This document describes how to configure the Cisco 5500 Series Adaptive Security Appliance (ASA) to act as a remote VPN server using the Adaptive Security Device Manager (ASDM) or CLI. The ASDM delivers world-class security management and monitoring through an intuitive, easy-to-use Web-based management interface. Once the Cisco ASA configuration is complete, it can be verified using the Cisco VPN Client.

Refer to PIX/ASA 7.x and Cisco VPN Client 4.x with Windows 2003 IAS RADIUS (Against Active Directory) Authentication Configuration Example in order to set up the remote access VPN connection between a Cisco VPN Client (4.x for Windows) and the PIX 500 Series Security Appliance 7.x. The remote VPN Client user authenticates against the Active Directory Security Service (IAS) RADIUS server.

Refer to PIX/ASA 7.x and Cisco VPN Client 4.x for Cisco Secure ACS Authentication Configuration Example in order to set up a remote access VPN connection between a Cisco VPN Client (4.x for Windows) and the PIX 500 Series Security Appliance 7.x using a Cisco Secure Access Control Server (ACS version 3.2) for extended authentication (Xauth).
Prerequisites

Requirements

This document assumes that the ASA is fully operational and configured to allow the Cisco ASDM or CLI to make configuration changes.

Note: Refer to Allowing HTTPS Access for ASDM or PIX/ASA 7.x: SSH on the Inside and Outside Interface Configuration Example to allow the device to be remotely configured by the ASDM or Secure Shell (SSH).

Components Used

The information in this document is based on these software and hardware versions:

- Cisco Adaptive Security Appliance Software Version 7.x and later
- Adaptive Security Device Manager Version 5.x and later
- Cisco VPN Client Version 4.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 Cisco PIX Security Appliance Version 7.x and later.

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

Background Information

Remote access configurations provide secure remote access for Cisco VPN clients, such as mobile users. A remote access VPN lets remote users securely access centralized network resources. The Cisco VPN Client complies with the IPSec protocol and is specifically designed to work with the security appliance. However, the security appliance can establish IPSec connections with many protocol-compliant clients. Refer to the ASA Configuration Guides for more information on IPSec.

Groups and users are core concepts in the management of the security of VPNs and in the configuration of the security appliance. They specify attributes that determine users access to and use of the VPN. A group is a collection of users treated as a single entity. Users get their attributes from group policies. Tunnel groups identify the group policy for a specific connections. If you do not assign a particular group policy to a users, the default group policy for the connection applies.

A tunnel group consists of a set of records that determines tunnel connection policies. These records identify the servers to which the servers to which the tunnel users are authenticated, as well as the accounting servers, if any, to which connections information is sent. They also identify a default group policy for the connections, and they contain protocol-specific connection
parameters. Tunnel groups include a small number of attributes that pertains to the creation of the tunnel itself. Tunnel groups include a pointer to a group policy that defines user-oriented attributes.

**Note:** In the sample configuration in this document, local user accounts are used for authentication. If you would like to use another service, such as LDAP and RADIUS, refer to [Configuring an External RADIUS Server for Authorization and Authentication](#).

The Internet Security Association and Key Management Protocol (ISAKMP), also called IKE, is the negotiation protocol that hosts agree on how to build an IPSec Security Association. Each ISAKMP negotiation is divided into two sections, Phase1 and Phase2. Phase1 creates the first tunnel to protect later ISAKMP negotiation messages. Phase2 creates the tunnel that protects data that travels across the secure connection. Refer to [ISAKMP Policy Keywords for CLI Commands](#) for more information on ISAKMP.

**Configurations**

**Configure the ASA/PIX as a Remote VPN Server using ASDM**

Complete these steps in order to configure the Cisco ASA as a remote VPN server using ASDM:

1. Select **Wizards > VPN Wizard** from the Home window.

2. Select the **Remote Access** VPN tunnel type and ensure that the VPN Tunnel Interface is set as

```plaintext
Select Wizards > VPN Wizard from the Home window.
```

```plaintext
2. Select the Remote Access VPN tunnel type and ensure that the VPN Tunnel Interface is set as
```
3. The only VPN Client Type available is already selected. Click Next.
4. Enter a name for the Tunnel Group Name. Supply the authentication information to use. **Pre-shared Key** is selected in this example.
Note: There is not a way to hide/encrypt the pre-shared key on the ASDM. The reason is that the ASDM should only be used by people who configure the ASA or by people who are assisting the customer with this configuration.

5. Choose whether you want remote users to be authenticated to the local user database or to an external AAA server group.**Note:** You add users to the local user database in step 6.

**Note:** Refer to [PIX/ASA 7.x Authentication and Authorization Server Groups for VPN Users via ASDM Configuration Example](#) for information on how to configure an external AAA server group via ASDM.
6. Add users to the local database if necessary. Note: Do not remove existing users from this window. Select **Configuration > Device Administration > Administration > User Accounts in the main ASDM window** to edit existing entries in the database or to remove them from the database.
7. Define a pool of local addresses to be dynamically assigned to remote VPN Clients when they connect.
8. Optional: Specify the DNS and WINS server information and a Default Domain Name to be pushed to remote VPN Clients.
9. Specify the parameters for IKE, also known as IKE Phase 1. Configurations on both sides of the tunnel must match exactly. However, the Cisco VPN Client automatically selects the proper configuration for itself. Therefore, no IKE configuration is necessary on the client PC.
10. Specify the parameters for IPSec, also known as IKE Phase 2. Configurations on both sides of the tunnel must match exactly. However, the Cisco VPN Client automatically selects the proper configuration for itself. Therefore, no IKE configuration is necessary on the client PC.
11. Specify which, if any, internal hosts or networks should be exposed to remote VPN users. If you leave this list empty, it allows remote VPN users to access the entire inside network of the ASA. You can also enable split tunneling on this window. Split tunneling encrypts traffic to the resources defined earlier in this procedure and provides unencrypted access to the Internet at large by not tunneling that traffic. If split tunneling is not enabled, all traffic from remote VPN users is tunneled to the ASA. This can become very bandwidth and processor intensive, based on your configuration.
12. This window shows a summary of the actions that you have taken. Click Finish if you are satisfied with your configuration.
Configure the ASA/PIX as a Remote VPN Server using CLI

Complete these steps in order to configure a remote VPN Access Server from the command line. Refer to Configuring Remote Access VPNs or Cisco ASA 5500 Series Adaptive Security Appliances-Command References for more information on each command that is used.

1. Enter the `ip local pool` command in global config mode in order to configure IP address pools to use for VPN remote access tunnels. In order to delete address pools, enter the no form of this command. The security appliance uses address pools based on the tunnel group for the connection. If you configure more than one address pool for a tunnel group, the security appliance uses them in the order in which they are configured. Issue this command in order to create a pool of local addresses that can be used to assign dynamic addresses to remote-access VPN Clients:

   ```
   ASA-AIP-CLI(config)#ip local pool vpnpool 172.16.1.100-172.16.1.199 mask 255.255.255.0
   ```

2. Issue this command:

   ```
   ASA-AIP-CLI(config)#username marty password 12345678
   ```

3. Issue this set of commands in order to configure the specific tunnel:

   ```
   ASA-AIP-CLI(config)#isakmp policy 1 authentication pre-share
   ASA-AIP-CLI(config)#isakmp policy 1 encryption 3des
   ASA-AIP-CLI(config)#isakmp policy 1 hash sha
   ASA-AIP-CLI(config)#isakmp policy 1 group 2
   ASA-AIP-CLI(config)#isakmp policy 1 lifetime 43200
   ASA-AIP-CLI(config)#isakmp enable outside
   ASA-AIP-CLI(config)#crypto ipsec transform-set ESP-3DES-SHA esp-3des esp-sha-hmac
   ASA-AIP-CLI(config)#crypto dynamic-map outside_dyn_map 10 set transform-set ESP-3DES-SHA
   ASA-AIP-CLI(config)#crypto dynamic-map outside_dyn_map 10 set reverse-route
   ```
seconds 288000

ASA-AIP-CLI(config)#crypto map outside_map 10 ipsec-isakmp
dynamic outside_dyn_map

ASA-AIP-CLI(config)#crypto map outside_map interface
outside

ASA-AIP-CLI(config)#crypto isakmp nat-traversal

Optional: If you would like the connection to bypass the access-list that is applied to the interface, issue this command:ASA-AIP-CLI(config)#sysopt connection permit-ipsec

Note: This command works on 7.x images before 7.2(2). If you use image 7.2(2), issue the ASA-AIP-CLI(config)#sysopt connection permit-vpn command.

5. Issue this command:ASA-AIP-CLI(config)#group-policy hillvalleyvpn internal

6. Issue these commands in order to configure client connection settings:ASA-AIP-CLI(config)#group-policy hillvalleyvpn attributes
ASA-AIP-CLI(config)#(config-group-policy)#dns-server value 172.16.1.11

ASA-AIP-CLI(config)#(config-group-policy)#vpn-tunnel-protocol IPSec

ASA-AIP-CLI(config)#(config-group-policy)#default-domain value test.com

7. Issue this command:ASA-AIP-CLI(config)#tunnel-group hillvalleyvpn ipsec-ra

8. Issue this command:ASA-AIP-CLI(config)#tunnel-group hillvalleyvpn ipsec-attributes

9. Issue this command:ASA-AIP-CLI(config)#(config-tunnel-ipsec)#pre-shared-key cisco123

10. Issue this command:ASA-AIP-CLI(config)#tunnel-group hillvalleyvpn general-attributes

11. Issue this command in order to refer the local user database for authentication:ASA-AIP-CLI(config-tunnel-general)#authentication-server-group LOCAL

12. Associate the group policy with the tunnel group:ASA-AIP-CLI(config-tunnel-ipsec)# default-group-policy hillvalleyvpn

13. Issue this command while in the general-attributes mode of the hillvalleyvpn tunnel-group in order to assign the vpnpool created in step 1 to the hillvalleyvpn group:ASA-AIP-CLI(config-tunnel-general)#address-pool vpnpool

### Running Config on the ASA Device

```
ASA-AIP-CLI(config)#show running-config
ASA Version 7.2(2) ! hostname ASAwAIP-CLI domain-name corp.com
enable password WwXYvtKrnjXqGbu1 encrypted names !
interface Ethernet0/0 nameif outside security-level 0 ip address 10.10.10.2 255.255.255.0 !
interface Ethernet0/1 nameif inside security-level 100 ip address 172.16.1.2 255.255.255.0 !
interface Ethernet0/2 shutdown no nameif security-level no ip address !
interface Management0/0 shutdown no nameif security-level no ip address !
local pool vpnpool 172.16.1.100-172.16.1.199 mask 255.255.255.0 !
no failover icmp unreachable rate-limit 1 burst-size 1 no asdm history enable arp timeout 14400
timeout xlate 3:00:00 timeout conn 1:00:00 half-closed
0:10:00 udp 0:02:00 icmp 0:00:02 timeout sunrpc 0:10:00
h323 0:05:00 h225 1:00:00 mgcp 0:05:00 mgcp-pat 0:05:00
timeout sip 0:30:00 sip_media 0:02:00 sip-invite 0:03:00
sip-disconnect 0:02:00 timeout uauth 0:05:00 absolute

group-policy hillvalleyvpn1 internal group-policy
hillvalleyvpn1 attributes dns-server value 172.16.1.11

vtep-tunnel-protocol IPSec default-domain value test.com
username marty password 6XmYwQOO9tiYnUDN encrypted no
snmp-server location no snmp-server contact no snmp-server
enable traps snmp authentication linkup linkdown
coldstart crypto ipsec transform-set ESP-3DES-SHA esp-3des esp-sha-hmac crypto dynamic-map outside_dyn_map 10
set transform-set ESP-3DES-SHA crypto dynamic-map
outside_dyn_map 10 set security-association lifetime
```
Cisco VPN Client Password Storage Configuration

If you have numerous Cisco VPN Clients, it is very hard to remember all the VPN Client usernames and passwords. In order to store the passwords in the VPN Client machine, configure the ASA/PIX and the VPN Client as this section describes.

ASA/PIX

Use the `group-policy attributes` command in global configuration mode:

```
  group-policy VPNusers attributes password-storage enable
```

Cisco VPN Client

Edit the `.pcf` file and modify these parameters:

```
  SaveUserPassword=1 UserPassword= <type your password>
```

Disable the Extended Authentication

In tunnel group mode, enter this command in order to disable the extended authentication, which is enabled by default, on the PIX/ASA 7.x:

```
  asa(config)#tunnel-group client ipsec-attributes asa(config-tunnel-ipsec)#isakmp ikev1-user-authentication none
```

After you disable the extended authentication, the VPN Clients do not pop-up a username/password for an authentication (Xauth). Therefore, the ASA/PIX does not require the username and password configuration to authenticate the VPN Clients.

Verify
Attempt to connect to the Cisco ASA using the Cisco VPN Client in order to verify that the ASA is successfully configured.

1. Select **Connection Entries > New**.

![Image of the Cisco VPN Client interface showing the 'New' option](image)

2. Fill in the details of your new connection. The Host field should contain the IP address or hostname of the previously configured Cisco ASA. The Group Authentication information should correspond to that used in step 4. Click **Save** when you are...
3. Select the newly created connection, and click **Connect**.

4. Enter a username and password for extended authentication. This information should match that specified in steps 5 and 6.
5. Once the connection is successfully established select **Statistics** from the Status menu to verify the details of the tunnel. This window shows traffic and crypto information:

This window shows split tunneling information:
Troubleshoot

Use this section to troubleshoot your configuration.

Incorrect Crypto ACL

ASDM 5.0(2) is known to create and apply a crypto access control list (ACL) that can cause problems for VPN Clients that use split tunneling, as well as for hardware clients in network-extension mode. Use ASDM version 5.0(4.3) or later to avoid this problem. Refer to Cisco bug ID CSCsc10806 (registered customers only) for more details.

Related Information

- Cisco ASA 5500 Series Adaptive Security Appliances
- Most Common L2L and Remote Access IPsec VPN Troubleshooting Solutions
- Cisco ASA 5500 Series Adaptive Security Appliances Troubleshoot and Alerts
- Technical Support & Documentation - Cisco Systems