设置从Windows计算机到Cisco路由器的PPPoE会

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简介

本文档介绍在Windows计算机(用作PPPoE客户端)和用作PPPoE服务器的思科路由器之间配置以 太网点对点连接(PPPoE)的过程。

先决条件

要求

思科建议您了解端到端第1层连接是用户优先级(UP)。

使用的组件

本文档不限于特定的软件和硬件版本。

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。

配置

网络图

本文档使用图中所示的网络设置:



配置

BRAS配置

aaa new-model

```
! Enabling AAA on router
```

```
!
```

aaa authentication ppp PPPOE-METD group PPPOE-RADIUS
! Defining AAA method list for PPP Authentication
aaa authorization network PPPOE-AUTHOR-METD group PPPOE-RADIUS
! Defining AAA method list for PPP Authorization
aaa accounting network PPPOE-ACCT-METD start-stop group PPPOE-RADIUS
! Defining AAA method list for PPP Accounting
!
aaa group server radius PPPOE-RADIUS
! Defining AAA Server Group named PPPOE-RADIUS
server-private 10.106.39.253 key cisco
ip radius source-interface GigabitEthernet0/0/0
!
bba-group pppoe BBA-TEST
virtual-template 10

!

interface GigabitEthernet0/0/1.47 encapsulation dot1Q 1 native pppoe enable group BBA-TEST end 1 interface Virtual-Template10 ip unnumbered Loopback10 peer default ip address pool local ! Calling three named AAA Method lists configured above under this Virtual Template ppp authentication pap chap PPPOE-METD ppp authorization PPPOE-AUTHOR-METD ppp accounting PPPOE-ACCT-METD end ! ip local pool local 192.168.1.2 192.168.1.10 ! interface Loopback10 ip address 192.168.1.1 255.255.255.255 end

!

Windows计算机配置和设置

完成以下步骤,从充当PPPoE客户端的Windows计算机启动PPPoE会话。

步骤1.打开网络和共享中心,然后单击"设置新连接或网络",如图所示。

Retwork and Sharing Center	-DX
😳 🔯 • Control Panel • Network and Internet • Network and Sharing Center 🔹 😭 Search Control Panel	
Ele Edit Yew Iools Help	
Control Panel Home View your basic network information and set up connections	
Change adapter settings 📃 💭 See full r	пар
Change advanced sharing settings ADMIN-PC Network 7 Internet (This computer)	
View your active networks Connect or disconn	ect .
Network 7 Access type: Internet Work network Connections: © Local Area Connection 6	
Change your networking settings	-
Set up a wireless, bildband, dial-up, ad hoc, or VPN connection; or set up a router or access point.	
Connect to a network Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.	
Choose homegroup and sharing options Access files and printers located on other network computers, or change sharing settings.	
Troubleshoot problems Diagnose and repair network problems, or get troubleshooting information.	
See also	
HomeGroup	
Internet Options	
Windows Firewall	

步骤2.如图所示,选择"连接**到Internet"并单**击"下一步"。



步骤3.选择Set up a new connection anyway,如图所示:

🔀 Network and Sharing Center	
🕐 😵 • Control Panel • Network and Internet • Network and Sharing Center 🔹 😭 Sear	ch Control Panel 🗾 😢
File Edit View Tools Help	
Control Panel Home View your basic network information and set up connections	0
Change adapter settings 📃 🧾	See full map
Change a 📢 Connect to the Internet	×
Connect to the Internet	
	Connect or disconnect
You are already connected to the Internet	
	hection 6
🔍 ——— 🎱	<u> </u>
	access point.
Browse the Internet now	
→ Set up a new connection anyway	з.
See also	
HomeGrov	
Internet (1
Windows	

步骤4.选择**否,创建新连接**,如图所示:

Network a	and Sharing Center				_O×
00	😵 🔹 Control Panel 👻 Net	work and Internet + Network and Sharing Center	• 🖸 🛛	Search Control Panel	2
File Edit Control Pa Change a	View Tools Help anel Home dapter settings	View your basic network information and set up	connections	See ful map	0
Change a	G 📀 Connect to the Do you want to u	se a connection that you already have?		Connect or disconnect	
	← No, <u>create</u> ← Yes, I'll cho	a new connection hose an goisting connection PoE-FINAL AN Miniport (PPPOE)		access point.	
See also HomeGrow Internet O Windows			Next Car	icel	

步骤5.如图所示,单击"Broadband(PPPoE**)"**:

Network and Sharing Center	_O×
🕐 💱 • Control Panel • Network and Internet • Network and Sharing Center 🔹 😫	Search Control Panel
File Edit View Tools Help	
Control Panel Home View your basic network information and set up connections	0
Change adapter settings 🛛 🙀 ———— 🌆	See full map
Change a store to the Internet	
G 😔 Connect to the Internet	Connect or disconnect
Here do you much he connect?	
now do you want to connect?	section 6
Broadband (PPPoE)	
Connect using DSL or cable that requires a user name and password.	
L2	
	access point.
	ps.
Show connection options that this computer is not set up to use	
See also Help me choose	
HomeGrov	
Windows	Cancel

步骤6.如图所示,输入用户名、**密码和连**接名**称,然**后单击 连接.

Network a	nd Sharing Center				-OX
00	😵 🔹 Control Panel 👻 Network an	d Internet • Network and Sharing Center	÷ 🚺	Search Control Panel	2
File Edit 1	View Tools Help				
Control Pa	anel Home View	your basic network information and set up connec	tions		0
Charge at	durbar caltions	· 🐠 📭 .		See full map	
Change a	Connect to the Internet				
	Connect to the Inte	met			
				Connect or disconnect	
	Type the information fr	om your Internet service provider (ISP)			
				nection 6	
	User name:	citeo -			
	Password:	[Password your ISP gave you]			
		Show characters			
		Bemember this password		access ponc.	
	Connection name:	PPPOE-USER			
	Connection Tante	1			
	🤫 🥅 Allow other peo	ple to use this connection		ps.	
	This option allow	is anyone with access to this computer to use this con	nection.		
See also	L don't have an ISP				
HomeGrow					
Internet (Connect, Car	ncel	
Windows					

这将启动到服务器的PPPoE会话。如图所示检查验证部分:

Retwork and Sharing Center	
COC 😫 • Control Panel • Network and Internet • Network and Sharing Center	👻 🔄 Search Control Panel 💋
File Edit View Tools Help	
Control Panel Home View your basic network information and set up connection	· • •
Change adapter settings	X See full map
Change a 📲 Connect to the Internet	
Connect to the Internet	
	Connect or disconnect
Testing your Internet connection	
	nection 6
i 🕘	ess
	access point.
See also HomeGrov Internet (Windows	Skip Cancel
	- W

验证

步骤1.再次打开**Networks**选项卡,选择网络(在本例中名为PPPOE-USER)并验证状态。如图所示 ,在输入"用户名"和"密码"后,单击**连接**启动会话:

Network and Sharing Center				_101 ×
Control Panel - Net	work and Internet + Network and Sharing Center	- 6	Search Control Panel	<u> 1</u>
File Edit View Tools Help				
Control Panel Home	Yiew your basic network information and set up co	nections		
	A		See full map	
Change adapter settings	Mar 1999		Sec. 1	
Change advanced sharing settings	ADMIN-PC Network 7 (This computer)		Internet	
	View your active networks		Connect or disconnect	
	Network 7	Access type: In	iternet	
	Work network	Connections: 📮 Lo	ocal Area Connection 6	
	Change your pelworking settings	1		
	Set up a new consection or network			
	Set up a wireless, broadband, dial-up, ad hoc, or	VPN connection; or set u	up a router or access point.	
			Currently connected to:	47
	Connect to a network		Network 7	
	Connect or reconnect to a wireless, wired, dia-u	p, or vew network conne	Internet access	
	Choose homegroup and sharing options			100
	Access files and printers located on other netwo	k computers, or change :	Dial-up and VPN	<u> </u>
	Troubleshoot exchience		PPPOE-USER	4
	Diagnose and repair network problems, or get th	subleshooting information	n n	Connect
See also				Touncer
HomeGroup			PPPoE-FINAL	
Internet Options			PPP-1	31
Windows Firewall				
		1	pppoe	ų,
		(non 10.76		
	TETP Server:	¥10.1		
	TFTP Userlpa:	ss: tftpu		
			Open Network and Sharin	g Center

Network and Sharing Center				_O×
Control Panel - Nel	twork and Internet • Network and Sharing Ce	enter	 Search Control Panel 	2
File Edit View Tools Help				
Control Panel Home	View your basic network information	n and set up connecti	ions	0
Change adapter settings	A	- 🌗 -	See full map	
Change advanced sharing settings	ADMIN-PC (This computer)	Network 7	Internet	
	View your active networks		Connect or disconnect	
	Tonnect PPPOE-USER		s type: Internet ections: U Local Area Connection 6	
			ection; or set up a router or access point.	
	User name: cisco		network connection.	
	Password:		rs, or change sharing settings.	
L3	Save this user name and password for C. Me.or/a	r the following users:	and an an	
See also	C Anyone who uses this computer		ing information.	
HomeGroup				
Internet Options	Connect Cancel Prgp	erties <u>H</u> elp		
Windows Finewall				

步骤2.打开命令提示符并运行ipconfig /all命令以检查协商的IP地址,如图所示:



步骤3.启用**debug pppoe event、debug pppoe error 和debug ppp negotiation**,以检查PPPoE会话 的建立。我们还可以启用**debug radius**,以查看与Radius服务器交换的消息。

BRAS#show debugging

PPP: PPP protocol negotiation debugging is on PPPoE: PPPoE protocol events debugging is on PPPoE protocol errors debugging is on

Radius protocol debugging is on Radius packet protocol debugging is on Debug snippet:

BRAS# *Sep 19 18:44:14.531: PPPoE 0: I PADI R:0050.56ad.7206 L:ffff.ffff.ffff Gi0/0/1.47

! Receiving PPPoE Active Discovery Initiation (PADI) broadcast packet from Windows Machine (MAC 0050.56ad.7206) on Router interface Gi0/0/1.47

*Sep 19 18:44:14.531: Service tag: NULL Tag *Sep 19 18:44:14.531: PPPoE 0: O PADO, R:d867.d99f.6601 L:0050.56ad.7206 Gi0/0/1.47

! Sending PPPoE Active Discovery Offer (PADO) unicast packet from Router interface Gi0/0/1.47 (MAC d867.d99f.6601) to Windows Machine (MAC 0050.56ad.7206)

*Sep 19 18:44:14.531: Service tag: NULL Tag *Sep 19 18:44:14.533: PPPoE 0: I PADR R:0050.56ad.7206 L:d867.d99f.6601 Gi0/0/1.47

! Receiving PPPoE Active Discovery Request (PADR) unicast packet from Windows Machine (MAC 0050.56ad.7206) on Router interface Gi0/0/1.47

*Sep 19 18:44:14.533: Service tag: NULL Tag *Sep 19 18:44:14.533: PPPoE : encap string prepared *Sep 19 18:44:14.533: [76]PPPoE 63: Access IE handle allocated *Sep 19 18:44:14.533: [76]PPPoE 63: AAA get retrieved attrs *Sep 19 18:44:14.533: [76]PPPoE 63: AAA get nas port details *Sep 19 18:44:14.533: [76]PPPoE 63: Error adjusting nas port format did *Sep 19 18:44:14.533: [76]PPPoE 63: AAA get dynamic attrs *Sep 19 18:44:14.533: [76]PPPOE 63: AAA unique ID 88 allocated *Sep 19 18:44:14.533: [76]PPPoE 63: No AAA accounting method list *Sep 19 18:44:14.534: [76]PPPoE 63: Service request sent to SSS *Sep 19 18:44:14.534: [76]PPPoE 63: Created, Service: None R:d867.d99f.6601 L:0050.56ad.7206 Gi0/0/1.47 *Sep 19 18:44:14.534: [76]PPPOE 63: State NAS_PORT_POLICY_INQUIRY Event SSS MORE KEYS *Sep 19 18:44:14.534: PPP: Alloc Context [7FE79EC0D8C8] *Sep 19 18:44:14.534: ppp76 PPP: Phase is ESTABLISHING *Sep 19 18:44:14.534: [76]PPPoE 63: data path set to PPP *Sep 19 18:44:14.534: [76]PPPoE 63: Segment (SSS class): PROVISION

! We can also enable 'debug sss events' and 'debug sss error' to debug this stage

*Sep 19 18:44:14.534: [76]PPPoE 63: State PROVISION_PPP Event SSM PROVISIONED *Sep 19 18:44:14.534: [76]PPPoE 63: O PADS R:0050.56ad.7206 L:d867.d99f.6601 Gi0/0/1.47

! Sending PPPoE Active Discovery Session Confirmation (PADS) unicast packets from Router interface Gi0/0/1.47 (MAC d867.d99f.6601) to Windows Machine (MAC 0050.56ad.7206)

*Sep 19 18:44:14.534: [76]PPPoE 63: Unable to Add ANCP Line attributes to the PPPoE Authen attributes

! Access Node Control Protocol (ANCP) is configured between the Digital Subscriber Line Access Concentrator (DSLAM) and Broadband Remote Access Server (BRAS), which is used to aggregate traffic from multiple subscribers and deliver information for any application independently. More information related to ANCP could be found here. It is expected for the IOS to print this message even if ANCP is not enabled.

*Sep 19 18:44:14.534: ppp76 PPP: Using vpn set call direction *Sep 19 18:44:14.534: ppp76 PPP: Treating connection as a callin *Sep 19 18:44:14.534: ppp76 PPP: Session handle[8800004C] Session id[76] *Sep 19 18:44:14.534: ppp76 LCP: Event[OPEN] State[Initial to Starting] *Sep 19 18:44:14.534: ppp76 PPP LCP: Enter passive mode, state[Stopped] *Sep 19 18:44:14.539: ppp76 LCP: I CONFREQ [Stopped] id 0 len 21 *Sep 19 18:44:14.539: ppp76 LCP: MRU 1480 (0x010405C8) *Sep 19 18:44:14.539: ppp76 LCP: MagicNumber 0x61EB5A46 (0x050661EB5A46) *Sep 19 18:44:14.539: ppp76 LCP: PFC (0x0702) *Sep 19 18:44:14.539: ppp76 LCP: ACFC (0x0802) *Sep 19 18:44:14.539: ppp76 LCP: Callback 6 (0x0D0306) *Sep 19 18:44:14.539: ppp76 LCP: O CONFREQ [Stopped] id 1 len 18 *Sep 19 18:44:14.539: ppp76 LCP: MRU 1492 (0x010405D4) *Sep 19 18:44:14.539: ppp76 LCP: AuthProto PAP (0x0304C023) *Sep 19 18:44:14.539: ppp76 LCP: MagicNumber 0x7B063BEA (0x05067B063BEA) *Sep 19 18:44:14.539: ppp76 LCP: O CONFREJ [Stopped] id 0 len 7 *Sep 19 18:44:14.539: ppp76 LCP: Callback 6 (0x0D0306) *Sep 19 18:44:14.539: ppp76 LCP: Event[Receive ConfReq-] State[Stopped to REQsent] *Sep 19 18:44:14.540: ppp76 LCP: I CONFACK [REQsent] id 1 len 18 *Sep 19 18:44:14.540: ppp76 LCP: MRU 1492 (0x010405D4) *Sep 19 18:44:14.540: ppp76 LCP: AuthProto PAP (0x0304C023) *Sep 19 18:44:14.540: ppp76 LCP: MagicNumber 0x7B063BEA (0x05067B063BEA) *Sep 19 18:44:14.540: ppp76 LCP: Event[Receive ConfAck] State[REQsent to ACKrcvd] *Sep 19 18:44:14.540: ppp76 LCP: I CONFREQ [ACKrcvd] id 1 len 18 *Sep 19 18:44:14.540: ppp76 LCP: MRU 1480 (0x010405C8) *Sep 19 18:44:14.540: ppp76 LCP: MagicNumber 0x61EB5A46 (0x050661EB5A46) *Sep 19 18:44:14.540: ppp76 LCP: PFC (0x0702) *Sep 19 18:44:14.540: ppp76 LCP: ACFC (0x0802) *Sep 19 18:44:14.540: ppp76 LCP: O CONFACK [ACKrcvd] id 1 len 18 *Sep 19 18:44:14.540: ppp76 LCP: MRU 1480 (0x010405C8) *Sep 19 18:44:14.540: ppp76 LCP: MagicNumber 0x61EB5A46 (0x050661EB5A46) *Sep 19 18:44:14.540: ppp76 LCP: PFC (0x0702) *Sep 19 18:44:14.540: ppp76 LCP: ACFC (0x0802) *Sep 19 18:44:14.540: ppp76 LCP: Event[Receive ConfReq+] State[ACKrcvd to Open] *Sep 19 18:44:14.541: ppp76 LCP: I IDENTIFY [Open] id 2 len 18 magic 0x61EB5A46MSRASV5.20 *Sep 19 18:44:14.541: ppp76 LCP: I IDENTIFY [Open] id 3 len 24 magic 0x61EB5A46MSRAS-0-ADMIN-PC *Sep 19 18:44:14.541: ppp76 LCP: I IDENTIFY [Open] id 4 len 24 magic 0x61EB5A46sPPY.X`I?Z5SWE}} *Sep 19 18:44:14.541: ppp76 PPP: Queue PAP code[1] id[78] *Sep 19 18:44:14.563: ppp76 PPP: Phase is AUTHENTICATING, by this end *Sep 19 18:44:14.564: ppp76 PAP: Redirect packet to ppp76 *Sep 19 18:44:14.564: ppp76 PAP: I AUTH-REQ id 78 len 11 from "cisco"

! Incoming Authentication Request from Windows Machine using User name "cisco"

*Sep 19 18:44:14.564: ppp76 PAP: Authenticating peer cisco *Sep 19 18:44:14.564: ppp76 PPP: Phase is FORWARDING, Attempting Forward *Sep 19 18:44:14.564: ppp76 LCP: State is Open *Sep 19 18:44:14.564: ppp76 PPP: Phase is AUTHENTICATING, Unauthenticated User

```
*Sep 19 18:44:14.564: RADIUS/ENCODE(0000088):Orig. component type = PPPoE
*Sep 19 18:44:14.564: RADIUS: DSL line rate attributes successfully added
*Sep 19 18:44:14.564: RADIUS/ENCODE: Skip encoding 0 length AAA Cisco vsa password
*Sep 19 18:44:14.564: RADIUS(0000088): Config NAS IP: 10.106.39.212
*Sep 19 18:44:14.564: RADIUS(0000088): Config NAS IPv6: ::
*Sep 19 18:44:14.564: RADIUS/ENCODE: No idb found! Framed IP Addr might not be included
*Sep 19 18:44:14.564: RADIUS/ENCODE(0000088): acct_session_id: 125
*Sep 19 18:44:14.564: RADIUS(0000088): Config NAS IP: 10.106.39.212
*Sep 19 18:44:14.564: RADIUS(0000088): sending
*Sep 19 18:44:14.564: RADIUS(0000088): sending
*Sep 19 18:44:14.564: RADIUS(0000088): Send Access-Request to 10.106.39.253:1645 id 1645/106,
len 147
```

! Sending an Access-Request to Radius Server at 10.106.39.253 on port 1645.

```
*Sep 19 18:44:14.564: RADIUS: authenticator C1 5B AA 62 1D E1 31 6C - 16 A5 CE 92 D6 9C 12 E7
*Sep 19 18:44:14.564: RADIUS: Framed-Protocol [7] 6 PPP [1]
*Sep 19 18:44:14.564: RADIUS: User-Name [1] 7 "cisco"
*Sep 19 18:44:14.564: RADIUS: User-Password [2] 18 *
*Sep 19 18:44:14.564: RADIUS: NAS-Port-Type [61] 6 Virtual [5]
*Sep 19 18:44:14.564: RADIUS: NAS-Port [5] 6 0
*Sep 19 18:44:14.564: RADIUS: NAS-Port-Id [87] 9 "0/0/1/1"
*Sep 19 18:44:14.564: RADIUS: Vendor, Cisco [26] 41
*Sep 19 18:44:14.564: RADIUS: Cisco AVpair [1] 35 "client-mac-address=0050.56ad.7206"
*Sep 19 18:44:14.564: RADIUS: Service-Type [6] 6 Framed [2]
*Sep 19 18:44:14.564: RADIUS: NAS-IP-Address [4] 6 10.106.39.212
*Sep 19 18:44:14.564: RADIUS: Acct-Session-Id [44] 10 "0000007D"
*Sep 19 18:44:14.564: RADIUS: Nas-Identifier [32] 12 "BRAS"
*Sep 19 18:44:14.564: RADIUS(00000088): Sending a IPv4 Radius Packet
*Sep 19 18:44:14.564: RADIUS(00000088): Started 5 sec timeout
*Sep 19 18:44:14.566: RADIUS: Received from id 1645/106 10.106.39.253:1645, Access-Accept, len
52
```

! Receiving an Access-Accep from Radius Server

```
*Sep 19 18:44:14.566: RADIUS: authenticator C0 0D 6C 33 F1 A3 04 27 - F0 C2 76 F5 54 FD E2 42
*Sep 19 18:44:14.566: RADIUS: Class [25] 32
*Sep 19 18:44:14.566: RADIUS: 4A 83 05 60 00 00 01 37 00 01 0A 6A 27 FD 01 D2 12 2E 98 D0 4F B0
00 00 00 00 00 00 00 14 [ J`7j'.0]
*Sep 19 18:44:14.566: RADIUS(00000088): Received from id 1645/106
*Sep 19 18:44:14.566: ppp76 PPP: Phase is FORWARDING, Attempting Forward
*Sep 19 18:44:14.568: [76]PPPOE 63: State LCP_NEGOTIATION Event SSS CONNECT LOCAL
*Sep 19 18:44:14.568: [76]PPPOE 63: Segment (SSS class): UPDATED
*Sep 19 18:44:14.568: [76]PPPoE 63: Segment (SSS class): BOUND
*Sep 19 18:44:14.568: [76]PPPoE 63: data path set to Virtual Acess
*Sep 19 18:44:14.569: [76]PPPOE 63: State LCP_NEGOTIATION Event SSM UPDATED
*Sep 19 18:44:14.569: Vi2.1 PPP: Phase is AUTHENTICATING, Authenticated User
*Sep 19 18:44:14.569: Vi2.1 PAP: O AUTH-ACK id 78 len 5
*Sep 19 18:44:14.569: Vi2.1 PPP: Reducing MTU to peer's MRU
*Sep 19 18:44:14.569: [76]PPPoE 63: AAA get dynamic attrs
*Sep 19 18:44:14.569: Vi2.1 PPP: Phase is UP
*Sep 19 18:44:14.569: Vi2.1 IPCP: Protocol configured, start CP. state[Initial]
*Sep 19 18:44:14.569: Vi2.1 IPCP: Event[OPEN] State[Initial to Starting]
*Sep 19 18:44:14.569: Vi2.1 IPCP: O CONFREQ [Starting] id 1 len 10
*Sep 19 18:44:14.569: Vi2.1 IPCP: Address 192.168.1.1 (0x0306C0A80101)
*Sep 19 18:44:14.569: Vi2.1 IPCP: Event[UP] State[Starting to REQsent]
*Sep 19 18:44:14.569: [76]PPPoE 63: State PTA_BINDING Event STATIC BIND RESPONSE
*Sep 19 18:44:14.569: [76]PPPoE 63: Connected PTA
<snip>
```

```
*Sep 19 18:44:14.572: Vi2.1 IPCP: Event[Receive ConfReq+] State[ACKrcvd to Open]
*Sep 19 18:44:14.595: Vi2.1 IPCP: State is Open
*Sep 19 18:44:14.595: PPPoE : ipfib_encapstr prepared
*Sep 19 18:44:14.596: Vi2.1 Added to neighbor route AVL tree: topoid 0, address 192.168.1.2
*Sep 19 18:44:14.596: Vi2.1 IPCP: Install route to 192.168.1.2
```

```
! Installing route to PPPoE client
BRAS#sh pppoe sess
```

```
1 session in LOCALLY_TERMINATED (PTA) State
1 session total
```

Uniq	ID	PPPoE	RemMAC	Port	VT	VA	State
		SID	LocMAC			VA-st	Туре
	76	63	0050.56ad.7206	Gi0/0/1.47	10	Vi2.1	PTA
			d867.d99f.6601			UP	

```
BRAS#
```

BRAS#sh caller ip Line User IP Address Local Number Remote Number <-> Vi2.1 cisco 192.168.1.2 - - in BRAS# ping 192.168.1.2 Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds: !!!!! Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms

故障排除

目前没有针对此配置的故障排除信息。但是,我们可以借助相关调试应用与PPP和PPPoE相关的标 准故障排除技术。

相关信息

• <u>技术支持和文档 - Cisco Systems</u>