# Newer Design Guide Available

Cisco Smart Business Architecture has become part of the Cisco Validated Designs program.

For up-to-date guidance on the designs described in this guide, see http://cvddocs.com/fw/Aug13-141

For information about the Cisco Validated Design program, go to http://www.cisco.com/go/cvd

SBA

SBA SOLUTIONS BYOD

# BYOD—Remote Mobile Access Deployment Guide

SMART BUSINESS ARCHITECTURE

February 2013 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 February 2013 is the "February Series".

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

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

Partner access: http://www.cisco.com/go/sbachannel

## 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.

# Table of Contents

# 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:

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

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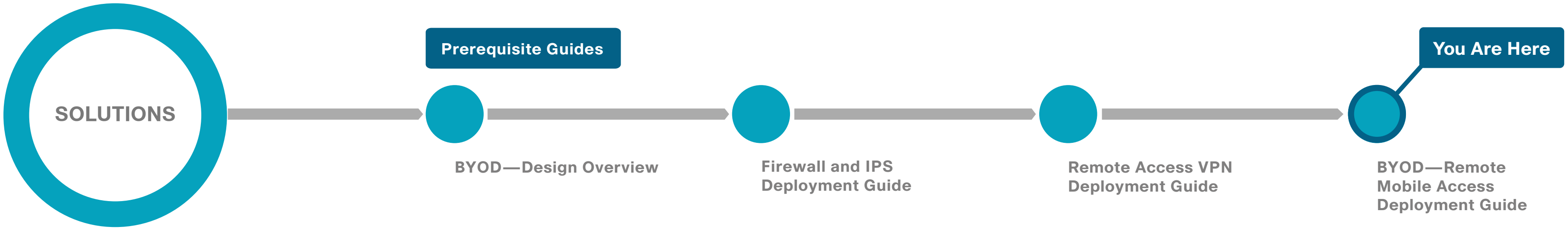

SOLUTIONS
Prerequisite Guides
BYOD—Design Overview
Firewall and IPS Deployment Guide
Remote Access VPN Deployment Guide
You Are Here
BYOD—Remote Mobile Access Deployment Guide

# Introduction

## Note

This guide is based on the *Cisco SBA—Borderless Networks Remote Mobile Access Deployment Guide*. The goal of this guide is to show you how a BYOD business problem can be solved by using Cisco Smart Business Architecture. Cisco has previously developed solutions to solve issues that are similar to the various BYOD business problems. Cisco SBA uses the Cisco AnyConnect remote access solution to solve the BYOD problem of providing secure access to mobile devices at off-site locations.

There is a trend in the marketplace today that is often referred to as Bring Your Own Device (BYOD). BYOD is a spectrum of business problems that can be solved in various ways. These range from accessing guest wireless networks to providing device authentication and identification. The goal is to provide a common work environment, regardless of the type of device being used. This could be accomplished by providing a virtualized desktop or by allowing users to self-register devices for use on the network.

Organizations are experiencing an unprecedented transformation in the network landscape. In the past, IT typically provided network resources only to corporate-managed PCs, such as laptops and desktops.  Today, employees are requiring access from both corporate managed and unmanaged devices, including mobile devices like smart phones and tablets.  This rapid proliferation of mobile devices capable of supporting applications drastically increases workforce mobility and productivity, but it also presents an enormous challenge to IT organizations seeking to enforce security policies across a growing population of devices, operating systems, and connectivity profiles.

The distinction between a work device and a personal device has evolved. This evolution of mobile device usage and the introduction of mobile devices into the workplace has caused a paradigm shift in how IT views what qualifies as a network "end point device" and also what it means to "be at work."

An organization needs to know not only who is accessing their wired and wireless networks, but also when the networks are accessed and from where.  In addition, with the wide adoption of nontraditional devices, such as smart phones and tablets, and people bringing their own devices to access the network, organizations need to know how many of these devices are connecting.  With this information, the organization can create policy to prevent connection by nontraditional devices, limit connection to approved devices, or make access to network resources easier for these non-traditional devices.  This presents a challenge for IT organizations that seek to provide end-users with a consistent network access experience and the freedom to use any device, while still enforcing stringent security policies to protect corporate intellectual property.  Further complicating the situation is delivering both consistent access and enforcing proper security policy based on the specific user-access scenario (wired, wireless, guest, local, branch, and remote users).

To balance the productivity gains versus the security risks, IT needs to implement a solution that allows for seamless on-boarding of users and devices, simplicity of on-going operations, and the ability to extend end-user applications to any user or any device at any time.

Other Cisco SBA Solutions guides addressing BYOD business problems include:

- *BYOD—Internal Corporate Access Deployment Guide*
- *BYOD—Identity and Authentication Deployment Guide*
- *BYOD—Advanced Guest Wireless Access Deployment Guide*

## Business Overview

As users move outside the boundaries of the traditional network, their requirements for access to job-related data, such as email, calendars, and more, don't change. To be productive, the network needs to allow users access wherever they are to whatever data they need to accomplish their tasks, from any device the organization allows. At the same time, the network must ensure that all access is secure and appropriate and that it follows organizational guidelines.

Mobile remote users connect using devices that can generally be broken down into two categories: laptop computers and the new group of mobile devices, such as smartphones and tablets. Networks have handled laptops for years. The newer mobile devices are being integrated currently. This integration continues to challenge network design and administration.

An organization's network must meet many requirements today that are sometimes contradictory. The network must be secure and prevent unauthorized access while being open enough to allow users to do their jobs regardless of where they are. As the mobility of users has increased, the requirements the network must meet have increased. In the past, a worker might have needed laptop connectivity while at the office or at home. Today, a worker needs access to the network from a smartphone while traveling, from a laptop while on site at a customer's or partner's office, or from both while sitting in the local coffee shop. And although providing this access is the primary requirement for the network, other requirements, such as ease of use and security, have not been relaxed.

Because these mobile users are outside the traditional perimeter (or physical border) of the network, their devices are exposed to potentially more malicious activity than a device that is located inside the protection of the network. So protection of the end device and the data being accessed and stored is critical. The mobile user's device needs to have protection from things such as malware and viruses. Ideally, this protection occurs even if the device is not connected to the headquarters network or if such a connection isn't possible. Because many mobile devices are smaller and are used much more often than a laptop, they are also more easily lost or stolen. In today's security environment where these devices potentially carry the same information that a laptop might, there is a need to protect the data on the devices and prevent unauthorized users from retrieving it.

As a standard part of their processes and guidelines, many organizations are required to control what sites users access on the Internet while they are using organizational resources. Providing this level of control for mobile users who do not reside within the boundaries of the network is challenging. To provide a complete solution, the network enforces standard access guidelines on the device, whether the device resides inside the headquarters or is connecting from a coffee shop. The end users should have similar experiences inside or outside the traditional network perimeter. They should also receive the same protection from malware whether they are inside the network or outside.

An often-overlooked component of access is ease of use. Having to check whether a secure connection is needed and enabled and having to constantly enter user credentials on a mobile device to enable a secure connection might make users look for ways to bypass the solution. Thus, a solution that is as integrated and seamless as possible doesn't impact users, hamper their day-to-day activities, or reduce their productivity as significantly. As part of ease of use, the solution should be automated as much as the platform allows, preventing users from either forgetting to follow the procedure or specifically trying to bypass procedures because they feel the procedures are restrictive.

As more users move outside the boundaries of the network, a corresponding increase in network load occurs on the organization's Internet connection. This can raise costs. Intelligent routing of traffic is a priority to control which traffic from a user has to go through the Internet edge component of the organization's network and which traffic can be kept out on the Internet. Reducing security on this traffic is not an option that is readily available, Traffic destined for the Internet that has to be brought back to the Internet edge for security inspection increases bandwidth usage and load on the Internet edge design while increasing latency on user connections.

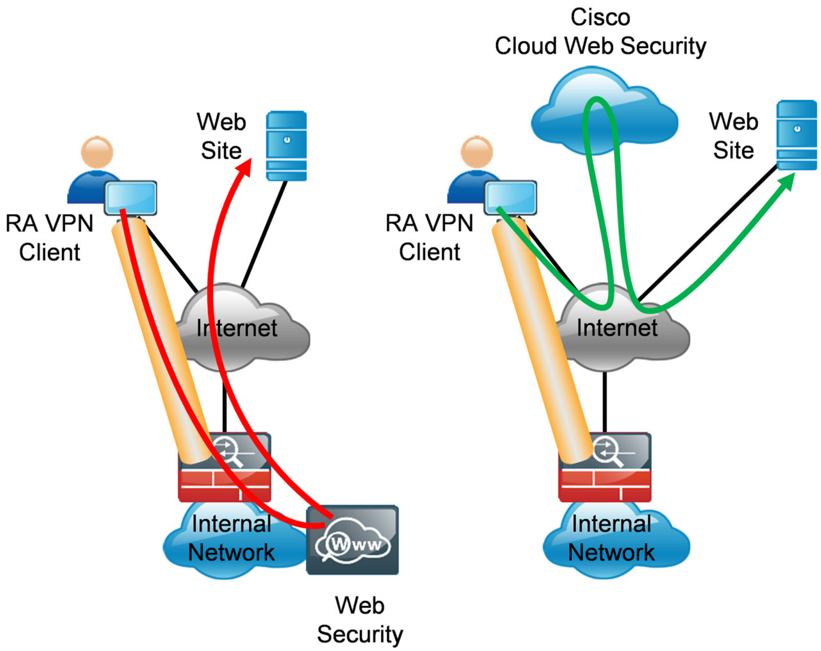
## Technology Overview

The Cisco Smart Business Architecture (SBA) Internet edge design provides the basic framework for the enhancements and additions that will be discussed in this guide. A prerequisite for using this deployment guide is that you must have already followed the guidance in the *Remote Access VPN Deployment Guide*, which itself builds upon the *Firewall and IPS Deployment Guide*. The *Internet Edge Design Overview* describes the goals of the overall design and how the pieces interact together.

Mobile remote users connect to their organization's network by using devices that generally fall into two categories: laptops and mobile devices such as smartphones and tablets. Because the devices operate and are used differently, the capabilities currently available for each group differ.

The Internet edge design covers remote access (RA) VPN for laptops running the Cisco AnyConnect Secure Mobility Solution client (for SSL VPN or IP Security [IPsec] connections). A feature built into the Cisco AnyConnect 3.1 client is the ability to interface with the Cisco Cloud Web Security (CWS) service, formerly known as *Cisco ScanSafe Cloud Web Security*. This feature gives the Cisco AnyConnect client the ability to let Internet web traffic go out through a CWS proxy directly to the destination without forcing it through the organization's headend. Without Cisco CWS, the traffic must be routed down the VPN tunnel, inspected at the campus Internet edge, and then redirected to the original destination; this process consumes bandwidth and potentially increases user latency. With Cisco CWS, the connection can be proxied through the Cisco CWS cloud and never has to traverse the VPN tunnel.

*Figure 1 - Web security traffic flows*



Other capabilities for the Cisco AnyConnect 3.1 client include features that allow the client to reconnect if the tunnel goes down, to disable the tunnel if the client moves onto the trusted network, or to bring up the tunnel if the client moves from a trusted to an untrusted network. These features make using the client more seamless and friendly because users don't have to manually bring up the VPN tunnel. Users are prompted for credentials when the tunnel is needed, and the tunnel is brought down when it isn't needed.

Mobile devices typically use a different deployment model in which basic services, such as mail, calendar, and contacts, are provided over Microsoft ActiveSync, which gives quick access to these commonly used services. For access to other services, including voice, video, internally hosted web servers, file shares, or other network services, a VPN tunnel is required.

Mobile devices such as the iPhone and iPad and some Android devices have access to the Cisco AnyConnect 3.1 client, which allows Secure Sockets Layer (SSL) VPN connectivity (check the app store for the device in question for availability). Using Cisco AnyConnect to connect the device to the corporate network provides full access to the internal network.

This document covers the additional configuration for remote access VPN for the Cisco AnyConnect 3.1 client that is required to activate Cisco CWS, Always On, and other features. It also covers interaction with the Cisco CWS management tool, ScanCenter. Last, the document covers configuration of Cisco Adaptive Security Appliance (ASA) to support mail and calendar services using Microsoft ActiveSync for mobile devices like smartphones and tablets and additionally, the configuration of the Cisco AnyConnect client for those mobile devices.

# Deployment Details

The first part of the deployment details describes how to configure the components to enable Cisco CWS service for Cisco AnyConnect 3.1 users that connect with laptop devices. The second part of the deployment details describes how to configure access for mobile devices with ActiveSync. The third part describes how to configure access for mobile devices with the Cisco AnyConnect client.

## Process

Configuring Access for Laptop Devices

1. Enable CWS security configuration
2. Configure ACL for trusted server
3. Configure ASA VPN policy for web security
4. Configure ASA AnyConnect group policies
5. Install certificate on the client
6. Test the AnyConnect configuration
7. Test Cloud Web Security
8. Configure Automatic VPN Policy
9. Test Trusted Network Detection
10. Enable Always On
11. Test the Always On setting
12. Synchronize the profiles to failover ASA

### Procedure 1 Enable CWS security configuration

This guide assumes you have purchased a Cisco CWS license and created an administrative CWS account that allows a user to log in and manage the account.

If you want to apply specific policies based on user identity, you must have groups built in Active Directory (AD) in order to allow differentiation based on group membership.

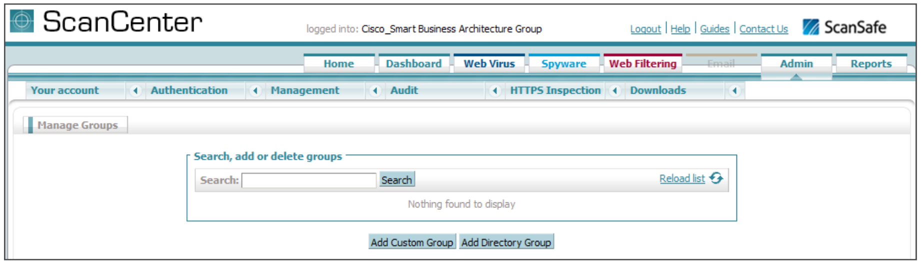
**Step 1:** Access the Cisco CWS ScanCenter Portal at the following location, and then log in with administrator rights:

https://scancenter.scansafe.com

**Step 2:** Navigate to **Admin > Management > Groups**.

### Tech Tip

Policy can differ based on group assignment. The simplest method for assigning group membership is to generate a unique key for a group and use that key during deployment to group members. If more granular policies are required, other methods for group assignment include IP address range or mapping to an Active Directory group.



logged into: Cisco_Smart Business Architecture Group

Nothing found to display

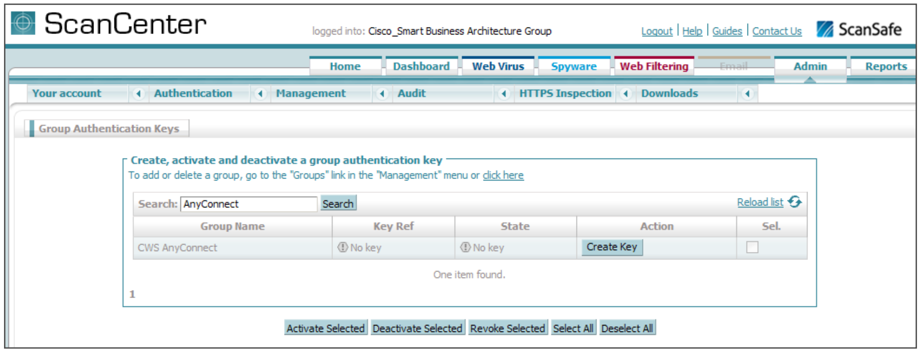
Step 3: Click **Add Custom Group**.

Step 4: On the Add New Custom Group pane, enter the group name (Example: CWS AnyConnect), and then click **Save**.

A group-specific authentication license key is generated for use in the Cisco ASA VPN configuration.

Step 5: Navigate to **Authentication > Group Keys**.

Step 6: For the group created in Step 4, click **Create Key**. ScanCenter generates a key that it sends to an email address of your choosing.



Create, activate and deactivate a group authentication key

To add or delete a group, go to the "Groups" link in the "Management" menu or click here

Search: AnyConnect

| Group Name | Key Ref | State | Action | Sel. |
|---|---|---|---|---|
| CWS AnyConnect | No key | No key | Create Key | □ |

One item found.

1

Step 7: Store a copy of this key by copying and pasting it into a secure file because it cannot be rebuilt and can only be replaced with a new key. After it is displayed the first time (on generation) and sent in email, you can no longer view it in ScanCenter. After this key is generated, the page options change to **Deactivate** or **Revoke**.

Step 8: Navigate to **Web Filtering > Management > Filters**.

**Tech Tip**

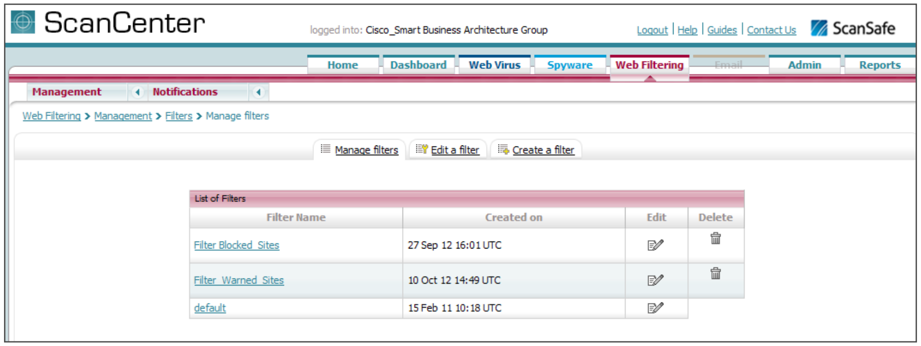
The filtering policy in this guide is an example only. The actual policy implemented should align with the organization's security policy and business requirements.

Step 9: Click **Create a filter**.

Step 10: Assign a name to the filter (Example: Filter Blocked Sites), select the categories blocked by your organization's policy (Examples: Pornography and Hate Speech), and then click **Save**. Access to these categories is completely restricted.

Step 11: Click **Create a filter**.

Step 12: Assign a name to the filter (Example: Filter Warned Sites), select the categories that are considered inappropriate by your organization's policy (Example: Gambling), and then click **Save**. Access to these categories is permitted, but only after accepting a warning message.



List of Filters

| Filter Name | Created on | Edit | Delete |
|---|---|---|---|
| Filter Blocked Sites | 27 Sep 12 16:01 UTC | ✎ | 🗑 |
| Filter Warned Sites | 10 Oct 12 14:49 UTC | ✎ | 🗑 |
| default | 15 Feb 11 10:18 UTC | ✎ | |

Step 13: **Navigate to Web Filtering > Management > Policy**.

Step 14: Select the Rule name **Default**, change the rule action to **Allow**, and then click **Save.**

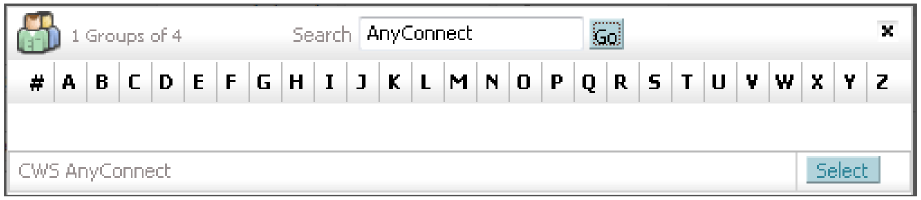
Step 15: Click **Create a rule**.

Step 16: Assign a name to the rule (Example: Block_Blocked_Sites), select **Active**.

Step 17: From the rule action list, choose **Block**.

Step 18: In the Define Group pane, click **Add group**.

**Step 19:** In the dialog box, in the **Search** box, enter the name of the group created in Step 4, and then click **Go**.



1 Groups of 4

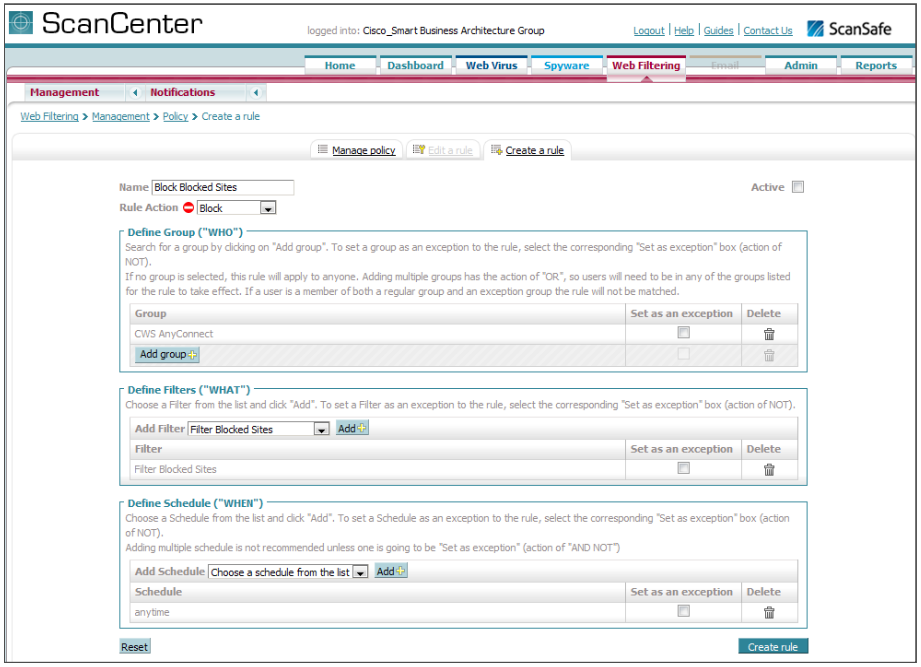
Search AnyConnect

CWS AnyConnect

**Step 20:** Click **Select**, and then click **Confirm Selection**.

**Step 21:** In the Define Filters pane, click the down arrow labeled **Choose a filter from the list**, select the filter created in Step 10 (Example: Filter Blocked Sites), and then click **Add**.

**Step 22:** Click **Create rule**. The policy rule has now been created.



Web Filtering > Management > Policy > Create a rule

Name Block Blocked Sites

Active □

Rule Action Block

Define Group ("WHO")

Search for a group by clicking on "Add group". To set a group as an exception to the rule, select the corresponding "Set as exception" box (action of NOT).

If no group is selected, this rule will apply to anyone. Adding multiple groups has the action of "OR", so users will need to be in any of the groups listed for the rule to take effect. If a user is a member of both a regular group and an exception group the rule will not be matched.

| Group | Set as an exception | Delete |
|---|---|---|
| CWS AnyConnect | □ | 🗑 |
| Add group | □ | 🗑 |

Define Filters ("WHAT")

Choose a Filter from the list and click "Add". To set a Filter as an exception to the rule, select the corresponding "Set as exception" box (action of NOT).

Add Filter Filter Blocked Sites Add

| Filter | Set as an exception | Delete |
|---|---|---|
| Filter Blocked Sites | □ | 🗑 |

Define Schedule ("WHEN")

Choose a Schedule from the list and click "Add". To set a Schedule as an exception to the rule, select the corresponding "Set as exception" box (action of NOT).

Adding multiple schedule is not recommended unless one is going to be "Set as exception" (action of "AND NOT")

Add Schedule Choose a schedule from the list Add

| Schedule | Set as an exception | Delete |
|---|---|---|
| anytime | □ | 🗑 |

Next, create a new rule.

**Step 23:** Click **Create a rule**.

**Step 24:** Assign a name to the rule (Example: Warn_Warned_Sites), select **Active**.

**Step 25:** From the **Rule Action** list, choose **Warn**.

**Step 26:** In the Define Group pane, click **Add group**.

**Step 27:** In the dialog box, in the search box, enter the name of the group created in Step 4, and then click **Go**.

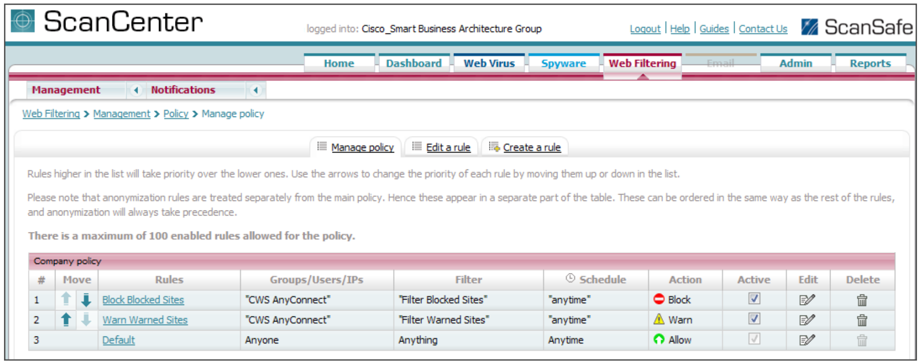
**Step 28:** Click **Select**, and then click **Confirm Selection**.

**Step 29:** In the Define Filters pane, click the down arrow labeled **Choose a filter from the list**, select the filter created in Step 12 (Example: Filter Warned Sites), and then click **Add**.

**Step 30:** Click **Create rule**. The policy rule has now been created.

Because all rules are evaluated on a first-hit rule, the following is the correct order for the rules in this example:

1. Block Blocked Sites (which blocks access to restricted categories)
2. Warn Warned Sites (which allows access to sites but with a warning)
3. Default (which permits all other sites to all groups)



Web Filtering > Management > Policy > Manage policy

Rules higher in the list will take priority over the lower ones. Use the arrows to change the priority of each rule by moving them up or down in the list.

Please note that anonymization rules are treated separately from the main policy. Hence these appear in a separate part of the table. These can be ordered in the same way as the rest of the rules, and anonymization will always take precedence.

**There is a maximum of 100 enabled rules allowed for the policy.**

Company policy

| # | Move | Rules | Groups/Users/IPs | Filter | Schedule | Action | Active | Edit | Delete |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ↑ ↓ | Block Blocked Sites | "CWS AnyConnect" | "Filter Blocked Sites" | "anytime" | Block | ☑ | ✎ | 🗑 |
| 2 | ↑ ↓ | Warn Warned Sites | "CWS AnyConnect" | "Filter Warned Sites" | "anytime" | Warn | ☑ | ✎ | 🗑 |
| 3 | | Default | Anyone | Anything | Anytime | Allow | ☑ | ✎ | 🗑 |

## Procedure 2 Configure ACL for trusted server

The Trusted Network Detection (TND) feature of Cisco CWS determines whether a host is connected directly to a *trusted network*, in this guide referring to a LAN or WLAN at an organization's primary or remote sites. Conversely, if a host connects to an organization through a remote access VPN, then the host is considered to be on an *untrusted network*.

The TND configuration requires a trusted server that is reachable for all hosts on the internal network but is unreachable for remote-access VPN users. The trusted server is required to support HTTPS connections.

**Step 1:** If a trusted server does not exist, deploy a server with an HTTP server and enable HTTPS. Ports other than TCP 443 may be used if necessary. (Example: 10.4.48.10:443)

### Tech Tip

Access to the trusted server is blocked for remote access VPN users. Choose a trusted server that does not support applications required for these users.

**Step 2:** From a client on the internal network, navigate to the RA VPN firewall's inside IP address, and then launch the Cisco ASA Security Device Manager. (Example: https://10.4.24.24)

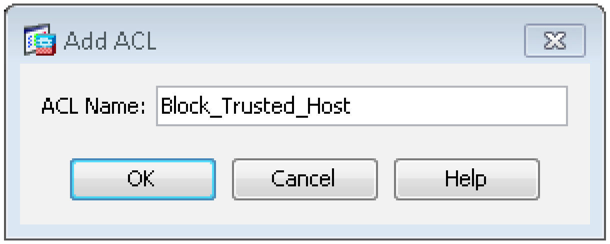
**Step 3:** In **Configuration > Remote Access VPN > Network (Client) Access > Group Policies**, select **GroupPolicy_Employee**, and then click **Edit**.

**Step 4:** On the Edit Internal Group Policy dialog box, click the two down arrows. The More options pane expands.

**Step 5:** For Filter, clear **Inherit**, and then click **Manage**.

**Step 6:** On the ACL Manager dialog box, click the **Extended ACL** tab, then click **Add > Add ACL**.

**Step 7:** On the Add ACL dialog box, enter an **ACL Name**, and then click **OK**. (Example Block_Trusted_Host)

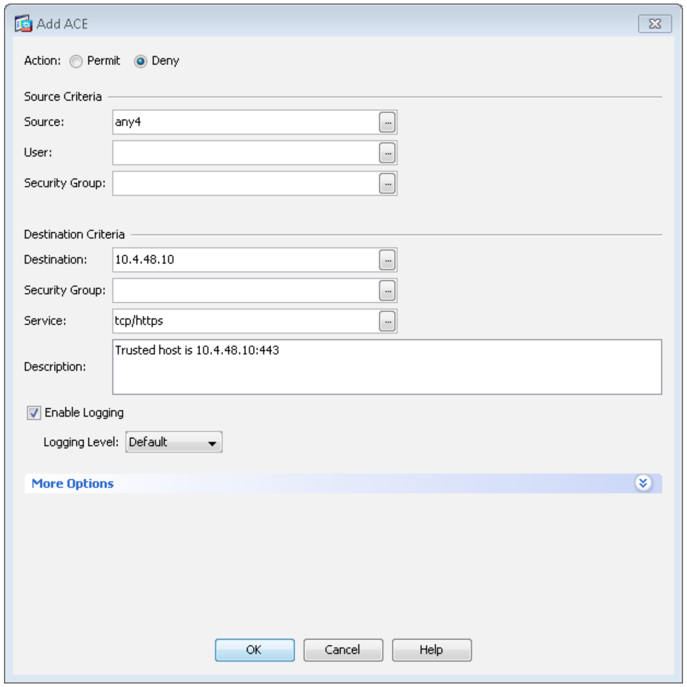


ACL Name: Block_Trusted_Host

**Step 8:** Click **Add > Add ACE**.

**Step 9:** On the Add ACE dialog box, configure the following values, and then click **OK**.

- Action—**Deny**
- Source—**any4**
- Destination—**10.4.48.10**
- Service—**tcp/https**
- Description—**Trusted host is 10.4.48.10:443**



Action: ○ Permit ● Deny

Source Criteria

Source: any4

User:

Security Group:

Destination Criteria

Destination: 10.4.48.10

Security Group:

Service: tcp/https

Description: Trusted host is 10.4.48.10:443

☑ Enable Logging

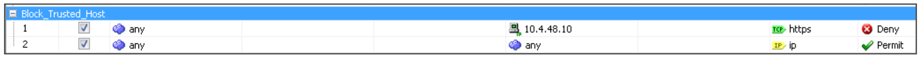
Logging Level: Default

Step 10: Click **Add > Insert After**.

Step 11: On the Add ACE dialog box, configure the following values, and then click **OK**.

- Action—**Permit**
- Source—**any4**
- Destination—**any4**
- Service—**ip**
- Description—**Permit all other traffic**

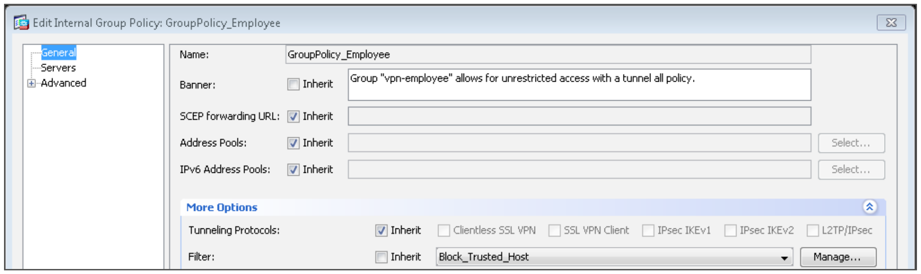
Step 12: On the ACL Manager dialog box, click **OK**.



Block_Trusted_Host

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | ☑ | any | | | 10.4.48.10 | TCP https | Deny |
| 2 | ☑ | any | | | any | IP ip | Permit |

Step 13: On the Add Internal Group Policy dialog box, click **OK**.



Edit Internal Group Policy: GroupPolicy_Employee

Name: GroupPolicy_Employee

Banner: □ Inherit Group "vpn-employee" allows for unrestricted access with a tunnel all policy.

SCEP forwarding URL: ☑ Inherit

Address Pools: ☑ Inherit

IPv6 Address Pools: ☑ Inherit

More Options

Tunneling Protocols: ☑ Inherit □ Clientless SSL VPN □ SSL VPN Client □ IPsec IKEv1 □ IPsec IKEv2 □ L2TP/IPsec

Filter: □ Inherit Block_Trusted_Host

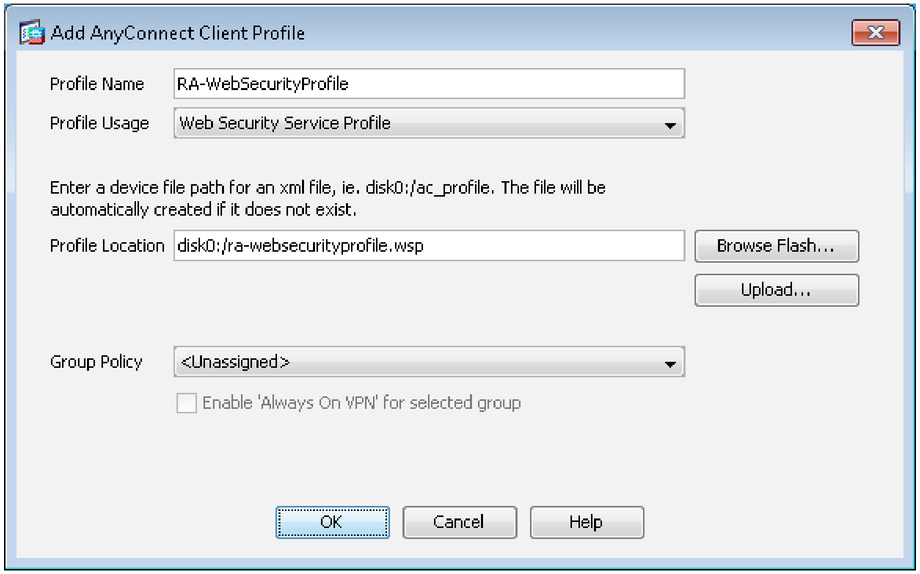
Step 14: In the Group Policies pane, click **Apply**.

## Procedure 3 Configure ASA VPN policy for web security

Step 1: In **Configuration > Remote Access VPN > Network (Client) Access > AnyConnect Client Profile**, select **Add**.

Step 2: On the **Add AnyConnect Client Profile** dialog box, in the Profile Name box, enter **RA-WebSecurityProfile.**

Step 3: In the **Profile Usage** list, choose **Web Security Service Profile**, click **OK**, and then click **Apply**.



Add AnyConnect Client Profile

Profile Name: RA-WebSecurityProfile

Profile Usage: Web Security Service Profile

Enter a device file path for an xml file, ie. disk0:/ac_profile. The file will be automatically created if it does not exist.

Profile Location: disk0:/ra-websecurityprofile.wsp

Group Policy: <Unassigned>

□ Enable 'Always On VPN' for selected group

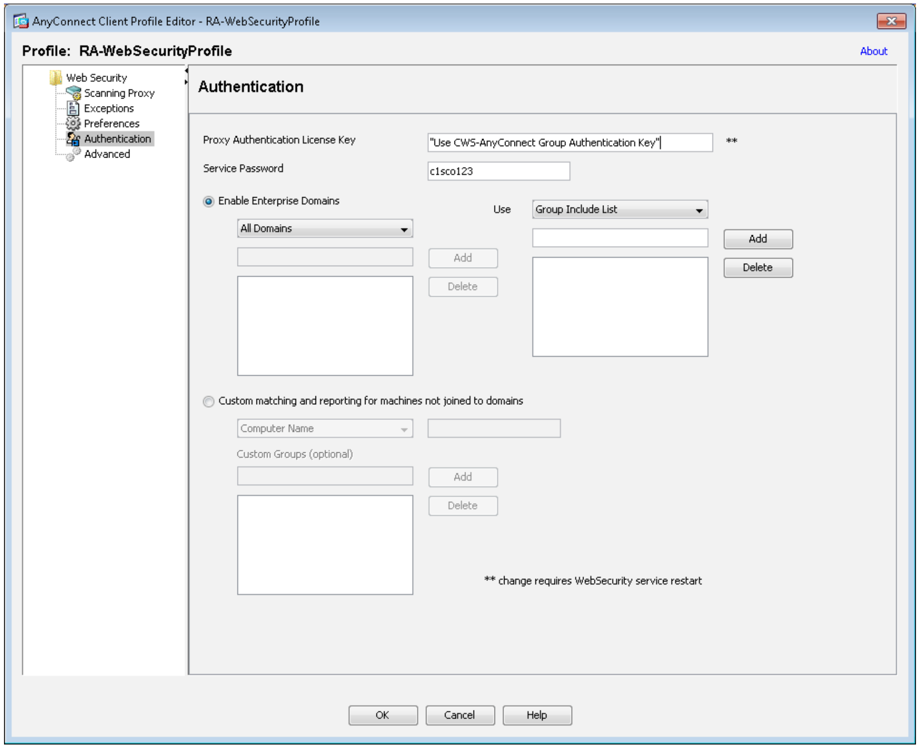
Step 4: Select the newly created RA-WebSecurityProfile profile, and then click **Edit**.

Step 5: In **Web Security > Scanning Proxy**, if the status is “Scanning Proxy list is currently up-to-date.”, then skip to Step 6. If the status is “Updates to the Scanning Proxy list are now available.”, then click **Update Proxies** to update the list.

Step 6: In the drop-down list, choose a default proxy location that best matches your location.

Step 7: In **Web Security > Authentication**, in the Proxy Authentication License Key box, enter the group key created in Step 6 of Procedure 1, “Enable CWS security configuration.”

**Step 8:** In the Service Password box, enter a new password that will be associated with the Web Security service when the service is running on the end host. (Example: c1sco123)



AnyConnect Client Profile Editor - RA-WebSecurityProfile

**Profile: RA-WebSecurityProfile**

**Authentication**

Proxy Authentication License Key: "Use CWS-AnyConnect Group Authentication Key" **

Service Password: c1sco123

● Enable Enterprise Domains — Use: Group Include List

All Domains

○ Custom matching and reporting for machines not joined to domains

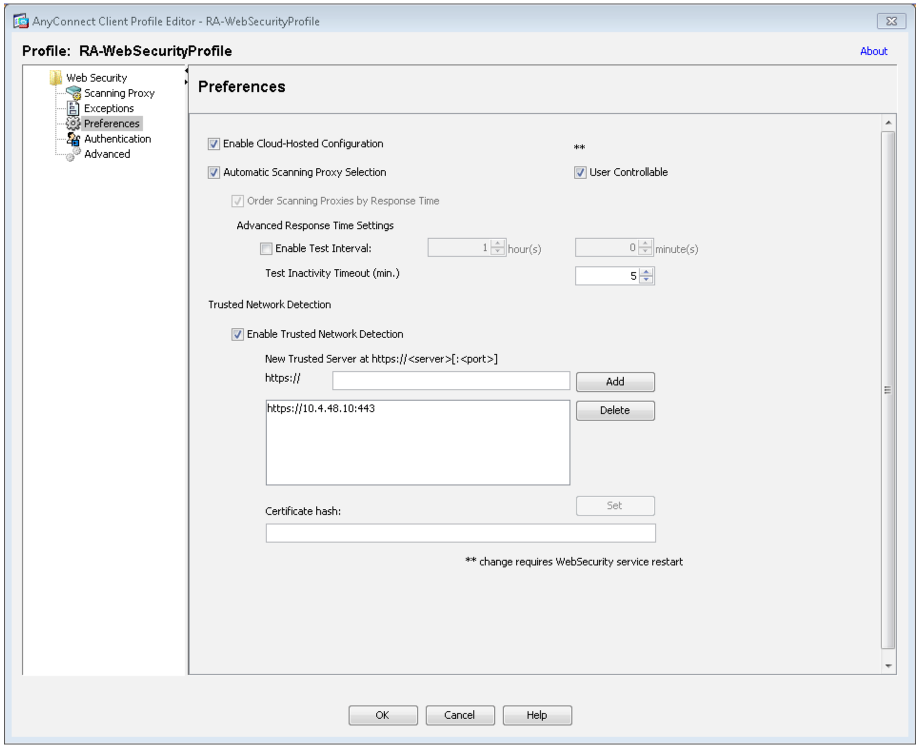
Computer Name

Custom Groups (optional)

** change requires WebSecurity service restart

**Step 9:** In **Web Security > Preferences**, do the following:

1. Select **Automatic Scanning Proxy Selection**.
2. If your organization allows users to control use of web security functions, select **User Controllable**.
3. In the Trusted Network Detection section, select **Enable Trusted Network Detection**.
4. For New Trusted Server, enter the server IP address (Example: 10.4.48.10) configured in Procedure 2, “Configure ACL for trusted server,” and then click **Add**.



AnyConnect Client Profile Editor - RA-WebSecurityProfile

**Profile: RA-WebSecurityProfile**

**Preferences**

☑ Enable Cloud-Hosted Configuration **

☑ Automatic Scanning Proxy Selection ☑ User Controllable

☑ Order Scanning Proxies by Response Time

Advanced Response Time Settings

□ Enable Test Interval: 1 hour(s) 0 minute(s)

Test Inactivity Timeout (min.) 5

Trusted Network Detection

☑ Enable Trusted Network Detection

New Trusted Server at https://<server>[:<port>]

https://

https://10.4.48.10:443

Certificate hash:

** change requires WebSecurity service restart

**Step 10:** On the **Add AnyConnect Client Profile Editor** dialog box, click **OK**.

**Step 11:** On the AnyConnect Client Profile screen, click **Apply**.

### Tech Tip

Modifications to the AnyConnect Web Security Service Profile do not take effect on a client machine until after the next RA VPN connection, followed by a restart of the AnyConnect Web Security Agent service. A workstation reboot is the easiest way to restart this service.

## Procedure 4 Configure ASA AnyConnect group policies

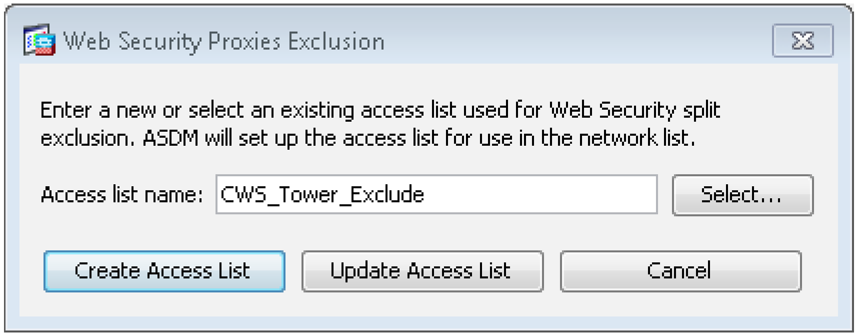
**Step 1:** In Cisco Adaptive Security Device Manager (ASDM), navigate to **Configuration > Remote Access VPN > Network Client Access > Group Policies**, select the **GroupPolicy_Employee** policy, and then click **Edit**.

**Step 2:** Under **Advanced**, select **Split Tunneling**.

**Step 3:** Next to **Policy**, clear the **Inherit check box,** and then choose **Exclude Network List Below**.

**Step 4:** Click **Set up split exclusion for Web Security**.

**Step 5:** On the Web Security Proxies Exclusion dialog box, in the **Access list name** box, enter **CWS_Tower_Exclude**, and then click **Create Access List**.



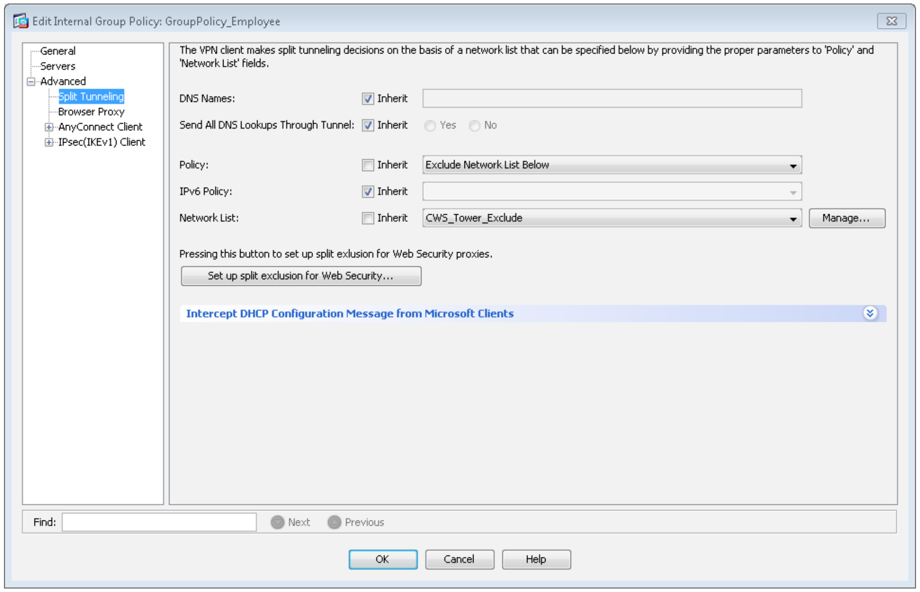
Web Security Proxies Exclusion

Enter a new or select an existing access list used for Web Security split exclusion. ASDM will set up the access list for use in the network list.

Access list name: CWS_Tower_Exclude

**Step 6:** In the Access List Result dialog box, review the list of proxies added to the access list, and then click **Close**.

**Step 7:** Next to **Network List**, clear the **Inherit** check box, and then choose **CWS_Tower_Exclude**.



Edit Internal Group Policy: GroupPolicy_Employee

The VPN client makes split tunneling decisions on the basis of a network list that can be specified below by providing the proper parameters to 'Policy' and 'Network List' fields.

DNS Names: ☑ Inherit

Send All DNS Lookups Through Tunnel: ☑ Inherit ○ Yes ○ No

Policy: □ Inherit Exclude Network List Below

IPv6 Policy: ☑ Inherit

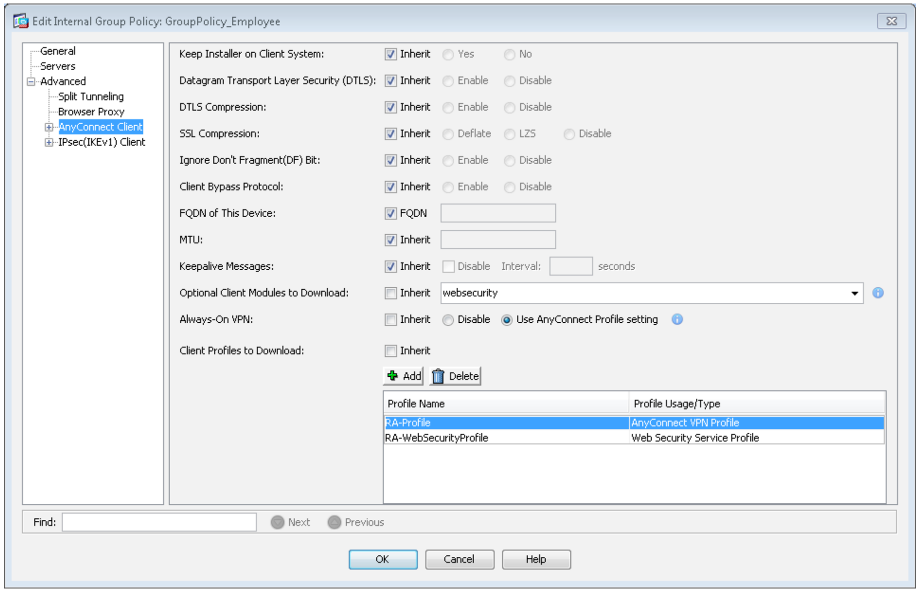
Network List: □ Inherit CWS_Tower_Exclude

Pressing this button to set up split exlusion for Web Security proxies.

**Step 8:** Navigate to **Advanced > AnyConnect Client**. Under **Optional Client Modules to Download**, clear the **Inherit check box,** choose **AnyConnect Web Security** from the list, and then click **OK**.

**Step 9:** In the Always-On VPN section, clear the **Inherit** check box, and then select **Use AnyConnect Profile setting**.

**Step 10:** In the Client Profiles to Download section, click **Add**, under Profile Name, choose **RA-WebSecurityProfile**, and then click **OK**.



Keep Installer on Client System: ☑ Inherit ○ Yes ○ No

Datagram Transport Layer Security (DTLS): ☑ Inherit ○ Enable ○ Disable

DTLS Compression: ☑ Inherit ○ Enable ○ Disable

SSL Compression: ☑ Inherit ○ Deflate ○ LZS ○ Disable

Ignore Don't Fragment(DF) Bit: ☑ Inherit ○ Enable ○ Disable

Client Bypass Protocol: ☑ Inherit ○ Enable ○ Disable

FQDN of This Device: ☑ FQDN

MTU: ☑ Inherit

Keepalive Messages: ☑ Inherit □ Disable Interval: seconds

Optional Client Modules to Download: □ Inherit websecurity

Always-On VPN: □ Inherit ○ Disable ● Use AnyConnect Profile setting

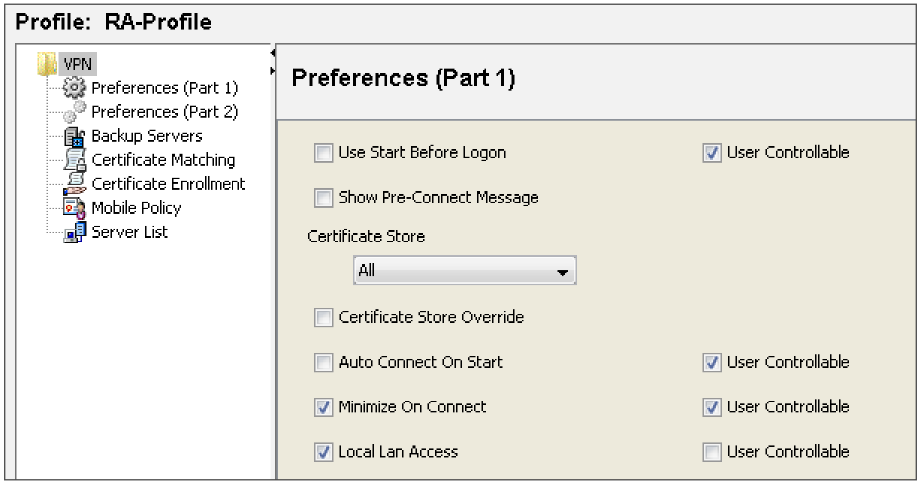
Client Profiles to Download: □ Inherit

| Profile Name | Profile Usage/Type |
|---|---|
| RA-Profile | AnyConnect VPN Profile |
| RA-WebSecurityProfile | Web Security Service Profile |

**Step 11:** Click **OK**, and then click **Apply**.

**Step 12:** In **Configuration > Remote Access VPN > Network (Client) Access > AnyConnect Client Profile**, select the AnyConnect VPN Profile (Example: RA-Profile), and then click **Edit**.

**Step 13:** In **VPN > Preferences (Part 1)**, select **Local LAN Access**, which is required for a split tunnel exclude policy. Clear **User Controllable** for **Local LAN Access**.



□ Use Start Before Logon ☑ User Controllable

□ Show Pre-Connect Message

Certificate Store: All

□ Certificate Store Override

□ Auto Connect On Start ☑ User Controllable

☑ Minimize On Connect ☑ User Controllable

☑ Local Lan Access □ User Controllable

**Step 14:** Click **OK**, and then click **Apply**.

## Procedure 5 Install certificate on the client

As described in the *Remote Access VPN Deployment Guide*, a self-signed certificate is generated and applied to Cisco ASA's outside interfaces. Because the certificate used in the lab is self-signed, all clients generate an error until the certificate is manually added to the trusted certificates. Certificates signed by a public certificate authority (CA) don't need to be manually added.

Because some of the features configured later in this guide involve automatic certificate checking, it isn't acceptable to have the errors show up when self-signed certificates are used. This procedure solves the error problems.

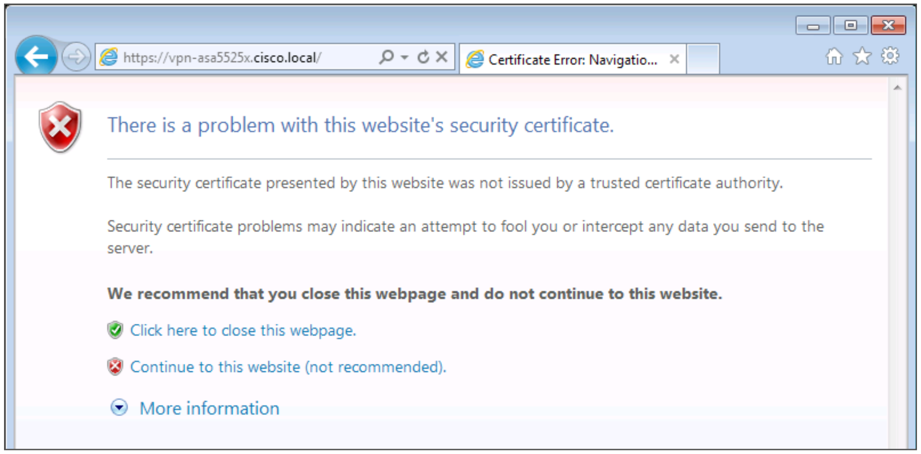
Publicly signed certificates do not have these issues and are easier to use in practice.

### Tech Tip

It is essential that the DNS Fully Qualified Domain Name (FQDN) for the Cisco ASA can be resolved and that the interface certificates on the RA VPN Cisco ASA match properly.

**Step 1:** On a client located outside the network, open a web browser (this procedure details the process for Internet Explorer), and go to the Cisco ASA address:
https://vpn-asa5525x.cisco.local

The first page reports a problem with the certificate.


https://vpn-asa5525x.cisco.local/
Certificate Error: Navigatio...

There is a problem with this website's security certificate.

The security certificate presented by this website was not issued by a trusted certificate authority.

Security certificate problems may indicate an attempt to fool you or intercept any data you send to the server.

**We recommend that you close this webpage and do not continue to this website.**

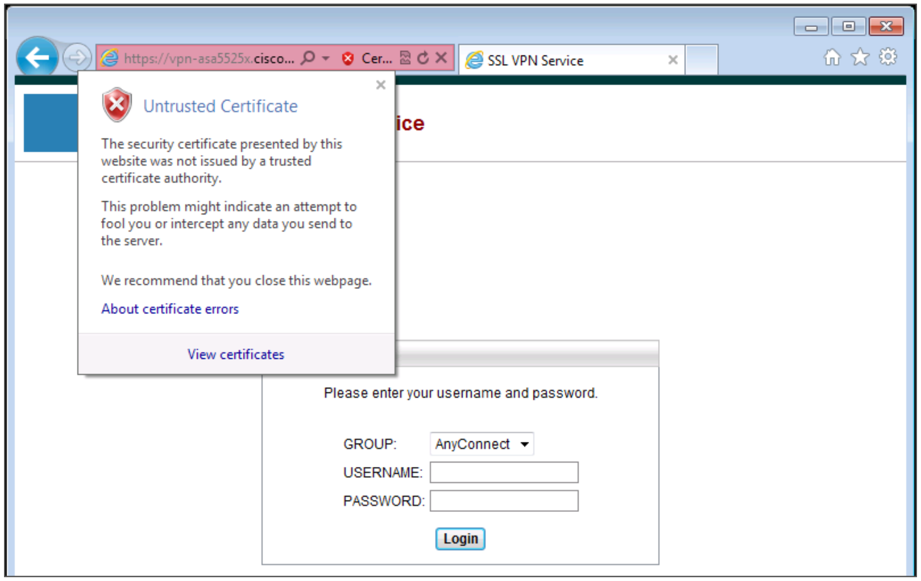
Click here to close this webpage.

Continue to this website (not recommended).

More information

**Step 2:** Click **Continue to this website**.

**Step 3:** On the next page, in the URL bar, click **Certificate Error**.



Untrusted Certificate

The security certificate presented by this website was not issued by a trusted certificate authority.

This problem might indicate an attempt to fool you or intercept any data you send to the server.

We recommend that you close this webpage.

About certificate errors

Please enter your username and password.

GROUP: AnyConnect
USERNAME:
PASSWORD:

**Step 4:** Select **View Certificate**.

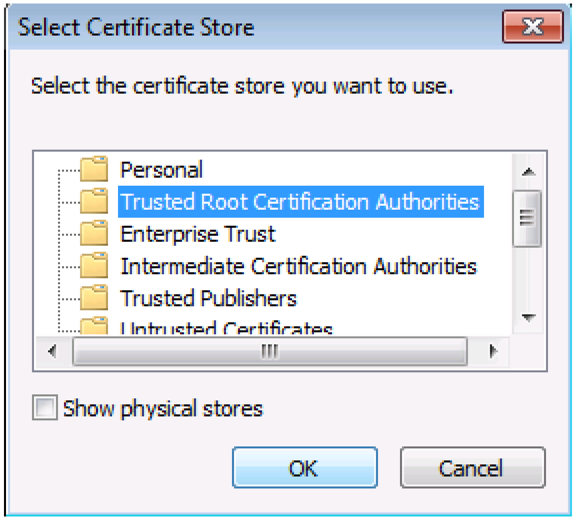
**Step 5:** At the bottom of the Certificate page, select **Install Certificate**. When the Certificate Import Wizard opens, click **Next**.

### Tech Tip

If the **Install Certificate** option is not available, close the browser and relaunch with the “Run as administrator” option. Restart this procedure from Step 1.

**Step 6:** Select **Place all Certificates in the following store**, and then click **Browse.**

**Step 7:** Select **Trusted Root Certification Authorities**, and then click **OK.**



Select the certificate store you want to use.

□ Show physical stores

**Step 8:** Click **Next**, and then click **Finish.**

**Step 9:** Accept the security warning and install the certificate.

### Tech Tip

When outside a lab environment, be very careful when installing certificates; after they are installed, they are implicitly trusted by the client. Publicly signed certificates do not have to be manually trusted.

**Step 10:** On the Certificate Import Wizard dialog box, click **OK**.

**Step 11:** In the **Certificate** window, click **OK**.

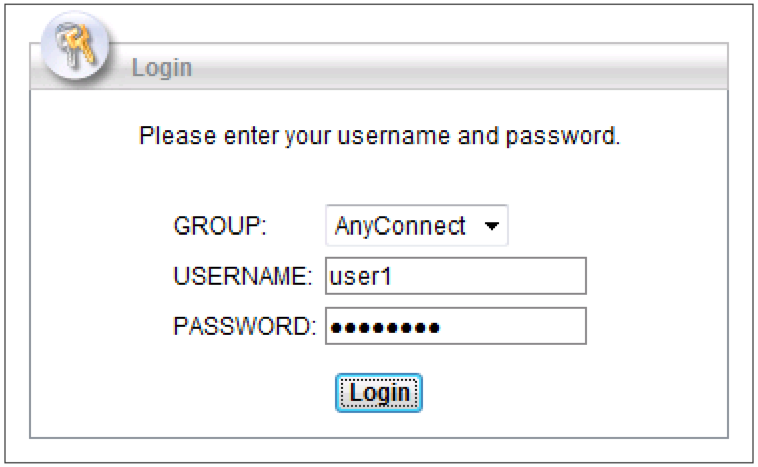
**Step 12:** Close and relaunch the browser, and then navigate to the following location:
https://vpn-asa5525x.cisco.local

The SSL VPN Service page loads without any certificate warnings or errors.

**Step 13:** If you are using a resilient Internet connection, the RA VPN firewall has two outside interfaces, each with a different IP address and DNS name. Repeat Step 1 through Step 11 for the secondary outside interface using the Cisco ASA address: https://vpn-asa5525x-fo.cisco.local.

## Procedure 6 Test the AnyConnect configuration

Step 1: Log in using a known username and password that is part of the vpn-employee group in Windows AD. If Cisco AnyConnect 3.1 is not installed, the client software is downloaded and installed. If necessary, accept installation warnings.



Login

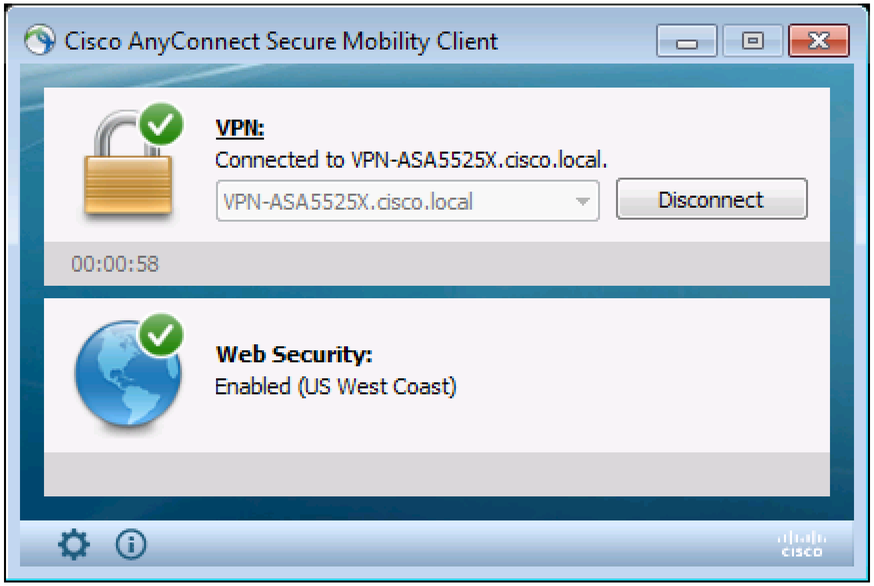
Please enter your username and password.

GROUP: AnyConnect

USERNAME: user1

PASSWORD: ●●●●●●●●●

Step 2: When connected, click the Cisco AnyConnect taskbar icon. This displays the client information panel.



Cisco AnyConnect Secure Mobility Client

VPN:
Connected to VPN-ASA5525X.cisco.local.

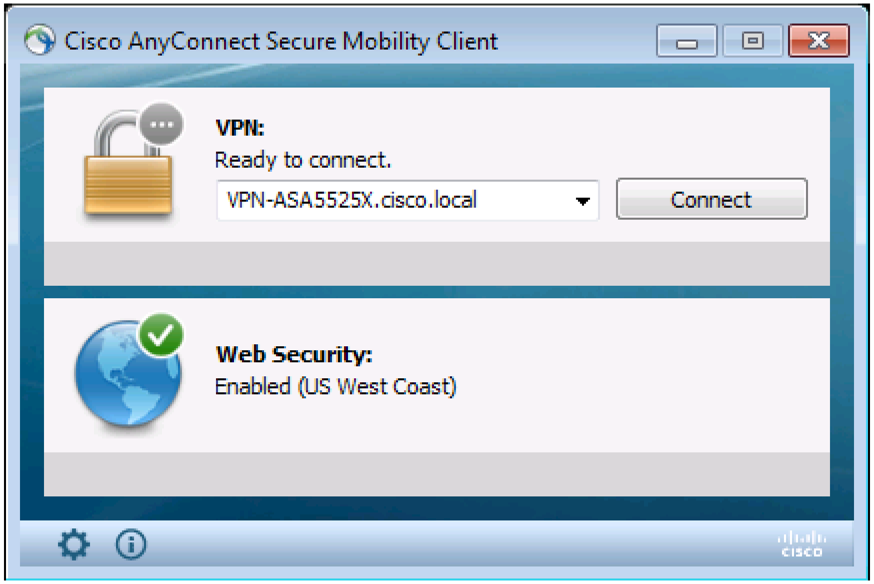
VPN-ASA5525X.cisco.local

00:00:58

Web Security:
Enabled (US West Coast)

Step 3: Verify there is a green check for both VPN and Web Security.

**Step 4:** Click **Disconnect**, and then verify that Web Security remains enabled.

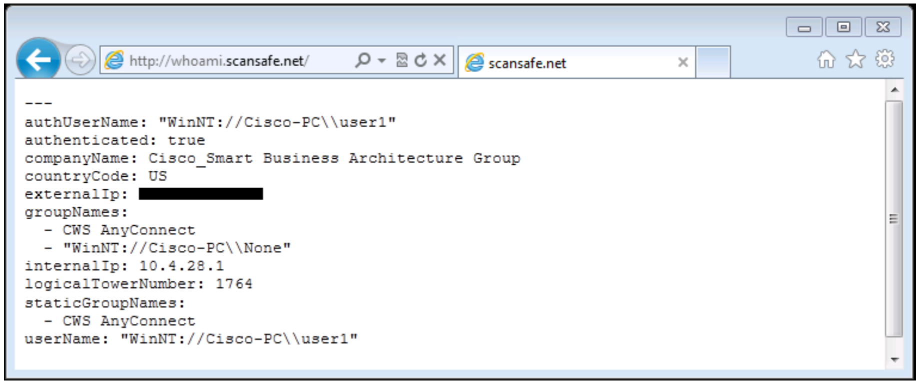


VPN:
Ready to connect.
VPN-ASA5525X.cisco.local

Web Security:
Enabled (US West Coast)

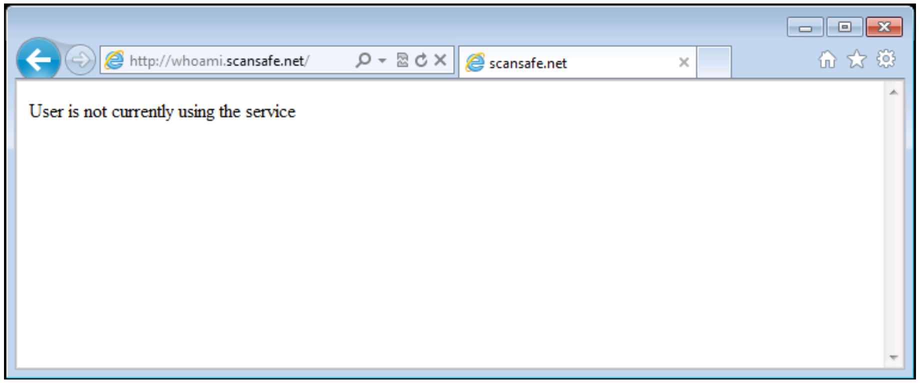
## Procedure 7 Test Cloud Web Security

**Step 1:** Open a web browser to http://whoami.scansafe.net. This browser returns diagnostic information from the Cisco CWS service.



```
---
authUserName: "WinNT://Cisco-PC\\user1"
authenticated: true
companyName: Cisco_Smart Business Architecture Group
countryCode: US
externalIp: [redacted]
groupNames:
  - CWS AnyConnect
  - "WinNT://Cisco-PC\\None"
internalIp: 10.4.28.1
logicalTowerNumber: 1764
staticGroupNames:
  - CWS AnyConnect
userName: "WinNT://Cisco-PC\\user1"
```

If the service is not active, the following information is returned.

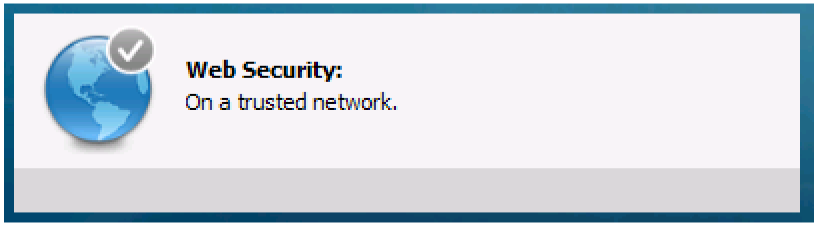


User is not currently using the service

**Step 2:** Verify Cisco CWS Trusted Network Detection by selecting a client that is connected outside the network and has the Web Security module enabled, and then move that client inside the network.

When the client is inside, it should be able to reach the trusted server configured in Procedure 3, "Configure ASA VPN policy for web security," Step 9. (Example: 10.4.48.10:443)

The ability to connect to the trusted server successfully tells the Cisco AnyConnect client that it is directly connected to the internal network and that the Web Security module should not be run because the client is on a trusted network. The host's web connections to external websites are now secured by the organization's Internet edge devices and policy. This is verified on the Anyconnect client status pane.



Web Security:
On a trusted network.

## Procedure 8 Configure Automatic VPN Policy

Trusted network detection for Cisco CWS has already been discussed. The Cisco AnyConnect client also has separate and distinct trusted network capabilities designed for use with Automatic VPN Policy.

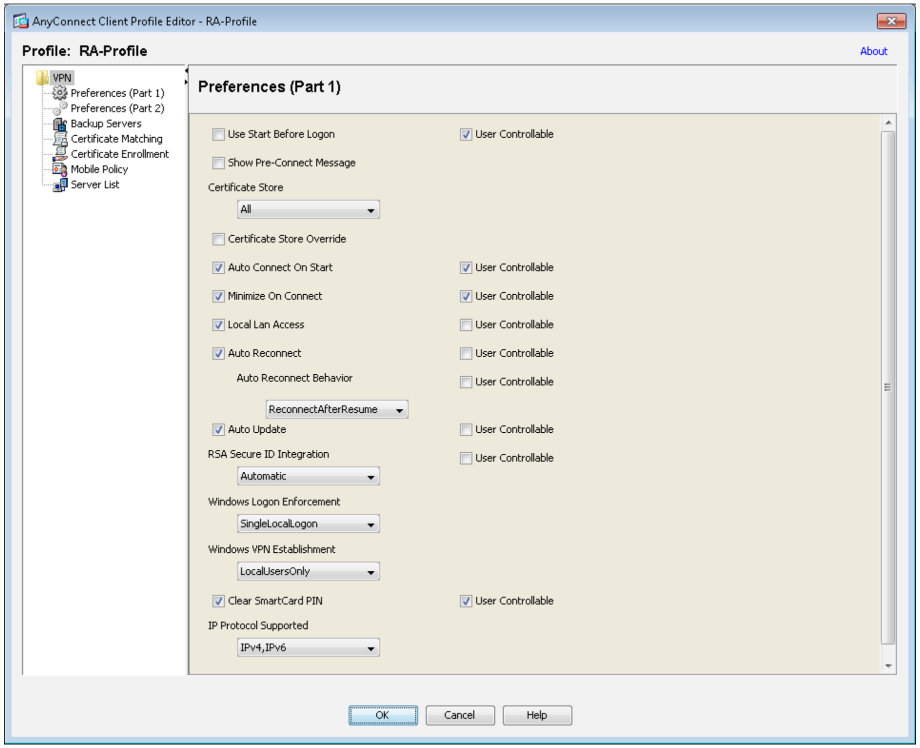
The Always On setting for Cisco AnyConnect allows an administrator to enforce a situation in which, if a laptop is outside the network and has connectivity, a VPN connection to the headend occurs and all connections go through the main site, where security policy can be applied. If the device cannot connect to the VPN, then no connections would be allowed.

If policy enforcement is not the end-use case, but instead ease of use is the end goal, then enabling the Auto Connect on Start, Auto Reconnect, and Automatic VPN Policy features that define a trusted network satisfy many requirements without applying strict enforcement that the VPN tunnel be up at all times if network access to Cisco ASA is available. Enabling these features makes access to the internal network more seamless to the end user and presents less opportunity for end users to forget to bring up their VPN tunnel while working remotely or to attempt to bring up the VPN tunnel while on the internal network.

In order to identify whether a device is on the trusted network, before a VPN tunnel is enabled, the client checks either for a trusted DNS domain or DNS server (choose only one). If a trusted DNS domain or DNS server can be reached, then the client is on the trusted domain, and no VPN tunnel is needed. If not, then the VPN tunnel is needed to access internal resources.

**Step 1:** Navigate to **ASDM > Configuration > Remote Access VPN > Network (Client) Access > AnyConnect Client Profile**, select **RA-Profile,** and then click **Edit**.

**Step 2:** In **Preferences (Part 1)**, select **Auto Connect On Start** and **Auto Reconnect**, and, if policy permits, select **User Controllable**. In the Auto Reconnect Behavior list, ensure **ReconnectAfterResume** is chosen.


AnyConnect Client Profile Editor - RA-Profile

Profile: RA-Profile

Preferences (Part 1)

☐ Use Start Before Logon ☑ User Controllable

☐ Show Pre-Connect Message

Certificate Store: All

☐ Certificate Store Override

☑ Auto Connect On Start ☑ User Controllable

☑ Minimize On Connect ☑ User Controllable

☑ Local Lan Access ☐ User Controllable

☑ Auto Reconnect ☐ User Controllable

Auto Reconnect Behavior ☐ User Controllable

ReconnectAfterResume

☑ Auto Update ☐ User Controllable

RSA Secure ID Integration ☐ User Controllable

Automatic

Windows Logon Enforcement: SingleLocalLogon

Windows VPN Establishment: LocalUsersOnly

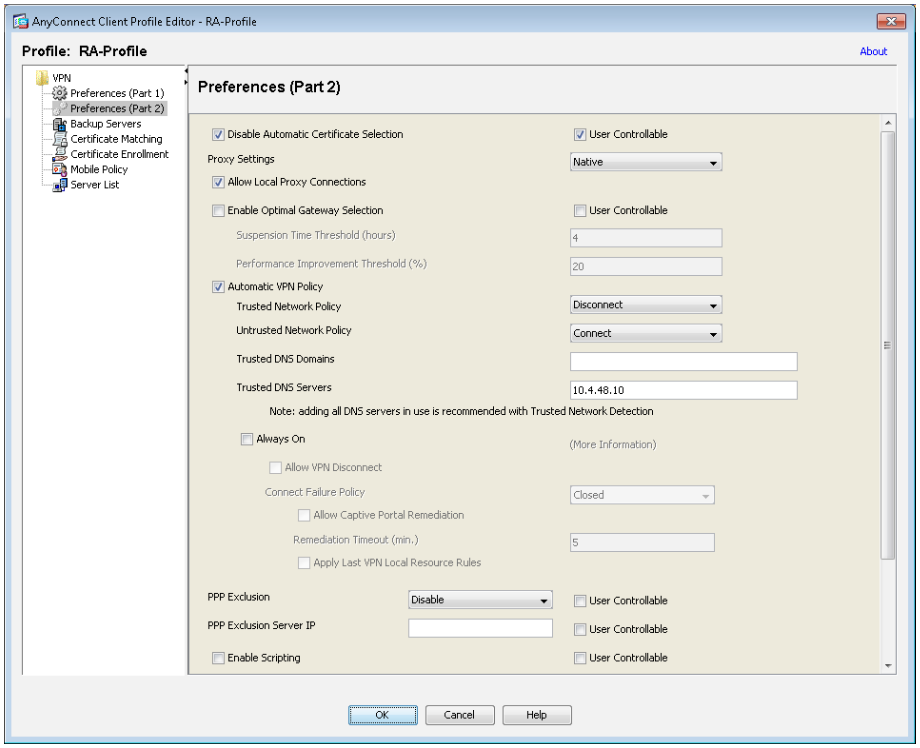
☑ Clear SmartCard PIN ☑ User Controllable

IP Protocol Supported: IPv4,IPv6

**Step 3:** In **Preferences (Part 2)**, select **Automatic VPN Policy**.

**Step 4:** In the Trusted Network Policy list, choose **Disconnect,** and then, in the Untrusted Network Policy list, choose **Connect**.

**Step 5:** In the Trusted DNS Servers box, enter the IP address of the internal DNS server that should be accessible from anywhere in the internal network: 10.4.48.10.



Profile: RA-Profile

Preferences (Part 2)

☑ Disable Automatic Certificate Selection ☑ User Controllable
Proxy Settings: Native
☑ Allow Local Proxy Connections
□ Enable Optimal Gateway Selection □ User Controllable
Suspension Time Threshold (hours): 4
Performance Improvement Threshold (%): 20
☑ Automatic VPN Policy
Trusted Network Policy: Disconnect
Untrusted Network Policy: Connect
Trusted DNS Domains:
Trusted DNS Servers: 10.4.48.10
Note: adding all DNS servers in use is recommended with Trusted Network Detection
□ Always On (More Information)
□ Allow VPN Disconnect
Connect Failure Policy: Closed
□ Allow Captive Portal Remediation
Remediation Timeout (min.): 5
□ Apply Last VPN Local Resource Rules
PPP Exclusion: Disable □ User Controllable
PPP Exclusion Server IP: □ User Controllable
□ Enable Scripting □ User Controllable

**Step 6:** Click **OK,** and then click **Apply**.

## Procedure 9 Test Trusted Network Detection

Test the configuration in order to ensure that Trusted Network Detection is functional and that the VPN client attempts to start at startup if needed or when the client moves outside the network.

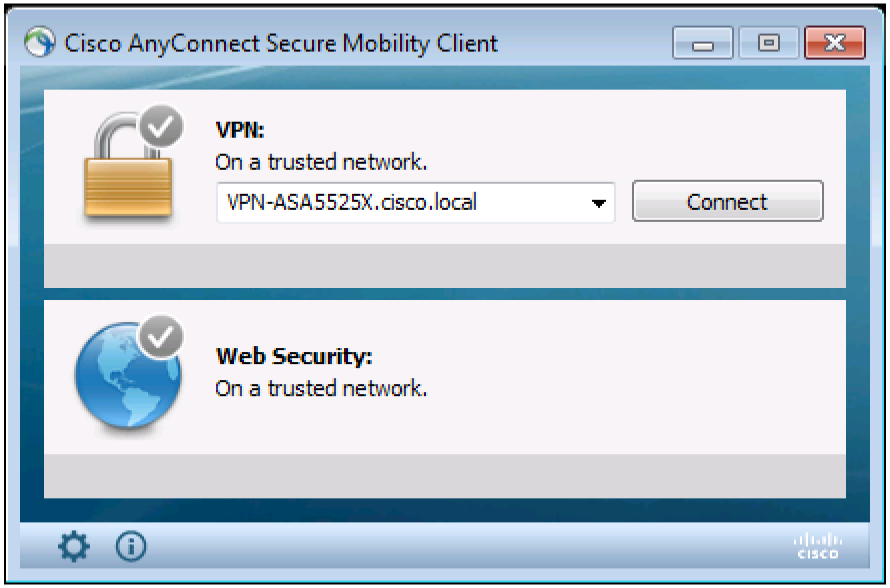
**Step 1:** On a laptop outside the network, connect the VPN to Cisco ASA.

**Step 2:** Move the client into the internal network, and establish a network connection again. The client should identify that it is on a trusted network and that the VPN is not required (the Web Security check box should also be disabled because the client is on the trusted network).

### Tech Tip

Cisco CWS Trusted Network Detection uses a trusted server for which it has a block filter that is configured on the RA VPN Cisco ASA.

Cisco AnyConnect client Trusted Network Detection uses a DNS server that is not reachable when the VPN is disconnected.

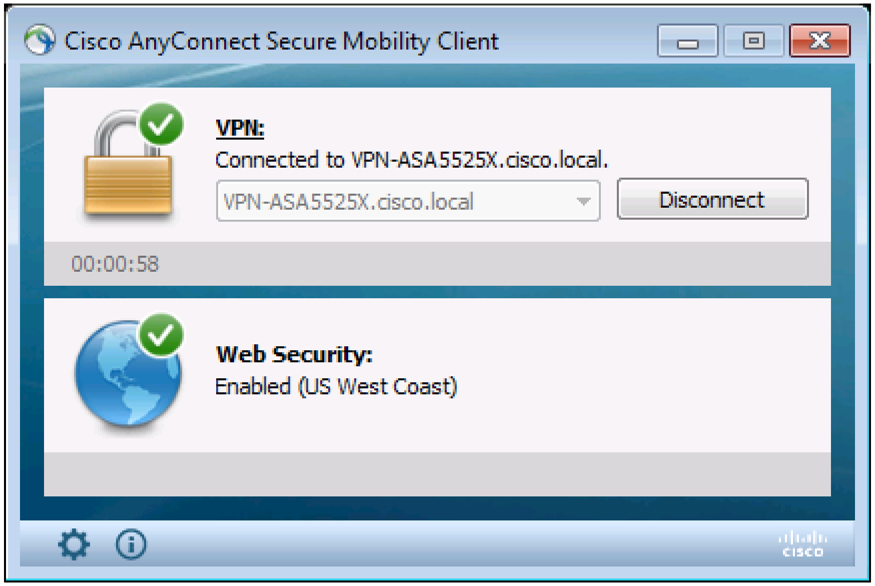


VPN:
On a trusted network.
VPN-ASA5525X.cisco.local

Web Security:
On a trusted network.

**Step 3:** Move the client back outside the network.

**Step 4:** At the VPN connect prompt, enter the credentials, and then verify that VPN and Web Security are enabled and the check boxes are green.


Cisco AnyConnect Secure Mobility Client

**VPN:**
Connected to VPN-ASA5525X.cisco.local.
VPN-ASA5525X.cisco.local

00:00:58

**Web Security:**
Enabled (US West Coast)

## Procedure 10 Enable Always On

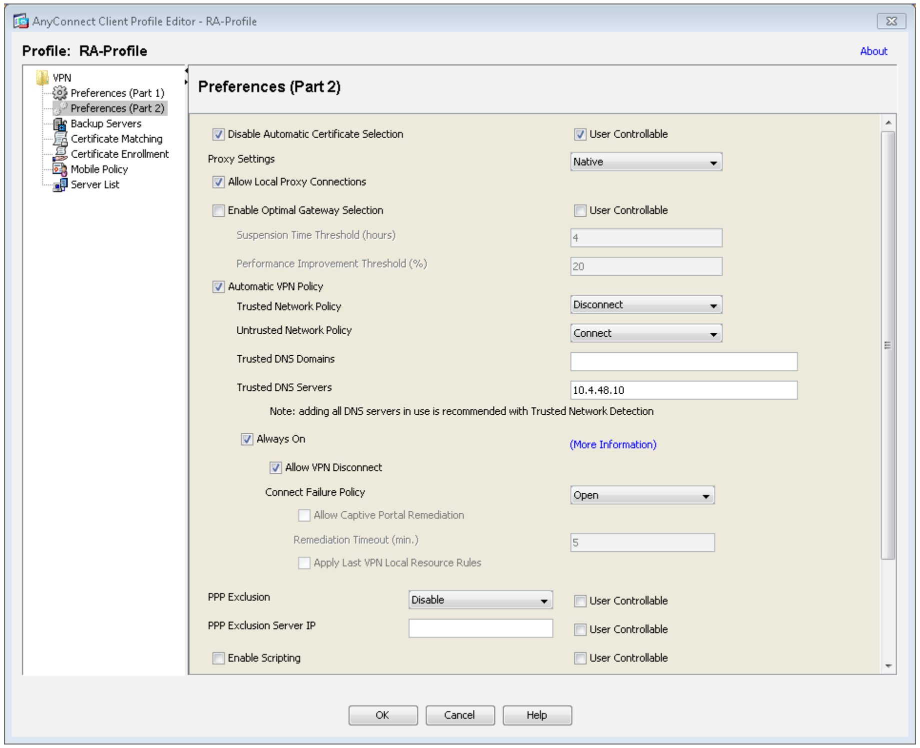
### Tech Tip

If an incorrect Always On configuration is pushed to the client, it is likely that the Cisco AnyConnect software will need to be uninstalled from the client and then reinstalled after the configuration is fixed.

**Step 1:** In Cisco ASDM, navigate to **Configuration > Remote Access VPN > Network Client Access > AnyConnect Client Profile**, select **RA-Profile**, and then click **Edit.**

**Step 2:** In **Preferences (Part 2)**, select **Always On** and **Allow VPN Disconnect**.

**Step 3:** In the **Connect Failure Policy** list, choose **Open**.


AnyConnect Client Profile Editor - RA-Profile

Profile: RA-Profile

Preferences (Part 2)

☑ Disable Automatic Certificate Selection ☑ User Controllable
Proxy Settings: Native
☑ Allow Local Proxy Connections
☐ Enable Optimal Gateway Selection ☐ User Controllable
Suspension Time Threshold (hours): 4
Performance Improvement Threshold (%): 20
☑ Automatic VPN Policy
Trusted Network Policy: Disconnect
Untrusted Network Policy: Connect
Trusted DNS Domains:
Trusted DNS Servers: 10.4.48.10
Note: adding all DNS servers in use is recommended with Trusted Network Detection
☑ Always On (More Information)
☑ Allow VPN Disconnect
Connect Failure Policy: Open
☐ Allow Captive Portal Remediation
Remediation Timeout (min.): 5
☐ Apply Last VPN Local Resource Rules
PPP Exclusion: Disable ☐ User Controllable
PPP Exclusion Server IP: ☐ User Controllable
☐ Enable Scripting ☐ User Controllable

**Step 4:** Click **OK,** and then click **Apply**.

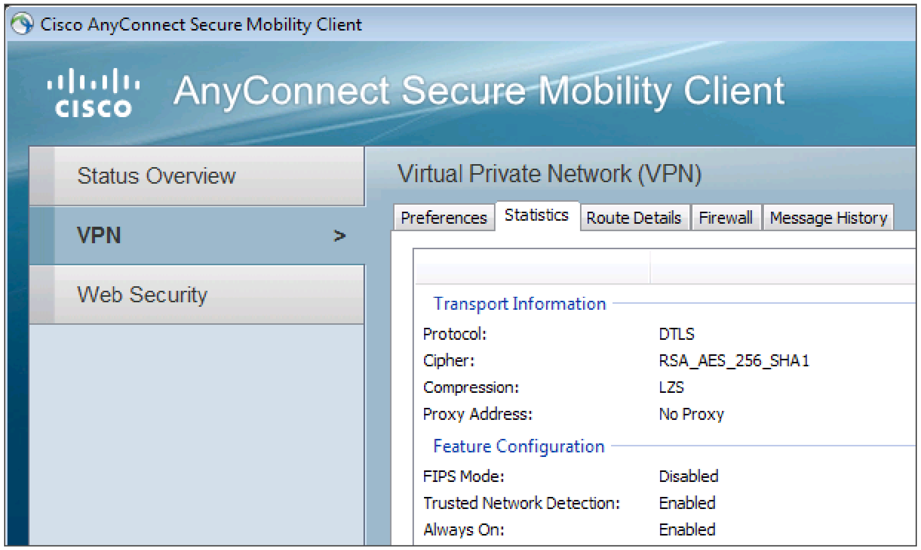
## Procedure 11 Test the Always On setting

### Tech Tip

This guide requires the use of the Cisco AnyConnect Secure Mobility Client build 3.1.00495. Newer builds of the client implement a stricter check on the certificate presented by the RA VPN Cisco ASA. If you are using self-signed certificates the Always On connection will fail.

**Step 1:** Connect a client, click the AnyConnect icon in the Windows Taskbar, and then click **Advanced.**

**Step 2:** On the **VPN** > **Statistics** tab, ensure **Always On:** has a value of **Enabled**.


Cisco AnyConnect Secure Mobility Client
AnyConnect Secure Mobility Client
Status Overview
VPN >
Web Security
Virtual Private Network (VPN)
Preferences
Statistics
Route Details
Firewall
Message History

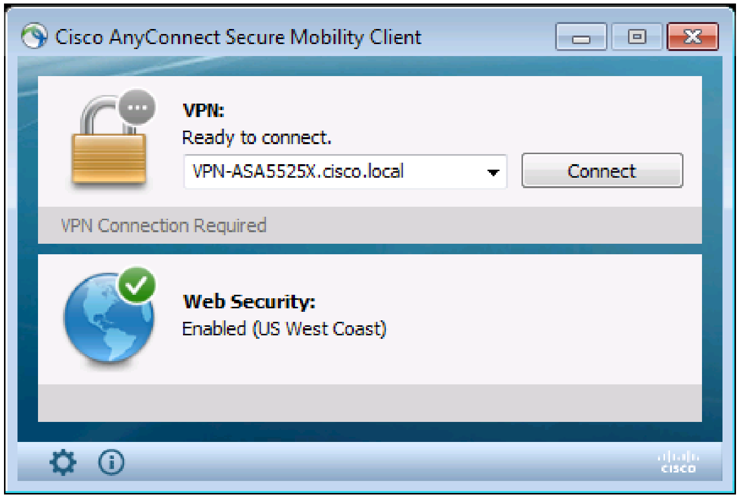
Transport Information

Protocol: DTLS
Cipher: RSA_AES_256_SHA1
Compression: LZS
Proxy Address: No Proxy

Feature Configuration

FIPS Mode: Disabled
Trusted Network Detection: Enabled
Always On: Enabled

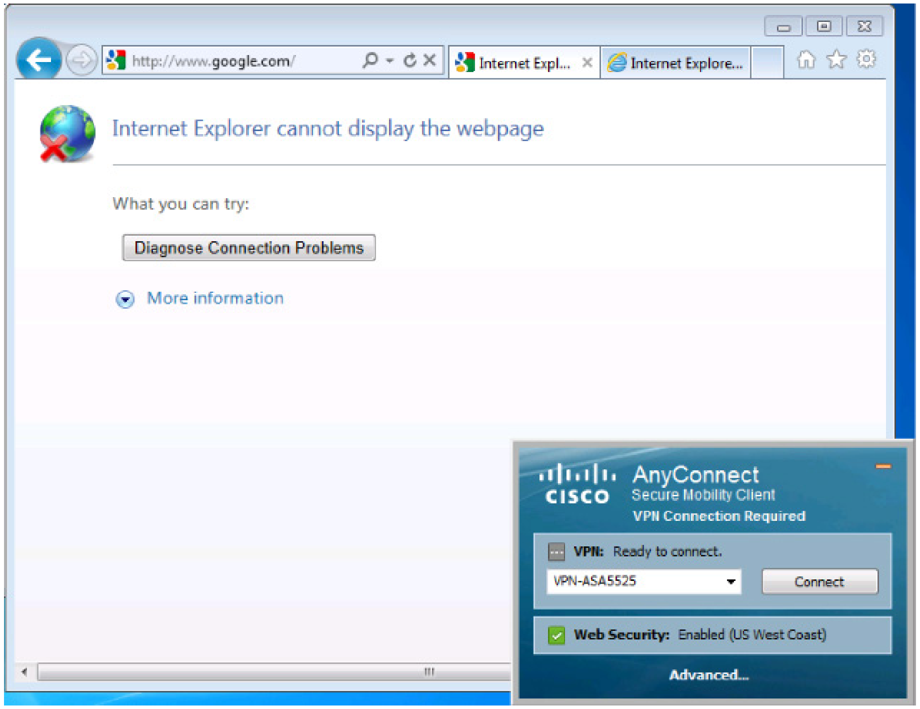
**Step 3:** With the client disconnected, check that **VPN Connection Required** appears on the Cisco AnyConnect screen.



VPN:
Ready to connect.
VPN-ASA5525X.cisco.local
VPN Connection Required

Web Security:
Enabled (US West Coast)

**Step 4:** Browse to a known good website. It should fail because no access is allowed without the VPN tunnel being enabled.



Internet Explorer cannot display the webpage

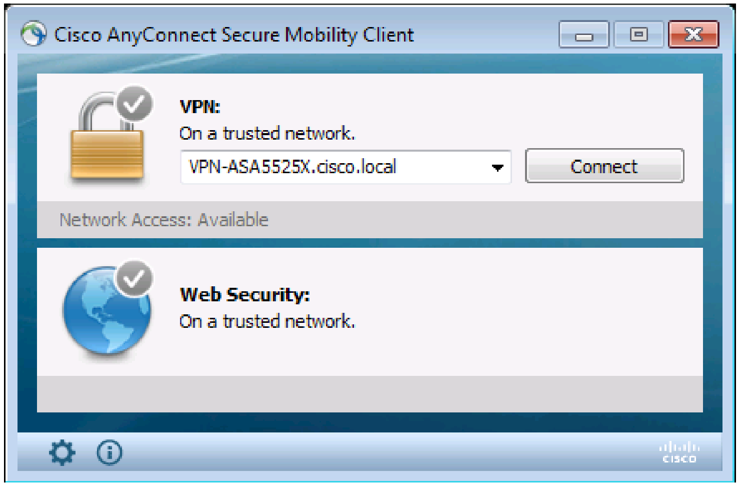
What you can try:

VPN Connection Required

VPN: Ready to connect.
VPN-ASA5525

Web Security: Enabled (US West Coast)

**Step 5:** Verify from a host on a trusted network that VPN is not required. With the client disconnected, check that **Network Access: Available** appears on the Cisco AnyConnect screen.



Cisco AnyConnect Secure Mobility Client

VPN:
On a trusted network.
VPN-ASA5525X.cisco.local

Network Access: Available

Web Security:
On a trusted network.

## Procedure 12 Synchronize the profiles to failover ASA

When running an RA VPN Cisco ASA firewall pair, the Cisco AnyConnect VPN Profile file and the Web Security Service Profile files must be manually replicated to the secondary ASA firewall. All of the files listed in Table 1 must be replicated.

### Tech Tip

This procedure is required after any modification to either the Cisco AnyConnect VPN Profile or the Web Security Service Profile.

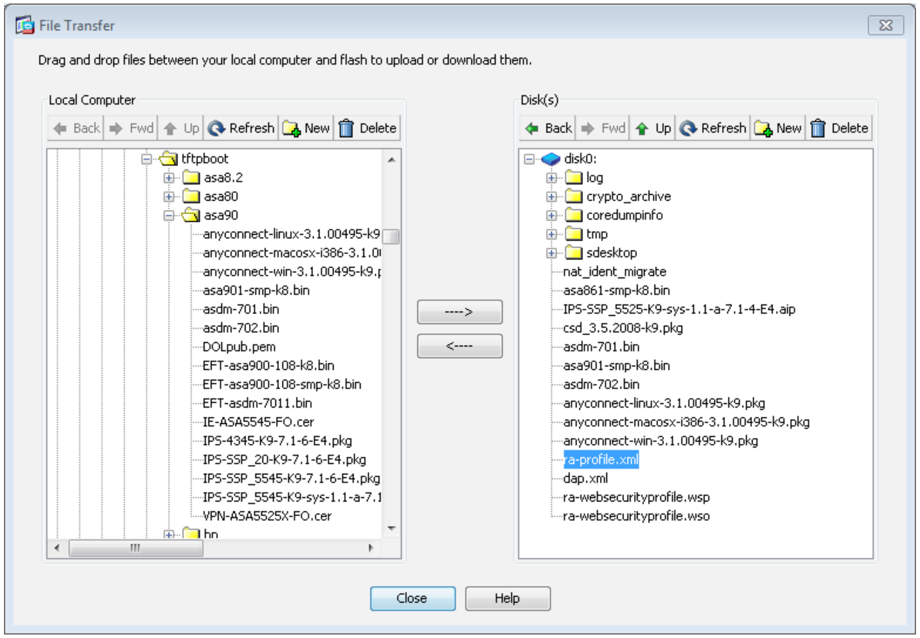
*Table 1 - Cisco AnyConnect Client Profile files*

| Profile type | Profile name | Filename |
|---|---|---|
| AnyConnect VPN Profile | RA-Profile | ra-profile.xml |
| Web Security Service Profile | RA-WebSecurityProfile | ra-websecurityprofile.wsp |
| Web Security Service Profile | RA-WebSecurityProfile | ra-websecurityprofile.wso |

**Step 1:** Navigate to **Tools > File Management.**

**Step 2:** Click **File Transfer**, and then select **Between Local PC and Flash**.

Browse to a destination on your local file system and copy the AnyConnect client profile file from the Cisco ASA disk (Example: ra-profile.xml) by selecting the profile and then clicking the left arrow.



File Transfer

Drag and drop files between your local computer and flash to upload or download them.

**Step 3:** Repeat Step 2 for the remaining files in Table 1.

**Step 4:** After completing all of the file transfers, click **Close**.

**Step 5:** Navigate to the secondary RA VPN Cisco ASA's inside IP address, and then launch Cisco ASDM. (Example: https://10.4.24.23)

**Tech Tip**

Do not attempt to modify the firewall configuration on the standby Cisco ASA. Configuration changes are only made on the primary ASA.

**Step 6:** Navigate to **Tools > File Management.**

**Step 7:** Click **File Transfer**, and then select **Between Local PC and Flash**.

**Step 8:** Browse to a destination on your local file system and copy the AnyConnect client profile file to the secondary Cisco ASA disk (Example: ra-profile.xml) by selecting the profile and then clicking the right arrow.

**Step 9:** Repeat Step 8 for the remaining files in Table 1.

**Step 10:** After completing all of the file transfers, click **Close**.

**Step 11:** Close Cisco ASDM on the secondary RA VPN Cisco ASA.

## Process

Configuring Access for Mobile Devices: ActiveSync

1. Configure DNS entry
2. Configure the DMZ firewall
3. Configure ActiveSync access on Cisco ASA
4. Configure additional security

The first step in providing access for mobile devices like smartphones and tablets is providing email, calendar, and contacts availability. This is a basic requirement and for some users might be enough access. For those users that need or want full tunnel access or for those users connecting on more powerful devices such as tablets, full access can be achieved by using SSL VPN in some cases or through the built-in IPsec client. Full access is needed for things such as internal file shares, internal web servers for employee directories, any other internally hosted web applications, or other services such as voice or video.

To this end, most administrators deploy Microsoft ActiveSync on a Microsoft Forefront Threat Management Gateway (TMG) server in their demilitarized zones (DMZs). ActiveSync connects to the Microsoft Exchange system internally. This setup can provide access to email, calendars, and contacts from a wide variety of mobile devices, including devices that run the Android, iOS, and Windows Mobile operating systems.

The steps in this guide assume that the setup and configuration of TMG, Exchange, and ActiveSync is complete and functional. This process discusses the configuration of Cisco ASA to support such a deployment as well as additional security steps to help improve the overall security of such a deployment.

**Reader Tip**

The following reference for Configuring ActiveSync publishing was used as a guideline for lab testing:
http://technet.microsoft.com/en-us/library/cc995186.aspx

## Procedure 1 Configure DNS entry

Prepare for the following configuration procedures by creating a DNS name that is referenced by the mobile email clients.

*Table 2 - DNS names for TMG server (public DNS)*

| ISP | FQDN | Outside IP address |
|---|---|---|
| Primary | mobilemail.cisco.local | 172.16.130.55 |
| Secondary | mobilemail-fo.cisco.local | 172.17.130.55 |

The same DNS name also needs to be configured on the internal DNS server. This is required if the mobile device is connected to the internal network.

*Table 3 - DNS name for TMG server (internal DNS)*

| FQDN | DMZ IP address |
|---|---|
| mobilemail.cisco.local | 192.168.22.25 |

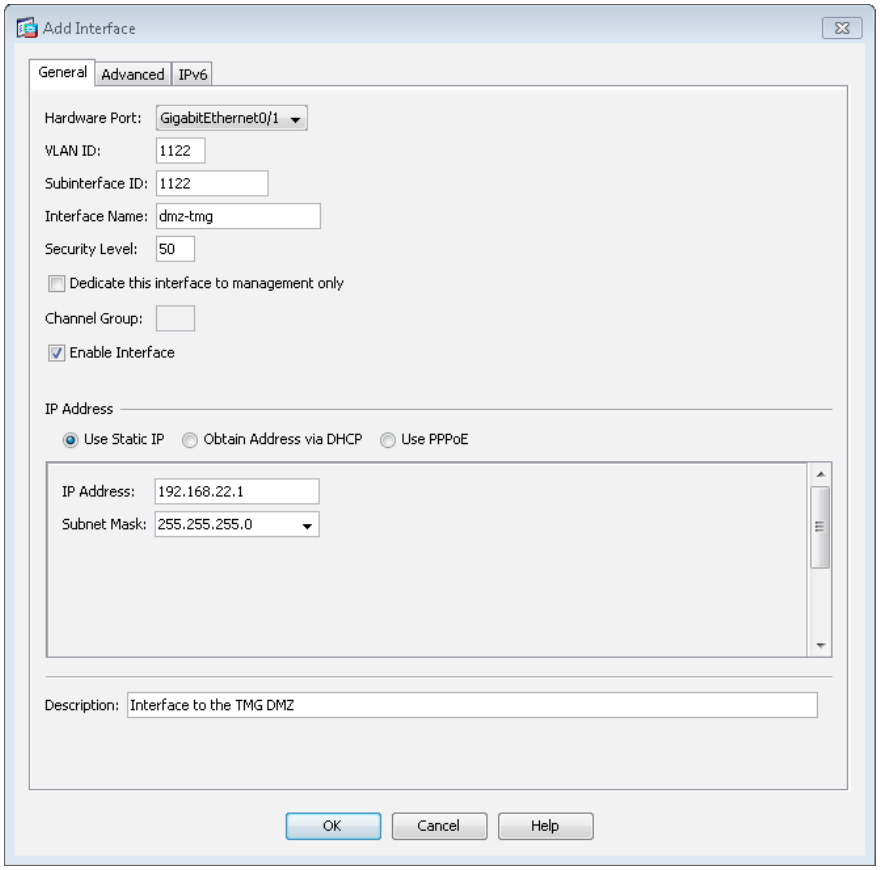
## Procedure 2 Configure the DMZ firewall

A new DMZ will host the TMG server and allow incoming connections from the outside to the TMG server. It will also allow the TMG server to connect to inside resources as required. Configuration of Cisco ASA firewall and the DMZ switch must be updated.

**Step 1:** From a client on the internal network, navigate to the firewall's inside IP address, and then launch the Cisco ASA Security Device Manager. (Example: https://10.4.24.30)

**Step 2:** Navigate to **Configuration > Device Setup > Interfaces.**

**Step 3:** Click **Add**, and then enter the required data. A new DMZ interface is created.



Hardware Port: GigabitEthernet0/1

VLAN ID: 1122

Subinterface ID: 1122

Interface Name: dmz-tmg

Security Level: 50

□ Dedicate this interface to management only

Channel Group:

☑ Enable Interface

● Use Static IP ○ Obtain Address via DHCP ○ Use PPPoE

IP Address: 192.168.22.1

Subnet Mask: 255.255.255.0

Description: Interface to the TMG DMZ

**Step 4:** Click **OK,** and then click **Apply.**

**Step 5:** Navigate to **Configuration > Device Management > High Availability > Failover.**

**Step 6:** Edit the dmz-tmg line to include the standby IP address for the interface: **192.168.22.2**.

**Step 7:** On the DMZ switch, add the appropriate VLAN to the trunk ports that connect to the appliances.

Primary appliance

```
interface GigabitEthernet1/0/24
switchport trunk allowed vlan add 1122
```

Secondary appliance

Secondary appliance

```
interface GigabitEthernet2/0/24
switchport trunk allowed vlan add 1122
```

## Procedure 3 Configure ActiveSync access on Cisco ASA

To allow ActiveSync to work through an external firewall, two things must be done. The first is building a Network Address Translation (NAT) translation for the TMG server to the outside network. The second is allowing the needed connections to traverse the firewall. Allowing the connections to traverse the firewall includes outside hosts making connections to the TMG server, and also the TMG server making connections to the Exchange server.

**Tech Tip**

This process assumes that a resilient Internet connection is used. ActiveSync is available on either ISP using different IP addresses. This solution does not support the use of a single DNS name for resiliency. If there is a failure of the primary ISP (ISP-A), you must manually update the DNS name to refer to the secondary ISP address.

This configuration is performed on the Cisco ASA firewall that controls access to the network and contains the DMZ where the TMG server resides. In this procedure, use the IP address and object name information provided in Table 4.

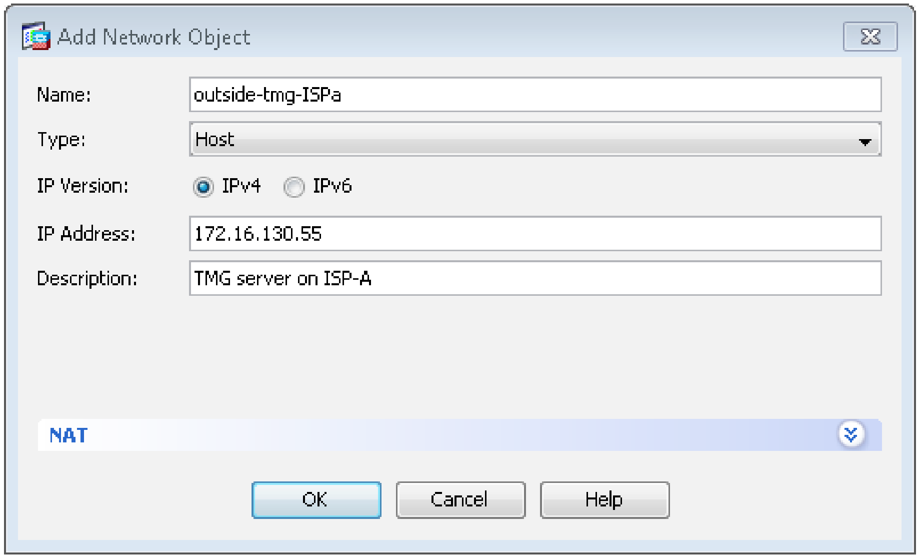
*Table 4 - Addressing and naming for TMG server*

| ISP | Interface name | Outside IP address | Outside firewall object | DMZ IP address | DMZ firewall object |
|---|---|---|---|---|---|
| Primary | outside-16 | 172.16.130.55 | outside-tmg-ISPa | 192.168.22.25 | dmz-tmg-ISPa |
| Secondary | outside-17 | 172.17.130.55 | outside-tmg-ISPb | 192.168.22.25 | dmz-tmg-ISPb |

**Step 1:** Open Cisco ASDM, and then navigate to **Configuration > Firewall > Objects > Network Objects/Groups**.

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

**Step 3:** On the **Add Network Object** dialog box, enter a name for this object for the TMG server, enter the IP address of the TMG server on the outside for the primary ISP, and then click **OK**.



Name: outside-tmg-ISPa
Type: Host
IP Version: ● IPv4 ○ IPv6
IP Address: 172.16.130.55
Description: TMG server on ISP-A

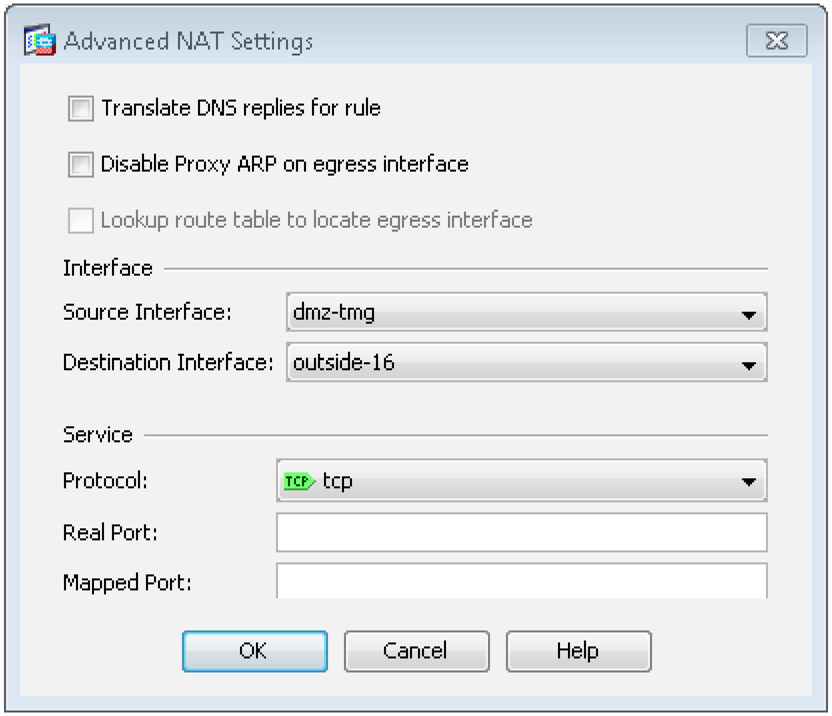
**Step 4:** Click **Add > Network Object**. This step creates the NAT object that ties the external address to the actual address of the TMG server in the DMZ.

**Step 5:** Enter the object name to be used to reference the TMG server in the Cisco ASA configuration, and then enter its actual address on the tmg-dmz (Example: outside-tmg-ISPa).

**Step 6:** Expand the **NAT** section.

**Step 7:** Select **Add Automatic Address Translation Rules**, in the **Type** list, choose **Static**, in the **Translated Addr** list, choose the TMG server network object that references the outside address of the TMG server created in Step 3, and then click **Advanced**.

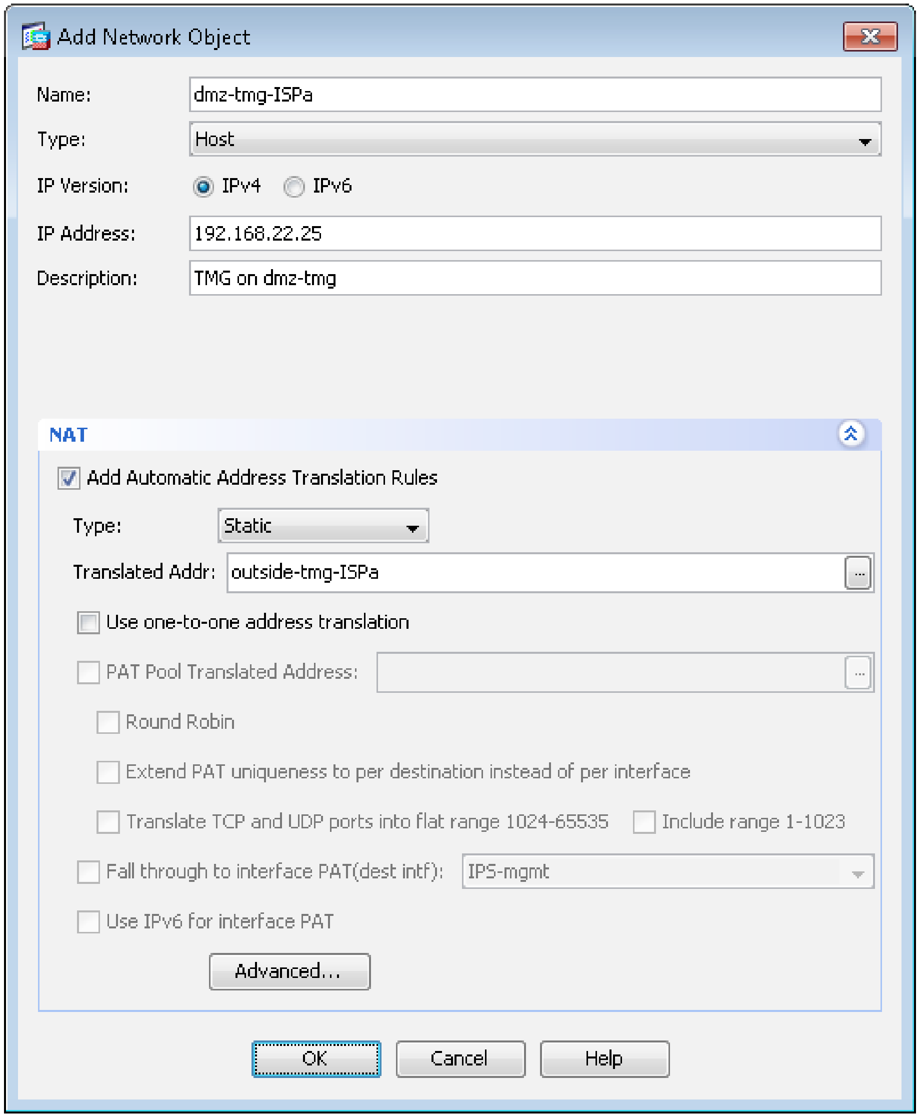
**Step 8:** On the Advanced NAT Settings dialog box, change the **Source Interface** to **dmz-tmg** and the **Destination Interface** to the outside interface to that of the primary ISP, and then click **OK**.



□ Translate DNS replies for rule
□ Disable Proxy ARP on egress interface
□ Lookup route table to locate egress interface

Source Interface: dmz-tmg
Destination Interface: outside-16
Protocol: tcp
Real Port:
Mapped Port:

**Step 9:** On the Add Network Object dialog box, click **OK**.



Add Network Object

Name: dmz-tmg-ISPa

Type: Host

IP Version: ● IPv4 ○ IPv6

IP Address: 192.168.22.25

Description: TMG on dmz-tmg

NAT

☑ Add Automatic Address Translation Rules

Type: Static

Translated Addr: outside-tmg-ISPa

□ Use one-to-one address translation

□ PAT Pool Translated Address:

□ Round Robin

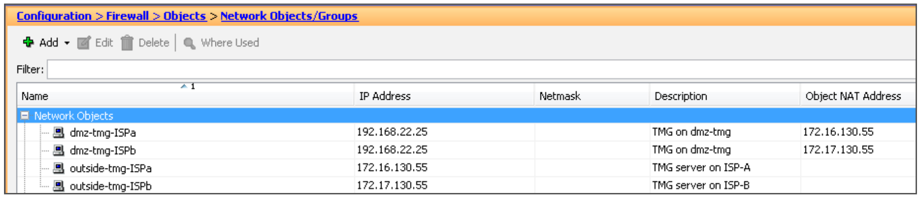
□ Extend PAT uniqueness to per destination instead of per interface

□ Translate TCP and UDP ports into flat range 1024-65535 □ Include range 1-1023

□ Fall through to interface PAT(dest intf): IPS-mgmt

□ Use IPv6 for interface PAT

**Step 10:** Repeat Step 2 through Step 9 for the secondary ISP as listed in Table 4.



Configuration > Firewall > Objects > Network Objects/Groups

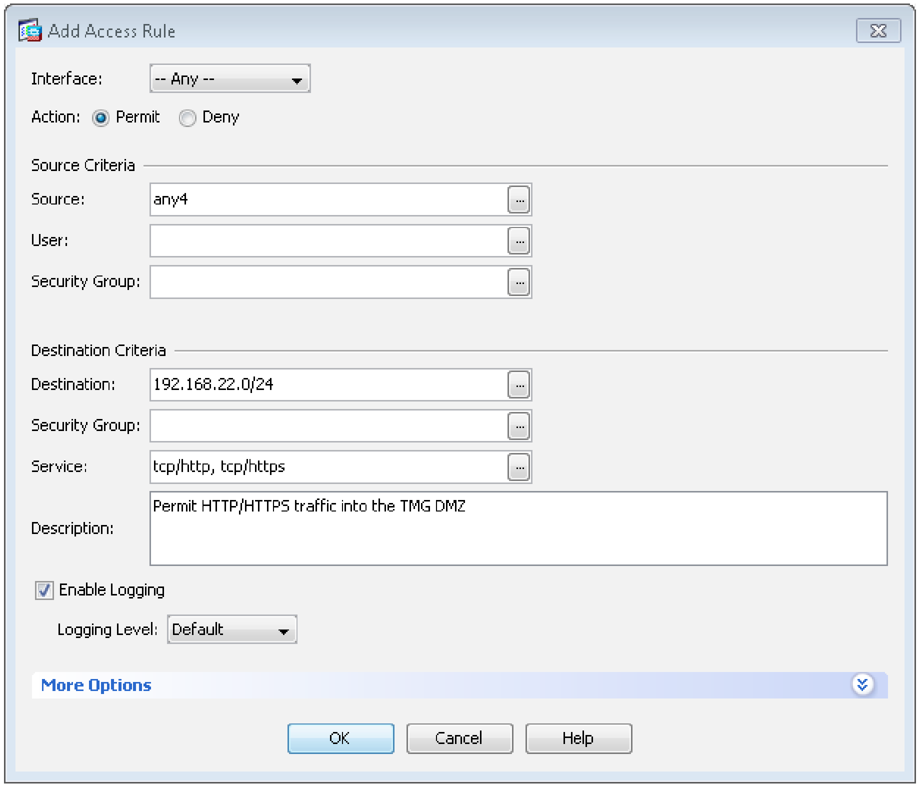
| Name | IP Address | Netmask | Description | Object NAT Address |
|---|---|---|---|---|
| Network Objects | | | | |
| dmz-tmg-ISPa | 192.168.22.25 | | TMG on dmz-tmg | 172.16.130.55 |
| dmz-tmg-ISPb | 192.168.22.25 | | TMG on dmz-tmg | 172.17.130.55 |
| outside-tmg-ISPa | 172.16.130.55 | | TMG server on ISP-A | |
| outside-tmg-ISPb | 172.17.130.55 | | TMG server on ISP-B | |

**Step 11:** Navigate to **Configuration > Firewall > Access Rules**, and then click **Add > Add Access Rule.**

**Step 12:** In the Edit Access Rule window, enter the following information:

- Interface—Any
- Action—Permit
- Source—any4
- Destination—dmz-tmg-network/24
- Service—tcp/http and tcp/https

This adds a new access control entry (ACE) rule to the global list of access rules. The rule allows outside hosts to make HTTP and HTTPS connections to hosts on the dmz-tmg network, which includes the TMG server.


Add Access Rule

Interface: -- Any --

Action: ● Permit ○ Deny

Source Criteria

Source: any4

User:

Security Group:

Destination Criteria

Destination: 192.168.22.0/24

Security Group:

Service: tcp/http, tcp/https

Description: Permit HTTP/HTTPS traffic into the TMG DMZ

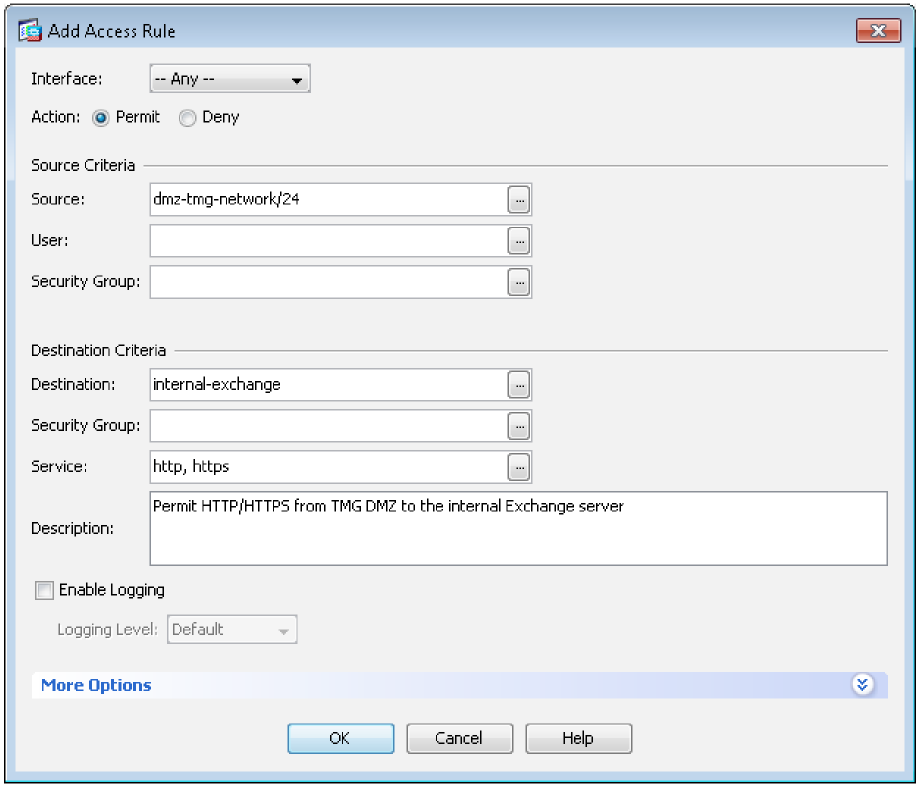
☑ Enable Logging

Logging Level: Default

Next, Create another Cisco ACE. This allows the TMG server access to the internal Exchange server.

**Step 13:** In the Edit Access Rule window, enter the following information:

- Interface—Any
- Action—Permit
- Source—dmz-tmg-network/24
- Destination—internal-exchange
- Service—tcp/http and tcp/https


Add Access Rule

Interface: -- Any --

Action: ● Permit ○ Deny

Source Criteria

Source: dmz-tmg-network/24

User:

Security Group:

Destination Criteria

Destination: internal-exchange

Security Group:

Service: http, https

Description: Permit HTTP/HTTPS from TMG DMZ to the internal Exchange server

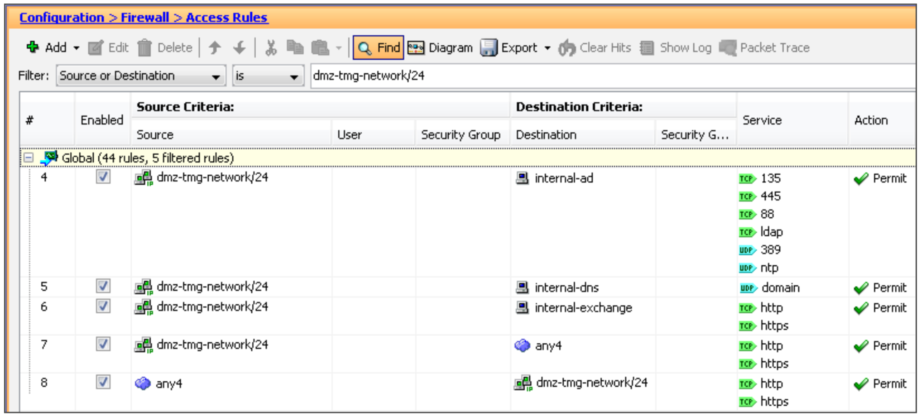
☐ Enable Logging

Logging Level: Default

**Step 14:** Permit access, using the examples above, from the **dmz-tmg-network/24** to the internal Active Directory server and the internal DNS server in the data center. The AD server requires ports on TCP 88, 135, 389, and 445, and UDP 123 and 389. The DNS server requires UDP 53.

The TMG server also requires HTTP/HTTPS in order to access the Internet to perform occasional required updates.

**Step 15:** Permit HTTP/HTTPS from the **dmz-tmg-network/24** to the destination **any4**.



Filter: Source or Destination · is · dmz-tmg-network/24

| # | Enabled | Source Criteria: | | | Destination Criteria: | | Service | Action |
|---|---|---|---|---|---|---|---|---|
| | | Source | User | Security Group | Destination | Security G... | | |
| Global (44 rules, 5 filtered rules) | | | | | | | | |
| 4 | ☑ | dmz-tmg-network/24 | | | internal-ad | | TCP 135<br>TCP 445<br>TCP 88<br>TCP ldap<br>UDP 389<br>UDP ntp | ✓ Permit |
| 5 | ☑ | dmz-tmg-network/24 | | | internal-dns | | UDP domain | ✓ Permit |
| 6 | ☑ | dmz-tmg-network/24 | | | internal-exchange | | TCP http<br>TCP https | ✓ Permit |
| 7 | ☑ | dmz-tmg-network/24 | | | any4 | | TCP http<br>TCP https | ✓ Permit |
| 8 | ☑ | any4 | | | dmz-tmg-network/24 | | TCP http<br>TCP https | ✓ Permit |

**Step 16:** Move these access rules above any rule already configured that denies DMZ networks access to other networks, and then click **Apply**.

## Procedure 4 Configure additional security

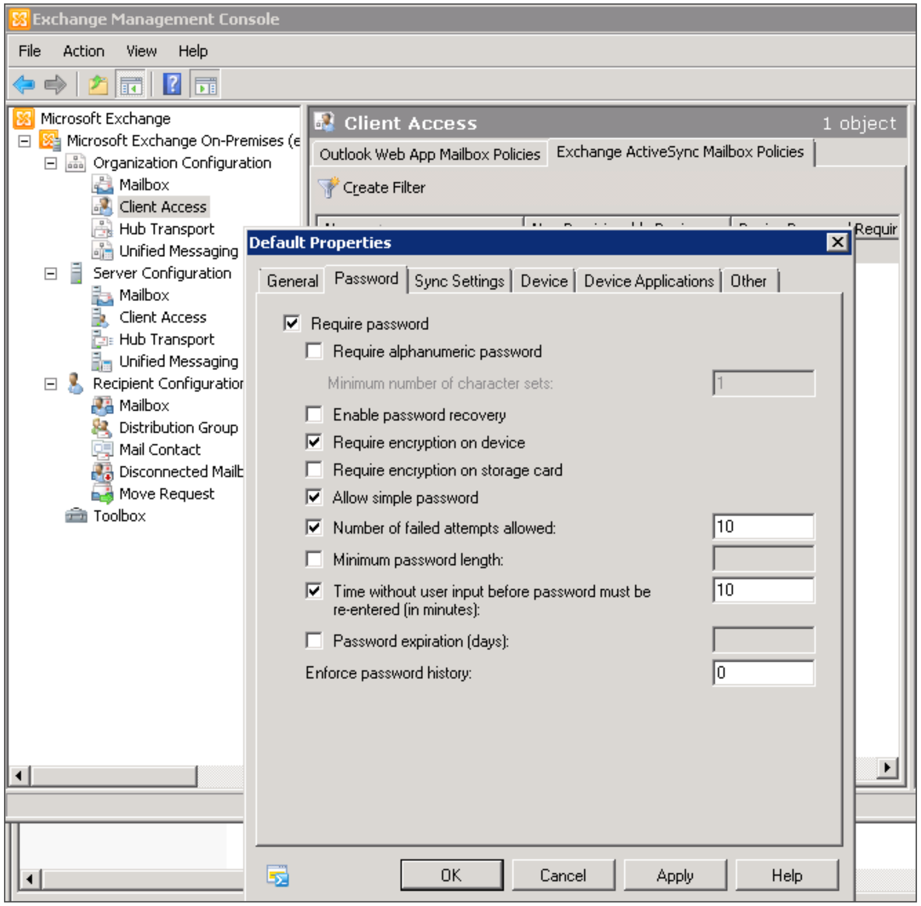
To increase the security of the deployment, ActiveSync includes some security options that administrators may deploy. These options include password requirements, inactivity timeout, device encryption, and a maximum number of failed password attempts before the data on the device is deleted. Security options vary by device. The organizational security policy should be used as a guide on how to approach the use of smartphones in the network.

**Step 1:** In the Exchange Management Console, navigate to **Organization Configuration > Client Access**.

**Step 2:** Click the **Exchange ActiveSync Mailbox Policies** tab, select the policy you want to view in the action pane, and then right-click **Properties**.

**Step 3:** On the **Password** tab, set the password requirements for Exchange ActiveSync clients as follows, and then click **OK**:

1. Select **Require password**.
2. Select **Allow simple password.** This check box allows pin-number-style simple passwords (a minimum level of security but easy to type and remember).
3. Select **Require encryption on device**.
4. Enter a number for **Number of failed attempts allowed.** This setting limits the number of failed password attempts before all information on the device is deleted.
5. Enter a time in minutes for **Time without user input before password must be re-entered**.



☑ Require password
☐ Require alphanumeric password
Minimum number of character sets: 1
☐ Enable password recovery
☑ Require encryption on device
☐ Require encryption on storage card
☑ Allow simple password
☑ Number of failed attempts allowed: 10
☐ Minimum password length:
☑ Time without user input before password must be re-entered (in minutes): 10
☐ Password expiration (days):
Enforce password history: 0

## Process

Configuring Access for Mobile Devices: AnyConnect Client

1. Configure full access using SSL VPN

## Procedure 1 Configure full access using SSL VPN

The Cisco AnyConnect client is available for some versions of smartphones or tablets (check the app store for your phone for availability). If available, your device can be configured to connect to Cisco ASA by using SSL VPN to provide full access to the internal network and its resources.

Change the Cisco AnyConnect client profile that is used in order to better support the mobility of smartphones and tablets.

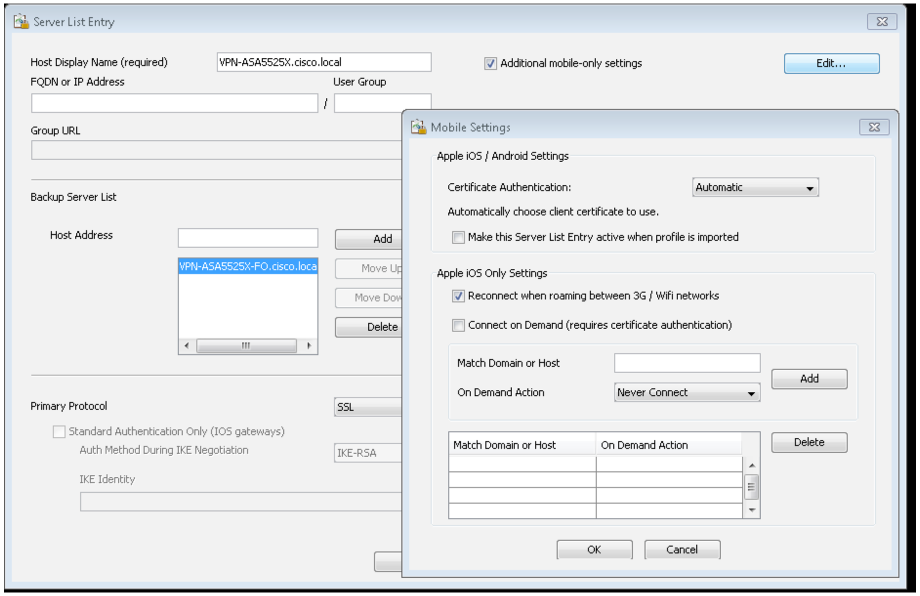
**Step 1:** In Cisco ASDM, navigate to **Configuration > Remote Access VPN > Network Client Access > AnyConnect Client Profile.**

**Step 2:** Select the profile with profile usage set to VPN that is assigned to the group policy that mobile phone users will be using (in this case, **RA-Profile** associated with **GroupPolicy_Employee**, **GroupPolicy_Administrator**, and **GroupPolicy_Partner**), and then click **Edit.**

**Step 3:** In the tree, select **Server List**, highlight the server host name (**VPN-ASA5525X.cisco.local**), and then click **Edit**.

**Step 4:** On the **Server List Entry** page, select **Additional mobile-only settings**, and then click **Edit**.

**Step 5:** Select **Reconnect when roaming between 3G / Wi-Fi networks, and then click OK.**


Server List Entry

Host Display Name (required): VPN-ASA5525X.cisco.local

FQDN or IP Address / User Group

Group URL

☑ Additional mobile-only settings

Backup Server List

Host Address

VPN-ASA5525X-FO.cisco.loca

Primary Protocol: SSL

□ Standard Authentication Only (IOS gateways)

Auth Method During IKE Negotiation: IKE-RSA

IKE Identity

Mobile Settings

Apple iOS / Android Settings

Certificate Authentication: Automatic

Automatically choose client certificate to use.

□ Make this Server List Entry active when profile is imported

Apple iOS Only Settings

☑ Reconnect when roaming between 3G / Wifi networks

□ Connect on Demand (requires certificate authentication)

Match Domain or Host

On Demand Action: Never Connect

| Match Domain or Host | On Demand Action |
|---|---|

## Process

Configure and connect mobile devices

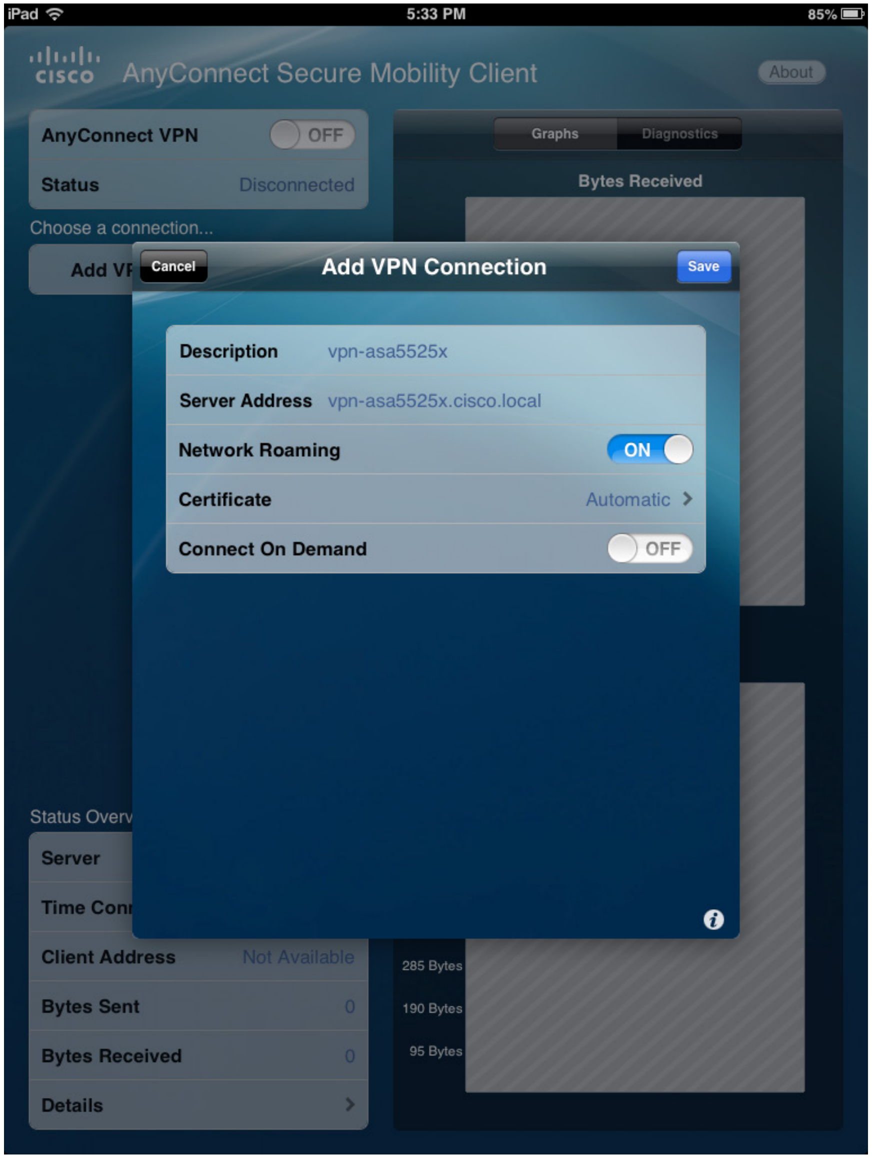
1. Configure and connect an iOS device
2. Configure and connect an Android device

## Procedure 1 Configure and connect an iOS device

**Step 1:** On the iOS device, download the AnyConnect client from the app store.

**Step 2:** Launch the AnyConnect application.

**Step 3:** Click **Add VPN Connection,** enter vpn-asa5525x in the **Description** field, enter vpn-asa5525x.cisco.local in the **Server Address** field, and then click **Save**.



AnyConnect VPN: OFF
Status: Disconnected

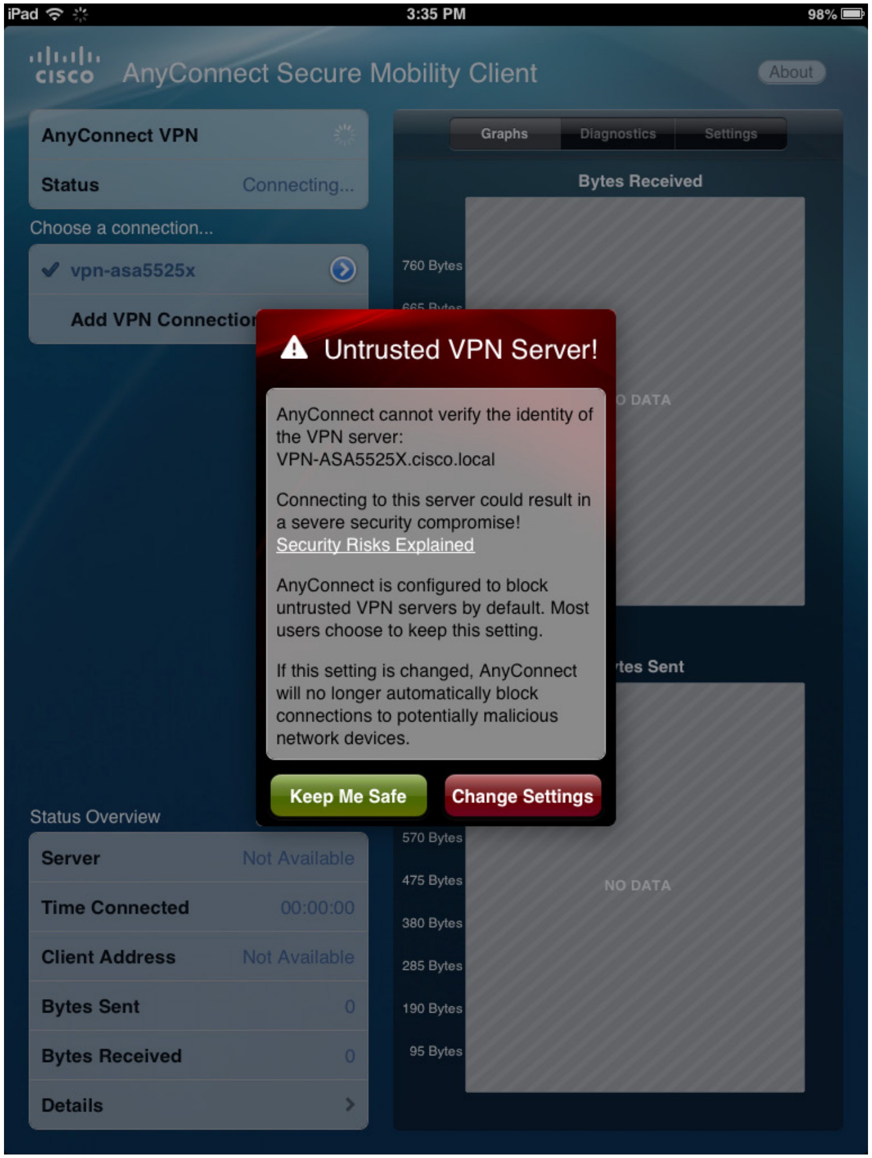
Add VPN Connection

| | |
|---|---|
| Description | vpn-asa5525x |
| Server Address | vpn-asa5525x.cisco.local |
| Network Roaming | ON |
| Certificate | Automatic |
| Connect On Demand | OFF |

| | |
|---|---|
| Server | |
| Time Connected | |
| Client Address | Not Available |
| Bytes Sent | 0 |
| Bytes Received | 0 |
| Details | |

Next, test the connection.

**Step 4:** Select the connection created in Step 3. Enable the connection by moving the AnyConnect VPN slider from the **Off** to the **On** position. The group is AnyConnect. If you are using a self-signed certificate on your RAVPN ASA firewall, then you will receive an Untrusted VPN Server warning message. Click **Change Settings**.



AnyConnect VPN
Status: Connecting...

✓ vpn-asa5525x

Untrusted VPN Server!

AnyConnect cannot verify the identity of the VPN server: VPN-ASA5525X.cisco.local

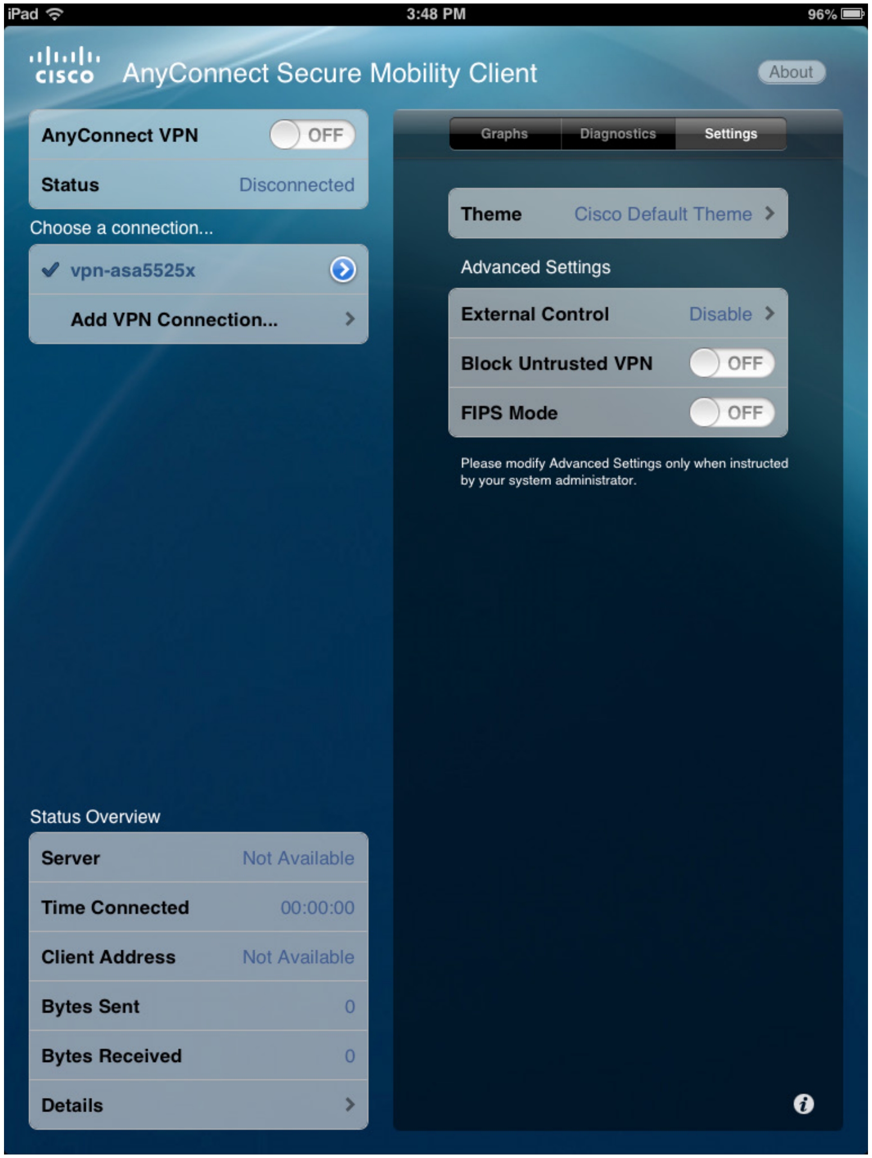
Connecting to this server could result in a severe security compromise!
Security Risks Explained

AnyConnect is configured to block untrusted VPN servers by default. Most users choose to keep this setting.

If this setting is changed, AnyConnect will no longer automatically block connections to potentially malicious network devices.

| | |
|---|---|
| Server | Not Available |
| Time Connected | 00:00:00 |
| Client Address | Not Available |
| Bytes Sent | 0 |
| Bytes Received | 0 |
| Details | |

**Step 5:** Disable the Block Untrusted VPN setting by moving the slider to **Off**.



AnyConnect VPN OFF

Status Disconnected

Choose a connection...

✓ vpn-asa5525x

Add VPN Connection...

Theme Cisco Default Theme

Advanced Settings

External Control Disable

Block Untrusted VPN OFF

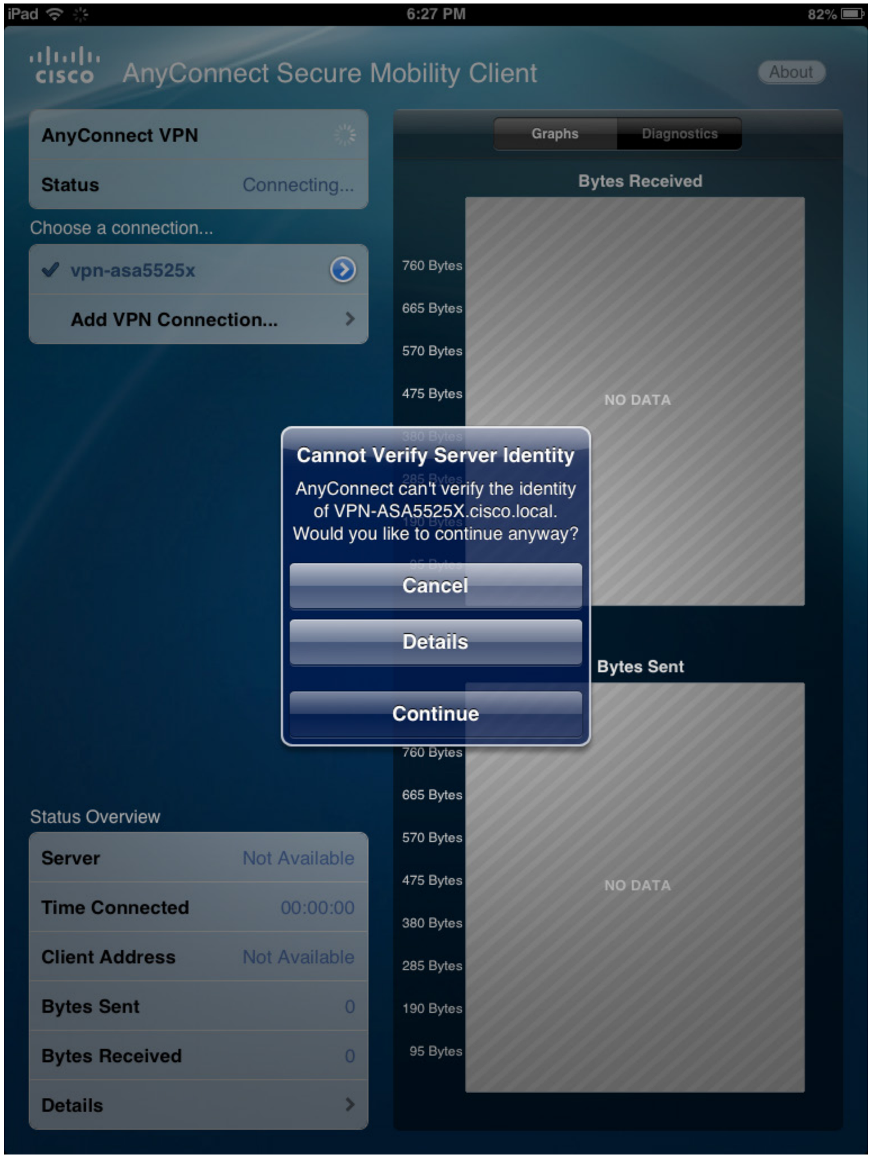
FIPS Mode OFF

Please modify Advanced Settings only when instructed by your system administrator.

Status Overview

| | |
|---|---|
| Server | Not Available |
| Time Connected | 00:00:00 |
| Client Address | Not Available |
| Bytes Sent | 0 |
| Bytes Received | 0 |
| Details | |

**Step 6:** Re-enable the connection by moving the AnyConnect VPN slider from the **Off** to the **On** position. The group is AnyConnect. If you are using a self-signed certificate on your RAVPN ASA firewall, then you will receive a warning message. Click **Continue**.



AnyConnect VPN

Status Connecting...

Choose a connection...

✓ vpn-asa5525x

Add VPN Connection...

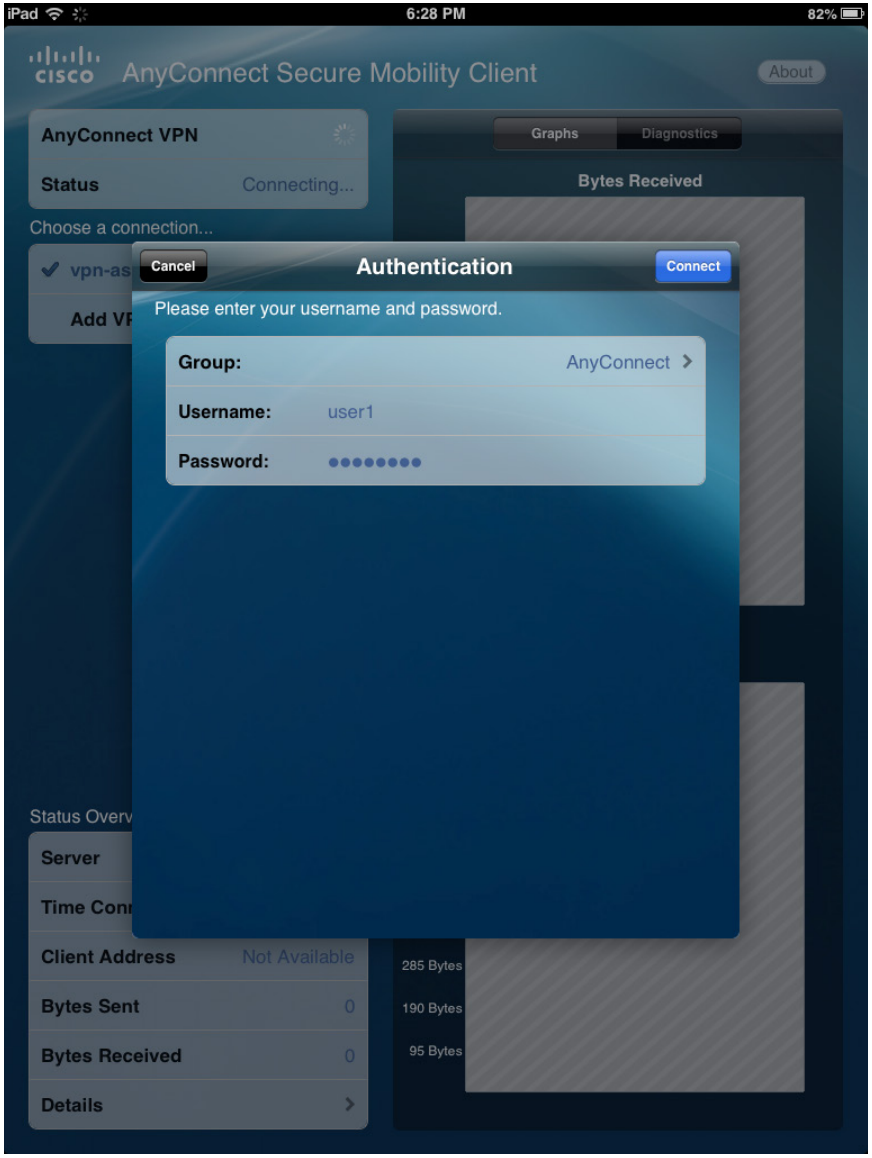
**Cannot Verify Server Identity**

AnyConnect can't verify the identity of VPN-ASA5525X.cisco.local. Would you like to continue anyway?

Status Overview

| | |
|---|---|
| Server | Not Available |
| Time Connected | 00:00:00 |
| Client Address | Not Available |
| Bytes Sent | 0 |
| Bytes Received | 0 |
| Details | |

**Step 7:** Enter a valid username and password for authentication, and then click **Connect**.



AnyConnect VPN

Status Connecting...

Choose a connection...

✓ vpn-as

Add VF

**Authentication**

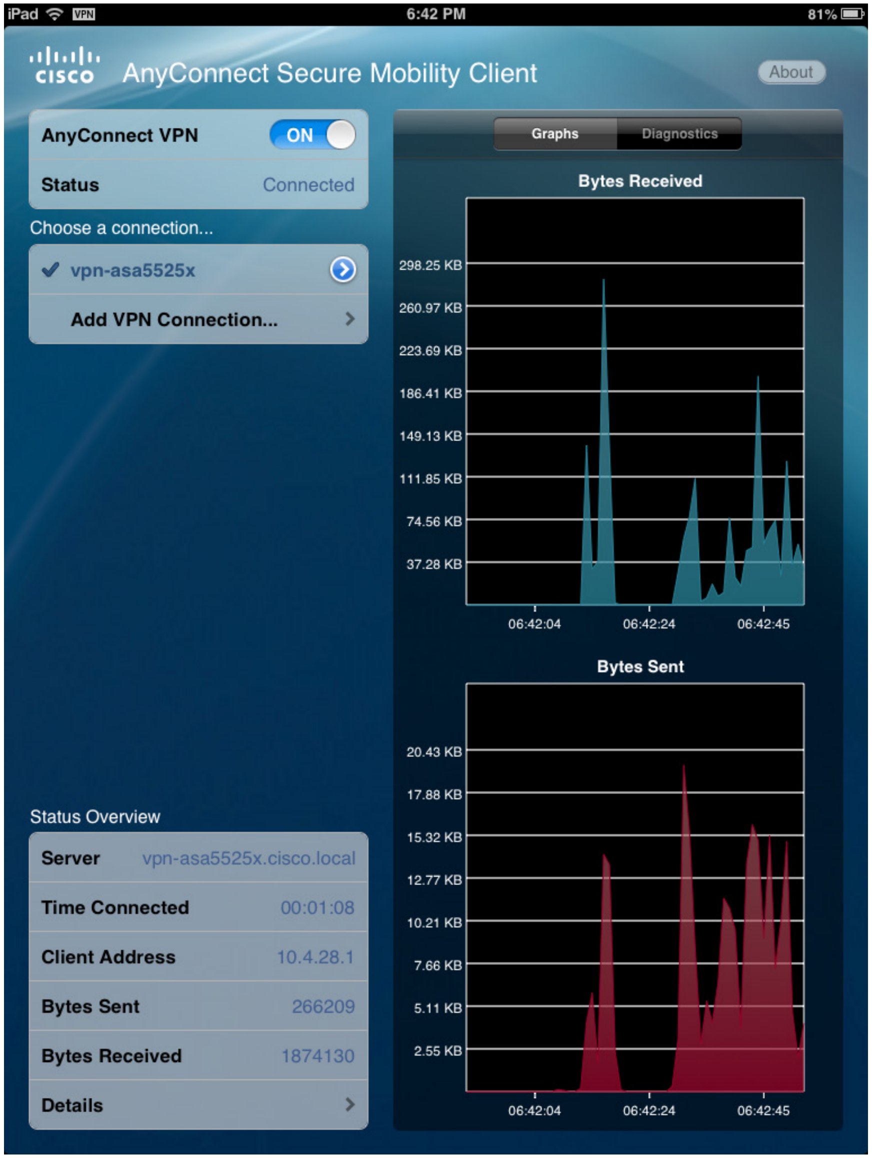
Please enter your username and password.

| | |
|---|---|
| Group: | AnyConnect › |
| Username: | user1 |
| Password: | ●●●●●●●● |

Status Overv

| | |
|---|---|
| Server | |
| Time Con | |
| Client Address | Not Available |
| Bytes Sent | 0 |
| Bytes Received | 0 |
| Details › | |

**Step 8:** Once you are successfully connected, you can monitor the connection status and view performance graphs.



AnyConnect VPN ON

Status Connected

Choose a connection...

✓ vpn-asa5525x

Add VPN Connection... ›

Status Overview

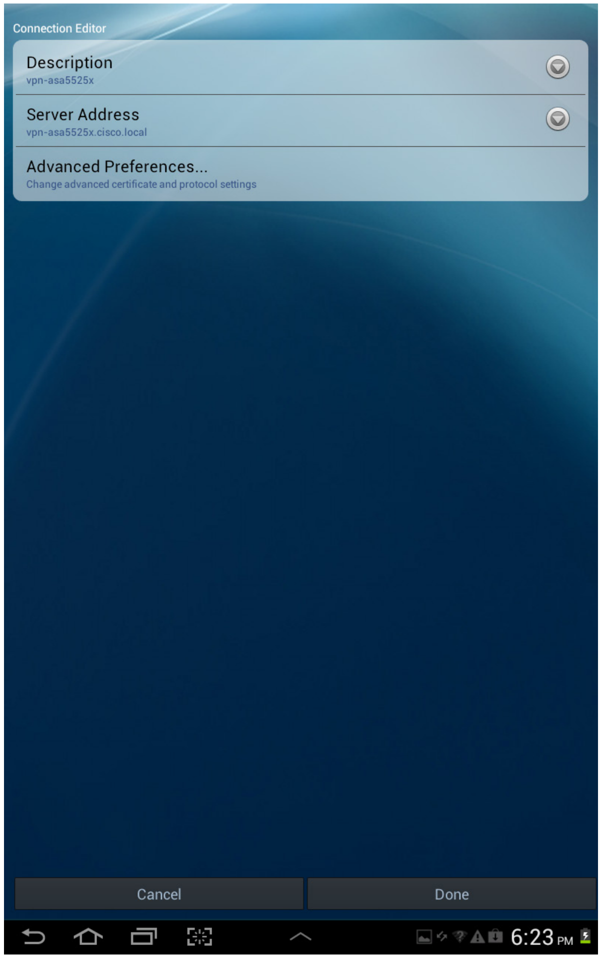
| | |
|---|---|
| Server | vpn-asa5525x.cisco.local |
| Time Connected | 00:01:08 |
| Client Address | 10.4.28.1 |
| Bytes Sent | 266209 |
| Bytes Received | 1874130 |
| Details › | |

## Procedure 2 Configure and connect an Android device

**Step 1:** On the Android device, download the AnyConnect client from the app store.

**Step 2:** Launch the AnyConnect application.

**Step 3:** Click **Add VPN Connection,** enter vpn-asa5525x in the **Description** field, enter vpn-asa5525x.cisco.local in the **Server Address** field, and then click **Done**.



Connection Editor

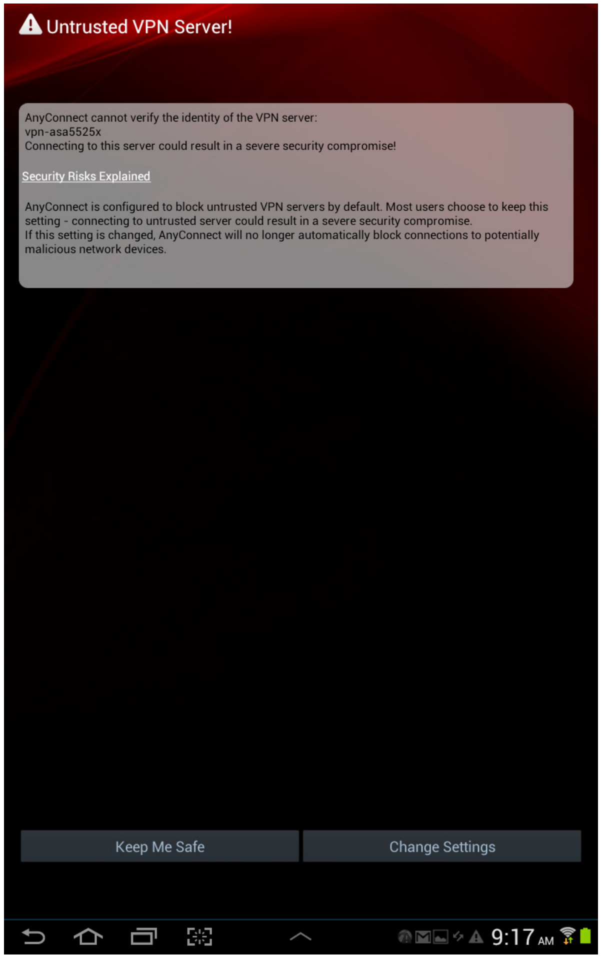
Description
vpn-asa5525x

Server Address
vpn-asa5525x.cisco.local

Advanced Preferences...
Change advanced certificate and protocol settings

Next, test the connection.

**Step 4:** Select the connection. This moves the AnyConnect VPN slider from the **Off** to the **On** position. The group is AnyConnect. If you are using a self-signed certificate on your RAVPN ASA firewall, then you will receive an Untrusted VPN Server warning message. Click **Change Settings**.



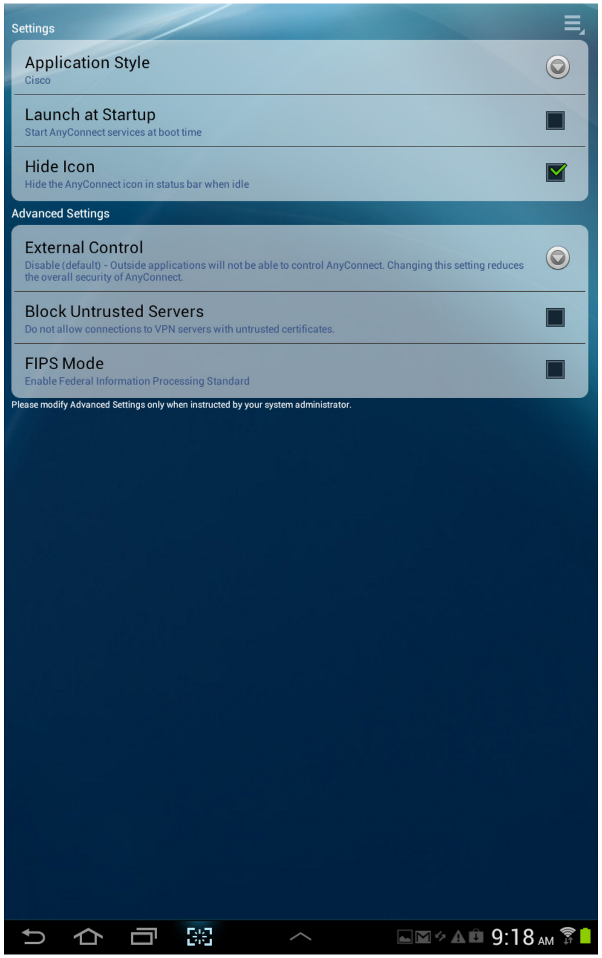
Untrusted VPN Server!

AnyConnect cannot verify the identity of the VPN server:
vpn-asa5525x
Connecting to this server could result in a severe security compromise!

Security Risks Explained

AnyConnect is configured to block untrusted VPN servers by default. Most users choose to keep this setting - connecting to untrusted server could result in a severe security compromise.
If this setting is changed, AnyConnect will no longer automatically block connections to potentially malicious network devices.

**Step 5:** Allow connections to untrusted servers by clearing **Block Untrusted Servers**.



Settings

Application Style
Cisco

□ Launch at Startup
Start AnyConnect services at boot time

☑ Hide Icon
Hide the AnyConnect icon in status bar when idle

Advanced Settings

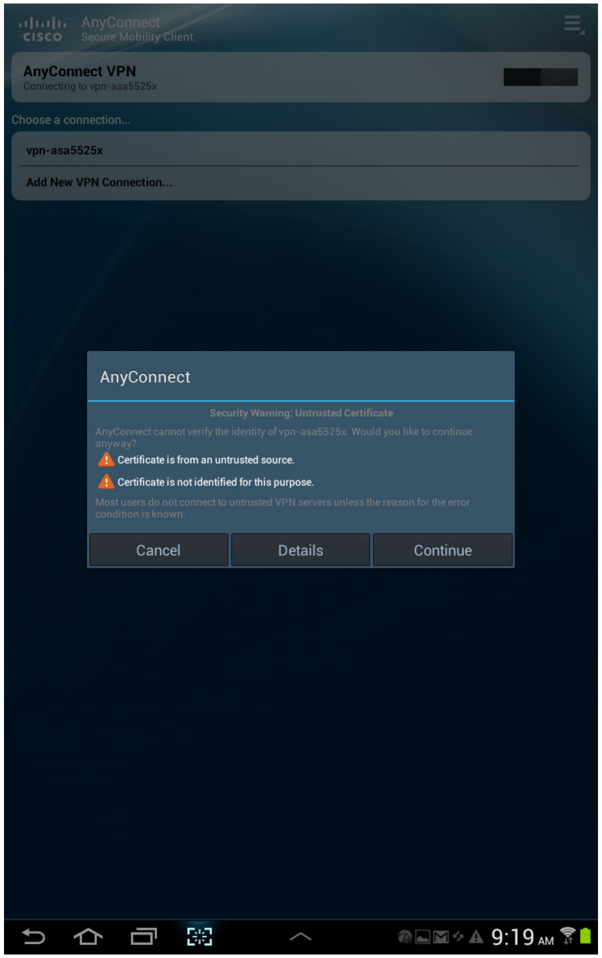
External Control
Disable (default) - Outside applications will not be able to control AnyConnect. Changing this setting reduces the overall security of AnyConnect.

□ Block Untrusted Servers
Do not allow connections to VPN servers with untrusted certificates.

□ FIPS Mode
Enable Federal Information Processing Standard

Please modify Advanced Settings only when instructed by your system administrator.

**Step 6:** Re-enable the connection by moving the AnyConnect VPN slider from the **Off** to the **On** position. The group is AnyConnect. If you are using a self-signed certificate on your RAVPN ASA firewall, then you will receive a warning message. Click **Continue**.



AnyConnect VPN
Connecting to vpn-asa5525x

Choose a connection...

vpn-asa5525x

Add New VPN Connection...

AnyConnect

Security Warning: Untrusted Certificate

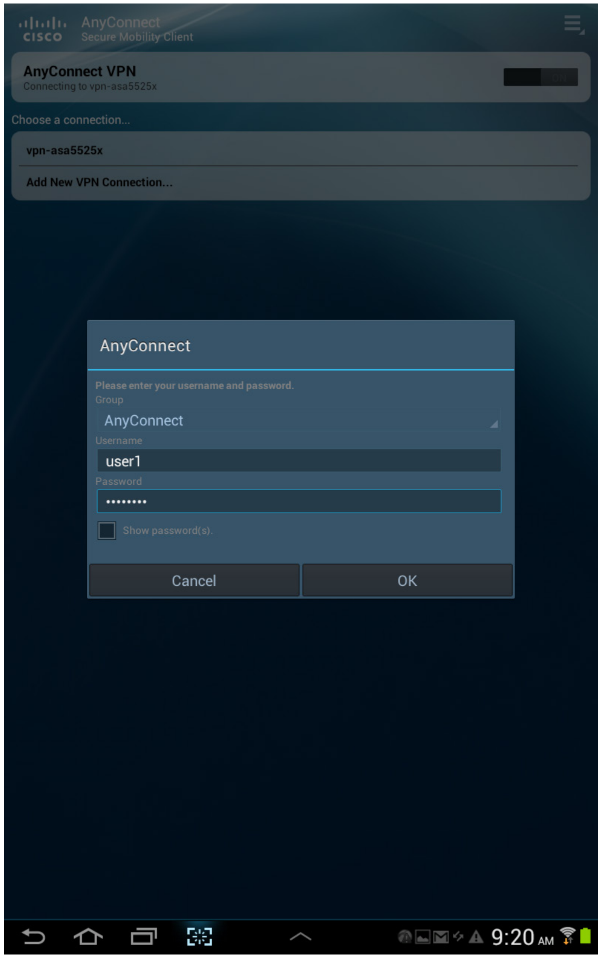
AnyConnect cannot verify the identity of vpn-asa5525x. Would you like to continue anyway?

⚠ Certificate is from an untrusted source.

⚠ Certificate is not identified for this purpose.

Most users do not connect to untrusted VPN servers unless the reason for the error condition is known.

**Step 7:** Enter a valid username and password for authentication, and then click **OK**.



Please enter your username and password.

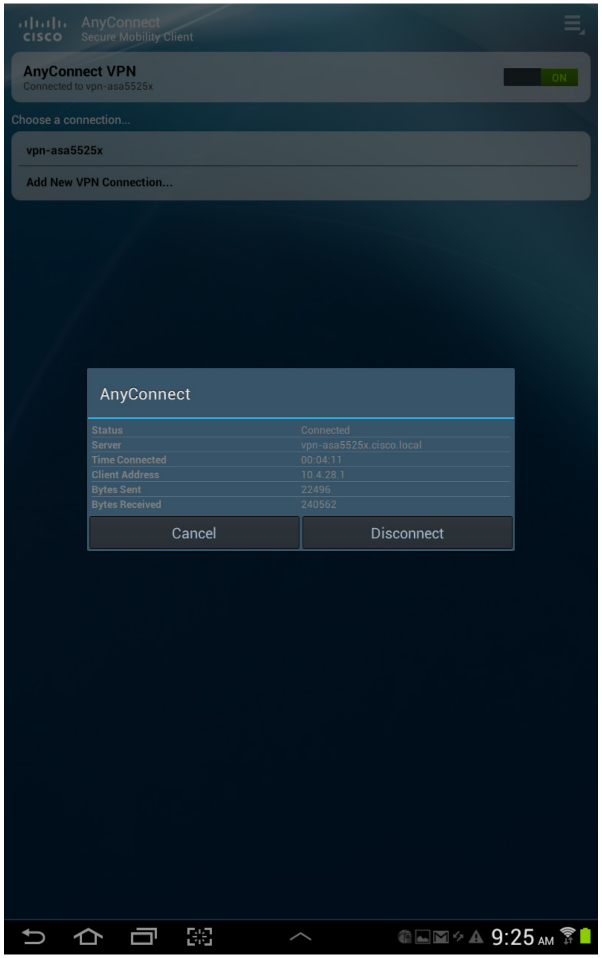
Group: AnyConnect

Username: user1

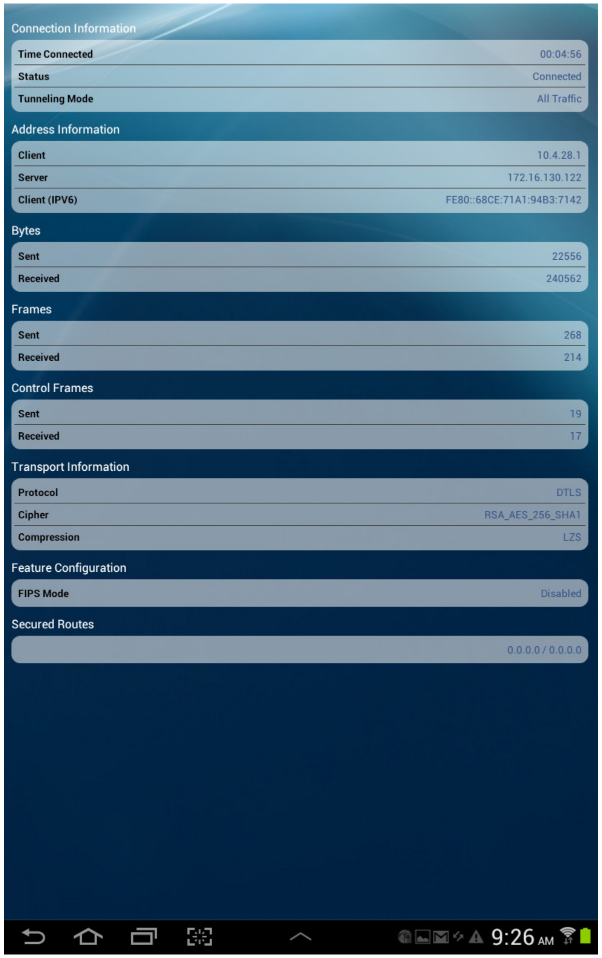
Password: ••••••••

□ Show password(s).

**Step 8:** Once you are successfully connected, you can monitor the connection status and view performance statistics.



| | |
|---|---|
| Status | Connected |
| Server | vpn-asa5525x.cisco.local |
| Time Connected | 00:04:11 |
| Client Address | 10.4.28.1 |
| Bytes Sent | 22496 |
| Bytes Received | 240562 |



Connection Information

| | |
|---|---|
| Time Connected | 00:04:56 |
| Status | Connected |
| Tunneling Mode | All Traffic |

Address Information

| | |
|---|---|
| Client | 10.4.28.1 |
| Server | 172.16.130.122 |
| Client (IPV6) | FE80::68CE:71A1:94B3:7142 |

Bytes

| | |
|---|---|
| Sent | 22556 |
| Received | 240562 |

Frames

| | |
|---|---|
| Sent | 268 |
| Received | 214 |

Control Frames

| | |
|---|---|
| Sent | 19 |
| Received | 17 |

Transport Information

| | |
|---|---|
| Protocol | DTLS |
| Cipher | RSA_AES_256_SHA1 |
| Compression | LZS |

Feature Configuration

| | |
|---|---|
| FIPS Mode | Disabled |

Secured Routes

0.0.0.0 / 0.0.0.0

## Notes

# Appendix A: Product List

## Internet Edge

| Functional Area | Product Description | Part Numbers | Software |
|---|---|---|---|
| Firewall | Cisco ASA 5545-X IPS Edition - security appliance | ASA5545-IPS-K9 | ASA 9.0(1)<br>IPS 7.1(6)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 | 7.0(2) |
| RA VPN Firewall | Cisco ASA 5545-X Firewall Edition - security appliance | ASA5545-K9 | ASA 9.0(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 ASA 5512-X Security Plus license | ASA5512-SEC-PL | |
| | Firewall Management | ASDM | 7.0(2) |
| AnyConnect License | AnyConnect Essentials VPN License - ASA 5545-X (2500 Users) | L-ASA-AC-E-5545 | — |
| | AnyConnect Essentials VPN License - ASA 5525-X (750 Users) | L-ASA-AC-E-5525 | |
| | AnyConnect Essentials VPN License - ASA 5515-X (250 Users) | L-ASA-AC-E-5515 | |
| | AnyConnect Essentials VPN License - ASA 5512-X (250 Users) | L-ASA-AC-E-5512 | |
| | AnyConnect Premium VPN License (2500 users) | L-ASA-SSL-2500 | |
| | AnyConnect Premium VPN License (500 Users) | L-ASA-SSL-500 | |
| | AnyConnect Premium VPN License (250 Users) | L-ASA-SSL-250 | |
| AnyConnect Mobile License | Cisco AnyConnect Mobile License | L-ASA-AC-M-5545 | — |
| | Cisco AnyConnect Mobile License | L-ASA-AC-M-5525 | |

## Internet Edge LAN

| Functional Area | Product Description | Part Numbers | Software |
|---|---|---|---|
| DMZ Switch | Cisco Catalyst 3750-X Series Stackable 24 Ethernet 10/100/1000 ports | WS-C3750X-24T-S | 15.0(2)SE<br>IP Base license |

## VPN Client

| Functional Area | Product Description | Part Numbers | Software |
|---|---|---|---|
| VPN Client | Cisco AnyConnect Secure Mobility Client (Windows) | Cisco AnyConnect Secure Mobility Client | 3.1.00495 |
| | Cisco AnyConnect Secure Mobility Client (Mac OS X) | Cisco AnyConnect Secure Mobility Client | |
| | Cisco AnyConnect Secure Mobility Client (Linux) | Cisco AnyConnect Secure Mobility Client | |
| Mobile Device VPN Client | Cisco AnyConnect Secure Mobility Client (Apple iOS) | Cisco AnyConnect Secure Mobility Client | 3.0.09097 |
| | Cisco AnyConnect Secure Mobility Client (Android) | Cisco AnyConnect Secure Mobility Client | 3.0.09093 |

## Web Security

| Functional Area | Product Description | Part Numbers | Software |
|---|---|---|---|
| Cloud Web Security | Cisco Cloud Web Security (ScanSafe) | Cisco Cloud Web Security | — |
| | Cisco Cloud Web Security (ScanSafe) | Please Contact your Cisco Cloud Web Security Sales Representative for Part Numbers:scansafe-sales-questions@cisco.com | |

## Access Control

| Functional Area | Product Description | Part Numbers | Software |
|---|---|---|---|
| Authentication Services | ACS 5.3 VMware Software and Base License | CSACS-5.3-VM-K9 | 5.3 |

# Appendix B: Configuration Example

## RA VPN ASA5525X

```
ASA Version 9.0(1)
!
hostname VPN-ASA5525X
domain-name cisco.local
enable password 8Ry2YjIyt7RRXU24 encrypted
passwd 2KFQnbNIdI.2KYOU encrypted
names
ip local pool RA-pool 10.4.28.1-10.4.31.254 mask 255.255.252.0
!
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
 vlan 16
 nameif outside-16
 security-level 0
 ip address 172.16.130.122 255.255.255.0
!
interface GigabitEthernet0/3.17
 vlan 17
 nameif outside-17
 security-level 0
 ip address 172.17.130.122 255.255.255.0
!
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
 management-only
 shutdown
 no nameif
 no security-level
 no ip address
!
boot system disk0:/asa901-smp-k8.bin
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 asdm-websecproxy-115-111-223-66
 host 115.111.223.66
object network asdm-websecproxy-122-50-127-66
 host 122.50.127.66
object network asdm-websecproxy-184-150-236-66
 host 184.150.236.66
object network asdm-websecproxy-196-26-220-66
 host 196.26.220.66
object network asdm-websecproxy-201-94-155-66
 host 201.94.155.66
object network asdm-websecproxy-202-167-250-90
 host 202.167.250.90
object network asdm-websecproxy-202-167-250-98
 host 202.167.250.98
object network asdm-websecproxy-202-177-218-66
 host 202.177.218.66
object network asdm-websecproxy-202-79-203-98
 host 202.79.203.98
object network asdm-websecproxy-46-255-40-58
 host 46.255.40.58
object network asdm-websecproxy-46-255-40-90
 host 46.255.40.90
object network asdm-websecproxy-46-255-40-98
 host 46.255.40.98
object network asdm-websecproxy-69-10-152-66
 host 69.10.152.66
object network asdm-websecproxy-69-174-58-179
 host 69.174.58.179
object network asdm-websecproxy-69-174-58-187
 host 69.174.58.187
object network asdm-websecproxy-69-174-87-131
 host 69.174.87.131
object network asdm-websecproxy-69-174-87-163
 host 69.174.87.163
object network asdm-websecproxy-69-174-87-171
 host 69.174.87.171
object network asdm-websecproxy-69-174-87-75
 host 69.174.87.75
object network asdm-websecproxy-70-39-176-115
 host 70.39.176.115
object network asdm-websecproxy-70-39-176-123
 host 70.39.176.123
object network asdm-websecproxy-70-39-176-131
 host 70.39.176.131
object network asdm-websecproxy-70-39-176-139
 host 70.39.176.139
object network asdm-websecproxy-70-39-176-35
 host 70.39.176.35
object network asdm-websecproxy-70-39-176-59
 host 70.39.176.59
object network asdm-websecproxy-70-39-177-35
 host 70.39.177.35
object network asdm-websecproxy-70-39-177-43
 host 70.39.177.43
```

```
object network asdm-websecproxy-70-39-231-107
 host 70.39.231.107
object network asdm-websecproxy-70-39-231-163
 host 70.39.231.163
object network asdm-websecproxy-70-39-231-171
 host 70.39.231.171
object network asdm-websecproxy-70-39-231-180
 host 70.39.231.180
object network asdm-websecproxy-70-39-231-182
 host 70.39.231.182
object network asdm-websecproxy-70-39-231-188
 host 70.39.231.188
object network asdm-websecproxy-70-39-231-190
 host 70.39.231.190
object network asdm-websecproxy-70-39-231-91
 host 70.39.231.91
object network asdm-websecproxy-72-37-244-163
 host 72.37.244.163
object network asdm-websecproxy-72-37-244-171
 host 72.37.244.171
object network asdm-websecproxy-72-37-248-19
 host 72.37.248.19
object network asdm-websecproxy-72-37-248-27
 host 72.37.248.27
object network asdm-websecproxy-72-37-249-139
 host 72.37.249.139
object network asdm-websecproxy-72-37-249-147
 host 72.37.249.147
object network asdm-websecproxy-72-37-249-163
 host 72.37.249.163
object network asdm-websecproxy-72-37-249-171
 host 72.37.249.171
object network asdm-websecproxy-72-37-249-195
 host 72.37.249.195
object network asdm-websecproxy-72-37-249-203
 host 72.37.249.203
object network asdm-websecproxy-80-254-147-251
 host 80.254.147.251
object network asdm-websecproxy-80-254-148-194
 host 80.254.148.194
object network asdm-websecproxy-80-254-150-66
 host 80.254.150.66
object network asdm-websecproxy-80-254-154-66
 host 80.254.154.66
object network asdm-websecproxy-80-254-154-98
 host 80.254.154.98
object network asdm-websecproxy-80-254-155-66
 host 80.254.155.66
object network asdm-websecproxy-80-254-158-147
 host 80.254.158.147
object network asdm-websecproxy-80-254-158-155
 host 80.254.158.155
object network asdm-websecproxy-80-254-158-179
 host 80.254.158.179
object network asdm-websecproxy-80-254-158-187
 host 80.254.158.187
object network asdm-websecproxy-80-254-158-211
 host 80.254.158.211
object network asdm-websecproxy-80-254-158-219
 host 80.254.158.219
object network asdm-websecproxy-80-254-158-35
 host 80.254.158.35
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 ALL_BUT_DEFAULT standard deny host 0.0.0.0
access-list ALL_BUT_DEFAULT standard permit any4
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 Block_Trusted_Host remark Trusted Host is 10.4.48.10:443
access-list Block_Trusted_Host extended deny tcp any4 host 10.4.48.10 eq https
access-list Block_Trusted_Host remark Permit All other traffic
access-list Block_Trusted_Host extended permit ip any4 any4
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-80-254-158-35 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-80-254-147-251 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-80-254-158-155 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-80-254-158-147 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-80-254-158-179 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-80-254-158-187 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-80-254-158-211 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-80-254-158-219 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-80-254-148-194 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-46-255-40-58 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-46-255-40-90 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-46-255-40-98 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-80-254-150-66 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-80-254-154-66 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-80-254-154-98 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
```

```
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-80-254-155-66 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-196-26-220-66 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-201-94-155-66 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-184-150-236-66 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-69-10-152-66 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-72-37-244-171 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-72-37-244-163 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-72-37-248-19 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-72-37-248-27 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
```

```
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-70-39-231-107 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-70-39-231-91 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-70-39-231-171 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-70-39-231-163 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-70-39-231-180 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-70-39-231-182 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-70-39-231-188 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-70-39-231-190 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-69-174-58-179 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
```

```
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-69-174-58-187 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-70-39-176-35 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-70-39-176-59 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-70-39-176-115 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-70-39-176-123 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-70-39-176-131 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-70-39-176-139 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-72-37-249-171 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-72-37-249-163 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-72-37-249-139 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-72-37-249-147 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
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access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-72-37-249-203 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-70-39-177-35 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
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access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
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access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-69-174-87-171 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-websecproxy-69-174-87-131 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security proxy ACE
```

```
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-69-174-87-163 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-202-167-250-98 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-202-167-250-90 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-115-111-223-66 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-122-50-127-66 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-202-79-203-98 any
access-list CWS_Tower_Exclude remark ASDM-generated Web Security
proxy ACE
access-list CWS_Tower_Exclude extended permit ip object asdm-
websecproxy-202-177-218-66 any
pager lines 24
logging enable
logging buffered informational
logging asdm informational
mtu inside 1500
mtu outside-16 1500
mtu outside-17 1500
failover
failover lan unit secondary
failover lan interface failover GigabitEthernet0/2
failover polltime unit msec 200 holdtime msec 800
failover polltime interface msec 500 holdtime 5
failover key FailoverKey
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-702.bin
no asdm history enable
arp timeout 14400
no arp permit-nonconnected
nat (inside,outside-17) 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 (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
!
router eigrp 100
 no auto-summary
 distribute-list ALL_BUT_DEFAULT out
 network 10.4.0.0 255.254.0.0
 passive-interface default
 no passive-interface inside
 redistribute static
!
route outside-16 0.0.0.0 0.0.0.0 172.16.130.126 1 track 1
route outside-17 0.0.0.0 0.0.0.0 172.17.130.126 50
route outside-16 172.18.1.1 255.255.255.255 172.16.130.126 1
route inside 0.0.0.0 0.0.0.0 10.4.24.1 tunneled
timeout xlate 3:00:00
timeout pat-xlate 0:00:30
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 SecretKey
aaa-server AAA-RADIUS protocol radius
aaa-server AAA-RADIUS (inside) host 10.4.48.15
 timeout 5
 key SecretKey
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 10.4.48.0 255.255.255.0 inside
snmp-server host inside 10.4.48.35 community cisco
no snmp-server location
no snmp-server contact
snmp-server community cisco
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 ipsec security-association pmtu-aging infinite
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 dynamic-map SYSTEM_DEFAULT_CRYPTO_MAP 65535 set reverse-route
crypto map outside-16_map 65535 ipsec-isakmp dynamic SYSTEM_DEFAULT_CRYPTO_MAP
crypto map outside-16_map interface outside-16
crypto ca trustpoint VPN-ASA5525X-Trustpoint
 enrollment self
 subject-name CN=VPN-ASA5525X.cisco.local
 keypair VPN-ASA5525X-Keypair
 proxy-ldc-issuer
 crl configure
crypto ca trustpoint VPN-ASA5525X-FO-Trustpoint
 enrollment self
 subject-name CN=VPN-ASA5525X-FO.cisco.local
 keypair VPN-ASA5525X-Keypair
 proxy-ldc-issuer
 crl configure
crypto ca trustpoint ASDM_TrustPoint0
 enrollment self
 subject-name CN=VPN-ASA5525X
 keypair foobar
 proxy-ldc-issuer
 crl configure
crypto ca trustpool policy
crypto ca certificate chain VPN-ASA5525X-Trustpoint
 certificate 196dbd50
    30820379 30820261 a0030201 02020419 6dbd5030 0d06092a
864886f7 0d010105
    0500304c 3121301f 06035504 03131856 504e2d41 53413535
3235582e 63697363
    6f2e6c6f 63616c31 27302506 092a8648 86f70d01 09021618
56504e2d 41534135
    35323558 2e636973 636f2e6c 6f63616c 301e170d 31323132
31373232 34353131
    5a170d32 32313231 35323234 3531315a 304c3121 301f0603
55040313 1856504e
    2d415341 35353235 582e6369 73636f2e 6c6f6361 6c312730
2506092a 864886f7
    0d010902 16185650 4e2d4153 41353532 35582e63 6973636f
2e6c6f63 616c3082
    0122300d 06092a86 4886f70d 01010105 00038201 0f003082
010a0282 010100be
    b40a3916 c07f0a5a ca49459f 1ff0fde1 18fdd1d3 1549f412
591ea3da d0fdc925
    e590bd9f ddb0a47b 488cfbcc 0a8245de 2c1bba6c b63c12d4
9378e952 c3146de5
    5cbaa719 c6cbc071 8ad5b3c1 fa3f9aaa f382b256 8518fa3b
0f4674d9 c973ec60
    b78a92a9 ccaeca0a bf55510d 1dd0e6b9 19c8d200 ae13aa37
aed1dae8 f06cd971
    9db5a13e ef9fab17 a66f1745 973ed31b 80cc10fc 27e7159b
e2ada507 000d0161
    56c3c3b5 dddb1010 2db93953 7bea683e 5d15e0e0 ec616cf1
d16bd4af e744c3ec
    ca686421 21ec21aa e05121c5 6dcc6c77 68638f87 2cee1f57
015fc2a4 bd5a4f36
    ccfe7a2e 78c20b1b f0e5f5fa 01b82783 2fbf0748 1df74d18
113c52db 58a27b02
    03010001 a3633061 300f0603 551d1301 01ff0405 30030101
ff300e06 03551d0f
    0101ff04 04030201 86301f06 03551d23 04183016 80142836
731ddd16 be77e390
    7c3543cb 6fcfbeba 47d7301d 0603551d 0e041604 14283673
1ddd16be 77e3907c
    3543cb6f cfbeba47 d7300d06 092a8648 86f70d01 01050500
03820101 001f3f41
    c292da00 7b7a5435 387b60fd 169ed55d 5a8634f9 1981a26b
950e84d2 fcc1608f
    4c198baa 76c7e40a 36922ed3 ef561037 a1ed3dee 49c9e7b1
bf465d4a 31c45abc
    42da8ed6 88721355 6e10c417 71a14481 6f379edf 7052500f
fbdd0142 92ec9dc2
    f82927e6 2cb3de0e 948f690b 9aa2d831 88c27c0c bbd11fa1
21a08fec 22da19d3
    ded3c076 76540ade d9e996ab 7dc26518 ea1b999c fe8d54c9
a26d455f 678030ac
    012ec360 fcab84d3 9271d88c e46e3def 45d6fa34 293d6bc6
89e014cc 740cc939
    be773a31 640b7dec 8f5b32f2 db785864 b89a68ae bb5d8bc5
33cce6b9 b16a63ca
    2d541dc2 79ed0483 3f9afc1c 3060aa60 0ecd97c5 6f1b0a1a
9af9e717 36
  quit
crypto ca certificate chain VPN-ASA5525X-FO-Trustpoint
 certificate 1a6dbd50
    3082037f 30820267 a0030201 0202041a 6dbd5030 0d06092a
864886f7 0d010105
    0500304f 31243022 06035504 03131b56 504e2d41 53413535
3235582d 464f2e63
    6973636f 2e6c6f63 616c3127 30250609 2a864886 f70d0109
02161856 504e2d41
    53413535 3235582e 63697363 6f2e6c6f 63616c30 1e170d31
32313231 37323234
```

```
    3535355a 170d3232 31323135 32323435 35355a30 4f312430 22060355 0403131b
    56504e2d 41534135 35323558 2d464f2e 63697363 6f2e6c6f 63616c31 27302506
    092a8648 86f70d01 09021618 56504e2d 41534135 35323558 2e636973 636f2e6c
    6f63616c 30820122 300d0609 2a864886 f70d0101 01050003 82010f00 3082010a
    02820101 00beb40a 3916c07f 0a5aca49 459f1ff0 fde118fd d1d31549 f412591e
    a3dad0fd c925e590 bd9fddb0 a47b488c fbcc0a82 45de2c1b ba6cb63c 12d49378
    e952c314 6de55cba a719c6cb c0718ad5 b3c1fa3f 9aaaf382 b2568518 fa3b0f46
    74d9c973 ec60b78a 92a9ccae ca0abf55 510d1dd0 e6b919c8 d200ae13 aa37aed1
    dae8f06c d9719db5 a13eef9f ab17a66f 1745973e d31b80cc 10fc27e7 159be2ad
    a507000d 016156c3 c3b5dddb 10102db9 39537bea 683e5d15 e0e0ec61 6cf1d16b
    d4afe744 c3ecca68 642121ec 21aae051 21c56dcc 6c776863 8f872cee 1f57015f
    c2a4bd5a 4f36ccfe 7a2e78c2 0b1bf0e5 f5fa01b8 27832fbf 07481df7 4d18113c
    52db58a2 7b020301 0001a363 3061300f 0603551d 130101ff 04053003 0101ff30
    0e060355 1d0f0101 ff040403 02018630 1f060355 1d230418 30168014 2836731d
    dd16be77 e3907c35 43cb6fcf beba47d7 301d0603 551d0e04 16041428 36731ddd
    16be77e3 907c3543 cb6fcfbe ba47d730 0d06092a 864886f7 0d010105 05000382
    0101001f 5a3e2fcc c384ca51 7519a55b 15d16c77 9a23ed00 72fba6fa ce0251dc
    274e59e8 664c0119 c42ae064 1956a610 a9f08787 3df62168 cdd9ac8a 968f69d3
    ebd48f27 c1ede1f6 63169317 bf070a22 f321d4b9 b6157593 59cb71cb bf8492fe
    ff8f8072 defb92eb 5d50b97c 24fd0c60 cd6ad778 afa18e73 b824b132 11970758
    e0a8b8f9 75b0a458 90bdefdb 324a6eb0 547a703c 0eb1d205 26f894db 02632a6d
    5b6c534b 77344868 10b4c4c3 811c073e e0193ddf bfcb3e0d 8eae3e4c 10d0a269
    6f500e65 fbf99d3b 5f06061f 241a1679 4fb0cb00 f07a01da 930a4636 959afbfd
    27e01065 d3730911 08eb3c6b c7494ff5 df273d77 adc52e75 79dd62a6 67d77785
    e88d11
  quit
crypto ikev1 enable outside-16
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
!
track 1 rtr 16 reachability
telnet timeout 5
ssh 10.4.48.0 255.255.255.0 inside
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 encryption aes256-sha1 aes128-sha1 3des-sha1
ssl trust-point VPN-ASA5525X-FO-Trustpoint outside-17
ssl trust-point VPN-ASA5525X-Trustpoint outside-16
webvpn
 enable outside-16
 enable outside-17
 anyconnect-essentials
 anyconnect image disk0:/anyconnect-win-3.1.00495-k9.pkg 1
 anyconnect image disk0:/anyconnect-macosx-i386-3.1.00495-k9.pkg 
2
 anyconnect image disk0:/anyconnect-linux-3.1.00495-k9.pkg 3
 anyconnect profiles RA-Profile disk0:/ra-profile.xml
 anyconnect profiles RA-WebSecurityProfile disk0:/ra-
websecurityprofile.wsp
 anyconnect profiles RA-WebSecurityProfile.wso disk0:/ra-
websecurityprofile.wso
 anyconnect enable
 tunnel-group-list enable
group-policy 5505Group internal
group-policy 5505Group attributes
 vpn-tunnel-protocol ikev1
 password-storage disable
 split-tunnel-policy tunnelall
 secure-unit-authentication enable
 nem enable
group-policy GroupPolicy_Employee internal
group-policy GroupPolicy_Employee attributes
 banner value Group "vpn-employee" allows for unrestricted access 
with a tunnel all policy.
 vpn-filter value Block_Trusted_Host
 split-tunnel-policy excludespecified
 split-tunnel-network-list value CWS_Tower_Exclude
 webvpn
  anyconnect modules value websecurity
  anyconnect profiles value RA-Profile type user
  anyconnect profiles value RA-WebSecurityProfile.wso type 
websecurity
  always-on-vpn profile-setting
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
group-policy GroupPolicy_Partner internal
group-policy GroupPolicy_Partner attributes
 banner value Group "vpn-partner" allows for access control list 
(ACL) restricted access with a tunnel all policy.
 vpn-filter value RA_PartnerACL
 webvpn
  anyconnect profiles value RA-Profile type user
group-policy GroupPolicy_Administrator internal
group-policy GroupPolicy_Administrator attributes
 banner value Group "vpn-administrator" allows for unrestricted 
access with a split tunnel policy.
 split-tunnel-policy tunnelspecified
 split-tunnel-network-list value RA_SplitTunnelACL
 webvpn
  anyconnect profiles value RA-Profile type user
username admin password 7KKG/zg/Wo8c.YfN 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
 password-management
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
!
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
: end
```

Notes

# Appendix C: Changes

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

- We updated the Cisco ASA firewall software to 9.0(1) with ASDM 7.0(2)
- We updated the AnyConnect Secure Mobility Client software for Windows, Mac OS X, and Linux to 3.1.00495
- We updated the AnyConnect Secure Mobility Client software for iOS to 3.0.09097
- We updated the AnyConnect Secure Mobility Client software for Android to 3.0.09093
- We updated various screenshots to reflect the new software versions.
- We made minor updates to improve the usability of the guide.
- We replaced the Microsoft ISA server with the Microsoft Forefront Threat Management Gateway.

Notes

## Feedback

Please use the feedback form to send comments and suggestions about this guide.

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