

Release Notes for Cisco AnyConnect Secure Mobility Client, Release 4.9.x for Android

AnyConnect for Android Release Notes

AnyConnect for Android Mobile Devices

The AnyConnect Secure Mobility Client provides remote users with secure VPN connections to the Cisco ASA 5500 Series. It provides seamless and secure remote access to enterprise networks allowing installed applications to communicate as though connected directly to the enterprise network. AnyConnect supports connections to IPv4 and IPv6 resources over an IPv4 or IPv6 tunnel.

This document, written for system administrators of the AnyConnect Secure Mobility Client and the Adaptive Security Appliance (ASA) 5500, provides release specific information for AnyConnect running on Android devices.

The AnyConnect app is available on Google Play, except for the Kindle package, which is available on Amazon.com. Cisco does not distribute AnyConnect mobile apps. Nor can you deploy the mobile app from the ASA. You can deploy other releases of AnyConnect for desktop devices from the ASA while supporting this mobile release.

AnyConnect Mobile Support Policy

Cisco supports the AnyConnect version that is currently available in the app store; however, fixes and enhancements are provided only in the most recently released version.

AnyConnect Licensing

To connect to the ASA headend, an AnyConnect 4.x Plus or Apex license is required. Trial licenses are available: Cisco AnyConnect Ordering Guide.

For the latest end-user license agreement, see Cisco End User License Agreement, AnyConnect Secure Mobility Client, Release 4.x.

For our open source licensing acknowledgments, see Open Source Software Used In Cisco AnyConnect Secure Mobility Client Release 4.x for Mobile

Cisco AnyConnect Android Beta Testing

Beta builds of AnyConnect are made available for pre-release testing.

To be eligible to receive these versions, opt-in to receive Beta builds using this Google Play link: https://play.google.com/apps/testing/com.cisco.anyconnect.vpn.android.avf

You may opt out later using this same Google Play link. After opting out, you will be required to uninstall the Beta build and reinstall the latest non-Beta version of AnyConnect.

Report issues found during beta testing promptly by sending email to Cisco at ac-mobile-feedback@cisco.com. The Cisco Technical Assistance Center (TAC) does not address issues found in Beta versions of AnyConnect.

Android Supported Devices

Full support for Cisco AnyConnect on Android is provided on devices running Android 4.0 (Ice Cream Sandwich) through the latest release of Android.

In order to use the Umbrella module for AnyConnect for Android, you must have Android 6.0 or later.

AnyConnect for Kindle Fire HD is available from Amazon for the Kindle Fire HD devices, and the New Kindle Fire. AnyConnect for Kindle is equivalent in functionality to the AnyConnect for Android package.

For all current Chromebooks, AnyConnect for Android is officially supported and strongly recommended for the optimal AnyConnect experience on ChromeOS. The native ChromeOS client is intended only for legacy Chromebooks incapable of running Android applications.

Per App VPN is supported in managed and unmanaged environments. In a managed environment using Samsung KNOX MDM, Samsung devices running Android 4.3 or later with Samsung Knox 2.0, are required. When using Per App in an unmanaged environment, the generic Android methods are used.

For the Network Visibility Module (NVM) capabilities, Samsung devices that are running Samsung Knox 2.8 or later (including 3.3), which requires Android 7.0 or later, are required. For configuration of NVM, the AnyConnect Profile Editor from AnyConnect 4.4.3 or later is also required. Earlier releases do not support mobile NVM configurations.

See the Android User Guide for Cisco AnyConnect Secure Mobility Client for installation and upgrade procedures.

Umbrella Module for AnyConnect for Android

In release 4.8.03645 (and later), Android offers the Cisco Umbrella module for AnyConnect for Android 6.0.1 and later devices. This roaming client for managed Android devices provides DNS-layer protection, and this protection extends to both apps and browsing covered by the work profile.

A mobile device management system (MDM) is required to deploy this client to Android devices and to push the Umbrella configuration to the Android devices. For a list of supported MDMs and other prerequisites, see Prerequisites for Deploying the Umbrella Module for AnyConnect on Android OS.

Some features may have limitations in functionality:

- Per-app VPN does not work with the Umbrella Module because of OS restrictions. If remote access VPN is active, Umbrella protection will only apply to DNS traffic that is intercepted by the VPN tunnel. If remote access is configured for per-app VPN, Umbrella protection only applies to DNS traffic for the tunneled applications.
- Always-On VPN should not be used with the lockdown (Fail Close) option when using Umbrella protection because it stops internet access for the user when the VPN server is not reachable. Refer to your MDM guide to turn off the lockdown setting when Always-On is turned on.

For an explanation of the complete Umbrella feature set, refer to the Umbrella Module for AnyConnect (Android OS) documentation.

Licensing Requirements for Umbrella on Android

You can enable the Umbrella module for AnyConnect for Android with or without an AnyConnect license. Refer to The Cisco AnyConnect Ordering Guide for AnyConnect software license details. Trial AnyConnect Apex (ASA) licenses are available for administrators at http://www.cisco.com/go/license. Android for AnyConnect requires Cisco Adaptive Security Appliance (ASA) boot image 8.0(4) or later. For licensing questions and evaluation licenses, contact ac-temp-license-request@cisco.com and include a copy of **show version** from your Cisco ASA.

Umbrella licenses are required for the Umbrella module on AnyConnect. Click https://learn-umbrella.cisco.com/ datasheets/cisco-umbrella-package-comparison-2 for additional information.

Prerequisites for Deploying the Umbrella Module for AnyConnect on Android OS

Deployment prerequisites:



AnyConnect monitors traffic generated from apps and browsers within the work profile created in an MDM and blocks or allows browsing accordingly. Any traffic generated outside the work profile by apps and/or browsers is not monitored.

- Mobile device management system (MDMs) for deploying the software and pushing the Umbrella configuration to the mobile devices. Current tested versions are Mobile Iron, Meraki, VMWare workspace 1 (Airwatch), or Microsoft Intune.
- Android (Samsung/Google Pixel) mobile devices with Android OS version 6.0.1 and above.
- Umbrella license to configure DNS policies, manage registered Android devices, and for reporting.
- Umbrella organization ID for enabling the feature.
- For Trusted Network Detection (TND):
 - If the Umbrella module detects a virtual appliance (VA) with HTTPS enabled, it deactivates itself; however, if the VA does not support HTTPS, the Umbrella module continues.
 - All VA FQDN in umbrella_va_fqdns must be enabled.

New Features

New Features in AnyConnect 4.9.06048 for Android Mobile Devices

This version of AnyConnect for Android is a maintenance release that contains no VPN related issues.

New Features in AnyConnect 4.9.06039 for Android Mobile Devices

This version of AnyConnect for Android includes the following features and support updates:

• Ability to determine if you want NVM to securely send data to the collector over DTLS.

• CiscoSSL libraries were updated to address DTLS session failures when connecting to new, unreleased versions of ASA.

New Features in AnyConnect 4.9.04035 for Android Mobile Devices

This version of AnyConnect for Android adds support for Server Name Identification (SNI) for VPN connections.

New Features in AnyConnect 4.9.00576 for Android Mobile Devices

This version of AnyConnect for Android contains no VPN related issues.

New Features in AnyConnect 4.9.00564 for Android Mobile Devices

This version of AnyConnect for Android resolves the defects described in Resolved Issues in AnyConnect 4.9.00564 for Android, on page 12.

New Features in AnyConnect 4.9.00548 for Android Mobile Devices

This version of AnyConnect for Android provides the following features and support updates:

- Updated OpenSSL (Cisco SSL) library
- For SSL VPN, AnyConnect no longer supports the following cipher suites from both TLS and DTLS: DHE-RSA-AES256-SHA and DES-CBC3-SHA
- For IKEv2/IPsec, AnyConnect no longer supports the following algorithms:
 - Encryption algorithms: DES and 3DES
 - Pseudo Random Function (PRF) algorithm: MD5
 - Integrity algorithm: MD5
 - Diffie-Hellman (DH) groups: 2, 5, 14, 24
- Added support for Umbrella User Identities. Managed devices can appear in the Umbrella dashboard to individually apply policies for a specific device or for all devices. Refer to Cisco Umbrella Module v1.1 for AnyConnect for Android OS for additional details.

Known Issues with Google on Android

Because of a limitation from Google on Android OS, the app download may fail in the Google Play store after enabling the Umbrella AnyConnect module. To avoid this, download the apps before enabling the Umbrella module. Google has fixed this behavior in Android OS "Q." For more information, see the Google issue tracker.

Android AnyConnect Feature Matrix

The following table indicates the remote access features that are supported by Cisco AnyConnect on Android:

Category: Feature	Android VPN
Deployment and Configuration:	
Install or upgrade from application store.	Yes
Cisco VPN Profile support (manual import)	Yes
Cisco VPN Profile support (import on connect)	Yes
MDM configured connection entries	Yes
User-configured connection entries	Yes
Tunneling:	
TLS	Yes
Datagram TLS (DTLS)	Yes
IPsec IKEv2 NAT-T	Yes
IKEv2 - raw ESP	Yes
Suite B (IPsec only)	Yes
TLS compression	Yes
Dead peer detection	Yes
Tunnel keepalive	Yes
Multiple active network interfaces	No
Per-App Tunneling	Yes, Android 5.0+ or Samsung Knox
Per-App Tunneling (Disallowed Apps Mode)	Yes
Full tunnel (OS may make exceptions on some traffic, such as traffic to the app store).	Yes
Split tunnel (split include).	Yes
Local LAN (split exclude).	No
Split-DNS	Yes, works with split include
Auto Reconnect / Network Roaming	Yes, regardless of the Auto Reconnect profile specification, AnyConnect Mobile always attempts to maintain the VPN as users move between 3G and WiFi networks
VPN on-demand (triggered by destination)	No
VPN on-demand (triggered by application)	No
Rekey	Yes
IPv4 public transport	Yes
IPv6 public transport	Yes, requires Android 5.0 or later
IPv4 over IPv4 tunnel	Yes
IPv4 over IPv6 tunnel	Yes

Category: Feature	Android VPN
IPv6 over IPv4 tunnel	Yes
IPv6 over IPv6 tunnel	Yes
Default domain	Yes
DNS server configuration	Yes
Private-side proxy support	Only support direct proxy mode on Android 10
Proxy Exceptions	No
Public-side proxy support	No
Pre-login banner	Yes
Post-login banner	Yes
DSCP Preservation	Yes
Connecting and Disconnecting:	
VPN load balancing	Yes
Backup server list	Yes
Optimal Gateway Selection	No
Authentication:	
Touch ID	No
SAML 2.0	Yes
Client Certificate Authentication	Yes
Online Certificate Status Protocol (OCSP)	Yes
Manual user certificate management	Yes
Manual server certificate management	Yes
SCEP legacy enrollment Please confirm for your platform.	Yes
SCEP proxy enrollment Please confirm for your platform.	Yes
Automatic certificate selection	Yes
Manual certificate selection	Yes
Smart card support	No
Username and password	Yes
Tokens/challenge	Yes
Double authentication	Yes
Group URL (specified in server address)	Yes
Group selection (drop-down selection)	Yes
Credential prefill from user certificate	Yes

Category: Feature	Android VPN
Save password	No
User interface:	
Standalone GUI	Yes
Native OS GUI	No
API / URI Handler (see below)	Yes
UI customization	No
UI localization	Yes, app contains pre-packaged languages
User preferences	Yes
Home screen widgets for one-click VPN access	Yes
AnyConnect specific status icon	Optional
Mobile Posture: (AnyConnect Identity Extensions, ACIDex)	
Serial number or unique ID check	Yes
OS and AnyConnect version shared with headend	Yes
AnyConnect NVM support	Yes, with specific Samsung Knox and MDM requirements
URI Handling:	
Add connection entry	Yes
Connect to a VPN	Yes
Credential pre-fill on connect	Yes
Disconnect VPN	Yes
Import certificate	Yes
Import localization data	Yes
Import XML client profile	Yes
External (user) control of URI commands	Yes
Reporting and Troubleshooting:	
Statistics	Yes
Logging / Diagnostic Information (DART)	Yes
Certifications:	
FIPS 140-2 Level 1	Yes

Adaptive Security Appliance Requirements

A minimum release of the ASA is required for the following features:

Note

- Refer to the feature matrix for your platform to verify the availability of these features in the current AnyConnect mobile release.
 - You must upgrade to ASA 9.7.1.24, 9.8.2.28, 9.9.2.1 or later to use the SAML authentication feature. Make sure that both the client and server versions are up-to-date.
 - You must upgrade to ASA 9.3.2 or later to use TLS 1.2.
 - You must upgrade to ASA 9.3.2 or later to use Per App VPN tunneling mode.
 - You must upgrade to ASA 9.0 to use the following mobile features:
 - IPsec IKEv2 VPN
 - Suite B cryptography
 - SCEP Proxy
 - Mobile Posture
 - ASA Release 8.0(3) and Adaptive Security Device Manager (ASDM) 6.1(3) are the minimum releases that support AnyConnect for mobile devices.

Other Cisco Headend Support

AnyConnect SSL connectivity is supported on Cisco IOS 15.3(3)M+/15.2(4)M+.

AnyConnect IKEv2 connectivity is supported on Cisco ISR g2 15.2(4)M+

AnyConnect SSL and IKEv2 is supported on Cisco Firepower Threat Defense, release 6.2.1 and later.

Guidelines and Limitations for AnyConnect on Android

- The ASA does not provide distributions and updates for AnyConnect for Android. They are available on Google Play. The APK (package) file for the latest version is also posted on Cisco.com.
- AnyConnect for Android supports only the Network Visibility Module and Umbrella; it does not support any other AnyConnect modules.
- The Android device supports no more than one AnyConnect profile, which is the last one received from a headend. However, a profile can consist of multiple connection entries.
- If users attempt to install AnyConnect on devices that are not supported, they receive the pop-up messageInstallation Error: Unknown reason -8. This message is generated by the Android OS.
- When users have an AnyConnect widget on their home screen, the AnyConnect services are automatically started (but not connected) regardless of the "Launch at startup" preference.

- AnyConnect for Android requires UTF-8 character encoding for extended ASCII characters when using pre-fill from client certificates. The client certificate must be in UTF-8 if you want to use prefill, per the instructions in KB-890772 and KB-888180.
- AnyConnect blocks voice calls if it is sending or receiving VPN traffic over an EDGE connection per the inherent nature of EDGE and other early radio technology.
- Some known file compression utilities do not successfully decompress log bundles packaged with the use of the AnyConnect Send Log button. As a workaround, use the native utilities on Windows and macOS to decompress AnyConnect log files.
- DHE Incompatibility—With the introduction of DHE cipher support in AnyConnect release 4.6, incompatibility issues result in ASA versions before ASA 9.2. If you are using DHE ciphers with ASA releases earlier than 9.2, you must disable DHE ciphers on those ASA versions.

Android on Google Play Store

Cisco highly recommends that all users run the current version of our Android release, which is available on the Google play store. Additionally, an .apk version is available on Cisco.com for the current version only. In the unlikely event that the Google play store is unavailable, administrators who have access to the AnyConnect software download page can get this version.

Known Compatibility Issues

- If you are experiencing connectivity issues with the VPN tunnel on Android 10, try disabling Android 10 Private DNS functionality.
- IPv6 on public and private interfaces.

IPv6 is supported on both private and public transports using AnyConnect 4.05015 and later, on Android 5 and later. With this combination the following is now allowed: IPv4 over an IPv6 tunnel, IPv6 over an IPv6 tunnel.

This is in addition to the previously allowed tunnel configurations on earlier AnyConnect and Android releases: IPv4 over an IPv4 tunnel, and IPv6 over an IPv4 tunnel.



Note Due to Google issue 65572, IPv6 over IPv4 does not work on Android 4.4. You must use Android 5 or later.

Battery saver and AnyConnect:

- Android 5.0 introduced battery saver capabilities that block background network connectivity on your device. When battery saver is enabled, AnyConnect will transition to the Paused state if it is in the background. To work around this on Android 5.0, users may turn off battery saver via the device settings: Settings -> Battery -> Battery saver or from the notification bar.
- In Android 6.0+, when AnyConnect transitions to the Paused state as a result of battery saver, you see a popup with the option to make AnyConnect part of the allowed list from battery saver mode. Making AnyConnect part of the allowed list provides a battery savings without impacting AnyConnect's ability to run in the background.

- Once AnyConnect is paused due to the batter saver, a manual reconnect is necessary to bring AnyConnect out of the Paused state, regardless of your action to turn off battery saver or to add AnyConnect to the allowed list.
- Split DNS does not work on any Android 4.4 device, and also does not work on Samsung 5.x Android devices. For Samsung devices, the only workaround is to connect to a group with split DNS disabled.
 On other devices you must upgrade to Android 5.x to receive the fix for this problem.

This is due to a known issue that is present in Android 4.4 (Issue #64819), fixed in Android 5.x, but not incorporated into Samsung 5.x android devices.

- Due to a bug in Android 5.x (Google Issue #85758, Cisco Issue # CSCus38925), if the AnyConnect app is closed from the recent apps screen it may not operate properly. To restore proper operation, terminate AnyConnect in **Settings** and then restart it.
- On Samsung mobile devices the Settings > Wi-Fi > Smart network switch allows switching from WIFI to LTE to maintain a stable Internet connection (when the Wi-Fi connection is not optimum). This also results in a pause and reconnect of the active VPN tunnel. Cisco recommends turning this off, since it may result in continuous reconnects.
- On Android 5.0 (Lollipop), which supports multiple active users, the VPN connection tunnels data for a single user only, not for all users on the device. Background data flow may be occurring in the clear.
- Due to a bug in Android 4.3.1(Google Issue #62073), users using the AnyConnect ICS+ package cannot enter non-fully qualified domain names. For example, users cannot type "internalhost", they must type "internalhost.company.com."
- The AT&T firmware updates on HTC One to Android 4.3 (software version: 3.17.502.3) do not support "HTC AnyConnect." Customers must uninstall "HTC AnyConnect", and install "AnyConnect ICS+." (HTC AnyConnect will work on the international edition, with software version of 3.22.1540.1). Check your software version on your device at Settings > About > Software information > Software number.
- We are pleased to report that Google Issue #70916, VPN connections will fail to connect if the administrator has set the MTU for Android tunnels lower than 1280, has been resolved in Android 5.0 (Lollipop). The following problem information is provided for reference:

Due to a regression in Android 4.4.3, (Google Issue #70916, Cisco CSCup24172), VPN connections will fail to connect if the administrator has set the MTU for Android tunnels lower than 1280. This issue has been reported to Google and will require a new version of the OS to correct the regression introduced in Android 4.4.3. To workaround this problem, ensure that the head-end administrator has not configured the tunnel MTU to be lower than 1280.

When encountered, the message displayed to the end user is: System configuration settings could not be applied. A VPN connection will not be established, and AnyConnect debug logs will report:

```
E/vpnandroid( 2419): IPCInteractionThread: NCSS: General Exception occured, telling
client
E/vpnandroid( 2419): java.lang.IllegalStateException: command '181 interface fwmark
rule add tun0'
failed with '400 181 Failed to add fwmark rule (No such process)'
E/vpnandroid( 2419): at android.os.Parcel.readException(Parcel.java:1473)
E/vpnandroid( 2419): at android.os.Parcel.readException(Parcel.java:1419)
E/vpnandroid( 2419): at
com.cisco.android.nchs.aidl.IICSSupportService$Stub$Proxy.establish
(IICSSupportService.java:330)
E/vpnandroid( 2419): at com.cisco.android.nchs.support.VpnBuilderWrapper.establish
```

```
(VpnBuilderWrapper.java:137)
E/vpnandroid( 2419): at com.cisco.android.nchs.support.NCSSIPCServer.callServiceMethod
(NCSSIPCServer.java:233)
E/vpnandroid( 2419): at
com.cisco.android.nchs.ipc.IPCInteractionThread.handleClientInteraction
(IPCInteractionThread.java:230)
E/vpnandroid( 2419): at com.cisco.android.nchs.ipc.IPCInteractionThread.run
(IPCInteractionThread.java:90)
E/acvpnagent( 2450): Function: ApplyVpnConfiguration
File: NcssHelper.cpp Line: 740 failed to establish VPN
E/acvpnagent( 2450): Function: PluginResult AndroidSNAKSystem::configDeviceForICS()
File: AndroidSNAKSystem.cpp Line: 665 failed to apply vpn configuration
E/acvpnagent( 2450): Function: virtual PluginResult
AndroidSNAKSystem::ApplyConfiguration()
File: AndroidSNAKSystem.cpp Line: 543 Failed to Configure System for VPN.
```

 We are pleased to report that Android 4.4 (KitKat) bug Google Issue #61948 (AnyConnect users will experience High Packet Loss over their VPN connection /users will experience timeouts) has been resolved in Google's release of Android 4.4.1 which Google has begun distributing to some devices via Software Update. The following problem information is provided for reference:

Due to a bug in Android 4.4 (Issue #61948, also see the Cisco Support Update), AnyConnect users will experience High Packet Loss over their VPN connection. This has been seen on the Google Nexus 5 running Android 4.4 with AnyConnect ICS+. Users will experience timeouts when attempting to access certain network resources. Also, in the ASA logs, a syslog message will appear with text similar to "Transmitting large packet 1420 (threshold 1405)."

Until Google produces a fix for Android 4.4, VPN administrators may temporarily reduce the maximum segment size for TCP connections on the ASA by configuring the following sysopt connection tcpmss <mss size>. The default for this parameter is 1380 bytes. Reduce this value by the difference between the values seen in the ASA logs. In the above example, the difference is 15 bytes; the value should thus be no more than 1365. Reducing this value will negatively impact performance for connected VPN users where large packets are transmitted.

 AnyConnect for Android may have connectivity issues when connecting to a mobile network using the IPv6 transition mechanism known as 464xlat. Known affected devices include the Samsung Galaxy Note III LTE connecting to the T-Mobile US network. This device defaults to an IPv6 only mobile network connection. Attempting a connection may result in a loss of mobile connectivity until the device is rebooted.

To prevent this problem, use the AnyConnect ICS+ app, and change your device settings to obtain IPv4 network connectivity or connect using a Wi-Fi network. For the Samsung Galaxy Note III LTE connecting to the T-Mobile US network, follow the instructions provided by T-Mobile to set the Access Point Name (APN) on your device, making sure APN Protocol is set to IPv4.

- The AnyConnect ICS+ package may have issues when a private IP address range within the VPN overlaps with the range of the outside interface of the client device. When this route overlap occurs, the user may be able to successfully connect to the VPN but then be unable to actually access anything. This issue has been seen on cellular networks which use NAT (Network Address Translation) and assign addresses within the 10.0.0.0 10.255.255.255 range, and is due to AnyConnect having limited control of routes in the Android VPN framework. The vendor specific Android packages have full routing control and may work better in such a scenario.
- An Asus tablet running Android 4.0 (ICS) may be missing the tun driver. This causes AVF AnyConnect to fail.
- Android security rules prevent the device from sending and receiving multimedia messaging service (MMS) messages while a VPN connection is up. Most devices and service providers display a notification

if you try to send an MMS message while the VPN connection is up. Android permits sending and receiving of messages when the VPN is not connected.

• Due to Google Isssue 41037, when pasting text from the clipboard, a space is inserted in front of the text. In AnyConnect, when copying text such as a one time password, the user has to delete this erroneous white space.

Open and Resolved AnyConnect Issues

The Cisco Bug Search Tool has detailed information about the following open and resolved issues in this release. A Cisco account is required to access the Bug Search Tool. If you do not have one, register at https://Cisco.com.

Note that some cross platform bugs defined in the desktop release notes (https://www.cisco.com/c/en/us/td/ docs/security/vpn_client/anyconnect/anyconnect410/release/notes/release-notes-anyconnect-4-10.html) may apply to the mobile releases. Once a bug has been reported as fixed, it becomes available on all operating system platforms (including mobile operating systems) with a higher AnyConnect release number. Those bugs with vpn, core, nvm, and similar components that apply across platform will not be duplicated in the subsequent mobile releases. For example, a vpn component bug resolved in desktop release 4.9.00086 will not be listed again in iOS release 4.9.00512 because the iOS version is greater than the release version where the bug was reported as fixed.

Resolved Issues in AnyConnect 4.9.00564 for Android

Identifier	Headline
CSCvv71547	OCSP check not working on AnyConnect for Android 4.9

AnyConnect Mobile Related Documentation

For more information refer to the following documentation:

- AnyConnect Release Notes
- AnyConnect Administrator Guides
- Navigating the Cisco ASA Series Documentation

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