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HP ALM Synchronizer
microTOOL in-Step Adapter
User Guide

Audience: Administrators

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1 Introduction

The HP ALM Synchronizer is suitable for automatically exchange requirements between the HP ALM and the microTOOL in-Step system. The current version (1.40) of the HP ALM Synchronizer doesn't offer to connect directly to an in-Step system. For this purpose an adapter has been developed which extends the synchronizer capabilities.

In this document we describe the installation of the adapter and the configuration of the synchronization process between the in-Step and HP ALM projects. As well the special characteristics of the in-Step adapter were explained.

The general use of the HP ALM Synchronizer as well as non adapter specific functionality is not explained in here. For this purpose please consult the HP ALM Synchronizer User Guide [2].

2 Functional overview

The in-Step adapter allows the synchronization of the following in-Step field types listed in the table below in the first column. The second column lists the corresponding ALM types:

In-Step field type	HP ALM type
`Alpha_numeric`	`String`
`Numeric`	`Number`
`Enumeration`	`Single value list`
`Bool`	`String`
`Auto_id`	`String`
`Date_value`	`String`
`URL`	`String`
`Activity`	`String, comma-separated`
`Product`	`String, comma-separated`

Table 1: in-Step field types vs. HP ALM type

Bidirectional synchronization was tested only with the "Alpha_Numeric" and "Numeric" types. Thus only bidirectional synchronization is supported with these types.

Synchronization of hierarchical information, i.e. folders, is supported in the direction from in-Step to HP ALM.

The synchronization of hierarchical information can be switched off by a parameter in a properties file (see 4.2.4.).

In case of switching the synchronization of hierarchical information off, the requirements are synchronized as a flat list, i.e. all requirements are created directly under the specified requirement root folder of the ALM project, no matter in what folder they are on the in-Step side. Using a special HP ALM synchronizer feature it is possible to create a folder-structure in HP ALM manually without having impact on the synchronization. This way the quality assurance team is allowed to use their own folder structure for requirements.

3 Installation

First install the HP ALM Synchronizer Server and Client according to the corresponding Install Guide. [1]

Second extend the synchronizer by the in-Step adapter. For this you have to first stop the HP ALM synchronizer service. The in-Step Adapter is added to the HP ALM Synchronizer by copying the files from the directory *"HP ALM Synchronizer in-Step Adapter Setup"* from the installation package to the directory *"<HP ALM Synchronizer Install Path>\adapters\lib"*. The HP ALM Synchronizer service has then to be restarted.

After that copy the files "*instep-adapter.properties" (see 4.2.4),* and *"licence.xml"* into the directory *"<HP ALM Synchronizer Install Path>\adapters\dat\microTOOL in-Step".* If you wish not to use folder synchronization but want to organize the requirements into folders on HP ALM side manually than you have to copy the file "fake_hierarchical_entities.properties" from the directory "HP ALM Synchronizer dat" in the installation package to the directory "<HP ALM Synchronizer Insatll Path>\dat". This file causes ignoring manually created hierarchical information on ALM-side during synchronization (see also 4.2.5).

The in-Step systems which should be synchronized must be accessible by the in-Step WebService. This is necessary because the ALM Synchronizer Server accesses the in-Step data via WebService. For information on how to configure the in-Step WebService please consult the in-Step Documentation.

Hereafter you can create a synchronization-link as described in section 4.

4   Configuration

4.1   Creating a synchronizer link for microTOOL in-Step projects

The creation process of a link has four steps. First the link has to be named appropriately and microTOOL in-Step has to be chosen as Endpoint 2 type. The first Endpoint is always of type HP-ALM.

Figure 1: Defining common link parameters

The second step is to configure the connection to the HP ALM project. An assisted configuration can be gained through the „Set Connection…" button.
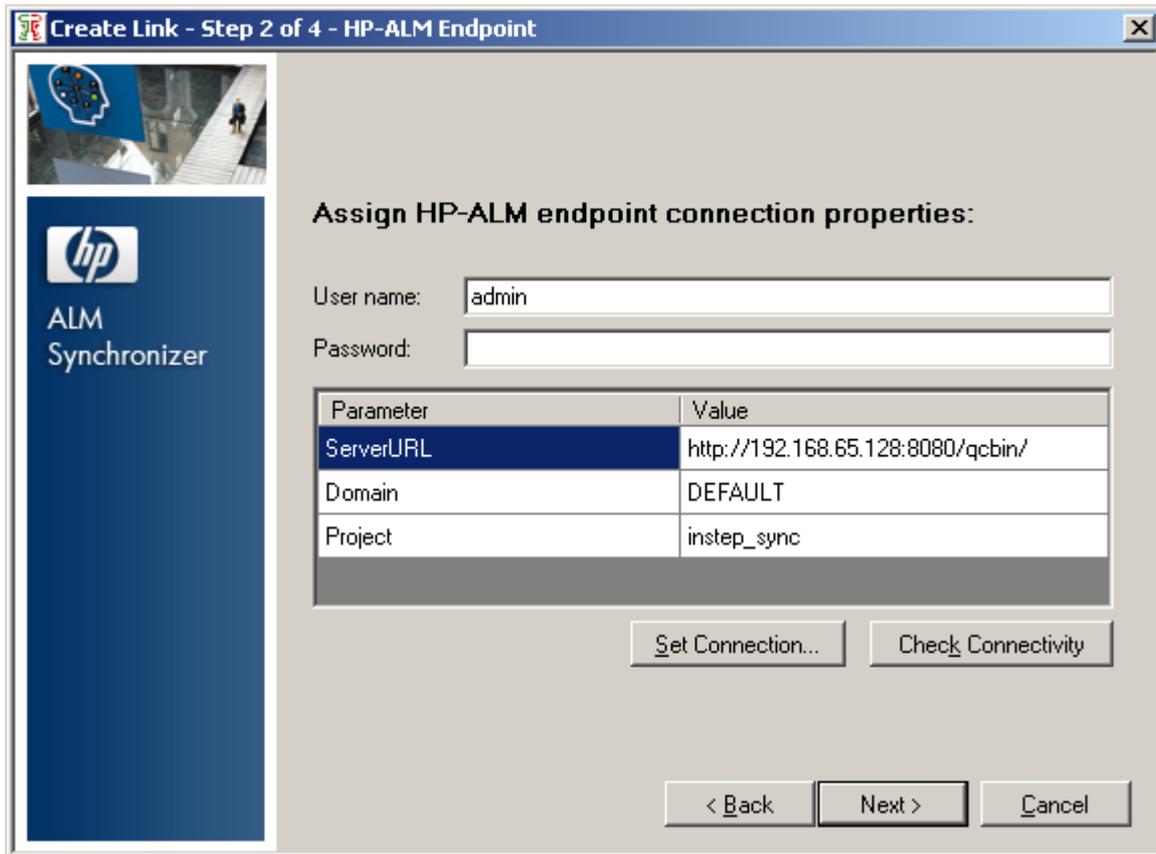
Figure 2: Defining the ALM project to be synchronized

In the following third step the in-Step project and the requirement path for synchronization has to be defined.

The in-Step project is defined by the following parameters:

Root metatype	The in-Step Object-type which has to be synchronized. Normally the value should be "REQUIREMENT". This value is necessary to synchronize only objects of relevant types.
Root path	The path to the requirements. This has to follow the pattern: \\ *<Project name>\<Product name>\<Path\to\Requirements>* In most cases the project name equals the product name. Example: *\\simpleProject\simpleProject\Forms\Requirement management\Dir for Requirements*
Logon type	Appoint the type of authentication used to access the in-Step web service. 0 – in-Step User 1 – Windows logon

`Project`	The in-Step project to connect to.
`System`	The in-Step system in which the project is administrated.
`inStep URL`	The URL of the in-Step web service.

The data can be verified by clicking „Check Connectivity". In the case of an error an exception is shown which lists in detail what data is incorrect.

The given user should have the necessary rights to read/write data in the corresponding in-Step project.
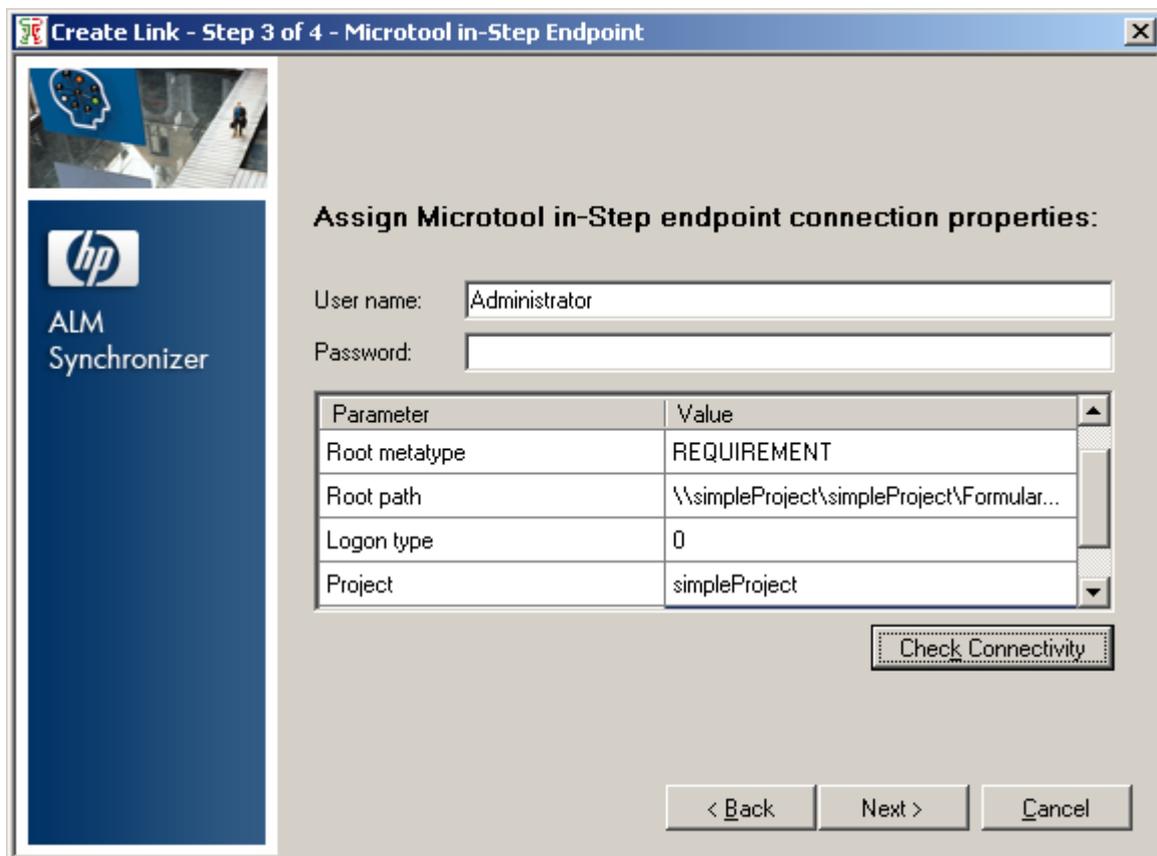

Figure 3: Defining the in-Step project to be synchronized

In the last step HP ALM entity types are mapped to in-Step ones. For this adapter choose "Requirement" on HP-ALM side and "Requirement" on in-Step side, because the in-Step adapter allows only the synchronization of ALM requirements.
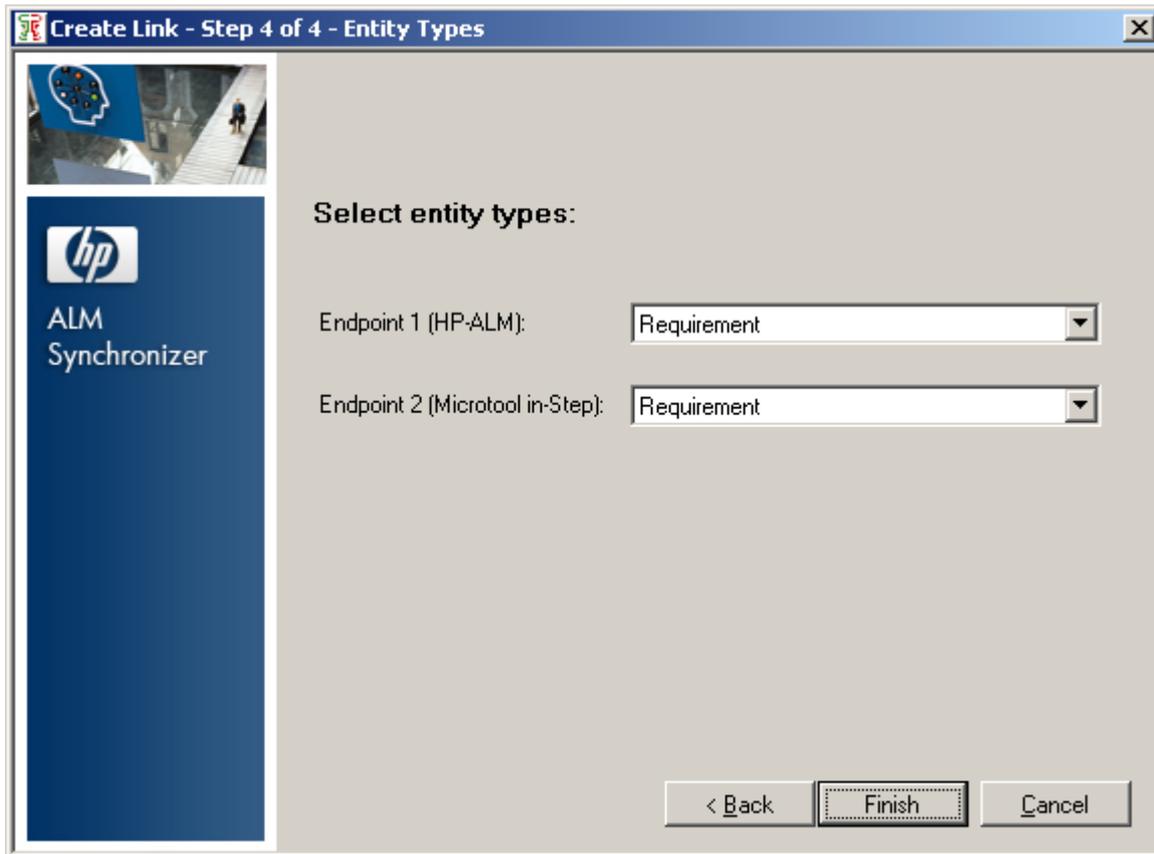
Figure 4: Mapping of entity types

4.2 Advanced link configuration

After link creation additional configurations for that link can be accomplished.

4.2.1 Defining the ALM requirement-path

On the tab "Connectivity" it is possible to define a path in the ALM-Requirements where to synchronize the in-Step requirements to, if you don't wish to synchronize into the top-level requirements folder of ALM.

Figure 5: Defining an alternative requirement-directory

4.2.2 Configure for automatic synchronization

In the tab "Scheduling" an automatic synchronization can be defined, i.e. when to run a synchronization. Two types of synchronization task have to be distinguished, incremental and full. Full synchronization means that all entities were compared for changes. Incremental synchronization just compares entites were the "Modified" timestamp is higher than the one from the last synchronization.

It has however proved to be good to run the full synchronization now and then, because the HP ALM Synchronization server this way cleans up the synchronization database.

Deletion of requirements is currently not supported.

The different configuration possibilities are described in the HP ALM Synchronizer User Guide. The following figure shows only one possible configuration for automation
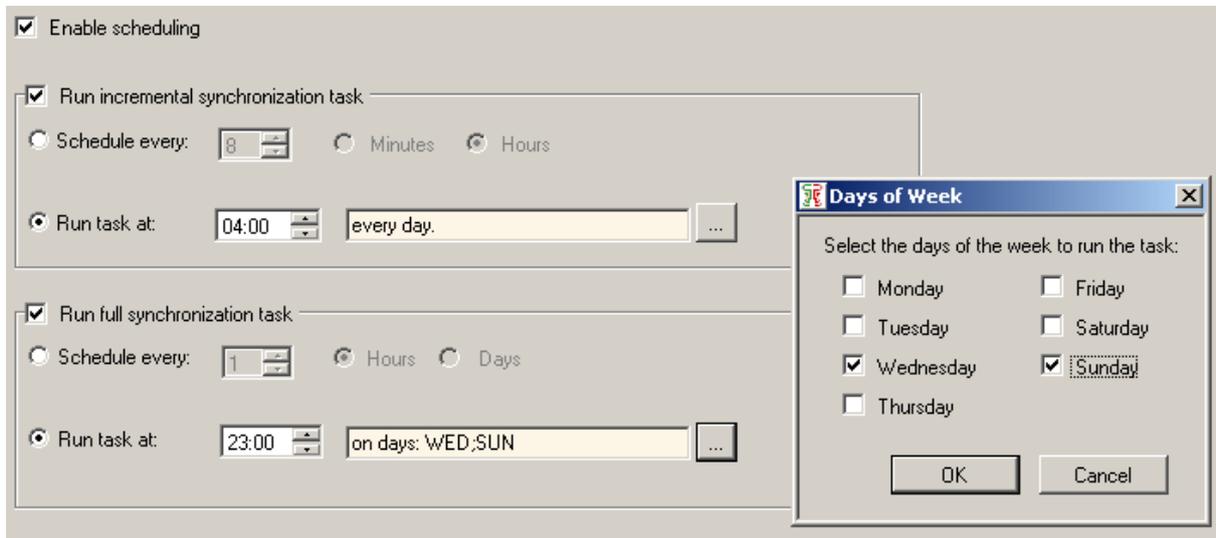

Figure 6: Configuring the automatic synchronization

4.2.3 Mapping in-Step requirements to HP ALM requirement types

Because HP ALM also supports multiple types of requirements the in-Step requirement has to be assigned to a certain ALM requirement type.

This assignment is done in the tab "Subtype Mapping". In the shown example the in-Step metatype "REQUIREMENT" was mapped to the ALM requirement type "Functional".
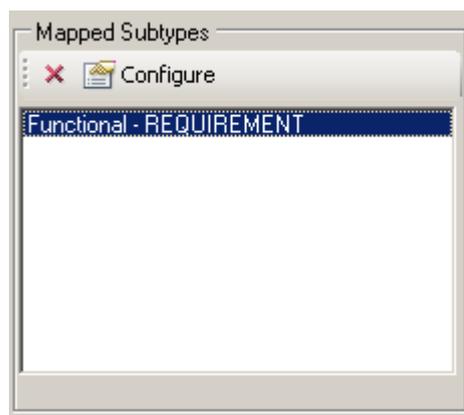

Figure 7: Assignment of requirement type

4.2.4 The file instep-adapter.properties

This section describes the possible configuration settings of the instep-adapter.properties file. You can configure the adapter behavior using this file.

`memofield.line.separator=\n`	These two fields define the line separator string to search for in memo-fields and his

`memofield.line.separator.replacement=
`	replacement. This ensures line separation also to arrive in ALM. The values shown here are the default adjustment coming with the installation package and should work in most cases.
`isfoldersupported= true|false`	Decide if in-Step folders should be part of the synchronization or not.
`folder_category= PRODUCTREVISION`	The in-Step category which is interpreted as a folder. Only entities of this category and which have the isDirectory in-Step-property set to true are taken into account. Set only one value!
`requirement_categories= REQUIREMENT`	A comma separated list of in-Step categories which are interpreted as a requirement to synchronize.
`deep_search_enabled=true|false`	Should the in-Step adapter read the in-Step structure at once (=true) or level by level (=false) Please note that activating deep search can result in large HTTP Request to the web service and thus maybe cause timeouts. Activating deep search is faster but less stable.

Table 2: The properties in the file instep-adapter.properties

4.2.5 Fake hierarchical

If the folder support is switched off the in-Step requirements are synchronized flat directly under the ALM requirement path (see 4.2.1).

If the requirement, which was synchronized to ALM, is moved manually into a folder on ALM side, and the file "fake_hierarchical_entities.properties" is not present in the directory "<HP ALM Synchronizer install Path>\dat", then the requirement will be moved back to hierarchical level zero again during the next synchronization. This is a default behavior of the HP ALM Synchronizer.

To prevent this movement the file "fake_hierarchical_entities.properties" has to be copied in to the "<HP ALM Synchronizer install Path>\dat" directory, except this behavior is intended.

4.3 Configuration of field mapping

After assigning a ALM requirement type to an in-Step meta type you can start defining specific create/update/delete rules and assign field values to each other.

4.3.1 Defining the treatment of new, updated and deleted requirements

In the Rules tab for a selected link sub type mapping you can decide which is the master side and how to treat a record when it is created, update or deleted. For a bidirectional synchronization from in-Step to ALM the following configuration is recommended:

Figure 8: Example rules for synchronizing requirements from in-Step

Following is a short description of Figure 8:

In-Step was chosen as the master-system. This means in ambiguous situations the in-Step value precedes. Additionally only in in-Step created requirements are considered for synchronization. Requirements created in ALM are not transferred to in-Step. Updates however are permitted on both sides. The synchronization of deleted requirements is generally excluded.

HP-ALM side:

- Creation: The requirement created on this side will not be created in in-Step
- Update: update also on in-Step side
- Deleted: do nothing on in-Step side

microTOOL in-Step side (this is the Master):

- Creation: create the requirement on HP-ALM side
- Update: do an update on HP-ALM side
- Deletion: nothing is done on HP-ALM side

4.3.2 Field mapping configuration

On the tab Field Mapping a detailed mapping between the HP-ALM requirement and in-Step requirement fields is defined.

This tab is divided into four areas. In the upper-left area all fields of the ALM requirement type, which are adapted to synchronization, are listed. Beside, in the upper-right area, fields of the in-Step system, adapted to synchronization, are listed.

In the lower-left area are listed all current mappings with a specification of the direction of the mapping. In the lower-right area additional details of the selected mapping can be defined
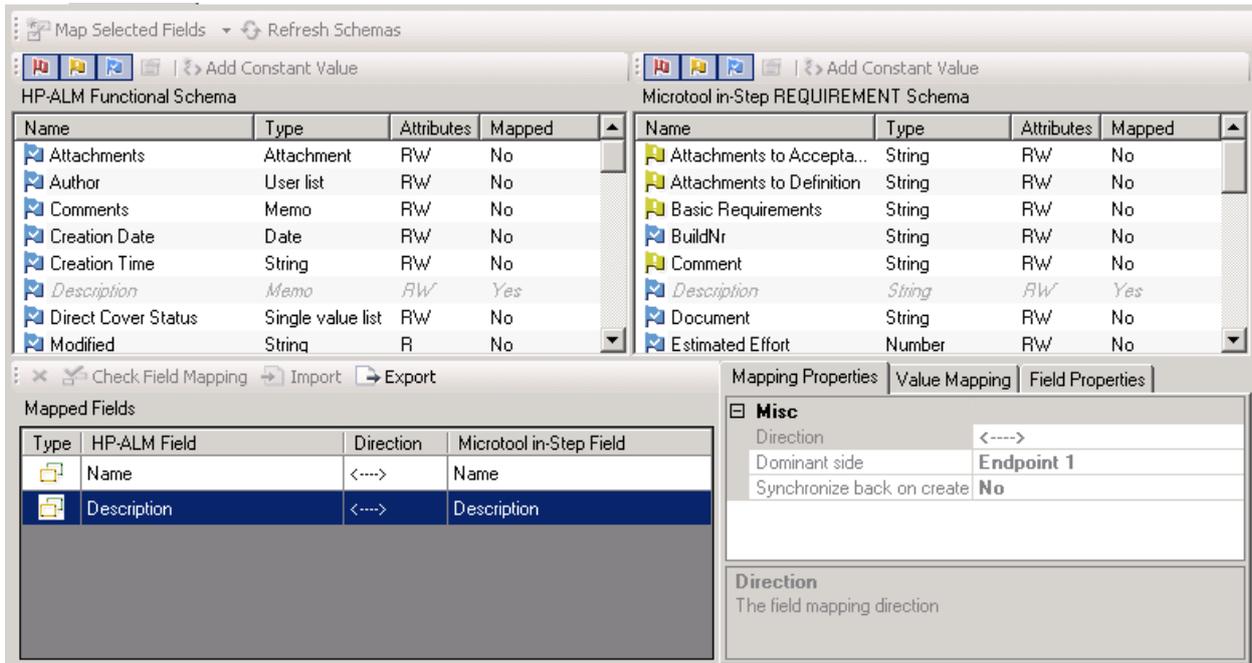

Figure 9: Area for defining field mapping

Properties of an in-Step requirement which contains String, Number or Enumeration are marked "optional" (blue).

Fields which are references to other in-Step entities are marked as "recommended" (yellow). This was implemented so to better distinguish these fields from each other.

For the extensive possibilities of field mapping configuration please refer to the ALM Synchronizer User Guide. [2]

4.4   Validating the link configuration

After saving the link configuration an "Integrity Check" must be performed and passed in order to enable the link. Not before enabling the link it can be used. During the integrity check the ALM Synchronizer verifies the defined mapping for validity.

4.5   Manual Synchronization

By clicking on "Run Task" in menu the user can invoke an incremental or fully synchronization manually. The synchronization process is logged in area at the bottom. After the synchronization a detailed report can be viewed by clicking on the button "View Report". In case of error this detailed Run Report and the subsequent Log, link on the bottom of the Run Report, can help to identify the problem or misconfiguration.

4.6 Synchronizing in-Step folders

The in-Step adapter supports synchronization of in-Step folders to ALM. The synchronization direction from ALM to in-Step is not yet supported.

The behavior of the folder synchronization is adjustable through properties in the file instep-adapters.properties. It is possible to enable/disable the folder synchronization there.

Also, using the property "folder_category", the in-Step category which should be interpreted as an in-Step folder, can be adjusted. In addition to this, the entity which has this category must have set the property isDirectoy to true.

For example if folder_category= PRODUCTREVISION, then an entity is considered an in-Step folder only if it has the category "PRODUCTREVISION" **and** the entity's property *IsDirectory=***true***.

For a detailed list of properties in the file please see 4.2.4

5 Appendix

5.1 List of Figures

5.2 Document reference

1	HP ALM Synchronizer Install Guide (28.11.2010) http://update.external.hp.com/qualitycenter/ALM110/sync/almsynchronizer/index.html
2	HP ALM Synchronizer User Guide (August 2011) http://update.external.hp.com/qualitycenter/ALM110/sync/almsynchronizer/index.html

5.3 List of Tables