Honeywell

Experion

Fault Tolerant Ethernet Installation and Service Guide

EP-DSX254
Release: R301
11/2006

R301

Notices and Trademarks

Honeywell International

Process Solutions

2500 West Union Hills

Phoenix, AZ 85027

1-800 343-0228

About This Document

This document describes how to install and configure the Fault Tolerant Ethernet (FTE) nodes for Experion and TPS systems.

Release Information

Document Name	Document ID	Release Number	Publication Date
Fault Tolerant Ethernet Installation and Service Guide - FE05	EP-DSX254	R301	11/2006

This document contains installation instructions for Fault Tolerant Ethernet (FTE) hardware and software.

Release Information

Document Name	Document ID	Release Number	Publication Date
Fault Tolerant Ethernet Fault Tolerant Ethernet Installation and Service Guide - FE05	EP-DSX254	R301	11/2006

References

The following list identifies all documents that may be sources of reference for material discussed in this publication.

Document Title
Fault Tolerant Ethernet Specification and Technical Data
Fault Tolerant Ethernet (FTE) Overview and Implementation Guide
Fault Tolerant Ethernet Status Display User's Guide
Experion Software Installation and Upgrade Guide

Contacts

World Wide Web

The following Honeywell web sites may be of interest to our Industry Solutions customers.

Honeywell Organization	WWW Address (URL)
Corporate	*http://www.honeywell.com*
Industry Solutions	*http://www.acs.honeywell.com*
International	*http://content.honeywell.com/global/*

Telephone

Contact us by telephone at the numbers listed below.

	Organization	Phone Number	
United States and Canada	Honeywell Inc. Industrial Solutions	1-800-343-0228 1-800-525-7439 1-800-822-7673	Sales Service SSC/TAC
Asia Pacific	Honeywell Asia Pacific Inc. Hong Kong	(852) 23 32 9133	
Europe	Honeywell PACE Brussels, Belgium	[32-2] 728-2711	
Latin America	Honeywell International Inc. Sunrise, Florida U.S.A.	(954) 845-2600	

Symbol Definitions

The following table lists those symbols used in this document to denote certain conditions.

Symbol	Definition
	**ATTENTION:** Identifies information that requires special consideration.
	**TIP:** Identifies advice or hints for the user, often in terms of performing a task.
	**REFERENCE EXTERNAL:** Identifies an additional source of information outside of the bookset.
	**REFERENCE INTERNAL:** Identifies an additional source of information within the bookset.
	**CAUTION**: Indicates a situation which, if not avoided, may result in equipment or work (data) on the system being damaged or lost, or may result in the inability to properly operate the process. **CAUTION**: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. **CAUTION** symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.
	**WARNING**: Indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death. **WARNING** symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.
	**ESD HAZARD:** Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices

Contents

Tables

Figures

1. Introduction

1.1 About this guide

Scope of this guide

This guide contains instructions for installing and configuring your Fault Tolerant Ethernet (FTE) node. Honeywell FTE can be installed on a variety of Honeywell node types under different circumstances. Section 2 contains installation checklists for different installation scenarios. If you're familiar with FTE installation, go directly to Section 2 to begin the installation.

Additional references

The following table lists documents that may be helpful when installing or operating your FTE node.

For more information on . . .	See this reference . . .
TPS	*TPS System Implementation Guide for Windows 2000*
Experion	*Experion Software Installation and Upgrade Guide*
All node types	*Fault Tolerant Ethernet Overview and Implementation Guide*

1.2 User interfaces and naming conventions

About Microsoft Windows 2003, XP and 2000 user interfaces

Honeywell FTE may be installed on a node that uses Windows Server 2003, Windows XP or Windows 2000 as its operating system. Installation tasks on all operating systems are the same with slight variations in the user interfaces unless you configure Windows 2003 and Windows XP to look like Windows 2000.

Local area connection and Ethernet adapter names

Local Area Connection and Ethernet adapter device names may be different than examples used throughout this guide. These names vary depending upon when you installed your Ethernet adapter, how your operating system detects the new hardware and whether or not you rename your connections using the conventions recommended in this guide.

Use of the A – *yellow* and B – *green* naming convention

The terms *A- yellow* and *B – green* are used consistently throughout this guide to describe the network adapter connections and switches used in an FTE network. Although not mandatory, Honeywell recommends this naming convention to make it easier to identify each network connection and verify it is connected to the appropriate switch: that is, the *A- yellow* network connection is connected to the switch in the "yellow" network tree. The following table describes these terms and how they apply to your FTE network.

Table 1-1 Standard naming conventions for network adapters

Term	Component	Used to describe the . . .	Example
A - yellow	Network Adapter	Network adapter primary port to which the yellow cable is connected.	FTE South Plant **A** – yellow
	Switch	Switch to which all the primary adapter ports are connected using yellow cable.	Switch **A** (yellow tree)
	Switch tree	Collection of all the A switches. That is, those switches to which all the yellow cables are connected.	Yellow network tree
B - green	Network Adapter	Network adapter secondary port to which the green cable is connected.	FTE South Plant **B** – green
	Switch	Switch to which all the secondary adapter ports are connected using green cable.	Switch **B** (green tree)
	Switch tree	Collection of all the B switches. That is, those switches to which all the green cables are connected.	Green network tree

FTE community naming restrictions

FTE community names must not be longer than 244 characters and must not contain any of the special characters listed in the following table.

Key on Keyboard	Description
	Tab
****	Backslash
/	Forward slash
:	Colon
*****	Asterisk
?	Question mark
<	Less than
>	Greater than
|	Pipe

1.3 Before you begin

Before installing FTE, be aware of FTE requirements and configuration rules in addition to any specific site and networking requirements. We recommend you review the following documents before installing FTE:

- *Fault Tolerant Ethernet (FTE) Specification and Technical Data*
- *Fault Tolerant Ethernet (FTE) Overview and Implementation Guide*
- Software Change Notice (SCN), which provides last-minute changes, special instructions, and workarounds

FTE network requirements

Before installing any FTE nodes, it is assumed you have performed the following tasks according to the *FTE Overview & Implementation Guide*

- Established a subnet or domain for your FTE network.
- Properly configured your switches according to Honeywell best practices

Installation variations for FTE

Procedures for implementing a Fault Tolerant Ethernet Network and FTE nodes vary depending upon these factors:

- Specific components ordered for your FTE system
- Whether you are migrating existing nodes to FTE or installing new FTE Nodes
- Node type
- Operating system
- Network configuration (domain or workgroup)
- Requested level of Honeywell support:
  - Customer installs Honeywell qualified FTE components only.
  - Honeywell installs Honeywell qualified FTE components only.
  - Honeywell certifies customer equipment for use with FTE.

FTE node types

FTE can be installed on the following node types.

Experion Server	Experion eServer
Console Extension Station(ES-CE)	Experion Flex (ES-F)
Experion Console Station (ES-C)	Experion PKS Application Control Environment (ACE)
Experion PKS Highway Gateway (EHG)	Experion PKS C200 Simulation Control Environment (SIM-C200)

2. FTE Installation and Configuration Checklists

2.1 FTE installation scenarios

Each installation scenario requires you to perform a different set of tasks. This section contains a checklist, which is a series of ordered tasks that refer you to step-by-step procedures located in the guide, for each scenario. Locate the appropriate checklist for you installation scenario.

Scenario	Go to	What you will need
Configuring FTE on a factory-configured Experion node	Page 20	No media or additional documents are needed
Installing and configuring FTE with your Experion System	Page 21	• *Software Installation and Upgrade Guide* • Experion PKS Client/Server Initialization DVD • Experion PKS Application DVD
Installing and configuring FTE on existing Experion nodes	Page 22	• Experion PKS Client/Server Initialization DVD • Experion PKS Application DVD
Installing and configuring FTE using the Node Definition Tool	Page 24	*Node Definition Tool User Guide* (optional)
Installing and configuring FTE on TPS nodes	Page 26	Common Component CD

2.2 Configuring FTE on a factory-configured Experion node

Factory configured FTE nodes are those in which the Experion software has been loaded, the FTE network adapter card has been installed and the FTE network ports have been configured.

Considerations

If you have the Node Definition Tool installed and an existing node definition, you can use the "Configuring FTE using the Node Definition Tool" checklist on page 58 to simplify the configuration.

Checklist

After performing each procedure return to the checklist to reference the next procedure.

Task	Go to	Done (✓)
Configure FTE service	Page 43	
Identify FTE network adapter ports	Page 47	
Determine TCP/IP binding order and, if necessary, reorder connections	Page 49	
Connect FTE network cables	Page 60	
FTE installation	Page 61	

2.3 Installing and configuring FTE with your Experion System

If you are installing FTE with your Experion system, refer to the appropriate checklist in the "Clean Installation Checklists" section of the *Software Installation and Upgrade Guide*. Use the checklist in this section to perform post-installation configuration tasks.

Prerequisites

You will need:

- *Software Installation and Upgrade Guide*
- EPKS Client/Server Initialization DVD
- Experion PKS Application DVD

Considerations

If you choose FTE as your network type when installing your Experion system, FTE software is installed automatically and you will be prompted for configuration information. You must still perform minimal configuration procedures after the installation is complete.

Checklist

After performing each procedure return to the checklist to reference the next procedure.

Task	Go to	Done (✓)
Installing FTE		
Refer to the *Software Installation and Upgrade Guide* to initialize your system and install all Experion software (including FTE)	Appropriate checklist for your system	
Configure FTE service	Page 43	
Enter IP addresses for the **Note**: This is only necessary if you want to change the IP addresses.	Page 56	
Connect FTE network cables	Page 60	
FTE installation	Page 61	

2.4 Installing and configuring FTE on existing Experion nodes

Use the checklist in this section to install and configure FTE on an Experion node that does not yet have FTE installed.

Prerequisites

You will need:

- EPKS Client/Server Initialization DVD
- Experion PKS Application DVD

Considerations

If you have the Node Definition Tool installed and an existing node definition, you can use the "Installing and configuring FTE using the Node Definition Tool" checklist on page 24 to simplify the configuration.

Checklist

After performing each procedure return to the checklist to reference the next procedure.

Task	Go to	Done (✓)
Removing non-FTE hardware: **Note:** If the FTE dual network adapter card is already installed or you are using the on-board dual network adapters, go to "Installing FTE software" section of the checklist.		
If the Experion Node is using the Onboard Single adapter Uninstall single (onboard) network adapter.	Page 30	
Disable non-FTE NIC for ***NON-EHG*** Node	Page 31	
Installing FTE hardware.		
Verify you have reviewed the specific vendor's installation guide for the network adapter card(s) you are using.	Vendor manuals	
Obtain the computer user manual for your platform to determine how to remove the cover.		
Determine Qualified platforms and network adapter card slot requirements	Page 32	
Determine Network adapter card connection requirements	Page 33	
Install dual port network adapter	Page 34	
Install or update network adapter driver for Experion nodes	Page 37	

Task	Go to	Done (✓)
Installing FTE software		
Install FTE software as an optional component (Experion)	Page 39	
Configuring FTE and Network Adapters		
Configure FTE service	Page 43	
Identify FTE network adapter ports	Page 47	
Determine TCP/IP binding order and, if necessary, reorder connections	Page 49	
Configure the *A - yellow* FTE network	Page 52	
Configure the *B - green* FTE network	Page 54	
Enter IP addresses for the	Page 56	
Connect FTE network cables	Page 60	
FTE installation	Page 61	

2.5 Installing and configuring FTE using the Node Definition Tool

Prerequisites

Before using the Node Definition Tool to install and configure FTE, it is assumed you have performed the following:

- Installed Experion software including the Node Definition Tool.
- Created a Node Definition in which all FTE configuration options have been defined. If this is not the case, refer to the *Node Definition Tool User's Guide*.

Checklist

After performing each procedure return to the checklist to reference the next procedure.

Task	Go to	Done (✓)
Removing non-FTE hardware: Perform these two procedures if the node has an onboard single NIC. **Note:** If the FTE dual network adapter card is already installed or you are using the on-board dual network adapters, go to "Installing FTE software" section of the checklist.		
If the Experion Node is using the Onboard Single adapter Uninstall single (onboard) network adapter.	Page 30	
Disable non-FTE NIC for ***NON-EHG*** Node	Page 31	
Installing FTE hardware.		
Verify you have reviewed the specific vendor's installation guide for the network adapter card(s) you are using.	Vendor manuals	
Obtain the computer user manual for your platform to determine how to remove the cover.		
Determine Qualified platforms and network adapter card slot requirements	Page 32	
Determine Network adapter card connection requirements	Page 33	
Install dual port network adapter	Page 34	
Install or update network adapter driver for Experion nodes	Page 37	
Installing FTE software		
Install FTE software as an optional component (Experion)	Page 39	
Configuring FTE and Network Adapters		
Download FTE-configured node definition	Page 58	

Task	Go to	Done (✓)
Configure FTE service	Page 43	
Identify FTE network adapter ports	Page 47	
Connect FTE network cables	Page 60	
FTE installation	Page 61	

2.6 Installing and configuring FTE on TPS nodes

Prerequisites

You will need the Honeywell Common Component CD.

Checklist

After performing each procedure return to the checklist to reference the next procedure.

Task	Go to	Done (✓)
Removing non-FTE hardware: Perform these two procedures if the node has an onboard single NIC. **Note:** If the FTE dual network adapter card is already installed or you are using the on-board dual network adapters, go to "Installing FTE software" section of the checklist.		
If the TPS Node is using the Onboard Single adapter Uninstall single (onboard) network adapter.	Page 30	
Disable non-FTE NIC for ***NON-EHG*** Node	Page 31	
Installing FTE hardware.		
Verify you have reviewed the specific vendor's installation guide for the network adapter card(s) you are using.	Vendor manuals	
Obtain the computer user manual for your platform to determine how to remove the cover.		
Determine Qualified platforms and network adapter card slot requirements	Page 32	
Determine Network adapter card connection requirements	Page 33	
Install dual port network adapter	Page 34	
Install or update network adapter driver for Experion nodes	Page 37	
Installing FTE Software		
Verify you've met all FTE software installation prerequisites	Page 39	
Stop TPS services and device drivers	Page 39	

Task	Go to	Done (✓)
Configuring FTE and Network Adapters		
Configure FTE service	Page 43	
Identify FTE network adapter ports	Page 47	
Determine TCP/IP binding order and, if necessary, reorder connections	Page 49	
Configure the *A - yellow* FTE network	Page 52	
Configure the *B - green* FTE network	Page 54	
Connect FTE network cables	Page 60	
FTE installation	Page 61	

3. Installing FTE Hardware

3.1 Introduction

This section contains procedures for installing and configuring the network adapter card used with your FTE node.

FTE hardware installation prerequisites

To ensure you will be able to install the FTE hardware correctly, verify the following tasks have been performed before you begin:

- You have reviewed the specific vendor's installation guide for the network adapter card(s) you are using.
- You are familiar with the hardware installation requirements for your specific platform. See "Qualified platforms and network adapter card slot requirements" on page 32.
- You have the computer user manual for your specific platform. You may need to refer to the manual in order to remove the cover.

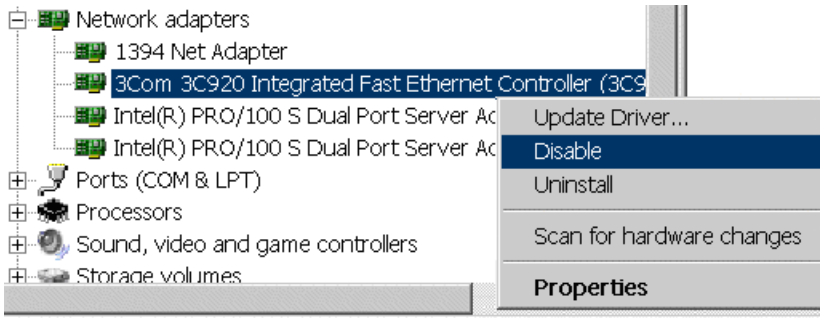
3.2 Removing Non-FTE hardware

Perform the procedures in this section if you are installing FTE on a node that has an integrated onboard Ethernet adapter. Do not perform these procedures if you are installing FTE on an EHG Node.

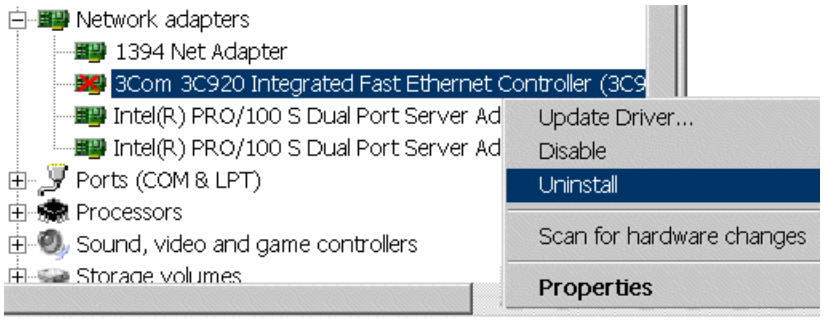
Uninstall single (onboard) network adapter

Use this procedure to disable and uninstall the integrated onboard Ethernet adapter.

Step	Action
1	Right-click the **My Computer** icon from the desktop or from the **Start** menu and select **Manage**.
2	In the console Tree, open **System Tools** and then click **Device Manager.**
3	Double-click **Network adapters** to view all installed network adapters.
4	Right-click the onboard Ethernet adapter that will not be used for FTE and click **Disable**.



5	Right-click the network adapter and click **Uninstall**.



6	Click **OK** to confirm the removal of the device.

Disable non-FTE NIC for NON-EHG Node

If you are installing FTE on an EHG Node, ***DO NOT*** perform this procedure. Otherwise, to ensure only the relevant local area connections are detected and used, Honeywell recommends that you disable the Network Interface Controller that will ***NOT*** be used to connect to the FTE network. BIOS configuration varies between machines, so the procedure steps are guidelines only.

CAUTION

Be aware that BIOS setup is an advanced tool, and you should only enter the system setup if you are an experienced user.

Step	Action
1	Restart the computer and, when prompted during system startup, press the appropriate key(s) to enter system setup.
2	Select Integrated Devices.
3	If Network Interface Controller is listed, you have on-board NIC. Change the setting to **Off.**
4	Save changes and exit BIOS to continue the system startup and allow your system to detect new hardware.
5	Perform a system start-up and log on to the local machine as Administrator.
6	Perform a system shutdown.

Qualified platforms and network adapter card slot requirements

The following table provides a list of hardware platforms that have been qualified for use with FTE. Some platforms have specific slot requirements, which are indicated in the Slot Requirement column. Refer to your hardware documentation for additional slot restrictions.

Table 3-1 FTE Network adapter slot placement

Platform	Slot requirement
WKS1, SVR1	PCI4 slot
WKS2, SVR2	PCI5 slot
Dell GX1	PCI1 slot
Dell GX200	PCI1 slot
Dell GX240	Available PCI-only slot
Dell PW340	Available PCI-only slot
Dell WS360	PCI4 slot
Dell WS370	PCI2 slot
Dell WS470	PCIX 4 slot
Dell WS490	PCIX – Slot 6
Dell PE1400	Available PCI-only slot
Dell PE1600	PCI6 slot
Dell PE1800	PCIX 5 slot
Dell PE2500	Available PCI-only slot
Dell PE2550	Available PCI-only slot
Dell PE2600	Available PCI-only slot
Dell PE2650	Available PCI-only slot
Dell PE2850	Onboard NIC

Network adapter card connection requirements

We recommend you use a consistent strategy when placing the network cards in each type of computer and when connecting the cables. For example, for all of your Dell PE2600 platforms, place the FTE network adapter card in slot 7 for each machine and connect the A - *yellow* cable to the ACT/LINK A port. The following table summarizes the requirements for connecting cables to the network adapter ports.

Table 3-2 NIC connection requirements

Physical Label on NIC	Physical Ethernet (MAC) Address	Connected Cable	Network Connections	Connect Cable to	Network Binding Order
ACT/LINK A (dual NIC) ACT/LINK (single NIC)	Lower physical Ethernet (MAC) address	Cable w/ **A - *yellow*** boots	First Adapter	Ethernet switch in the A - yellow Tree	First
ACT/LINK B (dual NIC) ACT/LINK (single NIC)	Higher physical Ethernet (MAC) address	Cable w/ **B - *green*** boots	Second Adapter	Ethernet Switch in the B - green Tree	Second

TIP

The term used to describe the 12-digit hexadecimal address for the network adapter port is different in the following interfaces:

- **IPCONFIG**: Physical Address
- **Switch Configuration Menu**: MAC Address

All of three of these represent the same address for the network adapter port.

3.3 Installing the Network Interface Card and driver

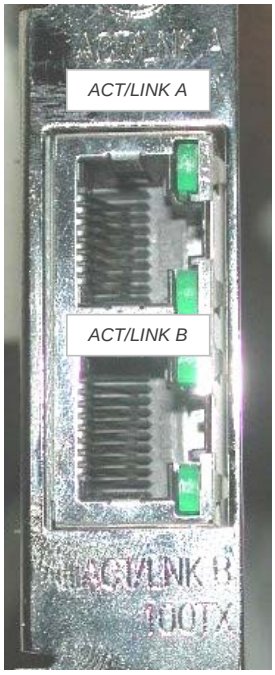
Purpose

If your FTE network interface card was not installed at the factory, use the procedures in this section to install and configure the network interface card or cards you will be using for your FTE node. You may need to refer to the vendor-specific documentation to complete some of these procedures.

Install dual port network adapter

Use this procedure to install the Network Adapter in the PCI slot. If necessary, refer to your specific platform hardware manual for information on the available PCI slots.

Step	Action
	REFERENCES Before installing the network adapter card, review all documentation that is packaged with the dual port network adapter, including the *Quick Start Guide*
1	Identify the "ACT/LINK A" and "ACT/LINK B" ports on the network adapter card. **Note**: The ACT/LINK A port is closest to the middle of the card.



Step	Action
	TIP Although the next two steps are optional, it may be useful to know the physical Ethernet address used for each port on the network adapter card. When reviewing the MAC address table in the Switch Configuration Menu, you will be able to positively identify which switch port is attached to which dual adapter port using these addresses.
2	Locate and record the adapter card's label containing the 12-digit, hexadecimal Physical Ethernet (MAC) Address. **Note:** This address applies to Port "A" (ACT/LINK A) on the network adapter card. 
3	Increment by 1 the address for Port "A" to derive the Physical Ethernet (MAC) Address for Port B, and record the value.
5	Install the dual port network adapter card in the proper slot using the instructions in the *Installation Guide* that is packaged with the device.

Uninstall Intel ® PROSet software

ProSet software is not used for R210 and later releases of FTE. Use this procedure to remove ProSet from your system if necessary.

1	Click **Start** > **Settings** > **Control Panel**, or Click **Start** > **Control Panel**.
2	Double-click **Add/Remove Programs**.
3	Select **Intel® PROSet** or **Intel® PROSet for Wired Connections** and click **Remove.**
4	Click **Yes** to confirm the removal.

Install or update network adapter driver for TPS nodes

Use this procedure to install or update your network adapter drivers on TPS-only nodes. This procedure updates all the network adapter drivers including the onboard adapter if it is enabled.

Step	Action
1	Select and run the following application from the Common Components CD **<*drive letter*>:\Drivers\Intel\pro100_1000_v8\prok2xpm.exe**
2	Review and accept the license agreement and then click **Next**.
3	Click **Next** to accept the default location for the saved files. **Note**: It may take several minutes for the files to be extracted from the package.
4	From the **Intel PRO Network Connections** dialog, click **Install Base Driver**.
5	As the drivers are installed or updated, observe any loss of network connections for both the *Yellow* and *Green* connections. The application returns to the about screen after the drivers are installed.
6	Click **Exit**.
7	If you updated the network adapter driver on an existing FTE node, use the "Verify FTE adapters are selected" procedure in this section to verify network adapters are still selected on the **FTE Configuration** dialog box.

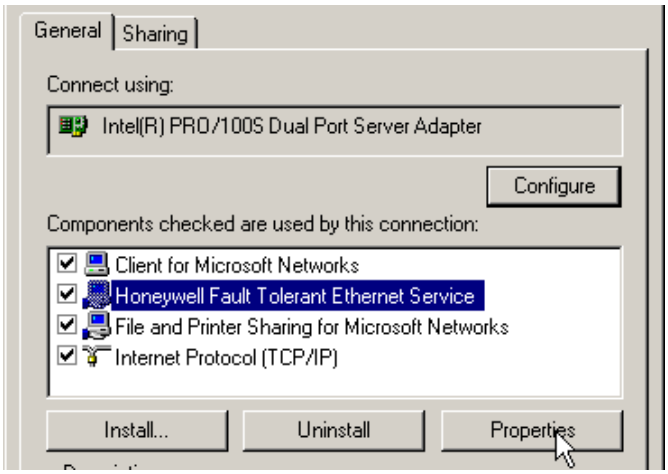
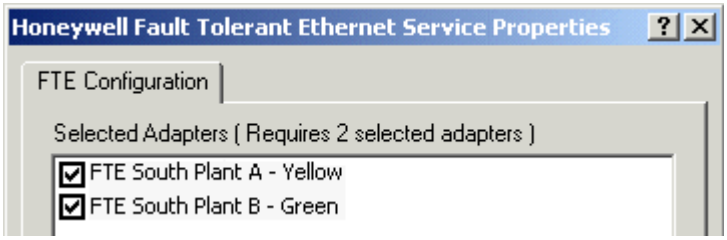
Install or update network adapter driver for Experion nodes

Use this procedure for installing or updating the FTE network adapter driver.

Step	Action
1	Select and run the following application from the Experion PKS Client/Server Initialization media. ***<drive letter>*:\Drivers\Intel\Installsetup\Prok2kxp.exe**
2	Review and accept the license agreement and then click **Next**.
3	Click **Next** to accept the default location for the saved files. **Note**: It may take several minutes for the files to be extracted from the package.
4	From the **Intel PRO Network Connections** dialog, click **Install Drivers**.
5	As the drivers are installed or updated, observe any loss of network connections for both the *Yellow* and *Green* connections. The application returns to the about screen after the drivers are installed.
6	Click **Exit**.
7	If you updated the network adapter driver on an existing FTE node, use the "Verify FTE adapters are selected" procedure in this section to verify network adapters are still selected on the **FTE Configuration** dialog box.

Verify FTE adapters are selected

If you are updating your network adapter driver on an existing FTE node, use this procedure to verify network adapters are still selected on the **FTE Configuration** dialog box.

Step	Action
1	Right-click **My Network Places** and select **Properties**.
2	Right-click one of the FTE network connections (*yellow* or *green*) and select **Properties**
3	Select **Honeywell Fault Tolerant Ethernet Service** then click **Properties**. 
4	From the **Honeywell Fault Tolerant Ethernet Service Properties** dialog box, verify both of the adapters that are being used for FTE (*yellow* and *green*) are checked and click **OK**.  **Note**: If the adapters are not checked, you will need to reconfigure the adapters. See the “Configure FTE service ” procedure in Section 5.3.
5	Close the **FTE Configuration, Properties**, and **Network Connections** dialog boxes.

4. Installing FTE Software

4.1 Introduction

Use the procedures in this section to install FTE software on Experion or TPS nodes.

FTE software installation prerequisites

To ensure you will be able to install and configure the FTE software correctly, verify the following tasks have been performed before you begin.

- You have an established subnet or domain for your FTE network.
- You have properly configured your switches according to the best practices in the *FTE Overview and Implementation Guide*.

4.2 Installing FTE software on Experion and TPS nodes

Install FTE software as an optional component (Experion)

Use this procedure to install FTE if it was not installed with your Experion system.

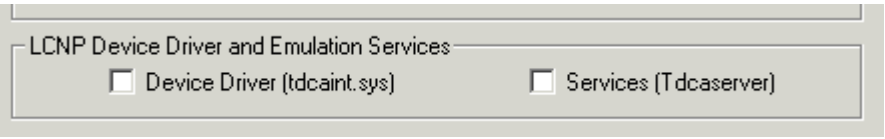
Step	Action
1	Insert the Experion Application DVD in the drive.
2	Click **Install Optional Software Packages**.
3	Review the information on the installation screens and click **Next** to continue.
4	Select **FTE Driver** from the **Package Selection** screen and click **Install Package**.
5	Click **OK** from the **Installable Packages** screen.
6	Close the software installation screens.

Install FTE on a TPS System

Use this procedure with the Common Components media to install FTE on a TPS node.

Step	Action
Stop TPS services and device drivers	
1	Click **Start** > **Programs** > **Honeywell TPS** > **Configuration Utility**.
2	From the **Devices and Services** tab, clear the **Device Driver** and **Services** checkboxes as shown in the picture.

Step	Action



3 Click **Ok**.

4 Restart the computer.

Install FTE software

5 Launch the Honeywell installer:

- Insert the Common Components CD in the drive.
- Select the Licensed Package Installer from the Install screen.

OR

- Double-click **Install** from the Packages folder on the Common Components CD.

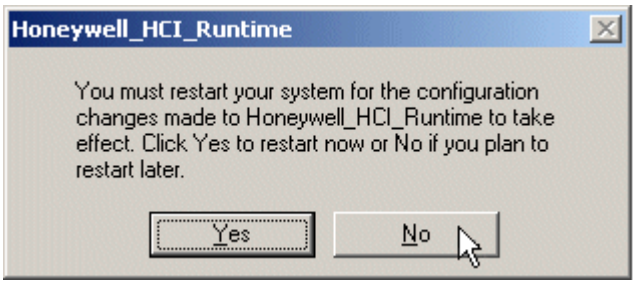
6 Review the information about installing software, license agreements, and third-party compatibility on the next several screens and click **Next** to continue.

7 From the **Honeywell Software Installation Installable Packages**, select **Fault Tolerant Ethernet Driver (FTE)**.

8 Click **OK** to begin installing FTE components.

Note: This may take several minutes.

9 If you selected HCI Runtime as one of the components to install, you will receive the following message. Click **No** at this time to continue the installation. You will restart the system after configuring the FTE Driver.

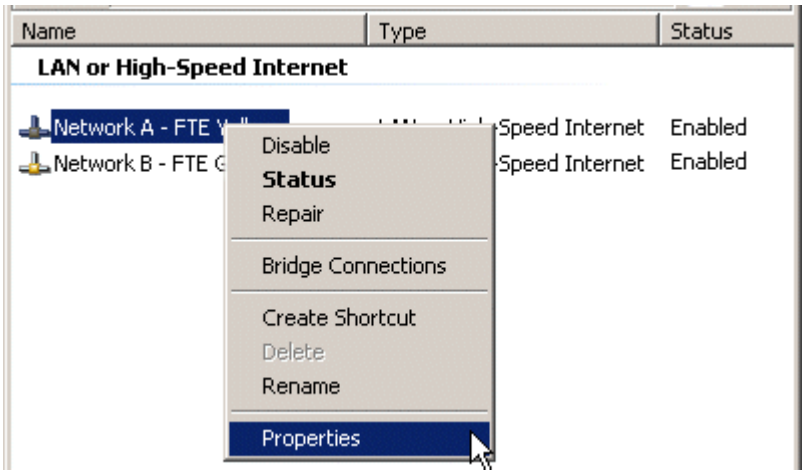


10 Click **Yes** to run the FTE Driver Install Script.

Note: If you choose not to run the script, you can install FTE using the "Manually install Honeywell FTE driver service" procedure in this section.

11 Click **Exit** from the **Installation** dialog box.

Step	Action
12	Open **Network Connections**.
13	Right-click one of the FTE network adapters and select **Properties**.



14	Verify **Honeywell Fault Tolerant Ethernet Service** appears in the list of components.

TIP

If **Honeywell Fault Tolerant Ethernet Service** does not appear in the properties dialog box, you will need to add it using the "Manually install Honeywell FTE driver service" procedure in Section 7.5.

5. Configuring FTE

5.1 Introduction

Depending on the media you used and options you selected, some FTE configuration is performed automatically. You must still perform minimal FTE configuration.

5.2 Configuring FTE Service properties

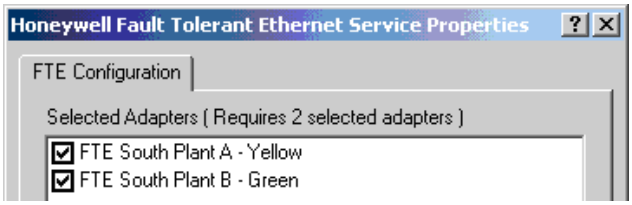
Configure FTE service settings

Use this procedure to configure the FTE service settings from the **FTE configuration** dialog box. See “FTE configuration” on page 46 for descriptions of the settings.

ATTENTION

The Network administrator should establish and record these settings to ensure each FTE Node in the network is configured properly.

Step	Action
1	If the **FTE Configuration** dialog box is not open, right-click either one of local area connections being used for FTE, and then click **Properties** from the Network Connections dialog.
2	Select **Honeywell Fault Tolerant Ethernet Service** then click **Properties**.
3	From the **FTE Configuration** tab, select both of the adapters that are being used for FTE.



ATTENTION

Other network adapters that have not been disabled will appear in the **FTE Configuration** dialog box. Verify that you have selected ***ONLY*** those adapters that are being configured for FTE.

Step	Action
4	Enter a **Device Index** value that is greater than 0 and equal to or less than the **Max FTE Nodes** setting.

CAUTION

- The **Device Index** is the FTE Node number.
- All FTE Nodes within the same community must have a unique **Device Index**.

5	If necessary, modify the Interval and Disjoin Multiplier values. Honeywell recommends using the default settings.
6	Enter a **Max FTE Nodes** value of 511 or less. **Note:** The value of 511 is the limit imposed by the software. Be aware, however, that your particular FTE network may have system limitations for the maximum number of FTE nodes based on the node types within the network. See “Planning a Honeywell FTE Network” in the *FTE Overview and Implementation Guide* for more information.

ATTENTION

The values for the following configuration settings must be the same for each FTE Node within a community.

- Multicast Address
- UDP Source Port
- UDP Destination Port

7	Enter an appropriate **Multicast Address** according to your site requirements**.** Honeywell recommends a non-routable multicast address such as that assigned by Foundation Fieldbus IANA: **224.0.0.105**.

REFERENCE

For additional information on the use of multicast addresses and other FTE network architecture recommendations, see “Planning a Honeywell FTE Network” in the *FTE Overview and Implementation Guide*.

Step	Action
8	For these remaining fields on the **FTE Configuration** dialog box, Honeywell strongly recommends using the defaults: • **UDP Source Port:** must be the same as the other nodes in the FTE community. • **UDP Destination port:** Must be the same as the other nodes in the FTE community. • **Max Routing Hops (TTL)**
9	Click **OK** to close the **FTE Configuration** dialog box.
10	Close the **FTE Properties** dialog box.

FTE configuration options

The following table describes the settings in the **FTE Configuration** dialog box.

Table 5-1 FTE service settings

Setting	Description and setting limitations
Device Index No default	Identifies the FTE Node. Each node within an FTE Community must have a unique Device Index lower than the than the Max FTE Nodes value.
Interval (ms) Default: 1000 microseconds (1 second)	Determines how often the FTE Node sends out a pair of diagnostic messages (heartbeat pulses) on its two channels. Too low value increases network traffic. Too high increases the amount of time before a failure is detected
Disjoin Multiplier Default: 3	This value multiplied by the Interval determines the amount of time the node's diagnostic messages are allowed to not be heard by the peer nodes before a failure detection message is sent out indicating the node has departed from the network. Too low value signals false departures when traffic is heavy. Too high value increases the amount of time before a failure is detected.
Max FTE Nodes Default: 511	Maximum number of FTE Nodes within a community. Device Index must be set lower than this value.
Multicast Address Default: 224.0.0.105	Identifies the multicast group for that FTE Node. All FTE Nodes within one FTE Community must have the same multicast address.
UDP Source Port Default: 47837	User Datagram Protocol source port address. All FTE Nodes within one FTE Community must have the same UDP Source Port.
UDP Destination Port Default: 51966	User Datagram Protocol destination port address. All FTE Nodes within one FTE Community must have the same UDP Destination Port.
Max Routing Hops (TTL) Default: 2	Maximum number of routers crossed for each message. Adjust this value according to the size of the FTE Network.

5.3 Identifying FTE network adapters

Positively identifying which physical network adapter port is associated with which network connection allows you to rename the connections using an FTE naming convention. The FTE naming convention makes it easier to verify correct binding order for proper operation of FTE. See also "Use of the A – *yellow* and B – *green* naming convention" in Section 1.2.

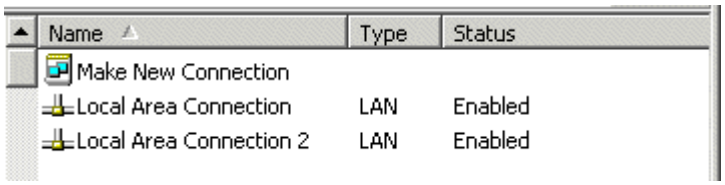
Identify FTE network adapter ports

This procedure is not necessary if you are installing FTE on a factory configured Experion node or you are installing from the Experion PKS Client/Server Initialization media, which names and configures the network adapter ports for you.

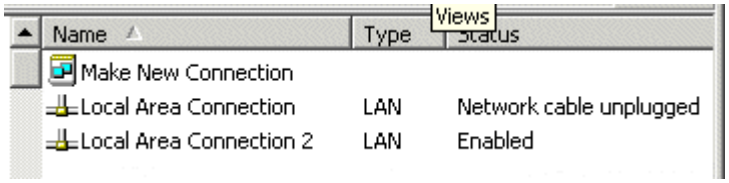
Step	Action

Identify which FTE adapter port is associated with which connection

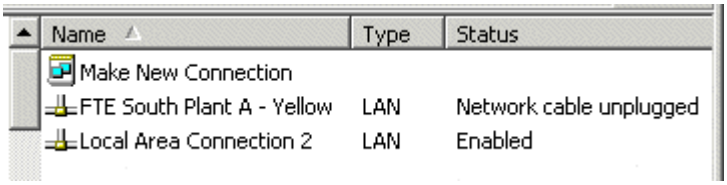
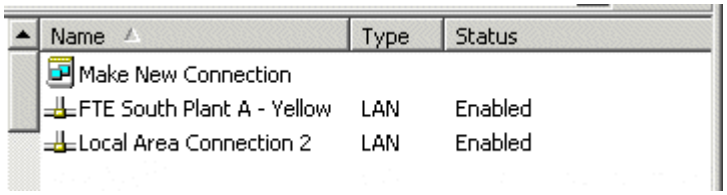
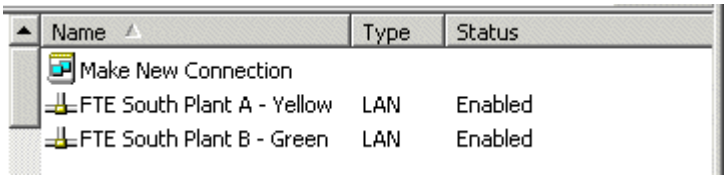
1 Click **Start** > **Settings** > **Network Connections**.



2 Disconnect the yellow network cable from the network adapter port.



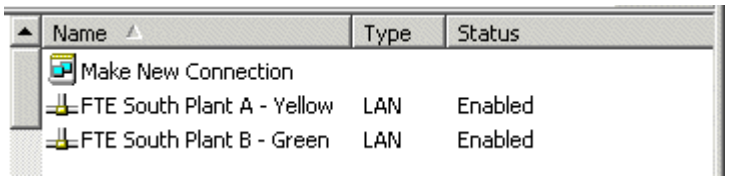
Note: In this example Local Area Connection is associated with the A adapter port. This will not always be the case.

Step	Action
3	Right-click the local area connection associated with the **Network cable unplugged** network adapter port and rename it using the following convention: • FTE *Community Name* A – yellow • Where *Community Name* is a descriptive name that does not contain special characters or exceed 244 characters. • **FTE South Plant A – Yellow** is used in the following example. 
4	Reconnect the A - yellow network cable to the network adapter A port. 
5	Right-click the unnamed local area connection and rename it using the following convention: • FTE *Community Name* B – Green • Where *Community Name* is a descriptive name that does not contain special characters or exceed 244 characters. • **FTE South Plant B – Green** is used in the following example. 

Determine TCP/IP binding order and, if necessary, reorder connections

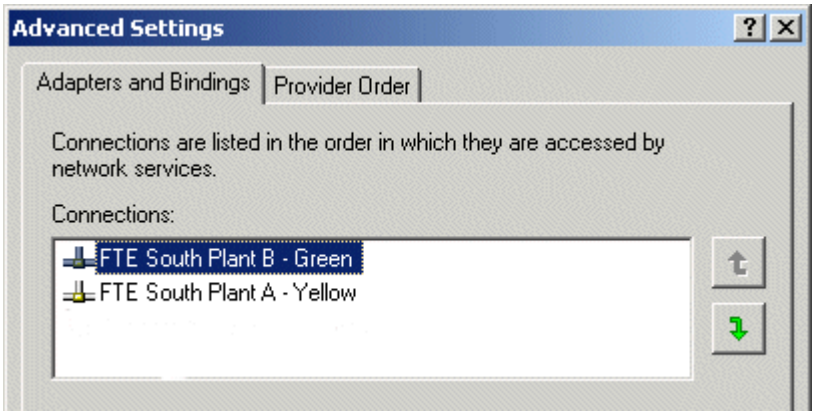
Binding order determines which FTE port is connected to which switch. That is, the connection listed first in the binding order must be connected to Switch A (*yellow* tree) in an FTE Network. Since you have already connected network adapter port A (*yellow*) to Switch A, you must make sure it is first in the binding order. If it is not, reorder the connections.

Step	Action
1	If necessary, open the **Network Connections** dialog by clicking **Start** > **Settings** > **Network Connections**.

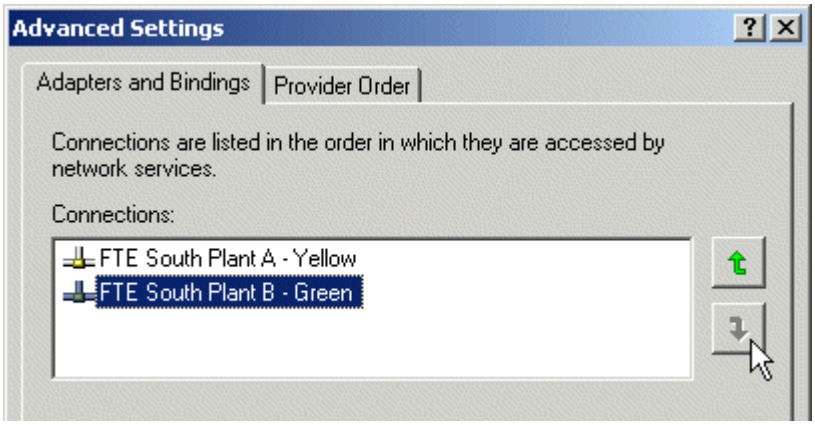


Note: The order in which the local area connections appear in **Network Connections** is not necessarily the same as the binding order.

2	From the **Network Connections** dialog, select **Advanced > Advanced Settings.**
3	From the **Adapters and Bindings** tab, identify which network adapter port is listed first under **Connections**. In the following example, ***FTE South Plant B – green*** appears first.



Step	Action
4	If the *A - yellow* network adapter port that is connected to Switch A is ***NOT*** listed first under **Connections**, reorder the connections using the arrows. Your connections should appear similar to the following example.



5	Click **OK** to close the **Advanced Settings** dialog and return to **Network Connections.**

5.4 Configuring FTE network connections

If you choose FTE as your network type when installing Experion, it is automatically installed and partially configured. Use the procedures in this section to manually configure network connections.

Network connection properties

The following table summarizes the selections that vary between the two FTE network connections (A – *yellow* and B – *green*).

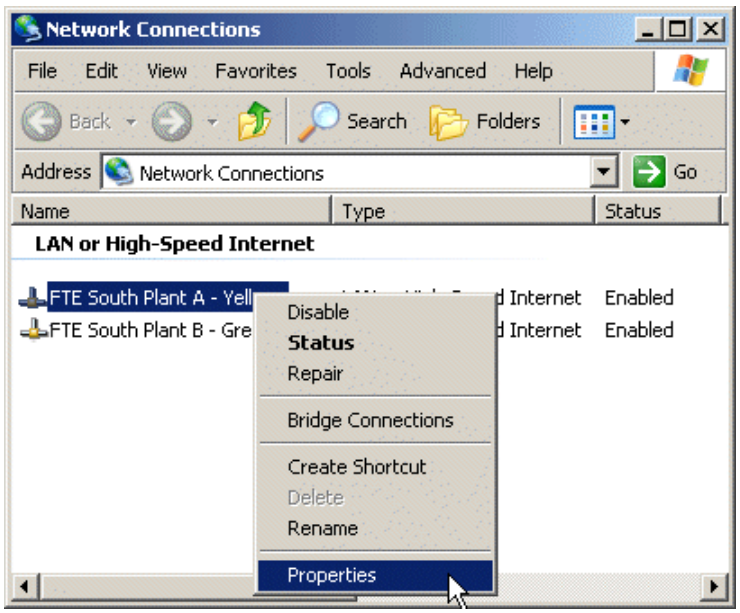
Selection	For ***A - yellow*** network connection	For ***B - green*** network connection
Default Gateway address	Enter if not using DHCP.	Do not enter addresses
DNS Server address	Enter addresses if they are not obtained automatically.	Do not enter addresses
IP Settings: Interface metric	1	5
DNS	Register this connection's addresses in DNS.	DO NOT register this connection's addresses in DNS.
WINS	Enable NetBIOS over TCP/IP	Disable NetBIOS over TCP/IP

Configure the *A - yellow* FTE network connection

Use this procedure to manually configure the A - *yellow* (first) FTE network connection. For new Experion systems, all these settings except for the IP addresses are configured by the Experion Application installation routine.

Configuring the *A - yellow* FTE network connection

Step	Action
1	If the **Network Connections** dialog is not open, click **Start** > **Settings** > **Network Connections**.
2	From **Network Connections**, right-click the A - yellow network connection, and click **Properties**.
3	From **Properties**, click **Configure**.



Configuring the *A - yellow* FTE network connection

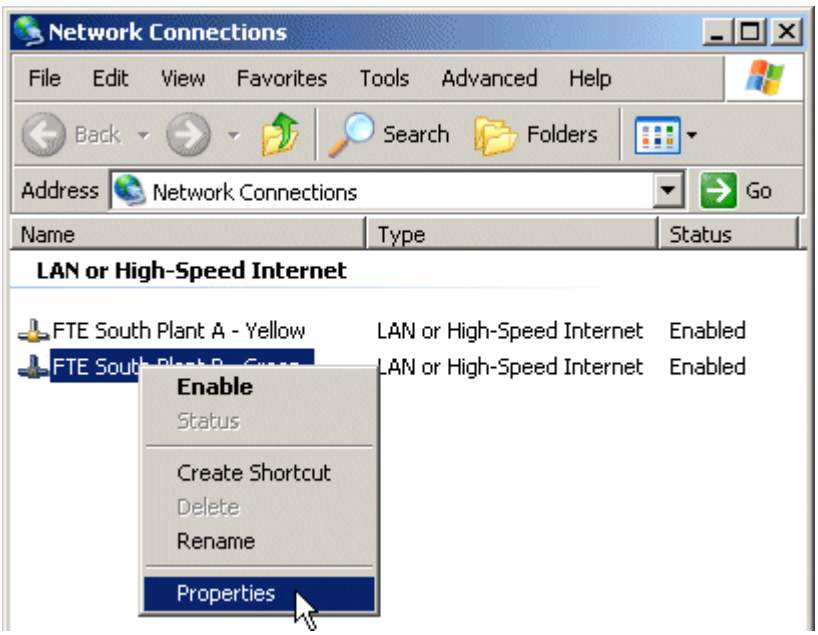
Step	Action
4	Configure the link speed and duplex for the network adapter: • For Intel Pro 1000 adapters, click the **Link** tab and select **100 Mbps/Full Duplex** from the **Speed and Duplex** list. • For other adapters: – Click the **Advanced** tab and select **Link Speed & Duplex** from the **Property** list. – In the **Value** drop-down list, select **100 Mbps/Full Duplex.**
5	Click **OK** to return to the **Properties dialog** box. **Note**: If the **Properties** dialog box closes, right-click the A - yellow network connection, and click **Properties.**
6	From **Properties** dialog box, select **Internet Protocol (TCP/IP)** and click **Properties**.
7	If you are using DHCP, select **Obtain an IP address automatically**. If you are NOT using DHCP, select **Use the following IP address** and configure the TCP/IP settings.
8	Select **Obtain DNS server address automatically**, or Select **Use the following DNS server addresses** and enter the IP addresses for your DNS servers.
	ATTENTION Each of the two connections associated with FTE has a separate IP address, but services only bind to one of these addresses. To ensure the host name is resolved to a single IP address and guarantee the client can connect to the service, you must verify that only the A - yellow connection is registered with DNS.
9	Click **Advanced** from the **Internet Protocol (TCP/IP) Properties** dialog.
10	Perform the following from the **IP Settings** tab: • If you are using the XP or Windows 2003 Server, clear the **Automatic metric** check box (check box does not appear in Windows 2000). • Type 1 in the **Interface metrics** box.
11	If you are using DNS, click the **DNS** tab and select **Register this connection's addresses in DNS**.
12	Click the **WINS** tab, select **Enable NetBIOS over TCP/IP** and click **OK**.
13	Close all dialog boxes and return to **Network Connections.** ***You are now ready to configure the B - green network connection.***

Configure the *B - green* FTE network connection

Use this procedure to manually configure the B - *green* (second) FTE network connection. For new Experion systems, all these settings except the IP addresses are configured by the Experion Application installation routine.

Configuring the *B - green* FTE network connection

Step	Action
1	If the **Network Connections** dialog is not open, click **Start** > **Settings** > **Network Connections**.
2	From **Network Connections**, right-click the ***B - green*** network connection and select **Properties**.
3	From the **Properties** dialog box, click **Configure**.



Configuring the *B - green* FTE network connection

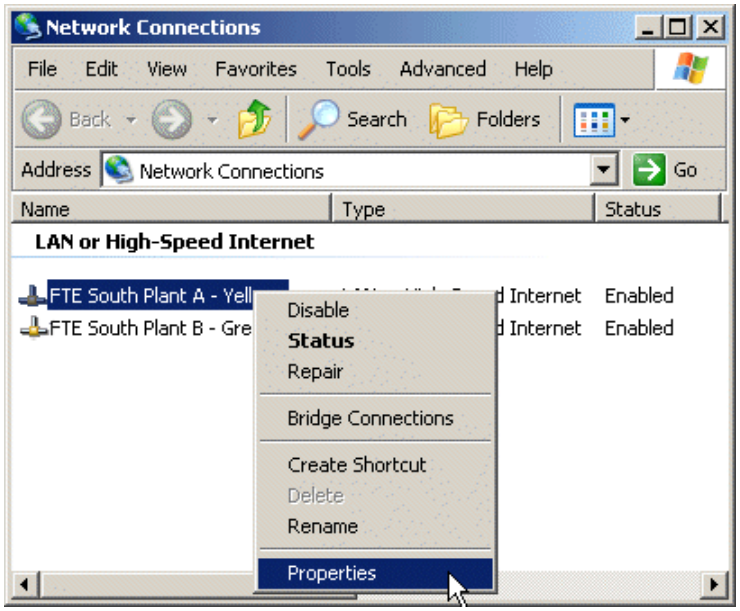
Step	Action
4	Configure the link speed and duplex for the network adapter: • For Intel Pro 1000 adapters, click the **Link** tab and select **100 Mbps/Full Duplex** from the **Speed and Duplex** list. • For other adapters: – Click the **Advanced** tab and select **Link Speed & Duplex** from the **Property** list. – In the **Value** drop-down list, select **100 Mbps/Full Duplex.**
5	Click **OK** to return to the **Properties** dialog box. **Note**: If the **Properties** dialog box closes, right-click the B - green network connection, and select **Properties.**
6	From the **Properties** dialog box, select **Internet Protocol (TCP/IP)** and then click **Properties**.
7	If you are using DHCP, select **Obtain an IP address automatically**. If you are NOT using DHCP, select **Use the following IP address** and configure the **IP address** and **Subnet mask**. **Note**: The **Default Gateway** does not need to be configured for the B – green network.
	ATTENTION Each of the two ports associated with FTE has a separate IP address, but services only bind to one of these addresses. To ensure the host name is resolved to a single IP address and guarantee the client can connect to the service, you must verify the B - green link is ***NOT*** registered with DNS. For this reason, you do not need to enter an address for the Default gateway or the DNS servers on the B – green network connection.
8	Click **Advanced** from **Internet Protocol (TCP/IP) Properties**.
9	Click the **IP Settings** tab and do the following: • If you are using the XP operating system, clear the **Automatic metric** check box (check box does not appear in Windows 2000). • Type 5 in the **Interface metrics** box.
10	Click the **DNS** tab, and clear the **Register this connection's addresses in DNS** checkbox.
11	Click the **WINS** tab, select **Disable NetBIOS over TCP/IP** and click **OK**.
12	Close all dialog boxes and restart the computer.

FTE is now installed and configured. After connecting your network cable, your FTE node will be visible on the network.

Enter IP addresses for the network connections

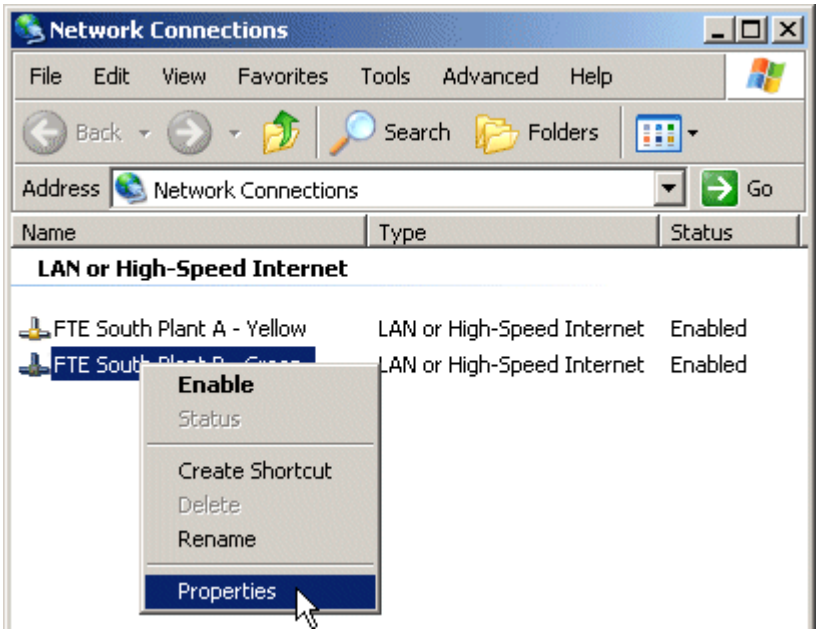
Use this procedure when the FTE network connections are already configured and you only need to set the IP addresses.

Step	Action
1	If the **Network Connections** dialog is not open, click **Start** > **Settings** > **Network Connections**.
	Configure the *A – yellow* FTE network connection
2	From **Network Connections**, right-click the A - yellow network connection, and select **Properties**.



3	From the **Properties** dialog box, select **Internet Protocol (TCP/IP)** and click **Properties**.
4	If you are using DHCP, select **Obtain an IP address automatically**. If you are NOT using DHCP, select **Use the following IP address** and configure the TCP/IP settings.
5	Select **Obtain DNS server address automatically**, or Select **Use the following DNS server addresses** and enter the IP addresses for your DNS servers.
6	Close all dialog boxes and return to **Network Connections.**
	Configure the *B – green* FTE network connection

Step	Action
7	From **Network Connections**, right-click the ***B - green*** network connection and select **Properties**.



8	From the **Properties** dialog box, select **Internet Protocol (TCP/IP)** and click **Properties**.
9	If you are using DHCP, select **Obtain an IP address automatically**. If you are NOT using DHCP, select **Use the following IP address** and configure the **IP address** and **Subnet mask**. **Note**: The **Default Gateway** does not need to be configured for the B – green network.
10	Close all dialog boxes and restart the computer.

FTE is now installed and configured. After connecting your network cable, your FTE node will be visible on the network.

5.5 Configuring FTE using the Node Definition Tool

About node definitions and FTE

If you created a node definition in which you defined all your FTE options, you can use it to configure your Experion FTE node. Essentially, you will be downloading the node definition that contains all the FTE configuration options to the FTE node. Refer to the *Node Definition Tool User Guide* for information on using the tool and creating a node definition.

Considerations

- You may only perform a download when the Node Definition Tool is running in the online mode and is connected to the EMDB.
- When you perform a download, the integrity of the node definition is validated, and if there are errors, you will not be allowed to continue.

Prerequisites

Before using this procedure it is assumed:

- You launched the Node Definition tool in online mode.
- You are logged on with an account that has administrator privileges.
- The node being updated with the node definition has Experion R300 or later software installed.

Download FTE-configured node definition

Use this procedure to download the node definition containing the correct FTE options to the FTE node.

Step	Action
1	From the **Node Definition Tool**, retrieve the node definition that contains the FTE node configuration information you want to save to a target FTE computer.
2	Click **Upload/Download (Computer)**.
3	From the **Upload/Download** dialog box, click **Download**.
4	Click **Browse** and select the target computer that you are saving the node definition to and click **OK**.
5	Read the confirmation dialog box and click **OK** if you are certain the node definition is properly configured.

Step	Action
6	If you are changing the computer name or adding the computer to a domain and you are not logged on with an account that has adequate privileges, you will be prompted for another account and password. Enter the information and press **OK**.
7	The tool verifies the target node is the same type defined in the node definition and validates the integrity of the values. If it detects any errors, an **Online Validation Errors** message appears. If this happens, click **OK** to return to the **Node Definition Tool** and correct the errors. See “Node Definition download validation” in the *Node Definition Tool User Guide* for help. **Note**: **Download operation fail** appears in the **Status** field.
8	If the tool detects values that are different between those in the node definition and those on the target node, it prompts you to confirm the values are correct. Click **OK** to confirm the values, or **Cancel** to return to the Node Definition Tool.
	TIP As its final operation, the download function launches the ANCIM Reboot Manager and performs the following: • Changes the computer name. • Adds or updates the IP address(es). • Adds the computer to a domain if applicable. The ANCIM Reboot Manager also manages the reboots required after performing the above actions and running the link domain groups and the server rename tools.

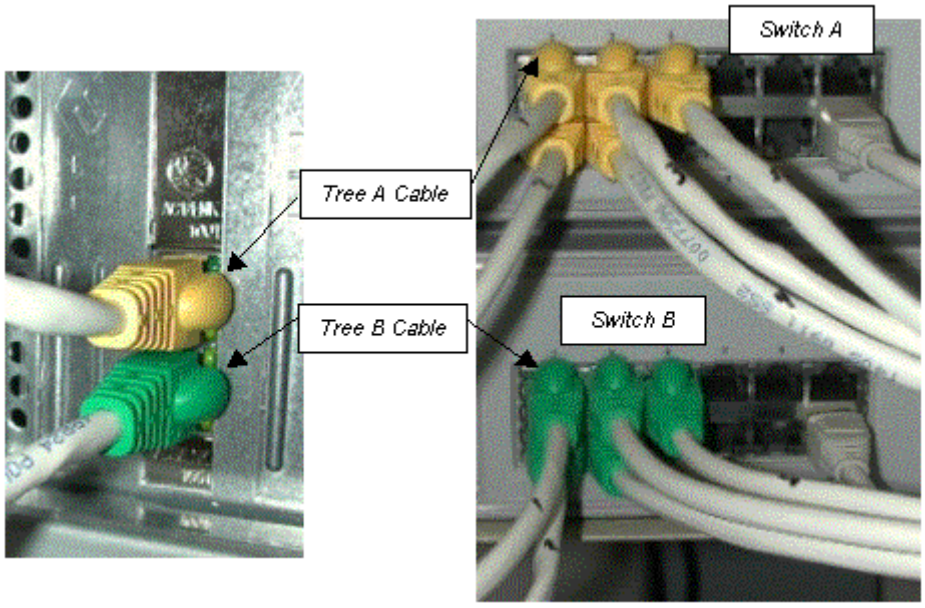
5.6 Connecting network cables to switches

Connect FTE network cables

Use this procedure to connect the FTE network cables to the FD 100-megabit switch ports. If you configured the switch using the switch configuration files and procedures in the *FTE Overview and Implementation Guide*, the FD 100-megabit ports will be those switch ports that are located after the configured uplink ports and FTE Bridge ports.

Step	Action
1	Connect the yellow network cable to one of the FD 100-megabit ports configured for FTE nodes in Switch A (yellow tree).
2	Connect the yellow network cable to the network adapter A port.
3	Connect the green network cable to one of the FD 100-megabit ports configured for FTE nodes in Switch B (green tree).
4	Connect the green network cable to the network adapter B port.

Figure 5-1 FTE Network Adapter Ports and Switches



5.7 Verifying correct installation

FTE installation checklist

Use this checklist to verify proper installation of FTE.

No.	Requirement	Done (✓)
1	All A - yellow cables are connected to the correct switch ports in the ***A - yellow*** tree.	
2	All B - green cables are connected to the correct switch ports in the ***B - green*** tree.	
3	The Device Index has been set to a unique value that is not 0.	
4	All values in the Device Index are unique. **Note: Dup State** column of the FTE Auxiliary Display should display **No Duplicates** for all nodes within the multicast scope.	
5	Multicast address has been set correctly for all nodes within the FTE community.	
6	The connection address for the ***A - yellow*** port is registered in DNS.	
7	Enable NetBIOS over TCP/IP has been set for ***A - yellow*** port.	
8	The **Interface metrics** has been set to 1 for the ***A - yellow*** port.	
9	The connection address for the ***B - green*** port is ***NOT*** registered in DNS.	
10	Disable NetBIOS over TCP/IP has been set for the ***B - green*** port.	
11	The **Interface metrics** has been set to 5 for the ***B - green*** port.	
12	The route addition command is successful for the ***A - yellow*** connection.	
13	Only the highest level of redundant switches in the LAN is interconnected using the crossover cable if you are ***NOT*** using a router.	

For more information

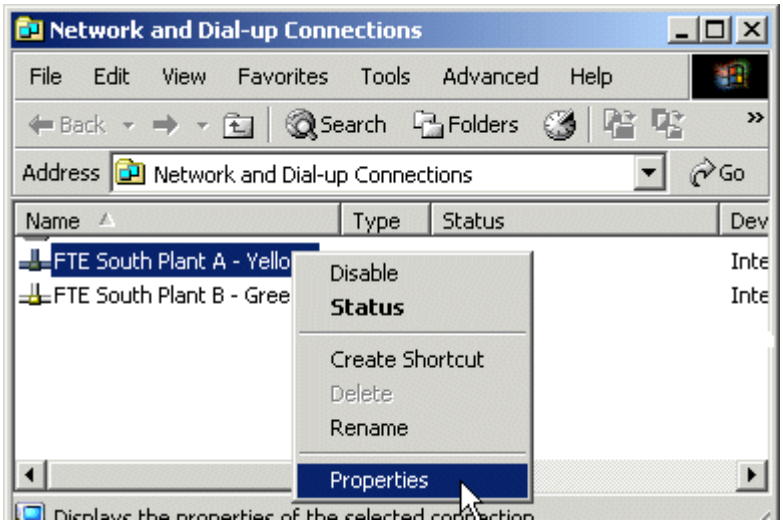
See also the “Troubleshooting FTE” section to resolve any issues with your FTE installation.

6. Operating and Servicing FTE

6.1 Modifying FTE settings

Access FTE configuration dialog box

Use this procedure to access the **FTE Configuration** dialog box in order to review or modify FTE service settings. See also “Table 5-1” for descriptions of each setting.

Step	Action
1	Click **Start** > **Settings** > **Network Connections**.
2	Right-click either one of the connections associated with FTE, and then click **Properties**.
	
3	Select **Honeywell Fault Tolerant Ethernet Service** then click **Properties**.
4	Review or modify the values in the **FTE Service Settings** using the criteria in Table 5-1.
5	Click **OK** to close the **FTE Configuration** dialog box.

6.2 Viewing FTE status

You can view the operating status of your FTE nodes using Honeywell's System Management and the cable status of your FTE nodes using the FTE Status auxiliary display.

Accessing status displays

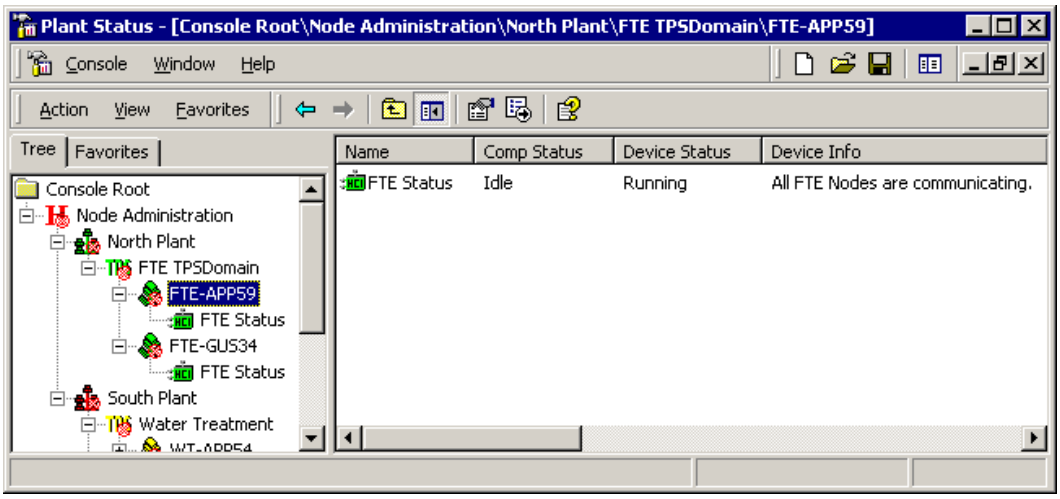
Status displays can be accessed in several ways as described in the following table.

For Experion users	
System Management Display	Select **Start** > **Programs** > **Honeywell Experion PKS** > **System Management** > **System Management Display.**
	Select **Start** > **Programs** > **Honeywell** > S**ystem Management** > **System Management Display**
FTE Status auxiliary display	Select **Start** > **Programs** > **Honeywell Experion PKS** > **System Management** > **FTE Status** display
	Click the **FTE Status** hyperlink from the **System Status Display** in Station.
For TPS users	
System Management Display	Open your configured System Management Display from the Microsoft Management Console (Start > Run and type mmc).
FTE Status auxiliary display	From the **System Management Display**, expand the network tree and then click on an FTE node. Right-click the **FTE Status** component and click **Auxiliary Display.**

System Management display overview

Honeywell's System Management allows you to configure and monitor managed nodes and their HCI managed components in a Windows domain or workgroup. Figure 6-1 is an example of a System Management Display that contains two FTE nodes (FTE-APP59 and FTE-GUS34) in a TPS domain. Notice that the status of the FTE nodes can be viewed from this display.

Figure 6-1 System Management Display



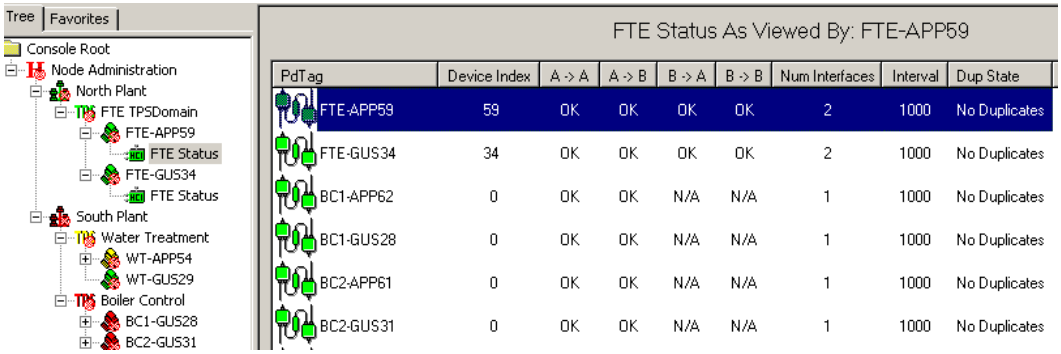
FTE Status Server and Auxiliary Display overview

The FTE Status is an HCI managed component. The FTE Status server communicates with the Heartbeat Provider (also known as the FTE provider) and provides connected clients with a list of all the nodes currently reporting a heartbeat within its multicast scope. Figure 6-2 is an example of an FTE Status Auxiliary Display. Notice that the individual cable link states (A>A, A>B, B>A, B>B) of the FTE nodes (FTE-APP59 and FTE-GUS34) can be viewed from this display.

REFERENCE

See the *FTE Status Server and Display Guide* for more information about using this application to monitor your FTE node.

Figure 6-2 FTE Status Auxiliary Display



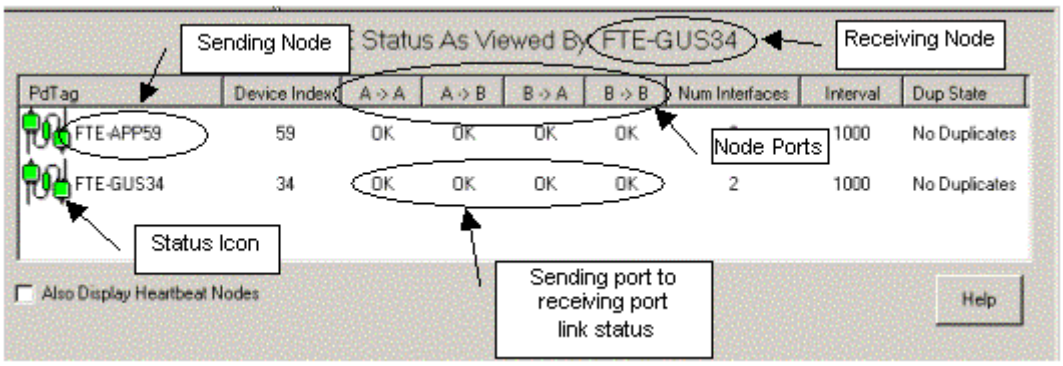
6.3 Monitoring nodes in an FTE network

Reviewing cable status

Table 6-1 and Table 6-2 list examples of cable status states you may view using the System Management Display.

- The **Scenario** column identifies the specific scenario for which examples and pictures are provided.
- The YES's and NO's in the **Crossover Cable Conn.** column indicate whether or not the crossover cable is connected. Note how the removal of the crossover cable alters what the nodes are able to "hear" on their ports.
- The YES's and NO's in the **Port A Conn.** and **Port B Conn.** columns indicate whether or not the A or B cables are connected on FTE-APP59 and FTE-GUS34.
- The **Sending Node** column identifies the node that is transmitting to the receiving or As Viewed By node (FTE-GUS34 in the example).
- The **A** > **A** column indicates whether port A of the sending node can transmit to port A of the receiving (viewed by) node.
- The **A** > **B** column indicates whether port A of the sending node can transmit to port B of the receiving (viewed by) node.
- The **B** > **A** column indicates whether port B of the sending node can transmit to port A of the receiving (viewed by) node.
- The **B** > **B** column indicates whether port B of the sending node can transmit to port B of the receiving (viewed by) node.

Figure 6-3 FTE Status Auxiliary Display Areas



Cable status states for FTE nodes with non-crossed cables

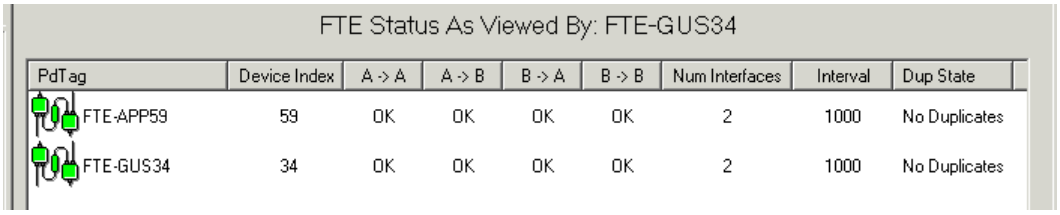
The following table lists the possible cable status states for two FTE nodes as viewed from FTE-GUS34. In all of these examples, there are no crossed cables for FTE-APP59 or FTE-GUS34. That is, the cables are connected to the appropriate ports and switches and the binding order is consistent with the cabling.

Table 6-1 As Viewed by FTE-GUS34 – non-crossed cables

Scen -ario	Crossover cable conn.	Port A conn	Port B conn	Sending node	A > A	A > B	B > A	B > B
1	YES	YES	YES	FTE-APP59	OK	OK	OK	OK
		YES	YES	FTE-GUS34	OK	OK	OK	OK
2	NO	YES	YES	FTE-APP59	OK	SILENT	SILENT	OK
		YES	YES	FTE-GUS34	OK	SILENT	SILENT	OK
3	YES	YES	YES	FTE-APP59	OK	SILENT	OK	SILENT
		YES	NO	FTE-GUS34	OK	SILENT	SILENT	SILENT
4	NO	YES	YES	FTE-APP59	OK	SILENT	SILENT	SILENT
		YES	NO	FTE-GUS34	OK	SILENT	SILENT	SILENT
5	YES	YES	YES	FTE-APP59	SILENT	OK	SILENT	OK
		NO	YES	FTE-GUS34	SILENT	SILENT	SILENT	OK
6	NO	YES	YES	FTE-APP59	SILENT	SILENT	SILENT	OK
		NO	YES	FTE-GUS34	SILENT	SILENT	SILENT	OK
7	YES	YES	YES	FTE-APP59	*Node will not appear*			
		NO	NO	FTE-GUS34	SILENT	SILENT	SILENT	SILENT

Scenario No. 1: A and B port connected; Crossover cable connected

FTE-APP59's A port and B port hear from FTE-GUS34's A port and B port. FTE-GUS34's A port and B port hears from both its own ports.



Scenario No. 2: A and B port connected; Crossover cable disconnected

FTE-APP59's and FTE-GUS34's ports can only hear from other ports on the same switch since there is no crossover cable between the A switch and B switch.

FTE Status As Viewed By: FTE-GUS34

PdTag	Device Index	A -> A	A -> B	B -> A	B -> B	Num Interfaces	Interval	Dup State
FTE-APP59	59	OK	SILENT	SILENT	OK	2	1000	No Duplicates
FTE-GUS34	34	OK	SILENT	SILENT	OK	2	1000	No Duplicates

Scenario No. 3: B port disconnected; Crossover cable connected

FTE-APP59's A port and B port hear only from FTE-GUS34's A port.
FTE-GUS34 hears only from its own A port.

FTE Status As Viewed By: FTE-GUS34

PdTag	Device Index	A -> A	A -> B	B -> A	B -> B	Num Interfaces	Interval	Dup State
FTE-APP59	59	OK	SILENT	OK	SILENT	2	1000	No Duplicates
FTE-GUS34	34	OK	SILENT	SILENT	SILENT	2	1000	No Duplicates

Scenario No. 4: B port disconnected; Crossover cable disconnected

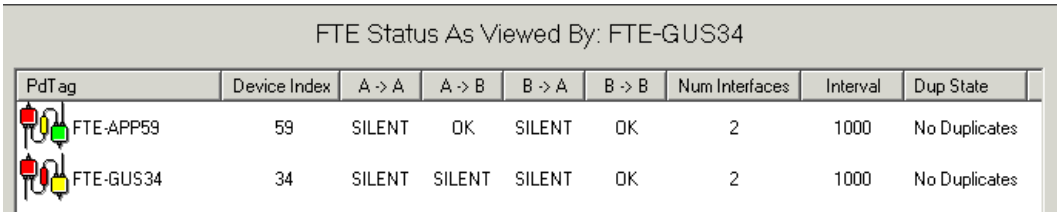
FTE-APP59's A port hears only from FTE-GUS34's A port.
FTE-GUS34's A port hears only from its own A port.

FTE Status As Viewed By: FTE-GUS34

PdTag	Device Index	A -> A	A -> B	B -> A	B -> B	Num Interfaces	Interval	Dup State
FTE-APP59	59	OK	SILENT	SILENT	SILENT	2	1000	No Duplicates
FTE-GUS34	34	OK	SILENT	SILENT	SILENT	2	1000	No Duplicates

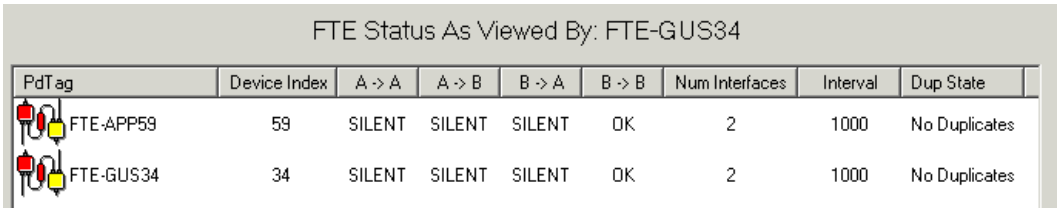
Scenario No. 5: A port disconnected; Crossover cable connected

FTE-APP59's A port and B port hears only from FTE-GUS34's B port.
FTE-GUS34 hears only from its own B port.



Scenario No. 6: A port disconnected; Crossover cable disconnected

FTE-APP59 hears only from FTE-GUS24's B port.
FTE-GUS34 hears only from its own B port.



Cable status states for FTE nodes with crossed cables

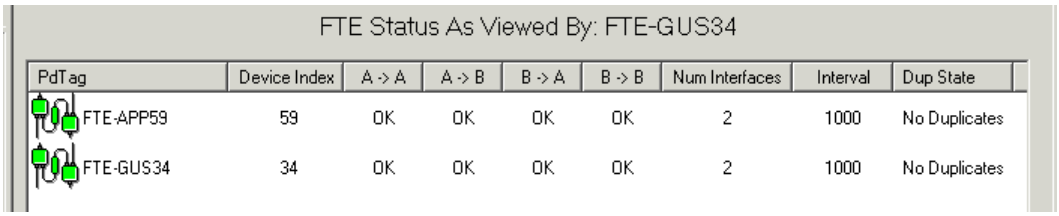
The following table lists the possible cable status states for two FTE nodes as viewed from FTE-GUS34. In all of these examples, FTE-GUS34 has crossed cables and the cables for FTE-APP59 are not crossed.

Table 6-2 As Viewed by FTE-GUS34 – crossed cables

Scenario	Crossover cable conn.	Port A conn	Port B conn	Sending node	A > A	A > B	B > A	B > B
1	YES	YES	YES	FTE-APP59	OK	OK	OK	OK
		YES	YES	FTE-GUS34	OK	OK	OK	OK
2	NO	YES	YES	FTE-APP59	SILENT	OK	OK	SILENT
		YES	YES	FTE-GUS34	OK	SILENT	SILENT	OK
3	YES	YES	YES	FTE-APP59	SILENT	OK	SILENT	OK
		YES	NO	FTE-GUS34	SILENT	SILENT	SILENT	OK
4	NO	YES	YES	FTE-APP59	SILENT	OK	SILENT	SILENT
		YES	NO	FTE-GUS34	SILENT	SILENT	SILENT	OK
5	YES	YES	YES	FTE-APP59	OK	SILENT	OK	SILENT
		NO	YES	FTE-GUS34	OK	SILENT	SILENT	SILENT
6	NO	YES	YES	FTE-APP59	SILENT	SILENT	OK	SILENT
		NO	YES	FTE-GUS34	OK	SILENT	SILENT	SILENT

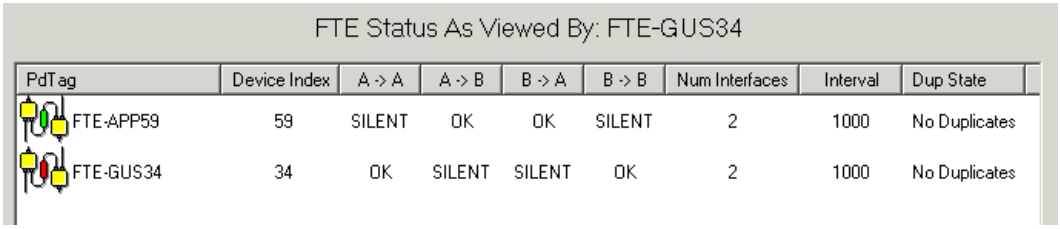
Scenario No. 1: A and B port connected; Crossover cable connected, crossed cables

FTE-APP59's A port and B port hear from FTE-GUS34's A port and B port.
FTE-GUS34's A port and B port hears from both its own ports.



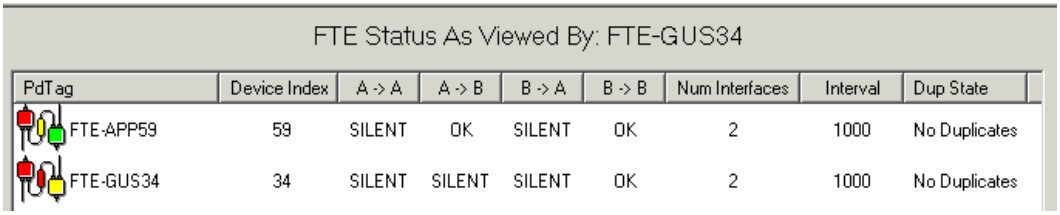
Scenario No. 2: A and B port connected; Crossover cable disconnected, crossed cables

Because the cables are crossed and the crossover cable between the switches is not connected FTE-APP59's and FTE-GUS34's ports can only hear from opposite ports.



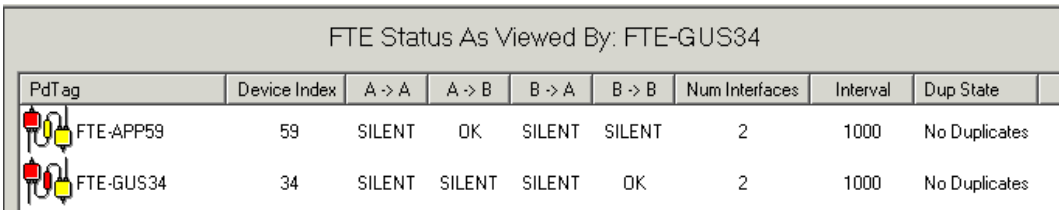
Scenario No. 3: B port disconnected; Crossover cable connected; crossed cables

FTE-APP59's A port and B port hears only from FTE-GUS34's B port.
FTE-GUS34 hears only from its own B port.



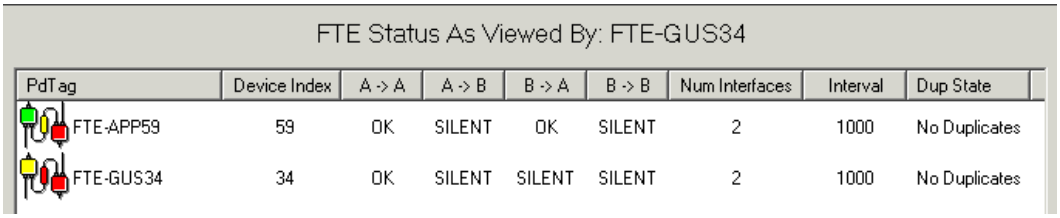
Scenario No. 4: B port disconnected; Crossover cable disconnected; crossed cables

FTE-APP59's A port and B port hears only from FTE-GUS34's B port.
FTE-GUS34 hears only from its own B port.



Scenario No. 5: A port disconnected; Crossover cable connected; crossed cables

FTE-APP59's A port and B port hear only from FTE-GUS34's A port.
FTE-GUS34 hears only from its own A port.

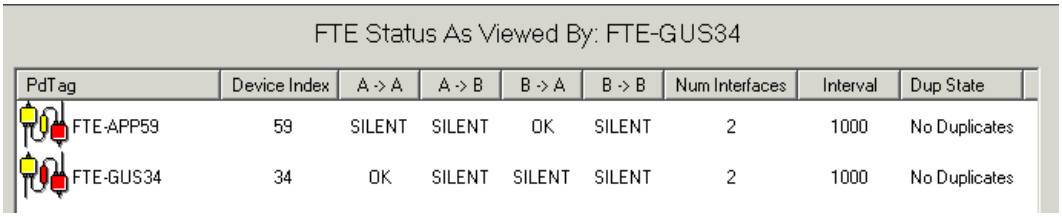


FTE Status As Viewed By: FTE-GUS34

PdTag	Device Index	A -> A	A -> B	B -> A	B -> B	Num Interfaces	Interval	Dup State
FTE-APP59	59	OK	SILENT	OK	SILENT	2	1000	No Duplicates
FTE-GUS34	34	OK	SILENT	SILENT	SILENT	2	1000	No Duplicates

Scenario No. 6: A port disconnected; Crossover cable disconnected; crossed cables

FTE-APP59's B port hears only from FTE-GUS34's A port.
FTE-GUS34 hears only from its own A port.



FTE Status As Viewed By: FTE-GUS34

PdTag	Device Index	A -> A	A -> B	B -> A	B -> B	Num Interfaces	Interval	Dup State
FTE-APP59	59	SILENT	SILENT	OK	SILENT	2	1000	No Duplicates
FTE-GUS34	34	OK	SILENT	SILENT	SILENT	2	1000	No Duplicates

Use System Management Display to identify crosslink errors

After FTE is installed and configured, use the System Management Display and FTE Status Server to verify there are no crosslink errors. This procedure assumes that you already have the System Management Display and the FTE Status Server installed and configured.

REFERENCE

See also the following two guides for more information about configuring a System Management Display and using it to monitor your FTE node.

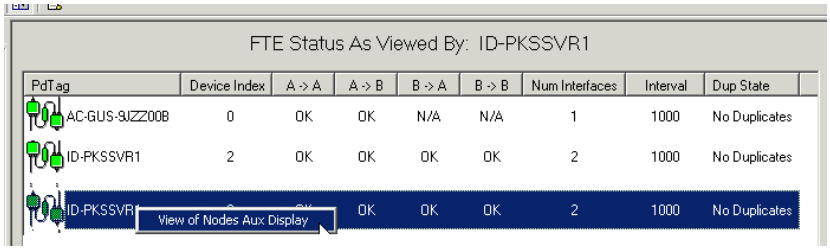
- *System Management Configuration Guide*
- *FTE Status Server and Display Guide*

Step	Action
1	Select **Experion** > **System Management** > **System Management Display**, and open a configured System Management Display.
2	Select the FTE Status server from the FTE Node you are testing.
3	Locate your FTE Node in the FTE Status View.
4	Remove the A port cable.
5	Examine the cable status states in the **A** > **A** to **B** > **B** columns.
6	If there are no crosslink errors, the FTE node you are testing should not be able to hear from its own A port nor should any other FTE node be able to hear from the disconnected port. See Figure 6-4 for an example.
7	If there is a crosslink error, the FTE node you are testing will indicate that it is able to hear from its own A port even though it is disconnected. Other FTE nodes will also indicate they are able to hear from the disconnected port. See Figure 6-5 for an example.
8	If there are crosslink errors, re-check all items.

Display status of remote FTE node

Use this feature to view the FTE status as seen from the remote node's view. This provides a view of the status array that is transmitted by the FTE driver for each FTE node. Since this is the view as seen from the FTE driver, it is only available on FTE nodes. For example, if you are currently at FTE node ID-PKSSVR1, but you would like to view the status as if you were at FTE node ID-PKSSVR2, you can right-click on node ID-PKSSVR2 to view the status from that node.

Step	Action
1	From the FTE Status Auxiliary display, right-click on the node from which you would like to view the status.



2	Review the status from the remote node's view.

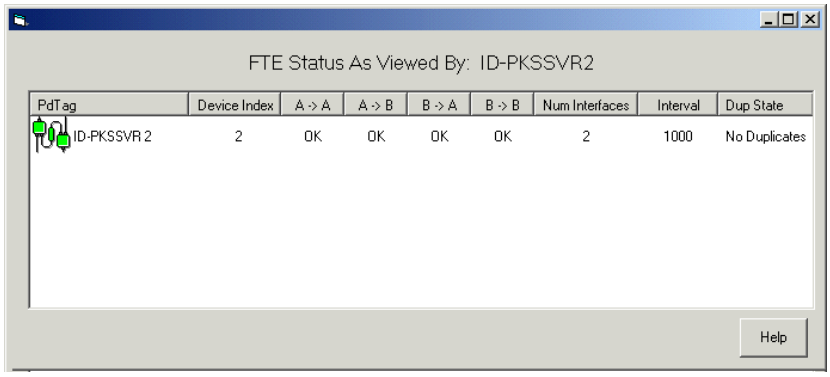


Figure 6-4 Disconnected A cable – no crosslink error

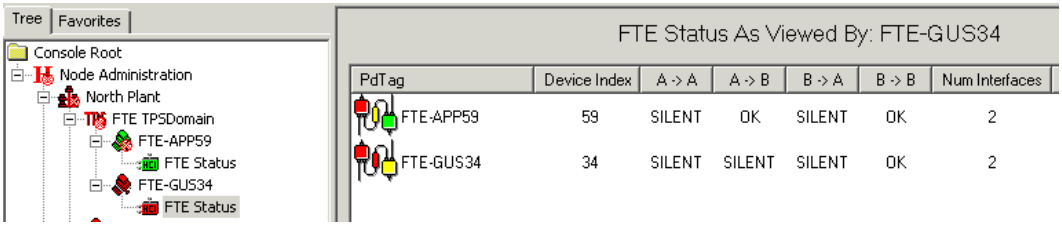
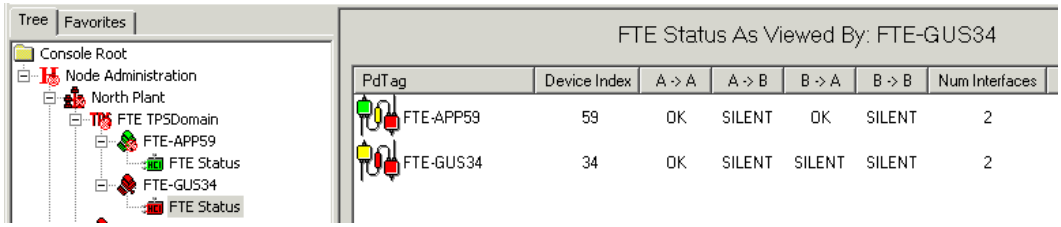


Figure 6-5 Disconnected A cable –crosslink error



6.4 Upgrading and replacing network adapter cards

Honeywell continuously qualifies new adapter cards for use with FTE. This section contains checklists for upgrading or replacing FTE network cards. Locate the checklist for your specific network card replacement and complete the tasks listed in the order shown.

Special considerations when replacing network adapter cards

Each network adapter card has a globally unique identifier (GUID) that Honeywell FTE software uses to identify the *green* and *yellow* network adapter ports. Network card GUIDs remain persistent as long as you do not change the network hardware. If you replace the hardware, you must uninstall and reinstall the FTE software so that FTE can identify the new GUIDs. Also for this reason, you cannot use Honeywell's Enhanced Backup & Restore utility to restore an image on a FTE node that does not have network adapter hardware and configuration identical to that defined in the image.

Network card replacement checklist

The following table lists the tasks associated with removing the existing NIC and replacing it with a new one.

Task	Go to	Done (✓)
Stopping the services		
If upgrading a TPS node, stop TPS services and device drivers.	Page 43	
Uninstalling FTE service		
If the node is a Level 2 FTE node, perform a route delete command.	Page 79	
Uninstall Honeywell FTE Service	Page 81	
Verify Honeywell FTE Service was properly removed	Page 81	

Removing virtual adapters **Note**: These two procedures are only necessary if the FTE Service was not properly removed.		
Remove Honeywell FTE network bindings	Page 97	
Uninstall virtual adapter	Page 99	
Removing the network adapter card		
Disable/uninstall network adapter(s)	Page 83	
Shut down the computer and remove the network adapter card	Computer documentation	
Installing new hardware and software: After removing the existing card, go to the appropriate checklist for your system.		
Installing and configuring FTE on existing Experion nodes	Page 22	
Installing and configuring FTE using the Node Definition Tool	Page 24	
Installing and configuring FTE on TPS nodes	Page 26	

6.5 Uninstalling FTE components

Use the procedures in this section to uninstall the FTE service.

FTE component removal checklist

The following tables lists the tasks associated with removing the FTE driver software and returning the node to its pre-FTE state.

No.	Task	Go to	Done (✓)
1	If you are uninstalling from a TPS node: Stop TPS services and device drivers	Page 39	
2	If the node is a Level 2 FTE node, perform a route delete command.	Page 79	
3	Uninstall FTE driver	Page 81	
4	Uninstall Honeywell FTE Service	Page 81	

Uninstall FTE driver and System Management software packages

Use this procedure to remove the FTE Driver and System Management software packages.

Step	Action
1	Click **Start** > **Settings** > **Control Panel**, or Click **Start** > **Control Panel**.
2	Double-click **Add/Remove Programs**.

Step	Action
3	Remove, in this order, all of the following software packages that you currently have installed: a) Honeywell System Management Runtime – ***must be the first component removed*** b) Honeywell System Management Status Display c) Honeywell FTE_Driver d) Honeywell FTE Status e) Honeywell SignOn Manager f) Honeywell SNMP Monitor g) Honeywell SES h) Honeywell SPS i) Honeywell Workstation Security j) Honeywell HCI Runtime k) Honeywell Packaged Redistributables Files – ***must be the last component removed***
4	Close the **Add/Remove Programs** dialog box.

Uninstall FTE driver

Use this procedure to remove the Honeywell FTE Driver.

Step	Action
1	Click **Start** > **Settings** > **Control Panel**, or Click **Start** > **Control Panel**.
2	Double-click **Add/Remove Programs**.
3	Select **Honeywell FTE Driver** from the **Add/Remove Programs** dialog box and click **Remove**.
4	Click **Yes** to confirm the removal.
5	Close the **Add/Remove Programs** dialog box.
6	Restart the computer.

Uninstall Honeywell FTE Service

Use this procedure to uninstall the Honeywell FTE service.

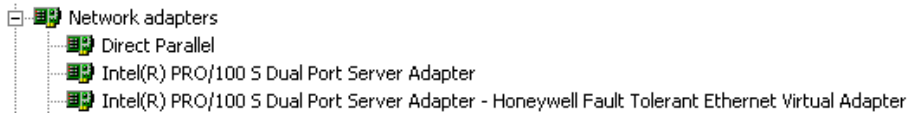
Step	Action
1	Click **Start** > **Settings** > **Network Connections**.
2	From **Network Connections**, right-click the A - yellow network connection, and select **Properties**.
3	Select **Honeywell Fault Tolerant Ethernet Service** and click **Uninstall** from the **Properties** dialog box.
4	Click **Yes** when asked to confirm the uninstall.
5	Close the **Properties** dialog box.
6	Shut down and restart the computer.

Verify Honeywell FTE Service was properly removed

Use this procedure to verify the FTE service uninstalled completely.

Step	Action
1	Right-click the **My Computer** icon from the desktop or from the **Start** menu and select **Manage**.

Step	Action
2	In the console Tree, open **System Tools** and then click **Device Manager.**
3	Select **View** and choose **Show hidden devices**.
4	Double-click **Network adapters** to view all installed network adapters.
5	If **Honeywell Fault Tolerant Ethernet Virtual Adapter** does *NOT* appear under Network adapters, the removal of the FTE service was successful. If **Honeywell Fault Tolerant Ethernet Virtual Adapter** *DOES* appear under Network adapters as shown in the figure, you will need to remove the virtual adapter(s) using the procedures in Section 7.4, "Uninstall virtual adapter."

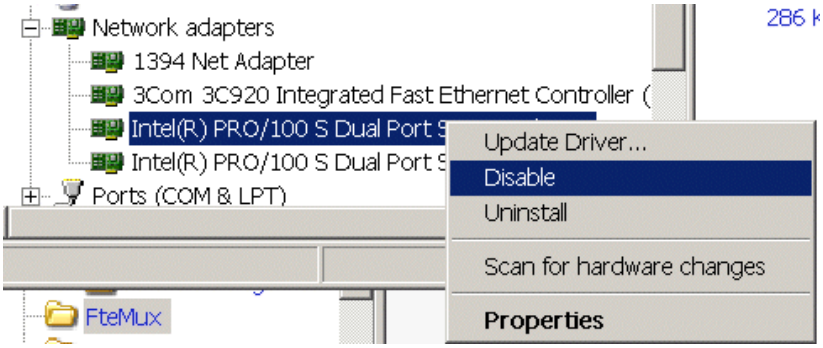
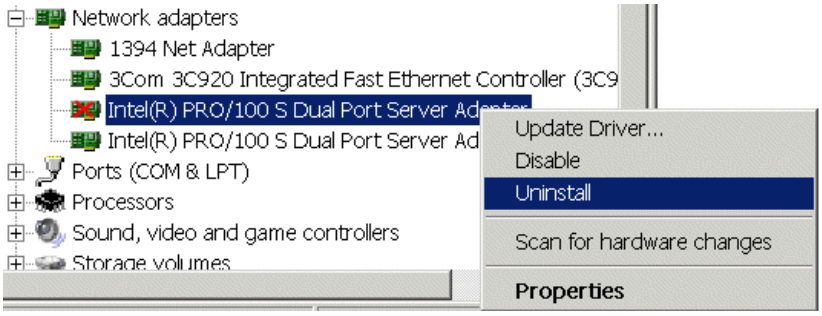


Example of unsuccessful FTE service removal

6	Restart the computer.

Disable/uninstall network adapter(s)

Use this procedure to disable and uninstall all of the currently installed network adapters.

Step	Action
1	Right-click the **My Computer** icon from the desktop or from the **Start** menu and select **Manage**.
2	In the console Tree, open **System Tools** and then click **Device Manager.**
3	Double-click **Network adapters** to view all installed network adapters.
4	Right-click the network adapter to be removed and select **Disable**. 
5	Click **Yes** when asked to confirm disabling the device.
6	Repeat steps 4 and 5 for each network adapter you will be uninstalling.
7	Right-click the network adapter and select **Uninstall**. 
8	Click **OK** to confirm the removal of the device.
9	Repeat steps 7 and 8 for each installed network adapter.

7. Troubleshooting FTE

7.1 Isolating problems

FTE installation verification checklist

The following checklist provides a list of items that should be verified if you experience problems with your FTE installation. If you experience specific symptoms, see "Fixing common problems" to determine an appropriate action to take.

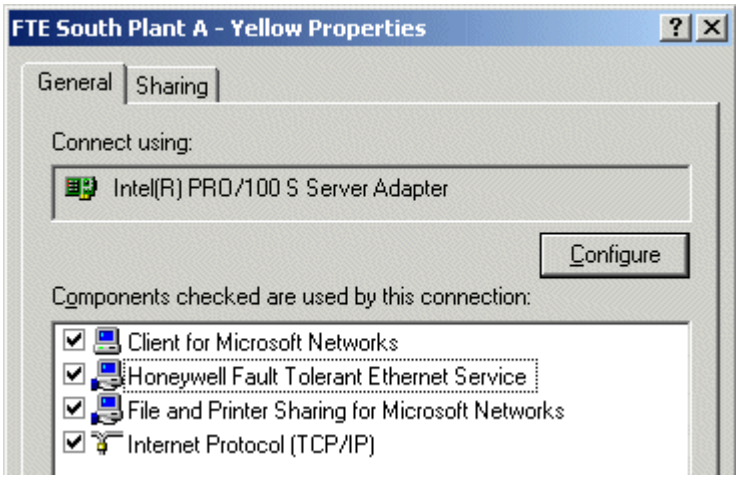
Task	Go to	Done (✓)
Inspect the network adapters	Page 87	
Verify duplicate IP addresses were not assigned	Page 88	
Verify duplicate device indexes were not assigned	Page 89	
Verify connections are configured properly for FTE	Page 89	
Verify TCP/IP network binding order is correct	Page 90	
Verify correct ports are connected to the correct switches	Page 92	
Verify any disconnected local area connections are disabled	Page 93	
Verify the event logs for FTE driver state the device is working properly	Page 93	
Verify virtual adapters are still functioning using the device manager	Page 94	

7.2 Procedures for verifying proper installation

Verify Honeywell FTE software is installed

Use this procedure to verify the Honeywell FTE service is properly installed.

Step	Action
1	Click **Start** > **Settings**, or Click **Start** > **Control Panel**.
2	Double-click **Network Connections**.
3	Right-click one of the FTE network adapters and select **Properties**.
4	Verify that **Honeywell Fault Tolerant Ethernet Service** appears in the list of components as shown:



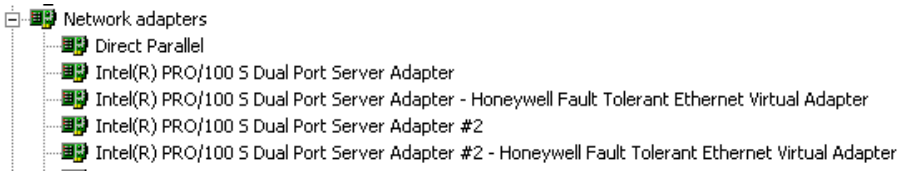
TIP

If **Honeywell Fault Tolerant Ethernet Service** does not appear in the **Properties** dialog box, you will need to add it using the "Manually install Honeywell FTE driver service" procedure in the "Troubleshooting" section.

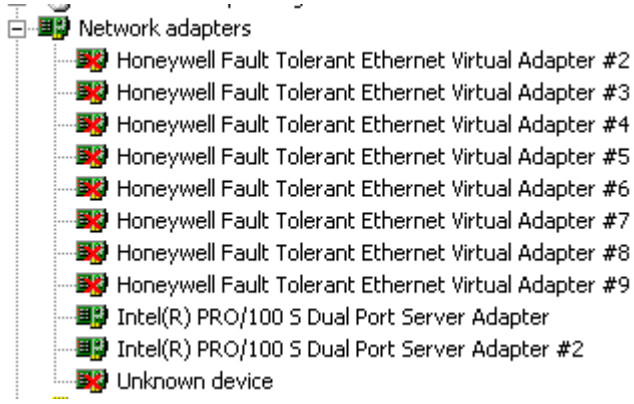
Inspect the network adapters

Use this procedure to verify network adapters for FTE are installed properly.

Step	Action
1	Right-click the **My Computer** icon from the desktop or from the **Start** menu and select **Manage**.
2	In the console Tree, open **System Tools** and then click **Device Manager.**
3	Select **View** and choose **Show hidden devices**.
4	Double-click **Network adapters** to view all installed network adapters.
	TIP The illustrations used in this procedure are for example purposes, and may not be identical to what you see on your screen.
5	Verify that a Honeywell FTE Virtual Adapter is listed for each of the network adapter ports being used for FTE as shown in the following figure.



6	If there is NOT a Honeywell FTE Virtual Adapter listed for each of the network adapter ports being used for FTE, verify that you performed all of the procedures according to the correct checklist in Section 2.

Step	Action
7	If the Network adapters look similar to the following figure, you may need to uninstall and reinstall the FTE software.  See Section 6.5, “Uninstalling FTE components” for uninstall procedures.
8	Close the **Computer Management** and **Administrative Tools** dialog boxes.

Verify duplicate IP addresses were not assigned

Use this procedure to verify you have a unique IP address for each of the ports on the network adapter being used for FTE. If you used DHCP to configure the IP addresses, this procedure does not apply to you.

Step	Action
1	Click **Start** > **Programs** > **Accessories**, and then click **Command Prompt**, or Select **Start** > **Run** and type **command** in the **Run** dialog box.
2	From the command prompt window, type **ipconfig** and press ENTER.
3	Verify that the **IP Address** for each network adapter port is unique.

Verify duplicate device indexes were not assigned

Each node within an FTE Community must have a unique device index. Use this procedure to open the event log and verify there are no duplicate devices indexes.

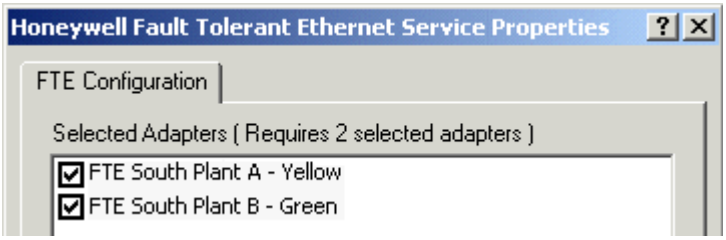
Step	Action
1	Right-click the **My Computer** icon from the desktop or from the **Start** menu and select **Manage**.
2	In the console Tree, open **System Tools** and then click **Even Viewer.**
3	In the console Tree, select **System.**
4	Click the **Source** column in the right pane to sort the events by source type.
5	Scroll to find the **FteImDrv** source type.
6	Double-click each Informational Type event to open the **Event Properties** dialog.
7	Review the description for the following event type, which indicates that there are two nodes within your FTE community that have the same device index. • Duplicated Node. A Diagnostic Message with PD Tag %2 data has duplication state and Device Index.
8	If you find the Duplicated Node event, reset the device index on one of the duplicate nodes using the “Configure FTE service ” procedure and restart the node.

Verify connections are configured properly for FTE

Use this procedure to verify you configured your Local Area Connections for use with FTE.

Step	Action
1	Click **Start** > **Settings** > **Control Panel**, or Click **Start** > **Control Panel**.
2	Double-click **Network Connections**.
3	Right-click one of the FTE connections and select **Properties**.
4	Select **Honeywell Fault Tolerant Ethernet Service** and click **Properties**.

Step	Action
5	Verify that the connections associated with the network adapters being used for FTE are checked as shown in the following figure.



6	Close the **FTE Configuration, Properties**, and **Network Connections** dialog boxes.

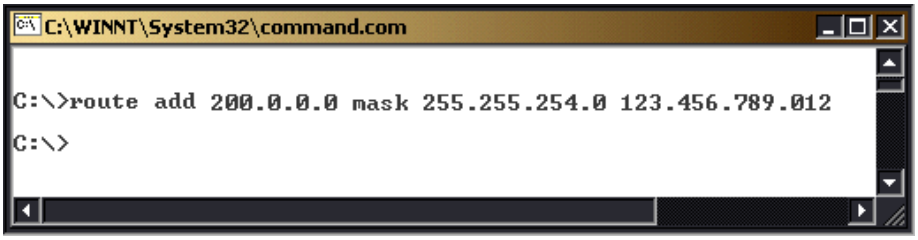
Verify TCP/IP network binding order is correct

Use this procedure to verify the binding order for FTE network adapter ports are consistent with the FTE Tree structure.

Step	Action
1	Click **Start** > **Programs** > **Accessories**, and then click **Command Prompt**, or Select **Start** > **Run** and type **command** in the **Run** dialog box.
2	From the Command Prompt window, type **ipconfig /all | more** and press ENTER.
3	Verify that the network adapter configured for the ***A - yellow*** Tree appears first in the binding order.
4	If the network adapter configured for the ***B - green*** Tree appears first in the network binding order, change the network binding order using one of the following two procedures in Section 7.4: • "Modify network binding order after FTE is configured" • "Modify network binding order by reseating the network adapter card"
5	Close the command prompt.

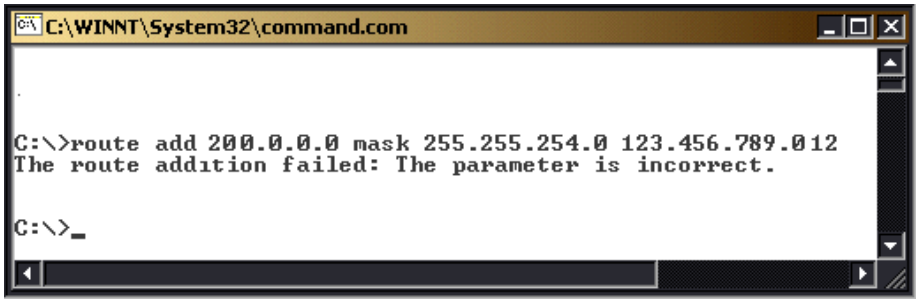
Verify correct binding order using route add command

Use the *route add* command in the following procedure to verify that the *A - yellow* connection has been configured as your primary adapter – that is, it appears first in the binding order.

Step	Action
1	Select **Start** > **Run** and type **command** in the **Run** dialog box.
	TIP Use the ipconfig /all command to display your IP addresses.
2	From the Command Prompt window, type the following command supplying your system values for the variables in ***bold italics*** in the parenthesis < >. route add <***subnet IP address***> mask <***subnet mask***> <***A – Yellow IP address***> **Note**: Do not include the parenthesis.
3	Press Enter.
4	Review any messages that display at the prompt after pressing Enter. If the *A - yellow* connection is configured correctly as the first adapter and communication was routed correctly, no message appears at the prompt. Example when *A - yellow* is configured as primary adapter: 
5	If **The route addition failed** message displays at the prompt, the *A - yellow* connection is NOT configured correctly and communication failed. If this happens do the following: • Verify that all steps in the "Configure the *A - yellow* FTE network " procedure in Section 5.3 were performed. • Verify that all steps in the "Configure the *B - green FTE* network " procedure in Section 5.3 were performed.

Step	Action

Example when NOT configured correctly



6 If you do not receive a route addition failed message, the route addition was successful, and you must delete the added subnet:

- Type route delete **<subnet IP address>** at the command prompt.
- Press Enter.

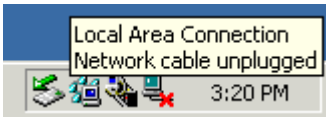
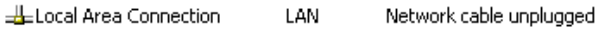
Verify correct ports are connected to the correct switches

Use this procedure to view all of the MAC addresses and their associated ports that the switch has learned. After reviewing the table of MAC addresses, you can compare the MAC address table to the addresses of the network adapter ports configured for FTE and verify that the switch has the addresses you expect it to have.

Step	Action
1	Select **Switch Configuration** from the BayStack 450 Main Menu (or press w).
2	From the **Switch Configuration** menu, select **MAC Address Table** (or press m).
	TIP A table of switch ports and their associated MAC addresses display. A port with multiple MAC addresses is most likely the port with the crossover cable.

Verify any disconnected local area connections are disabled

Use this procedure if you did not use BIOS to disable the on-board Ethernet connection, or you have other disconnected local area connections. Disabling these connections will help prevent hang-ups on system startup and ensure the connected LANs operate more reliably.

Step	Action
1	Double-click the unplugged Local Area Connection icon from the task bar, or Click **Start** > **Settings** > **Network Connections**. 
2	From the **Network Connections** dialog, right-click the local area connection that has the unplugged network cable. **Icon View**  **Detail View** 
3	Select **Disable** from the pop-up menu.
4	The unplugged Local Area Connection will no longer appear in the task bar. 

Verify the event logs for FTE driver state the device is working properly

Use this procedure to open Event Viewer and view the events for the FTE Driver.

Step	Action
1	Click **Start** > **Settings** > **Control Panel**, or Click **Start** > **Control Panel**.
2	Double-click **Administrative Tools**, and then double-click **Event Viewer.**
3	In the console Tree, select **System Log.**
4	Click the **Source** column in the right pane to sort the events by source type.
5	Scroll to find the **FteImDrv** source type.

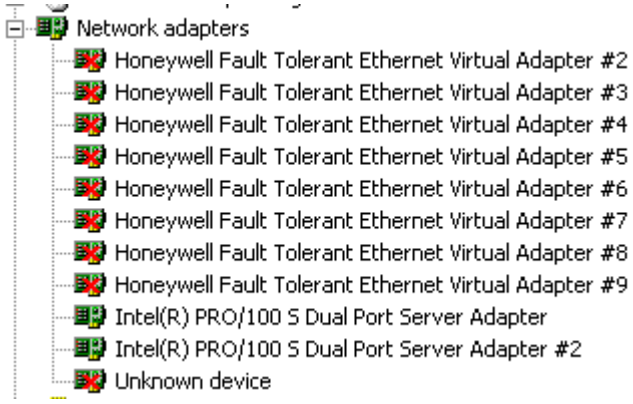
Step	Action
6	Double-click the event to open the **Event Properties** Dialog.
7	Review the Event description.

Verify virtual adapters are still functioning using the device manager

Use this procedure to ensure that the Honeywell FTE Adapters are still functioning.

Step	Action
1	Right-click the **My Computer** icon from the desktop or from the **Start** menu and select **Manage**.
2	In the console Tree, open **System Tools** and then click **Device Manager.**
3	Select **View** and choose **Show hidden devices**.
4	Double-click **Network adapters** to view all installed network adapters. Figure 7-1 is an example of a virtual adapter failure.
5	Follow the uninstalling FTE components procedures in Section 6.5.

Figure 7-1 FTE Virtual Adapter Failure Example



7.3 Fixing common problems

Cannot connect to network

After uninstalling FTE, the status for your network connections is Network Cable Unplugged even though the network cables are connected.

Diagnostic check:	After uninstalling FTE, the status in the Network Connections is Network Cable Unplugged.
Cause:	After uninstalling FTE, the operating system can no longer detect the network adapters.
Solution:	Uninstall and reinstall the network adapters, and allow the operating system to redetect the adapters. See “Uninstall and reinstall network adapters”.
Diagnostic check:	Unable to make a network connection.
Solution:	See the Troubleshooting section in the *Intel Pro/100 S Installation Guide*

Faulty FTE communication

FTE network connection is unusually slow.

Diagnostic check:	The FTE node is not communicating as expected and packets are being lost.
Cause:	Duplicate device indexes within the FTE community are causing a conflict.
Solution:	See “Verify duplicate device indexes were not assigned”.
Diagnostic check:	Unusually slow socket communications
Cause:	Switch port and node settings are not correct.
Solution:	Verify that the switch port and node are set to 100 full duplex. Verify that the network adapter cable is connected to an FTE configured switch port. See “Installing and Configuring Switches” in the *FTE Overview and Implementation Guide*.

Phantom Honeywell FTE virtual adapters

Diagnostic check:	Too many Honeywell FTE virtual adapters are listed under Network adapters. See Figure 7-1 for an example.
Solution:	See the removal procedures in Section 6.5

FTE node does not appear in the System Management Display

Diagnostic check:	The network adapters in the **FTE Configuration** dialog box are not selected.
Cause:	The hardware was upgraded without first uninstalling FTE and the FTE provider is still bound to the old network adapter.
Solution:	Select the FTE network adapters in the **FTE configuration** dialog box. See Section 5.2.

7.4 Resolving network issues

Remove Honeywell FTE network bindings

Use this procedure to run the registry clean-up utility. This will remove incomplete network bindings from the registry and allow you to uninstall the FTE virtual adapter.

CAUTION

In the following procedure, you will be using a script file to clean up the registry keys. You can restore the registry to the same version you were using when you last successfully started your computer. For instructions, see the Restore Registry topic in the Microsoft Registry Editor Help.

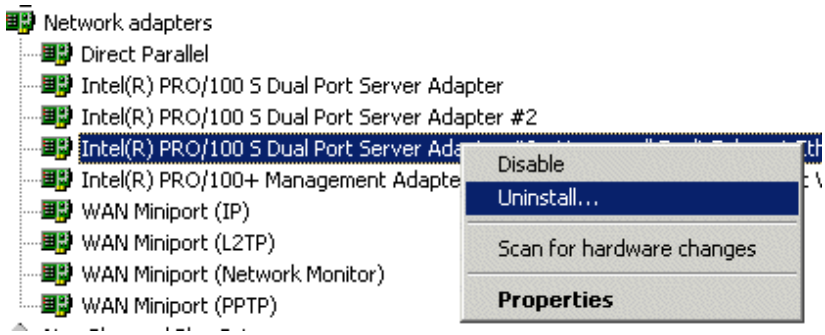
Step	Action
1	You should only run this utility if you have first uninstalled Honeywell FTE Service using the procedures in Section 6.5, “Uninstalling FTE components”
2	Use Windows Explorer to navigate to the following location: ***C:\Program Files\Honeywell\fte_driver***
3	Double-click the **fteregclean** utility.
4	From the **FTERegClean** dialog box, click **Scan**.

Step	Action
5	Click **Delete** to remove Honeywell Fault Tolerant Ethernet Virtual Adapter network bindings.
6	Click **Yes** after reading the information in the **Caution** dialog box.
7	Click **OK** to complete the registry clean-up.
8	Click **Exit** to exit the registry clean-up utility.

Uninstall virtual adapter

Use this procedure to uninstall the virtual adapter. This allows you to install a new network adapter.

Step	Action
1	Right-click the **My Computer** icon from the desktop or from the **Start** menu and select **Manage**.
2	In the console Tree, open **System Tools** and then click **Device Manager.**
3	Select **View** and choose **Show hidden devices**.
4	Double-click **Network adapters** to view all installed network adapters.
5	Right-click the Honeywell FTE Virtual Adapter and select **Uninstall**.



6	Click **OK** from the **Confirm Device Removal** message box.

TIP

If the following message appears when attempting to uninstall the device, it may because of incomplete network bindings.

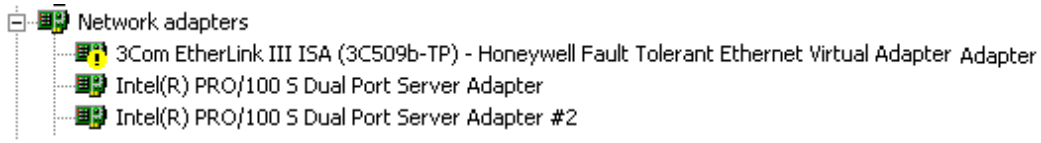
Verify that you performed steps 1 through 8 of this procedure. If you are still not able to uninstall the virtual adapter, you will need to perform the procedures in Section 7.4, “Modify network binding order after FTE is configured”

Step	Action
7	Restart the computer.
8	Right-click the **My Computer** icon from the desktop or from the **Start** menu and select **Manage**.
9	In the console Tree, open **System Tools** and then click **Device Manager.**
10	Select **View** and choose **Show hidden devices**.
11	Double-click **Network adapters** to view all installed network adapters.
12	If **Honeywell Fault Tolerant Ethernet Virtual Adapter** still appears anywhere under Network adapters, you will need to perform the additional procedures in Section 7.4, "Modify network binding order after FTE is configured."

About "phantom" FTE virtual adapters

If your initial FTE installation was interrupted or not done properly, you may have "phantom" FTE Virtual Adapters. The FTE virtual adapter may not uninstall properly if it is bound to a network adapter that has been uninstalled. See Figure 7-2 for an example of a "phantom" FTE virtual adapter looks like in the Device Manager. Perform the procedures in this section (Uninstall virtual adapter) to remove the "phantom" adapters completely.

Figure 7-2 "Phantom" FTE Virtual Adapter



Enable Ethernet port for on-board NIC

Use this procedure to re-enable the on-board NIC. Performing this procedure will allow you to uninstall the network adapter properly. You may skip this procedure if your on-board network adapter is currently enabled.

CAUTION

Be aware that BIOS setup is an advanced tool, and you should only enter the system setup if you are an experienced user.

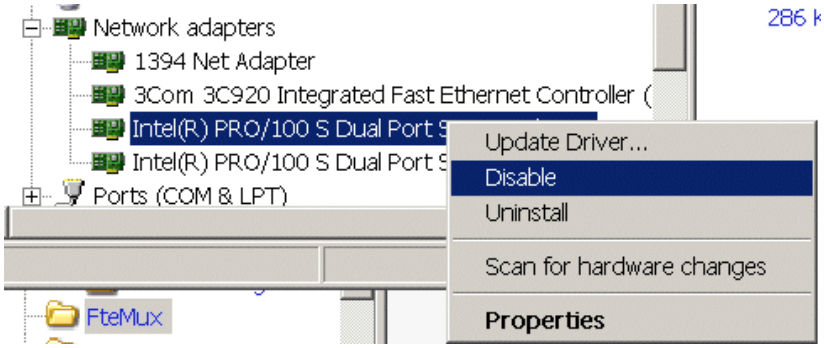
Step	Action
1	Restart the computer and, when prompted during system startup, press the appropriate key(s) to enter system setup.
2	Select Integrated Devices.
3	If Network Interface Controller is listed, you have on-board NIC. Change the setting to **On**.
4	Save changes and exit BIOS settings to continue the system startup.

Disable/uninstall network adapter(s)

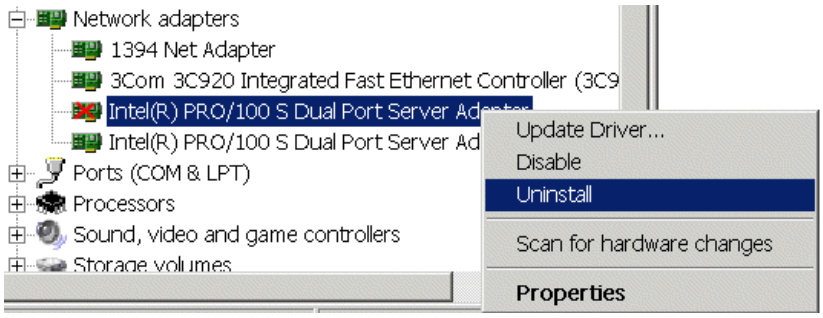
Use this procedure to disable and uninstall all of the currently installed network adapters. Performing this procedure will clean up all registry entries associated with the network adapters and allow you to remove the “phantom” adapters.

Step	Action
1	Right-click the **My Computer** icon from the desktop or from the **Start** menu and select **Manage**.
2	In the console Tree, open **System Tools** and then click **Device Manager.**
3	Double-click **Network adapters** to view all installed network adapters.

Step	Action
4	Right-click the network adapter to be removed and select **Disable**.



5	Click **Yes** when asked to confirm disabling the device.
6	Repeat steps 4 and 5 for each network adapter you will be uninstalling.
7	Right-click the network adapter and select **Uninstall**.

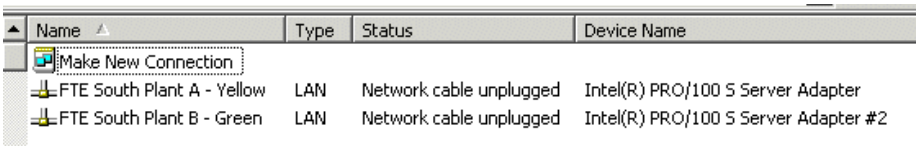


8	Click **OK** to confirm the removal of the device.
9	Repeat steps 7 and 8 for each installed network adapter.

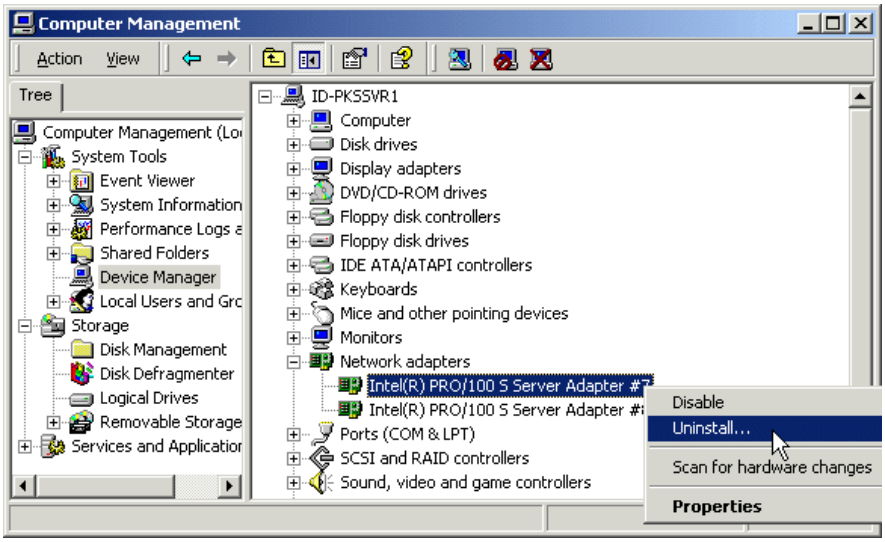
Uninstall and reinstall network adapters

Use this procedure to uninstall and reinstall network adapters.

Step	Action
1	Click **Start** > **Settings** > **Network Connections** and verify that the status is Network Cable Unplugged.



2	Right-click the **My Computer** icon from the desktop or from the **Start** menu and select **Manage**.
3	In the console Tree, open **System Tools** and then click **Device Manager.**
4	Double-click **Network adapters** to view all installed network adapters.
5	Right-click the network adapter used for FTE and then click **Uninstall.**

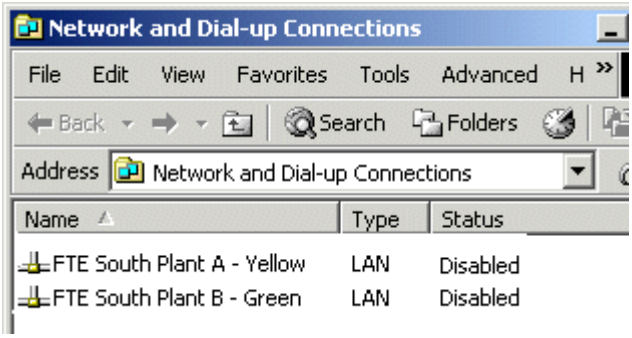


6	Click OK to confirm the uninstall.
7	Repeat Step 5 and Step 6 if you have more than one network adapter for FTE.
8	Shut down and restart the computer.
9	Allow Windows to detect the new hardware when the system restarts.

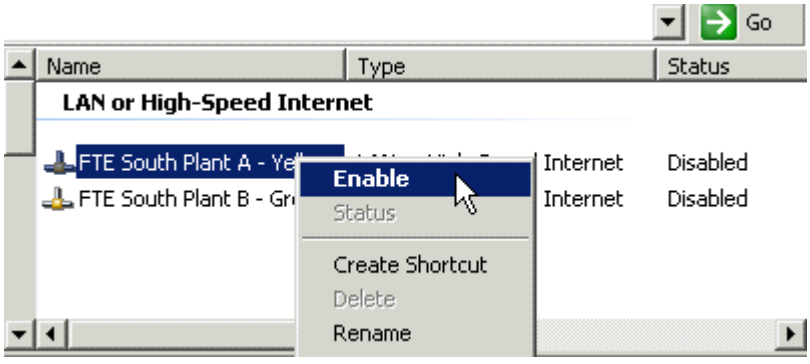
Verify enable network connections

After encountering virtual memory errors while running an application, the status of your network ports may become Disabled after a restart. Use this procedure to verify the network connections are still enabled and the network settings are correct.

Step	Action
1	After encountering a virtual memory error in an application, perform a system shutdown and restart the node.
2	Verify the network connections have not been disabled: • Click **Start** > **Settings** > **Network Connections**. • If the status is **Disabled** as shown in the picture, perform the rest of this procedure to re-enable the connections and correct the network settings.



3	From the **Network Connections** dialog, right-click the FTE connection and select **Enable**.



4	Repeat Step 3 to re-enable the second FTE connection.

Step	Action
	ATTENTION In the following two steps, you will be verifying the correct settings in the network properties and **FTE Configuration** dialog boxes. ***Click OK after accessing each page*** even if the settings are correct and you've made no changes.
5	Verify the network configuration and TCP/IP properties are set correctly using the following procedures in Section 5.3: • Configure the *A - yellow* FTE network • Configure the *B - green* FTE network
6	Verify the **FTE Configuration** dialog box has the correct settings using the "Configure FTE service " procedure in Section 5.2.
7	To verify proper FTE installation, see Section 5.7, "Verifying correct installation."

Configure a route add for Level 2 FTE nodes

Level 2 nodes are those that are required for the supervisory and advanced control functions. Examples of Level 2 nodes include servers, stations, ACE nodes, and PHD nodes. In order for Level 2 nodes to communicate with Level 1 nodes in the reusable address space, you must configure a *route add* command for each Level 2 node. Nodes that do not communicate with the Level 1 nodes do not need the *route add* command configured.

Step	Action
1	Select **Start** > **Run** and type command in the **Run** dialog box.
2	From the Command Prompt window, type the following command supplying your own values for the variables between the parenthesis < >: route add <*Level 1 subnet base address* > mask <*subnet mask*> <*yellow IP address*> -P **Example:** route add *10.0.0.0* mask *255.255.252.0 10.1.7.3* –P **Where** *10.0.0.0* is the base address of the Level 1 subnet *255.255.252.0* allows 512 Level 1 FTE nodes *10.1.7.3* is the yellow interface IP address of this node -P makes it persistent across reboots

Step	Action
3	Press Enter.

Perform a route delete command

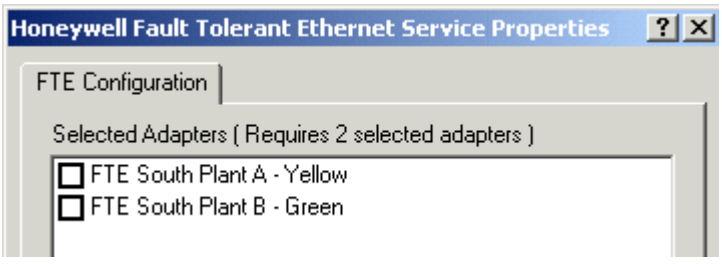
If you are uninstalling FTE on a Level 2 node on which you used the *route add* command to allow communication with Level 1 nodes, you must delete the route using the following procedure. See Section 2 of the *FTE Overview and Implementation Guide* for details on the use of *route add*.

Step	Action
1	Select **Start** > **Run** and type command in the **Run** dialog box.
2	From the Command Prompt window, type the following command supplying your own values for the variables between the parenthesis < >: route delete < *subnet address* >
3	Press enter.

7.5 Resolving installation issues

Modify network binding order after FTE is configured

Use this procedure to change the binding order using Advanced Settings option in Network Connections.

Step	Action
1	Click **Start** > **Settings** > **Network Connections**.
2	From **Network Connections**, right-click one of the FTE connections and select **Properties**.
3	Select **Honeywell Fault Tolerant Ethernet Service** then click **Properties**.
4	From the **FTE Configuration** dialog box, clear both of the FTE adapters that are configured for FTE. 
5	Click **OK** to close the **FTE Configuration** dialog box.

Step	Action
6	Close the **Properties** dialog box.
7	Click **Start** > **Settings** > **Network Connections**.
8	Select **Advanced** and choose **Advanced Settings**.
9	Select the **Adapters and Bindings** tab.
10	Select an FTE connection click the arrow to reorder the connection.
11	Verify the network binding order has been re-ordered so the local area connection associated with the ***A - yellow*** Tree is first and click **OK** to close the **Advanced Settings** dialog box.
12	Click **Yes** when asked if you want to restart the computer.
	**ATTENTION** If you are not prompted to restart the computer, it is likely the binding order will not be changed permanently. If this happens, try the following: • Re-open the **Advanced Settings** dialog box. • Reorder the bindings to the original order, and then to the corrected order. • Click **OK** to close the **Advanced Settings** dialog box. • Click **Yes** to restart the computer.
13	If you did not receive the restart your computer prompt, shut down and restart the computer at this time.
14	Click **Start** > **Programs** > **Accessories**, and then click **Command Prompt**, or Select **Start** > **Run** and type **command** in the **Run** dialog box.
15	If you are using a dual port network adapter, and the local area connection associated with the ***B - green*** Tree ***STILL*** appears first in the binding order you need to physically reseat the Dual Port NIC. See the “Modify network binding order by reseating the network adapter card“ procedure in this section.
16	Re-configure the FTE driver using the “Configure FTE service ” procedure in Section 4.1 of this guide.

Modify network binding order by reseating the network adapter card

Before using this procedure to modify the network binding order, make sure you have attempted to use the "Modify network binding order after FTE is configured" procedure. If necessary, refer to your specific platform hardware manual for information on adding adapter cards to the PCI slot.

Step	Action
1	If you have already installed FTE, perform all procedures in Section 6.5, "Uninstalling FTE
2	Perform a system shutdown and turn off the power to the computer.
3	Disconnect the network cables from both ports on the dual adapter.
4	Remove the network adapters(s) from the PCI slot(s).
5	Restart the computer and login.
6	Perform a system shutdown and turn off the power to the computer.
7	Re-install the network adapter(s) in the proper PCI slot(s).
8	Reconnect the network cables according to the procedures in Section 4, "Installing FTE Software."

Manually install Honeywell FTE driver service

If you do not use the FTE Driver Install Script to install FTE, you can use this procedure to add the Honeywell FTE Driver as a service to the Local Area Connection. You will configure the FTE services after configuring the network settings and adapter.

ATTENTION

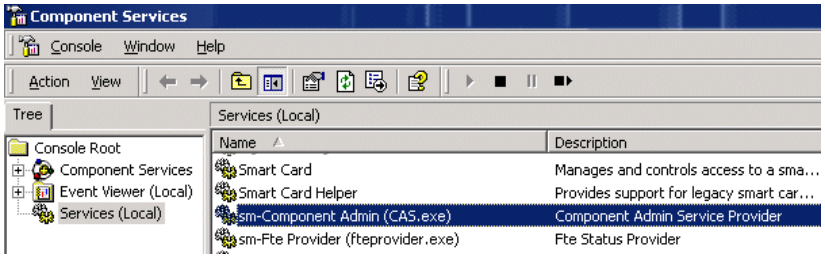
Even though there are always two local area connections for FTE, it is only necessary to add the Honeywell FTE Driver as a service to one of connections. The Windows operating system will automatically add the FTE service to the second port. (For Release 200 FTE is added to all ports and is in a "pass thru" mode for those ports not chosen as FTE)

Step	Action
1	Click **Start** > **Settings**, or Click **Start** > **Control Panel**.
2	Double-click **Network Connections**.

Step	Action
	**CAUTION** If you see only one Local Area Connection in the **Network Connections** dialog, ***DO NOT*** install the FTE Intermediate driver (FTE Service). The FTE driver can only be installed on a node with a minimum of two network adapter ports.
3	Right-click either one of the connections associated with FTE, and then click **Properties**.
4	Click **Install** from the **FTE properties** dialog box.
5	Select **Service**, and then click **Add.**
6	From the **Select Network Service** dialog box, click **Have Disk** to access the FTE intermediate driver files that you copied to your hard disk in the previous procedure.
	**ATTENTION – Upgrading FTE** If FTE was previously installed, it will appear in the Network Service list. **DO NOT** pick it from the list.
7	Enter or Browse to the location of the FTE intermediate driver files and click **Open.** Default is ***C:\Program Files\Honeywell\FTE_Driver***
8	Click **OK** to confirm the location of the FTE files.
9	Select **Honeywell Fault Tolerant Ethernet Service** then click **OK.**
	**ATTENTION** After performing this step, the FTE Node will NOT be visible on the network until all the FTE installation and configuration procedures in this section are complete and the node is restarted.
10	If your digital signature protection level is set to **Warn**, the **Digital Signature Not Found** message will appear. Click **Yes** for each message box that appears to continue the installation. See “Check the driver signing options” for more information.
11	Click **Yes** when prompted to restart the computer.
12	Verify that the **Honeywell Fault Tolerant Ethernet Service** appears in the **FTE properties** dialog box, and click **Close** to return to **Network Connections**.

Stop System Management services and processes

Use this procedure to stop the System Management services and processes.

Step	Action
	Stop the WMI service to stop System Management Services
1	Click **Start** > **Settings** > **Control Panel**, or Click **Start** > **Control Panel**.
2	Double-click **Administrative Tools**, and then double-click **Component Services**
3	In the console Tree, select **Services**.
4	Click the **Name** column to sort the services and locate the Windows Management Instrumentation (WMI) service.
5	Right-click the WMI service and select **Stop**.
	Stop any other System Management Services
6	Locate any other sm- services that are still started. 
7	Right-click the sm- service and select **Stop**.
8	Close the **Services** dialog box.
	Stop Processes
9	Press **Ctl** + **Alt** + **Delete** to open the Windows Task Manager.
10	Click **Task Manager** and select the **Processes** tab.
11	If any of the following processes are running select the process and click **End Process** to stop. • cas.exe • hscopcserv.exe • hscsysmg.exe
12	Close the Task Manager.

Stop Experion services

Use this procedure to stop the Experion services before you install FTE.

Step	Action
1	Click **Start** > **Programs** > **Honeywell Experion PKS > Engineering Tools > Engr Tools Services Control Panel.**
2	Select Click **Start-Stop Experion Server**.
3	Select **Stop All Including SQL** and click **OK**.
4	Wait for the dialog boxes to close.

Check the driver signing options

Use this procedure to set the driver signing option to Warn or Ignore. If driver signing is set to Block, you will not be able to install the Honeywell Intermediate FTE driver.

Step	Action
1	Right-click the **My Computer** icon from the desktop or from the **Start** menu and select **Properties**.
2	From the **System Properties** dialog box, select the **Hardware** tab.
3	Click **Driver Signing** under **Device Manager.**
4	Under the File signature verification, select one of the following options: • Ignore – Install all files, regardless of file signature • Warn – Display a message before installing an unsigned file
5	Click **OK**.
6	Close the **System Properties** dialog box.

7.6 Getting further assistance

Other resources

Subject	Resource
Monitoring FTE node status	If you have the FTE Status components installed, you may view the status of the FTE node and the individual cable status from a station that has Honeywell System Management Display installed and a System Management Display configured. See the following two guides for more information: • *System Management Configuration Guide* • *FTE Status Display Guide*
Determining cable faults	

Honeywell

Honeywell International
Process Solutions
2500 West Union Hills
Phoenix, AZ 85027