Configuring the Network Automation Engine (NAE)

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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.

This document is designed to help you configure the NAE for various types of applications. To install and wire an NAE, please refer to the Installing the Network Automation Engine (NAE) Technical Bulletin (LIT-1201161). To create and configure a Metasys® system extended architecture database, please refer to the System Configuration Tool Technical Bulletin (LIT-1201534). In addition, there is extensive user information in the Metasys system online 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
• establish a Dial-up connection to an NAE
• access the NAE user interface through a Web browser
• edit the NAE Focus screen configuration
• configure the NAE Network screen
• configure the NAE Communications screen
• 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
• 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

For an overview of the NAE and its place in a Metasys extended architecture network, please refer to the *Metasys System Extended Architecture Overview Technical Bulletin (LIT-1201527).*
Key Concepts

NAE System 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 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 User’s Guide (LIT-1201534).

Figure 1: Metasys NAE Network
NAE Configuration Flowchart

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

Unless otherwise indicated, the procedures in the flowchart are contained in the Detailed Procedures section of this document.

For information on setting up a database using the SCT, see the System Configuration Tool Technical Bulletin (LIT-1201534). Note that the SCT Technical Bulletin is written primarily from an N2 perspective. For additional information on integrating a BACnet™ network see the BACnet System Integration with NAE Technical Bulletin (LIT-1201531). For additional information on migrating an N1 network to the Metasys extended architecture, see the N1 Migration with the NIE Technical Bulletin (LIT-1201535).

For information on configuring an Application and Data Server, see the Configuring the ADS Technical Bulletin (LIT-1201645).

Some things to keep in mind when setting up a Metasys extended architecture network:

- determine the number of NAEs you are using and where they will be located
- select your Site Director. If you are using an ADS/ADX it is automatically the Site Director. If an NAE is Site Director, decide which one.
- assign names to the NAEs

Note: The names assigned to the NAEs must match the names assigned in the archive database using the SCT.
Add and configure NAEs and NIEs
- Set up Network Configuration
- Configure modems
- Set up SNMP (optional)

Build Metasys Database
- Add integration trunks, field devices, and field points. See the System Configuration Tool Technical Bulletin (LIT-1201534).
- Add Programming Logic Using LCT. See the Metasys system online help.
- Configure Alarm, Audit Trail, and Trend Archive. See the Metasys system online help.
- Configure Alarm Destinations. See the Metasys system online help.
- Build Graphics. See the Metasys system online help.

Archive database complete and ready to Download to NAEs / NIEs.
**NOTE:** Before download, ensure that the setting created during online steps (time zone, etc...) are correct in the archive. If they do not match, the download overwrites what you entered at the NAE.

The NAE is now ready to have a database downloaded. Use the Load Wizard to download the archive database to the NAE from the SCT. See the Metasys system online help.

Do you have additional NAEs or NIEs on the jobsite?
- **Yes**
  - Designate an NAE as Site Director. See Designating a Site Director in the Configuring the Network Automation Engine (NAE) Technical Bulletin (LIT-1201519). If you have an ADS or ADX, it is automatically the Site Director. See the Configuring the ADS Technical Bulletin (LIT-1201645) for more information about the ADS or ADX.
  - Add Users to the System in the Site Director. See the Security Administrator System Technical Bulletin (LIT-1201528)
- **No**

Prepare NAE Hardware at Jobsite.
- Install NAE. See Installing the NAE/NIE Technical Bulletin (LIT-1201161)
- Configure NAE for Connectivity with a Metasys Network. See Configuring an NAE for Connectivity in the Configuring the Network Automation Engine (NAE) Technical Bulletin (LIT-1201519), which lists five network scenarios for which instructions are included. These steps include:
  - set time, date, and time zone
  - if the NAE is not going to be the Site Director, demote it
  - assign a name and IP address (if necessary) to the NAE. This name must match the name assigned to NAE in the archive database in the SCT. When the name or IP address is changed the device needs to be reset, this can take 10 minutes.

**Figure 2: NAE Configuration Flow chart**
Modems

The NAE can be ordered with an optional internal 56 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

Either of these modems works when plugged into the USB port of the NAE.

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

Microsoft® Internet Explorer Browser Recommendations

Always open a new browser window to access the Metasys User Interface. Do not use the Metasys User Interface 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.

Application and Data Server (ADS)

ADS software consists of two parts, a Site Director component and a data storage component. Use the data storage component to provide storage for historical data in an NAE system. Once you add an ADS to the site, it is designated as the Site Director. The Site Director and Storage components do not have to reside on the same Personal Computer (PC).

NAE UI Tabs

The NAE UI is shown in Figure 3. On the right side of the NAE UI are a series of tabs. Each tab corresponds to a configuration screen for that aspect of the NAE. See Table 1 for a brief description of the type of information that is configured or viewed in each tab. When you are viewing an NAE through a Web browser, the border around the panels is blue as shown in Figure 3. When you are looking at an archive database offline with the SCT, the border is black as shown in Figure 4.
Table 1: NAE UI Tabs

<table>
<thead>
<tr>
<th>Tab</th>
<th>Purpose</th>
<th>Online/Offline*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focus</strong></td>
<td>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.</td>
<td>Both</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td>Serial port and modem configuration.</td>
<td>Both</td>
</tr>
<tr>
<td><strong>Network</strong></td>
<td>Network ID, LAN, and ADS dialing information (if applicable).</td>
<td>Both</td>
</tr>
<tr>
<td><strong>Email</strong></td>
<td>Email configuration and destination information.</td>
<td>Both</td>
</tr>
<tr>
<td><strong>Pager</strong></td>
<td>Pager configuration and destination information.</td>
<td>Both</td>
</tr>
<tr>
<td><strong>SNMP</strong></td>
<td>SNMP configuration and destination information.</td>
<td>Both</td>
</tr>
<tr>
<td><strong>Alarm</strong></td>
<td>Allows you to add and configure alarms. See <em>Alarms and Events</em> in the Key Concepts section of this document for a description of the default alarms.</td>
<td>Both</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td>Provides status and values for devices on the network.</td>
<td>Online</td>
</tr>
<tr>
<td><strong>Diagnostic</strong></td>
<td>Provides various status reports to aid in troubleshooting an NAE or the Metasys system.</td>
<td>Online</td>
</tr>
</tbody>
</table>

* 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 used for offline configuration of the Metasys extended architecture. The SCT provides an easy way to set up your databases while offline, for example in an office. The SCT also provides a Simulation feature, which allows you to simulate a device and test your database control logic prior to downloading to an NAE. See Figure 4 for an example of how the SCT looks in a Web browser. Notice the black border that distinguishes the offline SCT from the online NAE UI. Using the SCT, you can configure multiple Sites in one archive. When online in an NAE, you can only look at one Site at a time.

Figure 4: System Configuration Tool
Alarms and Events

You can define alarm and event sources, and configure conditions in which they occur. You may also define multiple destinations of different types for each event. In addition to database repositories, the NAE site director can be configured to deliver alarms to e-mail destinations, pagers, and SNMP destinations. The NAE displays alarms in browsers as Web pages and allows the user to acknowledge events in the NAE device 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 user interface 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 alarms to network printers.

Default alarms in the NAE include:

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

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 online help* for more information.

Site Object

The Site object defines the attributes that represent the characteristics of a 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, be sure to set them prior to demoting an NAE from Site Director. See *Designating a Site Director* in the Detailed Procedures section of this document.
Site Director

The Site Director is the NAE, or a PC running ADS software, which is designated to hold the Site object. When using a browser to view all the data on a site, the browser should point to the Site Director. The Site Director allows you to see all the other components on a 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 set its own clock accordingly. SNTP is used to synchronize 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. Time should be set 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 so that they are relevant to the item you have selected. See the Menu help in the Metasys system online 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

NAEs are set at the factory with the configuration shown in Table 2.

Table 2: Default NAE Configuration

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Name</td>
<td>NAExxxxxxxxxxxxxx where xxxxxxxxxxxxxx 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.</td>
</tr>
<tr>
<td>DHCP client</td>
<td>Enabled</td>
</tr>
<tr>
<td>Serial Port One</td>
<td>115,200 baud, 8 bits, no parity, 1 stop bit (115200,8,n,1), Direct Connect IP over Point-to-Point (PPP).</td>
</tr>
<tr>
<td>Serial Port Two</td>
<td>8 bits, no parity, 1 stop bit (9600,8,n,1)</td>
</tr>
<tr>
<td>Site Director</td>
<td>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.</td>
</tr>
<tr>
<td>Default NAE UI login</td>
<td>MetasysSysAgent</td>
</tr>
<tr>
<td>Default NAE UI password</td>
<td>XMG3-Rel.1</td>
</tr>
<tr>
<td>Default Windows Log in ID*</td>
<td>MetasysSysAgent</td>
</tr>
<tr>
<td>Default Windows Password – Password is case sensitive*</td>
<td>XMG3-Rel.1</td>
</tr>
</tbody>
</table>

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

Archive Database

The Metasys system extended architecture site database is stored (archived) by the SCT. It includes the NAE databases for one or more NAEs on the site.

Network Automation Engine (NAE) Database

The NAE database contains configuration information about the field controllers that the NAE is supervising, and the points within those controllers that are mapped into the Metasys system extended architecture. The SCT can archive the NAE database, which is in Flash memory in the NAE, to a hard disk or other long-term storage media. The SCT can also restore (download) the archive to the NAE.
Related Documentation

The documents in Table 3 contain information related to the installation and operation of NAEs in a Metasys system extended architecture environment. In addition, the NAE UI contains extensive online help to assist in the day-to-day use of the product.

Table 3: NAE Related Documentation

<table>
<thead>
<tr>
<th>For information on</th>
<th>See document</th>
<th>Literature Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installing an NAE or NIE</td>
<td>Installing the NAE/NIE Technical Bulletin</td>
<td>LIT-1201161</td>
</tr>
<tr>
<td>Troubleshooting the NAE</td>
<td>Troubleshooting the NAE/NIE Technical Bulletin</td>
<td>LIT-1201417</td>
</tr>
<tr>
<td>Dialing in to Metasys system extended architecture from a PC</td>
<td>Direct Connect and Dial-up Connection on Windows 2000 or Windows XP Operating Systems Application Note</td>
<td>LIT-1201639</td>
</tr>
<tr>
<td>Metasys system extended architecture</td>
<td>Metasys System Extended Architecture System Overview Technical Bulletin</td>
<td>LIT-1201527</td>
</tr>
<tr>
<td>System Configuration Tool (SCT)</td>
<td>System Configuration Tool Technical Bulletin</td>
<td>LIT-1201534</td>
</tr>
<tr>
<td>Using N2 devices with the Metasys system extended architecture</td>
<td>System Configuration Tool Technical Bulletin</td>
<td>LIT-1201534</td>
</tr>
<tr>
<td>Integrating BACnet devices to the Metasys system extended architecture</td>
<td>BACnet System Integration with NAE Technical Bulletin</td>
<td>LIT-1201531</td>
</tr>
<tr>
<td>Migrating N1 networks to the Metasys system extended architecture</td>
<td>N1 Migration with the NIE Technical Bulletin</td>
<td>LIT-1201535</td>
</tr>
<tr>
<td>Daily use of the Metasys system extended architecture</td>
<td>Metasys system online help</td>
<td>On the Help Menu, select Metasys system Help</td>
</tr>
<tr>
<td>General Network and Information Technology definitions and concepts</td>
<td>Network and Information Technology (IT) Considerations Technical Bulletin</td>
<td>LIT-1201578</td>
</tr>
<tr>
<td>Security issues, including adding users and roles to the system</td>
<td>Security Administrator System Technical Bulletin</td>
<td>LIT-1201528</td>
</tr>
</tbody>
</table>
Detailed Procedures

Configuring an NAE for Connectivity

Since all NAE configuration is performed from a standard Web browser, the first step in configuring a new NAE is to obtain connectivity between the NAE and the Web browser. The goal of the initial configuration is to establish the NAE as a device within a site’s network topology, allowing routine Web browser access. After this is completed, all other configuration can be performed from 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

This scenario is typical when installing the NAE on an existing building LAN. To connect an NAE to 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 NAExxxxxxxxxxx, where the x’s are the NAE’s MAC address (without the hyphens) in hexadecimal format.

2. Attach the NAE to the LAN with an Ethernet patch cable.

3. Supply power to the NAE.

4. Wait for the NAE initialization to complete based on the NAE run Light-Emitting Diode (LED). See the *Installing the NAE/NIE Technical Bulletin (LIT-1201161)* for a description of the meaning of the NAE LEDs.
5. Start your Web browser. Enter the following URL:
   http://dns-name/metasys/, where dns-name is the name of your NAE.

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

6. Log in to the NAE UI. The default login name is MetasysSysAgent. The default password is XMG3-Rel.1.

7. Click on and drag the NAE device object to the right panel of the NAE UI. The NAE device object appears in the right panel (Figure 5).

8. 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.

9. 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.

10. 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 9 and 10.

   **Note:** DHCP may be configured to make this assignment automatically.
11. Select the network tab of the NAE device object and click the Edit button.

12. Change the computer name and domain name to match the DNS assigned name. When the change is saved, the UI logs out 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 or DNS support (NAE uses APIPA):

1. Attach the NAE to the LAN using an Ethernet patch cable.
2. Supply power to the NAE.
3. Wait for the NAE initialization to complete based on the NAE run LED.
4. 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.

5. Enter this URL in your Web browser:  
   http://factory-default-computer-name/metasys. For example:  
   http://NAE008066050FFC/metasys.

6. 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.

7. If this NAE is not going to be Site Director, demote it from Site Director. See *Designating a Site Director* in the *Troubleshooting* section of this document.

8. (This step is optional.) Select the network tab of the NAE device object. Change the computer name from the factory default, if desired. When the change is saved, the UI logs out automatically and the NAE automatically resets. Allow the NAE initialization to complete based on the NAE run LED.

Initial configuration is complete. A Web browser on the subnet may log in 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 for building control use 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. To configure an NAE for an Ethernet LAN without DHCP and without DNS support (NAE uses Static IP Address):

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.

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. Wait for the NAE initialization to complete based on the NAE run LED.

3. Enter the following URL in your Web browser: http://ip-address/metasys/. For example: http://169.254.236.118/metasys/

4. Log in to the NAE UI. The default login name is MetasysSysAgent. The default password is XMG3-Rel.1.

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 in the left panel of the UI and drag it to the right panel. The NAE device object opens in the right panel.

8. Select the Network tab (Figure 6) of the NAE device object. Change the Computer name, if desired. Change DHCP enabled 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.
9. When the change is saved, the UI logs out automatically. The NAE automatically resets if the computer name was changed. If so, wait for the NAE initialization to complete based on the NAE run LED.

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 in to the NAE using this URL: http://ip-address/metasy/ 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 of 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’s network so that the DHCP server can assign the NAE an IP address.

1. Log in to the NAE. A Web browser on any subnet of the LAN may log in 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 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.

4. Update the NAE computer name from the network tab of the device object. After the computer name is updated, the UI automatically logs out 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 the 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 in Step 1.

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

**Establishing a Dial-up Connection to an NAE**

This scenario is typical for a single NAE at a remote location. This procedure cannot be used for out-of-box configuration of a new NAE.

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

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

The default baud rate is 115,200 baud.

1. If using an external modem plug the modem into a USB port of the NAE.
2. If using an internal modem, connect a phone line to the built in RJ-11 jack.
3. If using an external modem, connect a phone line to the modem’s RJ-11 jack.
4. From the PC, try to connect to the NAE. Fix all configuration errors so that connection succeeds.
5. Initial configuration is complete. A Web browser on the PC may log in to the NAE using this URL: http://169.254.77.40/metasys/
6. Bookmark the link for future use.
Accessing the NAE User Interface through a Web Browser

Once an NAE has been properly configured for connectivity, the NAE UI can be accessed through a Web browser. To access the NAE User Interface through a Web Browser:

1. Start Microsoft Internet Explorer.
2. Enter 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. Press 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 allow it to do so.

4. When the Metasys system Login screen appears, enter 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. The Metasys system extended architecture UI screen appears (Figure 7).
6. To view an item, in this case an NAE, select the NAE object 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. 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 displays, anyone who acknowledges the alarm clears the alarm for all other users.

Note: The Metasys system online help contains extensive information about navigating the Metasys system. To add users and roles for users, see the Security Administrator System Technical Bulletin (LIT-1201528).
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Figure 8: NAE Focus Screen

**Editing the NAE Focus Screen Configuration**

The focus view of the NAE is used to set features of the NAE such as description of device, including buffer and repository sizes. The Focus tab also includes general information about the ADS if applicable. To edit the NAE Focus Screen configuration:

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 as required.
4. Click the Advanced button. Figure 9 shows the NAE focus screen in edit mode with Advanced selected and the configuration screen scrolled down to show the audit trail configuration.
Configuring the Network Automation Engine (NAE) Technical Bulletin

5. Edit the advanced attributes as desired. See the NAE Device object help and Audit Trails online help in the Metasys system online help for guidance. If you have an ADS, this is where you enter the address so the NAE can find the ADS.

Configuring the NAE Network Screen

The NAE Network screen is used to configure the NAE’s Network Identification, LAN Configuration, and Dial-up parameters. To configure 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).
3. Enter the Computer Name in the Network Identification section of the Network Configuration edit screen.

**Note:** The computer name should be set up before references to objects on the device are made. Changing the computer name or domain name breaks all references to local objects made from other devices.

4. Fill in the Network Identification and LAN information 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 Screen

The NAE Communications screen is used to configure the NAE Serial Port, and, if applicable, the NAE internal or external modems. To configure items on the NAE Communications screen:

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

2. Click the Edit button.

3. The Serial Port Cable Config section allows you to edit the properties of Serial Port A. Serial Port B is not configurable through the NAE UI.

Note: The NAE serial ports do not support modems.

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

Note: An internal modem cannot be added 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 some information on the installed USB modem drivers.

6. Click the Save button when finished.

**Configuring the NAE’s Email Parameters**

The NAE’s Email screen is used to configure the NAE’s Email parameters and features, Email destinations, and Email identity. To configure the NAE’s Email parameters:

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

![Figure 13: NAE Email Configuration Screen](image-url)

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).

![Image](image_url)

**Figure 14: Email Destination Configuration Section**

5. Enter the email destination address and other information as desired. See Table 4 for a list of all the email settings available.
Table 4: Email Configuration Settings

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>UI Type</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>String</td>
<td>Text edit field</td>
<td>Email address</td>
<td></td>
</tr>
<tr>
<td>Priority</td>
<td>Enum</td>
<td>Selection list</td>
<td>High, low, normal</td>
<td></td>
</tr>
<tr>
<td>Subject</td>
<td>String</td>
<td>Text edit field</td>
<td>Max 256 character</td>
<td></td>
</tr>
<tr>
<td>Retries</td>
<td>Byte</td>
<td>Numeric edit field</td>
<td>Range 0-10</td>
<td>3</td>
</tr>
<tr>
<td>Enabled</td>
<td>Bool</td>
<td>Selection list</td>
<td>TRUE</td>
<td></td>
</tr>
<tr>
<td>Filters</td>
<td>List of structure</td>
<td>Custom UI – List of Item Categories, operation and value. There can be one or more filter defined.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Enum</td>
<td>Enum</td>
<td>Priority, Acknowledge</td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>Enum</td>
<td>Enum</td>
<td>Required, Current Status and Date-Time. Each item has a corresponding check box (checked/unchecked)</td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>List</td>
<td>List</td>
<td>12:20:00PM</td>
<td></td>
</tr>
<tr>
<td>Format</td>
<td>List of structure</td>
<td>Custom UI List of items – Priority, Acknowledge Required, Current Status and Date-Time. Each item has a corresponding check box (checked/unchecked)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enabled</td>
<td>Bool</td>
<td>Selection</td>
<td>Check Box</td>
<td></td>
</tr>
</tbody>
</table>

Attributes common to all email destinations

<table>
<thead>
<tr>
<th>SMTP server host</th>
<th>String</th>
<th>Text Edit Field</th>
<th>The SMTP server name to which the mails are sent.</th>
<th>Fully qualified host name.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMTP port</td>
<td>Unsigned short</td>
<td>Numeric Edit field</td>
<td>The SMTP port at which the server receives the email from clients (default is 25)</td>
<td>25</td>
</tr>
<tr>
<td>POP server host</td>
<td>String</td>
<td>Text Edit Field</td>
<td>The POP server name. This is required if the email server expects POP Authentication before it can accept emails from client.</td>
<td>If empty, no POP authentication.</td>
</tr>
<tr>
<td>POP username</td>
<td>String</td>
<td>Text Edit Field</td>
<td>Required only if POP Authentication is required and there is a value specified for POP server</td>
<td>Max 20 character</td>
</tr>
<tr>
<td>POP password</td>
<td>String</td>
<td>Text Edit Field</td>
<td>Required only if POP Authentication is required and there is a value specified for POP server</td>
<td>Max 20</td>
</tr>
<tr>
<td>Failed delivery email address</td>
<td>String</td>
<td>Text Edit Field</td>
<td>Email address that is used if a delivery fails. This should be a valid email address.</td>
<td>Email address</td>
</tr>
</tbody>
</table>

6. 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 screen appears (Figure 15).
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**

The NAE’s Pager screen is used to configure NAE pager parameters and destinations. To configure the NAE Pager Parameters:

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

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

3. Fill in the Shared Configuration fields. These fields define parameters that are common to all pager messages 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.
5. To filter the situations that cause a page to be sent, click the New button next to the filters section of the pager destination configuration screen. The Add Filter screen appears (Figure 18).
6. Select the item, operator, and value of the situation that you want to trigger a pager notification 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

The NAE SNMP screen is used to set up SNMP for monitoring the Metasys network. SNMP monitoring is generally used for very large networks that need alarms sent to an SNMP monitor. To configure the NAE SNMP parameters:

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

3. If you are using SNMP monitoring, set SNMP Enabled to True, and enter the IP Address or host name 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.

5. Enter 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

The following procedures are for setting up the time related parameters of the NAE.

**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 parameters first.

**Setting the Time and Date**

To set the time on an NAE:

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

   ![Select the command to issue, then click Send. (Specify command parameters, if required.)](image)

   **Figure 20: Time and Date Dialog Box**

2. Select the Set Time or Set Date radio button.

3. Enter 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 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).
5. Click the Save button.

![Image](image-url)
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 device.

To set up Site Time Servers:

1. Select the Site object 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. At this interval, the site director attempts to sync 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 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 sync 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. If you do the site promotion/demotion online, you may lose any navigation trees that have been built for the site. If User navigation trees have already been built, upload them to the SCT, change the site director and then redownload 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.

**IMPORTANT:** The security database cannot be archived. If the site director changes, all the users and passwords need to be reentered.

To designate a Site Director:

**Note:** To designate a Site Director you first need to demote the NAEs that are not going to be the 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. Enter 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 out, and then log in to the site director. You should see the new device in the tree.

Configuring an NAE to Dial Out to an ADS

An NAE can dial out to an ADS to deliver trend data, alarms, and other information. An NAE can dial out to an ADS either through its own modem or through the modem of a Site Director. The dial out capability is intended for small networks with a few NAE or NIE devices. If numerous devices are used and configured to deliver data to the ADS, or if third-party network devices or computers are added to the Metasys network, then the Site Director may dial out very frequently, causing a degradation of performance.

**Note:** A site cannot dial out to another ADS or ADX if there is an ADS or ADX on the site from which you are trying to dial.
To configure an NAE to dial out to an ADS through a Site Director:
1. Select the NAE you want to dial out to an ADS through the Site Director.
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 parameters.
6. Make sure that the ADS connection type is Dial, and accept the ADS defaults.

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

**Note:** If you are connected to the building network while configuring your NAE for dial out, you will lose your connection. Therefore, we recommend that you use a Direct Connect to serial port A to configure your NAE to dial out.

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 parameters.
6. Make sure that the ADS connection type is Dial.
7. Edit the other ADS parameters as needed.
8. Click Save.
9. Select the Network tab and click Edit.
10. Scroll down to the ADS dial-up section.
11. In the Connect Using field, select whether you are using an internal or external modem.
12. Set Enable Internet Connection Sharing to True.
13. Click Save.

**Note:** If you are using dial out, you cannot be connected into the building network.
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 an NAE:

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

1. Select the NAE you want to print from.
2. On the View menu, click Selected Item. The NAE Focus screen appears.
3. Select the tab in the left panel that you wish 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 to use 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.
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).
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. Turn on the 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.
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

<table>
<thead>
<tr>
<th>Device Information</th>
<th>Example output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host Name</td>
<td>NAE-1</td>
</tr>
<tr>
<td>DHCP Enabled</td>
<td>Yes</td>
</tr>
<tr>
<td>IP Address</td>
<td>159.222.8.206</td>
</tr>
<tr>
<td>Subnet Mask</td>
<td>255.255.252.0</td>
</tr>
<tr>
<td>Default Gateway</td>
<td>159.222.8.2</td>
</tr>
<tr>
<td>DHCP Server</td>
<td>159.222.8.9</td>
</tr>
<tr>
<td>MAC Address</td>
<td>00-80-66-05-0F-FC</td>
</tr>
<tr>
<td>Neuron ID</td>
<td>00-00-00-00-00-00</td>
</tr>
<tr>
<td>Model Name</td>
<td>NAE</td>
</tr>
</tbody>
</table>
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. Use the settings in Table 6 to configure the VT100 Terminal emulator.

**Note:** The settings form serial port B in the NAE may not be changed via the NAE UI.

### Table 6: VT100 Terminal Emulator Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Bits</td>
<td>8</td>
</tr>
<tr>
<td>Parity</td>
<td>No</td>
</tr>
<tr>
<td>Stop Bits</td>
<td>1</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>9600 baud</td>
</tr>
<tr>
<td>Flow Control</td>
<td>Hardware flow control</td>
</tr>
</tbody>
</table>

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. Turn on the 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 online help file 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 (if 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.
Figure 24: Summary Tab
Similarly, selecting the Diagnostic tab (Figure 25) provides information about the device and the network status.
Figure 25: Diagnostic Tab