

## Chapter 13

# Summary of IS-IS Configuration Statements

The following sections explain each of the Intermediate System-to-Intermediate System (IS-IS) configuration statements. The statements are organized alphabetically.

### authentication-key

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<b>Syntax</b>	authentication-key <i>key</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ], [edit protocols isis level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ]
<b>Description</b>	<p>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.</p> <p>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.</p>
<b>Default</b>	If you do not include this statement and the authentication-type statement, IS-IS authentication is disabled.
<b>Options</b>	<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 (" ").
<b>Usage Guidelines</b>	See “Configuring IS-IS Authentication” on page 228.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## authentication-type

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<b>Syntax</b>	<code>authentication-type authentication;</code>
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ], [edit protocols isis level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ]
<b>Description</b>	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.
<b>Default</b>	If you do not include this statement and the authentication-key statement, IS-IS authentication is disabled.
<b>Options</b>	<i>authentication</i> —Authentication scheme:  <i>md5</i> —Use HMAC authentication in combination with MD5. HMAC-MD5 authentication is defined in RFC 2104, <i>HMAC: Keyed-Hashing for Message Authentication</i> .  <i>simple</i> —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.
<b>Usage Guidelines</b>	See “Configuring IS-IS Authentication” on page 228.
<b>Required Privilege Level</b>	<i>routing</i> —To view this statement in the configuration. <i>routing-control</i> —To add this statement to the configuration.
<b>See Also</b>	<i>authentication-key</i> on page 255, <i>no-authentication-check</i> on page 274

## bfd-liveness-detection

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<b>Syntax</b>	bfd-liveness-detection { minimum-interval <i>milliseconds</i> ; minimum-receive-interval <i>milliseconds</i> ; minimum-transmit-interval <i>milliseconds</i> ; multiplier <i>number</i> ; }
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> ], [edit protocols isis interface <i>interface-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> ]
<b>Description</b>	Configure bidirectional failure detection timers.
<b>Options</b>	<p>minimum-interval <i>milliseconds</i>—Configure the minimum transmit and receive interval.  <b>Range:</b> 1 through 255,000</p> <p>minimum-receive-interval <i>milliseconds</i>—Configure the minimum receive interval.  <b>Range:</b> 1 through 255,000</p> <p>minimum-transmit-interval <i>milliseconds</i>—Configure the minimum transmit interval.  <b>Range:</b> 1 through 255,000</p> <p>multiplier <i>number</i>—Configure the detection time multiplier.  <b>Range:</b> 1 through 255  <b>Default:</b> 3</p>
<b>Usage Guidelines</b>	See “Configuring the BFD Protocol” on page 243.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## checksum

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<b>Syntax</b>	checksum;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> ], [edit protocols isis interface <i>interface-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> ]
<b>Description</b>	Enable checksum for packets on this interface. Checksum cannot be enabled with MD5 hello authentication on the same interface.
<b>Usage Guidelines</b>	See “Enabling Checksum” on page 231.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## csnp-interval

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<b>Syntax</b>	csnp-interval ( <i>seconds</i>   disable);
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> ], [edit protocols isis <i>interface-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis <i>interface-name</i> ]
<b>Description</b>	Configure the interval between complete sequence number (CSN) packets on a LAN interface.
<b>Options</b>	<p>disable—Do not send CSN packets on this interface.</p> <p><i>seconds</i>—Number of seconds between the sending of CSN packets.  <b>Range:</b> 1 through 65,535 seconds  <b>Default:</b> 10 seconds</p>
<b>Usage Guidelines</b>	See “Configuring the CSNP Interval” on page 231.
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

## disable

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<b>Syntax</b>	disable;
<b>Hierarchy Level</b>	<p>[edit logical-routers <i>logical-router-name</i> protocols isis],  [edit logical-routers <i>logical-router-name</i> protocols isis <i>interface-name</i>],  [edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i>],  [edit logical-routers <i>logical-router-name</i> protocols isis traffic-engineering],  [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis],  [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i>],  [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i>],  [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis traffic-engineering],  [edit protocols isis],  [edit protocols isis <i>interface-name</i>],  [edit protocols isis interface <i>interface-name</i> level <i>level-number</i>],  [edit protocols isis traffic-engineering],  [edit routing-instances <i>routing-instance-name</i> protocols isis],  [edit routing-instances <i>routing-instance-name</i> protocols isis <i>interface-name</i>],  [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i>],  [edit routing-instances <i>routing-instance-name</i> protocols isis traffic-engineering]</p>
<b>Description</b>	<p>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.</p> <p>Enabling IS-IS on an interface (by including the interface statement at the [edit protocols isis] or the [edit routing-instances <i>routing-instance-name</i> protocols isis] hierarchy level), disabling it (by including the <b>disable</b> statement), and not actually having IS-IS run on an interface (by including the <b>passive</b> statement) are mutually exclusive states.</p>
<b>Default</b>	<p>IS-IS is enabled for Level 1 and Level 2 routers on all interfaces on which an International Organization of Standardization (ISO) protocol family is enabled.</p> <p>IS-IS support for traffic engineering is enabled.</p>
<b>Usage Guidelines</b>	See “IS-IS Overview” on page 221, “Disabling IS-IS Support for Traffic Engineering” on page 243, and “Disabling IS-IS” on page 244.
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

## export

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<b>Statement</b>	export [ <i>policy-names</i> ];
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis], [edit protocols isis], [edit routing-instances <i>routing-instance-name</i> protocols isis]
<b>Description</b>	Apply one or more policies to routes being exported from the routing table into IS-IS.
<b>Options</b>	<i>policy-names</i> —Name of one or more policies.
<b>Usage Guidelines</b>	See “Configuring IS-IS Routing Policy” on page 246 and the <i>JUNOS Policy Framework Configuration Guide</i> .
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## external-preference

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<b>Syntax</b>	external-preference <i>preference</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ], [edit protocols isis level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ]
<b>Description</b>	Configure the preference of external routes.
<b>Options</b>	<i>preference</i> —Preference value. <b>Range:</b> 0 through 255 <b>Default:</b> 15 (for Level 1 internal routes), 18 (for Level 2 internal routes), 160 (for Level 1 external routes), 165 (for Level 2 external routes)
<b>Usage Guidelines</b>	See “Configuring Route Preferences” on page 233.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>See Also</b>	preference on page 281

## graceful-restart

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<b>Syntax</b>	graceful-restart { disable; helper-disable; restart-duration <i>seconds</i> ; }
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis], [edit protocols isis]
<b>Description</b>	Configure graceful restart for IS-IS.
<b>Options</b>	<p>disable—Disable graceful restart.</p> <p>helper-disable—Disable graceful restart helper capability.</p> <p>restart-duration <i>seconds</i>—Configure the time period for the restart to last, in seconds.  <b>Range:</b> 30 through 300 seconds  <b>Default:</b> 30 seconds</p>
<b>Usage Guidelines</b>	See “Configuring Graceful Restart” on page 96 and “Configuring Graceful Restart” on page 241.
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

## hello-authentication-key

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<b>Syntax</b>	hello-authentication-key <i>key</i> ;
<b>Hierarchy Level</b>	<p>[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> level <i>number</i>],</p> <p>[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>number</i>],</p> <p>[edit protocols isis interface <i>interface-name</i> level <i>number</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>number</i>]</p>
<b>Description</b>	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.
<b>Default</b>	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.
<b>Options</b>	<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 (“ ”).
<b>Usage Guidelines</b>	See “Configuring Authentication for Hello Packets” on page 236.

**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 255, authentication-type on page 256,  
hello-authentication-type on page 262

## hello-authentication-type

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**Syntax** hello-authentication-type *authentication*;

**Hierarchy Level** [edit logical-routers *logical-router-name* protocols isis interface *interface-name*  
level *number*],  
[edit logical-routers *logical-router-name* routing-instances *routing-instance-name*  
protocols isis interface *interface-name* level *number*],  
[edit protocols isis interface *interface-name* level *number*],  
[edit routing-instances *routing-instance-name* protocols isis interface *interface-name*  
level *number*]

**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.

**Options** *authentication*—Specifies the packet verification type.

**Usage Guidelines** See “Configuring Authentication for Hello Packets” on page 236.

**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 255, authentication-type on page 256,  
hello-authentication-key on page 261

## hello-interval

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<b>Syntax</b>	hello-interval <i>seconds</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ]
<b>Description</b>	How often the router sends hello packets out of an interface, in seconds.
<b>Options</b>	<i>seconds</i> —Length of time of hello packets. <b>Range:</b> 1 through 20,000 seconds. Specify 1 to send out hello packets every 333 milliseconds. <b>Default:</b> 3 seconds (for designated intersystem [DIS] routers), 9 seconds (for non-DIS routers)
<b>Usage Guidelines</b>	See “Modifying the Hello Interval” on page 237.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>See Also</b>	hold-time on page 263

## hold-time

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<b>Syntax</b>	hold-time <i>seconds</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ]
<b>Description</b>	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.
<b>Options</b>	<i>seconds</i> —Hold-time value, in seconds. <b>Range:</b> 3 through 65,535 seconds <b>Default:</b> 9 seconds (for DIS routers), 27 seconds (for non-DIS routers; three times the default hello interval)
<b>Usage Guidelines</b>	See “Modifying the Hold-Time Value” on page 237.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>See Also</b>	hello-interval on page 263

## ignore-attached-bit

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<b>Syntax</b>	ignore-attached-bit;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis], [edit protocols isis], [edit routing-instances <i>routing-instance-name</i> protocols isis]
<b>Description</b>	Ignore the attached bit on IS-IS Level 1 routers. Configuring this statement allows the router to ignore the attached bit on incoming Level 1 LSPs. If the attached bit is ignored, no default route, which points to the router which has set the attached bit, will be installed.
<b>Default</b>	The ignore-attached-bit statement is disabled by default.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## interface

<b>Syntax</b>	<pre> isis <i>interface-name</i> {     disable;     bfd-liveness-detection {         minimum-interval <i>milliseconds</i>;         minimum-receive-interval <i>milliseconds</i>;         minimum-transmit-interval <i>milliseconds</i>;         multiplier <i>number</i>;     }     checksum;     csnp-interval (<i>seconds</i>   disable);     lsp-interval <i>milliseconds</i>;     mesh-group (<i>value</i>   blocked);     no-ipv4-multicast;     no-ipv6-multicast;     no-ipv6-unicast;     passive;     level <i>level-number</i> {         disable;         hello-authentication-type <i>authentication</i>;         hello-authentication-key <i>key</i>;         hello-interval <i>seconds</i>;         hold-time <i>seconds</i>;         ipv4-multicast-metric <i>number</i>;         ipv6-multicast-metric <i>number</i>;         ipv6-unicast-metric <i>number</i>;         metric <i>metric</i>;         passive;         priority <i>number</i>;         te-metric <i>metric</i>;     } } </pre>
<b>Hierarchy Level</b>	<pre> [edit logical-routers <i>logical-router-name</i> protocols isis], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i>  protocols isis], [edit protocols isis], [edit routing-instances <i>routing-instance-name</i> protocols isis] </pre>
<b>Description</b>	<p>Configure interface-specific IS-IS properties. To configure more than one interface, include the interface statement multiple times.</p> <p>Enabling IS-IS on an interface (by including the interface statement at the [edit protocols isis] or the [edit routing-instances <i>routing-instance-name</i> protocols isis] hierarchy level), disabling it (by including the <b>disable</b> statement), and not actually having IS-IS run on an interface (by including the <b>passive</b> statement) are mutually exclusive states.</p>
<b>Options</b>	<p><i>interface-name</i>—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 <i>JUNOS Network Interfaces and Class of Service Configuration Guide</i>.</p>

The remaining statements are explained separately.

**Usage Guidelines** See “Configuring Interface-Specific Properties” on page 230.

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

## ipv4-multicast

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**Syntax** ipv4-multicast;

**Hierarchy Level** [edit logical-routers *logical-router-name* protocols isis topologies],  
[edit logical-routers *logical-router-name* routing-instances *routing-instance-name*  
protocols isis topologies],  
[edit protocols isis topologies],  
[edit routing-instances *routing-instance-name* protocols isis topologies]

**Description** Configure alternate IPv4 multicast topologies.

**Default** Multicast topologies are disabled.

**Usage Guidelines** See “Configuring IS-IS Multicast Topologies” on page 248.

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

## ipv4-multicast-metric

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**Syntax** ipv4-multicast-metric *metric*;

**Hierarchy Level** [edit logical-routers *logical-router-name* protocols isis interface *interface-name* level  
*level-number*],  
[edit logical-routers *logical-router-name* routing-instances *routing-instance-name*  
protocols isis interface *interface-name* level *level-number*],  
[edit protocols isis interface *interface-name* level *level-number*],  
[edit routing-instances *routing-instance-name* protocols isis interface *interface-name*  
level *level-number*]

**Description** Specify the multicast topology metric value for the level.

**Options** *metric*—Metric value.  
**Range:** 0 through 16,777,215

**Usage Guidelines** See “Configuring IS-IS Multicast Topologies” on page 248.

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

## ipv6-multicast-metric

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<b>Syntax</b>	ipv6-multicast-metric <i>metric</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ]
<b>Description</b>	Specify the IPv6 alternate multicast topology metric value for the level.
<b>Options</b>	<i>metric</i> —Metric value. <b>Range:</b> 0 through 16,777,215
<b>Usage Guidelines</b>	See “Configuring IS-IS Multicast Topologies” on page 248.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## ipv6-unicast

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<b>Syntax</b>	ipv6-unicast;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis topologies], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis topologies], [edit protocols isis topologies], [edit routing-instances <i>routing-instance-name</i> protocols isis topologies]
<b>Description</b>	Configure alternate IPv6 unicast topologies.
<b>Default</b>	IPv6 unicast topologies are disabled.
<b>Usage Guidelines</b>	See “Configuring IS-IS IPv6 Unicast Topologies” on page 251.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## ipv6-unicast-metric

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<b>Syntax</b>	ipv6-unicast-metric <i>metric</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ]
<b>Description</b>	Specify the IPv6 unicast topology metric value for the level.
<b>Options</b>	<i>metric</i> —Metric value. <b>Range:</b> 0 through 16,777,215
<b>Usage Guidelines</b>	See “Configuring IS-IS IPv6 Unicast Topologies” on page 251.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## isis

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<b>Syntax</b>	isis { ... }
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols], [edit protocols], [edit routing-instances <i>routing-instance-name</i> protocols]
<b>Description</b>	Enable IS-IS routing on the router or for a routing instance.  The isis statement is the one statement you must include in the configuration to run IS-IS on the router or in a routing instance.
<b>Default</b>	IS-IS is disabled on the router.
<b>Usage Guidelines</b>	See “Minimum IS-IS Configuration” on page 228.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## label-switched-path

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<b>Syntax</b>	label-switched-path <i>name</i> level <i>level-number</i> metric <i>metric</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis], [edit protocols isis], [edit routing-instances <i>routing-instance-name</i> protocols isis]
<b>Description</b>	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.
<b>Options</b>	<i>name</i> —Identifies the label-switched path.  <i>level-number</i> —IS-IS level number. <b>Value:</b> 1 or 2  <i>metric</i> —Metric value. <b>Range:</b> 1 through 63, or 1 through 16,777,215 (if you have configured wide metrics) <b>Default:</b> 10 (for all interfaces except lo0), 0 (for lo0)
<b>Usage Guidelines</b>	See “Advertising Label-Switched Paths into IS-IS” on page 239.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## level

See the following sections:

level (Global IS-IS) on page 270

level (IS-IS Interfaces) on page 271

**level (Global IS-IS)**

**Syntax** level *level-number* {  
 authentication-key *key*;  
 authentication-type *type*;  
 external-preference *preference*;  
 no-csnp-authentication;  
 no-hello-authentication;  
 no-psnp-authentication;  
 preference *preference*;  
 wide-metrics-only;  
 }

**Hierarchy Level** [edit logical-routers *logical-router-name* protocols isis],  
 [edit logical-routers *logical-router-name* routing-instances *routing-instance-name*  
 protocols isis],  
 [edit protocols isis],  
 [edit routing-instances *routing-instance-name* protocols isis]

**Description** Configure the global-level properties.

**Options** *level-number*—IS-IS level number.  
**Value:** 1 or 2

The remaining statements are explained separately.

**Usage Guidelines** See “Configuring Route Preferences” on page 233.

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

**level (IS-IS Interfaces)**

<b>Syntax</b>	<pre> 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>;     ipv4-multicast-metric <i>number</i>;     ipv6-unicast-metric <i>number</i>;     metric <i>metric</i>;     passive;     priority <i>number</i>;     te-metric <i>metric</i>; } </pre>
<b>Hierarchy Level</b>	<pre> [edit logical-routers <i>logical-router-name</i> protocols isis <i>interface-name</i>], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i>  protocols isis <i>interface-name</i>], [edit protocols isis <i>interface-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols isis <i>interface-name</i>] </pre>
<b>Description</b>	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.
<b>Options</b>	<p><i>level-number</i>—IS-IS level number.  <b>Value:</b> 1 or 2  <b>Default:</b> The router operates as both a Level 1 and Level 2 router.</p> <p>The remaining statements are explained separately.</p>
<b>Usage Guidelines</b>	See “Configuring IS-IS Levels on an Interface” on page 233.
<b>Required Privilege Level</b>	<pre> routing—To view this statement in the configuration. routing-control—To add this statement to the configuration. </pre>

**loose-authentication-check**


---

<b>Syntax</b>	loose-authentication-check;
<b>Hierarchy Level</b>	<pre> [edit logical-routers <i>logical-router-name</i> protocols isis], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i>  protocols isis], [edit protocols isis], [edit routing-instances <i>routing-instance-name</i> protocols isis] </pre>
<b>Description</b>	Allow the use of MD5 authentication without requiring network-wide deployment.
<b>Usage Guidelines</b>	See “Configuring Loose Authentication Check” on page 244.
<b>Required Privilege Level</b>	<pre> routing—To view this statement in the configuration. routing-control—To add this statement to the configuration. </pre>

## Isp-interval

---

<b>Syntax</b>	<code>isp-interval milliseconds;</code>
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis <i>interface-name</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocolsisis <i>interface-name</i> ], [edit protocols isis <i>interface-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis <i>interface-name</i> ]
<b>Description</b>	Configure the link-state PDU (LSP) interval time.
<b>Options</b>	<i>milliseconds</i> —Number of milliseconds between the sending of LSPs. Specifying a value of 0 blocks all LSP transmission. <b>Range:</b> 0 through 65,535 milliseconds <b>Default:</b> 100 milliseconds
<b>Usage Guidelines</b>	See “Modifying the LSP Interval” on page 239.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## Isp-lifetime

---

<b>Syntax</b>	<code>isp-lifetime seconds;</code>
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis], [edit protocols isis], [edit routing-instances <i>routing-instance-name</i> protocols isis]
<b>Description</b>	How long an LSP originating from the router should persist in the network. The router sends LSPs often enough so that the LSP lifetime never expires.
<b>Options</b>	<i>seconds</i> —LSP lifetime, in seconds. <b>Range:</b> 350 through 65,535 seconds <b>Default:</b> 1200 seconds
<b>Usage Guidelines</b>	See “Modifying the LSP Lifetime” on page 239.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## mesh-group

---

<b>Syntax</b>	mesh-group ( <i>value</i>   blocked);
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis <i>interface-name</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis <i>interface-name</i> ], [edit protocols isis <i>interface-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis <i>interface-name</i> ]
<b>Description</b>	Configure an interface to be part of a mesh group, which is a set of fully connected nodes.
<b>Options</b>	<i>value</i> —Number that identifies the mesh group. <b>Range:</b> 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.
<b>Usage Guidelines</b>	See “Configuring Mesh Groups” on page 231.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## metric

---

<b>Syntax</b>	metric <i>metric</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ]
<b>Description</b>	Metric value for the level.
<b>Options</b>	<i>metric</i> —Metric value. <b>Range:</b> 1 through 63, or 1 through 16,777,215 (if you have configured wide metrics) <b>Default:</b> 10 (for all interfaces except lo0), 0 (for the lo0 interface)
<b>Usage Guidelines</b>	See “Modifying the IS-IS Metric” on page 237.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>See Also</b>	te-metric on page 284, wide-metrics-only on page 288

## no-authentication-check

---

<b>Syntax</b>	no-authentication-check;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis], [edit protocols isis], [edit routing-instances <i>routing-instance-name</i> protocols isis]
<b>Description</b>	Generate authenticated packets, check the authentication on received packets, but do not reject packets that cannot be authenticated.
<b>Usage Guidelines</b>	See “Configuring IS-IS Authentication” on page 228.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>See Also</b>	csnp-interval on page 258, hello-authentication-type on page 262

## no-csnp-authentication

---

<b>Syntax</b>	no-csnp-authentication;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ], [edit protocols isis level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ]
<b>Description</b>	Suppress authentication check on complete sequence number PDU (CSNP) packets.
<b>Usage Guidelines</b>	See “Configuring IS-IS Authentication” on page 228.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>See Also</b>	csnp-interval on page 258

## no-hello-authentication

---

<b>Syntax</b>	no-hello-authentication;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ], [edit protocols isis level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ]
<b>Description</b>	Suppress authentication check on complete sequence number hello packets.
<b>Usage Guidelines</b>	See “Configuring IS-IS Authentication” on page 228.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>See Also</b>	hello-authentication-type on page 262

## no-ipv4-multicast

---

<b>Syntax</b>	no-ipv4-multicast;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> ], [edit protocols isis interface <i>interface-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> ]
<b>Description</b>	Disable alternate IPv4 multicast topologies.
<b>Default</b>	Multicast topologies are disabled.
<b>Usage Guidelines</b>	See “Configuring IS-IS Multicast Topologies” on page 248.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## no-ipv4-routing

---

<b>Syntax</b>	no-ipv4-routing;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis], [edit protocols isis], [edit routing-instances <i>routing-instance-name</i> protocols isis]
<b>Description</b>	Disable Internet Protocol version 4 (IPv4) routing.
<b>Usage Guidelines</b>	See “Disabling IPv4 Routing” on page 244.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## no-ipv6-multicast

---

<b>Syntax</b>	no-ipv6-multicast;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> ], [edit protocols isis interface <i>interface-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> ]
<b>Description</b>	Disable alternate IPv6 multicast topologies.
<b>Default</b>	Multicast topologies are disabled.
<b>Usage Guidelines</b>	See “Configuring IS-IS Multicast Topologies” on page 248.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## no-ipv6-routing

---

<b>Syntax</b>	no-ipv6-routing;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis], [edit protocols isis], [edit routing-instances <i>routing-instance-name</i> protocols isis]
<b>Description</b>	Disable Internet Protocol version 6 (IPv6) routing.
<b>Usage Guidelines</b>	See “Disabling IPv6 Routing” on page 245.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## no-ipv6-unicast

---

<b>Syntax</b>	no-ipv6-unicast;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> ], [edit protocols isis interface <i>interface-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> ]
<b>Description</b>	Disable alternate IPv6 unicast topologies.
<b>Default</b>	IPv6 unicast topologies are disabled.
<b>Usage Guidelines</b>	See “Configuring IS-IS IPv6 Unicast Topologies” on page 251.

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

## no-psnp-authentication

---

**Syntax** no-psnp-authentication;

**Hierarchy Level** [edit logical-routers *logical-router-name* protocols isis level *level-number*],  
 [edit logical-routers *logical-router-name* routing-instances *routing-instance-name*  
 protocols isis level *level-number*],  
 [edit protocols isis level *level-number*],  
 [edit routing-instances *routing-instance-name* protocols isis level *level-number*]

**Description** Suppress authentication check on partial sequence number PDU (PSNP) packets.

**Usage Guidelines** See “Configuring IS-IS Authentication” on page 228.

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

## overload

---

<b>Syntax</b>	<pre> overload {     advertise-high-metrics;     &lt;timeout seconds&gt;; } </pre>
<b>Hierarchy Level</b>	<p>[edit logical-routers <i>logical-router-name</i> protocols isis],  [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis],  [edit protocols isis],  [edit routing-instances <i>routing-instance-name</i> protocols isis]</p>
<b>Description</b>	<p>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. You can also advertise maximum link metrics in NLRIs instead of setting the overload bit.</p>
<b>Options</b>	<p><b>advertise-high-metrics</b>—Advertise maximum link metrics in NLRIs instead of setting the overload bit.</p> <p><b>timeout <i>seconds</i></b>—Number of seconds at which the overloading is reset.  <b>Default:</b> 0 seconds  <b>Range:</b> 60 through 1800 seconds</p>
<b>Usage Guidelines</b>	<p>See “Configuring the Router to Appear Overloaded” on page 240.</p>
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.  routing-control—To add this statement to the configuration.</p>

## passive

---

<b>Syntax</b>	passive;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis <i>interface-name</i> ], [edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis <i>interface-name</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit protocols isis <i>interface-name</i> ], [edit protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis <i>interface-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ]
<b>Description</b>	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] or the [edit routing-instances <i>routing-instance-name</i> protocols isis] hierarchy level), disabling it (by including the <b>disable</b> statement), and not actually having IS-IS run on an interface (by including the <b>passive</b> statement) are mutually exclusive states.
<b>Usage Guidelines</b>	See “Advertising Interface Addresses without Running IS-IS” on page 235.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## point-to-point

---

<b>Syntax</b>	point-to-point;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> ], [edit protocols isis interface <i>interface-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> ]
<b>Description</b>	Configure an IS-IS interface to behave like a point-to-point connection.
<b>Usage Guidelines</b>	See “Configuring Point-to-Point Interfaces” on page 241.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## preference

---

<b>Syntax</b>	<code>preference preference;</code>
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ], [edit protocols isis level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ]
<b>Description</b>	Configure the preference of internal routes.
<b>Options</b>	<i>preference</i> —Preference value. <b>Range:</b> 0 through 255 <b>Default:</b> 15 (for Level 1 internal routes), 18 (for Level 2 internal routes), 160 (for Level 1 external routes), 165 (for Level 2 external routes)
<b>Usage Guidelines</b>	See “Configuring Route Preferences” on page 233.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>See Also</b>	external-preference on page 260

## prefix-export-limit

---

<b>Syntax</b>	<code>prefix-export-limit number;</code>
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ], [edit protocols isis level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis level <i>level-number</i> ]
<b>Description</b>	Configure a limit to the number of prefixes exported into IS-IS.
<b>Options</b>	<i>number</i> —Prefix limit. <b>Range:</b> 0 through 4,294,967,295
<b>Usage Guidelines</b>	See “Configuring a Prefix Export Limit” on page 233.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## priority

---

<b>Syntax</b>	<code>priority number;</code>
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ]
<b>Description</b>	The 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.
<b>Options</b>	<i>number</i> —Priority value. <b>Range:</b> 0 through 127 <b>Default:</b> 64
<b>Usage Guidelines</b>	See “Configuring the Priority for Becoming the Designated Router” on page 238.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## reference-bandwidth

---

<b>Syntax</b>	<code>reference-bandwidth reference-bandwidth;</code>
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis], [edit protocols isis], [edit routing-instances <i>routing-instance-name</i> protocols isis]
<b>Description</b>	Set the reference bandwidth used in calculating the default interface cost. The cost is calculated using the following formula:  $cost = reference\text{-}bandwidth / bandwidth$
<b>Options</b>	<i>reference-bandwidth</i> —Reference bandwidth, in megabits per second. <b>Default:</b> 10 Mbps <b>Range:</b> 9600 through 1,000,000,000,000 Mbps
<b>Usage Guidelines</b>	See “Modifying the Interface Metric” on page 232.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## rib-group

---

<b>Syntax</b>	rib-group; { inet <i>group-name</i> ; inet6 <i>group-name</i> ; }
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis], [edit protocols isis], [edit routing-instances <i>routing-instance-name</i> protocols isis]
<b>Description</b>	Install routes learned from IS-IS routing instances into routing tables in the IS-IS routing table group. You can install IPv4 routes or IPv6 routes.  Support for IPv6 routing table groups in IS-IS--Enables IPv6 routes that are learned from IS-IS routing instances to be installed into other routing tables defined in an IS-IS routing table group.
<b>Options</b>	<i>group-name</i> —Name of the routing table group.  inet—Install IPv4 IS-IS routes.  inet6—Install IPv6 IS-IS routes.
<b>Usage Guidelines</b>	See “Creating Routing Table Groups” on page 88, “Configuring How Interface Routes Are Imported into Routing Tables” on page 89, “IS-IS Configuration Guidelines” on page 225, and “Configuring BGP Routing Table Groups” on page 503.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## shortcuts

---

<b>Syntax</b>	shortcuts;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis traffic-engineering], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis traffic-engineering], [edit protocols isis traffic-engineering], [edit routing-instances <i>routing-instance-name</i> protocols isis traffic-engineering]
<b>Description</b>	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.
<b>Usage Guidelines</b>	See “Configuring IS-IS to Use IGP Shortcuts” on page 242.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## spf-delay

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<b>Syntax</b>	spf-delay <i>milliseconds</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis], [edit protocols isis], [edit routing-instances <i>routing-instance-name</i> protocols isis]
<b>Description</b>	Configure the shortest-path-first (SPF) delay.
<b>Options</b>	<i>milliseconds</i> —Number of milliseconds between the detection of a topology change and when the SPF algorithm runs. <b>Range:</b> 50 through 1000 milliseconds <b>Default:</b> 200 milliseconds
<b>Usage Guidelines</b>	See “Configuring the SPF Delay” on page 240.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## te-metric

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<b>Syntax</b>	te-metric <i>metric</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit protocols isis interface <i>interface-name</i> level <i>level-number</i> ], [edit routing-instances <i>routing-instance-name</i> protocols isis interface <i>interface-name</i> level <i>level-number</i> ]
<b>Description</b>	Metric value 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.
<b>Options</b>	<i>metric</i> —Metric value. <b>Range:</b> 1 through 16,777,215 <b>Default:</b> Value of the IGP metric
<b>Usage Guidelines</b>	See “Modifying the IS-IS Metric” on page 237.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>See Also</b>	metric on page 274, wide-metrics-only on page 288

## topologies

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<b>Syntax</b>	<pre> topologies {   ipv4-multicast;   ipv6-multicast;   ipv6-unicast; } </pre>
<b>Hierarchy Level</b>	<p>[edit logical-routers <i>logical-router-name</i> protocols isis],  [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols isis],  [edit protocols isis],  [edit routing-instances <i>routing-instance-name</i> protocols isis]</p>
<b>Description</b>	Configure alternate IS-IS topologies.
<b>Options</b>	The statements are explained separately in this chapter.
<b>Usage Guidelines</b>	See “Configuring IS-IS Multicast Topologies” on page 248.
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.  routing-control—To add this statement to the configuration.</p>

## 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 logical-routers *logical-router-name* protocols isis],  
 [edit logical-routers *logical-router-name* routing-instances *routing-instance-name*  
 protocols isis],  
 [edit protocols isis],  
 [edit routing-instances *routing-instance-name* 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.

file *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 “Tracing IS-IS Protocol Traffic” on page 252.

**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

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**Syntax** traffic-engineering {  
     disable;  
     shortcuts;  
 }

**Hierarchy Level** [edit logical-routers *logical-router-name* protocols isis],  
 [edit logical-routers *logical-router-name* routing-instances *routing-instance-name*  
     protocols isis],  
 [edit protocols isis],  
 [edit routing-instances *routing-instance-name* protocols isis]

**Description** Configure traffic engineering properties for IS-IS.

**Default** IS-IS traffic engineering support is enabled.

**Usage Guidelines** See “Configuring IS-IS Traffic Engineering Attributes” on page 242.

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

## wide-metrics-only

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**Statement** wide-metrics-only;

**Hierarchy Level** [edit logical-routers *logical-router-name* protocols isis level *level-number*],  
 [edit logical-routers *logical-router-name* routing-instances *routing-instance-name*  
     protocols isis level *level-number*],  
 [edit protocols isis level *level-number*],  
 [edit routing-instances *routing-instance-name* 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 “Enabling Wide Metrics for Traffic Engineering” on page 232.

**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 284