Microsoft SCCM Deployment Tips & Tricks for Experienced Users

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Learning Objectives

- Types of update installers (ASP, MSP, MSI, SFX, EXE)
- Deploying Products, Updates, Hotfixes, Service Packs, Product Specific content
- Deploying compressed deployments in busy networks
- Silent deployment of SFX, Country Kits, etc.
- Reboot and Rollback
- Uninstalling deployed updates
- Identifying Common Errors and Interpreting Error logs
- Preventing deployment failures due to dependencies

Description:

This class covers the creation of deployments of Autodesk products and updates using Microsoft System Center Configuration Manager (commonly referred to as SCCM). Microsoft SCCM is the most commonly used systems management software product used by Autodesk customers, and with the 2019 releases, we’ve optimized our software for SCCM compatibility. This presentation is targeted toward customers with a firm understanding of SCCM who want detailed information about deploying Autodesk products and updates. Topics will include using advanced settings such as the Hybrid and Application method in SCCM. There will also be a detailed walk-through of how to debug common deployment issues.

Speaker(s):

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Microsoft SCCM

Microsoft® System Center Configuration Manager (SCCM) allows you to manage software distribution to selected target systems through a remote process.

Standard SCCM workflow

In the deployment process there are prerequisites that must be completed before touching SCCM in the process. In the picture above, SCCM is the 4th item.

We assume that you are familiar with the following.
1. How to get the binaries of your products (from Autodesk Account Portal – Browser Download) and plugins, add-ons, language packs, updates, etc.
2. Setting up licensing server.
3. Creating deployment using Autodesk Deployment Wizard. It’s part of the Product Installer. Familiarity with adding language packs, updates, etc.
4. Good understanding of the different deployment methods that are supported by SCCM.
5. Familiar with the process and using each method.

Here is a recap of most commonly used SCCM Deployment methods.

Package method:
SCCM Package method is the easiest and straightforward way to deploy Autodesk products because it does not use detection (of installed products). It can deploy to devices only.

Application method:
SCCM Application method is an advanced way to deploy Autodesk products. It uses dependency chains and detection methods. It can deploy to users and devices. In this method you would use Autodesk Deployment Wizard to create the deployment but not the product installer. SCCM Application manages component by component.
Hybrid method (Application method with script installer):
SCCM Hybrid method is an optional way to deploy Autodesk products. It gets many benefits of the Application method but avoids the complications involved. It uses detection and it can deploy to users and devices.

Complete detail can be found here, https://knowledge.autodesk.com/customer-service/network-license-administration/network-deployment/microsoft-system-center-configuration-manager-sccm
Deploying Product Updates

**Learning objective:** Autodesk product updates - the Autodesk Standard Patch wrapper (ASP), MSP, MSI, Service Packs; silent deployment, interpreting error logs and understanding error codes, and preventing deployment failures.

**Autodesk Standard Patch wrapper (ASP)**
Autodesk Standard Patch wrapper is an executable (.exe) that can contain one or more msp and msi update files for different Autodesk product components.

**Knowing ASP command line options**
To find the command line options and switches supported by an ASP, open Windows command prompt (cmd), browse to the directory where the ASP is located, and run one of the following commands as shown in the picture below.

- `<asp file name> -help`
- `<asp file name> /?`

**ASP command line option help**

**Typical output of ASP command line option help**
You may find more than one command line switch available to one functionality. For example,

- **ASP** silent install switch: ASP supports four parameters: “/quiet”, “/q”, “/silent”, “/s” for silent feature. All of them have the same effect.

  Note: Some older updates published as executable were not created in the ASP format. They might use some other switches for silent installation or might listen to one of the above. One has to check the updates release notes for the details.

- **MSI** and **MSP** – Autodesk updates in these formats respond to the msiexec parameters explained in the link below.


  https://www.advancedinstaller.com/user-guide/msiexec.html

**Using ASP command line options in SCCM**

When deploying the ASP updates to installed products using SCCM, you can enter command line option in the application or package you create in SCCM or create a command file that contains the command line itself. The picture below shows how to use command line switch in SCCM.
Deploying Autodesk Updates using SCCM

1. **Deploying an update using the Package Method**
   If you use the SCCM package method to deploy a package containing a single update to a device collection, the update will install silently on machines that have the targeted product installed and will fail silently on machines that do not have the product installed.

   The package method does not detect installed products or updates but simply attempt to install them. While doing so, the installer will fail with an error code. SCCM captures the errors and logs on the devices.

   **Note:** In SCCM application method there is an option to specify a custom requirement so that the update would not try to install on the client machines where the target product is not installed.

   **TIP:** In general, it would be better to only deploy update packages to device collections that all have the target product installed.

2. **Deploying Updates using the Application Method**
   If you use SCCM 'Application method with script installer’ to deploy products and/or updates to a device collection, you need to add detection for installed products and/or updates in SCCM.

   Like the package method, Application method also can silently install a single update deployment to a device collection. The update will fail silently on machines that do not have the target product installed and install silently on the machines that does have the target product installed.

   **TIP:** The exit code of update installation failures caused by the target product not being installed can be captured and ignored.

   **TIP:** The above failure can be prevented by using the product code of the target product to create a custom requirement. The custom requirement will check for the installed product and not attempt to install the update on machines that do not have the product installed.

   **TIP:** There are many ways to detect installed products/updates, but it’s recommended to use the ‘product codes’ for products and update Ids for updates.

**How to find Product codes to use in detection**

The uninstall text file in the SMS_SCCM scripts folder of the deployment contains the product code as shown in the picture below.
How to find Update Ids to use in detection
The update code (Update ID) can be found in Accounts portal. On the Product Updates page, expand the drawer by a single click on the update row. The highlighted text, {3D7FC4AF-4500-47B0-B83E-C864063775AE} is the Update Id for the update in the picture below. This value can be used for detection in the SCCM Application method.

ASP and MSP update detection
Generally, for MSP and ASP updates that contain MSP update files, you can point to the registry value of the update id (found in the product updates information in the accounts portal).

The update id entry is created in the Windows registry HKCL as shown below.
HKEY_CLASSES_ROOT\Installer\Patches\{Mangled update id\}
    SourceList
    LastUsedSource
  = n;1;C:\ProgramData\PackageCache\{update id\}

However, this value can be hard to use in SCCM so it’s often much easier to point to the Mangled Key directly. You may use the ‘mangle-tool' to get a scrambled update id.

TIP: You can find the Mangle script in mangle_update_id.zip uploaded at the ‘Additional Class Material' location in AU2018.

Use the update id you found in Accounts portal for your update in the mangle-tool to get the scrambled update id. Then use this scrambled id for custom detection in SCCM as shown below.

HKEY_CLASSES_ROOT\Installer\Patches\{Mangled update id\}

Detection 3DS Max 2019.1.1 ASP using mangled key

**MSI – Updates, Extensions and Addons detection**

Another option is to check the registry entries made by some updates under:

HKEY_LOCAL_MACHINE\SOFTWARE\Autodesk\UPI2\n
This is the same location where the Autodesk products add their id’s.
For example, the Infrastructure Parts Editor 2019.1 Extension whose update ID is `{3D7FC4AF-4500-47B0-B83E-C864063775AE}`

It can be detected in SCCM by adding the update id from the following registry key:

HKEY_LOCAL_MACHINE\SOFTWARE\Autodesk\UPI2\{58E36D07-4521-0000-0102-C854F44898ED}

Where, Guid = `{3D7FC4AF-4500-47B0-B83E-C864063775AE}` which is nothing but the Update Id you found in Accounts portal.
Adding Update GUID for detection in SCCM

Custom Requirements with Application method
You can also add a requirement with the option ‘Custom Requirements’. Here you can select the option MSI code and use the installed product’s product code which you can find in the uninstall script in the SMS_SCCM scripts folder. This will let the update application package be deployed to a user or device collection using product code as detection. SCCM will only try and install the update if the target product is installed and will skip devices that do not have the target product installed.
Creating customer requirement
For the requirement you will need to use the product’s core MSI code found in the uninstall script in the SMS_SCCM scripts folder.

**General guideline to prevent update install failure:**

**Application manager**
When adding updates using the application manager, no need to specify silent option because the update installation will use the switch added to the setup.exe command line. It would be ‘/q’ switch as found in the command line commands found in the SMS_SCCM scripts folder.

*Note: If this command line is used to install the product where the update was added with the application manager, it will install silently.*

**Include additional software** (Autodesk Deployment Wizard)

*Note: The behavior differs with the file format of the update.*
**ASP updates:**
For ASP executables, the silent switch ‘/q’ should be added in the parameter column for silent installation.

![Screenshot of Include additional software window with /q added to the parameter column.]

**Exit code in the setup error log**

**MSI updates:**
For MSI updates, no need to add the silent switch in the parameter field.

**TIP:** Adding one will cause the install to fail because msi uses the silent switch of the setup.exe.

**MSP Updates:**
If you are using the MSP workaround and adding the MSP update as an executable, no need to add any additional parameters in the parameters column. The update will install using the parameter added to the setup.exe command line so if /q is used there, then the update install will also use that parameter.

**Note:** If you add a parameter, the update installation will fail.

Find more information on using MSP installers in AKN, [Add MSP Updates to a Deployment](#).

**Common reasons of failure (pain points)**

All Autodesk updates are tested for successful installation and deployment on the target products. But when creating a deployment, how an update was added to the deployment package can cause failures.

**Note:** When deploying updates, the update install failures are silent. That is, there is no apparent failure notification. And SCCM will still report that the deployment was successful.

**TIP:** Precautionary measures must be taken to prevent such deployment failures.
TIP: The update release note contains useful information that can help resolve known issues.

The picture below shows an update dependency error in the update setup log.

![Exit code in the setup error log](image)

The error log contains the exit code and more related information. In the above example, the exit code is 0x81f40001 (highlighted in red).

**Note:** The above error means that the update failed to install because the update it was dependent on was not installed.

**ASP error logs**

ASP Error logs help identify what causes an update installation to fail. An error log is generated during the update installation. The log files are created in the following locations.

- `%temp%` - if the update is installed under user settings
- `C:\Windows\Temp\` - when installing under system settings such as SCCM

**TIP:** The name of the update is used to name the log file, so you can identify it.

**Note:** If the update install attempt fails, no log file is created because installation has not even started.

One common cause of update installation failure is, when the update is dependent on another update which was not installed.

**TIP:** This failure can be prevented by including both updates in the deployment with desired install sequence.

**Note:** The dependency is usually mentioned in the release note of an update if it has a dependency.

When deploying updates, the dependency must be considered for successful deployment.

**Note:** Autodesk desktop application (ADA) the dependency hierarchy is handled automatically.
Update install specific errors:

1. Exit Code: **1605 - ERROR_UNKNOWN_PRODUCT**, this error is returned when you attempted to uninstall an application that isn't installed on a target system.
2. Exit Code: **1647 - ERROR_UNKNOWN_PATCH**, the update is not applied to this product.
3. Exit code: **0x81000001** – This error can occur when you are trying to apply a patch onto a system that does not have the target product installed as shown in the picture below.

The execmgr.log file found in the Windows\CCM\Logs folder, can show this message for the same issue:

Script for Package: CCM001E3, Program: 2019.0.1 AutoCAD update failed with exit code 2164260865
Deploying Service Packs, Addons, etc.

Learning Objective: Deploy Service Packs and Add-ons; Prevent install failures; Silent Deployment.

There were frequent requests from the field on deploying Service Packs and add-ons because these types are used to update older versions of Autodesk products. This section will go over how to ensure that they are getting deployed successfully and silently using SCCM.

Deployment of Service packs

Service packs were updates for older versions of Autodesk products and they were not wrapped up into an ASP (Autodesk Standard Patch wrapper). Silent deployment of service packs was a challenge and hence caused failures.

You will observe slightly different behaviors with different silent switches which you can verify as described below.

When using the silent switch ‘/q’ to deploy a service pack, the installation is silent (no user interaction expected) but install progress window is displayed as shown in the picture below. This is not expected for silent deployment.

Instead of the ‘/q’ switch, using ‘/s’ switch makes service pack deployment completely silent as shown in the picture below.
Here are few ways of adding a **service pack** to a deployment image.

**Method 1:**
- Create or modify a deployment, on the Deployment Configuration Complete page, click Add Updates button to open Application Manager.
- Select the Service Pack and add it.
- **Note:** Service Pack install process dialog will be shown by using this method even with silent install mode ‘/q’ switch.

**Method 2:**
- Create or modify a deployment, Navigate to Configure page, unfold Include Additional software dialog.
- Add Service Pack and modify the name if you want.
- **Note:** If you don’t want the Service Pack installation process dialog shown, please add ‘/s’ switch.
Adding /s switch to suppress install progress window

Method 3

- Create a deployment
- Under the Img folder, create a sub-folder ADDONS\ADDON_<Service Pack name>_0
- Copy the Service Pack file into this folder.
- Open the setup.ini file which is in Img folder as well.
- Locate the EXE_SEQUENCE and add “ADDON_SEQUENCE=ADDON_<Service Pack name>_0” under that line; add the following text in the bottom of the file.

```ini
[ADDON_<Service Pack name>_0]
PRODUCT_NAME=<Service Pack name>
EXE_PATH=Addons\ADDON_<Service Pack name>_0\<Service Pack name>.exe
EXE_PARAM=/S
LOG=%tmp%\ServicePack1.log
DISKCOST=
IGNORE_FAILURE=YES
ROLLBACKABLE=YES
```
ACTION=INSTALL

- Save the Setup.ini

Known Installation Issues with service packs

The following tips can help with installations of service packs of Autodesk Inventor.

**Slower Service Pack install**: If Inventor was installed from a network location, the installation of service pack may run up to twice as slow as expected. This is due to additional security checking by Microsoft. For more information, please see [Installation might require several hours to complete](#).

**Solution**: You can opt out of the additional Microsoft security checking by running the Inventor 2016 SP installer from the Windows command line with the optional /OPTOUT_KB2918614 flag.

**Language Pack Install error**: If you downloaded and installed an Inventor Standalone language pack, it is possible that you may receive an error during the SP installation.

**Solution**: Uninstall the Inventor Language Pack and install the updated version [from here](#).

If you installed Inventor from the Autodesk Building Design Suite 2016, it is possible that you may receive an error during the SP1 installation. You will need to uninstall this version of Inventor and reinstall an updated version. For more information, please see [Error 1328 when installing Update for Inventor 2016](#).

**TIP**: Usually the update release notes contains useful information that can help resolve known issues. Always refer to the release notes before installing updates or creating deployments for them.
Deploying products and Addons packaged as SFX

Learning Objective: Deploying products and addons that are packaged as an sfx executable.

CAD/IT managers have been expressing difficulties deploying these products silently and it has been one of the pain points.

The SFX package cannot be deployed directly because the contents to be deployed is compressed and bundled as a self-extractable zip file. So, the contents must be extracted first and then deployment must be created with the extracted contents. This is the extra step involved.

This topic shows you how to create an SCCM application that will first self-extract the contents on the client machines silently and then run the extracted installer silently.

This section walks you through the process, using Autodesk DWG TrueView as an example.

Preparation for creating deployment

Download the product installer

Autodesk DWG TrueView is available in the following location:

https://www.autodesk.com/products/dwg/viewers

The downloaded file is ‘DWGTrueView_2019_Enu_64bit.sfx.exe’

**TIP:** The install package usually contains the text ‘sfx’ in the file name to indicate it is a self-extracting file.

By default, the contents will extract to ‘C:\Autodesk’ folder when the SFX file is executed. You can also choose another location to extract the files.

You can run the SFX file using this command line to extract.

`DWGTrueView_2019_Enu_64bit.sfx.exe -suppresslaunch -d "C:\Autodesk"`

The path entered here is the default suggested location, but you might want to extract the installer to the SCCM cache folder and then run it from that location. You can specify the path instead of the default path.

The following command will run the installer in silent mode.

"C:\Autodesk\DWGTrueView_2019_Enu_64bit\Setup.exe" /q

**Note:** Setup.exe will take the '/q' silent switch and other parameters you might want to use as well.

**TIP:** You can add the above two command lines into one command file as shown below:

`DWGTrueView_2019_Enu_64bit.sfx.exe -suppresslaunch -d "C:\Autodesk"
"C:\Autodesk\DWGTrueView_2019_Enu_64bit\Setup.exe" /q`
**Note:** Make sure the above command file is saved in ANSI format when saving as a command or batch file.

Copy the command file and the downloaded DWGTrueView_2019_Enu_64bit.sfx.exe file to a shared folder that you will use as the source folder for the SCCM application or package that you will create.

You might also want to create an uninstall command/batch file to use for the product uninstall.

You can use the command line directly in SCCM or in a batch/command file:

```
msiexec /X {28B89EEF-2028-0409-0100-CF3F3A09B77D} /q /L*V "%temp%/uninstall_dwg.log"
```

The product code `{28B89EEF-2028-0409-0100-CF3F3A09B77D}` in the above line is the DWG TrueView product code which you can find from the extracted setup.ini file as shown in the picture below.

![Product code in setup.ini](image)

**TIP:** The product can be found from the dwgviewer.msi file properties, under details and revision number as in the picture below:
Creating the TrueView DWG application in SCCM

In SCCM Application method with script installer, it is a straightforward process to create deployment for TrueView DWG SFX installer using the Create Application Wizard.

- Navigate to Applications and the sub-folder where you want to create the application in SCCM.
- Select ‘Create an Application’ button.
- Select ‘Manually specify the information’ radio button as shown in the picture below.
Specify Application settings

- Fill out all the required information until you reach the Deployment types step as shown in the picture below. Here, you need to select Add and then select a script installer.
Specifying deployment type

- Add content location and command line file as shown in the picture below.
  - DWG sfx file in the content location
  - The command file for the extraction and installation
  - The uninstall script (optional)
Adding content location and command files

- Then select the Detection rule
  - Windows installer
  - Enter the product code of the DWG add on
    
    {28B89EEF-2028-0409-0100-CF3F3A09B77D}
Go ahead and finish the wizard with the settings you want.
 Then distribute the content, and select if you want to deploy the application to a user or device collection
 Select, Installation Behavior: Install for system
 Log on requirement: Only when no user is logged on

**Note:** This is because the self-extraction doesn’t require user interaction, you might want to prevent a user from interfering with the installation. The self-extraction cannot be completely hidden during its extraction. The installation of the DWG product will be both silent and hidden completely from the user.
• Installation program visibility: Hidden

User Experience Settings

Continue and finish the wizard, set the rest of the deployment options and the DWG TrueView product can either be pushed or made available by first getting extracted and then installed on the client machines.
Deploying Country Kits

**Learning objective:** Deploy/Install Country Kits silently.

IT/CAD Managers have been facing difficulties in deploying country kits to Autodesk products. There have been many queries about deploying country kits silently to existing Infraworks or Civil 3D product installations.

This section walks you through the process to deploy country kits silently to **Civil 3D** installations.

**Pain point (Civil 3D):**
The country kits can be installed and applied onto an already installed product through the option available to modify the installation inside the control panel. Unfortunately, this is not a viable option for products that were deployed from a central location because it would have to be done manually on each computer.

There are two options available for network installed Autodesk products:

- **Option 1:** add the specific Country kit to the product deployment using the option “Add content” to your product, in the deployment wizard.
- **Option 2:** use a script that can be deployed on top of the already installed products on the computer network.

**Deploying Country kit with Product deployment**
When you want to add a country kit to a product deployment, the recommendation is to include it in the option “Add content” in the deployment wizard. This step is found in the step “Configure the deployment” as shown in this picture.

**Steps:**
- Expand the Autodesk Civil 3D option and click on “Add content” button
- Click the “Add” button
- Navigate to the language country kit xml file and select it
Add Content in Configure Deployment Window

- Once after it is added to the deployment, the name of the country kit will show up in the menu
- Then select the option to add a shortcut on the desktop for that country kit.

Create desktop shortcut for country kit
• Minimize the expanded section and continue to finish the deployment creation.

**TIP:** If the silent switch option is used in the install command line on the setup.exe, no need to add it again when adding the country kit for silent install.

**Note:** This can also be performed on an existing deployment by selecting the ‘Create and modify a deployment’ shortcut from the tools folder that is found inside the deployment.

Below command line is an example for installing country kit along with Civil 3D 2019 product.

```
\Img\Setup.exe /W /q /I Img\2019 Civ 3D countrykit.ini /language en-us
```

- where ‘2019 Civ 3D countrykit’ is the deployment name

### Deploying Country Kit to installed products silently

To deploy the Country Kits to already installed products, the best solution is unfortunately to first add the downloaded country kit data to the existing deployment and then reinstalling the Civil 3D product onto the client machines.

#### Create the civil 3D uninstall script

To do this you can first create an uninstall script from the uninstall.txt file found in the SMS_SCCM scripts folder.

1. Copy the text file to shared source folder you will use for the uninstall package.
2. Modify the entries in this file and remove all the double colons in front of the components that you want to uninstall
3. Some components are not able to be uninstalled by the script and for this case when you want to reinstall the product this is not needed.
4. When you have finished modifying this text file, select save as
5. Select all files
6. Save it in ANSI format with the .cmd extension
7. Now in SCCM select this command file to create an uninstall package.

#### Create the Civil 3D SCCM application

Now you can go ahead and create the same Civil 3D application as described in the previous section with the country kit data added to it.

The only thing you need to do is to always run the uninstall package created above before installing the application. This will ensure that the client machines will have the previous version of Civil 3D uninstalled before installing the new version of Civil 3D with the country kit.

**TIP:** To verify that a Civil 3D country kit is successfully applied you can look for these items listed:

- Country Kit specific icon is placed on the desktop (if set to that when installed)
- Files are cached in the following folder.
C:\Program Files\Autodesk\AutoCAD 2019\C3D\en-US\ContentPacks\Standalone

- Templates are installed in the following folder.
  C:\Users\<username>\AppData\Local\Autodesk\C3D 2019\enu\Template

- The Default Template File Name for QNEW is set to a valid 2019 template
- No errors in Event Viewer
- Country Kit specific tool palettes are present
- Country Kit specific toolbox entries are present
BIM 360 Glue

Learning Objective: Deploying BIM 360 Glue and BIM 360 Glue Desktop.

This section walks you through the steps to deploy BIM 360 Glue and BIM 360 Glue Desktop products.

Deploy BIM 360 Glue with product deployment
First the BIM 360 Glue component must be downloaded from your account (Accounts Portal) to already created Revit deployment. Once downloaded, add it in the ‘Include additional software’ option in the deployment step.

TIP: This component is an MSI package and hence no need to add the silent switch ‘/q’ in this step because MSI packages use the silent switch set to the setup.exe command line.

Installation of BIM 360 Glue can be validated by checking the windows registry as shown in the picture below.
Windows registry shows BIM 360 Glue as installed

**TIP:** BIM 360 Glue can be deployed along with the product (Revit) using either SCCM Package or Application methods.

**Deploying the BIM 360 Glue to an existing product installation**

The recommended way to apply BIM 360 Glue to an existing Revit installation is to first download it from the accounts portal, then create a command file with the correct msiexec command line added. It would be something like this:

```msiexec.exe /i "B3Addin_Revit2019_x64.msi /q /L*V "C:\Windows\Temp\B3Addin_Revit2019_x64.log"
```

**TIP:** The silent switch ‘/q’ is used with msiexec.exe which will be used for BIM 360 Glue component also.
The above picture shows that BIM 360 Glue command file (Revit_BIMGLUE.cmd) in the shared folder as the source. The silent switch ‘/q’ is used with msiexec.exe which will be used for BIM 360 Glue component as shown in the picture below.

Next step is to add detection to SCCM Application method.

**Note:** Refer to the topic ‘Creating the TrueView DWG application in SCCM’ which discusses about using detection in SCCM Application method detection.
The product key can be found in the Windows registry.

HKEY_LOCAL_MACHINE\SOFTWARE\Autodesk\UPI2\{DF633E10-FA33-46B9-8663-DCDEFA8F1F95}

Use the Product code, '{DF633E10-FA33-46B9-8663-DCDEFA8F1F95}' in the Properties window as shown in the picture below.

Create an uninstall script command file (name it as revit_bim_uninstall.cmd) which would contain the uninstall command line as shown below.

```msiexec /X {DF633E10-FA33-46B9-8663-DCDEFA8F1F95} /q /L*V
"C:\Windows\Temp\B3Addin_Revit2019_x64_uninstall.log"
```

**Note:** Using this uninstall command will uninstall BIM 360 Glue silently from all clients using SCCM.
BIM 360 Glue desktop

There are some applications that might open popup windows that make deploying them using SCCM a challenge. When deploying products/updates to client machines centrally and silently, any popup requiring user action will halt and wait for user input which is undesired. It will lead to deployment failure.

BIM 360 Glue desktop application is an example. This application requires Autodesk certificate is installed on the client machine or a popup window will ask if you want to install and trust the certificate as shown in the picture below.

To be able to deploy BIM 360 Glue desktop application without the need of the end user to click on that popup window, you need to pre-install that certificate onto the client machines before you try and run the installer.

The BIM 360 Glue Desktop application can be found here:

One way to achieve that is to create a package in SCCM where you run the CertMgr.exe with a command line script together with the pre-downloaded Autodesk certificate. You can create this package first and then have this package be a requirement that is always run before the actual BIM 360 Glue Desktop package installer is run.
Here are the steps to create the Certificate installer package:

**Get the Autodesk Certificate:**

**Step 1:**
1. The easiest way to get it is to download and run the BIM 360 Glue Launcher.exe. The BIM 360 Glue Desktop application can be found here.
3. When you run the BIM 360 Glue Launcher.exe, the popup window displays. Just click on the Autodesk, Inc link, as indicated in the picture below.

![BIM 360 Glue Desktop installation popup](image)

4. On the next window navigate to the details tab
5. Select DER check box and then click next
6. Click the button “Copy to” and then browse to where you want to save the certificate.
7. Name the certificate as 'adsk'. It will automatically get the .cer extension
8. Save and close the window.

**Step 2:**
1. Create a folder on the primary site server you are going to use as the source for the Certificate installer package.
2. Copy the CertMgr.exe tool into this folder. The tool can be found with any Visual studio installation and from the Microsoft windows 10 SDK.
3. Copy the adsk.cer certificate that you saved in the Step 1.
4. Create a new text file and add the following command line to it:
   `CertMgr.exe -add adsk.cer -c -s -r localMachine TrustedPublisher`
5. Save this text file as a batch or command file as you have done previously.

Step 3:
1. Create a new shared folder on the primary site server and name it something related to the BIM 360 Glue Desktop application
2. Copy the downloaded BIM 360 Glue Launcher.exe application and save it in this folder.

Now all the necessary components have been retrieved.

**Next step is to create the deployment packages in SCCM**

Step 1:
1. In SCCM navigate to
   ```
   \Software Library\Overview\Application Management\Packages\
   ```
2. Select any sub folder where you want to create the SCCM packages
3. Select create package to create the certificate installer.
4. Fill out the necessary information until you get to the Standard program window
5. Select the command file you created that contains the CertMgr.exe command line as shown in the picture below. And click on the ‘OK’ button
6. Select ‘run the application as an admin’ option. This is a mandatory step.
7. Fill out the ‘needed information’.
8. Save and close the package wizard.
9. When done you need to distribute the Certificate Installer package but you do not need to Deploy it to any collections. Once the requirement is for the BIM package it will be deployed automatically on client machines.

Step 2:
1. Create the BIM 360 Glue desktop installer package.
2. In SCCM, select create a package
3. Fill out the necessary information such as name, version, language etc.
4. Point to the source folder containing the BIM 360 Glue desktop application
5. On the standard program section, enter the following command line:

   BIM 360 Glue Launcher.exe /install
6. Select to install the package under user settings as shown in the picture below.

   **Note:** ‘Only when a user is logged on’ is a mandatory requirement.

![Deployment Package environment settings](image)

7. In the Requirements step you need to select, Run another program first
8. Select the previously create ADSK Certificate package
9. Select to always run this program
Deployment Package requirement settings

10. Complete the package creation wizard and then you can distribute and deploy it to the device collection you want.

Once the package has completed installation, it will automatically launch the BIM 360 Glue desktop. You could add a step that would either close the application using a command like such as:

```cmd
TASKKILL /IM BIM360Glue.exe
```

**TIP:** The certificate installation package can be used in similar circumstances with popups caused by certificates not being installed.
Revit Addon and Digital signature

Learning Objective: Prevent security popups at runtime from addons during deployment.

Background

When you try to load an executable file or add-on, the software checks its security credentials, including its digital signature.

A digital signature is a block of information added to files to identify the originator and indicate whether a file has been altered since the digital signature was applied.

You can examine the digital signature of a file through a chain of trust up to the root certificate issued by a trusted certificate authority (CA).

To access the digital signature for a signed file, do one of the following:

- If the warning dialog includes a View Certificate link, click the link.
- Right-click the file and then click Properties, the Digital Signatures tab, the name of the signer and the Details button, and then View Certificate.

Issues with Addons

Example: Revit Addon and Digital Signature

There have been some issues with addons and often specifically with Revit addons. There are mainly two issues that can happen with Addons that are digitally signed or that are unsigned when the end user is trying to run the application.

1. Digitally signed Addons

   When you are dealing with digitally signed addons, they can cause a popup at run time if the certificate is not trusted. This can happen when the root certificate from the authority who issued it is not found in the computer to validate it. You can prevent this untrusted certificate popups from happening if you deploy a certificate installation onto the same client machines that you have deployed the problematic product.

   In this case you would have to perform the same steps what you have done with the BIM 360 Glue Desktop example, but you could run the certificate installer after the product has been deployed.

   It is important to retrieve the correct certificate from the popup on the test machine where the popup is occurring. To retrieve the certificate, you can perform the same steps as in the BIM 360 Glue Example.

   a. Export the certificate
   b. Copy the certificate to the shared source folder
   c. Copy the CertMgr.exe to the same shared folder
d. Create a batch or command file that has the command line to install the certificate you wanted to install.
e. Create a package in SCCM using the shared folder containing:
   Your command-file with the script to install the certificate
   CertMgr.exe
   The extracted certificate
f. Make sure to select to install the package as admin or system settings
g. Distribute the package
h. Select the method to deploy the package.

**Note:** For more detailed instructions please see section BIM 360 Glue Desktop- ADSK certificate installer.

2. **Digitally Unsigned Addons**

For unsigned Addons you would need to sign them, or they would not be able to be installed silently without user interaction in most cases.

It is possible to self-sign an unsigned addon and then deploy this self-signed certificate to the client machines using SCCM.

To self-sign your unsigned addon follow the instructions here:
https://docs.microsoft.com/en-us/windows/desktop/appxpkg/how-to-create-a-package-signing-certificate

Even after the addon has been self-signed, the certificate is still not trusted by the local computer. To be able to deploy the addon you must deploy and install your certificate into the trusted certificates store of the local computer.

You can use Certutil.exe, which comes with Windows.

To install certificates with WindowsCertutil.exe:

```
Certutil -addStore TrustedPeople MyKey.cer
```

To be able to deploy and install your signed addon with SCCM you first need to:

1. Create a shared source folder
2. Add the Certutil.exe together with your certificate that needs to be installed
3. Create a batch or command file with the above command line with your .cer file name.
4. You can then follow the same steps as explained in the BIM 3060 Glue desktop example to deploy the certificate install package as a requirement before you install the main application or deploy it after the main application has been installed on the client machines.
SFX on dark sites

Learning Objective: Deploying SFX files silently on Window 7 in dark sites

Situation: Autodesk SFX files fails to extract on Windows 7 workstations on dark sites without internet connection and will display a message that the publisher could not be verified.

SFX (.exe) files must be digitally signed so that the validity of the certificate will be checked before extracting the content.

Note: Windows 10 and 8 operating systems already have the needed certificates, so the issues are not seen on these machines.

But Windows 7 does not have the certificate and hence it tries to validate on the fly. This requires active internet connection. Publisher could not be verified error message is displayed if there is no active internet connection.

The recommended solution is to manage the certificates on these machines manually as discussed in the link below.

https://knowledge.autodesk.com/search-result/caas/simplecontent/content/2018-installation-files-not-extracting-sfx-download.html

It'd be preferred to manage it in the deployment itself with no manual interaction so that the deployment can be silent.

It can be achieved by deploying the required certificate using command line as described in the section BIM 360 Glue Desktop (Step 2 onward).

• Find the certificate ‘VeriSign Universal Root Certification Authority’ at this location, https://www.websecurity.symantec.com/theme/roots#ActiveRoots
• Download it in the same folder where CertMgr.exe exists.
• Create a batch or command file as described in the BIM 360 Glue Desktop step 2.
• Create a new package in SCCM, using this source folder and have it install under admin or system settings.
  o This certificate installer will run silently with no need of user interaction and if selected in SCCM, can run hidden as well.
• Distribute this certificate installer package to your distribution points.

Then you can either set it as a requirement for the SFX package or application in SCCM, or just select to deploy it to the same device collections as the SFX installer separately.

Note: In the example with the BIM 360 Glue Desktop, it was set as a requirement in SCCM so that it will always install before the BIM 360 Glue Desktop package.
Autodesk VBA Object Enabler to AutoCAD

Learning Objective: Deploy Autodesk Object Enabler silently

There are mainly two ways to go about it.

The first way is described here in this AKN article:


This article is also valid for the 2019 VBA enabler.

Note: When deploying an Object Enabler, you do not need add the silent switch ‘/q’ in the parameter column because as with MSI and MSP files, the silent switch used to install setup.exe.

Following steps explains how to deploy VBA Object Enabler.

- Download the AutoCAD_2018_VBA_module_Win_64bit_GL_dlm.sfx.exe from here:
  https://knowledge.autodesk.com/support/autocad/troubleshooting/caas/downloads/content/download-the-microsoft-visual-basic-for-applications-module-vba.html

- Extract the AutoCAD_2018_VBA_module_Win_64bit_GL_dlm.sfx.exe

By default, it will extract to the c:\Autodesk folder as shown in the picture below.

- Once the files have finished extracting, exit the VBA installer as shown in the picture below.
• Download AutoCAD using Browser Download method from Autodesk Accounts portal and extract the content from the SFX file.
• Run the AutoCAD deployment wizard
• Navigate the folder where the VBA Object Enabler was downloaded in the configure deployment section and select ACVbaInstaller.msi file as shown in the picture below

Select VBA Object Enabler installer
• In the command line parameter column, add this line as shown in the picture below.

```
INSTALLDIR="C:\Program Files\Autodesk"
```

Include additional software with command line parameter

**Note:** You may add any other component you might want to add and close the expanded window.

• Finish and Close the deployment wizard
• Navigate to the following folder

```
C:\Autodesk\AutoCAD_2018_VBA_module_Win_64bit_dlm\x64\AcVbaInstaller
```

• Copy Eula, Program Files, and Windows folders under that folder to the folder

```
\Img\ADDONS\ADDON_ACVBAINSTALLER_0
```

**Note:** You do not need to copy the AcVbaInstaller.msi file as that should have automatically been copied during the deployment creation.
Copy additional folders

**Note:** If the command line from the SCCM scripts folder was used to install the deployment, 
.
.
.
Img\Setup.exe /W /q /I Img\2018 <AutoCAD deployment name>.ini
/language en-us
the silent switch ‘/q’, would apply to the object enabler and the other MSIs along with AutoCAD product at install time to install silently.

You can verify the object enabler installation in control panel as shown in the picture below.

Windows control panel shows the VBA Object Enabler as installed

You can also check the registry to confirm the installation as in the picture below.
TIP: You may use the product code for detection in the deployment.

**Note:** With the following command line, the VBA object enabler can be silently uninstall using SCCM

```shell
msiexec /X {C33F3BA8-CA07-4449-012D-B043FE6029AA} /q
/L*V "C:\Windows\Temp\VBA_object_enabler_x64_uninstall.log"
```
Common errors seen in SCCM

Learning Objective: Common errors in SCCM

The common errors that are encountered when deploying products or updates with SCCM are usually of three types:

1. Cache errors
2. Detection errors
3. Hash errors

Cache errors

A cache error occurs when the allocated space to hold the download content is not enough.

A cache would look like this: 0x87D01201(2016407039)

You can also find the explicit error mentioned in the CAS.log on the client machine:

‘Not enough space in Cache’

**TIP:** CAS.log is created in C:\Windows\CCM\Logs folder.

Cache errors can also occur with an empty cache folder and report in the CAS.log as,

‘---- CacheManager: Even if all currently inactive cached content was removed there would not be enough space available for the request.’

**TIP:** Change cache folder in the Configuration manager to resolve the issue.

Detection errors

A detection error occurs when the application installs successfully but the detection added in SCCM cannot be found at the client.

A detection error would look like this: 0x87D00324(2016410844)

With log entries in the Appenforce.log, the error message could be

‘Application not discovered’

**TIP:** Fixing the detection settings in SCCM for the Application will resolve this issue.

Hash errors

A hash error occurs when there is a mismatch between the package at the source and at the client.
A hash error would look like this: 0x80091007

With entries in the CAS.log the error log is,
‘Hash could not be matched for the downloaded content’.

WARNING: File hash mismatch

TIP: Deleting the deployment in the distribution point and redistributing to will resolve the it.
Uninstalling updates

Learning Objective: uninstall updates using SCCM centrally

The recommended way to uninstall updates is to create ASP, MSP or MSI uninstall scripts for the specific updates.

Here are the ways to create uninstall scripts.

ASP executables

The command line command syntax for uninstalling ASP updates is

<update_name>.exe /uninstall /<ASP parameter>

Note: For silent uninstall, use the silent switch ‘/q’ with the above command.

Here is an example of a command line for AutoCAD 2019.1 x64 ASP update that would uninstall silently and hidden.

AutoCAD_2019.1_Update_64bit.exe /q /uninstall

Note: Older executable updates such as 2016 version service packs ASP parameters cannot be used. So, it is recommended to read the release notes and test unknown updates before you deploy them on larger scale.

TIP: ASP may contain many update files but uninstalling the ASP once will uninstall all of them.

MSP updates

The command line command syntax for uninstalling ASP updates is

msiexec /package {GUID_OF_PRODUCT} /uninstall {GUID_OF_UPDATE} /q

Note: For silent uninstall, use the silent switch ‘/q’ with the above command.

Here is an example of a command line for Inventor 2019.1.1 update that would uninstall silently and hidden.

msiexec /package {7F4DD591-2364-0001-0000-7107D70F3DB4} /uninstall {0F04A84A-4FB5-4061-8DC0-07C6275491CE} /q

MSI updates

The command line command syntax for uninstalling ASP updates is

msiexec /X {msi code}
**Note:** For silent uninstall, use the silent switch `/q` with the above command.

**TIP:** Can use `/L*V` switch with the log file name to create uninstall log.

The syntax with log is

```
msiexec /X {msi code} /L*V "%temp%/<uninstall_logname>.log"
```

Here is an example of uninstalling BIM 360 Glue addon silently with log creation:

```
msiexec /X {DF633E10-FA33-46B9-8663-DCDEFA8F1F95} /q /L*V "C:\Windows\Temp\ B3Addin_Revit2019_x64_uninstall.log"
```

**Note:** You must start the command prompt in admin mode to execute the above commands.

**TIP:** You can create a command file with the above commands and use it to create an SCCM uninstall package or any other method you find suitable.
Reboots and Rollbacks

Learning Objective: Understanding and dealing with Reboots and Rollbacks

Reboot may be required once the entire product installation is complete or for certain component(s) of some products in two ways; soft reboot and hard reboot.

With soft reboot, product installation continues and finishes without rebooting the computer. Any system update required for the installed product will take place when the computer is rebooted next time after the product installation.

With hard reboot, if any component needs system update, the product installation cannot skip but reboots the computer upon the component installation completion. Product installation will continue automatically after reboot.

TIP: The component install exit code would indicate when a reboot is required.

Reboot flag in the setup.ini

The Reboot flag is part of EXE_PARAM settings in the setup.ini file. It may look like this.

EXE_PARAM=SETUP=1 REBOOT=ReallySuppress

This instruction would suppress any reboot and restart prompt during and at the end of the installation.

Example:

[VAULT]
PLATFORM=X64
PRODUCT_NAME=Autodesk® Vault Basic 2016 (Client)
PREREQUISITE=OS_EDM;VCREDIST2008SP1X64;VCREDIST2008SP1X86;VCREDIST2010 SP1X64;VCREDIST2010SP1X86;VCREDIST2012UPD3X86;VCREDIST2012UPD3X64;_DOT NET35SP1;DOTNET45SP1;DOTNET45SP1LANG;MSXML6;WSE30;DIRECTX;ADR;WMF95X 64;INVENTOR;DWGTRUEVIEW
EXE_PATH=%platform%\VE\Vault.msi
EXE64_PATH=%platform%\VE\Vault.msi
EXE_PARAM=SETUP=1 REBOOT=ReallySuppress

More information can be found here:
https://docs.microsoft.com/en-us/windows/desktop/msi/reboot

Handling Reboots in SCCM

Exit code = 3010 (Soft Reboot) - It indicates the requested operation was successful. Changes will not be effective until the system is rebooted.
Exit code = **1641 (Hard Reboot)** - It indicates the requested operation was completed successfully. The system will be restarted so the changes can take effect immediately.

Exit code = **0**. It indicates the operation was completed successfully and no reboot required.

**Options in SCCM:**

**TIP**: The exit code capturing is possible in SCCM Application method. But the package method does not support it.

**NOTE**: To capture exit codes of Autodesk product, package must be created in SCCM Application method.

After the SCCM Application package is created, following steps will walk you through the process of capturing and using exit code(s) in SCCM.

1. Navigate to the “Deployment type” tab

2. Right click the application and select properties
3. Select on the “Return Codes” tab
4. You will see the exit codes prepopulated as shown in the picture below.
Exit codes

0 = Success, no reboot
1707 = Success, no reboot
3010 = Soft Reboot
1641 = Hard Reboot
1618 = Fast Retry

Note: The above exit codes are captured by default. These codes are normally enough to handle Autodesk product and update installations.

5. Select the ‘User Experience’ tab as shown in the picture below.
Choose behavior

The above picture shows available behaviors as explained below.

- Select Determine behavior based on return codes – (Default) The client will perform any action needed based on the return code of the application.

- No specific action – The client won’t perform any action. **Note:** In this case it is possible to completely suppress a restart.

- The software install program might force a device restart – This option might force a restart.

- Configuration Manager client will force a mandatory device restart – The client will always perform a restart.
6. You need to select an option as you determine
7. Finish the set up by selecting the ‘OK’ button.

Rollbacks

The Autodesk install framework handles the installation of the products and its sub components with rollbacks in such a way that if a component installation fails, it will be completely cleaned up by default.

If the component was set to ignore failure, the installation would continue. If the component was set not to be ignored, the installation of the entire product will fail and roll back.

The standard installation behavior for the components included with the deployment can be modified in the component entries in the setup.ini file when using the setup.exe to install the product deployment.

Critical components cannot ignore failures. These components can be identified in the setup.ini file by the IGNORE_FAILURE flag.

The default setting is not to ignore as shown below.

IGNORE_FAILURE=NO

This setting will stop the installation and Rollback is determined based on the Rollbackable setting.

Example excerpt from setup.ini file:

[NLM]
PLATFORM=NATIVE
PRODUCT_NAME=Network License Manager
LOG=%tmp%\NLM Install.log
EXE_PATH=%platform%\Tools\NLM\NLM.msi
INSTALL_TYPE=4
ACTION=INSTALL
IGNORE_FAILURE=YES
ROLLBACKABLE=YES

In the example above the ROLLBACKABLE flag is set to YES which means that if a component which installs after this component fails which cannot be ignored, this component will also rollback.

**TIP:** To modify the standard installation behavior for the components included with the deployments, make changes to the component entries in the setup.ini file when using the setup.exe to install the product.
Note:

- **IGNORE_FAILURE** flag can be either set to YES or NO. If it’s not set, it assumes the default value NO and behaves accordingly.

- **ROLLBACKABLE** flag can also be either set to YES or NO. If it is not set, it assumes the default value, NO and behaves accordingly.

- Considering both above flags four different combination is possible. But the behavior will be independent. That is, one flag setting is not dependent on the other.

**TIP:** IGNORE_FAILURE setting is for the entire product install. So, if it is set to NO and a component fails, the entire product installation will fail. This is a critical setting and cannot be ignored.
Compressed deployments

Learning Objective: Creating and deploying compressed content for speedy and efficient deployment.

A common request from IT/CAD Managers have been to be able to deploy Autodesk products as compressed data to device collections. The advantage is, data transfer of fewer large files is faster and it’s handled efficiently by SCCM on busy networks.

Microsoft SCCM uses a Microsoft technology called BITS (Background Intelligent Transfer Service) which scans the network availability each time it wants to copy or transfer a file over the network. This can cause the transfer of many files to become much slower than if it’d have to transfer the same amount of data in fewer files. The use of compressing into larger chunks and combining script deployment can help alleviate this issue.

A common Autodesk product deployment contains 20,000 – 40,000 files. The following section demonstrates how to compress the data into larger chunks and deploy to device collections successfully.

The process consists of the following steps.

1. Create a script file to compress the content into larger chunks.
2. Compress the folders and files into chunks of predetermined size.
3. Create a script file to decompress the content and combine them into a restored product deployment on client machines.
4. Create the deployment package and deploy using SCCM.

Compress, Decompress and Install scripts and Prepare deployment

The following steps will walk you through the process.

The file compressing software WinRAR can be used to compress and decompress the data.

WinRAR software can be downloaded from this link, https://www.rarlab.com/download.htm

2. Install WinRAR on the computer where the deployment is to be created if it is not already installed.

3. Create a command file with the following command. The file is going to contain just one line. The file name may be something like this, compress_split.cmd.

"C:\Program Files\WinRAR\Rar.exe" a -v1000M -R split_files.rar

- ‘-v1000M’ tells WinRAR to compress the content and save in 1000 MB file size. You can specify any size but keep in mind that more number of files will take longer time to transfer over the network.
• ‘split_file.rar’ is the filename of the compressed file.

**TIP:** If compressed data is over specified 1000MB, more files with names ‘split_file.part1.rar’, ‘split_file.part2.rar, and so on will be created.

**Note:** Command files must be of type ‘ANSI’. When saving the file select this type.

3. Create Autodesk product deployment using Autodesk deployment wizard.

4. Copy the command file **compress_split.cmd** to the folder that holds the deployment which would be the folder that contains the following items.

   • Product install shortcut/command file
   • Img - folder
   • Tools - folder
   • SMS_SCCM scripts – folder

5. Open Windows file explorer and navigate to the deployment root folder where the **compress_split.cmd** file was copied.

6. Type the text ‘cmd’ (without the quotes) at the file explorer address bar and press Enter key. It will open command prompt window at that folder.

7. At the command prompt, type **compress_split.cmd** and hit enter.
   The script will create compressed files of 1 GB (1000MB) size will be created with the file name(s) as described in step 2.
   **Note:** The last file may be less than 1GB depending on the content.

   Example:
   3DS Max 2019 content is about 10.3 GB. So, compressing it will create eight files to deploy.
   AutoCAD 2019 content will fit in four compressed files.

   The following picture shows file compression in progress for 3DS max.
Running the compress_split.cmd script

**Note:** At this point there are two sets of the same data; one set of compressed data and one set uncompressed.

8. Keep the compressed files intact and delete other files in this folder.

9. Create another command file with the following commands to decompress the data and install the product. The file is going to contain two lines of command; one to extract the content and another to install the product. The file name may be like this, `extract_combine.cmd`.

   "C:\Program Files\WinRAR\rar.exe" x -o+ split_files.*
   .\Img\Setup.exe /W /q /I Img\2019 3dsmax.ini /language en-us

**Note:** The second line is specific for 3DS Max 2019 as indicated. You need to copy this command from SMS_SCCM Script folder from your deployment that you created for your product.

The command file will look like the picture below.

10. Add the command file, `extract_combine.cmd`, to the deployment source folder where you created the compressed data.

The following picture shows how the final content to be deployed would look in the folder.
Final content to be deployed

**Note:** The compress and decompress command file templates are available at the ‘Additional Class Materials’ location in AU2018.

Create SCCM deployment

You need to create two deployments; 1. the compress-decompress utility (WinRAR) and 2. the product (and add-ons) that needs to be deployed to device collection. The steps below walk you through the process.

1. Create a simple package in SCCM that contains WinRAR installer.

   **Note:** WinRAR is required on the client computer to decompress the content so that the product can be installed. This is a mandatory.

   **Note:** The WinRAR SCCM package must be added as a dependency for the compressed SCCM Application which will be created as explained below.

2. Create deployment using SCCM Application method for your product. Creating SCCM Application method is explained [here](#).

3. Add the ‘extract_combine.cmd’ as the installation program in the SCCM Application.

   **Note:** Executing these commands in the command file will decompress the content and install the product in sequence.
Prevent Desktop icon shortcut creation

Learning objective: Prevent desktop shortcut icon created during product installation.

IT/CAD managers who deploy Autodesk products sometimes do not want the Desktop icon (Desktop shortcut) created.

This section will show you two options on how to create a product deployment that do not create desktop shortcut icons during product deployment installation.

All Autodesk Desktop products by default create a desktop shortcut with product icon as part of product install which will be used to launch the product. Some products have that option as a check box option in the deployment wizard but unfortunately not all have that.

Using a command line command

Desktop icon creation can be prevented by using command line commands and switches at product install time.

Example: 3DSMax 2019 script would look like this.

```
.\Img\Setup.exe /W /q /I Img\2019 3dsmax.ini /language en-us
```

Find the above command line in the SMS_SCCM Script folder in the product deployment folder and append more command parameters as shown below.

```
.\Img\Setup.exe /W /q /I Img\2019 3dsmax.ini /language en-us /c MAX: EXE_PARAM=ADSK_DESKTOPSHORTCUT_1=0
```

Note: The switch “/c” instructs the setup.exe to run the command following it. The “MAX:” refers to the 3dsMax product msi.

TIP: You must use the right product code for your product deployment. For example, C3D for Civil 3D, ACAD for AutoCAD, and so on. These short product names can be found from the product setup.ini file by the main product MSI names.

Command line for the 3dsMax deployment to prevent Desktop icon
Using a signed MST file

The desktop icon creation can be prevented by instructing installation via an mst file.

**Note:** You can find an mst file, NoShortcut.mst uploaded for you at ‘Additional Class Material’ location in AU 2018 which you can download and add to your deployment.

**TIP:** This mst file can be used for any Autodesk product deployment.

You also need to add the following command in the setup.ini file.

```
STOCK_TRANSFORMS=NoShortcut.mst
```

**TIP:** You need to add this line in the main MSI section in the setup.ini file for a product and to all the main product sections in the case of suites.

The following picture shows the STOCK_TRANSFORMS line in the main product MSI section [MAX] of 3DS Max setup.ini.

![Using an mst in the deployment setup ini](image)
**MSI Dependencies**

**Learning Objective:** Manage dependencies while creating SCCM Application Method.

When you want to make changes to an existing deployment setup.ini or create a new one, managing MSI dependencies is a critical aspect which needs clear understanding of the relevant sections of the setup.ini and their purpose. If not managed properly with right dependency order, the deployment will fail.

**TIP:** The setup.ini file can be found under the ‘\<Deployment folder name>\Img’ folder inside the product deployment.

**[SETUP] section:**

This section contains settings for non-product specific, common install related parameters such as the setup language, install sequences, document, support links, etc. at the top of the setup.ini file. These settings apply to the entire setup.ini.

**Note:** The important part for the installation and dependencies is the sub-sections - Install Sequence, Execute Sequence, and UI Sequence.

- **EXE_SEQUENCE** – Defines a list of products to be installed in the listed order.
  Example: `EXE_SEQUENCE=PROD1;PROD2;PROD3`

- **INSTALL_SEQUENCE** – Also defines the installation order but this order will override the order defined by EXE_SEQUENCE.
  Example: `EXE_SEQUENCE=PROD3;PROD2;PROD1`

- **UI_SEQUENCE** – Defines the UI sequence, which also includes a subsequence of EXE_SEQUENCE. The subsequence defines the products that can be configured via UI.
  Example:
  
  `UI_SEQUENCE=LaunchDlg;ProductSelectionDlg;SummaryDlg;PROD1;PROD2;FullProgressDlg;InstallCompleteDlg`

Here is an example of Inventor 2019:

```
#================================= Install Execute and UI Sequence
=================================

EXE_SEQUENCE=INVENTOR;RXI;DCLIBRARY;AUTODESK_RECAP;Autodesk_RCPHOTO;ACEINVADDIN;ADSKAPP;ADDONS

INSTALL_SEQUENCE=INVENTOR;RXI;DCLIBRARY;AUTODESK_RECAP;Autodesk_RCPHOTO;ACEINVADDIN;ADSKAPP;ADDONS

UI_SEQUENCE=BeginDeploymentDlg;LicenseDlg;ProductInfoDlg;InvFlavorSelectionDlg;ProductSelectionDlg2;CLMCERT;CLM;INVENTOR;DCLIBRARY;AUTODESK_RECAP;Autodesk_RCPHOTO;ACEINVADDIN;ADSKAPP;ADDONS;FullProgressDlg;InstallCompleteDlg;DeploymentCompleteDlg;DeploymentFailedDlg
```
[<Product Name>] section(s).
This section contains similar settings as above, but they apply to the <Product Name>.

For each component listed in the setup.ini there will be a [Product] section.

**TIP:** Each product and component listed in the EXE_SEQUENCE and the INSTALL_SEQUENCE will have their own sections.

The important sections under each listed component within the brackets are the following:

- **PREREQUISITE** – Defines a list of prerequisites, which will be installed before the product installation.
  Example: PREREQUISITE=OS;MSI; VCREDISTX86;VCREDISTX64

- **POSTREQUISITE** – Defines a list of post-requisites, which will be installed after the product that relies on it has been installed.
  Example: POSTREQUISITE=SP1; SP2

- **EXE_PARAM** – Defines the parameters passed in the command line when the installer is called.
  Example: EXE_PARAM=MYPROPERTY1=1 MYPROPERTY2=2

- **ROLLBACKABLE** – Defines whether the installation can be rolled back or not if it failed or cancelled.
  Values: Null* | YES | NO; the default value is ‘YES’.

- **IGNORE_FAILURE** – Defines whether to ignore the installation failure or not.
  Values: Null* | YES | NO; the default value is ‘NO’.

- **SHAREDREQUISITE** - It is a requisite dependency type to support “Shared MSI” which can be shared across multiple products. Defines the dependency of parent product MSI with one or more shared MSI’s. Only one copy of shared requisite will be installed on the machine and reference counted for multiple products.

Here is an example from the Inventor 2019 setup.ini for ReCap product section:

```ini
[AUTODESK_RECAP]
[AUTODESK_RECAP]
PLATFORM=x64
PRODUCT_NAME=Autodesk® ReCap™
PREREQUISITE=UNINSTALL_PREV_RECAP;VCREDIST2012X86UPD4;VCREDIST2012X64UPD4;VCREDIST2017X86;VCREDIST2017X64;DOTNET47;FaroSDK
EXE_PATH=%platform%\RC2019\AutodeskReCap.msi
EXE_PARAM=
EXTRA_FILES=RC2019;%platform%\RC2019\*.PIT;%platform%\RC2019\upiconfig.xml
LOG=%tmp%\AutodeskReCapInstall.log
ROLLBACKABLE=NO
ADMIN_INSTALL=YES
PRODUCT_MESSAGE=AutodeskReCapSetupRes.dll;116
SHARED_COMPONENT=YES
EULA_PATH=eula
```
ACTION=INSTALL
DISK_PROMPT=MediaLabel.dll;2
DISK_LABEL=INVENTOR-1
REMOVE_PATH=
USE_EXTERNAL_UI=NO
PRODUCT_ICON=SetupRes\AutodeskReCap.ico
REMOVE_PREV_VERSION=YES
UI_SEQUENCE=InstallTypePage;PathCustomizationPage;AddAdditionalFilesPage;WorkstationSettingPage;ServicePackPageForInstall
MAINTENANCE_UI_SEQUENCE=MaintenanceDlg;RepairDlg;MaintVerifyReadyDlg;FullProgressDlg;MaintCompleteDlg;MaintFailedDlg
USE_DEFAULT_LANGUAGE=YES
SHAREDREQUISITE=CLM
LPMODE=MLD_ADR
DEFAULTMEDIALANGUAGE=en-US
AVAILABLELANGUAGES=en-us
POSTREQUISITE=
UPI=RECAP&2019&{50EDF910-0000-1033-0102-E3D118CE2EEA}&5.0.0.40
EULA_INDEX=-1
EULA_STATE=YES
CONFIG_TRANSFORM=AutodeskReCap-2019 Inventor 2019.1and2019.1.1.mst
EMBEDDED_TRANSFORMS=
STOCK_TRANSFORMS=
TRANSFORMS=
PATCHES=

Note: The dependencies that are listed for each component in each section is needed for that component to install successfully, if you remove that dependency you must also remove the component that has the listed dependency in the EXE_SEQUENCE and the INSTALL_SEQUENCE.
Dealing with VC++ Redistributables dependency

**Learning Objective:** Excluding VC++ redistributables dependency from deployment

Security policy settings does not allow installing VC++ 20XX redistributables in certain environment settings. Because of this, deployment will fail. The VC++ 20XX redistributables dependency installation failure can be prevented by making necessary modification in the setup.ini file in the `<Deployment folder>\Img\` folder.

Rest of this topic walks you through the process with an example.

- Search for the text ‘VCREDIST2010’ in the ‘VCREDIST’ section in the setup.ini file which would start like this (comment):
  
  `#============= VCREDIST Begin ==============

- If an entry is found, search for the component(s) which need/s it. For example, the ReCap ‘product section’ of Inventor 2016 setup.ini is shown below which indicates VCREDIST* entries as a prerequisite for ReCap. Note, this is a representative example.

  [AUTODESK_RECAP]
  PLATFORM=x64
  PRODUCT_NAME=Autodesk® ReCap™ 2016
  PREREQUISITE=VCREDIST2010SP1X86;VCREDIST2010SP1X64;VCREDIST2012X86UPD4;VCREDIST2012X64UPD4;DOTNET45SP1;FaroSDK

- In the above example, if VCREDIST2010 is the one that the security setting is going to disallow installation, remove ‘AUTODESK_RECAP’ entry from EXE_SEQUENCE and INSTALL_SEQUENCE in the [SETUP] entry from.

**Note:** In the above case, if some other component depends on ReCap and you have to remove that component as well.

**Note:** If you have removed such components from install sequence in the setup.ini, you can also go ahead and remove the relevant content (files) from the deployment source since they are not going to be installed and hence not needed. This will reduce the deployment size also.
Deploying to devices in Dark Sites

Learning Objective: Deploy domain specific content which needs internet connection at product installation time but the client machines do not have active internet connection.

CAD/IT managers have reported difficulties and issues with deploying such products, Revit 2019 for example.

Autodesk Revit 2019 downloads domain specific content at product install time because the install package does not contain the content. So, when deploying the product package, it will fail during install when trying to access internet to download the content.

Even if the client machines have internet access the installations can slow down depending on the internet speed and bandwidth. It can even appear that the installations have become stuck.

**Note:** If the msiexec.exe process is aborted, the installation needs to be restarted.

This failure is a time-out error (error code: 259) which may or may not rollback which depends on install settings.

**TIP:** You can increase the maximum allowed run time in SCCM as shown in the picture below to avoid the time-out failure.
Deploying country specific content to installed Revit 2019

Revit 2019 country content is not included in the install package and hence it will not be available to the deployment package. This is notified when creating the deployment as shown in the picture below.

![Revit Deployment notification](image)

**Note:** Without the content, you may encounter other issues, errors, and warnings when you start the Revit software.

There can also be other reasons as to why you would like to add this content to the existing deployment instead of having it download at install time.

The steps below walk you through how to download the Revit content and create deployment which would deploy the content to installed Revit product.

1. Create a shared source folder. This will be the content for SCCM deployment.
2. Download the content from the link below to the shared folder:

3. Extract the contents from the downloaded files one by one to the shared folder. Note: this is a manual process.
4. Delete the downloaded files keeping the extracted content intact.
5. Create a command file, `copy_revit_content.cmd` in the shared folder using the following commands:

   ```
   xcopy /S /Y ".\Family Templates\*." "%programdata%\Autodesk\RVT 2019\Family Templates" /V
   
   xcopy /S /Y ".\Libraries\*." "%programdata%\Autodesk\RVT 2019\Libraries" /V
   
   xcopy /S /Y ".\Templates\*." "%programdata%\Autodesk\RVT 2019\Templates" /V
   
   xcopy /S /Y "*.md5" "%programdata%\Autodesk\RVT 2019\" /V
   ```

   **Note:** The commands above copy the German Revit content to and the sub folders of %ProgramData%\Autodesk\RVT 2019 silently.

6. Create Revit content deployment using SCCM Application method as described here.
7. Use a folder name for detection as shown in the picture below.

   **Note:** For detection you cannot use Windows registry key here because there is no reference.
Detection rule for Revit German content

**Note:** You may use Revit product code to detect in custom requirement, so the deployment will skip devices that do not have Revit installed.

**TIP:** If you want to deploy Revit product and the content together at once, you must create a product deployment using SCCM Application method and set the product as a dependency for the content deployment. The deployment created will first install Revit to clients that do not have the product installed and then deploy the content.

**TIP:** This deployment can be used on clients that have the product already installed.

**References**
- [Microsoft System Center Configuration Manager (SCCM) Guide](#)
- [Network License Administration](#)

**Tools and scripts uploaded in Additional Class Materials link**
1. NoShortcut.mst
2. mangle_update_id.zip
3. Compress and decompress command files