



## Redundancy Management Interface (RMI)

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### Information About Redundancy Management Interface

The Redundancy Management Interface (RMI) is used as a secondary link between the active and standby Cisco Catalyst 9800 Series Wireless Controllers. This interface is the same as the wireless management interface, and the IP address on this interface is configured in the same subnet as the Wireless Management Interface. The RMI is used for the following purposes:

- Dual Active Detection
- Exchange resource health between controllers, for instance, gateway reachability status from either controller.
- Gateway Reachability detection: Gateway reachability is checked on the active and the standby controller through the RMI interface when the feature is enabled. It takes approximately 8 seconds to detect that a controller has lost gateway reachability.



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**Note** The RMI might trigger a switchover based on the gateway status on the controllers.

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#### Active Controller

The primary address on the active controller is the management IP. The secondary IPv4 address on the management VLAN is the RMI IP for the active controller. Do not configure the secondary IPv4 addresses explicitly because a single secondary IPv4 address is configured automatically by RMI under the RMI interface.



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**Note** RMI supports only IPv4 addresses.

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### Standby Controller

The standby controller does not have the wireless management IP configured; it has the RMI IP address configured as the primary IP address. When the standby controller becomes active, the management IP becomes the primary IP and the RMI IP becomes the secondary IP. If the interface on the active controller is administratively down, the same state is reflected on standby controller.

### Dual Stack Support on Management VLAN with RMI

Dual stack refers to the fact that the wireless management interface can be configured with IPv4 and IPv6 addresses. If RMI IPv4 address is configured along with an IPv4 management IP, you can additionally configure an IPv6 management address on the wireless management interface. This IPv6 management IP will not be visible on the standby controller.



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**Note** The RMI feature supports only RMI IPv4 addresses.

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### RMI-Based High-Availability Pairing

You should consider the following scenarios for High-Availability (HA) pairing:

- Fresh Installation
- Already Paired Controllers
- Upgrade Scenario
- Downgrade Scenario

Dynamic HA pairing requires both active controller and the standby controller to reload. However, dynamic HA pairing occurs on Cisco Catalyst 9800-40 Wireless Controller and Cisco Catalyst 9800-80 Wireless Controller when one of them reloads and becomes standby.

### HA Pairing Without Previous Configuration

When HA pairing is done for the first time, no ROMMON variables are found for the RP IPs. You can choose from the existing privileged EXEC-mode RP-based CLIs or the RMI IP based mechanisms. However, the exec-mode RP-based CLIs will be deprecated soon. If you use the Cisco DNA Centre, you can choose the exec-mode RP-based CLI mechanism till the Cisco DNA Centre migrates to support the RMI method.

The RP IPs are derived from the RMI IPs after an HA pair is formed. Also, the privileged EXEC-mode RP-based CLI method of clearing and forming an HA pair is not allowed.



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**Note** Though you can choose RP or RMI for a fresh installation, we recommended that you use RMI install method.

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**Note** To view the ROMMON variables, use the following command:

**show romvars**

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If you choose the exec-mode RP-based CLI mechanism, the RP IPs will be configured similar to the 16.12 release.

The following occurs when the RMI configuration is done:

- The RP IPs derived from the RMI IPs are overwritten, and used for HA pairing.
- If the active and standby already exists due to prior HA pairing through the exec-mode RP-based CLI mechanism, the pair will not be interrupted.
- Whenever the pair reloads later, the new RP IPs are used.
- Exec-mode RP-based CLIs are blocked.

### Already Paired Controllers

If the controllers are already in an HA pair, the existing exec-mode RP-based CLIs will continue to be used. You can enable RMI to migrate to the RMI based HA pairing.

If the controllers are already paired and RMI is configured, it will overwrite the RP IPs with the RMI derived IPs. The HA pair will not be disturbed immediately but the controllers will pick up the new IP when the next reload happens. RMI feature mandates a reload for the feature to be effective. When both controllers reload, they would come up as a pair with the new RMI derived RP IPs.

### Upgrading from Cisco IOS XE 16.1.x to a Later Release

A system that is being upgraded can choose to:

- Migrate with the existing RP IP configuration intact—In this case, the existing RP IP configuration will continue to be used. The exec-mode RP-based CLIs are used for future modifications.
- Migrate after clearing the HA configuration—In this case, you can choose between the old (exec-mode RP-based CLIs) and new RMI based RP configuration methods.



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**Note** In case the older configuration is retained, the RMI configuration updates the RP IPs with the IPs derived from the RMI IPs.

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### Downgrade Scenario

The downgrade scenario will have only the exec-mode RP-based CLIs. The following are the two possibilities:

- If the upgraded system used the RMI based RP configuration.
- If the upgraded system continued to use the exec-mode RP-based CLIs.



**Note** In the above cases, the downgraded system uses the exec-mode RP-based CLIs to modify the configuration. However, the downgraded system will continue to use the new derived RP IPs.

## Prerequisite for RMI

It is mandatory to configure the Redundancy Management IP address and Peer Redundancy Management address before HA pairing. Both the interfaces must be in the same subnet as the Wireless Management Interface. If controller1 is configured with 9.10.90.147 as the Redundancy Management IP and controller2 with 9.10.90.149, you need to execute the following command in controller1 for redundancy mode:

**redun-management interface Vlan** *vlan-interface-no* **chassis** *chassis-number* **address** *ip-address* **chassis** *chassis-number* **address** *ip-address*



**Note** The **redun-management** command needs to be configured on both the controllers prior to HA pairing. Here, the IP addresses 9.10.90.147 and 9.10.90.149 refer to the RMI IPs.

```
Device# conf t
Device(config)# redun-management interface Vlan Vlan90 chassis 1 address 9.10.90.147 chassis
2 9.10.90.149
```

## Configuring Redundancy Management Interface (GUI)

### Procedure

- Step 1** In the **Administration > Device > Redundancy** window, perform the following:
- Set the **Redundancy Configuration** toggle button to **Enabled** to activate redundancy configuration.
  - In the **Redundancy Pairing Type** field, select **RMI+RP** to perform RMI+RP redundancy pairing as follows:
    - In the **RMI IP for Chassis 1** field, enter RMI IP address for chassis 1.
    - In the **RMI IP for Chassis 2** field, enter RMI IP address for chassis 2.
  - In the **Redundancy Pairing Type** field, select **RP** to perform RP redundancy pairing as follows:
    - In the **Local IP** field, enter an IP address for Local IP.
    - In the **Netmask** field, enter the subnet mask assigned to all wireless clients.
    - From the **HA Interface** drop-down list, choose one of the HA interface.
- Note** You can select the HA interface only for Cisco Catalyst 9800 Series Wireless Controllers.

- In the **Remote IP** field, enter an IP address for Remote IP.
- d. In the **Keep Alive Timer** field, enter an appropriate timer value. The valid range is between 1 and 10 (x100 milliseconds).
- e. In the **Keep Alive Retries** field, enter an appropriate retry value. The valid range is between 3 and 10 seconds.
- f. In the **Active Chassis Priority** field, enter a value.

**Step 2** Click **Apply**.

## Configuring a Redundancy Management Interface IP Address (CLI)

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>chassis redundancy ha-interface</b> <b>GigabitEthernet</b> <i>interface-number</i> <b>Example:</b> <pre>Device# chassis redundancy ha-interface GigabitEthernet 3</pre>	Creates an HA interface for your controller. <i>interface-number</i> : GigabitEthernet interface number. The range is from 1 to 32. <b>Note</b> This step is applicable only for Cisco Catalyst 9800-CL Series Wireless Controllers. The chosen interface is used as the dedicated interface for HA communication between the 2 controllers.
<b>Step 2</b>	<b>configure terminal</b> <b>Example:</b> <pre>Device# configure terminal</pre>	Enters global configuration mode.
<b>Step 3</b>	<b>redun-management interface vlan</b> <i>vlan-interface-number</i> <b>chassis</b> <i>chassis-number</i> <b>address</b> <i>ip-address</i> <b>chassis</b> <i>chassis-number</i> <b>address</b> <i>ip-address</i> <b>Example:</b> <pre>Device(config)# redun-management interface Vlan 200 chassis 1 address 9.10.90.147 chassis 2 address 9.10.90.149</pre>	Configures Redundancy Management Interface. <ul style="list-style-type: none"> <li>• <i>vlan-interface-number</i> : VLAN interface number. The valid range is from 1 to 4094.</li> <li><b>Note</b> Here, the <i>vlan-interface-number</i> is the same VLAN as the Management VLAN. That is, both must be on the same subnet.</li> <li>• <i>chassis-number</i>: Chassis number. The valid range is from 1 to 2.</li> </ul>

	Command or Action	Purpose
		<ul style="list-style-type: none"> <li><i>ip-address</i>: Redundancy Management Interface IP address.</li> </ul> <p><b>Note</b> Each controller must have a unique chassis number for RMI to form the HA pair. The chassis number can be observed as SWITCH_NUMBER in the output of <b>show romvar</b> command. Modification of SWITCH_NUMBER is currently not available through the web UI.</p>
<b>Step 4</b>	<b>end</b>  <b>Example:</b> Device(config)# end	Returns to privileged EXEC mode.  <b>Note</b> To save the configuration, use the <b>write memory</b> command.

## Configuring Gateway Monitoring (CLI)

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b>  <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 2</b>	<b>[no] management gateway-failover enable</b>  <b>Example:</b> Device(config)# management gateway-failover enable	Enables gateway monitoring. (Use the <b>no</b> form of this command to disable gateway monitoring.)
<b>Step 3</b>	<b>ip default-gateway gateway-ip</b>  <b>Example:</b> Device(config)# ip default-gateway 1.1.1.1	Configures the gateway IP. The <i>gateway-ip</i> should be in the same subnet as the wireless management subnet.
<b>Step 4</b>	<b>end</b>  <b>Example:</b> Device(config)# end	Returns to privileged EXEC mode.  <b>Note</b> To save the configuration, use the <b>write memory</b> command.

## Verifying the Gateway-Monitoring Configuration

To verify the status of the gateway-monitoring configuration on an active controller, use the following command:

```
Device# show redundancy states

my state = 13 -ACTIVE
peer state = 8 -STANDBY HOT
Mode = Duplex
Unit = Primary
Unit ID = 1
Redundancy Mode (Operational) = sso
Redundancy Mode (Configured) = sso
Redundancy State = sso
Maintenance Mode = Disabled
Manual Swact = enabled
Communications = Up
client count = 127
client_notification_TMR = 30000 milliseconds
RF debug mask = 0x0
Gateway Monitoring = Enabled
```

To verify the status of the gateway-monitoring configuration on a standby controller, use the following command:

```
Device-stby# show redundancy states

my state = 8 -STANDBY HOT
peer state = 13 -ACTIVE
Mode = Duplex
Unit = Primary
Unit ID = 2
Redundancy Mode (Operational) = sso
Redundancy Mode (Configured) = sso
Redundancy State = sso
Maintenance Mode = Disabled
Manual Swact = cannot be initiated from this the standby unit
Communications = Up
client count = 127
client_notification_TMR = 30000 milliseconds
RF debug mask = 0x0
Gateway Monitoring = Enabled
```

## Verifying the Redundancy Management Interface Configuration

To verify the interface configuration for an active controller, use the following command:

```
Device# show running-config interface vlan management-vlan

Building configuration...

Current configuration : 109 bytes
!
interface Vlan90
ip address 9.10.90.147 255.255.255.0 secondary
ip address 9.10.90.41 255.255.255.0
```

```
end
```

To verify the interface configuration for a standby controller, use the following command:

```
Device-stby# show running-config interface vlan 90
```

```
Building configuration...
```

```
Current configuration : 62 bytes
!
interface Vlan90
ip address 9.10.90.149 255.255.255.0
end
```

To verify the chassis redundancy management interface configuration for an active controller, use the following command:

```
Device# show chassis rmi
```

```
Chassis/Stack Mac Address : 000c.2964.1eb6 - Local Mac Address
Mac persistency wait time: Indefinite
  H/W Current
```

Chassis#	Role	Mac Address	Priority	Version	State	IP	RMI-IP
*1	Active	000c.2964.1eb6	1	V02	Ready	169.254.90.147	9.10.90.147
2	Standby	000c.2975.3aa6	1	V02	Ready	169.254.90.149	9.10.90.149

To verify the chassis redundancy management interface configuration for a standby controller, use the following command:

```
Device-stby# show chassis rmi
```

```
Chassis/Stack Mac Address : 000c.2964.1eb6 - Local Mac Address
Mac persistency wait time: Indefinite
```

Chassis#	Role	Mac Address	Priority	H/W Version	Current State	IP	RMI-IP
1	Active	000c.2964.1eb6	1	V02	Ready	169.254.90.147	9.10.90.147
*2	Standby	000c.2975.3aa6	1	V02	Ready	169.254.90.149	9.10.90.149

To verify the ROMMON variables on an active controller, use the following command:

```
Device# show romvar | include RMI
```

```
RMI_INTERFACE_NAME = Vlan90
RMI_CHASSIS_LOCAL_IP = 9.10.90.147
RMI_CHASSIS_REMOTE_IP = 9.10.90.149
```

To verify the ROMMON variables on a standby controller, use the following command:

```
Device-stby# show romvar | include RMI
```

```
RMI_INTERFACE_NAME = Vlan90
RMI_CHASSIS_LOCAL_IP = 9.10.90.149
RMI_CHASSIS_REMOTE_IP = 9.10.90.147
```

To verify the switchover reason, use the following command:

```
Device# show redundancy switchover history
```

Index	Previous	Current	Switchover	Switchover
-------	----------	---------	------------	------------



-----	active	active	reason	time
-----	-----	-----	-----	-----
1	2	1	Active lost GW	17:02:29 UTC Mon Feb 3 2020

