

# VoIP

## AP2620 BcN VoIP Gateway

BcN : Broadband converged Network



Apr. 2004

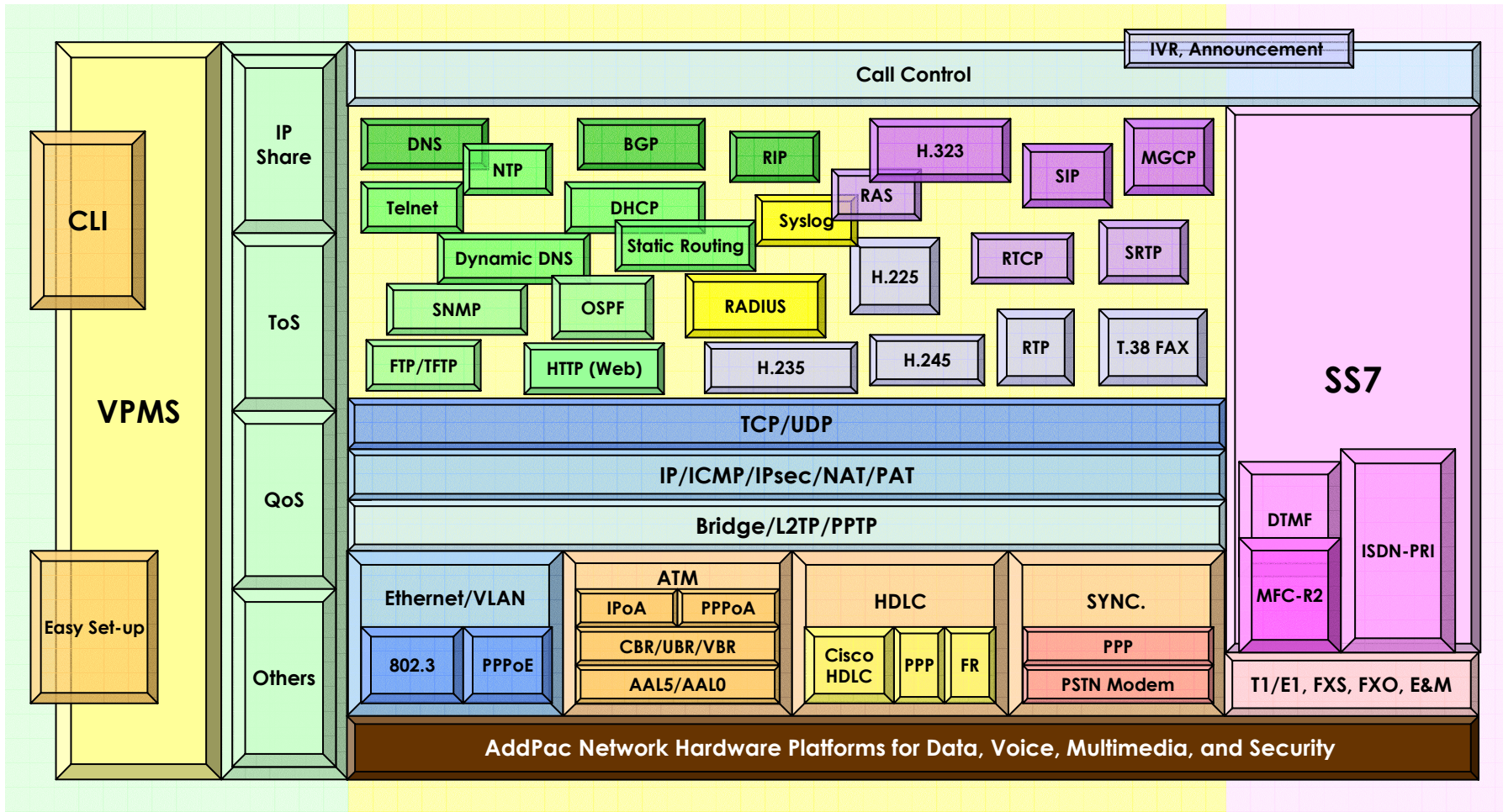
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# AP2620 VoIP Gateway Product Overview

## APOS Internetworking Protocol Stack

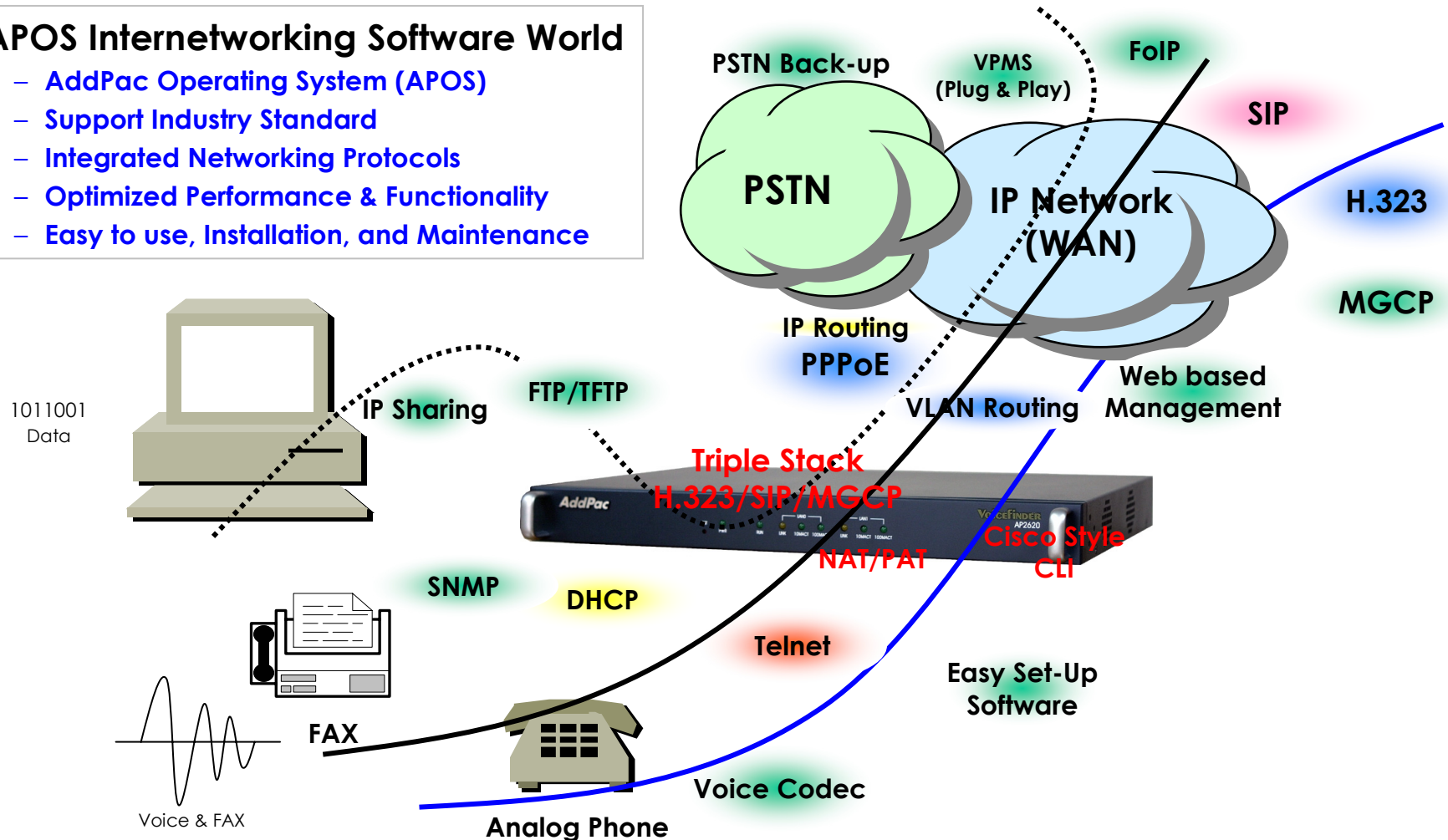


# AP2620 VoIP Gateway Product Overview

## APOS Internetworking S/W World

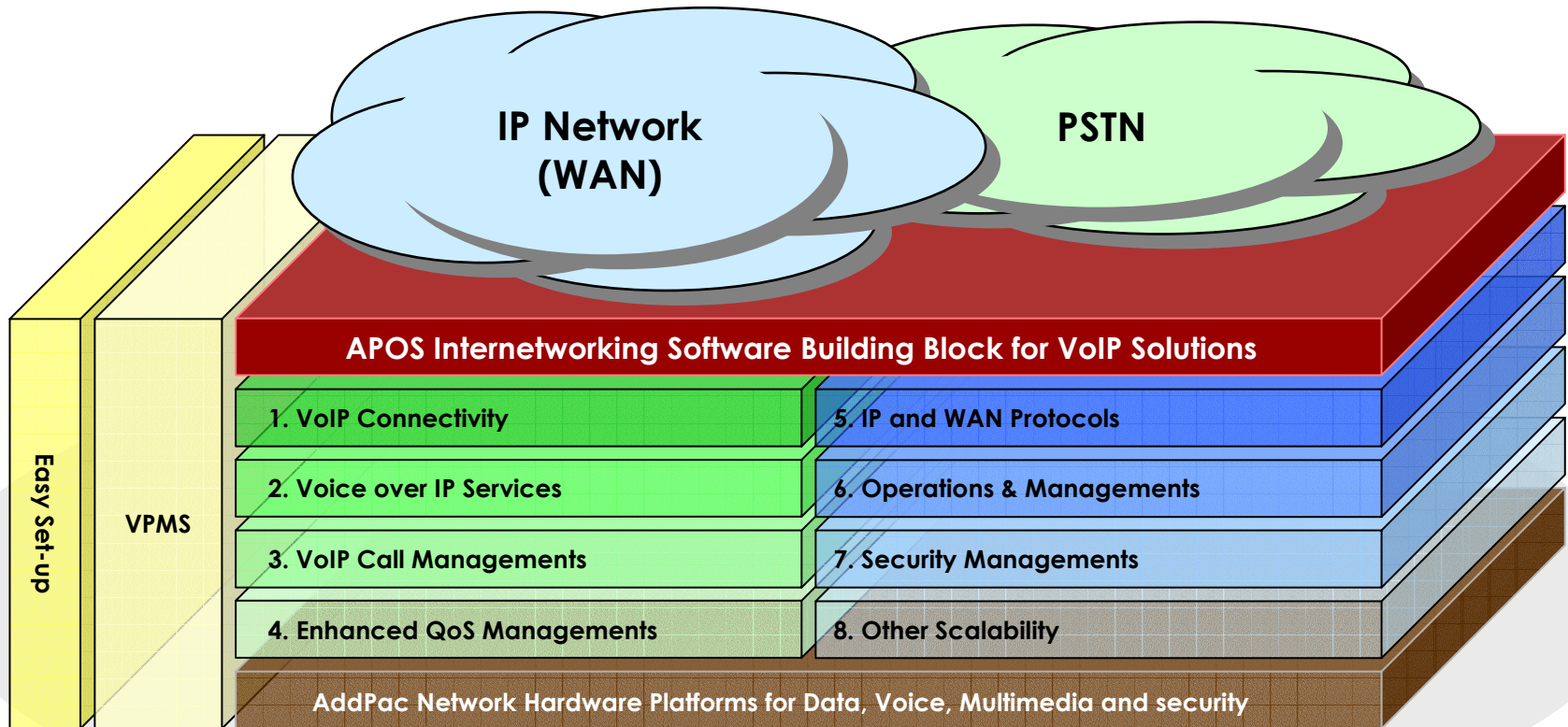
### • APOS Internetworking Software World

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



# AP2620 VoIP Gateway Product Overview

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



# AP2620 VoIP Gateway Product Overview

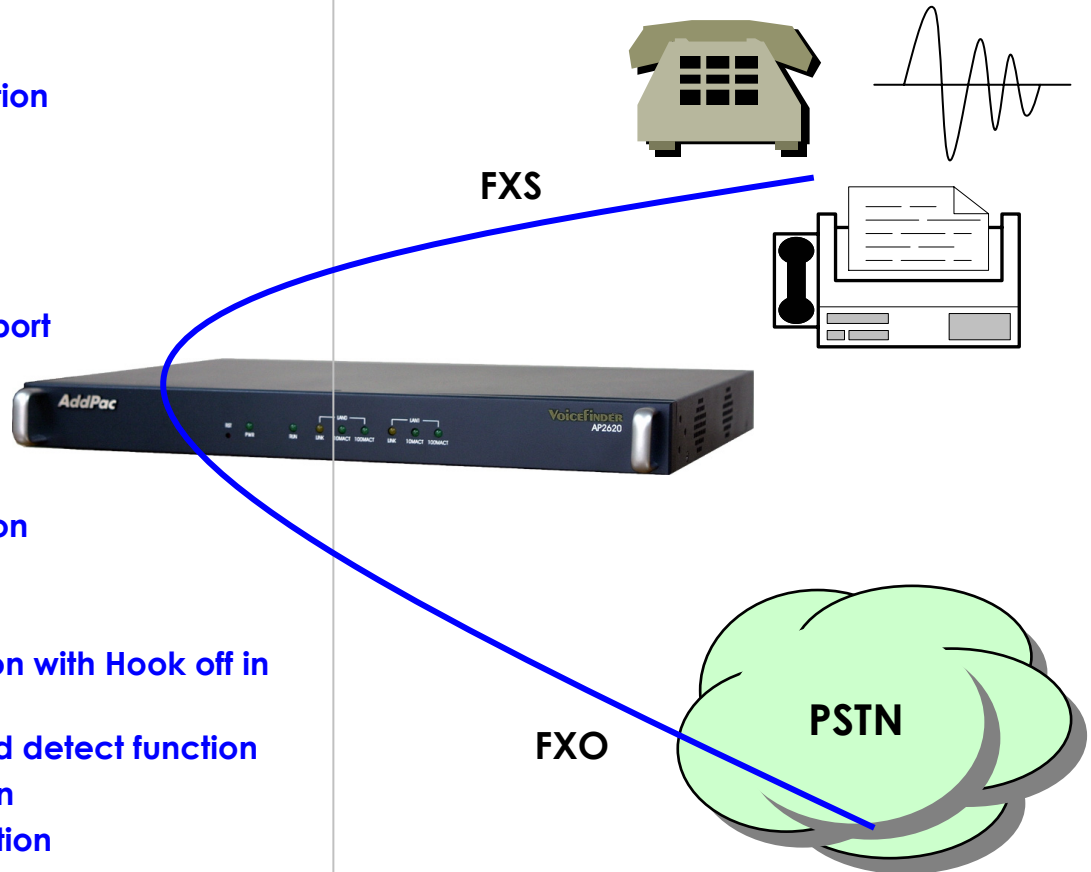
## VoIP Gateway Connectivity

- **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



# AP2620 VoIP Gateway Product Overview

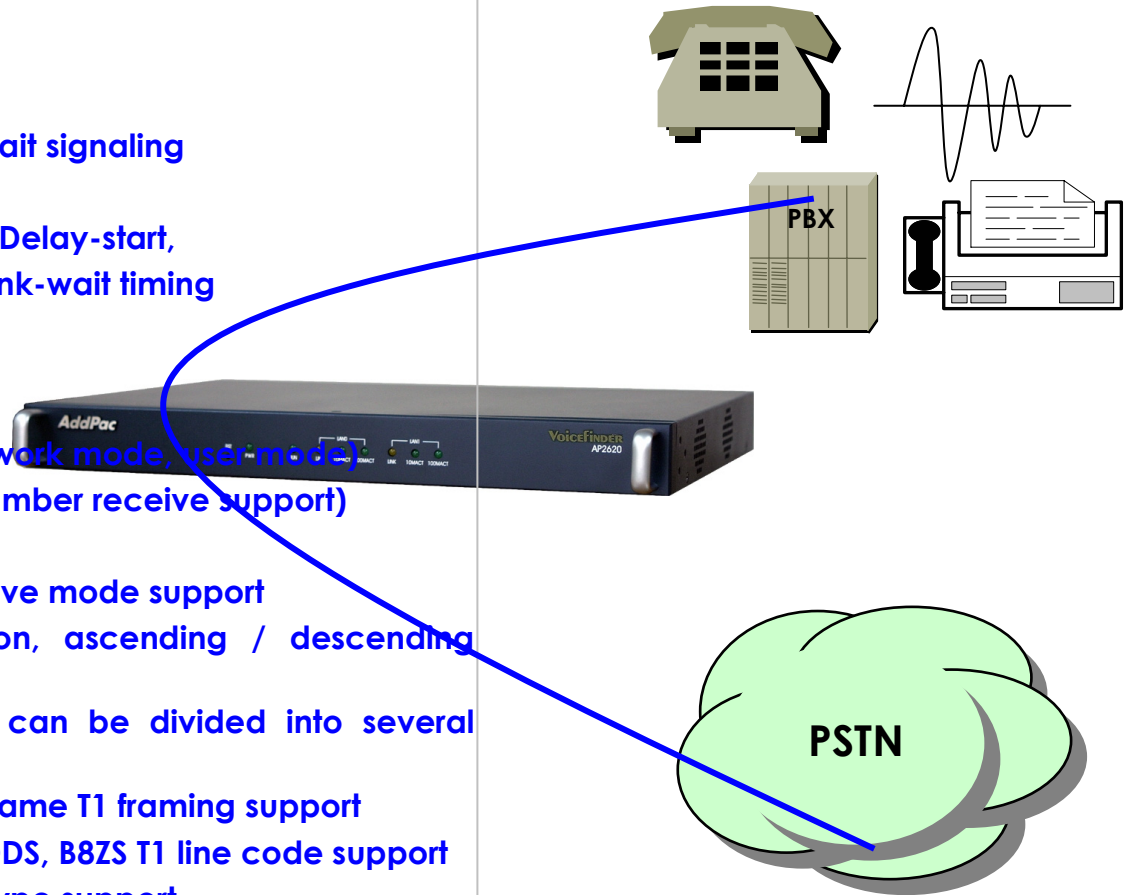
## VoIP Gateway Connectivity

- **E&M**

- Type 1, 2, 3, 5 support
- 2-wire, 4-wire support
- Delay-dial, Immediate, Wink-wait signaling support
- Dialout-delay, Delay-duration, Delay-start, Wait-wink, Wink-duration, Wink-wait timing setting support

- **E1,T1**

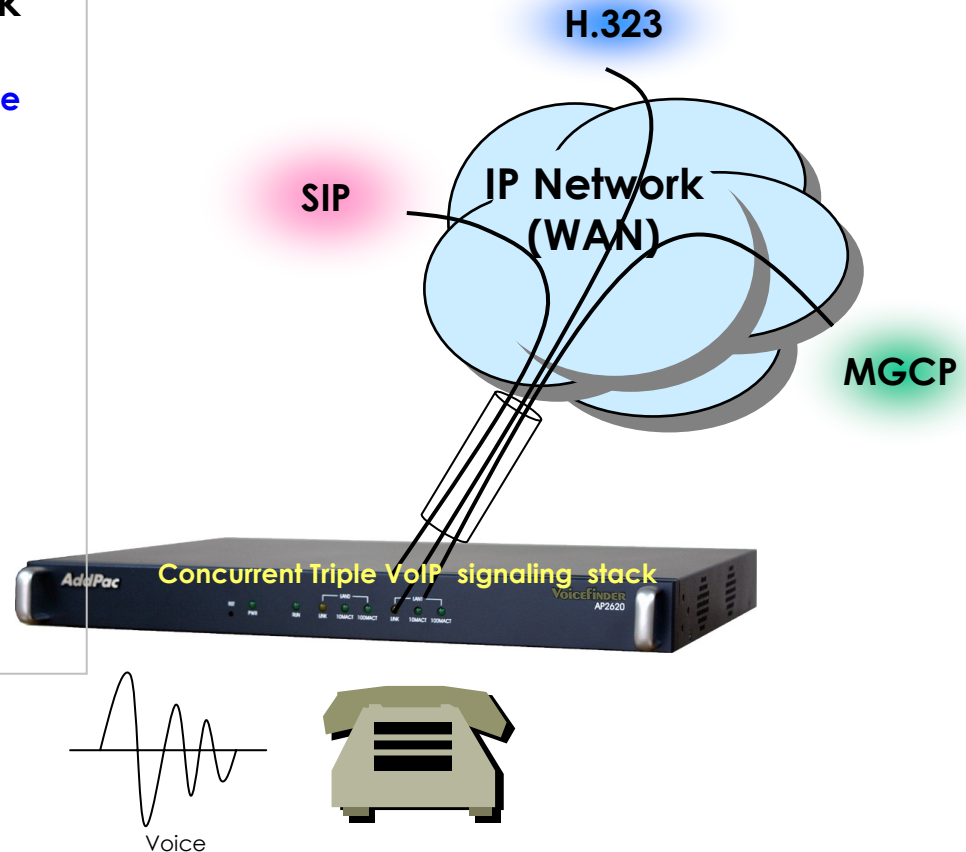
- ISDN PRI signaling support (network mode, user mode)
- R2 signaling support (calling number receive support)
- DTMF signaling support
- Clock source master mode, slave mode support
- In case of channel allocation, ascending / descending random support
- One physical E1,T1 interface can be divided into 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



# AP2620 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



# AP2620 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



# AP2620 VoIP Gateway Product Overview

## Voice over IP Service (cont.)

### • Voice Codec

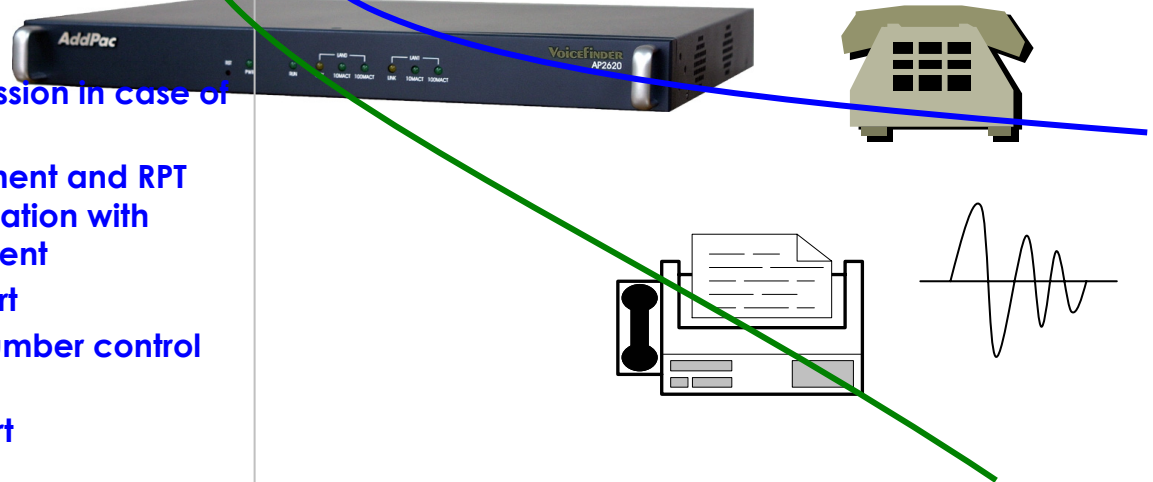
- G.711 A-Law, G.711 U-Law, G.711 PLC
- G.726 r16, G.726 r32
- G.729A
- G.723.1 r63, G.723.1 r53
- VAD (Voice Activity Detection) function support
- DTMF relay support (H.323, SIP, MGCP common) based on RFC2833
- CNG, G.168, T.38 G3 Fax Relay

### • 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



# AP2620 VoIP Gateway Product Overview

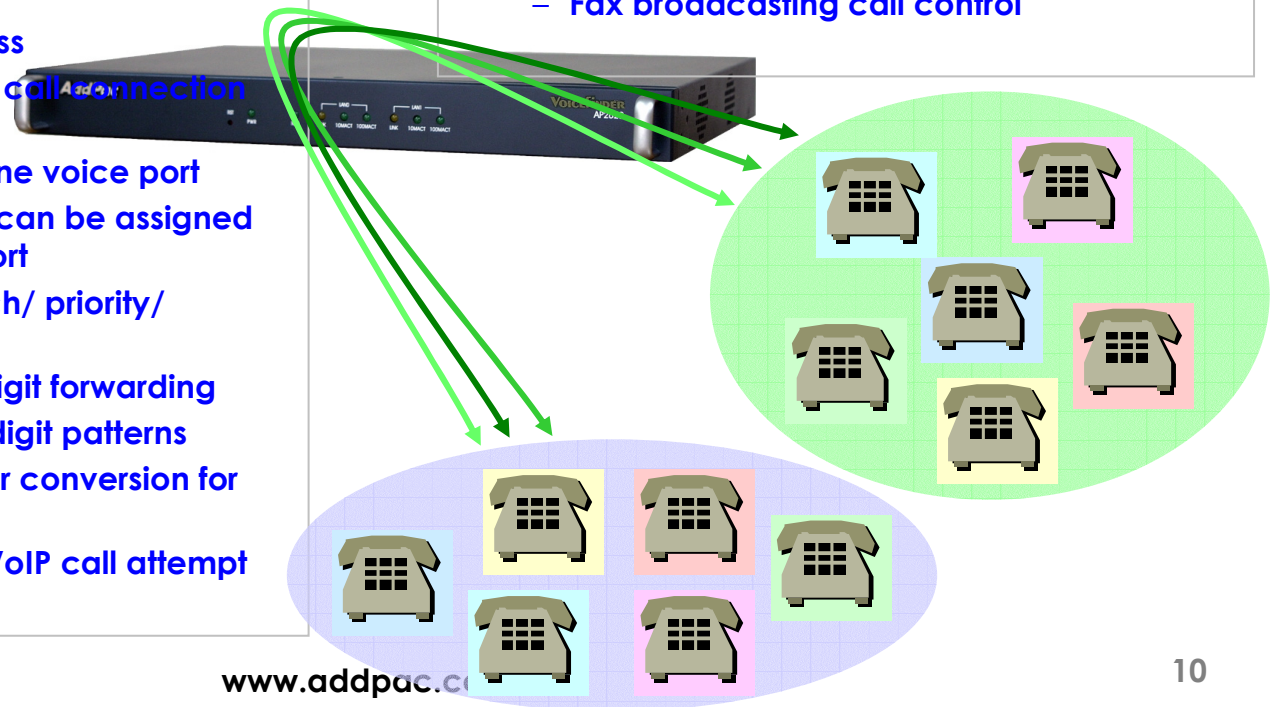
## VoIP Call Managements

### • 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



# AP2620 VoIP Gateway Product Overview

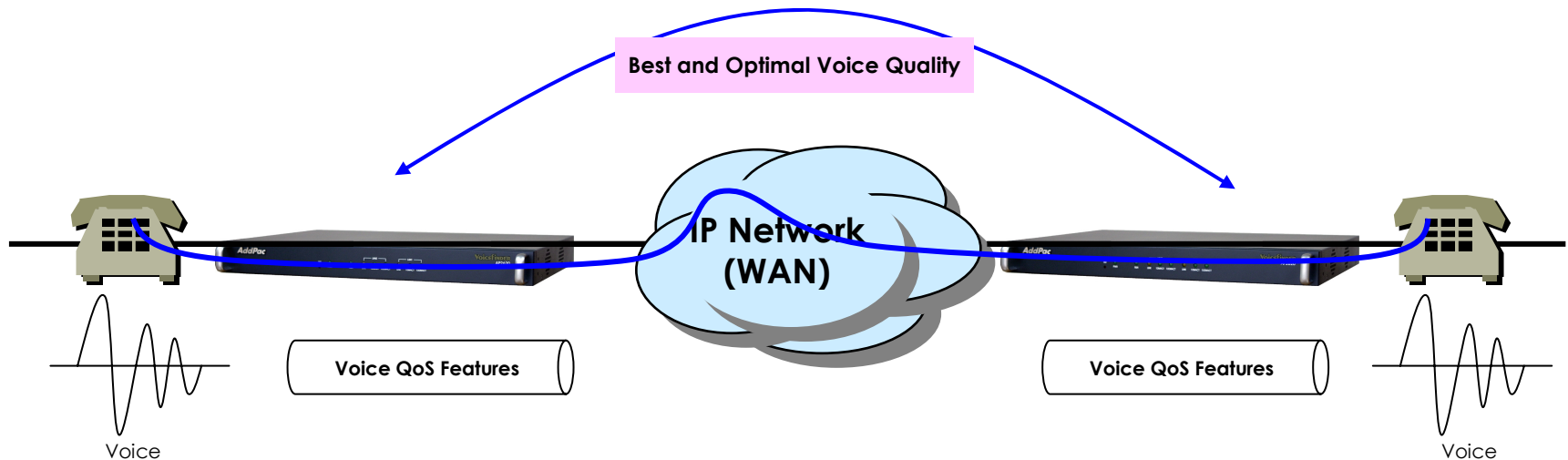
## Enhances QoS Managements

### • 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

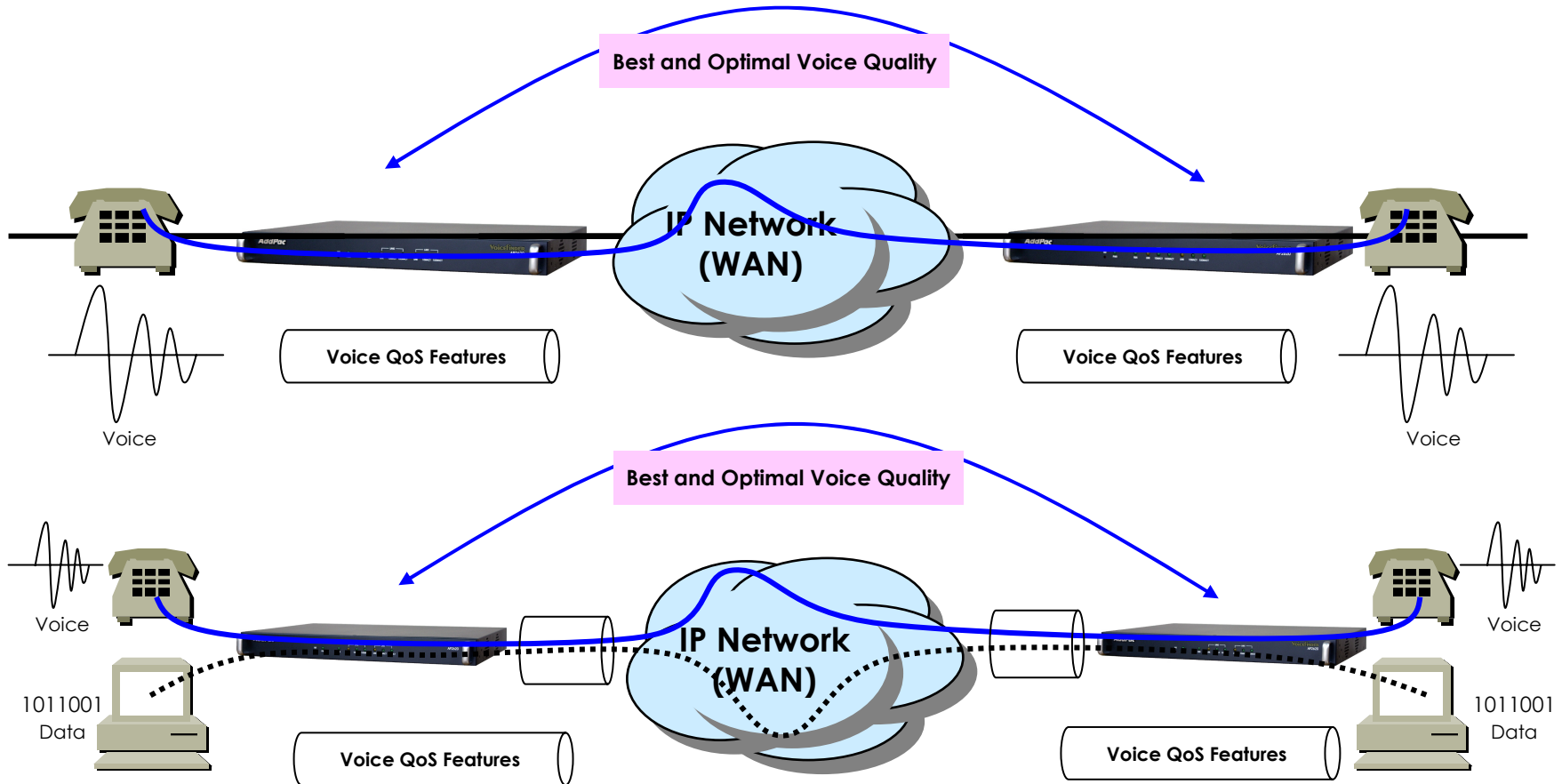
### • Enhances **Receive** Voice QoS Features

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



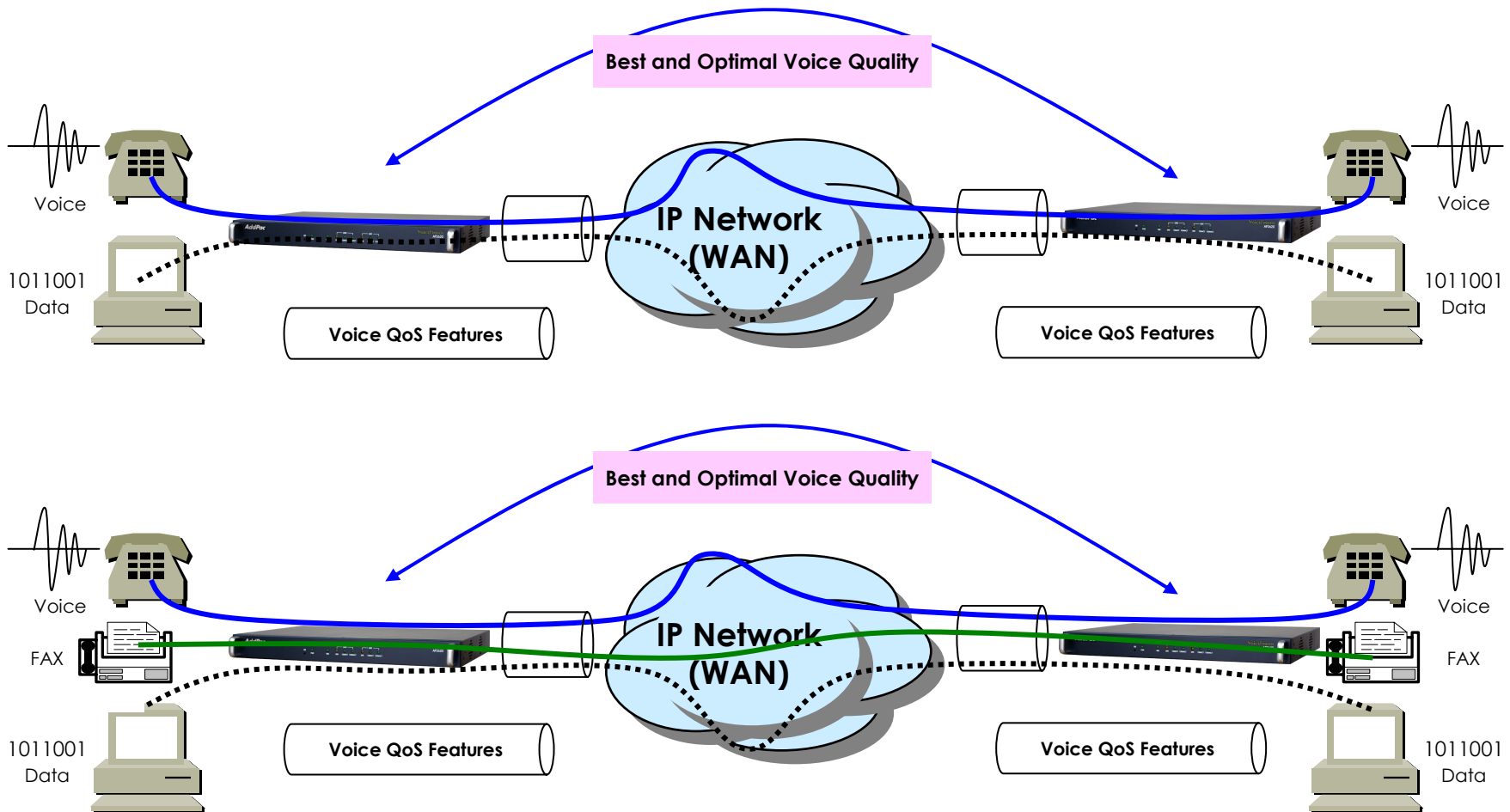
# AP2620 VoIP Gateway Product Overview

## Enhances QoS Managements (cont.)



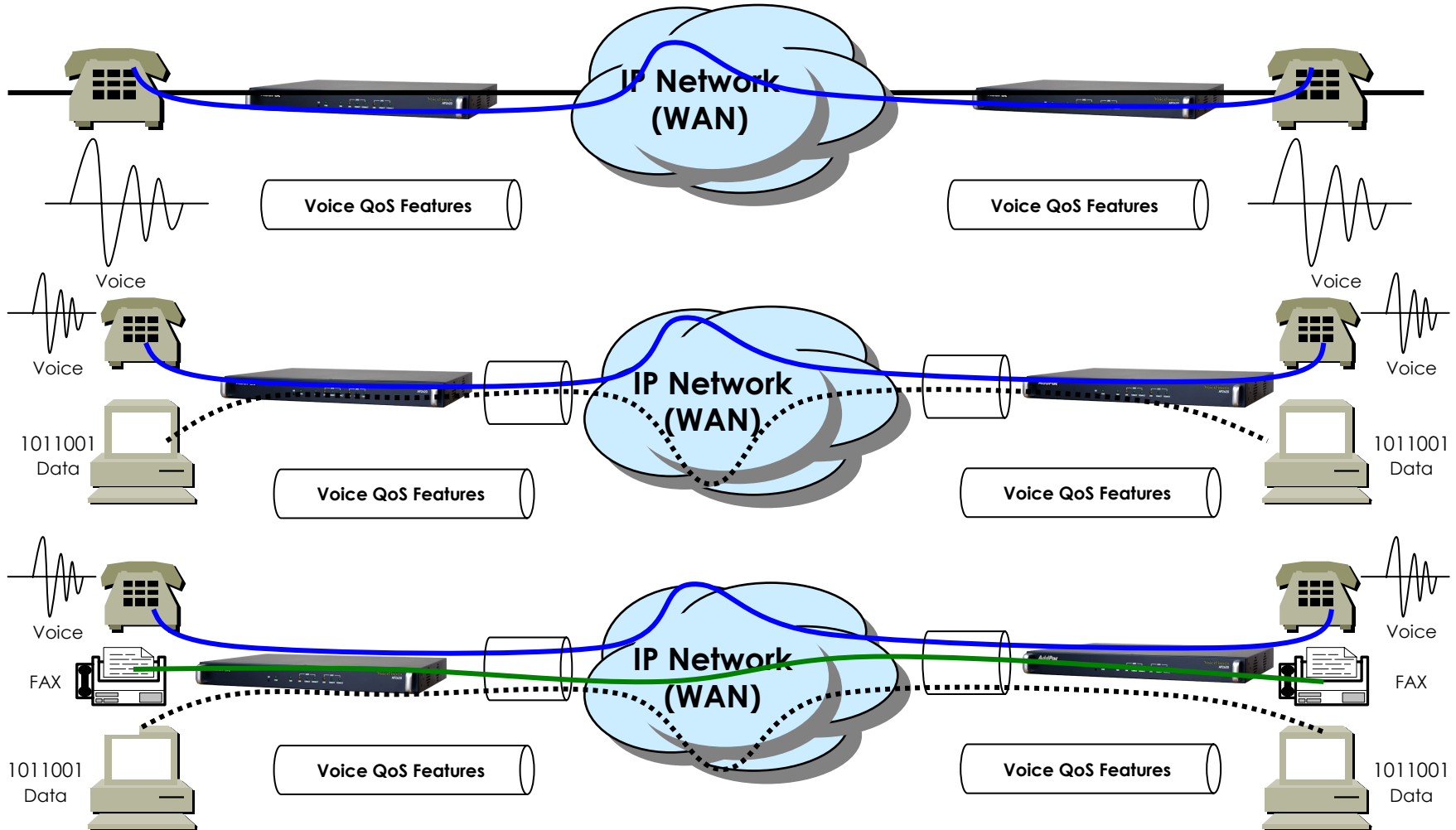
# AP2620 VoIP Gateway Product Overview

## Enhances QoS Managements (cont.)



# AP2620 VoIP Gateway Product Overview

## Enhances QoS Managements (cont.)



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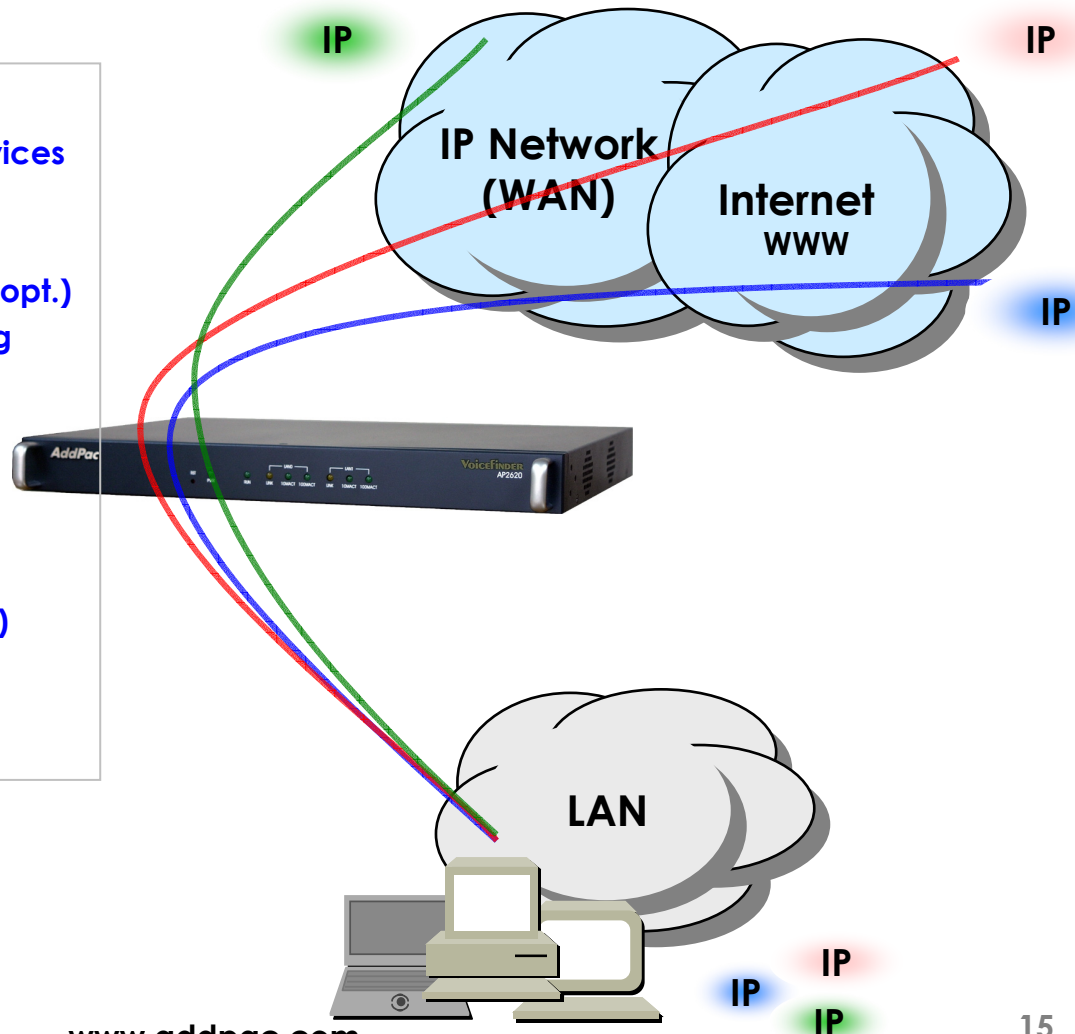
## IP and WAN Protocols

- **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)
- BGP4(Border Gateway Protocol)

- **WAN Protocols**

- Point-to-Point Protocol (PPP)
- High-level Data Link Control (HDLC) Protocol
- PPPoE, IPoA, PPPoA



# AP2620 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

- **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**

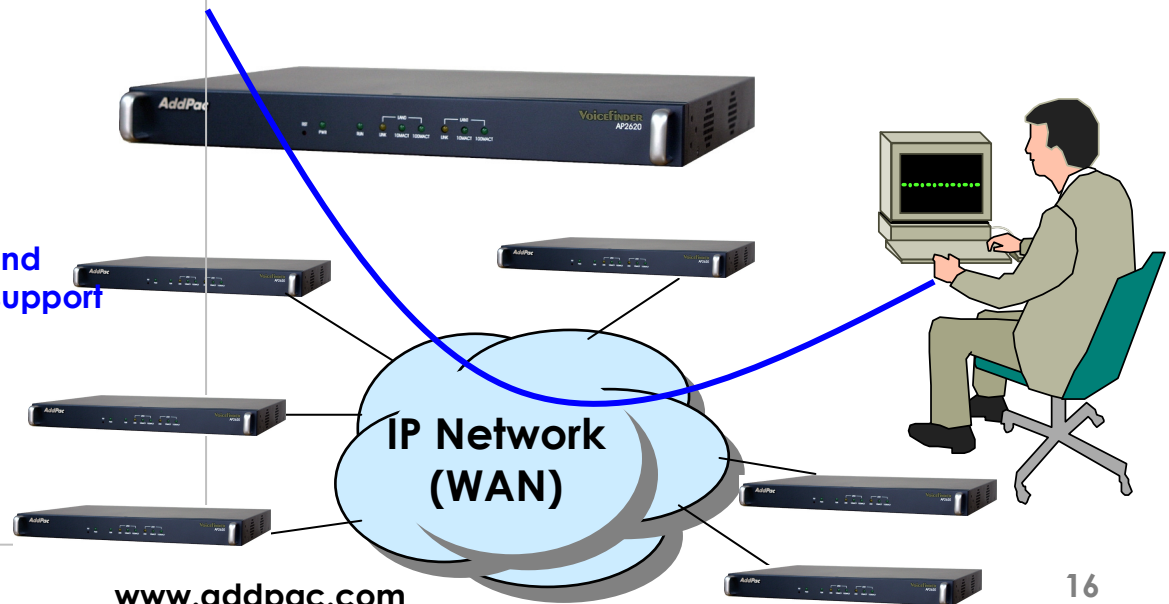
- Text based script downloading

- **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)

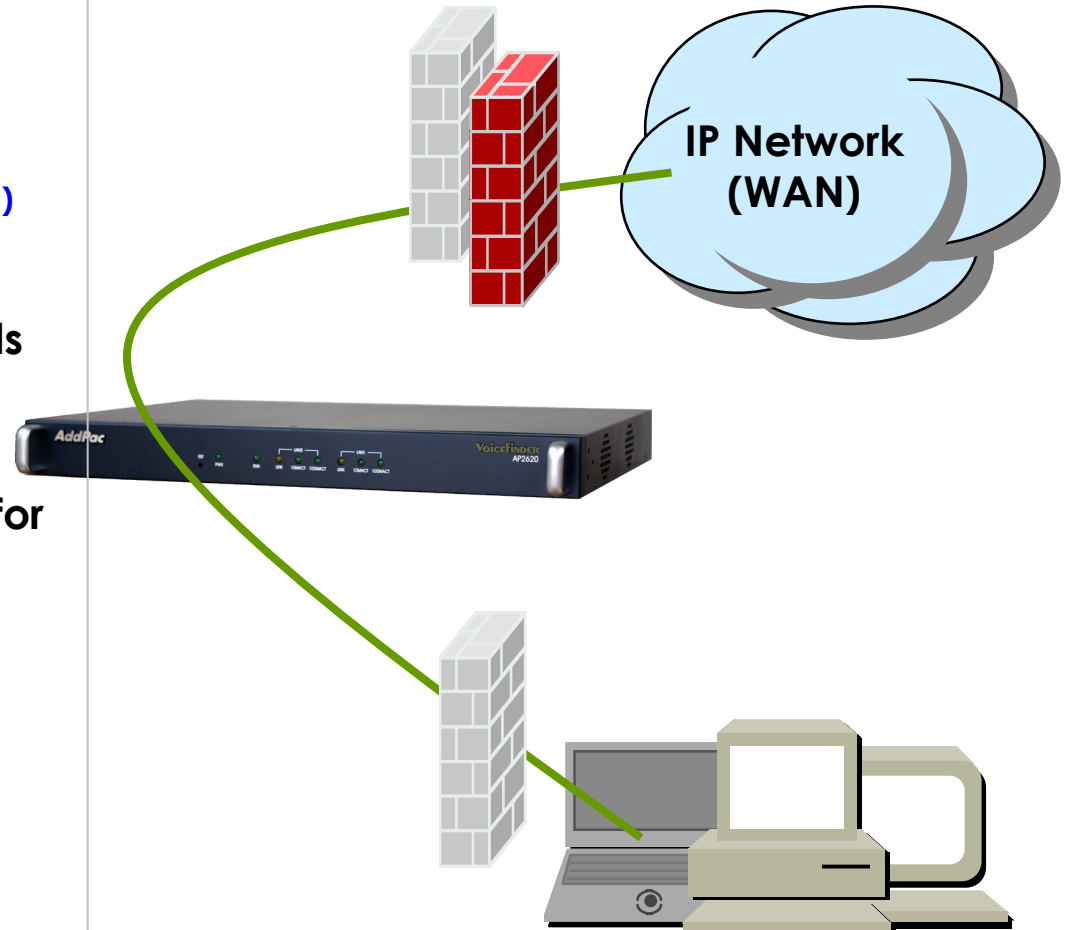




# AP2620 VoIP Gateway Product Overview

## 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



# AP2620 VoIP Gateway Product Overview

## Network Scalability

- **IP Sharing Feature**

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

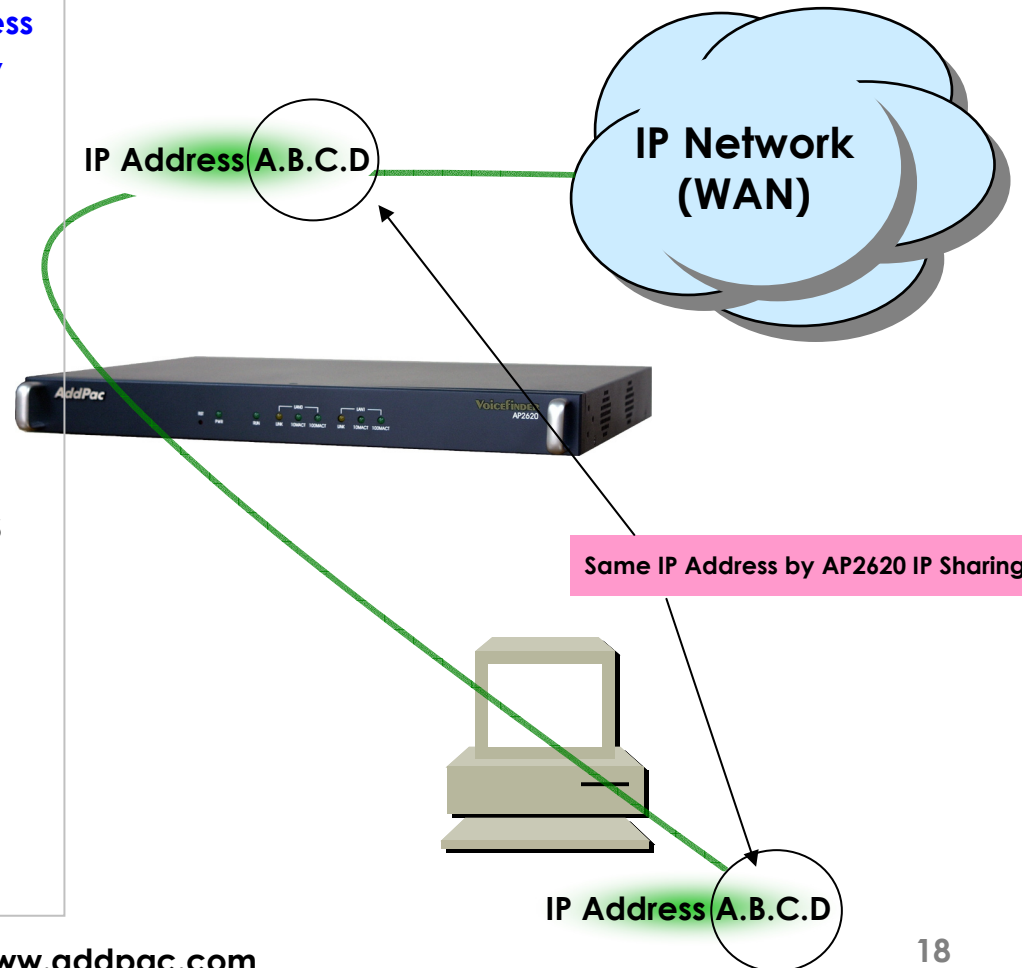
- **IP Sharing Network Environment**

- 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**

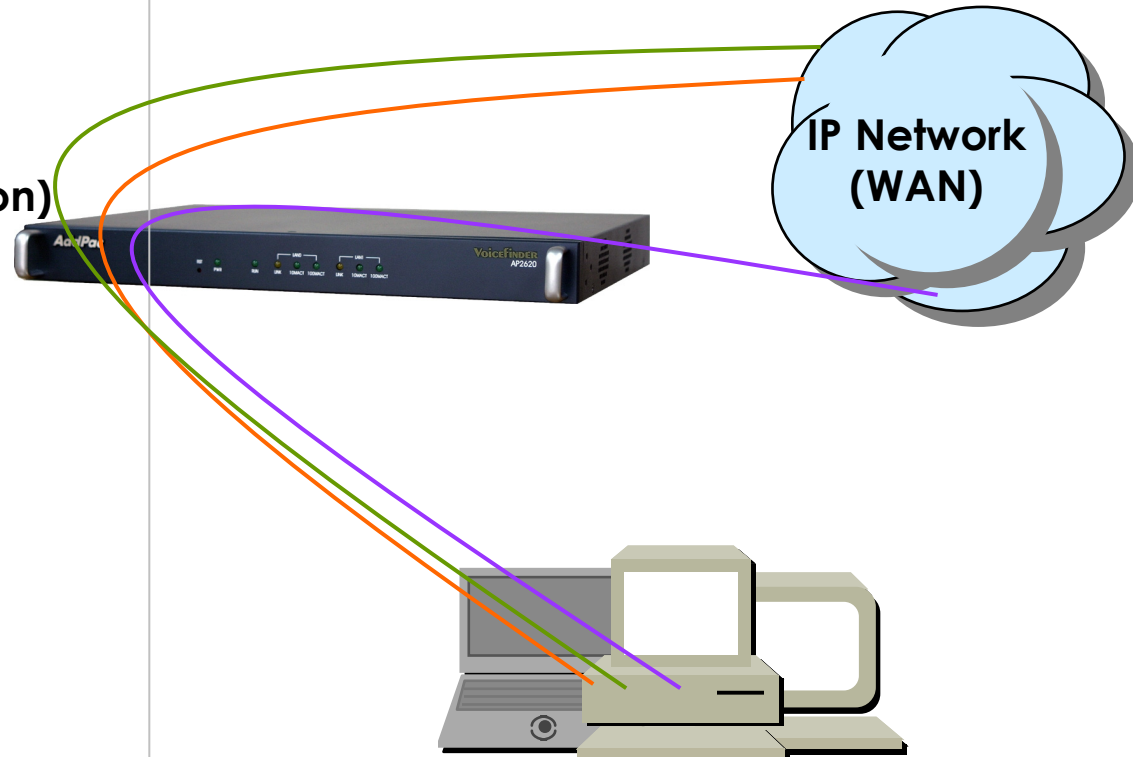
- PPPoE
- PPPTP
- DHCP



# AP2620 VoIP Gateway Product Overview

## Network Scalability (cont.)

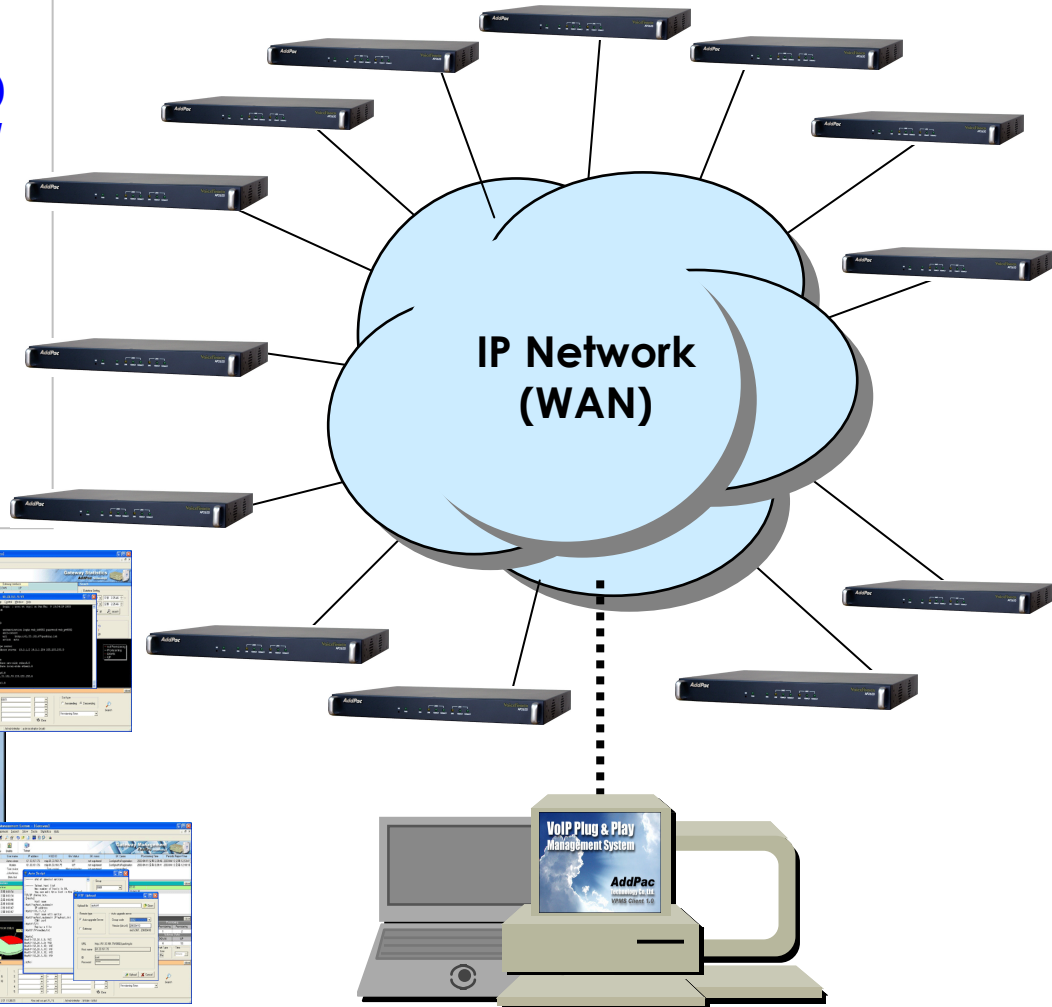
- **Bridging Service**
  - Spanning Tree Bridging protocol (IEEE) support
- **DHCP**
  - Server and Relay
- **IP Accounting**
- **PAT (Port Address Translation)**
- **NAT (Network Address Translation)**
- **Cisco Style CLI (Command Line Interface)**
- **PPTP (Point-to-Point Tunneling Protocol)**
- **NTP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



# AP2620 VoIP Gateway Product Overview

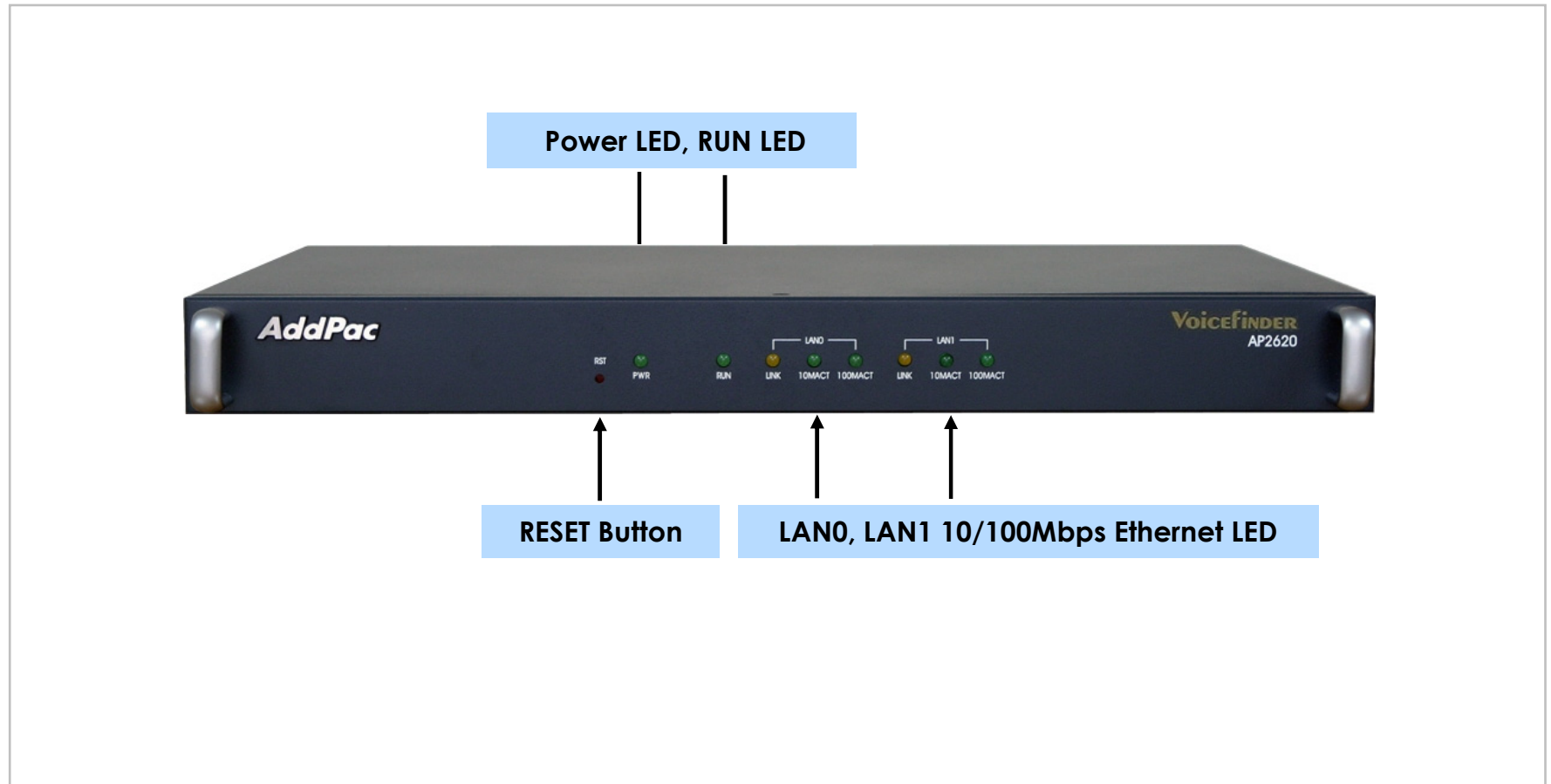
## VoIP Plug & Play System (VPMS)

- **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



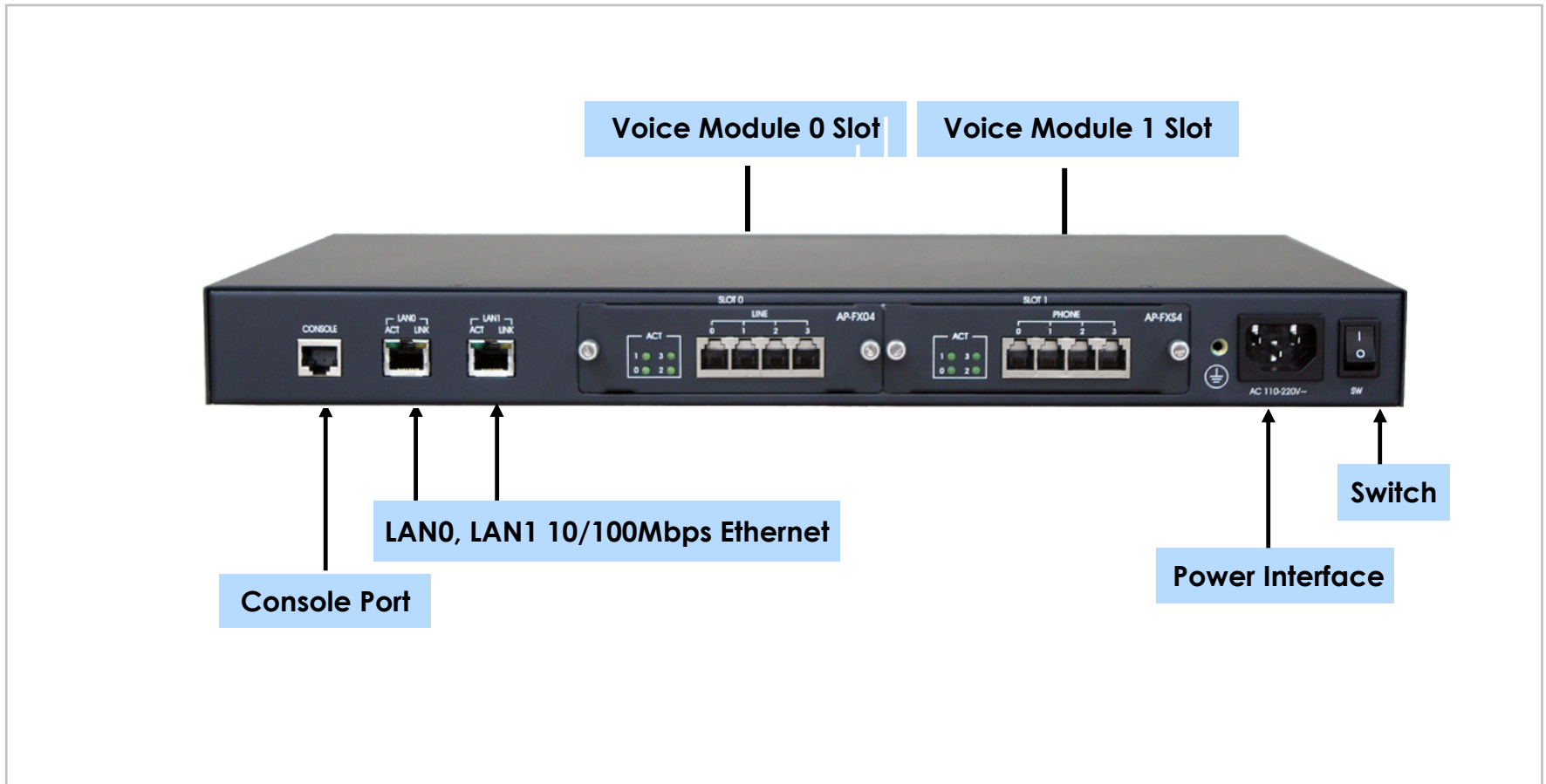
# AP2620 VoIP Gateway Product Overview

## AP2620 Network Configurations



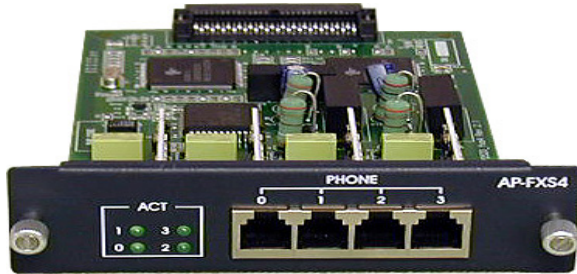
# AP2620 VoIP Gateway Product Overview

## AP2620 Hardware Specification

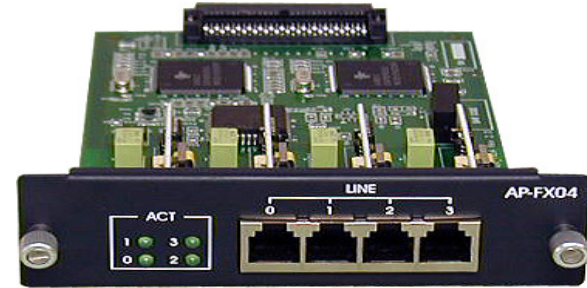


# AP2620 VoIP Gateway Product Overview

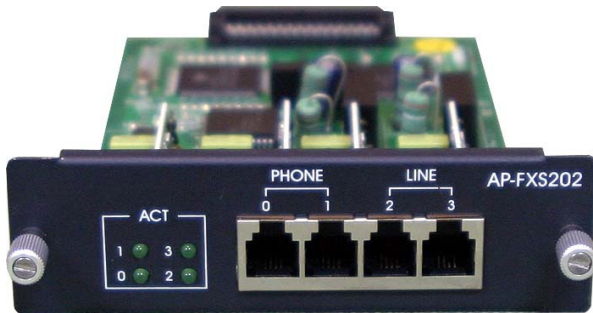
## AP2620 Analog Voice Module



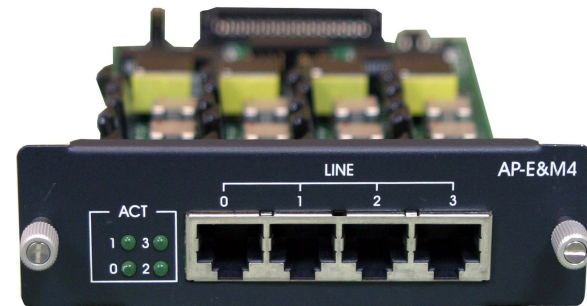
AP-FXS4 Module



AP-FXO4 Module



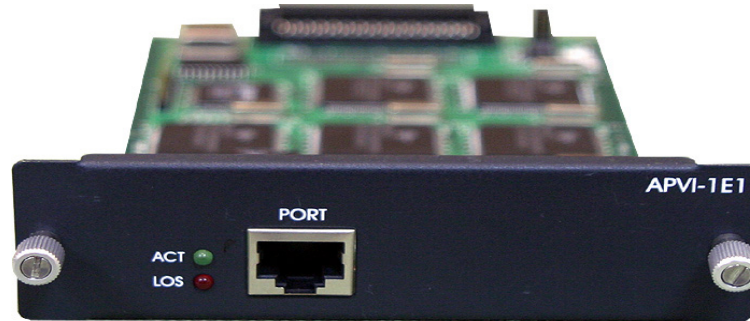
AP-FXS2, FXO2 Module



AP-E&M4 Module

# AP2620 VoIP Gateway Product Overview

## AP2620 Digital Voice Module



AP-E1 Module

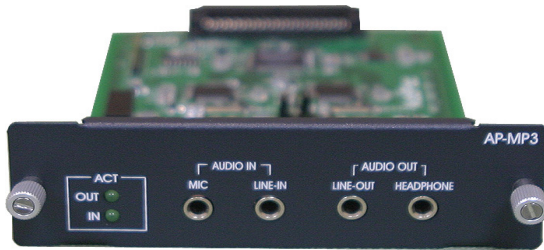


AP-T1 Module

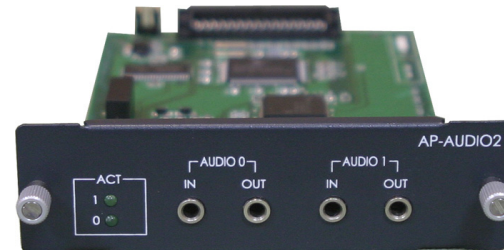


# AP2620 VoIP Gateway Product Overview

## AP2620 IP Broadcasting System Module



AP-MP3 Module (High Quality)



AP-AUDIO2 Module



AP-AUDIO1,FXS3 Module



AP-AUDIO1,FXO3 Module



AP-AUDIO1,FXS2, FXO1 Module

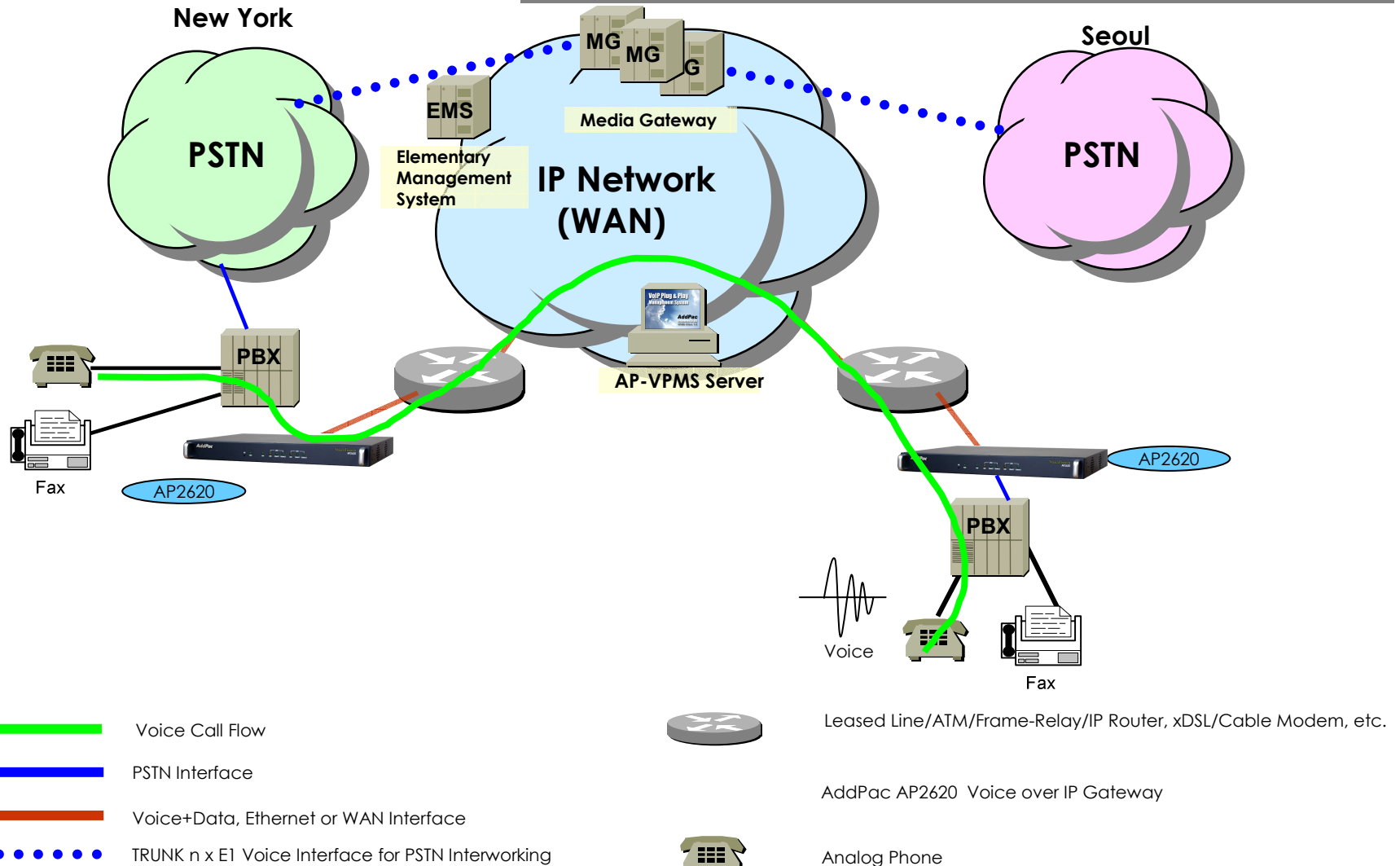
# AP2620 VoIP Gateway Product Overview

## AP2620 Hardware Specification

AP2620 VoIP G/W	Basic Specifications
CPU	Power PC 64Bit RISC Microprocessor
Voice Interface	Support Max. 2 E1 voice channels Support analog interface : 8 channels (FXS, FXO, E&M) Support Broadcasting System Module (MP3, Audio,etc)
Ethernet Interface	2-Ports 10/100Mbps Ethernet Interface(RJ-45)
Console Port	1-Port RS-232C Console Port(RJ-45)
Flash Memory	4Mbyte High-speed Flash Memory
Main Memory	32Mbyte High-speed SDRAM
Boot Memory	512Kbyte Flash Memory
Power Requirement	VAC110~220V, 50/60Hz, 25Watt
Operating Temperature	0°C ~ 45°C (32 °F ~ 112°F)
Storage Temperature	-40°C ~ 85°C (-40°C ~ 185°F)
Relative Humidity	5% ~ 95% (Non-condensing)
Dimensions	44mm x444mm x 220mm (H x W x D)
Weight (g)	2.2Kg

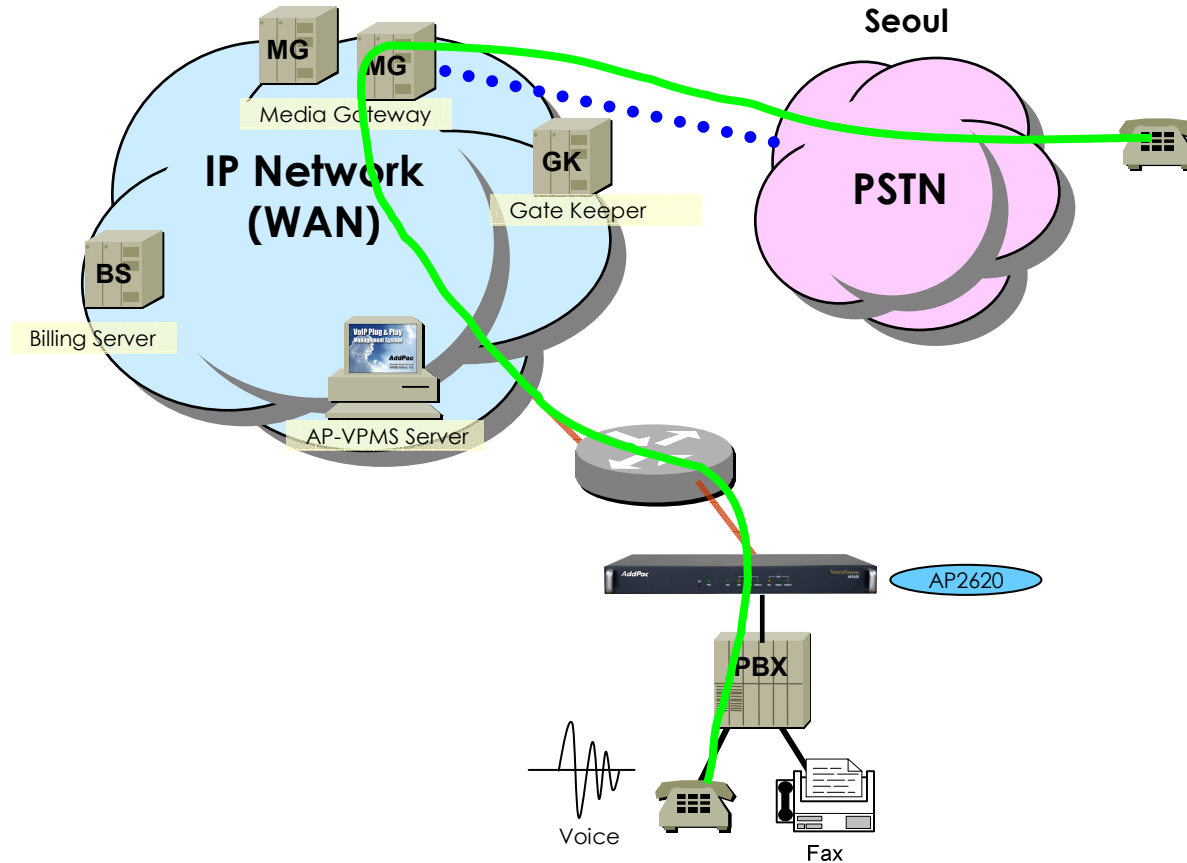
# AP2620 Voice Networking Configuration

## Inter-office calls



# AP2620 Voice Networking Configuration

## VoIP to PSTN Inter-working Call Flow

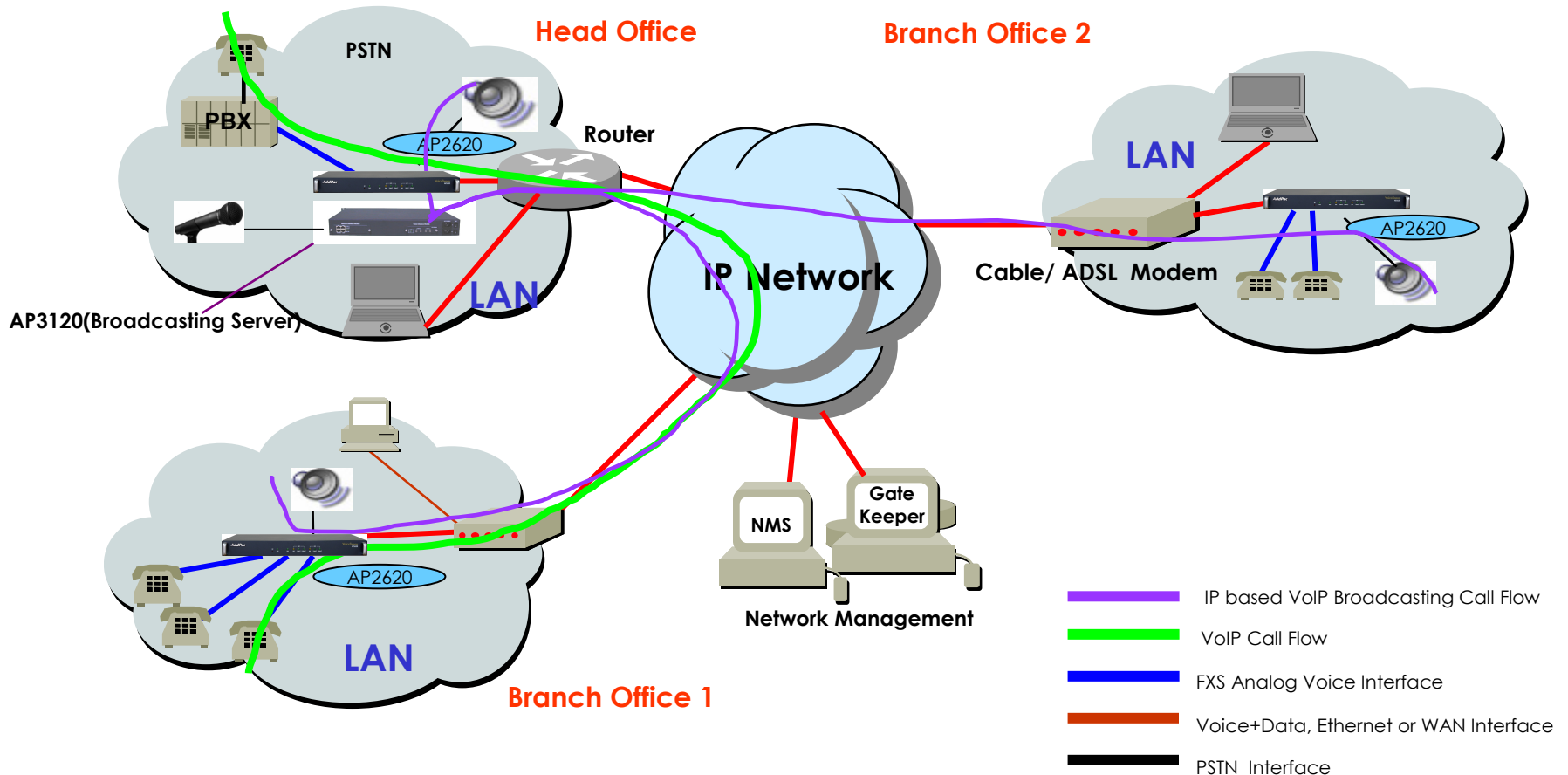


-  FXS Analog Voice Interface
-  Voice Call Flow
-  Voice+Data, Ethernet or WAN Interface
-  TRUNK n x E1 Voice Interface for PSTN Interworking
-  Leased Line/ATM/Frame-Relay/IP Router, xDSL/Cable Modem, etc.
-  AddPac AP2620 Voice over IP Gateway
-  Analog Phone



# AP2620 Voice Networking Configuration

## VoIP Broadcasting System Application



# AP2620 VoIP Gateway Product Overview

## AP2620 Ordering and Pricing

### • AP2620 VoIP Gateway

#### – VoIP Gateway Hardware

- Two(2) 10/100Mbps Fast Ethernet, One(1) Ethernet Console
- 64bit RISC CPU, 4MB Flash, 32MB SDRAM
- APOS v8.xx with Operation Manual
- Including CAB-LAN, CAB-CON

- 2620-FXS4      4Port FXS Interface Module
- 2620-FXO4      4Port FXO Interface Module
- 2620-E&M4      4Port E&M Interface Module
- 2620-FXS2O2    2Port FXS & 2Port FXO Interface Module
- APV1-1E1V      1 Port Digital E1 ISDN-PRI Network Module
- APV1-1T1V      1 Port Digital T1 ISDN-PRI Network Module
- AP-AUDIO2      Audio Module (4x 3.5mm Female)
- AP-AUD1S3      Audio/Voice Module(2x3.5mm Female / 3 x RJ11)
- AP-AUD1S2O1    Audio/Voice Module(2x3.5mm Female / 3 x RJ11)
- AP-AUD1O3      Audio/Voice Module(2x3.5mm Female / 3 x RJ11)
- AP-MP3          High Quality Audio Module (4x 3.5mm Female)



# AP2620 VoIP Gateway Product Overview

## AP2620 Ordering and Pricing


### • PRICING

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



# AP2620 VoIP Gateway Product Overview

## AP2620 Comparison Table

	AP2620 VoIP Gateway
▶ FXS Voice Ports (RJ11)	Up to 8
▶ FXO Voice Port (RJ11)	Up to 8
▶ E&M Voice Port(RJ45)	Up to 8
▶ Digital E1/T1 Voice Module	Up to 2
▶ 10/100 Mbps Ethernet Ports (RJ45)	2
▶ Console Ports (RJ45)	1
▶ CPU	PowerPC 64Bit RISC Microprocessor
▶ Flash Memory	4Mbyte
▶ Main Memory	32Mbyte
▶ Power Requirement	VAC 110~220V, 50/60Hz, 25Watt
▶ Internetworking OS	APOS
▶ H.323, SIP VoIP Protocol, T38 FAX, MGCP	YES
▶ PPPoE, PPTP Network Protocols	YES
▶ Enhanced QoS Management Feature	YES
▶ IP Routing Protocols Including NAT	YES
▶ Network Management Protocols	YES
▶ Support Network Environments	ADSL, VDSL, Cable Modem, Leased Line, ATM, Frame-Relay, Including Conventional Broad Band Networking



**Thank you !**

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