



# Setting Best Practice Parameters for IS-IS Fast Convergence

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This module describes how to configure an IS-IS router with parameters that are recommended as a basic step to improve network convergence.

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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 Setting Best Practice Parameters for IS-IS Fast Convergence

- It is assumed that you already have IS-IS running on your network.

- Before performing the tasks in this module, you should be familiar with the concepts described in the "Overview of IS-IS Fast Convergence" module.

# Information About Setting Best Practice Parameters for IS-IS Fast Convergence

## General Steps for Improving Convergence Time in the IS-IS Network

The process described in this module consists of configuration commands that are recommended as general first steps for improving convergence time in any IS-IS network. Performing the steps in the following process can help you save network resources and speed up network convergence.

To minimize the number of adjacencies, LSDBs, and related SPF and PRC computations that are performed, it is recommended that you have configured all Level 1 routers as Level 1 by using the **is-type** command. We recommend that you use the **metric-style wide** command because some features, such as setting prefix tags and MPLS traffic engineering, require that routers that are running IS-IS generate the new-style TLVs that have wider metric fields. If you use the default narrow metric style for IS-IS, the router generates and accepts old-style type, length, and value objects (TLVs). For more information on setting prefix tags, see the "Reducing Alternate-Path Calculation Times in IS-IS Networks" module.

## How to Set Best Practice Parameters for IS-IS Fast Convergence

### Setting Best Practice Parameters for IS-IS Fast Convergence

#### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **router isis** [area- tag]
4. **is-type** [level-1 | level-1-2 | level-2-only]
5. **metric-style wide** [transition] [level-1 | level-2 | level-1-2]
6. **set-overload-bit** [on-startup {seconds | wait-for-bgp}] [suppress {interlevel| external}]
7. **no hello padding**
8. **end**

#### DETAILED STEPS

|        | Command or Action | Purpose                       |
|--------|-------------------|-------------------------------|
| Step 1 | <b>enable</b>     | Enables privileged EXEC mode. |

|               | Command or Action  | Purpose  |
|---------------|--|--|
|               | <p><b>Example:</b></p> <pre>Router&gt; enable</pre>  | <ul style="list-style-type: none"> <li>Enter your password if prompted.</li> </ul>   |
| <b>Step 2</b> | <p><b>configure terminal</b></p> <p><b>Example:</b></p> <pre>Router# configure terminal</pre>  | Enters global configuration mode.  |
| <b>Step 3</b> | <p><b>router isis [area- tag]</b></p> <p><b>Example:</b></p> <pre>Router(config)# router isis</pre>  | <p>Enables IS-IS as an IP routing protocol and assigns a tag to a process, if required.</p> <ul style="list-style-type: none"> <li>Enters router configuration mode.</li> </ul>  |
| <b>Step 4</b> | <p><b>is-type [level-1   level-1-2   level-2-only]</b></p> <p><b>Example:</b></p> <pre>Router(config-router)# is-type level-1</pre>  | <p>Configures the routing level for an instance of the IS-IS routing process.</p> <ul style="list-style-type: none"> <li>It is recommended that IS-IS nodes that operate at a single level be configured as Level 1 to minimize the number of adjacencies, LDSBs, and related SPF and PRC calculations.</li> </ul> <p><b>Note</b> You can also set the IS-IS level type on the interface by entering the <b>isis circuit-type</b> command.</p> |
| <b>Step 5</b> | <p><b>metric-style wide [transition] [level-1   level-2   level-1-2]</b></p> <p><b>Example:</b></p> <pre>Router(config-router)# metric-style wide</pre>  | <p>Globally changes the metric value for all IS-IS interfaces.</p> <ul style="list-style-type: none"> <li>Wide style metrics are required for prefix tagging.</li> </ul>   |
| <b>Step 6</b> | <p><b>set-overload-bit [on-startup {seconds   wait-for-bgp}] [suppress {interlevel   external}]</b></p> <p><b>Example:</b></p> <pre>Router(config-router)# set-overload-bit on-startup 360</pre> | <p>Configures the router to signal other routers not to use it as an intermediate hop in their shortest path first (SPF) calculations.</p> <ul style="list-style-type: none"> <li>Setting the overload bit gives the router enough time to build its BGP and CEF tables prior to the router being used as a transit node.</li> </ul>   |
| <b>Step 7</b> | <p><b>no hello padding</b></p> <p><b>Example:</b></p> <pre>Router(config-router)# no hello padding</pre>   | <p>Disables IS-IS hello padding at the router level.</p> <ul style="list-style-type: none"> <li>By default the IS-IS Hello PDUs are padded to the full MTU size, possibly having a negative impact on time-sensitive application traffic that travels across low-bandwidth interfaces or on interface buffer resources when frequent hellos are configured. It is recommended to globally disable hello padding.</li> </ul>                    |

|        | Command or Action   | Purpose  |
|--------|---|--|
| Step 8 | <b>end</b><br><br><b>Example:</b><br>Router(config-router)# end | Exits router configuration mode and returns to privileged EXEC mode. |

## Configuration Examples for Setting Best Practice Parameters for IS-IS Fast Convergence

### Example Enabling IS-IS on a Router and Setting Best Practice Parameters for IS-IS Fast Convergence

The following example enables the IS-IS routing protocol on the interfaces for Router A, enables IS-IS on Router A, and configures Router A with the basic commands recommended to optimize IS-IS network convergence.

#### Router A

```

!
clns routing
process-max-time 50
ip routing protocol purge interface
router isis
  passive-interface Loopback0
  net 49.1962.XXXX.XXXX.XXXX.00
  is-type level-2-only
  ispf level-2
  log-adjacency-changes
  ignore-lsp-errors
  metric-style wide level-2
  external overload signalling !Configure on Cisco 12000 series Internet routers
  set-overload-bit on-startup 180
  max-lsp-lifetime 65535
  lsp-refresh-interval 65000
  spf-interval 5 1 50
  prc-interval 5 1 50
  lsp-gen-interval 5 1 50
  no hello padding
  authentication mode md5 level-2
  authentication key-chain ON
  mpls traffic-eng router-id Loopback0
  mpls traffic-eng level-2
!
interface GigabitEthernet x/x/x
  negotiation auto
  ip router isis
  mtu 4470
  isis network point-to-point
  isis metric <metric> level-2
  isis circuit-type level-2-only
  isis authentication mode md5 level-2

```

```

isis authentication key-chain ON
carrier-delay ms 0
dampening
interface POSx/y/x
carrier-delay msec 0
dampening
ip router isis
no peer neighbor-route
isis metric 1 level-2
isis circuit-type level-2-only
isis authentication mode md5 level-2
isis authentication key-chain ON
pos ais-shut
pos report lais
pos report lrldi
pos report pairs
pos report prdi
pos report slos
pos report slof
!
key chain ON
key 1
key-string mypassword

```

## Where to Go Next

To configure features to improve IS-IS network convergence times, complete the optional tasks in one or more of the following modules:

- "Reducing Failure Detection Times in IS-IS Networks"
- "Reducing Alternate-Path Calculation Times in IS-IS Networks"

## Additional References

### Related Documents

| Related Topic  | Document Title  |
|--|---|
| IS-IS commands: complete command syntax, command mode, defaults, command history, usage guidelines, and examples | <i>Cisco IOS IP Routing: ISIS Command Reference</i>         |
| Overview of Cisco IS-IS conceptual information   | "Overview of IS-IS Fast Convergence"                        |
| Cisco IOS master command list, all releases  | <a href="#">Cisco IOS Master Command List, All Releases</a> |

### Standards

| Standard  | Title |
|---|-------|
| No new or modified standards are supported, and support for existing standards has not been modified. | --    |

**MIBs**

| MIB   | MIBs Link  |
|---|--|
| No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature. | To locate and download MIBs for selected platforms, Cisco IOS XE software releases, and feature sets, use Cisco MIB Locator found at the following URL:<br><br><a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a> |

**RFCs**

| RFC   | Title |
|---|-------|
| No new or modified RFCs are supported, and support for existing RFCs has not been modified. | --    |

**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 Setting Best Practice Parameters for IS-IS Fast Convergence

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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**Table 1: Feature Information for Setting Best Practice Parameters for IS-IS Fast Convergence**

| <b>Feature Name</b>   | <b>Releases</b>          | <b>Feature Information</b>   |
|---|--------------------------|--|
| Setting Best Practice Parameters for IS-IS Fast Convergence | Cisco IOS XE Release 2.1 | This feature was introduced on the Cisco ASR 1000 Series Aggregation Services Routers. |

