

# Large Scale VoIP Gateway Solution



**AddPac**

**AddPac Technology**





2011, Sales and Marketing

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

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- VoIP Gateway Service Diagram
- VoIP Gateway Comparison Table
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- AddPac VoIP Gateway Management

# Large Capacity VoIP Gateways

Product	AP3100P	AP6200	AP6500	AP6800
				
Available VoIP Modules	AP-FXS4, AP-FXO4 AP-FXS2O2, AP-E&M4	AP-N1-FXS8, AP-N1-FXO8, AP-N1-E&M4, AP-N1-FXS4O4, AP-N1-E1/T1, AP-N1-2E1/T1	AP-N1-FXS32 AP-N1-FXO32	AP-N1-FXS32 AP-N1-FXO32
Analog Ports	Up to 60 (4-Port Module x 15)	Up to 80 (8-Port Module x 10)	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	SIP, H.323
CPU Redundancy (Dual CPU)	N/A	N/A	Support (Option)	Support (Option)
E&M	Support	Support	N/A	N/A
Module Slot for VoIP Module	15 Slots	10 Slots	4 Slots	8 Slots
LAN Port	2	2	2	2
Console	1	1	1	1
Dual Power Supply (Option)	Support	Support	Support	Support








# VoIP Modules



Target :  
AP3100P

# VoIP Modules

DSP






Target	VoIP Modules	Module Features	Module Picture
AP3100P	<b>AP-FXS4</b>	4-Port FXS Module	
AP3100P	<b>AP-FXO4</b>	4-Port FXO Module	
AP3100P	<b>AP-FXS2O2</b>	2-Port FXS&2-Port FXO Module	
AP3100P	<b>AP-E&amp;M4</b>	4-Port E&M Module	
AP3100P	<b>AP-FXS3O1</b>	3-Port FXS&1-Port FXO Module	



Target :  
AP6200

# VoIP Modules

DSP

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







Target :  
AP6500, AP6800

# VoIP Modules

DSP

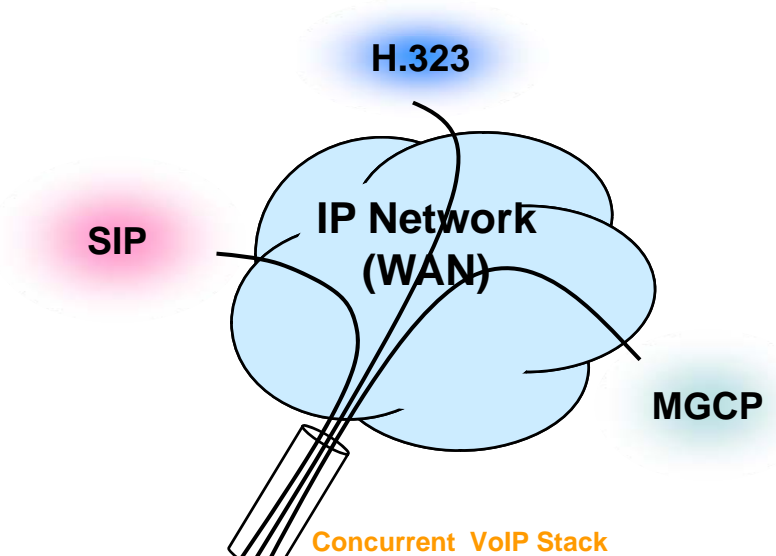
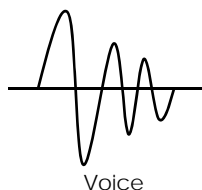
Target	VoIP Modules	Module Features	Module Picture
AP6500 AP6800	<b>AP-N1-FXS32</b>	32-Port FXS Module	
AP6500 AP6800	<b>AP-N1-FXO32</b>	32-Port FXO Module	



# 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**

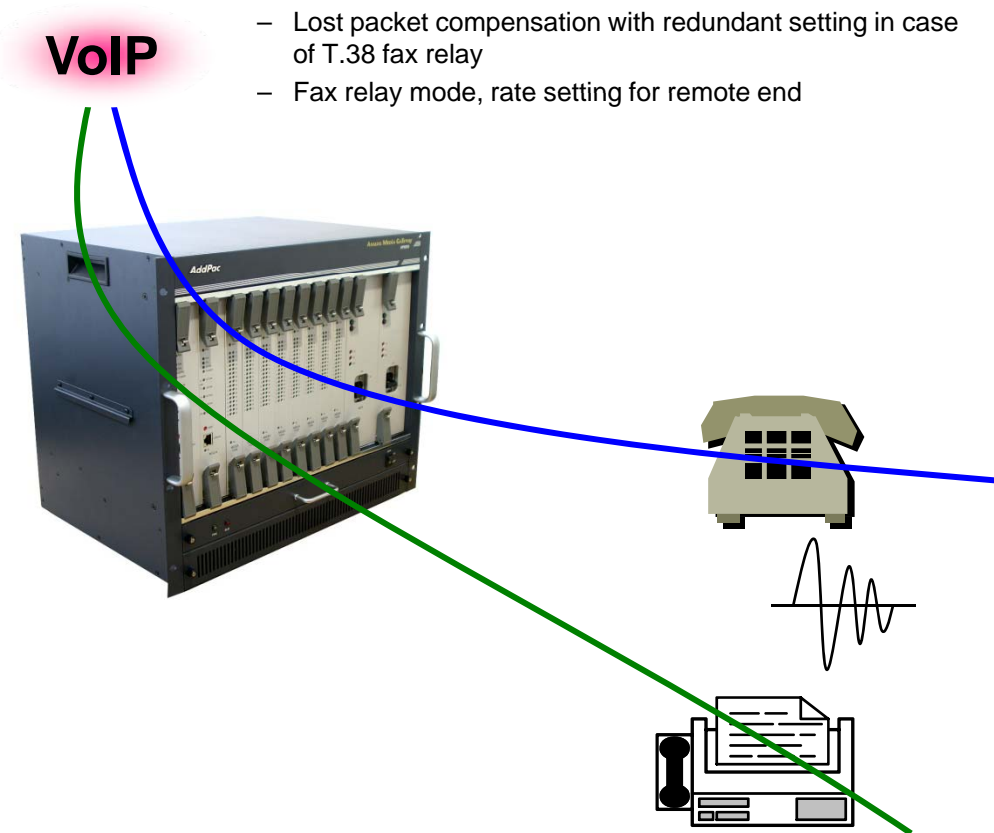
- G.711 A-Law, G.711 U-Law
- G.726 r16, G.726 r32
- G.729A
- G.723.1 r63, G.723.1 r53
- VAD (Voice Activity Detection) function support
- DTMF relay support (H.323, SIP, MGCP common) based on RFC2833

- **RTP**

- Redundant RTP packet transmission in case of severe packet loss
- Dynamic jitter buffer management and RPT 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



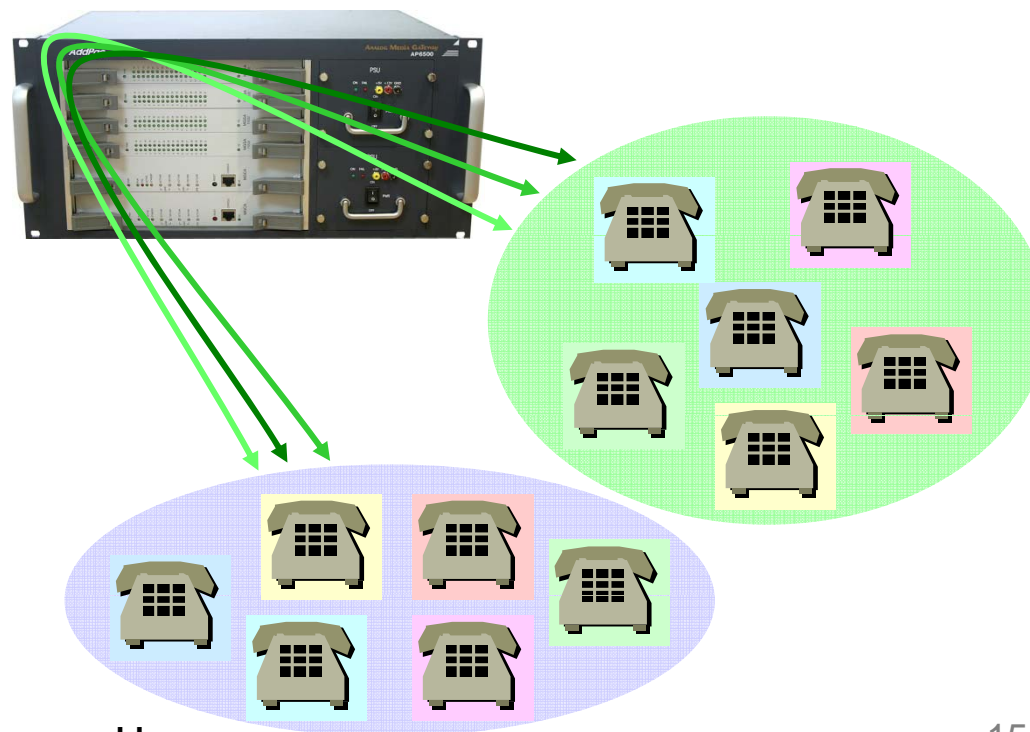
# VoIP (Voice over IP) Service

## • 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



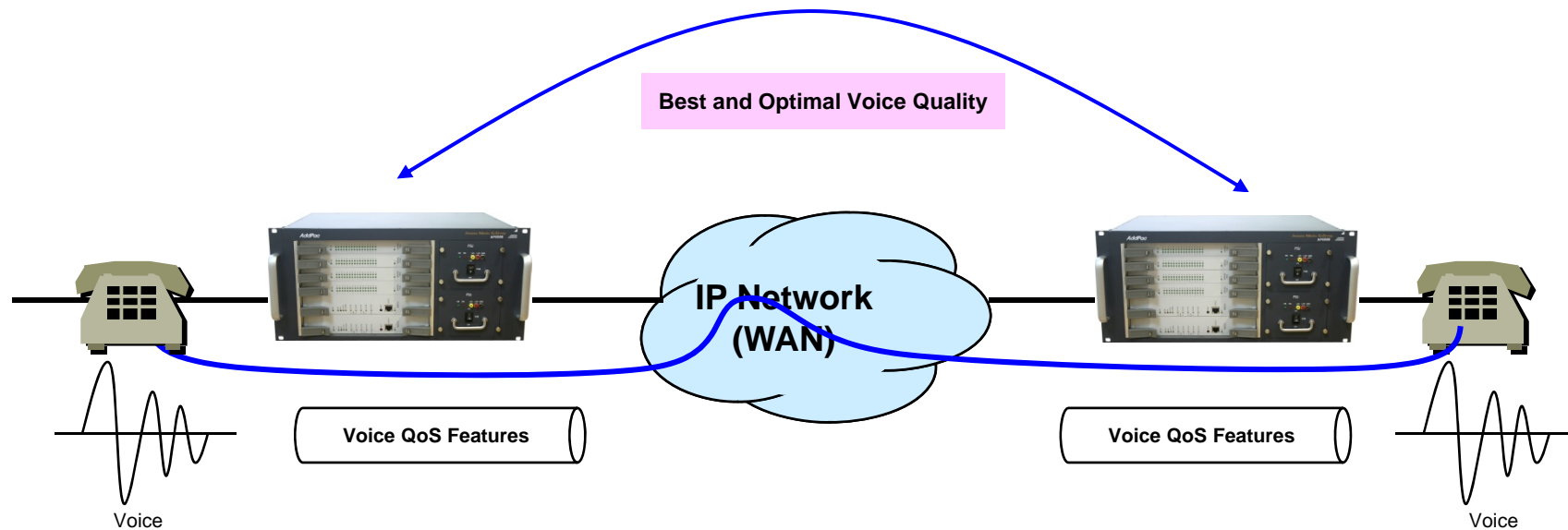
# Advanced QoS Features

- **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**

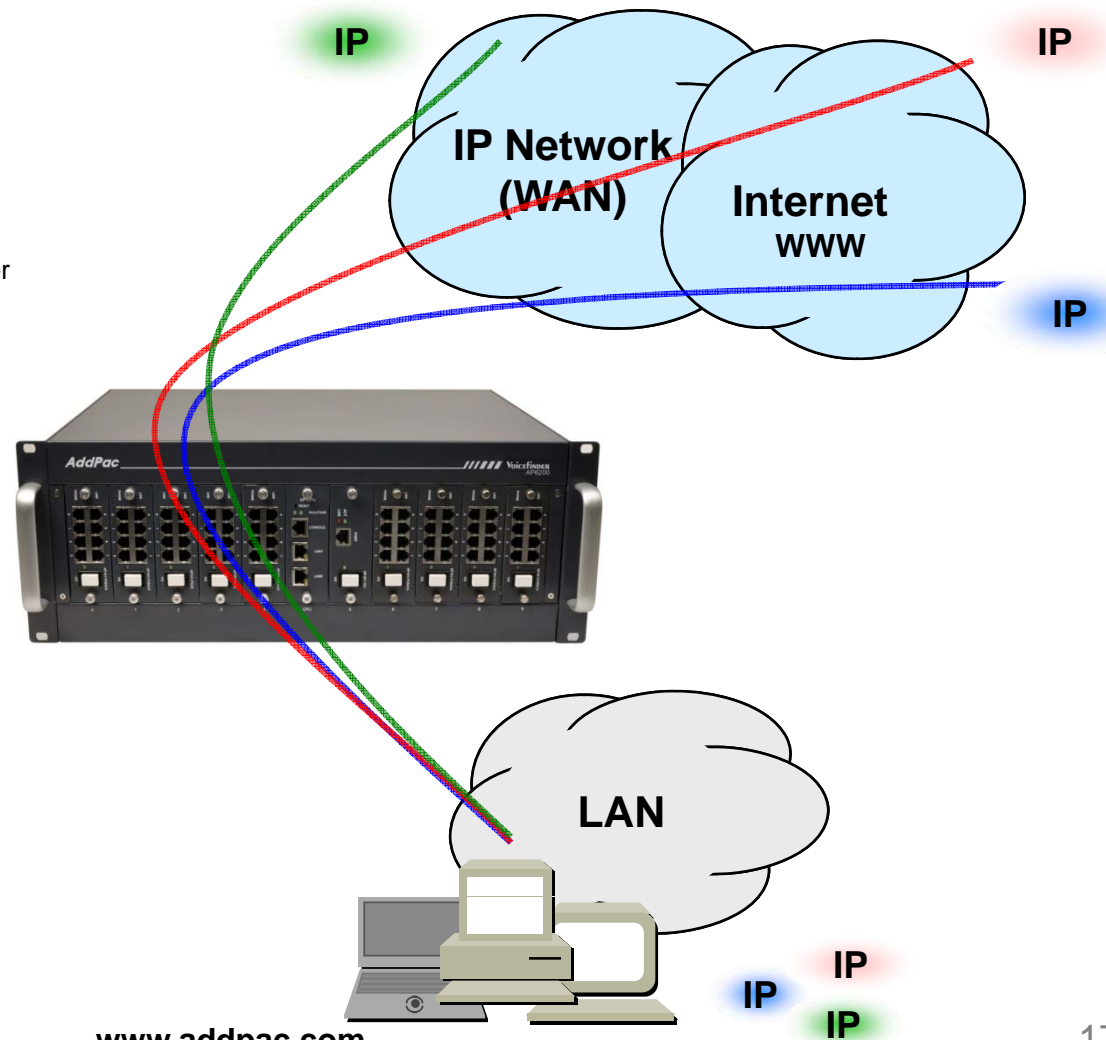
- FTP, Telnet, TFTP, DHCP Server/Relay, SNMP Server
- CDP (Cisco Discovery Protocol)
- DNS Resolver , DDNS(nsupdate)
- Bridge
- Syslog

- **IPv4 Address Configuration**

- Fixed (Static)
- DHCP
- PPPoE

- **Miscellaneous**

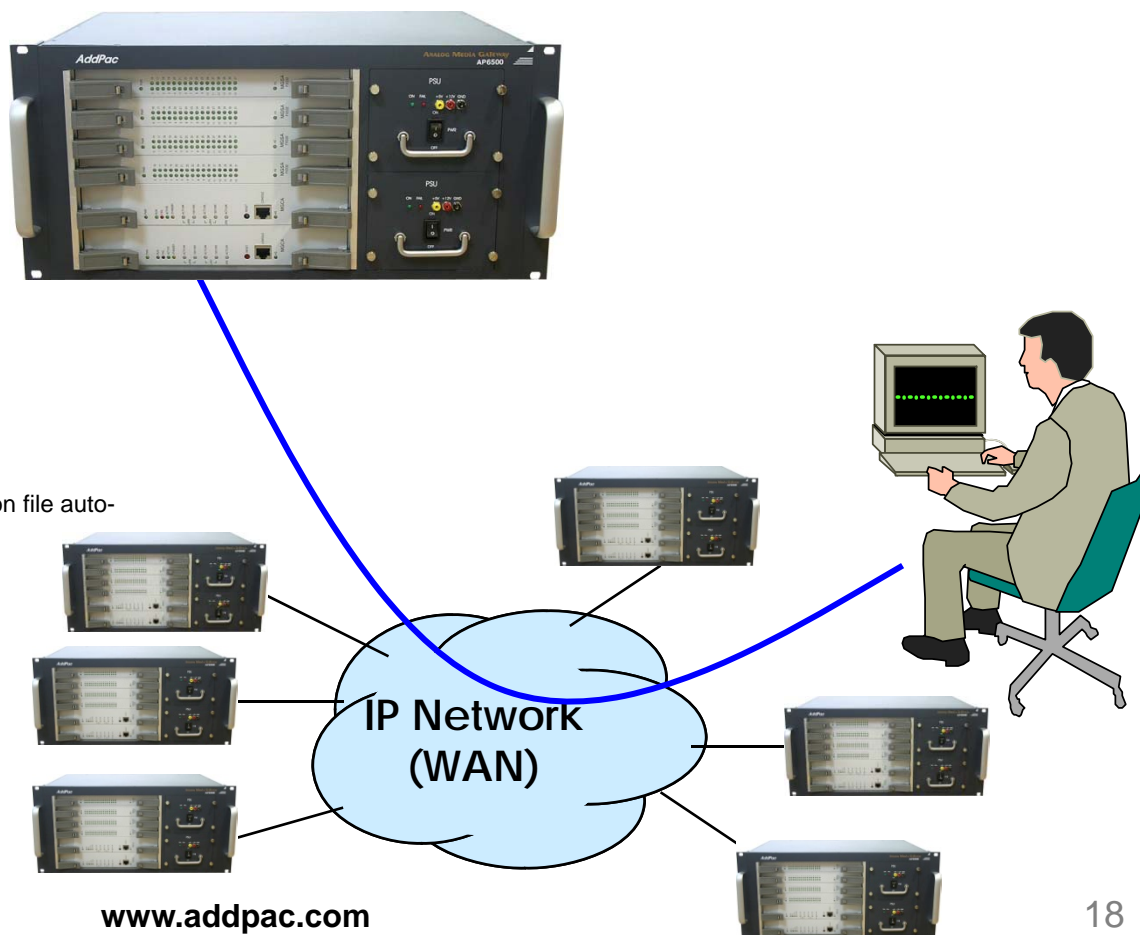
- Cisco Style CLI
- Standard & Extended IPv4 Access List
- Multi-level User Account Management
- IP accounting
- STUN Client



# Network Management

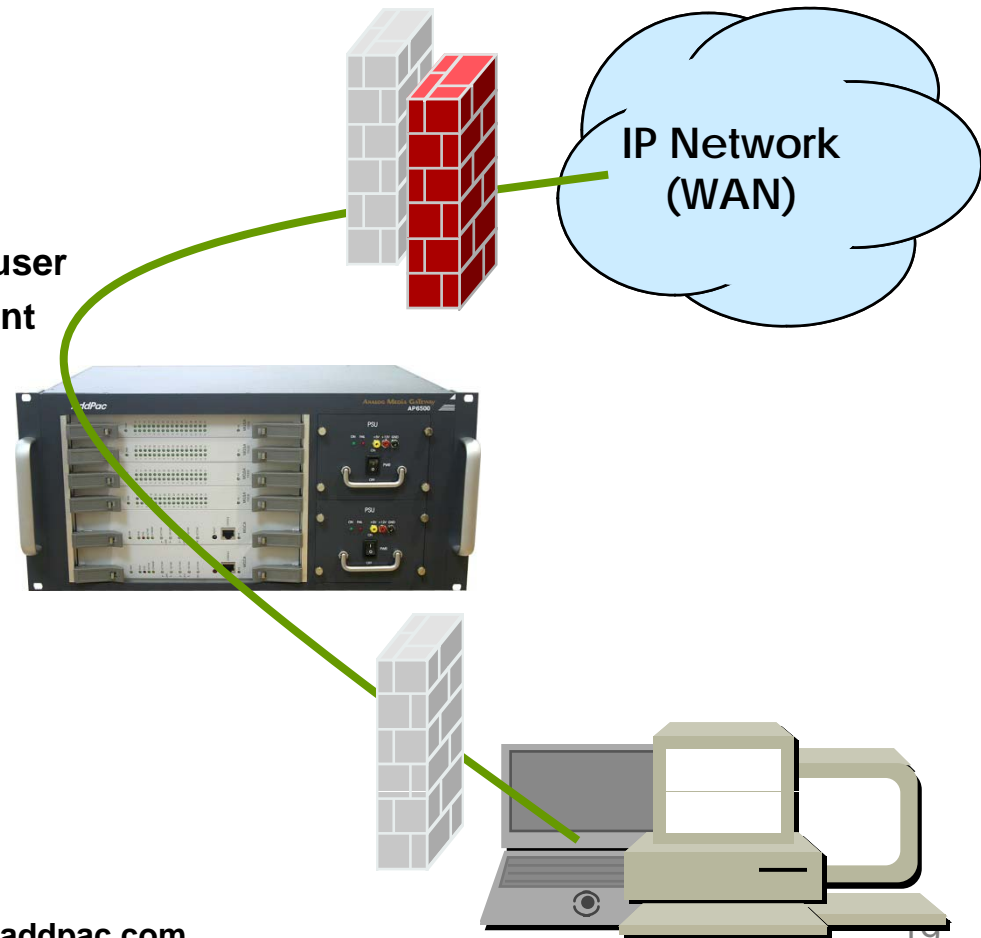
- **SNMP**
  - Standard Simple Network Management Protocol( SNMP) Agent support
  - MIB v1 and v2 Support
- **Web-based Management**
  - Smart Easy Setup
  - Standard Voice Interface
  - Standard PSTN Back-up Interface
- **Watch-dog Function**
  - Hardware, Software watch-dog services
- **Remote Management**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



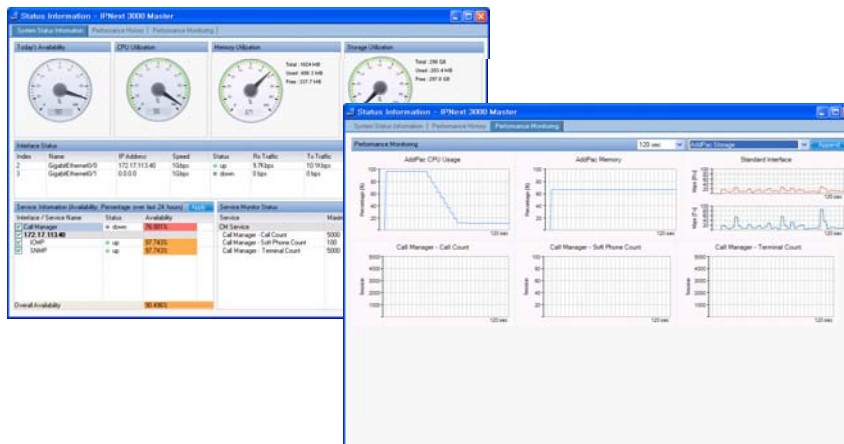
# Security Management

- 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



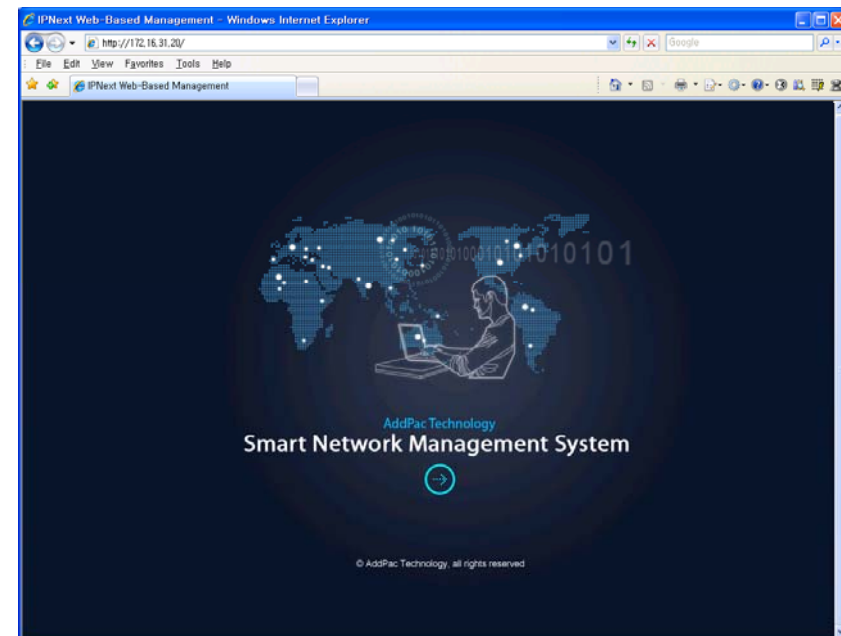
# Smart NMS

## 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

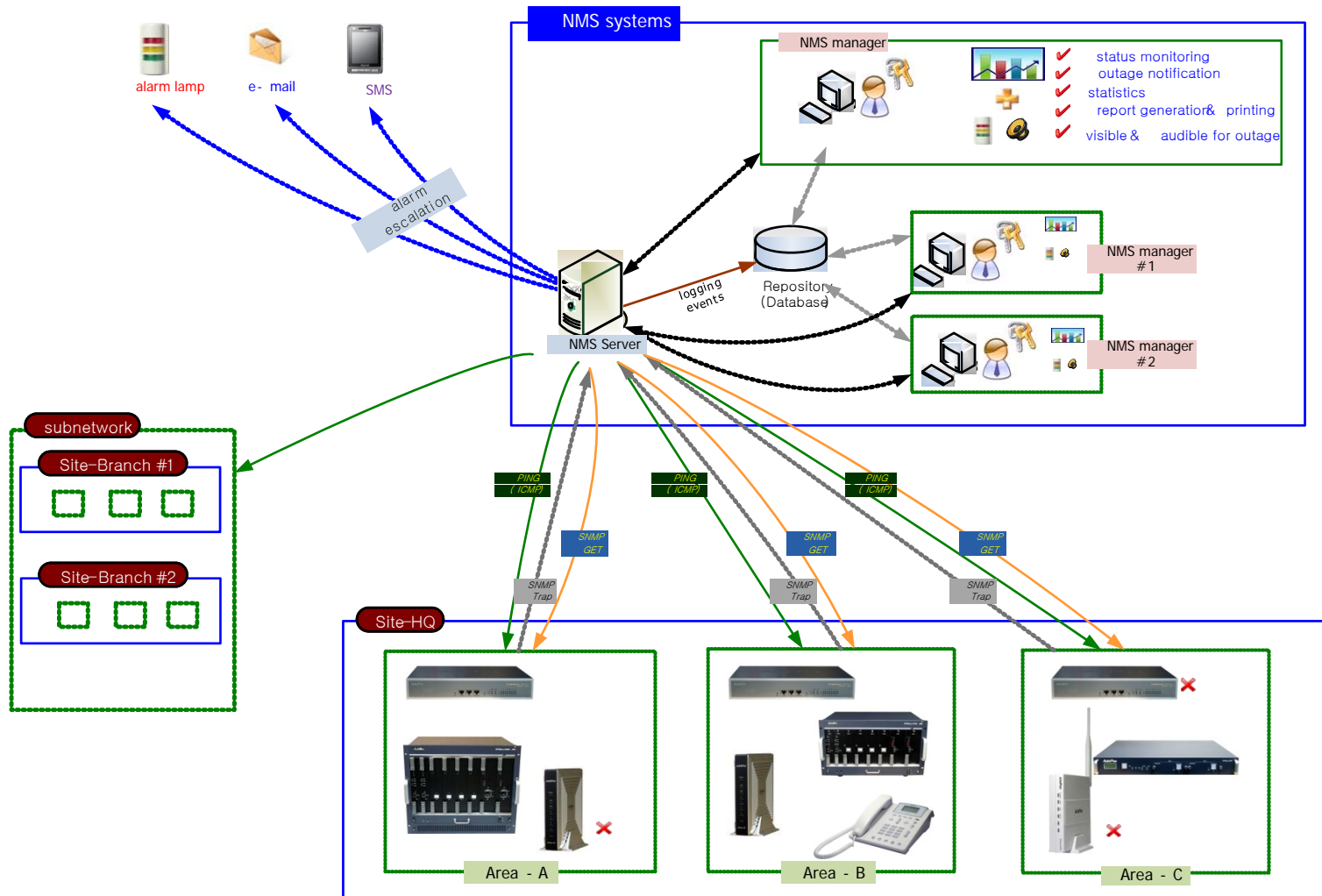
## NMS Server

- 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. The text "AddPac Technology Smart Network Management System" is prominently displayed. A copyright notice at the bottom reads "© AddPac Technology, all rights reserved".

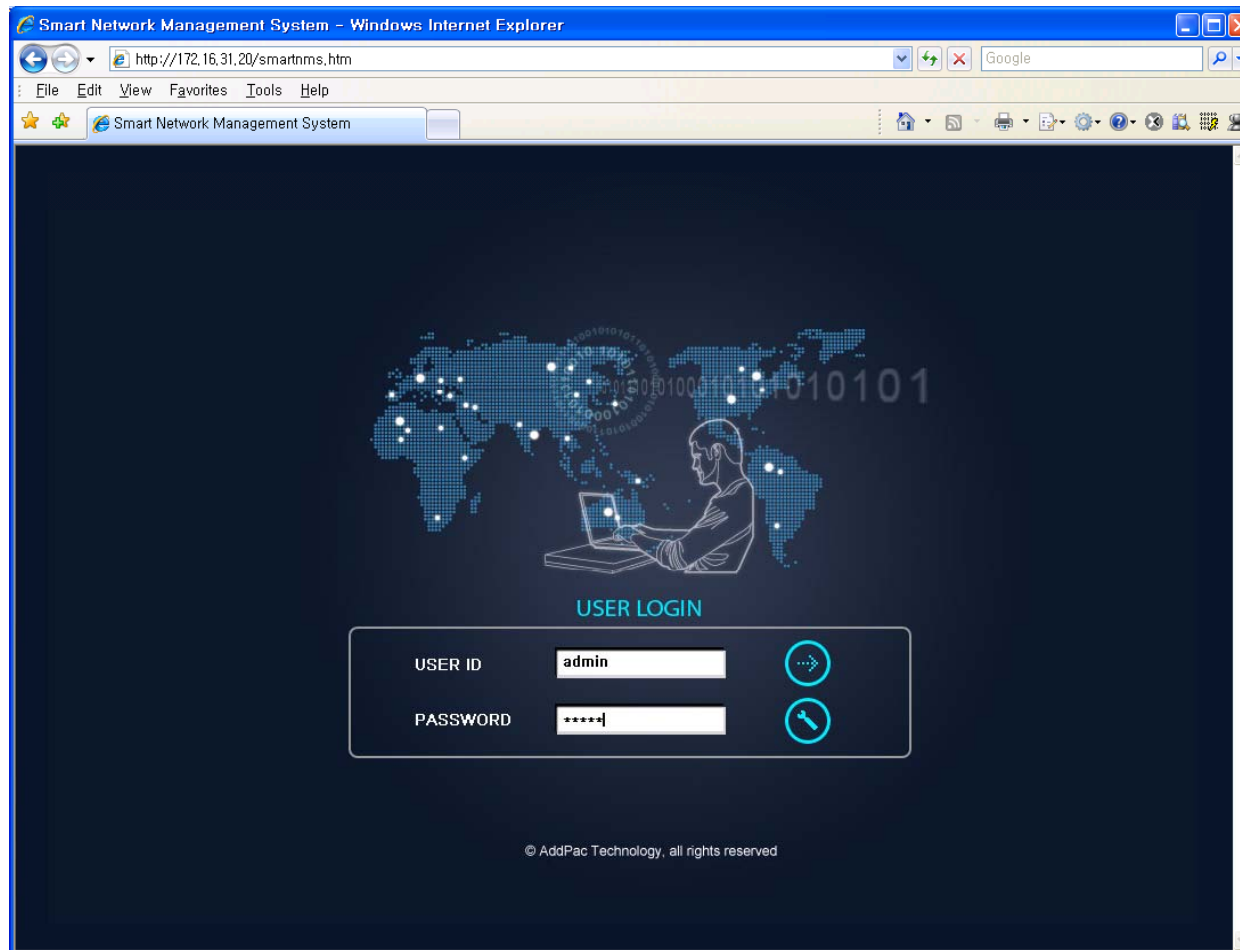
Two callout boxes highlight specific features:

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

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."
- (61%) Downloading installnms:** A dialog box with a blue title bar and standard window controls. It contains a progress bar and the following information:
  - Name: `installnms`
  - From: `172.16.31.20`
  - Downloading: 6.29 MB of 10.1 MBA "Cancel" button is located 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 view shows the network structure under 'Current Outage Devices (11)'. The tree includes nodes for 'AddPac' (AddPac Technology Co.,Ltd.), 'Branch AQ', 'Branch GX', 'Branch KT', 'HeadQuarter' (Main HeadQuarter Center), 'Seoul' (Seoul subnetwork), 'Seoul East Area', 'Subnetwork #2', 'Center' (Gangdong Area Center), 'SongPaGu Ar...' (SongPaGu Area Center), 'Seoul North Area', 'Seoul South Area', 'Branch A', 'Branch B', 'GangNamGu' (GangNamGu), 'Branch TG' (Yeoksam Area), 'SeoChoGu' (seoul secho district), 'Seoul West Area', 'Gangseo Area', 'Seoul', and 'MokDong Area' (MokDong Area). A context menu is open over the 'GangNamGu' node, with options: 'Add Sub Network', 'Add Site', 'Delete', 'Execute SMM', 'Search (Ctrl+F)', 'Refresh (F5)', and 'Properties'. A red arrow points from an orange callout box to the 'Execute SMM' option.

In the center, a table lists device categories:

Category Name	Description
Desktop	PC, notebook, laptop, etc
Network Camera	Network Camera Category
Phone	IP Phone, Video Phone
Server	PBX, RBT, UMS, Presence
Switch	Network Switch
VoIP Gateway	AddPac Digital(or Analog) Gateway

On the right, a 'User Properties' dialog box is open, showing a 'Site' tab. It contains a tree view of the same hierarchical structure as the main interface, with several nodes checked. A red arrow points from an orange callout box to this dialog box.

Three orange callout boxes provide additional context:

- 'manage the complex network with a structured, hierarchical form' (points to the tree view)
- 'can assign the hierarchical node to the operator and manage role-based policy' (points to the 'User Properties' dialog)
- 'can cooperate with the application executables such as SMM' (points to the 'Execute SMM' menu option)

# 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**

**current device fault list with hierarchy view**

**current device fault event message are shown as below**

**site device fault summary**

**overall total device fault statistics**

**device fault summary for category (classification)**

**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 [11] | Service Outages

Name	Service...	Availability
AddPac		
Branch AQ		
NMS Camera	6 of 12	46.937 %
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_Slavo...	2 of 3	32.740 %
IPNext 3000 ...	1 of 3	90.608 %
IPNext 3000 S...	1 of 3	90.623 %
UMS slave	3 of 3	0.000 %
HeadQuarter		
UMS server(o...	3 of 3	0.000 %
Subnetwork #2		
Center		
NMS_SOHO_...	2 of 2	98.115 %

Site	Type	Outages	Availability	Description
AddPac	Sub Netw...	28 / 10 / 32	53%	AddPac Technology C...
Seoul	Sub Netw...	2 / 1 / 2	98%	Seoul subnetwork

Category	Outages	Availability
Desktop	0 / 0 / 1	100%
Network Camera	6 / 1 / 2	54%
Phone	0 / 0 / 3	98%
Server	24 / 10 / 22	58%
Switch	0 / 0 / 0	100%
VoIP Gateway	0 / 0 / 6	98%

Overall Availability: 30 / 11 / 34 78.650 %

Overall Categories Availability: 30 / 11 / 34 61.282 %

Ack	ID	Send Time	Site	Device Name	IP Address	Service	Message
<input type="checkbox"/>	9502	4/10/2009 3:34:29 PM	/Subnetwork #2/Center	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	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 deleted 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

Your Outstanding Notices (16) | All Outstanding Notices (16)

4/10/2009 4:17:43 PM | 172.16.31.20:5101 | admin | Version 1.2.3384

# 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) | Service Outages | Device Monitoring - <All>

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

ACK ID	Send Time	Site	Device Name	IP Address	Service	Message
9525	4/10/2009 5:21:06 PM	/AddPac/Branch GX	00_Nr_server	172.17.111.21	SNMP	인터페이스 172.17.111.21 (172.17.111.21)의 장비명(00_Nr_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) | All 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 main area shows a 'Device Monitoring' view with a grid of device icons. Each icon represents a different device type, such as servers, routers, and cameras, with a status indicator (green for healthy, red for fault, yellow for warning). A red arrow points to the 'NMS Camera' device, which is highlighted with a red box. Below the grid, a table lists 'Your Outstanding Notices (18)', providing details for each fault, including the device name, IP address, service, and a message describing the issue.

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_SQHD_PBX			device NMS_SQHD_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

# 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 in Internet Explorer. The main window shows a 'Notification Summary' table on the left and a 'Device Monitoring' table on the right. An 'Advanced Search' dialog box is open over the device monitoring table.

**Notification Summary Table:**

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

**Device Monitoring Table (Selected Row):**

Ack	ID	Send Time	Site	Device Name	IP Address	Service	Message	Order	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	auto-acknowledged	4/10/2009 5:51:35 PM

**Advanced Search Dialog:**

- Sub Network: AddPac
- Site: <All>
- IP Address Contains: [Empty]
- Notice Status Type: <All>
- Message Contains: [Empty]
- Level (Severity): <All>
- Notices After: 11/10/2008 17:20:49
- Notices Before: 11/10/2008 17:20:49
- Sort By: ID Descending

**Your Outstanding Notices (17) Table:**

Ack	ID	Send Time	Site	Device Name	IP Address	Service	Message
<input type="checkbox"/>	9527	4/10/2009 5:34:10 PM	/AddPac/Branch AQ	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"/>	9239	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

daily fault event summary statistics information

detail fault event history list up with filter condition (advanced search)

# Device Fault History Management

The screenshot displays the Smart Network Management System (NMS) interface in Internet Explorer. The main window shows a list of outstanding notices with columns for Date/Time, Outstanding count, and Acknowledge status. A detailed view of a specific event (ID: 9528) is shown, including the device name (NMS Camera), IP address (172.16.4.180), and a message about a service failure. A 'Troubleshooting Note' dialog box is open, allowing users to add, edit, or delete notes for the event. The dialog box contains a text area for the note and buttons for 'Add', 'Edit', 'Delete', and 'Help'. A callout box points to the text area with the text 'Can write troubleshooting note if needed'.

Date/Time	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	102
2009-03-20	0	102
2009-03-19	0	102
2009-03-18	0	102
2009-03-17	0	102
2009-03-16	0	102
2009-03-15	0	102
2009-03-14	0	102
2009-03-13	0	102
2009-03-12	0	102
2009-03-11	0	102
2009-03-10	0	102
2009-03-09	0	102
2009-03-08	0	102
2009-03-07	0	102
2009-03-06	0	102
2009-03-05	0	102
2009-03-04	0	102

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.	to-acknowledged	4/10/2009 5:35:25 PM
<input type="checkbox"/>	9526	4/10/2009 5:33:42 PM	/AddPac/Branch GX					to-acknowledged	4/10/2009 5:35:25 PM
<input type="checkbox"/>	9525	4/10/2009 5:21:06 PM	/AddPac/Branch GX					to-acknowledged	4/10/2009 5:22:43 PM
<input type="checkbox"/>	9524	4/10/2009 5:17:29 PM	/AddPac/Branch GX					to-acknowledged	4/10/2009 5:17:56 PM
<input type="checkbox"/>	9522	4/10/2009 3:36:26 PM	/AddPac/Branch AQ	IP cor				to-acknowledged	4/10/2009 4:03:13 PM
<input type="checkbox"/>	9521	4/10/2009 3:36:18 PM	/AddPac/Branch AQ	PS RB				to-acknowledged	4/10/2009 4:03:13 PM
<input type="checkbox"/>	9520	4/10/2009 3:36:17 PM	/AddPac/Branch AQ	cor				to-acknowledged	4/10/2009 4:03:13 PM
<input type="checkbox"/>	9519	4/10/2009 3:36:17 PM	/AddPac/Branch AQ	UW				to-acknowledged	4/10/2009 4:03:13 PM
<input type="checkbox"/>	9518	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	Re (ou				to-acknowledged	4/10/2009 4:03:13 PM
<input type="checkbox"/>	9517	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	co				to-acknowledged	4/10/2009 4:03:13 PM
<input type="checkbox"/>	9516	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	00				to-acknowledged	4/10/2009 4:03:13 PM
<input type="checkbox"/>	9515	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	00				to-acknowledged	4/10/2009 4:03:13 PM
<input type="checkbox"/>	9514	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	5th floor				to-acknowledged	4/10/2009 4:03:13 PM
<input type="checkbox"/>	9513	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	IP				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9512	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:44 PM
<input type="checkbox"/>	9511	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9510	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:44 PM
<input type="checkbox"/>	9509	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9508	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9507	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9506	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9505	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9504	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9503	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9502	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9501	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9500	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9499	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9498	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9497	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9496	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9495	4/10/2009 3:36:09 PM	/AddPac/Branch AQ	172				to-acknowledged	4/10/2009 4:02:43 PM
<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	to-acknowledged	4/10/2009 4:02:43 PM
<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.	to-acknowledged	4/10/2009 4:03:14 PM
<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.	to-acknowledged	4/10/2009 4:02:54 PM
<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	to-acknowledged	4/10/2009 4:02:43 PM
<input type="checkbox"/>	9230	4/6/2009 7:49:20 PM	/AddPac/Branch AQ	NMS Camera 2	172.16.253.110	ICMP	device (NMS Camera 2) interface 172.16.253.118 (172.16.253.118) service ICMP not response or deleted by administrator	to-acknowledged	4/10/2009 4:02:44 PM
<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	to-acknowledged	4/10/2009 4:02:43 PM

Can write troubleshooting note if needed

# 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 Outage Devices' on the right. The 'Current Outage Devices' table lists various devices and their availability percentages. A red box highlights the 'Current Outage Devices' table with the text 'Display the current all device faults'. An 'Event Detail (ID: 45412)' pop-up window is open, showing event information such as Event Time (4/10/2009 9:26:04 PM), Site (/AddPac/Branch GX), Device Name (00\_RB\_T\_server), and Severity (Critical). The description of the event states: 'device 00\_RB\_T\_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.' A red box highlights the 'Event Detail' window with the text 'Can view the event data related to the current device fault and can write troubleshooting note if needed'. Below the event detail window, there is a 'Troubleshooting Note List' table with columns for Time, User, Status, and Note. The bottom of the interface shows 'Your Outstanding Notices (18)' and system information like the date (4/13/2009 11:44:29 AM) and version (1.2.3384).

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_RB_T_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 ID...	2 of 2	0.000 %

Outage ID	Site	Device Name	IP Address	Service	Time Down
13968	/AddPac/Branch GX	00_RB_T_server	172.17.114.60	Media	4/10/2009 9:26:04 PM
13967	/AddPac/Branch GX	00_RB_T_server	172.17.114.60	ICMP	4/10/2009 9:26:04 PM
13966	/AddPac/Branch GX	00_RB_T_server	172.17.114.60	SNMP	4/10/2009 9:26:04 PM
13948	/AddPac/HeadQuarter	5th floor meeting room p...	172.17.114.60	ICMP	4/10/2009 5:34:10 PM
13907	/Subnetwork #2/Cent.	NMS_SOHO_PBX	172.16.53.101	ICMP	4/10/2009 3:34:29 PM
13906	/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	172.17.114.60	device 00_IVR_server all services are down.	
13801	/AddPac/Branch GX	00_IVR_server	172.17.114.60	device NMS_IP_PBX_31.13 all services down.	
13800	/AddPac/Branch GX	00_IVR_server	172.17.114.60	device (NMS Camera 2) interface 172.16.253.118 (172.16.253.118) not response or delete by administrator	
13773	/AddPac/Branch AQ	NMS_IP_PBX_31.13	172.17.114.60		
13772	/AddPac/Branch AQ	NMS_IP_PBX_31.13	172.17.114.60		
13771	/AddPac/Branch AQ	NMS_IP_PBX_31.13	172.17.114.60		
13611	/AddPac/Branch AQ	NMS Camera	172.16.253.118		
13610	/AddPac/Branch AQ	NMS Camera	172.16.253.118		
13609	/AddPac/Branch AQ	NMS Camera	172.16.253.118		
13608	/AddPac/Branch AQ	NMS Camera	172.16.253.118		
13607	/AddPac/Branch AQ	NMS Camera	172.16.253.118		
13606	/AddPac/Branch AQ	NMS Camera	172.16.253.118		
9021	/AddPac/Branch GX	UMS slave	172.17.113.41		
9020	/AddPac/Branch GX	UMS slave	172.17.113.41		
9019	/AddPac/Branch GX	UMS slave	172.17.113.41		
6489	/AddPac/Branch GX	00_PS_server	172.17.114.60		

Event Time	IP Address	Severity
4/10/2009 9:26:04 PM	172.17.114.60	Critical

Site	Device Name	Device Model
/AddPac/Branch GX	00_RB_T_server	AP-RBT1000

Time	User	Status	Note

# Device Event History

Smart Network Management System - Windows Internet Explorer

http://172.16.31.20/smatnms.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

Limit 20 Refresh Advanced Search Acknowledge Events Troubleshooting Note

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

Acc. ID	Severity	Event Time	Site	Device Name	IP Address	Service	Message
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 [1.3.6.1.6.3.1.1.4.3.0="1.3.6.1.4.1.4855.3.2.255"
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.
45784	Cleared	4/13/2009 11:15:52 AM	/AddPac/Branch GX	00_NR_server	172.17.111.21		Node 00_NR_server is up.
45783	Critical	4/13/2009 11:15:51 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 [1.3.6.1.4.1.4855.3.2.10] args [1.3.6.1.6.3.1.1.4.3.0="1.3.6.1.4.1.4855.3.2.10"
45782	Critical	4/13/2009 11:15:13 AM	/AddPac/Branch GX	00_NR_server	172.17.111.21		Node 00_NR_server is down.
45781	Warning	4/13/2009 11:14:57 AM	/AddPac/Branch GX	00_NR_server	172.17.111.21	SNMP	SNMP data collection on interface 172.17.111.21 failed.
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 172.16.31.13 failed.
45779	Warning	4/13/2009 10:00:15 AM	/Subnetwork #2/Center	NMS_IP_PBX_31...	172.16.31.16	SNMP	SNMP thresholding on interface 172.16.31.16 failed.
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.
45777	Warning	4/13/2009 9:59:46 AM	/AddPac/Branch GX	UMS slave	172.17.113.201	SNMP	SNMP data collection on interface 172.17.113.201 failed.
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.
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 61.33.161.43 failed.
45774	Warning	4/13/2009 9:59:36 AM	/Subnetwork #2/Center	NMS_SOHO_PBX	172.16.19.50	SNMP	SNMP data collection on interface 172.16.19.50 failed.
45773	Warning	4/13/2009 9:59:33 AM	/Subnetwork #2/Center	NMS_SOHO_PBX	172.16.19.50	SNMP	SNMP data collection on interface 172.16.19.50 failed.
45772	Warning	4/13/2009 9:59:32 AM	/Subnetwork #2/Center	NMS_SOHO_PBX	172.16.19.50	SNMP	SNMP data collection on interface 172.16.19.50 failed.
45771	Warning	4/13/2009 9:59:27 AM	/Subnetwork #2/Center	NMS_SOHO_PBX	172.16.19.50	SNMP	SNMP data collection on interface 172.16.19.50 failed.
45770	Warning	4/13/2009 9:59:24 AM	/Subnetwork #2/Center	NMS_SOHO_PBX	172.16.19.50	SNMP	SNMP data collection on interface 172.16.19.50 failed.
45769	Warning	4/13/2009 9:59:23 AM	/Subnetwork #2/Center	NMS_SOHO_PBX	172.16.19.50	SNMP	SNMP data collection on interface 172.16.19.50 failed.
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.
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

Acc. ID	Event Time	Site	Device Name	IP Address	Service	Message
9495	4/10/2009 11:37:12 AM	/AddPac/Branch GX	IPNext 3000 Slave	172.17.113.41	Call Manager	device 00_RBT_server's all services are down.
9494	4/10/2009 11:37:12 AM	/AddPac/Branch GX	IPNext 3000 Master	172.17.113.40	Call Manager	device 5th floor meeting room phone device, all services are down.
9419	4/9/2009 2:20:01 PM	/AddPac/Branch GX	00_IVR_server			device NMS_SOHO_PBX, all services are down.
9396	4/9/2009 10:57:37 AM	/AddPac/Branch AQ	NMS_IP_PBX_3...			interface 172.17.113.41 (172.17.113.41) device (IPNext 3000 Slave) service Call Manager 2009-4-10 11:37:12 failed.
9239	4/6/2009 7:49:20 PM	/AddPac/Branch AQ	NMS Camera 2	172.16.253.118		interface 172.17.113.40 (172.17.113.40) device (IPNext 3000 Master) service Call Manager 2009-4-10 11:37:12 failed
						device 00_IVR_server all services are down.
						device NMS_IP_PBX_31.13 all services down.
						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 11:46:45 AM 172.16.31.20:5101 admin Version 1.2.3384

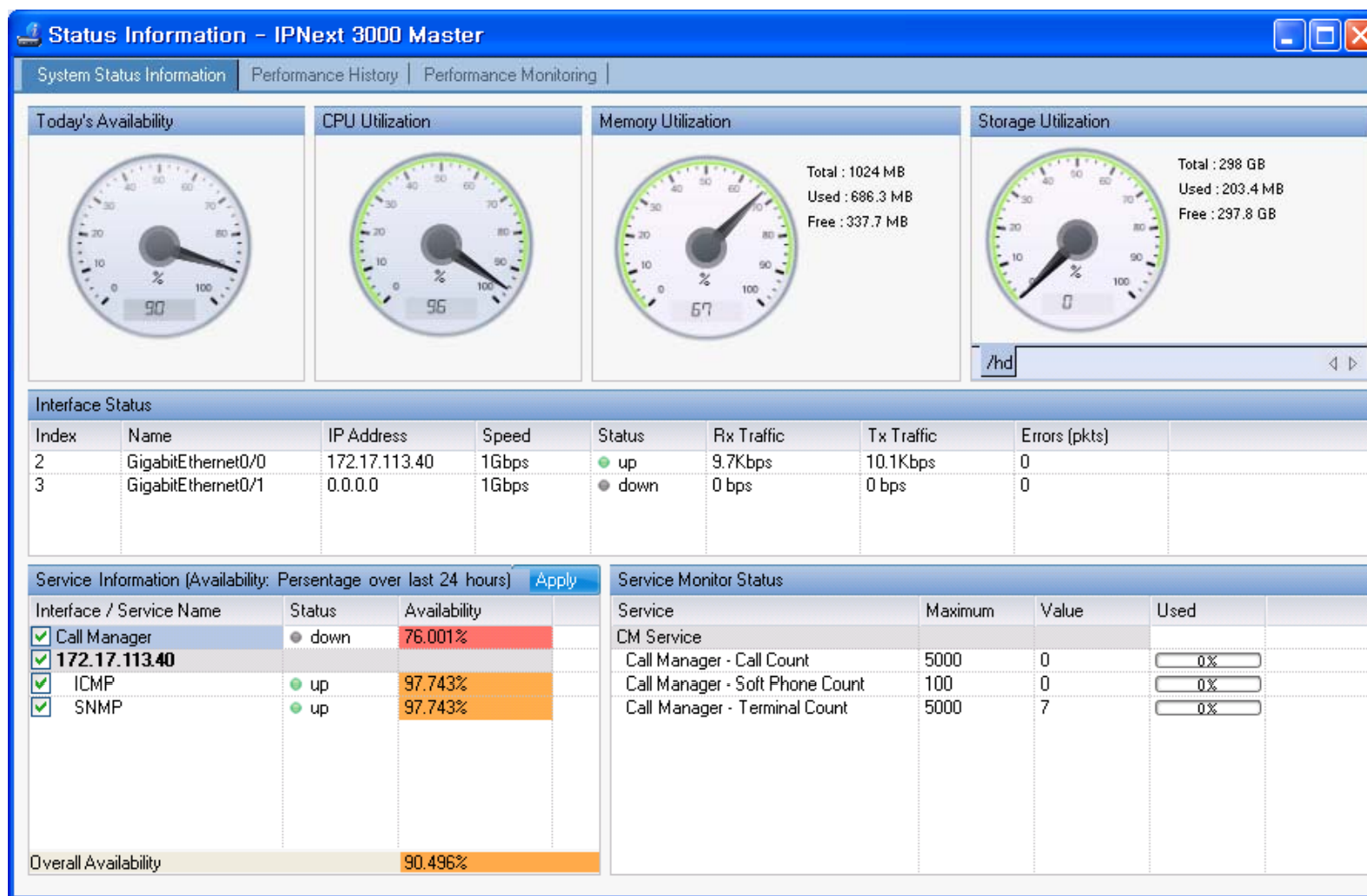
Can view all events for devices with search condition

# 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

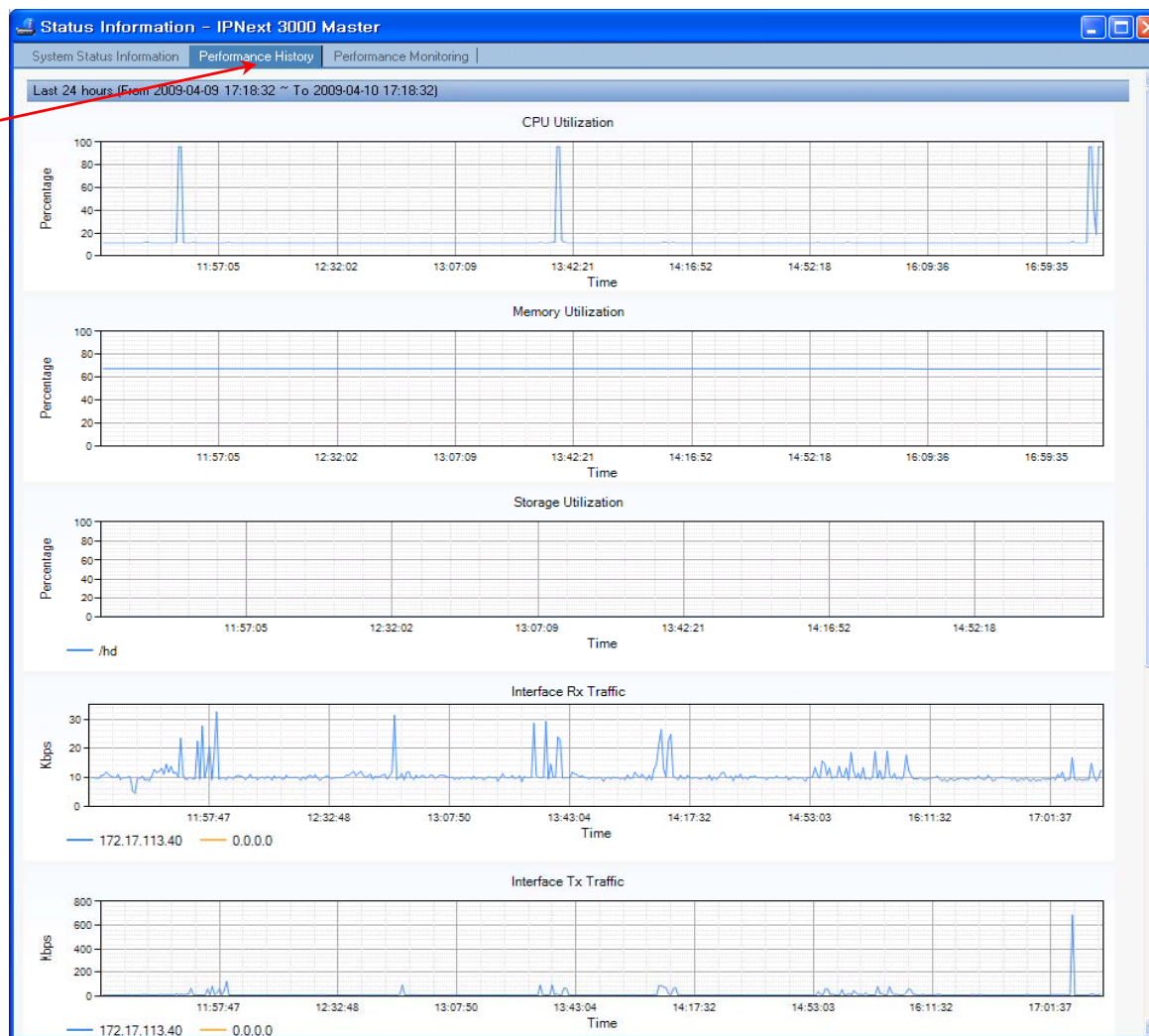


# Device Status Information

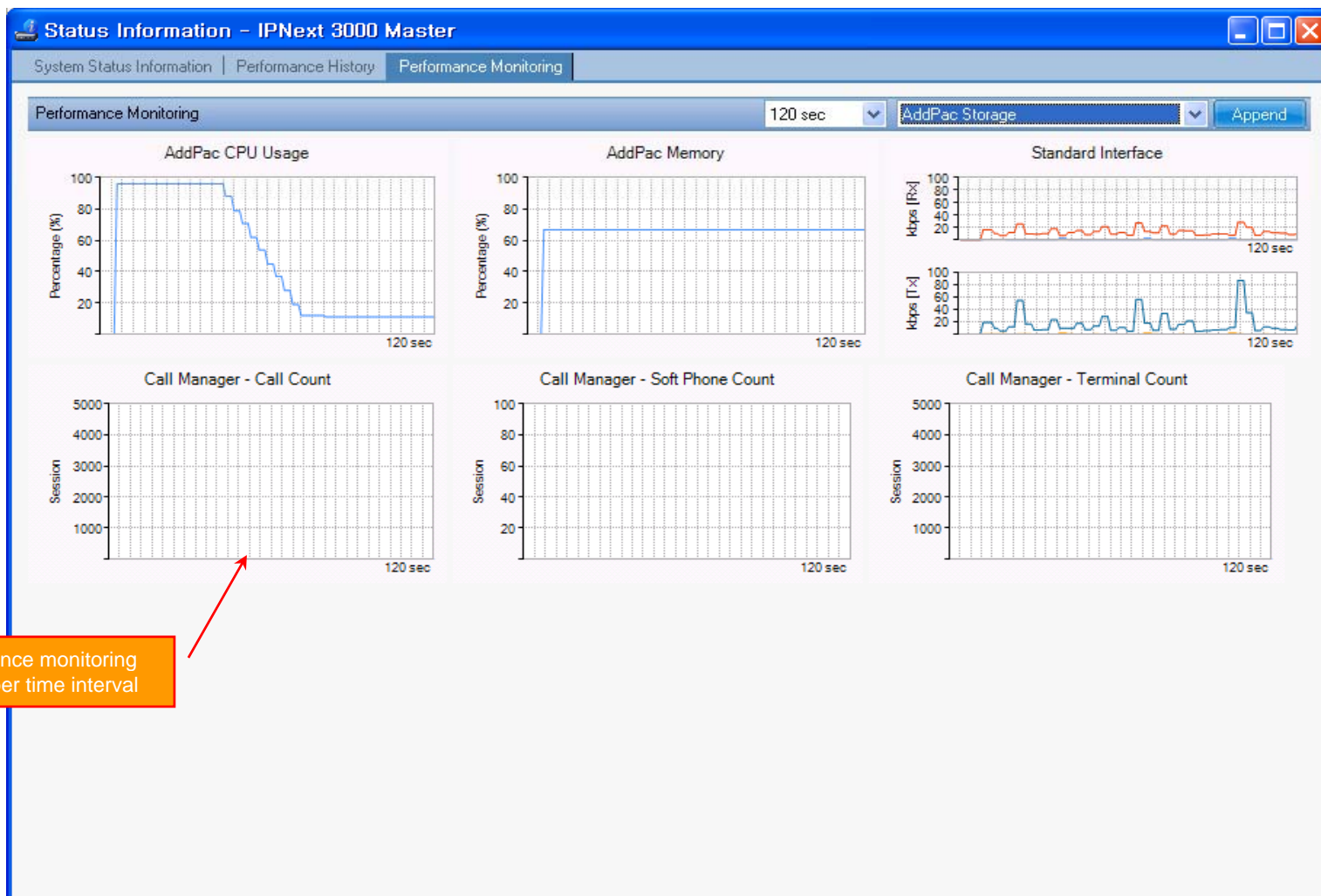


# Device Status Information

performance analysis graph for last 24 hours



# Device Status Information



performance monitoring  
with proper time interval



# 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

The screenshot displays the Smart Network Management System (NMS) interface. The main window shows a tree view of devices on the left, a table of event notifications in the center, and a detailed 'Event Notification Properties' dialog box on the right. Three orange callout boxes provide instructions:

- apply notification policy with event-based filter** (example : notify me when network link of device is down through SMS, e-mail)
- specify category when each event occurs**
- describe notification message content for e-mail or SMS**

The 'Event Notification Properties' dialog box shows the following configuration:

- 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 connection to the service listener on the remote machine. However, the synthetic transaction failed to complete within %iparam[timeout]% milliseconds, over %iparam[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:

The 'Your Outstanding Notices (18)' table at the bottom shows the following data:

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 is 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		

# Event Notification Management

The screenshot shows the Smart NMS interface with the 'Destination Path Properties' dialog box open. The dialog is titled 'Destination Path Properties' and has a 'Destination Path Name' field set to 'default'. Below this, there is a table for 'Initial Target' with columns for 'Notification Type', 'Target', and 'Auto Notify'. The table contains three entries: 'alarmLamp' with target 'alarmLamp' and 'Auto Notify' set to 'on'; 'email' with target 'admin' and 'Auto Notify' set to 'on'; and 'sms' with target 'admin' and 'Auto Notify' set to 'on'. A red callout box with the text 'define notification channel such as e-mail, sms, or alarmLamp' points to the 'alarmLamp' entry. There are 'Add' and 'Delete' buttons below the table. At the bottom of the dialog, there is an 'Escalation' section with a 'Delay' field set to '0m' and another empty table with 'Add' and 'Delete' buttons. The background shows a tree view of network devices and a table of 'Your Outstanding Notices'.

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

# Event Notification 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 (13) | Site | Service Outages | Event Notification | Destination Paths | Users

Destination Path Name: default  
onlyAlarmLamp

Destination Path Properties

Destination Path Name: default

Initial Target: [dropdown] Initial Delay: 0m

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

Target Properties

Choose the notification type: sms

Target Information

Send to select user: Account Administrator

Send to Email or Mobile: [radio button]

Mobile Number: [input field]

Choose the desired behavior for automatic notification on responded events: on

Help Ok Cancel

Your Outstanding Notices (18)

Ack	ID	Send Time	Site	Device Name	IP Address	Details
<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 meeti...		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

4/13/2009 11:24:54 AM | 172.16.31.20:5101 | admin | Version 1.2.3384

# Configuration

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

Network Management System Smart NMS

Current Outage Devices [13] Site

Service Outages Event Notification Destination Paths Users

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\_FS\_server 3 of 3 0.000 %
  - 00\_IPS\_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 serverfo... 3 of 3 0.000 %
- Subnetwork #2
  - Center
    - NMS\_S0HD\_... 2 of 2 0.000 %

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

global notification channel configuration

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_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_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 1.2.3384

# Audible & Visible Alarm

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	52%	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%
WiFi Gateway	0 / 0 / 6	100%

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'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/Cont...	NMS_SDHO_PBX			device NMS_SDHO_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

# 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 search condition is set to 'Hour' for '4/ 9/2009' from '00:00' to '23:00' for 'Site' 'Branch A, Branch AQ, B'. The bar chart shows fault counts for various sites: Seoul, HeadQuarter, Center, Branch TG, Branch KT, Branch GX, Branch B, Branch AQ, and Branch A. The detailed data table for 4/9/2009 shows fault counts for each site across the day, with a total of 118 faults.

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
<b>Total</b>	<b>0</b>	<b>36</b>	<b>0</b>	<b>60</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>14</b>	<b>0</b>	<b>118</b>

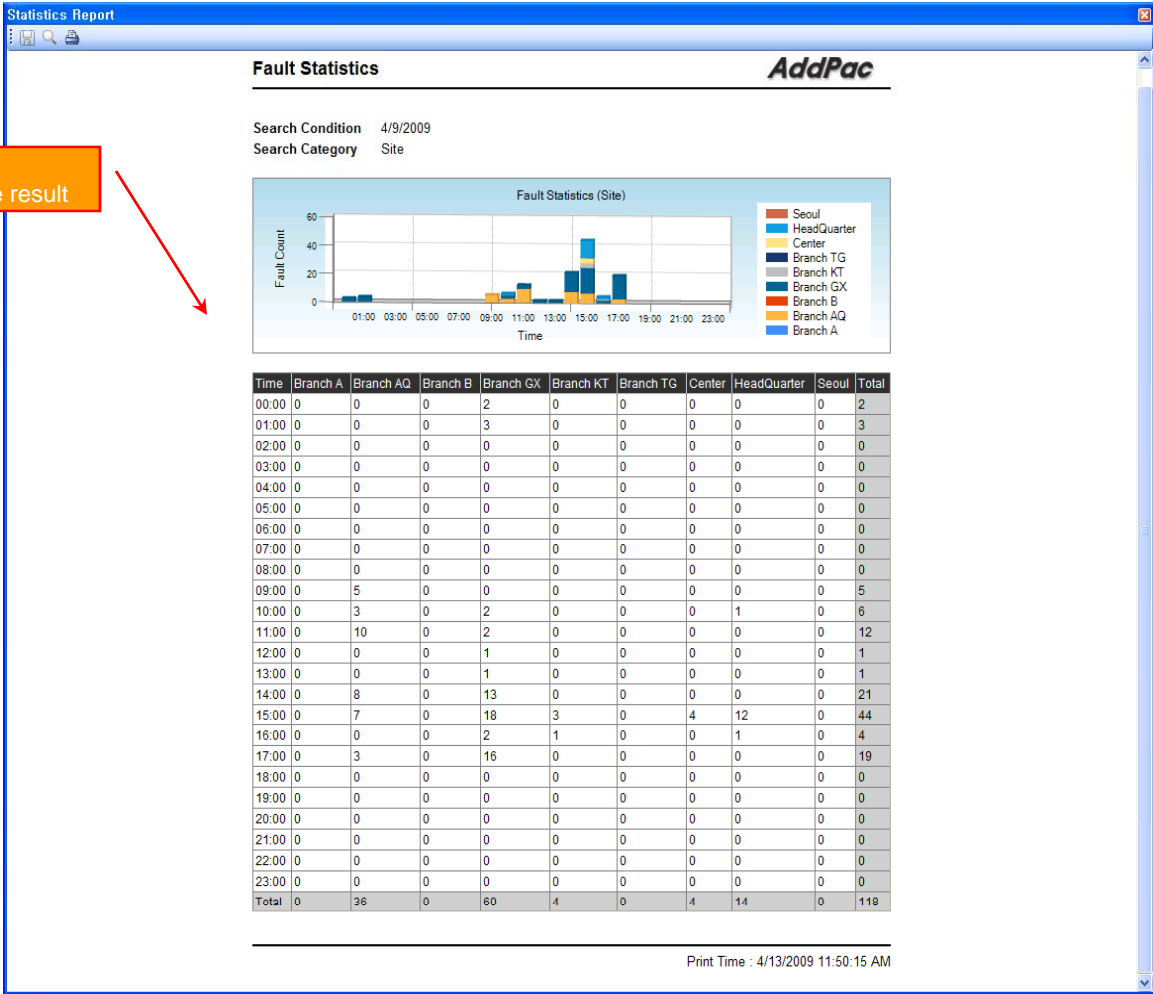
display graph for fault statistics with various search condition

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

manage device model with various properties such as model image

model image repository for selection

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

Network Management System Smart NMS

Site Event Summary Service Outages Event Notification Destination Paths Users View Current Outages View Outages View Events Fault Statistics Device Model

Name	Description
AddPac	AddPac Technology C...
Branch AQ	Branch AQ
Branch GX	Branch GX description
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
Uangseo Area	Uangseo 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
IPNext1000	Server
IPNext1800	Server
IPNext200	Server

Device Model Properties

General Service Availability System Monitoring Service Monitoring

Model Name: AP-IPC250M

Category: Network Camera

Management by SSCP:

SSCP Port: 5061 (1~65535)

Model Image:

Model Image Management

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 (IP
<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 (IP
<input type="checkbox"/>	9418	4/9/2009 2:20:01 PM	/AddPac/Branch GX	00_IVR_server			Call Manager 2009-4-10 11:37:12 failed
<input type="checkbox"/>	9396	4/9/2009 10:57:37 AM	/AddPac/Branch AQ	NMS_IP_PBX_3...			device 00_IVR_server all services are down.
<input type="checkbox"/>	9239	4/6/2009 7:49:20 PM	/AddPac/Branch AQ	NMS Camera 2	172.16.253.118		device NMS_IP_PBX_31.13 all services down.
<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
<input type="checkbox"/>	9237	4/6/2009 7:49:20 PM	/AddPac/Branch AQ	NMS Camera 2	172.16.253.118		response or delete by administrator
<input type="checkbox"/>	9236	4/6/2009 7:41:25 PM	/AddPac/Branch AQ	NMS Camera 2	172.16.253.118		device (NMS Camera 2) interface 172.16.253.118

Your Outstanding Notices (18)

4/13/2009 1:42:39 PM 172.16.31.20:5101 admin Version 1,2,3384

# Service Definition

The screenshot displays the Smart Network Management System (NMS) interface. The main window shows a tree view of sites on the left and a list of services in the center. A red arrow points from an orange callout box to the 'Camera Operation Status' service in the list. Two 'Service Properties' dialog boxes are open, showing configuration details for this service.

**Service Properties (Top Dialog):**

- General | SNMP
- Service Name: Camera Operation Status
- Protocol: SNMP
- Port: 161
- Interval: 30000 (msec)
- Timeout: 3000 (msec)
- Retry: 3

**Service Properties (Bottom Dialog):**

- General | SNMP
- Service OID: 1.3.6.1.4.1.4895.7.51.1.3.0
- Service Condition:
  - Operator: =
  - Operand: 1

**Service List (Table):**

Service Name	Protocol	Port
Call Manager	SNMP	161
Presence	SNMP	161
Media	SNMP	161
UP	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

**Your Outstanding Notices (Table):**

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_serv
<input type="checkbox"/>	9527	4/10/2009 5:34:10 PM	/AddPac/HeadQuarter	5th floor meeti...			device 5th floor meeti...
<input type="checkbox"/>	9502	4/10/2009 3:34:29 PM	/Subnetwork #2/Cent...	NMS_SOHD_PBX			device NMS_SOHD_PBX
<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
<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
<input type="checkbox"/>	9418	4/9/2009 2:20:01 PM	/AddPac/Branch GX	00_IVR_server			device 00_IVR_serv
<input type="checkbox"/>	9396	4/9/2009 10:57:37 AM	/AddPac/Branch AQ	NMS_IP_PBX_3...			device 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		device (NMS Camera response or delete by
<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 ICMP not response o
<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 SNMP not response
<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 ICMP not response o

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



# Thank you!

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

Phone +82.2.568.3848 (KOREA)

FAX +82.2.568.3847 (KOREA)

E-mail : [sales@addpac.com](mailto:sales@addpac.com)