



# AP2620IVR™

## IVR VoIP Gateway

High Performance IVR VoIP Gateway Solution

### Preliminary Product Overview



# **AddPac**

**AddPac Technology**

2006, Sales and Marketing

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

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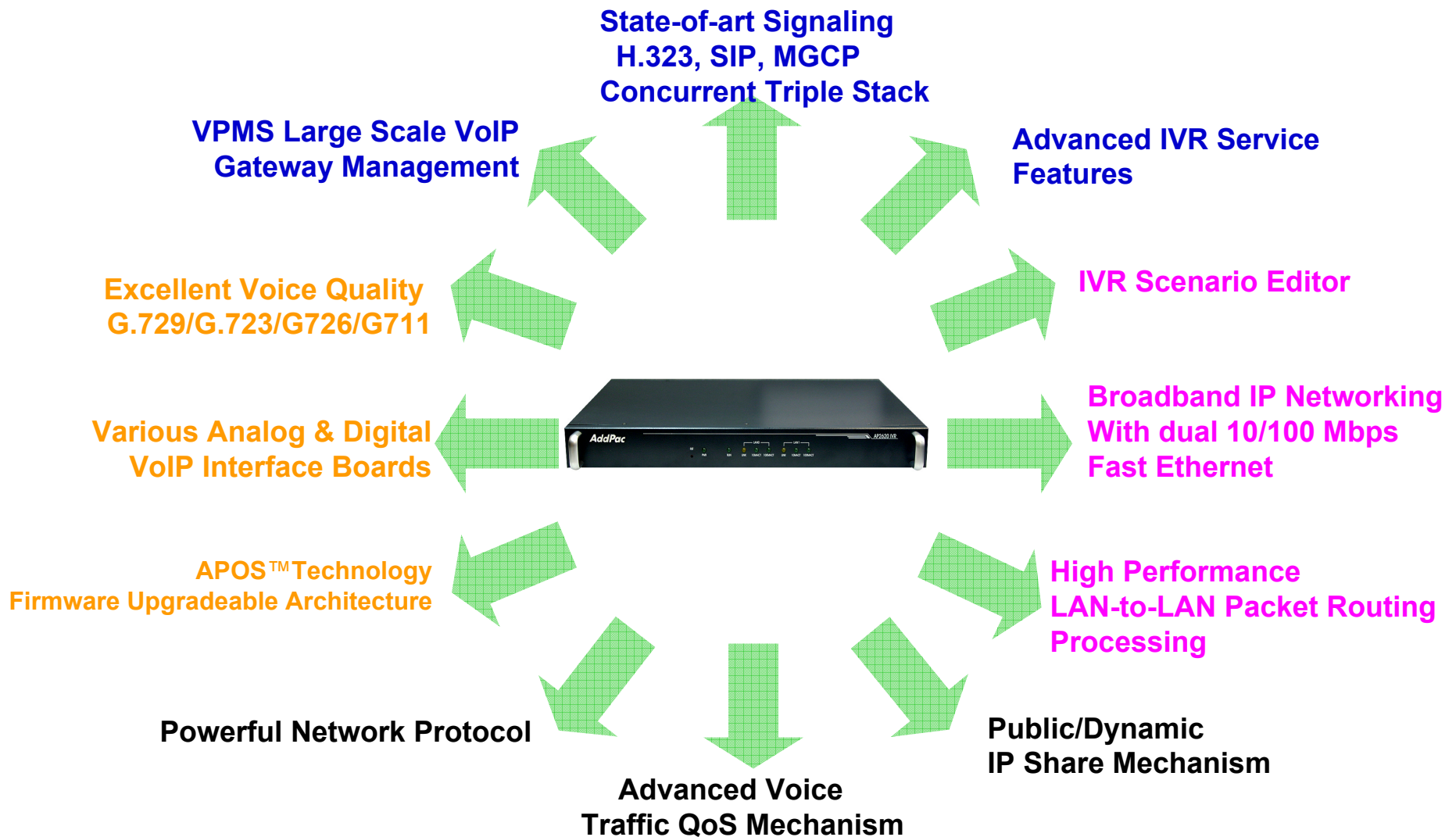
# Product Overview

## AP2620IVR VoIP Gateway

- H.323/SIP/MGCP Triple Concurrent Stack Embedded
- High Performance & Flexible IVR Service
- High-End RISC Processor & Programmable DSP Architecture
- Two (2) 10/100 Mbps Fast Ethernet
- High Performance LAN-to-LAN Routing Capability
- G.711/G.726/G.723/G.729, T.38 Fax , VAD, etc.
- Powerful Network Protocols (PPPoE, DHCP, Static Routing, etc.)
- Firmware Upgradeable Architecture
- VPMS (VoIP Plug & Play Management System) for Large Scale Deployment
- Advanced Voice QoS Mechanism
- Analog & Digital Interface Module  
(FXS, FXO, E&M, Audio Module, Digital E1, T1, etc.)

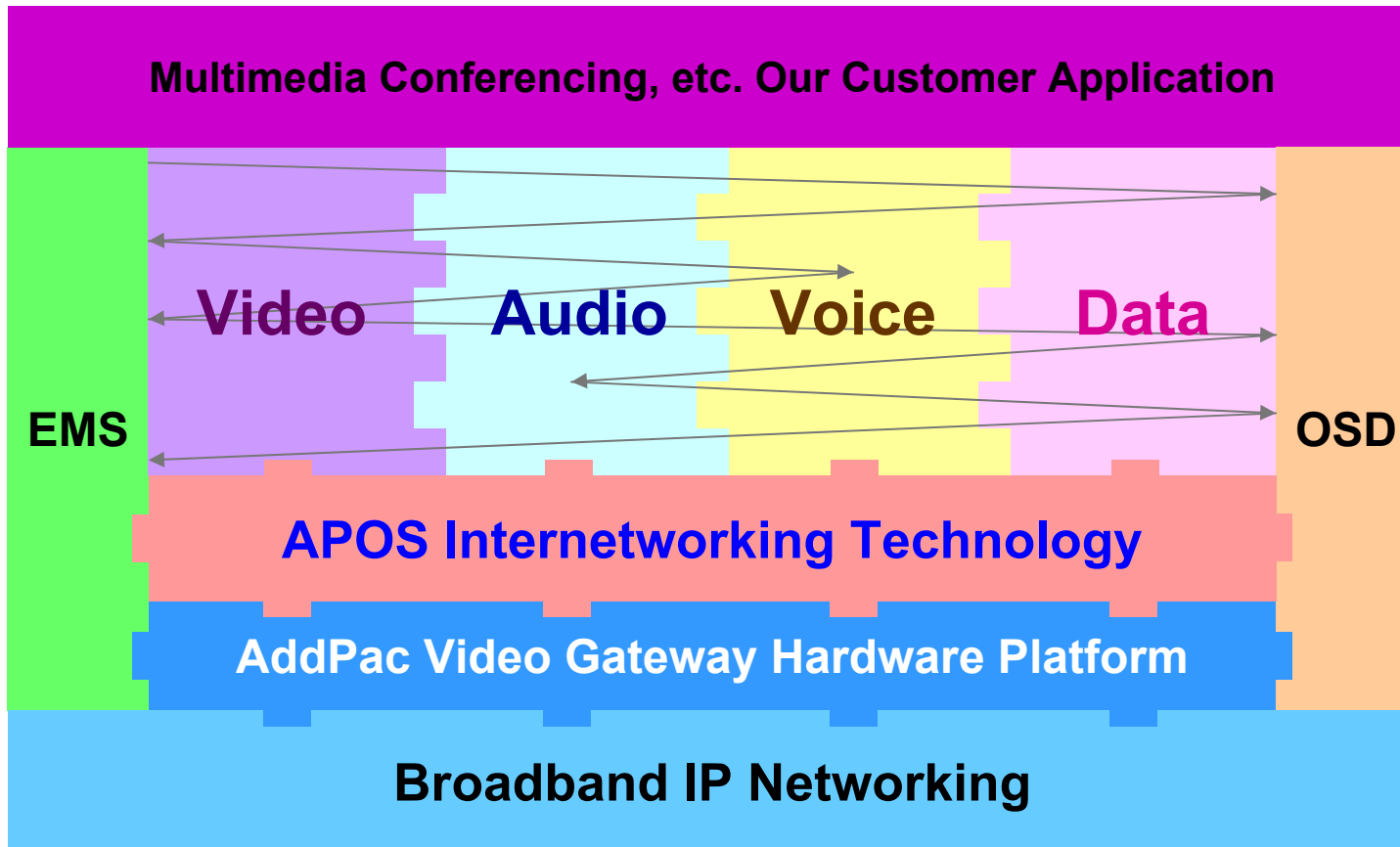
# Product Highlights

## AP2620IVR VoIP Gateway



# APOS Technology

AP2620IVR VoIP Gateway



- APOS: AddPac Internetworking Operating System
- OSD: On-Screen Display
- EMS: Element Management System

# Hardware Specification

AP2620IVR VoIP Gateway

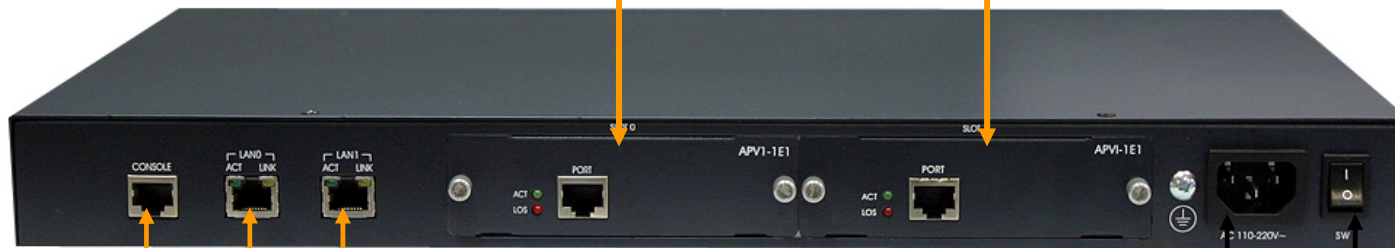
RISC  
CPU

High-End  
DSP



Voice Module 0 Slot

Voice Module 1 Slot



Console Port

LAN0, LAN1 10/100 Mbps Ethernet

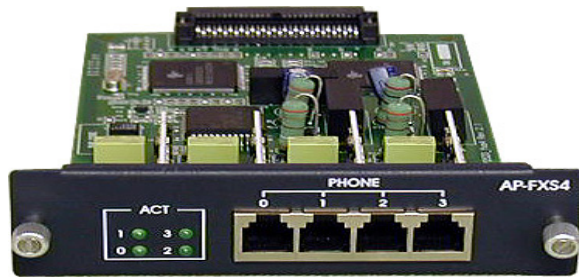
Power Interface

Switch

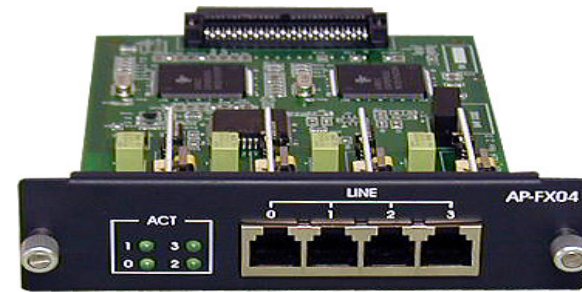
# Hardware Specification

AP2620IVR VoIP Gateway

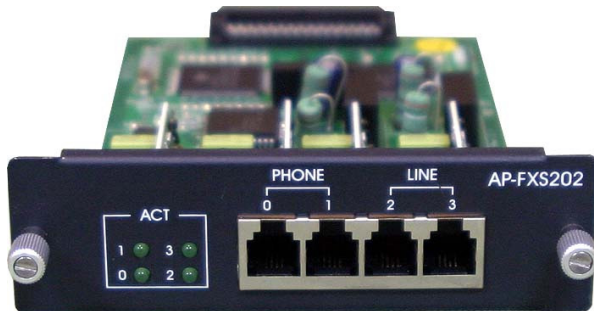
## AP2620IVR Analog Voice Modules



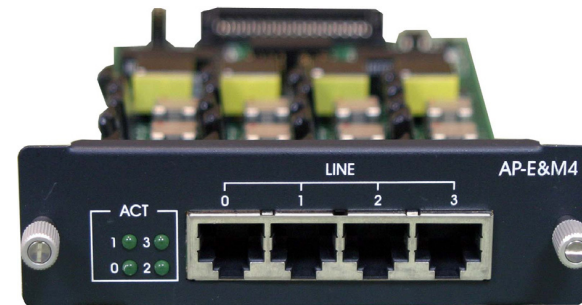
AP-FXS4 Module



AP-FXO4 Module



AP-FXS2, FXO2 Module



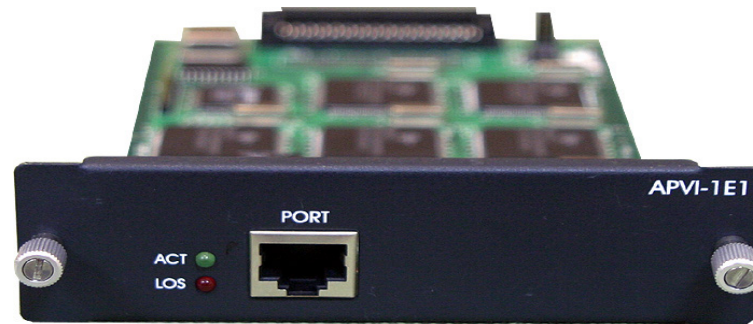
AP-E&M4 Module



# Hardware Specification

AP2620IVR VoIP Gateway

## AP2620IVR Digital Voice Modules



AP-E1 Module



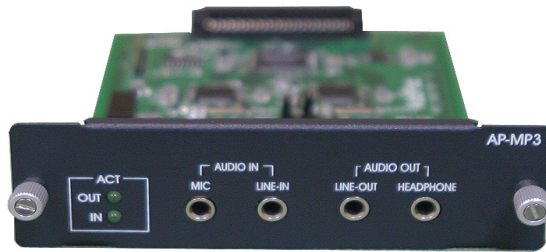
AP-T1 Module



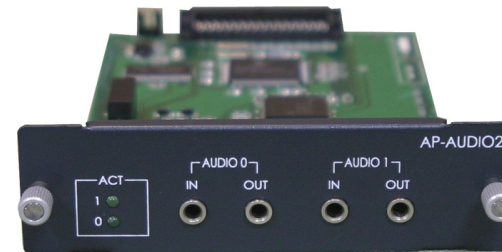
# Hardware Specification

AP2620IVR VoIP Gateway

## AP2620IVR IP Broadcasting Modules



AP-MP3 Module (High Quality)



AP-AUDIO2 Module



AP-AUDIO1,FXS3 Module



AP-AUDIO1,FXO3 Module



AP-AUDIO1,FXS2, FXO1 Module

# Hardware Specification

## AP2620IVR VoIP Gateway

AP2620 IVR VoIP G/W	Basic Specifications
CPU	Power PC 64-bit RISC Microprocessor
Voice Interface	Supports up to 2 E1/T1 voice channels. Supports analog interfaces. 8 channels (FXS, FXO, E&M) Supports Broadcasting System Module (MP3 and audio, etc.).
Ethernet Interface	2-Port 10/100 Mbps Ethernet Interface (RJ-45)
Console Port	1-Port RS-232C Console Port (RJ-45)
Flash Memory	8 Mbyte High-speed Flash Memory
Main Memory	64 Mbyte High-speed SDRAM
Boot Memory	512 Kbyte Flash Memory
Power Requirement	VAC110~220V, 50/60 Hz, 25 watts
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 x 444mm x 220mm (H x W x D)
Weight (g)	2.2 Kg



# Hardware Specification

## AP2620IVR VoIP Gateway



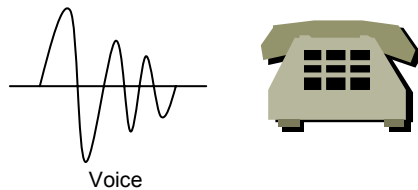
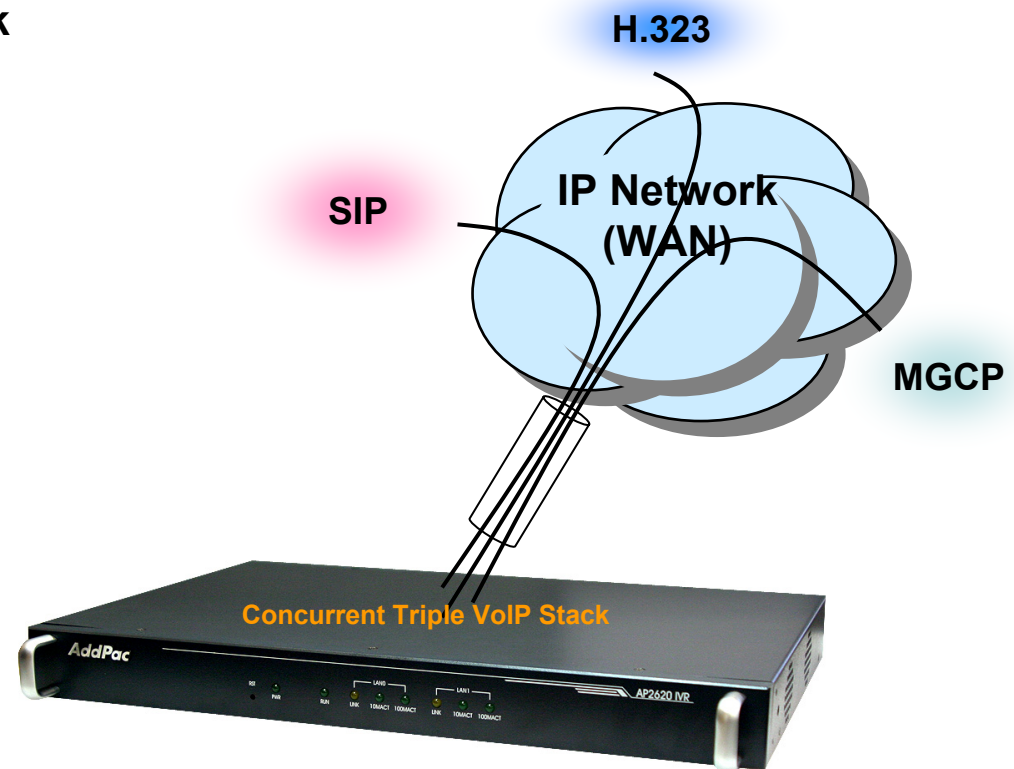
### AP2620IVR VoIP Gateway

▶ 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 64-bit RISC Microprocessor
▶ Flash Memory	8 Mbyte
▶ Main Memory	64 Mbyte
▶ Power Requirement	VAC 110~220V, 50/60Hz, 25 watts
▶ Internetworking OS	APOS
▶ H.323, SIP, MGCP VoIP Protocol, T38 FAX	YES
▶ PPPoE, PPTP Network Protocols	YES
▶ Enhanced QoS Management Feature	YES
▶ IP Routing Protocols Including NAT	YES
▶ Network Management Protocols	YES
▶ Supported Network Environments	ADSL, VDSL, Cable Modem, Leased Line, ATM, and Frame-Relay Including Conventional Broadband Networking

# VoIP (Voice over IP) Service

## AP2620IVR VoIP Gateway

- **H.323, SIP, and MGCP Triple Stack**
- **H.323**
  - ITU-T Standard H.323 v3 Supported
  - H.245 Tunneling Supported
  - H.235 Security Features
- **SIP**
  - IETF RFC3261 or RFC2543 SIP Standard
- **MGCP**
  - IETF RFC2705bis-02 Standard MGCP 1.0



# VoIP (Voice over IP) Service

## AP2620IVR VoIP Gateway

- **H.323**

- Fast connection and normal connection
- H.245 tunneling
- Q.931 response message setting for inbound VoIP calls
- H.245 logical channel open timing selection function
- Start H.245 procedure
- DTMF / Hook flash relay with H.245 alphanumeric / signal
- Secondary gatekeeper
- Gatekeeper assignment according to the domain name
- Gatekeeper discovery with multicast
- Lightweight RRQ
- Signaling TCP port assignment
- Resource threshold setting with RAI
- H.235 clear-token, crypto-token
- canMapAlias
- Technical prefix (supported prefix)
- Public IP assignment in an NAT environment

- **SIP**

- Gateway-based / Endpoint-based registration
- Secondary proxy-server assignment
- SIP signaling port change
- SIP proxy server assignment according to the domain name
- T.38 real-time fax relay
- DTMF relay with the RFC2833 / OPTION message
- Re-INVITE

- **MGCP**

- Secondary call agent assignment
- Default package assignment
- Announcement Server Package, Generic Media Package, Handset Package, Line Package, Trunk Package
- MGCP call agent assignment according to the domain name
- T.38 real-time fax relay
- DTMF relay based on RFC2833



# VoIP (Voice over IP) Service

## AP2620IVR VoIP Gateway

- **Voice Codec**

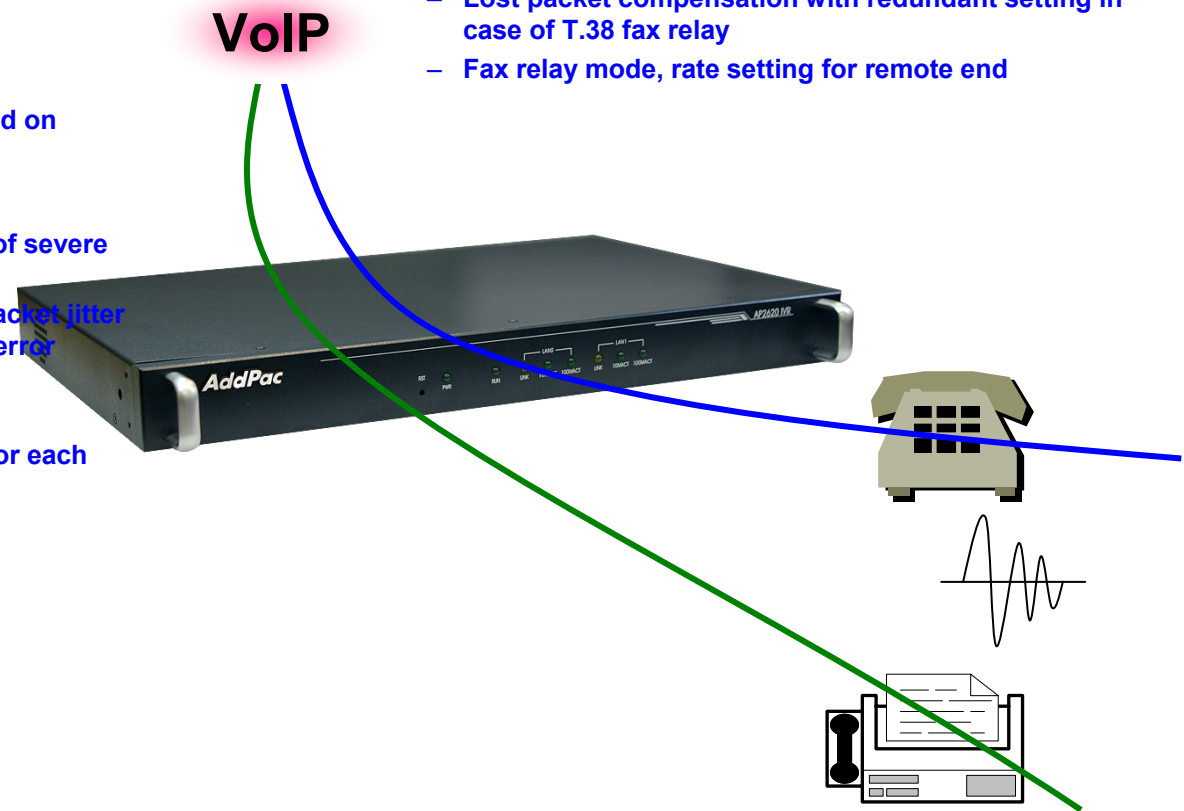
- G.711 A-Law, G.711 U-Law
- G.726 r16, G.726 r32
- G.729A
- G.723.1 r63, G.723.1 r53
- Voice Activity Detection (VAD)
- DTMF relay (H.323, SIP, MGCP common) based on RFC2833

- **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
- Voice frame per RTP packet number control for each codec
- In-band ring-back tone
- Virtual ring-back tone
- Changes the tone parameter.

- **FAX**

- Fax relay mode supporting T.38, inband-T.38, and 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

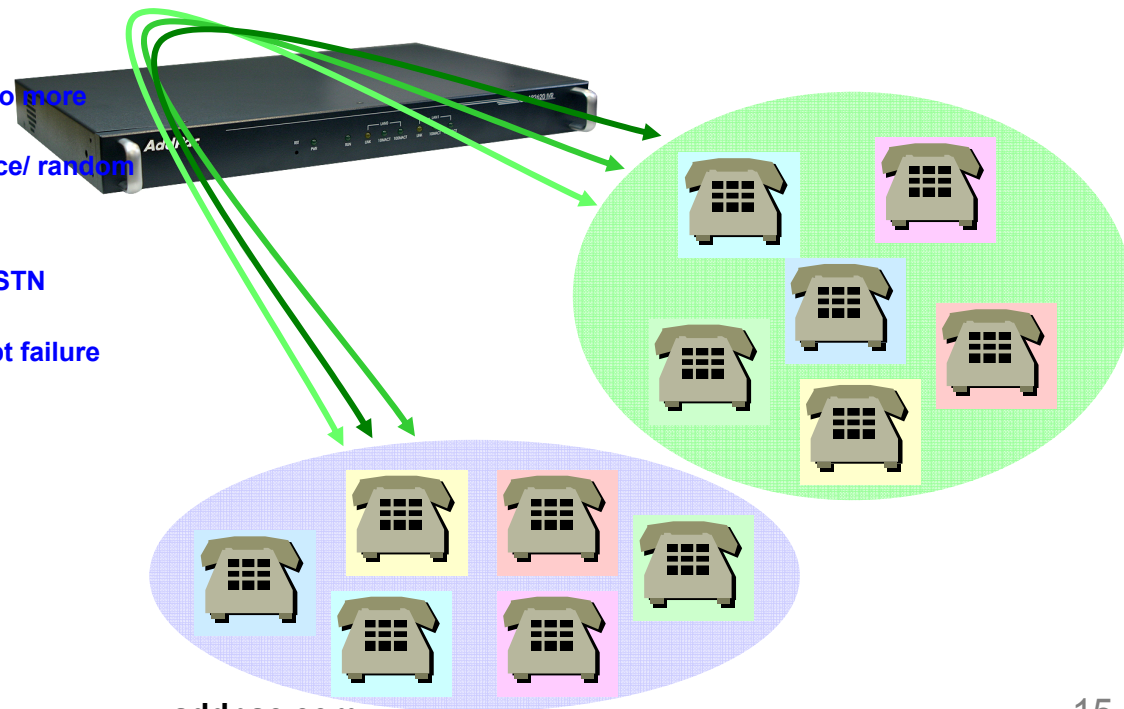
## AP2620IVR VoIP Gateway

### • VoIP Call Controls

- Hot line connection with Private Line Auto Ring Down (PLAR)
- Leased line emulation
- Connection monitoring
- 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 a 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





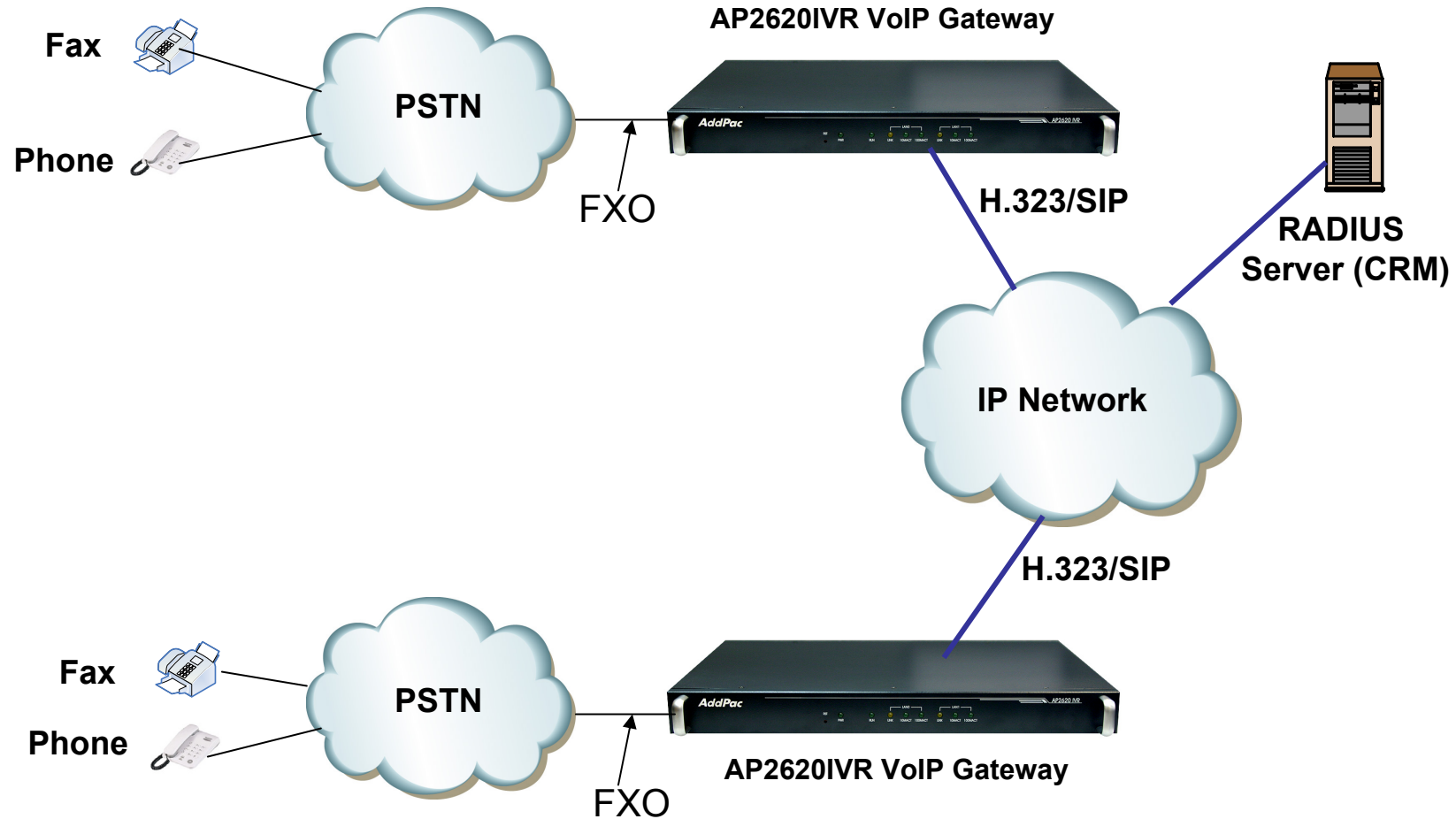
# IVR Service Features

## AP2620IVR VoIP Gateway

- **IVR Editor**
  - VXML-based IVR Script
  - Windows-based GUI
  - Easy to use
- **Pre-Paid and Post-Paid Services**
  - Supports basic pre-paid and post-paid IVR scenarios.
  - Supports multiple languages.
  - RADIUS interface (Quintum Compatible)
- **Cascade Mode**
  - Share one IP address.

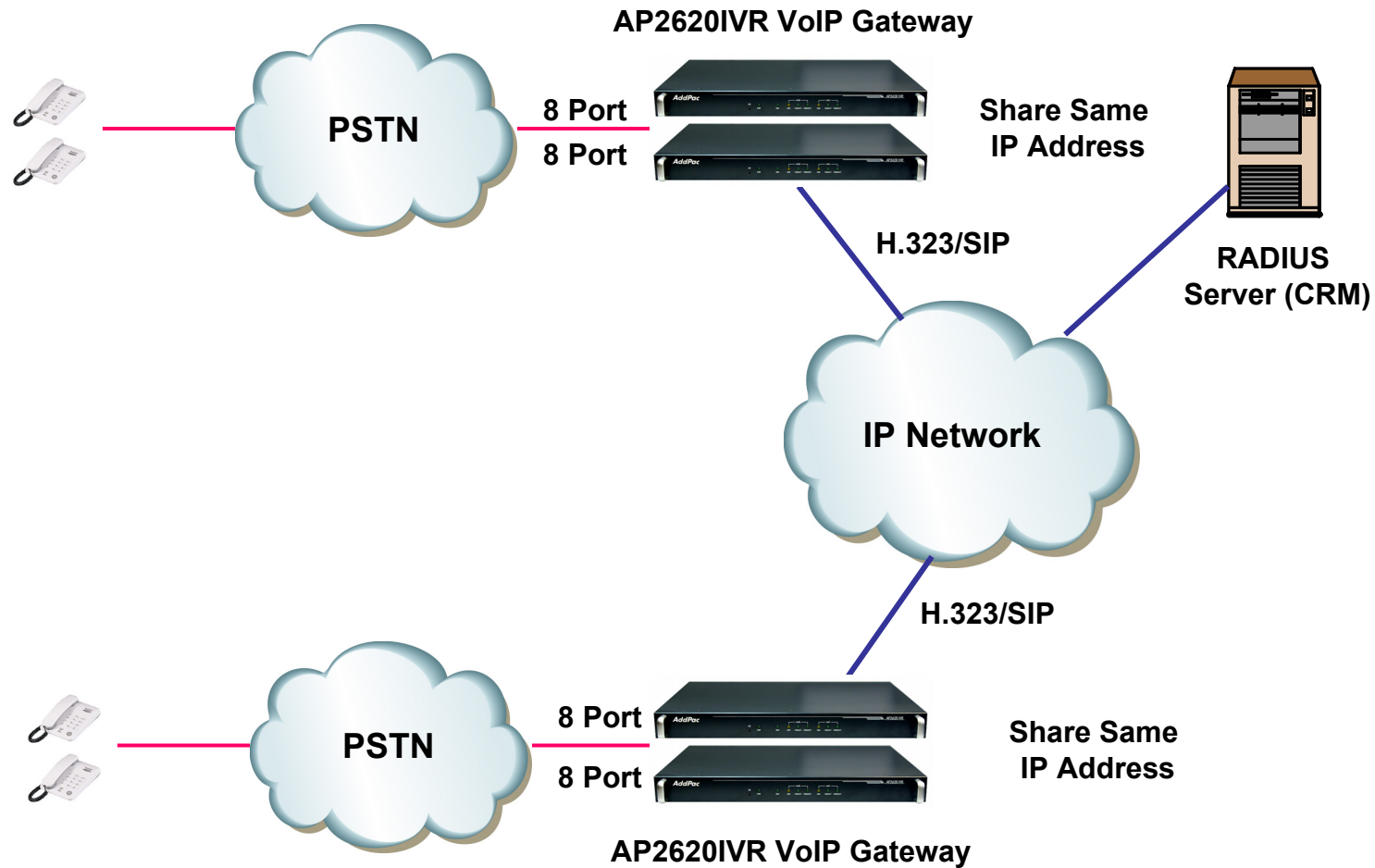
# IVR Service Network Diagram

## AP2620IVR VoIP Gateway



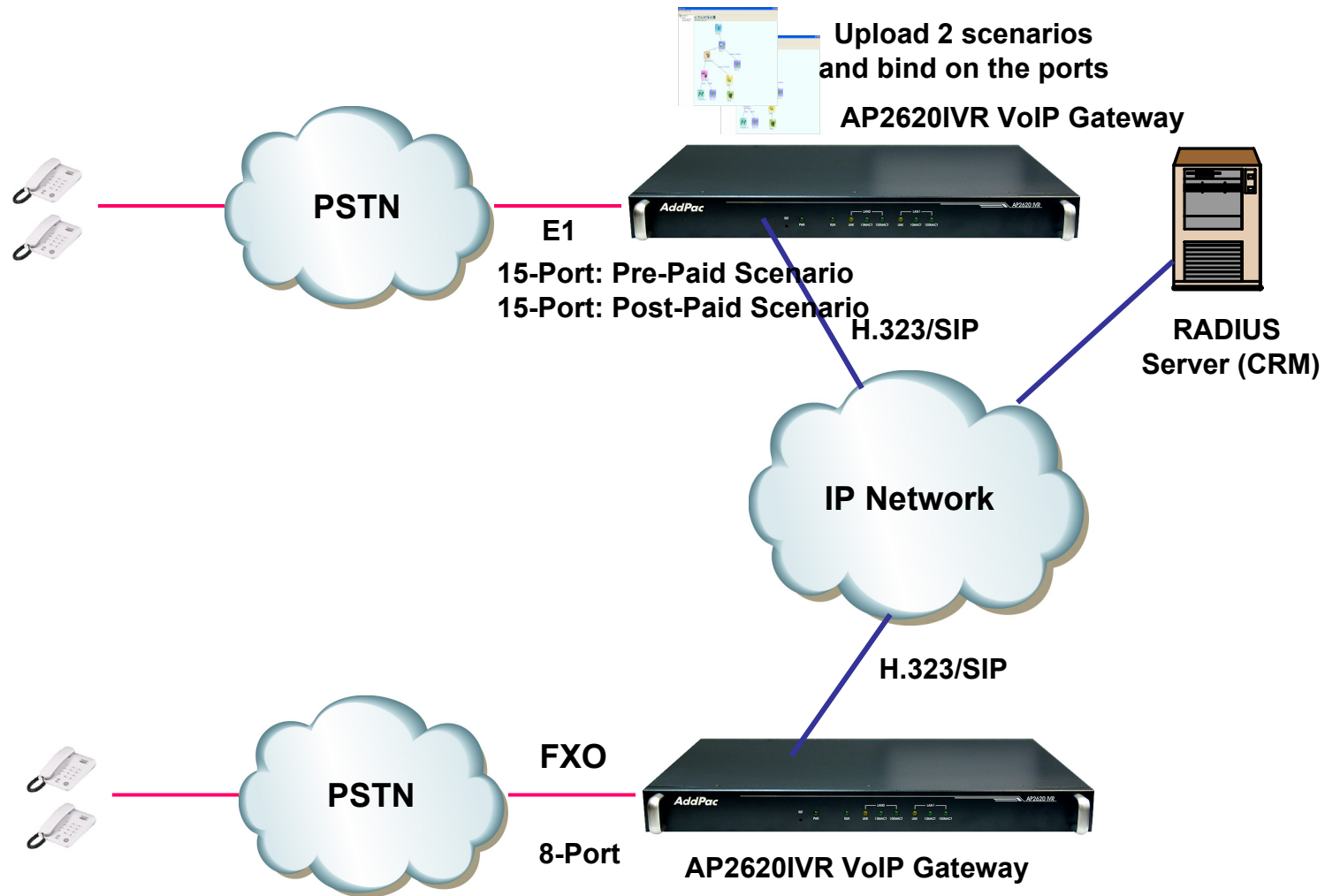
# IVR Cascade Service

AP2620IVR VoIP Gateway



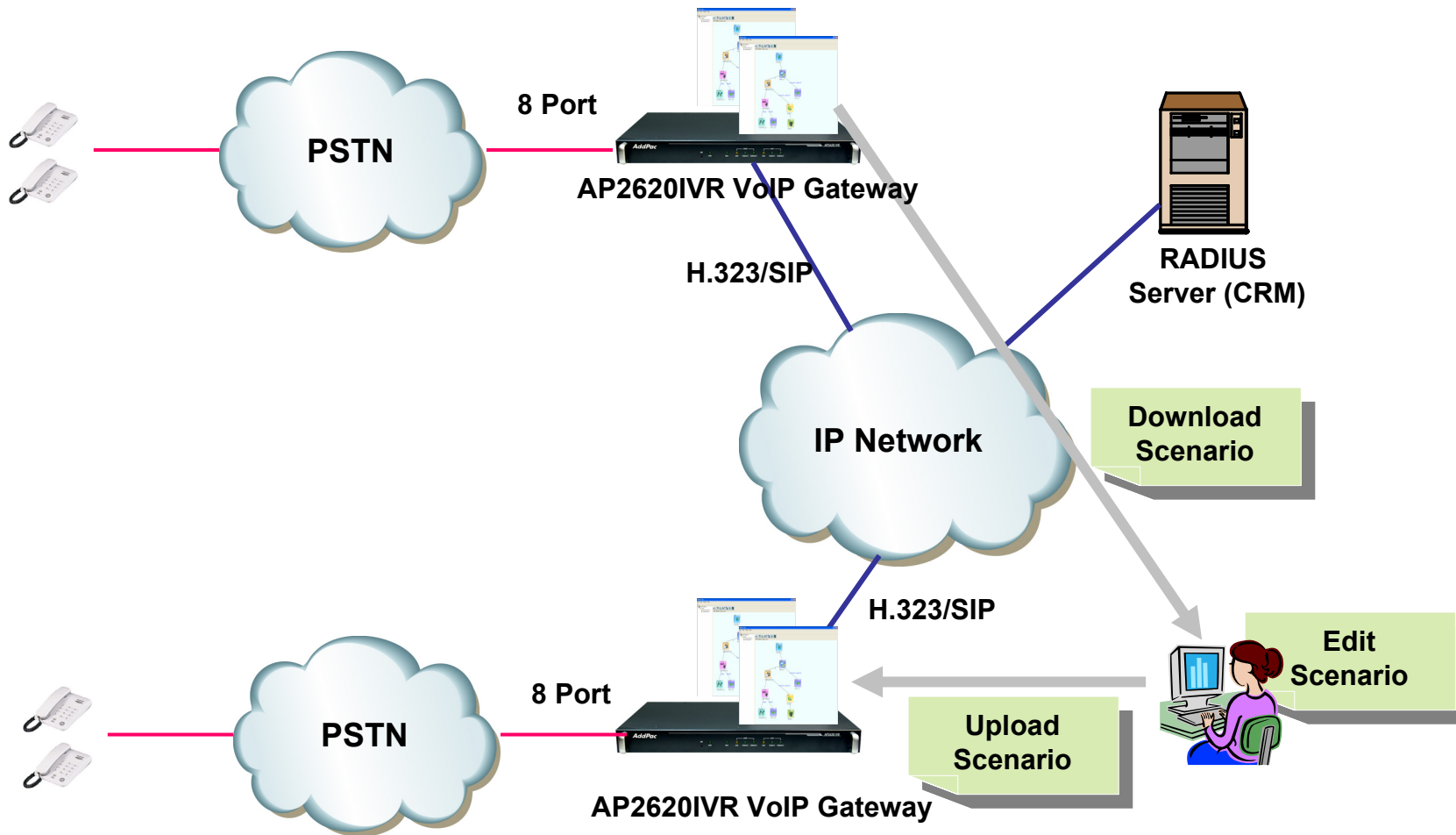
# Multiple IVR Scenario Service

## AP2620IVR VoIP Gateway



# IVR Scenario Editor

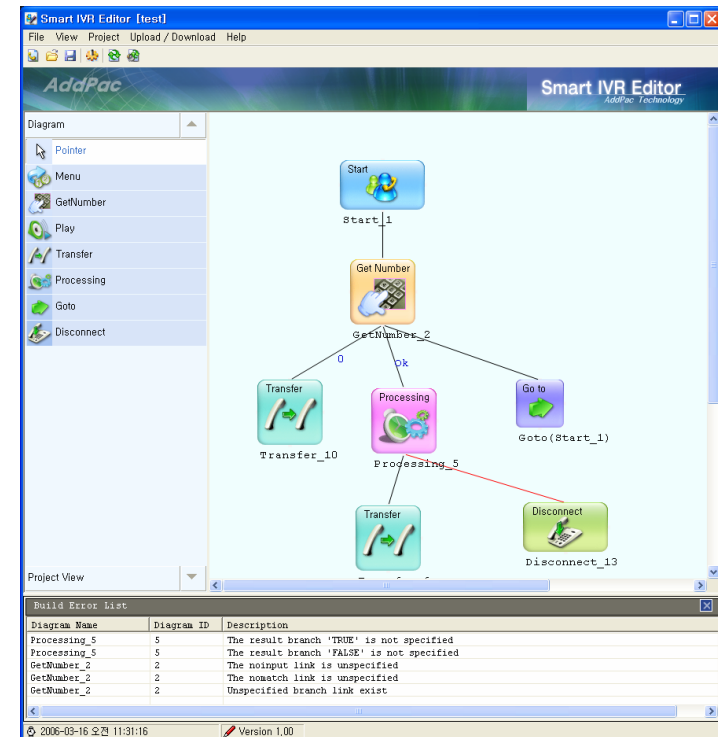
AP2620IVR VoIP Gateway



# IVR Scenario Editor Creation

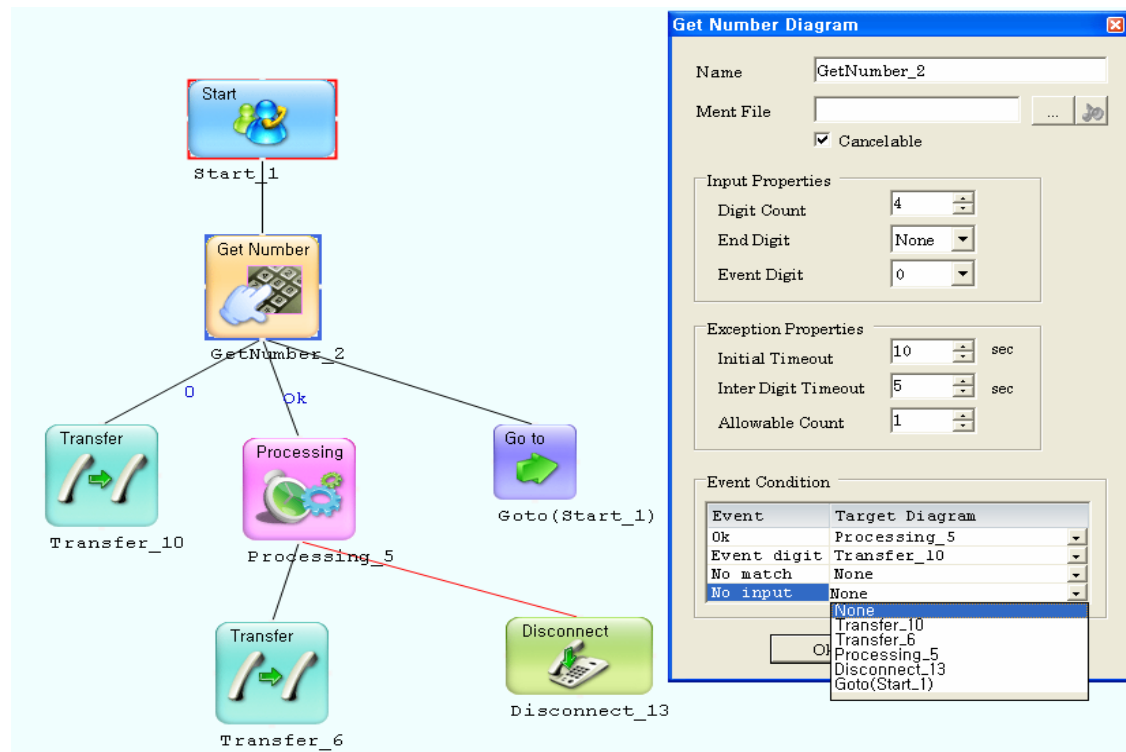
## AP2620IVR VoIP Gateway

- GUI-based IVR Scenario Editor
- Supports Pre-defined Components (DTMF Input, Call Transfer, Voice File Play, etc.).
- Supports Project Template File for Easy Modification and Reference.
- Supports Pre-Defined IP-PBX System API and Additional Customization API.
- Supports IVR Scenario Creation Error Debugging Features.



# IVR Scenario Editor Component Property

AP2620IVR VoIP Gateway

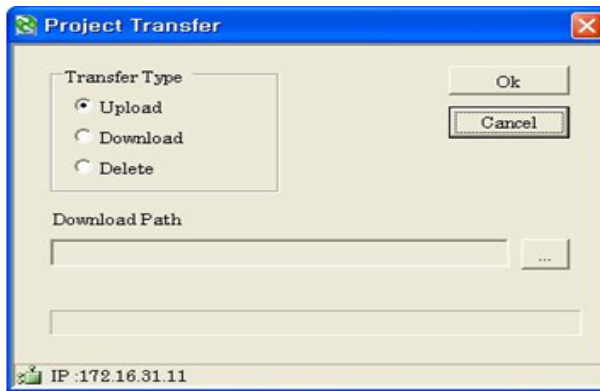


- Supports the Property Setting for Component Flow Diagram (Input Event, Exception Properties, and Event Condition).
- Provides different IVR Component Flows depending on Event Condition.

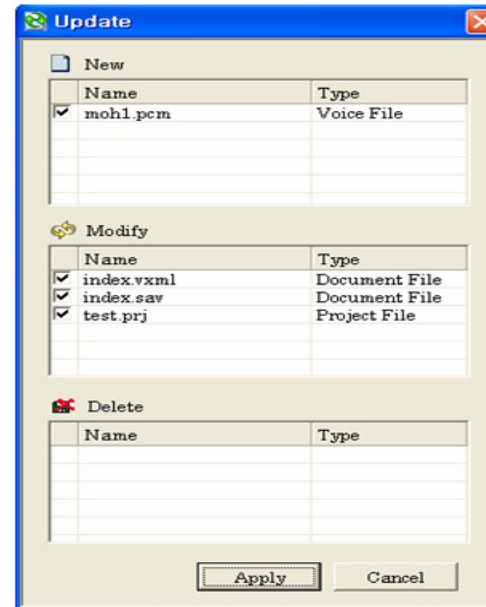


# IVR Scenario Management

AP2620IVR VoIP Gateway



**Project Transfer**



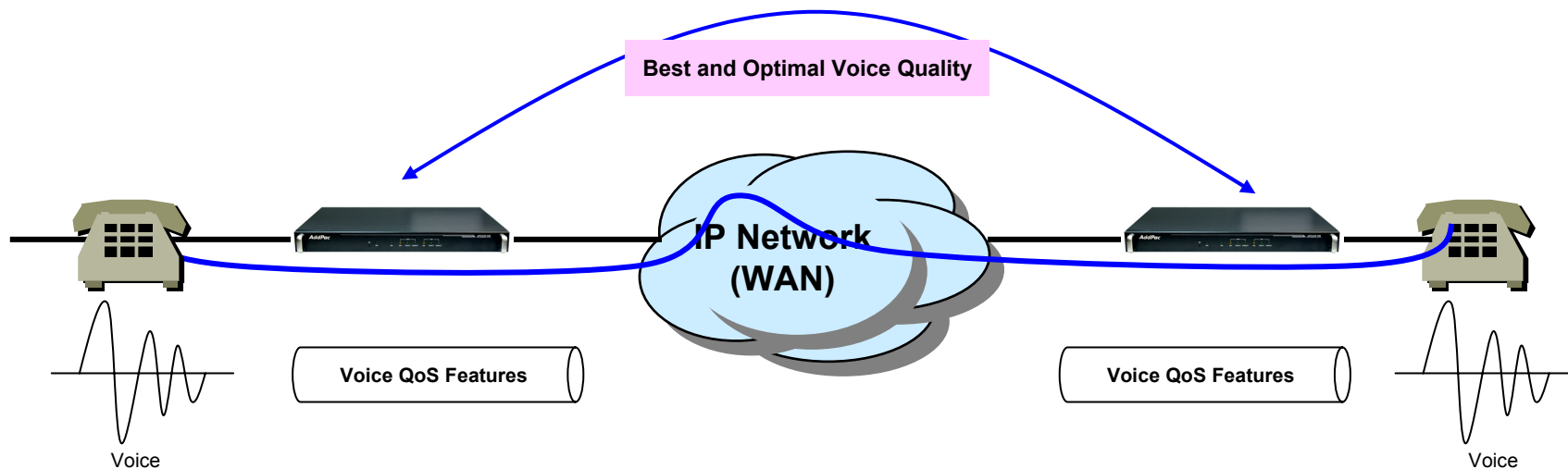
**Project Update**

- IVR Scenario Script File can be uploaded or downloaded to (from) VoIP Gateway.
- IVR Scenario Script File Version Control (Update, Add and Delete)
- Register Service with Smart Multimedia Manager

# Advanced QoS Features

## AP2620IVR VoIP Gateway

- Enhances **Transmit** Voice QoS Features
  - Voice Traffic Priority Queuing
  - QoS Service Profiling
  - Providing Virtual Network Transmit Algorithm
  - Real-time Voice Traffic QoS
  - RTP Packet Transmit Interval Control
  - RTP Packet Redundancy Scheme
  - IP Header Control such as ToS, Diffserv
- Enhances **Receive** Voice QoS Features
  - Dynamic Jitter Buffer Management
  - Error Concealment
  - T.38 FAX Data Error Recovery Scheme



# Network Protocols

## AP2620IVR VoIP Gateway

### Basic Network Protocols

- ARP, IPv4, TCP, UDP, ICMP, SCTP, IGMP, MLD

### Routing Protocol

- IPv4: Static

### Service Protocol

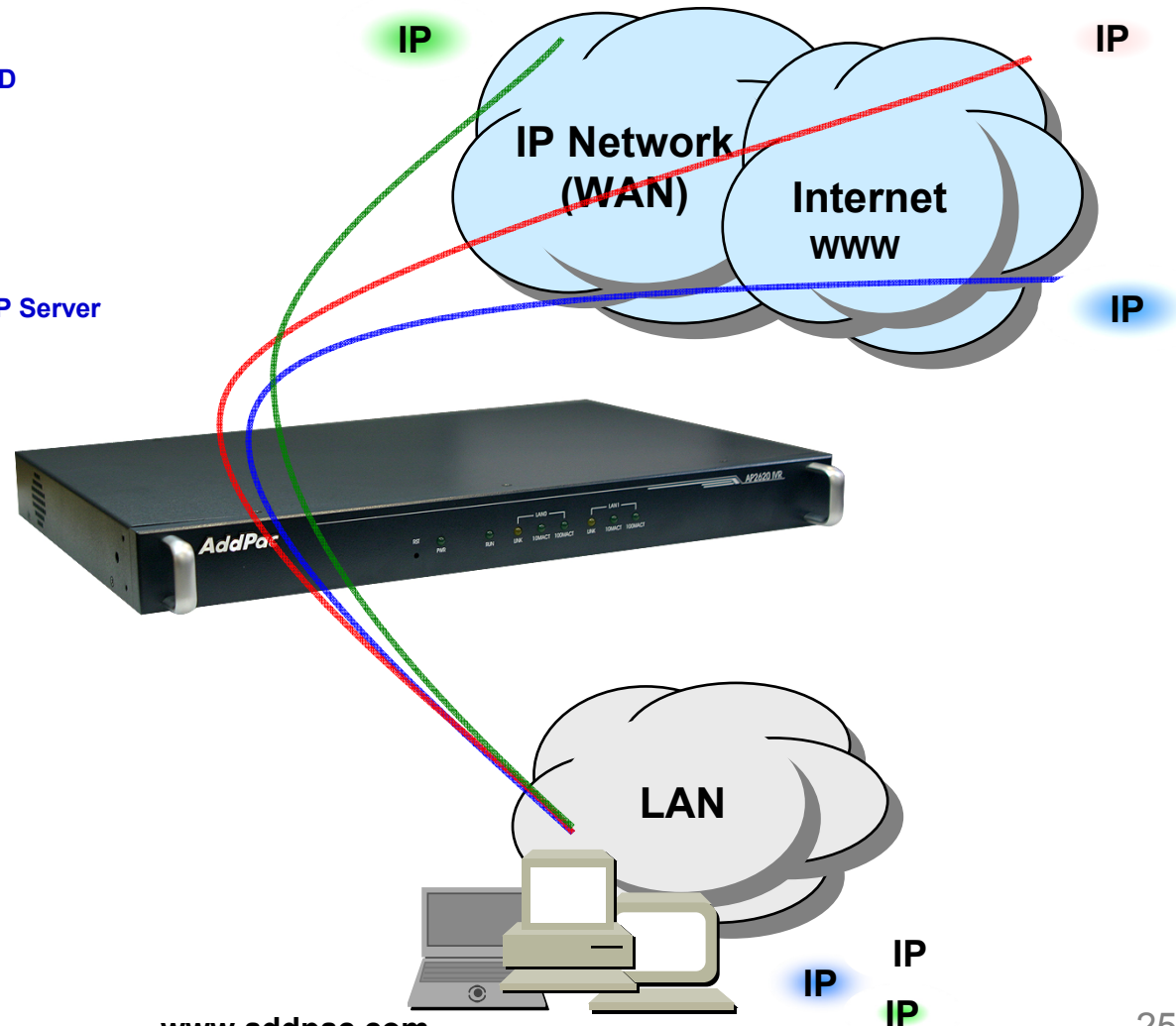
- FTP, Telnet, TFTP, DHCP Server/Relay, SNMP Server
- Cisco Discovery Protocol (CDP)
- DNS Resolver, DDNS (nsupdate)
- Bridge
- Syslog

### IPv4 Address Configuration

- Fixed (Static)
- DHCP
- PPPoE

### Miscellaneous

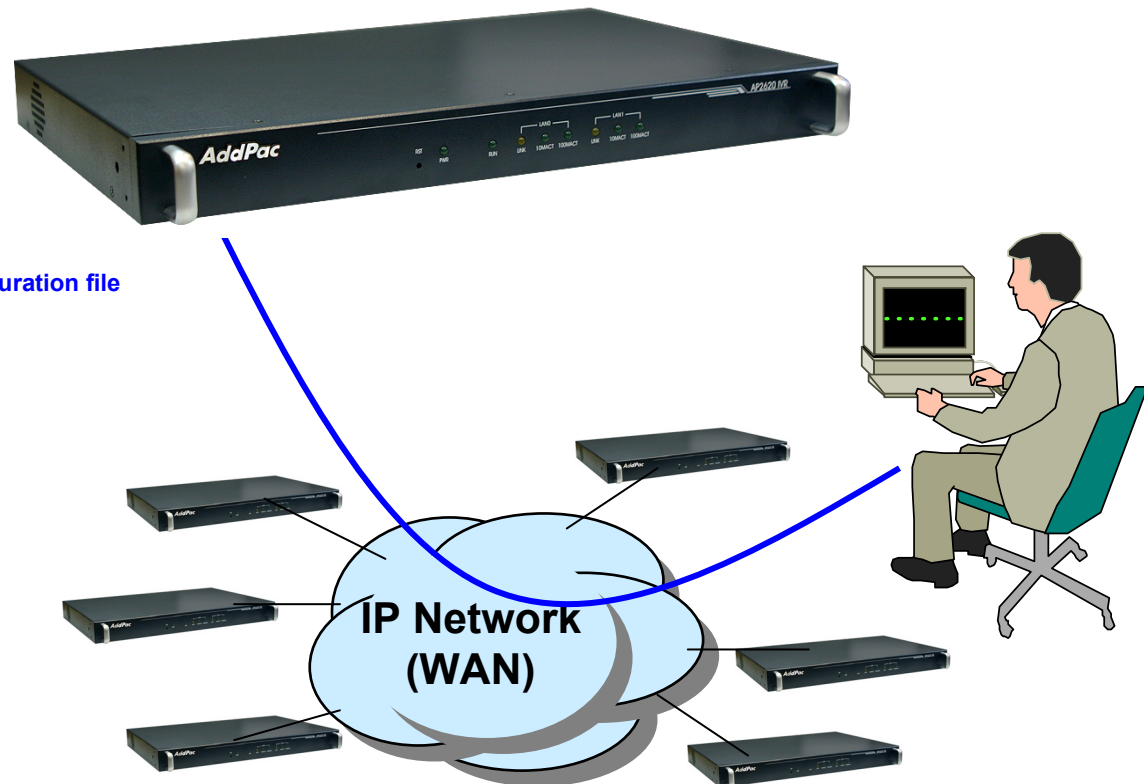
- Cisco Style CLI
- Standard & Extended IPv4 Access List
- Multi-level User Account Management
- IP Accounting
- STUN Client



# Network Management

## AP2620IVR VoIP Gateway

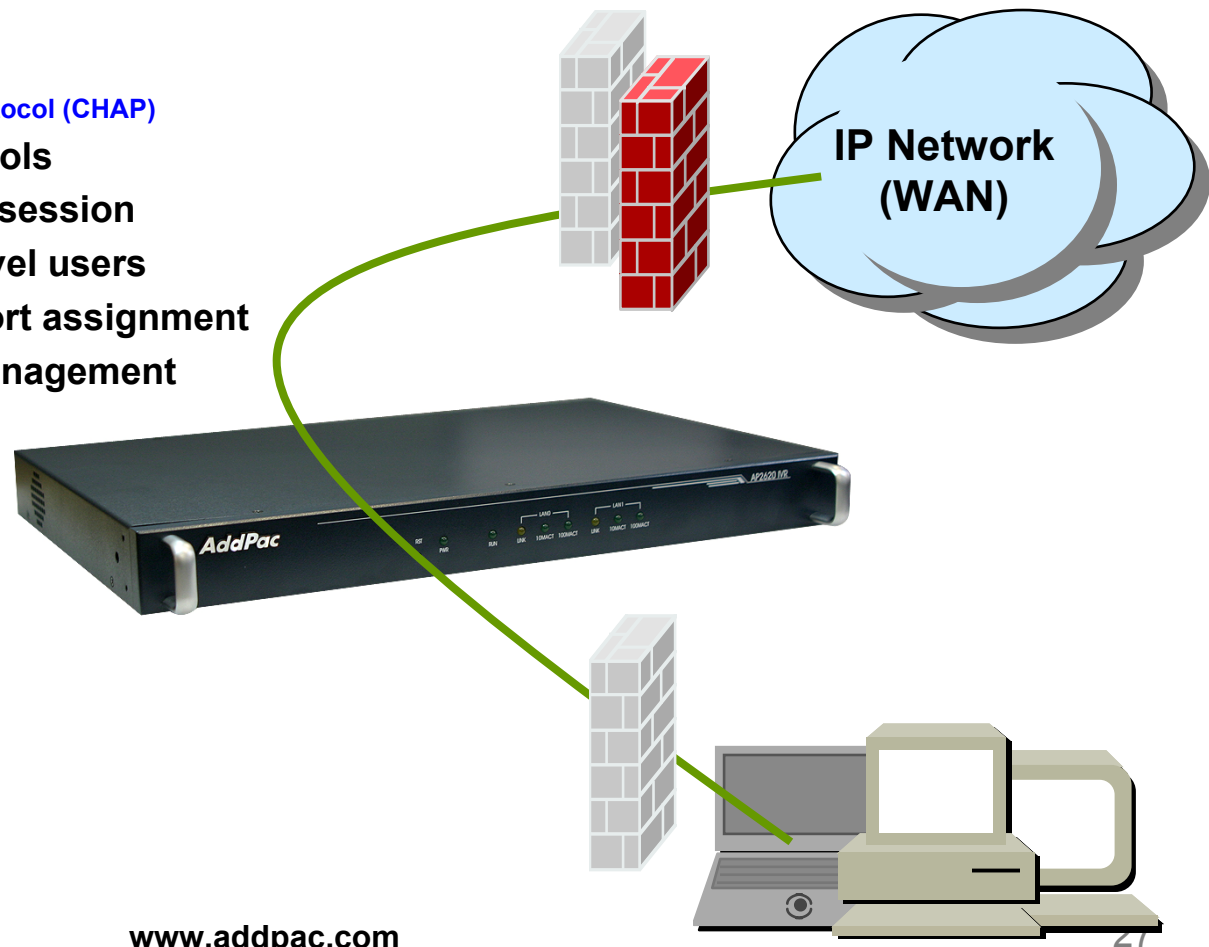
- **SNMP**
  - Standard Simple Network Management Protocol (SNMP) Agent
  - MIB v1 and v2
- **Watch-dog Function**
  - Hardware, software watch-dog services
- **Remote Management**
  - Telnet
  - Rlogin
- **Auto Upgrade Service**
  - HTTP server based APOS image and configuration file auto-upgrade
- **Batch Job**
  - Text-based script downloading
- **Interoperable with AP-VPMS Service**
  - AddPac VoIP Plug & Play Management System (AP-VPMS)



# Security Management

## AP2620IVR VoIP Gateway

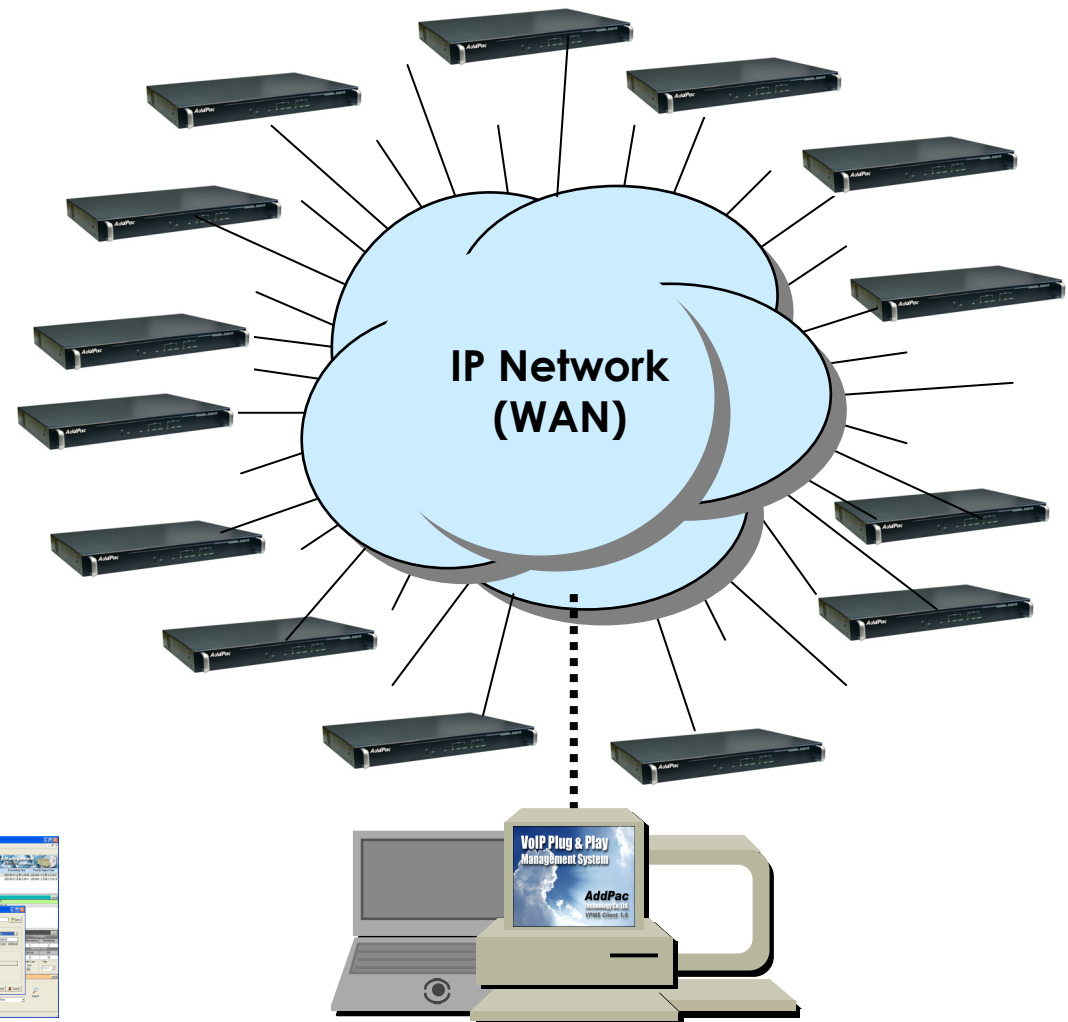
- IP packet filtering
- IP access list
- User authentication
  - Password Authentication Protocol (PAP)
  - Challenge Handshake Authentication Protocol (CHAP)
- Enabling/disabling specific protocols
- Auto-square connection of Telnet session
- Account management for multi-level users
- SNMP/TELNET/FTP/HTTP/TFTP port assignment
- SNMP/TELNET/FTP access list management
- Boot mode security check



# VPMS (VoIP Plug & Play Management System)

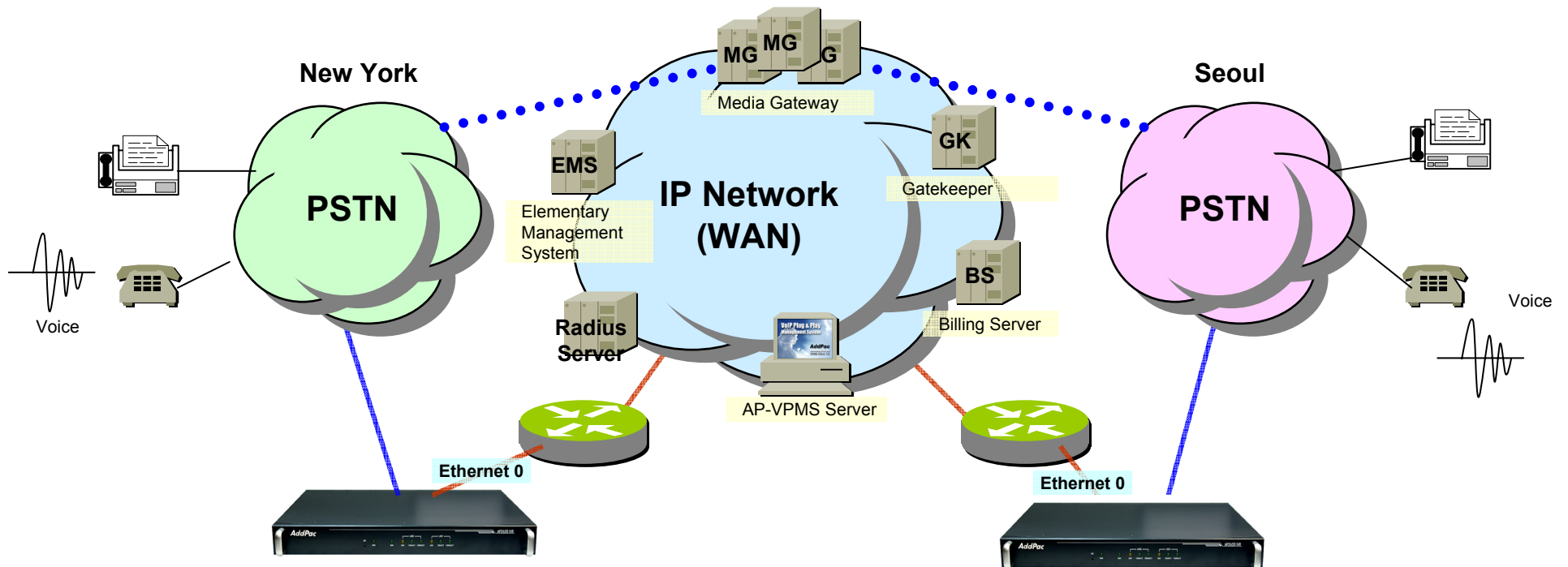
## AP2620IVR VoIP Gateway

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



# Standard Application

## AP2620IVR VoIP Gateway



— FXS Analog Voice Interface

— FXO Analog Voice Interface

— Voice+Data, Ethernet, or WAN Interface

••••• TRUNK n x E1 Voice Interface for PSTN Inter-working



Leased Line/ATM/Frame-Relay/IP Router, xDSL/Cable Modem, etc.



AddPac AP2620IVR VoIP Gateway



Analog Phone

**AddPac**

Fax

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



# Ordering Information

- **AP2620IVR VoIP Gateway Hardware**
  - Two (2) 10/100 Mbps Fast Ethernet Port
  - One (1) RS-232C Console Port
  - 64-bit RISC CPU, 8 MB Flash, 64 MB SDRAM
  - Two (2) VoIP Interface Module Slots
  - Network Cable & Ext. Power Supply, etc. Included
  - Optional VoIP Analog/Digital Interface Modules
- **Built-in APOS Internetworking Software for AP2620IVR**
- **1 Year Hardware Warranty**
- **Product Document**
  - Installation and Operation Guide (PDF)
- **Pricing**
  - AddPac Technology Regional Sales Manager
  - Authorized Sales and Marketing Representatives
  - Please contact [www.addpac.com](http://www.addpac.com).

# VoIP Gateway Series

**Thank you!**

**AddPac Technology Co., Ltd.**  
Sales and Marketing

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