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BYOD—Remote Mobile Access Deployment Guide

SMART BUSINESS ARCHITECTURE

August 2012 Series

Preface

Who Should Read This Guide

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

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

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

Release Series

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

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

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

month year Series

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

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

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

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.

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What's In This SBA Guide

Cisco SBA Solutions

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

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

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

Route to Success

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

About This Guide

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

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

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

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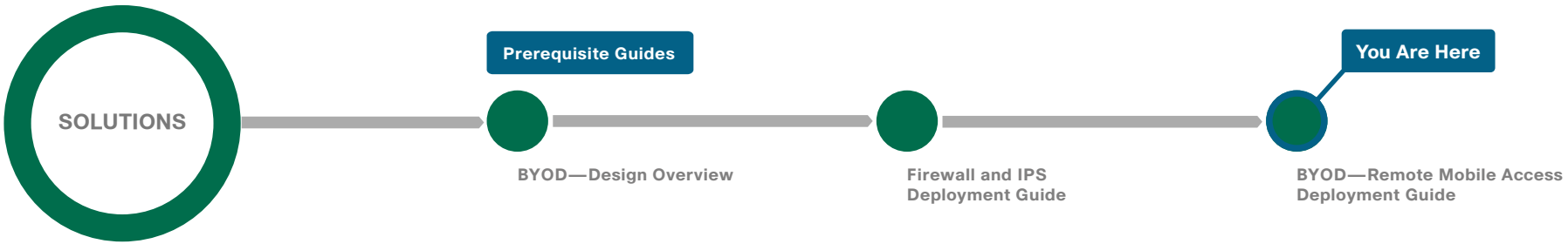


Introduction

Note

This guide is based on the *Cisco SBA—Borderless Networks Secure 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

One of the most profound advances in modern networks is the degree of mobility those networks support. Users can move around wirelessly inside the campus and enjoy the same degree of connectivity as if they were plugged in using cables in their offices. Users can leave their primary networks completely and work from a home-office environment that offers the same connectivity and user experience as they would get in their offices. Users also have the option of being truly mobile and connecting from any place that offers Internet access. With smartphones and tablets,

this mobility now commonly includes connecting while travelling down the highway or on a train. This guide describes business-use cases related to the truly mobile users who use a laptop, smartphone, or tablet device to connect through infrastructure that is not provided by their organizations. The guide does not cover use cases related to campus wireless access or home teleworker solutions.

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

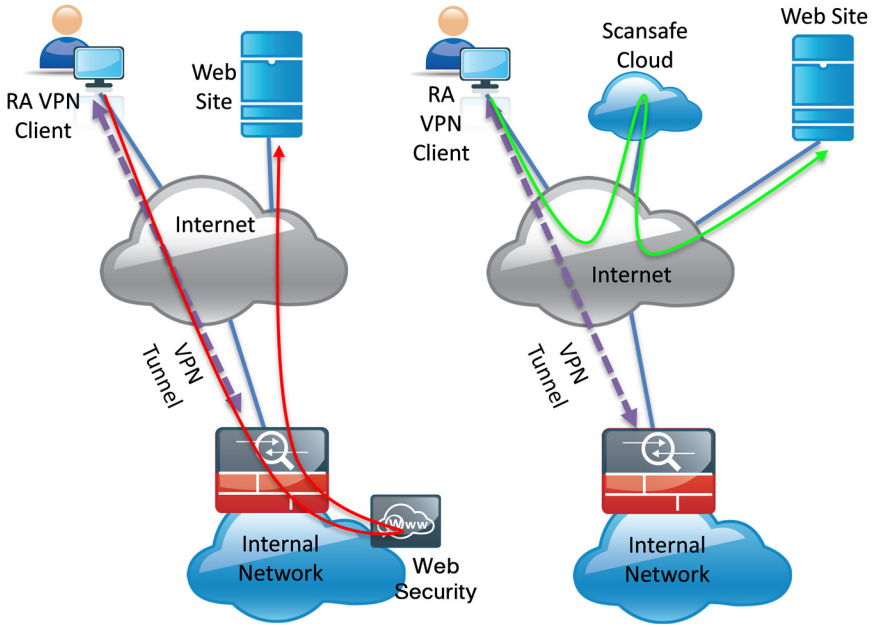
The Cisco Smart Business Architecture (SBA) Internet edge design provides the basic framework for the enhancements and additions that will be discussed in this guide. A prerequisite for using this deployment guide is that you must have already followed the guidance in the *Remote Access VPN Deployment 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 3.0 client is the ability to interface with the Cisco ScanSafe Cloud Web Security service. This feature gives the Cisco AnyConnect client the ability to let Internet web traffic go out through a Cisco ScanSafe proxy directly to the destination without forcing it through the organization's headend. Without Cisco ScanSafe, 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 ScanSafe, the connection can be proxied through the Cisco ScanSafe cloud and never has to traverse the VPN tunnel.

Figure 1 - Traffic flow through VPN tunnel and Cisco ScanSafe Cloud



Other capabilities for the Cisco AnyConnect 3.0 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 2.5 client, which allows 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 3.0 client that is required to activate Cisco ScanSafe Web Security, Always On, and other features. It also covers interaction with the Cisco ScanSafe Cloud management tool, ScanCenter. Last, the document covers configuration of Cisco Adaptive Security Appliance (ASA) to support mobile devices like smartphones and tablets and the configuration of the Cisco AnyConnect client for those devices that is required to let them connect to Cisco ASA.

Deployment Details

The first part of the deployment details describes how to configure the components to enable Cisco ScanSafe Cloud Web Security service for Cisco AnyConnect 3.0 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 ScanSafe security configuration
2. Configure Beacon Server on LAN
3. Configure ASA VPN policy for web security
4. Configure ASA AnyConnect group policies
5. Test the current configuration
6. Test Beacon Server functionality
7. Configure Trusted Network Detection
8. Test Trusted Network Detection
9. Install the certificate on the client
10. Enable Always On
11. Test the Always On setting

Procedure 1 Enable ScanSafe security configuration

This guide assumes you have purchased a Cisco ScanSafe license and created a Cisco ScanSafe account that allows a user to log in and administer the account.

It also assumes that you have different groups built in Active Directory (AD) to allow differentiation based on those groups.

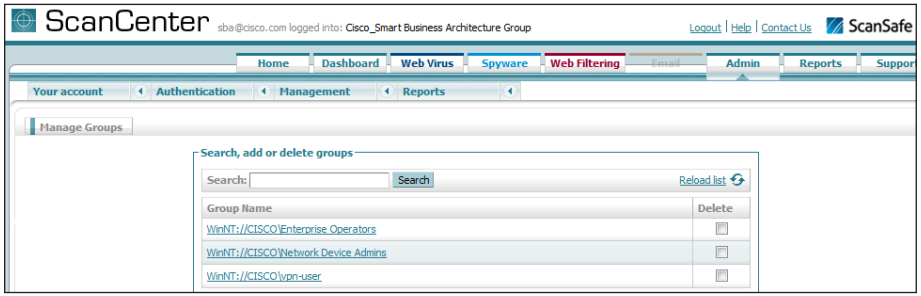
Step 1: In the Cisco ScanSafe ScanCenter Portal, after logging in with administrator rights, navigate to the following location:

https://scancenter.scansafe.com

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

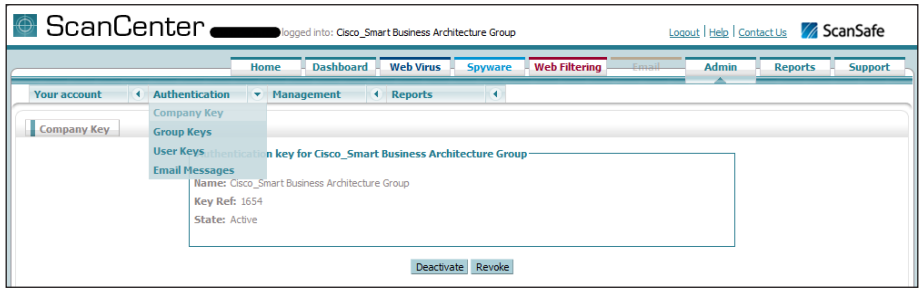
Tech Tip

Policy can differ based on organizational requirements. Windows Active Directory (AD) groups are the default method of applying policy in Cisco ScanSafe. Administrators will define one or more AD groups in the ScanCenter tool to which users belong. Policy can then be applied to one of the defined groups or the default group, which consists of users not in one of the defined groups.



A company-wide proxy authentication license key is generated for use in the Cisco ASA VPN configuration.

Step 3: Navigate to **Authentication > Company Key.**



Step 4: Click **Create Key**. Cisco ScanSafe generates a key that it sends to an email address of your choosing.

Write this key down 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 5: Navigate to **Web Filtering > Management > Filters**.

Step 6: Edit the filter called **default** to reference the Pornography, Sports and Recreation, and Gambling categories, and then click **Save**.

Step 7: Create a new filter called **VPN_Users** that references the Sports and Recreation category, and then click **Save**.

Step 8: Create a filter called **Admins** that references Sports, and then click **Save**.

Step 9: Navigate to **Management > Policy**.

Step 10: Click **Default**, change the rule action to **Allow**, and then click **Save.**

Step 11: Create a rule called **All_Users** with a rule action of **Block**. Assign the filter **default** to this rule. This blocks all access to porn, gambling, or sports sites.

Step 12: Create a rule called **VPN_Users** with a rule action of **WARN**.

Step 13: Under **Define Group**, select the **vpn-user** domain group.

Step 14: Under **Define Filters**, select **VPN_Users**, and then click **Create Rule.**

Step 15: Create a rule called **Admins** with a rule action of **Allow**.

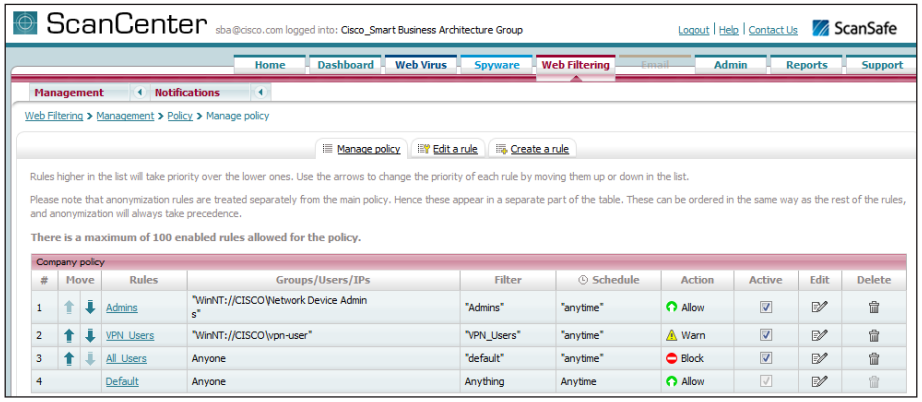
Step 16: Under **Define Group**, select the **Network Device Admin** domain group.

Step 17: Under **Define Filters**, select **Admins**, and then click **Create Rule.**

Step 18: Click **Active** on all rules, and then click **Apply Changes.**

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

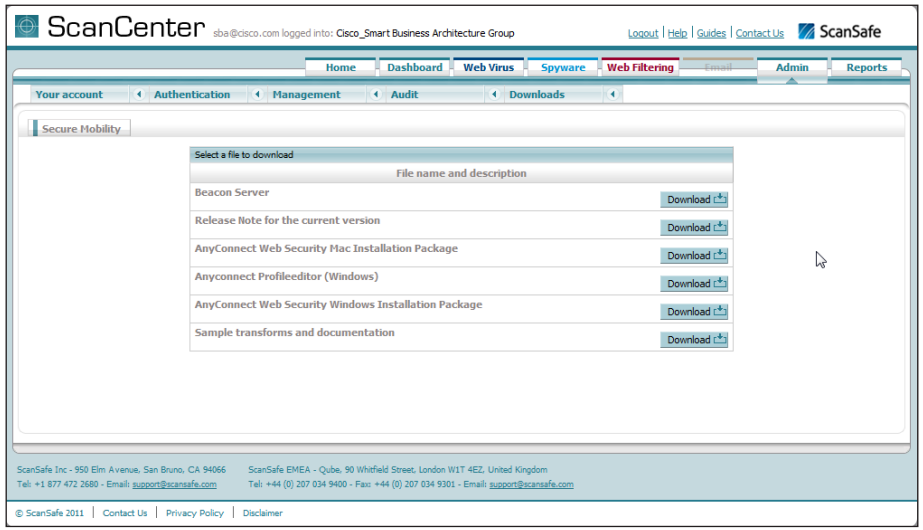
1. Admins (which allows anyone matching this rule access to sports sites)
2. VPN_Users (which allows this group access to sports sites but with a warning)
3. All_Users (which blocks sports, gambling, and pornography sites)
4. Default (which permits all other sites to all groups)



Procedure 2 Configure Beacon Server on LAN

In this procedure, you install and configure the Beacon Server software on a server in the inside network. This server should be accessible from anywhere in the network. Access to this server will tell the Cisco AnyConnect client that it currently resides inside the network and that the Web Security module does not need to run. You will configure Beacon Server to not accept connections from hosts with specific IP addresses where you wish the Web Security module to always run (for example, when the host is connected from outside the network through RA VPN and is assigned an address from the RA VPN pool).

Step 1: On an internal server that is reachable from anywhere in the organization, in the Cisco ScanSafe ScanCenter, navigate to **Admin** > **Downloads** > **Secure Mobility**.



Step 2: Select **Beacon Server**, and then click **Download**.

Step 3: Expand the downloaded package by using a .zip program. Inside the package, you will find OpenSSL.

Step 4: In the folder containing the openssl.exe program, from a command prompt on the Windows server, type the following.

```
openssl genrsa -out DOLprv.pem 1024
openssl rsa -in DOLprv.pem -out DOLpub.pem -outform PEM
-pubout
```

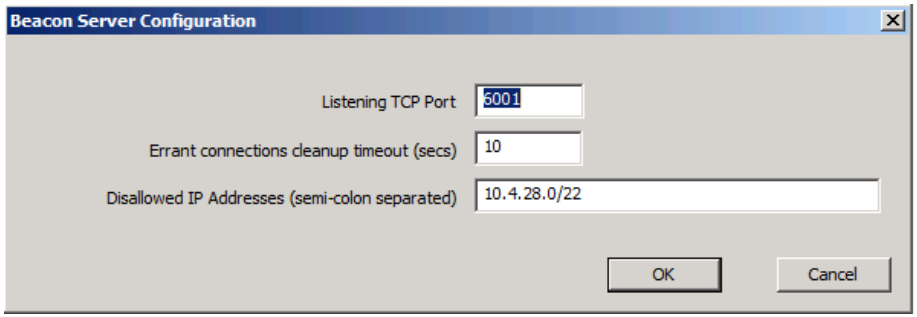
Step 5: Copy the DOLprv.pem file to the folder containing the BeaconServer.msi file.

Step 6: Copy the DOLpub.pem file to the device running Cisco Adaptive Security Device Manager (ASDM).

Step 7: In the package, in the Beacon Server directory, double-click the Beacon Server.msi file.

Step 8: Right-click the Windows Taskbar icon, and set preferences for Beacon Server.

Step 9: In the Disallowed IP Addresses box, enter the addresses used for remote access VPN.



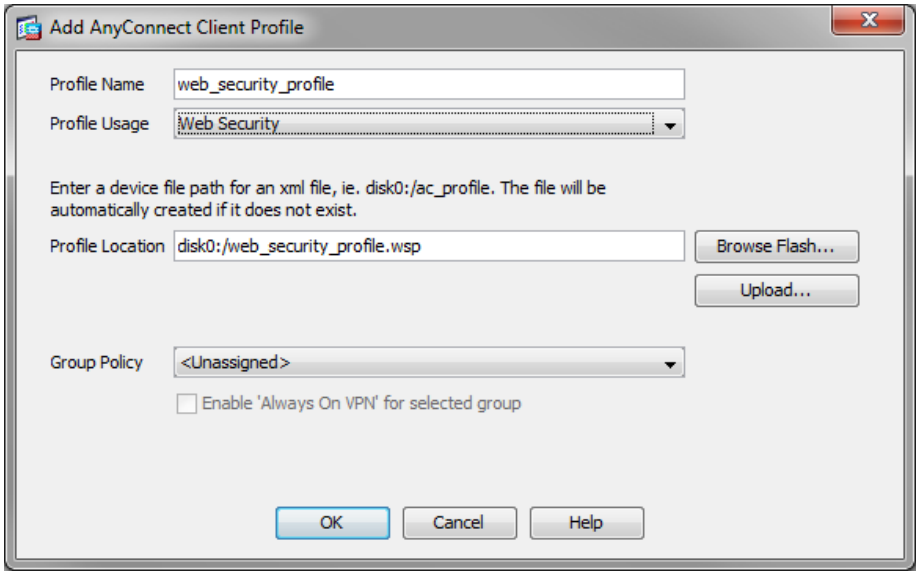
Procedure 3 Configure ASA VPN policy for web security

Step 1: Open ASDM connected to the RA VPN firewall.

Step 2: In **Configuration > Remote Access VPN > Network (Client) Access > AnyConnect Client Profiles**, select **Add**.

Step 3: On the **Add AnyConnect Client Profile** dialog box, in the Profile Name box, enter **web_security_profile.**

Step 4: In the Profile Usage list, choose **Web Security**, and then click **OK.**



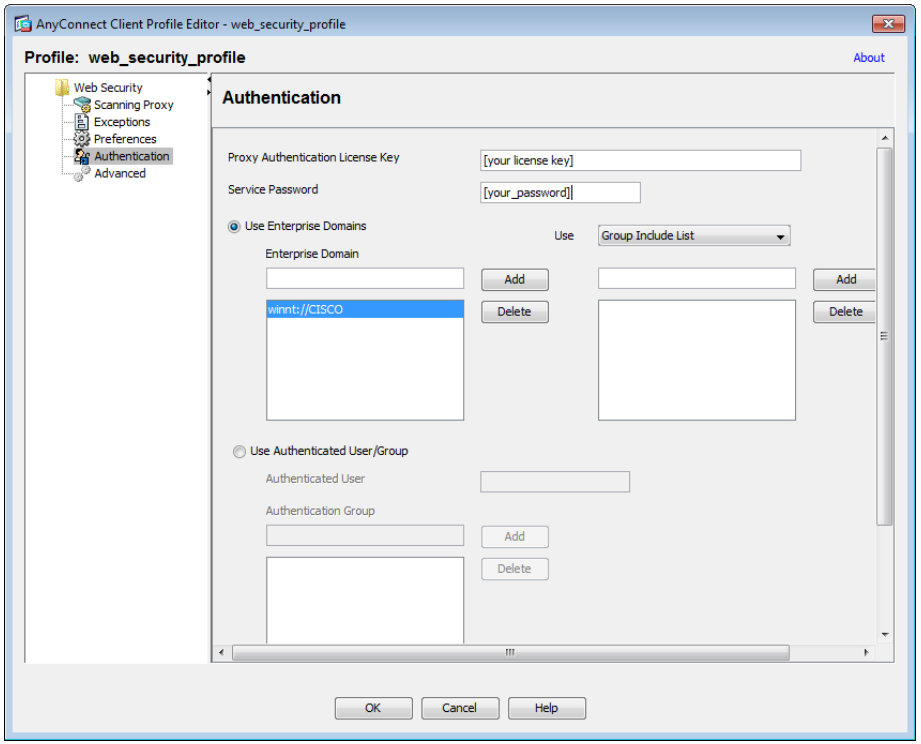
Step 5: Select the newly created web_security_profile profile, and then click **Edit**.

Step 6: In the Scanning Proxy section, write down the IP addresses of the different proxies. You can also use the Default Scanning Proxy drop-down list to choose a default proxy location that best matches your location.

Step 7: Under Authentication, in the Proxy Authentication License Key box, enter the key for your company-wide group.

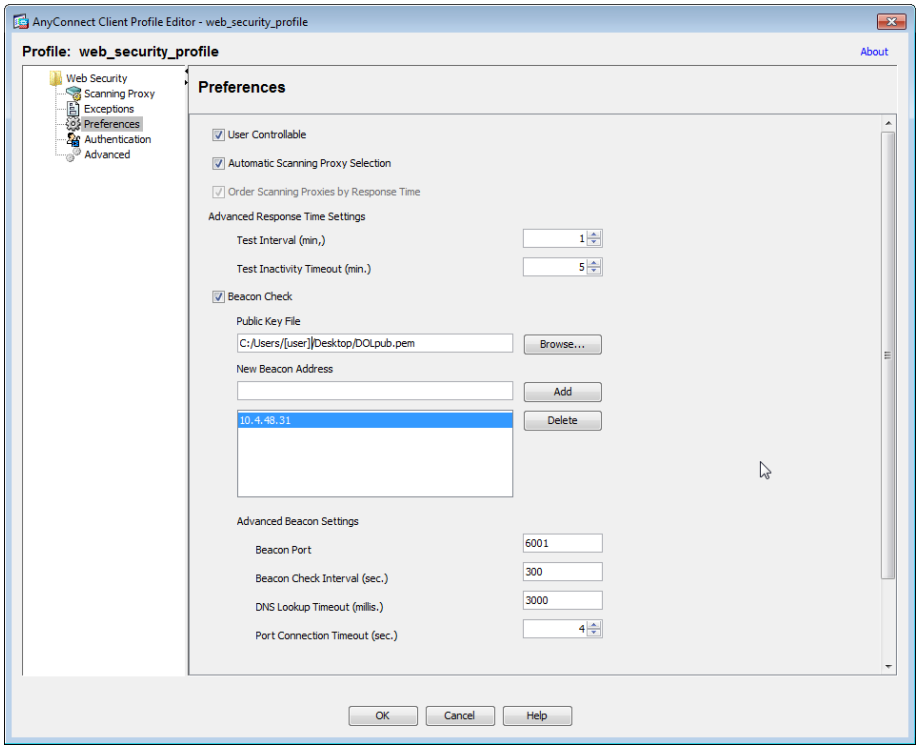
Step 8: In the Service Password box, enter a new password that will be associated with the Web Security service when the service is running on the end host.

Step 9: In the Use Enterprise Domains box, enter the domain information to which you wish to apply policy and click **Add**.



Step 10: From the Web Security menu, choose **Preferences**, and then do the following:

1. If your organization allows users to control use of web security functions, select **User Controllable**.
2. Select **Automatic Scanning Proxy Selection**.
3. Select **Beacon Check**.
4. Click **Browse** for the **Public Key File**, and then navigate to the public key file (DOLpub.pem) you copied in "Configure Beacon Server on LAN" earlier in this guide .
5. In the **New Beacon Address** field, enter the address of the server on which the Beacon Server software was installed.



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

Procedure 4 Configure ASA AnyConnect group policies

Step 1: In ASDM, navigate to **Configuration** > **Remote Access VPN** > **Network Client Access** > **Group Policies**, select the **GroupPolicy_AnyConnect** 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**.

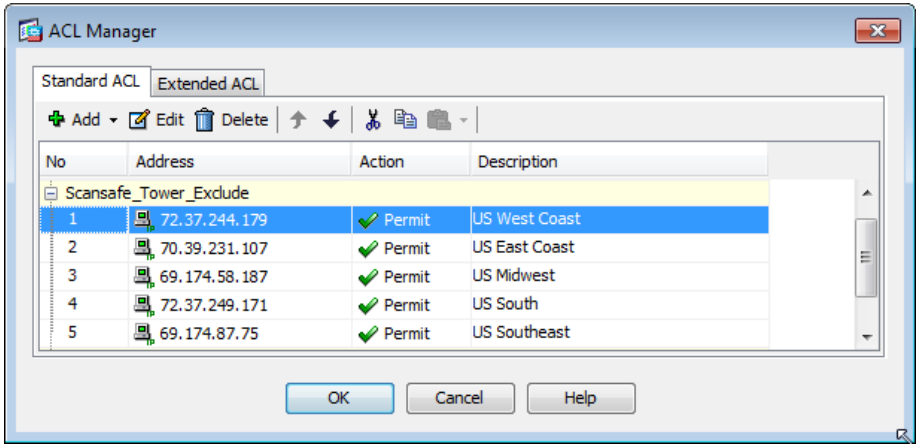
Step 4: Next to **Network List**, clear the **Inherit check box,** and then click **Manage**.

Step 5: In **ACL Manager**, click **Add,** and then select **Add ACL**. Use Scansafe_Tower_Exclude for the ACL name.

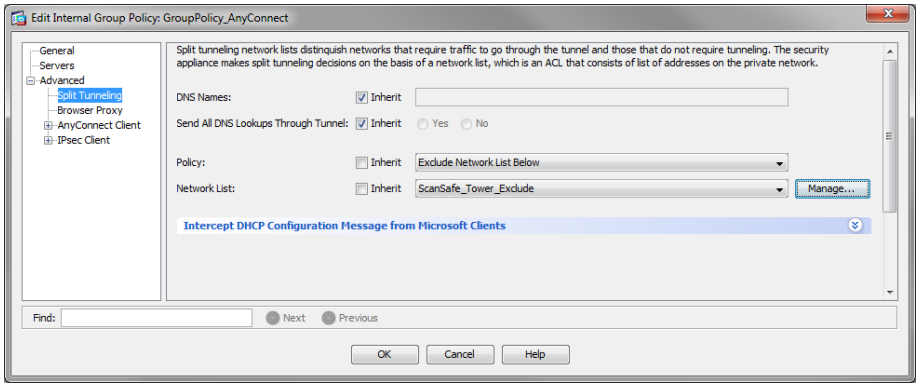
Step 6: Select the ACL you just created, and then click **Add** > **Add ACE**.

Step 7: For the address, add each Cisco ScanSafe scanning proxy address from Step 6 of "Configure ASA VPN policy for web security" earlier in this guide into its own access control entry (ACE), and then click **OK**.

This step configures the Cisco AnyConnect client to allow split tunneled traffic destined to each of the Cisco ScanSafe proxy addresses. All other traffic is sent down the VPN tunnel to the main site.



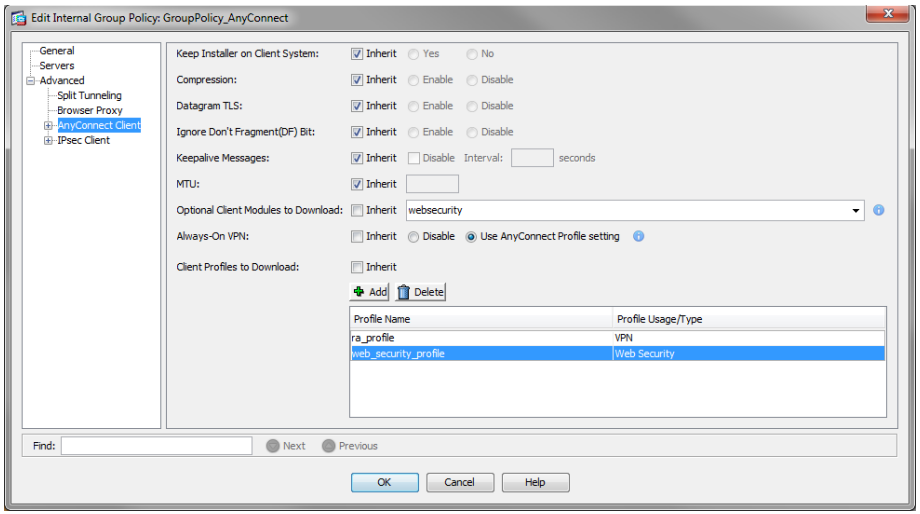
Step 8: On the **Edit Internal Group Policy** dialog box, navigate to **Advanced > Split Tunneling,** and then, in Network List, choose **Scansafe_Tower_Exclude**.



Step 9: 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 10: In the Always-On VPN section, clear the **Inherit** check box, and then select **Use AnyConnect Profile setting**.

Step 11: In the Client Profiles to Download section, click **Add**, select the **web_security_profile** for Profile Name and web security for Profile Usage, and then click **OK**.

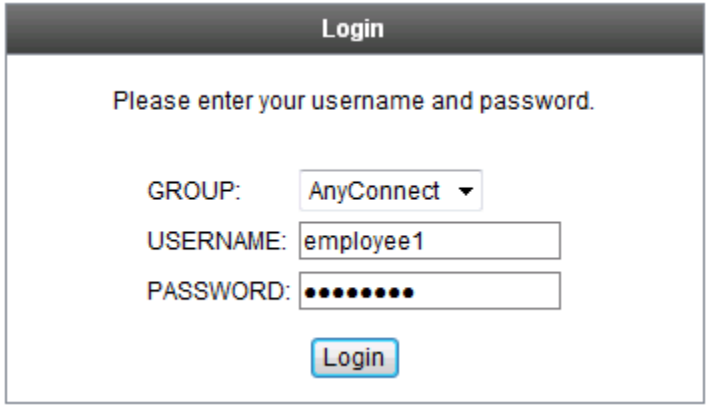


Step 12: Click **OK**, and then **Apply**.

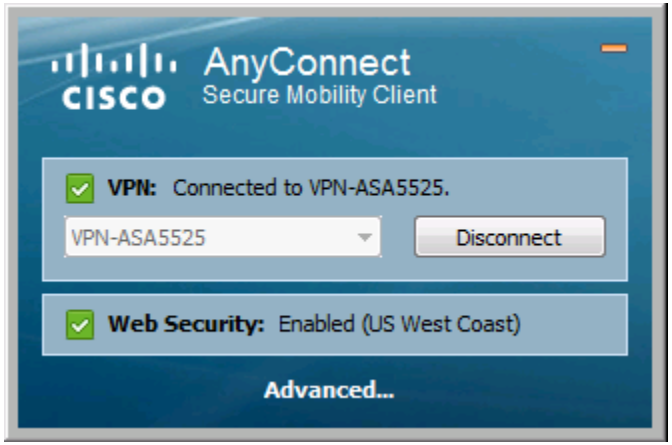
Procedure 5 Test the current configuration

Step 1: Open a browser on a client, and then navigate to the following outside IP address of the RA VPN ASA: https://ie-asa5545.cisco.local

Step 2: Log in using a known username and password that is part of the vpn-user group in Windows AD. If Cisco AnyConnect 3.0 is not installed, the client downloads and installs it.

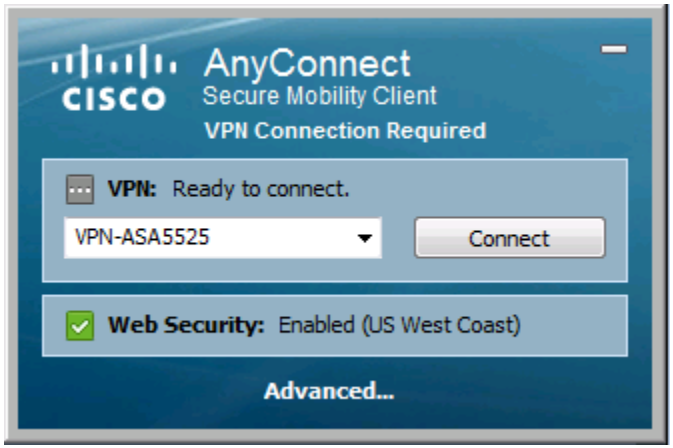


Step 3: When connected, click the Cisco AnyConnect taskbar icon. This displays the client information panel.



Step 4: Verify there is a green check box next to both VPN and Web Security.

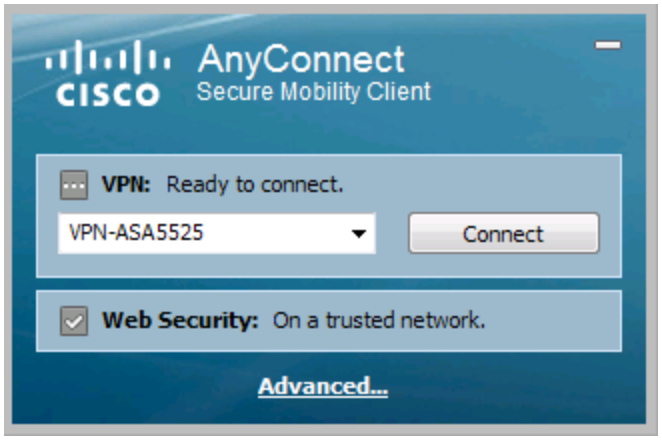
Step 5: Click **Disconnect**, and then verify that Web Security remains enabled.



Procedure 6 Test Beacon Server functionality

Step 1: Select 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 getting a DHCP address that is not part of the address space defined in the Beacon Server configuration. The client can now make a connection to Beacon Server. The ability to connect to Beacon Server successfully tells the Cisco AnyConnect client that the client is inside 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.



Procedure 7 Configure Trusted Network Detection

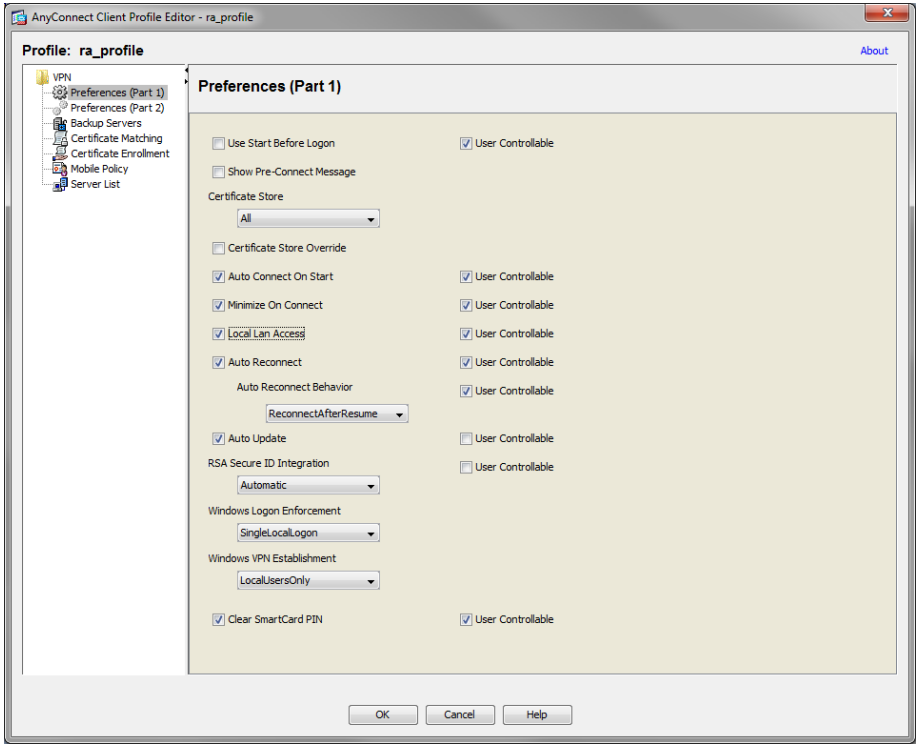
The Always On setting allows an administrator to enforce that if a laptop is outside the network and has connectivity, a VPN connection to the headend occurs and all connections go through the main site, where security policy can be applied. If the device cannot connect to the VPN, then no connections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

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. 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**.

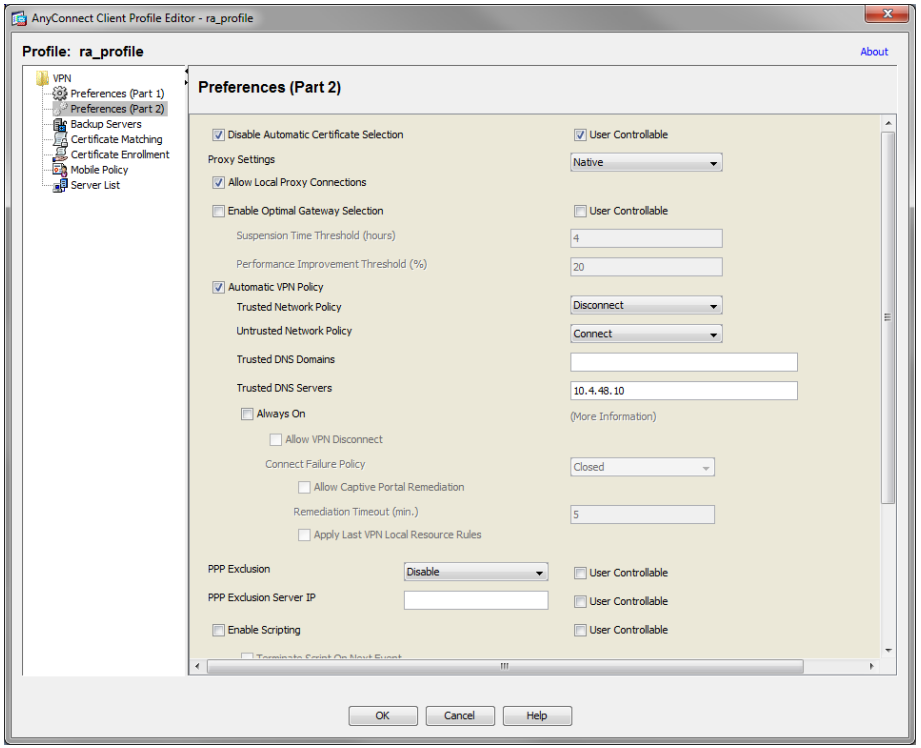
Step 2: In **Preferences (Part 1)**, select **Auto Connect On Start** and **Auto Reconnect**, and, if policy permits, select **User Controllable**. In the Auto Reconnect Behavior list, ensure **ReconnectAfterResume** is chosen.



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.



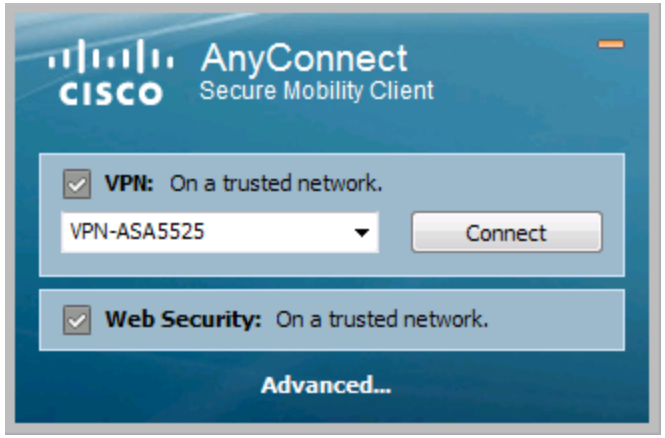
Step 6: Click **OK,** and then click **Apply**.

Procedure 8 Test Trusted Network Detection

Test the configuration 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.

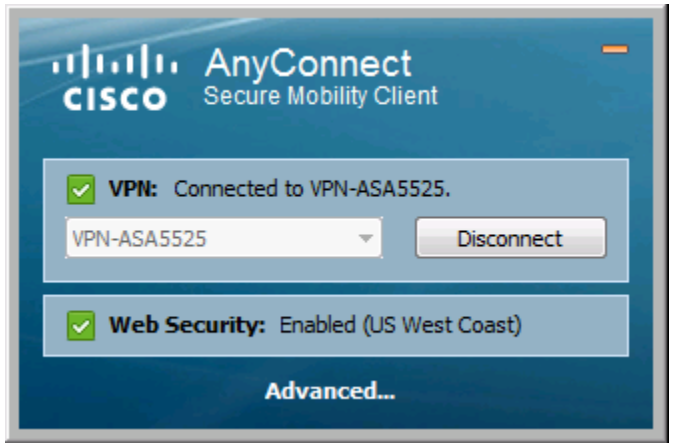
Step 1: On a laptop outside the network, connect the VPN to Cisco ASA.

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).



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.



Procedure 9 Install the 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.

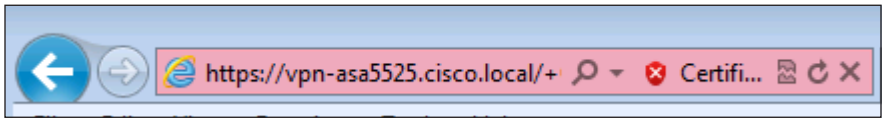
Publicly signed certificates do not have these issues and are easier to use in practice.

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-asa5525.cisco.local

The first page reports a problem with the certificate.

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

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

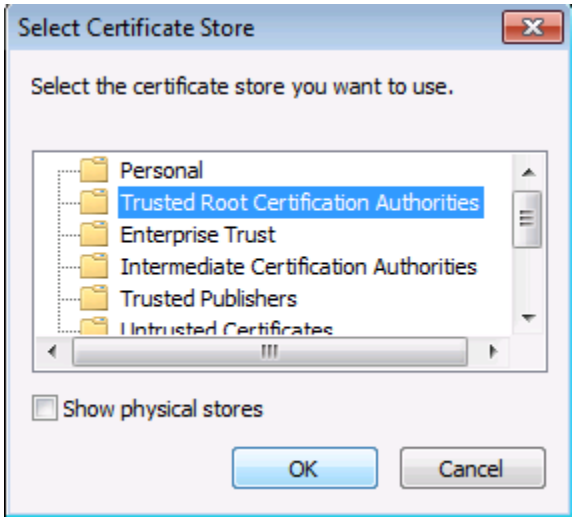


Step 4: Select **View Certificate**.

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

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**.



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

Step 11: Close and relaunch the browser, and then navigate to the following location:
https://vpn-asa5525.cisco.local

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

Procedure 10 Enable Always On

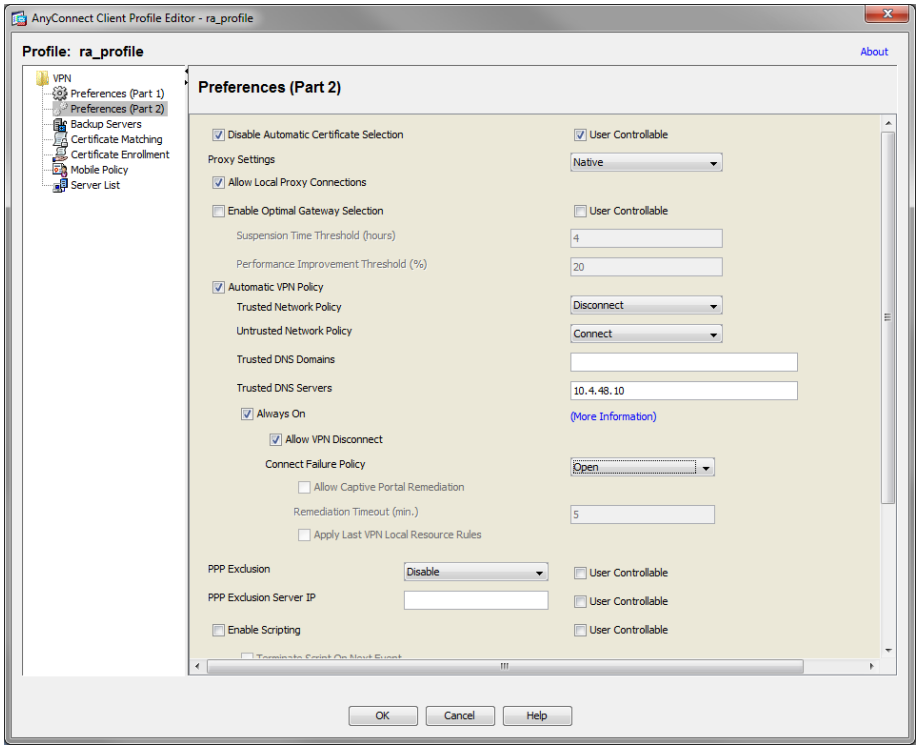
Tech Tip

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 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**.

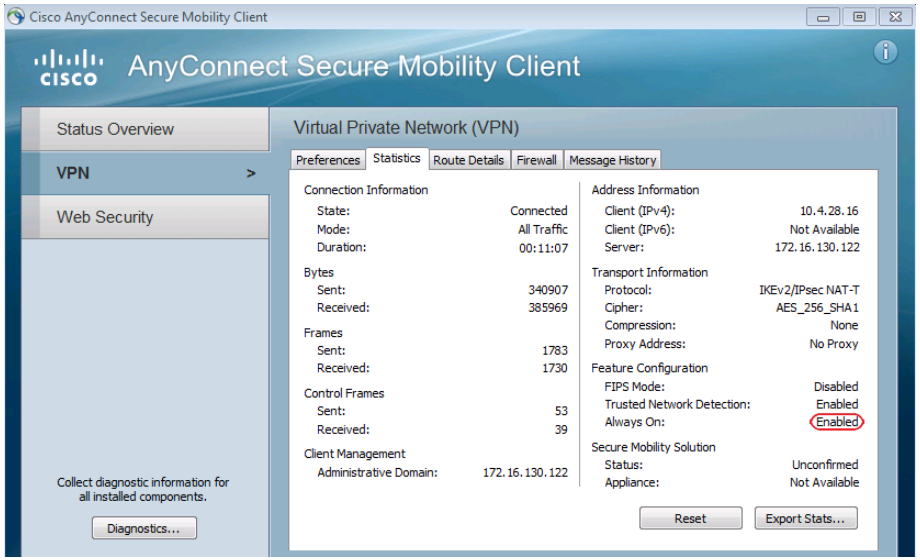


Step 4: Click **OK,** and then click **Apply**.

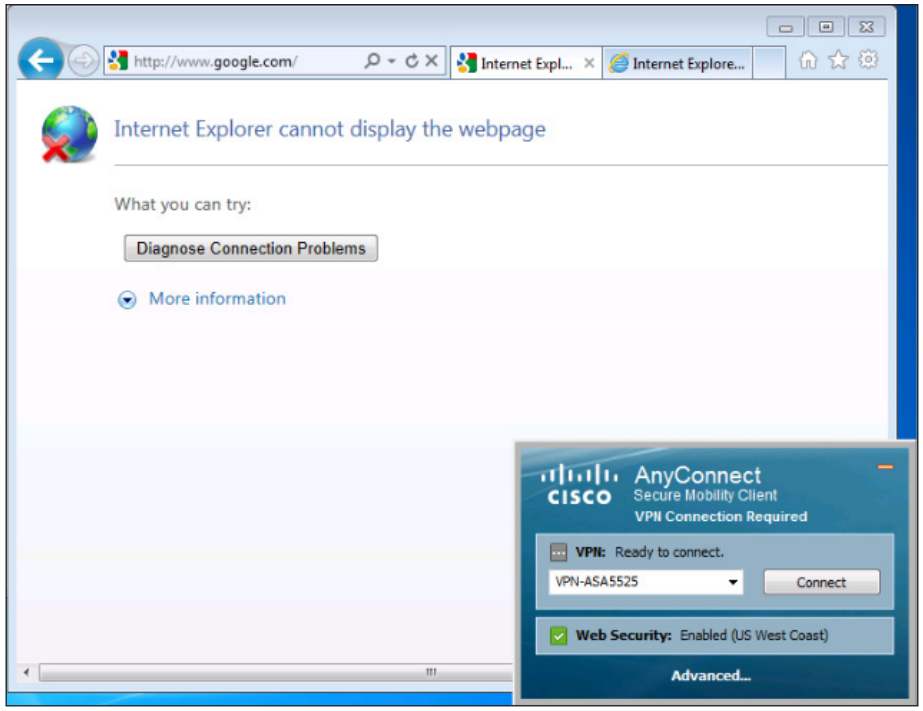
Procedure 11 Test the Always On setting

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**.



Step 3: With the client disconnected, check that **VPN Connection Required** appears on the Cisco AnyConnect screen. Browse to a known good website. It should fail because no access is allowed without the VPN tunnel being up.



Process

Configuring Access for Mobile Devices: ActiveSync

1. Configure the DMZ firewall
2. Configure ActiveSync access on Cisco ASA
3. 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 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 Internet Security and Acceleration (ISA) 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.

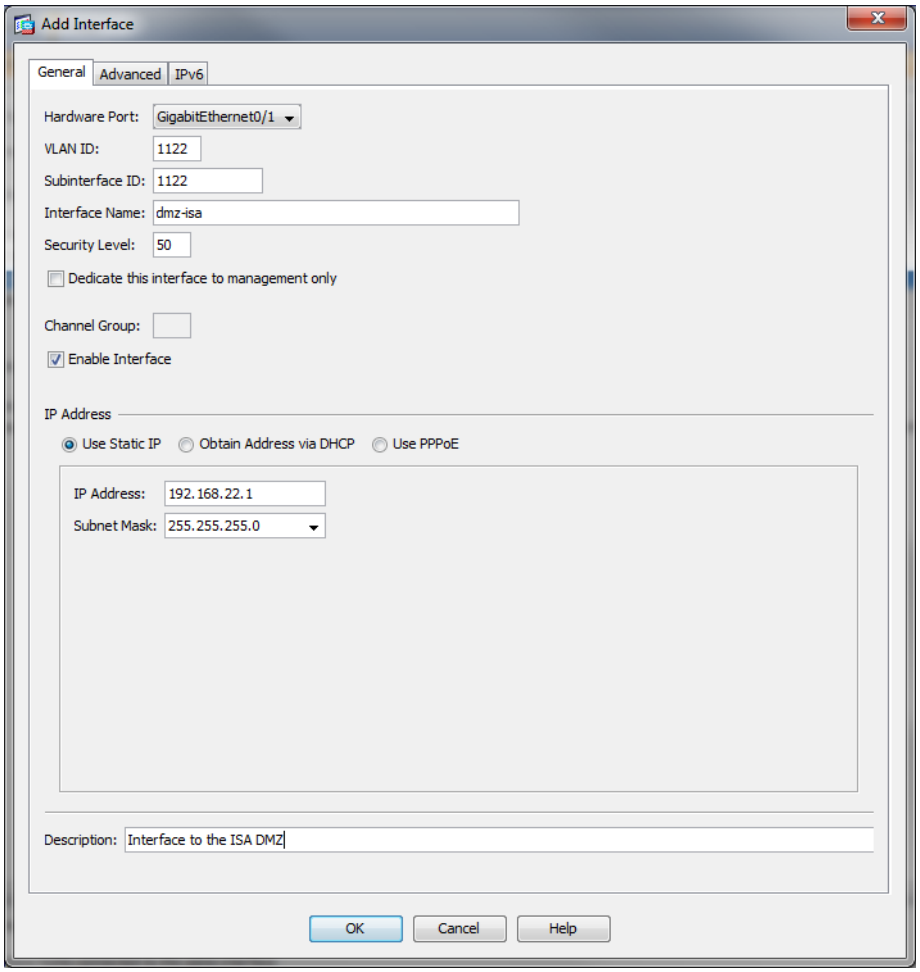
The steps in this guide assume that the setup and configuration of ISA, Exchange, and ActiveSync is complete and functional. This process discusses the configuration of Cisco ASA to support such a deployment as well as additional security steps to help improve the overall security of such a deployment.

Procedure 1 Configure the DMZ firewall

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

Step 1: Open ASDM, and then navigate to **Configuration > Device Setup > Interfaces.**

Step 2: Click **Add** to create a new DMZ interface, and then enter the required data.



Step 3: Click **OK**, and then click **Apply**.

Step 4: Navigate to **Configuration** > **Device Management** > **High Availability** > **Failover**.

Step 5: Edit the dmz-isa line to include the standby IP address for the interface: 192.168.22.2.

Step 6: 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

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

Procedure 2 Configure ActiveSync access on Cisco ASA

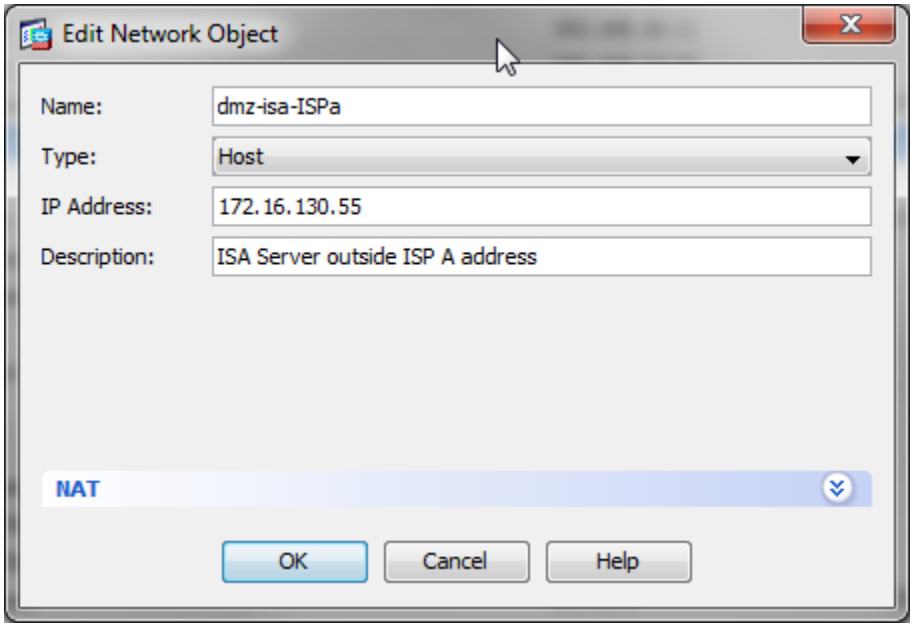
To allow ActiveSync to work through an external firewall, two things must be done. The first is building a Network Address Translation (NAT) translation for the ISA server to the outside network. The second is allowing the needed connections to traverse the firewall. Allowing the connections to traverse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

This configuration is performed on the Cisco ASA firewall that controls access to the network and contains the DMZ where the ISA server resides.

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

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

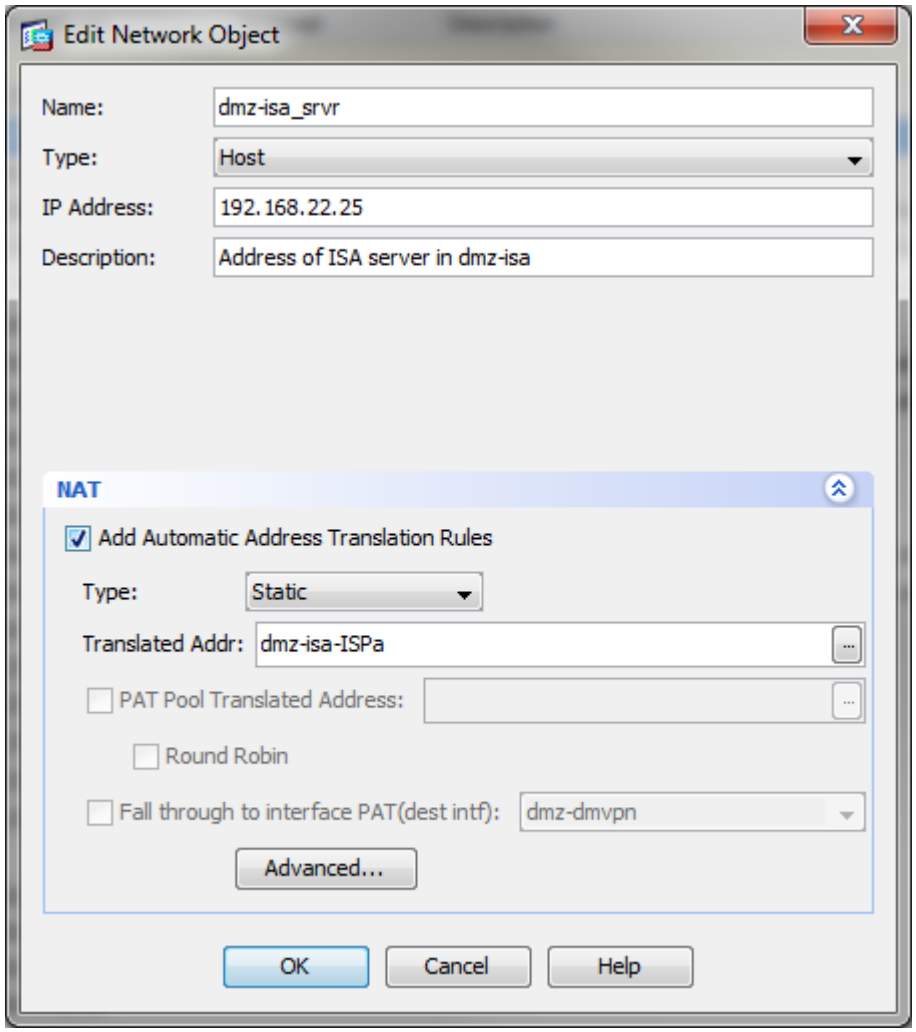
Step 3: On the **Add Network Object** dialog box, enter a name for this object for the ISA server, enter the IP address of the ISA server on the outside ISP, and then click **OK**.



Step 4: Navigate to **Configuration > Firewall > NAT Rules**, and then click **Add Network Object NAT rule.** This creates the NAT object that ties the external address to the actual address of the ISA server in the DMZ.

Step 5: Enter the object name to be used to reference the ISA server in the Cisco ASA configuration, and then enter its actual address.

Step 6: Under NAT, select **Add Automatic Address Translation Rules**, in Type, choose **Static**, in Translated Addr, choose the ISA server network object that references the public address of the ISA server created in Step 3, and then click **OK.**

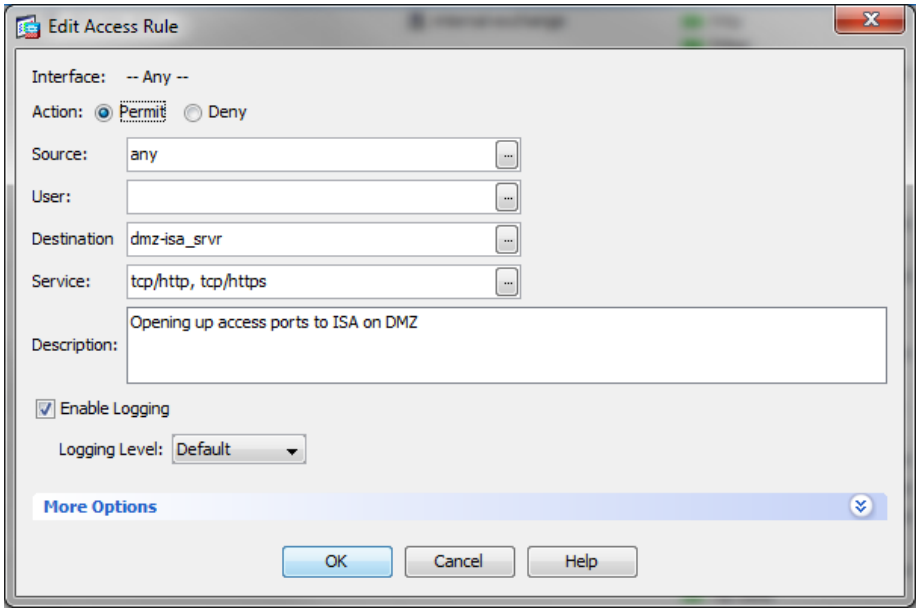


Step 7: Navigate to **Configuration > Firewall > Access Rules**, and then click **Add > Add Access Rule.**

Step 8: In the Edit Access Rule window, enter the following information:

- Interface—Any
- Action—Permit
- Source—Any
- Destination—dmz-isa_srvr
- Service—tcp/http and tcp/https

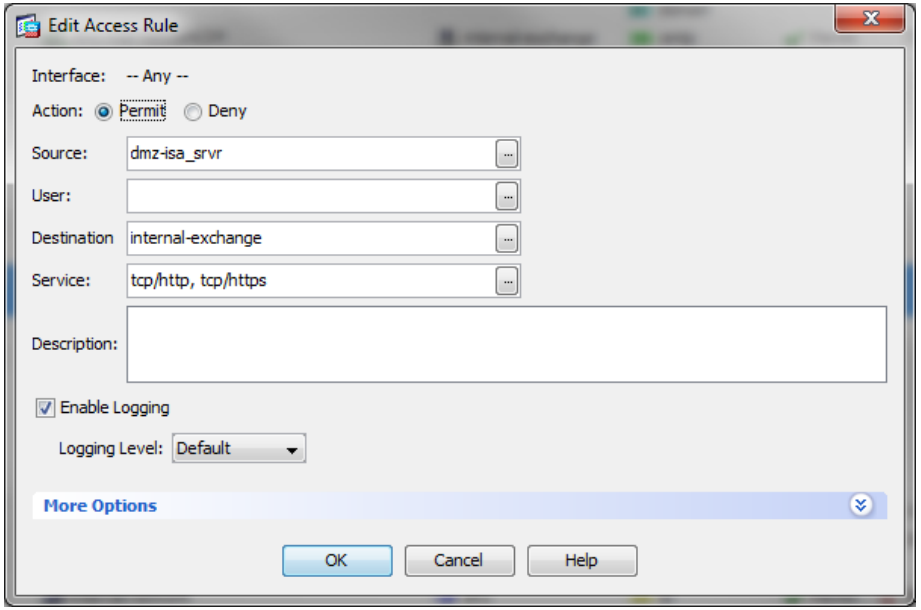
This adds a new access control entry (ACE) rule to the global list of access rules. The rule allows outside hosts to make HTTP and HTTPS connections to the ISA server.



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

Step 9: In the Edit Access Rule window, enter the following information:

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



Step 10: Permit access, using the examples above, from the ISA server to the Active Directory server and the DNS server in the data center (in this example, the AD server is also the DNS server and is called DNS). The AD server requires ports on TCP 135, 445, 1025, 49158, and 49164 and UDP 389 and the DNS server portion requires UDP 53.

#	Enabled	Source	User	Destination	Service	Action
10	☑	dmz-isa_srv		internal-dns	ICMP echo ICMP echo-reply TCP 1025 TCP 135 TCP 445 TCP 49158 TCP 49164 UDP 389 UDP domain	Permit

Step 11: Move these access rules above any rule already configured that denies DMZ networks access to other networks.

Procedure 3 Configure additional security

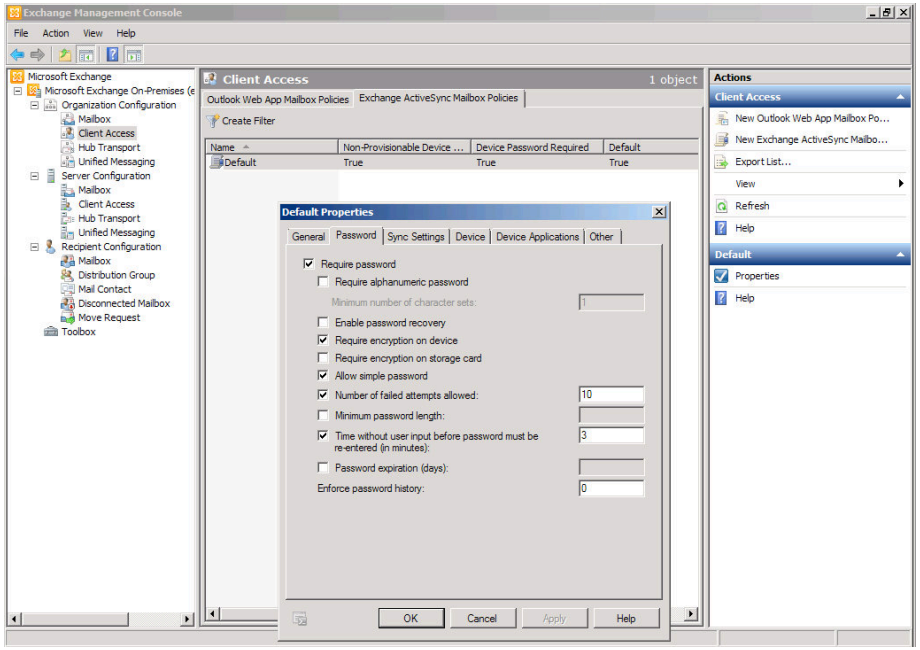
To increase the security of the deployment, ActiveSync includes some security options that administrators may deploy. These options include password requirements, inactivity timeout, device encryption, and a maximum number of failed password attempts before the data on the device is deleted. Security 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 click **Properties**.

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

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**.
6. Click OK



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.

To better support the mobility of smartphones and tablets, a change should be made to the Cisco AnyConnect client profile that is used.

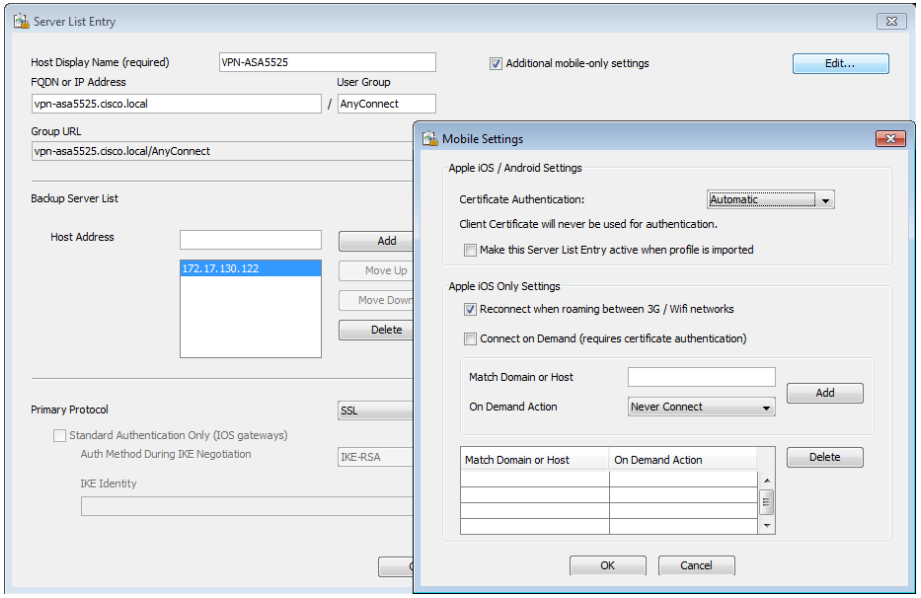
Step 1: In ASDM, navigate to **Configuration > Remote Access VPN > Network Client Access > AnyConnect Client Profile.**

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_AnyConnect, GroupPolicy_Administrators, and GroupPolicy_Partner), and then click **Edit.**

Step 3: In the tree, select **Server List**, highlight the server host name (VPN-ASA5525), 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 / WiFi networks, and then click OK.**



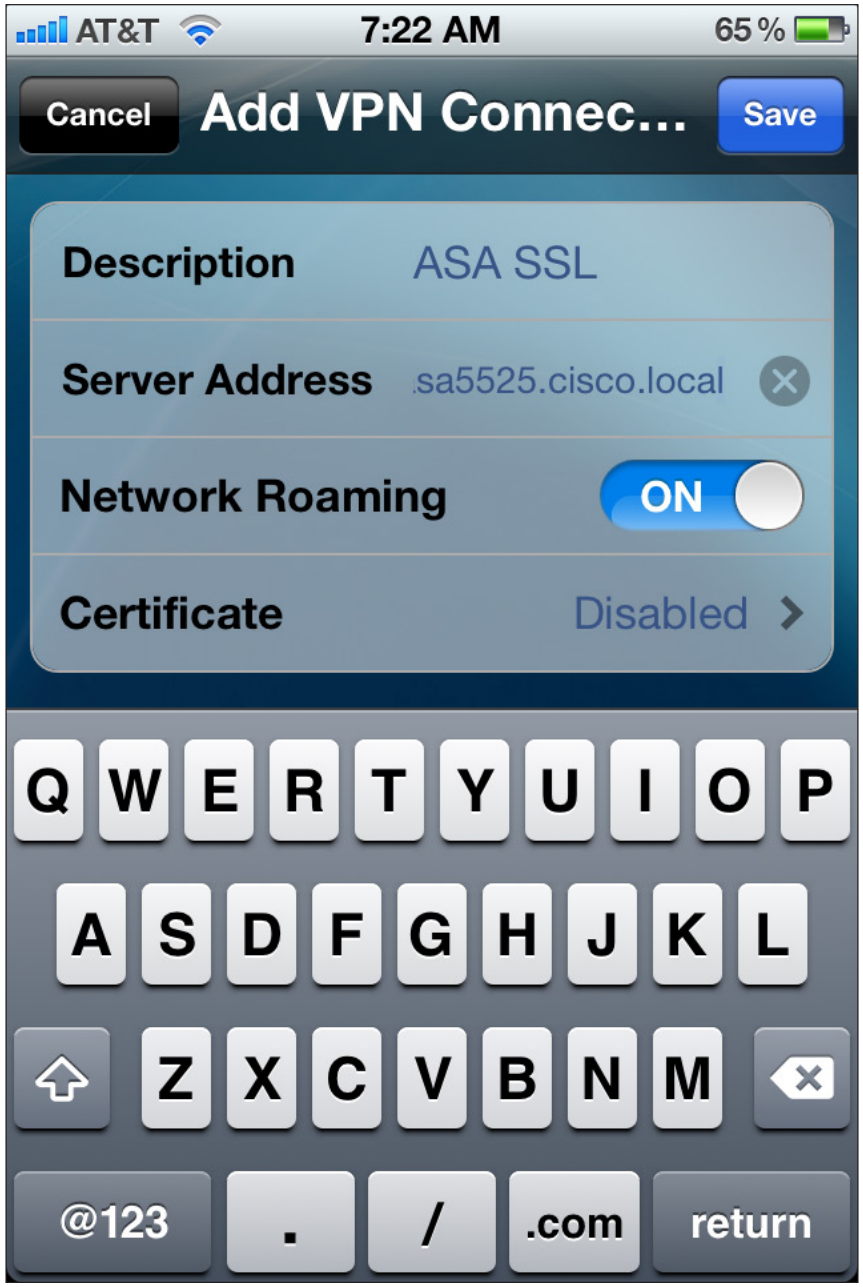
Reader Tip

The next steps are client-based and will be done on the actual phone or tablet device.

Step 6: On the device, download the AnyConnect client from the app store.

Step 7: Launch the AnyConnect application.

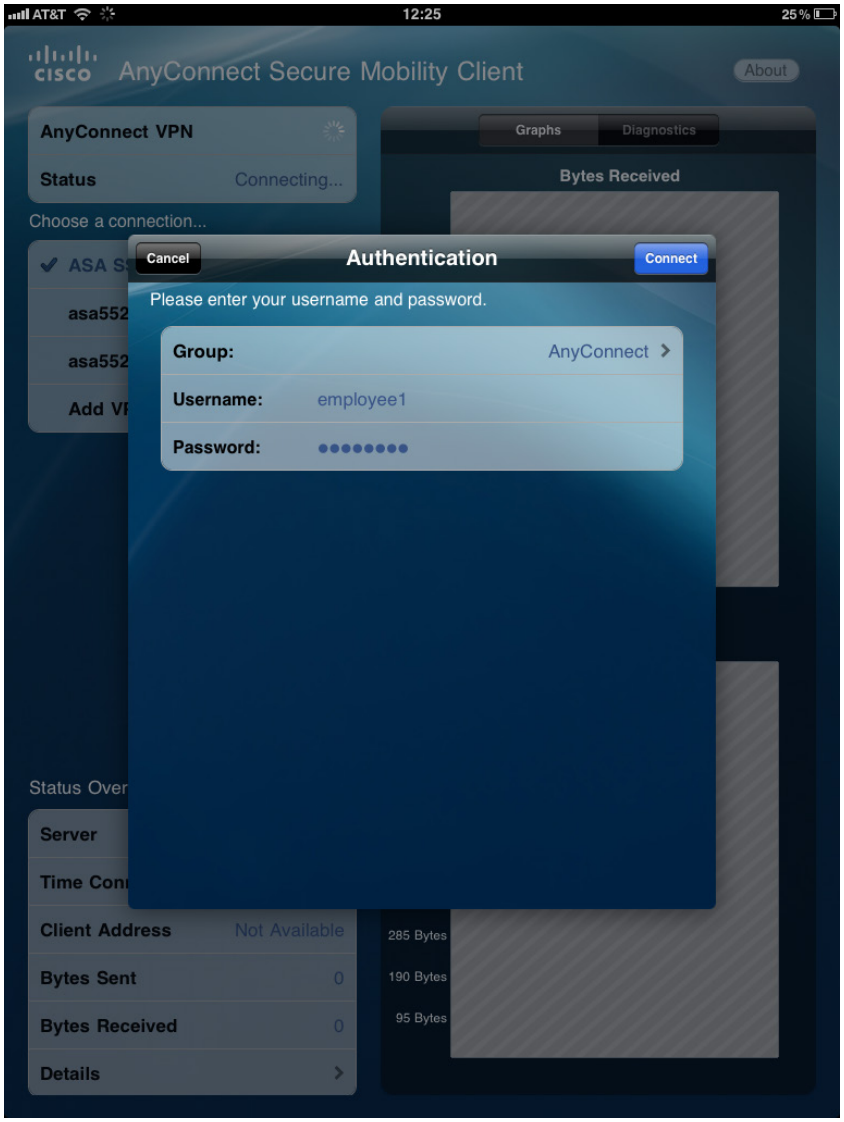
Step 8: Click **Add VPN Connection,** enter ASA SSL in the **Description** field, enter vpn-asa5525.cisco.local in the **Server Address** field, and then click **Save**.



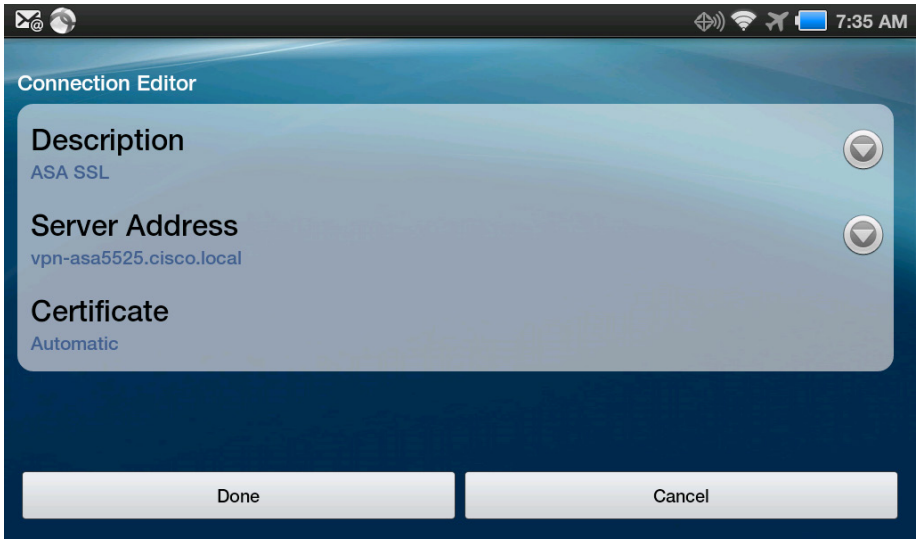
Step 9: Test the connection: select and enable the connection by moving the slider from the off to the on position. The group is AnyConnect.

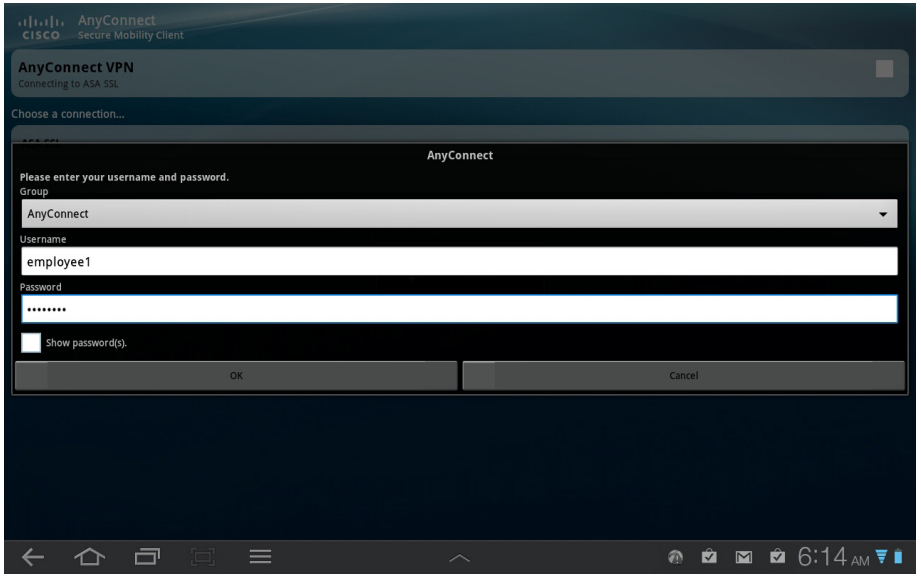
Step 10: Enter a valid username and password for authentication, and then click **Connect**. The following screens show example connection tests for the iOS and Android operating systems.

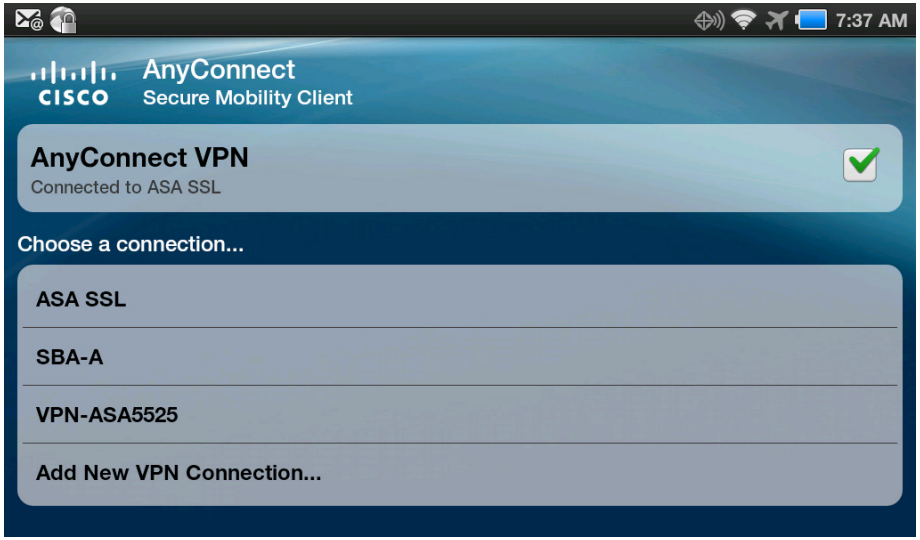
Example: iOS Operating System Connection



Example: Android Operating System Connection






7:37 AM
AnyConnect
Secure Mobility Client
AnyConnect VPN
Connected to ASA SSL
Choose a connection...
ASA SSL
SBA-A
VPN-ASA5525
Add New VPN Connection...

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 8.6(1)1 IPS 7.1(4) E4
	Cisco ASA 5525-X IPS Edition - security appliance	ASA5525-IPS-K9	
	Cisco ASA 5515-X IPS Edition - security appliance	ASA5515-IPS-K9	
	Cisco ASA 5512-X IPS Edition - security appliance	ASA5512-IPS-K9	
	Cisco ASA5512-X Security Plus license	ASA5512-SEC-PL	
	Firewall Management	ASDM	6.6.114
RA VPN Firewall	Cisco ASA 5545-X Firewall Edition - security appliance	ASA5545-K9	8.6(1)1
	Cisco ASA 5525-X Firewall Edition - security appliance	ASA5525-K9	
	Cisco ASA 5515-X Firewall Edition - security appliance	ASA5515-K9	
	Cisco ASA 5512-X Firewall Edition - security appliance	ASA5512-K9	
	Firewall Management	ASDM	6.6.114
Mobile License	AnyConnect Essentials VPN License - ASA 5545-X (2500 Users)	ASA-AC-E-5545	—
	AnyConnect Essentials VPN License - ASA 5525-X (750 Users)	ASA-AC-E-5525	
	AnyConnect Essentials VPN License - ASA 5515-X (250 Users)	ASA-AC-E-5515	
	AnyConnect Essentials VPN License - ASA 5512-X (250 Users)	ASA-AC-E-5512	
SSL Software License for ASA	ASA 5500 SSL VPN 500 Premium User License	ASA5500-SSL-500	—
	ASA 5500 SSL VPN 250 Premium User License	ASA5500-SSL-250	

VPN Client

Functional Area	Product Description	Part Numbers	Software
Mobile Device VPN Client	Cisco AnyConnect Secure Mobility Client	Cisco AnyConnect Secure Mobility Client	2.5.5130
VPN Client	Cisco AnyConnect Secure Mobility Client	Cisco AnyConnect Secure Mobility Client	3.0.07059
ScanSafe	ScanSafe	Please Contact your Cisco Scansafe Sales Representative for Part Numbers: scansafe-sales-questions@cisco.com	—

Appendix B: Configuration Files

RA VPN ASA5525-X

```
ASA Version 8.6(1)1
!
hostname VPN-ASA5525
domain-name cisco.local
enable password 8Ry2YjIyt7RRXU24 encrypted
passwd 2KFQnbNIdI.2KYOU encrypted
names
!
interface GigabitEthernet0/0
 nameif inside
 security-level 100
 ip address 10.4.24.24 255.255.255.224 standby 10.4.24.23
 summary-address eigrp 100 10.4.28.0 255.255.252.0 5
!
interface GigabitEthernet0/1
 shutdown
 no nameif
 no security-level
 no ip address
!
interface GigabitEthernet0/2
 description LAN/STATE Failover Interface
!
interface GigabitEthernet0/3
 no nameif
 no security-level
 no ip address
!
interface GigabitEthernet0/3.16
 description Prymary Internet connection VLAN 16
 vlan 16
 nameif outside-16
 security-level 0
 ip address 172.16.130.122 255.255.255.0 standby 172.16.130.121
!
interface GigabitEthernet0/3.17
 description Resilient Internet connection on VLAN 17
 vlan 17
 nameif outside-17
 security-level 0
 ip address 172.17.130.122 255.255.255.0 standby 172.17.130.121
!
interface GigabitEthernet0/4
 shutdown
 no nameif
 no security-level
 no ip address
!
interface GigabitEthernet0/5
 shutdown
 no nameif
 no security-level
 no ip address
!
interface GigabitEthernet0/6
 shutdown
 no nameif
 no security-level
 no ip address
!
interface GigabitEthernet0/7
 shutdown
 no nameif
 no security-level
 no ip address
```

```
!
interface Management0/0
 shutdown
 no nameif
 no security-level
 no ip address
 management-only
!
ftp mode passive
clock timezone PST -8
clock summer-time PDT recurring
dns domain-lookup inside
dns server-group DefaultDNS
 name-server 10.4.48.10
 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
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 Scansafe_Tower_Exclude remark US West Coast
access-list Scansafe_Tower_Exclude standard permit host
72.37.244.179
access-list Scansafe_Tower_Exclude remark US East Coast
access-list Scansafe_Tower_Exclude standard permit host
70.39.231.107
access-list Scansafe_Tower_Exclude remark US Midwest
access-list Scansafe_Tower_Exclude standard permit host
69.174.58.187
access-list Scansafe_Tower_Exclude remark US South
access-list Scansafe_Tower_Exclude standard permit host
72.37.249.171
access-list Scansafe_Tower_Exclude remark US Southeast
access-list Scansafe_Tower_Exclude standard permit host
69.174.87.75
access-list DEFAULT-ONLY standard permit any
access-list test extended permit ip any any
pager lines 24
logging enable
logging buffered informational
logging asdm informational
mtu inside 1500
mtu outside-16 1500
mtu outside-17 1500
ip local pool RA-pool 10.4.28.1-10.4.31.255 mask 255.255.252.0
failover
failover lan unit primary
failover lan interface failover GigabitEthernet0/2
failover polltime unit msec 200 holdtime msec 800
failover polltime interface msec 500 holdtime 5
failover key *****
failover replication http
failover link failover GigabitEthernet0/2
failover interface ip failover 10.4.24.97 255.255.255.248 standby
10.4.24.98
monitor-interface outside-16
monitor-interface outside-17
icmp unreachable rate-limit 1 burst-size 1
asdm image disk0:/asdm-66114.bin
no asdm history enable
arp timeout 14400
nat (inside,outside-16) source static any any destination static
NETWORK_OBJ_10.4.28.0_22 NETWORK_OBJ_10.4.28.0_22 no-proxy-arp
route-lookup
!
router eigrp 100
 no auto-summary
```

```
 no default-information 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 0.0.0.0 172.16.130.126 128 track 1
route inside 0.0.0.0 0.0.0.0 10.4.24.1 tunneled
timeout xlate 3:00:00
timeout conn 1:00:00 half-closed 0:10:00 udp 0:02:00 icmp 0:00:02
timeout sunrpc 0:10:00 h323 0:05:00 h225 1:00:00 mgcp 0:05:00
mgcp-pat 0:05:00
timeout sip 0:30:00 sip_media 0:02:00 sip-invite 0:03:00 sip-
disconnect 0:02:00
timeout sip-provisional-media 0:02:00 uauth 0:05:00 absolute
timeout tcp-proxy-reassembly 0:01:00
timeout floating-conn 0:00:00
dynamic-access-policy-record DfltAccessPolicy
aaa-server AAA-SERVER protocol tacacs+
aaa-server AAA-SERVER (inside) host 10.4.48.15
 key *****
aaa-server AAA-RADIUS protocol radius
aaa-server AAA-RADIUS (inside) host 10.4.48.15
 timeout 5
 key *****
user-identity default-domain LOCAL
aaa authentication enable console AAA-SERVER LOCAL
aaa authentication ssh console AAA-SERVER LOCAL
aaa authentication http console AAA-SERVER LOCAL
aaa authentication serial console AAA-SERVER LOCAL
aaa authorization exec authentication-server
http server enable
http 10.4.48.0 255.255.255.0 inside
snmp-server host inside 10.4.48.35 community *****
no snmp-server location
no snmp-server contact
snmp-server community *****
snmp-server enable traps snmp authentication linkup linkdown
coldstart warmstart
sla monitor 16
 type echo protocol ipIcmpEcho 172.18.1.1 interface outside-16
sla monitor schedule 16 life forever start-time now
crypto ca trustpoint ASDM_TrustPoint0
 enrollment self
 subject-name CN=VPN-ASA5525.cisco.local
 keypair sslpair
 proxy-ldc-issuer
 crl configure
crypto ca certificate chain ASDM_TrustPoint0
 certificate 3e1ffb4f
    30820270 308201d9 a0030201 0202043e 1ffb4f30 0d06092a
864886f7 0d010105
    0500304a 3120301e 06035504 03131756 504e2d41 53413535
32352e63 6973636f
    2e6c6f63 616c3126 30240609 2a864886 f70d0109 02161756
504e2d41 53413535
    32352e63 6973636f 2e6c6f63 616c301e 170d3132 30373039
31393034 34325a17
    0d323230 37303731 39303434 325a304a 3120301e 06035504
03131756 504e2d41
    53413535 32352e63 6973636f 2e6c6f63 616c3126 30240609
2a864886 f70d0109
    02161756 504e2d41 53413535 32352e63 6973636f 2e6c6f63
616c3081 9f300d06
    092a8648 86f70d01 01010500 03818d00 30818902 818100d6
2c54cc0b fe1cffa0
    ba51f93a 7d0017b1 e17a7765 31a16ee9 f9153059 a81d6ee0
c7b98f84 09930b89
    5affdb5c 7ac8cd8f 7b155d3f 9e82d041 b4979a16 df782104
f88877d7 8b22c3eb
    3828b31f b2440c42 2102cf43 1ae023db 962c5224 0a6225af
11a2dc48 02e1dc72
    8be4a007 42739a90 7cb16882 9815cd9f 576aa4b7 7bb4cf02
03010001 a3633061
```

```
    300f0603 551d1301 01ff0405 30030101 ff300e06 03551d0f
0101ff04 04030201
    86301f06 03551d23 04183016 80148d1b 53b7eff9 ebf29730
4632e70c cd0922ea
    3e75301d 0603551d 0e041604 148d1b53 b7eff9eb f2973046
32e70ccd 0922ea3e
    75300d06 092a8648 86f70d01 01050500 03818100 75ed2963
73550666 41e45b97
    396e53d6 9b6275bc efd1ab39 31f73846 26b692b6 57579bf4
32b41d9b 02037ad1
    aaa2cbec 14fc0739 59c1706f 1bf0d8aa 6bdae10a 737c2085
e8bc59a1 01f88043
    b4010901 3cf81fe9 093b6dc2 cc3122e5 3086c76e 422fce7b
a836736e 126c3416
    f45c50a5 64e956ac e8802127 b292d041 817fd51f
  quit
crypto ikev2 remote-access trustpoint ASDM_TrustPoint0
!
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 trust-point ASDM_TrustPoint0 outside-16
ssl trust-point ASDM_TrustPoint0 outside-17
webvpn
 enable outside-16
 enable outside-17
 anyconnect-essentials
 anyconnect image disk0:/anyconnect-linux-3.0.07059-k9.pkg 1
 anyconnect image disk0:/anyconnect-macosx-i386-3.0.07059-k9.pkg 2
 anyconnect image disk0:/anyconnect-win-3.0.07059-k9.pkg 3
 anyconnect profiles ra_profile disk0:/ra_profile.xml
 anyconnect profiles web_security_profile disk0:/web_security_
profile.wsp
 anyconnect profiles web_security_profile.wso disk0:/web_
security_profile.wso
 anyconnect enable
 tunnel-group-list enable
group-policy GroupPolicy_AnyConnect internal
group-policy GroupPolicy_AnyConnect attributes
 wins-server none
 dns-server value 10.4.48.10
 vpn-tunnel-protocol ssl-client
 split-tunnel-policy excludespecified
 split-tunnel-network-list value Scansafe_Tower_Exclude
 default-domain value cisco.local
 webvpn
  anyconnect modules value dart,websecurity
  anyconnect profiles value ra_profile type user
  anyconnect profiles value web_security_profile.wso type
websecurity
  always-on-vpn profile-setting
group-policy GroupPolicy_Administrators internal
group-policy GroupPolicy_Administrators attributes
 banner value Your acess is via unrestricted split tunnel.
 split-tunnel-policy tunnelall
 split-tunnel-network-list value RA_SplitTunnelACL
 webvpn
  anyconnect profiles value ra_profile type user
group-policy GroupPolicy_Partner internal
group-policy GroupPolicy_Partner attributes
 banner value Your Access is restricted to the partner server
 vpn-filter value RA_PartnerACL
 webvpn
  anyconnect profiles value ra_profile type user
username admin password w2Y.6Op4j7clVDk2 encrypted privilege 15
tunnel-group AnyConnect type remote-access
tunnel-group AnyConnect general-attributes
```

```
 address-pool RA-pool
 authentication-server-group AAA-RADIUS
 default-group-policy GroupPolicy_AnyConnect
tunnel-group AnyConnect webvpn-attributes
 group-alias AnyConnect enable
 group-url https://172.16.130.122/AnyConnect enable
 group-url https://172.17.130.122/AnyConnect enable
!
class-map inspection_default
 match default-inspection-traffic
!
!
policy-map type inspect dns preset_dns_map
 parameters
  message-length maximum client auto
  message-length maximum 512
policy-map global_policy
 class inspection_default
  inspect dns preset_dns_map
  inspect ftp
  inspect h323 h225
  inspect h323 ras
  inspect ip-options
  inspect netbios
  inspect rsh
  inspect rtsp
  inspect skinny
  inspect esmtp
  inspect sqlnet
  inspect sunrpc
  inspect tftp
  inspect sip
  inspect xdmcp
!
service-policy global_policy global
prompt hostname context
no call-home reporting anonymous
call-home
 profile CiscoTAC-1
  no active
  destination address http https://tools.cisco.com/its/service/
oddce/services/DDCEService
  destination address email callhome@cisco.com
  destination transport-method http
  subscribe-to-alert-group diagnostic
  subscribe-to-alert-group environment
  subscribe-to-alert-group inventory periodic monthly 23
  subscribe-to-alert-group configuration periodic monthly 23
  subscribe-to-alert-group telemetry periodic daily
```

Appendix C: Changes

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

- We updated the guide to reflect the changes to products and software used in the *Firewall and IPS Deployment Guide*.
- We made minor changes to improve the readability of this guide.

Notes

Feedback

Click here to provide feedback to Cisco SBA.

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