I Commands

This chapter describes the Cisco NX-OS system management commands that begin with the letter I.

icam monitor entries

To enable Intelligent CAM (iCAM) monitoring of ternary content addressable memory (TCAM) entries, use the **icam monitor entries** command. To disable the iCAM monitoring of TCAM entries, use the **no** form of this command.

icam monitor entries {**acl module** *module* **inst** *instance* | **multicast module** *module*}

no icam monitor entries {**acl module** *module* **inst** *instance* | **multicast module** *module*}

Syntax Description

acl	Specifies the TCAM entries.
module *module*	Specifies the module number. The range is from 1–18 for an 18-slot chassis, and from 1–9 for a 9-slot chassis.
inst *instance*	Specifies the ASIC or forwarding engine instance number. The range is from 0–11.
multicast	Specifies the multicast entries.

Command Default

iCAM monitoring of TCAM entries is not enabled. The historical traffic analytics and predictive analytics cannot be obtained for TCAM entries.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco NX-OS Release 8.2(1)	This command was introduced.

Usage Guidelines

To use the **icam monitor entries** command, you must enable the iCAM feature using the **feature icam** command.

Examples

This example shows how to enable iCAM monitoring on TCAM entries and multicast entries:

```
switch# configure terminal
switch(config)# icam monitor entries acl module 3 inst 0
switch(config)# icam monitor entries multicast module 3
```

This example shows how to disable iCAM monitoring on TCAM entries and multicast entries:

```
switch# configure terminal
switch(config)# no icam monitor entries acl module 3 inst 0
switch(config)# no icam monitor entries multicast module 3
```

Related Commands

Command	Description
feature icam	Enables the iCAM feature.
icam monitor interval	Configures the iCAM monitor interval and the number of intervals in an iCAM monitor history.
icam monitor resource	Enables iCAM monitoring on TCAM resources.
show icam entries acl	Displays traffic analytics of the ACL TCAM, which includes RACL, VACL, QoS, PBR, WCCP, CoPP, and so on.
show icam entries multicast	Displays traffic analytics of multicast entries.
show icam prediction entries acl	Displays machine-learning predictive analytics of the TCAM entries.
show icam prediction entries multicast	Displays machine-learning predictive analytics of multicast entries.
show icam prediction resource	Displays machine-learning predictive analytics of TCAM resource utilization.
show icam resource	Displays TCAM resource utilization.

icam monitor interval

To configure the Intelligent CAM (iCAM) monitor interval and the number of intervals in an iCAM monitor history, use the **icam monitor interval** command. To return the monitor interval and the number of intervals to their default values, use the **no** form of this command.

icam monitor interval *interval-hours* **num_intervals** *num_intervals*

no icam monitor interval *interval-hours* **num_intervals** *num_intervals*

Syntax Description

interval *interval-hours*	Specifies the iCAM monitor interval, in hours. The range is from 1–12. The default is 1, and the interval duration is 7200 sec.
num_intervals *num_intervals*	Specifies the number of intervals in iCAM monitor history. The range is from 168–1344. The default is 168.

Command Default

The iCAM feature uses the default values of the monitor interval and the number of intervals while monitoring the TCAM entries and resources to obtain traffic analytics.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco NX-OS Release 8.2(1)	This command was introduced.

Usage Guidelines

To use the **icam monitor interval** command, you must enable the iCAM feature using the **feature icam** command.

Examples

This example shows how to configure the iCAM monitoring interval and the number of intervals:

```
switch# configure terminal
switch(config)# icam monitor interval 2 num_intervals 200
```

This example shows how to reset the iCAM monitoring interval and the number of intervals:

```
switch# configure terminal
switch(config)# no icam monitor interval 2 num_intervals 200
```

Related Commands

Command	Description
feature icam	Enables the iCAM feature.
icam monitor entries	Enables monitoring of the TCAM entries.
icam monitor resource	Enables monitoring of the TCAM resources.

Command	Description
show icam entries acl	Displays traffic analytics of the ACL TCAM, which includes RACL, VACL, QoS, PBR, WCCP, CoPP, and so on.
show icam entries multicast	Displays traffic analytics of multicast entries.
show icam prediction entries acl	Displays machine-learning predictive analytics of TCAM entries.
show icam prediction entries multicast	Displays machine-learning predictive analytics of multicast entries.
show icam prediction resource	Displays machine-learning predictive analytics of TCAM resource utilization.
show icam resource	Displays TCAM resource utilization.

icam monitor resource

To enable Intelligent CAM (iCAM) monitoring on ternary content addressable memory (TCAM) resources, use the **icam monitor resource** command. To disable iCAM monitoring on TCAM resources, use the **no** form of this command.

icam monitor resource {**acl_tcam** | **fib_tcam**} **module** *module* **inst** *instance*

no icam monitor resource {**acl_tcam** | **fib_tcam**} **module** *module* **inst** *instance*

Syntax Descriptionn

acl_tcam	Specifies the access control list (ACL) TCAM resources.
module *module*	Specifies the module number. The range is from 1–18 for an 18-slot chassis, and from 1–9 for a 9-slot chassis.
inst *instance*	Specifies the ASIC or forwarding engine instance number. The range is from 0–11.
fib_tcam	Specifies the forwarding information base (FIB) TCAM resources.

Command Default

iCAM monitoring of TCAM resources are not enabled. The historical traffic analytics and predictive analytics cannot be obtained for TCAM resources.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco NX-OS Release 8.2(1)	This command was introduced.

Usage Guidelines

To use the **icam monitor resource** command, you must enable the iCAM feature using the **feature icam** command.

Examples

This example shows how to enable iCAM monitoring on ACL TCAM and FIB TCAM resources:

```
switch# configure terminal
switch(config)# icam monitor resource acl_tcam module 3 inst 0
switch(config)# icam monitor resource fib_tcam module 3 inst 0
```

This example shows how to disable iCAM monitoring on ACL TCAM and FIB TCAM resources:

```
switch# configure terminal
switch(config)# no icam monitor resource acl_tcam module 3 inst 0
switch(config)# no icam monitor resource fib_tcam module 3 inst 0
```

Related Commands

Command	Description
feature icam	Enables the iCAM feature.
icam monitor entries	Enables monitoring of TCAM entries.
icam monitor interval	Configures the iCAM monitor interval and the number of intervals in an iCAM monitor history.
show icam entries acl	Displays traffic analytics of the ACL TCAM, which includes RACL, VACL, QoS, PBR, WCCP, CoPP, and so on.
show icam entries multicast	Displays traffic analytics of multicast entries.
show icam prediction entries acl	Displays machine-learning predictive analytics of TCAM entries.
show icam prediction entries multicast	Displays machine-learning predictive analytics of multicast entries.
show icam prediction resource	Displays machine-learning predictive analytics of TCAM resource utilization.
show icam resource	Displays TCAM resource utilization.

ip access-list

To configure an IP access-list, use the **ip access-list** command.

ip access-list [*acl_name* | **match-local-traffic**]

Syntax Description

acl_name	Name of the access control list (ACL).
match-local-traffic	(Optional) Enables access-list matching for locally generated traffic.

Defaults

None

Command Modes

config-acl

SupportedUserRoles

network-admin
VDC-admin

Command History

Release	Modification
5.1(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

This example shows how to configure an IP access list:

```
switch# configure terminal
switch(config)# ip access-list match_12_pkts
switch(config-acl)# permit ip 12.0.0.0 0.255.255.255 any
switch(config-acl)#
```

Related Commands

Command	Description
filter access-group	Applies an access control group to an Encapsulated Remote Switched Port Analyzer (ERSPAN) source session.

ip dscp

To configure the differentiated devices code point (DSCP) value of the packets in the Encapsulated Remote Switched Port Analyzer (ERSPAN) traffic, use the **ip dscp** command.

ip dscp *dscp_value*

Syntax Description

dscp_value	Value of the DSCP of the packets in the ERSPAN traffic. The range is from 0 to 63.

Defaults

0

Command Modes

config-erspan-src

SupportedUserRoles

network-admin
network-operator

Command History

Release	Modification
5.1(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

This example shows how to configure the DSCP value of the packets in the ESRSPAN traffic:

```
switch# configure terminal
switch(config)# monitor session 5 type erspan-source
switch(config-erspan-src)# ip dscp 10
switch(config-erspan-src)#
```

Related Commands

Command	Description
ip ttl	Configures the IP time-to-live (TTL) value of the ERSPAN traffic.
monitor-session	Enters the monitor configuration mode for configuring an ERSPAN or SPAN session for analyzing traffic between ports.

ip flow monitor

To enable a Flexible NetFlow flow monitor for traffic that the router is receiving or forwarding, use the **ip flow monitor** command. To disable a Flexible NetFlow flow monitor, use the **no** form of this command.

ip flow monitor *monitor-name* {**input** | **output**} [**sampler** *sampler-name*]

Syntax Description

monitor-name	Name of a flow monitor that you previously configured.
input	Monitors traffic that the routers are receiving on the interface.
output	Monitors traffic that the routers are transmitting on the interface.
sampler	(Optional) Specifies the name of a flow sampler for the flow monitor.
sampler-name	Flow sampler for this flow monitor using the name of a sampler that you previously configured.

Defaults

Disabled

Command Modes

Interface configuration

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modification
4.0(1)	This command was introduced.

Usage Guidelines

You must have already created a flow monitor by using the **flow monitor** command before you can apply the flow monitor to an interface with the **ip flow monitor** command to enable traffic monitoring with Flexible NetFlow.

You must have already created a sampler by using the **sampler** command before you can enable a flow sampler for this flow monitor with the **ip flow monitor** command.

When adding a sampler to a flow monitor, only packets that are selected by the named sampler are entered into the cache to form flows. Each use of a sampler results in separate statistics being stored for that usage.

You cannot add a sampler to a flow monitor after the flow monitor has been enabled on an interface. You must remove the flow monitor from the interface before you enable the same flow monitor with a sampler. See the “Examples” section for more information.

Note The statistics for each flow needs to be scaled to give the expected true usage. For example, if you are using a 1 in 10 sampler, you must multiply the packet and byte counters by 10.

This command does not require a license.

Examples

This example shows how to enable a flow monitor for monitoring input traffic:

```
switch(config)# vlan  configuration 2
switch(config-vlan-config)# ip flow monitor FLOW-MONITOR-1 input
```

Note

- VLAN configuration mode enables you to configure VLANs independently of their creation, which is required for VTP client support.
- Egress NetFlow on VLAN is not supported

This example shows how to enable a flow monitor for monitoring output traffic:

```
switch(config)# interface ethernet0/0
switch(config-if)# ip flow monitor FLOW-MONITOR-1 output
```

This example shows how to enable the same flow monitor on the same interface for monitoring input and output traffic:

```
switch(config)# interface ethernet0/0
switch(config-if)# ip flow monitor FLOW-MONITOR-1 input
switch(config-if)# ip flow monitor FLOW-MONITOR-1 output
```

This example shows how to enable two different flow monitors on the same interface for monitoring input and output traffic:

```
switch(config)# interface ethernet0/0
switch(config-if)# ip flow monitor FLOW-MONITOR-1 input
switch(config-if)# ip flow monitor FLOW-MONITOR-2 output
```

This example shows how to enable the same flow monitor on two different interfaces for monitoring input and output traffic:

```
switch(config)# interface ethernet0/0
switch(config-if)# ip flow monitor FLOW-MONITOR-1 input
switch(config)# interface ethernet1/0
switch(config-if)# ip flow monitor FLOW-MONITOR-1 output
```

This example shows how to enable two different flow monitors on two different interfaces for monitoring input and output traffic:

```
switch(config)# interface ethernet0/0
switch(config-if)# ip flow monitor FLOW-MONITOR-1 input
switch(config)# interface ethernet1/0
switch(config-if)# ip flow monitor FLOW-MONITOR-2 output
```

This example shows how to enable a flow monitor for monitoring input traffic with a sampler to limit the input packets that are sampled:

```
switch(config)# interface ethernet0/0
switch(config-if)# ip flow monitor FLOW-MONITOR-1 input sampler SAMPLER-1
```

This example shows how to enable a flow monitor for monitoring output traffic with a sampler to limit the output packets that are sampled:

```
switch(config)# interface ethernet0/0
switch(config-if)# ip flow monitor FLOW-MONITOR-1 output sampler SAMPLER-1
```

This example shows how to enable two different flow monitors for monitoring input and output traffic with a sampler on the flow monitor that is monitoring input traffic to limit the input packets that are sampled:

```
switch(config)# interface ethernet0/0
switch(config-if)# ip flow monitor FLOW-MONITOR-1 input sampler SAMPLER-1
switch(config-if)# ip flow monitor FLOW-MONITOR-2 output
```

This example shows how to enable two different flow monitors for monitoring input and output traffic with a sampler on the flow monitor that is monitoring output traffic to limit the output packets that are sampled:

```
switch(config)# interface ethernet0/0
switch(config-if)# ip flow monitor FLOW-MONITOR-2 input
switch(config-if)# ip flow monitor FLOW-MONITOR-2 output sampler SAMPLER-1
```

This example shows what happens when you try to add a sampler to a flow monitor that has already been enabled on an interface without a sampler:

```
switch(config)# interface Ethernet0/0
switch(config-if)# ip flow monitor FLOW-MONITOR-1 input sampler SAMPLER-1
% Flow Monitor: Flow Monitor 'FLOW-MONITOR-1' is already on in full mode and cannot be
enabled with a sampler.
```

This example shows how to remove the flow monitor from the interface so that it can be enabled with the sampler:

```
switch(config)# interface Ethernet0/0
switch(config-if)# no ip flow monitor FLOW-MONITOR-1 input
switch(config-if)# ip flow monitor FLOW-MONITOR-1 input sampler SAMPLER-1
```

This example shows how to remove a sampler from a flow monitor on an interface by entering the **flow monitor** command again without the **sampler** *sampler-name* keyword and argument:

```
switch(config)# interface Ethernet0/0
switch(config-if)# ip flow monitor FLOW-MONITOR-1 input
% Flow Monitor: Flow Monitor 'FLOW-MONITOR-1' is already on in sampled mode and cannot be
enabled in full mode.
```

This example shows how to remove the flow monitor that was enabled with a sampler from the interface so that it can be enabled without the sampler:

```
switch(config)# interface Ethernet0/0
switch(config-if)# no ip flow monitor FLOW-MONITOR-1 input sampler SAMPLER-1
switch(config-if)# ip flow monitor FLOW-MONITOR-1 input
```

Related Commands

Command	Description
flow exporter	Creates a flow exporter.
flow monitor	Creates a flow monitor.
flow record	Creates a flow record.
sampler	Creates a flow sampler.

ip tftp source-interface

To configure source interface feature for TFTP client, use the **ip tftp source-interface** command. To disable this feature, use the **no** form of the command.

ip tftp source-interface ethernet *slot/chassis number* | **loopback** *virtual interface number*

no ip tftp source-interface ethernet *slot/chassis number* | **loopback** *virtual interface number*

Syntax Description

ethernet	Specifies the ethernet IEEE 802.3z.
slot/chassis number	Specifies the slot or chassis number. The range is from 1 to 253.
loopback	Specifies the loopback interface.
virtual interface number	Specifies the virtual interface number. The range is from 0 to 1023.

Defaults

None

Command Modes

Global configuration mode

SupportedUserRoles

network-admin
VDC-admin

Command History

Release	Modification
5.2(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

This example shows how to configure the ethernet IEEE 802.3z:

```
switch# configure terminal
switch(config)# ip tftp source-interface ethernet 1/ 1
switch(config)#
```

This example shows how to configure the loopback interface:

```
switch(config)# ip tftp source-interface loopback 1
switch(config)#
```

Related Commands

Command	Description
show ip tftp interface source-interface	Displays source TFTP client information.

ip ttl

To configure the IP time-to-live (TTL) value of the Encapsulated Remote Switched Port Analyzer (ERSPAN) traffic, use the **ip ttl** command.

ip ttl *ttl_value*

Syntax Description

ttl_value	Value of the IP TTL of the ERSPAN traffic. The range is from 1 to 255.

Defaults

255

Command Modes

config-erspan-src and config-erspan-dst

SupportedUserRoles

network-admin
network-operator

Command History

Release	Modification
5.1(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

This example shows how to configure the IP TTL value of the ESRSPAN source:

```
switch# configure terminal
switch(config)# monitor session 5 type erspan-source
switch(config-erspan-src)# ip ttl 30
switch(config-erspan-src)#
```

This example shows how to configure the IP TTL value of the ESRSPAN destination:

```
switch# configure terminal
switch(config)# monitor session 3 type erspan-destination
switch(config-erspan-dst)# ip ttl 35
switch(config-erspan-dst)#
```

Related Commands

Command	Description
ip dscp	Configures the DSCP value of the packets in the ERSPAN traffic.
monitor-session	Enters the monitor configuration mode for configuring an ERSPAN or SPAN session for analyzing traffic between ports.