Setting Up and Using Desktop Connector with BIM 360 Docs

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Learning Objectives

- Manage construction documentation using Desktop Connector with BIM 360 Docs
- Set up and use Desktop Connector
- Troubleshoot most common issues
- Best practices and recommendations

Description

BIM 360 Docs helps us store and collaborate our construction documents with our stakeholders. With Desktop Connector we can manage files in Document Management through a connected drive, allowing users to benefit from easy syncing of files and folders and working offline.
This class will teach you how to set up and use Desktop Connector with BIM 360 Document Management, and how to troubleshoot most common issues.

Speaker

Luciane is an Autodesk technical support specialist based in Europe. With an Architecture and Urbanism university degree and post-graduation in Business for Architects and Engineers, both acquired at FAAP - Fundação Armando Álvares Penteado in Brazil, she worked as an architect for five years. She started working for Autodesk Brazil in 2002, assisting Latin American users with their technical queries related to AutoCAD, AutoCAD LT, Revit, AutoCAD Architecture and other Autodesk products. She moved to the United Kingdom in 2007 and was a member of the AutoCAD support team. In 2014 she started providing technical support for BIM 360 products and is a Desktop Connector for BIM 360 point of contact since August 2018.

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Learning Objective 1: Manage construction documentation using Desktop Connector with BIM 360 Docs

What is Desktop Connector?

Desktop Connector is a tool that allows synchronization of files and folders between an Autodesk cloud service project and a computer.

Once a project member has appropriate permissions to folders in the cloud service, that folder structure and any files in it will be replicated in Windows File Explorer through a connected drive, making them available for download to the local drive.

Also, any files and folders placed into the connected drive folder structure on the computer will be automatically uploaded to the cloud service.

It is possible to download files to the local drive and work with them in offline mode. While in offline mode, an Internet connection is not required. When back online, changes are automatically uploaded to the cloud service.

Autodesk cloud services

Desktop Connector is compatible with the following Autodesk cloud services:

- Autodesk BIM 360 Docs;
- Autodesk BIM 360 Team;
- Autodesk Drive;
- Autodesk Fusion Team.

This document covers the functionality between Desktop Connector and the Document Management module in BIM 360 Docs. This flavor of Desktop Connector is also known as **Desktop Connector for BIM 360**.

BIM 360 Docs – a brief introduction

BIM 360 Docs is an Autodesk cloud service that hosts the Document Management module, designed to store uploaded files and allow collaboration between different teams or team members, using a folder structure with set permissions.

Some file types can be viewed in Document Management via the web browser. It is possible to compare certain documents, create markups, issues, reviews, and transmittals.

BIM 360 Docs uses Document Management as main storage module. Document Management is the storage location for other next-gen modules such as Field

Management, Model Coordination, Project Management, Design Collaboration, and others.

BIM 360 Docs servers are located in the United States of America (US server) and in Ireland (European server).

It is possible to access files stored in BIM 360 Document Management via the BIM 360 mobile app, which is very useful while working at the construction site.

BIM 360 Docs workflow

A BIM 360 account (also known as a site) is created by Autodesk following a request for a paid, trial, educational or a not for resale site. An invite is sent to the appointed account admin via email.

The account admin clicks the link in the email invite to activate the account and access the Account Admin page (BIM 360 Administration) to create projects and invite other account admins if required.

During the project creation, a project admin is assigned to the project. Project admins can add other project admins and members to projects. Project admins can customize folders, project information, member permissions, locations, issue properties, etc.

See the Folder Permissions page in the BIM 360 help for details on permission levels.

Document Management has two parent folders: **Plans** and **Project files**. Desktop Connector syncs with the **Project Files** folder only.

See the Plans and Project Files page for the explanation about the differences between these folders.
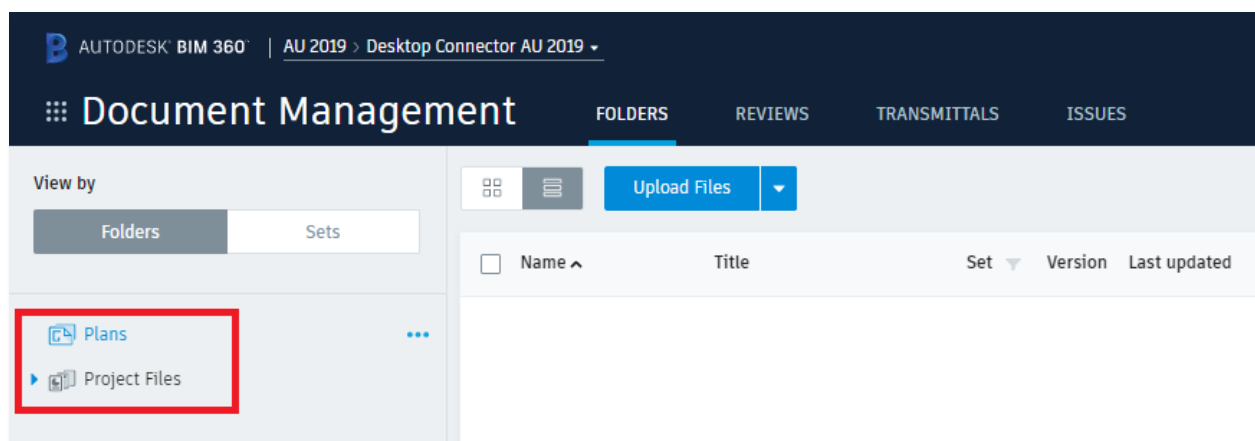
Plans and Project Files folders in BIM 360 – Document Management

What can you do with Desktop Connector for BIM 360?

Desktop Connector for BIM 360 allows you to sync your data with the Project Files folder in Document Management:

- Upload and delete documents. Existing files will be updated to a new version;
- Download and open documents;
- Access cloud stored files to link them into other files;
- Create and delete sub-folders;
- Rename folders and sub-folders;
- Lock files;
- Work with documents in offline mode;
- Work with BIM 360 Docs issues in Navisworks;
- Sync files from other applications.

Why should you use Desktop Connector?

Desktop Connector increases your productivity.

File syncing happens seamlessly and there is no need to use an Internet browser to upload or access your files.

The connected drive mirrors the folder structure in BIM 360 Docs, and you can manage sub-folders and files using the Windows File Explorer's familiar interface. This helps reduce errors while setting up a BIM 360 Docs project.

Desktop Connector allows you to work offline and uploads the changes made when you go back online.

Desktop Connector can also supplement Revit cloud worksharing workflows, such as linking in CAD files or non-worksharing Revit models from BIM 360 that may have been uploaded by a consultant that doesn't use Revit cloud worksharing.

What is needed to use Desktop Connector for BIM 360?

To use Desktop Connector for BIM 360, the following is required:

- Computer with Microsoft Windows operating system;
- Internet connection;
- Autodesk account - create one for free at https://accounts.autodesk.com;
- Appropriate access to the Project Files folder or sub-folder(s) in BIM 360 Docs Document Management;
- Installation of the Desktop Connector application - available from the Install Desktop Connector page;

Note: Anyone can install and start the application, but only project members with access to a BIM 360 Docs project (or other projects in supported data sources) will have access to cloud stored data via the connected drive;

- No additional fee is required to install and use Desktop Connector.

Learning Objective 2: Set up and use Desktop Connector

Installing and starting up Desktop Connector

Set up Desktop Connector in 3 simple steps:

Check

a. The system requirements to install Desktop Connector. Current requirements are:
    - Microsoft Windows 7, 8.1, or 10 (v. 1607 Anniversary Update or later);
    - Desktop Connector is not supported when "run as admin" (elevated).
b. That the user installing the Desktop Connector application needs to have administrator rights to perform the installation;
c. If there is free space in disk to install Desktop Connector and download files stored in the BIM 360 Docs project;
    Desktop Connector will create the connected drive under the C:\ drive by default. The drive is tied to the location of the user profile (%userprofile%), typically "*C:\users\<username>*". If you relocate the user profile to another drive, then that is the location Desktop Connector will use.
d. If you need to install any Windows update available.

Install

a. Download the installation file from the [Install Desktop Connector](#) page;
b. Run the installer;
    Desktop Connector will install Microsoft Visual C++ Redistributable (x64) and Microsoft .Net Framework during the setup process;
c. Watch the Desktop Connector icon appear in the Windows tray.

Sign in

a. If the application doesn't start automatically, start Desktop Connector via Windows Start menu. Note that users running the application need at least "Standard user" permission in Windows;
b. Enter your Autodesk account email and password;
c. Once logged in, notice the "BIM 360" connected drive appearing under "This PC" in Windows File Explorer;
d. Expanding or opening the BIM 360 drive displays any BIM 360 Docs accounts available to the user, preceded by the hub icon :
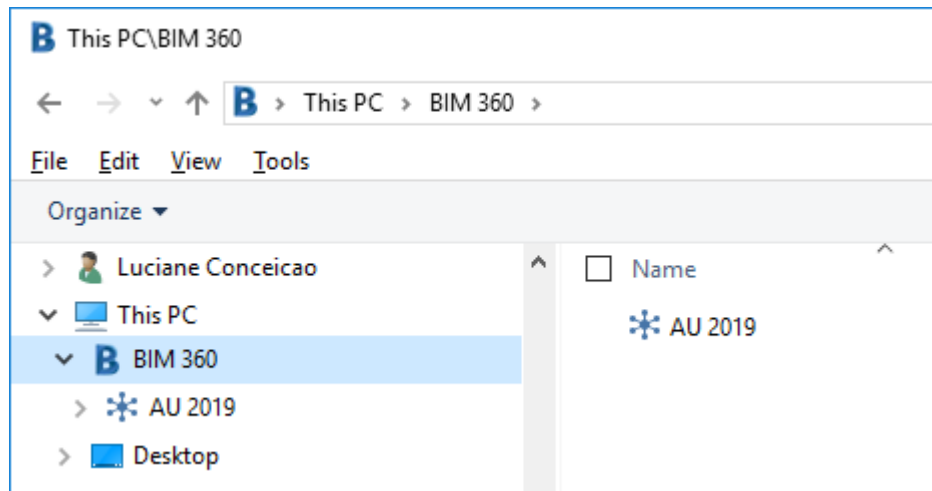
e. Hovering the mouse over the Desktop Connector "A" icon in the Windows tray will display the installed version:

This version is current as of 12th October 2019

Updating Desktop Connector

A new version of Desktop Connector is released regularly, usually every month (but this is not a rule). When a new version of Desktop Connector is released, users receive a bubble notification in Desktop Connector informing that a new version is available. The notification usually displays one week after the new version is released for download on the Install Desktop Connector page.
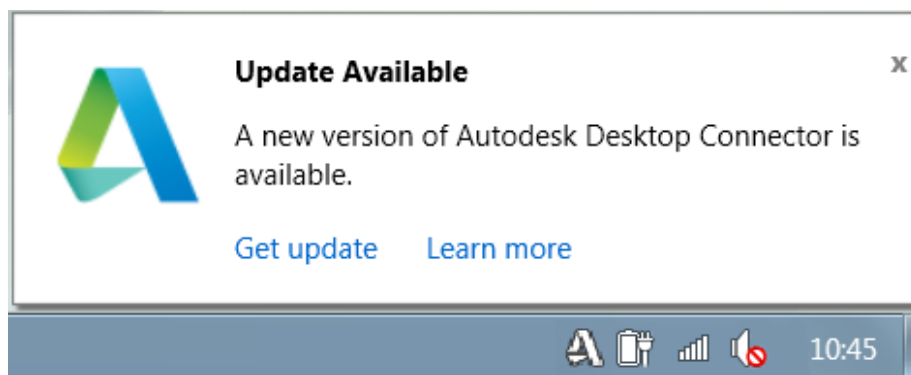
Desktop Connector notification of an update available to be installed

Users can update Desktop Connector by clicking on *Get update* in the bubble notification and following the steps on the screen.
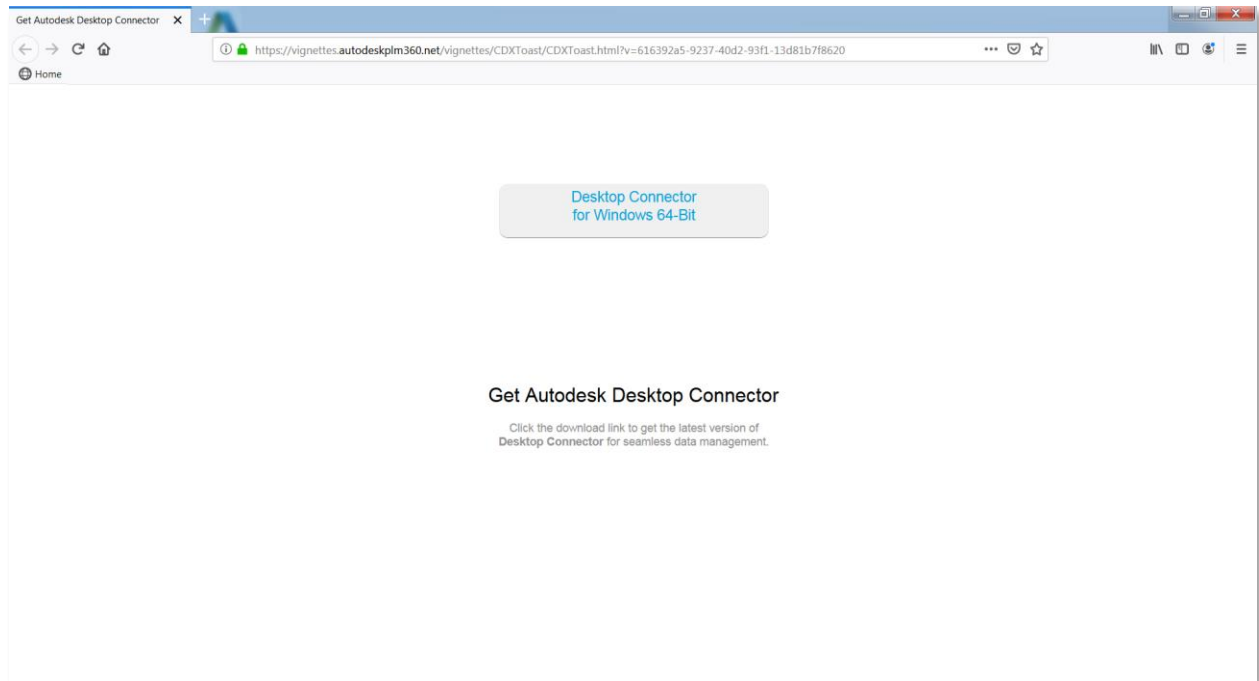
Desktop Connector Get Update page
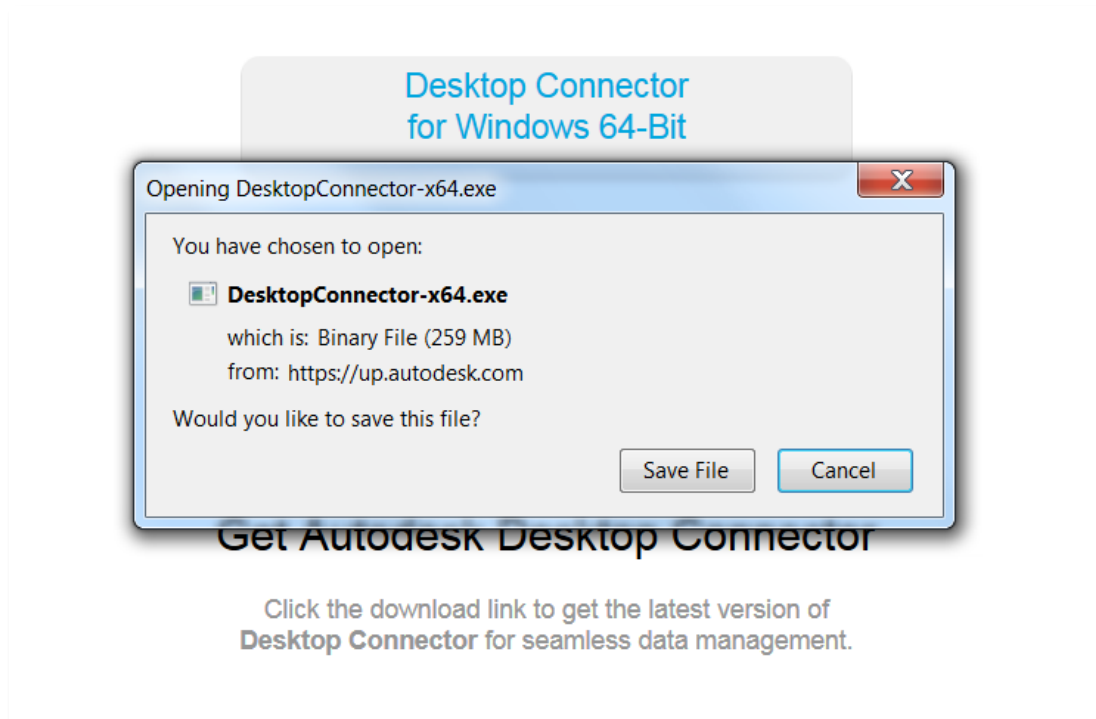
Download the latest Desktop Connector installation file
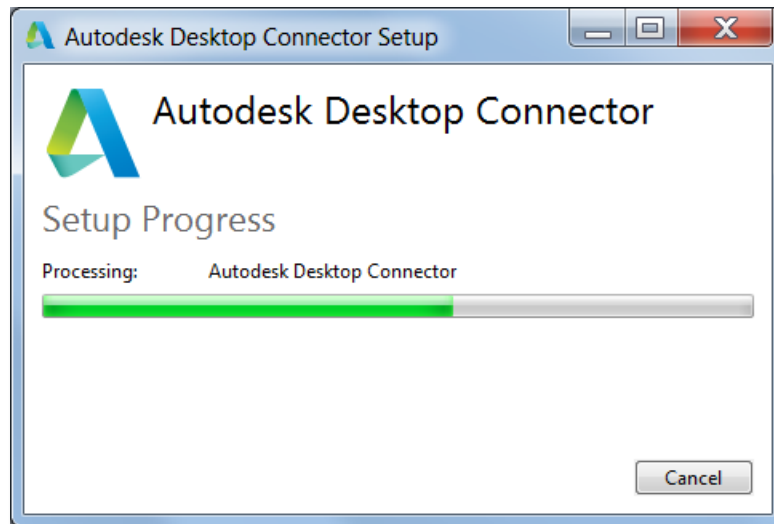
A computer restart is required at the end of the installation.

New versions can also be manually downloaded from the Install Desktop Connector page. Visit the Desktop Connector Release Notes page to review what is included in the new release. Note: If users do not have enough permission to install applications (administrator permission), the installation cannot be performed.

Installing the latest version of Desktop Connector is highly recommended. Usually, only the latest version of Desktop Connector is supported.

How does Desktop Connector work?

Now that Desktop Connector has been installed and the connected drive is available, the files and folders can be synced as follows:

- From your computer to BIM 360 Docs – files and folders are uploaded to the Project Files folder in the Document Management;

  Place files and folders in the BIM 360 connected drive for upload. This can be done via drag & drop and Copy and Paste.

  Any changes to files and folders in the BIM 360 connected drive will reflect in the BIM 360 Docs project, including file and folder deletion.
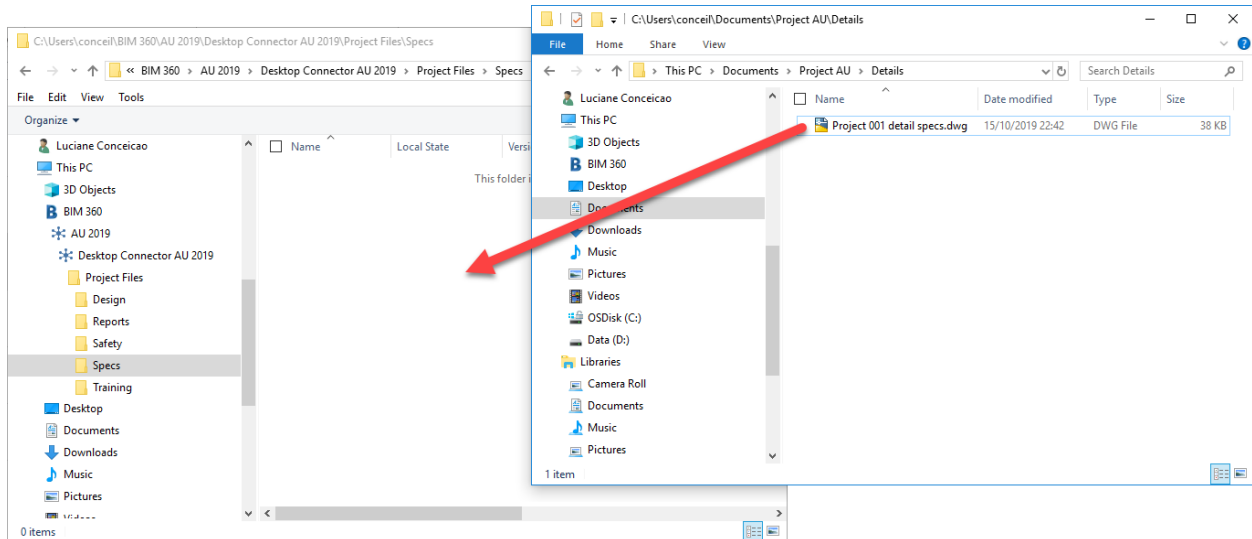
Drag & drop files from your computer to your BIM 360 Docs project via the BIM 360
Desktop Connector drive

When files are placed in the connected drive, the Transferring files notification is displayed
and the files are uploaded to Document Management:
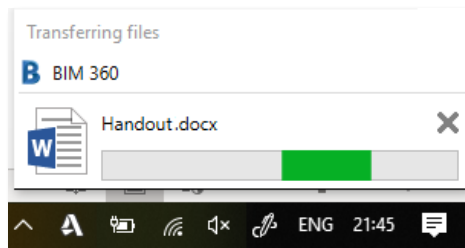
When saving files from the authoring application to the connected drive, make sure you
select the **BIM 360** drive under My Computer (or This PC) > Devices and drives:
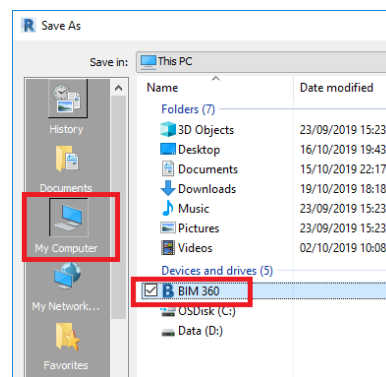
BIM 360 connected drive displayed in the Save As window in Revit
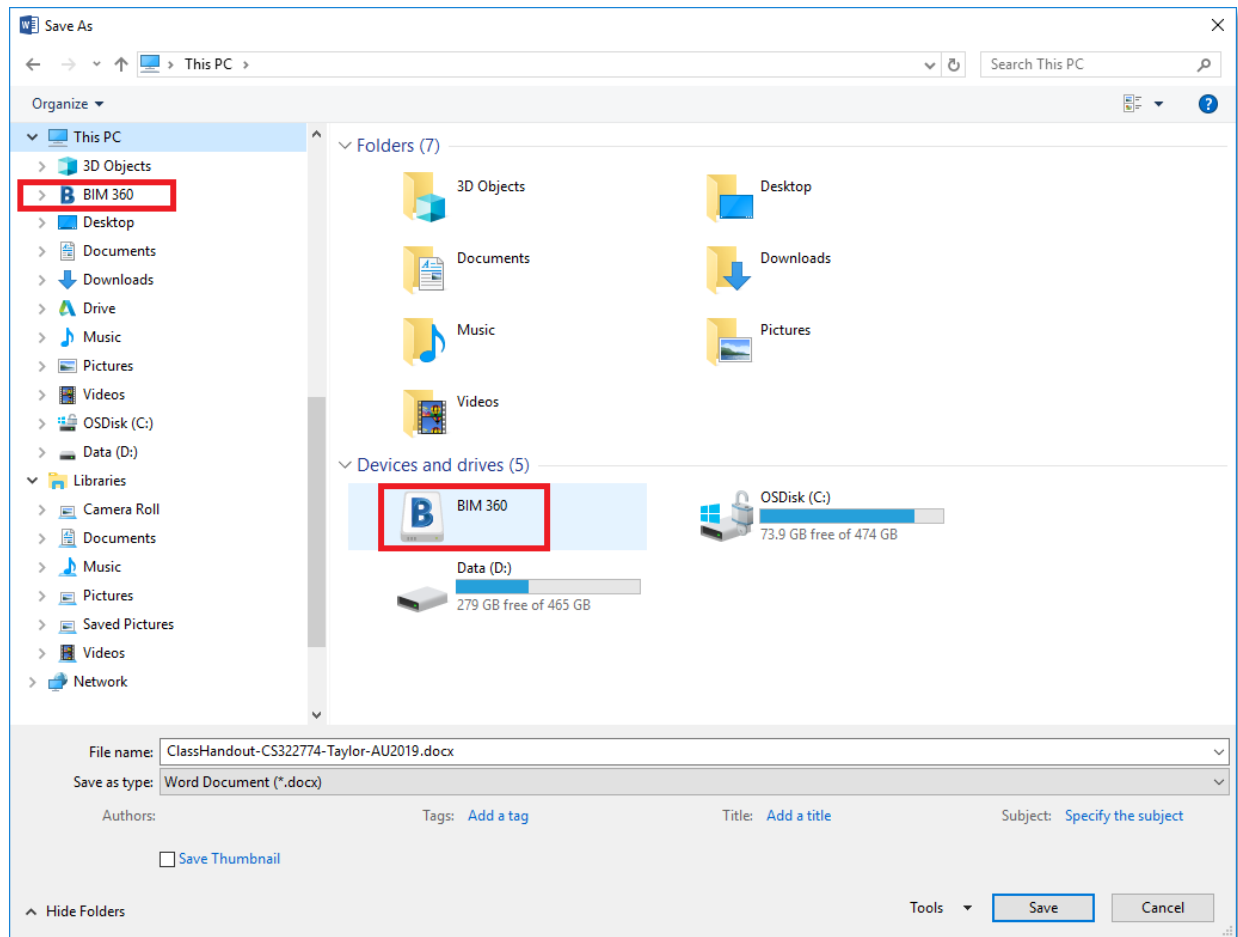
Save As menu in MS Word

- From BIM 360 Docs to your computer – a mirror of your BIM 360 Docs project (from the Project Files folder) is created in your computer;

  Desktop Connector will replicate the BIM 360 Docs project folder structure that you have permissions to into Windows File Explorer:
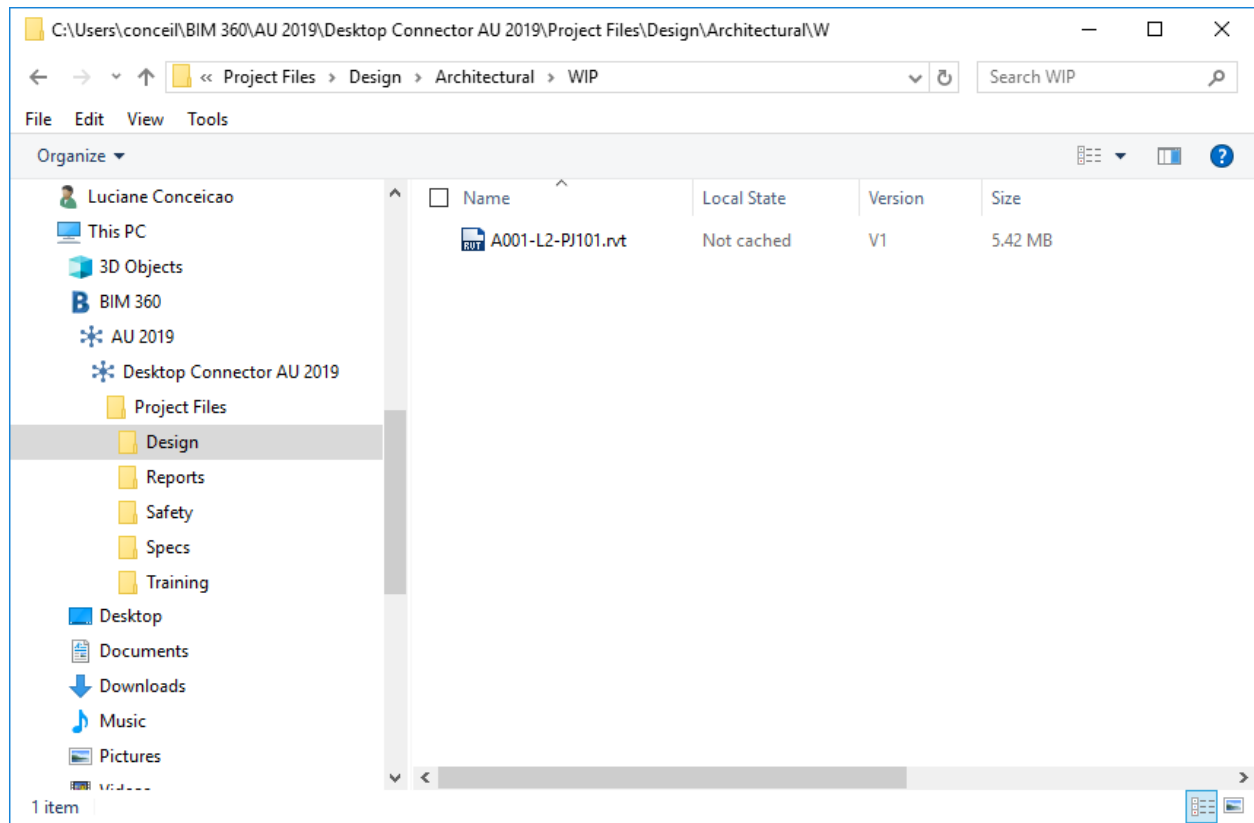
Project Files folder structure and files accessible to user are mirrored in the
BIM 360 connected drive

The folder structure is replicated in the connected drive, but files are only downloaded on demand when accessed or explicitly downloaded.

Files opened via Desktop Connector are automatically downloaded to the local drive. This includes double-clicking a file in the connected drive or opening a file via the authoring application such as AutoCAD, Revit, MS Word, etc.

The Transferring files notification also displays when opening a file. This indicates that a copy of the file is being downloaded to the local connected drive.

You can manually request download of files and folders. Right-click a file or folder and select the **Download** option. Files and folders downloaded locally will be saved in the following path by default:
C:\Users\<username>\BIM 360\<account name>\<project name>\.
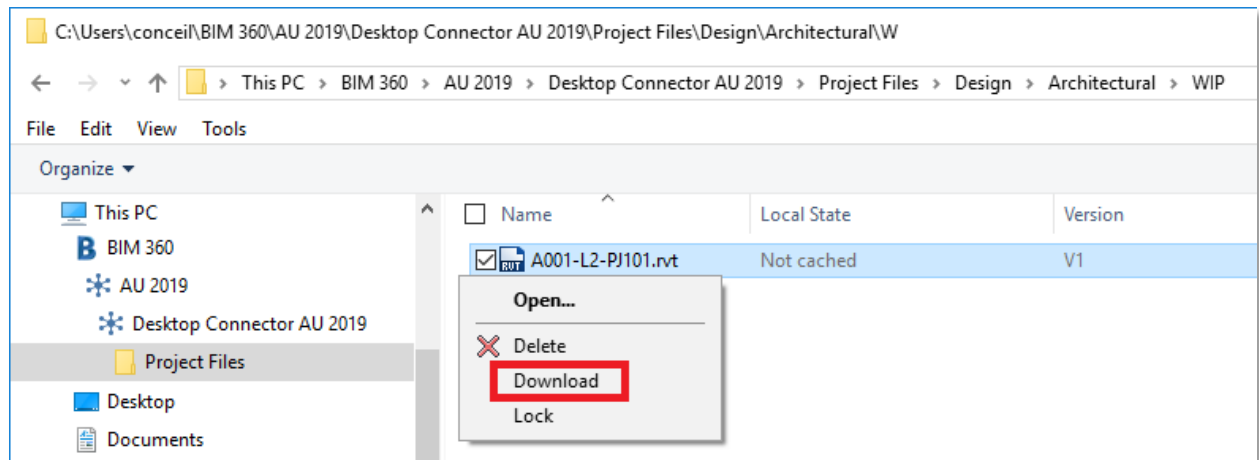
Download files and folders via right-click

You can also download files and work offline – Desktop Connector will upload the updated files to BIM 360 Docs once you set Desktop Connector to go back online.

Deleted items from the BIM 360 Docs project will also be deleted from the Desktop Connector drive once changes are synced.

If a file or folder is deleted by mistake, or you need to access a deleted file, it will be available from the Document Management **Deleted Items** folder, via web browser:
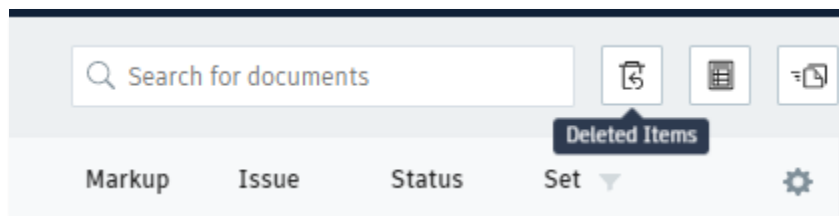
Access the Deleted Items folder in the web browser to see deleted files

Desktop Connector will update file properties (visible in Windows File Explorer) depending on the sync state. Local State will report the state of the files in the local drive.

When a file is placed in a folder in the connected drive, the file state will be "New". Once it is synced with BIM 360 Docs, the state will change to "Cached".

When a file is uploaded to BIM 360 Docs by another user or via the web browser, the file state will be "Not Cached".

When a file is downloaded locally, the state will be "Cached".
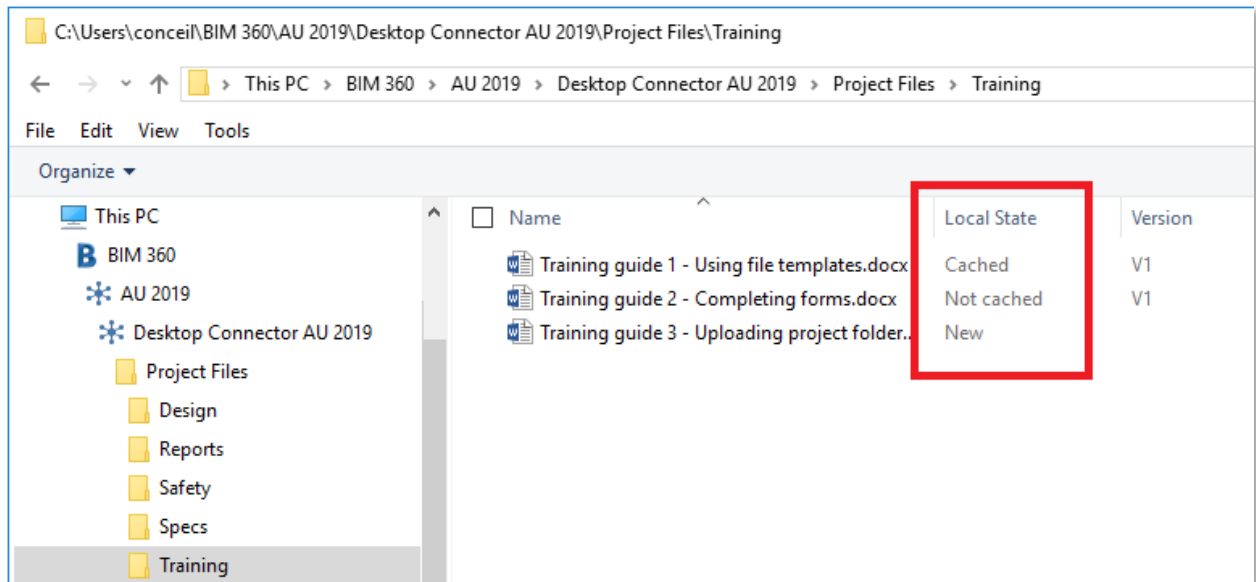
Local state of files in the connected drive

See File State for further details.

Working with DWG files and external references

Desktop Connector for BIM 360 offers special functionality for AutoCAD and Civil 3D drawing (DWG) files. Since version 10.0.0.832 (March 2019), Desktop Connector maintains relationships between drawing files that use external references (XREFs). This means that, when uploading or downloading DWG files to/from BIM 360 Docs, Desktop Connector will try to download or upload any external references (and their folder structure) that are inserted in the parent files.

Uploading DWG files with XREFs to BIM 360 Docs

When uploading drawing files with XREFs to BIM 360 Docs via the Desktop Connector drive, the parent and the child or children (XREFs) will also be synced.

If the XREFs are stored in a different folder than the parent file, then the folder structure is also uploaded to the BIM 360 project.

XREFs inserted with relative paths will upload with the full path, that is, the complete folder structure will be uploaded and this might create a long path to the file. See Microsoft Windows character limitation for further details.

If the XREFs are not accessible to the user, they will not upload. In this case, this message is displayed:
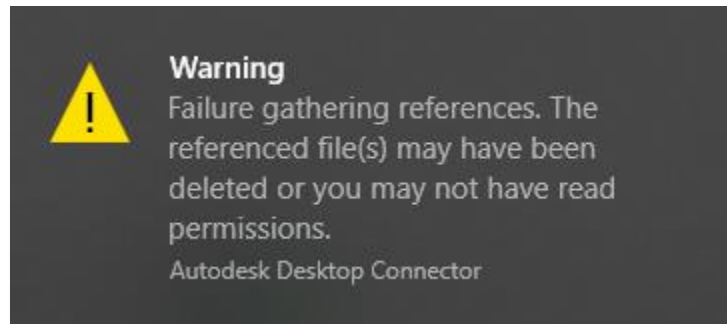
Warning "Failure gathering references. The referenced file(s) may have been deleted or you may not have read permissions."

Opening and downloading DWG files with XREFs

When opening or downloading a DWG file that has XREFs from BIM 360 Docs, Desktop Connector will open or download the parent file and any XREFs to the local drive as well.

If the XREFs are stored in a different folder than the parent file, the folder structure will be mirrored into the local drive.

Note that the user needs permissions to download those files. If the user doesn't have adequate permissions to the XREFs, they will not open or download.

Working with Revit files

There are two different methods for working with Revit files in Document Management.

The first method is through the usual upload of files – be it via the web browser or Desktop Connector.

You can upload Revit and CAD files to Document Management and use Desktop Connector to link them.
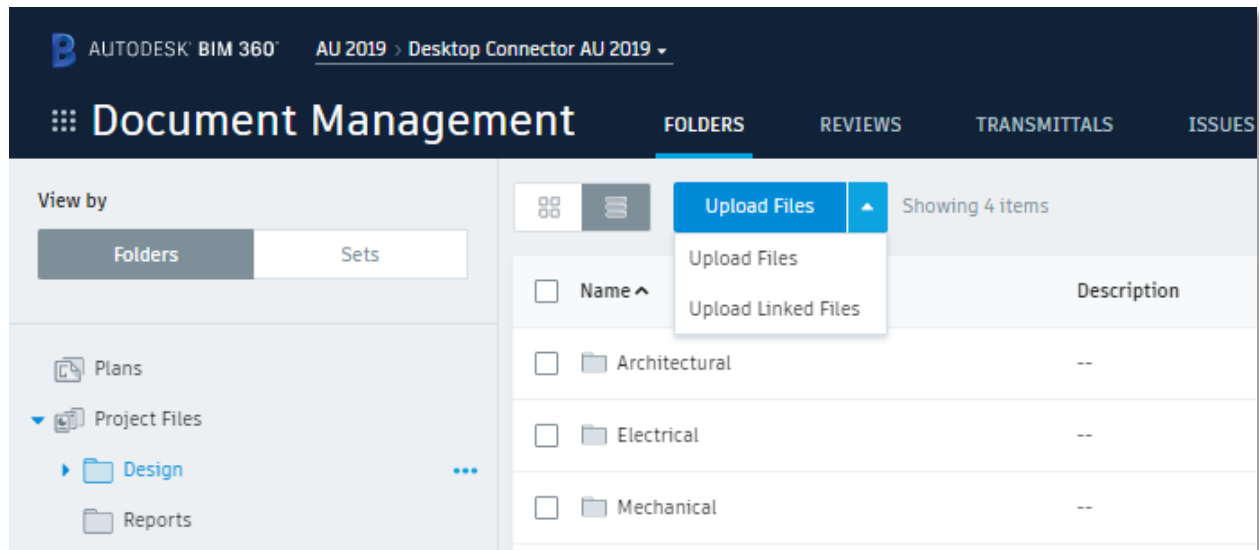
Upload files (single or linked) to Document Management via the web browser interface

The second method is via Revit cloud worksharing. In both cases, Revit 2018.3 or newer versions can be used. Note that Revit cloud worksharing requires an additional BIM 360 Design license.

Linking Revit files

In the first method mentioned above, Revit files are uploaded to BIM 360 Docs via web browser or Desktop Connector. Via web, it is possible to upload parent and linked files with the **Upload Linked Files** option, which allows viewing parent and linked Revit models in the web viewer.

You can also link files to a parent Revit model via Desktop Connector, pointing to files stored in BIM 360 Docs. In the Manage Links window in Revit you can browse to the BIM 360 connected drive and add your Revit files as links:
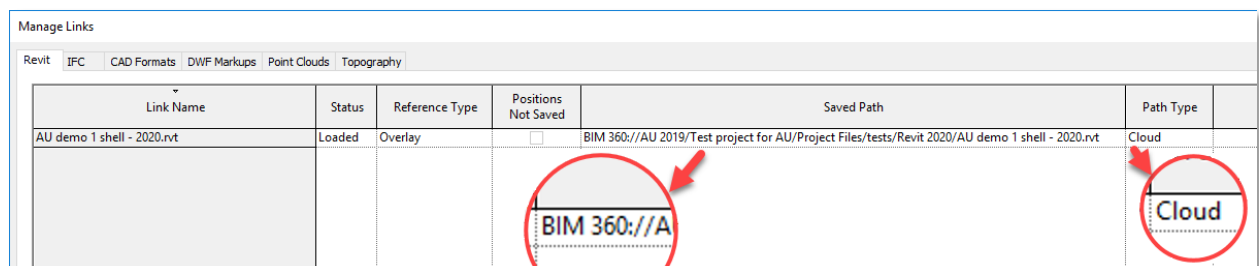
Manage Links in Revit

When adding a link file that is stored in BIM 360 Docs, the path type will be "Cloud" and the path will be *BIM 360://<account name>/<project name>/<folder path>/<file name>.*

When Revit files are linked via the BIM 360 connected drive, the parent file and its links will show as expected in Revit, but the linked files will not display in the Document Management web viewer (internet browser).

In Document Management, opening the parent file will show only geometry that exists in the parent file, and linked files will not show in the model views as no link is found. Uploading Revit linked files via Desktop Connector is not currently fully supported but can be very helpful, as the linked files will be saved for use in Revit and will display in Revit when other users open the parent file via Desktop Connector. Parent and linked files can be updated using this method. The linked files will be available in Revit as long as they are accessible to the user in BIM 360 Document Management. Note that you can link Revit models from the BIM 360 connected drive, but they cannot be used to host workshared central models.

File linking using the second method - uploading Revit files via cloud worksharing - works in a different way. The Revit models are uploaded to BIM 360 Document Management via the Collaborate button in Revit. Models uploaded this way will initially display as V1 (version 1) and then automatically change to V2 (version 2) in the project folder.

The main difference with these two methods for Desktop Connector users is that files that are cloud workshared can be opened via Desktop Connector, but cannot be saved or updated via Desktop Connector.

When a Revit cloud workshared file is opened via Desktop Connector, a message will display asking if you want to save a local copy (this will save it as a central model in your connected drive and create a *<filename>_backup* folder) or work with the model temporarily (this will not modify the file and will not create a *<filename>_backup* folder).
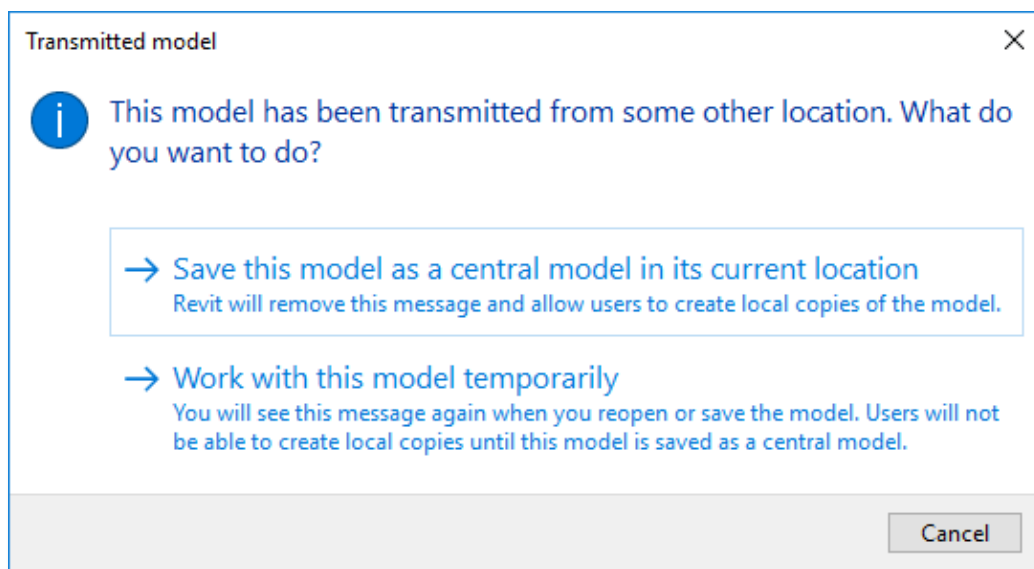
Transmitted model dialog that shows when opening a Revit cloud workshared file via Desktop Connector

If you later try to save this file, the Transmitted Model dialog will be displayed again. Saving this file to BIM 360 Docs will not be possible, because Revit cloud workshared models are not editable via Desktop Connector.

The Pending Actions dialog will show the following warning:

Message
The requested file cannot be overwritten due to being a different type such as a published model
Affected file: Project1 2018.rvt

"The requested file cannot be overwritten due to being a different type such as a published model" message is displayed when trying to save a Revit workshared cloud model to the connected drive

To avoid this scenario, instead of opening Revit cloud workshared models via Desktop Connector, you can **link** Revit cloud workshared models from the connected drive into a non-workshared file.

When linking Revit cloud workshared models via Desktop Connector into a non-workshared model, no *<filename>_backup* folder is created (as long as the model is still considered a transmitted model and you haven't modified it).

To review file types that can be opened and linked in Revit via BIM 360 Docs, see About BIM 360 Team and BIM 360 Connected Drive Integration with Revit.

Working with other file types

Desktop Connector for BIM 360 allows linking DWGs, Revit models and other file types as well. However, these links must be created via the Desktop Connector connected drive and the files must be stored in the same BIM 360 Docs project. If a file is linked via the connected drive but is stored in a local or network drive instead of the BIM 360 Docs project, other users may not be able to access the linked file when using Desktop Connector. See also the Supported Files page.

File locking

It is possible to lock a file in BIM 360 Docs. When a file is locked, other members cannot delete, copy, move, rename, overwrite, or make it current.

File locking directly in the connected drive was first introduced in Desktop Connector version 11.1.0.918 (July 2019). Only the user that locked the file can update the file, be it via Desktop Connector or the web interface. When a file is locked, other users can download it but not sync changes to it.

When other users try to sync changes to a locked file, this warning is displayed:
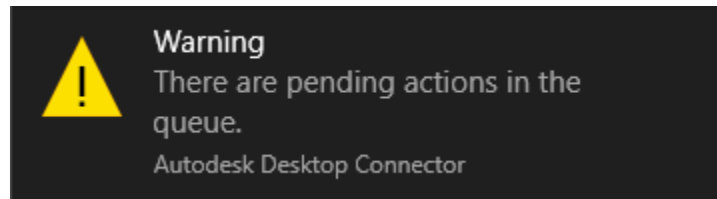
Warning "There are pending actions in the queue" displays when trying to sync a locked file

The Pending Actions window shows state "Failed - action required", and selecting the action displays the message "The requested file is locked by another user".
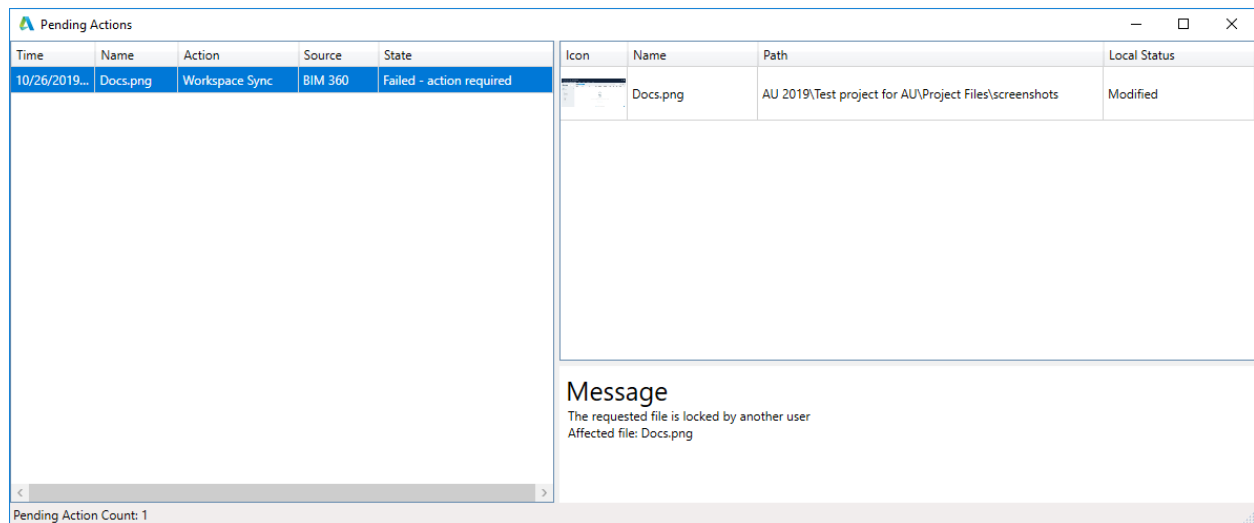
Pending Actions notification when trying to sync a file locked by another project member

Points to consider:

- If multiple people are working on the same file, coordinate accordingly. You want to avoid multiple people making changes to the same file at the same time, as changes made by one user will reset the changes made by another user. Working with XREFs is a possible alternative;
- Certain users with higher permissions can override the lock setting. Project members with View + Upload + Edit + Control permissions for a folder can unlock any document in that folder.

Working offline

The Work Offline tool is one of the main benefits of Desktop Connector, as it allows users to work with documents when not connected to the Internet while keeping the relationship with the file stored in BIM 360 Docs.

This is the basic workflow:

1. Download document(s) from the connected drive in Windows File Explorer. This can be done by opening the files or downloading them (right-click the file to see the Download option). You can also download folders with the Download option.
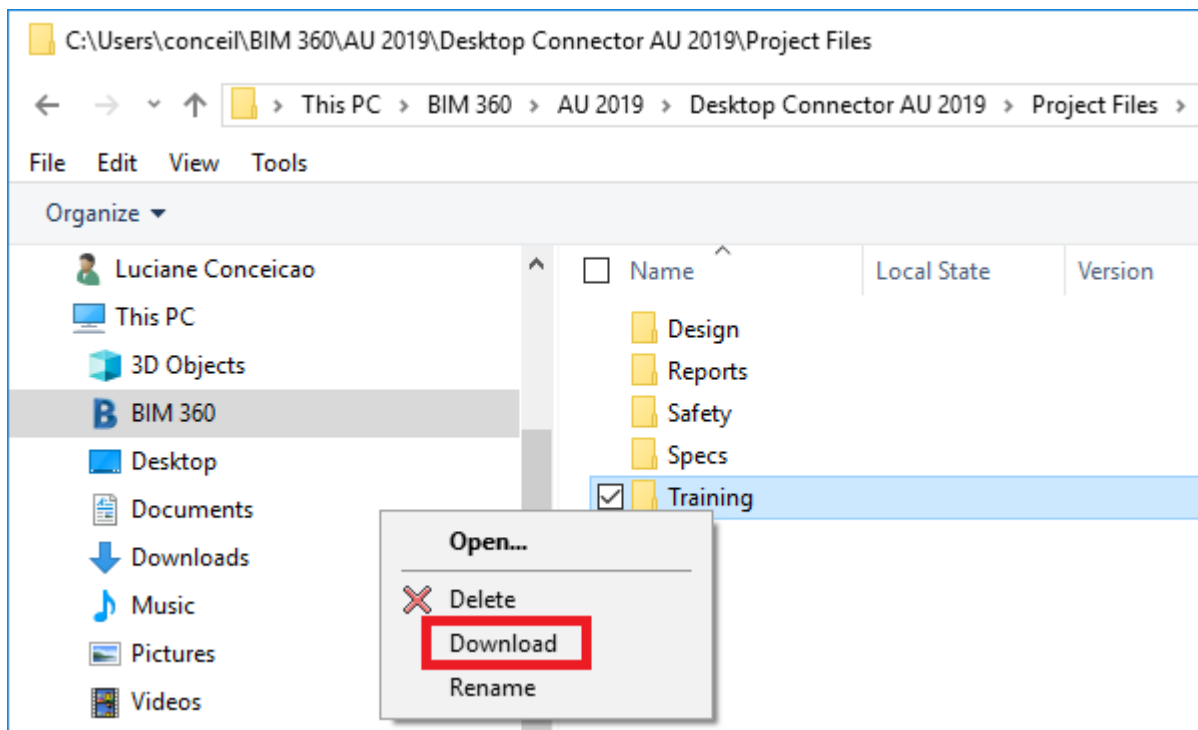
Download folders to the local connected drive via right-click menu

Files will be available indefinitely in the local folder, usually *C:\Users\<username>\BIM 360\<account name>\<project name>*;

2. Right-click the Desktop Connector "A" icon in the tray and select "Work Offline":
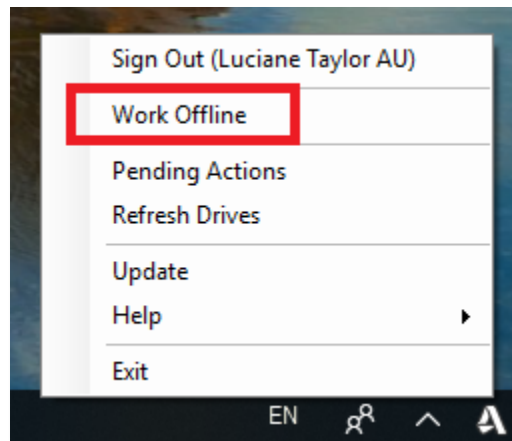
The Desktop Connector tray icon will transition to grey when going offline and then turn blue:

And the BIM 360 icon in File Explorer will display a pause symbol:
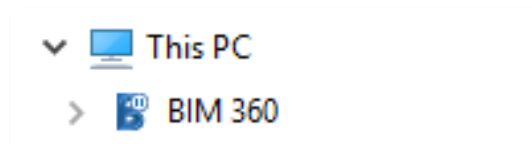
3. Work with the document(s) locally and save changes;
4. Right-click the Desktop Connector "A" icon in the tray and uncheck "Work Offline":
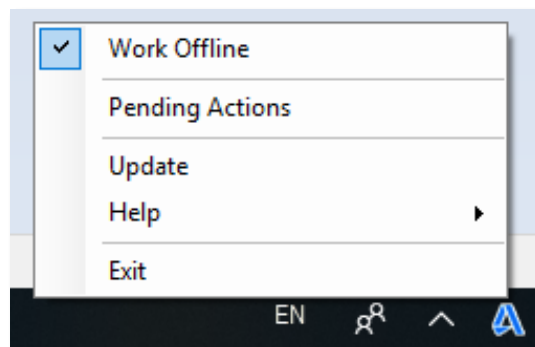
The Desktop Connector icon will go from grey to white with a green dot if it needs to sync:

And the Pending Actions will show the details:

Time	Name	Action	Source	State
10/3/2019 2:35 PM	right-c...	Workspace Sync	BIM 360	Running
10/3/2019 2:35 PM	updat...	Workspace Sync	BIM 360	Pending
10/3/2019 2:35 PM	updat...	Workspace Sync	BIM 360	Pending
10/3/2019 2:35 PM	work...	Workspace Sync	BIM 360	Pending

Pending Action Count: 4
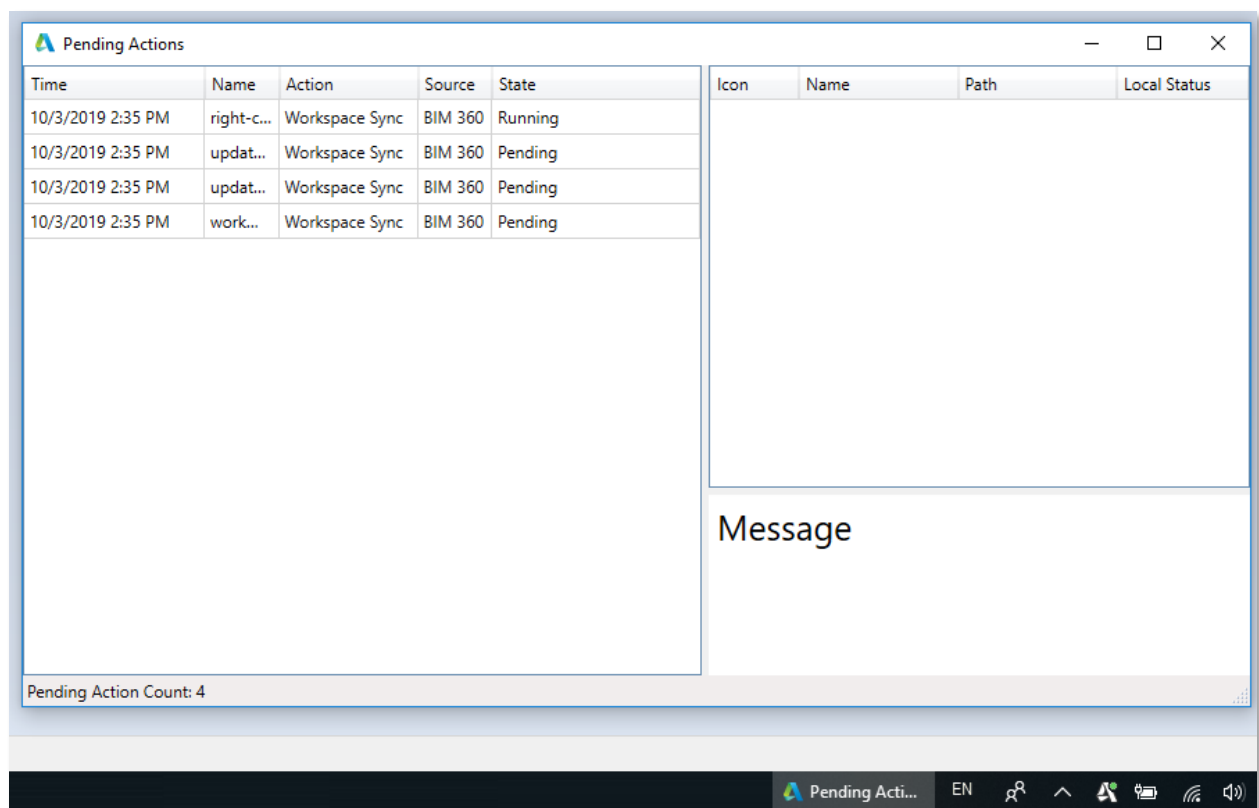
5. Desktop Connector then syncs the changes and the icon goes white:
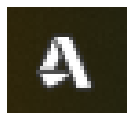
Deleting local files

When Desktop Connector is online, deleting a file or folder from the connected drive will also delete it from the data source, that is, from the BIM 360 Docs project.

If you want to delete the local copy only (cached data), follow these steps:

1. Set Desktop Connector to Work Offline by right-clicking the Desktop Connector icon on the tray and selecting Work Offline;
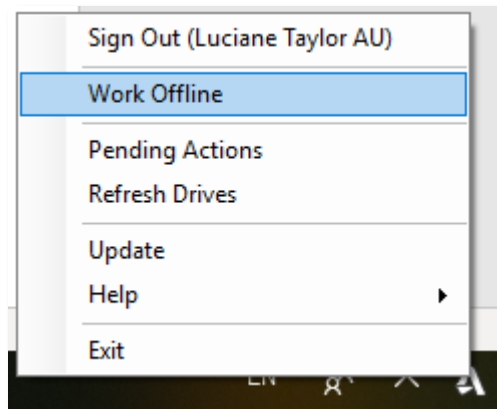
2. Navigate to the connected folder, usually "*C:\Users\<username>\BIM 360\<account name>\<project name>*";
3. Select the file or folder to be deleted and press the Delete key or right-click and select Delete local;
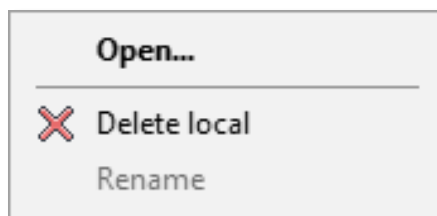
4. Click Yes to delete the local copy. The data will remain untouched in the data source, your BIM 360 Docs project.
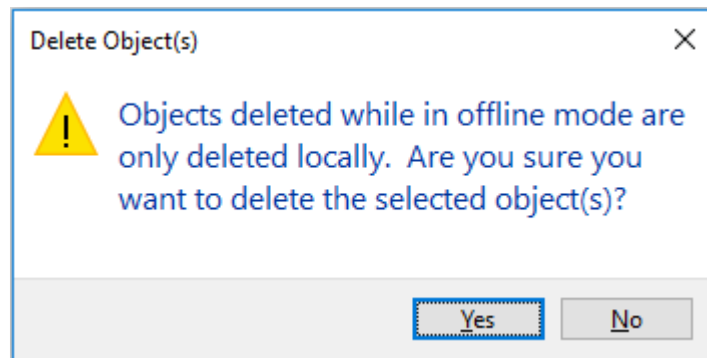
Working with BIM 360 issues in Navisworks

A handy tool is available for Navisworks users. Earlier this year, the **BIM 360 Issues** app was released. It allows working with BIM 360 Docs issues while using Navisworks NWD files, and syncs issues created in Navisworks to BIM 360 Docs and vice-versa.

The tool can be downloaded from the Autodesk App Store and works with Navisworks Manage and Simulate versions 2019 and 2020.

For more information, access:
- To Work with Issues in BIM 360
- Navisworks & BIM360 Docs Issues – The new best friends on the block!!!

Sharing data from Civil 3D to BIM 360

The Start page in Civil 3D allows access to Document Management files and folders stored in BIM 360 via Desktop Connector.

You can use the Publish Surfaces tool to publish Civil 3D surfaces to Document Management. These files will then be available for linking via the Desktop Connector drive, for example when adding topography links into Revit models.

Additional features are available in the new Collaboration for Civil 3D. For this, a BIM 360 Design license is required. Collaboration for Civil 3D allows creation and management of data shortcuts and automatic file locking.

Learning Objective 3: Troubleshoot most common issues

Help pages

Desktop Connector has two very useful Help pages; the first one covers the core functionality and interoperability with other Autodesk cloud services. The second one covers functionality that is specific to Desktop Connector when used with BIM 360 Docs:

- Desktop Connector - for general Desktop Connector information. This includes information about functionality designed for Desktop Connector when using BIM 360 Team, Autodesk Drive and Fusion Team cloud services. Some of these may not apply to Desktop Connector for BIM 360;
- Desktop Connector for BIM 360 - for information specifically related to Desktop Connector working with BIM 360 Docs.

It is highly recommended to review the BIM 360 Docs Help page:

- Welcome to the BIM 360 Help

The Revit Help page on Cloud services also has helpful information about interoperability with Desktop Connector:

- Cloud Services

Troubleshooting specific issues

In the event of unexpected behavior with certain operations when using Desktop Connector, see some tips below.

Installation

If the instructions on how to set up Desktop Connector were not enough to resolve installation issues, see the following suggestions:

- Disable anti-virus;
- Check internet connection;
- Close all other applications;
- Install using a different Windows user, preferably a newly created administrator user;
- Verify that permissions to the following locations are set to full access:

  o Folders:
  C:\ProgramData\Autodesk
  C:\ProgramData\FLEXnet
  C:\Program Files\Autodesk
  C:\Program Files\Common Files\Autodesk Shared
  C:\Program Files (x86)\Autodesk

C:\Program Files (x86)\Common Files\Autodesk Shared
C:\Users\<username>]\AppData\Roaming\Autodesk
C:\Users\<username>\AppData\Local\Autodesk
C:\Users\Public\Documents\Autodesk
C:\Users\<username>\AppData\Local\Temp

- Registry:
HKEY_CURRENT_USER\Software\Autodesk
HKEY_LOCAL_MACHINE\Software\Autodesk

Signing in

When having trouble signing in:

- Verify if the user is an active member of an active BIM 360 Docs project;
- Check in the Task Manager if the Autodesk File System Monitor Service (FileSystemMonitorService - a Windows service) is running. This service is used by Desktop Connector;
- Make sure the correct credentials are being used (email and password);
- Sign out of all Autodesk products and services and sign in to Desktop Connector only;
- Do not run Desktop Connector as an admin in Windows (Elevated mode) as is not supported. To check if Desktop Connector is being run in Elevated mode:
    1. Start Task Manager;
    2. In the Details tab, right-click on the column headers and choose "Select columns". Scroll down and enable "Elevated";
    3. Find "DesktopConnector.Applications.Tray.exe" and see if the Elevated value is Yes or No.

BIM 360 data not available

When the account, project, folder or file is not available in the connected drive:

- Check if the Document Management module was activated by the project admin - the Document Management service needs to be enabled in the BIM 360 Docs project, or the project will not display in Windows File Explorer;
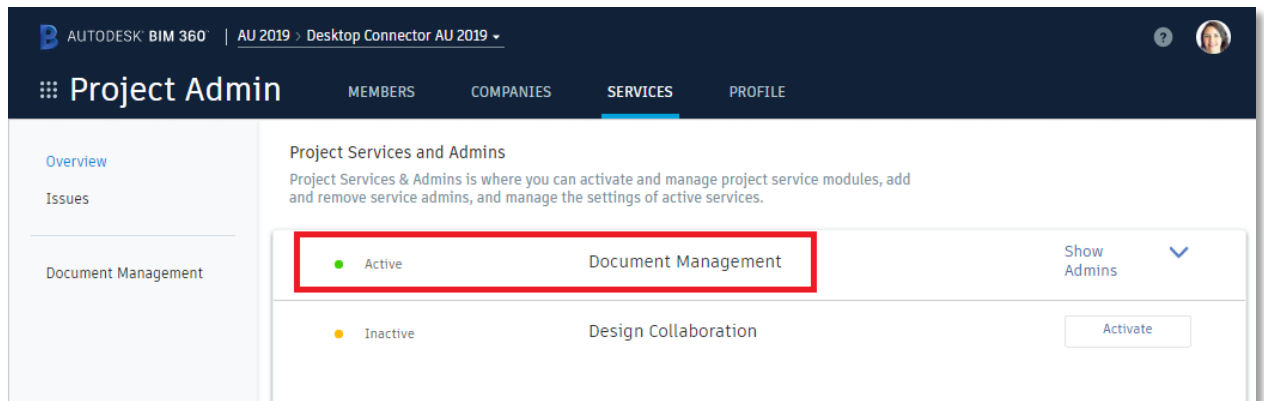
Document Management module is active in the BIM 360 Docs project

- Verify if the user has access to the related BIM 360 Docs project or folder when accessing the project with a web browser;
- Make sure there are files in the Project Files folder or sub-folder(s);
- Use the **Refresh Drives** tool, available when you right-click the Desktop Connector icon in the tray. This tool updates any BIM 360 Docs subscription changes, or when the user is added to another project. This forces an update to the connected drive:
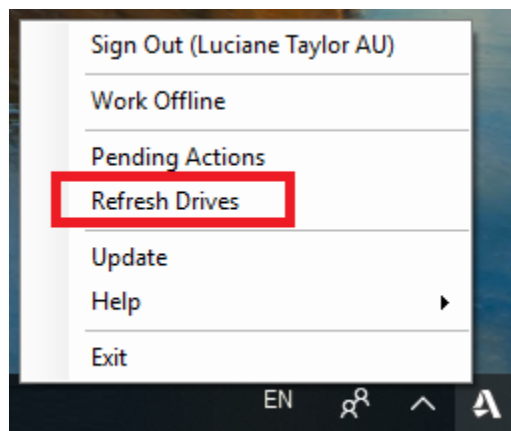
- Review if the user is a member of more than one account or project with the same name. It is advisable to keep unique names for accounts and projects;
- Close all other applications (review processes that are running in Task Manager) to rule out a conflict.

Uploading files

If files are not uploading from the computer to BIM 360 Docs:
- Close the authoring application (AutoCAD, Revit, etc.) to release the file, in case it is being edited and saved straight from the application;

- Review user permissions for the folder in BIM 360 Docs;
  Note: "Upload Only" permission to the Docs folder doesn't allow the user to upload files via Desktop Connector. Desktop Connector requires Download permission to work as expected.

View Only

Can view documents and can add markups/issues, but cannot upload or download content.

View/Download

Can view and download documents and can add markups/issues, but cannot upload content.

Upload Only

Can upload content, but cannot view folder contents.

View/Download+Upload

Can upload, download and view content, and add markups/issues.

View/Download+Upload+Edit

Can review and publish content, as well as edit and delete folder/subfolder content.

Folder Control

Full administrative controls, including managing folder access and title blocks.

Available user permission levels in BIM 360 Docs

- A restricted file format is included in the upload;
  It is not possible to upload files with reserved names into BIM 360 Docs. The same applies to uploads done via Desktop Connector.
  Reserved names are: CON, PRN, AUX, NUL, COM1, COM2, COM3, COM4, COM5, COM6, COM7, COM8, COM9, LPT1, LPT2, LPT3, LPT4, LPT5, LPT6, LPT7, LPT8, and LPT9.
- There might be an issue with the file. Try syncing a new file with few objects to see if that works as expected. Check the file for corruption;
- Review any pending sync actions in the Pending Actions window. See Pending actions for more details.

Downloading files

If it is not possible to download files to the local drive:

- Check if there is enough free space available in the local disk;
  Note that Desktop Connector may be trying to download referenced files as well as the parent file, so in this case, compute the size of all files;

- User may not have enough rights to the folder; review user permissions in BIM 360 Docs;
- The files are processing in BIM 360 Docs and not ready for download;
- The files need time to cache. **Caching** is the time it takes to have changes made in BIM 360 Docs reflect in the connected drive. The time required for the refresh varies according to the type of changes made:
  - Accounts: 12 minutes (minimum 2 minutes);
  - Projects: 3 minutes (minimum 1 minute);
  - Folders and documents: 3 minutes (minimum 1 minute);
  - User permissions: 35 minutes (minimum 5 minutes).

  Note: The Desktop Connector view in Windows File Explorer needs to be refreshed for changes to be displayed. The view is automatically refreshed every 10 minutes.

Opening files

If files are not opening from the connected drive:

- See instructions for downloading files above;
- Verify that the application needed to open the file is installed on the computer and the version is adequate;
- If XREFs are not loading automatically, make sure they were uploaded via Desktop Connector, or with the **Upload Linked Files** option if uploaded via web browser. Files uploaded via drag & drop to the folder in the web browser will not maintain XREF relationship;
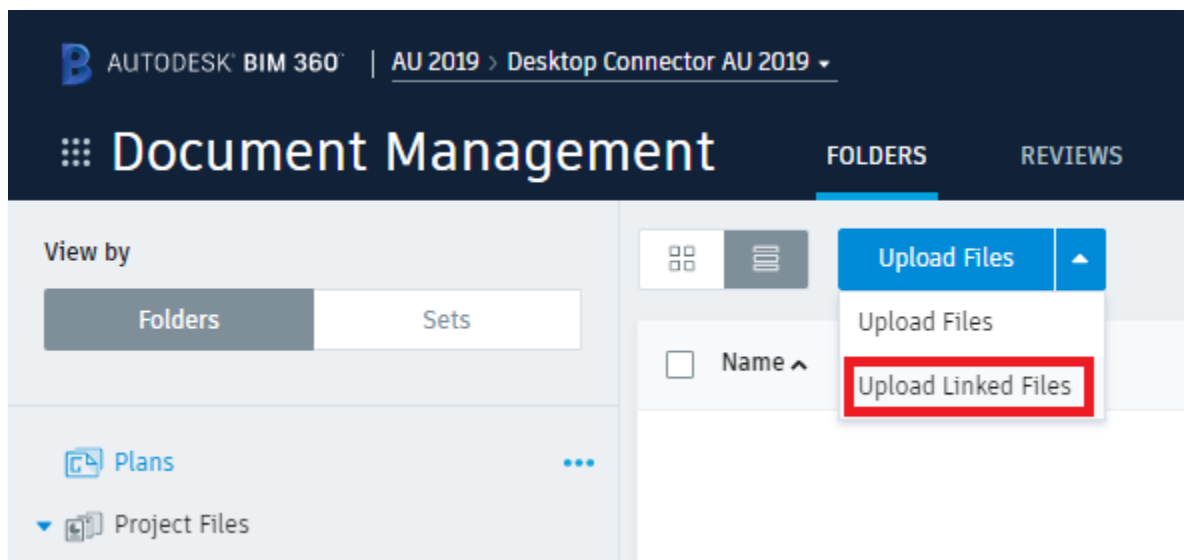
Upload Linked Files option in BIM 360 Document Management

- If Revit files (linked or not) are not opening, check that the Revit version is the same that was used to save the file originally;
- If files linked to a Revit model are not opening, make sure they were stored in the BIM 360 Docs project and inserted as a link in Revit via the Desktop Connector drive;
- The incorrect BIM 360 icon was used in the Revit Open file dialog. Although the icon is identical, Desktop Connector uses a different icon than the one that displays at the top of the Revit Open File dialog box:
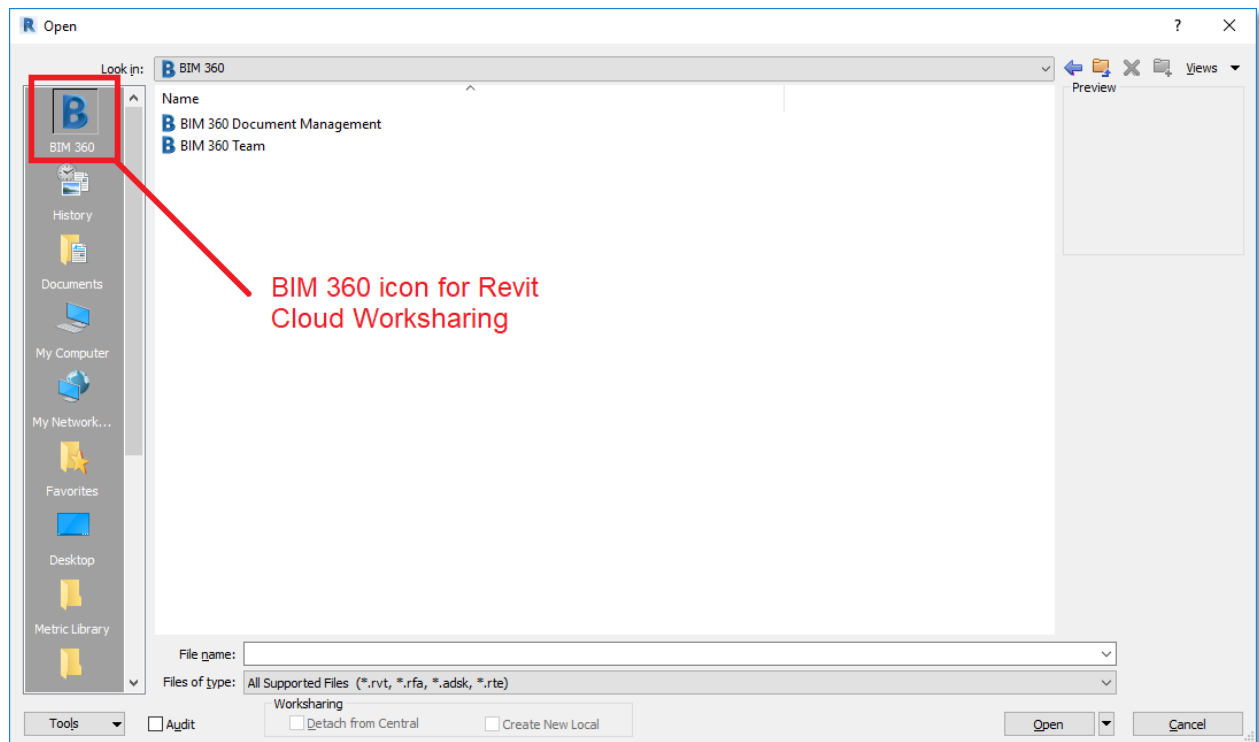
BIM 360 icon in Revit for Revit Cloud Worksharing

The BIM 360 Desktop Connector icon is located under "My Computer" in the Revit Open file dialog box:
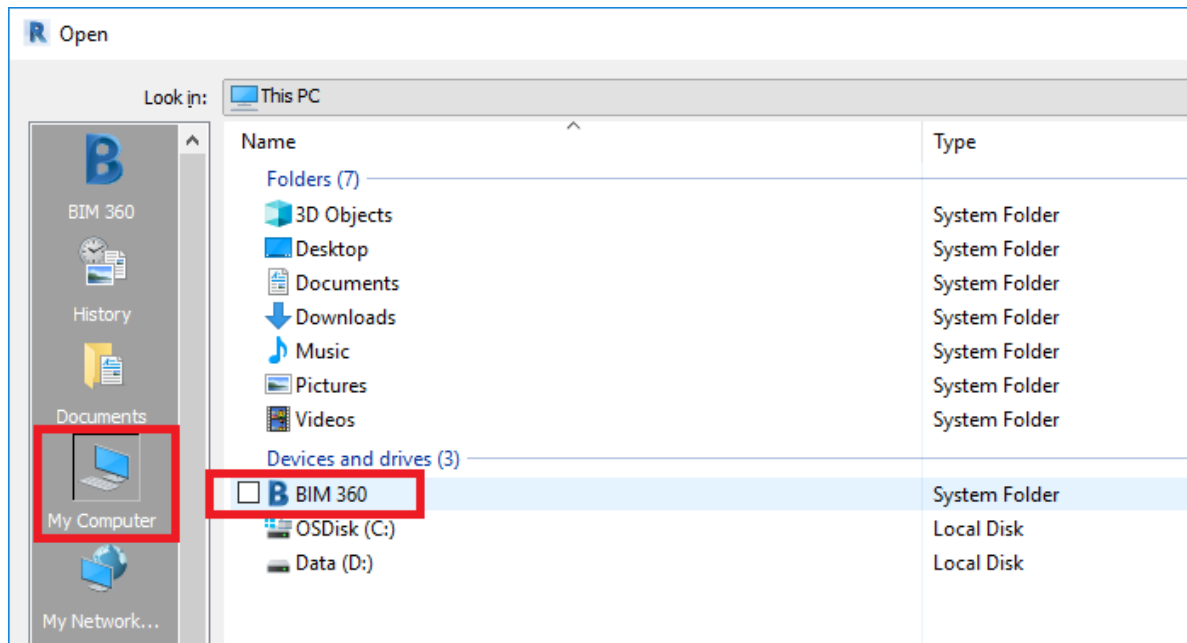
BIM 360 icon for Desktop Connector in Revit Open dialog

File locking

When troubleshooting BIM 360 Docs file locking issues, check that:

- It is not possible to lock Revit cloud workshared files. If a file was cloud workshared, the **Lock** option will not be available in the right-click menu;
- Someone else has locked the file;
- Someone with higher permissions has changed the file lock state.

File versioning

If the expected file version is not available:

- In BIM 360 Docs:
  - Verify that the file was uploaded to the correct project and folder;
  - Close the authoring application if this is the case;
  - Make sure the file was not added to the Desktop Connector folder while in offline mode;
- In the local drive:
  - Allow time to sync. Review caching times above.

Editing and deleting files and folders

When experiencing unexpected behavior editing and deleting files and folders:

- Check that the file is not locked;
- Review if your permissions to the project folders remain the same;
- It is not possible to delete the Project Files folder via the connected drive;
- It is currently not possible to rename files stored in BIM 360 Docs via Desktop Connector;
- There are limitations related to moving and copying files – see Known issues and limitations - Copying and Moving files and folders.

Interoperability

There may be applications that cause Desktop Connector to not function as expected due to a conflict. The following tools may help you identify the conflicting application:

- The **Netstat** command helps identify if another application uses the same port as Desktop Connector.
    1. Right-click the Command Prompt and select Run as administrator and then click Yes;
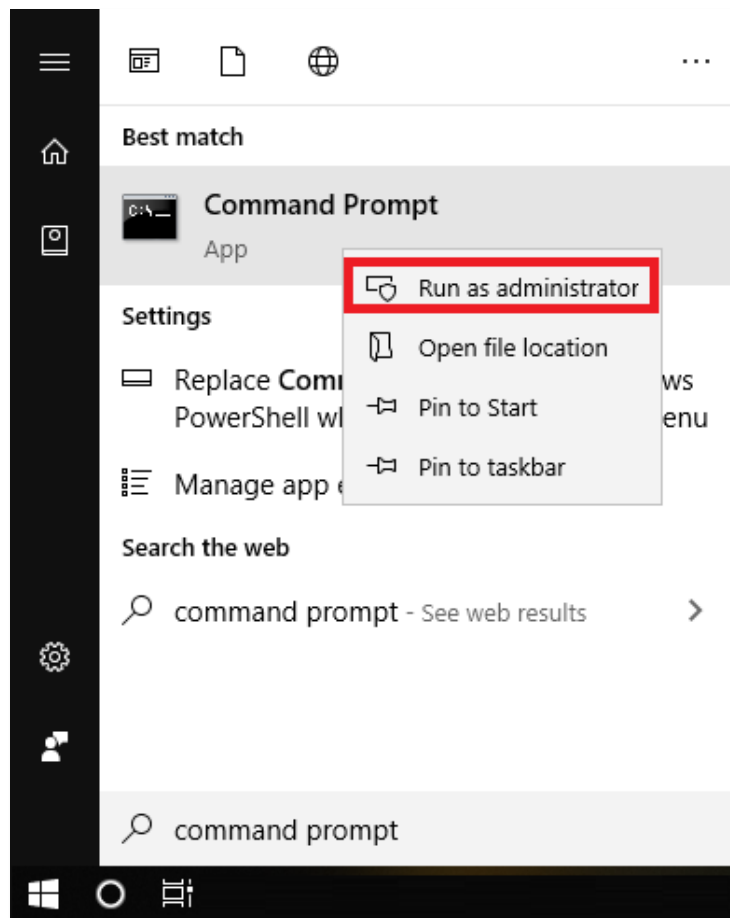
Run Command Prompt as administrator to use the Netstat command

2. Type **netstat -ab > c:\temp\netstatab.txt** and press Enter. This creates a netstatab.txt file in the *C:\Temp\ folder*;
3. Open the netstatab.txt file in a text editor such as Notepad and search for "DesktopConnector.Applications.Tray.exe" or port number (check port range 51001 - 51010). It should find something similar to:

   TCP   0.0.0.0:51001   NOVPC0SQ9ES:0   LISTENING
   [DesktopConnector.Applications.Tray.exe]

   If you can't find "DesktopConnector.Applications.Tray.exe", this means the service is not running and could be due to a conflict with another application.

- Microsoft's Handle sysinternals tool shows which files are open by which processes. To use it:
  1. Download and install the Handle tool;
  2. Follow step 1 above to run Command Prompt as administrator;
  3. Navigate to the directory where the Handle tool was extracted;
  4. Type **handle.exe net.pipe > netpipehandles.txt** and press Enter;
  5. Open the netpipehandles.txt file that is generated in the Handle folder and review it.

Once you find the conflicting application, disable or uninstall it and see if this resolves the conflict. You can then report the conflict to Autodesk and/or the conflicting application's manufacturer.

General troubleshooting techniques

If you are not sure why things are not going as expected, here are some general troubleshooting techniques to help you get Desktop Connector up and running.

Verify Desktop Connector status

The first step when troubleshooting general issues in Desktop Connector is to check what is the current application status. This can be verified in the Windows system tray icon:

Desktop Connector is starting up;

Desktop Connector requires an update. You must update to the latest version of Desktop Connector to continue using your connected drives;

Desktop Connector is online or you are not signed in yet;

Desktop Connector is in offline mode.

Display Desktop Connector custom properties

Once you open the BIM 360 connected drive, you will notice that the column names in Windows File Explorer are different from the usual columns.

It is possible to enable additional custom Desktop Connector columns that show files and folders properties specific to the connected drive, and this information is very useful when troubleshooting.

To enable these custom columns, right-click the column header and select the desired property to be displayed:
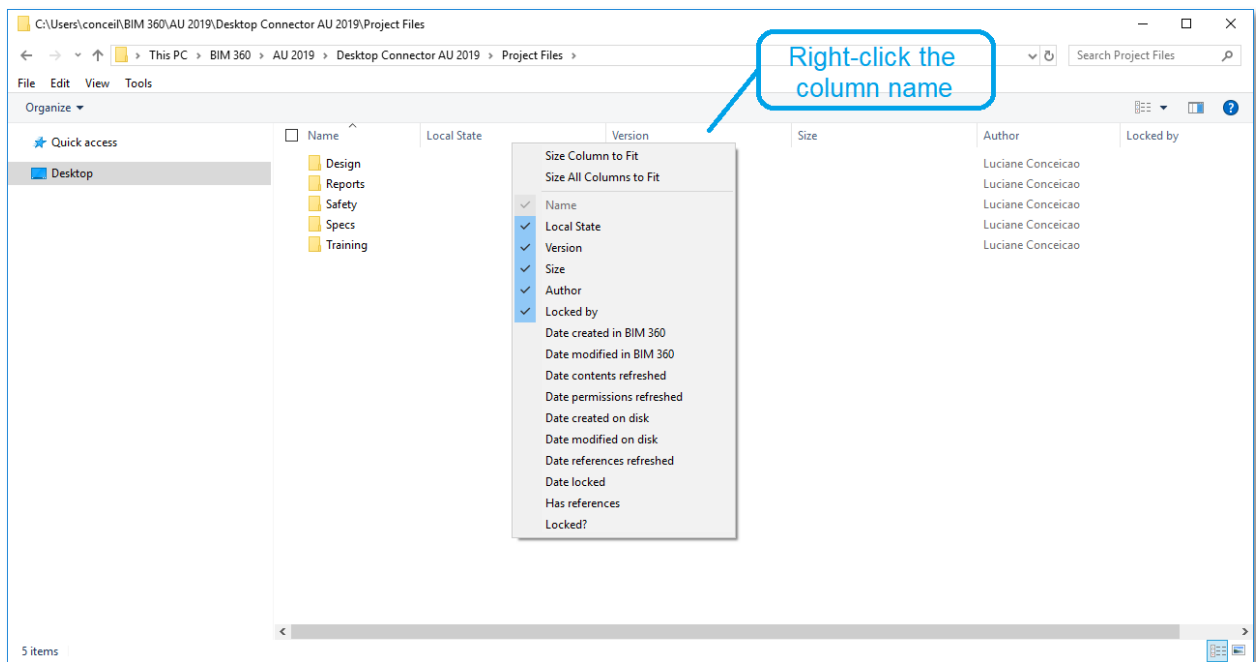
Enabling Desktop Connector custom columns in Windows File Explorer
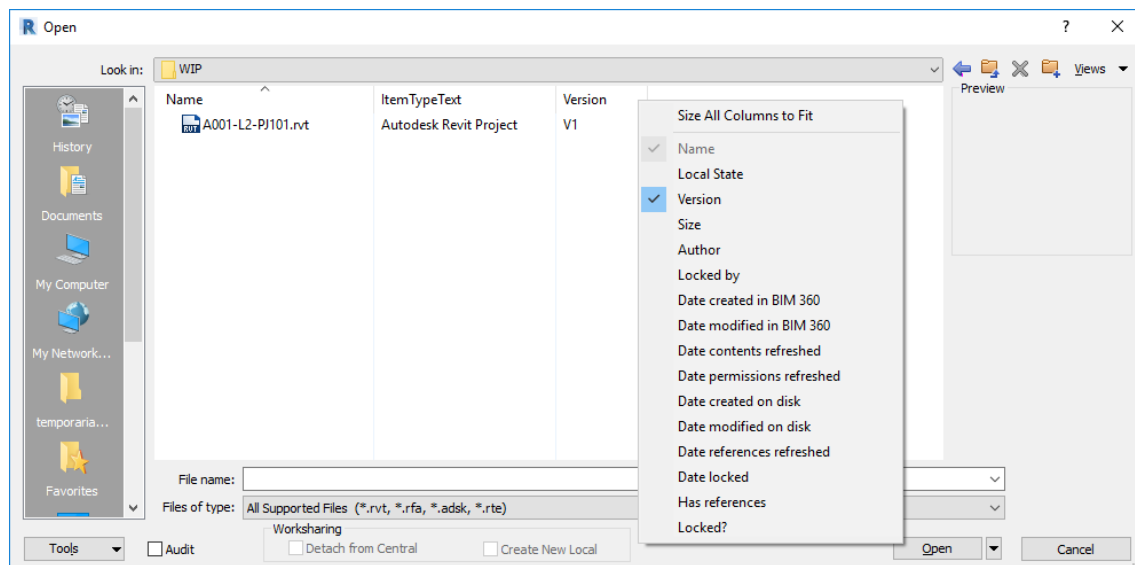
Enabling Desktop Connector custom columns in Revit Open window

Columns that can be displayed:

- **Name** - file name;
- **Local State** - shows state of files in the connected drive - see file state values below;
- **Version** - file version;
- **Size** - file size;
- **Author** - file author;
- **Locked by** - name of the user that locked the file;
- **Date created in BIM 360** - date the file was created in Document Management;
- **Date modified in BIM 360** - date the file was modified in Document Management;
- **Date contents refreshed** - date the folder contents were refreshed;
- **Date permissions refreshed** - date the folder permissions were refreshed;
- **Date created on disk** - date the file was created in the local drive;
- **Date modified on disk** - date the file was modified in the local drive;
- **Date references refreshed** - date Desktop Connector checked if the file has references;
- **Date locked** - date the file was locked;
- **Has references** - indicates if the file has external references;
- **Locked?** - indicates if a file was locked or not.

Review file properties

Checking file properties can give clues needed to resolve sync issues.
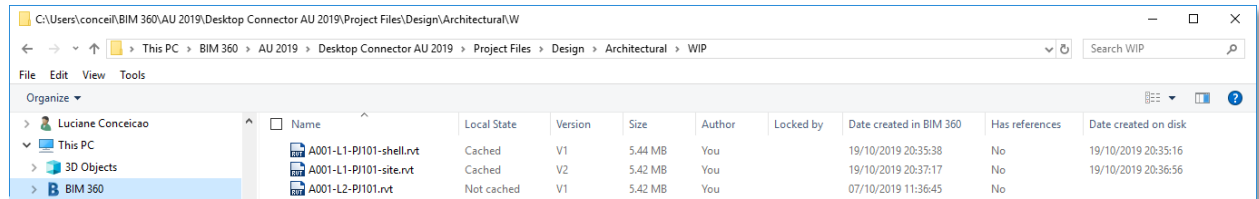
Check the file state

File state will indicate the state of the file in the local, connected drive.

Description of the local state values:
- o **New** - a new file version exists in the local drive and has never been uploaded. This state may happen just before changes are synced and also when Desktop Connector is in offline mode;
- o **Cached** - the file is cached locally and is up-to-date with the file in the cloud;
- o **Not Cached** - there is no local cache of the file, only a placeholder for the data in the BIM 360 project. Once the file is opened or downloaded it will be cached;
- o **Modified** - the file has been modified locally and the new version is not yet uploaded. This may happen in offline mode and also after trying to open and save a Revit Cloud workshared file via Desktop Connector (not a supported operation);
- o **Stale** - the local cached file is of an older version than the file in the cloud. Once the file is opened or downloaded it will be cached;
- o **Conflict** - the file was edited in the cloud and locally. The cloud version will be considered the most current. Once synced, the local version will be placed in the Recycle Bin and the cloud version will show as cached;
- o **Error** - there was an error obtaining the local file state.

Review file locking

When files are locked, it is possible to work on a local copy of the file, but these changes cannot be synced to the BIM 360 project. When the file gets unlocked, Desktop Connector will try to sync changes that were made while the file was locked and this may overwrite previous edits made by other users.

Compare the file version

Make sure you are working on the latest file version available in the project. This is easy to be checked. Log in to BIM 360 Docs via web browser and check the

file version in the project folder. Then, in Windows File Explorer, see if the version in the connected drive is the same. If it is not the same and the file is cached locally, refresh the window. If the file version is still not the latest and any changes you made are already synced, delete the local file (make a backup copy just in case) and allow it to sync again.

Confirm the file location

Check that the file you are working on is stored in the expected location. This can be very helpful when troubleshooting issues with externally referenced files.

Verify pending actions

The Pending actions window shows syncing activities that are performed by Desktop Connector.

To access the Pending actions window, right-click the Desktop Connector "A" icon in the Windows tray and select **Pending Actions**:
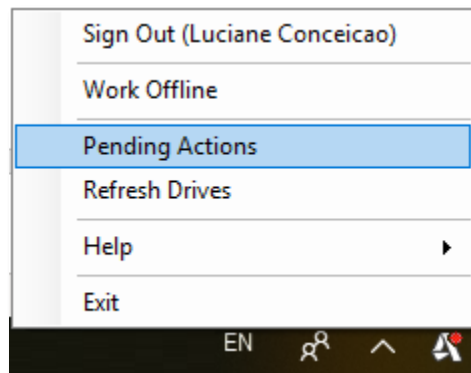
Open the Pending Actions window

When activities are being processed or pending, an entry is displayed in the list with details about the state, path and other information that you can use for troubleshooting. When a sync action is performed successfully, it disappears from the list.

When activities get stuck, they will remain in the list for further action from you, and the Desktop Connector icon will show a red dot:

In the Pending Actions window, select the action on the left pane to show its details on the right pane:
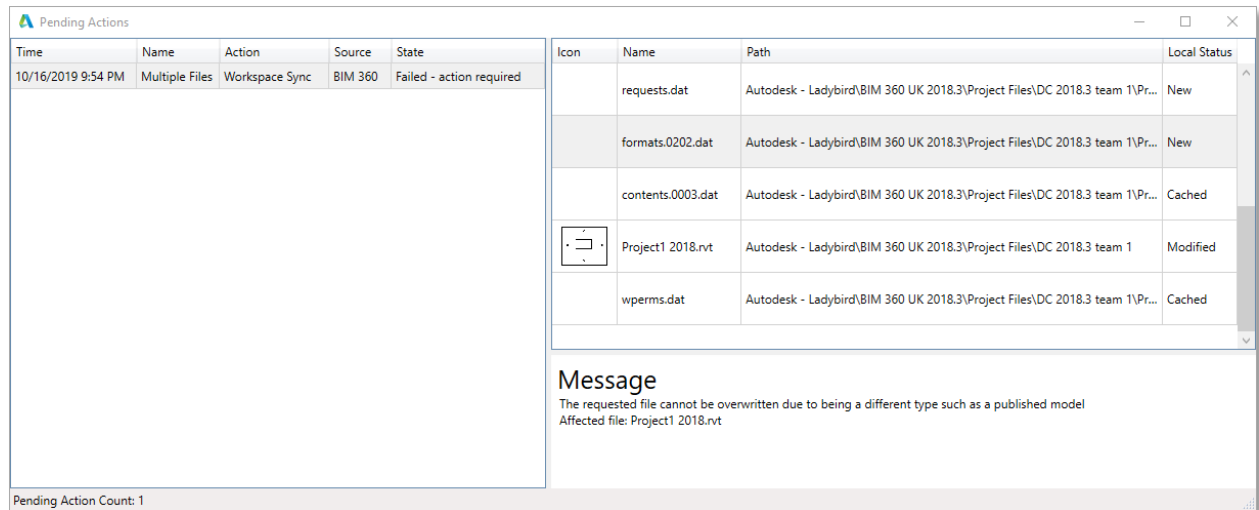
Pending Actions window shows a failed activity that requires input from the user

Right-clicking the action notification on the left pane opens up a menu with the following options:
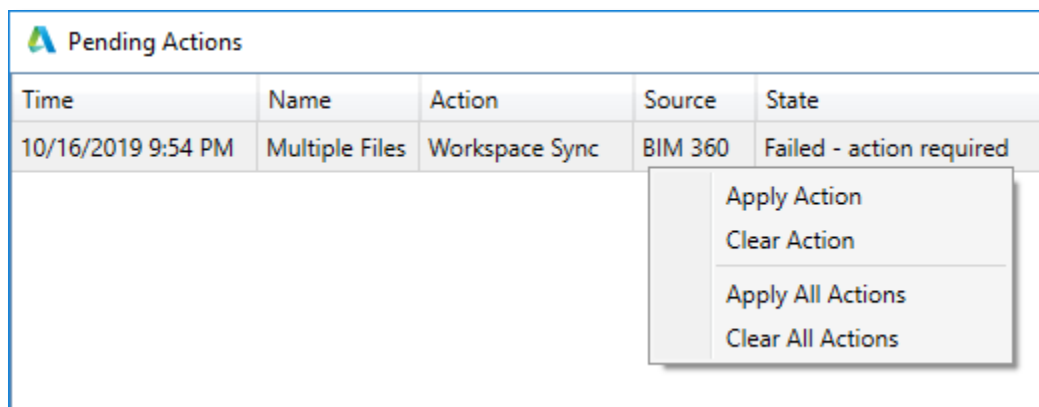
- Apply (all) action – this option allows you to retry the sync;
- Clear (all) action – this option removes the action from the list and the sync is canceled.

Right-clicking the action notification on the right pane opens up a menu with the following options:
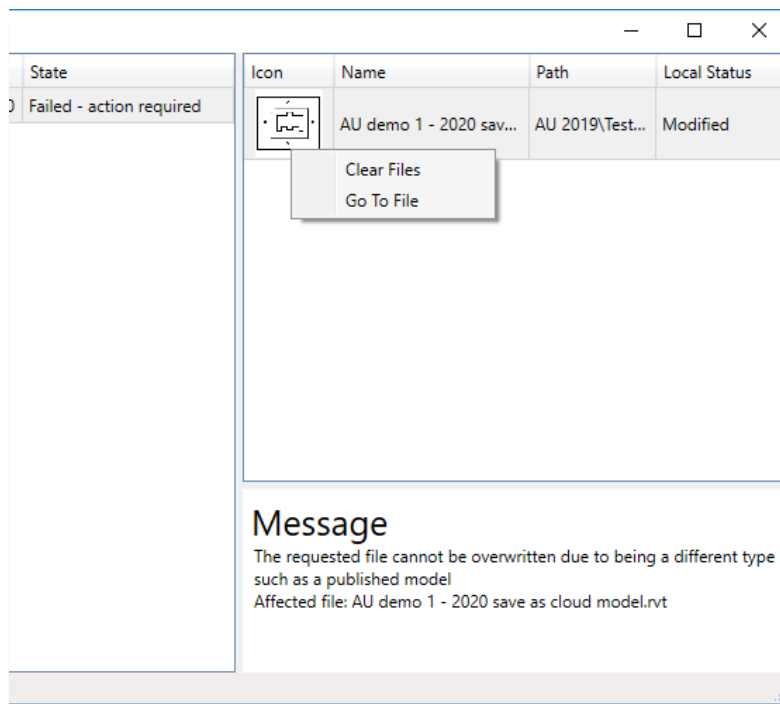
- Clear Files – this option removes the action from the list and the sync is canceled;
- Go To File – this option will open the file location in Windows File Explorer.

If the pending action is not cleared, you will receive follow-up notifications:
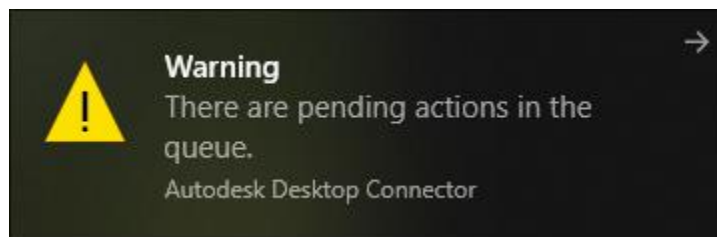
Desktop Connector will display warnings when pending actions require user intervention

Clear cached files

Clearing cached files may help when resolving sync issues in Desktop Connector. Follow the steps in Deleting local files.

Restart Desktop Connector

Sometimes, restarting the application clears any conflicts. Sign out if you can, exit Desktop Connector, and sign in again.

Sign out

Signing out of Desktop Connector and signing back in may refresh any changes to your account, so try this alternative for resolving account related conflicts.

You may have more than one Autodesk user account or multiple users may use the same computer. Desktop Connector is not supported when used by multiple accounts in the same machine. To resolve user account conflicts, sign out of all Autodesk applications. Then, sign back into Desktop Connector with the desired user account. You may want to clear cached files. Follow the steps in Deleting local files.

Review the diagnostic logs

If an investigation of sync operations is required, it is possible to create diagnostic logs. The diagnostic logs are compressed into a ZIP file that may contain information about Desktop Connector and the system, depending on the settings you choose for the logs.

To generate diagnostic logs:

- Choose the content you want to review in the log files:

    1. Press Shift + right-click on the Desktop Connector "A" icon in the tray and select Help, and then Diagnostics Mode:
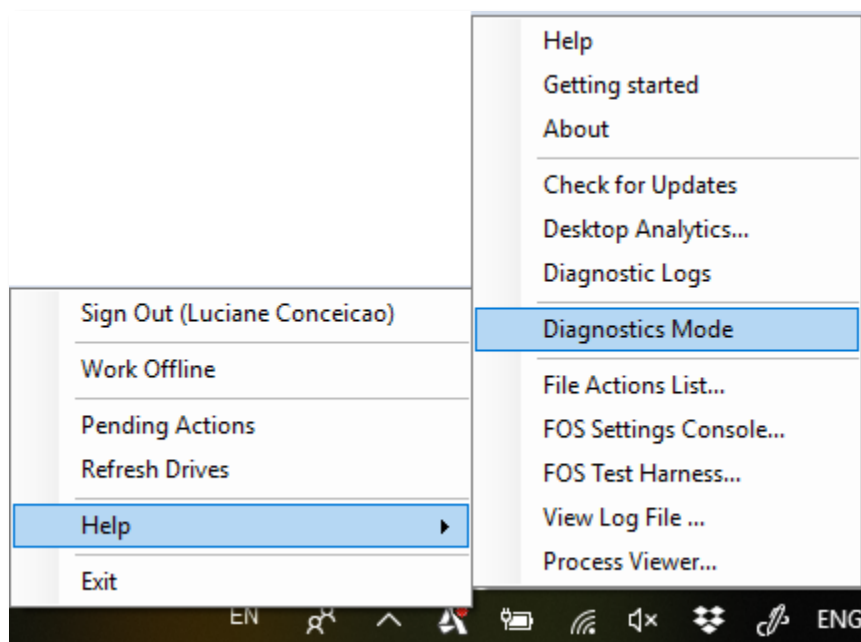
2. Select the log content for Desktop Connector and File System Monitor:
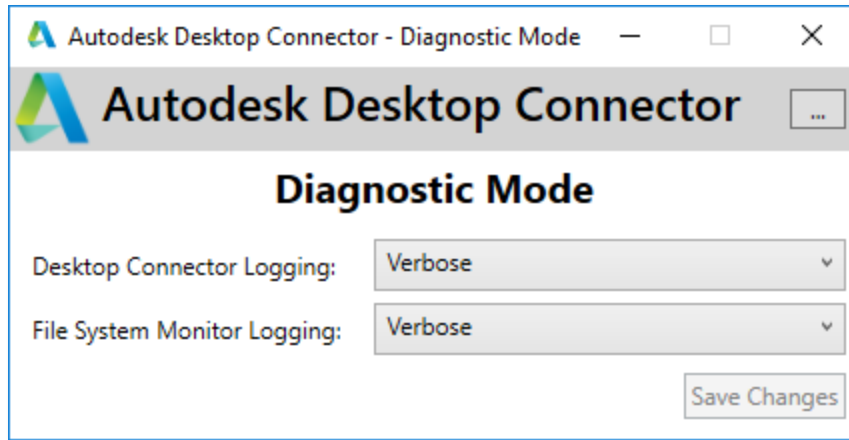
3. Select "Verbose" for a full log (larger file), or filter by any of the available options:
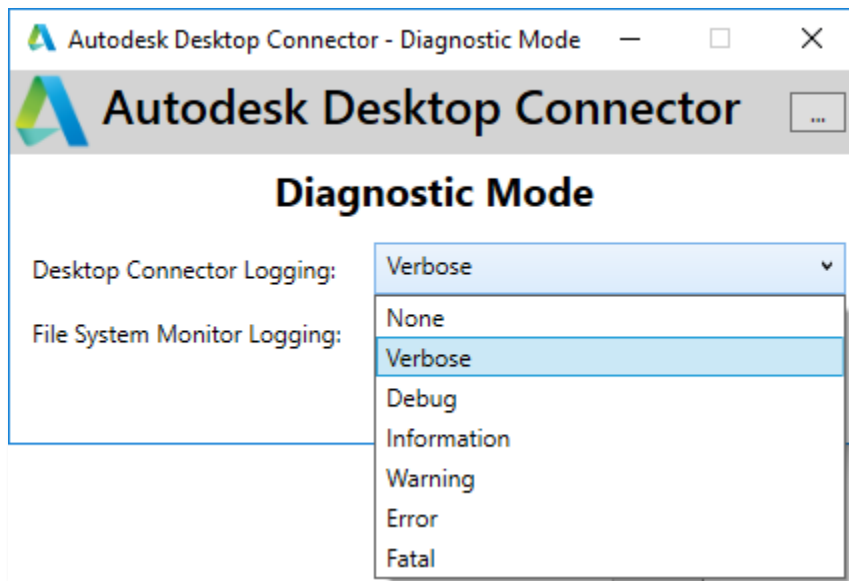
4. Click on Save Changes and close this window.

• Generate the diagnostic logs:

1. Perform the steps that caused the issue, preferably from scratch;
2. Right-click the Desktop Connector "A" icon in the tray and select Help > Diagnostic Logs:

3. The Diagnostic Log Files window will display; click "Open File Location" to access the folder where the log files are saved:
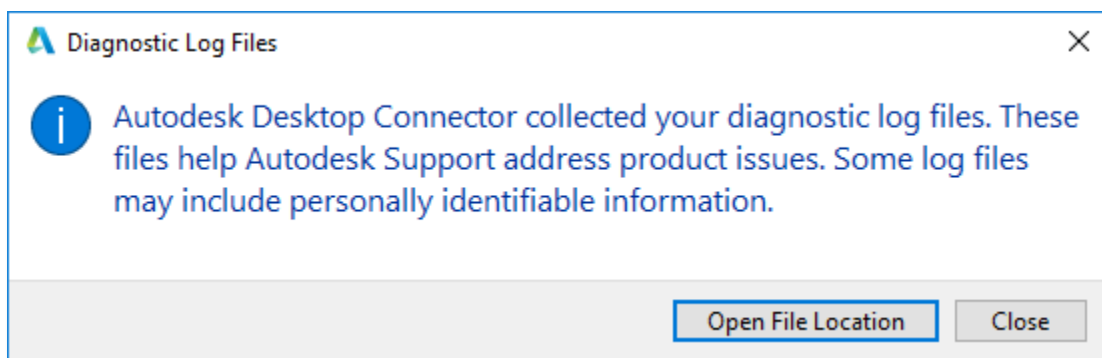
Diagnostic Log Files dialog displays when the log file is generated

Note: You may want to set the logging level back if you chose Verbose, as this option may generate large files that use up your disk space.

The default path for storing log data is:
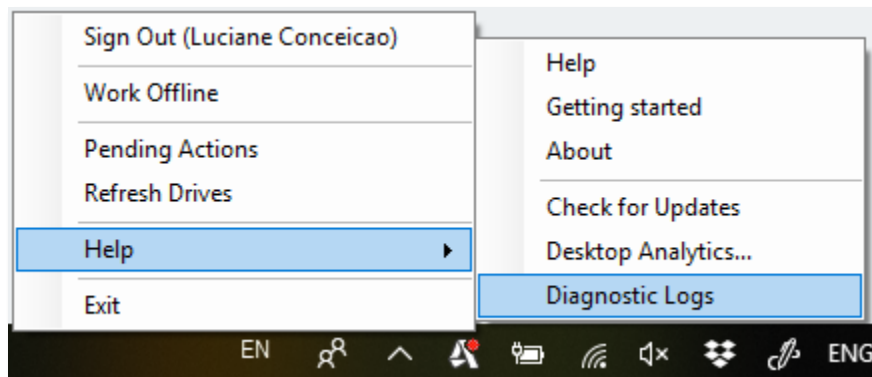*C:\Users\<username>\AppData\Local\Autodesk\Desktop Connector Diagnostics*.

- Review the diagnostic log files:

    1. Extract the ZIP file and double-click the *ADSKCDX.evtx* file found at
       *C:\Users\<user name>\AppData\Local\Autodesk\Desktop Connector
       Diagnostics\<folder name>\EventLogs*;
    2. The Event Viewer window will open and you can investigate events that are
       saved in the log:
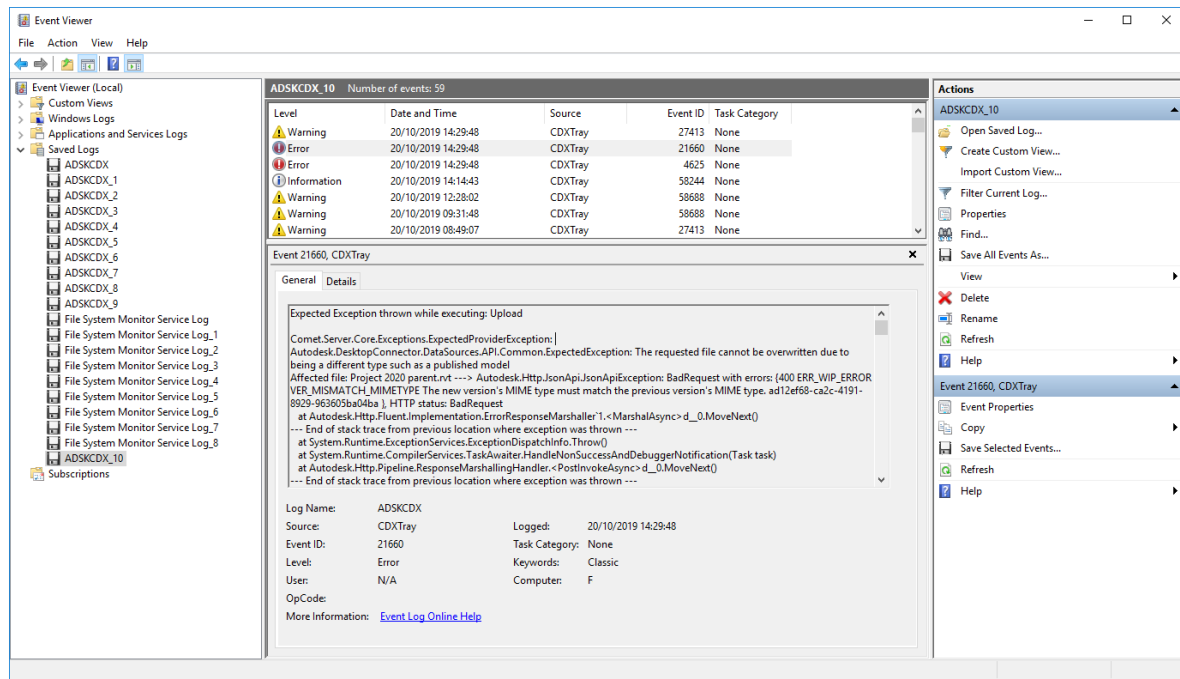
ADSKCDX.evtx open in the Event Viewer

3. You can also review the file system monitor service log by opening the *File System Monitor Service Log.evtx* saved in the same location as the *ADSKCDX.evtx* file.
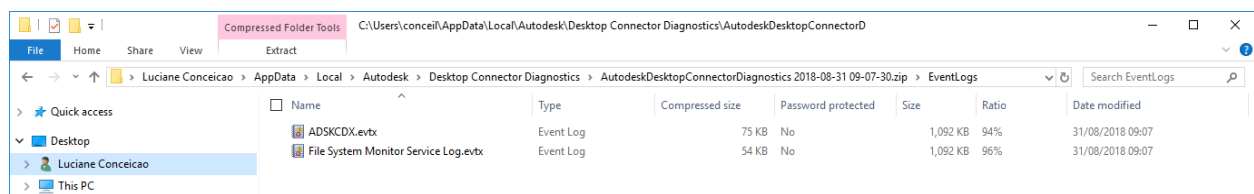
Diagnostic Logs

System check-up

- Update Windows and/or Microsoft .Net Framework;
- Update the graphics card drivers;
- Update the authoring application – keep your Autodesk applications up-to-date. The [Autodesk Desktop App](#) can help you with this task;
- Try with another Windows user, preferably one that has local admin permissions;
- Update Desktop Connector. If you did not receive a notification that a new version has been released, download it from the [Desktop Connector Release Notes](#) page;
- If you notice unexpected behavior since the last Desktop Connector version was installed, uninstall it and downgrade. Previous versions can be obtained from the [Older Releases](#) page;

Reinstall Desktop Connector

Some reinstall suggestions that may be of help:

- Reinstall Desktop Connector from Windows Apps & Features;
- Uninstall Desktop Connector from Windows Apps & Features and install again, preferably with a fresh download and recent version of Desktop Connector;
- If a simple reinstallation of Desktop Connector is not enough, try a clean installation.

    To perform a clean reinstallation:
    1. After uninstalling the application via the Control Panel, delete the following folders:
        - C:\Users\<USERNAME>\AppData\Local\Autodesk\Desktop Connector
        - C:\Users\<USERNAME>\AppData\Local\Autodesk\Web Services\DesktopConnector
    2. Then delete the following registry keys (it is recommended to first backup the system registry before deleting or modifying any keys):
        - HKEY_CURRENT_USER>SOFTWARE>Autodesk>Autodesk Desktop Connector
        - HKEY_LOCAL_MACHINE>SOFTWARE>Autodesk>Desktop Connector
    3. After the above items are removed, reboot the computer before reinstalling the application;
    4. Download the installation file again, install the application and restart the computer.

Review connectivity

Anti-virus, firewall or other network settings may block elements that are needed by Desktop Connector.

Desktop Connector TCP communication between its components on "localhost" uses port range 51001 – 51010.

See documentation in the links below for further details and instructions on how to troubleshoot connectivity issues:

- How to set up antivirus (AV) exclusions to improve stability and performance of Autodesk software
- What IP addresses, ports, and domains are used for BIM 360 services?
- Desktop Connector Install fails
- Proxy server settings changes required to unblock Autodesk 360 services

Visit the Health Dashboard

It may happen that BIM 360 services are unavailable at times. To check service availability, visit the Health Dashboard and look for the BIM 360 Docs state.

Known issues and limitations

This section covers some of the known issues and limitations with Desktop Connector. Most of them are covered in the Desktop Connector Support page and the AKN website.

BIM 360 Docs limitations

Any BIM 360 Docs limitation is also a limitation for Desktop Connector for BIM 360. Here are some examples:

- Maximum number of document versions is 10,000;
- Folders can have up to 10,000 items. This includes contents of the recycle bin;
- PDFs can have up to 20,000 pages;
- Desktop Connector for BIM 360 supports the same file formats as BIM 360 Docs. Review the current supported and unsupported file types in Document Management in the Supported Files page.

Microsoft Windows characters limitation

When working with complex folder structure, be aware of Microsoft's file path length limit of 260 characters for files and 247 characters for folders. Desktop Connector does not support file paths longer than 244 characters.

When you try to upload files that are located in a folder structure that exceeds the characters limit, you will receive the following notification in the Pending Actions window and the file will not be copied to the connected drive:

Message
The specified path, file name, or both are too long. The fully qualified file name must be less than 260 characters, and the directory name must be less than 248 characters.

Message displayed in Pending Actions when syncing long paths and file names

To resolve this issue, reduce the name of files and folders, or place the file closer to the parent folder.

Renaming files

Renaming files in the connected drive (local BIM 360 drive) is not possible. Do this via web browser. It is possible to rename folders in the BIM 360 connected drive.

Copying and moving files and folders

It is not possible to copy and move files and folders from a folder in the connected drive to another folder in the connected drive. Do this via browser in Document Management.

It is possible to copy a **file** from the connected drive to a local folder by drag & drop or copy and paste. From the local drive, it is possible to drag & drop and Copy and Paste to the connected drive. Moving files from the connected drive to a local folder is not possible – it will trigger the Copy command instead of Move.

It is not possible to drag & drop a **folder** from the connected drive to a local folder, but it is possible to select a folder on the right-side panel in Windows File Explorer and use Copy and then Paste Shortcut. A shortcut is created in the target folder, and the shortcut takes to the folder in the connected drive.

You can download multiple files and folders as a ZIP file from Document Management using the **Download source files** option in the web browser:
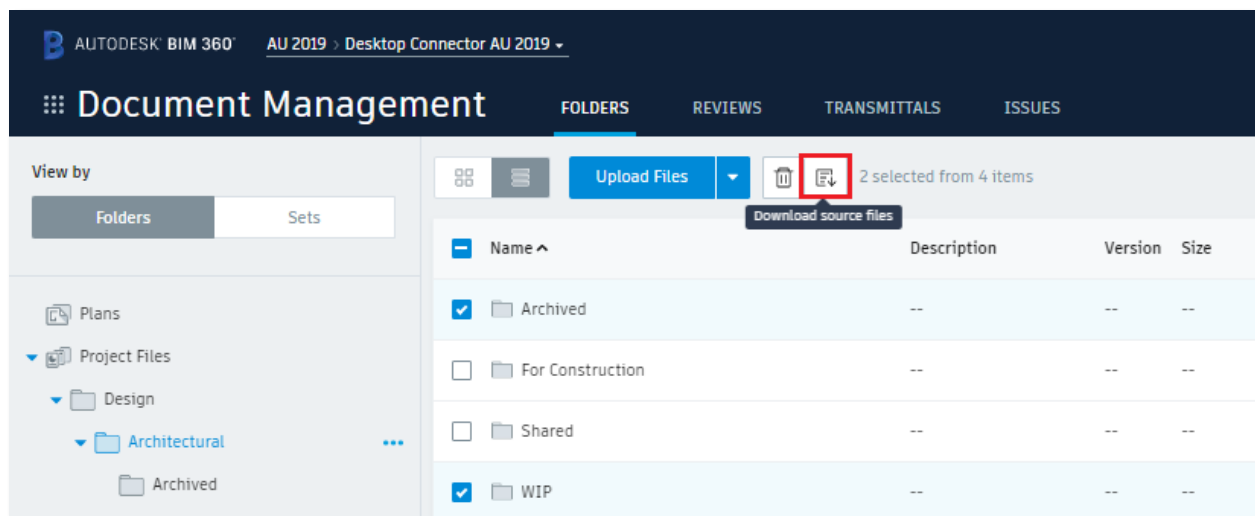
Use Download source files option to download multiple files and folders

Another alternative is to create a **Transmittal**, which is a ZIP file with the content selected in the Document Management web interface. Review the Transmittals topic in the BIM 360 Docs help page for more details.

Deleting folders

It is not possible to delete the Project Files folder via the connected drive.

Supported workflows

Always use Desktop Connector via Windows File Explorer and the Open, Save, and link methods that are available in compatible applications. Desktop Connector is not supported when invoked via command line.

Progress bar

The progress bar that displays in the Transferring files notification when uploading or downloading files via Desktop Connector does not indicate syncing progress. It reports on local disk copy progress. Once this process is finished during file upload, another process starts in BIM 360 Docs, and only then the file will be available for collaboration.
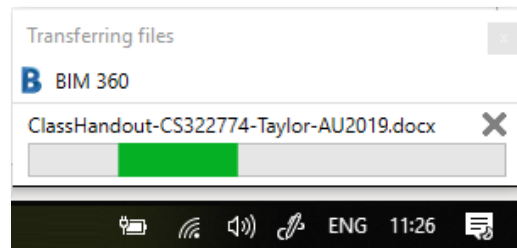
Revit cloud workshared models

Although you can open and link Revit cloud workshared models with Desktop Connector, it is recommended that you keep using the cloud worksharing workflow throughout the project. Open and link Revit cloud workshared models with the cloud collaboration tools that are available in Revit when you have a BIM 360 Design entitlement. Mixing workflows might have unexpected results and is not supported.

Also, remember that Revit worksharing is not supported using a central model saved into the BIM 360 connected drive. While you can save a worksharing-enabled model into the BIM 360 connected drive, this method is not supported when using it as a central model for multi-user workflows. This workflow is also not recommended because of the numerous _backup_ folders that will sync back and forth.

When opening a Revit cloud workshared model with cloud workshared links via Desktop Connector, you may receive a "Failed to open document" error. This happens when the cloud workshared links are not published to the latest version, and BIM 360 Docs packs the files as a ZIP file (although the file still shows an RVT extension). Rename the RVT file to ZIP and extract it. The parent and linked files can then be extracted.

File linking

Although it is possible to link different file types via the BIM 360 connected drive, only DWG files are fully supported for file linking operations.

Multiple users

Currently, running Desktop Connector by multiple users on the same machine is not a supported workflow.

Installing updates

In order to install Desktop Connector updates, the user performing the install needs to have admin permissions. This means that it is not possible to use a group policy to force Desktop Connector to auto-update.

Learning Objective 4: Best practices and recommendations

Plan ahead

Following the suggestions below will help you have a great experience with Desktop Connector for BIM 360.

BIM 360 Docs set up

Use Desktop Connector to upload project folders to your BIM 360 Docs project. Note that member permissions need to be set in Document Management via web browser.

Here are some other suggestions to avoid issues later in your workflow:

- Review BIM 360 Docs members permissions;
- Keep it short. Save your files and folders with short names to avoid hitting the Windows character limitation;
- Avoid special characters and periods (especially at the end of project names);
- Avoid duplication of project and folder names to prevent confusion;
- BIM 360 account names must be unique.

Link files from Document Management

Instead of linking files from your local disk or a server, upload your files to Document Management and use Desktop Connector to link those files from the cloud location.

This allows other users to access the linked files, as they will be stored in the BIM 360 Docs project, accessible to the members with appropriate permissions.

It is also recommended to avoid nested links with file types other than DWGs. Whenever possible, link files directly into the parent file.

Opening Revit files

Opening Revit files requires attention. This is because Revit allows you to save your models locally (including the BIM 360 connected drive) or at a server, but also allows you to save models to BIM 360 Docs via **cloud worksharing**.

Both options to open files have the same BIM 360 icon design in the Open file dialog in Revit 2018.3 and 2019. Make sure you use the correct icon:
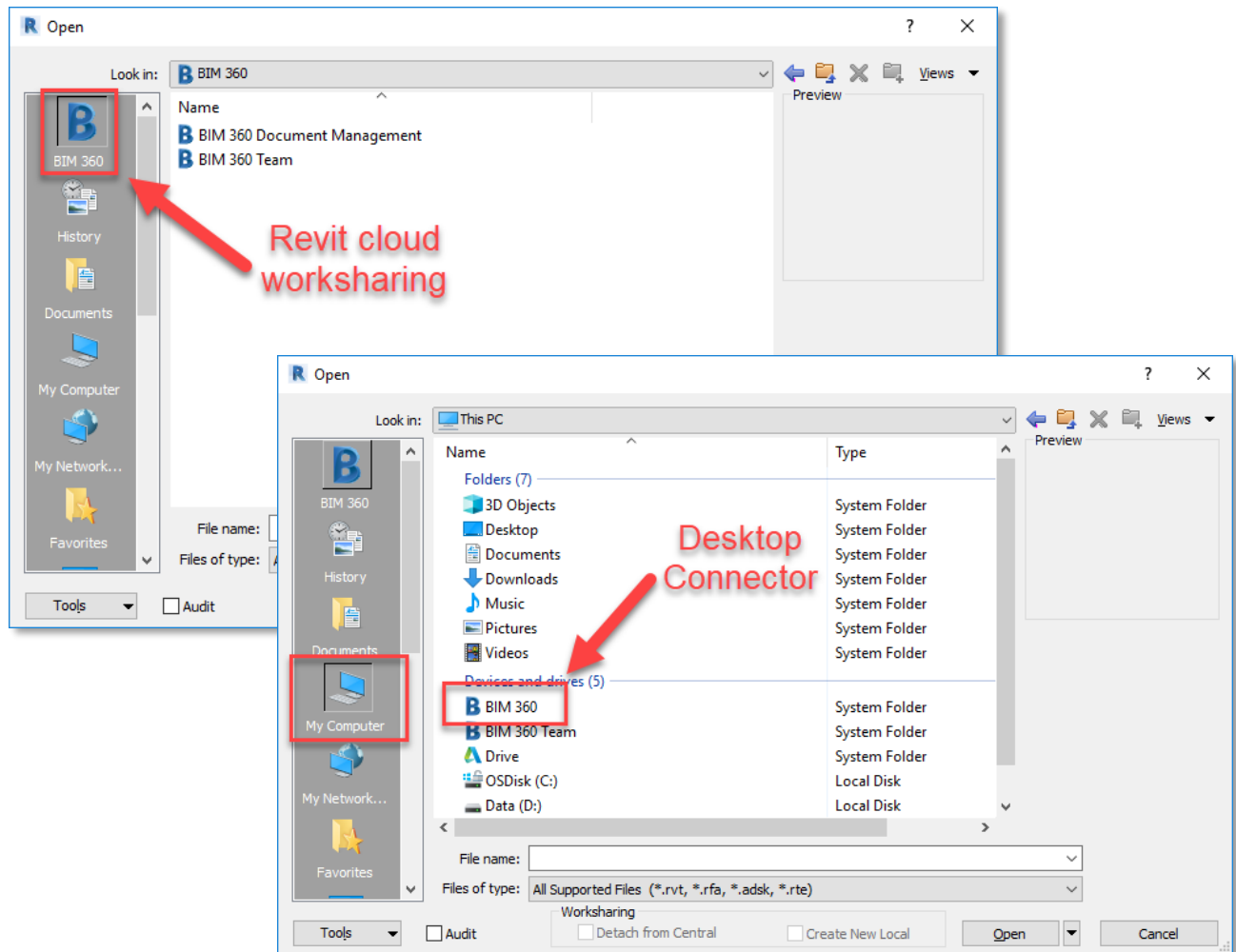
Revit 2018.3 and 2019 Open dialog

Revit 2019.1 and 2020 have a new Home page. You can open models via Desktop Connector by using the Open dialog. Revit cloud workshared files are available from the left panel > 🅱 icon, and any BIM 360 projects you can access will show in the list:
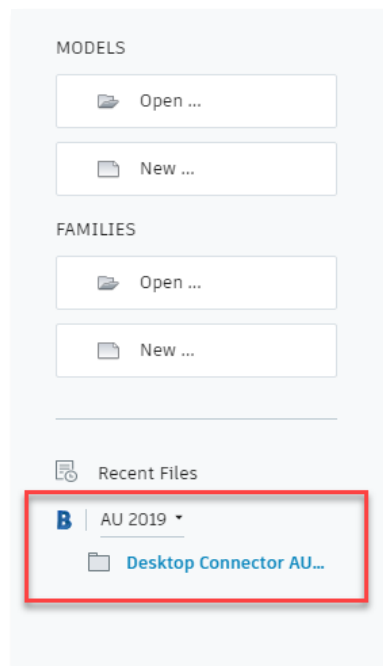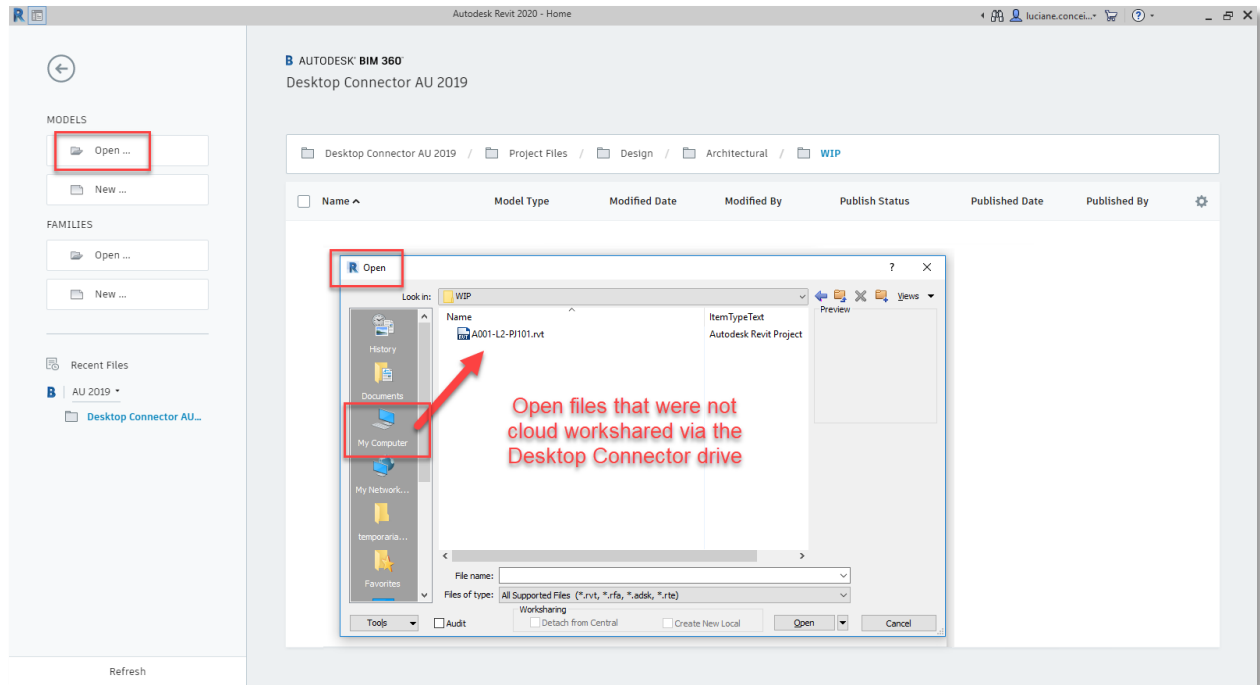
Open Revit cloud workshared models in Revit 2020 Home page

If no Revit models were cloud workshared, then the file list in the right panel will be empty:
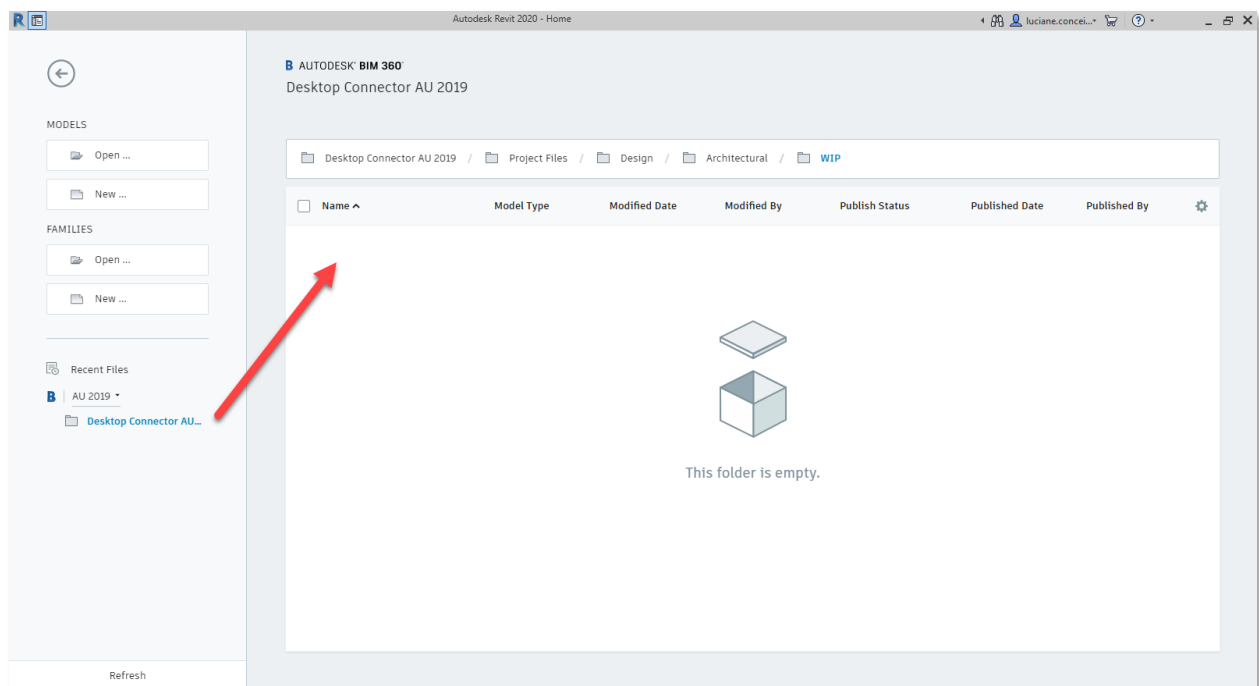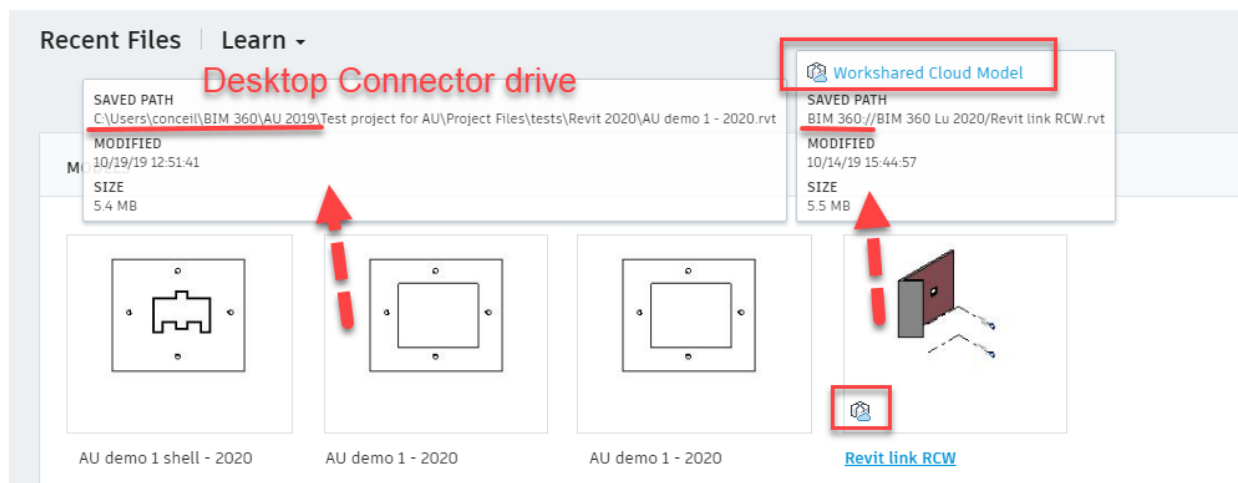

Revit 2020 Home page

But if there are Revit files in the Desktop Connected drive, then they can be accessed via the Open dialog:

Use the Open dialog to access your connected drive

It may be necessary to download linked files first before opening them in Revit. Review how to manually download files.

In the Recent files list, you can identify if a Revit model is saved in the connected drive by checking the file path:

Revit 2020 Home – Recent Files

Files accessed by Desktop Connector will show path *C:\Users\<user name>\<account name>/<project name>/<folder path>/<file name>.*

Revit cloud workshared models will show the cloud icon ⌘ , will be marked as Workshared Cloud Model and the path will be *BIM 360://<account name>/<project name>/< file name>.*

Review Working with Revit files for other details.

Communication

In order to avoid unexpected results while working in a team, communication is key:
- Discuss and plan for file locking;
- Agree on file updates when a team member works offline;
- Make sure the team is aware of the recommended file linking procedure.

Maintenance

- Check for free disk space;
- Keep Desktop Connector and your system up-to-date;
- Install updates in a few machines before deploying in large scale.

For that extra help…

Autodesk Knowledge Network - AKN

Visit the AKN website for learning materials, product documentation, technical articles, and troubleshooting documentation.

Forum

The BIM 360 Support Forum has answers to many issues encountered by BIM 360 users. If you can't find an answer to your current issue, why not ask in the forum so that other users like you can offer their help and opinion?

Ideas website

Do you have a particular request for a new tool or functionality for Desktop Connector or BIM 360 Docs? This is where you should go: BIM 360 Ideas page. Search for existing requests and check if they have been approved by BIM 360 product managers. If you can't find your request, why not create one? You can also vote for ideas that could help you, and product managers will consider these with closer attention.

Learn BIM 360

Visit the Learn BIM 360 page to access free BIM 360 online courses.

Contact technical support

If you are still stuck, please reach out to the Autodesk technical support team. We will be happy to help you. You can reach us via the Contact Support page. If you have a special technical support contract, follow the guidelines that apply to you, by reviewing your terms and conditions.

Autodesk University classes

Visit the Autodesk University website to access class recordings from previous years, such as Docs in Construction: Connecting the Office and Field with BIM 360 Docs.

And a little reminder…

Desktop Connector and BIM 360 Docs are being improved constantly. The information in this document is very likely to change with new releases. To keep up-to-date, review the following pages:

- Desktop Connector Release Notes
- BIM 360 Release Notes