



CHAPTER 5

Configuring Object Tracking

This chapter describes how to configure object tracking on Cisco NX-OS devices.

This chapter includes the following sections:

- [Information About Object Tracking, page 5-1](#)
- [Licensing Requirements for Object Tracking, page 5-2](#)
- [Prerequisites for Object Tracking, page 5-3](#)
- [Guidelines and Limitations, page 5-3](#)
- [Configuring Object Tracking, page 5-3](#)
- [Viewing Client Details, page 5-6](#)
- [Related Topics, page 5-6](#)
- [Field Descriptions for Object Tracking, page 5-6](#)
- [Additional References, page 5-7](#)

Information About Object Tracking

Object tracking allows you to track specific objects on the network, such as the interface line protocol state, IP routing, and route reachability, and take action when the tracked object's state changes. This feature allows you to increase the availability of the network and shorten recovery time if an object state goes down.

This section includes the following topics:

- [Object Tracking Overview, page 5-1](#)
- [High Availability, page 5-2](#)
- [Virtualization Support, page 5-2](#)

Object Tracking Overview

The object tracking feature allows you to create a tracked object that multiple clients can use to modify the client behavior when a tracked object changes. Several clients register their interest with the tracking process, track the same object, and each take different actions when the object state changes.

Clients include the following features:

- Hot Standby Redundancy Protocol (HSRP)

Send document comments to nexus7k-docfeedback@cisco.com

- Gateway Load Balancing Protocol (GLBP)
- Embedded Event Manager (EEM)

The object tracking monitors the status of the tracked objects and communicates any changes made to interested clients. Each tracked object is identified by a unique number that clients can use to configure the action to take when a tracked object changes state.

Cisco NX-OS tracks the following object types:

- Interface line protocol state—Tracks whether the line protocol state is up or down.
- Interface IP routing state—Tracks whether the interface has an IP address and IP routing is enabled and active.
- IP route reachability—Tracks whether the route exists and is reachable from the local device.

For example, you can configure HSRP to track the line protocol of the interface that connects one of the redundant routers to the rest of the network. If that link protocol goes down, you can modify the priority of the affected HSRP router and cause a switchover to a backup router that has better network connectivity.

High Availability

Object tracking supports high availability through stateful restarts. A stateful restart occurs when the object tracking process crashes. Object tracking also supports stateful switchover on a dual supervisor system. Cisco NX-OS applies the runtime configuration after the switchover.

You can also use object tracking to modify the behavior of a client to improve overall network availability.

Virtualization Support

Object tracking supports Virtual Routing and Forwarding (VRF) instances. VRFs exist within virtual device contexts (VDCs). By default, Cisco NX-OS places you in the default VDC and default VRF unless you specifically configure another VDC and VRF. By default, Cisco NX-OS tracks the route reachability state of objects in the default VRF. If you want to track objects in another VRF, you must configure the object to be a member of that VRF.

For more information, see the *Cisco NX-OS Virtual Device Context Configuration Guide*.

Licensing Requirements for Object Tracking

The following table shows the licensing requirements for this feature:

Product	License Requirement
DCNM	Object tracking requires a LAN Enterprise license. For a complete explanation of the DCNM licensing scheme and how to obtain and apply licenses, see the <i>Cisco DCNM Licensing Guide</i> .
NX-OS	Object tracking requires no license. Any feature not included in a license package is bundled with the Cisco NX-OS system images and is provided at no extra charge to you. For a complete explanation of the NX-OS licensing scheme, see the <i>Cisco NX-OS Licensing Guide</i> .

Send document comments to nexus7k-docfeedback@cisco.com

Prerequisites for Object Tracking

Object tracking has the following prerequisites:

- For each device that you use DCNM to configure object tracking, you must configure the logging level for object tracking to 5 (Notify) or a higher level. To configure the device with the minimal required logging level, log into the command-line interface of the device and use the following commands:

```
logging event link-status default
logging level track 5
logging logfile messages 5
```

- If you configure VDCs, install the Advanced Services license and enter the desired VDC (see the *Cisco NX-OS Virtual Device Context Configuration Guide*).

Guidelines and Limitations

Object tracking has the following guidelines and limitations:

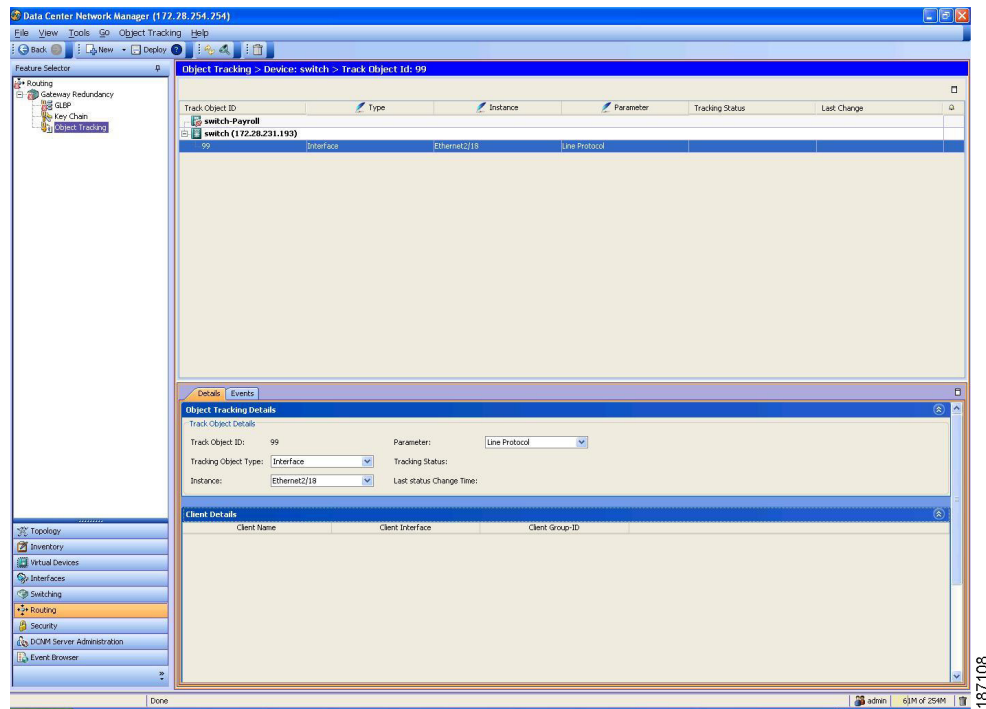
- Supports up to 500 tracked objects per VDC.
- Supports IPv4 addresses only.
- Supports Ethernet, subinterfaces, port channels, loopback interfaces, and VLAN interfaces.
- Supports one tracked object per HSRP group or GLBP group.

Configuring Object Tracking

You can access object tracking from the Routing feature selection. [Figure 5-1](#) shows how to configure object tracking.

Send document comments to nexus7k-docfeedback@cisco.com

Figure 5-1 Configuring Object Tracking



For more information about the Data Center Network Manager features, see the *Cisco Data Center Network Manager Fundamentals Guide*

This section includes the following topics:

- [Configuring Object Tracking for an Interface, page 5-4](#)
- [Configuring Object Tracking for Route Reachability, page 5-5](#)

Configuring Object Tracking for an Interface

You can configure Cisco NX-OS to track the line protocol or IP routing state of an interface.

BEFORE YOU BEGIN

Ensure that you configure the logging level for object tracking to 5 (Notify) or a higher level. To configure the device with the minimal required logging level, log into the command-line interface of the device and use the following command:

```
logging event link-status default
logging level track 5
logging logfile messages 5
```

DETAILED STEPS

To create a tracked object for an interface, follow these steps:

Send document comments to nexus7k-docfeedback@cisco.com

-
- Step 1** From the Feature Selector pane, choose **Routing > Gateway Redundancy > Object Tracking**.
The available devices appear in the Summary pane.
- Step 2** From the Summary pane, click the device that you want to configure object tracking on.
- Step 3** From the menu bar, choose **Object Tracking > New > Track Object**.
The system highlights the new tracked object row in the Summary pane, and tabs update in the Details pane.
- Step 4** From the highlighted Track Object ID field, enter the object ID.
- Step 5** From the Details pane, click the **Object Tracking Details** tab.
The Object Tracking Details tab appears.
- Step 6** From the Object Tracking Details tab, in the Tracking Object Type drop-down list, choose **Interface**.
- Step 7** From the Instance drop-down list, choose the interface that you want to track.
- Step 8** From the Parameter drop-down list, choose either **IP routing** or **Line Protocol**.
- Step 9** From the menu bar, choose **File > Deploy** to apply your changes to the device.
-

Configuring Object Tracking for Route Reachability

You can configure Cisco NX-OS to track the existence and reachability of an IP route.

BEFORE YOU BEGIN

Ensure that you configure the logging level for object tracking to 5 (Notify) or a higher level. To configure the device with the minimal required logging level, log into the command-line interface of the device and use the following command:

```
logging event link-status default
logging level track 5
logging logfile messages 5
```

DETAILED STEPS

To create a tracked object for route reachability, follow these steps:

-
- Step 1** From the Feature Selector pane, choose **Routing > Gateway Redundancy > Object Tracking**.
The available devices appear in the Summary pane.
- Step 2** From the Summary pane, click the device that you want to configure object tracking on.
- Step 3** From the menu bar, choose **Object Tracking > New > Track Object**.
The system highlights the new tracked object row in the Summary pane, and tabs update in the Details pane.
- Step 4** From the highlighted Track Object ID field, enter the object ID.
- Step 5** From the Details pane, click the **Object Tracking Details** tab.
The Object Tracking Details tab appears.

Send document comments to nexus7k-docfeedback@cisco.com

- Step 6** From the Object Tracking Details tab, in the Tracking Object Type drop-down list, choose **IP Route**.
- Step 7** In the Instance field, enter the IP prefix and network mask length that you want to track.
The format is A.B.C.D/length.
- Step 8** (Optional) From the VRF name drop-down list, choose the VRF where this route exists.
The default is the default VRF.
- Step 9** From the menu bar, choose **File > Deploy** to apply your changes to the device.
-

Viewing Client Details

You can view the clients that are using a tracked object.

DETAILED STEPS

To view client details for a tracked object, follow these steps:

-
- Step 1** From the Feature Selector pane, choose **Routing > Gateway Redundancy > Object Tracking**.
The available devices appear in the Summary pane.
- Step 2** From the Summary pane, click the device that you want to view tracked objects on.
- Step 3** Click the tracked object that you want to view clients for.
The system highlights the tracked object row in the Summary pane, and tabs update in the Details pane.
- Step 4** From the Details pane, click the **Object Tracking Details** tab.
The Object Tracking Details tab appears.
- Step 5** From the Object Tracking Details tab, click the **Client Details** section.
The client details appear.
-

Related Topics

See the following topics for information related to object tracking:

- [Chapter 4, “Configuring GLBP”](#)
- [Chapter 18, “Configuring HSRP”](#)

Field Descriptions for Object Tracking

This section includes the following field descriptions for Object Tracking:

- [Object Tracking: Details Tab: Object Tracking Details Section, page 5-7](#)
- [Object Tracking: Details Tab: Client Details Section, page 5-7](#)

[Send document comments to nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com)

Object Tracking: Details Tab: Object Tracking Details Section

Table 5-1 Object Tracking: Details: Object Tracking Details

Field	Description
Track Object ID	<i>Display only.</i> Object number for the tracked object.
Tracking Object Type	Type of object to track.
Instance	IP address or interface to track for this object.
VRF	VRF that the tracked interface exists in.
Parameter	Parameter type to track for this object.
Tracking Status	<i>Display only.</i> Status of the tracked object parameter.
Last status Change Time	<i>Display only.</i> Time the parameter last changed status for this object.

Object Tracking: Details Tab: Client Details Section

Table 5-2 Object Tracking: Details: Client Details

Field	Description
Client Name	<i>Display only.</i> Name of the feature that uses this tracked object.
Client Interface	Interface that uses this tracked object for the named client feature.
Client Group-ID	<i>Display only.</i> ID for the group that uses this tracked object for the named client feature.

Additional References

For additional information related to implementing object tracking, see the following sections:

- [Related Documents, page 5-8](#)
- [Standards, page 5-8](#)

[Send document comments to nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com)

Related Documents

Related Topic	Document Title
Object Tracking CLI commands	<i>Cisco NX-OS Unicast Routing Command Reference, Release 4.0</i>
Configuring the Embedded Event Manager	<i>Cisco NX-OS System Management Configuration Guide, Release 4.0</i>

Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—