Cisco Nexus 5600 Series NX-OS VM Tracker Configuration Guide, Release 7.x

First Published: December 22, 2014

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
http://www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

CONTENTS

Preface

The Preface contains the following sections:

Audience

This publication is for network administrators who configure and maintain Cisco Nexus devices and Cisco Nexus 2000 Series Fabric Extenders.

Document Conventions

Command descriptions use the following conventions:

Convention	Description
bold	Bold text indicates the commands and keywords that you enter literally as shown.
Italic	Italic text indicates arguments for which the user supplies the values.
[x]	Square brackets enclose an optional element (keyword or argument).
[x | y]	Square brackets enclosing keywords or arguments separated by a vertical bar indicate an optional choice.
{x | y}	Braces enclosing keywords or arguments separated by a vertical bar indicate a required choice.

Convention	Description
[x {y | z}]	Nested set of square brackets or braces indicate optional or required choices within optional or required elements. Braces and a vertical bar within square brackets indicate a required choice within an optional element.
`variable`	Indicates a variable for which you supply values, in context where italics cannot be used.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.

Examples use the following conventions:

Convention	Description
`screen font`	Terminal sessions and information the switch displays are in screen font.
`boldface screen font`	Information you must enter is in boldface screen font.
italic screen font	Arguments for which you supply values are in italic screen font.
< >	Nonprinting characters, such as passwords, are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

This document uses the following conventions:

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Related Documentation for Cisco Nexus 5600 Series NX-OS Software

The entire Cisco NX-OS 5600 Series documentation set is available at the following URL:

http://www.cisco.com/c/en/us/support/switches/nexus-5000-series-switches/tsd-products-support-series-home.html

Release Notes

The release notes are available at the following URL:

http://www.cisco.com/c/en/us/support/switches/nexus-5000-series-switches/products-release-notes-list.html

Configuration Guides

These guides are available at the following URL:

http://www.cisco.com/c/en/us/support/switches/nexus-5000-series-switches/products-installation-and-configuration-guides-list.html

The documents in this category include:

- *Cisco Nexus 5600 Series NX-OS Adapter-FEX Configuration Guide*
- *Cisco Nexus 5600 Series NX-OS FabricPath Configuration Guide*
- *Cisco Nexus 5600 Series NX-OS Fibre Channel over Ethernet Configuration Guide*
- *Cisco Nexus 5600 Series NX-OS Fundamentals Configuration Guide*
- *Cisco Nexus 5600 Series NX-OS Interfaces Configuration Guide*
- *Cisco Nexus 5600 Series NX-OS Layer 2 Switching Configuration Guide*
- *Cisco Nexus 5600 Series NX-OS Multicast Routing Configuration Guide*
- *Cisco Nexus 5600 Series NX-OS Quality of Service Configuration Guide*
- *Cisco Nexus 5600 Series NX-OS SAN Switching Configuration Guide*
- *Cisco Nexus 5600 Series NX-OS Security Configuration Guide*
- *Cisco Nexus 5600 Series NX-OS System Management Configuration Guide*
- *Cisco Nexus 5600 Series NX-OS Unicast Routing Configuration Guide*

Licensing Guide

The *License and Copyright Information for Cisco NX-OS Software* is available at http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/license_agreement/nx-ossw_lisns.html.

Command References

These guides are available at the following URL:

http://www.cisco.com/c/en/us/support/switches/nexus-5000-series-switches/products-command-reference-list.html

The documents in this category include:

- *Cisco Nexus 5600 Series NX-OS Fabric Extender Command Reference*
- *Cisco Nexus 5600 Series NX-OS FabricPath Command Reference*
- *Cisco Nexus 5600 Series NX-OS Fibre Channel Command Reference*

- *Cisco Nexus 5600 Series NX-OS Fundamentals Command Reference*
- *Cisco Nexus 5600 Series NX-OS Interfaces Command Reference*
- *Cisco Nexus 5600 Series NX-OS Layer 2 Interfaces Command Reference*
- *Cisco Nexus 5600 Series NX-OS Multicast Routing Command Reference*
- *Cisco Nexus 5600 Series NX-OS QoS Command Reference*
- *Cisco Nexus 5600 Series NX-OS Security Command Reference*
- *Cisco Nexus 5600 Series NX-OS System Management Command Reference*
- *Cisco Nexus 5600 Series NX-OS TrustSec Command Reference*
- *Cisco Nexus 5600 Series NX-OS Unicast Routing Command Reference*
- *Cisco Nexus 5600 Series NX-OS Virtual Port Channel Command Reference*

Error and System Messages

The *Cisco Nexus 5600 Series NX-OS System Message Guide* is available at http://www.cisco.com/en/US/docs/switches/datacenter/nexus5500/sw/system_messages/reference/sl_nxos_book.html.

Troubleshooting Guide

The *Cisco Nexus 5600 Series NX-OS Troubleshooting Guide* is available at http://www.cisco.com/c/en/us/support/switches/nexus-5000-series-switches/products-troubleshooting-guides-list.html.

Documentation Feedback

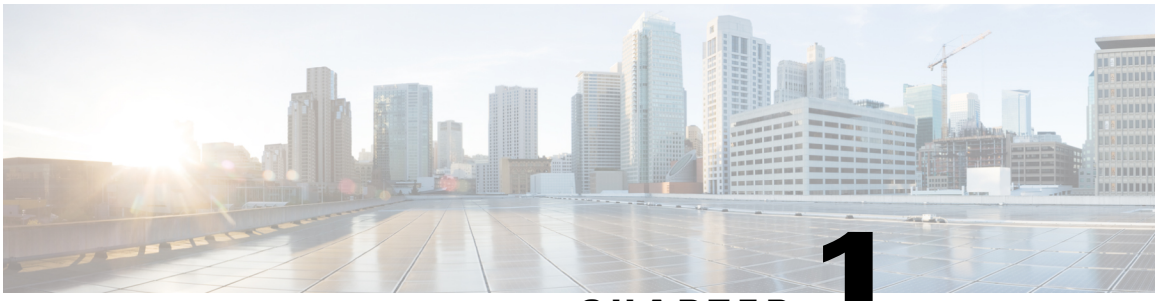
To provide technical feedback on this document, or to report an error or omission, please send your comments to: ciscodfa-docfeedback@cisco.com.

We appreciate your feedback.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation*, at: http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html.

Subscribe to *What's New in Cisco Product Documentation*, which lists all new and revised Cisco technical documentation as an RSS feed and delivers content directly to your desktop using a reader application. The RSS feeds are a free service.



CHAPTER 1

Virtual Machine Tracker Overview

This chapter contains the following sections:

Information About Virtual Machine Tracker

The growing adoption of server virtualization technologies has added to network configuration requirements. Virtual Machines (VMs) on a single physical server can belong to different Layer 2 domains and can require the Cisco Nexus device to provision multiple VLANs on the ports that connect to the physical servers. To provide seamless movement of VMs from one physical server to another, the servers must be reachable through the same Layer 2 domain so that the VMs can retain their IP addresses and network connectivity even after moving. A static predefined configuration requires provisioning of all possible VLANs that can be used by VMs in a server management domain on each port of the switch. This process can result in more logical port-based VLANs than the switch can support. Alternatively, you can dynamically provision VLANs on a Cisco Nexus device Layer 2 Ethernet or Layer 2 port-channel interface (attached to a server) based on the tracking of the VMs that are connected to the port and the VLAN requirements of these VMs.

Virtual Machine Tracker (VM Tracker) enables you to do the following:

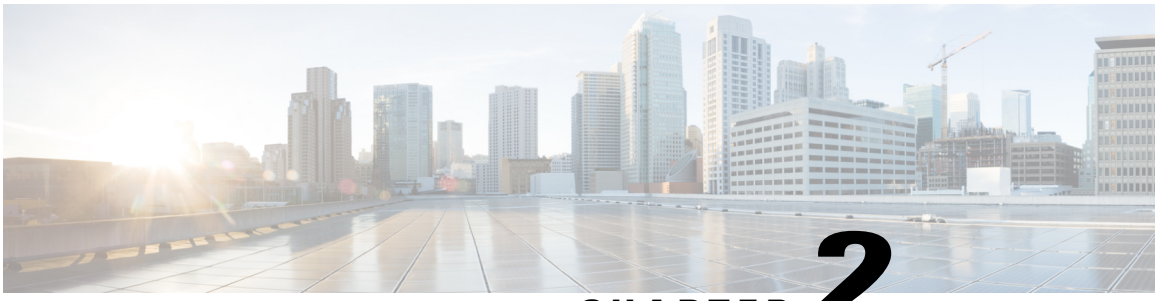
- Identify the Cisco Nexus device port that is used for each VM
- Identify the VLAN requirements of each VM
- Track the movement of VMs from one host (ESXi) to another
- Track VM configuration changes such as additions, deletions, or modifications of VLANs, and configure VLANs on Cisco Nexus device ports accordingly
- Track the additions or deletions of VMs and hosts, and configure VLANs on Cisco Nexus device ports accordingly
- Track whether the VMs are in the power on or power off state, and configure VLANs on local Cisco Nexus device ports for a VM only if the VM is in the power on state

Virtual Machine Tracker and VMware vCenter

VM Tracker connects with VMware vCenter and collects information about the VMs that are running on each host. This information includes the number of VMs that are running on connected to the host and the Cisco Nexus device through which the VM receives network traffic.

After you enable VM Tracker on the switch, it automatically extracts the following information about VMs from vCenter:

- The host on which the VMs exist.
- The Cisco Nexus device ports through which the VM traffic flows.
- The virtual network interface card (vNIC) that connects the VM to a virtual switch.
- The power state of the VM.
- The VLAN information of port groups or distributed virtual switch (DVS) port groups.
- The port groups or DVS port groups that are required for the VM.



CHAPTER 2

Configuring Virtual Machine Tracker

This chapter contains the following sections:

Information About Virtual Machine Tracker

Guidelines and Limitations for VM Tracker

VM Tracker has the following guidelines and limitations:

- VM Tracker supports up to four vCenter connections.
- VM Tracker supports high availability and the fault tolerance features of vCenter.
- VM Tracker supports up to 64 VMs per host.
- VM Tracker supports up to 230 hosts across all vCenters.
- VM Tracker supports up to 600 VLANs.
- VM Tracker supports only 507 VLANs in Per VLAN Rapid Spanning Tree (PVRST) mode due to hardware limitations. To enable more than 507 VLANs, use Multiple Spanning Tree (MST).
- VM Tracker supports ESXi 5.1 and ESXi 5.5.

- The current version of VM Tracker supports only VMware orchestration. It does not support orchestration with other hypervisors.
- Starting with Cisco NX-OS release 7.2(0)N1(1), Link Layer Discovery Protocol (LLDP) is supported.
- For all ports on which VM Tracker is enabled, you must not perform any Layer 2 or Layer 3 configuration that is related to switchports and VLANs. However, you can update the native VLAN.
- VM Tracker does not support VLAN 4095.
- You must connect the host directly to the Cisco Nexus device ports, including the FEX ports. Blade servers are not supported.
- If you do not specify the virtual routing and forwarding (VRF) while configuring the remote IP address, the management VRF is used.
- For vCenter version 5.1 and 5.5, the CDP information can contain a maximum of 32 characters for the name of the switch. If the name of the switch exceeds 32 characters, VM Tracker will not work.

Licensing Requirements for the Virtual Machine Tracker

No license is required for this feature.

Enabling Virtual Machine Tracker

By default, the VM Tracker feature is enabled on all interfaces.

Procedure

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **[no] feature vmtracker**	Enables the VM Tracker feature on all interfaces. The **no** form of the command disables the VM Tracker feature on all interfaces.

This example shows how to enable VM Tracker:

```
switch# configure terminal
switch(config)# feature vmtracker
switch(config)#
```

Creating a New Connection to vCenter

Procedure

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **[no] vmtracker connection** *connection-name*	Enters VM Tracker connection configuration mode for the connection name specified. The **no** form of the command disables the connection.
Step 3	switch(config-vmt-conn)# **[no] remote** {**ip address** *ip_address* | **port** *port_number* | **vrf** *vrf_name*}	Configures remote IP parameters. The default value for *port_number* is 80. If *vrf_name* is not specified, the default value is **management**.
Step 4	switch(config-vmt-conn)# **username** *username* **password** *password*	Verifies the username and password to connect to vCenter.
Step 5	switch(config-vmt-conn)# **[no] connect**	Connects to vCenter. The **no** form of the command disconnects VM Tracker from vCenter.

This example shows how to create a new connection to VMware vCenter:

```
switch# configure terminal
switch(config)# vmtracker connection conn1
switch(config-vmt-conn)# remote ip address 20.1.1.1 port 80 vrf management
switch(config-vmt-conn)# username user1 password abc1234
switch(config-vmt-conn)# connect
```

Synchronizing Information with VMware vCenter

By default, VM Tracker tracks all asynchronous events from VMware vCenter and updates the switchport configuration immediately. Optionally, you can also configure a synchronizing mechanism that synchronizes all host, VM, and port group information automatically with VMware vCenter at a specified interval.

Command	Purpose
[no] set interval find-new-host *val*	Sets the interval, in seconds, for finding hosts that are newly connected to vCenter. The **no** form of the command disables the previously configured interval. The default duration is 3600 seconds.

Command	Purpose
[no] set interval sync-full-info *val*	Sets the interval, in seconds, for synchronizing all host, VM, and port group related information with vCenter. The **no** form of the command disables the previously configured interval. The default duration is 3600 seconds.
vmtracker connection *connection-name* **refresh**	Synchronizes all host, VM, and port group related information with vCenter immediately for the specified connection.

This example shows how to set an interval for finding hosts that are newly connected to vCenter:

```
switch(config-vmt-conn)# set interval find-new-host 300
```

This example shows how to set an interval for synchronizing all host, VM, and port group information with vCenter:

```
switch(config-vmt-conn)# set interval sync-full-info 120
```

This example shows how to immediately synchronize all host, VM, and port group information with vCenter:

```
switch(config-vmt-conn)# vmtracker connection conn1 refresh
```

Verifying the Virtual Machine Tracker Configuration

Use the following commands to display and verify VM Tracker configuration information:

Command	Purpose
show running-config vmtracker [**all**]	Displays the VM Tracker configuration.
show vmtracker [**connection** *conn_name*] {{**info** [**interface** *intf_id*]{**summary** | **detail** | **host** | **vm** | **port-group**}} | **event-history**}	Displays the VM Tracker configuration based on the following: • Connection • Interface • Event history
show vmtracker [**connection** *conn_name*] **status**	Displays the IP address and connection status of the vCenter connection specified.
show logging level vmtracker	Displays the logging level of the syslog messages for VM Tracker.
show system internal vmtracker info all	Displays the complete configuration information of VM Tracker.

Enabling Virtual Machine Tracker on Specific Interfaces

When VM Tracker is enabled by using the **[no] feature vmtracker** command, it is enabled on all interfaces by default. You can optionally disable and enable it on specific interfaces by using the **[no] vmtracker enable** command.

Procedure

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **interface** *type slot/port*	Enters the interface configuration mode for the specified interface.
Step 3	switch(config-if)# **[no] vmtracker enable**	Enables the VM Tracker feature on the specified interface. The **no** form of the command disables the VM Tracker feature on the specified interface.

This example shows how to enable VM Tracker on a specified interface:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# vmtracker enable
```

Configuring Dynamic VLAN Creation

Enabling Dynamic VLAN Creation

Dynamic creation and deletion of VLANs globally is enabled by default. When dynamic VLAN creation is enabled, if a VM is moved from one host to another and the VLAN required for this VM does not exist on the switch, the required VLAN is automatically created on the switch. You can also disable this capability. However, if you disable dynamic VLAN creation, you must manually create all the required VLANs.

Before You Begin

Ensure that the VM Tracker feature is enabled.

Procedure

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **vmtracker connection** *connection-name*	Enters VM Tracker connection configuration mode for the connection name specified.

	Command or Action	Purpose
Step 3	switch(config-vmt-conn)# **[no] autovlan enable**	Enables dynamic VLAN creation and deletion. The **no** form of the command disables dynamic VLAN creation and deletion.

This example shows how to enable dynamic VLAN creation:

```
switch# configure terminal
switch(config)# vmtracker connection conn1
switch(config-vmt-conn)# autovlan enable
```

Configuring an Allowed VLAN List

By default, all VLANs can be configured dynamically on interfaces. You can also define a restricted list of such VLANs.

Before You Begin

Ensure that the VM Tracker feature is enabled.

Procedure

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **vmtracker connection** *connection-name*	Enters VM Tracker connection configuration mode for the connection name specified.
Step 3	switch(config-vmt-conn)# **allowed-vlans** {*allow-vlans* | **add** *add-vlans* | **except** *except-vlans* | **remove** *remove-vlans* | **all**}	Configures a list of VLANs that can be dynamically configured on interfaces.

This example shows how to configure a list of allowed VLANs:

```
switch# configure terminal
switch(config)# vmtracker connection test
switch(config-vmt-conn)# allowed-vlans 100-101
```

Removing an Allowed VLAN List

Procedure

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.

	Command or Action	Purpose
Step 2	switch(config)# **vmtracker connection** *connection-name*	Denotes the vSphere connection.
Step 3	switch(config-vmt-conn)# **default allowed-vlans**	Removes allowed VLANs.

This example shows how to remove an allowed VLAN list:

```
switch# configure terminal
switch(config)# vmtracker connection test
switch(config-vmt-conn)# default allowed-vlans
```

Example Configuration for Virtual Machine Tracker

This example shows how to create a connection with vCenter:

```
switch# configure terminal
switch(config)# feature vmtracker
switch(config)# vmtracker connection test
switch(config-vmt-conn)# remote ip address 20.1.1.1 port 80 vrf management
switch(config-vmt-conn)# username user1 password abc@123
switch(config-vmt-conn)# connect
switch(config-vmt-conn)# show vmtracker status

Connection           Host/IP                              status
------------------------------------------------------------------------------
vc1                  22.0.1.251                           No Connect
vc2                  22.0.1.247                           Connected

switch# show vmtracker connection vc2 status

Connection           Host/IP                              status
------------------------------------------------------------------------------
vc2                  22.0.1.247                           Connected

switch# show running-config vmtracker

!Command: show running-config vmtracker
!Time: Thu Oct  9 18:04:10 2014

version 7.1(0)N1(1)
feature vmtracker

vmtracker connection vc1
  remote ip address 22.0.1.251
  username administrator password 5 O0rlUinh
  no autovlan enable
  connect

switch# show running-config vmtracker all

!Command: show running-config vmtracker all
!Time: Thu Oct  9 18:10:00 2014

version 7.1(0)N1(1)
feature vmtracker

vmtracker connection vc1
  set interval pending-task-polling 2
  set interval sync-full-info 3600
  set interval find-new-host 3600
  remote ip address 22.0.1.251 port 80 vrf management
```

```
  username administrator password 5 O0rlUinh
  no autovlan enable
  allowed-vlans all
  connect

switch# show running-config interface port-channel 301

!Command: show running-config interface port-channel301
!Time: Thu Oct  9 18:06:23 2014

version 7.1(0)N1(1)

interface port-channel301
  switchport mode trunk
  switchport trunk allowed vlan 1,1001,1005
  vpc 301


switch# show vmtracker event-history

------------------------------------------------------------------------------
Event History (Conn:vc2 NumEv:439 IP:22.0.1.247)
------------------------------------------------------------------------------
EventId    Time                          Event Msg
------------------------------------------------------------------------------
12505      Oct 09 2014 17:14:32:475968  Removed TCLI 102 28 on 22.0.2.102 from
                                         first-dc
12504      Oct 09 2014 17:14:32:475958  Removed TCLI 102 29 on 22.0.2.102 from
                                         first-dc
12501      Oct 09 2014 17:14:31:535716  Removed TCLI 102 26 on 22.0.2.102 from
                                         first-dc
12500      Oct 09 2014 17:14:31:535711  Removed TCLI 102 27 on 22.0.2.102 from
                                         first-dc

switch# show logging level vmtracker

Facility        Default Severity        Current Session Severity
--------        ----------------        ------------------------
vmtracker               2                       7

0(emergencies)          1(alerts)       2(critical)
3(errors)               4(warnings)     5(notifications)
6(information)          7(debugging)


!How to disconnect from vcenter

switch# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
switch(config)# vmtracker connection vc2
switch(config-vmt-conn)# no connect

switch# show vmtracker connection vc2 status

Connection           Host/IP                              status
------------------------------------------------------------------------------
vc2                  22.0.1.247                           No Connect

switch# show running-config interface port-channel 301

!Command: show running-config interface port-channel301
!Time: Thu Oct  9 18:17:04 2014

version 7.1(0)N1(1)

interface port-channel301
  switchport mode trunk
  switchport trunk allowed vlan 1
  vpc 301

switch# show vmtracker info host
```

```
Switch: FOC1721R0UG
====================
--------------------------------------------------------------------------------
Interface                 Host                      VMNIC
--------------------------------------------------------------------------------
port-channel201           22.0.2.3                  vmnic0
Switch: FOC1736R028
====================
--------------------------------------------------------------------------------
Interface                 Host                      VMNIC
--------------------------------------------------------------------------------
port-channel201           22.0.2.3                  vmnic1
port-channel203           22.0.2.1                  vmnic1
port-channel202           22.0.2.3                  vmnic2
--------------------------------------------------------------------------------


switch# show vmtracker info vm

Switch: FOC1721R0UG
====================
--------------------------------------------------------------------------------
Interface                 VM                                  State
--------------------------------------------------------------------------------
port-channel201           ubuntu server 1                     on
port-channel201           win7 1                              on
Switch: FOC1736R028
====================
--------------------------------------------------------------------------------
Interface                 VM                                  State
--------------------------------------------------------------------------------
port-channel201           ubuntu server 1                     on
port-channel201           win7 1                              on
port-channel203           TCL Inst 2.1 11                     on
port-channel203           TCL Inst 2.1 12                     on
port-channel202           TCL Inst 2.3 10                     on
port-channel202           TCL Inst 2.3 8                      off
port-channel202           TCL Inst 2.3 9                      off
--------------------------------------------------------------------------------

switch# show vmtracker info summary

Switch: FOC1721R0UG
====================
------------------------------------------------------------
Interface            VM                            VLANs
------------------------------------------------------------
port-channel201      ubuntu server 1               91
port-channel201      win7 1                        91
Switch: FOC1736R028
====================
------------------------------------------------------------
Interface            VM                            VLANs
------------------------------------------------------------
port-channel201      ubuntu server 1               91
port-channel201      win7 1                        91
port-channel203      TCL Inst 2.1 11               93
port-channel203      TCL Inst 2.1 12               93
port-channel202      TCL Inst 2.3 10               97
port-channel202      TCL Inst 2.3 8                97
port-channel202      TCL Inst 2.3 9                97
------------------------------------------------------------

switch# sh vmtracker info port-group

Switch: FOC1721R0UG
====================
------------------------------------------------------------------------------------------
Interface            PortGroup                          Type            VLANs
------------------------------------------------------------------------------------------
port-channel201      VM Network 3 vpc po                vSwitch         91
port-channel201      VM Network 3 vpc po                vSwitch         91
Switch: FOC1736R028
```

```
==================
--------------------------------------------------------------------------------------------
Interface            PortGroup                                Type            VLANs
--------------------------------------------------------------------------------------------
port-channel201      VM Network 3 vpc po                      vSwitch         91
port-channel201      VM Network 3 vpc po                      vSwitch         91
port-channel203      VM Network 200 2lvpc AA-FEX              vSwitch         93
port-channel203      VM Network 200 2lvpc AA-FEX              vSwitch         93
port-channel202      VM Network 4 AA FEX HIF PO               vSwitch         97
port-channel202      VM Network 4 AA FEX HIF PO               vSwitch         97
port-channel202      VM Network 4 AA FEX HIF PO               vSwitch         97
--------------------------------------------------------------------------------------------


switch# show vmtracker info detail

Switch: FOC1721R0UG
==================
--------------------------------------------------------------------------------------------
Interface            Host            VMNIC   VM                                State PortGroup
                           VLAN-Range
--------------------------------------------------------------------------------------------
port-channel201      22.0.2.3        vmnic0  ubuntu server 1                   on    VM Network
 3 vpc po                 91
port-channel201      22.0.2.3        vmnic0  win7 1                            on    VM Network
 3 vpc po                 91
Switch: FOC1736R028
==================
--------------------------------------------------------------------------------------------
Interface            Host            VMNIC   VM                                State PortGroup
                           VLAN-Range
--------------------------------------------------------------------------------------------
port-channel201      22.0.2.3        vmnic1  ubuntu server 1                   on    VM Network
 3 vpc po                 91
port-channel201      22.0.2.3        vmnic1  win7 1                            on    VM Network
 3 vpc po                 91
port-channel203      22.0.2.1        vmnic1  TCL Inst 2.1 11                   on    VM Network
 200 2lvpc AA-FEX         93
port-channel203      22.0.2.1        vmnic1  TCL Inst 2.1 12                   on    VM Network
 200 2lvpc AA-FEX         93
port-channel202      22.0.2.3        vmnic2  TCL Inst 2.3 10                   on    VM Network
 4 AA FEX HIF PO          97
port-channel202      22.0.2.3        vmnic2  TCL Inst 2.3 8                    off   VM Network
 4 AA FEX HIF PO          97
port-channel202      22.0.2.3        vmnic2  TCL Inst 2.3 9                    off   VM Network
 4 AA FEX HIF PO          97
--------------------------------------------------------------------------------------------
switch# show system internal vmtracker info all
VM-Interface Mapping (Device:50:87:89:a1:f0:de)
--------------------------------------------------------------------------------
Interface       Host            VMNIC   VM         State PortGroup  VLAN-Range
--------------------------------------------------------------------------------
port-channel2   10.193.174.213  vmnic7  Site-1-Hos on    dvPortGrou 1-100
port-channel2   10.193.174.213  vmnic7  Site-1-Hos on    dvPortGrou 1-100
VM-Interface Mapping (Device:50:87:89:a1:f0:df)
--------------------------------------------------------------------------------
Interface       Host            VMNIC   VM         State PortGroup  VLAN-Range
--------------------------------------------------------------------------------
port-channel3   10.193.174.214  vmnic7  Site-1-Hos on    dvPortGrou 1-100
port-channel3   10.193.174.214  vmnic7  Site-1-Hos on    dvPortGrou 1-100
VM-Interface Mapping (Device:50:87:89:a1:f0:e1)
--------------------------------------------------------------------------------
Interface       Host            VMNIC   VM         State PortGroup  VLAN-Range
--------------------------------------------------------------------------------


--------------------------------------------------------------------------------
Host VM Info (Conn:conn1 IP:10.193.174.215)
--------------------------------------------------------------------------------
Host            VM                          State      PortGroup
--------------------------------------------------------------------------------
10.193.174.213  Site-1-Host-1-VM-1-Ubuntu on         VM Network
10.193.174.213  Site-1-Host-1-VM-1-Ubuntu on         dvPortGroup
10.193.174.213  Site-1-Host-1-VM-10-Ubunt on         VM Network
```

```
10.193.174.213  Site-1-Host-1-VM-2-Ubuntu on         VM Network
10.193.174.213  Site-1-Host-1-VM-2-Ubuntu on         dvPortGroup
10.193.174.213  Site-1-Host-1-VM-3-Ubuntu on         VM Network
10.193.174.213  Site-1-Host-1-VM-4-Ubuntu on         VM Network
10.193.174.213  Site-1-Host-1-VM-5-Ubuntu on         VM Network
10.193.174.213  Site-1-Host-1-VM-6-Ubuntu on         VM Network
10.193.174.213  Site-1-Host-1-VM-7-Ubuntu on         VM Network
10.193.174.213  Site-1-Host-1-VM-8-Ubuntu on         VM Network
10.193.174.213  Site-1-Host-1-VM-9-Ubuntu on         VM Network
10.193.174.213  Site-1-vCenter-Server     on         VM Network
10.193.174.214  Site-1-Host-2-VM-1-Ubuntu on         VM Network
10.193.174.214  Site-1-Host-2-VM-1-Ubuntu on         dvPortGroup
10.193.174.214  Site-1-Host-2-VM-2-Ubuntu on         VM Network
10.193.174.214  Site-1-Host-2-VM-2-Ubuntu on         dvPortGroup
10.193.174.214  Site-1-Host-2-VM-3-Ubuntu on         VM Network
10.193.174.214  Site-1-Host-2-VM-4-Ubuntu on         VM Network
10.193.174.214  Site-1-Host-2-VM-5-Ubuntu on         VM Network
10.193.174.214  Site-1-Host-2-VM-6-Ubuntu on         VM Network
10.193.174.214  Site-1-Host-2-VM-7-Ubuntu on         VM Network
10.193.174.214  Site-1-Host-2-VM-8-Ubuntu on         VM Network

--------------------------------------------------------------------------------
Host CDP Info (Conn:conn1 IP:10.193.174.215)
--------------------------------------------------------------------------------
Host            Switch                Port                   VMNIC    Status
--------------------------------------------------------------------------------

--------------------------------------------------------------------------------
Host LLDP Info (Conn:conn1 IP:10.193.174.215)
--------------------------------------------------------------------------------
Host            Switch                Port                   VMNIC    Status
--------------------------------------------------------------------------------
10.193.174.213  50:87:89:a1:f0:df     Ethernet1/2            vmnic5   connected
10.193.174.213  50:87:89:a1:f0:de     Ethernet1/1            vmnic7   connected
10.193.174.214  50:87:89:a1:f0:e1     Ethernet1/4            vmnic5   connected
10.193.174.214  50:87:89:a1:f0:e0     Ethernet1/3            vmnic7   connected

--------------------------------------------------------------------------------
Host vSwitch Port Group Info (Conn:conn1 IP:10.193.174.215)
--------------------------------------------------------------------------------
Host                vSwitch              PortGroup
--------------------------------------------------------------------------------
10.193.174.213      vSwitch0             Management Network
10.193.174.213      vSwitch0             VM Network
10.193.174.214      vSwitch0             Management Network
10.193.174.214      vSwitch0             VM Network

--------------------------------------------------------------------------------
Host vSwitch VMNIC Info (Conn:conn1 IP:10.193.174.215)
--------------------------------------------------------------------------------
Host                vSwitch              VMNIC
--------------------------------------------------------------------------------
10.193.174.213      vSwitch0             vmnic6
10.193.174.214      vSwitch0             vmnic6

--------------------------------------------------------------------------------
Host DVS Switch Port Group Info (Conn:conn1 IP:10.193.174.215)
--------------------------------------------------------------------------------
Host            DVS-Name             PortGroup                      Vlan-Range
--------------------------------------------------------------------------------
10.193.174.213  dvSwitch-1-Site-1    dvPortGroup                    1-100
10.193.174.213  dvSwitch-1-Site-1    dvSwitch-1-Site--DVUplinks-464 1-100
10.193.174.214  dvSwitch-1-Site-1    dvPortGroup                    1-100
10.193.174.214  dvSwitch-1-Site-1    dvSwitch-1-Site--DVUplinks-464 1-100

--------------------------------------------------------------------------------
Host DVS Switch VMNIC Info (Conn:conn1 IP:10.193.174.215)
--------------------------------------------------------------------------------
Host                DVS-Name                 VMNIC
--------------------------------------------------------------------------------
10.193.174.213      dvSwitch-1-Site-1        vmnic3
10.193.174.213      dvSwitch-1-Site-1        vmnic4
10.193.174.213      dvSwitch-1-Site-1        vmnic5
```

```
10.193.174.213       dvSwitch-1-Site-1         vmnic7
10.193.174.214       dvSwitch-1-Site-1         vmnic3
10.193.174.214       dvSwitch-1-Site-1         vmnic4
10.193.174.214       dvSwitch-1-Site-1         vmnic5
10.193.174.214       dvSwitch-1-Site-1         vmnic7

--------------------------------------------------------------------------------
Host Port Group Info (Conn:conn1 IP:10.193.174.215)
--------------------------------------------------------------------------------
Host                      PortGroup                             VLAN
--------------------------------------------------------------------------------
10.193.174.213            Management Network                    0
10.193.174.213            VM Network                            0
10.193.174.214            Management Network                    0
10.193.174.214            VM Network                            0

--------------------------------------------------------------------------------
Distributed Switch Info (Conn:conn1 IP:10.193.174.215)
--------------------------------------------------------------------------------
DVS Name             PortGroup                 VLAN Range
--------------------------------------------------------------------------------
dvSwitch-1-Site-1    dvPortGroup               1-100
dvSwitch-1-Site-1    dvSwitch-1-Site--DVUplink 1-100
dvSwitch2            dvPortGroup               12-12
dvSwitch2            dvSwitch2-DVUplinks-221   0-4094

--------------------------------------------------------------------------------
Event History (Conn:conn1 NumEv:6 IP:10.193.174.215)
--------------------------------------------------------------------------------
EventId    Time                          Event Msg
--------------------------------------------------------------------------------
19631      Sep 02 2014 11:34:53:799161  Network connectivity restored on DVPor
                                        ts: "2/00 d1 2c 50 0c d6 4c f6-48 6e 3
                                        c 4b b0 13 83 bf". Physical NIC vmnic5
                                         is up.
19630      Sep 02 2014 11:34:52:890965  Physical NIC vmnic5 linkstate is up.
19624      Sep 02 2014 11:31:17:453523  Network connectivity restored on DVPor
                                        ts: "2/00 d1 2c 50 0c d6 4c f6-48 6e 3
                                        c 4b b0 13 83 bf". Physical NIC vmnic5
                                         is up.
19618      Sep 02 2014 01:44:08:66653   Network connectivity restored on DVPor
                                        ts: "2/00 d1 2c 50 0c d6 4c f6-48 6e 3
                                        c 4b b0 13 83 bf". Physical NIC vmnic5
                                         is up.
19612      Sep 02 2014 01:32:04:930919  Network connectivity restored on DVPor
                                        ts: "2/00 d1 2c 50 0c d6 4c f6-48 6e 3
                                        c 4b b0 13 83 bf". Physical NIC vmnic5
                                         is up.
19611      Sep 02 2014 01:32:04:930862  Physical NIC vmnic5 linkstate is up.

--------------------------------------------------------------------------------
Time Info (Conn:conn1 IP:10.193.174.215)
--------------------------------------------------------------------------------
Type                                                      Time (ms)
--------------------------------------------------------------------------------
Total Fetching Time for All Host                        : 660
Total Fetching Time for All DVS                         : 112
Max Time to Sync Full Host Info                         : 57882
Max Time to Sync vShield Info                           : 0
Max Time to Check unconnected Host Info                 : 3091
Max Time to Sync Host Info                              : 15162
Max Time to get one Host info                           : 3152
Max Time to get one Virtual Machine info                : 3080
Max Time to get one CDP info                            : 3102
Max Time to get VM port group Info                      : 3580
Max Time to get task info                               : 0
Max Time to process recv event                          : 0
Max Time to get dvs info                                : 3021
Max Time to get dvs port group info                     : 3043

--------------------------------------------------------------------------------
Counters Info (Conn:conn1 IP:10.193.174.215)
--------------------------------------------------------------------------------
```

```
Type                                                                  Counter
------------------------------------------------------------------------------
Property Retrieval Fail                                             : 0
Wait for Update Fail                                                : 0
Wait for Update Timeout                                             : 7157
Create Task Collector Fail                                          : 0
Create Event Collector Fail                                         : 0
Create Event Filter Fail                                            : 0
CDP Info Retrieval Fail                                             : 0
Connect to vCenter Fail                                             : 0
SOAP Memory Alloc Fail                                              : 0
Num Datacenter Property Retrieval                                   : 88
Num Connection Verification                                         : 2227
Num Host Property Retrieval                                         : 1311
Num VM Property Retrieval                                           : 11267
Num CDP/LLDP Info Retrieval                                         : 1248
Num Task Info Retrieval                                             : 0
Num DVS Info Retrieval                                              : 1228
Num DVS PG Info Retrieval                                           : 2456
Num Switch Info Retrieval                                           : 0
Num Interface Configuration Time                                    : 0
Num of VLAN Creation Time                                           : 0
Num of VLAN Removal Time                                            : 0
Wait for Update Success                                             : 10
Num Recv Event VmPoweredOnEvent                                     : 0
Num Recv Event VmPoweredOffEvent                                    : 0
Num Recv Event VmBeingHotMigratedEvent                              : 0
Num Recv Event VmMigratedEvent                                      : 0
Num Recv Event VmFailedMigrateEvent                                 : 0
Num Recv Event VmReconfiguredEvent                                  : 0
Num Recv Event VmCreatedEvent                                       : 0
Num Recv Event VmClonedEvent                                        : 0
Num Recv Event VmRenamedEvent                                       : 0
Num Recv Event VmRemovedEvent                                       : 0
Num Recv Event VmSuspendedEvent                                     : 0
Num Recv Event VmRelocatedEvent                                     : 0
Num Recv Event TaskEvent                                            : 0
Num Recv Event EventEx                                              : 10
Num Recv Event HostConnectionLostEvent                              : 0
Num Recv Event HostDisconnectedEvent                                : 0
Num Recv Event HostConnectedEvent                                   : 0
Num Recv Event HostShutdownEvent                                    : 0
Num Recv Event HostRemovedEvent                                     : 0
Num Recv Event HostIpChangedEvent                                   : 0
Num Recv Event DVPortgroupCreatedEvent                              : 0
Num Recv Event DVPortgroupReconfiguredEvent                         : 0
Num Recv Event DVPortgroupDestroyedEvent                            : 0
Num Recv Event DVPortgroupRenamedEvent                              : 0
Num Recv Event DvsCreatedEvent                                      : 0
Num Recv Event DvsDestroyedEvent                                    : 0
Num Recv Event DvsRenamedEvent                                      : 0
Num Recv Event DvsReconfiguredEvent                                 : 0
Num Recv Event DvsMergedEvent                                       : 0
Num Recv Task UpdateNetworkConfig                                   : 0
Num Recv Task UpdatePortGroup                                       : 0
Num Recv Task RemovePortGroup                                       : 0
Num Recv Task UpdateVirtualSwitch                                   : 0

------------------------------------------------------------------------------
Global Counters Info
------------------------------------------------------------------------------
Type                                                                  Counter
------------------------------------------------------------------------------
Num Elem VMTrackerElemRoot                                          : 3
Num Elem VMTrackerElemConn                                          : 1
Num Elem VMTrackerCluster                                           : 0
Num Elem VMTrackerElemHost                                          : 3
Num Elem VMTrackerElemHostCDP                                       : 0
Num Elem VMTrackerElemHostLLDP                                      : 4
Num Elem VMTrackerElemHostVM                                        : 19
Num Elem VMTrackerElemHostVMPortGroup                               : 23
Num Elem VMTrackerElemHostvSwitch                                   : 2
Num Elem VMTrackerElemHostvSwitchVMNIC                              : 2
```

```
Num Elem VMTrackerElemHostvSwitchPortGroup            : 4
Num Elem VMTrackerElemHostPortGroup                   : 4
Num Elem VMTrackerElemHostDVSSwitch                   : 2
Num Elem VMTrackerElemHostDVSSwitchVMNIC              : 8
Num Elem VMTrackerVirtWire_Type                       : 0
Num Elem VMTrackerElemHostVirtWire                    : 0
Num Elem VMTrackerElemHostVirtualNic                  : 0
Num Elem VMTrackerElemDVS                             : 2
Num Elem VMTrackerElemDVSPortGroup                    : 4
Num Elem VMTrackerElemDVSPortGroupVlanRange           : 4
Num Elem VMTrackerElemDeviceID                        : 4
Num Elem VMTrackerElemDevicePort                      : 4
Num Elem VMTrackerElemDevicePortHost                  : 4
Num Elem VMTrackerElemDevicePortVM                    : 8
Num Elem VMTrackerElemDevicePortVMPortGroup           : 8
Num Elem VMTrackerElemDevicePortVMPortGroupVlanRange  : 8
Num Elem VMTrackerElemSwitchDeviceID                  : 2
Num Elem VMTrackerElemSwitchDeviceIntf                : 87
Num Elem VMTrackerElemIfRunTimeRoot                   : 1
Num Elem VMTrackerElemIfDeviceId                      : 4
Num Elem VMTrackerElemIfSwitchPort                    : 4

--------------------------------------------------------------------------------
Unconnected Host Info (Conn:conn1 IP:10.193.174.215)
--------------------------------------------------------------------------------
Host Name
--------------------------------------------------------------------------------
172.23.40.129

--------------------------------------------------------------------------------
Dev-Id          Intf            IfIndex    Member of PO    NativeVlan VMT Enable bia-mac

--------------------------------------------------------------------------------
SAL1819SALX     Ethernet1/1     1a000000   port-channel2   1          1
50:87:89:a1:f0:de
SAL1819SALX     Ethernet1/10    1a001200                   1          1
50:87:89:a1:f0:e7
SAL1819SALX     Ethernet1/11    1a001400                   1          1
50:87:89:a1:f0:e8
SAL1819SALX     Ethernet1/12    1a001600                   1          1
50:87:89:a1:f0:e9
SAL1819SALX     Ethernet1/13    1a001800                   1          1
50:87:89:a1:f0:ea
SAL1819SALX     Ethernet1/14    1a001a00                   1          1
50:87:89:a1:f0:eb
SAL1819SALX     Ethernet1/15    1a001c00                   1          1
50:87:89:a1:f0:ec
SAL1819SALX     Ethernet1/16    1a001e00                   1          1
50:87:89:a1:f0:ed
SAL1819SALX     Ethernet1/17    1a002000                   1          1
50:87:89:a1:f0:ee
SAL1819SALX     Ethernet1/18    1a002200                   1          1
50:87:89:a1:f0:ef
SAL1819SALX     Ethernet1/19    1a002400                   1          1
50:87:89:a1:f0:f0
SAL1819SALX     Ethernet1/2     1a000200   port-channel2   1          1
50:87:89:a1:f0:df
SAL1819SALX     Ethernet1/20    1a002600                   1          1
50:87:89:a1:f0:f1
SAL1819SALX     Ethernet1/21    1a002800                   1          1
50:87:89:a1:f0:f2
SAL1819SALX     Ethernet1/22    1a002a00                   1          1
50:87:89:a1:f0:f3
SAL1819SALX     Ethernet1/23    1a002c00                   1          1
50:87:89:a1:f0:f4
SAL1819SALX     Ethernet1/24    1a002e00                   1          1
50:87:89:a1:f0:f5
SAL1819SALX     Ethernet1/25    1a003000                   1          1
50:87:89:a1:f0:f6
SAL1819SALX     Ethernet1/26    1a003200                   1          1
50:87:89:a1:f0:f7
SAL1819SALX     Ethernet1/27    1a003400                   1          1
50:87:89:a1:f0:f8
```

```
SAL1819SALX     Ethernet1/28    1a003600                  1           1
50:87:89:a1:f0:f9
SAL1819SALX     Ethernet1/29    1a003800                  1           1
50:87:89:a1:f0:fa
SAL1819SALX     Ethernet1/3     1a000400   port-channel3  1           1
50:87:89:a1:f0:e0
SAL1819SALX     Ethernet1/30    1a003a00                  1           1
50:87:89:a1:f0:fb
SAL1819SALX     Ethernet1/31    1a003c00                  1           1
50:87:89:a1:f0:fc
SAL1819SALX     Ethernet1/32    1a003e00                  1           1
50:87:89:a1:f0:fd
SAL1819SALX     Ethernet1/33    1a004000                  1           1
50:87:89:a1:f0:fe
SAL1819SALX     Ethernet1/34    1a004200                  1           1
50:87:89:a1:f0:ff
SAL1819SALX     Ethernet1/35    1a004400                  1           1
50:87:89:a1:f1:00
SAL1819SALX     Ethernet1/36    1a004600                  1           1
50:87:89:a1:f1:01
SAL1819SALX     Ethernet1/37    1a004800                  1           1
50:87:89:a1:f1:02
SAL1819SALX     Ethernet1/38    1a004a00                  1           1
50:87:89:a1:f1:03
SAL1819SALX     Ethernet1/39    1a004c00                  1           1
50:87:89:a1:f1:04
SAL1819SALX     Ethernet1/4     1a000600   port-channel3  1           1
50:87:89:a1:f0:e1
SAL1819SALX     Ethernet1/40    1a004e00                  1           1
50:87:89:a1:f1:05
SAL1819SALX     Ethernet1/41    1a005000                  1           1
50:87:89:a1:f1:06
SAL1819SALX     Ethernet1/42    1a005200                  1           1
50:87:89:a1:f1:07
SAL1819SALX     Ethernet1/43    1a005400                  1           1
50:87:89:a1:f1:08
SAL1819SALX     Ethernet1/44    1a005600                  1           1
50:87:89:a1:f1:09
SAL1819SALX     Ethernet1/45    1a005800                  1           1
50:87:89:a1:f1:0a
SAL1819SALX     Ethernet1/46    1a005a00                  1           1
50:87:89:a1:f1:0b
SAL1819SALX     Ethernet1/47    1a005c00                  1           1
50:87:89:a1:f1:0c
SAL1819SALX     Ethernet1/48    1a005e00                  1           1
50:87:89:a1:f1:0d
SAL1819SALX     Ethernet1/5     1a000800                  1           1
50:87:89:a1:f0:e2
SAL1819SALX     Ethernet1/6     1a000a00                  1           1
50:87:89:a1:f0:e3
SAL1819SALX     Ethernet1/7     1a000c00                  1           1
50:87:89:a1:f0:e4
SAL1819SALX     Ethernet1/8     1a000e00                  1           1
50:87:89:a1:f0:e5
SAL1819SALX     Ethernet1/9     1a001000                  1           1
50:87:89:a1:f0:e6
SAL1819SALX     Ethernet2/1     1a006000                  1           1
7c:69:f6:0f:eb:20
SAL1819SALX     Ethernet2/10    1a007200                  1           1
7c:69:f6:0f:eb:29
SAL1819SALX     Ethernet2/11    1a007400                  1           1
7c:69:f6:0f:eb:2a
SAL1819SALX     Ethernet2/12    1a007600                  1           1
7c:69:f6:0f:eb:2b
SAL1819SALX     Ethernet2/2     1a006200   port-channel1  1           1
7c:69:f6:0f:eb:21
SAL1819SALX     Ethernet2/3     1a006400   port-channel1  1           1
7c:69:f6:0f:eb:22
SAL1819SALX     Ethernet2/4     1a006600   port-channel1  1           1
7c:69:f6:0f:eb:23
SAL1819SALX     Ethernet2/5     1a006800   port-channel1  1           1
7c:69:f6:0f:eb:24
SAL1819SALX     Ethernet2/6     1a006a00   port-channel1  1           1
```

```
7c:69:f6:0f:eb:25
SAL1819SALX     Ethernet2/7     1a006c00                1          1
7c:69:f6:0f:eb:26
SAL1819SALX     Ethernet2/8     1a006e00                1          1
7c:69:f6:0f:eb:27
SAL1819SALX     Ethernet2/9     1a007000                1          1
7c:69:f6:0f:eb:28
SAL1819SALX     Vlan1           9010001                 0          1
00:00:7c:3d:fe:09
SAL1819SALX     Vlan2           9010002                 0          1
00:00:7c:3d:fe:09
SAL1819SALX     Vlan3           9010003                 0          1
00:00:7c:3d:fe:09
SAL1819SALX     Vlan4           9010004                 0          1
00:00:7c:3d:fe:09
SAL1819SALX     Vlan5           9010005                 0          1
00:00:7c:3d:fe:09
SAL1819SALX     Vlan6           9010006                 0          1
00:00:7c:3d:fe:09
SAL1819SALX     Vlan7           9010007                 0          1
00:00:7c:3d:fe:09
SAL1819SALX     Vlan8           9010008                 0          1
00:00:7c:3d:fe:09
SAL1819SALX     ii1/1/1         4a000000                0          1
00:00:00:00:00:00
SAL1819SALX     ii1/1/10        4a000009                0          1
00:00:00:00:00:00
SAL1819SALX     ii1/1/11        4a00000a                0          1
00:00:00:00:00:00
SAL1819SALX     ii1/1/12        4a00000b                0          1
00:00:00:00:00:00
SAL1819SALX     ii1/1/2         4a000001                0          1
00:00:00:00:00:00
SAL1819SALX     ii1/1/3         4a000002                0          1
00:00:00:00:00:00
SAL1819SALX     ii1/1/4         4a000003                0          1
00:00:00:00:00:00
SAL1819SALX     ii1/1/5         4a000004                0          1
00:00:00:00:00:00
SAL1819SALX     ii1/1/6         4a000005                0          1
00:00:00:00:00:00
SAL1819SALX     ii1/1/7         4a000006                0          1
00:00:00:00:00:00
SAL1819SALX     ii1/1/8         4a000007                0          1
00:00:00:00:00:00
SAL1819SALX     ii1/1/9         4a000008                0          1
00:00:00:00:00:00
SAL1819SALX     lc-eth0/1       6201000                 0          1
00:00:7c:3d:fe:09
SAL1819SALX     mgmt0           5000000                 0          1

SAL1819SALX     port-channel1   16000000                1          1
00:00:00:00:00:00
SAL1819SALX     port-channel2   16000001                1          1
00:00:00:00:00:00
SAL1819SALX     port-channel3   16000002                1          1
00:00:00:00:00:00
SAL1819SALX     sup-eth0        15000000                0          1
00:00:7c:3d:fe:09
SAL1819SALX     sup-eth1        15010000                0          1
00:00:00:00:00:00

--------------------------------------------------------------------------------
```

INDEX