在Windows计算机和思科路由器之间设置L2TP隧 道

目录

简介

本文档介绍如何在Windows计算机和Cisco路由器之间配置第2层隧道协议(L2TP)隧道。

先决条件

要求

Cisco建议您知道Windows计算机可以ping通路由器上的物理接口IP地址。

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

本文档使用以下网络设置:



配置

聚合器配置:

聚合器上的配置示例如图所示:

interface GigabitEthernet0/0/1 ip address 192.168.1.1 255.255.255.0 negotiation auto interface Loopback100 end ip address 172.16.1.1 255.255.255.255 vpdn enable end vpdn-group 1 ! Default L2TP VPDN group accept-dialin protocol 12tp virtual-template 1 no l2tp tunnel authentication interface Virtual-Template1 ip unnumbered Loopback100 peer default ip address pool test ppp authentication chap callout ppp ipcp dns 4.2.2.1 4.2.2.2 end ip local pool test 10.1.1.2 10.1.1.100 Windows计算机配置和设置

请完成以下步骤:

步骤1.打开网络和共享中心,然后单击"设置新连接或网络",如下图所示。

🔾 🕞 🗢 😟 « Network and Inte	ernet Network and Sharing Center	- - i i j	Search Control Panel	م					
Control Panel Home	View your basic network informatic	n and set	up connections	Q					
Change adapter settings Change advanced sharing settings	Ige adapter settings Ige advanced sharing Igs ADMIN-PC Network 5 Internet (This computer) View your active networks Computer								
	Work network	Connections: 🖗 Local Area Connection 5							
Set up a new connection or network Set up a wireless, broadband, dia p, ad hoc, or VPN connection; or set up a point.									
	Connect to a network Connect or reconnect to a wireless, v	wired, dial-u	p, or VPN network connect	ion.					
	Choose homegroup and sharing op Access files and printers located on o	ions other networ	k computers, or change sh	aring settings.					
See also HomeGroup Internet Options	Troubleshoot problems Diagnose and repair network problem	ms, or get tro	publeshooting information.						
Windows Firewall									

步骤2.选择"连**接到工作区",然**后单击"下**一步"**

🌀 🙀 Set Up a Connection or Network	
Choose a connection option	
Connect to the Internet Set up a wireless, broadband, or dial-up connection to the Internet.	
Set up a new network Configure a new router or access point.	
Connect to a workplace Set up a dial-up or VPN connection to your workplace.	
Set up a dial-up connection Connect to the Internet using a dial-up connection.	
Ne	xt Cancel

步骤3.选择Use my Internet Connection(VPN)



步骤4.输入聚合器的IP地址(在本例中为192.168.1.1),为连接指定一个名称(在本例中为 VPDN命名),然后单击**Next**。

🕝 🗽 Connect to a Workplace	2									
Type the Internet add	ress to connect to									
Your network administrator										
Internet address:	192.168.1.1									
D <u>e</u> stination name:	VPDN]								
🔲 Use a <u>s</u> mart card										
Allow other people to use this connection This option allows anyone with access to this computer to use this connection.										
Don't connect now;	just set it up so I can connect later									
		ext Cancel								

步骤5.输入用户名和密码,然后单击"连**接"**

Connect to a Workpl	ace	
Type your user nan	ne and password	
<u>U</u> ser name:	cisco	
<u>P</u> assword:	•••••	
	Show characters	
Domain (antional)	<u>Remember this password</u>	
Domain (optional):		
		Connect Cancel

步骤6.检验用户名和密码



步骤7.它可能首次失败,如下图所示。

🚱 🗽 Connect to a Workplace	
Connection failed with error 800	
The remote connection was not made because the attempted VPN tunnels failed. The VPN server might be unreachable. If this connection is attempting to use an L2TP/IPsec tunnel, the security parameters required for IPsec negotiation might not be configured properly.	*
→ Iry again	
Set up the connection anyway	
Diagnose the problem	
	Cancel

步骤8.单击"**仍然设置连接"并**打开"网**络"**选项卡。



步骤9.右键单击连接(此处为VPDN),然后单击"**属性"**。检验聚合器的IP地址(此处为 192.168.1.1)

VPDN Properties									
General Options Security Networking Sharing									
<u>H</u> ost name or IP address of destination (such as microsoft.com or 157.54.0.1 or 3ffe:1234::1111):									
192.168.1.1									
First connect									
Windows can first connect to a public network, such as the Internet, before trying to establish this virtual connection.									
Dial another connection first:									
See our online <u>privacy statement</u> for data collection and use information.									
OK Cancel									

步骤10.导航至**选项> PPP设置**并验证设置,如下图所示。

VPDN Properties								
General Options Security Networking Sharing								
Dialing options Display progress while connecting Prompt for name and password, certificate, etc. Include Windows logon domain								
PPP Settings								
Enable LCP extensions Enable software compression Negotiate multi-link for single-link connections OK								
PPP Settings								
OK Cancel								

步骤11.导航至Security > Type of VPN >Layer 2 Tunneling Protocol with IPsec,如下图所示。

VPDN Properties								
General Options Security Networking Sharing								
Type of VPN:								
Automatic								
Automatic Point to Point Tunneling Protocol (PPTP) Laver 2 Tunneling Protocol with IPsec (L2TP/IPSec) Secure Socket Tunneling Protocol (SSTP)								
Authentication								
O Use Extensible Authentication Protocol (EAP)								
Properties Allow these protocols								
any of these protocols for other VPN types.								
Unencrypted password (PAP)								
Challenge Handshake Authentication Protocol (CHAP)								
Microsoft CHAP Version 2 (MS-CHAP v2)								
Automatically use my Windows logon name and password (and domain, if any)								
OK Cancel								

步骤12.在"数据加**密"下拉菜单**下选择"不允许加密"选项:

VPDN Properties
General Options Security Networking Sharing
Type of VPN:
Layer 2 Tunneling Protocol with IPsec (L2TP/IPSec)
Advanced settings
Require encryption (disconnect if server declines)
Optional encryption (connect even if no encryption) Require encryption (disconnect if server declines) Maximum strength encryption (disconnect if server declines) Properties
Allow these protocols
Unencrypted password (PAP)
Challenge Handshake Authentication Protocol (CHAP)
Microsoft CHAP Version 2 (MS-CHAP v2)
Automatically use my Windows logon name and password (and domain, if any)
OK Cancel

步骤13.取消选中Microsoft CHAP版本2并单击确定。

VPDN Properties									
General Options Security Networking Sharing									
Type of VPN:									
Layer 2 Tunneling Protocol with IPsec (L2TP/IPSec)									
Advanced settings									
No encryption allowed (server will disconnect if it requires encry									
Authentication									
Use Extensible Authentication Protocol (EAP)									
▼									
Properties									
Allow these protocols									
(DAD)									
<u>Unencrypted password (PAP)</u> Challenged the detailed to the structure Bestered (CLLAB)									
Challenge Handshake Authentication Protocol (CHAP)									
Microsoft CHAP Version 2 (MS-CHAP v2)									
Automatically use my Windows logon name and									
passivora (and domain, ir any)									
OK Cancel									

步骤14.打开网络(此处为VPDN),然后单击"连**接"。**



步骤15.输入用户名和密码,然后单击"连**接"**

😂 Connect VPDN	— ×—							
User name: cisco								
Password:								
Do <u>m</u> ain:								
Save this user name and passwork	rd for the following users:							
⊚ Me o <u>n</u> ly								
O Anyone who uses this compute	er							
Connect Cancel	Pr <u>o</u> perties <u>H</u> elp							

验证

步骤1.再次打开**Networks**选项卡,选择网络(在本例中名为VPDN)并验证状态为Connected。



步骤2.打开命令提示符并运行ipconfig /all命令。

PPI	da ada	pter	• VPD	N:											
	Conn	necti	.on-s	pec	if:	ic	Dŀ	IS	Sı	lff	i	c	-	=	
	Desc	ript	ion		-	-	-	-	-	-	-	-	-		VPDN
	Phys	ical	. Add	res	s.	-	-	-	-	-	-	-	-		
	DHCF	'Ena	bled		_	_	-	_	_	_	-	_	-		No
	Auto	conf	igur	ati	on	Ег	ial	510	ed	_		_			Yes
	I Pu4	Add	ress		_	_	_	_	_	_	_	_	_		10.1.1.9(Preferred)
	Suhn	net M	lask			_	_	_	_	_	_	_	_	-	255-255-255-255
	Defa	ult.	Gate	ωau	-		_	_		_				-	0_0_0_0
	DNS	Seru	ens											-	4 2 2 1
	2110	001 4	010	•	-	-			-	-	-	-			4 9 9 9
	NetB	BIOS	over	Tc	pi	p.			-	-		-		:	Enabled

IPv4地址和域名服务器(DNS)由聚合器在完成PPP Internet协议控制协议(IPCP)阶段后分配。

步骤3.在聚合器上运行debug ppp negotiation 命令和其他show命令:

```
Aggregator#

*Apr 12 06:17:38.148: PPP: Alloc Context [38726D0C]

*Apr 12 06:17:38.148: ppp11 PPP: Phase is ESTABLISHING

*Apr 12 06:17:38.148: ppp11 PPP: Using vpn set call direction

*Apr 12 06:17:38.148: ppp11 PPP: Treating connection as a callin

*Apr 12 06:17:38.148: ppp11 PPP: Session handle[A600000B] Session id[11]

*Apr 12 06:17:38.148: ppp11 LCP: Event[OPEN] State[Initial to Starting]
```

*Apr 12 06:17:38.148: ppp11 PPP: No remote authentication for call-in *Apr 12 06:17:38.148: ppp11 PPP LCP: Enter passive mode, state[Stopped] *Apr 12 06:17:38.607: ppp11 LCP: I CONFREQ [Stopped] id 0 len 21 *Apr 12 06:17:38.607: ppp11 LCP: MRU 1400 (0x01040578) *Apr 12 06:17:38.607: ppp11 LCP: MagicNumber 0x795C7CD1 (0x0506795C7CD1) *Apr 12 06:17:38.607: ppp11 LCP: PFC (0x0702) *Apr 12 06:17:38.607: ppp11 LCP: ACFC (0x0802) *Apr 12 06:17:38.607: ppp11 LCP: Callback 6 (0x0D0306) *Apr 12 06:17:38.608: ppp11 LCP: O CONFREQ [Stopped] id 1 len 10 *Apr 12 06:17:38.608: ppp11 LCP: MagicNumber 0xF7C3D2B9 (0x0506F7C3D2B9) *Apr 12 06:17:38.608: ppp11 LCP: O CONFREJ [Stopped] id 0 len 7 *Apr 12 06:17:38.608: ppp11 LCP: Callback 6 (0x0D0306) *Apr 12 06:17:38.608: ppp11 LCP: Event[Receive ConfReq-] State[Stopped to REQsent] *Apr 12 06:17:38.615: ppp11 LCP: I CONFACK [REQsent] id 1 len 10 *Apr 12 06:17:38.615: ppp11 LCP: MagicNumber 0xF7C3D2B9 (0x0506F7C3D2B9) *Apr 12 06:17:38.615: ppp11 LCP: Event[Receive ConfAck] State[REQsent to ACKrcvd] *Apr 12 06:17:38.615: ppp11 LCP: I CONFREQ [ACKrcvd] id 1 len 18 *Apr 12 06:17:38.615: ppp11 LCP: MRU 1400 (0x01040578) *Apr 12 06:17:38.615: pppl1 LCP: MagicNumber 0x795C7CD1 (0x0506795C7CD1) *Apr 12 06:17:38.616: ppp11 LCP: PFC (0x0702) *Apr 12 06:17:38.616: ppp11 LCP: ACFC (0x0802) *Apr 12 06:17:38.616: ppp11 LCP: O CONFNAK [ACKrcvd] id 1 len 8 *Apr 12 06:17:38.616: ppp11 LCP: MRU 1500 (0x010405DC) *Apr 12 06:17:38.616: ppp11 LCP: Event[Receive ConfReq-] State[ACKrcvd to ACKrcvd] *Apr 12 06:17:38.617: ppp11 LCP: I CONFREQ [ACKrcvd] id 2 len 18 *Apr 12 06:17:38.617: ppp11 LCP: MRU 1400 (0x01040578) *Apr 12 06:17:38.617: pppl1 LCP: MagicNumber 0x795C7CD1 (0x0506795C7CD1) *Apr 12 06:17:38.617: ppp11 LCP: PFC (0x0702) *Apr 12 06:17:38.617: ppp11 LCP: ACFC (0x0802) *Apr 12 06:17:38.617: ppp11 LCP: O CONFNAK [ACKrcvd] id 2 len 8 *Apr 12 06:17:38.617: ppp11 LCP: MRU 1500 (0x010405DC) *Apr 12 06:17:38.617: ppp11 LCP: Event[Receive ConfReq-] State[ACKrcvd to ACKrcvd] *Apr 12 06:17:38.618: ppp11 LCP: I CONFREQ [ACKrcvd] id 3 len 18 *Apr 12 06:17:38.618: ppp11 LCP: MRU 1500 (0x010405DC) *Apr 12 06:17:38.618: ppp11 LCP: MagicNumber 0x795C7CD1 (0x0506795C7CD1) *Apr 12 06:17:38.618: ppp11 LCP: PFC (0x0702) *Apr 12 06:17:38.618: ppp11 LCP: ACFC (0x0802) *Apr 12 06:17:38.618: ppp11 LCP: O CONFACK [ACKrcvd] id 3 len 18 *Apr 12 06:17:38.618: ppp11 LCP: MRU 1500 (0x010405DC) *Apr 12 06:17:38.618: ppp11 LCP: MagicNumber 0x795C7CD1 (0x0506795C7CD1) *Apr 12 06:17:38.618: ppp11 LCP: PFC (0x0702) *Apr 12 06:17:38.619: ppp11 LCP: ACFC (0x0802) *Apr 12 06:17:38.619: ppp11 LCP: Event[Receive ConfReq+] State[ACKrcvd to Open] *Apr 12 06:17:38.621: ppp11 LCP: I IDENTIFY [Open] id 4 len 18 magic 0x795C7CD1MSRASV5.20 *Apr 12 06:17:38.621: ppp11 LCP: I IDENTIFY [Open] id 5 len 24 magic 0x795C7CD1MSRAS-0-ADMIN-PC *Apr 12 06:17:38.621: ppp11 LCP: I IDENTIFY [Open] id 6 len 24 magic 0x795C7CD1Z8Of(U3G.cIwR<#! *Apr 12 06:17:38.626: ppp11 PPP: Queue IPV6CP code[1] id[7] *Apr 12 06:17:38.626: ppp11 PPP: Queue IPCP code[1] id[8] *Apr 12 06:17:38.640: ppp11 PPP: Phase is FORWARDING, Attempting Forward *Apr 12 06:17:38.640: ppp11 LCP: State is Open *Apr 12 06:17:38.657: Vi3.1 PPP: Phase is ESTABLISHING, Finish LCP *Apr 12 06:17:38.657: Vi3.1 PPP: Phase is UP *Apr 12 06:17:38.657: Vi3.1 IPCP: Protocol configured, start CP. state[Initial] *Apr 12 06:17:38.657: Vi3.1 IPCP: Event[OPEN] State[Initial to Starting] *Apr 12 06:17:38.657: Vi3.1 IPCP: O CONFREQ [Starting] id 1 len 10 *Apr 12 06:17:38.657: Vi3.1 IPCP: Address 172.16.1.1 (0x0306AC100101) *Apr 12 06:17:38.657: Vi3.1 IPCP: Event[UP] State[Starting to REQsent] *Apr 12 06:17:38.657: Vi3.1 PPP: Process pending ncp packets *Apr 12 06:17:38.657: Vi3.1 IPCP: Redirect packet to Vi3.1 *Apr 12 06:17:38.657: Vi3.1 IPCP: I CONFREQ [REQsent] id 8 len 34 *Apr 12 06:17:38.657: Vi3.1 IPCP: Address 0.0.0.0 (0x03060000000) *Apr 12 06:17:38.657: Vi3.1 IPCP: PrimaryDNS 0.0.0.0 (0x81060000000) *Apr 12 06:17:38.657: Vi3.1 IPCP: PrimaryWINS 0.0.0.0 (0x82060000000) *Apr 12 06:17:38.657: Vi3.1 IPCP: SecondaryDNS 0.0.0.0 (0x83060000000)

*Apr 12 06:17:38.657: Vi3.1 IPCP: SecondaryWINS 0.0.0.0 (0x84060000000) *Apr 12 06:17:38.657: Vi3.1 IPCP AUTHOR: Done. Her address 0.0.0.0, we want 0.0.0.0 *Apr 12 06:17:38.657: Vi3.1 IPCP: Pool returned 10.1.1.9 *Apr 12 06:17:38.657: Vi3.1 IPCP: O CONFREJ [REQsent] id 8 len 16 *Apr 12 06:17:38.658: Vi3.1 IPCP: PrimaryWINS 0.0.0.0 (0x82060000000) *Apr 12 06:17:38.658: Vi3.1 IPCP: SecondaryWINS 0.0.0.0 (0x84060000000) *Apr 12 06:17:38.658: Vi3.1 IPCP: Event[Receive ConfReq-] State[REQsent to REQsent] *Apr 12 06:17:38.658: Vi3.1 IPV6CP: Redirect packet to Vi3.1 *Apr 12 06:17:38.658: Vi3.1 IPV6CP: I CONFREQ [UNKNOWN] id 7 len 14 *Apr 12 06:17:38.658: Vi3.1 IPV6CP: Interface-Id F0AA:D7A4:5750:D93E (0x010AF0AAD7A45750D93E) *Apr 12 06:17:38.658: Vi3.1 LCP: O PROTREJ [Open] id 2 len 20 protocol IPV6CP (0x0107000E010AF0AAD7A45750D93E) *Apr 12 06:17:38.672: Vi3.1 IPCP: I CONFACK [REQsent] id 1 len 10 *Apr 12 06:17:38.672: Vi3.1 IPCP: Address 172.16.1.1 (0x0306AC100101) *Apr 12 06:17:38.672: Vi3.1 IPCP: Event[Receive ConfAck] State[REQsent to ACKrcvd] *Apr 12 06:17:38.672: Vi3.1 IPCP: I CONFREQ [ACKrcvd] id 9 len 22 *Apr 12 06:17:38.672: Vi3.1 IPCP: Address 0.0.0.0 (0x03060000000) *Apr 12 06:17:38.672: Vi3.1 IPCP: PrimaryDNS 0.0.0.0 (0x81060000000) *Apr 12 06:17:38.672: Vi3.1 IPCP: SecondaryDNS 0.0.0.0 (0x83060000000) *Apr 12 06:17:38.672: Vi3.1 IPCP: O CONFNAK [ACKrcvd] id 9 len 22 *Apr 12 06:17:38.672: Vi3.1 IPCP: Address 10.1.1.9 (0x03060A010109) *Apr 12 06:17:38.672: Vi3.1 IPCP: PrimaryDNS 4.2.2.1 (0x810604020201) *Apr 12 06:17:38.672: Vi3.1 IPCP: SecondaryDNS 4.2.2.2 (0x830604020202) *Apr 12 06:17:38.672: Vi3.1 IPCP: Event[Receive ConfReq-] State[ACKrcvd to ACKrcvd] *Apr 12 06:17:38.747: Vi3.1 IPCP: I CONFREQ [ACKrcvd] id 10 len 22 *Apr 12 06:17:38.747: Vi3.1 IPCP: Address 10.1.1.9 (0x03060A010109) *Apr 12 06:17:38.747: Vi3.1 IPCP: PrimaryDNS 4.2.2.1 (0x810604020201) *Apr 12 06:17:38.747: Vi3.1 IPCP: SecondaryDNS 4.2.2.2 (0x830604020202) *Apr 12 06:17:38.747: Vi3.1 IPCP: O CONFACK [ACKrcvd] id 10 len 22 *Apr 12 06:17:38.748: Vi3.1 IPCP: Address 10.1.1.9 (0x03060A010109) *Apr 12 06:17:38.748: Vi3.1 IPCP: PrimaryDNS 4.2.2.1 (0x810604020201) *Apr 12 06:17:38.748: Vi3.1 IPCP: SecondaryDNS 4.2.2.2 (0x830604020202) *Apr 12 06:17:38.748: Vi3.1 IPCP: Event[Receive ConfReq+] State[ACKrcvd to Open] *Apr 12 06:17:38.768: Vi3.1 IPCP: State is Open *Apr 12 06:17:38.769: Vi3.1 Added to neighbor route AVL tree: topoid 0, address 10.1.1.9 *Apr 12 06:17:38.769: Vi3.1 IPCP: Install route to 10.1.1.9

Aggregator#show caller ip Line User IP Address Local Number Remote Number <-> Vi3.1 10.1.1.9 in Aggregator#show ip interface brief | exclude un Interface IP-Address OK? Method Status Protocol GigabitEthernet0/0/1 **192.168.1.1** YES manual up up **172.16.1.1** YES manual up Loopback100 up

步骤4.验证Windows计算机能否到达聚合器后的远程网络(本例中为Loopback 100接口)

C:\Users\admin>ping 172.16.1.1

Pinging 172.16.1.1 with 32 bytes of data: Reply from 172.16.1.1: bytes=32 time=1ms TTL=255 Reply from 172.16.1.1: bytes=32 time<1ms TTL=255 Reply from 172.16.1.1: bytes=32 time<1ms TTL=255 Reply from 172.16.1.1: bytes=32 time<1ms TTL=255 Ping statistics for 172.16.1.1: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 1ms, Average = 0ms

故障排除

目前没有针对此配置的故障排除信息。

相关信息

- <u>了解 VPDN</u>
- <u>T技术支持和文档 Cisco Systems</u>