

Contents

Introduction	1
Prerequisites	1
Example: Configuring GTS and rate limiting	1
Network configuration	1
Analysis	1
Applicable hardware and software versions	2
Procedures	4
Configuring priority marking	4
Configuring GTS	5
Configuring rate limiting	6
Verifying the configuration	6
Configuration files	7

Introduction

This document provides GTS and rate limiting configuration examples.

Prerequisites

The configuration examples in this document were created and verified in a lab environment, and all the devices were started with the factory default configuration. When you are working on a live network, make sure you understand the potential impact of every command on your network.

This document assumes that you have basic knowledge of GTS and rate limiting.

Example: Configuring GTS and rate limiting

Network configuration

As shown in [Figure 1](#), the 15-Mbps dedicated line transmits the FTP traffic, business-specific application traffic, and IP voice traffic between the headquarters and branch of a company.

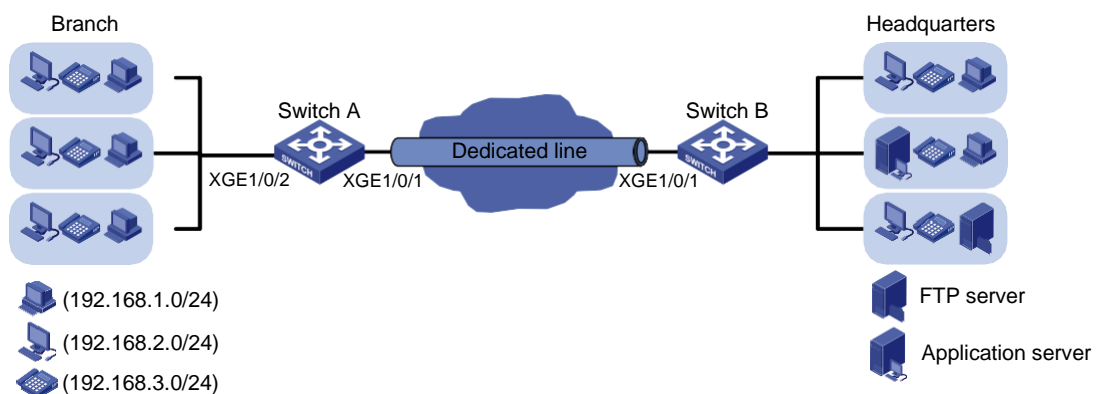
The following traffic policing settings have been configured on the edge device (Switch B) of the headquarters:

- CIR of 10 Mbps for IP voice traffic.
- CIR of 3 Mbps for business-specific application traffic.
- CIR of 7 Mbps for FTP traffic.

Configure traffic shaping on the edge device (Switch A) of the branch to buffer excess traffic of each traffic type.

Configure rate limiting on Switch A to limit the outgoing traffic rate to 15 Mbps.

Figure 1 Network diagram



Analysis

To meet the network requirements, you must perform the following tasks:

- To implement GTS, first determine the queue that transmits a type of traffic. In this example, the priorities of these types of traffic are not provided. You need to use priority marking to manually assign packets to different queues.
- You can manually assign packets to queues by marking DSCP values, 802.1p priority values, or local precedence values. To keep the contents of packets unchanged, mark local precedence values for packets.

Applicable hardware and software versions

The following matrix shows the hardware and software versions to which this configuration example is applicable:

Hardware	Software version
SC 3570 switch series	Release 11xx
SC 5525 switch series	Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx
SC 5520 switch series	Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx
SC 3170 switch series	Release 11xx
SC 3130 switch series	Release 63xx

The `port link-mode` command is not supported on the following switches and the `port link-mode bridge` command does not appear in their configuration files.

- SC 3130 series.

Procedures

Before configuring GTS and rate limiting, make sure there is network connectivity between the branch and headquarters.

This section does not describe the configurations for enabling network connectivity.

Configuring priority marking

1. Create three traffic classes to match the three traffic types:
 - # Configure basic IPv4 ACL 2000 to match IP voice traffic (traffic from subnet 192.168.3.0/24).


```
<SwitchA> system-view
[SwitchA] acl basic 2000
[SwitchA-acl-ipv4-basic-2000] rule permit source 192.168.3.0 0.0.0.255
[SwitchA-acl-ipv4-basic-2000] quit
```
 - # Create a class named **voice**, and use ACL 2000 as the match criterion.


```
[SwitchA] traffic classifier voice
[SwitchA-classifier-voice] if-match acl 2000
[SwitchA-classifier-voice] quit
```
 - # Configure basic IPv4 ACL 2001 to match application traffic (traffic from subnet 192.168.2.0/24).


```
[SwitchA] acl basic 2001
[SwitchA-acl-ipv4-basic-2001] rule permit source 192.168.2.0 0.0.0.255
[SwitchA-acl-ipv4-basic-2001] quit
```
 - # Create a class named **service**, and use ACL 2001 as the match criterion.

```
[SwitchA] traffic classifier service
[SwitchA-classifier-service] if-match acl 2001
[SwitchA-classifier-service] quit
# Configure advanced IPv4 ACL 3000 to match FTP traffic (traffic from subnet 192.168.1.0/24 and with destination port number 20).
[SwitchA] acl advanced 3000
```

```
[SwitchA-acl-ipv4-adv-3000] rule permit tcp destination-port eq 20 source 192.168.1.0 0.0.0.255
```

```
[SwitchA-acl-ipv4-adv-3000] quit
```

Create a class named **ftp**, and use ACL 3000 as the match criterion.

```
[SwitchA] traffic classifier ftp
```

```
[SwitchA-classifier-ftp] if-match acl 3000
```

```
[SwitchA-classifier-ftp] quit
```

2. Create three traffic behaviors:

Create a behavior named **voice**, and configure the behavior to mark packets with local precedence 6 (corresponding to queue 6).

```
[SwitchA] traffic behavior voice
```

```
[SwitchA-behavior-voice] remark local-precedence 6
```

```
[SwitchA-behavior-voice] quit
```

Create a behavior named **service**, and configure the behavior to mark packets with local precedence 4 (corresponding to queue 4).

```
[SwitchA] traffic behavior service
```

```
[SwitchA-behavior-service] remark local-precedence 4
```

```
[SwitchA-behavior-service] quit
```

Create a behavior named **ftp**, and configure the behavior to mark packets with local precedence 2 (corresponding to queue 2).

```
[SwitchA] traffic behavior ftp
```

```
[SwitchA-behavior-ftp] remark local-precedence 2
```

```
[SwitchA-behavior-ftp] quit
```

3. Configure and apply a QoS policy:

Create a QoS policy named **shaping**, and associate the three classes with their respective behaviors in the QoS policy.

```
[SwitchA] qos policy shaping
```

```
[SwitchA-qospolicy-shaping] classifier voice behavior voice
```

```
[SwitchA-qospolicy-shaping] classifier service behavior service
```

```
[SwitchA-qospolicy-shaping] classifier ftp behavior ftp
```

```
[SwitchA-qospolicy-shaping] quit
```

Apply the QoS policy **shaping** to the inbound direction of GigabitEthernet 1/0/2.

```
[SwitchA] interface gigabitethernet 1/0/2
```

```
[SwitchA-GigabitEthernet1/0/2] qos apply policy shaping inbound
```

```
[SwitchA-GigabitEthernet1/0/2] quit
```

Configuring GTS

Configure GTS on GigabitEthernet 1/0/1 to set the CIR to 10 Mbps for queue 6 (IP voice traffic).

```
[SwitchA] interface gigabitethernet 1/0/1
```

```
[SwitchA-GigabitEthernet1/0/1] qos gts queue 6 cir 10240
```

Configure GTS on GigabitEthernet 1/0/1 to set the CIR to 3 Mbps for queue 4 (application traffic).

```
[SwitchA-GigabitEthernet1/0/1] qos gts queue 4 cir 3072
```

Configure GTS on GigabitEthernet 1/0/1 to set the CIR to 7 Mbps for queue 2 (FTP traffic).

```
[SwitchA-GigabitEthernet1/0/1] qos gts queue 2 cir 7168
```

Configuring rate limiting

Configure rate limiting on GigabitEthernet 1/0/1 to set the CIR to 15 Mbps for outgoing traffic.

```
[SwitchA-GigabitEthernet1/0/1] qos lr outbound cir 15360
```

Verifying the configuration

Verify the priority marking settings of GigabitEthernet 1/0/2.

```
<Sysname> display qos policy interface inbound
```

```
Interface: GigabitEthernet1/0/2
```

```
Direction: Inbound
```

```
Policy: shaping
```

```
Classifier: voice
```

```
Operator: AND
```

```
Rule(s) :
```

```
  If-match acl 2000
```

```
Behavior: voice
```

```
Marking:
```

```
  Remark local-precedence 6
```

```
Classifier: service
```

```
Operator: AND
```

```
Rule(s) :
```

```
  If-match acl 2001
```

```
Behavior: service
```

```
Marking:
```

```
  Remark local-precedence 4
```

```
Classifier: ftp
```

```
Operator: AND
```

```
Rule(s) :
```

```
  If-match acl 3000
```

```
Behavior: ftp
```

```
Marking:
```

```
  Remark local-precedence 2
```

Verify the GTS settings on GigabitEthernet 1/0/1.

```
<Sysname> display qos gts interface
```

```
Interface: GigabitEthernet1/0/1
```

```
Rule: If-match queue 6
```

```
  CIR 10240 (kbps), CBS 640000 (Bytes)
```

```
Rule: If-match queue 4
```

```
  CIR 3072 (kbps), CBS 192000 (Bytes)
```

```
Rule: If-match queue 2
```

```
  CIR 7168 (kbps), CBS 448000 (Bytes)
```

Verify the rate limiting settings on GigabitEthernet 1/0/1.

```
<Sysname> display qos lr interface
```

```
Interface: GigabitEthernet1/0/1
```

```
Direction: Outbound
```

```
  CIR 15360 (kbps), CBS 960000 (Bytes)
```

Configuration files

```
#
acl basic 2000
  rule 0 permit source 192.168.3.0 0.0.0.255
#
acl basic 2001
  rule 0 permit source 192.168.2.0 0.0.0.255
#
acl advanced 3000
  rule 0 permit tcp source 192.168.1.0 0.0.0.255 destination-port eq ftp-data
#
traffic classifier ftp operator and
  if-match acl 3000
#
traffic classifier service operator and
  if-match acl 2001
#
traffic classifier voice operator and
  if-match acl 2000
#
traffic behavior ftp
  remark local-precedence 2
#
traffic behavior service
  remark local-precedence 4
#
traffic behavior voice
  remark local-precedence 6
#
qos policy shaping
  classifier voice behavior voice
  classifier service behavior service
  classifier ftp behavior ftp
#
interface GigabitEthernet1/0/1
  port link-mode bridge
  qos lr outbound cir 15360 cbs 960000
  qos gts queue 6 cir 10240 cbs 640000
  qos gts queue 4 cir 3072 cbs 192000
  qos gts queue 2 cir 7168 cbs 448000
#
interface GigabitEthernet1/0/2
  port link-mode bridge
  qos apply policy shaping inbound
#
return
```