

Chapter 17

Summary of IS-IS Configuration Statements

The following sections explain each of the IS-IS configuration statements. The statements are organized alphabetically.

authentication-key

Syntax	authentication-key <i>key</i> ;
Hierarchy Level	[edit protocols isis]
Description	Authentication key (password). Neighboring routers use the password to verify the authenticity of packets sent from this interface. For the key to work, you also must include the authentication-type statement. All routers must use the same password. If you are using the JUNOS IS-IS software with another implementation of IS-IS, the other implementation must be configured to use the same password for the domain, the area, and all interfaces adjacent to the Juniper router.
Default	If you do not include this statement and the authentication-type statement, IS-IS authentication is disabled.
Options	<i>key</i> —Authentication password. The password can be up to 255 characters. Characters can include any ASCII strings. If you include spaces, enclose all characters in quotation marks (“ ”).
Usage Guidelines	See “Configure IS-IS Authentication” on page 177.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	authentication-type on page 196, no-authentication-check on page 205

authentication-type

Syntax	authentication-type <i>authentication</i> ;
Hierarchy Level	[edit protocols isis]
Description	Enable authentication and specify the authentication scheme for IS-IS. If you enable authentication, you must specify a password by including the authentication-key statement.
Default	If you do not include this statement and the authentication-key statement, IS-IS authentication is disabled.
Options	<p><i>authentication</i>—Authentication scheme:</p> <p>md5—Use HMAC authentication in combination with MD5. HMAC-MD5 authentication is defined in RFC 2104, <i>HMAC: Keyed-Hashing for Message Authentication</i>.</p> <p>simple—Use a simple password for authentication. The password is included in the transmitted packet, making this method of authentication relatively insecure. We recommend that you <i>not</i> use this authentication method.</p>
Usage Guidelines	See “Configure IS-IS Authentication” on page 177.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	authentication-key on page 195, no-authentication-check on page 205

csnp-interval

Syntax	csnp-interval (<i>seconds</i> disable);
Hierarchy Level	[edit protocols isis interface <i>interface-name</i>]
Description	Configure the interval between CSN packets.
Options	<p><i>seconds</i>—Number of seconds between the sending of CSN packets.</p> <p>Range: 1 through 65,535</p> <p>Default: 10 seconds (if the router is the designated router on a LAN); 3600 seconds (if the router is on a point-to-point interface)</p> <p>disable—Do not send CSN packets on this interface.</p>
Usage Guidelines	See “Configure the CSNP Interval” on page 179.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

disable

Syntax	disable;
Hierarchy Level	[edit protocols isis], [edit protocols isis traffic-engineering], [edit protocols isis interface <i>interface-name</i>], [edit protocols isis interface <i>interface-name</i> level <i>level-number</i>]
Description	Disable IS-IS on the router, on an interface, or on a level. At the [edit protocols isis traffic-engineering] hierarchy level, disable IS-IS support for traffic engineering. Enabling IS-IS on an interface (by including the interface statement at the [edit protocols isis] hierarchy level), disabling it (by including the disable statement), and not actually having IS-IS run on an interface (by including the passive statement) are mutually exclusive states.
Default	IS-IS is enabled for Level 1 and Level 2 routers on all interfaces on which an ISO protocol family is enabled. IS-IS support for traffic engineering is enabled.
Usage Guidelines	See “IS-IS Overview” on page 171, “Disable IS-IS Support for Traffic Engineering” on page 188, and “Disable IS-IS on the Router” on page 188.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

export

Statement	export [<i>policy-names</i>];
Hierarchy Level	[edit protocols isis]
Description	Apply one or more policies to routes being exported from the routing table into IS-IS.
Options	<i>policy-name</i> —Name of one or more policies.
Usage Guidelines	See “Configure IS-IS Routing Policy” on page 188 and “Configure Routing Policy” on page 35.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

external-preference

Syntax	external-preference <i>preference</i> ;
Hierarchy Level	[edit protocols isis level <i>level-number</i>]
Description	Configure the preference of external routes.
Options	<i>preference</i> —Preference value. Range: 0 through 255 Default: 15 (for Level 1 internal routes), 18 (for Level 2 internal routes), 160 (for Level 1 external routes), 165 (for Level 2 external routes)
Usage Guidelines	See “Configure Route Preferences” on page 181.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	preference on page 206

hello-authentication-key

Syntax	hello-authentication-key <i>key</i> ;
Hierarchy Level	[edit protocols isis interface <i>interface-name</i>] [edit protocols isis interface <i>interface-name</i> level <i>number</i>]
Description	Authentication key (password) for hello packets. Neighboring routers use the password to verify the authenticity of packets sent from an interface. For the key to work, you also must include the hello-authentication-type statement.
Default	By default, hello authentication is not configured on an interface. However, if IS-IS authentication is configured, the hello packets are authenticated using the IS-IS authentication type and password.
Options	<i>key</i> —Authentication password. The password can be up to 255 characters. Characters can include any ASCII strings. If you include spaces, enclose all characters in quotation marks (“ ”).
Usage Guidelines	See “Configure Authentication for Hello Packets” on page 183.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	authentication-key on page 195, authentication-type on page 196, hello-authentication-type on page 199

hello-authentication-type

Syntax	hello-authentication-type <i>authentication</i> ;
Hierarchy Level	[edit protocols isis interface <i>interface-name</i>] [edit protocols isis interface <i>interface-name</i> level <i>number</i>]
Description	Enable authentication on an interface for hello packets. If you enable authentication on hello packets, you must specify a password by including the hello-authentication-key statement.
Default	By default, hello authentication is not configured on an interface. However, if IS-IS authentication is configured, the hello packets are authenticated using the IS-IS authentication type and password.
Usage Guidelines	See “Configure Authentication for Hello Packets” on page 183.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	authentication-key on page 195, authentication-type on page 196, hello-authentication-key on page 198

hello-interval

Syntax	hello-interval <i>seconds</i> ;
Hierarchy Level	[edit protocols isis interface <i>interface-name</i> level <i>level-number</i>]
Description	How often the router sends hello packets out of an interface.
Options	<i>seconds</i> —Length of time hello packets. Range: 1 through 20,000 Default: 3 seconds (for DIS routers), 9 seconds (for non-DIS routers)
Usage Guidelines	See “Modify the Hello Interval” on page 184.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	hold-time on page 200

• hold-time

• **Syntax** hold-time *seconds*;

• **Hierarchy Level** [edit protocols isis interface *interface-name* level *level-number*]

• **Description** How long a neighbor should consider the sending router (this router) to be operative (up). The hold time is advertised in IS-IS hello packets.

• **Options** *seconds*—Hold-time value.
• **Range:** 3 through 65,535
• **Default:** 9 seconds (for DIS routers), 27 seconds (for non-DIS routers)
• (three times the default hello interval)

• **Usage Guidelines** See “Modify the Hold-Time Value” on page 184.

• **Required Privilege Level** routing—To view this statement in the configuration.
• routing-control—To add this statement to the configuration.

• **See Also** hello-interval on page 199

interface

Syntax interface *interface-name* {
 csnp-interval (*seconds* | disable);
 disable;
 hello-authentication-key *key*;
 hello-authentication-type *authentication*;
 lsp-interval *milliseconds*;
 mesh-group (*value* | blocked);
 passive;
 level *level-number* {
 disable;
 hello-authentication-type *authentication*;
 hello-authentication-key *key*;
 hello-interval *seconds*;
 hold-time *seconds*;
 metric *metric*;
 passive;
 priority *number*;
 te-metric *metric*;
 }
}

Hierarchy Level [edit protocols isis]

Description Configure interface-specific IS-IS properties. To configure more than one interface, include the interface statement multiple times.

Enabling IS-IS on an interface (by including the interface statement at the [edit protocols isis] hierarchy level), disabling it (by including the **disable** statement), and not actually having IS-IS run on an interface (by including the **passive** statement) are mutually exclusive states.

Options *interface-name*—Name of an interface. Specify the full interface name, including the physical and logical address components. To configure all interfaces, specify the interface name as all. For details about specifying interfaces, see the *JUNOS Internet Software Configuration Guide: Interfaces and Chassis*.

The remaining statements are explained separately.

Usage Guidelines See “Configure Interface-Specific Properties” on page 179.

Required Privilege Level routing—To view this statement in the configuration.
 routing-control—To add this statement to the configuration.

isis

Syntax	isis { ... }
Hierarchy Level	[edit protocols]
Description	Enable IS-IS routing on the router. The isis statement is the one statement you must include in the configuration to run IS-IS on the router.
Default	IS-IS is disabled on the router.
Usage Guidelines	See “Minimum IS-IS Configuration” on page 177.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

label-switched-path

Syntax	label-switched-path <i>name</i> level <i>level-number</i> metric <i>metric</i> ;
Hierarchy Level	[edit protocols]
Description	Advertise label-switched paths into IS-IS as point-to-point links. The label-switched path is advertised in the appropriate IS-IS levels as a point-to-point link and contains a local address and a remote address.
Options	<i>level-number</i> —IS-IS level number. Value: 1 or 2 <i>metric</i> —Metric value. Range: 1 through 63, or 1 through 4,294,967,295 (if you have configured wide metrics) Default: 10
Usage Guidelines	See “Advertise Label-Switched Paths into IS-IS” on page 186.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

level

level (global IS-IS)

Syntax	level <i>level-number</i> { external-preference <i>preference</i> ; preference <i>preference</i> ; }
Hierarchy Level	[edit protocols isis]
Description	Configure the global level properties.
Options	<i>level-number</i> —IS-IS level number. Value: 1 or 2 The remaining statements are explained separately.
Usage Guidelines	See “Configure Route Preferences” on page 181.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

level (IS-IS interfaces)

Syntax	level <i>level-number</i> { disable; hello-authentication-key <i>key</i> ; hello-authentication-type <i>authentication</i> ; hello-interval <i>seconds</i> ; hold-time <i>seconds</i> ; metric <i>metric</i> ; passive; priority <i>number</i> ; te-metric <i>metric</i> ; }
Hierarchy Level	[edit protocols isis interface <i>interface-name</i>]
Description	Configure the IS-IS level. You can configure one instance of Level 1 routing and one instance of Level 2 routing on each interface, and you can configure the two levels differently.
Options	<i>level-number</i> —IS-IS level number. Value: 1 or 2 Default: The router operates as both a Level 1 and Level 2 router. The remaining statements are explained separately.
Usage Guidelines	See “Configure IS-IS Levels on an Interface” on page 181.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

lsp-interval

Syntax	lsp-interval <i>milliseconds</i> ;
Hierarchy Level	[edit protocols isis interface <i>interface-name</i>]
Description	Configure the LSP interval time.
Options	<i>milliseconds</i> —Number of milliseconds between the sending of LSPs. Specifying a value of 0 blocks all LSP transmission. Range: 0 through 65,535 Default: 100 milliseconds
Usage Guidelines	See “Modify the LSP Interval” on page 185.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

lsp-lifetime

Syntax	lsp-lifetime <i>seconds</i> ;
Hierarchy Level	[edit protocols isis]
Description	How long an LSP originating from the router should persist in the network. The router sends LSPs sufficiently often so that the LSP lifetime never expires.
Options	<i>seconds</i> —LSP lifetime. Range: 350 through 65,535 Default: 1200 seconds
Usage Guidelines	See “Modify the LSP Lifetime” on page 186.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

mesh-group

Syntax	mesh-group (<i>value</i> blocked);
Hierarchy Level	[edit protocols isis interface <i>interface-name</i>]
Description	Configure an interface to be part of a mesh group, which is a set of fully connected nodes.
Options	<i>value</i> —Number that identifies the mesh group. Range: 1 through 4,294,967,295 (32 bits are allocated to identify a mesh group) blocked—Configure the interface so that it does not flood LSP packets.
Usage Guidelines	See “Configure Mesh Groups” on page 180.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

metric

Syntax	metric <i>metric</i> ;
Hierarchy Level	[edit protocols isis interface <i>interface-name</i> level <i>level-number</i>]
Description	Metric value for the level.
Options	<i>metric</i> —Metric value. Range: 1 through 63, or 1 through 4,294,967,295 (if you have configured wide metrics) Default: 10
Usage Guidelines	See “Modify the IS-IS Metric” on page 184.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	te-metric on page 208, wide-metrics-only on page 211

no-authentication-check

Syntax	no-authentication-check;
Hierarchy Level	[edit protocols isis]
Description	Generate authenticated packets, and check the authentication on received packets but do not reject packets that cannot be authenticated.
Usage Guidelines	See “Configure IS-IS Authentication” on page 177.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	csnp-interval on page 196, hello-authentication-type on page 199

overload

Syntax	overload <timeout <i>seconds</i> >;
Hierarchy Level	[edit protocols isis]
Description	Configure the local router so that it appears to be overloaded. You might want to do this when you want the router to participate in IS-IS routing, but do not want it to be used for transit traffic. Note that traffic to immediately attached interfaces continues to transit the router.
Option	timeout <i>seconds</i> —Number of seconds at which the overloading is reset. Range: 60 through 1800 seconds Default: 0 seconds
Usage Guidelines	See “Configure the Router to Appear Overloaded” on page 187.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

passive

Syntax passive;

Hierarchy Level [edit protocols isis interface *interface-name*],
[edit protocols isis interface *interface-name* level *level-number*]

Description Advertise the direct interface addresses on an interface or into a level on the interface without actually running IS-IS on that interface or level.

Enabling IS-IS on an interface (by including the interface statement at the [edit protocols isis] hierarchy level), disabling it (by including the **disable** statement), and not actually having IS-IS run on an interface (by including the **passive** statement) are mutually exclusive states.

Usage Guidelines See “Advertise Interface Addresses without Running IS-IS” on page 183.

Required Privilege Level routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

preference

Syntax preference *preference*;

Hierarchy Level [edit protocols isis level *level-number*]

Description Configure the preference of internal routes.

Options *preference*—Preference value.

Range: 0 through 255

Default: 15 (for Level 1 internal routes), 18 (for Level 2 internal routes), 160 (for Level 1 external routes), 165 (for Level 2 external routes)

Usage Guidelines See “Configure Route Preferences” on page 181.

Required Privilege Level routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

See Also external-preference on page 198

priority

Syntax	<code>priority number;</code>
Hierarchy Level	[edit protocols isis interface <i>interface-name</i> level <i>level-number</i>]
Description	Interface's priority for becoming the designated router. The interface with the highest priority value becomes that level's designated router. The priority value is meaningful only on a multiaccess network. It has no meaning on a point-to-point interface.
Options	<i>number</i> —Priority value. Range: 0 through 127 Default: 64
Usage Guidelines	See "Configure the Priority for Becoming the Designated Router" on page 185.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

reference-bandwidth

Syntax	<code>reference-bandwidth reference-bandwidth;</code>
Hierarchy Level	[edit protocols isis]
Description	Set the reference bandwidth used in calculating the default interface cost. The cost is calculated using the following formula: $cost = reference\text{-}bandwidth / bandwidth$
Options	<i>reference-bandwidth</i> —Reference bandwidth in bits per second. Default: 10 Mbps—If the reference bandwidth is not configured.
Usage Guidelines	See "Modify the Interface Metric" on page 180.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

shortcuts

Syntax	shortcuts;
Hierarchy Level	[edit protocols isis traffic-engineering]
Description	Configure IS-IS to use MPLS label-switched paths (LSPs) as next hops if possible when installing routing information into the inet.3 routing table.
Usage Guidelines	See “Configure Route Preferences” on page 181.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

te-metric

Syntax	te-metric <i>metric</i> ;
Hierarchy Level	[edit protocols isis interface <i>interface-name</i> level <i>level-number</i>]
Description	Metric value that is used by traffic engineering for information injected into the traffic engineering database (TED). The value of the traffic engineering metric does not affect normal IS-IS forwarding.
Options	<i>metric</i> —Metric value. Range: 1 through 4,294,967,295 Default: 10
Usage Guidelines	See “Modify the IS-IS Metric” on page 184.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	metric on page 205, wide-metrics-only on page 211

traceoptions

Syntax traceoptions {
 file *name* <replace> <size *size*> <files *number*> <no-stamp>
 <(world-readable | no-world-readable)>;
 flag *flag* <*flag-modifier*> <disable>;
 }

Hierarchy Level [edit protocols isis]

Description Configure IS-IS protocol-level tracing options.

To specify more than one tracing operation, include multiple flag statements.

Default The default IS-IS protocol-level tracing options are those inherited from the routing protocols traceoptions statement included at the [edit routing-options] hierarchy level.

Options disable—(Optional) Disable the tracing operation. You can use this option to disable a single operation when you have defined a broad group of tracing operations, such as all.

name—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. All files are placed in the directory /var/log. We recommend that you place IS-IS tracing output in the file isis-log.

files *number*—(Optional) Maximum number of trace files. When a trace file named *trace-file* reaches its maximum size, it is renamed *trace-file.0*, then *trace-file.1*, and so on, until the maximum number of trace files is reached. Then, the oldest trace file is overwritten.

If you specify a maximum number of files, you also must specify a maximum file size with the size option.

Range: 2 through 1000 files

Default: 2 files

flag—Tracing operation to perform. To specify more than one flag, include multiple flag statements.

IS-IS Tracing Flags

csn—Complete sequence number PDU (CSNP) packets

error—Errored IS-IS packets

hello—Hello packets

lsp—Link-state PDU packets

lsp-generation—Link-state PDU generation packets

packets—All IS-IS protocol packets

psn—Partial sequence number PDU (PSNP) packets

spf—Shortest-path-first calculations

Global Tracing Flags

all—All tracing operations

general—A combination of the normal and route trace operations

normal—All normal operations, including adjacency changes

Default: If you do not specify this option, only unusual or abnormal operations are traced.

policy—Policy operations and actions

route—Routing table changes

state—State transitions

task—Interface transactions and processing

timer—Timer usage

flag-modifier—(Optional) Modifier for the tracing flag. You can specify one or more of these modifiers:

detail—Detailed trace information

receive—Packets being received

send—Packets being transmitted

no-stamp—(Optional) Do not place timestamp information at the beginning of each line in the trace file.

Default: If you omit this option, timestamp information is placed at the beginning of each line of the tracing output.

no-world-readable—(Optional) Disallow any user to read the log file.

replace—(Optional) Replace an existing trace file if there is one.

Default: If you do not include this option, tracing output is appended to an existing trace file.

size *size*—(Optional) Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). When a trace file named *trace-file* reaches this size, it is renamed *trace-file.0*. When the *trace-file* again reaches its maximum size, *trace-file.0* is renamed *trace-file.1* and *trace-file* is renamed *trace-file.0*. This renaming scheme continues until the maximum number of trace files is reached. Then, the oldest trace file is overwritten.

If you specify a maximum file size, you also must specify a maximum number of trace files with the *files* option.

Syntax: *xk* to specify KB, *xm* to specify MB, or *xg* to specify GB

Range: 10 KB through the maximum file size supported on your system

Default: 1 MB

world-readable—(Optional) Allow any user to read the log file.

Usage Guidelines See “Trace IS-IS Protocol Traffic” on page 190.

Required Privilege Level routing and trace—To view this statement in the configuration.
routing-control and trace-control—To add this statement to the configuration.

traffic-engineering

Syntax traffic-engineering {
 disable;
 shortcuts;
}

Hierarchy Level [edit protocols isis]

Description Configure traffic engineering properties for IS-IS.

Default IS-IS traffic engineering support is enabled.

Usage Guidelines See “Configure IS-IS Traffic Engineering Attributes” on page 187.

Required Privilege Level routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

wide-metrics-only

Statement wide-metrics-only;

Hierarchy Level [edit protocols isis level *level-number*]

Description Configure IS-IS to generate metric values greater than 63 on a per IS-IS level basis.

Usage Guidelines See “Enable Wide Metrics for Traffic Engineering” on page 180.

Required Privilege Level routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

See Also te-metric on page 208

