

# Fusion 360

## Lab Installation Instructions

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## Table of Contents

1. Fusion 360 System Requirements .....	3
2. Installation Options .....	3
2.1. Per-user .....	3
2.2. All-Users, Self-Contained Package .....	3
2.3. All-Users, Web-Sourced .....	4
3. Installation Procedures .....	4
3.1. Self-Contained Package .....	4
Mac OS X .....	4
Windows .....	5
3.2. Web-Sourced .....	6
Initial Installation .....	6
Initial Installation: Mirrored .....	6
Populating a Mirror .....	6
Updating an Existing Installation .....	7
Removing an Existing Installation .....	7
Mac OS X Commands .....	7
Windows Commands .....	8
4. Checking for current version .....	9
4.1. Detecting Installed Version .....	10
5. Command Line Parameter Reference .....	11

# 1. Fusion 360 System Requirements

- Apple® Mac OS® X 10.8 or later
- Microsoft® Windows® 7 or later+
- CPU: 64-bit processor (**32-bit not supported**)
- Memory: 3GB RAM (4GB recommended)
- An internet connection
- Hard drive space required is approximately 2.0GB for the Fusion 360 Client
- Graphics Card: All graphics cards on supported hardware (except Intel GMA X3100)
- Pointing device: Microsoft-compliant mouse, Apple Mouse, MacBook Pro trackpad
- **Fusion 360 is updated approximately every 6 weeks and installations must be kept in sync**

## 2. Installation Options

The primary installation method for Fusion 360 is designed for single users, lowering the barriers to entry for those users and simultaneously ensuring that the client portion of Fusion 360 is always current and compatible with the internet-based services that Fusion 360 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 organisations 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 360, 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 organisations managing a large number of systems with Fusion 360 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%20360%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 360.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/Fusion%20360%20Admin%20Install.exe>

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 360 Admin Install.exe](#) and provide it a command line parameter:

### Update Command

```
> "Fusion 360 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 360 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 360 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 360 Admin Install.exe" --quiet  
> "Fusion 360 Admin Install.exe" --process update --quiet  
> "Fusion 360 Admin Install.exe" --process uninstall --purge-incomplete --quiet  
> "Fusion 360 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` parameter 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 thislocation: <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 360 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 360 Client Downloader" --globalinstall

# Initial Web-Sourced Installation from local Mirror
$ sudo "/Volumes/Autodesk Client Downloader/Double Click to
Install.app/Contents/MacOS/Fusion 360 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 360 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 360 Client Downloader" --globalinstall --process
update

# Uninstall Command
$ sudo "/Volumes/Autodesk Client Downloader/Double Click to
Install.app/Contents/MacOS/Fusion 360 Client Downloader" --globalinstall --process
uninstall
```

#### Windows Commands

On Windows, the streamer commands described in this section must be issued to "Fusion 360 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 360 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 360 Client Downloader.exe" -globalinstall

# Initial Web-Sourced Installation from local Mirror
> "Fusion 360 Client Downloader.exe" --globalinstall --conn
"http://ourmirrorat.somebig.org/fusion360-source/"
```

```
# Pull Web Source Command
> "Fusion 360 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 360 Client Downloader.exe" --globalinstall --process update

# Uninstall Command
> "Fusion 360 Client Downloader.exe" --globalinstall --process uninstall
```

## 4. Checking for current version

As stated earlier in this document, neither the installer nor Fusion 360 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 360 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 360 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 360 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 360, 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 360 Client Downloader" --globalinstall --process
query --infofile "~/Documents/fusioninfo.json"

# Windows
> "Fusion 360 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 360 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 360 application bundle in `/Applications` for its version.

## 5. Command Line Parameter Reference

What follows is the complete command line parameter reference for the Fusion 360 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}]
               [-a APP_ID] [-l LANGUAGE] [-c CONNECTION] [-s STREAM] [-g]
               [-x] [-r] [-d PULL_DEST]
               [-v {WARN,ERROR,DEBUG,INFO,CRITICAL}] [-f LOGFILE]
               [--logging-config LOGCONFIG] [--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 {pull,deploy,update,query,launch,uninstall}, --process
{pull,deploy,update,query,launch,uninstall}
                    Specify the action to take when running.
-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 in the display
-c CONNECTION, --conn CONNECTION
                    Override the connection string for updates
-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
```

Uninstall:

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

```
-x, --full-uninstall
                    Indicate that the app-id parameter should be ignored
                    and all known applications will be uninstalled.
```

-r, --purge-incomplete  
Remove components of partially installed applications

#### Pull:

Change the default pull behaviour. 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 {WARN,ERROR,DEBUG,INFO,CRITICAL}, --verbosity  
{WARN,ERROR,DEBUG,INFO,CRITICAL}  
Specify how much information to log

-f LOGFILE, --logfile LOGFILE  
Change the output logfile

--logging-config LOGCONFIG  
The full path to a logging configuration file.

#### 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  
Output appManifest and install path to logfile

--no\_cleanup  
A flag to indicate that the usual old-version cleanup after an update should not be performed