



## Configuring Capabilities Manager

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### Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table at the end of this module.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

### Prerequisites for Configuring Capabilities Manager

- To ensure that a router has Capabilities Manager available, enter the **showservice-routingplugincapman** command. To enable a router to distribute its capabilities information, configure a SAF Forwarder on the router.
- To view capabilities information present on other routers in the network, configure a SAF Forwarder.

### Information About Capabilities Manager

Capabilities Manager is enabled by default at system startup. At startup, it registers as a Service Routing Client and proceeds to discover various capabilities of the hardware and software platform.

## Capabilities Discovery

Capabilities Manager only discovers whether a capability is supported on the local system. It does not discover whether the capability is configured or enabled or discover any other information about the capability for other routers in the network.

Capabilities information will be installed into the local Network Information Base (NIB) as service routing data and made available for advertisement by any SAF Forwarder to the Service Routing network. Capabilities information is passed to the Service Routing infrastructure in XML format and stored in the local NIB.

## Interoperability with SAF Forwarder

Capabilities Manager does not advertise capabilities information to the Service Routing network. A SAF Forwarder performs the functions to distribute capabilities information. However, a SAF Forwarder is not required for Capabilities Manager to function. If a SAF Forwarder is not configured, the capabilities information is bound to the local router and is not distributed to other routers in the network. When a SAF Forwarder is configured, it will distribute all capabilities information by default.

## Capabilities Information

Capabilities information is installed in the Network Information Base (NIB) as service routing data. It is identified by a SAF address in the form of:

- service ID—Capabilities Manager uses service ID 100.
- subservice ID—Capability group ID. The subservice ID indicates the group ID of the capabilities data type.
- Instance number—Unique identifier for the local router. It is assigned in order of the hardware serial number, default MAC address, IPv4 router ID, or IPv6 router ID.

## Capabilities Groups

Capabilities Manager classifies capabilities by group to facilitate query and retrieval, and assigns each group a unique ID. Capabilities Manager provides the following capability groups:

- 1 (HARDWARE)
- 2 (SOFTWARE)

### Hardware Group Information

Hardware information is designated as group ID 1. Group 1 provides the following capabilities information, when available. All hardware information may not be available on each platform that supports Capabilities Manager.

- Host Name
- Platform

- Main Memory Size
- IO Memory Size

## Software Group Information

Software information is designated as group ID 2. Group 2 provides the following capabilities information, when available. All software information may not be available on each platform that supports Capabilities Manager.

- Host Name
- Software
- Image
- Version
- Software subsystems:
  - IP Multicast
  - eigrp\_ipv4
  - eigrp\_ipv6
  - fh\_fd\_ipsla
  - ospf
  - ospfv3
  - isis
  - isis\_ipv6
  - bgp\_ipv4
  - bgp\_ipv6
  - service\_routing

## XML Schema for Capabilities Data

If you have an Extensible Messaging Client Protocol (XMCP) client (external client) connected to a SAF Forwarder, you can subscribe to the Capabilities Manager, which is service ID 100. The data can be interpreted using the following XML schema:

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
<xs:element name="Capabilities" type="CapabilitiesType" />
<xs:complexType name="CapabilitiesType">
<xs:sequence>
<xs:element ref="Group" minOccurs="1" maxOccurs="unbounded" />
```

```

</xs:sequence>
</xs:complexType>
<xs:element name="Group" type="GroupType" />
<xs:complexType name="GroupType">
<xs:sequence>
<xs:element ref="Capability" minOccurs="1" maxOccurs="unbounded" />
</xs:sequence>
<xs:attribute name="Name" type="xs:normalizedString" use="required" />
</xs:complexType>
<xs:element name="Capability" type="CapabilityType" />
<xs:complexType name="CapabilityType">
<xs:sequence>
<xs:element name="Value" type="xs:normalizedString" />
</xs:sequence>
<xs:attribute name="Name" type="xs:normalizedString" use="required" />
</xs:complexType>
</xs:schema>

```

Example:

```

<Capabilities>
<Group Name="HARDWARE">
<Capability Name="HostName">
<Value>R100</Value>
</Capability>
<Capability Name="Platform">
<Value>Solaris Unix (Sparc) processor</Value>
</Capability>
<Capability Name="MainMemorySize">
<Value>63683Kbytes</Value>
</Capability>
</Group>
<Group Name="SOFTWARE">
<Capability Name="HostName">
<Value>R100</Value>
</Capability>
<Capability Name="Software">
<Value>Cisco IOS Software</Value>

```

```
</Capability>
<Capability Name="Image">
<Value>Solaris Software (UNIX-ADVENTERPRISE-M)</Value>
</Capability>
<Capability Name="Version">
<Value>Experimental Version 15.1(20110323:093227)</Value>
</Capability>
<Capability Name="ipmulticast">
<Value>Subsystem loaded</Value>
</Capability>
<Capability Name="eigrp_ipv4">
<Value>Subsystem loaded</Value>
</Capability>
</Group>
</Capabilities>
```

## How to Configure Capabilities Manager

### Disabling and Enabling and Capabilities Manager

Capabilities Manager is enabled by default. You can disable and reenable Capabilities Manager at any time.

- Disabling Capabilities Manager will remove all the capabilities information that is installed in the local Network Information Base (NIB) and unregister the information from Service Routing.
- Re-enabling Capabilities Manager will rediscover capabilities and provide information to the local NIB and to the Service Routing network.

Perform this task to disable and reenable Capabilities Manager.

#### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **no service-routing capabilities-manager**
4. **service-routing capabilities-manager**

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
<b>Step 2</b>	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>no service-routing capabilities-manager</b>  <b>Example:</b> Router(config)# no service-routing capabilities-manager	Disables Capabilities Manager.
<b>Step 4</b>	<b>service-routing capabilities-manager</b>  <b>Example:</b> Router(config)# service-routing capabilities-manager	Enables Capabilities Manager.

## Displaying Capabilities Manager Information

To display information about Capabilities Manager, use the following commands in privileged EXEC mode.

## SUMMARY STEPS

1. **show service-routing plugins *plugin-name***
2. **show service-routing plugins capabilities-manager internal**
3. **show service-routing capabilities-manager**
4. **show service-routing capabilities-manager [group *group-id*] [local]**

## DETAILED STEPS

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**Step 1**    **show service-routing plugins *plugin-name***

**Example:**

```
Device> show service-routing plugins capman
```

```
Service Routing plugins:::
  capman                : 1.00.00 : Cisco Capability Manager
```

Displays information about Capabilities Manager plugins.

## Step 2 **show service-routing plugins capabilities-manager internal**

### Example:

```
Device> show service-routing capabilities-manager internal
```

```
Service-Routing Capabilities Manager
=====

Major Version: 1  Minor Version: 0  Edit Version: 0
Reachability: 5.12.20.13:0
Local Instance GUID: 53504531-3233-3830-3136-390000000000
```

Displays internal information about Capabilities Manager.

## Step 3 **show service-routing capabilities-manager**

### Example:

```
Device> show service-routing capabilities-manager
```

```
Service-Routing Capabilities Manager
=====

Registered Capabilities
=====

Group/ID: HARDWARE/1
Service: 100:1:53504531-3233-3830-3136-390000000000
Originator: 5.12.20.13
Capability Data:
<Capabilities>
<Group Name="HARDWARE">
  <Capability Name="HostName">
    <Value>Router</Value>
  </Capability>
  <Capability Name="Platform">
    <Value>cisco WS-C4503-E (MPC8572) processor</Value>
  </Capability>
  <Capability Name="MainMemorySize">
    <Value>786516Kbytes</Value>
  </Capability>
  <Capability Name="IOMemorySize">
    <Value>20480Kbytes</Value>
  </Capability>
</Group>
</Capabilities>

Group/ID: SOFTWARE/2
Service: 100:2:53504531-3233-3830-3136-390000000000
Originator: 5.12.20.13
Capability Data:
<Capabilities>
<Group Name="SOFTWARE">
  <Capability Name="HostName">
    <Value>Router</Value>
  </Capability>
  <Capability Name="Software">
    <Value>Cisco IOS Software</Value>
```

```

</Capability>
<Capability Name="Image">
  <Value> Catalyst 4500 L3 Switch Software (cat4500e-UNIVERSALK9-M)</Value>
</Capability>
<Capability Name="Version">
  <Value> Version 15.2(1.1.69)E</Value>
</Capability>
<Capability Name="ipmulticast">
  <Value>Subsystem Loaded</Value>
</Capability>
<Capability Name="eigrp_ipv4">
  <Value>Subsystem Loaded</Value>
</Capability>
<Capability Name="eigrp_ipv6">
  <Value>Subsystem Loaded</Value>
</Capability>
<Capability Name="ospf">
  <Value>Subsystem Loaded</Value>
</Capability>
<Capability Name="ospfv3">
  <Value>Subsystem Loaded</Value>
</Capability>
<Capability Name="isis">
  <Value>Subsystem Loaded</Value>
</Capability>
<Capability Name="isis_ipv6">
  <Value>Subsystem Loaded</Value>
</Capability>
<Capability Name="bgp_ipv4">
  <Value>Subsystem Loaded</Value>
</Capability>
<Capability Name="bgp_ipv6">
  <Value>Subsystem Loaded</Value>
</Capability>
<Capability Name="fh_fd_ipsla">
  <Value>Subsystem Loaded</Value>
</Capability>
<Capability Name="service_routing">
  <Value>Subsystem Loaded</Value>
</Capability>
</Group>
</Capabilities>

```

Displays information about Capabilities Manager.

#### Step 4 **show service-routing capabilities-manager [group *group-id*] [local]**

##### Example:

```

Device# show service-routing capabilities-manager group 1 local

Service-Routing Capabilities Manager
=====

Registered Capabilities
=====

Group/ID: HARDWARE/1
Service: 100:1:53504531-3233-3830-3136-390000000000
Originator: 5.12.20.13
Capability Data:
<Capabilities>
<Group Name="HARDWARE">
  <Capability Name="HostName">
    <Value>Router</Value>
  </Capability>
  <Capability Name="Platform">
    <Value>cisco WS-C4503-E (MPC8572) processor</Value>
  </Capability>

```



```

<Capability Name="MainMemorySize">
  <Value>786516Kbytes</Value>
</Capability>
<Capability Name="IOMemorySize">
  <Value>20480Kbytes</Value>
</Capability>
</Group>
</Capabilities>

```

Displays information about registered capabilities.

## Clearing Registered Capabilities Information

Perform this task to clear current capabilities information from the NIB. Once the NIB is cleared, Capabilities Manager will automatically rediscover new capabilities.

### SUMMARY STEPS

1. enable
2. clear service-routing capabilities-manager

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b>  <b>Example:</b> Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>clear service-routing capabilities-manager</b>  <b>Example:</b> Device# clear service-routing capabilities-manager	Clears the current capabilities information from the NIB database. Capabilities Manager will automatically rediscover new capabilities.

# Additional References

## Related Documents

Related Topic	Document Title
Cisco IOS commands	<a href="#">Cisco IOS Master Commands List, All Releases</a>
Service Advertisement Framework commands	<a href="#">Cisco IOS Service Advertisement Framework Technology Command Reference</a>

## Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

# Feature Information for Capabilities Manager

*Table 1: Feature Information for Capabilities Manager*

Feature Name	Releases	Feature Information
Capabilities Manager	15.0(1)SY, 15.2(3)T, 15.2(2)S Cisco IOS XE 3.6S, Cisco IOS XE 3.3SG 15.2(1)E	<p>Capabilities Manager is enabled by default at system startup. At startup, it registers as a Service Routing Client and proceeds to discover various capabilities of the hardware and software platform.</p> <p>In Cisco IOS XE 3.3 SG, support was added for the Cisco Catalyst 4000 Series Switches.</p> <p>The following commands were introduced or modified:</p> <ul style="list-style-type: none"> <li>• <b>clear service-routing capabilities-manager</b></li> <li>• <b>service-routing capabilities-manager</b></li> <li>• <b>show service-routing plugins capman</b></li> <li>• <b>show service-routing capabilities-manager internal</b></li> <li>• <b>show service-routing capabilities-manager group</b></li> </ul>

