

# SS7 VoIP Gateway Solution



**AddPac**

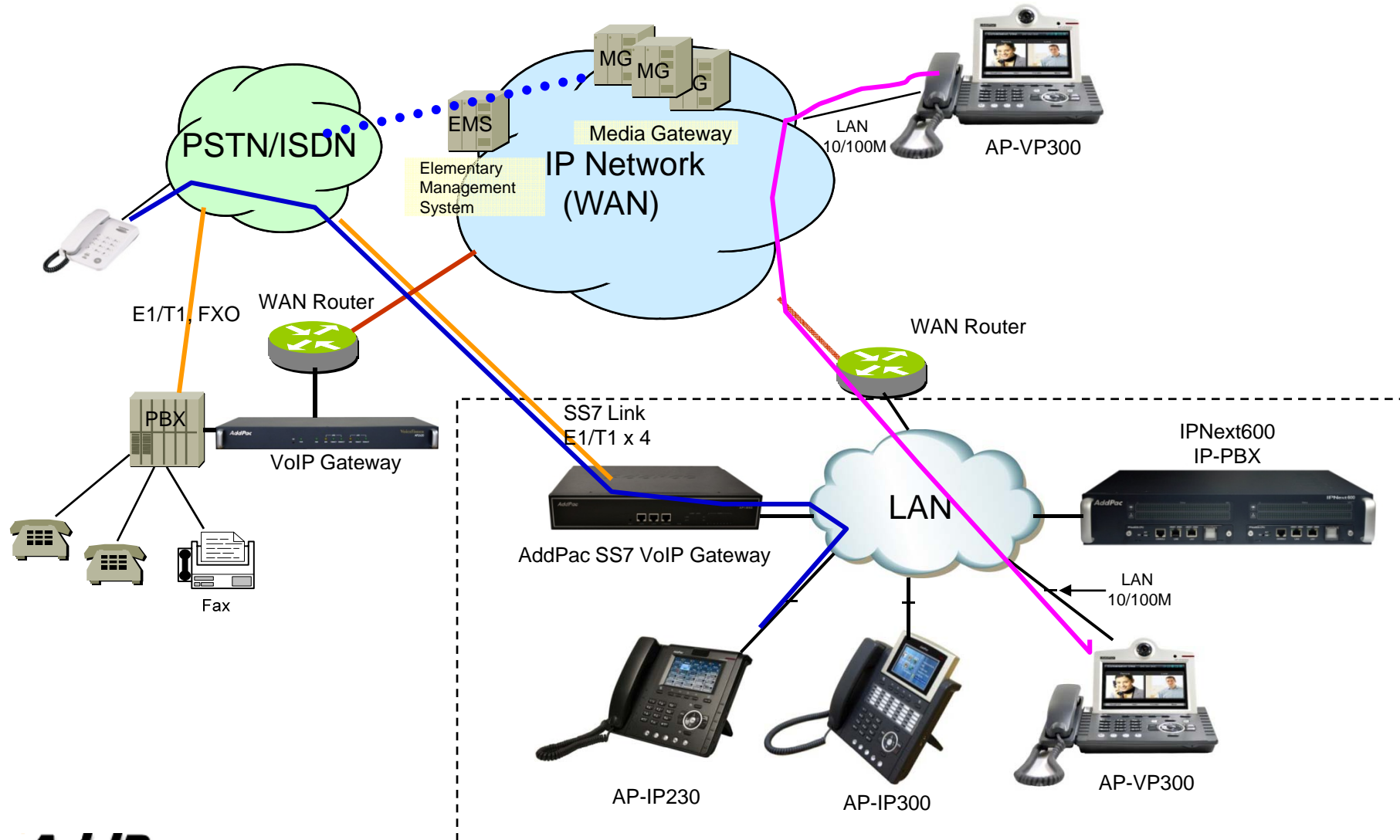
**AddPac Technology**

2013, Sales and Marketing






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# SS7 VoIP Gateway Service Diagram



# SS7 VoIP Gateways (1~16 E1/T1)

| Product           | AP1800  | AP1850  | AP-MG3000  | AP-MG3800   | AP-MG5000   |
|-------------------|---|---|--|---|---|
|                   |  |  |  |  |  |
| Available Modules | AP-N1-FXS8<br>AP-N1-FXO8<br>AP-N1-FXS4O4<br>AP-N1-E1                              | AP-N1-E1<br>AP-N1-2E1   | APv2-1E1<br>APv2-2E1<br>APv2-4E1   | HIM-VoIP4E1<br>(4 E1/T1 Module)   | HIM-4E1<br>(4 E1/T1 Module)   |
| VoIP Signaling    | SIP, H.323  | SIP, H.323  | SIP, H.323   | SIP, H.323  | SIP, H.323  |
| Digital E1/T1     | Up to 2E1   | Up to 4E1   | Up to 4E1  | Up to 8 E1  | Up to 16E1  |
| Digital Signaling | ISDN PRI, R2,<br>SS7  | ISDN PRI, R2,<br>SS7  | ISDN PRI, R2,<br>SS7   | ISDN PRI, R2,<br>SS7  | ISDN PRI, R2,<br>SS7  |
| Module Slot       | Two(2)  | Two(2)  | Two(2)   | Two(2)  | Four(4)   |
| LAN Port          | 2   | 2   | 2  | 2   | 2   |
| Console           | 1   | 1   | 1  | 1   | 1   |
| Power             | Single PSU  | Single PSU  | Single PSU   | Single PSU  | Dual PSU  |





# VoIP Modules



Target :  
AP1800, AP1850

# VoIP Modules

DSP

| Target           | VoIP Modules     | Module Features                | Module Picture  |
|------------------|------------------|--------------------------------|---|
| AP1800<br>AP1850 | <b>AP-N1-E1</b>  | 1-Port Digital E1/T1<br>Module |  |
| AP1800<br>AP1850 | <b>AP-N1-2E1</b> | 2-Port Digital E1/T1<br>Module |  |






Target :  
AP-MG3000



# VoIP Modules

DSP


| Target    | VoIP Modules | Module Features             | Module Picture   |
|-----------|--------------|-----------------------------|--|
| AP-MG3000 | APv2-1E1     | 1-Port Digital E1/T1 Module |  A black VoIP module with a single RJ45 port on the front panel. The top of the module is labeled 'APv2-1E1'. |
| AP-MG3000 | APv2-2E1     | 2-Port Digital E1/T1 Module |  A black VoIP module with two RJ45 ports on the front panel. The top of the module is labeled 'APv2-2E1'.     |
| AP-MG3000 | APv2-4E1     | 4-Port Digital E1/T1 Module |  A black VoIP module with four RJ45 ports on the front panel. The top of the module is labeled 'APv2-4E1'.   |



Target :  
AP-MG3800, AP-MG5000

# VoIP Modules

DSP

| Target                  | VoIP Modules       | Module Features                | Module Picture   |
|-------------------------|--------------------|--------------------------------|--|
| AP-MG3800,<br>AP-MG5000 | <b>HIM-VOIP4E1</b> | 4-Port Digital E1/T1<br>Module |  |



# SS7 Signaling Service Features

# SS7 Gateway Feature

- Support Multiple E1 / T1 Interface
- Support Incoming and Outgoing Calls
- MTP2 (Q.703) / MTP3 (Q.704) / ISUP (Q.76x)
- SS7 A/F Link Support
- Support multiple linksets with different Point Code
- Support links with multiple links for load balance and failover
- Variant : ANSI, ITU-T, Japan(\*), China(\*)

# ISUP (ISDN User Part) (1/2)

- Basic call messages (IAM, ACM, ANM, REL, RLC)
- CIC Reset (GRS, GRA, RSC)
- Connect message (CON)
- CIC Blocking/Unblocking (CGB, CGBA, CGU, CGUA, BLO, BLA)
- Continuity Check (COT, CCR)
- Call Progress message (CPG)
- Inbound and outbound calling works.

# ISUP (ISDN User Part) (2/2)

- ITU style SS7 support
- ANSI-style signalling support
- Called and Calling Nature of Address Indicator
- CallerID presentation and screening
- UCIC and LPA messages
- ANI2 - Originating line interface parameter (ANSI)
- Charge number parameter (ANSI)

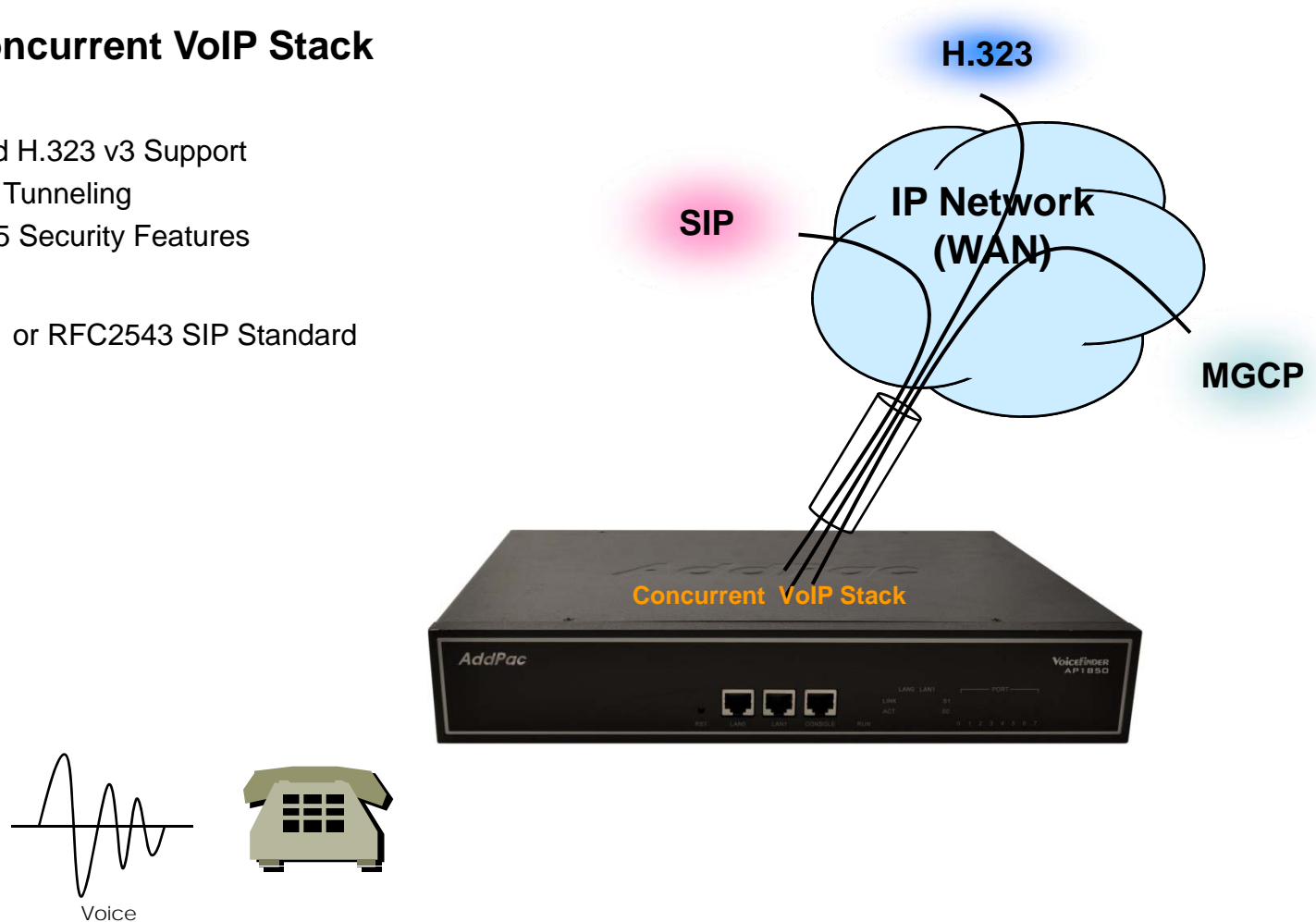


# VoIP Gateway Service Features



# VoIP (Voice over IP) Service

- **H.323, SIP Concurrent VoIP Stack**
- **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



# VoIP (Voice over IP) Service

- **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

# VoIP (Voice over IP) Service

- **Voice Codec**

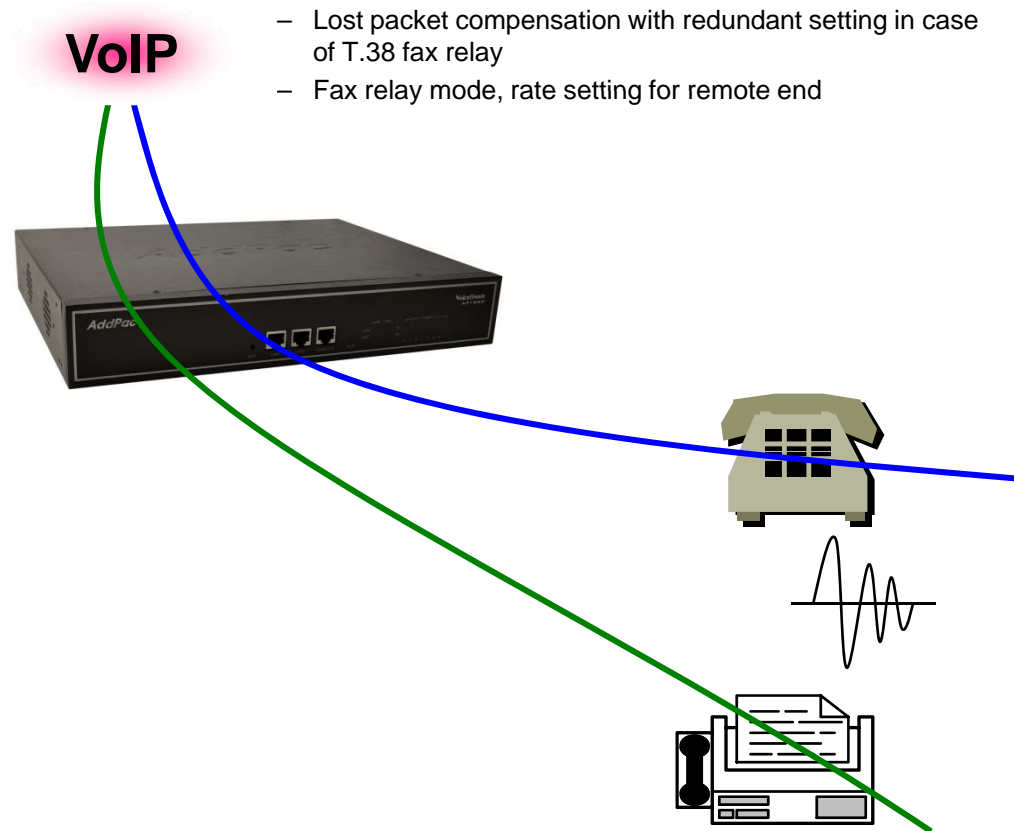
- G.711 A-Law, G.711 U-Law
- G.726 r16, G.726 r32
- G.729A
- G.723.1 r63, G.723.1 r53
- VAD (Voice Activity Detection) function support
- DTMF relay support (H.323, SIP, MGCP common) based on RFC2833

- **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



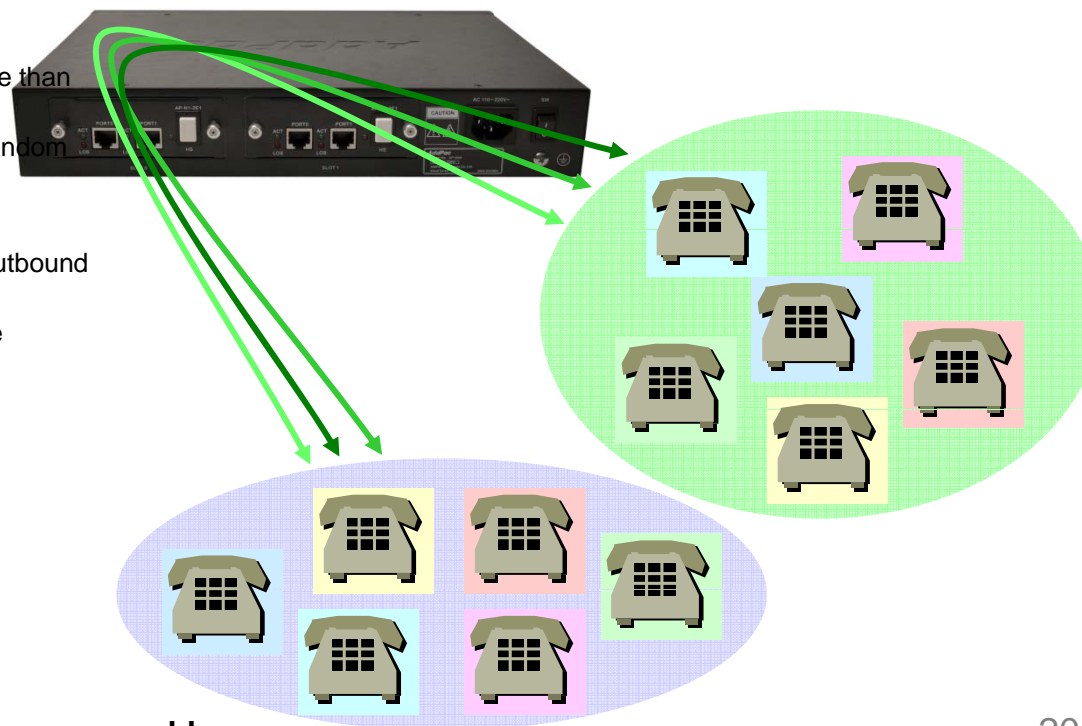
# VoIP (Voice over IP) Service

## • 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



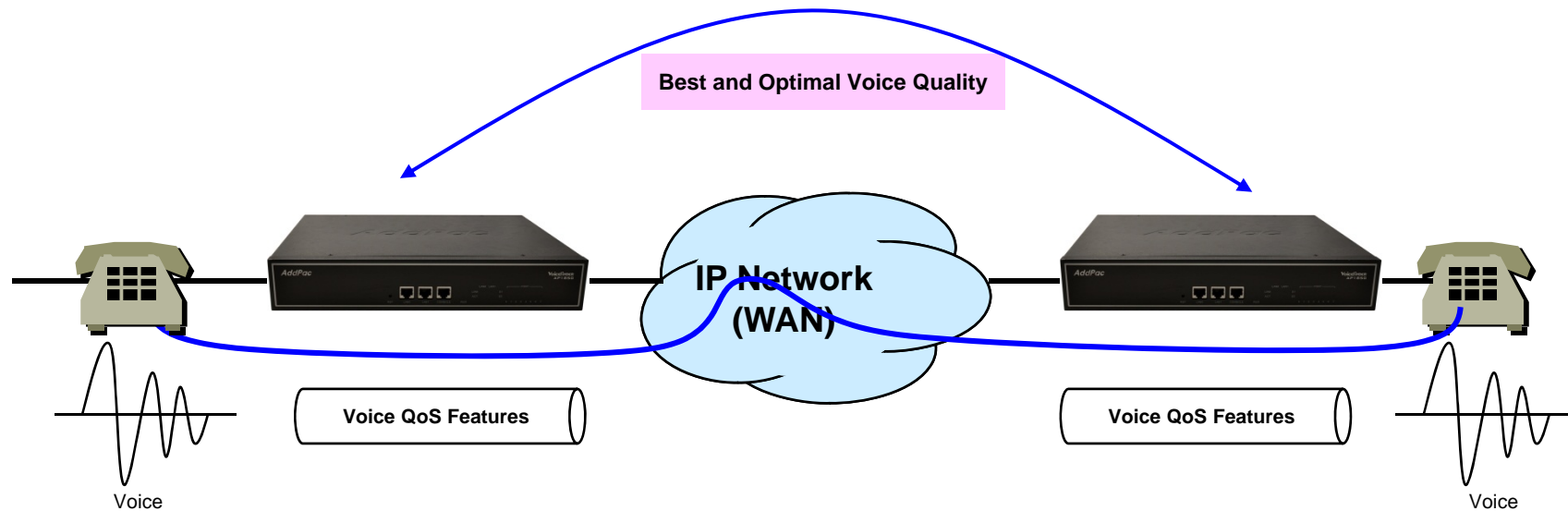
# Advanced QoS Features

- **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

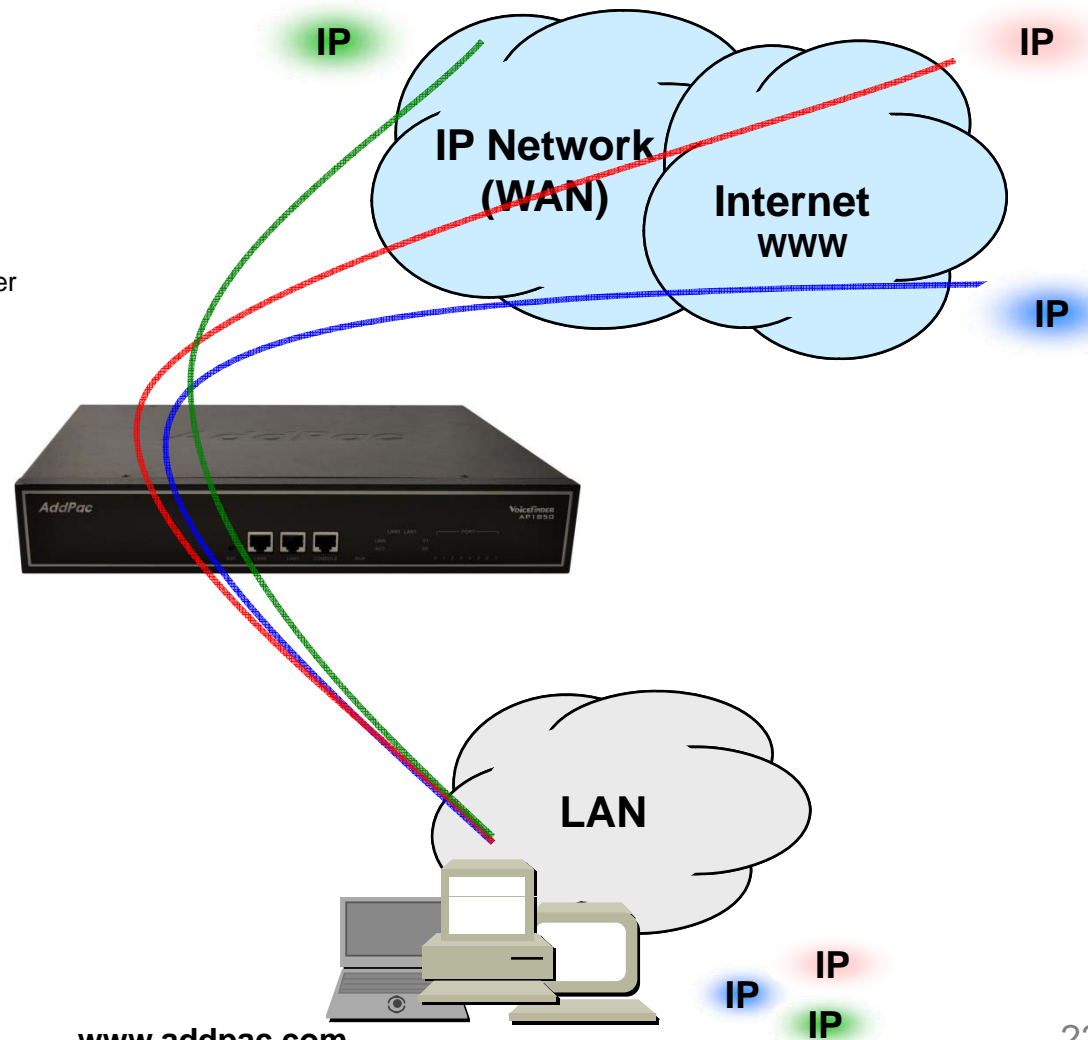
- **Enhances Receive Voice QoS Features**

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



# Network Protocols

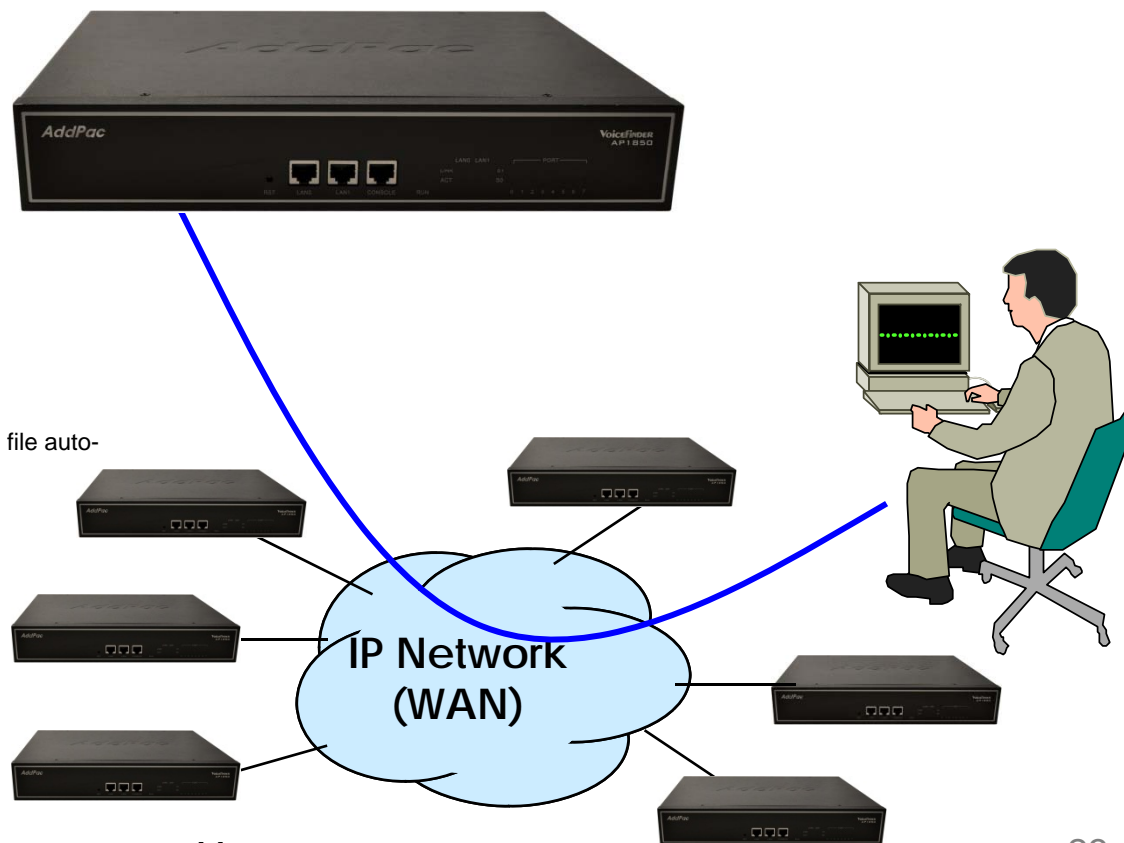
- **Basic Network Protocols**
  - ARP, IPv4, TCP, UDP, ICMP, SCTP, IGMP, MLD
- **Routing Protocol**
  - IPv4 : Static
- **Service Protocol**
  - FTP, Telnet, TFTP, DHCP Server/Relay, SNMP Server
  - CDP (Cisco Discovery Protocol)
  - DNS Resolver , DDNS(nsupdate)
  - Bridge
  - Syslog
- **IPv4 Address Configuration**
  - Fixed (Static)
  - DHCP
  - PPPoE
- **Miscellaneous**
  - Cisco Style CLI
  - Standard & Extended IPv4 Access List
  - Multi-level User Account Management
  - IP accounting
  - STUN Client



# Network Management

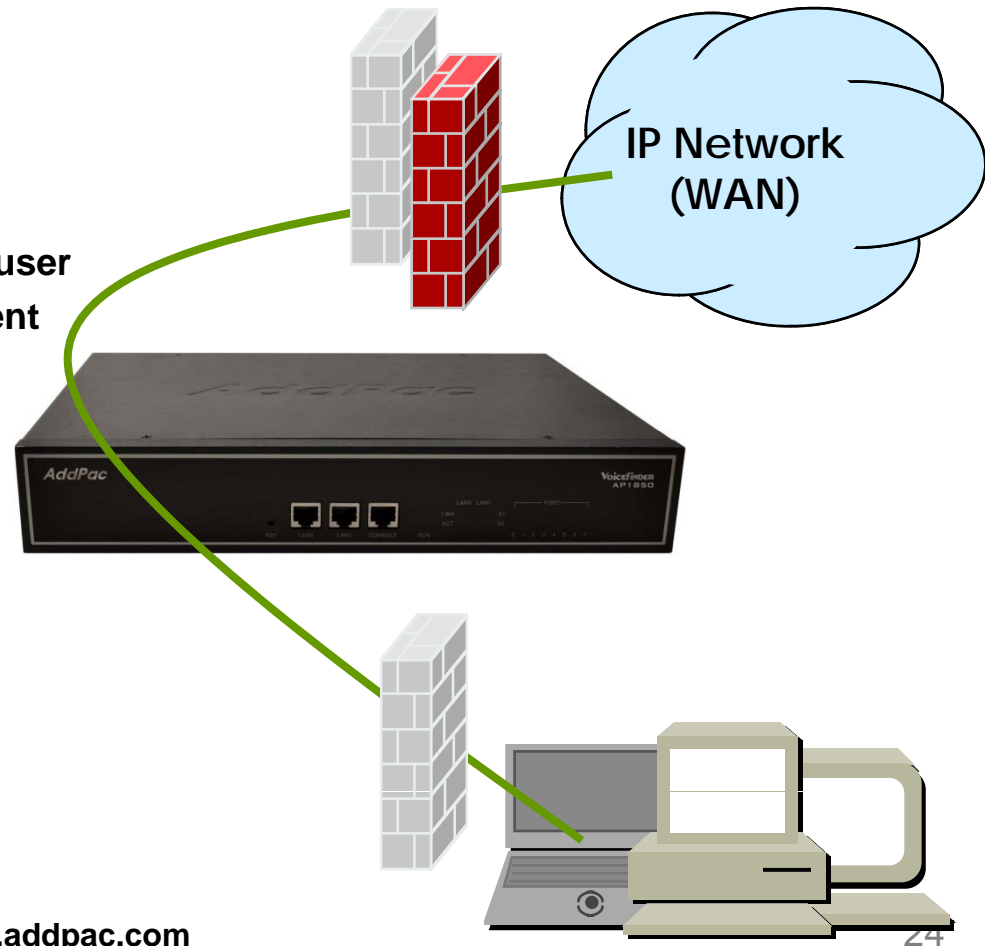
- **SNMP**
  - Standard Simple Network Management Protocol( SNMP) Agent support
  - MIB v1 and v2 Support
- **Web-based Management**
  - Smart Easy Setup
  - Standard Voice Interface
  - Standard PSTN Back-up Interface
- **Watch-dog Function**
  - Hardware, Software watch-dog services
- **Remote Management**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

- **Interoperable with AP-VPMS Service**
  - AddPac VoIP Plug & Play Management System (AP-VPMS)



# Security Management

- 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 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







# Thank you!

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