AUTODESK UNIVERSITY 2014

How to Get Away with Copying All of Your Work

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PL5873-P

This class will provide an overview of the new Vault software Copy Design functionality, looking at the new interface and configuration tools that enable a broader range of copy design workflows. This class is designed to take users from simple copy setup through to the intricacies of reference-based copy, replace pending, circular reference copy, folder-based operations, and automated file numbering.

Learning Objectives

At the end of this class, you will be able to:

- Learn how to navigate the new copy design interface
- Understand the configuration settings
- Leverage the new copy design workflow capabilities
- Understand the execution and results of copy

About the Speaker

Before joining Autodesk, Inc., in 2008 Allan O'Leary amassed around 15 years of experience working with Autodesk design tools within the manufacturing industry as a designer and application engineer specializing in data management tools.

Allan currently works at Autodesk as part of the Data Management Team to focus on the delivery and implementation of Vault software products.

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Learn How to navigate the new Copy Design interface

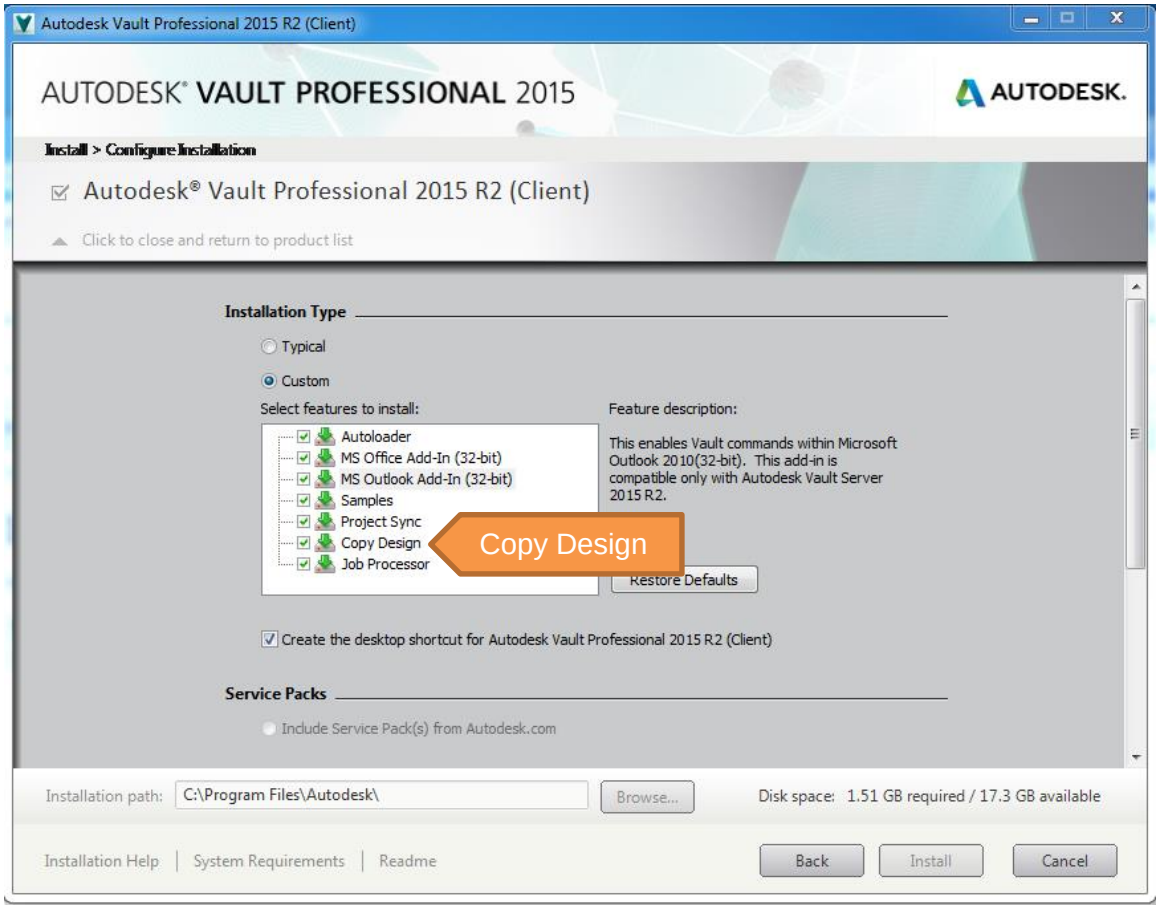
Install and Access the new Copy Design

The new completely redesign Copy Design tool is available in Vault Professional 2015 R2 and Vault Workgroup 2015 R2, updated subscription entitlement releases of Autodesk Vault. The new Copy Design tool is not available in Vault Basic.

The first release of this new Copy Design is a standalone tool which is installed as a separate component to the R2 Vault Client and is not accessed directly from the Vault Explorer. As of now the original Copy Design capabilities are still enabled in Vault Professional and Workgroup, so if you do wish to use the legacy Copy Design tool you need not do anything, this will still be the default behavior inside of Vault Explorer when you right click on a file or select Copy from the Edit menu.

Installing Copy Design

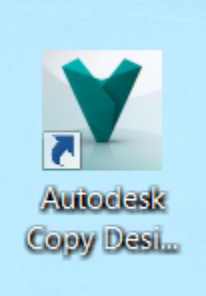
The new Copy Design is installed by default, but this can be deactivated by unchecking Copy Design from the Installation Configuration tab:



Accessing Copy Design

After install, Copy Design is added to the Data Management Tools Menu:

Start > All Programs > Autodesk > Data Management > Data Management Tools > **Autodesk Copy Design 2015 R2 for Vault <Version>**



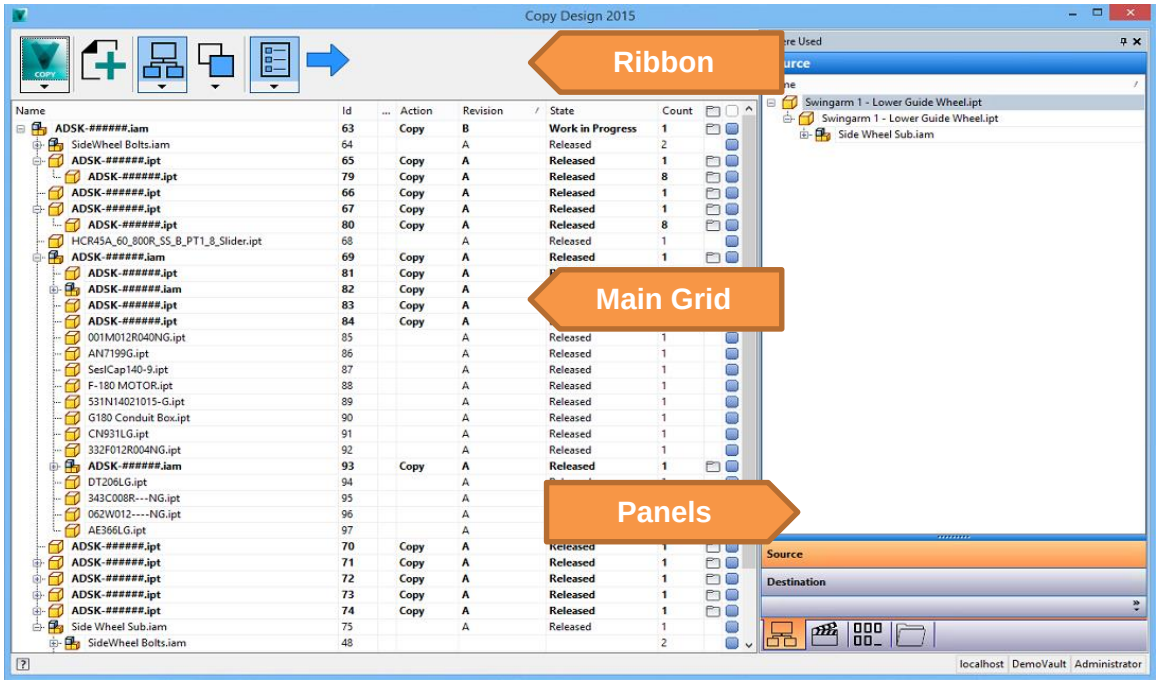
In order to start your copy double click the copy design icon, the dialog opens and requests you to log in.

Like all other Vault tools Copy Design requires secure log in to the server, and uses a license for each new user login (Note as always, multiple log in sessions by 1 user from 1 machine only consume 1 license)

Once logged in users will be able to add files, configure and execute Copy on files.

Copy Design user Interface

The new user interface is a modeless dialog (Users can work inside Vault Explorer and their CAD applications while Copy Design is open in the background) with three main components, being the toolbar / ribbon across the top, the Main Grid and Panels

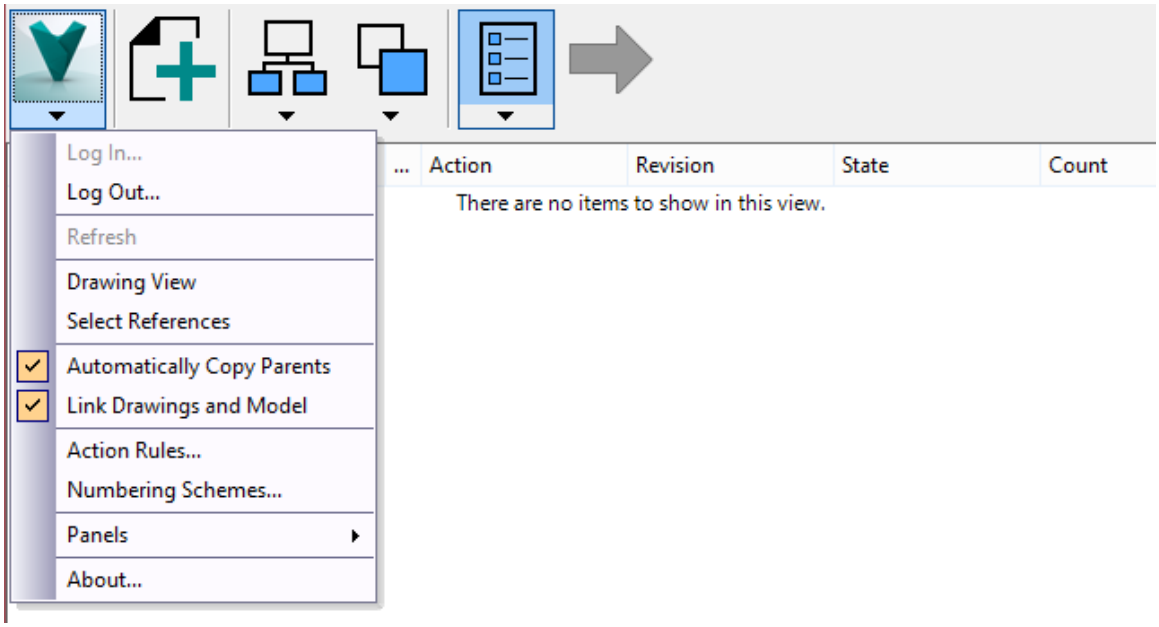


Copy Design Ribbon

The Copy Design Ribbon contains the File menu and a number of end user configuration commands and settings including Add Objects, Include Children, Copy Settings, Selected Rule Set and Create Copy.

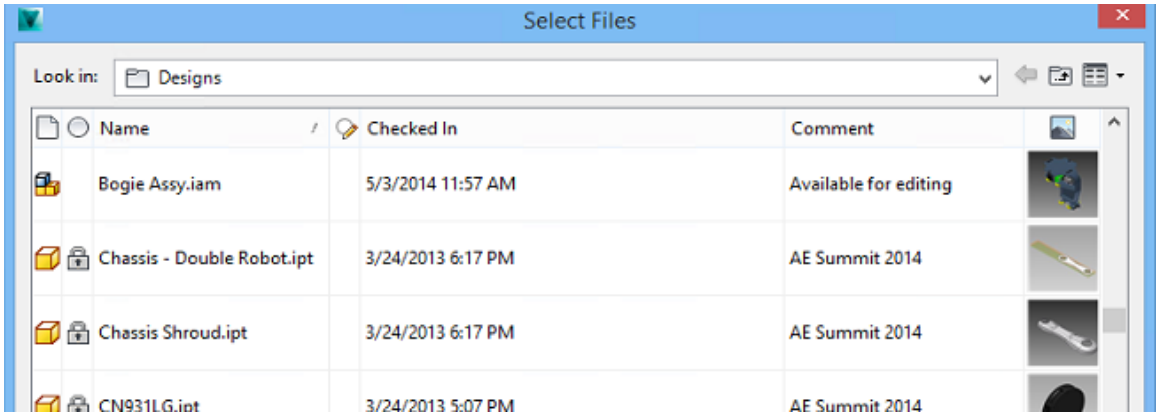
File Menu

File Menu options including Log in and out, the refresh command, advanced copy options, relationship behaviors, Action Rules, Numbering Scheme settings as well as Panel Visibility. Many of these settings will be reviewed as we look at the advanced configuration and workflows.



Add Objects

Add Objects allows users to browse for and select files for Copy – the standard dialog here allows users to configure, sort and search the folder grid, set banding and create quick views.



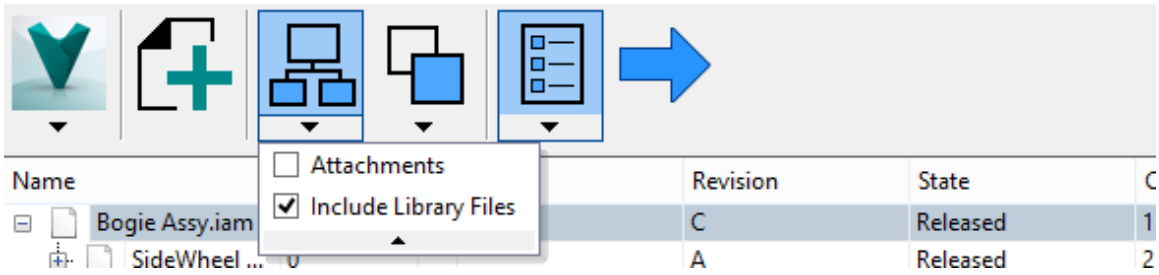
TIP: New to this version of Copy Design, users are able to add more than one file to copy at a time. Add multiple assemblies or individual files and configure them independently to execute multiple copy operations in one go, greatly reducing the time taken to copy multiple designs.

TIP: Release 1 of this new Copy Design does not have a "remove" objects option – users can simply set any files not intended for copy to re-use OR log out to clear all selection.

Include Children

This Copy Design setting is used to configure whether Attachments and Library Files are included in the configuration.

By default all Library Files are set to reuse and are not visible in the main grid, including them makes it possible to override the "re-use" status. Likewise any file attachments are automatically set to reuse, by turning them on we can override the reuse behavior.

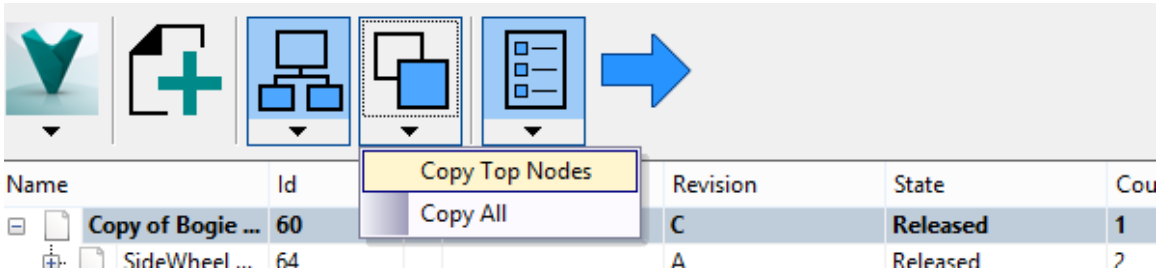


TIP: The Attachment and Library file settings are sticky and are consistent for all copy sessions by that user on the same machine – you will also note that the "Include Children" button will change to a blue color when either library files or attachments are included – your mouse tool tip will preview what the setting is when you pause on it.

TIP: If you choose to include Attachments, they can be configured to be removed from the new copied files as they are not dependents, "Remove" can only be carried out on attachment file types.

Copy Settings

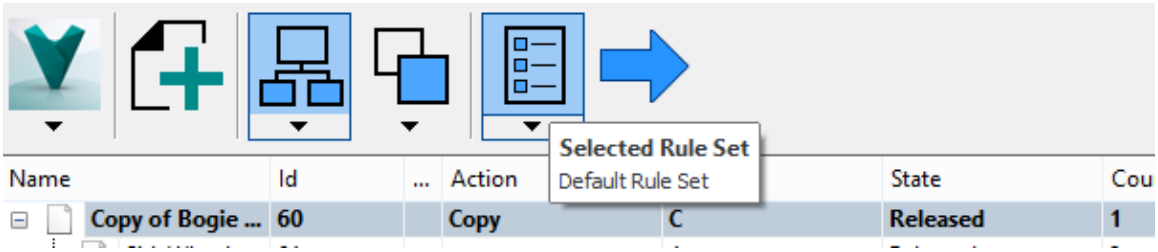
Here the user can short cut the selection of files for copy by either copying All or Copying just the top level nodes (first level parents)



TIP: These actions are only carried out on the current selection set in the current configuration – they are not sticky between sessions

Selected Rule Set

Here the user can set the property behavior rule set to apply to this configuration – turning this off will result in all source file properties being copied to your new files.



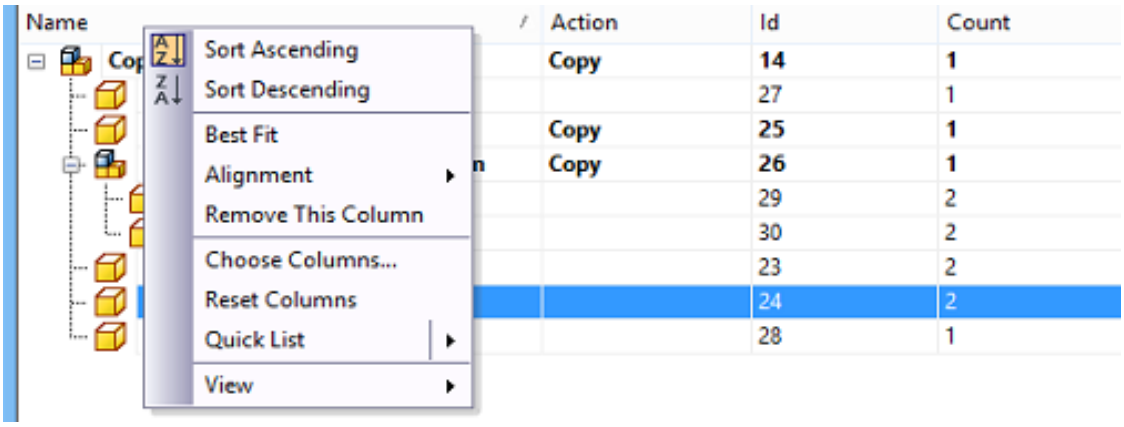
TIP: The Default Rule Set supplied with Copy Design carries out the same actions as the legacy copy design (Reset Part Number, delete iLogic rules add reset category, revision and lifecycle)

Copy Design Main Grid

The Main Grid displays the current loaded data set detail, it is a read only grid that reflects file name, file details, current configured action (Copy, Reuse, Exclude, Replace, Remove, Edit), target folder detail and also the operation results (Pass or Fail). This component is at the heart of the copy design configuration.

Configurable grid properties

Copy Design now leverages the standard Vault file grid, meaning users are able to configure the displayed properties to suit their requirements. Outside of the default standard properties users can add things like document thumbnails, lifecycle states or component description.



As users make changes to the configuration, the main grid “Name” value changes to preview the new component name, users can add the “File Name” column to see source file name or use values like Component ID and Component Quantity help to track source file behaviors.

TIP: These two values allow us to identify individual reference information (which reference the same source component and how many references exist or are being created).

The main grid also shows the completed operation results – (Success or failure of individual copy design operations) so the "Status" column should be retained in the view for that purpose.

In addition to column selection the user can also set banded rows, sort objects, create quick views, control column sizing and text alignment as we do with other Vault grids.

Set Copy Actions

By Right Clicking on any file in the main grid users can start to configure the copy design operations for that object. Below is a summary of the intent for each action, noting that not all objects are eligible to perform every action and some are reference specific.

Copy	Copy will set the current object to copy and create the new file in the same location as the source file
Copy Branch	Copy Branch will set the current object and all its children to copy and create the new files in the same location as the source files. Note this option is only available on objects with children.
Copy To	Copy To sets the current object to copy and allow the user to specify a new location for the new file. This can be an existing folder, or a new folder can be created as part of the Copy To command
Exclude	This action will restrict any action being taken on, or applied to the excluded file. *TIP: If you want to copy a number of dependents, but not the parent file, add the parent to copy design and set it to exclude. You can now copy all the children without copying or editing their parent.*
Remove	Remove actually detaches the selected file from the new copied files. *TIP: This can only be selected on non-dependents like attachment file types*
Replace	Replace allows the user to replace the current selection with another file from Vault in the new file. *TIP: Users can now replace with "pending" files being generated as part of the copy design operation.*
Reuse	Reuse sets the current file to be simply reused in the new structure, no new file will be created, nor will this file be edited. *TIP: Setting a file to reuse may impact behavior of dependents or parents.*
Reuse Branch	Reuse Branch sets the current and its children to be simply reused in the new structure, no new files will be created, nor will these files be edited. Note this option is only available on objects with children

Additional Actions

In addition to the explicit user actions, files as a result of adjacent configuration changes can have their status changed to states such as Auto or Edit.

TIP: These actions appear in red text to warn the user of the outcome – Edit file especially is not always a desirable outcome, and if you are showing drawings in your view this may mean you do not want to execute an "Auto" operation on these, but rather override the default behavior.

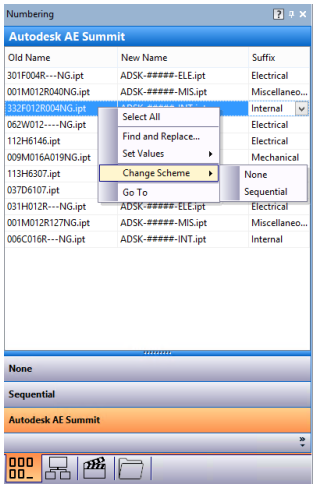
Auto	When in drawing mode and with "Link model and drawing" or "Automatically Copy Parents" set, any change to the dependent model file will result in an "Auto" operation on the drawing. *TIP: Auto mode means that the drawing file will be copied to the same location as the dependent model and take the same name as any dependent model file being copied or edited* *TIP: Auto mode can be overridden in Drawing view to change the drawing file name and location.*
Edit	When user does NOT have "Automatically Copy Parents" set, parents will appear as "Edit" to indicate that if you execute this operation the parent file will be modified to include the newly copied files – there will not be a new copy of that file. *TIP: Beware, this is often undesirable!*

Panels

Leveraging the main grid most users should be able to configure and run a simple copy operation, but in a larger assembly configuration or more complicated operations it may be necessary to leverage the copy design panels to see alternate views of the data being operated on, find specific source components, change the part number settings, speed up the configuration process or get an overview of the results.

The panels provide greater user feedback, a number of specific capabilities aimed at providing a different approach to copy configuration and additional tools to accomplish the desired results.

TIP: Each panel can be configured with different column detail and display settings much the same as the main grid.

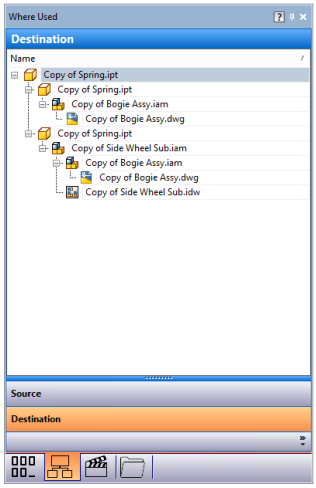


Numbering

This panel is used to manage scheme assignment and modify configurable numbering scheme values (Including the legacy “None” scheme format with prefix and suffix).

As we no longer modify the file name directly in the Copy Design grid this panel allows users to display the old and new file names, move files between numbering schemes, manually edit file name values as well as search and replace text to create consistent file names.

<u>TIP:</u> The Panel right click menu also includes “Go To” option allowing you to highlight the affected file in the main grid.



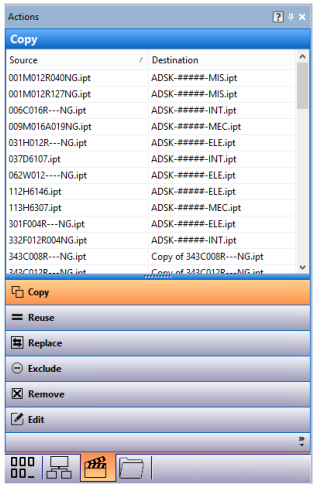
Where Used

Review the source of and destination of specific components as part of the copy operation.

The Source view shows the original file, and the number of new versions of this file that will be created (if more than one) as well as where these new versions will be used.

The Destination view shows the relationships that the new file will create.

TIP: This view is a useful “check” to make sure your new files are going to the correct locations.

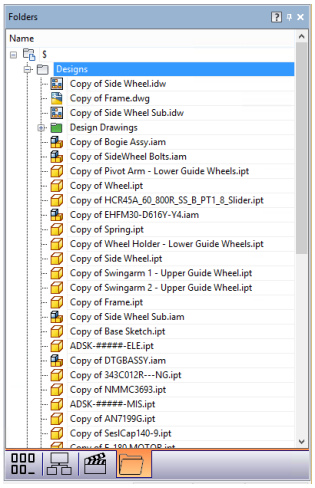


Actions

The Actions panel allows users to review current actions, change component behavior and check configuration before executing.

The panel has a number of tabs designed to filter by action type so the user to quickly assess what actions are being carried out as part of the operation, making sure the correct design intent is followed and reducing potential errors.

<u>TIP:</u> Select All can be used to quickly capture all files of a certain action and carry out another operation on them, creating a simple way for example to “Copy To” a large number of files to a new single location.



Folders

The folder view allows users to execute certain actions by folder content, and review file folder destinations.

The actual source and destination path information can be displayed on any of the other panels or main grid, but here users are able to visually review the Vault structure, including new folder locations created as part of “Copy To” action.

Users can drag and drop files to a new location (setting them to copy), select all files by folder location for a specific action and even rename new folders.

TIP: Drag and Drop an actual folder to a new location to maintain the folder structure then rename the newly created folder to reflect the new project or product name

Understand the configuration settings

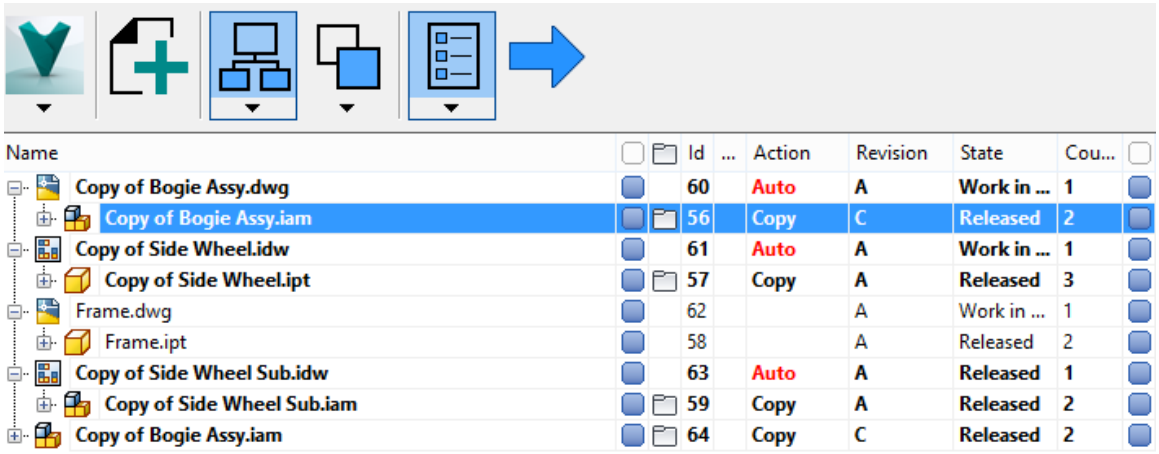
In addition to the basic user interface set up and actions, there are a number of other configuration controls designed to enable different approaches to the copy design configuration or achieve different results. We will go through each of these in a little more detail and expand on some in the workflow capabilities to understand what they enable us to do.

Drawing View

One of the key concepts of Autodesk Vault Copy Design is the ability to quickly create a new variation of an existing design, complete with its associated design documentation for an incredibly fast reissuing of the new design.

By default the new Copy Design operates in a “model view”, based on the assumption that users focus is the 3D model and all design documentation, while hidden, will automatically be modified to reflect the changes in the model.

By switching on Drawing View all related design documentation (IDW, IPN, DWG) files are presented as the top nodes in the copy design grid. By default all design documentation will still be set to “Auto” when their associated models are copied, inheriting the copied model name and destination location as they would in model view.



In drawing mode though, users can now set design documents to copy independently of the model and specify new file names and save locations, allowing greater flexibility with the copied output.

TIP: Drawing view does not apply to actions where users are directly selecting and copying DWG files, naturally in this case the selected file is displayed.

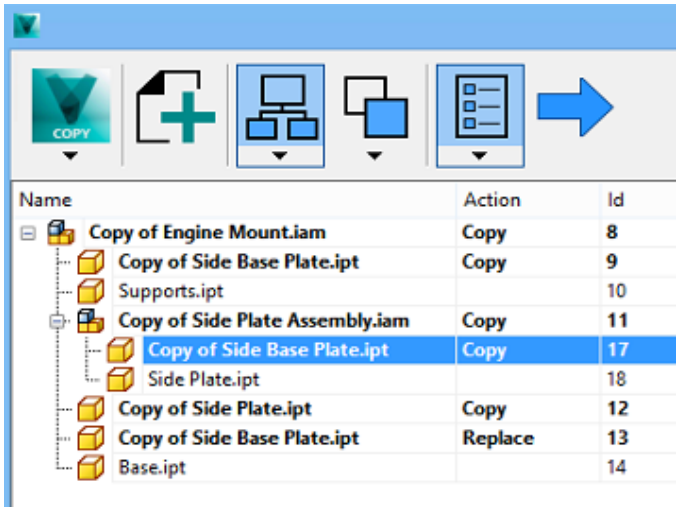
Select References

Often times in an assembly structure there are numerous references to a single component, for example a bolt or bracket may be used in several sub-assemblies or locations in the same structure.

Historically when we copied or replaced or reused a file in Copy Design every reference to that part was affected, even if you didn't want it to, copying a bracket in the top level assembly would copy that bracket in the sub assembly, causing the sub assembly to be edited or copied.

Users in this case would have to copy all and then edit the new structure to replace unaffected parts adding more work on top of the copy and introducing error.

By setting "Select Reference" the user can now pick and choose which reference to the file is affected by an operation – if you wish to copy one instance but reuse all others that is possible – saving a great deal of rework and error.



TIP: It may not be immediately obvious, but if you select to copy 2 references to the same component and copy them you will actually create 2 new files. If your intent is to copy 2 references of a component and create one new file you should either disable "Select Reference" and copy all component references, then using select reference reuse those you do not want to copy OR use "Replace Pending", to reuse one of the copied references in place of the other.

Automatically Copy Parents

Typically when user's select to copy or replace a component they intend to copy the affected structure above it, otherwise this parent file will actually be edited, changing the source data instead of creating a new complete design.

Automatically Copy Parent ensures that all affected parents are set to copy when a child is modified, reducing error and the number of clicks required to complete a copy configuration.

Copy parents will propagate up through the tree to the top level node copying all required parents.

TIP: If you do want to perform a replace type operation by editing a parent simply override the copy status to "Reuse" after copying or replacing the child.

TIP: If you choose not to copy a parent it will display an "Edit" action highlighted in red to warn users of the output.

Link Drawings and Models

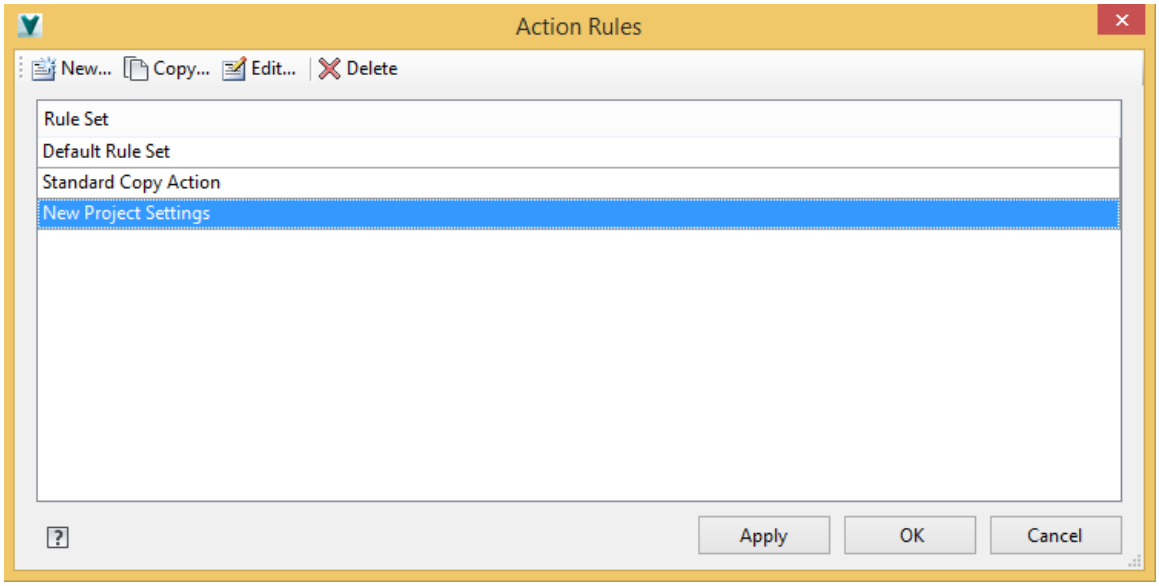
As discussed in the Drawing View section, by default all design documentation is copied and configured relative to their 3D model children. In Drawing Mode though users are able to control the behavior of drawings independently.

Linking drawings to the model maintains this behavior so as we change a components behavior the drawing reacts, by deselecting this and Automatically Copy Parents the drawing will not change behavior with the model, meaning by default it will be set to "Edit" instead of "Auto"

TIP: Automatically Copy Parent will also copy the linked drawing, but this option allows users to disable Auto Copy Parents and still link drawings if they so desire

Action Rules

This setting which is only accessible by the administrator opens the action rules dialog and presents the configured copy design action rule sets.



By default (using Default Rule Set) all new files follow legacy Copy Design behavior (part number equals file name, iLogic is broken, configured to use new file category, lifecycle and revision).

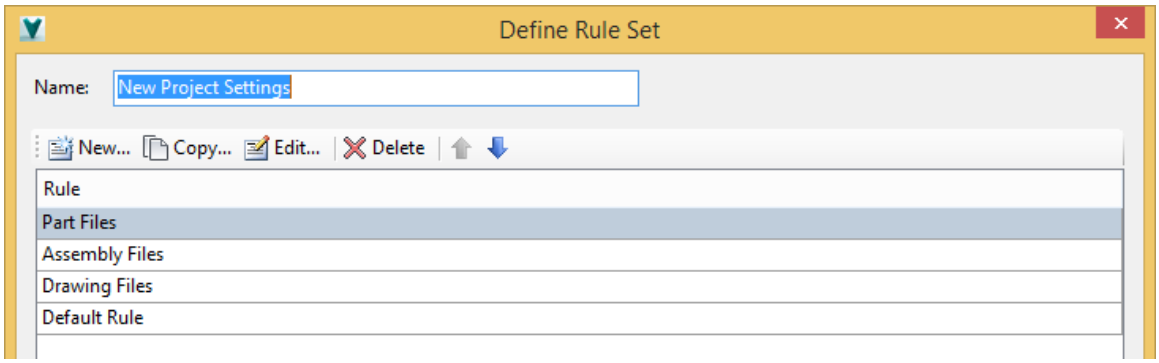
TIP: The Default Lifecycle Rule Set cannot be edited or removed, but can be copied

Numerous Rule Sets can be defined though by the Administrator, and the Copy Design user can select which one to apply to any single copy operation or the user can switch off action rules allowing any new files to maintain the source files category and properties.

New rule sets can be defined by selecting “New” or “Copy” to use an existing example.

Each Rule Set contains a number of file behavior and property setting rules based on the source file properties like “file type” for example, similar to category assignment rules, when a file meets the preset criteria its new file properties are modified as per the rule.

The rules are applied in the order of priority starting at the first rule down to the “default”.



TIP: The Action rules are defined per machine, but can be deployed to all clients to ensure a consistent options and user experience.

Property behaviors within these rules, include the ability to Reset a property, Set As Blank or Set Value As by mapping it to another value.

Reset will remove the source file value from the new file and fill in the property as per any new file in that category, meaning if there is a default value the new file will display the default value.

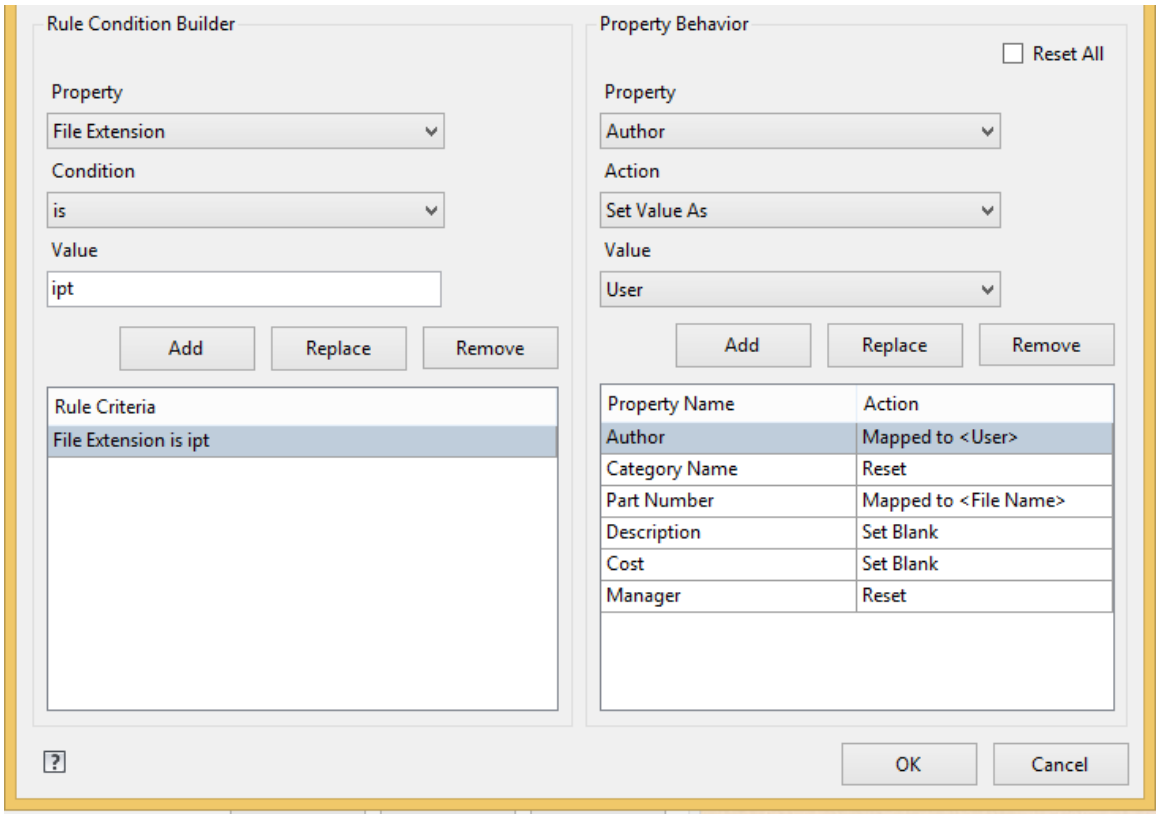
Set As Blank on the other hand will remove the source file value from the new file and force it to remain blank regardless of the default values.

Set Value As fills in the new file property using mapping to a limit the number of specific properties including:

- File Name – new file name without extension, useful for part number
- User Name – Current user executing the copy design
- Original File Name – Useful for tracking (Note we do still add comments with orig file name)
- Remove iLogic Rule – Set to “Removed” to clear iLogic Rules on open in Inventor

Note: Category Name is a special case – the only option for Category Name is Reset and this sets the new file to follow the default Category assignment rules. All revision and lifecycle states are linked with the Category, if we do not reset the Category Name the category will be copied from the source file and its revision scheme and state reset to defaults for that category.

TIP: If you wish to assign a new category to copied files, you can leverage property mapping and Category assignment rules to set alternate Category assignment. For example mapping the iLogic Rule value to Keyword (a largely unused value) we could use this to trigger a new Category assignment on add file.



Reset All – This override actually sets all properties and categories to ensure the new file is follows new file behaviors.

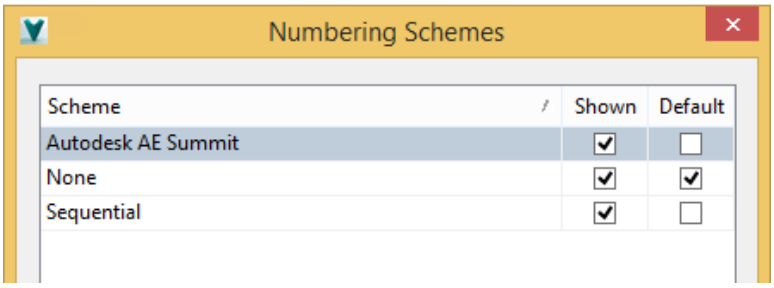
TIP: If you do not reset a value – the source file property (if any) will be copied to the new file property.

Why does this matter? – Previously users had limited control over properties, in fact only the Part Number was configurable, any newly created files would have the same category and behaviors as the source file. Including property control means users do not need to change the file category after Copy and edit any additional properties.

Numbering Schemes

Copy Design now allows users the option to assign automated numbers to new files via an intelligent numbering scheme instead of simply relying on prefix or postfix strings and manual entry.

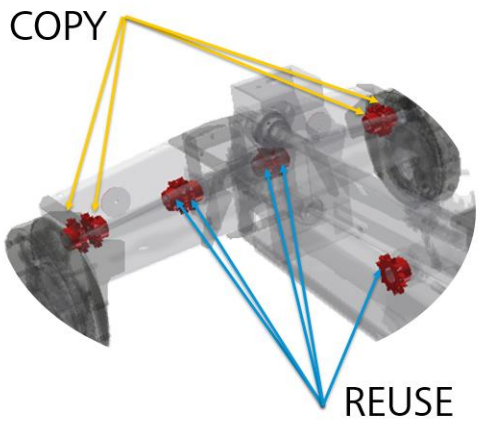
The numbering scheme control, allows the user to set which naming schemes are valid for use in the copy design configuration and what the defaults should be. The list of available schemes is actually set by the administrator in Vault Explorer (Schemes are not created in Copy Design), here we simply enable or disabled schemes valid for copy design and alter the default.



Why does this matter? – Previously users would have to manually configure and rename files, if the company used auto-numbering these new file names were non-compliant so users would have to copy the files, then search to locate the new files and rename them as a separate action.

When a file is set to Copy, it will be assigned to the default numbering scheme. Go to the numbering panel and right click on the file to change its scheme

Leverage the new copy design workflow capabilities



Reference Based Copy

In operations where the same component is referenced by multiple assemblies', user can now configure different operations for each reference in the model context. Traditionally when a component used in more than one location, such as derived parts in skeletal models was set to copy, it would be copied in all other assembly levels making it impossible to replace or reuse instances where required.

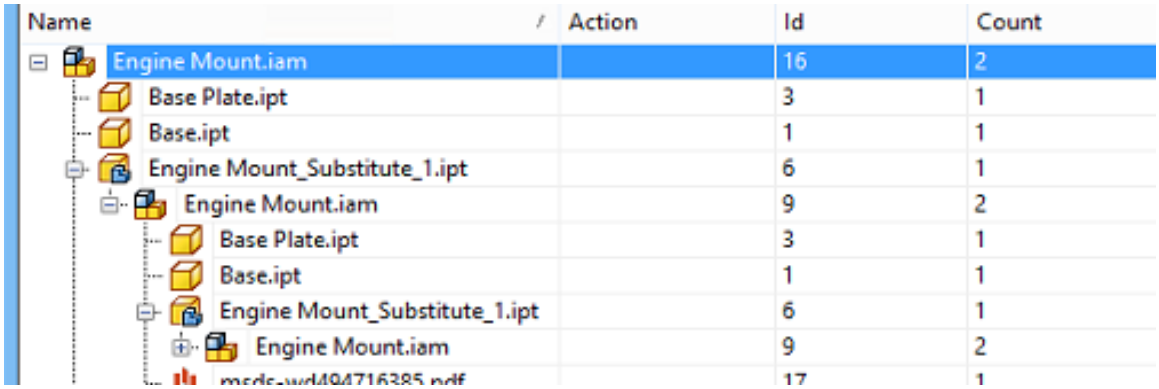
By selecting the reference option in 2015 R2 each individual component reference can have its copy behavior set independently.

Why does this matter? – We can now copy some references to the component without having to copy or replace it everywhere, reducing rework or the need to break down assemblies for copy.

Copy Design Circular Reference Support

Changes to Autodesk Vault reference management means user are now also able to copy models containing circular references (think derived parts / substitution in Inventor or AutoCAD overlays) as well as non CAD file types including attachments.

Why does this matter? – Support for Inventor circular references like simplified views or skeletal models as well as AutoCAD circular references permits more accurate useful copy operations – getting a complete, usable model.

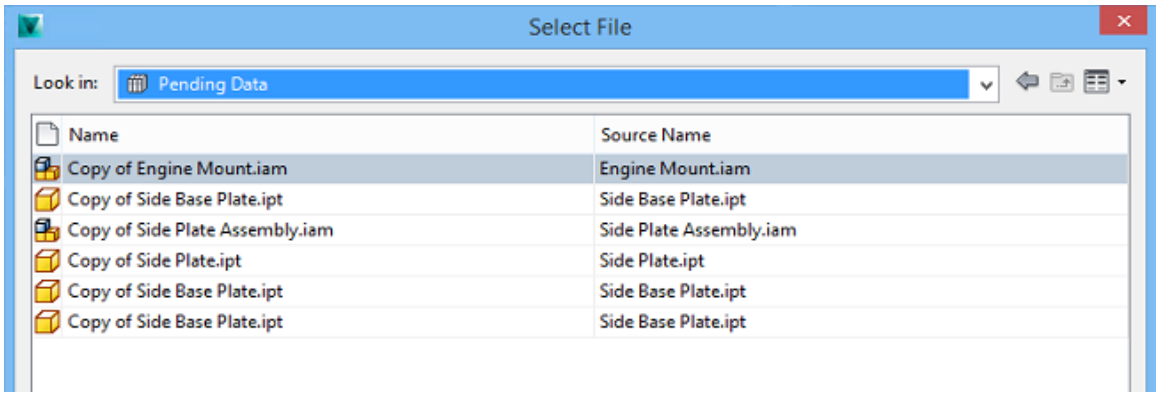


Replace with Pending Files

Another great new feature targeted at skeletal modelling techniques is the ability to replace components with pending data.

This means that files which will be created as part of the copy process can be reused throughout the structure.

When selecting “Replace” on a component select the “Pending Data” option in the file dialog – here you have access to the uncommitted “new files” being created by copy operations elsewhere in the model.



Once referenced into the operation Vault will create the new file and rebuild the new structure with the selected file like it would with any normal replace operation.

Why does this matter? – In a more complicated copy design environment we can consolidate component usage by reusing newly components in different locations – a newly generated bolt variation for example could be used to replace any number of existing standard bolts in the new assembly without needing to open and carry out additional replace actions in the new model.

Folder based Copy Design

Based on user feedback the Vault 2015 R2 Copy Design allows users to execute copy operations based on folder location.

After selecting your data set users can create new folders, carry out file operations based on the folder location, drag and drop between folders and have a visual method for configuring the copy.

Why does this matter? – This provides a fast simple method to set copy actions based on file location and recreate structure by simply dragging and dropping files and folders. In many cases this is faster than the older approach of find / replace strings in the target folder path.

Understand the execution and results of copy

Create Copy

Once you have everything configured, hit the Create Copy button and execute your copy design. Here a number of pre-checks will run to ensure that:

- All files and folders have unique names (by Folder)
- Vault unique file name rules are met
- Selected files still exist
- Files requiring edit are write enabled
- Files requiring edit are owned by site

Copy Design will display an error if any of these conditions are not met and the user will need to resolve these before continuing.

TIP: Select to Refresh from the Copy Design file menu to resolve missing or modified files, Refresh reloads the current data set while retaining your configuration settings, where applicable.

Server based Copy Design

One of the biggest changes to Copy Design is the fact that the actual copy operation, no longer requires file transfer from server to client. The copy operation is now completely handled on the server with the new file structure repaired on the next download operation, similar to move and rename commands.

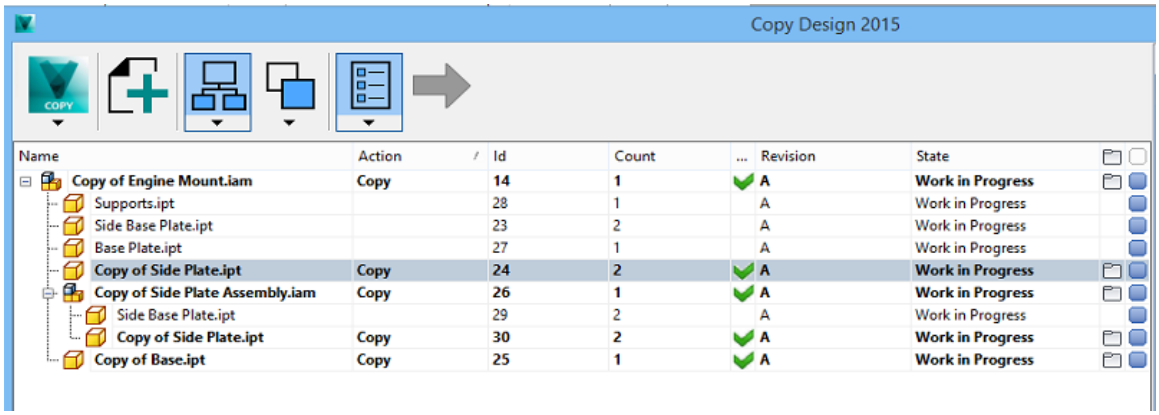
Why does this matter? – Running the copy on the server reduces Copy failures and greatly increases the performance. Users can carry on with other tasks while the Copy runs.

Results

Once the configured copy is successfully run, the Copy Design main grid displays the results, you will note that:

- After completing successfully the Run Copy command is disabled
- All successful copy operations appear with a green check
- All Failed copy operations appear with a red cross

What does a red cross mean? This indicates that some other action or condition not found during the pre-checks has interrupted or prevented a copy, the user needs to review errors and any newly created files to establish any issues.



Name	Action	Id	Count	...	Revision	State
Copy of Engine Mount.iam	Copy	14	1		A	Work in Progress
Supports.ipt		28	1		A	Work in Progress
Side Base Plate.ipt		23	2		A	Work in Progress
Base Plate.ipt		27	1		A	Work in Progress
Copy of Side Plate.ipt	Copy	24	2		A	Work in Progress
Copy of Side Plate Assembly.iam	Copy	26	1		A	Work in Progress
Side Base Plate.ipt		29	2		A	Work in Progress
Copy of Side Plate.ipt	Copy	30	2		A	Work in Progress
Copy of Base.ipt	Copy	25	1		A	Work in Progress

Note that at execution is when we actually create folders and commit new file names from your numbering schemes, issues may relate to folder creation or numbering.

Note too that the results do not display final file names when leveraging numbering schemes, we only ever show the file name preview for auto generated sequences.

Finish or Go Again?

With a successful copy completed, the user can simply close down copy design OR can choose to run another copy.

By selecting to refresh the data from the main menu (loading latest version of the originally selected data) or changing some of the configuration settings you will see the “Run Copy” command is enabled and another copy of the data can be executed.

TIP: Any additional copy will be carried out on the original data – NOT on the newly created data, by setting files to “reuse” you will see the original object is still the active selection.

After reconfiguring your data set simply hit “Run Copy” again and a new copy is created.

Summary

The new Copy Design tool provides a more user friendly interface with advanced options and user feedback designed to enable new approaches for designers to solve their existing copy design challenges and reduce the time taken for them to both configure and run Copy Design tasks.

We are confident the new copy design delivers on the promise of faster and more powerful experience resulting in more accurate copied data.

We hope that this class will present a better insight into general use of the tool and how to approach specific copy issues using the new tool.