

PIX/ASA: PPPoE Client Configuration Example

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[Introduction](#)

This document provides a sample configuration for the ASA/PIX security appliance as a Point-to-Point Protocol over Ethernet (PPPoE) client for versions 7.2.(1) and above.

PPPoE combines two widely accepted standards, Ethernet and PPP, in order to provide an authenticated method that assigns IP addresses to client systems. PPPoE clients are typically personal computers connected to an ISP over a remote broadband connection, such as DSL or cable service. ISPs deploy PPPoE because it is easier for customers to use and it uses their existing remote access infrastructure in order to support high-speed broadband access.

PPPoE provides a standard method to employ the authentication methods of the PPPoE network. When used by ISPs, PPPoE allows authenticated assignment of IP addresses. In this type of implementation, the PPPoE client and server are interconnected by Layer 2 bridging protocols that run over a DSL or other broadband connection.

PPPoE is composed of two main phases:

- Active Discovery Phase—In this phase, the PPPoE client locates a PPPoE server, called an access concentrator, where a session ID is assigned and the PPPoE layer is established
- PPP Session Phase—In this phase, Point-to-Point Protocol (PPP) options are negotiated and

authentication is performed. Once the link setup is complete, PPPoE functions as a Layer 2 encapsulation method, which allows data to be transferred over the PPP link within PPPoE headers.

At system initialization, the PPPoE client exchanges a series of packets in order to establish a session with the access concentrator. Once the session is established, a PPP link is set up, which uses Password Authentication Protocol (PAP) for authentication. Once the PPP session is established, each packet is encapsulated in the PPPoE and PPP headers.

Note: PPPoE is not supported when failover is configured on the adaptive security appliance, or in multiple context or transparent mode. PPPoE is only supported in single, routed mode, without failover.

[Prerequisites](#)

[Requirements](#)

There are no specific requirements for this document.

[Components Used](#)

The information in this document is based on the Cisco Adaptive Security Appliance (ASA) version 8.x and later.

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.

[Related Products](#)

This configuration can also be used with the Cisco PIX 500 Series Security Appliance, which runs version 7.2(1) and later. In order to configure the PPPoE client on the Cisco Secure PIX Firewall, PIX OS version 6.2 introduces this function and is targeted for the low-end PIX (501/506). For more information, refer to [Configuring the PPPoE Client on a Cisco Secure PIX Firewall](#)

[Conventions](#)

Refer to the [Cisco Technical Tips Conventions](#) for more information on document conventions.

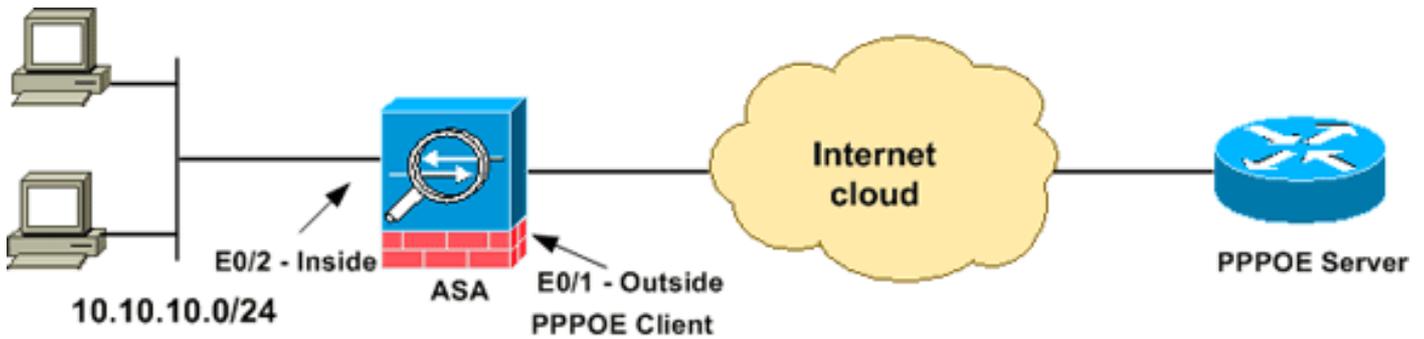
[Configure](#)

This section provides the information necessary to configure the features described in this document.

Note: Use the [Command Lookup Tool](#) ([registered](#) customers only) to obtain more information on the commands used in this section.

[Network Diagram](#)

This document uses this network setup:



CLI Configuration

This document uses these configurations:

Device Name 1

```
ciscoasa#show running-config : Saved : ASA Version
8.0(2) ! hostname ciscoasa enable password
8Ry2YjIyt7RRXU24 encrypted names ! interface Ethernet0/0
nameif dmz security-level 50 ip address 10.77.241.111
255.255.255.192 ! interface Ethernet0/1 nameif outside
security-level 0 !--- Specify a VPDN group for the PPPoE
client pppoe client vpdn group CHN !--- "ip address
pppoe [setroute]" !--- The setroute option sets the
default routes when the PPPoE client has !--- not yet
established a connection. When you use the setroute
option, you !--- cannot use a statically defined route
in the configuration. !--- PPPoE is not supported in
conjunction with DHCP because with PPPoE !--- the IP
address is assigned by PPP. The setroute option causes a
default !--- route to be created if no default route
exists. !--- Enter the ip address pppoe command in order
to enable the !--- PPPoE client from interface
configuration mode. ip address pppoe ! interface
Ethernet0/2 nameif inside security-level 100 ip address
10.10.10.1 255.255.255.0 ! interface Ethernet0/3
shutdown no nameif no security-level no ip address !
interface Management0/0 shutdown no nameif no security-
level no ip address ! passwd 2KFQnbNIdI.2KYOU encrypted
boot system disk0:/asa802-k8.bin ftp mode passive
access-list 100 extended permit ip any any access-list
inside_nat0_outbound extended permit ip 10.10.10.0
255.255.255.0 10. 20.10.0 255.255.255.0 inactive pager
lines 24 mtu dmz 1500 !--- The maximum transmission unit
(MTU) size is automatically set to 1492 bytes, !---
which is the correct value to allow PPPoE transmission
within an Ethernet frame. mtu outside 1492 mtu inside
1500 !--- Output suppressed. global (outside) 1
interface nat (inside) 1 0.0.0.0 0.0.0.0 !--- The NAT
statements above are for ASA version 8.2 and earlier. !-
- For ASA versions 8.3 and later the NAT statements are
modified as follows. object network obj_any subnet
0.0.0.0 0.0.0.0 nat (inside,outside) dynamic interface
!--- Output suppressed. telnet timeout 5 ssh timeout 5
console timeout 0 !--- Define the VPDN group to be used
for PPPoE. vpdn group CHN request dialout pppoe !---
Associate the user name assigned by your ISP to the VPDN
group. vpdn group CHN localname cisco !--- If your ISP
requires authentication, select an authentication
```

```
protocol. vpdn group CHN ppp authentication pap !---
Create a user name and password for the PPPoE
connection. vpdn username cisco password *****
threat-detection basic-threat threat-detection
statistics access-list ! class-map inspection_default
match default-inspection-traffic ! ! policy-map type
inspect dns preset_dns_map parameters message-length
maximum 512 policy-map global_policy class
inspection_default inspect dns preset_dns_map inspect
ftp inspect h323 h225 inspect h323 ras inspect netbios
inspect rsh inspect rtsp inspect skinny inspect esmtp
inspect sqlnet inspect sunrpc inspect tftp inspect sip
inspect xdmcp ! service-policy global_policy global
username cisco123 password ffIRPGpDSOJh9YLq encrypted
privilege 15 prompt hostname context
Cryptochecksum:3cf813b751fe78474dfb1d61bb88a133 : end
ciscoasa#
```

ASDM Configuration

Complete these steps in order to configure the PPPoE client provided with the adaptive security appliance:

Note: Refer to [Allowing HTTPS Access for ASDM](#) in order to allow the ASA to be configured by the ASDM.

1. Access the ASDM on the ASA: Open your browser, and enter **https://<ASDM_ASA_IP_ADDRESS>**. Where *ASDM_ASA_IP_ADDRESS* is the IP address of the ASA interface that is configured for ASDM access. **Note:** Make sure to authorize any warnings your browser gives you related to SSL certificate authenticity. The default user name and password are both blank. The ASA displays this window to allow the download of the ASDM application. This example loads the application onto the local computer and does not run in a Java applet.



Cisco ASDM 6.1



Cisco ASDM 6.1(3) provides an intuitive graphical user interface that makes it easy to set up, configure and manage your Cisco Security Appliances.

Cisco ASDM runs as either a local application or Java Web Start.

Running Cisco ASDM as a local Application

When you run Cisco ASDM as a local application, it connects to your Security Appliance from your desktop via SSL. Running Cisco ASDM as an application has these advantages:

- You can invoke ASDM from desktop shortcuts. No browser is required.
- One desktop shortcut allows you to connect to *multiple* Security Appliances.



Install ASDM Launcher and Run ASDM

Running Cisco ASDM as Java Web Start

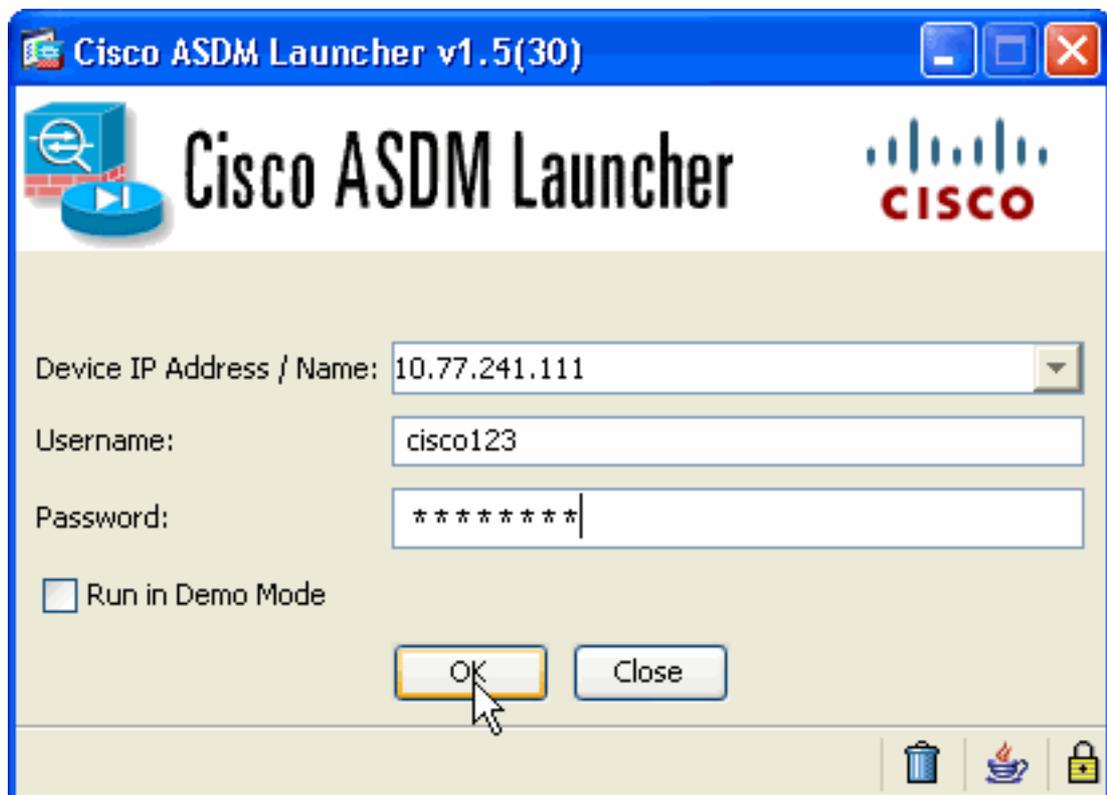
You can run Cisco ASDM as Java Web Start that is dynamically downloaded from the device to which you connect.

- Click **Run ASDM** to run Cisco ASDM.
- Click **Run Startup Wizard** to run Startup Wizard. Startup Wizard walks you through, step by step, the initial configuration of your security appliance.

Run ASDM

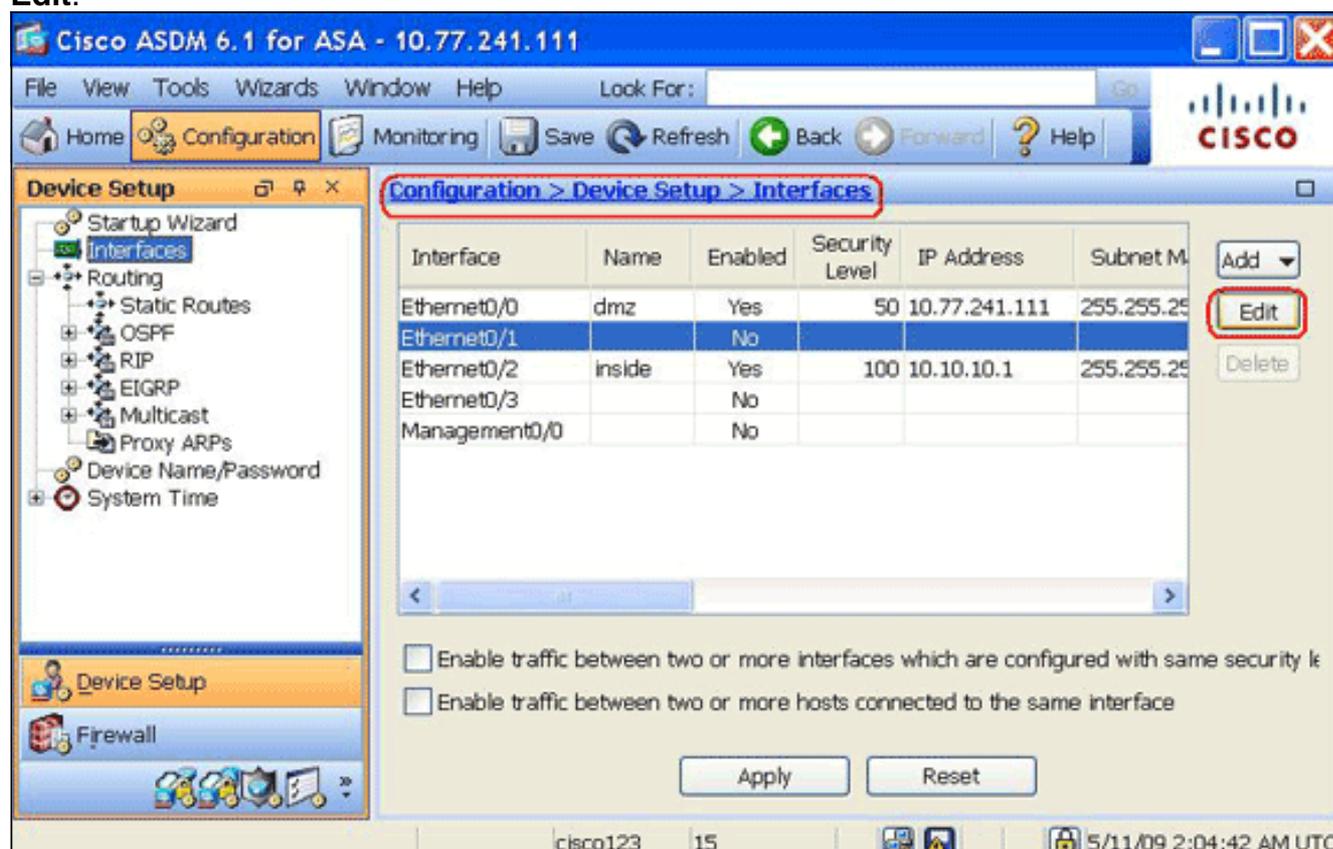
Run Startup Wizard

2. Click **Download ASDM Launcher and Start ASDM** in order to download the installer for the ASDM application.
3. Once the ASDM Launcher downloads, complete the steps directed by the prompts in order to install the software, and run the Cisco ASDM Launcher.
4. Enter the IP address for the interface you configured with the **http -** command, and a user name and password if you specified one. This example uses **cisco123** for the user name and **cisco123** as the



password.

5. Choose **Configuration > Device Setup > Interfaces**, highlight the outside interface, and click **Edit**.



6. In the Interface Name field, enter **outside**, and check the **Enable Interface** check box.
7. Click the **Use PPPoE** radio button in the IP Address area.
8. Enter a group name, PPPoE user name and password, and click the appropriate PPP authentication type (PAP, CHAP, or MSCHAP) radio button.

Edit Interface

General **Advanced**

Hardware Port: Ethernet0/1 Configure Hardware Properties...

Interface Name:

Security Level:

Dedicate this interface to management only

Enable Interface

IP Address

Use Static IP Obtain Address via DHCP Use PPPoE

Group Name:

PPPoE Username:

PPPoE Password:

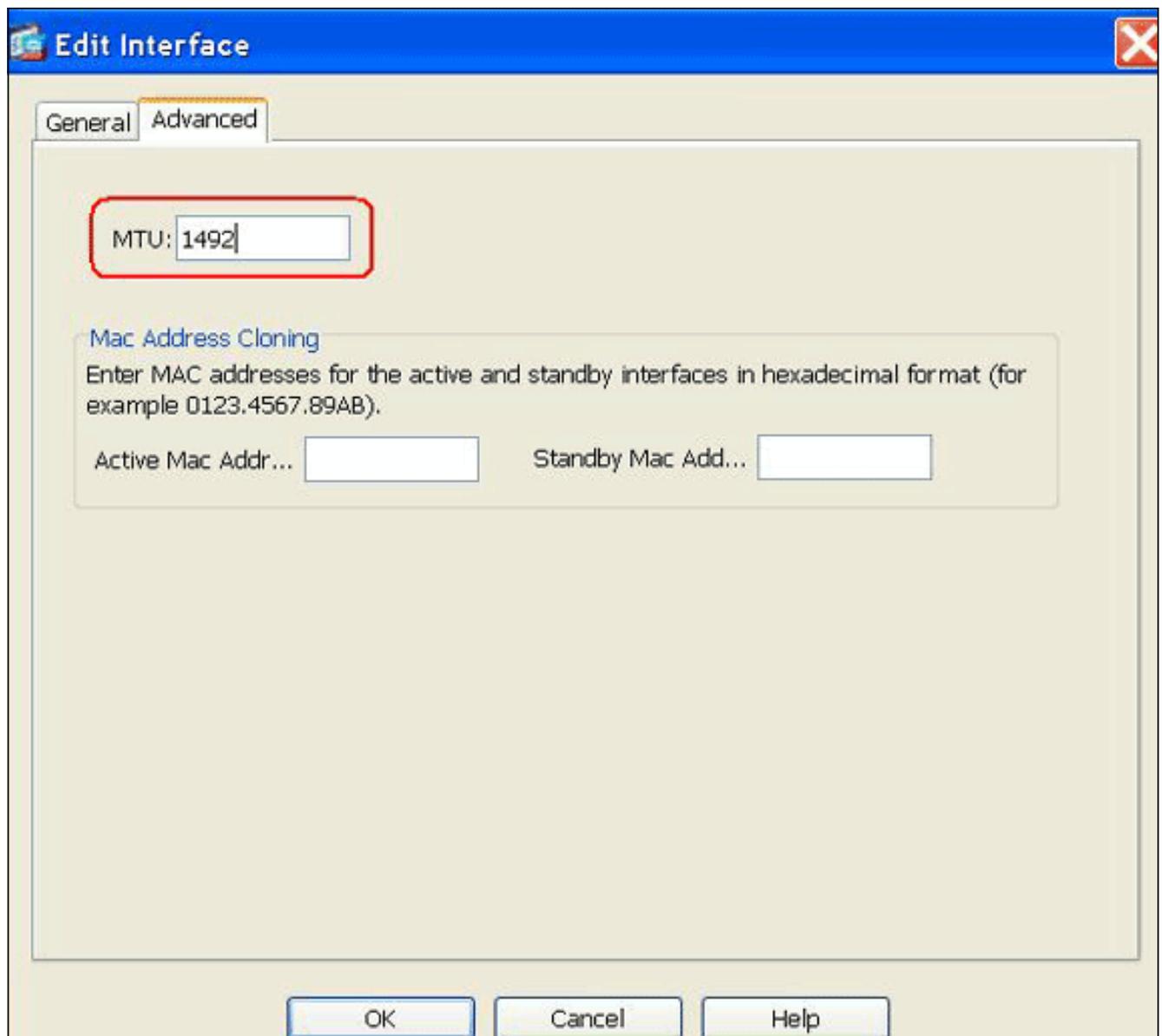
Confirm Password:

PPP Authentication: PAP CHAP MSCHAP

Store username and password in local flash IP Address and Route Settings...

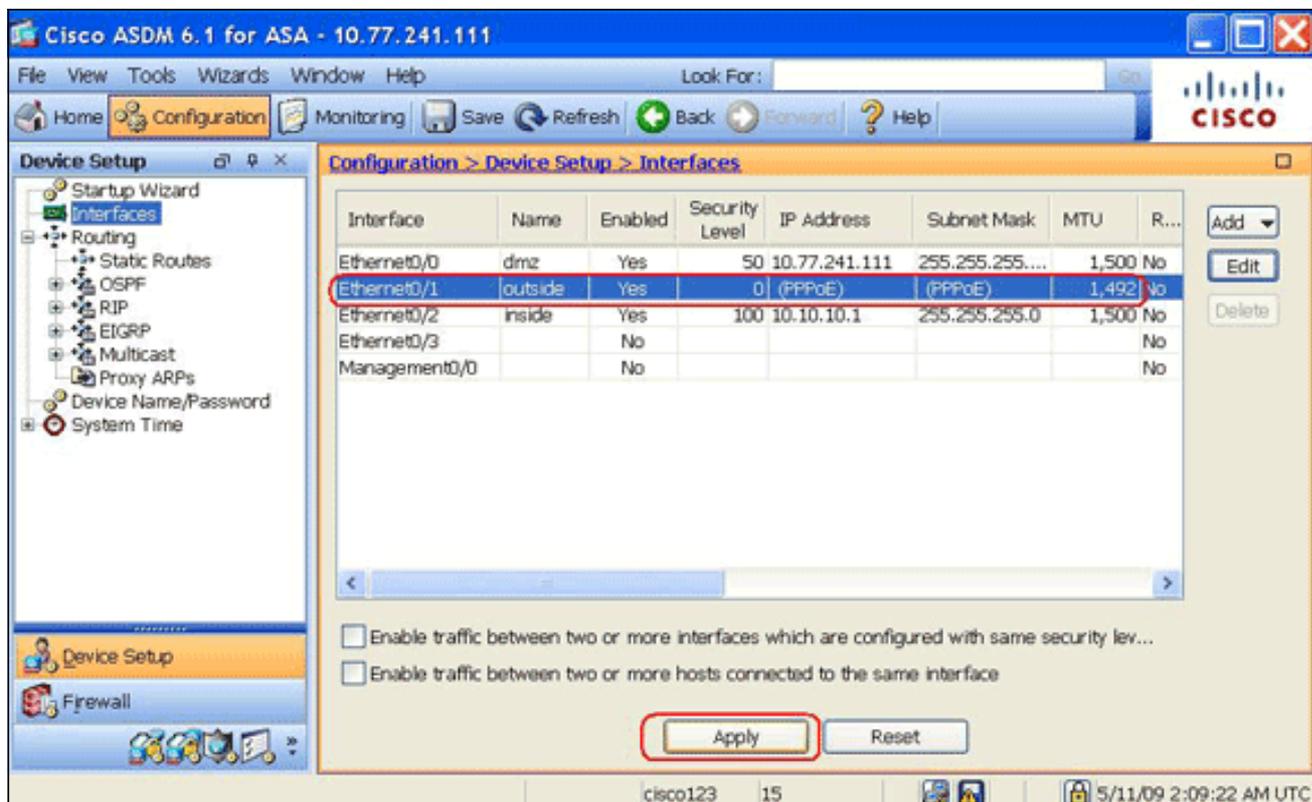
OK Cancel Help

9. Click the **Advanced** tab, and verify that the MTU size is set to **1492**. **Note:** The maximum transmission unit (MTU) size is automatically set to 1492 bytes, which is the correct value to allow PPPoE transmission within an Ethernet frame.



10. Click **OK** to continue.

11. Verify that the information you entered is correct, and click **Apply**.



Verify

Use this section to confirm that your configuration works properly.

The [Output Interpreter Tool](#) ([registered](#) customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

- **show ip address outside pppoe**—Use this command in order to display the current PPPoE client configuration information.
- **show vpdn session [l2tp | pppoe] [id sess_id | packets | state | window]**—Use this command in order to view the status of PPPoE sessions.

The following example shows a sample of information provided by this command:

```
hostname#show vpdn Tunnel id 0, 1 active sessions time since change 65862 secs Remote
Internet Address 10.0.0.1 Local Internet Address 199.99.99.3 6 packets sent, 6
received, 84 bytes sent, 0 received Remote Internet Address is 10.0.0.1 Session state
is SESSION_UP Time since event change 65865 secs, interface outside PPP interface id
is 1 6 packets sent, 6 received, 84 bytes sent, 0 received hostname#show vpdn session
PPPoE Session Information (Total tunnels=1 sessions=1) Remote Internet Address is
10.0.0.1 Session state is SESSION_UP Time since event change 65887 secs, interface
outside PPP interface id is 1 6 packets sent, 6 received, 84 bytes sent, 0 received
hostname#show vpdn tunnel PPPoE Tunnel Information (Total tunnels=1 sessions=1)
Tunnel id 0, 1 active sessions time since change 65901 secs Remote Internet Address
10.0.0.1 Local Internet Address 199.99.99.3 6 packets sent, 6 received, 84 bytes
sent, 0 received hostname#
```

Clearing the Configuration

In order to remove all **vpdn group** commands from the configuration, use the [clear configure vpdn group](#) command in global configuration mode:

```
hostname(config)#clear configure vpdn group
```

In order to remove all **vpdn username** commands, use the [clear configure vpdn username](#) command:

```
hostname(config)#clear configure vpdn username
```

Note: These commands have no affect on active PPPoE connections.

[Troubleshoot](#)

[Troubleshooting Commands](#)

The [Output Interpreter Tool](#) ([registered](#) customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

Note: Refer to [Important Information on Debug Commands](#) before you use **debug** commands.

- **hostname# [no] debug pppoe {event | error | packet}**—Use this command in order to enable or disable debugging for the PPPoE client.

[Subnet Mask Appears as /32](#)

Problem

When you use the **IP address x.x.x.x 255.255.255.240 pppoe setroute** command, the IP address is assigned correctly, but the subnet mask appears as /32 although it is specified in the command as /28. Why does this happen?

Solution

This is the correct behavior. The the subnet mask is irrelevant in the case of the PPPoe interface; the ASA will always change it to /32.

[Related Information](#)

- [Cisco ASA 5500 Series Adaptive Security Appliances](#)
- [Configuring PPPoE Client on the Cisco 2600 to Connect to a Non-Cisco DSL CPE](#)
- [Cisco Adaptive Security Device Manager](#)
- [Technical Support & Documentation - Cisco Systems](#)