



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 feature information and caveats, see 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 document.

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. An account on Cisco.com is not required.

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

- It is assumed 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.



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Information About Setting Best Practice Parameters for IS-IS Fast 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).

- [General Steps for Improving Convergence Time in the IS-IS Network, page 2](#)

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.

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

- [Setting Best Practice Parameters for IS-IS Fast Convergence, page 2](#)

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**
9. **show clns [domain | area-tag] protocol**

DETAILED STEPS

Command or Action	Purpose
<p>Step 1 <code>enable</code></p> <p>Example:</p> <pre>Router> enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> Enter your password if prompted.
<p>Step 2 <code>configure terminal</code></p> <p>Example:</p> <pre>Router# configure terminal</pre>	<p>Enters global configuration mode.</p>
<p>Step 3 <code>router isis [area- tag]</code></p> <p>Example:</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"> Enters router configuration mode.
<p>Step 4 <code>is-type [level-1 level-1-2 level-2-only]</code></p> <p>Example:</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"> 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. <p>Note You can also set the IS-IS level type on the interface by entering the isis circuit-type command.</p>
<p>Step 5 <code>metric-style wide [transition] [level-1 level-2 level-1-2]</code></p> <p>Example:</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"> Wide style metrics are required for prefix tagging.
<p>Step 6 <code>set-overload-bit [on-startup {seconds wait-for-bgp}] [suppress {interlevel external}]</code></p> <p>Example:</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"> 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.

Command or Action	Purpose
Step 7 no hello padding Example: <pre>Router(config-router)# no hello padding</pre>	Disables IS-IS hello padding at the router level. <ul style="list-style-type: none"> 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.
Step 8 end Example: <pre>Router(config-router)# end</pre>	Exits router configuration mode and returns to privileged EXEC mode.
Step 9 show clns [domain area-tag] protocol Example: <pre>Router(config-if)# show clns protocol</pre>	Lists the protocol-specific information for each ISO IGRP or IS-IS routing process in the router.

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, page 4](#)

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
 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
 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 pais
 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 Link Failure and Topology Change Notification 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 with links to all the individual IS-IS modules	"Integrated IS-IS Routing Protocol Overview" module

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, and support for existing MIBs has not been modified.	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

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.	http://www.cisco.com/cisco/web/support/index.html

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.

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. An account on Cisco.com is not required.

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

Feature Name	Software Releases	Feature Information
This table is intentionally left blank because no features were introduced or modified in this module since Cisco IOS Release 12.2T. This table will be updated when feature information is added to this module.	--	--

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