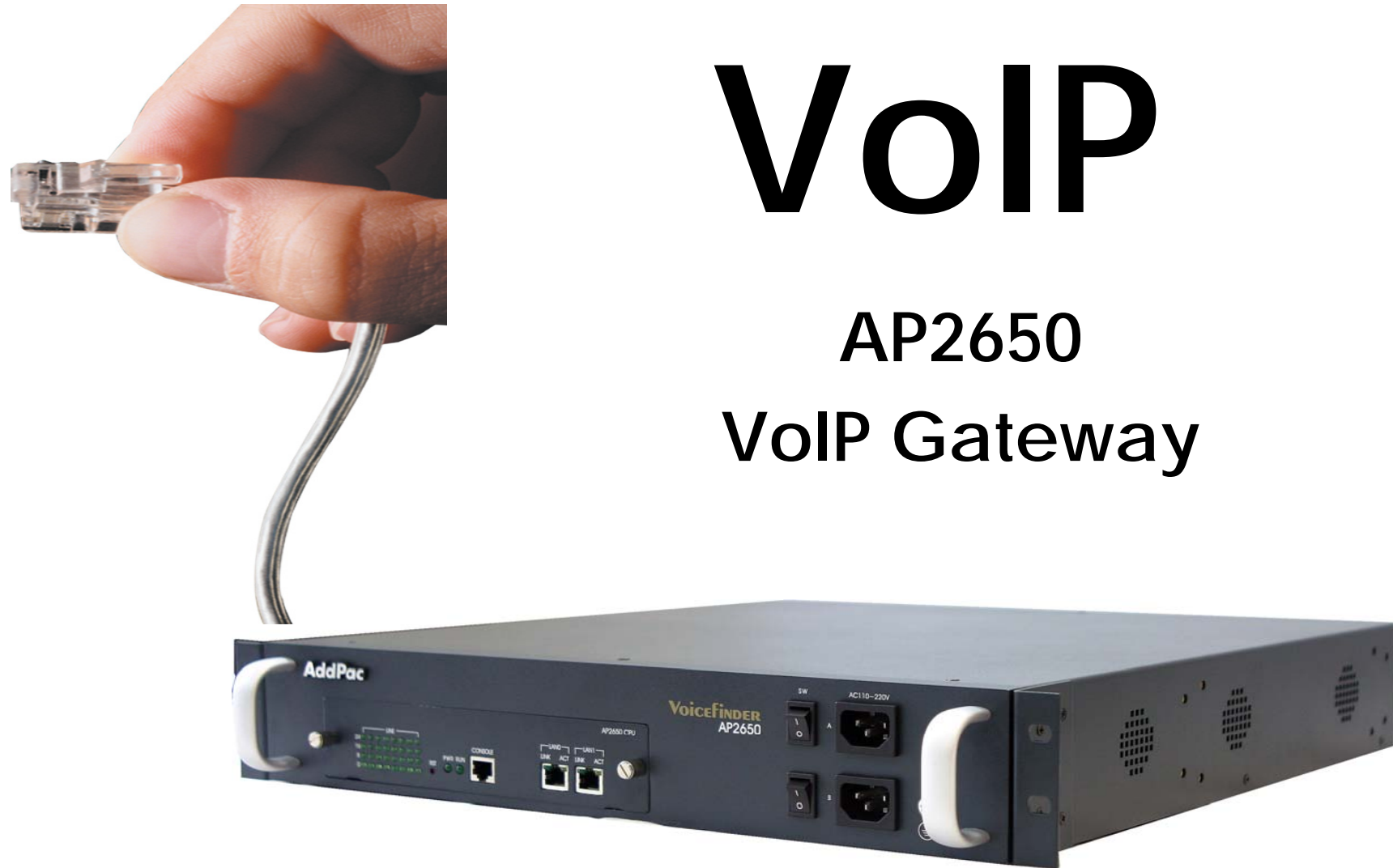


# VoIP

AP2650

VoIP Gateway



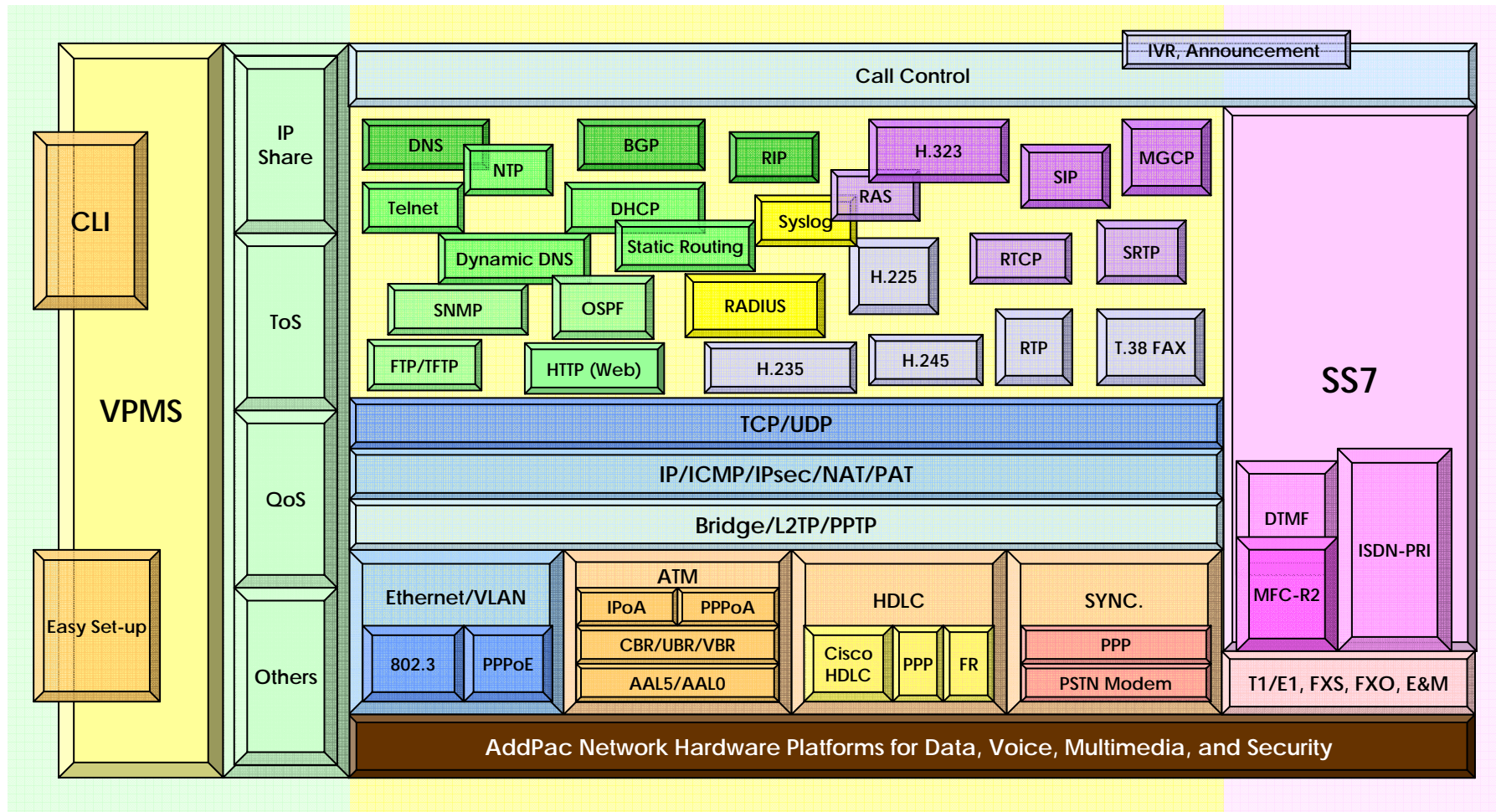
Technical Sales and Marketing

AddPac Technology

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# AP2650 VoIP Gateway Product Overview

## APOS Internetworking Protocol Stack

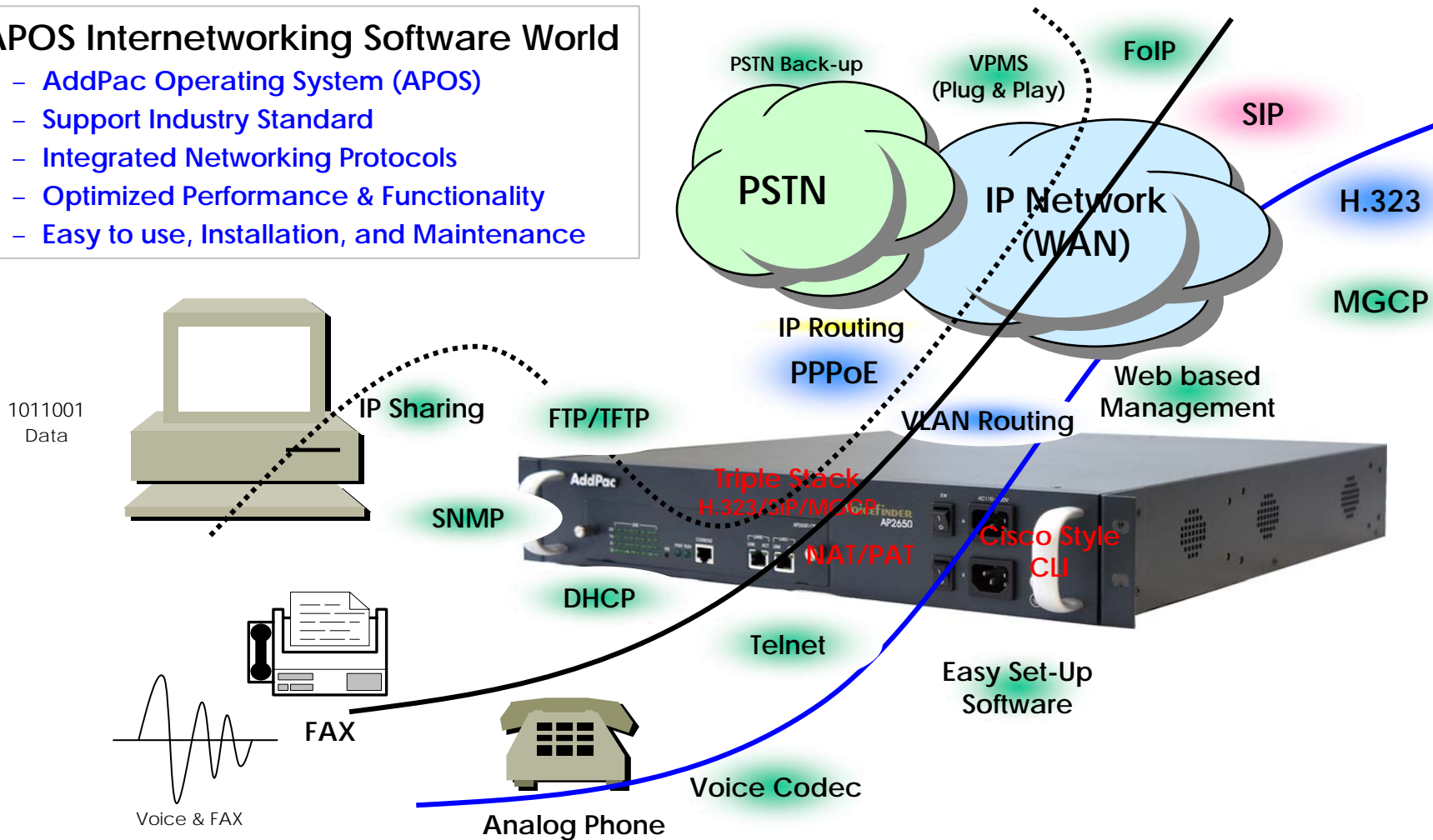


# AP2650 VoIP Gateway Product Overview

## 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

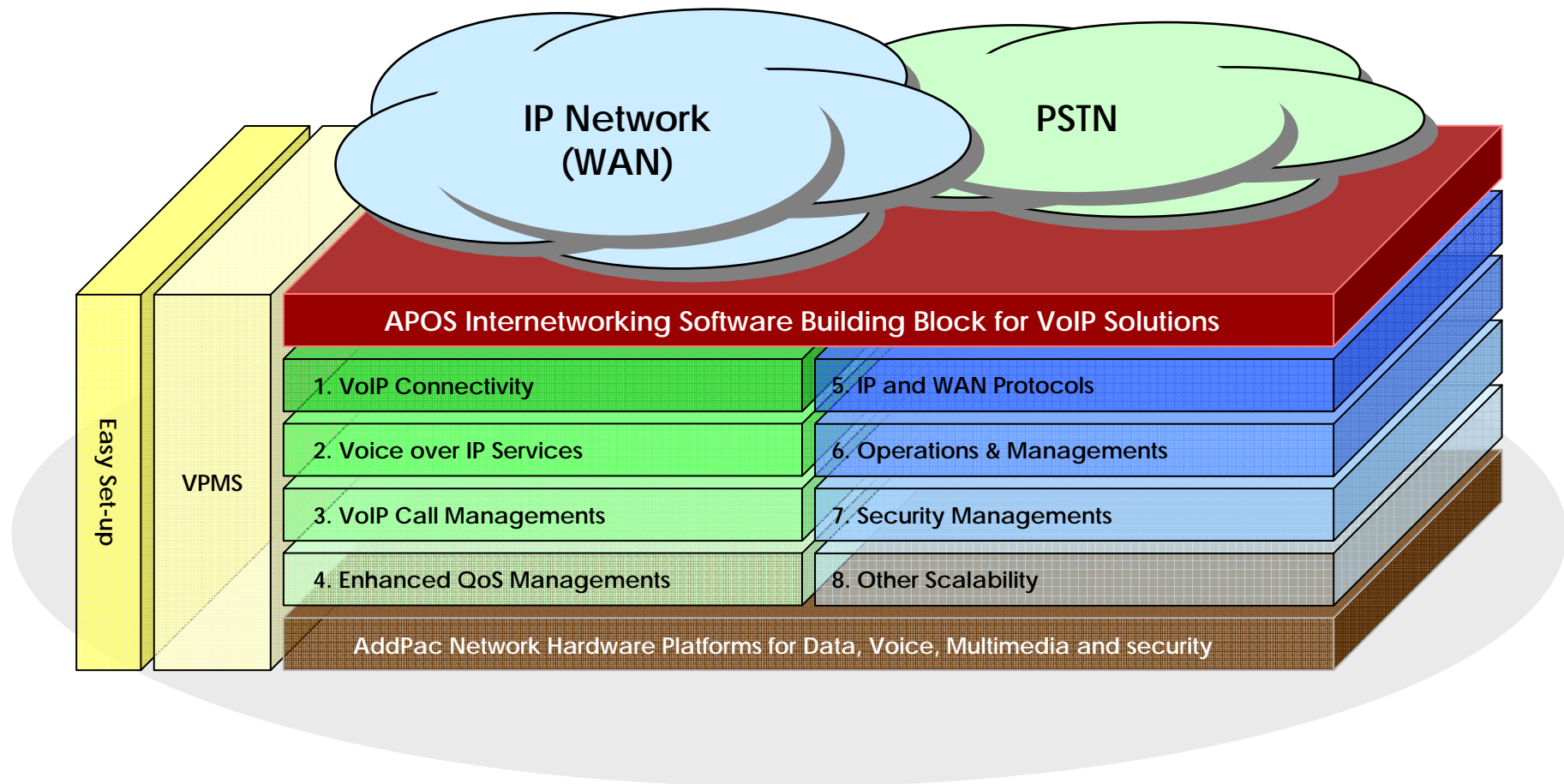


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# AP2650 VoIP Gateway Product Overview

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



# AP2650 VoIP Gateway Product Overview

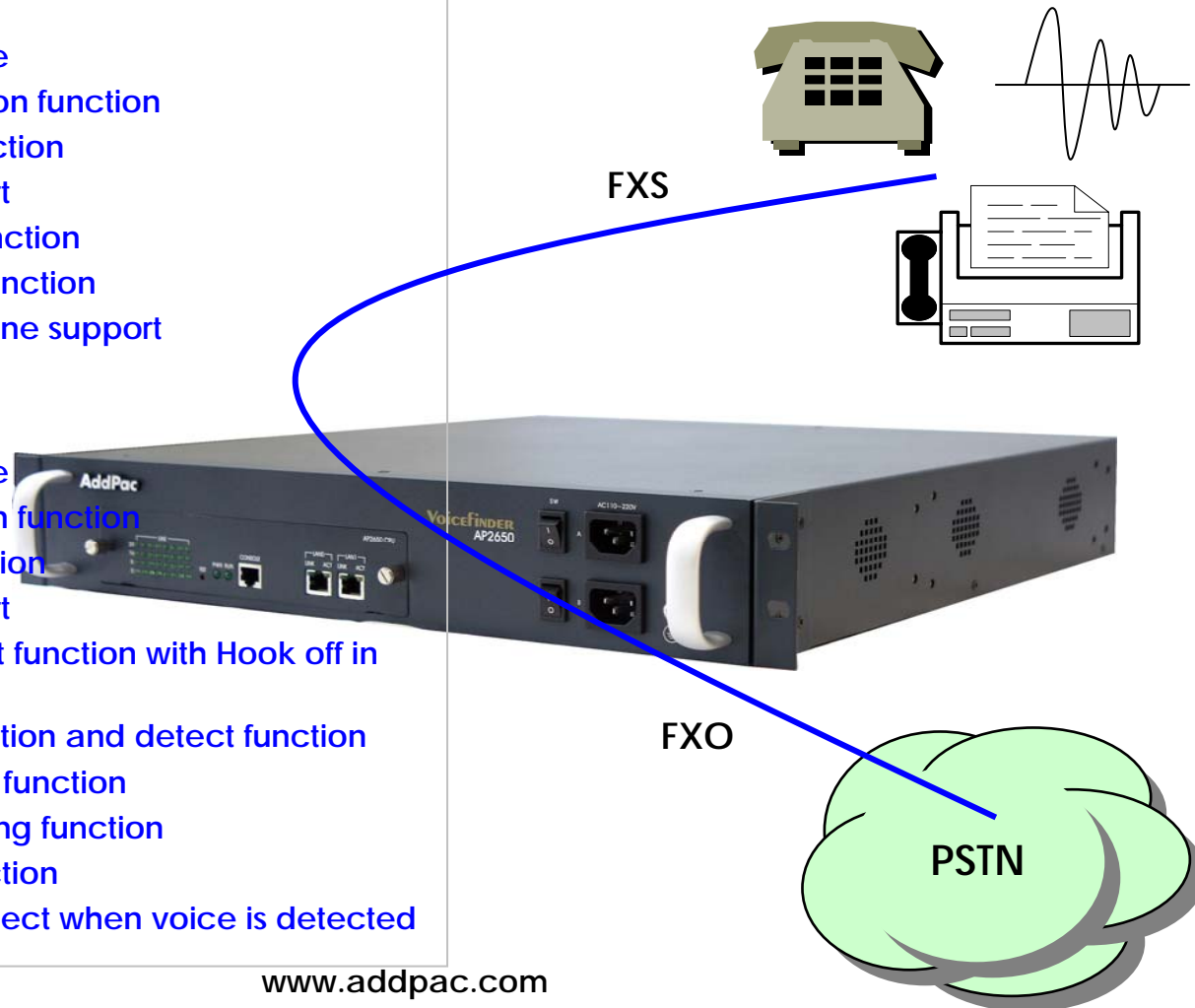
## VoIP Gateway Connectivity

### • 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

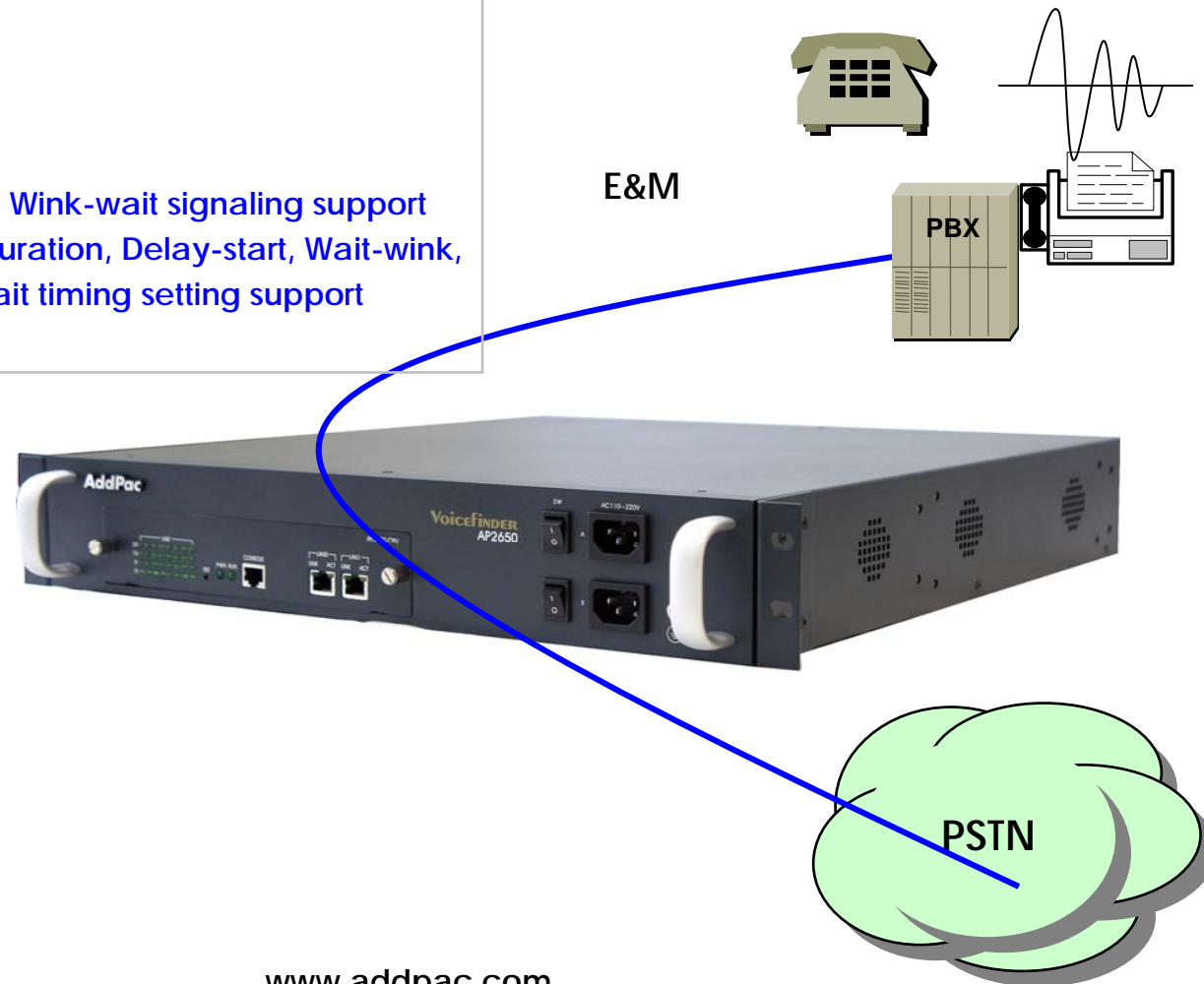


# AP2650 VoIP Gateway Product Overview

## 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

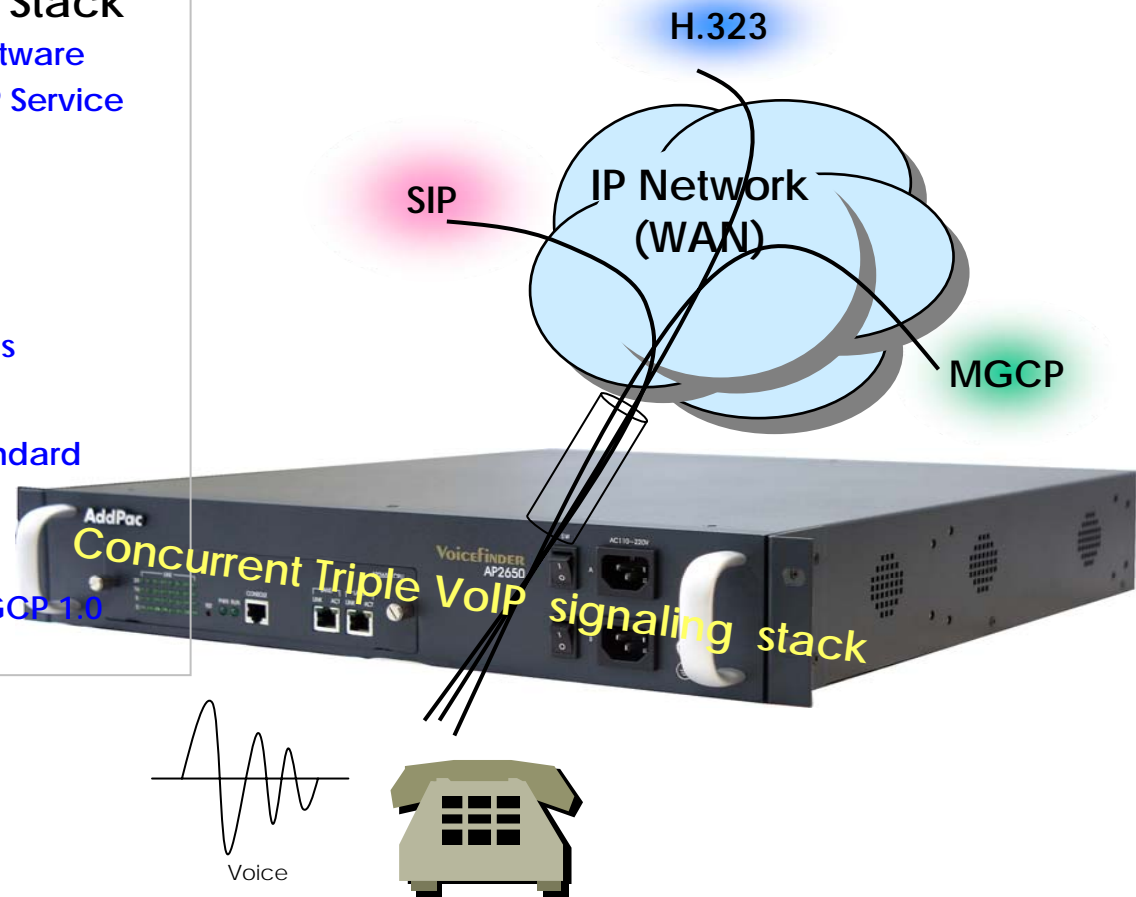




# AP2650 VoIP Gateway Product Overview

## 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



# AP2650 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





# AP2650 VoIP Gateway Product Overview

## Voice over IP Service (cont.)

### • Voice Codec

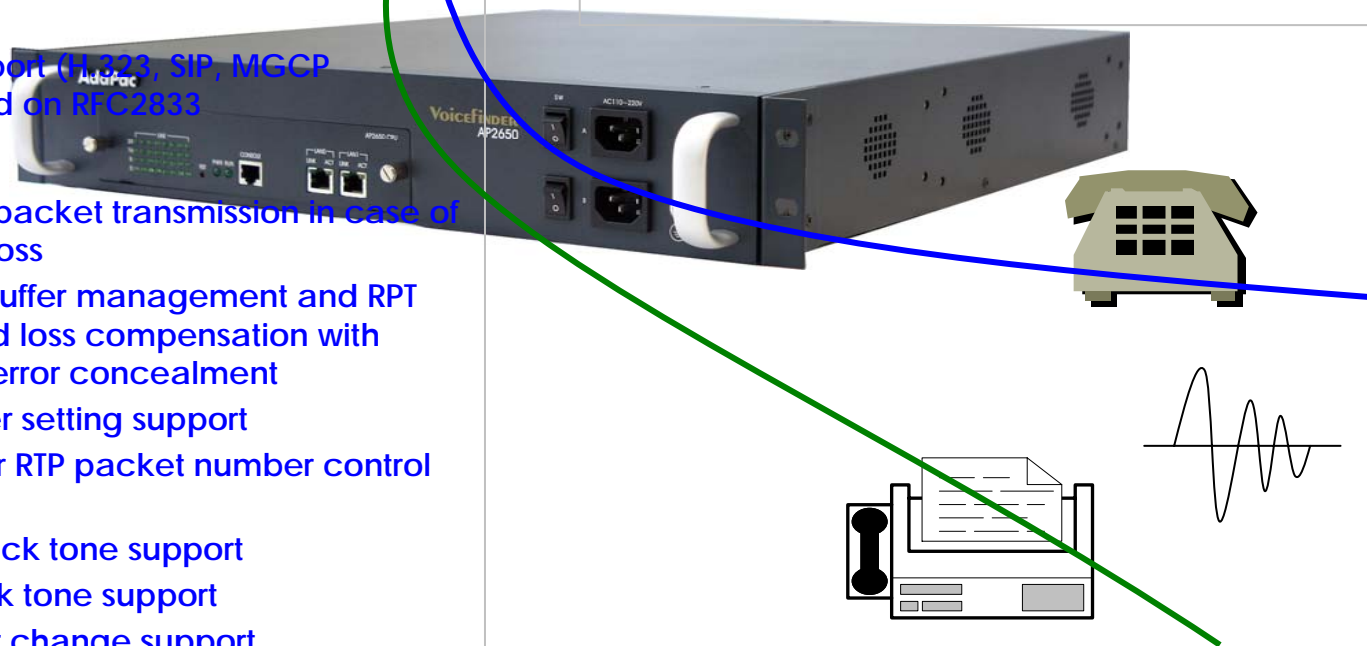
- G.711 A-Law, G.711 U-Law
- G.726 r16, G.726 r32
- G.729A
- G.723.1 r63, G.723.1 r53
- VAD (Voice Activity Detection) function support
- DTMF relay support (H.223, SIP, MGCP common) based on RFC2833

### • 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



# AP2650 VoIP Gateway Product Overview

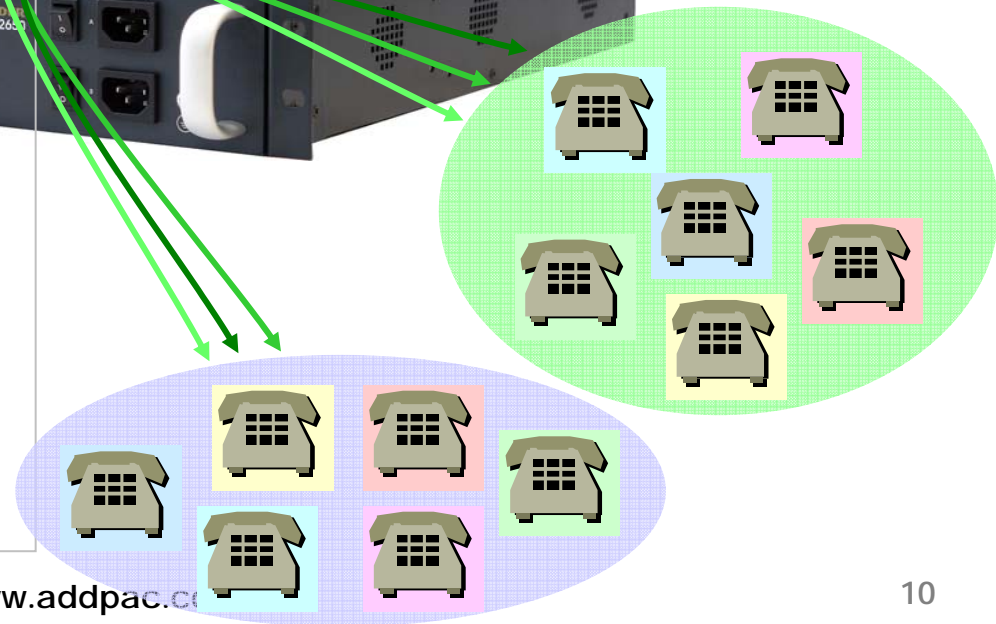
## VoIP Call Managements

### • 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



# AP2650 VoIP Gateway Product Overview

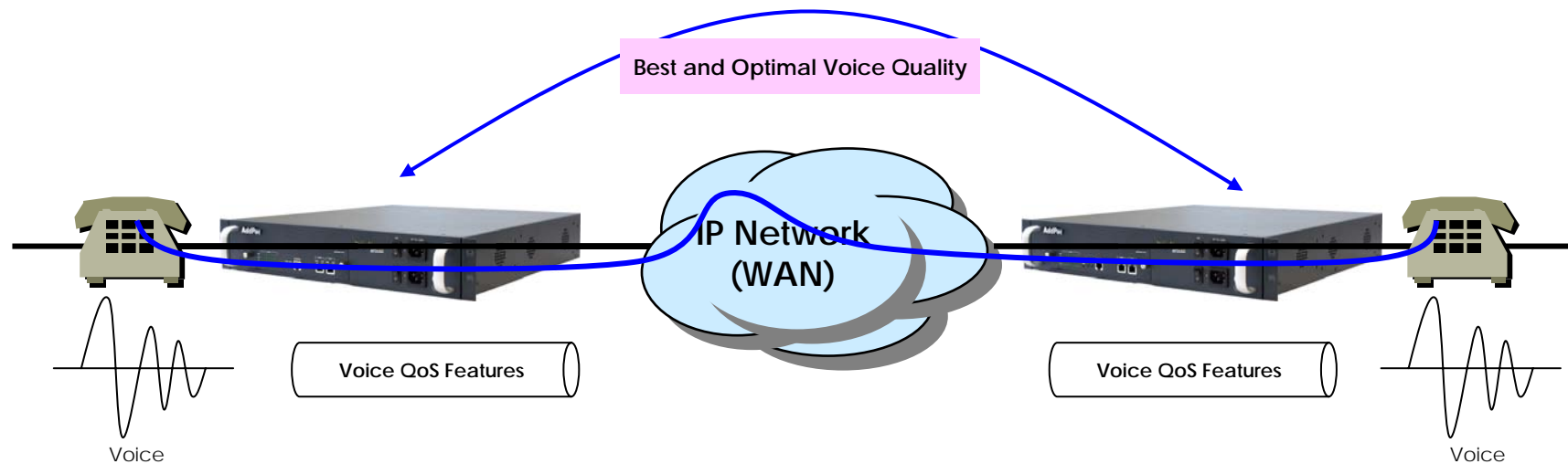
## Enhances QoS Managements

- 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

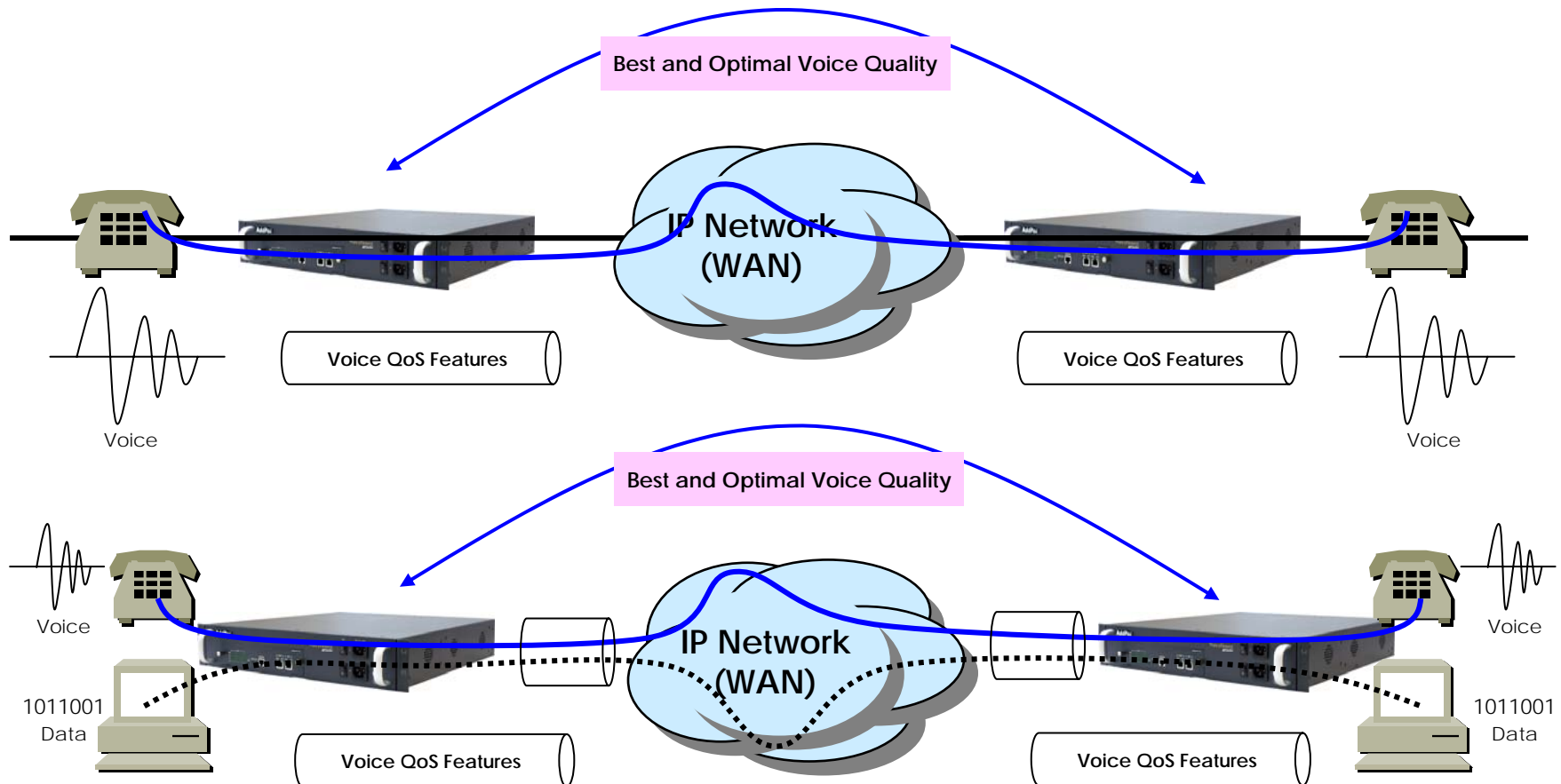
- Enhances **Receive** Voice QoS Features

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



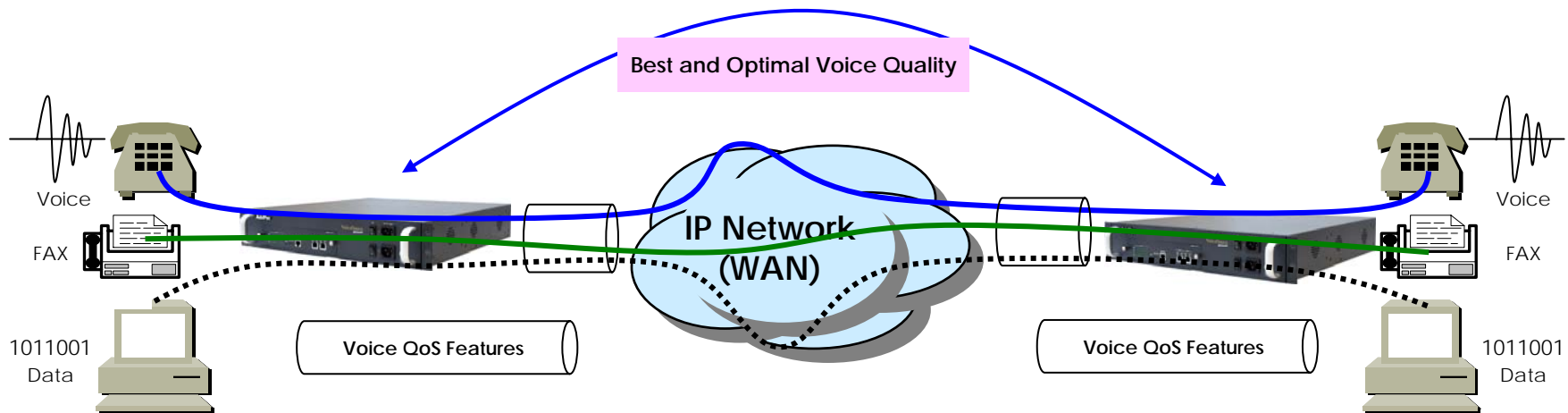
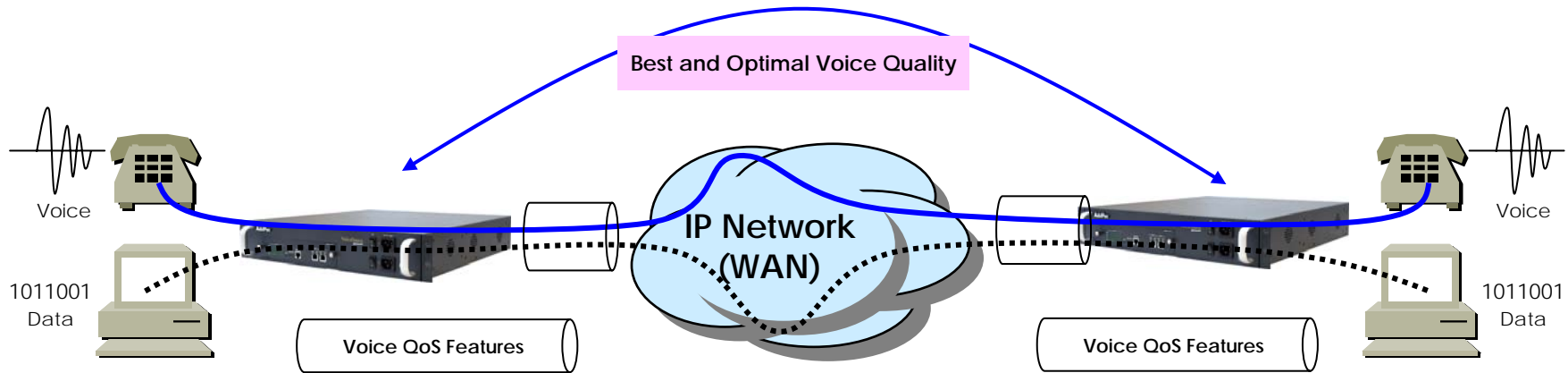
# AP2650 VoIP Gateway Product Overview

## Enhances QoS Managements (cont.)



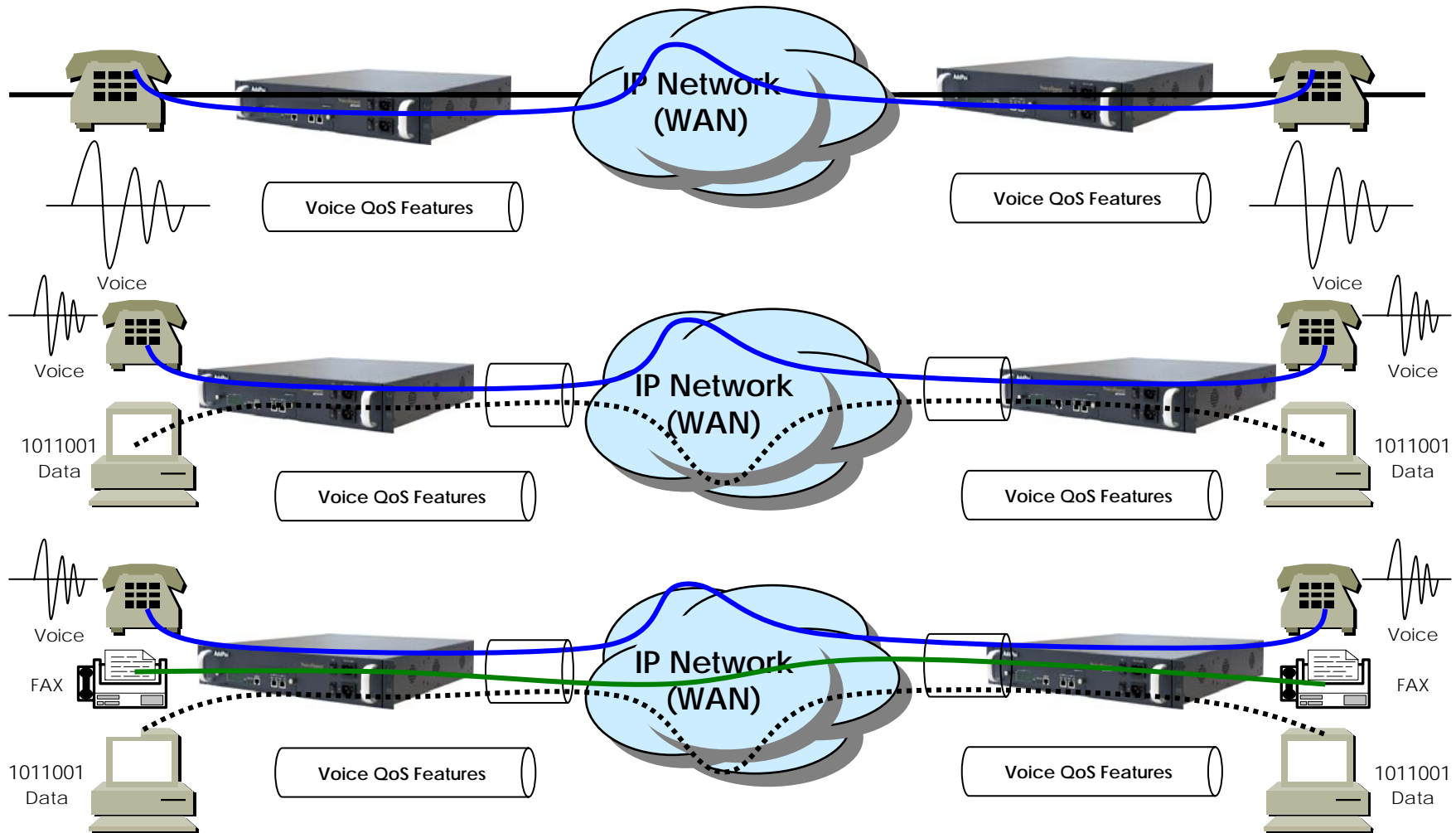
# AP2650 VoIP Gateway Product Overview

## Enhances QoS Managements (cont.)



# AP2650 VoIP Gateway Product Overview

## Enhances QoS Managements (cont.)





# AP2650 VoIP Gateway Product Overview

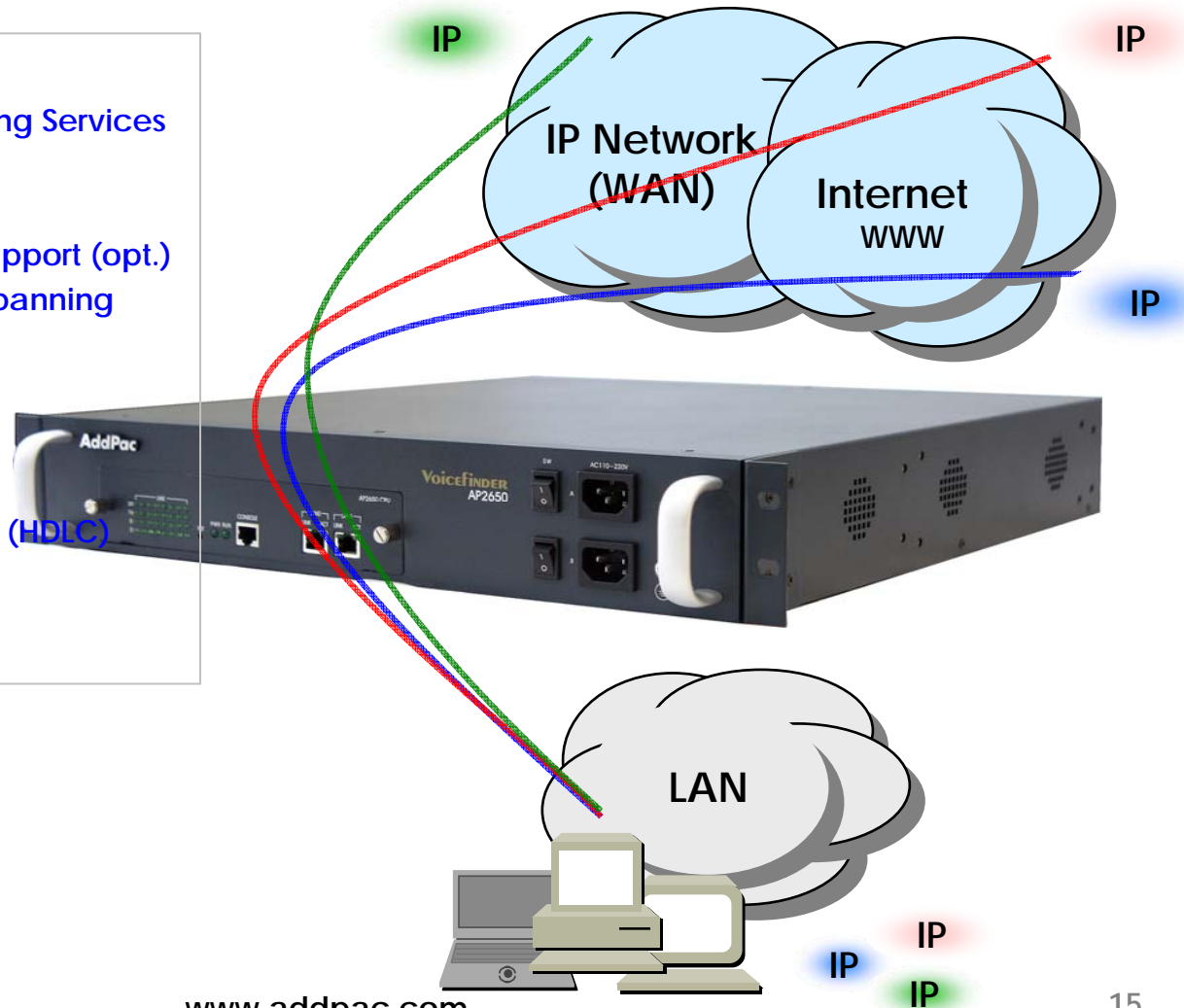
## IP and WAN Protocols

- 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



# AP2650 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**

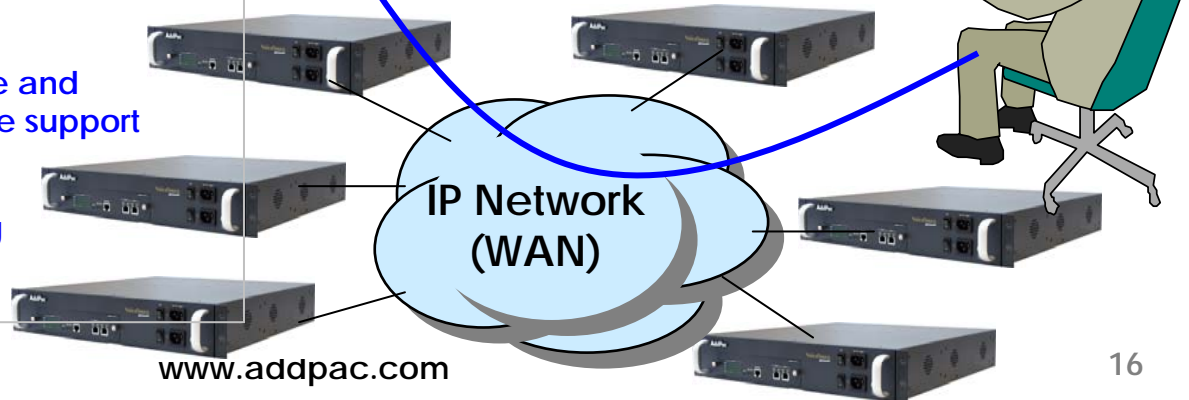
- Text based script downloading

- **Easy Set-up Service**

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

- **Interoperable with AP-VPMS Service**

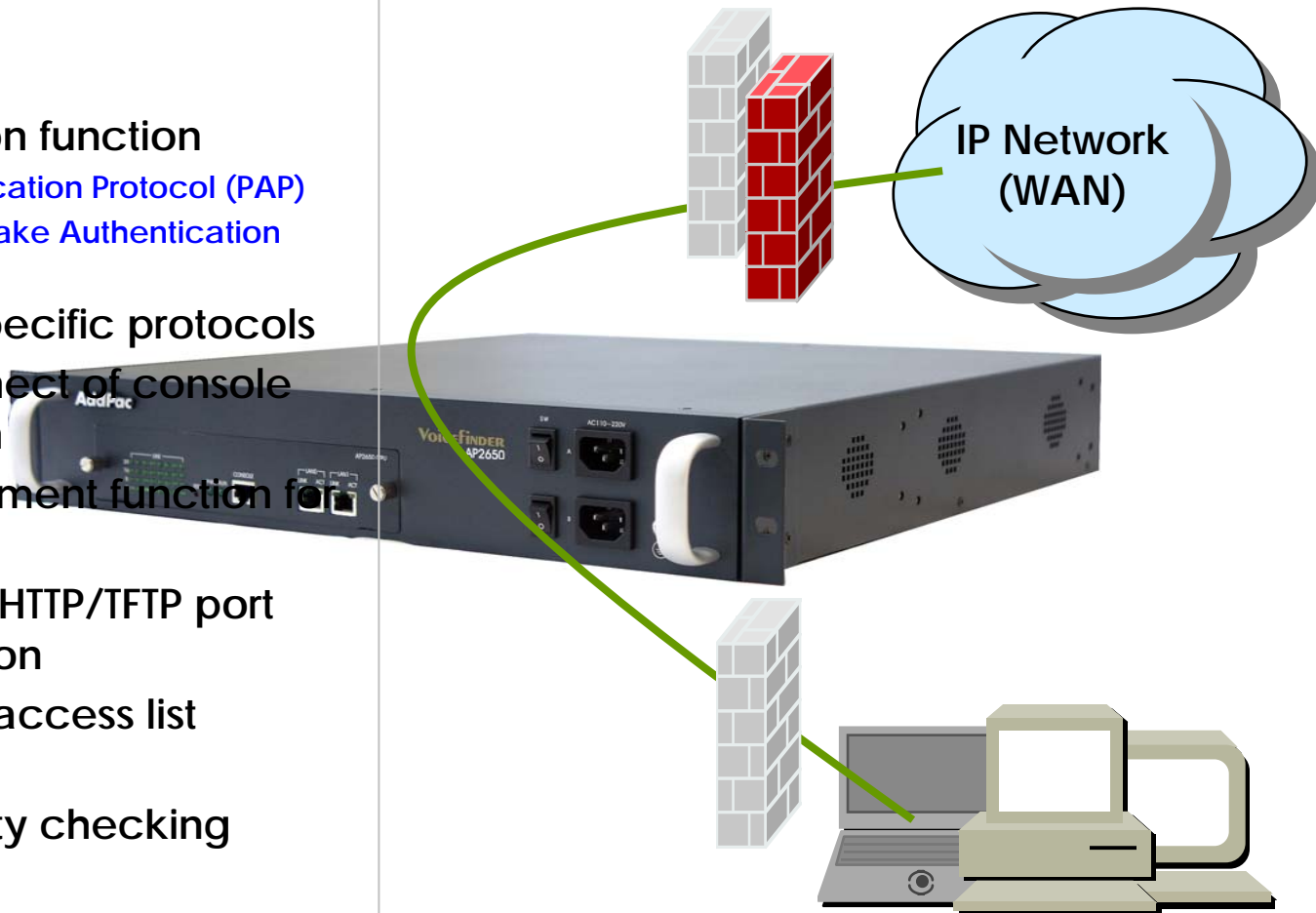
- AddPac VoIP Plug & Play Management System (AP-VPMS)



# AP2650 VoIP Gateway Product Overview

## Security Managements

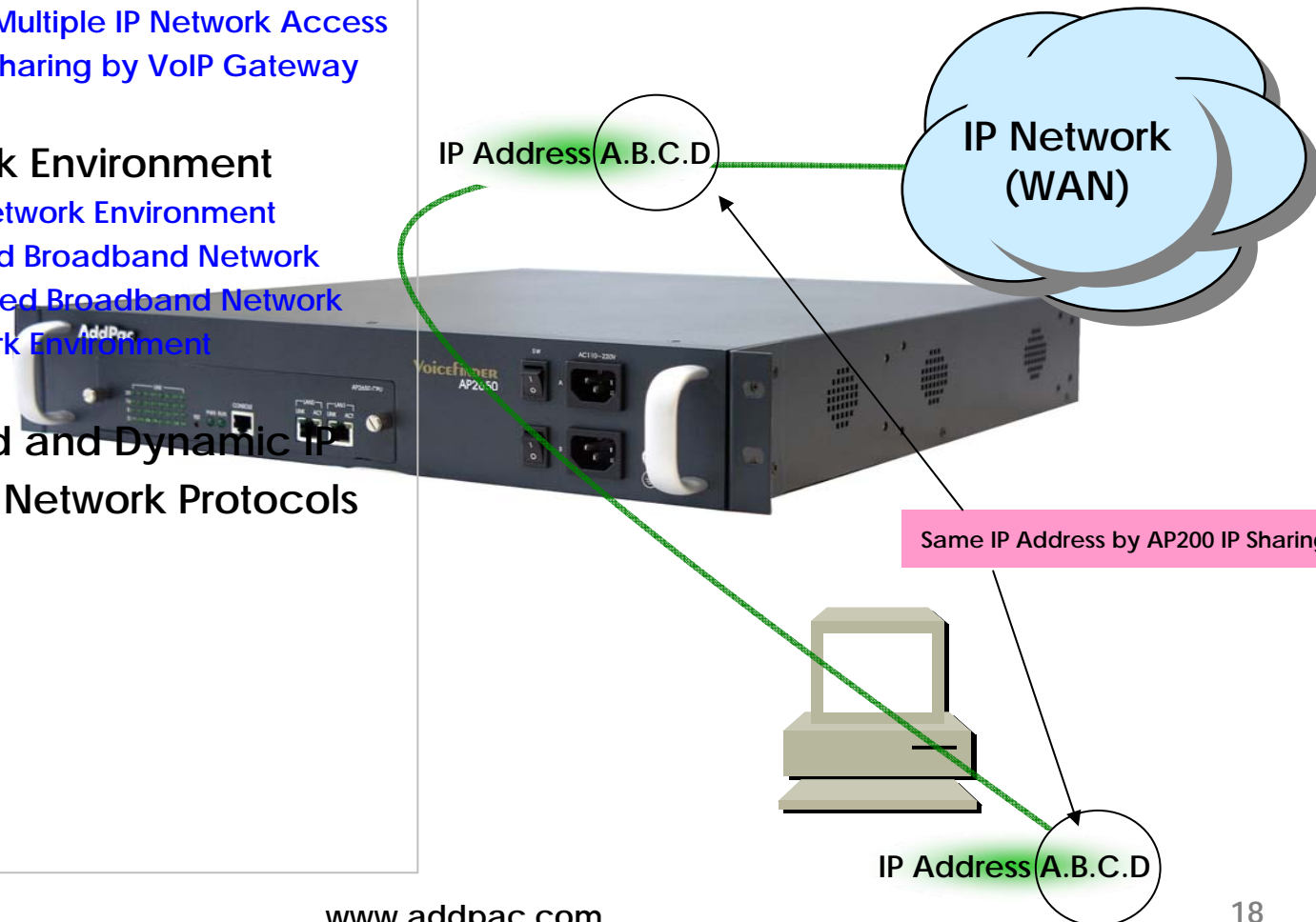
- IP packet filtering
- IP access list
- User authentication function
  - Password Authentication Protocol (PAP)
  - Challenge Handshake Authentication Protocol (CHAP)
- Enable/Disable specific protocols
- Auto-square connect of console and Telnet session
- Account Management function for multi-level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



# AP2650 VoIP Gateway Product Overview

## Network Scalability

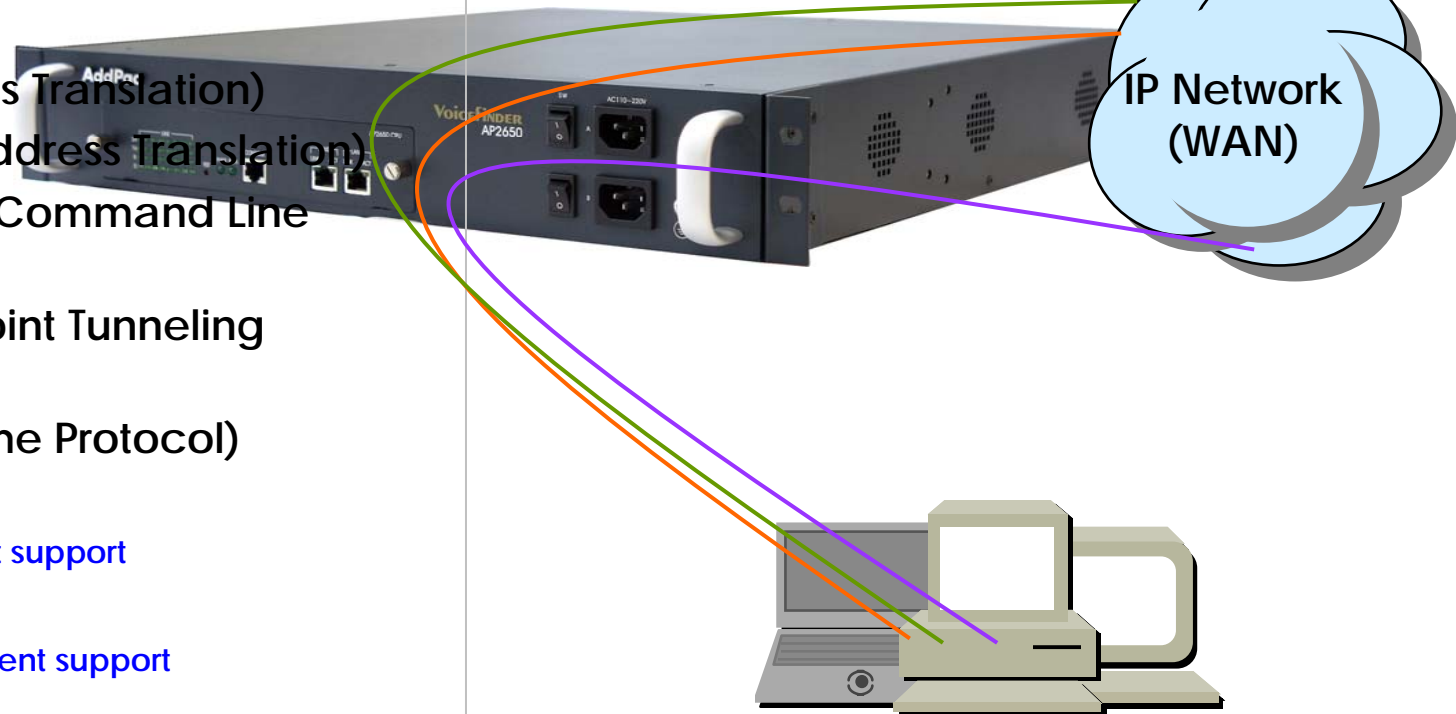
- IP Sharing Feature
  - Single IP Address, Multiple IP Network Access
  - Public IP Address Sharing by VoIP Gateway
- IP Sharing Network Environment
  - Support Legacy Network Environment
  - xDSL Modem based Broadband Network
  - Cable Modem based Broadband Network
  - Leased line Network Environment
- Both support Fixed and Dynamic IP
- Support Standard Network Protocols
  - PPPoE
  - PPPTP
  - DHCP



# AP2650 VoIP Gateway Product Overview

## Network Scalability (cont.)

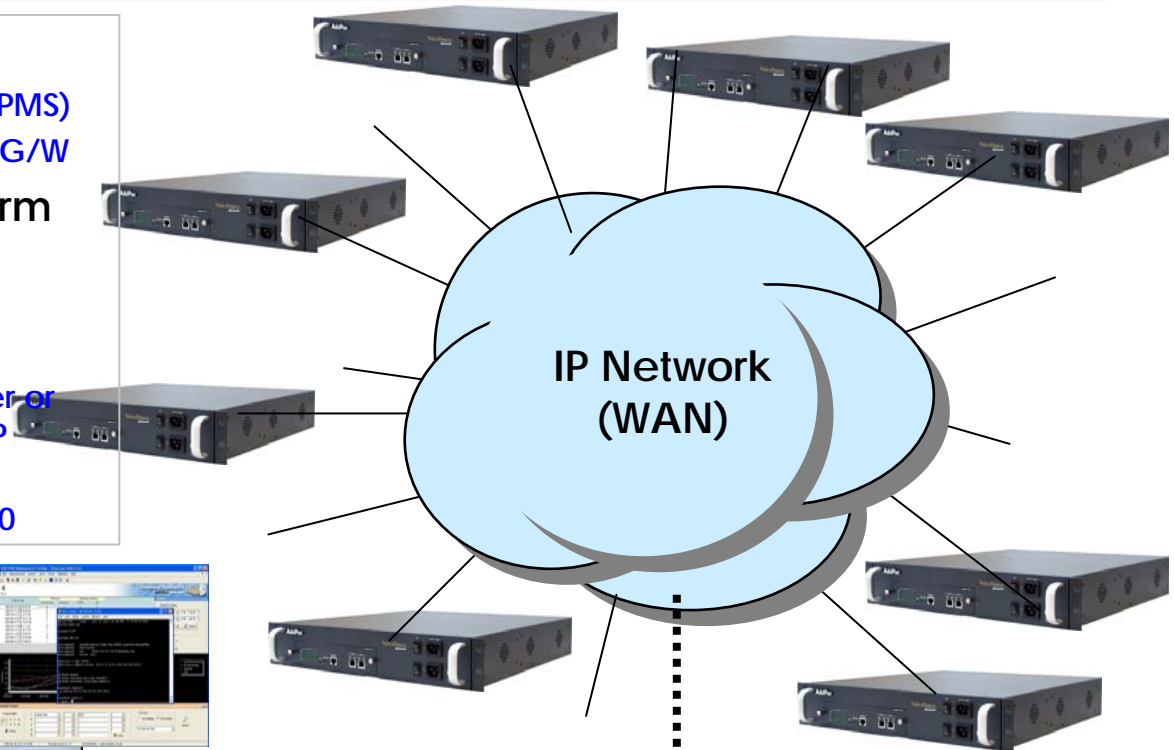
- Bridging Service
  - Spanning Tree Bridging protocol (IEEE) support
- DHCP
  - Server and Relay
- IP Accounting
- PAT (Port Address Translation)
- NAT (Network Address Translation)
- Cisco Style CLI (Command Line Interface)
- PPTP (Point-to-Point Tunneling Protocol)
- NTP (Network Time Protocol)
-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



# AP2650 VoIP Gateway Product Overview

## VoIP Plug & Play System (VPMS)

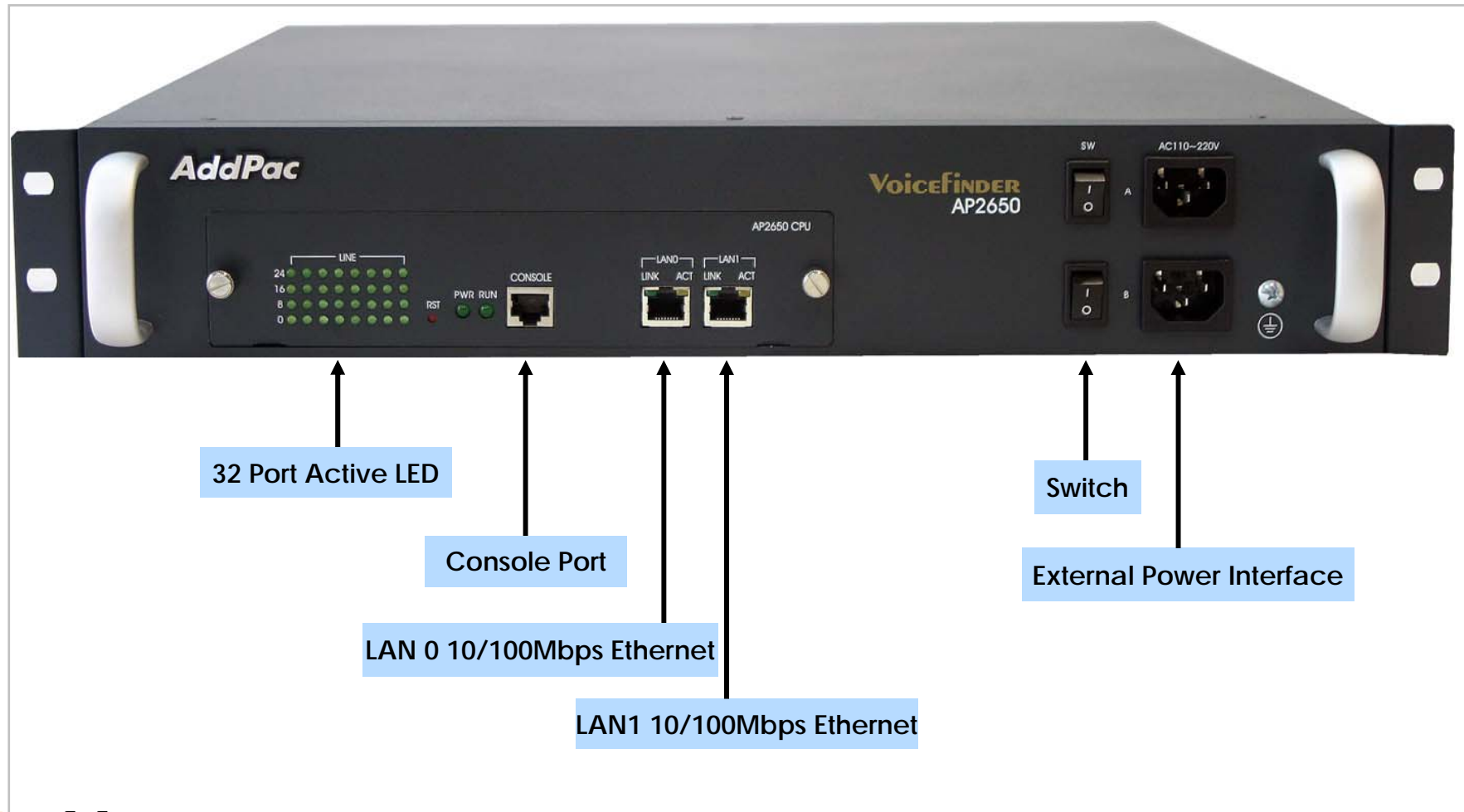
- AddPac AP-VPMS Support
  - AddPac VoIP Plug & Play System (VPMS)
  - Best EMS Solutions for AddPac VoIP G/W
- Requirements Hardware Platform
  - Over 1GHz Intel Pentium 4 Machine
  - Over 1GB Main Memory
  - Over 40GB Hard Disk Memory
  - Microsoft Windows Advanced Server or Windows 2000 Server or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





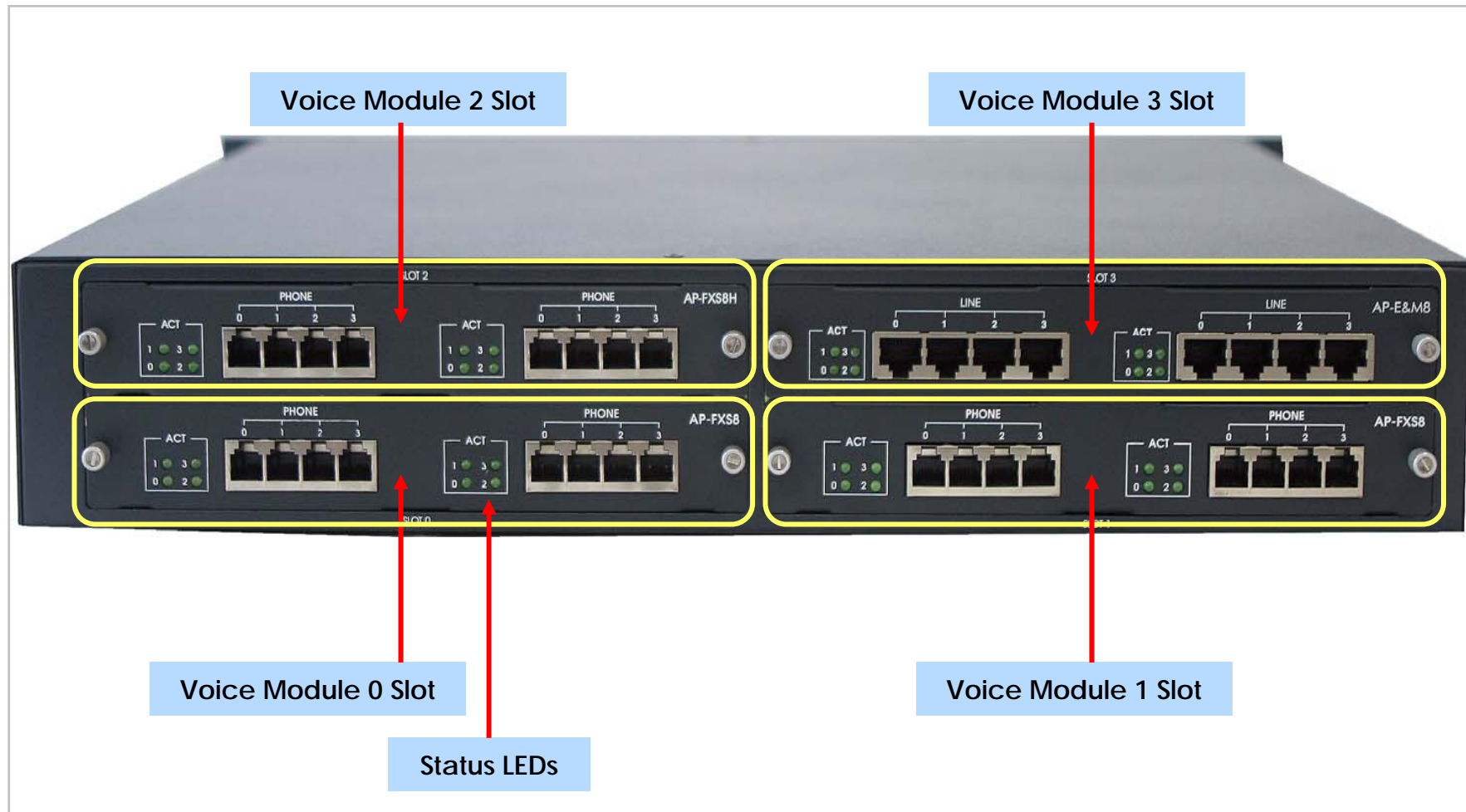
# AP2650 VoIP Gateway Product Overview

## AP2650 Network Configurations



# AP2650 VoIP Gateway Product Overview

## AP2650 Hardware Specification



# AP2650 VoIP Gateway Product Overview

## AP2650 Analog Voice Module



AP-FXS8 Module



AP-FXO8 Module



AP-FXS4O4 Module



AP-E&M8 Module

# AP2650 VoIP Gateway Product Overview

## AP2650 Analog Voice Module



AP-FXS4P4 Module

# AP2650 VoIP Gateway Product Overview

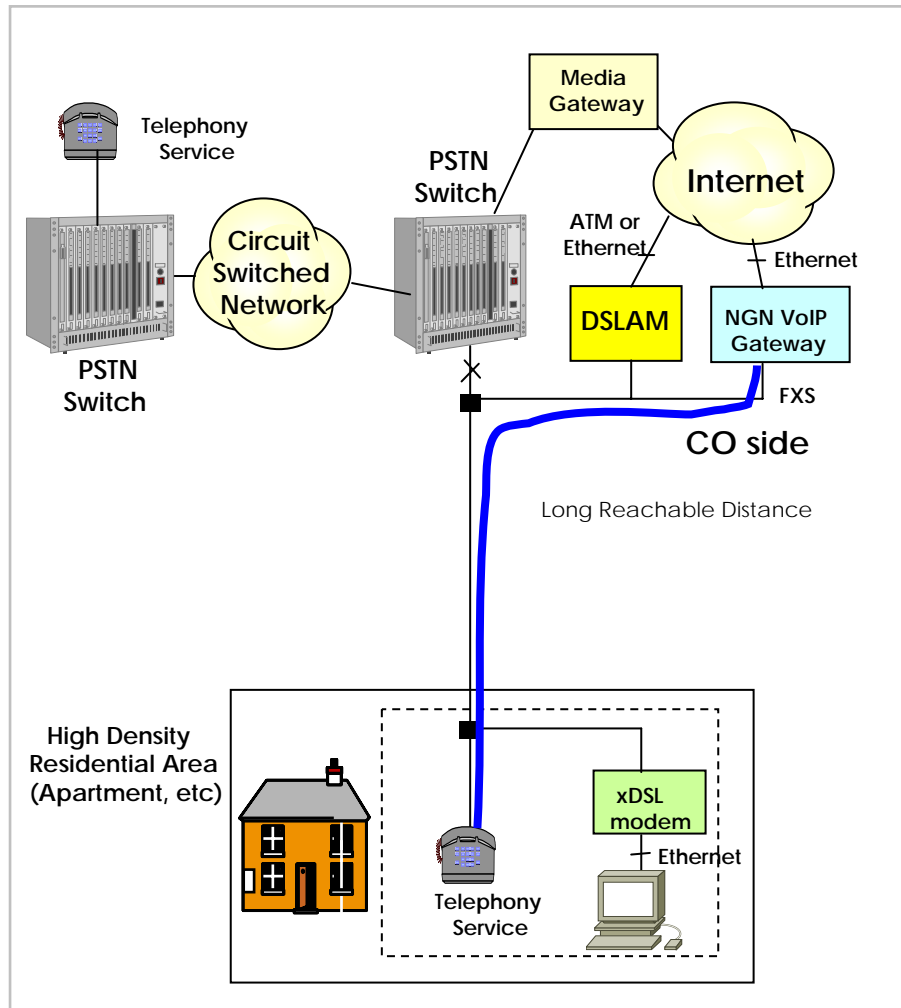
## AP2650 Voice Module (NGN)



AP-FXS8H Module

### • Product Highlight

- ✓ Supports Long reachable distance  
(Between telephones & VoIP switching gateway)
- ✓ Powerful surge protection  
(central exchange and MDF installation)
- ✓ Noise immunity with built-in LPF function (ADSL/ VDSL)
- ✓ Supports existing PSTN numbering plan
- ✓ Centralized management  
(reduced maintenance expenses)
- ✓ Supports powerful ringing for various analog phone
- ✓ Supports caller ID
- ✓ Simplified, distributed IP telephone switching



# AP2650 VoIP Gateway Product Overview

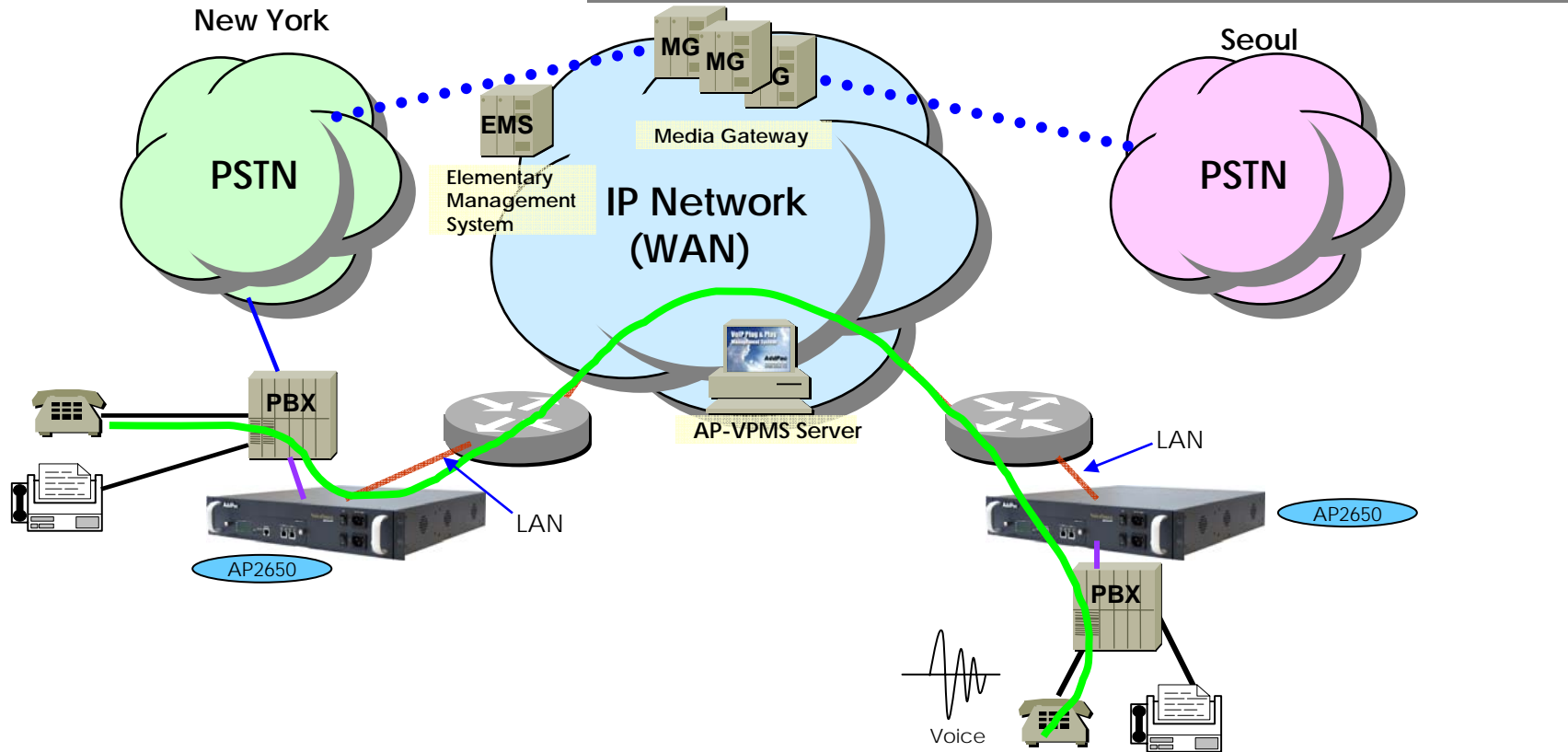
## AP2650 Hardware Specification

| AP2650 VoIP G/W       | Basic Specifications   |
|-----------------------|--|
| CPU Module            | PowerPC RISC Microprocessor  |
| Voice Interface       | 8-Ports FXS,8-Ports FXO,8-Ports E&M, FXS4O4,FXS4P4 Voice Interface |
| Ethernet Interface    | 2-Ports 10/100Mbps Ethernet Interface(RJ-45)                       |
| Console Port          | 1-Port RS-232C Console Port(RJ-45)                                 |
| Flash Memory          | 8Mbyte High-speed Flash Memory                                     |
| Base Memory           | 64Mbyte High-speed SDRAM   |
| Boot Memory           | 512Kbyte Flash Memory  |
| Power Requirement     | Dual Power Supply(Power Redundancy), VAC110~220V, 50/60Hz, 100Watt |
| Operating Temperature | 0°C ~ 50°C (32 °F ~ 122°F)   |
| Storage Temperature   | -40°C ~ 85°C (-40°C ~ 185°F)                                       |
| Relative Humidity     | 5% ~ 95% (Non-condensing)  |
| Dimensions            | 77mm x440mm x 450mm (H x W x D)                                    |
| Weight (g)            | 5.1kg  |






# AP2650 Voice Networking Configuration

## Inter-office calls

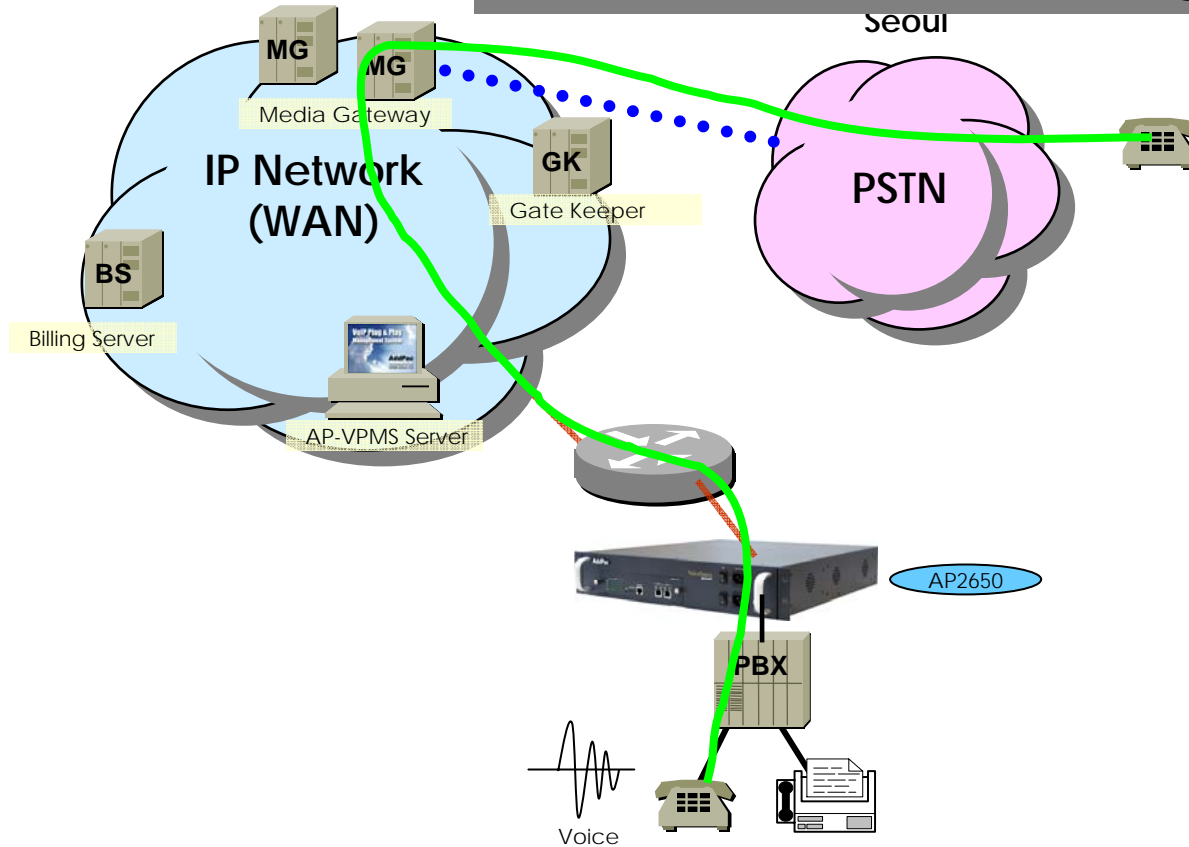


- Voice Call Flow
- PSTN Interface
- Voice+Data, Ethernet or WAN Interface
- TRUNK n x E1 Voice Interface for PSTN Interworking

-  Leased Line/ATM/Frame-Relay/IP Router, xDSL/Cable Modem, etc.
-  AddPac AP2650 Voice over IP Gateway
-  Analog Phone

# AP2650 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 AP2650 Voice over IP Gateway

Analog Phone

# AP2650 VoIP Gateway Product Overview

## AP2650 Ordering and Pricing

- **AP2650 VoIP Gateway**

- VoIP Gateway Hardware

- Two(2)Fast Ethernet, One(1) Console
    - 4 Voice Interface Modules
    - 32bit RISC CPU, 8MB Flash, 64MB SDRAM, CPU Module Type
    - Dual Power Supply
    - APOS v5.xx with Operation Manual
    - Including CAB-LAN, CAB-CON


- AP-FXS8           8Port FXS Interface Module
    - AP-FXS8H       8Port NGN FXS Interface Module
    - AP-FXO8         8Port FXO Interface Module
    - AP-E&M8         8Port E&M Interface Module
    - AP-FXS4O4      4Port FXS & 4Port FXO Interface Module
    - AP-FXS4P4      4Port FXS & 4Port PSTN Backup Interface Module
    - APV1-2E1/T1    Two(2) Ports Digital E1/T1 Interface Module

- **Pricing**

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

# AP2650 VoIP Gateway Product Overview

## AP2650 Comparison Table

|  | AP2650 VoIP Gateway  |
|---|--|
| ▶ FXS Voice Ports (RJ11)  | Up to 32   |
| ▶ FXO Voice Port (RJ11)   | Up to 32   |
| ▶ E&M Voice Module  | Up to 32   |
| ▶ Digital E1/T1 Interface   | 2  |
| ▶ 10/100 Mbps Ethernet Ports (RJ45)   | 2  |
| ▶ Console Ports (RJ45)  | 1  |
| ▶ CPU   | Power PC 32Bit RISC Microprocessor   |
| ▶ Flash Memory  | 8Mbyte   |
| ▶ Base Memory   | 64Mbyte  |
| ▶ Power Requirement   | Dual Power Supply, VAC 110~220V, 50/60Hz, 100Watt  |
| ▶ 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 |

AddPac Technology Co., Ltd.

Thank you !

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

Technical Sales and Marketing

Phone : +82 2 568 3848

Fax : +82 2 568 3847

[sales@addpac.com](mailto:sales@addpac.com)