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WHITE PAPER

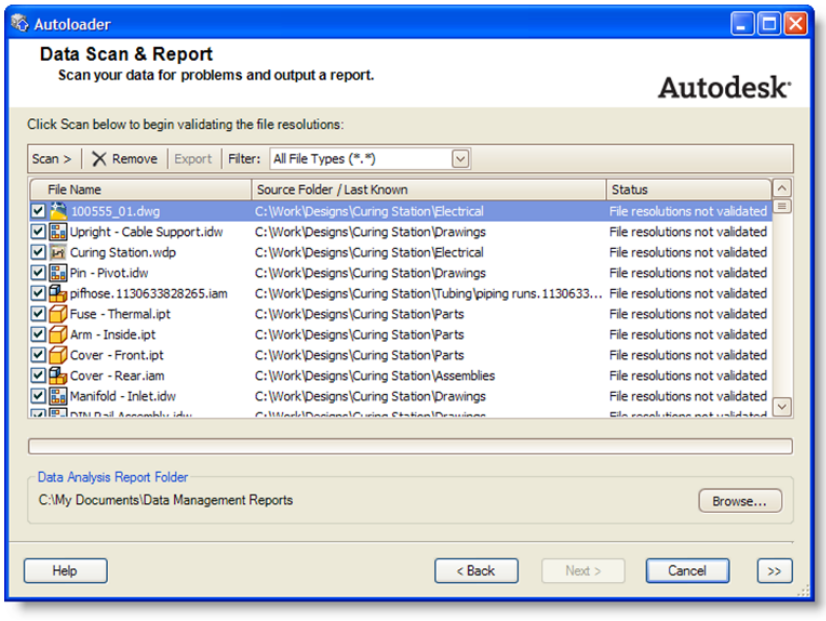
Best Practices for Loading Autodesk Inventor Data into Autodesk Vault

The first item to deal with during implementation will be the cleansing and loading of data. To facilitate this clean up in the most efficient manner, the following steps and tools should be leveraged.

The following process uses a “post-process” mentality with regards to cleansing the data. The powerful tools in Autodesk® Vault software will be used to assist in cleaning this data once it is in the vault. This means doing a minimal amount of work outside of Vault in terms of cleaning the data. We can then leverage the tools that Vault provides to complete the cleanup process.

There is not a single method to suit everyone. A combination of different techniques may be required to get data clean and ready for use by other consumers. However, the first task is loading the data with clean and valid “file references” or links. Without this, you cannot leverage the power of Vault.

To validate these links, we will leverage Autoloader, a utility provided with Autodesk Vault and Autodesk® Vault Manufacturing .



Autodesk®

Autoloader

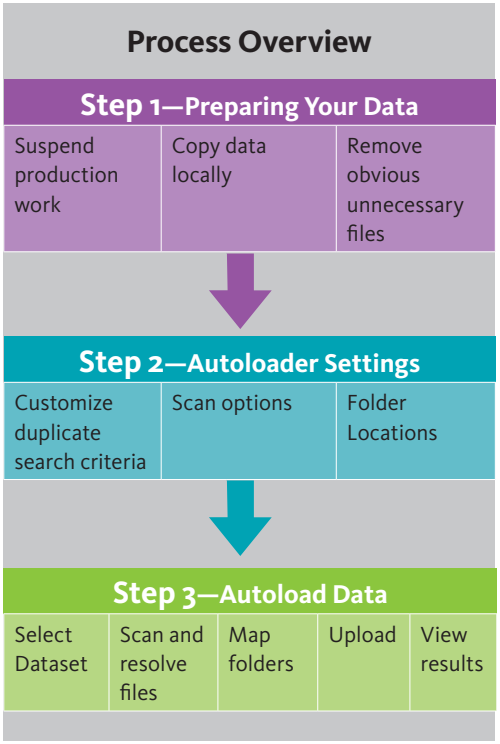
Autoloader is a best practice-based tool that increases the efficiency of loading data into the vault. It is designed to produce clean, reliable results when loading data in a format that allows the vault to work most efficiently in the long term. While there are many ways to set up Vault, Autodesk recommends using this tool to perform your initial data load and, upon completion, leverage its resultant folder structure and Autodesk® Inventor® software project file for all of your work.

Autoloader's main benefit is to help users identify problems with broken links in their Inventor data and in turn upload a set of data that is guaranteed to resolve properly.

To be successful with Autoloader, we recommend the following:
Default Folders—Be sure to honor the default folder structure as it is defined out of the box. There are ways to change the default folder names; however, we recommend that they remain the standard *Content Center Files*, *Designs*, and *Libraries* (for the English version of the software). These folders are designed to best leverage Autodesk Inventor and Autodesk Vault software. Keeping these folders as they are out of the box provides the best long-term results.

If your company and process require any other structure, simply create subsequent locations under the *Designs* folder. Consider *Designs* as the root of the vault moving forward.

- **Adding Data**—When adding data to the vault, the following order will bring the highest level of efficiency and success:
  - **Libraries** —Scan and add libraries first. If all library files add and resolve on their own, this greatly increases the likelihood of a smooth upload for subsequent data.
  - **Adding the First Project**—After the libraries are added, the first project can be imported into the vault. If a single project encapsulates many "logical" projects, the "excluded from upload" feature of Autoloader can be used to reduce the amount of data added at one time. This procedure is covered in a later section.
  - **Subsequent Projects** —Repeat the previous process until all projects have been loaded cleanly into the vault.
- **Inventor Project Types**—As a final note, remember that any Inventor project type (Single User, Vault, Semi-Isolated, or Shared) can be used with Autoloader. Autoloader automatically cleans up and removes any additional paths that were supported in these project types and consolidates them into a new, single Inventor project.



Step 1: Preparing Your Data

There are a few best practices to get your data loaded fastest. Usually you want to upload either all your data or a complete project when making the transition to Vault. Loading production data means that you need to perform this operation when no one is working on these files—possibly an evening or a weekend depending on how much data you have.

Copy all of your project data from its current file server location to your best performing workstation. If you need to change your Inventor project files to get your data to resolve, then do so before loading your data. Having all your data local ensures you the best performance.

Copying your data from its original location also permits you to manipulate the data while keeping a backup of these files in the original server location for security. To ensure correct file resolution, all library locations should be copied locally and any mapped network drives disconnected to ensure local copies are resolved.

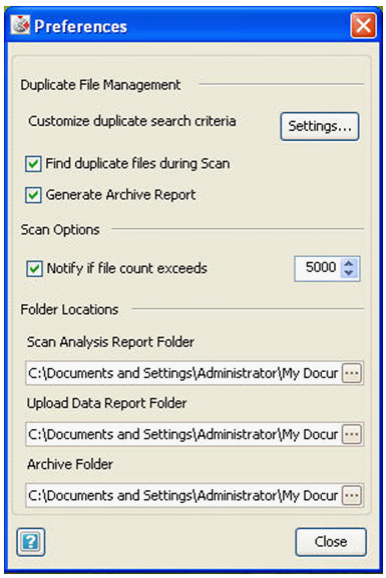
As you are copying this data locally, ensure that users aren't making changes to the original data at the same time. Make sure you can accomplish your goal by performing several test uploads before you perform the final one.

Simple steps can also be taken here to reduce the volume of files to be scanned in the pre-checks by removing unwanted files, including all "Old Versions" folders and common auto-generated files such as *.bak*, *.err*, *.log*, *.db*, and *.plt* files. Obvious duplicates can be removed at this stage, such as entire replicated folders or copied assemblies, but note that duplicates will be addressed as part of the Autoloader file scan in the following sections.

Note that Autodesk® Vault Workgroup, Autodesk® Vault Collaboration, or Autodesk Vault Manufacturing users intending to leverage document management functionality should configure default lifecycle states, revisioning schemes, categories, and category rules, and test these prior to committing to any bulk loading operations.

Step 2: Autoloader Settings

Prior to scanning your dataset, the Autoloader settings need to be configured to specify the report locations, scan file warning threshold, and file duplicate preferences. This dialog is accessed from the Preferences button in the bottom left of the Autoloader screen.



2.1 Customize Duplicate Search Criteria

Autoloader 2010 now permits the user to archive duplicates during the scan. Based on the duplicate criteria, files can be removed from the scanned file set and placed in an Archive folder. To search duplicates, ensure the "Find duplicate files during scan" checkbox is selected. Click Settings to modify the file duplicate criteria.

First decide how to identify duplicates in order to differentiate what are simply files with the same name and files that are exact duplicates of one another.

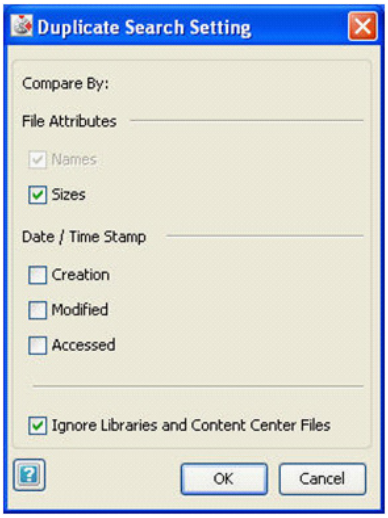
By adding criteria such as file size or created, modified, and accessed dates, you can better identify exact matches.

You can also search on and archive these exact duplicates initially, and then revise your settings to search on files just with the same name. This process can be used to create a work list to compare and decide which files should be retained and which should be renamed or removed.

It is possible that library or legacy Content Center Files may contain some duplicates. You can skip these locations during the scan using the setting on the left.

To see a report of duplicate archiving, select the relevant checkbox on the main scan settings dialog.

Note: If you are intending to load from more than one location, each Autoloader install must have its settings modified to suit.



2.2 Scan Options

For better performance, restrict the total number of files added per scan based on the complexity of the dataset, server capabilities, and, if applicable, network speed. The default warning level (where the user is alerted to excess file numbers) is set to 5,000 files, which is a good general guideline. If, however, you are intending to load the data with visualization files, this maximum number needs to be substantially reduced.

2.3 Folder Locations

Scan Analysis Report Folder—This location holds the results of the initial file scan prior to uploading. This report should be retained as a work list in the event that files during the scan are excluded in order to proceed with the upload.

Upload Data Report Folder—This location holds the final upload report. This report should be checked for errors in the process upon completion of the data loading and retained as a record of the initial file upload.

Archive Folder—This location is where the selected duplicates found during the scan are archived. These files should also be reviewed and reloaded where applicable.

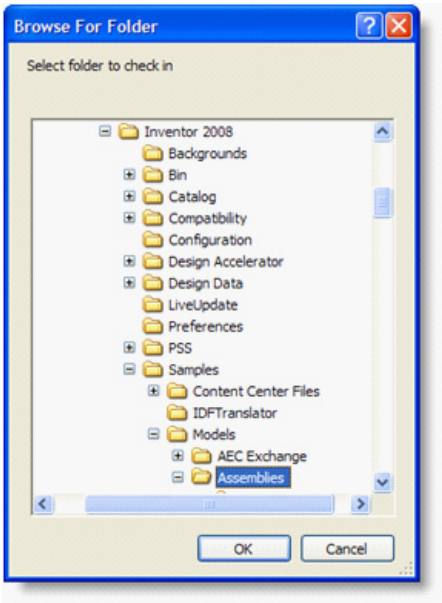
Step 3: Autoload Data

This process:

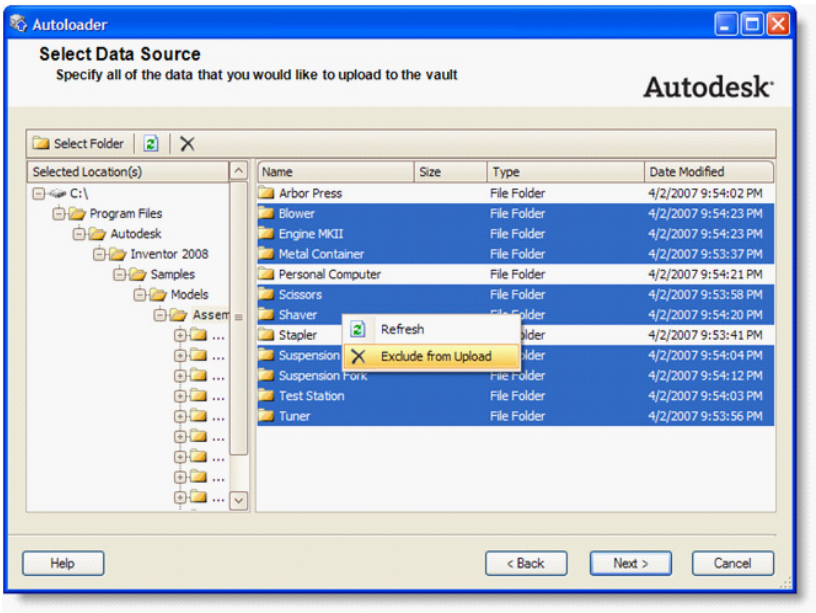
- Scans your data for broken links and other problems that cause errors with Vault or Inventor software.
- Copies your data to a temporary directory and *redirects*[1] all references to ensure they resolve properly.
- Removes any existing locks (or reservations) that were left over from the Semi-Isolated and Shared modes of Inventor.
- Uploads the data into Vault and optionally creates DWF™ files.

During this process, we implement a few techniques that help make it easier to manage and support the best level of performance. In the following example, the Inventor "Samples" project is used to demonstrate some of these techniques.

1. Prior to Launching Autoloader, check to see if your Vault has unique file names set to "true" (Administrative settings). If so, then you need to disable this setting. You can always turn unique file names on after data has been uploaded and cleaned.
2. Select the folder that you want to upload data from. This folder can be a single subfolder of an existing project or a top-level workspace for a larger amount of data. For this example, the Assemblies folder has been selected. Notice that this folder is not the top-level *Samples* folder but rather a subfolder of it. This is one technique to reduce the amount of data loaded. We can easily repeat this process with other parallel folders; but, note that the folder selected must contain all references for selected assemblies and drawing files to be correctly resolved.
3. Next you are prompted for the proper project file for the selected data set. If Autoloader finds a project in a subfolder of the one you selected, it attempts to use this project file. If it does not, or if it finds the wrong one, you can easily select any other project. Remember that this step is critical for the Inventor data to upload properly.
4. After the folder is selected, its contents are displayed down to the file level. You can navigate just like a typical folder browser and select the exact contents that you want to upload. Or, more precisely, you can remove the contents you do not want to upload. Using standard selection processes, select the folders you want to remove (or exclude), and choose the Exclude from Upload option. Feel free to use this process as much as you want without reservation. While this command removes files and folders from an initial upload set, during the next step of the process, any files that are required (for example, a part that is referenced in an assembly from a selected folder) will automatically be added back into the selection set.



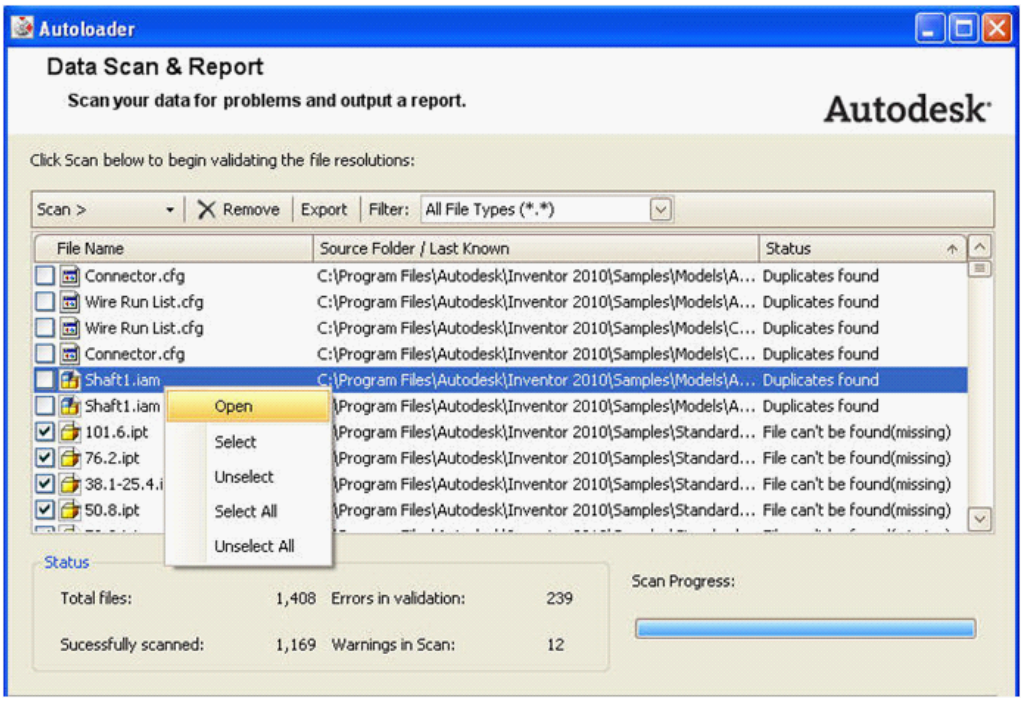
1 Redirection refers to the process that Autoloader uses to manipulate the file path information stored in Autodesk Inventor and AutoCAD data that instructs the files how to open. The redirection process ensures that all of this path data is clean and in an acceptable format for Vault and Vault Manufacturing.



5 Click the Next button after you have chosen your dataset for upload.

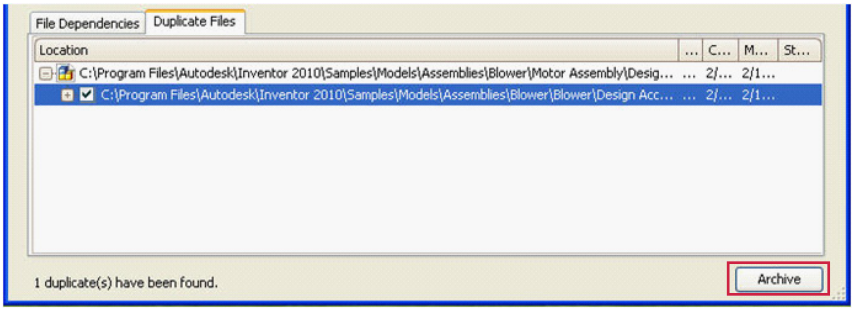
6 Click the Scan button in the upper left-hand corner of the dialog to begin Autoloader's analysis of the data. Here you will be presented with a list of errors and/or warnings that need to be resolved before continuing.

7 Warnings typically represent a file duplicate. To address these, you can highlight the duplicate file and, from the detail section beneath the main dialog, select Duplicate Files. Based on the file locations, you can simply tick the file you wish to archive or open each separately in their CAD application to differentiate the files.



Note: As of Autoloader 2010, it is possible to open CAD files directly from the scan dialog. To open files from the Autoloader, select the file, right click, and select Open.

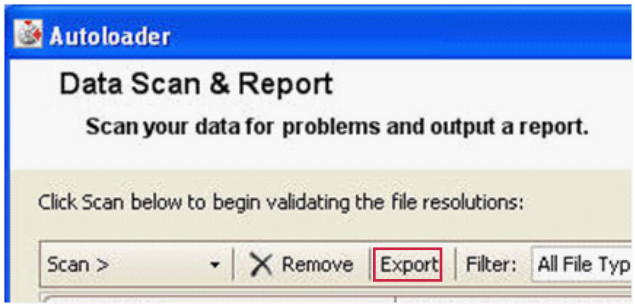
8 Once the duplicate has been identified, select the check box and select Archive. This file will be moved to the Archive folder selected in 2.3. Repeat for each duplicate instance, and rerun the scan; or exclude the files from upload, and export the report for further reference.



9 Examples of errors can be, but are not limited to, the following:

- Missing files
- Files created with a version of Autodesk Inventor software previous to version 10
- Corrupt and "zero byte" files
- Files saved in a beta version of Inventor

10 You will need to resolve each error you encounter before you continue. The best way to do this is to leverage the Export command and save the results to an Excel or CSV file. (CSV is better for larger data-sets or if you do not have Excel present.) Make sure that you keep Autoloader open after this, because you will continue to use it as you correct these errors.



11 Launch Inventor separately, or open files directly from the Scan window to work through the errors. Try to start with top- or high-level assemblies or any file that is reported to have "Issues with Children". Open the files, and see what error is given. If it is a missing file, Inventor will instruct you to find it; if it is an unmigrated file, Inventor will ask you to save it when you close the application.

12 After a few of the errors are corrected, click the Scan button again in Autoloader. If all issues have been corrected, Autoloader should report "successfully opened".

13 Repeat this process until all errors are corrected. By starting with higher level assemblies, you may correct more than one error with a single change. A single part can ripple through many assemblies and appear to be a larger set of issues.

14 After all errors are corrected, click the Next button.

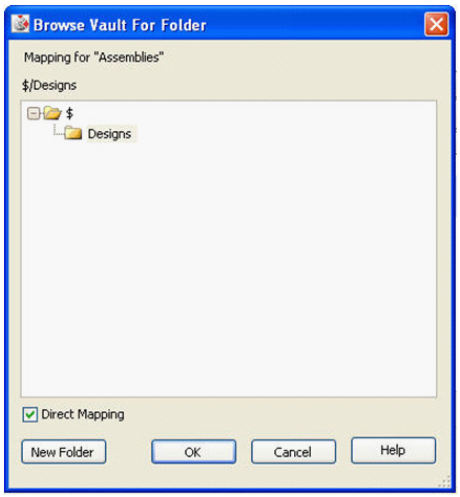
15 You will be prompted to log into the appropriate Vault. It is suggested you carry this process out as an Administrator. Click OK.

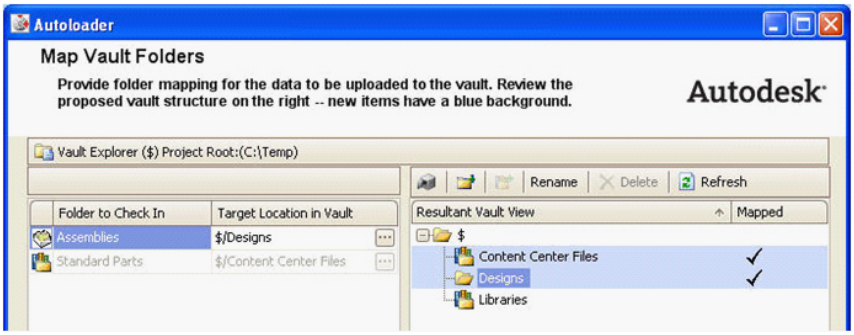
16 In the "Map Vault Folders" section, you need to assign a location for the Autoloader to place each path (*Workspace*, *Workgroup*, or *Library*) in the Vault. A *Content Center Files* path is always set to a fixed location and cannot be changed; however, for each of the other paths, you need to specify where they go. By default, the *Workspace* and *Workgroup* paths are set to the *Designs* folder and *Inventor Library* paths must be set to a folder under *Libraries*.

17 As of the 2010 release, you are able to map folders directly (as opposed to selecting the parent location) as well as renaming the top level Designs folder, adding a great deal more flexibility to the upload process. You can map your folders to almost any level of subfolder under the appropriate root locations, making this a perfect time to make minor changes to your folder structure.

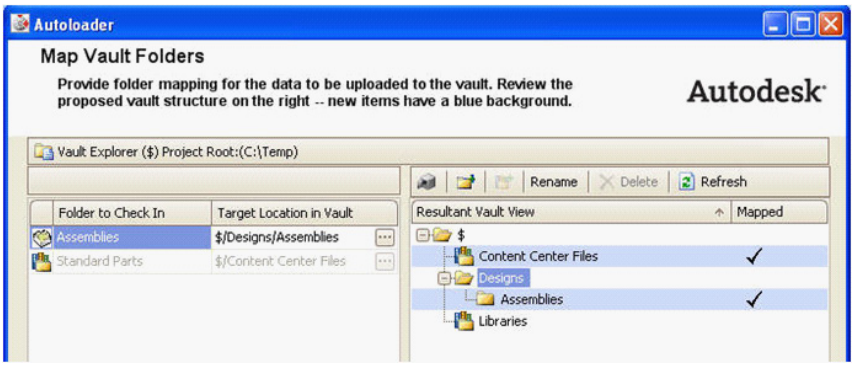
18 To map your folders directly, select the map (...) button and tick the Direct Mapping check box.

19 In this example, this would result in the following mapping with the contents of Assemblies uploaded directly into the *Designs* folder:



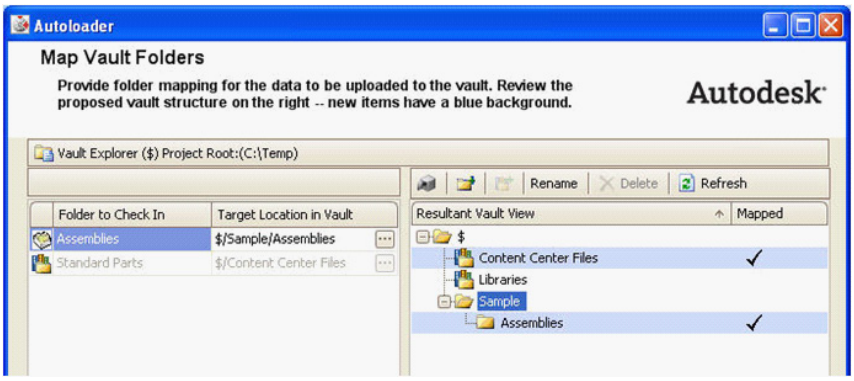


Traditional folder mapping to the parent folder (Direct Mapping not selected) would result in the following where the new *Assemblies* folder is created under the default *Designs* top level folder:



20 To rename the default *Designs* folder to suit your preferences, highlight the folder on the right hand side and select Rename.

Renaming the folder as *Sample* gives the following structure:



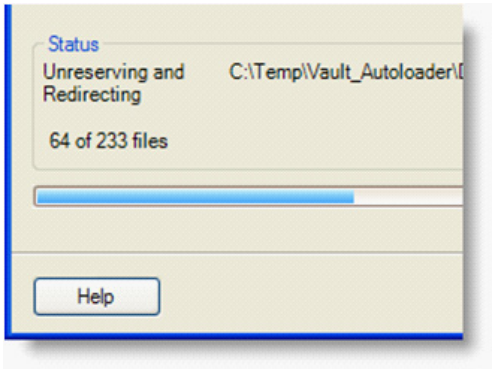
Note that it is recommended that you retain the default settings here. If it is necessary to modify the default folder structure, it is recommended that the final structure and naming scheme duplicate or closely mirror the default settings, as these have been configured to provide the best Vault performance and use conditions.

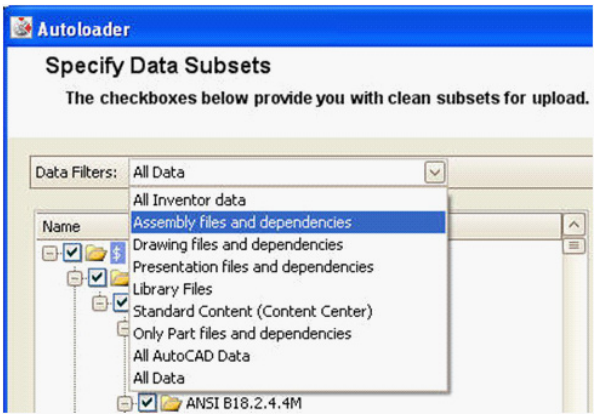
21 After all folders are mapped, click the Next button.

22 The next step, Copy and File Redirection, is simply a processing step. During this step, Autoloader performs the redirection mentioned earlier and makes sure that all data is clean and resolves without any broken links.

23 Click the Next button to continue.

24 Next Autoloader displays the file list for upload. This step can also be done as a multi-pass process. The filter at the top of the list allows you to filter by file types. It is a best practice to perform this process from the bottom of the structure up. For example, start with parts, then assemblies, then presentations, and finally drawings and all other files. This breaks apart the task with a more structured approach. If your dataset is not large (under 2,500 files), then you can do all files at once.



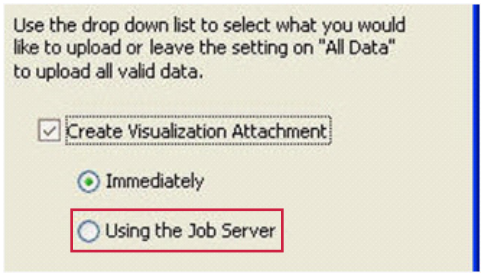


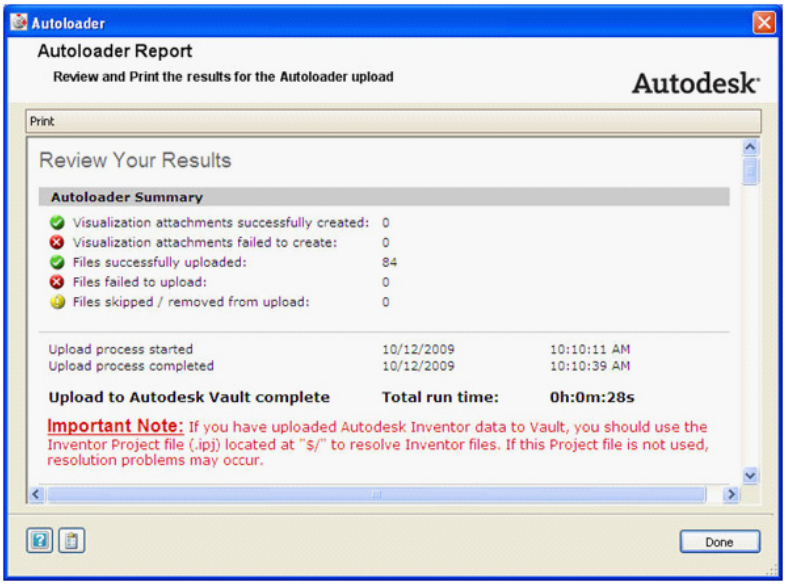
25 Optionally, in this step, you can choose to publish a related DWF file for all AutoCAD® and Inventor data. If you select this option, a warning is displayed indicating this selection increases the amount of time it takes to perform the upload operation; however publishing on upload is the preferred option if you are a Vault Manufacturing or Vault Collaboration user.

26 Here, users of Vault Collaboration and Vault Manufacturing can opt for the creation of DWF files with the Job Server. The documents are queued for processing at a later time, allowing the upload to continue without the overhead of immediate DWF creation on the local machine. This option is a great time saver but not available in Vault or Vault Workgroup.

27 Select Upload to begin.

28 Once completed, use the View Report button to see a complete report of both the DWF generation as well as the upload status for all files. If there are any errors, make sure that you investigate each one. The most productive way to resolve these errors is to open the file in Inventor or AutoCAD and correct any issues. Additionally this report can be found in the location specified in 2.3.





Data Cleanup

As a final step, it is now important to address any of the Autoloader errors and cleanup the now superseded production dataset.

1. Any failed files should be loaded independently via their CAD application or alternate means. Archived duplicates should be moved to a safe location or removed once they have been verified as unnecessary.
2. With this done, you can remove the uploaded dataset from the local machine.
3. It is a good idea to retain the original production dataset for some time after the Vault implementation to be sure that no data is overlooked. It is, however, important that these files are not accessible by the design team. The shared drive should be removed and/or archived off the now "old" file server.

These steps are designed to result in a single source of production files stored in and accessed via the vault.

Top 10 Things You Should Know

The following are the top ten things you need to know after reading this paper. Following these rules will give you the best results.

1. Copy data from your existing file server to a workstation configured for better performance. Running Autoloader from this machine with local data ensures the best performance during the scan and upload phases.
2. If your data was previously on a network drive, disconnect those mapped drives temporarily while performing the data load. Removing these drives will ensure that Inventor does not resolve files from their original, incorrect locations if the data is not resolved locally.
3. Practice makes perfect. Make sure to perform multiple dry runs on the data through the scan and upload phases. Testing can help you estimate the amount of work that you have in front of you and the required time. Remember, the data needs to be available and accessible by the users as soon as possible.
4. Leverage the default folder structure (top 3 folders) with Autoloader. This structure ensures the most reliable and predictable results. These folders were designed into Vault to produce the best results.
5. Clean up any large groups of duplicate files before using Autoloader and during the scan process. Remember that not all the duplicates have to be removed, just the obvious ones.
6. Any Inventor Project type can be used to load data with Autoloader (Single User, Vault, Semi-Isolated, or Shared).
7. The "Exclude from Upload" setting is possibly the most powerful feature of Autoloader. It allows you to reduce the amount of data loaded in each cycle by Autoloader, giving you the ability to produce more reliable and predictable uploads of large datasets.
8. Make sure that you leverage the "Folder Mapping" section of Autoloader to reorganize, rename, and change your folder structure if you want. Changing things here is easier than making the changes later.
9. Utilizing the DWF generation option takes additional time (in some cases, considerably more time). However, if you intend to leverage DWF files, this step is the best place to publish to DWF. Prepare your upload dataset accordingly, and use Job Server where available.
10. After all your data is loaded, you can leverage the many tools in Autodesk Vault and Vault Manufacturing to clean up your data such as: Edit Properties, Rename, Copy Design, and Replace. Utilizing these tools on a clean dataset uploaded with Autoloader greatly speeds up the overall process.