

# PassFinder

## AP2850

Multi-service Router



Aug. 2003

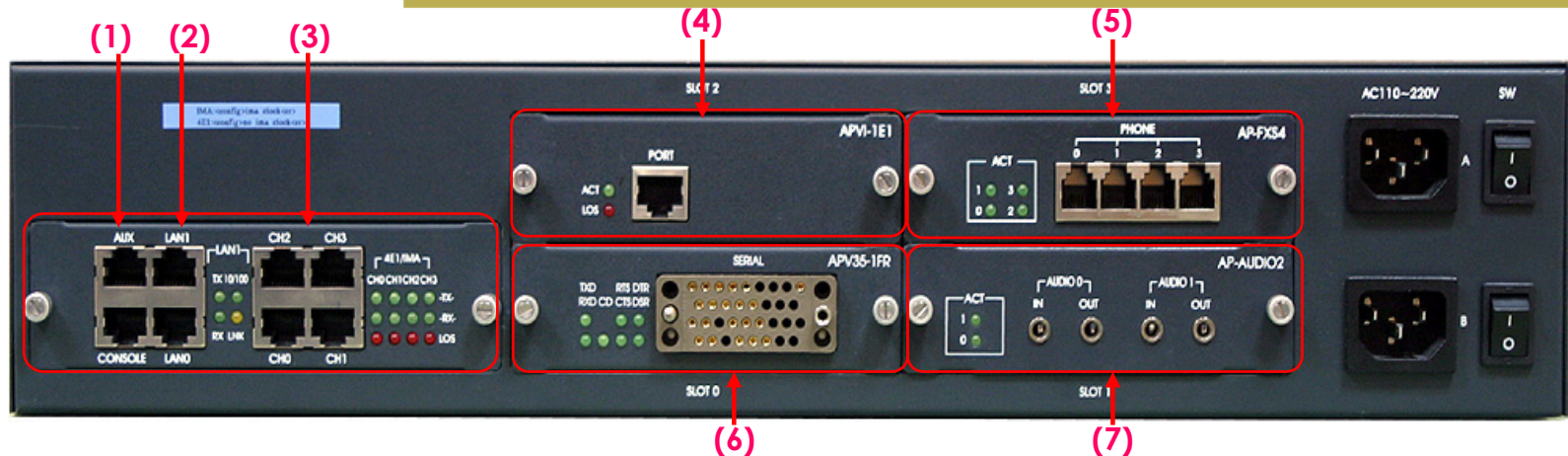
Technical Sales and Marketing

AddPac Technology

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

# PassFinder AP2850 Multi-service Router

## Multi-Service Router Connectivity



No.	Interface	Explanation
(1)	Asynchronous Serial	Two(2) RS-232C serial ports for Local system management
(2)	Ethernet	Two(2) 10/100Mbps Ethernet Ports for LAN interface
(3)	ATM Multiple E1/ IMA Interface	4-Port Multiple E1/T1 ATM Interface / IMA Interface
(4)	Module Slot 0 (Digital E1/T1 VoIP Module)	<b>4Port FXS, 4Port FXO, 4Port E&amp;M, 1Port Digital E1/T1, 1Port Frame-Relay Module is available</b>
(5)	Module Slot 1 (FXS VoIP Module)	
(6)	Module Slot 2 (Frame-Relay Module)	
(7)	Module Slot 3 (AUDIO 2 Module)	

# AddPac VoIP Products Road-Map

Multi-services Specific

Application Specific

## 1/2/4/8/16~60-Ports Voice



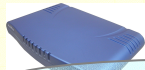
AP3100 VoIP Gateway



AP2120 VoIP Gateway



AP100x/1100 VoIP G/W Series



AP300 VoIP G/W Series



AP200 VoIP G/W Series



AP160 VoIP Gateway

## Voice over IP Solutions

### 4/8/16, 30~120-Ports Voice



AP2850 Multi-service Router



AP2830 Multi-service Router



AP2520S Secure VoIP Gateway



AP2520R VoIP Router



AP2520G VoIP Gateway



AP2110 VoIP Gateway

## VoIP Network Management SW



AP-VPMS S/W Solution

## Voice & FAX Broadcasting System



AP3120 Voice Broadcasting System



AP3220 FAX Broadcasting System



AP1601 Voice Broadcasting Terminal

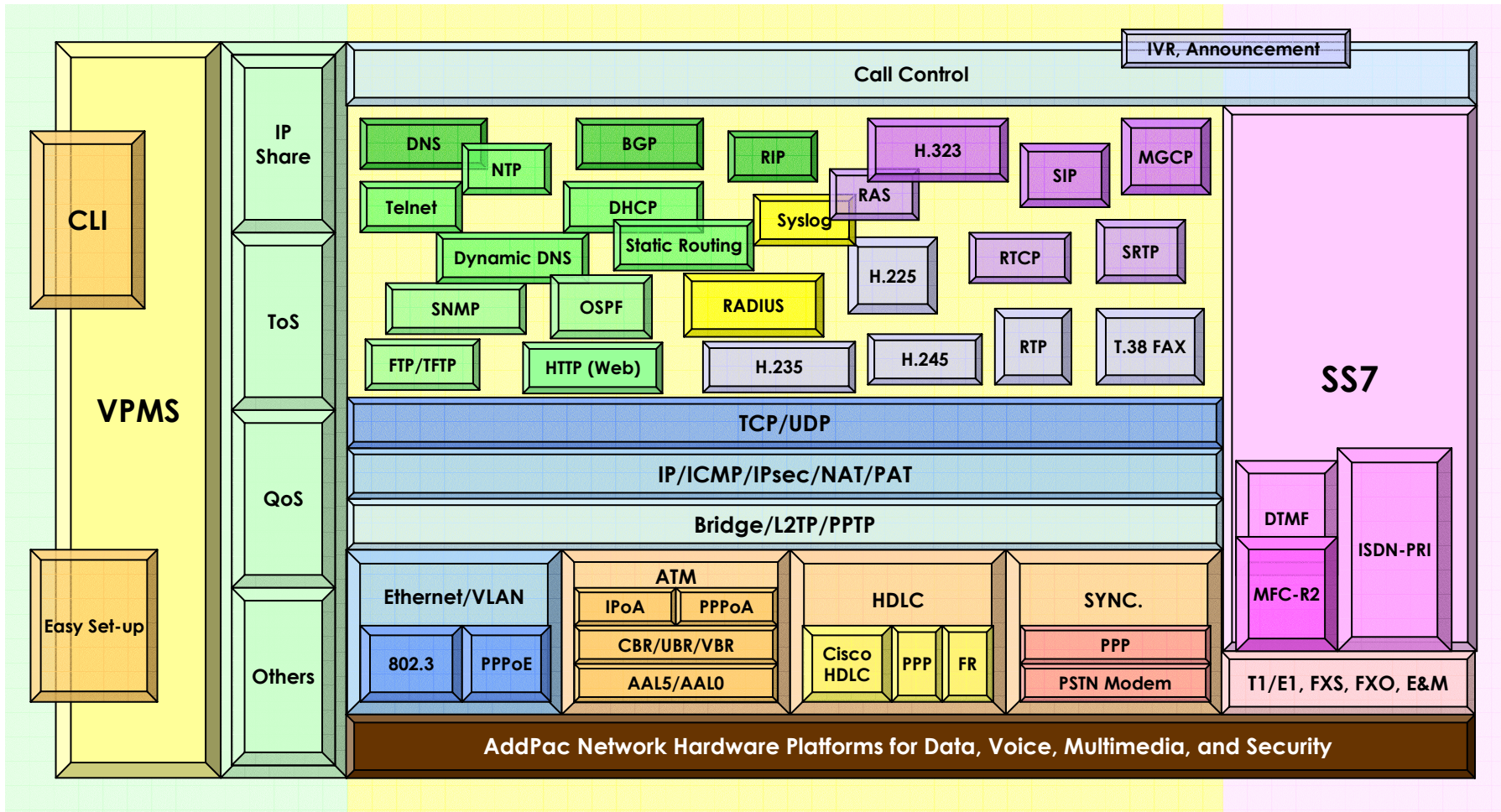
General Purpose VoIP Networking

VoIP & Data Networking

IP Application Solutions

# AP2850 Multi-service Router Product Overview

## APOS Internetworking Protocol Stack



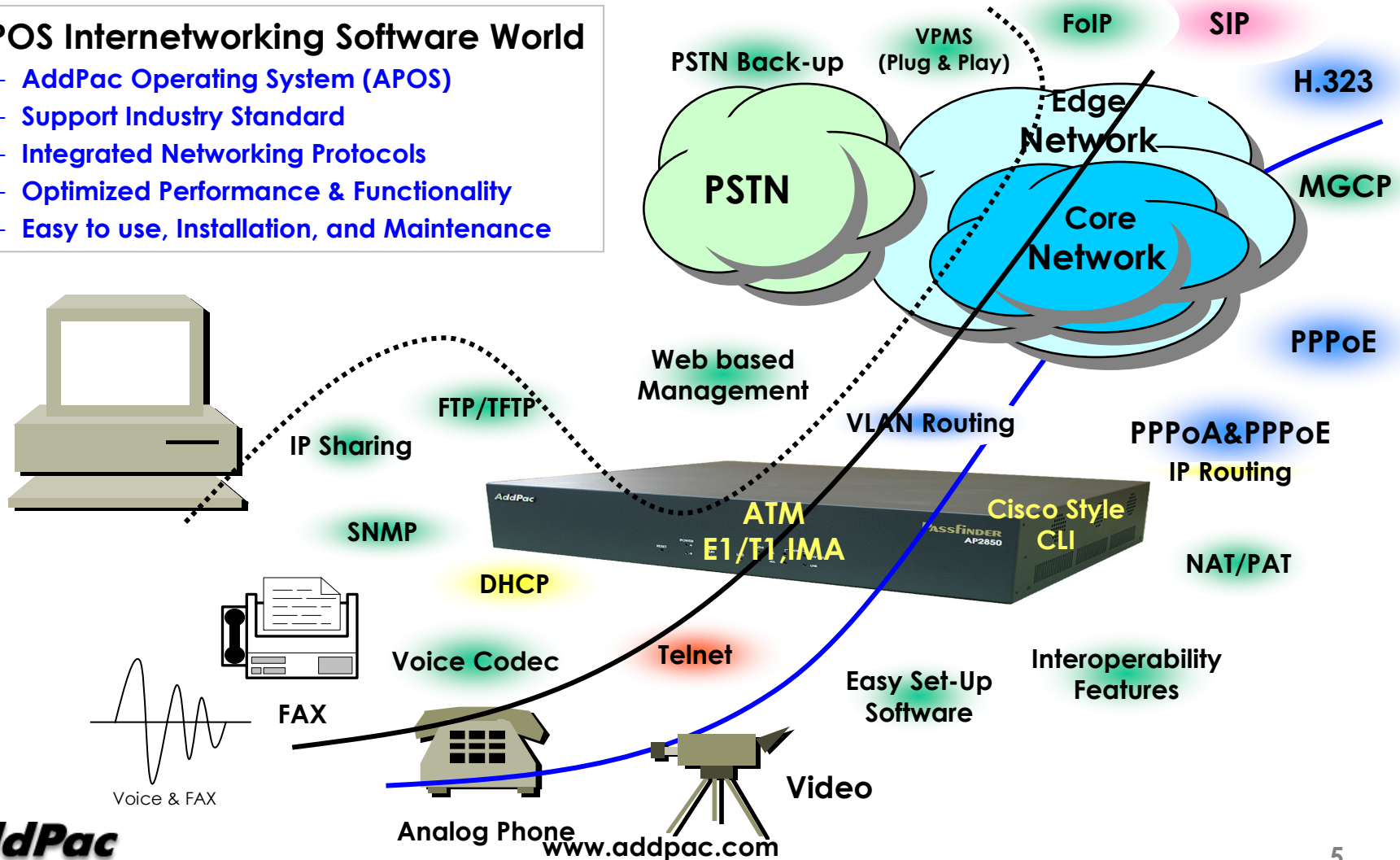


# AP2850 Multi-service Router Product Overview

## APOS Internetworking S/W World

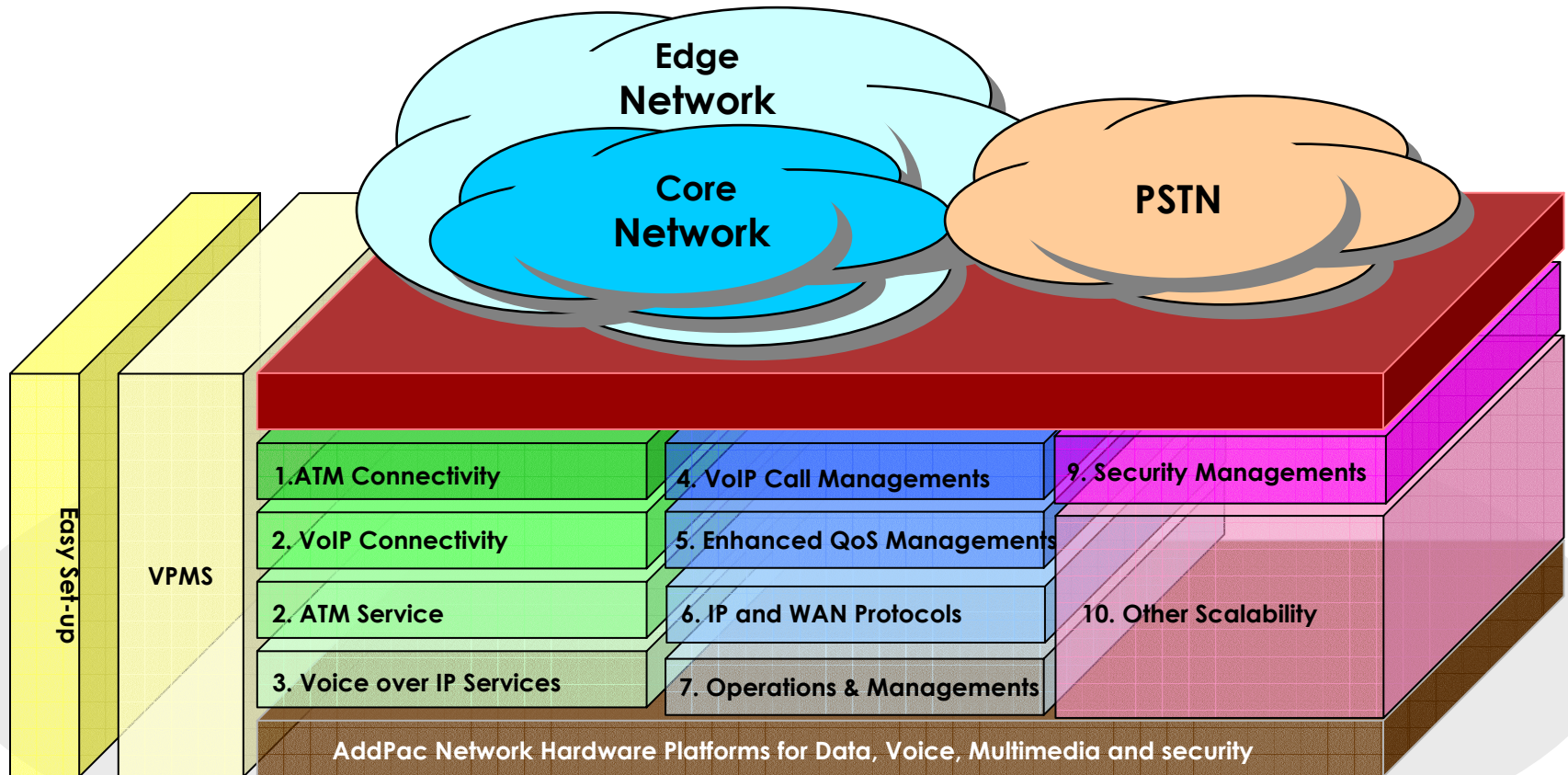
### • APOS Internetworking Software World

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



# AP2850 Multi-service Router Product Overview

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



# AP2850 Multi-service Router Product Overview

## Multi-Service Router Connectivity

### • Network Interface Modules

#### @ 4 E1 ATM(IMA,Independent E1)Network Interface Module

- 4-port ATM Multiple E1/T1, IMA Interface Card
- 2-Port 10/100Mbps Fast Ethernet Card
- 2-Port RS232C Asynchronous Serial Card

#### @ 1 E1 ATM Network Interface Module

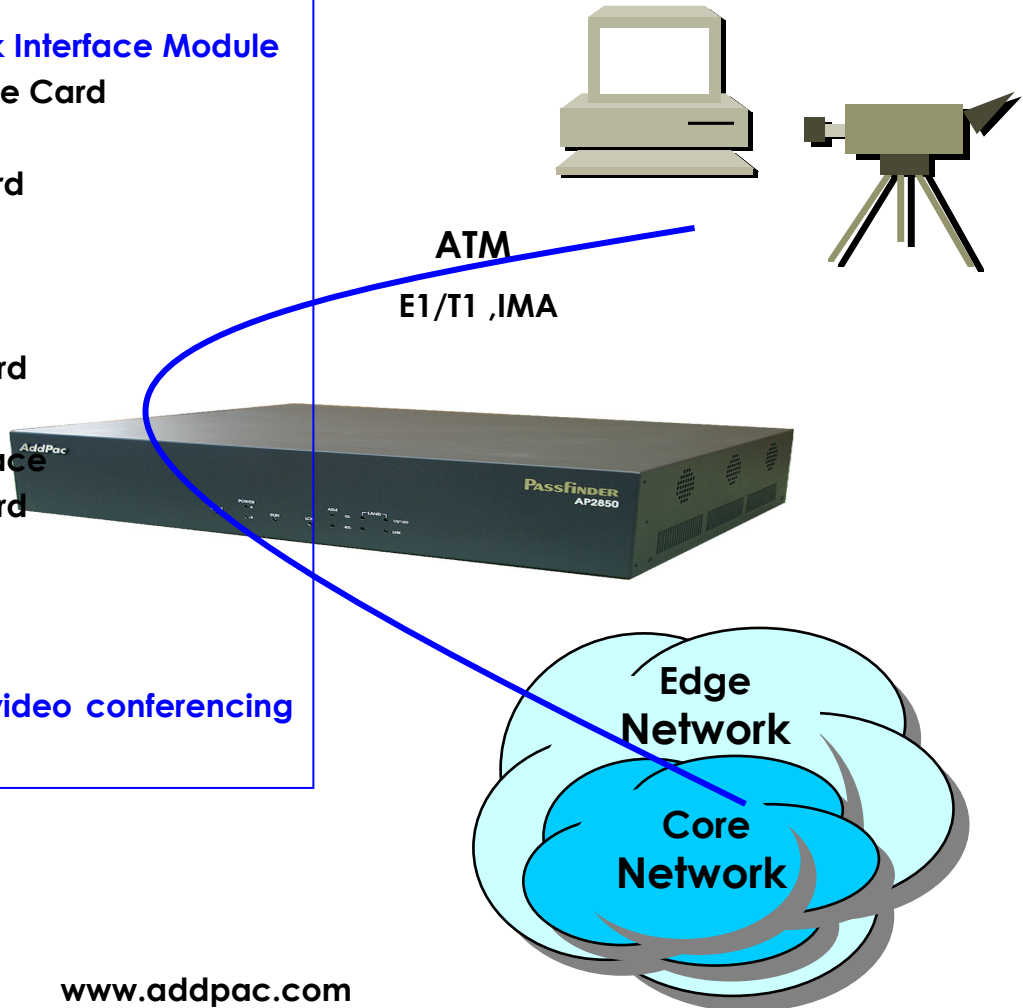
- 1port E1/T1 ATM Card
- 2-port 10/100Mbps Fast Ethernet Card
- 2-port RS232C Asynchronous Serial Card

#### @ Ethernet Network Interface Module

- 2-port 10/100Mbps Fast Ethernet Interface
- 2-port RS232C Asynchronous Serial Card

### • AP-FRV35 (1-port Frame-Relay)

- 1-port Frame-Relay Network Card
- Support various application such as video conferencing solutions



# AP2850 Multi-service Router Product Overview

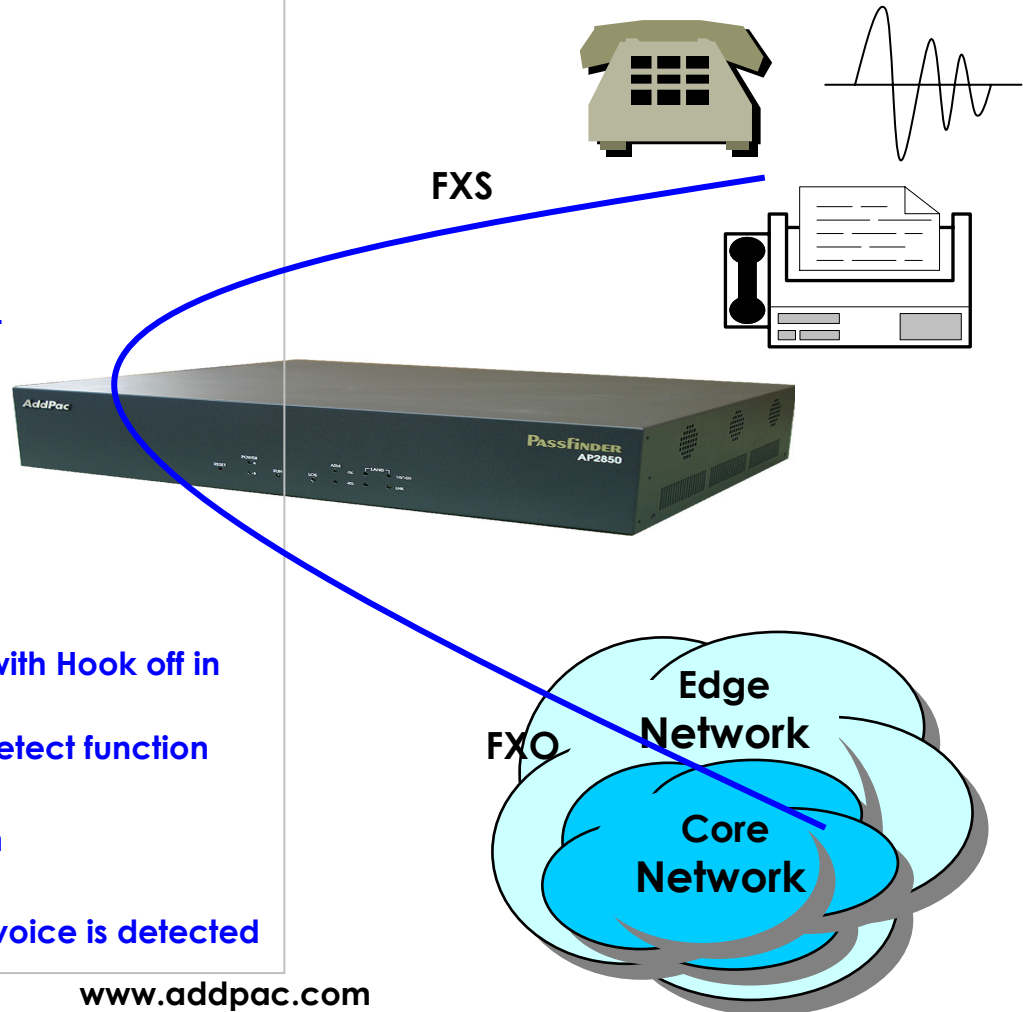
## Multi-service Router Connectivity

### • 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





# AP2850 Multi-service Router Product Overview

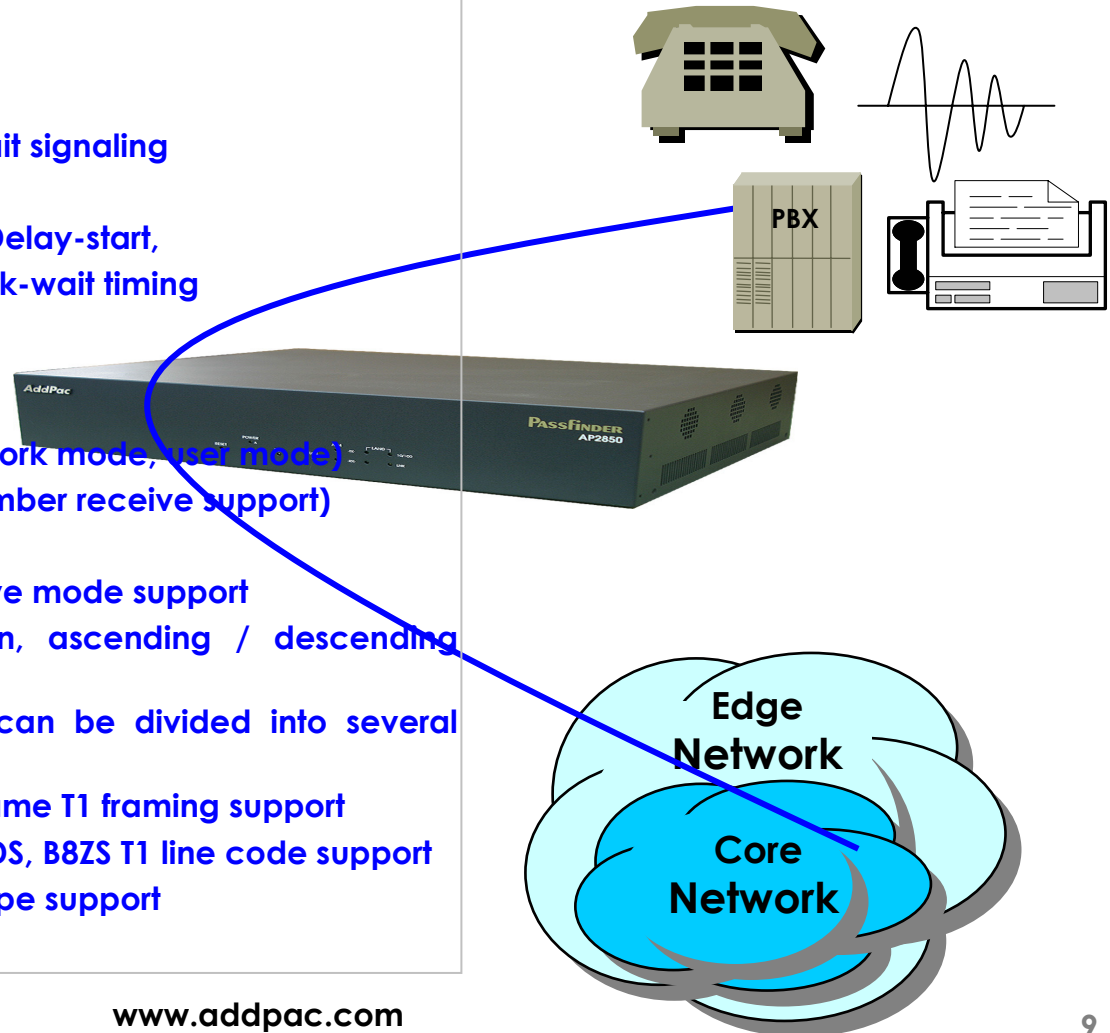
## Multi-service Router Connectivity

### • 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

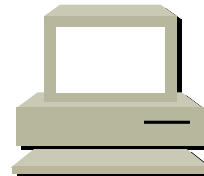
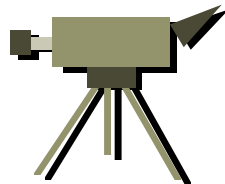
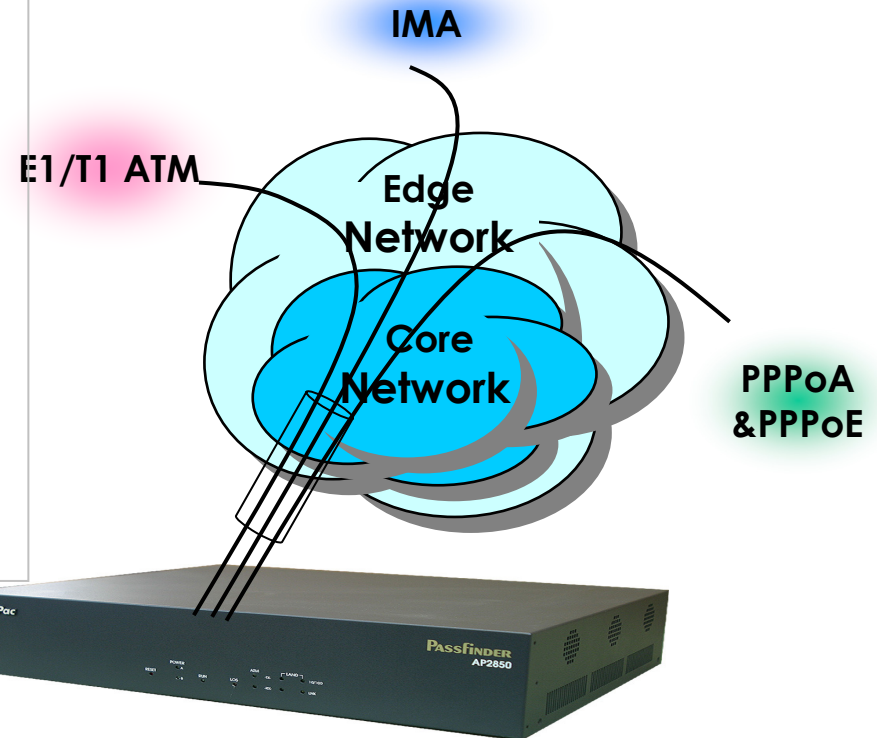
- ISDN PRI signaling support (network mode, user mode)
- R2 signaling support (calling number receive support)
- DTMF signaling support
- Clock source master mode, slave mode support
- In case of channel allocation, ascending / descending random support
- One physical E1/T1 interface can be divided into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



# AP2850 Multi-service Router Product Overview

## ATM Service

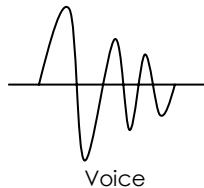
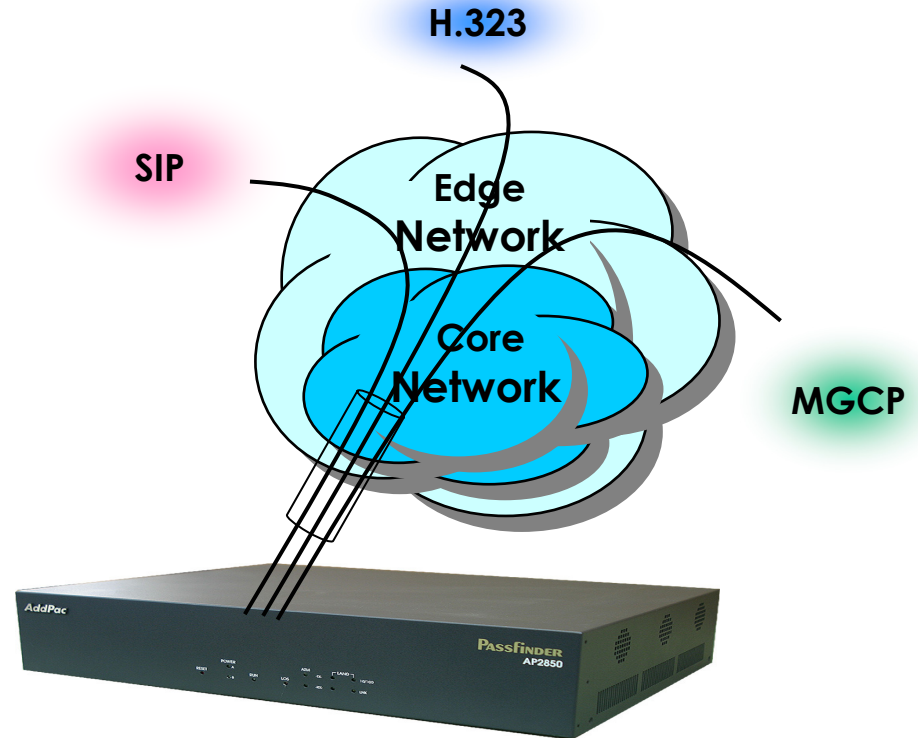
- Inverse Multiplexing over ATM (IMA) service
- ATM PVC UNI3.0, 3.1, 4.0 Support
- RFC1483 and RFC1577 based IPoA Service
- PPPoA and PPPoE Services
- ATM Classes of Service Support
  - ATM PVCs and SVCs Service
  - CBR, rt-VBR, nrt-VBR, UBR, and UBR+ Support
  - AAL0 ,AAL5 and AAL2
- PCR and MCR Service
- ATM Traffic Management Support
- provide Priority Level of 8-layer with ATM Pace Control
- Traffic shaping on a per-VC basis



# AP2850 Multi-service Router 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



# AP2850 Multi-service Router 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



# AP2850 Multi-service Router Product Overview

## Voice over IP Service (cont.)

### • Voice Codec

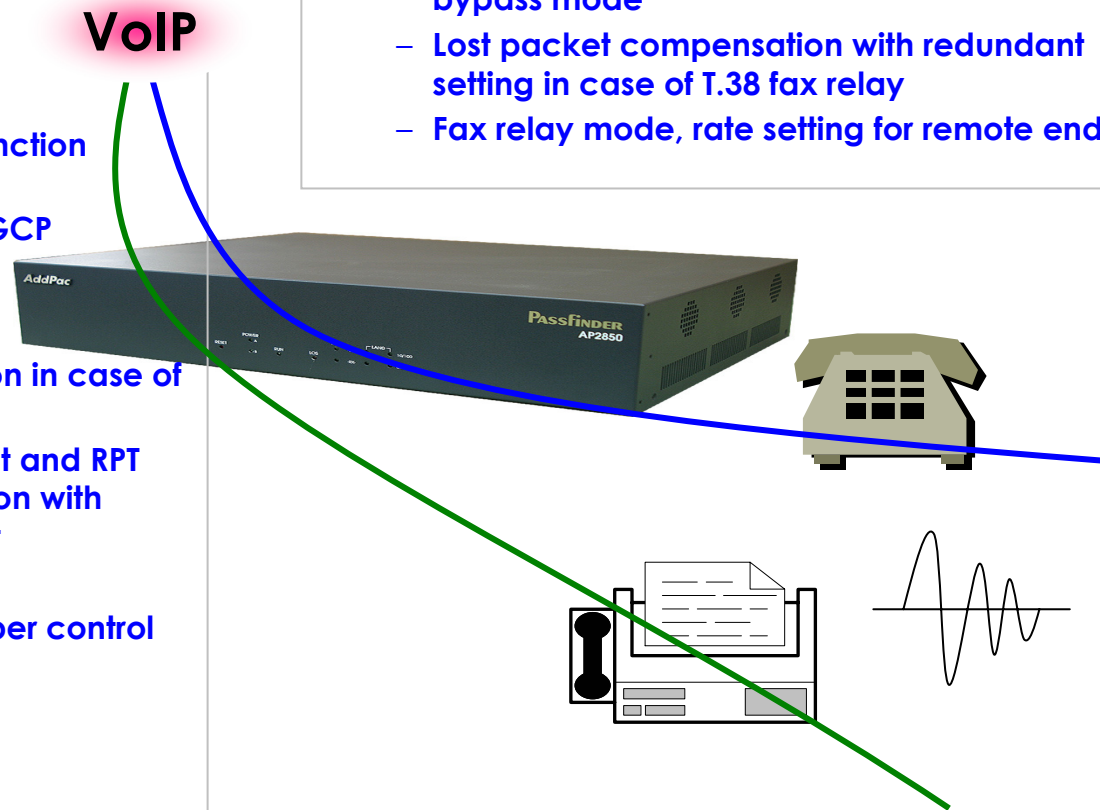
- G.711 A-Law, G.711 U-Law
- G.726 r16, G.726 r32
- G.729A
- G.723.1 r63, G.723.1 r53
- VAD (Voice Activity Detection) function support
- DTMF relay support (H.323, SIP, MGCP common) based on RFC2833

### • 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





# AP2850 Multi-service Router Product Overview

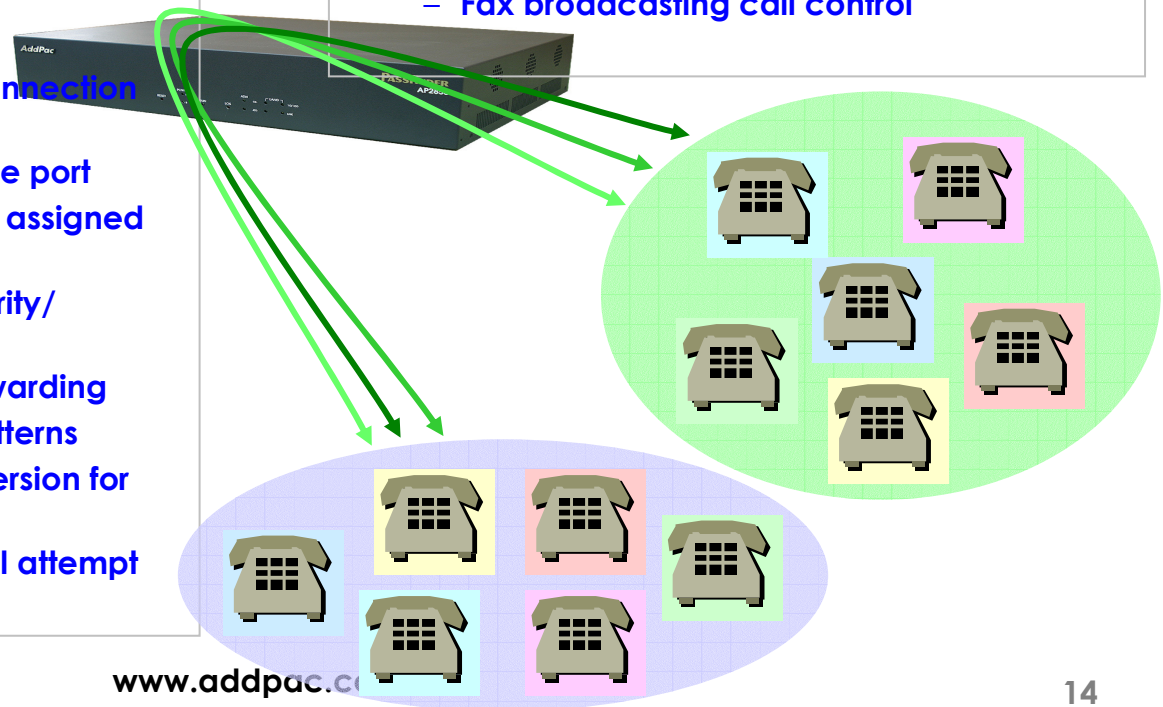
## VoIP Call Managements

### • 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



# AP2850 Multi-service Router Product Overview

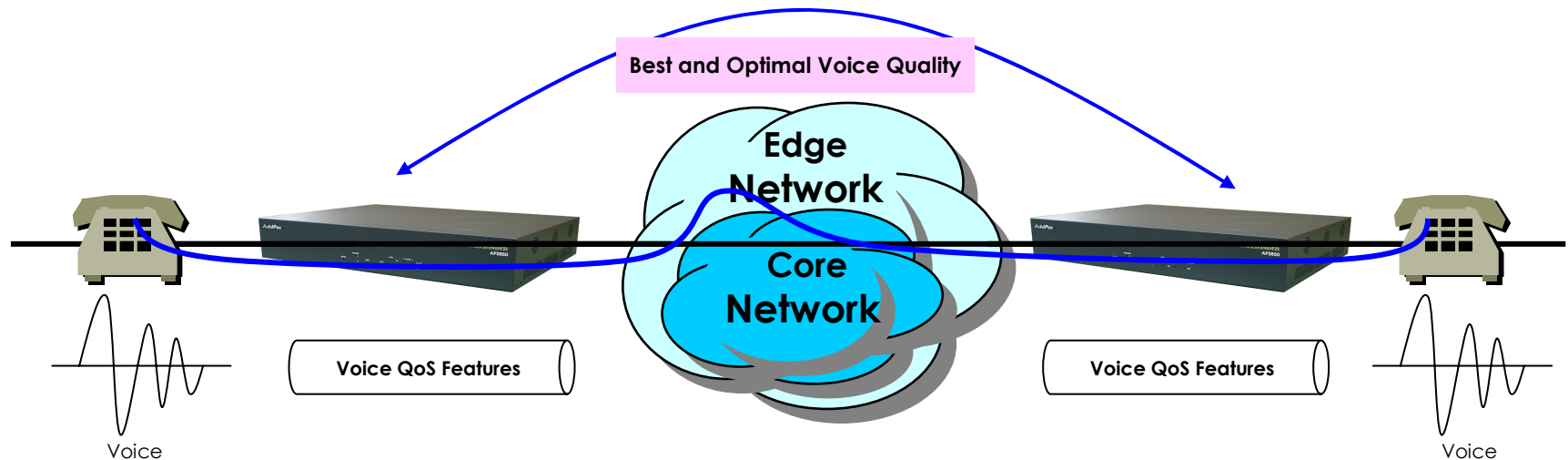
## Enhances QoS Managements

### • 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

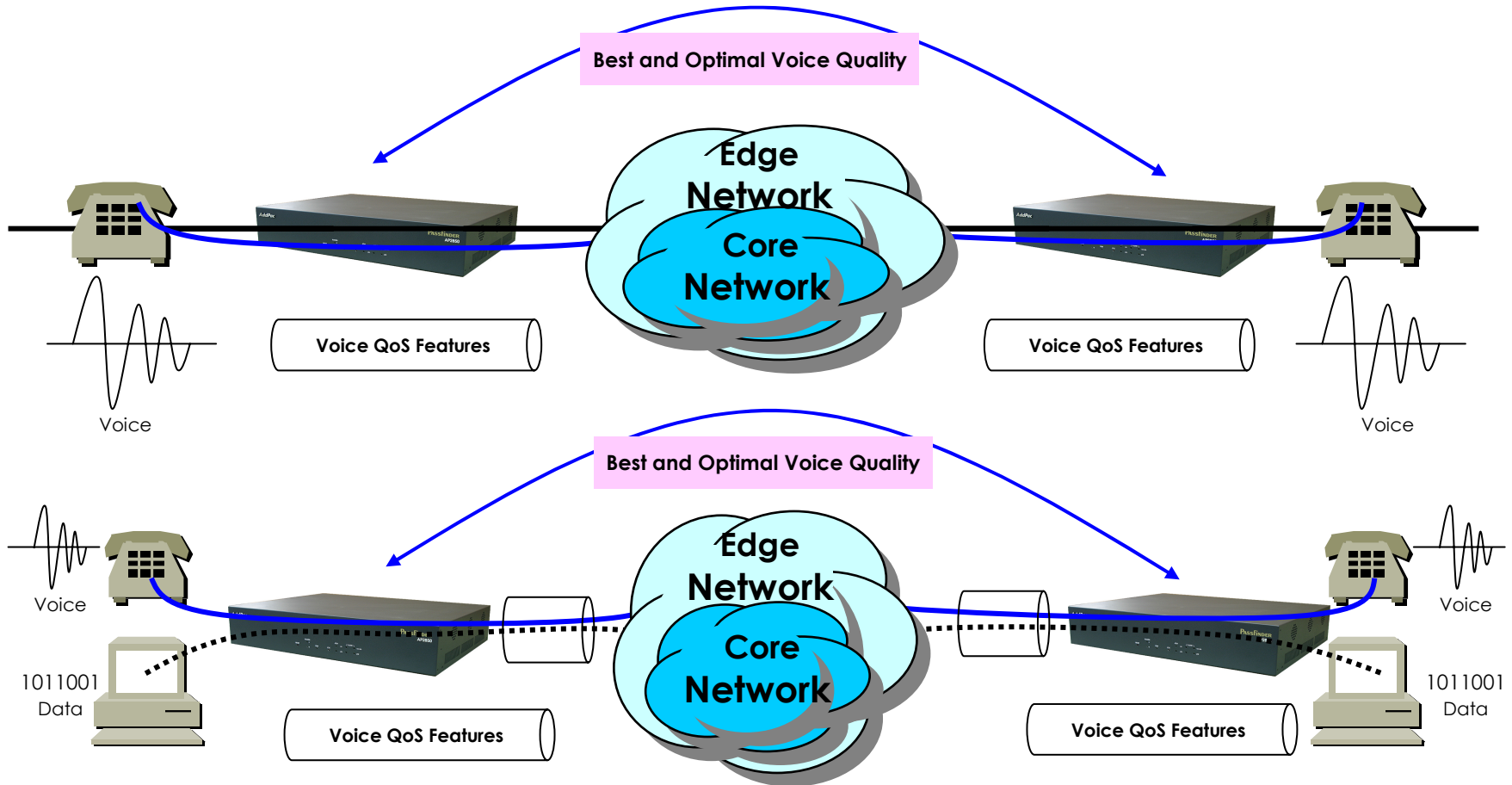
### • Enhances **Receive** Voice QoS Features

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



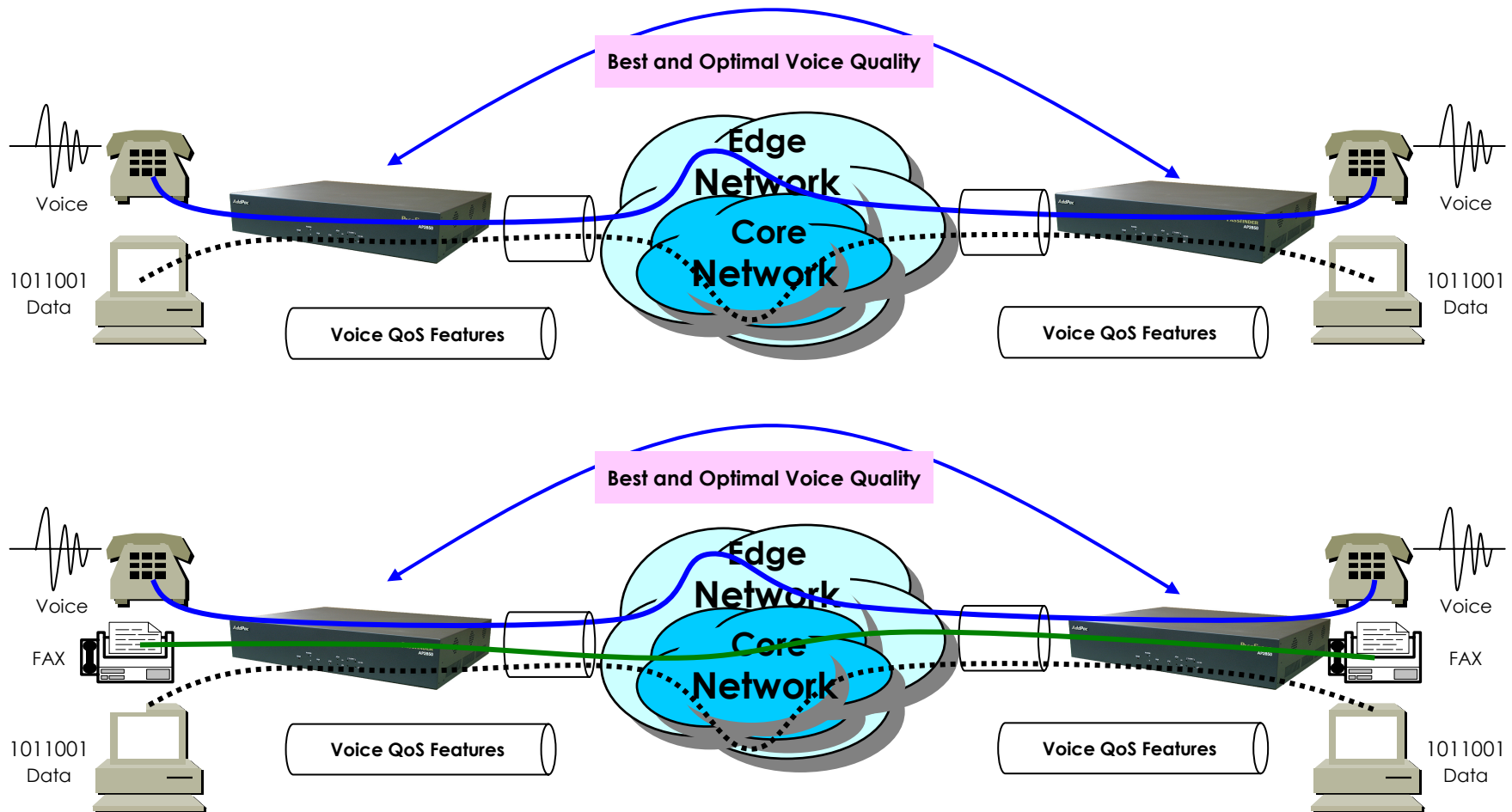
# AP2850 Multi-service Router Product Overview

## Enhances QoS Managements (cont.)



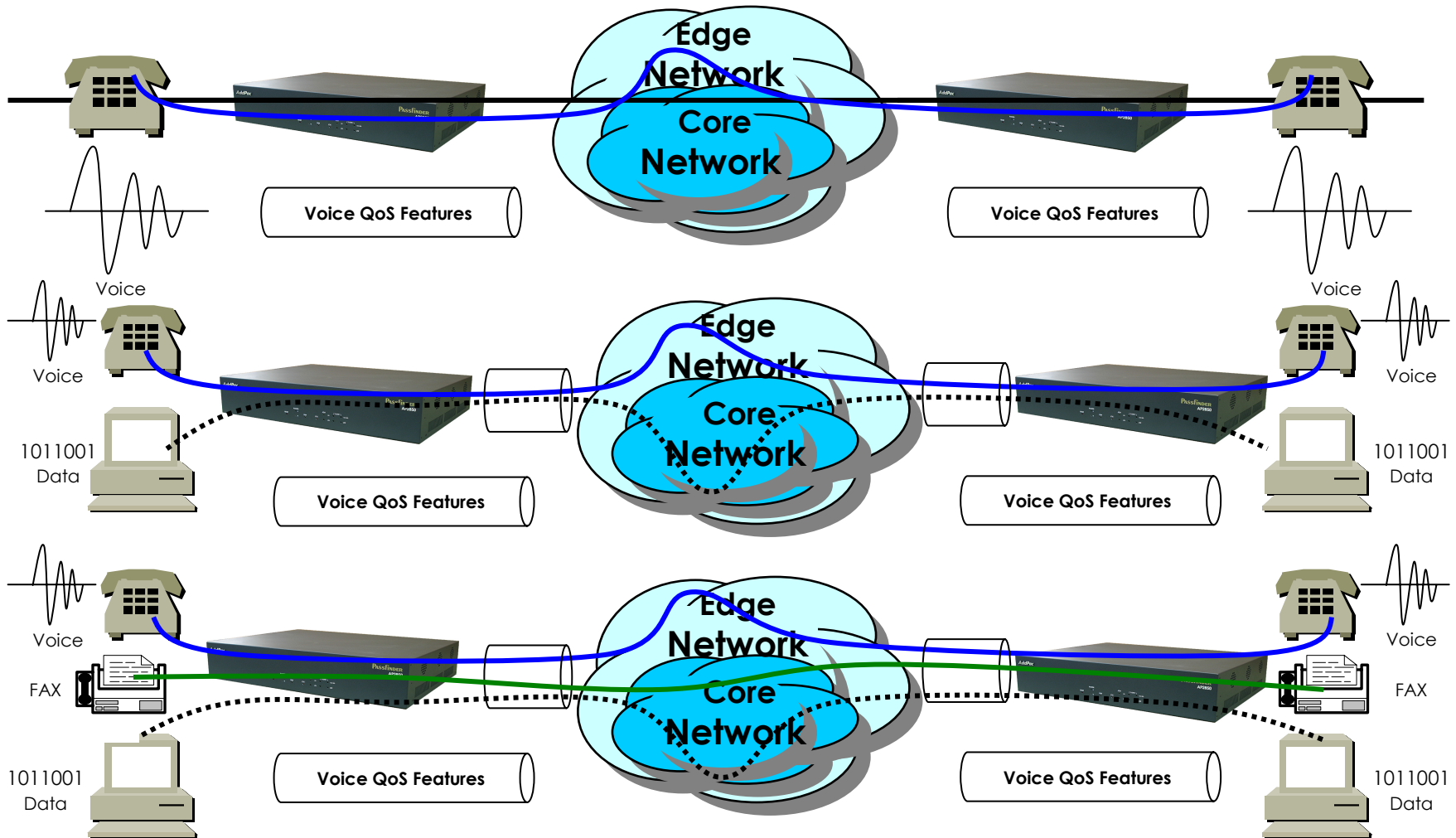
# AP2850 Multi-service Router Product Overview

## Enhances QoS Managements (cont.)



# AP2850 Multi-service Router Product Overview

## Enhances QoS Managements (cont.)





# AP2850 Multi-service Router Product Overview

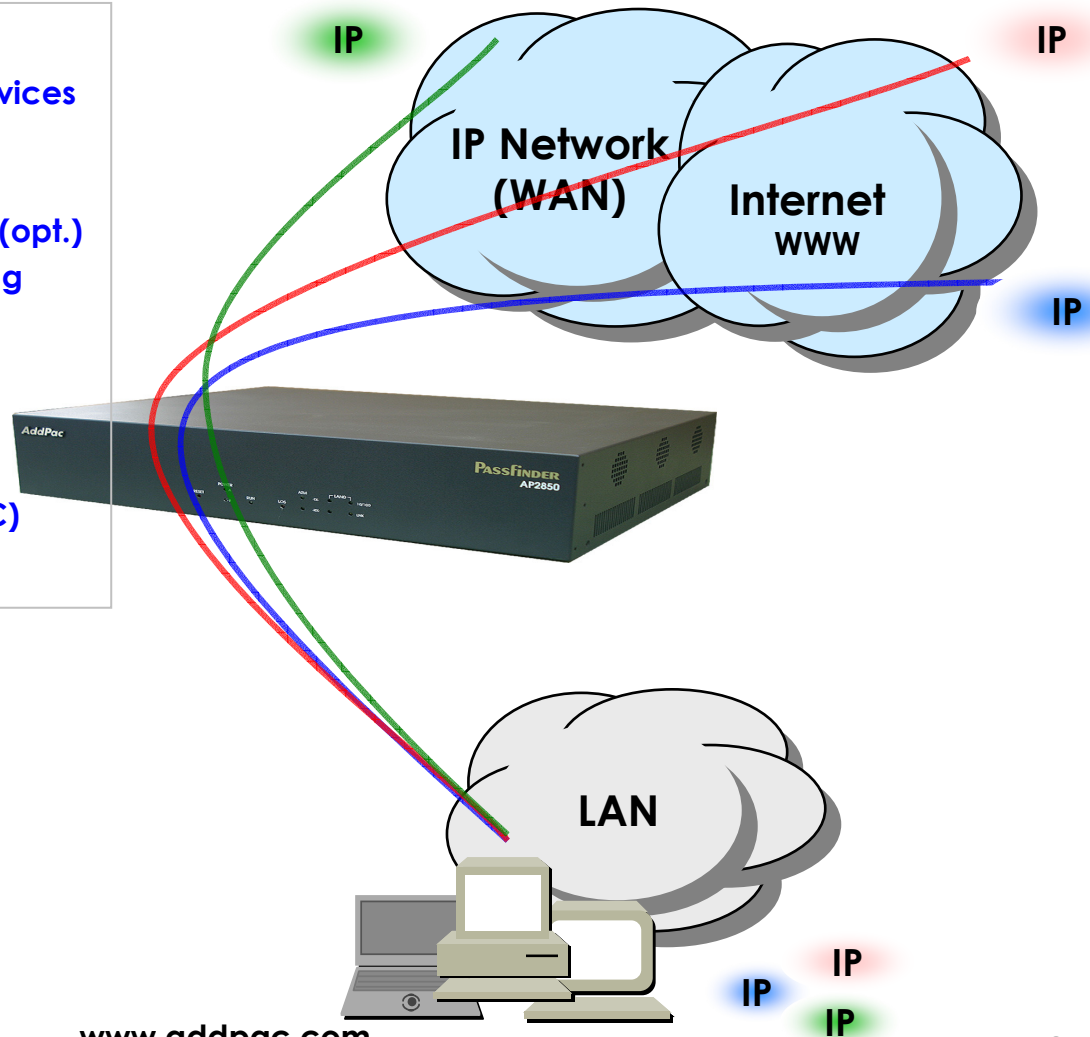
## IP and WAN Protocols

- 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

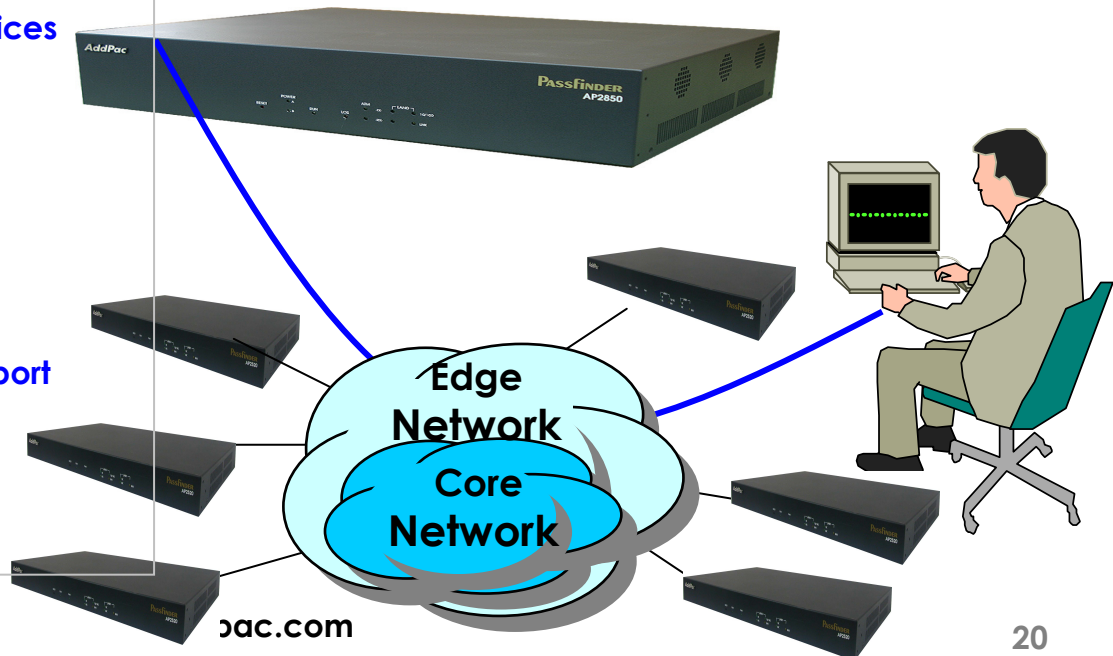


# AP2850 Multi-service Router Product Overview

## 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

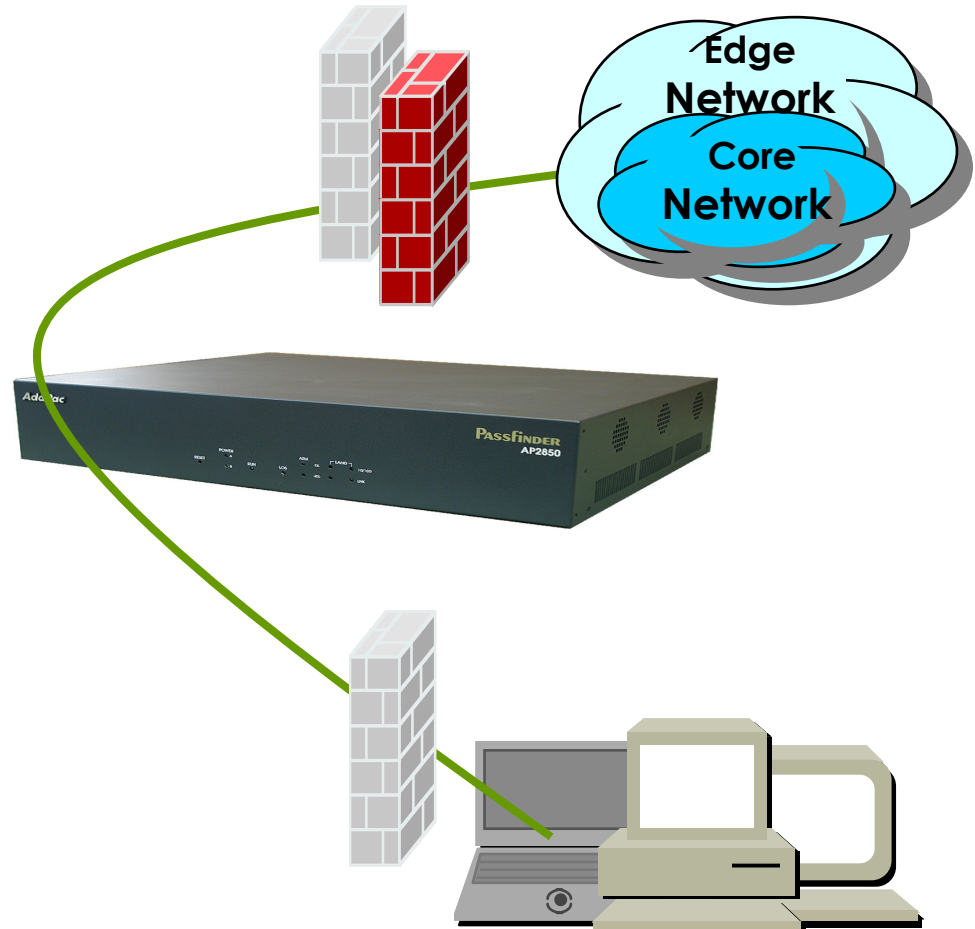
- **Easy Set-up Service**
  - MS Windows Graphical User Interface (GUI) based installation Software Solution
  - Easy installation Set-up service
- **Interoperable with AP-VPMS Service**
  - AddPac VoIP Plug & Play Management System (AP-VPMS)



# AP2850 Multi-service Router 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



# AP2850 Multi-service Router Product Overview

## Network Scalability

- **IP Sharing Feature**

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

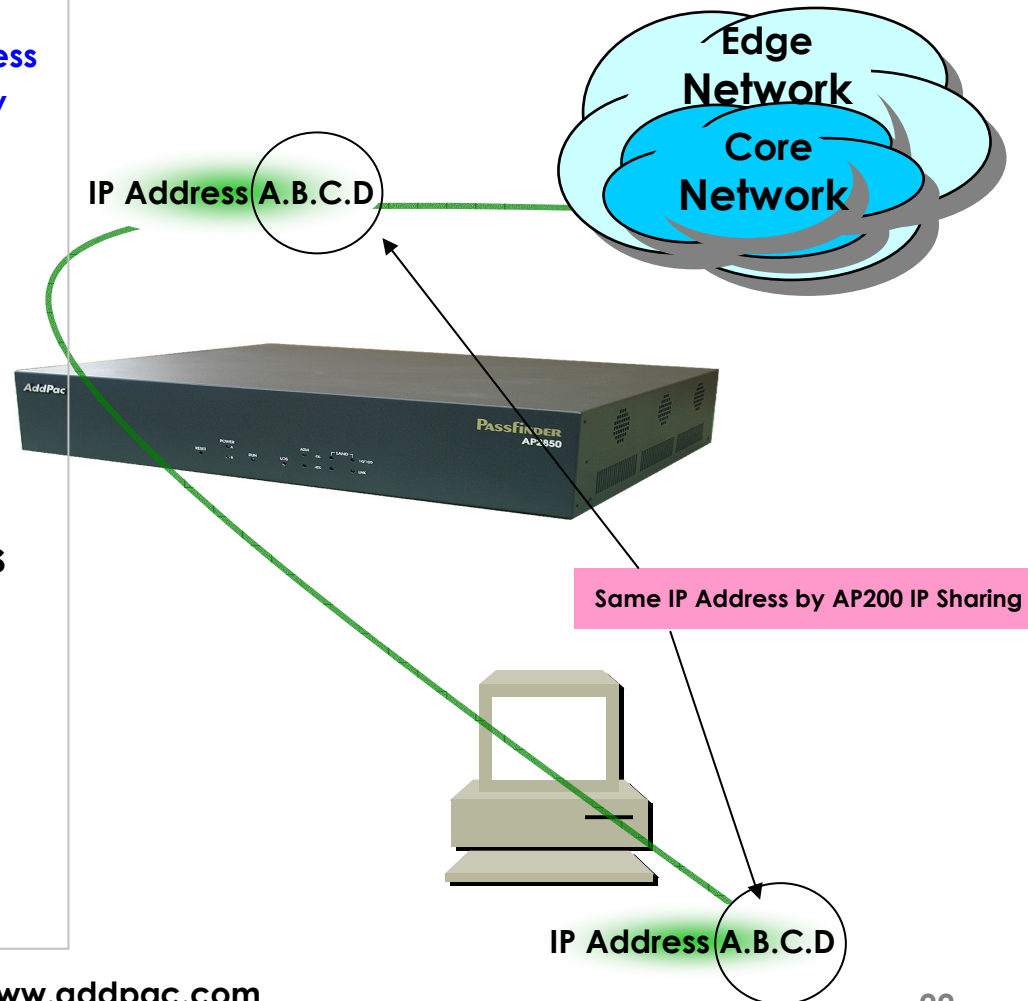
- **IP Sharing Network Environment**

- 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**

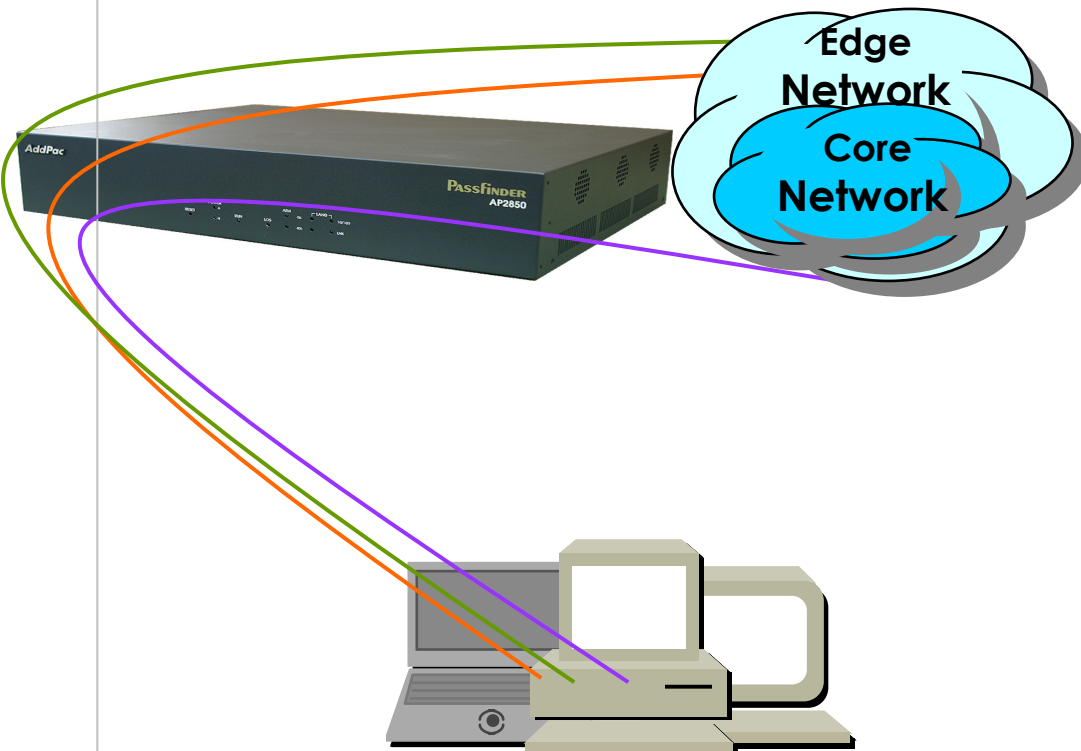
- PPPoE
- PPPTP
- PPPoA
- DHCP



# AP2850 Multi-service Router 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

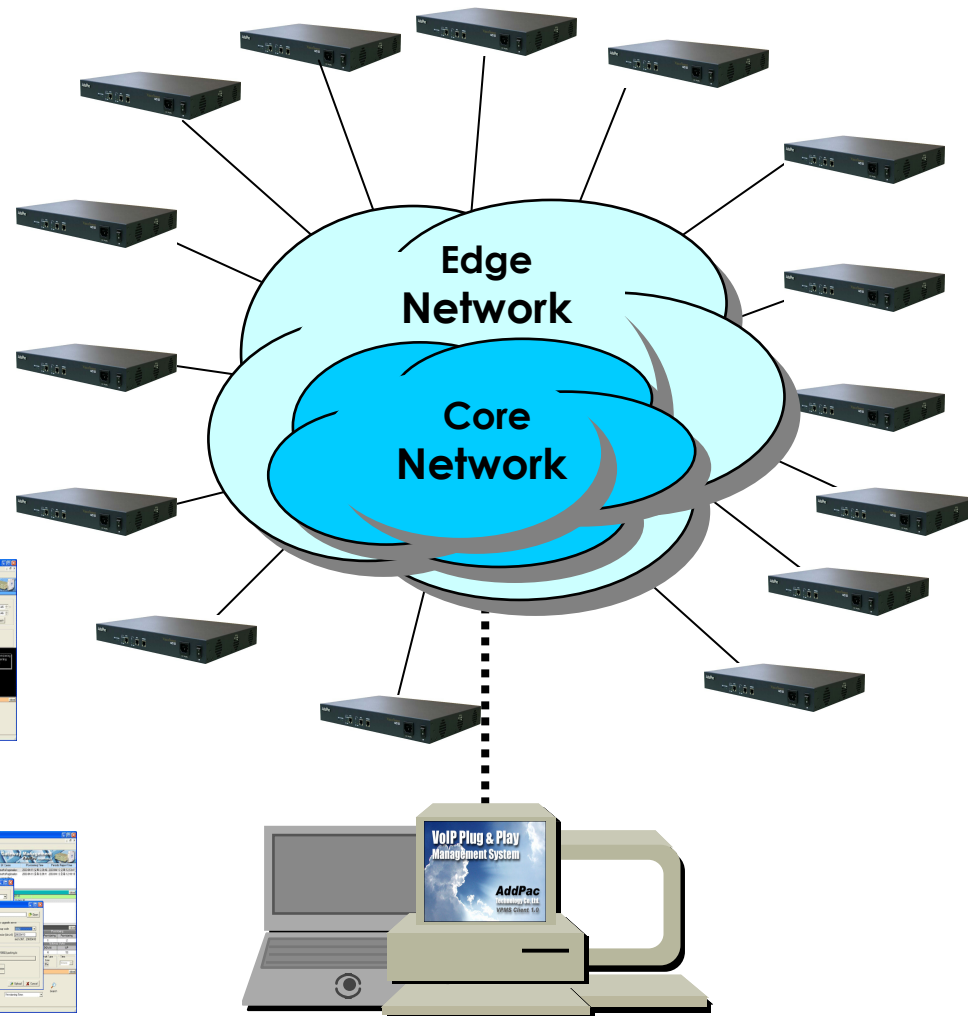




# AP2850 Multi-service Router Product Overview

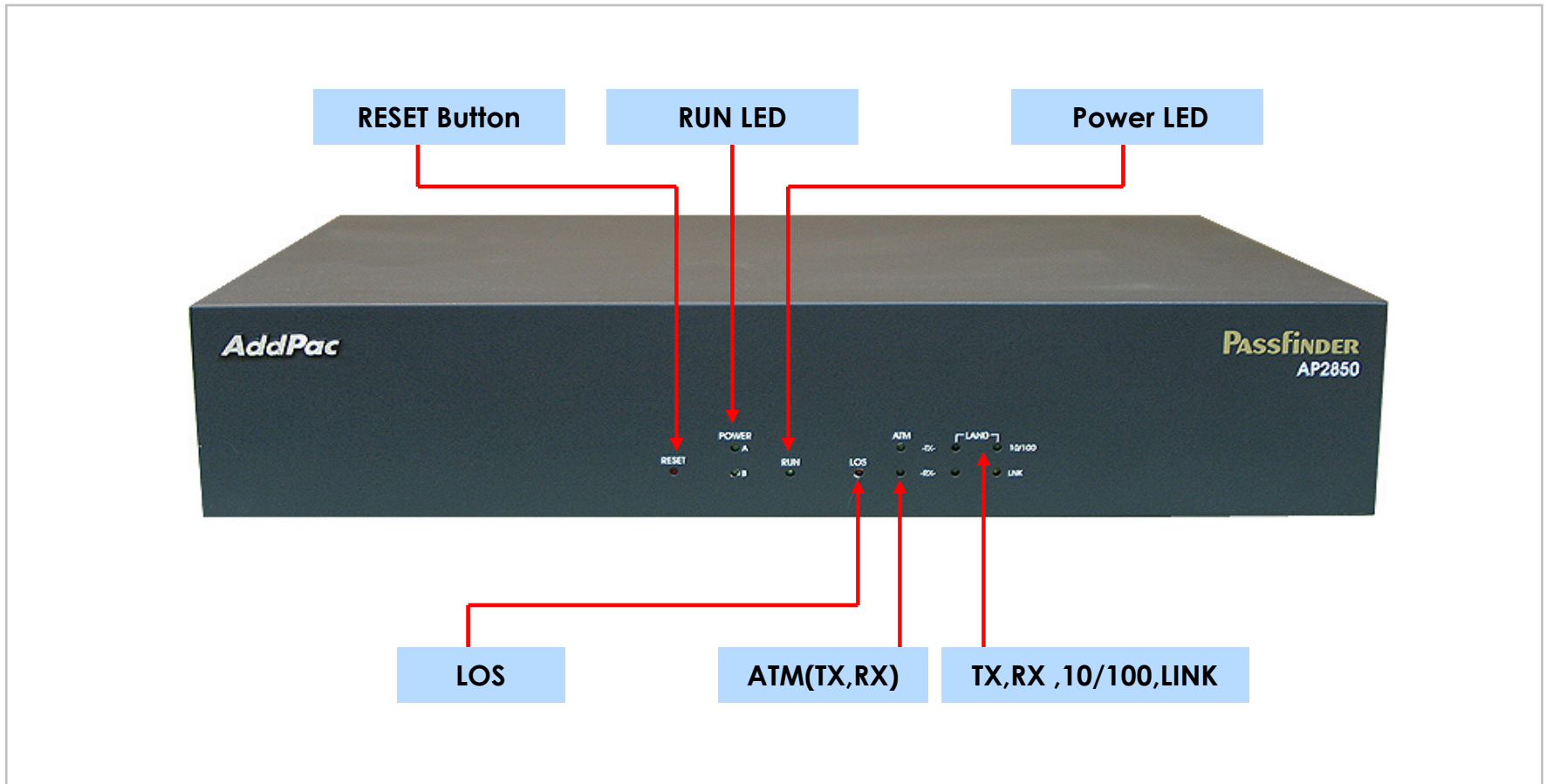
## VoIP Plug & Play System (VPMS)

- **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



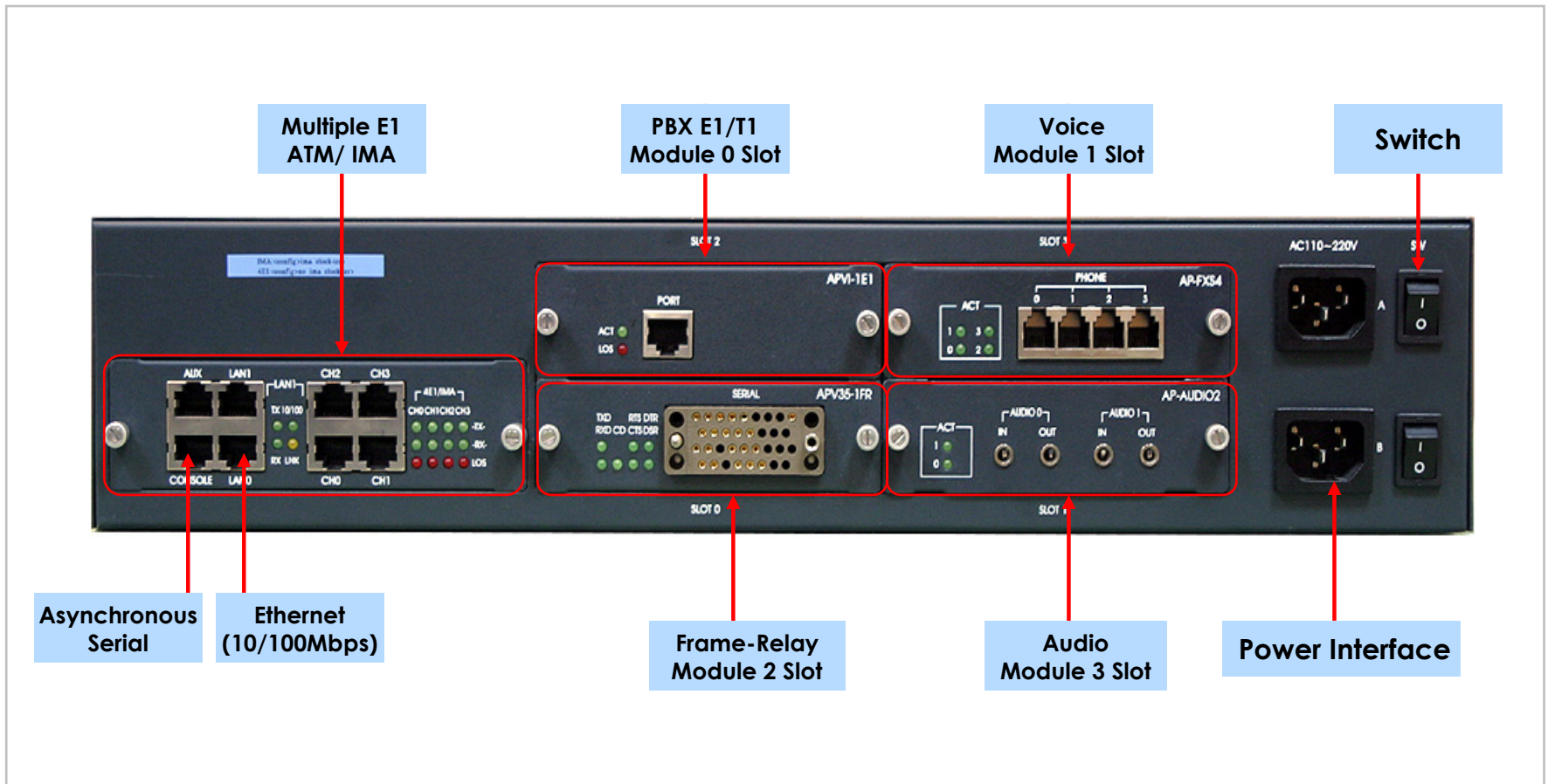
# AP2850 Multi-service Router Product Overview

## AP2850 Network Configurations



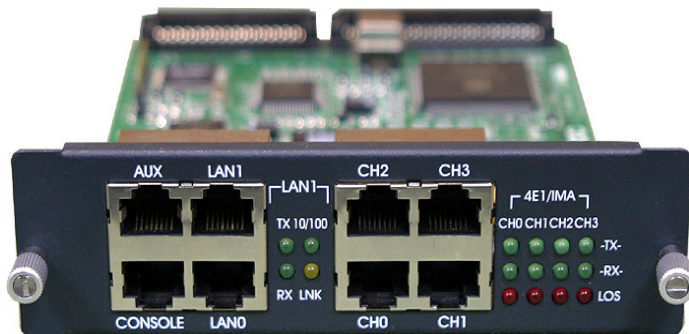
# AP2850 Multi-service Router Product Overview

## AP2850 Hardware Specification



# AP2850 Multi-service Router Product Overview

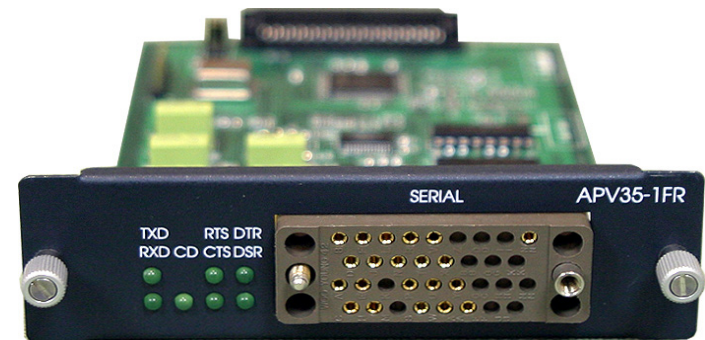
## AP2850 Network Interface Module



4-Port Multiple E1/T1 ATM Interface / IMA Interface

2-Port 10/100Mbps Fast Ethernet Interface

2-Port Asynchronous Serial Interface

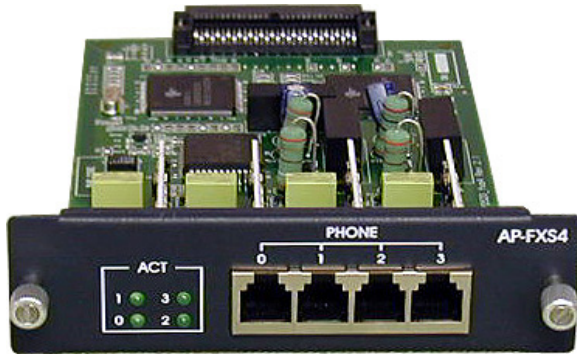


• AP-FRV35 (1-port Frame-Relay)

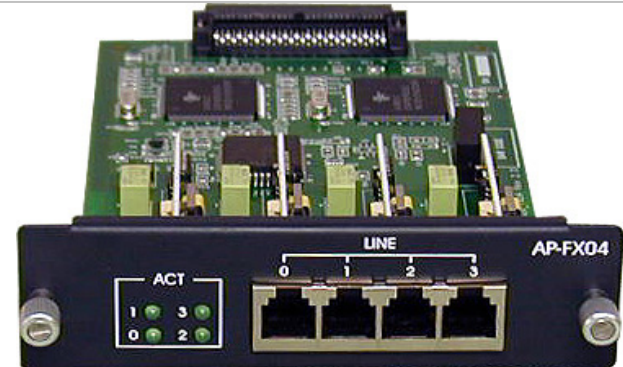


# AP2850 Multi-service Router Product Overview

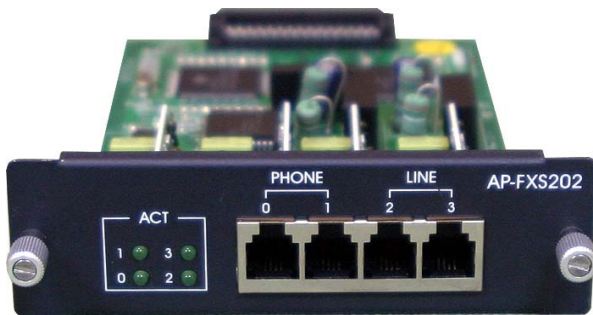
## AP2850 Analog Voice Module



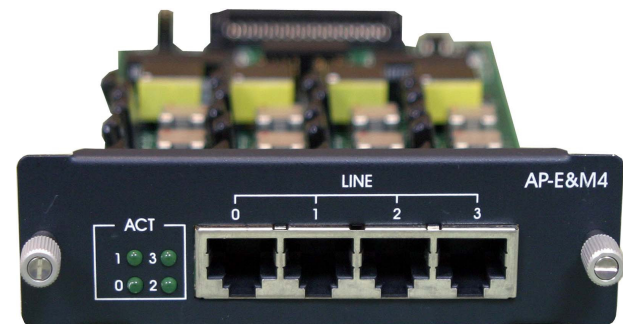
AP-FXS4 Module



AP-FXO4 Module



AP-FXS2, FXO2 Module

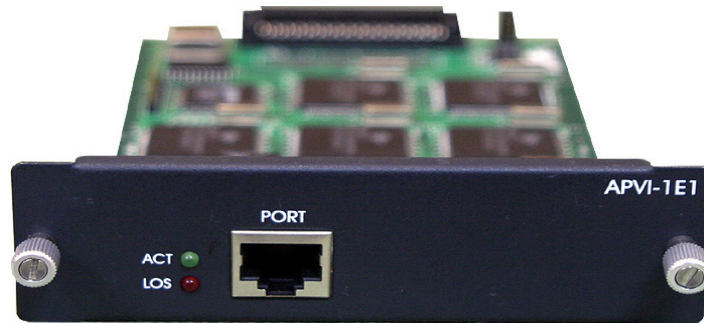


AP-E&M4 Module



# AP2850 Multi-service Router Product Overview

## AP2850 Digital Voice Module



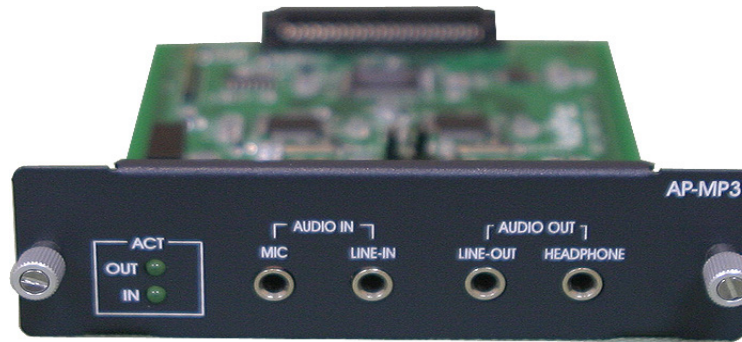
AP-E1 Module



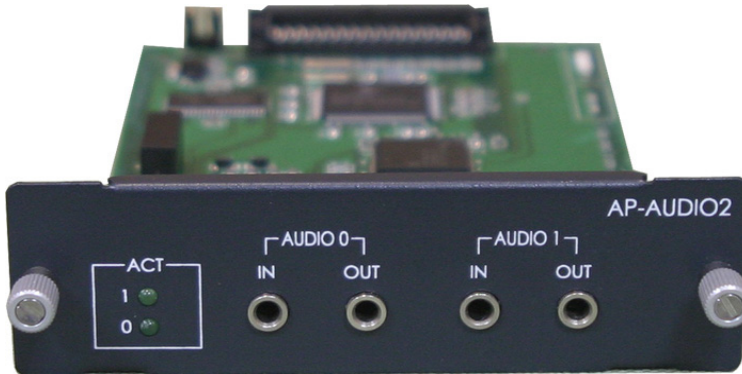
AP-T1 Module

# AP2850 Multi-service Router Product Overview

## AP2520G IP Broadcasting Module



AP-MP3 Module (High Quality)



AP-AUDIO2 Module



AP-AUDIO1,FXS3 Module

# AP2850 Multi-service Router Product Overview

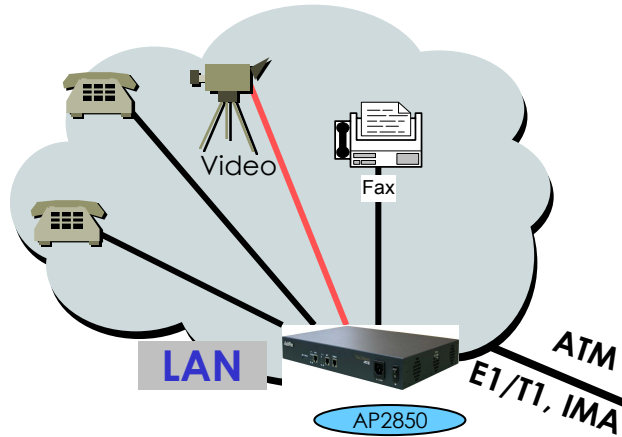
## AP2850 Hardware Specification

AP2850 Multi-service Router	Basic Specifications
Microprocessor	Power PC 64Bit RISC Microprocessor
Number of Slot	One(1) Network Module Slot and Four(4) Multi-Service Module Slots
Network Interface Module	4-Port Multiple E1/T1 ATM / IMA Interface Module 1-Port E1 ATM Interface Module Ethernet Interface Module
Multi-service Modules	4-Port FXS, FXO, E&M Module 2-Port FXO & 2-Port FXS Module MP3, AUDIO, AUDIO&FXS Module 1-Port Digital E1 Module 1-Port Digital T1 Module 1-Port Frame-Relay Module
Memory	8MB Flash Memory, 64MB SDRAM Main Memory, 8MB ATM Local Memory, 512KB Boot Memory
Power Input	VAC 110~220V Free Voltage, 50/60Hz, Dual Power Supply Unit
Operating Temperature	0°C ~ 55°C
Storage Temperature	-40°C ~ 85°C
Width x Depth x Height	435 mm x 248 mm x 43 mm ,2U x 19" Rack Mountable Chassis

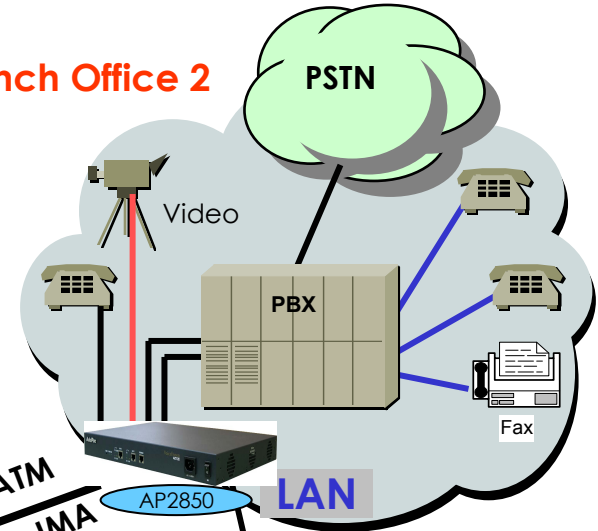
# AP2850 Voice Networking Configuration

## ATM Multi-Service +Router Application

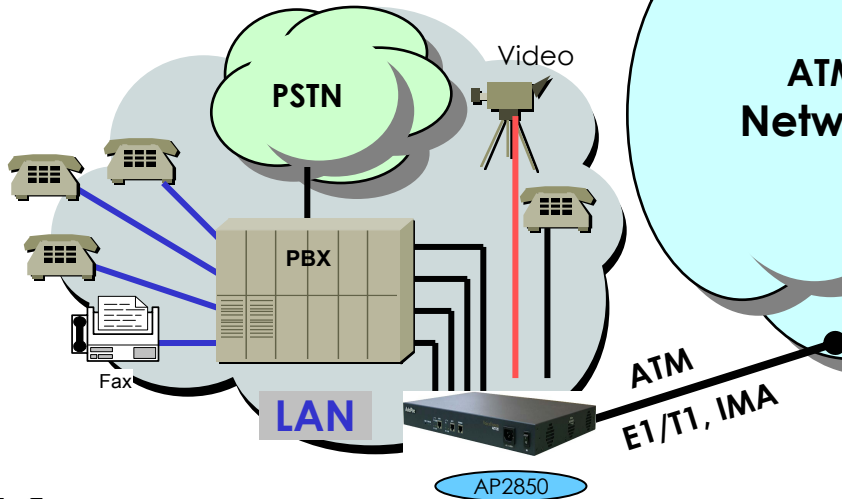
### Branch Office 1



### Branch Office 2



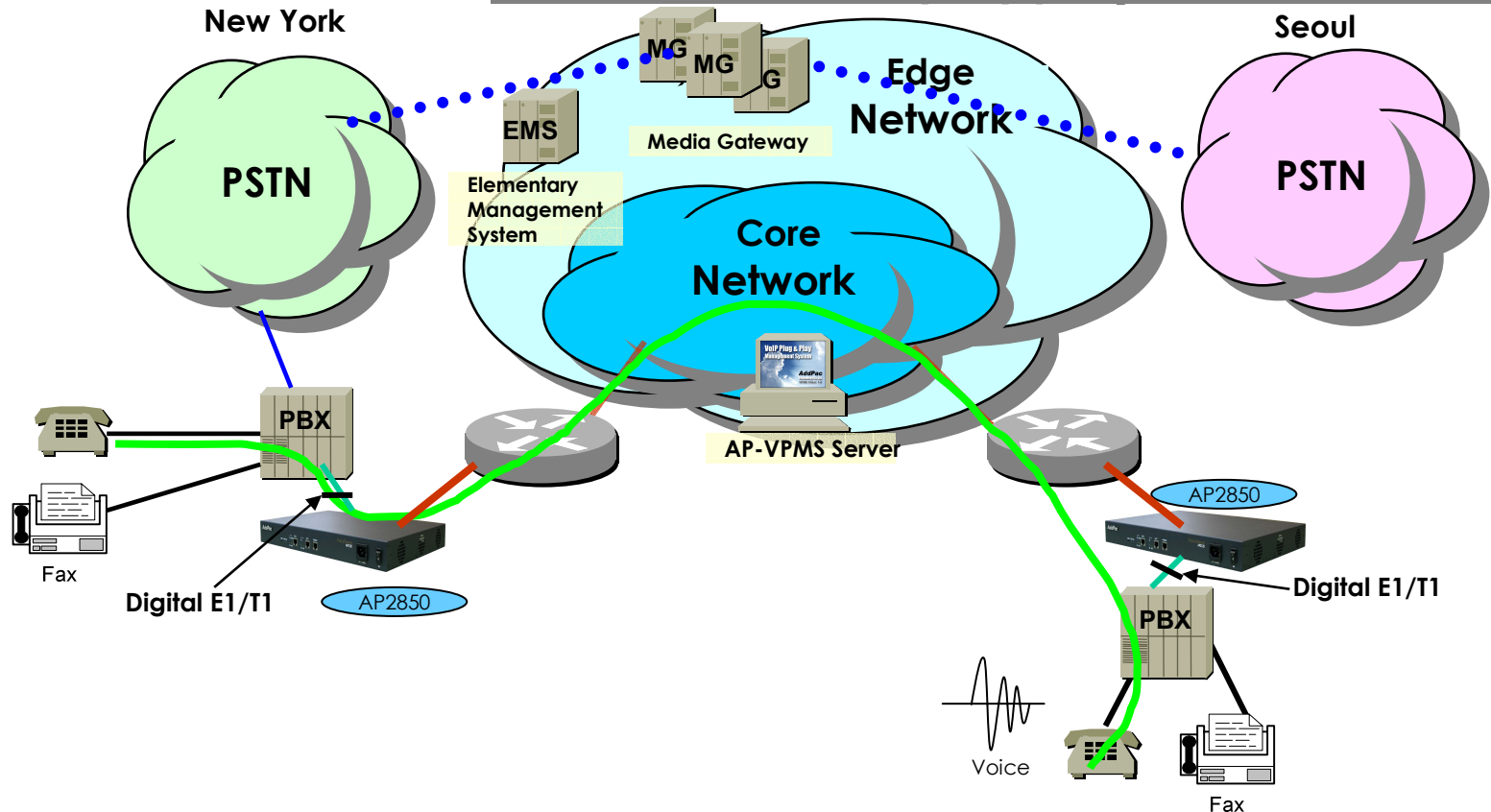
### Head Office



Network Managements

# AP2850 Voice Networking Configuration

## VoIP Gateway Appl. (Inter-office calls)



Voice Call Flow

PSTN Interface

Voice+Data, Ethernet or WAN Interface

TRUNK n x E1 Voice Interface for PSTN Interworking

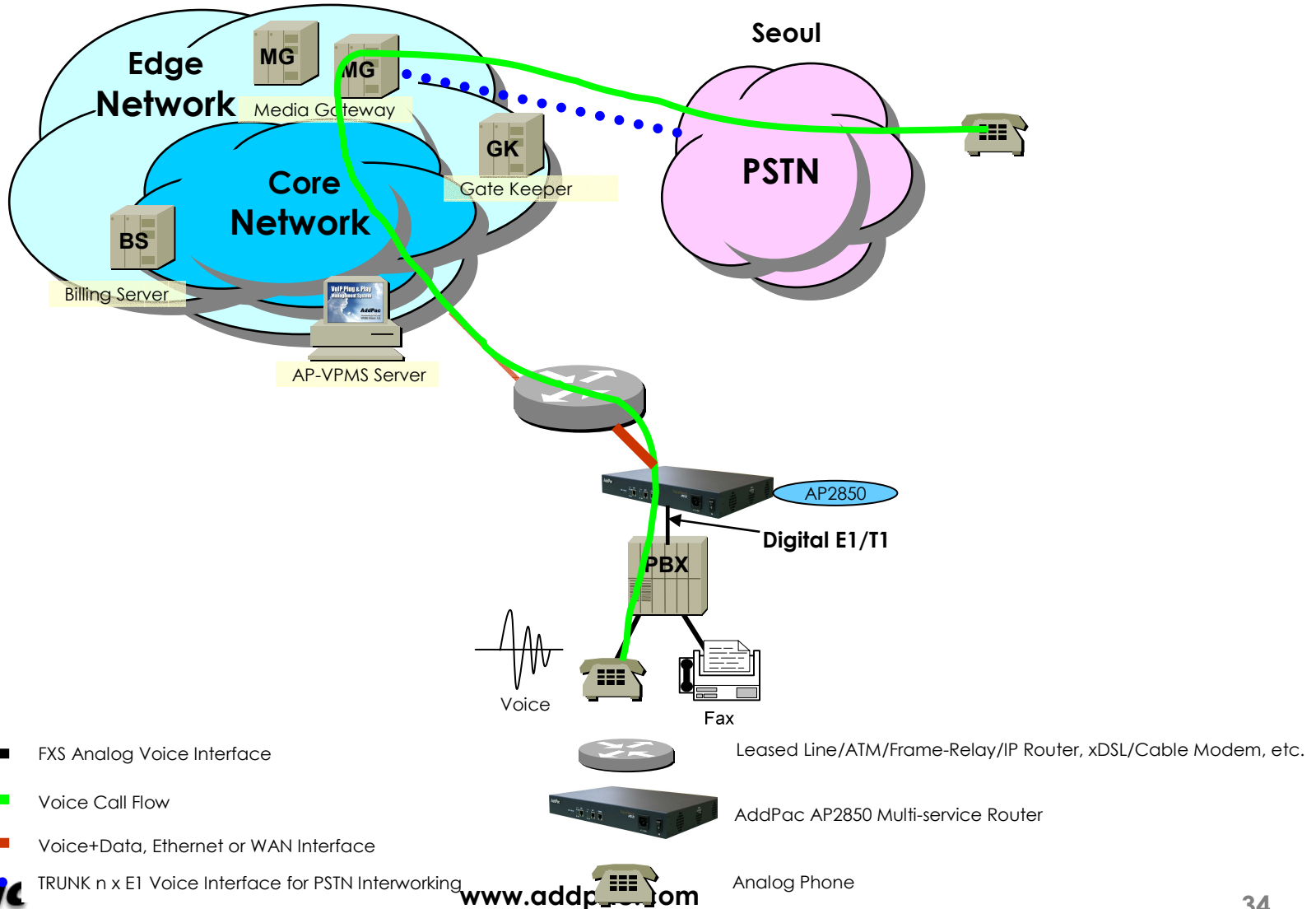
Leased Line/ATM/Frame-Relay/IP Router, xDSL/Cable Modem, etc.

AddPac AP2850 Multi-service Router

Analog Phone

# AP2850 Voice Networking Configuration

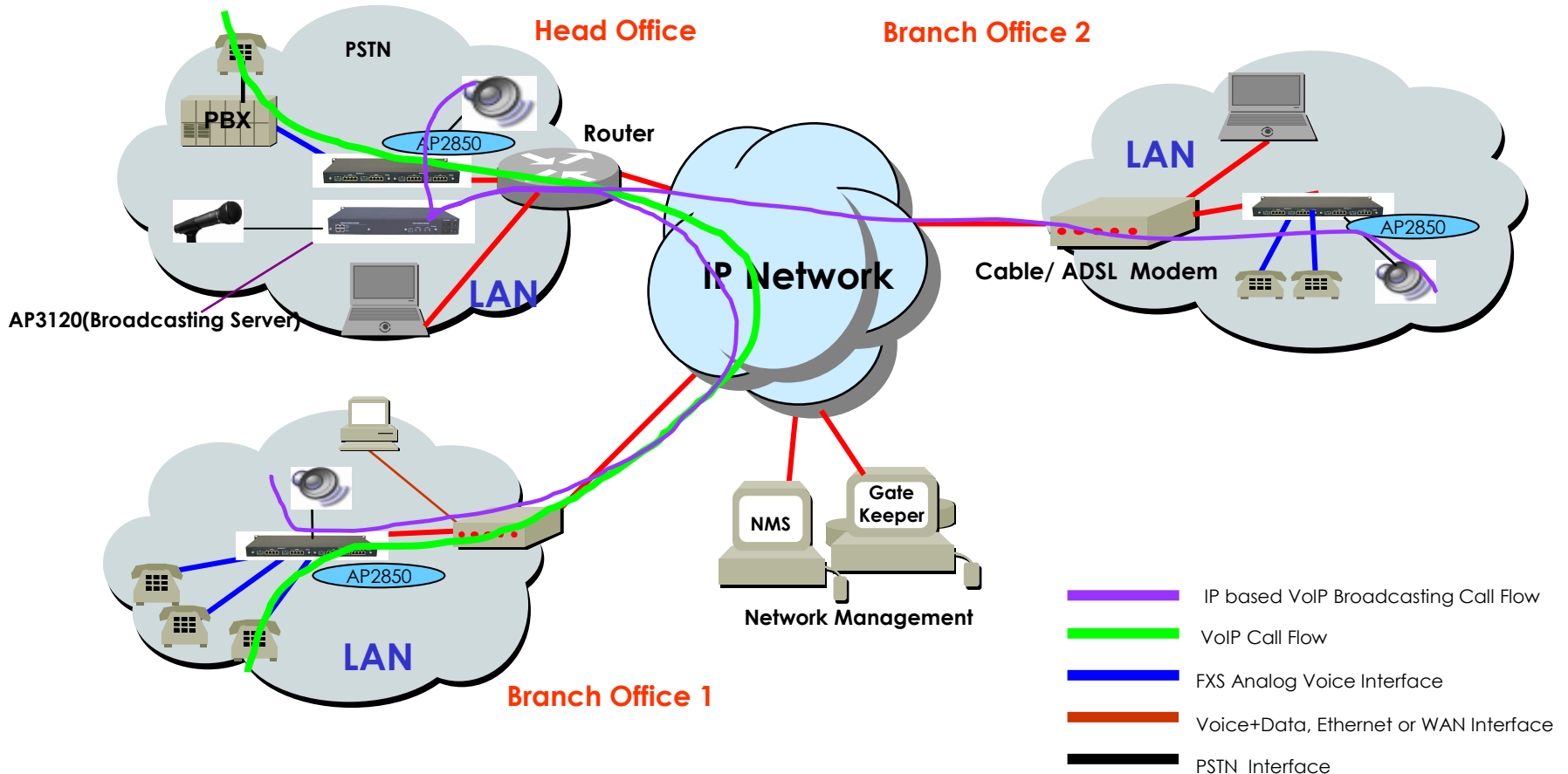
## VoIP Gateway Appl.(VoIP to PSTN Inter-working Call Flow)





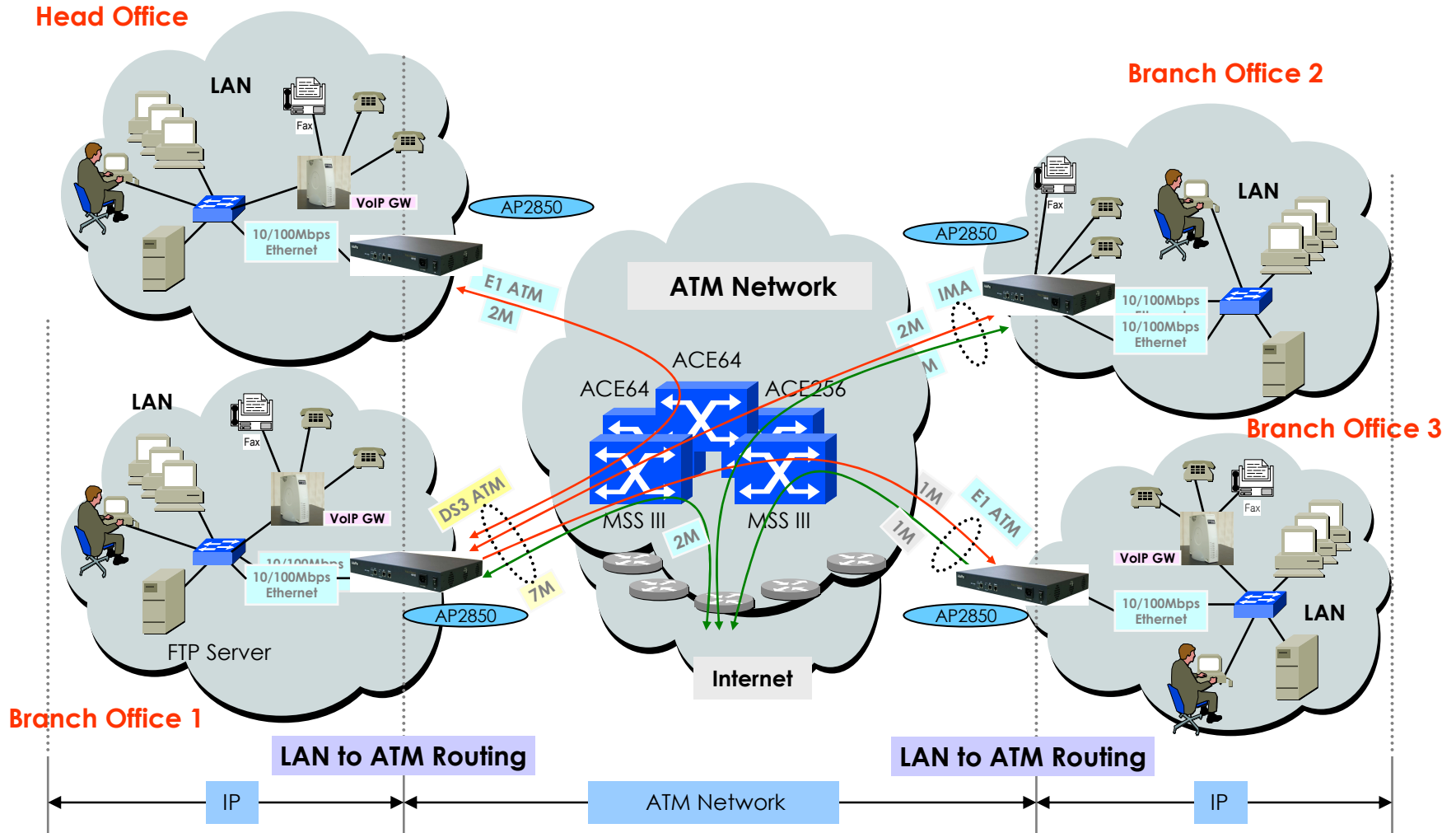
# AP2850 Voice Networking Configuration

## VoIP Gateway + Broadcasting Terminal Application



# AP2850 Voice Networking Configuration

## ATM Router Application



# AP2850 Multi-service Router Product Overview

## AP2850 Ordering and Pricing

### • AP2850 Multi-Service Router

#### – Multi-Service Router

- ATM Interface, Two(2)Fast Ethernet, One(1) Console, One(1) Async Port
- 64bit RISC CPU, 8MB Flash, 64MB SDRAM
- APOS v5.xx with Operation Manual
- Including CAB-LAN, CAB-CON

#### – 2850-FXS4

4Port FXS Interface Module

#### – 2850-FXO4

4Port FXO Interface Module

#### – 2850-E&M4

4Port E&M Interface Module

#### – 2850-FXS2O2

2Port FXS & 2Port FXO Interface Module

#### – AP-MP3

High Quality MP3 Audio Broadcasting Module

#### – AP-AUDIO2

Voice Band 2-CH Broadcasting Module

#### – AP-AUD1S3

Voice Band Audio Port + VoIP 3-Port FXS Module

#### – APV1-1E1V

1-port Digital E1 ISDN-PRI Network Module

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1-port Digital T1 ISDN-PRI Network Module

#### – AP-FRV35

1-port Frame-Relay Interface Module




#### – AddPac Technology Regional Sales Managers

#### – Authorized Sales and Marketing Representatives

#### – Please Contact [www.addpac.com](http://www.addpac.com)

# AP2850 Multi-service Router Product Overview

## AP2850 Comparison Table

	<p align="center"><b>AP2850 Multi-service Router</b></p>
▶ Analog VoIP Module	Up to 4
▶ Digital E1 /T1 VoIP Module	Up to 4
▶ Asynchronous Port	1
▶ 1-port Frame-Relay Real-time	1
▶ 10/100 Mbps Ethernet Ports	2
▶ Console Port	1
▶ CPU	Power PC 64Bit RISC
▶ Flash Memory	8Mbyte
▶ Base Memory	64Mbyte
▶ 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

**Thank you !**

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