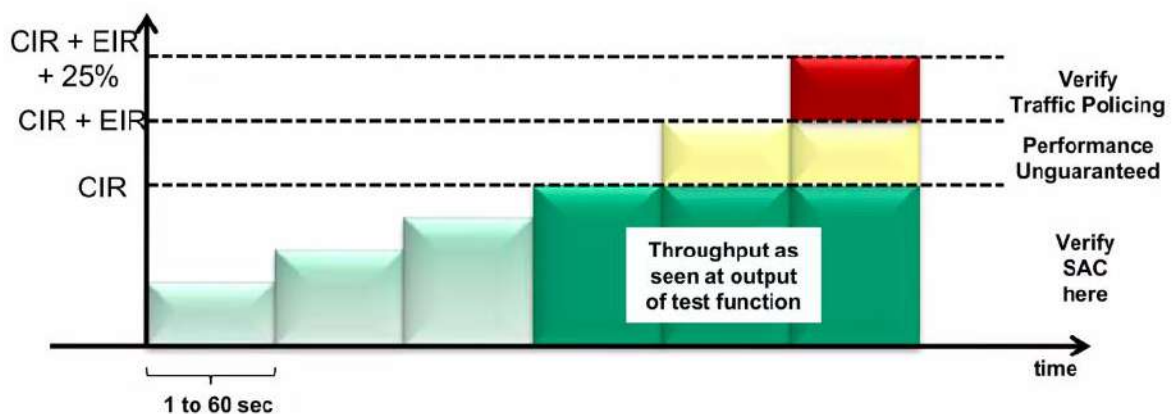


Y.1564 TEST

- Traffic is generated for each service sequentially, first up to CIR, then up to CIR + EIR (if applicable) and then over CIR + EIR
- Verifies that CIR and EIR are properly configured
- Verifies all parameters (pass/fail SAC thresholds for each Service Attribute)



Y.1564 TEST

This test will eventually supersede RFC2544 tests as the standard test for service turn-up and activation.

The Y.156sam focuses on the following KPIs for service quality:

Bandwidth or Information rate (IR): This is a bit rate measure of available or consumed data communication resources expressed in bits/second or multiples of it (kilobits/s, megabits/s, etc.).

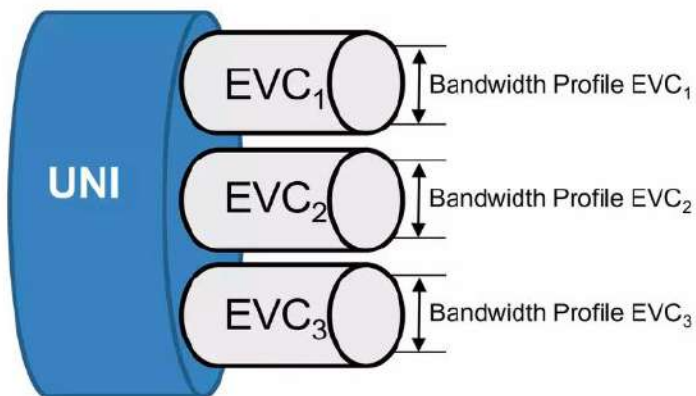
Frame transfer delay (FTD): Also known as latency, this is a measurement of the time delay between the transmission and the reception of a frame

Frame delay variations (FDV): Also known as packet jitter, this is a measurement of the variations in the time delay between packet deliveries

Frame loss ratio (FLR): Typically expressed as a ratio, this is a measurement of the number of packets lost over the total number of packets sent.

Availability (AVAIL): Typically expressed as a % of up time for link under test for example does the network pass the 5 "9's" 99.999% up time.

BANDWIDTH PROFILES



Parameters for Each Bandwidth Profile:

- CIR (Committed Information Rate)
- CBS (Committed Burst Size)
- EIR (Excess Information Rate)
- EBS: (Excess Burst Size)

Bandwidth for each EVC: CIR + EIR

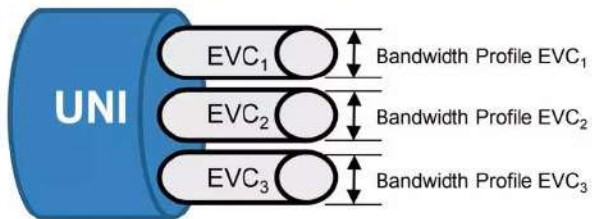
- CIR: Bandwidth that must be delivered
- EIR: Usable Excess Bandwidth. Not assured.

BANDWIDTH PROFILES

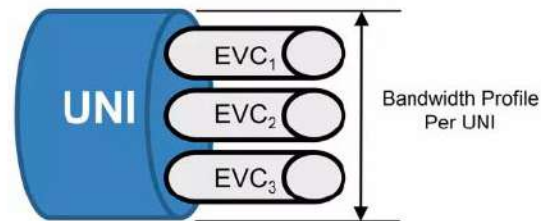
MEF 10.2 has defined three ways in which bandwidth profiles can be applied:

- Ingress Bandwidth Profile Per UNI
- Ingress Bandwidth Profile Per EVC
- Ingress Bandwidth Profile Per CoS ID

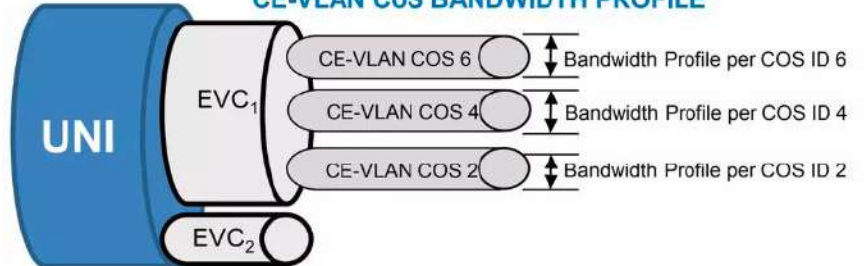
EVC BANDWIDTH PROFILE



UNI BANDWIDTH PROFILE



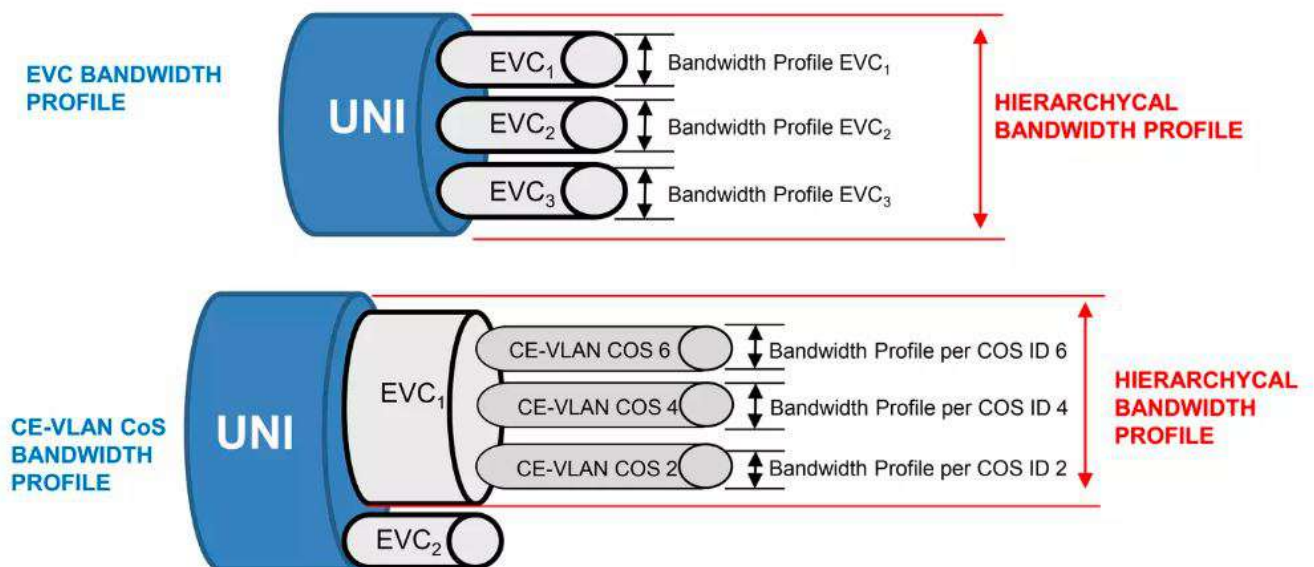
CE-VLAN CoS BANDWIDTH PROFILE



BANDWIDTH PROFILES




HCAR (HIERARCHICAL COMMITTED ACCESS RATE):

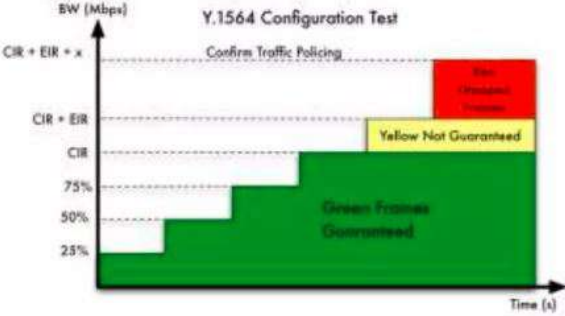
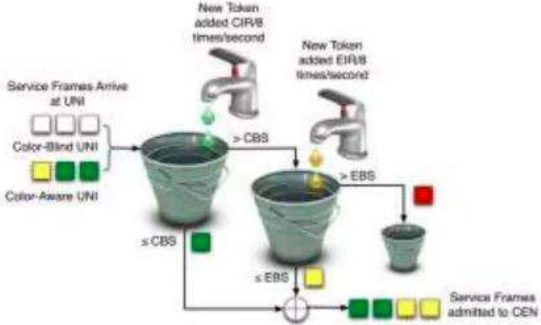
- Ingress Bandwidth Profile Per UNI
- Ingress Bandwidth Profile Per EVC
- Ingress Bandwidth Profile Per CoS ID



BANDWIDTH PROFILES

COLOR MARKING

CONFORMANCE	COLOR	SERVICE FRAME DELIVERY
CIR CONFORMANT		Service Frames are Green and delivered per the performance objectives specified in the SLAs
EIR CONFORMANT		Service Frames are Yellow and may be delivered but with no performance assurances.
NONE		Service Frames are Red and dropped



BANDWIDTH PROFILES

- ❑ Similar to rate limit command but includes latest MEF definitions regarding Traffic Color Marking (Green, Yellow, Red).
- ❑ Used on a port and can be combined with VLAN/CoS
- ❑ Used for HCAR (HIERARCHICAL COMMITTED ACCESS RATE)

BANDWIDTH PROFILE PER PORT + VLAN

```
raisecom#conf t
raisecom(config)# bandwidth-profile 1 cir 10000 cbs 64
raisecom(config)# bandwidth-profile 2 cir 20000 cbs 64
raisecom(config)# bandwidth ingress uni 1 vlan 10 1
raisecom(config)# bandwidth ingress uni 1 vlan 20 2
```

BANDWIDTH PROFILE PER PORT + VLAN + CoS

```
raisecom#conf t
raisecom(config)# bandwidth-profile 1 cir 10000 cbs 64
raisecom(config)# bandwidth-profile 2 cir 20000 cbs 64
raisecom(config)# bandwidth ingress uni 1 vlan 10 coslist 1 1
raisecom(config)# bandwidth ingress uni 1 vlan 10 coslist 2 2
```

HIERARCHICAL BANDWIDTH PROFILE PER PORT + VLAN + CoS

```
raisecom#conf t
raisecom(config)# bandwidth-profile 1 cir 50000 cbs 64
raisecom(config)# bandwidth-profile 2 cir 20000 cbs 64 eir 10000 ebs 64
raisecom(config)# bandwidth-profile 2 cir 30000 cbs 64
hierarchy-cos bandwidth-profile 1
    bandwidth coslist 5 1
    bandwidth coslist 3 2
    bandwidth coslist 1 3

raisecom(config)# bandwidth ingress uni 1 vlan 10 1
raisecom(config)# bandwidth ingress uni 1 vlan 20 2
```

BANDWIDTH PROFILES

HIERARCHICAL BANDWIDTH PROFILE PER PORT + VLAN + CoS

```
raisecom#conf t
raisecom(config)# bandwidth-profile 1 cir 50000 cbs 64
raisecom(config)# bandwidth-profile 2 cir 20000 cbs 64 eir 10000 ebs 64
raisecom(config)# bandwidth-profile 3 cir 30000 cbs 64
raisecom(config)# bandwidth-profile 4 cir 0 cbs 0 eir 10000 ebs 64
raisecom(config)#hierarchy-cos bandwidth-profile 1
raisecom(config-hcos)#bandwidth coslist 5 2
raisecom(config-hcos)#bandwidth coslist 3 3
raisecom(config-hcos)#bandwidth coslist 1 4
raisecom(config-hcos)#exit
raisecom(config)# bandwidth ingress uni 1 vlan 10 1 hierarchy-cos 1
```

HIERARCHICAL BANDWIDTH PROFILE PER PORT + VLAN

```
raisecom#conf t
raisecom(config)# bandwidth-profile 1 cir 50000 cbs 64
raisecom(config)# bandwidth-profile 2 cir 20000 cbs 64 eir 10000 ebs 64
raisecom(config)# bandwidth-profile 3 cir 30000 cbs 64
raisecom(config)# bandwidth-profile 4 cir 0 cbs 0 eir 10000 ebs 64
raisecom(config)# hierarchy-vlan bandwidth-profile 1
raisecom(config-hvlan)# bandwidth vlanlist 10 2
raisecom(config-hvlan)# bandwidth vlanlist 20 3
raisecom(config-hvlan)# bandwidth vlanlist 30 4
raisecom(config-hvlan)#exit
raisecom(config)#
raisecom(config)# bandwidth ingress uni 1 1 hierarchy-vlan 1
```


CoS REMARK

- By default the CoS value is trusted on the ingress port.
- CoS can be remarked:
 - All traffic marked with one single CoS value
 - All traffic can remarked selectively based on the incoming CoS value

SELECTIVE CoS REMARKING

```
raisecom#conf t
raisecom(config)#mls qos mapping cos-to-local-priority 1
raisecom(cos-to-pri)#cos 0 to local-priority 5
raisecom(cos-to-pri)#cos 1 to local-priority 6
raisecom(cos-to-pri)#exit
raisecom(config)# mls qos mapping cos-remark 1
raisecom(cos-remark)#exit
raisecom(config)# interface nni 1
raisecom(config-port)# switchport trunk allowed vlan 300 confirm
raisecom(config-port)# switchport mode trunk
raisecom(config-port)# mls qos cos-remark 1
raisecom(config-port)#exit
raisecom(config)# interface uni 1
raisecom(config-port)# switchport trunk allowed vlan 300 confirm
raisecom(config-port)# switchport mode trunk
raisecom(config-port)# mls qos cos-to-local-priority 1
raisecom(config-port)# exit
raisecom(config)#
```

PORT CoS REMARKING

```
raisecom#conf t
raisecom(config)# interface nni 1
raisecom(config-port)# switchport trunk allowed vlan 300 confirm
raisecom(config-port)# switchport mode trunk
raisecom(config-port)# mls qos port-priority 3
raisecom(config-port)#exit
raisecom(config)#
```

DSCP REMARK

- ❑ By default the DSCP value is not trusted on the ingress port.
- ❑ DSCP can be remarked:
 - All traffic marked with one single DSCP value
 - All traffic can be remarked selectively based on the incoming DSCP value

```
raisecom#sho mls qos uni 1-4
Port                Priority    Trust-Mode  Scheduler-Mode
-----
uni 1                0         Cos         SP
uni 2                0         Cos         SP
uni 3                0         Cos         SP
uni 4                0         Cos         SP
raisecom#conf t
raisecom(config)#int uni 1
raisecom(config-port)#mls qos trust
cos                 Cos
dscp                Dscp
inner-cos           inner cos
ipp                IP Precedence
port-priority       Port-priority
```

DSCP REMARK

PORT DSCP REMARKING

```
raisecom #conf t
raisecom(config)#access-list-map 10 permit
raisecom(config-aclmap)#match ip dscp default
raisecom(config-aclmap)#exit
raisecom(config)#class-map 10 match-any
raisecom(config-cmap)#match access-list-map 1
raisecom(config-cmap)#exit
raisecom(config)#policy-map 10
raisecom(config-pmap)#class-map 10
raisecom(config-pmap-c)#set ip dscp 33
raisecom(config-pmap-c)#exit
raisecom(config-pmap)#exit
raisecom(config)#service-policy 10 ingress uni 2
raisecom(config)#show access-list-map 10
access-list-map 10 permit
match ip dscp default

raisecom(config)#show class-map 10
Class Map match-any 10 (id 3)
  Match access-list-map 10

raisecom(config)#show policy-map 10
Policy Map 10
  Class-map 10
    set ip dscp 33
```

SELECTIVE DSCP REMARKING

```
raisecom #conf t
raisecom(config)#mls qos mapping dscp-mutation 1
raisecom(dscp-mutation)#dscp 10 to new-dscp 20
raisecom(dscp-mutation)#exit
raisecom(config)#
raisecom(config)# interface uni 1
raisecom(config-port)# mls qos trust dscp
raisecom(config-port)# mls qos dscp-mutation 1
raisecom(config-port)#exit
raisecom(config)#
```