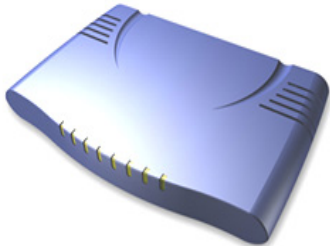


# VoIP



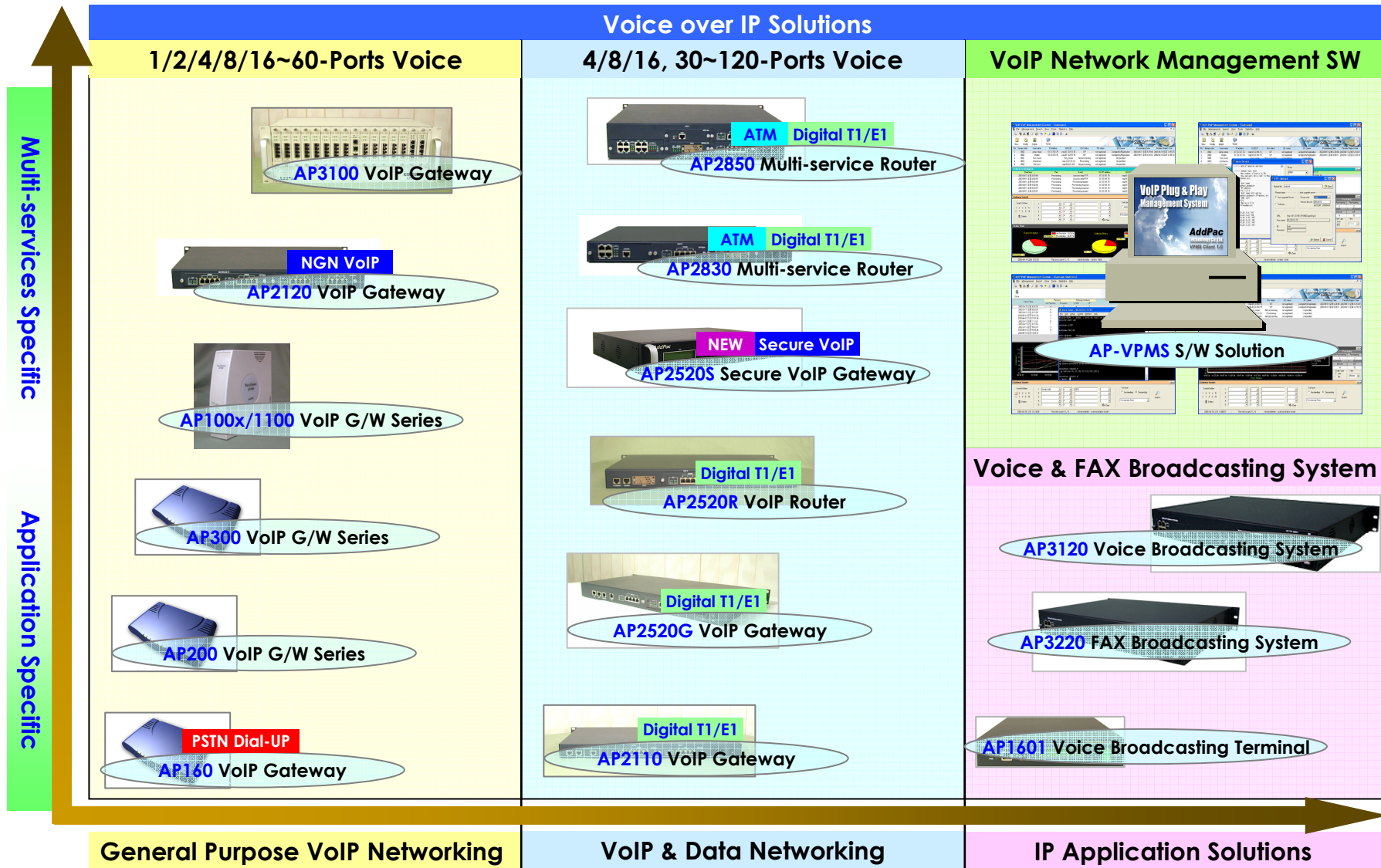
**July 2003**

**Technical Sales and Marketing**

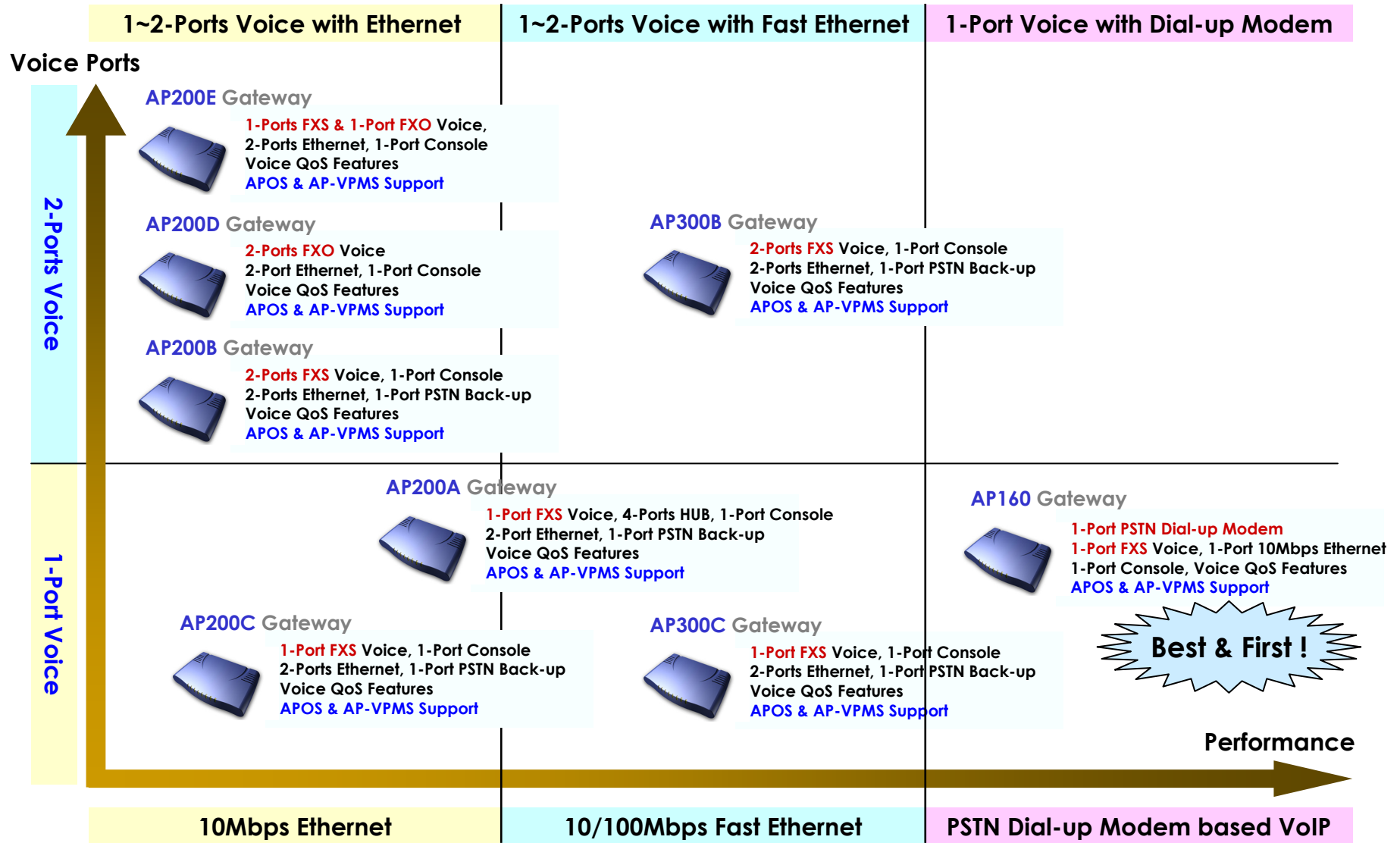
**AddPac Technology**

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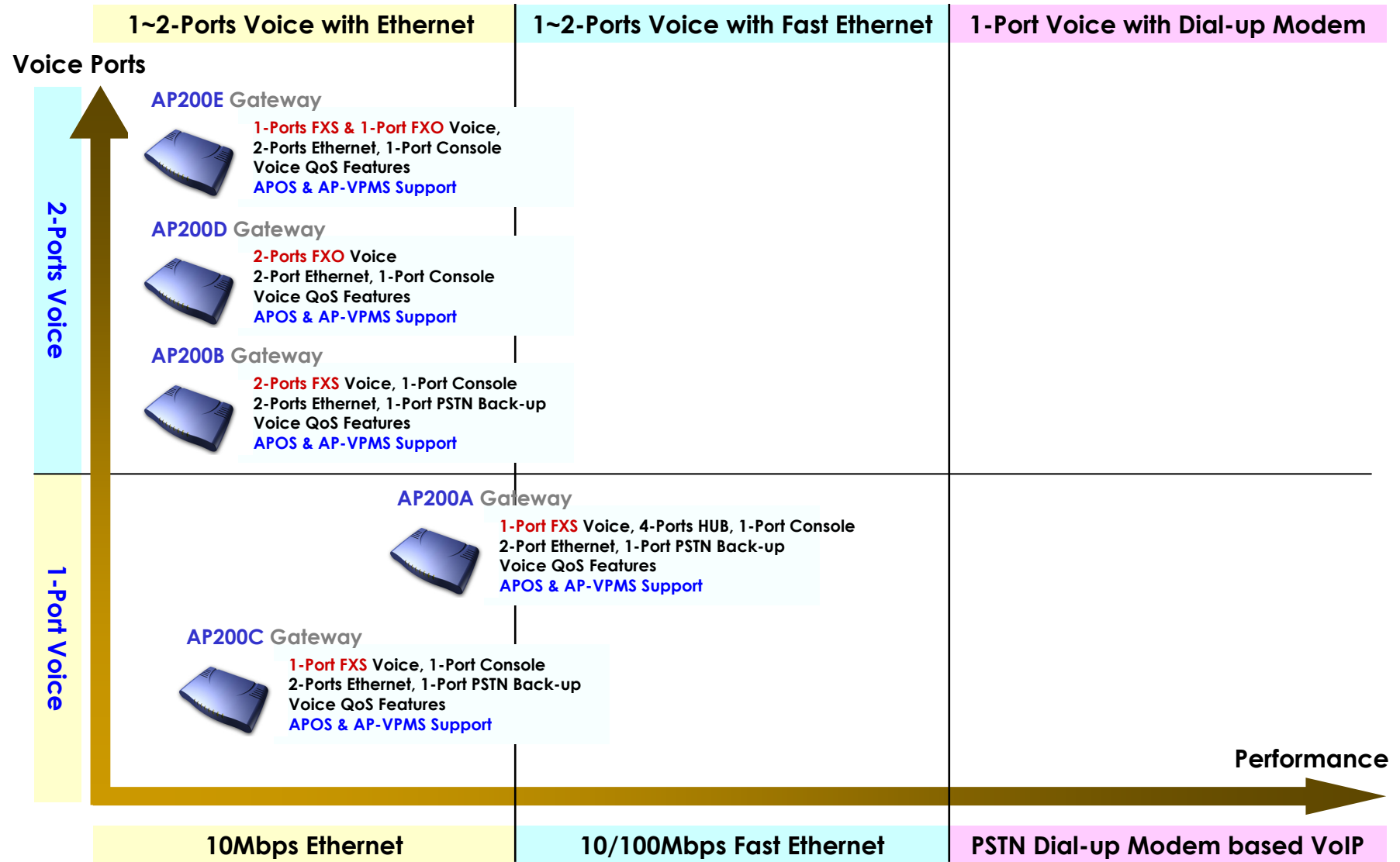
# AddPac VoIP Products Road-Map



# AddPac AP160/200/300 Products Road-Map

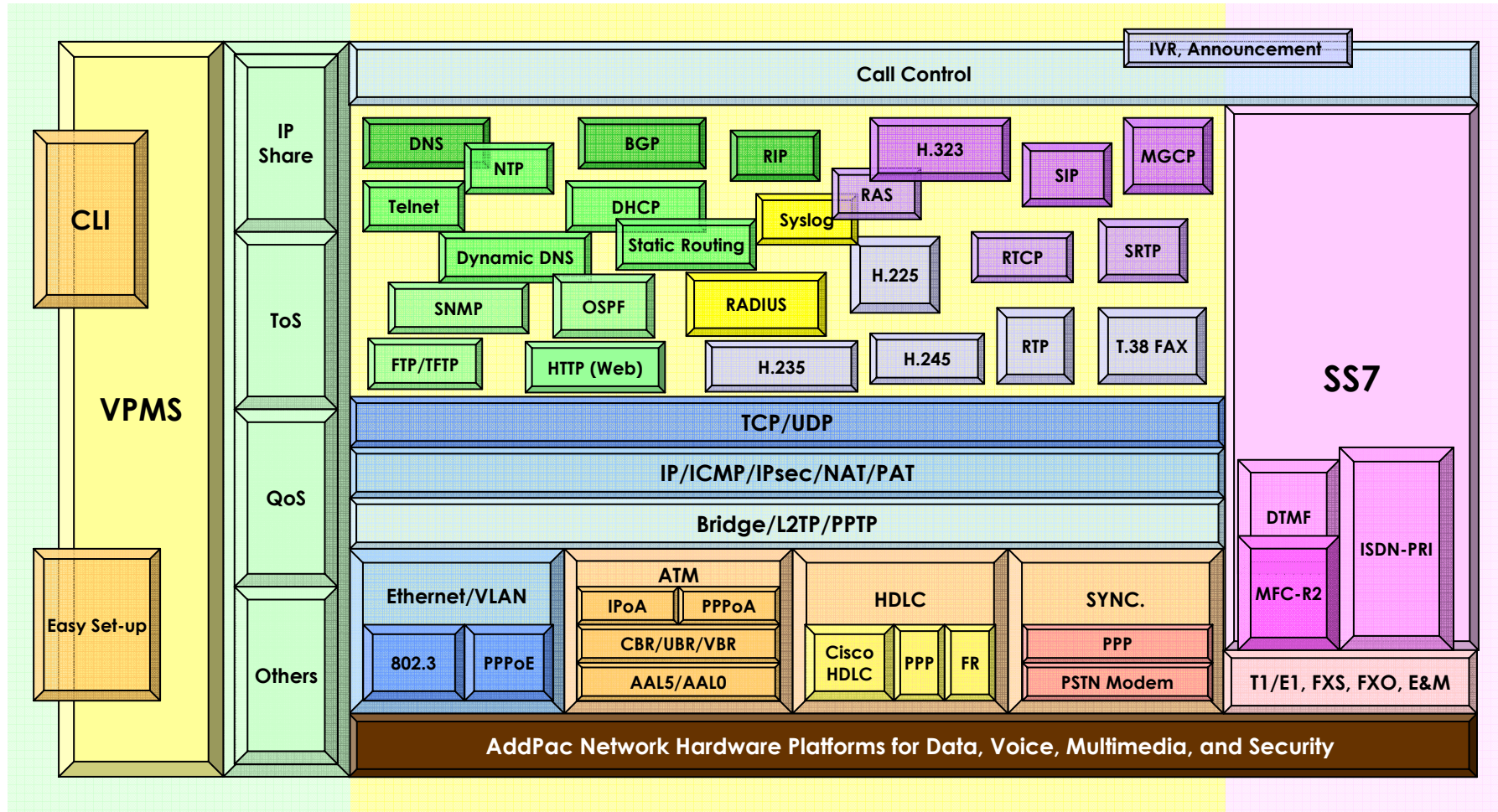


# AddPac AP200 Products Road-Map



# AP200 VoIP Gateway Product Overview

## APOS Internetworking Protocol Stack

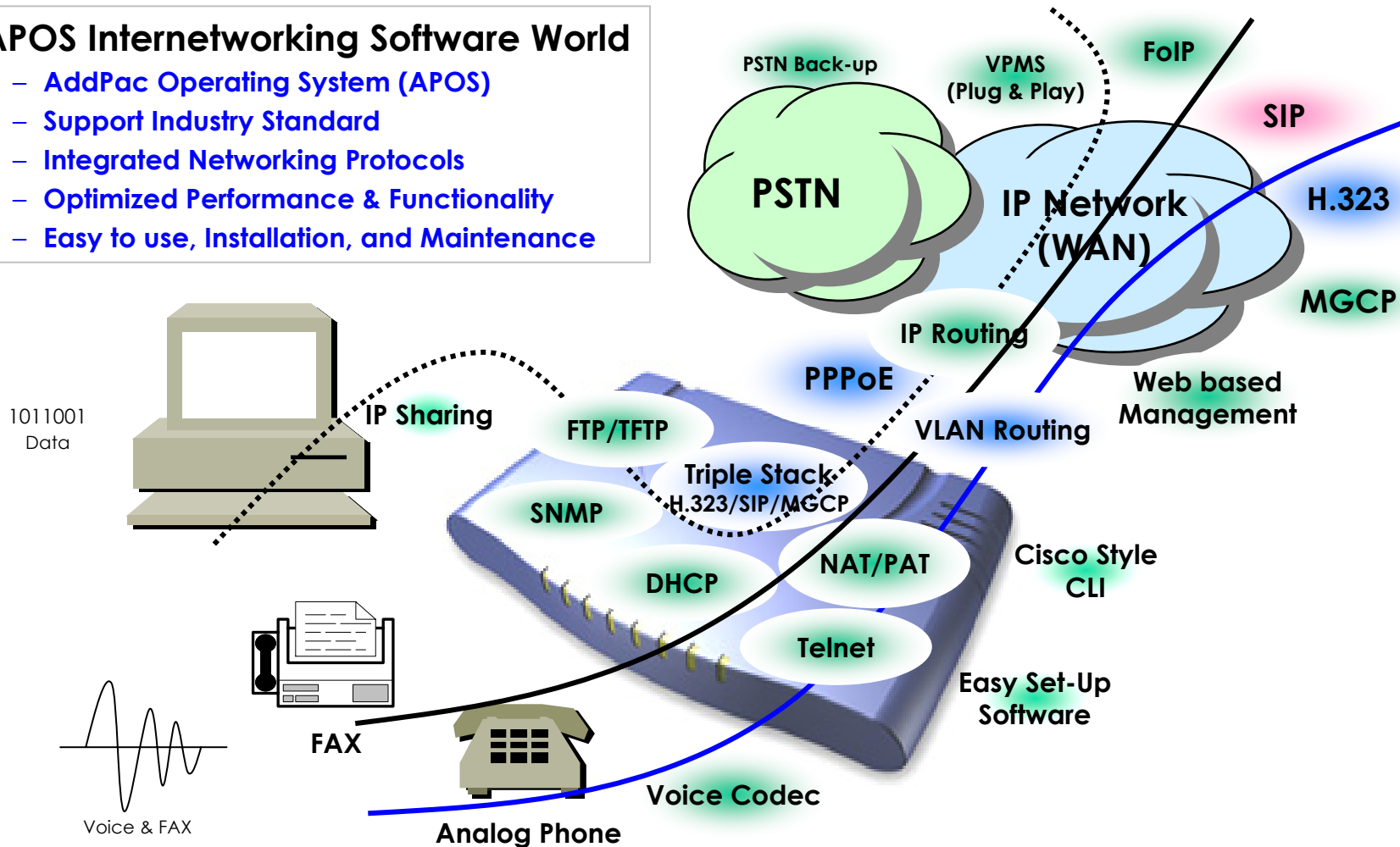


# AP200 VoIP Gateway Product Overview

## APOS Internetworking S/W World

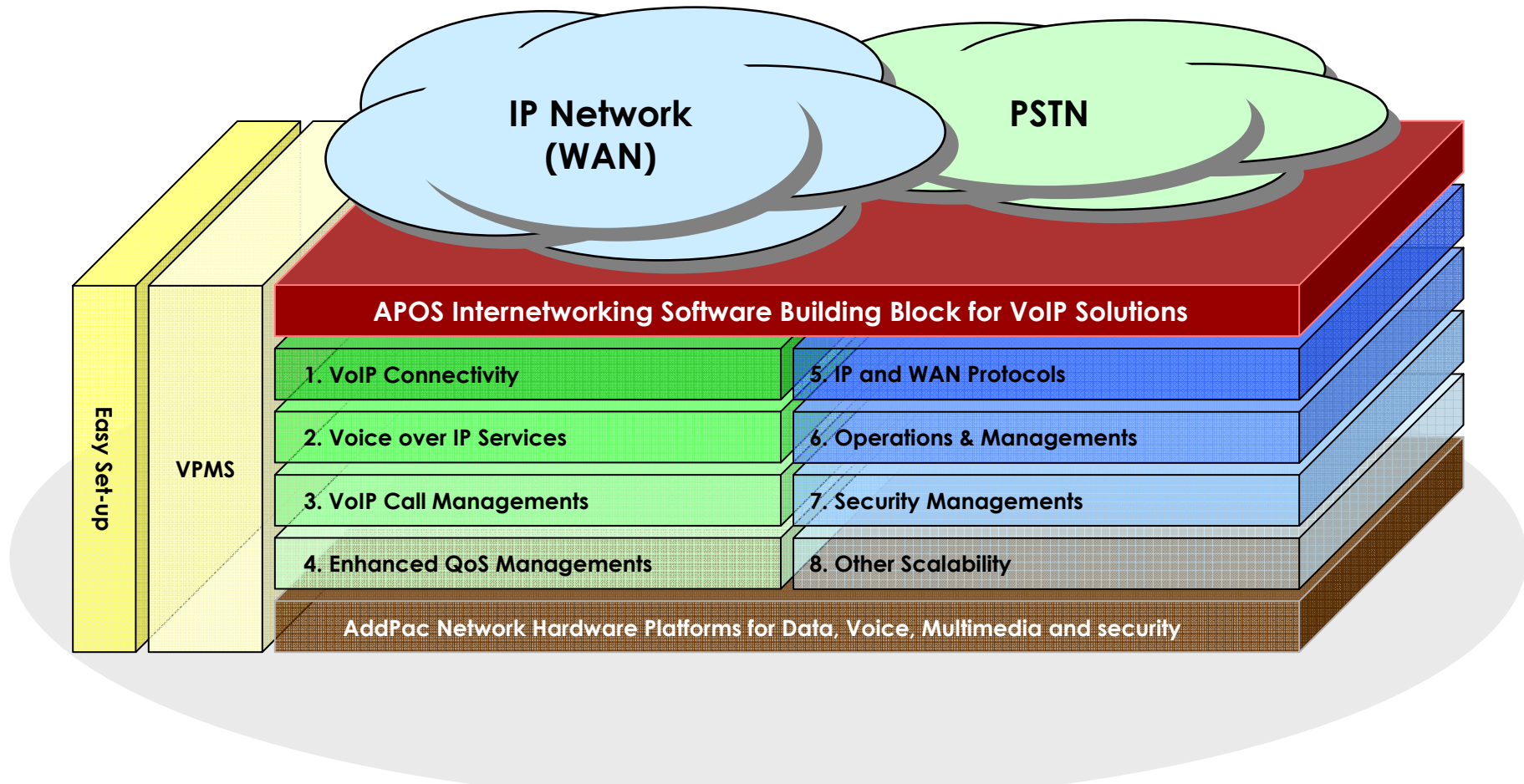
### • APOS Internetworking Software World

- 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

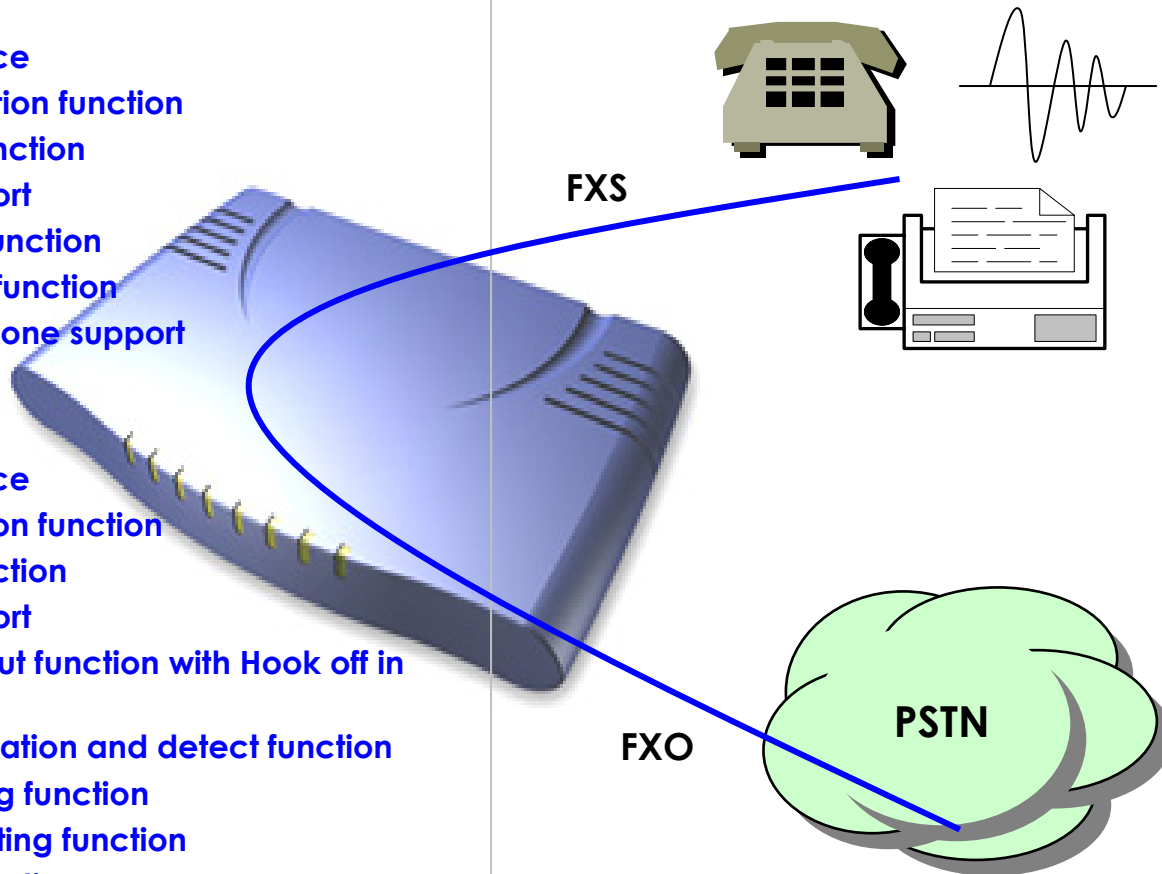
## VoIP Gateway Connectivity

- **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

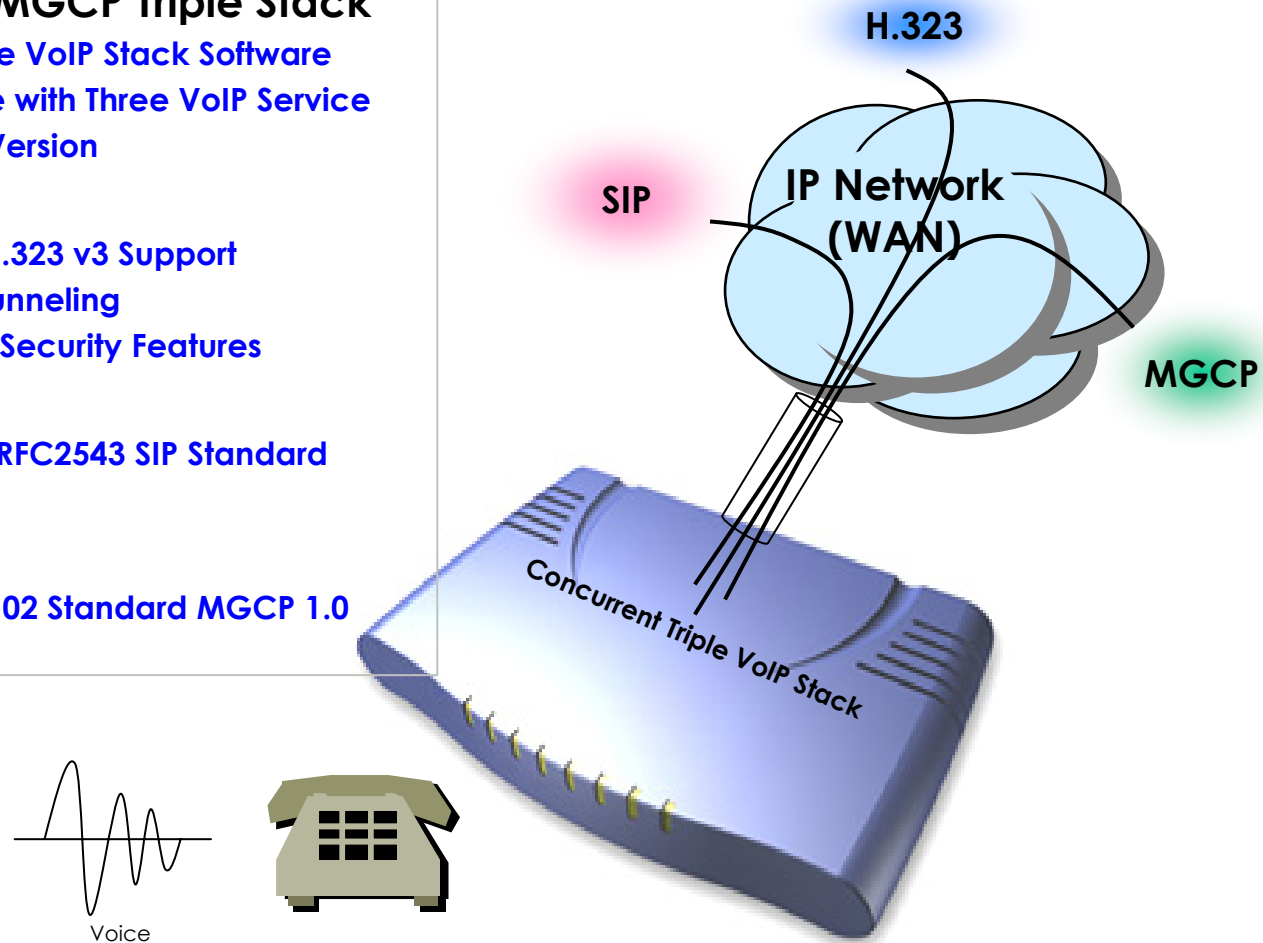




# AP200 VoIP Gateway Product Overview

## 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

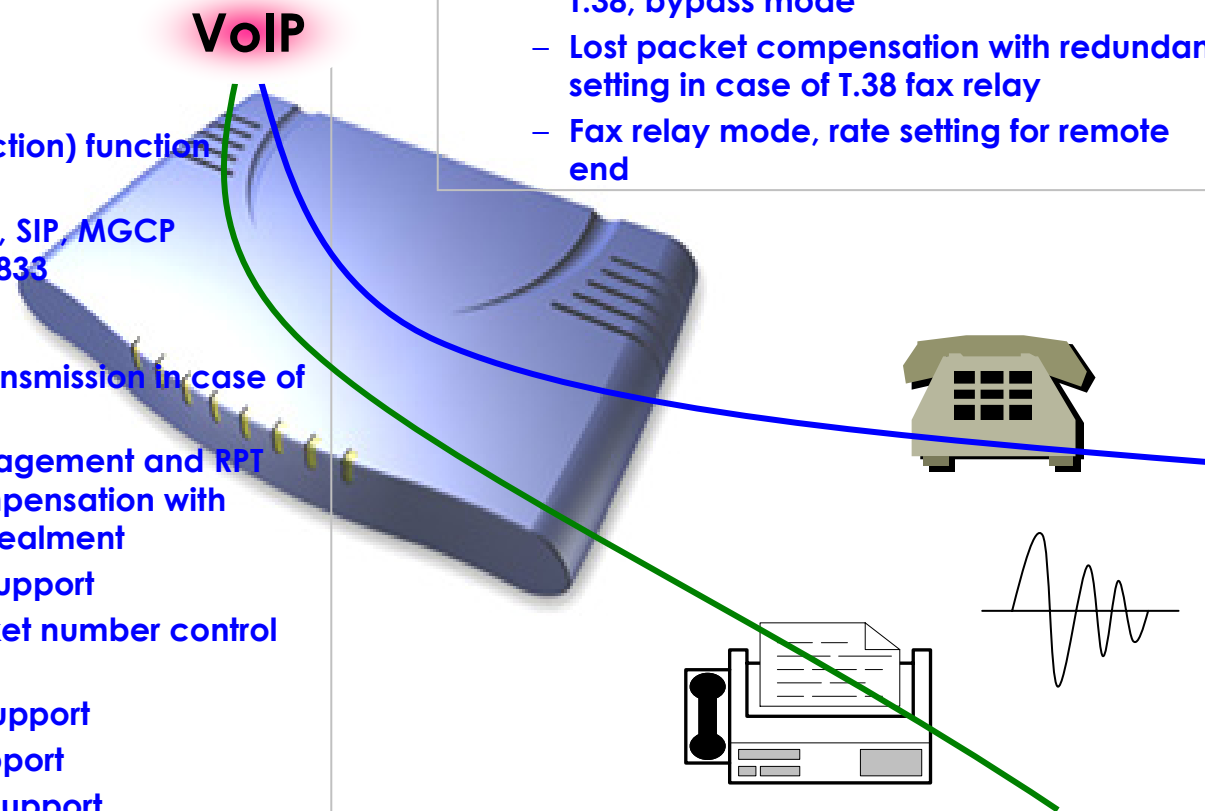
- G.711 A-Law, G.711 U-Law
- G.726 r16, G.726 r32
- G.729A
- G.723.1 r63, G.723.1 r53
- VAD (Voice Activity Detection) function support
- DTMF relay support (H.323, SIP, MGCP common) based on RFC2833

### • 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

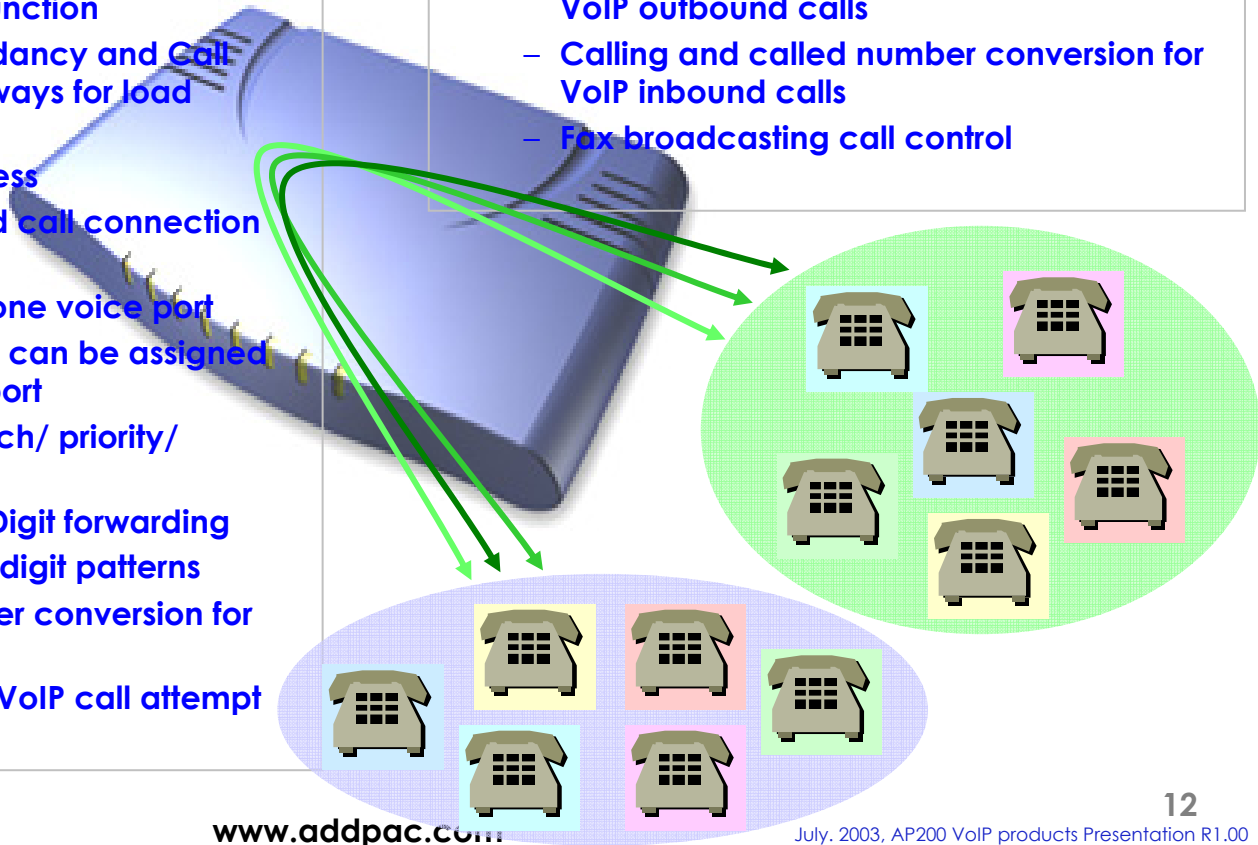
## VoIP Call Managements

### • 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

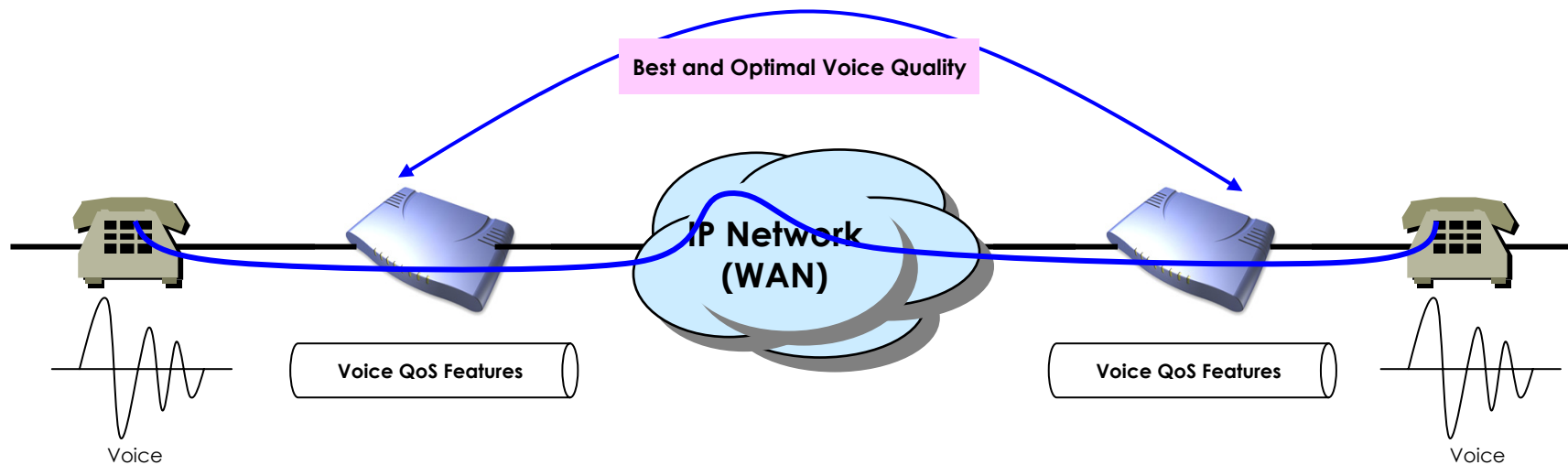
## Enhances QoS Managements

- 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

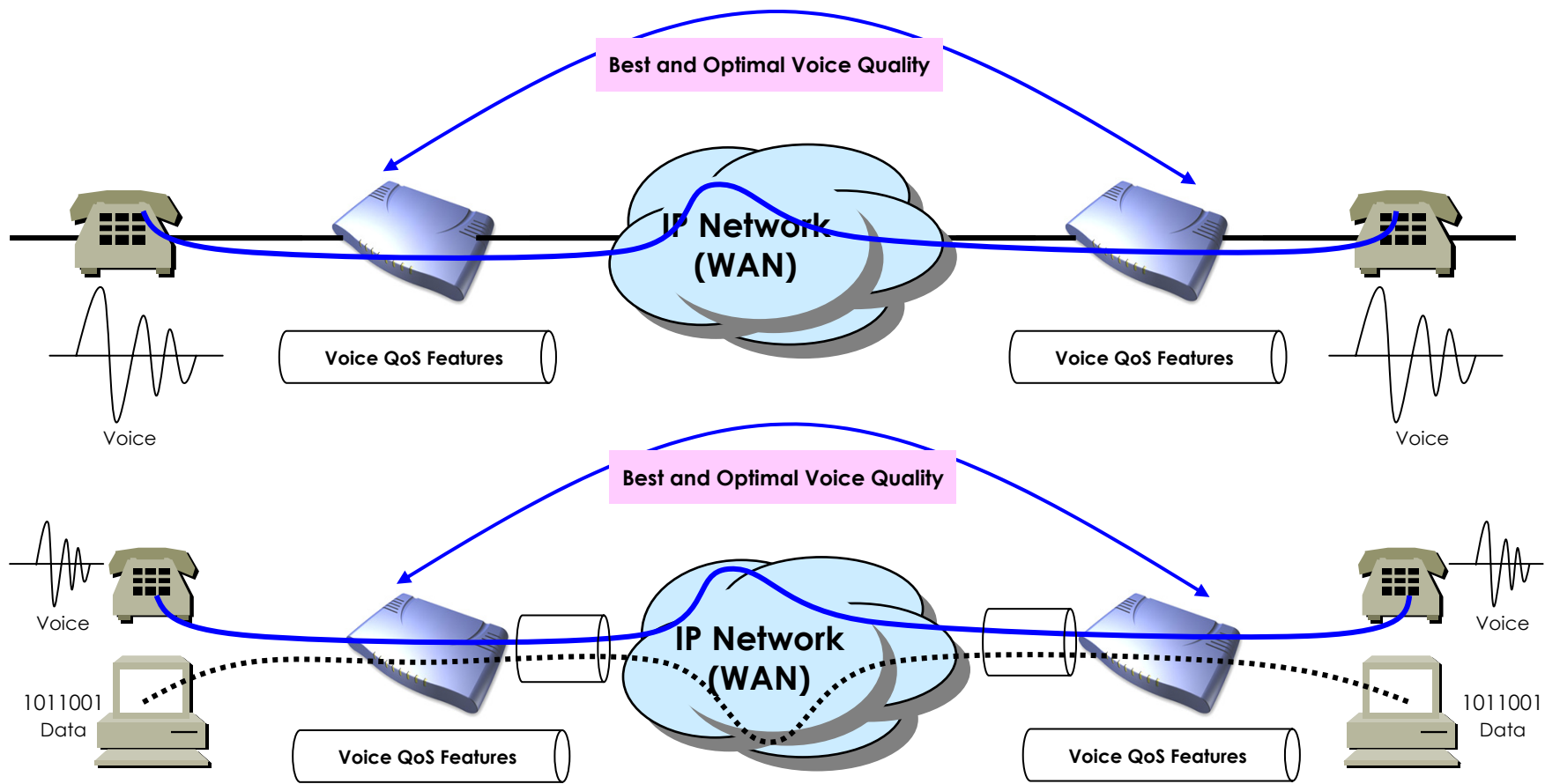
- Enhances **Receive** Voice QoS Features

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



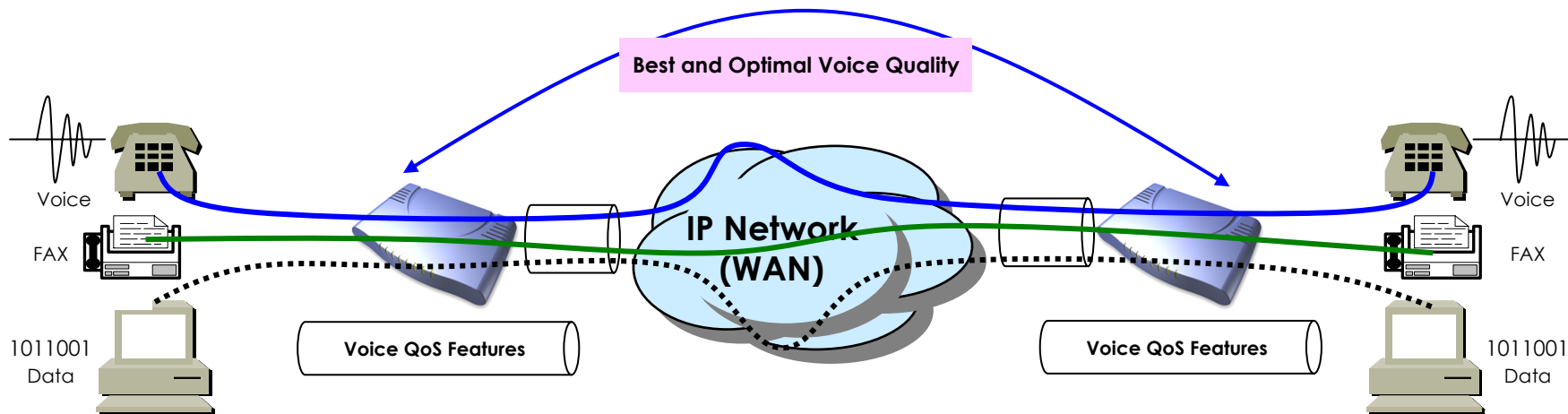
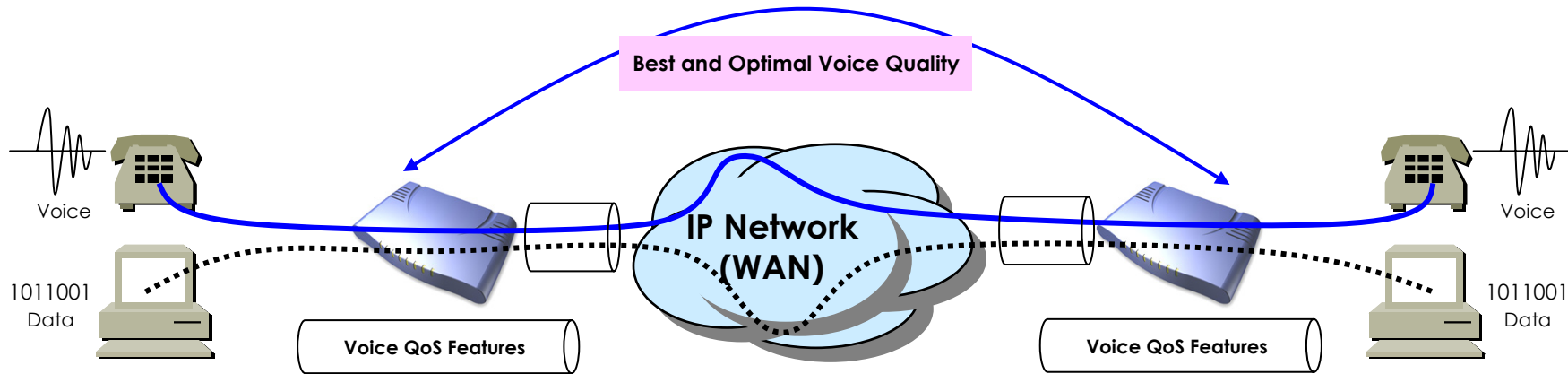
# AP200 VoIP Gateway Product Overview

## Enhances QoS Managements (cont.)



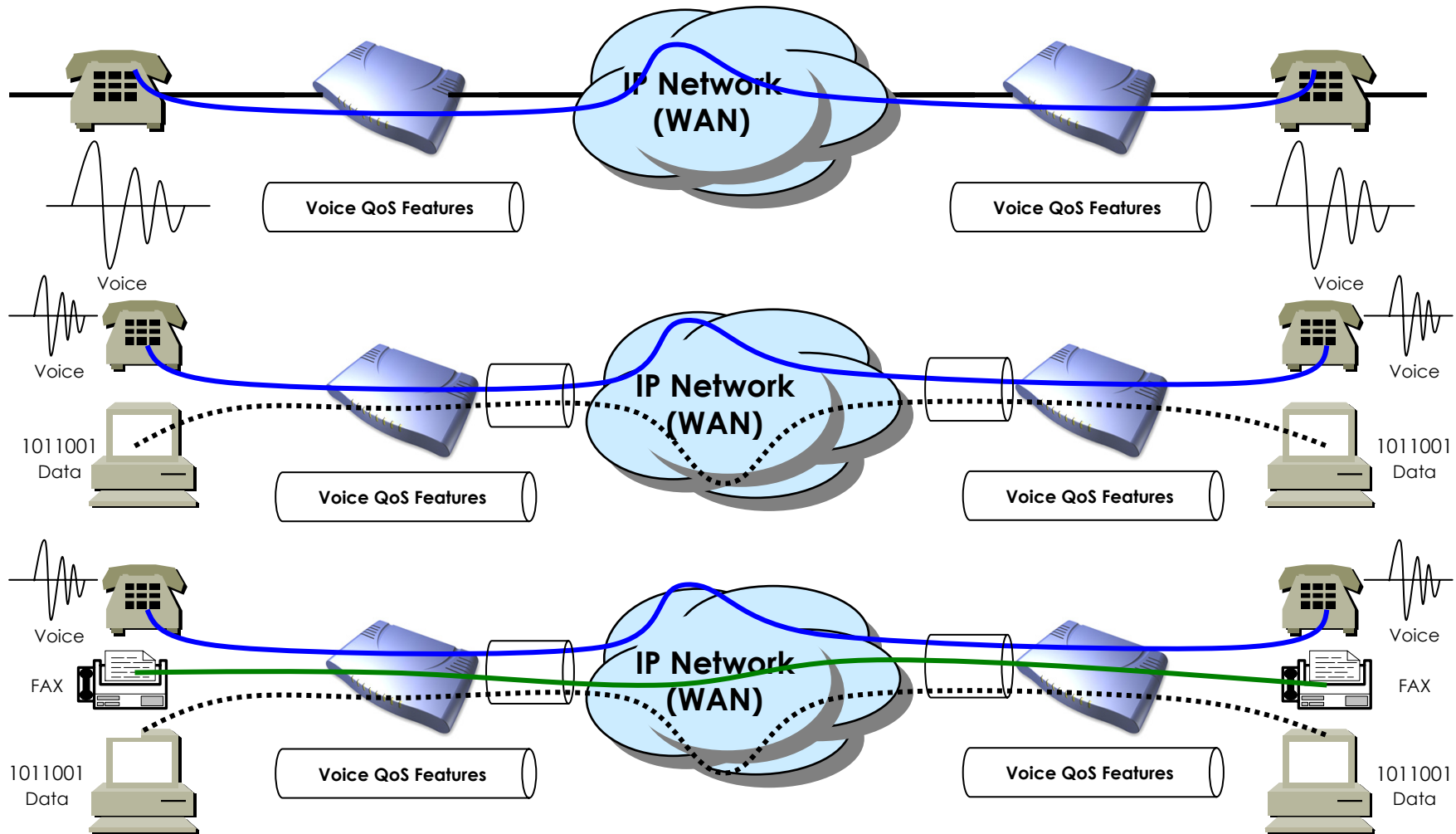
# AP200 VoIP Gateway Product Overview

## Enhances QoS Managements (cont.)



# AP200 VoIP Gateway Product Overview

## Enhances QoS Managements (cont.)





# AP200 VoIP Gateway Product Overview

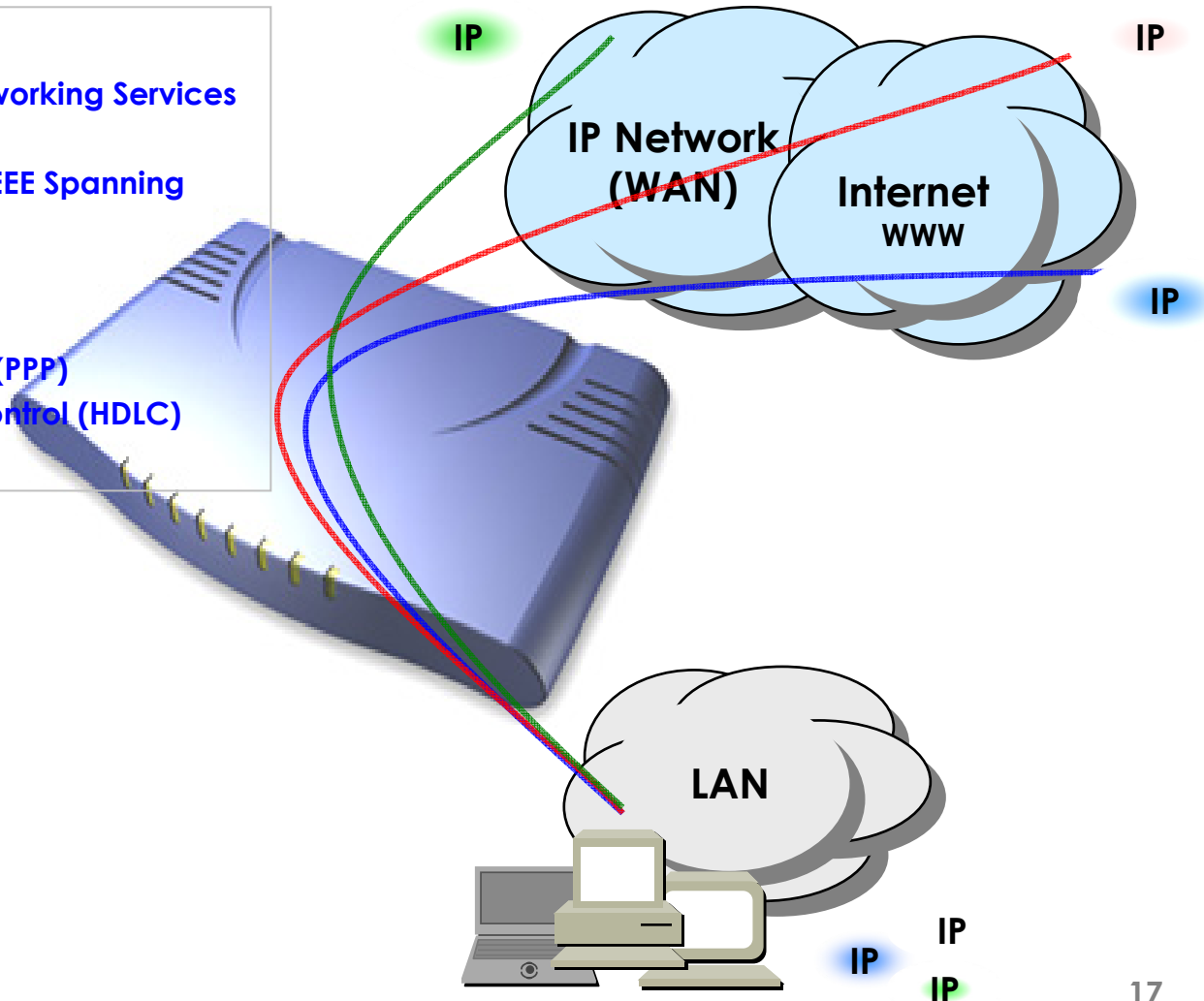
## IP and WAN Protocols

- **IP Routing Protocols**

- Multi-protocol Internetworking Services
- Static IP routing
- 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**

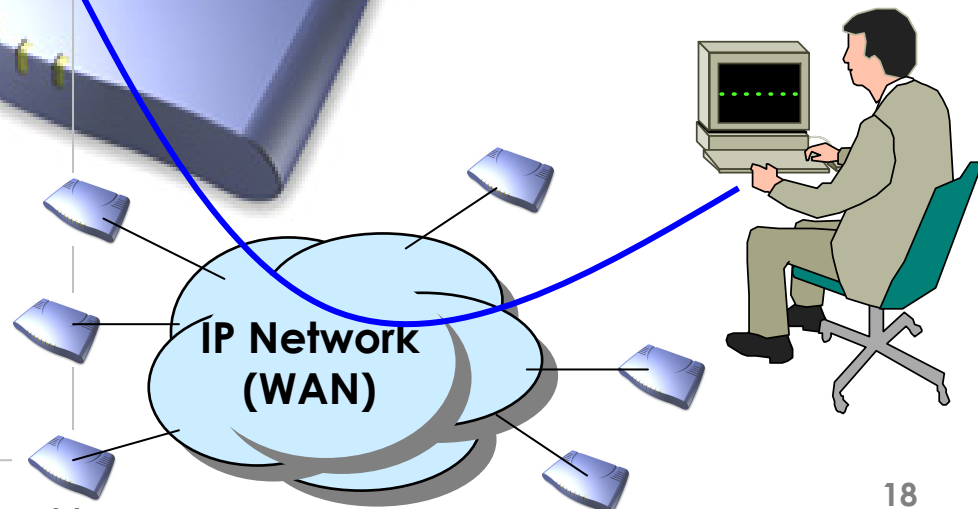
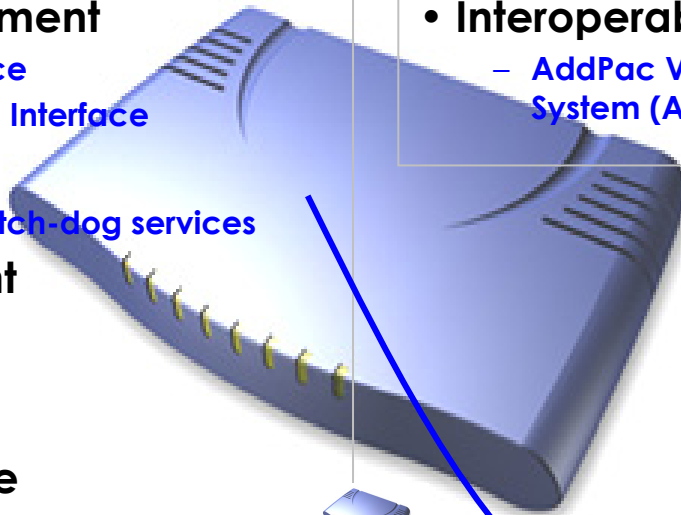
- Text based script downloading

- **Easy Set-up Service**

- MS Windows Graphical User Interface (GUI) based installation Software Solution
- Easy installation Set-up service

- **Interoperable with AP-VPMS Service**

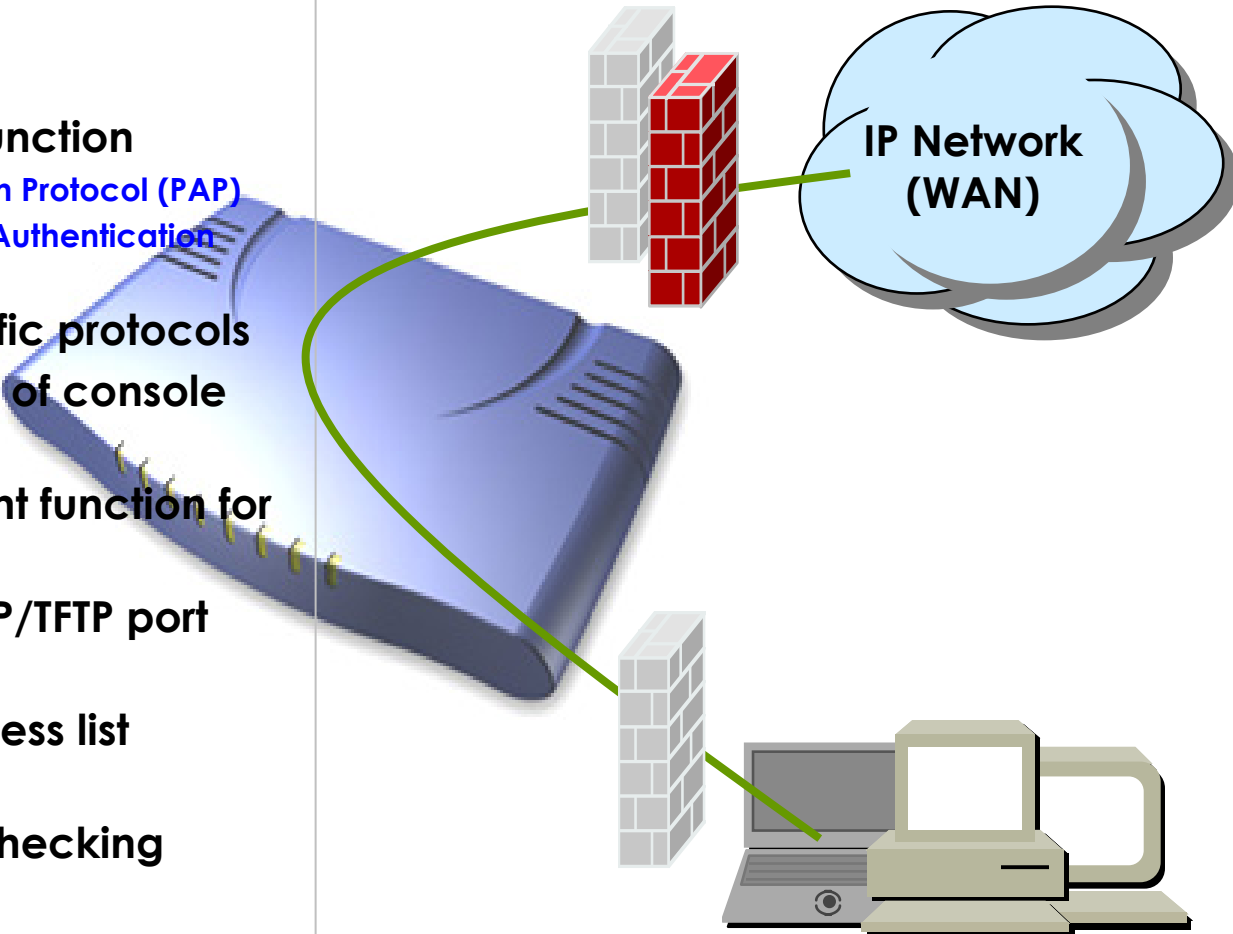
- AddPac VoIP Plug & Play Management System (AP-VPMS)



# AP200 VoIP Gateway Product Overview

## Security Managements

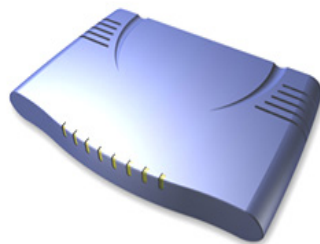
- IP packet filtering
- IP access list
- User authentication function
  - Password Authentication Protocol (PAP)
  - Challenge Handshake Authentication Protocol (CHAP)
- Enable/Disable specific protocols
- Auto-square connect of console and Telnet session
- Account Management function for multi-level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



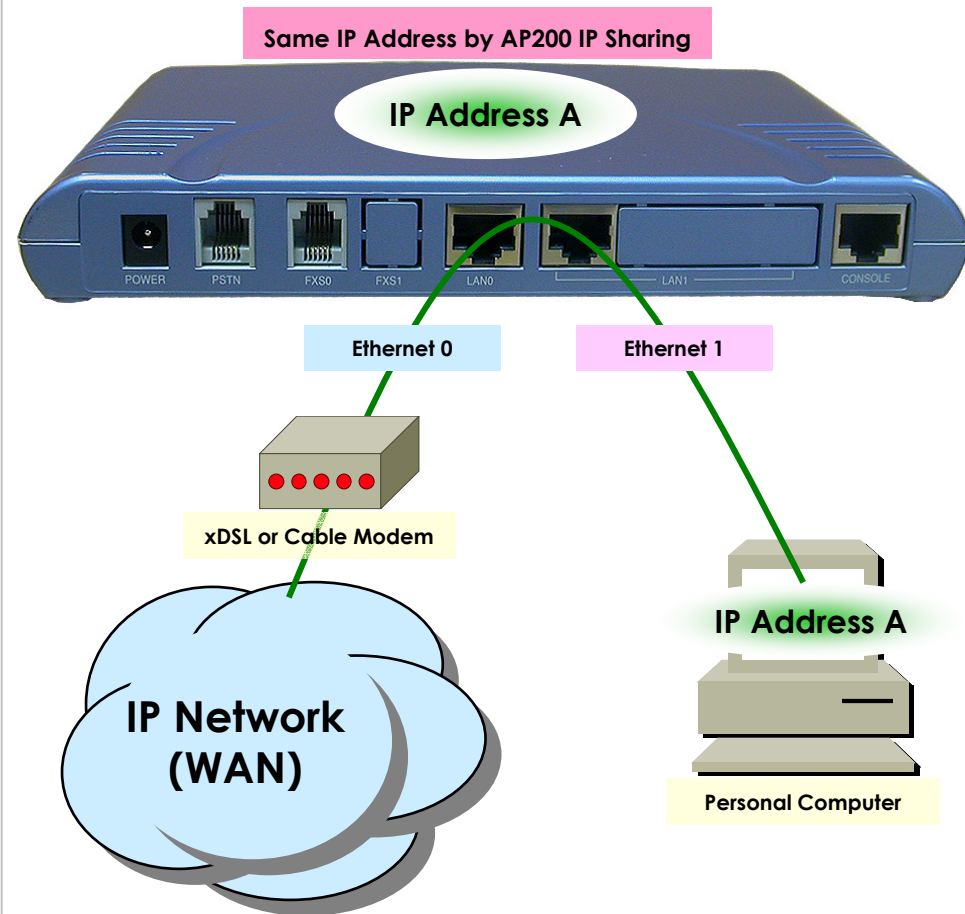
# AP200 VoIP Gateway Product Overview

## 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



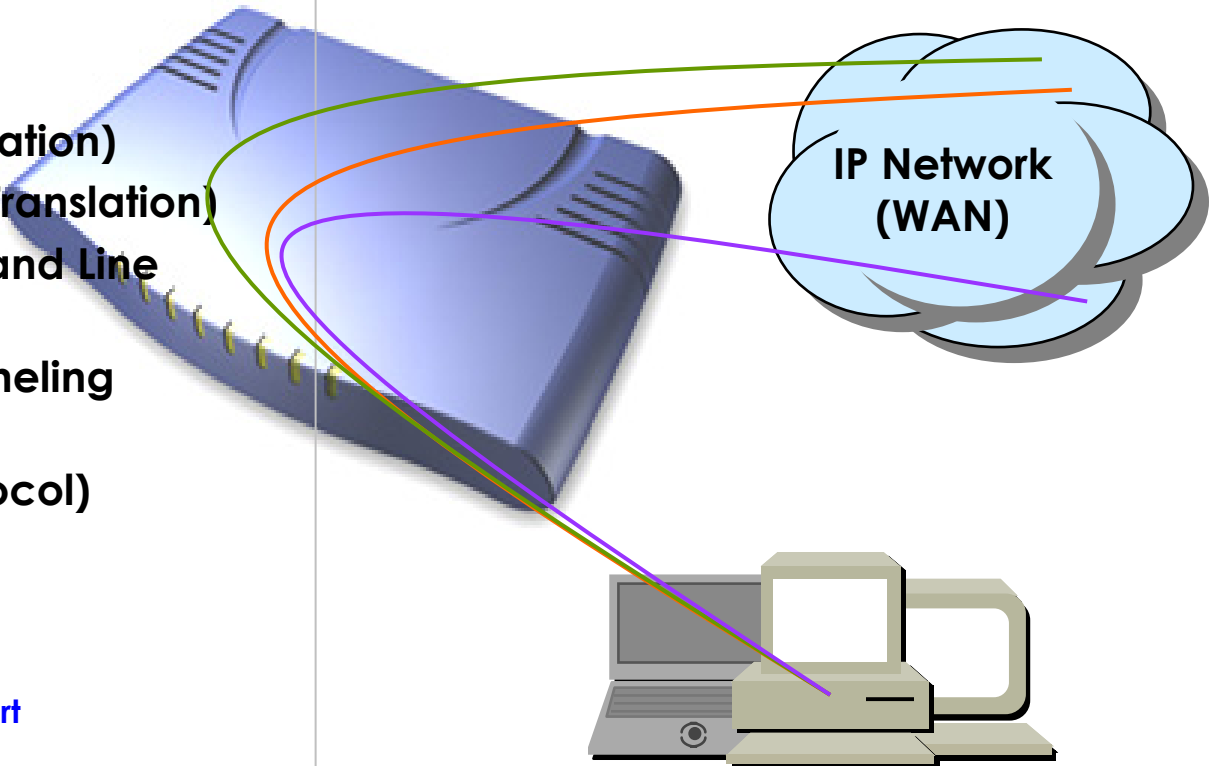
AP200 VoIP Gateway



# AP200 VoIP Gateway Product Overview

## Network Scalability (cont.)

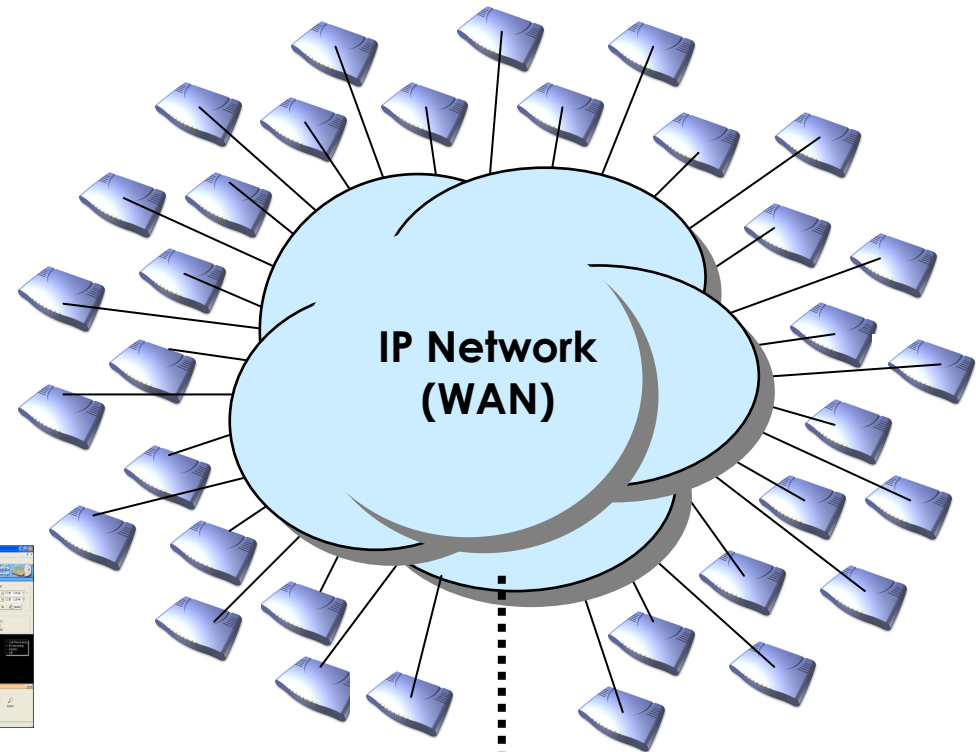
- **Bridging Service**
  - Spanning Tree Bridging protocol (IEEE) support
- **DHCP**
  - Server and Relay
- **IP Accounting**
- **PAT (Port Address Translation)**
- **NAT (Network Address Translation)**
- **Cisco Style CLI (Command Line Interface)**
- **PPTP (Point-to-Point Tunneling Protocol)**
- **NTP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

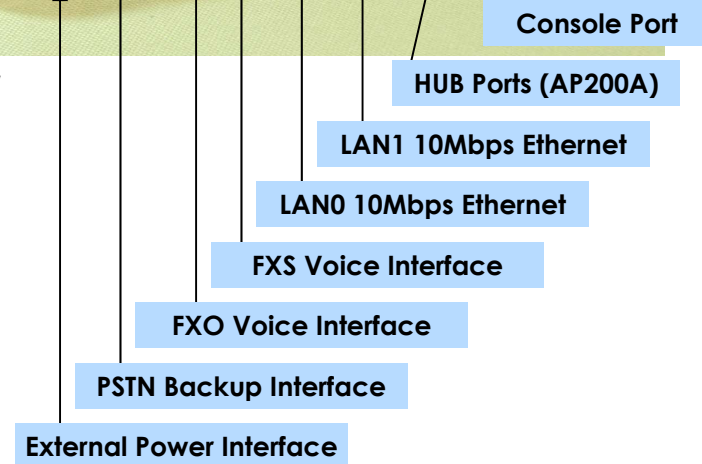
### Hardware Specifications

| 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-Poet 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<br>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

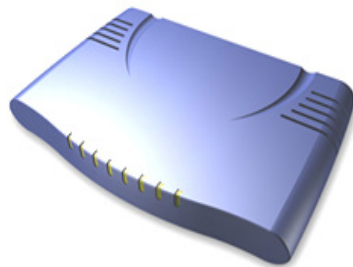




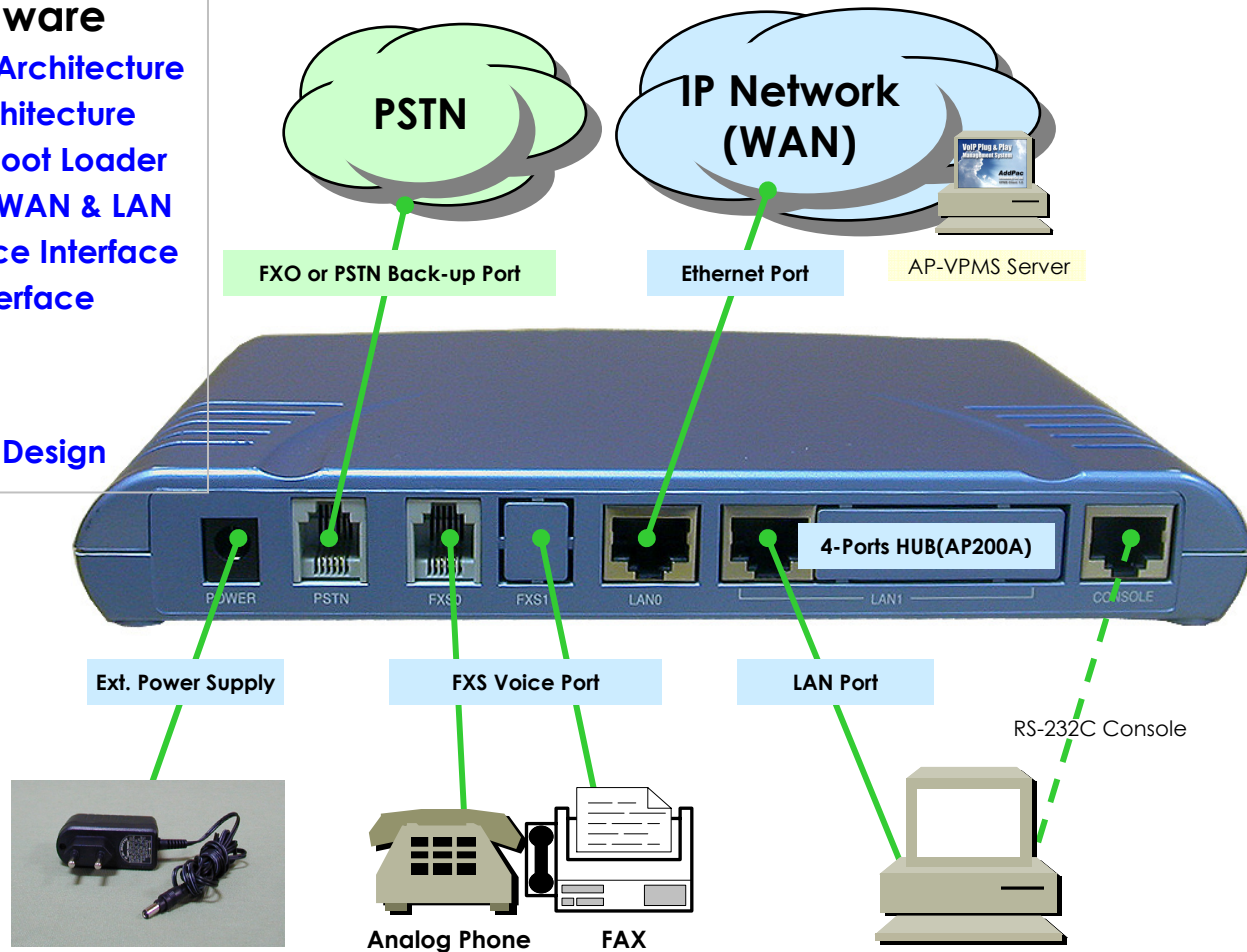
# AP200 VoIP Gateway Product Overview

## AP200 Networking Interface

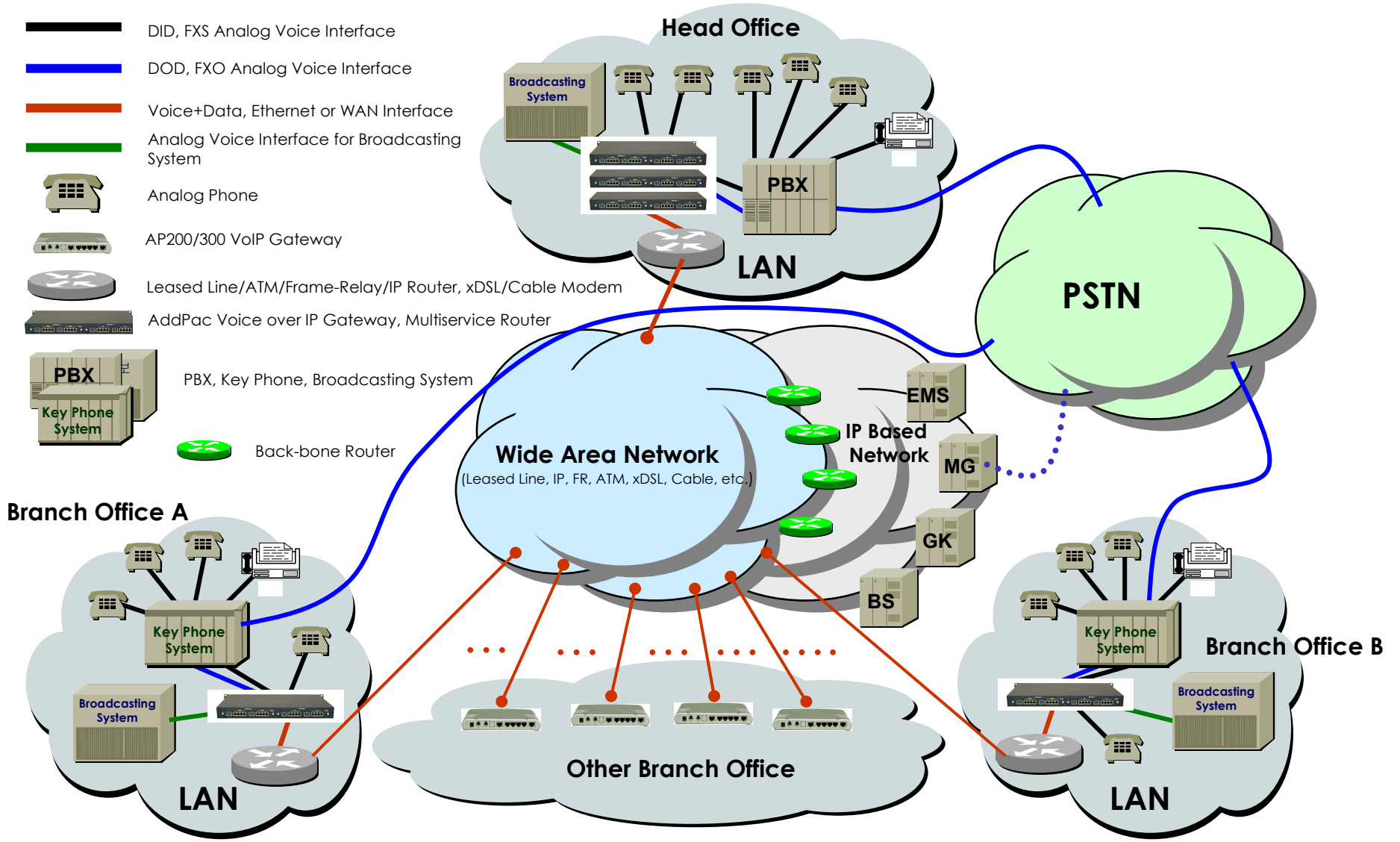
- **High-performance Hardware**
  - 32bit RISC Microprocessor Architecture
  - High-performance DSP Architecture
  - High-speed Memory with Boot Loader
  - Dual Ethernet Interface for WAN & LAN
  - Standard FXS and FXO Voice Interface
  - Standard PSTN Back-up Interface
  - RS-232C Console Interface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



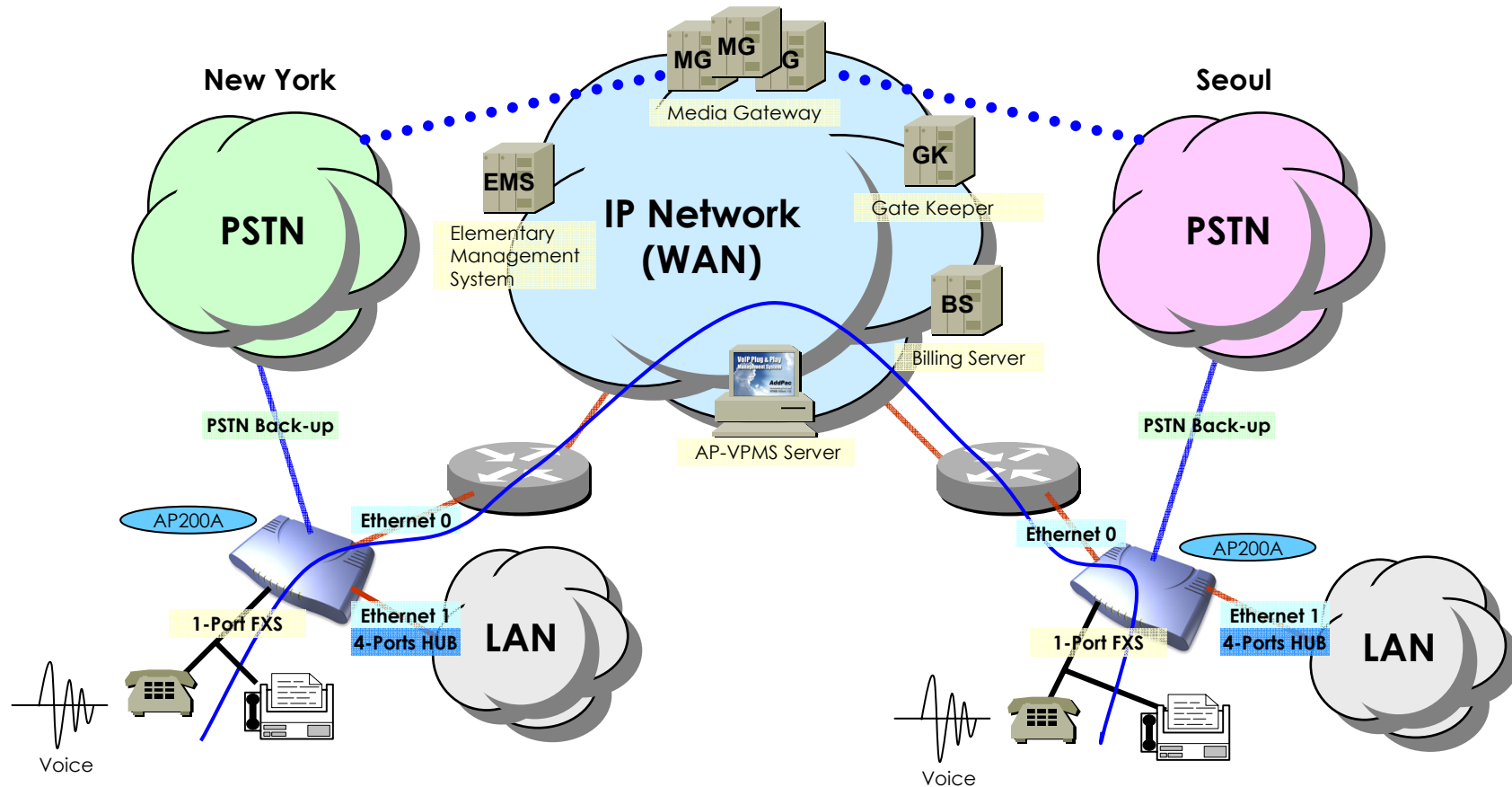
AP200 VoIP Gateway



# AddPac VoIP Gateway Network Diagram Example



# AP200A Voice Networking Configuration



— FXS Analog Voice Interface

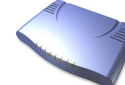
— FXO Analog Voice Interface

— 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.

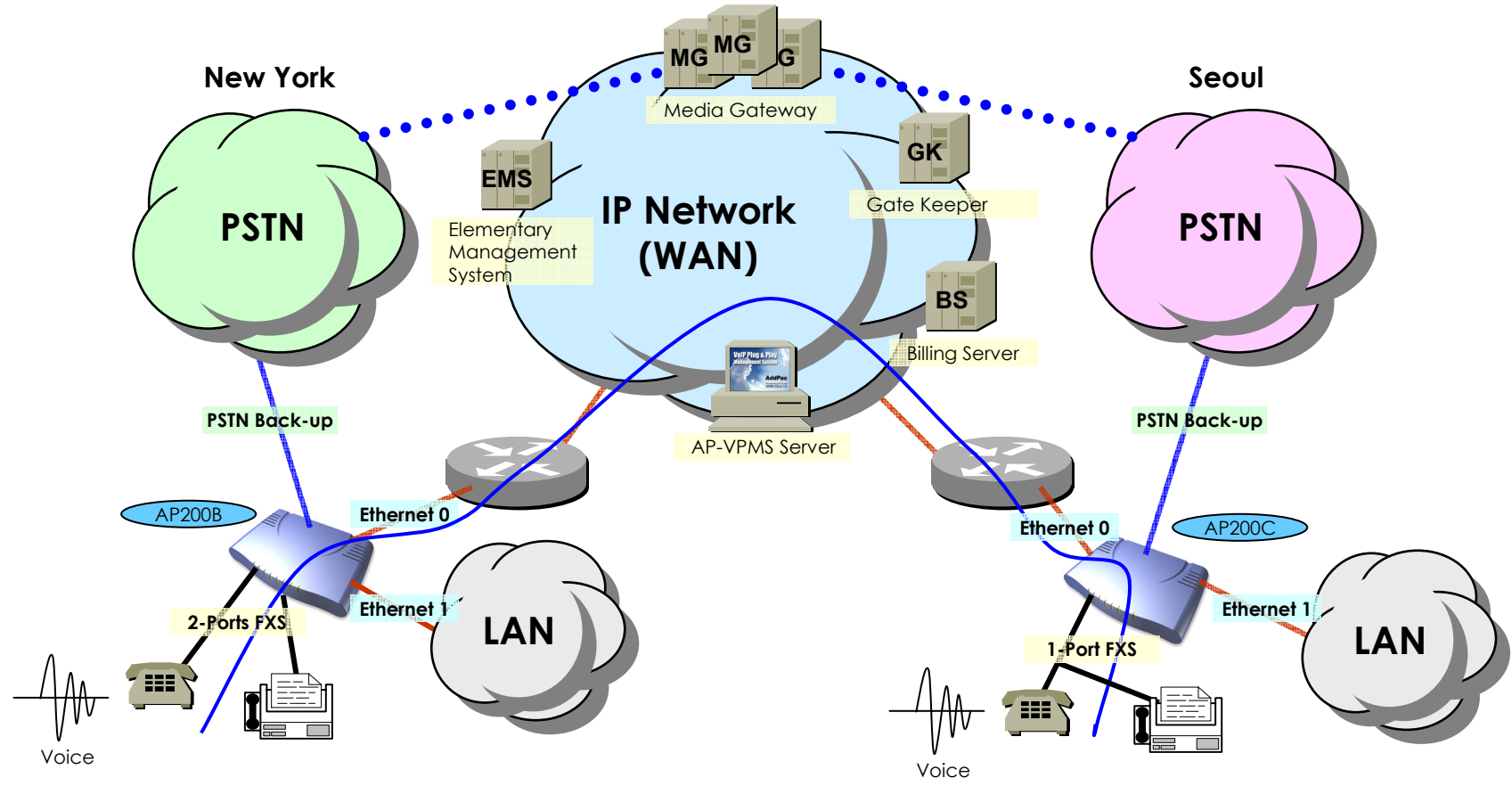


AddPac AP200 Voice over IP Gateway Series (A, B, C, D, and E)



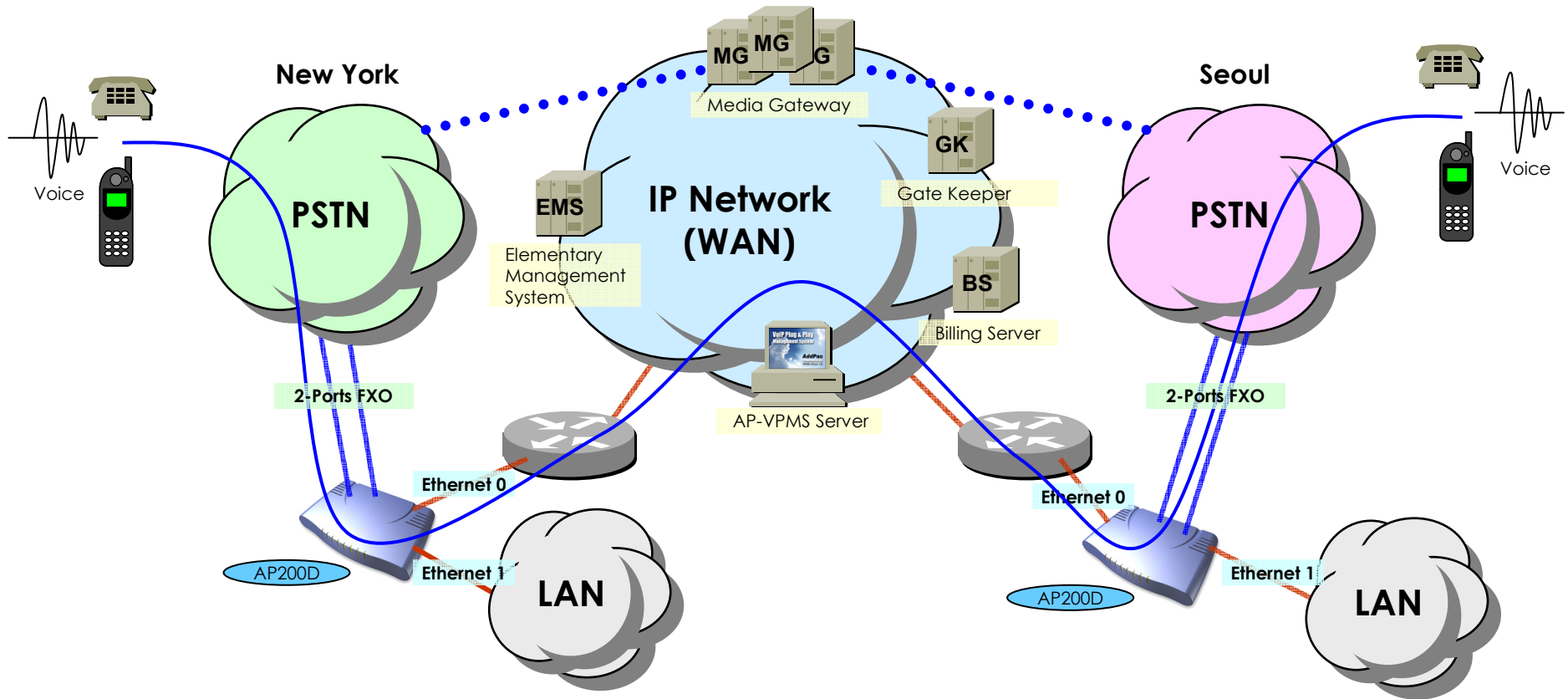
Analog Phone

# AP200B & C 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

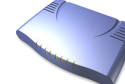
# AP200D Voice Networking Configuration



- 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.

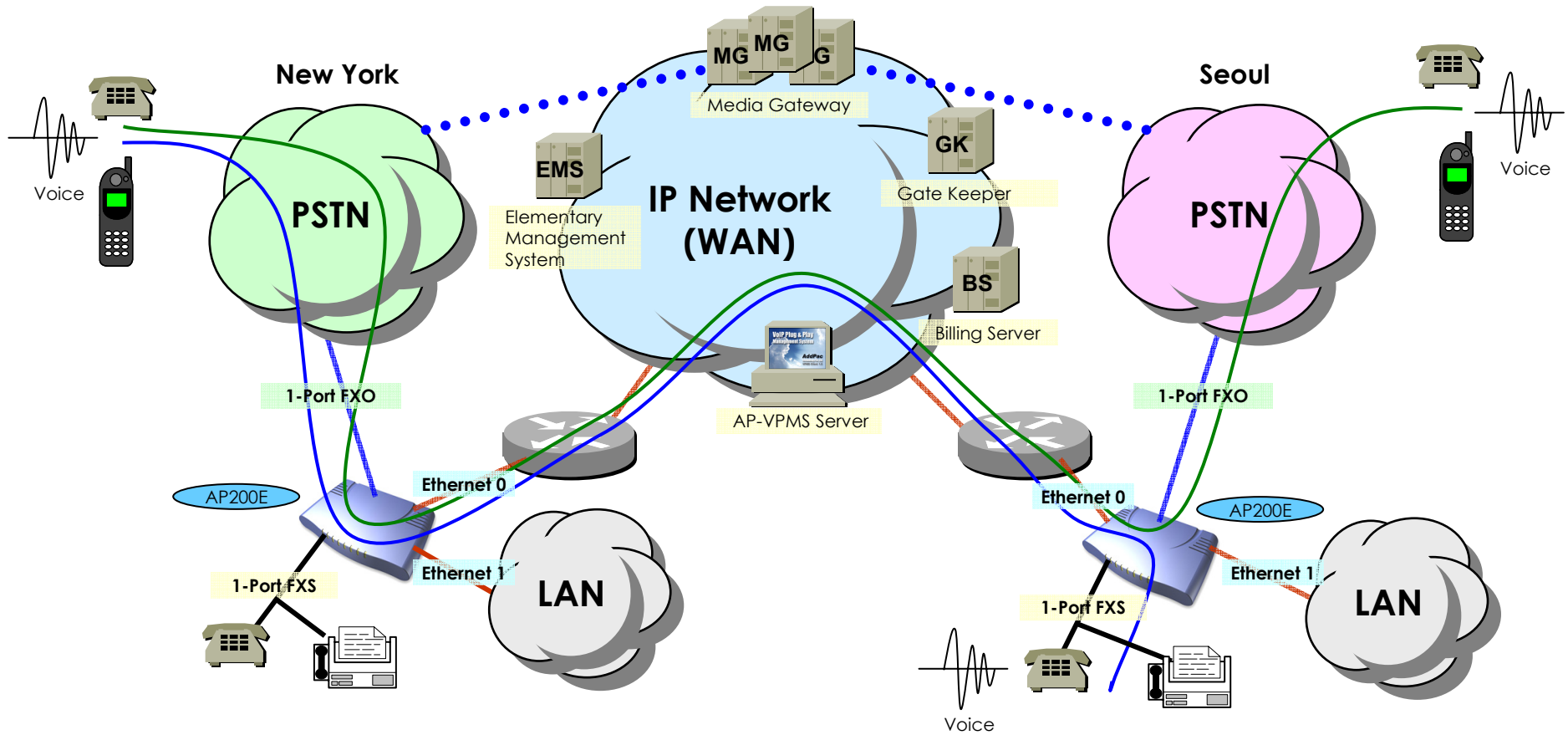


AddPac AP200 Voice over IP Gateway Series



Analog Phone

# AP200E Voice Networking Configuration



— FXS Analog Voice Interface

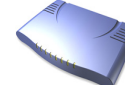
— FXO Analog Voice Interface

— 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.



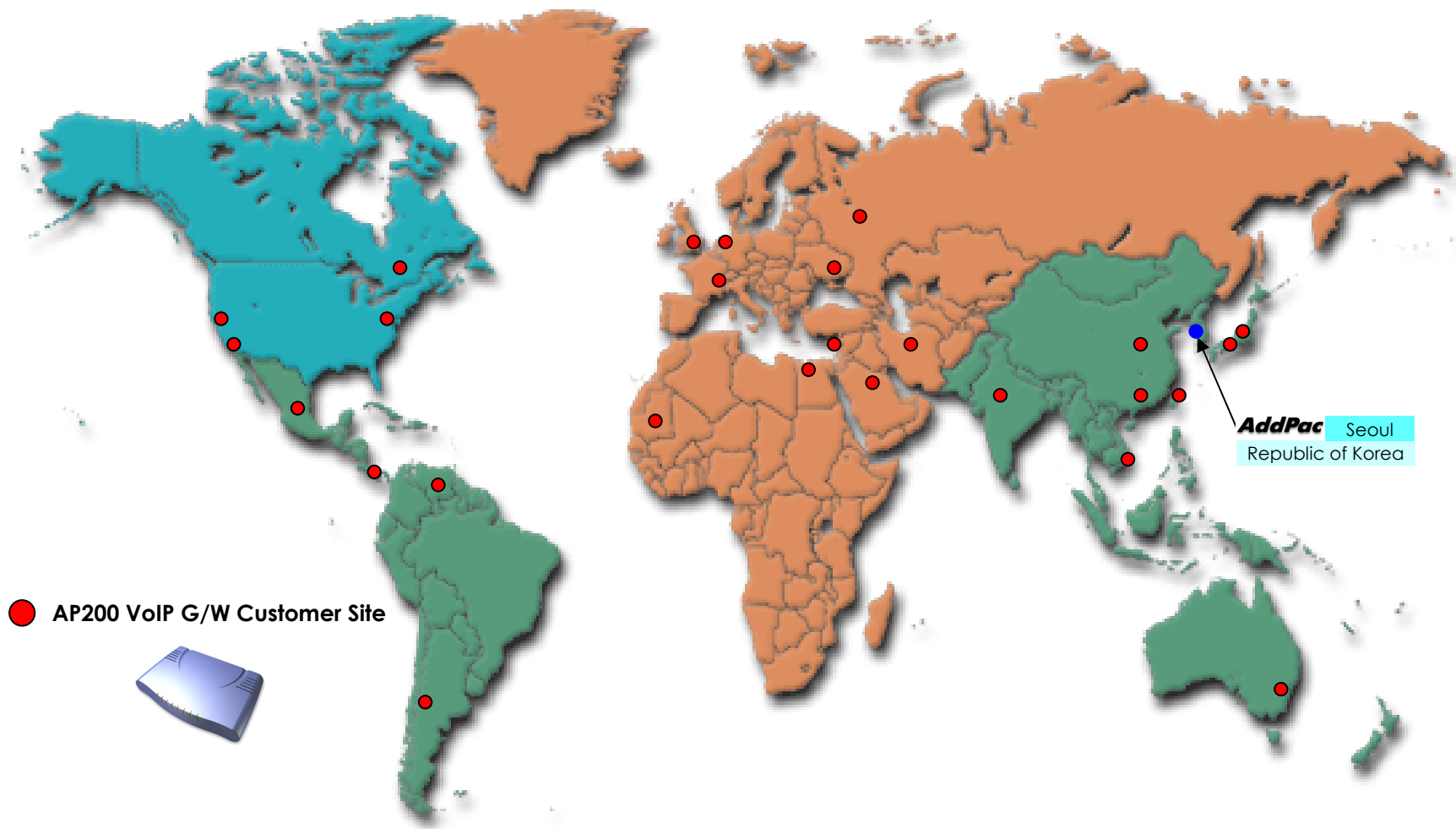
AddPac AP200 Voice over IP Gateway Series (A, B, C, D, and E)



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 |            |            |            |            |

**AddPac Technology Co., Ltd.**

**Thank you !**

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

**Technical Sales and Marketing**

**AddPac Technology**

**sales@addpac.com**