

# 与分布式QOS的帧中继流量整形在Cisco 7500系列

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## 简介

本文澄清流量整形的应用程序之间差异对帧中继接口在思科7500系列路由器与通用接口处理器(VIP)和在其他平台。其他平台包括Cisco 7200、3600及2600系列路由器。

## 先决条件

### 要求

本文档没有任何特定的要求。

### 使用的组件

本文档不限于特定的软件和硬件版本。

### 规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

## 背景信息

自Cisco IOS软件版本12.1(5)T，服务质量(QoS)策略在VIP的分布式模式必须运行;路由交换机处理器(RSP) -不再支持基于QoS。因此，您必须使用模块化QoS命令行界面(MQC)的shape命令和其他命令为了实现帧中继接口的分布式流量整形在Cisco 7500系列的VIP。DTS结合通用流量整形(GTS)和帧中继流量整形(帧中继TS)。参考[配置](#)配置示例的[分布式流量整形](#)。

此表澄清如何配置帧中继TS，取决于平台：

	7500系列	7200， 3600， 2600和其他非VIP平台
支持的整形机制	DTS	帧中继TS
配置命令	shape命令在策略映射	在主接口的帧中继的流量整形;映射组配置命令指定整形参数
要求dCEF <sup>1</sup>	是(请用show cef linecard命令验证。)	无

<sup>1</sup> dCEF =分布式Cisco快速转发模式

**注意：**在Cisco 7500系列，因为帧中继TS执行在一个非分布式的模式的仅RSP能力通过**frame-relay traffic-shaping**命令配置帧中继TS当前阻塞。使用dCEF和帧中继TS，CEF“平底船”邻接导致RSP快速交换所有信息包，为最大转发性能是不理想的。

## 配置步骤

请使用这些步骤配置在基于VIP的帧中继接口的DTS：

1. 启用dCEF用此命令：

```
router(config)# ip cef distributed
```

2. 保证帧中继接口为分布式交换启用。

```
router(config-if)# interface serial 8/0/0
router(config-if)# ip route-cache distributed
```

```
router# show ip interface serial 8/0/0
Serial8/0/0 is up, line protocol is up
Internet address is 24.0.0.2/24
Broadcast address is 255.255.255.255
!--- Output suppressed. ICMP redirects are always sent ICMP unreachable are always sent
ICMP mask replies are never sent IP fast switching is enabled IP fast switching on the same
interface is disabled IP Flow switching is disabled IP CEF switching is enabled IP
Distributed switching is enabled
IP Fast switching turbo vector
IP CEF switching with tag imposition turbo vector
IP multicast fast switching is enabled
IP multicast distributed fast switching is disabled
IP route-cache flags are Fast, Distributed, CEF
Router Discovery is disabled
IP output packet accounting is disabled
```

3. 创建服务策略并且应用它对映射类别。您能实现这些策略之一：**单级策略**—运用整形参数对虚拟电路流量**分级策略**—运用与shaping在“parent”级别和队列的一个两级策略在级“的孩子”参考[数据流策略作为QoS策略\(层次化数据流策略\)示例](#)欲知更多信息。**注意：**当Cisco IOS软件版本12.1(2)T介绍低延迟队列的(LLQ)时支持除Cisco 7500系列之外，在平台，分布式LLQ(dLLQ)在VIP的Cisco IOS软件版本12.1(5)T介绍。分布式版本提高此功能性能。您能配置同一个服务策略每数据链路连接标识符(DLCI)。您不需要使用映射类别。您能实施**service-policy**命令直接地到子接口或DLCI。然而，请配置dLLQ在映射类别里面。
4. 验证您的服务策略的正确操作这些命令：**show policy-map interfaceshow interface**形状显示

## FRF.12 与 DTS

Cisco IOS软件版本12.1(5)T介绍帧中继分段存储分布式版本，FRF.12。当您应用分布式FRF.12对帧中继接口时，您必须定义映射类别和运用服务策略在映射类别下。如果尝试配置与服务策略的一映射类别应用直接地对接口，您的路由器报告此错误消息用启用的logging console：

```
ip cef distributed
!
class-map 1
  match <>
  !--- Define match-on criteria. class-map 2 match <> !--- Define match-on criteria. ! policy-
map CBWFQ class 1 bandwidth <> !--- Define the value in kbps or percent. class 2 priority <> !--
- Define the value in kbps or percent. ! policy-map SHAPE class class-default shape average
service-policy CBWFQ ! int s0/0 encapsulation frame-relay ip route-cache distributed !--- Do not
configure frame-relay traffic-shaping.
!
int s0/0.1 point-to-point
  ip address a.b.c.d
  frame-relay interface-dlci xxx
  class cisco
!
map-class frame-relay cisco
  service-policy output SHAPE
```

在运行在RSP 8.的Cisco IOS软件版本12.2(5)T的此部分的配置和配置验证命令在Cisco 7500系列路由器测试了。

**注意：** [与服务质量\(分段、流量整形，LLQ /IP RTP优先级\)](#)的参考的[基于帧中继的VoIP](#)关于分段值的选择的更多信息。

### DTS和FRF.12配置示例

```
interface Ethernet4/1/3
  ip address 10.122.3.206 255.255.255.0
!
interface Serial5/0/0:0
  no ip address
  encapsulation frame-relay
  load-interval 30
  no fair-queue
  !--- Do not configure frame-relay traffic-shaping.
!
interface Serial5/0/0:0.1 point-to-point
  ip address 10.1.1.2 255.255.255.0
  frame-relay interface-dlci 16
  class test
  frame-relay ip rtp header-compression
!
map-class frame-relay test
  no frame-relay adaptive-shaping
  service-policy output llq-shape
  frame-relay fragment 120
  !--- Apply the frame-relay fragment command to the !---
Frame Relay map class.

access-list 101 permit udp any range 16384 32767 any
```

```
range 16384 32767
```

```
MS-7507-8A# show ip rtp head
```

```
RTP/UDP/IP header compression statistics:  
DLCI 16 Link/Destination info: point-to-point dlci  
Interface Serial5/0/0:0:  
Distributed fast switched:  
4 seconds since line card sent last stats update  
Rcvd: 105475 total, 105472 compressed, 0 errors  
0 dropped, 0 buffer copies, 0 buffer failures  
Sent: 99451 total, 99447 compressed,  
3776208 bytes saved, 2187963 bytes sent  
2.72 efficiency improvement factor  
Connect: 256 rx slots, 256 tx slots,  
0 long searches, 3 misses 0 collisions, 0 negative cache hits  
99% hit ratio, five minute miss rate 0 misses/sec, 0 max
```

```
MS-7507-8A# show policy-map
```

```
Policy Map llq-shape  
Class class-default  
shape peak 256000 1024 1024  
service-policy llq  
Policy Map llq  
Class voip  
priority percent 50
```

```
MS-7507-8A# show policy-map interface s 5/0/0:0.1
```

```
Serial5/0/0:0.1: DLCI 16 -  
Service-policy output: llq-shape  
queue stats for all priority classes:  
queue size 0, queue limit 32  
packets output 147008, packet drops 0  
tail/random drops 0, no buffer drops 0, other drops 0  
Class-map: class-default (match-any)  
148237 packets, 10393582 bytes  
30 second offered rate 24000 bps, drop rate 0 bps  
Match: any  
queue size 0, queue limit 64  
packets output 149563, packet drops 0  
tail/random drops 0, no buffer drops 0, other drops 0  
Shape: cir 256000, Bc 1024, Be 1024  
lower bound cir 0, adapt to fecn 0  
output bytes 6972057, shape rate 10000 bps  
Service-policy : llq  
Class-map: voip (match-all)  
146701 packets, 10325334 bytes  
30 second offered rate 24000 bps, drop rate 0 bps  
Match: access-group 101  
Priority: 50% (128 kbps), burst bytes 3200, b/w  
exceed drops: 0  
Class-map: class-default (match-any)  
1536 packets, 68248 bytes  
30 second offered rate 0 bps, drop rate 0 bps  
Match: any  
queue size 0, queue limit 32  
packets output 2555, packet drops 0  
tail/random drops 0, no buffer drops 0, other drops 0
```

```
MS-7507-8A# show frame pvc 16
```

```
PVC Statistics for interface Serial5/0/0:0 (Frame Relay DTE)  
DLCI = 16, DLCI USAGE = LOCAL, PVC STATUS = ACTIVE, INTERFACE = Serial5/0/0:0.1  
input pkts 3036327 output pkts 199453  
in bytes 198958363
```

out bytes 17271661   dropped pkts 0    in FECN pkts 0  
in BECN pkts 0       out FECN pkts 0   out BECN pkts 0  
in DE pkts 0         out DE pkts 0  
out bcast pkts 1071   out bcast bytes 371448  
5 minute input rate 0 bits/sec, 0 packets/sec  
5 minute output rate 35000 bits/sec, 50 packets/sec  
pvc create time 17:51:42, last time pvc status changed 17:50:53  
fragment type end-to-end fragment size 120

**MS-7507-8A# show interface shape**

Serial5/0/0:0 nobuffer drop 0  
Serial5/0/0:0.1(class 0):  
cir 256000, Bc 1024, Be 1024  
lower bound cir 0, adapt to fecn 0  
packets output 152104, bytes output 6985505  
queue limit 64, queue size 0, drops 0  
last clear = 16:58:59 ago, shape rate = 10000 bps

**MS-7507-8A# show ip rtp head**

RTP/UDP/IP header compression statistics:  
DLCI 16 Link/Destination info: point-to-point dlci  
Interface Serial5/0/0:0:  
Distributed fast switched:  
4 seconds since line card sent last stats update  
Rcvd: 105475 total, 105472 compressed, 0 errors  
0 dropped, 0 buffer copies, 0 buffer failures  
Sent: 99451 total, 99447 compressed,  
3776208 bytes saved, 2187963 bytes sent  
2.72 efficiency improvement factor  
Connect: 256 rx slots, 256 tx slots,  
0 long searches, 3 misses 0 collisions, 0 negative cache hits  
99% hit ratio, five minute miss rate 0 misses/sec, 0 max

**MS-7507-8A# show policy-map**

Policy Map llq-shape  
  Class class-default  
    shape peak 256000 1024 1024  
    service-policy llq  
Policy Map llq  
  Class voip  
    priority percent 50

**MS-7507-8A# show policy-map interface s 5/0/0:0.1**

Serial5/0/0:0.1: DLCI 16 -  
Service-policy output: llq-shape  
  queue stats for all priority classes:  
  queue size 0, queue limit 32  
  packets output 147008, packet drops 0  
  tail/random drops 0, no buffer drops 0, other drops 0  
Class-map: class-default (match-any)  
  148237 packets, 10393582 bytes  
  30 second offered rate 24000 bps, drop rate 0 bps  
Match: any  
  queue size 0, queue limit 64  
  packets output 149563, packet drops 0  
  tail/random drops 0, no buffer drops 0, other drops 0  
Shape: cir 256000, Bc 1024, Be 1024  
  lower bound cir 0, adapt to fecn 0  
  output bytes 6972057, shape rate 10000 bps  
Service-policy : llq  
  Class-map: voip (match-all)  
  146701 packets, 10325334 bytes  
  30 second offered rate 24000 bps, drop rate 0 bps  
Match: access-group 101

```
Priority: 50% (128 kbps), burst bytes 3200, b/w
exceed drops: 0
Class-map: class-default (match-any)
1536 packets, 68248 bytes
30 second offered rate 0 bps, drop rate 0 bps
Match: any
queue size 0, queue limit 32

packets output 2555, packet drops 0
tail/random drops 0, no buffer drops 0, other drops 0
```

#### MS-7507-8A# show frame pvc 16

```
PVC Statistics for interface Serial5/0/0:0 (Frame Relay DTE)
DLCI = 16, DLCI USAGE = LOCAL, PVC STATUS = ACTIVE, INTERFACE = Serial5/0/0:0.1
input pkts 3036327   output pkts 199453
in bytes 198958363
out bytes 17271661   dropped pkts 0   in FECN pkts 0
in BECN pkts 0      out FECN pkts 0   out BECN pkts 0
in DE pkts 0        out DE pkts 0
out bcast pkts 1071 out bcast bytes 371448
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 35000 bits/sec, 50 packets/sec
pvc create time 17:51:42, last time pvc status changed 17:50:53
fragment type end-to-end fragment size 120
```

#### MS-7507-8A# show interface shape

```
Serial5/0/0:0 nobuffer drop 0
Serial5/0/0:0.1(class 0):
cir 256000, Bc 1024, Be 1024
lower bound cir 0, adapt to fecn 0
packets output 152104, bytes output 6985505
queue limit 64, queue size 0, drops 0
last clear = 16:58:59 ago, shape rate = 10000 bps
```

## [已知问题](#)

如果仍然使用Cisco IOS软件版本12.1E，配置与帧中继封装的VIP接口能失败与总线错误。此失败出现，如果运用服务策略，当接口通过流量时。在您更新服务策略前，应急方案是终止所有后台流量。或者您能升级到Cisco IOS软件版本12.2或以后。

欲知更多信息，参考[思科工具&资源页](#)。

## [相关信息](#)

- [QoS 技术支持](#)
- [技术支持和文档 - Cisco Systems](#)