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Mylyn Home

 *Last Updated:* 03 Feb 2022

Beginning in Sync version 4.30, Mylyn connectors will no longer be supported. If using Mylyn connectors in a version earlier than 4.30, you should migrate to SDK connectors before upgrading.

This can be done by first upgrading to version 4.29 and then upgrading to version 4.30.

Legacy Connectors

Tasktop Sync allows teams to synchronize tasks across different defect and task tracking repositories. The Tasktop Sync server application places itself in between repositories to synchronize changes made to the defects or tasks in either repository.

This guide lists legacy repository connectors certified to work with Tasktop Sync. Each section describes a certified connector together with documentation regarding installation requirements, common setup problems, and other issues that pertain to that specific connector.

[Atlassian JIRA Connector \[pre Sync 3.5\]](#)

[Borland StarTeam Connector](#)

[CA Agile Planning and CA Clarity Requirements Connector](#)

[CA Project and Portfolio Management Connector For Sync \[pre Sync 4.1\]](#)

[HPE QC / ALM Connector \[pre Sync 3.5\]](#)

[IBM Rational DOORS Next Gen Connector \[pre Sync 4.0\]](#)

[IBM Rational Team Concert SDK Connector](#)

[Microsoft Team Foundation Server Connector \[pre Sync 4.2\]](#)

[Mozilla Bugzilla Connector](#)

[Serena Business Manager Connector \[pre Sync 4.1\]](#)

Synchronizing Pairs of Connectors

This section describes how to set up Sync configurations for some common pairs of Tasktop connectors.

Synchronizing Atlassian JIRA [pre Sync 3.5] with HPE QC / ALM [pre Sync 3.5]

Synchronizing Borland StarTeam with HPE QC / ALM [pre Sync 3.5]

Synchronizing CA Project and Portfolio Management [pre Sync 4.1] with IBM Rational Team Concert (using IBM Rational Team Concert SDK)

Synchronizing CA Project and Portfolio Management [pre Sync 4.1] with Microsoft Team Foundation Server

Synchronizing IBM Rational DOORS Next Gen [pre Sync 4.0] with HPE QC / ALM [pre Sync 3.5]

Synchronizing IBM Rational Team Concert (using IBM Rational Team Concert SDK) with HPE QC / ALM [pre Sync 3.5]

Synchronizing Serena Business Manager [pre Sync 4.1] with HPE QC / ALM [pre Sync 3.5]

Synchronizing Time Worked From Atlassian JIRA [pre Sync 3.5] to CA Project and Portfolio Management [pre Sync 4.1]

Atlassian JIRA Connector [pre Sync 3.5]

Atlassian JIRA Queries

It is recommended to use Atlassian JIRA server-side queries (or “filters” in JIRA) for the Changes Query and Initialization Query, because it is easier to check that the queries are working over the JIRA web UI by looking at the query results.

To create a JIRA server-side query (“filter”), in the Web UI for JIRA, select `Issues > New`. There is the choice of a `simple` or `advanced` search; the `advanced` search allows relative dates.

For example, to get the tasks which have changed in the past two days, use:

```
updated >="-2d"
```

When the Changes Query is created, make sure that the time scoping works properly before using it in Tasktop Sync.

Once the query has been defined, click on the `Search` button, and then in the left-hand pane, click on `Save it as a filter`. There will be a page which asks for a name and a description. The name here will need to match the name in `synchronizer.xml` exactly. It is recommended to use a name with three parts: “Tasktop Sync”, the project name, and a description of what is returned, e.g. “Tasktop Sync - Cobra Project JIRA - Recently Modified Defects”.

Atlassian JIRA Repository requirements

JIRA does not have the concept of links, so a custom field for storing Tasktop Sync proxy associations will need to be created. It must be a free text field, global (all issues). In `synchronizer.xml`, the custom field will be referred to with the custom field ID, so the name is arbitrary. It is recommended to name this field `tasktop_sync_proxy` for documentation purposes.

Tasktop Sync requires the ID of this custom field.

To find the custom field ID, go to the JIRA web interface and sign in as an administrator. Select `Administration` from the header on the right side, then click on `Issues`, and select `View Custom Fields`. On the right hand side of the entry of the relevant field, there will be a link for `Configure`. The custom Field ID will be in the last part of that URL, e.g. if clicking `Configure` links to <http://example.com:8080/secure/admin/ConfigureCustomField!default.jspx?customFieldId=10000>, then the custom field ID is `attribute.jira.custom::customfield_10000`.

JIRA should also be configured to allow remote API calls. To turn on remote API calls, first sign into JIRA as an administrator and select Administration from the header. Under System select General Configuration and then scroll down and find Edit Configuration. After clicking Edit Configuration, scroll down and find Accept remote API calls, then select the On radio button and click Update to complete the change.

Atlassian JIRA synchronizer.xml requirements

Required repository properties

The following properties need to be added to the repository section.

- **project:** The value must identify the project area of the repository to be used for synchronization, e.g.:

```
<scope>
  <field id="project" value="COBRA"/>
</scope>
```

- **proxyStorageAttribute:** id of the custom field for storing proxy information, e.g.:

```
<proxy-storage-attribute id="attribute.jira.custom::customfield_10000" />
```

- **proxyStorageAttributeIsSparse:** must be set to true, lets Tasktop Sync know that JIRA excludes empty custom attributes from the task data:

```
<proxy-storage-attribute id="attribute.jira.custom::customfield_10000"
sparse="true" />
```

Additional requirements

JIRA excludes empty custom attributes from the task data. When mapping a custom JIRA attribute, a sparse flag must be set to true, e.g.:

```
<attribute key="attribute.jira.custom::customfield_10100" sparse="true">
```

The above setting ensures that Tasktop Sync will detect that the value of a custom JIRA attribute has been cleared.

The default copy attribute mapping strategy must be used when mapping a custom JIRA attribute. This strategy, when paired with the sparse attribute, ensures that if the target custom attribute has been excluded from the JIRA task data, then the attribute will be created.

Status caster

To map status in JIRA with workflow restrictions, a multiple submission Groovy scripted caster should be used. An example of a multiple submission Groovy scripted caster can be found in the Tasktop Sync User Guide.

Comments

The `comment-content-type` for JIRA repositories should be set to `confluence`.

Fix/Affects Version attributes

Synchronizing the JIRA Fix/Affects Version attributes requires that the value " " must be explicitly mapped if resetting the selection is needed. e.g:

```
<attribute-mapping>
  <attribute id="category" caster="value-map">
    <caster-configuration>
      <map>
        <entry key=" " value="Unassigned Project in non-JIRA
repository"/>
      </map>
    </caster-configuration>
  </attribute>
  <attribute id="attribute.jira.affectsversions" caster="value-map">
    <caster-configuration>
      <map>
        <entry key="Unassigned Project in non-JIRA
repository" value=" "/>
      </map>
    </caster-configuration>
  </attribute>
</attribute-mapping>
```

Borland StarTeam Connector

Installation requirements

To use the Borland StarTeam connector with Tasktop Sync you will need to get the Borland StarTeam connector distribution from a Tasktop Sales Engineer. Download this zip file to a convenient location on the installation server. You will be prompted for it in the installation process.

Borland StarTeam Queries

Queries are always stored on the server, but you can create queries on either via Web client or using the form on Tasktop Sync.

Queries are only able to return one task type, but you can run that query on any combination of projects.

Queries can return all assignable types. As delivered, Borland StarTeam has these assignable types: tasks, change requests, requirements, and stories.

Borland StarTeam Repository requirements

The Borland StarTeam repository login credentials used by Tasktop Sync must have Administrator credentials.

MPX (Push)

It is not possible to run a query with StarTeam for which tasks have changed, so all tasks need to be returned and examined for changes. However, StarTeam has a “push” feature called MPX. After you run a query once, then MPX will push changes to Tasktop Sync, so queries are in theory not needed. (We recommend setting `default-query-interval-minutes` to something large like 60, just to be safe.) MPX propagates changes extremely quickly.

To use MPX, you will need to check the MPX box when you create the repository connection:

Properties for Task Repository

Borland StarTeam Repository Settings (Tasktop Enterprise)
Supports versions 2009 (11.0) and higher.

Server: starteam.example.com

Label: StarTeam ☐ Disconnected

User ID: tasktopSync

Password: ***** ☒ Save Password

▼ **Additional Settings**

Encryption

- ☒ No encryption
- ☐ RC4
- ☐ RC2-ECB
- ☐ RC2-CBC
- ☐ RC2-CFB

MPX Settings

☒ Enable MPX

Unicast Off-site

Commit Traces

Default SCM: <no default>

Max. Changesets: 2

► **Task Editor Settings**

Borland StarTeam synchronizer.xml requirements

Required attributes and properties

Additional **repository scope** fields:

- **project** (required): The value must identify the project area of the repository to be used for synchronization.

The Synopsis field is mandatory.

Summary is a derived attribute. It is the first line of the Synopsis attribute, which is mandatory. This means that you cannot create the Summary attribute directly.

Comments

You should set `comment-content-type` for Borland StarTeam repositories to "text/plain".

Other

If you are using the Borland StarTeam Web UI, you will probably not notice synchronizations immediately. You should press F5 to see the changes.

CA Agile Planning and CA Clarity Requirements Connector

This section describes how to connect to supported versions of CA Agile Planning and CA Clarity Requirements using Tasktop's connector.

CA Repository Configuration Requirements

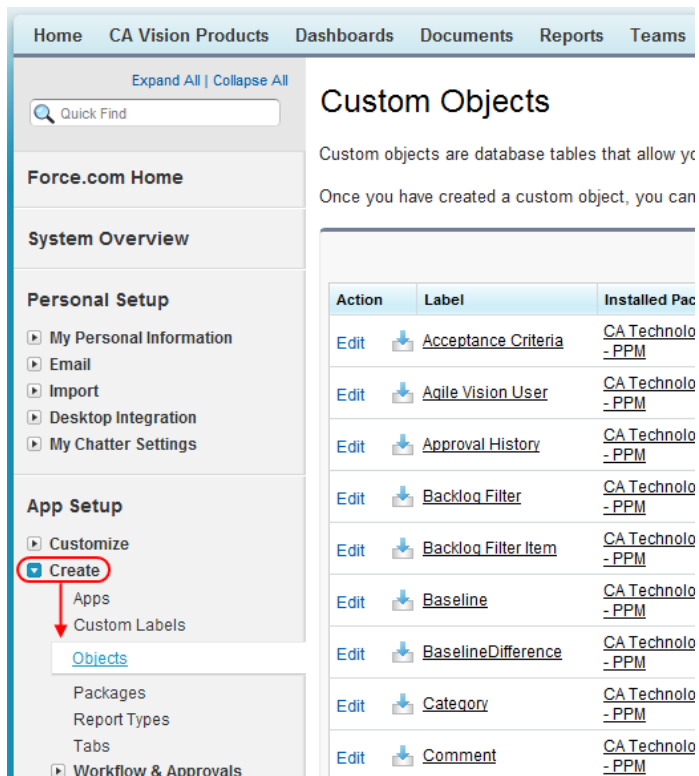
This section describes changes to the CA repository that are needed to allow synchronization.

Associations Field

The associations field is required for Tasktop Sync to create an association between two synchronizing tasks. CA objects (e.g. User Story, Issue) do not contain an association field by default. Each CA object synchronized in Tasktop Sync, requires a custom associations field to allow task synchronization.

To create and enable the proxy association field in CA:

- 1.) Sign into the CA repository with a System Administrator profile
- 2.) Click the **Setup** link in the top right corner
- 3.) Navigate down the far left pane to the **App Setup** section, select **Create** then **Objects** to view the list of objects



The screenshot shows the CA Agile Planning interface. The top navigation bar includes links for Home, CA Vision Products, Dashboards, Documents, Reports, and Teams. The left sidebar has a search bar and a list of sections: Force.com Home, System Overview, Personal Setup, and App Setup. The App Setup section is expanded, showing options like Customize, Create, Apps, Custom Labels, Packages, Report Types, Tabs, and Workflow & Approvals. The 'Create' option is highlighted with a red circle, and a red arrow points to the 'Objects' link. The main content area is titled 'Custom Objects' and contains a table of custom objects.

| Action | Label | Installed Pac |
|----------------------|-------------------------------------|-------------------|
| Edit | Acceptance Criteria | CA Technolo - PPM |
| Edit | Agile Vision User | CA Technolo - PPM |
| Edit | Approval History | CA Technolo - PPM |
| Edit | Backlog Filter | CA Technolo - PPM |
| Edit | Backlog Filter Item | CA Technolo - PPM |
| Edit | Baseline | CA Technolo - PPM |
| Edit | BaselineDifference | CA Technolo - PPM |
| Edit | Category | CA Technolo - PPM |
| Edit | Comment | CA Technolo - PPM |

- 4.) Navigate through the list of objects to find the object that will be synchronized (e.g. User Story, Requirement) and click on the object label to view the object
- 5.) Scroll down until the Custom Fields & Relationships section appears and click the New button found at the top of the section to open the New Custom Field page

| Action | Field Label | API Name |
|--------|---------------|-----------------------------------|
| Edit | Actual Result | agile1206051633__Actual_Result__c |

- 6.) Scroll down to the Text data type and select the radio button then click next
- 7.) Fill out the Field Label with a name similar to TasktopSyncProxy (**NOTE:** this name is required for the synchronizer.xml file configuration, see the CA Synchronizer.xml Requirements for more information), next enter 250 for the Length field then click next, next and save

User Story New Custom Field

Step 2. Enter the details

Field Label: TasktopSyncProxy

Please enter the maximum length for a text field below.

Length: 250

Field Name: TasktopSyncProxy

- 8.) Navigate back by clicking CA Vision Products tab, usually found on the left side of the tab bar
- 9.) Hover over Administration, select Custom Attributes, choose the product and object to be synchronized and click Enable Attribute, then select the custom proxy field from the drop-down list then click Save and Close

Product Vision Agile Vision Administration

Administration > Configuration > Custom Attributes

Product: A Product Object: User Story

Enable Attribute Delete

Enable Attribute

Field Name: TasktopSyncProxy

Save and Close Save and New Cancel

CA Connecting to the Repository

Connecting to a CA repository requires a System Administrator profile with a security token. For more information about security tokens see the [Salesforce help documentation](#). When entering credentials for the repository connector, the security token must be appended to the end of your password with no spaces or characters between the password and security token (e.g. PasswordN0tArE4LT0kEn3Jh3K).

CA Queries

Queries for the CA connector can only be constructed within Tasktop Sync utilizing the form queries option. Currently, relative dates are not supported so care should be taken when scoping queries so that the changes query does not become too large over time.

CA Synchronizer.xml Requirements

This section describes unique and notable synchronizer.xml configuration requirements for the CA connector.

Configuration

- Item-type
 - Issue
 - Requirement
 - Test_Case__c
 - Task__c
 - User_Story__c

Required Fields for User Stories, Issues, Requirements and Tasks

Summary and the proxy association field are both required fields to synchronize with CA for User Stories, Issues, Requirements and Tasks.

Summary

The summary can be mapped through the Attribute Mapping view or by starting your synchronizer configuration using Quick Start.

Proxy Association Storage Attribute

To map the custom association field created in CA, specify the `proxyStorageAttribute` in `synchronizer.xml` in the `repository` element. If custom field has not been created for the proxy storage attribute in CA, refer to the [CA Repository Configuration Requirements](#) section for more information. The property value for the `proxyStorageAttribute` uses the `API Name` for the custom proxy association field created in CA. The `API Name` is the `Field Name` of the custom field with "`__c`" appended to the end (e.g. `Field Name: customName` `API Name: customName__c`). If custom association field was named `TasktopSyncProxy`, the association property added to the repository element will be the same as the example below.

```
<proxy-storage-attribute id="TasktopSyncProxy__c" />
```

Required Fields for Test Cases

Synchronizing Test Case is unidirectional from HPE Quality Center (QC)/Application Lifecycle Management (ALM) to CA only. The following sections contain all required fields and examples of how they can be mapped in the `synchronizer.xml` file. The example mappings below are for reference only as some attributes names/labels may not be the same for your repository. It is recommended that these fields be mapped from the Attribute Mapping view.

Summary

```
<attribute-mapping>
    <attribute id="TS_NAME" strategy="ignore"/>
    <attribute id="task.common.summary"/>
</attribute-mapping>
```

Test ID

```
<attribute-mapping>
    <attribute id="TS_TEST_ID" strategy="ignore"/>
    <attribute id="****__Test_Id__c"/>
</attribute-mapping>
```

The ******** value will change depending on your CA repository, this value will be generated automatically when using the Attribute Mapping editor

QC Project Name

The HPE QC/ALM connector requires that the project be specified for synchronization. For that reason, `QC Project Name` is synchronized using a literal caster with the name of the HPE QC/ALM project. The project name can be viewed from the HPE QC/ALM web UI or from the repository URL. For example, if your HPE QC/ALM repository URL is http://some.url/qcbin/The_Domain/The_Project, the literal caster will look like the example below.

```
<attribute-mapping>
    <attribute caster="'" strategy="ignore"/>
    <attribute id="ca.vision.qc.project.name" caster="'The_Project'"/>
</attribute-mapping>
```

QC Folder Hierarchy

```
<attribute-mapping>
    <attribute id="TS_SUBJECT" strategy="ignore"/>
    <attribute id="ca.vision.qc.folder.hierarchy"/>
</attribute-mapping>
```

Note: the folder hierarchy attribute in HPE QC/ALM is called `subject`

Proxy Association Storage Attribute

The proxy association field for Test Case is the same as any CA object and can be specified by adding the following property to the `repository` element in the `synchronizer.xml` file. If you have not yet created a custom field for the proxy storage attribute in CA, refer to the [CA Repository Configuration Requirements](#) section for more information.

```
<proxy-storage-attribute id="TasktopSyncProxy__c" />
```

CA Known Limitations

Tasktop Sync supports one way Requirements sync only

Tasktop Sync only supports unidirectional attribute mappings for syncing from CA Requirements. This means it is possible to synchronize changes made in CA Requirements into an outside repository, but it is not possible to synchronize changes from an outside repository into CA Requirements. It is recommended that the Attribute Mapping editor is used to specify attribute mappings as unidirectional.

System Administrator credentials are required

The CA repository in Tasktop Sync must use System Administrator credentials to allow Sync to perform all operations required by CA.

Syncing Test ID for Test Case

If you are experiencing problems syncing Test ID from HPE QC/ALM to CA, a workaround is to sync Task Key (Tasktop) from HPE to TestId in CA.

CA Project and Portfolio Management Connector For Sync [pre Sync 4.1]

This section explains how to connect to supported versions of CA PPM® using Tasktop's CA Project and Portfolio Management Connector.

Configuring the CA Project and Portfolio Management Server for Tasktop Sync

Before using Tasktop Sync for CA Project and Portfolio Management, there are a few steps to follow to configure the CA Project and Portfolio Management server for integration with Tasktop Sync.

Create Proxy Association Attribute for CA Project and Portfolio Management

Tasktop Sync for CA Project and Portfolio Management requires a custom attribute to store proxy association information. Follow these instructions to create this attribute:

- Log in to the CA Project and Portfolio Management web UI as an administrator
- Select **Objects** from the **Administration** menu
- Select the **Task** object from the list
- Navigate to the **Attributes** tab
- Select **New** from the bottom toolbar
- Set **Attribute ID** to `ttsync_proxyasn`
- Set **Data Type** to **String**
- Set **Maximum Size** to 100 (or greater)
- Set **Attribute Name** (and **Description**, if desired) to an appropriate value to allow easy identification of the purpose of the attribute
- Select **Save and Return**

The new attribute will not be visible in the web UI by default and does not need to be exposed for Tasktop Sync for CA Project and Portfolio Management to work correctly.

Install Custom NSQL Scripts

For performance reasons, and to properly support the Tasktop Sync proxy association custom field, Tasktop Sync uses custom NSQL scripts on the CA Project and Portfolio Management server to retrieve **Task** details. NSQL queries are SQL-like scripts installed on a CA Project and Portfolio Management server, and are exposed via SOAP API. The [CA Project and Portfolio Management Studio Developer's Guide](#) contains further information on NSQL.

Directions

In the CA Project and Portfolio Management web interface, navigate to Administration -> Studio -> Queries. For each of the four scripts listed in the following section, do the following:

- Click the **New** button at the bottom of the page
- Set the query ID to be the same as the name of the script (e.g. TTSyncQuery_GetAssignments)
- Set the other properties (Available for user portlets, Content Source, Category) to the values given in the "Properties" section

ca

Clarity PPM

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Li

Query Name

Tasktop Sync Query - Get Assign x

Query ID

TTSyncQuery_GetAssignments

Available for User Portlets

☒

Content Source

Customer

Category

Project

Description

Save and Continue

Save And Return

Return

■

 = Required

■

 = Enter Once

★

 = Unique

- Copy the content in the "Source" section to the `NSQL` section in the web interface

[illegible]

- Click the Save And Return button

The queries are automatically available through the web service after saving.

The Scripts

TTSyncQuery_GetAssignments

Properties

- Available for user portlets: true
- Content Source: Customer
- Category: Project

Source

```
SELECT  @Select:DIM:USER_DEF:IMPLIED:ASSIGNMENT:A.PRUID:
tt_AssignmentInternalID@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRTASKID:
tt_AssignmentTaskID@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRESOURCEID:
tt_AssignmentResourceID@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRISUNPLANNED:
tt_AssignmentIsUnplanned@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRESTPATTERN:
tt_AssignmentEstPattern@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRESTMAX:
tt_AssignmentEstMax@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRPENDESTSUM:
tt_AssignmentPendEstSum@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRPENDACTSUM:
tt_AssignmentPendActSum@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRPENDSTART:
tt_AssignmentPendStart@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRPENDFINISH:
tt_AssignmentPendFinish@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRSTART:
tt_AssignmentStart@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRFINISH:
tt_AssignmentFinish@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRSTATUS:
tt_AssignmentStatus@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRACTSUM:
tt_AssignmentActSum@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRACTTHRU:
tt_AssignmentActThru@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRESTSUM:
tt_AssignmentEstSum@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRWDM:
tt_AssignmentWdm@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PREXTENSION:
tt_AssignmentExtension@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.SLICE_STATUS:
tt_AssignmentSliceStatus@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.CURVE_STATUS:
tt_AssignmentCurveStatus@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.ROLE_ID:
tt_AssignmentRoleID@
,        @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.TEAM_ID:
tt_AssignmentTeamID@
```

```

,          @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.CREATED_DATE:
tt_AssignmentCreatedDate@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.CREATED_BY:
tt_AssignmentCreatedBy@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.LAST_UPDATED_DATE:
tt_AssignmentLastUpdatedDate@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.LAST_UPDATED_BY:
tt_AssignmentLastUpdatedBy@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.ACTCOST_CURVE:
tt_AssignmentActCostCurve@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.ACTCOST_SUM:
tt_AssignmentActCostSum@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:A.PRID:tt_AssignmentID@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:ASSIGNMENT:R.UNIQUE_NAME:
tt_AssignmentResourceName@

FROM      PRASSIGNMENT A
,          SRM_RESOURCES R

WHERE      A.PRRESOURCEID = R.ID
AND        @FILTER@

```

TTSyncQuery_GetLookup

Properties

- Available for user portlets: true
- Content Source: Customer
- Category: Productivity

Source:

```

SELECT      @SELECT:DIM:USER_DEF:IMPLIED:RESOURCE:L.ID:LOOKUP_ID@,
            @SELECT:DIM_PROP:USER_DEF:IMPLIED:RESOURCE:L.LOOKUP_TYPE:
LOOKUP_TYPE@,
            @SELECT:DIM_PROP:USER_DEF:IMPLIED:RESOURCE:L.LOOKUP_CODE:
LOOKUP_CODE@,
            @SELECT:DIM_PROP:USER_DEF:IMPLIED:RESOURCE:L.LOOKUP_ENUM:
LOOKUP_ENUM@,
            @SELECT:DIM_PROP:USER_DEF:IMPLIED:RESOURCE:L.NAME:LOOKUP_NAME@,
            @SELECT:DIM_PROP:USER_DEF:IMPLIED:RESOURCE:L.LANGUAGE_CODE:
LOOKUP_LANG@
FROM        CMN_LOOKUPS_V L
WHERE       @FILTER@

```

TTSyncQuery_GetProjects

Properties

- Available for user portlets: true
- Content Source: Customer
- Category: Project

Source:

```

SELECT      @SELECT:DIM:USER_DEF:IMPLIED:PRJ:P.PRID:tt_ProjectInternalID@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PREXTTERNALID:
tt_ProjectExternalID@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRNAME:tt_ProjectName@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRUID:tt_ProjectUID@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRGUIDELINES:
tt_ProjectGUIDELINES@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRDEPARTMENT:
tt_ProjectDEPARTMENT@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRVERSION:tt_ProjectVERSION@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRUSERTEXT6:
tt_ProjectUSERTEXT6@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRUSERTEXT7:
tt_ProjectUSERTEXT7@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRBUGET:tt_ProjectBUDGET@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRSTART:tt_ProjectSTART@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRASOF:tt_ProjectASOF@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRFINISH:tt_ProjectFINISH@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRCPMTYPE:tt_ProjectCPMTYPE@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRTRACKMODE:
tt_ProjectTRACKMODE@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRISOPEN:tt_ProjectISOPEN@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRCHARGECODEID:
tt_ProjectCHARGECODEID@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRSPONSOREDBY:
tt_ProjectSPONSOREDBY@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRREQUESTEDBY:
tt_ProjectREQUESTEDBY@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRREQUESTEDTIME:
tt_ProjectREQUESTEDTIME@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRAPPROVEDTIME:
tt_ProjectAPPROVEDTIME@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRUSERTEXT1:
tt_ProjectUSERTEXT1@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRUSERTEXT2:
tt_ProjectUSERTEXT2@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRUSERTEXT3:
tt_ProjectUSERTEXT3@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRUSERTEXT4:
tt_ProjectUSERTEXT4@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRFORMAT:tt_ProjectFORMAT@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRFINISCALSTART:
tt_ProjectFINISCALSTART@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRUSERTEXT5:
tt_ProjectUSERTEXT5@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRPTCOMPLETE:
tt_ProjectPTCOMPLETE@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRPRRIORITY:
tt_ProjectPRRIORITY@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRCLOSEDIME:
tt_ProjectCLOSEDIME@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRUSERNAME:
tt_ProjectUSERNAME@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRSIZEADJUST:
tt_ProjectSIZEADJUST@
,           @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRSIZEADJUSTON:
tt_ProjectSIZEADJUSTON@

```

```

,          @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRSTARTIMPOSED:
tt_ProjectSTARTIMPOSED@
,          @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRFINISHIMPOSED:
tt_ProjectFINISHIMPOSED@
,          @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRBASESTART:
tt_ProjectBASESTART@
,          @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRBASEFINISH:
tt_ProjectBASEFINISH@
,          @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRBASETIME:
tt_ProjectBASETIME@
,          @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRMODBY:tt_ProjectMODBY@
,          @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRMODTIME:tt_ProjectMODTIME@
,          @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.PRDESCRIPTION:
tt_ProjectDESCRIPTION@
,          @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:P.IS_ACTIVE:
tt_ProjectIS_ACTIVE@
,          @SELECT:DIM_PROP:USER_DEF:IMPLIED:PRJ:I.ASSGN_POOL:
tt_ProjectASSGN_POOL@

FROM      PRPROJECT P
,          INV_INVESTMENTS I
WHERE      P.PRID = I.ID
AND        @FILTER@

```

TTSyncQuery_GetTasks

Properties

- Available for user portlets: true
- Content Source: Customer
- Category: Project

Source:

```

SELECT      @Select:DIM:USER_DEF:IMPLIED:TASK:T.PRID:tt_taskInternalID@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.CREATED_BY:tt_TaskCreatedBy@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.CREATED_DATE:
tt_TaskCreatedDate@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.EV_BCWP_OVR:
tt_TaskEvBcwpOvr@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.EV_CALC_METHOD:
tt_TaskEvCalcMethod@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.IS_OPEN_TE:
tt_TaskIsOpenForTimeEntry@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.IS_PCT_DIRTY:
tt_TaskIsPctDirty@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.LAST_CALC_RUN:
tt_TaskLastCalcRun@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.LAST_RULE_RUN_ID:
tt_TaskLastRuleRunID@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.LAST_UPDATED_BY:
tt_TaskLastUpdatedBy@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.LAST_UPDATED_DATE:
tt_TaskLastUpdatedDate@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRCALCESTIMATE:
tt_TaskCalcEstimate@

```

```

,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRCATEGORY:tt_TaskCategory@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRCHARGECODEID:
tt_TaskChargeCodeID@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRDURATION:tt_TaskDuration@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PREARLYFINISH:
tt_TaskEarlyFinish@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PREARLYSTART:
tt_TaskEarlyStart@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PREEXTERNALID:
tt_TaskExternalID@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRFINISH:tt_TaskFinish@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRGUIDELINES:
tt_TaskGuidelines@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRISCRITICAL:
tt_TaskIsCritical@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRISFIXED:tt_TaskIsFixed@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRISKEY:tt_TaskIsKey@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRISLOCKED:tt_TaskIsLocked@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRISMILESTONE:
tt_TaskIsMilestone@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRISTASK:tt_TaskIsTask@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRISUNPLANNED:
tt_TaskIsUnplanned@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRLATEFINISH:
tt_TaskLateFinish@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRLATESTART:
tt_TaskLateStart@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRMETHODEXTID:
tt_TaskMethodExtID@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRNAME:tt_TaskName@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRPCTCOMPLETE:
tt_TaskPctComplete@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRPRRIORITY:tt_TaskPriority@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRPROJECTID:
tt_TaskProjectInternalID@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRSHORTNAME:
tt_TaskShortName@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRSTART:tt_TaskStart@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRSTATUS:tt_TaskStatus@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRTOTALFLOAT:
tt_TaskTotalFloat@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRUID:tt_TaskUID@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRUSERTEXT1:
tt_TaskUserText1@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRWBSLEVEL:tt_TaskWbsLevel@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRWBSSEQUENCE:
tt_TaskWbsSequence@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.PRWDM:tt_TaskWdm@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.WBS_NNBSEQ:tt_TaskWbsNnbSeq@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:T.WBS_PARSEQ:tt_TaskWbsParSeq@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:CUSTOM.TTSYNC_PROXYASSN:
tt_TaskProxyAssn@
,          @Select:DIM_PROP:USER_DEF:IMPLIED:TASK:P.PREEXTERNALID:
tt_TaskProjectExternalID@

FROM      PRTASK T
,          PRPROJECT P

```

```

,          ODF_CA_TASK CUSTOM

WHERE      T.PRID = CUSTOM.ID
AND        P.PRID = T.PRPROJECTID
AND        @FILTER@

```

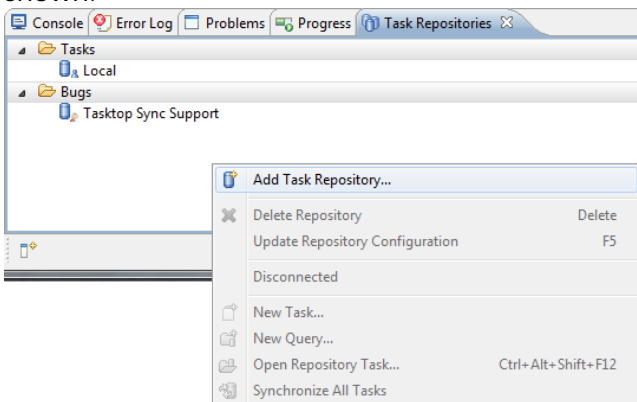
Configuring the CA Project and Portfolio Management Repository

Connecting to the CA Project and Portfolio Management Repository

Tasktop Sync must be configured to connect to the CA Project and Portfolio Management Repository through the Tasktop Sync Repository manager.

Add the CA Project and Portfolio Management repository to the Task Repositories view:

- Right click in the pane of the Task Repositories view and select `Add Task Repository...` as shown:

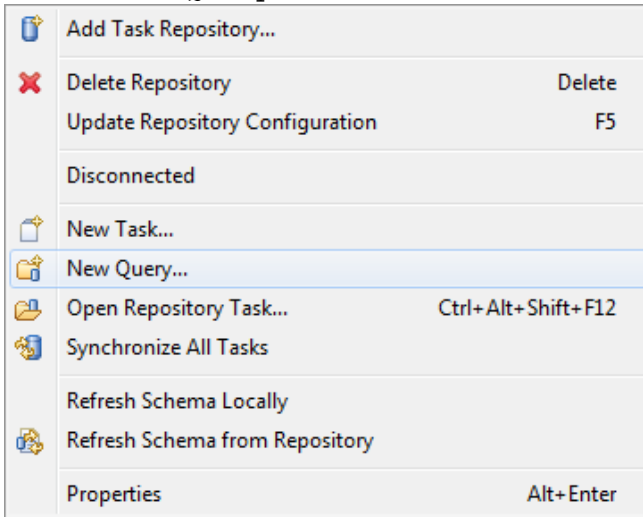


- Choose CA Project and Portfolio Management from the list
- Fill in the specifics for your repository in the Add Task Repository dialog. Click the `Validate` button after filling out the fields to validate that Tasktop Sync can connect to your repository
- Select `No` when Tasktop Sync asks you if you would like to add a new query to the repository.

Create Initialization and Changes Queries for CA Project and Portfolio Management

After the previous step, Tasktop Sync has been configured to connect to your CA Project and Portfolio Management server and you are ready to create the changes and initialization queries. Please consult the [configuration section](#) on creating queries for details on the purpose of the queries you will be creating.

- Right click on your CA Project and Portfolio Management repository;
- Click on New Query . . .



- Select either the Single-Project or Multi-Projects Query type (depending on whether your synchronization should span over multiple projects)
- Select your project area(s) from the list in the resulting dialog
- Enter a title for the query and select Finish;
- Repeat the previous steps if a different project is required for the initialization query.

Create a Task Mapping for CA Project and Portfolio Management

The final step in configuring Tasktop Sync for CA Project and Portfolio Management is to create a task mapping. Please consult the [Task Synchronization Configuration](#) section for detailed instructions on creating and editing task mappings.

Required Properties

Once the mapping is created, CA Project and Portfolio Management specific properties must be defined. The list of required properties is listed below. Properties are defined in the following way:

- Double-click on the task mapping;
- Navigate to the Overview tab;
- On the CA Project and Portfolio Management side of the page, find the Properties section and select Add;
- Select the property name from the Name dropdown;
- Fill in the Value field and click OK;
- Save the mapping by pressing Ctrl+S or by clicking the Save icon in the top right corner

Recommended repository properties: .

- **proxyStorageAttribute:** The value must identify an attribute that will be used to store proxy information. The id of this attribute must be `ttsync_proxyasn`.

Required Attribute Mappings

The `External Task ID` attribute must be set on all tasks being synchronized between CA Project and Portfolio Management and the other repository. See the [Attribute Limitations](#) section for more details. A mapping for the `External Task ID` attribute is required in order for this attribute to be set when Tasktop Sync synchronizes a new task into CA Project and Portfolio Management. The `External Task ID` attribute must be unique in the CA Project and Portfolio Management project. It is recommended to map `External Task ID` to the `ID` or `Key` attribute in the other repository. This mapping must be one way from the other repository into CA Project and Portfolio Management and must use the `Initialize` mapping strategy. In the `synchronizer.xml` file, the mapping should look similar to this:

```
<attribute-mapping>
  <attribute id="task.common.key" strategy="initialize"/>
  <attribute id="id" strategy="ignore"/>
</attribute-mapping>
```

The `Internal Project ID` attribute must be mapped in all task mappings. A value mapper can be used. The `ID` portion of the project attribute refers to the project's internal ID (a number), not the external ID.

Task Assignments

With the CA Project and Portfolio Management connector for Tasktop Sync, you can synchronize attributes from an artifact on another system to the assignments of a task in Project and Portfolio Management, using a scripted attribute handler.

Handling Task Assignments in a Scripted Attribute Handler

In your attribute handler script, task assignments are represented as "assignment" attributes. By reading and modifying these assignment attributes you can manipulate the assignments of a task.

All assignment attributes have attribute type `tasktop.type.assignment` and have IDs following the pattern `tasktop.assignment-[number]`. An assignment attribute has two child attributes with IDs `tasktop.assignment.assignee` and `tasktop.assignment.estimate`, which, for Project and Portfolio Management, represent the resource ID and Estimated Time To Complete (ETC) of the task assignment, respectively.

To read or modify an existing task assignment you must get the assignment attribute for that assignment, and read or modify the values of its `tasktop.assignment.assignee` and `tasktop.assignment.estimate` child attributes.

To create a new task assignment you must create a new assignment attribute. Create a new task attribute under the root attribute of your task, and set its type to `tasktop.type.assignment`. Then create two child attributes with IDs `tasktop.assignment.assignee` and `tasktop.assignment.estimate` under that attribute, and set their values to whichever resource ID and ETC you like.

For an example of a scripted attribute handler for Project and Portfolio Management task assignments, see [Synchronizing CA Project and Portfolio Management with Microsoft Team Foundation Server: Task Assignments](#).

Limitations and Other Notes on Task Assignments

- The Project and Portfolio Management connector cannot delete task assignments
 - Removing an existing assignment attribute in your attribute handler script will have no effect
- Project and Portfolio Management does not allow multiple task assignments to have the same resource
 - If your attribute handler script creates a new assignment attribute and sets the value of its `tasktop.assignment.assignee` child attribute to the same value as an existing assignment attribute, this will result in a synchronization error
- The ETC for a task assignment is shown in the Project and Portfolio Management web application in hours, but is represented internally in milliseconds
 - Your attribute handler script may need to convert a source estimate value to milliseconds before setting it on the `tasktop.assignment.estimate` attribute

A note about TasktopSync 2.8 users

We have changed how assignments are represented in TasktopSync 3.0.0, so if you have used assignment synchronization with a previous build, do ensure that your mappings and scripts follow the structure above.

Note on Start and Finish Date Defaults for Task and Task Assignment Creation

The Project and Portfolio Management connector will use the following default date values:

Tasks

- A newly created task's Start and Finish dates will default to *Today* if not set

Task Assignments

- A task assignment's Start and Finish dates will be set to its task's Start and Finish dates
- A task assignment's Start date will be set to *Today* if its task's Start date is not set

- A task assignment's Finish date will set to its Start date plus its Estimated to Complete if its task's Finish date is not set

Limitations for CA Project and Portfolio Management

Feature Limitations

Tasktop Sync for CA Project and Portfolio Management only supports synchronizing Task objects. All tasks within the specified project will be synchronized. As there is no way to comment on a Task object within CA Project and Portfolio Management, comment synchronization is not supported. Currently, attachment synchronization is also not supported.

Attribute Limitations

External Task ID

Tasktop Sync for CA Project and Portfolio Management requires that the External Task ID attribute be set on all tasks. In the CA Project and Portfolio Management web UI, this attribute is called ID. Tasks without an External Task ID will not be synchronized and will end up in the error queue. Tasktop Sync for CA Project and Portfolio Management cannot change External Task ID after initialization. However, External Task ID may be changed via the CA Project and Portfolio Management web UI without causing problems. See [Required Attribute Mappings](#) section above for recommendations for the External Task ID attribute mapping.

Status and % Complete

The Status and % Complete attributes are linked in CA Project and Portfolio Management. Changes to the % Complete will be ignored if the task is not in the Started state. % Complete will be set to 0 if a task is moved to the Not Started state; it will be set to 100 if the task is moved to the Completed state. If this behavior is not enforced on the attributes from the other repository, mapping both Status and % Complete will lead to unexpected results. In this case, it is recommended to either not map the % Complete attribute or to map it one-way from CA Project and Portfolio Management into the other system. The Status attribute can then be mapped normally.

Read-only Attributes

The Last Updated Date attribute and the Internal Task ID attributes can be read from CA Project and Portfolio Management, but values cannot be set into them.

Custom Attributes

Custom attributes are not supported by Tasktop Sync for CA Project and Portfolio Management. Only standard attributes, those defined in a default CA Project and Portfolio Management installation, can be mapped.

HPE QC / ALM Connector [pre Sync 3.5]

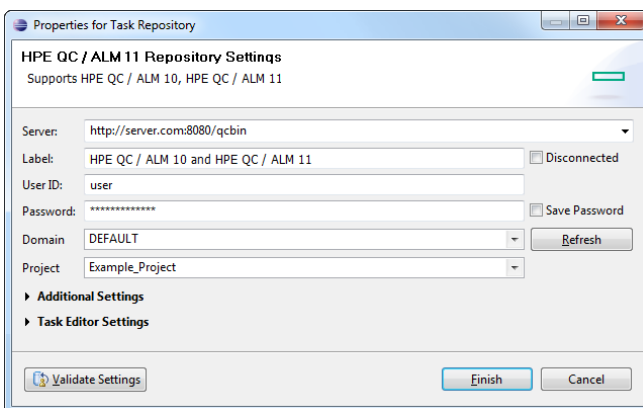
Connecting to HPE QC / ALM

Adding a Repository

Before queries can be created over HPE QC / ALM requirements and defects, you must first set up an HPE QC / ALM Task Repository in the Task Repositories View:

HPE QC / ALM

1. Open the Task Repositories View – from the Window menu select Window > Show View > Other > Mylyn > Task Repositories
2. In the view that opens, click the Add Task Repository button in the view toolbar.
3. In the wizard that opens, select 'HPE QC / ALM 11' from the list of available repositories and click Next.



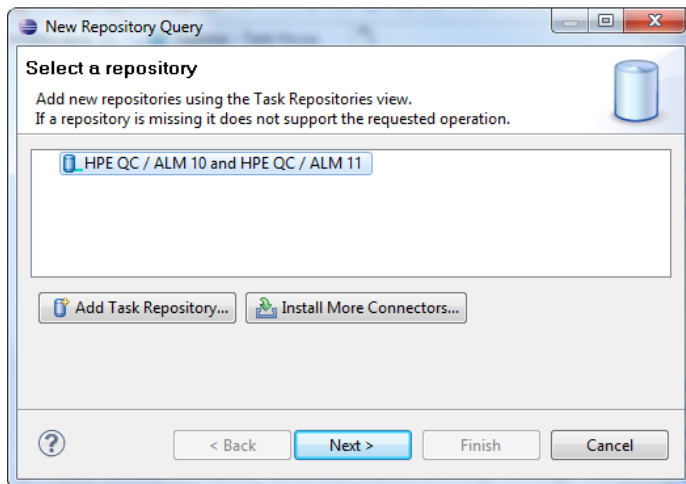
4. In the server field, enter the HPE QC / ALM web service URL. For example, <http://server.com:8080/qcbin>
5. Choose a label for the repository and enter your credentials. Check the Save password box if you want the password to persist between workbench sessions.
6. Click Refresh to download the list of domains and projects available on the server, and select the Domain and Project that you would like to connect to (if you already know the Domain and Project, you can just enter the URL in the format <http://server:8080/qcbin;Domain;Project>). If you want to connect to more than one project, you will have to repeat this process to set up a repository for each one.
7. Press the **Validate Settings** button to confirm that the settings are correct.
8. Press the Finish button

HPE Agile Manager

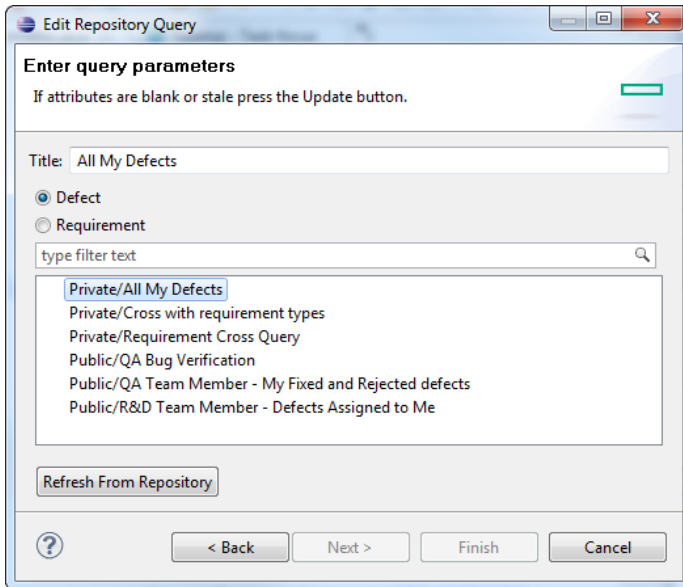
1. Open the Task Repositories View – from the Window menu select Window > Show View > Other > Mylyn > Task Repositories
2. In the view that opens, click the Add Task Repository button in the view toolbar.
3. In the wizard that opens, select 'HPE QC / ALM 11' from the list of available repositories and click Next.
4. In the server field, paste the complete HPE Agile Manager URL from your web browser. For example, https://server.com/agm/webui/alm/saas_alm_123456789/Main/apm/@6Cn5d/?TENANTID=123456789#home
5. Choose a label for the repository and enter your credentials. Check the Save password box if you want the password to persist between workbench sessions.
6. Press the **Validate Settings** button to confirm that the settings are correct.
7. Press the Finish button

Queries – Bringing your HPE QC / ALM requirements and defects into the Task List

A query is the primary means to get HPE QC / ALM tasks (Requirements and Defects) into the Task List. To manually add a new query, click the New drop down (the arrow beside the button) in the Task List toolbar, or right click in the Task List view and select New > Query. Choose the HPE QC / ALM repository that you just created when prompted to choose a repository.



After you select your HPE QC / ALM repository and click Next, you are presented with a choice of which kind of query to create. You can query Defects or Requirements, by choosing from a list of Favorite queries.



Favorite queries are server side queries that can be brought into your personal Task List. Navigate the available queries on the HPE QC / ALM repository and choose the query you wish to include in your task list, then click the Finish button. The query is added to your Task List and matching tasks appear nested under the query.

HPE QC / ALM Connector – Requirements for Sync

This section explains how to connect to supported versions of HPE QC / ALM using Tasktop's HPE QC / ALM connector.

HPE QC / ALM Installation requirements

If the server version is HPE QC / ALM v10 or older, the HPE QC / ALM Connectivity add-in needs to be installed. To download the add-in, go to

<http://qualityCenterHostAndPort/qcbin/addins.html>

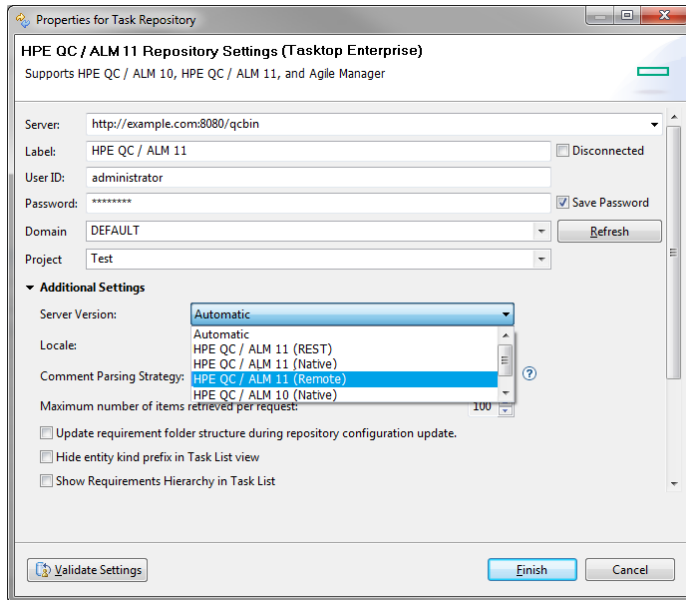
(where *qualityCenterHostAndPort* should be similar to hpalm.example.com:8080).

HPE QC / ALM Repository Configuration requirements

Server Version

When creating repositories for HPE QC / ALM, a number of options are available in the “Server Version” dropdown under the “Additional Settings” area. If the server version is HPE QC / ALM 11 and above, the server version should be set to either `Automatic` or `HPE QC / ALM 11 (REST)`.

Note that `HPE QC / ALM 11.5` is not a supported server version (however `HPE QC / ALM 11.52` is supported).



If using HPE QC / ALM 10 or below, then the `HPE QC / ALM 10 (Remote)` option must be selected. The remote client is a special Sync-specific connector which uses HPE QC / ALM's native client running in a remote process to work around memory-leak issues in the native client.

In Sync, the `HPE QC / ALM 10 (Native)` option is disabled by default due to instability. If Tasktop Sync is started up with this repository setting, it will likely crash periodically due to a bug in the HPE QC / ALM native client. It can still be force-enabled by adding the property `showQcNativeClient` to the `TasktopSync.ini` file.

Comment Parsing Strategy

There are three comment parsing strategies to choose from: `None` (no comment parsing strategy), `Strict`, and `Lenient`. These strategies represent the procedure in which the HPE QC / ALM multi-comment field is separated into individual comments for synchronization to another repository. The `Strict` comment parsing strategy is the default for Tasktop Sync.

It should be noted that enabling or disabling comment parsing in the repository settings page does not enable or disable comment synchronization in any related task mappings, and similarly enabling or disabling comment synchronization in a task mapping will not enable or disable comment parsing. This means that tasks which have comments which fail to parse will cause errors even when their task mapping has comment synchronization disabled, when comment parsing is enabled in the repository settings page.

No comment parsing strategy

When no comment parsing strategy is specified, HPE QC / ALM tasks will not have comments for synchronization.

If comment synchronization is disabled, one can still synchronize the multi-comment field from HPE QC / ALM to a rich text field in the other system.

Strict comment parsing strategy

This strategy employs the delimiter of twenty-five consecutive underscore characters used by HPE QC / ALM to separate the body of text into individual comments. Comments synchronized using this strategy will use the text following the ":" character as the text body for the synchronized comment. Text preceding this character will be used as comment metadata to discern the comment author and creation date. If the creation date cannot be parsed from the comment metadata, comment creation dates will show as Jan 1 1970 00:00:00 GMT.

Failure to parse the text body into individual comments will result in an error and stop synchronization of this artifact.

Lenient comment parsing strategy

As with the `Strict` parsing strategy, the `Lenient` strategy separates the text body into comments using the aforementioned delimiter. This strategy also attempts to parse the comment metadata preceding the ":" character of each comment to identify the comment author and creation date. Failure to parse this metadata results in using the entire comment text between delimiters (including malformed comment metadata) as the body of text for each comment. In this case, comments have creation dates of Jan 1 1970 00:00:00 GMT. Because the comment author will not be known in the event of a metadata parsing failure, the person mapping must be configured with a valid default user.

Issues with synchronization will arise if malformed comments that have been created in HPE QC / ALM are corrected after they have been posted. The corrected comment will be recognized as a new comment and synchronized to the proxy repository. The malformed comment still present in the proxy repository will then be synchronized back to HPE QC / ALM. Correcting the duplicate malformed comment in HPE QC / ALM will result in the repetition of these same actions by Tasktop Sync. Malformatted comments created in HPE QC / ALM while using the `Lenient` strategy will always be present in both repositories.

Switching strategies from Lenient to Strict

Malformatted comments that had been synchronized while using the `Lenient` strategy will cause synchronization failures after switching to the `Strict` comment parsing strategy.

Comments

In the `repository` section, `comment-content-type` should be set to `text/html`.

Comment Parsing

Basics

HPE QC / ALM have a unique approach to comment handling. One (HTML formatted) field is used to store the entire list of comments, separated by: _____.

Each of those individual comments follow one of the following formats: `userName, date: commentText` or `userFullName <userName>, date: commentText`. (Please note that the second format is shown based on how it displays in the web UI. Internally, the comment is stored with the angle brackets encoded to `<` and `>`. If comments are added outside of the UI (via scripting, for example), the encoded format should be used.)

It is important to know that in order for successful comment synchronization, Tasktop Sync makes the following assumptions to be able to parse comments reliably based on the examples above:

- splitting the entire comment field by _____ results in the list of comments
- each comment starts with a comment header, which can be either
 - a HPE QC / ALM "user name" (which is unique), followed by a comma, followed by a date, followed by a colon, or
 - a user's full name (not unique), followed by the user name (unique) in angle brackets, followed by a comma, followed by a date, followed by a colon
- after this individual comment header, everything else is interpreted as the comment's text (including HTML formatting and line breaks)

Note that user name and user's full name cannot contain `'`, `<`, or `>` characters.

Examples of Valid HPE QC / ALM Comments

```
tasktop, 01/01/1970: test comment
```

```
Ulysses User <n02910>, 1/1/1970: test comment
```

Examples of Invalid HPE QC / ALM Comments

```
1/1/1970: test comment
```

```
testComment
```

```
tasktop 1/1/1970: test comment
```

```
tasktop, 1/1/1970 test comment
```


Invalid HTML served by HPE QC / ALM

On rare occasions, HPE QC / ALM can send invalid HTML. The most common example is that a comment contains HTML tags which are not closed, or closing tags which are lacking a corresponding opening tag.

Troubleshooting HPE QC / ALM Comment failures

We understand that it can and will happen that users intentionally or accidentally break this implicit HPE QC / ALM comment formatting contract and thus Tasktop Sync will fail to parse comments. Tasktop is collecting data on those failures and is improving comment parsing results constantly.

If a comment parsing error occurs, check for unusual characters and formatting, based on the examples of valid comments above. If there are no obvious issues, please contact support@tasktop.com and provide us with the full error log entry (which should contain the comment text) and we will investigate further.

Additionally, HPE QC / ALM might return invalid HTML with unclosed tags. Tasktop Sync comment parsing will fail on those occasions and provide enough details to manually fix this in the HPE QC / ALM web UI. Usually the best approach to fix this is to delete the text before and after the unclosed tag (to effectively cause deletion of the faulty tag) and then rewrite that text in the web UI.

Another related issue is formatting information being stripped when HPE QC / ALM comments are synchronized to another system. This often occurs due to HTML tags being inserted in the comment header. This causes the parser to strip all of the tags from the comment in order to differentiate the comment metadata and comment body. Removing the tags in the comment header may cause the formatting to be synced to the other system.

If a failure related to HPE QC / ALM Comment handling occurs, check the error details for further information on which comment caused the problem. Most of the time the issue can be resolved by fixing the comment in the web UI.

HPE QC / ALM Sync Connector Known Limitations

- The HPE QC / ALM 11 sync works natively with a REST client only. For HPE QC / ALM version 10, you need to download the HPE QC / ALM Connectivity Add-in.
- HPE QC / ALM allows the editing of defects with stale data. That is if sync modifies a defect that has been synchronized with incoming changes from another repository, and the user then edits the same task without refreshing the client, the incoming changes would be overridden.
- The HPE QC / ALM connector does not support IPv6
- Favorite filters containing dates must use “yyyy-mm-dd” date format.
- Using a form based (local) query on user names with spaces is not supported. Use a favorite (server stored query) instead.

- The following characters are not supported as part of attachment file names, all other characters including whitespace are valid: \ / : * ? " < > | % +
- The HPE QC / ALM connector does not support 0 byte attachments.

Troubleshooting Guide

I keep getting a message like “Unable to login. Please validate credentials” but I can login on the web. How do I connect?

If you are running HPE QC / ALM on WebLogic or WebSphere, there could be a problem with the server configuration that will interfere with your ability to use the connector. Basic Authentication is enabled by default in WebLogic and WebSphere and intercepts the REST API authentication requests there and needs to be switched off for the application domain. For WebLogic this is done by inserting this parameter

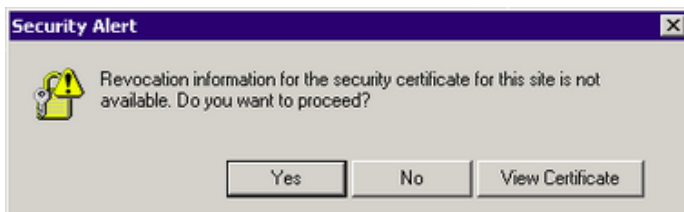
```
<enforce-valid-basic-auth-credentials>false</enforce-valid-basic-auth-credentials>
```

within this section

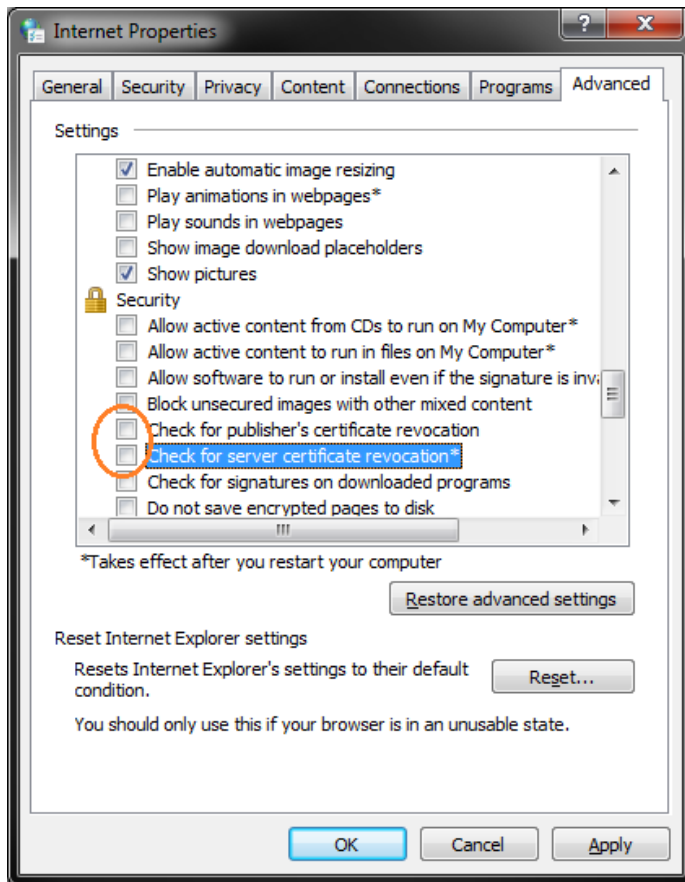
```
<security-configuration></security-configuration>
```

of the config.xml of the domain that HPE QC / ALM is configured on. Note that this is reflected in the HPE QC / ALM REST APIs help documentation in the general limitations section.

I keep getting a Security Alert dialog about certificate revocation. How do I solve this?



This alert can be disabled by turning off the checks for revoked certificates:



Open the Internet Options and uncheck both Check for publisher's certificate revocation and Check for server certificate revocation. After a restart of the computer, the Security Alert should not happen anymore.

IBM Rational DOORS Next Gen Connector [pre Sync 4.0]

This section explains how to connect to supported versions of IBM® Rational DOORS Next Gen™ using Tasktop's IBM Rational DOORS Next Gen Connector.

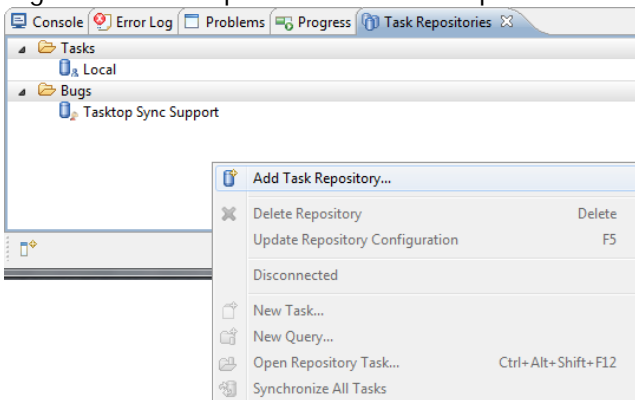
Configuring the IBM Rational DOORS Next Gen Repository

Connecting to the IBM Rational DOORS Next Gen Repository

Tasktop Sync must be configured to connect to the IBM Rational DOORS Next Gen Repository through the Tasktop Sync Repository manager.

Add the IBM Rational DOORS Next Gen repository to the Task Repositories view:

- Right click in the pane of the Task Repositories view and select “Add Task Repository...” as shown:

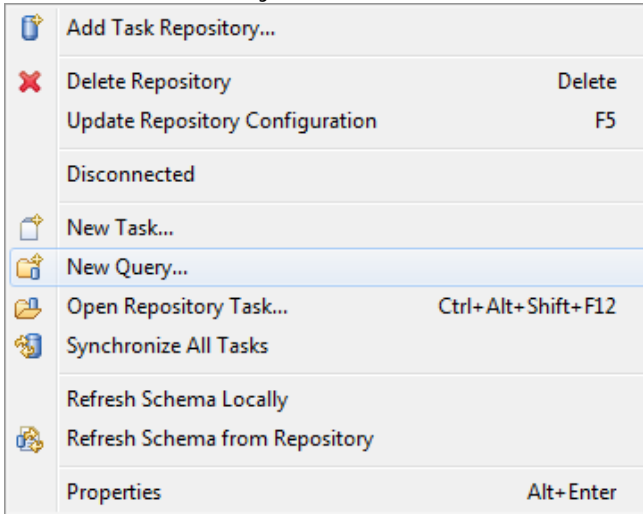


- Choose IBM Rational DOORS Next Gen Repository from the list
- Fill the repository information into the fields of the “Add Task Repository” dialog. Click the “Validate Settings” button after filling out the fields to validate that Tasktop Sync can connect to the repository.
- Select no when Tasktop Sync asks to add a new query to the repository.

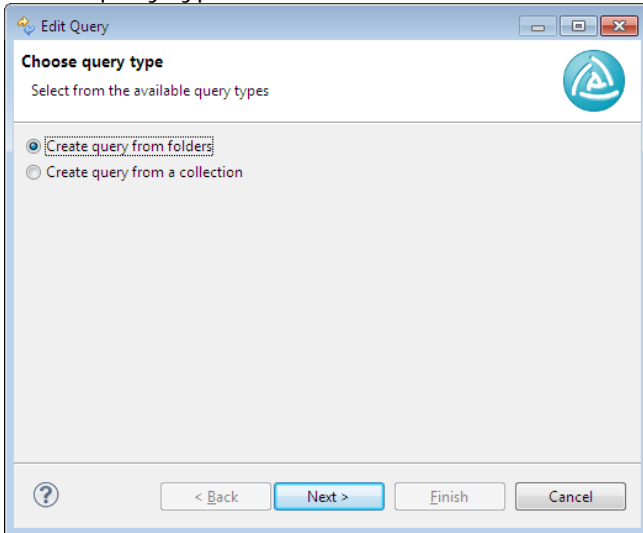
Create Initialization and Changes Queries for IBM Rational DOORS Next Gen

After the previous step, Tasktop Sync has been configured to connect to the IBM Rational DOORS Next Gen server. Now, the changes and initialization queries can be created. Please consult the configuration [section](#) on creating queries for details on the purpose of the queries.

- Right click on the IBM Rational DOORS Next Gen Repository.
- Click on "New Query...":



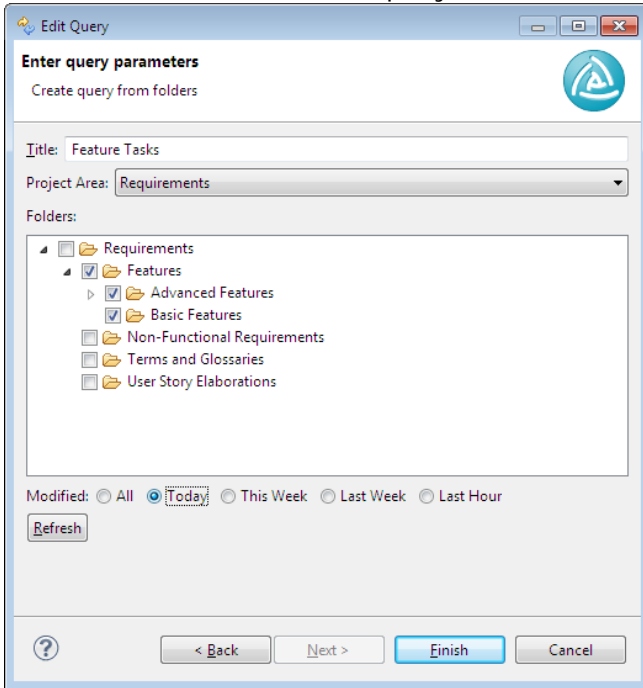
- Select query type:



Query from folders

- Select the project area from the top of the dialog.
- Select the folders to include in the query.

- Select the appropriate **Modified** option. It is recommended to select **Today** for the changes query and **All** for the initialization query.



- Repeat the previous step to add the initialization query to Tasktop Sync.

Query from a collection

- Select the project area from the top of the dialog.
- Select a collection for the query.

- Select the appropriate **Modified** option. It is recommended to select **Today** for the changes query and **All** for the initialization query.

- Repeat the previous step to add the initialization query to Tasktop Sync.

Required attributes and properties

Additional repository properties:

- **project** (required): The value must identify the project area of the repository to be used for synchronization.
- **proxyStorageAttribute** (required): The value must identify an attribute that will be used to store proxy information.

Setting up the proxyStorageAttribute property

Note: these instructions assume a task mapping exists for IBM Rational DOORS Next Gen and HPE QC / ALM.

- Create a new custom field in the IBM Rational DOORS Next Gen project:
 - As an administrator, navigate to Manage Project Properties in the IBM Rational DOORS Next Gen web UI.
 - Under the Artifact Types tab, with Requirements highlighted under the Artifact Types list, select Add Attribute in the Artifact Attributes list.
 - Click New Attribute from the resulting pop up.

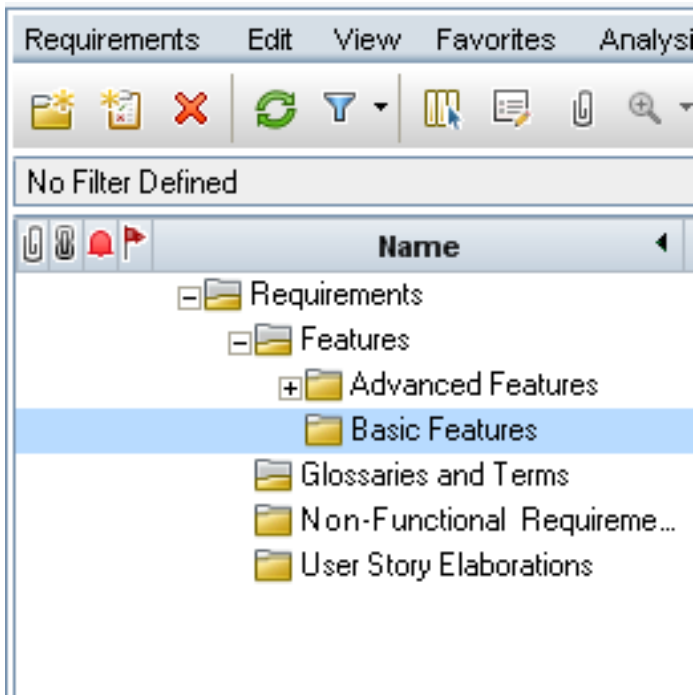
- In the Create New Attribute dialog box, name the new attribute and set its data type to String and click OK.
- Select the newly created attribute in the Add Attribute dialog box and click OK. The new attribute should now appear in the list under the Artifact Attributes header.
- Click Save.
- Set custom field to be the proxy storage field in Sync:
 - Open the task mapping. Click the Rational DOORS Next Gen Schema tab at the bottom of the mapping and refresh the schema. The newly created attribute should now appear in the schema.
 - Right-click on the new attribute in the Attributes list and select Copy ID.
 - Click the Overview tab at the bottom of the mapping.
 - In the IBM Rational DOORS Next Gen Properties section in the Overview, click Add.
 - Select proxyStorageAttribute from the Name dropdown.
 - Paste the copied attribute ID into the Value field and click OK.
 - Save the mapping by clicking the Save icon in the top right corner.

Folder Sync

The IBM Rational DOORS Next Gen connector supports synchronization of the folder of a requirement to and from a mapped repository. Folder Sync allows the containment of a requirement to be synchronized such that the requirement will reside in a folder (or container) of the same name and structure in the mapped repository.

Preparing for Folder Sync

In order to synchronize folders, ensure that the structure and names of each folder in IBM Rational DOORS Next Gen matches the target repository. Folder structure must be configured prior to synchronization. For example, folder structures for IBM Rational DOORS Next Gen and HPE QC / ALM could be set up as follows:



Limitations

Artifact Types

Each artifact type requires a separate mapping since not all attributes are common to all artifact types, even within the same project. If the artifact type of a requirement is changed, it will fall under a new mapping. Only the attributes common to both mappings will continue to sync properly. Artifact type should not be a mapped attribute.

Artifact Format

Tasktop Sync only supports `Text` format requirements.

Folder Names

- The IBM Rational DOORS Next Gen connector for Tasktop Sync does not support projects with folders whose names contain the characters "&", "<", or ">". Attempting to synchronize requirements from such a project will result in an error. However, synchronizing requirements from another project without such folders, on the same server, will work as expected.

Folder Sync

- Folder names may not contain the character "/" when Tasktop Sync is configured to synchronize folders.

Unsupported IBM Rational DOORS Next Gen Features

Tasktop Sync does not support synchronization of the following for IBM Rational DOORS Next Gen:

- Comments
- Attachments

Unsupported Basic Types

Tasktop Sync does not support mappings for attributes of the following IBM Rational DOORS Next Gen types:

- Float
- Time
- DateTime
- Duration
- Multi-select Enumerations

Attribute Sync Limitations

- Primary Text attribute (main description field) can only be synchronized one-way from IBM Rational DOORS Next Gen to the target repository.
- HTML tags are removed from standard text fields that are not rich text (e.g. The “Summary” field)

Summary with special characters appears encoded (Rational DOORS Next Gen Versions 4.0.4 and 4.0.5)

Due to a defect on the Rational DOORS Next Gen versions 4.0.4 and 4.0.5, requirement summaries containing special characters (e.g. an & character) will appear encoded (e.g. &) when synchronized to another ALM system. This problem is resolved in versions 4.0.6 and up.

For more information, please see [jazz.net ticket 83692](#) .

IBM Rational Team Concert SDK Connector

This section explains how to connect to supported versions of IBM Rational Team Concert using Tasktop's IBM Rational Team Concert SDK Connector.

IBM Rational Team Concert Installation requirements

Tasktop Sync requires that the IBM Rational Team Concert client plugins are available to connect to these repositories. An account on jazz.net is needed to download the required plugins. The plugins will be available as a p2 repository zip file. Download the version that exactly matches the server version. For example, version 4.0 requires you to download [Rational Team Concert v4.0 p2 repository](#). Unzip these plugins to a location on the hard drive. This location will be entered during the installation of Tasktop Sync.

Configuring the Rational Team Concert Repository

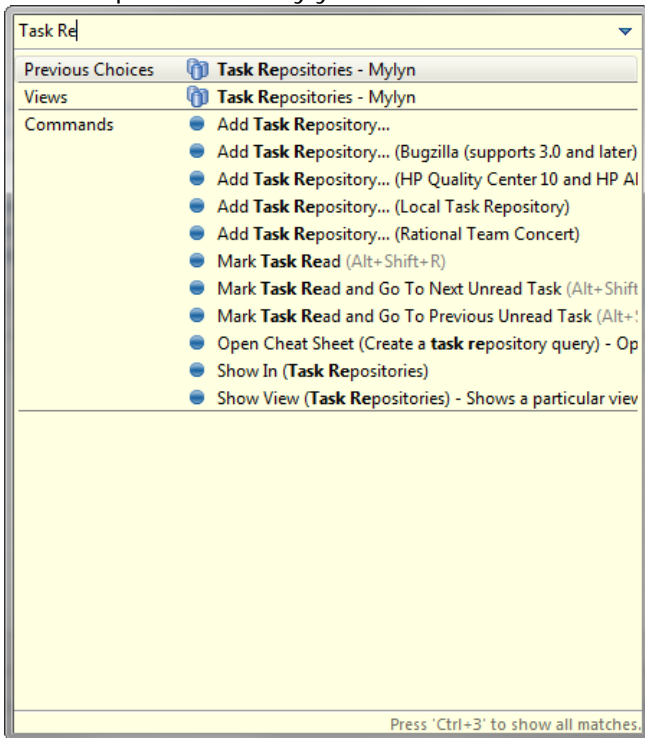
1. Permissions

- The account that will be used by Tasktop Sync requires a Rational Team Concert Developer License as Tasktop Sync cannot operate under a Rational Team Concert Contributor License.
- Further, ensure that the account used by Tasktop Sync is assigned process roles which are granted all permissions listed under Work Items in both the Project Configuration and the Team Configuration. It is also recommended that the Tasktop Sync user is granted all permissions attributed to a basic user process role.

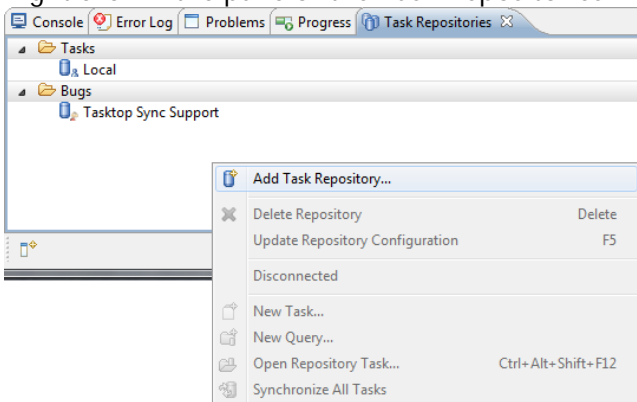
Connecting to the Rational Team Concert Repository

Tasktop Sync must be configured to connect to the Rational Team Concert Repository through the Tasktop Sync Repository manager.

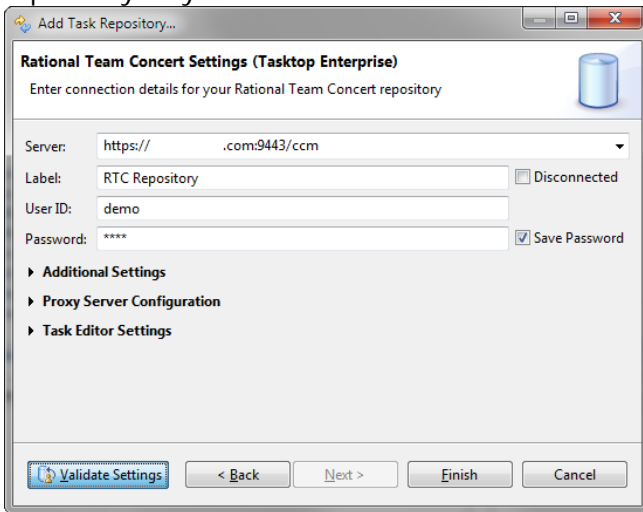
- Open up the Task Repositories view by pressing Ctrl+3 and typing in "Task Repositories". Select "Task Repositories - Mylyn" from the Views section as shown:



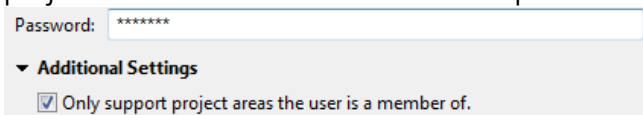
- Right click in the pane of the Task Repositories view and select "Add Task Repository..." as shown:



- Fill in the specifics to your repository in the Add Task Repository dialog. Click the validate button after filling out the fields to validate that Tasktop Sync can connect to your repository. An example repository may look as follows:



- By default only the projects the authenticated user is a Member of are supported (the Administrator role is not sufficient). This ensures that the repository configuration update remains as small as possible in a large environment. To display all project areas on the server, disable the “Only support project areas the user is a member of” option in the Advanced Settings:



- Select no when Tasktop Sync asks to add a new query to the repository.

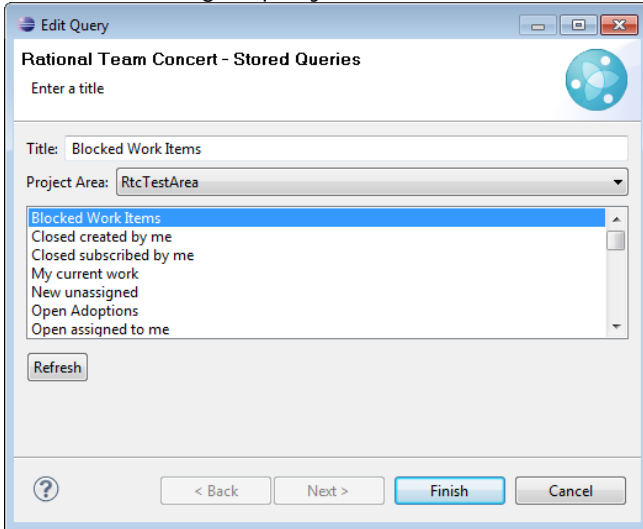
Create Initialization and Changes Queries for IBM Rational Team Concert

After the previous step, Tasktop Sync has been configured to connect to your Rational Team Concert server and the changes and initialization queries should be configured as well. Please consult the [configuration section](#) on creating queries for details on the purpose of the queries you will be creating.

Both the initialization and changes queries should be created on the Rational Team Concert Query server. Please check the Rational Team Concert documentation for details on how to create queries. Once these queries have been created, add these queries to Tasktop Sync.

- Navigate to the Task Repositories view either by clicking on Task Repositories, or using Ctrl+3 and typing in “Task Repositories”, selecting the appropriate view;
- Right click on the Rational Team Concert Repository;
- Click on “New Query...”;

- Select the project area from the drop down at the top of the resulting dialog;
- Select the changes query created above from the list of available queries;



- Repeat the previous 3 steps to add the initialization query to Tasktop Sync.

Edit IBM Rational Team Concert synchronizer.xml

The final step in configuring Tasktop Sync for Rational Team Concert is to make the appropriate edits to the synchronizer.xml configuration file. To complete these edits, follow the instructions in the [synchronizer.xml](#) section. Please note:

- The URL you use in the repository element of your synchronizer file must match exactly the URL you specified when creating your repository above.
- The names of changes/initialization queries specified in the synchronizer.xml file must also match exactly the names for these queries above. Tasktop Sync will not function correctly if they do not match and will report errors, for example, that it cannot find a given query.
- The value of the project property in the synchronizer.xml file must be the *name* of the desired project area. Using the UUID, or any identifier other than the project area's name, will result in Tasktop Sync failing to generate a task schema for your Rational Team Concert repository.
- For comment-content-type, use "text/plain;markup=RTCRichText".

The summary of the Rational Team Concert specific additions to the synchronizer.xml configuration is listed below.

Required attributes and properties

Additional **repository scope** fields:

- **project** (required): The name of the project area of the repository to be used for synchronization. (Be sure to use the project area's *name*, and not its UUID)

- **ItemType** (required): Must match the Rational Team Concert WorkItem type **ID** (e.g. task, defect, etc), not the user-visible name for that item type.

Additional repository fields:

- `<proxy-storage-attribute id="">` (optional): If using a custom proxy storage attribute the desired attribute ID must be placed within `name=""`.
- `<proxy-storage-attribute id="" sparse="true">` (optional): If using a custom proxy storage attribute with IBM Rational Team Concert this property must add `sparse="true"` for Tasktop Sync to use the configured custom proxy storage attribute.

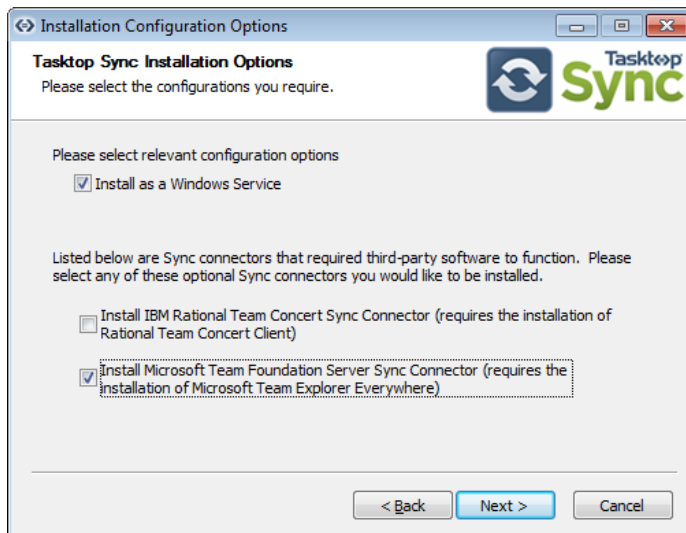
IBM Rational Team Concert limitations

Issues with Simultaneous Log-in

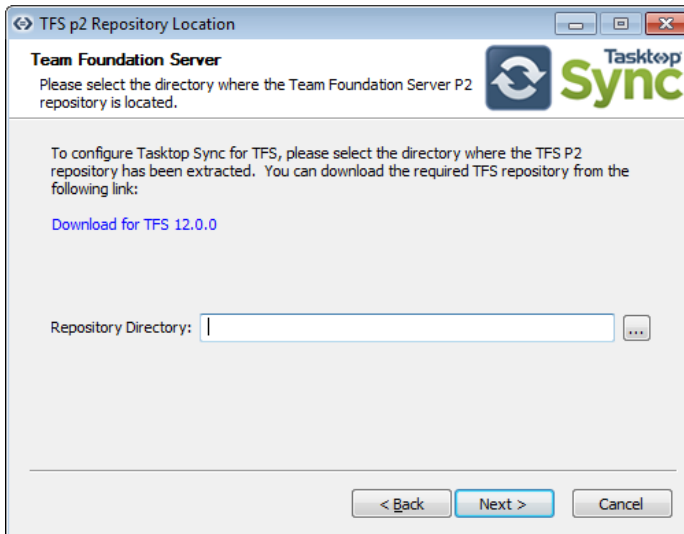
Tasktop Sync may not function correctly if the same Rational Team Concert user is logged on to Tasktop Sync and the Rational Team Concert web UI simultaneously.

Microsoft Team Foundation Server Connector [pre Sync 4.2] Installation Requirements

The Microsoft Team Foundation Server connector requires the Microsoft Virtual Studio Team Explorer Everywhere plugin and the Tasktop Team Foundation Server Sync Connector. When you run the installation program, one of the pages of the dialog will prompt you to install the Team Foundation Server Sync Connector. Be sure that you check the box for **Install TFS Sync Connector (requires the installation of Microsoft Team Explorer Everywhere)** on this page. If you do not check this checkbox on installation, and later decide that you do want a Team Foundation Server connector, you will need to reinstall Tasktop Sync.



The next page will explain where to download the Team Explorer Everywhere plugin:



Sync Requirements

Microsoft Team Foundation Server Iteration paths

For `Area path` and `Iteration path` attributes, the value is a hierarchical path, e.g. "Tasktop\Tasktop Sync\Sprint 7\Iteration 3". Most other vendors' repositories use individual attributes for the values in the path (e.g. `project\product\sprint\iteration`). In such cases, you will probably want to write a Groovy caster to pull apart the iteration path and push it into multiple attributes. You will then need to fuse multiple attributes into one iteration path in the other direction.

Microsoft Team Foundation Server synchronizer.xml Requirements

Comments

You should use `comment-content-type="text/plain"` for Microsoft Team Foundation Server repositories.

Proxy Storage Attribute

The use of the `proxyStorageAttribute` setting is recommended for Microsoft Team Foundation Server repositories. If not specified, a special hyperlink is stored on TFS work items to store the proxy association.

There are three ways to add work item fields to Team Foundation Server:

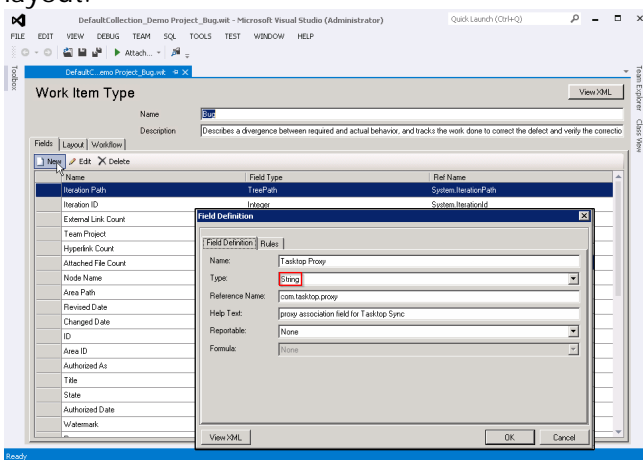
- Editing the XML (see [MSDN](#));

- Using witadmin (see [MSDN](#));
- Using the [Team Foundation Server Power Tools](#) Process Editor (2012 version linked)(as recommended by [MSDN](#));

We recommend using the Process Editor.

Follow these steps to add the attribute with the Process Editor:

1. Ensure the Visual Studio Power Tools are installed (Tools -> Process Editor entry will be present)
2. Open Visual Studio.
3. Go to Tools -> Process Editor -> Work Item Types -> Open WIT From Server.
4. Select desired collection, project and type.
5. In Fields tab, create new `String` field
6. (Optional) To see the field in the Team Foundation Server UI, go to Layout tab and add it to the layout.



Set the proxy storage field writeable to only a specific set of users

The proxy storage attribute field can be configured to be read-only for most users but a certain group. There are two strategies to do this: either a certain user group is granted exclusive permission to write to the field, or a certain user group is forbidden from writing to the field.

Allow only one group to write the proxy storage field

```
<FieldDefinition name="proxyUrl" refname="proxy.url" type="String">
  <READONLY not="[Global]\Project Collection Administrators" />
</FieldDefinition>
```

This is the field definition that needs to be set in the WorkItemTemplate. To set this up using the Power Tools mentioned above, simply double click the proxy storage field, change to the RULES tab and add a new rule READONLY, with the NOT condition set to the user group you want to have write access.

Work Item Type

Name: Bug

Description: Describes a divergence between required and actual behavior, and tracks the work done to correct the d

| Name | Field Type | Ref Name |
|----------------|------------|----------------------------|
| Assigned To | String | System.AssignedTo |
| Work Item Type | String | System.WorkItem |
| Created Date | DateTime | System.CreatedDate |
| Created By | String | System.CreatedBy |
| Description | PlainText | System.Description |
| History | | System.History |
| Related System | | System.RelatedSystem |
| Repro Steps | | System.ReproSteps |
| State Change | | System.StateChange |
| Activated | | System.Activated |
| Activated By | | System.ActivatedBy |
| Resolved | | System.Resolved |
| Resolved By | | System.ResolvedBy |
| Closed Date | | System.ClosedDate |
| Closed By | | System.ClosedBy |
| Priority | | System.Priority |
| Severity | | System.Severity |
| Stack Trace | | System.StackTrace |
| Integrated | | System.Integrated |
| Found In | String | Microsoft.VSTS.Bug.FoundIn |
| proxyUrl | String | proxy.url |

Field Definition Dialog: READONLY

Name: READONLY

For: [Global]\PROXY_READ_ONLY

Not: [Global]\Project Collection Administrators

Buttons: View XML, OK, Cancel

Forbid one specific group from writing to the proxy

You can also set the rule to FOR, and enter a specific user group which should not be allowed to write the field (while all other groups are able to). The set up is similar to above, just using the first of the two rule properties (FOR).

```
<FieldDefinition name="proxyUrl" refname="proxy.url" type="String">
  <READONLY for="[Global]\PROXY_READ_ONLY" />
</FieldDefinition>
```

User permissions required for Tasktop Sync

The user used for Tasktop Sync should have at least the default contributor rights. The recommended permission group is "ProjectAdministrator".

The following screenshots show the project level and collection level permissions that are recommended. Refer to the [TFS help documentation](#) for additional details on permission settings.

Project Level Permissions

The default project team.

| | |
|--------------------------------|-----------------|
| Create test runs | Inherited allow |
| Delete team project | Not set |
| Delete test runs | Inherited allow |
| Edit project-level information | Not set |
| Manage test configurations | Inherited allow |
| Manage test environments | Inherited allow |
| View project-level information | Allow |
| View test runs | Inherited allow |

Collection Level Permissions

Permissions Member of

| | |
|---|-----------------|
| Administer build resource permissions | Not set |
| Administer Project Server integration | Not set |
| Administer shelved changes | Not set |
| Administer workspaces | Not set |
| Alter trace settings | Not set |
| Create a workspace | Inherited allow |
| Create new projects | Not set |
| Delete team project | Not set |
| Delete team project collection | Not set |
| Edit collection-level information | Not set |
| Make requests on behalf of others | Not set |
| Manage build resources | Not set |
| Manage process template | Not set |
| Manage test controllers | Not set |
| Trigger events | Not set |
| Use build resources | Not set |
| View build resources | Inherited allow |
| View collection-level information | Inherited allow |
| View system synchronization information | Not set |

Microsoft Team Foundation Server Queries for Synchronization

With Microsoft Team Foundation Server, if you change a query, you will need to restart Tasktop Sync before the change in the query takes effect.

With most connectors, we recommend that you create named queries on the repository server-side. For Team Foundation Server, that is mandatory; you are not able to create queries using a Tasktop Sync form. You can use the Team Foundation Server Web UI, Visual Studio, or the Eclipse (not Tasktop) Team Foundation Server plug-in. See the appropriate documentation for how to create a query.

Be careful with the name: the name will need to match the name in `synchronizer.xml` exactly. We recommend you use a name with three parts: "Tasktop Sync", the repository name, and a description of what is returned, e.g. "Tasktop Sync - Cobra Project TFS - Recently Modified Defects".

Microsoft Team Foundation Server Synchronization Legal Requirements

There are specific legal licensing requirements that Microsoft requires when synchronizing data from Team Foundation Server. This does not affect your *technical* ability to synchronize, it affects your *legal right* to synchronize. Customers are required to ensure that their licenses with Microsoft cover their intended synchronization use.

Microsoft Team Foundation Server Connector Known Limitations

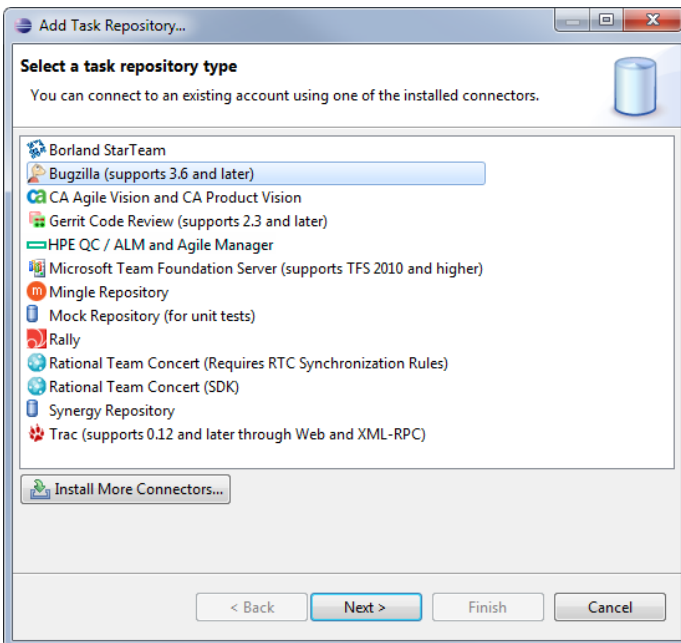
- The `Description` field in Microsoft Team Foundation Server does not support HTML or any other rich text format. If you are synchronizing from an attribute which allows HTML or rich text formatting, the descriptions will not look the same in the two repositories.
- Currently, IPv6 is not supported for the Team Foundation Server connector.
- The `userId` and display name of a user have to be unique within the team project. Submitting a user field or comment with a user whose `userId` or display name is not unique will result in an error.
- Editing rich text (html) fields on a work item using Mozilla Firefox will result in unsupported html and formatting being removed during synchronization.
- Custom Person fields are treated as string attributes in the connector, and no option (list of people to choose from) is available. The API declares such fields no different than custom string fields.

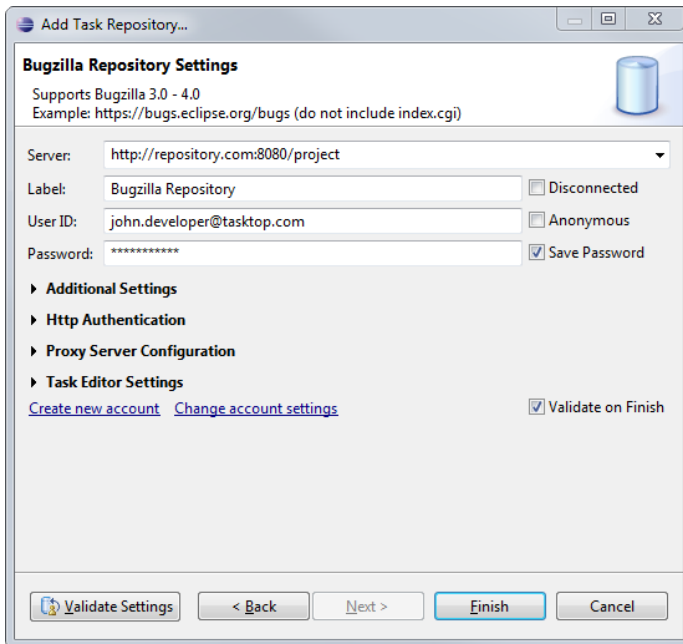
Mozilla Bugzilla Connector

The Mozilla Bugzilla Connector allows you to view, modify, share, and synchronize tasks from a Bugzilla repository, all within Tasktop.

Connecting to Bugzilla

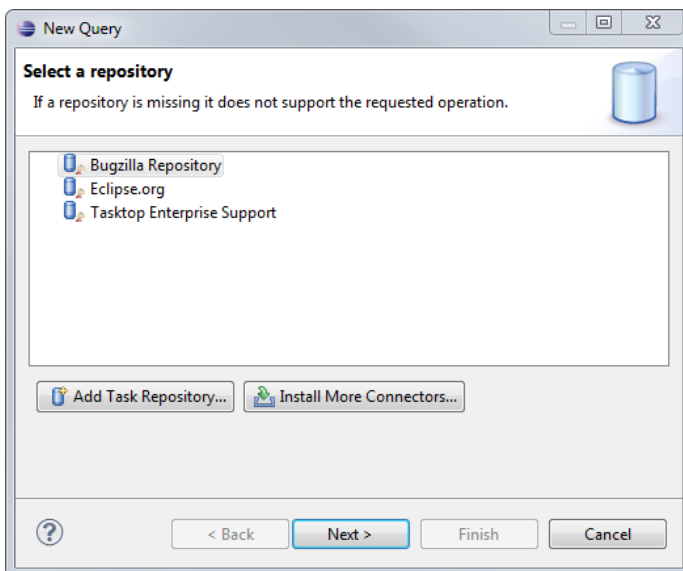
To connect to a Bugzilla repository, select “Add Task Repository” from the view menu in the Task Repositories View. In the Add Task Repository wizard, select Bugzilla and click “Next”. On the following wizard page, enter the URL of your Bugzilla repository, and, if your Bugzilla repository requires log-in credentials, de-select the “Anonymous” check box and enter your credentials. Click “Validate Settings” to confirm your credentials, then click “Finish” to finish connecting to Bugzilla.





Creating Queries

To create a new query on your Bugzilla repository, visit the Task List View, open the "New" menu, and select "New Query". The Bugzilla connector provides two ways to specify a query: using a query form, or providing an existing query URL.



Edit Query

Choose query type

Select from the available query types.

☒ Create query using form

☐ Create query from existing URL

? < Back Next > Finish Cancel

Creating Queries Using the Query Form

To create a new Bugzilla query using a form, select "Create query using form" and click "Next". Use the form page to specify your query. You can search for words in tasks' summaries, search by the people related to tasks, such as the owner or reporter, and search by task attributes such as Product or Component. To see more task attributes to search by, click on "More Options". When you are satisfied with your query, enter a title for it and click "Finish."

Edit Query

Enter query parameters

Title: Developer's Improve Tasks

Summary: improve contains all of the

Email: developer@tasktop.com contains

☒ Owner ☐ Reporter ☐ CC ☐ Commenter ☐ QA Contact

| Product: | Component: | Status: | Severity: |
|------------------|----------------|-------------|-----------|
| Tasktop | StudentRecords | UNCONFIRMED | blocker |
| UniversityOnline | | NEW | critical |
| Weather Tracker | | ASSIGNED | major |
| | | REOPENED | normal |

► More Options

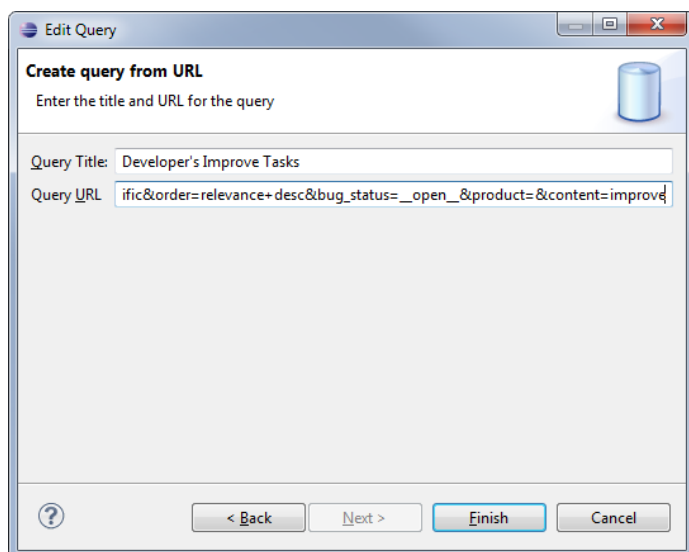
► Boolean Charts (Advanced)

Refresh Clear Fields

? < Back Next > Finish Cancel

Using an Existing Query URL

If you have already created a query using the Search feature in Bugzilla's web interface and you wish to use that query with the Bugzilla Connector, select "Create query from existing URL" and click "Next". Copy and paste the URL for the Bugzilla Search from your web browser into the "Query URL" field of the wizard, give your query a title, and click "Finish."



The screenshot shows a window titled "Edit Query" with a tab labeled "Create query from URL". Below the tab is a sub-header "Enter the title and URL for the query" and a small database cylinder icon. There are two text input fields: "Query Title" containing "Developer's Improve Tasks" and "Query URL" containing "ific&order=relevance+desc&bug_status=__open__&product=&content=improve". At the bottom, there is a help icon (question mark) and four buttons: "< Back", "Next >", "Finish" (highlighted in blue), and "Cancel".

Further Help

For further help with the Mozilla Bugzilla Connector, try the following resources:

- [Mylyn Bugzilla Connector Help Documentation](#)
- [Mylyn Bugzilla Connector FAQ](#)

Serena Business Manager Connector [pre Sync 4.1]

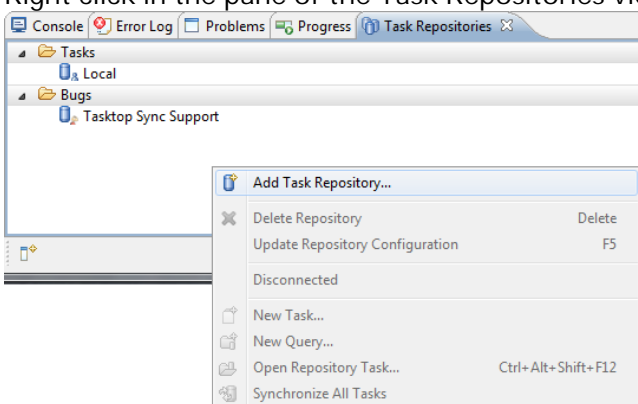
This document explains how to connect to Serena® Business Manager using Tasktop's Serena Business Manager Connector.

Connecting to the Serena Business Manager Repository

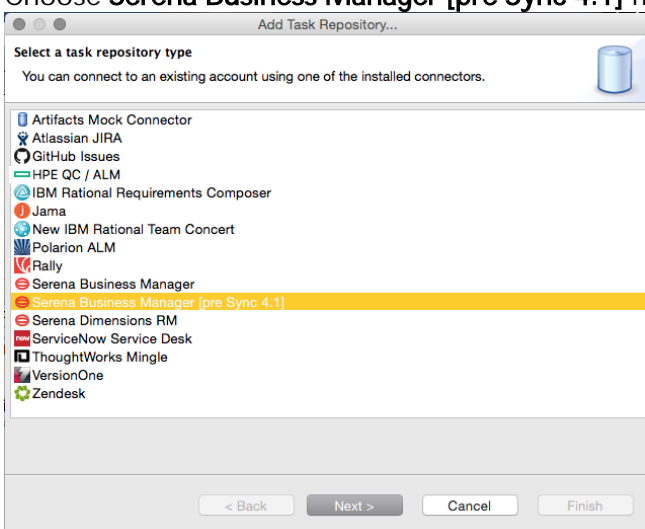
The Serena Business Manager connector must be configured to connect to the Serena Business Manager Repository through the repository manager.

Add the Serena Business Manager repository to the Task Repositories view:

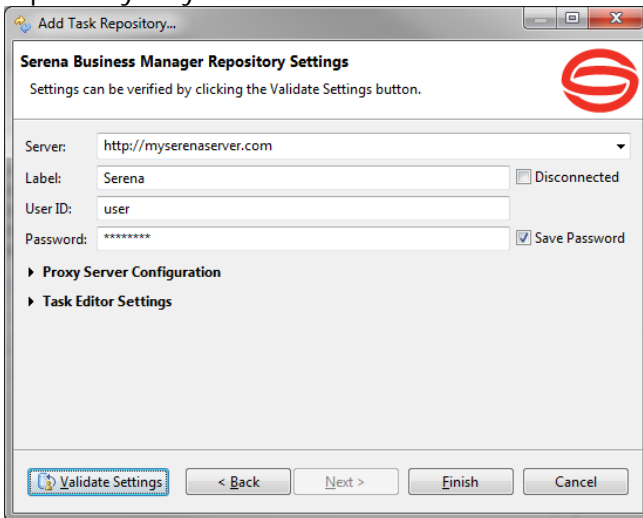
- Right click in the pane of the Task Repositories view and select **Add Task Repository...** as shown:



- Choose **Serena Business Manager [pre Sync 4.1]** from the list:



- Fill in the specifics for your repository in the Add Task Repository dialog. Click the **Validate** button after filling out the fields to validate that the connector can connect to your repository. An example repository may look as follows:



- Select **No** when asked if you would like to add a new query to the repository.

Create Initialization and Changes Queries for Serena Business Manager

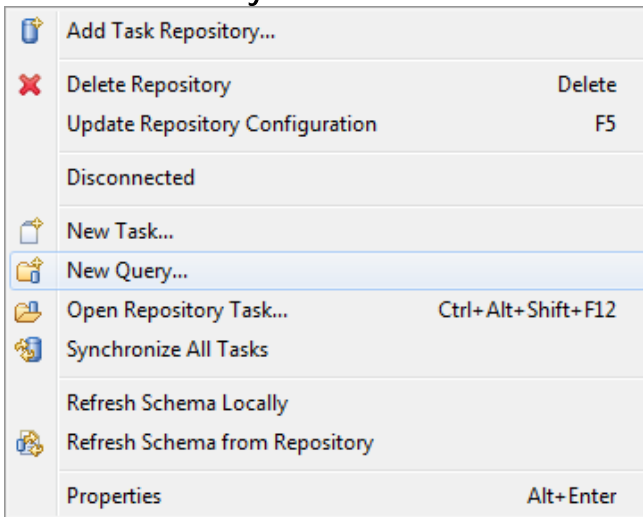
After the previous step, Tasktop Sync has been configured to connect to your Serena Business Manager server and you are ready to create the changes and initialization queries. Please consult the configuration [section](#) on creating queries for details on the purpose of the queries you will be creating.

Creating Queries for Serena Business Manager

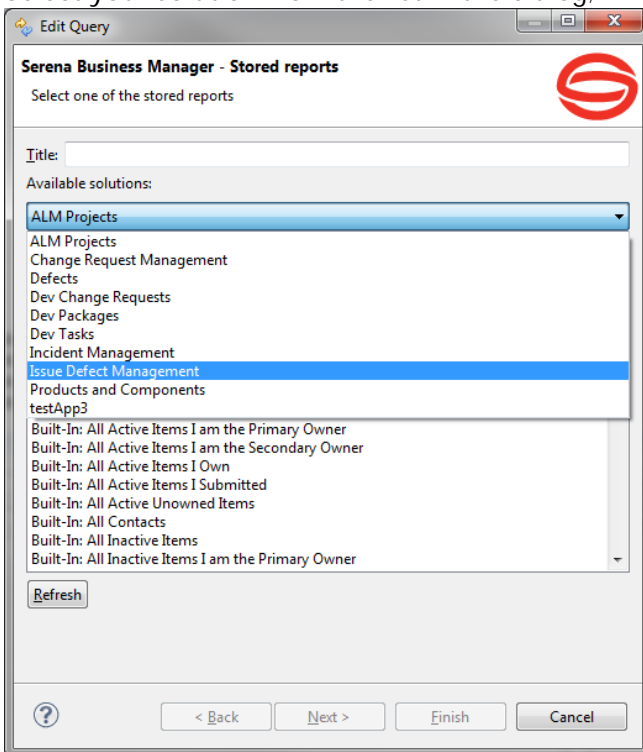
For the Serena Business Manager connector, queries are based on reports saved to the Serena Business Manager repository. To be used for a query, the report **must** contain the title and last modified date fields. Note that these fields are identified by the standard database field names; the labels do not need to match the standard labels for these fields.

- Right click on your Serena Business Manager repository;

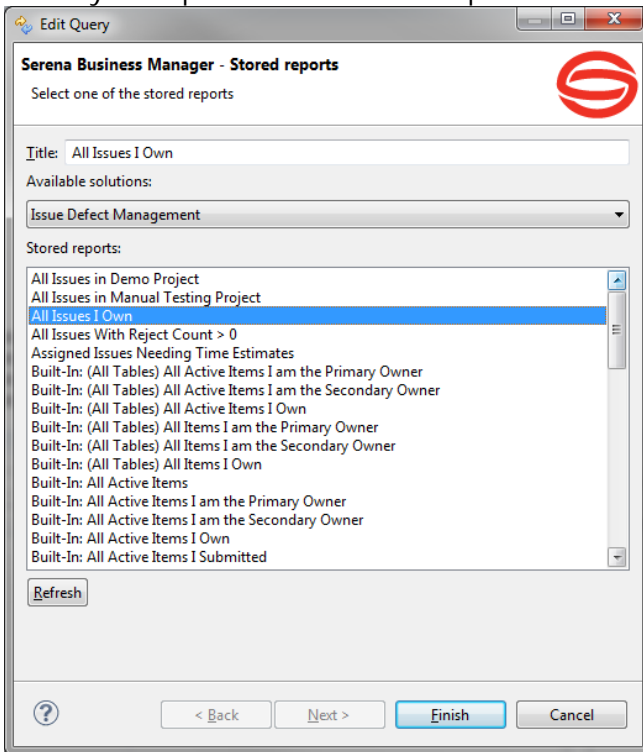
- Click on **New Query...**



- Select your solution from the list in the dialog;



- Select your report from the list of reports in that solution;



- Enter a title for the query and select **Finish**.

Create Proxy Association Attribute for Serena Business Manager

In the next step, Tasktop Sync for Serena Business Manager will require a custom attribute to store proxy association when using the attribute-based proxy store. The following instructions can be used to create this attribute:

- Open the appropriate process application in SBM Composer;
- Switch to the Data Design view and navigate to the primary table;
- Right click and choose **Add New...** then **Text**;
- In the property editor, navigate to the **General** pane;
- Set the field name and database field name to an appropriate value to allow easy identification of the purpose of the field (for example, "TASKTOP_PROXY_ASSOCIATION");
- Navigate to the **Options** pane;
- For **Style**, choose **Fixed length** with a size of at least 225 characters;
- Save and validate your changes (either from the toolbar or the main menu);
- Deploy the process application to make your new field available to Tasktop Sync.

The new attribute will not be visible in the UI by default. It is not necessary for it to be visible for the Serena Business Manager connector to work correctly.

Create a Task Mapping for Serena Business Manager

The final step in configuring Tasktop Sync for Serena Business Manager is to create a task mapping. Please consult the [Task Synchronization Configuration](#) section for detailed instructions on creating and editing task mappings.

Limitations for Serena Business Manager

Feature Limitations

Artifact Types

Serena Business Manager artifacts are only supported if they meet the following requirements:

- They include the title field and the last modified date field
- Any required fields are of supported, writable types (see [Read-Only Attribute Types](#) section)

Keeping the standard fields that SBM Composer creates when a type is defined is recommended. The Serena Business Manager connector uses the standard database field names to identify known fields.

Unsupported Features

Tasktop Sync does not support synchronization of comments for Serena Business Manager.

Supported Reports

The Serena Business Manager connector uses saved reports to define its queries. Only reports that include both the title field and the last modified date field are supported for this use. Again, the standard database field names are used to identify these fields. The labels can be changed without an issue.

Attribute Limitations

Unsupported Attribute Types

Tasktop Sync does not support synchronization of attributes of the following types:

- Folder
- Multi-Group
- Multi-Relational
- Multi-User
- Single Relational
- Sub-Relational

Read-only Attribute Types

Attributes of the following types can be read from Serena Business Manager, but values cannot be set into them:

- Single Selection
- Multi-Selection
- Binary/Trinary
- Summation

Status

Tasktop Sync does not support synchronizing the **Status** attribute.

Rich Text Attributes

Tasktop Sync does not support synchronizing text attributes maintaining rich text formatting (ie. HTML tags) for Serena Business Manager.

Synchronizing Pairs of Connectors

Tasktop Sync allows teams to synchronize tasks across different defect and task tracking repositories. The Tasktop Sync server application places itself in between repositories to synchronize changes made to the defects or tasks in either repository.

This section describes how to set up Sync configurations for some common pairs of Tasktop connectors.

Synchronizing Atlassian JIRA [pre Sync 3.5] with HPE QC / ALM [pre Sync 3.5]

Task mapping

When synchronizing between Atlassian JIRA and HPE QC / ALM repositories, it is recommended to use this task mapping:

```
<task-mapping conflict-notification-policy="Log">
```

Most of the attributes in HPE QC / ALM repositories and in JIRA repositories can be mapped using task IDs instead of keys, including:

- task.common.summary
- task.common.description

Rich Text Conversion

HPE QC / ALM and Atlassian JIRA both can display rich text, but HPE QC / ALM stores the text in HTML format; Atlassian JIRA stores it in Confluence (wiki-style markup). To ensure that text is legible in both repositories, a rich text caster should be used. For example:

```
<attribute-mapping>
    <attribute id="task.common.description"
caster="html-to-confluence"/> <!-- JIRA -->
    <attribute id="BG_DESCRIPTION" caster="
confluence-to-html"/> <!-- HPE QC/ALM -->
</attribute-mapping>
```

Dates

Dates do not need a date caster when synchronizing between HPE QC / ALM and Atlassian JIRA. Here are some examples of dates:

| HPE QC / ALM | Atlassian JIRA |
|----------------------------------|--------------------|
| BG_CLOSING_DATE | attribute.jira.due |
| task.common.date.created | |
| task.common.date.modified | |

Value-mapped attributes

There are several important attributes which do not map directly across from one repository to another, with severity and priority being the most obvious ones.

The priority values in JIRA are stored as numbers (e.g. "5"), even though they display as values (e.g. "Trivial").

Note that the order of urgency is reversed: critical values in HPE QC / ALM tasks are numerically high, while in Atlassian JIRA tasks, they are numerically low. Additionally, HPE QC / ALM's notion of Severity aligns with JIRA's notion of priority; JIRA does not have a field with the same notion as HPE QC / ALM's priority field.

It is recommended to use a mapping similar to this:

| HPE QC / ALM's BG_SEVERITY | JIRA's <code>task.common.priority</code> |
|----------------------------|--|
| 5-Urgent | 1 |
| 4-Very High | 2 |
| 3-High | 3 |
| 2-Medium | 4 |
| 1-Low | 5 |

Person mapping

Person mapping needs a person caster.

Synchronizing Borland StarTeam with HPE QC / ALM [pre Sync 3.5]

Task mapping

When synchronizing between Borland StarTeam and HPE QC / ALM repositories, this task-mapping should be used:

```
<task-mapping conflict-notification-policy="Comment">
```

If comments are not desired for conflict notification, "Log" can be used instead.

Strings

| | |
|--------------|------------------|
| HPE QC / ALM | Borland StarTeam |
| BG_SUMMARY | Synopsis |

Text Conversion

HPE QC / ALM can display rich text, but Borland StarTeam cannot. To ensure that text is legible in both repositories, a rich text caster should be used. For description synchronization, it is recommended to use this mapping:

```
<attribute-mapping>
    <attribute id="task.common.description"
caster="html-to-textile"/> <!-- StarTeam -->
    <attribute id="task.common.description"
caster="textile-to-html"/> <!-- HP ALM/QC -->
</attribute-mapping>
```

Textile is a wiki markup language that does a reasonable job of conveying rich text intentions in plain text.

Dates

Dates do not need a date caster when synchronizing between HPE QC / ALM and Atlassian JIRA. Here are some examples of dates:

| | |
|-------------------|-----------------------------|
| HPE QC / ALM | Borland StarTeam |
| BG_CLOSING_DATE | Microsoft.VSTS.CMMI.Symptom |
| BG_DETECTION_DATE | task.common.date.created |

`task.common.date.modified`

Value-mapped attributes

There are several important attributes which do not map directly across from one repository to another, with severity and priority being the most obvious ones.

StarTeam has only 3 values for severity, so it is recommended to use a mapping similar to this:

| HPE QC / ALM's BG_SEVERITY | Borland StarTeam's Severity |
|----------------------------|-----------------------------|
| 5-Urgent | 2 |
| 4-Very High | 2 |
| 3-High | 1 |
| 2-Medium | 1 |
| 1-Low | 0 |

StarTeam has only three values for priority, 101 (Unassigned), 0 (No), 1 (Yes), so it is recommended to use a mapping similar to this:

|HPE QC / ALM's BG_PRIORITY|Borland StarTeam's task.common.priority

| | |
|-------------|-----|
| 5-Urgent | 1 |
| 4-Very High | 1 |
| 3-High | 1 |
| 2-Medium | 0 |
| 1-Low | 0 |
| Unassigned | 101 |

Person mapping

Person mapping needs a person caster.

Common attributes using a person caster include:

| HPE QC / ALM | Borland StarTeam |
|----------------|---------------------------|
| BG_RESPONSIBLE | task.common.user.assigned |

Limitations

The conversion between HTML and textile may not be perfect. In some cases, formatting of text may not be consistent between the repositories.

Synchronizing CA Project and Portfolio Management [pre Sync 4.1] with IBM Rational Team Concert (using IBM Rational Team Concert SDK)

This section shows some common mappings between CA PPM® standard task attributes and IBM® Rational Team Concert™ standard task attributes.

Task mapping

For CA Project and Portfolio Management and IBM Rational Team Concert, this task-mapping should be used:

```
<task-mapping conflict-notification-policy="Log">
```

Comment should not be used as a conflict notification policy, as CA Project and Portfolio Management does not support comments.

Required Repository Properties

Project

The project attribute identifies the project area of the repository to be used for synchronization. It is **required** for both IBM Rational Team Concert and CA Project and Portfolio Management.

ProxyStorageAttribute

The proxyStorageAttribute identifies an attribute that Tasktop Sync will use to store proxy information. It is **required** for CA Project and Portfolio Management. It is not necessary for IBM Rational Team Concert.

Required Attribute Mappings

In order for Tasktop Sync to synchronize new IBM Rational Team Concert objects into CA Project and Portfolio Management, the External Task ID attribute in CA Project and Portfolio Management must be mapped in an initialization-only configuration. See the [CA Project and Portfolio Management Connector For Sync](#) section for full information on the requirements for the External Task ID attribute. Here is an example of a mapping that could be used for External Task ID:

| IBM Rational Team Concert Attribute | CA Project and Portfolio Management Attribute |
|-------------------------------------|---|
| | |

| | |
|----|------------------|
| ID | External Task ID |
|----|------------------|

The mapping would be one way (from IBM Rational Team Concert to CA Project and Portfolio Management) and would have a mapping strategy of initialize.

The synchronizer.xml snippet corresponding to the above example would appear as:

```
<attribute-mapping>
  <attribute id="task.common.key" strategy="initialize"/>
  <attribute id="id" strategy="ignore"/>
</attribute-mapping>
```

Strings

String attributes do not need to be transformed with a caster and can be directly synchronized. Here is an example of a simple string mapping that could be used:

| IBM Rational Team Concert Attribute | CA Project and Portfolio Management Attribute |
|-------------------------------------|---|
| Summary | Summary |

Dates

A date caster is not needed when synchronizing between CA Project and Portfolio Management Attribute and IBM Rational Team Concert repositories. Dates may be synchronized directly.

Booleans

Boolean attributes do not need to be transformed with a caster and can be directly synchronized.

Value mapped attributes

Status and % Complete attributes

In CA Project and Portfolio Management, the values of the Status and % Complete attributes are linked. See the [CA Project and Portfolio Management Connector For Sync](#) section for details. This is a possible value mapping that can be used for Status:

| IBM Rational Team Concert's Internal State | CA Project and Portfolio Management's Status |
|--|--|
| Resolved | Completed |
| Closed | Completed |
| | |

| | |
|-------------|-------------|
| New | Not Started |
| In Progress | Started |
| Reopened | Started |

The synchronizer.xml snippet corresponding to the above example would appear as the following:

```
<attribute-mapping>
  <attribute caster="value-map" id="status">
    <caster-configuration>
      <map>
        <entry value="1" key="2"/>
        <entry value="0" key="1"/>
        <entry value="2" key="3"/>
        <entry value="1" key="6"/>
        <entry value=" " key="4"/>
        <entry value="2" key="5"/>
        <entry value=" " key="7"/>
      </map>
    </caster-configuration>
  </attribute>
  <attribute caster="value-map" id="internalState">
    <caster-configuration>
      <map>
        <entry value="2" key="1"/>
        <entry value="1" key="0"/>
        <entry value="3" key="2"/>
      </map>
    </caster-configuration>
  </attribute>
</attribute-mapping>
```

IBM Rational Team Concert does not have an attribute with equivalent behavior to % Complete. Therefore, it is recommended that the % Complete attribute either not be mapped or be mapped one way, from CA Project and Portfolio Management to IBM Rational Team Concert.

Other single select attributes

Other single select attributes, like EV Calculation Method, should be mapped using an appropriate value mapping, similar to that shown for Status above.

Limitations

Please check the Limitations sections of the [CA Project and Portfolio Management](#) and [IBM Rational Team Concert](#) documentation for details.

Synchronizing CA Project and Portfolio Management [pre Sync 4.1] with Microsoft Team Foundation Server

This section shows some common mappings between CA PPM® standard task attributes and Microsoft Team Foundation Server standard task attributes.

Task mapping

When synchronizing between Microsoft Team Foundation Server and CA Project and Portfolio Management repositories, it is recommended to use this task mapping:

```
<task-mapping conflict-notification-policy="Log">
```

Comment should not be used as a conflict notification policy, as CA Project and Portfolio Management does not support comments.

Required Repository Properties

Project

The project attribute identifies the project area of the repository to be used for synchronization. It is **required** for both CA Project and Portfolio Management and Microsoft Team Foundation Server.

ProxyStorageAttribute

The proxyStorage Attribute identifies an attribute that Tasktop Sync will use to store proxy information. It is **required** for both CA Project and Portfolio Management and Microsoft Team Foundation Server.

Required Attribute Mappings

In order for Tasktop Sync to synchronize new Microsoft Team Foundation Server Work Items into CA Project and Portfolio Management, the External Task ID attribute in CA Project and Portfolio Management must be mapped in an initialization-only configuration. See the [CA Project and Portfolio Management Connector For Sync](#) section for full information on the requirements for the External Task ID attribute. Here is an example of a mapping that could be used for External Task ID:

| Microsoft Team Foundation Server Attribute | CA Project and Portfolio Management Attribute |
|--|---|
| Key | External Task ID |

The mapping would be one way (from Microsoft Team Foundation Server to CA Project and Portfolio Management) and would have a mapping strategy of initialize. The `synchronizer.xml` snippet corresponding to the above example would appear as:

```
<attribute-mapping>
  <attribute id="task.common.key" strategy="initialize"/>
  <attribute id="task.common.key" strategy="ignore"/>
</attribute-mapping>
```

Strings

String attributes do not need to be transformed with a caster and can be directly synchronized. Here is an example of a simple string mapping that could be used:

| Microsoft Team Foundation Server Attribute | CA Project and Portfolio Management Attribute |
|--|---|
| Summary | Summary |

Dates

A date caster is not needed when synchronizing between CA Project and Portfolio Management and Microsoft Team Foundation Server repositories. Dates may be synchronized directly.

Value-mapped attributes

Status and % Complete attributes

In CA Project and Portfolio Management, the values of the `Status` and `% Complete` attributes are linked. See the [CA Project and Portfolio Management Connector For Sync](#) section for details. This is a possible value mapping that can be used for `Status`.

| Microsoft Team Foundation Server's Status | CA Project and Portfolio Management's Status |
|---|--|
| Approved | Started |
| Committed | Started |
| Done | Completed |
| New | Not Started |
| Removed | Completed |

The `synchronizer.xml` snippet corresponding to the above example would appear as:

```

<attribute-mapping>
  <attribute id="status" caster="value-map">
    <caster-configuration>
      <map>
        <entry key="New" value="0"/>
        <entry key="Done" value="2"/>
        <entry key="Removed" value="2"/>
        <entry key="Committed" value="1"/>
        <entry key="Approved" value="1"/>
      </map>
    </caster-configuration>
  </attribute>
  <attribute id="task.common.status" caster="value-map">
    <caster-configuration>
      <map>
        <entry key="0" value="New"/>
        <entry key="2" value="Done"/>
        <entry key="1" value="Committed"/>
      </map>
    </caster-configuration>
  </attribute>
</attribute-mapping>

```

When configuring the mapping for the `Status` attribute, keep workflow rules in mind. Specific sequences of status may be necessary; for example, moving from `New` to `Completed` might require a move from `New` to `In Progress` followed by a move from `In Progress` to `Completed`. If these sequences cannot be mapped directly between repositories, more complicated mappings may be necessary for `Status`. See the [Advanced Concepts](#) section for more details.

Microsoft Team Foundation Server does not have an attribute with equivalent behavior to `% Complete`. Therefore, it is recommended that the `% Complete` attribute either not be mapped or be mapped one way, from CA Project and Portfolio Management to Microsoft Team Foundation Server.

Other single select attributes

Other single select attributes, like `EV Calculation Method`, should be mapped using an appropriate value mapping, similar to that shown for `Status` above.

Task Assignments

You can also synchronize CA Project and Portfolio Management task assignments with a field or a collection of fields in Microsoft Team Foundation Server, using a scripted attribute handler.

In the following example we set up a one-way mapping, from two fields in Microsoft Team Foundation Server to CA Project and Portfolio Management task assignments. The two Microsoft Team Foundation Server fields are `custom.assignee`, a person field, and `custom.estimated`, an integer field. Changing `custom.assignee` or `custom.estimated` will cause a new task assignment to be created in CA Project and Portfolio Management with its resource ID set to the value of `custom.assignee` and its estimated time to complete (ETC) set to the value of `custom.estimated`. Alternatively, if a task

assignment with that resource ID already exists on the CA Project and Portfolio Management task, that existing assignment will have its ETC updated to the value of `custom.estimate`.

The attribute handler appears in `synchronizer.xml` as:

```
<attribute-handler language="groovy" id="custom.assignee" script="
scripts/tfs-fields-to-clarity-assignments.groovy"/>
<attribute-handler language="groovy" id="custom.estimate" script="
scripts/tfs-fields-to-clarity-assignments.groovy"/>
```

Notice we need to add the handler twice, once for each Microsoft Team Foundation Server field it should be triggered on.

Here is the full groovy script for the attribute handler:

```
import org.apache.log4j.Logger
import com.tasktop.sync.core.strategy.model.Attribute
import com.tasktop.sync.core.strategy.model.TaskModel
def map(context, Attribute sourceAttribute, TaskModel targetTask) {
    def CLARITY_CONNECTOR_TYPE = "com.tasktop.ca.clarity.ppm"
    def ATTR_ASSIGNEE = "custom.assignee"
    def ATTR_ETC = "custom.estimate"
    def MS_PER_HOUR = 3600000
    if(CLARITY_CONNECTOR_TYPE.equals(targetTask.getConnectorKind())){
        def sourceTaskData = sourceAttribute.taskAttribute.taskData
        def customAssigneeAttr = sourceTaskData.root.getAttribute
(ATTR_ASSIGNEE)
        def assignee = customAssigneeAttr.value
        if( !assignee.isEmpty() ) {
            def customEstimateAttr = sourceTaskData.root.
getAttribute(ATTR_ETC)
            def estimate = 0
            if( customEstimateAttr != null && !customEstimateAttr.
value.isEmpty() ) {
                estimate = customEstimateAttr.value.
toInteger() * MS_PER_HOUR
            }
            def assignmentAttr = getOrCreateAssignmentAttr
(targetTask, assignee)
            assignmentAttr.createAttribute("tasktop.assignment.
estimate").setValue(estimate.toString())
        }
    }
}
def getOrCreateAssignmentAttr(TaskModel targetTask, assignee) {
    def assignmentAttr = findAssignmentAttrByAssignee(targetTask,
assignee)
    if( assignmentAttr == null ) {
        assignmentAttr = targetTask.root.createAttribute("tasktop.
assignment-new")
        assignmentAttr.getMetaData().defaults().setType("tasktop.type.
assignment")
        assignmentAttr.createAttribute("tasktop.assignment.assignee").
setValue(assignee)
    }
    return assignmentAttr
}
```

```

}
def findAssignmentAttrByAssignee(TaskModel targetTask, assignee) {
    def taskData = targetTask.taskData
    def assignmentAttrs = taskData.attributeMapper.getAttributesByType
(taskData, "tasktop.type.assignment")
    for( assignmentAttr in assignmentAttrs ) {
        def assigneeAttr = assignmentAttr.getAttribute("tasktop.
assignment.assignee")
        if( assigneeAttr != null && assigneeAttr.value == assignee ) {
            return assignmentAttr
        }
    }
    return null
}

```

The script first finds the values of the `custom.assignee` and `custom.estimate` fields on the Microsoft Team Foundation Server task. It then checks if the CA Project and Portfolio Management task already has an assignment with the resource ID specified by `custom.assignee`. Task assignments are accessible as “assignment” attributes in the script. The method `findAssignmentAttrByAssignee` gets all assignment attributes from the CA Project and Portfolio Management task data and searches for one whose `tasktop.assignment.assignee` child attribute has this value. If a matching assignment attribute is not found, we create a new one. The method `getOrCreateAssignmentAttr` creates a new attribute and sets its type to `tasktop.type.assignment`. It then creates the child attribute `tasktop.assignment.assignee` and sets its value. Finally, we find or create a new `tasktop.assignment.estimate` child attribute under the assignment attribute, and set its value.

Note that the value of `custom.assignee` is not mapped or transformed, so this script will only work if Microsoft Team Foundation Server and CA Project and Portfolio Management have the same users (for example, they share an LDAP server).

For more general information on CA Project and Portfolio Management task assignments, see [CA Project and Portfolio Management Connector For Sync: Task Assignments](#).

Limitations

Please check the Limitations sections of the [CA Project and Portfolio Management](#) and [Microsoft Team Foundation Server](#) documentation for details.

Synchronizing IBM Rational DOORS Next Gen [pre Sync 4.0] with HPE QC / ALM [pre Sync 3.5]

This section shows some common mappings between HPE QC / ALM standard task attributes and IBM® Rational DOORS Next Gen™ standard task attributes.

Setting up the proxyStorageAttribute property

Sync requires that the IBM Rational DOORS Next Gen repository has a proxyStorageAttribute property. For information on how to set this up, refer to the instructions on how to [set up the proxyStorageAttribute property](#).

Task mapping

For IBM Rational DOORS Next Gen and HPE QC / ALM, this task-mapping should be used:

```
<task-mapping conflict-notification-policy="Log">
```

Strings

String attributes do not need to be transformed with a caster and can be directly synchronized. Here is an example of a simple string mapping that could be used:

| HPE QC / ALM Attribute | IBM Rational DOORS Next Gen Attribute |
|------------------------|---------------------------------------|
| Name | Summary |

Dates

A date caster is not needed when synchronizing between IBM Rational DOORS Next Gen and HPE QC / ALM repositories. Dates may be synchronized directly.

IBM Rational DOORS Next Gen DateTime, Time and Duration field types are not supported for synchronization.

Boolean attributes

Boolean attributes may be synchronized directly; however, HPE QC / ALM does not support boolean values. Boolean attributes will be treated as strings in HPE QC / ALM during a synchronization.

Value-mapped attributes

IBM Rational DOORS Next Gen tasks have an `Unclassified` value for severity, while HPE QC / ALM tasks do not. The `Severity` field is required, so one of the following actions should be taken:

- remove the `Unclassified` value from IBM Rational DOORS Next Gen,
- make `Severity` not required,
- add an `Unclassified` value to HPE QC / ALM,
- map the IBM Rational DOORS Next Gen `Unclassified` value to another value in HPE QC / ALM

| HPE QC / ALM's Priority | IBM Rational DOORS Next Gen's Severity |
|-------------------------|--|
| 5-Urgent | Blocker |
| 4-Very High | Critical |
| 3-High | Major |
| 2-Medium | Normal |
| 1-Low | Minor |

Person Mappings

If users have the same user IDs on both repositories, then these attributes can be synchronized directly. If not, then a person mapping will need to be defined, as described in [Person mapping definitions](#)

To use the Person mapping, each attribute that has a person type needs to use a person caster, for example:

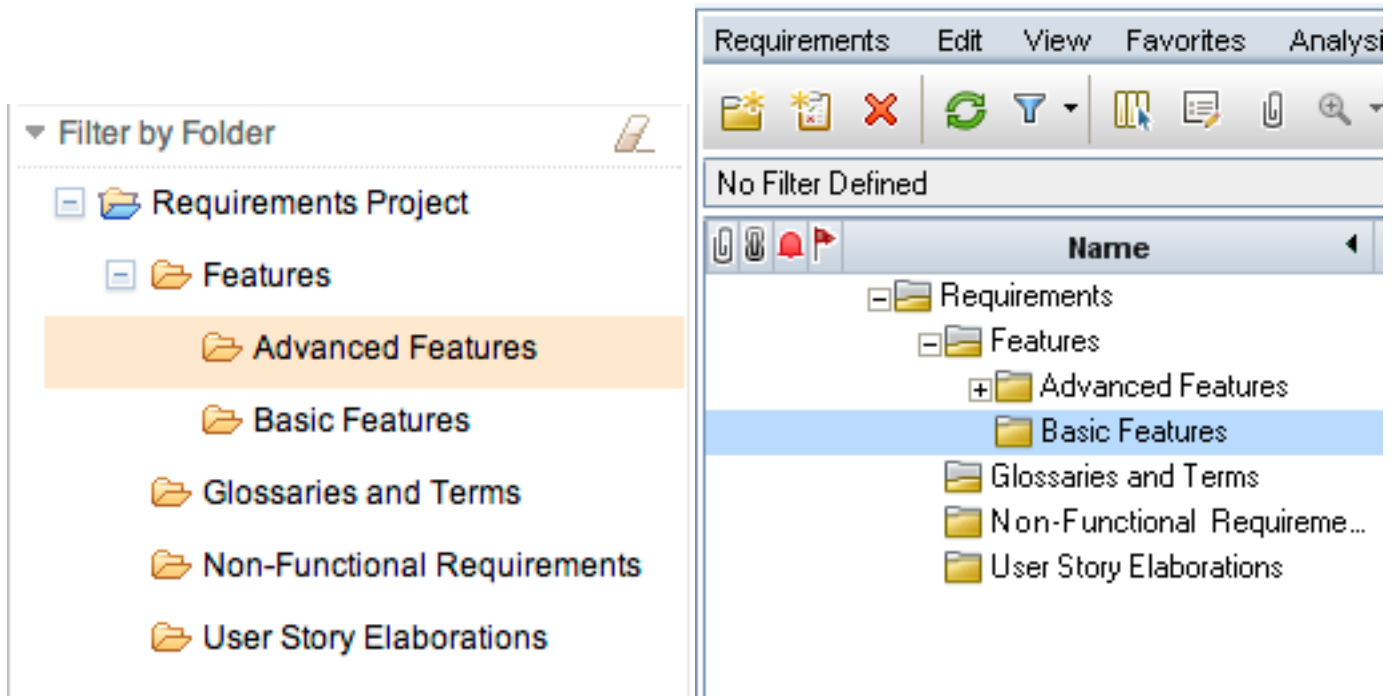
```
<attribute-mapping>
  <attribute caster="person" id="RQ_REQ_AUTHOR"/>
  <attribute caster="person" id="dc:creator"/>
</attribute-mapping>
```

Some attributes that may require person mappings:

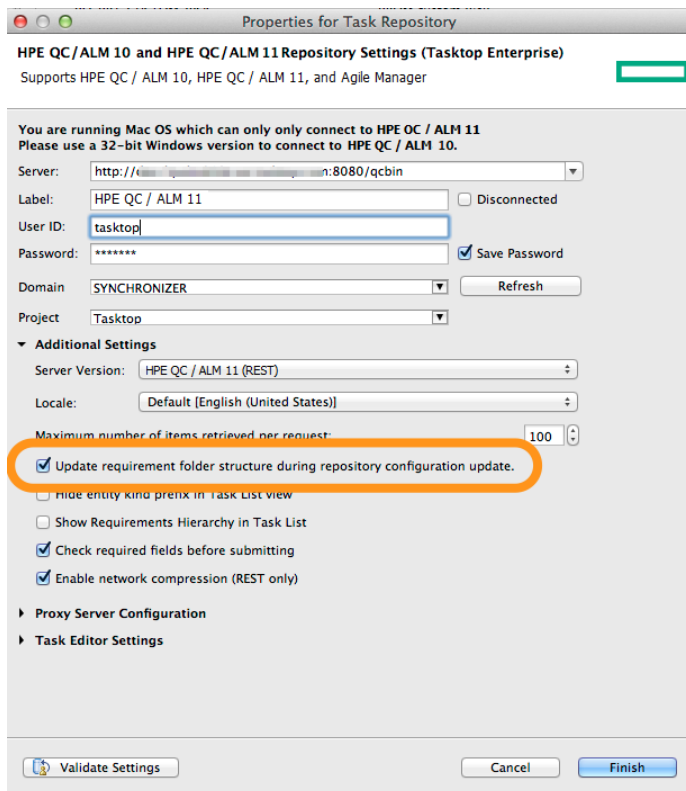
| HPE QC / ALM Attribute | IBM Rational DOORS Next Gen Attribute |
|------------------------|---------------------------------------|
| Author | Reporter |

Folder Sync

To configure Folder Sync from IBM Rational DOORS Next Gen to and from HPE QC / ALM, first ensure that the folder structures in IBM Rational DOORS Next Gen and HPE QC / ALM match. For example, folder structures for IBM Rational DOORS Next Gen and HPE QC / ALM could be set up as follows:

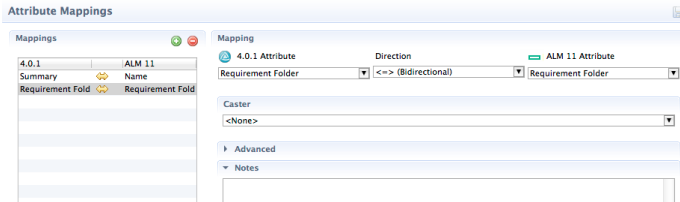


Next, ensure that requirement folder configuration is configured to be retrieved from the HPE QC / ALM repository by checking the configuration option in the Repository Settings Dialog.



Then ensure that the repository schema for each repository is current and refresh if necessary.

Folder synchronization can then be configured by adding an attribute mapping for the Requirement Folder attribute in IBM Rational DOORS Next Gen to the Requirement Folder attribute in HPE QC / ALM. No casters or other transformations are required. For example, configuration can be set up as follows:



The synchronizer.xml should contain configuration similar to the following:

```
<attribute-mapping>
  <documentation></documentation>
  <attribute id="com.tasktop.ibm.rrc.folder"/>
  <attribute id="RQ_REQ_FOLDER"/>
</attribute-mapping>
```

Limitations

- Folder Sync is only available for IBM Rational DOORS Next Gen with HPE QC / ALM 11 and higher.

Synchronizing IBM Rational Team Concert (using IBM Rational Team Concert SDK) with HPE QC / ALM [pre Sync 3.5]

This section shows some common mappings between HPE QC / ALM standard task attributes and IBM® Rational Team Concert™ standard task attributes.

Task mapping

For IBM Rational Team Concert and HPE QC / ALM, this task-mapping should be used:

```
<task-mapping conflict-notification-policy="Comment">
```

If comments are not desired for conflict notification, "Log" can be used instead.

Strings

String attributes do not need to be transformed; they can be synchronized as is. Here are some examples of simple string mappings that could be used:

| HPE QC / ALM Attribute | IBM Rational Team Concert Attribute |
|------------------------|-------------------------------------|
| BG_SUMMARY | Summary |
| BG_DESCRIPTION | Description |

It is recommended for rich text attributes such as Description that the `html-to-RTCRichText` and `RTCRichText-to-HTML` casters are used, this is accomplished by selecting `HTML` for HPE QC / ALM and `RTCRichText` for IBM Rational Team Concert as the markup language in the attribute mapping editor.

Dates

A date caster is not needed when synchronizing between IBM Rational Team Concert and HPE QC / ALM repositories. Dates may be synchronized directly.

Value-mapped attributes

There are several important attributes which do not map directly across. IBM Rational Team Concert tasks have an `Unclassified` value for both severity and priority, while HPE QC / ALM tasks do not. The `Severity` field is required, so one of the following actions should be taken:

- remove the `Unclassified` value from IBM Rational Team Concert,
- make `Severity` not required,
- add an `Unclassified` value to HPE QC / ALM,
- map the IBM Rational Team Concert `Unclassified` value to another value in HPE QC / ALM

| HPE QC / ALM's BG_SEVERITY | IBM Rational Team Concert's Severity |
|----------------------------|--------------------------------------|
| 5-Urgent | Blocker |
| 4-Very High | Critical |
| 3-High | Major |
| 2-Medium | Normal |
| 1-Low | Minor |

Priority has a similar issue, but is not a required field in IBM Rational Team Concert as-installed.

| HPE QC / ALM's BG_PRIORITY | IBM Rational Team Concert's Priority |
|----------------------------|--------------------------------------|
| 5-Urgent | High |
| 4-Very High | High |
| 3-High | High |
| 2-Medium | Medium |
| 1-Low | Low |

Note that when mappings are made for priority and severity, it is important for there to be consensus on the meaning of priority versus severity.

Person Mappings

If users have the same user IDs on both repositories, then these attributes can be synchronized directly as strings. If not, then a person mapping will need to be defined, as described in [Person mapping definitions](#)

To use the Person mapping, each attribute that has a person type needs to use a person caster, for example:

```
<attribute-mapping>
  <attribute key="BG_DETECTED_BY" caster="person"/>
  <attribute key="BG_DETECTED_BY" caster="person"/>
</attribute-mapping>
```

Some attributes that may require person mappings:

| | |
|--|--|
| | |
|--|--|

| HPE QC / ALM Attribute | IBM Rational Team Concert Attribute |
|------------------------|-------------------------------------|
| BG_DETECTED_BY | Creator |
| BG_RESPONSIBLE | Owner |

Synchronizing Serena Business Manager [pre Sync 4.1] with HPE QC / ALM [pre Sync 3.5]

This section shows some common mappings between Serena® Business Manager standard task attributes and HPE QC / ALM standard task attributes.

Task mapping

Comment should not be used as a conflict notification policy, as the connector for Serena Business Manager does not support comments.

Strings

String attributes can be directly synchronized without a caster.

Here is a typical string mapping that could be used:

| Serena Business Manager Attribute | HPE QC / ALM Attribute |
|-----------------------------------|------------------------|
| Title | Summary |
| Description | Description |

Numeric attributes

Serena Business Manager provides 4 types of numeric attributes:

- integer
- float
- precision
- summation

Fields based on the integer and float types can be directly synchronized without a caster.

Precision types are configured with a fixed number of decimal places, and while fields based on the precision type can be directly synchronized, numeric values may be altered to match the number of configured decimal places when they are being transferred between HPE QC / ALM and Serena Business Manager.

The summation type is used to define calculated, read-only fields. Since these are read-only, fields based on the summation type can only be directly synchronized from Serena Business Manager into HPE QC / ALM.

Date/Time attributes

Serena Business Manager provides 4 variations of date/time attributes:

- date only
- time only
- date & time
- elapsed time

Date and date & time fields can be synchronized directly without a caster.

Time only fields will contain numeric values between 0 and 86,400 (the number of seconds in a day) and can be directly synchronized.

Similarly, elapsed time fields will contain a numeric value measured in seconds and can be directly synchronized.

Single-select attributes

Due to functional limitations (see [Limitations for Serena Business Manager](#) section), single-select fields in Serena Business Manager are treated as read-only. Due to this limitation, single-select fields can only be synchronized from Serena Business Manager into HPE QC / ALM. Synchronizing to string fields in HPE QC / ALM will be the easiest, but more complex solutions can use techniques like scripting to map them into other types in HPE QC / ALM.

Boolean attributes

Boolean attributes in Serena Business Manager are assigned a type of binary/trinary. Due to similar functional limitations (see [Limitations for Serena Business Manager](#)), binary/trinary fields in Serena Business Manager are treated as read-only, and hence can only be synchronized from Serena Business Manager into HPE QC / ALM. Synchronizing to string fields in HPE QC / ALM will be the easiest, but more complex solutions can use techniques like scripting to map them into other types in HPE QC / ALM.

Person attributes

Person attributes can be synchronized through a **Person mapping** caster. Person mappings will subsequently need to be defined between Serena Business Manager and HPE QC / ALM.

To use the person mapping, each attribute that has a person type needs to use a **Person mapping** caster, for example:

```

<attribute-mapping>
  <attribute caster="person" id="OWNER"/>
  <attribute caster="person" id="BG_RESPONSIBLE"/>
</attribute-mapping>

```

Here is a typical person mapping that could be used:

| Serena Business Manager Attribute | HPE QC / ALM Attribute |
|-----------------------------------|------------------------|
| Owner | Assigned To |
| Submitter | Detected By |

Synchronizing Time Worked From Atlassian JIRA [pre Sync 3.5] to CA Project and Portfolio Management [pre Sync 4.1]

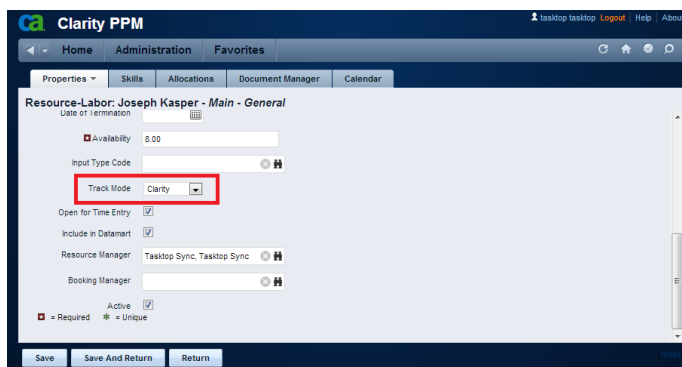
The Time Worked Synchronization feature utilizes Tasktop Syncâ€™s existing Atlassian JIRA and CA PPM® connectors to facilitate time tracking and monitoring across Development and the PMO, aggregating and synchronizing work logs entered by developers on JIRA issues to timesheets for corresponding tasks in Project and Portfolio Management, where the PMO can monitor this data.

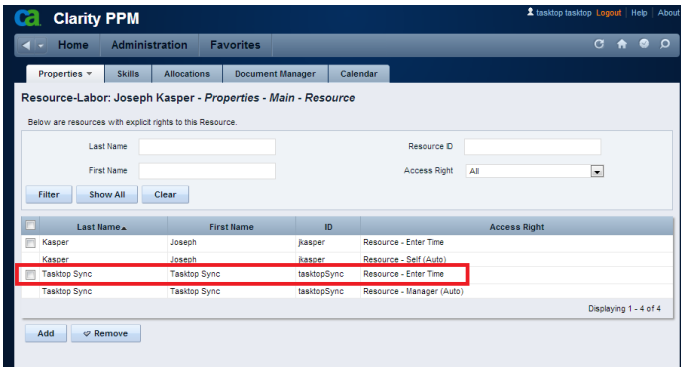
Setting up Project and Portfolio Management for Time Worked Synchronization

Before work logs from JIRA issues can be synchronized to timesheets in Project and Portfolio Management, the following configurations should be made to ensure that Project and Portfolio Management is set up for time entry.

Ensure all users who will be logging time are configured for time entry. For each user:

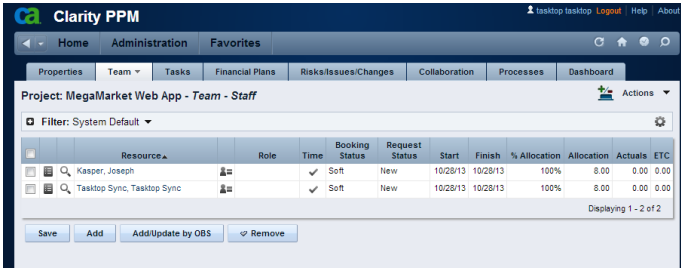
1. Navigate to the **Resources** page in Project and Portfolio Management and click on the user to edit
2. Navigate to **Properties -> Properties -> General** and set the **Track Mode** option to **Clarity**
3. Navigate to **Properties -> Access to this Resource -> Resource** and add the Resource
 - Enter Time access right for the Tasktop Sync user





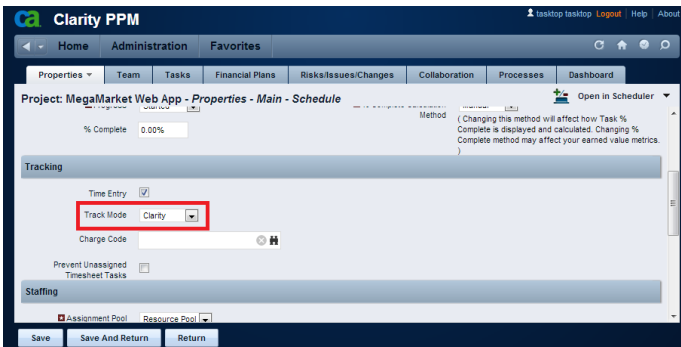
Ensure all users who will be logging time are team members of all projects whose tasks they will log time against. For each project:

1. Navigate to Home -> Portfolio Management -> Projects and click on the project to edit
2. Navigate to the Team tab and ensure that all users who will log time against tasks in this project are in the list of team members



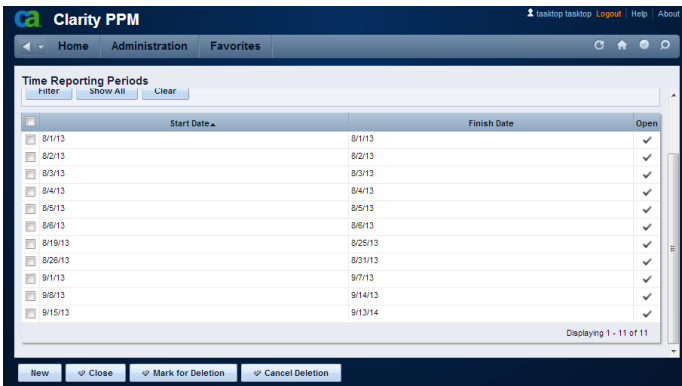
Ensure all projects whose tasks will have time logged against them are configured for time entry. For each project:

1. Navigate to the Projects page in Project and Portfolio Management and click the project to edit
2. Navigate to Properties -> Properties -> Schedule and set the Track Mode option to Clarity



Ensure that all time reporting periods in which time will be logged are in the Open state:

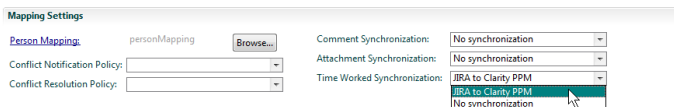
1. Navigate to Administration -> Project Management -> Time Reporting Periods
2. Ensure each time reporting period has a check mark in its Open column



Configuring Tasktop Sync to Synchronize Time Worked

Once Project and Portfolio Management has been configured for time entry, Tasktop Sync can be set up to synchronize JIRA work logs to Project and Portfolio Management timesheets:

1. Create a mapping between JIRA and Project and Portfolio Management (see [CA Project and Portfolio Management Connector For Sync](#) and [Atlassian JIRA Connector For Sync](#) for details on setting up mappings with these connectors).
2. Open the Sync Mapping Editor and navigate to the Mapping Settings section of the Overview tab. Open the Time Worked Synchronization drop down menu and select the option to synchronize from JIRA to Project and Portfolio Management.
3. Ensure that a Person Mapping is configured. Synchronization of time worked uses the Person Mapping to map users who are logging time. See [Person Mapping Files](#) for details on how to configure a Person Mapping.



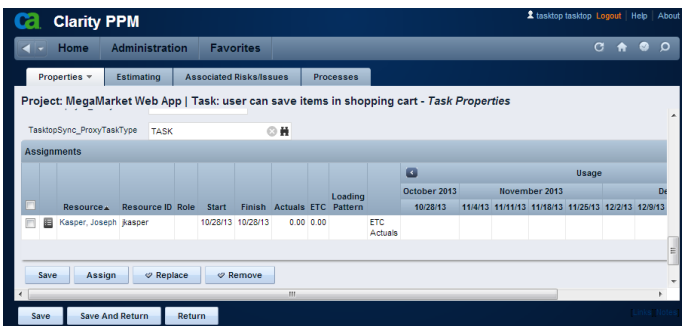
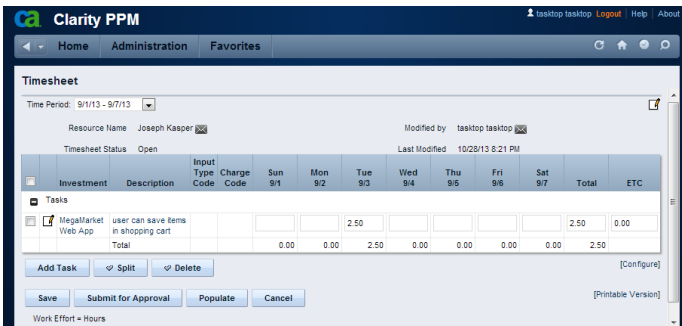
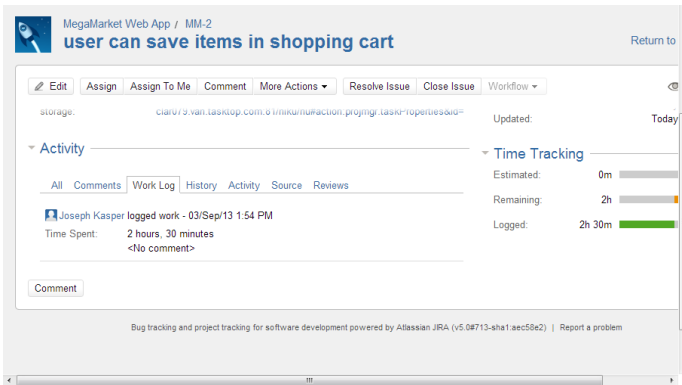
Tasktop Sync is now configured to synchronize time worked from JIRA to Project and Portfolio Management.

Synchronizing Time Worked

With Tasktop Sync's Time Worked Synchronization feature, all work logs entered on JIRA issues will be synchronized to Project and Portfolio Management timesheets:

1. In JIRA's web application, open an issue. From the More Actions drop down menu, select Log Work. In the wizard enter the amount and start date of the time worked and click Log.
2. When Tasktop Sync has finished processing the change, open the Timesheets page in Project and Portfolio Management. On the timesheet for the user who logged the time in JIRA, the time worked should now be entered under the correct day, in the row corresponding to the task on which it was logged.

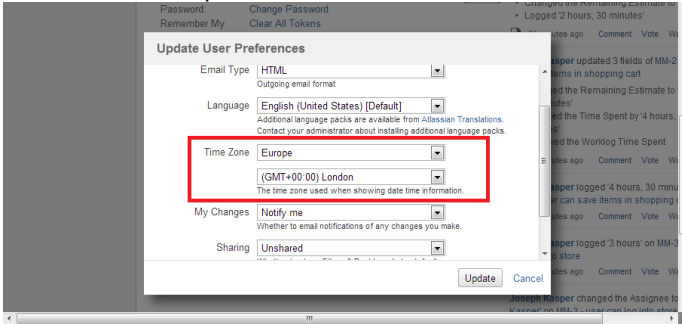
3. Additionally, if the user had not yet been assigned to the task for which the time was logged, notice that an assignment has been created for the user on that task in Project and Portfolio Management.



Note on Time Zone Settings in Atlassian JIRA

In the JIRA web application, a user can select the time zone in which dates will be displayed. However, all dates are stored internally in JIRA in GMT; this user preference merely affects how one user will see dates when logged into the web application. Project and Portfolio Management timesheets store and display all dates in GMT. Thus if a JIRA user sets his or her time zone preference to anything except GMT there may be an apparent discrepancy between work logs logged against JIRA issues and the timesheet entries

synchronized to Project and Portfolio Management. To avoid this confusion, JIRA users may want to set their time zone preference to GMT.



Known Limitations

Tasktop Sync's Time Worked Synchronization has the following known limitations:

- Tasktop Sync will log time for a Project and Portfolio Management user regardless of whether or not `Open for Time Entry` is enabled in that user's properties.
- Tasktop Sync will log time against tasks in a project regardless of whether or not `Time Entry` is enabled in that project's schedule properties in Project and Portfolio Management.
- Tasktop Sync will always create missing assignments on tasks for which time is logged, regardless of whether or not `Prevent Unassigned Timesheet Tasks` is enabled in a project's schedule properties in Project and Portfolio Management.
- Deletion of time worked is not supported. If a user deletes a work log on a JIRA issue, the results in Project and Portfolio Management's timesheets may vary.
- Splitting of timesheet entries in Project and Portfolio Management is not supported. If a timesheet entry is split, Tasktop Sync will fail to synchronize time worked to it.
- Time logged in JIRA will always overwrite time logged in Project and Portfolio Management, and changes made to a timesheet in Project and Portfolio Management will not be synchronized back to JIRA.
- In order to synchronize time worked into a Project and Portfolio Management user's timesheet for a particular time period, that timesheet must be in an editable state (i.e. either `Open`, `Open (Adjustment)`, `Returned`, or `Returned (Adjustment)`).