



# PPTP Port Address Translation

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The PPTP Port Address Translation feature supports the Point-to-Point Tunneling Protocol (PPTP) application layer gateway (ALG) for Port Address Translation (PAT) configuration. PAT configuration requires the PPTP ALG to parse PPTP packets. The PPTP ALG is enabled by default when Network Address Translation (NAT) is configured.

This module provides information about how to configure the PPTP ALG for PAT.

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## Restrictions for PPTP Port Address Translation

- The Point-to-Point Tunneling Protocol (PPTP) application layer gateway (ALG) does not support virtual TCP (vTCP) and TCP segments.
- The PPTP ALG will not work in Carrier Grade Network Address Translation (NAT) mode, when the NAT client and server use the same call ID.

## Information About PPTP Port Address Translation

### PPTP ALG Support Overview

The Point-to-Point Tunneling Protocol (PPTP) is a network protocol that enables the secure transfer of data from a remote client to an enterprise server by creating a VPN across TCP/IP-based data networks. PPTP encapsulates PPP packets into IP datagrams for transmission over the Internet or other public TCP/IP-based networks.

PPTP establishes a tunnel for each communicating PPTP network server (PNS)-PPTP Access Concentrator (PAC) pair. After the tunnel is set up, PPP packets are exchanged using enhanced generic routing encapsulation (GRE). A call ID present in the GRE header indicates the session to which a particular PPP packet belongs.

Network Address Translation (NAT) translates only the IP address and the port number of a PPTP message. Static and dynamic NAT configurations work with PPTP without the requirement of the PPTP application layer gateway (ALG). However, Port Address Translation (PAT) configuration requires the PPTP ALG to parse the PPTP header and facilitate the translation of call IDs in PPTP control packets. NAT then parses the GRE header and translates call IDs for PPTP data sessions. The PPTP ALG does not translate any embedded IP address in the PPTP payload. The PPTP ALG is enabled by default when NAT is configured.

NAT recognizes PPTP packets that arrive on the default TCP port, 1723, and invokes the PPTP ALG to parse control packets. NAT translates the call ID parsed by the PPTP ALG by assigning a global address or port number. Based on the client and server call IDs, NAT creates two doors based on the request of the PPTP ALG. (A door is created when there is insufficient information to create a complete NAT-session entry. A door contains information about the source IP address and the destination IP address and port.) Two NAT sessions are created (one with the server call ID and the other with the client call ID) for two-way data communication between the client and server. NAT translates the GRE packet header for data packets that complies with RFC 2673.

PPTP is a TCP-based protocol. Therefore, when NAT recognizes a TCP packet as a PPTP packet, it invokes the PPTP ALG parse-callback function. The PPTP ALG fetches the embedded call ID from the PPTP header and creates a translation token for the header. The PPTP ALG also creates data channels for related GRE tunnels. After ALG parsing, NAT processes the tokens created by the ALG.

#### PPTP Default Timer

The default timer for PPTP is 24 hours. This means that a generic routing encapsulation (GRE) session will live for 24 hours when deploying static and dynamic NAT. Based on your PPTP configuration and scaling requirement, you adjust the PPTP default timer.

Some PPTP clients and servers send keepalive messages to keep GRE sessions alive. You can adjust the NAT session timer for PPTP sessions by using the **ip nat translation pptp-timeout** command.

## How to Configure PPTP Port Address Translation

### Configuring PPTP ALG for Port Address Translation

The Point-to-Point Tunneling Protocol (PPTP) application layer gateway (ALG) is enabled by default when Network Address Translation (NAT) is configured. Use the **no ip nat service pptp** command to disable the PPTP ALG. Use the **ip nat service pptp** command to reenabPPTP ALG translation of applications.

#### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number*
4. **ip nat inside**
5. **exit**
6. **interface** *type number*
7. **ip nat outside**
8. **exit**
9. **ip nat pool** *name start-ip end-ip* {**netmask** *netmask* | **prefix-length** *prefix-length*}

10. **ip nat inside source list** {*access-list-number* | *access-list-name*} **pool name overload**
11. **ip access-list standard** *access-list-name*
12. **permit** *host-ip*
13. **end**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b> <b>Example:</b> Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
Step 2	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
Step 3	<b>interface</b> <i>type number</i> <b>Example:</b> Device(config)# interface gigabitethernet 0/0/1	Enables an interface and enters interface configuration mode.
Step 4	<b>ip nat inside</b> <b>Example:</b> Device(config-if)# ip nat inside	Connects the interface to the inside network, which is subject to NAT.
Step 5	<b>exit</b> <b>Example:</b> Device(config-if)# exit	Exits interface configuration mode and enters global configuration mode.
Step 6	<b>interface</b> <i>type number</i> <b>Example:</b> Device(config)# interface gigabitethernet 0/1/0	Enables an interface and enters interface configuration mode.
Step 7	<b>ip nat outside</b> <b>Example:</b> Device(config-if)# ip nat outside	Connects the interface to the outside network.
Step 8	<b>exit</b> <b>Example:</b> Device(config-if)# exit	Exits interface configuration mode and enters global configuration mode.
Step 9	<b>ip nat pool</b> <i>name start-ip end-ip {netmask netmask   prefix-length prefix-length}</i> <b>Example:</b> Device(config)# ip nat pool pptp-pool 192.168.0.1 192.168.0.234 prefix-length 24	Defines a pool of IP addresses for NAT translations.

	Command or Action	Purpose
Step 10	<b>ip nat inside source list</b> <i>{access-list-number   access-list-name}</i> <b>pool name overload</b> <b>Example:</b> Device(config)# ip nat inside source list pptp-acl pool pptp-pool overload	Enables NAT of the inside source address. <ul style="list-style-type: none"> <li>When overloading is configured, the TCP or UDP port number of each inside host distinguishes between multiple conversations by using the same local IP address.</li> </ul>
Step 11	<b>ip access-list standard</b> <i>access-list-name</i> <b>Example:</b> Device(config)# ip access-list standard pptp-acl	Defines a standard IP access list by name to enable packet filtering and enters standard access-list configuration mode.
Step 12	<b>permit</b> <i>host-ip</i> <b>Example:</b> Device(config-std-nacl)# permit 10.1.1.1	Sets conditions in named IP access lists that permit packets.
Step 13	<b>end</b> <b>Example:</b> Device(config-std-nacl)# end	Exits standard access-list configuration mode and enters privileged EXEC mode.

## Configuration Examples for PPTP Port Address Translation

### Example: Configuring PPTP ALG for Port Address Translation

```

Device# configure terminal
Device(config)# interface gigabitethernet 0/0/1
Device(config-if)# ip nat inside
Device(config-if)# exit
Device(config)# interface gigabitethernet 0/1/0
Device(config-if)# ip nat outside
Device(config-if)# exit
Device(config)# ip nat pool pptp-pool 192.168.0.1 192.168.0.234 prefix-length 24
Device(config)# ip nat inside source list pptp-acl pool pptp-pool overload
Device(config)# ip access-list standard pptp-acl
Device(config-std-nacl)# permit 10.1.1.1
Device(config-std-nacl)# end

```

## Additional References for PPTP Port Address Translation

### Related Documents

Related Topic	Document Title
Cisco IOS commands	<a href="#">Cisco IOS Master Command List, All Releases</a>

Related Topic	Document Title
NAT commands	<a href="#">Cisco IOS IP Addressing Services Command Reference</a>

### Standards and RFCs

Standard/RFC	Title
RFC 2637	<i>Point-to-Point Tunneling Protocol (PPTP)</i>

### Technical Assistance

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	<a href="http://www.cisco.com/support">http://www.cisco.com/support</a>

## Feature Information for PPTP Port Address Translation

Table 1: Feature Information for PPTP Port Address Translation

Feature Name	Releases	Feature Information
PPTP Port Address Translation Support	Cisco IOS XE Release 3.9S	<p>The PPTP Port Address Translation Support feature introduces the Point-to-Point Tunneling Protocol (PPTP) application layer gateway (ALG) for Port Address Translation (PAT) configuration. PAT configuration requires the PPTP ALG to parse PPTP packets. The PPTP ALG is enabled by default when Network Address Translation (NAT) is configured.</p> <p>The following commands were introduced or modified: <b>debug platform hardware qfp feature alg datapath pptp</b>, <b>ip nat service pptp</b>, <b>show platform hardware qfp feature alg statistics pptp</b>.</p>

