©© 3COM

PPTP VPN for Windows XP and Vista to 3Com X-family

Document Version:	1.1
Publication Date:	10 th May 2007
Description:	PPTP VPNs from Microsoft Windows XP and Vista to 3Com X-family
Product:	3Com X-family
3Com TOS Version:	2.5.1.6826
Windows XP version	Version 5.1 (Build 2600.xpsp_sp2_gdr.061219-0316 : Service Pack 2)
Windows Vista version	Ultimate Edition

Introduction

This document explains how to configure the 3Com X-family devices to terminate a Windows XP or Windows Vista VPN client using PPTP.

These instructions assume that your corporate network is attached to the LAN security zone of the X-family, and that external (Internet) traffic is on the WAN security zone.

Table of Contents

1	OVERVIEW	3
2	NETWORK CONFIGURATION	3
3	CONFIGURING POINT-TO-POINT TUNNELING PROTOCOL (PPTP)	4
3.1	High-level steps	4
3.1	3Com X-family Configuration for PPTP	4
3.2	Windows XP VPN Client Configuration with PPTP	6
3.3	Load the Strong Encryption Package	10
3.4	Windows Vista Client Configuration with PPTP	11
4	TROUBLESHOOTING PPTP TUNNEL	15

1 Overview

PPTP uses the security attributes of a GRE tunnel with MPPE encryption for data transfer, and the Point-to-Point Tunneling Protocol to essentially make the client appear part of the Workplace network.

2 Network Configuration



IP	Addresses	for the	following	example	setup are:
----	-----------	---------	-----------	---------	------------

Device	Interface	Address	Mask	Gateway
Router	1 (to X-family unit)	10.10.20.1	255.255.255.0	
Router	2 (to VPN Client)	10.10.10.1	255.255.255.0	
X-family	external	10.10.20.147	255.255.255.0	10.10.10.1
VPN Client	external	10.10.10.147	255.255.255.0	10.10.20.1
PC1		192.168.1.100	255.255.255.0	192.168.1.254
VPN Client	Tunnel	192.168.1.x	255.255.255.0	192.168.1.254

3 Configuring Point-to-Point Tunneling Protocol (PPTP)

PPTP is the default client setup for earlier versions of Windows when creating a VPN to a remote workplace. It is quick and easy to setup but does have a downside of being less secure than alternatives like L2TP/IPSec.

3.1 High-level steps ...

- Create an IP address pool for PPTP VPN clients the X-family will issue addresses from this pool for use by the VPN clients. The range used needs to correspond to the subnets on the LAN security zone (or zone with which clients terminate onto) but must not conflict with any DHCP IP pools either the inbuilt or external DHCP server.
- Configure and enable PPTP server on the X-family.
- Check firewall rules.
- Create a local-user account on X-family for VPN Client users.
- Configure the Windows client using dial-up networking.

3.1 3Com X-family Configuration for PPTP

- 1) Login to your X-family web interface (LSM).
- 2) Create an IP address group for the PPTP IP Pool.
 - a) Click Network > Configuration > IP Address Groups in the navigation menu.
 - b) Click "Create Address Group"
 - c) Give the Group a name ie **PPTP_Pool**
 - d) Select the method to specify the address group. For this example we'll select "IP Range". Enter the Range e.g. 192.168.1.10 to 192.168.1.20¹.
 - e) Click "Add to table below" to enter that range.
 - f) Add more ranges, subnets or hosts as required.
 - g) Click "Create" to commit the changes.

¹ You must ensure the address range meets the following criteria:

a) It is part of the Security Zone the PPTP tunnel will be set to terminate within.

b) The terminating Security Zone in the PPTP Server configuration is assigned to an *internal* virtual interface.

c) The address range does not conflict with others used for DHCP server etc.

IPS		ess Group		
Firewall	IP Address Group	Setup		
VPN	Group Name PPTP	Pool		
Events	O IP Host			
System	O IP Subnet	Mask]	
Network	IP Range	to		
Configuration Network Ports Security Zones IP Interfaces IP Address Groups	*changes will not be	Add to table below saved until you click "Create" ge IP Address	IP Address	Function(s)
DNS Default Gateway	range	192.168.1.10	192.168.1.20	×
DHCP Server Tools	Create Canc	<u>el</u>		

- 3) Enable PPTP Server on the X-family
 - a) Click VPN > PPTP Status in the navigation menu.
 - b) Click the tab in the top right "PPTP Server Configuration"
 - c) Click "Enable PPTP Server"
 - d) Set PPTP Security Zone to LAN^2 .
 - e) Select "Require Encryption" this will enable MPPE
 - f) Enter any DNS and WINS settings
 - g) Select the IP Address Group (IP group created in previous step PPTP_Pool)
 - h) Click "Apply". The screen will refresh.

((VPN >> PPTP STATUS >> PPTP Server Configuration	1 PPTP Server Configuration
IPS	PPTP Server	
Firewall		
VPN	Enable PPTP Server	
IPSec Status IKE Proposals L2TP Status	PPTP Security Zone	
PPTP Status	PPTP Client Configuration	
Events	WINS Servers	DNS Servers
System	WINS Server 1	Device acts as DNS relay
Network	WINS Server 2	O Specify DNS Server
Authentication		DN5 Server 1
		DN5 Server 2
	PPTP Addresses	
	IP address assigned by RADIUS	
	Specify IP Address Group	
	Apply	

4) Check Firewall Policies.

² Note more sophisticated setups are possible here terminating in other zones but this is the simplest setup.

If you are using multiple security zones, and/or have changed the terminating zone from LAN, and/or have change the policy rules for traffic allowed to the X-family from the WAN, you should perform this step.

Note: Remember that the firewall rule table is ordered with traffic being matched top to bottom.

- a) Ensure that there are suitable firewall policy rules allowing traffic to/from other Security Zones and the Security Zone you have set for the PPTP Server.
- b) Ensure that there is a policy rule allowing the PPTP tunnel traffic to the *WAN* security zone³.
- 5) Create a User Account
 - 1. Click Authentication > User List in the navigation menu.
 - 2. Click "Create a New User" to create a new user.
 - 3. Enter the username in the "Login" field *note: this is case sensitive*. In this example we use "auser".
 - 4. Select User Type as "Local User".
 - 5. Under "Privilege Group" select "Allow VPN Access".
 - 6. Enter and confirm the password *note: this is case sensitive*.
 - 7. Click Create.

iPS	
Firewall	Enter User Information
PN	(1) Username must be 6 to 31 characters. Password must be 8 to 31 characters and contain at least two letters, one number, and one special character.
vents	. X
System	Username auser
letwork	User Type O TOS User 💿 Local User
Authentication	Security Level Operator
User List	Privilege Group Allow_VPN_access
Privilege Groups	Password
X.509 Certificates Preferences	Confirm Password

The X-family is now configured, now you need to configure the Windows clients...

3.2 Windows XP VPN Client Configuration with PPTP

Note: These instructions are for Windows XP. The same principle applies to other operating systems such as MAC OS and Linux.

1) From Start Menu, select "Network Connections"

³ The default Service Group vpn-protocols and default firewall rules will allow this. PPTP requires the GRE and PPTP services to be allowed from the WAN to this-device security zones.

2) Click "Create a New Connection"

Windows XP then runs the New Connection Wizard:

Step 2a	Step 2b
New Connection Wizard	New Connection Wizard
Network Connection Type What do you want to do?	Network Connection How do you want to connect to the network at your workplace?
 Connect to the Internet Connect to the Internet so you can browse the Web and read email. Connect to the network at my workplace Connect to a business network (using dial-up or VPN) so you can work from home, a field office, or another location. Set up a home or small office network Connect to an existing home or small office network or set up a new one. Set up an advanced connection Connect directly to another computer using your serial, parallel, or infrared port, or set up this computer so that other computers can connect to it. 	Create the following connection: Dial-up connection Connect using a modern and a regular phone line or an Integrated Services Digital Network (ISDN) phone line. Distribution of the service of the s
< <u>₿</u> ack <u>N</u> ext > Cancel	< <u>Back</u> <u>Next</u> > Cancel
Connect to network at my workplace	Virtual Private Network
Step 2c	Step 2d
New Connection Wizard	New Connection Wizard
New Connection Wizard Connection Name Specify a name for this connection to your workplace.	New Connection Wizard Public Network Windows can make sure the public network is connected first.
New Connection Wizard Connection Name Specify a name for this connection to your workplace. Type a name for this connection in the following box. Company Name Corporate Network For example, you could type the name of your workplace or the name of a server you will connect to.	New Connection Wizard Public Network Windows can make sure the public network is connected first. Windows can automatically dial the initial connection to the Internet or other public network, before establishing the virtual connection. O Do not dial the initial connection: Automatically dial this initial connection:
New Connection Wizard Connection Name Specify a name for this connection to your workplace. Type a name for this connection in the following box. Company Name Corporate Network For example, you could type the name of your workplace or the name of a server you will connect to. (Back Next> Cancel	New Connection Wizard Public Network Windows can make sure the public network is connected first. Windows can automatically dial the initial connection to the Internet or other public network, before establishing the virtual connection. Do not dial the initial connection. Automatically dial this initial connection: Automatically dial this initial connection: Seak Next >

Step 2e	Step 2f
New Connection Wizard	New Connection Wizard
VPN Server Selection What is the name or address of the VPN server?	Connection Availability You can make the new connection available to any user or only to yourself.
Type the host name or Internet Protocol (IP) address of the computer to which you are connecting. Host name or IP address (for example, microsoft.com or 157.54.0.1):	A connection that is created for your use only is saved in your user account and is not available unless you are logged on.
10.10.20.147	 Anyone's use
< <u>Back</u> Next> Cancel	O My use only <back< td=""> Next > <back< td=""> Next ></back<></back<>
Enter the public WAN IP address of X-family	Select whether this connection is shared.
Step 2g	
New Connection Wizard	
Completing the New Connection Wizard You have successfully completed the steps needed to	
create the following connection: Corporate Network • Share with all users of this computer	
The connection will be saved in the Network Connections folder.	
Add a shortcut to this connection to my desktop To create the connection and close this wizard, click Finish.	
< <u>B</u> ack Finish Cancel	
Hit finish to complete the wizard	

3) After creating the connection you will be prompted to connect for the first time. Enter the user details configured on the X-family to establish the VPN connection. This must match Step 4c – user name and password configured on the X-family. *Note: Remember both username and passwords are case sensitive*

Connect 3Con	n Hemel 🛛 💽 🔀
<u>U</u> ser name:	auser
<u>P</u> assword:	•••••
Save this us	er name and password for the following users:
⊙ Me o <u>n</u> ly	
<u> </u>	who uses this computer
Connect	Cancel Properties <u>H</u> elp

- 4) Final setup. It is recommended that (once connected) you force the client to use PPTP, even though this will be the default Windows XP will use. To do this:
 - a) From Start Menu, select Network Connections
 - b) Select the connection for the PPTP tunnel and right click.
 - c) Click Properties
 - d) Select the Networking Tab
 - e) Under "Type of VPN" select PPTP VPN from pull-down list and click "OK".

🛩 Corporate Network Properties 🛛 💽 🗙		
General Options Security Networking Advanced		
Type of VPN:		
PPTP VPN		
<u>S</u> ettings		
This connection uses the following items:		
 File and Printer Sharing for Microsoft Networks QoS Packet Scheduler Client for Microsoft Networks 		
Install Uninstall Properties		
Description		
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.		
OK Cancel		

f) Double click the connection to establish the VPN tunnel

Connection to X-family should now be established.

3.3 Load the Strong Encryption Package

Windows Vista ships with stronger encryption than earlier Windows versions. The encryption used by Windows Vista with PPTP is 128-bit MPPE. For export compliance reasons, the X-family products ship with weak encryption (40 and 64 bit MPPE in the PPTP case). To enable strong encryption, the Strong Encryption software package must be loaded. This package is only available to approved end users in approved locations.

- 1. Acquire the Strong Encryption package from either the TippingPoint TMC or 3Com download site and load it onto PC1. This will require completion of an export compliance form on the web site.
- 2. Open a browser on PC1, connect to <u>https://192.168.1.254</u> and login as the user you set up during the OBE.
- 3. Navigate to System -> Update, open the "TOS/DV Update" tab and complete the form as shown below with the path of the Strong Encryption package on PC1. Click "Install Package".

🚾 ibm-762c500a371		
🗿 TOS & DV Update LSM - Dev	vice (3KB_X_unit_1) - Microsoft Internet Explorer	_8×
<u>File Edit View Favorites Ir</u>	[ools Help	1
🕁 Back 🔹 🤿 🗸 🙆 🚮	🕲 Search 🗃 Favorites 🛞 Media 🎯 🖏 - 🎒 🗃	
Address 🕘 https://192.168.1.254/	₩ <u></u> ¢60 L	.inks 🌺 Norton AntiVirus 🔙 👻
Current User: topu	user Auto Log Off in 60 minutes	G= 0.
		3COM
(«	SYSTEM >> UPDATE >>	
IPS		g System Snapshots
Firewall	Step 1	
VPN	Check for DV or TOS updates from the <u>Threat Management Center</u> and save any new versions to your PC.	
Events	Step 2	
System	Make sure the package you downloaded is smaller than: 202 MB.	
Update	An unpacked package may require more space than anticipated. To aid, delete one or more of the previously installed TOS im Installed TOS im	lages,
Network		
Authentication	Step 3	
	Enable High Priority Preference (if desired)	
	Step 4	
	Select ".pkg" file and click install	
	Package File C:\comal-highEncryption_X5.99901.pkg Browse	
	Install Package	
	A The installation of TOP undates will report the Venico	
	Ine installation or rus updates will reboot triggevice.	
		-
🙆 Done		🚊 💣 Internet
🏦 Start 🛛 🚮 🅭 🥹 🌆 🐣	🖁 🛛 🕼 TOS & DY Update LS 🖾 C:\WINNT\system32\cmd 🔯 IBM_PRELOAD (C:)	💭 😪 🕞 🛤 🚅 🌺 17:33

4. The package will be installed and the X-family device will reboot. The X-family device is ready to set up the VPN when reboot has completed.

3.4 Windows Vista Client Configuration with PPTP

Note: These instructions are for Windows Vista. The same principle applies to other operating systems such as MAC OS and Linux.

- 1) From Start Menu, select "Connect To".
- Click "Set up a Connection or Network". Windows Vista then runs the New Connection Wizard...

Step 2a Step 2b

🚱 🏆 Connect to a network	🚱 🏠 Connect to a workplace
Choose a connection option	How do you want to connect?
Connect to the Internet	Use my Internet connection (VPN) Connect using a virtual private network (VPN) Connect using a virtual private network (VPN)
Set up a wireless router or access point	
Set up a dial-up connection Connect through a dial-up connection to the Internet.	
Connect to a workplace	Dial directly Connect directly to a phone number without going through the Internet.
	🔍 — 🕪
	What is a VPN connection?
Next Cancel	Cancel
Connect to network at my workplace	Virtual Private Network
Step 2c	Step 2d
🕒 🕈 Connect to a workplace	🕒 🗊 💌
Type the Internet address to connect to	Type your user name and password
Your network administrator can give you this address.	∐ser name: auser
Internet address: 10.10.20.147	Password:
Destination name: Head Office	Show characters
	Domain (optional):
🔄 Use a gmart card	
Eligible to use this connection This option allows anyone with access to this computer to use this connection.	
☑ <u>D</u> on't connect now; just set it up so I can connect later	
Next Cancel	<u>Create</u> Cancel
Enter X-family IP address, give the	Enter User Name and Password and click
connection a name, and check "Don't	"Create".
connect now".	
Step 2e	
- 0 💌	
The connection is ready to use	
→ Connect now	
Close	
Click "Close".	

3) After creating the connection it is advisable to edit it to ensure that only PPTP connection is attempted. From Start Menu, select "Connect To".

этер за	Step 3b
🕞 📡 Connect to a network	Head Office Properties
Select a network to connect to Show All	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): 1010.20.147 First connect Vindows can first connect to a public network, such as the latercet trying to establish this virtual connection
Name: Head Office Diagnoze why Windows cannot find any additional networks Set up a connection on network Set up a connection on network Open Network and Sharing Center Connect Cancel	Dial another connection first:
Right click on Head Office and select Properties from the menu	Click on "Networking" tab
Step 3c	Step 3d
Head Office Properties General Options Security Networking Sharing Type of VPN:	Image: Select a network
PPTP VPN Ilesec Settings This connection uses the following items: Internet Protocol Version 6 (TCP/IPv6) Internet Protocol Version 4 (TCP/IPv4) Image: File and Printer Sharing for Microsoft Networks Image: QoS Packet Scheduler Image: Client for Microsoft Networks Image: Client for Microsoft Networks Image: Imag	Show All
PPTP VPN Ilesec Settings This connection uses the following items: Internet Protocol Version 6 (TCP/IPv6) Internet Protocol Version 4 (TCP/IPv4) Image: File and Printer Sharing for Microsoft Networks Image: QoS Packet Scheduler Image: Client for Microsoft Networks Image: Image	Show At The Add Office VPN connection Name: Head Office VPN connection Diagnose why Windows cannot find any additional networks Set up a connection or network Open Network and Sharing Center Connect Cancel Click "Cancel".

4) From Start Menu, select "Connect To". Enter the user details configured on the X-family for the local user - this must match Step 8 where the local user name and password were configured on the X-family. *Note: Remember both username and passwords are case sensitive*

Step 4a	Step 4b
🕞 🏆 Connect to a network	Connect Head Office
Select a network to connect to Show All Head Office VPN connection	
Name: Head Office	∐ser name: auser
Diagnose why Windows cannot find any additional networks Set up a connection or network	Password:
Open Network and Sharing Center	Do <u>m</u> ain:
	Save this user name and password for the following users: Me only Anyone who uses this computer Connect Cancel Properties Help
Highlight "Head Office" and click "Connect".	Enter userid and password and click "Connect".
Step 4c	
🕞 🗑 😵 Connect to a network	
Connecting to Head Office	
· · · · · · · · · · · · · · · · · · ·	
Connecting to 10.10.20.147	
Cancel	
VPN connecting	

Connection to X-family should now be established.

4 Troubleshooting PPTP Tunnel

The following is a list of things to check if the PPTP tunnel cannot be established or does not operate correctly:

- a) If you get an invalid username/password error:
 - Check the Local User username/password configured on the X-family matches the credentials entered on the VPN client.
- b) If using RADIUS, check the Troubleshooting RADIUS section in the separate RADIUS Technical Note
- c) If the client gets no response at all from the X-family:
 - Check the IP address configured for the PPTP client matches that of the external interface of the X-family.
 - Check the firewall policy rules allow PPTP and GRE as appropriate from the WAN zone to this-device. It is worth checking the Block Log on the X-family to see if the connection is being refused. This may require you to enable "Logging" on the Block rules in the firewall that you suspect may be blocking the request.
 - On the Windows client try forcing the VPN type to PPTP in Network Properties.
- d) If the client gets logged in but traffic does not flow:
 - Check that the local user on the X-Family has been configured with Allow_VPN_access privileges in the Authentication > User List dialogs.
 - Check that the terminating zone for the PPTP Server is associated with an internal virtual interface. For a Full Transparent Mode deployment you only have the external virtual interface, but you must ensure that the terminating zone is *not* the WAN zone.
 - Has the correct DNS server information been configured for the PPTP server?
 - Ensure that all firewalls on the client PC or between PC and the X-Family are configured to allow GRE traffic.
 - Try disconnecting and re-connecting.
- e) If Windows Vista will not connect.
 - Download the Strong Encryption software package from either the TippingPoint TMC or the 3Com download site and install it on the Xfamily device. This will automatically upgrade the device to accept 128 bit MPPE encryption. See the X-family to Windows Vista L2TP/IPSec Technical Note for details.
 - If the Strong Encryption package is not available for any reason, contact Microsoft and ask them how to downgrade Vista to low (40-bit or 64-bit) MPPE encryption.