
Configuration Commands

Generic Commands

description

Syntax **description** *description-string*
no description

Context config>mirror>mirror-dest
 config>li>log>log-id
 config>li>li-filter>li-mac-filter
 config>li>li-filter>li-mac-filter>entry

Description This command creates a text description stored in the configuration file for a configuration context to help the administrator identify the content of the file.

The **no** form of the command removes the description string from the configuration.

Default There is no default description associated with the configuration context.

Parameters *description-string* — The description character string. Allowed values are any string up to 80 characters long composed of printable, 7-bit ASCII characters. If the string contains special characters (#, \$, spaces, etc.), the entire string must be enclosed within double quotes.

shutdown

Syntax [**no**] **shutdown**

Context config>mirror>mirror-dest
 debug>mirror-source
 config>mirror>mirror-dest>spoke-sdp>egress
 config>li>li-source
 config>li>log>log-id

Description The **shutdown** command administratively disables an entity. When disabled, an entity does not change, reset, or remove any configuration settings or statistics. Many entities must be explicitly enabled using the **no shutdown** command.

The **shutdown** command administratively disables an entity. The operational state of the entity is disabled as well as the operational state of any entities contained within. Many objects must be shut down before they may be deleted.

Unlike other commands and parameters where the default state is not indicated in the configuration file, **shutdown** and **no shutdown** are always indicated in system generated configuration files.

The **no** form of the command puts an entity into the administratively enabled state.

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Default See Special Cases below.

Special Cases **Mirror Destination** — When a mirror destination service ID is shutdown, mirrored packets associated with the service ID are not accepted from the mirror source or remote source7750 SR-Series router. The associated mirror source is put into an operationally down mode. Mirrored packets are not transmitted out of the SAP or SDP. Each mirrored packet is silently discarded. If the mirror destination is a SAP, the SAP's discard counters are incremented.

The **shutdown** command places the mirror destination service or mirror source into an administratively down state. The **mirror-dest** service ID must be shut down in order to delete the service ID, SAP or SDP association from the system.

The default state for a mirror destination service ID is **shutdown**. A **no shutdown** command is required to enable the service.

Mirror Source — Mirror sources do not need to be shutdown in order to remove them from the system.

When a mirror source is **shutdown**, mirroring is terminated for all sources defined locally for the **mirror-dest** service ID. If the **remote-source** command has been executed on the **mirror-dest** associated with the shutdown **mirror-source**, mirroring continues for remote sources.

The default state for a mirror source for a given **mirror-dest** service ID is **no shutdown**. A **shutdown** command is required to disable mirroring from that mirror-source.

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far-end

Syntax **far-end** *ip-address* [**ing-svc-label** *ing-vc-label* | **tldp**]
no far-end *ip-addr*

Context config>mirror>mirror-dest>remote-source

Description This command defines the remote device and configures parameters for mirror destination services on other devices allowed to mirror to the mirror destination service ID.

The **far-end** command is used within the context of the **remote-source** node. It allows the definition of accepted remote sources for mirrored packets to this *mirror-dest-service-id*. Up to 50 **far-end** sources can be specified. If a far end router has not been specified, packets sent to the router are discarded.

The **far-end** command is used to define a remote source that may send mirrored packets to this router for handling by this **mirror-dest** *service-id*.

The **ing-svc-label** keyword must be given to manually define the expected ingress service label. This ingress label must also be manually defined on the far end address through the **mirror-dest** SDP binding keyword **egr-svc-label**.

The **no** form of the command deletes a far end address from the allowed remote senders to this **mirror-dest** service. All **far-end** addresses are removed when **no remote-source** is executed. All signaled ingress service labels are withdrawn from the far end address affected. All manually defined *ing-svc-label* are removed.

Default No far end service ingress addresses are defined.

Parameters *ip-address* — The service IP address (system IP address) of the remote device sending mirrored traffic to this mirror destination service. If 0.0.0.0 is specified, any remote is allowed to send to this service.

Values 1.0.0.1 — 223.255.255.254

The ingress service label must be manually defined using the **ing-svc-label** keyword. On the far end router the associated SDP **egr-svc-label** must be manually set and equal to the label defined in **ing-svc-label**.

ing-svc-label *ing-vc-label* — Specifies the ingress service label for mirrored service traffic on the **far end** device for manually configured mirror service labels.

The defined *ing-svc-label* is entered into the ingress service label table which causes ingress packet with that service label to be handled by this **mirror-dest** service.

The specified *ing-svc-label* must not have been used for any other service ID and must match the far end expected specific *egr-svc-label* for this router. It must be within the range specified for manually configured service labels defined on this router. It may be reused for other far end addresses on this *mirror-dest-service-id*.

Values 2048 — 18431

tldp — Specifies that the label is obtained through signaling via the LDP.

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enable-port-id

Syntax	[no] enable-port-id
Context	configure>mirror>mirror-dest
Description	This command includes the mirrored packet system's port-id. The system port ID can be used to identify which port the packet was received or sent on. Inclusion of the port-id is only supported for mirror-dest type ppp.
Default	no enable-port-id

endpoint

Syntax	endpoint endpoint-name [create] no endpoint endpoint-name
Context	configure>mirror>mirror-dest configure>mirror>mirror-dest>sap configure>mirror>mirror-dest>sdp
Description	<p>A mirror service supports two implicit endpoints managed internally by the system. The following applies to endpoint configurations.</p> <p>Up to two (2) named endpoints may be created per service mirror/LI service. The endpoint name is locally significant to the service mirror/LI service.</p> <ul style="list-style-type: none">• Objects (SAPs or sdp's) may be created on the service mirror/LI with the following limitations:<ul style="list-style-type: none">– two implicit endpoint objects (without explicit endpoints defined)– one implicit and multiple explicit object with the same endpoint name– multiple explicit objects each with one of two explicit endpoint names• All objects become associated implicitly or indirectly with the implicit endpoints 'x' and 'y'.• Objects may be created without an explicit endpoint defined.• Objects may be created with an explicit endpoint defined.• Objects without an explicit endpoint may have an explicit endpoint defined without deleting the object.• Objects with an explicit endpoint defined may be dynamically moved to another explicit endpoint or may have the explicit endpoint removed. <p>Creating an object without an explicit endpoint:</p> <ul style="list-style-type: none">• If an object on a mirror/LI service has no explicit endpoint name associated, the system attempts to associate the object with implicit endpoint 'x' or 'y'.• The implicit endpoint cannot have an existing object association.• If both 'x' and 'y' are available, 'x' will be selected.• If an 'x' or 'y' association cannot be created, the object cannot be created. <p>Creating an object with an explicit endpoint name:</p>

- The endpoint name must exist on the mirror/LI service.
- If this is the first object associated with the endpoint name:
 - the object is associated with either implicit endpoint 'x' or 'y'
 - the implicit endpoint cannot have an existing object associated
 - if both 'x' and 'y' are available, 'x' will be selected
 - if 'x' or 'y' is not available, the object cannot be created
 - the implicit endpoint is now associated with the named endpoint
- if this is not the first object associated with the endpoint name:
 - the object is associated with the named endpoint's implicit association

Changing an objects implicit endpoint to an explicit endpoint name

- If the explicit endpoint name is associated with an implicit endpoint, the object is moved to that implicit endpoint
- If the object is the first to be associated with the explicit endpoint name:
 - the object is associated with either implicit endpoint 'x' or 'y'
 - the implicit endpoint cannot have an existing object associated (except this one)
 - if both 'x' and 'y' are available, 'x' will be selected
 - if 'x' or 'y' is not available, the object cannot be moved to the explicit endpoint
 - if moved, the implicit endpoint is now associated with the named endpoint

Changing an objects explicit endpoint to another explicit endpoint name

- If the new explicit endpoint name is associated with an implicit endpoint, the object is moved to that implicit endpoint
- If the object is the first to be associated with the new explicit endpoint name:
 - the object is associated with either implicit endpoint 'x' or 'y'
 - the implicit endpoint cannot have an existing object associated (except this one)
 - if both 'x' and 'y' are available, 'x' will be selected
 - if 'x' or 'y' is not available, the object cannot be moved to the new endpoint
 - if moved, the implicit endpoint is now associated with the named endpoint

An explicitly named endpoint can have a maximum of one SAP and one ICB. Once a SAP is added to the endpoint, only one more object of type ICB sdp is allowed. The ICB sdp cannot be added to the endpoint if the SAP is not part of a MC-LAG instance. Conversely, a SAP which is not part of a MC-LAG instance cannot be added to an endpoint which already has an ICB sdp.

An explicitly named endpoint which does not have a SAP object can have a maximum of four SDPs which can include any of the following: a single primary SDP, one or many secondary SDPs with precedence, and a single ICB SDP.

The user can only add a SAP configured on a MC-LAG instance to this endpoint. Conversely, the user will not be able to change the mirror service type away from mirror service without first deleting the MC-LAG SAP.

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The **no** form of the command removes the association of a SAP or a sdp with an explicit endpoint name. Removing an objects explicit endpoint association:

- The system attempts to associate the object with implicit endpoint 'x' or 'y'.
- The implicit endpoint cannot have an existing object association (except this one).
- If both 'x' and 'y' are available, 'x' will be selected.
- If an 'x' or 'y' association cannot be created, the explicit endpoint cannot be removed.

Parameters *endpoint-name* — Specifies the endpoint name.
create — Mandatory keyword to create this entry.

revert-time

Syntax **revert-time** {*revert-time* | **infinite**}
no revert-time

Context configure>mirror>mirror-dest>endpoint

Description This command has an effect only when used in conjunction with a endpoint which contains a SDP of type 'primary'. It is ignored and has no effect in all other cases. The revert-timer is the delay in seconds the system waits before it switches the path of the mirror service from an active secondary SDP in the endpoint into the endpoint primary SDP after the latter comes back up.

The **no** form of the command resets the timer to the default value of 0. This means that the mirror-service path will be switched back to the endpoint primary sdp immediately after it comes back up.

Default 0 — The VLL path will be switched back to the endpoint primary SDP immediately after it comes back up.

Parameters *revert-time* — Specifies a delay, in seconds, the system waits before it switches the path of the mirror service from an active secondary SDP in the endpoint into the endpoint primary SDP after the latter comes back up.

Values 0 — 600

infinite — Forces the mirror/LI service path to never revert to the primary SDP as long as the currently active secondary -SDP is UP.

fc

Syntax **fc** *fc-name*
no fc

Context config>mirror>mirror-dest

Description This command specifies a forwarding class for all mirrored packets transmitted to the destination SAP or SDP overriding the default (be) forwarding class. All packets are sent with the same class of service to minimize out of sequence issues. The mirrored packet does not inherit the forwarding class of the original packet.

When the destination is on a SAP, a single egress queue is created that pulls buffers from the buffer pool associated with the *fc-name*.

When the destination is on an SDP, the *fc-name* defines the DiffServ based egress queue that will be used to reach the destination. The *fc-name* also defines the encoded forwarding class of the encapsulation.

The **no** form of the command reverts the **mirror-dest** service ID forwarding class to the default forwarding class.

Default The best effort (be) forwarding class is associated with the **mirror-dest** service ID.

Parameters *fc-name* — The name of the forwarding class with which to associate mirrored service traffic. The forwarding class name must already be defined within the system. If the *fc-name* does not exist, an error will be returned and the **fc** command will have no effect. If the *fc-name* does exist, the forwarding class associated with *fc-name* will override the default forwarding class.

Values be, 12, af, 11, h2, ef, h1, nc

isa-aa-group

Syntax **isa-aa-group** *aa-group-id* *traffic-direction*

Context config>mirror>mirror-dest

Description This command specifies ISA AA group parameters.

Parameters *aa-group-id* — specifies the particular application group to match against to resolve to an AQP action. If set to an empty string, no match on application group is done.

traffic-direction — specifies the traffic directions to match against to resolve to an AQP action. This allows different policer bandwidths to apply in each direction.

mirror-dest

Syntax **mirror-dest** *service-id* [**type** *mirror-type*] [**create**]
no mirror-dest

Context config>mirror

Description This command creates a context to set up a service that is intended for packet mirroring. It is configured as a service to allow mirrored packets to be directed locally (within the same 7750 SR-Series router) or remotely, over the core of the network and have a far end 7750 SR-Series decode the mirror encapsulation.

The **mirror-dest** service is comprised of destination parameters that define where the mirrored packets are to be sent. It also specifies whether the defined *service-id* will receive mirrored packets from far end 7750 SR-Series over the network core.

The **mirror-dest** service IDs are persistent between boots of the router and are included in the configuration saves. The local sources of mirrored packets for the service ID are defined within the **debug mirror mirror-source** command that references the same *service-id*. Up to 255 **mirror-dest** service IDs can be created within a single system.

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The **mirror-dest** command is used to create or edit a service ID for mirroring purposes. If the *service-id* does not exist within the context of all defined services, the **mirror-dest** service is created and the context of the CLI is changed to that service ID. If the *service-id* exists within the context of defined **mirror-dest** services, the CLI context is changed for editing parameters on that service ID. If the *service-id* exists within the context of another service type, an error message is returned and CLI context is not changed from the current context.

LI source configuration is saved using the **li>save** command.

The **no** form of the command removes a mirror destination from the system. The **mirror-source** or **li-source** associations with the **mirror-dest** *service-id* do not need to be removed or shutdown first. The **mirror-dest** *service-id* must be shutdown before the service ID can be removed. When the service ID is removed, all **mirror-source** or **li-source** commands that have the service ID defined will also be removed from the system.

Default No packet mirroring services are defined.

Parameters *service-id* — The service identification identifies the service in the service domain. This ID is unique to this service and cannot be used by any other service, regardless of service type. The same service ID must be configured on every 7750 SR-Series router that this particular service is defined on.

If particular a service ID already exists for a service, then the same value cannot be used to create a mirror destination service ID with the same value. For example:

If an Epipe service-ID **11** exists, then a mirror destination service-ID **11** cannot be created. If a VPLS service-ID **12** exists, then a mirror destination service-ID **12** cannot be created.

If an IES service-ID **13** exists, then a mirror destination service-ID **13** cannot be created.

Values *service-id:* 1 — 2147483647
svc-name: 64 characters maximum

type *encap-type* — The type describes the encapsulation supported by the mirror service.

Values ether, frame-relay, ppp, ip-only, atm-sdu, satop-e1, satop-e3, satop-t1, cesopsn, cesopsn-cas

remote-source

Syntax **[no] remote-source**

Context config>mirror>mirror-dest

Description This command configures remote devices to mirror traffic to this device for mirror service egress. Optionally, deletes all previously defined remote mirror ingress devices.

The remote-source context allows the creation of a ‘sniffer farm’ to consolidate expensive packet capture and diagnostic tools to a central location. Remote areas of the access network can be monitored via normal service provisioning techniques.

Specific far-end routers can be specified with the **far-end** command allowing them to use this router as the destination for the same *mirror-dest-service-id*.

The **remote-source** node allows the source of mirrored packets to be on remote router devices. The local router will configure its network ports to forward packets associated with the *service-id* to the destination

SAP. When **remote-source far-end** addresses are configured, an SDP is not allowed as a destination.

By default, the **remote-source** context contains no **far-end** addresses. When no **far-end** addresses have been specified, network remote devices will not be allowed to mirror packets to the local router as a mirror destination. Packets received from unspecified **far-end** addresses will be discarded at network ingress.

The **no** form of the command restores the *service-id* to the default condition to not allow a remote router access to the mirror destination. The **far-end** addresses are removed without warning.

Default No remote source devices defined

sap

Syntax **sap** *sap-id* [**create**] [**no-endpoint**]
sap *sap-id* [**create**] **endpoint** *name*
no sap

Context config>mirror>mirror-dest

Description This command creates a service access point (SAP) within a mirror destination service. The SAP is owned by the mirror destination service ID.

The SAP is defined with port and encapsulation parameters to uniquely identify the (mirror) SAP on the interface and within the box. The specified SAP may be defined on an Ethernet access port with a dot1q, null, or q-in-q encapsulation type.

Only one SAP can be created within a **mirror-dest** service ID. If the defined SAP has not been created on any service within the system, the SAP is created and the context of the CLI will change to the newly created SAP. In addition, the port cannot be a member of a multi-link bundle, LAG, APS group or IMA bundle.

If the defined SAP exists in the context of another service ID, **mirror-dest** or any other type, an error is generated.

Mirror destination SAPs can be created on Ethernet interfaces that have been defined as an access interface. If the interface is defined as network, the SAP creation returns an error.

When the **no** form of this command is used on a SAP created by a mirror destination service ID, the SAP with the specified port and encapsulation parameters is deleted.

Default No default SAP for the mirror destination service defined.

Parameters *sap-id* — Specifies the physical port identifier portion of the SAP definition. See [Common CLI Command Descriptions on page 439](#) for command syntax.

endpoint *name* — specifies the name of the endpoint associated with the SAP.

no endpoint — Removes the association of a SAP or a sdp with an explicit endpoint name.

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cem

Syntax **cem**

Context config>mirror>mirror-dest>sap

Description This command enables the context to specify circuit emulation (CEM) mirroring properties. Ingress and egress options cannot be supported at the same time on a CEM encap-type SAP. The options must be configured in either the ingress **or** egress contexts.

packet

Syntax **packet jitter-buffer** *milliseconds* [**payload-size** *bytes*]
packet payload-size *bytes*
no packet *bytes*

Context config>mirror>mirror-dest>sap>cem

Description This command specifies the jitter buffer size, in milliseconds, and payload size, in bytes.

Default The default value depends on the CEM SAP endpoint type, and if applicable, the number of timeslots:

Endpoint Type	Timeslots	Default Jitter Buffer (in ms)
unstructuredE1	n/a	5
unstructuredT1	n/a	5
unstructuredE3	n/a	5
unstructuredT3	n/a	5
nxDS0 (E1/T1)	N = 1	32
	N = 2..4	16
	N = 5..15	8
	N >= 16	5
nxDS0WithCas (E1)	N	8
nxDS0WithCas (T1)	N	12

Parameters *milliseconds* — specifies the jitter buffer size in milliseconds (ms).

Configuring the payload size and jitter buffer to values that result in less than 2 packet buffers or greater than 32 packet buffers is not allowed.

Setting the jitter buffer value to 0 sets it back to the default value.

Values 1 — 250

payload-size bytes — Specifies the payload size (in bytes) of packets transmitted to the packet service network (PSN) by the CEM SAP. This determines the size of the data that will be transmitted over the service. If the size of the data received is not consistent with the payload size then the packet is considered malformed.

Default The default value depends on the CEM SAP endpoint type, and if applicable, the number of timeslots:

Endpoint Type	Timeslots	Default Payload Size (in bytes)
unstructuredE1	n/a	256
unstructuredT1	n/a	192
unstructuredE3	n/a	1024
unstructuredT3	n/a	1024
nxDS0 (E1/T1)	N = 1	64
	N = 2..4	N x 32
	N = 5..15	N x 16
	N >= 16	N x 8
nxDS0WithCas (E1)	N	N x 16
nxDS0WithCas (T1)	N	N x 24

For all endpoint types except for nxDS0WithCas, the valid payload size range is from the default to 2048 bytes.

For nxDS0WithCas, the payload size divide by the number of timeslots must be an integer factor of the number of frames per trunk multiframe (for example, 16 for E1 trunk and 24 for T1 trunk).

For 1xDS0, the payload size must be a multiple of 2.

For NxDS0, where $N > 1$, the payload size must be a multiple of the number of timeslots.

For unstructuredE1, unstructuredT1, unstructuredE3 and unstructuredT3, the payload size must be a multiple of 32 bytes.

Configuring the payload size and jitter buffer to values that result in less than 2 packet buffers or greater than 32 packet buffer is not allowed.

Setting the payload size to 0 sets it back to the default value.

Values 0, 16 — 2048

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rtp-header

Syntax	[no] rtp-header
Context	config>mirror>mirror-dest>sap>cem
Description	This command specifies whether an RTP header is used when packets are transmitted to the packet service network (PSN) by the CEM SAP.
Default	no rtp-header

egress

Syntax	egress
Context	config>mirror>mirror-dest>sap
Description	This command enables access to the context to associate an egress SAP Quality of Service (QoS) policy with a mirror destination SAP. If no QoS policy is defined, the system default SAP egress QoS policy is used for egress processing.

ip-mirror

Syntax	ip-mirror
Context	config>mirror>mirror-dest>sap>egress
Description	This command configures IP mirror information.

sa-mac

Syntax	sa-mac <i>ieee-address</i> da-mac <i>ieee-address</i> no sa-mac
Context	config>mirror>mirror-dest>sap>egress>ip-mirror
Description	This command configures the source and destination MAC addresses for IP mirroring.
Parameters	sa-mac <i>ieee-address</i> — Specifies the source MAC address. Multicast, Broadcast and zeros are not allowed. da-mac <i>ieee-address</i> — Specifies the destination MAC address. Zeroes are not allowed.

QoS

Syntax **qos** *policy-id*
no qos

Context config>mirror>mirror-dest>sap>egress

Description This command associates a QoS policy with an egress SAP for a mirrored service. By default, no specific QoS policy is associated with the SAP for egress, so the default QoS policy is used. The **no** form of the command removes the QoS policy association from the SAP, and the QoS policy reverts to the default.

Default QoS policy-id 1.

Parameters *policy-id* — The QoS policy ID to associate with SAP for the mirrored service. The policy ID must already exist.

Values 1 — 65535

service-name

Syntax **service-name** *service-name*
no service-name

Context config>mirror>mirror-dest

Description This command specifies an existing service name, up to 64 characters in length, which adds a name identifier to a given service to then use that service name in configuration references as well as display and use service names in show commands throughout the system. This helps the service provider/administrator to identify and manage services.

slice-size

Syntax **slice-size** *bytes*
no slice-size

Context config>mirror>mirror-dest

Description This command enables mirrored frame truncation and specifies the maximum size, in bytes, of a mirrored frame that can be transmitted to the mirror destination.

This command enables mirroring larger frames than the destination packet decode equipment can handle. It also allows conservation of mirroring resources by limiting the size of the packet stream through the router and the core network.

When defined, the mirror **slice-size** creates a threshold that truncates a mirrored frame to a specific size. For example, if the value of 256 bytes is defined, a frame larger than 256 bytes will only have the first 256 bytes transmitted to the mirror destination. The original frame is not affected by the truncation. The mirrored

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frame size may increase if encapsulation information is added during transmission through the network core or out the mirror destination SAP to the packet/protocol decode equipment.

The actual capability of the router to transmit a sliced or non-sliced frame is also dictated by the mirror destination SDP **path-mtu** and/or the mirror destination SAP physical MTU. Packets that require a larger MTU than the mirroring destination supports are discarded if the defined **slice-size** does not truncate the packet to an acceptable size.

Notes:

- When configuring IP mirroring, packet slice will be rejected as an incorrect option as it will cause IP packets to be rejected by the next hop with an IP header verification error.
- Slice-size is not supported by CEM encap-types or IP-mirroring.

The **no** form of the command disables mirrored packet truncation.

Default **no slice-size** — Mirrored packet truncation is disabled.

Parameters *bytes* — The number of bytes to which mirrored frames will be truncated, expressed as a decimal integer.

Values 128 — 9216

spoke-sdp

Syntax **spoke-sdp** *sdp-id:vc-id* [**create**] [**no-endpoint**]
spoke-sdp *sdp-id:vc-id* [**create**] **endpoint** *name* [**icb**]
no sdp *sdp-id:vc-id*

Context config>mirror>mirror-dest

Description This command binds an existing (mirror) service distribution path (SDP) to the mirror destination service ID.

The operational state of the SDP dictates the operational state of the SDP binding to the mirror destination. If the SDP is shutdown or operationally down, then SDP binding is down. Once the binding is defined and the service and SDP are operational, the far-end router defined in the **config service sdp sdp-id far-end** parameter is considered part of the service ID.

Only one SDP can be associated with a mirror destination service ID. If a second **sdp** command is executed after a successful SDP binding, an error occurs and the command has no effect on the existing configuration. A **no sdp** command must be issued before a new SDP binding can be attempted.

An SDP is a logical mechanism that ties a far end router to a specific service without having to define the far-end SAP. Each SDP represents a method to reach a router.

One method is the IP Generic Router Encapsulation (GRE) encapsulation, which has no state in the core of the network. GRE does not specify a specific path to a router. A GRE-based SDP uses the underlying IGP routing table to find the best next hop to the far end router.

The other method is Multi-Protocol Label Switching (MPLS) encapsulation. router routers support both signaled and non-signaled LSPs (Label Switched Path) though the network. Non-signaled paths are defined at each hop through the network. Signaled paths are protocol communicated from end to end using RSVP. Paths may be manually defined or a constraint based routing protocol (OSPF-TE or CSPF) can be used to determine the best path with specific constraints.

SDPs are created and then bound to services. Many services can be bound to a single SDP. The operational and administrative state of the SDP controls the state of the SDP binding to the service.

An egress service label (Martini VC-Label), used by the SDP to differentiate each service bound to the SDP to the far-end router, must be obtained manually or through signaling with the far end. If manually configured, it must match the **ing-svc-label** defined for the local router.

The **no** form of the command removes the SDP binding from the mirror destination service. Once removed, no packets are forwarded to the far-end (destination) router from that mirror destination service ID.

Default No default SDP ID is bound to a mirror destination service ID. If no SDP is bound to the service, the mirror destination will be local and cannot be to another router over the core network.

Parameters *sdp-id[:vc-id]* — A locally unique SDP identification (ID) number. The SDP ID must exist. If the SDP ID does not exist, an error will occur and the command will not execute.

For mirror services, the *vc-id* defaults to the *service-id*. However, there are scenarios where the *vc-id* is being used by another service. In this case, the SDP binding cannot be created. So, to avoid this, the mirror service SDP bindings now accepts *vc-ids*.

Values 1 — 17407

endpoint name — specifies the name of the endpoint associated with the SAP.

no endpoint — Removes the association of a SAP or a SDP with an explicit endpoint name.

icb — Indicates that the SDP is of type Inter-Chassis Backup (ICB). This is a special pseudowire used for MC-LAG and pseudowire redundancy application.

An explicitly named endpoint can have a maximum of one SAP and one ICB. Once a SAP is added to the endpoint, only one more object of type ICB SDP is allowed. The ICB SDP cannot be added to the endpoint if the SAP is not part of a MC-LAG instance. This means that all other SAP types cannot exist on the same endpoint as an ICB SDP since non Ethernet SAP cannot be part of a MC-LAG instance. Conversely, a SAP which is not part of a MC-LAG instance cannot be added to an endpoint which already has an ICB SDP.

An explicitly named endpoint, which does not have a SAP object, can have a maximum of four SDPs, which can include any of the following: a single primary SDP, one or many secondary SDPs with precedence, and a single ICB SDP.

Default Null. The user should explicitly configure this option at create time. The user can remove the ICB type simply by retying the SDP configuration without the **icb** keyword.

egress

Syntax **egress**

Context config>mirror>mirror-dest>spoke-sdp

Description This command enters the context to configure spoke SDP egress parameters.

Mirror Destination Configuration Commands

vc-label

Syntax **vc-label** *egress-vc-label*
no vc-label [*egress-vc-label*]

Context config>mirror>mirror-dest>spoke-sdp>egress

Description This command configures the spoke-SDP egress VC label.

Parameters *egress-vc-label* — A VC egress value that indicates a specific connection.

Values 16 — 1048575

precedence

precedence *precedence-value* | **primary**
no precedence

Context config>mirror>mirror-dest>spoke-sdp>egress

Description This command indicates that the SDP is of type secondary with a specific precedence value or of type primary.

The mirror/LI service always uses the primary type as the active pseudowire and only switches to a secondary pseudowire when the primary is down. The mirror service switches the path back to the primary pseudowire when it is back up. The user can configure a timer to delay reverting back to primary or to never revert back.

If the active pseudowire goes down, the mirror service switches the path to a secondary sdp with the lowest precedence value. That is, secondary SDPs which are operationally up are considered in the order of their precedence value, 1 being the lowest value and 4 being the highest value. If the precedence value is the same, then the SDP with the lowest sdp ID is selected.

An explicitly named endpoint can have a maximum of one SAP and one ICB. Once a SAP is added to the endpoint, only one more object of type ICB SDP is allowed. An explicitly named endpoint, which does not have a SAP object, can have a maximum of four SDPs, which can include any of the following: a single primary SDP, one or many secondary SDPs with precedence, and a single ICB SDP.

Context An SDP is created with type secondary and with the lowest precedence value of 4.

Parameters *prec-value* — The precedence of the SDP.

Values 1-4

primary — A special value of the precedence which assigns the SDP the lowest precedence and enables the revertive behavior.

encap

Syntax **encap**

Context config>mirror>mirror-dest

Description This command enters the encap branch in order to configure encapsulation options for the mirrored traffic. Note that the use of encap is mutually exclusive with sap or spoke-sdp options in the same mirror-dest. Only one type of encapsulation can be specified for a single mirror-dest. Slicing and encap are mutually exclusive in the same mirror-dest.

layer-3-encap

layer-3-encap {ip-udp-shim| ip-gre} [create]
no layer-3-encap

Context config>mirror>mirror-dest>encap

Description This command specifies the format of the routable encapsulation to add to each copied packet. Layer-3-encap takes precedence over ethernet-encap configuration in an li-source. No changes are allowed to the layer-3-encap once a gateway is configured.

Default no layer-3-encap

Parameters **ip-udp-shim** — indicates the type of layer-3 encapsulation is an IPv4 header, UDP header and LI-Shim. Added to the mirrored packets.

ip-gre — indicates the type of layer-3 encapsulation is nn IPv4 header and GRE header. Added to the mirrored packets. Only supported with mirror-dest type ip-only.

direction-bit

Syntax **direction-bit**
no direction-bit

Context config>mirror>mirror-dest>encap>layer-3-encap

Description This command is used to steal one bit from the intercept-id in the LI-Shim and use it to indicate the direction of traffic flow for an LI session. Using a direction bit may be used by a LI Mediation Gateway to distinguish between the two directions of traffic flow for an LI session when both directions share a common mirror-dest, intercept-id and session-id. If the direction bit is enabled then the Mirror Header Version (2 bit mhv) in the LI-Shim will be set to binary 01, and the next bit after the mhv is set to 0 for ingress traffic and 1 for egress traffic.

For NAT based LI, ingress means the traffic is arriving at the node from the subscriber host.

No changes are allowed to the direction-bit configuration once a gateway is configured.

Default no direction-bit

Mirror Destination Configuration Commands

router

Syntax **router** *router-instance*
router **service-name** *service-name*
no router

Context config>mirror>mirror-dest>encap>layer-3-encap

Description This command specifies the routing instance into which to inject the mirrored packets. The packets will be forwarded in the routing instance based on the configurable destination IP address in the inserted IP header. If a mirror-dest is configured to inject into a VPRN service, then that VPRN service cannot be deleted. A mirror-dest with layer-3-encap will be set to operationally down if the configured destination IP address is not reachable via an interface in the routing instance or service configured for the mirror-dest. No changes are allowed to the router configuration once a gateway is configured. A service must already exist before it is specified as a router-instance. Note that vprns and ies services share the same number space for the service-id, but ies services cannot be specified as the router-instance for routable LI encap.

Default router "Base"

Parameters *router-instance* — Specifies the router instance.

Values <*router-name*> | <*service-id*>

router-name—"Base"|name Default - Base

service-id—1 to 2147483647

service-name — Specifies the service name. Specify a character string, 64 characters maximum.

gateway

Syntax **gateway** [create]
no gateway

Context config>mirror>mirror-dest>encap>layer-3-encap

Description Configures the parameters to send the mirrored packets to a remote destination gateway. Once a gateway is created, no changes to the layer-3-encap type, router or direction-bit are allowed.

Default None

ip

Syntax **ip** **src** *ip-address* **dest** *ip-address*
no ip

Context config>mirror>mirror-dest>encap>layer-3-encap>gateway

Description Configures the source IPv4 address and destination IPv4 address to use in the IPv4 header part of the routable LI encapsulation.

Default no ip

Parameters **src** *ip-address* — Specifies source IP address.

Values a.b.c.d

dest *ip-address* — Specifies destination IP address.

Values a.b.c.d

udp

Syntax **udp src** *udp-port* **dest** *udp-port*
no udp

Context config>mirror>mirror-dest>encap>layer-3-encap>gateway

Description Configures the source UDP port and destination UDP port to use in the UDP header part of the routable LI encapsulation.

Default no udp

Parameters **src** *ip-address* — Specifies source UDP port.

Values 1 to 65535

dest *ip-address* — Specifies destination UDP port.

Values 1 to 65535

Mirror Source Configuration Commands

mirror-source

Syntax [no] **mirror-source** *service-id*

Context debug

Description This command configures mirror source parameters for a mirrored service.

The **mirror-source** command is used to enable mirroring of packets specified by the association of the **mirror-source** to sources of packets defined within the context of the *mirror-dest-service-id*. The mirror destination service must already exist within the system.

A mirrored packet cannot be mirrored to multiple destinations. If a mirrored packet is properly referenced by multiple mirror sources (for example, a SAP on one **mirror-source** and a port on another **mirror-source**), then the packet is mirrored to a single *mirror-dest-service-id* based on the following hierarchy:

1. Filter entry
2. Subscriber mirror priority
3. Service access port (SAP)
4. Physical port

The hierarchy is structured so the most specific match criteria has precedence over a less specific match. For example, if a **mirror-source** defines a port and a SAP on that port, then the SAP mirror-source is accepted and the mirror-source for the port is ignored because of the hierarchical order of precedence.

The **mirror-source** configuration is not saved when a configuration is saved. A **mirror-source** manually configured within an ASCII configuration file will not be preserved if that file is overwritten by a **save** command. Define the **mirror-source** within a file associated with a **config exec** command to make a **mirror-source** persistent between system reboots.

By default, all **mirror-dest** service IDs have a **mirror-source** associated with them. The **mirror-source** is not technically created with this command. Instead the service ID provides a contextual node for storing the current mirroring sources for the associated **mirror-dest** service ID. The **mirror-source** is created for the mirror service when the operator enters the **debug>mirror-source svcId** for the first time. If the operator enters **li>li-source svcId** for the first time, an LI source is created for the mirror service. The **mirror-source** is also automatically removed when the **mirror-dest** service ID is deleted from the system.

The **no** form of the command deletes all related source commands within the context of the **mirror-source service-id**. The command does not remove the service ID from the system.

Default No mirror source match criteria is defined for the mirror destination service.

Parameters *service-id* — The mirror destination service ID for which match criteria will be defined. The *service-id* must already exist within the system.

Values	<i>service-id:</i>	1 — 2147483647
	<i>svc-name:</i>	64 characters maximum

ip-filter

Syntax **ip-filter** *ip-filter-id* **entry** *entry-id* [*entry-id* ...]
no ip-filter *ip-filter-id*
no ip-filter *ip-filter-id* **entry** *entry-id* [*entry-id* ...]

Context debug>mirror-source

Description This command enables mirroring of packets that match specific entries in an existing IP filter.

The **ip-filter** command directs packets which match the defined list of entry IDs to be mirrored to the mirror destination referenced by the *mirror-dest-service-id* of the **mirror-source**.

The IP filter must already exist in order for the command to execute. Filters are configured in the **config>filter** context. If the IP filter does not exist, an error will occur. If the filter exists but has not been associated with a SAP or IP interface, an error is not generated but mirroring will not be enabled (there are no packets to mirror). Once the IP filter is defined to a SAP or IP interface, mirroring is enabled.

If the IP filter is defined as ingress, only ingress packets are mirrored. Ingress mirrored packets are mirrored to the mirror destination prior to any ingress packet modifications.

If the IP filter is defined as egress, only egress packets are mirrored. Egress mirrored packets are mirrored to the mirror destination after all egress packet modifications.

An *entry-id* within an IP filter can only be mirrored to a single mirror destination. If the same *entry-id* is defined multiple times, an error occurs and only the first **mirror-source** definition is in effect.

By default, no packets matching any IP filters are mirrored. Mirroring of IP filter entries must be explicitly defined.

The **no ip-filter** command, without the **entry** keyword, removes mirroring on all *entry-id*'s within the *ip-filter-id*.

When the **no** command is executed with the **entry** keyword and one or more *entry-id*'s, mirroring of that list of *entry-id*'s is terminated within the *ip-filter-id*. If an *entry-id* is listed that does not exist, an error will occur and the command will not execute. If an *entry-id* is listed that is not currently being mirrored, no error will occur for that *entry-id* and the command will execute normally.

Default IP filter mirroring is not defined.

Parameters *ip-filter-id* — The IP filter ID whose entries are mirrored. If the *ip-filter-id* does not exist, an error will occur and the command will not execute. Mirroring of packets will commence once the *ip-filter-id* is defined on a SAP or IP interface.

entry *entry-id* [*entry-id* ...] — The IP filter entries to use as match criteria for packet mirroring. The **entry** keyword begins a list of *entry-id*'s for mirroring. Multiple *entry-id* entries may be specified with a single command. Each *entry-id* must be separated by a space.

If an *entry-id* does not exist within the IP filter, an error occurs and the command will not execute.

If the filter's *entry-id* is renumbered within the IP filter definition, the old *entry-id* is removed but the new *entry-id* must be manually added to the configuration to include the new (renumbered) entry's criteria.

Mirror Source Configuration Commands

mac-filter

Syntax **mac-filter** *mac-filter-id* **entry** *entry-id* [*entry-id* ...]
no mac-filter *mac-filter-id*
no mac-filter *mac-filter-id* **entry** *entry-id* [*entry-id* ...]

Context debug>mirror-source

Description This command enables mirroring of packets that match specific entries in an existing MAC filter.

The **mac-filter** command directs packets which match the defined list of entry IDs to be mirrored to the mirror destination referenced by the *mirror-dest-service-id* of the **mirror-source**.

The MAC filter must already exist in order for the command to execute. Filters are configured in the `config>filter` context. If the MAC filter does not exist, an error will occur. If the filter exists but has not been associated with a SAP or IP interface, an error is not generated but mirroring will not be enabled (there are no packets to mirror). Once the filter is defined to a SAP or MAC interface, mirroring is enabled.

If the MAC filter is defined as ingress, only ingress packets are mirrored. Ingress mirrored packets are mirrored to the mirror destination prior to any ingress packet modifications.

If the MAC filter is defined as egress, only egress packets are mirrored. Egress mirrored packets are mirrored to the mirror destination after all egress packet modifications.

An *entry-id* within a MAC filter can only be mirrored to a single mirror destination. If the same *entry-id* is defined multiple times, an error occurs and only the first **mirror-source** definition is in effect.

By default, no packets matching any MAC filters are mirrored. Mirroring of MAC filter entries must be explicitly defined.

The **no mac-filter** command, without the **entry** keyword, removes mirroring on all *entry-id*'s within the *mac-filter-id*.

When the **no** command is executed with the **entry** keyword and one or more *entry-id*'s, mirroring of that list of *entry-id*'s is terminated within the *mac-filter-id*. If an *entry-id* is listed that does not exist, an error will occur and the command will not execute. If an *entry-id* is listed that is not currently being mirrored, no error will occur for that *entry-id* and the command will execute normally.

Default No MAC filter mirroring defined.

Parameters *mac-filter-id* — The MAC filter ID whose entries are mirrored. If the *mac-filter-id* does not exist, an error will occur and the command will not execute. Mirroring of packets will commence once the *mac-filter-id* is defined on a SAP.

entry *entry-id* [*entry-id* ...] — The MAC filter entries to use as match criteria for packet mirroring. The **entry** keyword begins a list of *entry-id*'s for mirroring. Multiple *entry-id* entries may be specified with a single command. Each *entry-id* must be separated by a space. Up to 8 entry IDs may be specified in a single command.

Each *entry-id* must exist within the *mac-filter-id*. If the *entry-id* is renumbered within the MAC filter definition, the old *entry-id* is removed from the list and the new *entry-id* will need to be manually added to the list if mirroring is still desired.

If no *entry-id* entries are specified in the command, mirroring will not occur for that MAC filter ID. The command will have no effect.

port

Syntax **port** {*port-id* | **lag** *lag-id*} {[**egress**] [**ingress**]}
no port {*port-id* | **lag** *lag-id*} [**egress**] [**ingress**]

Context debug>mirror-source

Description This command enables mirroring of traffic ingressing or egressing a port (Ethernet port, SONET/SDH channel, TDM channel, or Link Aggregation Group (LAG)).

The **port** command associates a port or LAG to a mirror source. The port is identified by the *port-id*. The defined port may be Ethernet, Access or network, SONET/SDH, or TDM channel access. A network port may be a single port or a Link Aggregation Group (LAG) ID. When a LAG ID is given as the *port-id*, mirroring is enabled on all ports making up the LAG. If the port is a SONET/SDH interface, the *channel-id* must be specified to identify which channel is being mirrored. Either a LAG port member *or* the LAG port can be mirrored.

The port is only referenced in the mirror source for mirroring purposes. The mirror source association does not need to be removed before deleting the card to which the port belongs. If the port is removed from the system, the mirroring association will be removed from the mirror source.

The same port may not be associated with multiple mirror source definitions with the **ingress** parameter defined. The same port may not be associated with multiple mirror source definitions with the **egress** parameter defined.

If a SAP is mirrored on an access port, the SAP mirroring will have precedence over the access port mirroring when a packet matches the SAP mirroring criteria. Filter and label mirroring destinations will also precedence over a port-mirroring destination.

If the port is not associated with a **mirror-source**, packets on that port will not be mirrored. Mirroring may still be defined for a SAP, label or filter entry, which will mirror based on a more specific criteria.

The encapsulation type on an access port or channel cannot be changed to Frame Relay if it is being mirrored.

The **no port** command disables port mirroring for the specified port. Mirroring of packets on the port may continue due to more specific mirror criteria. If the **egress** or **ingress** parameter keywords are specified in the **no** command, only the ingress or egress mirroring condition will be removed.

Default No ports are defined.

Parameters *port-id* — Specifies the port ID.

Syntax: port-id: *slot/mda/port[.channel]*
 bundle-id: *bundle-type-slot/mda.bundle-num*
 bundle keyword
 type ima, fr, ppp
 bundle-num 1 — 336
 bpgrp-id: *bpgrp-type-bpgrp-num*
 bpgrp keyword
 type ima, ppp
 bpgrp-num 1 — 2000
 aps-id: *aps-group-id.channel*
 aps keyword
 group-id 1 — 64

Mirror Source Configuration Commands

```
ccag-id: ccag-id.path-id cc-type:cc-id
ccag      keyword
id        1 — 8
path-id   a, b
cc-type   .sap-net, .net-sap
cc-id     0 — 4094
```

```
ccag-id ccag-id.path-id[cc-type]:cc-id
ccag     keyword
id       1 — 8
path-id  a, b
cc-type  .sap-net, .net-sap
cc-id    0 — 4094
```

lag-id — The LAG identifier, expressed as a decimal integer.

Note: On the 7950, The XMA ID takes the place of the MDA.

Values 1 — 200

egress — Specifies that packets egressing the port should be mirrored. Egress packets are mirrored to the mirror destination after egress packet modification.

ingress — Specifies that packets ingressing the port should be mirrored. Ingress packets are mirrored to the mirror destination prior to ingress packet modification.

sap

Syntax **sap** *sap-id* {[**egress**] [**ingress**]}
no sap *sap-id* [**egress**] [**ingress**]

Context debug>mirror-source

Description This command enables mirroring of traffic ingressing or egressing a service access port (SAP). A SAP that is defined within a mirror destination cannot be used in a mirror source. The mirror source SAP referenced by the *sap-id* is owned by the service ID of the service in which it was created. The SAP is only referenced in the mirror source name for mirroring purposes. The mirror source association does not need to be removed before deleting the SAP from its service ID. If the SAP is deleted from its service ID, the mirror association is removed from the mirror source.

More than one SAP can be associated within a single **mirror-source**. Each SAP has its own **ingress** and **egress** parameter keywords to define which packets are mirrored to the mirror destination.

The SAP must be valid and properly configured. If the associated SAP does not exist, an error occurs and the command will not execute.

The same SAP cannot be associated with multiple mirror source definitions for ingress packets.
The same SAP cannot be associated with multiple mirror source definitions for egress packets.

If a particular SAP is not associated with a mirror source name, then that SAP will not have mirroring enabled for that mirror source.

Note that the ingress and egress options cannot be supported at the same time on a CEM encaps-type SAP. The options must be configured in either the ingress **or** egress contexts.

The **no** form of the command disables mirroring for the specified SAP. All mirroring for that SAP on ingress and egress is terminated. Mirroring of packets on the SAP can continue if more specific mirror criteria is configured. If the **egress** or **ingress** parameter keywords are specified in the **no** command, only the ingress or egress mirroring condition is removed.

Default No SAPs are defined by default.

Parameters *sap-id* — Specifies the physical port identifier portion of the SAP definition. See [Common CLI Command Descriptions on page 439](#) for command syntax.

channel-id — The SONET/SDH or TDM channel on the port of the SAP. A period separates the physical port from the *channel-id*. The port must be configured as an access port.

egress — Specifies that packets egressing the SAP should be mirrored. Egress packets are mirrored to the mirror destination after egress packet modification.

ingress — Specifies that packets ingressing the SAP should be mirrored. Ingress packets are mirrored to the mirror destination prior to ingress packet modification.

ingress-label

Syntax **[no] ingress-label label [label ...up to 8 max]**
no ingress-label label [label ...up to 8 max]

Context debug>mirror-source

Description This command enables ingress MPLS frame mirroring based on the top-of-stack MPLS label. Multiple labels can be defined simultaneously.

The **ingress-label** command is used to mirror ingressing MPLS frames with specific MPLS labels to a specific mirror destination. The ingress label must be at the top of the label stack and can only be mirrored to a single mirror destination. If the same label is defined with multiple mirror destinations, an error is generated and the original mirror destination remains.

The **ingress-label** mirror source overrides all other mirror source definitions. The MPLS frame is mirrored to the mirror destination as it is received on the ingress network port. The router MPLS label space is global for the system. A specific label is mirrored to the mirror destination regardless of the ingress interface.

By default, no ingress MPLS frames are mirrored. The **ingress-label** command must be executed to start mirroring on a specific MPLS label.

The **no ingress-label** command removes all label mirroring for the mirror source. To stop mirroring on specific labels, use the **no ingress-label label** form of the command. Multiple labels may be given in a single **no ingress-label** command.

Default No ingress MPLS labels for mirroring are defined.

Parameters *label* — The top-of-stack label received on ingress to be mirrored. A label can only be mirrored to a single mirror destination.

If the label does not exist on any ingress network ports, no packets are mirrored for that label. An error

Mirror Source Configuration Commands

will not occur. Once the label exists on a network port, ingress mirroring commences for that label.

Values 0 — 1048575. The local MPLS stack may not support portions of this range.

Lawful Intercept Commands

li

Syntax li

Context config

Description This command configures the context to configure lawful intercept (LI) parameters.

li-filter

Syntax li-filter

Context config>li

Description This command enters the li-filter branch in order to create lawful intercept filter lists and entries.

li-mac-filter

Syntax li-mac-filter *filter-name* [create]
no li-mac-filter *filter-name*

Context config>li>li-filter

Description This command creates a Lawful Interception (LI) MAC filter list, or enters the CLI context for a LI MAC filter list. LI MAC filters are used as a manner to create confidential MAC filter based li-source entries. The LI MAC filter entries are inserted/merged into normal MAC filters as configured via the li-filter-associations and li-filter-block-reservation commands, but the LI MAC filter entries are not visible to users without LI permissions.

Parameters *filter-name* — Specifies the name of the MAC filter. Filter names cannot start with an underscore character (e.g. “_my-filter”) and cannot use the name “default”.

entry

Syntax entry *li-entry-id* [create]
no entry *li-entry-id*

Context config>li>li-filter>li-mac-filter

Description This command creates or edits a Lawful Interception filter entry. Multiple entries can be created using unique entry-id numbers within the filter.

An entry in a LI filter always has an implicit action of “forward”.

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The **no** form of the command removes the specified entry from the filter. Entries removed from the filter are immediately removed from all services or network ports where the associated filter is applied.

LI filter entries can be used as **li-source** entries.

The entry numbers for **li** filters serve purely as keys for managing the entries (deleting entries, etc). The order of **LI** filter entries is not guaranteed to match the entry numbers and s/w may reorder entries. Operators must use **LI** entries in a manner such that relative order of the **LI** entries amongst themselves is not important.

Parameters *li-entry-id* — Identifies the Lawful Interception filter entry.

Values 1—65536

match

Syntax **match** [**frame-type** {**802dot3**|**802dot2-llc**|**802dot2-snap**|**ethernet_II**}]
no match

Context config>li>li-filter>li-mac-filter>entry

Description This command creates the context for entering/editing match criteria for the filter entry and specifies an Ethernet frame type for the entry.

If more than one match criteria (within one match statement) are configured then all criteria must be satisfied (**AND** function) for a match to occur.

A match context may consist of multiple match criteria, but multiple match statements cannot be entered per entry.

The **no** form of the command removes the match criteria for the entry.

Parameters **frame-type** — Filters can continue to be edited by all users even when an **li-source** references an entry in that filter.

Values 802dot3, 802dot2-llc, 802dot2-snap, ethernet_II

Default 802dot3

802dot3 — Specifies the frame type is Ethernet IEEE 802.3.

802dot2-llc — Specifies the frame type is Ethernet IEEE 802.2 LLC.

802dot2-snap — Specifies the frame type is Ethernet IEEE 802.2 SNAP.

ethernet_II — Specifies the frame type is Ethernet Type II.

dst-mac

Syntax **dst-mac** *ieee-address* [*mask*]
no dst-mac

Context config>li>li-filter>li-mac-filter>entry>match

Description Configures a destination MAC address or range to be used as a MAC filter match criterion. The **no** form of the command removes the destination mac address as the match criterion.

Default no dst-mac

Parameters *ieee-address* — Enter the 48-bit IEEE mac address to be used as a match criterion.

Values HH:HH:HH:HH:HH:HH or HH-HH-HH-HH-HH-HH where H is a hexadecimal digit

ieee-address-mask — This 48-bit mask can be configured using:

Format Style	Format Syntax	Example
Decimal	DDDDDDDDDDDDDD	281474959933440
Hexadecimal	0xHHHHHHHHHHHH	0x0FFFFFF000000
Binary	0BBBBBBB...B	0b11110000...B

To configure so that all packets with a destination MAC OUI value of 00-03-FA are subject to a match condition then the entry should be specified as: 003FA000000 0xFFFFFFFF000000

Default 0xFFFFFFFFFFFF (exact match)

Values 0x0000000000000000 — 0xFFFFFFFFFFFF

src-mac

Syntax **src-mac** *ieee-address* [*ieee-address-mask*]
no src-mac

Context config>li>li-filter>li-mac-filter>entry>match

Description Configures a source MAC address or range to be used as a MAC filter match criterion. The **no** form of the command removes the source mac as the match criteria.

Default no src-mac

Parameters *ieee-address* — Enter the 48-bit IEEE mac address to be used as a match criterion.

Values HH:HH:HH:HH:HH:HH or HH-HH-HH-HH-HH-HH where H is a hexadecimal digit

ieee-address-mask — This 48-bit mask can be configured using:

Format Style	Format Syntax	Example
Decimal	DDDDDDDDDDDDDD	281474959933440
Hexadecimal	0xHHHHHHHHHHHH	0x0FFFFFF000000
Binary	0BBBBBBB...B	0b11110000...B

Lawful Intercept Commands

To configure so that all packets with a source MAC OUI value of 00-03-FA are subject to a match condition then the entry should be specified as: 003FA000000 0xFFFFFFFF000000

Default 0xFFFFFFFFFFFFFFF (exact match)

Values 0x0000000000000000 — 0xFFFFFFFFFFFFFFF

li-filter-block-reservation

Syntax **li-filter-block-reservation**

Context config>li

Description This command enters the li-filter-block-reservation branch in order to create lawful intercept filter reservations.

li-reserved-block

Syntax **li-reserved-block** *block-name* [create]
no li-reserved-block *block-name*

Context config>li>li-filter-block-reservation

Description This command creates or edits an LI reserved block. An LI reserved block allows an operator to define where entries from an LI filter should be inserted into a normal filter. The block reserves a configurable number of entries in the normal filter that can only be used for entries inserted from associated LI filters. The LI filter entries that get inserted into the reserved block in each normal filter are not visible to non-LI operators. The block also defines to which normal filters the reservation will be applied.

Parameters *block-name* — Specifies the name of the MAC filter. Block names cannot start with an underscore character (e.g. “_my-filter”) and cannot use the name “default”.

start-entry

Syntax **start-entry** *entry-id* **count** *count*
no start-entry

Context config>li>li-filter-block-reservation>li-reserved-block

Description This command defines a block of reserved filter entries that are used to insert LI filter entries into a normal filter.

Default **no start-entry**

Parameters *entry-id* — The entry identification identifies the start of a block of reserved filter entries.

Values 1—65536

count — This parameter identifies the number of entries in the block.

Values 1—8192

mac-filter

Syntax **mac-filter** *filter-id*
no mac-filter

Context config>li>li-filter-block-reservation>li-reserved-block

Description This command configures to which normal MAC filters the entry reservation is applied.

Default *filter-id* — The filter identification identifies the normal MAC filters.

Values 1—65536 | <name:64 char max>

li-filter-associations

Syntax **li-filter-associations**

Context config>li

Description This command enters the **li-filter-associations** branch in order to define which LI filter entries get inserted into which normal filters.

li-mac-filter

Syntax **li-mac-filter** *filter-name*
no li-mac-filter *filter-name*

Context config>li>li-filter-associations

Description Specifies the li-mac-filter that will have its entries inserted into a list of normal mac filters.

Parameters *filter-name* — Specifies the name of the LI MAC filter. Filter names cannot start with an underscore character (e.g. “_my-filter”) and cannot use the name “default”. 32 chars maximum.

mac-filter

Syntax **mac-filter** *filter-id*
no mac-filter *filter-id*

Context config>li>li-filter-associations>li-mac-filter

Description Specifies the MAC filter(s) into which the entries from the specified **li-mac-filter** are to be inserted. The **li-mac-filter** and **mac-filter** must already exist before the association is made. If the normal MAC filter is

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deleted then the association is also removed (and not re-created if the MAC filter comes into existence in the future).

Parameters *filter-id* — The filter identification identifies the MAC filters.

Values 1—65536 | *<name:64 char max>*

li-filter-lock-state

Syntax **li-filter-lock-state** {**locked** | **unlocked-for-li-users** | **unlocked-for-all-users**}
no li-filter-lock-state

Context config>li

Description This command configures the lock state of the filters used by LI. With the configurable filter lock for LI feature an LI user can control the behavior of filters when they are used for LI.

In previous releases, when a filter entry was used as a Lawful Intercept (LI) mirror source criteria, all subsequent attempts to modify the filter were then blocked to avoid having the LI session impacted by a non-LI user.

The **no** form of the command reverts to the default.

Default **locked**

Parameters **locked** — When an li-source criteria is configured that references any entry of filter Y, then filter Y can no longer be changed (until there are no longer any li-sources references to entries of filter Y).

unlocked-for-li-users — Filters can continue to be edited by LI users only even when an li-source references an entry in that filter.

unlocked-for-all-users — Filters can continue to be edited by all users even when an li-source references an entry in that filter.

li-source

Syntax [**no**] **li-source** *service-id*

Context config>li

Description This command configures a lawful intercept (LI) mirror source.

Parameters *service-id* — The service identification identifies the service in the service domain. This ID is unique to this service and cannot be used by any other service, regardless of service type. The same service ID must be configured on every router that this particular service is defined on.

Values *service-id:* 1 — 2147483647
svc-name: 64 characters maximum

ip-filter

Syntax **ip-filter** *ip-filter-id* [**entry** *entry-id*...] [**intercept-id** *intercept-id*...] [**session-id** *session-id*...]
no ip-filter *ip-filter-id*

Context config>li>li-source

Description This command enables lawful interception (LI) of packets that match specific entries in an existing IP filter. The **ip-filter** command directs packets which match the defined list of entry IDs to be intercepted to the destination referenced by the *mirror-dest-service-id* of the **mirror-source**.

The IP filter must already exist in order for the command to execute. Filters are configured in the **config>filter** context. If the IP filter does not exist, an error will occur. If the filter exists but has not been associated with a SAP or IP interface, an error is not generated but mirroring will not be enabled (there are no packets to mirror). Once the IP filter is defined to a SAP, IP interface or subscriber, mirroring is enabled.

If the IP filter is defined as ingress, only ingress packets are intercepted. Ingress packets are sent to the destination prior to any ingress packet modifications.

If the IP filter is defined as egress, only egress packets are intercepted. Egress packets are sent to the destination after all egress packet modifications.

An *entry-id* within an IP filter can only be intercepted to a single destination. If the same *entry-id* is defined multiple times, an error occurs and only the first definition is in effect.

By default, no packets matching any IP filters are intercepted. Interception of IP filter entries must be explicitly defined.

When the **no** command is executed with the **entry** keyword and one or more *entry-id*'s, interception of that list of *entry-id*'s is terminated within the *ip-filter-id*. If an *entry-id* is listed that does not exist, an error will occur and the command will not execute. If an *entry-id* is listed that is not currently being intercepted, no error will occur for that *entry-id* and the command will execute normally.

Parameters *ip-filter-id* — The IP filter ID whose entries are to be intercepted. If the *ip-filter-id* does not exist, an error will occur and the command will not execute. Intercepting packets will commence when the *ip-filter-id* is defined on a SAP or IP interface.

entry *entry-id* — The IP filter entries to use as match criteria for lawful intercept (LI). The **entry** keyword begins a list of *entry-id*'s for interception. Multiple *entry-id* entries can be specified with a single command. Each *entry-id* must be separated by a space. Up to <N><n> 8 entry IDs may be specified in a single command.

If an *entry-id* does not exist within the IP filter, an error occurs and the command will not execute.

If the filter's *entry-id* is renumbered within the IP filter definition, the old *entry-id* is removed but the new *entry-id* must be manually added to the configuration to include the new (renumbered) entry's criteria.

intercept-id *intercept-id* — This command configures the *intercept-id* that is inserted into the packet header for all mirrored packets of the associated li-source entry. This *intercept-id* can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs. For all types of **li-source** entries (filter, nat, sap, subscriber), when the mirror service is configured with **ip-udp-shim** routable encap, an *intercept-id* field (as part of the routable encap) is always present in the mirrored packets. If there is no *intercept-id* configured for an **li-source** entry, then the default value will be inserted. When the mirror service is configured with **ip-gre** routable encap, no *intercept-id* is

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inserted and none should be specified against the **li-source** entries.

Values 1..4294967295 (32b) For nat li-source entries that are using a mirror service that is not configured with routable encap

Values 1..1,073,741,824 (30b) For all types of li-source entries that are using a mirror service with routable ip-udp-shim encap and no direction-bit.

Values 1..536,870,912 (29b) For all types of li-source entries that are using a mirror service with routable ip-udp-shim encap and with the direction-bit enabled.

session-id *session-id* — This command configures the *session-id* that is inserted into the packet header for all mirrored packets of the associated **li-source** entry. This *session-id* can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs. The *session-id* is only valid and used for mirror services that are configured with **ip-udp-shim** routable encap (**config>mirror>mirror-dest>encap#ip-udp-shim**). For all types of **li-source** entries (filter, nat, sap, subscriber), when the mirror service is configured with **ip-udp-shim** routable encap, a *session-id* field (as part of the routable encap) is always present in the mirrored packets. If there is no *session-id* configured for an **li-source** entry, then the default value will be inserted. When a mirror service is configured with **ip-gre** routable encap, no *session-id* is inserted and none should be specified against the **li-source** entries.

Values 1..4,294,967,295 (32b)

ipv6-filter

Syntax **ipv6-filter** *ipv6-filter-id* [**entry** *entry-id...*] [**intercept-id** *intercept-id...*] [**session-id** *session-id...*]
no ipv6-filter *ipv6-filter-id*

Context config>li>li-source

Description This command enables lawful interception (LI) of packets that match specific entries in an existing IPv6 filter.

The **ipv6-filter** command directs packets which match the defined list of entry IDs to be intercepted to the destination referenced by the *mirror-dest-service-id* of the **mirror-source**.

The IPv6 filter must already exist in order for the command to execute. Filters are configured in the **config>filter** context. If the IPv6 filter does not exist, an error will occur. If the filter exists but has not been associated with a SAP or IPv6 interface, an error is not generated but mirroring will not be enabled (there are no packets to mirror). Once the IPv6 filter is defined to a SAP, IPv6 interface or subscriber, mirroring is enabled.

If the IPv6 filter is defined as ingress, only ingress packets are intercepted. Ingress packets are sent to the destination prior to any ingress packet modifications.

If the IPv6 filter is defined as egress, only egress packets are intercepted. Egress packets are sent to the destination after all egress packet modifications.

An *entry-id* within an IPv6 filter can only be intercepted to a single destination. If the same *entry-id* is defined multiple times, an error occurs and only the first definition is in effect.

By default, no packets matching any IPv6 filters are intercepted. Interception of IPv6 filter entries must be explicitly defined.

When the **no** command is executed with the **entry** keyword and one or more *entry-id*'s, interception of that list of *entry-id*'s is terminated within the *ipv6-filter-id*. If an *entry-id* is listed that does not exist, an error will occur and the command will not execute. If an *entry-id* is listed that is not currently being intercepted, no error will occur for that *entry-id* and the command will execute normally.

Parameters

ipv6-filter-id — The IPv6 filter ID whose entries are to be intercepted. If the *ipv6-filter-id* does not exist, an error will occur and the command will not execute. Intercepting packets will commence when the *ipv6-filter-id* is defined on a SAP or IPv6 interface.

entry entry-id — The IPv6 filter entries to use as match criteria for lawful intercept (LI). The **entry** keyword begins a list of *entry-id*'s for interception. Multiple *entry-id* entries can be specified with a single command. Each *entry-id* must be separated by a space. Up to <N><n> 8 entry IDs may be specified in a single command.

If an *entry-id* does not exist within the IPv6 filter, an error occurs and the command will not execute.

If the filter's *entry-id* is renumbered within the IPv6 filter definition, the old *entry-id* is removed but the new *entry-id* must be manually added to the configuration to include the new (renumbered) entry's criteria.

intercept-id intercept-id — This command configures the *intercept-id* that is inserted into the packet header for all mirrored packets of the associated li-source entry. This *intercept-id* can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs. For all types of **li-source** entries (filter, nat, sap, subscriber), when the mirror service is configured with **ip-udp-shim** routable encap, an *intercept-id* field (as part of the routable encap) is always present in the mirrored packets. If there is no *intercept-id* configured for an **li-source** entry, then the default value will be inserted. When the mirror service is configured with **ip-gre** routable encap, no *intercept-id* is inserted and none should be specified against the **li-source** entries.

Values 1..4294967295 (32b) For nat li-source entries that are using a mirror service that is not configured with routable encap

Values 1..1,073,741,824 (30b) For all types of li-source entries that are using a mirror service with routable ip-udp-shim encap and no direction-bit.

Values 1..536,870,912 (29b) For all types of li-source entries that are using a mirror service with routable ip-udp-shim encap and with the direction-bit enabled.

session-id session-id — This command configures the *session-id* that is inserted into the packet header for all mirrored packets of the associated **li-source** entry. This *session-id* can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs. The *session-id* is only valid and used for mirror services that are configured with **ip-udp-shim** routable encap (**config>mirror>mirror-dest>encap#ip-udp-shim**). For all types of **li-source** entries (filter, nat, sap, subscriber), when the mirror service is configured with **ip-udp-shim** routable encap, a *session-id* field (as part of the routable encap) is always present in the mirrored packets. If there is no *session-id* configured for an **li-source** entry, then the default value will be inserted.. When a mirror service is configured with **ip-gre** routable encap, no *session-id* is inserted and none should be specified against the **li-source** entries.

id — The session-id value to insert into the header of the mirrored packets.

Values 1..4,294,967,295 (32b)

li-mac-filter

Syntax **li-mac-filter** *filter-name* **entry** *li-entry-id* [*li-entry-id...*(upto 8 max)] [**intercept-id** *intercept-id* [*intercept-id...*(upto 8 max)]] [**session-id** *session-id* [*session-id...*(upto 8 max)]]
no li-mac-filter *filter-name* [**entry** *li-entry-id* [*li-entry-id...*(upto 8 max)]]

Context config>li>li-source

Description This command enables lawful interception (LI) of packets that match specific entries in an existing LI MAC filter that has been associated with a normal MAC filter. The specification of an li-mac-filter entry as an li-source means that packets matching the li-mac-filter entry will be intercepted on all interfaces/saps/etc where the associated normal mac-filter(s) are applied.

Default *filter-name* — The name of the li-mac-filter. 32 characters maximum.

li-entry-id — The entry id in the li-mac-filter that is to be used as an li-source criteria.

Values 1—65535

intercept-id *intercept-id* — This command configures the intercept-id that is inserted into the packet header for all mirrored packets of the associated li-source entry. This *intercept-id* can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs. For all types of **li-source** entries (filter, nat, sap, subscriber), when the mirror service is configured with **ip-udp-shim** routable encap, an *intercept-id* field (as part of the routable encap) is always present in the mirrored packets. If there is no *intercept-id* configured for an **li-source** entry, then the default value will be inserted. When the mirror service is configured with **ip-gre** routable encap, no *intercept-id* is inserted and none should be specified against the **li-source** entries.

session-id *session-id* — This command configures the *session-id* that is inserted into the packet header for all mirrored packets of the associated **li-source** entry. This *session-id* can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs. The *session-id* is only valid and used for mirror services that are configured with **ip-udp-shim** routable encap (**config>mirror>mirror-dest>encap#ip-udp-shim**). For all types of **li-source** entries (filter, nat, sap, subscriber), when the mirror service is configured with **ip-udp-shim** routable encap, a *session-id* field (as part of the routable encap) is always present in the mirrored packets. If there is no *session-id* configured for an **li-source** entry, then the default value will be inserted. When a mirror service is configured with **ip-gre** routable encap, no *session-id* is inserted and none should be specified against the **li-source** entries.

mac-filter

Syntax **mac-filter** *mac-filter-id* **entry** [*entry-id...*] [**intercept-id** *intercept-id...*] [**session-id** *session-id...*]
no mac-filter *mac-filter-id*

Context config>li>li-source

Description This command enables lawful interception (LI) of packets that match specific entries in an existing MAC filter. Multiple entries can be created using unique entry-id numbers within the filter. The router implementation exits the filter on the first match found and executes the actions in accordance with the accompanying action command. For this reason, entries must be sequenced correctly from most to least explicit.

An entry may not have any match criteria defined (in which case, everything matches) but must have at least the keyword **action** for it to be considered complete. Entries without the **action** keyword will be considered incomplete and hence will be rendered inactive.

An *entry-id* within an MAC filter can only be intercepted to a single destination. If the same *entry-id* is defined multiple times, an error occurs and only the first definition is in effect.

The **no** form of the command removes the specified entry from the IP or MAC filter. Entries removed from the IP or MAC filter are immediately removed from all services or network ports where that filter is applied.

Parameters

mac-filter-id — Specifies the MAC filter ID. If the *mac-filter-id* does not exist, an error will occur and the command will not execute.

entry *entry-id* — The MAC filter entries to use as match criteria.

intercept-id *intercept-id* — This command configures the *intercept-id* that is inserted into the packet header for all mirrored packets of the associated **li-source** entry. This *intercept-id* can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs. For all types of **li-source** entries (filter, nat, sap, subscriber), when the mirror service is configured with **ip-udp-shim** routable encap, an *intercept-id* field (as part of the routable encap) is always present in the mirrored packets. If there is no *intercept-id* configured for an **li-source** entry, then the default value will be inserted. When the mirror service is configured with **ip-gre** routable encap, no *intercept-id* is inserted and none should be specified against the **li-source** entries.

Values 1..4294967295 (32b) For nat **li-source** entries that are using a mirror service that is not configured with routable encap

Values 1..1,073,741,824 (30b) For all types of **li-source** entries that are using a mirror service with routable ip-udp-shim encap and no direction-bit.

Values 1..536,870,912 (29b) For all types of **li-source** entries that are using a mirror service with routable ip-udp-shim encap and with the direction-bit enabled.

session-id *session-id* — This command configures the *session-id* that is inserted into the packet header for all mirrored packets of the associated **li-source** entry. This *session-id* can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs. The *session-id* is only valid and used for mirror services that are configured with **ip-udp-shim** routable encap (**config>mirror>mirror-dest>encap#ip-udp-shim**). For all types of **li-source** entries (filter, nat, sap, subscriber), when the mirror service is configured with **ip-udp-shim** routable encap, a *session-id* field (as part of the routable encap) is always present in the mirrored packets. If there is no *session-id* configured for an **li-source** entry, then the default value will be inserted. When a mirror service is configured with **ip-gre** routable encap, no *session-id* is inserted and none should be specified against the **li-source** entries.

Values 1..4,294,967,295 (32b)

nat

Syntax nat

Context config>li>li-source

Description This command enables the context to configure LI NAT parameters.

classic-lsn-sub

Syntax	[no] classic-lsn-sub router <i>router-instance</i> ip <i>ip-address</i>
Context	config>li>li-source>nat
Description	This command configures a classic LSN subscriber sources. The no form of the command removes the parameter from the configuration.
Parameters	router <i>router-instance</i> — Specifies the router instance the pool belongs to, either by router name or service ID. Values <i>router-name</i> : “Base” “management” Default Base ip <i>ip-address</i> — Specifies the IP address in a.b.c.d format.

intercept-id

Syntax	intercept-id <i>id</i> no intercept-id
Context	config>li>li-source>nat>classic-lsn-sub config>li>li-source>nat>dslite-lsn-sub config>li>li-source>nat>ethernet-header config>li>li-source>nat>l2-aware-sub config>li>li-source>nat>nat64-lsn-sub
Description	<p>This command configures the intercept-id that is inserted into the packet header for all mirrored packets of the associated li-source entry. This intercept-id can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs.</p> <p>For nat mirroring (a nat li-source entry type), when the mirror service is not configured with any routable encap (for example, no ip-udp-shim or ip-gre configured under config>mirror>mirror-dest>encap), the presence of a configured intercept-id against an li-source (nat) entry will cause the insertion of the intercept-id after a configurable mac-da, mac-sa and etype (configured under li-source>nat>ethernet-header), at the front of each packet mirrored for that particular li-source entry. If there is no intercept-id configured (for a nat entry using a mirror service without routable encap), then a configurable mac-da and mac-sa are added to the front of the packets (but no intercept-id). In both cases a non-configurable etype is also added immediately before the mirrored customer packet. Note that routable encapsulation configured in the mirror-dest takes precedence over the ethernet-header configuration in the li-source nat entries. If routable encapsulation is configured, then the ethernet-header config is ignored and no mac header is added to the packet (the encap is determined by the mirror-dest in this case).</p> <p>For all types of li-source entries (filter, nat, sap, subscriber), when the mirror service is configured with ip-udp-shim routable encap, an intercept-id field (as part of the routable encap) is always present in the mirrored packets. If there is no intercept-id configured for an li-source entry, then the default value will be inserted. When the mirror service is configured with ip-gre routable encap, no intercept-id is inserted and none should be specified against the li-source entries.</p> <p>The no form of the command removes the value from the configuration.</p>

Default **no intercept-id (an id of 0, or no id)**

Parameters *id* — The intercept-id value to insert into the header of the mirrored packets.

Values 1..4294967295 (32b) For nat li-source entries that are using a mirror service that is not configured with routable encap

Values 1..1,073,741,824 (30b) For all types of li-source entries that are using a mirror service with routable ip-udp-shim encap and no direction-bit.

Values 1..536,870,912 (29b) For all types of li-source entries that are using a mirror service with routable ip-udp-shim encap and with the direction-bit enabled.

session-id

Syntax **session-id *id***
no session-id

Context config>li>li-source>nat>classic-lsn-sub
config>li>li-source>nat>dslite-lsn-sub
config>li>li-source>nat>ethernet-header
config>li>li-source>nat>l2-aware-sub
config>li>li-source>nat>nat64-lsn-sub

Description This command configures the session-id that is inserted into the packet header for all mirrored packets of the associated li-source entry. This session-id can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs.

The session-id is only valid and used for mirror services that are configured with ip-udp-shim routable encap (config>mirror>mirror-dest>encap# ip-gre-shim).

For all types of li-source entries (filter, nat, sap, subscriber), when the mirror service is configured with ip-udp-shim routable encap, a session-id field (as part of the routable encap) is always present in the mirrored packets. If there is no session-id configured for an li-source entry, then the default value will be inserted. When a mirror service is configured with ip-gre routable encap, no session-id is inserted and none should be specified against the li-source entries.

The **no** form of the command removes the session-id from the configuration which results in the default value being used.

Default **no session-id (an id of 0, or no id)**

Parameters *id* — The session-id value to insert into the header of the mirrored packets.

Values 1..4,294,967,295 (32b)

dslite-lsn-sub

Syntax	[no] dslite-lsn-sub router <i>router-instance</i> b4 <i>ipv6-prefix</i>
Context	config>li>li-source>nat
Description	This command configures the Dual Stack Lite LSN subscriber source. The no form of the command removes the value from the configuration.
Parameters	router <i>router-instance</i> — Specifies the router instance the pool belongs to, either by router name or service ID. Values <i>router-name</i> : “Base” “management” Default Base b4 <i>ipv6-prefix</i> — Specifies the IPv6 address. Values <i>ipv6-prefix</i> : <prefix>/<length> <i>prefix</i> : x:x:x:x:x:x:x (eight 16-bit pieces) x:x:x:x:x:d.d.d.d x - [0..FFFF]H d - [0..255]D <length> : [0..128]

ethernet-header

Syntax	ethernet-header [<i>da ieee-address</i>] [<i>sa ieee-address</i>] [<i>etype ethertype</i>] no ethernet-header
Context	config>li>li-source>nat
Description	This command configures the ethernet header for the NAT sources The no form of the command removes the values from the configuration.

l2-aware-sub

Syntax	[no] l2-aware-sub <i>sub-ident-string</i>
Context	config>li>li-source>nat
Description	This command configures a Layer-2-Aware subscriber source. The no form of the command removes the values from the configuration.
Parameters	<i>sub-ident-string</i> — Specifies a source name.

sap

Syntax **sap** *sap-id* {[**ingress**] [**egress**]} [**intercept-id** *intercept-id...*] [**session-id** *session-id...*]
no sap *sap-id*

Context config>li>li-source

Description This command creates a service access point (SAP) within an LI configuration. The specified SAP must define a FastE, GigE, or XGigE, or XGigE access port with a dot1q, null, or q-in-q encapsulation type.

The *intercept-id* parameter configures the intercept IDs that is inserted into the packet header for all mirrored packets of the associated li-source entry.

The *session-id* parameter inserts the specified IDs into the packet header for all mirrored packets of the associated li-source entry.

When the **no** form of this command is used on a SAP, the SAP with the specified port and encapsulation parameters is deleted.

Default none

Parameters *sap-id* — Specifies the physical port identifier portion of the SAP definition. See [Common CLI Command Descriptions on page 439](#) for command syntax.

egress — Specifies that packets egressing the SAP should be mirrored. Egress packets are mirrored to the mirror destination after egress packet modification.

ingress — Specifies that packets ingressing the SAP should be mirrored. Ingress packets are mirrored to the mirror destination prior to ingress packet modification.

intercept-id *intercept-id* — This command configures the intercept-id that is inserted into the packet header for all mirrored packets of the associated li-source entry. This *intercept-id* can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs.

For all types of **li-source** entries (filter, nat, sap, subscriber), when the mirror service is configured with **ip-udp-shim** routable encap, an *intercept-id* field (as part of the routable encap) is always present in the mirrored packets. If there is no *intercept-id* configured for an **li-source** entry, then the default value will be inserted. When the mirror service is configured with **ip-gre** routable encap, no *intercept-id* is inserted and none should be specified against the **li-source** entries.

Values 1..4294967295 (32b) For nat li-source entries that are using a mirror service that is not configured with routable encap

Values 1..1,073,741,824 (30b) For all types of li-source entries that are using a mirror service with routable ip-udp-shim encap and no direction-bit.

Values 1..536,870,912 (29b) For all types of li-source entries that are using a mirror service with routable ip-udp-shim encap and with the direction-bit enabled.

session-id *session-id* — This command configures the *session-id* that is inserted into the packet header for all mirrored packets of the associated **li-source** entry. This *session-id* can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs.

The *session-id* is only valid and used for mirror services that are configured with **ip-udp-shim** routable encap (**config>mirror>mirror-dest>encap#ip-udp-shim**).

For all types of **li-source** entries (filter, nat, sap, subscriber), when the mirror service is configured with

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ip-udp-shim routable encap, a *session-id* field (as part of the routable encap) is always present in the mirrored packets. If there is no *session-id* configured for an **li-source** entry, then the default value will be inserted. When a mirror service is configured with **ip-gre** routable encap, no *session-id* is inserted and none should be specified against the **li-source** entries.

Values 1..4,294,967,295 (32b)

subscriber

Syntax **subscriber** *sub-ident-string* [**sap** *sap-id* [**ip** *ip-address*] [**mac** *ieee-address*]]**sla-profile** *sla-profile-name* [**fc** {[**be**] [**l2**] [**af**] [**l1**] [**h2**] [**ef**] [**h1**] [**nc**]}] {[**ingress**] [**egress**]} [**intercept-id** *intercept-id...*] [**session-id** *session-id...*]
no subscriber *sub-ident-string*

Context config>li>li-source

Description This command adds hosts of a subscriber to mirroring service.

Parameters *sub-ident-string* — Specifies the name of the subscriber identification policy.

sap-id — Specifies the physical port identifier portion of the SAP definition. See [Common CLI Command Descriptions on page 439](#) for command syntax.

ip-address — The service IP address (system IP address) of the remote device sending LI traffic. If 0.0.0.0 is specified, any remote router is allowed to send to this service.

Values 1.0.0.1 — 223.255.255.254

mac *mac-address* — Specify this optional parameter when defining a static host. The MAC address must be specified for **anti-spoof ip-mac** and **arp-populate**. Multiple static hosts may be configured with the same MAC address given that each definition is distinguished by a unique IP address.

sla-profile-name — Specifies the SLA profile name.

Values 32 characters maximum.

fc — The name of the forwarding class with which to associate LI traffic. The forwarding class name must already be defined within the system. If the *fc-name* does not exist, an error will be returned and the **fc** command will have no effect. If the *fc-name* does exist, the forwarding class associated with *fc-name* will override the default forwarding class.

Values be, l2, af, l1, h2, ef, h1, nc

ingress — Specifies information for the ingress policy.

egress — Specifies information for the egress policy.

intercept-id *intercept-id* — This command configures the *intercept-id* that is inserted into the packet header for all mirrored packets of the associated **li-source** entry. This *intercept-id* can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs.

For all types of **li-source** entries (filter, nat, sap, subscriber), when the mirror service is configured with **ip-udp-shim** routable encap, an *intercept-id* field (as part of the routable encap) is always present in the mirrored packets. If there is no *intercept-id* configured for an **li-source** entry, then the default value will be inserted. When the mirror service is configured with **ip-gre** routable encap, no *intercept-id* is

inserted and none should be specified against the **li-source** entries.

Values 1..4294967295 (32b) For nat li-source entries that are using a mirror service that is not configured with routable encap

Values 1..1,073,741,824 (30b) For all types of li-source entries that are using a mirror service with routable ip-udp-shim encap and no direction-bit.

Values 1..536,870,912 (29b) For all types of li-source entries that are using a mirror service with routable ip-udp-shim encap and with the direction-bit enabled.

session-id *session-id* — This command configures the *session-id* that is inserted into the packet header for all mirrored packets of the associated **li-source** entry. This *session-id* can be used (for example by a downstream LI Gateway) to identify the particular LI session to which the packet belongs. The *session-id* is only valid and used for mirror services that are configured with **ip-udp-shim** routable encap (**config>mirror>mirror-dest>encap#ip-udp-shim**).

For all types of **li-source** entries (filter, nat, sap, subscriber), when the mirror service is configured with **ip-udp-shim** routable encap, a *session-id* field (as part of the routable encap) is always present in the mirrored packets. If there is no *session-id* configured for an **li-source** entry, then the default value will be inserted. When a mirror service is configured with **ip-gre** routable encap, no *session-id* is inserted and none should be specified against the **li-source** entries.

Values 1..4,294,967,295 (32b)

log

Syntax log

Context config>li

Description This command enables the context to configure an event log for Lawful Intercept.

log-id

Syntax [**no**] log-id *log-id*

Context config>li>log

Description This command configures an LI event log destination. The *log-id* is used to direct events, alarms/traps, and debug information to respective destinations.

Parameters *log-id* — The log ID number, expressed as a decimal integer.

Values 1 — 100

Lawful Intercept Commands

filter

Syntax	filter <i>filter-id</i> no filter
Context	config>li>log>log-id
Description	<p>This command adds an event filter policy with the log destination.</p> <p>The filter command is optional. If no event filter is configured, all events, alarms and traps generated by the source stream will be forwarded to the destination.</p> <p>An event filter policy defines (limits) the events that are forwarded to the destination configured in the log-id. The event filter policy can also be used to select the alarms and traps to be forwarded to a destination snmp-trap-group.</p> <p>The application of filters for debug messages is limited to application and subject only.</p> <p>Accounting records cannot be filtered using the filter command.</p> <p>Only one filter-id can be configured per log destination.</p> <p>The no form of the command removes the specified event filter from the <i>log-id</i>.</p>
Default	no filter — No event filter policy is specified for a <i>log-id</i> .
Parameters	<i>filter-id</i> — The event filter policy ID is used to associate the filter with the <i>log-id</i> configuration. The event filter policy ID must already be defined in config>log>filter <i>filter-id</i> .
Values	1 — 1000

from

Syntax	from {[li]} no from
Context	config>li>log>log-id
Description	This command configures a bit mask that specifies the log event source stream(s) to be forwarded to the destination specified in the log destination (memory, session, SNMP). Events from more than one source can be forwarded to the log destination.
Parameters	li — Specifies the li event stream that contains all events configured for Lawful Intercept activities. If the requestor does not have access to the li context, the event stream will fail.

time-format

Syntax	time-format {local utc}
Context	config>li>log>log-id
Description	This command specifies whether the time should be displayed in local or Coordinated Universal Time (UTC) format.

Default `utc`

Parameters `local` — Specifies that timestamps are written in the system's local time.
`utc` — Specifies that timestamps are written using the UTC value. This was formerly called Greenwich Mean Time (GMT) and Zulu time.

to

Syntax `to memory [size]`
`to session`
`to snmp [size]`

Context `config>li>log>log-id`

Description This command enables the context to configure the destination type for the event log. The source of the data stream must be specified in the **from** command prior to configuring the destination with the **to** command.
 The **to** command cannot be modified or re-entered. If the destination or maximum size of an SNMP or memory log needs to be modified, the log ID must be removed and then re-created.

Parameters `size` — The size parameter indicates the number of events that can be stored into memory.

Default 100

Values 50 — 1024

save

Syntax `save`

Context `config>li`

Description This command is required to save LI configuration parameters.

df-peer

Syntax `df-peer df-peer-id df2-addr ip-address df2-port port df3-addr ip-address df3-port port`
`no df-peer df-peer-id`

Context `config>li>mobile`

Description This command provisions a Delivery Function Peer, which includes Delivery Function2 used for IRI as well as Delivery Function3 used for CC, of a Lawful Intercept Gateway.
 The **no** form of the command removes the Delivery Function Peer information from the configuration.

Parameters `df-peer-id` — Configures Delivery Function Peer parameters.

Lawful Intercept Commands

Values 1 — 16

df2-addr *ip-address* — Specifies the Delivery Function2 address. This is the IP address of the Delivery Function where the IRI is to be sent

df2-port *port* — Specifies the DF2 port number. This is the TCP port of the Delivery Function where the IRI is to be sent

df3-addr *ip-address* — Specifies the Delivery Function3 address. This is the IP address of the Delivery Function where the CC is to be sent

df3-port *port* — Specifies the DF3 port number. This is the TCP port of the Delivery Function where the CC is to be sent.

local-interface

Syntax **local-interface** *ip-address* [**router** *router-instance*]
no local-interface

Context config>li>mobile

Description This command configures the source IP address used by the xGW/GGSN for Lawful Intercept (LI) interface.

The **no** form of the command reverts to the default.

Default no local-interface

Parameters *ip-address* — Specifies the source IP address.

Values	ipv4-address	a.b.c.d
	ipv6-address	x:x:x:x:x:x:x (eight 16-bit pieces) x:x:x:x:x:d.d.d.d x - [0..FFFF]H d - [0..255]D

router *router-instance* — Specifies the router instance up to 32 characters in length.

target

Syntax **target** *target-type id string intercept intercept peer df-peer-id* [**liid** *li-identifier*]
no target *target-type id string*

Context config>li>mobile

Description This command configures a target for interception and assign the Delivery Function Peer that receives the Intercept Related Information (IRI) and Content of Communication (CC) for this target.

All IRI and CC messages for this target are sent to the newly specified DF peer, subsequent to target modifications.

Only IMSI is currently supported as a target Identifier initially. Modifying the **target** command's parameters does not require a shutdown/no shutdown of the GW.

The **no** form of the command de-activates a target that is being intercepted.

target-type — Specifies the type of surveillance target identifier to be provisioned.

Values imsi, imei, msisdn

id string — uniquely identifies a target for the interception up to 15 characters in length.

liid li-identifier — uniquely identifies the LI identifier up to 25 characters in length.

intercept intercept — Specifies the interception type for the target. The intercept type is allowed to change from IRI to IRI+CC and from IRI+CC to IRI,

Values iri — Intercept Related Information
 iricc — Intercept Related Information (IRI) and Content of Communication (CC)

Default iri

peer df-peer-id — Specifies the Delivery Function (DF) Peer associated with the target.

Values 1 — 16

Default 1

x3-transport

Syntax **x3-transport {tcp | udp} ulic-header {v0 | v1}**

Context config>li>mobile

Description This command specifies the transport option for an X3 interface, along with the ULIC Header version to be used. The same transport option is supported to all the Delivery Function (DF) peers in a service provider network. Changing the option requires a GW shutdown/no shutdown.

Following are the valid combinations of Transport protocol and ULIC Header versions supported:

- TCP with ULIC Header v1
- UDP with ULIC Header v1
- UDP with ULIC Header v0

The no form of the command reverts to the default.

Default disable

Parameters **tcp** — Specifies to use TCP as the transport option for an X3 interface.

Default Only ULIC Header V1 is supported with this option.

udp — Specifies to use UDP as the transport option for an X3 interface.

Default Only ULIC Header V0 is supported with this option.

ulic-header — Specifies the header option..

v0 — Specifies ULIC v0 Header option.

v1 — Specifies ULIC v1 Header option.

Lawful Intercept Commands

operator

Syntax **operator-id** *op_id*
 no operator-id

Context config>li>mobile

Description This command is used to configure the operator identifier for an operator's deployment. The configured value is used to populate the operator-identifier field of the Network-Identifier IE. The "No" form of the command reverts to the default.

Default "op_id"

Parameters *op-id* — Specifies the operator identifier, string of up to 5 alphanumeric characters.

Other LI Configuration Commands

The following commands are also described in the Basic System Configuration Guide. Other LI commands are described in the System Management Guide

li-local-save

Syntax [no] li-local-save

Context bof

Description This command specifies whether or not lawful intercept (LI) configuration is allowed to be save to a local file. Modifying this command will not take affect until the system is rebooted.

Default li-local-save

li-separate

Syntax [no] li-separate

Context bof

Description This command specifies whether or not a non-LI user has access to lawful intercept (LI) information. When this command is enabled, a user who does not have LI access will not be allowed to access CLI or SNMP objects in the li context. Modifying this command will not take affect until the system is rebooted.

When the **no li-separate** command is set (the default mode), those who are allowed access to the **config>system>security>profile** context and user command nodes are allowed to modify the configuration of the LI parameters. In this mode, a user that has a profile allowing access to the **config>li** and/or **show>li** command contexts can enter and use the commands under those nodes.

When the **li-separate** command is configured, only users that have the LI access capabilities set in the **config>system>security>user>access li** context are allowed to access the **config>li** and/or **show>li** command contexts. A user who does not have LI access is not allowed to enter the **config>li** and **show>li** contexts even though they have a profile that allows access to these nodes. When in the **li-separate** mode, only users with **config>system>security>user>access li** set in their user account have the ability modify the setting LI parameters in either their own or others profiles and user configurations.

Default no li-separate

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access

Syntax [no] access [ftp] [snmp] [console] [li]

Context config>>system>security>user

Description This command grants a user permission for FTP, SNMP, console or lawful intercept (LI) access. If a user requires access to more than one application, then multiple applications can be specified in a single command. Multiple commands are treated additively. The **no** form of command removes access for a specific application. **no access** denies permission for all management access methods. To deny a single access method, enter the **no** form of the command followed by the method to be denied, for example, **no access FTP** denies FTP access.

Default No access is granted to the user by default.

Parameters **ftp** — Specifies FTP permission.
snmp — Specifies SNMP permission. This keyword is only configurable in the **config>system>security>user** context.
console — Specifies console access (serial port or Telnet) permission.
li — Allows user to access CLI commands in the lawful intercept (LI) context.

profile

Syntax [no] profile *user-profile-name*

Context config>system>security

Description This command creates a context to create user profiles for CLI command tree permissions. Profiles are used to either deny or permit user console access to a hierarchical branch or to specific commands. Once the profiles are created, the **user** command assigns users to one or more profiles. You can define up to 16 user profiles but a maximum of 8 profiles can be assigned to a user. The *user-profile-name* can consist of up to 32 alphanumeric characters. The **no** form of the command deletes a user profile.

Default user-profile default

Parameters *user-profile-name* — The user profile name entered as a character string. The string is case sensitive and limited to 32 ASCII 7-bit printable characters with no spaces.

li

Syntax li

Context config>system>security>profile

Description This command enables the Lawful Intercept (LI) profile identifier.

Default no li

