

VoIP Gateway Solution



AddPac

AddPac Technology






2010, Sales and Marketing

www.addpac.com

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VoIP Gateways for SOHO(1~2Port)

| Product | AP100 | | AP100B | | AP190 | AP200 | | AP300 | |
|-------------|---|-------------|--|-------------------|---|---|-------------------|---|-------------------|
| |  | |  | |  |  | |  | |
| Model | Type | VoIP | Type | VoIP | | Type | VoIP | Type | VoIP |
| | P | PSTN Backup | B | 2FXS, PSTN Backup | | B | 2FXS, PSTN Backup | B | 2FXS, PSTN Backup |
| | | | | | | D | 2FXO | | |
| | | | | | | E | 1FXS, 1FXO | | |
| VoIP Ports | 1 | | 2 | | 1 | 2 | | 2 | |
| Signaling | SIP, H.323 | | SIP, H.323 | | SIP, H.323 | SIP, H.323 | | SIP, H.323 | |
| Module Slot | N/A | | N/A | | N/A | N/A | | N/A | |
| LAN Port | 2 | | 2 | | 2 | 2 | | 2 | |
| Console | N/A | | N/A | | Support | Support | | Support | |
| Power | External Adaptor | | External Adaptor | | External Adaptor | External Adaptor | | External Adaptor | |



VoIP Gateways for SMB (4 Port)

| Product | AP700 | | AP1000 | AP1002 | AP1005 | AP800 | |
|-------------|---|--------------------|--|---|---|---|--------------------|
| |  | |  |  |  |  | |
| Model | Type | VoIP | | | | Type | VoIP |
| | P | 1-Port PSTN Backup | | | | A | 1-Port PSTN Backup |
| | | | | | | B | 4-Port PSTN Backup |
| VoIP Ports | 4-Port FXS | | 4-Port FXS | 2-Port FXS & 2-Port FXO | 4-Port FXO | 4-Port FXS | |
| Signaling | SIP, H.323 | | SIP, H.323 | SIP, H.323 | SIP, H.323 | SIP, H.323 | |
| Module Slot | N/A | | N/A | N/A | N/A | N/A | |
| LAN Port | 2 | | 2 | 2 | 2 | 2 | |
| Console | Support | | Support | Support | Support | Support | |
| Power | External Adaptor | | External Adaptor | External Adaptor | External Adaptor | External Adaptor | |




VoIP Gateways for MB (8Port)

| Product | AP900 | | AP1100 | | AP1200 | |
|-------------|---|-----------------|---|-----------------|---|-----------------|
| |  | |  | |  | |
| Model | Type | VoIP | Type | VoIP | Type | VoIP |
| | A | 4 FXS, 4 FXO | A | 4 FXS, 4 FXO | A | 4 FXS, 1 FXO |
| | B | 8 FXS | B | 8 FXS | B | 8 FXS, 1 FXO |
| | C | 8 FXO | C | 8 FXO | | |
| VoIP Ports | Up to 8-Port | | Up to 8-Port | | Up to 8-Port | |
| Signaling | SIP, H.323 | | SIP, H.323 | | SIP, H.323 | |
| Module Slot | N/A | | N/A | | N/A | |
| LAN Port | 2 | | 2 | | 2 | |
| Console | Support | | Support | | Support | |
| Power | External Adaptor | | External Adaptor | | External Adaptor | |




VoIP Gateways (~24Port)

| Product | AP1700 | AP1800 | AP2610 | AP2620 | AP2120N | AP2330 |
|-------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Available Modules | AP-FXS4 AP-FXO4 AP-FXS2O2 AP-E&M4 AP-E1 | AP-N1-FXS8 AP-N1-FXO8 AP-N1-FXS4O4 AP-N1-E1 | AP-FXS4 AP-FXO4 AP-FXS2O2 AP-E&M4 | AP-FXS4 AP-FXO4 AP-FXS2O2 AP-E&M4 AP-E1 | AP-N1-FXS8 AP-N1-FXO8 AP-N1-FXS4O4 | AP-N1-FXS8 AP-N1-FXO8 AP-N1-FXS4O4 |
| Analog Ports | Up to 8 | Up to 16 | Up to 4 | Up to 8 | Up to 16 | Up to 24 |
| Signaling | SIP, H.323 | SIP, H.323 | SIP, H.323 | SIP, H.323 | SIP, H.323 | SIP, H.323 |
| Digital E1/T1 | Up to 2E1 | Up to 2E1 | N/A | Up to 2E1 | N/A | N/A |
| E&M | Support | N/A* | Support | Support | Support | N/A* |
| Module Slot | Two(2) | Two(2) | One(1) | Two(2) | Two(2) | Three(3) |
| LAN Port | 2 | 2 | 2 | 2 | 2 | 2 |
| Console | 1 | 1 | 1 | 1 | 1 | 1 |
| Power | Single PSU | Single PSU | Single PSU | Single PSU | Single PSU | Single PSU |





VoIP Gateways (~32Port)

| Product | AP2340 | AP2640 | AP2650 |
|-------------------|---|---|---|
| |  |  |  |
| Available Modules | AP-N1-FXS8 AP-N1-FXO8 AP-N1-FXS404 | AP-FXS8 AP-FXO8 AP-FXS404 AP-E&M8 AP-E1 | AP-FXS8 AP-FXO8 AP-FXS404 AP-E&M8 AP-E1 |
| Analog Ports | Up to 32 | Up to 32 | Up to 32 |
| Signaling | SIP, H.323 | SIP, H.323 | SIP, H.323 |
| Digital E1/T1 | N/A | Up to 2E1 | Up to 2E1 |
| E&M | N/A* | Support | Support |
| Module Slot | Four(4) | Four(4) | Four(4) |
| LAN Port | 2 | 2 | 2 |
| Console | 1 | 1 | 1 |
| Power | Single PSU | Single PSU | Dual PSU |

Large Capacity VoIP Gateways


| Product | AP3100P | AP6500 | AP6800 |
|-----------------------------|---|---|---|
| |  |  |  |
| Available VoIP Modules | AP-FXS4, AP-FXO4 AP-FXS2O2, AP-E&M4 | AP-N1-FXS32 AP-N1-FXO32 | AP-N1-FXS32 AP-N1-FXO32 |
| Analog Ports | Up to 60 (4Port Module x 15) | Up to 128 (32 Port Module x 4) | Up to 256 (32 Port Module x 8) |
| Signaling | SIP, H.323 | SIP, H.323 | SIP, H.323 |
| CPU Redundancy (Dual CPU) | N/A | Support (Option) | Support (Option) |
| E&M | Support | N/A | N/A |
| Module Slot for VoIP Module | 15 Slots | 4 Slots | 8 Slots |
| LAN Port | 2 | 2 | 2 |
| Console | 1 | 1 | 1 |
| Dual Power Supply (Option) | Support | Support | Support |

Digital VoIP Gateways (1~16 E1/T1)

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









VoIP Modules



Target :
AP2610, AP2620, AP1700,
AP3100P





VoIP Modules

DSP

| Target | VoIP Modules | Module Features | Module Picture |
|---------------------------------|--------------------|------------------------------|---|
| AP1700,AP2610 AP2620,AP3100P | AP-FXS4 | 4-Port FXS Module |  |
| AP1700,AP2610 AP2620,AP3100P | AP-FXO4 | 4-Port FXO Module |  |
| AP1700,AP2610 AP2620,AP3100P | AP-FXS2O2 | 2-Port FXS&2-Port FXO Module |  |
| AP1700,AP2610 AP2620,AP3100P | AP-E&M4 | 4-Port E&M Module |  |
| AP1700,AP2610 AP2620,AP3100P | AP-FXS3O1 | 3-Port FXS&1-Port FXO Module |  |
| AP1700, AP2620 | AP-E1 | 1-Port Digital E1/T1 Module |  |

Additional VoIP Modules

DSP







| Target | Voice Modules | Module Features | Module Picture |
|-------------------|---------------|--|---|
| AP2610, AP2620 | AP-MP3 | 1-Pair Audio-In/Out Port, Direct MIC-In, Headphone High Quality Audio Band IP Broadcasting |  |
| AP2610 AP2620 | AP-AUDIO2 | 2-Pair Audio-In/Out Ports Voice Band IP Broadcasting |  |
| AP2610, AP2620 | AP-AUD1S3 | 1-Pair Audio-In/Out Ports, FXS Analog Interface Voice Band IP Broadcasting |  |
| AP2610, AP2620 | AP-AUD1S2O1 | 1-Pair Audio-In/Out Ports, FXS 2-Ports, FXO 1-Port Voice Band IP Broadcasting |  |




Target :
AP2120N, AP2640, AP2650

VoIP Modules

DSP






| Target | VoIP Modules | Module Features | Module Picture |
|-----------------------------|--------------------|------------------------------|---|
| AP2120N AP2640 AP2650 | AP-FXS8 | 8-Port FXS Module |  |
| AP2120N AP2640 AP2650 | AP-FXO8 | 8-Port FXS Module |  |
| AP2120N AP2640 AP2650 | AP-FXS4O4 | 4-Port FXS&4-Port FXO Module |  |
| AP2120N AP2640 AP2650 | AP-E&M8 | 8-Port E&M Module |  |
| AP2640 AP2650 | AP-E1 | 1-Port Digital E1/T1 Module |  |
| AP2640 AP2650 | AP-2E1 | 2-Port Digital E1/T1 Module |  |



Target :
AP1800, AP2330, AP2340,
AP1850

VoIP Modules

DSP



| Target | VoIP Modules | Module Features | Module Picture |
|----------------------------|---------------------|------------------------------|---|
| AP1800 AP2330 AP2340 | AP-N1-FXS8 | 8-Port FXS Module |  |
| AP1800 AP2330 AP2340 | AP-N1-FXO8 | 8-Port FXO Module |  |
| AP1800 AP2330 AP2340 | AP-N1-FXS4O4 | 4-Port FXS&4-Port FXO Module |  |
| AP1800 AP1850 | AP-N1-E1 | 1-Port Digital E1/T1 Module |  |
| AP1800 AP1850 | AP-N1-2E1 | 2-Port Digital E1/T1 Module |  |



Target :
AP6500, AP6800

VoIP Modules

DSP




| Target | VoIP Modules | Module Features | Module Picture |
|------------------|--------------------|--------------------|---|
| AP6500 AP6800 | AP-N1-FXS32 | 32-Port FXS Module |  |
| AP6500 AP6800 | AP-N1-FXO32 | 32-Port FXO Module |  |



Target :
AP-MG3000

VoIP Modules

DSP


| Target | VoIP Modules | Module Features | Module Picture |
|-----------|--------------|-----------------------------|--|
| AP-MG3000 | APv2-1E1 | 1-Port Digital E1/T1 Module |  |
| AP-MG3000 | APv2-2E1 | 2-Port Digital E1/T1 Module |  |
| AP-MG3000 | APv2-4E1 | 4-Port Digital E1/T1 Module |  |



Target :
AP-MG3800, AP-MG5000

VoIP Modules

DSP

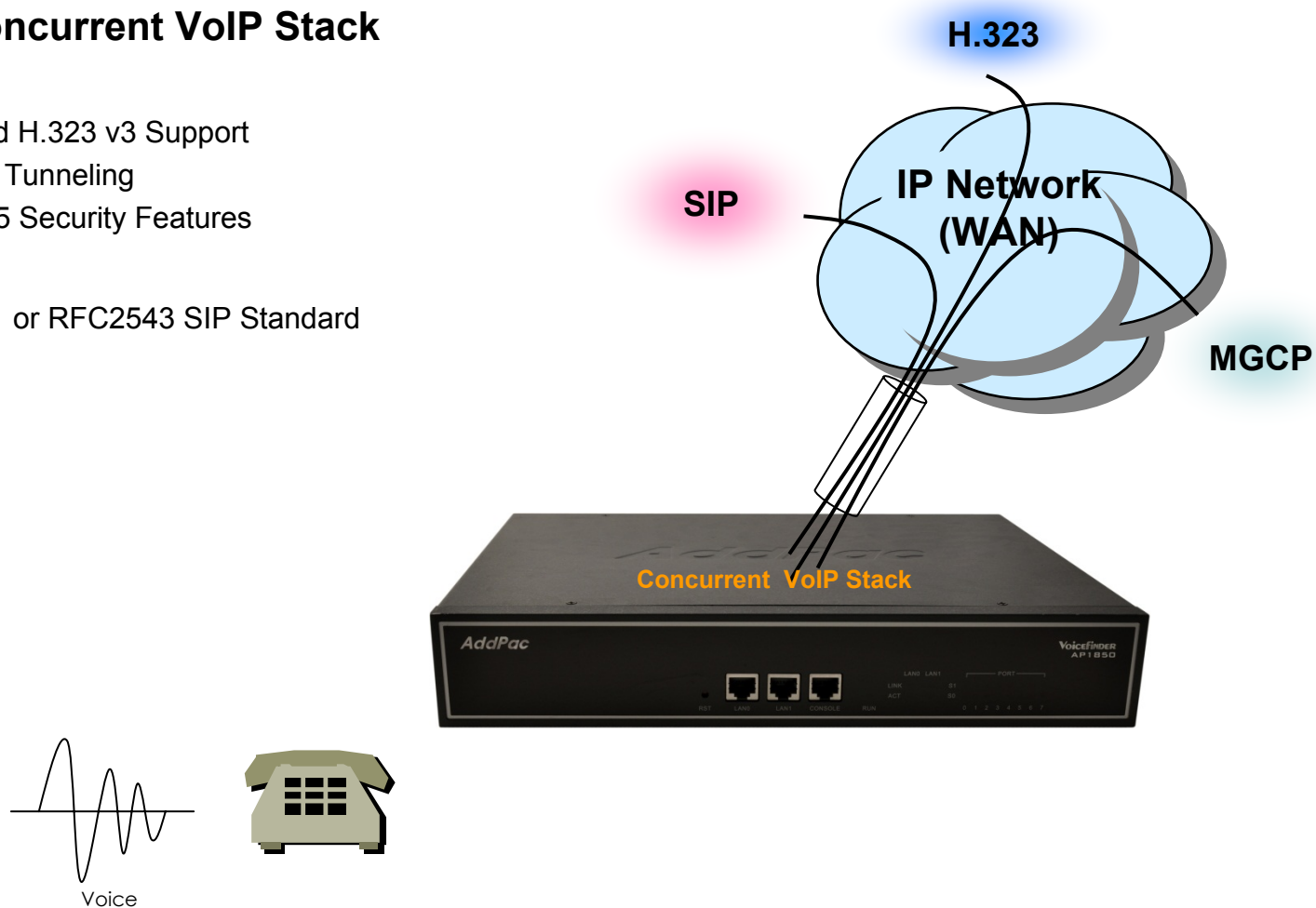
| Target | VoIP Modules | Module Features | Module Picture |
|-------------------------|--------------------|--------------------------------|--|
| AP-MG3800, AP-MG5000 | HIM-VOIP4E1 | 4-Port Digital E1/T1 Module |  |



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**

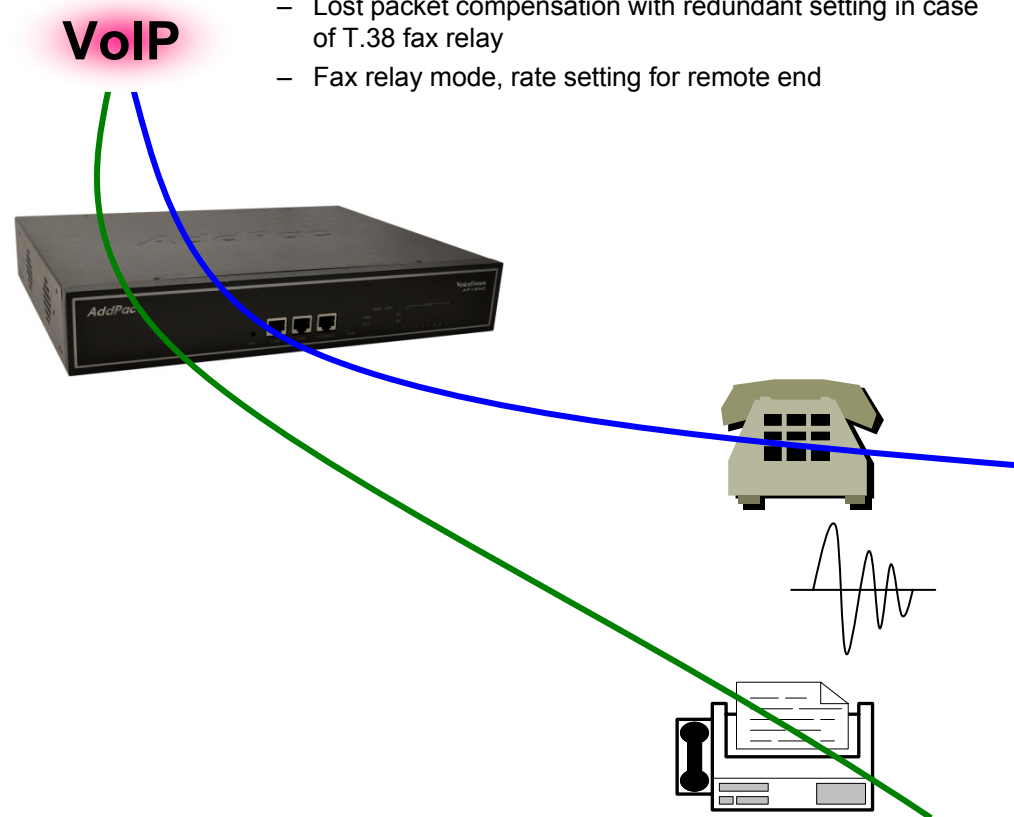
- G.711 A-Law, G.711 U-Law
- G.726 r16, G.726 r32
- G.729A
- G.723.1 r63, G.723.1 r53
- VAD (Voice Activity Detection) function support
- DTMF relay support (H.323, SIP, MGCP common) based on RFC2833

- **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



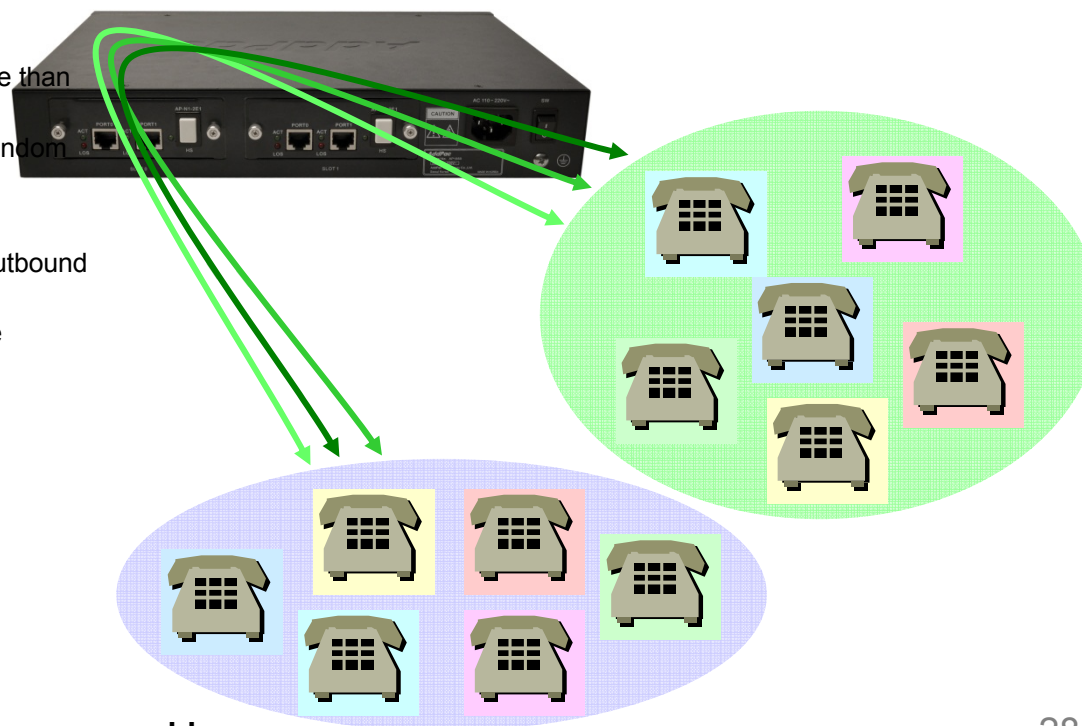
VoIP (Voice over IP) Service

• 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



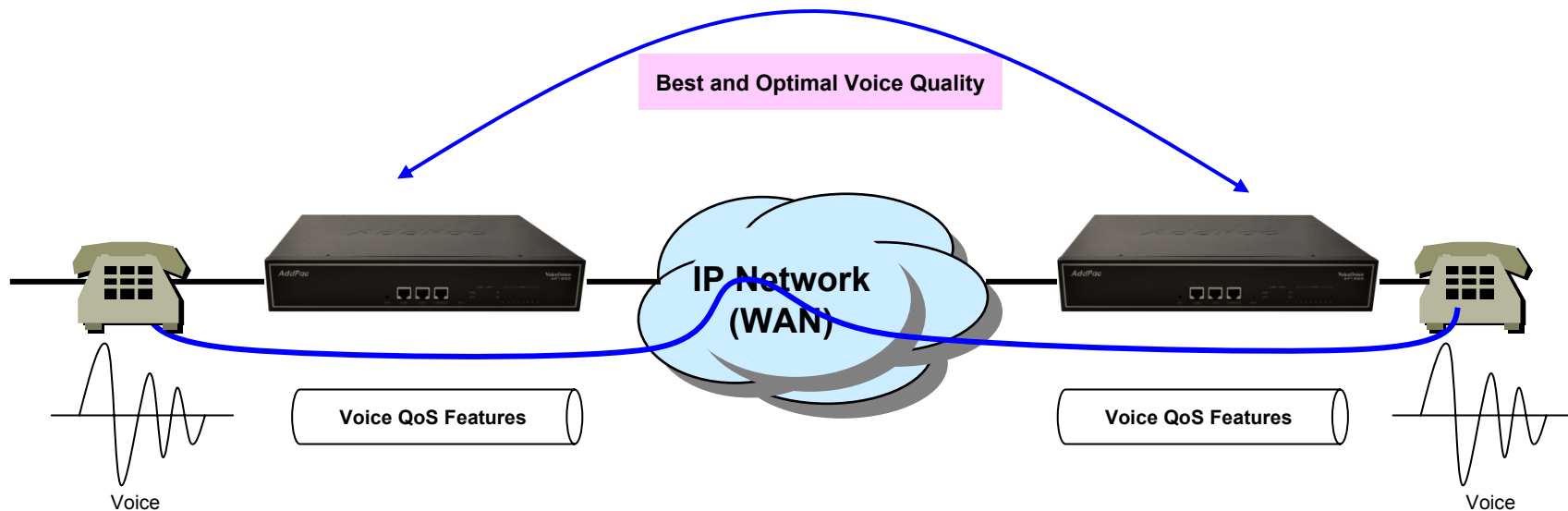
Advanced QoS Features

- **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**

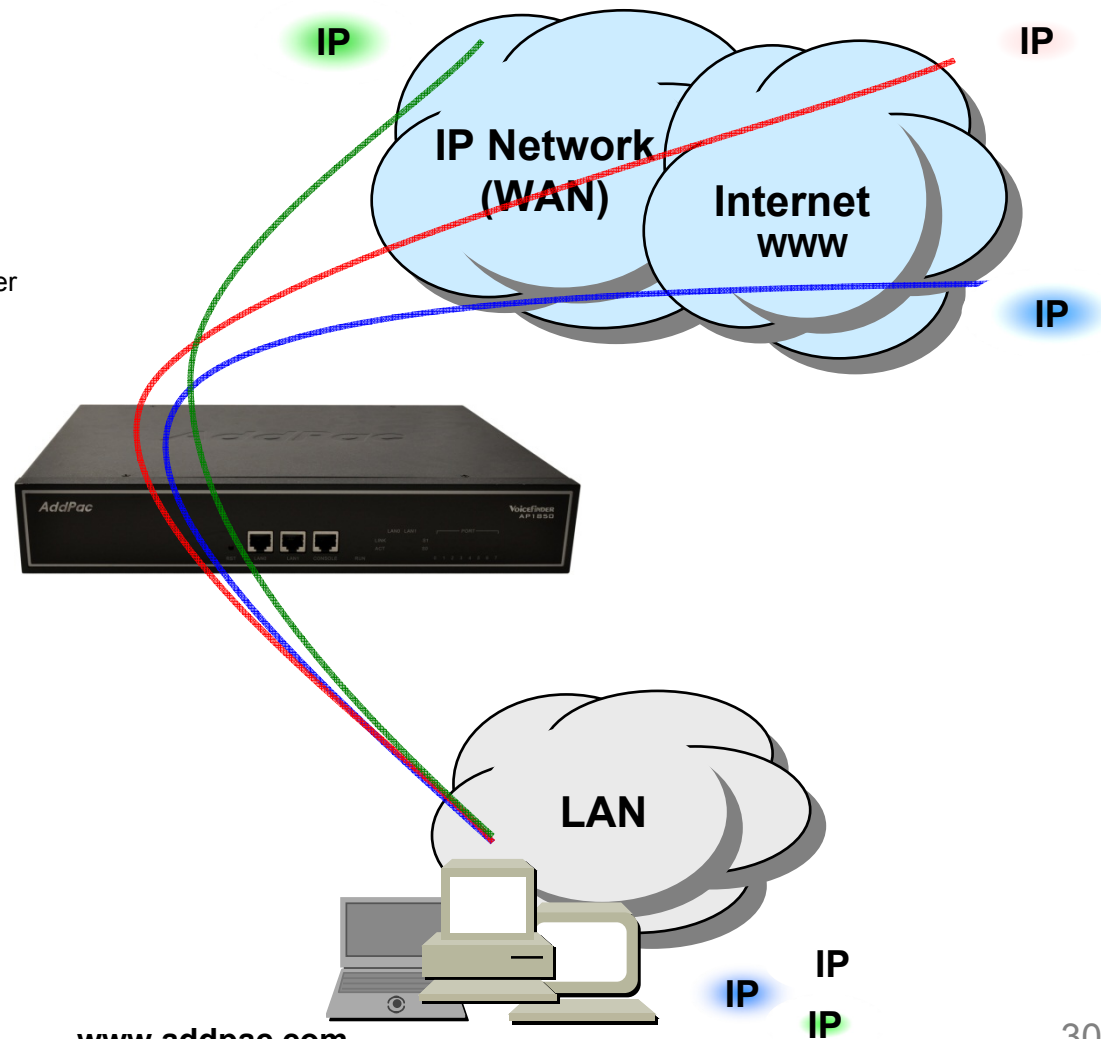
- FTP, Telnet, TFTP, DHCP Server/Relay, SNMP Server
- CDP (Cisco Discovery Protocol)
- DNS Resolver , DDNS(nsupdate)
- Bridge
- Syslog

- **IPv4 Address Configuration**

- Fixed (Static)
- DHCP
- PPPoE

- **Miscellaneous**

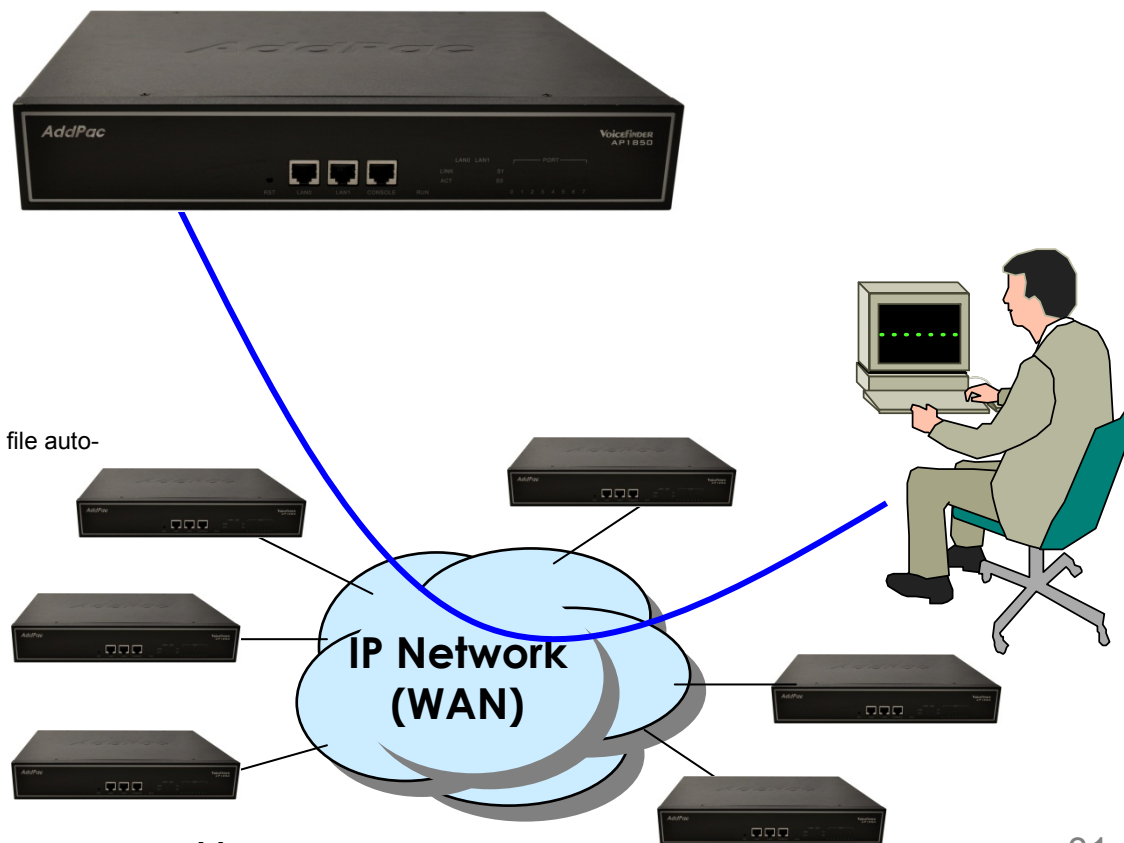
- Cisco Style CLI
- Standard & Extended IPv4 Access List
- Multi-level User Account Management
- IP accounting
- STUN Client



Network Management

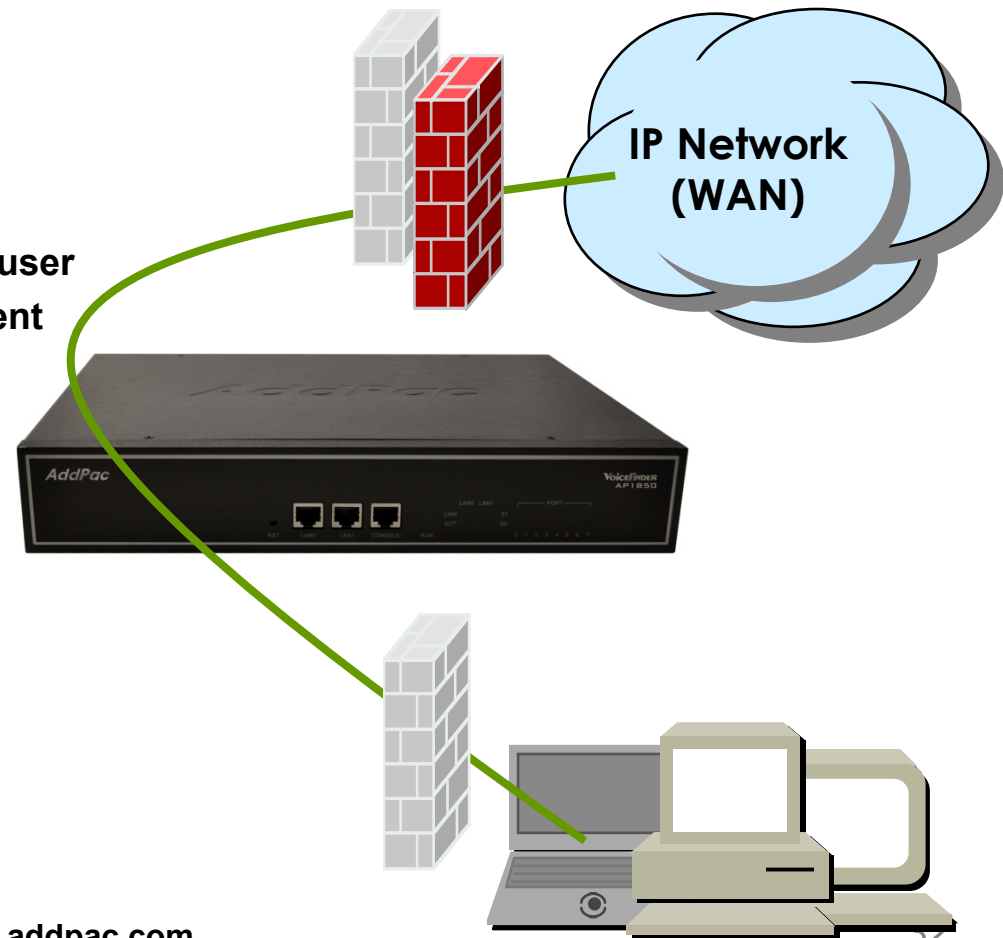
- **SNMP**
 - Standard Simple Network Management Protocol(SNMP) Agent support
 - MIB v1 and v2 Support
- **Web-based Management**
 - Smart Easy Setup
 - Standard Voice Interface
 - Standard PSTN Back-up Interface
- **Watch-dog Function**
 - Hardware, Software watch-dog services
- **Remote Management**
 - 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)



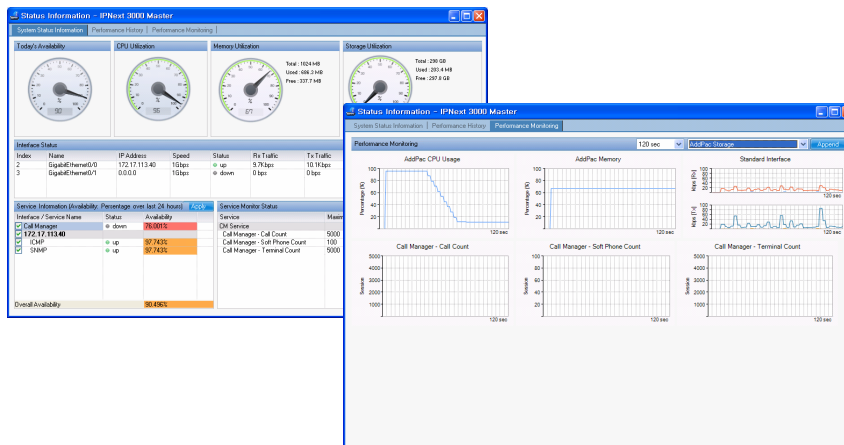
Security Management

- 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



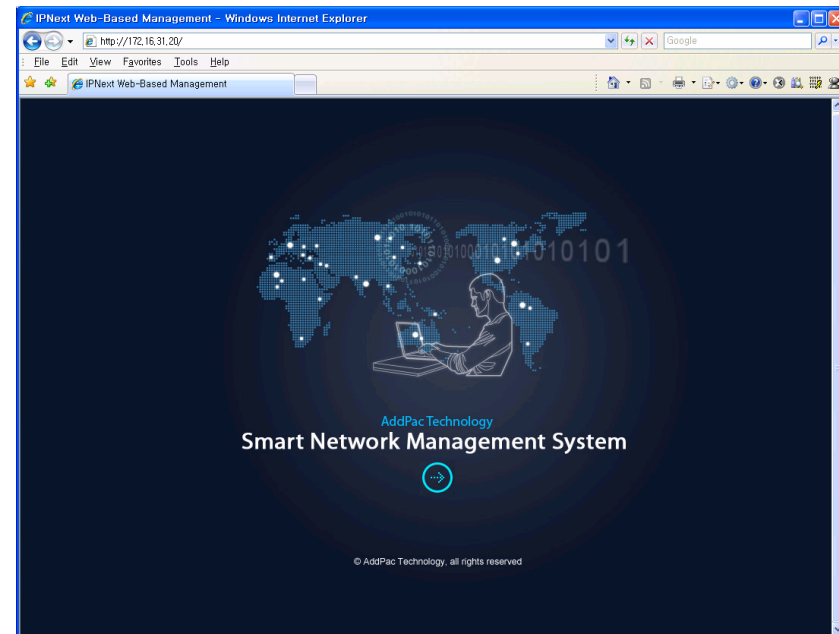
Smart NMS

Smart Network Management System for VoIP Gateway



Contents

- System Requirement
- Smart NMS Networking Diagram
- Web-based Management
- Network Resource Management
- Device Fault Management
- Device Fault History Management
- Device Status Information
- Notification Management
- Fault Statistics
- Model & Service Management



System Requirement

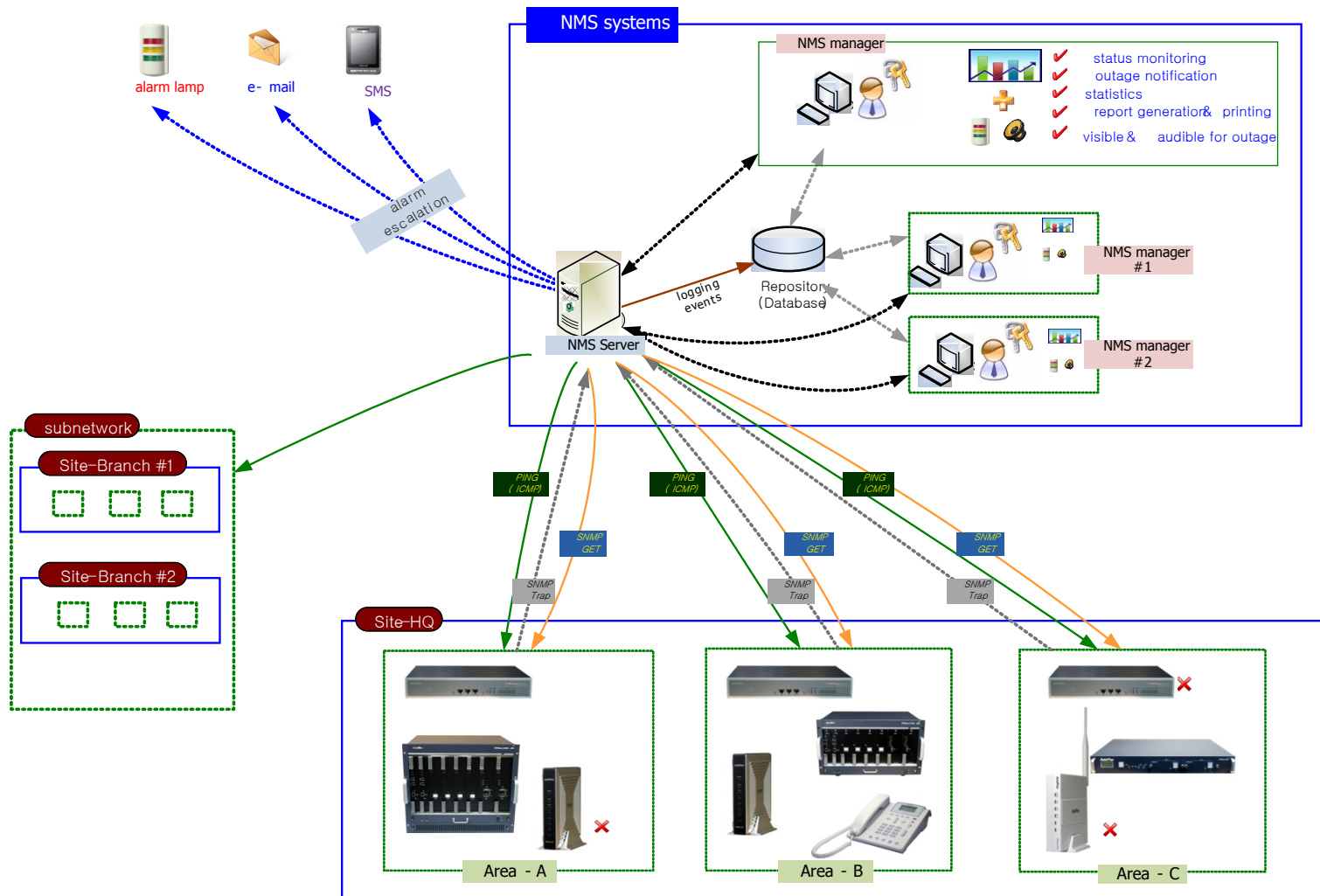
NMS Server

- OS : RHEL (Redhat Enterprise Linux) 5.0 or higher
- CPU : Quad-Core 2.0 GHz / 1333MHz FSB 2x4 MB cache
- Physical Memory : 4 GB
- HDD : 300 G
- JRE (Java Runtime Environment) 1.5.1 or Higher
- Database : PostgreSQL 8.1.11

NMS Client

- Windows XP, Vista, Windows Server 2000/2003
- Microsoft Internet Explorer 6.0 or higher

NMS Networking Diagram



Web-based Management

- **Easy Access via Web browser**
 - Microsoft Internet Explorer 6.0 or higher compatible
- **Version Control**
 - Automatic version check
 - New version software download feature
- **UI control**
 - User friendly GUI management

Version Control

The screenshot displays the IPNext Web-Based Management interface within a Windows Internet Explorer browser window. The browser's address bar shows the URL `http://172.16.31.20/`. The main content area features a dark blue background with a world map and a person using a laptop, with the text "AddPac Technology Smart Network Management System" and a copyright notice "© AddPac Technology, all rights reserved".

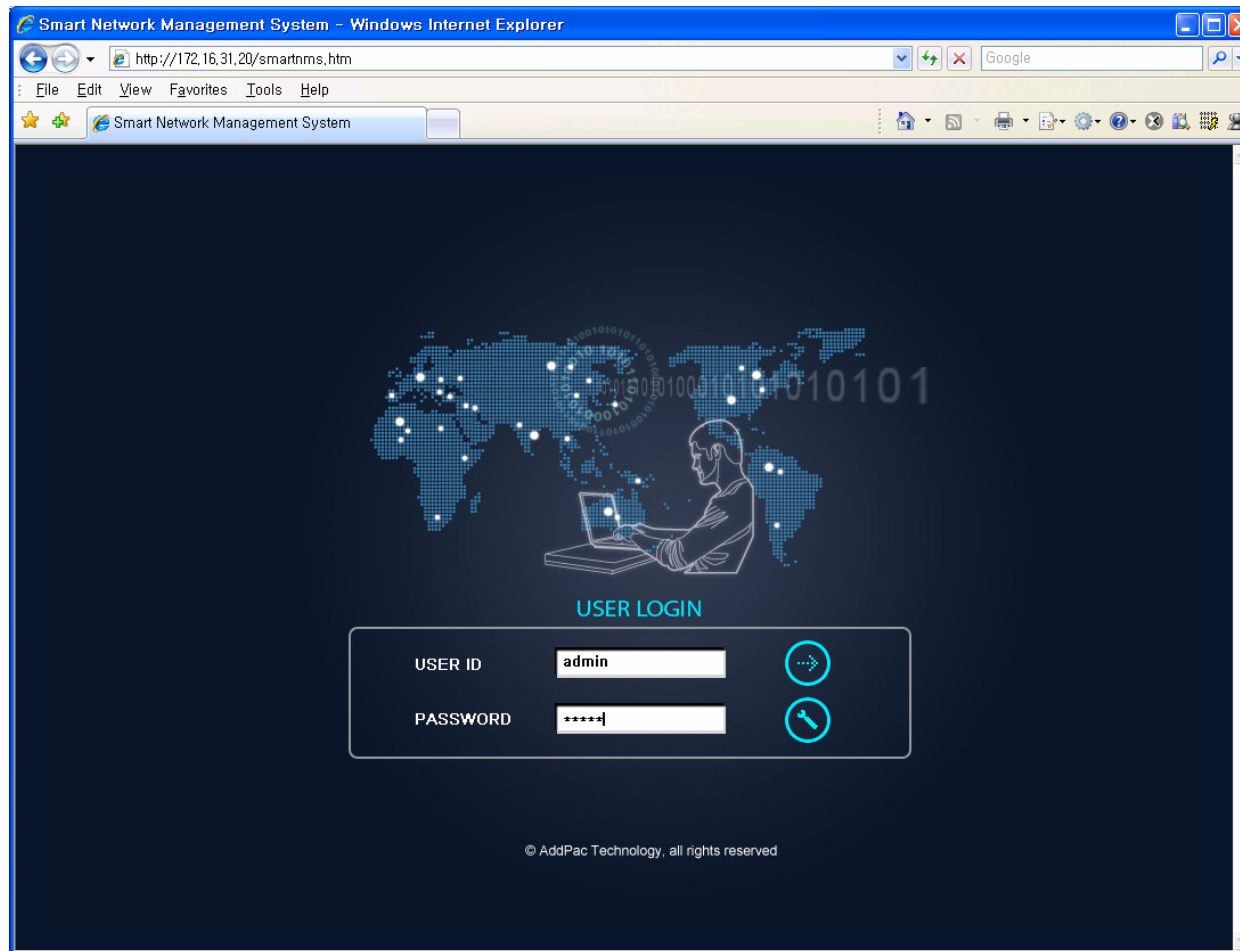
Two yellow callout boxes highlight key features:

- Automatic version check:** A yellow box with an arrow pointing to the top right of the browser window.
- New S/W version update:** A yellow box with an arrow pointing to the bottom right of the browser window.

Two Windows dialog boxes are overlaid on the interface:

- Launching Application:** A dialog box with a blue title bar and a close button. It contains a progress bar and the text "Verifying application requirements. This may take a few moments." Below the progress bar are icons of a computer and a globe.
- (61%) Downloading installnms:** A dialog box with a blue title bar and standard window controls. It contains the text "Downloading installnms" and "This may take several minutes. You can use your computer to do other tasks during the installation." Below this is a progress bar showing 61% completion. The details include: "Name: installnms", "From: 172.16.31.20", and "Downloading: 6.29 MB of 10.1 MB". A "Cancel" button is at the bottom right.

Web-based Login



Network Resource Management

- Network resource management with hierarchical structure
- Role-based resource management for each administrator

The screenshot displays the AddPac Network Resource Management interface. On the left, a hierarchical tree structure shows the organization of network resources, including sites like 'AddPac' and 'Seoul', and various sub-networks and branches. A context menu is open over the 'GangNamGu' node, with 'Execute SMM' highlighted. An orange callout box points to this menu with the text: 'can cooperate with the application executables such as SMM'. In the center, a table lists device categories such as 'Desktop', 'Network Camera', 'Phone', 'Server', 'Switch', and 'VoIP Gateway'. An orange callout box points to this table with the text: 'manage the complex network with a structured, hierarchical form'. On the right, a 'User Properties' dialog box is open, showing a 'Site' tab with a tree view of the same hierarchical structure. An orange callout box points to this dialog with the text: 'can assign the hierarchical node to the operator and manage role-based policy'. At the bottom, a status bar indicates 'Total Categories : 6'.

Device Fault Management

- Centralized fault summary information in main window
- Display current fault device through tree view
- Notify administrator with detailed fault information
- Provide device availability information for 24hrs

Device Fault Management

main window

The screenshot displays the Smart Network Management System (NMS) interface. The main window shows a navigation menu with options like NMS, Account, Configuration, Monitoring, Notification, Fault, Statistics, and View. The interface is divided into several sections:

- Current Outage Devices (11):** A tree view showing the hierarchy of devices. A red arrow points to this section, labeled "current device fault list with hierarchy view".
- Service Outages:** A table showing site-level outages. A red arrow points to the "AddPac" site row, labeled "site device fault summary".
- Overall Availability:** A summary bar at the bottom of the Service Outages table showing "Overall Availability 30 / 11 / 34 78.650%". A red arrow points to this bar, labeled "overall total device fault statistics".
- Device Categories:** A table showing the availability of various device categories. A red arrow points to the "Switch" category row, labeled "device fault summary for category (classification)".
- Your Outstanding Notices (16):** A table showing a list of fault events. A red arrow points to the first row, labeled "current device fault event message as shown as below".

Device Fault Management

Smart Network Management System - Windows Internet Explorer

http://172.16.31.20/smartnms.htm

NMS Account Configuration Monitoring Notification Fault Statistics View Help

Current Outage Devices [12]

| Name | Service... | Availability |
|------------------|------------|--------------|
| Branch AQ | | |
| NMS Camera | 6 of 12 | 48.994 % |
| NMS_IP_PBX... | 3 of 3 | 0.000 % |
| Branch GX | | |
| 00_IVR_server | 3 of 3 | 0.000 % |
| 00_IVR_slave... | 3 of 3 | 0.000 % |
| 00_NR_server | 1 of 2 | 98.015 % |
| 00_PS_server | 3 of 3 | 0.000 % |
| 00_PS_Slave... | 2 of 3 | 32.703 % |
| IPNext 3000 ... | 1 of 3 | 90.536 % |
| IPNext 3000 S... | 1 of 3 | 90.584 % |
| UMS slave | 3 of 3 | 0.000 % |
| HeadQuarter | | |
| UMS serverfo... | 3 of 3 | 0.000 % |
| Subnetwork #2 | | |
| NMS_SOHO_... | 2 of 2 | 92.939 % |

Service Outages Device Monitoring - <All>

Group Type Value View Mode Refresh Import

display message icon when the device have a notification for event

device status matrix with several severity such as critical, major, minor

- * severity color
- 1) red : critical
- 2) orange : major
- 3) light blue : normal

Total Monitoring Devices : 34

| ACK ID | Send Time | Site | Device Name | IP Address | Service | Message |
|--------|-----------------------|-----------------------|--------------------|---------------|--------------|---|
| 9525 | 4/10/2009 5:21:06 PM | /AddPac/Branch GX | 00_IVR_server | 172.17.111.21 | SNMP | 인터페이스 172.17.111.21 (172.17.111.21)의 장비명(00_IVR_server)의 서비스 SNMP가 2009년 4월 10일 금요일 오후 5시 21분 06초에 실패함. |
| 9502 | 4/10/2009 3:34:29 PM | /Subnetwork #2/Center | NMS_SOHO_PBX | | | device NMS_SOHO_PBX, all services are down |
| 9495 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Slave | 172.17.113.41 | Call Manager | interface 172.17.113.41 (172.17.113.41) device (IPNext 3000 Slave) service Call Manager 2009-4-10 11:37:12 failed. |
| 9494 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Master | 172.17.113.40 | Call Manager | interface 172.17.113.40 (172.17.113.40) device (IPNext 3000 Master) service Call Manager 2009-4-10 11:37:12 failed. |
| 9418 | 4/9/2009 2:20:01 PM | /AddPac/Branch GX | 00_IVR_server | | | device 00_IVR_server all services are down. |

Your Outstanding Notices [17]

4/10/2009 5:16:30 PM 172.16.31.20:5101 admin Version 1.2.3384

Device Fault Management

The screenshot displays the Smart Network Management System (NMS) interface within a Windows Internet Explorer browser. The address bar shows the URL `http://172.16.31.20/smartnms.htm`. The interface features a top navigation menu with options like NMS, Account, Configuration, Monitoring, Notification, Fault, Statistics, View, and Help. Below this is a toolbar with various icons for site management, configuration, and monitoring. The main content area is divided into several sections:

- Left Panel:** A tree view showing the hierarchy of sites and subnets, including locations like AddPac, Seoul, and various branches.
- Top Right Panel:** A control area with a 'View Mode' selector set to 'Small', and buttons for 'Refresh', 'Import', and 'New Tab'.
- Center Panel:** A grid of device status icons. Each icon represents a device and includes a status indicator (e.g., a red 'X' for a fault, a green checkmark for 'OK', or a yellow warning triangle). The devices listed include various server types, IPNext 3000 units, and NMS Cameras. An orange callout box with a red arrow points to this grid, containing the text "device status matrix with small view mode".
- Bottom Panel:** A table titled "Your Outstanding Notices (18)" listing recent alerts. The table has columns for Ack, ID, Send Time, Site, Device Name, IP Address, Service, and Message. The messages describe service outages and failures for various devices.

At the bottom of the browser window, the system status shows the date and time as 4/13/2009 3:14:58 PM, the IP address 172.16.31.20:5101, the user 'admin', and the version 'Version 1.2.3384'.

Device Fault History Management

- Provide both summary view and detailed event message
- Can Write troubleshooting job note for each event manually
- Administrator can query for a history fault with search condition
- Each fault is related to the several raw events

Device Fault History Management

The screenshot displays the Smart Network Management System (NMS) interface. On the left, a 'Notification Summary' table provides a daily fault event summary. An orange callout box points to this table with the text 'daily fault event summary statistics information'. The main area shows a list of fault events with columns for Ack, ID, Send Time, Site, Device Name, IP Address, Service, Message, and Respond Time. An orange callout box points to this list with the text 'detail fault event history list up with filter condition (advanced search)'. An 'Advanced Search' dialog box is open, showing filters for Sub Network, Site, IP Address, Notice Status Type, Level (Severity), Message Contains, Notices After, Notices Before, and Sort By. Below the main list, there is a section for 'Your Outstanding Notices (17)' with a detailed table of fault events.

| DateTime | Outstanding | Acknowledge |
|------------|-------------|-------------|
| 2009-04-10 | 4 | 27 |
| 2009-04-09 | 2 | 76 |
| 2009-04-08 | 0 | 96 |
| 2009-04-07 | 0 | 40 |
| 2009-04-06 | 7 | 489 |
| 2009-04-05 | 0 | 722 |
| 2009-04-04 | 0 | 708 |
| 2009-04-03 | 1 | 476 |
| 2009-04-02 | 0 | 248 |
| 2009-04-01 | 0 | 19 |
| 2009-03-31 | 0 | 37 |
| 2009-03-30 | 0 | 9 |
| 2009-03-29 | 0 | 3 |
| 2009-03-28 | 0 | 1 |
| 2009-03-27 | 0 | 14 |
| 2009-03-26 | 0 | 52 |
| 2009-03-25 | 0 | 8 |
| 2009-03-24 | 0 | 19 |
| 2009-03-23 | 0 | 59 |
| 2009-03-22 | 0 | 102 |
| 2009-03-21 | 0 | 17 |
| 2009-03-20 | 0 | 21 |
| 2009-03-18 | 0 | 48 |
| 2009-03-17 | 0 | 41 |
| 2009-03-13 | 0 | 36 |
| 2009-03-07 | 0 | 1 |
| 2009-03-06 | 0 | 482 |
| 2009-03-05 | 0 | 38 |
| 2009-03-04 | 0 | 13 |

| Ack | ID | Send Time | Site | Device Name | IP Address | Service | Message | Respond Time |
|--------------------------|------|----------------------|---------------------|-------------------------------------|--------------|---------|--|----------------------|
| <input type="checkbox"/> | 9528 | 4/10/2009 5:51:06 PM | /AddPac/Branch AQ | NMS Camera | 172.16.4.180 | SNMP | interface 172.16.4.180 (172.16.4.180) device(NMS Camera) service SNMP failed at 2009-4-10 5:51 06 PM | 4/10/2009 5:51:35 PM |
| <input type="checkbox"/> | 9527 | 4/10/2009 5:34:10 PM | /AddPac/HeadQuarter | 5th floor meeting room phone device | | | device 5th floor meeting room phone device, all services are down. | 4/10/2009 5:35:25 PM |
| <input type="checkbox"/> | 9526 | 4/10/2009 5:33:42 PM | /AddPac/Branch GX | 00_NR_server | 172.17.11 | | | 4/10/2009 5:22:43 PM |
| <input type="checkbox"/> | 9525 | 4/10/2009 5:21:06 PM | /AddPac/Branch GX | 00_NR_server | 172.17.11 | | | 4/10/2009 5:17:56 PM |
| <input type="checkbox"/> | 9524 | 4/10/2009 5:17:29 PM | /AddPac/Branch GX | 00_NR_server | 172.17.11 | | | 4/10/2009 4:03:13 PM |
| <input type="checkbox"/> | 9522 | 4/10/2009 3:36:26 PM | /AddPac/HeadQuarter | IP_PBX_Slave(our company) | | | | 4/10/2009 4:03:13 PM |
| <input type="checkbox"/> | 9521 | 4/10/2009 3:36:18 PM | /AddPac/HeadQuarter | PS_server(our co... | | | | 4/10/2009 4:03:13 PM |
| <input type="checkbox"/> | 9520 | 4/10/2009 3:36:17 PM | /AddPac/HeadQuarter | RBT server(our company) | | | | 4/10/2009 4:03:13 PM |
| <input type="checkbox"/> | 9519 | 4/10/2009 3:36:17 PM | /AddPac/HeadQuarter | UMS_server #2 | | | | 4/10/2009 4:03:13 PM |
| <input type="checkbox"/> | 9518 | 4/10/2009 3:36:09 PM | /AddPac/HeadQuarter | Recording Server (our company) | | | | 4/10/2009 4:03:13 PM |
| <input type="checkbox"/> | 9517 | 4/10/2009 3:36:08 PM | /AddPac/HeadQuarter | company_MCU_s... | | | | 4/10/2009 4:03:14 PM |
| <input type="checkbox"/> | 9516 | 4/10/2009 3:36:00 PM | /AddPac/Branch GX | 00_PS_Slave_ser... | | | | 4/10/2009 4:03:13 PM |
| <input type="checkbox"/> | 9514 | 4/10/2009 3:35:50 PM | /AddPac/Branch GX | 00_PS_server | | | | 4/10/2009 4:02:54 PM |
| <input type="checkbox"/> | 9513 | 4/10/2009 3:35:41 PM | /AddPac/HeadQuarter | 5th floor meeting room phone device | | | | 4/10/2009 4:02:43 PM |
| <input type="checkbox"/> | 9512 | 4/10/2009 3:35:41 PM | /AddPac/HeadQuarter | IP_PBX_Master (our company) | | | | 4/10/2009 4:02:44 PM |
| <input type="checkbox"/> | 9511 | 4/10/2009 3:35:33 PM | /AddPac/Branch KT | 172.16.51.12 | | | | 4/10/2009 4:02:43 PM |

| Ack | ID | Send Time | Site | Device Name | IP Address | Service | Message |
|--------------------------|------|-----------------------|-----------------------|-------------------------|----------------|--------------|---|
| <input type="checkbox"/> | 9527 | 4/10/2009 5:34:10 PM | /AddPac/HeadQuarter | 5th floor meeting ro... | | | device 5th floor meeting room phone device, all services are down. |
| <input type="checkbox"/> | 9502 | 4/10/2009 3:34:29 PM | /Subnetwork #2/Center | NMS_SOHD_PBX | | | device NMS_SOHD_PBX, all services are down |
| <input type="checkbox"/> | 9495 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Slave | 172.17.113.41 | Call Manager | interface 172.17.113.41 (172.17.113.41) device (IPNext 3000 Slave) service Call Manager 2009-4-10 11:37:12 failed. |
| <input type="checkbox"/> | 9494 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Master | 172.17.113.40 | Call Manager | interface 172.17.113.40 (172.17.113.40) device (IPNext 3000 Master) service Call Manager 2009-4-10 11:37:12 failed. |
| <input type="checkbox"/> | 9418 | 4/9/2009 2:20:01 PM | /AddPac/Branch GX | 00_IVR_server | | | device 00_IVR_server all services are down. |
| <input type="checkbox"/> | 9396 | 4/9/2009 10:57:37 AM | /AddPac/Branch AQ | NMS_IP_PBX_31.13 | | | device NMS_IP_PBX_31.13 all services down. |
| <input type="checkbox"/> | 9239 | 4/6/2009 7:49:20 PM | /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | | device (NMS Camera 2) interface 172.16.253.118 (172.16.253.118) not response or delete by administrator |
| <input type="checkbox"/> | 9238 | 4/6/2009 7:49:20 PM | /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | ICMP | device (NMS Camera 2) interface 172.16.253.118 (172.16.253.118) service ICMP not response or deleted by administrator |
| <input type="checkbox"/> | 9237 | 4/6/2009 7:49:20 PM | /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | SNMP | device (NMS Camera 2) interface 172.16.253.118 (172.16.253.118) service SNMP not response or deleted by administrator |

Device Fault History Management

The screenshot displays the Smart Network Management System (Smart NMS) interface within a Windows Internet Explorer browser. The main window shows a list of events with columns for Ack, ID, Send Time, Site, Device Name, IP Address, Service, Message, Responder, and Respond Time. A 'Troubleshooting Note' dialog box is open, showing a log message and a table for adding notes. An orange callout box points to the dialog with the text 'Can write troubleshooting note if needed'.

| Ack | ID | Send Time | Site | Device Name | IP Address | Service | Message | Responder | Respond Time |
|-------------------------------------|------|----------------------|-------------------|-------------------------------------|--------------|---------|--|-------------------|----------------------|
| <input checked="" type="checkbox"/> | 9528 | 4/10/2009 5:51:06 PM | /AddPac/Branch AQ | NMS Camera | 172.16.4.180 | SNMP | interface 172.16.4.180 (172.16.4.180) device(NMS Camera) service SNMP failed at 2009-4-10 5:51 06 PM | auto-acknowledged | 4/10/2009 5:51:35 PM |
| <input type="checkbox"/> | 9527 | 4/10/2009 5:34:10 PM | /AddPac/Branch AQ | 5th floor meeting room phone device | | | device 5th floor meeting room phone device, all services are down. | | |
| <input type="checkbox"/> | 9526 | 4/10/2009 5:33:42 PM | /AddPac/Branch GX | | | | | | |
| <input type="checkbox"/> | 9525 | 4/10/2009 5:21:06 PM | /AddPac/Branch GX | | | | | | |
| <input type="checkbox"/> | 9524 | 4/10/2009 5:17:29 PM | /AddPac/Branch GX | | | | | | |
| <input type="checkbox"/> | 9522 | 4/10/2009 3:36:26 PM | /AddPac/Branch AQ | IP cor | | | | | |
| <input type="checkbox"/> | 9521 | 4/10/2009 3:36:18 PM | /AddPac/Branch AQ | PS RB cor | | | | | |
| <input type="checkbox"/> | 9520 | 4/10/2009 3:36:17 PM | /AddPac/Branch AQ | UW | | | | | |
| <input type="checkbox"/> | 9519 | 4/10/2009 3:36:17 PM | /AddPac/Branch AQ | re (ou | | | | | |

The 'Troubleshooting Note' dialog box contains the following text:

```

Status: Cleared
Fixed it manually.
2009-04-10 PM
by Administrator.
Operator: admin
    
```

The dialog also includes a table for adding notes:

| Time | User | Status | Note |
|------|------|--------|------|
| | | | |

Buttons: Add, Edit, Delete, Help, Close.

Current Device Fault (Outage)

The screenshot displays the Smart Network Management System (NMS) interface. The main window shows a tree view of network devices on the left and a table of current outages in the center. An event detail window is open for ID 45412, showing event information and a description of the fault.

Current Outage Devices Table:

| Name | Service... | Availability |
|--------------------|------------|--------------|
| AddPac | | |
| Branch AQ | | |
| NMS Camera | 6 of 12 | 50.000 % |
| NMS_IP_PBX... | 3 of 3 | 0.000 % |
| Branch GX | | |
| 00_IVR_server | 3 of 3 | 0.000 % |
| 00_IVR_slave... | 3 of 3 | 0.000 % |
| 00_PS_server | 3 of 3 | 0.000 % |
| 00_PS_slave... | 2 of 3 | 33.333 % |
| 00_RBT_server | 3 of 3 | 0.000 % |
| IPNext 3000 S... | 1 of 3 | 66.667 % |
| IPNext 3000 S... | 1 of 3 | 66.667 % |
| UMS slave | 3 of 3 | 0.000 % |
| HeadQuarter | | |
| 5th floor meeti... | 1 of 1 | 0.000 % |
| UMS serverfo... | 3 of 3 | 0.000 % |
| Subnetwork #2 | | |
| Center | | |
| NMS_SOHO... | 2 of 2 | 0.000 % |

Service Outages Table:

| Outage ID | Site | Device Name | IP Address | Service | Time Down |
|-----------|------------------------|-----------------------------|---------------|--------------|---|
| 13968 | /AddPac/Branch GX | 00_RBT_server | 172.17.114.60 | Media | 4/10/2009 9:26:04 PM |
| 13967 | /AddPac/Branch GX | 00_RBT_server | 172.17.114.60 | ICMP | 4/10/2009 9:26:04 PM |
| 13966 | /AddPac/Branch GX | 00_RBT_server | 172.17.114.60 | ICMP | 4/10/2009 9:26:04 PM |
| 13948 | /AddPac/HeadQuarter | 5th floor meeting room p... | 172.16.53.101 | ICMP | 4/10/2009 5:34:10 PM |
| 13907 | /Subnetwork #2/Cent... | NMS_SOHO_PBX | 172.16.19.50 | ICMP | 4/10/2009 3:34:29 PM |
| 13906 | /Subnetwork #2/Cent... | NMS_SOHO_PBX | 172.16.19.50 | SNMP | 4/10/2009 3:34:29 PM |
| 13896 | /AddPac/Branch GX | IPNext 3000 Slave | 172.17.113.41 | Call Manager | 2009-4-10 11:37:12 failed. |
| 13895 | /AddPac/Branch GX | IPNext 3000 Master | 172.17.113.40 | Call Manager | interface 172.17.113.40 (172.17.113.40) device (IPNext 3000 Master) service Call Manager, 2009-4-10 11:37:12 failed |
| 13802 | /AddPac/Branch GX | 00_IVR_server | | | device 00_IVR_server all services are down. |
| 13801 | /AddPac/Branch GX | 00_IVR_server | | | device NMS_IP_PBX_31.13 all services down. |
| 13800 | /AddPac/Branch GX | 00_IVR_server | | | device NMS_Camera 2 interface 172.16.253.118 (172.16.253.118) not response or delete by administrator |

Event Detail (ID: 45412):

- Event Time: 4/10/2009 9:26:04 PM
- Site: /AddPac/Branch GX
- Service: /AddPac/Branch GX
- Time Acknowledge: [Empty]
- Log Message: device 00_RBT_server down
- Description: device 00_RBT_server's all interface down. A new Outage record has been created and service level availability calculations will be impacted until this outage is resolved.

Your Outstanding Notices (18):

| Ack | ID | Send Time | Site | Device Name | IP Address | Service | Message |
|-------------------------------------|------|-----------------------|------------------------|----------------------|----------------|--------------|---|
| <input checked="" type="checkbox"/> | 9535 | 4/10/2009 9:26:04 PM | /AddPac/Branch GX | 00_RBT_server | | Media | device 00_RBT_server's all interface down. |
| <input checked="" type="checkbox"/> | 9527 | 4/10/2009 5:34:10 PM | /AddPac/HeadQuarter | 5th floor meeting... | | ICMP | device 5th floor meeting room p... interface 172.16.53.101 (172.16.53.101) device (5th floor meeting room p...) service ICMP, 2009-4-10 5:34:10 PM failed |
| <input checked="" type="checkbox"/> | 9502 | 4/10/2009 3:34:29 PM | /Subnetwork #2/Cent... | NMS_SOHO_PBX | | ICMP | device NMS_SOHO_PBX interface 172.16.19.50 (172.16.19.50) device (NMS_SOHO_PBX) service ICMP, 2009-4-10 3:34:29 PM failed |
| <input checked="" type="checkbox"/> | 9495 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Slave | 172.17.113.41 | Call Manager | Call Manager 2009-4-10 11:37:12 failed. |
| <input checked="" type="checkbox"/> | 9494 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Master | 172.17.113.40 | Call Manager | interface 172.17.113.40 (172.17.113.40) device (IPNext 3000 Master) service Call Manager, 2009-4-10 11:37:12 failed |
| <input checked="" type="checkbox"/> | 9418 | 4/9/2009 2:20:01 PM | /AddPac/Branch GX | 00_IVR_server | | | device 00_IVR_server all services are down. |
| <input checked="" type="checkbox"/> | 9396 | 4/9/2009 10:57:37 AM | /AddPac/Branch AQ | NMS_IP_PBX_3... | | | device NMS_IP_PBX_31.13 all services down. |
| <input checked="" type="checkbox"/> | 9239 | 4/6/2009 7:49:20 PM | /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | | device NMS_Camera 2 interface 172.16.253.118 (172.16.253.118) not response or delete by administrator |

Device Event History

Smart Network Management System - Windows Internet Explorer

http://172.16.31.20/smartnms.htm

NMS Account Configuration Monitoring Notification Fault Statistics View Help

Site Event Summary Service Outages Event Notification Destination Paths Users View Current Outages View Outages View Events

| Event Time | Outsta... | Ackno... | Not Clea... | Cleared | In Pr... |
|------------|-----------|----------|-------------|---------|----------|
| 2009-04-13 | 40 | 0 | 40 | 0 | 0 |
| 2009-04-12 | 6 | 0 | 6 | 0 | 0 |
| 2009-04-11 | 314 | 0 | 314 | 0 | 0 |
| 2009-04-10 | 182 | 0 | 182 | 0 | 0 |
| 2009-04-09 | 290 | 0 | 290 | 0 | 0 |
| 2009-04-08 | 412 | 0 | 412 | 0 | 0 |
| 2009-04-07 | 448 | 0 | 448 | 0 | 0 |
| 2009-04-06 | 1453 | 0 | 1453 | 0 | 0 |
| 2009-04-05 | 1704 | 0 | 1704 | 0 | 0 |
| 2009-04-04 | 1712 | 0 | 1712 | 0 | 0 |
| 2009-04-03 | 1276 | 0 | 1276 | 0 | 0 |
| 2009-04-02 | 799 | 0 | 799 | 0 | 0 |
| 2009-04-01 | 271 | 0 | 271 | 0 | 0 |
| 2009-03-31 | 277 | 0 | 277 | 0 | 0 |
| 2009-03-30 | 212 | 0 | 212 | 0 | 0 |
| 2009-03-29 | 17 | 0 | 17 | 0 | 0 |
| 2009-03-28 | 2 | 0 | 2 | 0 | 0 |
| 2009-03-27 | 108 | 0 | 108 | 0 | 0 |
| 2009-03-26 | 292 | 0 | 292 | 0 | 0 |
| 2009-03-25 | 46 | 0 | 46 | 0 | 0 |
| 2009-03-24 | 121 | 0 | 121 | 0 | 0 |
| 2009-03-23 | 1904 | 0 | 1904 | 0 | 0 |
| 2009-03-22 | 2643 | 0 | 2643 | 0 | 0 |
| 2009-03-21 | 354 | 0 | 354 | 0 | 0 |
| 2009-03-20 | 172 | 0 | 172 | 0 | 0 |
| 2009-03-19 | 1 | 0 | 1 | 0 | 0 |
| 2009-03-18 | 1294 | 0 | 1294 | 0 | 0 |
| 2009-03-17 | 788 | 0 | 788 | 0 | 0 |
| 2009-03-16 | 14 | 0 | 14 | 0 | 0 |
| 2009-03-15 | 3 | 0 | 3 | 0 | 0 |

Limit: 20 Refresh Advanced Search Acknowledge Events Troubleshooting Note

| Ack | ID | Severity | Event Time | Site | Device Name | IP Address | Service | Message |
|--------------------------|-------|----------|-----------------------|------------------------|----------------------|----------------|---------|---|
| <input type="checkbox"/> | 45786 | Critical | 4/13/2009 11:24:42 AM | /AddPac/Branch GX | SE_MG3000N_A | 172.17.111.25 | | Agent Up with enterprise: 1.3.6.1.4.1.4855.3.2.255 args [1]: 1.3.6.1.4.1.4855.3.2.255" |
| <input type="checkbox"/> | 45785 | Cleared | 4/13/2009 11:15:59 AM | /AddPac/Branch GX | 00_NR_server | 172.17.111.21 | SNMP | SNMP data collection on interface 172.17.111.21 previously failed and has been restored. Node 00_NR_server is up. |
| <input type="checkbox"/> | 45784 | Cleared | 4/13/2009 11:15:52 AM | /AddPac/Branch GX | 00_NR_server | 172.17.111.21 | | Agent Up with Possible Changes (coldStart Trap) enterprise: 1.3.6.1.4.1.4855.3.2.10 [1]: 1.3.6.1.4.1.4855.3.2.10" |
| <input type="checkbox"/> | 45783 | Critical | 4/13/2009 11:15:51 AM | /AddPac/Branch GX | 00_NR_server | 172.17.111.21 | | Node 00_NR_server is down. |
| <input type="checkbox"/> | 45782 | Critical | 4/13/2009 11:15:13 AM | /AddPac/Branch GX | 00_NR_server | 172.17.111.21 | SNMP | SNMP data collection on interface 172.17.111.21 failed. |
| <input type="checkbox"/> | 45781 | Warning | 4/13/2009 11:14:57 AM | /AddPac/Branch GX | 00_NR_server | 172.17.111.21 | SNMP | SNMP thresholding on interface 172.16.31.13 failed. |
| <input type="checkbox"/> | 45780 | Warning | 4/13/2009 10:00:15 AM | /AddPac/Branch AQ | NMS_IP_PBX_31... | 172.16.31.13 | SNMP | SNMP thresholding on interface 172.16.31.16 failed. |
| <input type="checkbox"/> | 45779 | Warning | 4/13/2009 10:00:15 AM | /Subnetwork #2/Cent... | NMS_IP_PBX_31... | 172.16.31.16 | SNMP | SNMP data collection on interface 172.17.113.201 failed. |
| <input type="checkbox"/> | 45778 | Warning | 4/13/2009 9:59:51 AM | /AddPac/Branch GX | UMS slave | 172.17.113.201 | SNMP | SNMP data collection on interface 172.17.113.201 failed. |
| <input type="checkbox"/> | 45777 | Warning | 4/13/2009 9:59:46 AM | /AddPac/Branch GX | UMS slave | 172.17.113.201 | SNMP | SNMP data collection on interface 61.33.161.43 failed. |
| <input type="checkbox"/> | 45776 | Warning | 4/13/2009 9:59:42 AM | /AddPac/HeadQuarter | UMS server(our co... | 61.33.161.43 | SNMP | SNMP data collection on interface 61.33.161.43 failed. |
| <input type="checkbox"/> | 45775 | Warning | 4/13/2009 9:59:41 AM | /AddPac/HeadQuarter | UMS server(our co... | 61.33.161.43 | SNMP | SNMP data collection on interface 172.16.19.50 failed. |
| <input type="checkbox"/> | 45774 | Warning | 4/13/2009 9:59:36 AM | /Subnetwork #2/Cent... | NMS_SOHO_PBX | 172.16.19.50 | SNMP | SNMP data collection on interface 172.16.19.50 failed. |
| <input type="checkbox"/> | 45773 | Warning | 4/13/2009 9:59:33 AM | /Subnetwork #2/Cent... | NMS_SOHO_PBX | 172.16.19.50 | SNMP | SNMP data collection on interface 172.16.19.50 failed. |
| <input type="checkbox"/> | 45772 | Warning | 4/13/2009 9:59:32 AM | /Subnetwork #2/Cent... | NMS_SOHO_PBX | 172.16.19.50 | SNMP | SNMP data collection on interface 172.16.19.50 failed. |
| <input type="checkbox"/> | 45771 | Warning | 4/13/2009 9:59:27 AM | /Subnetwork #2/Cent... | NMS_SOHO_PBX | 172.16.19.50 | SNMP | SNMP data collection on interface 172.16.19.50 failed. |
| <input type="checkbox"/> | 45770 | Warning | 4/13/2009 9:59:24 AM | /Subnetwork #2/Cent... | NMS_SOHO_PBX | 172.16.19.50 | SNMP | SNMP data collection on interface 172.16.19.50 failed. |
| <input type="checkbox"/> | 45769 | Warning | 4/13/2009 9:59:23 AM | /Subnetwork #2/Cent... | NMS_SOHO_PBX | 172.16.19.50 | SNMP | SNMP data collection on interface 172.16.19.50 failed. |
| <input type="checkbox"/> | 45768 | Warning | 4/13/2009 9:59:18 AM | /AddPac/Branch AQ | NMS_IP_PBX_31... | 172.16.31.13 | SNMP | SNMP data collection on interface 172.16.31.13 failed. |
| <input type="checkbox"/> | 45767 | Warning | 4/13/2009 9:59:15 AM | /AddPac/Branch AQ | NMS_IP_PBX_31... | 172.16.31.13 | SNMP | SNMP data collection on interface 172.16.31.13 failed. |

Results: 1 to 20 of 25346 Search Constraints: user=admin

summarize daily event statistics data

| Site | Device Name | IP Address | Service | Message |
|--------------------------|----------------------|-----------------------|-------------------|--|
| /AddPac/Branch GX | 00_RBT_server | | | device 00_RBT_server's all services are down. |
| /AddPac/HeadQuarter | 5th floor meeting... | | | device 5th floor meeting room phone device, all services are down. |
| /Subnetwork #2/Cent... | NMS_SOHO_PBX | | | device NMS_SOHO_PBX, all services are down. |
| <input type="checkbox"/> | 9495 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Slave 172.17.113.41 |
| <input type="checkbox"/> | 9494 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Master 172.17.113.40 |
| <input type="checkbox"/> | 9418 | 4/9/2009 2:20:01 PM | /AddPac/Branch GX | 00_IVR_server |
| <input type="checkbox"/> | 9396 | 4/9/2009 10:57:37 AM | /AddPac/Branch AQ | NMS_IP_PBX_3... |
| <input type="checkbox"/> | 9239 | 4/6/2009 7:49:20 PM | /AddPac/Branch AQ | NMS Camera 2 172.16.253.118 |

Your Outstanding Notices (18) All Outstanding Notices (18)

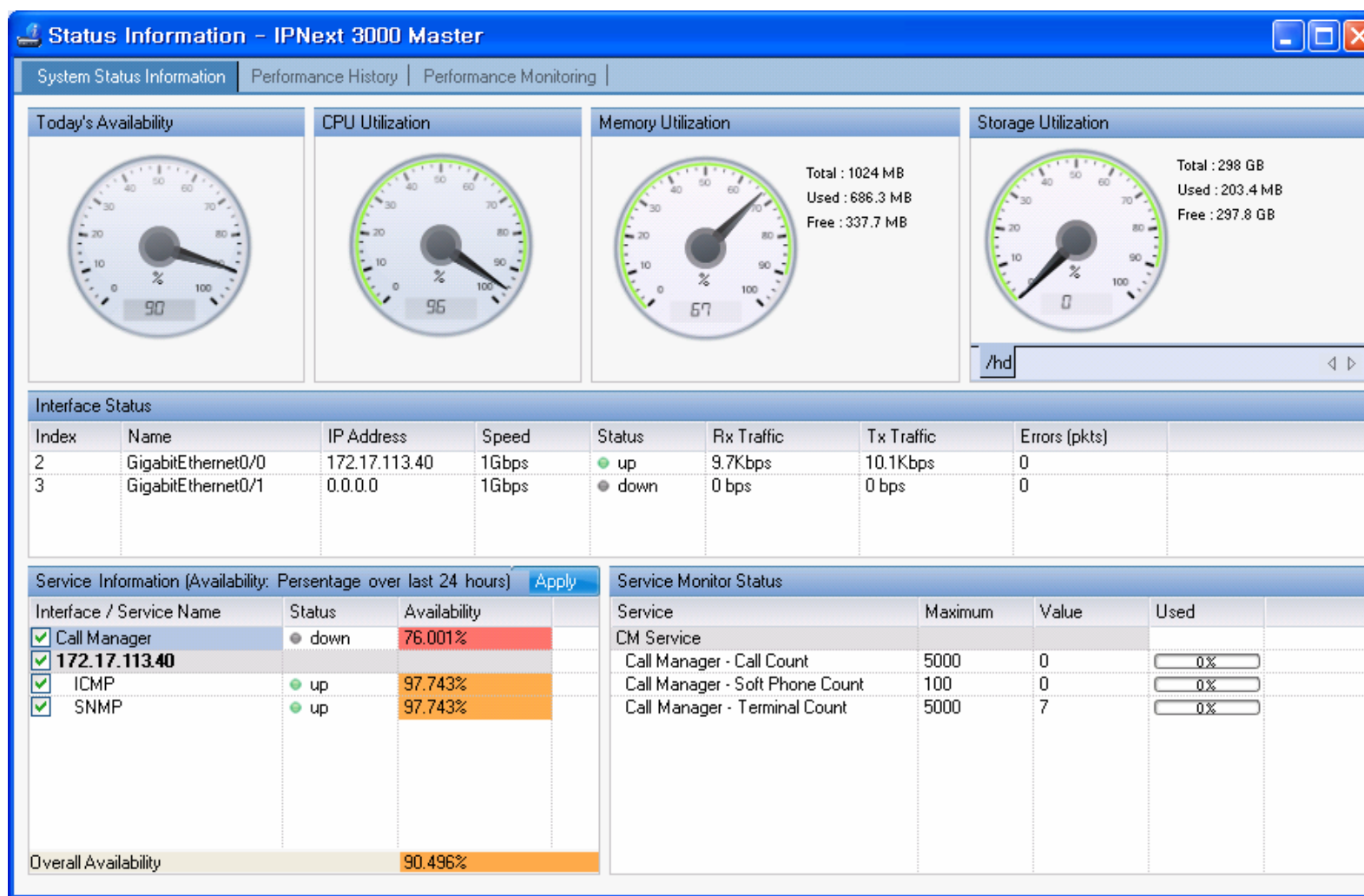
4/13/2009 11:46:45 AM 172.16.31.20:5101 admin Version 1.2.3384

Can view all events for devices with search condition

Device Status Information

- System Performance Information (CPU, HDD, Memory,...)
- Provide device current service status (up/down)
- Provide device main status (max value vs current value)
- Display Graph Series with System Performance Information
- Monitor Main Status Flow with System Monitoring View

Device Status Information

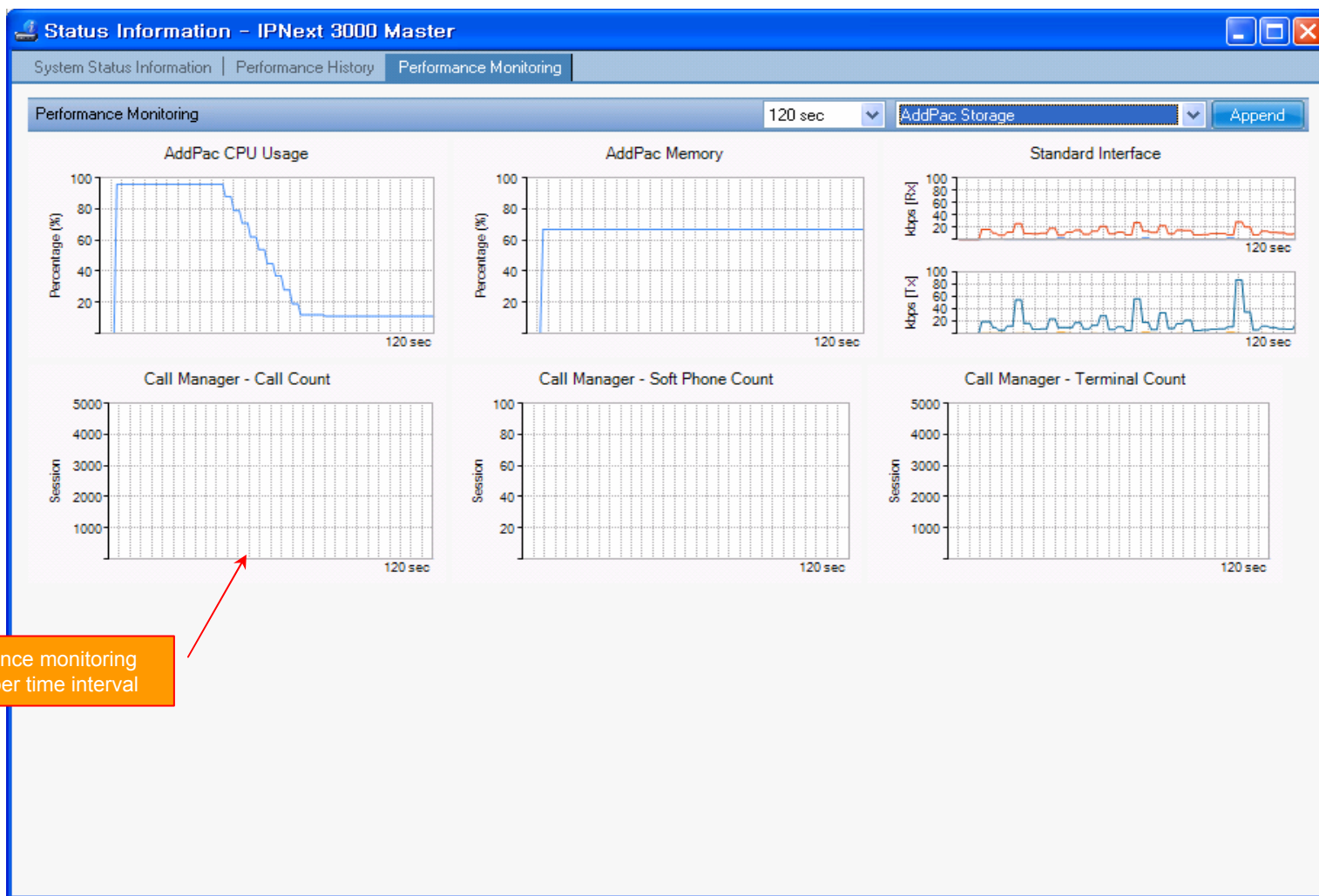


Device Status Information

performance analysis graph for last 24 hours



Device Status Information



Notification Management

- Notify administrator for important event such as critical device fault when proper action needs
- Provide several notification channel such as SMS, e-mail, alarm lamp
- Notification channel configuration for each event
- Manage notification with device category such as Server, Terminal, PC, etc
- Provide Alarm with audible (play sound), visible (alarm lamp) form

Event Notification Management

apply notification policy with event-based filter (example : notify me when network link of device is downed through SMS, e-mail)

specify category when each event occurs

describe notification message content for e-mail or SMS

Smart Network Management System - Windows Internet Explorer
 http://172.16.31.20/smartnms.htm

Smart Network Management System
 NMS Account Configuration Monitoring Notification Fault Statistics View Help

Current Outage Devices (13) | Site

| Name | Service... | Availability |
|--------------------|------------|--------------|
| AddPac | | |
| Branch AQ | | |
| NMS Camera | 6 of 12 | 50.000 % |
| NMS_IP_PBX... | 3 of 3 | 0.000 % |
| Branch GX | | |
| 00_IVR_server | 3 of 3 | 0.000 % |
| 00_IVR_slave... | 3 of 3 | 0.000 % |
| 00_PS_server | 3 of 3 | 0.000 % |
| 00_PS_slave... | 2 of 3 | 33.333 % |
| 00_RBT_server | 3 of 3 | 0.000 % |
| IPNext 3000 ... | 1 of 3 | 66.667 % |
| IPNext 3000 S... | 1 of 3 | 66.667 % |
| UMS slave | 3 of 3 | 0.000 % |
| HeadQuarter | | |
| 5th floor meeti... | 1 of 1 | 0.000 % |
| UMS server(o... | 3 of 3 | 0.000 % |
| Subnetwork #2 | | |
| Center | | |
| NMS_SOHO_... | 2 of 2 | 0.000 % |

| Notification Name | Event | Destination Path | Description |
|------------------------|---------------------------------|------------------|-------------|
| serviceUnresponsive | Node event: serviceUnresponsive | NMS Admin | test |
| serviceResponsive | Node event: serviceResponsive | NMS Admin | |
| interfaceDown | Node event: interfaceDown | NMS Admin | |
| nodeDown | Node event: nodeDown | NMS Admin | |
| interfaceUp | Node event: interfaceUp | NMS Admin | |
| nodeUp | Node event: nodeUp | NMS Admin | |
| nodeLostService | Node event: nodeLostService | NMS Admin | |
| nodeRegainedService | Node event: nodeRegainedService | NMS Admin | |
| coldStart | SNMP Cold Start | NMS Admin | |
| warmStart | SNMP Trap: SNMP Warm Start | NMS Admin | |
| authenticationFailure | SNMP Trap: SNMP Authn Failure | NMS Admin | |
| serviceDeleted | Node event: serviceDeleted | NMS Admin | |
| nodeAdded | Node event: nodeAdded | NMS Admin | |
| nodeInfoChanged | Node event: nodeInfoChanged | NMS Admin | |
| interfaceDeleted | Node event: interfaceDeleted | NMS Admin | |
| High Threshold | highThresholdExceeded | NMS Admin | |
| Low Threshold | lowThresholdExceeded | NMS Admin | |
| Low Threshold Rearmed | lowThresholdRearmed | NMS Admin | |
| High Threshold Rearmed | highThresholdRearmed | NMS Admin | |

Event Notification Properties

Notification Name: serviceUnresponsive

Description: test

Event: Node event: serviceUnresponsive

Destination Path: default

Notification Type: sms, alarmLamp, email

Current Rule: IPADDR IPLIKE ****

Apply Category: Desktop, Network Camera, Phone, Server, Switch

Email Subject: Notice #noticeid%: %service% service on %interfaceresolve% (%interface%)

Text Message: The %service% poll to interface %interfaceresolve% (%interface%) on node %nodelabel% successfully completed a synthetic connection to the service listener on the remote machine. However, the synthetic transaction failed to complete within %param(timeout)% milliseconds, over %param(attempts)% attempts. This event will NOT impact service level agreements, but may be an indicator of other problems on that node.

Special Values: Can be used in both the text message and email subject:
 %noticeid% = notification ID number
 %time% = time sent
 %severity% = event severity
 %nodelabel% = may be IP address or empty
 %interface% = IP address, may be empty
 %service% = service name, may be empty
 %eventid% = event ID, may be empty

Note: If the alert exceeds 80 bytes then the notification will be dispatched in two or more sms.

Enable Notification

Your Outstanding Notices (18)

| Ack | ID | Send Time | Site | Device Name | IP Address | Service | Message |
|--------------------------|------|-----------------------|----------------------|----------------------|----------------|--------------|--------------------------------------|
| <input type="checkbox"/> | 9535 | 4/10/2009 9:26:04 PM | /AddPac/Branch GX | 00_RBT_server | | | device:00_RBT_server:all services... |
| <input type="checkbox"/> | 9527 | 4/10/2009 5:34:10 PM | /AddPac/HeadQuarter | 5th floor meeting... | | | |
| <input type="checkbox"/> | 9502 | 4/10/2009 3:34:29 PM | /Subnetwork #2/Cent. | NMS_SOHO_PBX | | | |
| <input type="checkbox"/> | 9495 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Slave | 172.17.113.41 | Call Manager | |
| <input type="checkbox"/> | 9494 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Master | 172.17.113.40 | Call Manager | |
| <input type="checkbox"/> | 9418 | 4/9/2009 2:20:01 PM | /AddPac/Branch GX | 00_IVR_server | | | |
| <input type="checkbox"/> | 9396 | 4/9/2009 10:57:37 AM | /AddPac/Branch AQ | NMS_IP_PBX_3... | | | |
| <input type="checkbox"/> | 9239 | 4/6/2009 7:49:20 PM | /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | | |

4/13/2009 9:52:03 AM | 172.16.31.20:5101 | admin | Version 1.2.3384

Event Notification Management

The screenshot shows the 'Smart Network Management System' interface in a Windows Internet Explorer browser. The main window displays a tree view of network devices and their availability. A 'Destination Path Properties' dialog box is open, showing the configuration for a destination path named 'default'. The dialog includes a table for notification types and targets, and an 'Escalation' section.

Destination Path Properties Dialog:

- Destination Path Name: default
- Initial Target: onlyAlarmLamp
- Initial Delay: 0m

| Notification Type | Target | Auto Notify |
|-------------------|-----------|-------------|
| alarmLamp | alarmLamp | on |
| email | admin | on |
| sms | admin | on |

Escalation Section:

- Escalation: (unchecked)
- Delay: 0m

Table with 7 columns: Ack, ID, Send Time, Site, Device Name, IP Address, Service, Message

| Ack | ID | Send Time | Site | Device Name | IP Address | Service | Message |
|--------------------------|------|-----------------------|------------------------|----------------------|----------------|--------------|--|
| <input type="checkbox"/> | 9535 | 4/10/2009 9:26:04 PM | /AddPac/Branch GX | 00_RBT_server | | | device 00_RBT_server's all services are down. |
| <input type="checkbox"/> | 9527 | 4/10/2009 5:34:10 PM | /AddPac/HeadQuarter | 5th floor meeting... | | | device 5th floor meeting room phone device, all services are down. |
| <input type="checkbox"/> | 9502 | 4/10/2009 3:34:29 PM | /Subnetwork #2/Cent... | NMS_SOHD_PBX | | | device NMS_SOHD_PBX, all services are down |
| <input type="checkbox"/> | 9495 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Slave | 172.17.113.41 | Call Manager | interface 172.17.113.41 (172.17.113.41) device (IPNext 3000 Slave) service Call Manager 2009-4-10 11:37:12 failed |
| <input type="checkbox"/> | 9494 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Master | 172.17.113.40 | Call Manager | interface 172.17.113.40 (172.17.113.40) device (IPNext 3000 Master) service Call Manager 2009-4-10 11:37:12 failed |
| <input type="checkbox"/> | 9418 | 4/9/2009 2:20:01 PM | /AddPac/Branch GX | 00_IVR_server | | | device 00_IVR_server all services are down. |
| <input type="checkbox"/> | 9396 | 4/9/2009 10:57:37 AM | /AddPac/Branch AQ | NMS_IP_PBX_3... | | | device NMS_IP_PBX_31.13 all services down. |
| <input type="checkbox"/> | 9239 | 4/6/2009 7:49:20 PM | /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | | device (NMS Camera 2) interface 172.16.253.118 (172.16.253.118) not response or delete by administrator |

Callout Box: define notification channel such as e-mail, sms, or alarmlamp

Event Notification Management

The screenshot displays the Smart Network Management System (NMS) interface. The main window shows a tree view of network devices and their availability. Overlaid on this are two configuration dialog boxes: 'Destination Path Properties' and 'Target Properties'. The 'Target Properties' dialog is the primary focus, showing a dropdown menu for 'Choose the notification type:' with 'sms' selected. Below this, the 'Target Information' section has 'Send to select user:' selected, with a dropdown menu showing 'Account Administrator'. An orange callout box with a red arrow points to this dropdown menu, containing the text: "user account (administrator) setting for SMS, E-mail Notification or specify e-mail address or SMS phone number".

| Name | Service... | Availability |
|--------------------|------------|--------------|
| Branch AQ | | |
| NMS Camera | 6 of 12 | 50.000 % |
| NMS_IP_PBX... | 3 of 3 | 0.000 % |
| Branch GX | | |
| 00_IVR_server | 3 of 3 | 0.000 % |
| 00_IVR_slave... | 3 of 3 | 0.000 % |
| 00_PS_server | 3 of 3 | 0.000 % |
| 00_PS_slave... | 2 of 3 | 33.333 % |
| 00_RBT_server | 3 of 3 | 0.000 % |
| IPNext 3000 ... | 1 of 3 | 66.667 % |
| IPNext 3000 S... | 1 of 3 | 66.667 % |
| UMS slave | 3 of 3 | 0.000 % |
| HeadQuarter | | |
| 5th floor meeti... | 1 of 1 | 0.000 % |
| UMS serverlo... | 3 of 3 | 0.000 % |
| Subnetwork #2 | | |
| NMS_SOHO_... | 2 of 2 | 0.000 % |

| Notification Type | Target | Auto Notify |
|-------------------|-----------|-------------|
| alarmLamp | alarmLamp | on |
| email | admin | on |
| sms | admin | on |

| Ack | ID | Send Time | Site | Device Name | IP Address | Message |
|--------------------------|------|-----------------------|------------------------|----------------------|----------------|--|
| <input type="checkbox"/> | 9535 | 4/10/2009 9:26:04 PM | /AddPac/Branch GX | 00_RBT_server | | device 00_RBT_server's all services are down. |
| <input type="checkbox"/> | 9527 | 4/10/2009 5:34:10 PM | /AddPac/HeadQuarter | 5th floor meeting... | | device 5th floor meeting room phone device, all services are down. |
| <input type="checkbox"/> | 9502 | 4/10/2009 3:34:29 PM | /Subnetwork #2/Cent... | NMS_SOHO_PBX | | device NMS_SOHO_PBX, all services are down |
| <input type="checkbox"/> | 9495 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Slave | 172.17.113.41 | interface 172.17.113.41 (172.17.113.41) device (IPNext 3000 Slave) service Call Manager 2009-4-10 11:37:12 failed |
| <input type="checkbox"/> | 9494 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Master | 172.17.113.40 | interface 172.17.113.40 (172.17.113.40) device (IPNext 3000 Master) service Call Manager 2009-4-10 11:37:12 failed |
| <input type="checkbox"/> | 9418 | 4/9/2009 2:20:01 PM | /AddPac/Branch GX | 00_IVR_server | | device 00_IVR_server all services are down. |
| <input type="checkbox"/> | 9396 | 4/9/2009 10:57:37 AM | /AddPac/Branch AQ | NMS_IP_PBX_3... | | device NMS_IP_PBX_31.13 all services down. |
| <input type="checkbox"/> | 9239 | 4/6/2009 7:49:20 PM | /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | device (NMS Camera 2) interface 172.16.253.118 (172.16.253.118) not response or delete by administrator |

Configuration

Smart Network Management System - Windows Internet Explorer

http://172.16.31.20/smartnms.htm

NMS Account Configuration Monitoring Notification Fault Statistics View Help

Current Outage Devices [13] Site

| Name | Service... | Availability |
|------------------|------------|--------------|
| AddPac | | |
| Branch AQ | | |
| NMS Camera | 6 of 12 | 50.000 % |
| NMS_IP_PBX... | 3 of 3 | 0.000 % |
| Branch GX | | |
| 00_IVR_server | 3 of 3 | 0.000 % |
| 00_IVR_slave... | 3 of 3 | 0.000 % |
| 00_PS_server | 3 of 3 | 0.000 % |
| 00_PS_Slave... | 2 of 3 | 33.333 % |
| 00_FBT_server | 3 of 3 | 0.000 % |
| IPNext 3000 ... | 1 of 3 | 66.667 % |
| IPNext 3000 S... | 1 of 3 | 66.667 % |
| UMS slave | 3 of 3 | 0.000 % |
| HeadQuarter | | |
| 5th floor meeti | 1 of 1 | 0.000 % |
| UMS server(o... | 3 of 3 | 0.000 % |
| Subnetwork #2 | | |
| Center | | |
| NMS_S0HD_... | 2 of 2 | 0.000 % |

Destination Path Name: default
onlyAlarmLamp

Configure Notification

External Notification Alarm Lamp

E-Mail SMS

Sender Email Address: nms@addpac.com

SMTP Server Host: 61.33.161.2

Authentication

Username: _____

Password: _____

Help Ok Cancel

Total destination paths : 2

Your Outstanding Notices (18)

| Ack | ID | Send Time | Site | Device Name | IP Address | Service | Message |
|--------------------------|------|-----------------------|------------------------|----------------------|----------------|--------------|--|
| <input type="checkbox"/> | 9535 | 4/10/2009 9:26:04 PM | /AddPac/Branch GX | 00_FBT_server | | | device 00_FBT_server's all services are down. |
| <input type="checkbox"/> | 9527 | 4/10/2009 5:34:10 PM | /AddPac/HeadQuarter | 5th floor meeting... | | | device 5th floor meeting room phone device, all services are down. |
| <input type="checkbox"/> | 9502 | 4/10/2009 3:34:29 PM | /Subnetwork #2/Cent... | NMS_S0HD_PBX | | | device NMS_S0HD_PBX, all services are down |
| <input type="checkbox"/> | 9495 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Slave | 172.17.113.41 | Call Manager | interface 172.17.113.41 (172.17.113.41) device (IPNext 3000 Slave) service |
| <input type="checkbox"/> | 9494 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Master | 172.17.113.40 | Call Manager | interface:172.17.113.40 (172.17.113.40) device (IPNext 3000 Master) service Call Manager_2009-4-10 11:37:12 failed |
| <input type="checkbox"/> | 9418 | 4/9/2009 2:20:01 PM | /AddPac/Branch GX | 00_IVR_server | | | device 00_IVR_server all services are down. |
| <input type="checkbox"/> | 9396 | 4/9/2009 10:57:37 AM | /AddPac/Branch AQ | NMS_IP_PBX_3... | | | device NMS_IP_PBX_31.13 all services down. |
| <input type="checkbox"/> | 9239 | 4/6/2009 7:49:20 PM | /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | | device (NMS_Camera 2) interface 172.16.253.118 (172.16.253.118) not response or delete by administrator |

Your Outstanding Notices (18) All Outstanding Notices (18)

4/13/2009 11:26:16 AM 172.16.31.20:5101 admin Version 1.2.3984

Audible & Visible Alarm

Smart Network Management System - Windows Internet Explorer

http://172.16.31.20/smartnms.htm

Smart Network Management System

NMS Account Configuration Monitoring Notification Fault Statistics View Help

notify operator (or administrator)
1. Alarm lamp blink (on&off) (visible)
2. play alarm sound (audible)

can synchronize with alarm lamp equipment

| Site | Type | Outages | Availability | Description |
|--------|-------------|--------------|--------------|------------------------|
| AddPac | Sub Netw... | 32 / 12 / 32 | 92% | AddPac Technology C... |
| Seoul | Sub Netw... | 2 / 1 / 2 | 33% | Seoul subnetwork |

| Category | Outages | Availability |
|----------------|--------------|--------------|
| Desktop | 0 / 0 / 1 | 100% |
| Network Camera | 6 / 1 / 2 | 57% |
| Phone | 1 / 1 / 3 | 66% |
| Server | 27 / 11 / 22 | 42% |
| Switch | 0 / 0 / 0 | 100% |
| VoIP Gateway | 0 / 0 / 6 | 100% |

Overall Availability: 34 / 13 / 34, 27.690 %

Overall Categories Availability: 34 / 13 / 34, 49.470 %

| Ack | ID | Send Time | Site | Device Name | IP Address | Service | Message |
|--------------------------|------|-----------------------|------------------------|----------------------|----------------|--------------|---|
| <input type="checkbox"/> | 9535 | 4/10/2009 9:26:04 PM | /AddPac/Branch GX | 00_RBT_server | | | device 00_RBT_server's all services are down. |
| <input type="checkbox"/> | 9527 | 4/10/2009 5:34:10 PM | /AddPac/HeadQuater | 5th floor meeting... | | | device 5th floor meeting room phone device, all services are down. |
| <input type="checkbox"/> | 9502 | 4/10/2009 3:34:29 PM | /Subnetwork #2/Cent... | NMS_S0HQ_PBX | | | device NMS_S0HQ_PBX, all services are down |
| <input type="checkbox"/> | 9495 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Slave | 172.17.113.41 | Call Manager | interface 172.17.113.41 (172.17.113.41) device (IPNext 3000 Slave) service Call Manager 2009-4-10 11:37:12 failed. |
| <input type="checkbox"/> | 9494 | 4/10/2009 11:37:12 AM | /AddPac/Branch GX | IPNext 3000 Master | 172.17.113.40 | Call Manager | interface 172.17.113.40 (172.17.113.40) device (IPNext 3000 Master) service Call Manager 2009-4-10 11:37:12 failed |
| <input type="checkbox"/> | 9418 | 4/9/2009 2:20:01 PM | /AddPac/Branch GX | 00_IVR_server | | | device 00_IVR_server all services are down. |
| <input type="checkbox"/> | 9396 | 4/9/2009 10:57:37 AM | /AddPac/Branch AQ | NMS_IP_PBX_3... | | | device NMS_IP_PBX_31.13 all services down. |
| <input type="checkbox"/> | 9239 | 4/6/2009 7:49:20 PM | /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | | device (NMS Camera 2) interface 172.16.253.118 (172.16.253.118) not response or delete by administrator |
| <input type="checkbox"/> | 9238 | 4/6/2009 7:49:20 PM | /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | ICMP | device (NMS Camera 2) interface 172.16.253.118 (172.16.253.118) service ICMP not response or deleted by administrator |
| <input type="checkbox"/> | 9237 | 4/6/2009 7:49:20 PM | /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | SNMP | device (NMS Camera 2) interface 172.16.253.118 (172.16.253.118) service SNMP not response or deleted by administrator |
| <input type="checkbox"/> | 9236 | 4/6/2009 7:41:25 PM | /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | ICMP | device(NMS Camera 2) interface 172.16.253.118 (172.16.253.118) service ICMP not response or deleted by administrator |
| <input type="checkbox"/> | 9235 | 4/6/2009 7:41:25 PM | /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | SNMP | device(NMS Camera 2) interface 172.16.253.118 (172.16.253.118) service SNMP not response or deleted by administrator |

4/13/2009 11:52:14 AM 172.16.31.20:5101 admin Version 1.2.3384

Fault Statistics

- analyze for a fault event with graph and detailed list data
- Report form generation and print out for statistics result

Fault Statistics

The screenshot displays the Smart Network Management System (NMS) interface. The main content area is titled "Fault Statistics (Site)" and shows a bar chart of fault counts over time for various sites. Below the chart is a detailed data table for the date 4/9/2009, showing fault counts for each site across different times of the day. The total fault count for the day is 118.

Search Condition: Hour: 4/ 9/2009 ~ 3/30/2009, Site: Branch A, Branch AQ, B

Fault Statistics (Site) Legend: Seoul, HeadQuarter, Center, Branch TG, Branch KT, Branch GX, Branch B, Branch AQ, Branch A

4/9/2009 Detailed Data Table:

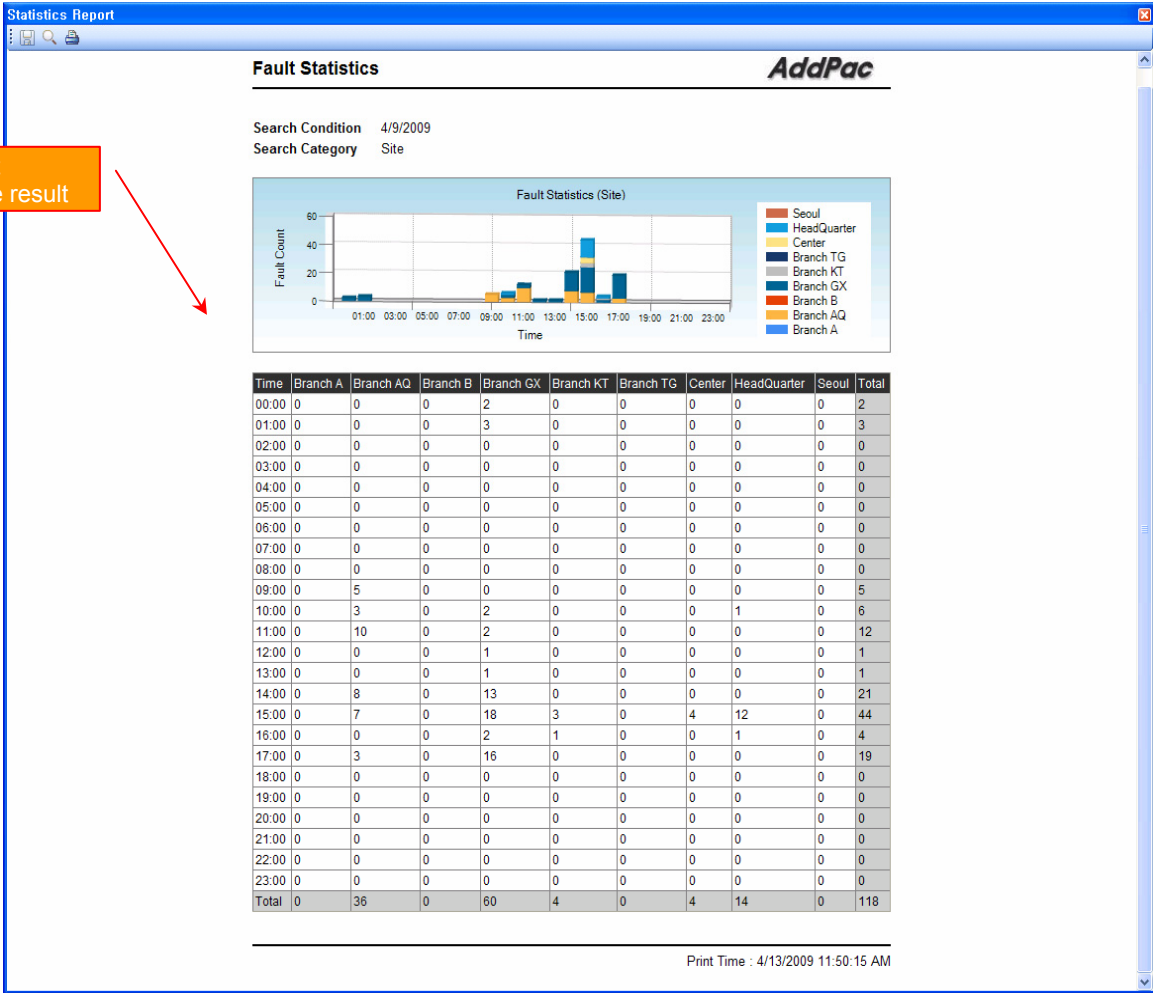
| Time | Branch A | Branch AQ | Branch B | Branch GX | Branch KT | Branch TG | Center | HeadQuarter | Seoul | Total |
|--------------|----------|-----------|----------|-----------|-----------|-----------|----------|-------------|----------|------------|
| 07:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:00 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 10:00 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 6 |
| 11:00 | 0 | 10 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 12 |
| 12:00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 13:00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 14:00 | 0 | 8 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 21 |
| 15:00 | 0 | 7 | 0 | 18 | 3 | 0 | 4 | 12 | 0 | 44 |
| 16:00 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 4 |
| 17:00 | 0 | 3 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 19 |
| 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 36 | 0 | 60 | 4 | 0 | 4 | 14 | 0 | 118 |

Callout 1: display graph for fault statistics with various search condition

Callout 2: display detailed data for fault statistics

Fault Statistics – Report Generation

report generation for fault statistics and print out the result



Model & Service Management

- Define new model with provided template image & properties
- Customize data collection with standard protocol such as TCP, SNMP

Device Model Management

The screenshot displays the Smart Network Management System (Smart NMS) interface. The main window shows a tree view of sites on the left and a list of device models in the center. A 'Device Model Properties' dialog box is open, showing the configuration for a selected device model. Below the main window, a 'Model Image Management' window is visible, displaying a grid of device images for selection.

manage device model with various properties such as model image

model image repository for selection

| Model Name | Category |
|------------|----------------|
| AP-IP200 | Phone |
| AP-IP300 | Phone |
| AP-IPC | Network Camera |
| AP-IPC250M | Network Camera |
| AP-IVR1000 | Server |
| AP-MC1000 | Server |
| AP-MC3000 | Server |
| AP-MC5000 | Server |
| AP-NR2000 | Server |
| AP-PS2000 | Server |
| AP-RBT1000 | Server |
| AP-RS2000 | Server |
| AP-UMS1000 | Server |
| AP-UMS2000 | Server |
| AP-VC2000 | Phone |
| AP-VP200 | Phone |
| AP-VP300 | Phone |
| AP-VP350 | Phone |
| AP-VP500 | Phone |
| IPNext100 | Server |
| IPNext1000 | Server |
| IPNext180 | Server |
| IPNext200 | Server |

| Site | Description |
|---------------------|-------------------------|
| AddPac | AddPac Technology C... |
| Branch AQ | Branch AQ |
| Branch GX | Branch GX description |
| Branch KT | Branch KT |
| HeadQuarter | Main HeadQuarter Cen... |
| Seoul | Seoul subnetwork |
| Seoul East Area | Seoul East Area |
| SongPaGu Area Ce... | SongPaGu Area Center |
| Subnetwork #2 | Subnetwork #2 |
| Branch TG | Yeoksam Area |
| SeoChoGu | seoul seocho district |
| Seoul West Area | Seoul West Area |
| Gangseo Area | Gangseo Area |
| Seoul | |
| MokDong Area | MokDong Area |

| Model Name | Category |
|------------|----------------|
| AP-IP200 | Phone |
| AP-IP300 | Phone |
| AP-IPC | Network Camera |
| AP-IPC250M | Network Camera |
| AP-IVR1000 | Server |
| AP-MC1000 | Server |
| AP-MC3000 | Server |
| AP-MC5000 | Server |
| AP-NR2000 | Server |
| AP-PS2000 | Server |
| AP-RBT1000 | Server |
| AP-RS2000 | Server |
| AP-UMS1000 | Server |
| AP-UMS2000 | Server |
| AP-VC2000 | Phone |
| AP-VP200 | Phone |
| AP-VP300 | Phone |
| AP-VP350 | Phone |
| AP-VP500 | Phone |
| IPNext100 | Server |
| IPNext1000 | Server |
| IPNext180 | Server |
| IPNext200 | Server |

| Model Name | Category |
|------------|----------------|
| AP-IP200 | Phone |
| AP-IP300 | Phone |
| AP-IPC | Network Camera |
| AP-IPC250M | Network Camera |
| AP-IVR1000 | Server |
| AP-MC1000 | Server |
| AP-MC3000 | Server |
| AP-MC5000 | Server |
| AP-NR2000 | Server |
| AP-PS2000 | Server |
| AP-RBT1000 | Server |
| AP-RS2000 | Server |
| AP-UMS1000 | Server |
| AP-UMS2000 | Server |
| AP-VC2000 | Phone |
| AP-VP200 | Phone |
| AP-VP300 | Phone |
| AP-VP350 | Phone |
| AP-VP500 | Phone |
| IPNext100 | Server |
| IPNext1000 | Server |
| IPNext180 | Server |
| IPNext200 | Server |

| Model Name | Category |
|------------|----------------|
| AP-IP200 | Phone |
| AP-IP300 | Phone |
| AP-IPC | Network Camera |
| AP-IPC250M | Network Camera |
| AP-IVR1000 | Server |
| AP-MC1000 | Server |
| AP-MC3000 | Server |
| AP-MC5000 | Server |
| AP-NR2000 | Server |
| AP-PS2000 | Server |
| AP-RBT1000 | Server |
| AP-RS2000 | Server |
| AP-UMS1000 | Server |
| AP-UMS2000 | Server |
| AP-VC2000 | Phone |
| AP-VP200 | Phone |
| AP-VP300 | Phone |
| AP-VP350 | Phone |
| AP-VP500 | Phone |
| IPNext100 | Server |
| IPNext1000 | Server |
| IPNext180 | Server |
| IPNext200 | Server |

Service Definition

define the service for data collection, current status with standard protocol such as TCP or SNMP

The screenshot displays the Smart NMS web interface in Internet Explorer. The main window shows a tree view of sites on the left and a table of services in the center. A 'Service Properties' dialog box is open, showing the configuration for a service named 'Camera Operation Status'. The dialog has two tabs: 'General' and 'SNMP'. The 'General' tab is active, showing the service name, protocol (SNMP), and port (161). The 'SNMP' tab is also visible, showing the Service OID (1.3.6.1.4.1.4855.7.51.1.3.0) and a service condition (Operator: =, Operand: 1).

| Service Name | Protocol | Port |
|-------------------------|----------|------|
| Call Manager | SNMP | 161 |
| Presence | SNMP | 161 |
| Media | SNMP | 161 |
| IPX | SNMP | 161 |
| RtpProxy | SNMP | 161 |
| MCU | SNMP | 161 |
| IVR | SNMP | 161 |
| Recording | SNMP | 161 |
| Tomcat | TCP | 8080 |
| FTP | TCP | 21 |
| Camera Pan | SNMP | 161 |
| Camera Tilt | SNMP | 161 |
| Camera Zoom | SNMP | 161 |
| Camera Operation Status | SNMP | 161 |

| Site | Description |
|----------------------|-------------------------|
| AddPac | AddPac Technology C... |
| Branch AQ | Branch AQ |
| Branch GX | Branch GX description |
| Branch KT | Branch KT |
| HeadQuarter | Main HeadQuarter Cen... |
| Seoul | Seoul subnetwork |
| Seoul East Area | Seoul East Area |
| SongPaGu Area Ce... | SongPaGu Area Center |
| Subnetwork #2 | Subnetwork #2 |
| SongPaGu Area Center | SongPaGu Area Center |
| North Area | North Area |
| South Area | South Area |
| NamGu | NamGu |
| Sam Area | Sam Area |
| Seocho district | Seocho district |
| West Area | West Area |
| Gangseo Area | Gangseo Area |
| Seoul | Seoul |
| MokDong Area | MokDong Area |

| Site | Device Name | IP Address | Service | Message |
|------------------------|----------------------|----------------|--------------|-----------------------|
| /AddPac/Branch GX | 00_RBT_server | | | device 00_RBT_serv |
| /AddPac/HeadQuarter | 5th floor meeting... | | | device 5th floor meet |
| /Subnetwork #2/Cent... | NMS_SDHD_PBX | | | device NMS_SDHD_P |
| /AddPac/Branch GX | IPNext 3000 Slave | 172.17.113.41 | Call Manager | interface 172.17.113 |
| /AddPac/Branch GX | IPNext 3000 Master | 172.17.113.40 | Call Manager | Call Manager 2009-4 |
| /AddPac/Branch GX | 00_IVR_server | | | interface 172.17.113 |
| /AddPac/Branch AQ | NMS_IP_PBX_3 | | | device NMS_IP_PBX |
| /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | | device (NMS Camera |
| /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | ICMP | response or delete by |
| /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | SNMP | device (NMS Camera |
| /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | ICMP | SNMP not response o |
| /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | ICMP | device(NMS Camera |
| /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | ICMP | SNMP not response o |
| /AddPac/Branch AQ | NMS Camera 2 | 172.16.253.118 | ICMP | device(NMS Camera |



Thank you!

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