

X.25到TCP的轉換

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簡介

XOT(X.25 Over TCP)由Cisco Systems設計，並詳述於要求建議(RFC)1613中，以透過IP網際網路傳輸X.25。這允許透過傳輸控制通訊協定/網際網路通訊協定(TCP/IP)網路而不是連結存取程式平衡(LAPB)連結傳送X.25封包。XOT是一種通過IP網際網路透過TCP封包中X.25封包層級封裝傳送X.25封包的方法。

本文檔提供一個示例配置，說明這兩個轉換：

- 傳輸控制通訊協定(TCP)到X.25的轉譯。
- X.25到TCP的轉換。

必要條件

需求

本文件沒有特定需求。

採用元件

此轉換需要ENTERPRISE功能集，該功能集僅在思科路由器平台26xx及更高版本上受支援。

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。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

慣例

如需文件慣例的詳細資訊，請參閱[思科技術提示慣例](#)。

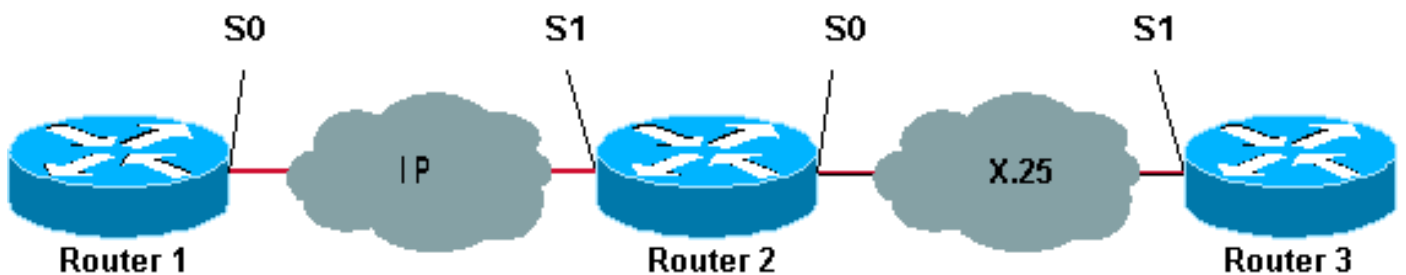
設定

本節提供用於設定本文中所述功能的資訊。

注意：要查詢有關本文檔中使用的命令的其他資訊，請使用[命令查詢工具](#)([僅限註冊客戶](#))。

網路圖表

本檔案會使用以下網路設定：



如圖所示，路由器1和2之間以及路由器2和3之間使用背對背鏈路。

組態

本檔案會使用以下設定：

- Router1
- Router2
- Router3

注意：我們已截斷以下配置以顯示相關資訊。

Router1
<pre>version 12.1 service timestamps debug datetime msec service timestamps log datetime msec ! hostname Router1 ! interface Serial0 description DCE connection to s1 Router2 ip address 10.0.0.6 255.255.255.252 no ip mroute-cache clockrate 56000 ! ip route 192.168.7.0 255.255.255.0 10.0.0.5</pre>
Router2
<pre>version 12.1</pre>

```
service timestamps debug datetime msec
service timestamps log datetime msec
!
hostname Router2
!
x25 routing
!
interface Loopback0
 ip address 192.168.7.1 255.255.255.0
!
interface Serial0
 description DCE connection to s1 Router3
 encapsulation x25 dce
 no ip mroute-cache
 clockrate 64000
!
interface Serial1
 description DTE connection to s0 Router1
 ip address 10.0.0.5 255.255.255.252
!
x25 route 123 interface Serial0
!
translate tcp 192.168.7.2 x25 123
translate x25 345 tcp 10.0.0.6
```

Router3

```
Router3#show running-config
Building configuration...

Current configuration:
!
version 12.1
service timestamps debug datetime msec
service timestamps log datetime msec
hostname Router3
!
ip subnet-zero
!
x25 routing
!
interface Serial1
 description DTE connection to s0 Router2
 encapsulation x25
 x25 address 123
!
x25 route 345 interface Serial1
```

驗證

使用以下命令測試網路是否正常運行：

[輸出直譯器工具](#)(僅供[註冊](#)客戶使用)支援某些show命令，此工具可讓您檢視show命令輸出的分析。

- **show debug** — 用於顯示各種調試資訊或執行特定的故障排除活動。
- **telnet 192.168.7.2** -以提示模式連線到Internet上的電腦系統。
- **pad 345** — 將您登入到PAD。
- **show x25 vc** — 在特權EXEC模式下顯示有關活動交換虛擬電路(SVC)和永久虛擬電路(PVC)的

資訊。

以下測試中的輸出是在上述網路圖所示的裝置上輸入這些命令的結果。此輸出表明網路運行正常。

測試1:TCP到X.25的轉換

在本測試中，我們執行從Router1到Router2的IP位址的Telnet作業階段：

1. 從Router1通過Telnet 192.168.7.2。**注意**：此地址屬於Router2中的網路192.168.7.0 /24。此地址不能分配給網路中的任何其他系統。
2. Router2會執行TCP到X.25的轉譯以到達Router3。以下輸出所示。

```
Router2#show debug
```

```
TCP:
  TCP special event debugging is on
X.29 PAD:
  X25 PAD debugging is on
X.25:
  X.25 special event debugging is on
Protocol translation:
  Protocol Translation debugging is on
Router2#
```

```
Router1#telnet 192.168.7.2
```

```
Trying 192.168.7.2 ... Open
Trying 123...Open
  User Access Verification
  Password:
Router3>
```

```
Router2#
```

```
*Mar 1 01:50:28.759: TCP0: state was LISTEN -> SYNRCVD [23 -> 10.0.0.6(11007)]
*Mar 1 01:50:28.763: TCBC00499CAC setting property TCP_TOS (11) C0094
*Mar 1 01:50:28.767: tcppad2: fork started
*Mar 1 01:50:28.767: TCP: sending SYN, seq 3338770911, ack 4026886977
*Mar 1 01:50:28.771: TCP2: Connection to 10.0.0.6:11007, advertising MSS 1460
*Mar 1 01:50:28.775: TCP2: Connection to 10.0.0.6:11007, received MSS 556, MSS is 556
*Mar 1 01:50:28.791: TCP2: state was SYNRCVD -> ESTAB [23 -> 10.0.0.6(11007)]
*Mar 1 01:50:28.803: pad_open_connection: found a valid route
*Mar 1 01:50:28.807: Serial0: X.25 O R1 Call (11) 8 lci 1
*Mar 1 01:50:28.811: From (0): To (3): 123
*Mar 1 01:50:28.811: Facilities: (0)
*Mar 1 01:50:28.815: Call User Data (4): 0x01000000 (pad)
*Mar 1 01:50:28.827: Serial0: X.25 I R1 Call Confirm (5) 8 lci 1
*Mar 1 01:50:28.831: From (0): To (0):
*Mar 1 01:50:28.835: Facilities: (0)
*Mar 1 01:50:28.835: PAD2: Call completed
*Mar 1 01:50:28.839: PAD2: Control packet received.
*Mar 1 01:50:28.851: PAD2: Input X29 packet type 4 (Read X.3 param) len 1
*Mar 1 01:50:28.855: PAD2: Output X29 packet type 0 (Parameter indication) len 45
  1:1, 2:1, 3:2, 4:1, 5:0, 6:0, 7:4,
  8:0, 9:0, 10:0, 11:14, 12:0, 13:0, 14:0, 15:0,
  16:127, 17:21, 18:18, 19:0, 20:0, 21:0, 22:0,
*Mar 1 01:50:28.879: PAD2: Control packet received.
*Mar 1 01:50:28.883: PAD2: Input X29 packet type 6 (Set and Read) len 9
  2:0, 4:1, 15:0, 7:21,
*Mar 1 01:50:28.887: tcppad2: Sending WILL ECHO
*Mar 1 01:50:28.891: PAD2: Output X29 packet type 0 (Parameter indication) len 9
```

2:0, 4:1, 15:0, 7:21,

Router2#**show x25 vc**

```
SVC 1, State: D1, Interface: Serial0
  Started 00:00:25, last input 00:00:22, output 00:00:22
Line: 2 vty 0 Location: Host: 10.0.0.6
  connected to 123 PAD <--> X25
Window size input: 2, output: 2
  Packet size input: 128, output: 128
  PS: 5 PR: 4 ACK: 4 Remote PR: 5 RCNT: 0 RNR: no
  P/D state timeouts: 0 timer (secs): 0
  data bytes 57/62 packets 5/4 Resets 0/0 RNRs 0/0 REJs 0/0 INTs 0/0
Router2#
```

測試2:X.25到TCP的轉換

在本測試中，我們從Router3對Router2的X.25位址啟動封包裝配器/分解器(PAD)作業階段：

1. 從Router3對345執行PAD命令。
2. Router2會執行X.25到TCP的轉譯以到達Router1。輸出如下。

Router2#**show debug**

```
TCP:
  TCP special event debugging is on
X.29 PAD:
  X25 PAD debugging is on
X.25:
  X.25 special event debugging is on
Protocol translation:
  Protocol Translation debugging is on
Router2#
```

Router3#**pad 345**

```
Trying 345...Open
Trying 10.0.0.6 ... Open
  User Access Verification
  Password: CCCC
Router1>
```

Router2#

```
*Mar 1 01:51:31.475: Serial0: X.25 I R1 Call (12) 8 lci 1024
*Mar 1 01:51:31.479: From (3): 123 To (3): 345
*Mar 1 01:51:31.483: Facilities: (0)
*Mar 1 01:51:31.483: Call User Data (4): 0x01000000 (pad)
*Mar 1 01:51:31.487: PAD: translate call to 345
*Mar 1 01:51:31.491: Call User Data (4): 0x01000000 (pad)
*Mar 1 01:51:31.495: PAD: Creating proto translation on tty2 for vc 1024
*Mar 1 01:51:31.499: Serial0: X.25 O R1 Call Confirm (5) 8 lci 1024
*Mar 1 01:51:31.503: From (0): To (0):
*Mar 1 01:51:31.503: Facilities: (0)
*Mar 1 01:51:31.507: PAD2: Call completed
*Mar 1 01:51:31.511: padtcp2: fork started
*Mar 1 01:51:31.515: PAD2: Output X29 packet type 4 (Read X.3 param) len 1
*Mar 1 01:51:31.523: TCB0049E7A4 created
*Mar 1 01:51:31.523: TCB0049E7A4 setting property TCP_TOS (11) 49C853
*Mar 1 01:51:31.527: TCB0049E7A4 bound to UNKNOWN.44034
*Mar 1 01:51:31.531: PAD2: Control packet received.
*Mar 1 01:51:31.531: TCP: sending SYN, seq 3401534831, ack 0
*Mar 1 01:51:31.535: TCP2: Connection to 10.0.0.6:23, advertising MSS 1460
*Mar 1 01:51:31.539: TCP2: state was CLOSED -> SYNSENT [44034 -> 10.0.0.6(23)]
*Mar 1 01:51:31.559: TCP2: state was SYNSENT -> ESTAB [44034 -> 10.0.0.6(23)]
```

```

*Mar 1 01:51:31.563: TCP2: Connection to 10.0.0.6:23, received MSS 1460, MSS is 1460
*Mar 1 01:51:31.567: TCBO049E7A4 connected to 10.0.0.6.23
*Mar 1 01:51:31.571: PAD2: Input X29 packet type 0 (Parameter indication) len 45
    1:1, 2:1, 3:2, 4:1, 5:0, 6:0, 7:4,
    8:0, 9:0, 10:0, 11:14, 12:0, 13:0, 14:0, 15:0,
    16:127, 17:21, 18:18, 19:0, 20:0, 21:0, 22:0,
*Mar 1 01:51:31.583: PAD2: Setting ParamsIn, length 44
*Mar 1 01:51:31.587: PAD2: Output X29 packet type 6 (Set and Read) len 9
    2:0, 4:1, 15:0, 7:21,
*Mar 1 01:51:31.599: PADTCP2: Telnet received WILL ECHO (1)
*Mar 1 01:51:31.599: PAD2: Control packet received.
*Mar 1 01:51:31.607: PADTCP2: Telnet received DO TTY-TYPE (24)
*Mar 1 01:51:31.611: PAD2: Output X29 packet type 6 (Set and Read) len 3 2:0,
*Mar 1 01:51:31.619: PAD2: Input
*Mar 1 01:51:31.619: PAD2: Control packet received.X29 packet type 0
    (Parameter indication) len 9 2:0, 4:1, 15:0, 7:21,
*Mar 1 01:51:31.627: PAD2: Setting ParamsIn, length 8
*Mar 1 01:51:31.631: PAD2: Input X29 packet type 0 (Parameter indication) len 3 2:0,
*Mar 1 01:51:31.635: PAD2: Setting ParamsIn, length 2
*Mar 1 01:51:31.643: PADTCP2: Telnet received DONT TTY-LOCATION (23)
*Mar 1 01:51:31.647: PADTCP2: Telnet received DONT TTY-SPEED (32)
Router2#

```

Router2#**show x25 vc**

```

SVC 1024, State: D1, Interface: Serial0
    Started 00:00:10, last input 00:00:07, output 00:00:05
Line: 2 vty 0 Location: Host: 123
    123 connected to 345 PAD <--> X25
Window size input: 2, output: 2
    Packet size input: 128, output: 128
    PS: 1 PR: 6 ACK: 6 Remote PR: 1 RCNT: 0 RNR: no
    P/D state timeouts: 0 timer (secs): 0
    data bytes 3057/60 packets 33/6 Resets 0/0 RNRs 0/0 REJs 0/0 INTs 0/0
Router2#
Router2#

```

發出[debug](#)指令之前，請先參閱有關Debug指令的重要資訊。

[疑難排解](#)

目前尚無適用於此組態的具體疑難排解資訊。

[相關資訊](#)

- [更多X.25技術提示](#)
- [技術支援 - Cisco Systems](#)