Honeywell

Honeywell Process Solutions

Fault Tolerant Ethernet Installation and Service Guide

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Notices and Trademarks

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About This Document

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

Release Information

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Installation and Upgrades

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 LX Users

Experion LX *Software Installation and Upgrade Guide*

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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

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 . . .
Experion LX	Experion LX *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 Server 2008, and Windows 7 user interfaces

Honeywell FTE may be installed on a node that uses Windows Server 2008, Windows 7 as its operating system.

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.

Standard naming conventions for network adapters

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.

Term	Component	Used to describe the . . .	Example
A - yellow	Network Adapter	Network adapter primary port which usually has the lowest MAC Address 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 which usually has the next highest MAC Address to which the green	FTE South Plant **B** – green

Term	Component	Used to describe the . . .	Example
		cable is connected.	
	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 an Ethernet structure for your FTE network.
- Properly installed and configured Honeywell approved Cisco Ethernet 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
- Migrating existing nodes to FTE or installing new FTE Nodes
- Node type
- Operating system
- Network configuration (Level 1 and Level 2)
- 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 LX Server (ESV)	Experion LX eServer
	Experion Flex (ES-F)
Experion LX Console Extension Station(ES-CE)	
Experion LX Application Server (EAS)	Experion LX Application Node
Domain controller	

ATTENTION

In Windows Server 2008 and Windows 7 nodes, the FTE Mux network identification may appear as “unidentified network” in systems using workgroups. This does not actually indicate a problem with the network, but merely identifies that the node cannot establish an internet connection. Nodes that are joined to a domain show the domain name as the identified network.

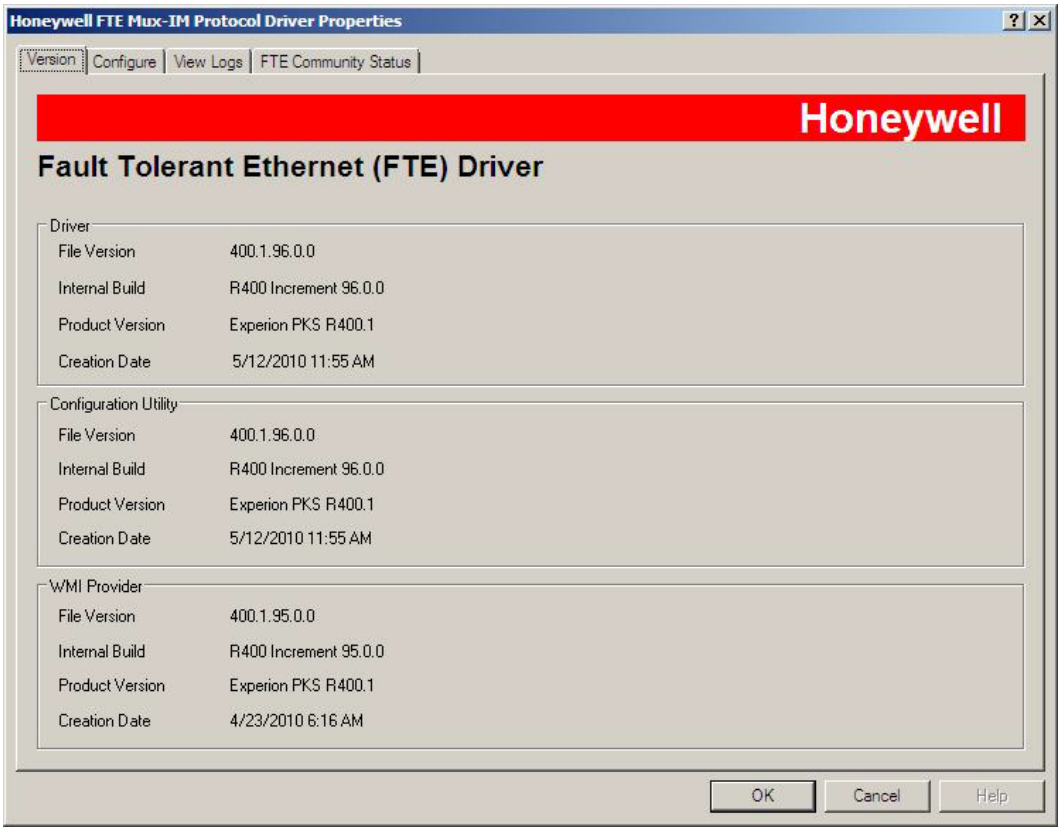
1.4 Overview on Honeywell FTE MUX

The Honeywell FTE MUX provides operational status and configuration user interfaces for the FTEMUX intermediate driver. It includes the following.

- Version Information
- FTEMUX Configuration
- FTEMUX Log File Viewer
- FTE Community Status Viewer

Version Information

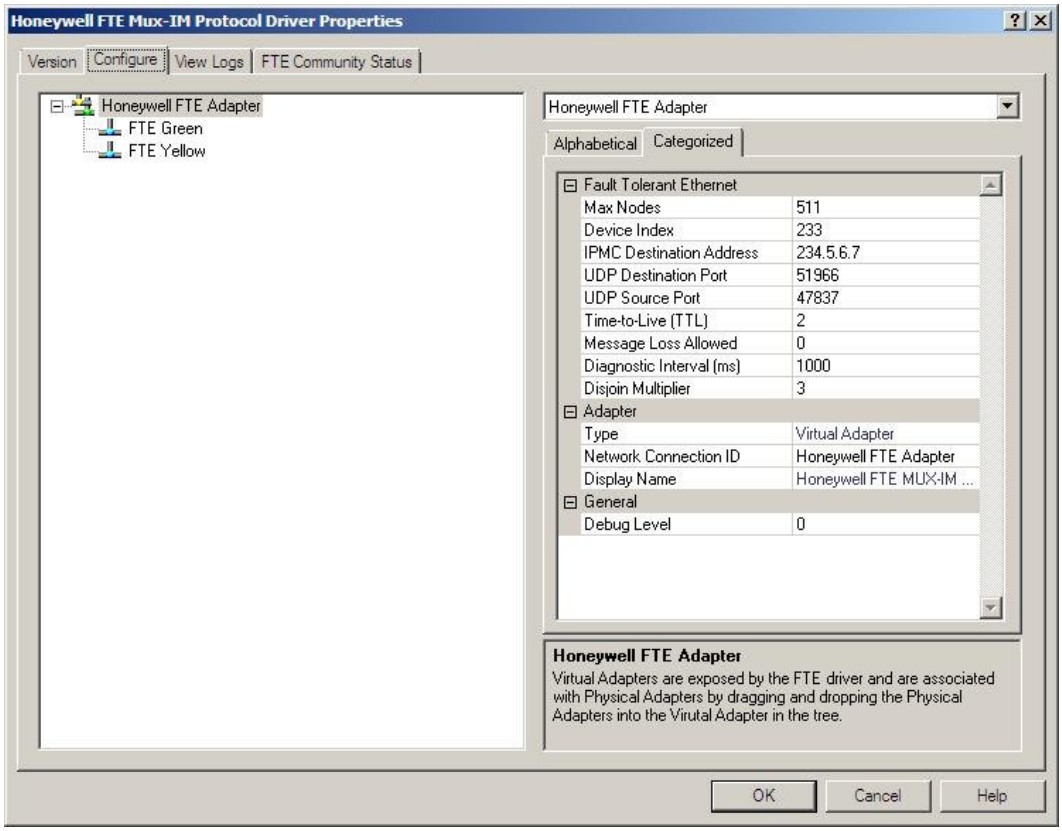
Version Information tab displays the FTEMUX driver, Configuration Utility and WMI Provider. Version information is extracted from a version resource linked into the executables.



FTEMUX Configuration

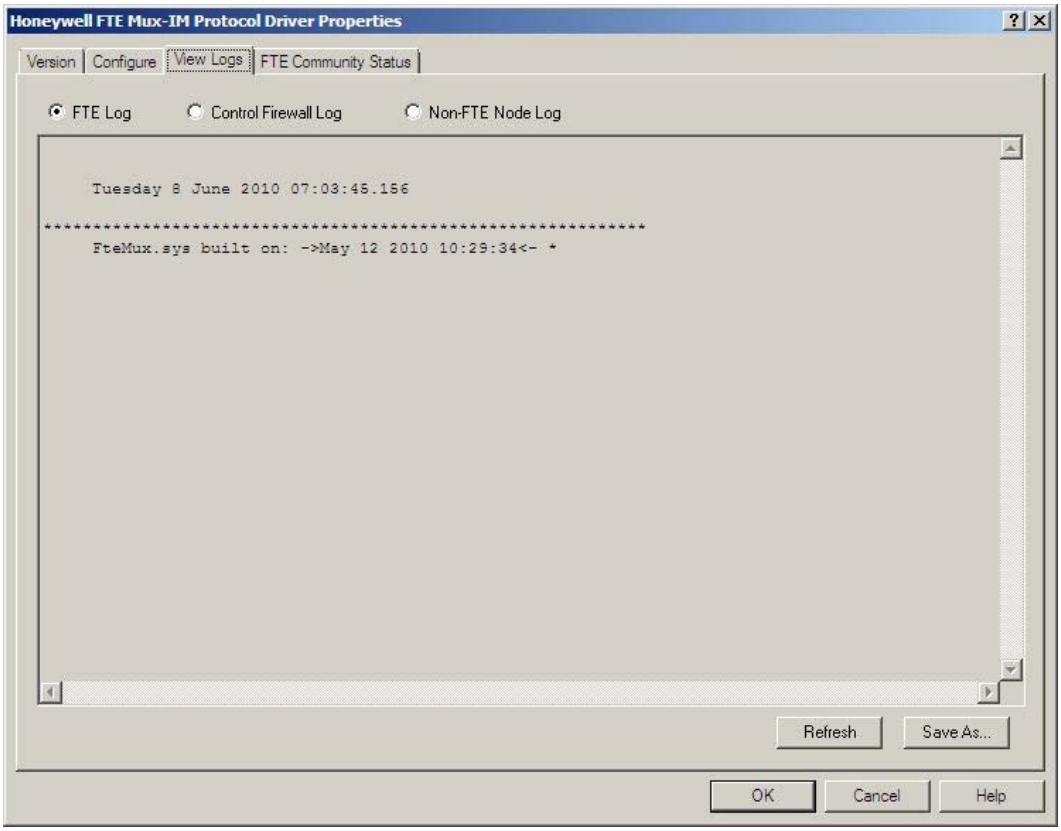
FTEMUX Configuration tab displays current virtual and physical adapters and the binding relationship between physical adapters and the FTEMUX protocol. Adapters, both virtual (FTEMUX) and physical are displayed in a tree. Properties for each adapter in the tree may be viewed by selecting the desired adapter either in the tree or from a list box that lists all physical and FTEMUX virtual adapters. Properties may be read-only (example: MAC ID) or may be editable (example: Device Index).

Adapters that are not assigned (bound) to an FTEMUX virtual adapter display information common to all physical adapters in the property lists. Adapters are assigned to FTEMUX virtual adapters by dragging and dropping the physical adapter onto an FTEMUX virtual adapter in the tree. Refer to the section Operating and Servicing FTE for detailed information on how to drag and drop the physical adapter onto FTEMUX virtual adapters.



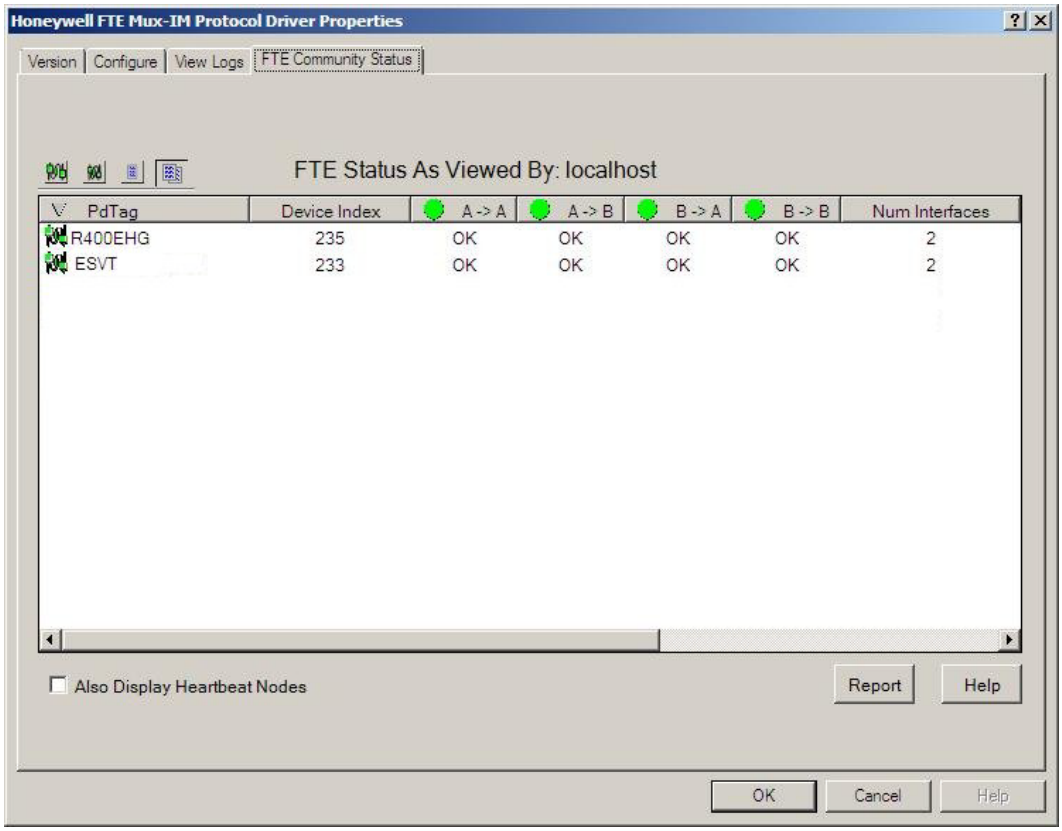
FTEMUX Log File Viewer

View Logs property tab displays the FTE Log files. These log files are written periodically by the FTE driver. It provides a mechanism for saving a figure of these log files to a defined file location and name. Files are refreshed every two and a half minutes automatically.



FTE Community Status Viewer

FTE Community Status tab hosts the FTE auxiliary display. This replaces the need to host the auxiliary display in a web page. The Experion LX Station detail displays hosts this same status viewer.


Honeywell FTE Mux-IM Protocol Driver Properties
Version
Configure
View Logs
FTE Community Status
FTE Status As Viewed By: localhost
PdTag
Device Index
A -> A
A -> B
B -> A
B -> B
Num Interfaces
R400EHG
235
OK
OK
OK
OK
2
ESVT
233
OK
OK
OK
OK
2
Also Display Heartbeat Nodes
Report
Help
OK
Cancel
Help

2. FTE Installation and Configuration Checklists

2.1 Configuring FTE on a factory-configured Experion LX node

Factory configured FTE nodes are those in which the Experion LX 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 Installation Builder installed and an existing node definition, you can use the "Configuring FTE using the Installation Builder" checklist on page 92 to simplify the configuration.

Checklist

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

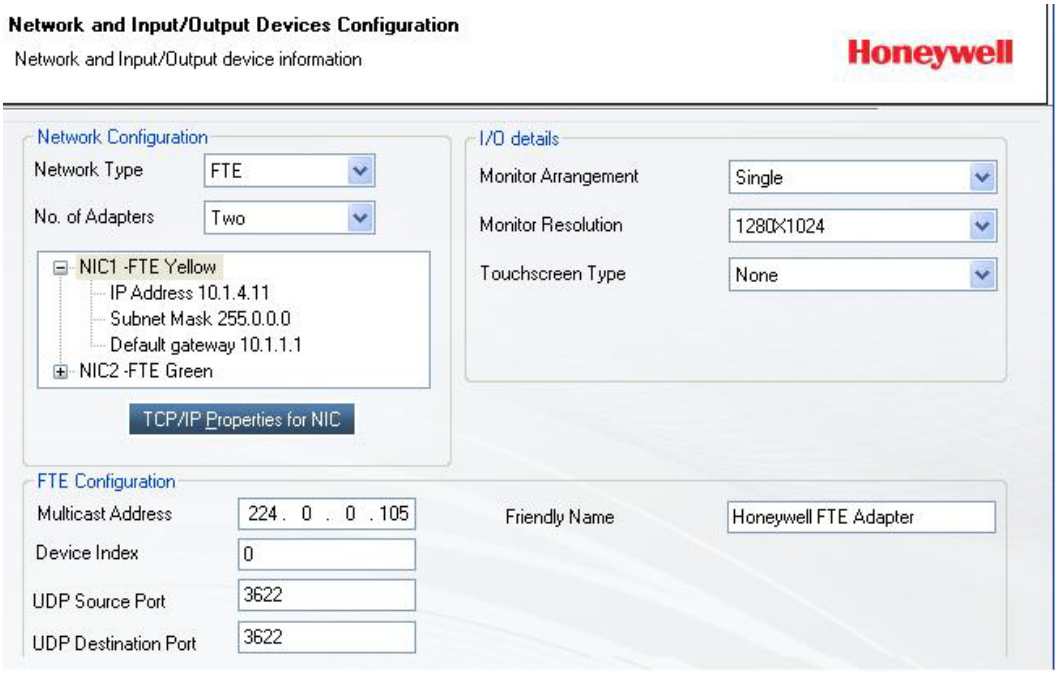
Task	Go to	Done (✓)
Configuring FTE Mux-IM Protocol Driver properties	Page 69	
Configure the Honeywell FTE Adapter	Page 83	
Connect FTE network cables	Page 94	
Verify Honeywell FTE Driver Operation	Page 87	

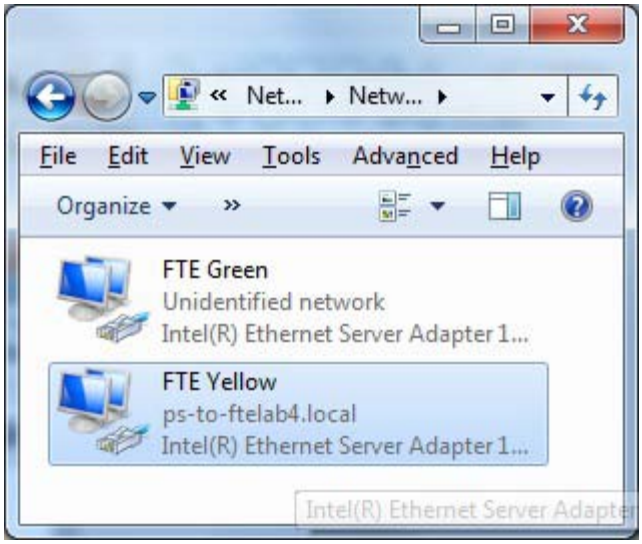
2.2 Prerequisites for FTE Mux Installation

Changing/Verify Network Properties to support FTE Mux Installation

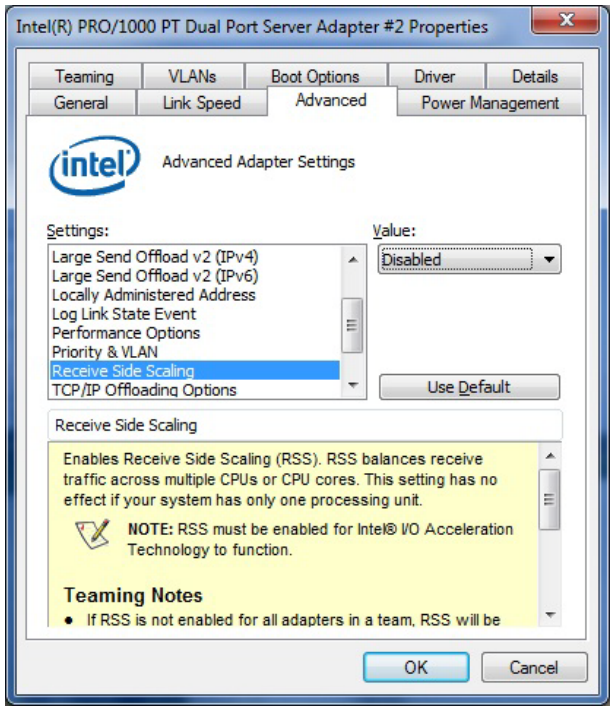
Perform/verify this procedure before beginning with any FTE package installation. Setting these parameters incorrectly can result in a system with an unusable network interface.

If the Experion LX System Initialization DVD was used to configure the node installation of the Operating System the following settings will already be set correctly. Make sure FTE was selected for the network type and the NIC- FTE Yellow was configured with at least an IP address, a subnet mask, and a default gateway. See the *Software Installation and Upgrade Guide* (SUIG) for details.


Network and Input/Output Devices Configuration
Network and Input/Output device information
Honeywell
Network Configuration
Network Type
FTE
No. of Adapters
Two
NIC1 -FTE Yellow
IP Address 10.1.4.11
Subnet Mask 255.0.0.0
Default gateway 10.1.1.1
NIC2 -FTE Green
TCP/IP Properties for NIC
I/O details
Monitor Arrangement
Single
Monitor Resolution
1280X1024
Touchscreen Type
None
FTE Configuration
Multicast Address
224 . 0 . 0 . 105
Device Index
0
UDP Source Port
3622
UDP Destination Port
3622
Friendly Name
Honeywell FTE Adapter

Step	Action
1	From **Control Panel**, • For **Windows 7 Operating System**, choose **Network and Internet** > **Network and sharing Center** > **Change Adapter Settings**. • For **Windows Server 2008 Operating System**, choose **Network and sharing Center** > **Manage Network Connections**. 
2	Right-click one of the FTE network connections (yellow or green) and then select **Properties**. The **User Account Control** dialog box appears.
3	Click **Continue** The **Adapter Yellow/Green Properties** window appears.

Step	Action
4	Under **Networking** tab click **Configure**.
5	For **Broadcom Adapters**, under **Advanced** tab perform/verify the following: • Click **IPv4 Checksum Offered** and verify/change the value to **Rx & Tx Enabled**. • Click **Jumbo Packet** and verify/change the value to **Disabled**. • Click **Jumbo MTU** and ensure the value is **1500**. • Click **Large Send Offload v2 (IPv4)** and verify/change the value to **Disabled**. • Click **Link Speed & Duplex** and verify/change the value to **100Mb full**. • Click **OK**.

Step	Action
6	For **Intel Adapters**, under **Advanced** tab perform the following: • Click **Jumbo Packet** verify/change the value to **Disabled**. • Click **Large Send Offload (IPv4)** verify/change the value to **Disabled**. • Click **Large Send Offload (IPv6)** verify/change the value to **Disabled**. • Click **Receive Side Scaling** verify/change the value to **Disabled**. • Click **Link Speed** tab and verify/change the value to **100Mbps/Full Duplex**. • Click **OK**. 

2.3 Installing and configuring FTE with your Experion LX System

If you are installing FTE with your Experion LX 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*
- Experion LX System Initialization DVD
- Experion LX Installation DVD
- Experion LX Support DVD

Considerations

If you choose FTE as your network type when installing your Experion LX 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.

The operating system must be installed either by the Experion LX System Initialization DVD or manually. This procedure assumes an operating system is configured as per the requirements of Experion LX R1XX installation.

Checklist

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

Task	Go to	Done (✓)
Install the Operating System and configure it per the Software Installation and Upgrade Guide	Appropriate checklist for your system	
Identifying FTE network adapters	Page 74	
Configuring FTE network connections	Page 77	

Task	Go to	Done (✓)
Refer to the *Software Installation and Upgrade Guide* to initialize the system and install all Experion LX software (including FTE)	Appropriate checklist for your system	
Configuring FTE Mux-IM Protocol Driver properties	Page 69	
Configure the Honeywell FTE Adapter **Note**: This is only necessary to verify the IP address	Page83	
Connecting network cables to switches	Page 94	
Verify Honeywell FTE Driver Operation	Page 9687	

2.4 FTE installation scenarios

This section explains the items and checklists required to configure and install the different FTE installation scenarios for Experion LX Release 1XX. I

The following table assumes that all nodes are already setup for FTE Installation and the Hardware has been configured to support FTE.

Scenario	Go to	What you will need
Converting a *dual* Supervisory Ethernet node to an FTE node	Page 33	*FTE Installation and Service Guide* for R3XX or R2XX network conversion scenario
Configuring FTE on a factory-configured Experion LX node	Page 25	No media or additional documents are needed
Installing and configuring FTE with your Experion LX System	Page 30	• *Software Installation and Upgrade Guide* • Experion LX System Initialization DVD • Experion LX Installation DVD • Experion LX Support DVD
Installing and configuring FTE on existing Experion LX nodes	Page 35	• *Software Installation and Upgrade Guide* • Experion LX System Initialization DVD • Experion LX Installation DVD • Experion LX Support DVD

Scenario	Go to	What you will need
		•
Installing and configuring FTE using Installation Builder	Page 37	*Installation Builder User Guide* (optional)
Installing and configuring FTE on Domain Controllers	Page 39	• Root, Peer or Read Only Domain controller running Windows Server 2008 You will need the Experion LX Installation DVD

2.5 Converting a *dual* Supervisory Ethernet node to an FTE node

Use this checklist to convert a dual supervisory node to an FTE node

Considerations

If the dual Supervisory node does not have an FTE qualified network card, first install one in the node even if the node is being replaced.

Checklist

The beginning of this checklist refers to the prior release of this document *FTE Installation and Service Guide* for R3XX or R2XX. Unless otherwise stated for conversion from the dual supervisory network to FTE must occur on the prior release before migration.

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

Task	Go to	Done (✓)
Read "Supervisory Network to FTE network considerations"	Page 43	
Identify your specific scenario using the matrix in "Migration scenarios for dual Ethernet Experion Servers, Consoles and Flex Stations"	Page 47	
For server nodes only		
Follow the instructions in the *FTE Installation and Service Guide* for R3XX or R2XX for server nodes only.	Appropriate checklist for your system	
For all nodes (server and station)		
If the node is using the Onboard Single adapter, Uninstall single (onboard) network adapter using the *FTE Installation and Service Guide* for R3XX or R2XX.	Appropriate checklist for your system	
Disable non-FTE NIC for ***NON-EHG*** Node using the *FTE Installation and Service Guide* for R3XX or R2XX.	Appropriate checklist for your system	
Removing non-FTE hardware: **Note:** If the node being replaced or upgraded already has FTE qualified network adapter(s) installed, go to "**Installing FTE software**" section of this checklist.		

Task	Go to	Done (✓)
Installing FTE hardware		
Verify you have reviewed the specific vendor's installation guide for the network adapter card(s) you are using.	Vendor manuals	
Determine Qualified platforms and network adapter card slot requirements using *FTE Installation and Service Guide* for R3XX or R2XX	Appropriate checklist for your system	
Determine Network adapter card connection requirements using *FTE Installation and Service Guide* for R3XX or R2XX	Appropriate checklist for your system	
adapter using *FTE Installation and Service Guide* for R3XX or R2XX	Appropriate checklist for your system	
Note: ***If the dual Ethernet card was used from a new platform, reinstall it in new platform after migrating the old one and shutting it down.***		
Note: if the node being migrated is a Dell PE 2850 computer install a Pro 1000 MT Dual Server Adapter Card and disable the onboard NIC card in the BIOS before continuing migration to Experion PKS R4XX.		
Migrate to Experion PKS Release 4XX.X		
Follow the instructions in the *Experion PKS Migration Users Guide* for migrating the specific node type to Experion PKS with a FTE network type.	Appropriate checklist for your system	
Configuring FTE Network Adapter		
Configuring FTE Mux-IM Protocol Driver properties	Page 69	
Configure the Configure the Honeywell FTE Adapter	Page 83	
Verify the FTE Driver settings in procedure Verify Honeywell FTE Driver Operation	Page 87	

2.6 Installing and configuring FTE on existing Experion LX nodes

Use the checklist in this section to install and configure FTE on an Experion node that is migrated from a previous release and that has FTE installed. You can add FTE to an Experion PKS Node already running Experion PKS.

Prerequisites

You will need:

- *Software Installation and Upgrade Guide*
- Experion PKS System Initialization DVD
- Experion PKS Installation DVD
- Experion PKS Support DVD
- Experion PKS Knowledge Builder DVD

Considerations

If you have the Installation Builder installed and an existing node definition, you can use the “Installing and configuring FTE using Installation Builder” checklist on page 37 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 50	
Disable non-FTE NIC for ***NON-EHG*** Node	Page 50	
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.		

Task	Go to	Done (✓)
Determine Qualified platforms and network adapter card slot requirements	Page 51	
Determine Network adapter card connection requirements	Page 52	
Install dual port network adapter	Page 53	
Installing FTE software		
Install the Operating System and configure it per the Software Installation and Upgrade Guide	Appropriate checklist for your system	
Identifying FTE network adapters	Page 74	
Configuring FTE network connections	Page 77	
Refer to the *Software Installation and Upgrade Guide* to initialize the system and install all Experion software (including FTE)	Appropriate checklist for your system	
Configuring FTE Mux-IM Protocol **Driver** properties	Page 69	
Configure the Honeywell FTE Adapter **Note**: This is only necessary to verify the IP address	Page83	
Connecting network cables to switches	Page 94	
Verify Honeywell FTE Driver Operation	Page 9687	

2.7 Installing and configuring FTE using Installation Builder

Prerequisites

Before using the Installation Builder to install and configure FTE, it is assumed you have performed the following:

- Installed Experion software including the Installation Builder.
- Created a Master Definition for the node in which all FTE configuration options have been defined. If this is not the case, refer to the *Installation Builder 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 50	
Disable non-FTE NIC for ***NON-EHG*** Node	Page 50	
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 51	
Determine Network adapter card connection requirements	Page 52	
Install dual port network adapter	Page 53	
Configuring FTE and Network Adapters		
Download FTE-configured Master definition	Page 92	
Configuring FTE Mux-IM Protocol **Driver** properties	Page 69	

Task	Go to	Done (✓)
Identify FTE network adapter ports	Page 74	
Connect FTE network cables	Page 94	
FTE installation	Page 96	

2.8 Installing and configuring FTE on Domain Controllers

Prerequisites

Root, Peer or Read Only Domain controller running Windows Server 2008 or Root or Peer Domain Controller running Windows server 2003.

You will need the Experion PKS Installation DVD.

Checklist

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

Task	Go to	Done (✓)
Install Operating System and Setup Domain Controller		
If the Domain Controller is already up and running proceeds to Configuring Network adapters.	Appropriate checklist for your system	
If the Domain Controller is to be hosted on a Honeywell Supported Platform, follow the instructions in *Software Installation and Upgrade Guide* for installing Windows Server 2008 operating system only. Be sure to configure the network type is FTE and specify the FTE Settings at this time.	Appropriate checklist for your system	
If the Domain Controller is not hosted on a Honeywell supported platform make sure that a Honeywell supported Dual NIC Adapter is installed. Install and configure the Domain Controller per the *Experion R400 Domain/Workgroup Implementation Guide.*	Appropriate checklist for your system	
If the Domain Controller is already up and running proceeds to Configuring Network adapters.	Page 69	
Configuring Network Adapters		
Installing FTE Hardware perform the applicable sections for the Domain Controller's current hardware configuration.	Page 49	
Identifying FTE network adapters	Page 74	
Configuring FTE network connections	Page 77	
Connect FTE network cables	Page 94	
Installing Experion PKS R4XX and FTE Software		

Task	Go to	Done (✓)
Refer to the *Software Installation and Upgrade Guide* to initialize the system and install all Experion software (including FTE) to install Experion Software on a Domain Controller.	Appropriate checklist for your system	
Configuring FTE Mux-IM Protocol **Driver** properties	Page 69	
Configure the Honeywell FTE Adapter **Note**: This is only necessary if you want to change the IP address. The IP address of the domain controller should have been configured correctly in the Install FTE Hardware procedure.	Page 83	
Verify Honeywell FTE Driver Operation	Page 87	

3. Converting a Supervisory Network to an FTE Network

Use the information in this section and the appropriate checklist from Section 2 to convert your Supervisory Network to an FTE Network.

This conversion must occur before Experion Release 4XX is installed on the nodes. Refer to the procedures located in the Fault Tolerant Installation and Service guide for the Experion PKS Release 3XX being migrated from. Use the R3XX version of this guide for all of the steps and recommendation prior to referencing this document.

3.1 Supervisory Network to FTE network considerations

Migrate a Supervisory Network to an FTE network. First convert all nodes within the network to FTE nodes. Before conversion, see the *Fault Tolerant Ethernet Overview and Implementation Guide* for detailed FTE network planning information.

Server and station conversion guidelines

- Each server must be converted at the same time as its redundant partner; stations can be converted individually.
- Each redundant server that has a dual Ethernet configuration must have its links redefined for a single network.
- Each redundant server must have its host file updated.

Special considerations for migrating a single Ethernet platform

If you are upgrading a platform that currently has a Single Ethernet card, replace the Single Ethernet card with a Dual Ethernet card before starting a migration. Experion Migration software looks specifically for a Dual Ethernet configuration and if one is not detected it stops the migration process. To avoid having to purchase a dual Ethernet card just for the migration process, perform the following:

- Remove the dual Ethernet card from the new platform and install it in the platform that is being replaced.
- Start-up the node being replaced and begin the migration process.
- After all the data on the node being replaced is backed up or migrated, shut it down and remove the dual Ethernet card.

- Re-install the dual Ethernet card in the new platform and continue with the migration.

3.2 Identifying the specific conversion scenario

This section identifies the scenarios you may encounter when converting an existing non-FTE node to an FTE node. Each scenario requires you to perform different tasks.

Migration scenarios for single Ethernet Experion Servers, Consoles and Flex Stations

The following table lists scenarios for migrating single Ethernet Experion Servers, Consoles and Flex Stations currently in a Supervisory network to dual Ethernet Experion Servers, Consoles and Flex Stations that can be used in an FTE network.

Current Honeywell hardware platforms	Current Ethernet Card	Is hardware platform being replaced?	Ethernet card to use in current hardware platform
PE1400[1] PE1600[1] or PE2600 series[1]	Single	Yes – with a Server that has onboard NIC	Use card in current platform if it is FTE qualified[1]
PE1400[1] PE1600[1] PE2600 series[1]	Single	Yes – with a Server that has an FTE qualified dual Ethernet card	Use card in current platform if it is FTE qualified[1]
PE1800 PE 1430	Single	No	Must purchase an FTE qualified Intel Pro 1000 MT or PT Dual server Ethernet card [2]
PE2850 PE 2900 PE2950 PE 710 PE610	Single	No	Use onboard NIC after enabling it
WS360-based Workstation[1] WS370-based Workstation[1] WS470-based Workstation[1]	Single	Yes – with current Windows 7 -based Honeywell Workstation	Use card in new platform (temporarily) or purchase an FTE qualified dual Ethernet card [2]
WS490, WsT5400 WS T5500 based Workstation	Dual	No	Use card in current platform if it is FTE qualified [2]

[1]Platforms no t supported for Experion PKS R4XX[2] Disable onboard NIC for these platforms (PE1800 PE1430).

Migration scenarios for dual Ethernet Experion Servers, Consoles and Flex Stations

The following table lists scenarios for migrating dual Ethernet Experion Servers, Consoles and Flex Stations currently in a Supervisory network to dual Ethernet Experion Servers, Consoles and Flex Stations that can be used in an FTE network.

Current Honeywell hardware platform	Current Ethernet Card	Is hardware platform being replaced?	Ethernet card to use in current hardware platform
PE1400[1] PE1600[1] PE2600 series[1]	Dual	Yes. – with a Server that has onboard NIC	Use Onboard NIC Card
PE1400[1] PE1600 series[1]	Dual	Yes – with a Server that has an FTE qualified dual Ethernet card	Use card in current platform if it is FTE qualified[1,2]
PE1800 PE1430 PE2900 PE2850 PE2950 PE 710 PE 610 series	Dual	No	Use card in current platform if it is FTE qualified. In PE 1800 and PE1430 See Note[2] Use Onboard NIC in platform if it is Dual.
WS360[1] WS370[1] WS470 -based Workstations[1]	Dual	Yes – with current Windows 7 qualified based Honeywell Workstation	Use card in current platform if it is FTE qualified [1,2]
WS490, WsT5400 WS T5500 based Workstation	Dual	No	Use card in current platform if it is FTE qualified [2]

[1] Platforms no t supported for Experion PKS R4XX. [2] Can use either Dual Intel Pro 1000 MT Dual Server Card (Must be the Dual Card from Intel)or Intel Pro 1000 PT Dual Server Card.

4. Installing FTE Hardware

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

4.1 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:

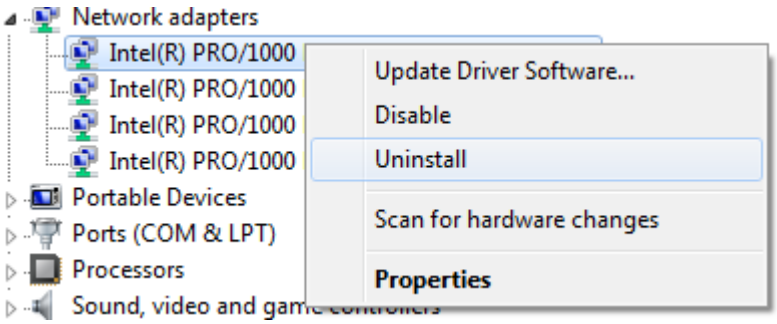
- You have reviewed the specific vendor's installation guide for the network adapter card(s) you are using.
- You are familiar with the hardware installation requirements for your specific platform. See "Qualified platforms and network adapter card slot requirements" on page 51.
- You have the computer user manual for your specific platform. You may need to refer to the manual in order to remove the cover.

4.2 Removing Non-FTE hardware

Perform the procedures in this section if you are installing FTE on a node that has an integrated onboard network 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, On Windows Server 2008, open **Diagnostics** and then click **Device Manager.**
3	Double-click **Network adapters** to view all installed network adapters.
4	Right-click the network adapter and click **Uninstall**. 
5	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.

Platform	Slot requirement
Dell WS490	PCI-e – Slot 1 for PT Card or PCI-x Slot XX for MT Card
Dell WS T5400	PCI-e – Slot 1 for PT Card or PCI-x Slot XX for MT Card
Dell WS T5500	PCI-e – Slot 1
Dell PE1800	PCI-e Slot # 2 for PT Card or PCIX 5 slot for MT Card
Dell PE2850	Onboard NIC
Dell PE2950	Onboard NIC
Dell PE2900	Onboard NIC
Dell PE710	Onboard NIC – Disable 2 of the four
Dell PE610	Onboard NIC – Disable 2 of the four

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 PE1800-based Honeywell platforms, place the FTE network adapter card in slot 2 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.

Physical Label on NIC	Physical Ethernet (MAC) Address	Connected Cable	Network Connections	Connect Cable to
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
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
For R710 Systems				
ACT/LINK C (third NIC for EHG Installation)	Higher physical Ethernet (MAC) address	DHEB	Third Adapter	DHEB

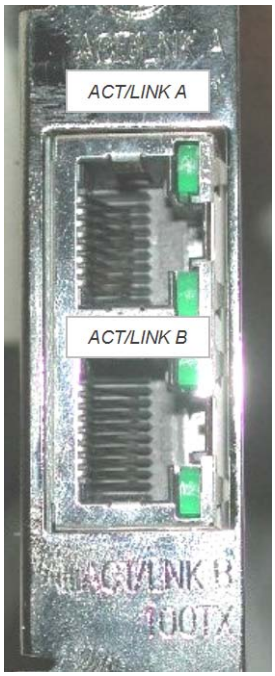
4.3 Installing the Network Interface Card and driver

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.
4	Install the dual port network adapter card in the proper slot using the instructions in the *Installation Guide* that is packaged with the device.

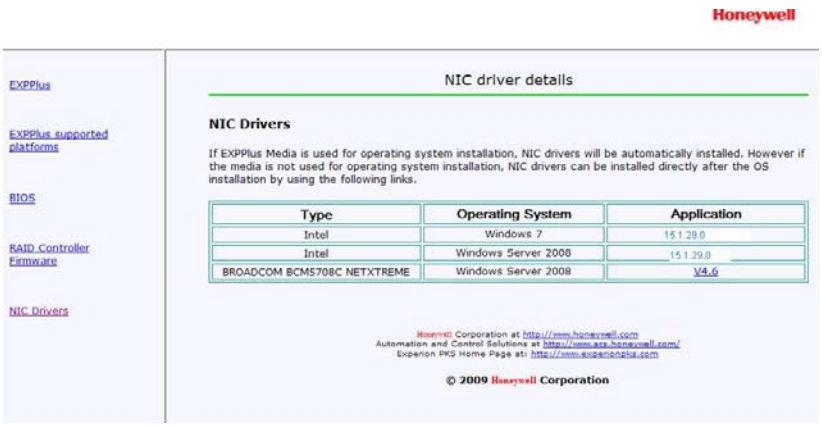
Install or update Intel network adapter drivers for Experion nodes

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

Step	Action
	Install Intel Network Driver and PROSet Software for the Intel NICs
	ATTENTION Before you begin, ensure that you have used Intel PRO 1000 PT or 1000 MT Dual Server adapters for FTE configuration.
	CAUTION Before updating the Adapter Driver Version always Disable FTE by performing "Need procedure to unbind FTE MUX".

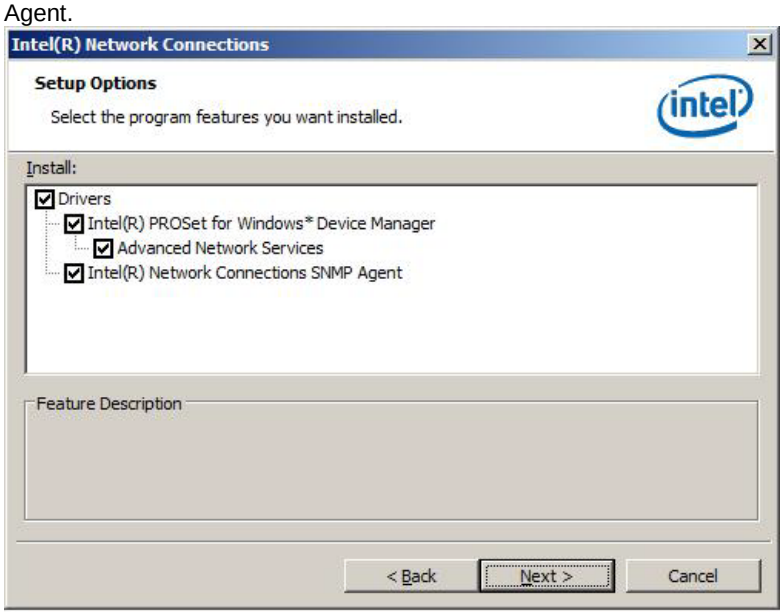
Step	Action
1	Insert the **Experion PKS System Initialization DVD** in the DVD drive.
2	In the **Honeywell – Experion PKS System Initialization** window, click **Utilities**:

Step	Action
3	On the left pane, click **NIC-Drivers**.



4	Select the Intel NIC Driver that applies to your system and then follow the instructions on-screen to complete the installation.

Step	Action
5	Select **SNMP Agent** dialog box only if you are planning to install Server nodes only on ESV-T or ESV node types. Otherwise do not select SNMP Agent.



6	Select **Next** and follow the instructions on-screen to complete the installation.
Configure the NIC	
7	Click **Allow**.
8	Click the NIC name to rename the NIC. By default, FTE Yellow is the first NIC (Yellow or Primary Supervisor) and FTE Green is secondary NIC (Green or Secondary Supervisory).
9	Expand the **FTE Yellow** and select **DHCP Enabled**.
10	Click **TCP/IP Configuration** and type IP Address, Subnet mask, default gateway and the DNS Server address, as necessary.
11	Select **Configure**.
12	Proceed and refer to the procedure Verify/Change Physical adapters settings.

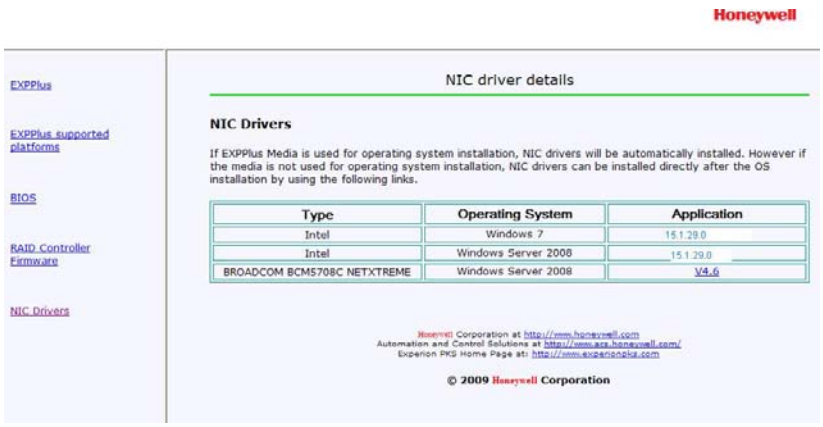
Install or update Onboard BroadCom network adapter driver for Experion nodes

Use this procedure along with the Experion Client/Server media to obtain the latest driver.

Step	Action
Install Intel Network Driver and PROSet Software for the Intel NICs	
	ATTENTION This procedure is to support Onboard Broadcom NIC cards and that there is a new driver version to be updated.
	CAUTION Before updating the Adapter Driver Version always Disable FTE by performing “Need procedure to unbind FTE MUX”.
1	Insert the **Experion PKS System Initialization DVD** in the DVD drive.

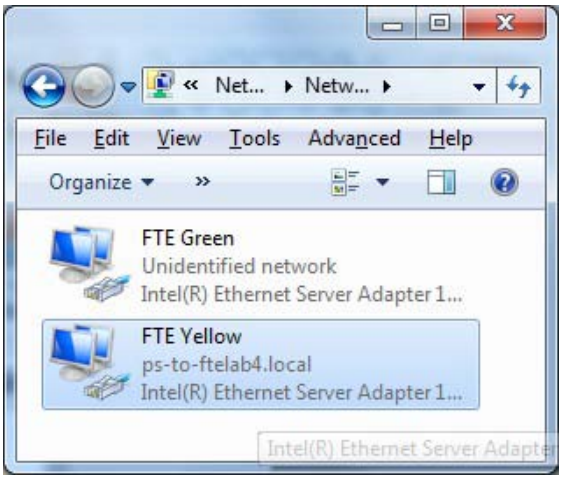
Step	Action
2	In the **Honeywell – Experion PKS System Initialization** window, click **Utilities**.

3	On the left pane select **NIC-Drivers**.

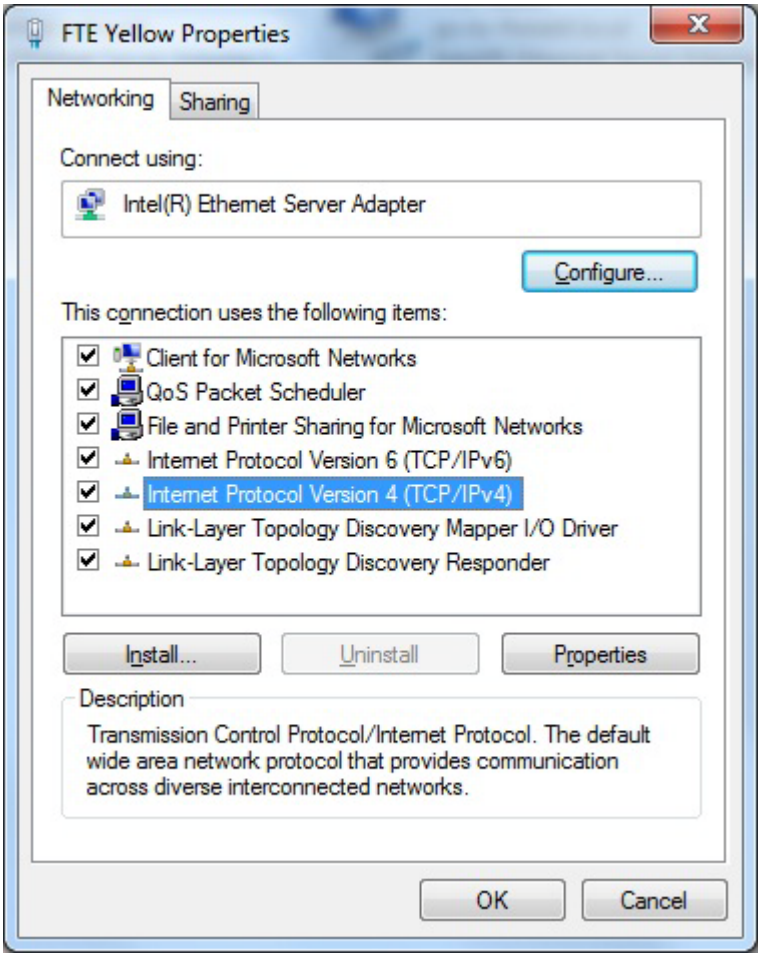


Step	Action
4	Select **Broadcom BCM5708C NETEXTREME V4.6**.
5	Follow the prompts for the Broadcom Installation.

Verify/Set NIC Adapter Properties

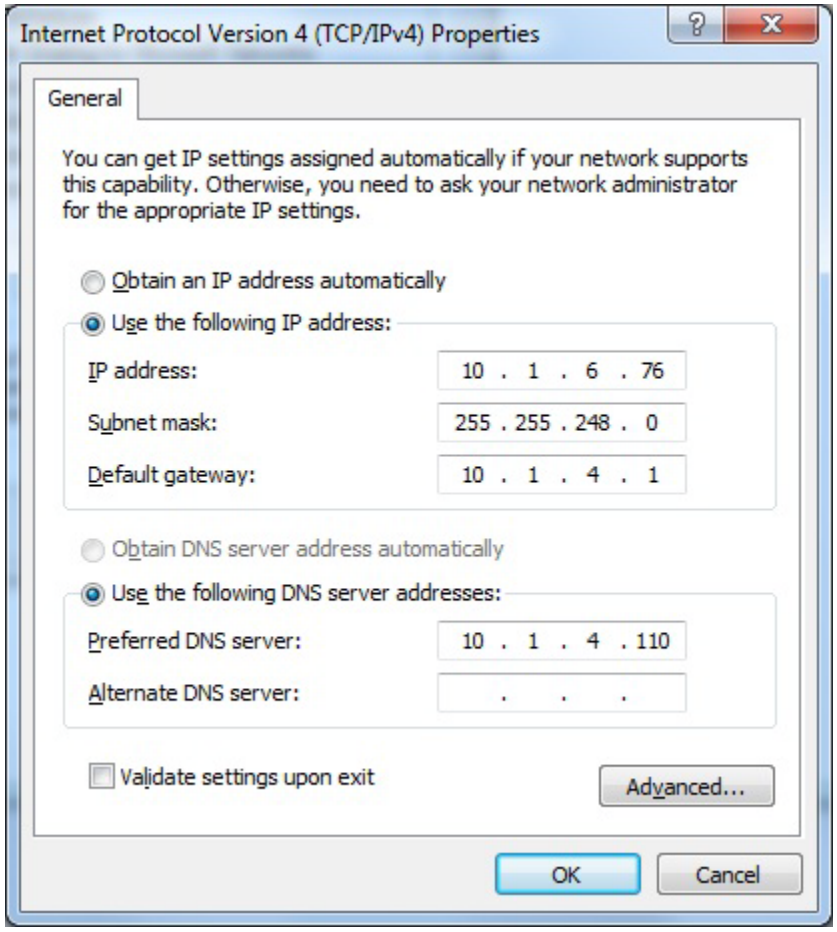
Step	Action
1	From **Control Panel**, • For **Windows 7 Operating System**, choose **Network and Internet** > **Network and sharing Center** > **Change Adapter Settings**. • For **Windows Server 2008 Operating System**, choose **Network and sharing Center** > Manage Network Connections. 
2	For **Yellow network connection**, Right-click the Yellow network connection and then select **Properties**. The **User Account Control** dialog box appears.
3	Click **Continue** Verify the **Yellow Adapter Properties** window.

Step	Action
4	From **Networking** tab, select **Internet Protocol Version 4(TCP/IPv4)** and then click **Properties**.



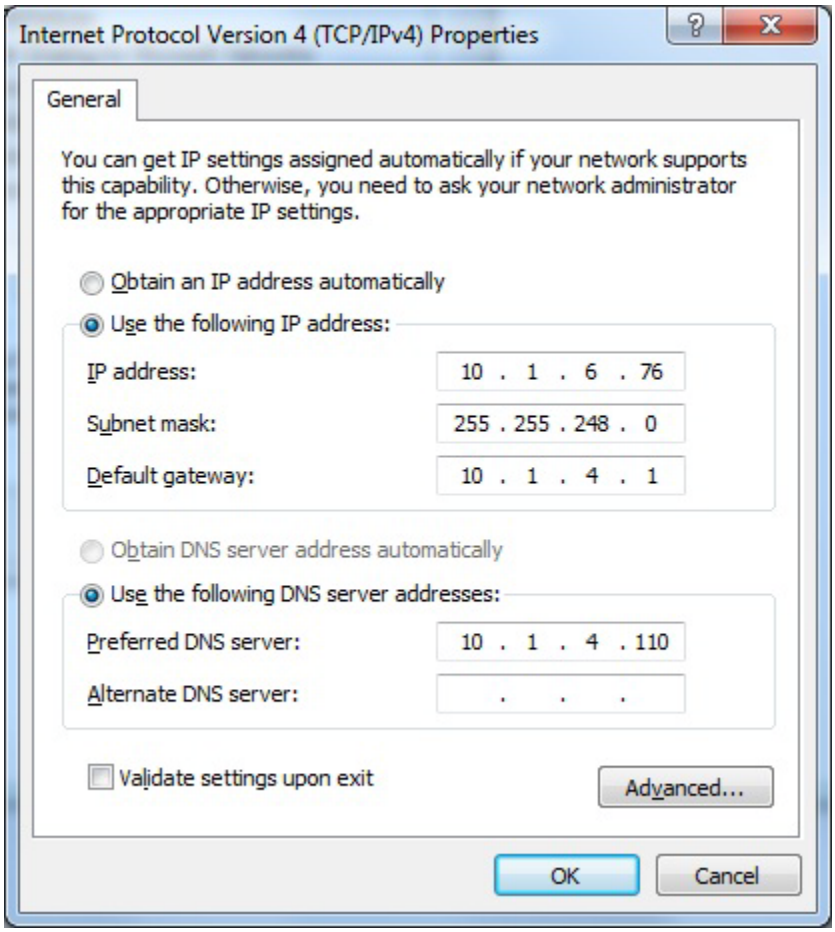
5	Verify/Set the **IPv4 properties for the yellow adapter** window.

Step	Action
6	Set the **IP address**, **Subnet mask** and **Default gateway** assigned to this node. If required also set the **DNS servers**.



7	Click **OK** and then click **Close**.
8	For **Green network connection**, Right-click the Green network connection and then select **Properties**. The **User Account Control** dialog box appears.

Step	Action
9	Click **Continue**. Verify the **Adapter Green Properties** window appears.
10	Set the **IP address**, **Subnet mask** and **Default gateway** assigned to this node. If required also set the **DNS servers**.
11	Click **OK** and then click **Close**.
12	Close **Network Connections** window.

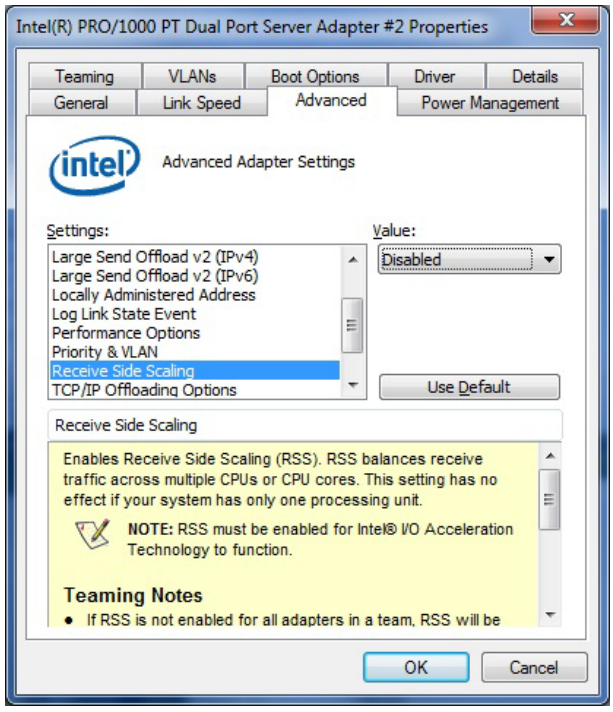


Verify/Change Physical adapters settings

If you are updating your network adapter driver on an existing FTE node, use this procedure to verify if the network physical adapter properties are still selected.

Step	Action
1	From **Control Panel**, • For **Windows 7 Operating System**, select **Network and Internet** > **Network and sharing Center** > **Change Adapter Settings**. • For **Windows Server 2008 Operating System**, select **Network and sharing Center** > **Manage Network Connections**.
2	Right-click one of the FTE network connections (yellow or green) and then select **Properties**. The **User Account Control** dialog box appears.

Step	Action
3	Click **Continue**. Verify the **Adapter Yellow/Green Properties** window.
4	Under **Networking** tab, select **Configure**.
5	For Broadcom Adapters, Under **Advanced** tab, perform the following: • **IPv4 Checksum Offered** and ensure the value is set to **Rx & Tx Enabled.** • **Jumbo Packet** and verify/change the value to **Disabled**. • J**umbo MTU** and verify/change the value to **1500**. • Click **Large Send Offload v2 (IPv4)** and verify/change the value to **Disabled**. • **Link Speed & Duplex** and verify/change the value to **100Mb full**.

Step	Action
6	For Intel Adapters, Under **Advanced** tab, perform the following: • **Jumbo Packet** verify/change the value to **Disabled**. • **Large Send Offload (IPv4)** verify/change the value to **Disabled**. • **Large Send Offload (IPv6)** verify/change the value to **Disabled**. • **Receive Side Scaling** verify/change the value to **Disabled**. • **Link Speed Tab and** verify/change the value to **100Mbps/Full Duplex**. 
7	Click **OK**.
8	Click **Close** from the Adapter Properties window.
9	Repeat step 2 to 7 for second adapter.

5. Configuring FTE

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

5.1 Configuring FTE Mux-IM Protocol Driver properties

Use this procedure to configure the FTE Protocol Driver settings from the **FTE-IM Protocol Driver Properties** page. See "FTE configuration" on page 72 for descriptions of the settings.

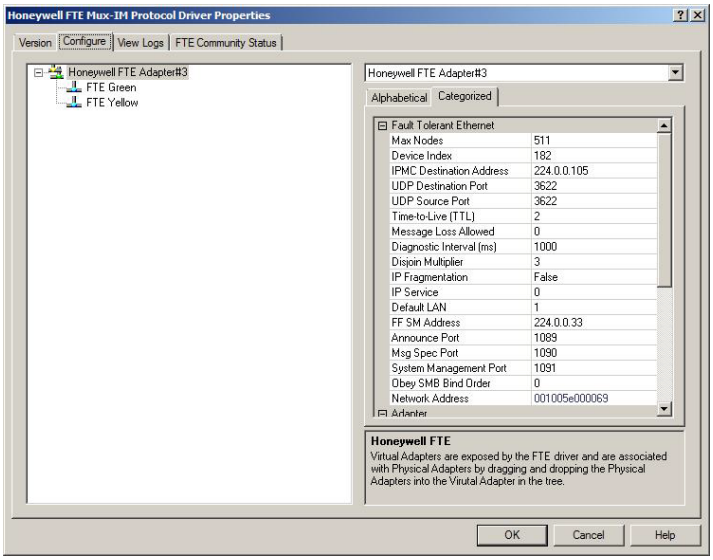
ATTENTION

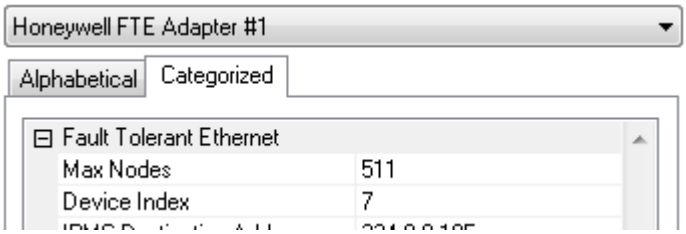
The Network administrator should establish and record these settings to ensure each FTE Node in the network is configured properly.

Step	Action
1	From **Control Panel**, • For **Windows 7 Operating System**, choose **Network and Internet** > **Network and Sharing Center** > **Change Adapter Settings**. • For **Windows Server 2008 Operating System**, choose **Network and Sharing Center** > **Manage Network Connections**.
2	Right-click one of the FTE network connections (yellow or green) and then select **Properties**. The **Adapter Yellow/Green Properties** window appears.

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
3	Select **Honeywell FTE Mux-IM Protocol Driver** then click **Properties**. The **Honeywell FTE Mux-IM Protocol Driver Properties** window appears. 
4	Click the **Configure** tab.

Step	Action
5	Enter/verify the Device Index value is greater than 0 and equal to or less than the Max FTE Nodes setting. Note: These settings must be already setup for the network if the Experion PKS System Initialization DVD was used to install the operating system. The Experion PKS Installation DVD sets these properties upon installation of the FTE Driver package if the network type was selected as FTE. 

CAUTION

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

6	If necessary, modify the Interval and Disjoin Multiplier values. Honeywell recommends using the default settings.
7	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

8	Enter an appropriate **IPMC Destination Address** according to your site requirements**.**

Step	Action
	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*.
9	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. • **Time –To-Live (TTL)**
10	Click **OK** if changes are made. Or, Click **Cancel,** if no are made.
11	Click **Close** to exit the FTE Yellow or FTE Green adapter properties.
12	Restart the system.

FTE configuration options

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

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 Max FTE Nodes value.
Diagnostic 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.

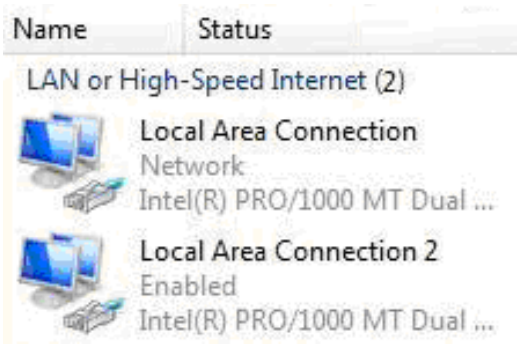
Setting	Description and setting limitations
IPMC Destination Address Default: 234.5.6.7	Identifies the multicast group for that FTE Node. All FTE Nodes within one FTE Community must have the same multicast address.
UDP Source Port Default: 47837	User Datagram Protocol source port address. All FTE Nodes 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.
Time-To-Live (TTL) Default: 2	Maximum number of routers crossed for each message. Adjust this value according to the size of the FTE Network.

5.2 Identifying FTE network adapters

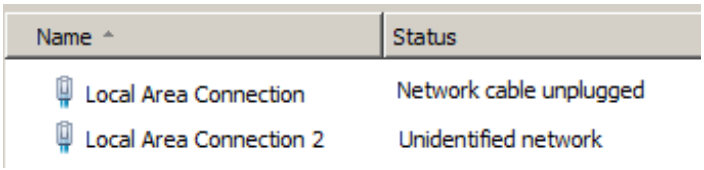
Positively identifying which physical network adapter port is associated with which network connection allows you to rename the connections using an FTE naming convention. The FTE naming convention makes it easier to verify correct proper operation of FTE. See also “Standard naming conventions for network adapters” 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	From **Control Panel**, • For **Windows 7 Operating System**, choose **Network and Internet** > **Network and Sharing Center** > **Change Adapter Settings**. • For **Windows Server 2008 Operating System**, choose **Network and Sharing Center** > **Manage Network Connections**. 

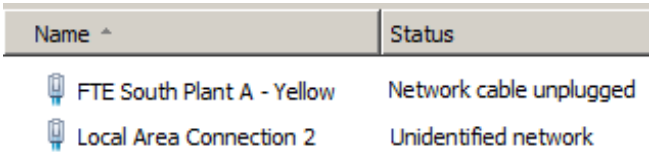
Step	Action
2	Disconnect the yellow network cable from the network adapter port.



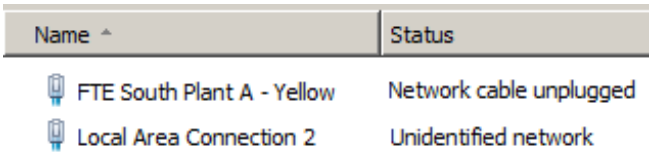
Note: In this example Local Area Connection is associated with the A adapter port. This will not always be the case.

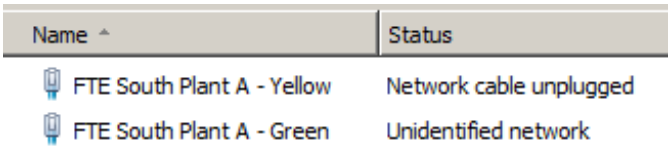
3 Right-click the local area connection associated with the **Network cable unplugged** network adapter port and rename it using the following convention:

- 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.



Step	Action
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. 

5.3 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.

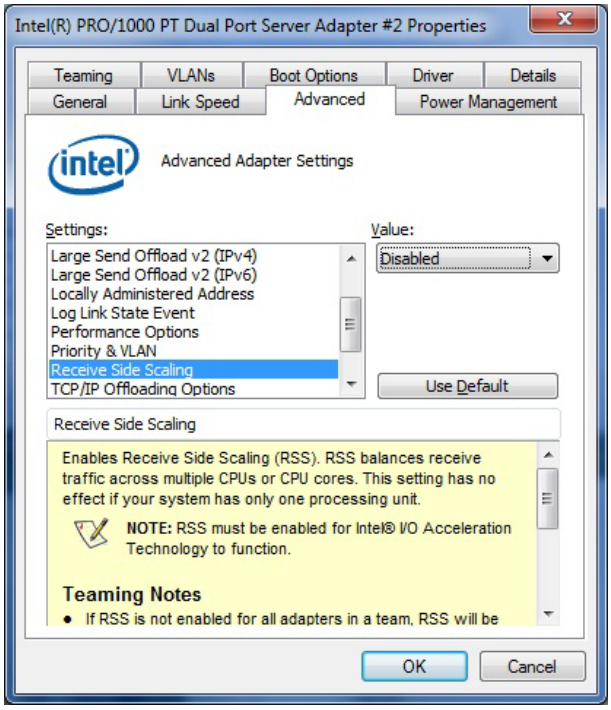
Configure the Physical network connections

Use the following procedure to manually configure the network connection to support FTE installation. For new Experion systems, all these settings except for the IP addresses are configured by the Experion Application installation routine. If the Experion PKS System Initialization DVD is used for installation all the items are automatically configured. Ensure you use this procedure before installing FTE on a non- Honeywell supported platform that is to be installed with FTE such as a Domain Controller or OPC Client node.

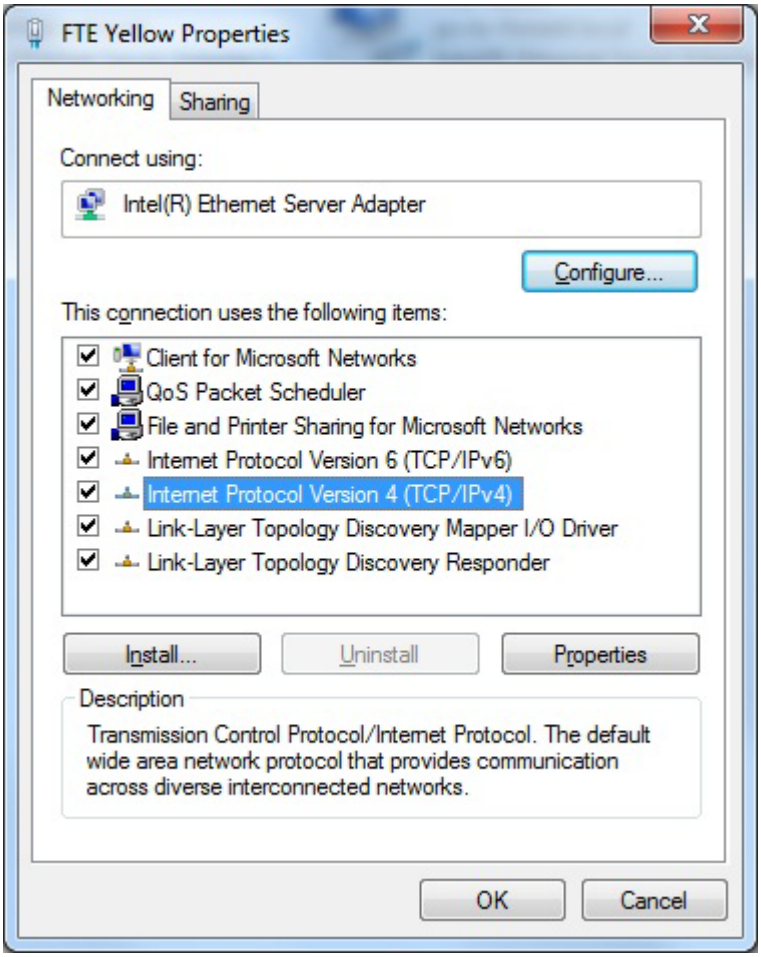
Step	Action
1	From **Control Panel**, • For **Windows 7 Operating System**, choose **Network and Internet** > **Network and Sharing Center** > **Change Adapter Settings**. • For **Windows Server 2008 Operating System**, choose **Network and Sharing Center** > **Manage Network Connections**.
2	Right-click the **A - Yellow network connection** and then select **Properties**. The **User Account Control** dialog box appears.
3	Click **Continue**. Verify the **Yellow Adapter Properties** window.
4	Under **Networking** tab, select **Configure**.

Step	Action
5	For Broadcom Adapters, Under **Advanced** tab, perform the following: • **IPv4 Checksum Offered** and ensure the value is set to **Rx & Tx Enabled**. • **Jumbo MTU** and verify/change the value to **1500**. • **Large Send Offload v2 (IPv4)** and verify/change the value to **Disabled**. Under **Link Speed** tab, perform the following. • **Link Speed & Duplex** and verify/change the value to **100Mb full**.

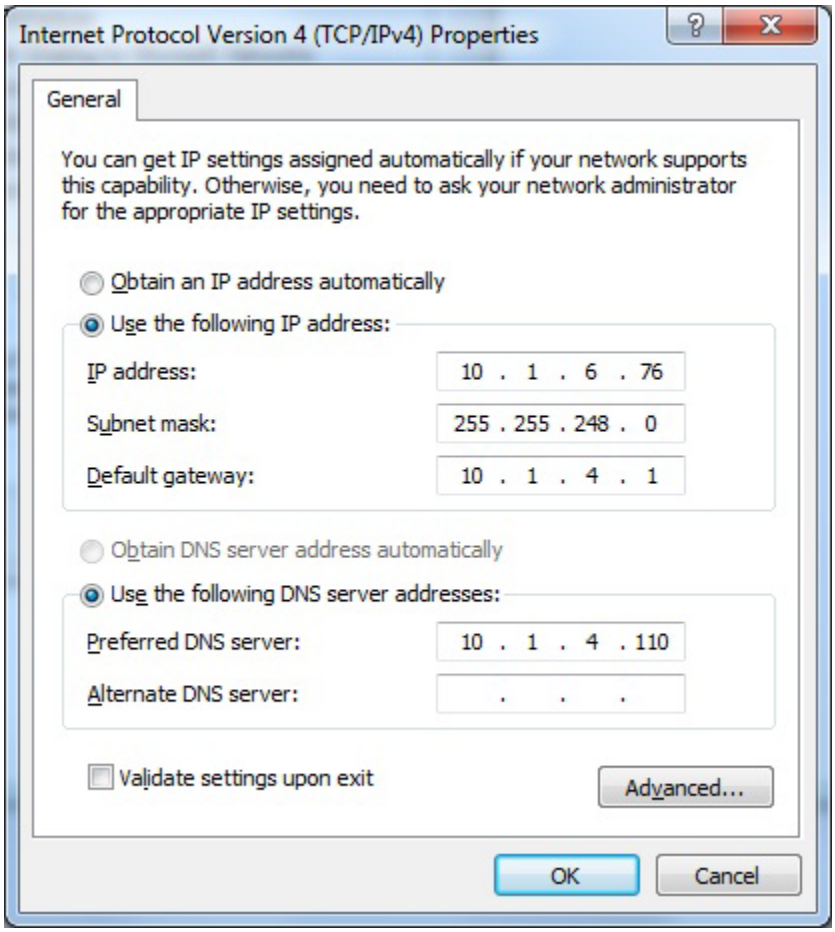
Step	Action
6	For Intel Adapters, Under **Advanced** tab, perform the following: • **Jumbo Packet** verify/change the value to **Disabled**. • **Large Send Offload (IPv4)** verify/change the value to **Disabled**. • **Large Send Offload (IPv6)** verify/change the value to **Disabled**. • **Receive Side Scaling** verify/change the value to **Disabled**. Under **Link Speed** tab, perform the following. • **Link Speed Tab and** verify/change the value to **100Mbps/Full Duplex**.
7	Click **OK**.
8	Repeat steps 2 to 7 for the B - Green Adapter.



Step	Action
9	Right-click the **A- Yellow connection** and then select **Properties**. The **User Account Control** dialog box appears.
10	Click **Continue**. Verify the **Adapter Yellow Properties** window.
11	From **Networking** tab, select **Internet Protocol Version 4(TCP/IPv4)** and then click **Properties**.

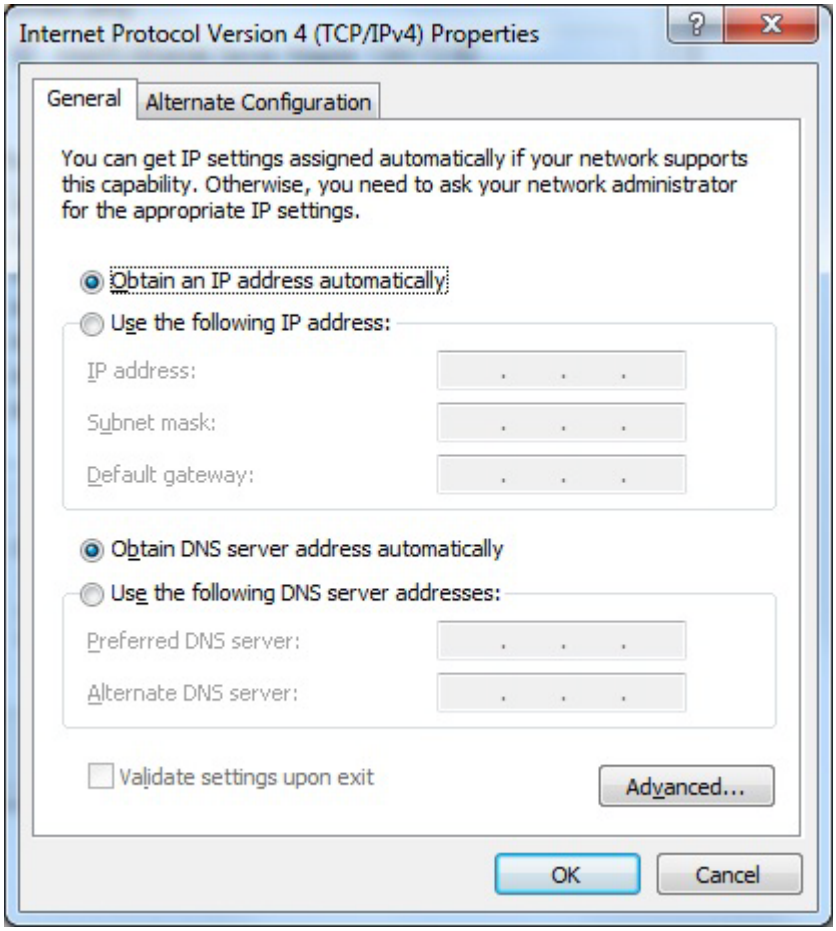


Step	Action
12	Verify/Set the **IPv4 properties for the yellow adapter** window.
13	Set the **IP address**, **Subnet mask** and **Default gateway** assigned to this node. If required also set the **DNS servers**.



14	Click **OK** and then click **Close**.
15	For **Green network connection**, Right-click the Green network connection and then select **Properties**. The **User Account Control** dialog box appears.

Step	Action
16	Click **Continue**. Verify the **Adapter Green Properties** window.
17	Verify/Set the IPv4 properties for the Green adapter.
18	Click/verify the **Obtain an IP address automatically** is selected.
19	Click **OK** and then click **Close**.
20	Close **Network Connections** window.



5.4 Configure the Honeywell FTE Adapter

Use this procedure to manually configure the settings for the Honeywell FTE Adapter, which the system uses as its primary network connection. FTE no longer requires individual IP addresses to be assigned to the Yellow and Green connections. The Honeywell FTE Adapter uses the settings that are assigned to the Yellow adapter at the time of FTE Installation.

If the FTE Installation was performed initially at the Honeywell Factory, this procedure will be required to set the IP address settings for the computer's installed environment.

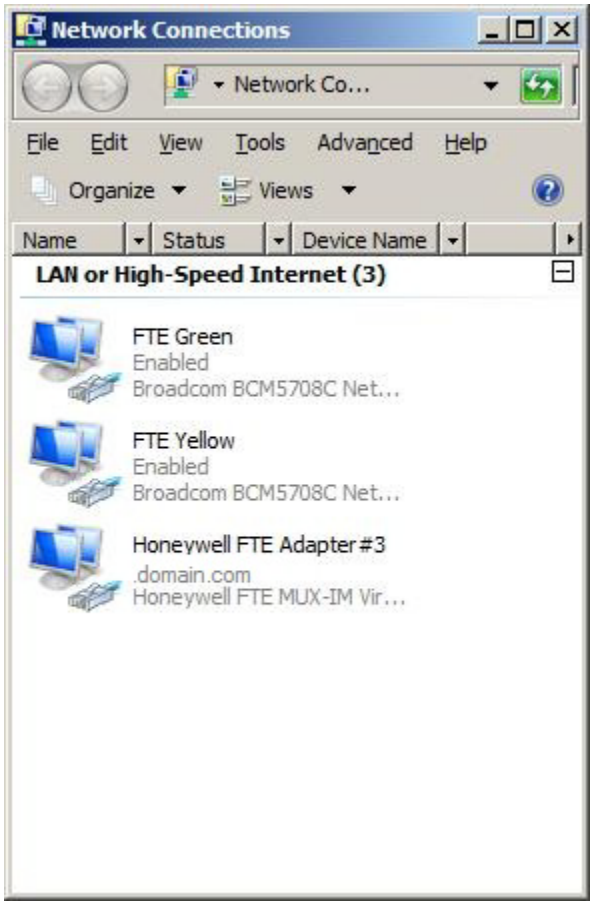
ATTENTION

If for some reason the Honeywell FTE Adapter must be unbound to the Physical yellow and Green Adapters, without using a Honeywell installation or upgrade procedures the IP settings will have to be applied to the Yellow adapter using the procedure *Configure the Physical Network Connections* above.

Configuring the Honeywell FTE Adapter

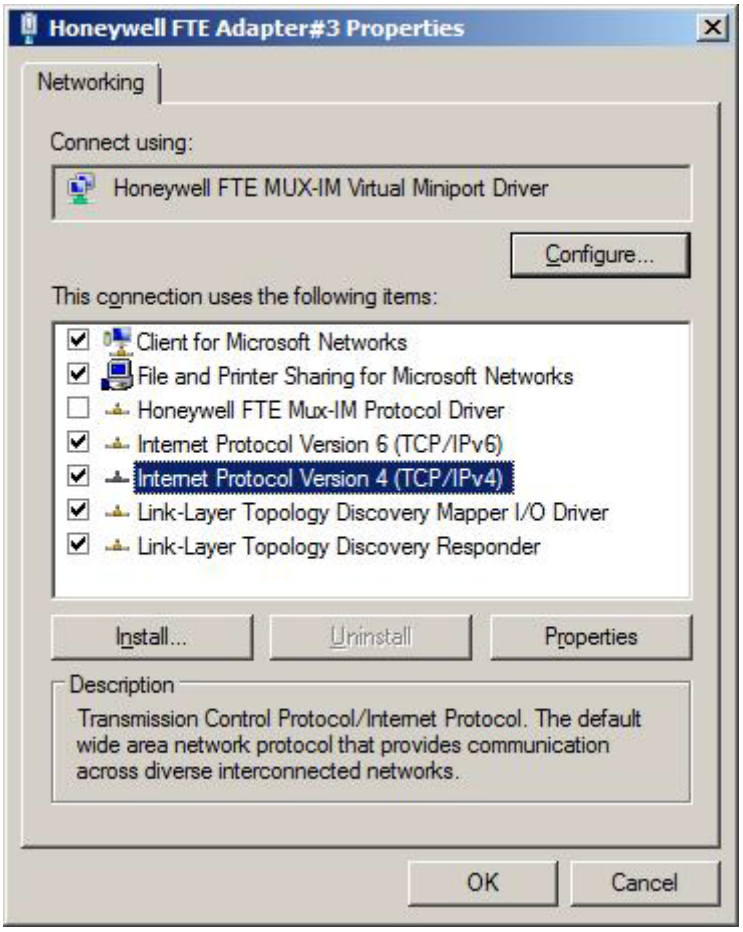
Step	Action

Configuring the Honeywell FTE Adapter

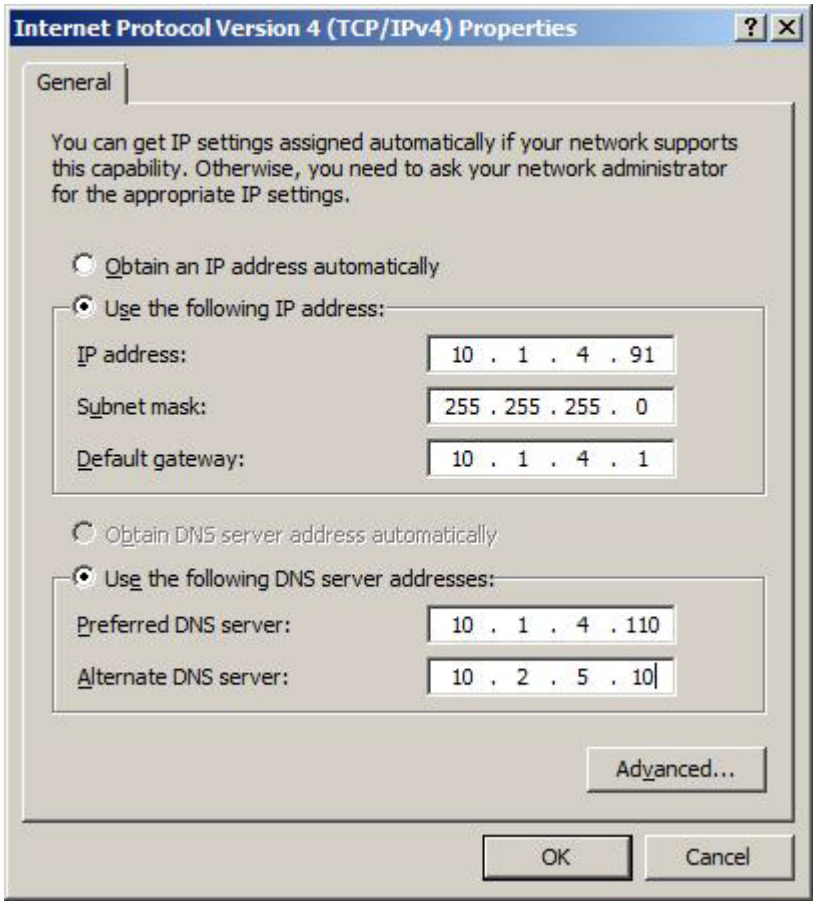
Step	Action
1	From **Control Panel**, • For **Windows 7 Operating System**, choose **Network and Internet** > **Network and Sharing Center** > **Change Adapter Settings**. • For **Windows Server 2008 Operating System**, choose **Network and Sharing Center** > **Manage Network Connections**. 
2	From **Network Connections**, right-click the **Honeywell FTE Adapter** and then select **Properties**.

Configuring the Honeywell FTE Adapter

Step	Action
3	From **Networking** tab, select **Internet Protocol Version 4(TCP/IPv4)** and click **Properties**.



Configuring the Honeywell FTE Adapter

Step	Action
4	Set the **IP address**, **Subnet mask** and **Default gateway** assigned to this node. If required also set the **DNS servers**. 
5	Click **OK** and then click **Close**. The Honeywell FTE Adapter must connect to the network and be ready for use.
6	Verify Honeywell FTE Status for the node:

Configuring the Honeywell FTE Adapter

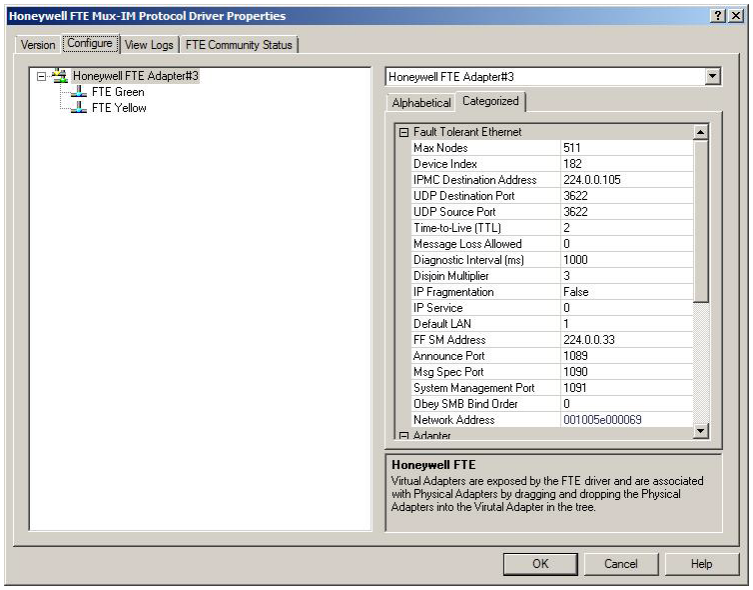
Step	Action
7	From **Network Connections**, select either the **FTE Yellow** or **FTE Green Adapter**.
8	Right-click and select **Properties**.

5.5 Verify Honeywell FTE Driver Operation

Use this procedure to verify that FTE is fully functioning on the node.

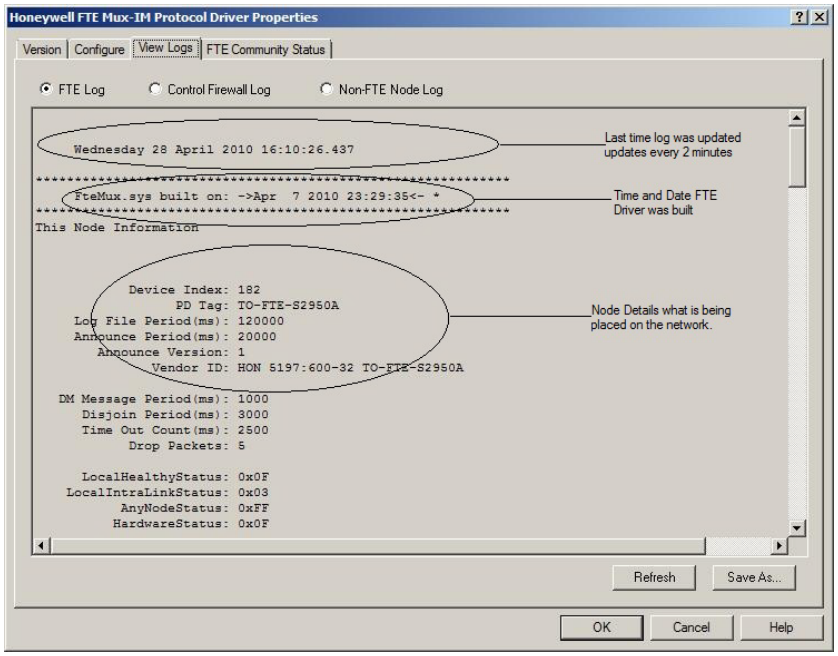
Step	Action
1	From **Control Panel**, • For **Windows 7 Operating System**, choose **Network and Internet** > **Network and Sharing Center** > **Change Adapter Settings**. • For **Windows Server 2008 Operating System**, choose **Network and Sharing Center** > **Manage Network Connections**..
2	Select **Honeywell FTE Mux-IM Protocol Driver** then Select **Properties**. Verify Honeywell Adapter settings.

Step	Action
3	The **Honeywell FTE Mux-IM Protocol Driver Properties** window appears. Click the **Configure** tab and verify if the settings are correct.



View the FTE Network Logs for the local node

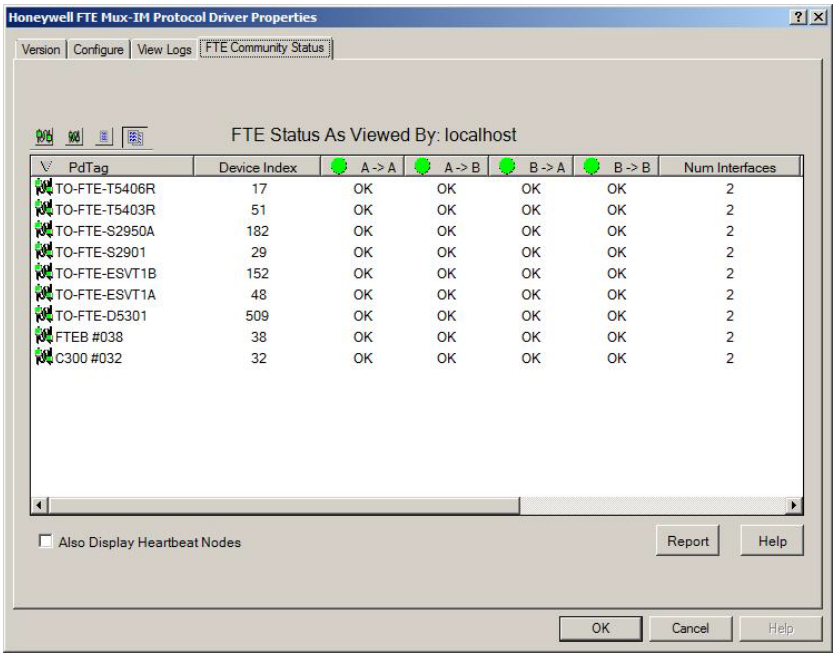
Step	Action
4	Click the **View Logs** tab and then click the **FTE Log** option to view the log.



5	Verify the first node listed under FTE Node list.

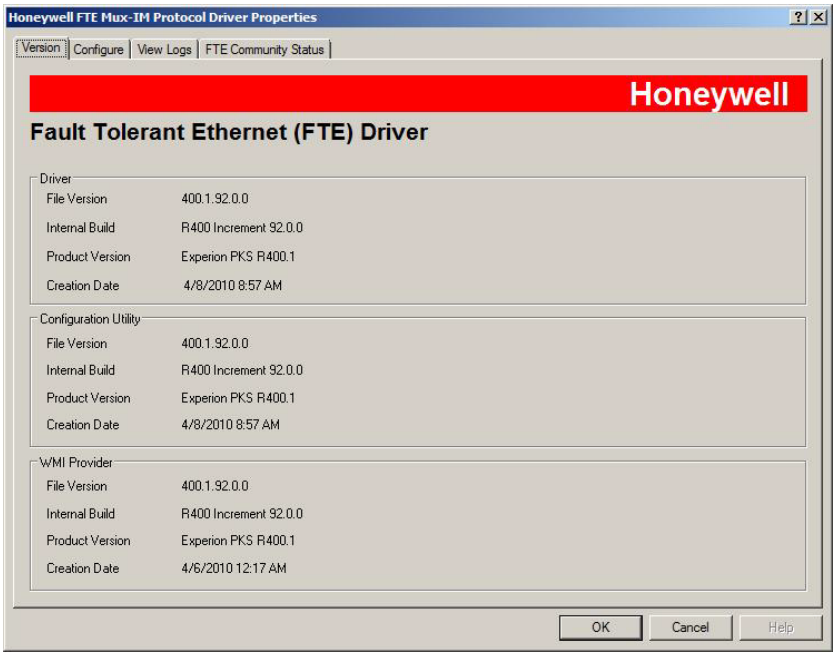
View the FTE Status for the local node

Step	Action
6	Click the **FTE Community Status** tab and verify if this node is in the status list with all paths listed as **OK**.



Verify FTE Driver Versions for the local node

Step	Action
7	Click the **Version** tab and verify if the version matches the node which was upgraded to or installed as per the *Software Change Notice (SCN)* for the release.
8	Click **Cancel** and then click **Close**.



5.6 Configuring FTE using the Installation Builder

About Master definitions and FTE

If you created a Master 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 Master definition that contains all the FTE configuration options to the FTE node. Refer to the *Installation Builder User Guide* for information on using the tool and creating a Master definition.

Considerations

- You may only perform a download when the Installation Builder is running in the online mode and is connected to the IDB.
- When you perform a download, the integrity of the master definition is validated, and if there are errors, you will not be allowed to continue.

Prerequisites

Before using this procedure it is assumed:

- You are logged on with an account that has administrator privileges.
- You launched the Installation Builder in online mode.
- The node being updated with the master definition has Experion R301 or later software installed.

Download FTE-configured Master definition

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

Step	Action
1	In **Installation Builder** network tree view, find the computer node on which the FTE options are to be configured.
2	Click the **Master Definition** under the computer node in the network tree.
3	Right -click the **Master Definition** and choose **File** > **Download** or click the toolbar button. A confirmation message appears informing you of the consequences of the download operation.
4	Click **Yes** if you want to confirm the download operation. Step 7.

Step	Action
5	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 Installation Builder** and correct the errors. See “Validate Node Definitions” section in the *Installation Builder User Guide* for help.
6	If there are differences between the current configuration and the configuration being downloaded, a Comparison Report appears displaying the differences.
7	View all the configuration items that are changed and click **Download**, if you still want to proceed.
8	Click **Exit** if you do not want to proceed with the download.
9	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**.
	**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.

5.7 Connecting network cables to switches

Use the information in this section to add your FTE node to your network. Your FTE network switches should already have been configured using the switch configuration files and procedures in the *FTE Overview and Implementation.*

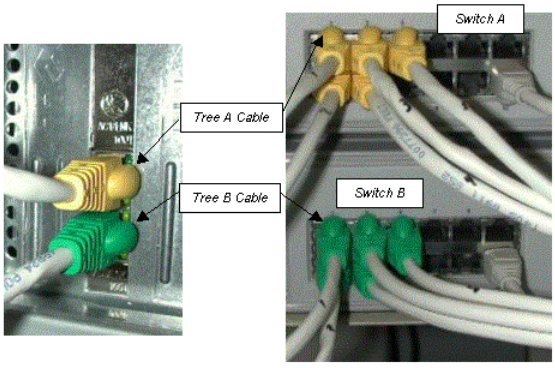
WARNING

Always shut down a new FTE node before connecting the network cables and adding the node to an on-process system. Doing so will ensure that any duplicate IP addresses will be detected immediately and will allow you to resolve any IP address conflicts.

Connect FTE network cables

Use this procedure to connect the FTE network cables to the Full Duplex 100-megabit switch ports. The Full Duplex 100-megabit ports are the switch ports that are located after the configured uplink ports and FTE Bridge ports.

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



Step	Action
6	Restart the FTE node.
7	If you receive the following error message: The static IP address that was just configured is already in use on the network. Please reconfigure a different IP address. Shut down the node and resolve the conflict. See "Resolve duplicate IP addresses" on page 136.

5.8 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	IPMC Destination address has been set correctly for all nodes within the FTE community.	
6	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 on network conform to FTE Overview and Implementation Guide.	

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

ATTENTION

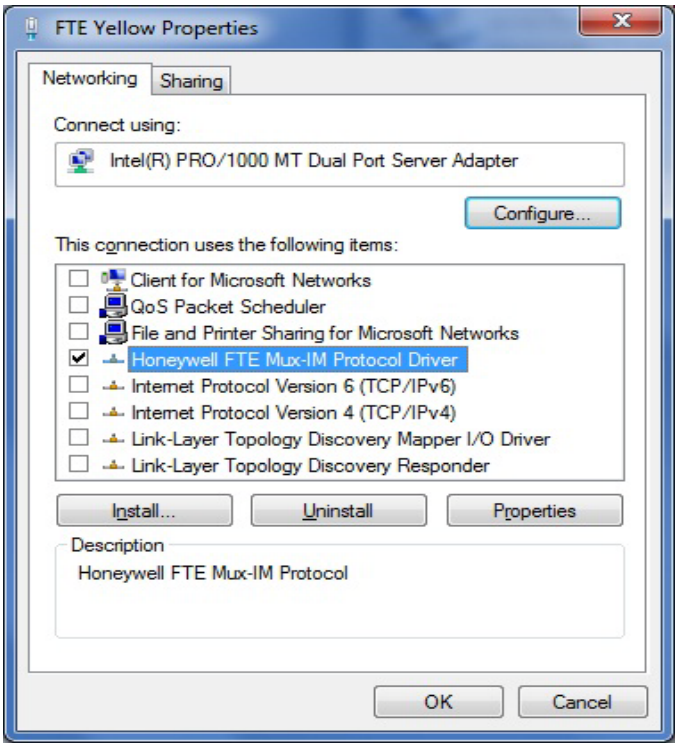
In case you want to modify IP information for FTE (such as IP address) you must go to the **Internet Protocol Version 4 (TCP/IPv4) Properties** window of the Honeywell MUX virtual adapter.

Accessing FTE configuration dialog box

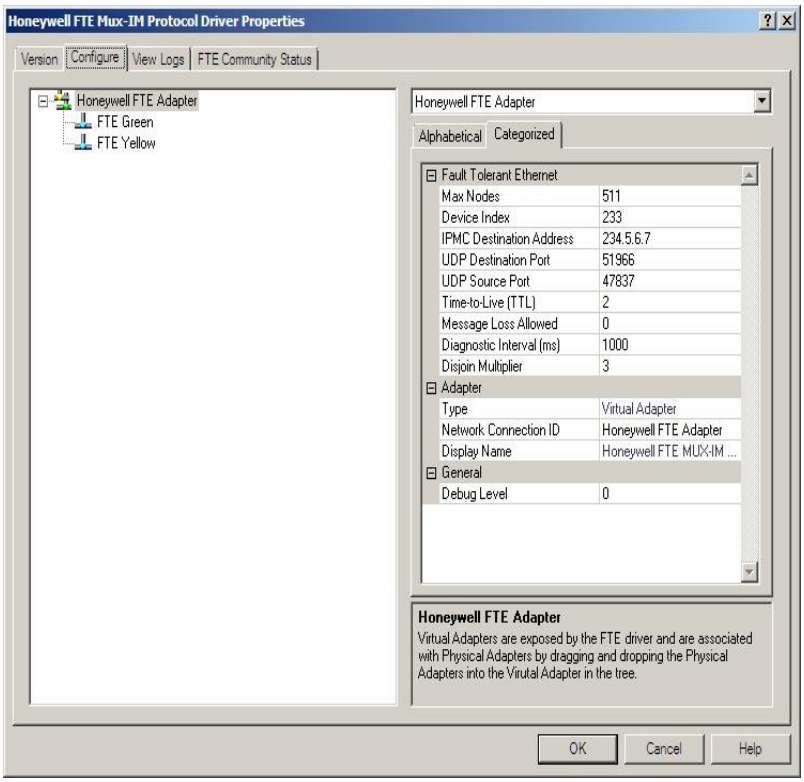
Use this procedure to access the **FTE Configuration** dialog box in order to review or modify FTE service settings. See also "FTE configuration options" for descriptions of each setting.

Step	Action
1	Ensure that you are logged on to an account that is a member of the administrators group.
2	Click **Start** > **Control Panel** > **Network and Internet** > **Network and Shari006Eg Center** > **Change adapter settings**.
3	Right-click either one of the connections associated with FTE, and then click **Properties**.

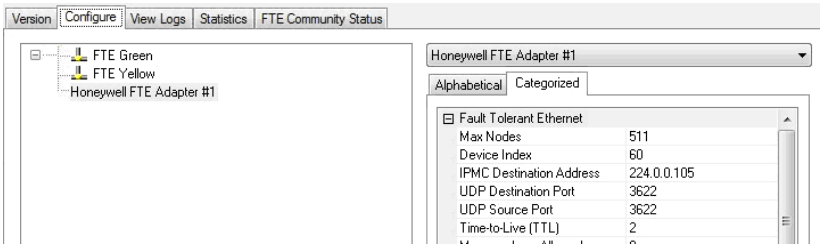
Step	Action
4	Select **Honeywell FTE Mux-IM Protocol Driver** then click **Properties**.



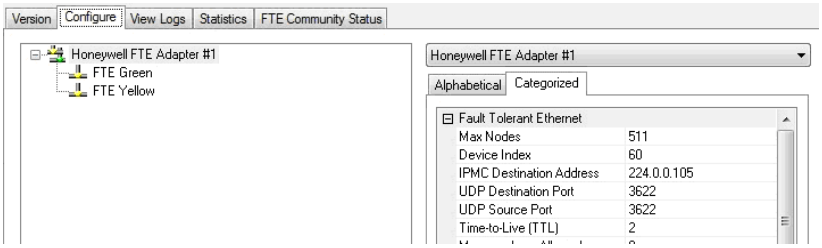
If there are currently no adapters bound to the FTE driver, you must check the box next to the **Honeywell FTE Mux-IM Protocol Driver**, and then select **Properties**.

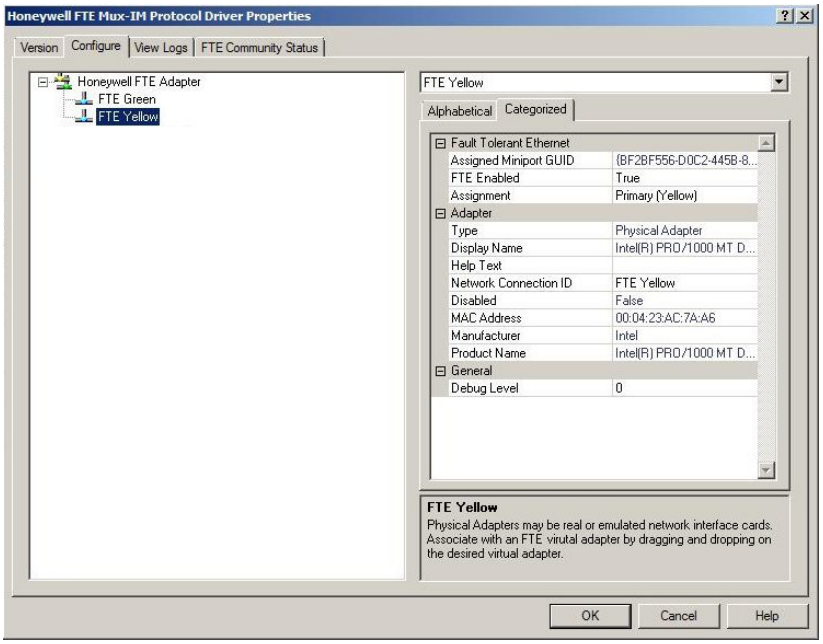
Step	Action
5	You can now drag the appropriate adapters onto the FTE Mux from the configuration page. When you click **OK** FTE binds and correctly checks/clears the appropriate boxes. For more information on dragging and dropping adapters, proceed to the next step. 
6	To unbind an adapter from FTE, drag and drop the adapters, in the FTE Configuration window.

Step	Action
7	Select the physical adapter, drag and drop it into the blank space. The physical adapter is no longer offset.



8	To bind an adapter, select the physical adapters which are not offset under the Honeywell FTE adapter. Now drag and drop these adapters under the Honeywell FTE Adapter.



Step	Action
9	Click one of the physical adapters (yellow or green) and check the properties that appear on the right. In case you manipulate which adapters are bound to the FTE Mux adapter, ensure to verify the correct adapters are categorized as green or yellow in the physical adapter properties. If they are reversed, the combo box in the properties field can be used to correct the binding.  Note: It is important to verify because when adapters are added or removed from the mux the yellow/green association may be reversed. When a yellow adapter is removed, the green becomes the yellow logically (and indicates the same in the properties on the right). When the yellow is re-added, the green remains as yellow. Also, if both adapters are removed, whichever adapter is added first assumes the yellow role.
10	Review or modify the values in the **FTE Mux-IM Protocol Driver Properties** page using the criteria in Section 6.3.
11	Click **OK** to close the **FTE Mux-IM Protocol Driver Properties** 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.

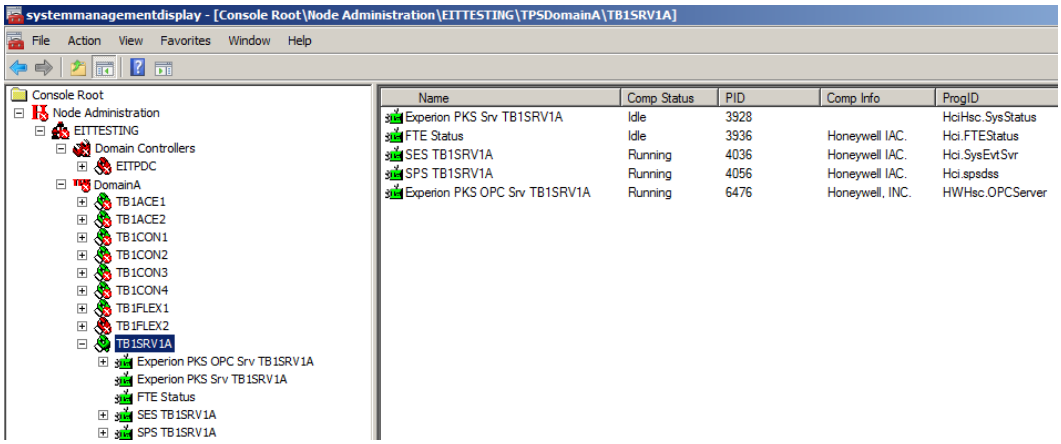
Accessing status displays

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

For Experion users	
System Management Display	Select **Start** > **All Programs** > **Honeywell Experion PKS** > **System Management** > **System Management Display**.
	Select **Start** > **All Programs** > **Honeywell Experion PKS** > **System Management** > **System Management Display**.
	Select **Start** > **All Programs** > **Honeywell Experion PKS** > **Server** > **Station**. The station window appears. Click **System Management** on the right pane.
FTE Status auxiliary display	Select **Start** > **All Programs** > **Honeywell Experion PKS** > **System Management** > **FTE and Heartbeat Node Status Display**.
	Click the **FTE Status** hyperlink from the **System Status Display** in Station. Or, Click the **FTE Community Status** tab on **Honeywell FTE Mux-IM Protocol Driver Properties** window.
	Select **Start** > **All Programs** > **Honeywell Experion PKS** > **Server** > **Station**. The station window appears. Click **FTE Status** on the right pane.

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. You can view the status of the FTE nodes from this display.

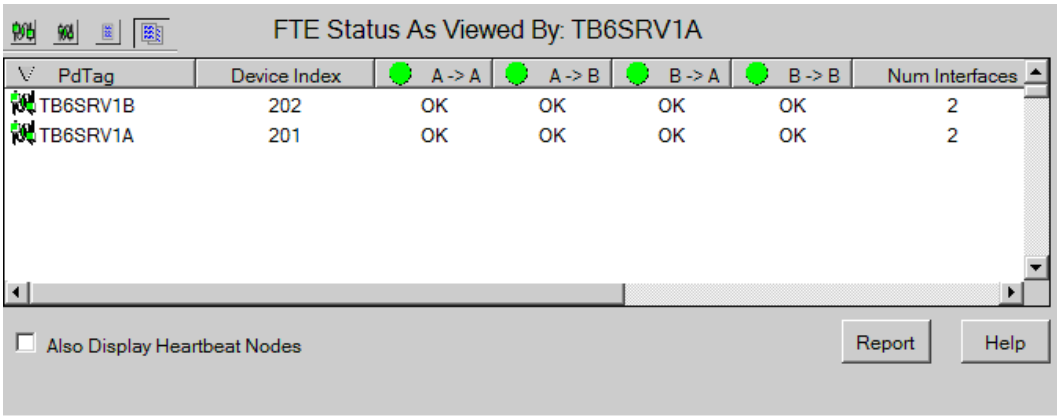


FTE Status Server and Auxiliary Display overview

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. The following figure 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 (TB6SRV1B and TB6SRV1A) 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.

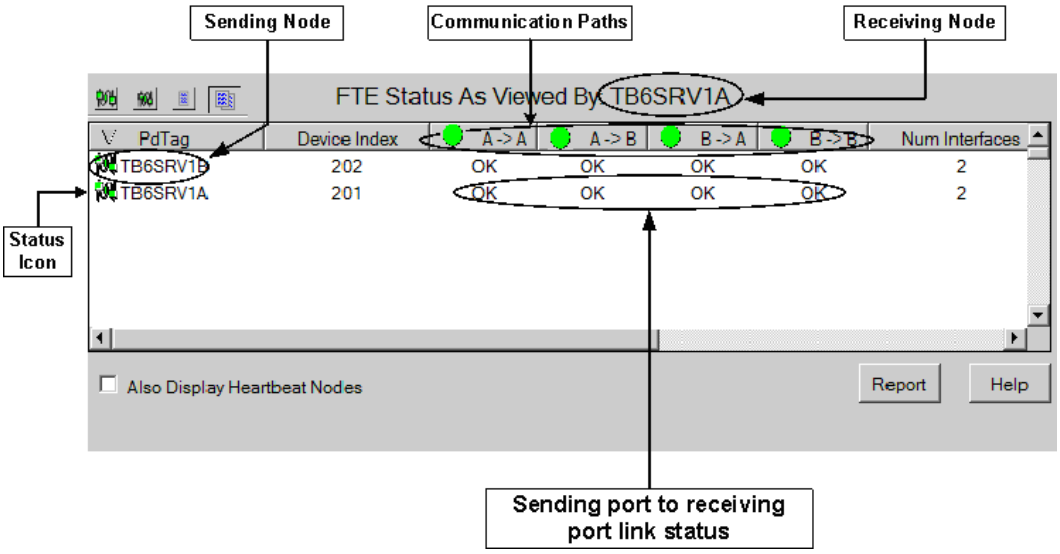

FTE Status As Viewed By: TB6SRV1A
PdTag
Device Index
A -> A
A -> B
B -> A
B -> B
Num Interfaces
TB6SRV1B
202
OK
OK
OK
OK
2
TB6SRV1A
201
OK
OK
OK
OK
2
Also Display Heartbeat Nodes
Report
Help

6.3 Monitoring nodes in an FTE network

Reviewing cable status

The tables in Section 6.3 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 TB6SRV1B and TB6SRV1A.
- The **Sending Node** column identifies the node that is transmitting to the receiving or As Viewed By node (SRVA 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.



ATTENTION

The composite status is provided to easily identify any single fault when the number of nodes exceeds the number of currently displayed nodes. You must scroll down in the window and search each individual node to check if there is a problem.

If there is a red circle in the composite node status, it means that at least one node in the display is silent on that particular communication path.

Cable status states for FTE nodes with non-crossed cables

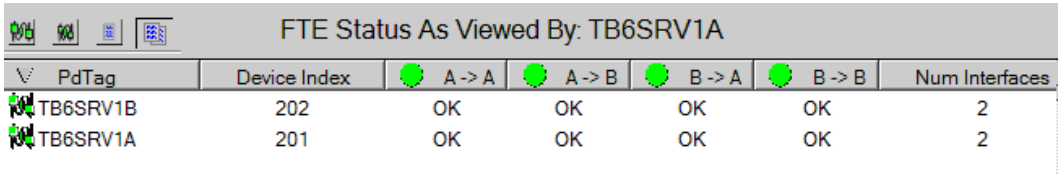
The following table lists the possible cable status states for two FTE nodes as viewed from TB6SRV1A. In all of these examples, there are no crossed cables for TB6SRV1B or TB6SRV1A. That is, the cables are connected to the appropriate ports and switches and the binding order is consistent with the cabling.

Scenario	Crossover cable conn.	Port A conn	Port B conn	Sending node	A > A	A > B	B > A	B > B
1	YES	YES	YES	TB6SRV1B	OK	OK	OK	OK
		YES	YES	TB6SRV1A	OK	OK	OK	OK

Scenario	Crossover cable conn.	Port A conn	Port B conn	Sending node	A > A	A > B	B > A	B > B
2	NO	YES	YES	TB6SRV1B	OK	SILENT	SILENT	OK
		YES	YES	TB6SRV1A	OK	SILENT	SILENT	OK
3	YES	YES	YES	TB6SRV1B	OK	SILENT	OK	SILENT
		YES	NO	TB6SRV1A	OK	SILENT	SILENT	SILENT
4	NO	YES	YES	TB6SRV1B	OK	SILENT	SILENT	SILENT
		YES	NO	TB6SRV1A	OK	SILENT	SILENT	SILENT
5	YES	YES	YES	TB6SRV1B	SILENT	OK	SILENT	OK
		NO	YES	TB6SRV1A	SILENT	SILENT	SILENT	OK
6	NO	YES	YES	TB6SRV1B	SILENT	SILENT	SILENT	OK
		NO	YES	TB6SRV1A	SILENT	SILENT	SILENT	OK
7	YES	YES	YES	TB6SRV1B	*Node will not appear*			
		NO	NO	TB6SRV1A	SILENT	SILENT	SILENT	SILENT

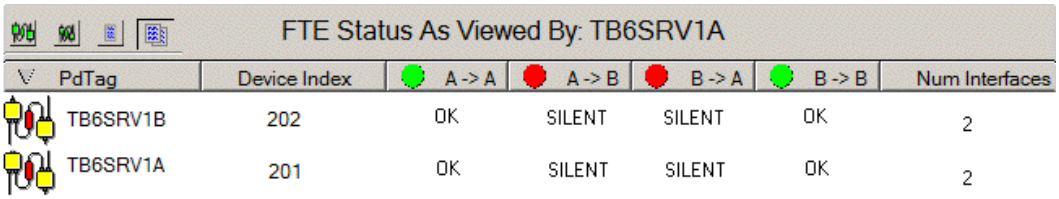
Scenario No. 1: A and B port connected; Crossover cable connected

TB6SRV1B's A port and B port hear from TB6SRV1A's A port and B port.
TB6SRV1A's A port and B port hears from both its own ports.



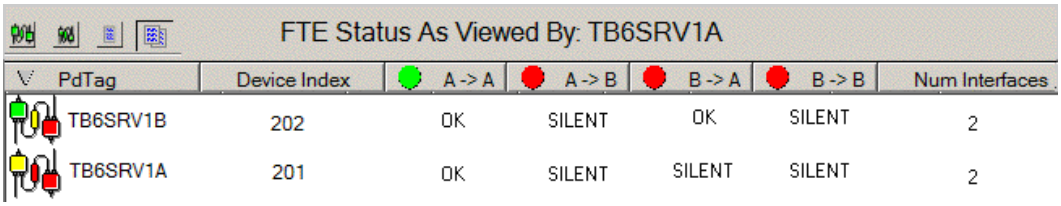
Scenario No. 2: A and B port connected; Crossover cable disconnected

TB6SRV1B's and TB6SRV1A'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.



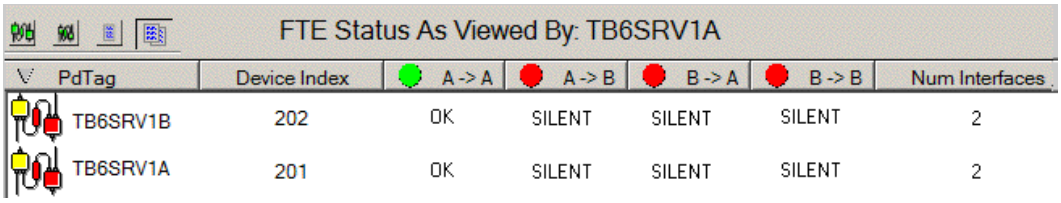
Scenario No. 3: B port disconnected; Crossover cable connected

TB6SRV1B's A port and B port hear only from TB6SRV1A's A port.
TB6SRV1A hears only from its own A port.



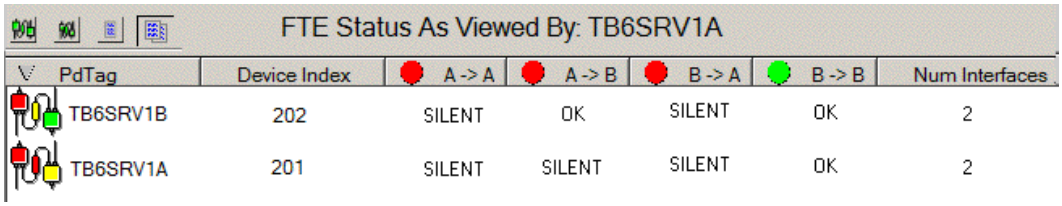
Scenario No. 4: B port disconnected; Crossover cable disconnected

TB6SRV1B's A port hears only from TB6SRV1A's A port.
TB6SRV1A's A port hears only from its own A port.



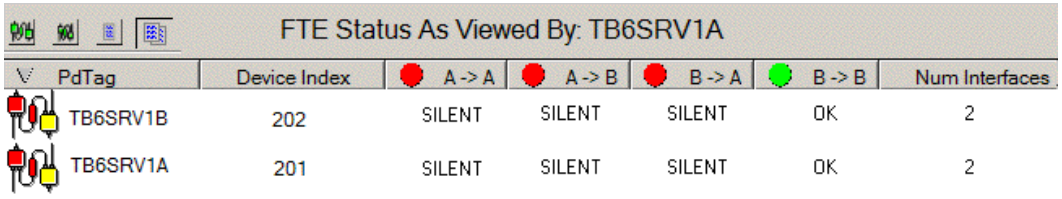
Scenario No. 5: A port disconnected; Crossover cable connected

TB6SRV1B's A port and B port hears only from TB6SRV1A's B port.
TB6SRV1A hears only from its own B port.



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

TB6SRV1B hears only from TB6SRV1A's B port.
TB6SRV1A hears only from its own B port.



Cable status states for FTE nodes with crossed cables

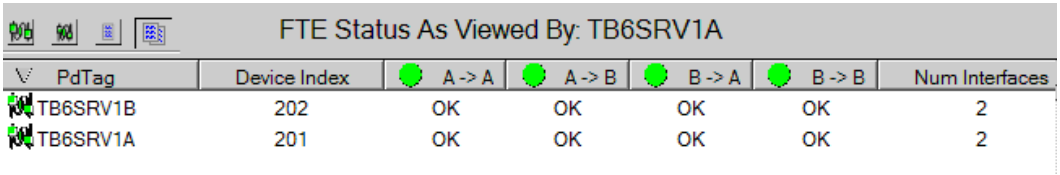
The following table lists the possible cable status states for two FTE nodes as viewed from TB6SRV1A. In all of these examples, TB6SRV1A has crossed cables and the cables for TB6SRV1B are not crossed.

Scenario	Crossover cable conn.	Port A conn	Port B conn	Sending node	A > A	A > B	B > A	B > B
1	YES	YES	YES	TB6SRV1B	OK	OK	OK	OK
		YES	YES	TB6SRV1A	OK	OK	OK	OK
2	NO	YES	YES	TB6SRV1B	SILENT	OK	OK	SILENT
		YES	YES	TB6SRV1A	OK	SILENT	SILENT	OK
3	YES	YES	YES	TB6SRV1B	SILENT	OK	SILENT	OK
		YES	NO	TB6SRV1A	SILENT	SILENT	SILENT	OK
4	NO	YES	YES	TB6SRV1B	SILENT	OK	SILENT	SILENT
		YES	NO	TB6SRV1A	SILENT	SILENT	SILENT	OK

Scenario	Crossover cable conn.	Port A conn	Port B conn	Sending node	A > A	A > B	B > A	B > B
5	YES	YES	YES	TB6SRV1B	OK	SILENT	OK	SILENT
		NO	YES	TB6SRV1A	OK	SILENT	SILENT	SILENT
6	NO	YES	YES	TB6SRV1B	SILENT	SILENT	OK	SILENT
		NO	YES	TB6SRV1A	OK	SILENT	SILENT	SILENT

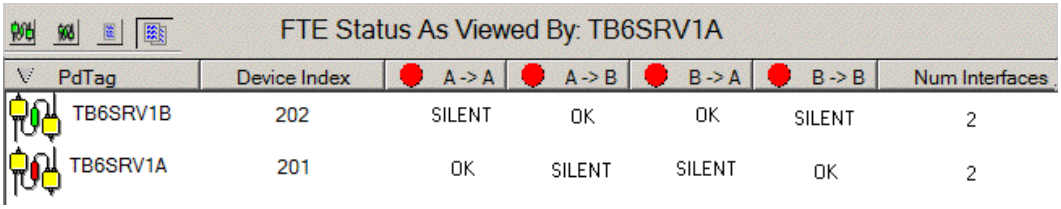
Scenario No. 1: A and B port connected; Crossover cable connected, crossed cables

TB6SRV1B's A port and B port hear from TB6SRV1A's A port and B port.
TB6SRV1A's A port and B port hears from both its own ports.



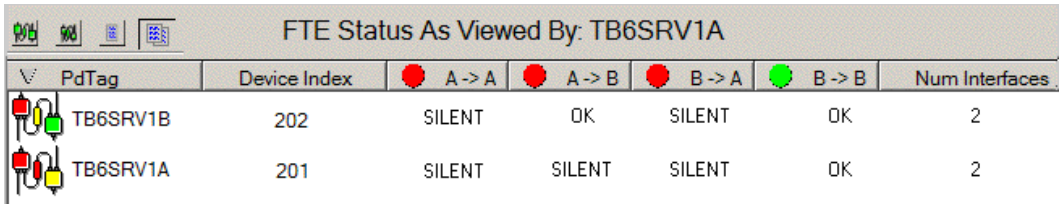
Scenario No. 2: A and B port connected; Crossover cable disconnected, crossed cables

Because the cables are crossed and the crossover cable between the switches is not connected TB6SRV1B's and TB6SRV1A's ports can only hear from opposite ports.



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

TB6SRV1B's A port and B port hears only from TB6SRV1A's B port.
TB6SRV1A hears only from its own B port.

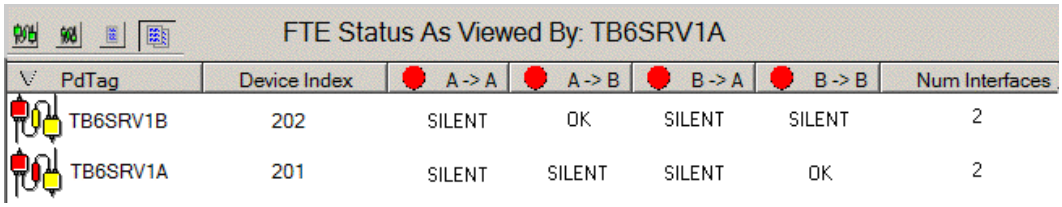


FTE Status As Viewed By: TB6SRV1A

PdTag	Device Index	A -> A	A -> B	B -> A	B -> B	Num Interfaces
TB6SRV1B	202	SILENT	OK	SILENT	OK	2
TB6SRV1A	201	SILENT	SILENT	SILENT	OK	2

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

TB6SRV1B's A port and B port hears only from TB6SRV1A's B port.
TB6SRV1A hears only from its own B port.

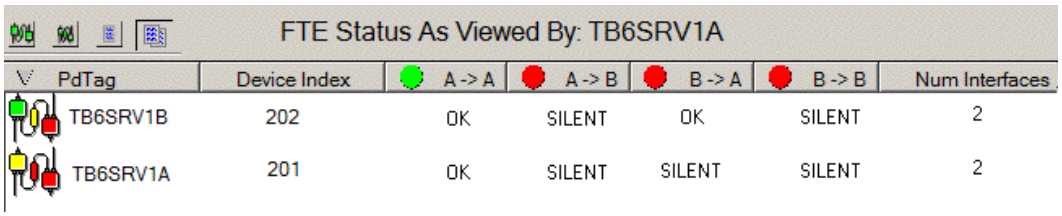


FTE Status As Viewed By: TB6SRV1A

PdTag	Device Index	A -> A	A -> B	B -> A	B -> B	Num Interfaces
TB6SRV1B	202	SILENT	OK	SILENT	SILENT	2
TB6SRV1A	201	SILENT	SILENT	SILENT	OK	2

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

TB6SRV1B's A port and B port hear only from TB6SRV1A's A port.
TB6SRV1A hears only from its own A port.

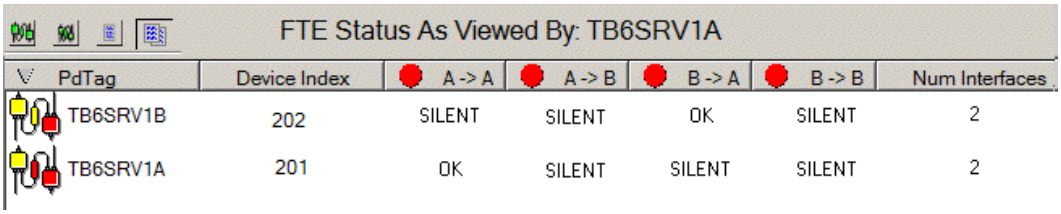


FTE Status As Viewed By: TB6SRV1A

PdTag	Device Index	A -> A	A -> B	B -> A	B -> B	Num Interfaces
TB6SRV1B	202	OK	SILENT	OK	SILENT	2
TB6SRV1A	201	OK	SILENT	SILENT	SILENT	2

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

TB6SRV1B's B port hears only from TB6SRV1A's A port.
TB6SRV1A hears only from its own A port.


FTE Status As Viewed By: TB6SRV1A
PdTag
Device Index
A -> A
A -> B
B -> A
B -> B
Num Interfaces
TB6SRV1B
202
SILENT
SILENT
OK
SILENT
2
TB6SRV1A
201
OK
SILENT
SILENT
SILENT
2

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*

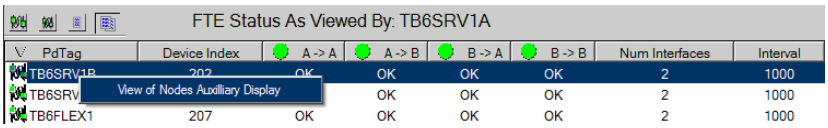
Step	Action
1	Select **Experion** > **System Management** > **System Management Display**, and open a configured System Management Display.
2	Select the FTE Status server from the FTE Node you are testing.
3	Locate your FTE Node in the FTE Status View.
4	Remove the A port cable.
5	Examine the cable status 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 is able to hear from the disconnected port. See "Disconnected A cable – no crosslink error 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 "Disconnected A cable – crosslink error example."
8	If there are crosslink errors, re-check all items.

Display status of remote FTE node

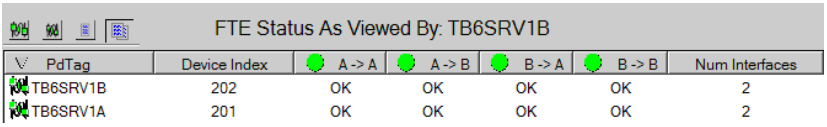
Use this feature to view the FTE status as seen from the remote node's view. This provides a view of the status array that is transmitted by the FTE driver for each FTE node. Since this is the view as seen from the FTE driver, it is only available on FTE

nodes. For example, if you are currently at FTE node TB6SRV1A, but you would like to view the status as if you were at FTE node TB6SRV1B, you can right-click on node TB6SRV1B to view the status from that node.

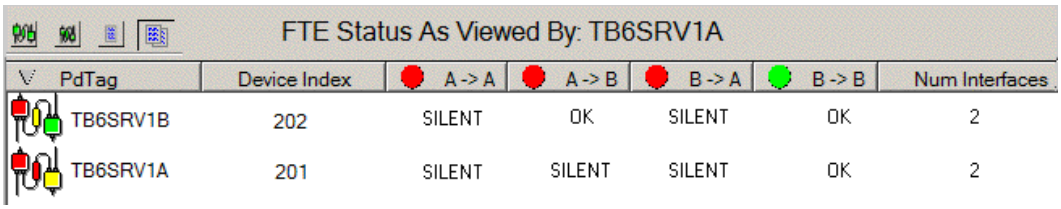
Step	Action
1	From the FTE Status Auxiliary display, right-click the node from which you would like to view the status.



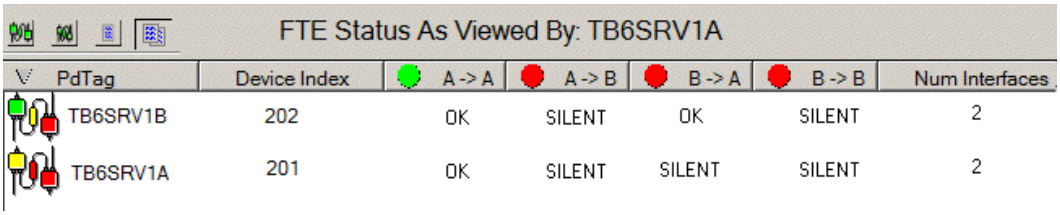
2	Review the status from the remote node's view.



Disconnected A cable – no crosslink error example



Disconnected A cable – crosslink error example

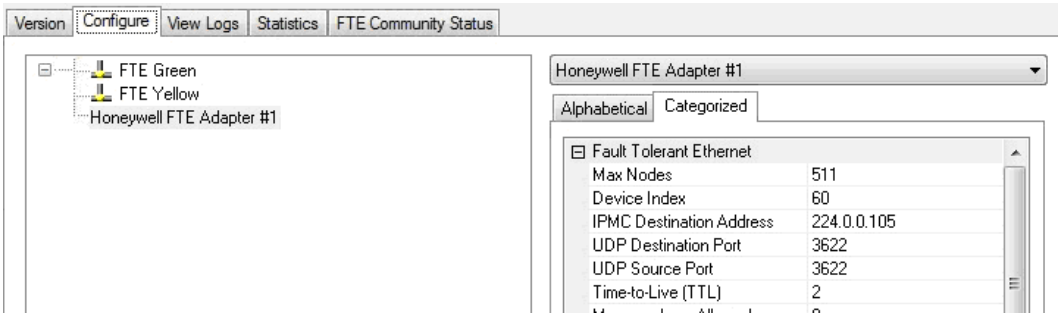


6.4 Upgrading and replacing network adapter cards

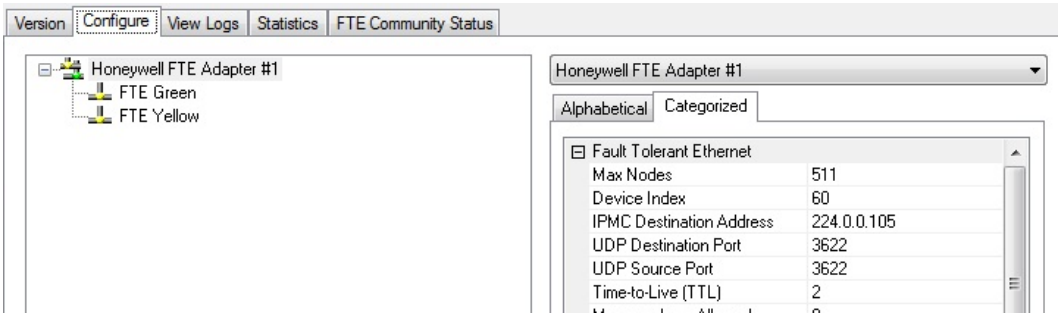
Honeywell continuously qualifies new adapter cards for use with FTE. This section contains checklists for upgrading or replacing FTE network cards. Locate the checklist for your specific network card replacement and complete the tasks listed in the order shown.

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 remains persistent as long as you do not change the network hardware. To replace the hardware, unbind the NIC cards from the physical adapters and replace with a new NIC. You must drag the adapters under Honeywell FTE Adapter in the config page to bind the physical adapters to FTE. To drag and drop the adapters, in the FTE Configuration window, select the physical adapter and drag and drop it into the blank space. The physical adapter is no longer offset.

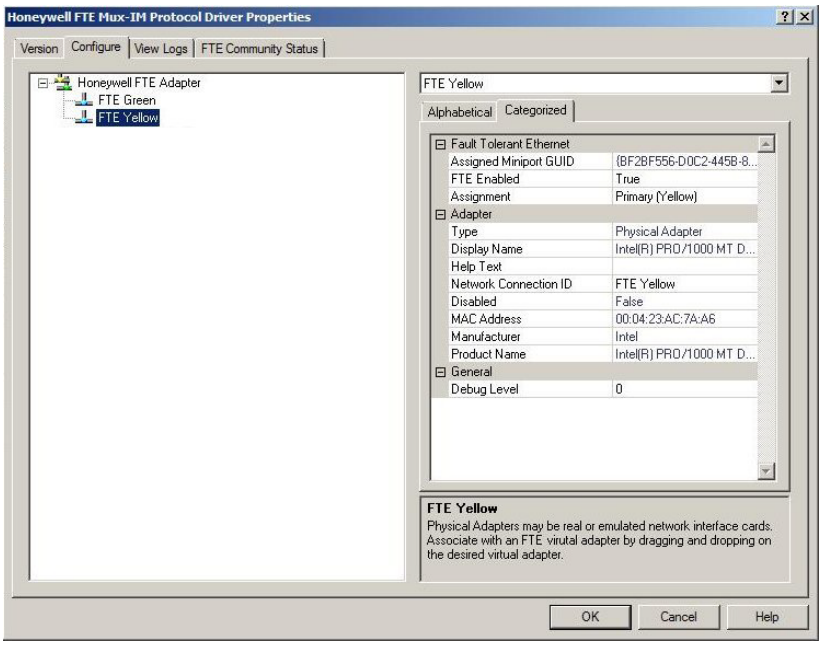


- To bind an adapter select the physical adapter those are not offset under the Honeywell FTE adapter , drag and then drop it under Honeywell FTE Adapter.



- Click one of the physical adapters (yellow or green) and check the properties that appear on the right.

  In case you manipulate which adapters are bound to the FTE Mux adapter, ensure to verify the correct adapters are categorized as green or yellow in the physical adapter properties. If they are reversed, the combo box in the properties field can be used to correct the binding.



Note: It is important to verify because when adapters are added or removed from the mux the yellow/green association may be reversed. When a yellow adapter is removed, the green becomes the yellow logically (and indicates the same in the properties on the right). When the yellow is re-added, the green remains as yellow. Also, if both adapters are removed, whichever adapter is added first assumes the yellow role.

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 (✓)
Uninstalling FTE service		
Verify Honeywell FTE Service was properly removed	Page 119	

Removing virtual adapters **Note**: These two procedures are only necessary if the FTE Service was not properly removed.		
Removing the network adapter card		
Disable/uninstall network adapter(s)	Page 120	
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 LX nodes	Page 35	
Installing and configuring FTE using Installation Builder	Page 37	
Installing and configuring FTE on Domain Controllers	Page 39	

6.5 Uninstalling FTE Mux Driver

Use the procedures in this section to uninstall the FTE Mux Driver.

Uninstall FTE Mux driver

Use this procedure to remove the Honeywell FTE Mux Driver.

Step	Action
1	Click **Start** > **Control Panel > Programs > Programs and Features > Uninstall a program**.
2	Select **Honeywell Experion PKS 400.1** and click **Uninstall**.
	The **Maintenance Tool Server** screen appears.
3	Select **Honeywell FTE Mux Driver** and click **Uninstall All**.
	This removes all the FTE Mux Driver components.

Verify Honeywell FTE Service was properly removed

Use this procedure to verify the FTE service uninstalled completely.

Step	Action
1	Right-click the **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	If **Honeywell FTE Mux-IM Virtual Miniport Driver** does *NOT* appear under Network adapters, the removal of the FTE service was successful.
	If **Honeywell FTE Mux-IM Virtual Miniport Driver** *DOES* appear under Network adapters as shown in the figure, you will need to remove the virtual adapter(s).

Step	Action
	
	Example of unsuccessful FTE service removal
6	Restart the computer.

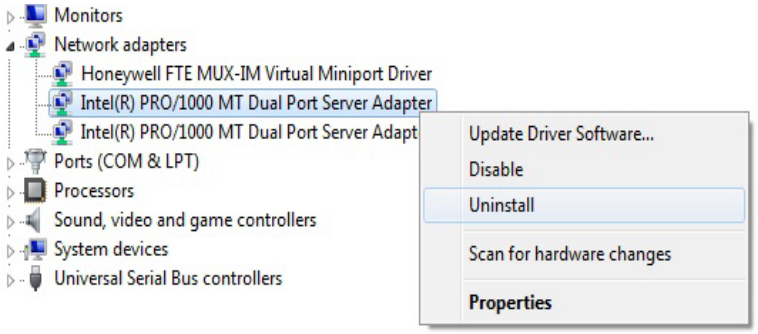
Disable/uninstall network adapter(s)

ATTENTION

Ensure to unbind the adapters before you disable/uninstall network adapters.

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

Step	Action
1	Right-click the **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.

Step	Action
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.

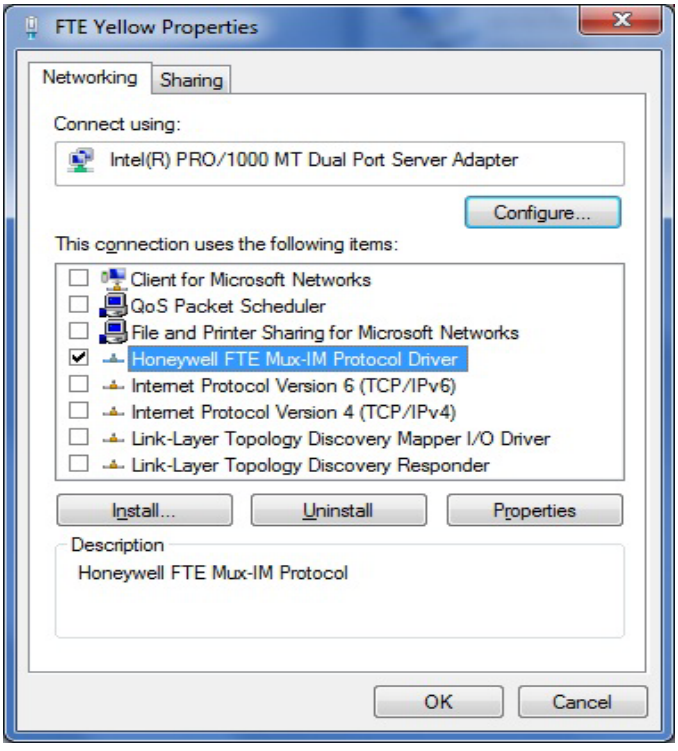
Task	Go to	Done (✓)
Inspect the network adapters	Page 125	
Verify duplicate IP addresses were not assigned	Page 126	
Verify duplicate device indexes were not assigned	Page 126	
Verify connections are configured properly for FTE	Page 127	
Verify any disconnected local area connections are disabled	Page 129	
Verify the event logs for FTE driver state the device is working properly	Page 130	

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** > **Control Panel** > **Network and Internet** > **Network and sharing center** > **Change adapter settings**.
2	Right-click one of the FTE network adapters and then click **Properties**.
3	Verify that **Honeywell FTE Mux-IM Protocol Driver** appears in the list of components as shown:



TIP

If **Honeywell FTE Mux-IM Protocol Driver** 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 **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 only one **Honeywell FTE Mux-IM Virtual Miniport Driver** is listed for FTE as shown in the following figure.
	
6	If there is NOT a **Honeywell FTE Mux-IM Virtual Miniport Driver** listed for being used for FTE, verify that you performed all of the procedures according to the correct checklist in Section 2.
7	If there is more than one **Honeywell FTE Mux-IM Virtual Miniport Driver**, you may need to uninstall and reinstall the FTE software.
8	Close the **Computer Management** and **Administrative Tools** dialog boxes.

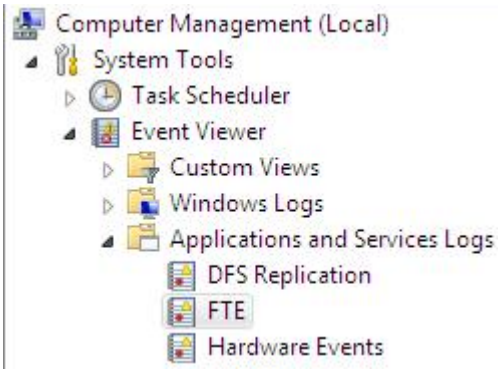
Verify duplicate IP addresses were not assigned

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** > **All 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 FTE Mux adapter is unique.
4	If the IP addresses are not unique, see the "Resolve duplicate IP addresses" procedure on page 136 in Section 7.4.

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	Click **Application and Services Logs** and then click **FTE**. 

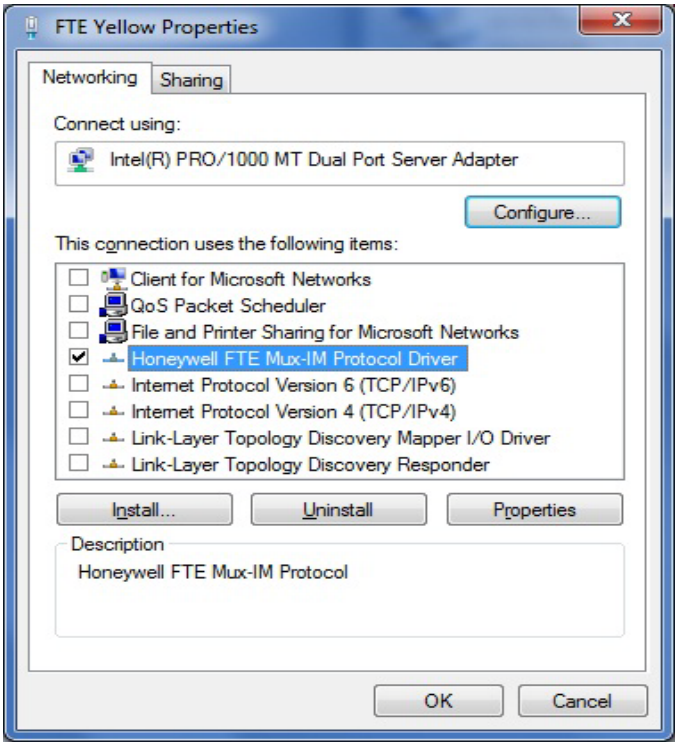
Step	Action
4	Scroll to find the  on the right panel.
5	Double-click each Informational Type event to open the **Event Properties** dialog.
6	Review the description for the following event type, which indicates that there are two nodes within your FTE community that have the same device index. • Duplicated Node. A Diagnostic Message with PD Tag %2 data has duplication state and Device Index.
7	If you find the Duplicated Node event, reset the device index on one of the duplicate nodes and then restart the node. See Section 5.1, “Configuring FTE Mux-IM Protocol Driver properties” and Section 6.3,Monitoring nodes in an FTE network.

Verify connections are configured properly for FTE

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

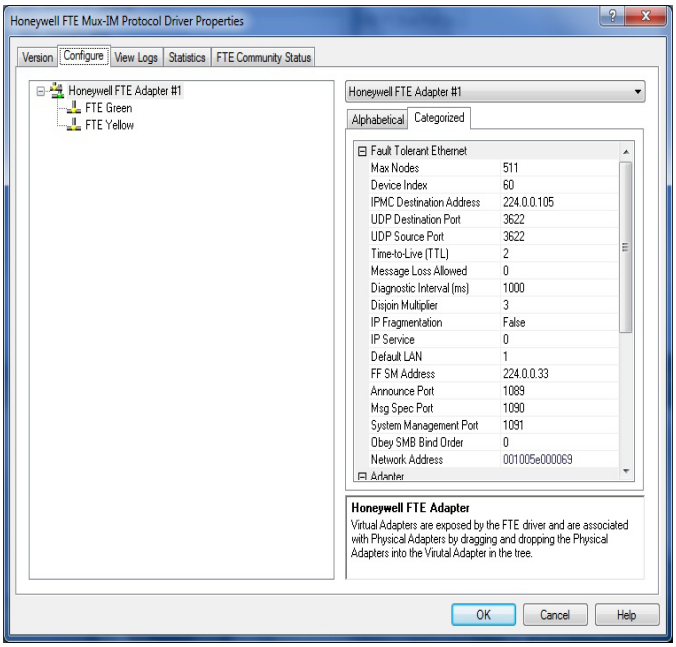
Step	Action
1	Click **Start** > **Control Panel** > **Network and Internet** > **Network and sharing center** > **Change adapter settings**.
2	Right-click one of the FTE network adapters and then click **Properties**.

Step	Action
3	Ensure Honeywell FTE Mux-IM Protocol Driver is checked as shown in the following figure.



4	Select **Honeywell FTE Mux-IM Protocol Driver** and click **Properties**.

Step	Action
5	Verify that the connection associated with the network adapters being used for FTE is listed under Honeywell FTE Adapter as shown in the following figure.



6	Close the **Honeywell FTE Mux-IM Protocol Driver Properties**, and **Network Connections** dialog boxes.

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

Step	Action
1	Double-click the unplugged Local Area Connection icon from the task bar, or Click **Start** > **Control Panel** > **Network and Internet** > **Network and sharing center** > **Change adapter settings**.
2	From the **Network Connections** dialog, right-click the local area connection that has the unplugged network cable. **Detail View**  **Icon 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	Right-click the **Computer** icon from the desktop or from the **Start Menu** right-click **Computer** and select **Manage**.
2	Double-click **Event Viewer.**
3	In the console Tree, double-click **Application and Services Logs**, and then double-click **FTE.**
4	Double-click the event to open the **Event Properties** dialog box.
5	Review the Event description.

7.3 Fixing common problems

Intermittent or blocked communication to controllers on a different subnet

When Controllers are addressed in a different subnet than the Servers/Consoles, the level 2 nodes rely on addroute and ARP to establish TCP connections with controllers. If proxy arp is enabled on the router, the router responds with its own MAC address when the level 2 nodes ARP for the controller MAC addresses, preventing or breaking TCP communication. Hence, all router connections to an FTE network must have the "no ip proxy arp" command.

Diagnostic check:	Check for switch interface to where the node is connected blinking amber.
Cause:	FTE adapter or switch configured for autonegotiate resulting in speed/duplex mismatch
Solution:	Correct the speed/duplex configuration of the adapter or switch.

Network adapters cannot connect

After uninstalling FTE, your network card cannot communicate 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.
Diagnostic check:	Unable to make a network connection.
Solution:	See the Troubleshooting section in the *Intel Pro/1000 MT, Intel Pro/100 PT or Broadcom 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*.

Cannot establish network communications

The FTE node cannot communicate with the network from either network adapter port.

Diagnostic check:	The node cannot communicate with network after you start up the node and then connect the network cables.
Cause:	If you connect a node that has a duplicate IP address to the network after it is already booted up, the duplicate IP address will not be detected and you section will not receive an error message, but it will still not be able to establish communication with the network.
Solution:	See "Resolve duplicate IP addresses" in Section 7.4 on page 136.

FTE node does not appear in the System Management Display

Diagnostic check:	The network adapters displayed in the **FTE Configuration** tree view 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 5.1, “Configuring FTE Mux-IM Protocol Driver properties” on page 69.

Mismatch of FTE Multicast address and destination port

An FTE node does not show up in the FTE node list or FTE status display as expected.

7.4 Resolving network issues

Enable Ethernet port for on-board NIC

Use this procedure to re-enable the on-board NIC. You may skip this procedure if your on-board network adapter is currently enabled.

CAUTION

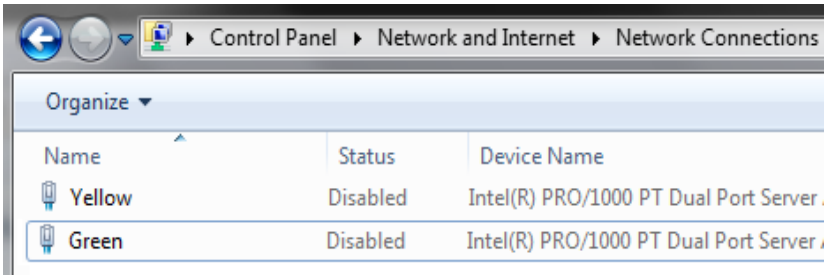
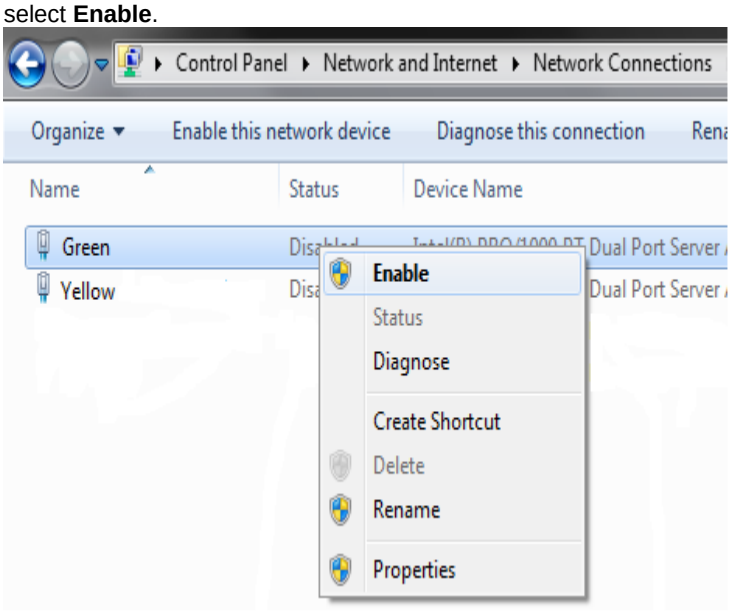
Be aware that BIOS setup is an advanced tool, and you should only enter the system setup if you are an experienced user.

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.

Verify network connections are enabled

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.

Step	Action
2	Verify the network connections have not been disabled: • Click **Start** > **Control Panel** > **Network and Internet** > **Network and sharing center** > **Change adapter 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 5.2: • Configure the *Physical* network • Configure the *Honeywell FTE Adapter*
6	Verify the **Honeywell FTE Mux-IM Protocol Driver Properties** dialog box has the correct settings. See Section 5.1, "Configuring FTE Mux-IM Protocol Driver properties" on page 69.
7	To verify proper FTE installation, see Section 5.8, "Verifying correct installation."

Resolve duplicate IP addresses

Use this procedure to resolve duplicate IP addresses for your FTE node.

Step	Action
1	If the **Network Connections** dialog is not open, Click **Start** > **Control Panel** > **Network and Internet** > **Network and sharing center** > **Change adapter settings** > **Network Connections**.
2	From FTE Mux adapter, right-click to select **Properties**.
3	From the connection properties dialog box, select **Internet Protocol (TCP/IPv4)** and then click **Properties**.
4	Click **Use the following IP address** to specify the IP address for the network connection.
5	In the **IP address** box, type the IP address that you want to assign to this network connection. **Note**: Make sure it is a unique address in the range of addresses that are available for your network.
6	In the **Subnet mask** box, type the subnet mask for your network.

Step	Action
7	In the **Default gateway** box, type the IP address of the computer or device on your network that connects your network to another network or to the Internet.
8	Select **Obtain DNS server address automatically**, or Select **Use the following DNS server addresses** and enter the IP addresses for your DNS servers.
9	Click **OK**, and close all dialog boxes.
10	Shut down the FTE node.
11	Verify all network cables are connected correctly. See Section 5.7 on page 94, if necessary.
12	Restart the FTE node *Your FTE node should be visible on the network.*

7.5 Resolving installation issues

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.

Step	Action
1	Click **Start** > **Control Panel** > **Network and Internet** > **Network and sharing center** > **Change adapter settings** > **Network Connections**.
2	Right-Click either one of the FTE network connections (yellow or green) and then click **Properties**.
	The **FTE Yellow/Green Properties** window appears.
3	Right-click either one of the connections associated with FTE, and then click **Properties**.
4	Click **Install** from the **Local Area Connection yellow/green Properties** dialog box.
5	Select **Protocol**, and then click **Add.**
6	From the **Select Network Protocol** dialog box, click **Have Disk** to access the FTE Mux-IM Protocol driver files that you copied to your hard disk.
	**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 Mux-IM Protocol driver files and click **Open.**
	Default is ***C:\Program Files\Honeywell\FTEDriver***
8	Click **OK** to confirm the location of the FTE files.
9	Select **Honeywell FTE Mux-IM Protocol Driver** then click **OK.**

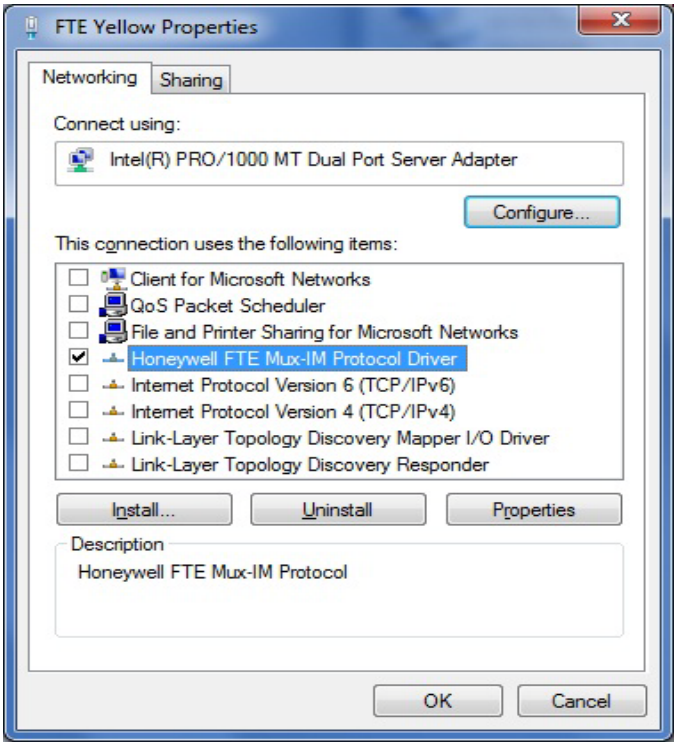
Step	Action

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 Click **Yes** when prompted to restart the computer.

11 Verify that the **Honeywell FTE Mux-IM Protocol Driver** appears in the **FTE properties** dialog box.



Click **OK** to return to **Network Connections**.

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