



All You Want to Know About Items in Vault Professional

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PL6547

In this class you will learn about enhancements to Items and Bill of Materials area in Vault Professional 2015 including the basics about creating items and editing BOM in Vault to support Long-lead items, re-using items, editing Position Number, using Vault items in CAD BOM, etc. In this class you'll also learn about using more advanced Item & BOM capabilities such as Item Lifecycles, Multiple BOM Rows, BOM Row Properties, BOM Reports, etc. that are introduced in Vault Professional 2015 R2 release.

Learning Objectives

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

- Use the new Item BOM enhancements
- Administer and use Lifecycles on Items.
- Administer and use Item BOM Row Properties
- Create and use item BOM Reports

About the Speaker

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Introduction:

The last two releases of Vault have added many exciting new features. Each of these releases made significant improvements to the existing Item functionality. This document will describe those enhancements.

You can also find more coverage of some of these topics in the following Vault classes at Autodesk University 2014.

- PL5680 – Evolve with Vault: What’s New in Vault 2015 and Vault 2015 R2, taught by Jeff Maisano
- PL5397 - I Want to Ride My Lifecycle, taught by Ralf Walter
- PL5962-P - Hitchhiker's Guide to Property Management, taught by Alan Bathgate

Item BOM enhancements

The Vault 2015 release was focused on improving Item/BOM workflows. The enhancements introduce flexibility to allow you manage your design process the way you want to, and optimizes workflows to reduce time and cost.

Long Lead Items

Previously in Vault, using Items was difficult unless the entire design was ready. Our long lead item workflows allow you to manage a subset of the design that is ready, while the rest can be added at a later date. This better suits Item workflows requiring a partial bill of materials for tracking unfinished, purchased, highly complex, or unavailable components before the design is completed.

Assign Item

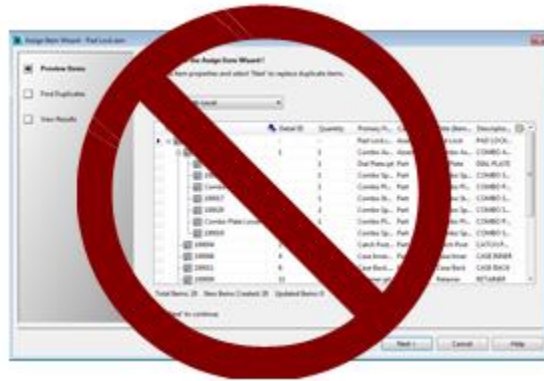
In Vault Professional 2014 and previous releases, assigning item to a file would result in the Assign Item Wizard being displayed. This wizard would create items for every component in the Bill of Materials, and would have very limited editing functionality.

In Vault Professional 2015, there have been significant improvements to this workflow.

No Wizard

Starting in Vault Professional 2015, the Assign Item Wizard is no longer used. The results of an Assign Item operation will be displayed in an Edit Item dialog. This allows the user to make

changes to the item before committing it to the database. If the user wishes, they can cancel the operation and no new items will be created.



BOM Components

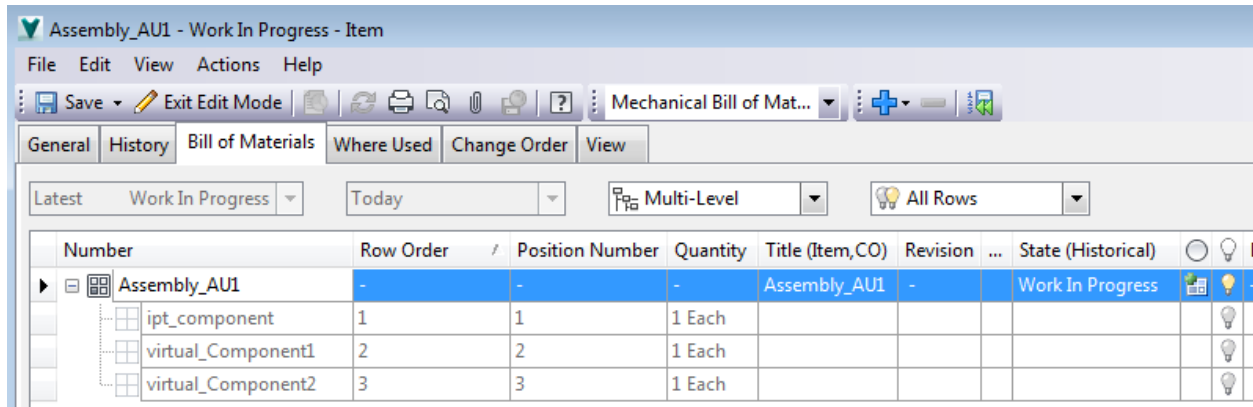
BOM Components are the CAD representations of parts and assemblies. These components can be the reason that the file exists or a subcomponent such as an Inventor virtual component, an AutoCAD Mechanical part reference or content center part.

Model Data						
Structured Parts Only (Disabled)						
Part Number	Thumbnail	BOM Structure	Unit QTY	QTY	S	
▶  ipt_component	Preview not available	 Normal	Each	1		
 virtual_Component1	Preview not available	 Normal	Each	1		
 virtual_Component2	Preview not available	 Normal	Each	1		

In the image above, the Inventor assembly contains two virtual components and an instance of an Inventor part. In addition, there is a component for the assembly itself. In previous versions of Vault, the Assign Item operation would result in 4 items being created. One item would be linked to the part file, and the remaining items would be linked to the assembly file. This is because the Vault knew about the components and allowed a user to link an item to each component.

As the following image shows, Vault will no longer force each component to become linked to an item. Instead, data for the components will be displayed. BOM components can be

identified by their icon which differs from the Item icon, and the 'dimmed' or greyed appearance of the text.



BOM Component rows are ignored in the following areas:

- Lifecycle state transition actions.
- Relationship gathering for Change State, Change Revision, and Change Lifecycle
- Item Export
- BOM Comparison

BOM Components can be promoted to items at any time using a number of methods:

- Clicking on the light-bulb icon in the 'On/Off BOM Row' property (light bulb icon).
- Right-clicking on the BOM row(s), and selecting the 'Turn Row On' command in the context menu. This will use the Equivalence Value of the BOM row to match an existing item if one exists, otherwise it will create a new item for the BOM row.
- Right-clicking on the BOM row, and selecting 'Assign To...'. This will allow the user to use Vault's Advanced Find capabilities to search for an item, and assign that Item to the BOM row.
- Right-clicking on the BOM row, and selecting 'Turn Branch On'. This will assign an item to the selected BOM row, and assign items to all child BOM rows which have not been assigned.

Off Rows

In previous releases, a user could delete a row from an assembly's BOM. The Vault would hide the row and keep enough data about these rows to prevent them from reappearing on subsequent updates. In 2015, the Vault exposes these 'off' rows.

An 'off' row can be associated with an Item, and can have its own BOM hierarchy. Rows in an 'off' state, like BOM components, will be excluded from many operations, including entity relationship gathering in Change State, Change Revision, and Change Lifecycle, and Export Item. BOM comparison will consider a BOM row that is 'off' to be a deleted row when compared

to a BOM where the row is 'on'. The previously discussed BOM Component objects are always considered off.

'Off' rows will be displayed with a grey text color to indicate their state, and the light bulb icon in the 'On/Off BOM Row' column will not be lit.

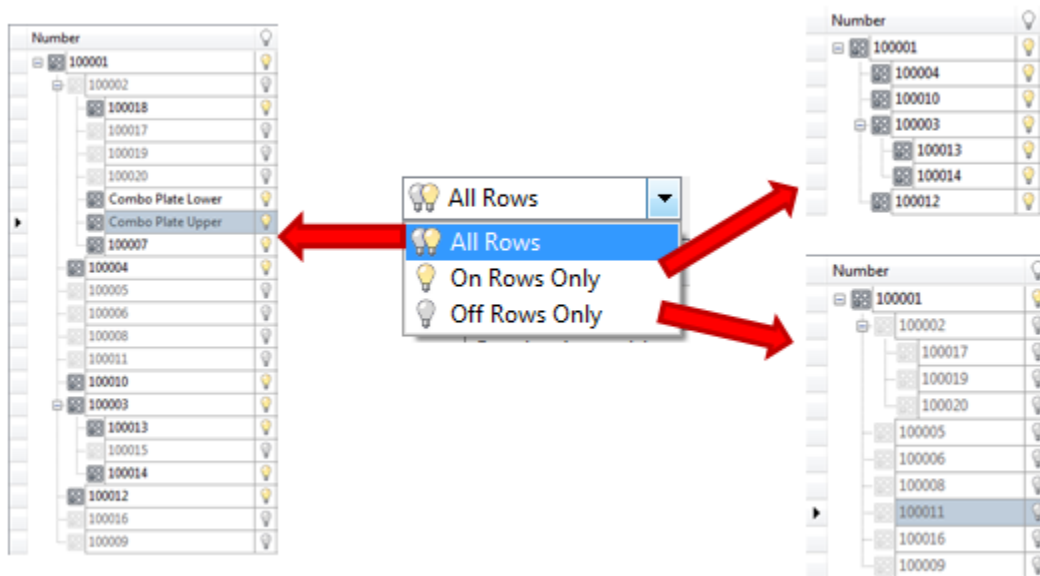
Number	
100001	
100002	
100018	
100017	
100019	
100020	

BOM rows can be turned on and off with the right-click context menu commands of 'Turn Row On' and 'Turn Row Off', or by clicking the light-bulb in the 'On/Off BOM Row' column for the row.

On/Off BOM Row Filter

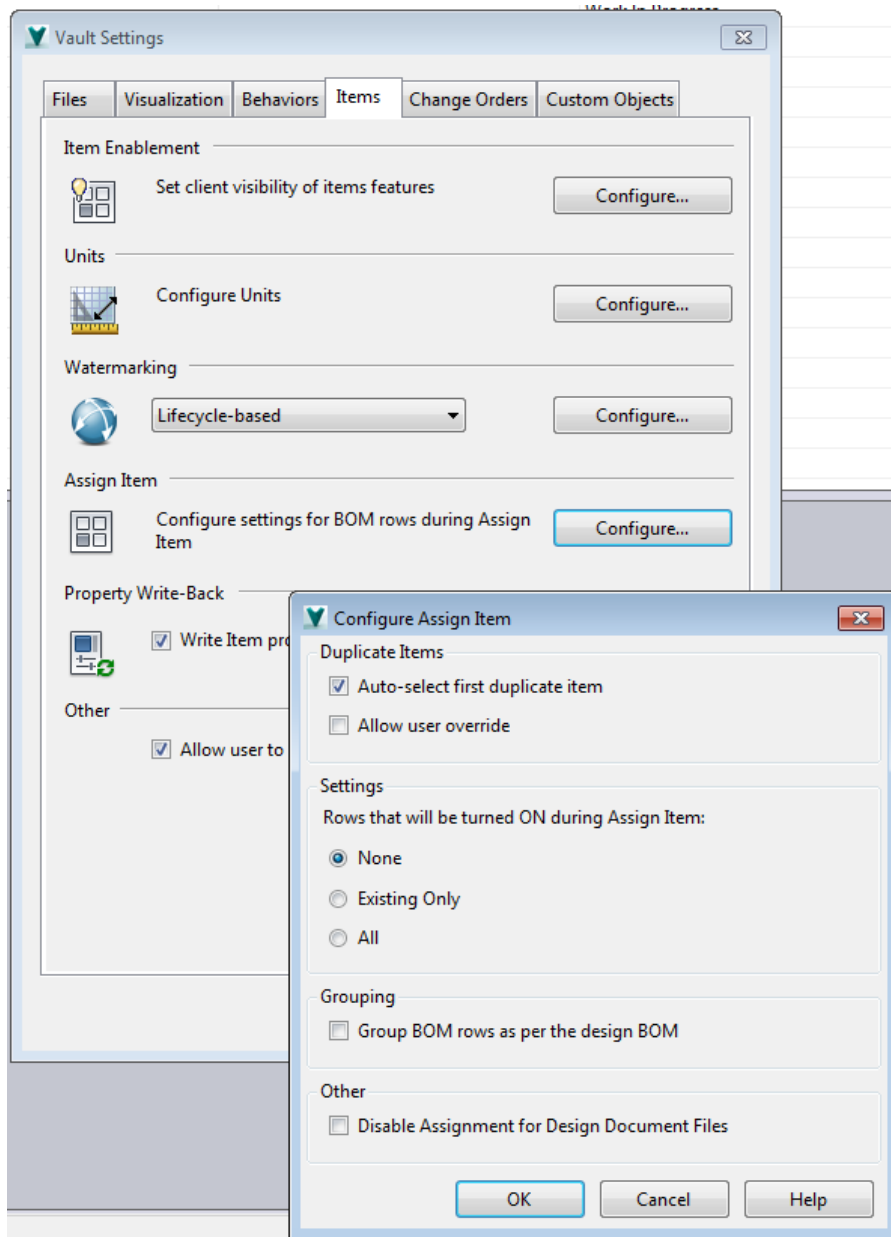
A new filter was introduced to control the display of BOM rows dependent on their on/off state.

Note: BOM rows underneath an 'off' row will not be shown, even if the children are in an 'on' state when the 'On Rows Only' filter is selected.



Administration

The settings for configuring the assign item behavior can be found in the Item tab of Vault Settings.



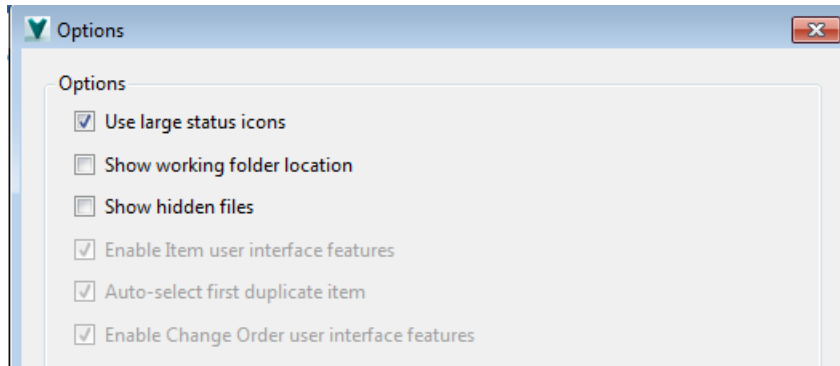
Duplicate Items

- Auto-select first duplicate item

If this option is selected, child BOM Components will attempt to link to an existing item using the Equivalence Value property.

Note: Standard Components will always attempt to link to an existing item.

- Allow user override
This enables the Auto-select first duplicate item option. The user can then override the Vault setting.



Rows that will be turned ON during Assign Item

- None - Components that link to existing items will not be turned on.
- Existing Only - Components that link to existing items will be turned on.
- All - Components that do not link to existing items will have new items created for them. All new rows will be turned on.

Note: These rules are only applied until a row is linked to an item. Once a row has an item identified, the flag will not change the on/off state of a row during a subsequent update.

Checked out Files

In previous versions of Vault, a user could not assign item to a file that was checked out. Starting in 2015, Assign Item operates on the last checked in version of the files.

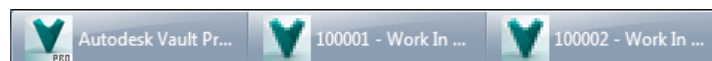
Edit Dialog improvements

In addition to removing the Assign Item Wizard and displaying the Assign Item results in an Edit Dialog, a number of improvements were made to the Item Edit Dialog.

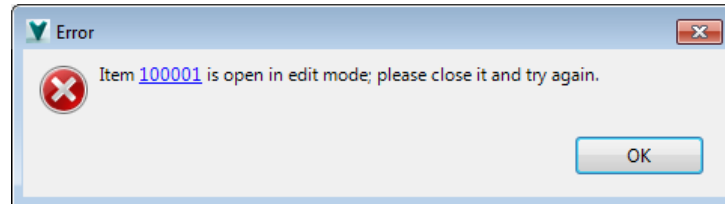
Modeless Dialog

Item dialogs can now be opened without blocking interaction with the main application window. Previous to Vault 2015, an Item dialog would block interaction with other Vault windows until it was closed. Now, you can open Item dialogs for viewing or editing, and continue to work in the main application window.

This approach also allows for multiple Item windows to be open at the same time. Each window will get its own entry in the taskbar for easy location and switching. Only one Item dialog at a time can be used for editing an item.

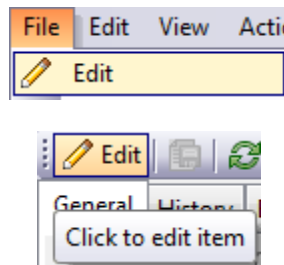


Only one Item window may be used for editing. If the user attempts to enter edit mode while an existing Item window is in edit mode, a dialog will be displayed letting the user know which window is currently being edited will be displayed. The Item number can be clicked in this window to bring the Item window currently in edit mode to the foreground.

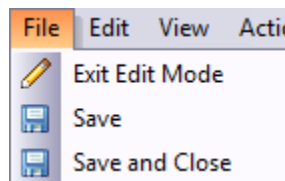


Viewing, Editing, and Saving

In Vault 2014 and before, you had to open an Item for viewing (using the 'Open...' command), or for editing (using the 'Edit...' command). In Vault 2015, you can use one Item dialog and switch between view-only and edit modes. This can be accomplished by selecting the 'Edit' command in the File menu or by selecting the 'Edit' command on the Item dialog toolbar. Keep in mind that if another item is currently in edit mode, the 'Edit' command will be disabled.



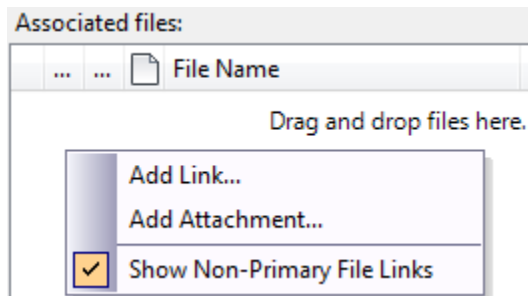
In Vault 2014, when saving an item, the item window was always closed. In Vault 2015, you have the option of saving your edits and keeping the item window open to continue editing, or saving and closing the window, as well as returning to view-only mode. This can be accomplished with the 'Exit Edit Mode', 'Save', and 'Save and Close' commands on the Item dialog File menu.



New Workflows for Associating Files

Vault 2015 offers many new ways of manipulating the associated files. You can now add associated files to an item by using the 'Add Link...' or 'Add Attachment...' right-click context menus, by dragging and dropping files from the main application window or Advanced Find dialog to the associated files grid, or using copy (Ctrl-C) and paste (Ctrl-V) of files to the

associated files grid. This allows users to have an Item first design process where they can start with the Items and associate them with CAD data later.

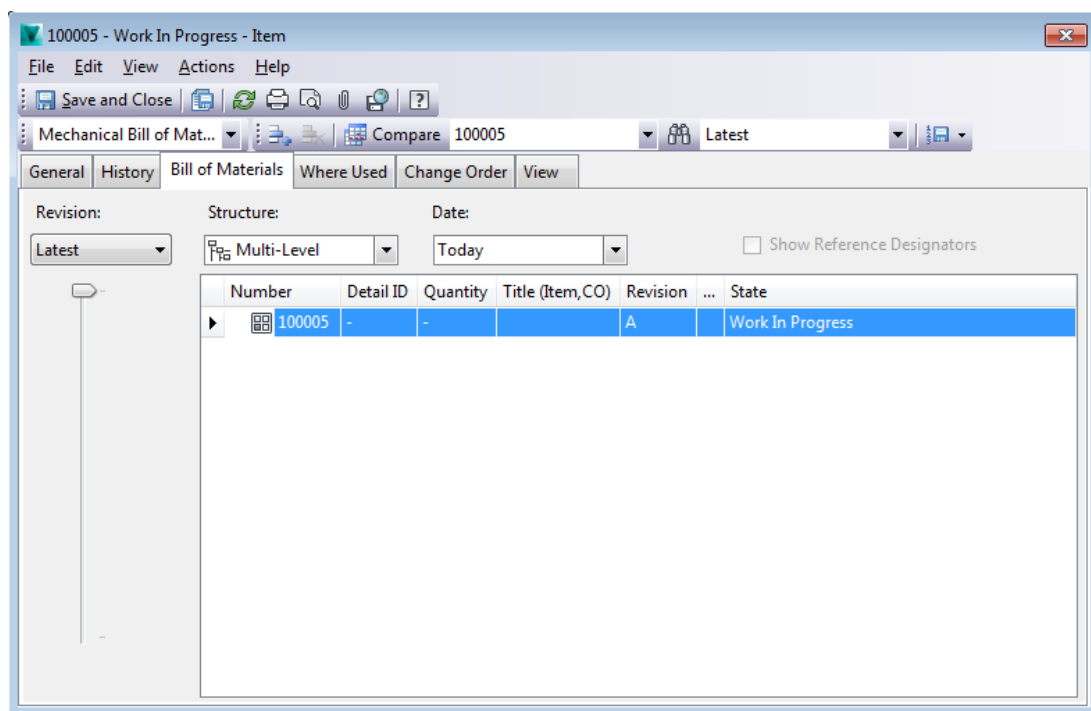


BOM Tab Enhancements

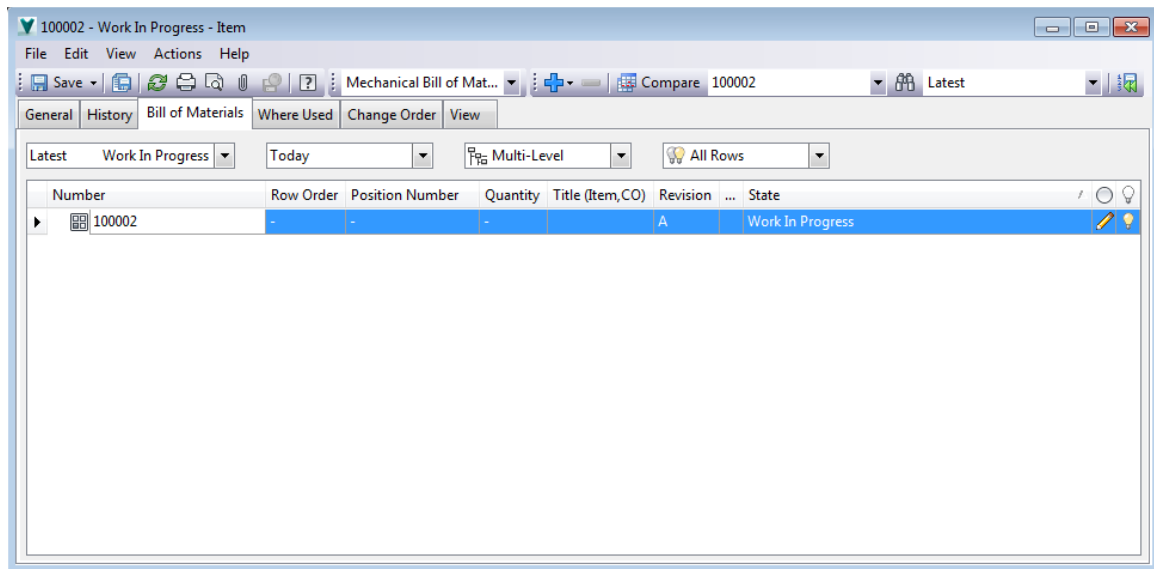
The BOM tab has received a lot of attention including a new layout, introduction of new workflows, enhanced editing capabilities, and new properties.

New BOM Tab Layout

The BOM tab has undergone a facelift to maximize the BOM tree or grid space, and increase usability in general. The default locations of the toolbars have been re-arranged, but the user can customize the locations to get back to the legacy settings.



Old BOM Tab Layout



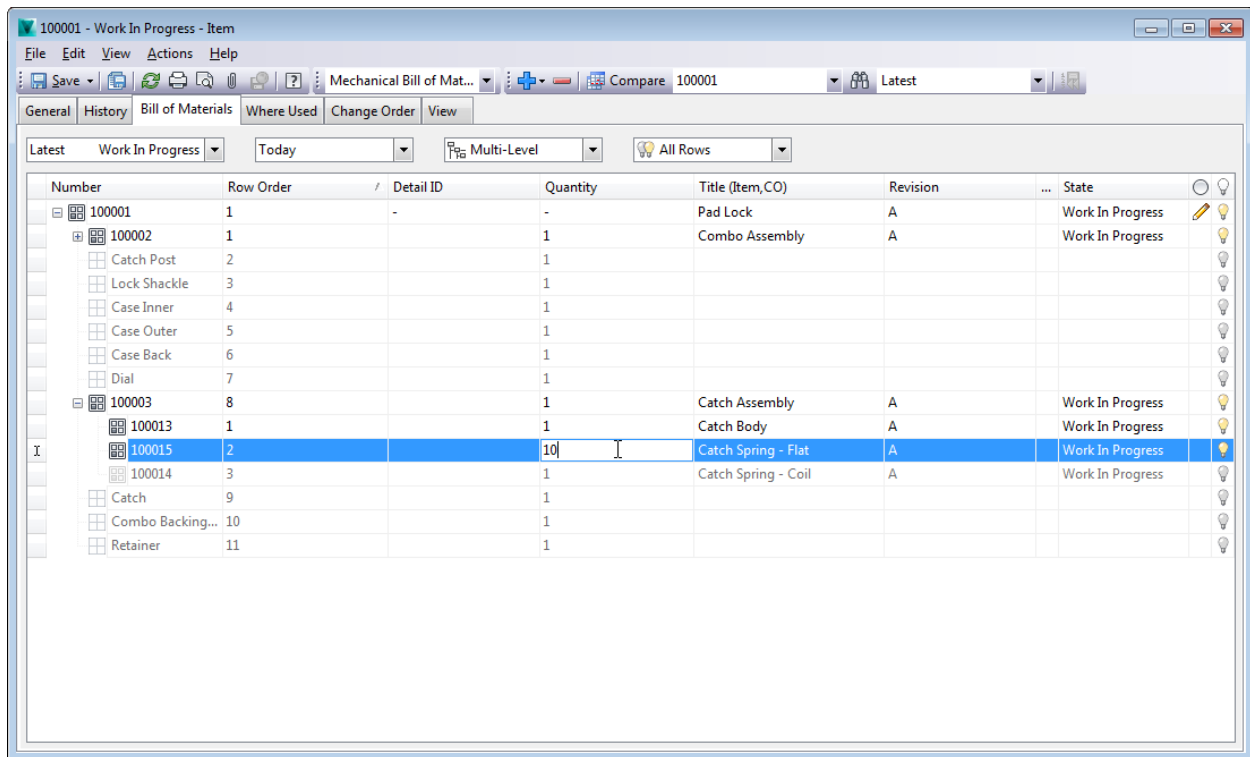
New BOM Tab Layout

The 'Revision' selector and slider have been replaced with a repositioned selector that is consistent with the document interface. The 'Structure' and 'Date' labels have been removed, and a new row filter has been introduced (see below for details). Lastly, the default columns for BOM tree have been changed. 'Detail ID' has been replaced with 'Row Order' and 'Position Number', and the new 'Vault Status' and 'On/Off BOM Row' columns have been added.

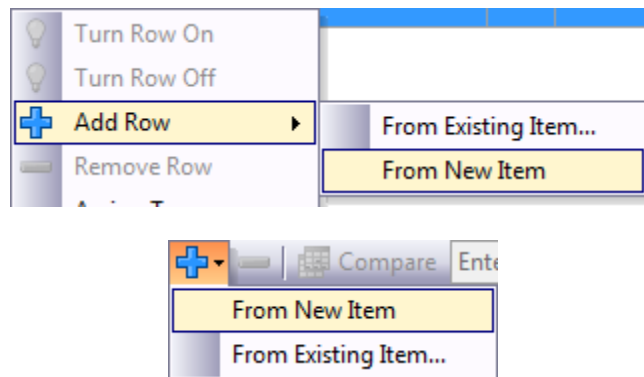
Nested Edits

In Vault 2014 and before, only the structure of the top level BOM row could be modified, and only the BOM properties of the first-level children could be edited.

One of the most impactful changes for Vault 2015 is the ability to edit any row of the BOM. Rows can be added or deleted at any level, and the editable properties of any BOM row can be changed. The only requirement is that the Item representing the parent of the BOM row must be available for editing.



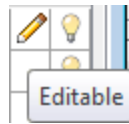
In Vault 2014, rows could be added to the BOM only by searching for and selecting existing items. In Vault 2015, new items can be created on the fly and inserted into a BOM using the new right-click context menu 'Add Row'/'From New Item' command, or by using the toolbar '+', and selecting the 'From New Item' command from the fly out menu.



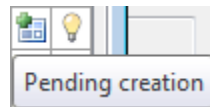
New BOM Row Status Icons

New status for BOM rows has been implemented for the 'Vault Status' column. These new statuses will let the user know the editability of BOM rows in their views.

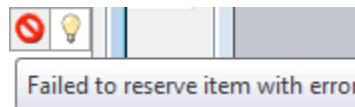
The 'Editable' status is represented by a pencil icon. The root BOM row will always be editable when the Item dialog is in edit mode. Other rows will be marked with the editable status as the user performs edits in the BOM and items are reserved on demand.



The 'Pending creation' status is for the initial version of an Item that has not yet been saved to the server. This status will be shown for new items created by the 'New Item' command, the 'Assign / Update' command, or the 'Add Row/From New Item' command. Items with this status will not be created if the edits are not saved to server.



To allow for editing of BOM rows at any level of the BOM, Items are now reserved on demand as edits are applied to them. Some Items may not be eligible to be reserved for edits. When this situation occurs, we will display a red 'no' icon with a tooltip indicating the reservation error that occurred. Also, the editable properties on both the Item itself, as well as the children that are not editable as a result of this error will be displayed in grey.



Lastly, Items in a 'locked' state due to security will display the lock icon. A gold lock will be displayed if the Item is locked because of lifecycle state, a silver lock will be shown if the Item is locked due to security.



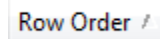
Row Order

A new 'Row Order' column has been introduced to provide a hierarchical order for the BOM structure.

The values for Row Order must be a non-negative whole number. The BOM Multi-Level view will show a value built from the Row Orders of all parent BOM rows. For example, if a BOM row's Row Order value is 3, and the parent Row's value is 8, and the grandparent's Row Order value is 5, the row order for the row in question will be displayed as 5.8.3. When editing the Row Order, only the targeted Row Order value will be displayed; so for the above example, only 3 will be displayed.

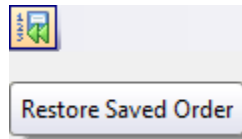
Original Value	Begin Edit	Edit Value (to 3)	Apply Edits
5.8.1	1	3	5.8.3

The Row Order value can also be manipulated with drag and drop. To use drag and drop to set the Row Order, you must have the Row Order column be the primary sort column. You can set this by clicking on the Row Order column header. The column can be sorted in ascending or descending order. The drag and drop must also occur within the same parent.


 A rectangular button with a light gray background and a thin border. It contains the text "Row Order" in a standard font, followed by a small downward-pointing arrow icon.

If the column is sorted in ascending order, drag and drop will set the Row Order values for all children in ascending order, starting at 1. If the column is sorted in descending order, drag and drop will set the Row Order in descending order, ending at 1.

If you have unsaved edits to Row Order and wish to revert back to the original values, you can use the 'Restore Saved Order' command at the end of the toolbar to get back to the unedited values.



Position Number

Another new property, 'Position Number', has been introduced to give full control to the engineer to specify the 'Position Number' for all rows. A user can override the CAD value or supply a value for manually added rows.

Position Number
-
1
1
3

Position Number is a text field and can have any value, including no value.

The Position Number cell in the BOM view will highlight with a yellow background if there is another sibling row under the same parent with the same Position Number value. This behavior is also implemented for the 'First Level' view since that view displays only the children of the top-level parent, but not 'Parts Only' because that view shows children at multiple levels.

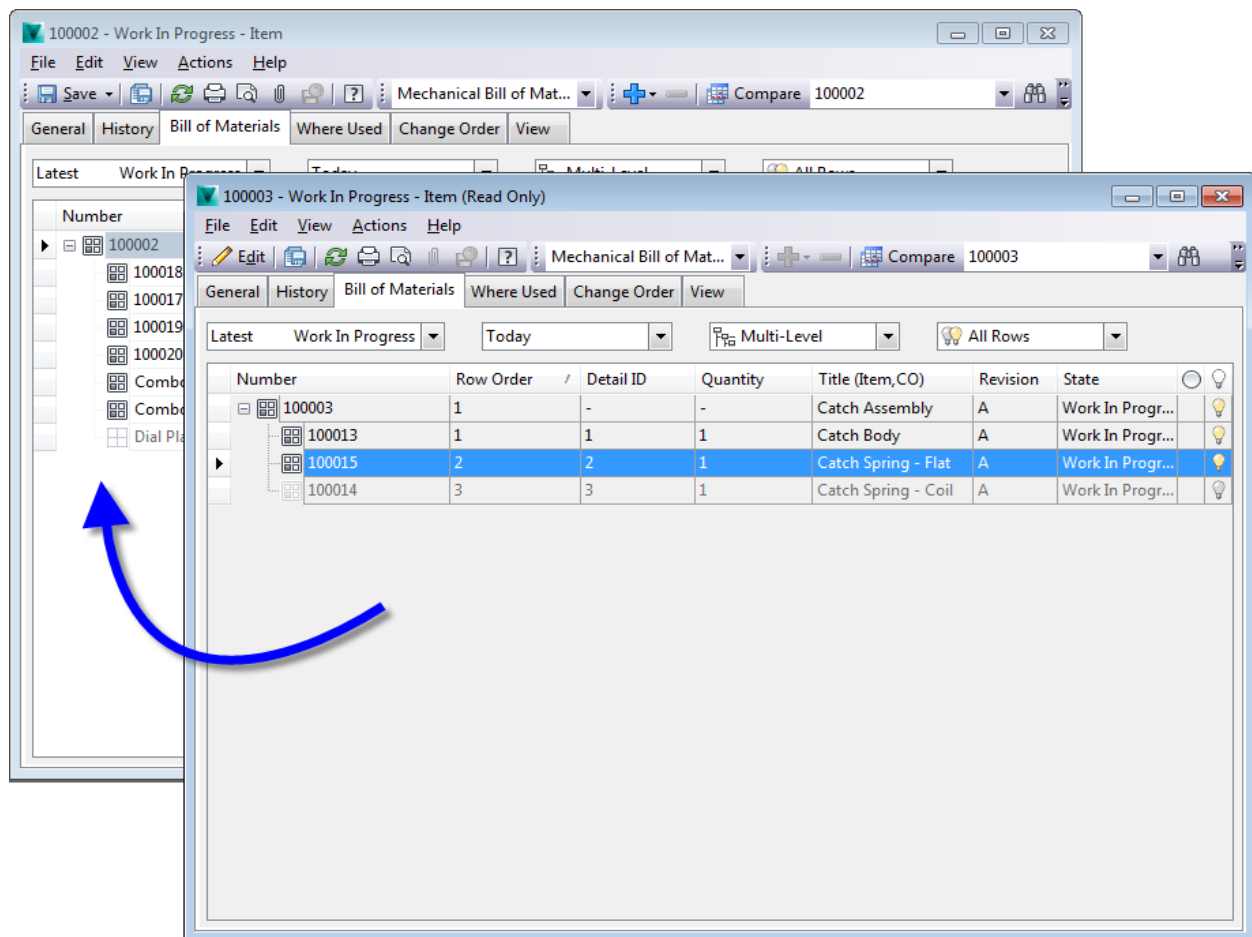
Copying BOM Rows

With the ability to have multiple Item windows open, you can now copy BOM rows from one BOM to another.

This can be accomplished by dragging and dropping or copying and pasting (via Edit/Copy and Edit/Paste or Ctrl-C/Ctrl-V) BOM rows from one BOM view to another. The destination BOM

must be in an edit-mode Item dialog, but the source BOM can be another BOM window or the BOM tab in the Item preview pane. The copied BOM rows will be added as children of the item that was under the cursor when the dragged row is dropped or the selected item when the paste command is executed. The quantity of these rows from the original BOM will maintain their original value from the original BOM.

Items can also be dragged & dropped or copied & pasted to a BOM directly. The Items can be selected from the Item Master, Item links in other entities, or search results. The quantity will default to 1 in these cases.



Item Lifecycles

Prior to Vault 2015 R2, documents, folders, and custom objects used Vault's configurable lifecycle engine, while Items used a separate, non-configurable lifecycle engine. The biggest project for the Vault 2015 R2 release was to allow Items to use the configurable lifecycle engine,

allowing users to customize Item behavior to meet their needs. Item lifecycles can now also be shared with files, folders, or custom objects.

Unified Life Cycle Engine

Some of the capabilities of the flexible lifecycle engine include:

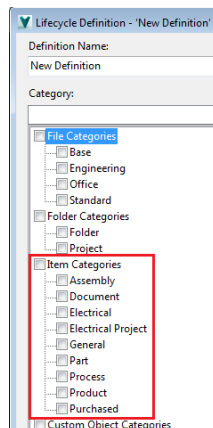
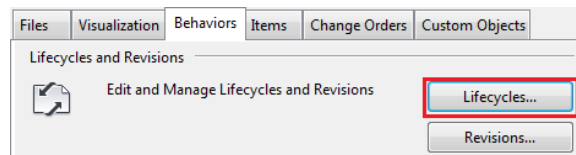
- Multiple Lifecycle Definitions
- Manage multiple lifecycle definitions per category
- Lifecycle Definitions can be shared between Items and other entity types
- Ability to create Custom Lifecycle Definitions

Vault Professional also added some additional functionality that will allow Vault Professional 2015 R2 to closely emulate the legacy item lifecycle engine.

Note: This document will only cover Item specific changes to the lifecycle engine. For a more in-depth description of the lifecycle engine, see PL5397 “I Want to Ride My Lifecycle”

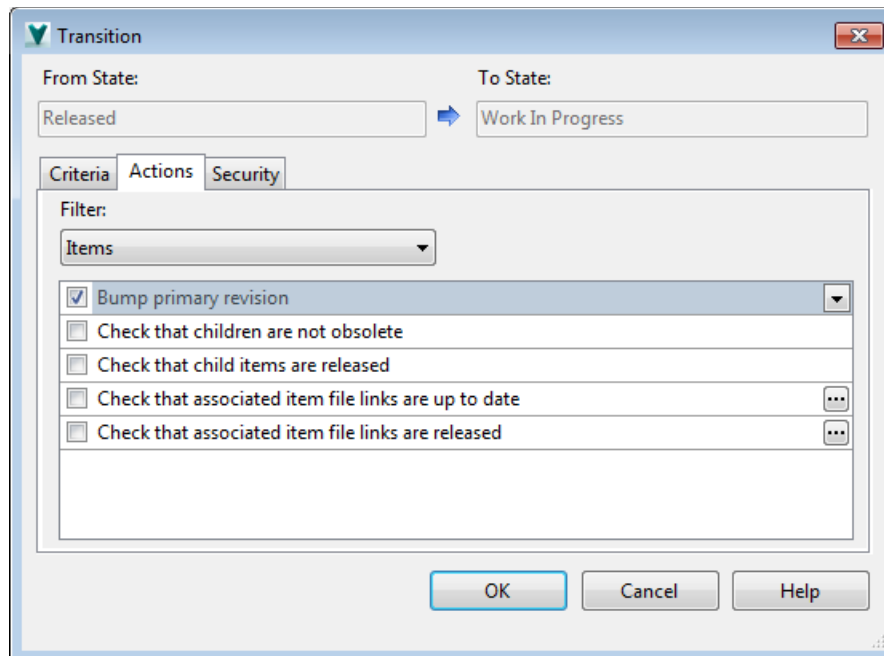
Lifecycle Definitions

All lifecycle settings are accessed on the Behaviors tab of the Vault Settings Dialog.

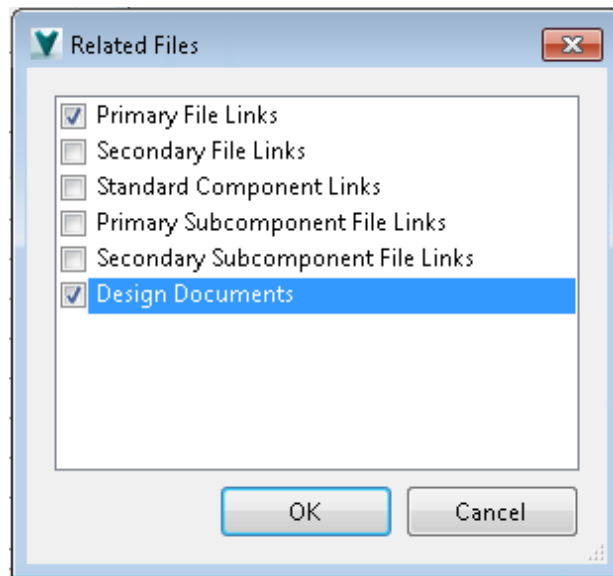


Item Specific Transition Actions

Some transition actions were added to the lifecycle engine to handle the legacy item workflows.



- Check that children are not obsolete
 - This will verify that direct children are not in an obsolete state.
 - Excluded (OFF) child rows are not checked
 - This action is also available for state transitions on other entity types.
- Check that child items are released
 - This will verify that direct children are now in a released state.
 - Excluded (OFF) child rows are not checked
- Check that associated item file links are up to date.
 - The (⋮) button to the right of this option will display the related files dialog.
 - The selected link types must be up to date during the corresponding transition.



- Check that associated item file links are released.
 - The (...) button to the right of this option will display the related files dialog.
 - The selected link types must be released at the time of the transition.

Security

Vault can now set read, modify, and delete permissions on items in the same way that these permissions were set for files and folders in previous releases. Security can be defined for a lifecycle state and it will be applied to an item when it enters that state. Users can also override the current security on an item.

State based security

Security for items is defined on the state's security tab. Read, Modify, and Delete permissions are set the same way that a user would define them for other entity types.

Lifecycle Definition - 'Item Release Process'

Definition Name: Item Release Process

Description: Item lifecycle process for release control

Category: Assembly, Document, Electrical, Electrical Project, Genera...

Lifecycle Details

Lifecycle States:

✓	Name	Description
✓	Work In Progress	Item is available for editing
	In Review	Item is awaiting further ac...
	Released	Item is ready for production
	Obsolete	Item is no longer used in ...
	Quick-Change	State for controlling Item ...

General Transitions Security Control Comments

Name

Everyone
Administrator

Add... Remove

Permission	Allow	Deny
Read	☒	☐
Modify	☒	☐
Delete	☐	☐

☐ No state-based security

Associated Files

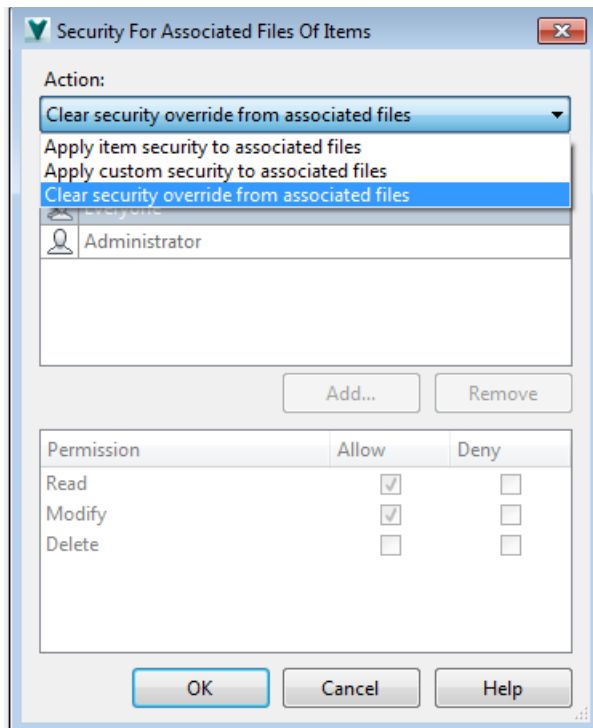
☒ Security for associated files of items Configure...

OK Cancel Apply Help

Security for item related files

A new “Associated Files...” group has been added. This defines how security will be applied to files when the state of a related item is changed.

When the Configure button is pushed, the “Security For Associated Files Of Items” dialog will appear.



The Action Dropdown has three options:

- Apply item security to associated files
 - This will apply the item state's security to associated files
- Apply custom security to associated files
 - This will apply the security that is defined on this dialog to associated files
- Clear security override from associated files.
 - This will clear the security override from the associated files.

These security settings will be applied to the following link types:

- Primary
- Primary subcomponent
- Secondary
- Secondary subcomponent
- Tertiary links (Design Documents)

New Obsolete flag

The concept of an 'Obsolete' state has been added to the lifecycle engine and is available for all entity types to allow for custom behavior of entities in this state. Control over which versions of Items can be purged is also available with the new lifecycle configuration.

General Transitions Security **Control** Comments

☐ This is a "Released" state

☒ This is an "Obsolete" state

Controlled versions (do not purge)

☐ All

☒ First and last

☐ Last

☐ None

Watermarking

All states in all Lifecycles will be given an associated watermark definition. The state's display name will be the default text associated with the watermark.

▼ Lifecycle Watermarks

Filter: <All Lifecycle Definitions>

Name	Description
Basic Release Process	Basic manufacturing lifecycle process for release control
Flexible Release Process	Flexible manufacturing lifecycle process for release control
Simple Release Process	Simple lifecycle process for document control
Long Lead Time Release Process	A process for releasing long lead time manufacturing projects
▶ Item Release Process	Item lifecycle process for release control
<None>	Null lifecycle definition for opt-out scenario

Lifecycle State	Watermark Text	Location	Font	Color	Size
▶ Work In Progress	WORK IN PROGRE...	Diagonal	Tahoma	Red	Medium
In Review	IN REVIEW	Diagonal	Tahoma	Red	Medium
Released	RELEASED – EFFECTIVE	Border	Tahoma	Black	Medium
Obsolete	OBSOLETE	Diagonal	Tahoma	Red	Medium
Quick-Change	QUICK-CHANGE	Diagonal	Tahoma	Red	Medium

OK Cancel Help

Effectivity

The existing effectivity system properties (Effectivity, Start, End) will be re-created as User Defined Properties.

We will only be creating (migrating) property values for these new User Defined Properties for 'known' Item Effectivities associated with Items

Predefined Lifecycle Definitions

Out of the box, Vault Professional now comes with a single predefined Item Lifecycle Definition. The behaviors of the states in this definition are consistent with the previous Item

lifecycle configuration. The states in the definition are Work In Progress, In Review, Released, Obsolete, and Quick-Change.

The Quick-Change State is an editable state. The transition from Released to Quick-Change and back does not cause a revision bump.

Note: The Delete permission in the security ACL is given to the Administrator in every state. Everyone has the delete permission in the Obsolete state.

Migrated Definitions

For Vaults that are migrated to Vault Professional 2015 R2, the migration scripts will copy the existing settings into the new lifecycle engine and existing items will use the flexible lifecycle engine. This process includes:

- Creation of the New Lifecycle Definition “Item Release Process”
- Create the 4 Legacy Item States using the legacy display names
- Add the Quick-Change state
- Each non-edit state will be configured with an ACL without write permission.
 - These ACLs will be applied to each item currently not in the WIP state
- Existing Items will be modified to reference their corresponding state in the new definition.
- If the legacy Item Admin option “Apply Security to Related Files” is ON, each state will be configured with a “Security for associated files of items” option
- The Bump Revision Transition action settings will be preserved
- Watermarks will migrate to the new states

Multiple BOM rows

Some user workflows require a child to appear multiple times under its parent. These rows can differ from each other in an assortment of ways (length, finish, etc.) In previous releases, Vault would group all of the instances of a child item into a single row. Vault Professional 2015 R2 gives the users the ability to display these individual rows.

Support for Material Workflows

When using a tool such as Frame Generator, each part may be an individual part file. Historically, if a user wanted to see different lengths of a material in a BOM, then a different item for each length would need to be created. A single item can now be displayed on multiple rows with different lengths and properties.

Number	Posi... /	Item Qty	Unit Qty	Quantity	Title (Item,CO)	Revision
FrameAsm	-	-	-	-	FrameAsm	A
Part8	1	1	Each	1 Each	Part8	A
AISC - 1/4x3/16 - 1	2	1	1 Inch	1 Inch	ANSI 1_4x3_16 00000001	A
AISC - 1/4x3/16 - 0.5	3	4	0.5 Inch	2 Inch	ANSI 1_4x3_16 00000005	A
AISC - 1/4x3/16 - 0.32	4	4	0.32 Inch	1.28 Inch	ANSI 1_4x3_16 00000010	A
AISC - 1/4x3/16 - 1	5	1	1 Inch	1 Inch	ANSI 1_4x3_16 00000001	A
AISC - 1/4x3/16 - 1	6	1	1 Inch	1 Inch	ANSI 1_4x3_16 00000001	A
AISC - 1/4x3/16 - 1	7	1	1 Inch	1 Inch	ANSI 1_4x3_16 00000001	A

Additional Properties

To add support for multiple bom rows, three additional properties were added.

- Unit Qty – Unit Qty is the size of each instance of this BOM Row.
- Item Qty – The number of instances of the item represented by the current BOM Row.
 - Note: Quantity will default to Item Qty * Unit Qty but can be changed.
- Row Type
 - CAD – The row represents a row in a CAD file
 - Manual – A row that was added using the Vault.

Grouping

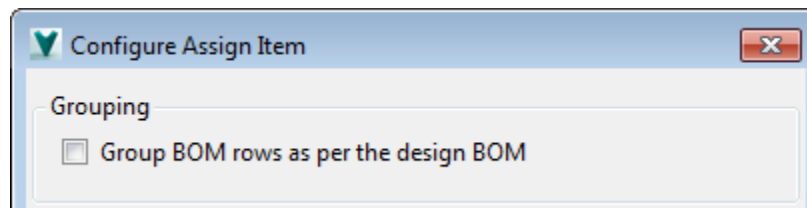
To allow for a more accurate BOM, the concept of grouping has been added to the server and the Vault Explorer application for 2015 R2. When there are multiple CAD rows of the same child item, Vault has the ability to group them into a single row or to leave them as individual rows.

Grouped rows are represented with a new entity icon (). Everything that can be manipulated on a regular BOM row can also be manipulated on a Grouped BOM row.

Number	Row Ord...	Position N...	Unit Qty	Quantity	Title (Item, CO)	Row Type
bc_subasm4	-	-	-	-	bc_subasm4	-
bc_subasm4_v1	2	2	1 Each	2 Each	bc_subasm4_v1	CAD
bc_subasm4_v1	3	11	1 Each	4 Each	bc_subasm4_v1	Manual
bc_subasm4_v3	3	3	1 Each	1 Each	bc_subasm4_v3	CAD

Grouping Logic

When the Vault sees more than one CAD row for an item it has to determine if a group is needed. To help with this, Assign Item has added another option. This option can be found in the Configure Assign Item' dialog, accessible through Vault Settings administration dialog, Item tab, 'Configure...' button under the 'Assign Item' section.



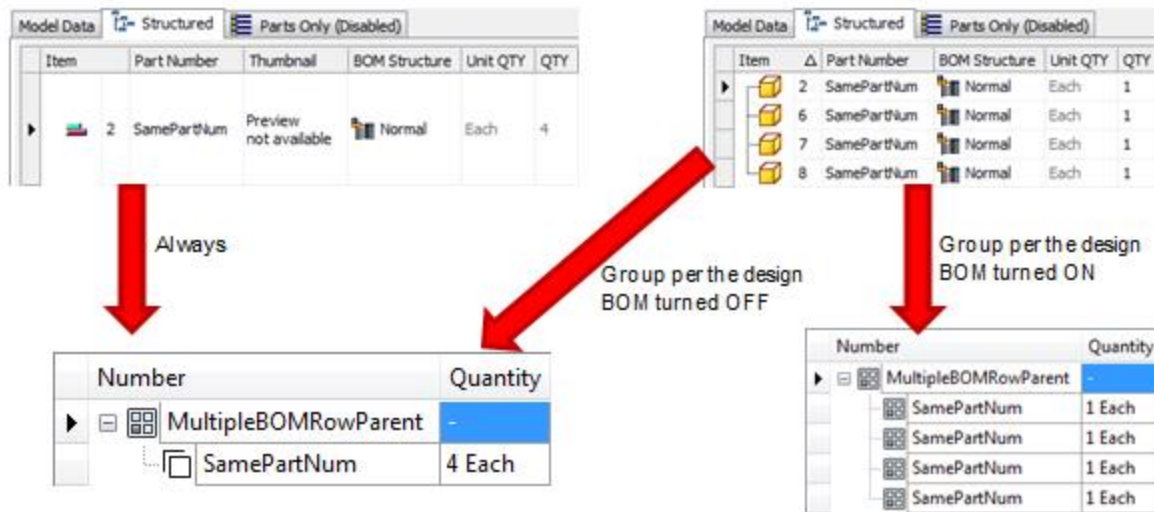
Group BOM rows as per the design BOM

- ON - The Vault will try to reproduce the BOM as close to the CAD BOM as possible.
- OFF - All CAD rows for a single item will be grouped into a single row.

Note: The OFF setting will reproduce legacy vault behavior.

Note: The ON setting uses detail id values to identify rows. If the structured BOM in Inventor is disabled and no detail id values are provided, then the rows will group.

The following examples show an Inventor CAD BOM and the resulting Vault Item BOM depending on the 'Group BOM rows as per the design BOM' administrator setting.



BOM Row Properties

BOM Row Properties

Creating User Defined Properties (UDPs) particular to BOM row instances has existed on the server for a few releases, but was not usable from Vault Professional until the 2015 R2 release. BOM row properties allow each reference to an Item within a BOM to have its own properties, even if the same Item is referenced in multiple locations within the BOM.

Prior to Vault 2015 R2, the only BOM row properties available were a set of system-defined properties that included:

- Detail ID
- Latest Obsolete
- On/Off BOM Row (introduced in Vault 2015)
- Position Number (introduced in Vault 2015)
- Quantity
- Row Order

For Vault Professional 2015 R2, the ability to create and use BOM Row properties has been added. Users can create their own BOM Row properties and include them in the BOM display for viewing and editing.

Number	Row Order	Detail ID	Position Number	My BOM Row Prop
100013	-	-	-	-
100014	1		1	Value 1
100015	1.1			Value 2
100015	2		2	Value 3

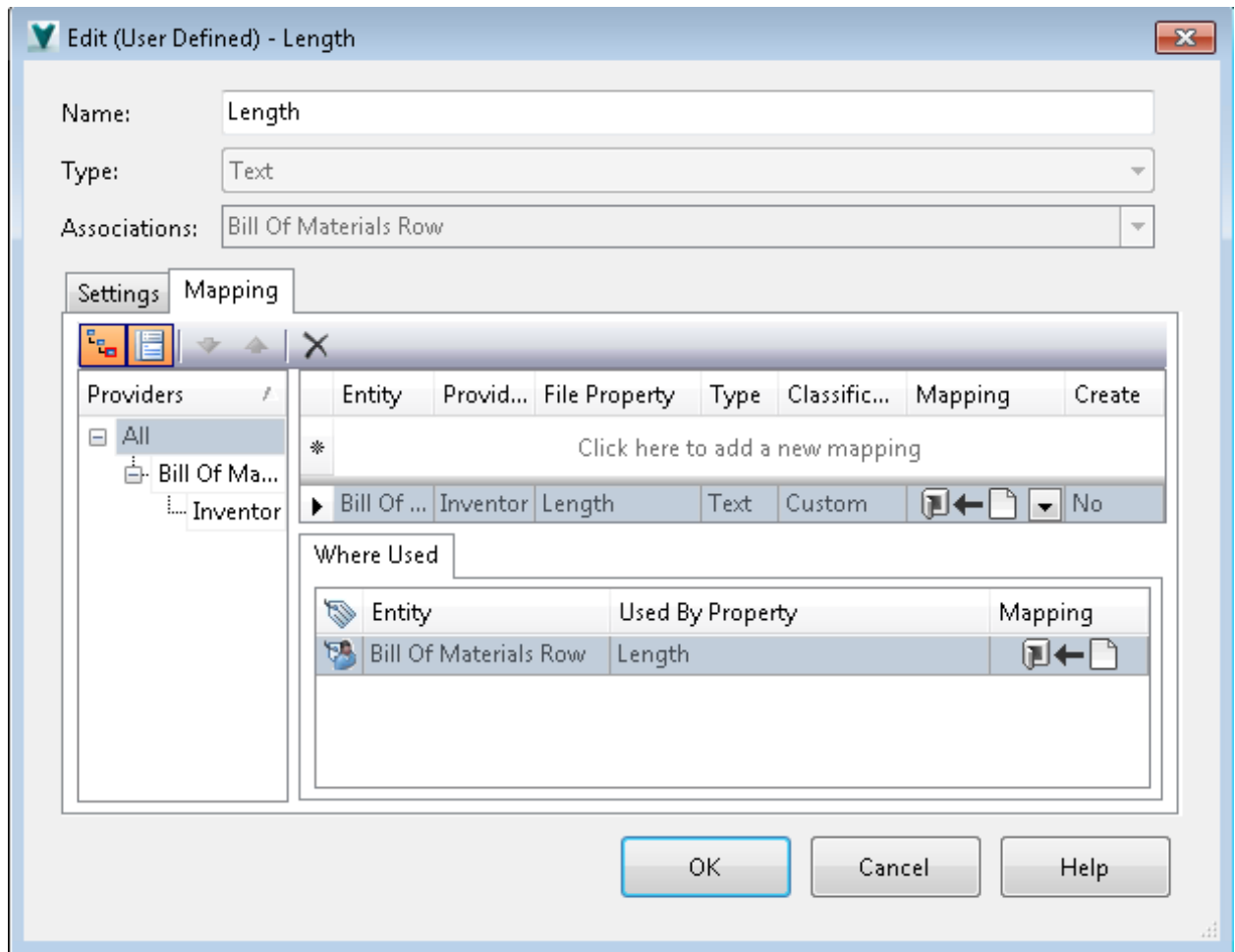
Administration

BOM row property customization is more limited than other UDPs that a user can create, and only supports association to BOM rows (no other entities), an initial value, a suggested list of values (but not restriction to only the list), and mappings that read the value from a file property value to the BOM row UDP. Search capabilities, many constraint types, and mappings that write from Vault to the property in the file are not supported for user defined BOM row properties.

Mapping

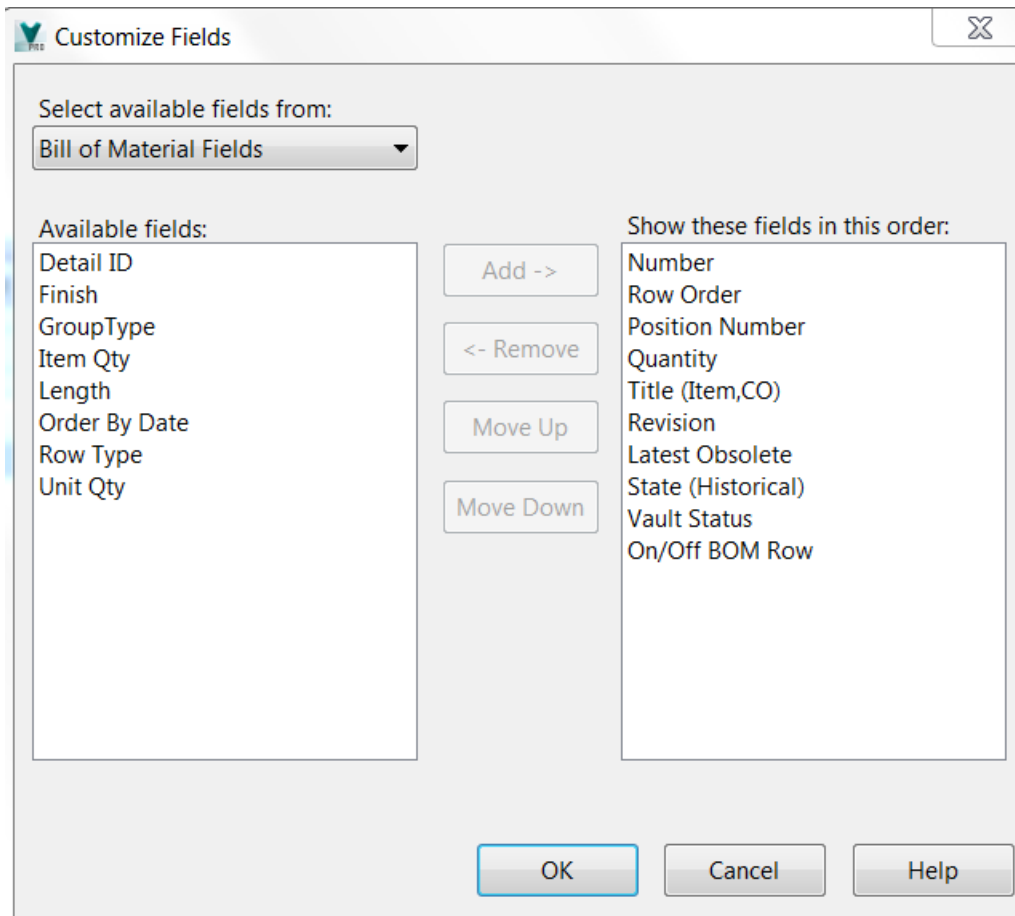
In 2015 R2, BOM Row properties can obtain their values from the CAD Component that represents the child item for that row. These Component properties have historically been mapped to Item properties. Because Vault is mapping to the same Component properties, the mapping process for BOM Row Properties is almost identical to that of Item properties. BOM Row properties only allow read mappings.

Note: A component is defined in a single file and BOM Row property mappings get data from that file. A component can be used in multiple assemblies. Each of these assemblies can have a BOM Row Property value for that component. This many-to-one situation prevents writeback of BOM Row properties.



Displaying

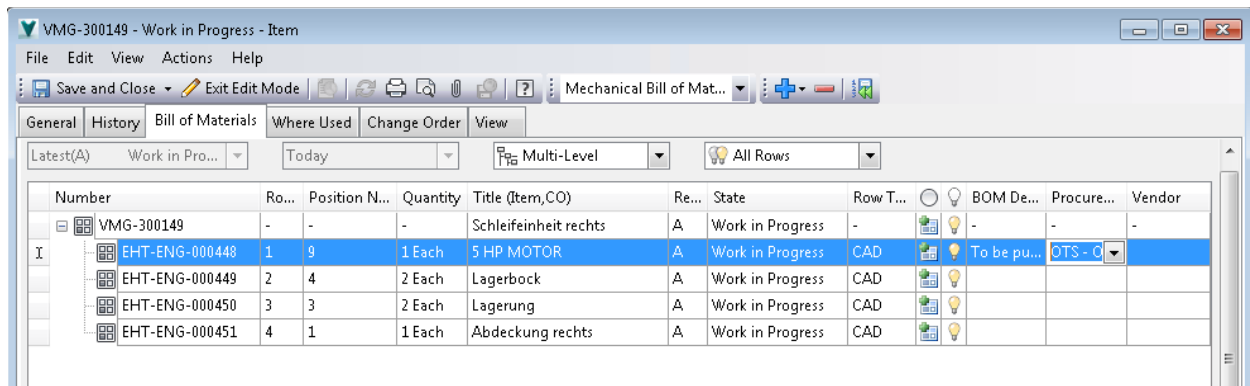
User Defined BOM Row Properties can be displayed in the Bill of Materials grid. This is done in the same manner as adding legacy BOM properties such as Quantity



Editing

In 2015 R2, the edit capabilities within the Bill of Materials grid was expanded to allow users to edit both Item and BOM Row User Defined Properties. If the user can edit the item, then the item's UDPs are editable. A user can edit BOM Row UDPs if they have the ability to edit the parent item.

The grid is aware of the data type of the column being edited. The grid will use droplists, spinners, and other controls to assist the user in editing the data.



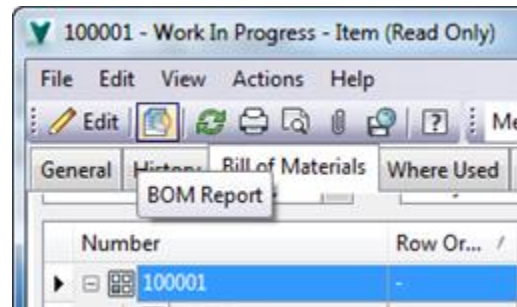
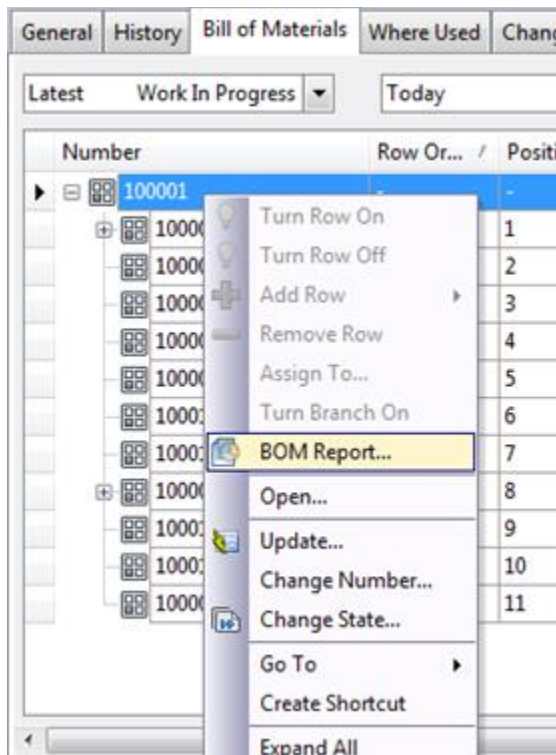
Note: Change Order Item Properties and BOM Row properties are both relationship properties. They are defined in different areas, but they use the same storage mechanism. Because of this, the two types of relationship property definitions cannot share names.

BOM reports

Based on Existing Engine

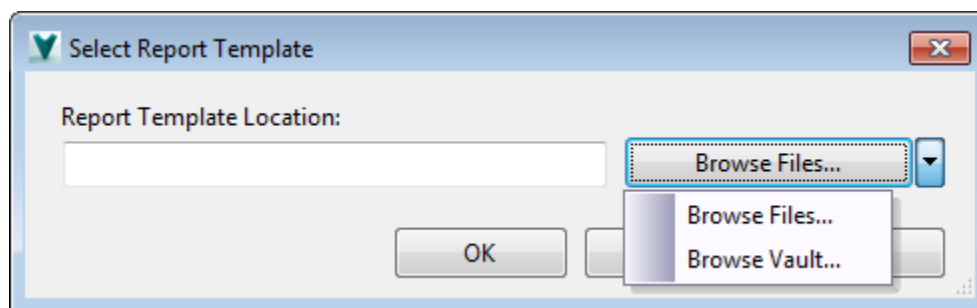
New Command

The new command, BOM Report is available on the toolbar and context menu of a BOM row on the BOM tab of an item. This command will be executed on the top-level item regardless of the row the user might have selected at the time of invoking the command. The report will be generated based on the Revision and Date filters. The Row Type filter will be ignored during the generation of the report. Select the corresponding template for the view (Multi-Level, etc.) you are in.

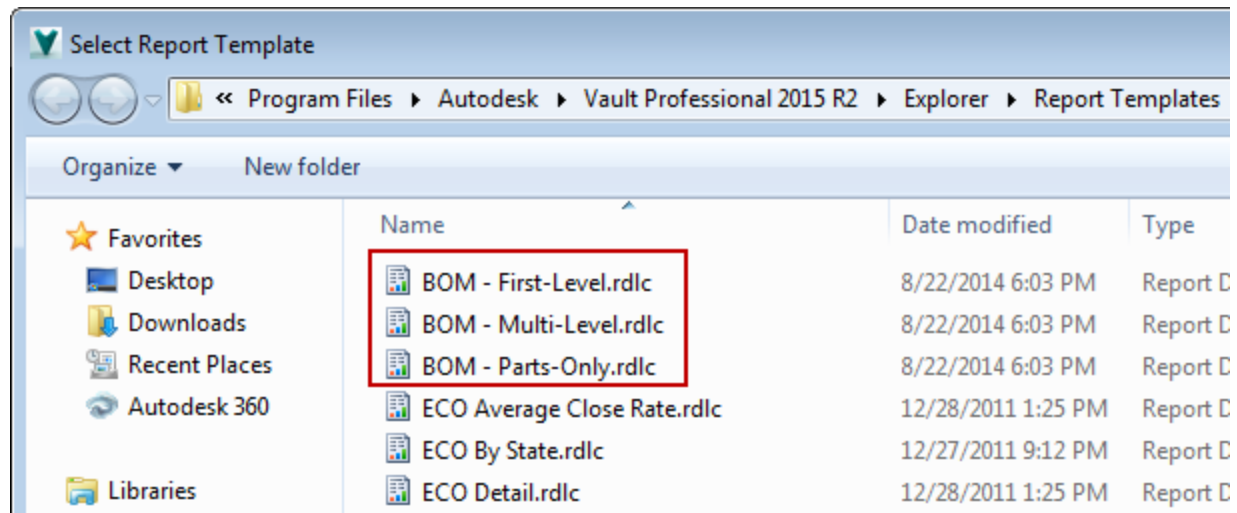


Out of the Box templates

You can either browse Vault or browse the file system to select a template that's used for running the report.



There are three templates, one for each view type is provided out of the box. When running a report, simply select the template that's appropriate for that view that you are in.



Following is a sample Multi-Level BOM report that was generated by using the out of the box template file, BOM – Multi-level.rdlc.

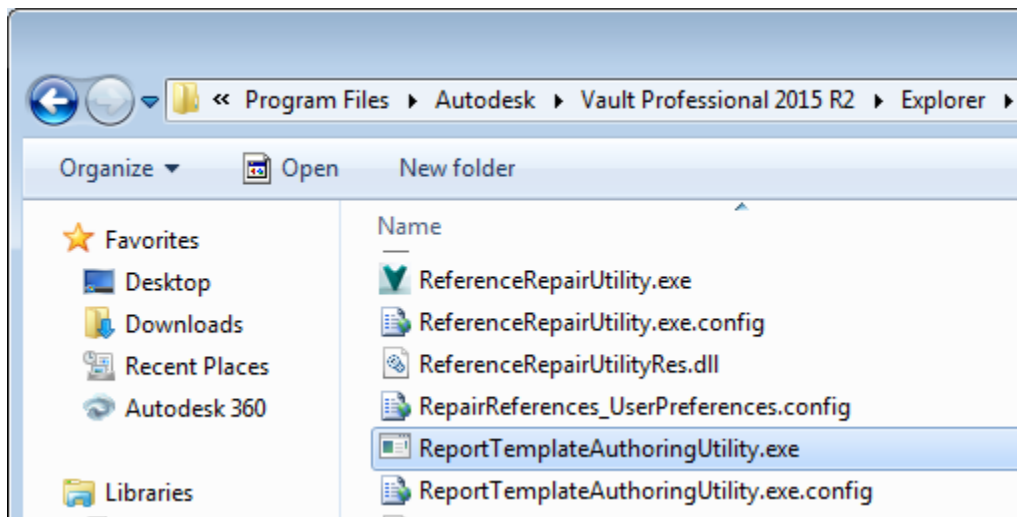
Autodesk®

Bill of Materials Report - Multi-Level

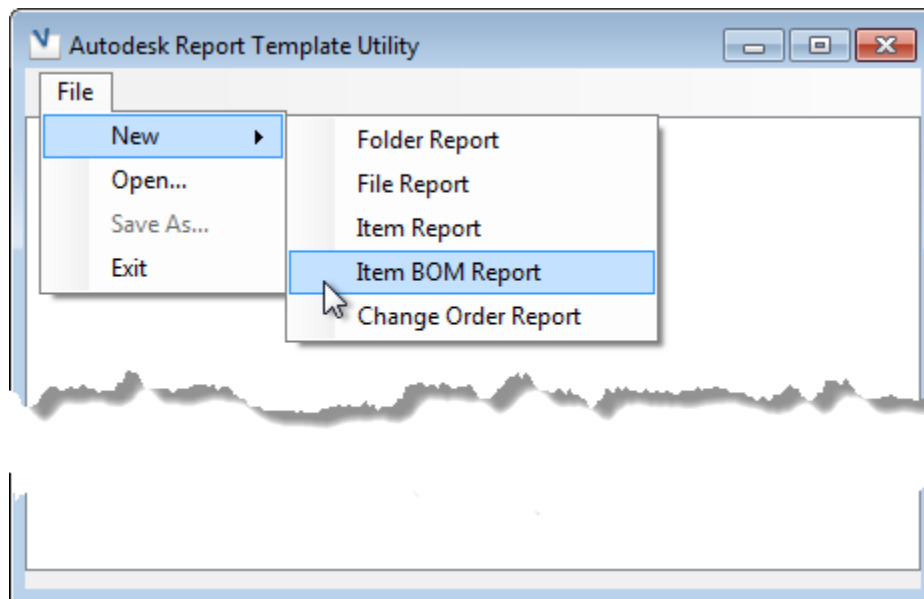
Item Number	: Pad Lock	Category	: Assembly
Revision	: A	State	: Work in Progress
Date Modified	: 10/17/2014 3:34:46 AM	Title	: Pad Lock
Latest?	: True	Description	: PAD LOCK ASSEMBLY

Row Order	Number	Position Number	Quantity	Title	Revision	State	Latest Obsolete	On/Off
-	Pad Lock	-	-	Pad Lock	A	Work in Progress	False	True
1	Combo Assembly	1	1	Combo Assembly	A	Work in Progress	False	True
1.1	Combo Spring	1	1	Combo Spring	A	Work in Progress	False	True
1.2	Combo Stand-Off	2	1	Combo Stand-Off	A	Work in Progress	False	True
1.3	Combo Spacer	3	1	Combo Spacer	A	Work in Progress	False	True
1.4	Combo Spacer Notch	4	2	Combo Spacer Notch	A	Work in Progress	False	True
1.5	Combo Plate Lower	5	1	Combo Plate Lower	A	Work in Progress	False	True
1.6	Combo Plate Upper	6	1	Combo Plate Upper	A	Work in Progress	False	True
1.7	Dial Plate	7	1	Dial Plate	A	Work in Progress	False	True
2	Catch Post	2	1	Catch Post	A	Work in Progress	False	True

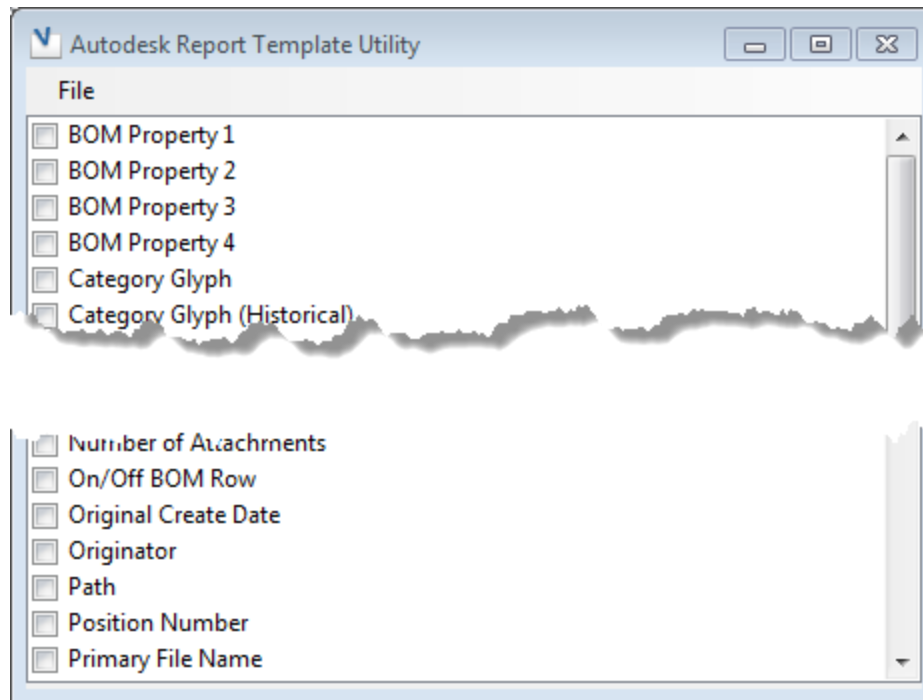
Customization



Launch and login with Administrator credentials. Either open an existing template file using the Open command or use the New menu and select Item BOM Report to start creating an RDLC file for BOM reports.



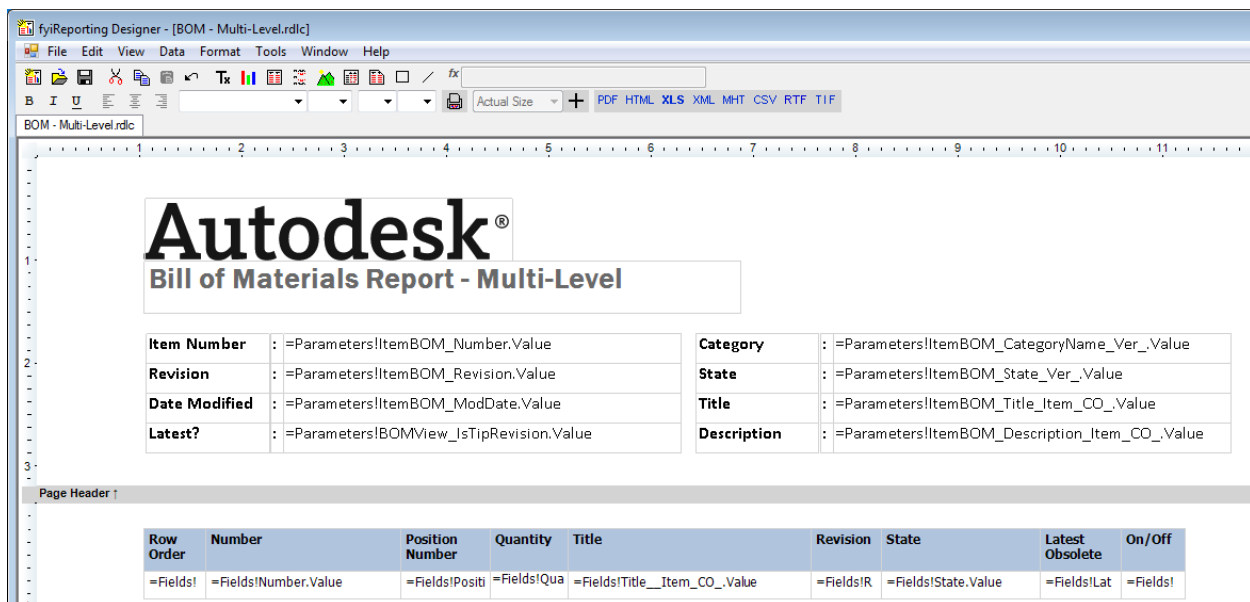
Select the properties that you would like to make available in the report and save the file.



Open the file using an RDLC editor such as the RDL Designer and customize it as per your requirements. RDL Designer can be downloaded from here:

<http://www.fyireporting.com/download.html>

Following image shows how the out of the box template for Multi-level BOM report looks like when it's opened in RDL Designer.



For more information on this topic, please refer to Help:

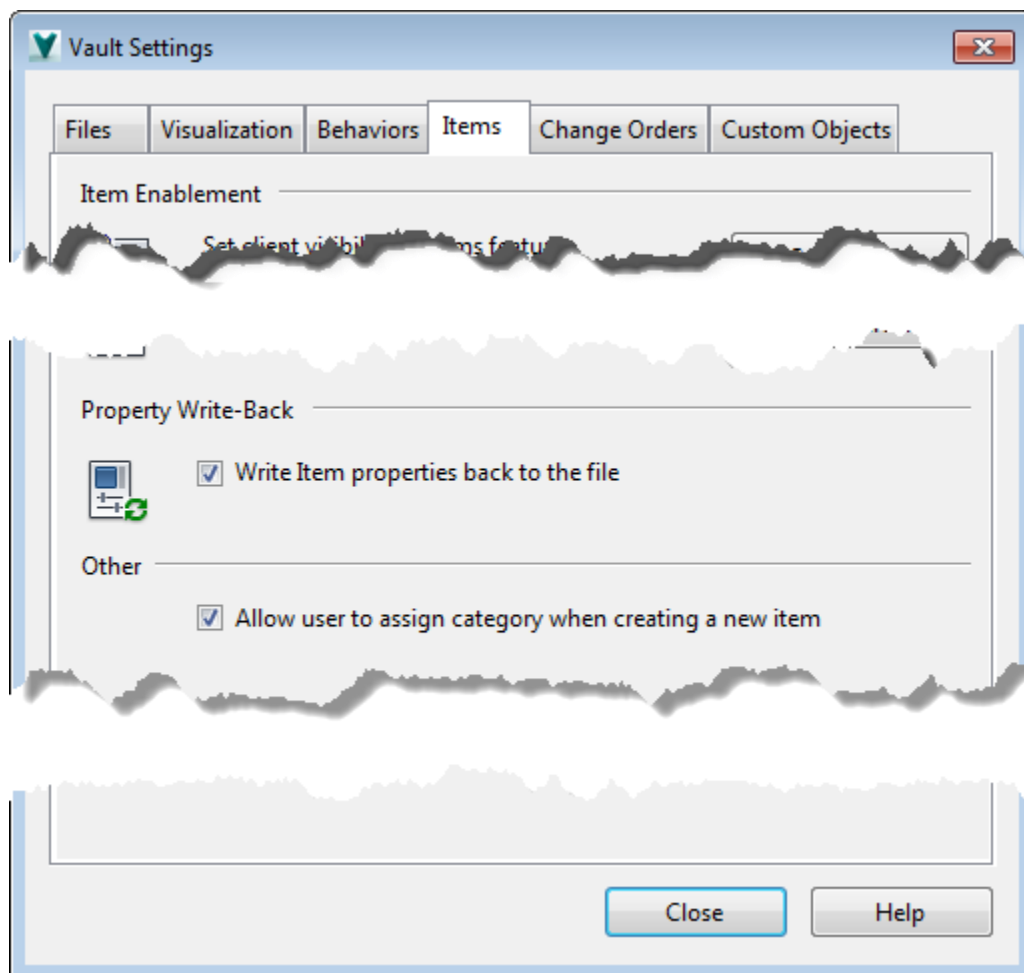
<http://help.autodesk.com/view/VAULT/2015/ENU/?guid=GUID-1338617E-80C5-4B85-9B83-F66260D25BCD>

Writeback Item Properties

Item properties (based on the mappings) can be written back to the associated files when the files are opened in CAD applications and also by using the Edit Properties and Synchronize Properties commands in Vault Explorer.

Admin Flag

A new administrative option, **Write Item properties back to the file**, is introduced to enable or disable write-back of item properties to associated files. When enabled, item property mappings take priority over file property mappings if a property has multiple mappings.



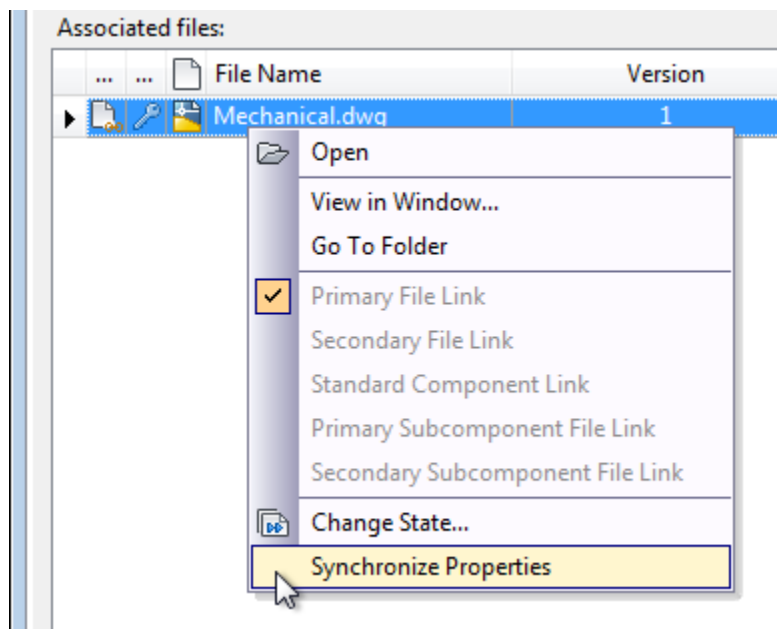
CAD Applications:

Writing item properties back to file from within CAD applications is not new but in Vault 2015 R2, item properties will be written back based on the administrative option. Also in Vault 2015 R2, item properties can be written back to Tertiary links.

Item properties can be written back to the file upon opening the file in a CAD application from Vault or by using the command, Update Properties if the file is already open in CAD. Properties will be written back to all types of file links but there is an exception for Tertiary links. Item properties will be written back a Tertiary link only if it's linked to one item as Tertiary.

VE

Writing Item properties back to the file from Vault Explorer is new in Vault 2015 R2. Provided the administrative option to write item properties back to the file is enabled, the Edit Properties and Synchronize Properties workflows on files will write item properties back to the file provided the file is assigned to an item and there are write mappings from item to the file. The command Synchronized Properties can now be accessed from the context menu of file on the Associated Files grid of an item.



The reporting for Edit Properties and Synchronize Properties has been improved to indicate which entity's (file or item) properties are written back to the file.

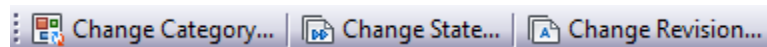
Successfully updated from Vault <u>File</u> property 'Author'
Successfully updated from Vault <u>Item</u> property 'Description (Item,CO)'

Note: The only difference between CAD integrations and Vault Explorer when it comes to writing back item properties is Vault Explorer can only write-back to file properties, it cannot write-back to subcomponent properties such as Inventor's virtual components, AutoCAD's part references that can only be accessed by the CAD application.

Usability Improvements

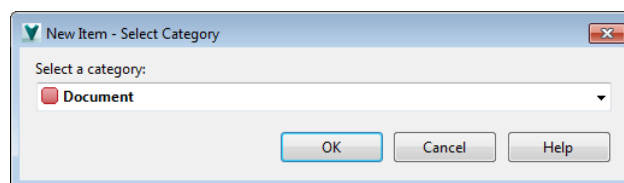
Change [Category, State, Revision] Workflow Unification for Items

The impact to most users will come from Items now participating in the standard Vault workflows for 'Change Category', 'Change State', and 'Change Revision' commands.



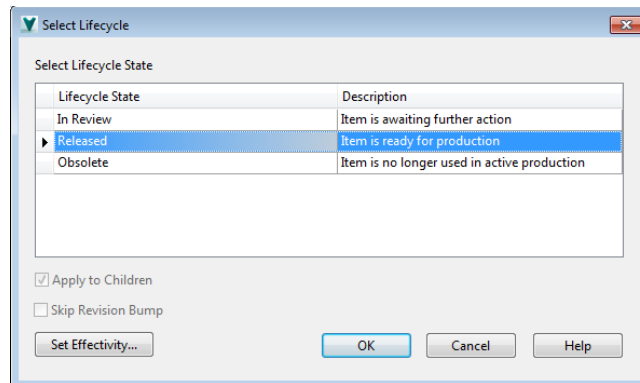
Previously to Vault 2015 R2, changing an Item's category could only be accomplished by editing the item, and changing the category via the 'Category' drop-list on the General tab. Now, multiple Items can participate in the 'Change Category' command and each individual Item can have its own category set, as the standard 'Change Category' workflow allows.

Note: Since the ability to change categories was removed from the Item edit dialog, a new prompt was introduced when creating new Items (not Assign Item). This dialog will appear before the Item edit dialog whenever the 'New Item' command is executed. This behavior can be suppressed with the Vault Settings administration dialog 'Allow user to assign category when creating a new item' option on the Items tab. 'Assign Item' will use the category assignment rules, consistent with previous versions of Vault.

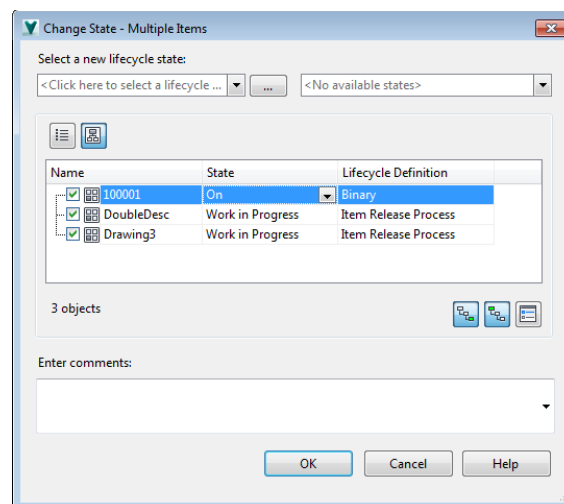


Like 'Change Category', the 'Change State' workflow for Items was also made consistent with other entities in Vault 2015 R2. Multiple Items can participate in 'Change State', and as with 'Change Category', each Item can have its own lifecycle definition and state modified individually. The 'Apply to Children' option has been replaced with parent and child relationship gathering, so parents and children can be included, and each will be displayed as its own entry

in the dialog and can have its settings specified individually. Lastly, there is an opportunity for the user to specify comments for the new versions of Items which will be created by the operation either by selecting the configured comments for the state change, or typing their own.



Old Item Change Lifecycle Dialog

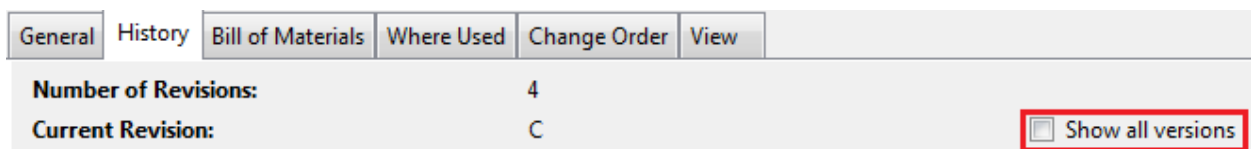
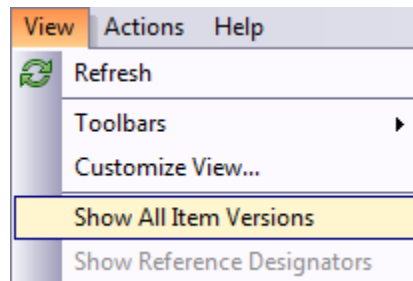
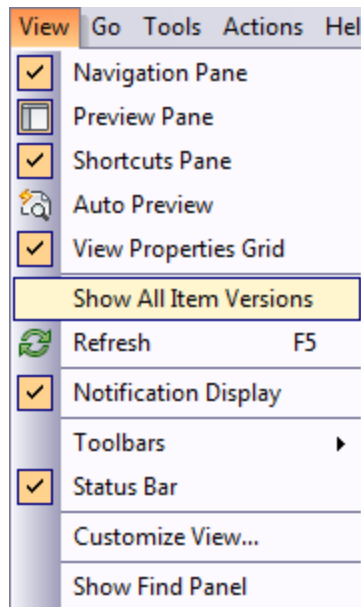


New Item Change Lifecycle Dialog

Much like, 'Change Category' and 'Change State', 'Change Revision' also has the same benefits of multiple Item selection, relationship gathering, individual revision settings per Item (including changing revision scheme), and comments.

Show All Item Versions

The ability to see historic 'Work In Progress' Item versions was a common user request for Item workflows. To enable this functionality, the 'Show All Item Versions' option was added. This option can be controlled from the main window 'View' menu (but is only shown when in a view that can show Items), the Item window's 'View' menu, and the Item view's History tab. All three locations will change the setting for the entire application.



When the setting is turned on, the user can select that version to display in a number of locations:

- General Tab

General	History	Bill of Materials	Where Used	Change Order	View															
Revision:	Latest Quick-Change ▼																			
Number:	<table border="1"> <thead> <tr> <th>Revision</th> <th>Lifecycle State</th> <th>Version</th> </tr> </thead> <tbody> <tr> <td>Latest</td> <td>Quick-Change</td> <td>16</td> </tr> <tr> <td>C</td> <td>Released</td> <td>11</td> </tr> <tr> <td>▶ B</td> <td>Work in Progr...</td> <td>5</td> </tr> <tr> <td>A</td> <td>Released</td> <td>3</td> </tr> </tbody> </table>					Revision	Lifecycle State	Version	Latest	Quick-Change	16	C	Released	11	▶ B	Work in Progr...	5	A	Released	3
Revision	Lifecycle State	Version																		
Latest	Quick-Change	16																		
C	Released	11																		
▶ B	Work in Progr...	5																		
A	Released	3																		
Title:																				
Description:																				

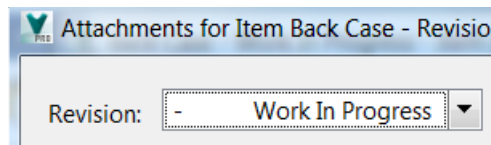
- History tab

Number	Revision	State	Version	Title (Item, CO)	State (Historical)
100007	D	Quick-Change	16	6	Quick-Change
100007	D		15	5	Quick-Change
100007	D		14	5	Released
100007	D		13	5	Work in Progress
100007	D		12	4	Work in Progress
100007	C		11	4	Released
100007	C		10	4	Quick-Change
100007	C		9	3	Quick-Change
100007	C		8	3	Released
100007	C		7	3	Work in Progress
100007	C		6	2	Work in Progress
100007	B		5	2	Work in Progress
100007	B		4	1	Work in Progress
100007	A		3	1	Released
100007	A		2	1	Work in Progress
100007	A		1		Work in Progress

- BOM & Where used tabs

General	History	Bill of Materials	Where Us															
Latest Quick-Change ▼		Today																
<table border="1"> <thead> <tr> <th>Revision</th> <th>Lifecycle State</th> <th>Version</th> </tr> </thead> <tbody> <tr> <td>▶ Latest</td> <td>Quick-Change</td> <td>16</td> </tr> <tr> <td>C</td> <td>Released</td> <td>11</td> </tr> <tr> <td>B</td> <td>Work in Progress</td> <td>5</td> </tr> <tr> <td>A</td> <td>Released</td> <td>3</td> </tr> </tbody> </table>				Revision	Lifecycle State	Version	▶ Latest	Quick-Change	16	C	Released	11	B	Work in Progress	5	A	Released	3
Revision	Lifecycle State	Version																
▶ Latest	Quick-Change	16																
C	Released	11																
B	Work in Progress	5																
A	Released	3																

- Attachments dialog



Users can now see 'Work In Progress' versions of a BOM, as well as properties, 'Where Used' data, and attachments.

When the option is turned off, only the 'consumable' version of the file within a revision will be shown. A consumable is the latest released version of the Item within a revision, or the latest version of the Item within revisions that do not have any released versions. To aid in version selection, a 'Version' column has been added to the Item versions drop-list.

Latest	Work in Progress	Today
Revision	Lifecycle State	Version
▶ Latest	Work in Progr...	12
C	Work in Progr...	12
C	Work in Progr...	11
B.1	Released	10
B.1	Quick-Change	9
B.1	Quick-Change	8
B.1	Released	7
B.1	Work in Progr...	6
B	Work in Progr...	5
B	Work in Progr...	4
A	Released	3
A	Work in Progr...	2
A	Work in Progr...	1

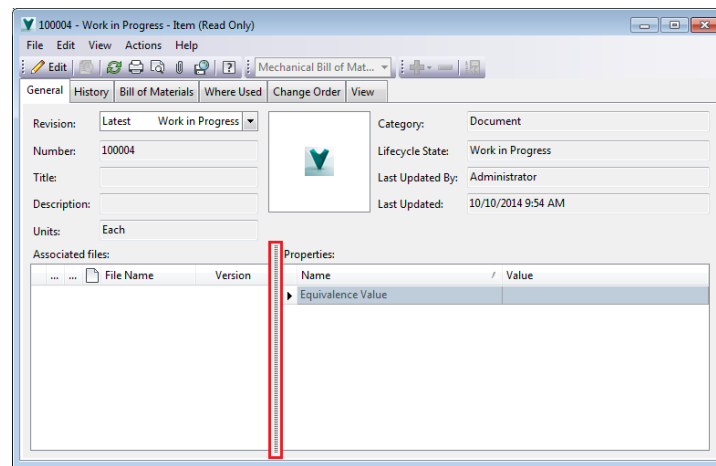
'Show All Versions' On

Latest	Work in Progress	Today
Revision	Lifecycle State	Version
▶ Latest	Work in Progr...	12
C	Work in Progr...	12
B.1	Released	10
B	Work in Progr...	5
A	Released	3

'Show All Item Versions' Off

General and View Tab Resizable Regions

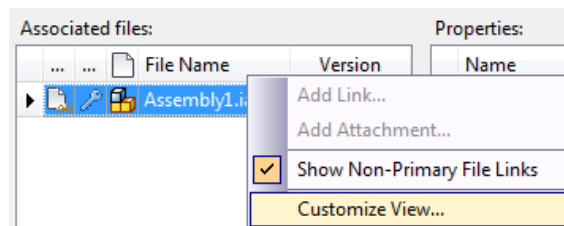
To allow users to maximize the size of regions on the Item view's 'General' and 'View' tabs, splitter panels were added to these views. On the 'General Tab', between the 'Associated Files' grid and the 'Properties' grid, a bar can be clicked and dragged to change the size of these regions. This draggable bar can also resize the regions on the Item 'View', the Change Order comment 'Attachments' tab, and the Change Order comment 'Attach Files from Change Order' window. Each of these windows will persist the location of the draggable bar, so future instances of these windows will maintain the last setting.

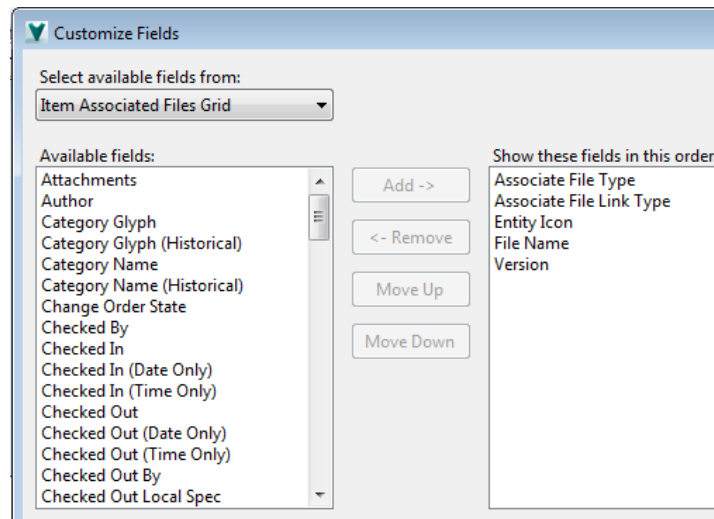


Note: The draggable bar can be double clicked to reset it's location to the default position.

Associated Files Customizable Columns

The 'Associated files' grid on the 'General' tab of the Item view has been enhanced to allow properties to be added, removed, or re-ordered. You can modify the columns by right-clicking on the column headers or the whitespace in the grid, and selecting 'Customize View'. As this view is showing files, most file based properties are available to be added in this context.





Non-Primary File Link Display

From numerous user requests, the ability to view only primary file links in the Item dialog/preview panel General tab was added for Vault 2015.

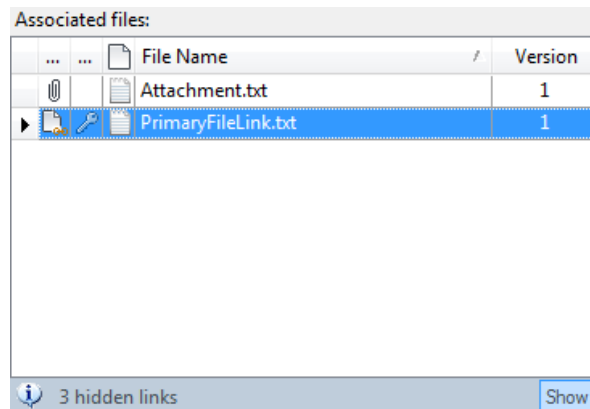
This option can be controlled with the 'Show Non-Primary File Links' command on the main window 'View' menu, and the 'Associated Files' grid right-click context menu.

Note: The 'Show Non-Primary File Links' menu entry will only be shown in the main window View menu when the 'Associated Files' grid has is selected (has focus).

Associated files:

	File Name	Version
	Attachment.txt	1
	PrimaryFileLink.txt	1
	SecondaryFileLink.txt	1
	SecondarySubcomponentLink.txt	1
	StandardComponentLink.txt	1

'Show Non-Primary File Links' option off

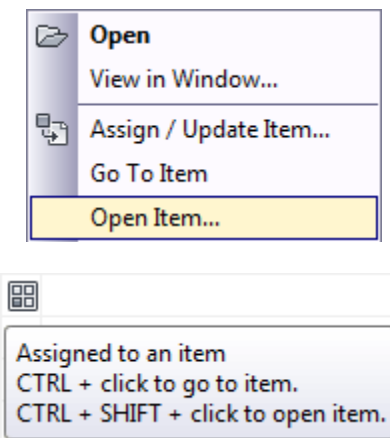


'Show Non-Primary File Links' option on

When the option is turned on, only Primary File Links, Primary Subcomponent File Links, and Attachments will be shown. In addition, if any links are not shown, an information bar displaying the number of hidden links will be displayed. There is also a 'Show' button on this bar to allow for quick switching of the option to see all the links.

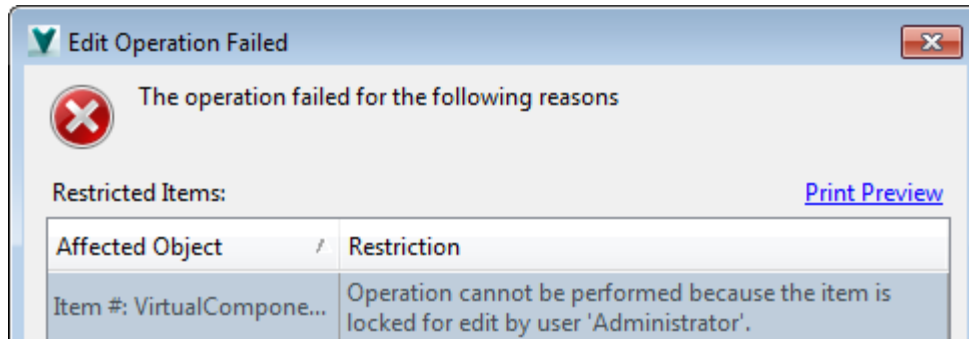
Open Item Command (from files)

To increase accessibility to Items from files, a new 'Open Item' command was introduced to the right-click context menu for a selected file. A new shortcut was also added to the 'Linked to Item' column icon, allowing CTRL-SHIFT-click on the icon to also open the associated Item.



Clear Item and CO Locks Command

Item reservation in Vault is tied to a login timestamp, so one instance of Vault Explorer cannot edit the same Item as another instance, even when it is the same user who is requesting the edit because the logins occurred at different times. When an event happens that causes the user to have to login again, such as a server reset or an unexpected exit from the client, the user must wait for the Item reservation to expire before they can edit the Item again.



But I am Administrator!!!

To alleviate this issue, a new 'Clear Item and CO Locks' command was introduced on the main window Actions menu. This will clear ALL Item and Change Order locks for the current user. After executing this command, the user will be free to again edit the Item or Change Order that was reserved by them. All unsaved edits will unfortunately not be recovered and will be lost.

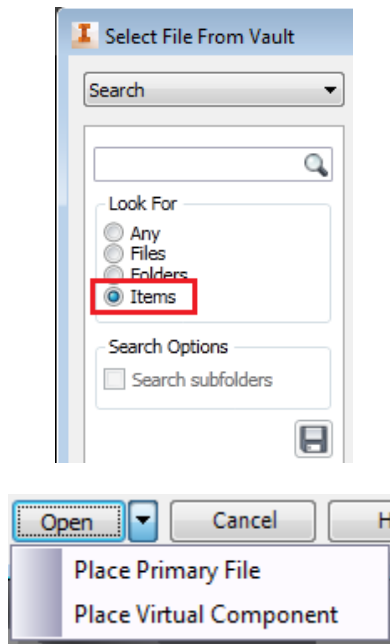
To protect the integrity of a current edit, the command will be disabled if an Item window is in edit mode in the current instance of the application. If multiple Vault Professional clients are opened by the same user, active edits in another instance of Vault Professional can be lost if this command is run from non-editing instance.

Item First Workflows

Reuse Items in CAD

Place Item From Vault

New Item options were added to the Inventor Vault add-in 'Select File From Vault' window. Users can now search for Items in addition to files and folders. When an item is selected for placement, the user can choose to place the Primary File associated with the item (if applicable), in which case the file will be downloaded to the appropriate location according to the Inventor project file settings, and placed into the model as if a local file on disk was selected. If 'Place Virtual Component' is chosen, a virtual component will be created in the current context, with the Title, Description, and Part Number properties auto-populated from the Item values in Vault.



Note: Similar functionality was added to AutoCAD Mechanical. In this case the option will be “Create Part Reference”

