Lenovo Networking Plug-in for VMware vRealize Orchestrator

Deployment and User Guide

Version 1.0

Lenovo™

Note: Before using this information and the product it supports, read the general information in the *Safety information and Environmental Notices and User Guide* documents on the Lenovo *Documentation* CD and the *Warranty Information* document that comes with the product.

First Edition (August 2015)

Contents

Chapter 1. Overview

The *Lenovo Networking Plug-in* leverages the open plug-in architecture of the vRealize Orchestrator product to support the management of Lenovo Networking products. Through the use of Actions and Workflows, it allows management of key features in Lenovo switches, such as:

- VLANs
- Static & LACP portchannels
- Ports
- Connectivity to server adapters
- vLAGs
- UFP
- Server/uplink ports

Requirements

VMware vRealize Orchestrator

This version of the plug-in is supported on the following VMware vRealize Orchestrator releases:

- VMware vCenter Orchestrator 6.0

Supported Lenovo Networking Products

This version of the plug-in is supports the following Lenovo Networking Products:

- Lenovo Flex System Interconnect Fabric
- Lenovo Flex System Fabric EN4093R 10Gb Scalable Switch
- Lenovo RackSwitch G8264
- Lenovo RackSwitch G8272

Licensing

The *Lenovo Networking Plug-in* for VMware vRealize Orchestrator comes in two forms:

- Non-warranted version that is free to anyone and downloadable from the VMware Solution Exchange website
- Warranted version that is purchased under the vRealize Subscription and Support Package and is downloadable by the customer from IBM Passport Advantage system

Although the functionality of the two plug-ins is identical, each will contain a different EULA. The EULA is presented to the user upon import, where they must accept the terms.

- Non-warranted will display Lenovo's ILAN license. First line of license: *International License Agreement for Non-Warranted Programs*
- Warranted will display Lenovo's IPLA license. First line of license: *International Program License Agreement*

Chapter 2. Plug-in Installation

Installation Procedures

To install the plug-in follow the steps described below:

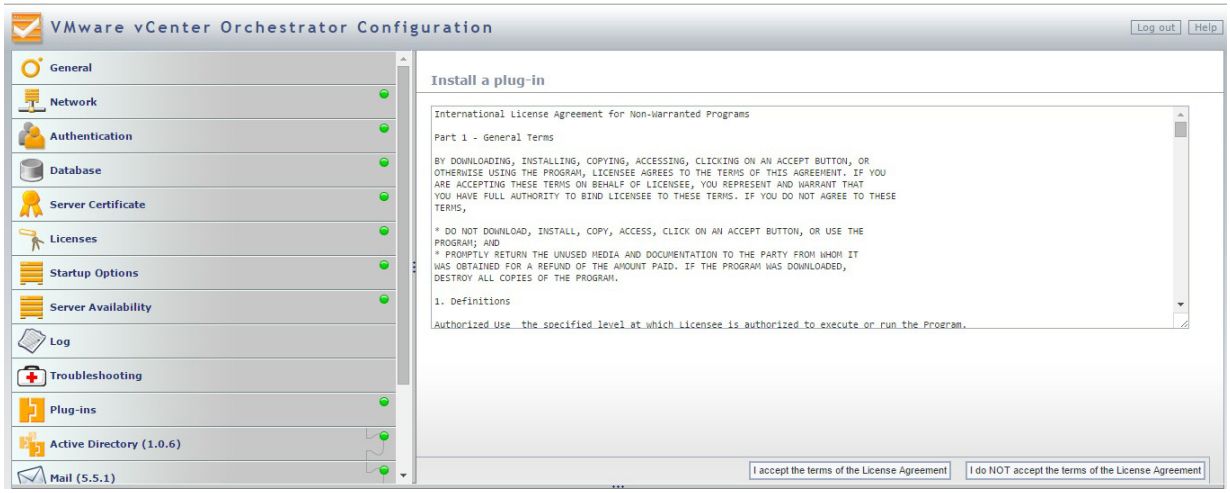
i. Prerequisites

1. Install VMware vRealize Orchestrator 6.0.
2. Download the Lenovo Networking Plug-in for VMware vRealize Orchestrator from any of the following:
   - VMware Solution Exchange (VSX) website
   - IBM Passport Advantage, if purchased via the "Lenovo Networking Bundle for vRealize" product

ii. Plug-in Installation

1. Logon to the vCenter Orchestrator web Configuration page.
2. On the left pane, click **Plug-ins**.
3. In the Install new plug-in area, click on the **browse icon**.
4. Navigate to the folder where you have saved the .vmoapp file and select the .vmoapp file.
5. Click **Open**.
6. Click **Upload and Install**.

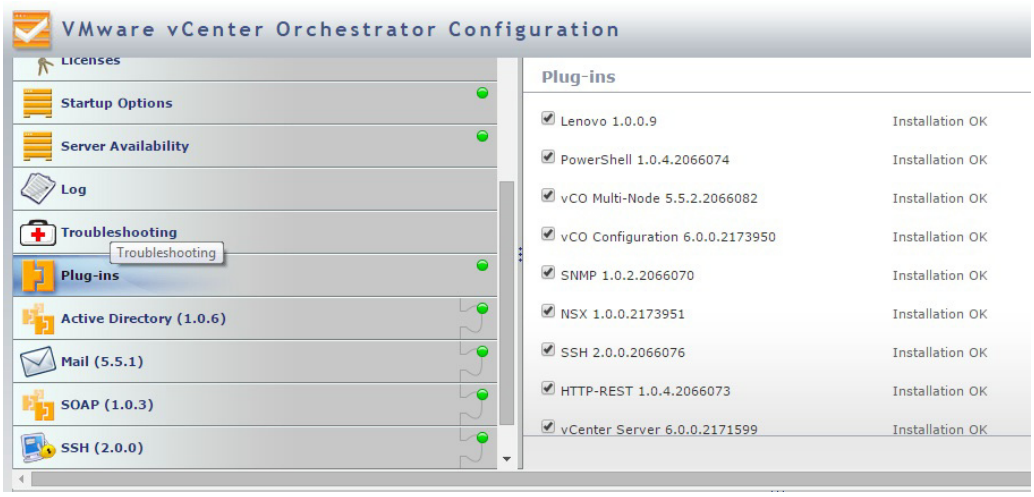
7. Agree to the license terms. Depending whether you are installing the free, non-warranted plug-in or the for-fee, warranted plug-in the license that is displayed will be different.



The plug-in is installed.

iii. Plug-in Activation

1. Logon to the vCenter Orchestrator (vCO) web Configuration page.
2. To activate the plugin, select **Startup Options** on the left pane and click **Restart Service** or **Start Service**. Depending on whether the service has already started or not the Restart Service or Start Service options appear respectively.



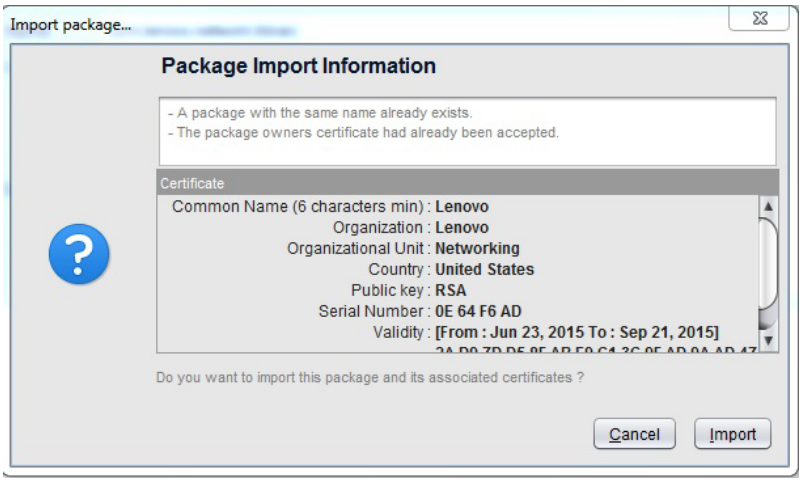
The plug-in is activated.

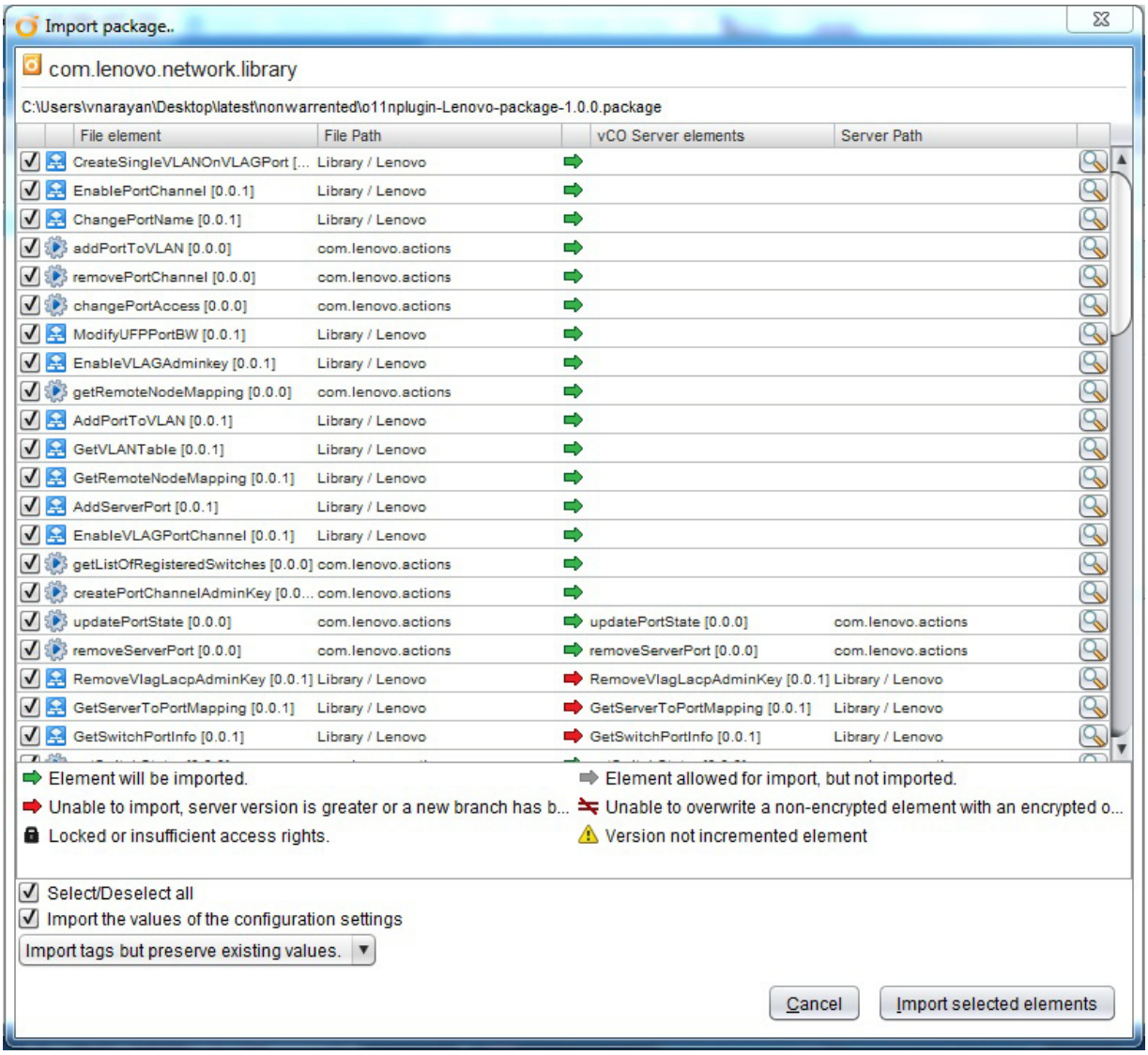
Note: The above steps are standard plug-in installation procedures that can be found on the vRealize Orchestrator Documentation page.

iv. Package Installation

The procedure below has to be followed only the first time when the vRealize Orchestrator (vRO) plug-in is installed on the vRO Virtual Machine (VM) so that the certificate is registered. Subsequently, the package will be installed automatically when installing the plug-in.

1. Log into the vRO Client.
2. Go to the **Design** mode.
3. Go to **Packages** tab.
4. Right-click on the open space present on the left side of the tab. A menu is then displayed.
5. Click on the **import package** option. Choose the **.package** file included with the plug-in and click **Open** button and then import all the actions and workflows into vRO.




Import package..
com.lenovo.network.library
C:\Users\vnarayan\Desktop\latest\nonwarrented\o11nplugin-Lenovo-package-1.0.0.package
File element
File Path
vCO Server elements
Server Path
CreateSingleVLANOnVLAGPort [...
Library / Lenovo
EnablePortChannel [0.0.1]
Library / Lenovo
ChangePortName [0.0.1]
Library / Lenovo
addPortToVLAN [0.0.0]
com.lenovo.actions
removePortChannel [0.0.0]
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changePortAccess [0.0.0]
com.lenovo.actions
ModifyUFPPortBW [0.0.1]
Library / Lenovo
EnableVLAGAdminkey [0.0.1]
Library / Lenovo
getRemoteNodeMapping [0.0.0]
com.lenovo.actions
AddPortToVLAN [0.0.1]
Library / Lenovo
GetVLANTable [0.0.1]
Library / Lenovo
GetRemoteNodeMapping [0.0.1]
Library / Lenovo
AddServerPort [0.0.1]
Library / Lenovo
EnableVLAGPortChannel [0.0.1]
Library / Lenovo
getListOfRegisteredSwitches [0.0.0]
com.lenovo.actions
createPortChannelAdminKey [0.0...
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RemoveVlagLacpAdminKey [0.0.1]
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RemoveVlagLacpAdminKey [0.0.1]
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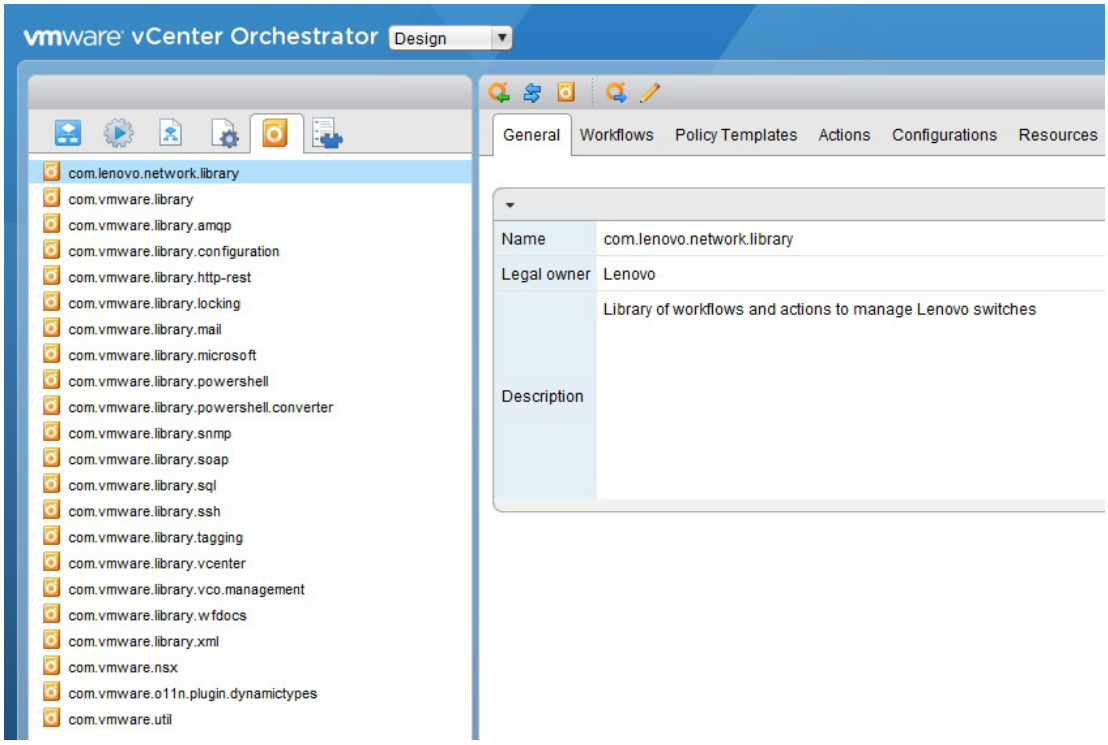
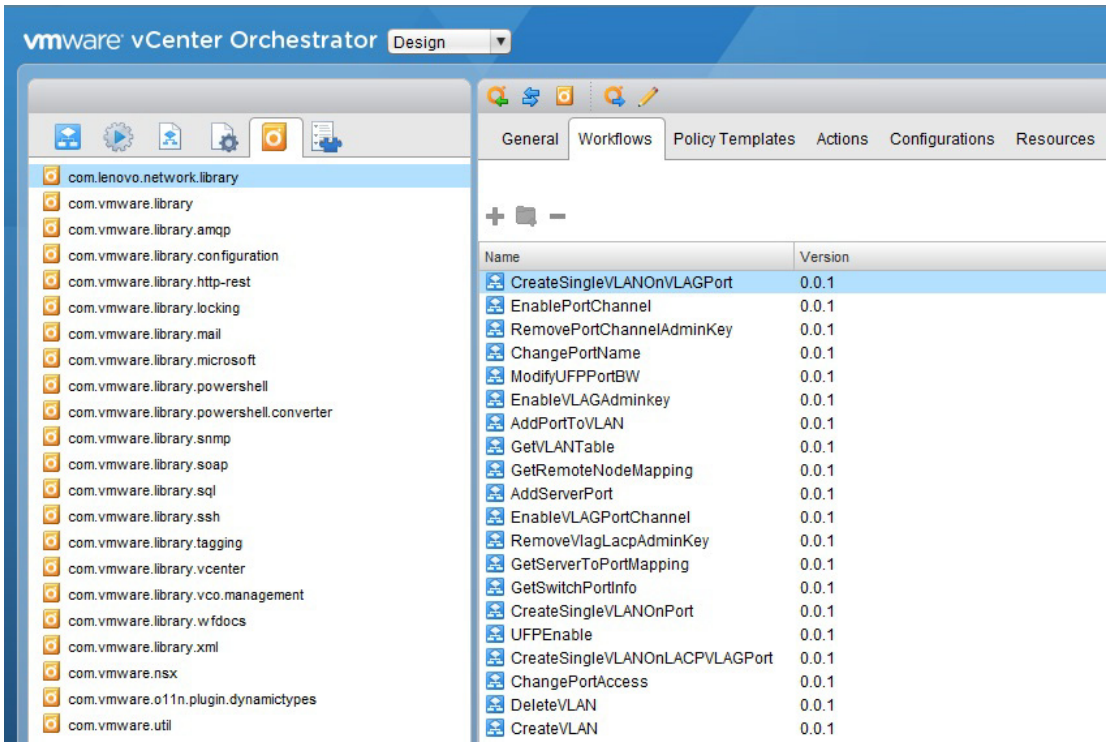
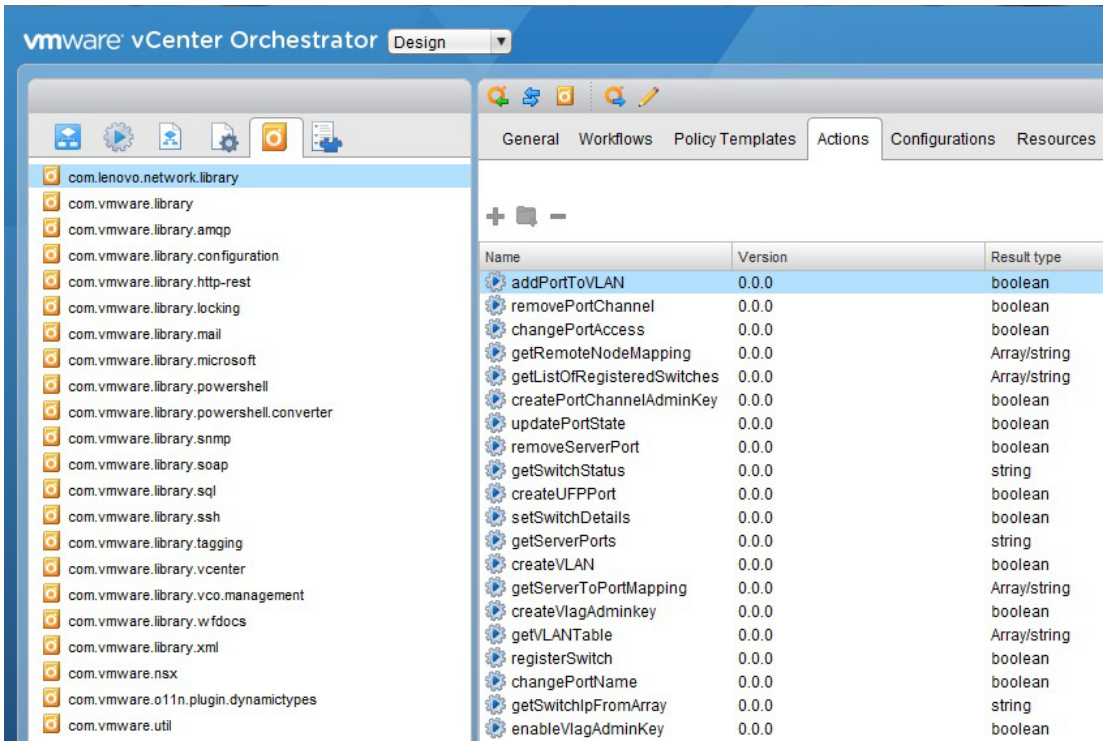
GetServerToPortMapping [0.0.1]
Library / Lenovo
GetServerToPortMapping [0.0.1]
Library / Lenovo
GetSwitchPortInfo [0.0.1]
Library / Lenovo
GetSwitchPortInfo [0.0.1]
Library / Lenovo
Element will be imported.
Element allowed for import, but not imported.
Unable to import, server version is greater or a new branch has b...
Unable to overwrite a non-encrypted element with an encrypted o...
Locked or insufficient access rights.
Version not incremented element
Select/Deselect all
Import the values of the configuration settings
Import tags but preserve existing values.
Cancel
Import selected elements

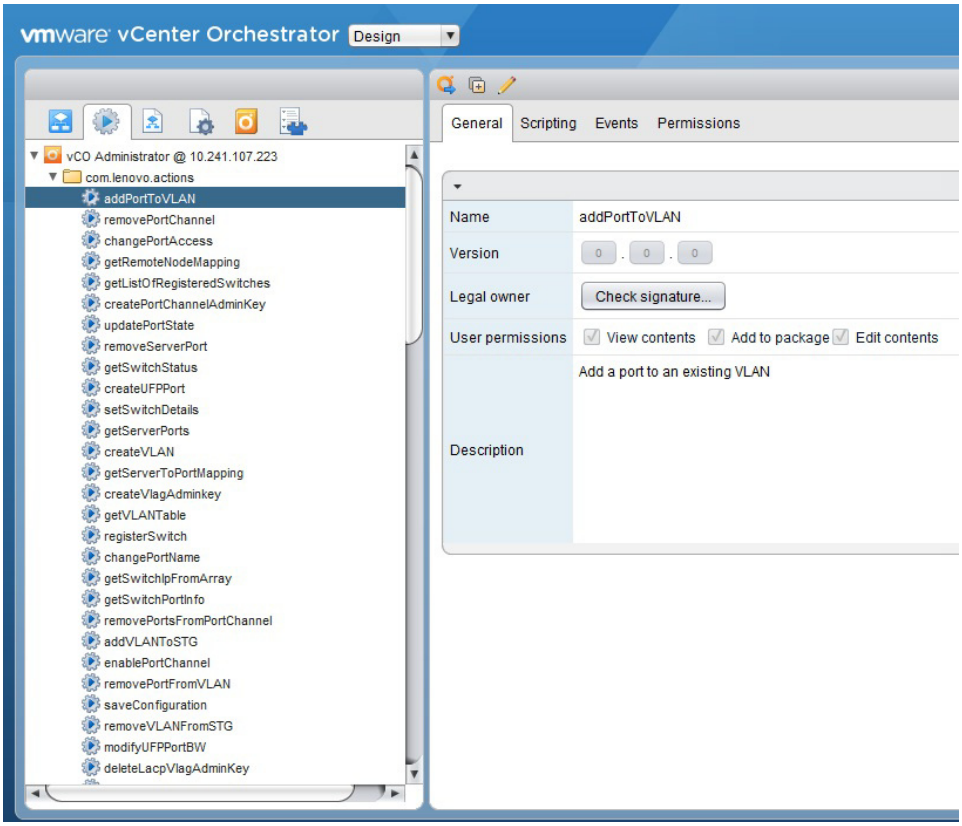
6. After this step, the package that is imported will be shown in the packages tab. Click on the package **com.lenovo.network.library** and see the actions and workflows listed on the right side. Verify if the package contents are proper after the import is over:



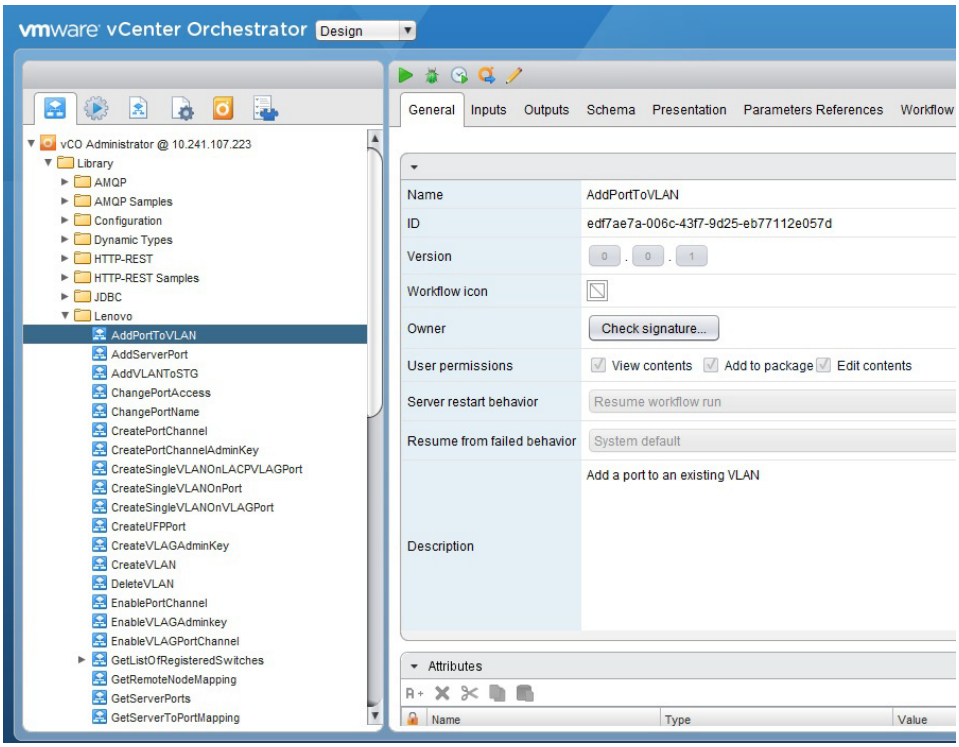




a. Click on the **Actions** tab in the left panel and expand the **com.lenovo.actions** folder to view the imported actions.



b. Click on the **Workflows** tab in the left panel and expand the **com.lenovo.actions** folder to view the imported workflows.



v. Plug-in Uninstallation

To uninstall the plug-in follow the steps described below:

1. Go to **/usr/lib/vco/app-server/plugins** directory.
2. Remove the **o11nplugin-Lenovo.dar** file.
3. Restart the servers.

Chapter 3. Using the Plug-in

To start using the plug-in, run and log into the vRealize Orchestrator (vRO) Client. The client allows you to run and schedule workflows, manage user permissions etc. The client also enables you to develop workflows and actions.

For more information about using the vRO Client, refer to the following document on the vRealize Orchestrator Documentation page:

- Using the VMware vCenter Orchestrator Client.

The client has three views:

- **`Run`** - Provides features that enable you to run and schedule workflows.
- **`Design`** - Provides features that enable you to develop actions and workflows.
- **`Administer`** - Provides features that enable you to manage users, packages etc.

Actions and Workflows

This section describes the Actions and Workflows provided by the plug-in. Actions typically are individual tasks that have a single result and can be used to build Workflows. Workflows typically provide a task or process that may involve many actions, decisions and results.

Actions

The following table lists all the Actions implemented by the plug-in. In addition, a corresponding Workflow for each Action is provided. An Action begin with a lower case letter, whereas its corresponding Workflow begins with an upper case letter.

Table 1. *Actions*

Action name	Workflow name	Description	Input	Output	Preconditions
registerSwitch	RegisterSwitch	Add switches to the VRO management domain using its IPv4 address and credentials.	String switchIpAddress, String version, String readCommunity, String writeCommunity, String userName, String authenticationProtocol, String authenticationPassword, String privacyProtocol, String privacyPassword	Boolean	SNMP enabled on switch.
getListOfRegisteredSwitches	GetListOfRegisteredSwitches	Gets the list of registered switches within the vRO management domain.	None	String[] - array of switch IP addresses	None
getServerToPortMapping	GetServerToPortMapping	Determine which switch and port has specific server connection.	String serverMacAddress	String[] - Switch IP and Switch Port	Switch is registered. Switch has valid connection to an adapter in a server. LLDP is enabled on the switch.
getRemoteNodeMapping	GetRemoteNodeMapping	Return the remote system information for a given port.	String switchIpAddress, String switchPort	String[] - Remote system's chassis ID and port name	Switch is registered. Switch has valid connection to an adapter in a server. LLDP is enabled on the switch.
getVLANTable	GetVLANTable	List of VLANs Configured on a switch.	String switchIpAddress	String[] - Array of VLANs and their information	Switch is registered.
getVLANInfo	GetVLANInfo	Get detailed information about a specific VLAN.	String switchIpAddress, String vlanNumber	String[] - Name, Status, Port list	Switch is registered.

Table 1. *Actions*

Action name	Workflow name	Description	Input	Output	Preconditions
getSwitchStatus	GetSwitchStatus	Return the value of the Global Health Status of the switch.	String switchIpAddress	String Status: ok(1), noncritical(2), critical(3), unreachable(4)	Switch is registered.
createVLAN	CreateVLAN	Create new VLAN on a switch.	String switchIPAddress, String vlanName, number vlanId	boolean: Status	Switch is registered.
deleteVLAN	DeleteVLAN	Remove existing VLAN from a switch.	String switchIpAddress, String vlanId	boolean: Status	Switch is registered.
addPortToVLAN	AddPortToVLAN	Add a port to an existing VLAN.	String switchIpAddress, String vlanId, String portNum	boolean: Status	Switch is registered.
removePortFrom VLAN	RemovePortFrom VLAN	Remove a port from a VLAN.	String switchIpAddress, String vlanId, String portNum	boolean: Status	Switch is registered.
updatePortState	UpdatePortState	Enable/Disable a switch port administratively.	String switchIPAddress, String portNum, number enable(2)/disable(3)	boolean: Status	Switch is registered.
getSwitchPortInfo	GetSwitchPortInfo	Get detailed information about a specific port.	String switchIpAddress, String portNum	String[] - Speed, Mode, State, Descr, Alias, Type, etc.	Switch is registered.
changePortName	ChangePortName	Configure the user-defined name for a port on a switch for easy reference.	String switchIpAddress, String portNum, String name	boolean: Status	Switch is registered.
changePortAccess	ChangePortAccess	Change the port to Access or Trunk Mode.	String switchIpAddress, String portNum, number access (tagged(2)/untagged(3))	boolean: Status	Switch is registered.
addVLANToSTG	AddVLANToSTG	Add the VLAN to a specific spanning tree group.	String switchIPAddress, number spanningTreeGroup, number vlanId	boolean: Status	Switch is registered. Spanning tree group is already created.
removeVLANFro mSTG	RemoveVLANFro mSTG	Remove the VLAN from a specified spanning tree group.	String switchIPAddress, number spanningTreeGroup, number vlanId	boolean: Status	Switch is registered. Spanning tree group is already created.
createPortchannel	CreatePortchannel	Create a vLAG portchannel on a set of ports.	String switchIPAddress, number PortchannelNum, String ports (comma separated list of port numbers)	boolean: Status	Switch is registered.

Table 1. *Actions*

Action name	Workflow name	Description	Input	Output	Preconditions
enablePortchannel	EnablePortchannel	Enable the portchannel.	String switchIPAddress, number portChannelNum, number enable(1)/disable(2)	boolean: Status	Switch is registered. Portchannel is already created.
createPortChannelAdminKey	CreatePortChannelAdminKey	Create LACP portchannel.	String switchIpAddress, number adminKey	boolean: Status	Switch is registered.
removePortChannelAdminkey	RemovePortChannelAdminKey	Removes the static ID assignment from a LACP portchannel.	String switchIpAddress, number portChannelNum	boolean: Status	Switch is registered.
enableVLAGPortChannel	EnableVLAGPortChannel	Enable the vLAG portchannel.	String switchIPAddress, number portChannelNum, number vlag enable(1)/disable(2)	boolean: Status	Switch is registered. Portchannel is already created.
enableVLAGAdminKey	EnableVLAGAdminKey	Enable vLAG Adminkey.	String switchIpAddress, number adminKeyofthePortChannel, number vlag enable (1)/disable(2)	boolean: Status	Switch is registered. Portchannel is already created.
createVLAGAdminkey	CreateVLAGAdminkey	Create a new LACP on a given port.	String switchIpAddress, number portNum, number adminKeyofthePortChannel, number enable (off(1), active (2), passive (3))	boolean: Status	Switch is registered. The LACP trunk group is created with the required admin key.
removePortsFromPortchannel	RemovePortsFromPortchannel	Remove ports from the portchannel.	String switchIPAddress, number PortchannelNum, String ports (comma separated list of port numbers)	boolean: Status	Switch is registered.
removePortchannel	RemovePortchannel	Remove the trunk group.	String switchIpAddress, number portChannelNum	boolean: Status	Switch is registered.
deleteLacpVlagAdminkey	RemoveVlagLacpAdminkey	Set port to default LACP.	String switchIPAddress, String portNum, number setToDefault (delete(2))	boolean: Status	Switch is registered.
enableUFP	EnableUFP	Enable Global UFP on the switch.	String switchIPAddress	boolean: Status	Switch is registered.
createUFPPort	CreateUFPPort	Enable a specific UFP port.	String switchIPAddress, String portNum, String vlanId, String ufpType, String vPortNum	boolean: Status	Switch is registered. Action is applicable only on: - G8264CS SIF internal ports. - RackSwitch ports that have been configured as server ports.

Table 1. *Actions*

Action name	Workflow name	Description	Input	Output	Preconditions
modifyUFPPortBW	ModifyUFPPortBW	Modify parameters on UFP port.	String switchIPAddress, String portNum, String vPortNum, String minBW, String maxBW	boolean: Status	Switch is registered.
saveConfiguration	SaveConfiguration	Save the running configuration to the start-up configuration.	String switchIpAddress	boolean: Status	Switch is registered.
addServerPort	AddServerPort	Designate a port on a RackSwitch as an server port. Not applicable to Flex devices.	String switchIPAddress, String portNum	boolean: Status	Switch is registered.
removeServerPort	RemoveServerPort	Remove a port on a RackSwitch as an server port. Not applicable to Flex devices.	String switchIPAddress, String portNum	boolean: Status	Switch is registered.
getServerPorts	GetServerPorts	Return the list of active ports that are server ports. Not applicable to Flex devices.	String switchIPAddress	String[] - port list	Switch is registered.
setSwitchDetails	SetSwitchDetails	Sets the SNMP credentials used for the communication with the switch.	String switchIpAddress, String version, String readCommunity, String writeCommunity, String userName, String authenticationProtocol, String authenticationPassword, String privacyProtocol, String privacyPassword	Boolean	Switch is registered.

Advanced Workflows

The following table lists Advanced Workflows that combine multiple Actions to perform a task.

Table 2. *Advanced Workflows*

Workflow name	Description	Input	Output	Preconditions	Notes
CreateSingleVLAN OnPort	This will create a VLAN on a switch based on server MAC address and VLAN number.	String serverMacAddress, String VLANNum, String VLANName	Status message on the console log and the highlighted green end point in the workflow path.	Switch is registered. LLDP is enabled on the switch.	Use actions: 1. Get Server Port Mapping 2. Verify Active Switch 3. Create VLAN 4. Apply VLAN to Port 5. Apply Configuration
CreateSingleVLAN OnVLAGPort	This will create a VLAN on switch based on server MAC address and VLAN number with the server port on the switch belonging to a Static Portchannel.	String serverMacAddress, String VLANNum, String VLANName, String portChannelNumber	Status message on the console log and the highlighted green end point in the workflow path.	Switch is registered. LLDP is enabled on the switch.	Use actions: 1. Get Server Port Mapping 2. Verify Active Switch 3. Create Port Channel on the server port. 4. Enable Port Channel 5. Create VLAN 6. Apply VLAN to Static Port Channel vLAG Port 7. Apply Configuration
CreateSingleVLAN OnLACPVLAGPort	This will create a VLAN on switch based on server MAC address and VLAN number with the server port on the switch belonging to a LACP Portchannel.	String serverMacAddress, String VLANNum, String VLANName, String portChannelNumber	Status message on the console log and the highlighted green end point in the workflow path.	Switch is registered. LLDP is enabled on the switch.	Use actions: 1. Get Server Port Mapping 2. Verify Active Switch 3. Create LACP Port Channel. 4. Create LACP Port using LACP Port Channel adminKey. 5. Create VLAN 6. Apply VLAN to LACP Port Channel Port 7. Apply Configuration

Chapter 4. Troubleshooting

vRealize Orchestrator provides an extensive logging facility for troubleshooting issues. Refer to the following document on the vRealize Orchestrator Documentation page for details on how to enable logging, change log levels and where to access the log files:

- Installing and Configuring VMware vCenter Orchestrator

The Lenovo Networking Plug-in for VMware vRealize Orchestrator supports the following log levels:

- INFO
- DEBUG
- ERROR

The following table lists the various log levels that are supported:

Table 3. *Logging Messages*

LOG_INFO	2015-05-25 07:15:23.237+0000 [WorkflowExecutorPool-Thread-18] INFO {vcoadmin:RegisterSwitchUsingAction:8a71eb5b4d89bd6d014d89ed0373009c:3d3ebb73-6413-42e6-858a-539fed85e849:[3d3ebb73-6413-42e6-858a-539fed85e849]} [RegisterSwitch] sysInfo is [1, Discovered device info... IP Address = 10.241.105.239 sysDescr = Lenovo Flex System Fabric EN4093R 10Gb Scalable Switch sysObjectID = 1.3.6.1.4.1.20301.1.18.18 sysName = compassr SNMP Version = 1 SNMP Port = 161 Security Model = v1v2 Read Community = public Write Community = private]
LOG_INFO	2015-05-25 10:28:35.430+0000 [WorkflowExecutorPool-Thread-1] INFO {vcoadmin:RegisterSwitchUsingAction:8a71eb7b4d8a9ac2014d8a9de41f0004:3d3ebb73-6413-42e6-858a-539fed85e849:[3d3ebb73-6413-42e6-858a-539fed85e849]} [SCRIPTING_LOG] [RegisterSwitchUsingAction (5/25/15 10:28:32)] Registration of the switch successful
LOG_INFO	2015-05-25 10:39:43.801+0000 [WorkflowExecutorPool-Thread-7] INFO {vcoadmin:CreateVLAN:8a71eb7b4d8a9ac2014d8aa8034b0034:5ec1d57a-3e00-4b86-a025-96c0741d1fa7:[5ec1d57a-3e00-4b86-a025-96c0741d1fa7]} [SCRIPTING_LOG] [CreateVLAN (5/25/15 10:39:36)] VLAN creation has been successful

Table 3. *Logging Messages*

LOG_INFO	2015-05-25 10:46:42.213+0000 [WorkflowExecutorPool-Thread-10] INFO {vcoadmin:AddPortToVLAN:8a71eb7b4d8a9ac2014d8aae6c7a0050:26de7650-eab1-4cfa-b0b6-2f2acf60f5e2:[26de7650-eab1-4cfa-b0b6-2f2acf60f5e2]} [SCRIPTING_LOG] [AddPortToVLAN (5/25/15 10:46:36)] Adding port to VLAN successful
LOG_INFO	2015-05-25 10:46:42.169+0000 [WorkflowExecutorPool-Thread-10] INFO {vcoadmin:AddPortToVLAN:8a71eb7b4d8a9ac2014d8aae6c7a0050:26de7650-eab1-4cfa-b0b6-2f2acf60f5e2:[26de7650-eab1-4cfa-b0b6-2f2acf60f5e2]} [AddPortToVLAN] Applying configuration after SET DONE
LOG_INFO	2015-05-25 10:50:20.175+0000 [WorkflowExecutorPool-Thread-11] INFO {vcoadmin:GetListOfRegisteredSwitches:8a71eb7b4d8a9ac2014d8ab1d1710058:3a9b700c-2bb5-4323-b060-0f1eaa97fa29:[3a9b700c-2bb5-4323-b060-0f1eaa97fa29]} [SCRIPTING_LOG] [GetListOfRegisteredSwitches (5/25/15 10:50:18)] Got the registered switches
LOG_INFO	2015-05-25 10:59:08.787+0000 [WorkflowExecutorPool-Thread-15] INFO {vcoadmin:GetMarsSwitchStatus:8a71eb7b4d8a9ac2014d8ab9d8da007e:52711401-2600-45af-94b7-7255f1a3a250:[52711401-2600-45af-94b7-7255f1a3a250]} [SCRIPTING_LOG] [GetMarsSwitchStatus (5/25/15 10:59:05)] getting the switch health status successful
LOG_ERROR	2015-05-25 07:24:30.955+0000 [WorkflowExecutorPool-Thread-21] ERROR {vcoadmin:CreateVLAGAdminKey:8a71eb5b4d89bd6d014d89f562ce00b3:9fc0ef8d-3b9c-419b-8063-41ef6b12f5c8:[9fc0ef8d-3b9c-419b-8063-41ef6b12f5c8]} [CreatePortChannel] ip address is not valid
LOG_ERROR	2015-05-25 10:32:06.735+0000 [WorkflowExecutorPool-Thread-3] ERROR {vcoadmin:UFPEnable:8a71eb7b4d8a9ac2014d8aa122cf0013:bfbeba47-d593-496e-af1f-156da77ccbc9:[bfbeba47-d593-496e-af1f-156da77ccbc9]} [UFPEnable] ip address is not valid
LOG_ERROR	2015-05-25 10:33:40.354+0000 [WorkflowExecutorPool-Thread-4] ERROR {vcoadmin:CreateUFPPort:8a71eb7b4d8a9ac2014d8aa29095001b:6c95e358-8d71-4434-a5f7-e33ea164c55e:[6c95e358-8d71-4434-a5f7-e33ea164c55e]} [UFPPortEnable] UFP port parameters are invalid

Table 3. *Logging Messages*

LOG_ERROR	2015-05-25 10:35:47.032+0000 [WorkflowExecutorPool-Thread-5] ERROR {vcoadmin:RemovePortChannel:8a71eb7b4d8a9ac2014d8aa47f8f0024:63150e59-36cf-4e07-b193-68d24dc4c085:[63150e59-36cf-4e07-b193-68d24dc4c085]} [RemovePortChannel] port channel number is invalid
LOG_ERROR	2015-05-25 10:37:18.799+0000 [WorkflowExecutorPool-Thread-6] ERROR {vcoadmin:ModifyUFPPortBW:8a71eb7b4d8a9ac2014d8aa5e613002c:7cae3d5e-6084-4398-a555-c6cab36c58b0:[7cae3d5e-6084-4398-a555-c6cab36c58b0]} [ModifyUFPPortBW] UFP port params are invalid
LOG_ERROR	2015-05-25 10:44:47.502+0000 [WorkflowExecutorPool-Thread-9] ERROR {vcoadmin:GetRemoteNodeMapping:8a71eb7b4d8a9ac2014d8aacbe9d0048:c36a11ae-6d12-4547-978b-24fcf659c075:[c36a11ae-6d12-4547-978b-24fcf659c075]} [GetRemoteNodeMapping] switch port is not valid
LOG_DEBUG	2015-05-25 10:41:38.751+0000 [WorkflowExecutorPool-Thread-8] DEBUG {vcoadmin:GetVLANInfo:8a71eb7b4d8a9ac2014d8aa9dce5003c:73f2b9dd-1df3-4b9e-893e-7d622dc17349:[73f2b9dd-1df3-4b9e-893e-7d622dc17349]} [WorkflowHandler] getAttributeFromCache WorkflowTokenAttribute [name=array, type=Array/string, value=#{#string#key = vlanInfoStatus.1300,value = 2#;#string#key = vlanInfoPorts.1300,value = 13;43-44#;#string#key = vlanInfoName.1300,value = VLAN 1300#}#]
LOG_DEBUG	2015-05-25 10:46:37.495+0000 [WorkflowExecutorPool-Thread-10] DEBUG {vcoadmin:AddPortToVLAN:8a71eb7b4d8a9ac2014d8aae6c7a0050:26de7650-eab1-4cfa-b0b6-2f2acf60f5e2:[26de7650-eab1-4cfa-b0b6-2f2acf60f5e2]} [WorkflowHandler] getAttributeFromCache WorkflowTokenAttribute [name=portNum, type=string, value=6] 2015-05-25 10:46:37.495+0000 [WorkflowExecutorPool-Thread-10] DEBUG {vcoadmin:AddPortToVLAN:8a71eb7b4d8a9ac2014d8aae6c7a0050:26de7650-eab1-4cfa-b0b6-2f2acf60f5e2:[26de7650-eab1-4cfa-b0b6-2f2acf60f5e2]} [WorkflowScriptRunner] Fetching portNum

Table 3. *Logging Messages*

LOG_DEBUG	2015-05-25 10:50:20.150+0000 [WorkflowExecutorPool-Thread-11] DEBUG {vcoadmin:GetListOfRegisteredSwitches:8a71eb7b4d8a9ac2014d8ab1d1710058:3a9b700c-2bb5-4323-b060-0f1eaa97fa29:[3a9b700c-2bb5-4323-b060-0f1eaa97fa29]} [WorkflowHandler] getAttributeFromCache WorkflowTokenAttribute [name=returnVals, type=Array/string, value=#{#string#switchIp=10.241.105.239,switchType=compassr#}#]
LOG_DEBUG	2015-05-25 10:52:06.365+0000 [WorkflowExecutorPool-Thread-12] DEBUG {vcoadmin:GetSwitchPortInfo:8a71eb7b4d8a9ac2014d8ab36cb20061:9028ba38-6619-4399-9deb-7311036b35da:[9028ba38-6619-4399-9deb-7311036b35da]} [WorkflowHandler] getAttributeFromCache WorkflowTokenAttribute [name=retArray, type=Array/string, value=#{#string#key = portInfoType.5,value = 7#;#string#key = portInfoMode.5,value = 2#;#string#key = portInfoPhyIfDescr.5,value = INTA5#;#string#key = portInfoSpeed.5,value = 5#;#string#key = portInfoPhyIfOperStatus.5,value = 2#}#]
LOG_DEBUG	2015-05-25 10:56:07.479+0000 [WorkflowExecutorPool-Thread-13] DEBUG {vcoadmin:GetSwitchPortInfo:8a71eb7b4d8a9ac2014d8ab71e8c006d:9028ba38-6619-4399-9deb-7311036b35da:[9028ba38-6619-4399-9deb-7311036b35da]} [WorkflowHandler] getAttributeFromCache WorkflowTokenAttribute [name=retArray, type=Array/string, value=__NULL__]
LOG_DEBUG	2015-05-25 10:59:08.785+0000 [WorkflowExecutorPool-Thread-15] DEBUG {vcoadmin:GetMarsSwitchStatus:8a71eb7b4d8a9ac2014d8ab9d8da007e:52711401-2600-45af-94b7-7255f1a3a250:[52711401-2600-45af-94b7-7255f1a3a250]} [WorkflowHandler] getAttributeFromCache WorkflowTokenAttribute [name=result, type=string, value=critical]

Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about Lenovo products, you will find a wide variety of sources available from Lenovo to assist you.

Use this information to obtain additional information about Lenovo and Lenovo products, and determine what to do if you experience a problem with your Lenovo system or optional device.

Note: This section includes references to IBM web sites and information about obtaining service. IBM is Lenovo's preferred service provider for the System x, Flex System, and NeXtScale System products.

Before you call, make sure that you have taken these steps to try to solve the problem yourself.

If you believe that you require warranty service for your Lenovo product and you have purchased the plug-in through the “Lenovo Networking Bundle for vRealize”, the service technicians will be able to assist you more efficiently if you prepare before you call.

- Go to the IBM Support portal to check for information to help you solve the problem.
- Gather the following information to provide to the service technician. This data will help the service technician quickly provide a solution to your problem and ensure that you receive the level of service for which you might have contracted.
  - Pertinent information such as error messages and logs
- Start the process of determining a solution to your problem by making the pertinent information available to the service technicians. The IBM service technicians can start working on your solution as soon as you have completed and submitted an Electronic Service Request.

You can solve many problems without outside assistance by following the troubleshooting procedures that Lenovo provides in the online help or in the Lenovo product documentation. The Lenovo product documentation also describes the diagnostic tests that you can perform. The documentation for most systems, operating systems, and programs contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

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