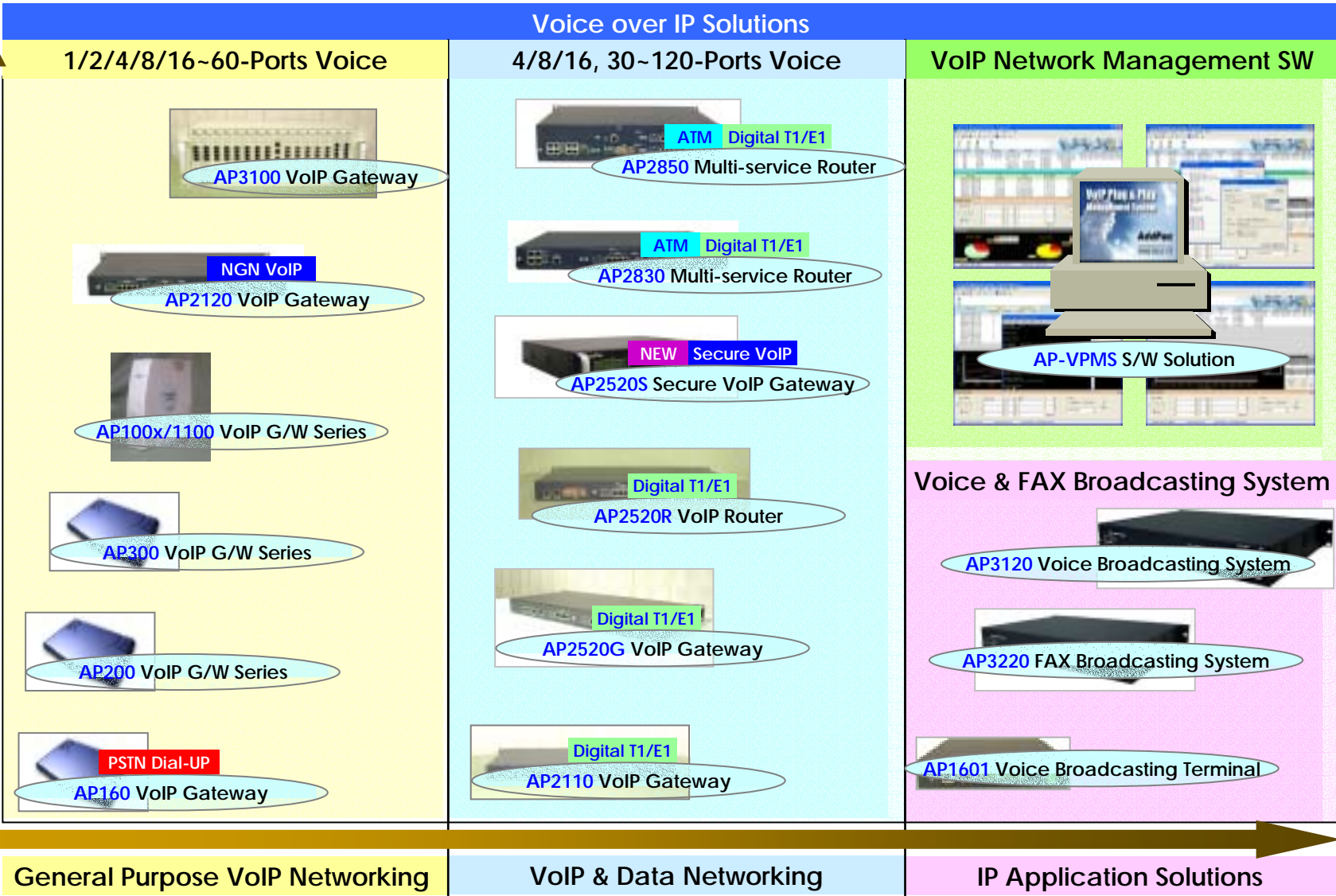
AddPac Technology

[www.addpac.com](http://www.addpac.com)

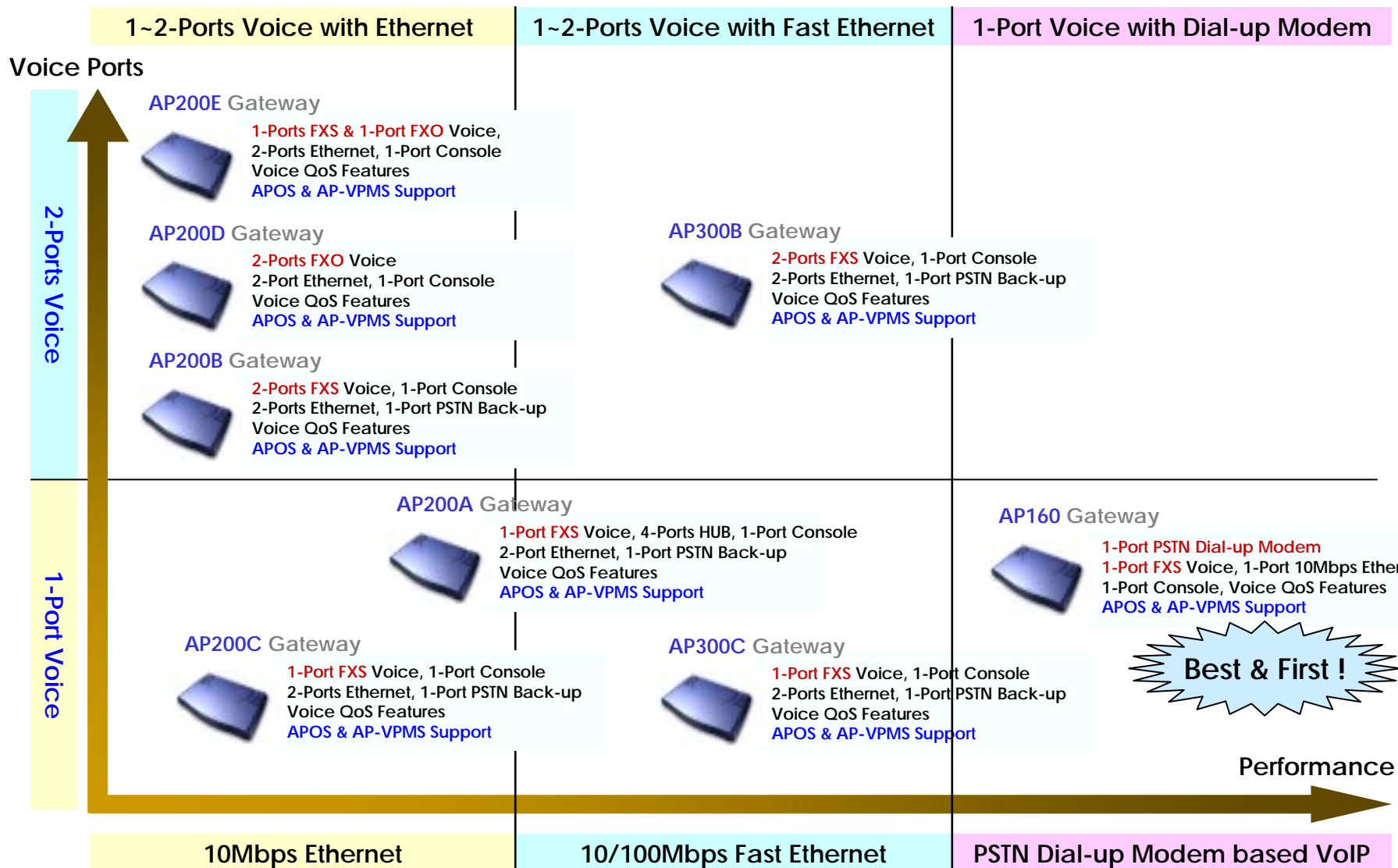
# AddPac VoIP Products Road-Map

Multi-services Specific

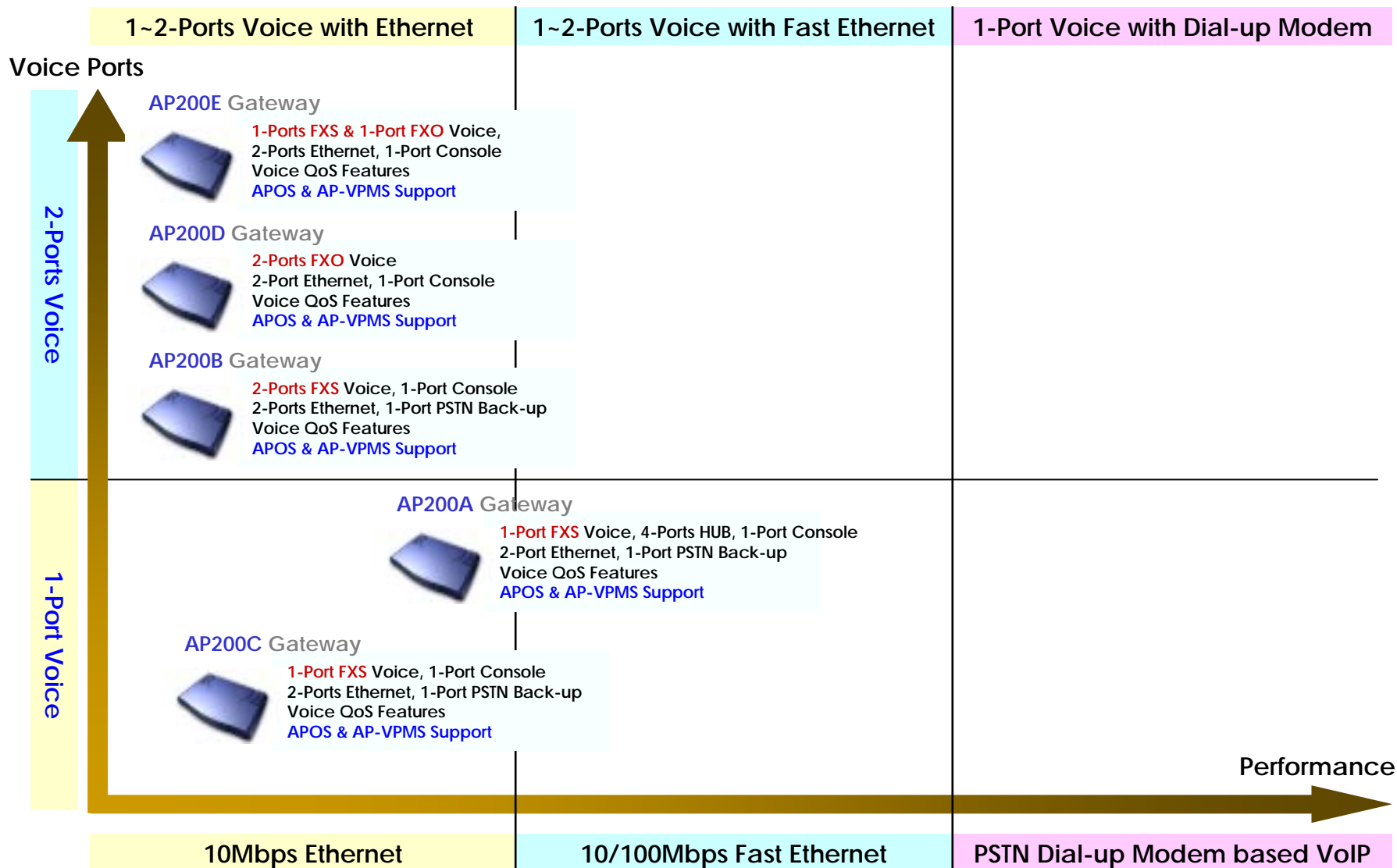
Application Specific



# AddPac AP160/200/300 Products Road-Map

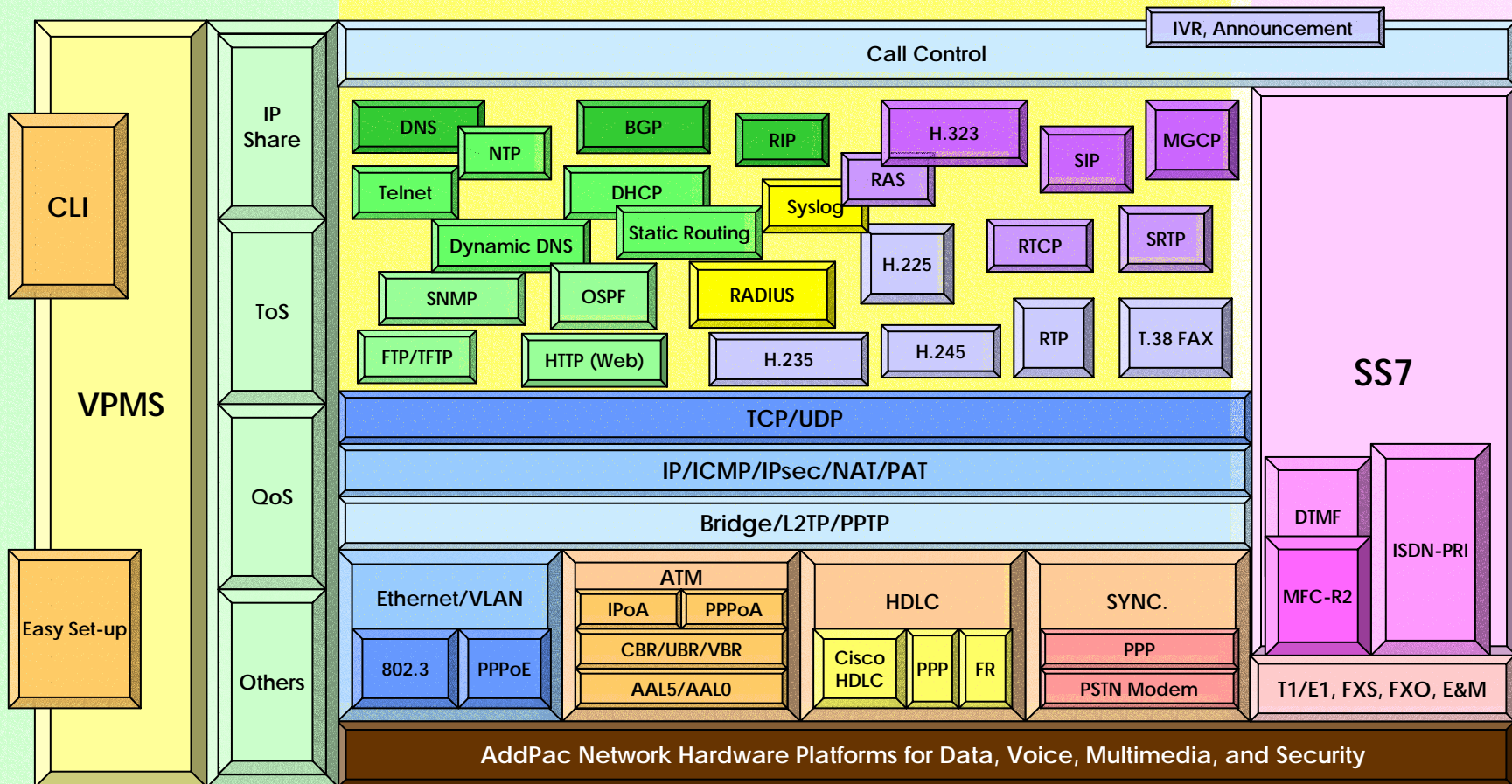


# AddPac AP200 Products Road-Map



# AP200 VoIP Gateway Product Overview

## APOS Internetworking Protocol Stack



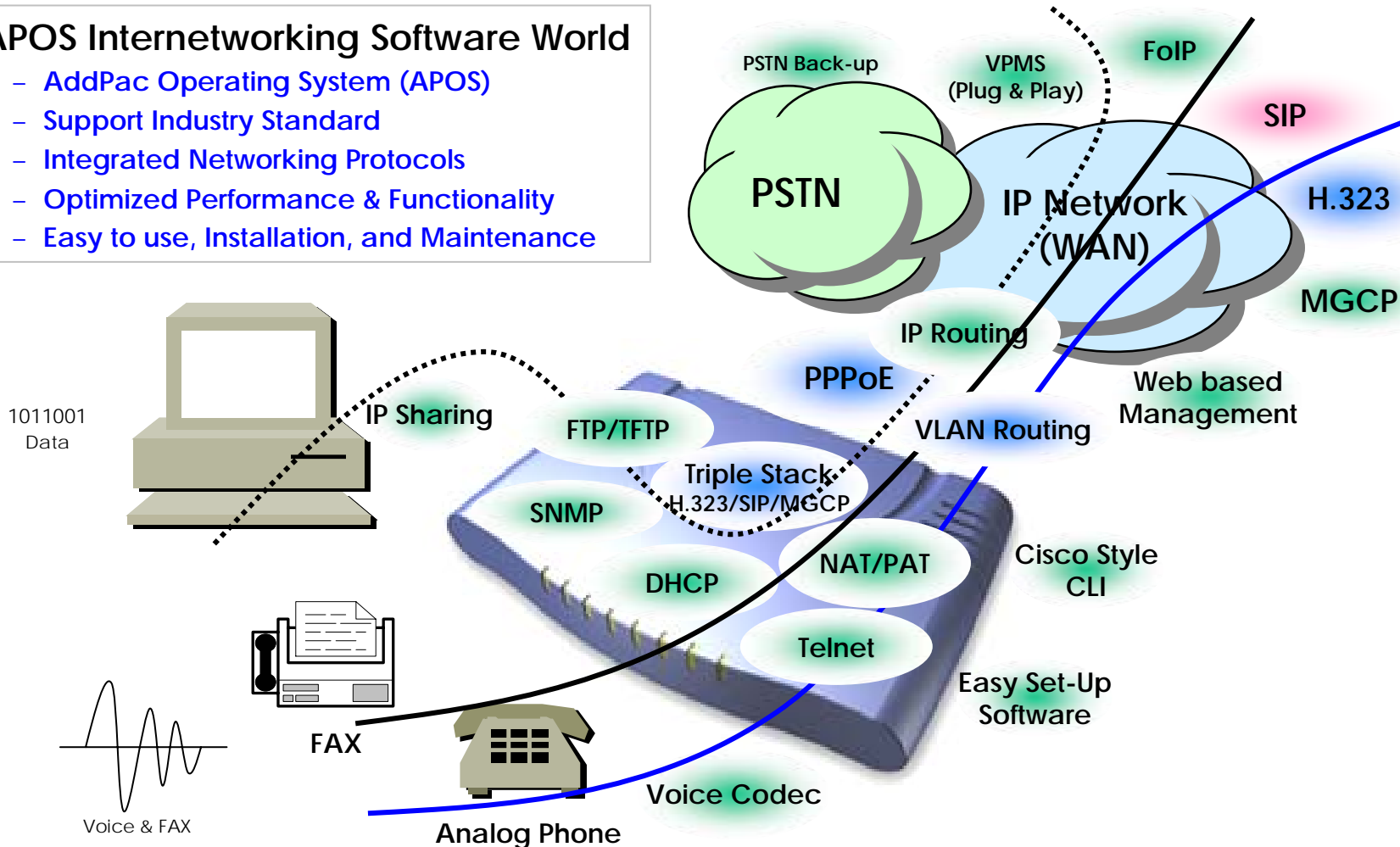


# AP200 VoIP Gateway Product Overview

## APOS Internetworking S/W World

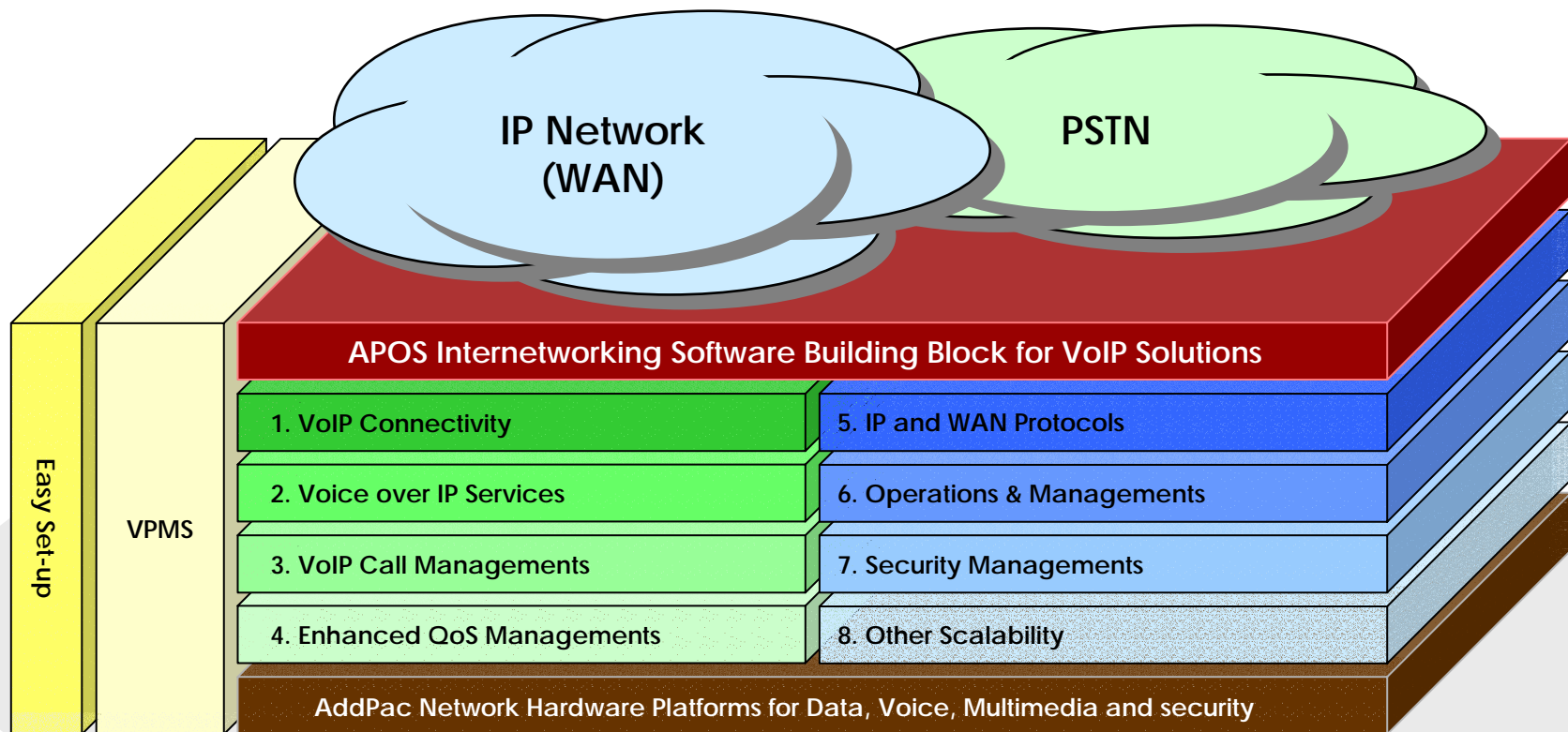
### • APOS Internetworking Software World

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



# AP200 VoIP Gateway Product Overview

## APOS Internetworking S/W World (cont.)



# AP200 VoIP Gateway Product Overview

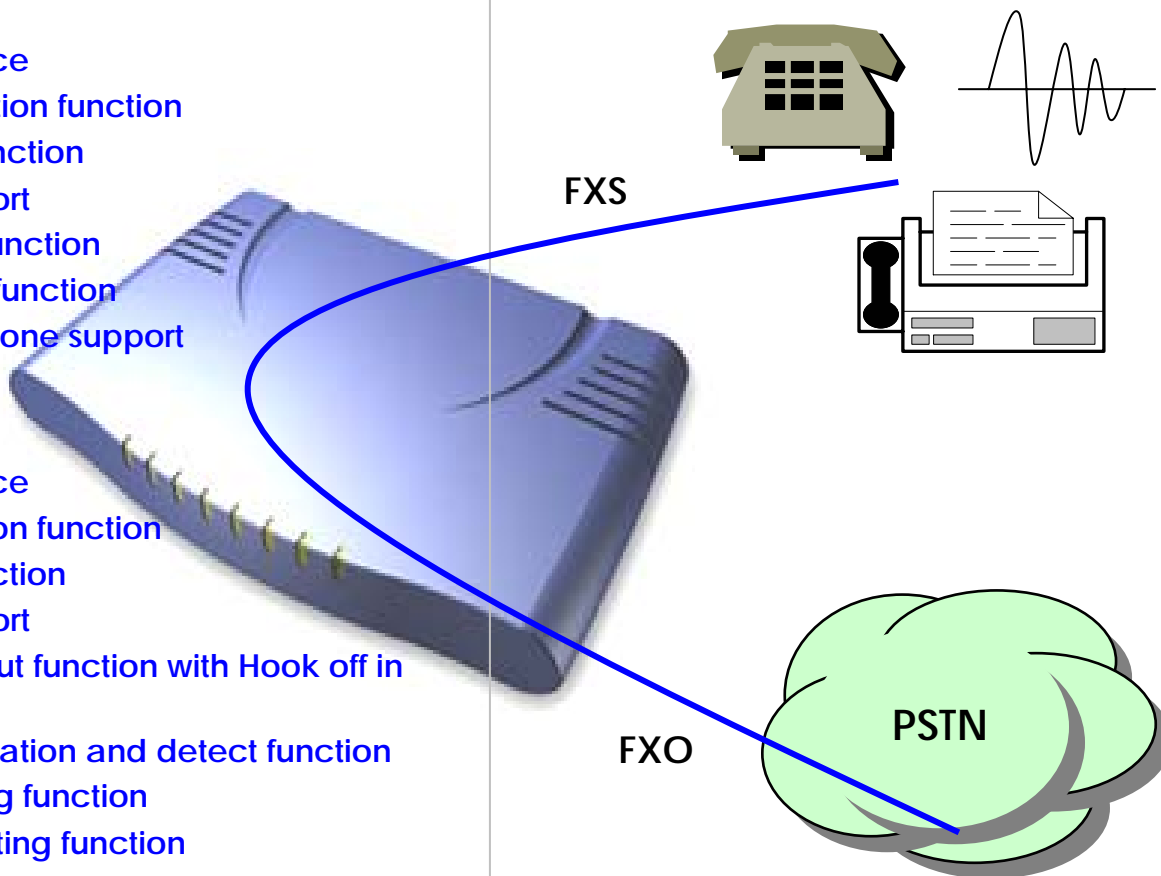
## VoIP Gateway Connectivity

- FXS

- RJ-11 Hardware interface
- Polarity inverse generation function
- Caller-id generation function
- Busy-out function support
- Ring cadence setting function
- Ring frequency setting function
- European type II telephone support
- Surge protect support

- FXO

- RJ-11 Hardware interface
- Polarity inverse detection function
- Caller-ID detection function
- Busy-out function support
- PSTN backup or busy-out function with Hook off in case of power down
- Clear down tone registration and detect function
- Hook flash timing setting function
- Ring detect timeout setting function
- Ring number setting function
- For outbound calls, connect when voice is detected

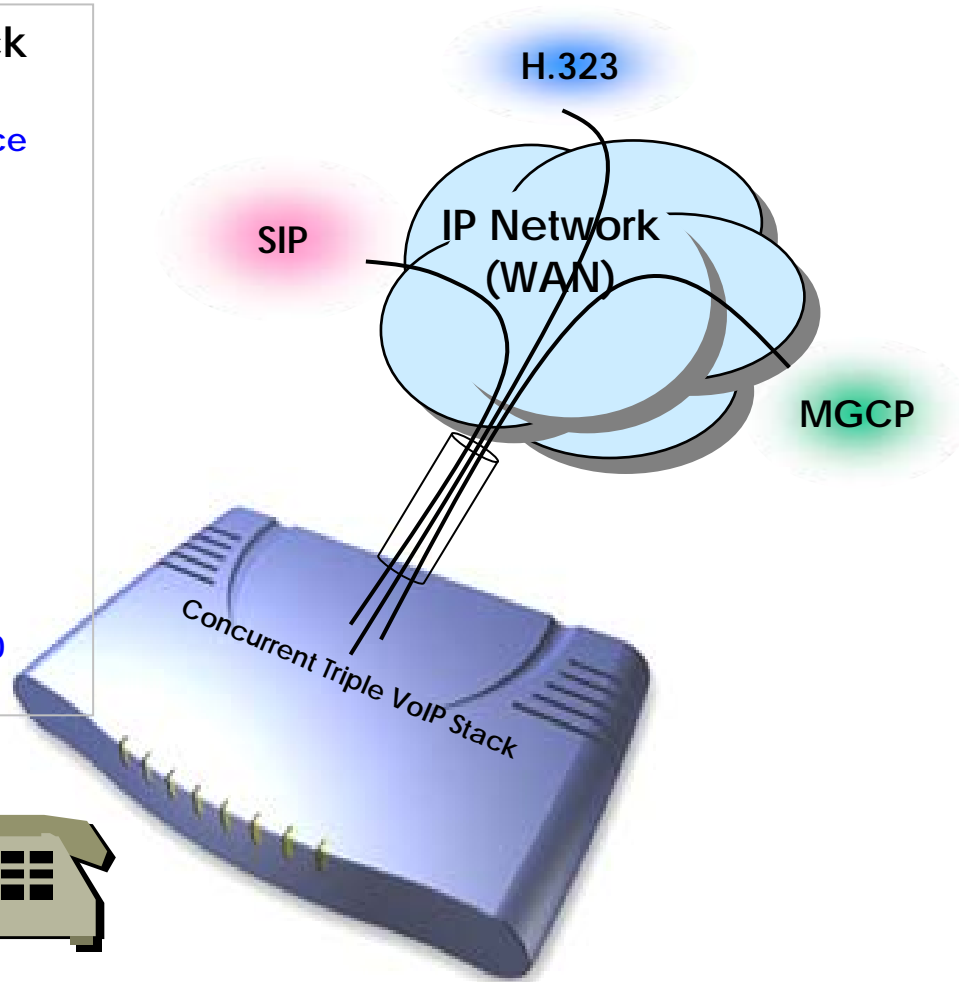




# AP200 VoIP Gateway Product Overview

## 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



# AP200 VoIP Gateway Product Overview

## Voice over IP Service (cont.)

### • H.323

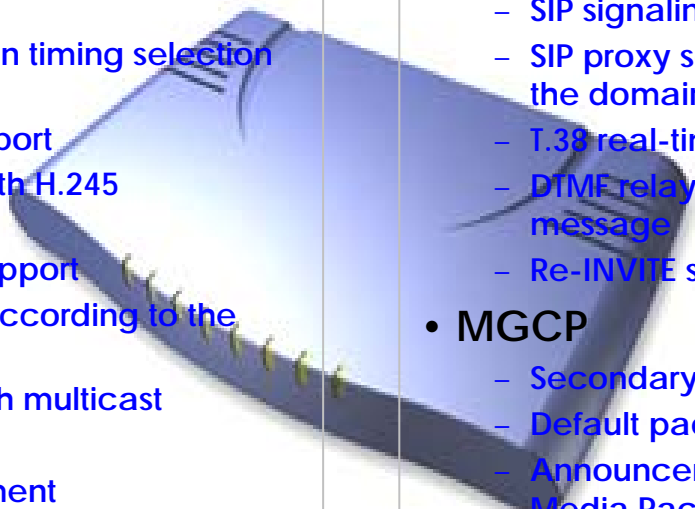
- Fast connect, normal connect support
- H.245 tunneling support
- Q.931 response message setting for inbound VoIP calls
- H.245 logical channel open timing selection function
- Start H.245 procedure support
- DTMF / Hook flash relay with H.245 alphanumeric / signal
- Secondary gatekeeper support
- Gatekeeper 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



# AP200 VoIP Gateway Product Overview

## Voice over IP Service (cont.)

### • Voice Codec

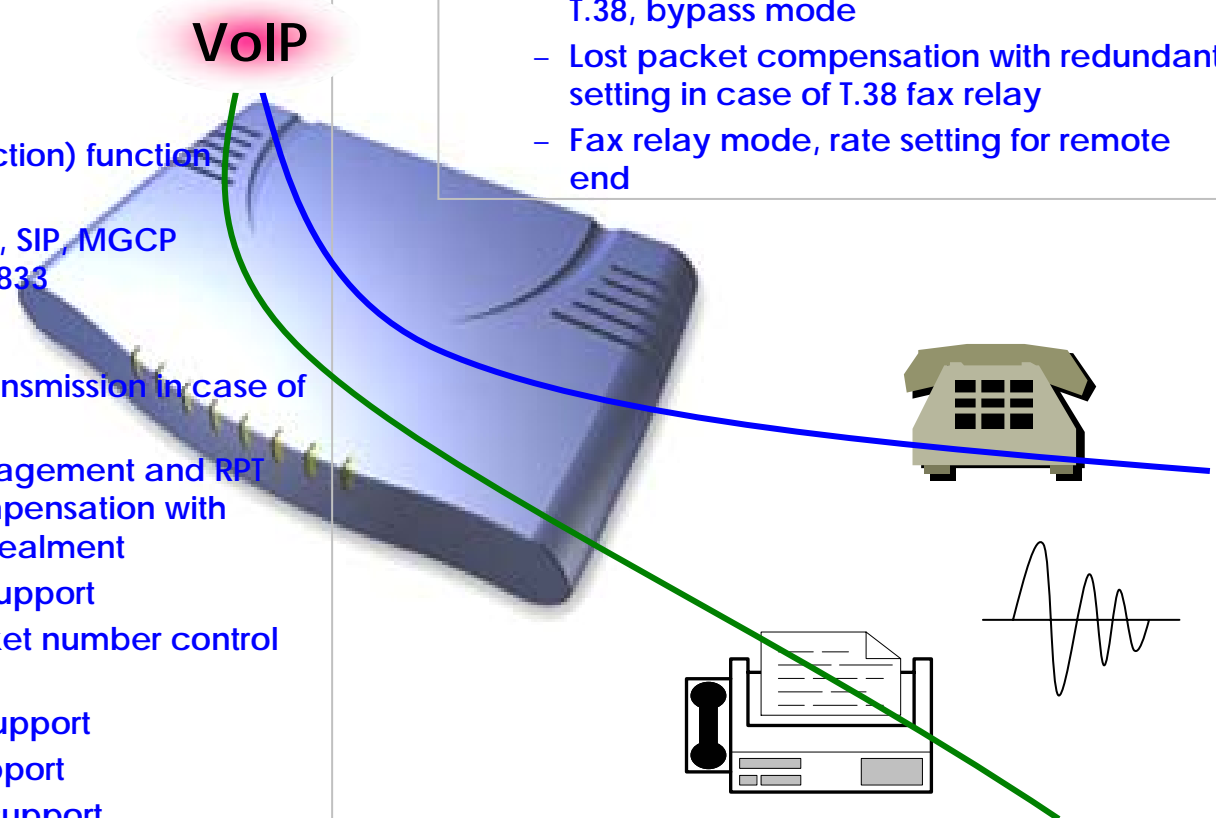
- G.711 A-Law, G.711 U-Law
- G.726 r16, G.726 r32
- G.729A
- G.723.1 r63, G.723.1 r53
- VAD (Voice Activity Detection) function support
- DTMF relay support (H.323, SIP, MGCP common) based on RFC2833

### • RTP

- Redundant RTP packet transmission in case of severe packet loss
- Dynamic jitter buffer management and RTP 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



# AP200 VoIP Gateway Product Overview

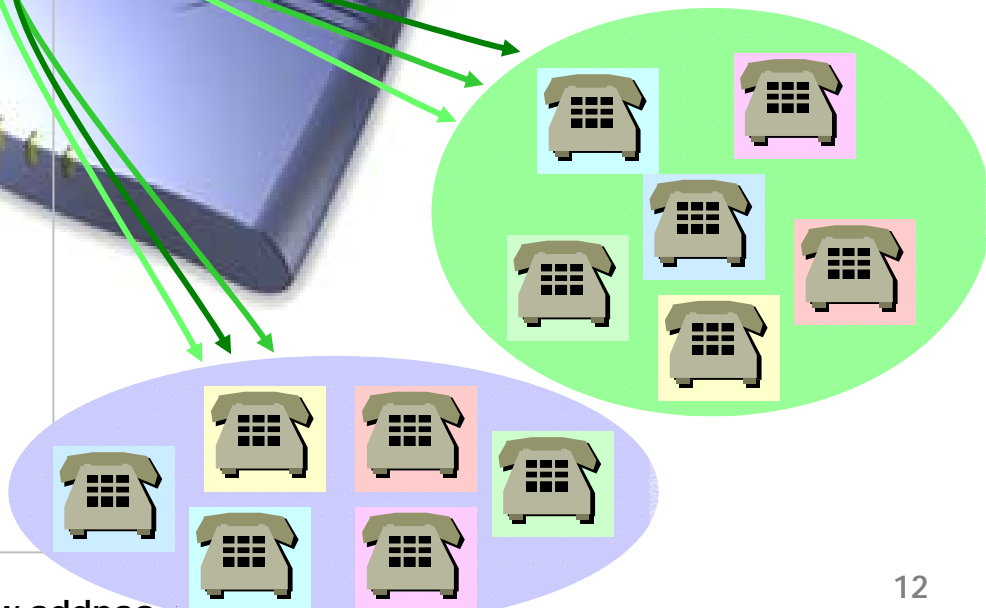
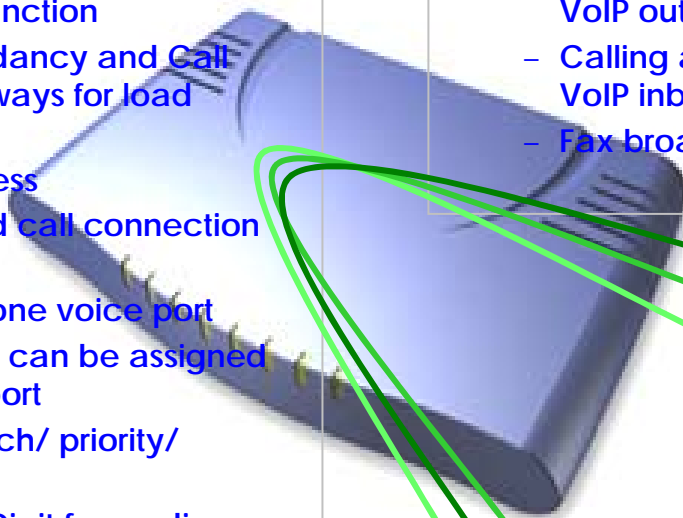
## VoIP Call Managements

### • 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



# AP200 VoIP Gateway Product Overview

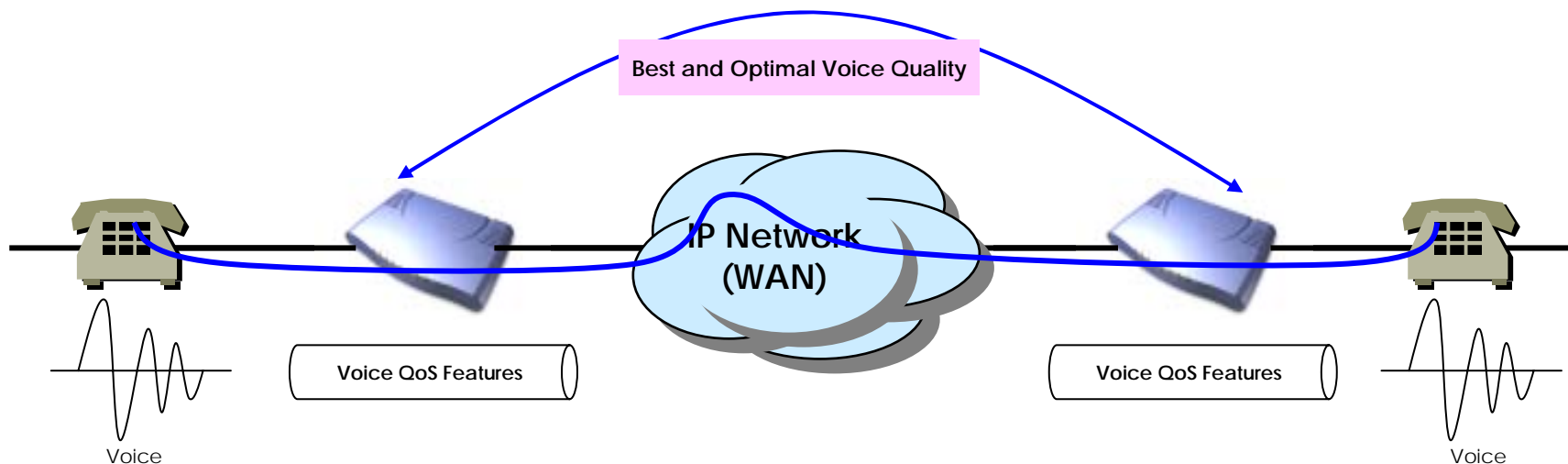
## Enhances QoS Managements

### • 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

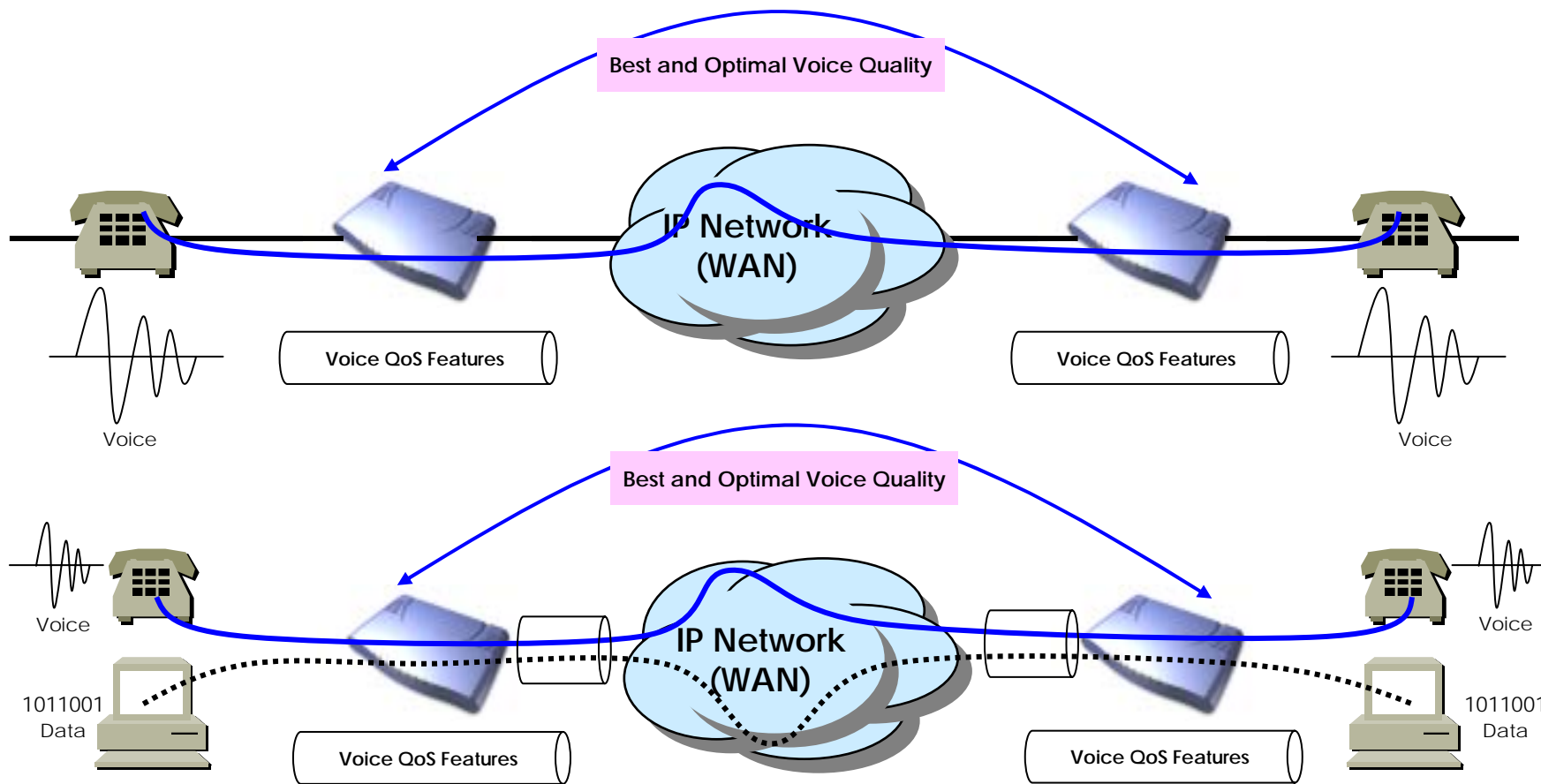
### • Enhances **Receive** Voice QoS Features

- Dynamic Jitter Buffer Management
- Error Concealment
- Support T.38 FAX Data Error Recovery Scheme



# AP200 VoIP Gateway Product Overview

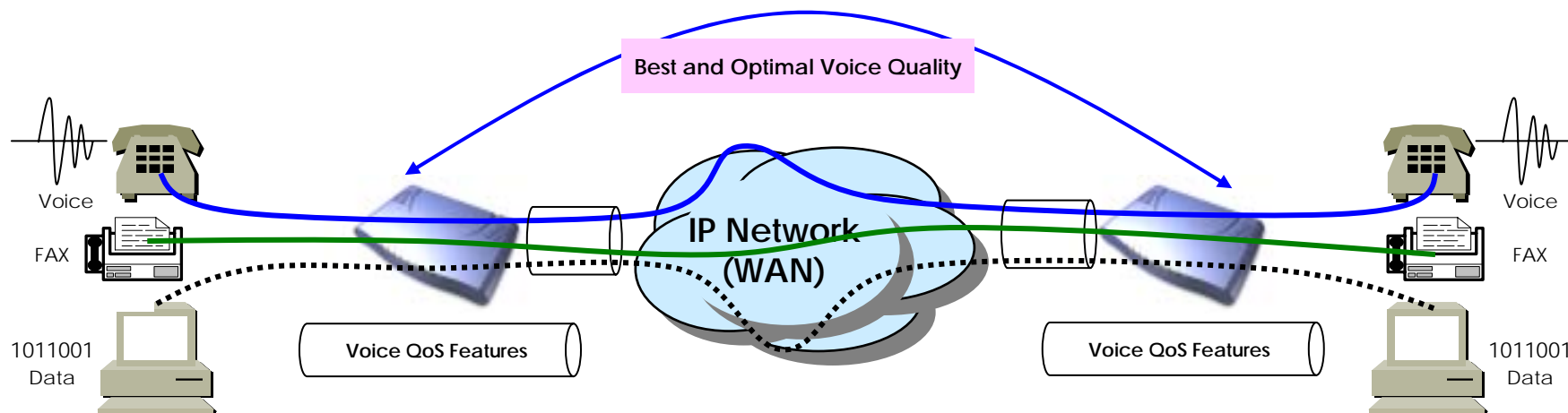
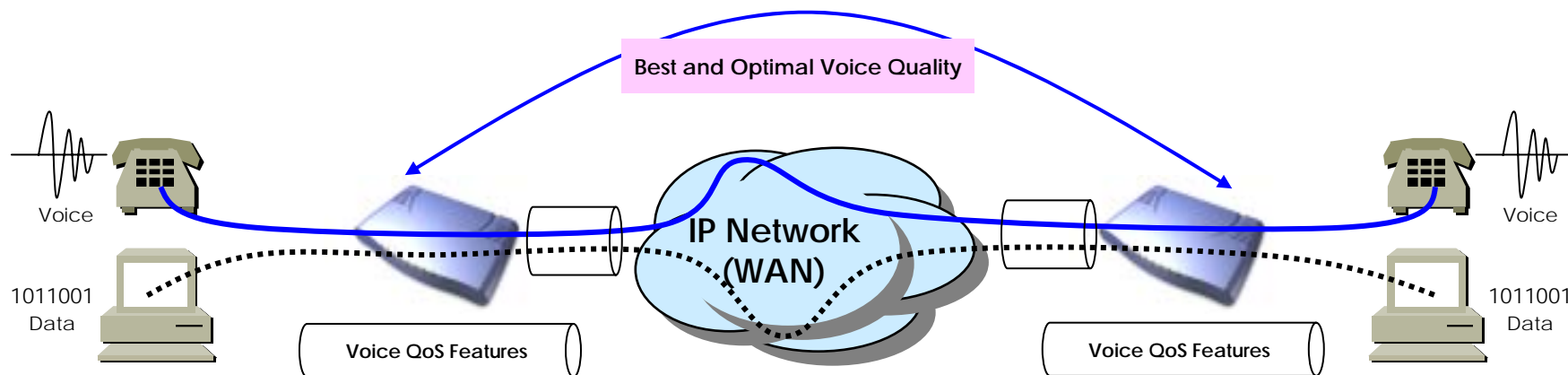
## Enhances QoS Managements (cont.)





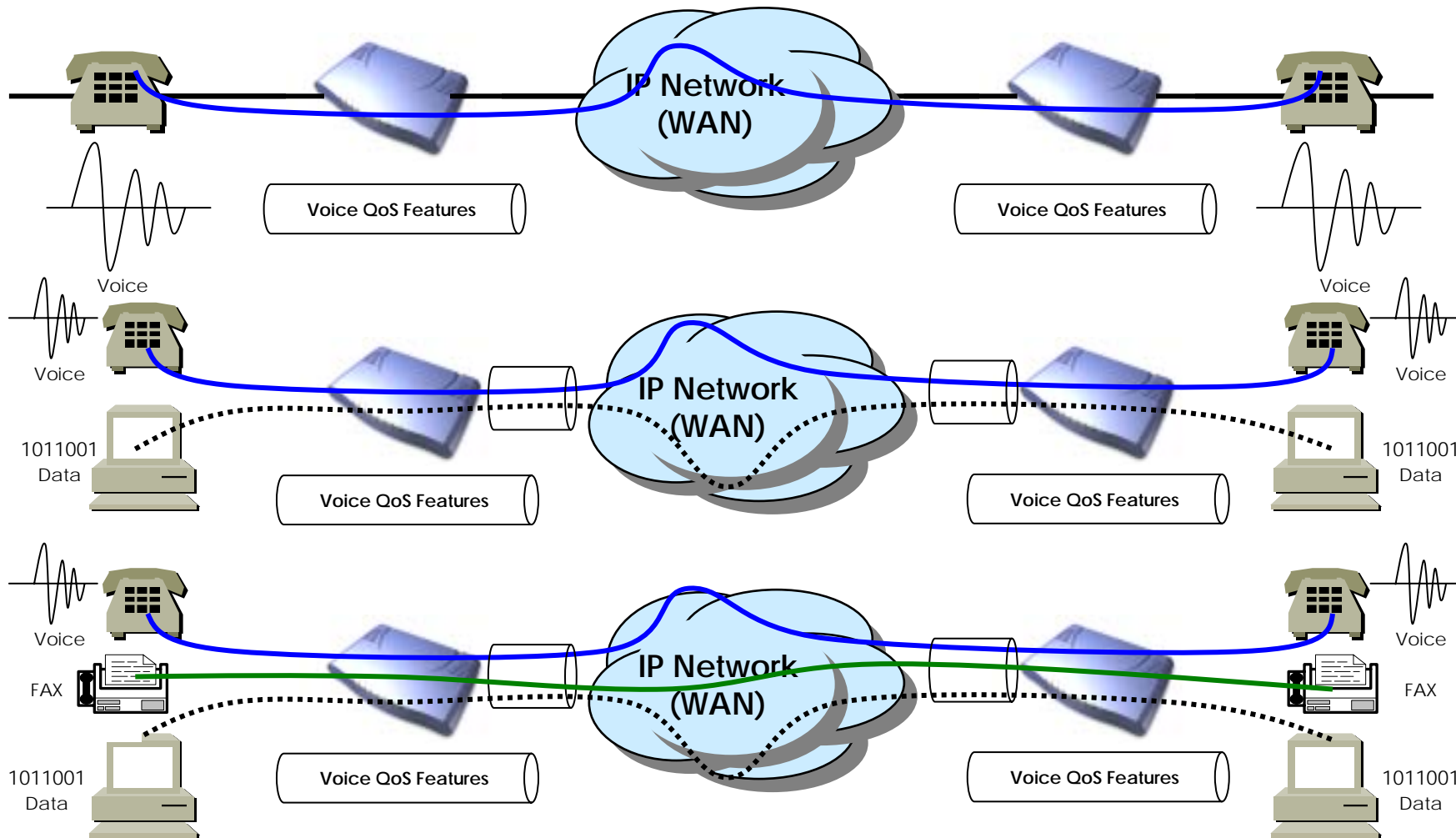
# AP200 VoIP Gateway Product Overview

## Enhances QoS Managements (cont.)



# AP200 VoIP Gateway Product Overview

## Enhances QoS Managements (cont.)



# AP200 VoIP Gateway Product Overview

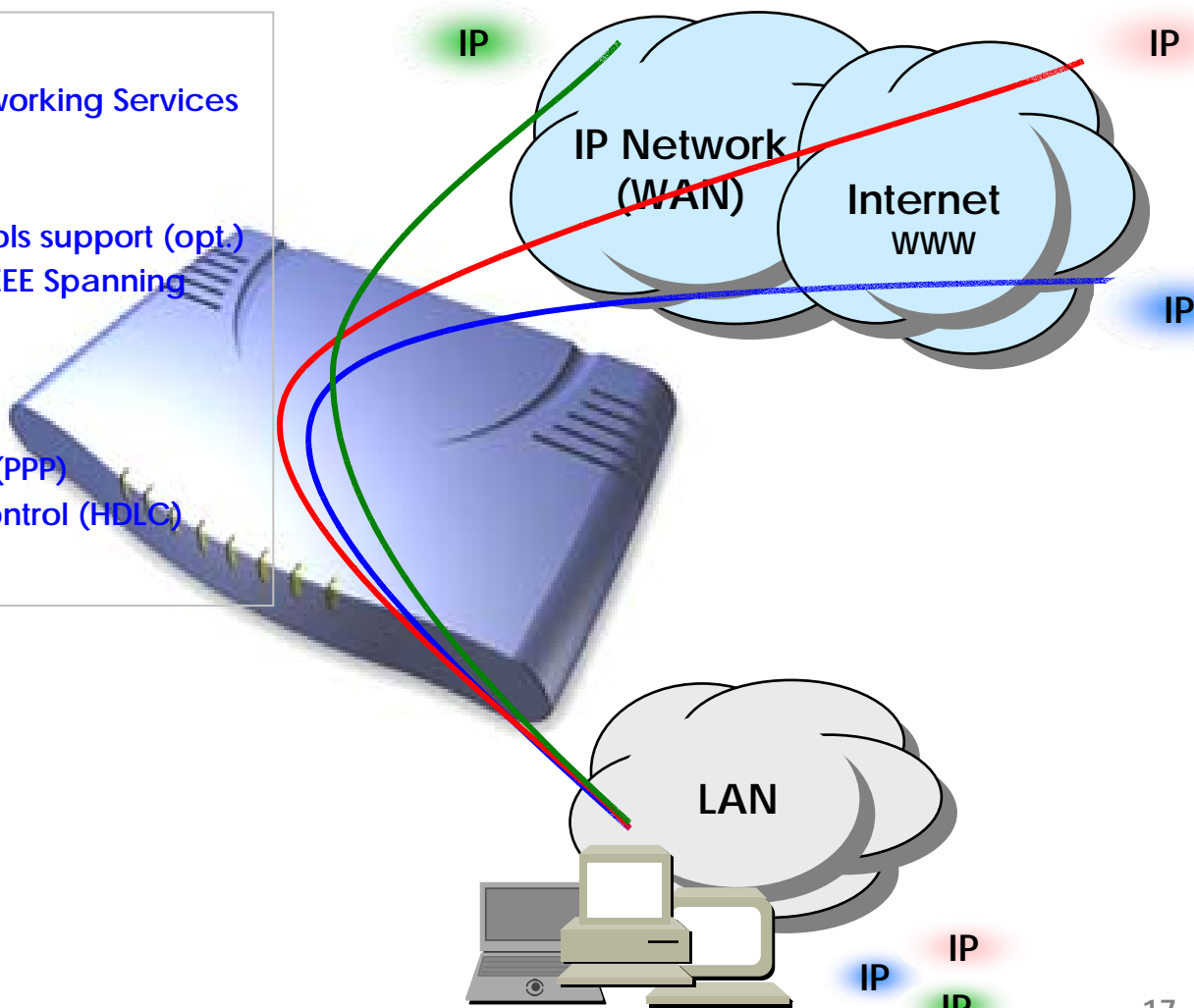
## IP and WAN Protocols

- 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 Protocol (PPP)
- High-level Data Link Control (HDLC) Protocol

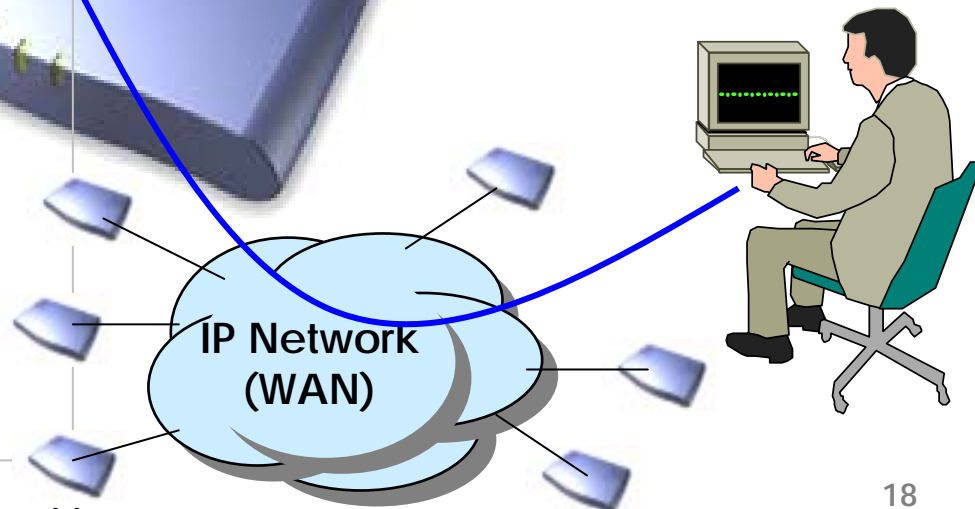
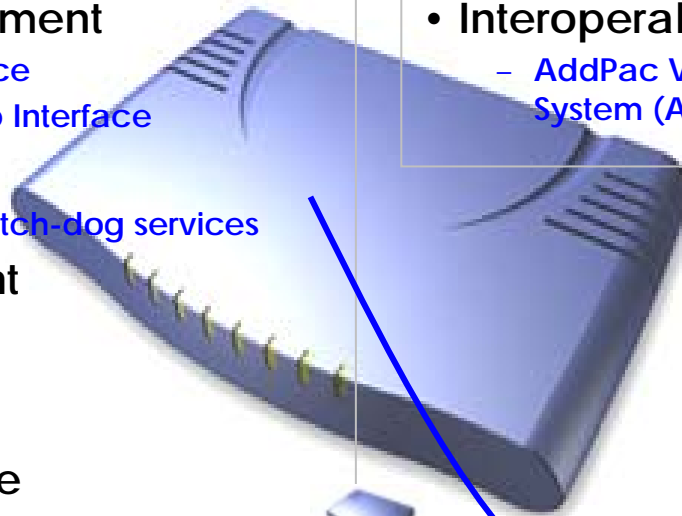


# AP200 VoIP Gateway Product Overview

## Network Managements

- **SNMP**
  - Standard Simple Network Management Protocol( SNMP) Agent support
  - MIB v1 and v2 Support
- **Web-based Management**
  - Standard Voice Interface
  - Standard PSTN Back-up 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

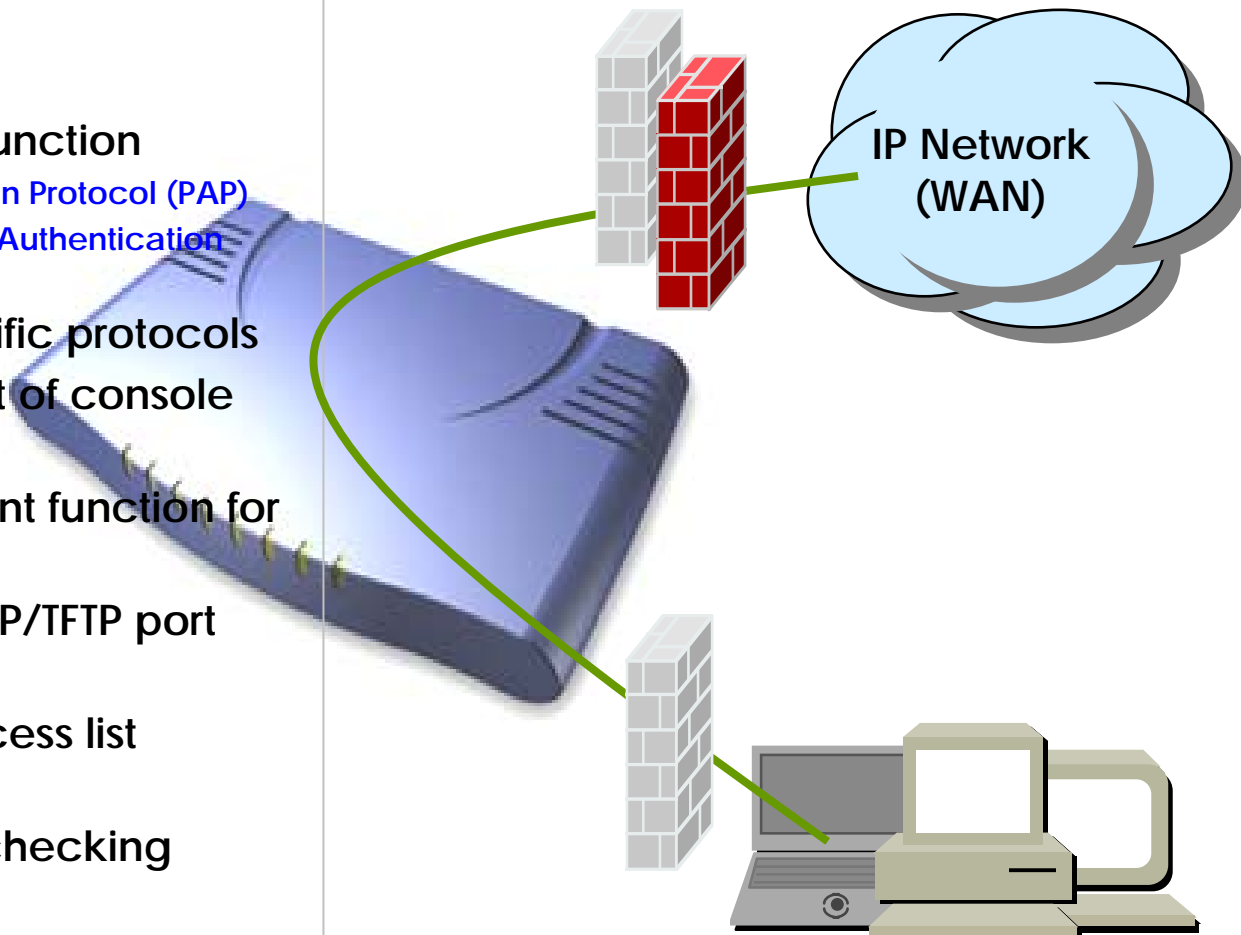
- **Easy Set-up Service**
  - MS Windows Graphical User Interface (GUI) based installation Software Solution
  - Easy installation Set-up service
- **Interoperable with AP-VPMS Service**
  - AddPac VoIP Plug & Play Management System (AP-VPMS)



# AP200 VoIP 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



# AP200 VoIP Gateway Product Overview

## Network Scalability

- IP Sharing Feature

- Single IP Address, Multiple IP Network Access
- Public IP Address Sharing by VoIP Gateway

- IP Sharing Network Environment

- Support Legacy Network Environment
- xDSL Modem based Broadband Network
- Cable Modem based Broadband Network
- Leased line Network Environment

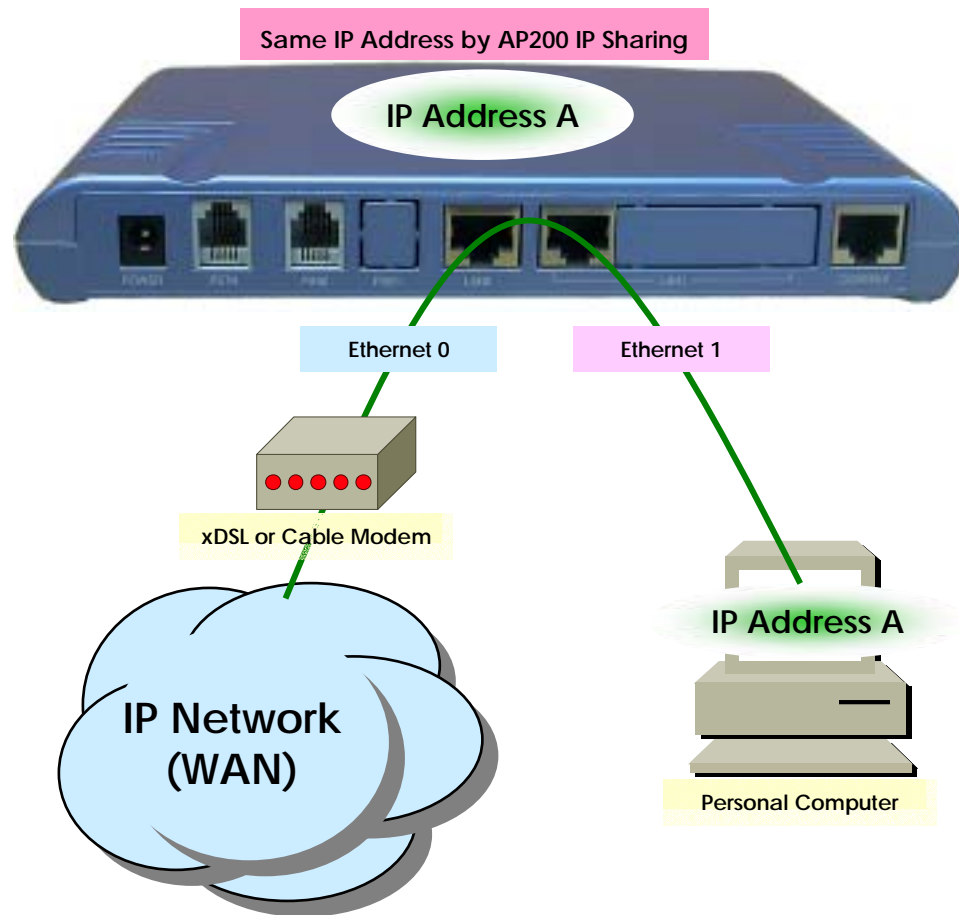
- Both support Fixed and Dynamic IP

- Support Standard Network Protocols

- PPPoE
- PPPTP
- DHCP



AP200 VoIP Gateway

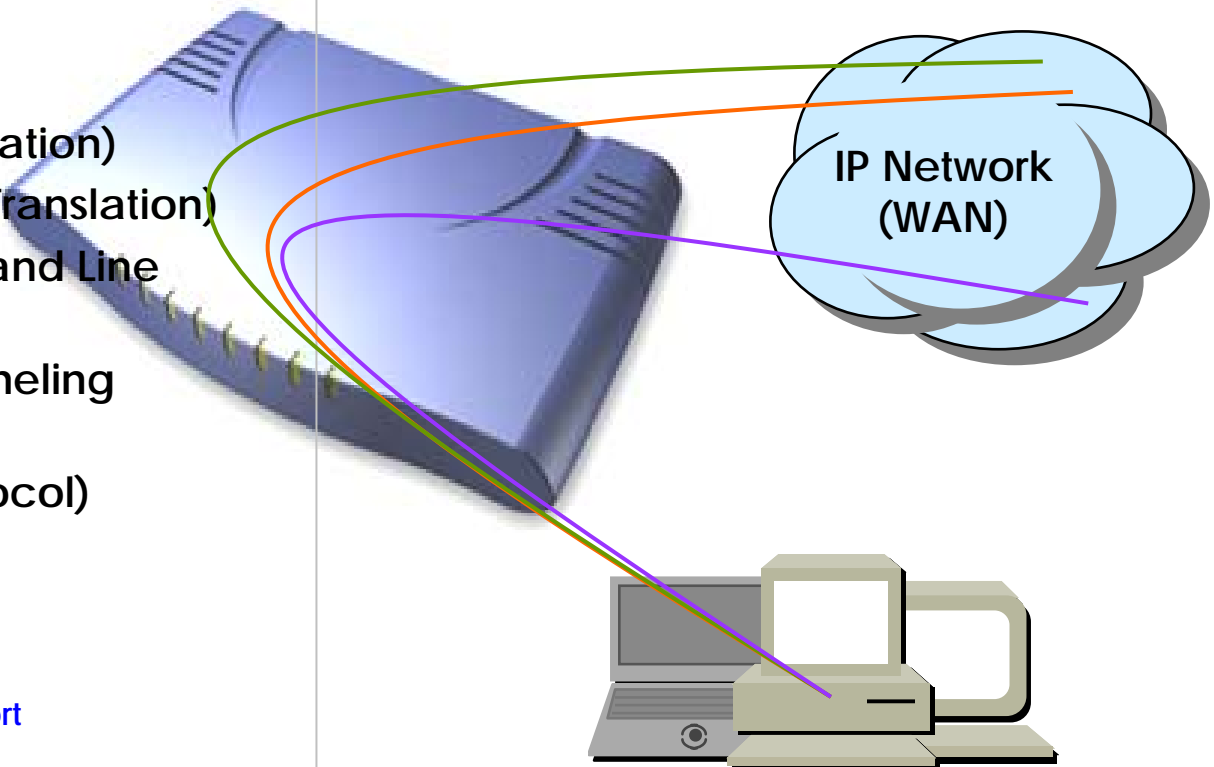




# AP200 VoIP Gateway Product Overview

## Network Scalability (cont.)

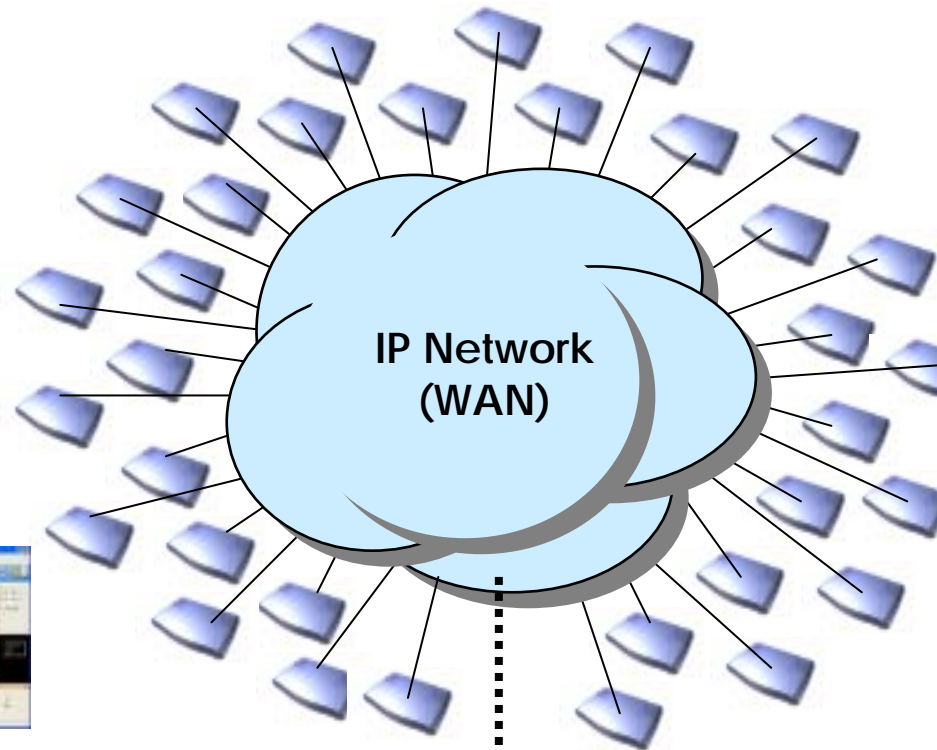
- Bridging Service
  - Spanning Tree Bridging protocol (IEEE) support
- DHCP
  - Server and Relay
- IP Accounting
- PAT (Port Address Translation)
- NAT (Network Address Translation)
- Cisco Style CLI (Command Line Interface)
- PPTP (Point-to-Point Tunneling Protocol)
- NTP (Network Time Protocol)
-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



# AP200 VoIP Gateway Product Overview

## VoIP Plug & Play System (VPMS)

- AddPac AP-VPMS Support
  - AddPac VoIP Plug & Play System (VPMS)
  - Best EMS Solutions for AddPac VoIP G/W
- Requirements Hardware Platform
  - Over 1GHz Intel Pentium 4 Machine
  - Over 1GB Main Memory
  - Over 40GB Hard Disk Memory
  - Microsoft Windows Advanced Server or Windows 2000 Server or Windows XP Professional
  - DBMS : Microsoft MS-SQL Server 2000



# AP200 VoIP Gateway Product Overview

## AP200 Network Configurations



- Front View Side of AP200 Series
- AP200A
  - 1-Port FXS, 4-Ports HUB, 1-Port Console
  - 2-Ports Ethernet, 1-Port PSTN Back-up
- AP200B
  - 2-Ports FXS, 1-Port Console
  - 2-Ports Ethernet, 1-Port PSTN Back-up
- AP200C
  - 1-Port FXS, 1-Port Console
  - 2-Ports Ethernet, 1-Port PSTN Back-up
- AP200D
  - 2-Ports FXO, 1-Port Console
  - 2-Ports Ethernet
- AP200E
  - 1-Port FXS, 1-Port FXO, 1-Port Console
  - 2-Ports Ethernet
- AddPac AP-VPMS Support
  - AddPac VoIP Plug & Play System (VPMS)
  - Best EMS Solutions for AddPac VoIP G/W

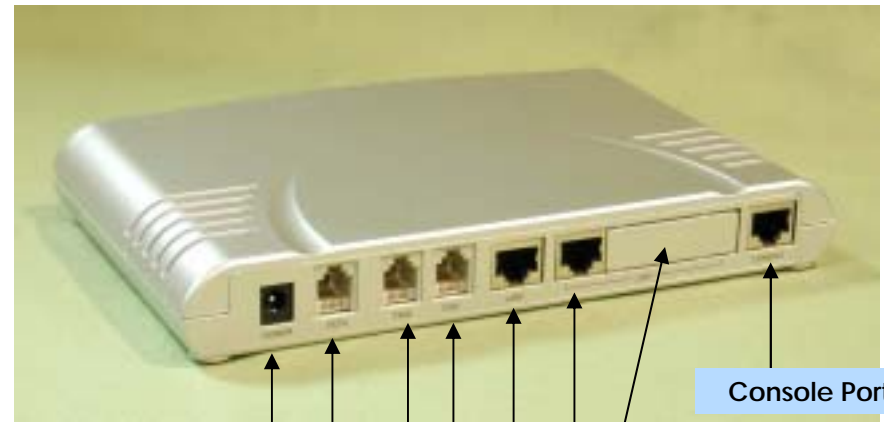
# AP200 VoIP Gateway Product Overview

## AP200 Hardware Specification

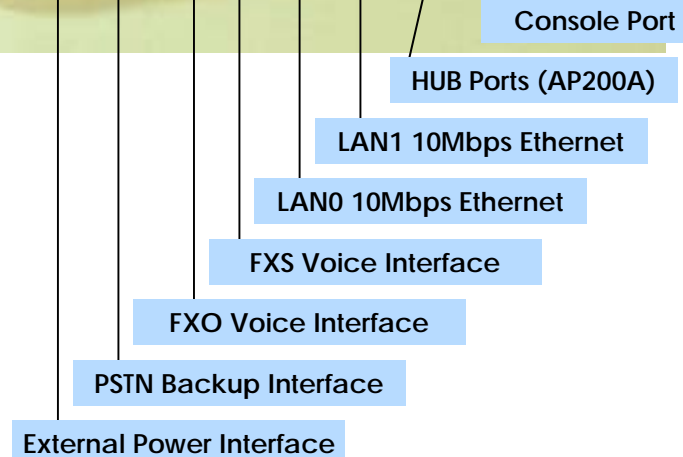
### Hardware Specifications

AP200 VoIP Series	Basic Specifications
CPU	32Bit RISC Microprocessor
Voice Interface	1~2-Ports FXS or FXO Voice Interface(RJ-11)
Ethernet Interface	2-Ports 10Mbps Ethernet Interface(RJ-45)
Ethernet HUB Ports	4-Ports 10Mbps Ethernet HUB (AP200A)
Console Port	1-Port RS-232C Console Port(RJ-45)
PSTN Backup Port	1-Port PSTN Backup Port(RJ-11)
Flash Memory	2Mbyte High-speed Flash Memory
Base Memory	16Mbyte High-speed SDRAM
Boot Memory	512Kbyte Flash Memory
Power Requirement	External Power Supply Adaptor / VAC 110~220V, 50/60Hz, 5Watt
Operating Temperature	0°C ~ 45°C (32 °F ~ 112°F)
Storage Temperature	-40°C ~ 85°C (-40°C ~ 176°F)
Relative Humidity	5% ~ 95% (Non-condensing)
Dimensions	26mm x 200mm x 137mm (H x W x D)
Weight (g)	400g
Regulations	MIC, CE, FCC, JATE

### Network interface Configurations



AP200 VoIP G/W



# AP200 VoIP Gateway Product Overview

## AP200 Networking Interface

- High-performance Hardware

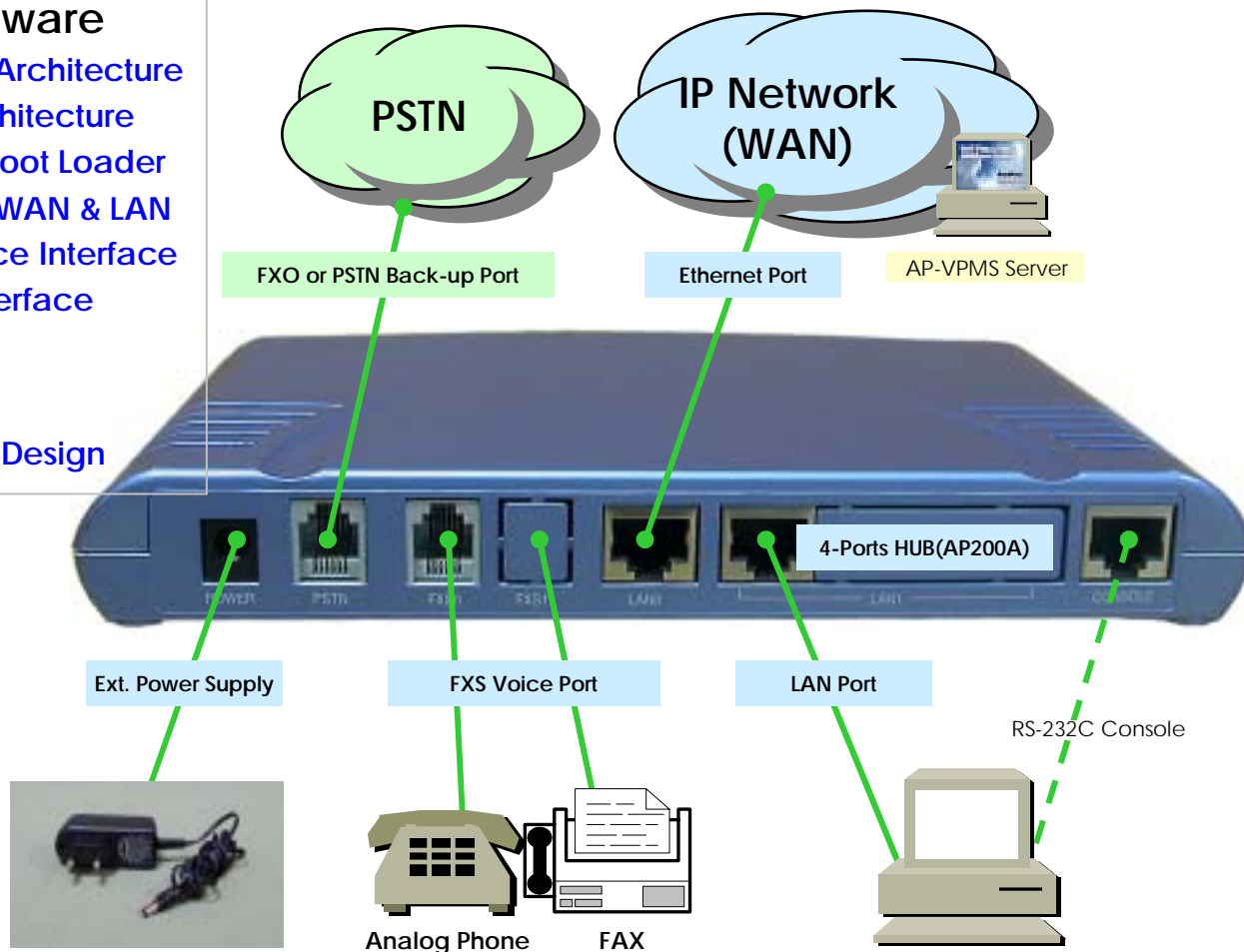
- 32bit RISC Microprocessor Architecture
- High-performance DSP Architecture
- High-speed Memory with Boot Loader
- Dual Ethernet Interface for WAN & LAN
- Standard FXS and FXO Voice Interface
- Standard PSTN Back-up Interface
- RS-232C Console Interface

- Compact Design

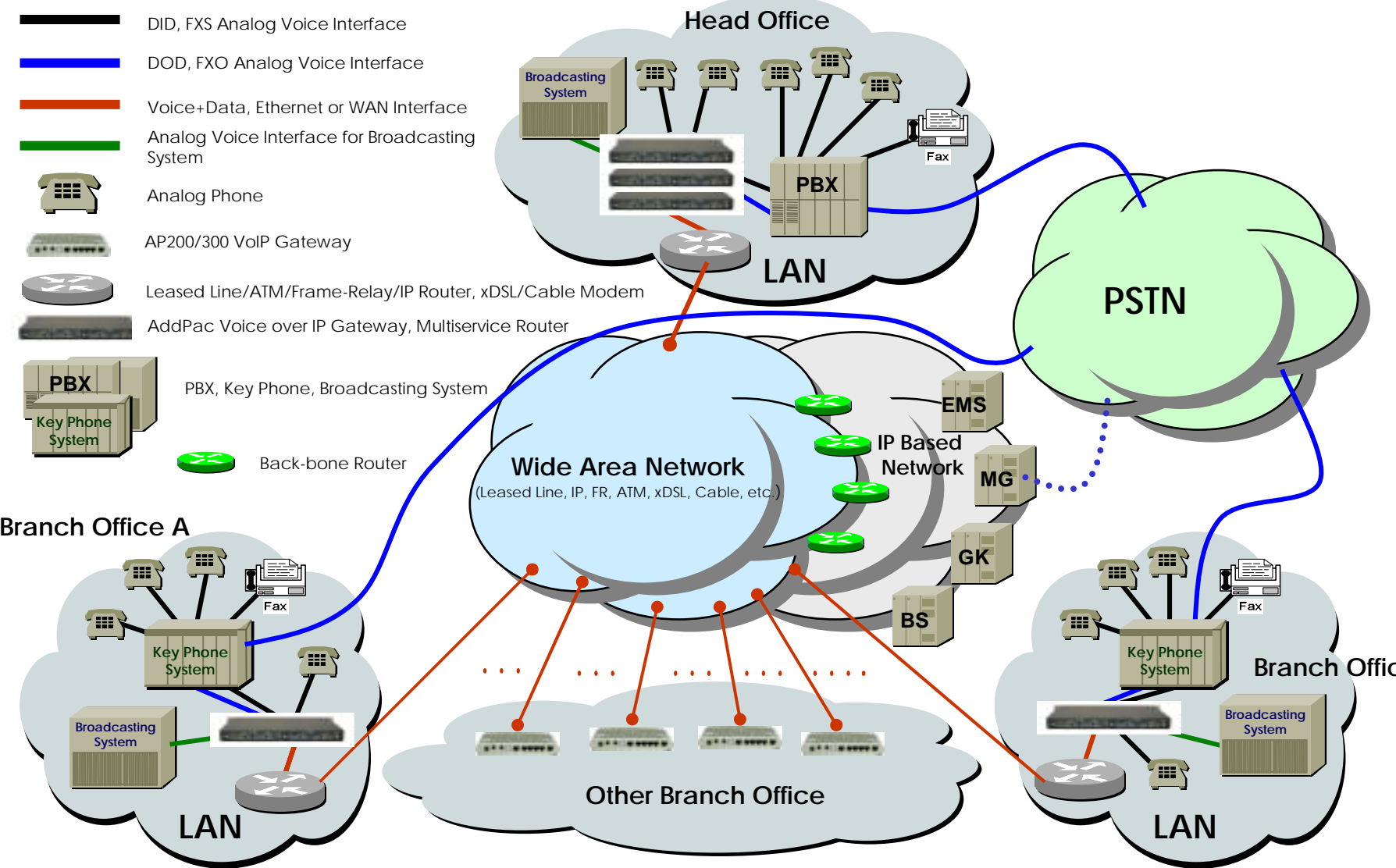
- Small, Light, and Compact Design



AP200 VoIP Gateway

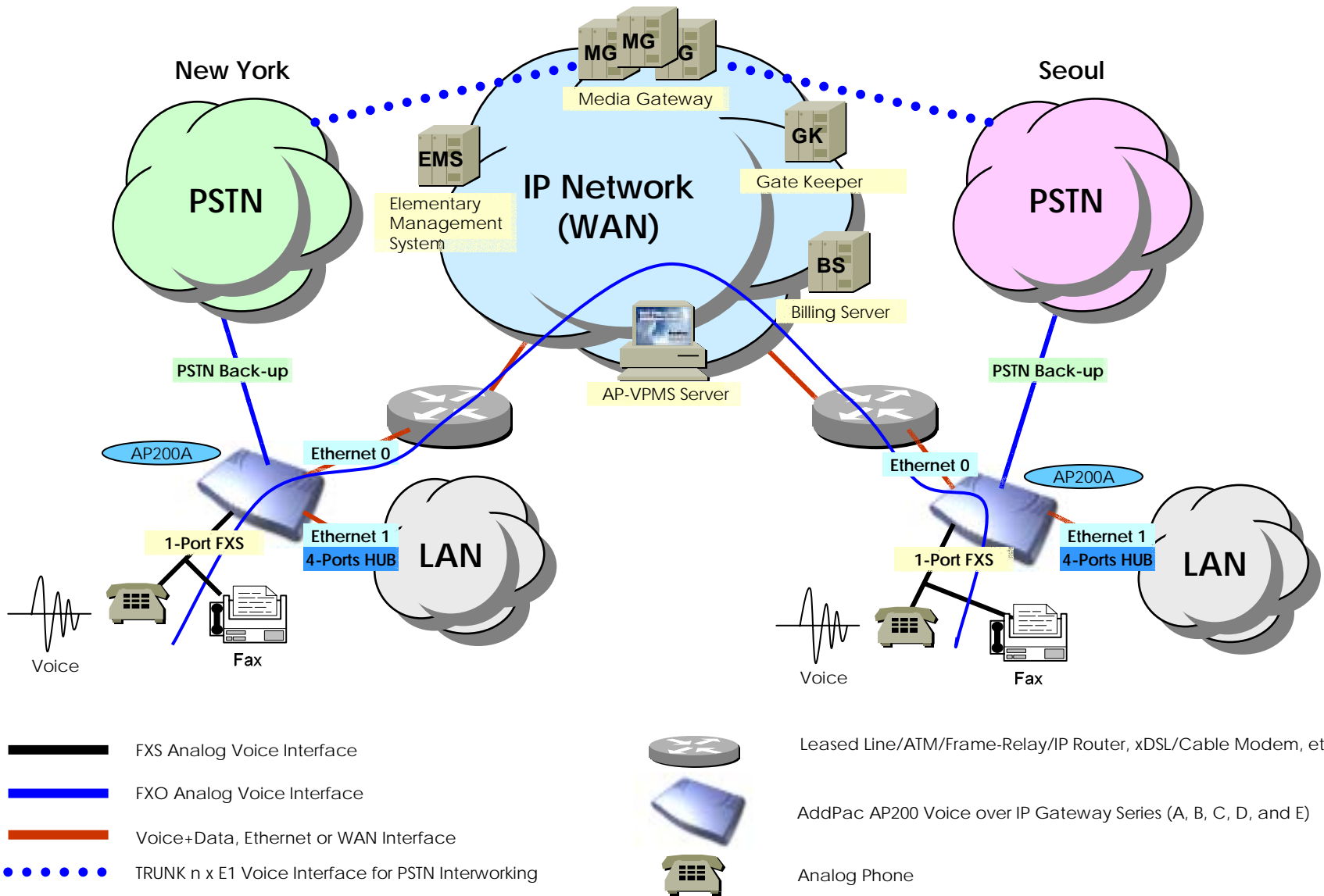


# AddPac VoIP Gateway Network Diagram Example

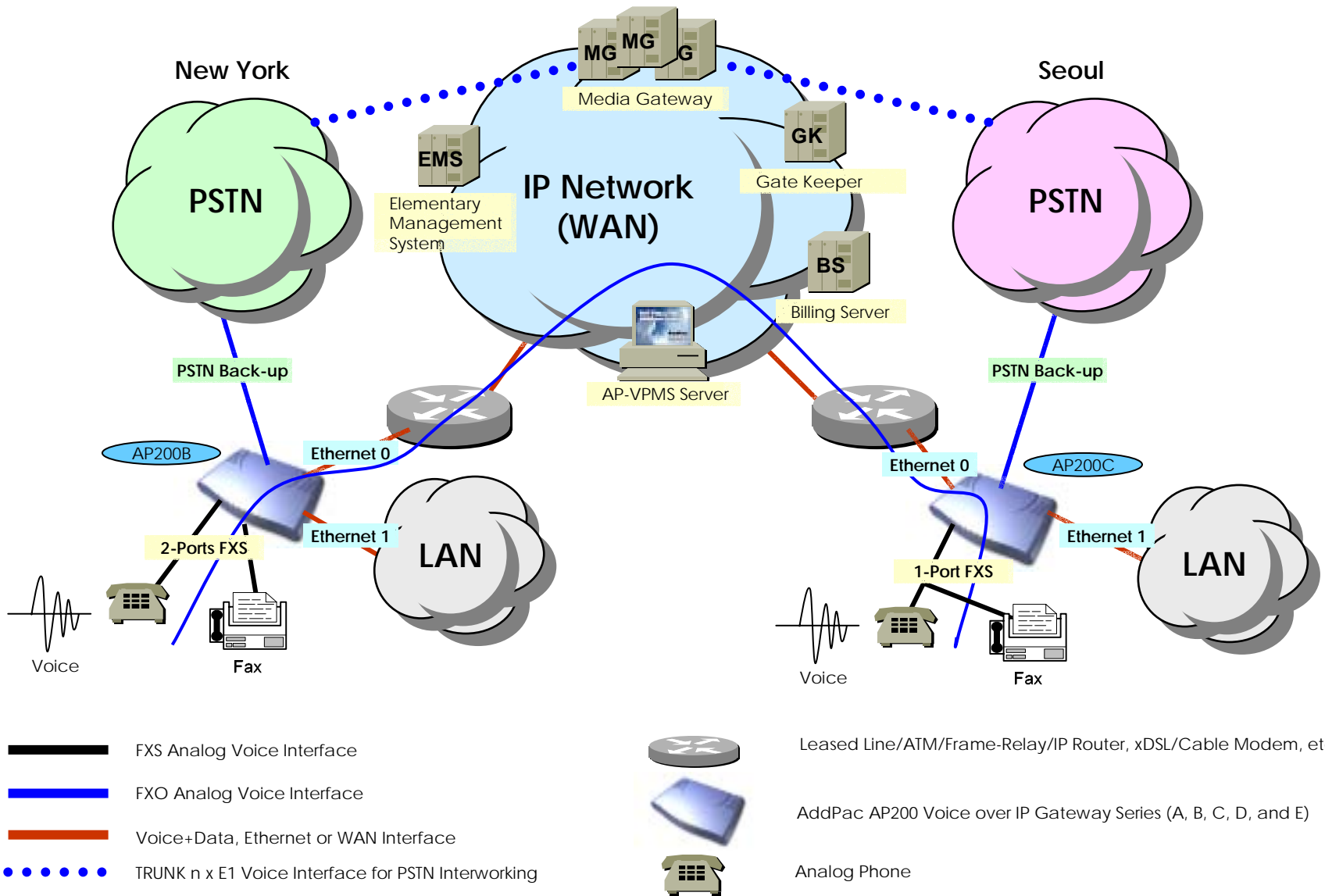




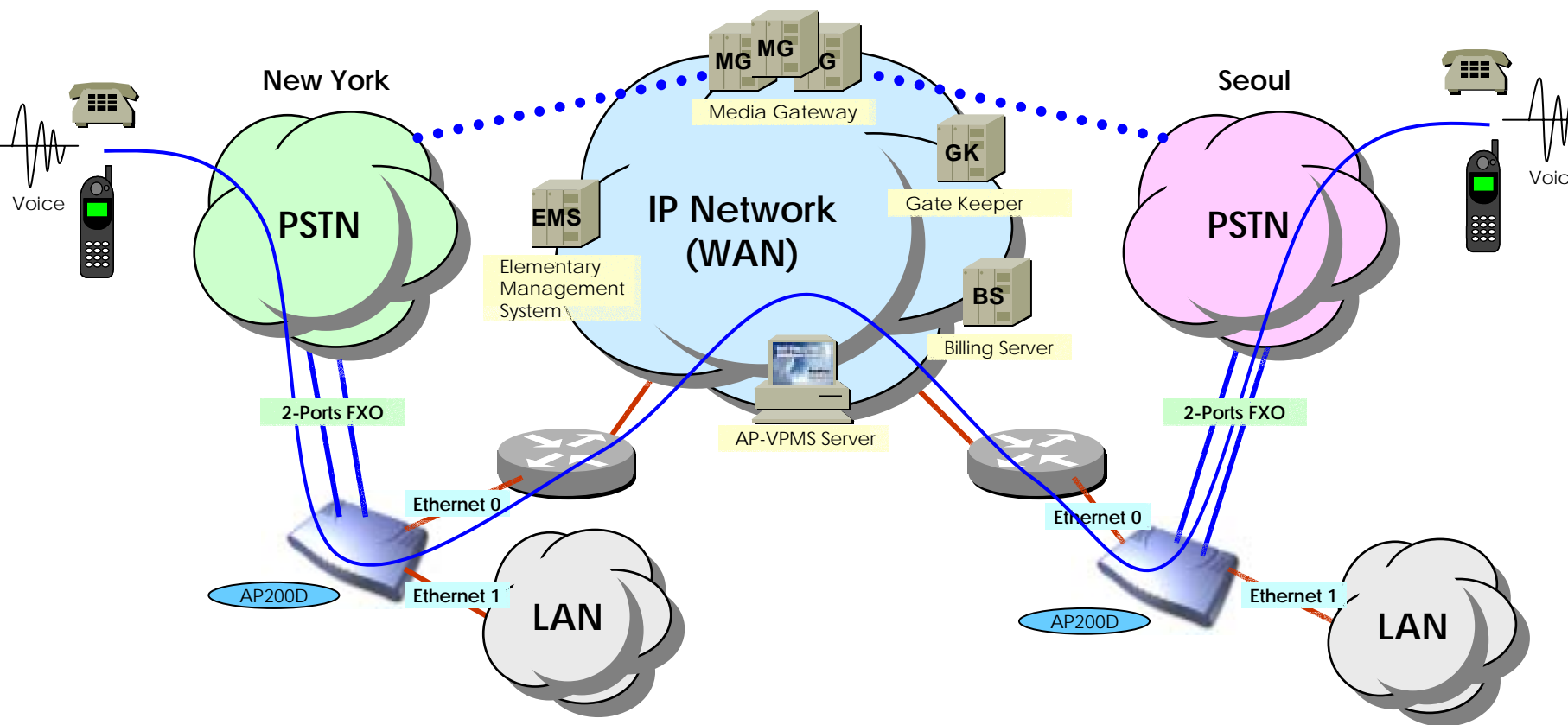
# AP200A Voice Networking Configuration



# AP200B & C Voice Networking Configuration



# AP200D Voice Networking Configuration



DOD, FXO Analog Voice 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.

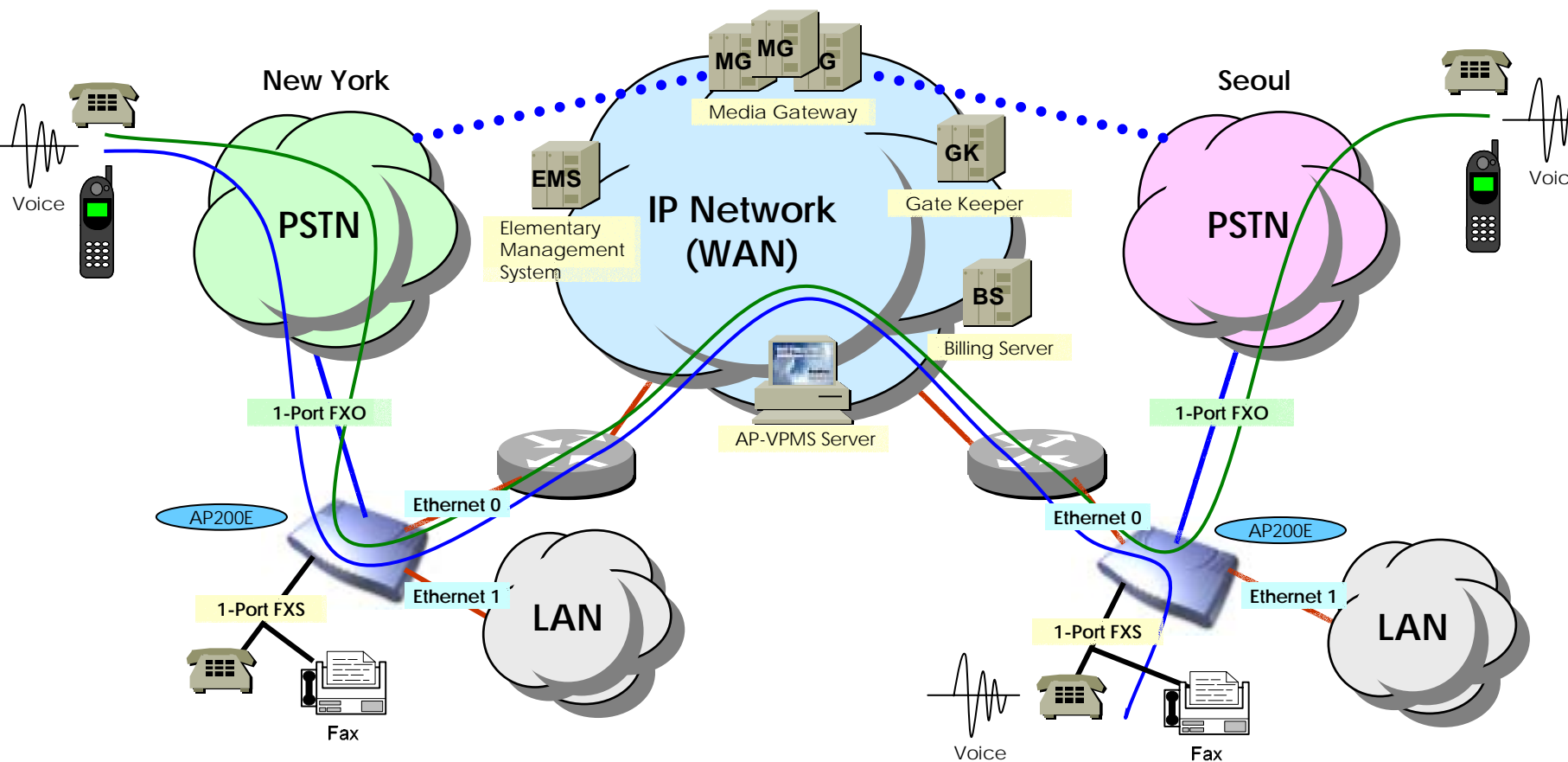






AddPac AP200 Voice over IP Gateway Series



Analog Phone

# AP200E Voice Networking Configuration



-  FXS Analog Voice Interface
-  FXO Analog Voice 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.



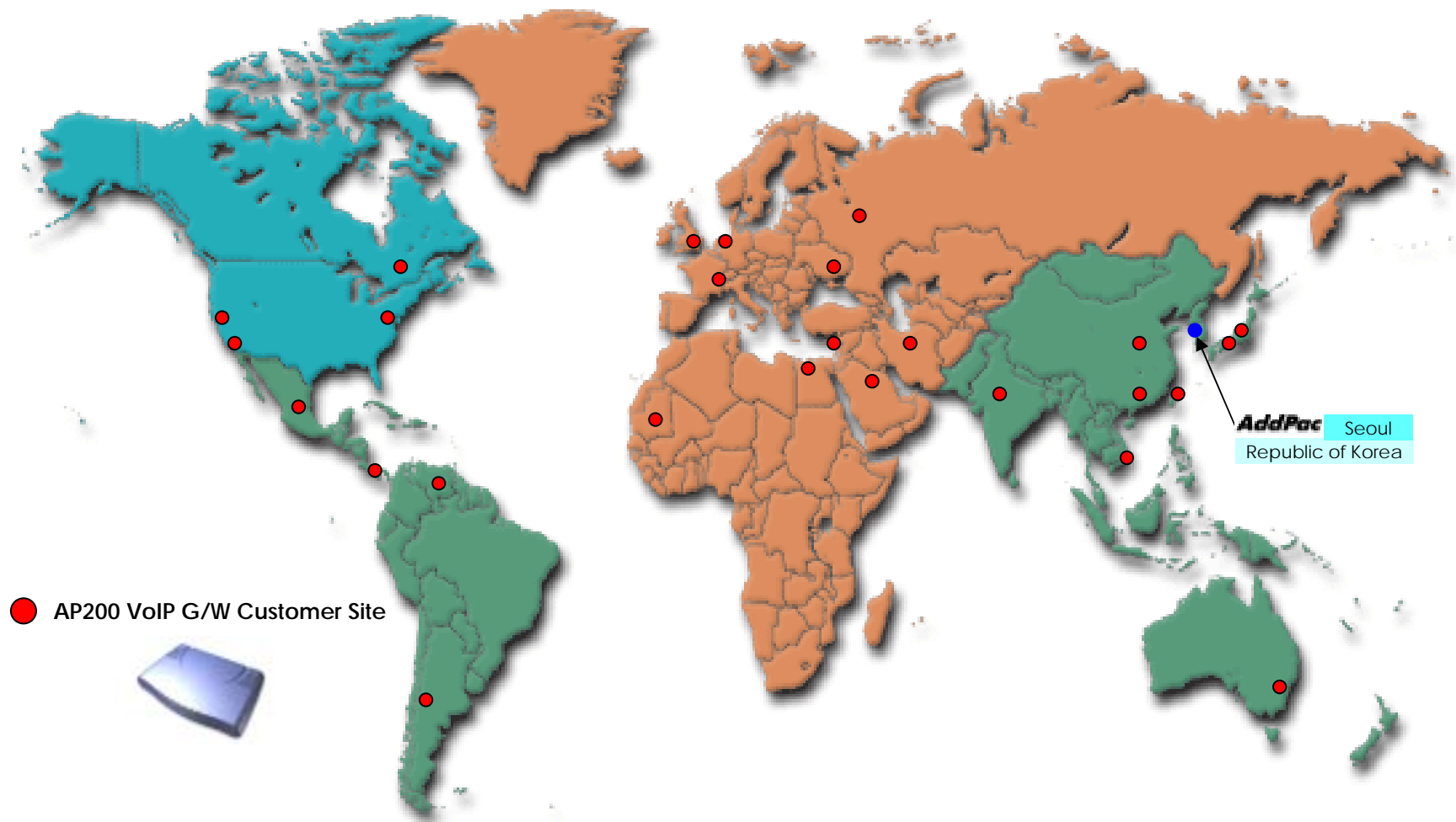
AddPac AP200 Voice over IP Gateway Series (A, B, C, D, and E)



Analog Phone

# AP200 VoIP Gateway Product Overview

## AP200 World-Wide Customer Site



# AP200 VoIP Gateway Product Overview

## AP200 Ordering and Pricing

### • AP200 VoIP Gateway Series

- VoIP Gateway Hardware
  - High-speed 32bit RISC CPU
  - 1~2-Ports FXS or FXO Voice port Configuration
  - 2-Ports Ethernet, Opt. 4-Ports HUB
  - 1-Port PSTN Back-up
  - 1-Port RS-232C Console
  - Including Network Cable Set
- Built-in APOS Internetworking Software
- Including 1-Year Hardware Warranty
- Product Documents
  - Installation Guide (PDF)
  - Quick APOS Operation Guide (PDF)
  - APOS Operation Guide (PDF)




OEM and volume  
pricing available!

### • Pricing

- AddPac Technology Regional Sales Managers
- Authorized Sales and Marketing Representatives
- Please Contact [www.addpac.com](http://www.addpac.com)

# AP200 VoIP Gateway Product Overview

## AP200 Series Comparison Table

	AP200 VoIP Gateway Series				
	AP200A	AP200B	AP200C	AP200D	AP200E
▶ FXS Voice Ports (RJ11)	1	2	1	-	1
▶ FXO Voice Port (RJ11)	-	-	-	2	1
▶ PSTN Backup Voice Port (RJ11)	1	1	1	-	-
▶ 10Mbps Ethernet Ports (RJ45)	1	1	1	1	1
▶ HUB Ports (RJ45)	4	-	-	-	-
▶ Console Ports (RJ45)	1	1	1	1	1
▶ CPU	32Bit RISC	32Bit RISC	32Bit RISC	32Bit RISC	32Bit RISC
▶ Flash Memory	2Mbyte	2Mbyte	2Mbyte	2Mbyte	2Mbyte
▶ Base Memory	16Mbyte	16Mbyte	16Mbyte	16Mbyte	16Mbyte
▶ Power Supply	Ext. PSU	Ext. PSU	Ext. PSU	Ext. PSU	Ext. PSU
▶ Internetworking OS	APOS	APOS	APOS	APOS	APOS
▶ H.323, SIP VoIP Protocol, T38 FAX, MGCP	YES	YES	YES	YES	YES
▶ PPPoE, PPTP Network Protocols	YES	YES	YES	YES	YES
▶ Enhanced QoS Management Feature	YES	YES	YES	YES	YES
▶ IP Routing Protocols Including NAT	YES	YES	YES	YES	YES
▶ Network Management Protocols	YES	YES	YES	YES	YES
▶ Support Network Environments	ADSL, VDSL, Cable Modem, Leased Line, ATM, Frame-Relay, Including Conventional Broad Band Networking				



**Thank you !**

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