

Nexus 9000 Cisco Intelligent Traffic Director

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Introduction

This document describes the configuration and basic troubleshooting of Intelligent Traffic Director (ITD) on Nexus 9000 platform

Background

Cisco Intelligent Traffic Director (ITD) is as follows

- Providing ASIC- based (hardware) Traffic distribution for Layer 3 and 4 services and applications using Cisco Nexus 5/6/7/9K switches.
- It perform L3 and L4 traffic distribution but does not replace layer 7 load-balancers.
- Performs health monitoring and automatic failure handling of load balanced servers.
- It automatically creates ACL, Route-map policies to perform PBR functionality to redirect and Load balance traffic.

Components used

HW - C9372PX

SW - 7.0(3)I7(2)

License Requirement

Cisco NX-OS -ITD requires a Network Services license.

Following logs seen when "Feature ITD" is enabled and we do not have the required license.

```
VDC-1 %$ iscm[31793]: !!!!! WARNING: 'NETWORK_SERVICES_PKG' LICENSE NOT FOUND ON THE SYSTEM !!!!!. You have tried
```

```
VDC-1 %$ iscm[31793]: System supports honor based license.Feature will be enabled and fully functional.License usage
```

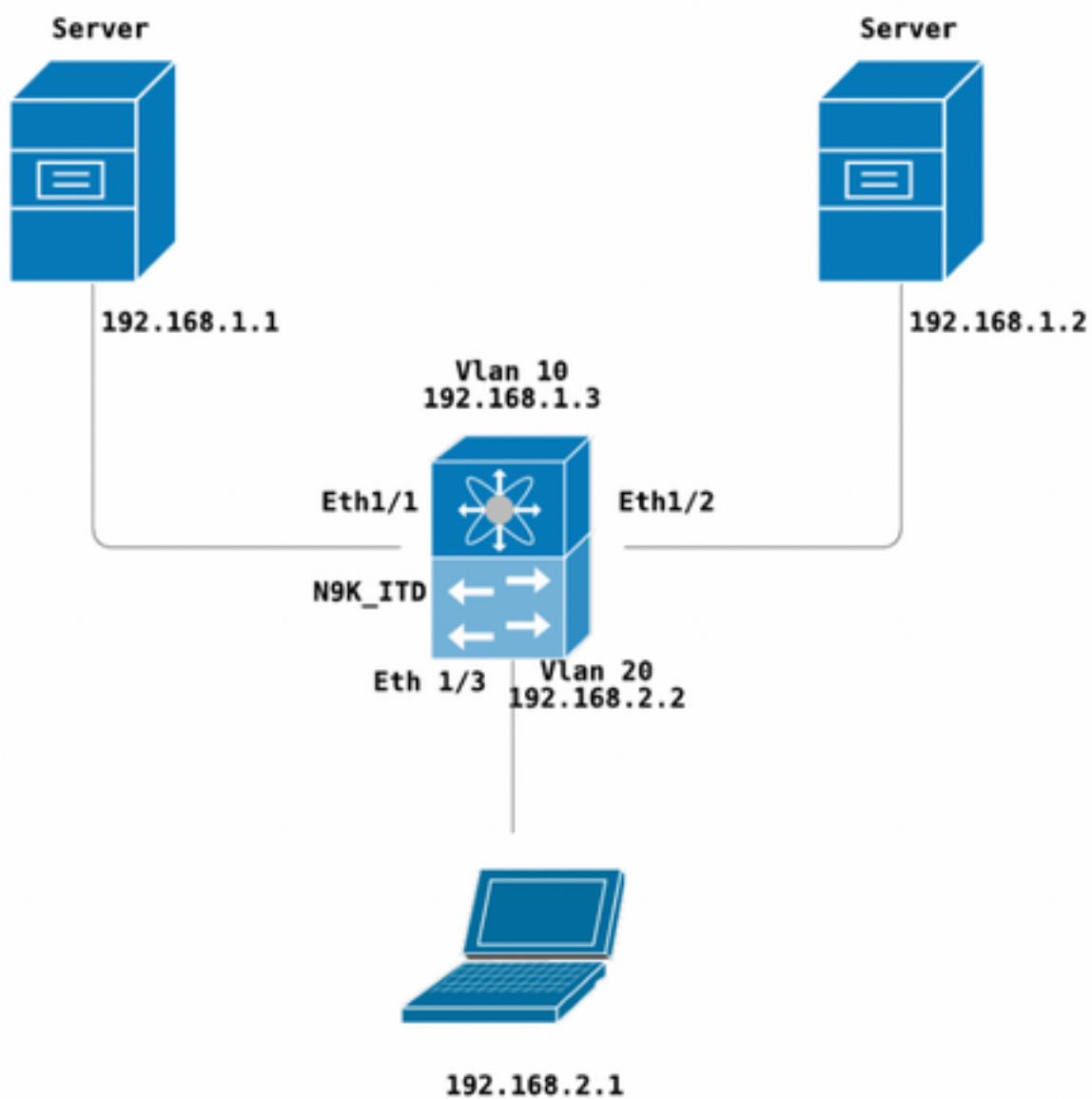
```
VDC-1 %$ iscm[31793]: If you have enabled this feature in error, please disable the feature. If you
```

have not purchasem

Features that we need to enable in order to use ITD

- Feature ITD
- Feature PBR
- Feature Sla Sender
- Feature SLA Responder *

Topology



Configure ITD

Four Primary steps to configure an ITD Service

- Create Device group
- Create ITD service
- Attach Device group to ITD Service
- Attach the Service to ingress interface

N9K_ITD

```
version 7.0(3)I7(2)
feature itd
```

```
itd device-group Test
  probe icmp
  node ip 192.168.1.1
  node ip 192.168.1.2
```

```
itd Telnet
  device-group Test ( Call the device group )
  virtual ip 192.168.2.2 255.255.255.255 tcp 23 ( Optional )
  ingress interface Vlan20 ( Assign ingress interface )
  no shut
```

```
interface Vlan20
  no shutdown
  ip address 192.168.2.2/24
  ip policy route-map Telnet_itd_pool ( This line gets automatically added when we "no shut" the
ITD service )
```

Note : Apply this to L2 interfaces gives following error. Create L3 interface or an SVI.

```
N9K_ITD(config-itd)# ingress interface ethernet 1/3
ERROR: Interface:Ethernet1/3 is not a layer-3 interface
```

Please note that the below config gets automatically added, these are the buckets that get created to each node defined to be LB via a PBR.

Show run | section ITD

```
feature itd
ip access-list Telnet_itd_vip_1_bucket_1
  10 permit tcp 1.1.1.0 255.255.255.127 192.168.2.4/32 eq telnet
ip access-list Telnet_itd_vip_1_bucket_2
  10 permit tcp 1.1.1.128 255.255.255.127 192.168.2.4/32 eq telnet
route-map Telnet_itd_pool permit 10
  description auto generated route-map for ITD service Telnet
  match ip address Telnet_itd_vip_1_bucket_1
  set ip next-hop verify-availability 192.168.1.1 track 2
route-map Telnet_itd_pool permit 11
  description auto generated route-map for ITD service Telnet
  match ip address Telnet_itd_vip_1_bucket_2
  set ip next-hop verify-availability 192.168.1.2 track 3
ip policy route-map Telnet_itd_pool
```

```
switch(config)# show route-map Telnet_itd_pool
route-map Telnet_itd_pool, permit, sequence 10
Description: auto generated route-map for ITD service Telnet
```

Match clauses:

ip address (access-lists): Telnet_itd_bucket_1

Set clauses:

ip next-hop verify-availability 192.168.1.1 track 2 [UP]

route-map Telnet_itd_pool, permit, sequence 11

Description: auto generated route-map for ITD service Telnet

Match clauses:

ip address (access-lists): Telnet_itd_bucket_2

Set clauses:

ip next-hop verify-availability 192.168.1.2 track 3 [UP]

Verifiy ITD

N9K_ITD(config)# show itd Telnet statistics

Service	Device Group	#Packets		VIP/mask
Telnet 255.255.255.255	Test	0	(0%)	192.168.2.2 /

Traffic Bucket Mode	Original Node	Assigned to #Packets		

Telnet_itd_vip_1_bucket_1 Bypass	192.168.1.1	0	(0%)	<<<<<<<<<<

Traffic Bucket Mode	Original Node	Assigned to #Packets		

Telnet_itd_vip_1_bucket_2 Bypass	192.168.1.2	0	(0%)	<<<<<<<<<<

N9K_ITD(config)# show itd Telnet statistics

Service	Device Group	#Packets		VIP/mask
Telnet 255.255.255.255	Test	0	(0%)	192.168.2.2 /

Traffic Bucket Mode	Original Node	Assigned to #Packets		

Telnet_itd_vip_1_bucket_1 Bypass	192.168.1.1	0	(0%)	<<<<<<<<<<

Traffic Bucket Mode	Original Node	Assigned to #Packets		

Telnet_itd_vip_1_bucket_2 Bypass	192.168.1.2	0	(0%)	<<<<<<<<<<

Telnet to the Vlan 20 Loadbalancer VIP (SVI)

N9K_ITD(config)# show itd Telnet statistics

Service	Device Group	#Packets		VIP/mask
Telnet	Test			192.168.2.2 /

255.255.255.255 0 (0%)

```
Traffic Bucket Assigned to
Mode Original Node #Packets
-----
Telnet_itd_vip_1_bucket_1 192.168.1.1
Bypass 192.168.1.1 0 (0%) <<<<<<<<<<<
```

```
Traffic Bucket Assigned to
Mode Original Node #Packets
-----
Telnet_itd_vip_1_bucket_2 192.168.1.2
Bypass 192.168.1.2 0 (0%) <<<<<<<<<<<
```

Packets received by VIP (31 packets)and forwarded to Node (192.168.1.1) 31 packets.

N9K_ITD(config)# show it Telnet statistics

```
Service Device Group VIP/mask
-----
#Packets
```

```
Telnet Test 192.168.2.2 /
255.255.255.255 31 (100.00%)
```

```
Traffic Bucket Assigned to
Mode Original Node #Packets
-----
Telnet_itd_vip_1_bucket_1 192.168.1.1
Redirect 192.168.1.1 31 (100.00%)
```

```
Traffic Bucket Assigned to
Mode Original Node #Packets
-----
Telnet_itd_vip_1_bucket_2 192.168.1.2
Redirect 192.168.1.2 0 (0.00%)
```

Known defects:

https://bst.cloudapps.cisco.com/bugsearch/bug/CSCvc73162/?refering_site=dumpcr