

Structure Resolution Parameters

We mentioned Structure Resolution briefly in the Parameters section above. The Structure Resolution parameter sets query criteria to return a specific configuration of items with respect to Released state and version (generation).

Structure Resolution Modes:

- **Default:** a structure as physically stored in the database. Technically speaking, results will contain Items with ID values in related_id Property of Relationships in the structure without interpretation of LifeCycle State or availability of new versions (generations).
- **Latest:** uses the generation of the Item with the highest value.
- **Latest Released:** uses the generation of the Item with the highest value which is also Released.
- **Latest Released or Latest:** uses the generation of the Item with the highest value which is also Released; otherwise, the Latest if there are no Released generations.

By default, the structure is only displayed as stored in the database. Without dynamic view parameters users would need to spend more time examining work-in-progress changes to components in a structure. Dynamic structure resolution is important feature for BOM structure, Effectivity, 3D Visualization, and other Aras Innovator features.

In this section we describe in detail how Structure Resolution can be configured for a Query Definition using the Query Builder.

Important

In Aras Innovator 12.0 SP2 and SP3, there was an error in process Structure Resolution Queries for the Dynamic Viewer in that it would assign the Structure Resolution filter to the root CAD Item. Thus, if a Structure Resolution query was meant to include all Latest Released CAD Items (and the root CAD Item was not Released, the query would return nothing. This has been fixed in 12.0 SP4 and later releases.

OOTB Example: BOM Structure Resolution

Structure Resolution comes pre-configured for Part BOM Structures OOTB. If you wish to enable Structure Resolution for your own Query Definition its useful to examine the OOTB configuration



used in Query Definition PE_BomStructure for reference. Other than naming conventions and base query structure you will follow the same procedure as used for the OOTB implementation when adding Structure Resolution to your Query.

Display Hidden Tabs Under Query Definition

By default, Tabs under the Query Definition itemtype are hidden. Query Definition Itemtype have Relationships to Parameters and Event handlers. We will need them displayed to examine and configure Structure Resolution.

As administrator, edit the Itemtype qry_QueryDefinition and change the Default Structure View to “Tabs On” as shown on right. If the tabs do not appear for Query Definition form, then you may need to exit the Query Definition and re-open to refresh the form.

Name	History Template
qry_QueryDefinition	
Singular Label	Plural Label
Query Definition	Query Definitions
Show Parameters Tab	Default Structure View
When Populated	Tabs On

Check Parameter Tab

Once displayed, you will have access to relationships under the Query Definition as Tabs. Recall from **Section 2.4** that Parameters are essentially runtime variables configured in the Query Builder to provide runtime variables (i.e. search criteria) to the underlying query.

Under qry_QueryParameter tab, you will see all Query Parameters defined for this query. For Bom Structure OOTB, Parameter “StructureResolutionMode” is pre-configured with the default value “Aras.Resolution.EntryPoint.Default” as shown below.

If adding Structure Resolution to your custom query, you will need to add a Parameter and assign the Default Value “Aras.Resolution.EntryPoint.Default” as shown below. This procedure is detailed in Section 7.2.

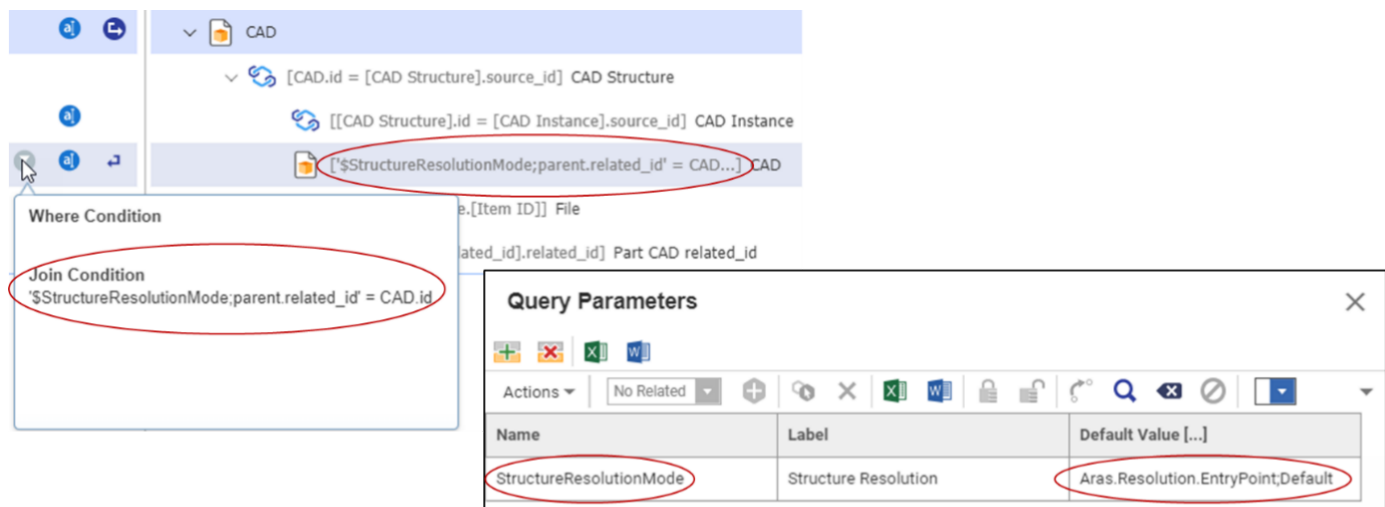


Structure Resolution can be applied to any Item Relationship structure of Versionable items that follows the same rules as Part BOM structures – Life Cycle State “Released” (is_released Boolean), incremental Revisions with interim versioned generations, etc.

CAD Structure is an example of such a structure, and Structure Resolution can be applied to Query Definitions against this data model in the same manner as Part BOM structures. We use CAD Structure as an example of this procedure which is documented in greater detail in the *Aras 3D Visualization - Administrator Guide* document.

Per the Part BOM Query Definition we examined in Section 7.1, Structure Resolution requires a Parameter with the Resolution Entrypoint, an Event Handler must be added to the Query, and the Parameter must be referenced in the Join Condition for the resolved itemtype.

Adding the Structure Resolution configuration to a CAD Structure Query will involve all of these steps as well.



The screenshot displays the CAD Structure Query Definition interface. The 'Where Condition' section shows the join condition: `$StructureResolutionMode;parent.related_id' = CAD.id`. The 'Query Parameters' dialog is open, showing a parameter named `StructureResolutionMode` with the label `Structure Resolution` and the default value `Aras.Resolution.EntryPoint;Default`.

Name	Label	Default Value [...]
StructureResolutionMode	Structure Resolution	Aras.Resolution.EntryPoint;Default

Step 1: Create Structure Resolution Mode Parameter

Applying a specific Structure Resolution Mode ('Default', 'Latest', etc.) is done using a Query Parameter. Using the Query Parameters Dialog, add a Parameter to be used for Structure Resolution Mode. For example `'StructureResolutionMode'` and assign the default value `'Aras.Resolution.EntryPoint;Default'`



Important

Be sure to check the syntax of the Default Value for the Parameter. It is used to select a specific List Item as set in the Tree Grid View Definition and described below in Step 4.

Step 2: Incorporate the Query Parameter in Join Condition

The added Query Parameter must be incorporated into the Query Definition in order for it to be used/exposed to the end-user. Add it as part of the Join Condition of the Child CAD Query Item as shown in 7.1.4. Replace the default Join Condition – e.g. `' [Part BOM].related_id = Part.id '` with the following – `' $StructureResolutionMode;parent.related_id' = Part.id '`

Part BOM and Part are used for this example, but it could just as well be `' [myLinkage].related_id = myNode.id '` being replaced by `' $StructureResolutionMode;parent.related_id' = myNode.id '`.

Important

Be sure to check the syntax of the Join Condition. It must be as specified above (without the outer quotes). This assumes the value `StructureResolutionMode` was used for the Query Parameter Name. If you named the Parameter differently, e.g. `myParam`, then you would naturally need to dereference it as `$myParam` in the expression. The Structure Resolution Mode Query Parameter can only be inserted once in a Query Definition. It cannot be used/applied to more than one Query Item.

Step 3: Add Structure Resolution Method to Query Event Handler

Show the Relationship Tabs for the Query Definition in the Form View if they are not shown. Tabs On/Off is set in the Query Definition itemtype (`qry_QueryDefinition`).

Select the `qry_QueryDefinitionEvent` Relationship Tab. A Method needs to be added to the `OnBeforeExecute` event. To do this, select the **Select Items Icon** to create a Relationship and select the `qry_ResolveStructureEntryPoint` Method and assign it to the `OnBeforeExecute` event as shown in **Error! Reference source not found.**



qry_QueryItem qry_QueryReference qry_QueryParameter qry_QueryDefinitionEvent					
Methods					
Hidden					
Name	Method T...	V...	execution_all...	Comments	event
qry_ResolveStructureEntryPoint	CSharp	1	Administrators		OnBeforeExecute

Step 4: Map the Query Parameter in the Tree Grid View Definition

In order for the Query Parameter to be used in a **Tree Grid View**, it must be enabled (made visible) in the Tree Grid View Definition.

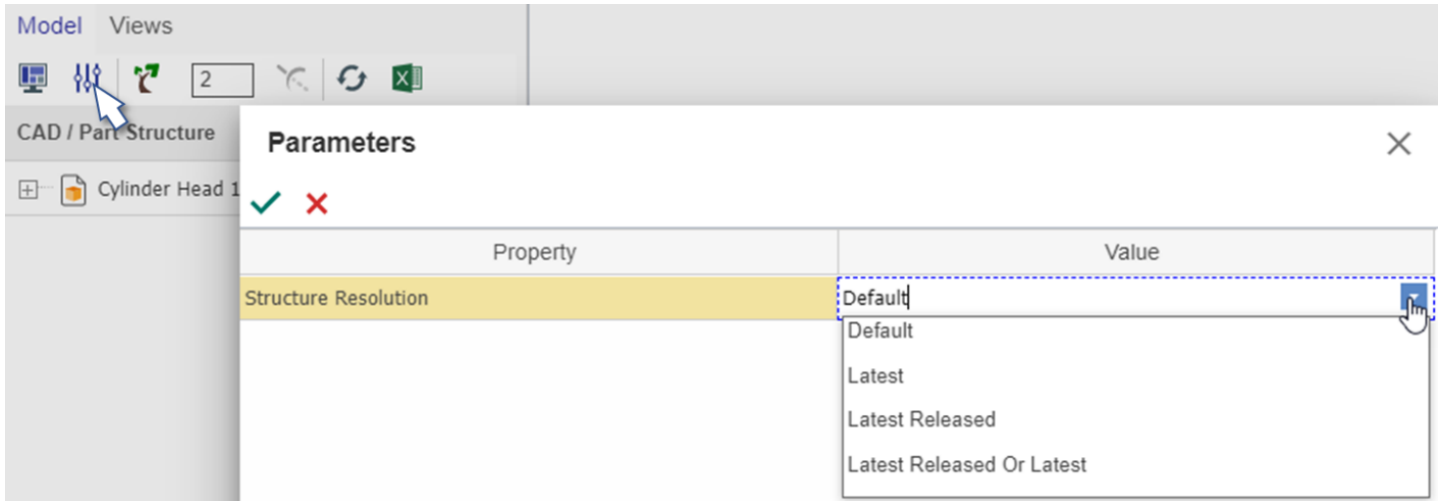
Open the Map Parameters Dialog in the Tree Grid View Definition within the Editor View. All Parameters defined in the Query Definition used by the Tree Grid View will be listed.

Select the **Visible** check box for the **StructureResolutionMode** row. The **Data Type** is a List and the **Data Source** is the List **qry_StructureResolution**.

Map Parameters						
Actions No Related						
Visi...	Name	Label	Default Value	Data Type	Data Source [...]	Pattern
☒	StructureResolutionMode	Structure Resolution	Aras.Resolution.EntryPoint;Default	list	qry_StructureResolution	

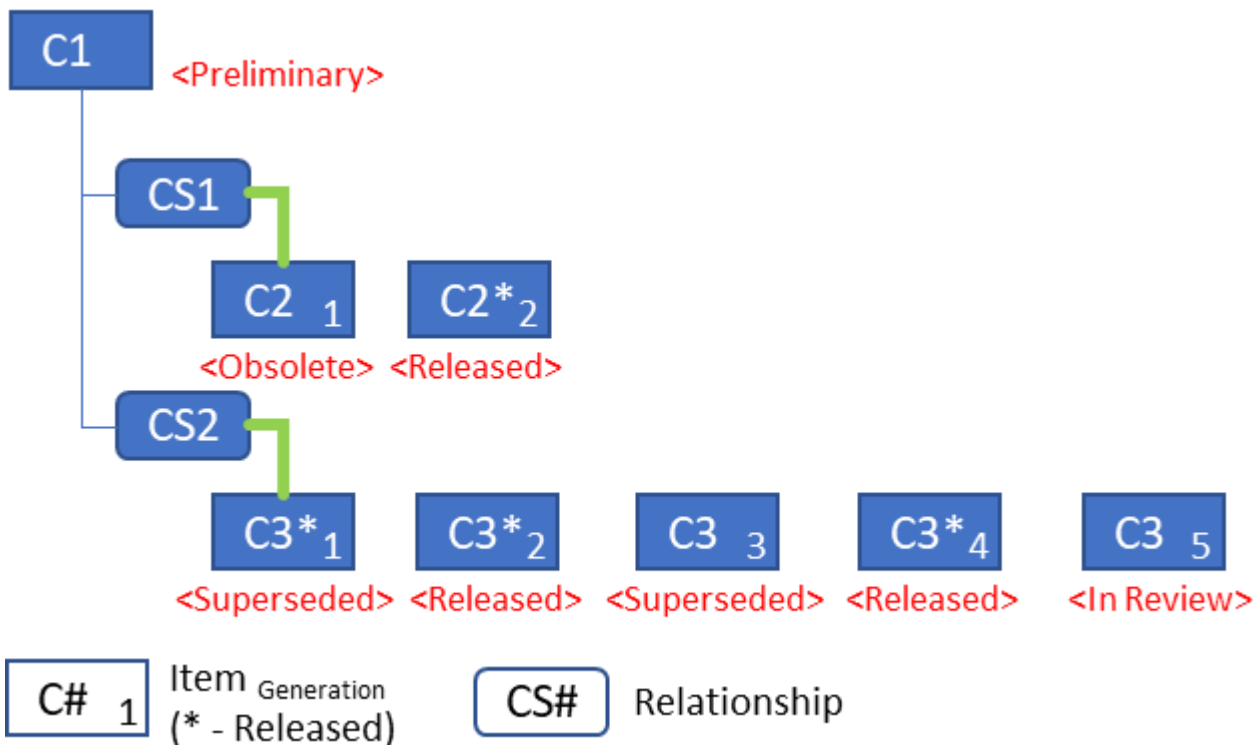
With this Configuration in place, users will be able to select specific Resolution Modes by opening the Query Parameters Dialog in the Tree Grid View used within the 3D Viewer.



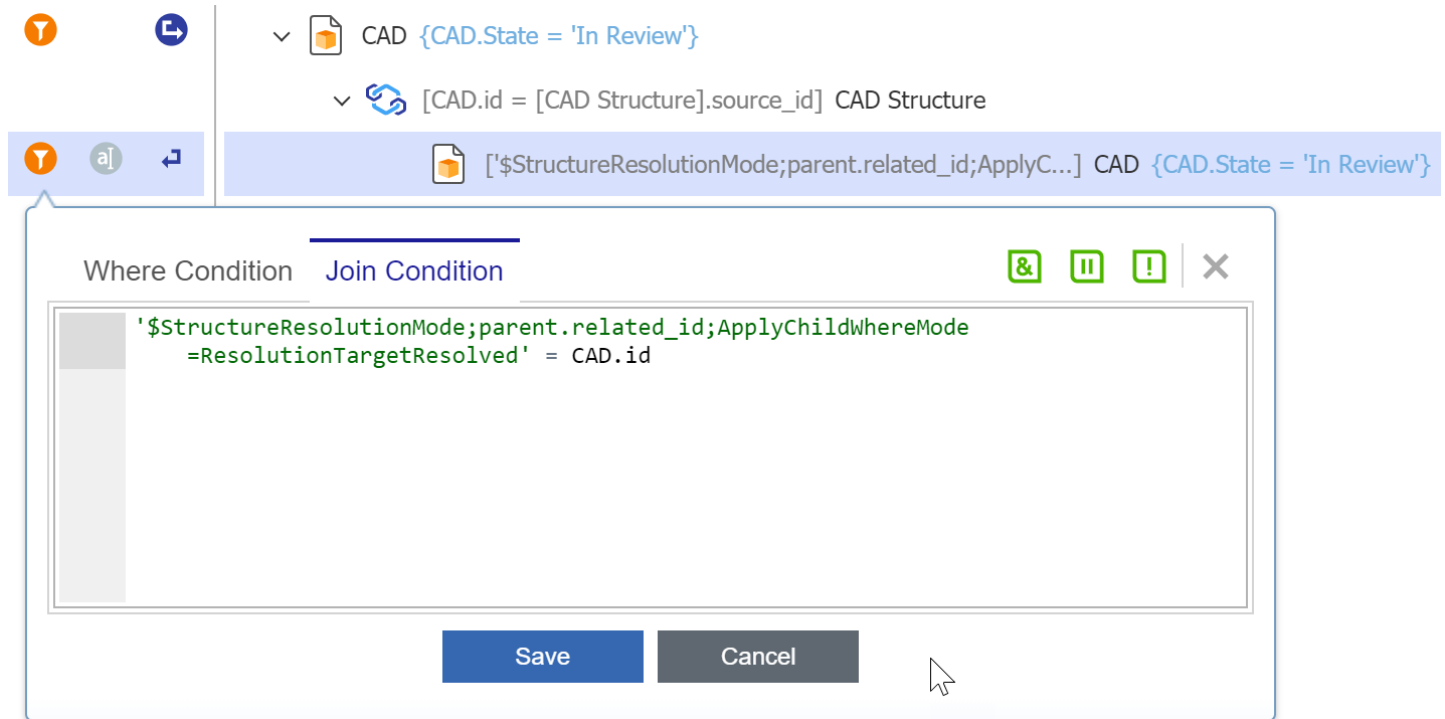


Applying a Where Condition Against Resolved Items

In Aras Innovator 12.0 SP4 and later releases it is possible to add a Where Condition to a Query Item that is used for Structure Resolution (e.g., CAD in this example). Doing so allows the Administrator to apply an additional condition (filter) when resolving the Structure of Items with fixed Relationships (such as CAD / CAD Structure). For example, assuming the CAD Structure in the following diagram:



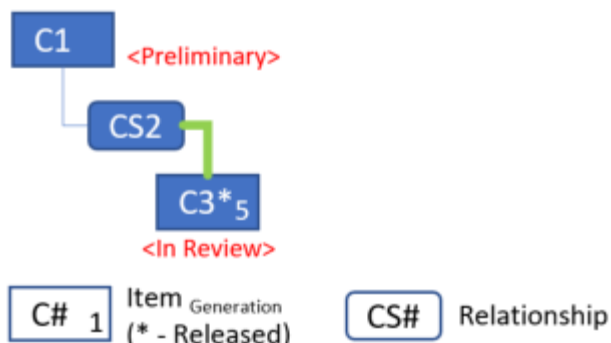
If the Administrator would like to use Structure Resolution of 'Latest' and apply an additional condition to only include CAD Items that were *In Review* (that is, with a CAD.State = 'In Review') then Where and Join conditions like the following could be added to the Query Item:



Note the addition of the left-side of the Join Condition:

`'$StructureResolutionMode;parent.related_id;ApplyChildWhereMode=ResolutionTargetResolved' = CAD.id]`

Executing this Query Definition, with Structure Resolution of 'Latest Released' with return:



Structure Resolution Logic with Condition Result

In this example, only the CAD Item – CS3, version 5 is returned because of the added Where Condition of 'CAD.State = 'In Review' applied to the resolved results of the Structure Resolution Join Condition using the selected Mode parameter. For more details and extensive examples of how Resolution Modes are applied in BOM Structures, Effectivity, and 3D Visualization please refer to the following documents:

Aras 3D Visualization - Administrator Guide Aras Innovator Product Engineering - User's Guide

