Catalyst 6800ia接入端口上的QoS配置示例

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简介

本文档介绍如何在Cisco Catalyst 6800ia主机端口上配置、验证服务质量(QoS)并对其进行故障排除 。Catalyst 6800父虚拟交换系统(VSS)上Cisco IOS^{®软}件版本152.1.SY及更高版本的6800ia主机端 口支持QoS。

先决条件

要求

本文档没有任何特定的要求。

使用的组件

本文档中的信息基于以下软件和硬件版本:

- Cisco IOS®^软件版本152.1.SY
- Cisco Catalyst 6800父VSS

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原 始(默认)配置。如果您使用的是真实网络,请确保您已经了解所有命令的潜在影响。

背景信息

Catalyst 6800ia的配置模式已禁用,所有6800ia主机端口的QoS配置必须从父端完成。6800ia主机

端口的QoS配置了策略映射。应用到接口时,此策略映射将相关配置内部推送到6800ia,然后对硬件队列进行编程。

6800ia主机端口在传输(TX)方向具有1p3q3t架构。本文档中的所有配置示例仅适用于6800ia上的 TX队列。

当6800ia接口上没有默认状态的显式QoS配置时,6800ia主机接口的输出可能与以下示例输出类似 :

6880-VSS#show run int gi101/1/0/1

interface GigabitEthernet101/1/0/1
switchport
switchport trunk allowed vlan 500
switchport mode access
switchport access vlan 500
load-interval 30
end

6880-VSS#show queueing interface gi101/1/0/1

Interface GigabitEthernet101/1/0/1 queueing strategy: Weighted Round-Robin

Port QoS is disabled globally Queueing on Gi101/1/0/1: Tx Enabled Rx Disabled

Trust boundary disabled

Trust state: trust DSCP Trust state in queueing: trust DSCP Default COS is 0 Queueing Mode In Tx direction: mode-dscp Transmit queues [type = 1p3q3t]: Queue Id Scheduling Num of thresholds -----1 Priority 3 2 WRR 3 3 WRR 3 WRR 3 4 WRR bandwidth ratios: 100[queue 2] 100[queue 3] 100[queue 4] 0[queue 5] queue-limit ratios: 15[Pri Queue] 25[queue 2] 40[queue 3] 20[queue 4] queue thresh dscp-map -----1 1 32 33 40 41 42 43 44 45 46 47 1 2 1 3 16 17 18 19 20 21 22 23 26 27 28 29 30 31 34 35 36 37 38 39 2 1 2 2 24 2 3 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 3 1 25 3 2 0 1 2 3 4 5 6 7 3 3 1 8 9 11 13 15 4 4 2 10 12 14 4 3



配置示例1:队列带宽

此示例显示如何为6800ia TX队列配置带宽:

1. 配置**类映射**以对所关注的流量进行分类: class-map type lan-queuing match-any ltest

```
match dscp 32
class-map type lan-queuing match-any ltest1
match dscp 24
class-map type lan-queuing match-any ltest2
```

```
class-map type lan-queuing match-any itest match dscp default
```

2. 为已配置的类分配优先级和带宽:

```
policy-map type lan-queuing ltest
class type lan-queuing ltest
priority
class type lan-queuing ltest1
bandwidth remaining percent 30
class type lan-queuing ltest2
bandwidth remaining percent 20
```

class class-default

 将策略映射应用到有问题的6800ia接口:注意:当您将lan排队策略映射应用到6800ia堆叠上 的一个端口时,它会将更改传播到堆叠中的所有端口。

6880-VSS#conf t

6880-VSS(config)#int gi101/1/0/1

6880-VSS(config-if)#service-policy type lan-queuing output ltest

```
Propagating [attach] lan queueing policy "ltest" to Gi101/1/0/1 Gi101/1/0/2 Gi101/1/0/3
Gi101/1/0/4 Gi101/1/0/5 Gi101/1/0/6 Gi101/1/0/7 Gi101/1/0/8 Gi101/1/0/9 Gi101/1/0/10
Gi101/1/0/12 Gi101/1/0/13 Gi101/1/0/14 Gi101/1/0/15 Gi101/1/0/16 Gi101/1/0/23
Gi101/1/0/18 Gi101/1/0/25 Gi101/1/0/26 Gi101/1/0/27 Gi101/1/0/28 Gi101/1/0/29
Gi101/1/0/30 Gi101/1/0/31 Gi101/1/0/32 Gi101/1/0/33 Gi101/1/0/34 Gi101/1/0/35
Gi101/1/0/36 Gi101/1/0/37 Gi101/1/0/38 Gi101/1/0/49 Gi101/1/0/40 Gi101/1/0/41
Gi101/1/0/42 Gi101/1/0/43 Gi101/1/0/44 Gi101/1/0/45 Gi101/1/0/46 Gi101/1/0/47 Gi101/1/0/48
```

```
Propagating [attach] lan queueing policy "ltest" to Gi101/2/0/1 Gi101/2/0/2
Gi101/2/0/3 Gi101/2/0/4 Gi101/2/0/5 Gi101/2/0/6 Gi101/2/0/7 Gi101/2/0/8
Gi101/2/0/9 Gi101/2/0/10 Gi101/2/0/11 Gi101/2/0/12 Gi101/2/0/13 Gi101/2/0/14
Gi101/2/0/15 Gi101/2/0/16 Gi101/2/0/17 Gi101/2/0/18 Gi101/2/0/19 Gi101/2/0/20
Gi101/2/0/21 Gi101/2/0/22 Gi101/2/0/23 Gi101/2/0/24 Gi101/2/0/25 Gi101/2/0/26
Gi101/2/0/27 Gi101/2/0/28 Gi101/2/0/29 Gi101/2/0/30 Gi101/2/0/31 Gi101/2/0/32
Gi101/2/0/33 Gi101/2/0/34 Gi101/2/0/35 Gi101/2/0/36 Gi101/2/0/37 Gi101/2/0/38
Gi101/2/0/39 Gi101/2/0/40 Gi101/2/0/41 Gi101/2/0/42 Gi101/2/0/43 Gi101/2/0/44
Gi101/2/0/45 Gi101/2/0/46 Gi101/2/0/47 Gi101/2/0/48
```

```
Propagating [attach] lan queueing policy "ltest" to Gil01/3/0/1 Gil01/3/0/2
Gil01/3/0/3 Gil01/3/0/4 Gil01/3/0/5 Gil01/3/0/6 Gil01/3/0/7 Gil01/3/0/8
Gil01/3/0/9 Gil01/3/0/10 Gil01/3/0/11 Gil01/3/0/12 Gil01/3/0/13 Gil01/3/0/14
Gil01/3/0/15 Gil01/3/0/16 Gil01/3/0/17 Gil01/3/0/18 Gil01/3/0/19 Gil01/3/0/20
Gil01/3/0/21 Gil01/3/0/22 Gil01/3/0/23 Gil01/3/0/24 Gil01/3/0/25 Gil01/3/0/26
Gil01/3/0/27 Gil01/3/0/28 Gil01/3/0/29 Gil01/3/0/30 Gil01/3/0/31 Gil01/3/0/32
Gil01/3/0/33 Gil01/3/0/34 Gil01/3/0/35 Gil01/3/0/36 Gil01/3/0/37 Gil01/3/0/38
Gil01/3/0/39 Gil01/3/0/40 Gil01/3/0/41 Gil01/3/0/42 Gil01/3/0/43 Gil01/3/0/44
Gil01/3/0/45 Gil01/3/0/46 Gil01/3/0/47 Gil01/3/0/48
```

Propagating [attach] lan queueing policy "ltest" to Gil01/4/0/1 Gil01/4/0/2
Gil01/4/0/3 Gil01/4/0/4 Gil01/4/0/5 Gil01/4/0/6 Gil01/4/0/7 Gil01/4/0/8
Gil01/4/0/9 Gil01/4/0/10 Gil01/4/0/11 Gil01/4/0/12 Gil01/4/0/13 Gil01/4/0/14
Gil01/4/0/15 Gil01/4/0/16 Gil01/4/0/17 Gil01/4/0/18 Gil01/4/0/19 Gil01/4/0/20
Gil01/4/0/21 Gil01/4/0/22 Gil01/4/0/23 Gil01/4/0/24 Gil01/4/0/25 Gil01/4/0/26
Gil01/4/0/27 Gil01/4/0/28 Gil01/4/0/29 Gil01/4/0/30 Gil01/4/0/31 Gil01/4/0/32
Gil01/4/0/33 Gil01/4/0/34 Gil01/4/0/35 Gil01/4/0/36 Gil01/4/0/37 Gil01/4/0/38

Gi101/4/0/39 Gi101/4/0/40 Gi101/4/0/41 Gi101/4/0/42 Gi101/4/0/43 Gi101/4/0/44 Gi101/4/0/45 Gi101/4/0/46 Gi101/4/0/47 Gi101/4/0/48 6880-VSS(config-if)# 6880-VSS(config-if)#end 4. 验证是**否应用了**策略映射: 6880-VSS#show run int gi101/1/0/1 interface GigabitEthernet101/1/0/1 switchport switchport trunk allowed vlan 500 switchport mode access switchport access vlan 500 load-interval 30 service-policy type lan-queuing output ltest end 5. 检查类映射到队列映射、带宽和缓冲区分配,以及队列到差分服务代码点(DSCP)映射: 6880-VSS#show queueing int gi101/1/0/1 Interface GigabitEthernet101/1/0/1 queueing strategy: Weighted Round-Robin Port QoS is disabled globally Queueing on Gil01/1/0/1: Tx Enabled Rx Disabled Trust boundary disabled Trust state: trust DSCP Trust state in queueing: trust DSCP Default COS is 0 Class-map to Queue in Tx direction Class-map Queue Id ----ltest 1 ltest1 4 ltest2 3 class-default 2 Queueing Mode In Tx direction: mode-dscp Transmit queues [type = 1p3q3t]: Queue Id Scheduling Num of thresholds _____ Priority 3 1 WRR 2 3 WRR 3 3 WRR 3 4 WRR bandwidth ratios: 50[queue 2] 20[queue 3] 30[queue 4] queue-limit ratios: 15[Pri Queue] 100[queue 2] 100[queue 3] 100[queue 4] queue thresh dscp-map _____ 1 1 32 1 2 1 3 1 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 2 23 25 26 27 28 29 30 31 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 2 2 3 2 3 0 1 3 2 3 3 1 24 4 2 4

4

3

 从6800ia对缓冲区和带宽分配进行双检查:注意:如果不指定某个类的缓冲区权重,则默认为 100%。队列 1:15 / [15+100+100+100] = 4队列 2:100 / [15+100+100+100] ~ 31对于其他队列 ,也会得出权重。

6880-VSS#remote command fex 101 show mls qos int gi1/0/1 buffer

GigabitEthernet1/0/1 The port is mapped to qset : 1 The allocations between the queues are : 4 31 31 34

6880-VSS#remote command fex 101 show mls gos int gi1/0/1 queueing

GigabitEthernet1/0/1
Egress Priority Queue : enabled
Shaped queue weights (absolute) : 0 0 0 0
Shared queue weights : 0 127 51 76
The port bandwidth limit : 100 (Operational Bandwidth:100.0)
The port is mapped to qset : 1

7. 验证相关流量是否在各自的队列中入队,以及是否存在丢弃: 6880-VSS#remote command fex 101 show mls gos int gi1/0/1 statistic

GigabitEthernet1/0/1 (All statistics are in packets)

dscp: incoming

0 - 4 :	0	0	0	0	0
5 - 9 :	0	0	0	0	0
10 - 14 :	0	0	0	0	0
15 - 19 :	0	0	0	0	0
20 - 24 :	0	0	0	0	0
25 - 29 :	0	0	0	0	0
30 - 34 :	0	0	0	0	0
35 - 39 :	0	0	0	0	0
40 - 44 :	0	0	0	0	0
45 - 49 :	0	0	0	13	0
50 - 54 :	0	0	0	0	0
55 - 59 :	0	0	0	0	0
60 - 64 :	0	0	0	0	
dscp: outgoing					

0 - 4 :	0	0	0	0	0
5 - 9 :	0	0	0	0	0
10 - 14 :	0	0	0	0	0
15 - 19 :	0	0	0	0	0
20 - 24 :	0	0	0	0	9118500
25 - 29 :	0	0	0	0	0
30 - 34 :	0	0	516236	0	0
35 - 39 :	0	0	0	0	0
40 - 44 :	0	0	0	0	0
45 - 49 :	0	0	0	20	0
50 - 54 :	0	0	0	0	0
55 - 59 :	0	0	0	0	0
60 - 64 :	0	0	0	0	
cos: incoming					
0 - 4 :	106	0	0	0	0
5 - 7 :	0	0	0		
cos: outgoing					

0 - 4 : 41 0 0 9118505 516236 0 Ο 0 5 - 7 : output queues enqueued: queue: threshold1 threshold2 threshold3 _____ **queue 0: 516255** 35 5 0 12 0 queue 1: 0 queue 2: 0 Ο
 queue 2:
 0

 queue 3:
 9118520
 0 0 output queues dropped: queue: threshold1 threshold2 threshold3 _____ queue0:0queue1:0 0 0 0 0 0 0 0 queue 2: 0 queue 3: 49823 Ω 0 OutofProfile: Policer: Inprofile: 0

配置示例2:带宽和缓冲区

此示例显示如何为6800ia TX队列配置带宽和缓冲区:

```
1. 在示例1中创建的策略映射中,可以指定队列缓冲区分配,如本示例所示:注意:如果不指定
  某个类的缓冲区权重,则默认为100%。
  policy-map type lan-queuing ltest
  class type lan-queuing ltest
    priority
    queue-buffers ratio 15
   class type lan-queuing ltest1
    bandwidth remaining percent 30
    queue-buffers ratio 30
   class type lan-queuing ltest2
    bandwidth remaining percent 20
    queue-buffers ratio 40
   class class-default
    queue-buffer ratio 15

    2. 检查类映射到队列映射、带宽和缓冲区分配以及队列到DSCP映射:

  6880-VSS#sh queueing int gi101/1/0/1
  Interface GigabitEthernet101/1/0/1 queueing strategy: Weighted Round-Robin
   Port QoS is disabled globally
   Queueing on Gi101/1/0/1: Tx Enabled Rx Disabled
  Trust boundary disabled
  Trust state: trust DSCP
  Trust state in queueing: trust DSCP
  Default COS is 0
    Class-map to Queue in Tx direction
    Class-map
              Queue Id
    _____
                           1
     ltest
    ltest1
                           4
    ltest2
                           3
    class-default
                           2
```

Queueing Mode In Tx direction: mode-dscp Transmit queues [type = 1p3q3t]:

-----1 Priority WRR WRR WRR WRR bandwidth ratios: 50[queue 2] 20[queue 3] 30[queue 4] queue-limit ratios: 15[Pri Queue] 15[queue 2] 40[queue 3] 30[queue 4] queue thresh dscp-map -----1 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 25 26 27 28 29 30 31 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 1 24 4 2 3. 从6800ia对缓冲区和带宽分配进行双检查: 6880-VSS#remote command fex 101 sh mls qos int gi1/0/1 queueing GigabitEthernet1/0/1 Egress Priority Queue : enabled Shaped queue weights (absolute) : 0 0 0 0 Shared queue weights : 0 127 51 76 The port bandwidth limit : 100 (Operational Bandwidth:100.0) The port is mapped to qset : 1 6880-VSS#remote command fex 101 sh mls qos int gi1/0/1 buffers GigabitEthernet1/0/1 The port is mapped to qset : 1 The allocations between the queues are : 15 15 40 30 4. 验证相关流量是否在各自的队列中入队,以及是否存在丢弃: 6880-VSS#remote command fex 101 sh mls qos int gi1/0/1 statistic GigabitEthernet1/0/1 (All statistics are in packets) dscp: incoming _____ 0 0 - 4 : 5 - 9 : 0 0 10 - 14 : 15 - 19 : 20 - 24 : 25 - 29 : 30 - 34 : 35 - 39 : 40 - 44 : 45 - 49 : 50 - 54 : 55 - 59 : 60 - 64 :

Queue Id Scheduling Num of thresholds

0 - 4 :	0	0	0	0	0
5 - 9 :	0	0	0	0	0
10 - 14 :	0	0	0	0	0
15 - 19 :	0	0	0	0	0
20 - 24 :	0	0	0	0	57864687
25 - 29 :	0	0	0	0	0
30 - 34 :	0	0	29364400	0	0
35 - 39 :	0	0	0	0	0
40 - 44 :	0	0	0	0	0
45 - 49 :	0	0	0	775	0
50 - 54 :	0	0	0	0	0
55 - 59 :	0	0	0	0	0
60 - 64 :	0	0	0	0	
cos: incom	ing				
0 - 4 :	5323	0	0	0	0
5 - 7:	0	0	0		
cos: outgo	ing				
0 - 4 :	1718	0	0	57864691	29364400
5 - 7:	0	0	0		
output que	ues enqueued	:			
queue:	threshold1	threshold2	threshold3		
queue 0:	29365402	1883	5		
queue 1:	793	98	0		
queue 2:	0	0	0		
queue 3:	530554174	0	0		
output que	ues dropped:				
queue:	threshold1	threshold2	threshold3		
queue 0:	0	10	0		
queue 1:	1	24093	0		
queue 2:	0	0	0		
queue 3:	2309351	0	0		
		_			
Policer: In	profile:	0 Out	ofProfile:	0	

验证

当前没有可用于此配置的验证过程。

dscp: outgoing

故障排除

本部分提供的信息可用于对配置进行故障排除。

<u>命令输出解释程序工具(仅限注册用户)支持某些 show</u> 命令。使用输出解释器工具来查看 show 命令输出的分析。

从6800ia CLI为qos-manager启用debug。确保日志重定向到缓冲区,并且日志记录缓冲区设置为高数:

```
6880-VSS#attach fex 101
Attach FEX:101 ip:192.168.1.101
Trying 192.168.1.101 ... Open
??????FEX-101>en
Password: cisco
FEX-101#
FEX-101#debug platform qos-manager all
QM verbose debugging is on
QM cops debugging is on
QM cops debugging is on
QM events debugging is on
GM Statistics debugging is on
FEX-101#exit
[Connection to 192.168.1.101 closed by foreign host]
```

2. 配置policy-map以触发调试:

6880-VSS#conf t

6880-VSS(config)#int gil01/1/0/1
6880-VSS(config-if)# service-policy type lan-queuing output ltest
Propagating [attach] lan queueing policy "ltest" to Gil01/1/0/1
Gil01/1/0/2 Gil01/1/0/3 Gil01/1/0/4 Gil01/1/0/5 Gil01/1/0/6 Gil01/1/0/7 Gil01/1/0/8
Gil01/1/0/9 Gil01/1/0/10 Gil01/1/0/12 Gil01/1/0/13 Gil01/1/0/14 Gil01/1/0/15 Gil01/1/0/16
<snip>

6880-VSS(config-if)#end

3. 检查交换矩阵扩展器(FEX)上的日志以检查调试:

6880-VSS#remote command fex 101 show log
<snip>
May 20 06:43:18.208: HQM: hulc_fex_qos_priority_handler: hulc_fex_qos_priority_handler:
****Setting Priority Queue (FEX-101)

May 20 06:43:18.208: HQM: hulc_fex_qos_priority_handler: hulc_fex_qos_priority_handler: subopcode=2 startport=0 endport=0 size=4 (FEX-101) May 20 06:43:18.208: HQM: hulc_f _fex_qos_priority_handler:QueueNum=1 PriorityQueue=1 queuetype=2 thresholdsnum=3 (FEX-101) May 20 06:43:18.212: HQM: hulc_fex_qos_priority_handler: hulc_fex_qos_priority_handler: idb=GigabitEthernet1/0/1 (FEX-101) May 20 06:43:18.212: HQM: hulc_fex_qos_priority_handler: hulc_fex_qos_priority_handler: idb=GigabitEthernet1/0/2 (FEX-101) May 20 06:43:18.212: HQM: hulc_fex_qos_priority_handler: hulc_fex_qos_priority_handler: idb=GigabitEthernet1/0/2 (FEX-101) May 20 06:43:18.212: HQM: hulc_fex_qos_priority_handler: hulc_fex_qos_priority_handler: idb=GigabitEthernet1/0/3 (FEX-101)

hulc_fex_qos_srr_weight_setting:****Setting weight for queues**** (FEX-101)

May 20 06:43:18.232: HQM: hulc_fex_qos_srr_weight_setting: hulc_fex_qos_srr_weight_setting: subopcode=2 startport=0 endport=0 size=4 (FEX-101) May 20 06:43:18.232: HQM: hulc_fex_qos_srr_weight_setting: hulc_fex_qos_srr_weight_setting: QueueNum=1 RRType=0 WeightRelative=0 WeightAbsolute=0 (FEX-101) 20 06:43:18.232: HQM: hulc_fex_qos_srr_weight_setting: hulc_fex_qos_srr_weight_setting: ratio is 0 for queue 1 (FEX-101) May 20 06:43:18.232: HQM: hulc_fex_qos_srr_weight_setting: hulc_fex_qos_srr_weight_setting: QueueNum=2 RRType=0 WeightRelative=33 WeightAbsolute=0 (FEX-101) <snip>

20 06:43:19.110: HQM: hulc_fex_qos_buffer_conf: **Setting buffer for output queues** (FEX-101)

May 20 06:43:19.110: HQM: hulc_fex_qos_buffer_conf: hulc_fex_qos_buffer_conf:

subopcode=2 startport=0 endport=0 size=4 (FEX-101)
May 20 06:43:19.110: HQM: hulc_fex_qos_buffer_conf: hulc_fex_qos_buffer_conf:
queuenum=1 size=15 (FEX-101)
May 20 06:43:19.110: HQM: hulc_fex_qos_buffer_conf:
hulc_fex_qos_buffer_conf: queuenum=2 size=25 (FEX-101)
May 20 06:43:19.110: HQM: hulc_fex_qos_buffer_conf:
hulc_fex_qos_buffer_conf: queuenum=3 size=40 (FEX-101)
May 20 06:43:19.110: HQM: hulc_fex_qos_buffer_conf:
hulc_fex_qos_buffer_conf: queuenum=4 size=20 (FEX-101)
May 20 06:43:19.110: HQM: hqm
20 06:43:19.110: HQM: hqm
20 06:43:19.113: HQM: s88g_qd_get_queue_threshold: s88g_qd_get_queue_threshold:
max_limit = 3200, set to 350. (FEX-101)
Asy 20 06:43:19.113: HQM: s88g_qd_get_queue_threshold: s88g_qd_get_queue_threshold:
max_limit = 3200, set to 350. (FEX-101)

hulc_fex_qos_qthresh_map:****Setting dscp to output queue map**** (FEX-101)
May 20 06:43:19.169: HQM: hulc_fex_qos_qthresh_map: hulc_fex_qos_qthresh_map:
subopcode=2 startport=0 endport=0 size=1 (FEX-101)
May 20 06:43:19.169: HQM: hulc_fex_qos_qthresh_map: hulc_fex_qos_qthresh_map: DscpBma
20 06:43:19.169: HQM: hulc_fex_qos_qthresh_map: hulc_fex_qos_qthresh_map
dscp=32 iterator=0 (FEX-101)
May 20 06:43:19.169: HQM: hulc_fex_qos_qthresh_map: hulc_fex_qos_qthresh_map
dscp=33 iterator=1 (FEX-101)
May 20 06:43:19.169: HQM: hulc_fex_qos_qthresh_map: hulc_fex_qos_qthresh_map
dscp=40 iterator=2 (FEX-101)