

VoIP, Embedded Gatekeeper System

AP-GK2000



February 2004

AddPac Technology

www.addpac.com

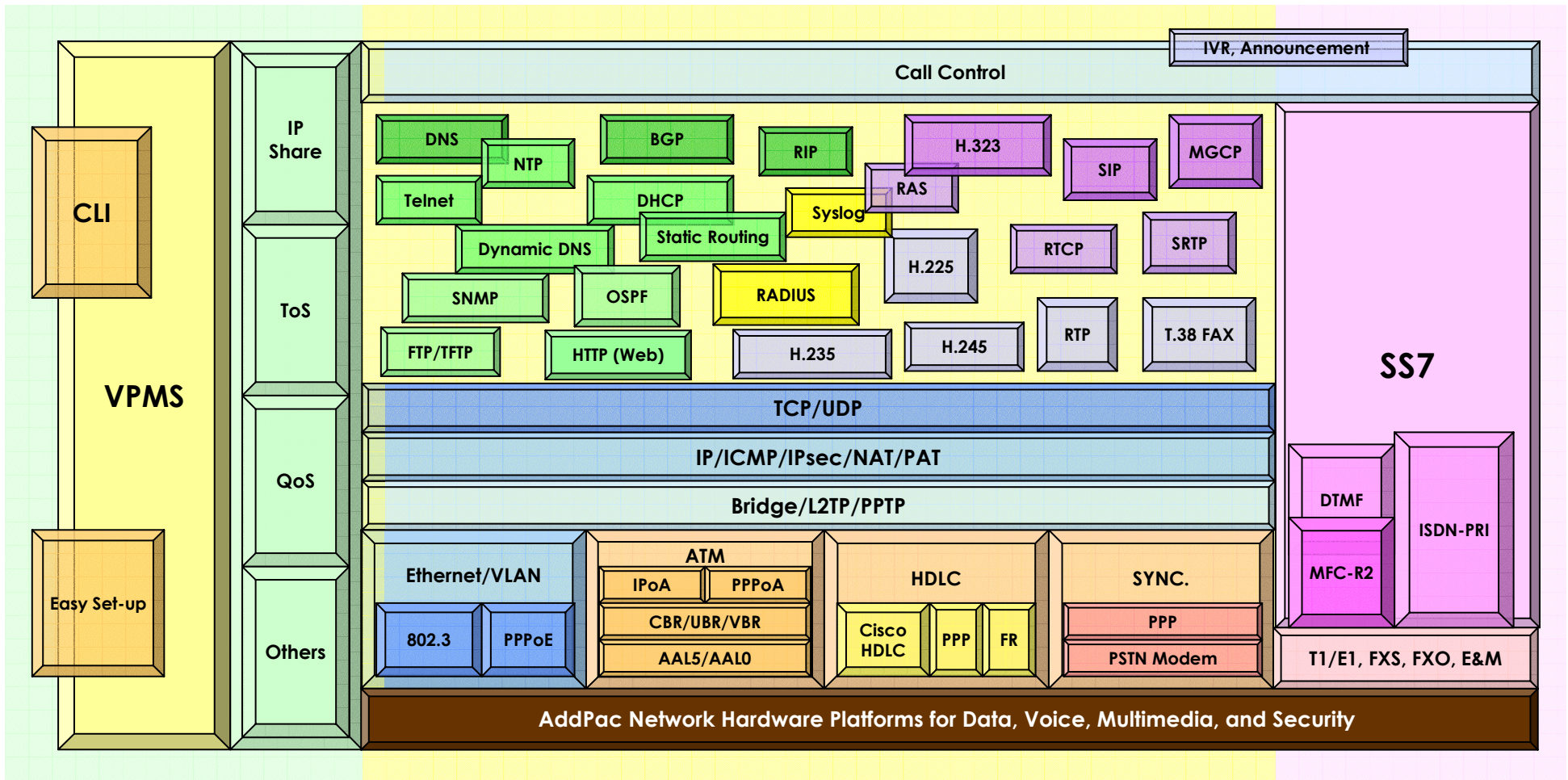
AddPac VoIP Products

AP-VPMS (VoIP Plug & play management system)

| VoIP Gateway | VoIP Gateway | VoIP Gateway | VoIP Gateway | VoIP Gateway | Multi-service VoIP | Media Gateway |
|--------------|--------------|--------------------------------|---------------|---|----------------------|------------------------|
| 1~2 ports | 4~8 ports | 8~16 ports | 16~64 ports | E1/T1/8 ports | N x E1/T1/8/16 ports | Triple E1/T1 |
| AP160 | AP1000 | AP2120 | AP3100 | AP2110 | AP2830 | AP-MG3000 |
| AP200A | AP1002 | AP2120N NGN | AP3100N NGN | AP2520G | AP2850 | *AP-MG5000 |
| AP200B | AP1005 | | | | | *AP-MG6000 |
| AP200C | AP1100A | | | | | |
| AP200D | AP1100B | | | | | |
| AP200E | AP1100C | | | | | |
| AP300B | AP1100F | | | | | |
| AP300C | | | | | | |
| | | Secure VoIP Gateway | | IP Broadcasting, FoIP Broadcasting | | VoIP Gatekeeper |
| | | AP-KMS (Key management System) | | VBMS (IP Broadcasting Management) | | AP-GK1000 |
| | | E1/T1/8 ports | E1/T1/8 ports | IP Broadcasting | FoIP Broadcasting | AP-GK2000 |
| | | *AP500S | AP-MG3000S | AP3120 | AP3220 | AP-GK3000 |
| | | *AP2120S | | AP1601 | | |
| | | AP2520S | | AP-PSB | | |
| | | | | | | VoIP Router |
| | | | | | | AP2520R |

AddPac VoIP Gateway Product Overview

APOS Internetworking Protocol Stack

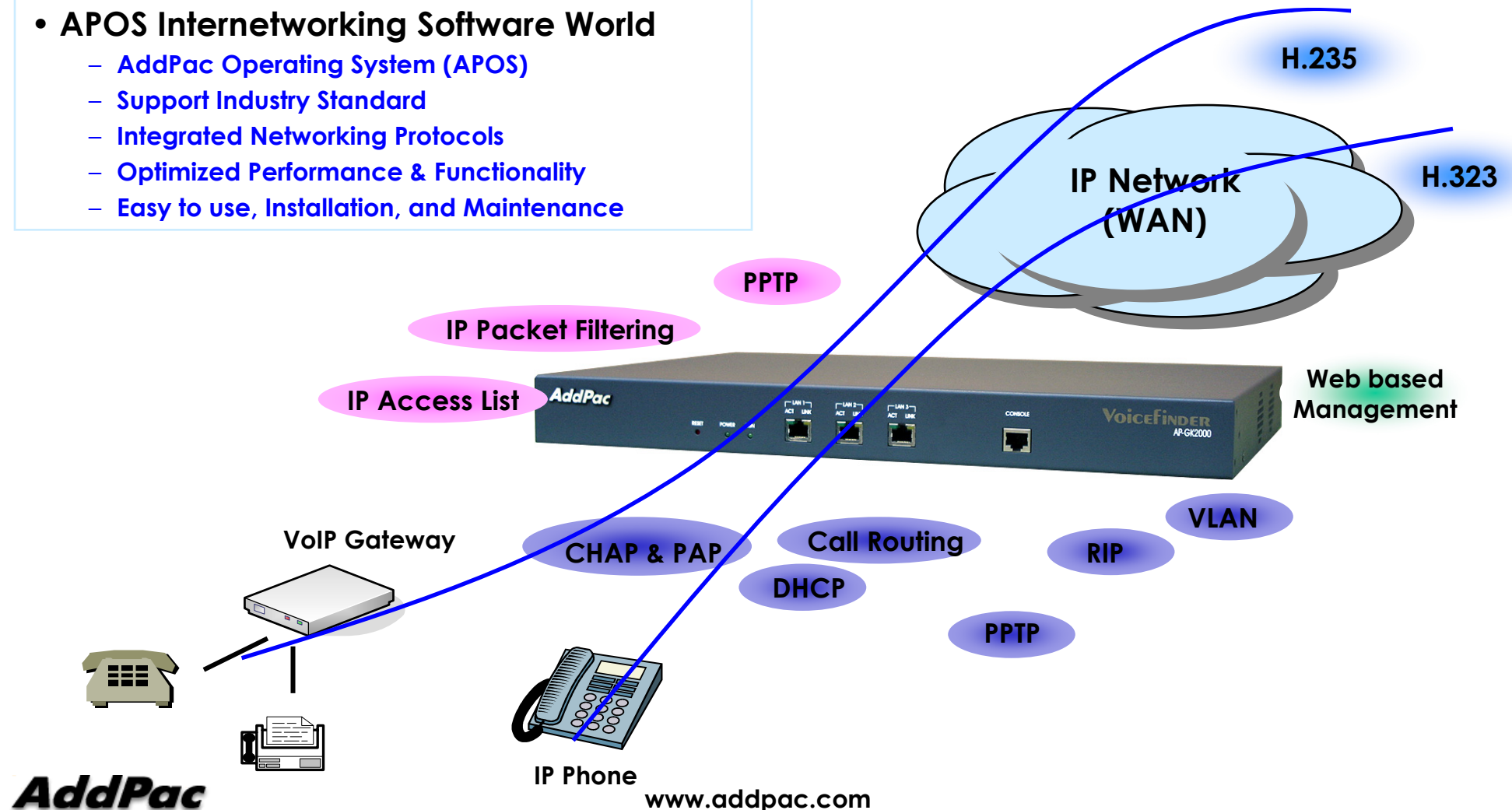


AP-GK2000 Gatekeeper Product Overview

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

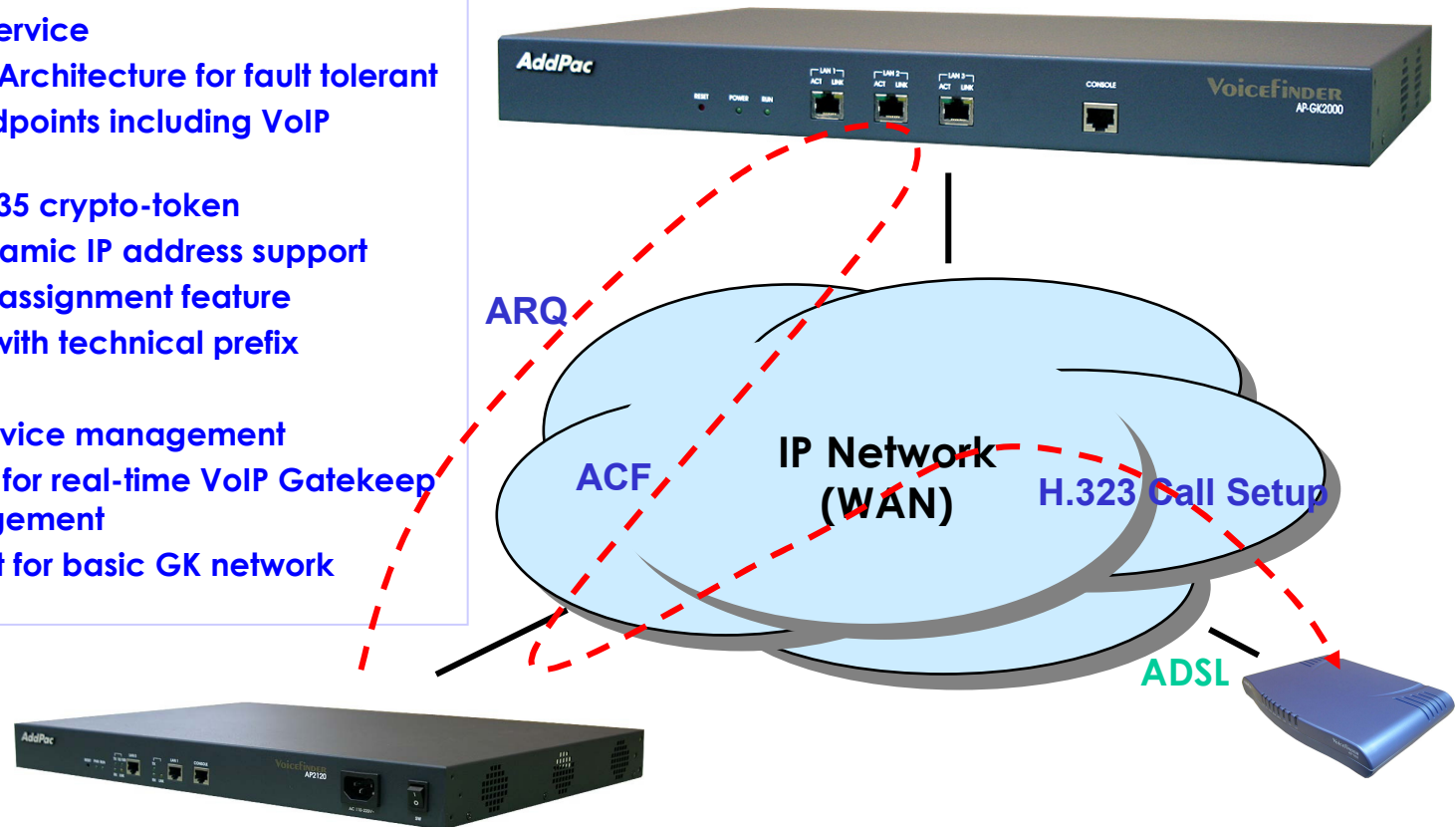


AP-GK2000 Gatekeeper Product Overview

AP-GK2000 VoIP Gatekeeper Service

• VoIP Gatekeeper Service Features

- All embedded System
- H.323 VoIP Gatekeeper service
- Primary & Secondary GK Architecture for fault tolerant
- Supports various VoIP endpoints including VoIP Gateway
- Security function with H.235 crypto-token
- VoIP call routing and dynamic IP address support
- RAS port change and TTL assignment feature
- Digit map management with technical prefix
- Remote S/W Upgrade
- Standard SNMP for GK device management
- Java based SmartViewer for real-time VoIP Gatekeeper monitoring and management
- Web based Management for basic GK network configuration



AP-GK2000 Gatekeeper Product Overview

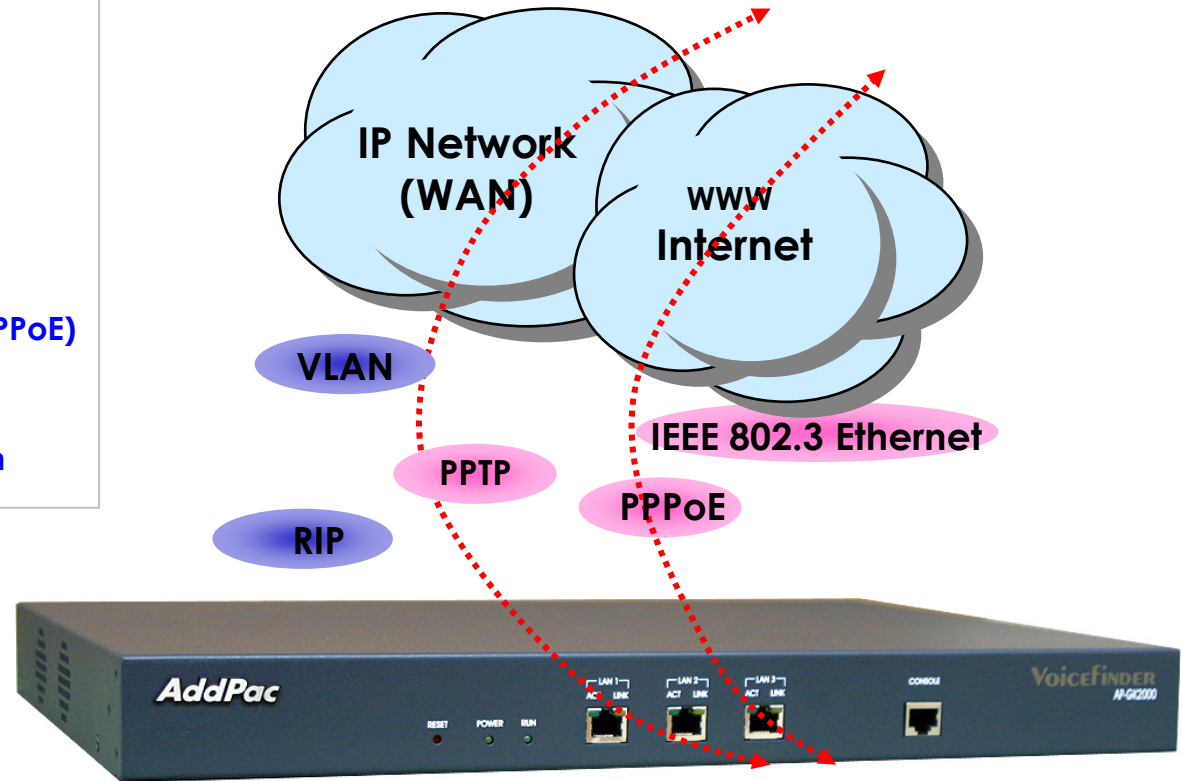
IP Routing and Network Protocols

- **IP Routing Protocols**

- Static and default Routing
- RIP v1/2
- IEEE 802.1Q VLAN Routing

- **WAN Protocols**

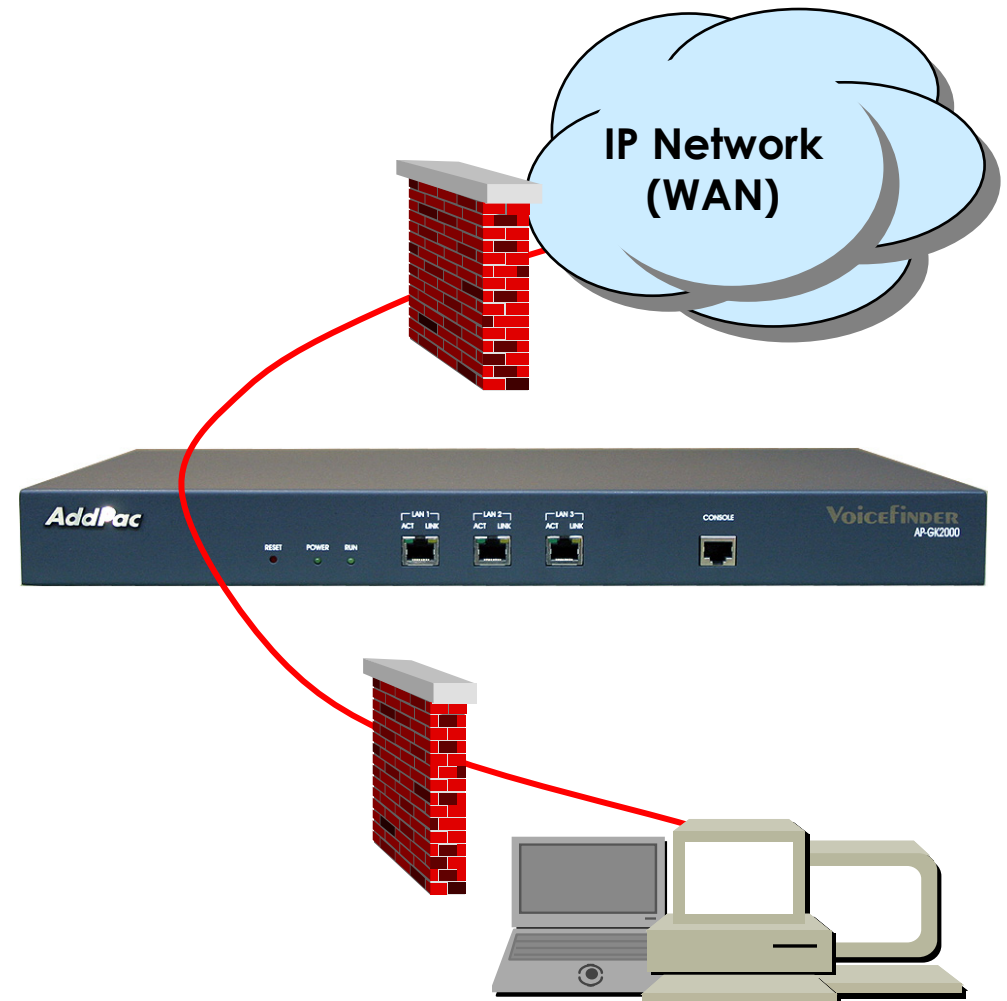
- Point-to-Point over Ethernet Protocol (PPPoE) for ADSL
- IEEE 802.3 Ethernet
- PPTP support for secure communication



AP-GK2000 Gatekeeper Product Overview

Security Management

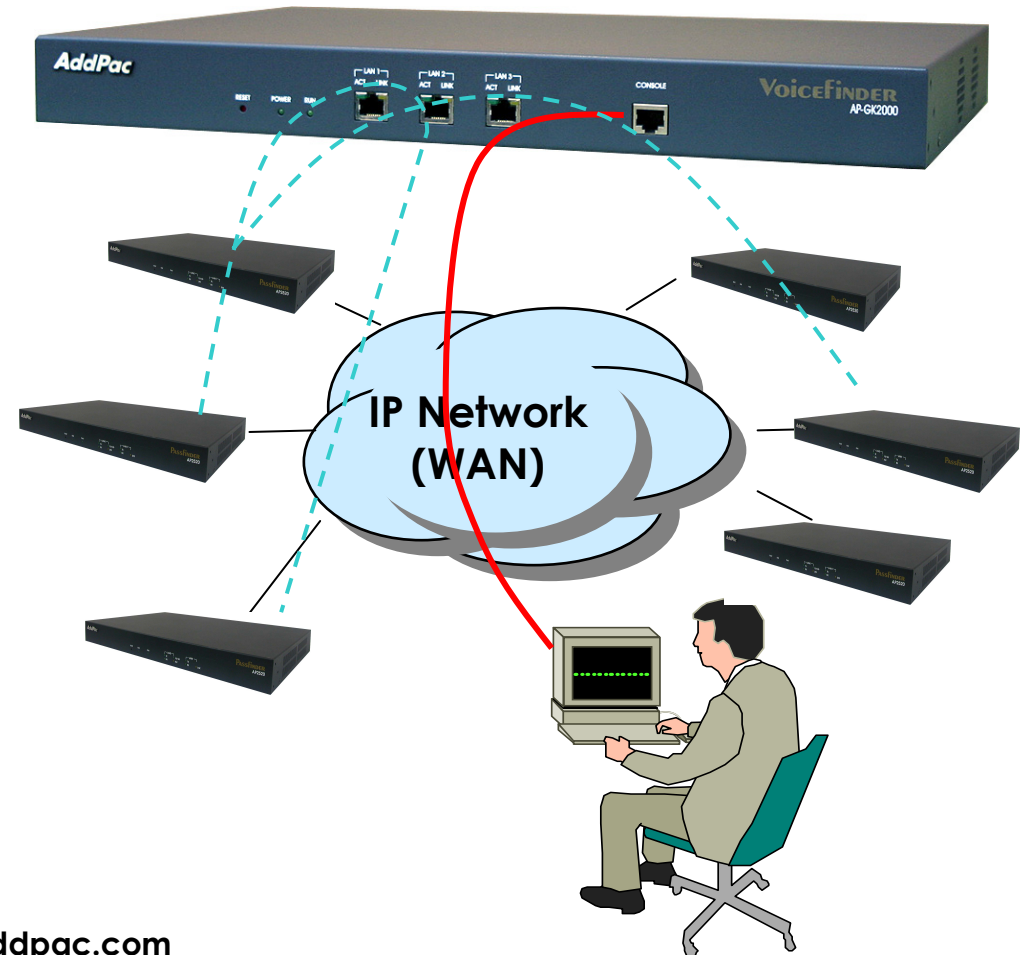
- IP packet filtering
- Access list
- PPP User authentication function
 - Password Authentication Protocol (PAP)
 - Challenge Handshake Authentication Protocol (CHAP)
- Enable/Disable specific protocols
- Auto-square connect of console and Telnet session
- Account Management function for multi-level user



AP-GK2000 Gatekeeper Product Overview

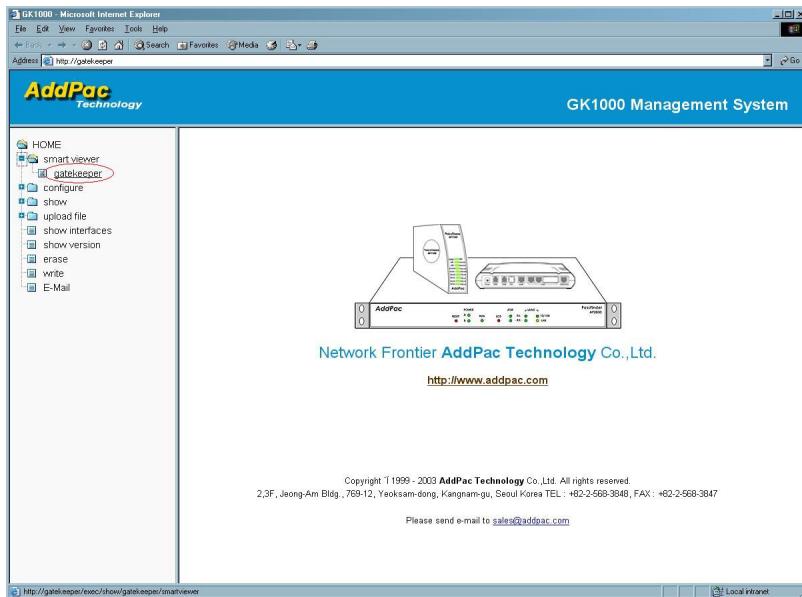
Network Managements

- **SNMP**
 - Standard Simple Network Management Protocol(SNMP) Agent support
 - MIB v1 and v2 Support
- **Web-based Management using HTTP Server**
- **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



AP-GK2000 Gatekeeper Product Overview

Web-based Management



- Web based Management
 - Web based management using HTTP Server interface
 - Easy Setup
 - Graphic User Interface (GUI)



<http://172.x.x.x...>

AP-GK2000 Gatekeeper Product Overview

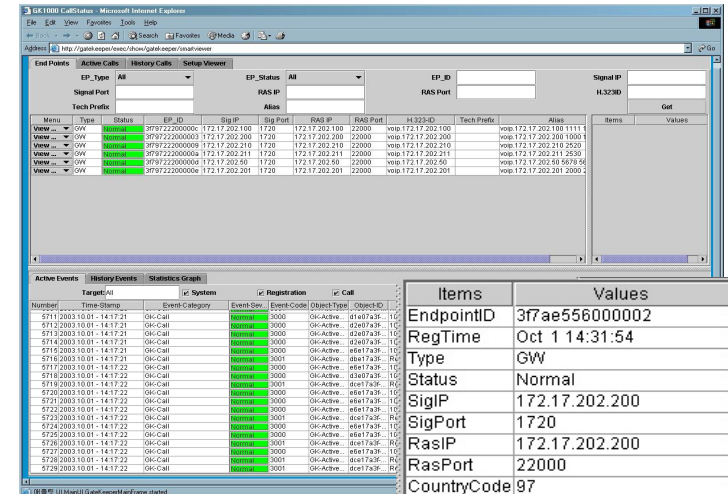
SmartViewer Program

• Smart Viewer Program

- Easy monitoring of endpoints registered at the GateKeeper and call status
- Offers statistical information of the endpoints' status and active calls
- Easy-to-use Graphic User Interface
- Easy search function of VoIP gateway's call history and events
- Sort function

• System Requirement

- CPU: Intel Pentium II 300Mhz or higher system
- Memory: 128MB or higher
- Hard Disk: 10GB or more
- OS: MS Windows 2000 / XP / Server 2003
- Java 2 Runtime Environment SE v 1.4.2
- Web browser



| Category | All | Severity | Warning | Code | | | |
|----------|---------------------------|-----------------|----------------|------------|-------------|-----------|--|
| ObjectID | | | | | | | |
| Notice | Time-Stamp | Event-Category | Event-Severity | Event-Code | Object-Type | Object-ID | |
| | 44242:2003.10.01-15:35:53 | GK-System | Minor | 1006 | | | Management channel |
| | 38438:2003.10.01-15:21:21 | GK-Registration | Major | 2001 | GK-Regist. | 37ae556 | Remove an endpoint |
| | 38437:2003.10.01-15:21:21 | GK-Registration | Major | 2005 | GK-Regist. | 37ae556 | Endpoint will be removed |
| | 37960:2003.10.01-15:20:11 | GK-Registration | Minor | 2004 | GK-Regist. | 37ae556 | No response on RRO |
| | 37491:2003.10.01-15:19:00 | GK-Registration | Warning | 2003 | GK-Regist. | 37ae556 | No RRO within TTL |
| | 244:2003.10.01-14:32:15 | GK-Registration | Minor | 2000 | GK-Regist. | 37ae556 | GW Normal: 37ae556 |
| | 241:2003.10.01-14:32:15 | GK-Registration | Minor | 2112 | GK-Regist. | | +RRO* from 172.17.202.211 rejected by fullRegistrationRequired |
| | 149:2003.10.01-14:32:05 | GK-Registration | Major | 2000 | GK-Regist. | 37ae556 | GW Normal: 37ae556000005,172.17.202.210,1720,172.17.202.210... |
| | 148:2003.10.01-14:32:05 | GK-Registration | Minor | 2112 | GK-Regist. | | +RRO* from 172.17.202.210 rejected by fullRegistrationRequired |
| | 143:2003.10.01-14:32:04 | GK-Registration | Major | 2000 | GK-Regist. | 37ae556 | GW Normal: 37ae556000004,172.17.202.50,1720,172.17.202.50,2... |
| | 142:2003.10.01-14:32:04 | GK-Registration | Minor | 2112 | GK-Regist. | | +RRO* from 172.17.202.50 rejected by fullRegistrationRequired |
| | 140:2003.10.01-14:32:04 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 138:2003.10.01-14:32:03 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 136:2003.10.01-14:32:03 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 133:2003.10.01-14:32:03 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 131:2003.10.01-14:32:03 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 129:2003.10.01-14:32:03 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 127:2003.10.01-14:32:02 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 125:2003.10.01-14:32:02 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 123:2003.10.01-14:32:02 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 121:2003.10.01-14:32:02 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 118:2003.10.01-14:32:02 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 114:2003.10.01-14:32:01 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 112:2003.10.01-14:32:01 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 110:2003.10.01-14:32:01 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |
| | 108:2003.10.01-14:32:01 | GK-Call | Warning | 3100 | GK-Active | 56e57a3f | +ARQ* rejected by unregistered destination (5678) |

AP-GK2000 Gatekeeper Product Overview

AP-GK2000 Performance Report (1)

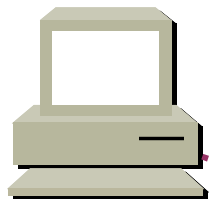
• Gkburst (Gatekeeper Burstness Test)

- Measures the burstness of the gatekeeper call handling ability
- The number of RRQ messages per seconds by sending a lot of RRQ messages to gatekeeper
- The number of ARQ messages per seconds by sending a lot of ARQ messages to gatekeeper

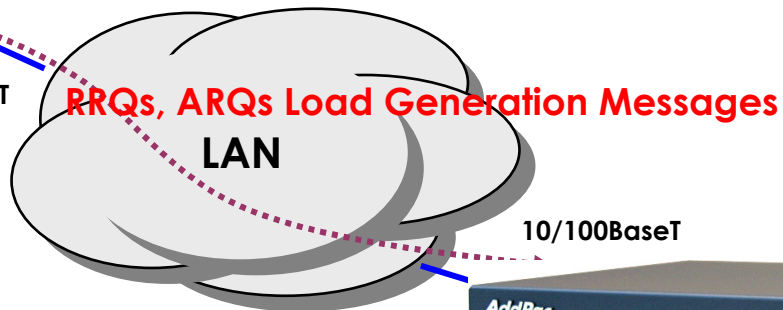
• gkburst -gk <GK's IP address> -n 1000

- The iteration number of RRQs, ARQs call load generation messages is one thousand(1000)

Linux PC



10/100BaseT



10/100BaseT



Send 1000RRQ and 1000ARQS

- 83 RRQ/sec

- 83 ARQ/sec

AP-GK2000 Gatekeeper Product Overview

AP-GK2000 Performance Report (2)

• Gkgen

- measures maximum number of endpoints and maximum concurrent calls supported by a gatekeeper.
- Single Gkgen process can register 1000 endpoints with 2000 aliases
- After register endpoints, single Gkgen process generate 1000 ARQs and DRQs periodically

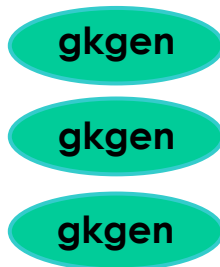
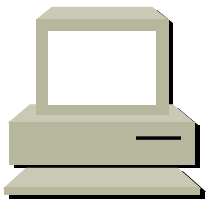
• `gkgen -gk <GK's IP address> -n 1000 -b 1000 -arq- 2 -ttl 120`

- `-gk` : gatekeeper IP address
- `-n` : number of endpoints and calls to generate
- `-b` : base number for distinguishing multiple Gkgen processes
- `-ttl` : Time to live timer value.
- `-arq-` : number of TTL period per one call

Condition : TTL = 60 sec,
Call period is 120 sec

-GK CPU load : Max 100%
-1500 endpoints, 3000 aliases
-1500 concurrent calls

Linux PC




Emulates 1000 endpoints with
periodic 1000 calls




AP-GK2000 Gatekeeper Product Overview

AP-GK2000 Hardware Specification

| | |
|---|---|
|  | <p style="text-align: center;">AP-GK2000 GateKeeper</p> |
| <p>▶ Microprocessor</p> | <p style="text-align: center;">64bit RISC Microprocessor</p> |
| <p>▶ Network Interface</p> | <p style="text-align: center;">Fixed 3-Ports 10/100Mbps Fast Ethernet Interface(Rj45)</p> |
| <p>▶ Console Ports</p> | <p style="text-align: center;">Fixed 1-Port RS-232C Interface (RJ45)</p> |
| <p>▶ Boot Memory for Loader</p> | <p style="text-align: center;">512Kbyte</p> |
| <p>▶ Flash Memory</p> | <p style="text-align: center;">4Mbyte</p> |
| <p>▶ Main Memory</p> | <p style="text-align: center;">32Mbyte High-Speed SDRAM</p> |
| <p>▶ Power Requirement</p> | <p style="text-align: center;">VAC 110~220V, 50/60Hz, 30Watt</p> |
| <p>▶ Internetworking OS</p> | <p style="text-align: center;">APOS</p> |
| <p>▶ Support VoIP Protocol</p> | <p style="text-align: center;">H.323</p> |
| <p>▶ PPPoE, PPTP Network Protocols</p> | <p style="text-align: center;">YES</p> |
| <p>▶ Enhanced QoS Management Feature</p> | <p style="text-align: center;">YES</p> |
| <p>▶ IP Routing Protocols Including NAT</p> | <p style="text-align: center;">YES</p> |
| <p>▶ Network Management Protocols</p> | <p style="text-align: center;">YES</p> |
| <p>▶ Support Network Environments</p> | <p style="text-align: center;">ADSL, VDSL, Cable Modem, Leased Line, ATM, Frame-Relay, Including Conventional Broad Band Networking</p> |

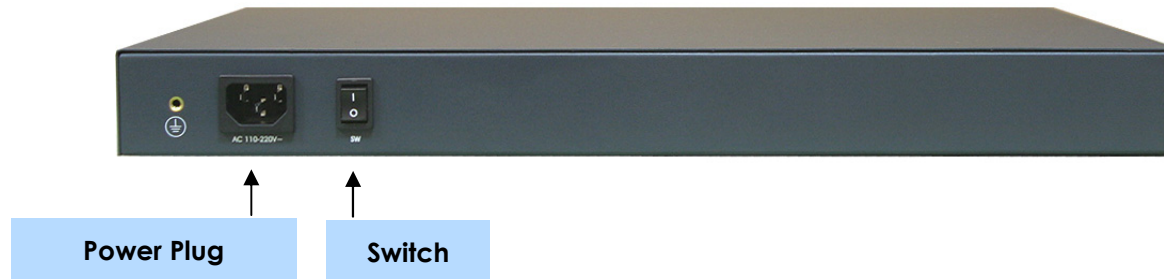
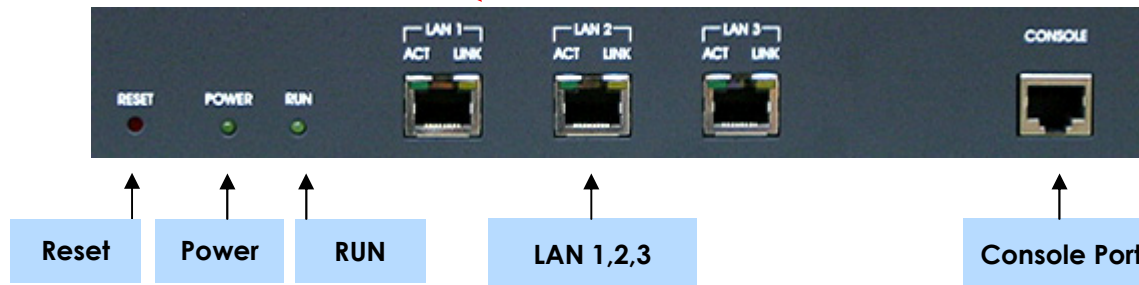
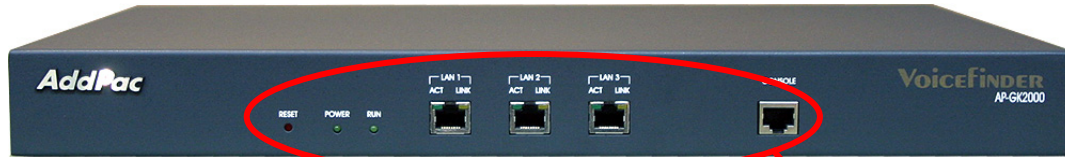
AP-GK2000 Gatekeeper Product Overview

AP-GK2000 Support Protocols & Service

| | |
|---|---|
|  | <p style="text-align: center;">AP-GK2000 Support Protocol and Service</p> |
| <p>▶ Routing Protocol</p> | <p>Static and Default Routing RIP v1/v2, OSPFv2, etc IEEE 802.1Q VLAN Routing</p> |
| <p>▶ WAN Protocol</p> | <p>Point-to-Point over Ethernet Protocol For ADSL IEEE 802.3 Ethernet PPTP support for secure communication</p> |
| <p>▶ GateKeeper Function</p> | <p>Primary GK & secondary GK setting for fault-tolerant Digit map management with technical prefix TTL assignment function Security function with H.235 crypto-token RAS port change function</p> |
| <p>▶ Operation & Management</p> | <p>System Performance Analysis for Process, CPU, Connection I/F Configuration Backup & Restore for APOS Management Debugging, System Auditing and Diagnostics supports System Booting and Auto-rebooting with Watchdog Feature System Management with Data Logging IP Traffic Statistics with Accounting</p> |
| <p>▶ Additional Features</p> | <p>DHCP Server & Relay Functions IP Accounting Function Transparent Bridging (IEEE Standard) Function CISCO Style Command Line Interface (CLI) Network time Protocol (NTP) Support Remote Upgrade for APOS Management using FTP / TFTP ITU-T H.323 v3 VoIP Protocol Compatibility, ITU-T H.235 Security Feature</p> |

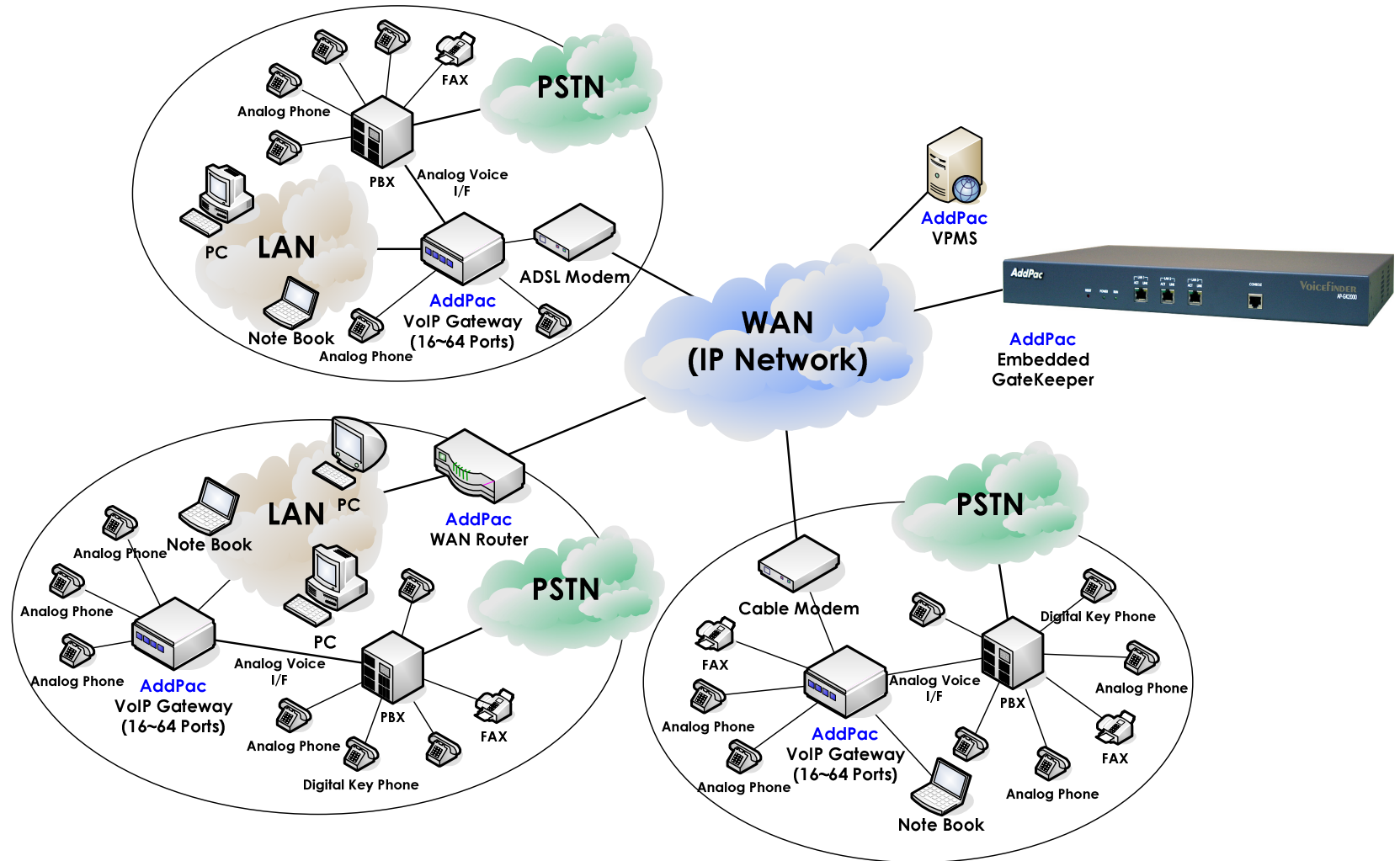
AP-GK2000 Gatekeeper Product Overview

AP-GK2000 Exterior Parts



AP-GK2000 Gatekeeper Product Overview

AP-GK2000 Network Diagram



AP-GK2000 Gatekeeper Product Overview

Ordering and Pricing Information

• AP-GK2000 Ordering Information

Order No :

AP-GK2000 Gatekeeper

- Three(3) 10/100BaseT Fast Ethernet
- One(1) Console Port
- High-Performance 32bit RISC CPU
- 512K Boot Loader
- 4MB Flash Memory, 32MB SDRAM, etc
- APOS v7.xx with Operation Manual
- Including CAB-LAN, CAB-CON

CAB-LAN

- RJ45 Ethernet Cable

CAB-CON

- RJ45 RS-232C Console Cable



For detailed pricing info:

Contact

- AddPac Technology Regional Sales Managers
- Authorized Sales and Marketing Representatives
- www.addpac.com

AddPac Technology Co., Ltd.

Thank you !

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