

有關在MDS交換機中優先傳輸B2B信用額度的技術說明

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簡介

本檔案介紹不同介面中的接收和傳輸緩衝區到緩衝區(B2B)信用，當您對光纖通道網狀架構中的效能問題進行疑難排解時，這些信用非常有用。

必要條件

需求

思科建議您瞭解以下主題：

- Cisco多層次資料交換器(MDS)
- 光纖通道協定

採用元件

本檔案中的資訊是根據Cisco MDS 9000系列多層次交換器。

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

瞭解MDS交換機中的優先順序傳輸B2B信用

對光纖通道交換矩陣網路的慢排問題進行故障排除時，MDS交換機中的**show interface**命令是確認介面可用積分的一種簡單方法。

以下說明在MDS介面中傳輸B2B信用。

適用於交換器間連結通訊協定(ISL)中繼介面

低優先順序信用用於資料流量，高優先順序信用用於交換機間鏈路控制流量。這只是傳送方端的一個邏輯除法器，用以限制其自身，使其不會消耗接收方上的所有可用接收(Rx)信用。

例如，交換機MDS Tempest (接收器) 通知交換機MDS Maestro (傳送方) 它有64個Rx信用點。

交換機MDS Maestro將56個信用標籤為低優先順序傳輸(Tx)信用和8個標籤為高優先順序Tx信用。

出現擁塞時，MDS Maestro在56個低優先順序信用均不可用時停止傳送資料流量。

但是，它仍可以使用可用的8個高優先順序信用點向MDS Tempest傳送控制流量。

MDS Tempest無需區分低優先順序信用或高優先順序信用。

附註：高優先順序TX傳輸信用的數量取決於不同的硬體平台。

這是一般的理念：八分之一的TX傳輸信用將為高優先順序信用，最大值為15 — 足以處理ELP或其他ISL控制消息。

這種高/低優先順序差異僅用於E埠或TE埠之間的ISL鏈路，不用於F埠。

MDS 9148S平台示例：

對於E埠介面：

```
Tempest# show int fc1/26 fc1/26 is trunking Hardware is Fibre Channel, SFP is short wave laser
w/o OFC (SN) Port WWN is 20:1a:00:2a:6a:b9:d2:30 Peer port WWN is 20:1a:00:2a:6a:56:f0:00 Admin
port mode is auto, trunk mode is on snmp link state traps are enabled Port mode is TE Port vsan
is 2 Admin Speed is auto Operating Speed is 4 Gbps Rate mode is dedicated Port flow-control is
R_RDY Transmit B2B Credit is 32 Receive B2B Credit is 64 B2B State Change Number is 14 Receive
data field Size is 2112 Beacon is turned off Logical type is core Trunk vsans (admin allowed and
active) (2) Trunk vsans (up) (2) Trunk vsans (isolated) () Trunk vsans (initializing) () 5
minutes input rate 160 bits/sec,20 bytes/sec, 0 frames/sec 5 minutes output rate 96 bits/sec,12
bytes/sec, 0 frames/sec 22464 frames input,1801536 bytes 0 discards,0 errors 0 invalid CRC/FCS,0
unknown class 0 too long,0 too short 22977 frames output,1318564 bytes 0 discards,0 errors 0
input OLS,0 LRR,0 NOS,2 loop inits 1 output OLS,2 LRR, 0 NOS, 1 loop inits 64 receive B2B credit
remaining 32 transmit B2B credit remaining
28 low priority transmit B2B credit remaining
Interface last changed at Thu Jul 20 15:40:32 2017

Last clearing of "show interface" counters : never
```

Tempest#

鏈路另一端顯示總傳輸信用為64，低優先順序為56:

```
Maestro# show int fc1/26
fc1/26 is trunking
Hardware is Fibre Channel, SFP is short wave laser w/o OFC (SN)
Port WWN is 20:1a:00:2a:6a:56:f0:00
Peer port WWN is 20:1a:00:2a:6a:b9:d2:30
Admin port mode is auto, trunk mode is on
snmp link state traps are enabled
Port mode is TE
Port vsan is 2
Speed is 4 Gbps
```

```

Rate mode is dedicated
Transmit B2B Credit is 64
Receive B2B Credit is 32
B2B State Change Number is 14
Receive data field Size is 2112
Beacon is turned off
admin fec state is down
oper fec state is down
Trunk vsans (admin allowed and active) (2)
Trunk vsans (up) (2)
Trunk vsans (isolated) ()
Trunk vsans (initializing) ()
5 minutes input rate 160 bits/sec,20 bytes/sec, 0 frames/sec
5 minutes output rate 216 bits/sec,27 bytes/sec, 0 frames/sec
23189 frames input,1330368 bytes
    0 discards,0 errors
    0 invalid CRC/FCS,0 unknown class
    0 too long,0 too short
22677 frames output,1818076 bytes
    0 discards,0 errors
1 input OLS,2 LRR,0 NOS,3 loop inits
1 output OLS,0 LRR, 0 NOS, 1 loop inits
32 receive B2B credit remaining
64 transmit B2B credit remaining
56 low priority transmit B2B credit remaining
Interface last changed at Wed Jul 19 16:39:58 2017

Last clearing of "show interface" counters 1w 5d

```

Maestro#

對於F埠介面：

對於F埠，此計算不適用，因為MDS交換機和啟動器/目標裝置之間沒有控制流量。

但是，您可以看到F埠中標籤為資料流量低優先順序的所有傳輸信用。

例如，以下輸出中的總傳輸信用3和低優先順序為3:

```

switch# show int fc1/47
fc1/47 is up
Hardware is Fibre Channel, SFP is short wave laser w/o OFC (SN)
Port WWN is 20:2f:00:2a:6a:56:f0:00
Admin port mode is F, trunk mode is on
snmp link state traps are enabled
Port mode is F, FCID is 0x570f00
Port vsan is 2
Speed is 4 Gbps
Rate mode is dedicated
Transmit B2B Credit is 3
Receive B2B Credit is 32
Receive data field Size is 2112
Beacon is turned off
admin fec state is down
oper fec state is down
5 minutes input rate 0 bits/sec,0 bytes/sec, 0 frames/sec
5 minutes output rate 16 bits/sec,2 bytes/sec, 0 frames/sec
1220 frames input,74256 bytes
    0 discards,0 errors
    0 invalid CRC/FCS,0 unknown class

```

```
0 too long,0 too short
2231 frames output,220056 bytes
0 discards,0 errors
1 input OLS,1 LRR,0 NOS,0 loop inits
1 output OLS,0 LRR, 1 NOS, 0 loop inits
32 receive B2B credit remaining
3 transmit B2B credit remaining
3 low priority transmit B2B credit remaining
Interface last changed at Wed Jul 19 15:56:15 2017
```

Last clearing of "show interface" counters 1w 5d

switch#

MDS 9710交換機示例：

MDS97xx交換機中沒有高優先順序Tx傳輸信用。但是，可以使用**system default tx-credit double-queue** 指令更改此設定。

所連線交換器的介面也可以看到最大Tx傳輸信用額。

拓撲： MDS 9710 Leonard fc3/14通過E埠背靠背連線到MDS 9148S Tempest fc1/13。

預設設定：

預設情況下，MDS 9710 DS-X9448-768K9線卡沒有高優先順序信用，所有64個傳輸信用均被視為低優先順序。

```
Leonard(config-if)# show int fc3/14 counter
fc3/14
5 minutes input rate 320 bits/sec, 40 bytes/sec, 3 frames/sec
5 minutes output rate 2688 bits/sec, 336 bytes/sec, 3 frames/sec
1416819 frames input, 77233324 bytes
0 discards, 0 errors, 0 CRC/FCS
0 unknown class, 0 too long, 0 too short
1416813 frames output, 138598368 bytes
0 discards, 0 errors
0 timeout discards, 0 credit loss
53 input OLS, 85 LRR, 119 NOS, 0 loop inits
77 output OLS, 7 LRR, 93 NOS, 0 loop inits
14 link failures, 37 sync losses, 2 signal losses
140 Transmit B2B credit transitions to zero
92 Receive B2B credit transitions to zero
0 2.5us TxWait due to lack of transmit credits
Percentage Tx credits not available for last 1s/1m/1h/72h: 0%/0%/0%/0%
500 receive B2B credit remaining
64 transmit B2B credit remaining
64 low priority transmit B2B credit remaining
Last clearing of "show interface" counters : never
Leonard(config-if)#
```

使用tx-credit double-queue:

在交換機上發出命令後，Leonard系統預設的tx-credit雙隊列

(需要通過shut/no shut重置介面)

```

Leonard(config)# show system default switchport
System default port state is down
System default trunk mode is on
System default link failure syslog logging level is 5
System default tx credit queue type is 0
Leonard(config)# system default tx-credit double-queue
Leonard(config)# show system default switchport
System default port state is down
System default trunk mode is on
System default link failure syslog logging level is 5
System default tx credit queue type is 1
Leonard(config)# int fc3/14
Leonard(config-if)# shut
Leonard(config-if)# no shut

```

可以看到，有8個高優先順序Tx傳輸B2B信用和56個低優先順序信用：

```

Leonard(config-if)# show int fc3/14 counter
fc3/14
 5 minutes input rate 320 bits/sec, 40 bytes/sec, 2 frames/sec
 5 minutes output rate 256 bits/sec, 32 bytes/sec, 2 frames/sec
1420613 frames input, 77459300 bytes
 0 discards, 0 errors, 0 CRC/FCS
 0 unknown class, 0 too long, 0 too short
1420607 frames output, 138968464 bytes
 0 discards, 0 errors
 0 timeout discards, 0 credit loss
 54 input OLS, 87 LRR, 122 NOS, 0 loop inits
 79 output OLS, 7 LRR, 95 NOS, 0 loop inits
 14 link failures, 38 sync losses, 2 signal losses
 143 Transmit B2B credit transitions to zero
 94 Receive B2B credit transitions to zero
 0 2.5us TxWait due to lack of transmit credits
Percentage Tx credits not available for last 1s/1m/1h/72h: 0%/0%/0%/0%
 500 receive B2B credit remaining
 64 transmit B2B credit remaining
 56 low priority transmit B2B credit remaining
Last clearing of "show interface" counters : never
Leonard(config-if)#

```

來自交換機MDS 9148S Tempest的最大RX傳輸積分為15:

從連線的MDS 9148S，Tempest可以看出，最大Tx傳輸B2B信用為15。

預設情況下，MDS9710交換機Leonard有500個接收信用點，因此MDS9148S交換機Tempest還將有500個Tx傳輸B2B信用點剩餘，但15個信用點（最大值）被分配為高優先順序(500 - 485 = 15)。

```

Tempest# show int fc1/13 counter
fc1/13
 5 minutes input rate 2624 bits/sec, 328 bytes/sec, 3 frames/sec
 5 minutes output rate 1504 bits/sec, 188 bytes/sec, 3 frames/sec
1343331 frames input, 131489464 bytes
 0 discards, 0 errors, 0 CRC/FCS
 0 unknown class, 0 too long, 0 too short
1343332 frames output, 72878124 bytes
 0 discards, 0 errors
 0 timeout discards, 0 credit loss

```

```
9 input OLS, 2 LRR, 0 NOS, 0 loop inits
12 output OLS, 20 LRR, 9 NOS, 0 loop inits
9 link failures, 0 sync losses, 0 signal losses
66 Transmit B2B credit transitions to zero
24 Receive B2B credit transitions to zero
0 2.5us TxWait due to lack of transmit credits
Percentage Tx credits not available for last 1s/1m/1h/72h: 0%/0%/0%/0%
64 receive B2B credit remaining
500 transmit B2B credit remaining
485 low priority transmit B2B credit remaining
Last clearing of "show interface" counters :never
Tempest#
```

當從MDS 9710 Leonard接收的積分更改為低於120時，八分之一的Tx積分將被標籤為高優先順序：

```
Leonard(config)# int fc3/14
Leonard(config-if)# switchport fcrxbbcredit 112

Tempest# show int fc1/13 count
fc1/13
5 minutes input rate 1024 bits/sec, 128 bytes/sec, 3 frames/sec
5 minutes output rate 1536 bits/sec, 192 bytes/sec, 3 frames/sec
1360026 frames input, 133105756 bytes
0 discards, 0 errors, 0 CRC/FCS
0 unknown class, 0 too long, 0 too short
1360027 frames output, 73885304 bytes
0 discards, 0 errors
0 timeout discards, 0 credit loss
14 input OLS, 2 LRR, 0 NOS, 0 loop inits
17 output OLS, 30 LRR, 14 NOS, 0 loop inits
14 link failures, 0 sync losses, 0 signal losses
91 Transmit B2B credit transitions to zero
34 Receive B2B credit transitions to zero
0 2.5us TxWait due to lack of transmit credits
Percentage Tx credits not available for last 1s/1m/1h/72h: 0%/0%/0%/0%
64 receive B2B credit remaining
112 transmit B2B credit remaining
98 low priority transmit B2B credit remaining
Last clearing of "show interface" counters :never
Tempest#
```

關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。