ITD Commands

device-group

To add an existing device group to an Intelligent Traffic Director (ITD) service, use the **device-group** command. To remove the device group, use the **no** form of this command.

device-group *device-group-name*

no device-group *device-group-name*

Syntax Description

device-group-name	Name of the device group. You can enter up to 32 alphanumeric characters.

Defaults

None.

Command Modes

Device group configuration (config-device-group)

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modification
6.2(8)	This command was introduced.

Usage Guidelines

You must ensure that ITD is enabled before you enter this command. You can enter the **feature itd** global configuration mode command to enable ITD.

Use the **device-group** command to add an existing device group to the ITD service. You can configure the device group using the **itd device-group** command.

Note An ITD device group can have either IPv4 or IPv6 nodes, but not both.

Note Before modifying the service parameters or device-group parameters, you must enter the **shutdown** command. Once the required parameters are modified, you should enter the **no shutdown** command on the service.

This command requires the Enhanced Layer 2 Package license.

Examples

This example shows how to add a device group to an ITD:

```
switch(config)# feature itd
switch(config)# itd device-group dg
switch(config-device-group)# node ip 20.20.20.3
switch(config-device-group)# node ip 20.20.20.4
switch(config-device-group)# node ip 20.20.20.5
switch(config-device-group)# probe icmp
switch(config-device-group)# exit
switch(config)# itd test
switch(config-itd)# device-group dg
```

Related Commands

Command	Description
device-group	Creates an ITD device group.
feature itd	Enables the ITD service on the switch.
itd	Configures an ITD service.
node ip	Creates an IPv4 cluster node for ITD.
node ipv6	Creates an IPv6 cluster node for ITD.
probe	Configures the cluster group service probe for ITD.

failaction

To enable traffic to be reassigned to an active Intelligent Traffic Director (ITD) node, use the **failaction** command. To disable the node reassignment, use the **no** form of this command.

failaction node reassign

no failaction node reassign

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

ITD configuration (config-itd)

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modification
6.2(8)	This command was introduced.

Usage Guidelines

You must ensure that ITD is enabled before you enter this command. You can enter the **feature itd** global configuration mode command to enable ITD.

The **failaction** command enables traffic on failed nodes to be reassigned to the first available active node. Once the failed node comes back, it automatically resumes serving the connections.

Note An ITD probe must be configured prior to using the **failaction** command.

Note Only a device group with IPv4 nodes is supported with the **failaction** command.

Note Before modifying the service parameters or device-group parameters, you must enter the **shutdown** command. Once the required parameters are modified, you should enter the **no shutdown** command on the service.

This command requires the Enhanced Layer 2 Package license.

Examples

This example shows how to enable the reassignment of failed ITD nodes:

```
switch(config)# feature itd
switch(config)# itd test
switch(config-itd)# failaction node reassign
```

Related Commands

Command	Description
feature itd	Enables the ITD service on the switch.
itd	Configures an ITD service.
node ip	Creates an IPv4 cluster node for ITD.
node ipv6	Creates an IPv6 cluster node for ITD.
probe	Configures the cluster group service probe for ITD.

feature itd

To enable the Intelligent Traffic Director (ITD) feature, use the **feature itd** command. To disable the ITD feature, use the **no** form of this command.

feature itd

no feature itd

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled.

Command Modes

Global configuration

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modified
6.2(8)	This command was introduced.

Usage Guidelines

You must enable the ITD feature before you can configure ITD. When the ITD feature is disabled with the **no** command, all relevant configurations are removed.

Note Before modifying the service parameters or device-group parameters, you must enter the **shutdown** command. Once the required parameters are modified, you should enter the **no shutdown** command on the service.

This command requires the Enhanced Layer 2 Package license.

Examples

This example shows how to enable and verify the ITD feature:

```
switch# conf t
switch(config)# feature itd
switch# show feature | grep itd

itd                   1         enabled
```

Related Commands

ingress interface

To add an ingress interface or multiple interfaces to an Intelligent Traffic Director (ITD) service, use the **ingress interface** command. To remove the interface or interfaces, use the **no** form of this command.

ingress interface *interface*

no ingress interface *interface*

Syntax Description

interface	Ingress interface. You can enter a single interface, multiple interfaces, or a range of interfaces (see the usage guidelines section).

Defaults

None.

Command Modes

ITD configuration (config-itd)

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modification
6.2(8)	This command was introduced.

Usage Guidelines

You must ensure that ITD is enabled before you enter this command. You can enter the **feature itd** global configuration mode command to enable ITD.

You can enter a single interface, multiple interfaces, or a range of interfaces using the **ingress interface** command:

- Use a comma (",") to separate multiple interfaces:

```
switch(config-itd)# ingress interface Ethernet 4/1, Ethernet 4/2
```

- Use a hyphen ("-") to separate a range of interfaces:

```
switch(config-itd)# ingress interface Ethernet 4/1-10
switch(config-itd)# ingress interface vlan 1-100
```

Note Before modifying the service parameters or device-group parameters, you must enter the **shutdown** command. Once the required parameters are modified, you should enter the **no shutdown** command on the service.

This command requires the Enhanced Layer 2 Package license.

Examples

This example shows how to configure multiple ingress interfaces for the ITD service:

```
switch(config)# feature itd
switch(config)# itd device-group dg
switch(config-device-group)# node ip 20.20.20.3
switch(config-device-group)# node ip 20.20.20.4
switch(config-device-group)# node ip 20.20.20.5
switch(config-device-group)# probe icmp
switch(config-device-group)# exit
switch(config)# itd test
switch(config-itd)# device-group dg
switch(config-itd)# ingress interface Ethernet 4/1, Ethernet 4/2
```

This example shows how to configure a range of ingress interfaces for the ITD service:

```
switch(config)# feature itd
switch(config)# itd device-group dg
switch(config-device-group)# node ip 20.20.20.3
switch(config-device-group)# node ip 20.20.20.4
switch(config-device-group)# node ip 20.20.20.5
switch(config-device-group)# probe icmp
switch(config-device-group)# exit
switch(config)# itd test
switch(config-itd)# device-group dg
switch(config-itd)# ingress interface Ethernet 4/1-10
```

Related Commands

Command	Description
device-group	Adds an existing device group to an ITD service
feature itd	Enables the ITD service on the switch.
itd device-group	Creates an ITD device group.
node ip	Creates an IPv4 cluster node for ITD.
node ipv6	Creates an IPv6 cluster node for ITD.

itd

To configure an Intelligent Traffic Director (ITD) service and to enter into ITD configuration mode, use the **itd** command. To remove the ITD service, use the **no** form of this command.

itd *service-name*

no itd *service-name*

Syntax Description

service-name	Name of the ITD service. You can enter up to 32 alphanumeric characters.

Defaults

Disabled.

Command Modes

Global configuration

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modified
6.2(8)	This command was introduced.

Usage Guidelines

You must ensure that ITD is enabled before you enter this command. You can enter the **feature itd** global configuration mode command to enable ITD.

Note Before modifying the service parameters or device-group parameters, you must enter the **shutdown** command. Once the required parameters are modified, you should enter the **no shutdown** command on the service.

This command requires the Enhanced Layer 2 Package license.

Examples

This example shows how to configure an ITD service and to enter into ITD configuration mode:

```
switch(config)# feature itd
switch(config)# itd test
switch(config-itd)
```

Related Commands

Command	Description
feature itd	Enables the ITD service on the switch.
show itd	Displays ITD configuration information.

itd device-group

To create an Intelligent Traffic Director (ITD) device group and enter device group configuration mode, use the **itd device-group** command. To remove the ITD device group, use the **no** form of this command.

itd device-group *name*

no itd device-group *name*

Syntax Description

name	Name of the ITD device group. You can enter up to 32 alphanumeric characters.

Defaults

Disabled.

Command Modes

Global configuration

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modified
6.2(8)	This command was introduced.

Usage Guidelines

You must ensure that ITD is enabled before you enter this command. You can enter the **feature itd** global configuration mode command to enable ITD.

Note Before modifying the service parameters or device-group parameters, you must enter the **shutdown** command. Once the required parameters are modified, you should enter the **no shutdown** command on the service.

This command requires the Enhanced Layer 2 Package license.

Examples

This example shows how to create a device group and enter into device group configuration mode:

```
switch(config)# feature itd
switch(config)# itd device-group dg
switch(config-device-group)#
```

Related Commands

Command	Description
feature itd	Enables the ITD service on the switch.

loadbalance

To configure the buckets, mask position, and/or the load-balancing method of an Intelligent Traffic Director (ITD) service, use the **loadbalance** command. To remove the configuration, use the **no** form of this command.

loadbalance [**buckets** *bucket-number*] [**mask-position** *position*] [**method** {**src-ip** | **dst-ip**}]

no loadbalance [**buckets** *bucket-number*] [**mask-position** *position*] [**method** {**src-ip** | **dst-ip**}]

Syntax Description

buckets *bucket-number*	(Optional) Specifies the number of buckets to create. The range is from 2 to 256, in powers of 2.
mask-position *position*	(Optional) Specifies the mask position number. The range is from 0 to 31.
method src-ip	(Optional) Specifies the source IP address based load/traffic distribution.
method dst-ip	(Optional) Specifies the destination IP address based load/traffic distribution.

Defaults

None.

Command Modes

ITD configuration (config-itd)

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modification
6.2(8)	This command was introduced.

Usage Guidelines

You must ensure that ITD is enabled before you enter this command. You can enter the **feature itd** global configuration mode command to enable ITD.

The options for the **loadbalance** command are as follows:

- **buckets**—Specifies the number of buckets to create. Buckets must be configured in powers of two. One or more buckets are mapped to a node in the cluster.

  If you configure more buckets than the number of nodes, the buckets are applied in a round-robin fashion across all the nodes.

- **mask-position**—Specifies the mask position of the load balancing. This command is useful when a packet classification has to be made based on specific octets or bit of an IP addresses. By default, the system uses the last octet/least significant bit (LSB) for bucketing. If you prefer to use

nondefault bits/octets, you can use the mask-position keyword to provide the starting point at which the traffic classification is to be made. For example, the starting point is at the 8th bit for the second octet and the 16th bit for the third octet of an IP address.

- **method**—Specifies the source IP address or destination IP address based load/traffic distribution.

Note Before modifying the service parameters or device-group parameters, you must enter the **shutdown** command. Once the required parameters are modified, you should enter the **no shutdown** command on the service.

This command requires the Enhanced Layer 2 Package license.

Examples

This example shows how to configure load balancing for ITD:

```
switch(config)# feature itd
switch(config)# itd device-group dg
switch(config-device-group)# node ip 20.20.20.3
switch(config-device-group)# node ip 20.20.20.4
switch(config-device-group)# node ip 20.20.20.5
switch(config-device-group)# probe icmp
switch(config-device-group)# exit
switch(config)# itd test
switch(config-itd)# device-group dg
switch(config-itd)# ingress interface Ethernet 4/1-10
switch(config-itd)# loadbalance buckets 16 mask-position 8 method src-ip
```

Related Commands

Command	Description
feature itd	Enables the ITD service on the switch.
ingress-interface	Adds an ingress interface or multiple interfaces to an ITD service.
itd	Configures an ITD service.
itd device-group	Creates an ITD device group.
node ip	Creates an IPv4 cluster node for ITD.
node ipv6	Creates an IPv6 cluster node for ITD.
probe	Configures the cluster group service probe for ITD.

node ip

To create an IPv4 cluster node for Intelligent Traffic Director (ITD), use the **node ip** command. To remove the cluster node, use the **no** form of this command.

node ip *ipv4-address* [**mode hot-standby**]

no node ip *ipv4-address* [**mode hot-standby**]

Syntax Description

ipv4-address	IPv4 address for the node.
mode hot-standby	(Optional) Specifies that the node is a standby node.

Defaults

None.

Command Modes

Device group configuration (config-device-group)

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modification
6.2(8)	This command was introduced.

Usage Guidelines

You must ensure that ITD is enabled before you enter this command. You can enter the **feature itd** global configuration mode command to enable ITD.

The **node ip** *ip-address* **mode hot-standby** command allows you to specify that a particular node is the standby node if a failure occurs. ITD redirects traffic away from the failed node to the newly active (standby) node. When the failed node becomes operational again, it is reinstated as an active node and traffic from the standby node is redirected back to the original node. The standby node reenters the pool of standby nodes.

Note An ITD device group can have either IPv4 or IPv6 nodes, but not both.

Note Before modifying the service parameters or device-group parameters, you must enter the **shutdown** command. Once the required parameters are modified, you should enter the **no shutdown** command on the service.

This command requires the Enhanced Layer 2 Package license.

Examples

This example shows how to configure IPv4 nodes for ITD:

```
switch(config)# feature itd
switch(config)# itd device-group dg
switch(config-device-group)# node ip 20.20.20.2
switch(config-device-group)# node ip 20.20.20.3
switch(config-device-group)# node ip 20.20.20.4
switch(config-device-group)# node ip 20.20.20.5 mode hot standby
```

Related Commands

Command	Description
feature itd	Enables the ITD service on the switch.
itd device-group	Creates an ITD device group.
node ipv6	Creates an IPv6 cluster node for ITD.

node ipv6

To create an IPv6 cluster node for Intelligent Traffic Director (ITD), use the **node ipv6** command. To remove the cluster node, use the **no** form of this command.

node ipv6 *ipv6-address* [**mode hot-standby**]

no node ipv6 *ipv6-address* [**mode hot-standby**]

Syntax Description

ipv6-address	IPv6 address for the node in the format A:B::C:D.
mode hot-standby	(Optional) Specifies that the node is a standby node.

Defaults

None.

Command Modes

Device group configuration (config-device-group)

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modification
6.2(8)	This command was introduced.

Usage Guidelines

You must ensure that ITD is enabled before you enter this command. You can enter the **feature itd** global configuration mode command to enable ITD.

The **node ipv6** *ipv6-address* **mode hot-standby** command allows you to specify that a particular node is the standby node if a failure occurs. ITD redirects traffic away from the failed node to the newly active (standby) node. When the failed node becomes operational again, it is reinstated as an active node and traffic from the standby node is redirected back to the original node. The standby node reenters the pool of standby nodes.

Note An ITD device group can have either IPv4 or IPv6 nodes, but not both.

Note Before modifying the service parameters or device-group parameters, you must enter the **shutdown** command. Once the required parameters are modified, you should enter the **no shutdown** command on the service.

This command requires the Enhanced Layer 2 Package license.

Examples

This example shows how to configure IPv6 nodes for ITD:

```
switch(config)# feature itd
switch(config)# itd device-group dg
switch(config-device-group)# node ipv6 ffff:eeee::dddd:eeee fefe:efef::dcdc:cccc
```

Related Commands

Command	Description
feature itd	Enables the ITD service on the switch.
itd device-group	Creates an ITD device group.
node ip	Creates an IPv4 cluster node for ITD.

probe

To configure the cluster group service probe for Intelligent Traffic Director (ITD), use the **probe** command. To remove the service probe, use the **no** form of this command.

probe {**icmp** | **tcp port** *port-number* | **udp port** *port-number*} [**frequency** *seconds*] [**retry-count** *number*] [**timeout** *seconds*]

no probe {**icmp** | **tcp port** *port-number* | **udp port** *port-number*} [**frequency** *seconds*] [**retry-count** *number*] [**timeout** *seconds*]

Syntax Description

icmp	Specifies the Internet Control Message Protocol (ICMP) as the probe for the device group.
tcp	Specifies the Transmission Control Protocol (TCP) as the probe for the device group.
port *port-number*	Specifies the port number of the protocol.
udp	Specifies the User Datagram Protocol (UDP) as the probe for the device group.
frequency *seconds*	(Optional) Specifies the frequency of the probe in seconds. The range is from 1 to 604800.
retry-count *number*	(Optional) Specifies the number of recounts undertaken by the probe. The range is from 1 to 5.
timeout *seconds*	(Optional) Length of the timeout period in seconds. The range is from 1 to 604800.

Defaults

None.

Command Modes

Device group configuration (config-device-group)

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modification
6.2(8)	This command was introduced.

Usage Guidelines

You must ensure that ITD is enabled before you enter this command. You can enter the **feature itd** global configuration mode command to enable ITD.

You can use the service probe to periodically monitor the node health. The ITD feature supports PING, TCP, and UDP probes. The connected appliance must support PING, TCP, or UDP probes and should be configured to respond to probes that are initiated by ITD.

ITD probes all cluster group nodes including the nodes that are configured as hot standby.

Note Probes are not supported for a device group with IPv6 nodes.

Note Before modifying the service parameters or device-group parameters, you must enter the **shutdown** command. Once the required parameters are modified, you should enter the **no shutdown** command on the service.

This command requires the Enhanced Layer 2 Package license.

Examples

This example shows how to configure an ICMP probe:

```
switch(config)# feature itd
switch(config)# itd device-group dg
switch(config-device-group)# node ip 20.20.20.3
switch(config-device-group)# node ip 20.20.20.4
switch(config-device-group)# node ip 20.20.20.5
switch(config-device-group)# probe icmp
```

Related Commands

Command	Description
failaction	Enables traffic to be reassigned, following node failure.
feature itd	Enables the ITD service on the switch.
itd device-group	Creates an ITD device group.
node ip	Creates an IPv4 cluster node for ITD.
node ipv6	Creates an IPv6 cluster node for ITD.

show itd

To display the status and configuration for all or specified Intelligent Traffic Director (ITD) services, use the **show itd** command.

show itd [*itd-name*] [**brief**]

Syntax Description

itd-name	(Optional) Name of the ITD service. You can enter up to 32 alphanumeric characters.
brief	(Optional) Displays a summary of the ITD service information.

Defaults

None.

Command Modes

User EXEC

Privileged EXEC

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modification
6.2(8)	This command was introduced.

Usage Guidelines

The **show itd** command displays the status and configuration for all ITD service instances on the device.

The **show itd** *itd-name* command allows you to display information for the specific ITD service instance.

The **brief** keyword allows you to display summarized information.

This command requires the Enhanced Layer 2 Package license.

Examples

This example shows how to display information about all the ITD service instances on the device:

```
switch(config)# show itd

Name       Probe LB Scheme  Status   Buckets
---------- ----- ---------- -------- -------
WEB-SERVERS N/A   src-ip     ACTIVE   8

Device Group
------------------------------------------------
IPV6_SERVER_FARM

Route Map                     Interface    Status Track_id
----------------------------- ------------ ------ ---------
WEB-SERVERS_itd_routemap        Eth6/13      UP       9
```

```
Virtual IP                                Netmask/Prefix Protocol     Port
------------------------------------------------------ ------------ ----------
1:1::1:1 / 64                                          IP           0

  Node  IP                            Config-State Status     Track_id  Sla_id
  ----------------------------------- ------------ ---------- --------- ---------
  1     100:100::100:100              Active       OK          None      None

        IP Access List
        ------------------------------------------------------------
        WEB-SERVERS_nice_vip_0_acl_0
        WEB-SERVERS_nice_vip_0_acl_5

  Node  IP                            Config-State Status     Track_id  Sla_id
  ----------------------------------- ------------ ---------- --------- ---------
  2     200:200::200:200              Active       OK          None      None

        IP Access List
        ------------------------------------------------------------------------
        WEB-SERVERS_nice_vip_0_acl_1
        WEB-SERVERS_nice_vip_0_acl_6

  Node  IP                            Config-State Status     Track_id  Sla_id
  ----------------------------------- ------------ ---------- --------- ---------
  3     300:300::300:300              Active       OK          None      None

        IP Access List
        ------------------------------------------------------------------------
        WEB-SERVERS_nice_vip_0_acl_2
        WEB-SERVERS_nice_vip_0_acl_7

  Node  IP                            Config-State Status     Track_id  Sla_id
  ----------------------------------- ------------ ---------- --------- ---------
  4     500:500::500:500              Active       OK          None      None

        IP Access List
        ------------------------------------------------------------------------
        WEB-SERVERS_nice_vip_0_acl_3

  Node  IP                            Config-State Status     Track_id  Sla_id
  ----------------------------------- ------------ ---------- --------- ---------
  5     600:600::600:600              Active       OK          None      None

        IP Access List
        ------------------------------------------------------------------------
        WEB-SERVERS_nice_vip_0_acl_4

  Node  IP                            Config-State Status     Track_id  Sla_id
  ----------------------------------- ------------ ---------- --------- ---------
  6     700:700::700:700              Standby      Standby     None      None

        IP Access List
        ------------------------------------------------------------------------


  Node  IP                            Config-State Status     Track_id  Sla_id
  ----------------------------------- ------------ ---------- --------- ---------
  7     400:400::400:400              Standby      Standby     None      None

        IP Access List
        ------------------------------------------------------------------------
```

```
Virtual IP                                Netmask/Prefix Protocol     Port
------------------------------------------------------ ------------ ----------
2:2::2:2 / 64                                         IP           0

Node  IP                           Config-State Status     Track_id  Sla_id
  ---------------------------------- ------------ ---------- --------- ---------
  1     100:100::100:100             Active       OK          None      None

        IP Access List
        ------------------------------------------------------------
        WEB-SERVERS_nice_vip_1_acl_0
        WEB-SERVERS_nice_vip_1_acl_5

  Node  IP                           Config-State Status     Track_id  Sla_id
  ---------------------------------- ------------ ---------- --------- ---------
  2     200:200::200:200             Active       OK          None      None

        IP Access List
        ------------------------------------------------------------------------
        WEB-SERVERS_nice_vip_1_acl_1
        WEB-SERVERS_nice_vip_1_acl_6

  Node  IP                           Config-State Status     Track_id  Sla_id
  ---------------------------------- ------------ ---------- --------- ---------
  3     300:300::300:300             Active       OK          None      None

        IP Access List
        ------------------------------------------------------------------------
        WEB-SERVERS_nice_vip_1_acl_2
        WEB-SERVERS_nice_vip_1_acl_7

  Node  IP                           Config-State Status     Track_id  Sla_id
  ---------------------------------- ------------ ---------- --------- ---------
  4     500:500::500:500             Active       OK          None      None

        IP Access List
        ------------------------------------------------------------------------
        WEB-SERVERS_nice_vip_1_acl_3

  Node  IP                           Config-State Status     Track_id  Sla_id
  ---------------------------------- ------------ ---------- --------- ---------
  5     600:600::600:600             Active       OK          None      None

        IP Access List
        ------------------------------------------------------------------------
        WEB-SERVERS_nice_vip_1_acl_4

  Node  IP                           Config-State Status     Track_id  Sla_id
  ---------------------------------- ------------ ---------- --------- ---------
  6     700:700::700:700             Standby      Standby     None      None

        IP Access List
        ------------------------------------------------------------------------


  Node  IP                           Config-State Status     Track_id  Sla_id
  ---------------------------------- ------------ ---------- --------- ---------
  7     400:400::400:400             Standby      Standby     None      None

        IP Access List
        ------------------------------------------------------------------------
```

This example shows how to display summarized information about the ITD service:

```
switch(config)# show itd brief

Name       Probe LB Scheme  Interface  Status   Buckets
---------- ----- ---------- ---------- -------- --------
WEB-SERVERS    N/A   src-ip     Eth6/13    ACTIVE   8

Device Group
-------------------------------------------------
IPV6_SERVER_FARM

Virtual IP                                Netmask/Prefix Protocol     Port
--------------------------------------------------------- ------------ ----------
1:1::1:1 / 64                                             IP           0

  Node  IP                                      Config-State Status     Track_id  Sla_id
  ----------------------------------------- ------------ ---------- --------- ---------
  1     100:100::100:100                        Active       OK           None      None
  2     200:200::200:200                        Active       OK           None      None
  3     300:300::300:300                        Active       OK           None      None
  4     500:500::500:500                        Active       OK           None      None
  5     600:600::600:600                        Active       OK           None      None
  6     700:700::700:700                        Standby      Standby      None      None
  7     400:400::400:400                        Standby      Standby      None      None

Virtual IP                                Netmask/Prefix Protocol     Port
--------------------------------------------------------- ------------ ----------
2:2::2:2 / 64                                             IP           0

Node  IP                                     Config-State Status     Track_id  Sla_id
  ----------------------------------------- ------------ ---------- --------- ---------
  1     100:100::100:100                        Active       OK           None      None
  2     200:200::200:200                        Active       OK           None      None
  3     300:300::300:300                        Active       OK           None      None
  4     500:500::500:500                        Active       OK           None      None
  5     600:600::600:600                        Active       OK           None      None
  6     700:700::700:700                        Standby      Standby      None      None
  7     400:400::400:400                        Standby      Standby      None      None
```

Related Commands

Command	Description
feature itd	Enables the ITD service on the switch.
show itd statistics	Displays the statistics for ITD services.

show itd statistics

To display the statistics for Intelligent Traffic Director (ITD) service, use the **show itd statistics** command.

show itd statistics [*itd-name*] [**brief**]

Syntax Description

itd-name	(Optional) Name of the ITD service. You can enter up to 32 alphanumeric characters.
brief	(Optional) Displays a summary of the ITD service information.

Defaults

None.

Command Modes

EXEC

Privileged EXEC

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modification
6.2(8)	This command was introduced.

Usage Guidelines

The **show itd statistics** command displays the statistics for all the ITD service instances on the device.

The **show itd statistics** *itd-name* command allows you to display the statistics for the specific ITD service instance.

The **brief** keyword allows you to display summarized information.

Before using the **show itd statistics** command, you need to enable the statistic by using the **route-map** *name* **pbr-statistics** command:

```
switch# route-map testmap pbr-statistics
switch# show itd statistics
```

To clear the statistics use the **clear route-map** *name* **pbr-statistics**.

This command requires the Enhanced Layer 2 Package license.

Examples

This example shows how to display the traffic information for the ITD service:

```
switch# show itd statistics
```

```
Service Name
-----------------------------------------------------------------------
WEB-SERVERS

Device Group
-----------------------------------------------------------------------
IPV4_SERVER_FARM

  Node  IP                                                Packets
  ----- ------------------------------------------------- ------------
  1     10.10.10.10                                       110

        IP Access List                                    Packets
        ------------------------------------------------- ------------
        WEB-SERVERS_itd_acl_0                             64
        WEB-SERVERS_itd_acl_5                             46

  Node  IP                                                Packets
  ----- ------------------------------------------------- ------------
  2     20.20.20.20                                       101

        IP Access List                                    Packets
        ------------------------------------------------- ------------
        WEB-SERVERS_itd_acl_1                             37
        WEB-SERVERS_itd_acl_6                             64


  Node  IP                                                Packets
  ----- ------------------------------------------------- ------------
  3     30.30.30.30                                       92

        IP Access List                                    Packets
        ------------------------------------------------- ------------
        WEB-SERVERS_itd_acl_2                             32
        WEB-SERVERS_itd_acl_7                             60

  Node  IP                                                Packets
  ----- ------------------------------------------------- ------------
  4     40.40.40.40                                       0

        IP Access List                                    Packets
        ------------------------------------------------- ------------

  Node  IP                                                Packets
  ----- ------------------------------------------------- ------------
  5     50.50.50.50                                       32

        IP Access List                                    Packets
        ------------------------------------------------- ------------
        WEB-SERVERS_itd_acl_3                             32

  Node  IP                                                Packets
  ----- ------------------------------------------------- ------------
  6     60.60.60.60                                       32

        IP Access List                                    Packets
        ------------------------------------------------- ------------
        WEB-SERVERS_itd_acl_4                             32

  Node  IP                                                Packets
  ----- ------------------------------------------------- ------------
  7     70.70.70.70                                       0

        IP Access List                                    Packets
```

```
       ---------------------------------------------- ------------

switch(config)# show itd statistics

Service Name
--------------------------------------------------------------------
WEB-SERVERS

Device Group
--------------------------------------------------------------------
IPV6_SERVER_FARM

  Node  IP                                            Packets
  ----- ------------------------------------------- ------------
  1     100:100::100:100                            110

        IP Access List                                Packets
        ---------------------------------------------- ------------
        WEB-SERVERS_itd_acl_0                         64
        WEB-SERVERS_itd_acl_5                         46

  Node  IP                                            Packets
  ----- ------------------------------------------- ------------
  2     200:200::200:200                            101

        IP Access List                                Packets
        ---------------------------------------------- ------------
        WEB-SERVERS_itd_acl_1                         37
        WEB-SERVERS_itd_acl_6                         64

  Node  IP                                            Packets
  ----- ------------------------------------------- ------------
  3     300:300::300:300                            92

        IP Access List                                Packets
        ---------------------------------------------- ------------
        WEB-SERVERS_itd_acl_2                         32
        WEB-SERVERS_itd_acl_7                         60

  Node  IP                                            Packets
  ----- ------------------------------------------- ------------
  4     500:500::500:500                            32

        IP Access List                                Packets
        ---------------------------------------------- ------------
        WEB-SERVERS_itd_acl_3                         32

  Node  IP                                            Packets
  ----- ------------------------------------------- ------------
  5     600:600::600:600                            32

        IP Access List                                Packets
        ---------------------------------------------- ------------
        WEB-SERVERS_itd_acl_4                         32

  Node  IP                                            Packets
  ----- ------------------------------------------- ------------
  6     700:700::700:700                             0

        IP Access List                                Packets
        ---------------------------------------------- ------------

  Node  IP                                            Packets
  ----- ------------------------------------------- ------------
```

```
7     400:400::400:400                                  0

      IP Access List                                   Packets
      ------------------------------------------------ ------------
```

Related Commands

Command	Description
feature itd	Enables the ITD service on the switch.
show itd	Displays the status and configuration for all or specified ITD services.

shutdown (ITD)

To shut down an instance of the Intelligent Traffic Director (ITD) in order to modify the parameters, use the **shutdown** command. To disable this function, use the **no** form of this command.

shutdown

no shutdown

Syntax Description

This command has no arguments or keywords.

Defaults

Enabled.

Command Modes

ITD configuration (config-itd)

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modification
6.2(8)	This command was introduced.

Usage Guidelines

You must ensure that ITD is enabled before you enter this command. You can enter the **feature itd** global configuration mode command to enable ITD.

Before modifying service parameters or device-group parameters, you must execute the **shutdown** command. Once the required parameters are modified, you should issue the **no shutdown** command on the service.

This command requires the Enhanced Layer 2 Package license.

Examples

This example shows how to shut down the ITD service:

```
switch(config)# itd test
switch(config-itd)# shutdown
```

Related Commands

Command	Description
feature itd	Enables the ITD service on the switch.

virtual ip

To configure the virtual IPv4 address of an Intelligent Traffic Director (ITD) service, use the **virtual ip** command. To remove the virtual IPv4 address, use the **no** form of this command.

virtual ip *ipv4-address ipv4-network-mask* [**tcp** | **udp** {*port-number* | **any**}] [**advertise** {**enable** | **disable**}]

no virtual ip *ipv4-address ipv4-network-mask* [**tcp** | **udp** {*port-number* | **any**}] [**advertise** {**enable** | **disable**}]

Syntax Description

ipv4-address	Virtual IPv4 address, in A.B.C.D format.
ipv4-network-mask	Virtual IP network mask, in m.m.m.m format.
tcp	(Optional) Allows the virtual IP address to accept flows from Transmission Control Protocol (TCP) connections only.
udp	(Optional) Allows the virtual IP address to accept flows from User Datagram Protocol (UDP) connections only.
port-number	Port number of the protocol. The range is from 0 to 65535.
any	Allows the virtual IPv4 address to accept flows destined to any port.
advertise enable	(Optional) Specifies that the virtual IP route is advertised to neighboring devices.
advertise disable	(Optional) Specifies that the virtual IP route is not advertised to neighboring devices.

Defaults

None.

Command Modes

ITD configuration (config-itd)

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modification
6.2(8)	This command was introduced.

Usage Guidelines

You must ensure that ITD is enabled before you enter this command. You can enter the **feature itd** global configuration mode command to enable ITD.

A virtual IP address (VIP) is an IP address assigned to multiple servers that are part of a device group, rather than being assigned to a specific single server or network interface card. Incoming data packets that are sent to the VIP address, are routed to actual servers from the Cisco Nexus 7000 Series device. Single or multiple VIPs can be configured as part of an ITD service. You can also specify a wildcard mask for a VIP address.

Note The VIP has to be in a different subnet than the server IP.

The **virtual ip** *ip-address ip-network-mask* **advertise enable** command creates a route on the device that is advertised to neighboring routers. Those routers forward packets that are destined to the VIP to the ingress interface on the Cisco Nexus 7000 Series device.

In some instances, it is not feasible to configure all the VIP TCP or UDP port numbers. You can use the **any** keyword to allow the VIP to accept flows destined to any port.

Note Before modifying the service parameters or device-group parameters, you must enter the **shutdown** command. Once the required parameters are modified, you should enter the **no shutdown** command on the service.

This command requires the Enhanced Layer 2 Package license.

Examples

These examples show how to configure a VIP:

```
switch(config)# feature itd
switch(config)# itd device-group dg
switch(config-device-group)# node ip 20.20.20.3
switch(config-device-group)# node ip 20.20.20.4
switch(config-device-group)# node ip 20.20.20.5
switch(config-device-group)# probe icmp
switch(config-device-group)# exit
switch(config)# itd test1
switch(config-itd)# device-group dg
switch(config-itd)# ingress interface Ethernet 4/1-10
switch(config-itd)# virtual ip 4.4.4.4 255.255.0.0 tcp any advertise enable

switch(config)# feature itd
switch(config)# itd device-group dg
switch(config-device-group)# node ip 1.1.1.1
switch(config-device-group)# node ip 1.1.1.2
switch(config-device-group)# node ip 1.1.1.3
switch(config-device-group)# node ip 1.1.1.4
switch(config-device-group)# exit
switch(config)# itd test2
switch(config-itd)# device-group dg
switch(config-itd)# virtual ip 11.22.33.44 255.255.255.255 tcp any
switch(config-itd)# virtual ip 11.22.33.55 255.255.0.0
switch(config-itd)# ingress interface Eth4/15
switch(config-itd)# no shutdown
```

Related Commands

Command	Description
device-group	Adds an existing device group to an ITD service.
feature itd	Enables the ITD service on the switch.
ingress-interface	Adds an ingress interface or multiple interfaces to an ITD service.
itd	Configures an ITD service.
itd device-group	Creates an ITD device group.

Command	Description
node ip	Creates an IPv4 cluster node for ITD.
node ipv6	Creates an IPv6 cluster node for ITD.
probe	Configures the cluster group service probe for ITD.
virtual ipv6	Configures the virtual IPv6 address of an ITD service.

virtual ipv6

To configure the virtual IPv6 address of an Intelligent Traffic Director (ITD) service, use the **virtual ipv6** command. To remove the virtual IPv6 address, use the **no** form of this command.

virtual ipv6 *ipv6-address* {*ipv6-network-mask* | *ipv6-prefix/length*} [**ip** | **tcp** {*port-number* | **any**} | **udp** {*port-number* | **any**}] [**advertise** {**enable** | **disable**}]

no virtual ipv6 *ipv6-address* {*ipv6-network-mask* | *ipv6-prefix/length*} [**ip** | **tcp** {*port-number* | **any**} | **udp** {*port-number* | **any**}] [**advertise** {**enable** | **disable**}]

Syntax Description

ipv6-address	Virtual IPv6 address, in A:B::C:D format.
ipv6-network-mask	Virtual IPv6 network mask, in A:B::C:D format.
ipv6-prefix/length	IPv6 prefix length. The range is from 0 to 128.
ip	(Optional) Performs load balancing for IP connections only.
tcp	(Optional) Allows the virtual IPv6 address to accept flows from the Transmission Control Protocol (TCP) connections only.
port-number	Port number of the protocol. The range is 0-65535.
udp	(Optional) Allows the virtual IPv6 address to accept flows from the User Datagram Protocol (UDP) connections only.
any	Allows the virtual IPv6 address to accept flows destined to any port.
advertise enable	(Optional) Specifies that the virtual IPv6 route is advertised to neighboring devices.
advertise disable	(Optional) Specifies that the virtual IPv6 route is not advertised to neighboring devices.

Defaults

None.

Command Modes

ITD configuration (config-itd)

SupportedUserRoles

network-admin
vdc-admin

Command History

Release	Modification
6.2(8)	This command was introduced.

Usage Guidelines

You must ensure that ITD is enabled before you enter this command. You can enter the **feature itd** global configuration mode command to enable ITD.

A virtual IP address (VIP) is an IP address assigned to multiple servers that are part of a device group, rather than being assigned to a specific single server or network interface card. Incoming data packets that are sent to the VIP address, are routed to actual servers from the Cisco Nexus 7000 Series device. Single or multiple VIPs can be configured as part of an ITD service.

Note The VIP has to be in a different subnet than the server IP.

The **virtual ipv6** *ipv6-address* **advertise enable** command creates a route on the device that is advertised to neighboring routers. Those routers forward packets that are destined to the VIP to the ingress interface on the Cisco Nexus 7000 Series device.

In some instances, it is not feasible to configure all the VIP TCP or UDP port numbers. You can use the **any** keyword to allow the VIP to accept flows destined to any port.

Note Before modifying the service parameters or device-group parameters, you must enter the **shutdown** command. Once the required parameters are modified, you should enter the **no shutdown** command on the service.

This command requires the Enhanced Layer 2 Package license.

Examples

These examples show how to configure a virtual IPv6 address:

```
switch(config)# feature itd
switch(config)# itd device-group dgv6
switch(config-device-group)# node ip 20.20.20.3
switch(config-device-group)# node ip 20.20.20.4
switch(config-device-group)# node ip 20.20.20.5
switch(config-device-group)# exit
switch(config)# itd test1
switch(config-itd)# device-group dg
switch(config-itd)# ingress interface Ethernet 4/1-10
switch(config-itd)# virtual ipv6 ffff:eeee::cccc:eeee dddd:efef::fefe:dddd tcp 10
advertise enable
switch(config-itd)# no shutdown

switch(config)# feature itd
switch(config)# itd device-group dgv6
switch(config-device-group)# node ip 20.20.20.3
switch(config-device-group)# node ip 20.20.20.4
switch(config-device-group)# node ip 20.20.20.5
switch(config-device-group)# exit
switch(config)# itd test2
switch(config-itd)# device-group dg
switch(config-itd)# virtual ipv6 11:22::33/64 tcp any
switch(config-itd)# virtual ipv6 11:22::44 ffff:ffff::ff tcp any
switch(config-itd)# ingress interface Eth4/14
switch(config-itd)# no shutdown
```

Related Commands

Command	Description
device-group	Adds an existing device group to an ITD service.
feature itd	Enables the ITD service on the switch.

Command	Description
ingress-interface	Adds an ingress interface or multiple interfaces to an ITD service.
itd	Configures an ITD service.
itd device-group	Creates an ITD device group.
node ip	Creates an IPv4 cluster node for ITD.
node ipv6	Creates an IPv6 cluster node for ITD.
probe	Configures the cluster group service probe for ITD.
virtual ip	Configures the virtual IPv4 address of an ITD service.