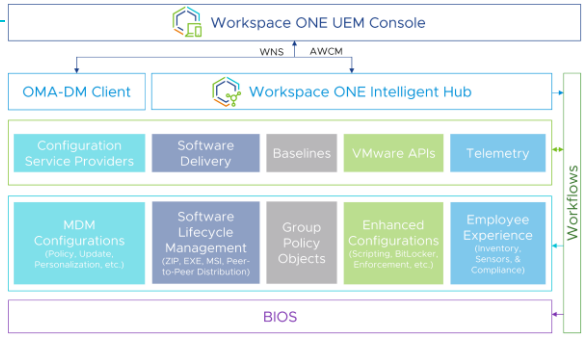
TROUBLESHOOTING WINDOWS CHEATSHEET

Use this checklist & troubleshooting tips as a reference for the next time you troubleshoot issues on Windows using Workspace ONE UEM. For next steps, you can reach out to VMware or Microsoft Support. Be sure to send logs: use Remote Log Collection within Workspace ONE or generate the MDM Advanced Diagnostic Report.

UNDERSTANDING THE BASICS

Clients	Uses
OMA-DM	Native MDM client built into Windows. Used for device communication, enrollment, profile configuration Microsoft CSPs, and software distribution metadata delivery. Communicates using WNS.
Workspace ONE Intelligent Hub	Used for local policy enforcement, non-CSP profiles, telemetry, Sensors/Scripts, Workflows, Baselines, unified app catalog, Hub Services, and Product Provisioning. Communicates using AWCM.
Software Distribution Client (SFD)	Used to install Win32 apps.
VMware Digital Experience Telemetry Client	Provides insights about apps, operating system stability, and performance.
Workspace ONE Assist Client	Allows for remote control, file management, and executing remote shell commands using Remote Assist.
Workspace ONE Tunnel Client	Enables secure access for mobile workers and devices.
Workspace ONE Provisioning Client	Discovers where pre-registered OEM devices enroll.



Services	Description	Hostnames & Ports
Windows Notification Service (WNS)	Provides real-time communication for the built-in OMA-DM client.	*.wns.windows.com over 80/443 (IP Ranges - https://via.vmw.com/w10WNS)
AirWatch Cloud Messaging (AWCM)	Provides real-time communication for the Workspace ONE Intelligent Hub.	awcm*.awmdm.com:443 (SaaS) and 2001 (On-Premises)
Content Distribution Network (CDN)	Cloud service used when downloading apps from Workspace ONE UEM. CDN is enabled by default for all SaaS-hosted Workspace ONE UEM tenants.	CDN*.awmdm.com:443
Device Health Attestation	Cloud service used for determining device posture, can also be hosted on-premises.	has.spserv.microsoft.com:443
Business Store Portal	Access to apps from the Business Store Portal, also used if pushing online BSP apps.	bspmts.mp.microsoft.com:443
Azure AD Authentication	Used when leveraging Azure AD for any authentication, including enrollment.	login.microsoftonline.com:443
Windows Updates	Endpoints used for Windows Update downloads of apps and OS updates.	*.mp.microsoft.com over 80/443

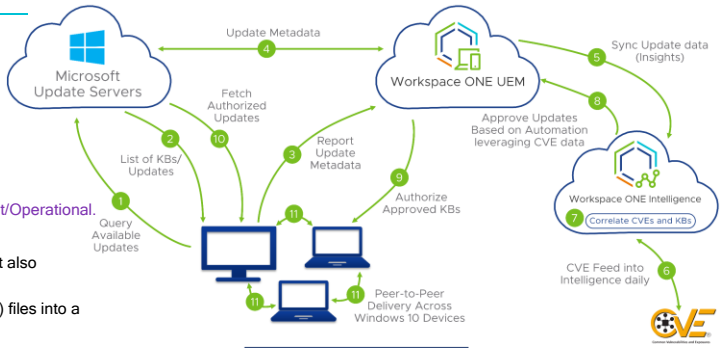
For all networking requirements, visit https://via.vmw.com/W10Endpoints & https://ports.vmware.com.

DEPLOYING PROFILES

- ☐ Check Event Viewer logs for failure message (404): App and Service Logs > Microsoft > Windows > DeviceManagement-Enterprise-Diagnostics-Provider > Admin.
- ☐ Confirm that the correct action is used - Add/Replace/Delete/Exec.
- ☐ For Custom Settings: https://via.vmw.com/W10CustomSettings
  - Check that XML is in between CDATA tags.
  - Confirm that the correct data format is sent.
- ☐ Confirm setting is supported on the W10 edition/version being used: aka.ms/CSPList
- ☐ In Fiddler or SyncML Viewer, check error codes: https://via.vmw.com/SyncMLCodes

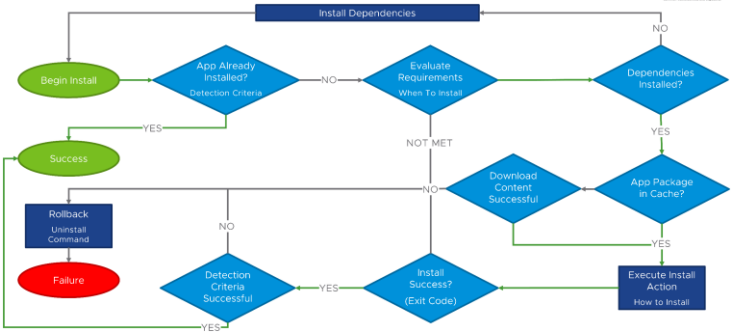
WINDOWS UPDATES

- ☐ Navigate to Windows Settings > Update & Security > Troubleshoot > Windows Update, then select Run the Troubleshooter.
- ☐ Verify that you see Update under Windows Settings > Accounts > Access Work or School, then selecting on our enrollment account, then selecting Info. Ensure you see Update under Areas managed by Workspace ONE, then under Policies.
- ☐ Using Regedit, navigate to and validate all of the configured update values are set correctly: HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\PolicyManager\current\device\Update
- ☐ Use Event Viewer to obtain more information about errors: Microsoft-Windows-WindowsUpdateClient/Operational.
- ☐ The following PowerShell cmdlets are helpful:
  - The Get-Hotfix cmdlet retrieves hotfixes (also called updates) that have been installed; the cmdlet also retrieves hotfixes or updates that have been installed manually by users.
  - The Get-WindowsUpdateLog cmdlet merges and converts Windows Update event trace log (ETL) files into a single, readable WindowsUpdate.log file.



SOFTWARE DISTRIBUTION

- ☐ Check installation status of Software Distribution client: 70 is ✓ but 30, 60,120 is ✗ HKLM\SOFTWARE\Microsoft\EnterpriseDesktopAppManagement\MSI
- ☐ Review the registries under HKEY_LOCAL_MACHINE > SOFTWARE > AirWatchMDM > AppDeploymentAgent.
- ☐ Check the Queue path and the S-1-5-18/S-1-X-X path for any processes. Then, check the LastDeploymentLog and LastStatusCode for more details. https://via.vmw.com/SFD_Errors
- ☐ Scripts are supported for Install, Uninstall, and Detection. The following lists examples for each type:
  - **PowerShell**: PowerShell -ExecutionPolicy Bypass -File file.ps1
  - **VBScript**: cmd /C file.vbs • **JScript**: cmd /C file.js
- ☐ BranchCache Status (P2P) run bcstatus from PowerShell, then run perfmon, add BranchCache counters, view data using the Report View.



CONSOLE SETTINGS & ENROLLMENT

- ☐ Check Device Root Certificate is generated and is of type PFX NOT CER in System > Advanced > Device Root Certificate.
- ☐ Confirm that the Hub app is published Devices & Users > Windows > Windows Desktop > Intelligent Hub Application.
- ☐ Staging workflows (command-line, PPKG, etc.) where the device is auto-reassigned to the end-user need to have "Fixed Organization Group" or "User Group Organization Group" set at Devices & Users > General > Shared Devices.
- ☐ For Azure-based enrollment, ensure Immutable ID Mapping Attribute is correctly set. Most commonly objectGUID or mS-DS-ConsistencyGuid. Ensure that Binary is used for objectGUID and String for any non-GUID value.

ENROLLMENT FLOWS

For all enrollment flows, refer to https://via.vmw.com/W10Onboarding

- ☐ Admin staging (staged enrollment to admin account, log out/login to domain user): msiexec /i AirwatchAgent.msi /quiet ENROLL=Y SERVER=[server] LGNAME=[og id] USERNAME=[staging username] PASSWORD=[password] Refer to https://via.vmw.com/cli_enrollment
- ☐ Brownfield domain joined (in domain user profile): msiexec /i AirwatchAgent.msi /quiet ENROLL=Y SERVER=[server] LGNAME=[og id] USERNAME=[staging username] PASSWORD=[password] ASSIGNTOLOGGEDINUSER=Y Refer to https://via.vmw.com/cli_enrollment

☐ Azure AD Premium: Enable Azure AD integration. Settings > System > Enterprise Integration > Directory Services > Azure AD Integration and Use Azure AD For Identity Services set to Enabled. Refer to https://via.vmw.com/azure_enrollment

Important Event Viewer Log Locations

For a complete list of Windows Error Codes visit https://via.vmw.com/WinErrors

OMA-DM Communication

Collects every interaction between the device and Workspace ONE UEM
Event Viewer (Local) > Applications and Services > Microsoft > Windows > DeviceManagement-Enterprise-Diagnostics-Provider > Admin

BITS Client

Collects BITS information, this is important when encountering issues with apps and Windows Updates not downloading properly.
Event Viewer (Local) > Applications and Services > Microsoft > Windows > Bits-Client

BitLocker

Collects BitLocker information, or use the `manage-bde -Status C:` command first
Event Viewer (Local) > Applications and Services > Microsoft > Windows > BitLocker-API and BitLocker-DrivePreparationTool

Certificates

Collects certificate provisioning information
Event Viewer (Local) > Applications and Services > Microsoft > Windows > CAPI2 (enable log and reproduce errors)
Event Viewer (Local) > Applications and Services > Microsoft > Windows > CertificateServicesClient-Lifecycle-* (System and User)
Event Viewer (Local) > Applications and Services > Microsoft > Windows > CertPolEng

Drop-Ship Provisioning (Online)

Collects drop-ship provisioning information and errors (general rule is if you see errors, you will likely have to start over)
Event Viewer (Local) > Applications and Services > AirwatchProvisioningAgent

Important Device Registry Keys

All MDM Profiles/Apps Pushed to Device

Lists all the profiles (not values) pushed to the device, including applications. These are broken down by device/user profiles identified by user's SID.
`HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\EnterpriseResourceManager\Tracked`

MDM Profiles and Values

Lists the device profiles default and updated values. These are broken down by device profiles and user profiles identified by user's SID.
`HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\PolicyManager\current\device`
`HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\PolicyManager\providers\{EnrollmentGUID}\default\Device`

MSI/Desktop Apps

Status of Workspace ONE Intelligent Hub and Software Distribution Client (used for installing Win32 apps) if enabled. If SFD is not enabled, contains MSI app install status.
`HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\EnterpriseDesktopAppManagement`

Software Distribution Apps*

Status of app installations along with additional information.
`HKEY_LOCAL_MACHINE\SOFTWARE\AirWatchMDM\AppDeploymentAgent`

*The following folders are useful when troubleshooting apps:
AppManifests\GUID\DeploymentManifestXML – Contains Deployment Options settings from the console for that application.
ContentManifests\GUID\ContentManifestXML – Contains the download source, such as Device Services server or CDN and includes P2P Content ID.
Queue/S-1-5-X – Logs where S-1-5-18 contains apps pushed to the device and S-1-5-21-X contains apps pushed to the user. Check the LastDeploymentLog and LastStatusCode for more details.

Logging Directories

Workspace ONE Intelligent Hub

`%ProgramData%\AirWatch\UnifiedAgent\Logs (Device-Level Logs)`

AwclClient-YYYYMMDD.log – Log contains communications between AWCM client and Workspace ONE UEM.
AWProcessCommands-YYYYMMDD.log – Logs containing info regarding commands sent from Device Services to the Workspace ONE Intelligent Hub such as encryption/BitLocker, Baselines, Product Provisioning, etc.
Baseline-YYYYMMDD.log - Log contains info on Baseline being applied or reapplied.
ComExecution.log – Log contains details regarding user engaged restart for app deployments.
DeviceEnrollment-YYYYMMDD.log – After native OMA-DM enrollment, these logs capture additional enrollment steps performed by Workspace ONE Intelligent Hub.
DSM-YYYYMMDD.log – Log contains info regarding device state management.
HubStatus.html – Created after right clicking on the Hub and selecting Troubleshoot -> Hub Status. Contains details around required Services and enrollment details.
ExtendedDeviceInventory–YYYYMMDD.log - Logs details regarding additional device attributes.
InstallerLog_HHMMSS_DDMMYYYY.log – Installer logs will be created for each action performed by the Workspace ONE Intelligent Hub Installer: upgrade, install, uninstall and repair.
NativeEnrollment.log – Log contains details about the native OMA-DM enrollment completed by the Workspace ONE Intelligent Hub based enrollments.
PowershellExecutor[64]-YYYYMMDD.log – Details of the PowerShell commands executed through product provisioning and Sensors.
TaskScheduler-YYYYMMDD.log – Log contains details regarding Workspace ONE Intelligent Hub task scheduler such as Hub re-starts, device re-assignments, enrollment request/response, etc.
Workflow-YYYYMMDD.log – Log contains info regarding Workflows execution.
JobLogs\ProductProvisioningJobName_#.log – Contains either a success message (Jobs executed successfully) or more details regarding why your files/actions (Product Provisioning) script failed to process successfully. Each Product (Files/Actions) will contain a new log file, furthermore, each new attempt at re-pushing a Product will create a new log file. The standard naming format is Product Name followed by Job Number.
Recovery\RecoveryService.log – Provides details on the status of the Workspace ONE Intelligent Hub auto recovery functionality. This can be trigger by an admin in the Workspace ONE UEM console, by preforming the Repair Hub action, under More Actions.

`%localappdata%\VMware\IntelligentHub\Logs (User-Level Logs)`

AwWindowsIpc-YYYYMMDD.log – Contains user context process communications along with the status of all actions performed. For example, installing the Workspace ONE Intelligent Hub UI component, Toast Notifications, getting INet proxy, etc.

`%appdata%\..\Local\Packages\AirWatchLLC.WorkspaceONEIntelligentHub_htcwkw4rx2gx4\LocalState\logs (Hub UI Logs)`

IntelligentHubLogsYYYY-MM-DD.log – This log contains details about the Workspace ONE Intelligent Hub UI component's operations. For example, enrollment request/response and Hub Services related details such as branding, entitlements, and other details.

Software Distribution Cache (requires admin elevation)	Baselines	Telemetry Client
`%ProgramData%\AirWatchMDM\AppDeploymentCache` `%ProgramData%\AirwatchMDM\Support\VMware.Hub.SfdAgent-x64-VERSION-*.log`	`C:\Program Files (x86)\Airwatch\AgentUI\Baseline`	`%programdata%\VMWOSQEXT\logger`

Workspace ONE AirLift

`%PROGRAMDATA%\VMware\VMware Airlift\logs`
AirLift-<current_date>.txt: AirLift Windows Service logs
AirLift-Tool-<current_date>.txt: AirLift Command Line Tool logs
AirLift Setup Logs: `%LOCALAPPDATA%\Temp`

Drop-Ship (Factory) Provisioning

`%SYSTEMDRIVE%\Temp\PpkgInstaller\PpkgInstallerLog.txt` – Log contains details from applying the PPKG onto the system.
`%ProgramData%\AirWatch\UnifiedAgent\Logs\PPKGFinalSummary.log` – Log contains details from VMware Workspace ONE Provisioning Tool.

Enterprise Reset

`C:\Recovery\OEM`
AWRefreshUnattend.xml: Unattend XML which executes RefreshRunOnce.cmd.
RefreshRunOnce.cmd: Completes the Workspace ONE Intelligent Hub command-line enrollment.
ResetConfig.xml: XML file which specifies what happens when a PC Reset is invoked; invokes VMwareRefreshBackup.cmd to backup prior to reset and then VMwareRefreshRecover.cmd to restore user data and enrollment settings.
VMwareRefreshBackup.cmd: Backs up all enrollment data to C:\Recovery\OEM\VMware.
VMwareRefreshRecover.cmd: Restores all the backed-up data from C:\Recovery\OEM\VMware folder, restores enrollment, MDM and SFD info to registry, then copies AWRefreshUnattend.xml to Panther folder ready for OOBE.
`C:\Recovery\OEM\VMware`
Contains logs and application data with the app deployment cache, Hub database with all configurations and settings, and registry settings with MDM device ID used to ensure the device checks in with the right console side record.

HELPFUL TOOLS

Fiddler: via.vmw.com/Fiddler
A web debugging proxy server tool which logs HTTP(S) traffic to quickly obtain all network communications to and from the device.

Postman: via.vmw.com/Postman
Send requests, inspect responses, and easily debug REST APIs. Allows you to troubleshoot console actions quickly e.g. baseline creation.

SyncML Viewer: via.vmw.com/SyncML Viewer
Presents the SyncML protocol stream between the Windows device and MDM server. Easier to use than Fiddler!

Discovery Fling: via.vmw.com/Discovery Fling
Quickly view installed apps, certificates, updates, and basic enrollment info on the device and review related services.

DevTools: Right-click on webpage, click Inspect or press Command+Option+C (Mac) or Control+Shift+C (Windows). Click Network tab. See detailed errors from the console-side.

Get the latest Windows Troubleshooting Tutorial on Tech Zone @ https://via.vmw.com/W10Troubleshooting
Learn the fundamentals of managing Windows with Workspace ONE UEM @ https://via.vmware.com/LearnWindows