Honeywell

EXPERION PKS

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Switch Configuration Tool Users Guide

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CHAPTER

1 ABOUT THIS GUIDE

This guide describes the user interface of the Switch Configuration Tool and provides an overview for configuring switches using the tool. It describes the tasks to create new switch configuration, open an existing switch configuration, generate text files from the switch configuration, and load the new switch configurations to the switches. It also briefly describes about creating and saving projects using the tool.

1.1 Revision history

Revision	Date	Description
A	August 2020	Initial release of the document.

CHAPTER

2 About Switch Configuration Tool

The Switch Configuration Tool can be used for performing the following:

- Configuring Honeywell-qualified switches
- Creating and generating switch configuration files
- Loading the switch configuration files into Honeywell-qualified switches

You can also use the tool to select the node and switch types to define custom switch configurations with the same security and QOS settings as the templates found in the FTE driver directory of an Experion release.

Related topics

"Honeywell-qualified switches" on page 8

"Supported Experion nodes" on page 10

2.1 Honeywell-qualified switches

This tool supports the configuration of the following Honeywell-qualified switches.

Cisco Switches

Description	Honeywell part no	Part no	No. of ports	Uplink only	Level 1	Level 2	Mixed	Split
Cisco Catalyst 2950-48G*	NE - SW248G	WS-C2950G-48-EI	50		X	X	X	
Cisco Catalyst 2950-24G*	NE - SW224G	WS-C2950G-24-EI	26		X	X	X	
Cisco Catalyst 3550-12G*	NE - SW312G	WS-C3550-12G	12	X				
Cisco Catalyst 3550-24FX*	NE - SW324F	WS-C3550-24-FX-SMI	26	X				
Cisco Catalyst 3750-12G* (Stackable up to 9 switches)	NE - SW312S	WS-C3750G-12S-S	12, up to 108	X		X		
Cisco Catalyst 2955-12C*	NE - SW512C	WS-C2955C-12	14		X	X	X	
Cisco Catalyst 2960-48G*	NE-SW248S	WS-C2960-48TC-L	50		X	X	X	X
Cisco Catalyst 2960-24G*	NE-SW224S	WS-C2960-24TC-L	26		X	X	X	X
Cisco Catalyst 2960-48T*	NE - SW248T	WS-C2960-48TT-L	50		X	X	X	X

Description	Honeywell part no	Part no	No. of ports	Uplink only	Level 1	Level 2	Mixed	Split
Cisco Catalyst 2960-24T*	NE - SW224T	WS-C2960-24TT-L	26		X	X	X	X
Cisco Catalyst 3560-24TS*	NE - SW324S	WS-C3560-24-TS-S	26		X	X	X	X
Cisco IE 3000-8TC	NE - SW508S	IE3000-8TC	Up to 26		X	X		X
Cisco IE 3000-4TC	NE - SW504S	IE3000-4TC	Up to 22		X	X		X
Cisco SFE2000	-	SFE2000	28		X	X		
Cisco Catalyst 3560V2*	NE - SW3242S	WS-C3560V2 - 24TS S	26		X	X	X	X
Cisco Catalyst 3750X-12S	NE - SW312X	WS-C3750X - 12S S	12, up to 108 with stack	X		X		X
Cisco Catalyst 2960+-24	NE-SW224P	WS-C2960+24TC-L	26		X	X	X	X
Cisco Catalyst 2960+-48	NE-SW248P	WS-C2960+48TC-L	50		X	X	X	X
Cisco Catalyst 2960X-24	NE-SW24G1	WS-2960X-24-TS-L	28	X	X	X	X	X
Cisco C3850-12S	SI-3850N2	WS-C3850-12S-S	12, up to 16 with add on modul	X		X		

Description	Honeywell part no	Part no	No. of ports	Uplink only	Level 1	Level 2	Mixed	Split
			e and 144 with stack					
Cisco C2960XR-24TS	SI-2960R4	WS-C2960XR-24TS-I	28	X	X	X	X	X
Cisco C2960X-48TS-L	SI-296XN8	WS-C2960X-48TS-L	52	X	X	X	X	

* These switches are supported by the tool, but Honeywell qualified firmware updates are no longer available.

Hewlett Packard Switches

Description	Honeywell part no	Part no	No. of ports	Uplink only	Level 1	Level 2	Mixed	Split
HP JL227A	SH-2620N4	JL227A	28	X	X	X		
HP JL330A	SH-2530N4	JL330A	28	X	X	X		
HP JL075A	SH-3810R6	JL075A	16, up to 216 with stack	X		X		

Huawei Switches

Description	Honeywell part no	Part no	No. of ports	Uplink only	Level 1	Level 2	Mixed	Split
Huawei S2750-28TP	SU-2750N4	S2750-28TP-EI-AC	28		X	X		
Huawei S5700-28X	SU-570XN4	S5700-28X-LI-24S-AC	28	X		X		
Huawei S5700-28P	SU-570PN4	S5700-28P-LI-AC	28	X		X		
Huawei AR550-8FE	SU-AR55N8	AR550-8FE-D-H	12		X	X		

Moxa Switches

Description	Honeywell part no	Part no	No. of ports	Uplink only	Level 1	Level 2	Mixed	Split
Moxa EDS-G512E	SM-G512I2	EDS-G512E-T	12		X	X		

The available configuration selections are based on the Honeywell-recommended usage and best practices for the specific switch model. Refer to the latest Experion Network Best Practices document for more information.

ATTENTION

The tool cannot be used for downloading the configuration for the Cisco SFE 2000, 2960X, 2960XR and 3850 switches.

2.2 Supported Experion nodes

Switch Configuration Tool can be installed on the following nodes.

- Experion Flex Station (ES-F)
- Experion Console Station (ES-C)
- Experion Console Station-TPS (ES-T)
- Experion Console Extension Station (ES-CE)
- Application Server (EAS)
- Experion Server (ESV)
- eServer
- Experion Server TPN Connected (ESVT)

Nodes such as Experion Application node (E-APP), Application Control Environment (ACE), and Application Control Environment-TPS (ACE-T) are not supported.

CHAPTER

3 INSTALLING SWITCH CONFIGURATION TOOL

Related topics

"Software requirements" on page 12

"Install Switch Configuration Tool" on page 13

3.1 Software requirements

The Switch Configuration Tool can be installed on a computer running the following operating systems.

- Microsoft Windows XP
- Microsoft Windows 7
- Microsoft Windows 10
- Enterprise 2016 LTSB (x64)
- Microsoft Windows Server 2008 Standard

The tool is qualified for use with Experion R430 or later releases. However, it can be used for configuring switches for Experion R3xx, R400.x, and R410.x releases.

3.2 Install Switch Configuration Tool

With Experion R430 and later, the Switch Configuration Tool is installed as part of the Experion installation process. However, for Experion R3xx, R400.x, and R410.x releases you must manually install the tool.

For TPN R685 or later releases, the tool can be installed using the Utilities and Load Module (ULM) media.

CHAPTER

4

OVERVIEW OF SWITCH CONFIGURATION TOOL

Related topics

"Layout of Switch Configuration Tool" on page 16

"Switch type" on page 19

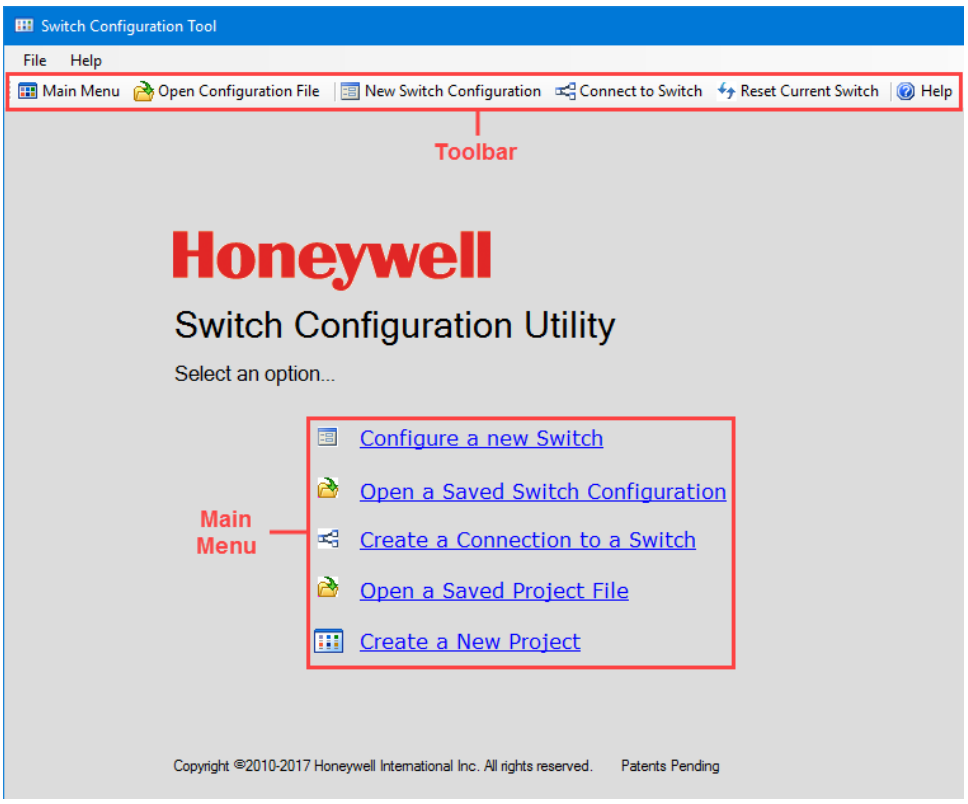
"Template selection" on page 22

"Select port configuration" on page 26

"Switch configuration form" on page 27

4.1 Layout of Switch Configuration Tool

When you open the Switch Configuration Tool, the Welcome to the Switch Configuration Utility window appears.



Following options are available on the Welcome to the **Switch Configuration Utility window.**

- Toolbar
- Main Menu

4.1.1 Toolbar

The toolbar provides quick access to commonly used commands. Following table lists the options available on the toolbar.

Options	Description
Main Menu 	Displays the Welcome to the Switch Configuration Utility window, where you can select the Main Menu options.

Options	Description
Open Configuration File 	Opens previously saved switch configuration files.
New Switch Configuration 	Creates new switch configurations.
Connect to Switch 	Creates a serial or telnet connection to a switch. Use this option to connect to a switch and copy the switch text file to the running configuration of the switch.
Reset Current Switch 	Resets current switch.
Help 	Displays the help file of the tool.

4.1.2 Main Menu options

The Main Menu lists the tasks that can be performed by using the tool. Following are the Main Menu options:

- **Configure a new Switch:** This option is used for creating a new switch configuration.
- **Open a Saved Switch Configuration**: This option is used for opening any previously saved switch configuration file.
- **Create a Connection to a Swit**ch: This option is used for creating a serial or a telnet connection to a switch and loading the switch with new configurations.
- **Open a Saved Project File**: This option is used for opening any previously saved project.
- **Create a New Project:** This option is used for creating a new project.

4.1.3 Terms and definitions

The following terms and definitions are used throughout this document.

Terms	Definitions
Switch	The physical hardware device where a switch text file is downloaded.
Switch configuration form	The user interface representation of the core switch parameters. The switch configuration form presents the user with a set of property pages that can be used for configuring the switch. The contents of the property pages can be saved as a Switch configuration file. For more information about the Switch configuration form, refer to the section “Switch configuration form” on page 27.
Switch configuration file	The physical file that saves the users inputs in the Switch configuration form.
Switch Text File	Text generated via the Switch configuration form that can be downloaded to the Switch.

4.2 Switch type

This section describes the different ports available for each of the switch types. You can view the available switch configurations after selecting a specific switch type.

4.2.1 Level 1 switch type

Level 1 switch is used for controller-level connections. The uplink to a router and top switch options are not available, as a Level 1 switches cannot be the top switch. Honeywell recommends the following Fast Ethernet port configurations.

- L1 Uplink and Fast Ethernet ports are used for connecting another switch for an uplink connection only.
- The Honeywell FTE Bridge (FTEB) is used for connecting C200 and FIM controllers.
- Safety Manager supports Level 1 connection for Honeywell Safety Manager or FSC.
- Other 10 MBps (megabit per second) connections.
- Modbus Firewall supports the settings for Honeywell Modbus TCP Firewall connection through Level 1 connection. It includes Modbus Read-only Firewall device connection, 51154724-100, and 51154724-200.
- Other auto connections use other devices such as Modbus bridges and Modbus TCP devices that require an auto-negotiate Ethernet configuration to connect.

Level 1 alternate cost switches

In addition to the standard Level 1 devices, Level 1 alternate switches such as HP 2530-24 supports C300, FIM4, and FIM8

Support for EUCN

Cisco IE3000 switches on EUCN supports EHPM and ENIM node types.

4.2.2 Level 2 switch type

Level 2 switch is for nodes defined as Level 2 nodes as in the best practice document, such as server and clients computers. Honeywell recommends the following while connecting Fast Ethernet port configurations.

- L2 Uplink and Fast Ethernet ports are designated for connecting another switch for an uplink connection only.
- One Wireless Firewall supports the special settings for One Wireless multimode connections.
- Modbus Firewall supports the settings for Honeywell Modbus TCP Firewall connection through a Level 2 connection. It includes Modbus Read-only Firewall device connection, 51154724-100, and 51154724-200.
- ACE: Fast Ethernet port can be configured for ACE nodes such as ACE-T and EHG.
- Honeywell Control Firewall (CF9).
- Console: Fast Ethernet port can be configured for Console stations such as Experion station and TPS station.
- Flex: Fast Ethernet port can be configured for Flex station which includes client node types such as Experion Flex station.
- Server: Fast Ethernet port can be configured for Experion servers, TPS server, and other server types such as EHG.
- Safety Manager L2 or Safety supports a Level 2 connection for Honeywell Safety Manager.
- Other 100 MBps Fast Ethernet port configurations can include other client node types such as OPC servers.
- Other Auto includes any node type that require an auto-negotiate.
- VM – Gigabit Ethernet Level 2 connection configured to support ESXi Server connections of the Virtual Machines specifically for the 1 GB switch type.

- DVM – Gigabit Ethernet Level 2 connection configured to support Digital Video Monitor level 2 connections specifically for the 1 GB switch type.
- Ethernet Interface Module (EIM): Used to connect a controller to the server via an Ethernet link (LAN).
- Enhanced TotalPlant™ Solution Node (ETN): An enhanced version of TPS Node that enables virtualization of computer hardware by removing LCNP4 cards and replacing them with a combination of Enhanced TPS Node Interface (ETNI) and K4LCN processor boards installed in the LCN chassis.
- Triconex Communication Module Interface (TCMI): An interface between the Fault Tolerant Ethernet (FTE) based Enhanced Universal Control Network (EUCN) and Triconex TRICON Safety Manager System. Replaces the Triconex SMM.
- Universal Embedded Appliance (UEA): Honeywell processor based common embedded hardware platform that executes emulated LCN node personality software, or, an ELCN bridge.
- Experion Local Control Network (ELCN) Bridge: A bridge node that connects Coax LCN to FTE ELCN, creating a single logical hybrid xLCN network. Used for on-process migration from LCN nodes to ELCN nodes.
- ELCN node: An equivalent LCN node with communications via FTE instead of Coax.

If you are unsure of the node connection type for Level 2, select other 100 MBps and ensure the node is configured for 100 MBps and full duplex before connecting to the switch.

Special Considerations for 1 GB switches

All L2 Uplinks are specified as 100 MB/S, use Auto selection for 1 GB/S operation which is suggested between switches.

4.2.3 Uplink-only switch type

The Uplink-only switch is used at the top of the FTE network tree where other switches and router are usually connected. There are different selections for uplinks based on the switch model. Honeywell recommends the following Fast Ethernet port configurations.

- Auto is the connection type selection available for the Cisco 3550-12 Uplink-only switch.
- L2 Uplink is used when another Level 2 or Level 1 switch is connected.
- One Wireless Firewall supports the special settings for One Wireless connections.
- Modbus Firewall supports the settings for Honeywell Modbus TCP Firewall connection and includes Modbus ReadOnly Firewall device connection, 51154724-100, and 51154724-200.
- 100FX L2 Uplink option is visible only on 100FX connections. This is 100 MBps multimode fiber connections.
- When used with Cisco 2960 family of switches, CF9 installed with CC-FSMX01 module should be connected to 100LX small form-factor pluggable (SFP) module or CF9 installed with CC-FMMX01 module should be connected to 100FX SFP module.
- Router Auto option is available only if the switch is connected to a router and the configuration Uplink to Router is selected.

Special considerations for Cisco 3550-12

The Cisco 3550-12 is typically used top level configuration. Either 1 GB fiber GBICs or 1 GB Copper GBICs are used in ports 1-10. The speed and duplex for these connections is 1 GB and is not changeable. Ports 11 and 12 are standard RJ45 connections that can be modified to support 100 MBps L2 Uplink or 1 GB connections.

Special Considerations for Cisco 3550-24-FX

This switch has only 24 100 FX MJRT fiber connections and 2 GBIC connections. This switch is typically used as a top level switch. It can be used as a connection point for CF9s with the 100FX MJRT Fiber module installed.

Special Considerations for SFP ports

In order to set the speed/duplex of a small form-factor pluggable (SFP) interface, the SFP such as GLC-T must be inserted before configuring the switch. The Cisco 3750/3750X switch is used as a “backbone” switch in most systems. It has a special configuration as an all uplink switch. The 3750-12/3750x-12 only has SFP interfaces so there is no Fast Ethernet tab.

The following port selections are unique for the Cisco 3750-12/3750x-12 switch Uplink-only.

Auto Copper provides connection using a SFP connection such as GLC-T and so on with auto-negotiate active

- Auto Fiber provides connection using a SFP connection such as GLC-SX-MM with auto-negotiate active
- 100 MB Copper provides connection using a SFP connection such as GLC-T with speed set to 100 MBps and Duplex Full
- 100 MB Fiber provides connection using a SFP connection such as GLC-GE-100FX
- GB Uplink provides connection using a SFP connection such as GLC-T and so on with speed set to 1 GBps and Duplex Full
- Uplink provides connection using a SFP connection such as GLC-T and so on with speed set to 100 MBps and Duplex Full
- Router 1 GB provides connection using a SFP connection such as GLC-SX-MM or GLC-T and so on with speed set to 1 GBps
- Router 100 MB, Router uplink provides connection using a SFP connection such as GLC-T and so on with speed set to 100 MBps and Duplex Full.

Stackable Switches

Stackable switches include Cisco 3750, Cisco 3750X, Cisco 3850-12 and HP 3810.

For example, the Cisco 3750 switch has the ability to be stacked (up to nine). The level in the stack must be chosen. The ports for the stacked configuration can be labeled 1-108, but in the generated switch file the interface number appears as “interface GigabitEthernetN/0/1-12”, where N is the stack position of the individual switches.

4.2.4 Mixed switch type

Mixed is a legacy configuration for combining Level 1 and Level 2 nodes on the same switch. It must only be used for replacing existing mixed switches. You need not generate new configurations using the mixed selection. If a backward compatible solution is desired, the mixed configuration is available. The procedure is similar to the Level 2 configuration except the number of Level 1 nodes is selected, when the number of uplinks is selected. The Level 1 nodes have different node selections from the Level 2 nodes in the Fast Ethernet tab.

The uplink to router is grayed out for this switch.

The available Honeywell configurations are all of Level 1 and all Level 2 node types. A mixed configuration does not support connection directly to a router. Mixed switches must not be connected to a router.

4.2.5 Split switch type

New applications of Level 1/Level 2 combinations must choose split configuration. The split switch is the preferred way to have both Level 1 and Level 2 nodes on the same switch. The split requires a crossover cable to connect the sides together. The position of the crossover cable depends on how many Level 1 nodes are selected at the time the number of uplinks is selected. The place for the crossover cable is indicated in the description field of the text file that is generated using the button at the top of the frame. Node types are again color coded for uplink, Level 1, and Level 2 switch types.

You can select the switch type as split only for the following switch models.

Table

Description	Honeywell part no	Part no
Cisco Catalyst 2960-48G	NE-SW248S	WS-C2960-48TC-L
Cisco Catalyst 2960-24G	NE-SW224S	WS-C2960-24TC-L
Cisco Catalyst 2960-48T	NE SW248T	WS-C2960-48TT-L
Cisco Catalyst 3560-24TS	NE SW324S	WS-C3560-24-TS-S
Cisco IE 3000-8TC	NE SW508S	IE3000-8TC
Cisco IE 3000-4TC	NE SW504S	IE3000-4TC
Cisco Catalyst 3560V2	NE SW3242S	WS-C3560V2 24TS S
Cisco Catalyst 3750X-12S	NE SW312X	WS-C3750X 12S S
Cisco Catalyst 2960+-24	NE-SW224P	WS- C2960+24TC-L
Cisco Catalyst 2960+-48	NE-SW248P	WS- C2960+48TC-L
Cisco Catalyst 2960X-24	NE-SW24G1	WS-2960X–24–TS-L
Cisco C2960XR-24TS	SI-2960R4	WS-C2960XR-24TS-I

The Honeywell configuration supports connecting all Level 1 and Level 2 node types. A split configuration does not recommend connection directly to a router. This configuration must be configured manually.

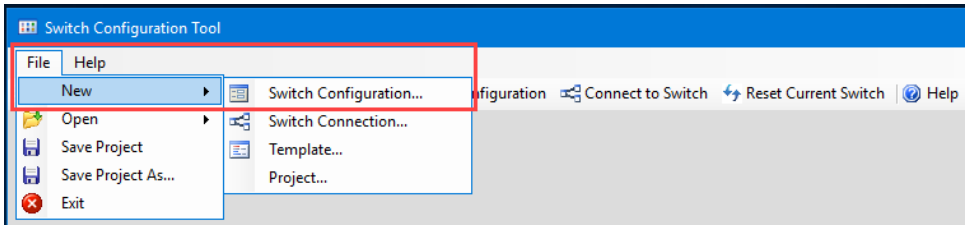
The split switch type is recommended for configurations, where both level 1 and 2 are to be connected to the same switch, this is the preferred configuration over selecting a mixed switch configuration.

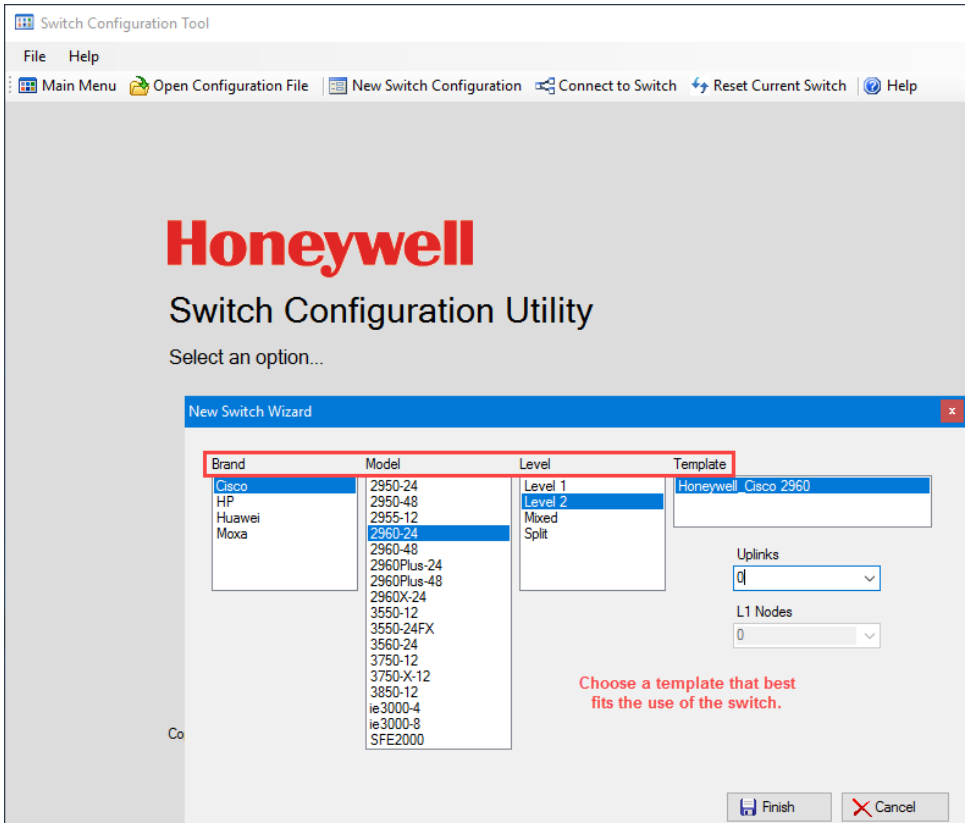
4.3 Template selection

Using the Switch Configuration Tool you can perform switch configuration by providing some general information and completing a few straightforward forms. Honeywell provides a set of default templates with the recommended settings for all qualified switches and connected node types. These templates are used in combination with user input to complete an up loadable switch configuration file.

You must select the Honeywell template for all switch models and levels. For example, in the following images, if you select Cisco 2960-24 as the switch model, the Honeywell_Cisco 2960 is the Honeywell template available in the Template list.

Usually, there is only one template selection for each switch module. If you have created a customized switch template, you can open the template and include it to the template list.



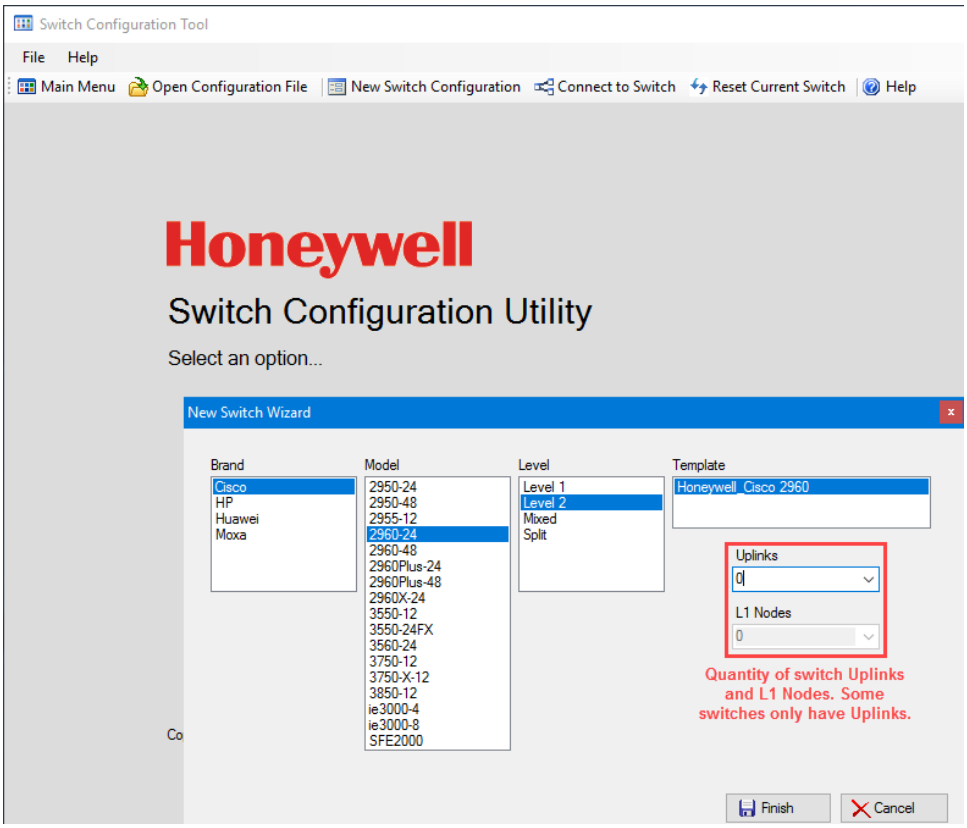


4.3.1 Managing templates

The Switch Configuration Tool chooses a template based on the switch model and level in which you want to place the switch. A switch template file (.stml) is basically a text file with keywords that are used for generating the resulting switch configuration file.

4.4 Select port configuration

You can select the number of Uplinks and number of L1 Nodes required for configuring the switch. Level 2 ports are determined by the number of Uplink and Level 1 ports selected.



4.4.1 Uplinks

Uplinks lists the number of ports associated with the switch module selected. Select the number of uplinks required for your configuration. That is, a 2u_2960_24 configuration (supplied Honeywell configuration with FTE Driver) would select 2 uplinks and the level 1 selection grays out.

For level 2 switches, such as Cisco 2960 and 3560 that are required to be uplink only, select all of the available ports in the uplink list to make these an uplink only switch.

The ports allocated to be Uplinks would have only the connection types as listed in Uplink Only section above.

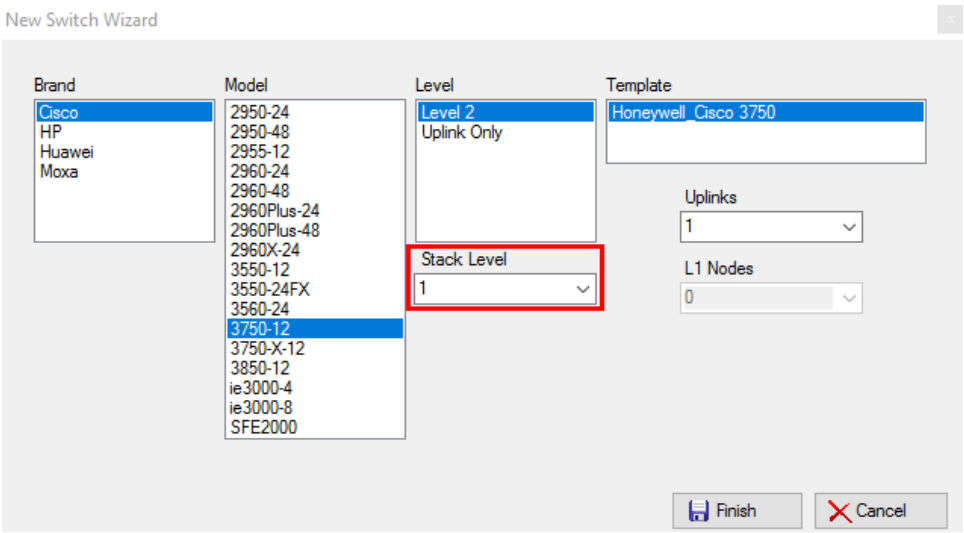
4.4.2 Number of L1 Nodes

This lists the number of ports associated with the switch module selected. Select the number of Level 1 nodes required for your configuration. That is a 2u_810_2960_24 configuration (supplied Honeywell switch configuration files with FTE Driver) would select 2 uplinks and the level 1 selection will be selected as 8, the remaining 14 ports being assigned to Level 2.

The ports allocated to be Level 1 will have only the connection types as listed in Level 1 section above.

4.4.3 Stack Level

Select the number of switches configured in the switch stack. This option is only for Cisco 3750, 3750x and 3850-12 switches, and the HP 3810 switch. Additional switch hardware, and expert configuration of these switches, are required to enable stacking.



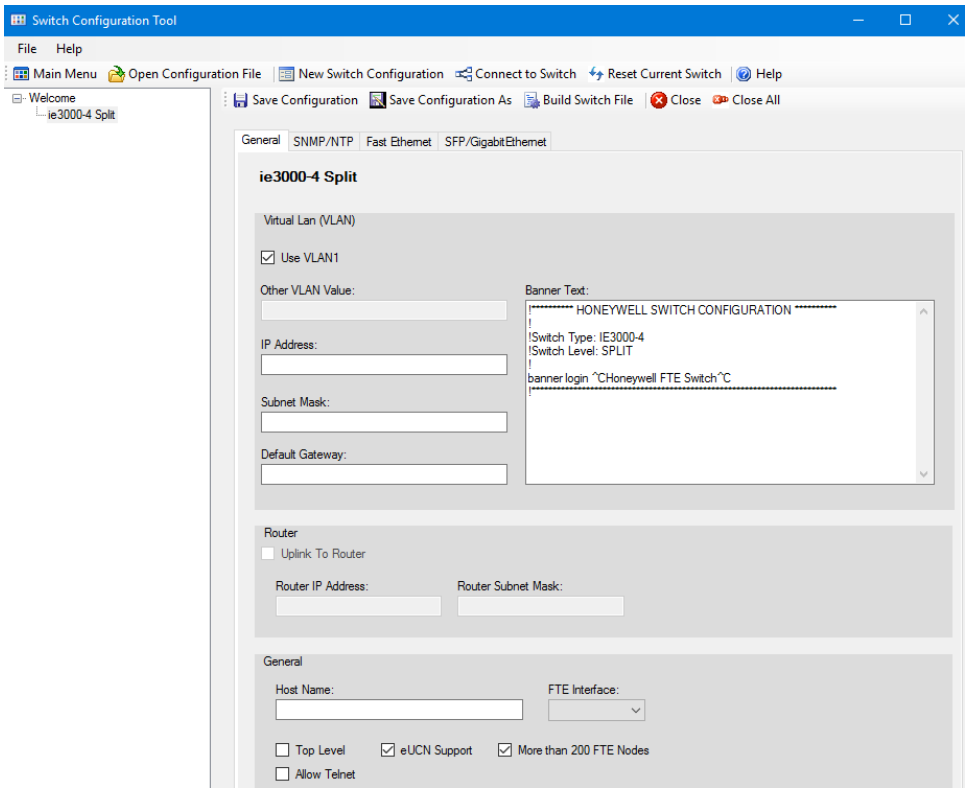
4.5 Switch configuration form

You can use the switch configuration form to set the general properties of a switch and to configure the network ports of the switch. The configuration form consists of a tool bar and three or more tabs:

- General
- SNMP/NTP
- One or more groups of ports

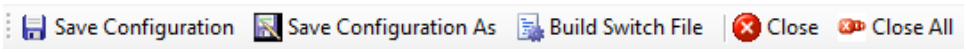
Note that for only for Cisco 3550-24FX switches, a Fiber tab is shown.

The following image illustrates the switch configuration form.



4.5.1 Toolbars in switch configuration form

The following image illustrates the options available on the toolbar in switch configuration form.



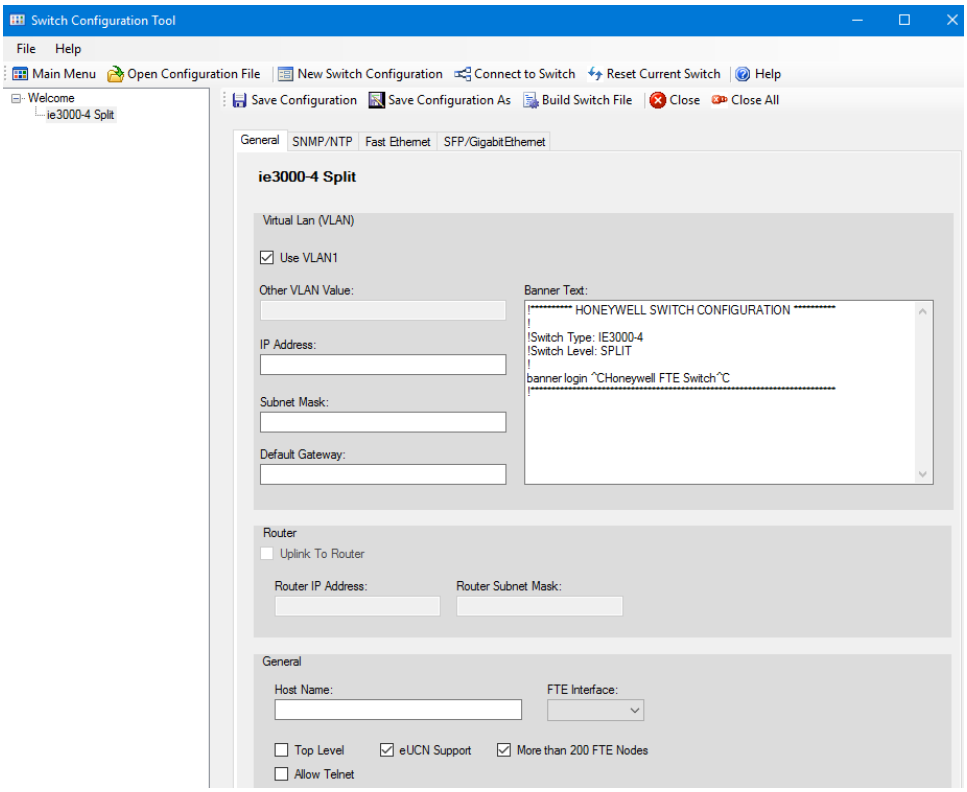
The following table lists the options available on the switch configuration form toolbar.

Options	Description
Save Configuration 	Used for saving the form settings as a switch (*.sfl) file.

Options	Description
Save Configuration As 	Used for saving the form settings with a different name in the same file extension/file format.
Build Switch File 	Used for generating a text file and downloading it to the physical switch or device.
Close 	Used for closing the current form and removing the connection from the project explorer.
Close All 	Used for closing all the forms and removing the connection of all the forms from the project explorer.

4.5.2 General tab

You can configure the overall features of the switch in the General tab. The following image illustrates the General tab.


Switch Configuration Tool
File
Help
Main Menu
Open Configuration File
New Switch Configuration
Connect to Switch
Reset Current Switch
Help
Welcome
ie3000-4 Split
Save Configuration
Save Configuration As
Build Switch File
Close
Close All
General
SNMP/NTP
Fast Ethernet
SFP/GigabitEthernet
ie3000-4 Split
Virtual Lan (VLAN)
Use VLAN1
Other VLAN Value:
IP Address:
Subnet Mask:
Default Gateway:
Banner Text:
!********** HONEYWELL SWITCH CONFIGURATION **********
!
!Switch Type: IE3000-4
!Switch Level: SPLIT
!
banner login ^CHoneywell FTE Switch^C
!**********
Router
Uplink To Router
Router IP Address:
Router Subnet Mask:
General
Host Name:
FTE Interface:
Top Level
eUCN Support
More than 200 FTE Nodes
Allow Telnet

Table

Options	Descriptions
IP Address	TCP IP address of the switch, used for switch access and SNMP designation.
Subnet Mask	Enter the Subnet Mask for the switch
Use VLAN1	Use VLAN1 if no other VLAN is defined on this network. To use a different VLAN, clear this check box and enter a VLAN in the "Other VLAN Value" entry port.
Other VLAN Value	VLAN Designation for the Network (that is 101) other than the default of VLAN1. Must be the same for all switches in this network.
Top Level	Select if the switch is at the TOP LEVEL of the network tree. This box is only enabled for Level 2, Split, or Mixed level switches. “Uplink to Router” is only enabled if TOP LEVEL is specified.
Uplink to Router	Select if the switch is the TOP LEVEL connection, connected directly to the router. Note: this option is only enabled if TOP LEVEL is checked. This option is disabled for Cisco 2950 and 2955 switches.
Router IP Address	Router IP Address, this is usually the same as default gateway address. Note: this option is disabled for Cisco 2950 and 2955 switches.
Router Subnet Mask	Enter the Subnet Mask for router connection. Note: this option is disabled for Cisco 2950 and 2955 switches.
Default Gateway	Default gateway address is the router address that provides an access point to other networks. This can be the router address.
Banner Text	Place any command or comment that this tool does not provide an interface for. Note that comments are generally preceded by a specially designated character. The character is not the same for all supported switches. For Cisco it is a “!”, and for HP it is “;”. Use the same character as seen in the text box
Host Name	Enter String that appears for this switch (for example, C2960-FTE-Green).
FTE Interface	Select Yellow or Green for the FTE Interface side this switch is to be connected.
eUCN Support	Select if you want to configure eUCN (eNIM, eHPM) ports for this switch. For select switches only.

Options	Descriptions
More than 200 FTE nodes	Select if the Experion system for which this switch is configured have more than 200 total FTE nodes.

The explanation for the various options on the General tab are as follows:

Virtual LAN (VLAN)

If this community uses VLAN1 for the switches, then no action is needed. The VLAN1 check box is selected by default.

If another VLAN, for example, VLAN101 is used, then clear Use VLAN1 option. In Other VLAN Value field, type a number; in this example enter 101.

You can also configure the VLAN IP address, or management address of the switch. The default VLAN IP address, but you must change it to a unique address for this switch. For example, enter 10.0.1.101. The subnet mask must be configured to enable access to and from the SES server in the Experion system. It is recommended to make it match the server's mask. The default gateway is optional and must be used only if the NTP server or SNMP server is outside of the subnet mask configured previously.

> **ATTENTION**
>
> For Split Switch Types the VLAN configured in the General tab applies to the level 2 side of the split, which includes the uplinks. The level 1 side defaults to "vlan 2" If "vlan 2" is already in use or the desired VLAN for the Level 2 side, this can be changed by hand in the generated text.

Banner Text

The Banner Text window is used for any custom configuration items or boilerplate text, such as security warnings that the user's IT department may require. Router configuration commands must be entered here. In addition, you can enter the commands for other security settings required for the switches only if they are different from the preprogrammed security items.

Consult with appropriate documentation for the specific switch before adding content to the banner.

The following is an example for Cisco switches:

banner login ^C2960-24^C

Or a proprietary equipment notice:

banner login ^CWarning! This is proprietary Honeywell network equipment. Unauthorized access is strictly prohibited ^C

Any commands or comments you enter is saved. These saved commands or comments are used when minor changes to the switches configuration are required without having to re-enter the commands for a minor switch change.

> **ATTENTION**

The banner that appears in a telnet session must indicate the switch type and tool release. A default login banner is supplied in the Banner text field on the general tab of any switch. The switch type can be entered in the banner by replacing the “Honeywell FTE Switch” text with the switch type, for example, **2960-24. banner login ^CHoneywell FTE Switch^C**

Router

The router frame enables optional configurations for a top level switch. If your switch is the top level switch (where the crossover cable exists) connected directly to the router, then this frame can be used for configuring a filter that guarantees the range of the Level 3 access to Level 2. This feature prevents multicast packets from entering the router.

Select the Uplink To Router check box, if you want to configure the filtering for Level 3 to Level 2 access. Otherwise clear this check box.

If this filter is desired, select the Uplink To Router check box and enter the router address (it may be the same as the default gateway) and the subnet mask desired to limit the range of addresses accessible from Level 3.

By selecting this check box, a “router” uplink type becomes available in the Fast Ethernet tab under uplink type and in the SFP/GigabitEthernet tab under the Speed drop down list. This port is configured as a standard uplink with the addition of the filter mentioned above.

ATTENTION

This option is not available for the Cisco 2955-12, 2950-24 or 2950-48 switch models. The advanced filtering commands do not work on these models.

CAUTION

Do not select this box for Mixed switch configurations even though this option is available it is not recommended for the Mixed switch type.

ATTENTION

A problem exists with the Fast Ethernet and SFP selections if Mixed or Level 2 switch types are selected. If the Uplink To Router check box is selected, then for Level 1 and Level 2 port types a router selection is added. Do not select these options for level 1 or level 2 port types, the protection that is specific to these port types are not enabled.

General Frame

The general frame is used for configuring the host name, IP Address info, and the usage of the switch (Yellow or Green).

Enter the host name of the switch (e.g., C2960-FTE-Green).

Select Yellow or Green for the FTE Interface.

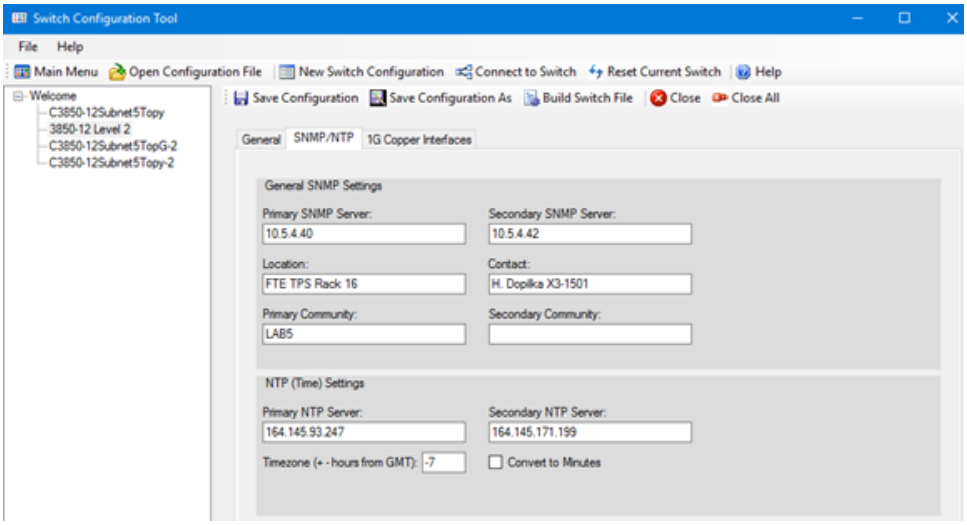
If this is a top level switch, select the Top Level check box. This adds the configuration for spanning tree priority for primary root for a Yellow switch and secondary root for a Green switch. This also enables the **Uplink To Router** check box.

4.5.3 SNMP/NTP tab

Use the SNMP/NTP tab for entering the Primary SNMP/NTP server address, that is the address of the Experion server set up to receive the traps. Enter the community name that matches the one in the Experion server in the Primary Community box. The default value in Experion Systems is set as public, use this value unless one has been defined for your system. The Secondary server is optional for a redundant server for SNMP traps and read- only access.

The Location and Contact boxes are optional information that may be entered if desired. The location and contact information is displayed on the CANE Switch Detailed display for this switch, if it is added to the CANE Network tree for the Experion System.

Following image illustrates the SNMP/NTP tab.



The following table summarizes the options available on the SNMP/NTP tab.

Table

Option	Description
Primary SNMP Server	Type the Server IP address of the Primary Experion SES server to receive SNMP trapped events from this switch.
Secondary SNMP Server	Type the Server IP address of either the Secondary Experion SES Server or another Experion SES to receive SNMP events from this switch.
Location	Type any text that helps to describe the location. The location information appears on the switch detail displays.
Contact	Type any text that gives required contact information. The contact information appears on the switch detail displays.
Primary Community	Type the unique string that corresponds to how the switch detail displays are to access this switch's information for the Primary SNMP Server.
Secondary Community	Type the unique string that corresponds to how the switch detail displays are to access the information of the switch for the Secondary SNMP Server, leave blank for Redundant servers
Primary NTP Server	Type the primary NTP server IP address of the network, if applicable.
Secondary NTP Server	Type the secondary NTP server IP address of the network, if applicable.
Convert to Minutes	Some switches (i.e., HP) use minutes instead of hours for the offset from GMT. Checking this box puts an offset of minutes into the switch configuration file.

The following is a list of how the entries behave.

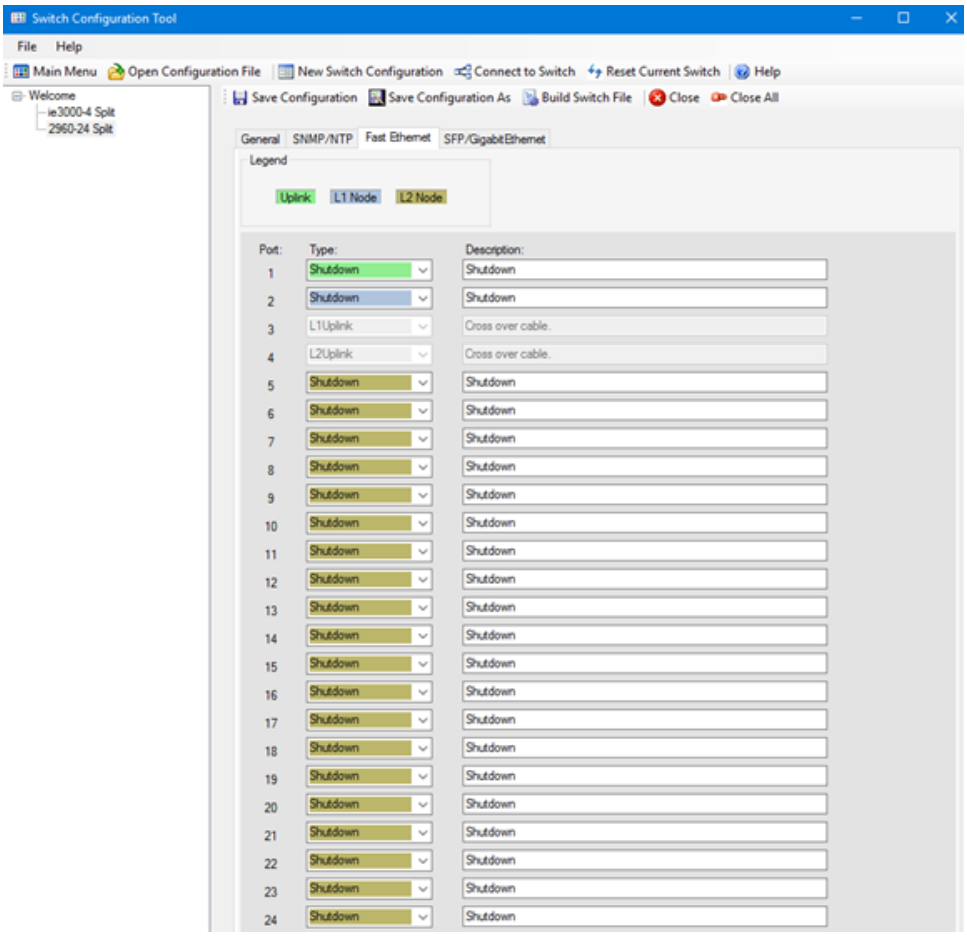
- If you type a primary host, then you must type a primary community.
- If you type a secondary host, the tool uses the primary community unless a secondary community is specified (a primary host is not required to specify a secondary host).
- If you type a primary community, the tool considers it as a RO community even if a host is not specified.
- If you type a secondary community, the tool considers it as a RO community even if a host is not specified (and currently even if a primary community is not specified).
- If you type the Primary NTP Server and the Secondary NTP Server, the tool synchronizes time among a set of distributed time servers and clients.

The NTP (Time) Setting is used for synchronizing time among a set of distributed time servers and clients. Type the Primary NTP Server and the Secondary NTP Server.

4.5.4 Port Configuration tabs

Port configuration tabs appear to the right of the General and SNMP/NTP tabs. The labels on the port configuration tabs are specific to a particular switch, and identify the type of supported ports. There can be up to 4 of these tabs per switch that define the port configuration for a switch.

There is at least one tab, which generally contains the majority of ports that the switch can support. The following image illustrates an example of this tab, which in this case happens to be the Fast Ethernet tab (for a Cisco 2960 switch).



In the example above, you can use the Fast Ethernet tab for configuring the node types connected to the interfaces. The interface types are color coded for easy recognition. The color code appears under Legend. You can select the node type from the drop down boxes and enter a default description. Ensure to change the description to something more appropriate for the individual node. That way the configuration text can be printed out as a guide to the installer to know where to plug the cable to make the actual installation match the documentation.

Refer to the section “Switch type” on page 19 for an explanation of the different port types available. All interfaces are automatically configured to shut down if no node type is selected.

You cannot change the switch type selected, the uplinks go only to the number of uplinks selected initially. In addition, the number of L1 node also does not change except if you delete an expansion module. Note that, for split configuration deleting or changing the number of expansion modules can have undesired effects.

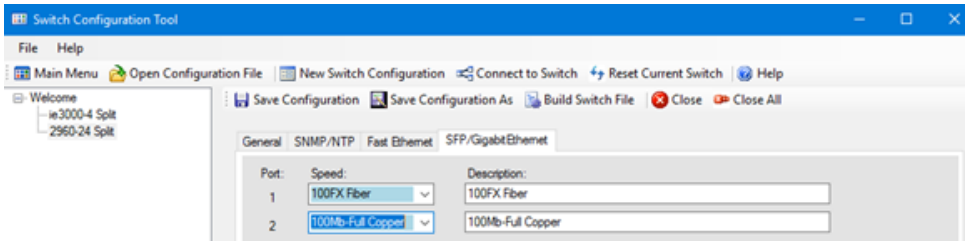
CAUTION

Do not blank the description fields for the interfaces. This produces an error from the switch when the file is downloaded

ATTENTION

For Cisco IE 3000 Switches, the Port selections are numbered based on the expansion modules selected. You can select and add or change expansion modules as required.

As in the previously described tab (Fast Ethernet) that generally contains the majority of ports that the switch can support, the prototype is selected from a dropdown list with a default description entered, as shown in the SFP/GigabitEthernet tab example below.



CAUTION

It is important to install all SFP modules prior to downloading the configurations for any switch with SFPs. If proper SFPs are not installed, an error occurs during the download and you cannot configure the port correctly.

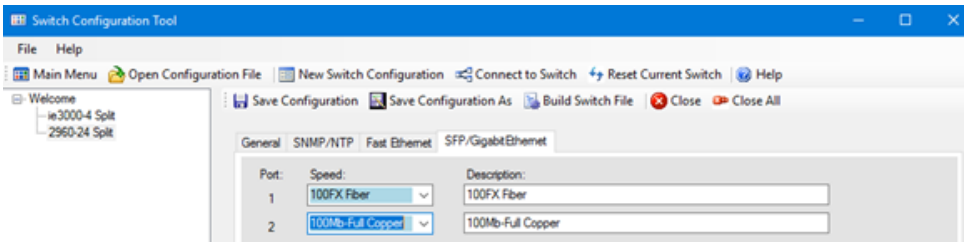
Change the description as appropriate for the individual connection, for example, “Uplink to Top Level Green”. This type of configuration description can help the installer know where to connect cabling during installation. All interfaces are automatically configured to shut down if no connection type is selected.

Cisco Specific SFP/Gigabit Ethernet tab

You can use SFP/Gigabit Ethernet tab for configuring 2 separate SFP/RJ45 interfaces. The small form-factor pluggable (SFP) transceiver is used for switches that only accept data from SFP and do not have a gigabit port. The Gigabit Ethernet is used only for the older model of switches such as the Cisco 3550 and 2950. Each of these interfaces can only be set to fixed settings depending on the Switch Model. If Auto is the only selection, then the switch type does not support any other configuration for the port type.

The connection type is selected from the drop down list and a default description is entered. Ensure to change the description to something more appropriate for the individual connection, that is, Uplink to Top Level Green. This way, the configuration text can be printed out as a guide to the installer to know, where to plug the cable to make the actual installation match the documentation. All interfaces are automatically configured to shut down if no connection type is selected.

The following image illustrates an SFP/Gigabit Ethernet tab.



CAUTION

It is important to install all SFP modules prior to downloading the configurations for any switch with SFPs. If proper SFPs are not installed, an error occurs during the download and you cannot configure the port correctly.

The following options are available for SFP on the Cisco 3560 switch types:

- 100 MB Uplink, Connection using a GLC-T SFP connection with speed set to 100 MB/s and Duplex Full
- 100 MB Fiber, Connection using a GLC-GE-100FX SFP connection
- 1 GB Uplink, Connection using a GLC-T SFP connection with speed set to 1 GB/s and Duplex Full
- Auto, Connection using a GLC-T SFP connection with speed set to 100 MB/s and Duplex Full
- Auto, Connection using a GLC-T or GLC-SX-MM SFP connection with speed set to Auto
- Router 100 MB, Router uplink connection using a GLC-T SFP with speed set to 100 MB/s and Duplex Full. This selection is only available if the switch is connected to a router and the configuration Uplink to Router is selected
- Router 1GB, Connection using a GLC-SX-MM or GLC-T SFP connection with speed set to 1 GB/s, this selection is only available if the switch is connected to a router and the configuration Uplink to Router is selected.
- Router Auto, router connection using a GLC-T or GLC-SX-MM SFP connection with speed set to Auto, this selection is only available if the switch is connected to a router and the configuration Uplink to Router is selected.

The following selections are valid for SFP/Gigabit Tab and GBIC Tab

Auto

- Shutdown

The selection for the SFP for the Cisco 2960 switch type also includes

- 100 FX Fiber, this selection sets the media type to SFP. This selection is only valid for the WS-2960-24-TS- S and WS-2960-48-TS-S versions of the 2960 switch the TT version only Auto should be selected.
- 100MB – Full Copper, this selection set the media type to RJ45. This selection is only valid for the
- WS-2960-24-TS-S and WS-2960-48-TS-S versions of the 2960 switch. For the TT version only Auto should be selected, but if 100MB full is required an error at load time will be displayed since the media-type command is not valid on these switch models.
- Router Auto, this selection is only available if the switch is connected to a router and the configuration Uplink to Router is selected.

The following options are available for the SFP Tab on the Cisco IE3000 switch types:

- Auto, using any other SFP that is 1GB or other than the GLC-T or GLC-FE-100FX-RDG
- Shutdown
- 100 MB Full Copper, Connection using a GLC-T SFP connection with speed set to 100 MB/s and Duplex Full
- 100FX Fiber, Connection using a GLC-FE-100FX-RGD SFP connection,
- Router Auto, setup for any of the SFPs to be used. This selection is only available if the switch is connected to a router and the configuration Uplink to Router is selected.

The Gigabit Ethernet Tab for the Cisco 3550-12 switch gigabit Ethernet ports 11 and 12 support

- 100MB L2Uplink
- Auto

ATTENTION

Only select Router Auto for one uplink on the entire switch and make sure that it does only connect to the router. There is no check to verify only one Router Port is configured. The GBIC Tab is for the Cisco 2950 and 3550 models only. These switches only allow the gigabit ports to be set to Shutdown or Auto there is no speed or duplex selections.

CAUTION

Do not blank the description fields for the interfaces. This produces an error from the switch when the file is downloaded.

CHAPTER

5

GETTING STARTED WITH SWITCH CONFIGURATION TOOL

The Switch Configuration Tool has two modes of operation. The first is to generate a switch configuration. The second is to load that configuration to a switch.

> **ATTENTION**
>
> This tool cannot be used to download the configuration for the Cisco SFE 2000, 2960X, 2960XR and 3850 switches. Refer to the appropriate Honeywell Installation Guide for more information.

Related topics

“Starting Switch Configuration Tool” on page 38

“Checklist for configuring a switch” on page 39 “Creating a new switch configuration” on page 40 “Saving switch configuration” on page 43

“Opening existing switch configuration files” on page 44

“Generating Text files” on page 45

“Establishing a serial or telnet connection using Switch Configuration Tool” on page 46

“Loading the switch with new configuration” on page 50

“Backing up the current switch configuration” on page 58

“Editing switch settings using switch rules XML file” on page 59

“L2.5 switch configuration” on page 60

5.1 Starting Switch Configuration Tool

The Switch Configuration Tool can be started from the following two ways:

- By executing Launch switchtool.exe
- From Configuration Studio

5.1.1 Starting Switch Configuration Tool by executing Launch switchtool.exe

To start the Switch Configuration Tool.

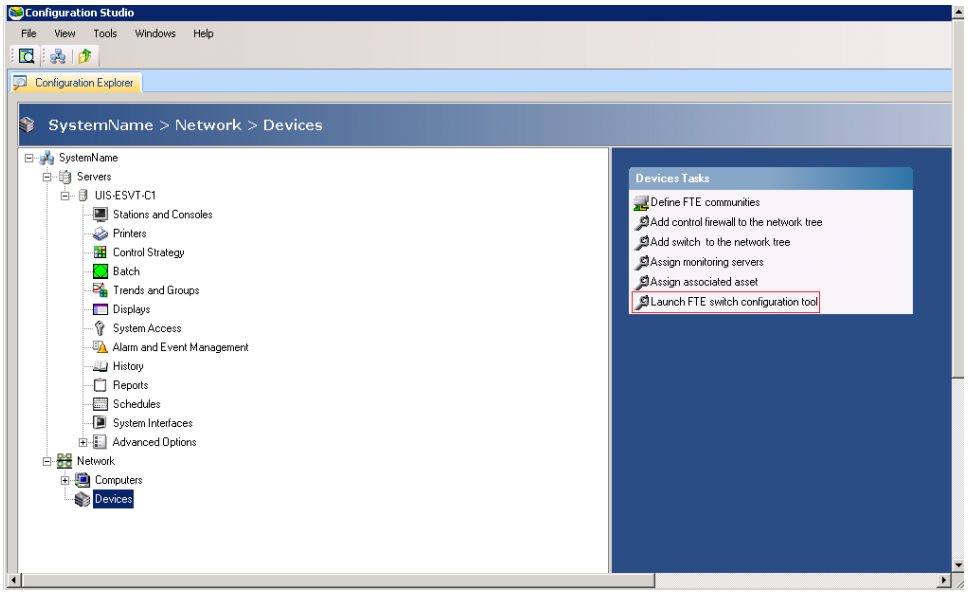
Launch switchtool.exe.

The **Switch Configuration Tool** is launched.

5.1.2 Launching Switch Configuration tool from Configuration Studio

To launch the tool from Configuration Studio

1. In the **Configuration Studio window**, click **SystemName** > **Network.**



2. On the right pane, from Devices Tasks, click Launch FTE switch configuration tool. The Switch Configuration Tool is launched.

5.2 Checklist for configuring a switch

The following provides a high level task for creating or configuring a switch.

1. Gather switch information and design network per the Fault Tolerant Ethernet Overview and Implementation Guide.
2. Using the Switch Configuration Tool establish a serial connection with the switch.
3. Configure the basic setup for the switch as per the Fault Tolerant Ethernet Overview and Implementation Guide. That is, set up the switch password and VLAN. You need not enter the data such as IP address and other items as this is done by the tool.
4. Start the Switch Configuration Tool, and select the switch type.
5. Select the port types.
6. Configure the Yellow Switch first.
7. In the General tab, enter the following information.
8. In the Banner Text area you can type any special command For example, if FTP command is to be setup, enter the commands in the Banner Text area as per the Fault Tolerant Ethernet Overview and Implementation Guide.
9. Determine if the switch is used for eUCN.
10. Determine if this is a top switch and if it is connected to the router
11. In the SNMP/NTP tab, configure SNMP related fields such as primary and secondary hosts.
12. In the port configuration tabs, set up ports as uplinks, L1 Nodes or L2 Nodes, and enter the description.Return to the General tab and review the entered data.
13. Save the switch configuration.

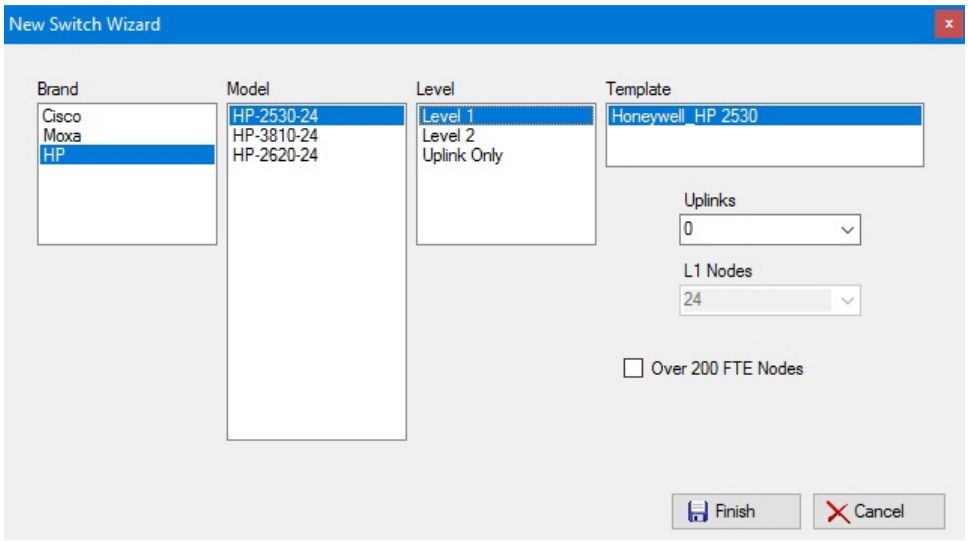
14. Repeat the procedure to generate the Green Switch file.
15. Compare the Yellow and Green switch configurations and change any inconsistencies.
16. Save the changes in a project that includes both files, if desired.
17. Generate the downloadable Text file for each switch. Review the text file before saving it.
18. Download the generated switch file to the switch using the serial connection for a new switch. For an existing switch on the network the telnet connection can be use.

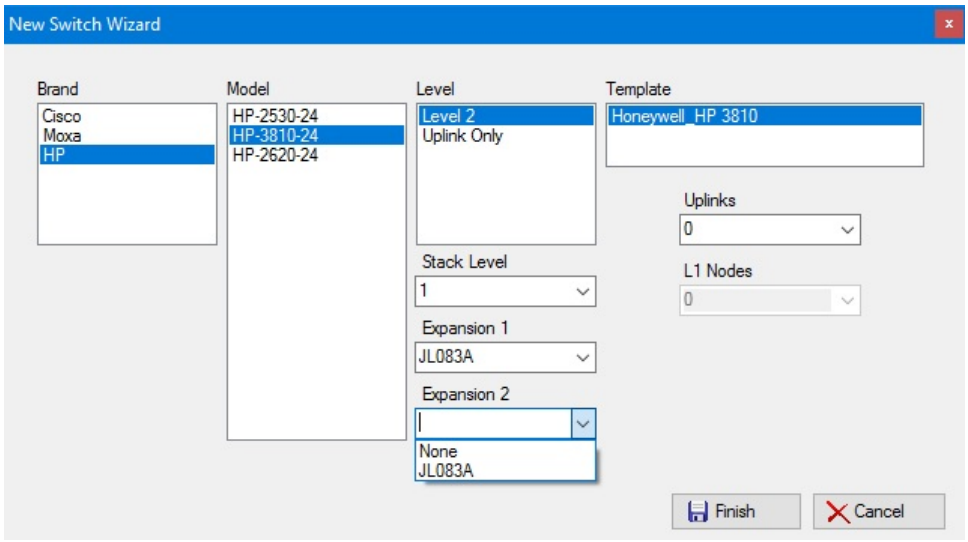
> **ATTENTION**
>
> After the reload command is implemented, the telnet connection will be lost, to view the boot up sequence of the switch, you must establish a serial connection with the switch.

5.3 Creating a new switch configuration

To create a new switch configuration

1. In **Switch Configuration Tool window**, click **Configure** a new Switch. The **New Switch Wizard** appears. Level 1 and Level 2 windows are shown below.





2. Select the required **Brand** and **Model**.

   Expansion modules can be added and modified later. If you are configuring a fiber expansion module, due to hardware limitation, it must be the last expansion module in series. So if the Fiber 8 was selected for Expansion 1 then there will be no Expansion 2 selection.

3. Select the required Level.

5.4 Saving switch configuration

When the configuration steps are complete, save the file using the  icon at the top of the toolbar. The name in the tree view in the left side pane changes to the saved name. Ensure to match the host name set in the Host Name box in the General tab for consistency. This only saves the internal format (*.slf files) for the switch configuration for use in the future.

These files can be used with newer versions of the Switch Configuration Tool. When you re-generate the *.txt files, updates to switch configurations are included in the newly generated file. As a result, a newer version of the switch configuration can be generated without re-entering the data, by opening the *.slf file in the new Switch Configuration Tool version and regenerating the text file.

5.5 Opening existing switch configuration files

To open an existing switch configuration file

1. Select the  icon on the toolbar. OR
2. Choose File > Open > Switch Configuration File. The Open dialog box appears.
3. Browse to the directory location where the file that is to be opened is located.
4. Select the file, and then click Open. The selected file appears in the tree.
5. To make modifications to the file, select the file in the tree.
6. The details appears on the right pane.
7. Edit the file and save.

This file can also be modified to create a new file similar just save it as a different name. Ensure that while saving the new file name, not to overwrite the file being copied. The save selection in some cases require the name to be re-selected or entered before it can be saved.

Creating a file that contains default values such as the ports configuration and SNMP and Banner text can be used as a baseline to generate similar files by just opening the template *.slf and changing the unique data such as switch name, Yellow or Green, IP Address and banner text. Many files can be generated quickly this way.

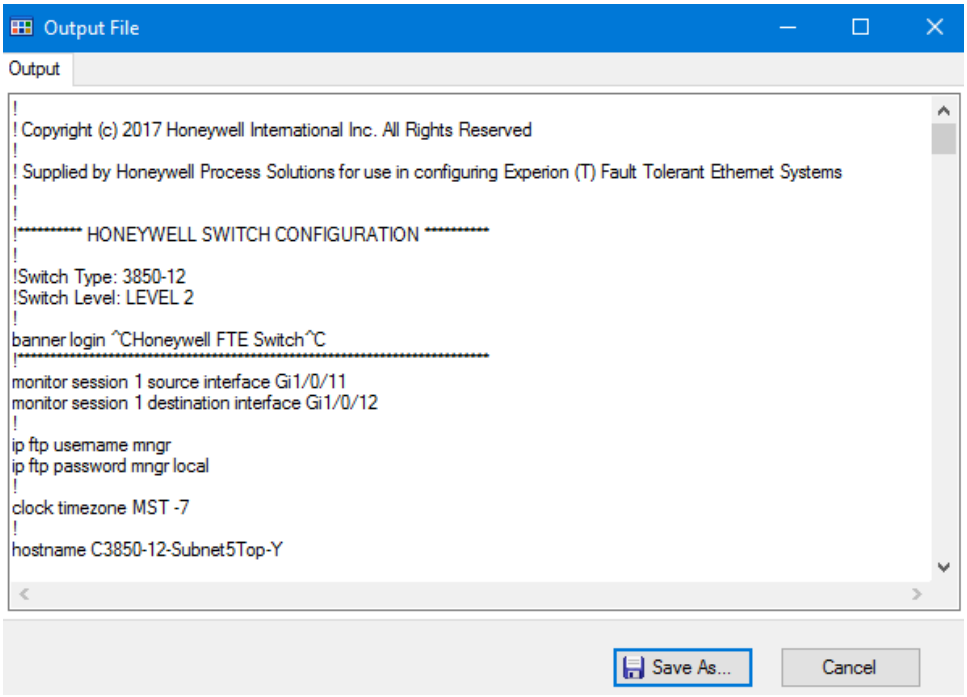
This can reduce the risk of errors by getting the first configuration correct then generating the rest based on this file.

> **ATTENTION**
>
> If the switch file was saved with a different name than originally opened the new file name appears in the Switch file tree and the original file will no longer be open in the switch tool. You must reopen the original file using the Open Switch Configuration file option.

5.6 Generating Text files

A text version of the file must be saved for reviewing and downloading it to a switch. To generate text files.

1. Select  icon on the toolbar.
   The Output File dialog box appears.



2. Review this file to ensure it meets all expectations.

3. Any errors discovered during the file generation appears in an error tab. Review the error tab and correct the issues.

4. Select  icon on the toolbar to generate the text file again.

5. If an Error tab is shown next to the Output tab, fix any errors shown below the Error tab. The Error tab shows when there is an issue when generating the file.

6. Click Save As to save the generated text file.

Ensure that the file name matches the hostname for consistency.

If additional items are added in the text file, they will not be saved in the internal format file saved earlier that can be reloaded in the future for configuration modifications. Any additional configuration items must be added in the Banner Text box and then be saved in the internal format. Then the additional instructions appear in both the text file used for configuration and is available when the internal file is loaded at a future time.

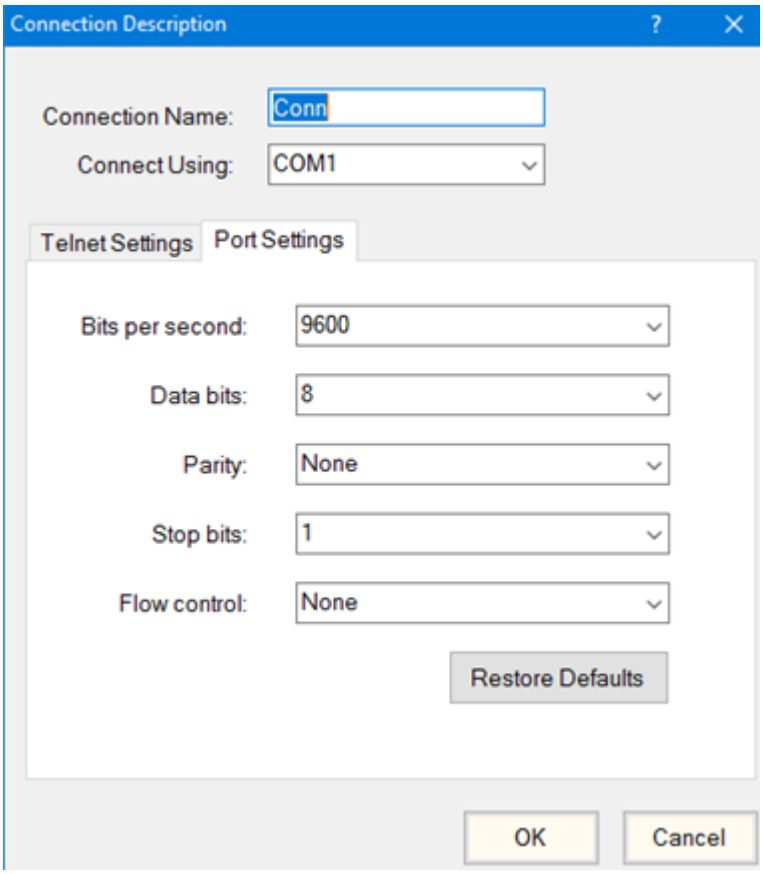
5.7 Establishing a serial or telnet connection using Switch Configuration

This section describes the tasks to establish a serial or telnet connection with a switch.

Establishing a serial connection using the Switch Configuration Tool

To establish a serial connection using the Switch Configuration Tool

1. In the **Switch Configuration Tool** window, click icon. The **Connection Description dialog** box appears.



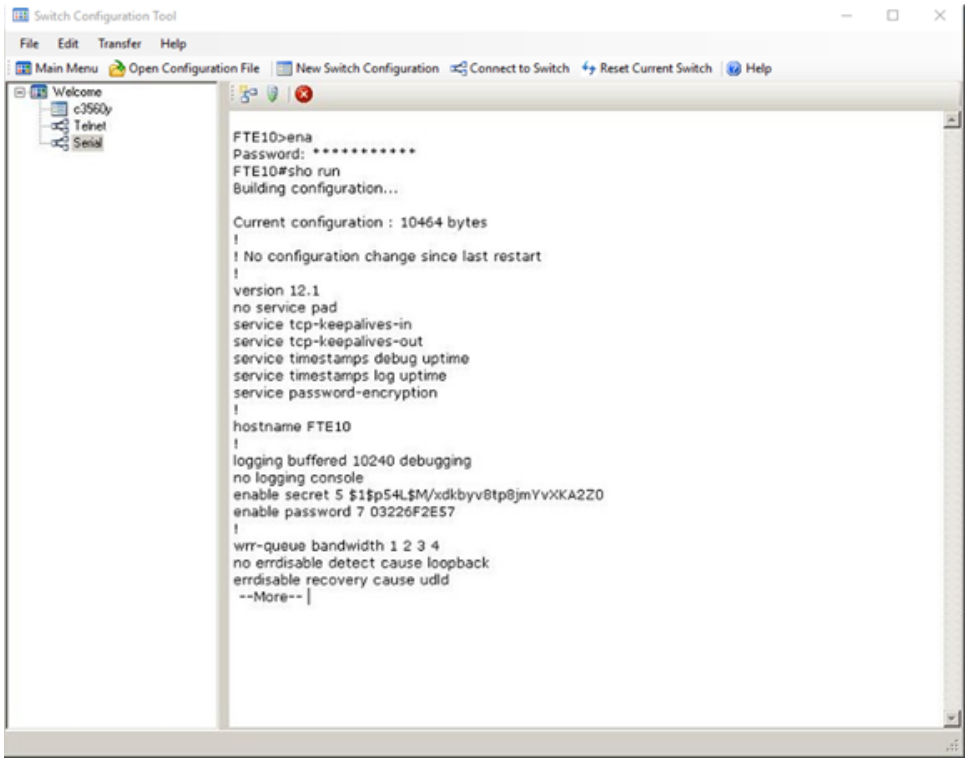
2. Select **Port Settings** tab.

3. In the **Connection Name field**, type a name for the connection.

4. From the **Connect Using lis**t, select the appropriate com port. Other parameters must be left in the default state.

5. Click **OK.**

6. The switch name prompt must appear in the main window pane.



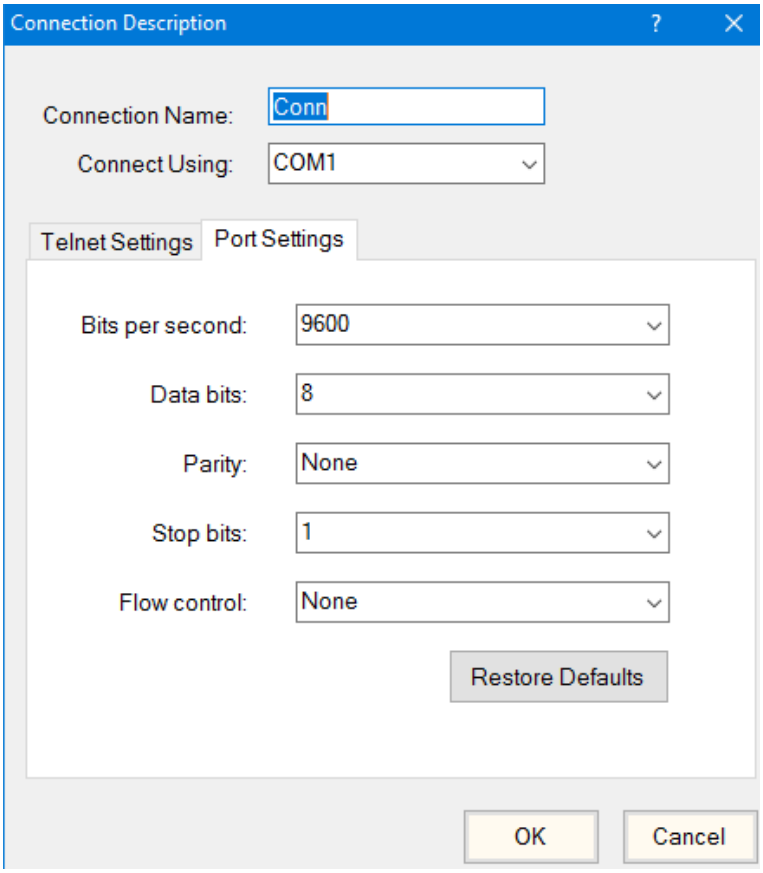
5.8 Tool

This section describes the tasks to establish a serial or telnet connection with a switch.

5.8.1 Establishing a serial connection using the Switch Configuration Tool

To establish a serial connection using the Switch Configuration Tool

1. In the Switch Configuration Tool window, click  icon. The Connection Description dialog box appears.



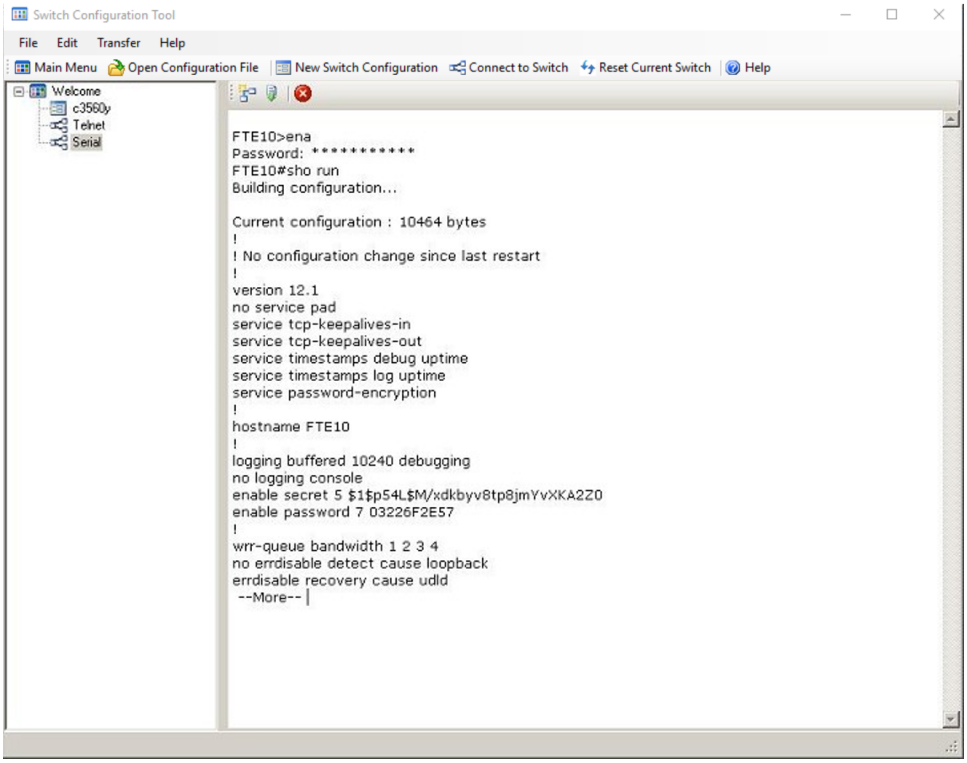
2. Select Port Settings tab.

3. In the Connection Name field, type a name for the connection.

4. From the Connect Using list, select the appropriate com port. Other parameters must be left in the default state.

5. Click OK.

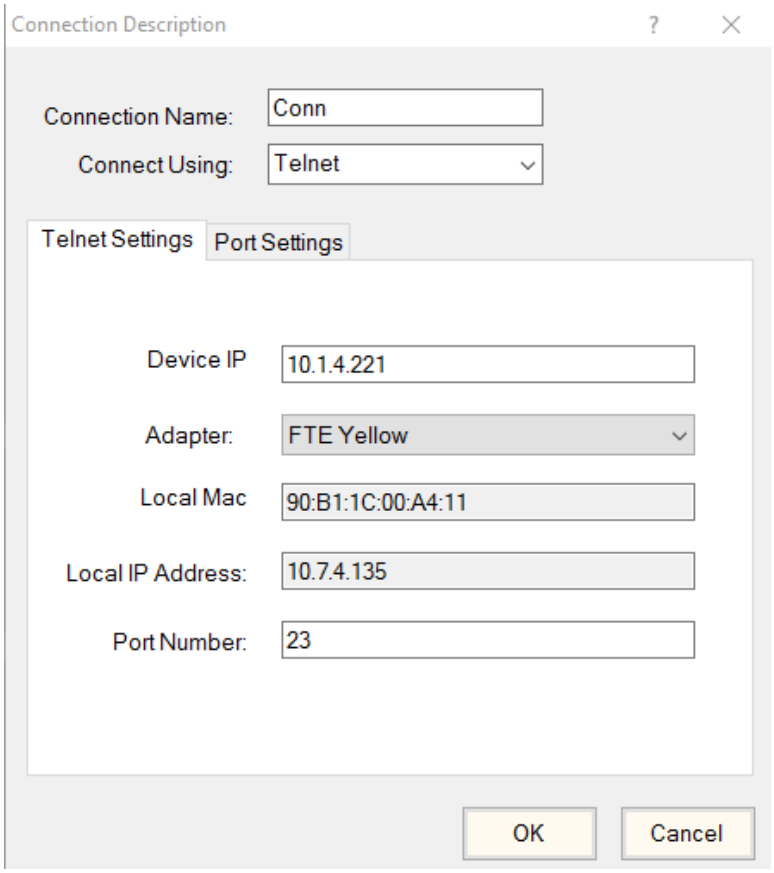
6. The switch name prompt must appear in the main window pane.



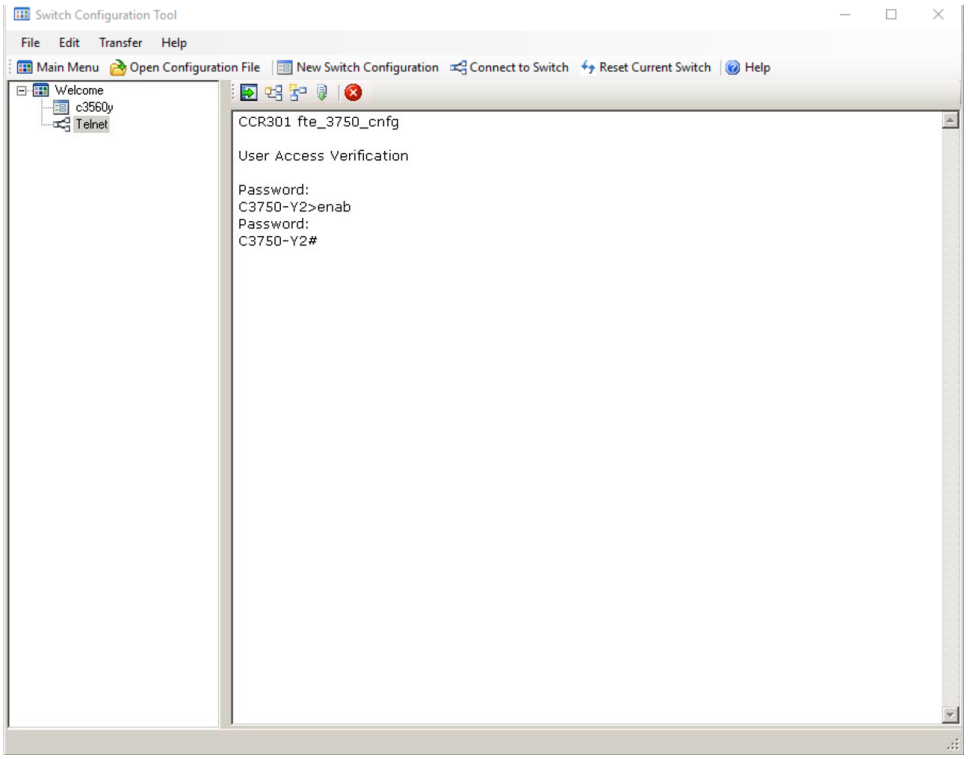
5.8.2 Establishing a telnet connection using the Switch Configuration Tool

To establish a telnet connection using the Switch Configuration Tool

1. In the Switch Configuration Tool window, click  icon. The Connection Description dialog box appears.
2. Select Telnet Settings tab.



3. Enter the IP address for the switch to configure and then on the computer select the interface to use.
4. Click OK.
5. The switch name prompt must appear in the main window pane.

6. 

ATTENTION

If you set up SSH and if you run the crypto image of IOS, then the telnet session will not be supported.

5.9 Loading the switch with new configuration

Once a switch has been configured and the switch text file has been generated, the data can be downloaded into the switch though a Serial or Telnet connection. The computer requires a serial connection to the switch being updated when using the serial method.

The following table provides the high level tasks for downloading the switch files in the switch.

Task	Refer to
1. Connect to the switch	Create a Serial or Telnet connection to the switch. ■ Refer to the section "Establishing a serial connection using the Switch Configuration Tool" on page 46 ■ Refer to the section "Establishing a telnet connection using the Switch Configuration Tool" on page 47
2. Download the switch text.	Download the switch text file created in the switch configuration form using the Telnet or Serial connection from the step above. The file must be copied to a switch flash file with a .txt or .text extension. ■ Refer to the section "Downloading the switch configuration file using serial connection" on page 51 ■ Refer to the section "Downloading the switch configuration file using telnet connection" on page 53
3. Loading the switch file to the running configuration	Refer to the section "Loading the switch file to the running configuration" on page 54 Verify the file loaded. Address any errors or warnings that occurred during the download. **ATTENTION** Loading to the running configuration can only be performed when connected to the switch using the serial(COM) port).
4. Copy the configuration file to a switch flash file.	Refer to the section "Copying the configuration file to a switch flash file" on page 56

CAUTION

The download capability in the switch tool is not be used for IOS download. These files cause the switch tool to crash and you will lose all of the work, if the configuration was not saved before the crash. To update the IOS you must use a FTP Server and separate telnet session from another telnet tool.

Refer to the Fault Tolerant Ethernet Overview and Implementation Guide for information about methods on how to update the switch IOS.

ATTENTION

The tool cannot be used to download the configuration for the Cisco SFE 2000, 2960X, 2960XR and 3850 switches, but can only be used to generate the text file. Refer to the appropriate Honeywell Installation Guide for more information on configuring these switches.

The following toolbars appear on the switch configuration form after making a serial/telnet connection with the switches.

Related topics

“Downloading the switch configuration file using serial connection” on page 51

“Downloading the switch configuration file using telnet connection” on page 53

“Loading the switch file to the running configuration” on page 54

“Copying the configuration file to a switch flash file” on page 56

Downloading the switch configuration file using serial connection on Cisco switches

ATTENTION

This section provides an example specific to Cisco switches. Consult the appropriate documentation for information relevant to other switch brands.

This is the initial preferred method for configuring a new switch or existing switch not accessible on the network. This requires the serial cable that was supplied with the switch being configured. Make a note of which serial connection the cable was attached. Typically, a Honeywell-qualified workstation platform has two serial connections to choose from.

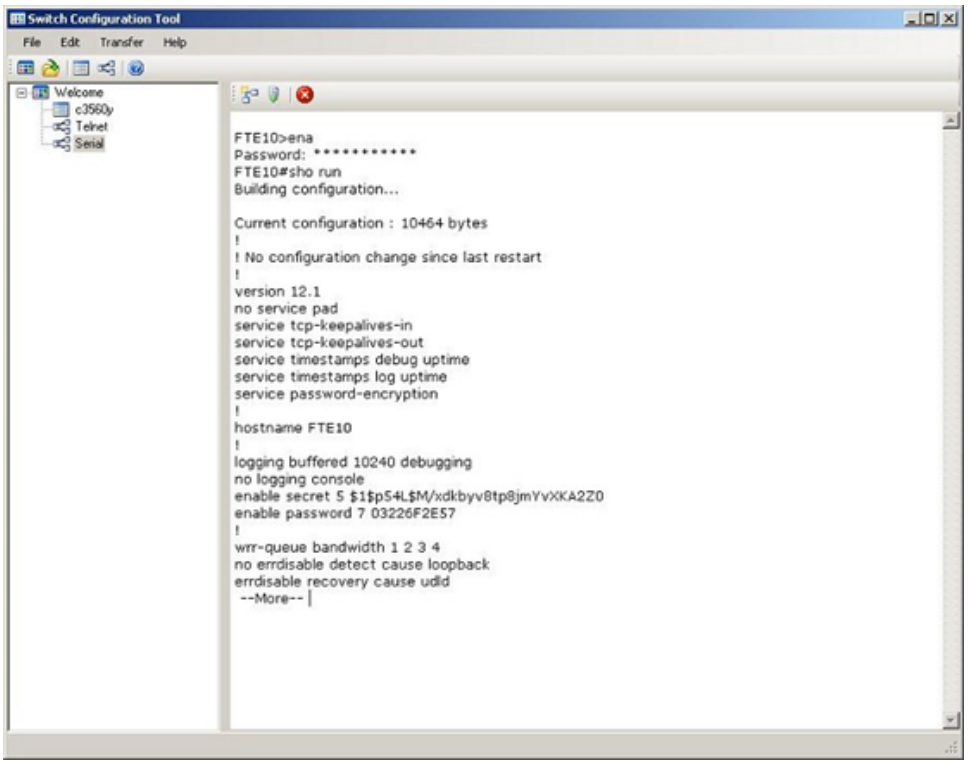
Prerequisites

If the switch is new, you must configure the switch as per the Fault Tolerant Ethernet Overview and Implementation Guide. You can also configure the switch as per the Fault Tolerant Ethernet Overview and Implementation Guide using the Switch Configuration Tool. The serial interface can be used to perform these procedures.

To download the switch configuration file using serial connection

1. Establish a serial connection with the switch. Refer to the section “Establishing a serial connection using the Switch Configuration Tool” on page 46.

2. Once the serial connection is established with the switch the following window appears.



3. In the right pane, for a previously programmed switch type enable <cr> and then enter the enable secret password.

4. To clear the switch type “write erase” <cr>.

ATTENTION

This removes the config.text file from the switch FLASH memory. Backup of this file would be prudent if a return to the previous switch configuration is desired.

CAUTION

It is important to remember that the switch will revert to initial configuration. This must not be performed on a switch that is on process. The interface configuration will be auto and will not connect, and a split switch will lose the isolation of the two VLANs.

1. Verify the prompt: Erasing the nvram file system will remove all configuration files! Continue? [confirm].

2. Type Y to erase all configuration files.

3. Type reload.

4. The prompt System configuration has been modified. Save? [yes/no]: appears:

5. Verify the prompt and type Y.

6. The prompt Proceed with reload? [confirm] appears.

7. Type Y.

8. When the switch reloads, proceed with the initial configuration using Fault Tolerant Ethernet Overview

and Implementation Guide. It is a good idea to configure the passwords desired in this initial configuration. All other configuration items including VLANs and hostname can be performed using the tool.

9. After initial configuration the switch can be loaded using the tool. Login into the Switch

10. Type enable and the enable secret password after the prompt appears, from the initial configuration.

5.9.1 Downloading the switch configuration file using serial connection on Cisco switches

> **ATTENTION**
>
> This section provides an example specific to Cisco switches. Consult the appropriate documentation for information relevant to other

This is the initial preferred method for configuring a new switch or existing switch not accessible on the network. This requires the serial cable that was supplied with the switch being configured. Make a note of which serial connection the cable was attached. Typically, a Honeywell-qualified workstation platform has two serial connections to choose from.

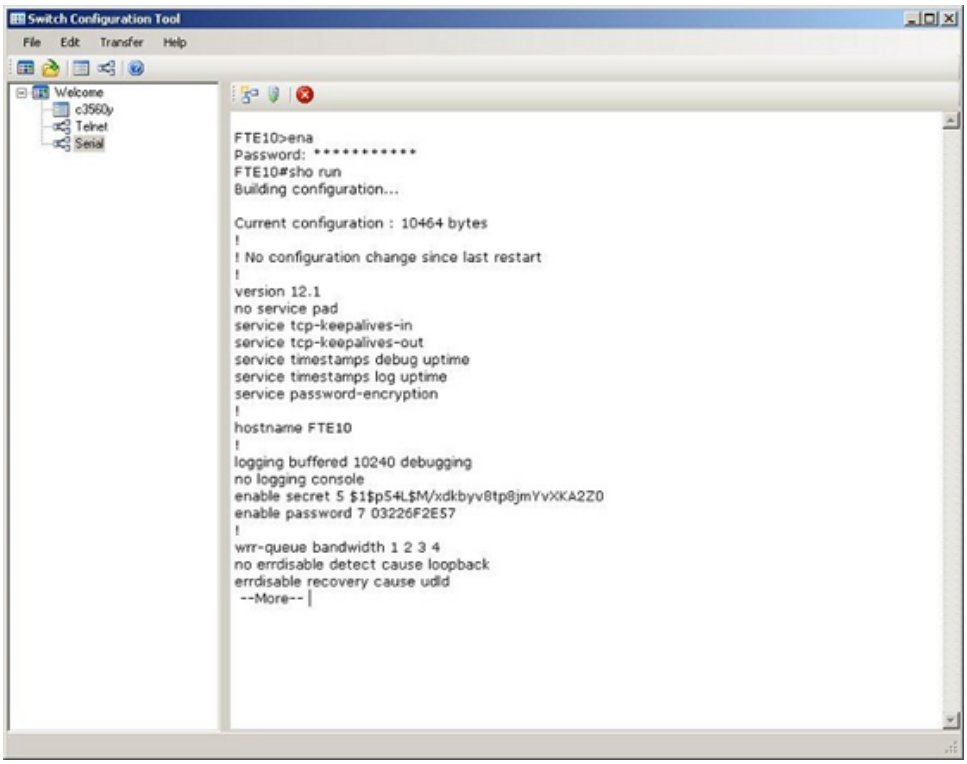
Prerequisites

If the switch is new, you must configure the switch as per the Fault Tolerant Ethernet Overview and Implementation Guide. You can also configure the switch as per the Fault Tolerant Ethernet Overview and Implementation Guide using the Switch Configuration Tool. The serial interface can be used to perform these procedures.

To download the switch configuration file using serial connection

1. Establish a serial connection with the switch. Refer to the section “Establishing a serial connection using the Switch Configuration Tool” on page 46.

2. Once the serial connection is established with the switch the following window appears.



3. In the right pane, for a previously programmed switch type enable <cr> and then enter the enable secret password.

4. To clear the switch type “write erase” <cr>

ATTENTION

This removes the config.text file from the switch FLASH memory. Backup of this file would be prudent if a return to the previous switch configuration is desired.

CAUTION

It is important to remember that the switch will revert to initial configuration. This must not be performed on a switch that is on process. The interface configuration will be auto and will not connect, and a split switch will lose the isolation of the two VLANs.

6. Verify the prompt: Erasing the nvram file system will remove all configuration files! Continue? [confirm].

7. Type Y.

8. The Verify Erase of NVRAM: Complete prompt appears.

9. Type reload.

10. The System configuration has been modified. Save? [yes/no] prompt appears.

11. Type n and verify the prompt Proceed with reload? [confirm].

12. Type Y.

13. The switch must be connected to a serial connection to complete the configuration.

14. When the switch reloads, proceed with the initial configuration using Fault Tolerant Ethernet Overview and Implementation Guide. It is a good idea to configure the passwords desired in this initial configuration. All other configuration items including VLANs and hostname are done by the tool.

5.9.2 Downloading the switch configuration file using telnet connection on Cisco switches

> **ATTENTION**
>
> This section provides an example specific to Cisco switches. Consult the appropriate documentation for information relevant to other switch brands.

Use this method for existing switches when their configuration is being updated or changed. To use telnet, the switch must already be on the network and configured with an IP address and even a default gateway depending on where on the network your telnet session is to be run.

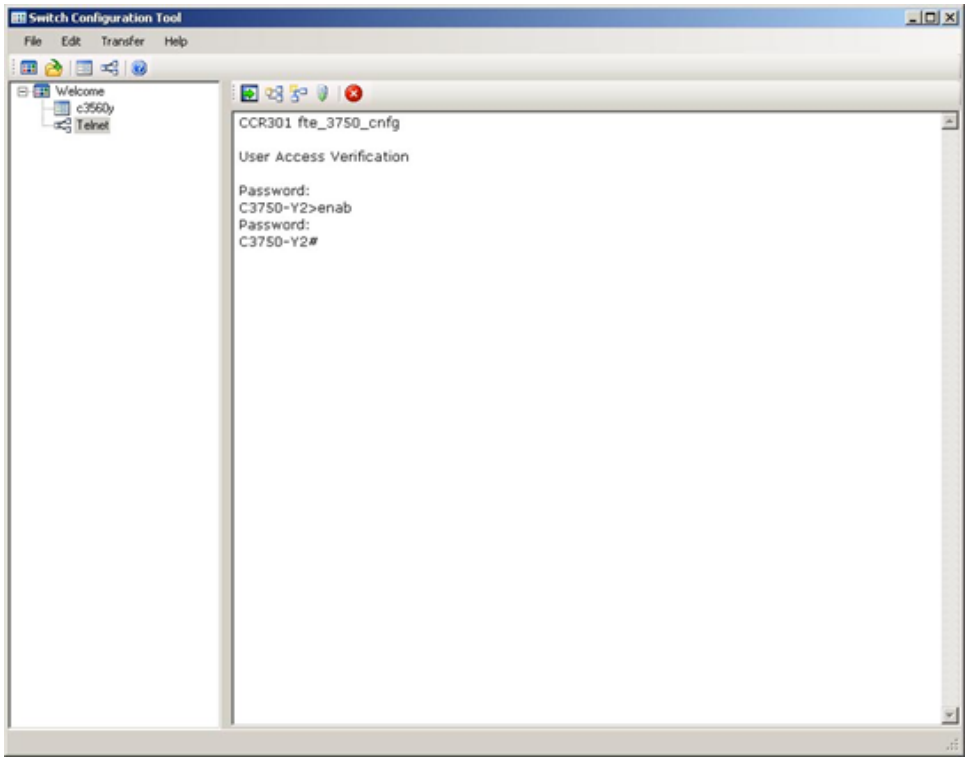
This is also a good way to back up a currently configured switch by using Trivial File Transfer Protocol (TFTP) to back up the existing switch configuration to a text file on the PC.

When you download a switch configuration using TFTP, you must first transfer the file to a flash device. Do not load a switch configuration directly to the running configuration. After the file has been transferred to a flash device, it can be loaded to the running-configuration.

To download the switch configuration file using telnet connection

1. Establish a telnet connection with the switch. Refer to the section “Establishing a telnet connection using the Switch Configuration Tool” on page 47.

2. Once the serial connection is established with the switch the following window appears.



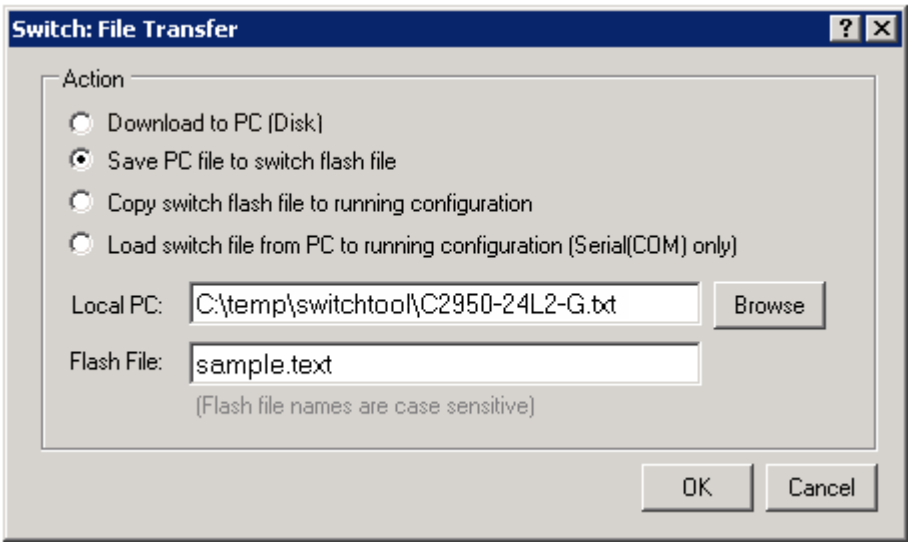
3. In the right pane, type the **Virtual Terminal Password** that was originally setup.

4. Type **enable** and the enable secret password after the prompt appears from the initial configuration.

5. Click the icon.

6. The **Switch File Transfer** dialog box appears.

7. Select **Save PC** file to switch flash file to copy the configuration text file to the flash file of the switch.



1. Browse to the location of the text version of the configuration file saved.

2. Enter the name of the file, which must be saved on the switch.

3. Click OK.

4. The tool issues the commands for tftp and send the file. Verify the file was saved using command in the telnet window and type dir and verify the file was created that is sample.text appears in the flash directory on the switch.

5. Type write erase <cr> to clear the switch.

> **ATTENTION**
>
> This removes the config.text file from the switch FLASH memory. Backup of this file would be prudent if a return to the previous switch configuration is desired.

> **CAUTION**
>
> It is important to remember that the switch reverts to initial configuration. This must not be performed on a switch that is on process. The interface configuration will be auto and will not connect, and a split switch will lose the isolation of the two VLANs.

6. Verify the prompt: Erasing the nvram file system will remove all configuration files! Continue? [confirm].

7. Type Y.

8. The **Verify Erase of NVRAM**: Complete prompt appears.

9. Type **reload.**

10. The **System configuration has been modified. Save?** [yes/no] prompt appears.

11. Type **n** and **verify the prompt Proceed with reload**? [confirm].

12. Type **Y.**

13. The switch must be connected to a serial connection to complete the configuration.

14. When the switch reloads, proceed with the initial configuration using *Fault Tolerant Ethernet Overview and Implementation Guide*. It is a good idea to configure the passwords desired in this initial configuration. All other configuration items including VLANs and hostname are done by the tool.

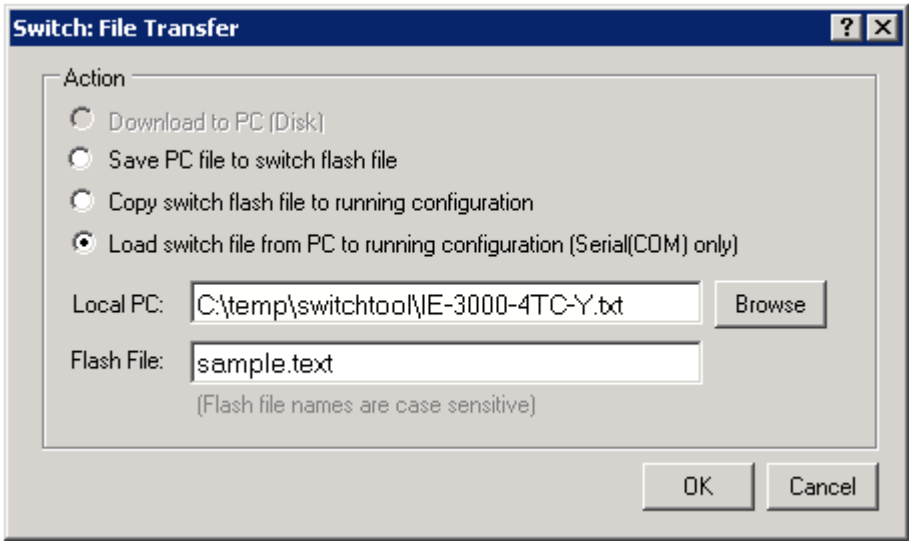
5.9.3 Loading the switch file to the running configuration

To load the switch file to the running configuration using serial connection

1. Click the icon on the toolbar.

The **Switch File Transfer dialog** box appears.

2. Select Load switch file from PC to running Configuration (Serial (COM) only).



3. Browse to the location of the text version of the configuration file saved in a previous step and then click

4. OK.

5. The tool issues the commands for xmodem and sends the file.

6. In the serial connection window, verify the load using the show run command.

7. The tool automatically writes a mem command when the file is loaded. A dir command displays that the config.text file is present indicating the write mem command was successful.

8. Type show run, and verify the setting match what was contained in the file downloaded.

9. Type reload, if the configuration was not saved the prompt, System configuration has been modified. Save? [yes/no] appears.

10. Type Y.

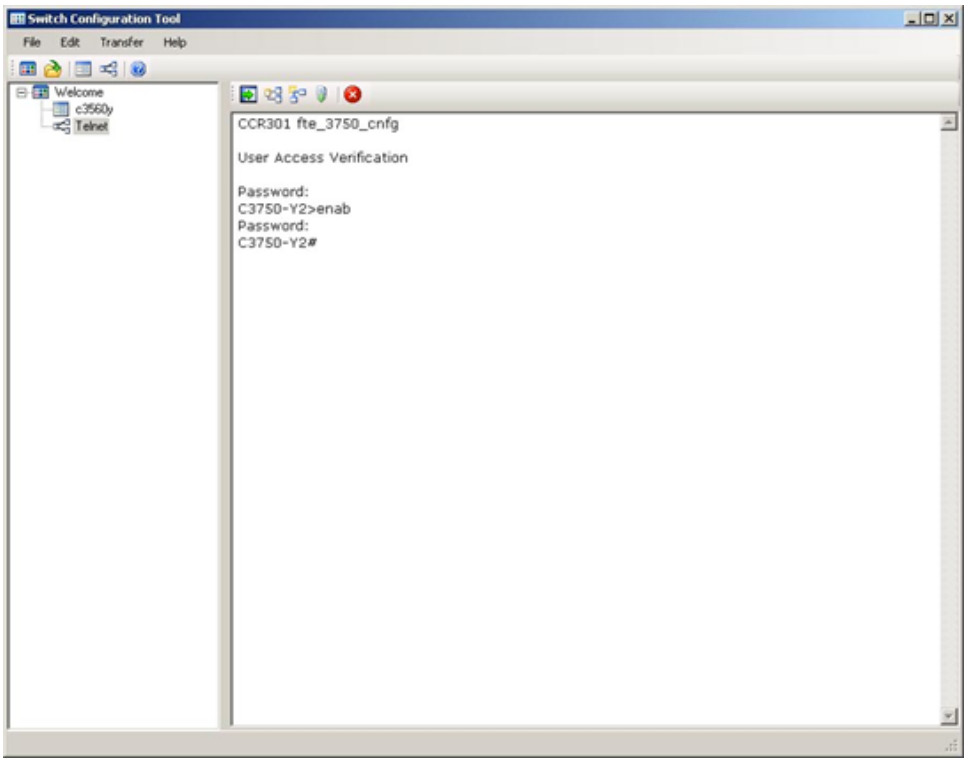
11. Verify the prompt Proceed with reload? [confirm].

12. Type Y.

The switch is now ready for deployment.

To load the switch file to the running configuration using telnet connection

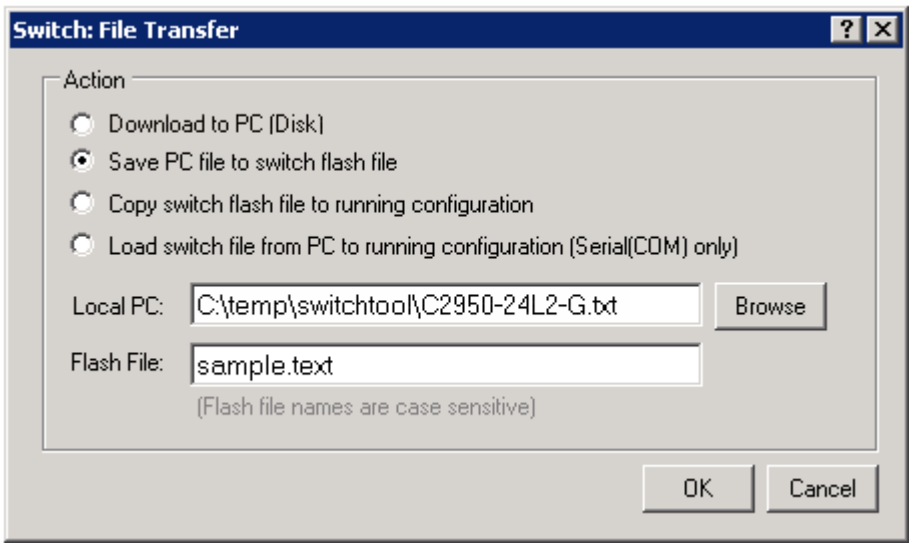
1. In the telnet connection window, in the right pane, type enable and the enable secret password.



5.9.4 Copying the configuration file to a switch flash file

To copy the configuration file to a switch flash file

1. Click the  icon.
   The Switch File Transfer dialog box appears.
2. Select Save PC file to switch flash file to copy the configuration text file to the flash file of the switch.



3. Click Browse and navigate to the location on the switch flash file where you want to take a backup of the configuration file.
4. Click OK.

5.10 Backing up the current switch configuration

To take a backup of the current switch configuration

1. Establish a serial or telnet connection with the switch. Refer to the section "Establishing a serial or telnet connection using Switch Configuration Tool" on page 46.

5.11 L2.5 switch configuration

Use the existing templates available with the Experion release for configuring the L2.5 switches.

CHAPTER

6

PROJECTS

Projects are a way of grouping switch configuration files together. When a project is opened it opens all of its associated switch configuration .slf files and they are listed in the under the project tree. This makes it easy to access all of the switch configurations at one time for across the network changes.

Related topics

“Creating projects” on page 62

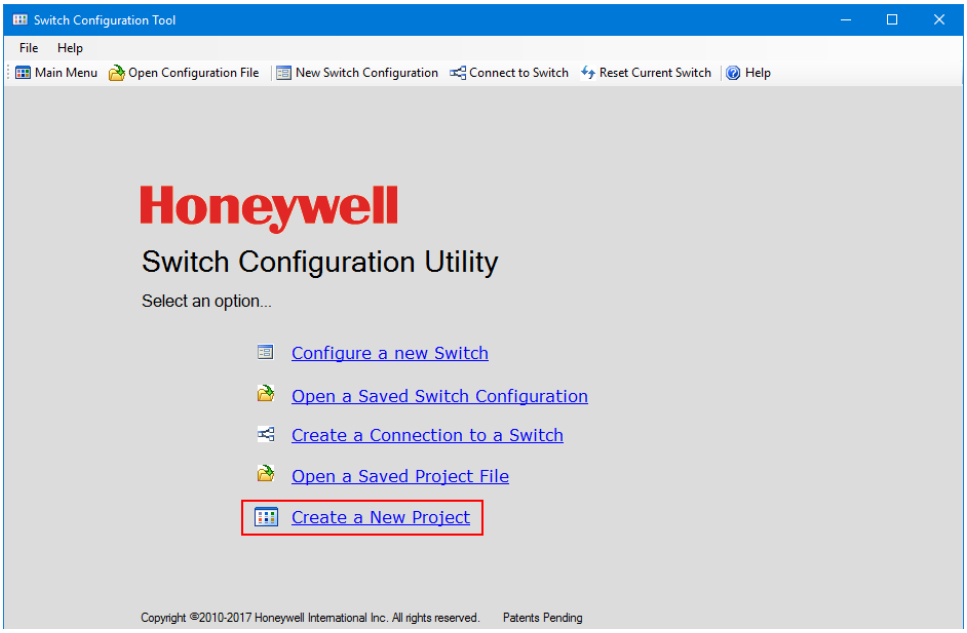
“Opening projects” on page 64

“Saving projects” on page 66

6.1 Creating projects

The project file can be created after creating multiple switch configuration files or just one of the file. To create a project, on the Switch Configuration Tool window choose File > Save Project As.

1. In the Switch Configuration Tool window, click Create a New Project.



The New dialog box appears.

2. In File name, type an appropriate name for the project. For example, type Sample.

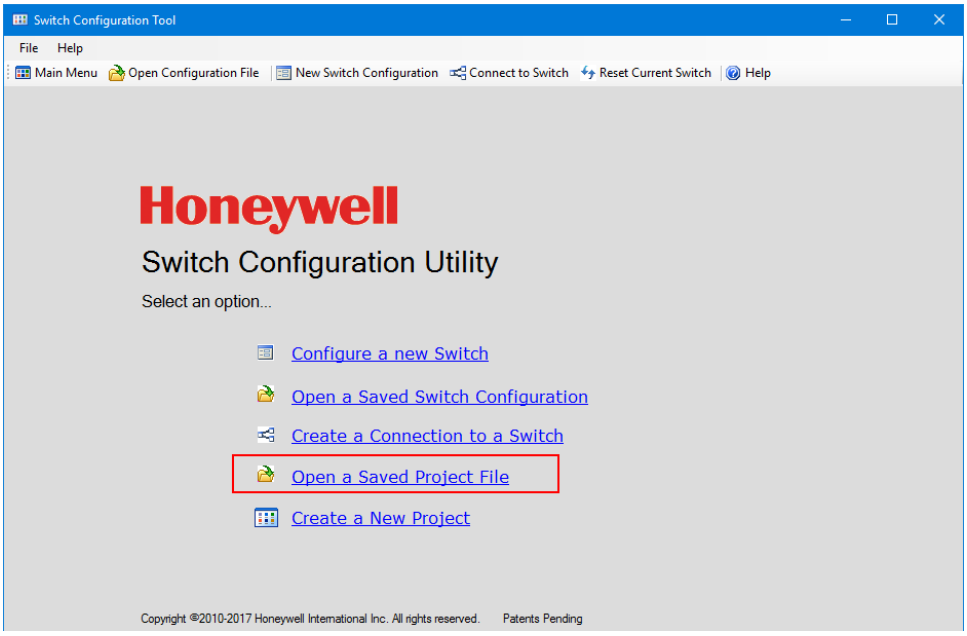
3. Click Open.

6.2 Opening projects

You can make changes or review a complete network configuration by opening an existing project. When you open an existing project, all the switch files in the project are loaded.

To open an existing project

1. In the Switch Configuration Tool window, click Open Saved Project File.



The **Open dialog box** appears.

2. Browse to the directory where your files are located and select the project file.

The selected project and all the switch files in the project are listed in the left pane.

3. Review or edit the switch files of the project.

The project does not change the individual switch files, so each file that is changed will be as last saved even if was changed after the project was saved.

ATTENTION

If all of the files are moved to another folder path different from the when the project file was saved, the tool does not open the files, due to the change in file location. You must save the project file by opening the switch files from their new location and then re-saving the project.

ATTENTION

You must open one project at a time. Opening more than one project can cause the same switch file to be listed many times. To open a different project, first close the tool, then restart and open the new project or delete all of the switch files from the tree. You can delete all the files from the tree by selecting the switch file and using the Delete option. The delete option only deletes the switch file from the tree and not from the file system.

6.3 Saving projects

When saving a project ensure the file locations are where they reside while making changes to the switch files. Saving a project file is just like saving a file that contains a list of file paths. If the files are moved from the original path, then the files must be opened in the new location to ensure that, when the project file is saved it has the correct file location information.

To save a new project file in the Switch Configuration Tool window, choose File > Save Project As and enter the location and file name to be saved.

To save changes to the currently open project choose File > Save Project.

CHAPTER

7

CUSTOMIZING SWITCHTOOL

Switchtool is the user interface to a switch configuration file generator. Behind the scenes, there is a file (switchdescription.xml) that outlines the switches that are supported, and the characteristics for those switches. There is another set of files, commonly referred to as “templates”, which are used to create the configuration files based on the user’s input to Switchtool.

While it is generally not advised to modify the files used by Switchtool, advanced users are able to customize the output of the files generated for specific needs (e.g. site specific network configurations), by modifying these files.

> **CAUTION**
>
> Modifying the configuration files for Switchtool may cause the tool to become inoperable.

7.1 Switch Definition File (switchdescription.xml)

switchdescription.xml defines all the switches supported by Switchtool, and the characteristics of those switches. What follows is an example definition for a non-existent switch, in which every option is identified and explained.

<?xml version="1.0"?>

<QualifiedSwitches>

<!-- bunch of other switches -->

<Switch>

<Model>

<Mfg>Honeywell</Mfg>

<!-- Mandatory Field Manufacturer's name. This shows up in the switch configuration

wizard to identify supported switches -->

<Name>HW-2112-24</Name>

<!-- Mandatory Field Model number. This shows up in the switch configuration wizard to

select a specific model of switch. Note that, in this example, there is a '-24' at the end.

This is to specify how many ports the switch supports. Some devices, with the same

model number, may support different numbers of ports. In Switchtool, we treat each

type of model as a distinct entry. The tag <name> is a holdover from previous versions

of the software. -->

</Model>

<!-- The next section specifies the leading string that denotes a comment section for a given switch.

Switchtool does not support comments spanning more than one line. If this section is not defined,

then it is assumed that the leading string is "!" -->

<Comment>!</Comment>

<!-- Next follows the option to specify a switch specific banner. The section itself is optional, however,

the following string will be used if not a banner is not specified: "banner login ^CHoneywell FTE Switch^C"

One may simply create a banner with an empty string if the default is not desired. If the switch model is to be

included in the banner, insert $SWITCHMODEL into the string, and it will be substituted for the switch's

model name -->

<Banner>

<BannerText> banner motd "\" SCT $SWITCHMODEL\"" </BannerText>

<BannerText> banner exec "\" FTE SWITCH TOOL $SWITCHMODEL\""</BannerText>

</Banner>

<!-- The following 4 entries enable checkboxes within switchtool to enable some sort of functionality. Most

should be obvious, except for Over200Nodes. That checkbox is to tell a level 1 switch that there may be

more than 200 downstream devices and a different storm control configuration is necessary. All are

Booleans and should be either 'true' or 'false'. They are not mandatory, will default to 'false' if not called out. -->

<AllowSSH>true</AllowSSH>

<AllowTelnet>false</AllowTelnet>

<AllowTFTP>false</AllowTFTP>

<Over200Nodes>true</Over200Nodes>

<!-- The following 6 entries tell switchtool where in the Experion hierarchy the switch may reside. All are

Booleans and should be either 'true' or 'false' -->

<Level1>false</Level1>

<!-- Mandatory Field -->

<Level2>true</Level2>

<!-- Mandatory Field -->

<Mixed>false</Mixed> <!-- Mandatory Field -->

<Split>false</Split> <!-- Mandatory Field -->

<UplinkOnly>true</UplinkOnly> <!-- Mandatory Field -->

<Modbus>false</Modbus> <!-- Mandatory Field -->

<!-- The next four sections specify a list of configuration options available to a port, depending on

options that the user specifies in the SwitchTool UI. These four sections only apply to the one

interface group specified as: <Interface> <Name> FastEthernet </Name> <Interface> (Note:

further along in the file is an example and description of what an <Interface> section does)

The values in the list are used when the switch configuration file is actually generated. While

one might use any values in these lists, generally each entry is used to differentiate between port

configurations. For example: - 'EIM' might specify that a port is an endpoint, meaning that the

configuration for that port might need an entry to tell the switch to enable BPDU guarding –

'Uplink' might specify that the port belongs to a specific spanning tree configuration When the

script is to generate a config that is setting up a port of type 'EIM', it gets a different configuration

than a port set up to be an 'Uplink' -->

<L1Uplinks> L1Uplink </L1Uplinks>

<L1Nodes> FTEB;Safety Manager;FIM4;FIM8;C300;Other 10Mb;Auto </L1Nodes>

<L2Uplinks> 100Mb Auto Copper;Uplink;1Gb Full Uplink;10Gb Auto Uplink;Auto Copper;One Wireless FW;Modbus Firewall </L2Uplinks>

<L2Nodes> ACE;CF9;Console;EIM;Flex;Modbus Firewall;Virtual Machine (VM);Server;Safety Manager;TCMI;Other 100Mb;Other 1Gb;Other 10Gb;Digital Video Monitor(L2);Other Auto </L2Nodes>

<Interface>

<!-- <Interface> is to define a group of ports that are of the same type (e.g. BaseT or SFP). Switchtool

currently supports up to 4 separate <Interface> groups. Of the four defined groups (identified by using

the tag <name> within the Interface grouping): - FastEtherent - GBIC - Expansion1 - Expansion2. The

FastEthernet grouping is required to be defined. The others are optional. Note: The names 'FastEthernet'

and 'GBIC' are historical, and internal to Switchtool. The interface grouping can be of any like ports. The

user visible name is specified by the <caption> tag and illustrated below. -->

<Name>FastEthernet</Name>

<!-- Mandatory Field 'FastEthernet' is a required interface specification. Generally this is for the base

set of ports that a switch supports. Note: In switchtool UI, for each port, there is a pop-up menu to

define its configuration. The menu is populated from the items from items specified in the following

tags (specified before the first <Interface>

group: - <L1Uplinks> - <L1Nodes> - <L2Uplinks> - <L2Nodes> -->

<Caption>SFP+</Caption>

<!-- the name of this interface is not exposed in the switchtool UI. Instead, the 'Caption' tag provides a

name for the user to identify the port group with. -->

<RouterNodes>Router 100Mb;Router 1Gb;Router 10Gb;Router Auto</RouterNodes>

<!-- <RouterNodes> specify list of additional options for a port. This list added to the port's pop-up

menu when a user explicitly specifies the switch connects to an upstream router. -->

<NumPort>4</NumPort>

<!-- Mandatory Field <NumPort> specifies how many ports are in this interface group -->

</Interface>

<Interface>

<Name>GBIC</Name>

<Caption>SFP+</Caption>

<PortTypes>Shutdown;Auto;100FX Fiber;Digital Video Monitor(L2);L1Uplink;L2Uplink</PortTypes>

<!-- Mandatory Field <PortTypes> are the same as <L1Uplinks>, <L1Nodes>, <L2Uplinks>,

and <L2Nodes>. The exception being that these values only apply to the encapsulating interface. -->

<RouterNodes>Router 100Mb;Router 1Gb;Router 10Gb;Router Auto</RouterNodes>

<NumPort>2</NumPort>

</Interface>

<Interface>

<Name>Expansion1</Name>

<!-- The Expansion1 interface, while similar to GBIC, has one major difference: the user can specify

if it exists. Some switches have expansion modules that may or may not be installed. If a switch

has an expansion module installed, it can be specified in the UI, and the ports it contains can be

made available to be configured. -->

<Caption>Expansion 1 SFP+</Caption>

<PortTypes>Shutdown;100Mb Full Copper Uplink;1Gb Full Uplink;10Gb Auto Uplink;100Mb Full Copper;1Gb Full;10Gb Auto</PortTypes>

<RouterNodes>Router 100Mb;Router 1Gb;Router 10Gb;Router Auto</RouterNodes>

<WizardOptions>None;JL083A</WizardOptions>

<!-- These are the values exposed in the combobox used to specify something about the expansion

interface. There are three recognized values and a user may specify their own entries: - 'Yes'

means the interface is active or installed - 'No' means the interface is not installed or not active - 'None'

means the interface is not installed User specified values and 'Yes' are exposed in the $X1MEDIA

variable used by the switch template file. Otherwise $X1MEDIA is an empty string (meaning one

can test for "" to see if a user specified the existence of an expansion card/slot) -->

<UseComboBox>Yes</UseComboBox>

<!-- Used to control the visibility of the 'Expansion*" combobox on the switch selection wizard. - 'Yes'

means to make the combobox visible on the switch wizard. - 'No' the combobox will not be visible,

but the associated ports will be available anyway. 'Yes' is the default value if this entry does not exist -->

<NumPort>2</NumPort>

</Interface>

<Interface>

<Name>Expansion2</Name>

<!-- Expansion2 behaves just like Expansion1 -->

<Caption>Expansion 2 SFP+</Caption>

<PortTypes>Shutdown;100Mb Full Copper Uplink;1Gb Full Uplink;10Gb Auto Uplink;100Mb Full Copper;1Gb Full;10Gb Auto</PortTypes>

<RouterNodes>Router 100Mb;Router 1Gb;Router 10Gb;Router Auto</RouterNodes>

<WizardOptions>None;JL083A</WizardOptions>

<!-- This is the same as the previously mentioned <WizardOptions>, with the exception that it ties to

the $X2MEDIA variable in a switch template file -->

<UseComboBox>Yes</UseComboBox>

<NumPort>2</NumPort>

</Interface>

<Interface>

<Name>MaxInStack</Name>

<!-- This breaks the pattern that has been seen so far, but this interface group specifies a group of switches,

instead of a group of ports. Some switches allow for the concept of 'stacking' where multiple switches

are connected so they behave as a single switch. -->

<NumPort>2</NumPort>

<!-- Max Number of switches in stack -->

</Interface>

<Template>

<!-- This example contains only one template, but there may be as many different template sections as

there are switch levels defined. -->

<File>.\Templates\Example\HW_2112.stml</File>

<!-- Mandatory Field The <File> tag specifies the script file to be used to generate a switch configuration.

It has a path that is relative to the installation directory of SwitchTool. The normal installation location

is: C:\Program Files (x86)\Honeywell\Experion PKS\Engineering Tools\Switch Configuration So the

script file for this switch is located at: C:\Program Files (x86)\Honeywell\Experion PKS\Engineering Tools\Switch Configuration\.\Templates\Example\HW_2112.stml Note that the leading '.' is required. -->

<Level>Level1;Level2;UplinkOnly;Mixed;Split;Modbus</Level>

<!-- Mandatory Field The values in <Level> are exposed to the user to specify where in the network

hierarchy the switch resides. These correspond directly to the tags: <Level1> <Level2> <Mixed>

<Split> <UplinkOnly> <Modbus> If one of these tags is listed as 'true' then it's corresponding

value must be included in the list NOTE: If you have 2 or more template defined, you cannot

have the same level value in more than one template entry -->

<Description>Honeywell_HW 2112</Description>

<!-- Mandatory Field -->

</Template>

</Switch>

</QualifiedSwitches>

7.2 Template Files

In the same location as switchdefinition.xml is a folder entitled “Templates”. Enclosed by this folder, is a folder for each switch defined in switchdefinition.xml. The configuration file for a specific switch is referenced by switchdefinition.xml, and can be found in the switch’s definition.

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