

Fusion

Lab Installation Instructions

Version	Date	Document Revision
2.0	21 Nov 2021	v.1

Table of Contents

1. Fusion System Requirements.....	3
2. Installation Options.....	3
2.1. Per-user.....	3
2.2. All-Users, Self-ContainedPackage.....	3
2.3. All-Users, Web-Sourced.....	4
3. Installation Procedures.....	4
3.1. Self-Contained Package.....	4
3.2. Web Sourced.....	6
4. Checking for Current Version.....	9
5. Command Line Parameter Reference.....	11
6. Auto-Downloading Fusion Updates.....	14
6.1. Benefit to User.....	14
6.2. Instructions - Setting Up Auto-Download for Fusion Updates.....	14
6.3. Check that the Latest Version of Fusion is Installed.....	21

1. Fusion System Requirements

- Apple® Mac OS® X 10.14 or later
- Microsoft® Windows® 8.1(64 bit) (until January 2023) or later+
- CPU: 64-bit processor (**32-bit not supported**)
- Memory: 4GB RAM (integrated graphics recommend 6 GB or more)
- An internet connection, 2.5 Mbps or faster download; 500 Kbps or faster upload
- Hard drive space required is approximately 3.0GB for the Fusion Client
- Graphics Card: All graphics cards on supported hardware (except Intel GMA X3100)
- Pointing device: Microsoft-compliant mouse, Apple Mouse, MacBook Pro trackpad
- Fusion is updated approximately every 6 weeks and installations must be kept in sync
- Refer to latest system requirement: <https://knowledge.autodesk.com/support/fusion-360/troubleshooting/caas/sfdcarticles/sfdcarticles/System-requirements-for-Autodesk-Fusion-360.html>

2. Installation Options

The primary installation method for Fusion is designed for single users, lowering the barriers to entry for those users and simultaneously ensuring that the client portion of Fusion is always current and compatible with the internet-based services that Fusion uses on the back end. However, certain aspects of these goals do not fit well into managed environments when large numbers of computers are to be maintained with installations of Fusion. This document details various alternate methods of installation meant to meet the needs of organizations that wish to maintain a large number of computers.

2.1. Per-user

This option is essentially the one targeted to single users and may also work well for small-scale installations. Where 5-10 computers need to be maintained with Fusion, only a single account is ever used to log in to a given computer and a good connection to the internet is available, it may be sufficient to follow [the installation method for single users](#) on each machine independently. The advantage of this approach is that it is as close to a one-click install as we have been able to achieve and no further action should be necessary in order to keep clients current with the associated web services. This approach will not be discussed further in this document.

2.2. All-Users, Self-Contained Package

This method has been developed specifically to meet the needs of organizations managing a large number of systems with Fusion installed. Platform-standard packages which contain all necessary components of the software in a single, large download are provided. This is the most direct method for avoiding the problem of transferring the application over the general internet to tens or hundreds of computers and integrate with existing software management solutions that may be implemented at a particular site. The drawback to this is that the administrator is responsible for taking care to ensure that all managed systems are kept current with clients that are compatible with the related web services.

2.3. All-Users, Web-Sourced

In this method, the small installation bootstrap that is used in single user installs is re-purposed for All-Users installs via the use of command line options to install to a location accessible by all system logins. It is similar in structure to the per-user installation and delivers the application files from a web-based installation source, but it is not currently capable of automatically maintaining the client compatible with the web services it uses. This method, initially, has had the drawback of causing each client to have to retrieve client data from a central, Autodesk-sponsored installation source, which would instigate costly amounts of network traffic in large installations where many clients needed to be updated. However, this drawback can be mitigated by establishing local mirrors of the central sources. The benefit of choosing this method is that it will be able to leverage enhancements to the All-Users install that would make it exhibit more of the benefits of the per-user install as they become available in the All-Users install.

The current main benefit of this installation method is that it will make some attempt to avoid transferring components from the installation source (central or mirrored) to the client machines when those machines already have them, thereby conserving network bandwidth and installation time to some extent. However, it makes no attempt to keep clients current and may be difficult to integrate with some system management services. Any potential improvements to the method are undisclosed and not guaranteed.

3. Installation Procedures

The procedures below only include the All-Users variants for supported platforms.

3.1. Self-Contained Package

Mac OS X

The self-contained OS X package can be downloaded from the following URL:

<https://dl.appstreaming.autodesk.com/production/installers/Autodesk%20Fusion%20Admin%20Install.pkg>

It is a system-standard pkg file and can be installed using the customary methods: double-click on the package in finder, use the "installer" command in the terminal (with the required `sudo`) or with software distribution and managements systems such as Apple RDP or Munki.

Instructions for third-party tools such as RDP or Munki are outside the scope of this document.

This installation method puts a self-contained application bundle (Autodesk Fusion.app) in the system's /Applications folder, and executing it in the customary way should allow it to function as either an initial install or an update install.

Windows

The self-contained Windows package can be downloaded from the following URL:

<https://dl.appstreaming.autodesk.com/production/installers/Autodesk%20Fusion%20Admin%20Install.pkg>

Once downloaded to a target machine, run the executable from Windows Explorer, a command shell, script or software distribution or management system to perform an initial installation. The executable will prompt for elevated privileges if it does not already have them.

To perform an update of an existing installation in a single step, it is necessary to first download the latest version of [Fusion Admin Install.exe](#) and provide it a command line parameter:

Update Command

```
> "Fusion Admin Install.exe" --process update
```

To **purge** old versions after performing a parameter-less install of a new version, execute the following command:

Purge Command

```
> "Fusion Admin Install.exe" --process uninstall --purge-incomplete
```

This installer currently does not register an entry in the "Programs and Features" Windows control panel. In order to uninstall it, issue a full uninstall command:

Uninstall Command

```
> "Fusion Admin Install.exe" --process uninstall
```

Finally all command lines above (and the additional, implied initial installation command line) can be made to execute without displaying progress information by providing the `--quiet` argument. In the four contexts, this would look as follows:

"Quiet" Execution Options

```
> "Fusion Admin Install.exe" --quiet  
> "Fusion Admin Install.exe" --process update --quiet  
> "Fusion Admin Install.exe" --process uninstall --purge-incomplete --quiet  
> "Fusion Admin Install.exe" --process uninstall --quiet
```

3.2 Web Sourced

The web-sourced installation procedures are fundamentally and conceptually consistent across platforms and so will be described together. However, since there are superficial differences in how the commands are initiated due to platform differences in packaging conventions, this section will be concluded with specific examples for each documented process for each platform. Before that time, a platform-agnostic stand-in for the program that is used to launch an installation will be "% streamer" followed by command-line directives, which should be consistent across platforms.

Initial Installation

The main flag that distinguishes a web-sourced user install from a web-sourced administrative install is the `--globalinstall` flag. This changes the installation location from one in the user's home/profile directory to a location that is accessible by multiple users and makes other adjustments to ensure all users can access and execute the application. It is important to note that this flag must be specified to any installer invocation that is expected to change the install state of any application that is installed to an All-Users location.

Initial Web-Sourced Installation

```
% streamer --globalinstall
```

Initial Installation: Mirrored

If installing from the primary web source puts undue stress on the network infrastructure because of the large number of clients or any other reason, installation can be performed from a mirror on the local network. To do this, the installer must be told the location of the mirror with the `--conn` argument, which specifies the url to a directory which is set up as a web source.

Initial Web-Sourced Installation from local Mirror

```
% streamer --globalinstall --conn "http://ourmirrorat.somebig.org/fusion360-source/"
```

Populating a Mirror

Setting up a server to serve as a web-source is beyond the scope of this document, but the installer supports collecting the content that must be provided through the web source using the pull process built in to it.

Pull Web-Source Command

```
% streamer --process pull --root  
"/file/system/path/to/folder/served/by/http.ourmirrorat.somebig.org/fusion360-source/"
```

The path provided to the `--root` parameter is one that should be accessible at the url passed to the streamer when following the "Initial Installation: Mirrored" procedure above. Also note that the `--globalinstall` parameters is NOT necessary for this command.

Updating an Existing Installation

Initial installations record their web-sources so the command for performing an update is similar whether the primary web-source or a mirror is used. To perform an update, use the update process which is part of the installer.

Web-Source Update Command

```
% streamer --globalinstall --process update
```

If updating from a mirror, the mirror must be updated to accurately reflect the current state of the primary web-source before clients attempting to update from it will be successful in doing so.

Removing an Existing Installation

To remove installations deployed with this installer, the uninstall process which is part of the installer must be used.

Uninstall Command

```
% streamer --globalinstall --process uninstall
```

Mac OS X Commands

On OS X, the streamer commands described in this section must be issued to "Double Click to Install.app" which is distributed in the dmg obtainable at this location: <http://www.appstreaming.autodesk.com/install/app/73e72ada57b7480280f7a6f4a289729f/>. The dmg, once mounted, may resolve to varying filesystem paths depending on the state of the system, and the .app may in fact be moved to any desired location before issuing the desired commands, but the examples that follow will use the install app as if it were to be run from the default and most common mount point of the dmg. This is `/Volumes/Autodesk Client Downloader/Double Click to Install.app`.

Additionally, since the installer needs superuser access to install to an All-Users location, the full command with `sudo` applied to the executable embedded in the application bundle shall be:

Base Mac Command

```
$ sudo "/Volumes/Autodesk Client Downloader/Double Click to Install.app/Contents/MacOS/Fusion Client Downloader"
```

Substituting this command in place of "streamer" in the procedures detailed earlier yields the following commands:

```
Mac-Specific Command Examples

# Initial Web-Sourced Installation
$ sudo "/Volumes/Autodesk Client Downloader/Double Click to
Install.app/Contents/MacOS/Fusion Client Downloader" --globalinstall

# Initial Web-Sourced Installation from local Mirror
$ sudo "/Volumes/Autodesk Client Downloader/Double Click to
Install.app/Contents/MacOS/Fusion Client Downloader" --globalinstall --conn
"http://ourmirrorat.somebig.org/fusion360-source/"

# Pull Web Source Command
$ sudo "/Volumes/Autodesk Client Downloader/Double Click to
Install.app/Contents/MacOS/Fusion Client Downloader" --process pull --root
"/file/system/path/to/folder/served/by/http.ourmirrorat.somebig.org/fusion360-
source/"

# Web-Source Update Command
$ sudo "/Volumes/Autodesk Client Downloader/Double Click to
Install.app/Contents/MacOS/Fusion Client Downloader" --globalinstall --process
update

# Uninstall Command
$ sudo "/Volumes/Autodesk Client Downloader/Double Click to
Install.app/Contents/MacOS/Fusion Client Downloader" --globalinstall --process
uninstall
```

Windows Commands

On Windows, the streamer commands described in this section must be issued to "Fusion Client Downloader.exe" which is obtainable at this location: <http://www.appstreaming.autodesk.com/install/app/73e72ada57b7480280f7a6f4a289729f/>. The examples below will assume that the issuer has launched a command window and changed the working directory to be that one containing the file "Fusion Client Downloader.exe". Also, this process needs to be executed with elevated permissions in order to be allowed to modify an All-Users location and the instructions below will also assume that the command window that was launched will have these elevated permissions. Interactively, this is done by right-clicking on the command prompt icons and selecting "Run as Administrator." If no other way is available, the powershell command [start-process](#) with the "-verb runas" option may be used to achieve the necessary result but this process will not be detailed in this document.

```
Windows-Specific Command Examples

# Initial Web-Sourced Installation
> "Fusion Client Downloader.exe" --globalinstall

# Initial Web-Sourced Installation from local Mirror
> "Fusion Client Downloader.exe" --globalinstall --conn
"http://ourmirrorat.somebig.org/fusion360-source/"
```

```
# Pull Web Source Command
> "Fusion Client Downloader.exe" --process pull --root
"c:\file\system\path\to\folder\served\by\http.ourmirrorat.somebig.org\fusion360-
source\"

# Web-Source Update Command
> "Fusion Client Downloader.exe" --globalinstall --process update

# Uninstall Command
> "Fusion Client Downloader.exe" --globalinstall --process uninstall
```

4. Checking for Current Version

As stated earlier in this document, neither the installer nor Fusion makes an attempt to ensure that the client software is current and compatible with the back-end web services. Therefore, it is the responsibility of the system administrator to make sure that the version of Fusion deployed is kept current.

To achieve some level of automation for this task, it is possible to query the Autodesk-sponsored web install source for the currently released version of the software. This information is accessible at the following urls:

OS X:

<https://dl.appstreaming.autodesk.com/production/97e6dd95735340d6ad6e222a520454db/73e72ada57b7480280f7a6f4a289729f/full.json>

Windows:

<https://dl.appstreaming.autodesk.com/production/67316f5e79bc48318aa5f7b6bb58243d/73e72ada57b7480280f7a6f4a289729f/full.json>

The contents of these files, as indicated by their extension, are encoded using the widely utilised [JSON](#) data-exchange format and hence many programming, scripting and automation languages have libraries available to them for processing the contents.

Once the contents are accessible, those scripts wishing to check for updated version will be interested primarily in two properties of the root object:

```
Fusion Application Manifest Excerpt
{
  "build-version": "2.0.1365",
  "major-update-version": "2.0.1301",
}
```

The `build-version` and `major-update-version` properties are both strings containing three period-delimited integers of the form `major-release.minor-release.buid-number`

Release numbers take precedent left to right and are strictly increasing within a segment. For example, the build version 3.0.12 is newer than 2.1.5789.

When the `build-version` in `full.json` is greater than the version of Fusion deployed to maintained systems, the clients *should* be updated to the current version in order to receive fixes and any new features that have been released.

When the `build-version` AND `major-update-version` in `full.json` is greater than the deployed version of Fusion, the clients *MUST* be updated in order to avoid problems that could arise from file schema and service version incompatibilities, in addition to getting fixes and features.

If an update is necessary, follow the procedures in this document for the desired platform and method after accessing the assets in the same fashion as for the initial installation.

4.1. Detecting Installed Version

It is expected that the version installed to a group of clients will be maintained by the system keeping the clients up to date but if this is not possible, and a system with Fusion installed is accessible, the installation program can be queried for the last version of the software installed on that system. Using conventions established in the section on web-sourced installs:

```
Version Queries

# Generic
% streamer --globalinstall --process query --infofile
"/some/place/fusioninfo.json"

# OS X
$ sudo "/Volumes/Autodesk Client Downloader/Double Click to
Install.app/Contents/MacOS/Fusion Client Downloader" --globalinstall --process
query --infofile "~/Documents/fusioninfo.json"

# Windows
> "Fusion Client Downloader.exe" --globalinstall --process query --infofile
"%USERPROFILE%\Documents\fusioninfo.json"

# Windows: Admin install executable. Will take more time and space to extract and
launch. Not recommended
> "Fusion Admin Install.exe" --process query --infofile
"%USERPROFILE%\Documents\fusioninfo.json"
```

This will produce the file `fusioninfo.json` where the version of the installed software can be accessed in the following place:

```
Info File

{
  "manifest": {
    "build-version": "2.0.1365"
  }
}
```

This value can then be compared against the value pulled from the url in the preceding section to determine if an update is necessary.

The `--process` query procedure detailed here can be used with the web-sourced install on both platforms and the self-contained package install on Windows. OS X administrators utilising the self-contained package install for that platform will need to query the Fusion application bundle in `/Applications` for its version.

5. Command Line Parameter Reference

What follows is the complete command line parameter reference for the Fusion Installer. Note, however, that the `-a` and `-s` parameters are embedded in the distribution package. Additionally, the Windows "`Admin Install.exe`" embeds `--globalinstall`.

No embedded parameters can be overridden in distribution packages.

Help will not currently be displayed by distribution packages.

Command Line Parameter Reference

```
usage: streamer [-h] [-p {pull,deploy,update,query,launch,uninstall}]
               [-o {single,multiple}] [-a APP_ID] [-l LANGUAGE]
               [-c CONNECTION] [-u UPDATE_CONNECTION] [-s STREAM] [-g]
               [-nal] [-nur] [--install-origin INSTALL_ORIGIN] [--profile]
               [--threadscount THREADSCOUNT] [--full-deploy] [-r]
               [--cleanup] [--args LAUNCH_ARGS] [-d PULL_DEST]
               [-v {DEBUG,INFO,WARNING,ERROR,CRITICAL}] [-f LOGFILE]
               [--headless] [--headless_pipes PIPES] [--quiet]
               [-i INFOFILE] [--no_cleanup]
```

Deploys and updates an Autodesk 360 Application

optional arguments:

```
-h, --help          show this help message and exit
-p {deploy,update,uninstall,launch,query,pull}, --process
{deploy,update,uninstall,launch,query,pull}
Specify the action to take when running.
-o {single,multiple}, --operation {single,multiple}
Specify the process operating method, single or
multiple thread.
-a APP_ID, --appid APP_ID
Provide the id of the application to install when
doing an initial, streaming install
-l LANGUAGE, --lang LANGUAGE
Specify the language code to use to in the display
-c CONNECTION, --conn CONNECTION
Override the connection string for updates
-u UPDATE_CONNECTION, --update-conn UPDATE_CONNECTION
Live update URL which will be saved to DB. If not set,
--conn will be used.
-s STREAM, --stream STREAM
Override the default distribution stream. -c takes
priority over this setting
-g, --globalinstall Specify where the install is per users or for all the
users
-nal, --no-auto-launch
Specify option of not launch Fusion after install
-nur, --no-uninstall-registry
```

Specify have uninstall registry
--install-origin INSTALL_ORIGIN
A string to identify who triggers the streamer.
--profile Use the cProfile module to profile the streamer code
--threadscount THREADSCOUNT
Set the multi-threads count, the default is 5

Deploy:

Change the default installation behavior. All of the arguments in this group are only effective when the "process" parameter is set to "deploy" or unspecified.

--full-deploy Some applications are delivered incomplete with full functionality provided in optional "sub-applications." This option attempts to force all sub-applications to be delivered with the main application

Uninstall:

Change the default uninstall behavior. All of the arguments in this group are only effective when the "process" parameter is set to "uninstall"

-r, --purge-incomplete Remove components of partially installed applications
--cleanup Clean up unused components that are also not part of an in-progress install.

Launch:

Change the default launch behavior. All of the arguments in this group are only effective when the "process" parameter is set to "launch"

--args LAUNCH_ARGS Additional arguments for the launch session

Pull:

Change the default pull behavior. All of the arguments in this group are only effective when the "process" parameter is set to "pull"

-d PULL_DEST, --root PULL_DEST
Override the default folder where pulled files will be placed. This should be a fully-qualified path string

Logging:

-v {DEBUG,INFO,WARNING,ERROR,CRITICAL}, --verbosity {DEBUG,INFO,WARNING,ERROR,CRITICAL}
Specify how much information to log
-f LOGFILE, --logfile LOGFILE
Change the output logfile

Advanced:

--headless Signal that the process should be executed for use by a controlling process
--headless_pipes PIPES
A comma-separated pair of base-ten integers that indicate operating system file handles to be written to and read from during headless execution. The first handle will be used to send json commands (from this process), and the second handle will be used to read json responses when appropriate.
--quiet Signal that the process should be executed quietly without a graphical user interface.
-i INFOFILE, --infofile INFOFILE

<code>--no_cleanup</code>	Output appManifest and install path to logfile A flag to indicate that the usual old-version cleanup after update should not be performed
---------------------------	--

6. Auto-Downloading Fusion Updates

These instructions describe how to schedule a task that will run a script that compares your installed version of Fusion with the version of Fusion for Educational Institutions that is available on the [Autodesk Education Community Fusion web page](#). If a new version exists, the script will automatically download the new version.

6.1 Benefit to User

By scheduling a task to download the latest version, administrators can avoid the manual work required to download Fusion updates when they are released every 4-8 weeks. Fusion updates are pushed to students on their personal devices so that they always have the same version as administrators. This is important because a file edited with a more recent version of Fusion might not open in a slightly older version.

Access Required

To schedule the task to run the script, the user must have administrator rights. Users without administrator rights will not be able to complete these steps.

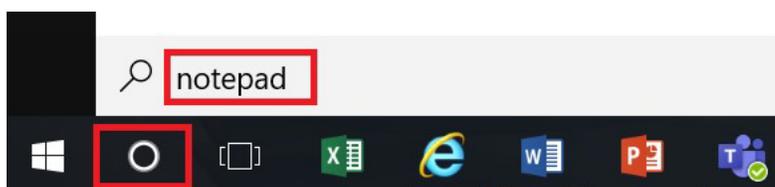
6.2 Instructions - Setting Up Auto-Download for Fusion Updates

These instructions are for Windows 10 (64-bit) only.

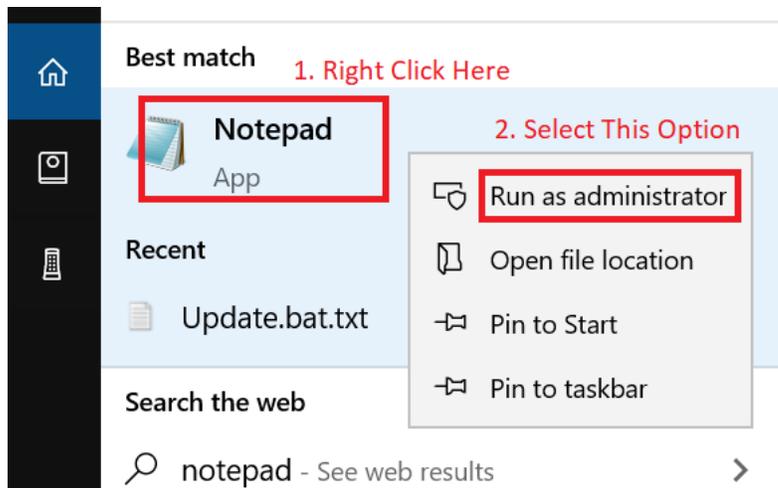
Step 1. Create the script that will check for the newest Fusion version available

1. Run Notepad as an administrator and create a text file.

- Open the Start Menu
- Search for Notepad



- Right click on Notepad and select "Run as administrator".



2. Copy and paste this script into Notepad.

```
@echo off

set "StreamerDir=c:\Program Files\Autodesk\webdeploy\meta\streamer"

setlocal
FOR /F %%i IN ('dir /A:D /B /oN "%StreamerDir%") DO (
    SET a=%%i
)
endlocal & set StreamerVer=%a%

"%StreamerDir%\%StreamerVer%\streamer.exe" --globalinstall --process update --quiet
```

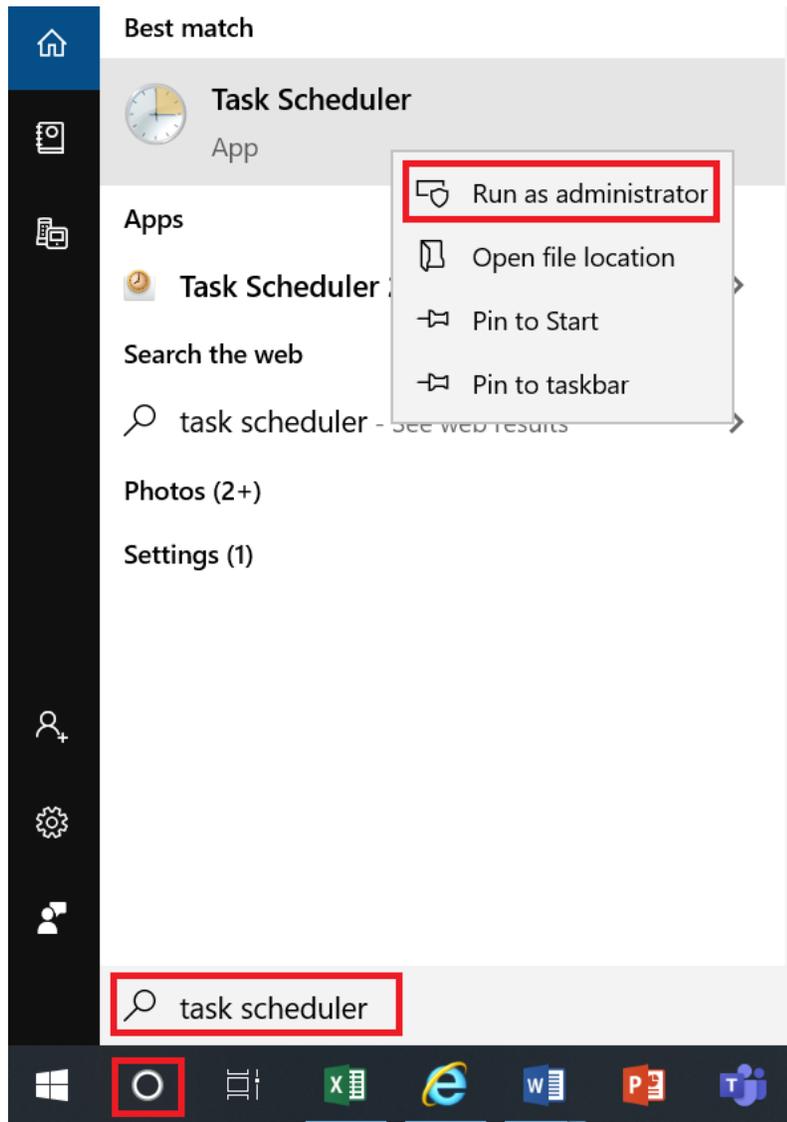
3. DOUBLE-CHECK THAT THE SCRIPT FORMATTING IN NOTEPAD EXACTLY REFLECTS THE FORMATTING IN THE PRECEDING BOX. THE FORMATTING MAY HAVE CHANGED WHEN YOU PASTED IT INTO NOTEPAD. THE SCRIPT WON'T RUN CORRECTLY IF IT DOESN'T MATCH THE FORMATTING IN THE PRECEDING BOX.

4. Save the file to the correct folder.
 - In Notepad, click File->Save.
 - Choose "C:\Program Files\Autodesk\webdeploy\meta\" folder as the destination.
 - Set the file name to "update.bat".
 - Click Save.
 - Close Notepad.

Step 2. Open Task Scheduler as an administrator

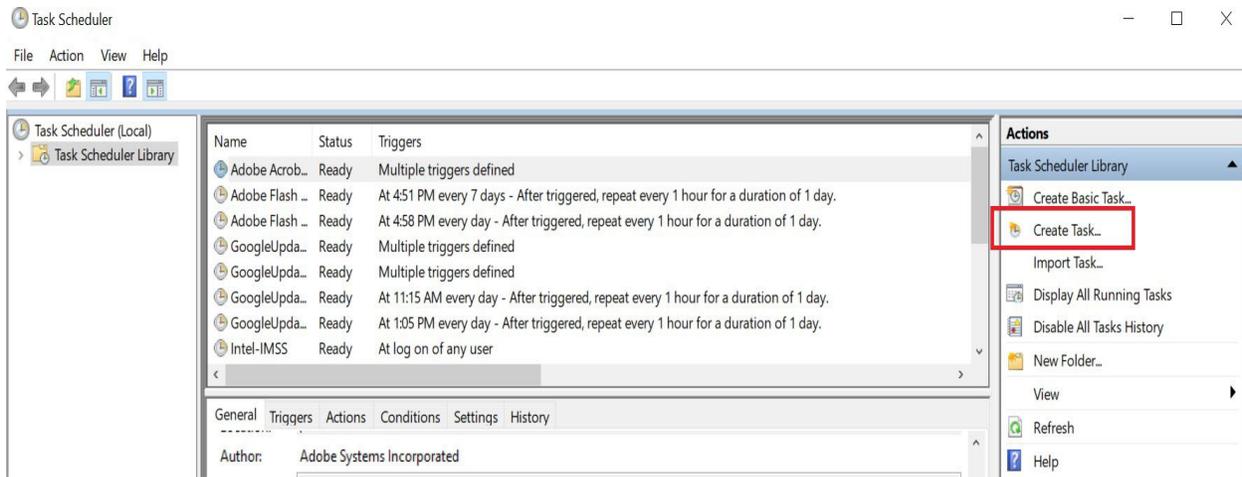
Note: These instructions apply to Microsoft Task Scheduler, but other task schedulers can be used as well.

1. Click the search box in your task bar.
2. Search for "Task Scheduler".
3. Right click on "Task Scheduler" and select "Run as administrator".



Step 3. Create a Task

In the right panel of Task Scheduler, click “Create Task”.



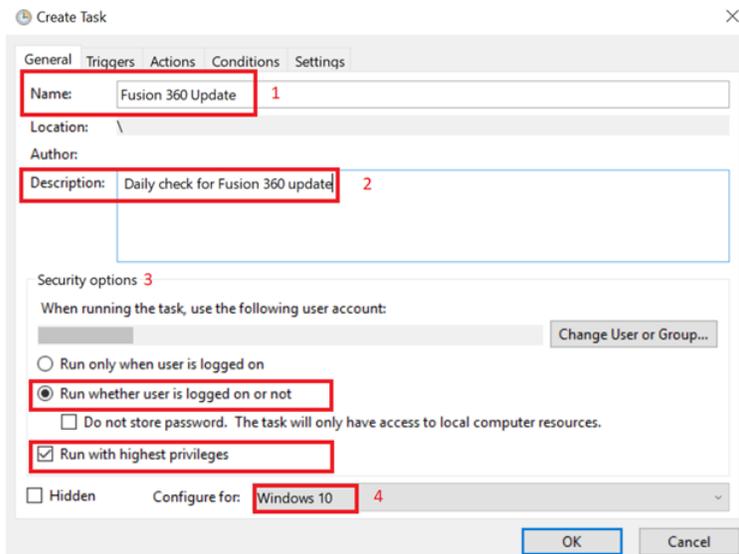
Step 4. Name the task and select security options

In the “Create Task” dialog:

1. Name the task.
2. Enter a description.
3. Select these security settings:
 - Run whether user is logged in or not
 - Run with highest privileges

The task must be run with highest privileges to work correctly, and the script must be run using administrator rights. The first time you run the task, you will be prompted to enter your user name and password. You should not need to enter these again.

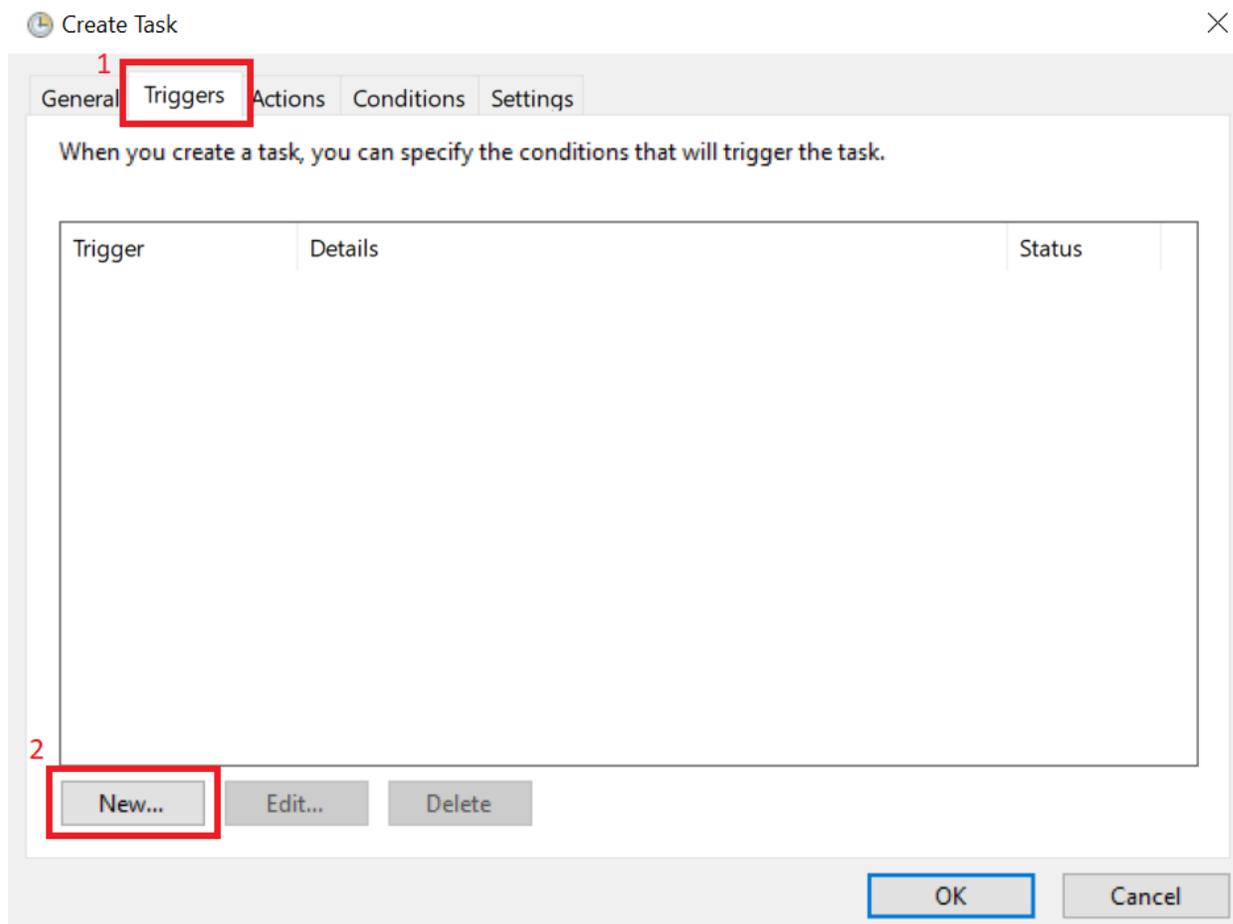
4. (Optional) Select the operating system.



Step 5. Select task frequency

Schedule how often to check for Fusion updates.

1. In the Create Task dialog, click the “Triggers” tab.
2. Click “New”.



3. In the New Trigger dialog that opens, select “On a schedule” from the “Begin the task” drop-down menu.
4. Under Settings, set the task to run Daily.
5. Select a time when the task will run.
Try to pick a time when Fusion will not be in use.
6. Set “Recur every” to 1 day.
7. Under Advanced Settings, select a value (for example, 1 hour) for “Delay task for up to (random delay)”.
The purpose of this threshold is to spread the task out over a specified time period if the task will run for a high number of computers. For example, if there are 100 computers in your environment, a one-hour threshold will split the task up across 100 computers over the course of that hour.
8. Click “OK”.

Begin the task: On a schedule 1

Settings

One time
 Daily 2
 Weekly
 Monthly

Start: 12/ 5/2019 6:00:00 AM Synchronize across time zones 3

Recur every: 1 days 4

Advanced settings

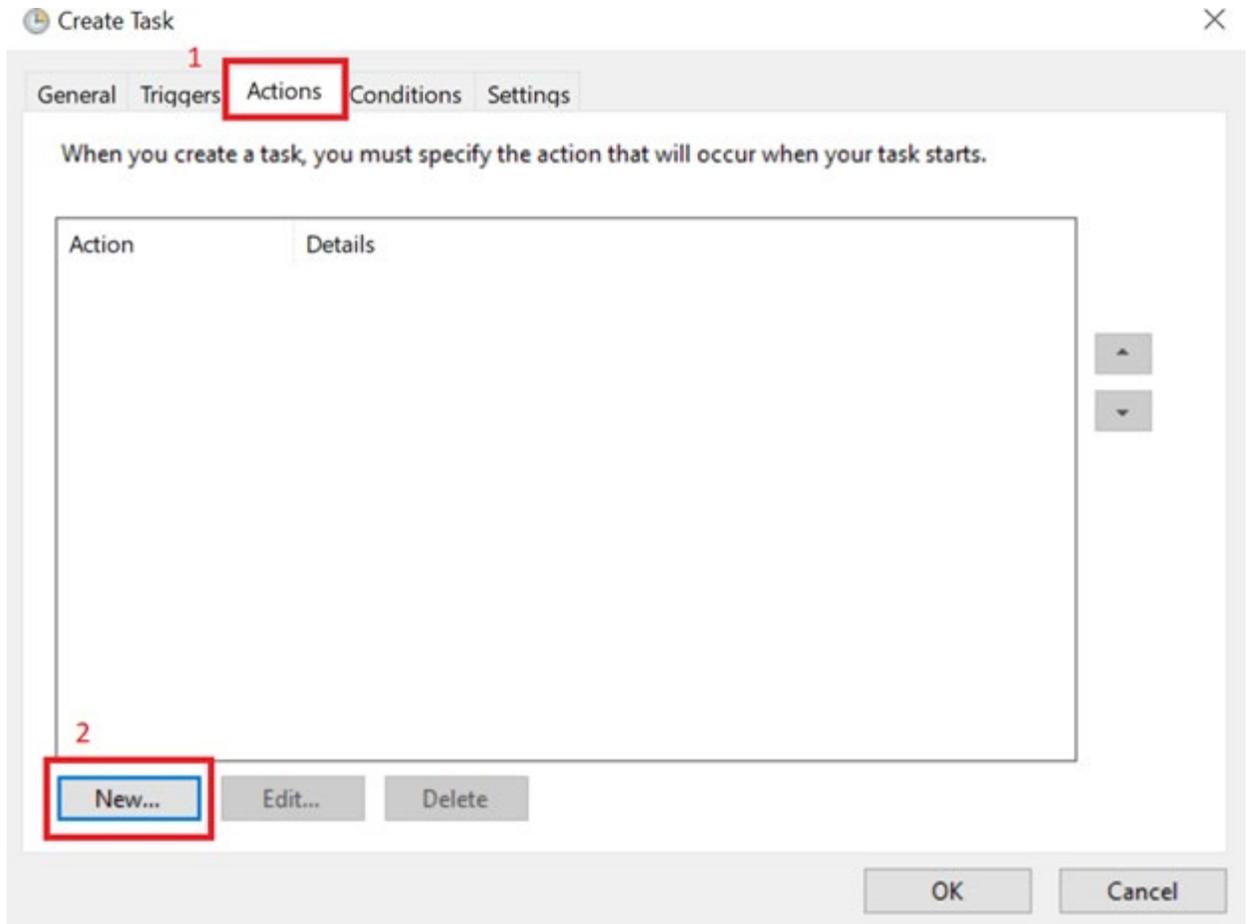
Delay task for up to (random delay): 1 hour 5
 Repeat task every: 1 hour for a duration of: 1 day
 Stop all running tasks at end of repetition duration
 Stop task if it runs longer than: 3 days
 Expire: 12/ 5/2020 8:38:22 AM Synchronize across time zones
 Enabled

6

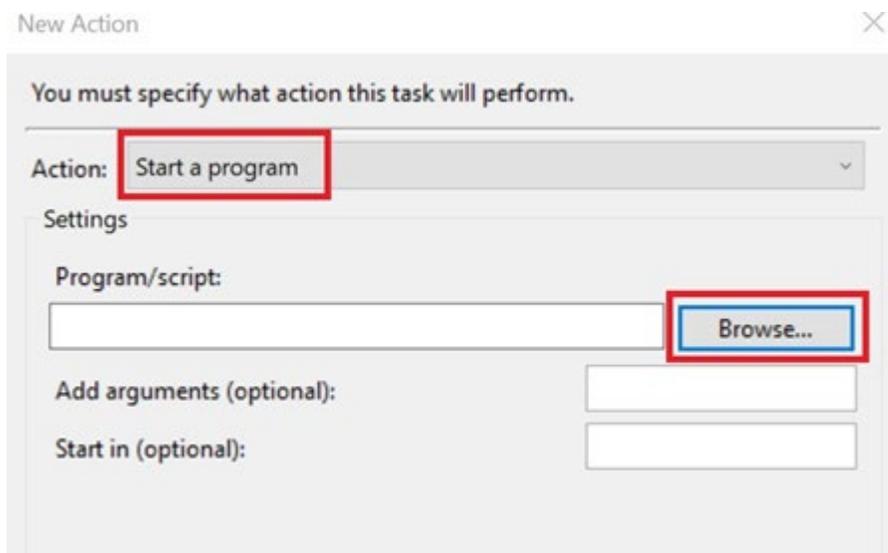
Step 6. Set the Notepad script as an action to be performed at the scheduled time

Create an action that performs the script that you created in step 1 at the scheduled time. This script checks for Fusion updates.

1. In the Create Task dialog, click the "Actions" tab.
2. Click "New".



3. In the New Action dialog, select “Start a program” from the Action drop-down menu.
4. Next to the “Program/Script” field, click “Browse”.

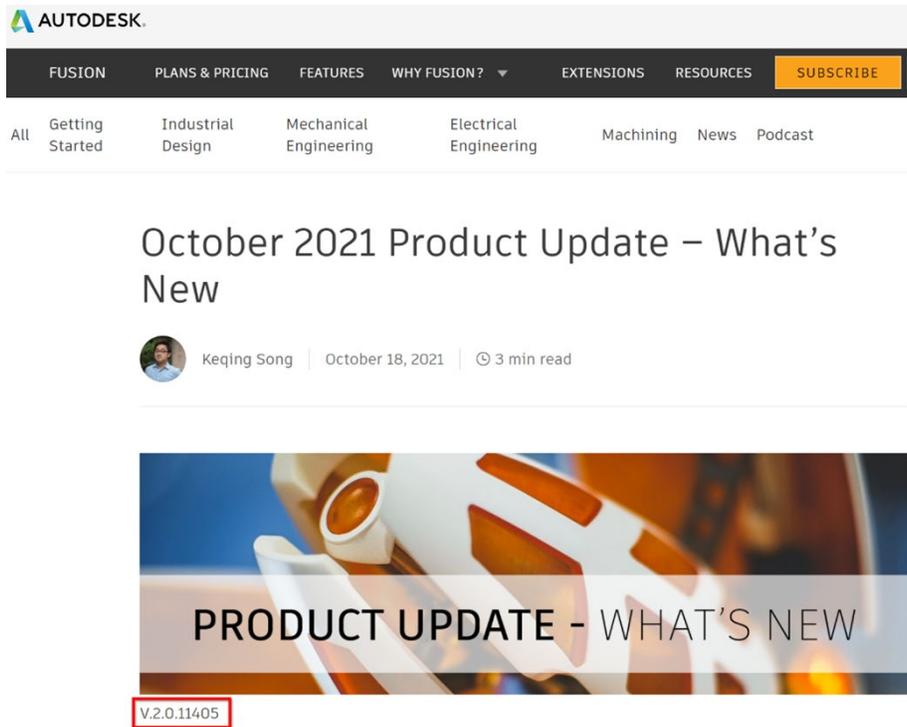


5. Browse to the “update.bat” file you created in c:\Program Files\Autodesk\webdeploy\meta\.
6. Click “OK”.

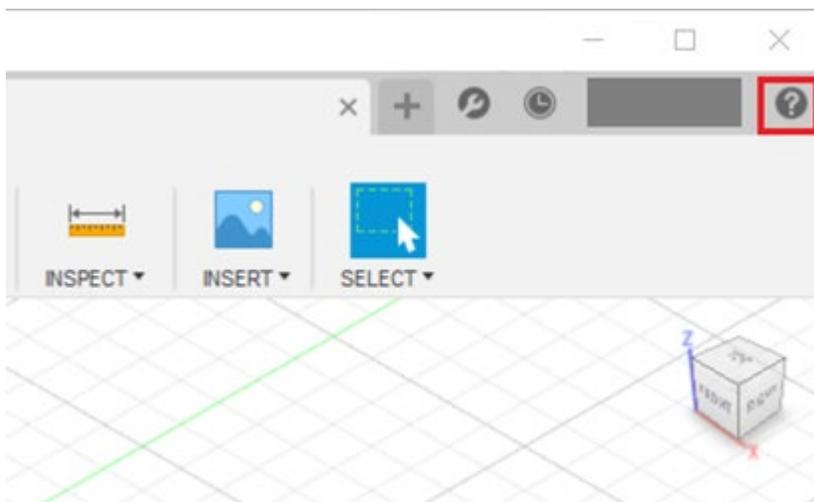
You have successfully scheduled a task that will check for and download Fusion updates from the [Autodesk Education Community Fusion page](#).

6.3 Check that the Latest Version of Fusion is Installed

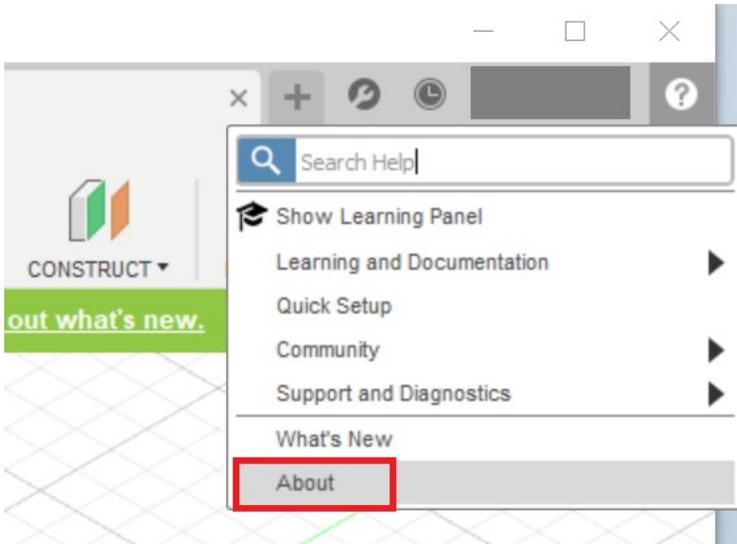
1. Go to the [Fusion What's New Blog](#). Check for the version number of the most recent Fusion update.



2. Open Fusion on your desktop.
3. In the upper right corner of the application, click the question mark.



4. Click "About".



5. Check the version number of your installation. If the version matches the number on the What's New page, you have the latest version of Fusion.

