

Nexans Switches Frequently Asked Questions VIII Automatic provisionning of FTTO switches via Zero Touch Configuration

Version 2 EN

The goal of this document is to provide a simple and practical description of the different parameters "Zero Touch Configuration" parameters. All the parameters related to NEXMAN and the Controller are described in the documentation "NEXMAN manual", available on our support portal.

Sommaire

1. Introduction	
1.1. Presentation	
1.2. Requierements	
2. Pre-configuration of switches via DHCP	
2.1. Functioning	
2.2. Get the controller's IP address via the DHCP option 43	4
3. Firmware setting	
4. Configuration settings	
4.1. Predefined Configuration	
4.1.1. Import configurations to the Controller	
4.1.2. Adding predefined configurations	6
4.2. Default Configuration	8
4.3. Configuration of static IP parameters and naming via CSV	
4.3.1. IP settings via CSV file	
5. Starting the Zero-Touch Configuration	
6. Logs configuration	
6.1. Activating logs	
6.2. Setting of log emails	
7. Configuration saving and replacement of switches	
7.1. Saving Configurations to predefined Devices	
7.2. Replace a device	
8. Troubleshooting	
8.1. Configuration option 43	
8.2. IP parameters Master Config configuration	
8.2.1. Static IP configuration	
8.2.2. DHCP IP configuration	

1. Introduction

1.1. Presentation

Definition of the Zero Touch Configuration

Once connected to a network segment, the Nexans switch will automatically contact its Controller to be updated, receive a configuration and be added to the database.

The Zero Touch Configuration is a feature allowing once configured :

- Adding new switches in the database and in a dedicated device-list
- The firmware update (Upgrade or Downgrade).
- Import of configurations on new switches (default or predefined configurations).
- Sending log messages, also by email.

FTTo switch		
Start-up process with DHCP		
Via DHCP Option 43, the switch knows the controller IP. Or via fix DNS name "nexman-controller".		NEXMAN Controller
Hello, I am Switch	00:C0:29:xx:xx with Firmware vX.X	X Checks if switch already known
≺ Ok, t	here is your "default-config"	If unknown
<ok, here="" is="" td="" y<=""><td>your "deviœ-config" and Firmware</td><td>If already known</td></ok,>	your "deviœ-config" and Firmware	If already known
Configuration accepted		
-Сж, now I am	updated and you are my Controller-	>
≪	Keep alive (Life Packet)	

1.2. Requierements

To be configured via Zero Touch Configuration, switches must meet certain requirements:

- The switch must be on firmware version 6.0 or higher.
- The switches must start with the factory settings.
- Zero Touch Configuration is only available with the Client-Controller version of NEXMAN..
- A DHCP or DNS pre-configuration is required..

2. Pre-configuration of switches via DHCP

2.1. Functioning

At startup, the FTTO switch checks to see if Zero Touch Configuration is enabled. If it is, the switch contacts the Controller to get new configurations and firmware. To do this, the switch needs to know the Controller's IP address, which it can retrieve in three different ways:

- Via Nexan specific DHCP option 43 (if DHCP is enabled)
- Via the DNS server using DHCP options 6 and 15 (if DHCP is enabled)
- Via the controller's static IP address manually configured in the switch

Important :

For simplicity reasons, only the first and most common of these options will be described below. All the other options are described in the documentation "Switch Management Manual" chapter "7.3 Zero Touch Configuration".

2.2. Get the controller's IP address via the DHCP option 43

To get the controller's IP address from a DHCP server, DHCP must be enabled, and on the DHCP server, option 43 must be configured as "vendor-encapsulated-option" in the following Nexans-specific text format:

0x01 <text length> "NEXANS_cip_<IPv4/IPv6 address>"

Where 0x01 is the code for the "Controller IP Address" suboption, and <text length> is the length of the following text field without a NULL terminator. For some DHCP servers, the text length is automatically calculated by the length of the following text field and does not need to be explicitly declared.

Syntax examples:

0119"NEXANS_cip_192.168.201.92"

0118"NEXANS_cip_192.168.0.224"

Example of configuration in a DHCP server configuration file:

OPTION_43=0119"NEXANS_cip_192.168.201.92"

or

OPTION_43=01194e4558414e535f6369705f3139322e3136382e3230312e3932

3. Firmware setting

Switches provisioned via Zero Touch Configuration can be automatically updated to a predefined firmware version if required. This can be a newer version or an older version than the one on the newly added switch.

The new firmware version can be selected in the Zero Touch Configuration settings. For an FTTO switch, the firmware must be loaded in the "Firmware file f40:" field.

№ Databa	se Management					
		QB 🗘 🖬	$\square \square $			
Drag a colu	mn header and drop it here to group by that column					
Move to D	evice-List Active MAC Address IPv4 A	ddress IPv6 Address	IPv6 Link Local Address	Name Location 1	Description Type Mant	FW
	N Controller Settings			÷		
Move to	General Settings	Zero Touch Configuration Settir	ngs			TY/V4.100
Move to	Poll Settings	Firmware				1TY/V4.14L
Move to	UDP Settings	Enable Firmware Update:		Allow Firmware Downgrades:		ITY/V4.14L
Move to	Zero Touch Configuration Settings	Firmware File F40:	hw5-f40-p07-office-v6.04S.swu	📔 🔕 Firmware File F46:		TY/V4.100
Move to	E-Mail Notification Settings	Firmware File F47:				.02F
Move to	Log-Messages Server Settings					ITY/V5.01r
Move to		Configuration				1.66H
Move to		Enable Config Update:				TY/V4.14L
Move to		Default Config File F40:	basic.dat	Default Config File F46:		💫 🙆 🛛 1.66Н
Move to		Default Config File F47:				TY/V4.14L
Move to						1.66H
Move to		General				6H
Move to		Number Of Retries [010]:	3	Simultaneous Configurations [130]:	30	6H
Move to		Note:				TY/V4.14U
Move to		Firmware Family FAO- HWS DO7 (DEELCE			· IIY/V4.14
				Save Close		

- To enable the firmware update, the "Enable Firmware Update:" option must be checked. When this option is checked, the Controller will automatically update the switch's firmware version if the current one is older. If this option is not checked, the update will simply be ignored.
- The "Allow Firmware Downgrade" option will define, in case the firmware version of the switch is higher than the selected one, if the switch should still be downgraded with this version or not.

N Database Management	- 0 %
$[\mathbb{R} \ \mathbb{R} \$	
Drag a column header and drop it here to group by that column	
Move to Desirealist Active MAC Address IDvA Address IDvA Address IDvA Address IDvA Address Name Location 😯 Description. Tune Momt FW	-
₩ Controller Settings	
Move to General Settings Zero Touch Configuration Settings	TY/V4.100
Move to Poll Settings Firmware	TY/V4.14L
Move to UDP Settings Enable Firmware Update: Image: Comparison of the set of the	TY/V4.14L
Move to Zero Touch Configuration Settings Firmware File F40: Iwb-140-p07-office+x6.045.swu Settings Firmware File F46: Settings Setting Setting Settings </td <td>TY/V4.100</td>	TY/V4.100
Move to E-Mail Notification Settings Firmware File F47:	.02F
Move to Log-Messages Server Settings	TY/V5.01r
Move to Configuration	1.66H
Move ta Enable Config Update:	= TY/V4.14L—
Default Config File F40:	1.66H
Default Config File F47:	TY/V4.14L
Move to	1.66H
General	6H
Move to Number OF Retries (010): 3 Simultaneous Configurations (130): 30	6H
Move to Note	TY/V4.14U
Limmuara Familu EAD. HWS DOT OFFICE	• TY/V4.14F •
Save Close	

4. Configuration settings

4.1. Predefined Configuration

4.1.1. Import configurations to the Controller

Before the configurations can be assigned to the switches, they must be imported to the Controller. This can be done in the "Config files on Server" section of the Database Management menu.

N Database Manage	V Database Management									
		🔳 Q 🗟	*) N (
Drag a column header and	d drop it here to group by tha	at column								
Move to Device-List	Active MAC Address	IPv4 Address	IPv6 Address	IPv6 Link Loca	al Address Name		Location	Description	Туре	Mgmt FW
	7	N Config Fil	es Known By Controlle	er			J J		T 🛛 T	
Move to Device-List	00:C0:29:26:B5:2A	10.2 File	Name				not defined	GigaSwitch V5 TP SFP-VI 230VAC	73	HW5-F40-P07-OFFICE-V6.02F
Move to Device-List	00:C0:29:22:83:91	10.2				7	not defined	FiberSwitch 100 BM+ GI(ST)	7	ENHANCED/SECURITY/V3.66H
Move to Device-List	00:C0:29:26:B5:11	10.2 X basi	c.dat				not defined	GigaSwitch V5 TP SFP-VI 230VAC	73	HW5-F40-P07-OFFICE-V6.02F
Move to Device-List	00:C0:29:26:B9:39	10.2 X cam	era.dat				not defined	GigaSwitch V5 TP SFP-VI 230VAC	73	HW5-F40-P07-OFFICE-V6.02F
Move to Device-List	00:C0:29:26:13:2E	10.2 X offic	:e.dat				not defined	GigaSwitch V3 TP SFP-I 230VAC ES3	62	HW3/ENHANCED/SECURITY/V4
Move to Device-List	00:C0:29:26:B5:49	10.2					not defined	GigaSwitch V5 TP SFP-VI 230VAC	73	HW5-F40-P07-OFFICE-V6.02F
Move to Device-List	00:C0:29:26:B5:29	10.2					not defined	GigaSwitch V5 TP SFP-VI 230VAC	73	HW5-F40-P07-OFFICE-V6.02F
Move to Device-List	00:C0:29:25:BC:98	10.2					not defined	GigaSwitch V3 TP SFP-I 48/54VDC E	53 62	HW3/ENHANCED/SECURITY/V4
Move to Device-List	00:C0:29:25:AC:59	10.2					not defined	GigaSwitch V3 TP SFP-I 48/54VDC E	53 62	HW3/ENHANCED/SECURITY/V4
Move to Device-List	00:C0:29:25:A4:E0	10.2					not defined	GigaSwitch V3 TP SFP-I 48/54VDC E	53 62	HW3/ENHANCED/SECURITY/V4
Move to Device-List	00:C0:29:25:A7:B6	10.2					not defined	GigaSwitch V3 TP SFP-I 48/54VDC E	53 62	HW3/ENHANCED/SECURITY/V4
Move to Device-List	00:C0:29:25:B0:8E	10.2					not defined	GigaSwitch V3 TP SFP-I 48/54VDC E	53 62	HW3/ENHANCED/SECURITY/V4
Move to Device-List	00:C0:29:25:A5:81	10.2					not defined	GigaSwitch V3 TP SFP-I 48/54VDC E	53 62	HW3/ENHANCED/SECURITY/V4
Move to Device-List	00:C0:29:26:B5:0D	10.2 Upload C	onfig Files	Delete Selected Files		Close	not defined	GigaSwitch V5 TP SFP-VI 230VAC	73	HW5-F40-P07-OFFICE-V6.02F
Move to Device-List	00:C0:29:25:A9:23	10.2		Service Serviced Tiles		Close	not defined	GigaSwitch V3 TP SFP-I 48/54VDC E	53 62	HW3/ENHANCED/SECURITY/V4
4										•

4.1.2. Adding predefined configurations

Once the configurations have been imported, it is then possible to associate them with the MAC addresses of the switches that will be provisioned via ZTC. This is done in the "Predefined Devices" section of the "Database Management" menu.

These MAC addresses can be entered manually, or automatically via a CSV file.

Manually

It is possible to simply add MAC addresses to the list, and then associate them with one of the configurations available in the database via a drop-down menu.

Version 2

N Database Management	<i>M</i> Database Management						
	R R R R B M M R R R R R R R R R R R R R						
Drag a column header and drop it here to group by that colu	n						
Move to Device-List Active MAC Address IPv	Address ID-6 Address ID-6 Link Loral Address Address Alama	Type Mgmt FW					
<u>र</u>	A Predefined Devices	र र					
Move to Device-List 00:C0:29:26:B5:2A 10.	MAC Address Config File Name Exists In Database Validation Result	1 230VAC 73 HW5-F40-P07-OFFICE-V6.02F					
Move to Device-List 00:C0:29:22:83:91 10.		I(ST) 7 ENHANCED/SECURITY/V3.66H					
Move to Device-List 00:C0:29:26:85:11 10.	X 00:C0:29:29:11:11 Please enter a file name.	I 230VAC 73 HW5-F40-P07-OFFICE-V6.02F					
Move to Device-List 00:C0:29:26:B9:39 10.	X 00:C0:29:29:71:FF basic.dat OK	I 230VAC 73 HW5-F40-P07-OFFICE-V6.02F					
Move to Device-List 00:C0:29:26:13:2E 10.	X 00:C0:29:29:6D:D8 camera.dat OK	230VAC ES3 62 HW3/ENHANCED/SECURITY/V4					
Move to Device-List 00:C0:29:26:B5:49 10.	X 00:C0:29:29:21:AA OK	I 230VAC 73 HW5-F40-P07-OFFICE-V6.02F					
Move to Device-List 00:C0:29:26:B5:29 10.	X 00:C0:29:29:8D:A6 camera.dat OK	I 230VAC 73 HW5-F40-P07-OFFICE-V6.02F					
Move to Device-List 00:C0:29:25:BC:98 10.	X 00:C0:29:29:81:DA office.dat OK	48/54VDC ES3 62 HW3/ENHANCED/SECURITY/V4					
Move to Device-List 00:C0:29:25:AC:59 10.		48/54VDC ES3 62 HW3/ENHANCED/SECURITY/V4					
Move to Device-List 00:C0:29:25:A4:E0 10.		48/54VDC ES3 62 HW3/ENHANCED/SECURITY/V4					
Move to Device-List 00:C0:29:25:A7:B6 10.		48/54VDC ES3 62 HW3/ENHANCED/SECURITY/V4					
Move to Device-List 00:C0:29:25:B0:8E 10.		48/54VDC ES3 62 HW3/ENHANCED/SECURITY/V4					
Move to Device-List 00:C0:29:25:A5:81 10.		48/54VDC ES3 62 HW3/ENHANCED/SECURITY/V4					
Move to Device-List 00:C0:29:26:85:0D 10.		I 230VAC 73 HW5-F40-P07-OFFICE-V6.02F					
Move to Device-List 00:C0:29:25:A9:23 10.		48/54VDC ES3 62 HW3/ENHANCED/SECURITY/V4					
		•					
	Show Config Files On Server Import From CSV File Delete Selected Items Save Close						

Automatically

The predefined MAC addresses can be entered automatically, using a .csv file filled in beforehand. This file must be composed of two columns:

- A column containing the MAC address of the switches.
- A second column containing the name of the configuration to be assigned to the switch.

This file should not contain any column names, or any information other than those listed above.

Example :

	А	В	С
1	00:C0:29:29:71:FF	office.dat	
2	00:C0:29:29:6D:D8	camera.dat	
3	00:C0:29:29:21:AA	camera.dat	
4	00:C0:29:29:8D:A6	camera.dat	
5	00:C0:29:29:81:DA	office.dat	

This file can be imported using the "Import From CSV File" option.

Version 2

Nexans ANS FAQ

N Database Management								_ 0 %
	Q 🛱 🌣 🗊 🛛 🗗							
Drag a column header and drop it here to group by that column								
Move to Device-List Active MAC Address	IDuk Addeses	IDv6 Link Local Address Name		Location			Туре	Mgmt FW
T N	Predefined Devices			-		A	T	
Move to Device-List 00:C0:29:26:B5:2A 10.2	MAC Address	Config File Name	Exists In Database	Validation Result		I 230VAC	73	HW5-F40-P07-OFFICE-V6.02F
Move to Device-List 00:C0:29:22:83:91 10.2	T	<u> </u>	7		V	I(ST)	7	ENHANCED/SECURITY/V3.66H
Move to Device-List 00:C0:29:26:B5:11 10.2	Click here to add new item					I 230VAC	73	HW5-F40-P07-OFFICE-V6.02F
Move to Device-List 00:C0:29:26:89:39 10.2	> X 00:C0:29:29:71:FF	office.dat		ОК		I 230VAC	73	HW5-F40-P07-OFFICE-V6.02F
Move to Device-List 00:C0:29:26:13:2E 10.2	X 00:C0:29:29:6D:D8	camera.dat		ОК		230VAC ES3	62	HW3/ENHANCED/SECURITY/V4
Move to Device-List 00:C0:29:26:B5:49 10.2	X 00:C0:29:29:21:AA	camera.dat		ОК		I 230VAC	73	HW5-F40-P07-OFFICE-V6.02F
Move to Device-List 00:C0:29:26:85:29 10.2	X 00:C0:29:29:8D:A6	camera.dat		ОК		I 230VAC	73	HW5-F40-P07-OFFICE-V6.02F
Move to Device-List 00:C0:29:25:BC:98 10.2	X 00:C0:29:29:81:DA	office.dat		ОК		48/54VDC ES3	62	HW3/ENHANCED/SECURITY/V4
Move to Device-List 00:C0:29:25:AC:59 10.2	X 00:C0:29:29:11:11	camera.dat		ОК		48/54VDC ES3	62	HW3/ENHANCED/SECURITY/V4
Move to Device-List 00:C0:29:25:A4:E0 10.2						48/54VDC ES3	62	HW3/ENHANCED/SECURITY/V4
Move to Device-List 00:C0:29:25:A7:B6 10.2						48/54VDC ES3	62	HW3/ENHANCED/SECURITY/V4
Move to Device-List 00:C0:29:25:B0:8E 10.2						48/54VDC ES3	62	HW3/ENHANCED/SECURITY/V4
Move to Device-List 00:C0:29:25:A5:81 10.2						48/54VDC ES3	62	HW3/ENHANCED/SECURITY/V4
Move to Device-List 00:C0:29:26:B5:0D 10.2						I 230VAC	73	HW5-F40-P07-OFFICE-V6.02F
Move to Device-List 00:C0:29:25:A9:23 10.2						48/54VDC ES3	62	HW3/ENHANCED/SECURITY/V4
1								
						-	-	
s	Show Config Files On Server Import	From CSV File Delete Selected Items		Save	Close			

4.2. Default Configuration

It is also possible to configure a default configuration, which will be assigned to switches added via ZTC, whose MAC address is not entered in the predefined configuration database.

This configuration must be entered in the "Database Management" -> "Controller Settings" -> "Zero Touch Configuration Settings" menu.

For an FTTO switch, the configuration must be entered in the "Default Config file F40" field. To activate the configuration import, the "Enable Config Update" option must be checked. If this option is not checked, new switches added via Zero Touch configuration will not receive a configuration.

N Device-List - NEXMAN Client			
File Edit Remove Templates	s Inventory Logfile Help		
i 🖸 🗖 🔛 📸 🏷 👂 🤱 🥞	🔹 🦷 🐨		
Device-List	8 Device-List		
New Devices [system]		Dran a column hera to oroun hu this column	
Devices *	N Database Management		Uptime Last
All Devices	1 428 42 43 MA 1 6		
Unassigned Devices			
Categories	Drag a column header and drop it here to group b	by that column	
Configured	JU Controller Settings		
Not Configured	General Settings	Zero Touch Configuration Settings	
	Poll Settings	Firmware	
	UDP Settings	Enable Firmware Update:	_
	Zero Touch Configuration Settings	Firmware File F40: hw5-f40-p07-office-v6.045.swu 🗼 🙆 Firmware File F46:	8
	E-Mail Notification Settings	Firmware File F47:	
	Log-Messages Server Settings		
		Configuration	
		Enable Config Update:	_
		Default Config File F40:	8
		Default Config File F47:	
		General	
		Number Of Retries [010]: 3 Simultaneous Configurations [130]: 30	
		Note: Firmware Family F40: HWS P07 OFFICE Firmware Family F46: HWS P10 INDUSTRIAL Firmware Family F47: HWS P12/P16 INDUSTRIAL	
		Save Close	
1			

4.3. Configuration of static IP parameters and naming via CSV

It is possible to assign static IP parameters as well as naming parameters to the switches according to their MAC address.

These parameters are independent for each switch, so you don't have to create your own configuration for each switch.

These parameters must be entered in two files in .csv format (one for the IP parameters, and one for the naming parameters). They must be placed on the Controller, and their access path must be filled in the parameters of the master-configs imported on the switches when adding them in Zero Touch Configuration.

4.3.1. IP settings via CSV file

It is possible in a first file to define IP addresses for the switches according to their MAC address. These parameters must be entered in a simple .csv file containing 4 columns:

- MAC address
- IP address
- Subnet mask
- Gateway

This file should not contain any other information, or column headers.

Example :

4	A	В	С	D	E
1	00:C0:29:29:71:FF	192.168.0.80	255.255.255.0	192.168.0.254	
2	00:C0:29:29:6D:D8	192.168.0.90	255.255.255.0	192.168.0.254	
3	00:C0:29:29:21:AA	192.168.0.91	255.255.255.0	192.168.0.254	
4	00:C0:29:29:8D:A6	192.168.0.92	255.255.255.0	192.168.0.254	
5	00:C0:29:29:81:DA	192.168.0.93	255.255.255.0	192.168.0.254	

The file can then be selected directly in the master-config settings, in the "IPv4 / IPv6 Setup -> IPv4 Address" parameter.

At the same time the "DHCP enable" parameter must be disabled, so that the switch loses its assigned address and takes on its new static IP address.

Device-List Master-Config [1]*					
[Exit & Save] [Cancel] [Check all par	ameters] [[Uncheck all parameters] Mas	ter-Config		
Device Info	IPv4 / IPv6 S	Setup			
Port Setup	-IPv4 Setu	D			
✓ Management (4) IPv4 / IPv6 Setup (2)		Pv4 Access enable:			
Agent		DHCP enable:			
Local Accounts Access Global		DHCP/BOOTP Download Mode:	Enable TFTP download of config file		
Access SNMP Access IEC61850	I IF	Pv4 Address:	Get IP-Address/Netmask/Gateway from CSV file by MAC Address (xxxxxxxxxxxxx:IP-Address:Netmask.Gateway)		
Banner		Browse Open	C:\Users\pjandik\Documents\TRAVAUX\Presentation\materiel\presentation_tableau_IP.csv		
Zero Touch Configuration (2) Scripting		Vetmask:	255.255.255.0		
Global	G	Gateway Address:	0.0.0.0		
▶ VLAN (2)					
Discovery					

Finally, the IP address of the Controller must be added in the "Zero Touch Configuration" section.

Device-List Master-Config [1]*						
[Exit & Save] [Cancel] [Check all parameters] [Uncheck all parameters] Master-Config						
Device Info	Zero Touch Configuration					
Port Setup	Zero Touch Configuration					
✓ Management (4) IPv4 / IPv6 Setup (2)	Zero Touch Configuration Mode:	Zero Touch Configuration Enabled				
Agent	Controller IP Address:	192.168.0.224 Edit				
Local Accounts						
Access Global						
Access SNMP						
Access IEC61850						
Banner						
Zero Touch Configuration (2)						
Scripting						
Global						

This option allows the switch to contact the Controller once its IP address has been changed. This allows the Controller to automatically update the switch with its new IP address.

4.3.2. Name setting via CSV file

In the same way, it is possible to configure different naming information parameters via a CSV file. Different parameters are available. In this example, the CSV file is composed of 4 columns:

- MAC address
- Name
- Location
- Contact

Nexans ANS FAQ

Example :

ſ		A	В	С	D	E
I	1	00:C0:29:29:71:FF	MS_01_01_01	Etage_1_Bureau_1	support@nexans.com	
I	2	00:C0:29:29:6D:D8	MS_01_01_02	Etage_1_Bureau_2	support@nexans.com	
I	3	00:C0:29:29:21:AA	MS_01_01_03	Etage_1_Bureau_3	support@nexans.com	
I	4	00:C0:29:29:8D:A6	MS_01_01_04	Etage_1_Bureau_4	support@nexans.com	
I	5	00:C0:29:29:81:DA	MS_01_01_05	Etage_1_Bureau_5	support@nexans.com	

The file can then be selected directly in the master-config parameters, in the "Agent -> Name" parameter. Different file configurations are available in case for example you want to use only one naming parameter.

Device-List Master-Config [1]*				
[Exit & Save] [Cancel] [Check all par	ameters]	[Uncheck all parameters]	Master-Config	
Device Info	Agent			
Port Setup	Reset	t Setup		
✓ Management (5)	_		None	•
IPv4 / IPv6 Setup (2)		Reset Action:		
Agent (1)		Memory Card Mode:	Enabled	▼]
Local Accounts	Nome	Satura		
Access Global	INGILIE	Setup		
Access SNMP	V	Name:	Get Name/Location/Contact from CSV file by MAC Address (xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	ion;Contact) 👻
Access IEC61850		Filonomo Proveno Onor	C:\!!sere\niandik\Documente\TRA\/AIIX\Presentation\material\presentation_tableau_No	mm3de.csv
Banner		Filename. Drowse Oper		initiage.csv
Zero Touch Configuration (2)		Location:	not defined	(max 50 chars)
Scripting				(50 L)
Global		Contact:	not defined	(max 50 chars)
▶ VLAN (2)		Domain:		(max 50 chars)
Discoverv				

5. Starting the Zero-Touch Configuration

The Zero Touch Configuration is only active when the Controller is in listening mode. This means that if listening mode is not enabled, the switches can be preconfigured with the Controller's IP address, and attempt to contact the Controller, but they will not be supported by the Controller. This will allow you to choose when the switch provisioning should take place.

The listening mode must be activated with the "ZTC" button in the "Database Management" menu.

N Device-List - NEXMAN Client	
File Edit Remove Templa	tes Inventory Logfile Help
i 🖸 🗖 🔛 📂 🖄 🔎 🔰 💈	8 🛊 🕷 📽 👘 👘 👘 👘 👘 👘 👘
Device-List	Bevice-List
New Devices [system]	Dran a column bera to
Devices	N Database Management
All Devices	I B B B B I I I I I I I I I I I I I I I
Unassigned Devices	
Categories	Drag a column header and drop it here to group by that column
Configured	Move to Device-List Active MAC Address IPv4 Address IPv6 Address IPv6 Address IPv6 Link Local Address Name
Not Configured	

Once supported, the switches will be configured with the preconfigured settings, and added to the database, as well as to the "New Devices [system]" Device-List, which is a list dedicated to new switches added via ZTC. They can then be assigned to other device lists via the database.

6. Logs configuration

6.1. Activating logs

The controller can receive different types of logs and store them in the database. These different messages can be received and stored:

- SYSLOG messages
- SNMP Trap messages
- Zero Touch Configuration notifications
- Controller notifications

To enable listening for SYSLOG and SNMP Trap messages, click "Start Log-Messages Listening" in the Database Management menu. Messages sent by the Controller itself, such as Zero Touch Configuration notifications or Controller notifications, will be stored in any case.

File Edit Remove Template	s Inventory Logfile	e Help					
🖸 🗖 🖬 💕 🖄 🔎 🤰 🍔	🔹 🕿 🦁						
Device-List	Ş	Device-List					
New Devices [system]						Drag a column here t	o aroup.
Devices	N Database Manager	ment	a Sector Sec.	teres - constant and the	mariting for these	Income the Public	_
All Devices	: L2 S L2 L3	MA				m	
Unassigned Devices							
Categories	Drag a column header and	I drop it here to group by tha	t column				
Configured	Move to Device-List	Active MAC Address	IPv4 Address	IPv6 Address	IPv6 Link Local Address	Name	Locati
Not Configured		7	V V	۷	V	v	

To display the log viewing tab, select the "Show/Hide log messages" button.

N Device-List - NEXMAN Client	V Device-List - NEXMAN Client												
File Edit Remove Templates	Inv	/ento	ory	Log	file Help								
Device-List Device-List Log Messages													
New Devices [system]	-	6		6	. .								
Devices				•									
All Devices			0	0	Drag a column header and	drop it here to group by th	at column						
Unassigned Devices			0	0	Sender IP Address	Time-Stamp	Message Type	Message					
Categories			t:	•	V	Enter date 🔳 🏹	• 7						
Configured		0	0	0	192.168.0.85	18.02.2021 09:38:21	ZeroTouchConfigNewDevice	New Device: 00:C0:29:29:6D:D8, 192.168.0.85, HW5-F40-P07-OFFICE-V6.04H, camera.dat, Configured					
Not Configured		0	0	0	192.168.0.85	18.02.2021 09:27:15	ZeroTouchConfigNewDevice	New Device: 00:C0:29:29:6D:D8, 192.168.0.85, HW5-F40-P07-OFFICE-V6.04H, camera.dat, Configured					
					192.168.0.86	18.02.2021 09:27:14	ZeroTouchConfigNewDevice	New Device: 00:C0:29:29:71:FF, 192.168.0.86, HW5-F40-P07-OFFICE-V6.04H, office.dat, Configured					
					192.168.0.85	18.02.2021 09:19:37	ZeroTouchConfigNewDevice	New Device: 00:C0:29:29:6D:D8, 192.168.0.85, HW5-F40-P07-OFFICE-V6.04H, camera.dat, Configured					
					192.168.0.86	18.02.2021 09:19:36	ZeroTouchConfigNewDevice	New Device: 00:C0:29:29:71:FF, 192.168.0.86, HW5-F40-P07-OFFICE-V6.04H, office.dat, Configured					
					192.168.0.85	18.02.2021 09:13:46	ZeroTouchConfigNewDevice	New Device: 00:C0:29:29:6D:D8, 192.168.0.85, HW5-F40-P07-OFFICE-V6.04H, camera.dat, Configured					
					192.168.0.86	18.02.2021 09:13:45	ZeroTouchConfigNewDevice	New Device: 00:C0:29:29:71:FF, 192.168.0.86, HW5-F40-P07-OFFICE-V6.04H, office.dat, Configured					
					Controller	18.02.2021 09:11:43	ControllerSettingsChanged	Setting changed by user admin: Zero Touch Configuration = True!					

6.2. Setting of log emails

The various messages received by the Controller can be transmitted by email via an SMTP server. This includes all the message types described in the previous point.

The different types of emails that can be sent can be configured in "Controller Settings -> E-Mail Notifications Settings".

N Database Management					
	d 🖩 Q 🛱 🗘 📄 📄				
Drag a column header and drop it here to group	by that column				
Controller Settings		And and Address Taxa	-		
General Settings	E-Mail Notification Settings				
Poll Settings	E-Mail Server				
UDP Settings	Send From E-Mail Address:	Nexman_controller@nexans.de	Password:		
Zero Touch Configuration Settings	Recipient E-Mail Address 1:	Nexman_controller2@nexans.de	Recipient E-Mail Address 2:		
Log-Messages Server Settings	Recipient E-Mail Address 3:		SMTP Server:	10.22.69.128	
	SMTP Server Port Number [165535]:	25	Use SSL:		
	Syslog / SNMP Trap Messages				
	Send Syslog / SNMP Trap Notifications:				
	Syslog Notifications Severity Level [07]:	1			
	Zero Touch Configuration				
	Send Zero Touch Configuration Notifications:				
	Controller Notifications				
	Send Switch Is Offline Notifications:		Send Settings Changed Notifications:		
	General Settings				
	Send Notifications Every x Minutes:	1]		
		Save	Close		

This can for example allowing emailing of information about added switches via ZTC.

If enabled, the controller will, after some time, send an email containing information about which switches have been updated, configured and added to the database since the last notification. It also shows the current firmware version, the configuration file used and the category the device has been moved to. The email will look like this:

von Nexman_controller@nexans.de tar											
An Mich 😭											
The following devices	have been added to the device lis	t 'New Devices [system]':									
MAC Address	IP Address	FW Version	Config File	Category							
00:C0:29:29:68:D6	192.168.0.10	HW5-F40-P07-OFFICE-V6.02N	Default.cfg	Configured							
00:C0:29:29:68:B4	192.168.0.12	HW5-F40-P07-OFFICE-V6.02N	Office.cfg	Configured							
00:C0:29:26:5D:81	192.168.0.16	HW5-F40-P07-OFFICE-V6.02N	Production.cfg	Configured							
00:C0:29:26:5D:86	192.168.0.14	HW5-F40-P07-OFFICE-V6.02N	Service.cfg	Configured							
00:C0:29:26:5D:87	192.168.0.17	HW5-F40-P07-OFFICE-V6.02N	Office.cfg	Configured							
00:C0:29:26:5D:8E	192.168.0.15	HW5-F40-P07-OFFICE-V6.02N	Production.cfg	Configured							

7. Configuration saving and replacement of switches

In order to quickly replace a switch via, NEXMAN offers to save switches configuration on the pre-defined list. This will allow then a quick and easy replacement of a switch.

7.1. Saving Configurations to predefined Devices

Select the switches in the NEXMAN database, and select "Move selected to Predefined Devices". Configs will be saved on the predefined configs.

	ement					
		🖩 🔜 🥑	to 🗘 🗊			
Drag a column header and	d drop it here to group by that	t column Move select	ed to Predefined Device	s		
Move to Device-List	Active MAC Address	IPv4 Address	IPv6 Address	IPv6 Link Local Address	Name	Location
	7	V	γ	V V	V V	
Move to Device-List	00:C0:29:29:6D:D8	192.168.0.90	:	:	NEXANS-00C029296DD8	not defin
Move to Device-List	00:C0:29:29:B0:F2	192.168.0.80	:	:	NEXANS-00C02929B0F2	not defin

Configuration of each switch is saved and configured in the predefined configuration list.

N	D	atał	base Management												
:	: B B B B [: 🕫 🎟 🕿 候 📾 🌣 🗊] : D 🖿 💭 🗇 🗍]														
7	V F	Prec	defined Devices						×						
-			MAC Address	Config File Name	Exists In Database	Validation Result									
ī			7	γ	T				A						
	Ŧ	Clic	k here to add new item												
l		Х	00:C0:29:29:B0:F2	192_168_0_80.cfg		ОК									
		Х	00:C0:29:29:6D:D8	192_168_0_90.cfg		ОК									

7.2. Replace a device

In case of replacement of a switch, the MAC address of the old switch can be replaced on the predefined configuration lists, directly from the device-list.

Devi	Device-List Log Messages													
	Drag a column here to group by this column													
Check	Device	Alarms	Redundancy	PoE	IPv4 Address	Active MAC Address	Name	Location	Description	Туре	Mgmt Firmware Vers.			
	8	8	7	V	8	8	V	V	8	V	R			
	Switch	0	Disabled	Po	192.168.0.80	00:C0:29:29:B0:F2	NEX	not defi	GigaSwit	74	HW5-F40-P07-OFFICE-V6.04V			
	Switch	Offline	Disabled	Po	192.168.0.90	00:C0:29:29:6D:D8	NEX	not defi	GigaSwit	73	HW5-F40-P07-OFFICE-V6.04V			
	Γ	Enter ne	w MAC Addr	ess fo	r Predefined D	evices List —	[>						
		-												
		Ente Xxxxx	rnew MAC Ad xxxxxxxxxxx, 'x	dresst x-xx-x0	o replace currer (-xx-xx-xx', 'xxxxo	nt address 00:C0:29:29: xxxxxxxx):	6D:D8 (allowed for	mats					
		00:0	:0:29:29:71:FF											
					ОК	Cancel	1							
							1		_					

In case of replacement of a switch, the MAC address of the old switch can be replaced on the predefined configuration lists, directly from the device-list.

ļ Λ	Dat	tabase Management												
: L2	🖻 🖻 🖻 🖓 🗰 📾 🥰 📾 🌣 🗊 🛛 🖿 🖿 💭 🗇 🏛 🛛													
Ĩ	Pı	redefined Devices						-		×				
	MAC Address Config File Name Exists In Database Validation Result													
ī			T			T				T				
	C	Click here to add new item												
4	X	K 00:C0:29:29:B0:F2		192_168_0_80.cfg			ОК							
	X	00:C0:29:29:71:FF		192_168_0_90.cfg			ОК							

The MAC of the switch is now replaced on the predefined configuration list.

After running Zero Touch Configuration, the new switch will take the place of the old one.

Dev	Device-List														
	Drag a column here to group by this column.														
Check	Device	Alarms	Redundancy	PoE	IPv4 Address	Active MAC Address	Name	Location	Description	Туре	Mgmt Firmware Vers.				
	V	T	7	7	7	V	V	V	খ	8	V				
	Switch	0	Disabled	Powered	192.168.0.80	00:C0:29:29:B0:F2	NEXANS-00C02929B0F2	not defined	GigaSwitch V5 SFP-2VI 54VDC	74	HW5-F40-P07-OFFICE-V6.04V				
	Switch	0	Disabled	Powered	192.168.0.90	00:C0:29:29:71:FF	NEXANS-00C029296DD8	not defined	GigaSwitch V5 TP SFP-VI 54VDC	73	HW5-F40-P07-OFFICE-V6.04V				

Action of the Controller can be followed on the log.

Device-List Log Messages								
Drag a column header and drop it here to group by that column								
Time-Stamp	Sender IP Address	Message Type	Message					
Enter date 🔳 🏹	آ	• T						
08.07.2021 11:41:46	192.168.0.81	ZeroTouchConfigNewDevice	New Device: 00:C0:29:29:71:FF, 192.168.0.81, HW5-F40-P07-OFFICE-V6.04V, 192_168_0_90.cfg, Configured					
08.07.2021 11:36:26	192.168.0.81	${\sf ZeroTouchConfigStartingFirmwareUpdate}$	Starting Firmware Update of Device 00:C0:29:29:71:FF, 192.168.0.81 to HW5-F40-P07-OFFICE-v6.04V					

8. Troubleshooting

8.1. Configuration option 43

Configuration of option 43 of the DHCP depends of the type of DHCP used, and can varied a lot. Therefore we advise you to check on your DHCP configuration how to

Example of configuration for Windows DHCP:

IP address of the controller : 192.168.7.121

Parameter of the option 43 : 01184e4558414e535f6369705f3139322e3136382e372e313231

Example of Configuration for DHCP Server:

OPTION_43=0119"NEXANS_cip_192.168.201.92"

or

OPTION_43=01194e4558414e535f6369705f3139322e3136382e3230312e3932

8.2. IP parameters Master Config configuration

Different issues can be caused by a wrong master-config creation.

8.2.1. Static IP configuration

In case of static parameters configured from a CSV list, DHCP should be disabled too.

Nexans ANS FAQ

[Exit & Save] [Cancel] [Check all parameters] [Uncheck all parameters] Master-Config Device Info IPv4 / IPv6 Setup IPv4 / IPv6 Setup Port Setup IPv4 Setup IPv4 Access enable:	
Device Info IPv4 / IPv6 Setup Port Setup IPv4 Setup Port 0 [MGMT] IPv4 Access enable:	
▲ Port Setup Port 0 [MGMT] IPv4 Setup IPv4 Access enable:	
Port 0 [MGMT]	
Port 1 [TP-1]	
Port 2 [TP-2] DHCP enable:	
Port 3 (TP-3)	
Port 4 (TP-4)	
Port 5 (UPLINK-SFP) Get IP-Address/Netmask/Cateway from CSV file by MAC Address UPLINK-SFP IPv4 Address:	
A Management (5) Collogicality of the sector of t	
IPv4 / IPv5 Setup (2) IPv4 / IPv5 Setup (2)	_
Agent (2)	
Local Accounts Gateway Address: 0.0.0.0	
Access Global (1)	
Access SNMP	
Access IEC61850	
Banner IPv6 Setup	
Zero Touch Configuration IPv6 Access Mode: Disable IPv6 access V	
Scripting IPv6 Link Local Address: fe80::2c0:29ff fe29:71ff	
VLAW (z) IPV6 Address: Get in Vonduces/Subint Prefix Gateway indit Cs vite by Mich Address (oxcoxoxoxoxox) (DV6 Address;Subint Prefix Gateway)	
VLAN Table (2) Browse Open	
Discovery Scherk Berle Landt, 0 (0.128) (0]	
Prioritisation / CoS	
Alarms Gateway Address: ::	
Security	

As controller IP address is transmitted to the switch via DHCP, when DHCP is disabled, they are automatically removed. Zero Touch Configuration should be configured in static, in order for the switch to contact the controller with it's new IP address.

Device-List Master-Config [camera]*						
[Exit & Save] [Cancel] [Check all par	ameters]	[Uncheck all parameters] Master-Co	nfig			
Device Info	Zero Touch Configuration					
✓ Port Setup	Zero Touch Configuration					
Port 0 [MGMT] Port 1 [TP-1]	V	Zero Touch Configuration Mode:	Zero Touch Configuration Enabled \sim			
Port 2 [TP-2] Port 3 [TP-3]		Controller IP Address:	192.168.0.224 Edit			
Port 4 [TP-4]						
Port 5 [UPLINK-SFP]						
Port 6 [UPLINK-TP]						
⊿ Management (5)						
IPv4 / IPv6 Setup						
Agent (2)						
Local Accounts						
Access Global (1)						
Access SNMP						
Access IEC61850						
Banner						
Zero Touch Configuration (2)						
Scripting						

8.2.2. DHCP IP configuration

In case DHCP parameters should be kept by switches, DHCP enable parameter only should be selected.

Device-List Master-Config [camera]*							
[Exit & Save] [Cancel] [Check all parameters] [Uncheck all parameters] Master-Config							
Device Info IPv4 / IPv6 Setup							
✓ Port Setup	A Setun						
Port 0 [MGMT]							
Port 1 [TP-1]	I IPV4 Access enable:						
Port 2 [TP-2]	☑ DHCP enable: ☑						
Port 3 [TP-3]							
Port 4 [TP-4]	DHCP/BOOTP Download Mode: Enable TFTP download of config file						
Port 5 [UPLINK-SFP]	Get IP-Address/Netmask/Gateway from CSV file by MAC Address						
Port 6 [UPLINK-TP]	IPv4 Address: (xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx						
⊿ Management (4)	Browse Open						
IPv4 / IPv6 Setup (1)	D Network 255,255,0						
Agent (2)	Vetmask.						
Local Accounts	Gateway Address: 0.0.0						
Access Global (1)							
Access SNMP							
Access IEC61850							
Banner	IPv6 Setup						
Zero Touch Configuration	IPv6 Access Mode: Disable IPv6 access						
Scripting	IPv6 Link Local Address: fe80-2c0-29ff fe29-71ff						
Global							
⊿ VLAN (2)	IPv6 Address: Get IPv6-Address/Subnet Prefix/Gateway from CSV file by MAC Address (xy xy xy xy Vick-Address) (xy xy xy xy Vick-Address)						
VLAN Setup							
VLAN Table (2)	Browse Upen						
Discovery	Subnet Prefix Length: 0 (0128) [0]						
Prioritisation / CoS							
Alarms	Gateway Address: ::						
Security							
Multicasts							

Nexans Deutschland GmbH • Advanced Networking Solutions Bonnenbroicher Straße 2-14 • 41238 Monchengladbach • Tel: +49 (0) 2166 27-2017 E-Mail: support.ans@nexans.com • www.nexans-ans.de/support