Document Introduction

This document describes the integration of Intelligent Fire Controller (IFC) Series fire alarm systems to the Metasys® System Extended Architecture environment. This document contains information on how to develop an Integrated Fire Network (IFN) consisting of one or more IFC-640, IFC-1010, IFC-2020, and/or IFC-3030 fire alarm control panels. A Johnson Controls® Network Control Annunciator (JNCA) can be installed in the IFN, but it is not involved in the integration.

Related Documentation

Table 1 lists documents related to fire and smoke system integration.

Table 1: Related Documentation (Part 1 of 2)

<table>
<thead>
<tr>
<th>For Information On</th>
<th>Refer To</th>
<th>LIT No./Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installing the Network Automation Engine (NAE)</td>
<td>NAE55/NIE55 Installation Instructions</td>
<td>Part No. 24-10051-0</td>
</tr>
<tr>
<td>Setting Up Databases Using the System Configuration Tool</td>
<td>SCT Technical Bulletin</td>
<td>LIT-1201534</td>
</tr>
<tr>
<td>Configuring the NAE</td>
<td>NAE Commissioning Guide</td>
<td>LIT-1201519</td>
</tr>
<tr>
<td>Understanding Metasys System Extended Architecture</td>
<td>Metasys System Extended Architecture Overview Technical Bulletin</td>
<td>LIT-1201527</td>
</tr>
<tr>
<td>Using Metasys System Extended Architecture and Metasys System Supported Objects and Commands</td>
<td>Metasys system Help, including Object section</td>
<td>--</td>
</tr>
<tr>
<td>IFC BACnet Gateway Integration into the Metasys system</td>
<td>BACnet System Integration with NAE Technical Bulletin</td>
<td>LIT-1201531</td>
</tr>
<tr>
<td>IFC BACnet Gateway Installation and Programming</td>
<td>Notifier® BACnet Gateway Installation/Operation Manual</td>
<td>Part No. 51659, Rev. A3 or higher</td>
</tr>
<tr>
<td>Acronyms and Terms</td>
<td>Metasys System Extended Architecture Glossary Technical Bulletin</td>
<td>LIT-1201612</td>
</tr>
</tbody>
</table>
Fire System Integration Overview

When you integrate the IFC Series fire alarm systems to the Metasys system extended architecture, the IFN connects to a IFC BACnet Gateway and becomes another node on the IFN. The IFC BACnet Gateway also connects to the Ethernet network that interfaces to the extended architecture.

The IFC BACnet Gateway communicates to the Metasys system extended architecture The communication is in one direction only. The NAE user interface is an ancillary annunciator for the fire alarm system. You cannot send commands from the NAE, through the IFC BACnet Gateway, to the IFN panels. This document describes online programming of the IFC BACnet Gateway and associated fire alarm points using the Metasys system User Interface (UI).

IMPORTANT: The NAE does not support Life Safety Objects.
Fire Integration System Example

Figure 1 shows an example of an integrated fire control system.

Figure 1: Example Fire Integration System
**Device and Panel Requirements**

**IFC**

Table 2 lists the IFC panel requirements.

<table>
<thead>
<tr>
<th>Panel</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>JNCA</td>
<td>Requires an NCM-W/F for communication to other IFC Fire Panels and the IFC BACnet Gateway.</td>
</tr>
<tr>
<td>IFC-640</td>
<td>Requires an NCM-W/F for communication to other IFC Fire Panels and the IFC BACnet Gateway.</td>
</tr>
<tr>
<td>IFC-3030</td>
<td>Requires an NCM-W/F for communication to other IFC Fire Panels and the IFC BACnet Gateway.</td>
</tr>
<tr>
<td>IFC-2020</td>
<td>Requires a JSIB-NET card and a MIB Card for communication to other IFC Fire Panels and the IFC BACnet Gateway.</td>
</tr>
<tr>
<td>IFC-1010</td>
<td>Requires a JSIB-NET card and a MIB Card for communication to other IFC Fire Panels and the IFC BACnet Gateway.</td>
</tr>
<tr>
<td>IFC BACnet Gateway</td>
<td>Requires an NCM-W for communication to the IFC Fire Panels, an Ethernet connection for BACnet communication, and a separate power supply.</td>
</tr>
</tbody>
</table>

**Note:** Each node requires a Network Communications Module (NCM-W or NCM-F) or a Media Interface Board (MIB-W, MIB-F, or MIB-WF) as an interface between the node and the IFN communication media (wire or fiber-optic cable).

**IFN**

The IFN has the following device requirements:

- IFC BACnet Gateway Version 3.6 or later Application Code software
- Each fire alarm panel, each network annunciator, and each IFC BACnet Gateway is a node on the IFN.
**BACnet System**

**NAE - BACnet Integration to the IFN**

This section covers the panel requirements for the:

- NAE - BACnet Integration
- NAE - BACnet IFC Field Device
- NAE - BACnet IFC Field Point
- NAE - Alarm Notification Class Subscription BACnet Intrinsic Alarming

Verify your NAE panels meet the following requirements:

- NAE55 software release 1.2 or later
- The nodes on the IFN require Network Version 5.0, Release 2.0 software or later.
- Enable the Metasys system extended architecture site as an IFC BACnet Gateway site.
- Enable the Extended Architecture Site as a BACnet site.
- Establish Ethernet communication between the BACnet system and the NAEs.
- Configure the IFC BACnet Gateway and have it online.
- The IFC Fire Panels must be communicating with the IFC BACnet Gateway.
- Each device on the BACnet system, including the NAEs, **must** have a unique BACnet Device Object Identifier (OID).

**Note:** The OID number, also known as the Instance number, for the IFC Panels = (IFC panel address X 10,000).

- You must know the BACnet Network address (1001 is usually the default).
- You must know the BACnet Internet Protocol (IP) Port (47808 is usually the default).
Revision List

The list below shows minimum revision numbers and file names for all supported IFC Gateway tools, gateway systems, and panels.

Table 3: Revision List

<table>
<thead>
<tr>
<th>Tool/IFC Device</th>
<th>Application Software/Tool</th>
<th>File Name (If Applicable)</th>
<th>Version (or Later)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veri-Fire® Tools Software</td>
<td>Tools DBver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note: Use to configure the IFC-640 and IFC-3030</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IFC-640</td>
<td>Boot Application - CPU</td>
<td>NFS640_03_00_08.hex</td>
<td>3.0.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.0.8</td>
</tr>
<tr>
<td>NCM-W/F</td>
<td>Application - CPU</td>
<td>NCM2-002-002-000.hex</td>
<td>2.20</td>
</tr>
<tr>
<td>IFC-3030</td>
<td>Boot Application - CPU</td>
<td>NFS 3030 002-002-009.hex</td>
<td>3.0.2</td>
</tr>
<tr>
<td></td>
<td>Application - LCM320</td>
<td>LCM_002_003_007.hex</td>
<td>2.2.9</td>
</tr>
<tr>
<td></td>
<td>Application - LCD160</td>
<td>LCD_160_001_002_0014.hex</td>
<td>2.3.7</td>
</tr>
<tr>
<td>NCM-W/F</td>
<td>Application - CPU</td>
<td>NCM2-002-002-000.hex</td>
<td>2.20</td>
</tr>
<tr>
<td>JNCA</td>
<td>Boot - Boot Code Application - Str</td>
<td>NCA Upgrade Boot 003-002-001.hex</td>
<td>3.2.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NCA 003-002-001.str</td>
<td>3.2.1</td>
</tr>
<tr>
<td>NCM-W/F</td>
<td>Application - CPU</td>
<td>NCM2-002-002-000.hex</td>
<td>2.20</td>
</tr>
<tr>
<td>Veri-Fire 1020 Software</td>
<td>Tools</td>
<td></td>
<td>8.04</td>
</tr>
<tr>
<td>Note: Use to configure the IFC-1010 and IFC-2020.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IFC-1010</td>
<td>CPU-1010</td>
<td></td>
<td>Network Version 5, Release 2</td>
</tr>
<tr>
<td>IFC-2020</td>
<td>CPU-2020</td>
<td></td>
<td>Network Version 5, Release 2</td>
</tr>
<tr>
<td>IFC BACnet Serial Configuration Tool</td>
<td>Serial Configuration Tool</td>
<td></td>
<td>2.0</td>
</tr>
<tr>
<td>IFC BACnet Gateway</td>
<td>Gateway Version</td>
<td></td>
<td>3.6</td>
</tr>
<tr>
<td>NCM-W/F</td>
<td>Application - CPU</td>
<td>NCM2-002-002-000.hex</td>
<td>2.20</td>
</tr>
</tbody>
</table>

Note: * To upgrade the IFC BACnet Gateway Network Control Module (NCM), you must upgrade a flash chip for an NCM connected to an online IFC Panel first. Next, use the upgraded flash chip to replace the IFC BACnet Gateway flash chip. Insert the older flash chip removed from the IFC BACnet Gateway into the NCM for the IFC panel and upgrade it.

Cable Requirements

For information on cable requirements and connecting the IFC BACnet Gateway to an NCM-W/F, refer to the IFC BACnet Gateway Installation/Operation Manual (Part No. 51659).
IFC Panels and Points

The IFC BACnet Gateway allows integration of IFC panels as individual BACnet devices and IFC points to the NAE. The two types of BACnet points available from the IFC BACnet Gateway are multistate and binary output.

**BACnet Point States and Alarms**

Multistate Input

Multistate Input examples include: detectors, zones, pull stations, and panels. Table 4 lists the Multistate Input enumeration sets. Table 5 lists the Binary Output enumeration sets.

**Table 4: Multistate Input – Enumeration Sets and BACnet Object Properties**

<table>
<thead>
<tr>
<th>State</th>
<th>Status Flags</th>
<th>Event State</th>
<th>Reliability</th>
<th>Out of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Reliable</td>
<td>False</td>
</tr>
<tr>
<td>1 - Alarm</td>
<td>In Alarm</td>
<td>Off Normal</td>
<td>No Fault Detected</td>
<td>False</td>
</tr>
<tr>
<td>2 - Fault</td>
<td>In Alarm, Fault</td>
<td>Fault</td>
<td>Unreliable Other</td>
<td>False</td>
</tr>
<tr>
<td>3 - Disabled</td>
<td>In Alarm, Out of Service</td>
<td>Fault</td>
<td>No Fault Detected</td>
<td>True</td>
</tr>
</tbody>
</table>

**Table 5: Binary Output – Modules - Enumeration Sets and BACnet Object Properties**

<table>
<thead>
<tr>
<th>Condition</th>
<th>State</th>
<th>Status Flags</th>
<th>Event State</th>
<th>Reliability</th>
<th>Out of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>0 - Inactive</td>
<td>Normal</td>
<td>Normal</td>
<td>Reliable</td>
<td>False</td>
</tr>
<tr>
<td>Alarm</td>
<td>1 - Active</td>
<td>In Alarm</td>
<td>Off Normal</td>
<td>No Fault Detected</td>
<td>False</td>
</tr>
<tr>
<td>Fault</td>
<td>0 - Inactive</td>
<td>In Alarm, Fault</td>
<td>Fault</td>
<td>Unreliable Other</td>
<td>False</td>
</tr>
<tr>
<td>Alarm</td>
<td>1 - Active</td>
<td>In Alarm, Out of Service</td>
<td>Fault</td>
<td>No Fault Detected</td>
<td>True</td>
</tr>
</tbody>
</table>

**BACnet Communication**

BACnet communication is monitor only. No commands initiated from the NAE are passed back to the IFC system.

**IFC BACnet Enumerations**

The BACnet network shows the present value of a BACnet object as one of the BACnet protocol states. The NAE converts the BACnet protocol state into the NAE BACnet state. The NAE BACnet states are then converted into the IFC BACnet enumeration (Table 6).

**Note:** If you use a BACnet tool such as BAS-O-Matic to view the BACnet protocol, the BACnet states you see are **not** the same as the NAE BACnet states.

**Table 6: IFC BACnet Enumeration Set**

<table>
<thead>
<tr>
<th>BACnet Protocol State</th>
<th>Equivalent NAE BACnet State</th>
<th>IFC BACnet Enumeration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>State 0 = 0</td>
<td>Normal</td>
</tr>
<tr>
<td>2</td>
<td>State 1 = 1</td>
<td>Alarm</td>
</tr>
<tr>
<td>3</td>
<td>State 2 = 2</td>
<td>Fault</td>
</tr>
<tr>
<td>4</td>
<td>State 3 = 3</td>
<td>Disabled</td>
</tr>
</tbody>
</table>
Detailed Procedures

Connecting the Null-Modem Cable for Programming the IFC BACnet Gateway

Note: See Figure 2 for null modem pinouts.

To connect the null-modem cable for programming the IFC BACnet Gateway:

1. Connect one end of the null-modem cable to the DB9 connector of the IFC BACnet Gateway where the NCM-W/F normally connects.

2. Connect the other end of the null-modem cable to the COM port of the computer running the IFC BACnet Gateway programming utility.

![Figure 2: Null-Modem Cable Pinouts](image)

Setting Up the IFC BACnet Gateway

To set up the IFC BACnet Gateway Serial Configuration Tool:

1. Connect the Null-Modem cable and start the IFC BACnet Gateway Serial Configuration Tool program.
2. Select the COM tab. The COM screen appears (Figure 3).

![Figure 3: BACnet Gateway Serial Configuration Tool - Multi Tab](image)

3. Change the COM port of the computer being connected to the Gateway, if required.

4. Select Connect in the lower left corner. The Connect text changes to Disconnect and the current program in the IFC BACnet Gateway appears under the Information tab (Figure 4).

![Figure 4: IFC BACnet Gateway Serial Configuration Tool - Information Tab](image)

5. Select the Gateway tab. The Gateway screen appears (Figure 5).
Note: The Gateway tab allows you to delete the database and change User Names and Passwords.

6. Select the Network tab and the Network tab appears (Figure 6).

Figure 5: BACnet Gateway Serial Configuration Tool - Gateway Tab

Figure 6: BACnet Gateway Serial Configuration Tool - Network Tab
7. Fill in the information (Table 7).

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gateway IP</td>
<td>Allows you to enter the unique static IP address used to identify the IFC BACnet Gateway on the network.</td>
</tr>
<tr>
<td>Routing IP</td>
<td>Contact your network administrator to obtain the Routing IP address.</td>
</tr>
<tr>
<td>Subnet Mask</td>
<td>Contact your network administrator to obtain the Subnet Mask address.</td>
</tr>
<tr>
<td>NCM Address</td>
<td>Displays the IFC panel address on the IFN entered during initial configuration. The BACnet Gateway retrieves this address, even if the NCM disconnects from the IFN.</td>
</tr>
<tr>
<td>Threshold A</td>
<td>Corresponds to the settings on the NCM-W/F network communication module.</td>
</tr>
<tr>
<td>Threshold B</td>
<td>Corresponds to the settings on the NCM-W/F network communication module.</td>
</tr>
<tr>
<td>Network Update Time</td>
<td>Indicates when updates occur to the object properties for all devices on the network. If changes are needed immediately, cycle power on the IFC BACnet Gateway. This forces the IFC BACnet Gateway to rebuild the database.</td>
</tr>
</tbody>
</table>

8. Select the BACnet tab. The BACnet screen appears (Figure 7).

![Figure 7: BACnet Gateway Serial Configuration Tool - BACnet Tab](image-url)
9. Fill in the BACnet tab information (Table 8).

### Table 8: BACnet Tab Parameters

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Number</td>
<td>Indicates the subnet of the BACnet Network where the IFC BACnet Gateway resides. Note: The BACnet Gateway assigns each of its nodes a network number based on the number you enter in this field. The first node is the BACnet Gateway network number plus 1. The second node is the BACnet Gateway number plus 2, and so on. The sequential numbering of nodes may result in duplicate addresses if the NAE network number is higher than the number specified in this field. To avoid duplicate addresses, verify that the NAE network number is lower than the number in this field. For example, assign the NAE a network number of 1001 and the BACnet Gateway a network number of 1006.</td>
</tr>
<tr>
<td>Primary BACnet Port</td>
<td>Indicates the IP port number on which the IFC BACnet Gateway communicates. The default value is 47808.</td>
</tr>
<tr>
<td>Secondary BACnet Port</td>
<td>Indicates the IP port number on which the IFC BACnet Gateway communicates.</td>
</tr>
<tr>
<td>Foreign Device</td>
<td>Indicates the BACnet Broadcast Management Device (BBMD) is used between the BACnet Gateway and the front end device.</td>
</tr>
<tr>
<td>BBMD IP</td>
<td>Indicates the IP address of the BBMD.</td>
</tr>
<tr>
<td>BACnet Port</td>
<td>Indicates the port on which the BBMD communicates.</td>
</tr>
<tr>
<td>Register time</td>
<td>Indicates how often the BACnet Gateway sends the Register Foreign Device message to specified BBMD.</td>
</tr>
<tr>
<td>Detectors/Modules</td>
<td>Always select MultiState.</td>
</tr>
<tr>
<td>Zones</td>
<td>Always select MultiState.</td>
</tr>
</tbody>
</table>

10. Select the Multi tab. The Multi screen appears (Figure 8).

![Figure 8: BACnet Gateway Serial Configuration Tool - Multi Tab](image)

11. Set the Multiple Gateway selection, if required.
**Note:** Multiple gateways are necessary if there are more than 15 nodes on the IFN. An additional BACnet Gateway is required for each 15 nodes. For more information, refer to the *BACnet Gateway Installation/Operation Manual*.

12. Select the IFC BACnet Gateway IFN node address and the IFC panel node address you want the IFC BACnet Gateway to monitor.

13. Select Apply.

14. Click Disconnect.

15. Close the BACnet Gateway Serial Configuration Tool window.

For information on setting up the IFC BACnet Gateway, refer to the *BACnet Gateway Installation/Operation Manual (Part No. 51659)*.

**Troubleshooting Using the IFC BACnet Gateway Telnet Connection**

**Establishing a Telnet Connection to the IFC BACnet Gateway**

To use Telnet to monitor IFC BACnet Gateway activity, you must establish an Ethernet connection between the computer and the IFC BACnet Gateway.

To establish a Telnet connection to the IFC BACnet Gateway:

1. On the Windows screen, select Start.

2. Select Run.

3. Type `Telnet xxx.xxx.xxx.xxx` (the IP of the IFC BACnet Gateway).

4. Select OK. A DOS prompt appears (Figure 9).

5. Type `Target` and press Enter. `Target` is the default User Name.

6. Type `Password` and press Enter. `Password` is the default password.

![Figure 9: Telnet Screen](image-url)
**Note:** A DOS prompt is visible now (->). System data appears when status changes or events occur. The Telnet screen displays panel status and events such as fire and trouble alarms for the panels. The events are passed as BACnet messages.

**Setting Up the NAE - BACnet Integration**

**Enabling a BACnet Site**

To enable the BACnet site using the Metasys System Configuration Tool (SCT):

1. Launch SCT.
2. Log onto the Site Director.
3. Drag the Site Object to the display frame.
4. Select Edit in the display window.
5. Select Advanced. The Advanced Site View appears (Figure 10).
6. Scroll down to the BACnet section.
7. Change the BACnet Site field to True.
8. Change the BACnet Encoding Type field to ascii.
9. Set up the Third party BBMD as needed.
10. Click Save.

**Downloading the Changes**
Repeat this procedure for all necessary supervisory devices.
To download the changes:
1. In the header region, select Tools to download the changes.
2. Select Load Archive from the drop-down list.
3. Select Download.
4. Highlight the desired device.  
   **Note:** Start with the Site Director.

5. Continue filling in the information and selecting Next to complete the download information.


7. Monitor the progress of the download to confirm it completed successfully.

8. Close the Wizard.

**Setting the BACnet OID for the Supervisory Devices Using the SCT**

To set the BACnet OID for the Supervisory Devices using the SCT:

1. Launch SCT.

2. Create a new archive (if this a new site) or open an existing archive.

3. Highlight the desired supervisory device Name and drag and drop the site to the display frame.

4. From the Configuration Tab, select Edit.

5. Select Advanced.

6. Locate find the BACnet section.

7. Set the BACnet Object Identifier to a unique number for the BACnet network.

8. Set the BACnet Network Address to match your BACnet field Network address.

9. Set the BACnet IP Port to match your BACnet field IP Port address.

10. Select Save.

11. Download the changes to your site by selecting Tools in the header region.

12. Select Load Archive from the drop-down list.

13. Select Download.

14. Highlight the desired device (start with the site director).

15. Continue filling in the information and selecting Next to complete the download information.


17. Monitor the progress of the download to confirm it completed successfully.

18. Close the Wizard.
**Adding the BACnet Integration Object to the Supervisory Device Using the NAE**

To add a BACnet integration object to the Supervisory Device using the NAE:

1. Highlight the target NAE in the Navigation Tree and select Insert from the menu bar. The Insert menu appears.

2. On the Insert drop-down menu, select Integration. The Insert Integration Wizard appears (Figure 11).

3. In the Select Object Type section, highlight BACnet.
4. Click Next. The target NAE appears in the Destination screen (Figure 12). The NAE name shown in parenthesis is the factory default Media Access Control (MAC) address of the NAE.

![Figure 12: Insert Integration Wizard: Destination](image)

5. Highlight the target NAE.

6. Click Next. The Identifier screen appears (Figure 13).

![Figure 13: Insert Integration Wizard: Identifier](image)
7. Enter a unique BACnet object name for the integration in the window on the left side of the Identifier screen (default is BACnet1). You can choose any unique name.

**Note:** This is the only opportunity to change the BACnet object name without deleting the object and starting over.

8. Click Next. The Configure screen appears (Figure 14).

![Figure 14: insert Integration Wizard: Configure](image)

9. Click the Advanced radio button in the upper right corner of the screen.
10. Verify the Object Name is the name you previously entered in the Identifier screen.
11. If desired, enter text in the Description field.
12. In the Object Category drop-down list, select Fire.
13. In the Communication Process Identifier field, enter the number four (4).
14. From the Execution Priority drop-down list, select Life Safety.

**IMPORTANT:** You must assign each panel specifically used for fire integration as Life Safety priority. This is the highest priority and ensures the fastest system response.
15. Click Next. The Summary screen appears (Figure 15). The BACnet object name previously entered appears in both the Identifier and the Name fields.

![Figure 15: Insert Integration Wizard: Summary](image)

16. Verify the data is correct.
17. Click Finish. The Extension Wizard screen appears (Figure 16).
18. Click Done.

![Figure 16: Extension Wizard](image)
19. Verify that a new BACnet object, with the previously entered BACnet object name, appears in the tree in the Navigation frame (Figure 17).

![Figure 17: New BACnet Object in Navigation Frame](image)

20. Archive the changes, highlight the supervisory device and right-click.

21. Select Commands from the list.

22. Select Archive.

23. Shut down the Internet Explorer connection.

Go to *Uploading an Archive Database*. 
Setting Up the NAE - BACnet IFC Field Device

Adding BACnet Field Devices Using the NAE

You can configure each Fire panel as a BACnet field device. Repeat Steps 1 through 13 for each fire alarm panel on the IFN that is connected to the NAE through the IFC BACnet Gateway.

To add a BACnet field device to the BACnet Integration using the NAE:

1. Highlight the Integration BACnet object in the Navigation frame (Figure 18).

![Figure 18: Highlighted BACnet Integration Object](image-url)
2. From the Insert menu select Field Device. The Insert Field Device Wizard appears (Figure 19).

![Figure 19: Insert Field Device Wizard: Destination](image1)

3. Verify the NAE and Integration BACnet object (highlighted) appear in the Destination screen of the Wizard.

4. Click Next. The Select Definition Mode screen appears (Figure 20).

![Figure 20: Insert Field Device Wizard: Select Definition Mode](image2)
5. Verify the Assisted radio button is selected. Click on the Invoke Auto Discovery bar. The Wizard Auto Detect Utility appears (Figure 21).

![Figure 21: Wizard Auto Detect Utility](image)

6. When the Status displays Discovery Complete, click on one of the IFC Series fire alarm panel BACnet Device objects. The Insert Field Device Wizard Identifier screen appears (Figure 22).

![Figure 22: Insert Field Device Wizard: Identifier](image)

7. Enter a unique name for the fire alarm panel’s BACnet Device object.

**Note:** The default is the individual device’s OID.
8. Click Next. The Configure screen appears (Figure 23).

![Figure 23: Insert Field Device Wizard: Configure](image)

9. In the Object Category drop-down list, select Fire. Enter any optional information in the Description field.

**IMPORTANT:** You **must** assign each panel specifically used for fire integration to the Fire Object Category. This limits the local acknowledgement of Metasys system BACnet IFC events to authorized users.

10. Click Next to display the Summary screen (Figure 24).

![Figure 24: Insert Field Device Wizard: Summary](image)
11. Review the summary information and click Next. The Extension Wizard appears (Figure 26).
12. Click Done. The Field Device Extension Field Points screen appears (Figure 27).

![Extension Wizard]

Figure 26: Extension Wizard
13. Click Done to exit the wizard.

![Field Device Extension](image)

**Figure 27: Field Device Extension: Field Points**

14. Archive the changes.

15. Highlight the supervisory device and right-click it.

16. Select Commands from the list.

17. Select Archive.

18. Shut down the Internet Explorer connection.

Go to *Uploading an Archive Database*.

**Deleting BACnet Field Devices Using the NAE**

Repeat this procedure for all devices requiring deletion.

To delete a BACnet field device from the BACnet Integration using the NAE:

1. Connect to the Site Director supervisory device from your Internet Explorer connection.

2. Highlight the desired BACnet field device.

3. From the header region, select Edit.

4. From the drop-down list, select Delete. Click Yes to the warning.

5. Verify the desired BACnet field device has been deleted from the Navigation Tree.
6. Highlight the supervisory device and right-click.
7. Select Commands from the list.
8. Select Archive.
9. Shut down the Internet Explorer connection.

Go to **Uploading an Archive Database**.

### Setting Up the NAE - BACnet IFC Field Point

You can configure each zone and detector as field points. The programming in the **Setting Up NAE - Alarm Notification Class Subscription IFC BACnet Gateway Intrinsic Alarming** results in the availability of the fire alarm event information on the NAE User Interface in the form of pop-up messages along with events recorded in the Event Viewer and Audit Viewer.

You must add BACnet field points to:

- enable the NAE Event Notification from the specific IFC BACnet Gateway point
- access IFC point values and states from Graphics and Interlocks for building automation functions

### Adding a BACnet Field Points Using the NAE

To add a BACnet field points to the BACnet field device using the NAE:

1. Connect to the Site Director supervisory device from your Internet Explorer connection.
2. Highlight the desired BACnet field device to which you want add the BACnet field points.
3. From the Insert menu, select Field Point. The Insert Point Wizard Destination screen appears (Figure 28).

![Figure 28: Insert Field Point Wizard: Destination](image)

4. Select the field device and click Next. The Insert Point Wizard Definition screen appears (Figure 29).

![Figure 29: Insert Field Point Wizard: Definition](image)
5. Verify that the Assisted radio button is selected. Click the Auto Discovery bar. The Wizard Auto Detect Utility appears (Figure 30).

![Figure 30: Wizard Auto Detect Utility](image)

6. When the status displays Discovery Complete, click Close. The Insert Point Wizard Point Mapping Utility appears (Figure 31).

![Figure 31: Insert Point Wizard: Point Mapping Utility](image)

7. Select which fire alarm field devices to map to the NAE. Use one or both of the following methods:
a. For individual input devices, expand the Multistate Inputs folder and double-click on each input device or zone that must be available for graphics or interlock control in the NAE environment or each device or zone that needs to be displayed in the Navigation Tree of the UI. The selections appear in the right side of the Point Mapping Utility screen (Figure 32).

b. Expand the Binary Outputs folder and double-click on each output devices that needs to be available for reporting in the NAE environment. The selections appear in the right side of the Point Mapping Utility screen.

**Note:** If you made selections for input and output field points, the right frame of the Point Mapping Utility screen only shows one group at a time. Click on a point in the tree on the Point Mapping Utility screen to toggle between each of the Multistate Input and Binary Output groups.

**Note:** Verify you select the necessary alarm notification class subscriptions (ZONENOTIFY, OUTPUTNOTIFY, and INPUTNOTIFY). See *Setting Up NAE - Alarm Notification Class Subscription IFC BACnet Gateway Intrinsic Alarming* for more information.

8. Review the point data and click Next. The Summary screen appears (Figure 33).
**Note:** Double-click on the point in the tree to remove them from the list.

9. Click Finish. The Summary screen closes and the points are added to the selected device.

10. Archive the changes, highlight the supervisory device and right-click.

11. Select Commands from the list.

12. Select Archive.

13. Shut down the Internet Explorer connection.

Go to *Uploading an Archive Database*.

**Deleting BACnet Field Points Using the NAE**

To delete a BACnet field point from a BACnet field device using the NAE:

1. Connect to the Site Director supervisory device from your Internet Explorer connection.

2. Highlight the desired BACnet field point.

3. From the Toolbar, select Edit.

4. From the drop-down list, select Delete, click yes to the warning.

5. Ensure the desired BACnet field point has been deleted from the Navigation Tree.

6. Archive the changes, highlight the supervisory device and right-click.
7. Select Commands from the list.
8. Select Archive.
9. Shut down the Internet Explorer connection.

Go to *Uploading an Archive Database*.

**Setting Up NAE - Alarm Notification Class Subscription IFC BACnet Gateway Intrinsic Alarming**

You must configure the IFC BACnet Gateway for Intrinsic Alarming by configuring the alarm notification class subscriptions at the NAE for each fire panel device. There is no need to subscribe for specific field points.

**Configuring Intrinsic Alarming**

When you configure your IFC BACnet Gateway for Intrinsic Alarming, it sends all subscribed event notifications as they occur directly to the NAE. There is no need to define alarm extensions to any IFC field device or point.

The NAE analyzes every IFC BACnet Gateway notification to determine if the event has occurred for a BACnet field point configured at the NAE. Events are reported **only** for those points. Each of these events requires an acknowledgment; however, the configured points that are defined as detailed in the *Setting Up the NAE - BACnet IFC Field Point* are not updated until the configured point attributes are read.

The Metasys system event message text includes the event notification text from the IFC panel along with the BACnet Event Text, when applicable.

**IFC to BACnet Alarm Message Text Mapping**

Table 9 shows the relationship to the IFC alarm event notifications and the resulting BACnet event message text.

**Table 9: IFC to BACnet Alarm Message Text Mapping**

<table>
<thead>
<tr>
<th>IFC Event</th>
<th>BACnet Event Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRE</td>
<td>Device Alarm</td>
</tr>
<tr>
<td>SECURITY_LIFE</td>
<td>Security Alarm</td>
</tr>
<tr>
<td>CRIT_PROC_LIFE</td>
<td>Life Critical Process</td>
</tr>
<tr>
<td>MED_EMERG_LIFE</td>
<td>Life Medical Emergency</td>
</tr>
<tr>
<td>SECURITY_PROPERTY</td>
<td>Security Property</td>
</tr>
<tr>
<td>CRIT_PROC_PROPERTY</td>
<td>Critical Process Property</td>
</tr>
<tr>
<td>SUPERVISORY</td>
<td>Supervisory</td>
</tr>
<tr>
<td>SUPERVISORY_SIGNAL</td>
<td>Supervisory Signal</td>
</tr>
<tr>
<td>FIRE_TROUBLE</td>
<td>Fire Trouble</td>
</tr>
<tr>
<td>DISABLE</td>
<td>Disable</td>
</tr>
</tbody>
</table>
Subscribing to the ZONENOTIFY Alarm Notification Class

IMPORTANT: This subscription process is optional.

Repeat this procedure for every additional supervisory device requiring the ZONENOTIFY Alarm Notification Class Subscription.

To subscribe to the ZONENOTIFY Alarm Notification Class:

1. Connect to the Site Director supervisory device from your Internet Explorer connection.
2. Highlight and expand the desired BACnet field device (IFC Series panel).
3. Locate the ZONENOTIFY Notification Class Object.
4. Highlight the ZONENOTIFY object, drag the object onto the view window. The ZONENOTIFY object Focus tab view appears in the Display frame (Figure 34).

<table>
<thead>
<tr>
<th>IFC Event</th>
<th>BACnet Event Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECURITY_TROUBLE</td>
<td>Security Trouble</td>
</tr>
<tr>
<td>NONFIRE_TROUBLE</td>
<td>Nonfire Trouble</td>
</tr>
<tr>
<td>NONFIRE_DISABLE</td>
<td>Nonfire Disable</td>
</tr>
<tr>
<td>PREALARM</td>
<td>Prealarm</td>
</tr>
<tr>
<td>NONFIRE_ACTIVATION</td>
<td>Zone Active</td>
</tr>
</tbody>
</table>

Table 9: IFC to BACnet Alarm Message Text Mapping (Continued)

![Figure 34: Focus Tab Screen](image_url)
5. Select the Recipient List Tab. The Recipient tab view appears (Figure 35) with a list of the current recipients.

![Figure 35: Recipient Tab Screen](image1)

6. Select Edit. The Recipient tab screen switches to Edit mode (Figure 36).

![Figure 36: Recipient Tab Edit Mode Screen](image2)
7. Select Add. The Notification Recipient screen appears (Figure 37).

Completing the Notification Recipient Screen

To complete the Notification Recipient Screen:

1. Select Address.
2. Enter the IP Address for the currently connected supervisory device.
3. Enter the Network Number and UDP Port number.
5. Select the desired days for alarm subscription.
6. Set the start and stop time.
7. Set the transition notifications.
8. Set the Notification Message type.
9. Select Save.

Note: This saves the additions to a temporary file. Follow the steps below to save the additions permanently.

10. Select Save in the ZONENOTIFY Recipient tab screen to save your changes.

Note: All additions made in the Notification Recipient screen will be lost unless you click Save.
11. Archive the changes, highlight the supervisory device, and right-click.
12. Select Commands from the list.
13. Select Archive.
14. Shut down the Internet Explorer connection.

Go to *Uploading an Archive Database*.

**Subscribing to the INPUTNOTIFY Alarm Notification Class**

**IMPORTANT:** This subscription is **required** for event reporting.

Repeat this procedure each additional supervisory device that requires the Alarm Notification Class Subscription.

To subscribe to the INPUTNOTIFY Alarm Notification Class:
1. Connect to the Site Director supervisory device from your Internet Explorer connection.
2. Highlight and expand the desired BACnet field device (IFC Series panel).
3. Locate the INPUTNOTIFY Notification Class Object.
4. Highlight the INPUTNOTIFY object, drag and drop the object onto the display frame. The INPUTNOTIFY object Focus tab view appears in the Display frame (Figure 38).

![Figure 38: INPUTNOTIFY Focus Tab Screen](image)

*Figure 38: INPUTNOTIFY Focus Tab Screen*
5. Select the Recipient List Tab. The Recipient tab view appears with a list of the current recipients (Figure 39).

Figure 39: Recipient Tab Screen

6. Select Edit. The Recipient tab screen switches to Edit mode (Figure 40).

Figure 40: Recipient Tab Edit Mode Screen
7. Select Add. The Notification Recipient screen appears (Figure 36).

8. Fill in the Notification Recipient screen fields. See *Completing the Notification Recipient Screen*.

9. Select Save.

**Note:** This saves the additions to a temporary file. Use the steps below to save the additions permanently.

10. Select Save in the INPUTNOTIFY Recipient tab screen to save your changes.

**Note:** All additions made in the Notification Recipient screen will be lost unless you click Save.

11. Archive the changes, highlight the supervisory device and right-click.

12. Select Commands from the list.

13. Select Archive.

14. Shut down the Internet Explorer connection.

Go to *Uploading an Archive Database*.

### Subscribing to the OUTPUTNOTIFY Alarm Notification Class

**Note:** To reduce the amount of information presented to the operator, this subscription is not recommended due to the number of notifications. Repeat this procedure for each additional supervisory device that requires the OUTPUTNOTIFY Alarm Notification Class Subscription.

To subscribe to the OUTPUTNOTIFY Alarm Notification Class:

1. Connect to the Site Director supervisory device from your Internet Explorer connection.

2. Highlight and expand the desired BACnet field device.

3. Locate the OUTPUTNOTIFY Notification Class Object.
4. Highlight the OUTPUTNOTIFY object, drag and drop the object onto the view window. The OUTPUTNOTIFY object Focus tab view appears in the Display frame (Figure 41).

![Figure 41: OUTPUTNOTIFY Focus Tab Screen](image)

5. Select the Recipient List Tab. The Recipient tab view appears (Figure 42) with a list of the current recipients.

![Figure 42: Recipient Tab Screen](image)
6. Select Edit. The Recipient tab screen switches to Edit mode (Figure 43).

![Figure 43: Recipient Tab Edit Mode Screen](image)

7. Select Add. The Notification Recipient screen appears (Figure 36).

8. Fill in the Notification Recipient screen fields. See *Completing the Notification Recipient Screen*.

9. Click Save.

**Note:** This saves the additions to a temporary file.

10. Select Save in the OUTPUTNOTIFY Recipient tab screen to save your changes.

   **Note:** All additions made in the Notification Recipient screen will be lost unless you click Save.

11. Archive the changes, highlight the supervisory device, and right-click.

12. Select Commands from the list.

13. Select Archive.

14. Shut down the Internet Explorer connection.

   Go to *Uploading an Archive Database*. 

---

**Metasys® System Extended Architecture Fire System Integration Using the IFC BACnet® Gateway Application Note**
Uploading an Archive Database

You need to upload the archive database after you perform the following procedures:

- Adding the BACnet Integration Object to the Supervisory Device Using the NAE
- Setting Up the NAE - BACnet IFC Field Device
- Setting Up the NAE - BACnet IFC Field Point
- Setting Up NAE - Alarm Notification Class Subscription IFC BACnet Gateway Intrinsic Alarming

To upload an archive database:
1. Launch SCT.
2. Open the desired archive.
3. Select Load Archive from the drop-down list.
4. Select Upload.
5. Highlight the desired device (start with the site director).
6. Continue filling in the information and selecting Next to complete the upload information.
7. Select Finish.
8. Monitor the progress of the upload to confirm it completes successfully.

IFC Alarm Examples

The following series of screens show the progression of alarm screens as conditions change.

The alarm state starts in the Normal state, transitions into the Trouble state, transitions again into the Alarm state, transitions again into the Disabled state, and finally transitions into the Return To Normal state. Each alarm type main screen shows the alarms in the Focus view, Multistate Inputs view, and the Event Viewer. Associated alarm pop-up screens are shown for each alarm state.

The screens show information that displays on the Metasys system UI when Intrinsic Alarming is programmed for the NAE.
Normal Alarm State

Figure 44 shows a Normal state for point L001M100.

Figure 44: L001M100 Normal
Trouble Alarm State

Opening the Initiation Device Circuit (IDC) transitions the L100NM100 monitor module to a Trouble state (Figure 45). The following screens show the transition to the Fault state - BACnet State 2.

Note: Zone 9 is listed in the control-by-event that is programmed into the IFC panel database for the L001M100 module.
Figure 47 shows the Module Trouble Alarm pop-up for L001M100.

![Image showing Module Trouble Alarm Pop-up](image)

**Alarm State**

The following screens show the transition to the Alarm State – BACnet State 1. Transition the monitor module L001M100 to an Alarm state (while the Initiating Device Circuit (IDC) is open, short the input terminals at the monitor module or the contacts close on an alarm initiating device located on the IDC between the open circuit and the module).

Figure 48, Figure 50, and Figure 49 show L001M100 in Alarm.
**Note:** The alarms were discarded from the event viewer to more clearly show the transition from Fault state to Alarm state.

![Figure 48: L001M100 Alarm](image1)

![Figure 49: L001M100 Module Alarm Popup](image2)
Disable State

The following screens show the transition to the Disabled State – BACnet State 3. Transition the monitor module L001M100 to an Alarm state (while the sensing line is open, short the input terminals at the monitor module and disable the monitor module from the IFC Panel).

Figure 51 and Figure 52 show L001M100 in the Disabled state.

Note: The alarms were discarded from the event viewer to more clearly show the transition from Alarm to Disable.
Return To Normal State

Transition the monitor module L001M100 from a Disabled state to a Normal state (reconnect the sensing line, clear the input terminals at the monitor module, reenable the monitor module from the IFC Panel, and reset the IFC Panel).

Figure 55 shows the main Return To Normal screen.

The following screens show the transition to the Normal State – BACnet State 0.
Note: The alarms were discarded from the event viewer to more clearly show the transition from Disabled to Normal.

The following 10 screens show the alarms as they are acknowledged and the transition to a Return To Normal state.

Figure 55: L001M100 Return To Normal

The following 10 screens show the alarms as they are acknowledged and the transition to a Return To Normal state.
Figure 57: Device Alarm Pop-up

Figure 58: Zone 9 Alarm Pop-up

Figure 59: IFC Panel Trouble Alarm Pop-up
Figure 60: Zone 9 Return To Normal Event Pop-up

Figure 61: IFC System Reset Return To Normal Event Pop-up

Figure 62: IFC Panel Battery Return To Normal Event Pop-up
Figure 63: Zone 9 Return To Normal Event Pop-up

Figure 64: L001M100 Module Return To Normal Alarm Pop-up

Figure 65: L001M100 Device Return To Normal Event Pop-up
Upgrading the Software in the IFC BACnet Gateway

Viewing IFC BACnet Gateway Information Using the IFC BACnet Gateway Serial Configuration Tool

The following process provides the current IFC BACnet Gateway information. Use this information after you upgrade your IFC BACnet Gateway to restore the site information.

**Note:** A screen capture program is useful to retain this information.

To view IFC BACnet Gateway information using the IFC BACnet Gateway Serial Configuration Tool:

1. Connect the null-modem cable.
2. Start the IFC BACnet Gateway Serial Configuration Tool program.
3. When the Information tab appears, select Connect in the lower left hand corner. The present IFC BACnet Gateway information appears (Figure 66).

![Figure 66: IFC BACnet Gateway Serial Configuration Tool - Information Tab](image)

4. Record the information on each tab.
5. Exit the IFC BACnet Gateway Serial Configuration Tool Program.

Loading the VxWORKS Zip File

You may need to upgrade the IFC BACnet Gateway software. If you need to upgrade, you must unzip the vxWorksy.yy.zip software upgrade file to a specific directory. The unzipped files are then copied to the IFC BACnet Gateway using the FTP process.
**Note:** When you upgrade the software in the IFC BACnet Gateway, it results in a loss of the IFC BACnet Gateway programmed setup; therefore, use the IFC BACnet Gateway Serial Configuration Tool as detailed in the Setting Up the IFC BACnet Gateway. Refer to the IFC BACnet Gateway Installation/Operation Manual (Part No. 51659) for additional information.

**IMPORTANT:** The IFC BACnet Gateway stores the alarm subscriptions. The upgrade process removes the alarm subscriptions. You must resubscribe to the Alarm Notification Class subscriptions. If you have previously completed the fire integration and are upgrading the software in the IFC BACnet Gateway, see the Setting Up NAE - Alarm Notification Class Subscription IFC BACnet Gateway Intrinsic Alarming section for more information.

To load the VxWorksy.yy.zip file:

**Note:** Load the VxWorksy.yy.zip file onto the computer you will use to upgrade the IFC BACnet Gateway. The computer must be an active node on the Ethernet LAN to which the IFC BACnet Gateway is connected.

1. Using Windows Explorer, create a directory: c:\bacnetgw on your computer hard disk.
2. Copy the software upgrade file, vxWorks_y.y into the c:\bacnetgw directory.
   **Note:** The y.y in the upgrade file name indicates the revision number.
3. Unzip the vxWorks_y.y file in the c:\bacnetgw directory. This directory produces the actual upgrade file, vxworks.
   **Note:** The file name for the actual upgrade software for the IFC BACnet Gateway is always the same, regardless of the software revision; therefore, you should include the revision level in the zip file name.

**Establishing a File Transfer Protocol (FTP) Connection to the IFC BACnet Gateway**

Use this procedure to copy the VxWorks file located in c:\BACnetGW\vxworks to the IFC BACnet Gateway using the FTP file transfer.

Follow the steps exactly as shown in Figure 66. Skip the steps in the lines with [May not be used] at the end unless the bootrom.sys file was included in the IFC BACnet Gateway software upgrade package. The bootrom.sys file that was used to upgrade Version 2.0 software and is not necessary or included in the Version 3.1 or Version 3.6 software upgrades.

To establish an FTP connection to the IFC BACnet Gateway:

**Note:** Verify the computer is an active node on the Ethernet LAN to which the IFC BACnet Gateway is connected.

1. Select Start > Run.
2. Type **FTP xxx.xxx.xxx.xxx** (the IP address of the Gateway).
3. Select OK. A DOS prompt appears.
4. Enter the User Name and press Enter. The default User Name is Target.
5. Enter the Password and press Enter. The default password is Password.
6. **Type cd/atal** to change the directory to ATA1.
7. Type **dir** and press Enter to display the files in the ATA1 directory.
8. Type **binary** to change the mode to Binary and press Enter.
9. Type **delete objects.dat** and press Enter.
10. Type **delete objects.flg** and press Enter.
11. Type **send c:\bacnetgw\bootrom.sys**, if applicable, and press Enter.
12. Type **send c:\bacnetgw\vxworks** and press Enter.
13. After the Transfer Completed line appears, type quit and press Enter.

**Figure 67: FTP Screen**

```
C:\>ftp 159.222.11.139
Connected to 159.222.11.139
220 Taurus (3.4) FTP server ready
User (159.222.11.139), (ren): target
331 Password required
Password: [hidden]
220 User logged in
ftp> cd /atal
210 Changed directory to "/atal"
ftp> dir
200 Port set ok
120 Opening ASCII mode data connection
ftp> binary
200 Type set to L, binary mode
ftp> delete objects.dat
210 File deleted successfully.
ftp> delete objects.flg
210 File deleted successfully.
ftp> send c:\bacnetgw\bootrom.sys  [May not be used]
200 Port set ok
120 Opening ASCII mode data connection
220 Transfer complete
ftp> send c:\bacnetgw\vxworks  [May not be used]
200 Port set ok
120 Opening ASCII mode data connection
220 Transfer complete
ftp> send c:\bacnetgw\bootrom.sys  [May not be used]
200 Port set ok
120 Opening ASCII mode data connection
220 Transfer complete
ftp> quit
```

**NOTES:**
1. Substitute the IP address for your BACnet Gateway for the address "159.222.11.139" used in the above example.
2. As part of the log-in process, after the colon (:) at the end of the fourth line, enter the user name (default is Target), and after the colon at the end of the sixth line, enter the password (default is Password).

File size, data, and time may vary with the specific BACnet Gateway version being installed.
14. Press the Reset button located in the upper right corner of the circuit board.

15. Reenter the setup into the IFC BACnet Gateway. See the *Loading the VxWORKS Zip File* section for more information.

**If the Upgrade Is Unsuccessful**

If it is an emergency situation, you can use a flash loading device (Figure 68) to correct the failed upgrade. See *If the Upgrade Is Unsuccessful* for more information. This is a complex process and should only be used in emergency situations.

**Upgrading the IFC BACnet Gateway Using a Flash Loading Device**

| IMPORTANT: Work in a static-free area. Discharge any static electricity you may have accumulated. Discharge static electricity by touching a known, securely grounded object. Do not handle the IFC BACnet Gateway without proper protection against static discharge. Use a wrist strap when handling the IFC BACnet Gateway. Secure the wrist strap clamp to earth ground. |

To upgrade the BACnet IFC BACnet Gateway using a flash loading device:

1. Power off the IFC BACnet Gateway.

2. Remove the IFC BACnet Gateway from its standoffs.

| IMPORTANT: The IFC BACnet Gateway has six supporting standoffs. Each standoff has a plastic washer between the standoff and the IFC BACnet Gateway board. You must reinstall the plastic washer when you reinstall the IFC BACnet Gateway at the end of this procedure. |

3. Carefully remove the flash chip from the IFC BACnet Gateway.

4. Place the flash in the flash loading device (Figure 68).

   **Note:** We recommend the Kodak® Picture Card Adapter #1561596. For ordering information, refer to www.Kodak.com.

   ![Figure 68: Flash Loading Device](image)

5. Place the flash loading device into the Personal Computer Memory Card International Association (PCMCIA) slot of your laptop.
Note: The laptop reads the device as a removable disk and adds an icon to the Windows® Explorer tree. You can drag the files into the correct directory on the flash.

6. Open Windows Explorer and browse to the flash loading device.
   Note: The flash loading device appears as a removable device in the tree.

7. Double-click the flash loading device icon to open a Windows Explorer window of the flash loading device (Figure 69).

![Figure 69: Explorer Window](image)

8. Delete the objects.dat and objects.flg files.
   Note: Do not remove the bootrom.sys file unless you are upgrading and the new file is included in the vxWorks.y.y software upgrade file.


10. Change the directory to C:\BACnetGW.
    Note: This is the directory where you unzipped the new vxworks file.

11. Copy the new vxworks file and the bootrom.sys file, if applicable, to the flash loading drive Explorer window.

12. Locate and click the Unplug or Eject Hardware icon. A message appears.
    Note: This is the icon representing the flash loading device.

13. Click the icon. A Stop Mass Storage Device - Drive (x) message appears.

14. Click on the message. A The USB Mass Storage Device can now be safely removed from the system message appears.

15. Remove the flash from the flash loading device.
16. Place the flash back into the IFC BACnet Gateway.
17. Reinstall the plastic washers between the standoffs and the IFC BACnet Gateway board.
18. Remount the IFC BACnet Gateway.
19. Supply power and reboot the IFC BACnet Gateway.
20. Resubscribe to the Alarm Notification Class subscriptions, if necessary.

**Troubleshooting**

<table>
<thead>
<tr>
<th>Problem/Error Message</th>
<th>Description/Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Metasys system event description does not match the Fire Panel.</td>
<td>A proprietary event using the alarm extension was created. Proprietary events are generated using only the data available from the alarm extension and the value of the polled attribute, typically, the present_value attribute. <strong>Solution:</strong> Remove alarm extension. Verify the alarm notification class subscriptions have been configured for each Fire Panel device.</td>
</tr>
<tr>
<td>Superfluous Metasys system events are reported for IFC devices and points.</td>
<td>This is normal operation for intrinsic event reporting. The BACnet Gateway reports all alarms and events for each subscribed class. The NAE, in turn, outputs an event for each BACnet Gateway report related to the IFC devices and points that are configured at the NAE. <strong>Solution:</strong> None. There is no way to filter intrinsic event reporting at the NAE based on event type. However, you may want to reduce the number of event notifications by deleting the OUTPUTNOTIFY alarm notification subscription. Subscribing to the OUTPUTNOTIFY class is not recommended, because each time there is an alarm in the associated IFC panel, each of the output devices for alarm signals, door release, and elevator recall that are interlocked to the initiating device display their activation in the form of pop-up alarm boxes and entries in the Event Viewer. This makes it difficult to determine the actual point of alarm initiation. On moderate to large systems, the output devices activated by one initiating devices might be on the order of 20 to 50 or more devices. Most sites select only the INPUTNOTIFY class because this identifies the specific addressable device activated in the IFC Series fire alarm control panel. ZONENOTIFY may be used instead of INPUTNOTIFY. The ZONENOTIFY generates a Event Viewer entry and a pop-up for each zone activated. Again, it may be difficult to determine the source/location of the alarm, because more than one zone may be listed in the Control-By-Event (CBE) programming of each initiating device in the IFC panel.</td>
</tr>
<tr>
<td>Metasys system events for IFC field devices and points report after a significant device or are not reported.</td>
<td>Alarm notification class subscriptions have not been configured or need to be reconfigured following an upgrade to the IFC BACnet Gateway. Without alarm notifications class subscriptions, IFC field point attributes are polled on a demand basis. The poll time varies widely depending on the number of field devices and points referenced in interlocks and graphics. If there are no references to a specific attribute, the attribute may not be updated until it is brought into a view. <strong>Solution:</strong> Configure alarm notification class subscriptions for each Fire Panel device. Verify you are using the same process identifier defined in the BACnet Integration Object (4).</td>
</tr>
</tbody>
</table>
### Table 10: Troubleshooting

<table>
<thead>
<tr>
<th>Problem/Error Message</th>
<th>Description/Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IFC Metasys system point values and status updates are slow.</strong></td>
<td>The response time is dependent on the number of polled IFC BACnet field points. The BACnet Integration Object Periodic Update time indicates how often points are polled.</td>
</tr>
<tr>
<td><strong>Solution:</strong></td>
<td>In the BACnet Integration objects diagnostic screen, monitor the Execution Time for at least 5 minutes for the worst case time. The Execution Time is the time to poll all of the integration objects. If the worst case is fewer than 50 seconds, you can improve performance by decreasing the Integration Object Periodic Time to the worst case time plus 5 seconds. If the worst case time is greater than 60 seconds, add a second NAE.</td>
</tr>
<tr>
<td><strong>IFC Metasys system point values and status never update until the point is viewed.</strong></td>
<td>Integrated point values are updated only on a demand basis.</td>
</tr>
<tr>
<td><strong>Solution:</strong></td>
<td>Configure the present_value for all points in an application, such as interlocking.</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>Although an alarm extension causes polling for integrated points, alarm extensions for MSI points are not recommended.</td>
</tr>
</tbody>
</table>