# Configuration du tunnel L2TP entre un ordinateur Windows et un routeur Cisco

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### Introduction

Ce document décrit comment configurer un tunnel L2TP (Layer 2 Tunneling Protocol) entre une machine Windows et un routeur Cisco.

### Conditions préalables

#### **Conditions requises**

Cisco recommande que vous sachiez que la machine windows peut envoyer une requête ping à l'adresse IP de l'interface physique sur le routeur.

#### **Components Used**

Ce document n'est pas limité à des versions de matériel et de logiciel spécifiques.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

### Configuration

#### Diagramme du réseau

Ce document utilise la configuration réseau suivante :



Configurations

Configuration de l'agrégateur :

Un exemple de configuration sur l'agrégateur est illustré :

```
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
end
    vpdn enable
vpdn-group 1
 ! Default L2TP VPDN group
accept-dialin
protocol 12tp
virtual-template 1
no 12tp 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
     ip local pool test 10.1.1.2 10.1.1.100
end
```

Configurations et paramètres Windows Machine

Procédez comme suit :

Étape 1. Ouvrez **Centre Réseau et partage** et cliquez sur **Configurer une nouvelle connexion ou un nouveau réseau** comme indiqué dans cette image.

💽 🗢 🗄 « Networ	k and Internet 🔸 Netw	ork and Sharing Center		<b>▼</b> <sup>4</sup> 7	Search Control Panel	٩
Control Panel Home	View yo	our basic network	information	and set	up connections	0
Change adapter setting Change advanced shari settings See also HomeGroup Internet Options Windows Firewall	view you ing (T View you iiii) Change y iiiii iiiii iiiiii iiiiiiiiiii iiiiiii	ADMIN-PC his computer) r active networks Network 5 Work network our networking setting: Set up a new connection Set up a wireless, broad point. Connect to a network Connect to a network Connect or reconnect Choose homegroup ar Access files and printe Troubleshoot problem Diagnose and repair network	Network Network on or network dband, dia p, a to a wireless, wire nd sharing option rs located on oth s etwork problems,	5 Acco Cor d hoc, or V ed, dial-up ns er network or get tro	Up connections Internet Cor Internet Cor Internet Interne	See full map annect or disconnect Connection 5 a router or access tion.

Étape 2. Sélectionnez Se connecter à un lieu de travail et cliquez sur Suivant

💮 🐏 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.	
Nex	t Cancel

Étape 3. Sélectionnez Utiliser ma connexion Internet (VPN)



Étape 4. Entrez l'adresse IP de l'agrégateur (dans ce cas, 192.168.1.1), attribuez un nom à la connexion (dans ce cas, donnez le nom VPDN) et cliquez sur **Suivant**.

🚱 🜆 Connect to a Workplace		
Type the Internet addr	ress to connect to	
Variation de la chief de la		
Your network administrator	can give you this address.	
Internet address:	192.168.1.1	
Destination name:	VPDN	
Use a <u>s</u> mart card		
🚱 📃 <u>A</u> llow other people to	o use this connection	
This option allows ar	hyone with access to this computer to use this connection.	
<u>U</u> on't connect now; J	just set it up so I can connect later	
	<u>N</u> e	t Cancel

Étape 5. Entrez le nom d'utilisateur et le mot de passe, puis cliquez sur Connect

🚱 🗽 Connect to a Workplace		
Type your user name	and password	
<u>U</u> ser name:	cisco	]
<u>P</u> assword:	•••••	]
	Show characters           Remember this password	
<u>D</u> omain (optional):		
		Connect Cancel

Étape 6. Vérifier le nom d'utilisateur et le mot de passe



Étape 7. Il peut échouer pour la première fois, comme le montre cette image.

Connect to a Workplace	- • •
Connection failed with error 800	
<b>N</b>	
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

Étape 8. Cliquez sur **Configurer la connexion de toute façon** et ouvrez l'onglet **Réseaux**.



Étape 9. Cliquez avec le bouton droit sur la connexion (ici VPDN) et cliquez sur **Propriétés**. Vérifiez l'adresse IP de l'agrégateur (ici 192.168.1.1)

VPDN Properties
General Options Security Networking Sharing
Host 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

Étape 10. Accédez à **Options>PPP Settings** et vérifiez les paramètres, comme indiqué dans cette image.

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

Étape 11. Accédez à Security >Type of VPN >Layer 2 Tunneling Protocol with IPsec, comme illustré dans cette image.

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
© Use Extensible Authentication Protocol (EAP)
Allow these protocols EAP-MSCHAPv2 will be used for IKEv2 VPN type. Select any of these protocols for other VPN types.
Unencrypted password (PAP)
Challenge Handshake Authentication Protocol (CHAP)
Microsoft CHAP Version 2 (MS-CHAP v2)
<u>Automatically use my Windows logon name and password (and domain, if any)</u>
OK Cancel

Étape 12. Sélectionnez No encryption allowed option dans le menu déroulant Data encryption :

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)
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

Étape 13. Désélectionnez Microsoft CHAP Version 2 et cliquez sur OK.

VPDN Properties
General Options Security Networking Sharing
Type of VPN:
Layer 2 Tunneling Protocol with IPsec (L2TP/IPSec)
Advanced <u>s</u> ettings
Data encryption:
No encryption allowed (server will disconnect if it requires encry
Authentication
Use Extensible Authentication Protocol (EAP)
Properties
Allow these protocols
Unencrypted password (PAP)
Challenge Handsbake Authentication Protocol (CHAP)
password (and domain, if any)
OK Cancel

Étape 14. Ouvrez le réseau (ici VPDN) et cliquez sur Connect.



Étape 15. Saisissez le nom d'utilisateur et le mot de passe, puis cliquez sur Connect

💐 Connect VPDN 💽
User name: cisco
Password:
Do <u>m</u> ain:
Save this user name and password for the following users:
○ Me o <u>n</u> ly
O Anyone who uses this computer
Connect Cancel Properties Help

## Vérification

Étape 1. Ouvrez à nouveau l'onglet **Réseaux**, sélectionnez le réseau (nommé VPDN dans cet exemple) et vérifiez que l'état est Connecté.



Étape 2. Ouvrez l'invite de commandes et exécutez la commande ipconfig /all.

PPP adapter VPDN:		
Connection-specific DNS Suffix	. :	
Description	: VPDN	
Physical Address	:	
DHCP Enabled	: No	
Autoconfiguration Enabled	: Yes	
IPv4 Address	: 10.1.1.9(Preferred	)
Subnet Mask	: 255.255.255.255	
Default Gateway	: 0.0.0.0	
DNS Servers	: 4.2.2.1	
	4.2.2.2	
NetBIOS over Tcpip	: Enabled	

L'adresse IPv4 et le serveur de noms de domaine (DNS) sont attribués par l'agrégateur après avoir terminé la phase PPP IPCP (Internet Protocol Control Protocol).

Étape 3. Exécutez la commande **debug ppp negotiation** et les autres commandes show sur Aggregator :

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: ppp11 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: ppp11 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

Loopback100	172.16.1.1	YES manual up	up
GigabitEthernet0/0/1	192.168.1.1	YES manual up	up
Interface	IP-Address	OK? Method Status	Protocol
Aggregator#show ip int	erface brief	exclude un	

Étape 4. Vérifiez si l'ordinateur Windows peut atteindre le réseau distant derrière Aggregator (dans ce cas, l'interface de bouclage 100)

```
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
```

### Dépannage

Il n'existe actuellement aucune information de dépannage spécifique pour cette configuration.

#### Informations connexes

- Présentation de VPDN
- <u>TSupport technique et documentation Cisco Systems</u>