

# Workspace ONE Assist

VMware Workspace ONE UEM 2001



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# Workspace ONE Assist

# 1

VMware Workspace ONE Assist, together with Workspace ONE UEM powered by AirWatch, enables you to access remotely and troubleshoot devices in real time. Workspace ONE Assist is privacy-friendly. End users can accept, pause, and end a remote session at any time for privacy reasons.

The Workspace ONE Assist client also has additional support tools and device information available. The combination of remote control and information allows you to troubleshoot any issues on devices quickly and accurately.

Workspace ONE Assist is already configured for SaaS customers who have purchased the upgrade.

Workspace ONE Assist requires devices to have the Workspace ONE Intelligent Hub and the Remote Management client installed.

## Supported Deployment Models

With Workspace ONE Intelligent Hub and the platform-specific Assist app installed on all devices, Workspace ONE Assist works together with Workspace ONE UEM, making it easy to use the console as the starting point for each support session.

Whether your Workspace ONE UEM deployment is part of an on-premises, dedicated SaaS, or shared SaaS environment, several Workspace ONE Assist deployment models are supported.

**Note** Regarding iOS devices and organization groups (OGs), iOS can only be enabled or disabled for an entire customer. iOS cannot be enabled/disabled for specific OGs.

**Table 1-1. Single Customer**

Workspace ONE UEM	Workspace ONE Assist
On-Premises	On-Premises
On-Premises (Multi-Environment)	Shared SaaS*
Shared SaaS	Shared SaaS
Dedicated SaaS	Shared SaaS

\* In this scenario, multiple instances of Workspace ONE UEM (each for a single customer) communicate to a single Shared SaaS build of Workspace ONE Assist. See [Integrate Deployment Model, On-Prem UEM With SaaS Assist](#)

**Table 1-2. Multi-Tenant Partner\*\***

Workspace ONE UEM	Workspace ONE Assist
On-Premises	Shared SaaS
Shared SaaS	Shared SaaS
Dedicated SaaS	Shared SaaS

\*\* In this scenario, multiple organization groups within Workspace ONE UEM (on-premises or SaaS) communicate to a single Shared SaaS build of Workspace ONE Assist.

This chapter includes the following topics:

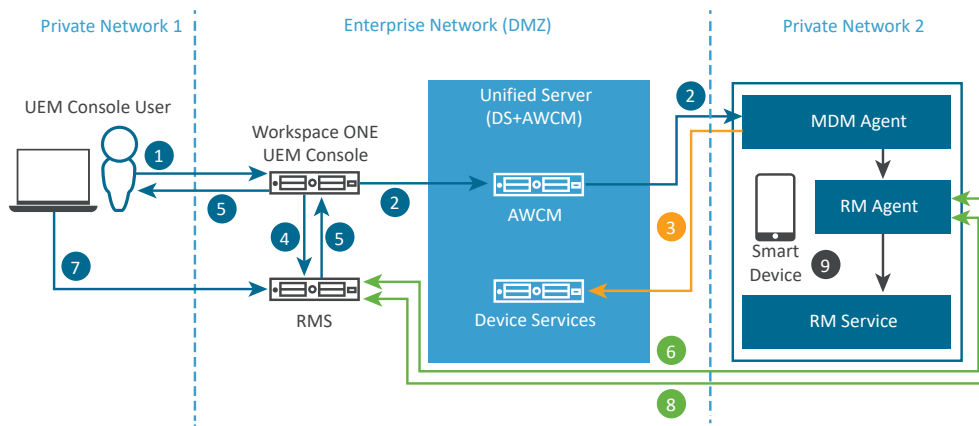
- [Typical Deployment](#)
- [Supported Platforms](#)
- [Capabilities by Platform](#)
- [Agent Modes](#)
- [General and Hardware Requirements](#)
- [Upgrade to a New Version](#)

## Typical Deployment

Most administrators deploy the Workspace ONE Assist server in an enterprise network to facilitate the communication between the various components.

### Without Load Balancer

This sample diagram is a typical deployment without the use of a load balancer.

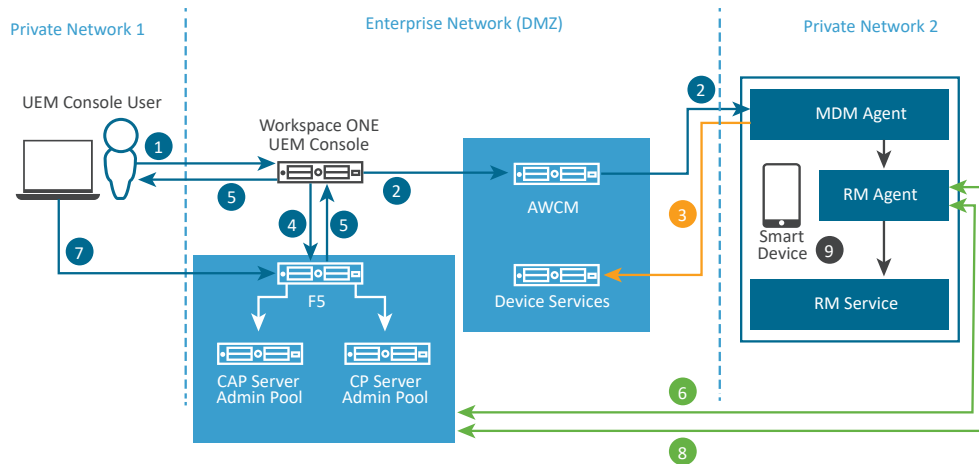


- |  |                          |
|--|--------------------------|
| 1. Queue RM Command.                     | 6. Request Session URL.  |
| 2. Queuing Command to Connect to Server. | 7. Admin Joins Session.  |
| 3. Confirm Command.                      | 8. Device Joins Session. |

- |                      |                              |
|----------------------|------------------------------|
| 4. Create Session.   | 9. Send Commands/Get Frames. |
| 5. Send Session URL. |                              |

## With Load Balancer

This sample diagram is a typical deployment that includes a load balancer. For more information, see [Integrate a Load Balancer to Your Deployment](#).



**CAP Servers** contain Core Services, Application Services, and Portal Services and can be load balanced.

**CP Servers** cannot be load balanced with the F5 since they use built-in software load balancing.

- |  |                              |
|--|------------------------------|
| 1. Queue RM Command.                     | 6. Request Session URL.      |
| 2. Queuing Command to Connect to Server. | 7. Admin Joins Session.      |
| 3. Confirm Command.                      | 8. Device Joins Session.     |
| 4. Create Session.                       | 9. Send Commands/Get Frames. |
| 5. Send Session URL.                     |                              |

## Supported Platforms

Workspace ONE Assist supports Remote Control for Android, macOS, Windows 10, and Windows Mobile devices. iOS devices are supported but only as far as the Remote View feature.

## Android Devices

- Android devices managed by Workspace ONE Intelligent Hub 7.0 or later.
  - Download and install the latest version of the Workspace ONE Assist APK from the My Workspace ONE™ documentation repository (<https://my.workspaceone.com/>).

- Android devices running Android 5.1 (Lollipop) or later support Remote View ONLY without a corresponding service application.
- Android devices running Android 4.3 (Jelly Bean) and later support full remote control with a corresponding OEM-specific service application installed. Download and install this OEM-specific service application by visiting the My Workspace ONE™ documentation repository (<https://my.workspaceone.com/>). Devices manufactured by Samsung and Sony both support full remote control without a corresponding OEM-specific service application.
- Samsung devices operating with a Work Profile in a BYOD or COPE enrollment require the Knox Service Plugin application to be installed after the Assist Agent is installed. For more information, see [How Do You Enable Remote Control with Samsung Knox Service Plugin](#).

For details, see [Supported Features by Enrollment Type and Ownership, Android](#) and [Full Remote Control Support by Original Equipment Manufacturer \(OEM\) and Model, Android](#).

## Windows 10 Devices

- Windows 10 devices running Windows 10 Anniversary Update (version 1607, code named Redstone 1) or later for Enterprise and Professional editions only.
- 64-bit processor required.
- Managed by Workspace ONE Intelligent Hub 1907 or later.
- Download and install the latest version of the Workspace ONE Assist agent (MSI file) from the My Workspace ONE™ documentation repository (<https://my.workspaceone.com/>).

## iOS Devices

Managed iOS devices can only be viewed using Remote View, a feature in Workspace ONE Assist.

- iOS devices running version 11.0 or later.
- Managed by Workspace ONE Intelligent Hub 4.9.3 or later.

## macOS Devices

macOS devices can only be remotely controlled with the Share Screen client tool provided they are within these specifications and environments.

- Support for SaaS deployments only.
- Managed by Workspace ONE Intelligent Hub 1912 or later.
- Workspace ONE UEM 1912 or later.



- macOS devices running 10.13 (High Sierra) or later.
  - **Note** macOS devices running 10.15 (Catalina) or later must grant **Screen Recording** permission to Workspace ONE Assist in the **Privacy** tab of **Security & Privacy** preferences, located in System Preferences. Only during the first time you initiate a Share Screen session with a qualifying macOS device, an access request popup displays including a convenience link to this privacy setting in System Preferences.
- Download and install the latest version of the Workspace ONE Assist agent from the My Workspace ONE™ documentation repository (<https://my.workspaceone.com/>).

## Windows Mobile

- Windows Mobile/CE running .NET 2.0 or later.
- Managed by Workspace ONE Intelligent Hub 6.0.4 or later.
- Download and install the latest version of the Workspace ONE Assist agent (MSI file) from the My Workspace ONE™ documentation repository (<https://my.workspaceone.com/>).

## Supported Features by Enrollment Type and Ownership, Android

Feature support for Android devices can be categorized by enrollment type (legacy, COPE, BYOD, Fully-Managed), ownership (Device, Profile), and whether the device is made by Samsung or not.

Samsung Devices					
Enrollment Type	Ownership	Remote Management	Hub Presence	Assist Presence	Knox Plugin Presence (Android 9.0 or later)
COPE	Device	Supported	Yes, not visible	Provisioned as an internal application	n/a
	Profile	Supported	Yes	n/a	Provisioned as a public application with allow remote control policies activated by Knox Premium key.
BYOD	Device	Not Supported	No	n/a	n/a
	Profile	Supported (work applications only)	Yes	Provisioned as a public application from the play store	Provisioned as a public application with allow remote control policies activated by Knox Premium key.
Fully Managed	Device	Supported	Yes	Provisioned as an internal application	
Non Samsung Devices (with OEM-signed Assist Service)					
COPE	Device	Supported	Yes, not visible	Provisioned as an internal application	n/a
	Profile	Supported	Yes	n/a	n/a
BYOD	Device	Supported	No	n/a	n/a

	Profile	Supported	Yes	Provisioned as a public application from the play store	n/a
Fully Managed	Device	Supported	Yes	Provisioned as an internal application	n/a

## Full Remote Control Support by Original Equipment Manufacturer (OEM) and Model, Android

Your Android device can enjoy full remote control support for Workspace ONE Assist if its model is listed here and you have installed its OEM-specific service application, available at the My Workspace ONE™ documentation repository.

Visit [my.workspaceone.com](https://my.workspaceone.com) to download the OEM-specific service application for your Android device of the following OEM/models.

Airbus

Archos Sense 50X

Bitatek

Blackberry KeyOne

Bluebird

Cipherlab

Curbell

Datalogic

Edovo Rockchip

Elotouch

Getac ZX70

Handheld Algiz RT7

Handheld Nautiz 6

Honeywell

Honeywell CT60

HP

Huawei

Innowi

Intermec

iSafe - IS5201

iSafe - IS910.1

ITOS

Janam

JREN

Kyocera DuraForce Bell

Kyocera M Devices

Kyocera Non-M

Kyocera-DuraForce-Pro

Lenovo TAB2 A8-50LC

Lenovo Tab4

LG

M3 Mobile SM10

M3 Mobile SM15

MediaWave

Mimo Monitors

Mobile Demand

Nokia 7.1

Outform Rockchip

Panasonic

Point Mobile

Samsung

SEUIC

Sonim

Sonim XP3800

Sonim XP5s

Sonim XP8

Sony

Spectralink Versity

Touch Dynamic.

Trimble Nomad 5

Unitech

Unitech EA500

Unowhy SQOOL 4.0

Unowhy SQOOL 4.1

XploreTech

XploreTech M60

Zebra (This service application is only necessary for Zebra devices with Android 9.0 or earlier. Zebra devices with Android 10.0 or later support Workspace ONE Assist out of the box).

Zone24x7

## Capabilities by Platform

You can review all the major supported features of Workspace ONE Assist separated by platform.

	Android	iOS	macOS	Windows CE	Windows 10
Attended Mode (BYOD/COPE)	✓	✓	✓		✓
Capture images or video	✓	✓	✓	✓	✓
Control device buttons and keypad	✓		✓	✓	✓
Manage files and folders	✓		✓	✓	✓
Registry editor				✓	
Remote control	✓		✓	✓	✓
Remote view	✓	✓			✓
Remote reboot with auto reconnect	✓		✓	✓	✓
Role-based access to client tools	✓	✓			✓
Run commands	✓		✓		✓
Screen draw	✓			✓	✓
Shortcuts to commonly used apps and settings	✓		✓	✓	✓
Unattended mode (Rugged/Kiosk)	✓			✓	
View and export detailed device info	✓	✓	✓	✓	✓
View basic device info	✓	✓	✓	✓	✓
View list active processes and apps	✓		✓	✓	✓
Virtual on-screen keyboard	✓		✓	✓	✓

## Agent Modes

You can connect to devices remotely using two distinct modes of the Workspace ONE Assist agent: Attended Mode and Unattended Mode. Given the enterprise use cases, ownership models, and privacy requirements, understanding the difference between these modes is the foundation of a best practice.

IT and Help Desk staff can use Workspace ONE Assist to support devices in myriad enterprise use cases. These cases include Knowledge Worker employees (Corporate-Owned Personally Enabled (COPE) or Bring Your Own Device (BYOD)), used for business-critical tasks (for example, inventory scanning, logistics) by shift working employees. Contractors with rugged devices and devices used by customers in kiosks are among other use cases.

It is important that Workspace ONE UEM be configured to deploy the correct Workspace ONE Assist client to each device based on these use cases and the privacy requirements and expectations for each device.

## Attended Mode

Attended Mode is intended for devices where the Remote User can contain personal or sensitive information and the Remote User can have an expectation or a legal requirement of privacy. Customers generally deploy Attended Mode for BYOD and COPE devices, providing additional privacy protection. In Attended Mode, the user is more actively prompted to authorize access to the device and its information.

Attended mode is available on Android, iOS, macOS, and Windows 10 devices.

Attended mode is not available on Windows Mobile/CE devices.

## Unattended Mode

Unattended Mode is intended for devices that do not contain personal information and might require maintenance or support by IT when there is no Remote User physically using the device (for example, when charging on a cradle between shifts, when in the depot because it was returned as defective, as a customer-facing kiosk). Customers generally deploy Unattended Mode for corporate owned Rugged/Business Critical and Kiosk devices.

There are no device notifications when using Workspace ONE Assist in unattended mode when a session is active. You are solely responsible for notifying device end users of the active remote management session.

Workspace ONE Assist uses device ownership information received during enrollment to recognize devices as corporate or personally owned. Unattended mode is not available to devices identified as personally owned or devices in a non-supervised configuration.

Unattended mode is available on Android and Windows Mobile/CE devices.

Unattended mode is not currently available on Windows 10 or macOS devices.

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**Note** On Samsung devices, a Knox permission must be accepted by the user when the application is first launched, even for devices in unattended mode.

---

## Missing Device Ownership

When device ownership status is unavailable, the installed agent behavior is platform-dependent.

- **Android Agent** - the unattended agent behaves per the unattended mode parameters and the attended agent behaves per the attended mode.

- **Windows10 Agent** - the unattended agent behaves the same as the attended agent, per the attended mode parameters.

## General and Hardware Requirements

Both SaaS and On-Premises customers must meet minimum requirements before using Workspace ONE Assist.

### General Requirements

SaaS customers must meet only the general requirements listed here.

Requirements	Minimum
<b>Supported Browsers</b>	Latest version of Google Chrome, Firefox, Safari, or Edge. Only Chrome supports the File Manager feature.
<b>Workspace ONE™ UEM version</b>	Workspace ONE UEM 9.2 or later with the ARM add-on.

### Hardware Requirements

In addition to the general requirements, on-premises customers must also meet the hardware requirements.

**Table 1-4. Workspace ONE Assist Server**

Hardware	Minimum
CPUs	2.4 GHz Processors, 4 Logical Processors, 2 CPUs, 2 Core 2x2 or 4 physical depending on machine type, virtual machine, or physical.
Memory	16 GB
Hard Drive IOPS	200
Hard Drive Space	100 GB for OS drive

**Table 1-5. Workspace ONE Assist Database Server**

Hardware	Minimum
CPUs	2.4 GHz Processors, 4 Logical Processors, 2 CPUs, 2 Core 2x2 or 4 physical depending on the machine type, virtual machine, or physical.
Memory	16 GB
Hard Drive IOPS	200
Hard Drive Space	200 GB for databases

**Table 1-6. Bandwidth**

Hardware	Minimum
Average Remote Session Requirement	1 MB/per minute (17 kbps)

## Hardware Scaling Requirements

Use the following requirements as a basis for creating an effective Workspace ONE Assist system that scales to your on-premises environment.

These requirements do not include network equipment such as load balancers or monitoring servers. All the arrangements presented here offer a high system availability in active and passive modes.

# Devices / # of Concurrent Remote Sessions / # of Concurrent Enrollments				
	Core Server (all in one)	DB Server	CP Server	CAP Server
Less than 1000 / Up to 50 sessions / 5 enrollments per sec	1 server (2 CPUs, 32 GB RAM, 250 GB HDD): * Windows 2012 or 2016 w/GUI. * MS SQL 2012–2016 Express (if DB is on the same server).	1 server, optional (2 CPUs, 8 GB RAM, 250 GB HDD): * Windows 2012 or 2016 w/GUI. * MS SQL 2012–2016 Express.	n/a	n/a
1000–10,000 / Up to 50 sessions / 5 enrollments per sec	1 server (2 CPUs, 32 GB RAM, 250 GB HDD): * Windows 2012 or 2016 w/GUI. * MS SQL 2012–2016 Standard (if DB is on same server).	1 server, optional (2 CPUs, 8 GB RAM, 250 GB HDD): * Windows 2012 or 2016 w/GUI. * MS SQL 2012–2016 Standard.	n/a	n/a
10,000–100,000 / Up to 50 sessions / 5 enrollments per sec	1 server (2 CPUs, 32 GB RAM, 250 GB HDD): * Windows 2012 or 2016 w/GUI.	1 server, optional (2 CPUs, 16 GB RAM, 250 GB HDD): * Windows 2012 or 2016 w/GUI. * MS SQL 2012–2016 Standard.	n/a	n/a
100,000–500,000 / Up to 100 sessions / 20 enrollments per sec	n/a	SQL cluster (2 CPUs, 32 GB RAM, 250 GB HDD): * Windows 2012 or 2016 w/GUI. * MS SQL 2012–2016 Standard.	2 servers (4 CPUs, 16 GB RAM, 250 GB HDD): * Windows 2012 or 2016 w/GUI.	2 servers (4 CPUs, 32 GB RAM, 250 GB HDD): * Windows 2012 or 2016 w/GUI.
500,000–1 million / Up to 200 sessions / 40 enrollments per sec	n/a	SQL cluster (4 CPUs, 32–64 GB RAM, 1 TB HDD): * Windows 2012 or 2016 w/GUI. * MS SQL 2012–2016 Standard.	4 servers (8 CPUs, 16 GB RAM, 250 GB HDD): * Windows 2012 or 2016 w/GUI.	4 servers (8 CPUs, 32 GB RAM, 250 GB HDD): * Windows 2012 or 2016 w/GUI.

## Software Requirements

Ensure that you meet the following software requirements to run Workspace ONE Assist.

## SaaS and On-Premises Device Software Requirements

For a full listing of platform-specific software requirements for devices, see [Supported Platforms](#) and [Chapter 4 Configure End-User Devices](#).

## On-Premises Installation Software Requirements

**Table 1-7. Workspace ONE Assist Server**

Requirement	Description
Operating System	Microsoft Windows Server 2016 or 2012 R2.
Software	Microsoft .NET Framework 4.6.2
Server Roles	<ul style="list-style-type: none"> <li>■ Application Server.</li> <li>■ Web Server IIS.</li> </ul>
Features	<ul style="list-style-type: none"> <li>■ .NET Framework 4.6 Features.               <ul style="list-style-type: none"> <li>■ .NET Framework 4.6.</li> <li>■ ASP .NET 4.6.</li> <li>■ WCF Services.                   <ul style="list-style-type: none"> <li>■ HTTP Activation.</li> <li>■ Message Queuing (MSMQ) Activation.</li> <li>■ Named Pipe Activation.</li> <li>■ TCP Activation and TCP Port Sharing.</li> </ul> </li> </ul> </li> <li>■ Message Queuing Services.</li> <li>■ Windows Process Activation Service.               <ul style="list-style-type: none"> <li>■ Process Model.</li> <li>■ .NET Environment 3.5.</li> <li>■ Configuration APIs.</li> </ul> </li> </ul>

**Table 1-8. Workspace ONE Assist Database**

Requirement	Description
Operating System	<ul style="list-style-type: none"> <li>■ Microsoft Windows Server 2016 or 2012 R2.</li> </ul>
Software	<ul style="list-style-type: none"> <li>■ MS SQL Server of any of the following versions.               <ul style="list-style-type: none"> <li>■ 2012 Standard.</li> <li>■ 2014 Standard or Enterprise.</li> <li>■ 2016 Standard or Enterprise.</li> <li>■ Express 2012 or later (only for deployments with less than 2000 devices).</li> </ul> </li> <li>■ MS SQL Management Studio 17 (only when SQL Server Express 2012 or later is used).</li> <li>■ Microsoft .Net Framework 4.6.2.</li> <li>■ Microsoft SQL Server Management Objects (SMO) DLL.</li> </ul>

## Database Settings Created Automatically During Installation

You must have a server admin account (or equivalent) for these elements to auto-create when you install Workspace ONE Assist.



<b>Server Roles</b>	<ul style="list-style-type: none"> <li>■ Sysadmin.</li> <li>■ Bulkadmin.</li> <li>■ Dbcreator.</li> </ul>
<b>User Mapping</b>	<ul style="list-style-type: none"> <li>■ Dbowner.</li> <li>■ Dbbackupoperator.</li> <li>■ SQLAgent dependent.</li> <li>■ serverGroup dependent.</li> </ul>
<b>Users</b>	<p><b>Apdbuser</b>  Server role: Db_creator.  Database role: Db_owner for all aetherpal user databases. On MSDB, database role to create SQL jobs.  [SQLAgentOperatorRole]  [SQLAgentReaderRole]  {SQLAgentUserRole}</p> <p><b>Apadminuser</b>  Server role: Db_creator, to create multitenant databases.  Database role: Db_owner for all aetherpal user databases. On MSDB, database role to create SQL jobs.  [SQLAgentOperatorRole]  [SQLAgentReaderRole]  {SQLAgentUserRole}</p>

## Network and Security Requirements

While configuring your network, you must take security measures into account whether you are in an on-premises or SaaS environment.

### On-Premises Configurations, Network and Security Requirements

The network and security configurations designed for single (all-in-one) server deployments differ from multiple-server deployments. IPv4 is the required protocol for the Workspace ONE Assist server. You must disable IPv6.

#### IP Address and Port Translation, Single-Server On-Prem Deployment

The Workspace ONE Assist server is required to have one static IPv4 address. This address must be accessible from the mobile device network and the user network from which users access the web portal. This IP address is translated to the all-in-one server's Portal (web) services and Connection Proctor (CP) services.

By default, web services are bound to port 443 and 80 and CP services are bound to port 8443, however, your IT team can customize these ports. If Network Address Translation (NAT) is used, one public facing static IP address is required translated to the internal IP address of the Workspace ONE Assist server.

Port	Service
80	Portal Services
443	Portal Services and T10 API
8443	Connection Proctor Service

\* Indicates customizable port address.

### IP Address and Port Translation, Multiple-Server On-Prem Deployment

Each Connection Proctor server must have its own static IPv4 address that is accessible from the device network and the user network that is translated to the CP service using port 443. The server hosting Portal Services must also have its own static IP address that is accessible from the device network and user network. The portal services are bound to port 443 and 80, however, your IT team can customize these ports.

If network address translation (NAT) is used, the public facing IP addresses must be translated to the internal IP addresses of the servers accordingly.

Core and application components and corresponding services can be deployed on a public facing server or in a private zone. CP services and Portal services must be able to communicate with these core and application services over a range of ports.

Port	Service
80	Portal Services on Portal Server
443	Portal Services and T10 API
8443	Connection Proctor Service on CP Server.
8865	Data Tier Proxy (DTP)
8866	Messaging Entity (ME)
8867	Data Access Proxy (DAP)
8870	Service Coordinator (SVC)
12780	Connection Proctor (CP) from Messaging Entity (ME)

\* Indicates customizable port address.

Database services are deployed on the database server. The Workspace ONE Assist system connects to the database server using an IP address, hostname, or instance name. Typically, SQL database allows connections on port 1433.

### Persistence for Multiple Server On-Prem Deployment

Workspace ONE Assist supports IP and SSL persistence. SSL persistence is required for connection proctor servers as the SSL termination must be made at the server level.

SSL persistence is also required for T10 service communication. An SSL certificate must be present on the T10 server since this communication cannot be offloaded.

### Firewall Rules, Single-Server On-Prem Deployment

Firewall rules can be summarized based on the number of allocated IP addresses to the Workspace ONE Assist system.

Source	Destination	Protocol	Port	Direction	Rule
Device and User Networks / Internet	CP Server	TCP/TLS/SSL	8443	Inbound	Accept
Device and User Networks / Internet	Portal Server	TCP/HTTPS	443	Inbound	Accept
Workspace ONE portal server	Portal Server (T10 Interface)	TCP/HTTPS	443	Inbound	Accept
Workspace ONE Assist server	MS SQL Database Server	TCP	1433	Inbound	Accept

### Firewall Rules, Multiple Server On-Prem Deployment

Source	Destination	Protocol	Port	Direction	Rule
Device and User Networks / Internet	CP Server	TCP/TLS/SSL	8443	Inbound	Accept
Device and User Networks / Internet	Portal Server	TCP/HTTPS	443	Inbound	Accept
Workspace ONE portal server	Portal Server (T10 Interface)	TCP/HTTPS	443	Inbound	Accept
CP Server and Portal Server	Core/App Server	TCP	8865, 8866, 8867, 8870	Inbound	Accept
Core/App Server	CP Server	TCP	12780	Inbound	Accept
Core/App Server	Database Server	TCP	1433	Inbound	Accept

### Fully Qualified Domain Name and Site SSL/TLS Certificate, Single-Server On-Prem Deployment

The Workspace ONE Assist system requires one FQDN assigned to the static IP address which is used for Portal Services and for Connection Proctor services.

The Site SSL/TLS certificate has the following attributes in a single-server deployment:

- It is used for TLS/SSL bindings for Portal services.
- It is used in IIS for the Portal Services bound to port 443.
- It corresponds to the FQDN.
- It is used for the Connection Proctor Service bound to port 8443.
- It contains both public and private key pairs.
- It must be installed on the Workspace ONE Assist server's personal certificate store before the Workspace ONE Assist software is installed.

Obtain your SSL/TLS certificate from a well-known certificate authority such as Comodo, GoDaddy, and so on. If you prefer a self-signed certificate, then the root and intermediate certificates/public key pair must be installed on mobile devices you intend to remote into.

### Fully Qualified Domain Name and Site SSL/TLS Certificate, Multiple Server On-Prem Deployment

One FQDN is assigned to the Portal server and one FQDN is assigned to each CP server deployed in the ARM system. If a single CP server is deployed, you must have 2 FQDNs. If 2 CP servers are deployed, then 3 FQDNs are required, and so on.

You can obtain a SAN or wildcard site SSL/TLS certificate used for TLS/SSL IIS bindings for the Portal Services. The same SAN or wildcard certificate can be used for the CP servers to bind the CP services. If you have a separate SSL/TLS certificate for each server, then each server must have its own certificate installed. The certificates must correspond to the FQDN assigned to the servers. The certificates must contain both private and public key pairs and they are installed on the server's local machine certificate store.

Obtain your SSL/TLS certificates from a well-known certificate authority such as Comodo, GoDaddy, and so on. If you prefer a self-signed certificate, then the root and intermediate certificates/public key pair must be installed on mobile devices you intend to remote into.

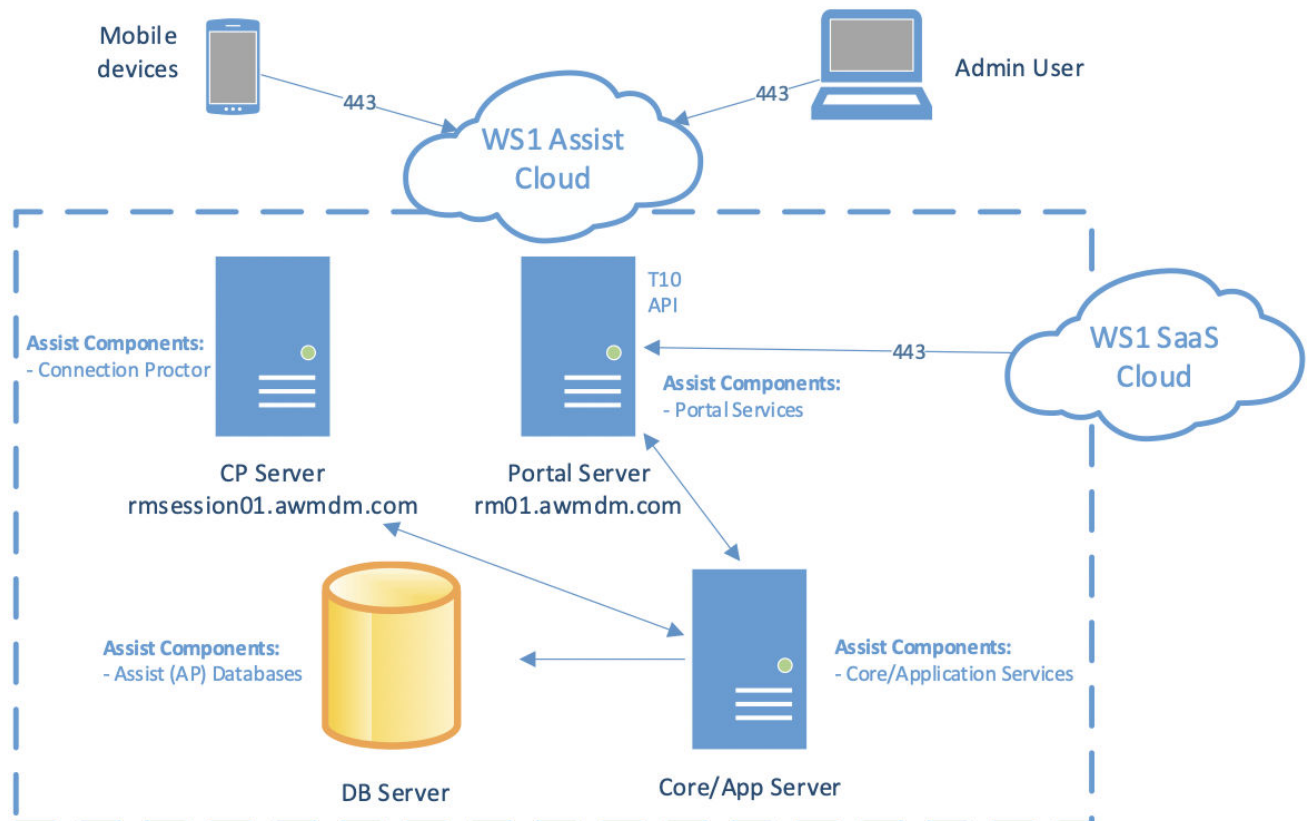
## SaaS Configurations, Network and Security Requirements

The network and security configurations designed for SaaS deployments differ from on-premises deployments. Based on your location, you must whitelist certain FQDN and IP addresses.

### SaaS Deployment

With a cloud-based implementation, the Workspace ONE Assist software is delivered as a service (SaaS). The integration between your Workspace ONE UEM SaaS tenant and your Workspace ONE Assist SaaS deployment is configured for you.

**Figure 1-1. Workspace ONE Assist SaaS Deployment**



If you want your Workspace ONE Assist to run in a SaaS configuration, you must whitelist the following fully qualified domain names (FQDNs) and IP addresses.

The FQDNs and IPs are region specific, so add these to your whitelist based on your location. The port is 443.

- US Portal Server - <https://rm01.awmdm.com> 52.207.131.208
- US CP Server [rm01session01.awmdm.com](https://rm01.awmdm.com) 52.207.186.27
- UK Portal Server <https://rmuk01.awmdm.com> 35.176.238.148
- UK CP Server [rmuksession01.awmdm.com](https://rmuk01.awmdm.com) 35.177.197.211
- Canada Portal Server <https://rmca01.awmdm.com> 52.60.162.133
- Canada CP Server [rmcasession01.awmdm.com](https://rmca01.awmdm.com) 52.60.196.137
- Germany Portal Server - <https://rmde01.awmdm.com> 52.28.212.69
- Germany CP Server - [rmdesession01.awmdm.com](https://rmde01.awmdm.com) 52.28.80.78
- Australia Portal Server <https://rmau01.awmdm.com> 52.62.156.193
- Australia CP Server [rmausession01.awmdm.com](https://rmau01.awmdm.com) 13.55.186.162
- Japan Portal Server <https://rmjp01.awmdm.com> 52.193.23.235
- Japan CP Server [rmjpsession01.awmdm.com](https://rmjp01.awmdm.com) 52.199.112.44

## Deployments Across Public and Private Security Zones

Security zone configuration for Workspace ONE Assist depends upon whether your environment is composed of a single server or multiple servers.

### Single-Server Deployments

The database component can be installed on a database server in the private zone while the rest of the components are installed on the all-in-one server in the public zone. You can deploy the all-in-one server either in the public or private zone but the all-in-one server **MUST** be accessible from the device network and the user network that uses the Workspace ONE Assist system.

### Multiple Server Deployments

You can deploy Workspace ONE Assist servers across multiple security zones, such as DMZ/public and private. You can deploy all servers in a public zone or a private zone, depending on the network/security requirements. You can also deploy servers across any zone, provided the servers hosting Connection Proctor services and Portal Services are accessible from the device network and user network.

Typically, in multiple server deployments, components must be accessed by the device network and the user network. Because of this dependency, servers deployed in the Public zone include servers hosting Connection Proctor components and Portal services components. Servers deployed in private zones can include Application, Core, and Database components.

Based on hardware scaling, if the Core, Application, and Portal services components are deployed on the same server (CAP server), then this server must be deployed in a public zone. Connection Proctor servers are also deployed in the public zone. The database server is deployed in the private zone.

## Domain Name Service

Domain Name Service is required only for multiple server deployments of Workspace ONE Assist. Domain Name Service is not required on single-server deployments (App+Core+Portal+CP).

In multiple server deployments, the Workspace ONE Assist server requires a forward lookup zone and three DNS records within the forward lookup zone. These records enable devices to communicate properly with the components within the Workspace ONE Assist server. The forward lookup zone, the host record, and service records all must point to the Workspace ONE Assist server.

Requirement	Description
<b>Forward Lookup Zone</b>	<p>Create a forward lookup zone that points to your Workspace ONE Assist server.</p> <p>The forward lookup zone must be named.</p> <pre>controlplane.aetherpal.internal</pre>
<b>Host (A) Record</b>	<p>The Host (A) Record must be named the following.</p> <pre>admin</pre> <ul style="list-style-type: none"> <li>■ If the Workspace ONE Assist Server is behind a load balancer, then the Host (A) Record must point to the internal IP address of the VIP (also known as Virtual IP) for the load balanced pool.</li> <li>■ If the Workspace ONE Assist server is not behind a load balancer, then the Host (A) Record must point to the Workspace ONE Assist Server IP address.</li> </ul>
<b>Service Coordinator Service Records</b>	<ul style="list-style-type: none"> <li>■ Record type: SRV.</li> <li>■ Domain: controlplane.aetherpal.internal</li> <li>■ Service: _svc.</li> <li>■ Protocol: _tcp.</li> <li>■ Priority: 0</li> <li>■ Weight: 0</li> <li>■ Port number: 8870</li> <li>■ Host Offering this service: admin.controlplane.aetherpal.internal</li> </ul>

## Custom Lookup Zone

You can use a custom **Forward Lookup Zone** with the Domain Name Service in place of the prescribed zone above. Full instructions on entering a custom lookup zone are provided in steps 11 and 14 of the [Advanced \(Custom\) Installation of Workspace ONE Assist](#).

## Upgrade to a New Version

Upgrading to a new version of Workspace ONE Assist is simple. Install a new version of Workspace ONE Assist on top of an existing, older version by taking the following steps.

### Prerequisites

Read through this entire topic BEFORE you begin the installation process.

## Procedure

- 1 To ensure that you do not run the old installer file in error, replace the previous version of the installer with the new version in the same folder. All certificates and the install.config file remain the same.
- 2 Right-click the installer file and select **Run as administrator**. The installer prompts you to remove the currently installed components, excluding the database.
- 3 Select **OK** and allow the installer to remove the installed components.

The **AirWatch Remote Management Uninstall Components** screen appears.

- 4 Select **Next** and proceed with the uninstall process.

The **Uninstall Components** dialog box displays, listing each component it finds of the old version. Each of these components is selected with a green check mark. Notice that the Database or DB does not appear on this screen. This absence is because the old database is used during the upgrade process, which means everything on the database is kept intact in the new version of Workspace ONE Assist.

- 5 Select **Uninstall** and commence uninstalling the old components.

The uninstallation begins in earnest, displaying each component as it is removed.

- 6 Once all the old components are uninstalled, the **AirWatch Remote Management Setup** prompts you to install new versions of the same components. Select **Next** to begin.
- 7 The **Choose Install Location** prompt appears. The default installation location appears prepopulated in the text box, which it got from the install.config file. Proceed by selecting **Install**.
- 8 The **Get Started with AirWatch** screen displays, prompting you to select between **Standard Installation (Basic)** and **Advanced Installation (Custom)**.

For details about each installation method, including all steps, screens, text boxes, and options, see [Standard \(Basic\) Installation of Workspace ONE Assist](#) or [Advanced \(Custom\) Installation of Workspace ONE Assist](#).

- 9 The installer reads from the install.config file, applying all the original configurations it finds to the options screens, including SQL server details, user names, Tenant FQDN, certificates, database configurations, and many other configurations. You might not need to modify any of the settings it pulls from this install.config file with the possible exceptions below.
  - **Check Database Accounts** - Depending upon your configuration and the existing permissions in your environment, the install.config settings might not be populated correctly. For this reason, review the database accounts to ensure that they are correct. Do this review at the first screen, **Installer - Basic - Database (Step 1 / 2)** by clicking the **...More** button which displays the **Database Advanced Settings** dialog box. Review the apadminuser and apdbuser accounts and respective passwords for accuracy and select **Save**. Ensuring these accounts are correct now saves you trouble later.

- **SSL Certificate** - If you installed a new SSL certificate before running this upgrade, ensure that you integrate it with the upgrade. Review the certificate at the second screen, **Installer - Basic - Application (Step 2 / 2)** by selecting the **SSL Certificate** drop-down menu and reviewing the name of the new SSL Certificate. If you have not installed a new SSL certificate before running this upgrade, then just ensure that the existing SSL cert is selected.
  - **T10 Certificate** - When upgrading from an older version of ARM to a newer version, review the T10 certificate to make sure it is the correct one. If you are in doubt about this certificate's validity, on the **Installer - Basic - Application (Step 2 / 2)** screen, deselect the check box **Apply Default Settings**, select the folder button that corresponds to the **T10 Certificate**, and select the correct certificate file in P7B format.
  - **Check the Ports** - At the **Installer - Basic - Application (Step 2 / 2)** screen, select the **...More** button which displays the **Portal Advanced Settings** screen.
    - Ensure all the ports it pulls from install.config are correct for your environment. You should know whether your environment is using port 8443, which is the default connection port for Workspace ONE Assist.
    - If 8443 is not used by your environment, then ensure the **CP Port** text box is 8443.
    - If 8443 is being used by your environment, then you must select another **CP Port** in order for Workspace ONE Assist to function. Consider using port 8446 in such a case.
    - Select **Save** if you have made changes.
- 10 After you have reviewed all the settings above and made all applicable adjustments, proceed with the remainder of the installation by selecting the **Next** button.

The **Installer - Selected Components** screen displays.

- 11 The **Installer - Selected Components** page confirms all the installer settings it plans to use for the upgrade. If you want to make changes, you can use the **< Prev** button to revisit config pages. Otherwise, select **Install** to begin the upgrade. The installer prompts you again for the installation location. Select **Install**.

The database account is validated against the apdbuser and apadminuser accounts. During the upgrade, the Installing Database process displays "Error Message: DBAlreadyExists". This simply means it found the existing database and it has begun to upgrade it.

- 12 When the installation finishes, select **Next**.
- 13 The last step is to run the resource pack which consists of configuration files for hundreds of different devices. Ensure the **Execute Resource pack** check box is selected and click **Finish**.

## Results

The Workspace ONE Assist server has been upgraded.



# Load Balancer

# 2

A load balancer improves the workload distribution across multiple server resources and is valuable in high capacity, high availability environments. Consider a load balancer in your Workspace ONE Assist environment if your configuration features a separate CAP server and connection proctor server.

This chapter includes the following topics:

- [Integrate a Load Balancer to Your Deployment](#)

## Integrate a Load Balancer to Your Deployment

You can integrate a load balancer into a new Workspace ONE Assist configuration, provided you have implemented all the multi-node options during server and database installation.

When you initially run the installer which creates the config.installer file, you are presented with the **Database Credentials** screen.

### Prerequisites

SSL passthrough is required for all server configurations on the load balancer. To address persistence, you must configure the load balancer to use IP or SSL session persistence.

### Procedure

- 1 For multi-node solutions, you must enter the database server instance name or the database server instance IP address.
- 2 You must run the database installation by itself even if you are installing other services on the same server.
- 3 The Workspace ONE Assist server requires a host record that points to the internal IP address of the VIP (also known as Virtual IP) for the load balanced pool.
- 4 Ensure that each [FQDN] record in the [ApAdmin].[dbo].[Server] table in the database points to the internal IP address of the VIP (also known as Virtual IP) for the load balanced pool.

### What to do next

Ensure that you delete the Default Website from IIS once the server is running. See [Domain Name Service](#). See also [Modify Database Record for Multi-Node Configuration](#).

# Install Workspace ONE Assist

# 3

Before you can benefit from remotely accessing devices in your fleet, on-premises customers must install and configure the Workspace ONE Assist server.

There are two methods to installing Workspace ONE Assist.

- **Standard (Basic)**, for installations that require only the default settings.
- **Advanced (Custom)**, for installations with advanced options such as multiple servers to accommodate high availability and horizontal scaling.

Before deciding which method is right for your needs, you must [Generate the Workspace ONE Assist Certificates](#).

This chapter includes the following topics:

- [Generate the Workspace ONE Assist Certificates](#)
- [Install an SSL Certificate](#)
- [Standard \(Basic\) Installation of Workspace ONE Assist](#)
- [Advanced \(Custom\) Installation of Workspace ONE Assist](#)
- [Integrate Deployment Model, On-Prem UEM With SaaS Assist](#)

## Generate the Workspace ONE Assist Certificates

You must generate the root and intermediate certificates used during an on-premises installation whether you are performing a **Standard (Basic)** or **Advanced (Custom)** installation.

The installer is called RemoteManagementCertificateGenerator\_9\_2. This tool must be run on a machine with the same locale settings as the database server to ensure that the same date format is set in the SQL script. You must run this certificate generator as an administrator.

### Prerequisites

Download the installer package, titled [VMware Workspace ONE™ UEM Remote Management Installer](#), from the myWorkspaceONE portal (<https://myworkspaceone.com>).

## Procedure

- 1 Extract all contents from the installer package ZIP file into c:\temp of the Workspace ONE Assist server. Do not move the files around inside the temp folder as the installer needs all the files in their extracted locations. Do not rename or move the temp folder.
- 2 Run the Remote Management Certificate Generator which is included in the installer package.
- 3 In the UEM console, switch to your primary organization group (OG).
- 4 The OG you select must be of a 'customer' type.
- 5 Navigate to **Groups & Settings > All Settings > System > Advanced > Site URLs**, scroll down to the Workspace ONE Assist section, and copy the string in the **Remote Management CN** text box. You are not able to see a **Remote Management CN** option unless you are in a 'customer' type OG.

---

**Note** If the **Remote Management CN** text box is blank, then you must manually [Chapter 8 Create the Remote Management CN from the Workspace ONE UEM Database](#).

---

- 6 Set the following values.

Setting	Value
Certificate Type	Remote Management
Deployment	On-premises
Certificate Common Name	Paste the Remote Management CN copied from the preceding step (Step 6).

- 7 Select **Generate Certificates**.
- 8 Set **Password** for the certificates when prompted. Store this password for future use.
- 9 Navigate to the folder holding the Remote Management Certificate Generator.
- 10 Find the generated certificates file in the Artifacts\private folder called root\_intermediate\_chain.p7b.
- 11 Copy this file to the c:\temp\certs folder on the Workspace ONE Assist Server. This file is the T10 Certificate. The T10 interface certificate contains two major certificates that enable Workspace ONE UEM to communicate with the T10 portal. These certs are the Workspace ONE UEM portal Root and Intermediate certificates in a p7b file.
- 12 In the Artifacts folder, find the "Certificate Seed Script.sql". Run this script against the Workspace ONE UEM Database to seed the generated certificates into the Workspace ONE UEM database.

## Results

If you receive the error message "The conversion of a varchar data type to a datetime data type resulted in an out-of-range value," then see [Chapter 9 Troubleshooting Workspace ONE Assist](#). Support for multiple Workspace ONE UEM environments is available. For details, see [Configure Multi-Workspace ONE UEM Environment Support](#).

## What to do next

Proceed next to [Install an SSL Certificate](#).

# Install an SSL Certificate

You must incorporate a secure sockets layer (SSL) certificate into the Workspace ONE Assist on-premises installation process whether you are performing a **Standard (Basic)** or **Advanced (Custom)** installation.

SSL certificates provide secure, encrypted communications between a website and an Internet browser. The SSL certificate secures HTTPS binding for the management website for port 443 and allows a secure connection. This secure connection is between the admin and Web services. Also, the SSL certificate secures the connection to the Connection Proctor on port 8443. You must provide the SSL certificate as a wildcard or SAN certificate.

If you are installing Workspace ONE Assist for the first time or upgrading to a newer version, you do not need to bind the SSL certificate to a website or renew the site thumbprint. However, if you are renewing an expired SSL certificate in between Workspace ONE Assist releases, you must bind the SSL certificate to a website and update the renewed site Thumbprint using AdminWebPortal. A link to each of those tasks appears directly after the following steps.

This process applies only to the SSL certificate. This process does not apply to the root and intermediate chain, the details of which can be viewed in [Generate the Workspace ONE Assist Certificates](#).

## Procedure

- 1 Run the Microsoft Management Console (MMC).  
Locate this application by typing 'mmc' into the search box found in the Start button.
- 2 In the **File** menu of the MMC application, select **Add/Remove Snap-in....**  
The **Add or Remove Snap-ins** dialog box displays.
- 3 Under **Available snap-ins** on the left panel, select **Certificates** and then select the **Add** button in the middle.  
The **Certificates snap-in** dialog box displays.
- 4 Select **Computer Account** and then select the **Next** button.
- 5 Select **Local Computer** and then select the **Finish** button.  
Now the **Add or Remove Snap-ins** screen displays **Certificates (Local Computer)** under the **Console Root** on the right panel.
- 6 Select **OK** to finish.  
The main MMC window displays.
- 7 Expand the **Certificates (Local Computer)** on the left panel by selecting the **Greater Than** symbol. Select **Personal > Certificates**.
  - a If you do not have a Certificates folder to select, select the Personal folder and a Certificates folder will be created automatically.

- 8 In the **Action** menu of the MMC application, select **All Tasks** followed by **Import....**  
The **Certificate Import Wizard** displays.
- 9 Select **Next** to begin the Wizard.
- 10 Select **Browse...** to locate the SSL certificate in the PFX file format. You should familiarize yourself with the name of this file, since you must identify it by name in the future. Once located, select **Open** to import it.
- 11 Enter the certificate's **Password** when prompted. Add check marks to the two boxes labeled **Mark this key as exportable** and **Include all extended properties**.
- 12 Select **Next**.
- 13 Select **Place all certificates in the following store** and set the **Certificate** store to 'Personal'.
- 14 Select **Next**.
- 15 Confirm all the presented information is correct and then select **Finish**.

### Results

A new SSL certificate has been installed or your expired SSL certificate has been updated.

### What to do next

If you are installing Workspace ONE Assist, then you must decide whether you are running a [Standard \(Basic\) Installation of Workspace ONE Assist](#) or an [Advanced \(Custom\) Installation of Workspace ONE Assist](#).

- **Standard (Basic)**, for installations that require only the default settings.
- **Advanced (Custom)**, for installations with advanced options such as multiple servers to accommodate high availability and horizontal scaling.

If you are not installing Workspace ONE Assist but rather just updating an expired SSL certificate, then you must [Bind the SSL Certificate to a Website](#) followed by [Update the Renewed Site Thumbprint Using AdminWebPortal](#).

## Bind the SSL Certificate to a Website

If you are renewing an expired SSL certificate in between Workspace ONE Assist releases, you must bind the renewed SSL certificate to the website and update the renewed site Thumbprint using AdminWebPortal. This task binds the SSL certificate.

If you are installing or upgrading the Workspace ONE Assist server, do not take these steps.

### Prerequisites

You do not need to manually bind the SSL certificate each time you install it. During the normal course of installing or upgrading the Workspace ONE Assist server, you must also install the SSL certificate. But the Workspace ONE Assist installation or upgrade process takes care of binding the SSL certificate to the website for you. You only need to follow these steps to bind the SSL certificate if you are manually renewing an expired SSL certificate in between Workspace ONE Assist installations or upgrades.

## Procedure

- 1 Open Internet Information Services (IIS) on the Workspace ONE Assist server.
- 2 In the **Connection** pane on the left, expand the node of the server by selecting the triangle in front of the server name.
- 3 Expand the node of the **Sites** folder.
- 4 Right-click **Mgmt Web Site** and select **Edit Bindings....**  
The **Site Bindings** screen displays.
- 5 Select **https** and then select the **Edit** button.  
The **Edit Site Binding** screen displays.
- 6 Select the updated **SSL certificate** in the drop-down menu.
- 7 Select **OK**.

## Results

The new SSL Certificate is now bound to the website.

## What to do next

[Update the Renewed Site Thumbprint Using AdminWebPortal.](#)

# Update the Renewed Site Thumbprint Using AdminWebPortal

If you are renewing an expired SSL certificate in between Workspace ONE Assist releases, you must bind the renewed SSL certificate to the website and update the renewed site Thumbprint. This task updates the Thumbprint with AdminWebPortal.

If you are installing or upgrading the Workspace ONE Assist server, do not take these steps.

## Prerequisites

During the normal course of installing or upgrading the Workspace ONE Assist server, you must also install the SSL certificate. But the Workspace ONE Assist installation or upgrade process takes care of binding the SSL certificate to the website for you and updating the site thumbprint.

You only need to follow these steps to update the site thumbprint with AdminWebPortal if you are manually renewing an expired SSL certificate in between Workspace ONE Assist installations or upgrades and have already bound it to the website.

## Procedure

- 1 Start the MMC console from the Workspace ONE Assist server.
- 2 In the left-side panel, navigate to **Console Root > Certificates (Local Computer) > Personal > Certificates** and locate, by name, the SSL certificate you installed or updated recently.
- 3 Double-click this SSL certificate.  
The Certificate screen displays.

- 4 Select **Details** tab at the top.
- 5 In the **Show** drop-down menu, select **Properties Only**.
- 6 Click once on the text box **Thumbprint**.

A series of number and letter pairs appears in the panel beneath the **Show** panel.

- 7 Select all these pairs of characters and copy them to the clipboard. Close the MMC console.
- 8 Open Notepad from the server desktop.
- 9 Paste the clipboard contents into the empty notepad screen.
- 10 In Notepad, enter the keyboard shortcut **Ctrl-H**.


The **Replace** screen displays.

- 11 Enter a single space in the **Find what** text box.
- 12 Click the **Replace All** button and then close the **Replace** screen by clicking the X.

All the spaces in between the number/letter pairs have been removed. Using notepad also takes the ANSI text copied from the MMC console and converts it to ASCII text, which is the format we want when we go to paste that thumbprint in the AdminWebPortal.

- 13 In Notepad, select the newly formatted thumbprint and copy it to clipboard with **Ctrl-C**. Close Notepad.
- 14 Open your browser and log into the AdminWebPortal using your credentials.  
For example, <https://yourdomain.com/AdminWebPortal/login.aspx>.
- 15 Select the **Default Service Configurations**.
- 16 In the **Search** bar, enter certid.

To display the search results properly, you might need to scroll down to the page size modifier and maximize the number of pages it can display. Doing this sets a large enough playing field to display any search result.

- 17 Identify the certid in the **Parameter Name** column. :ctl.svc.cnp.tch/certid. In the **Options** column of the same line, select the Edit () icon.



Upon clicking the Edit icon, you might need to search for certid once again. Locate the certid **Parameter Name** and notice that the **Parameter Value** is now editable.

- 18 Select the existing string of characters in the **Parameter Value** for :ctl.svc.cnp.tch/certid and replace it with the new Thumbprint string you have stored in your clipboard by applying the **Ctrl-V** keyboard shortcut.

- 19 Select the Save () icon.

- 20 Select **Service Configuration**.

- 21 Search for ConnectionProctorService and review its **Status** column.

- 22 For both **Active** status and **Inactive** status for ConnectionProctorService, select the Edit () icon and update the :ctl.svc.cnp.tch/certid **Parameter Value** with the new Thumbprint string (**Ctrl-V**).
- 23 Select the Save () icon for each, as applicable.
- 24 Select the **Update** button at the bottom of the page.
- 25 Restart all services (Core and IIS services). Select the Start menu and enter run on your keyboard. In the **Open** text box, enter `services.msc`  
The **Services** application displays.
- 26 Locate all services that are labeled Aetherpal.
- 27 Stop all these Aetherpal services.
- 28 Start all Aetherpal services.

### Results

The site Thumbprint has been updated.

## Standard (Basic) Installation of Workspace ONE Assist

The Standard (Basic) method of installing the Workspace ONE Assist server, for on-premises environments that require only the default settings, is a process that is composed of a single phase.

### Procedure

- 1 Download, extract, and save the Workspace ONE Assist installer into a temporary directory on the Workspace ONE Assist server. You can download the installer from the repository at <https://my.workspaceone.com>.
- 2 Right-click the installer file and select **Run as administrator**.
- 3 At the Welcome screen, select **Next**.
- 4 Enter the directory where you want to install the Workspace ONE Assist application and select **Install**.  
The default installation directory can be customized to any location on the server.
- 5 Select Standard Installation (Basic) and then select **Next**.
- 6 If SQL Server is already installed on the server or on another server where Assist databases are deployed, select 'Connect to existing SQL Server' and enter the required parameters.

Setting	Description
SQL server name	Define the SQL Server instance running on the server (such as \\SQLEXPRESS, (local), and so on).
Authentication	Select either Windows authentication to authenticate to SQL Server as current Windows user OR select SQL Server Authentication to select a SQL server account, such as SA.



Setting	Description
User name	If SQL Server Authentication was used, type in the user name that is used to authenticate against the SQL server.
Password	Type in the password for the user name selected.

- a Select the **...More** button and enter additional details.

The installer creates two user accounts to access and maintain SQL databases. They are apadminuser and apdbuser.

- b Specify passwords for these accounts.

**Note** When making user names and passwords, do not use the following special characters:

- Ampersand - &
- Less Than - <
- Greater Than - >
- Single Quote - '
- Double Quotes - "
- Semicolon - ;

- c Enter in the path for database MDF, LDF, and NDF files.

- d Select **Save** to proceed.

You are taken back to the previous screen.

- e Select **Next** to proceed.

- 7 In the **Tenant FQDN** text box, type in the FQDN for portal (web) services.

A Fully Qualified Domain Name is the complete domain name for a specific computer, or host, on the Internet. It consists of two parts: the host and the domain. For example, myhost.thedomain.edu.

- 8 In the **SSL Certificate** text box, select the folder button or the pull-down arrow to select the SSL certificate for the Workspace ONE Assist system that corresponds to the FQDN.

The certificate is installed in the local system personal certificate store.

- 9 Select the certificate and then select **OK**.

- 10 Deselect the **Apply Default Settings** check box and select the folder icon to attach the T10 certificate.

- 11 Browse for the T10 certificate, select the certificate, and then select **Open**.

- 12 Select the **...More** button to select additional settings for the Workspace ONE Assist system. Verify the parameters.

Setting	Description
<b>HTTP Port</b>	Defines the internal HTTP port used by portal services. By default, port 80 is selected. You can use a different port if port 80 is being used, such as 8080.
<b>IIS Site Binding IP address</b>	Defines from which interfaces/IP addresses portal services can be reached. By default, the setting is 'All Unassigned' to enable all interfaces/IPs.
<b>HTTPS port</b>	Defines the HTTPS port used by portal services for access from outside the network. By default, port 443 is selected. If port 443 is already being used in your environment for another purpose, then you can use a different port, such as 7443.
<b>SSL Enable</b>	Enables SSL/TLS protocol for portal services. By default, this check box is enabled so that the portal services use SSL/TLS. Leave this check box enabled.
<b>T10 user name and Auto Generated</b>	Defines T10 API user for connectivity between AirWatch portal and Workspace ONE Assist system. By default, if 'Auto Generated' check box is enabled, the installer assigns a random user name to be created locally on the server. Leave this text box defaulted and the check box enabled for the Installer to create the T10 API user. If you want to define the user, disable the check box and type in the T10 user name you want to use.
<b>CP FQDN/Port</b>	Defines the FQDN and port on which CP services can be reached. Enter in the FQDN, which must be the same as the FQDN assigned for portal services. Enter port 8443, which is the default port for CP services. If port 8443 cannot be used, you can enter any other port. Be sure that network/security teams use this assigned port when assigning translation rules from the firewall/router to the RM Server for CP services.

- 13 Select **Save** to continue.

You are taken to the previous screen.

- 14 Select **Next** to continue.

The installer performs multiple pre-requisite checks to ensure that the product can be installed. After the installer performs the prerequisites check, a summary report displays.

- 15 If any of the prerequisites are missing and the check fails, do NOT select Install.

- Select **Detailed Report** link to see which prerequisites are missing.
- To install missing prerequisite components, select the **Install Components** link. The installer installs the missing components.

You might need to reboot the server after the prerequisites are installed.

- After the reboot, relaunch the installer.

The installer pre-populates with your previous selections.

- 16 If the initial prerequisite check comes back with all components passing, select **Install**.

Once the **Install** button is selected, the installation process begins.

Note: Database execution might take an extended period.

- 17 When the installation finishes, select **Next** to continue.
- 18 When prompted to run the Resource Pack that loads all available device profiles onto the Workspace ONE Assist system, leave the **Execute Resource pack** check box selected (enabled) and then select the **Finish** button.

## Results

By default, the Resource Pack utility imports all device profiles by using a command-line window. After Resource Pack utility completes, the command-line window closes.

## What to do next

Next, proceed to [Configure the Workspace ONE UEM console](#).

# Advanced (Custom) Installation of Workspace ONE Assist

The Advanced (Custom) method of installing the Workspace ONE Assist server for on-premises environments is a process that is composed of a single phase. The Advanced (Custom) installation features advanced options such as multiple servers to accommodate high availability and horizontal scaling.

Take the following steps and install Workspace ONE Assist with its advanced (custom) configuration.

## Procedure

- 1 Download, extract, and save the Workspace ONE Assist installer into a temporary directory on the Core, Application, and Portal (CAP) server. You can download the installer from the repository at <https://my.workspaceone.com>.
- 2 Right-click the installer file, and select **Run as administrator**.
- 3 At the Welcome screen, select **Next**.
- 4 Enter the directory where you want to install the Workspace ONE Assist application and select **Install**.

The default installation directory can be customized to any location on the server.

- 5 Select Advanced Installation (Custom) and then select **Next**.
- 6 Select all components for installation on the server.
  - Database
  - Core Services
  - Portal Services
  - Application Services
- 7 Select **Next**.

- 8 Configure the Database settings. Select **Connect to existing SQL Server** and complete the following settings.

Setting	Description
SQL Server Name	Enter the database server hostname.
Authentication	Select the database account authentication. The authentication can be either <b>Windows Authentication</b> or <b>SQL Authentication</b> .
User name	Enter the user name of the database account. This user name is used by the installer to create all the databases required to install Workspace ONE Assist.
Password	Enter the password of the database account.

**Note** When making user names and passwords, do not use the following special characters:

- Ampersand - &
- Less Than - <
- Greater Than - >
- Single Quote - '
- Double Quotes - "
- Semicolon - ;

9 Select the **...More** button and complete the **Database Advanced Settings**.

**Important** If you are upgrading an existing installation, you must reenter your user name passwords. You must also reenter the paths of your MDF, LDF, and NDF file locations.

**Note** When making user names and passwords, do not use the following special characters:

- Ampersand - &
- Less Than - <
- Greater Than - >
- Single Quote - '
- Double Quotes - "
- Semicolon - ;

Setting	Description
<b>DB Owner User name/ Password</b>	Set the user name and password for the Workspace ONE Assist database owner SQL account. This account does not have system-wide permissions. The account only has permissions within the Workspace ONE Assist databases. This user name is <b>apadminuser</b> .
<b>DB Application User name/ Password</b>	Set the user name and password for the Workspace ONE Assist database application account. This user name is <b>apdbuser</b> .
<b>MDF Path</b>	Enter the path of the primary data file (MDF).
<b>LDF Path</b>	Enter the path of the transaction log file (LDF).
<b>NDF Path</b>	Enter the path of the secondary data file (NDF).

10 Select **Save** followed by **Next**.

11 Configure the Portal settings.

Setting	Description
<b>Tenant FQDN</b>	Enter the server fully qualified domain name. For example, "rmstage01.awmdm.com"
<b>SSL Certificate</b>	Select the folder icon and browse for the SSL Certificate already installed. For details, see <a href="#">Install an SSL Certificate</a> .
<b>SQL Server Name</b>	Enter the database server hostname from the previous step.
<b>Apply Default Settings.</b>	Enable this check box to pre-populate the additional settings <b>Enrollment Certificate</b> , <b>T10 Certificate</b> , and <b>License</b> .
<b>Apply Default Enrollment Certificate</b>	If required, select a different <b>Enrollment Certificate</b> provided by the Assist support team.
<b>Apply Default T10 Certificate</b>	Deselect this check box and select the folder button to browse for and load the T10 certificate.

- 12 Select the **...More** button and complete the **Custom Portal Advanced Settings**.

**Important** If you are using port numbers other than the defaults referenced in [Network and Security Requirements](#), you must enter these non-default port numbers here.

Setting	Description
<b>DB Application User name/ Password</b>	Enter the user name and password for the Workspace ONE Assist database application account. This user name is <b>apdbuser</b> .
<b>HTTP Port</b>	Enter the internal HTTP port used by portal services. The default is 80 but you can enter an alternate port number, such as 8080.
<b>IIS Site Binding IP Address</b>	Defines from which interfaces/IP addresses portal services can be reached. By default, the setting is 'All Unassigned' to enable all interfaces/IPs.
<b>HTTPS Port</b>	Enter the HTTPS port number. The default is 443 but you can enter your preferred port number.
<b>SSL Enable</b>	Enables SSL/TLS protocol for portal services. By default, this check box is enabled so that the portal services use SSL/TLS. Leave this check box enabled.
<b>T10 user name And Auto Generated</b>	Defines T10 API user for connectivity between AirWatch portal and Workspace ONE Assist system. By default, if 'Auto Generated' check box is enabled, the installer assigns a random user name to be created locally on the server. Leave this text box defaulted and the check box enabled for the Installer to create the T10 API user. If you want to define the user, disable the check box and type in the T10 user name you want to use.

- 13 Select **Save** followed by **Next**.
- 14 Review your selections at the Selected Components screen, then select **Install** and wait for the installer to complete. Once the installer has finished, select **Next**.
- 15 Ensure that the check box **Execute Resource Pack** is selected and select the **Finish** button.
- 16 Download, extract, and save the Workspace ONE Assist installer into a temporary directory on the Connection Proctor (CP) server, right-click the installer file, and select **Run as administrator**.
- 17 At the Welcome screen, select **Next**.
- 18 Enter the directory where you want to install the Workspace ONE Assist application and select **Install**.
- The default installation directory can be customized to any location on the server.
- 19 Select Advanced Installation (Custom) and then select **Next**.
- 20 Select the 'Connection Proctor' component for installation on the server.

## 21 Configure the Connection Proctor settings.

**Important** If you are using port numbers other than the defaults referenced in [Network and Security Requirements](#), you must enter these non-default port numbers here.

Setting	Description
<b>Connection Proctor FQDN</b>	Defines the Fully Qualified Domain Name (FQDN) on which CP services can be reached. Enter in the FQDN, which must be the same as the FQDN assigned for portal services.
<b>Port</b>	<p>Enter the port number for CP services. The default is 443 in multiple server environments but you can enter your preferred port number.</p> <p>Whatever port you select, ensure that network/security teams use this port when assigning translation rules from the firewall/router to the Workspace ONE Assist Server for CP services.</p>
<b>SSL Certificate</b>	<p>Select the folder icon and browse for the SSL Certificate already installed. For details, see <a href="#">Install an SSL Certificate</a>.</p> <p>SAN (subject alternative name) certificates are supported. The implementation of SAN certificates depends upon your server arrangement.</p> <ul style="list-style-type: none"> <li>■ The SAN certificate must have an FQDN defined for each connection proctor server and Workspace ONE Assist server. <ul style="list-style-type: none"> <li>■ For example, presume you have 2 connection proctor servers and 2 Workspace ONE Assist servers. The 2 Workspace ONE Assist servers host portal services, which require TLS/SSL traffic terminated at the load balancer. The FQDN for the SAN certificate must reflect the fully qualified domain name, for instance, "rmstage01.awmdm.com".</li> <li>■ Meanwhile, for each of the 2 CP servers, TLS/SSL traffic terminates at the connection proctor, and therefore, you must have 2 FQDNs defined in the SAN certificate, for instance, "rmstage01.awmdm.com" and "rmstage02.awmdm.com".</li> </ul> </li> </ul>
<b>SQL Server Name</b>	Enter the database server hostname from the previous step.
<b>Apply Default Settings.</b>	Enable this check box to pre-populate the additional setting <b>Enrollment Certificate</b> .
<b>Apply Default Enrollment Certificate</b>	If required, select a different <b>Enrollment Certificate</b> provided by the Assist support team.

- 22 Select the **...More** button and complete the **Custom Connection Proctor Advanced Settings**.

**Important** If you are using port numbers other than the defaults referenced in [Network and Security Requirements](#), you must enter the non-default port numbers here.

Setting	Description
<b>DB Application User name / Password</b>	Enter the user name and password for the Workspace ONE Assist database application account. This user name is <b>apdbuser</b> .
<b>CP Internal IP Address/Port</b>	Defines from which internal IP addresses the connection proctor can be reached. By default, the setting is 'All Unassigned' to enable all addresses. Enter the port number for the Connection Proctor component. The default is 8443 but you can enter your preferred port number.
<b>Forward Lookup Zone</b>	Under the <b>CP Internal IP Address/Port</b> drop-down menu, enable this check box and enter your forward lookup zone here. You can also enter a custom lookup zone. The Forward Lookup Zone setting is optional in a multi-server environment.

- 23 Select **Save** followed by **Next**.

- 24 At the **Selected Components** screen, review your selections. Once you have verified your configuration, select **Install**.

#### What to do next

Proceed to [Integrate Deployment Model, On-Prem UEM With SaaS Assist](#).

## Integrate Deployment Model, On-Prem UEM With SaaS Assist

You can integrate an on-premises Workspace ONE UEM environment with a SaaS build of Workspace ONE Assist, in either single customer and multi-customer deployments.

The typical use case is that a partner with multiple on-premises Workspace ONE UEM environments (with single customer or multi-customer deployments) wants to add Workspace ONE Assist service. It is simple to integrate a SaaS build of Workspace ONE Assist to your on-prem Workspace ONE UEM build.

#### Prerequisites

You must have a working on-prem Workspace ONE UEM installation and a working SaaS build of Workspace ONE Assist.

#### Procedure

- 1 Update the Site URL of the External Remote Management in Settings. See [Configure the Workspace ONE UEM console](#).

The Workspace ONE Assist server can now communicate with Workspace ONE UEM.



- 2 [Generate the Workspace ONE Assist Certificates](#). This step must be finished no matter what deployment model you are using, but it is the first set of certificates you generate for multi-Workspace ONE UEM environments. See [Supported Deployment Models](#).
  - If you are deploying a single customer Workspace ONE UEM environment, then proceed to step 3.
  - If you are deploying a multi-customer Workspace ONE UEM environment, then you must [Configure Multi-Workspace ONE UEM Environment Support](#).
- 3 [Chapter 4 Configure End-User Devices](#).
- 4 While logged into the Workspace ONE UEM console, navigate to **Devices > List View** and locate a suitable device to remotely manage. See [Supported Platforms](#).
- 5 Select that device's *Friendly Name* to display **Device Details**.
- 6 Initiate a Workspace ONE Assist session on this device by selecting the **More Actions** button and then selecting **Remote Management**.

## Results

The single customer or multi-customer on-premises deployment of Workspace ONE UEM is now connected to the Shared SaaS build of Workspace ONE Assist.

## Configure the Workspace ONE UEM console

After installing the Workspace ONE Assist server and all its components, configure the UEM console to communicate with the Workspace ONE Assist server.

### Procedure

- 1 In the UEM console, ensure that you are in the Global OG.
- 2 Navigate to **Settings > System > Advanced > Site URLs > External Remote Management**.
- 3 Complete the Workspace ONE Assist settings.

Settings	Description
<b>Console Connection Hostname</b>	Enter the Workspace ONE Assist server fully qualified domain name (FQDN) plus "/t10". For example: <pre>https://rmstage01.awmdm.com/t10</pre>
<b>Device Connection Name</b>	Enter the Workspace ONE Assist server fully qualified domain name (FQDN). For example: <pre>https://rmstage01.awmdm.com</pre>

- 4 Select **Save**.

## Results

The Workspace ONE Assist server is now ready to handle remote management sessions with end-user devices.

## What to do next

Proceed to [Chapter 4 Configure End-User Devices](#).

## Configure Multi-Workspace ONE UEM Environment Support

If you want to operate the Workspace ONE Assist server across multiple Workspace ONE UEM environments (not multiple organization groups), then take the following steps.

Do not follow this procedure if you want Workspace ONE Assist to work with a single Workspace ONE UEM environment.

## Prerequisites

You must have already completed all the steps in [Generate the Workspace ONE Assist Certificates](#).

## Procedure

- 1 Log in to the **secondary or other** Workspace ONE UEM environment.

Do not log into the same environment you selected in **Step 4** of the topic [Generate the Workspace ONE Assist Certificates](#).

- 2 In the UEM console of this secondary environment, switch to your primary OG.

The OG you select must be of a 'customer' type. For more information about organization groups, see the topic **Organization Group Type Functions** from the **VMware Workspace ONE UEM Console Basics Documentation**.

- 3 Navigate to **Groups & Settings > All Settings > System > Advanced > Site URLs**, scroll down to the **External Remote Management** section, and copy the string in the **Remote Management CN** text box.

---

**Note** If this text box is blank, then you must manually [Chapter 8 Create the Remote Management CN from the Workspace ONE UEM Database](#).

---

- 4 Switch back to the Workspace ONE Assist server. Run the Remote Management Certificate Generator, which includes the Remote Management Installer, using the following values.

Setting	Value
Certificate Type	Remote Management
Deployment	Upload Intermediate
Certificate Common Name	Paste the Remote Management CN from Step 3 preceding

- 5 Select the **Generate Certificates** button.

- 6 When prompted, you must select the intermediate private cert.

This certificate and password is the same one you originally generated in **Step 8** of [Generate the Workspace ONE Assist Certificates](#). This certificate is located in c:\temp\certs of the Workspace ONE Assist server.

- 7 On the Workspace ONE Assist server, locate the 'artifacts' folder, and run the SQL script file "Certificate Seed Script.sql" against the Workspace ONE UEM Database to seed the generated certificates into the Workspace ONE UEM database.
- 8 Repeat this entire task for each additional Workspace ONE UEM environment you want Workspace ONE Assist to work with.

If you want to add two additional environments to the environment you configured originally, then you must follow the steps of this task twice.

### What to do next

After you have finished installing the client certificate for each Workspace ONE UEM environment, proceed to [Configure the Workspace ONE UEM console](#).

# Configure End-User Devices

# 4

Now that the servers have been installed and configured you must install the platform-specific agents on the devices so that they can be remotely managed with Workspace ONE Assist. You may also have to enable the device to accept remote control.

## Install the Assist App for Windows and macOS

- 1 Visit the <https://my.workspaceone.com/products> page that lists all the available device agents.
- 2 Identify and download platform-specific Workspace ONE Assist agents that are applicable to your deployment.

---

**Note** macOS devices running 10.15 (Catalina) or later must grant **Screen Recording** permission to Workspace ONE Assist in the **Privacy** tab of **Security & Privacy** preferences, located in System Preferences. Only during the first time you initiate a Share Screen session with a qualifying macOS device, an access request popup displays including a convenience link to this privacy setting in System Preferences.

---

## Install the Assist App for iOS

In addition to the Assist App for iOS you get from <https://my.workspaceone.com/products>, you must also prepare your iOS devices to use the Remote View feature. For more information, see [How Do You Enable Remote View For iOS Devices](#).

## Install the Assist App for Android

To provide support for Android devices, VMware has partnered with many of the top Android device manufacturers to make OEM-specific service applications. Android devices by Samsung and Sony do not require this OEM-specific service application, as they include support for Assist out of the box.

If the launcher mode is enabled on Samsung devices, you must whitelist the following activities in order for you to be able to respond to the prompts during the installation of the Assist agent.

```
com.samsung.klmsagent.activities.ConfirmDialog
```

```
com.android.packageinstaller.permission.ui.GrantPermissionsActivity
```

- **Note** Zebra devices with Android 10 (Q) or later also support Workspace ONE Assist out of the box. This support means customers do not need to deploy the Zebra-specific service application APK file on their Zebra devices running Android 10 (Q) or later.

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- **Note** For Android Enterprise Enrolled BYOD Devices, see [How Do You Enable Remote Control for Android Enterprise Enrolled BYOD Devices](#).

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- **Note** For Android Enterprise Enrolled COPE Devices, see [How Do You Enable Remote Control for Android Enterprise Enrolled COPE Devices](#).

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This chapter includes the following topics:

- [How Do You Enable Remote Control with Samsung Knox Service Plugin](#)
- [How Do You Enable Remote View For iOS Devices](#)
- [How Do You Enable Remote Control for Android Enterprise Enrolled BYOD Devices](#)
- [How Do You Enable Remote Control for Android Enterprise Enrolled COPE Devices](#)

## How Do You Enable Remote Control with Samsung Knox Service Plugin

You can enable Samsung Knox devices to be remotely controlled with Workspace ONE Assist by installing the Knox Service Plugin.

### Prerequisites

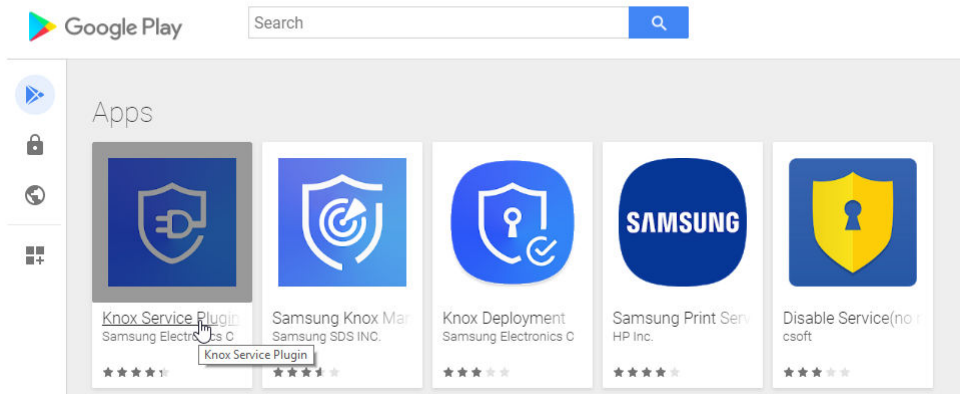
The Samsung Knox Service Plugin is only available on Android 9.0 (Pie) and later. The only deployment modes supported are Profile Owner (PO) and Device Owner (DO).

### Procedure

- 1 Log in to the Workspace ONE UEM Console.
- 2 Navigate to **Apps and Books > Applications > Native**, select the **Public** tab, and then select **Add Application**.
- 3 Select Android as the platform and enter "Knox Service Plugin" for the **Name** option.

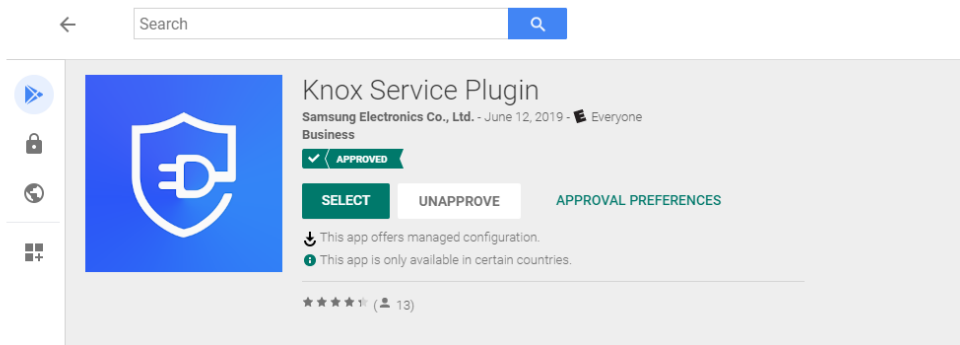
4 Select the **Knox Service Plugin** from the list of applications.

Add Application



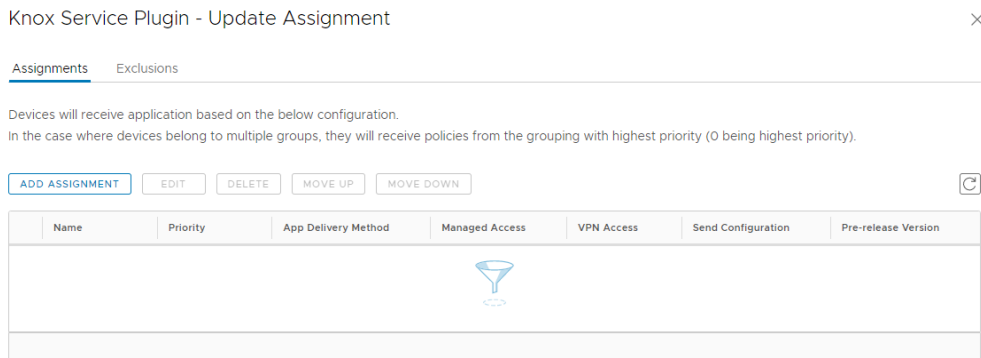
5 Click the **Select** button.

Add Application



6 Add additional details as needed. Select **Save and Assign** to continue.

7 Select **Add Assignment**.



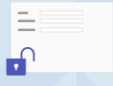
8 Select your applicable assignment Groups.

- 9 Select the desired application delivery method: **Auto** and automatically apply the application assignment and **On Demand** to allow the device user to opt-out of the app assignment.

Knox Service Plugin - Add Assignment ×

Assignment Groups <sup>\*</sup>

App Delivery Method <sup>\*</sup> ☐ Auto ☒ On Demand



**Adaptive Management Level : Open Access**  
Apply policies that give users open access to apps with minimal administrative management.

**Data Loss Prevention** [Configure](#)  
DLP policies provide controlled exchange of data between managed and unmanaged applications on the device. To prevent data loss on this application, make it "Managed Access" and create "Restriction" profile policies for desired device types.

**Managed Access** ☐

**App Tunneling** ☐

**Pre-release Version** <sup>\*</sup>

**Application Configuration** [CONFIGURE](#)

[CANCEL](#) [ADD](#)

- 10 Select **CONFIGURE** next to **Application Configuration**.

- 11 Enter the KNOX Premium License Key.

Knox Service Plugin - Application Configuration ×

**Profile name**  [+](#) [?](#)

**KPE Premium License key**  [+](#) [?](#)

**Debug Mode**  [?](#)

**Device-wide policies (Device Owner)** [CONFIGURE](#)  
DeX policy, VPN policy, Firewall and Proxy policy, Call and Messaging control, Device Restrictions, Advanced Restriction policies, Firmware update (FOTA) policy, Password Policy, Application management policies, Device Admin whitelisting, Device customization controls, Device Controls, Enterprise Billing policy, Universal Credential Manager policy, Certificate management policies

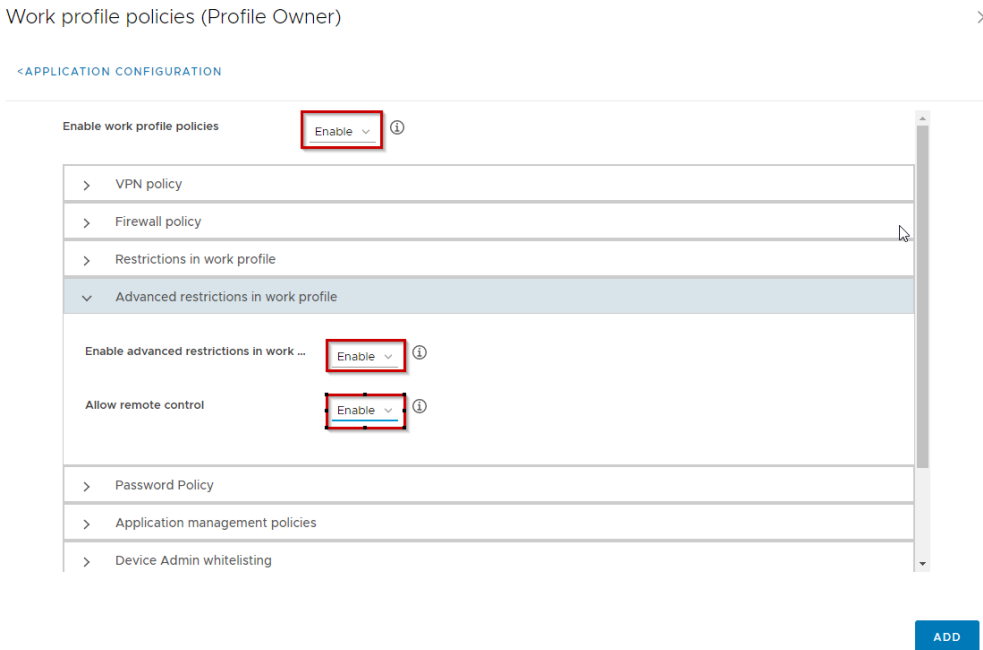
**Work profile policies (Profile Owner)** [CONFIGURE](#)  
VPN policy, Firewall policy, Restrictions in work profile, Advanced restrictions in work profile, Password Policy, Application management policies, Device Admin whitelisting, Enterprise Billing policy, Universal Credential Manager policy,

[CANCEL](#) [SAVE](#)

The Knox premium license key is mandatory to enable remote control within the work profile.

- 12 Select **CONFIGURE** next to **Work profile policies (Profile Owner)**.

- 13** Select the **Enable** drop-down next to **Enable Work Profile Policies**. Then enable the two options under **Advanced restrictions in work profile** and **Allow remote control**. Then select the **ADD** button.



- 14** Select **Add** again to save the assignment.

- 15** Finally, select **Save and Publish** to publish the Knox Service Plugin with the configured policies.

## Results

Once the Knox Service Plugin is installed on the device and the policies are applied successfully, remote control is available within the work profile.

Samsung Knox devices can now be remotely controlled using Workspace ONE Assist.

**Note** On Samsung BYOD devices, remote control is available only within Work apps. If you navigate to the Work profile home screen or personal side of a Samsung BYOD device during a Workspace ONE Assist session, it only displays a blank screen.

## What to do next

Proceed to [Start an Assist Session](#).

# How Do You Enable Remote View For iOS Devices

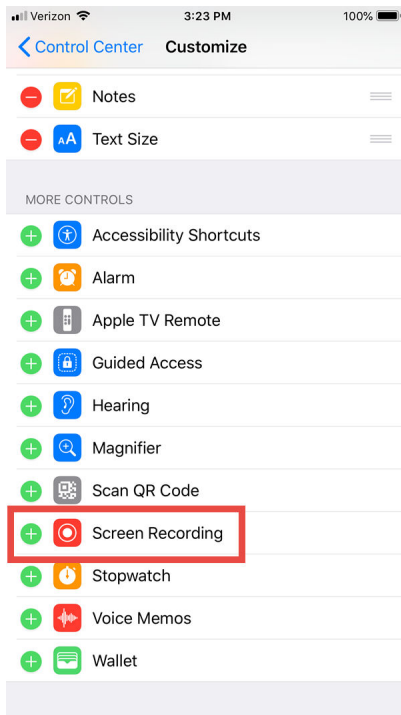
You can enable Workspace ONE Assist's Remote View feature for iOS devices by taking the following steps.


## Procedure

- 1 Ensure Workspace ONE Intelligent Hub 190x or later is installed.

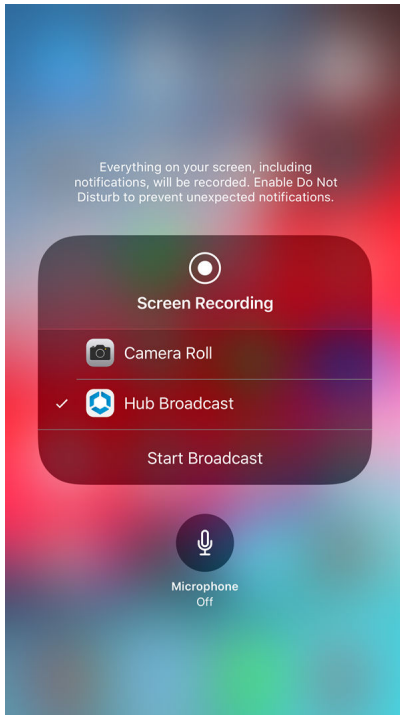


- 2 Request the iOS device end user to perform the following one time setup.
  - a Navigate to **Settings > Control Center > Customize Controls** and add **Screen Recording** to the Control Center by selecting its green plus sign.



- 3 Request the iOS device end user to perform the following procedure before each Remote View session.
  - a Open **Control Center** using the screen gesture appropriate for your iOS model.
  - b Press and hold down the **Screen Recording** icon ().

- c Enable **Hub Broadcast**.
- d Select **Start Broadcast**.



## Results

This iOS device can now be remotely viewed using Workspace ONE Assist.

## How Do You Enable Remote Control for Android Enterprise Enrolled BYOD Devices

You must enable your Android Enterprise enrolled BYOD devices to work with Workspace ONE Assist before they can be remotely controlled.

On Samsung BYOD devices, you must enable remote control within the work profile. The Knox Service Plugin must also be installed and the appropriate OEM Config Policy must be pushed to the device.

For more information, see [How Do You Enable Remote Control with Samsung Knox Service Plugin](#) and [Full Remote Control Support by Original Equipment Manufacturer \(OEM\) and Model, Android](#).

## Prerequisites

The Assist Agent and OEM-specific Assist Service package can be auto installed from Workspace ONE UEM or made available for the end user to install when needed.

The Workspace ONE Assist Agent is available at <https://my.workspaceone.com/products>.

To enable Android Enterprise enrolled BYOD devices, select path 1 **or** path 2.

## Procedure

### 1 Push required content using Workspace ONE UEM.

- a From the Workspace ONE UEM console, use **Apps and Books** or **Product Provisioning** to add the Workspace ONE Assist agent as a managed **internal** application. For more information about App Management, see the **VMware Workspace ONE UEM Application Management Life Cycle Guide**.
- b From the Workspace ONE UEM console, use **Apps and Books** or **Product Provisioning** to add the OEM-specific Assist Service as a managed **internal** application. This step is required to enable remote control on all supported OEMs except Samsung and Sony. For more information about Product Provisioning, see the **VMware Workspace ONE UEM Product Provisioning Guide**.
- c Create a smart group that includes these Android Enterprise enrolled BYOD devices.
- d Assign the agent and OEM-specific Assist Service to the smart group you created. For more information about Smart Groups, see the **VMware Workspace ONE UEM Console Basics Guide**.

All the guides mentioned above can be found on [docs.vmware.com](https://docs.vmware.com).

### 2 Direct End-User to Download and Install Apps From Their Device.

For Android BYOD devices, you must make the Workspace ONE Assist agent and OEM-specific service application available as **Public** applications through the Play Store.

- a Direct your Android BYOD end users to navigate to the Work Profile.
- b The end user must open the Play Store from within the Work Profile.
- c End user must download and install the Workspace ONE Assist Agent.
- d If applicable, the end user must download and install the OEM-specific service application. This step is required to enable remote control on all supported OEMs except Samsung and Sony.

## What to do next

---

**Note** On Samsung BYOD devices, remote control is available only within Work apps. If you navigate to the Work profile home screen or personal side of a Samsung BYOD device during a Workspace ONE Assist session, it only displays a blank screen.

---

Proceed to [Start an Assist Session](#).

## How Do You Enable Remote Control for Android Enterprise Enrolled COPE Devices

You must enable your Android Enterprise enrolled COPE (Corporate-Owned, Personally-Enabled) devices to work with Workspace ONE Assist before they can be remotely controlled.

The Workspace ONE Assist Agent is available at <https://my.workspaceone.com/products>.

## Prerequisites

On Samsung COPE devices, you must enable remote control within the work profile. The Knox Service Plugin must also be installed and the appropriate OEM Config Policy must be pushed to the device.

For more information, see [How Do You Enable Remote Control with Samsung Knox Service Plugin](#) and [Full Remote Control Support by Original Equipment Manufacturer \(OEM\) and Model, Android](#).

## Procedure

- 1 From the Workspace ONE UEM console, use **Apps and Books** or **Product Provisioning** to add the Workspace ONE Assist agent as a managed **internal** application. For more information about App Management, see the **VMware Workspace ONE UEM Application Management Life Cycle Guide**.
- 2 From the Workspace ONE UEM console, use **Apps and Books** or **Product Provisioning** to add the OEM-specific Assist Service as a managed **Internal** application. This step is required to enable remote control on all supported OEMs except Samsung and Sony. For more information about Product Provisioning, see the **VMware Workspace ONE UEM Product Provisioning Guide**.
- 3 Create a smart group that includes these Android Enterprise enrolled COPE devices.
- 4 Assign the agent and OEM-specific Assist Service to the smart group you created. For more information about Smart Groups, see the **VMware Workspace ONE UEM Console Basics Guide**.

All the guides mentioned above can be found on [docs.vmware.com](https://docs.vmware.com).

## What to do next

Proceed to [Start an Assist Session](#).

# Client Tools

# 5

The Workspace ONE Assist client provides support tools to facilitate troubleshooting and remotely controlling end-user devices. Not all client tools are available for all platforms. You can also assign tool-specific role permissions to your admins from the Workspace ONE UEM console.

This chapter includes the following topics:

- [Role-Based Access to Workspace ONE Assist](#)
- [Start an Assist Session](#)
- [Privacy Notices and End-User Prompts](#)
- [Remote View, Assist Client Tool](#)
- [Share Screen, Assist Client Tool](#)
- [Manage Files, Assist Client Tool](#)
- [Registry Editor, Assist Client Tool](#)
- [Remote Shell, Assist Client Tool](#)
- [Command-Line Interface, Android](#)

## Role-Based Access to Workspace ONE Assist

You can make customized roles based on Assist functionality and assign those roles to your admins, giving them varying level of access to Workspace ONE Assist's main features, including Remote View and Share Screen.

Roles specific to Workspace ONE Assist work the same as roles in Workspace ONE UEM. Roles are made of one or more resources (or permissions). Permissions specific to Workspace ONE Assist are included in the same pool of Workspace ONE UEM permissions.

## Remote View Session Elevation

A role with the right combination of permissions can give your admins the ability to elevate the current Assist session, allowing them to go from using one client tool to using another in the middle of a session.

For example, if you make a role with the **Remote View** and **Remote Control** permissions, and assign that role to an admin, then that admin can start a Remote View session, provided the host device supports such functionality, and elevate that session to a remote control session simply by using the [Main Menu Toolbar](#).

Such elevation reflects the natural progression of many Remote View sessions, where the admin completes an initial troubleshooting phase only to discover they require the full range of abilities afforded to them by the Share Screen client tool.

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**Note** macOS devices do not support the Remote View client tool, which means Remote View Session Elevation is not available for macOS devices. macOS devices only support the full remote control function.

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## Assign Role Permissions for Workspace ONE Assist Client Tools

You can add resources, or permissions, to the roles you assign to admins with the Workspace ONE UEM console so they can use Workspace ONE Assist to help users of supported devices.

### Procedure

- 1 In the Workspace ONE UEM console, navigate to **Accounts > Administrators > Roles** and select the **Add Role** button.

The **Create Role** screen displays.

- 2 Select the **Assist** category, located in the left pane labeled **Categories**.

All five Assist-related resources, or permissions, display in the right pane.

- 3 Enable the **Allow** check box for the specific permission you want to apply to the role.


There are five Assist-related permissions.

- **Remote View** - "read only" view of the host device with the [Remote View, Assist Client Tool](#).
- **Remote Control** - "edit" view or full access to the [Share Screen, Assist Client Tool](#).
- **File Manager** - full access to the [Manage Files, Assist Client Tool](#).
- **Registry Editor** - full access to the [Registry Editor, Assist Client Tool](#).
- **Remote Shell** - functionality includes both the [Remote Shell, Assist Client Tool](#) and the [Command-Line Interface, Android](#).

- 4 Enter the **Name** and **Description** of your Assist-related role.

- 5 **Save** the role.

- 6 Next, you must assign the role to your administrator. Navigate to **Accounts > Administrators > List View** and locate the Administrator you want to assign the role to.

- 7 Select the **Edit** icon () to the left of the administrator user name.

The **Add/Edit Admin** screen displays.

- 8 Select the **Roles** tab.

- 9 Select the **Add Role** button.

Two empty text boxes display, labeled **Select Organization Group** and **Select Role**.

- 10 Fill the **Select Organization Group** text box with the organization group (OG) in your org structure you want this role assignment to apply.

If your admin is in this OG or downline of this OG, then they gain the abilities of this role. If your admin moves above this OG, or upline of this OG, then they lose the abilities of this role. The higher the OG you select here, the more OGs your admin can apply the abilities of this role.

- 11 Fill the **Select Role** text box with the name of the role from step 4.

You can repeat Steps 9 through 11 to assign as many roles to an admin as you want.

- 12 **Save** the role assignment.

## Start an Assist Session

Initiate a Workspace ONE Assist session, and depending on the platform, you can view the host device screen, manage the host's files, make changes to the host's registry, and access the Remote Shell.

### Procedure

- 1 Navigate to **Devices > List View** and select the **Friendly Name** of a device capable of being remotely managed.

The Details View for the selected device displays.

- 2 Select the **More Actions** button, followed by **Remote Management**.

The **Remote Support** screen displays and it commences with reviewing device registration, queuing remote management command, and creating the remote management session.

- 3 Select the **Launch Session** button.

- 4 Select a tool from among the presented options.

A confirmation PIN displays on the screen intended for the end-user of the host device.

- 5 Relay this PIN information to the end-user and ask them to enter the PIN on their device to authorize the session.

- If they enter the PIN, they consent to the remote session and the session begins.
- If they refuse to enter the PIN, they do not consent and the session ends.

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**Note** On Samsung BYOD devices, remote control is available only within Work apps. If you navigate to the Work profile home screen or personal side of a Samsung BYOD device during a Workspace ONE Assist session, it only displays a blank screen.

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## Privacy Notices and End-User Prompts

When Workspace ONE Assist is launched for the first time, the end user is presented with a Privacy Notice that informs them of the permissions and data accessed by the Assist application. Before the beginning of each Attended session, the end user is presented with a PIN prompt.

As the administrator, a four-digit PIN displays as a pop up message. You must provide this PIN to the end user so they can enter it into the PIN prompt. Communicate this by telephone, text message, or email. This exchange represents the end user's acknowledgment of the privacy notice and permission to access (by entering the PIN you provide) or denial of access (by not entering the PIN you provide).

During the Screen Share session, the end user's display features a blue outline known as a "halo". This halo serves as a persistent notification that an Assist session is active.

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**Note** The halo effect, as well as other pop up messages, are disabled on corporate owned, fully managed Android devices only.

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Also, when you start any other client tool during a Screen Share session, the end user is again asked permission for access.

For example, an end user enters the PIN provided by the Admin resulting from initiating a Screen Share session. This action grants the Admin view only access to the end user's Windows 10 device to troubleshoot a problem. During this Screen Share session, the Admin starts the Manage Files client tool. Before the Admin gets to see and manage the end user's files remotely, the end user of the host device must select **Deny** or **Allow** from the Manage Files prompt that appears. The Screen Share session is not impacted by either choice. However, the Manage Files session cannot proceed until after the end user allows access.

The PIN prompt and User Consent prompts are displayed only during an Attended mode of connection. When using Workspace ONE Assist in unattended mode, no device notifications are provided when a remote management session is active. You are solely responsible for notifying device end users of Assist sessions in unattended mode.

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**Note** On Samsung devices, a Knox permission must be accepted by the user when the application is first launched, even for devices in unattended mode.

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For more information, see [Agent Modes](#).

For more information about VMware's stance on privacy, see the [VMware Privacy Notice](#).

## Remote View, Assist Client Tool

The Remote View client tool in Workspace ONE Assist allows you to only view a host device screen remotely.

This functionality requires the **Remote View** permission to be part of your assigned administrator roles. If your administrator role also includes the **Remote Control** permission, you can start a Remote View session which allows you to only view the screen of your host but you can elevate the session to a Share Screen session, allowing you to fully control the host device.



Remote View is not supported on macOS devices.

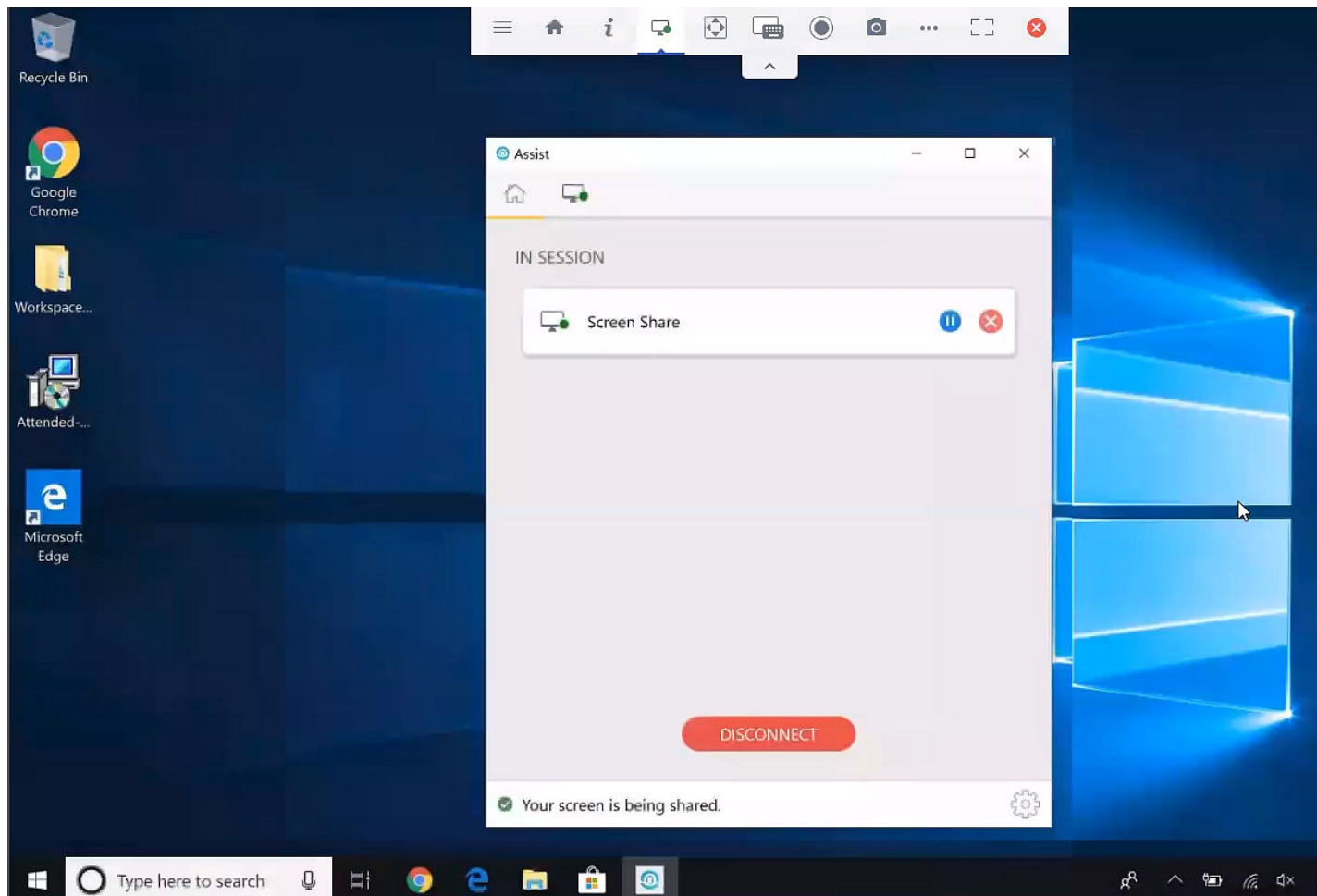
For more information, see [Assign Role Permissions for Workspace ONE Assist Client Tools](#).

## Share Screen, Assist Client Tool

The Share Screen tool is the section of the Workspace ONE Assist which allows you to control the end-user device remotely for troubleshooting and research purposes.

This functionality requires the **Remote Control** permission to be part of your assigned administrator roles. For more information, see [Assign Role Permissions for Workspace ONE Assist Client Tools](#).

**Figure 5-1. Share Screen Session with a Windows 10 Device**



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**Note** macOS devices running 10.15 (Catalina) or later must grant **Screen Recording** permission to Workspace ONE Assist in the **Privacy** tab of **Security & Privacy** preferences, located in System Preferences. Only during the first time you initiate a Share Screen session with a qualifying macOS device, an access request popup displays including a convenience link to this privacy setting in System Preferences.


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## Main Menu Toolbar





The main menu toolbar appears in the top-center of the screen, giving you direct access to multiple features and functions.


 - The Home button gives you access to all the client tools including Manage Files, Remote Shell, Registry Editor, and Share Screen.


 - The Info button displays the session logs, the VMware Privacy Policy, and the version number of Workspace ONE Assist.


 - The Fit to Screen button stretches or shrinks the remote device skin in a way that makes it fully visible given the current size of the Assist window.

 - The Virtual Keyboard button starts the on-screen keyboard. You can find details about the virtual keyboard in its own section of this topic.

 - The Record button initiates a video recording of the remote session. For details, see [Capture Video and Images](#).

 - The Screenshot button takes a static screenshot of the remote session. For details, see [Capture Video and Images](#).

 - The Ellipsis button contains access to **Shortcuts** and the **System Summary**. You can find details about each of these screens in their own sections of this topic.


 - The Fullscreen button maximizes the Assist window in such a way that it fills the display at its current maximum resolution.

 - The End Session button stops the currently running session.

## End-User Can Pause Session

During a long share screen session, an end user might need to perform some activity that requires privacy, for instance, answering an email.

If an end user needs privacy, they can pause a remote control session by clicking the blue Pause button

() located in the **Assist** window, which places the share screen session in a "hold" state. The end user can unpause the session by clicking the blue button again.

## Virtual Keyboard

The virtual keyboard is used to send platform-specific key commands, language-specific keys, and other special keystrokes to the remote device.

For example, if your remote management device is an Apple Mac, you must use the virtual keyboard to send a Windows key keystroke to the Windows 10 remote device.

If you remote into a device that is configured in a different language than your remote management device, you must use the virtual keyboard to access those special keys.

Lastly, the virtual keyboard lets you send special keystrokes to the remote device, ensuring they are not confused with keystrokes for your own device, for example Ctrl-Alt-Del.

## Copy & Paste with Virtual Keyboard

The virtual keyboard is the method by which you can copy a string of text from your remote management device, and paste it onto the remote device.

Initiate copy & paste during a Share Screen session by taking the following steps.

- 1 On the remote management device, select a text string from your application of choice.
- 2 Copy it to the clipboard by hitting Ctrl-C on your keyboard.
- 3 Switch to the Share Screen session and open the virtual keyboard.
- 4 Click anywhere in the grey colored area that runs across the top of the virtual keyboard, to the right of the Auto Send switch.
- 5 Paste it onto the virtual keyboard by hitting Ctrl-V on your keyboard.
- 6 Ready the application on the host device to receive the text string. Do this by placing the pointer on the spot you want the text string to be pasted.
- 7 Switch back to the virtual keyboard and select the green send button to the far-right of the virtual keyboard to paste it onto the application you made ready above.

## Shortcuts

The shortcuts menu grants access to common administrator tools and useful functions such as the Command Prompt, Control Panel, Event Viewer, Network and Sharing screen, Registry Editor, Restart PC, Services, Show Desktop, and Task Manager.

## System Summary

The System Summary contains information similar to Device Details in Workspace ONE UEM. Use this information to diagnose issues on a device while connected. There are five subsections within System Summary.

- The **Device Information** pane provides at-a-glance information about the remote device during troubleshooting. The pane displays signal strength, battery, network status, storage, and main memory information.
- The **Application List** subsection displays all the installed applications on the device.
- The **Process List** subsection displays all processes running on the device and includes the option to kill or stop only those processes that can be killed.

- The **Service Book** subsection displays all services running on the device.
- The **Share Screen** subsection displays a historical log of all prior remote sessions.

All the content in each subsection can be searched using the **Search list below** feature, located in the upper-right corner of the **System Summary** screen.

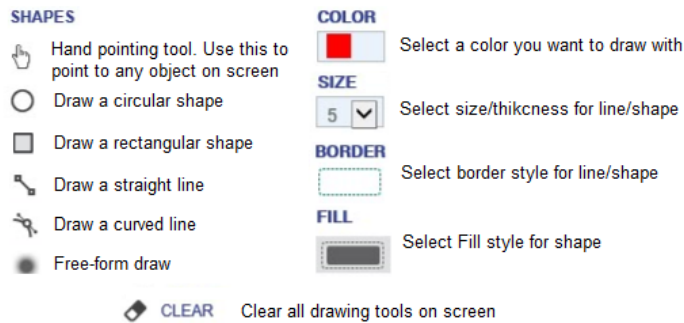
You can also select the **Export** button (to the right of the search function) to export each subsection to an Excel-viewable file saved to your device for detailed analysis.

## Device Whiteboard

The device whiteboard functionality allows you to highlight a specific item to the user. The whiteboard allows you to draw, highlight, and point to areas on the screen.

To use the whiteboard, select the whiteboard icon () in the bottom right of the device screen view.

The whiteboard menu consists of the following items.



This feature is supported by Android, macOS, and Windows 10 devices.

Be sure that the Android devices in your fleet are configured to use the Whiteboarding feature. For more information, see [Configure Android Devices for Whiteboarding Feature](#).

## Capture Video and Images

You can capture video of your Workspace ONE Assist remote session and save it as a file to your download folder. You can do the same with still images (screenshots).

### Prerequisites

Make sure that you have initiated a remote session and that there are no connectivity issues.

### Procedure

- 1 Invoke the drop-down toolbar by selecting the down arrow at the top-center of your remote session window.
- 2 Select the icon of the action you want to perform.
  - For **video capture**, select the round 'Record' icon. Stop recording the session to video by clicking the same button.

- For an **image capture** (screenshot) of the session, select the 'Camera' icon.
- 3 Once completed, your captures can be found in the default downloads folder of your browser.
    - **Video captures** are saved as .WEBM files.
    - **Image captures** are saved as PNG files.

## Configure Android Devices for Whiteboarding Feature

You can configure Android devices to use the Whiteboarding feature in Workspace ONE Assist's Share Screen client tool. The Whiteboarding feature enables you to draw freehand on the host's screen and be viewed by the host user, which you can use to call the host user's attention to certain screen elements.

### Prerequisites

Confirm whether an OEM-specific service APK is available for your Android device and install it.

Android devices with an OEM-specific service APK installed are preconfigured to use the Whiteboarding feature and require no other setting.

Android devices made by Samsung, Sony, and any other OEM without a specific service APK installed must take the following steps to use the Whiteboarding feature.

### Procedure

- 1 Include a customization to the device profile that allows system UI overlays.
  - a In Workspace ONE UEM, navigate to **Devices > Profiles & Resources > Profiles**.
 

**Choose from:**

    - **Existing Profile** - If you want to include this customization to an existing device profile, then find the profile you want to modify in the listing. Then select the edit icon (✎) next to the profile name in the **Profile Details** column. Before you can make changes to an existing profile, you must select the **Add Version** button.
    - **New Profile** - If you want to include this customization to a new device profile, then select **Add** followed by **Add Profile**, select the **Android** platform, and make all your other device profile specifications. The **Android Legacy** platform does not support enabling system UI overlays. For details, see the **Device Profiles** topic in the **Workspace ONE UEM Managing Devices** documentation and the **Workspace ONE UEM Android Platform Guide** and the **Workspace ONE Android (Legacy) Platform Guide**, all available on [docs.vmware.com](https://docs.vmware.com).
  - b Select the **Restrictions** payload and if necessary, select the **Configure** button.

The **Restrictions** payload screen displays.

- c In the **Device Functionality** section, scroll down to **Allow System UI (Toasts, Activities, Alerts, Errors, Overlays)** and enable this option by adding a check mark to its check box.
- d Select **Save and Publish**.

The device profile (including the customization to allow system UI overlays) is saved and pushed to all applicable devices.

- 2 On the Android device, navigate to Settings.
- 3 Navigate to App Settings.
- 4 Open the Assist app settings.
- 5 Locate the Advanced section.
- 6 Enable permission to Draw over other Apps.

### Results

The Whiteboarding feature can now be used by this Android device lacking an OEM-specific service APK.

## Manage Files, Assist Client Tool

You can use the Manage Files client tool in Workspace ONE Assist to upload files, download files, download folders, rename files, and delete files on the device.

This functionality requires the **File Manager** permission to be part of your assigned administrator roles.

For more information, see [Assign Role Permissions for Workspace ONE Assist Client Tools](#).

## Upload a File

You can upload a file to the device you are managing remotely with Workspace ONE Assist.

### Procedure

- 1 In the active Workspace ONE Assist session and the Manage Files client tool activated, select the red, circular **Upload** button in the bottom-right corner of the screen.
- 2 Select the **Browse** button and select a file accessible to the Workspace ONE™ UEM console you want to add to the device's file system.
- 3 Select **Close** on the File Upload Completed confirmation.

## Download a File

You can download a file from the device with the Manage Files client tool in Workspace ONE Assist.

### Procedure

- 1 In the active Workspace ONE Assist session and the Manage Files client tool activated, locate the file on the device you want to download.

You can find the "breadcrumbs" style folder path at the top of the file listing a useful navigation aid.

- 2 Select the **Download** button (📄).

### Results

Downloaded files are saved according to your default browser's downloaded file action.

## Rename a File

You can rename a file on the remote device using the Manage Files client tool in Workspace ONE Assist.

### Procedure

- 1 In the active Workspace ONE Assist session and the Manage Files client tool activated, locate the file on the device you want to rename.
- 2 Select the **Rename** button.  
  
This button is located in the button cluster to the left of the **Size** column.  
  
The Rename screen displays where you can enter the new name for the file.
- 3 Select **OK** to save your changes.

## Select Multiple Files

You can select multiple files on the remote device using the Manage Files client tool in Workspace ONE Assist. Multi-selecting files can be useful if you want to cut, copy (followed by paste), or delete them.

### Procedure

- 1 In the active Workspace ONE Assist session and the Manage Files Client tool activated, locate the files you want to select.
- 2 Click the check box to the left of each file you want to select.

## Download a Folder

You can download an entire folder from the remote device including the folder's contents using Workspace ONE Assist.

### Procedure

- 1 In the active Workspace ONE Assist session and the Manage Files client tool activated, locate the folder on the device you want to download.  
  
You might find the "breadcrumbs" style folder path at the top of the file listing a useful navigation aid.
- 2 Select the **Download** button (📄).

### Results

The downloaded folder and all its content is saved according to your default browser's download action.

### Example

If you select a folder to download called "remoteDocs" and your default browser's download action is to save all downloads to "C:\Documents\downloads", then once the download successfully completes, you can expect to find the folder's content in C:\Documents\downloads\remoteDocs.

## Cut, Copy, and Paste a File

You can cut, copy, and paste files on the remote device using the Manage Files client tool in Workspace ONE Assist.

### Procedure

- 1 Once you have selected the files you want, select the **Cut** button (✂) or **Copy** button (📄).
- 2 Cutting files removes the files from the source location while copying files leaves the files in the source location.
- 3 Navigate to the target location on the device.
- 3 Select the **Paste** button, which only becomes visible when either the Cut or Copy buttons have been selected.

## Delete a File

You can also delete a file from the remote device with Workspace ONE Assist.

### Procedure

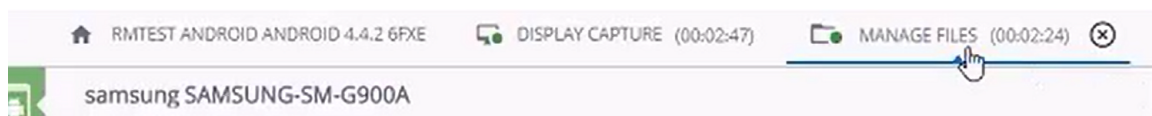
- 1 In the active Workspace ONE Assist session and the Manage Files client tool activated, locate the file on the device you want to delete.
- 2 Select the **Delete** button (🗑).
- 3 Select **OK** to confirm file deletion.

## Close the Manage File Session

When you are finished managing files remotely with Workspace ONE Assist, you can close the Manage Files session while keeping the Display Capture session running.

### Procedure

- 1 In the active Workspace ONE Assist session, locate the header bar toward the top of the browser.



- 2 Select the circled **X** button to the right of the Manage Files indicator.
- 3 Select **OK** to confirm closure of the Manage Files session.

## Registry Editor, Assist Client Tool

You can edit the registry of Windows CE devices remotely using the Workspace ONE Assist client tool.



Much like the Registry Editor that includes Windows desktop PCs, the Workspace ONE Assist client tool includes a Registry Editor for Windows CE devices. Using this editor, you can add, rename, and delete registry keys and values on the Windows CE devices in your fleet.

This functionality requires the **Registry Editor** permission to be part of your assigned administrator roles. For more information, see [Assign Role Permissions for Workspace ONE Assist Client Tools](#).

## Add a Key

You can add a key to the registry of your Windows CE device using the Registry Editor included with Workspace ONE Assist.

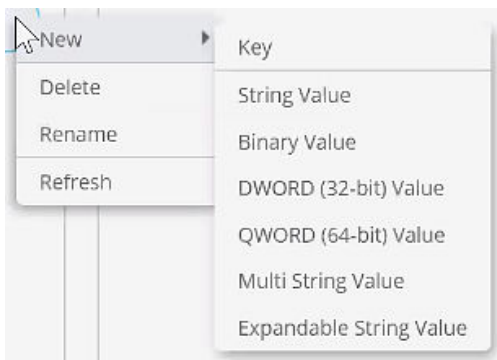
The registry editor is arranged with Keys listed on the left side panel and Values listed on the right side panel.

### Prerequisites

You must start a remote management session. For details, see [Start an Assist Session](#) and select **Registry Editor** when prompted.

### Procedure

- 1 Once a connection has been established to the remote device, you can add a key by selecting the hive you want to add a key to. Select a hive folder on the left and the entire hive folder opens up, revealing all the existing keys.
- 2 Select the 'Hamburger menu' icon to the right of the hive folder.



A menu displays showing options for making new keys and values, renaming keys and values, and deleting keys and values.

- 3 Select **New** followed by **Key**.

A new key (or folder) appears in the left side panel, labeled **New Key**, selected, and ready for editing.

- 4 Give the **New Key** a new label and press the Enter key.

### What to do next

[Add a Value](#)

## Add a Value

You can add a value (binary, dword, qword, string, multi-string, or expandable string) to the registry of your Windows CE device using the Registry Editor included with Workspace ONE Assist.

The registry editor is arranged with Keys listed on the left side panel and Values listed on the right side panel. The key you have selected is the key for which you are making a new value.

### Prerequisites

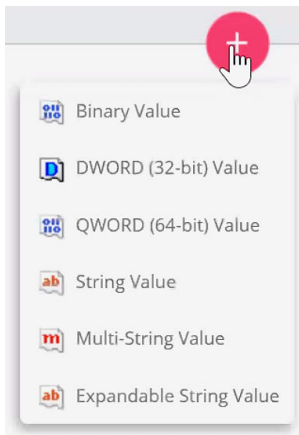
You must start a remote management session. For details, see [Start an Assist Session](#) and select **Registry Editor** when prompted.

### Procedure

- 1 With the correct key selected in the left side panel, select the 'Hamburger menu.'

A menu displays showing options for making new keys and values, renaming keys and values, and deleting keys and values.

- 2 Alternately, you can select the Plus Sign circled in red to create a Value.



- 3 Select the type of Value you want to add.

- Binary Value
- DWORD (32-bit) Value
- QWORD (64-bit) Value
- String Value
- Multi String Value
- Expandable String Value

The right side panel displays, featuring the options you must complete to create the value you selected.

- 4 Complete the **Value Name** and **Value Data** options then select **Save**.

## Rename a Key or Value

You can rename an existing key or value in the registry of your Windows CE device by using the Registry Editor included with Workspace ONE Assist.

The registry editor is arranged with Keys listed on the left side panel and Values listed on the right side panel.

### Prerequisites

You must start a Workspace ONE Assist session. For details, see [Start an Assist Session](#) and select **Registry Editor** when prompted.

### Procedure

- 1 Identify the key or value you want to rename.
- 2 To rename a key or value, select from among the following.

Option	Description
<b>Rename a Key.</b>	In the left side panel, select the 'Hamburger menu' icon to the right of the key name and select <b>Rename</b> .
<b>Rename a Value.</b>	With the key selected in the left side menu, identify the value in the key you want to rename. Select the pencil icon to the far right side of the Value listing.

- 3 Enter the new **Key Name** or **Value Name**.

## Delete a Key or Value

You can delete an existing key or value from the registry of your Windows CE device by using the Registry Editor included with Workspace ONE Assist.

The registry editor is arranged with Keys listed on the left side panel and Values listed on the right side panel.

### Prerequisites

You must start a Workspace ONE Assist session. For details, see [Start an Assist Session](#) and select **Registry Editor** when prompted.

### Procedure

- 1 Identify the key or value you want to delete.
- 2 To delete a key or value, select from among the following.

Option	Description
<b>Delete a Key.</b>	In the left side panel, select the 'Hamburger menu' icon to the right of the key name and select <b>Delete</b> .
<b>Delete a Value.</b>	With the key selected in the left side menu, identify the value in the key you want to delete. Select the trash bin icon to the far right side of the Value listing.

- 3 Confirm that you want to delete the **Key Name** or **Value Name** or you can cancel the deletion.

## Remote Shell, Assist Client Tool

Using Workspace ONE Assist's Remote Shell client tool, you can remote into the PowerShell interface of connected Windows 10 devices, enabling you to make detailed and precise configurations in a command-line environment.

Microsoft's PowerShell interface combines automation with a sophisticated scripting language with a configuration management framework. For more information about PowerShell, see <https://docs.microsoft.com/en-us/powershell/>.

This functionality requires the **Remote Shell** permission to be part of your assigned administrator roles. For more information, see [Assign Role Permissions for Workspace ONE Assist Client Tools](#).

## Command-Line Interface, Android

The Command-Line Interface (CLI), available for Android devices and supported in Workspace ONE Assist, is the counterpoint to the Graphical User Interface (GUI). While a graphical user interface makes common tasks easy, a command-line interface makes complicated tasks possible.

This functionality requires the **Remote Shell** permission to be part of your assigned administrator roles. For more information, see [Assign Role Permissions for Workspace ONE Assist Client Tools](#).

CLI Commands	Support Level	Function
<b>am get-config</b>	Full	Gather configuration data from a device.
<b>cd</b>	Full	Change directory.
<b>getprop</b>	Full	Get properties by way of the android property service.
<b>getprop ro.build.version.sdk</b>	Full	Get API level device properties.
<b>ip -f inet addr show wlan0</b>	Full	Show the WiFi IP address.
<b>logcat</b>	Full	Prints log data to the screen.
<b>logcat *:D</b>	Partial	Prints log data to the screen, filter to show only the debug level. In a few devices, this command cannot be canceled.
<b>logcat *:E</b>	Partial	Prints log data to the screen, filter to show only the error level. In a few devices, this command cannot be canceled.
<b>logcat *:I</b>	Partial	Prints log data to the screen, filter to show only the info level. In a few devices, this command cannot be canceled.
<b>logcat *:V</b>	Partial	Prints log data to the screen, filter to show only the verbose level. In a few devices, this command cannot be canceled.
<b>logcat *:W</b>	Partial	Prints log data to the screen, filter to show only the warning level. In a few devices, this command cannot be canceled.
<b>ls</b>	Full	List the directory contents.
<b>ls -a</b>	Full	List the directory contents, do not hide entries starting with a dot.

CLI Commands	Support Level	Function
<b>ls -n</b>	Full	List the directory contents, list numeric UIDs, and GIDs.
<b>ls -R</b>	Full	List the directory contents, list subdirectories recursively.
<b>ls -s</b>	Full	List the directory contents, print size of each file, in blocks.
<b>mkdir</b>	Full	Make a directory.
<b>netcfg / ifconfig</b>	Full	Configure and manage network connections by way of profiles.
<b>netstat</b>	Full	Network statistics.
<b>ping</b>	Partial	Test the connection and latency between two network connection. In few devices, this command cannot be canceled.
<b>pm list packages</b>	Full	Prints all packages, optionally only those package names included in <FILTER>.
<b>pm list packages -3</b>	Full	Prints all packages filtered to show only the third-party packages.
<b>pm list packages -d</b>	Full	Prints all packages filtered to show only the disabled packages.
<b>pm list packages -e</b>	Full	Prints all packages filtered to show only the enabled packages.
<b>pm list packages -f</b>	Full	Prints all packages including their associated file.
<b>pm list packages -i</b>	Full	See the installer for the packages.
<b>pm list packages -s</b>	Full	Prints all packages filtered to show only the system packages.
<b>pm list packages -u</b>	Full	Prints all packages including uninstalled packages.
<b>pm list permission-groups</b>	Full	Lists all permissions groups.
<b>pm list permissions</b>	Full	Lists all permissions on the device.
<b>pm path &lt;package &gt;</b>	Full	Print the path to the APK of the given <package>.
<b>ps</b>	Full	Print process status.
<b>ps -p</b>	Full	Print process status and show scheduling policy.
<b>pwd</b>	Full	Print the current working directory location.
<b>rm -d</b>	Full	Remove a directory, even if it is not empty.
<b>rm -f</b>	Full	Remove a directory, force remove without prompt.
<b>rm -r</b>	Full	Remove the contents of the directory recursively.
<b>top</b>	Partial	Display top CPU processes. In a few devices, this command cannot be canceled.
<b>touch</b>	Full	Create an empty file or change file timestamps.

# Workspace ONE Assist Components

# 6

Workspace ONE Assist uses multiple components to facilitate the communication between admins and end-user devices. The core components are as follows.

## Database

The database handles system and tenant configuration, operations, and logging such as the accrual of historical device enrollment data. The Workspace ONE Assist system is composed of eight databases.

- **ApAdmin** – Maintains all the system configurations, tenant (customer) configuration, management information, system administration data, and server instrumentation data. There is only one ApAdmin database for all tenants.
- **APOps (2)** – Maintains data required for the operations of the system such as device enrollment, Access Control List's (ACL), groups, users, zones, and so on. You have one template APOps database and one for the tenant with the GUID.
- **APReports (2)** – Contains historical data of device enrollment, session, audit, report views, and so on. You have one template APReports database and one for the tenant with a GUID.
- **APJournal (2)** – Contains aggregated information on the tenant necessary to construct various reports. You have one template APJournal database and one for the tenant with a GUID.
- **APPublic** – Contains pre-enrollment information on devices and multiple database jobs. There is only one APPublic database for all tenants.

## Core Services

The Core Services component provides service discovery and auxiliary services for the Workspace ONE Assist solution through Web services and Windows services. These services include the following.

- **Management Entity (ME)** – Windows service that provides an in-memory datastore for admin and management Web service, which provides the operational end point to the system.
- **Service Coordinator (SVC)** – This Windows service is responsible for coordinating communication between various elements within the system. It provides the communication to the database and is responsible for the discovery of all other Remote Management Tool services. All Workspace ONE Assist Tool services register with this service. Service coordinator service is installed on an Application (App) Server.

- **Data Tier Proxy (DTP)** – This Windows service works with the Service Coordinator. It serves as the gateway for all services to reach the Service Coordinator service to communicate with Remote Management Tool databases. Data Tier Proxy service is installed on the App Server.
- **Data Access Proxy (DAP)** – This Web service is responsible for a proper communication of all Web services. It serves a similar purpose as the Data Tier Proxy service and is installed on the App server.

## Portal Services

The Portal Services component handles the administrative and management services for Workspace ONE Assist. The Management Website is installed as part of the portal services component and consists of the following.

- **AetherPal Tool Controller Service (ACS)** – Acts as a gateway service that maintains a consistent socket connection between the RS web console and the Connection Proctor.
- **Management Web Site (ADM/ANC)** – IIS Service that hosts the RS web console for managing and remoting into devices. Anchor service responsible for mobile device registration. Also, it contains the System Admin Service (SAS) admin web portal for accessing and administering the tool and defining tenant and service configuration.
  - **T10 Interface** – The T10 Interface is part of the Management website and it defines an integration portal between Workspace ONE UEM and the Workspace ONE Assist server.
    - The T10 interface uses Representational State Transfer (REST) communication with a JavaScript Object Notation (JSON) payload. The T10 interface provides Workspace ONE UEM with the ability to make a mobile device eligibility call.
    - The T10 interface can also start a remote support session using the Workspace ONE Assist tool and delete the device from the Workspace ONE Assist system.

## Application Services

**Messaging Entity (MSG)** – a core Windows service that provides the means for the Workspace ONE Assist tool to send out SMS messages to the device by way of API or direct communication. This communication is accomplished with a messaging gateway, such as Google Cloud Messaging (GCM), or any proprietary SMSC aggregator.

The remaining application services are installed by default but are not used by Workspace ONE Assist directly. As such, these services can be disabled if you prefer.

- **ZVC Services (ZVC)** – Windows service used for GuideMe feature. ZVC Service helps with versioning and authoring management. Workspace ONE Assist does not require this auxiliary service. After installation, these services can be disabled in Windows services.
- **KB Service (KB)** – Windows service used for GuideMe feature. This service help process content for delivery and publishing. This is an auxiliary service that is not required by the Workspace ONE Assist application for most use cases. Once installed, these services can be disabled in Windows services.

## Connection Proctor

The Connection Proctor component uses the Windows Connection Proctor service to manage device connections to the Workspace ONE Assist server. The component also simultaneously handles multiple requests for sessions.



# Import Device Profiles with Resource Pack Utility

## 7

Device profiles contain the key mapping, device skin, and Workspace ONE Assist service signatures for full remote control. You can perform a bulk import of these device profiles onto your Workspace ONE Assist Server.

### Procedure

- 1 Run the Resource Pack Utility file provided. The file is called "AW RM Resource Pack Version - v0xx.exe"
- 2 Complete the **Authentication** step.
  - a Enter the **Target Tenant URL** specific to your environment. For example, `https://rmstage01.awmdm.com`
  - b Enter the user name and password. If new credentials have not been defined, use the default credentials.
    - **User name:** admin
    - **Password:** admin
  - c Enter the **Admin URL** of

```
http://admin.controlplane.aetherpal.internal:80
```

If you have not used the WBC portal yet and have not reset your default password, the Resource Pack Utility prompts you at this point to reset the password. Enter your new password and select the **Update Password** button to continue.

- 3 Complete the **Resource Import** step.

You can select one or more device profiles from the list or you can enable the **Select All** check box to initiate a full importation of all available device profiles.
- 4 Select the **Import** button to continue. The log panel on the right side fills up with confirmation messages which you can review.

The device profiles you selected are installed onto the Workspace ONE Assist server.
- 5 When finished importing device profiles, select the **Exit** button.

# Create the Remote Management CN from the Workspace ONE UEM Database

## 8

If the **Remote Management CN** text box is empty from step 5 of Generate Workspace ONE Assist Certificates or step 3 of Configure Multi-Workspace ONE UEM Environment Support, you can run an SQL script against the database to create the Remote Management CN manually.

### Procedure

- 1 Open the Remote Management Certificate Generator.

You must run this generator as an administrator.

- 2 Select the Question Mark button.

- 3 Copy the displayed text.

This text is the SQL script to run against the Workspace ONE UEM Database.

- 4 Switch to the Workspace ONE UEM Database server and open SQL Server Management Studio.

- 5 Create a query with the copied text.

- 6 On the first line of the query, replace the **NULL** value with the GroupID for the customer type OG that you want to use.

The OG you select must be a **customer** type, it cannot be of any other type including global, partner, container, and so on.

```
DECLARE @GroupID NVARCHAR(20) = NULL;
```

becomes

```
DECLARE @GroupID NVARCHAR(20) = 'RemoteManagement';
```

- 7 In the Results, copy the created Remote Management CN.

### What to do next

The Remote Management CN is used to generate the root and intermediate certificates for Remote Management. Return to **Step 5** of [Generate the Workspace ONE Assist Certificates](#) or **Step 3** of [Configure Multi-Workspace ONE UEM Environment Support](#).

# Troubleshooting Workspace ONE Assist

# 9

If you are having issues with your Workspace ONE Assist performance or service, consider troubleshooting your issue before calling support.

These troubleshooting steps address the most common issues with the Workspace ONE Assist service.

This chapter includes the following topics:

- [Troubleshooting, Generate Certificates](#)
- [Troubleshooting, Remote Management Not Available - Device Registration Issues](#)
- [Troubleshooting, Issues Connecting to Devices](#)
- [Modify Database Record for Multi-Node Configuration](#)

## Troubleshooting, Generate Certificates

While running the "Certificate Seed Script.sql" file in Step 10 of the Generate Workspace ONE Assist Certificates task, you might see an error. This error reads "The conversion of a varchar data type to a datetime data type resulted in an out-of-range value."

Such an error is likely the result of a difference in locale between the machine upon which the SQL script was generated and the database server on which it is being run.

There are two possible solutions.

- Ensure that the same date format is set in the SQL script by running the cert provisioning tool on a machine with the same locale settings as the database server.

**OR** (if the first solution is not possible).

- Manually edit the date format in the SQL script. For more information about date formats, see <http://www.sql-server-helper.com/tips/date-formats.aspx>. References in this documentation to any specific service provider, manufacturer, company, product, service, setting, or software do not constitute an endorsement or recommendation by VMware. VMware cannot be held liable for any damages, including without limitation any direct, indirect, incidental, special, or consequential damages, expenses, costs, profits, lost savings or earnings, lost or corrupted data, or other liability arising out of or related in any way to information, guidance, or suggestions provided in this documentation.

## Troubleshooting, Remote Management Not Available - Device Registration Issues

Many Workspace ONE Assist sessions that are "not available" are a result of device registration issues. Review these detailed troubleshooting issues and find a solution.

### Workspace ONE Assist Link Does Not Display in Workspace ONE UEM

#### Problem

"Remote Management" link does not display in the More Actions drop-down menu as seen in Device Details View OR device is not shown in the Device List View.

#### Possible Cause

Registration failed or Intelligent Hub might not have been deployed properly. Intelligent Hub might have not been installed on the device properly or registration to Workspace ONE Assist Server has failed.

#### Solution

Attempt to re-register the device. Update Resource portal to ensure that Intelligent Hub can be properly downloaded and installed on device. A Workspace ONE UEM administrator must re-register the device.

### Registration Check Returns Failed

#### Problem

Device does not register with Workspace ONE UEM or the Workspace ONE Assist portal.

#### Possible cause

P7b file missing root/intermediate certificates in certificate chain. In MMC (Microsoft Management Console) certificate console when opening the certificate, the certificate path is missing and certificate status displays: the issue of this certificate can not be found.

#### Solution

Reinstall the certificate including intermediate and root certificate. Reinstall all the certificates for this client and ensure that the root certificate is placed into the root certificate folder and the intermediate certificate is placed in intermediate certificate folders in the MMC certificate console.

### Error Message, 'Registration Failed: Server Not Found'

#### Problem

Device does not register with Workspace ONE UEM or the Workspace ONE Assist portal.

#### Possible cause 1

Workspace ONE Assist Site URL capital and lower-case letters. In Workspace ONE Assist tool versions 4.4.2.6291 and prior, the URL for remote management server is CAPS sensitive. In the example shown below, the URL uses upper-case and lower-case letters 'https://rmSTAGE01.awmdm.com'.

**Solution 1**

Remove upper case characters from the Workspace ONE Assist site URL. Review the Workspace ONE Assist site configuration. You must ensure that the URL has all lower-case letters. In the example above, the URL must be 'https://rmstage01.awmdm.com'.

**Possible cause 2**

Firewall is ON but misconfigured. If the firewall is incorrectly configured on the Workspace ONE Assist Server, it might be preventing device registrations from being received.

**Solution 2**

Turn off firewall or set up exceptions. When the firewall is on and it is not correctly configured, it might be preventing device registrations. Devices register with the Anchor web service, hosted on port 443 on the Workspace ONE Assist server. If this port is blocked on the firewall, registrations are jeopardized. Turn off the firewall and see if registrations succeed. If they do, review the exceptions to ensure that the Anchor web service on port 443 or other port defined for this service is in the list of exceptions.

## Troubleshooting, Issues Connecting to Devices

If you are having connectivity issues with your Workspace ONE Assist performance or service, consider troubleshooting your issue before calling support. These troubleshooting steps address the most common connectivity issues with the Workspace ONE Assist service.

### Browser Window Does Not Open Remote Management Portal

**Problem**

The Workspace ONE Assist portal is not opening on Workspace ONE UEM users' browser window.

**Possible Cause 1**

Incompatible web browser. The browser being used by VMware Support staff is not compatible with Workspace ONE Assist.

**Solution 1**

Use a different web browser. Install or switch to a compatible browser. The following is a list of browsers currently supported by the Workspace ONE Assist Tool.

- Google Chrome
- Safari

**Possible Cause 2**

Browser pop ups are blocked. The browser being used is blocking pop-up windows from the Workspace ONE Assist portal.

## Solution 2

Enable pop-ups in browser settings. UEM console users must update their browser settings to allow pop-ups from the Workspace ONE Assist portal.

## Remote Support Validation Fails

### Problem

During Workspace ONE Assist validation steps, one or all the three validation steps and 'Launch Session' button does not appear.

**Possible Cause(s):** Certificate mismatch, Workspace ONE Assist server issues. Client-server certificates might be incorrectly deployed or there might be issues with availability of Workspace ONE Assist server and console.

**Solution:** Review certificates and ensure that Workspace ONE Assist servers are operational. Ensure that T10 interface certificate has been properly deployed on the Workspace ONE Assist servers, ensure that Workspace ONE Assist servers are online and operational.

## Modify Database Record for Multi-Node Configuration

In order for the Workspace ONE Assist server to operate correctly in a multi-node configuration, you might need to modify DB records in [ApAdmin].[dbo].[Server].[FQDN]. Some installations result in these tables pointing to the external Virtual IP (VIP) address by default. This default arrangement must be changed.

---

**Note** Active-passive configurations with standard, all-in-one installations do not need this FQDN change inside the database table. Applying this change in such an environment might break the configuration. Consult with support if you are unsure which configuration you have.

---

Ensure that each [FQDN] record in the [ApAdmin].[dbo].[Server] table in the database points to the internal IP address of the VIP (also known as Virtual IP) for the load balanced pool.

The number of [FQDN] records is equal to the number of application/connection proctor servers in your deployment. Therefore, you must update each one in the table. For example, if your deployment has four connection proctor servers, then you must locate and modify 4 [FQDN] records in the [ApAdmin].[dbo].[Server] table.

After you finish the record modification, restart all Workspace ONE Assist Servers.