

Low Latency Queueing

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Introduction

This sample configuration illustrates the Low Latency Queueing feature. The Low Latency Queueing feature brings strict priority queueing to Class-Based Weighted Fair Queueing (CBWFQ). Configured by the **priority** command, strict priority queueing gives delay-sensitive data, such as voice, preferential treatment over other traffic. With this feature, delay-sensitive data is sent first (before packets in other queues are treated). Low Latency Queueing documentation provides additional details about this feature.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

Low Latency Queueing has been supported on all platforms running Cisco IOS® Software release 12.0(7)T and later. For further information on this, refer to Supported Platforms.

For Cisco 7500 routers, Low Latency Queueing is supported in Cisco IOS Software release 12.0(7)XE and later. For more information, refer to Supported Platforms.

For an overview of feature evolution on Cisco IOS Software releases, refer to Feature Overview.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

For more information on document conventions, refer to Cisco Technical Tips Conventions.

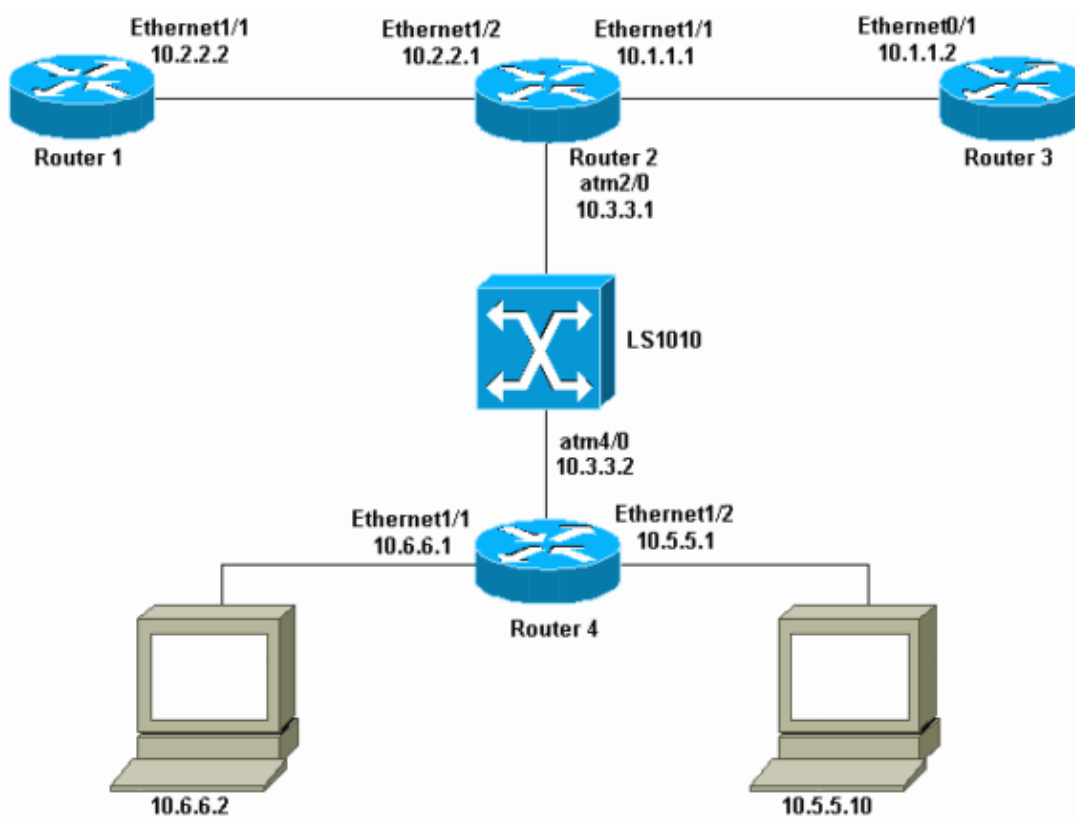
Configure

In this section, you are presented with the information to configure the features described in this document.

Note: To find additional information on the commands used in this document, use the Command Lookup Tool (registered customers only).

Network Diagram

This document uses this network setup:



Note: In this configuration:

- The Cisco 7200s 2 and 4 are equipped with a PA-A3 and configured with the CBWFQ Low Latency Queueing feature.
- A policy-map statement is configured to classify the packets originating from Router 1, 10.2.2.2, and directed to 10.6.6.2 (device connected to Router 4). Low Latency Queueing is configured to give priority to this flow and allocate 70K of the 100K SCR vbr-nrt PVC configured between the two routers.
- A ping traffic simulates the constant traffic flow between Source 10.2.2.2 and Destination 10.6.6.2. A ping traffic with timeout 0 generated from Router 3 towards 10.5.5.10 connected to Router 4 will simulate the congesting flow.
- The **queue-limit** keyword under **class-default** is used to limit the queue depth of the congesting traffic.
- The **tx-ring-limit** command is used to reduce the PA First In, First Out (FIFO) queue.
- The **show queue atm2/0.1** command shows the null weight assigned to the high priority flow. Any packet matching that flow is immediately scheduled for transmission. Packets assigned to the default class are queued up to the maximum queue-limit threshold and dropped if the congestion state

persists.

Configurations

This document uses these configurations:

- Cisco 7200 Router 2
- Cisco 7200 Router 4

Cisco 7200 Router 2

```
!  
class-map voice  
  match access-group 110  
!  
policy-map llq  
  class voice  
    priority 70  
  class class-default  
    fair-queue  
    queue-limit 10  
!  
ip cef  
!  
interface Ethernet1/1  
  ip address 10.1.1.1 255.255.255.0  
  no ip directed-broadcast  
!  
interface Ethernet1/2  
  ip address 10.2.2.1 255.255.255.0  
  no ip directed-broadcast  
!  
interface ATM2/0  
  no ip address  
  no ip directed-broadcast  
  ip accounting output-packets  
  load-interval 30  
  no atm ilmi-keepalive  
!  
interface ATM2/0.1 point-to-point  
  ip address 10.3.3.1 255.255.255.0  
  no ip directed-broadcast  
  pvc llq 0/100  
    tx-ring-limit 3  
    service-policy output llq  
    vbr-nrt 100 100  
    broadcast  
    encapsulation aal5snap  
!  
!  
access-list 110 permit ip host 10.2.2.2 host 10.6.6.2  
!
```

Cisco 7200 Router 4

```
!  
class-map voice  
  match access-group 110  
!  
policy-map llq  
  class voice  
    priority 70
```

```

class class-default
  fair-queue
  queue-limit 10
!
ip cef
!
interface Ethernet1/1
  ip address 10.6.6.1 255.255.255.0
  no ip directed-broadcast
  no ip mroute-cache
  no keepalive
!
interface Ethernet1/2
  ip address 10.5.5.1 255.255.255.0
  no ip directed-broadcast
  no ip mroute-cache
  no keepalive
!
interface ATM4/0
  no ip address
  no ip directed-broadcast
  no atm ilmi-keepalive
!
interface ATM4/0.1 point-to-point
  ip address 10.3.3.2 255.255.255.0
  no ip directed-broadcast
  pvc llq 0/100
  tx-ring-limit 3
  service-policy output llq
  vbr-nrt 100 100 1
  broadcast
  encapsulation aal5snap
!
!
access-list 110 permit ip host 10.6.6.2 host 10.2.2.2
!

```

Verify

This section provides information you can use to confirm your configuration is working properly.

Certain **show** commands are supported by the Output Interpreter Tool (registered customers only), which allows you to view an analysis of **show** command output.

- **show queue** Lists fair queueing configuration and statistics for a particular interface.
- **show policy-map interface** Displays the configuration of all classes configured for all service policies on the specified interface.

```

Router 2# show queue atm2/0.1
  Interface ATM2/0.1 VC 0/100
  Queueing strategy: weighted fair
  Total output drops per VC: 210118
  Output queue: 11/512/64/210118 (size/max total/threshold/drops)
    Conversations 2/2/16 (active/max active/max total)
    Reserved Conversations 0/0 (allocated/max allocated)
  (depth/weight/discards/tail drops/interleaves) 1/0/0/0/0
  Conversation 24, linktype: ip, length: 212
  source: 10.2.2.2, destination: 10.6.6.2, id: 0x4D42, ttl: 254, prot: 1
  (depth/weight/discards/tail drops/interleaves) 10/32384/41516/0/0
  Conversation 11, linktype: ip, length: 1512
  source: 10.1.1.2, destination: 10.5.5.10, id: 0x617B, ttl: 254, prot: 1

```

```
Router 2# show policy-map interface atm2/0.1
ATM2/0.1: VC 0/100 - output : llq
  Weighted Fair Queueing
    Class voice
      Strict Priority
      Output Queue: Conversation 24
        Bandwidth 70 (kbps) Packets Matched 311 Max Threshold 64 (packets)
        (discards/tail drops) 0/0
    Class class-default
      Flow Based Fair Queueing
      Maximum Number of Hashed Queues 16 Max Threshold 10 (packets)
```

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

Related Information

- [IP to ATM Class of Service](#)
 - [Low Latency Queueing](#)
 - [ATM Technology Support](#)
 - [Technical Support – Cisco Systems](#)
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