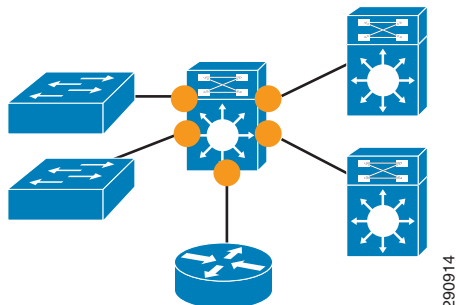


Role in Medianet Campus Network

The Cisco Catalyst 6500 series switches are well-suited to the role of distribution- or core-layer switches in medianet campus networks. As such, these switches typically connect directly to other switches or routers, as shown in Figure 1.

To simplify design, this document assumes the use of WS-X6716-10GE linecards.

Figure 1 Cisco Catalyst 6500 Switches in a Medianet Campus Network



QoS Design Steps

There are four main steps to configure QoS on Cisco Catalyst 6500 series switches:

1. Enable QoS
2. Configure DSCP-Trust
3. Configure Ingress Queuing
4. Configure Egress Queuing

Step 1: Globally Enable QoS

QoS is globally enabled on the Cisco Catalyst 6500 with the **mls qos** command.

Step 2: Configure DSCP-Trust

DSCP trust is configured with the **mls qos trust dscp** interface-configuration command.

Switch ports that can be set to trust DSCP are shown as yellow circles in Figure 1.

Step 3: Configure Ingress Queuing

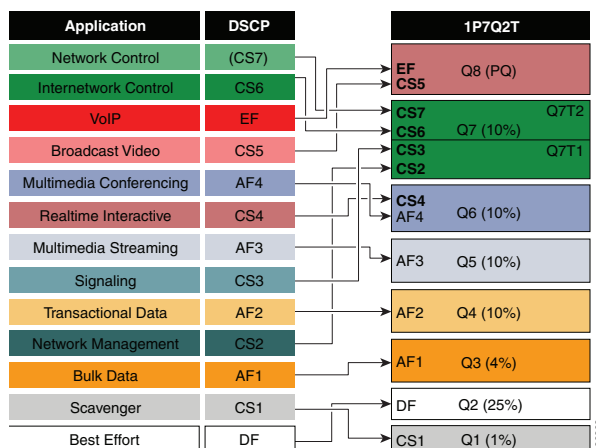
Three considerations need to be taken into account when determining if ingress queuing configuration is required on the Cisco Catalyst 6500 linecard:

- Is the linecard oversubscribed?
- Is the linecard operating in the distribution or core layers of the medianet campus network?
- Does the linecard support DSCP-to-Queue mapping?

Ingress queuing is only recommended when the answer to all three questions is Yes.

The medianet ingress queuing model for the Cisco Catalyst 6500 (with 6716 linecards) is shown in Figure 2.

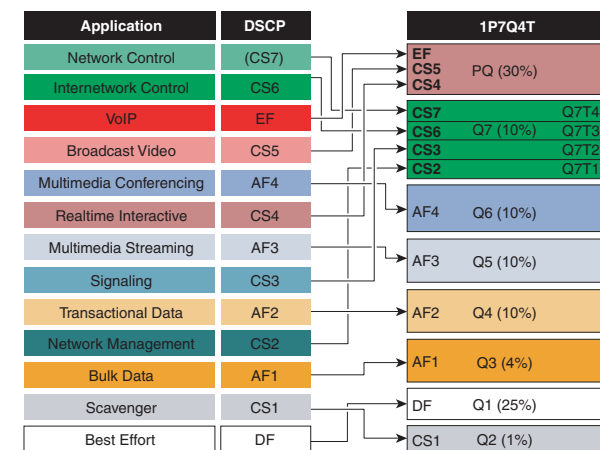
Figure 2 Catalyst 6500 (6716) Ingress Queuing Model



Step 4: Configure Egress Queuing

The medianet egress queuing model for the Cisco Catalyst 6500 (with 6708 or 6716 linecards) is shown in Figure 3.

Figure 3 Catalyst 6500 (6716) Egress Queuing Model



EtherChannel QoS

Ingress QoS policies on the Cisco Catalyst 6500 are configured on the logical Port-Channel interface (typically these are simply to enable DSCP trust), while egress QoS policies are configured on the physical port-member interfaces.

Cisco Validated Design (CVD)

The Cisco Validated Design for Cisco Catalyst 6500 series switches with WS-X6716-10GE linecards in the role of a distribution- or core-layer switch in a medianet campus network is presented on the reverse.

Step 1: Enable QoS`mls qos`**Step 2: Configure DSCP-Trust**`mls qos trust dscp`**Step 3: Configure Ingress Queuing**`mls qos queue-mode mode-dscp`Enables DSCP-based
Queue/Threshold Mapping

```
rcv-queue bandwidth 1 25 4 10 10 10 10
rcv-queue queue-limit 10 25 10 10 10 10 10
```

Ingress Queue
Tuning

```
rcv-queue threshold 1 100 100
rcv-queue threshold 2 100 100
rcv-queue threshold 3 80 100
rcv-queue threshold 4 80 100
rcv-queue threshold 5 80 100
rcv-queue threshold 6 80 100
rcv-queue threshold 7 80 100
```

Ingress
Threshold
Tuning

```
rcv-queue dscp-map 1 2 8
rcv-queue dscp-map 2 2 0
rcv-queue dscp-map 3 1 12 14
rcv-queue dscp-map 3 2 10
rcv-queue dscp-map 4 1 20 22
rcv-queue dscp-map 4 2 18
rcv-queue dscp-map 5 1 28 30
rcv-queue dscp-map 5 2 26
rcv-queue dscp-map 6 1 36 38
rcv-queue dscp-map 6 2 32 34
rcv-queue dscp-map 7 1 16 24
rcv-queue dscp-map 7 2 48 56
```

Ingress
DSCP-to-Queue/Threshold
Mapping**Step 4: Configure Egress Queuing**

```
wrr-queue queue-limit 10 25 10 10 10 10 10
wrr-queue bandwidth 1 25 4 10 10 10 10
priority-queue queue-limit 15
```

Egress Queue
Tuning**Step 4: Configure Egress Queuing (continued)**

```
wrr-queue random-detect 1
wrr-queue random-detect 2
wrr-queue random-detect 3
wrr-queue random-detect 4
wrr-queue random-detect 5
wrr-queue random-detect 6
wrr-queue random-detect 7
```

Enables WRED
on Egress Queues 1-7

```
wrr-queue random-detect max-threshold 1 100 100 100 100
wrr-queue random-detect min-threshold 1 80 100 100 100
wrr-queue random-detect max-threshold 2 100 100 100 100
wrr-queue random-detect min-threshold 2 80 100 100 100
wrr-queue random-detect max-threshold 3 80 90 100 100
wrr-queue random-detect min-threshold 3 70 80 90 100
wrr-queue random-detect max-threshold 4 70 80 90 100
wrr-queue random-detect min-threshold 4 80 90 100 100
wrr-queue random-detect max-threshold 5 70 80 90 100
wrr-queue random-detect min-threshold 5 80 90 100 100
wrr-queue random-detect max-threshold 6 70 80 90 100
wrr-queue random-detect min-threshold 6 80 90 100 100
wrr-queue random-detect max-threshold 7 60 70 80 90
wrr-queue random-detect min-threshold 7 70 80 90 100
```

Tunes WRED on
Egress Queues 1-7

```
wrr-queue dscp-map 1 1 8
wrr-queue dscp-map 2 1 0
wrr-queue dscp-map 3 1 14
wrr-queue dscp-map 3 2 12
wrr-queue dscp-map 3 3 10
wrr-queue dscp-map 4 1 22
wrr-queue dscp-map 4 2 20
wrr-queue dscp-map 4 3 18
wrr-queue dscp-map 5 1 30
wrr-queue dscp-map 5 2 28
wrr-queue dscp-map 5 3 26
wrr-queue dscp-map 6 1 38
wrr-queue dscp-map 6 2 36
wrr-queue dscp-map 6 3 34
wrr-queue dscp-map 7 1 16
wrr-queue dscp-map 7 2 24
wrr-queue dscp-map 7 3 48
wrr-queue dscp-map 7 4 56
priority-queue dscp-map 1 32 40 46
```

Egress
DSCP-to-Queue/Threshold
Mapping

Note: Highlighted commands are global; otherwise these are interface specific.

For more details, see Medianet Campus QoS Design 4.0: http://www.cisco.com/en/US/docs/solutions/Enterprise/WAN_and_MAN/QoS_SRND_40/QoS_Campus_40.html.