

Configuring network resources to support deployment and virtual server relocation

Prerequisites:

Make sure that you have met the following prerequisites before you complete the steps in this quick start guide:

- An IBM Flex System Manager management node is managing a chassis. For more information about installing components in a chassis and configuring those components, see the following quick start guides:
 - *Installing the IBM Flex System Enterprise Chassis*
 - *Configuring components of the IBM Flex System Enterprise Chassis*
 - *Configuring the IBM Flex System Manager management node*
 - *Selecting one or more chassis to be managed in the IBM Flex Systems Manager domain or Adding a chassis to an existing Flex System Manager management domain*
- A storage copy services or NIM image repository is configured with at least one deployable virtual appliance or workload. For more information about managing images using VMControl and a NIM server, see the *Managing images using VMControl and NIM* quick start guide.
- SAN storage is configured for the virtual servers that are capable of relocation.

Background:

When the IBM Flex System Enterprise chassis is configured in the standard manner, you can use VMControl to deploy imported and captured virtual appliances as new virtual machines on the compute nodes.

In the VMControl deployment wizard, the Network Mapping panel prompts to map the virtual appliance's networks to networks available on the target compute node. In the standard IBM Flex System configuration, the only choice is to map the virtual appliance's networks to **VLAN xxx (Bridged)**. This means that all deployed workloads will communicate on the same VLAN, which is the management VLAN connecting all of the components in your IBM Flex System rack.

However, you might want your new virtual machines, or subsets of them, to communicate on different VLANs. There are two ways to configure these additional VLANs:

- **Manually.** Create VLANs using the VLAN configuration templates available on the IBM Flex System Manager management node.
- **Dynamically.** Set up Network Control so that it can automatically configure and manage your VLANs across multiple switches. You can then use these additional VLANs as you deploy your virtual appliance.

There are several advantages to configuring these VLANs dynamically (called the Automated Logical Network Provisioning feature):

- No need to perform error-prone manual configurations that must be coordinated across multiple devices.
- VLANs are configured only when and where they are needed.
- No need to involve a network administrator for everyday tasks such as deploying or moving a virtual machine. Network Control automatically modifies the network configuration to provide the connectivity required by the virtual machine.
- Separation of the network based on VLAN ID within a network system pool. This enables you to have multiple clients or tenants using the same environment without being able to view each other's network traffic.

This feature will configure the chassis I/O modules, any optional top-of-rack switches used to connect the chassis to one another, and the virtual switches within the virtualized compute nodes in the chassis. You can also specify whether there are VLANs outside this management domain to which you want to connect.

This Automated Logical Network Provisioning feature supports configuration of one logical adapter per virtual machine. If you need to configure multiple adapters per virtual machine, or if you have multiple physical adapters in your compute node and need to connect different virtual machines to different networks, you can automatically configure only one of those networks using Network Control. You will need to manually configure the VLANs on your other network(s).

This document covers the initial setup steps that you must perform to be able to configure your environment using either method.

Steps:

Complete the following steps to prepare switches and servers to be managed as a single network. You must complete these steps before you can configure VLANs.

1. Identify network system pool components.

Identify the components you want in your network system pool. You should include all chassis, compute nodes, and switches that you plan to manage with your IBM Flex System Manager node. If you use top-of-rack switches to connect multiple chassis managed by the same IBM Flex System Manager, you should include those switches as well so that the IBM Flex System Manager node can manage the network across the chassis.

Notes:

- Users must have administrator authority to add switches to a network system pool.
- Only switches that have physical network connectivity to each other can be added to the network system pool. Having switches with physical network connectivity ensures a path from each switch to every other switch.

- Compute nodes that are attached to switches in the network system pool, along with the associated virtual servers and virtual switches, are considered part of the network system pool's mobility domain.

For a list of supported switches, look for switches with Configuration Management support in the following topic:

Information center (Internet) :

http://publib.boulder.ibm.com/infocenter/flexsys/information/topic/com.ibm.sdnm.adv.helps.doc/fnc0_r_network_ctrl_device_support.html

The IBM Flex System product documentation is also available on the IBM Flex System Manager management node. To access the installed documentation, click Information Center from the IBM Flex System Manager Home page and then navigate to:

IBM Flex System information→Management devices and solutions→IBM Flex System Manager management node→Managing network resources→Network Control→Planning→IBM Flex System Manager Network Control device and task support

2. Discover and request access to network system pool components.

All the components (endpoints) that you identified in the previous step should be discovered in the IBM Flex System Manager management node, and it must have full access to the endpoints. The Ethernet switch endpoints must all have the SNMP protocol discovered and active. The SNMP protocol is required for all Ethernet switches in the network system pool.

For information on how to perform discovery, see the following topic:

Information center (Internet) :

http://publib.boulder.ibm.com/infocenter/flexsys/information/topic/com.ibm.director.discovery.helps.doc/fqm0_t_discovering_and_inventorying_resources.html

The IBM Flex System product documentation is also available on the IBM Flex System Manager management node. To access the installed documentation, click Information Center from the IBM Flex System Manager Home page and then navigate to:

IBM Flex System information→Management devices and solutions→IBM Flex System Manager management node→Managing all resources→Discovering systems and collecting inventory data

For information on how to request access to Ethernet switches, see the *Getting full access to Ethernet I/O modules* quick start guide.

3. Collect inventory on all of the discovered compute nodes and switches that you would like to be part of your network system pool.

For information on how to collect inventory, see the following topics:

Information center (Internet) :

- http://publib.boulder.ibm.com/infocenter/flexsys/information/topic/com.ibm.director.discovery.helps.doc/fqm0_t_collecting_and_viewing_inventory_data.html

The IBM Flex System product documentation is also available on the IBM Flex System Manager management node. To access the installed documentation, click Information Center from the IBM Flex System Manager Home page and then navigate to:
IBM Flex System information→Management devices and solutions→IBM Flex System Manager management node→Managing all resources→Discovering systems and collecting inventory data→Collecting and viewing inventory data

- http://publib.boulder.ibm.com/infocenter/flexsys/information/topic/com.ibm.sdnm.adv.helps.doc/fnc0_t_network_ctrl_virtual_resources.html

The IBM Flex System product documentation is also available on the IBM Flex System Manager management node. To access the installed documentation, click Information Center from the IBM Flex System Manager Home page and then navigate to:
IBM Flex System information→Management devices and solutions→ IBM Flex System Manager management node→Managing network resources→Network Control→Managing→Discovering network systems→Working with virtual network resources

4. Create the logical network profile templates.

Logical network profiles define the attributes that describe the logical networks that reside within a network system pool. **Servers that are on the same logical network are guaranteed to be able to connect to each other.** This is a key function provided by network system pools. Each logical network profile specifies a VLAN ID to which you want to connect virtual machines, as well as an optional identifier of an IEEE 802.1Qbg VSI Type profile that you would like to deploy as part of the logical network. (You must use the IBM System Network Element Manager product to create IEEE 802.1Qbg VSI Type profiles.)

You can create as many logical network profiles as you would like to associate with your network system pool.

For information on creating logical network profiles, see the following topic:

Information center (Internet) :

http://publib.boulder.ibm.com/infocenter/flexsys/information/topic/com.ibm.sdnm.adv.helps.doc/fnc0_r_panel_network_ctrl_LNP_learn_more.html

The IBM Flex System product documentation is also available on the IBM Flex System Manager management node. To access the installed documentation, click Information Center from the IBM Flex System Manager Home page and then navigate to:

IBM Flex System information→ Management devices and solutions→ IBM Flex System Manager management node→Managing network resources→Network Control→Managing→Managing network system pools and logical networks→Using logical network profiles with network system pools

Note: Adding a logical network profile to a network system pool is not required when you use VMware vCenter. When you create a virtual machine with a port group using VMware vCenter, a corresponding logical network profile is automatically created in the IBM Flex System Manager software if a matching logical network profile is not found. Network Control uses this logical network profile for configuring the underlying network.

5. Create the network system pool.

Create a single network system pool for the domain managed by the IBM Flex System Manager node. It should include all Ethernet switches within the chassis as well as any top-of-rack switches that are used to connect the chassis managed by this management node. If you would like to be able to connect virtual machines within the environment to VLANs that exist outside the management domain of the IBM Flex System Manager, be sure to complete the pool uplink connections pages when you create a network system pool. These pages enable you to specify which ports connect to external VLANs.

Follow these steps to create a network system pool:

- a) Log in to the IBM Flex System Manager user interface with a user account that has sufficient privileges to configure devices managed by the IBM Flex System Manager management node.
- b) Select the Plug-ins tab on the Home page.
- c) Select **VMControl**.
- d) On the VMControl summary page, select the System Pools tab. Click **Network system pools** from the View drop-down.
- e) Click **Create** to start the Create Network System Pool wizard. Use the following tips as well as the help links on the pages as you complete the wizard:
 - On the Initial Switch page, select a device that you want to include in the network system pool. You are able to add additional devices later.
 - On the Additional Systems page, select all of the other devices that you want to add to this network system pool. It is recommended that you select all devices in the list in order to create a single network system pool for all of the devices in the IBM Flex System Manager domain.
 - On the Add Pool Uplink Connections page, select all switch uplink ports that you want to specify external VLAN connectivity on. For each uplink port that you select, the wizard allows you to specify one or more external VLANs that this port connects to and specify the behavior of the port regarding VLAN traffic.
 - On the Logical Networks page, select all profiles for which you want to allow deployment within this network system pool.