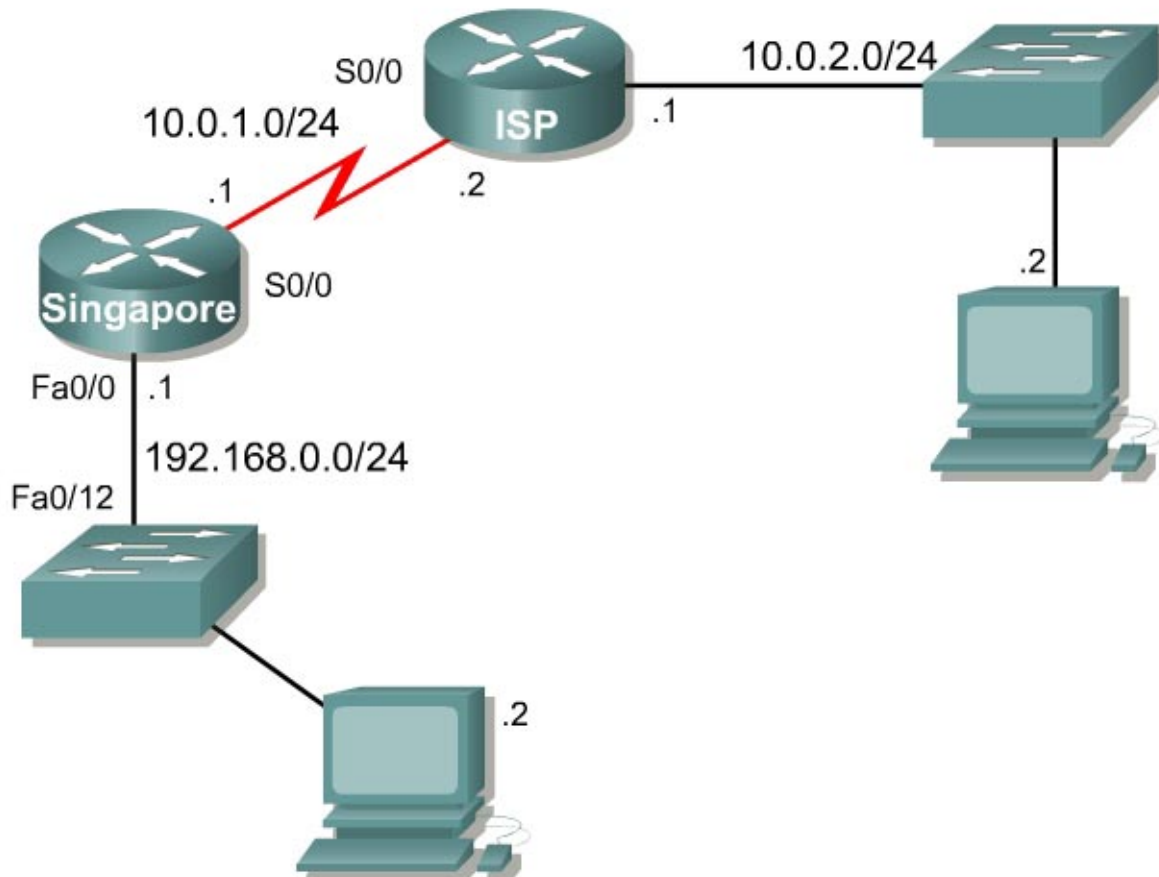


Lab 8.9.8 Configuring Generic Traffic Shaping (GTS)



Objective

Generic Traffic Shaping (GTS) shapes traffic by reducing outbound traffic flow to avoid congestion. It does this by constraining traffic to a particular bit rate using the token bucket mechanism. GTS applies to a per-interface basis and can use access lists to select the traffic to shape.

In this lab, GTS will be configured on an interface.

Scenario

In this scenario, assume the ISP has a policy of installing T1 links to all their customers and traffic shaping the data to match the bandwidth the customer has paid for. Configure the customer router and the ISP router to shape traffic to a maximum rate of 128 kbps using GTS.

Step 1

Build and configure the physical topology as shown in the diagram. The WAN link should use a clock rate of approximately T1 speed, or 1,544,000 bps. Use Enhanced Interior Gateway Routing Protocol (EIGRP) with an autonomous system (AS) of 100 as the routing protocol. The switches can be left in their default configuration.

Step 2

On each router serial interface configure GTS using the **traffic-shape rate** command:

```
Router(config-if)# traffic-shape [group access-list-number | rate] bit-rate  
[burst-size [excess-burst-size]]
```

Note that the **traffic-shape** command uses either group or rate, depending on the presence or absence of an ACL.

The bit-rate determines the average data rate that will be permitted out of the specified interface. The burst-size is the number of bits that can be sent as a single burst within a time period. The instantaneous bit-rate can be much higher than the average bit-rate. The burst-size should be configured so that any peaks do not overwhelm the input queue of the destination interface. The time period (T_c) over which the bit-rate is measured is given by the following formula:

$$T_c = \frac{\text{burst-size}}{\text{bit-rate}}$$

The ISP requests that the burst-size be limited to 12800 bits. The ISP will police this rate and drop any packets that exceed this burst rate. Configure an excess-burst-size that is no higher than 12800 bits:

```
Singapore(config)#interface serial 0/0  
Singapore(config-if)#traffic-shape rate 128000 12800 12800  
  
ISP(config)#interface serial 0/0  
ISP(config-if)#traffic-shape rate 128000 12800 12800
```

Step 3

Verify the configuration of the **traffic-shape** command using the **show traffic-shape** command:

```
Singapore#show traffic-shape  
Interface   Se0/0  
VC          Access Target  Byte  Sustain  Excess  Interval  Increment Adapt  
List        Rate    Limit bits/int bits/int (ms)      (bytes)  
Active  
-           128000  3200  12800   12800   100      1600      -
```

Verify the operation of GTS using the **show traffic-shape statistics** command:

```
Singapore #show traffic-shape statistics  
Access Queue  Packets  Bytes  Packets  Bytes  
Shaping  
I/F        List  Depth                Delayed  Delayed  
Active  
Se0/0      0      0      0      0      0      0      no
```

At this stage no traffic is flowing so no shaping is active.

Step 4

Enable file sharing on the PCs and copy a large file over the WAN link.

1. What is the maximum transfer speed achieved over the T1 WAN link? _____
2. How else could it be confirmed that Generic Traffic Shaping is active? _____