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Teleworking—Cisco ASA 5505 Deployment Guide

SMART BUSINESS ARCHITECTURE

August 2012 Series

Preface

Who Should Read This Guide

This Cisco® Smart Business Architecture (SBA) guide is for people who fill a variety of roles:

- Systems engineers who need standard procedures for implementing solutions
- Project managers who create statements of work for Cisco SBA implementations
- Sales partners who sell new technology or who create implementation documentation
- Trainers who need material for classroom instruction or on-the-job training

In general, you can also use Cisco SBA guides to improve consistency among engineers and deployments, as well as to improve scoping and costing of deployment jobs.

Release Series

Cisco strives to update and enhance SBA guides on a regular basis. As we develop a series of SBA guides, we test them together, as a complete system. To ensure the mutual compatibility of designs in Cisco SBA guides, you should use guides that belong to the same series.

The Release Notes for a series provides a summary of additions and changes made in the series.

All Cisco SBA guides include the series name on the cover and at the bottom left of each page. We name the series for the month and year that we release them, as follows:

month year Series

For example, the series of guides that we released in August 2012 are the "August 2012 Series".

You can find the most recent series of SBA guides at the following sites:

Customer access: http://www.cisco.com/go/sba

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How to Read Commands

Many Cisco SBA guides provide specific details about how to configure Cisco network devices that run Cisco IOS, Cisco NX-OS, or other operating systems that you configure at a command-line interface (CLI). This section describes the conventions used to specify commands that you must enter.

Commands to enter at a CLI appear as follows:

```
configure terminal
```

Commands that specify a value for a variable appear as follows:

```
ntp server 10.10.48.17
```

Commands with variables that you must define appear as follows:

```
class-map [highest class name]
```

Commands shown in an interactive example, such as a script or when the command prompt is included, appear as follows:

```
Router# enable
```

Long commands that line wrap are underlined. Enter them as one command:

```
wrr-queue random-detect max-threshold 1 100 100 100 100 100
100 100 100
```

Noteworthy parts of system output or device configuration files appear highlighted, as follows:

```
interface Vlan64
  ip address 10.5.204.5 255.255.255.0
```

Comments and Questions

If you would like to comment on a guide or ask questions, please use the SBA feedback form.

If you would like to be notified when new comments are posted, an RSS feed is available from the SBA customer and partner pages.

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What's In This SBA Guide

Cisco SBA Solutions

Cisco SBA helps you design and quickly deploy a full-service business network. A Cisco SBA deployment is prescriptive, out-of-the-box, scalable, and flexible.

Cisco SBA incorporates LAN, WAN, wireless, security, data center, application optimization, and unified communication technologies—tested together as a complete system. This component-level approach simplifies system integration of multiple technologies, allowing you to select solutions that solve your organization's problems—without worrying about the technical complexity.

Cisco SBA Solutions are designs for specific problems found within the most common technology trends. Often, Cisco SBA addresses more than one use case per solution because customers adopt new trends differently and deploy new technology based upon their needs.

Route to Success

To ensure your success when implementing the designs in this guide, you should first read any guides that this guide depends upon—shown to the left of this guide on the route below. As you read this guide, specific prerequisites are cited where they are applicable.

About This Guide

This *deployment guide* contains one or more deployment chapters, which each include the following sections:

- **Business Overview**—Describes the business use case for the design. Business decision makers may find this section especially useful.
- **Technology Overview**—Describes the technical design for the business use case, including an introduction to the Cisco products that make up the design. Technical decision makers can use this section to understand how the design works.
- **Deployment Details**—Provides step-by-step instructions for deploying and configuring the design. Systems engineers can use this section to get the design up and running quickly and reliably.

You can find the most recent series of Cisco SBA guides at the following sites:

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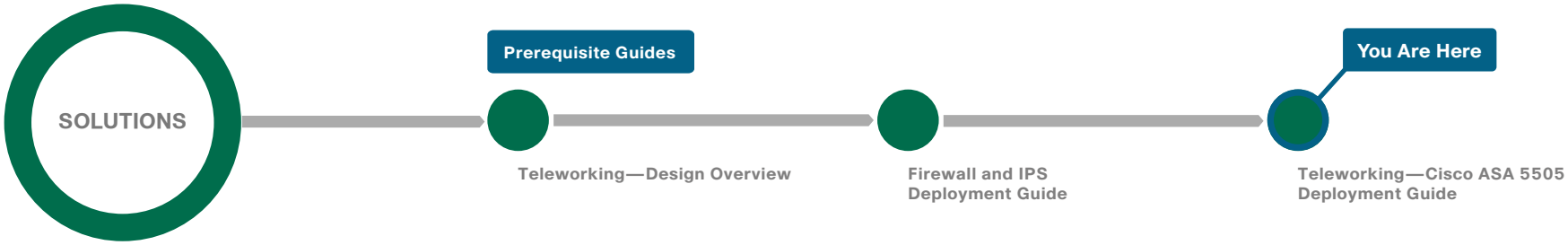


Introduction

Business Overview

Many organizations face increasing need to offer a telecommuter solution to their employees. Employees perceive that commuting and water-cooler chatter are time they spend at work, and renting or buying office space and fixtures, and even deploying network infrastructure to host the work force, adds up to a substantial sum of capital and operating expense.

Providing an office-like work environment at the teleworker's home requires:

- A phone that is accessible as an extension on the organization's phone system.
- An unobtrusive, quiet, low-power solution to provide multiple Ethernet connections for one or more IP-phones or other desktop collaboration resources.
- One or more Ethernet connections for computers that access the organization's network, as well as Ethernet connectivity for other network-connected devices, such as printers and IP video surveillance equipment.

Employees don't need wireless connectivity at the telework site because all of the telework resources connect with wired Ethernet.

Technology Overview

Cisco ASA 5505 offers a low-cost option to provide teleworker connectivity to the organization. Cisco ASA 5505 provides secure connectivity for data and collaboration endpoints in a compact, fanless form factor, minimizing noise and space requirements.

The Cisco ASA 5505 teleworker solution integrates with the Internet Edge portion of the Cisco SBA design. The teleworker's connection terminates at resilient Cisco ASA firewalls at the organization's Internet edge. This solution is configured on the same ASA firewalls as the remote-access virtual private network (RAVPN) solution. This configuration applies to dedicated and shared-mode RAVPN deployments. Some of the configuration re-uses portions of the RAVPN configuration, although it may be configured to be completely independent of the RAVPN resources. The addition of the head-end's support for Cisco ASA 5505 teleworker termination does not affect RAVPN connectivity, and the configuration can be applied without the imposition of a service outage.

The Cisco ASA 5505 teleworker solution provides access for endpoint devices, such as laptop and desktop computers, IP phones, printers, and other devices that connect to the network via wired Ethernet connections. Two of the Cisco ASA 5505's ports provide Power over Ethernet (PoE) to support IP phones, IP video surveillance, and other endpoints without cluttering the teleworker's office with additional cables and wall-wart power supplies.

The Cisco ASA 5505 teleworker solution offers:

- **Low cost**—With this solution, you get a Cisco ASA 5505, a Cisco IP phone, and the necessary license on the organization's Internet edge Cisco ASAs.
- **Flexible connectivity**—The Cisco ASA 5505's integrated Ethernet switch can accommodate multiple endpoint devices, including two interfaces that can provide PoE.
- **Simple deployment**—The Cisco ASA 5505 can be configured quickly with a brief text-file configuration.
- **Security**—Deactivation of the teleworker site's credentials on the Internet-edge appliance can terminate the teleworker's connectivity.

  Ideally, the Cisco ASA 5505 teleworker device is preconfigured and sent home with the teleworker user. A newly-provisioned or existing desktop IP-phone can be taken home, as well, and registers to the Cisco Call Manager server over the VPN.

Deployment Details

Configuration of remote-access connectivity consists of two phases. In the first phase, you configure your resilient Internet-edge appliance pair to receive VPN connections from teleworkers' Cisco ASA 5505 appliances. In the second phase, you deploy configuration on the teleworkers' Cisco ASA 5505 hardware clients.

Process

Configuring Internet Edge ASA for Teleworker VPN

1. Configure IPsec(IKEv1) connection profile
2. Configure NAT exemption
3. Configure route advertisement

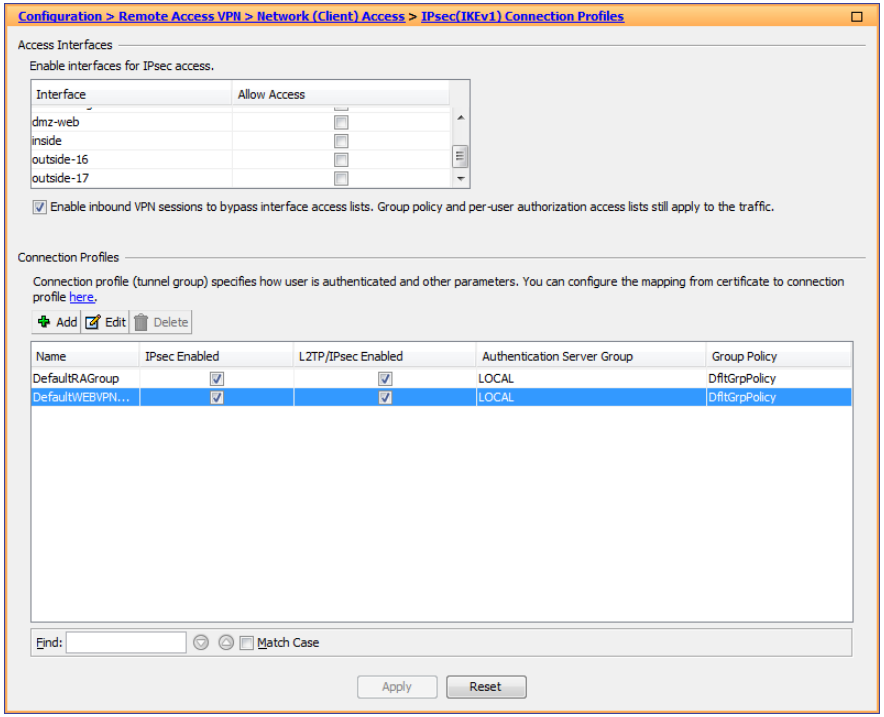
As a rule, the Internet-edge Cisco ASA configuration for Cisco ASA 5505 teleworker VPN is self-contained. A few aspects rely on configuration from the Internet-edge foundation, so you need to have followed the configuration steps for Cisco ASA-based Remote Access VPN in the *Cisco SBA—Borderless Networks Remote Access VPN Deployment Guide*.

Procedure 1 Configure IPsec(IKEv1) connection profile

The IPsec connection profile carries the bulk of the configuration that sets the behavior for VPN client connections, so you must apply a number of steps in this procedure to complete the central configuration.

Step 1: Navigate to the **Configuration > Remote Access VPN > Network (Client) Access > IPsec(IKEv1)Connection Profiles** tab,

Step 2: In the right pane under **Connection Profiles**, click the **Add** button.



Step 3: On the **Add IPsec Remote Access Connection Profile** dialog box, enter the following details. This configuration affects the behavior of the Cisco ASA 5505 teleworker device, as described.

- Name—**Teleworker5505**

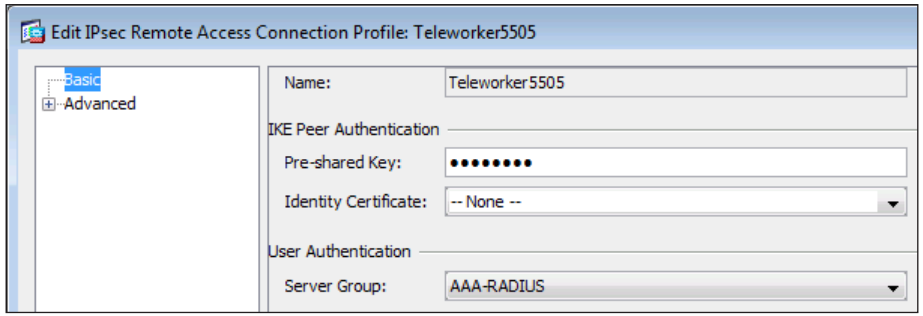
  This entry is the name of the VPN group that is reflected in the Cisco ASA 5505 Easy VPN Client configuration.

- IKE Peer Authentication Pre-Shared Key—**cisco123**

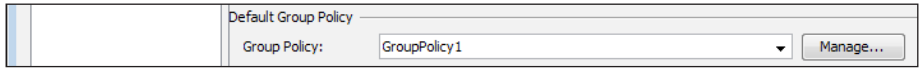
  This entry is the group key that must be duplicated in the Cisco ASA 5505 Easy VPN Client configuration.

- Server Group—Select **AAA-RADIUS** or **AD, depending on whether you** are using ACS or Microsoft Active Directory for user authentication.

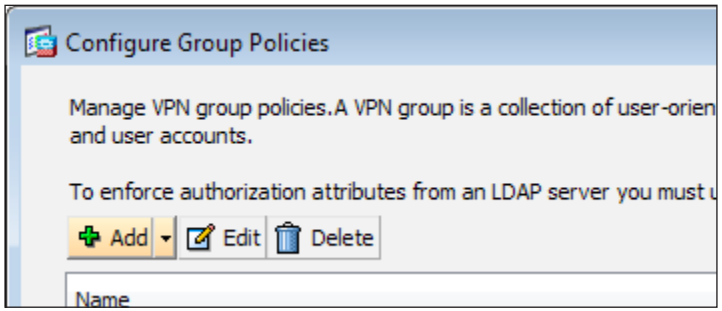
  This entry selects the server that authenticates user names and passwords that are presented to open the Easy VPN Client tunnel.



Step 4: On the right side of the **Group Policy** list, click **Manage**.



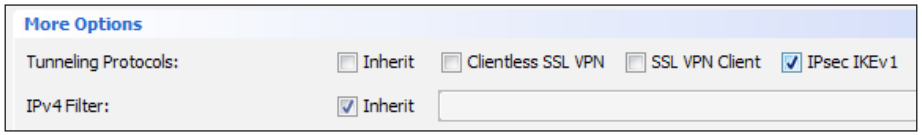
Step 5: On the **Configure Group Policies** dialog box, click **Add**.



Step 6: On the **Add Internal Group Policy** dialog box, select **General**, and then in the **Name** box, enter **5505Group**.

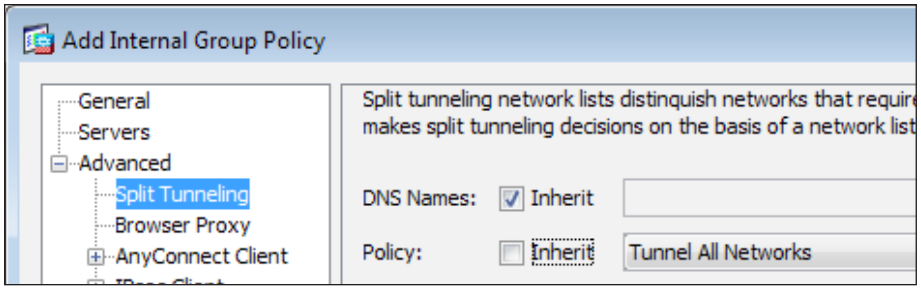
Step 7: Expand the options panel by clicking **More Options**.

Step 8: Next to **Tunneling Protocols**, clear **Inherit**, and then select **IPsec IKEv1**.



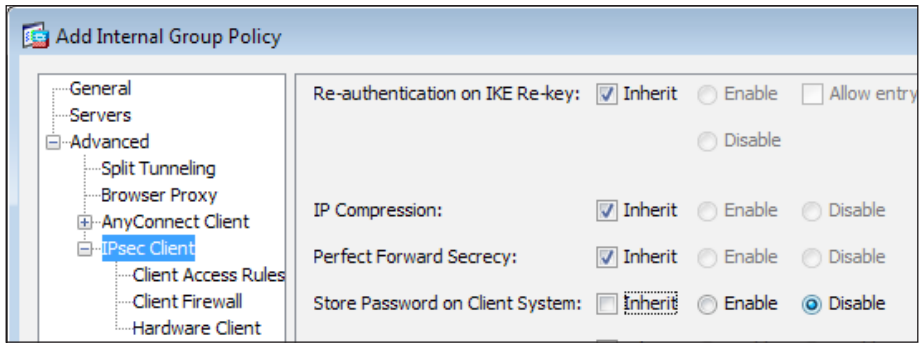
Step 9: Navigate to **Advanced** > **Split Tunneling**, and in the right panel, next to **Policy**, clear **Inherit.**

Step 10: Next to **Policy, in the drop-down list**, ensure that **Tunnel All Networks** is selected.



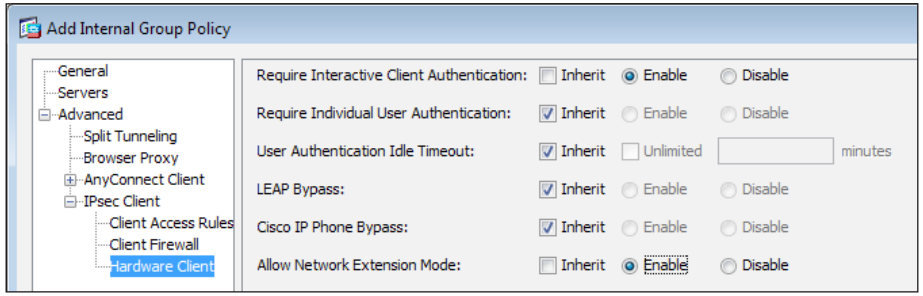
Step 11: Navigate to **Advanced** > **IPsec Client**.

Step 12: Next to **Store Password on Client System**, clear **Inherit** and ensure that **Disable** is selected.



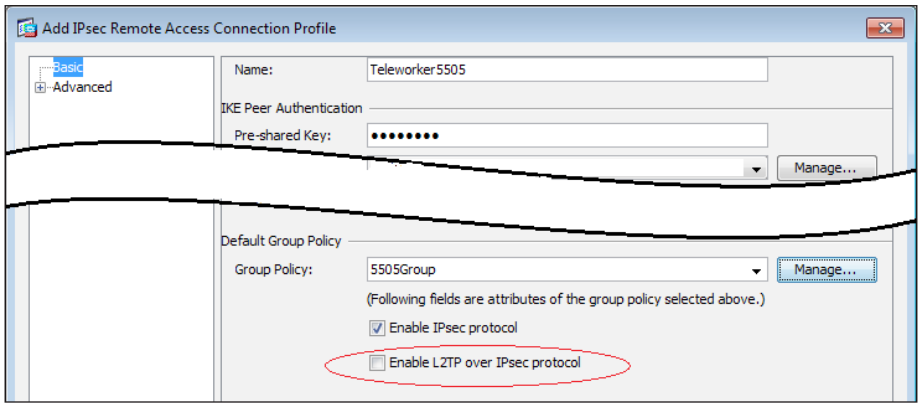
Step 13: Navigate to **Advanced** > **IPsec Client**> **Hardware Client,** and do the following:

- Next to **Require Interactive Client Authentication**, clear **Inherit** and ensure that **Enable** is selected.
- Next to **Allow Network Extension Mode**, clear **Inherit** and ensure that **Enable** is selected.
- Click **OK**.



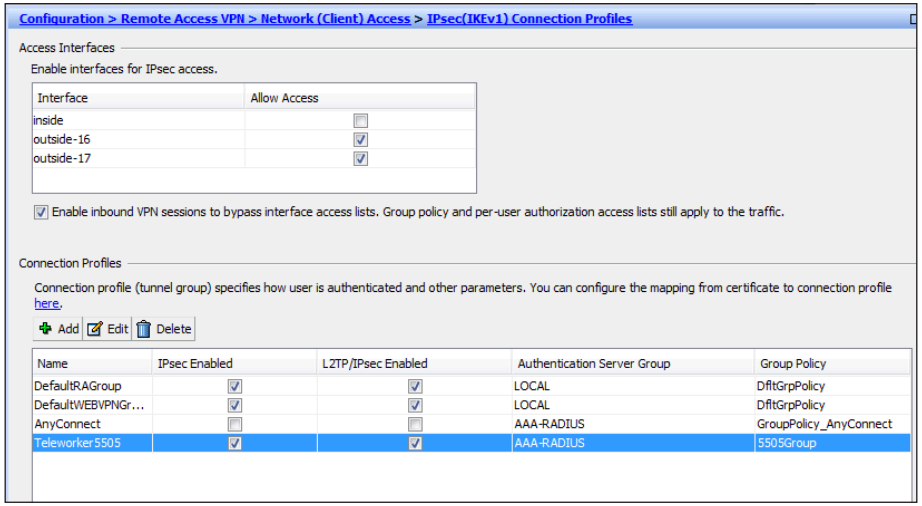
Step 14: On the **Configure Group Policies** dialog box, click **OK**.

Step 15: On the **Add IPsec Remote Access Connection Profile** dialog box, clear **Enable L2TP over IPsec protocol**, and then click **OK**.



Step 16: Navigate to **Configuration** > **Remote Access VPN** > **Network (Client) Access** > **IPsec(IKEv1) Connection Profiles**.

Step 17: Under **Access Interfaces**, next to the appliance's primary outside interface, select **Allow Access**.



Step 18: Under **Connection Profiles**, verify that the new Teleworker5505 profile appears, and then click **Apply**.

The steps above apply the following configuration:

```
group-policy 5505Group internal
group-policy 5505Group attributes
  password-storage disable
  vpn-tunnel-protocol ikev1
  split-tunnel-policy   tunnelall
  secure-unit-authentication enable
  nem enable
exit
tunnel-group Teleworker5505 type remote-access
tunnel-group Teleworker5505 general-attributes
  default-group-policy 5505Group
  authentication-server-group  AAA-RADIUS
tunnel-group Teleworker5505 ipsec-attributes
  ikev1 pre-shared-key cisco123
crypto ikev1 policy 70
  encryption aes
  authentication crack
crypto ikev1 policy 80
  encryption aes
  authentication rsa-sig
crypto ikev1 policy 90
  encryption aes
crypto ikev1 policy 40
  encryption aes-192
  authentication crack
crypto ikev1 policy 50
  encryption aes-192
  authentication rsa-sig
crypto ikev1 policy 60
  encryption aes-192
crypto ikev1 policy 10
  encryption aes-256
  authentication crack
crypto ikev1 policy 20
  encryption aes-256
  authentication rsa-sig
crypto ikev1 policy 30
  encryption aes-256
crypto ikev1 policy 100
  authentication crack
crypto ikev1 policy 110
  authentication rsa-sig
crypto ikev1 policy 120
crypto ikev1 policy 130
  encryption des
  authentication crack
crypto ikev1 policy 140
  encryption des
  authentication rsa-sig
crypto ikev1 policy 150
  encryption des
crypto ikev1 enable  outside-16
crypto ipsec ikev1 transform-set ESP-AES-256-MD5 esp-aes-256
esp-md5-hmac
crypto ipsec ikev1 transform-set ESP-DES-SHA esp-des esp-sha-
hmac
crypto ipsec ikev1 transform-set ESP-3DES-SHA esp-3des esp-
sha-hmac
crypto ipsec ikev1 transform-set ESP-DES-MD5 esp-des esp-md5-
hmac
crypto ipsec ikev1 transform-set ESP-AES-192-MD5 esp-aes-192
esp-md5-hmac
crypto ipsec ikev1 transform-set ESP-3DES-MD5 esp-3des esp-
md5-hmac
crypto ipsec ikev1 transform-set ESP-AES-256-SHA esp-aes-256
esp-sha-hmac
crypto ipsec ikev1 transform-set ESP-AES-128-SHA esp-aes esp-
sha-hmac
crypto ipsec ikev1 transform-set ESP-AES-192-SHA esp-aes-192
esp-sha-hmac
crypto ipsec ikev1 transform-set ESP-AES-128-MD5 esp-aes esp-
md5-hmac
crypto dynamic-map SYSTEM_DEFAULT_CRYPTO_MAP 65535 set  ikev1
transform-set  ESP-AES-128-SHA ESP-AES-128-MD5 ESP-AES-192-SHA
ESP-AES-192-MD5 ESP-AES-256-SHA ESP-AES-256-MD5 ESP-3DES-SHA
ESP-3DES-MD5 ESP-DES-SHA ESP-DES-MD5
crypto map outside-16_map 65535 ipsec-isakmp dynamic SYSTEM_
DEFAULT_CRYPTO_MAP
crypto map outside-16_map interface  outside-16
```

Procedure 2 Configure NAT exemption

The Internet-edge appliances must not apply network address translation (NAT) on traffic between the organization's private network and the IP-subnet that encompasses teleworkers' remote addresses. You must configure a policy that prevents the Internet-edge appliance from applying NAT.

Configure a network object for the summary address of the internal network. The network object will be used during the security policy configuration.

Step 1: Navigate to **Configuration > Firewall > Objects > Network Objects/Groups**.

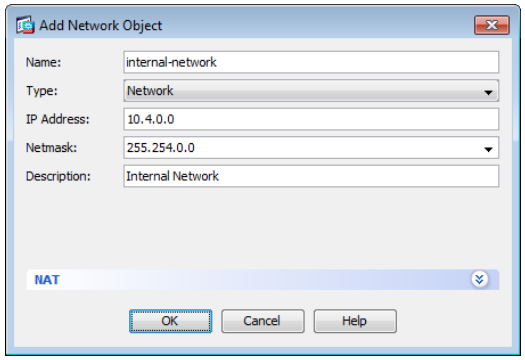
Step 2: Click **Add > Network Object**.

Step 3: In the Add Network Object dialog box, in the **Name box**, enter a description for the network summary. (Example: internal-network)

Step 4: In the **Type** list, select **Network**.

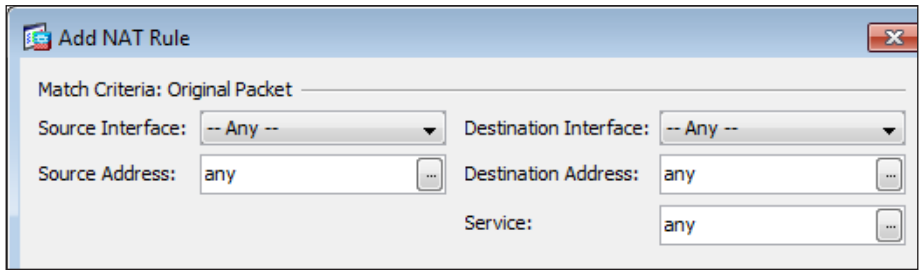
Step 5: In the **IP Address** box, enter the address that summarizes all internal networks. (Example: 10.4.0.0)

Step 6: In the **Netmask** box, enter the internal network summary netmask, and then click **OK**. (Example: 255.254.0.0)

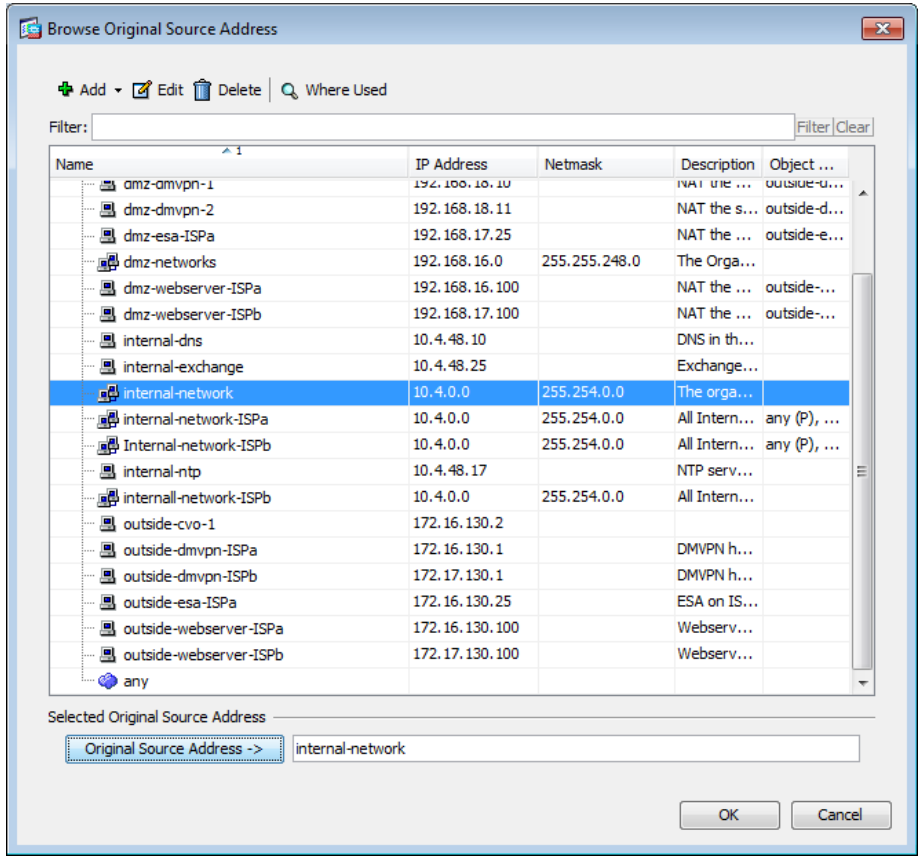


Step 7: Navigate to **Configuration > Firewall > NAT Rules**, and then click **Add**.

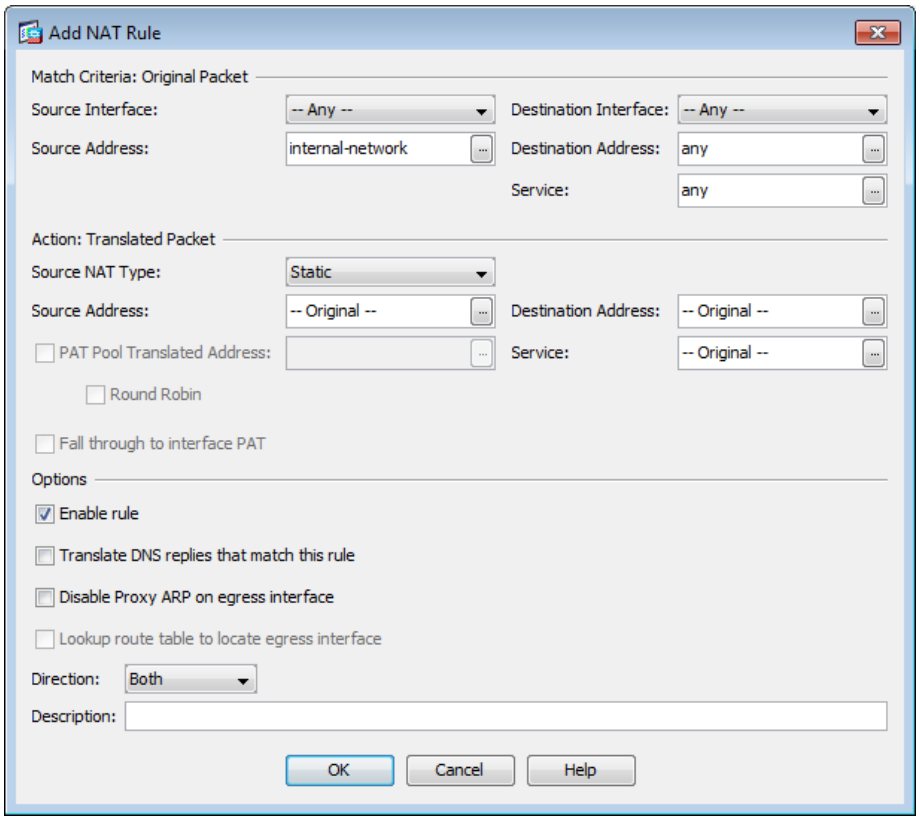
Step 8: On the **Add NAT Rule** dialog box, under **Match Criteria: Original Packet**, in the **Source Address** box, click the ellipsis (…).



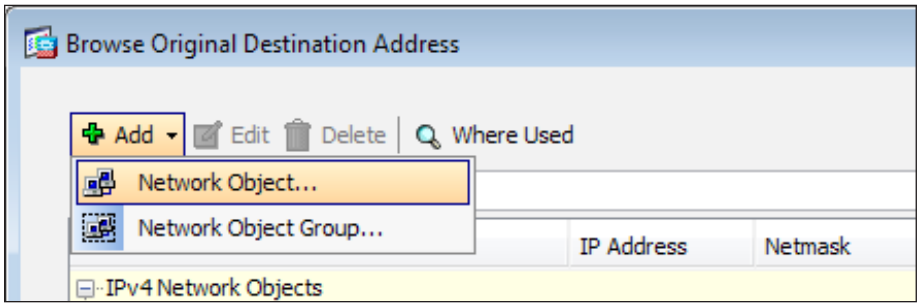
Step 9: On the **Browse Original Source Address** dialog box, expand the **IPv4 Network Objects** list, double-click **internal-network**, and then click **OK**.



Step 10: On the **Add NAT Rule** dialog box, under **Match Criteria: Original Packet**, in the **Destination Address** box, click the ellipsis (...).

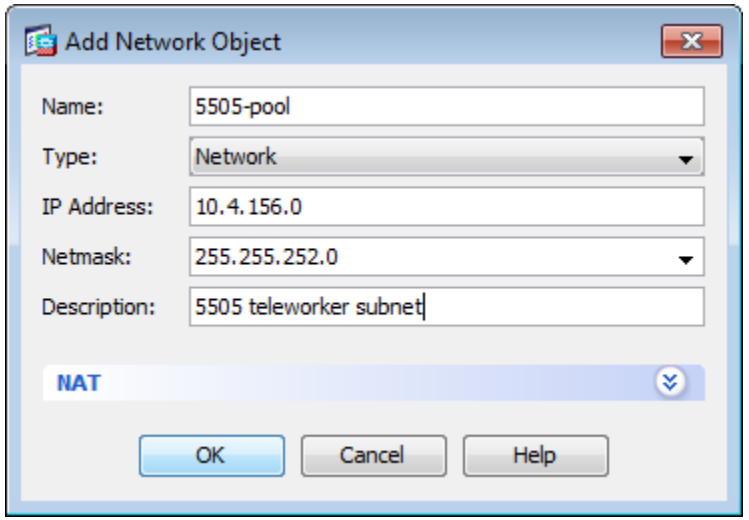


Step 11: On the **Browse Original Destination Address** dialog box, click **Add,** and then click **Network Object**.

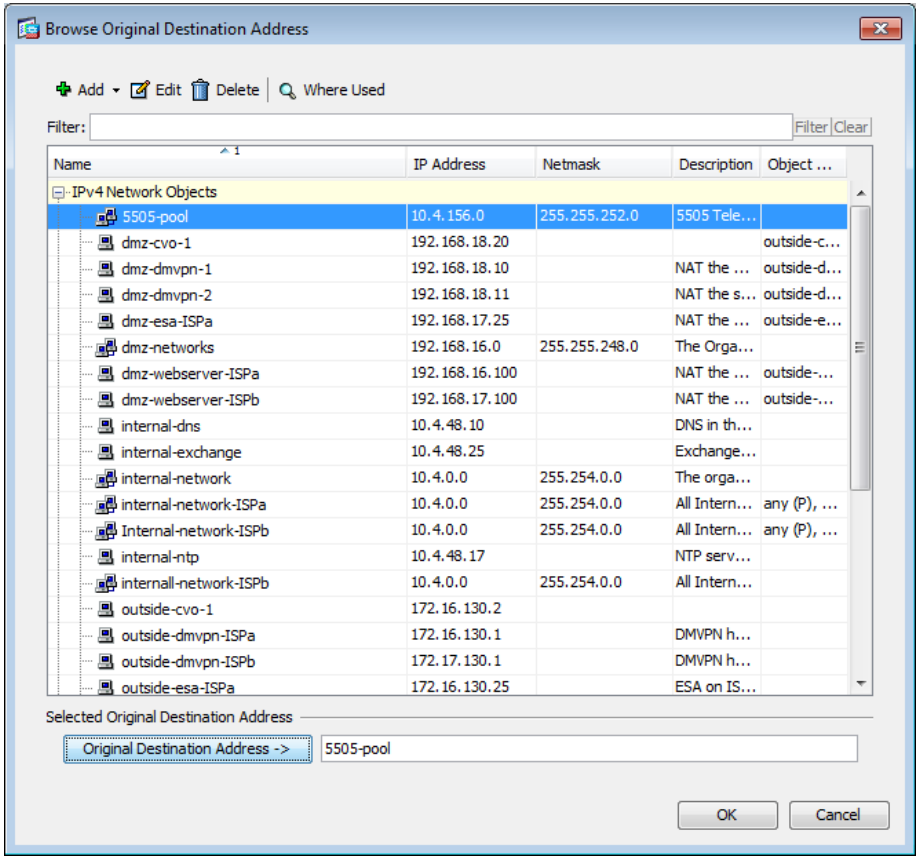


Step 12: On the **Add Network Object** dialog box, enter the following values, and then click **OK**.

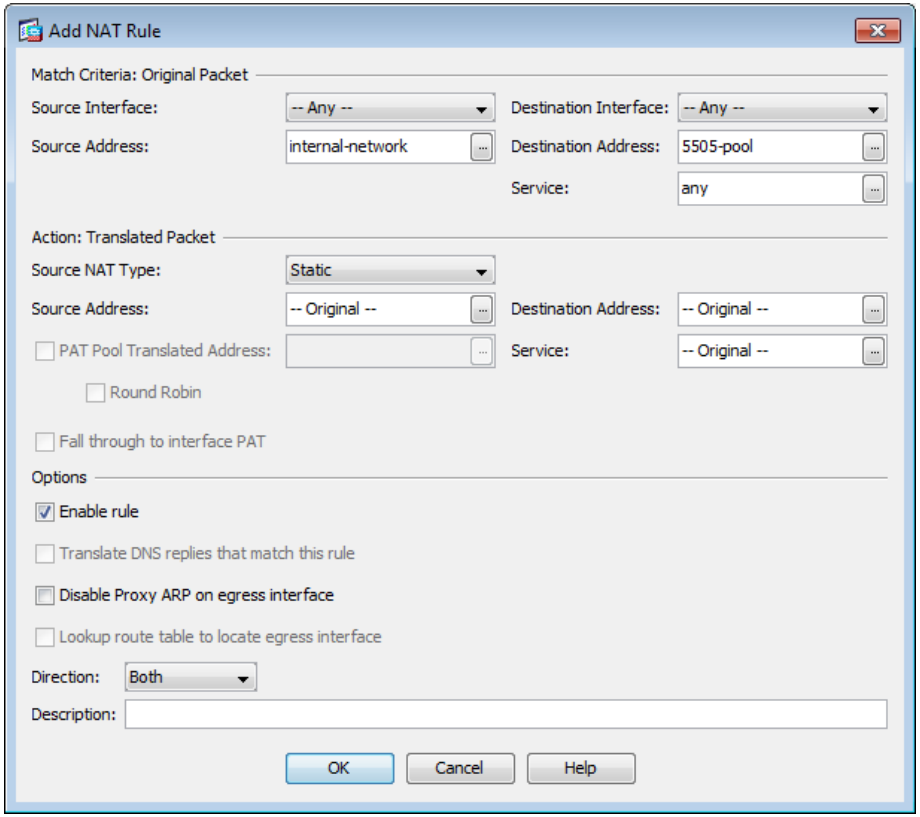
- Name—5505-pool
- Type—Network
- IP Address—10.4.156.0
- Netmask—255.255.252.0
- Description—5505 Teleworker Subnet



Step 13: On the **Browse Original Destination Address** dialog box, expand the **IPv4 Network Objects** list, double-click **5505-pool**, and then click **OK**.



Step 14: Under **Options**, ensure that **Enable Rule** is selected and that the indicated direction is **Both**, and then click **OK**.



Step 15: Review the configuration, and then click **Apply**.

Cisco ASDM applies the following configuration:

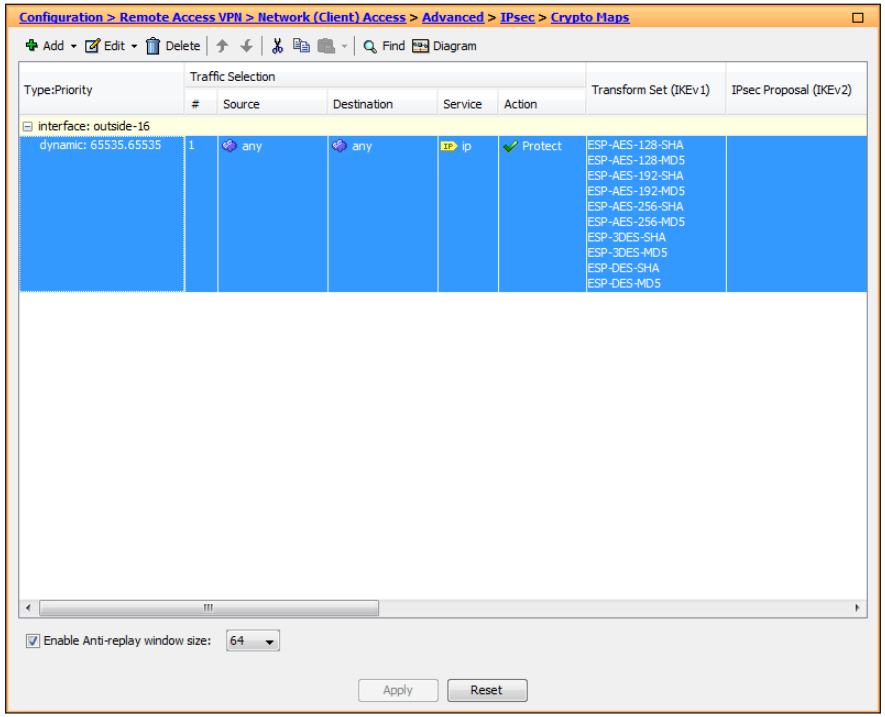
```
object network 5505-pool
  subnet 10.4.156.0 255.255.252.0
  description 5505 teleworker subnet
nat (any,any) source static internal-network internal-network
destination static 5505-pool 5505-pool
```

Procedure 3 Configure route advertisement

The Internet-edge appliances must advertise the teleworker sites' networks to the internal network. RAVPN address pools are advertised as host routes by reverse route injection (RRI) and summarized on the Internet-edge distribution switch. Teleworker subnets are advertised by RRI, as well, but without summarization; the teleworker subnets remain intact as eight-number (/29) subnets advertised to the rest of the network.

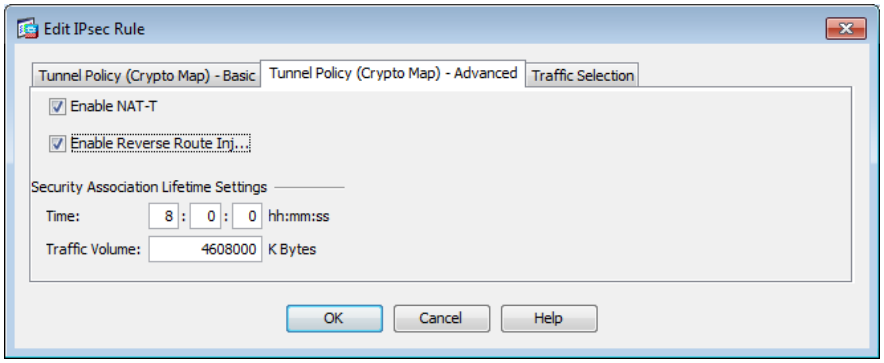
Step 1: Navigate **to Configuration > Remote Access VPN > Network (Client) Access > Advanced > IPsec > Crypto Maps**.

Step 2: Select the crypto map listed under the primary outside interface, and then click **Edit**.



Step 3: Click the **Tunnel Policy (Crypto Map) - Advanced** tab.

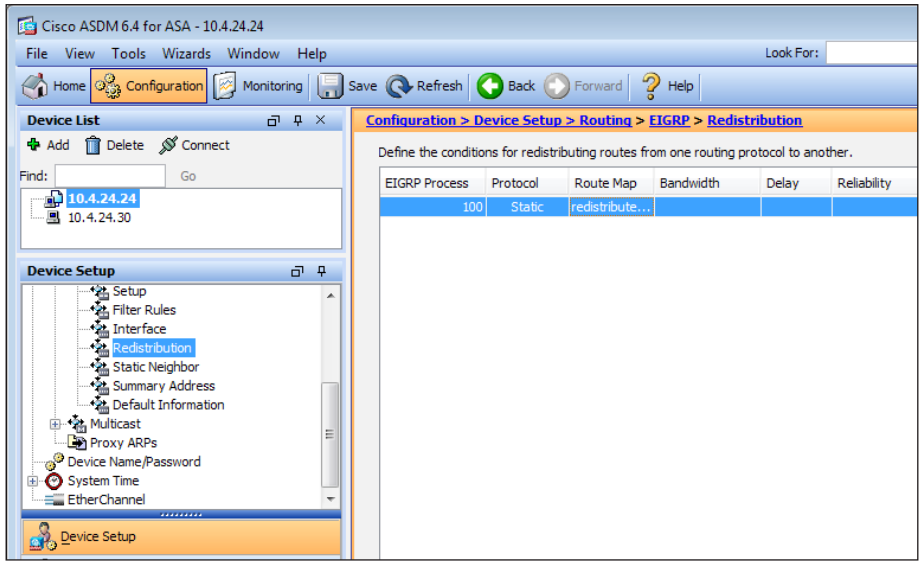
Step 4: Select **Enable Reverse Route Injection**, and then click **OK**.



Step 5: On the Crypto Maps pane, click **Apply**.

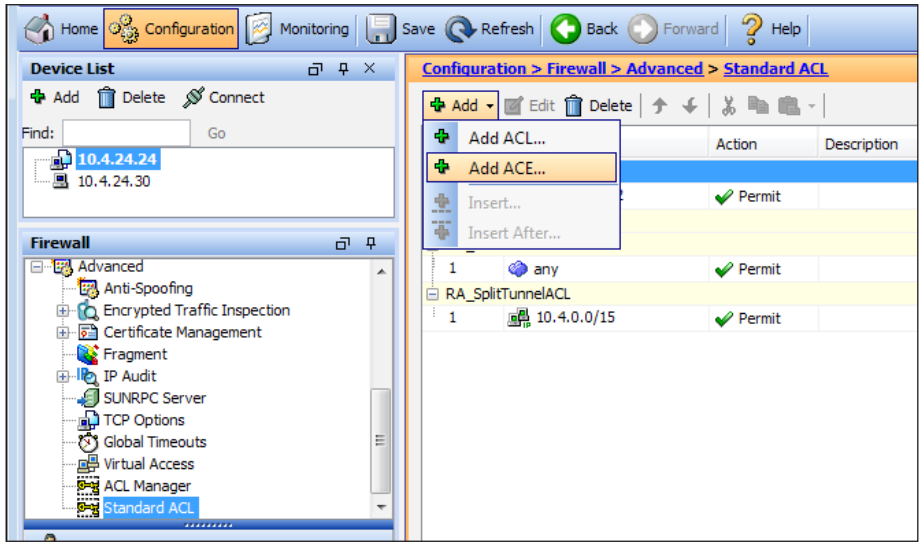
Step 6: Navigate to **Configuration > Device Setup > Routing > EIGRP > Redistribution.**

Step 7: **On the Redistribution** pane, locate the static routing redistribution configuration, and verify that a route-map is defined in the static route redistribution for Enhanced Interior Gateway Routing Protocol (EIGRP). You may need to scroll the window to the far right to view the Route Map column (in the figure below, the Route Map column was moved). If no route-map is configured, you should review and apply the RAVPN-pool advertisement steps in the *SBA —Borderless Networks Remote Access VPN Deployment Guide*.

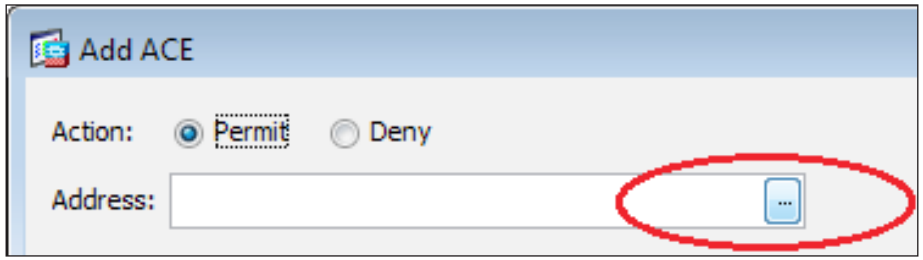


Step 8: Navigate to **Configuration > Firewall > Advanced > Standard ACL.**

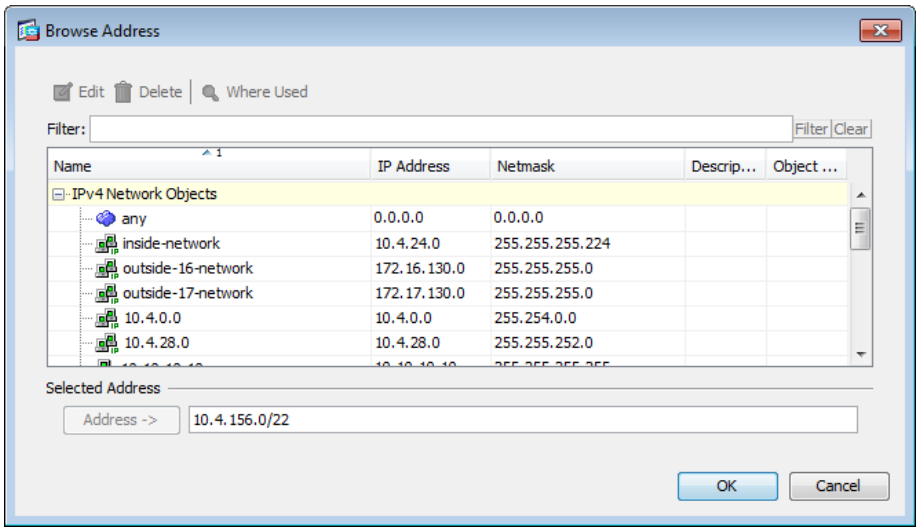
Step 9: Add the Cisco ASA 5505 teleworker's subnet to the route-map's access-list by selecting the **redistribute-list** entry in the ACL list, clicking **Add**, and then clicking **Add ACE**.



Step 10: On the Add ACE dialog box, next to the **Address** box. click the ellipsis (...).

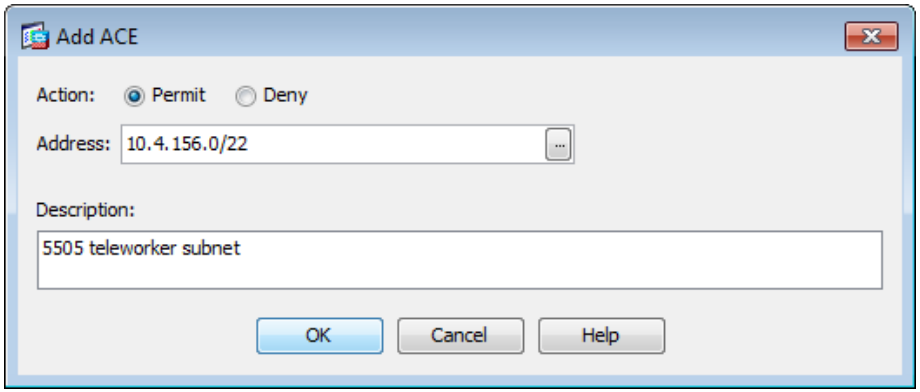


Step 11: On the Browse Address dialog box, in the **Address** box, type 10.4.156.0/22, and then click **OK**.

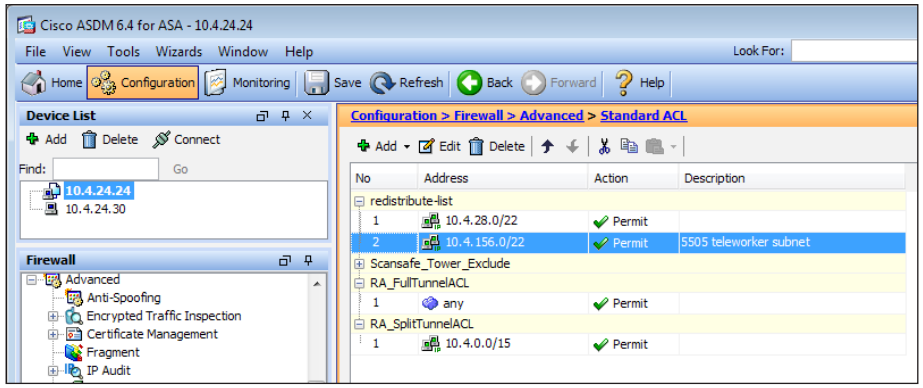


Step 12: Verify that **Permit** is selected and that **10.4.156.0/22** is the value for **Address**.

Step 13: On the Add ACE dialog box, in the **Description box**, enter 5505 teleworker subnet, and then click **OK**.



Step 14: In the Standard ACL pane, click **Apply**.



Cisco ASDM applies the following configuration:

```
crypto dynamic-map SYSTEM_DEFAULT_CRYPTO_MAP 65535 set
reverse-route
access-list redistribute-list remark 5505 teleworker subnet
access-list redistribute-list standard permit 10.4.156.0
255.255.252.0
```

Process

Configuring Teleworker Cisco ASA 5505 Endpoints

1. Configure inside VLAN and switch ports
2. Define global device configuration
3. Configure outside VLAN and switch port
4. Configure Cisco ASA 5505 DHCP server
5. Configure Cisco ASA 5505 Easy VPN client

Each teleworker's Cisco ASA 5505 endpoint must be configured to connect to your resilient Internet-edge appliance. Because this configuration is likely to be deployed on multiple devices, the configuration is shown only in the command-line interface to streamline deployment. All Cisco ASA 5505 teleworker sites connect using Network Extension Mode, which allows teleworker-site endpoints to connect freely to the organization's LAN.

Connecting in Network Extension Mode is particularly critical for endpoints, such as IP phones and video surveillance cameras, which might be susceptible to NAT's modification of data traffic.

Each site must use a unique inside-IP subnet. Otherwise, all configuration is identical between sites. To avoid conflicting address assignments, Cisco recommends that you maintain a spreadsheet of subnet assignments for the various users that will be issued Cisco ASA 5505 telecommuter equipment.

User name	Subnet	ASA 5505 LAN address	Hostname
Employee1	10.4.156.0/29	10.4.156.1	5505site1

Procedure 1 Configure inside VLAN and switch ports

Each Cisco ASA 5505 teleworker site needs a unique inside subnet, which you should track in a spreadsheet, as recommended in the introduction of this section.

Step 1: Configure the VLAN 1 interface for the teleworker site's LAN.

```
interface Vlan1
 no ip address
 nameif inside
 security-level 100
 ip address 10.4.156.1 255.255.255.248
```

Step 2: Associate the Cisco ASA 5505's Ethernet 0/1 through Ethernet 0/7 interfaces with VLAN 1, and instruct the teleworker to connect PoE-enabled devices to the Ethernet 0/6 and 0/7 ports.

```
interface Ethernet0/1
 switchport access vlan 1
 no shutdown
…
interface Ethernet0/7
 switchport access vlan 1
 no shutdown
```

Procedure 2 Define global device configuration

Step 1: Configure the Cisco ASA 5055's hostname and domain name.

```
hostname 5505site1
domain-name cisco.local
```

Step 2: Define a local administrative username.

```
username admin password c1sco123 privilege 15
```

Step 3: Set the enable password.

```
enable password c1sco123
```

Step 4: Define the management configuration.

```
http server enable
http 10.0.0.0 255.0.0.0 inside
ssh 10.0.0.0 255.0.0.0 inside
management-access inside
```

Step 5: If you are using centralized AAA, define authentication servers for management access.

```
aaa-server AAA-SERVERS protocol tacacs+
aaa-server AAA-SERVERS (inside) host 10.4.48.15
 key SecretKey
aaa authentication http console AAA-SERVERS LOCAL
aaa authentication ssh console AAA-SERVERS LOCAL
```

Procedure 3 Configure outside VLAN and switch port

Step 1: Configure a VLAN interface to receive an IP address via DHCP from the teleworker's Internet gateway device.

```
interface Vlan2
 nameif outside
 security-level 0
 ip address dhcp setroute
```

Step 2: Associate the Cisco ASA 5505's Ethernet 0/0 interface with VLAN 2, and instruct the teleworker to connect Ethernet 0/0 to their Internet gateway device.

```
interface Ethernet0/0
 switchport access vlan 2
 no shutdown
```

Procedure 4 Configure Cisco ASA 5505 DHCP server

The Cisco ASA 5505 must be configured to provide IP-addresses for the teleworker endpoints, such as computers, phones, printers, and video surveillance devices. Each site must use a unique subnet, which should be tracked in a spreadsheet, as recommended in the introduction of this section.

Step 1: Define the DHCP scope address range. The DHCP scope must be in the same subnet as the inside (VLAN 1) interface.

```
dhcpd address 10.4.156.2-10.4.156.6 inside
```

Step 2: Configure the DNS and domain-name values that will be distributed to clients.

```
dhcpd dns 10.4.48.10 interface inside
dhcpd domain cisco.local interface inside
```

Step 3: Define DHCP option 150 to provide the Cisco Unified Call Manager Server address for Cisco IP phones.

```
dhcpd option 150 ip 10.4.48.120
```

Step 4: Enable the DHCP scope.

```
dhcpd enable inside
```

Procedure 5 Configure Cisco ASA 5505 Easy VPN client

Cisco ASA 5505 uses Easy VPN network-extension mode to negotiate the VPN connectivity to the Internet-edge Cisco ASA Remote Access server.

Step 1: Apply the Easy VPN client configuration for the remote Cisco ASA 5505: The vpngroup and password values must match the IPsec Remote Access Connection Profile that you configured on the Internet-edge appliance.

```
vpnclient server 172.16.130.122
```

Step 2: Set network-extension mode:

```
vpnclient mode network-extension-mode
```

Step 3: Define the Easy VPN client connection attributes. The vpngroup and password values must match the IPsec Remote Access Connection Profile that you configured on the Internet-edge appliance.

```
vpnclient vpngroup Teleworker5505 password cisco123
```

Step 4: Enable the Cisco ASA 5505's Easy VPN client:

```
vpnclient enable
```

The teleworker must manually initiate their VPN connection; when the user employs a web browser to access web content on your internal network, Cisco ASA 5505 intercepts the connection and provides an interactive login prompt. The user must provide login credentials, at which point the VPN connection is negotiated with the provided username and password.

Tech Tip

The IP Phone connected to the Cisco ASA 5505 can't place or receive calls if the user's VPN connection is not active.

In the event that a teleworker's VPN access must be revoked, the authentication server should deny the teleworker's access.

Appendix A: Product List

Remote-Site

Functional Area	Product Description	Part Numbers	Software
Remote Site Appliance	Cisco ASA 5505 Firewall Edition Bundle security appliance	ASA5505-BUN-K9	8.4(4)1

Internet Edge

Functional Area	Product Description	Part Numbers	Software
Firewall	Cisco ASA 5545-X IPS Edition - security appliance	ASA5545-IPS-K9	ASA 8.6(1)1, IPS 7.1(4) E4
	Cisco ASA 5525-X IPS Edition - security appliance	ASA5525-IPS-K9	
	Cisco ASA 5515-X IPS Edition - security appliance	ASA5515-IPS-K9	
	Cisco ASA 5512-X IPS Edition - security appliance	ASA5512-IPS-K9	
	Cisco ASA5512-X Security Plus license	ASA5512-SEC-PL	
	Firewall Management	ASDM	6.6.114
RA VPN Firewall	Cisco ASA 5545-X Firewall Edition - security appliance	ASA5545-K9	8.6(1)1
	Cisco ASA 5525-X Firewall Edition - security appliance	ASA5525-K9	
	Cisco ASA 5515-X Firewall Edition - security appliance	ASA5515-K9	
	Cisco ASA 5512-X Firewall Edition - security appliance	ASA5512-K9	
	Cisco ASA5512-X Security Plus license	ASA5512-SEC-PL	
	Firewall Management	ASDM	6.6.114

Appendix B: Configuration Files

VPN-ASA5525

```
hostname VPN-ASA5525
domain-name cisco.local
enable password 8Ry2YjIyt7RRXU24 encrypted
passwd 2KFQnbNIdI.2KYOU encrypted
names
!
interface GigabitEthernet0/0
 nameif inside
 security-level 100
 ip address 10.4.24.24 255.255.255.224 standby 10.4.24.23
 summary-address eigrp 100 10.4.28.0 255.255.252.0 5
!
interface GigabitEthernet0/1
 shutdown
 no nameif
 no security-level
 no ip address
!
interface GigabitEthernet0/2
 description LAN/STATE Failover Interface
!
interface GigabitEthernet0/3
 no nameif
 no security-level
 no ip address
!
interface GigabitEthernet0/3.16
 description Prymary Internet connection VLAN 16
 vlan 16
 nameif outside-16
 security-level 0
 ip address 172.16.130.122 255.255.255.0 standby 172.16.130.121
!
interface GigabitEthernet0/3.17
 description Resilient Internet connection on VLAN 17
 vlan 17
 nameif outside-17
 security-level 0
 ip address 172.17.130.122 255.255.255.0 standby 172.17.130.121
!
interface GigabitEthernet0/4
 shutdown
 no nameif
 no security-level
 no ip address
!
interface GigabitEthernet0/5
 shutdown
 no nameif
 no security-level
 no ip address
!
interface GigabitEthernet0/6
 shutdown
 no nameif
 no security-level
 no ip address
!
interface GigabitEthernet0/7
 shutdown
 no nameif
 no security-level
 no ip address
!
interface Management0/0
```

```
 shutdown
 no nameif
 no security-level
 no ip address
!
ftp mode passive
clock timezone PST -8
clock summer-time PDT recurring
dns server-group DefaultDNS
 domain-name cisco.local
same-security-traffic permit intra-interface
object network NETWORK_OBJ_10.4.28.0_22
 subnet 10.4.28.0 255.255.252.0
object network RA-Pool
 subnet 10.4.28.0 255.255.252.0
 description RA VPN client pool
object network 5505-Pool
 subnet 10.4.156.0 255.255.252.0
 description 5505 Teleworker Subnet
object network Internal_Network
 subnet 10.4.0.0 255.254.0.0
 description Internal Network
access-list RA_PartnerACL remark Partners can access this
internal host only
access-list RA_PartnerACL standard permit host 10.4.48.35
access-list RA_SplitTunnelACL remark Internal networks
access-list RA_SplitTunnelACL standard permit 10.4.0.0
255.254.0.0
access-list RA_SplitTunnelACL remark DMZ networks
access-list RA_SplitTunnelACL standard permit 192.168.16.0
255.255.248.0
access-list inside_access_in extended permit ip any any
access-list redistribute-list standard permit 10.4.28.0
255.255.252.0
access-list redistribute-list remark 5505 Teleworker subnet
access-list redistribute-list standard permit 10.4.156.0
255.255.252.0
pager lines 24
logging enable
logging buffered informational
logging asdm informational
mtu inside 1500
mtu outside-16 1500
mtu outside-17 1500
ip local pool RA-pool 10.4.28.1-10.4.31.255 mask 255.255.252.0
failover
failover lan unit primary
failover lan interface failover GigabitEthernet0/2
failover polltime unit msec 200 holdtime msec 800
failover polltime interface msec 500 holdtime 5
failover key *****
failover replication http
failover link failover GigabitEthernet0/2
failover interface ip failover 10.4.24.97 255.255.255.248 standby
10.4.24.98
monitor-interface outside-16
monitor-interface outside-17
icmp unreachable rate-limit 1 burst-size 1
asdm image disk0:/asdm-66114.bin
no asdm history enable
arp timeout 14400
nat (inside,outside-16) source static any any destination static
NETWORK_OBJ_10.4.28.0_22 NETWORK_OBJ_10.4.28.0_22 no-proxy-arp
route-lookup
nat (any,any) source static Internal_Network Internal_Network
destination static 5505-Pool 5505-Pool
access-group inside_access_in in interface inside
!
route-map redistribute-map permit 1
 match ip address redistribute-list
!
!
router eigrp 100
 no auto-summary
```

```
 network 10.4.0.0 255.254.0.0
 passive-interface default
 no passive-interface inside
 redistribute static route-map redistribute-map
!
route outside-16 0.0.0.0 0.0.0.0 172.16.130.126 128 track 1
route inside 0.0.0.0 0.0.0.0 10.4.24.1 tunneled
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 sip-provisional-media 0:02:00 uauth 0:05:00 absolute
timeout tcp-proxy-reassembly 0:01:00
timeout floating-conn 0:00:00
dynamic-access-policy-record DfltAccessPolicy
aaa-server AAA-SERVER protocol tacacs+
aaa-server AAA-SERVER (inside) host 10.4.48.15
 key *****
aaa-server AAA-RADIUS protocol radius
aaa-server AAA-RADIUS (inside) host 10.4.48.15
 timeout 5
 key *****
user-identity default-domain LOCAL
aaa authentication enable console AAA-SERVER LOCAL
aaa authentication ssh console AAA-SERVER LOCAL
aaa authentication http console AAA-SERVER LOCAL
aaa authentication serial console AAA-SERVER LOCAL
aaa authorization exec authentication-server
http server enable
http 10.4.0.0 255.254.0.0 inside
no snmp-server location
no snmp-server contact
snmp-server community *****
snmp-server enable traps snmp authentication linkup linkdown
coldstart warmstart
sla monitor 16
 type echo protocol ipIcmpEcho 172.18.1.1 interface outside-16
sla monitor schedule 16 life forever start-time now
crypto ipsec ikev1 transform-set ESP-AES-256-MD5 esp-aes-256 esp-
md5-hmac
crypto ipsec ikev1 transform-set ESP-DES-SHA esp-des esp-sha-hmac
crypto ipsec ikev1 transform-set ESP-3DES-SHA esp-3des esp-sha-
hmac
crypto ipsec ikev1 transform-set ESP-DES-MD5 esp-des esp-md5-hmac
crypto ipsec ikev1 transform-set ESP-AES-192-MD5 esp-aes-192 esp-
md5-hmac
crypto ipsec ikev1 transform-set ESP-3DES-MD5 esp-3des esp-md5-
hmac
crypto ipsec ikev1 transform-set ESP-AES-256-SHA esp-aes-256 esp-
sha-hmac
crypto ipsec ikev1 transform-set ESP-AES-128-SHA esp-aes esp-sha-
hmac
crypto ipsec ikev1 transform-set ESP-AES-192-SHA esp-aes-192 esp-
sha-hmac
crypto ipsec ikev1 transform-set ESP-AES-128-MD5 esp-aes esp-md5-
hmac
crypto dynamic-map SYSTEM_DEFAULT_CRYPTO_MAP 65535 set ikev1
transform-set ESP-AES-128-SHA ESP-AES-128-MD5 ESP-AES-192-SHA
ESP-AES-192-MD5 ESP-AES-256-SHA ESP-AES-256-MD5 ESP-3DES-SHA ESP-
3DES-MD5 ESP-DES-SHA ESP-DES-MD5
crypto map outside-17_map 65535 ipsec-isakmp dynamic SYSTEM_
DEFAULT_CRYPTO_MAP
crypto map outside-17_map interface outside-17
crypto map outside-16_map 65535 ipsec-isakmp dynamic SYSTEM_
DEFAULT_CRYPTO_MAP
crypto map outside-16_map interface outside-16
crypto ca trustpoint ASDM_TrustPoint1
 enrollment self
 subject-name CN=VPN-ASA5525.cisco.local
 keypair sslpair
 proxy-ldc-issuer
 crl configure
```

```
crypto ca certificate chain ASDM_TrustPoint1
 certificate 199fc84f
    30820270 308201d9 a0030201 02020419 9fc84f30 0d06092a
864886f7 0d010105
    0500304a 3120301e 06035504 03131756 504e2d41 53413535
32352e63 6973636f
    2e6c6f63 616c3126 30240609 2a864886 f70d0109 02161756
504e2d41 53413535
    32352e63 6973636f 2e6c6f63 616c301e 170d3132 30363034
31373532 35345a17
    0d323230 36303231 37353235 345a304a 3120301e 06035504
03131756 504e2d41
    53413535 32352e63 6973636f 2e6c6f63 616c3126 30240609
2a864886 f70d0109
    02161756 504e2d41 53413535 32352e63 6973636f 2e6c6f63
616c3081 9f300d06
    092a8648 86f70d01 01010500 03818d00 30818902 818100d6
2c54cc0b fe1cffa0
    ba51f93a 7d0017b1 e17a7765 31a16ee9 f9153059 a81d6ee0
c7b98f84 09930b89
    5affdb5c 7ac8cd8f 7b155d3f 9e82d041 b4979a16 df782104
f88877d7 8b22c3eb
    3828b31f b2440c42 2102cf43 1ae023db 962c5224 0a6225af
11a2dc48 02e1dc72
    8be4a007 42739a90 7cb16882 9815cd9f 576aa4b7 7bb4cf02
03010001 a3633061
    300f0603 551d1301 01ff0405 30030101 ff300e06 03551d0f
0101ff04 04030201
    86301f06 03551d23 04183016 80148d1b 53b7eff9 ebf29730
4632e70c cd0922ea
    3e75301d 0603551d 0e041604 148d1b53 b7eff9eb f2973046
32e70ccd 0922ea3e
    75300d06 092a8648 86f70d01 01050500 03818100 c66af82c
d9402d37 9663a12d
    c46bd69c 6c74bf31 361ee1ce df02629c 71ea4c9f 40354eae
13489b6f 8b3fdcb1
    cb0a050d 8038afb3 daff4a30 2ed0d49a 9629d5ca c8d3c3f0
0e5b2df9 d57b02f1
    e1618468 b80be22f 89942cb5 34e3d05b 63f4edb1 3835ddd0
0542e2b1 d76c112b
    c2d5ef2e e9858080 fd297929 131784cc e628b546
  quit
crypto ikev1 enable outside-16
crypto ikev1 enable outside-17
crypto ikev1 policy 10
 authentication crack
 encryption aes-256
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 20
 authentication rsa-sig
 encryption aes-256
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 30
 authentication pre-share
 encryption aes-256
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 40
 authentication crack
 encryption aes-192
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 50
 authentication rsa-sig
 encryption aes-192
 hash sha
 group 2
 lifetime 86400
```

```
crypto ikev1 policy 60
 authentication pre-share
 encryption aes-192
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 70
 authentication crack
 encryption aes
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 80
 authentication rsa-sig
 encryption aes
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 90
 authentication pre-share
 encryption aes
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 100
 authentication crack
 encryption 3des
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 110
 authentication rsa-sig
 encryption 3des
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 120
 authentication pre-share
 encryption 3des
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 130
 authentication crack
 encryption des
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 140
 authentication rsa-sig
 encryption des
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 150
 authentication pre-share
 encryption des
 hash sha
 group 2
 lifetime 86400
crypto ikev1 policy 65535
 authentication pre-share
 encryption 3des
 hash sha
 group 2
 lifetime 86400
!
track 1 rtr 16 reachability
telnet timeout 5
ssh timeout 5
ssh version 2
console timeout 0
threat-detection basic-threat
threat-detection statistics access-list
```

```
no threat-detection statistics tcp-intercept
ntp server 10.4.48.17
ssl trust-point ASDM_TrustPoint1 outside-17
ssl trust-point ASDM_TrustPoint1 outside-16
webvpn
 enable outside-16
 enable outside-17
 anyconnect image disk0:/anyconnect-linux-2.5.2014-k9.pkg 1
 anyconnect image disk0:/anyconnect-macosx-i386-2.5.2014-k9.pkg 2
 anyconnect image disk0:/anyconnect-win-2.5.2014-k9.pkg 3
 anyconnect profiles ra_profile disk0:/ra_profile.xml
 anyconnect enable
 tunnel-group-list enable
group-policy 5505Group internal
group-policy 5505Group attributes
 vpn-tunnel-protocol ikev1 l2tp-ipsec
 password-storage disable
 split-tunnel-policy tunnelall
 secure-unit-authentication enable
 nem enable
group-policy GroupPolicy_AnyConnect internal
group-policy GroupPolicy_AnyConnect attributes
 wins-server none
 dns-server value 10.4.48.10
 vpn-tunnel-protocol ssl-client
 default-domain value cisco.local
 webvpn
  anyconnect profiles value ra_profile type user
group-policy GroupPolicy_Administrators internal
group-policy GroupPolicy_Administrators attributes
 banner value Your acess is via unrestricted split tunnel.
 split-tunnel-policy tunnelall
 split-tunnel-network-list value RA_SplitTunnelACL
 webvpn
  anyconnect profiles value ra_profile type user
group-policy GroupPolicy_Partner internal
group-policy GroupPolicy_Partner attributes
 banner value Your Access is restricted to the partner server
 vpn-filter value RA_PartnerACL
 webvpn
  anyconnect profiles value ra_profile type user
username admin password w2Y.6Op4j7clVDk2 encrypted privilege 15
tunnel-group AnyConnect type remote-access
tunnel-group AnyConnect general-attributes
 address-pool RA-pool
 authentication-server-group AAA-RADIUS
 default-group-policy GroupPolicy_AnyConnect
tunnel-group AnyConnect webvpn-attributes
 group-alias AnyConnect enable
 group-url https://172.16.130.122/AnyConnect enable
 group-url https://172.17.130.122/AnyConnect enable
tunnel-group Teleworker5505 type remote-access
tunnel-group Teleworker5505 general-attributes
 authentication-server-group AAA-RADIUS
 default-group-policy 5505Group
tunnel-group Teleworker5505 ipsec-attributes
 ikev1 pre-shared-key *****
!
class-map inspection_default
 match default-inspection-traffic
!
!
policy-map type inspect dns preset_dns_map
 parameters
  message-length maximum client auto
  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 ip-options
  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
prompt hostname context
no call-home reporting anonymous
call-home
 profile CiscoTAC-1
  no active
  destination address http https://tools.cisco.com/its/service/
oddce/services/DDCEService
  destination address email callhome@cisco.com
  destination transport-method http
  subscribe-to-alert-group diagnostic
  subscribe-to-alert-group environment
  subscribe-to-alert-group inventory periodic monthly 23
  subscribe-to-alert-group configuration periodic monthly 23
  subscribe-to-alert-group telemetry periodic daily
Cryptochecksum:daab272354b93c144a6e62651655b319
: end
```

ASA-5505

```
hostname 5505site1
domain-name cisco.local
enable password 9jNfZuG3TC5tCVH0 encrypted
passwd 2KFQnbNIdI.2KYOU encrypted
names
!
interface Ethernet0/0
 switchport access vlan 2
!
interface Ethernet0/1
!
interface Ethernet0/2
!
interface Ethernet0/3
!
interface Ethernet0/4
!
interface Ethernet0/5
!
interface Ethernet0/6
!
interface Ethernet0/7
!
interface Vlan1
 nameif inside
 security-level 100
 ip address 10.4.156.1 255.255.255.248
!
interface Vlan2
 nameif outside
 security-level 0
 ip address dhcp setroute
!
ftp mode passive
dns server-group DefaultDNS
 domain-name cisco.local
pager lines 24
mtu outside 1500
mtu inside 1500
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 sip-provisional-media 0:02:00 uauth 0:05:00 absolute
timeout tcp-proxy-reassembly 0:01:00
timeout floating-conn 0:00:00
dynamic-access-policy-record DfltAccessPolicy
aaa-server AAA-SERVERS protocol tacacs+
aaa-server AAA-SERVERS (inside) host 10.4.48.15
 key *****
user-identity default-domain LOCAL
aaa authentication http console AAA-SERVERS LOCAL
aaa authentication ssh console AAA-SERVERS LOCAL
http server enable
http 10.0.0.0 255.0.0.0 inside
no snmp-server location
no snmp-server contact
snmp-server enable traps snmp authentication linkup linkdown
coldstart warmstart
crypto ikev1 policy 65535
 authentication pre-share
 encryption 3des
 hash sha
 group 2
 lifetime 86400
telnet timeout 5
ssh 10.0.0.0 255.0.0.0 inside
ssh timeout 5
console timeout 0
management-access inside
vpnclient server 172.16.130.122
vpnclient mode network-extension-mode
vpnclient vpngroup Teleworker5505 password *****
vpnclient enable
dhcpd option 150 ip 10.4.48.120
!
dhcpd address 10.4.156.2-10.4.156.6 inside
dhcpd dns 10.4.48.10 interface inside
dhcpd domain cisco.local interface inside
dhcpd enable inside
!
threat-detection basic-threat
threat-detection statistics access-list
no threat-detection statistics tcp-intercept
webvpn
username admin password e1z89R3cZe9Kt6Ib encrypted privilege 15
!
class-map inspection_default
 match default-inspection-traffic
!
!
policy-map type inspect dns preset_dns_map
 parameters
  message-length maximum client auto
  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 ip-options
  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
```

```
prompt hostname context
no call-home reporting anonymous
call-home
 profile CiscoTAC-1
  no active
  destination address http https://tools.cisco.com/its/service/
oddce/services/DDCEService
  destination address email callhome@cisco.com
  destination transport-method http
  subscribe-to-alert-group diagnostic
  subscribe-to-alert-group environment
  subscribe-to-alert-group inventory periodic monthly
  subscribe-to-alert-group configuration periodic monthly
  subscribe-to-alert-group telemetry periodic daily
Cryptochecksum:3166aa566ffb90383d46ce8e325e2c1f
: end
```

Notes

Appendix C: Changes

This appendix summarizes the changes to this guide since the previous Cisco SBA series.

- We upgraded the Cisco ASA software to 8.6(1).
- We made minor changes to improve the readability of this guide.

Notes

Feedback

Click here to provide feedback to Cisco SBA.

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