

Configure and Verify Maximum Transmission Unit on Cisco Nexus Platforms

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Introduction

This document describes how to configure and verify maximum transmission unit (MTU) on Cisco Nexus switches.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

This document is not restricted to specific software and hardware versions.

Configure

Layer 3 MTU Configurations

All Layer 3 ports, regardless of platform, are configured on a per-port basis.

Configure MTU on a Switched Virtual Interface (SVI)

```
Nexus(config)#interface vlan 1  
Nexus(config-if)#mtu 9216
```

Configure MTU on a Layer 3 Port

```
Nexus(config)#interface ethernet 1/1  
Nexus(config-if)#no switchport  
Nexus(config-if)#mtu 9216
```

Layer 2 MTU Configurations

Layer 2 MTU is set either through a network Quality of Service (QoS) policy or by configuring the port itself (on switches that support per-port MTU). Only the Nexus 7000, 9000, and certain 3000 models support per-port MTU.

Network QoS MTU Configuration

Nexus 3000: Includes Nexus 3048, 3064, 3132Q, 3132Q-X, 3132Q-XL, 3172, and 3500 Series switches

Nexus 5000: All Nexus 5000 and 5500 Series switches

Nexus 6000: All Nexus 6000 Series switches

In order to configure elevated MTU on these switches, create a **network-qos** policy or modify an existing policy in order to specify the elevated MTU. This configuration applies to all ports. This includes any Cisco Fabric Extender (FEX) ports connected to the switch. Per-port MTU is not supported.

```
policy-map type network-qos jumbo  
class type network-qos class-default  
mtu 9216  
system qos  
service-policy type network-qos jumbo
```

Per-Port MTU Configuration

Nexus 3000: Includes Nexus 3132Q-V, 3164, 31108, 31128PQ, 3200 Series, and 36180YC-R switches

Nexus 7000: All Nexus 7000- and 7700 Series switches

Nexus 9000: All Nexus 9200 Series switches (includes 92xxx), 9300 Series switches (includes 93xxx), and 9500 Series switches

In order to configure MTU on a per-port basis, this configuration is needed:

```
Nexus(config)#interface ethernet 1/1  
Nexus(config-if)#mtu 9216
```

Nexus 2000 Configuration

Note: The Nexus 2000 MTU is set with the configuration of jumbo frames on the parent switch. For parent switches that allow jumbo on a per-port basis, configure the FEX Fabric Port-channel (FPC). If the parent switch requires a **network-qos** policy then jumbo is set with the configuration of the parent switch's QoS policy. These changes are automatically pushed down to the FEX in both cases.

Per-Port Fabric Port Channel (FPC) Configuration (to be configured on the Parent Nexus Switch)

```
interface port-channel136  
switchport mode fex-fabric  
fex associate 136  
vpc 136  
mtu 9216
```

Note: The Nexus 7000 does not allow you to set FEX MTU with the FPC in Version 6.2 and later. You must instead create a custom QoS policy as the next configuration shows.

Nexus 7000 / FEX Jumbo Frame Configuration (only applies to version 6.2 and later)

Note: Modify the template currently in use. In order to find the current template in use, enter the **show policy-map system type network-qos** command.

```
7K(conf)#class-map type network-qos match-any c-nq-8e-custom  
7K(config-cmap-nqos)#match cos 0-7  
  
7K(config)#policy-map type network-qos nq-8e-custom template 8e  
7K(config-pmap-nqos)#class type network-qos c-nq-8e-custom  
7K(config-pmap-nqos-c)#congestion-control tail-drop  
7K(config-pmap-nqos-c)#mtu 9216  
  
7K(config)#system qos  
7K(config-sys-qos)#service-policy type network-qos nq-8e-custom
```

Network QoS Policy Configuration (to be configured on the Parent Nexus Switch)

```
policy-map type network-qos jumbo  
class type network-qos class-default  
mtu 9216  
system qos
```

```
service-policy type network-qos jumbo
```

Verify

Use this section in order to confirm that your configuration works properly.

The [Cisco CLI Analyzer](#) (registered customers only) supports certain **show** commands. Use the Cisco CLI Analyzer in order to view an analysis of **show** command output.

Layer 3 MTU

Verify Layer 3 MTU on all Nexus platforms with the **show interface eth x/y** command as this example shows:

```
Nexus# show interface ethernet 1/19
Ethernet1/19 is up
Dedicated Interface
Hardware: 100/1000/10000 Ethernet, address: 547f.ee5d.413c (bia 547f.ee5d.40fa)
MTU 9216 bytes, BW 1000000 Kbit, DLY 10 usec
```

Verify SVI MTU with the **show interface vlan X** command as this output shows:

```
Nexus# show interface vlan 1
Vlan1 is down (Non-routable VDC mode), line protocol is down
Hardware is EtherSVI, address is 547f.eed8.ec7c
Internet Address is 1.1.1.1/23
MTU 9216 bytes, BW 1000000 Kbit, DLY 10 usec
```

Layer 2 MTU

This section describes how to verify Layer 2 MTU per platform. The commands are run from the parent switch.

Verify the MTU on Switches That Use Network QoS

```
Nexus# show queuing interface ethernet 1/1
Ethernet1/1 queuing information:
TX Queuing
qos-group sched-type oper-bandwidth
0 WRR 100
RX Queuing
qos-group 0
q-size: 469760, HW MTU: 9216 (9216 configured)
```

```
-- or --
```

```
Nexus# show queuing interface ethernet 1/1
```

```
slot 1
=====
```

```
HW MTU of Ethernet1/1 : 9216 bytes
```

```
Egress Queuing for Ethernet1/1 [System]
```

Verify the MTU on Switches That Support Per-port MTU

```
Nexus# show interface ethernet 1/12
Ethernet1/12 is up
admin state is up, Dedicated Interface
Hardware: 1000/10000 Ethernet, address: 7c0e.ceca.f183 (bia 7c0e.ceca.f183)
MTU 9216 bytes, BW 10000000 Kbit, DLY 10 usec
```

Note: When the Nexus 3000 is on code earlier than 7.0(3)I2(2a), check the MTU value with the **show queuing interface ethernet x/x** command. Nexus 3000 switches that run 7.0(3)I2(2a) and later show the MTU size on a per-port basis.

Nexus 2000

Note: When you change the FEX MTU, the FEX increases its MTU to a higher, but predetermined, amount that does not match the configured value exactly. The parent device enforces the configured MTU at the FEX Fabric Port-Channel (FPC).

For a FEX connected to Nexus 5000, 6000, and 7000:

```
Nexus# show queuing interface ethernet 136/1/1
if_slot 68, ifidx 0x1f870000
Ethernet136/1/1 queuing information:
Input buffer allocation:
Qos-group: 0
frh: 3
drop-type: drop
cos: 0 1 2 3 4 5 6 7
xon xoff buffer-size
-----+-----+-----
19200 78080 90880
```

```
Queueing:
queue qos-group cos priority bandwidth mtu
-----+-----+-----+-----+-----+-----
3 0 0 1 2 3 4 5 6 WRR 100 9280
```

For a FEX connected to Nexus 9000:

```
9K# show interface ethernet 104/1/1
Ethernet104/1/1 is up
admin state is up,
Hardware: 100/1000 Ethernet, address: 5475.d0e0.e5c2 (bia 5475.d0e0.e5c2)
MTU 9216 bytes, BW 1000000 Kbit, DLY 10 usec
```

Troubleshoot

This section provides information you can use in order to troubleshoot your configuration.

The [Cisco CLI Analyzer](#) (registered customers only) supports certain **show** commands. Use the Cisco CLI Analyzer in order to view an analysis of **show** command output.

Note: Refer to [Important Information on Debug Commands](#) before you use **debug** commands.

Sometimes it is necessary to verify the changes in software. In order to do this, check the Ethernet port manager (ethpm) in order to verify that the changes were pushed through software on any platform:

```
Switch#show system internal ethpm info interface eth 6/5 | egrep -i mtu
medium(broadcast), snmp trap(on), MTU(4000)
```

It is also possible on M1, M2, F1, and F2 modules to verify in the hardware that the changes were pushed down:

```
module-1#show hardware internal mac port 20 state | i MTU
GD: Port speed Undecided GD MTU 10240 (fixed to max), PL MTU 9238 mode 0
```

Or, you can look at the QoS configuration on the linecard:

```
module-1# show hardware internal mac port 33 qos configuration | beg mtu
  vl  hw_mtu  pm_mtu  pm_adj  qos_mtu  qos_adj  last_mtu
  0   9238    9728    22     9216    22      9216
```

Impact

A mismatched MTU across a link might have an impact on routed interfaces with routing adjacencies and will cause a type 1 inconsistency with VPC if both sides of the VPC do not match MTU. Configure with caution.

More information on VPC consistency parameters and Type 1 Inconsistencies like MTU can be found in the [show vpc consistency-parameters command description](#).

Known Defects

Cisco bug ID [CSCuf20035](#) - (Nexus 7000) FEX MTU changes do not take effect on FEX queues.