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Configuring the Network Automation Engine (NAE)

Introduction

The Network Automation Engine (NAE) is an Ethernet-based supervisory controller. The NAE provides features including alarm and event management, trending, archiving, energy management, data exchange, scheduling, dial features, and password protection through the Web browser user interface. NAEs come with operating software pre-installed in the unit, but must be configured via a Web browser User Interface (UI) to create the database for the monitored devices.

For references to additional information on installing, operating, and troubleshooting the NAE in a Metasys® system extended architecture network refer to *Related Documentation* in the *Key Concepts* section of this document. Also, refer to the Metasys system *Help*.

This document describes how to:

- configure an NAE for connectivity
- configure an NAE for an Ethernet Local Area Network (LAN) that Supports Dynamic Host Configuration Protocol (DHCP) and Domain Name Service (DNS)
- configure an NAE for an Ethernet LAN without DHCP or DNS Support [NAE uses Automatic Private Internet Protocol Addressing (APIPA)]
- configure an NAE for an Ethernet LAN without DHCP and without DNS support (NAE uses a Static Internet Protocol (IP) Address)
- configure an NAE for an Ethernet LAN that supports DHCP but not DNS
- configure an NAE for an Ethernet LAN that supports DNS but not DHCP
- configure an NAE for direct connect
- access the NAE user interface through a Web browser

- edit the NAE Focus screen configuration
- configure the NAE parameters in the Focus screen
- configure the NAE Network parameters
- configure the NAE Communications parameters
- configure the NAE's Email parameters
- configure the NAE's Pager parameters
- configure Simple Network Management Protocol (SNMP) for Network Monitoring
- set the Time, Date, Time Zone, and Time Synchronization
- designate a Site Director
- establish a Dial-up connection to an NAE
- configure an NAE to Dial Out to an Application and Data Server (ADS)/Application and Extended Data Server (ADX)
- print information from the NAE UI

Federal Communication Commission (FCC) Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his or her own expense.

Canadian Compliance Statement

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Compliance in Other Regions

For other countries and regions, refer to Agency Listings in the *Technical Specifications* section in the *Installing the NAE/NIE Technical Bulletin (LIT-1201161)*.

Key Concepts

NAE and Metasys System Extended Architecture Configuration Overview

Figure 1 shows a possible Metasys NAE network. An NAE network can consist of a single NAE connected to field controllers or multiple NAEs with an Application and Data Server (ADS) and access to multiple remote sites. In all cases you can configure the NAE using a Web browser to access the NAE User Interface (UI). Use the System Configuration Tool (SCT) to add a complex database to an NAE and to set up sites. For information on using the SCT see the *System Configuration Tool Technical Bulletin (LIT-1201534)*.

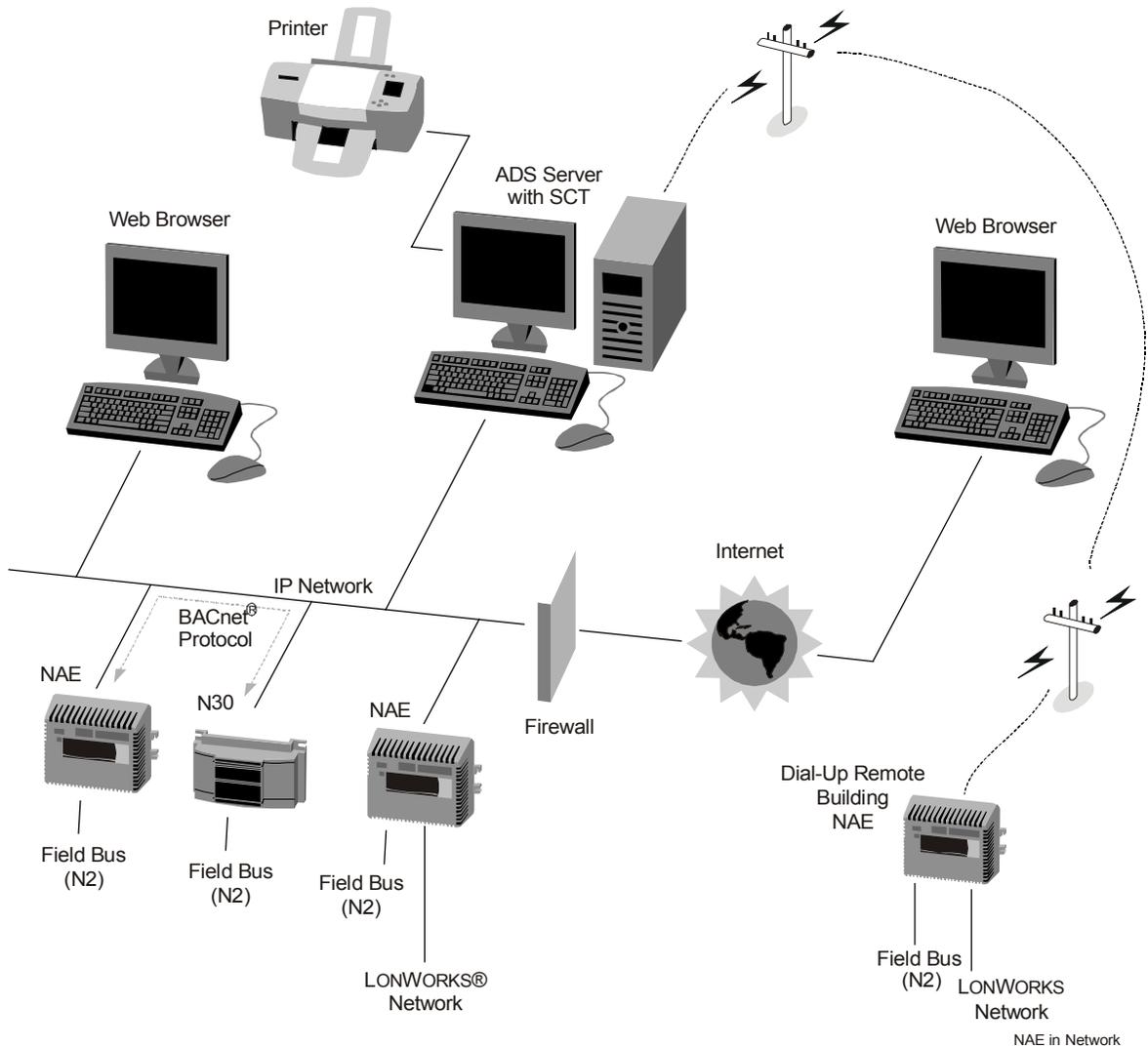


Figure 1: Multiple NAEs in a Metasys System Extended Architecture Network

NAE/NIE Configuration Flowchart

Figure 2 is a flowchart to help you understand the sequence of steps needed to successfully configure an NAE (or NIE). These steps enable you to configure the NAE features, including network settings, serial ports, communications options, and adding users to the system. To set up the Metasys system databases, we recommend that you use the SCT offline to create and edit archive database and then download the archive databases to the NAEs on your site. However, devices and points can be added directly from the NAE.

See the *Related Document* section in this document for additional information on using an NAE and Metasys system extended architecture network.

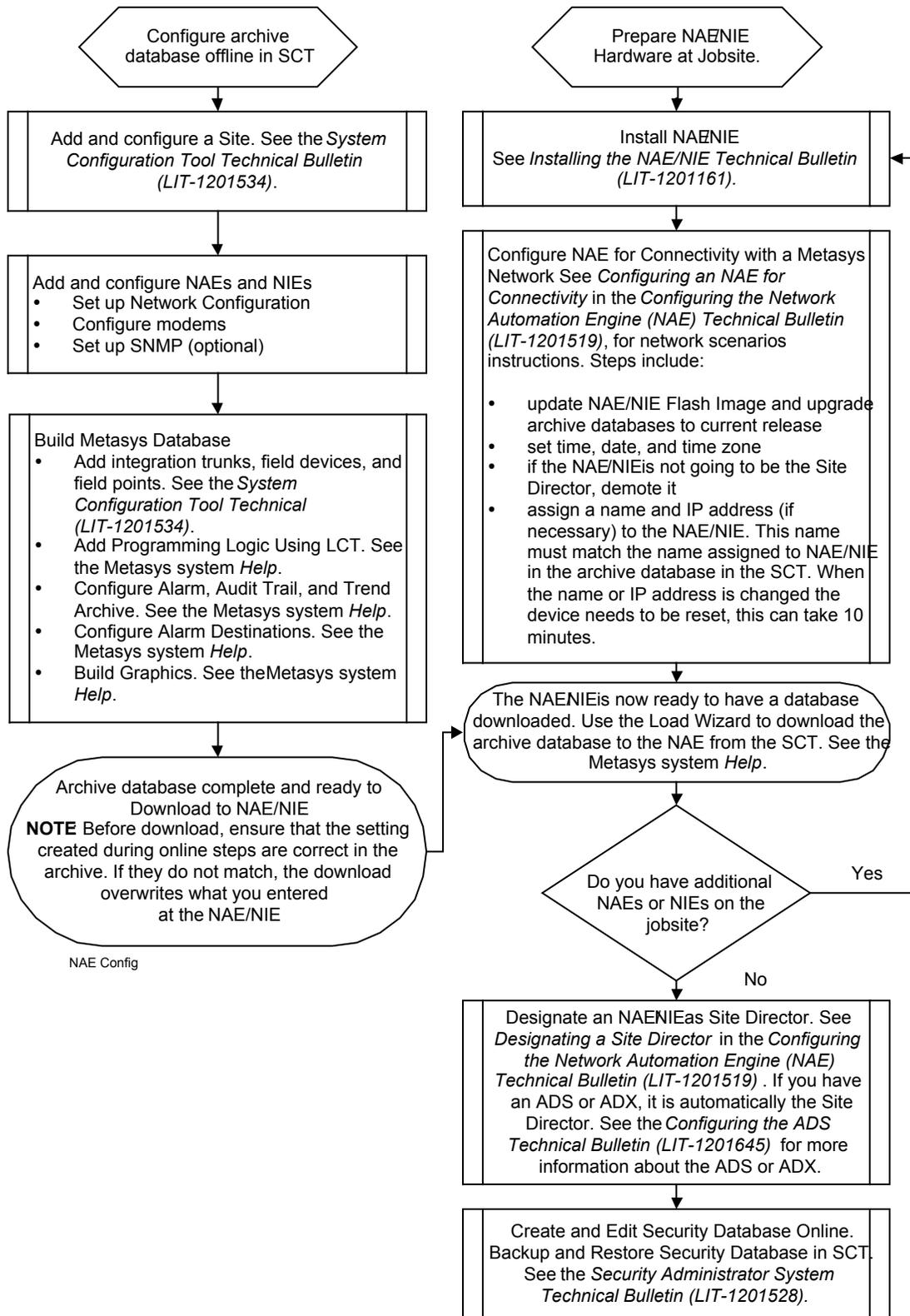


Figure 2: NAE/NIE Configuration Flowchart

Metasys System Extended Architecture Software Upgrades

When you update your SCT, ADS, ADX, NAE, or NIE to a new release version of the Metasys system extended architecture software, the database schema changes. Therefore you must also upgrade all archive databases from the previous release to new release databases.

For an overview of this software update and database upgrade process see the *Upgrade Sequence Overview* section in the *Application and Data Server (ADS), Application and Extended Data Server (ADX), and System Configuration Tool (SCT) Installation Instruction Technical Bulletin (Part No. 24-9898-1)*. The *Upgrade Sequence Overview* section refers you to the specific procedures and sequence necessary to upgrade the Metasys system extended architecture software, update the NAE/NIE flash image, and convert existing archive databases to the new release version.

Also see the *NAE/NIE Update Tool Technical Bulletin (Part No. 24-9985-2)* for information on updating the NAE/NIE flash image to the current software release.

Microsoft® Internet Explorer Browser Recommendations

Always open a new browser window to access the Metasys UI or SCT (if accessing from a Web browser). Do not use the Metasys UI browser window to navigate to any other Web site. If you access a Web site that requires a Java® plug-in, configuration and runtime problems may arise.

Launching Microsoft Internet Explorer from a shortcut on the desktop, or typing a Universal Resource Locator (URL) in the address field of the task bar may replace the Metasys application if Microsoft Internet Explorer is configured to reuse windows when launching shortcuts.

Network Automation Engine (NAE)

The NAE is a Web-enabled, Ethernet-based supervisory device that monitors and supervises networks of field-level building automation devices that typically control Heating, Ventilating, and Air Conditioning (HVAC) equipment, lighting, security, and building access.

The NAE provides features including alarm and event management, trending, archiving, energy management, data exchange, scheduling, dial features, and password protection through the Web browser UI.

Network Integration Engine (NIE)

The NIE supervisory device is a specialized version of the NAE and is designed to provide for the migration of N1 networks into the Metasys system extended architecture. The NIE uses the same UI as the NAE, except that connectivity with LONWORKS®, BACnet®, and N2 networks is not available in the NIE.

For additional information on migrating an N1 network into the Metasys system extended architecture using an NIE, see *N1 Migration with the NIE Technical Bulletin (LIT-1201535)*.

NAE/NIE Update Tool

The NAE/NIE Update Tool is a software application for updating the NAE or NIE flash image to the latest release of the Metasys system extended architecture software. Using the Update Tool, you can update one or more NAE/NIEs on the same Ethernet network. See the *NAE/NIE Update Tool Technical Bulletin (Part No. 24-9985-2)* for information about and procedures for updating NAE/NIE flash images.

NAE Reset Command

The NAE Reset command initiates an orderly reset that saves the NAE archive database and restarts the operating system. A reset is required for new settings to take effect after making changes to operating system parameters and the following attributes:

- APDU Retries
- APDU Segment Timeout
- APDU Timeout
- BACnet IP Port
- Computer Name
- Contact Person
- Domain Name
- External Modem Config
- Internal Modem Config
- Max APDU Length
- Network Address
- Port Number
- Read Community
- SNMP DDA

- SNMP Management Device
- Serial Port 1 Cable Config
- Time Sync Period
- Write Community
- XMS Dial-up Config

If you change any time-related attribute or change any direct connect, internal modem, or external modem attributes, you must also reset the NAE/NIE.

When the NAE/NIE requires a reset, Reset Needed appears in the title bar of the object in the display panel.

Application and Data Server (ADS)

The ADS is a Metasys server that consists of two components. The first component is the Application and Data Server software that supports the relational database management system Microsoft® SQL Server™ 2000 Desktop Engine (MSDE) for storing collected trend data, audit trail messages, and event messages. The second component is the Web server software that provides user interface access to data and routes commands to the Metasys system. This component may include the Site Director function.

Application and Data Extended Server (ADX)

The ADX is a version of the ADS Metasys server that has extended capabilities for historical data archiving and extends the multi-user Web access capabilities of the system. The ADX supports the Microsoft SQL Server 2000 relational database management system for storing collected trend data, audit trail messages, and event messages. This relational database is also used to store configuration information for site security and trend studies and other features.

Modems

The NAE can be ordered with an optional internal 56 Kilobytes Per Second (kbps) modem. In addition, the NAE is preloaded with the modem drivers for the following external Universal Serial Bus (USB) modems:

- Zoom® Telephonics 2985 modem, V.90, external USB modem
- Multitech Systems, MT5634ZBA-USB 56 K, V.90 external USB modem

These modems connect to a USB port on the NAE.

Notes: The NAE's serial ports do not support modems.

The optional internal modem cannot be added to an NAE or NIE in the field.

NAE UI Tabs

An example of the NAE UI is shown in Figure 3. In the right panel of the NAE UI are a series of tabbed pages. See Table 1 for a brief description of the type of information configured or viewed in each tab.

Note: When you are viewing the Metasys system extended architecture software on an NAE through an internet browser, the border around the panels is blue (Figure 3). When you are viewing and configuring an archive database with the SCT, the border is black (Figure 4).

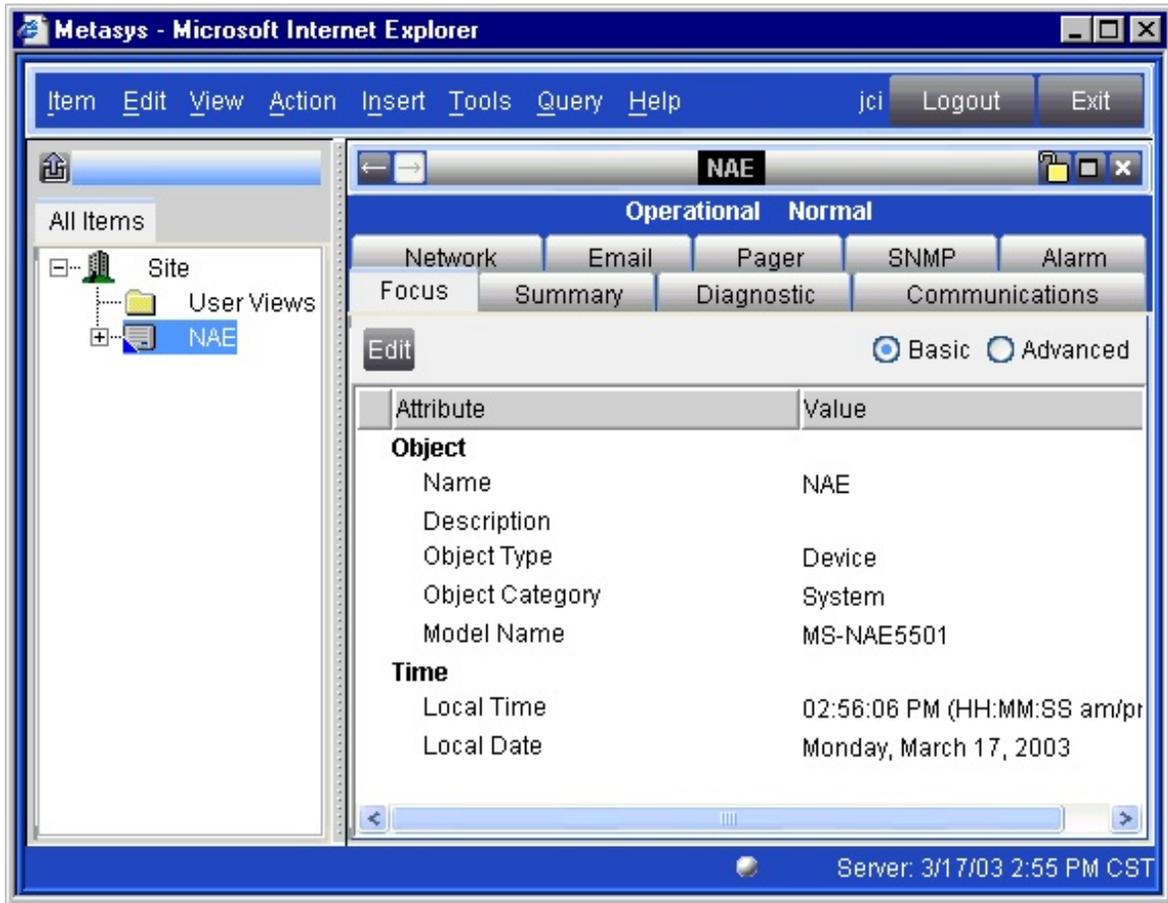


Figure 3: NAE Focus Screen

Table 1: NAE UI Tabs

Tab	Purpose	Online/ Offline*
Focus	Description of device, including buffer and repository sizes. The Focus tab also includes general information about the ADS if applicable. Dialing information for the ADS is in the Network tab.	Both
Communications	Serial port and modem configuration.	Both
Network	Network ID, LAN, and ADS dialing information (if applicable).	Both
Email	Email configuration and destination information.	Both
Pager	Pager configuration and destination information.	Both
SNMP	SNMP configuration and destination information.	Both
Alarm	Alarm configuration and destination information. See <i>Alarms and Events</i> in the <i>Key Concepts</i> section of this document for a description of the default alarms.	Both
Summary	Device status information and attribute values for devices on the network.	Online
Diagnostic	Various status reports to aid in troubleshooting your application	Online

* Online refers to the tabs you see when looking at the NAE UI. Offline refers to the tabs you see when looking at an archive database in the SCT.

System Configuration Tool (SCT)

The SCT is a software tool used for offline configuration of NAE/NIEs, ADS/ADXs, and the Metasys system extended architecture. The SCT provides an easy way to create and edit archive databases offline. The SCT also provides a logic-simulation feature, which allows you to simulate a building automation device and test the database's control logic prior to downloading it to an NAE. See Figure 4 for an example of how the SCT looks in a Web browser. Using the SCT, you can view and configure multiple Sites in one archive. When online in an NAE, you can only view and configure one Site at a time.

For additional information about using the SCT refer to the *System Configuration Tool Technical Bulletin (LIT-1201534)*.

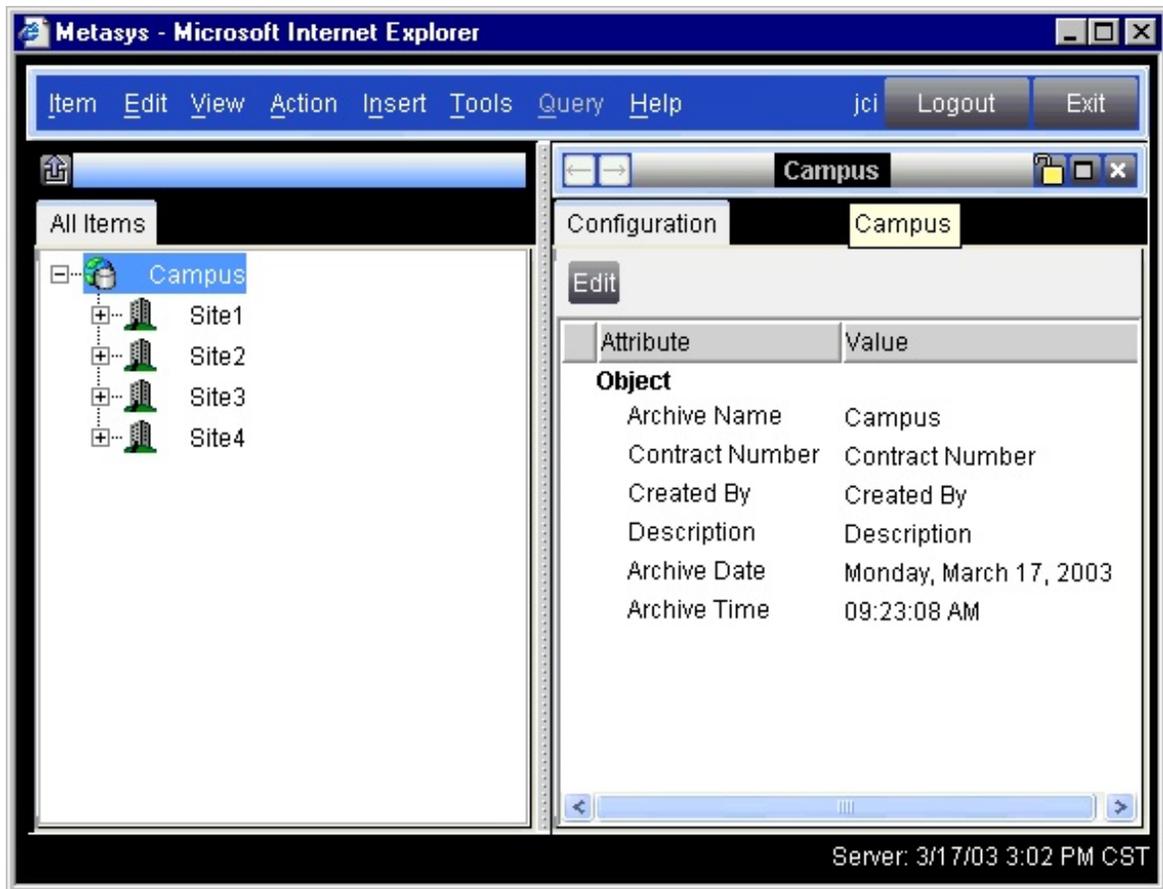


Figure 4: Example of a System Configuration Tool UI Screen

Alarms and Events

You can designate multiple alarm and event sources, and then configure the conditions that trigger those alarms or events. You can also define multiple notification types and multiple destinations for each alarm or event.

Each NAE stores alarms and events generated within the NAE and can also generate notifications to e-mail destinations, paging devices, and Simple Network Management Protocol (SNMP) destinations. If an ADS exists on the Site, the NAE can forward the alarms and events to the ADS for centralized notification and long-term storage.

The NAE displays alarms in browsers as Web pages (by viewing the event repository on each NAE or ADS) and allows the user to acknowledge alarms and events in the NAE repository. The oldest, highest priority event that requires acknowledgement is displayed in the Alarm bar. Use the Event Viewer to see all of the events in the device repository. When the device repository receives an acknowledgement either from the UI or through a Web service, the original source of the alarm is notified.

Note: If an ADS is the Site Director, you can also deliver alarm notifications to a network printer.

Default alarms in the NAE include:

- Central Processing Unit (CPU) usage
- Flash usage
- Memory usage
- Battery condition
- CPU temperature
- Board temperature

You can add, edit, or delete alarms at the Alarm tab in the NAE UI. Alarm extensions can be added to Field devices and Field point objects. Intrinsic alarming, which allows an object to generate event messages based on attributes within the object, is supported for BACnet sites. See the *Introduction to Alarm and Event Management* in the Metasys system *Help* for more information

Site Object

The Site object is a representation of the Site and it contains the attributes and values that represent the characteristics of the site. If the Site object exists on a device, that device is considered a Site Director.

One important function of the Site object is to maintain time-of-day synchronization for a site. See *Setting the Time, Date, Time Zone, and Time Synchronization* in the *Detailed Procedures* section of this document for instructions on checking and setting the time.

Note: Since time and time zone can only be set on the Site, set these values prior to demoting an NAE from Site Director. See *Setting the Time, Date, Time Zone, and Time Synchronization* section in this document for instructions on checking and setting the time.

Site Director

For each Site, a single supervisory device or Metasys server is designated as the Site Director. An NAE or NIE may be designated as the Site Director on small networks consisting of single or multiple NAE/NIEs. On larger networks with single or multiple ADS/ADXs, an ADS/ADX is designated as Site Director. The Site Director provides a uniform point of entry and supports functions such as user logon, user administration, time synchronization, and data-traffic management. Internet browsers accessing the Site Director are able to view all of the devices on the Site.

Simple Network Time Protocol (SNTP)

SNTP is a simplified version of Network Time Protocol (NTP). These protocols allow one computer to ask another computer across a TCP/IP network what time it is, then the querying computer can set its own clock accordingly. SNTP synchronizes an NAE network's time to ensure that schedules, calendars, alarms, and events occur or are reported at the correct time.

Note: SNTP does not set the time on an NAE network. Set the time when the NAE is installed. Once time has been set on the site, SNTP ensures that the time stays synchronized throughout the network.

There are two roles that a device can play in time synchronization on the Metasys network:

- Time Server – responsible for providing the current time to SNTP Clients.
- SNTP Client – sends time requests for time to the Time Server.

An NAE acting as Site Director or an ADS can be configured as a time server. All other NAEs are configured as clients. The client for SNTP is included in the NAE operating system (Windows XP operating system Embedded).

If there is an available Internet connection, SNTP offers the Metasys system the option to synchronize its date and time with the U.S. Naval Observatory Master Clock, essentially the Internet timeserver standard. For a list of Master Clocks see the following URL: <http://tycho.usno.navy.mil/>.

Automatic Private Internet Protocol Addressing (APIPA)

APIPA is a factory default feature built into the NAE to automatically assign a unique IP address when no Dynamic Host Configuration Protocol (DHCP) server is employed. Do not use APIPA when the network uses routers, or the network is connected to the Internet without a Network Address Translation (NAT) or proxy server. It is intended for use on small, single subnet, private networks. APIPA uses NetBIOS Name Service (NBNS) for host name to IP address resolution. The advantages of APIPA are:

- IP address and subnet mask are chosen automatically.
- If a DHCP server is later added to the network, the NAE automatically begins using the DHCP server for IP address assignment. The NAE attempts connection to a DHCP server every 3 minutes. This can become a performance issue with larger node counts.

Simple Network Management Protocol (SNMP)

SNMP is the protocol governing network management and the monitoring of network devices and their functions. It is not necessarily limited to TCP/IP networks. The NAE uses SNMP to monitor network device status and conditions.

NAE Menu Options

Menus in the NAE UI are dynamic and change according to the item you have selected. See the *Menu Help* in the Metasys system *Help* for descriptions of menu items.

Telocator Alphanumeric Protocol (TAP)

The NAE uses TAP for submitting requests to a pager service. TAP is an American Standard Code for Information Interchange (ASCII)-based, half-duplex protocol that allows the submission of a numeric or alphanumeric message.

Default NAE Configuration

Table 2 describes the NAE default configuration values.

Table 2: Default NAE Configuration

Attribute/Field Name	Value
Device Name	NAExxxxxxxxxx where xxxxxxxxxxxx is the Ethernet Media Access Control (MAC) address of the device in hexadecimal. For example, if the Ethernet MAC address is 00-80-66-05-0f-fc, the device name is NAE008066050FFC.
DHCP client	Enabled
Serial Port One	115,200 baud, 8 bits, no parity, 1 stop bit (115200,8,n,1), Direct Connect IP over Point-to-Point (PPP).
Serial Port Two	9600 baud, 8 bits, no parity, 1 stop bit (9600,8,n,1)
Site Director	An NAE is a Site Director by default. If it should not be a Site Director, it must be demoted and the hostname or IP address of the Site Director specified.
Default NAE UI Login Username	MetasysSysAgent (not case-sensitive)
Default NAE UI Login Password	XMG3-Rel.1 (case-sensitive)
Default Windows Login ID*	MetasysSysAgent
Default Windows Password – Password is case sensitive*	XMG3-Rel.1

* The Windows operating system logon ID and password are used with Dial-up and Direct Connections

Archive Database

An archive database holds the configuration information for the field devices and field points that make up a single site, or multiple sites. The archive database contains information about controllers, input/output points, and alarms. A single server can contain multiple archive databases, but each NAE retains its own archive database for the network integrations, field devices, and field points associated with the NAE. See *Network Automation Engine (NAE) Archive Database* in this section of this document.

Use the SCT to create, edit, archive and restore archive databases. Refer to *System Configuration Tool Technical Bulletin (LIT-1201534)*.

Network Automation Engine (NAE) Archive Database

An NAE archive database, which resides in the NAE Flash image, contains configuration information about the network integrations, and field devices that the NAE is supervising, and the field points within those field devices mapped into the Metasys system extended architecture. The SCT can archive the NAE database, to a hard disk or other long-term storage media, where it can be edited if necessary. The SCT can also restore (download) an archive database to an NAE.

Related Documentation

The documents in Table 3 contain information related to the installation, operation, and troubleshooting of NAE/NIEs in a Metasys system extended architecture environment, and information on the software tools used to update and configure NAE/NIEs and the Metasys system extended architecture. Once you are connected to a ADS/ADX or NAE/NIE you can access important user-information in the Metasys system *Help*.

Table 3: Documentation Related to Operating NAEs on Metasys System Extended Architecture

For Information On	See Document	LIT Number or Part Number
Installing an NAE or NIE	<i>Installing the NAE/NIE Technical Bulletin</i>	LIT-1201161
Updating the NAE/NIE Flash Image to New Software Release Versions	<i>NAE/NIE Update Tool Technical Bulletin</i>	Part No. 24-9985-2
Troubleshooting the NAE	<i>Troubleshooting the NAE/NIE Technical Bulletin</i>	LIT-1201417
Overview of Metasys System Extended Architecture Features and Functions	<i>Metasys System Extended Architecture Overview Technical Bulletin</i>	LIT-1201527
Installing the SCT, ADS, and ADX Software	<i>Application and Data Server (ADS), Application and Extended Data Server (ADX), and System Configuration Tool (SCT) Installation Instructions Technical Bulletin</i>	Part No. 24-9898-1
Creating, Editing, and Loading Archive Databases with the System Configuration Tool (SCT)	<i>System Configuration Tool Technical Bulletin</i>	LIT-1201534
Integrating N2 Devices to the Metasys System Extended Architecture	<i>System Configuration Tool Technical Bulletin</i>	LIT-1201534
Integrating BACnet Devices to the Metasys System Extended Architecture	<i>BACnet System Integration with NAE Technical Bulletin</i>	LIT-1201531
Migrating N1 Networks to the Metasys System Extended Architecture	<i>N1 Migration with the NIE Technical Bulletin</i>	LIT-1201535
Integrating LONWORKS Devices to the Metasys System Extended Architecture	<i>LONWORKS Network Integration with the NAE Technical Bulletin</i>	LIT-1201668
Daily Use of the Metasys System Extended Architecture	<i>Metasys System Help</i>	<i>On the Help Menu, select Metasys Help</i>
General Network and Information Technology Definitions and Concepts	<i>Network and Information Technology (IT) Considerations Technical Bulletin</i>	LIT-1201578
Security Issues, Including Adding Users and Roles to the System	<i>Security Administrator System Technical Bulletin</i>	LIT-1201528
Accessing Metasys System Extended Architecture via Dial-Up Connections.	<i>Metasys System Remote Access Installation Instructions Technical Bulletin</i>	LIT-1201691
Dialing into Metasys System Extended Architecture from a PC	<i>Direct Connect and Dial-up Connection on Windows 2000 or Windows XP Operating Systems Application Note</i>	LIT-1201639

Detailed Procedures

Configuring an NAE for Connectivity

All NAE configuration procedures are performed via a standard Web browser. So the first step in configuring an NAE is to establish the NAE within a site's network topology, and provide routine Web browser access. Once this initial Web connectivity is established, all other NAE configuration tasks can be performed via a Web browser. The NAE can be installed in one of the following typical network scenarios:

- Ethernet LAN that supports DHCP and DNS
- Ethernet LAN without DHCP and without DNS support – NAE to use APIPA
- Ethernet LAN without DHCP and without DNS Support – NAE to use static IP Address
- Ethernet LAN that supports DHCP but not DNS
- Ethernet LAN that supports DNS but not DHCP
- Direct Connect

Configuring an NAE for an Ethernet LAN that Supports DHCP and DNS

Note: This scenario is typical when installing the NAE on an existing building LAN.

To configure an NAE for an Ethernet LAN that supports DHCP and DNS:

1. Your Network Administrator must update the DNS server and the DHCP server using the NAE's Ethernet Media Access Control (MAC) address and the host name you want to give the NAE.

Note: The NAEs MAC address is written on the NAE label. By default the NAE's host name is NAExxxxxxxxxxxx, where the x's are the NAE's MAC address (without the hyphens) in decimal format.

2. Attach the NAE to the LAN with an Ethernet patch cable.
3. Connect supply power to the NAE and wait for the NAE to complete initialization (which is indicated when the NAE's Green RUN LED is steady-On).
4. Start your Web browser. Enter the following URL:
<http://dns-name/metasys/>
where dns-name is the name of your NAE.

Note: The PC on which you are running the Web browser must be attached to the LAN. The PC should be a DHCP client or configured to use a static IP address appropriate for the LAN.

5. Log on to the NAE UI. The default login name is MetasysSysAgent. The default password is XMG3-Rel.1.
6. Click on the NAE device object in the left panel and drag it to the right panel of the NAE UI. The NAE device object appears in the right panel (Figure 5).
7. If necessary, set the time, time zone, and date. See *Setting the Time, Date, Time Zone, and Time Synchronization* in the *Detailed Procedures* section of this document.
8. If this NAE is not going to be Site Director, demote it from Site Director. See *Designating a Site Director* in the *Detailed Procedures* section of this document.

Note: The NAE/NIE User Name and Password cannot be changed after an NAE/NIE is demoted.

9. If the Focus tab is not already selected, select Focus and look at the NAE device name. If the NAE device name matches the DNS assigned name, initial configuration is complete. If the NAE device name is still the factory default name, proceed to Steps 10 and 11.

Note: DHCP may be configured to make this assignment automatically.

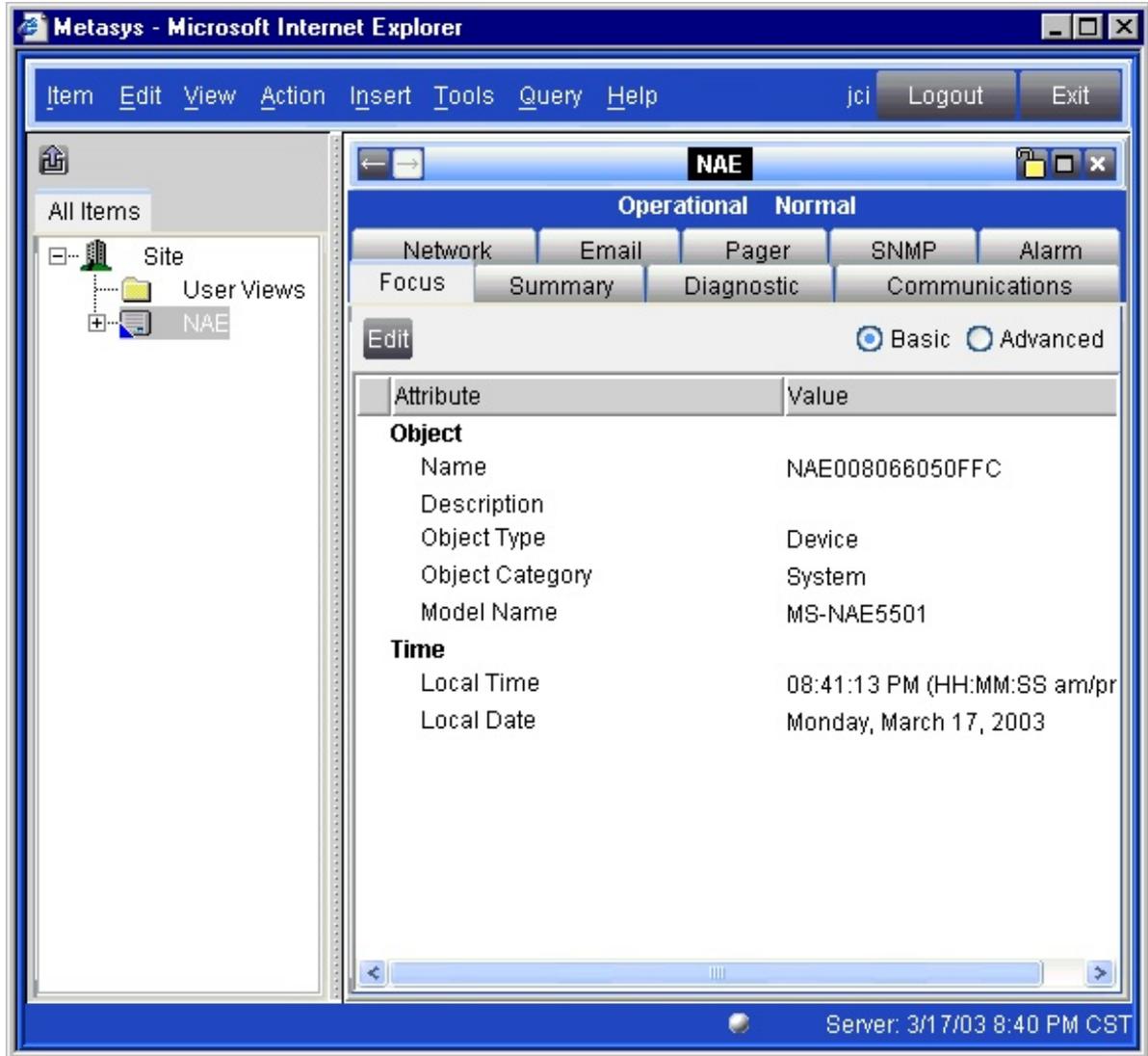


Figure 5: NAE Focus screen

10. Select the Network tab of the NAE device object and click the Edit button.
11. Change the Computer Name and Domain Name values to match the DNS assigned name. When the name changes are saved, the UI logs off automatically and the NAE resets. Go back to Step 4 of this procedure.

Note: See *Additional Information on Configuring an NAE for Connectivity* in the *Troubleshooting* section of this document for more information.

Configuring an NAE for an Ethernet LAN without DHCP and without DNS Support (NAE Uses APIPA)

This scenario is typical when installing the NAE on a stand-alone LAN for building control use only. Perform these steps from a PC attached to the LAN. Do not use an Ethernet crossover cable directly attached to the NAE as it can affect the IP address automatically assigned to the NAE.

To configure an NAE for an Ethernet LAN without DHCP and without DNS support (NAE uses APIPA):

1. Attach the NAE to the LAN using an Ethernet patch cable.
2. Connect supply power to the NAE and wait for the NAE to complete initialization (initialization is complete when the NAE's Green RUN LED is steady-On).
3. Verify that the PC is configured to use APIPA or a static IP address and subnet mask compatible with APIPA. If necessary, change the PC's IP address and subnet mask to be compatible with APIPA.

Note: See *Notes on Setting a PC to Use APIPA* in the *Troubleshooting* section of this document for more information.

4. Enter this URL in your Web browser:
`http://factory-default-computer-name/metasys`. For example:
`http://NAE008066050FFC/metasys`.
5. If necessary, set the time, time zone, and date. See *Setting the Time, Date, Time Zone, and Time Synchronization* in the *Detailed Procedures* section of this document.
6. If this NAE is not going to be the Site Director, demote it from Site Director. See *Designating a Site Director* in the *Troubleshooting* section of this document.
7. (This step is optional.) Select the Network tab of the NAE device object. Change the Computer Name value from the factory default, if desired. When the change is saved, the UI logs out automatically and the NAE automatically resets. Allow the NAE to complete initialization based on the NAE run LED.

Initial configuration is complete. A Web browser on the subnet may log on to the NAE using this URL: `http://computer-name/metasys`, where `computer-name` is the factory default name of the NAE or the name you assigned in Step 7.

Configuring an NAE for an Ethernet LAN without DHCP and without DNS Support (NAE Uses Static IP Address)

This scenario is typical when installing the NAE on a stand-alone LAN dedicated to building control only. Use this scenario when using APIPA is not appropriate. The commissioning steps may be performed from a PC attached to the LAN or a PC connected to the NAE with a crossover Ethernet cable. If attached to the LAN, the PC must be connected to the same subnet as the NAE.

Note: To connect to the NAE with this procedure you may need to know the IP address of the NAE. See *Determining the NAE IP Address and Device Name for a LAN Connection* in the *Detailed Procedures* section of this document.

To configure an NAE for an Ethernet LAN without DHCP and without DNS Support (NAE Uses Static IP Address):

1. Check the LAN IP address and subnet mask of the PC. If needed, change the IP address and subnet mask of the PC such that the PC and NAE exist on the same subnet. The IP address assigned to the PC must be unique for the subnet.
2. Connect supply power to the NAE and wait for the NAE to complete initialization (which is indicated when the NAE's Green RUN LED is steady-On).
3. Enter the following URL in your Web browser:
http://ip-address/metasys/. For example:
http://169.254.236.118/metasys/
4. Log on to the NAE UI. The default login User Name is MetasysSysAgent. The default Password is XMG3-Rel.1.
Note: The login User Name **is not** case sensitive. The Password **is** case sensitive.
5. If necessary, set the time, time zone, and date. See *Setting the Time, Date, Time Zone, and Time Synchronization* in the *Detailed Procedures* section of this document.
6. If this NAE is not going to be Site Director, demote it from Site Director. See *Designating a Site Director* in the *Detailed Procedures* section of this document.
7. Select the NAE device object from the navigation tree in the left panel of the UI and drag it to the right panel. The NAE device object UI opens in the right panel.

8. Select the Network tab (Figure 6) of the NAE device object. Change the Computer name value, if desired. Change DHCP Enabled attribute value to False. This disables DHCP and APIPA. Change the IP address and subnet mask. The network administrator typically assigns static IP addresses. Record the assigned IP address for the NAE for future reference.

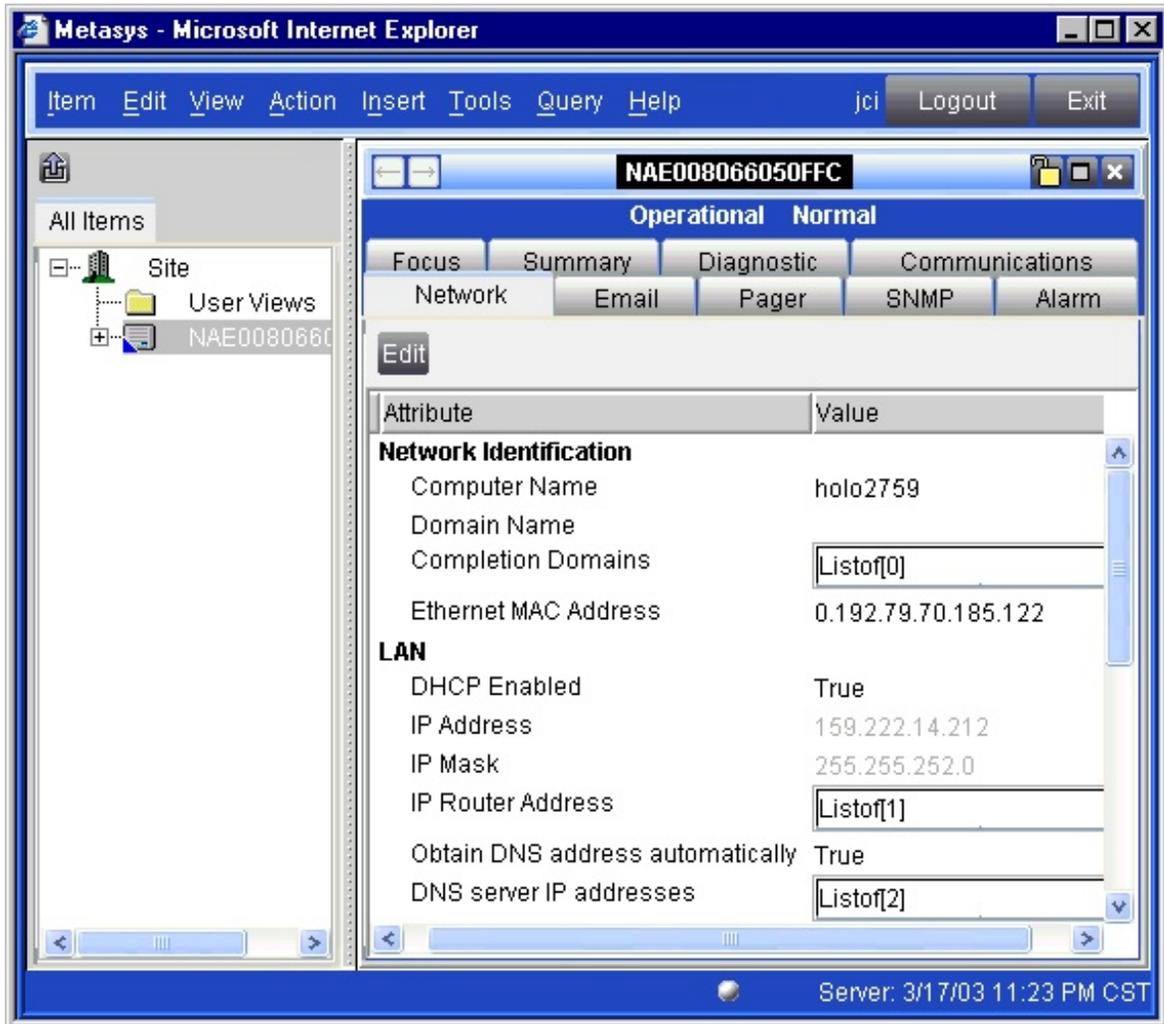


Figure 6: Network Tab on an NAE screen

9. When the changes are saved, the UI logs off automatically. The NAE automatically resets if the Computer Name is changed. If so, wait for the NAE to complete initialization (which is indicated when the NAE's Green RUN LED is steady-On).
10. If an Ethernet crossover cable was used, disconnect it and connect the NAE to the LAN with an Ethernet patch cable.

Initial configuration is complete. A Web browser on any subnet of the LAN may log on to the NAE using this URL:

<http://ip-address/metasys/>

where ip-address is the NAE's assigned IP address.

Configuring an NAE for an Ethernet LAN that Supports DHCP but not DNS

This scenario is common to many building LANs. The NAE should only use DHCP without DNS if DHCP is configured to always assign the same IP address after device-resets and lease-renewals. If this is not the case, use static IP addresses as described in *Configuring an NAE for an Ethernet LAN without DHCP and without DNS Support (NAE Uses Static IP Address)* in this document.

Note: Before performing this procedure, make sure that the NAE is connected to the building LAN so that the DHCP server can assign an IP address to the NAE.

To configure an NAE for an Ethernet LAN that Supports DHCP but not DNS:

1. Log on to the NAE. A Web browser on any subnet of the LAN may log on to the NAE using this URL: `http://ip-address/metasys/` where IP-address is the NAE's assigned IP address.
2. If necessary, set the time, time zone, and date. See *Setting the Time, Date, Time Zone, and Time Synchronization* in the *Detailed Procedures* section of this document.
3. If the NAE is not going to be the Site Director, demote it from Site Director. See *Designating a Site Director* in the *Detailed Procedures* section of this document.

Note: The NAE/NIE login User Name and Password cannot be changed after an NAE/NIE is demoted.

4. Update the NAE computer name value at the Network tab of the NAE UI. After the computer name is updated, the UI automatically logs off and the NAE automatically resets.

Note: See *Additional Information on Configuring an NAE for Connectivity* in the *Troubleshooting* section of this document for more information.

Configuring an NAE for an Ethernet LAN that Supports DNS but not DHCP

This scenario is not typical of today's networks. The configuration steps are identical to the steps in *Configuring an NAE for an Ethernet LAN without DHCP and without DNS Support (NAE uses APIPA)* and *Configuring an NAE for an Ethernet LAN without DHCP and without DNS Support (NAE uses Static IP Address)* in this document.

Using the NAE's Ethernet MAC address (from the NAE label) the network administrator can update the DNS server and the assigned computer name. If this is done, the following URL may be used on any PC on the LAN that is properly configured for DNS use:
<http://dns-name/metasys>.

Configuring an NAE for Direct Connect

This scenario is typical for a single NAE that is not attached to a LAN. It can also be used when an Ethernet crossover cable is not available.

To configure an NAE for Direct Connect:

Note: First, set up the PC for dial-up access as described in *Direct Connect and Dial-Up Connection on Windows 2000 or Windows XP Operating Systems Application Note (LIT-1201639)* for instructions.

1. Connect the PC Communication (COM) port to the NAE's serial port A using a null modem cable.
2. Establish the connection to the NAE by double-clicking the icon for Direct Connect that was created when the PC was set up for dial-up access.

Initial configuration is complete. A Web browser on the PC can log in to the NAE using this URL: <http://169.254.77.40/metasys>. Bookmark this link for future use.

Accessing the NAE User Interface (UI) through a Web Browser

Notes: Refer to *Microsoft® Internet Explorer Browser Recommendations* section of this document for important information on browsing Metasys system extended architecture.

Once an NAE has been properly configured for connectivity, the NAE UI can be accessed through a Web browser.

To access the NAE UI through a Web Browser:

1. Start Microsoft Internet Explorer.
2. Type the URL assigned to the Web page in your NAE and press Enter. The Welcome to Metasys screen appears.

Note: The URL for your NAE is `http://xxx.xxx.xxx.xxx/metasys/`. Where the series of x's is the IP address of your NAE. See *Determining the NAE IP Address and Device Name for a LAN Connection* in the *Troubleshooting* section of this document if you do not know them already. If the NAE has been added to a building's DNS server, you can access it by name.

3. Click the Close Window button on the Welcome to Metasys system screen. A dialog box lets you know that the application is trying to close the window. Click Yes to close window.
4. When the Metasys system Login screen appears, type your user name and password and press Enter. A Java window starts to download files and a progress bar appears giving you an indication of the percentage of files that are downloaded. This procedure can take up to ten minutes.
5. When the download is complete, the Metasys system extended architecture UI screen appears (Figure 7).

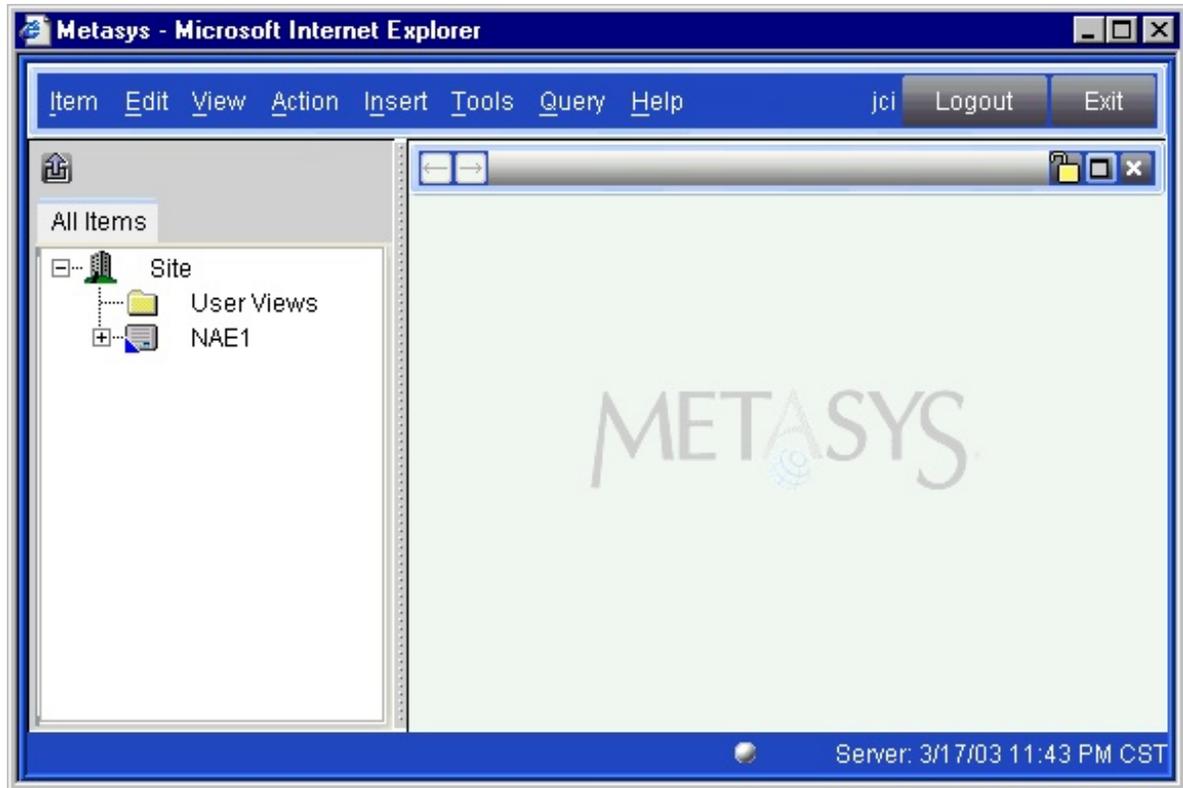


Figure 7: Metasys System Extended Architecture User Interface

6. To view an NAE, select the NAE object from the tree in the left panel and drag it to the right panel. The NAE Focus Screen appears (Figure 8).
7. To navigate in the NAE UI: Use the + and – signs to expand and collapse Navigation trees in the left panel.

Notes: The arrows at the top of the right panel allow you to navigate backwards and forwards to previously viewed items. An arrow in a white box indicates that you are at the end of the history. If an alarm is generated, anyone who acknowledges the alarm clears the alarm for all other users.

The Metasys system *Help* contains additional information about navigating the Metasys system. To add users and roles for users, see the *Security Administrator System Technical Bulletin (LIT-1201528)*.

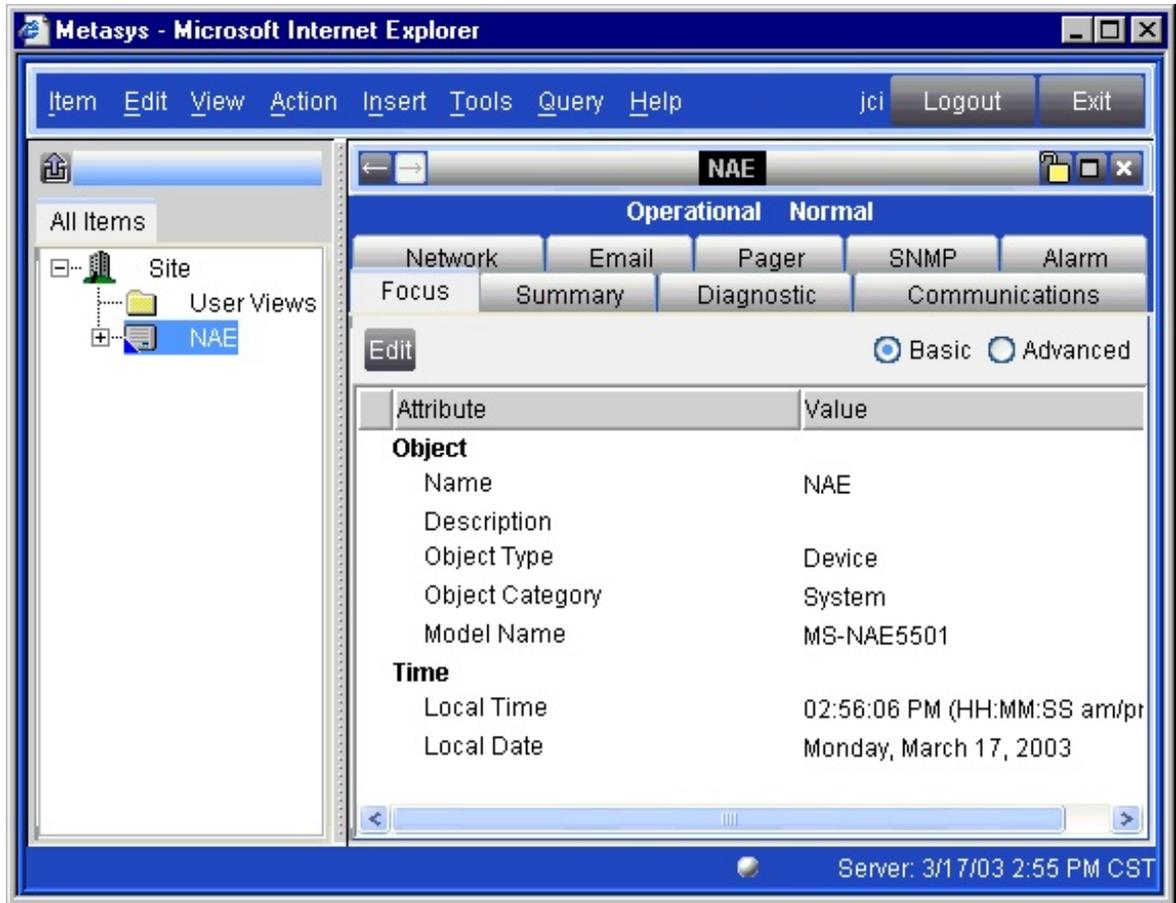


Figure 8: NAE Focus Screen

Configuring the NAE Parameters in the Focus Screen

To configure the some of the basic NAE parameters:

1. In the NAE UI click on the Focus tab, the Focus screen appears (Figure 8).
2. Click the Edit button.
3. Edit the NAE object name and description values as required.
4. Click the Advanced button. Figure 9 shows the NAE Focus screen in Edit mode with Advanced selected and the Focus screen scrolled down to show the audit trail configuration.

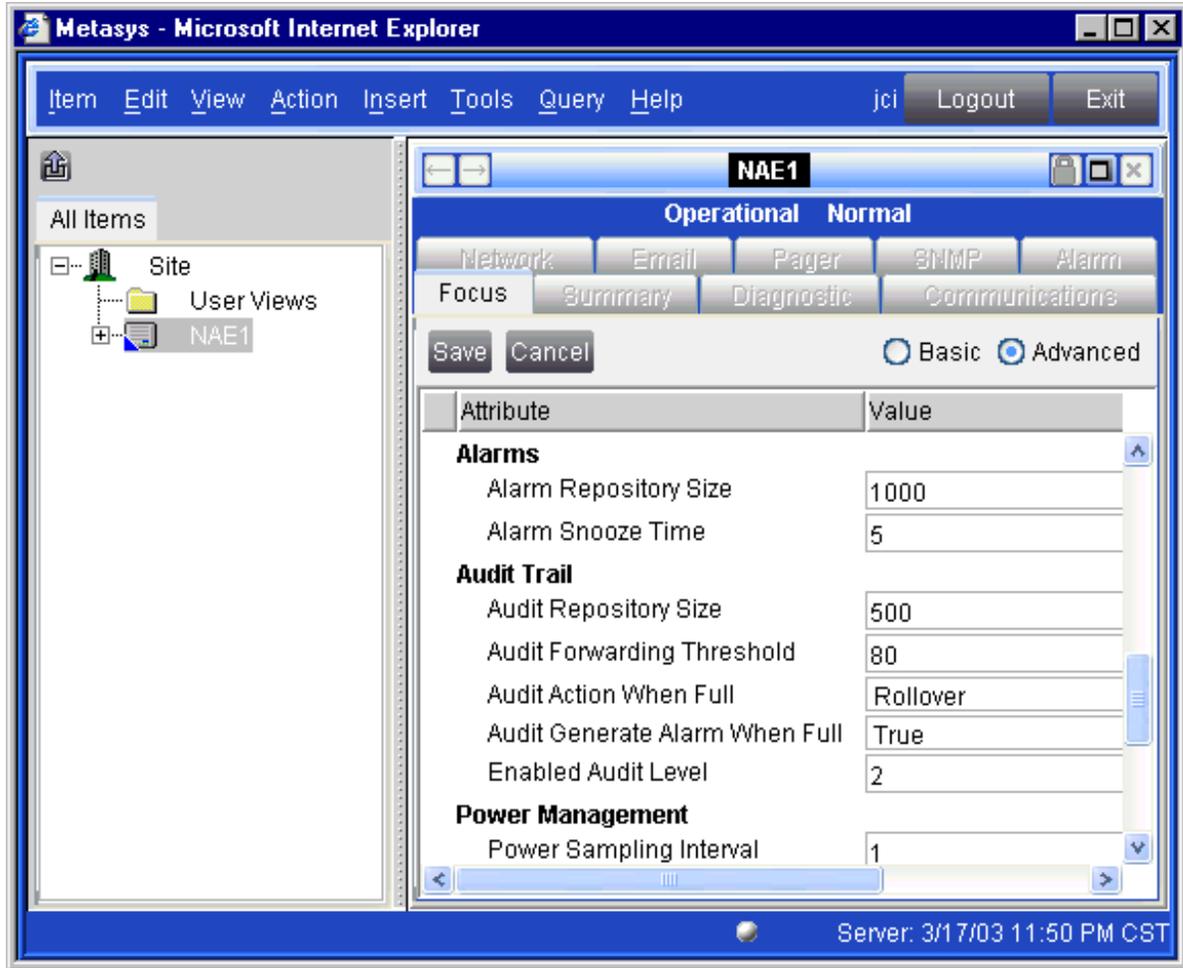


Figure 9: NAE Focus Screen - Advanced

5. Edit the advanced attribute values as desired. See the *NAE Device Object Help* and *Audit Trails Help* in the Metasys system *Help* for guidance. If you have an ADS, this is where you enter the ADS address so the NAE can find the ADS.

Configuring the NAE Network Parameters

To configure the NAE's network identification, LAN configuration, and Dial-up attributes in the NAE Network screen:

1. In the NAE UI, click the Network tab. The NAE Network Configuration screen appears (Figure 10).

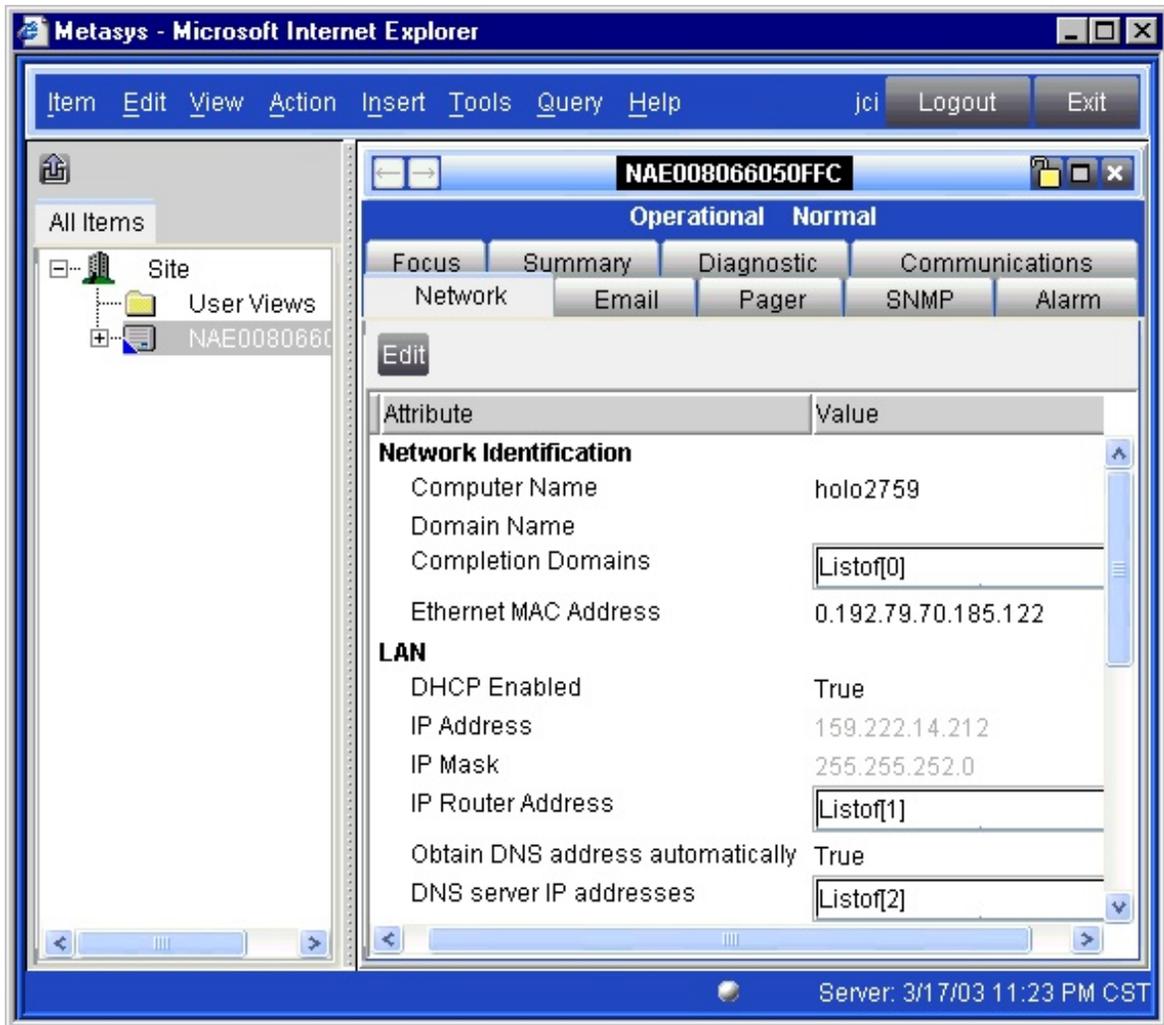


Figure 10: NAE Network Configuration Screen

2. Click the Edit button, the NAE Network Edit screen appears (Figure 11).

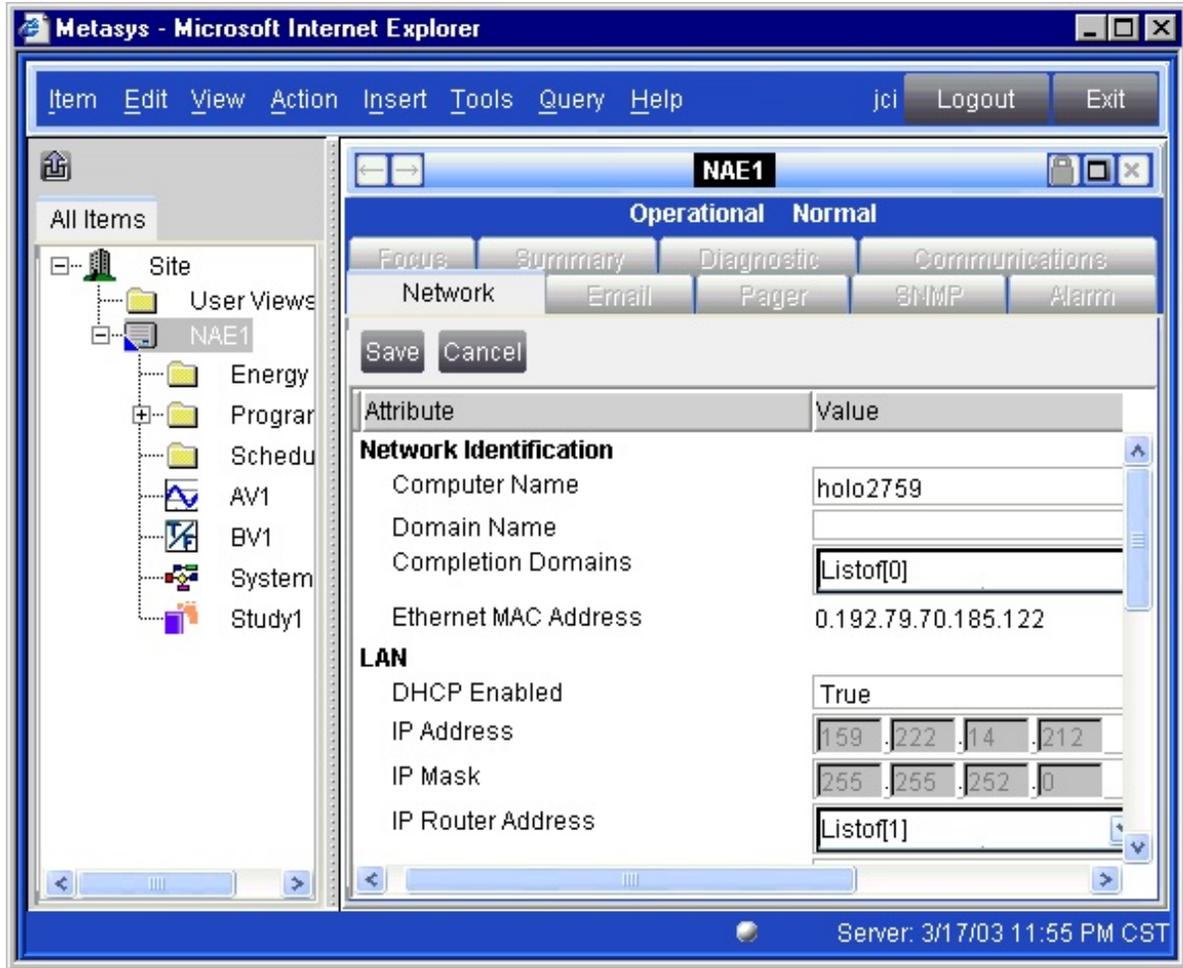


Figure 11: Network Edit Screen

3. Type the Computer Name value in the Network Identification section of the Network Configuration Edit screen.

Notes: Changing the Computer Name value causes a reboot of the NAE.

You must establish the Computer Name value before establishing references to objects on the device. Changing the Computer Name or Domain Name values breaks all references to local objects made from other devices.

4. Fill in the Network Identification and LAN attribute values as needed and click Save.

Note: If you are configuring an NAE to dial out to an ADS, see *Configuring an NAE to Dial Out to an ADS* in the *Detailed Procedures* section of this document.

Configuring the NAE Communications Parameters

Notes: If using the Remote Access application for dial connections, set the Allow Incoming Connections attribute to True for the modem you are using. Refer to the *Metasys System Remote Access Installation Instructions Technical Bulletin (LIT-1201691)* for information on Remote Access.

If the Remote Access application uses the same modem used for the Metasys system extended architecture's Destination Delivery Agents (DDAs), the DDA cannot send outgoing calls while the Allow Incoming Connections attribute is set to True.

By default, the NAE is not configured to accept incoming connections via a modem. To enable modem connections set the Allow Incoming Connections attribute value (in the Internal or External Modem Config sections) on the Communication tab to True (Figure 12).

Do not set the Allow Incoming Connections value (in the Internal Modem Config section) to True unless the internal modem is present. Doing so renders all Direct and Dialup communications connections inoperable.

To configure the NAE Serial Port and any optional NAE (internal or external) modem:

1. In the NAE UI, click the Communications tab. The Communications screen appears (Figure 12).

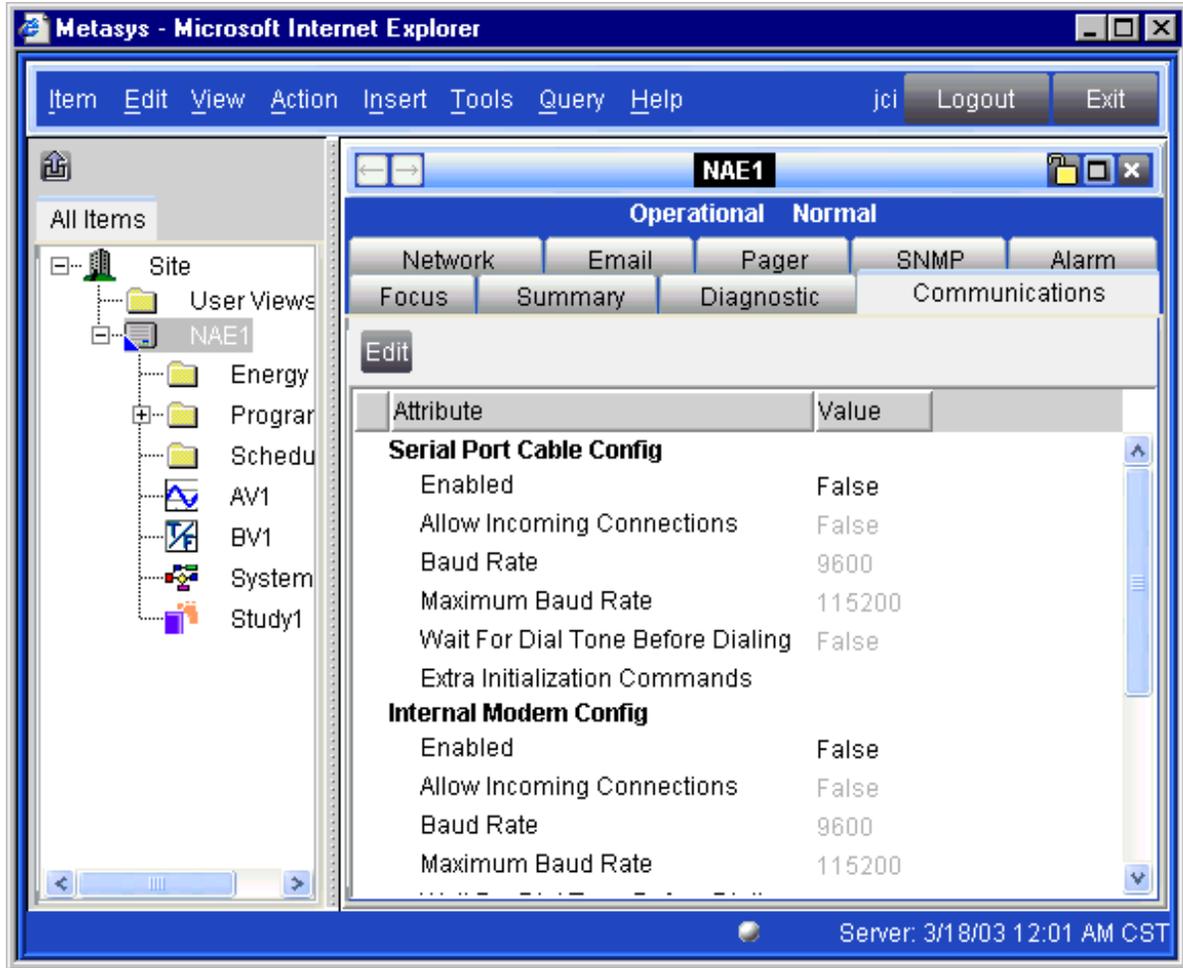


Figure 12: NAE Communications Screen

2. Click the Edit button.
3. The Serial Port Cable Config section allows you to edit the attribute values for Serial Port A. Serial Port B can not be configured through the NAE UI.

Note: The NAE serial ports **do not** support modems.

4. The Internal Modem Config section allows you to edit the attribute values for the optional internal modem if your NAE is so equipped.

Note: An internal modem cannot be added to an NAE in the field.

5. The External Modem Config section allows you to configure an external USB modem. See the *Modems* section of *Key Concepts* in this document for information on the installed USB modem drivers.
6. Click the Save button when finished.

Configuring the NAE's Email Parameters

To configure the NAE's Email values, identity, and destinations:

1. In the NAE UI, click the Email tab. The NAE Email configuration screen appears (Figure 13).

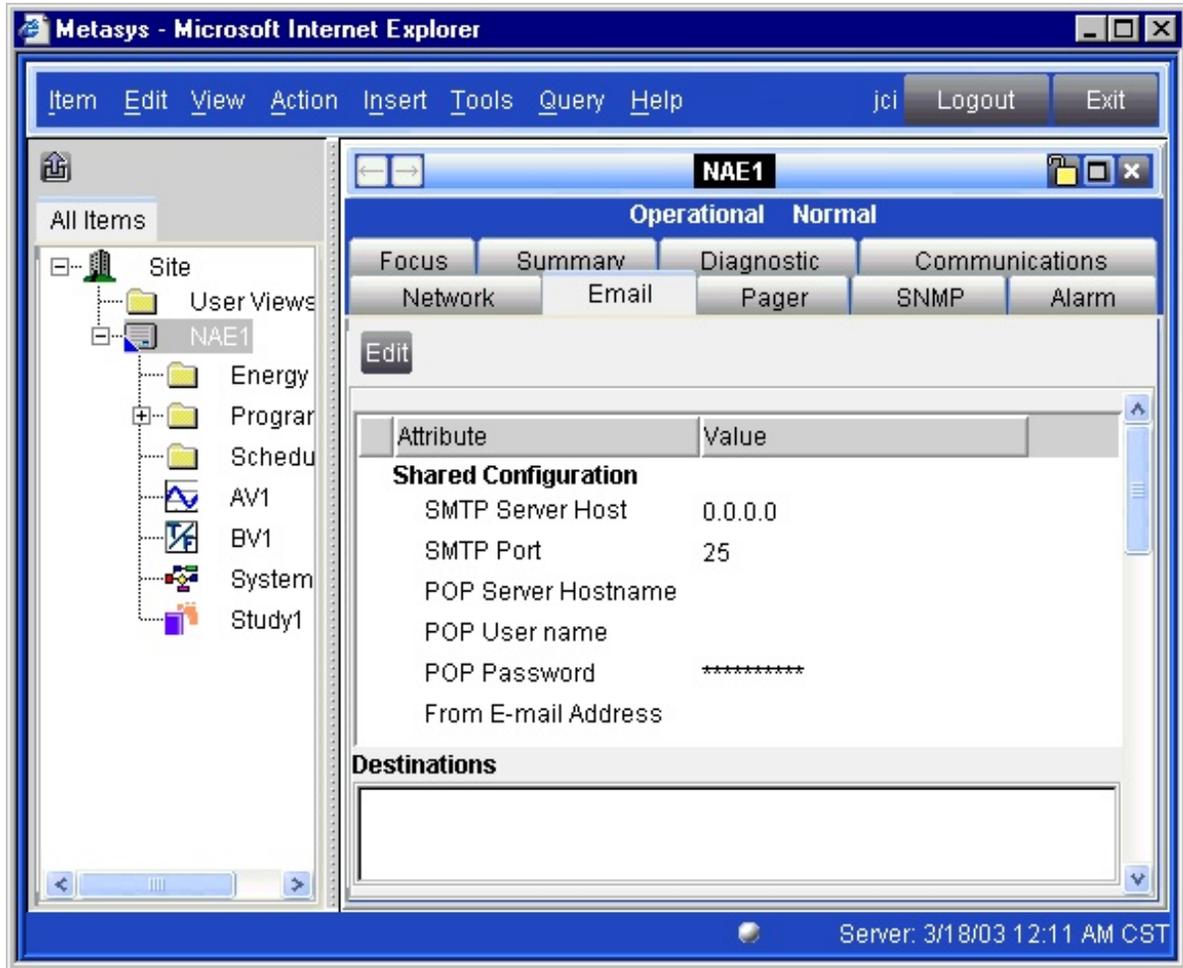


Figure 13: NAE Email Configuration Screen

2. Click the Edit button.
3. Scroll down to the Destinations section of the Email Configuration screen.
4. Click the New button. The Email Destinations Configuration section appears (Figure 14).

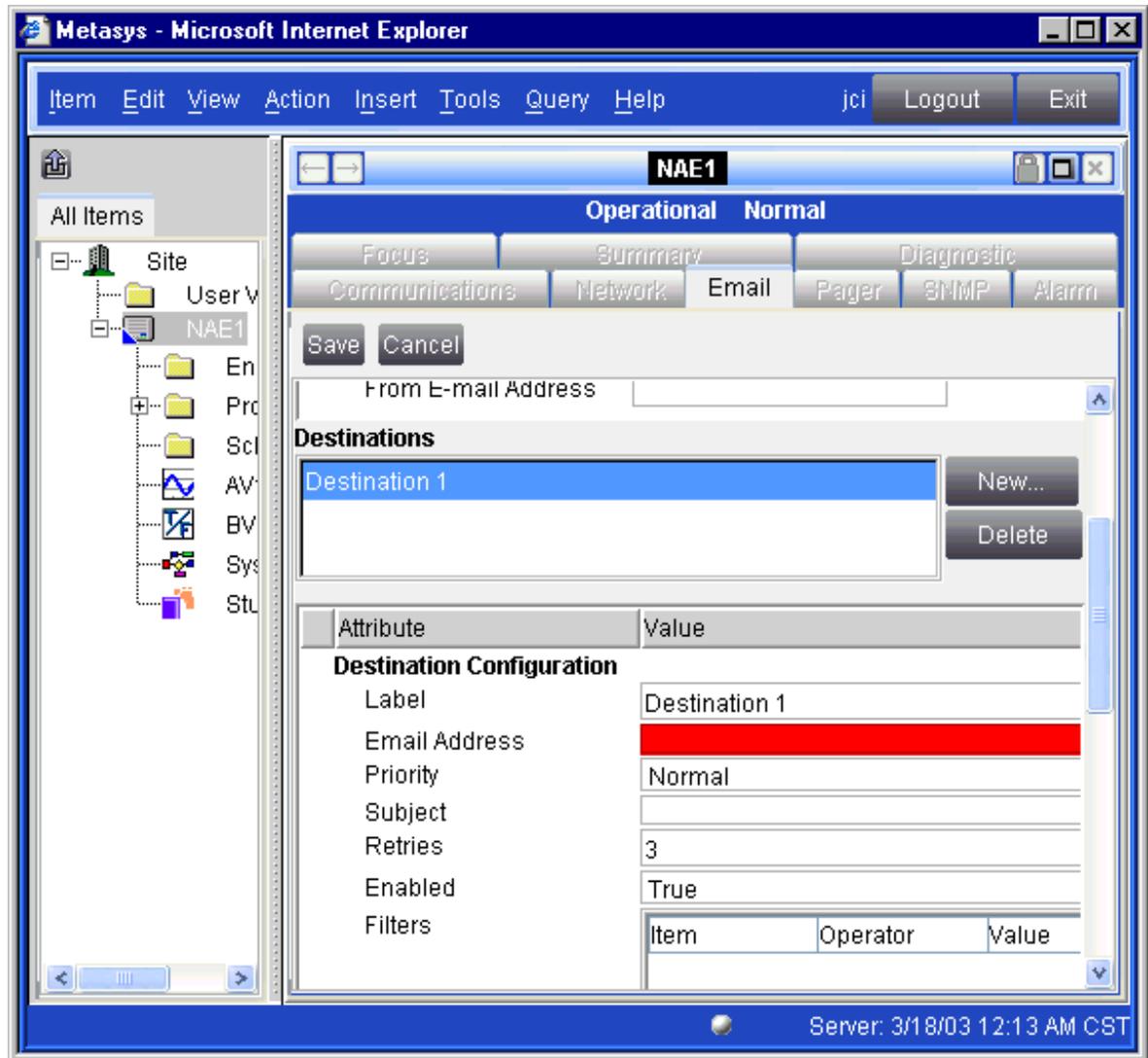


Figure 14: Email Destination Configuration Section

5. Enter the proper values for the email destination address and other attributes, as necessary. See Table 4 for a list of all the email settings available.

Table 4: Email Configuration Settings

Attribute	Value Type	UI Type	Description	Default
Address	String	Text edit field	Email address	
Priority	Enum	Selection list	High, low, normal	
Subject	String	Text edit field	Max 256 character	
Retries	Byte	Numeric edit field	Range 0-10	3
Enabled	Bool	Selection list		TRUE
Filters	List of structure	Custom UI – List of Item Categories, operation and value. There can be one or more filter defined.		
Item	Enum	Enum	Time	
Operation	Enum	Enum	<, =, >	
Value	List	List	12:20:00PM	
Format	List of structure	Custom UI List of items – Priority, Acknowledge Required, Current Status and Date-Time. Each item has a corresponding check box (checked/unchecked).		
Enabled	Bool	Selection	Check Box	
Item	Enum	Enum	Priority, Acknowledge Required, Current Status and Date-Time.	
Attributes common to all email destinations				
SMTP server host	String	Text Edit Field	The SMTP server name to which the mails are sent.	Fully qualified host name.
SMTP port	Unsigned short	Numeric Edit field	The SMTP port at which the server receives the email from clients (default is 25).	25
POP server host	String	Text Edit Field	The POP server name. This is required if the email server expects POP Authentication before it can accept emails from client.	If empty, no POP authentication.
POP username	String	Text Edit Field	Required only if POP Authentication is required and there is a value specified for POP server.	Max 20 character
POP password	String	Text Edit Field	Required only if POP Authentication is required and there is a value specified for POP server.	Max 20
Failed delivery email address	String	Text Edit Field	Email address that is used if a delivery fails. This should be a valid email address.	Email address

- If you want to filter the emails that are sent to the defined destination, click the New button next to the filters section of the email destination configuration screen. The Add Filter dialog box appears (Figure 15).

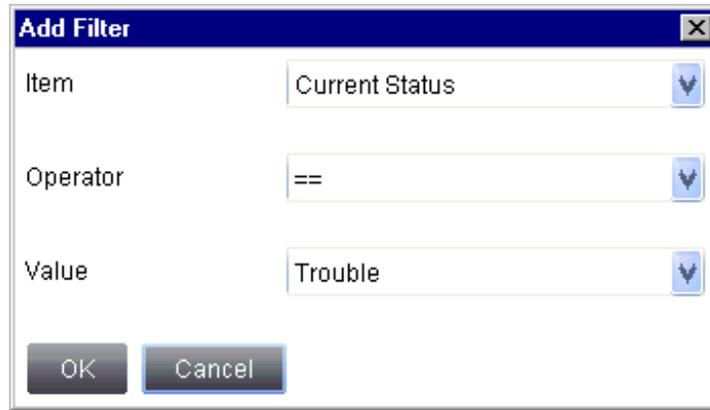


Figure 15: Add Filter Dialog Box

7. Select the item, operator, and value of the situation that you want to trigger an email notification sent to the email destination address you have defined.
8. Click OK.
9. Add additional email destinations and filters as desired.
10. Click Save.

Configuring the NAE's Pager Parameters

To configure the NAE Pager parameters and create pager message destinations:

Note: The NAE uses the TAP protocol for sending notifications to pagers.

1. In the NAE UI, click the Pager tab. The Pager screen appears (Figure 16).

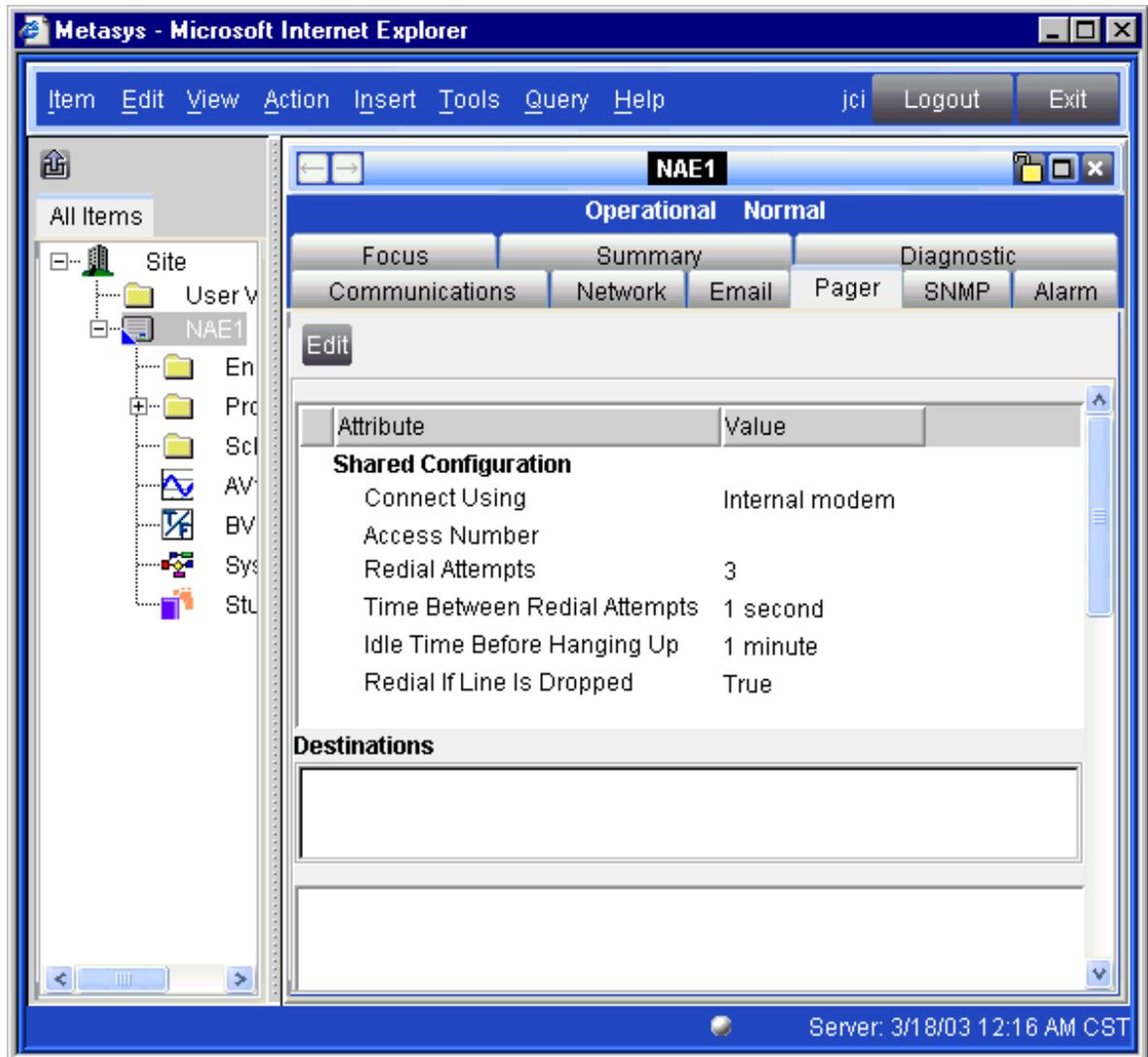


Figure 16: Pager Screen

2. Click the Edit button.
3. Enter the Shared Configuration values. (These fields define attributes that are common to all pager notifications sent from this NAE.)
4. In the Destinations section, click New. The Destinations fields appear (Figure 17).

Note: The Max Characters field defines the length of the text string that is sent to the pager. This field cannot have a value of zero.

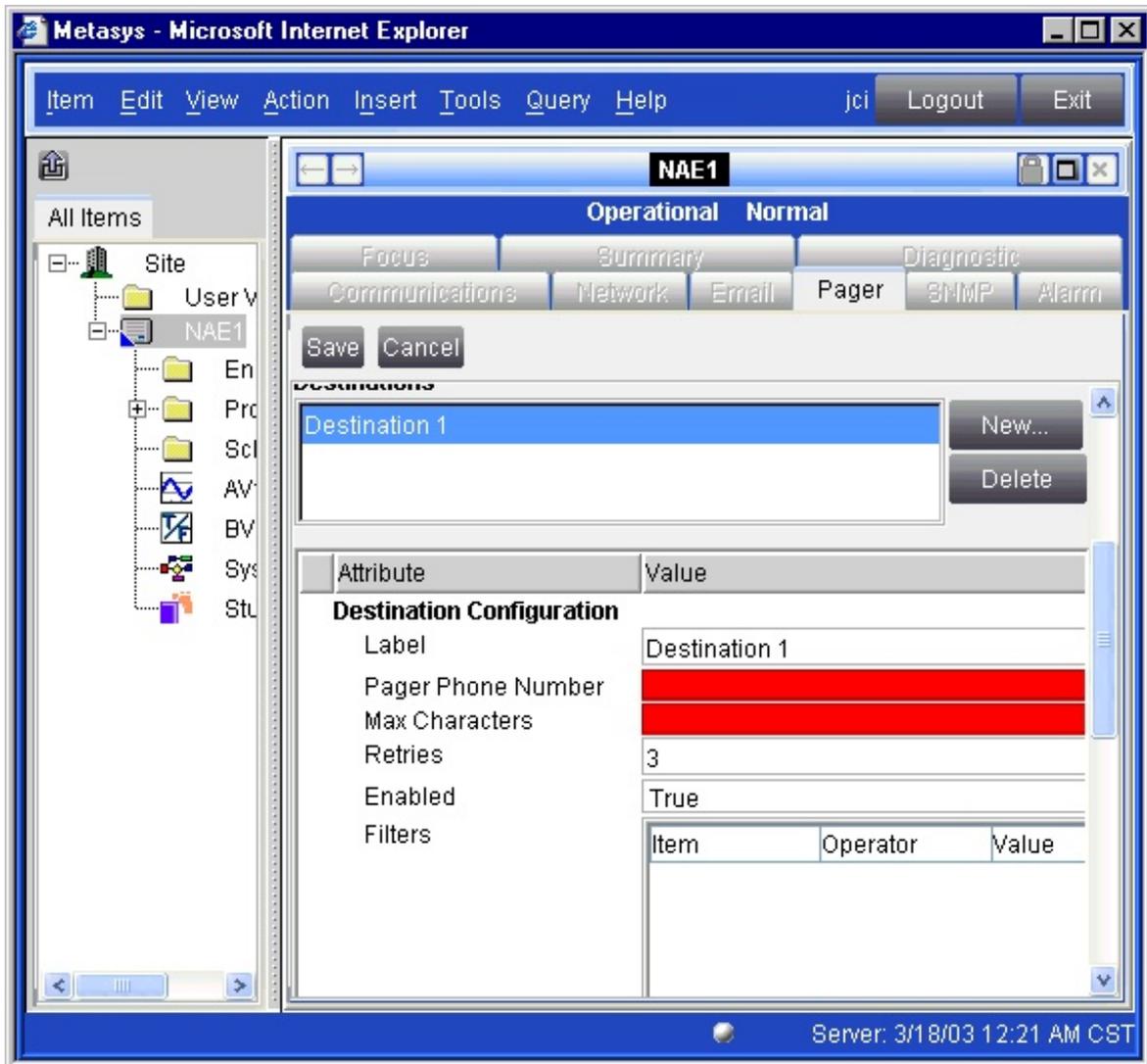


Figure 17: Pager Destination Screen

- To filter the conditions that trigger a pager notification, click the New button next to the filters section of the pager destination configuration screen. The Add Filter dialog box appears (Figure 18).



Figure 18: Add Filter Dialog Box

6. Select the item, operator, and value of the condition that you want to trigger a pager notification to be sent to the pager destination address you have defined.
7. Add additional pager destinations and filters as desired.
8. Click OK.
9. Click Save when finished.

Configuring SNMP for Network Monitoring

Note: SNMP monitoring is generally used for very large networks that need alarms sent to an SNMP monitor.

To configure the SNMP parameters and destinations:

1. In the NAE UI, click the SNMP tab. The SNMP screen appears (Figure 19).

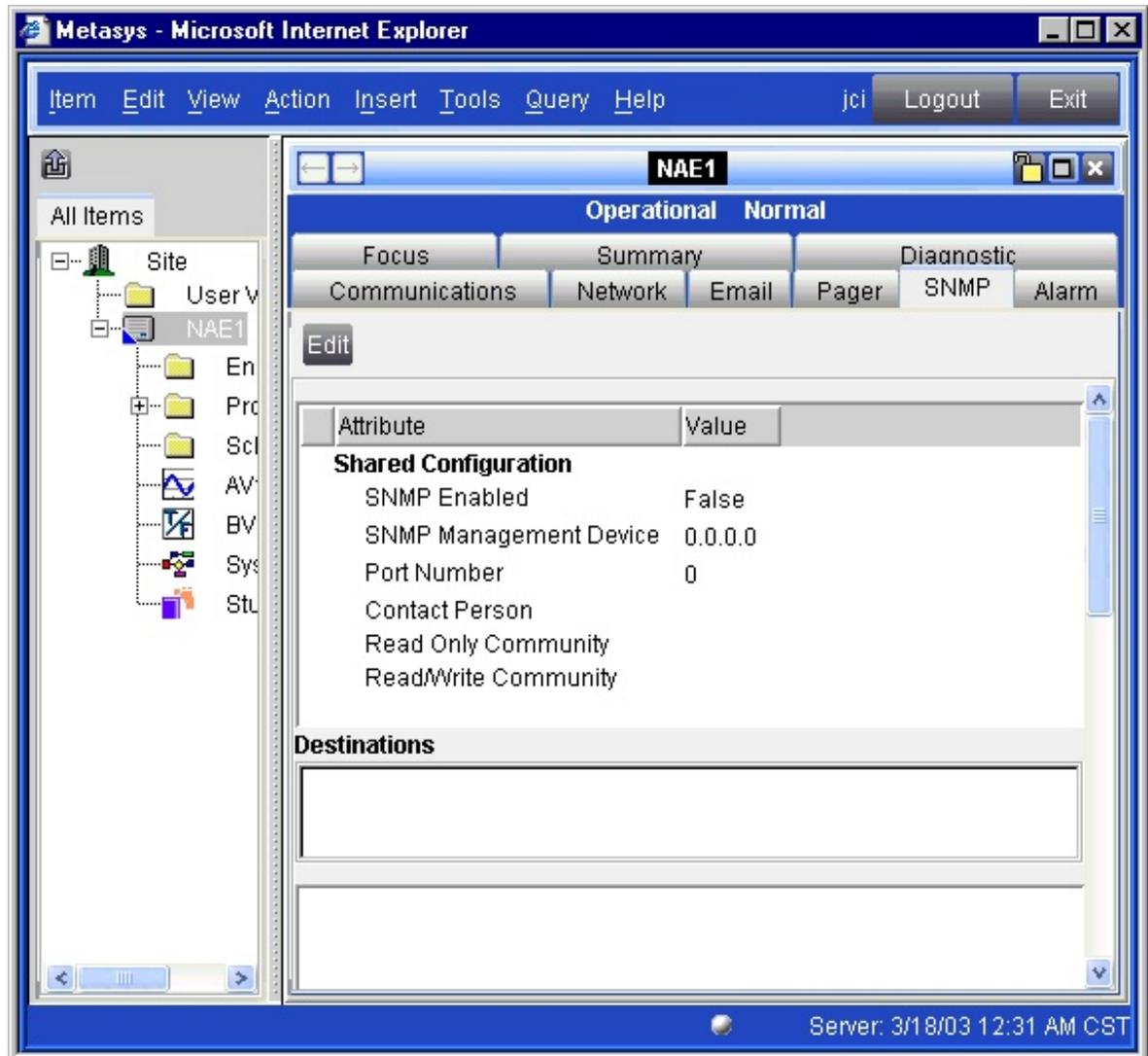


Figure 19: NAE SNMP Configuration Screen

2. Click the Edit button.
3. If you are using SNMP monitoring, set SNMP Enabled value to True, and type the IP Address or Host Name values of the SNMP Management device. The Read Only Community and Read/Write Community fields contain the community string used by the Network Management System (NMS) to retrieve data from objects maintained by managed devices.
4. Click New in the Destinations section. The Destinations fields appear.

5. Type the Destination information for the SNMP trap. The Community Name is used by the NMS Group to listen to the SNMP traps. The IP Address is the address of the NMS system that receives the traps. The Destination Port is the logical port on which the Manager listens to the trap messages (default is 162).
6. Click Save when finished.

Setting the Time, Date, Time Zone, and Time Synchronization

Note: Time, date, and time zone are set in the Site object. If you are going to demote an NAE from Site Director, be sure to set the time related attributes before demoting the NAE.

Setting the Time and Date

To set the time and date:

1. Right-click the Site object and select Commands. The Time and Date dialog box appears (Figure 20).

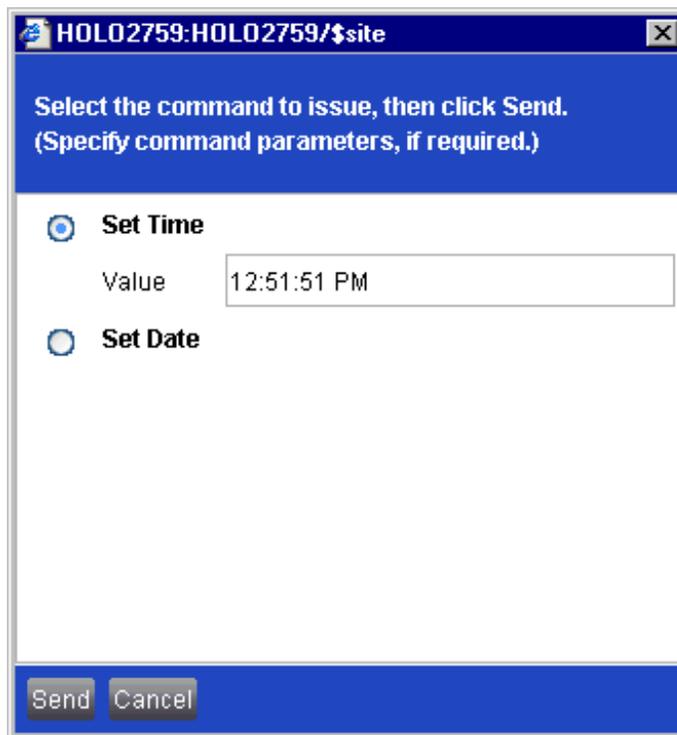


Figure 20: Time and Date Dialog Box

2. Select the Set Time or Set Date radio button.
3. Type the correct time or date in the Value field and click Send.

Setting the Time Zone

To set the time zone:

1. Select the Site object from the navigation tree in the left panel and drag it into the right panel. The Site View screen appears.
2. Click the Edit button.
3. Scroll down to the Time values.
4. Click on Time Zone and select your zone from the drop down list (Figure 21).

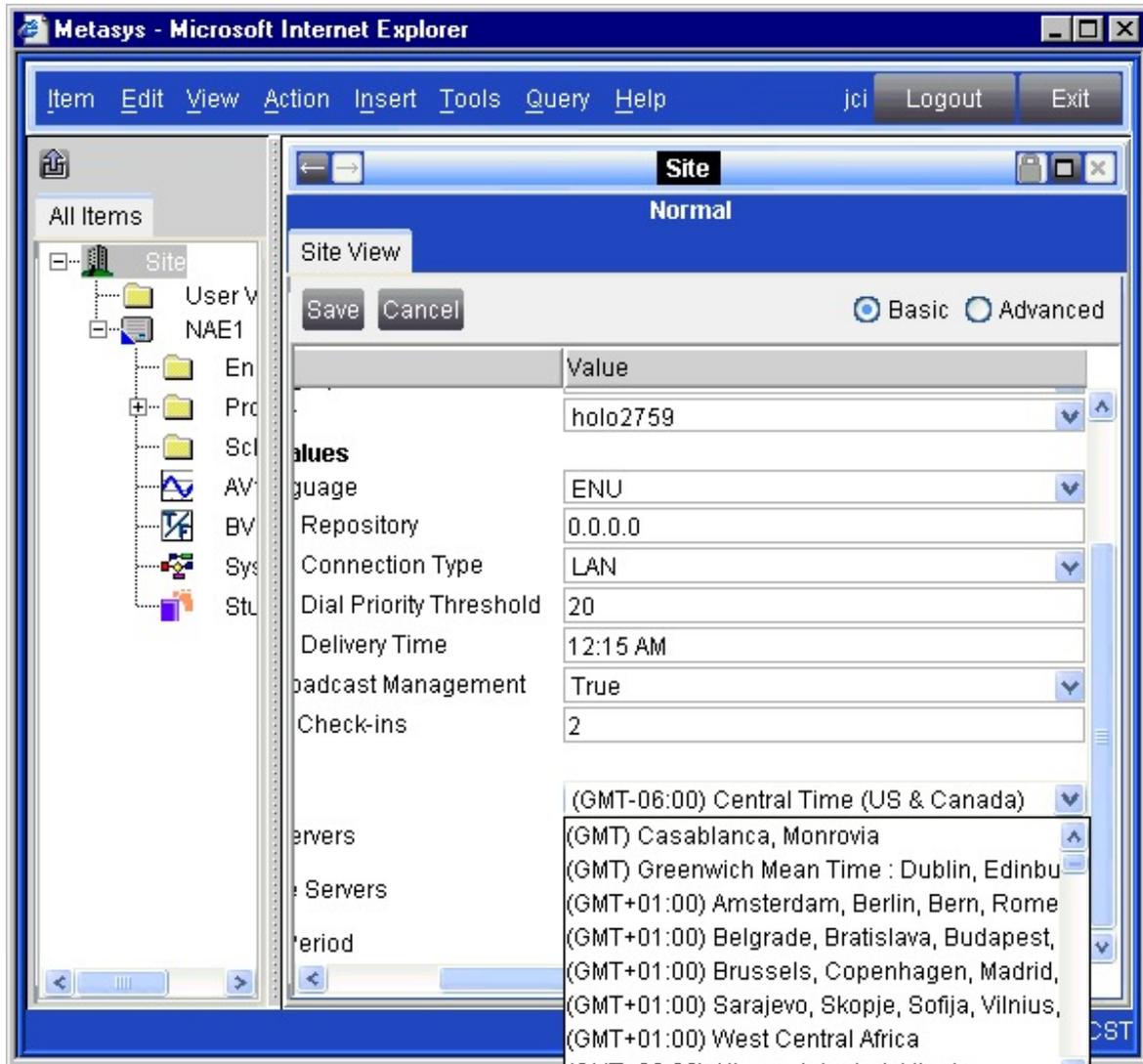


Figure 21: Time Values Screen with Time Zone Selected

5. Click the Save button.

Setting up Site Time Servers (Site Director)

Note: Neither an ADS nor an ADX uses the settings entered for Site or Device Time Servers. If you are using an ADS or ADX you must enter time settings manually at the PC (Metasys Server) that the ADS or ADX resides on.

To set up Site Time Servers:

1. Select the Site object from the navigation tree in the left panel and drag it into the right panel. The Site View screen appears.
2. Click the Edit button.
3. Scroll down to the Time values.
4. In the Site Time Servers field, enter the IP addresses of the SNTP server devices the Site Director can use as its time server.

Note: A hostname may be specified only if a DNS server is available to the site server.

5. Enter a value for the Time Sync Period.

Note: At this interval, the Site Director attempts to synch time from an SNTP server from the Site Time Servers list. Contact with an SNTP server is attempted one at a time in list order until one successful contact is made.

6. Click Save when finished.

Setting Up Device Time Servers (NAEs)

To set up Device Time Servers:

1. Select the Site object from the navigation tree in the left panel and drag it into the right panel. The Site View screen appears.
2. Click the Edit button.
3. Scroll down to the Time values.
4. In the Device Time Servers field enter a list of hostnames or IP addresses that the devices on the Site (except the Site Director) can use as their time servers.

Note: A hostname may be specified only if a DNS server is available to the site server. If the site server is also an SNTP time server, the site server may be specified in this attribute. This attribute is distributed automatically to the site devices.

5. Enter a value for the Time Sync Period. (At this interval, each device on the site [except the Site Director] attempts to synch time from an SNTP server from this list. Contact with an SNTP server is attempted one at a time in list order until one successful contact is made.)

6. Click Save when finished.

Designating a Site Director

Designating a Site Director can be done offline with the SCT or online through the NAE.

Note: If you do the site promotion/demotion online, you may lose any navigation trees built for the site. If User navigation trees have already been built, upload them to the SCT, change the Site Director and then re-download all the devices. NAEs come from the factory with a Site Object, therefore, you need to demote the NAEs that are not going to be Site Director.

To designate a Site Director, you must first demote all of the NAEs that are not going to be the Site Director. The NAE/NIE User Name and Password cannot be changed after an NAE/NIE is demoted. If you do not change the User Name and Password, you can log on (directly) to the NAE using the default User Name and Password.

To designate a Site Director:

1. Select the NAE you wish to demote from Site Director.
2. On the View menu, click Selected Item. The NAE Focus screen appears in the right panel.
3. Click the Advanced button.
4. Click the Edit button.
5. Scroll down to the Site heading and select the Local Site Director field.
6. Type the host name or IP address of the NAE or ADS/ADX that you want to be the site director.
7. Click the Save button.
8. If you are on the Site Director, wait approximately 30 seconds and then refresh the navigation tree. If you are changing the site director from a different device, wait about 30 seconds, log off, and then log on to the site director. You should see the new device in the tree.

Establishing a Dial-up Connection to an NAE

This scenario is typical for a single NAE at a remote location.

Notes: Do not use a dialup connection for out-of-box configuration of an NAE.

The PC you are dialing out from must be configured for dial-up connections. See *Direct Connect and Dial-Up Connection on Windows 2000 or Windows XP Operating Systems Application Note (LIT-1201639)* for instructions.

The NAE you are dialing out to, and its modem must also be configured properly for dial up connections. See *Configuring the NAE Communication Parameters* for additional information on setting up an NAE and its modem for dial-up.

The default baud rate is 115,200 baud.

You can use the Metasys system Remote Access application for dial connections. Remote access shortens the amount of time spent downloading the Java® plug-ins used to access NAE/NIEs and ADS/ADXs. Refer to the *Metasys System Remote Access Installation Instructions Technical Bulletin (LIT-1201691)* for information on installing and using Remote Access.

To connect an to NAE through a Dial-up Connection:

1. Power up the PC and initiate a Dial-up connection to the NAE.
2. A Web browser on the PC may connect to the NAE using the factory default URL: <http://169.254.77.40/metasys/>
3. Bookmark the link for future use.

Configuring an NAE to Dial Out to an ADS

An NAE may be configured to dial out through an internal or external modem to an ADS/ADX (at a different site) to deliver trend data, alarms, and other information to the ADS/ADX for storage and analysis.

You can use a direct connection from a PC to an NAE to configure the NAE and modem for dial out. You may also connect the PC to the NAE with an Ethernet crossover cable to configure the NAE and modem.

See *Configuring an NAE for Direct Connect* and *Accessing the NAE User Interface through a Web Browser* in this document for information on establishing a direct connection to an NAE and browsing the NAE UI. See *Modems* in the *Key Concepts* section and *Configuring the NAE Communication Parameters* for information on setting up an NAE and its modem dial up connections.

Notes: The dial out capability is intended for small networks with a single NAE or a few NAEs.

Each NAE requires its own modem and phone line connection to dial out to an ADS/ADX. An NAEs without a modem **cannot** dial out to an ADS/ADX through the Site Director's modem.

To configure an NAE to dial out to an ADS through a modem:

1. Select the NAE device object.
2. On the View menu, click Selected Item, the NAE focus window appears in the right panel.
3. Click the Advanced button.
4. Click the Edit button.
5. Scroll down to the Site attributes.
6. Make sure that the ADS connection type value is Dial.
7. Verify that the ADS Repository attribute is the first IP address in the range specified when configuring the ADS to accept incoming connections. See the *Configuring an ADS/ADX to Accept Dial-Up Connections* section of the *Configuring the Application and Data Server (ADS) Technical Bulletin (LIT-1201645)* for more information.
8. Edit the other ADS attributes as needed.
9. Click Save.
10. Select the Network tab and click Edit.
11. Scroll down to the ADS dial-up section.

12. In the Connect Using field, select whether you are using an internal or external modem.

Note: The Access Number value is the complete phone number of the ADS/ADX or Internet Service Provider (ISP) that the NAE is dialing out to.

The Username and Password values must match the account (username and password) selected for incoming messages to the ADS/ADX or the username and password assigned by the ISP. (These username and password values may not match the Metasys system account values, because these values are used for establishing dial-up connections only.)

13. Click Save.

Printing Information from the NAE UI

The NAE allows printing of the information displayed in the left panel of the Metasys UI. Note that this information must be selected before it can print.

To print information from the NAE UI:

Note: Using a printer as a destination for alarms requires an ADS.

1. Select an NAE.
2. On the View menu, click Selected Item. The NAE Focus screen appears.
3. Select a tab in the left panel to print.

Troubleshooting

Additional Information on Configuring an NAE for Connectivity

The *Detailed Procedures* section of this document describes several scenarios for configuring a new NAE for connectivity. Where noted, the following items apply for these scenarios:

- ideally, DHCP is configured to assign the same IP address to an NAE when the IP address lease expires and after NAE device resets. When a different IP address is issued to an NAE, address binding to the NAE from other devices breaks. The binding repairs itself, but the rebinding process starts only after an attempt to communicate to the NAE fails per device. All communication attempts fail until the rebinding is complete. These communication failures imply failures in features such as schedules, trend, and totalization.
- depending on the DNS server configuration, the NAE should be reachable from the subnet on which the NAE resides, or from other subnets
- if the DHCP server is not online when the NAE is powered up, the NAE assumes a unique IP address between 169.254.0.1 and 169.254.255.254, and a subnet mask of 255.255.0.0. This is a feature of APIPA that applies when DHCP is enabled in the NAE (factory default). For instructions without a DHCP server, see *Configuring an NAE for an Ethernet LAN without DHCP and without DNS Support (NAE Uses Static IP Address)* in the *Detailed Procedures* section of this document.
- if the NAE Ethernet cable is disconnected and reconnected with no DHCP server online, the NAE assumes a unique IP address between 169.254.0.1 and 169.254.255.254 and a subnet mask of 255.255.0.0. This is a feature of APIPA that applies when DHCP is enabled in the NAE (factory default). For instructions without a DHCP server, see *Configuring an NAE for an Ethernet LAN without DHCP and without DNS Support (NAE to use Static IP Address)* in the *Detailed Procedures* section of this document.
- DHCP assigns IP addresses with a lease. If the NAE's lease on an IP address expires because all DHCP servers are offline for an extended period of time, the NAE must stop using the IP address. APIPA will not assign a new IP address. The Ethernet adapter of the NAE will use an IP address of 0.0.0.0, which effectively disables all Ethernet communication. To correct this situation, place a DHCP server back online.

Pre-Boot Execution Environment (PXE)

The NAE/NIE implements a PXE client. If your network uses a PXE server, exclude the NAE/NIE MAC address from the PXE server. If you do not exclude the NAE/NIE MAC address, the device may not boot properly.

Determining the NAE IP Address and Device Name for a LAN Connection

Note: The IP Address determined by this procedure is the IP Address used on the LAN connection, not serial or dial connections.

Through an SNMP Monitor Server

When an NAE is powered up it sends an SNMP trap listing with its current IP address and device name. Johnson Controls has provided an SNMP Trap Browser on the SCT Installation CD to allow you to read the information in the SNMP trap. In an installation where you have multiple NAEs, you can distinguish them via their MAC addresses. An NAE comes from the factory with its MAC address printed on its label. To determine the NAE IP Address and Device Name using the SNMP Trap Receiver:

Note: If you have not installed the Johnson Controls Trap Browser, do so. Installation consists of placing the two files, jcitrapbrowser.exe and ipworks5.dll into the directory of your choosing. These files are located on the SCT Installation CD and must be in the same directory for the program to run properly.

1. Start the Johnson Controls Trap Receiver by navigating to the directory where it is located and double-clicking the jcitrapbrowser.exe file. The Johnson Controls Trap Browser starts (Figure 22).

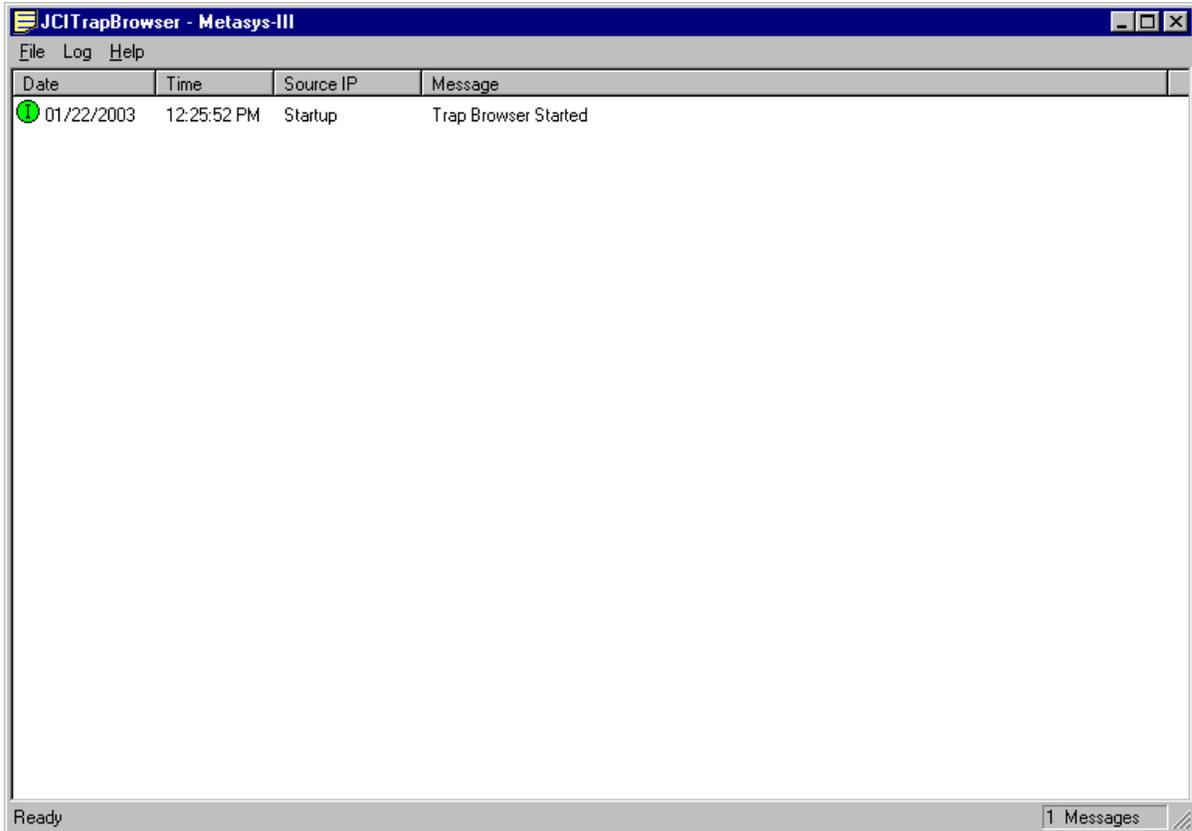


Figure 22: Johnson Controls Trap Browser

2. Connect the computer where you are running the Trap Browser to the NAE network using an Ethernet patch cable.

Note: If you are using a static IP address you can connect directly to the Ethernet port of the NAE directly using a crossover cable. However, if the NAE is using DHCP the IP address will not be the same after you connect the NAE to the LAN. The default configuration of the NAE is to have DHCP enabled.

3. Connect supply power to the NAE.
4. Record the IP address and device name listed in the Johnson Controls Trap Browser. In Figure 23 you can see the information displayed from an SNMP trap in the Johnson Controls Trap Browser.

Note: If the information is too long to fit on the display page you can either widen the screen to display the entire string or double-click the line you are interested in. This causes a pop-up box to display the entire string wrapped to the pop-up as in Figure 23.

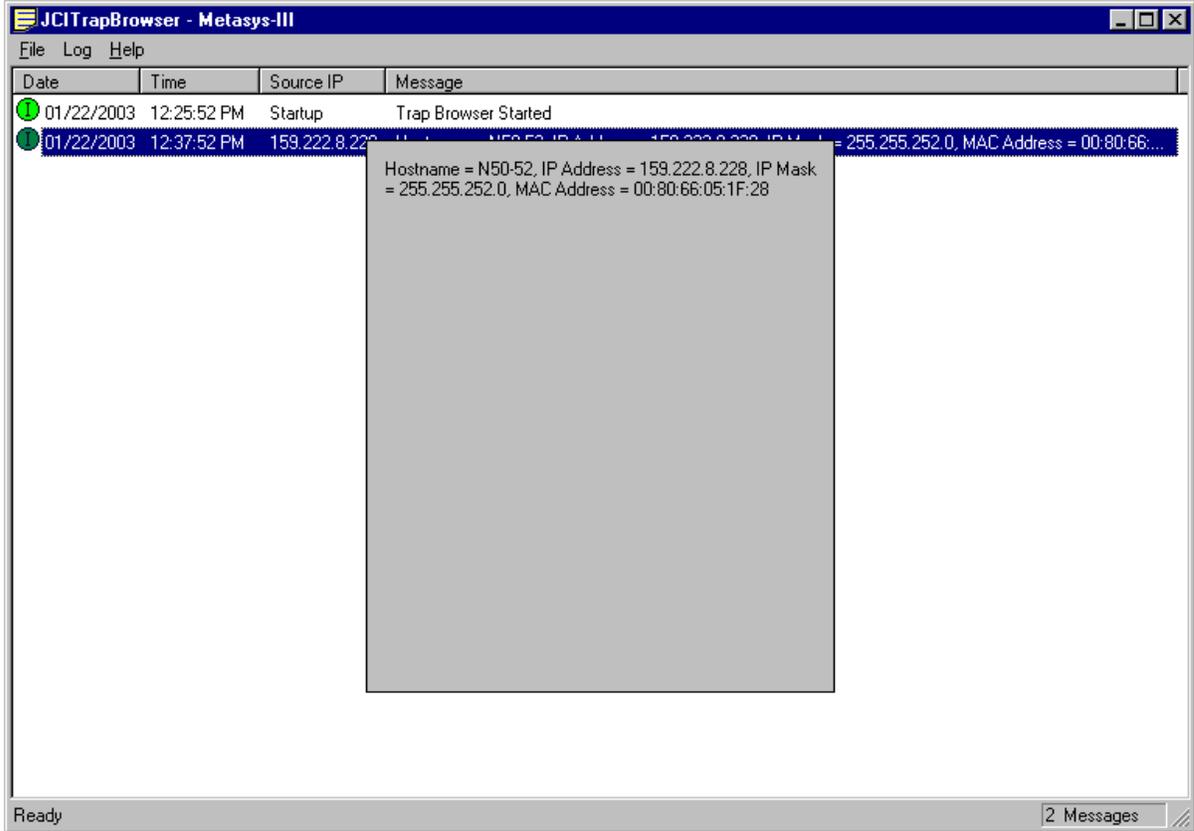


Figure 23: Johnson Controls Trap Browser Displaying NAE SNMP Trap

Through a Serial Port Monitor

When an NAE is powered up it sends a text string to Serial Port B, listing the device information in Table 5.

Table 5: Example NAE Startup Data Stream

Device Information	Example output
Host Name	NAE-1
DHCP Enabled	Yes
IP Address	159.222.8.206
Subnet Mask	255.255.252.0
Default Gateway	159.222.8.2
DHCP Server	159.222.8.9
MAC Address	00-80-66-05-0F-FC
Neuron ID	00-00-00-00-00-00
Model Name	NAE

To determine the NAE IP Address and Device Name through a Serial Port monitor:

Note: The IP address and device name are internal to the NAE and **will change** if the NAE is attached to a network using DHCP, unless the DHCP server is configured to assign a static IP address.

1. Connect a VT100 terminal or a PC with a VT100 Terminal emulator to Serial Port B (RS-232) on the NAE using a Null Modem cable.
2. Enter the values in Table 6 to configure the VT100 Terminal emulator.

Note: The values for Serial Port B in the NAE may not be changed via the NAE UI.

Table 6: VT100 Terminal Emulator Settings

Setting	Value
Data Bits	8
Parity	No
Stop Bits	1
Baud Rate	9600 baud
Flow Control	Hardware flow control

Note: If using a VT100 Terminal emulator, set the emulation setting to VT100.

3. Connect the NAE to the LAN if using DHCP so the DHCP server can assign the IP address.
4. Connect supply power to the NAE.
5. Note the IP address and device name listed in the resulting text file on your VT100 emulator.

Notes on Setting a PC to Use APIPA

If you are configuring an NAE for use on an Ethernet LAN without DHCP or DNS support you need to change the PC's IP address and subnet mask to be compatible with APIPA. If you are not familiar with these settings, see the Windows® operating systems *Help* or talk to the customer's Network Administrator. If you are familiar with these procedures, the following notes describe how to set your PC to use APIPA (in Windows XP operating systems) or how to set your IP Address to be compatible with APIPA for other Windows operating systems.

The easiest method to change the PC's IP address and subnet mask to be compatible with APIPA is to enable APIPA on the PC (if supported). The Windows XP operating system supports APIPA. In Windows XP operating systems, view the local area connection properties and select the TCP/IP properties. Under the General tab, select Obtain an IP Address Automatically. Under the Alternate Configuration tab, select Automatic Private IP address.

For versions of Windows that do not support APIPA

Open the Network setting in the Control panel. Select TCP/IP under the Configuration tab and select properties. Select the IP Address tab and click the Specify an IP Address radio button. Enter a static IP address between 169.254.0.1 and 169.254.255.254 and a subnet mask of 255.255.0.0. Verify the chosen static IP address is not in use by pinging the proposed IP address. If you receive no reply, the IP address is not in use.

NAE UI Summary and Diagnostic Screens

The NAE UI provides online status tools that can be used to diagnose and troubleshoot problems in your system.

Selecting the Summary tab (Figure 24) in the NAE UI provides a quick view of the status of items that are currently a part of your site. When you first click on the Summary tab, the NAE requests the status of the items in the Navigation tree. This may take a few minutes.

Similarly, selecting the Diagnostic tab (Figure 25) provides information about the device and the network status.

For additional information and explanations of the attributes found in the Summary and Diagnostic screens refer to the *Object Help* in the Metasys system *Help*.

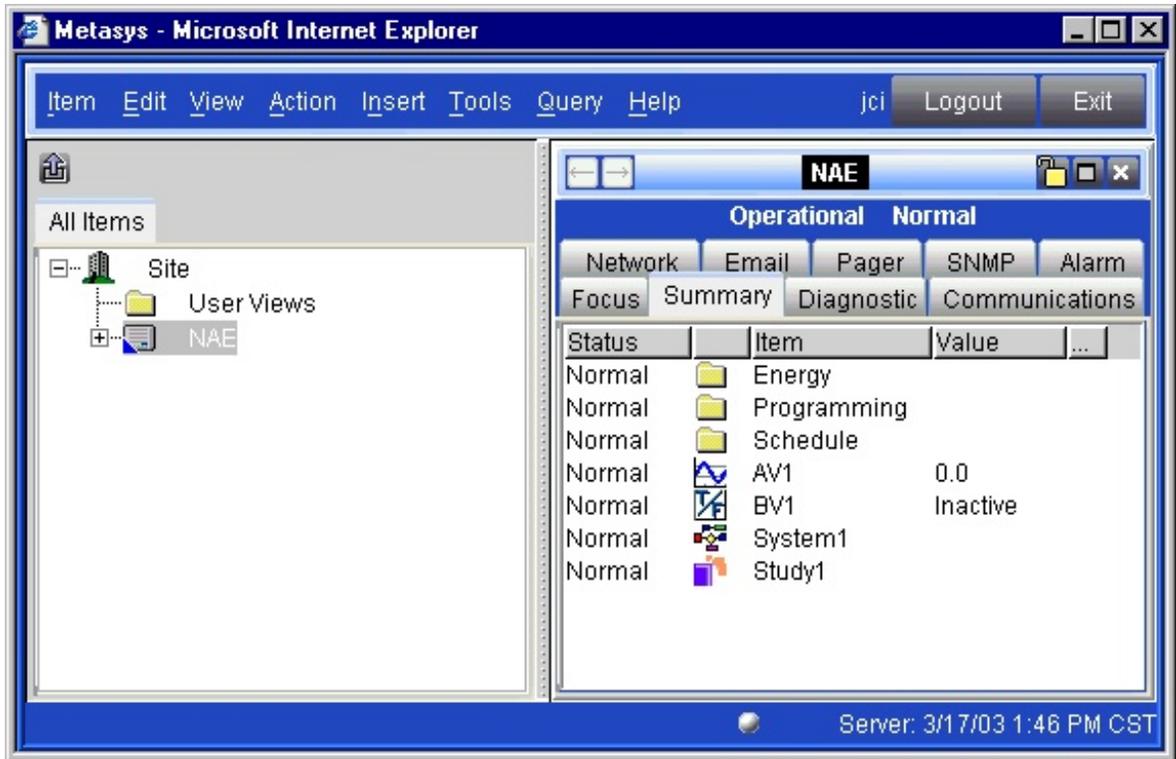


Figure 24: Summary Tab

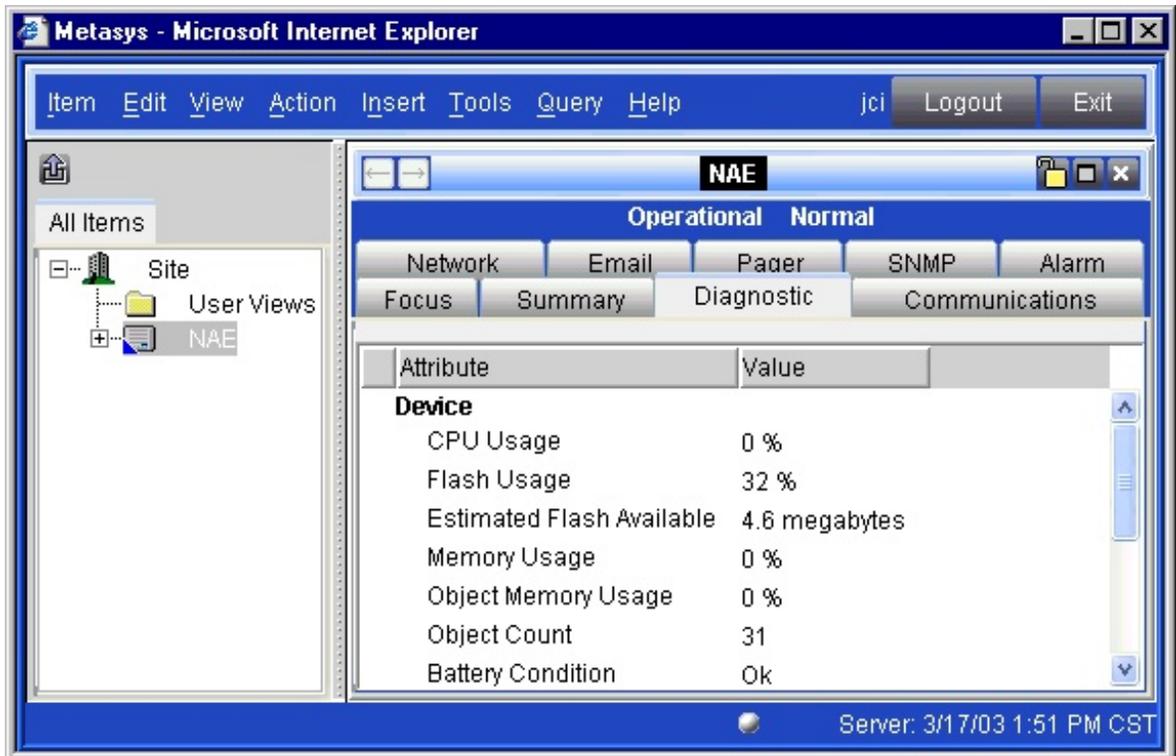


Figure 25: Diagnostic Tab



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