在Cisco Secure PIX防火牆上配置PPPoE客戶端

目錄

簡介

本檔案介紹如何在Cisco安全PIX防火牆上設定乙太網路上的點對點通訊協定(PPP)使用者端。PIX OS版本6.2引入了此功能，並面向低端PIX(501/506)。

PPPoE結合了乙太網和PPP這兩個廣為接受的標準，以便為客戶端系統分配IP地址提供經過驗證的方法。PPPoE客戶端通常是通過遠端寬頻連線（例如DSL或電纜服務）連線到ISP的個人電腦。ISP之所以部署PPPoE，是因為它支援使用其現有遠端訪問基礎設施進行高速寬頻訪問，並且客戶更容易使用。PIX防火牆6.2版引入了PPPoE客戶端功能。這允許PIX防火牆的小型辦公室、家庭辦公室(SOHO)使用者使用DSL數據機連線到ISP。

目前，只有PIX的外部介面支援此功能。一旦配置也位於外部介面上，就會使用PPPoE/PPP報頭封裝所有流量。PPPoE的預設身份驗證機制是密碼身份驗證協定(PAP)。

PPPoE提供了一種在乙太網上使用PPP身份驗證方法的標準方法。ISP使用時，PPPoE允許對IP地址進行身份驗證分配。在此類實施中，PPPoE客戶端和伺服器通過運行在DSL或其他寬頻連線上的第2層橋接協定互連。

使用者可以選擇手動配置質詢握手身份驗證協定(CHAP)或MS-CHAP。PIX OS版本6.2和6.3不支援使用PPPoE的第2層隧道協定(L2TP)和點對點隧道協定(PPTP)。

PPPoE由兩個主要階段組成：

- 活動發現階段 — 在此階段，PPPoE客戶端定位一個PPPoE伺服器，稱為訪問集中器。在此階

段中，將分配會話ID並建立PPPoE層。
- PPP Session Phase — 在此階段中，將協商PPP選項並執行身份驗證。一旦鏈路設定完成，PPPoE就充當第2層封裝方法，允許通過PPPoE報頭中的PPP鏈路傳輸資料。

在系統初始化時，PPPoE客戶端通過交換一系列資料包與AC建立會話。建立作業階段後，會建立PPP連結，其中包括使用密碼驗證(PAP)通訊協定的驗證。建立PPP作業階段後，每個封包都會封裝在PPPoE和PPP標頭中。

必要條件

需求

本文件沒有特定需求。

採用元件

本文中的資訊係根據以下軟體和硬體版本：

- 採用PIX OS版本6.3(4)的PIX 501
- 採用Cisco IOS®軟體版本12.3(10)配置為PPPoE伺服器的Cisco 1721路由器

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。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

慣例

請參閱思科技術提示慣例以瞭解更多有關文件慣例的資訊。

設定

本節提供可用於設定本檔案中所述功能的資訊。

注意：要查詢有關本文檔使用的命令的更多資訊，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：

組態

本檔案會使用這些設定。

- 作為PPPoE伺服器的Cisco 1721路由器
- 作為PPPoE客戶端的PIX（501或506）

在本實驗測試中，Cisco 1721路由器充當PPPoE伺服器。您的家庭/遠端辦公室不需要此功能，因為ISP託管PPPoE伺服器。

作為PPPoE伺服器的Cisco 1721路由器

```
!--- Username matches that on the PIX. username cisco
password cisco

!--- Enable virtual private dial-up network (VPDN). vpdn
enable
!

!--- Define the VPDN group that you use for PPPoE. vpdn-
group pppoex
 accept-dialin
  protocol pppoe
  virtual-template 1
!
interface Ethernet0
 ip address 172.21.48.30 255.255.255.224
!--- Enable PPPoE sessions on the interface. pppoe
enable
!

interface Virtual-Template1
 mtu 1492
!--- Do not use a static IP assignment within a virtual
template since !--- routing problems can occur. Instead,
use the ip unnumbered command !--- when you configure a
virtual template.

 ip unnumbered Ethernet0
 peer default ip address pool pixpool
!--- Define authentication protocol.  ppp authentication
pap
!
ip local pool pixpool 11.11.11.1 11.11.11.100
```

作為PPPoE客戶端的PIX（501或506）

```
pix501#write terminal
Building configuration...
: Saved
:
PIX Version 6.3(4)
interface ethernet0 10baset
interface ethernet1 100full
nameif ethernet0 outside security0
nameif ethernet1 inside security100
enable password 8Ry2YjIyt7RRXU24 encrypted
passwd 2KFQnbNIdI.2KYOU encrypted
hostname pix501
domain-name cisco.com
fixup protocol dns maximum-length 512
fixup protocol ftp 21
fixup protocol h323 h225 1720
fixup protocol h323 ras 1718-1719
fixup protocol http 80
```

```
fixup protocol rsh 514
fixup protocol rtsp 554
fixup protocol sip 5060
fixup protocol sip udp 5060
fixup protocol skinny 2000
fixup protocol smtp 25
fixup protocol sqlnet 1521
fixup protocol tftp 69
names
pager lines 24
mtu outside 1500
mtu inside 1500

!--- Enable PPPoE client functionality on the interface.
!--- It is off by default. The setroute option creates a
default !--- route if no default route exists.

ip address outside pppoe setroute

ip address inside 192.168.1.1 255.255.255.0
ip audit info action alarm
ip audit attack action alarm
pdm history enable
arp timeout 14400
global (outside) 1 interface
nat (inside) 1 192.168.1.0 255.255.255.0 0 0
timeout xlate 3:00:00
timeout conn 1:00:00 half-closed 0:10:00 udp 0:02:00 rpc
0:10:00 h225 1:00:00
timeout h323 0:05:00 mgcp 0:05:00 sip 0:30:00 sip_media
0:02:00
timeout uauth 0:05:00 absolute
aaa-server TACACS+ protocol tacacs+
aaa-server TACACS+ max-failed-attempts 3
aaa-server TACACS+ deadtime 10
aaa-server RADIUS protocol radius
aaa-server RADIUS max-failed-attempts 3
aaa-server RADIUS deadtime 10
aaa-server LOCAL protocol local
no snmp-server location
no snmp-server contact
snmp-server community public
no snmp-server enable traps
floodguard enable
telnet timeout 5
ssh timeout 5
console timeout 0

!--- Define the VPDN group that you use for PPPoE. !---
Configure this first. vpdn group pppoex request dialout
pppoe

!--- Associate the username that the ISP assigns to the
VPDN group. vpdn group pppoex localname cisco

!--- Define authentication protocol. vpdn group pppoex
ppp authentication pap

!--- Create a username and password pair for the PPPoE
!--- connection (which your ISP provides). vpdn username
cisco password *********

terminal width 80
Cryptochecksum:e136533e23231c5bbbbf4088cee75a5a
```

```
: end
[OK]
pix501#
```

驗證

本節提供的資訊可用於確認您的組態是否正常運作。

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 ip address outside pppoe** — 顯示當前PPPoE客戶端配置資訊。
- **show vpdn tunnel pppoe** — 顯示特定隧道型別的隧道資訊。
- **show vpdn session pppoe** — 顯示PPPoE會話的狀態。
- **show vpdn pppinterface** — 顯示PPPoE通道的介面識別值。為每個PPPoE隧道建立PPP虛擬介面。
- **show vpdn group** — 顯示為PPPoE隧道定義的組。
- **show vpdn username** — 顯示本地使用者名稱資訊。

以下是**show ip address outside pppoe**命令的輸出：

```
501(config)#show ip address outside pppoe

PPPoE Assigned IP addr: 11.11.11.1 255.255.255.255 on Interface: outside
   Remote IP addr: 172.21.48.30
```

以下是**show vpdn tunnel pppoe** 指令的輸出：

```
501(config)#show vpdn tunnel pppoe

PPPoE Tunnel Information (Total tunnels=1 sessions=1)

Tunnel id 0, 1 active sessions
  time since change 20239 secs
  Remote MAC Address 00:08:E3:9C:4C:71
  3328 packets sent, 3325 received, 41492 bytes sent, 0 received
```

以下是**show vpdn session pppoe**命令的輸出：

```
501(config)#show vpdn session pppoe

PPPoE Session Information (Total tunnels=1 sessions=1)

Remote MAC is 00:08:E3:9C:4C:71
  Session state is SESSION_UP
    Time since event change 20294 secs, interface outside
    PPP interface id is 1
    3337 packets sent, 3334 received, 41606 bytes sent, 0 received
```

以下是**show vpdn pppinterface**命令的輸出：

```
501(config)#show vpdn pppinterface

PPP virtual interface id = 1
PPP authentication protocol is PAP
Server ip address is 172.21.48.30
Our ip address is 11.11.11.1
```

```
Transmitted Pkts: 3348, Received Pkts: 3345, Error Pkts: 0
MPPE key strength is None
  MPPE_Encrypt_Pkts: 0,  MPPE_Encrypt_Bytes: 0
  MPPE_Decrypt_Pkts: 0,  MPPE_Decrypt_Bytes: 0
  Rcvd_Out_Of_Seq_MPPE_Pkts: 0
```

以下是**show vpdn group** 命令的輸出：

```
501(config)#show vpdn group
vpdn group pppoex request dialout pppoe
vpdn group pppoex localname cisco
vpdn group pppoex ppp authentication pap
```

以下是**show vpdn username**命令的輸出：

```
501(config)#show vpdn username
vpdn username cisco password *********
```

疑難排解

本節提供的資訊可用於對組態進行疑難排解。

疑難排解資訊

這些是PIX上常見錯誤配置的調試示例。開啟這些調試。

```
pix#show debug
debug ppp negotiation
debug pppoe packet
debug pppoe error
debug pppoe event
```

- 驗證失敗（例如，錯誤的使用者名稱/密碼）。

```
Rcvd Link Control Protocol pkt, Action code is: Echo Reply,
len is: 4 Pkt dump: d0c3305c

PPP pap recv authen nak: 41757468656e7469636174696f6e206661696c757265
PPP PAP authentication failed
Rcvd Link Control Protocol pkt, Action code is: Termination Request,
len is: 0
```

- 身份驗證協定無效（例如，PAP/CHAP配置錯誤）。

```
Xmit Link Control Protocol pkt, Action code is:
Config Request, len is: 6
Pkt dump: 05064a53ae2a
LCP Option: MAGIC_NUMBER, len: 6, data: 4a53ae2a

Rcvd Link Control Protocol pkt, Action code is: Config Request, len is: 14
Pkt dump: 010405d40304c0230506d0c88668
LCP Option: Max_Rcv_Units, len: 4, data: 05d4
LCP Option: AUTHENTICATION_TYPES, len: 4, data: c023
LCP Option: MAGIC_NUMBER, len: 6, data: d0c88668

Xmit Link Control Protocol pkt, Action code is: Config NAK, len is: 5
Pkt dump: 0305c22305
LCP Option: AUTHENTICATION_TYPES, len: 5, data: c22305

Rcvd Link Control Protocol pkt, Action code is: Config ACK, len is: 6
```

```
Pkt dump: 05064a53ae2a
LCP Option: MAGIC_NUMBER, len: 6, data: 4a53ae2a
```

- PPPoE伺服器沒有響應，每30秒重試一次。

```
send_padi:(Snd) Dest:ffff.ffff.ffff Src:0007.5057.e27e T
ype:0x8863=PPPoE-Discovery

  Ver:1 Type:1 Code:09=PADI Sess:0 Len:12
  Type:0101:SVCNAME-Service Name Len:0
  Type:0103:HOSTUNIQ-Host Unique Tag Len:4 00000001

padi timer expired

send_padi:(Snd) Dest:ffff.ffff.ffff Src:0007.5057.e27e
Type:0x8863=PPPoE-Discovery

  Ver:1 Type:1 Code:09=PADI Sess:0 Len:12
  Type:0101:SVCNAME-Service Name Len:0
  Type:0103:HOSTUNIQ-Host Unique Tag Len:4 00000001

padi timer expired

send_padi:(Snd) Dest:ffff.ffff.ffff Src:0007.5057.e27e
Type:0x8863=PPPoE-Discovery

  Ver:1 Type:1 Code:09=PADI Sess:0 Len:12
  Type:0101:SVCNAME-Service Name Len:0
  Type:0103:HOSTUNIQ-Host Unique Tag Len:4 00000001

padi timer expired
```

疑難排解指令

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。

註：發出debug指令之前，請先參閱有關Debug指令的**重要**資訊。

- **debug pppoe packet** — 顯示資料包資訊。
- **debug pppoe error** — 顯示錯誤消息。
- **debug pppoe event** — 顯示協定事件資訊。
- **debug ppp negotiation** — 用於檢視客戶端是否傳遞PPP協商資訊。
- **debug ppp io** — 顯示PPTP PPP虛擬介面的資料包資訊。
- **debug ppp upap** — 顯示PAP身份驗證。
- **debug ppp error** — 顯示PPTP PPP虛擬介面錯誤消息。
- **debug ppp chap** — 顯示有關客戶端是否通過身份驗證的資訊。

使用以下命令啟用PPPoE客戶端的調試：

```
!--- Displays packet information. 501(config)#debug pppoe packet

!--- Displays error messages. 501(config)#debug pppoe error

!--- Displays protocol event information. 501(config)#debug pppoe event

send_padi:(Snd) Dest:ffff.ffff.ffff Src:0008.a37f.be88 Type:0x8863=PPPoE-Discovery
```

```
  Ver:1 Type:1 Code:09=PADI Sess:0 Len:12

  Type:0101:SVCNAME-Service Name Len:0

  Type:0103:HOSTUNIQ-Host Unique Tag Len:4 00000001

padi timer expired

PPPoE:(Rcv) Dest:0008.a37f.be88 Src:0008.e39c.4c71 Type:0x8863=PPPoE-Discovery

  Ver:1 Type:1 Code:07=PADO Sess:0 Len:45

  Type:0101:SVCNAME-Service Name Len:0

  Type:0103:HOSTUNIQ-Host Unique Tag Len:4 00000001

  Type:0102:ACNAME-AC Name Len:9 3640

  Type:0104:ACCOOKIE-AC Cookie Len:16 D69B0AAF 0DEBC789 FF8E1A75 2E6A3F1B

PPPoE: PADO

send_padr:(Snd) Dest:0008.e39c.4c71 Src:0008.a37f.be88 Type:0x8863=PPPoE-Discovery

  Ver:1 Type:1 Code:19=PADR Sess:0 Len:45

  Type:0101:SVCNAME-Service Name Len:0

  Type:0103:HOSTUNIQ-Host Unique Tag Len:4 00000001

  Type:0102:ACNAME-AC Name Len:9 3640

  Type:0104:ACCOOKIE-AC Cookie Len:16 D69B0AAF 0DEBC789 FF8E1A75 2E6A3F1B

PPPoE:(Rcv) Dest:0008.a37f.be88 Src:0008.e39c.4c71 Type:0x8863=PPPoE-Discovery

  Ver:1 Type:1 Code:65=PADS Sess:1 Len:45

  Type:0101:SVCNAME-Service Name Len:0

  Type:0103:HOSTUNIQ-Host Unique Tag Len:4 00000001

  Type:0102:ACNAME-AC Name Len:9 3640

  Type:0104:ACCOOKIE-AC Cookie Len:16 D69B0AAF 0DEBC789 FF8E1A75 2E6A3F1B


PPPoE: PADS

IN PADS from PPPoE tunnel

PPPoE: Virtual Access interface obtained.PPPoE: Got ethertype=800
on PPPoE interface=outside

PPPoE: Got ethertype=800 on PPPoE interface=outside

PPPoE: Got ethertype=800 on PPPoE interface=outside
```

此輸出顯示PPPoE客戶端的其他調試命令：

```
501(config)#debug ppp negotiation
501(config)#debug ppp io
501(config)#debug ppp upap
```

```
501(config)#debug ppp error

PPP virtual access open, ifc = 0

Xmit Link Control Protocol pkt, Action code is: Config Request, len is: 6
Pkt dump: 0506609b39f5
LCP Option: MAGIC_NUMBER, len: 6, data: 609b39f5

PPP xmit, ifc = 0, len: 14  data: ff03c0210101000a0506609b39f5

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c02101010010012010405d40304c023050659d9f6360000000000000000000
0000000000000000000000000

Rcvd Link Control Protocol pkt, Action code is: Config Request, len is: 14
Pkt dump: 010405d40304c023050659d9f636
LCP Option: Max_Rcv_Units, len: 4, data: 05d4
LCP Option: AUTHENTICATION_TYPES, len: 4, data: c023
LCP Option: MAGIC_NUMBER, len: 6, data: 59d9f636

Xmit Link Control Protocol pkt, Action code is: Config ACK, len is: 14
Pkt dump: 010405d40304c023050659d9f636
LCP Option: Max_Rcv_Units, len: 4, data: 05d4
LCP Option: AUTHENTICATION_TYPES, len: 4, data: c023
LCP Option: MAGIC_NUMBER, len: 6, data: 59d9f636

PPP xmit, ifc = 0, len: 22  data:
ff03c02102010010012010405d40304c023050659d9f636

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c02101020010012010405d40304c023050659d9f6360000000000000000000
0000000000000000000000000

Rcvd Link Control Protocol pkt, Action code is: Config Request, len is: 14
Pkt dump: 010405d40304c023050659d9f636
LCP Option: Max_Rcv_Units, len: 4, data: 05d4
LCP Option: AUTHENTICATION_TYPES, len: 4, data: c023
LCP Option: MAGIC_NUMBER, len: 6, data: 59d9f636

Xmit Link Control Protocol pkt, Action code is: Config ACK, len is: 14
Pkt dump: 010405d40304c023050659d9f636
LCP Option: Max_Rcv_Units, len: 4, data: 05d4
LCP Option: AUTHENTICATION_TYPES, len: 4, data: c023
LCP Option: MAGIC_NUMBER, len: 6, data: 59d9f636

PPP xmit, ifc = 0, len: 22  data:
ff03c02102020010012010405d40304c023050659d9f636

Xmit Link Control Protocol pkt, Action code is: Config Request, len is: 6
Pkt dump: 0506609b39f5
LCP Option: MAGIC_NUMBER, len: 6, data: 609b39f5

PPP xmit, ifc = 0, len: 14  data: ff03c0210101000a0506609b39f5

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c02102010001000a0506609b39f5000000000000000000000000000000000000
0000000000000000000000000

Rcvd Link Control Protocol pkt, Action code is: Config ACK, len is: 6
Pkt dump: 0506609b39f5
LCP Option: MAGIC_NUMBER, len: 6, data: 609b39f5

Xmit Link Control Protocol pkt, Action code is: Echo Request, len is: 4
Pkt dump: 609b39f5
```

```
PPP xmit, ifc = 0, len: 12  data: ff03c02109000008609b39f5

PPP xmit, ifc = 0, len: 20  data: ff03c0230101001005636973636f05636973636f

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c0210a00000859d9f6360000000000000000000000000000000000000000
00000000000000000000000000

Rcvd Link Control Protocol pkt, Action code is: Echo Reply, len is: 4
Pkt dump: 59d9f636

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c0230201000500000000000000000000000000000000000000000000000000
00000000000000000000000000

PPP upap rcvd authen ack:
ff03c0230201000500000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00000
PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03802101010000a0306ac15301e0000000000000000000000000000000000
00000000000000000000000000

Rcvd IP Control Protocol pkt, Action code is: Config Request, len is: 6
Pkt dump: 0306ac15301e
IPCP Option: Config IP, IP = 172.21.48.30

Xmit IP Control Protocol pkt, Action code is: Config Request, len is: 6
Pkt dump: 030600000000
IPCP Option: Config IP, IP = 0.0.0.0

PPP xmit, ifc = 0, len: 14  data: ff03802101010000a030600000000

Xmit IP Control Protocol pkt, Action code is: Config ACK, len is: 6
Pkt dump: 0306ac15301e
IPCP Option: Config IP, IP = 172.21.48.30

PPP xmit, ifc = 0, len: 14  data: ff03802102010000a0306ac15301e

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03802103010000a03060b0b0b020000000000000000000000000000000000
00000000000000000000000000

Rcvd IP Control Protocol pkt, Action code is: Config NAK, len is: 6
Pkt dump: 03060b0b0b02
IPCP Option: Config IP, IP = 11.11.11.1

Xmit IP Control Protocol pkt, Action code is: Config Request, len is: 6
Pkt dump: 03060b0b0b02
IPCP Option: Config IP, IP = 11.11.11.1

PPP xmit, ifc = 0, len: 14  data: ff03802101020000a03060b0b0b02

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c0210901000c59d9f636015995a1000000000000000000000000000000000
00000000000000000000000000

Rcvd Link Control Protocol pkt, Action code is: Echo Request, len is: 8
Pkt dump: 59d9f636015995a1

Xmit Link Control Protocol pkt, Action code is: Echo Reply, len is: 8
Pkt dump: 609b39f5015995a1

PPP xmit, ifc = 0, len: 16  data: ff03c0210a01000c609b39f5015995a1
```

```
PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff0380210202000a03060b0b0b020000000000000000000000000000000000
00000000000000000000000000

Rcvd IP Control Protocol pkt, Action code is: Config ACK, len is: 6
Pkt dump: 03060b0b0b02
IPCP Option: Config IP, IP = 11.11.11.1

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c0210902000c59d9f6360159937b00000000000000000000000000000000
00000000000000000000000000

Rcvd Link Control Protocol pkt, Action code is: Echo Request, len is: 8
Pkt dump: 59d9f6360159937b

Xmit Link Control Protocol pkt, Action code is: Echo Reply, len is: 8
Pkt dump: 609b39f50159937b

PPP xmit, ifc = 0, len: 16  data: ff03c0210a02000c609b39f50159937b

Xmit Link Control Protocol pkt, Action code is: Echo Request, len is: 4
Pkt dump: 609b39f5

PPP xmit, ifc = 0, len: 12  data: ff03c02109010008609b39f5

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c0210a01000859d9f6360000000000000000000000000000000000000000
00000000000000000000000000

Rcvd Link Control Protocol pkt, Action code is: Echo Reply, len is: 4
Pkt dump: 59d9f636
```

使用ppp ms-chap命令進行身份驗證時調試

配置PPP MS-CHAP身份驗證時，此行是您需要在PIX中進行的唯一更改（其餘所有更改保持不變）。

vpdn group pppoex ppp authentication pap命令更改為vpdn group pppoex ppp authentication mschap。

啟用新身份驗證方法的調試。

```
501(config)#debug ppp negotiation
501(config)#debug ppp io
501(config)#debug ppp upap
501(config)#debug ppp error
501(config)#debug ppp chap
PPP virtual access open, ifc = 0

Xmit Link Control Protocol pkt, Action code is: Config Request, len is: 6
Pkt dump: 05063ff50e18
LCP Option: MAGIC_NUMBER, len: 6, data: 3ff50e18

PPP xmit, ifc = 0, len: 14  data: ff03c0210101000a05063ff50e18

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c02101010010013010405d40305c22380050659f4cf2500000000000000
00000000000000000000000000

Rcvd Link Control Protocol pkt, Action code is: Config Request, len is: 15
```

```
Pkt dump: 010405d40305c22380050659f4cf25
LCP Option: Max_Rcv_Units, len: 4, data: 05d4
LCP Option: AUTHENTICATION_TYPES, len: 5, data: c22380
LCP Option: MAGIC_NUMBER, len: 6, data: 59f4cf25

Xmit Link Control Protocol pkt, Action code is: Config ACK, len is: 15
Pkt dump: 010405d40305c22380050659f4cf25
LCP Option: Max_Rcv_Units, len: 4, data: 05d4
LCP Option: AUTHENTICATION_TYPES, len: 5, data: c22380
LCP Option: MAGIC_NUMBER, len: 6, data: 59f4cf25

PPP xmit, ifc = 0, len: 23  data:
ff03c02102010013010405d40305c22380050659f4cf25

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
 ff03c0210201000a05063ff50e1800000000000000000000000000000000
00000000000000000000000

Rcvd Link Control Protocol pkt, Action code is: Config ACK, len is: 6
Pkt dump: 05063ff50e18
LCP Option: MAGIC_NUMBER, len: 6, data: 3ff50e18

Xmit Link Control Protocol pkt, Action code is: Echo Request, len is: 4
Pkt dump: 3ff50e18

PPP xmit, ifc = 0, len: 12  data: ff03c021090000083ff50e18

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c2230103001508bfe11df6d8fb52433336343020202020000000000
00000000000000000000000

PPP chap receive challenge: rcvd a type MS-CHAP-V1 pkt
PPP xmit, ifc = 0, len: 63  data:
ff03c2230203003b31488506adb9ae0f4cac35866242b2bac2863870291e4a88e1458f0
12526048734778a210325619092d3f831c3bcf3eb7201636973636f

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c0210a00000859f4cf2500000000000000000000000000000000000000
00000000000000000000000

Rcvd Link Control Protocol pkt, Action code is: Echo Reply, len is: 4
Pkt dump: 59f4cf25

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c223030300040000000000000000000000000000000000000000000000
00000000000000000000000

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff0380210101000a0306ac15301e0000000000000000000000000000000000
00000000000000000000000

Rcvd IP Control Protocol pkt, Action code is: Config Request, len is: 6
Pkt dump: 0306ac15301e
IPCP Option: Config IP, IP = 172.21.48.30

Xmit IP Control Protocol pkt, Action code is: Config Request, len is: 6
Pkt dump: 030600000000
IPCP Option: Config IP, IP = 0.0.0.0

PPP xmit, ifc = 0, len: 14  data: ff0380210101000a030600000000

Xmit IP Control Protocol pkt, Action code is: Config ACK, len is: 6
Pkt dump: 0306ac15301e
IPCP Option: Config IP, IP = 172.21.48.30
```

```
PPP xmit, ifc = 0, len: 14  data: ff0380210201000a0306ac15301e

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff0380210301000a03060b0b0b020000000000000000000000000000000000
00000000000000000000000

Rcvd IP Control Protocol pkt, Action code is: Config NAK, len is: 6
Pkt dump: 03060b0b0b02
IPCP Option: Config IP, IP = 11.11.11.1

Xmit IP Control Protocol pkt, Action code is: Config Request, len is: 6
Pkt dump: 03060b0b0b02
IPCP Option: Config IP, IP = 11.11.11.1

PPP xmit, ifc = 0, len: 14  data: ff0380210102000a03060b0b0b02

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff0380210202000a03060b0b0b020000000000000000000000000000000000
00000000000000000000000

Rcvd IP Control Protocol pkt, Action code is: Config ACK, len is: 6
Pkt dump: 03060b0b0b02
IPCP Option: Config IP, IP = 11.11.11.1

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c0210901000c59f4cf2501592b7e000000000000000000000000000000
00000000000000000000000

Rcvd Link Control Protocol pkt, Action code is: Echo Request, len is: 8
Pkt dump: 59f4cf2501592b7e

Xmit Link Control Protocol pkt, Action code is: Echo Reply, len is: 8
Pkt dump: 3ff50e1801592b7e

PPP xmit, ifc = 0, len: 16  data: ff03c0210a01000c3ff50e1801592b7e

Xmit Link Control Protocol pkt, Action code is: Echo Request, len is: 4
Pkt dump: 3ff50e18

PPP xmit, ifc = 0, len: 12  data: ff03c021090100083ff50e18

PPP rcvd, ifc = 0, pppdev: 1, len: 42, data:
ff03c0210a01000859f4cf250000000000000000000000000000000000000000
00000000000000000000000

Rcvd Link Control Protocol pkt, Action code is: Echo Reply, len is: 4
Pkt dump: 59f4cf25
```

PIX OS版本6.2和6.3中的已知警告

- 如果已經配置了預設路由，PIX不會建立PPPoE，因為它不能用PPPoE提供的預設路由覆蓋現有的預設路由。如果要使用來自伺服器的預設路由(**setroute**選項)，使用者需要清除配置中的預設路由。
- 您僅定義使用者名稱和一個PPPoE伺服器。

PIX OS版本6.3中的已知警告

- 當您啟用PPPoE和開放最短路徑優先(OSPF)並在檢索IP地址後執行**write memory**時，通過PPPoE或DHCP下載的預設路由會儲存到配置。解決方法是在從PPPoE伺服器下載地址之前執

行**寫記憶體**。
- PPPoE **setroute**選項（用於生成預設路由）與PIX防火牆上的OSPF動態路由協定不相容。在OSPF進程下配置「network」語句時，PPPoE生成的預設路由將從路由表中刪除。解決方法是使用靜態路由。

相關資訊

- PIX支援頁
- PIX命令參考
- 要求建議 (RFC)
- 技術支援與文件 - Cisco Systems