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## Introduction

This document provides an overview of the QoS configuration required for prioritizing CEM traffic going over the MPLS cloud. CEM provides a bridge between a time-division multiplexing (TDM) network and a packet network, such as Multiprotocol Label Switching (MPLS). The router encapsulates the TDM data in MPLS packets and sends it over a CEM pseudowire to the remote provider edge (PE) router, thus functioning as a physical communication link across the packet network.

## Prerequisites

Below configuring QoS to prioritize CEM traffic on the ASR901 router, perform the following steps

1> Configure one or more CEM groups on the router. Each CEM group represents a set of time slots from the TDM circuit attached to the port. When you configure a CEM group on the port, the router creates an interface that has the same slot/port number as the port (for example, CEM0/1).

2> Configure a pseudowire for each of the CEM groups. The router maps the data from the time slots in each group to its pseudowire and sends the data over the MPLS network to the remote PE router. Use the `xconnect` command with `encap mpls` to create a pseudowire for each CEM group.

Note: More information on CEM configuration for ASR901 platform can be found [here](#).

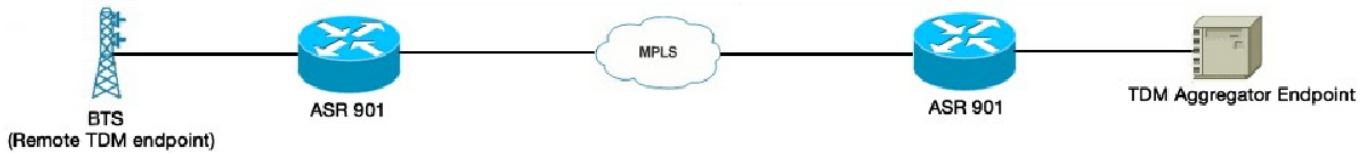
## Description

In this configuration example, we have an ingress QoS policy configured on the CEM group in order to mark the CEM traffic for prioritization on the MPLS interface. A VLAN interface is configured as the MPLS interface. This layer-3 VLAN interface is bound to a physical interface by a layer-2 EVC and a bridge-domain configuration.

In order to prioritize egress traffic, we have a QoS policy on the MPLS interface to mark the MPLS experimental bits as required. Another queuing QoS policy is applied under the physical egress interface which is eventually used to provide required priority to the CEM traffic going over the MPLS link

## Configure

## Network Diagram



## Configurations

Below are the ingress QoS configurations

```
!  
policy-map CEM  
class class-default  
set qos-group 5  
!  
interface CEM0/1  
no ip address  
load-interval 30  
cem 0  
service-policy input CEM  
xconnect 10.1.1.2 151 encapsulation mpls  
!
```

Below are the egress QoS configurations

```
!  
table-map CEM-TEST  
map from 1 to 1  
map from 2 to 2  
map from 3 to 3  
map from 4 to 4  
map from 5 to 5  
map from 6 to 6  
map from 7 to 7  
default copy  
!  
policy-map ABC  
class class-default  
set mpls experimental topmost qos-group table CEM-TEST  
!  
interface Vlan225  
ip address 172.16.1.1 255.255.255.0  
mpls ip  
service-policy output ABC  
!
```

Note : Table-map is required only for non-default mapping between the QoS-Group and the MPLS experimental bits. For default mappings, the table-map can be excluded from the QoS policy-map

```
!  
class-map match-any MPLS_EXP
```

```
match qos-group 5
match mpls experimental topmost 5
!
policy-map CHILD_POLICY_MAP
class MPLS_EXP
priority percent 50
!
policy-map PARENT_POLICY_MAP
class class-default
shape average 600000000
service-policy CHILD_POLICY_MAP
!
interface GigabitEthernet0/0
no ip address
load-interval 30
negotiation auto
service-policy output PARENT_POLICY_MAP
service instance 1 ethernet
encapsulation dot1q 225
rewrite ingress tag pop 1 symmetric
bridge-domain 225
!
```

## Verify

The “show policy-map interface <int>” command can be used to verify the above configurations. The ASR901 platform only supports byte counters and not the packet counters. All the QoS limitations for this platform are documented [here](#). In addition to the above limitations, ASR901 platform does not support any counters for CEM QoS policy-maps.