HP Operations Manager

Enabling IPv6-based Communication in an HPOM Environment

Software Version: 9.11

for the UNIX and Linux operating systems

Manufacturing Part Number: None

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In This Document

This document instructs you on how to configure HPOM to communicate over the network by using the IPv6 protocol.

Before proceeding with the configuration of the IPv6 technology in your HPOM environment, get familiar with the following terms:

Internet Protocol	Internet protocol is a communication mechanism that provides a standard set of rules for sending and receiving data over the network.
IPv4	Internet protocol version 4.
IPv6	Internet protocol version 6.
Single-stack system	A system where only a single internet protocol is running. It uses either an IPv4 or an IPv6 address.
Dual-stack system	A system where both IPv6 and IPv4 protocols are running. It uses both IPv4 and IPv6 addresses.

The details on migration to the IPv6 protocol in your HPOM environment are organized as follows:

Configuring an HPOM Environment to Use the IPv6 Protocol

IPv6 Support Specifics

This section provides you with important information regarding the IPv6 protocol support in your HPOM environment. This information is presented as follows:

NOTE

For the information about the IPv6 configuration prerequisites, how to enable the IPv6 protocol, configure it in the cluster environment, and how to determine whether it is present on your HP Operations management server, see "Configuring the IPv6 Protocol on the HP Operations Management Server" on page 11.

Software Requirements

To use IPv6 protocol in your HPOM environment, you must meet the following requirements:

❏ HP Operations management server patch 9.11

❏ Java GUI patch 9.11

❏ Administration UI patch 9.11

❏ Core patch 9.11

❏ HP Operations agent patch 11.13

To learn about additional requirements for installing HPOM, see the *HPOM Installation Guide for the Management Server*.

Required IP Communication Architectures

To use HPOM with IPv6, the network architecture must be in accordance with the following requirements:

- **HP Operations management server**

  HP Operations management server fully supports both IPv4 and IPv6 protocols, as well as the dual-stack architecture. Because most of the computer networks still use the IPv4 protocol or the dual-stack architecture, HP Operations management server runs on the dual-stack system so that communication with the managed nodes with various communication stacks can be established.

- **HP Operations agent**

  The HP Operations agent supports the following architectures for IP communication:

  - IPv4

IMPORTANT

The 11.13 version of the HP Operations agent provides the capability to communicate with IPv6-enabled servers.

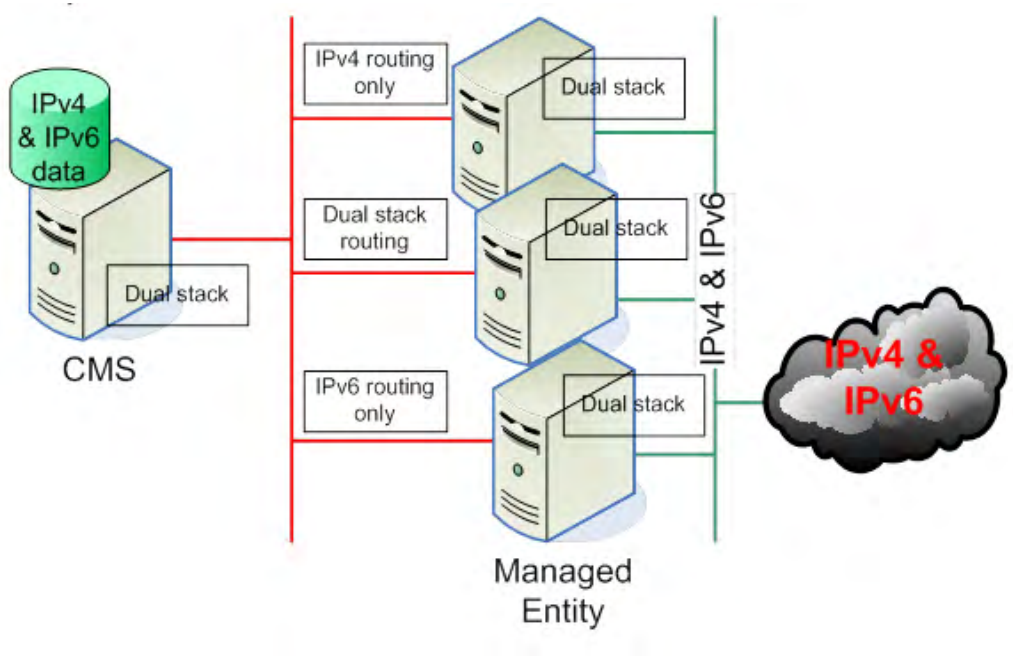
If you want to use the 11.13 agent version, request the agent media from HP and install the agent on the management server. The agent installation and deployment is described in the HP Operations agent documentation, which is available from http://support.openview.hp.com/selfsolve/manuals.

In addition, download and install the latest HP Operations agent patches from HP Software Support Online at http://www.hp.com/go/hpsoftwaresupport.

  - IPv6
  - Dual-stack

Figure 1 is a graphical presentation of IP network communication with the dual-stack architecture implemented and configured.

Figure 1 IPv4 and IPv6 Coexistence in the Dual-Stack Architecture



HPOM Functionality Supported with IPv6

Enabling the IPv6 protocol in your HPOM environment does not influence the functionality provided with the HPOM software.

Configuring the IPv6 Protocol on the HP Operations Management Server

This section describes the following:

IPv6 Configuration Prerequisites

To use the IPv6 protocol in an HPOM environment, you must first configure IPv6 in your organization on the network and system infrastructure level.

To do so, you must meet the following prerequisites:

❏ The DNS infrastructure in your organization must support IPv6.

❏ The network infrastructure in your organization must support and have enabled IPv6 traffic.

❏ The HP Operations management server must have dual-stack architecture implemented and configured on the operating system level.

NOTE

For a graphical presentation of IP network communication in your HPOM environment with the dual-stack architecture implemented and configured, see Figure 1 on page 10.

❏ IPv6 traffic must be thoroughly tested before you configure HPOM to use the IPv6 protocol.

- Name resolution for the HP Operations management server should return both IP addresses (IPv4 and IPv6). To check whether this is the case, type the following:

  opcsvnsl -v *<management_server_hostname>*

  For example, if you type `opcsvnsl -v stenar03.hp.com`, the output should look as follows:

  ```
  Name: stenar03.hp.com
  Addresses: fec0::94f6:cff:fe4d:ccdb, 192.168.1.1
  ```

NOTE You must add both IPv4 and IPv6 addresses to the `/etc/hosts` file on the HP Operations management server.

Enabling IPv6 Support

To enable IPv6 support on the management server, you must perform the following:

- Set the `OPC_IPV6_ACTIVE` configuration variable to `TRUE`:

  ovconfchg -ovrg server -ns opc -set OPC_IPV6_ACTIVE TRUE

- Set the `IsIPV6Enabled` Lcore configuration variable to `TRUE`:

  ovconfchg -ns sec.cm.server -set IsIPV6Enabled TRUE

- Restart the HP Operations management server and Lcore processes:

  ovc -kill

  ovc -start

Configuring IPv6 in the Cluster Environment

This section describes how to configure IPv6 in the cluster environment. The information is organized as follows:

Prerequisites

Before you configure IPv6 in the cluster environment, make sure the following applies:

- ❏ Cluster nodes are configured as IPv4 systems that support the IPv6 network.
- ❏ The available IPv6 address for the HP Operations management server virtual node is resolved by DNS.

Installation

To install HPOM to support IPv6 in the cluster environment, follow the procedure:

1. Enable IPv6 on all cluster nodes.
2. Install the HP Operations management server in the same way as on the IPv4-only cluster nodes. All IP addresses during the installation are IPv4. For the installation procedure, see the *HPOM Installation Guide for the Management Server*.
3. When you complete the server installation in the cluster environment, enable IPv6 for communication between server and agent as described in the “Enabling IPv6 for Server-Agent Communication” on page 13.

Enabling IPv6 for Server-Agent Communication

To enable IPv6 for communication between server and agent, perform these steps on the active cluster node:

1. Disable the HP Operations management server monitoring, as follows:

   ```
   /opt/OV/lbin/ovharg -monitor <Server HARG> disable
   ```

2. Follow the appropriate procedure, depending on your cluster environment:

   Veritas cluster

   a. Enable writing in the Veritas cluster configuration:

      ```
      haconf -makerw
      ```

b. Add a new resource for managing the HP Operations management server IPv6 address:

```
hares -add ov-ipv6 IP ov-server
```

c. Set a network device where the IPv6 address will be applied:

```
hares -modify ov-ipv6 Device <device like eth0>
```

d. Set an IPv6 address:

```
hares -modify ov-ipv6 Address <IPv6 address>
```

e. Set the prefix length for the IPv6 address:

```
hares -modify ov-ipv6 PrefixLen 64
```

f. Enable the resource:

```
hares -modify ov-ipv6 Enabled 1
```

g. Check resources for all cluster nodes:

```
hares -probe ov-ipv6 -sys <cluster node>
```

h. Start the resource on the node where the HP Operations management server is active:

```
hares -online ov-ipv6 -sys <cluster node>
```

IPv6 should now be active on the selected cluster node.

i. Set the resource dependency:

```
hares -link ov-application ov-ipv6
```

Sun Cluster

a. Add a new `LogicalHostname` resource to the `HARG` file on the HP Operations management server:

```
clreslogicalhostname create -g \
<HPOM HARG e.g. ov-server> -h <IPv6 address> -N \
<ipmp group>@<cluster node> ... ov-ipv6
```

b. Set the new resource dependency:

A. Get the current resource dependency of the `ov-application` resource:

```
clresource show -y Resource_dependencies \
ov-application
```

B. Set a new dependency list by adding the `ov-ipv6` resource:

```
clresource set -y \
Resource_dependencies=<new dependency list> \
ov-application
```

Example:

```
clresource set -y \
Resource_dependencies=ov-ip,ov-ipv6,ov-zpool \
ov-application
```

Red Hat Cluster (RHCS)

a. Edit `/etc/cluster/cluster.conf` and perform the following changes:

A. Add an IPv6 address inside the resources element:

```
<resources>

    ...
    <ip address="<IPv6 address>" monitor_link="1"/>
</resources>
```

B. Add an IPv6 address inside the `ov-server` service element:

```
<service autostart="0" domain="ov-server-failover" \
name="ov-server" recovery="relocate">

  ...

  <ip ref="<IPv6 address>"/>

</service>
```

C. Increase `config_version` by one at the top of the file.

b. Validate the new cluster configuration file by using the `ccs_config_validate` command.

c. Propagate the new cluster configuration to the rest of the cluster nodes:

```
cman_tool version -r Enabling
```

d. Verify `/etc/cluster/cluster.conf` on all cluster nodes.

HP ServiceGuard

a. Reconfigure the cluster to support both IPv6 and IPv4 addresses.

To enable the IPv6 address handling, add an IPv6 subnet to the cluster configuration. To do so, add the following lines to the cluster configuration:

```
SUBNET <IPv6 subnet e.g. fec0:: >
  IP_MONITOR OFF
```

In addition, you might also need to add a heartbeat IPv6 address for each cluster node. Add the following line for each cluster node specification in the cluster configuration:

```
HEARTBEAT_IP <cluster node IPv6 address>
```

Verify and apply the cluster configuration.

b. Reconfigure the server HARG file.

Add an HP Operations management server virtual host IPv6 address to the HP Operations management server package configuration by adding the following lines:

```
ip_subnet      <IPv6 subnet e.g. fec0::>
ip_address     <virtual node IPv6 address>
```

Verify and apply the package configuration.

3. After the cluster configuration is completed, enable IPv6 on the server side. To do this, follow these steps:

a. Enable the IPv6 support on the HP Operations management server:

```
ovconfchg -ovrg server -ns opc -set OPC_IPV6_ACTIVE
TRUE
```

b. Enable the IPv6 support for SecCM:

```
ovconfchg -ovrg server -ns sec.cm.server -set \
IsIPV6Enabled TRUE
```

c. Set the IPv4 and IPv6 addresses of the server virtual node as the SERVER_BIND_ADDR variable values:

```
ovconfchg -ovrg server -ns bbc.cb -set
SERVER_BIND_ADDR \ <IPv4>,<IPv6>
```

d. Restart the Communication Broker:

```
ovbbccb -stop server <active_local_node>
```

```
ovbbccb -start server <active_local_node>
```

e. Check whether the Communication Broker listens for both IPs on the port 383 namespace `bbc.cb`:

   `ovbbccb -status`

f. Enable the HP Operations management server monitoring:

   `/opt/OV/lbin/ovharg -monitor <Server HARG> enable`

Checking the IP Version Used in Your HPOM Environment

You can check the IP version used in your server-agent communication by viewing trace logs and the `System.txt` file on the HP Operations management server. IP addresses used by your HP Operations management server are also visible in the Administration UI or in the output of the `opcnode` command. To obtain this output, type the following:

`opcnode -list_nodes`

For detailed information about the administration of the HP Operations management server, see the *HPOM Administrator's Reference*.

For instructions on how to use the Administration UI, see the *HPOM Administration UI User Guide*.

Limitations and Workarounds for the IPv6 Protocol Use

Limitations

The following limitations apply:

- The HP Operations management server cannot run in an IPv6-only environment. It is required to set a dual-stack architecture.
- Communication based on the IPv6 protocol cannot be established among different HP Operations management servers in flexible environments. In these environments, the IPv4 protocol is used.

  In this case, it is required to add managed nodes to use the IPv4 protocol. The following example shows how to add the nodes:

  ```
  opcnode -add_node node_name=nodeB net_type=NETWORK_IP
  group_name=linux ip_addr=192.168.1.1
  mach_type=MACH_BBC_LX26RPM_X64
  ```

- CI Web Services do not support IPv6.
- HPOM does not support IPv6 “out of the box” when setting up a cluster.
- For IPv6 nodes, the node name must be used instead of *<hex_ip_addr_of_agent>* as the name of the `mgrconf` policy file.

Workarounds

In the IPv6 environment the `IsIPV6Enabled` variable should be set to `TRUE`. However, if this variable is set to `TRUE`, the IPv4 remote agent (11.13.007) installation fails.

To prevent this from happening, follow these steps:

1. Temporarily set the `IsIPV6Enabled` variable to `FALSE` before installing the IPv4 agent. Run:

   `ovconfchg -ns sec.cm.server -set IsIPV6Enabled FALSE`

2. Restart the certificate server. Run:

   `ovc -restart ovcs`