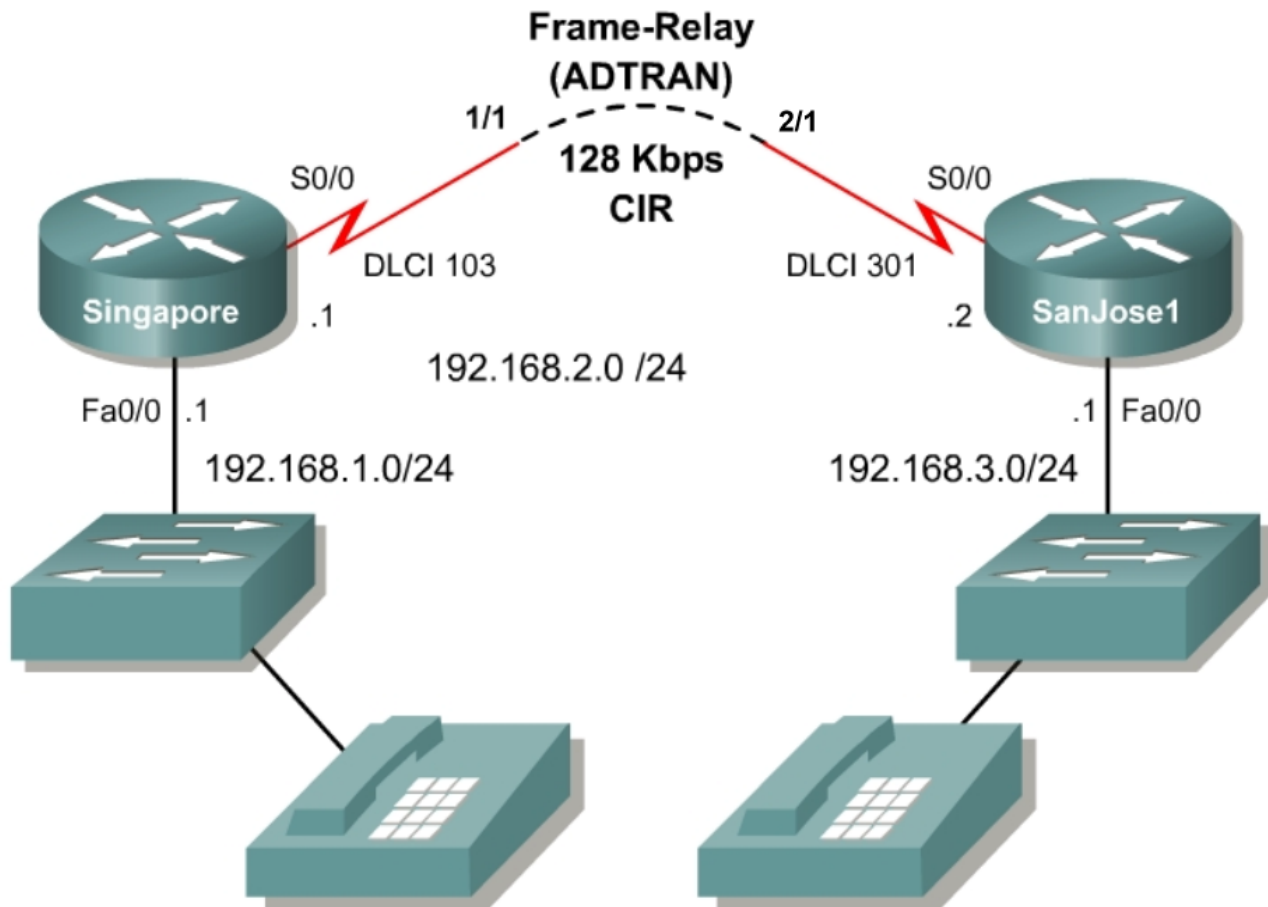


Lab 8.1.10.12 QoS Compressed Real Time Protocol



Objective

Compressed Real Time Protocol (cRTP) allows the significant overhead associated with voice packet headers to be substantially compressed over point-to-point links. Configure cRTP if the network has slow links and the bandwidth needs to be saved.

Scenario

The number of voice calls made over the Frame Relay link has increased dramatically over the last few months. Occasionally voice quality has suffered because congestion is being experienced on the low bandwidth WAN link. Management insists this problem be addressed immediately.

Given that the majority of traffic is voice, cRTP can be used to improve the situation.

Note Unless the user has access to voice traffic, this lab is an exercise in configuration only.

Step 1

Build and configure the network according to the diagram. Before beginning a lab, the configurations on all the routers should be cleared and then reloaded or power cycled to reset their default configurations. Delete the **vlan.dat** and startup configuration files on the switches before reloading them.

Configure the hostnames and interfaces on the routers. Configure the Enhanced Interior Gateway Routing Protocol (EIGRP) with an AS of 100 as the routing protocol. The configuration of cRTP will occur on the routers so the access-layer switches can be left in their factory-default (erase startup-configuration) configuration.

The Frame Relay link should be configured using subinterfaces as follows:

```
Singapore(config)#interface serial 0/0
Singapore(config-if)#encapsulation frame-relay
Singapore(config-if)#interface serial 0/0.103 point-to-point
Singapore(config-subif)#ip address 192.168.2.1 255.255.255.0
Singapore(config-subif)#frame-relay interface-dlci 103

SanJose1(config)#interface serial 0/0
SanJose1(config-if)#encapsulation frame-relay
SanJose1(config-if)#interface serial 0/0.301 point-to-point
SanJose1(config-subif)#ip address 192.168.2.2 255.255.255.0
SanJose1(config-subif)#frame-relay interface-dlci 301
```

Verify the configuration by pinging between the hosts and troubleshoot as necessary.

```
Router(config)#hostname Singapore
Singapore(config)#interface fastethernet 0/0
Singapore(config-if)#ip address 192.168.1.1 255.255.255.0
Singapore(config-if)#no shutdown
Singapore(config-if)#interface serial 0/0
Singapore(config-if)#no shutdown
Singapore(config-if)#encapsulation frame-relay
Singapore(config-if)#interface serial 0/0.103 point-to-point
Singapore(config-subif)#frame-relay interface-dlci 103
Singapore(config-fr-dlci)#ip address 192.168.2.1 255.255.255.0
Singapore(config-if)#
Singapore(config-if)#router eigrp 100
Singapore(config-router)#network 192.168.1.0
Singapore(config-router)#network 192.168.2.0

Router(config)#hostname SanJose1
SanJose1(config)#interface fastethernet 0/0
SanJose1(config-if)#ip address 192.168.3.1 255.255.255.0
SanJose1(config-if)#no shutdown
SanJose1(config-if)#interface serial 0/0
SanJose1(config-if)#no shutdown
SanJose1(config-if)#encapsulation frame-relay
SanJose1(config-if)#interface serial 0/0.301 point-to-point
SanJose1(config-subif)#frame-relay interface-dlci 301
SanJose1(config-fr-dlci)#ip address 192.168.2.2 255.255.255.0
SanJose1(config-if)#
SanJose1(config-if)#router eigrp 100
SanJose1(config-router)#network 192.168.3.0
SanJose1(config-router)#network 192.168.2.0
```

Step 2

An interface can be configured with cRTP, in which case any Frame Relay map will inherit the configuration. Use the following command:

```
Router(config-if)#frame-relay ip rtp header-compression [passive]
```

Note: In a non Frame Relay environment, such as a point-to-point serial link, the same command can be used without the **frame-relay** prefix.

An individual Frame Relay map can also be configured with cRTP with the following command:

```
Router(config-if)#frame-relay map ip ip-address dlci [broadcast] rtp
header-compression [active | passive]
```

If the **passive** keyword is included, the Cisco IOS software compresses outgoing Routing Table Protocol (RTP) packets. This compression takes place if only incoming RTP packets on the same interface are compressed. By using the command without the **passive** keyword, the software compresses all RTP traffic.

Configure cRTP on both ends of the WAN link as follows:

```
Singapore(config)#interface serial 0/0.103 point-to-point
Singapore(config-subif)#frame-relay ip rtp header-compression
Singapore(config-subif)#frame-relay ip rtp compression-connections 20

SanJose1(config)#interface serial 0/0.301 point-to-point
SanJose1(config-subif)#frame-relay ip rtp header-compression
SanJose1(config-subif)#frame-relay ip rtp compression-connections 20
```

By default, the IOS only allows for the compression for 16 simultaneous voice traffic flows. The **frame-relay ip rtp compression-connections** command allows this number to be varied.

Step 3

The operation of cRTP can be monitored with the **show frame-relay ip rtp header-compression** command. Notice that the output can give some indication of the amount of bandwidth being saved.

```
Singapore#show frame-relay ip rtp header-compression
DLCI 103      Link/Destination info: point-to-point dlci
Interface Serial0/0:
  Rcvd:       0 total, 0 compressed, 0 errors
              0 dropped, 0 buffer copies, 0 buffer failures
  Sent:       0 total, 0 compressed,
              0 bytes saved, 0 bytes sent
  Connect:    20 rx slots, 20 tx slots,
              0 long searches, 0 misses 0 collisions, 0 negative cache hits
Singapore#
```

Congratulations, configuration of the Compressed Real Time Protocol to manage the congested voice link is successful.

```
SanJose1#show frame-relay ip rtp header-compression
DLCI 301      Link/Destination info: point-to-point dlci
Interface Serial0/0:
  Rcvd:       0 total, 0 compressed, 0 errors
              0 dropped, 0 buffer copies, 0 buffer failures
  Sent:       0 total, 0 compressed,
              0 bytes saved, 0 bytes sent
  Connect:    20 rx slots, 20 tx slots,
              0 long searches, 0 misses 0 collisions, 0 negative cache hits
```