



## Preconfiguring Physical Interfaces

This module describes the preconfiguration of physical interfaces.

The system supports preconfiguration for the following interfaces:

- 10-Gigabit Ethernet
- 40-Gigabit Ethernet
- 100-Gigabit Ethernet
- 400-Gigabit Ethernet
- Management Ethernet

Preconfiguration allows you to configure line cards before you insert them into the router. When you insert the cards, they are instantly configured. The system creates the preconfiguration information in a different system database tree, rather than with the regularly configured interfaces. That database tree is known as the *preconfiguration directory* on the Route Processor.

There might be some preconfiguration data that you cannot verify unless the line card is present. This is because the verifiers themselves run only on the line card. You can verify such preconfiguration data when you insert the line card and initiate the verifiers. The system rejects a configuration if errors are found when you copy the configuration from the preconfiguration area to the active area.



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**Note** Gigabit Ethernet interface is not supported. You can only preconfigure physical interfaces.

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## Prerequisites for Preconfiguring Physical Interfaces

Before preconfiguring physical interfaces, ensure that you meet the following condition(s):

- Preconfiguration drivers and files are installed. Although it might be possible to preconfigure physical interfaces without a preconfiguration driver installed. The preconfiguration files are required to set the interface definition file on the router that supplies the strings for valid interface names.

# Information About Preconfiguring Physical Interfaces

To preconfigure interfaces, you must understand the following concepts:

## Physical Interface Preconfiguration Overview

Preconfiguration is the process of configuring interfaces before they are present in the system. You cannot verify or apply preconfigured interfaces until you insert the actual interface into the router with the matching location. The location can be the rack, slot, or module. When you insert the anticipated line card and create the interface, the system verifies the precreated configuration information. If the verification is successful, the system immediately applies the running configuration of the router.



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**Note** When you plug the anticipated line card in, ensure that you verify any preconfiguration by using the appropriate **show** commands.

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Use the **show run** command to see the interfaces that are in the preconfigured state.



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**Note** We recommend filling out preconfiguration information in your site planning guide. This allows you to compare the anticipated configuration with the actual preconfigured interfaces when you install the card and the interfaces are up.

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**Tip** Use the **commit best-effort** command to save the preconfiguration to the running configuration file. The **commit best-effort** command merges the target configuration with the running configuration and commits only the valid configuration (best effort). Some configuration might fail due to semantic errors, but the valid configuration still comes up.

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## Benefits of Interface Preconfiguration

Preconfigurations reduce downtime when you add new cards to the system. With preconfiguration, you can instantly configure the new modular services card that actively runs during the line card bootup.

Another advantage of performing a preconfiguration is that during a card replacement, when you remove the line card, you can still see the previous configuration and make modifications.

## Use of the Interface Preconfigure Command

To preconfigure the interfaces that are not yet present in the system, use the **interface preconfigure** command in global configuration mode.

The **interface preconfigure** command places the router in interface configuration mode. You must be able to add any possible interface commands. The verifiers registered for the preconfigured interfaces verify the

configuration. The preconfiguration is complete when you enter the **end** command, or any matching exit or global configuration mode command.



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**Note** It is possible that you are not able to verify some configurations until you insert the line card is inserted. Do not enter the **no shutdown** command for new preconfigured interfaces, because the no form of this command removes the existing configuration, and there is no existing configuration.

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You must provide names during preconfiguration that matches with the name of the interface that is created. If the interface names do not match, the system does not apply preconfiguration when the interface is created. The interface names must begin with the interface type that is supported by the router and for which drivers have been installed. However, the slot, port, subinterface number, and channel interface number information cannot be validated.



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**Note** Specifying an interface name that already exists and is configured (or an abbreviated name like Hu0/3/0/0) is not permitted.

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## Active and Standby RPs and Virtual Interface Configuration

The standby RP is available and is in a state in which it can take the load from the an active RP, if required. Following are the conditions when a standby RP becomes an active RP:

- Failure detection by a watchdog.
- Standby RP is administratively commanded to take over.
- Removal of the active RP from the chassis.

If a second RP is not present in the chassis while the first is in operation, the system may insert a second RP. The second RP then automatically becomes the standby RP. The standby RP may also be removed from the chassis with no effect on the system other than loss of RP redundancy.

After failover, the virtual interfaces become available on the standby (now active) RP. Their state and configuration is unchanged, and there is no loss of forwarding (in the case of tunnels) over the interfaces during the failover. The routers use nonstop forwarding (NSF) over tunnels through the failover of the host RP.



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**Note** You do not need to configure anything to guarantee that the standby interface configurations are maintained.

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## How to Preconfigure Physical Interfaces

This task describes only the most basic preconfiguration of an interface.

```
/* Enter global configuration mode. */  
RP/0/RP0/CPU0:router:router:hostname# configure
```

```
/* Enters interface preconfiguration mode for an interface, where type specifies
the supported interface type that you want to configure and interface-path-id specifies
the location where the interface will be located in rack/slot/module/port notation. */
```

```
RP/0/RP0/CPU0:router:router(config)# interface preconfigure HundredGigE 0/3/0/2
```

```
/* Assign an IP address and mask to the interface. Use one of the following commands:
```

```
- ipv4 address ip-address subnet-mask
```

```
- ipv4 address ip-address/prefix */
```

```
RP/0/RP0/CPU0:router(config-if-pre)# ipv4 address 192.168.1.2/31
```

```
RP/0/RP0/CPU0:router(config-if-pre)# end
```

```
or
```

```
RP/0/RP0/CPU0:router(config-if-pre)# commit
```

```
RP/0/RP0/CPU0:router# show running-config
```

- When you issue the **end** command, the system prompts you to commit changes: Uncommitted changes found, commit them before exiting (yes/no/cancel)?
- Entering **yes** saves configuration changes to the running configuration file, exits the configuration session, and returns the router to EXEC mode.
- Entering **no** exits the configuration session and returns the router to EXEC mode without committing the configuration changes.
- Entering **cancel** leaves the router in the current configuration session without exiting or committing the configuration changes.
- Use the **commit best-effort** command to save the configuration changes to the running configuration file and remain within the configuration session. The **commit best-effort** command merges the target configuration with the running configuration and commits only valid changes (best effort). Some configuration changes might fail due to semantic errors.