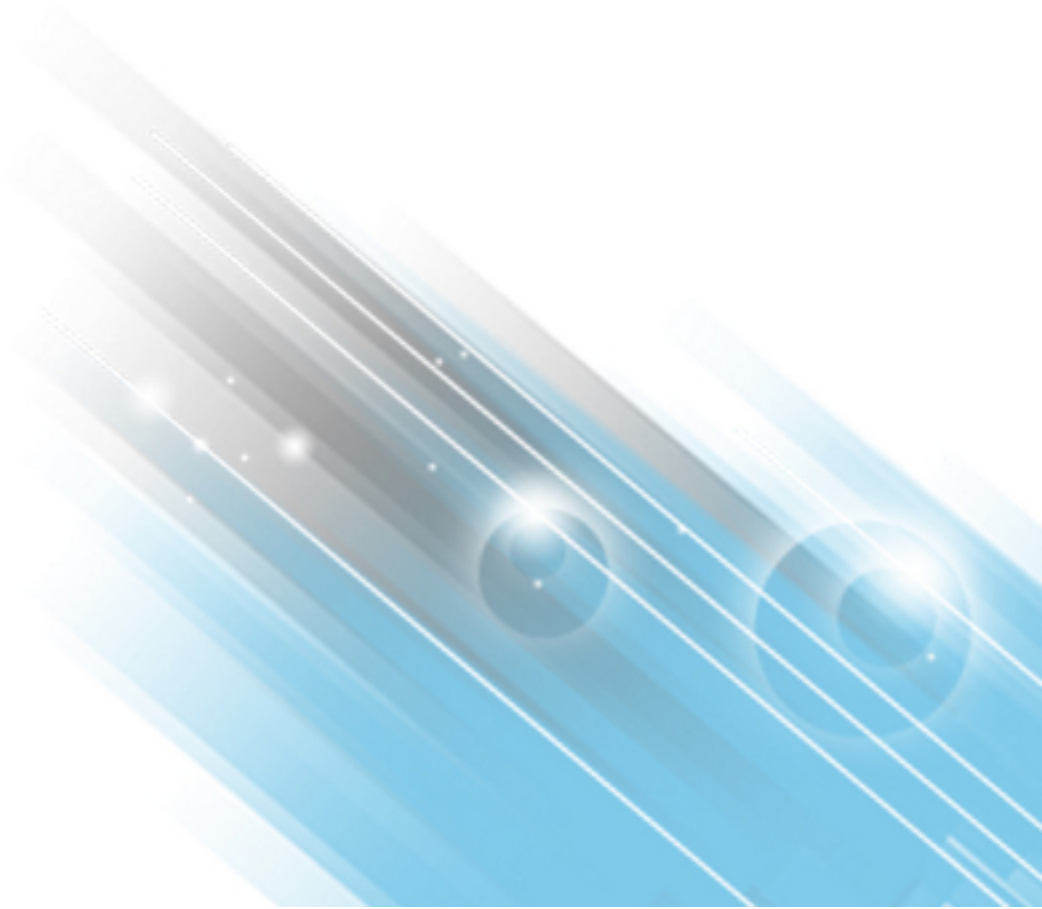
HP Value Stream

Software Version: 2.1

Requirement to Deploy Concept and Configuration Guide



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Part I: Requirement to Deploy Concept Guide

Chapter 1: Requirement to Deploy Value Stream Concepts

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Overview

The Requirement to Deploy (R2D) Value Stream provides a prescription for the key service life cycle data artifacts that IT needs to closely manage and define, build, test, and deploy an IT service. By understanding these artifacts and implementing the relationships between them, IT is finally equipped to control the quality, utility, schedule, cost, and sourcing of any aspect of a service that the business requests.

To accomplish this, the R2D Value Stream provides the framework for creating and sourcing a new service or modifying an existing service. The R2D Value Stream is initiated when it receives a demand signal from the business in the form of an approved IT contract and conceptual service blueprint from the Strategy to Portfolio (S2P) Value Stream. The R2D Value Stream ends when the requested service or modification is either deployed into production or packaged for future deployment through a Request to Fulfill (R2F) Value Stream catalog request.

The key inputs for the R2D Value Stream are:

- **IT contracts**, which originate from the business and are an output of the S2P Value Stream as a result of its Proposal Management function
- **Conceptual service blueprints**, which are generated from the S2P Value Stream Service Portfolio Management Functional Component
- **Requirements**, which are generated from the S2P Value Stream Demand Management Functional Component
- **Policies and standards**, which originate from the S2P Value Stream Policy Management Functional Component where the growing body of guidelines and best practice requirements are captured from IT and the business

The inputs above are assessed, rationalized, and elaborated with more detail and ultimately become content that is consumed and produced and passed on in the R2D Value Stream.

Note: For deployment and configuration instructions, see Part III:Requirement to Deploy Configuration Guide.

Who Should Read This Guide

This guide explains the motivation to install and use the Requirement to Deploy Value Stream. It describes what the value stream implementation will achieve and describes the workflow between the products that comprise the value stream.

This guide is intended for:

- Project managers
- IT architects
- Developers
- Deployment technicians
- Quality engineers
- Release managers
- Presales and sales personnel
- PSO
- Anyone who wants to learn about a framework for creating, modifying, or sourcing a service

The information in this guide may duplicate information available in other Value Stream documentation, but is provided here for convenience.

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Requirement to Deploy Value Stream Objectives

IT departments today experience challenges in meeting the expectations of the business in planning, developing, and delivering requested services. The R2D Value Stream is designed to ensure predictable, cost-effective, high quality results to the business while also promoting high levels of re-use, flexibility, agility, and collaboration across IT to support traditional and new methods for service creation and sourcing.

Key objectives to meet in support of giving the business what it needs are to:

- **Make service delivery predictable, even across globally dispersed teams, multiple suppliers, and multiple development methodologies**

  Services today are sourced or developed in cooperation with many different parties or configurations. All parties are working with their own processes and tooling. IT must be able to provide a good overview of the planned activities, should speak a common language with all parties involved, and should provide a methodology for how to achieve the best quality.

  Cloud sourcing, Agile development, and other innovations have created the need for IT to be able to manage development and delivery of services in a hybrid environment. IT needs an R2D Value Stream framework that can accommodate everything, including:

  - contracts for SaaS/subscription services
  - fast, lightweight application releases, such as mobile applications or those built using Agile methodologies (for example SCRUM, extreme programming)
  - traditional applications that utilize more structured project-driven release cycles
  - everything in between

- **Ensure that each service release is high quality and fit for purpose, and meets customer expectations**

  IT still experiences too many incidents immediately after release of a service into production. IT must establish control over the quality of a service regardless of the number of vendors that are part of the delivery.

- **Optimize time spent on planning to drive predictability of delivery time, as well as accuracy to ensure the business gets what it asked for when it asked for it**

  Poor estimates at the start of an IT project on elements such as estimates for service design, development, and delivery ensure missing the delivery schedule later. Better estimates help drive better trends for "on-time delivery," but must be balanced with pressures of "Agile methods" and "continuous delivery" that shorten planning and development windows. When tracked and optimized, the trends on plan versus estimate from the cycles of the R2D Value Stream

plan/design/deliver can be used by the Strategy to Portfolio Value Stream for continuous improvement.

- **Standardize service development and delivery to the point where re-use of service components is the norm**

  IT continues to struggle to find ways to increase the quality and speed of service delivery while also lowering costs. In support of these efficiency and quality goals, IT must have a framework in which to drive the re-use of existing service components at multiple stages of the development life cycle across multiple services. IT must work successfully with multiple internal and external contributors and be able to integrate the data process and tools required to work with globally dispersed teams, outsourcers, traditional and Cloud-based suppliers. Furthermore, IT must maintain control of the governance of this service delivery value stream and be able to track and measure internal and vendor performance, costs, quality, and on-time delivery. The ability to re-use requirements, source code, documentation, test scripts, service monitors, and other artifacts of the service development life cycle is a key contributor to managing cost, increasing quality and predictability, and accelerating release cycles.

- **Build a culture of collaboration between IT Operations and IT Development to support service release success**

  Both IT Development and IT Operations are paying a price for the poor collaboration that is the norm in many IT departments. Development organizations build and test services in a silo and surprise IT Operations by “throwing release packages over the fence” for immediate delivery. IT Operations may not manage the IT infrastructure to adapt for new standards and environments fast enough to meet the requirements of new developments from the Service Design and Development team. IT must make clear the role of IT Operations in the R2D Value Stream life cycle such that requirements and inputs from both sides are received at each stage of the service life cycle.

- **Put rigorous structure in place to lessen the impact of the IT reality – high staff turnover**

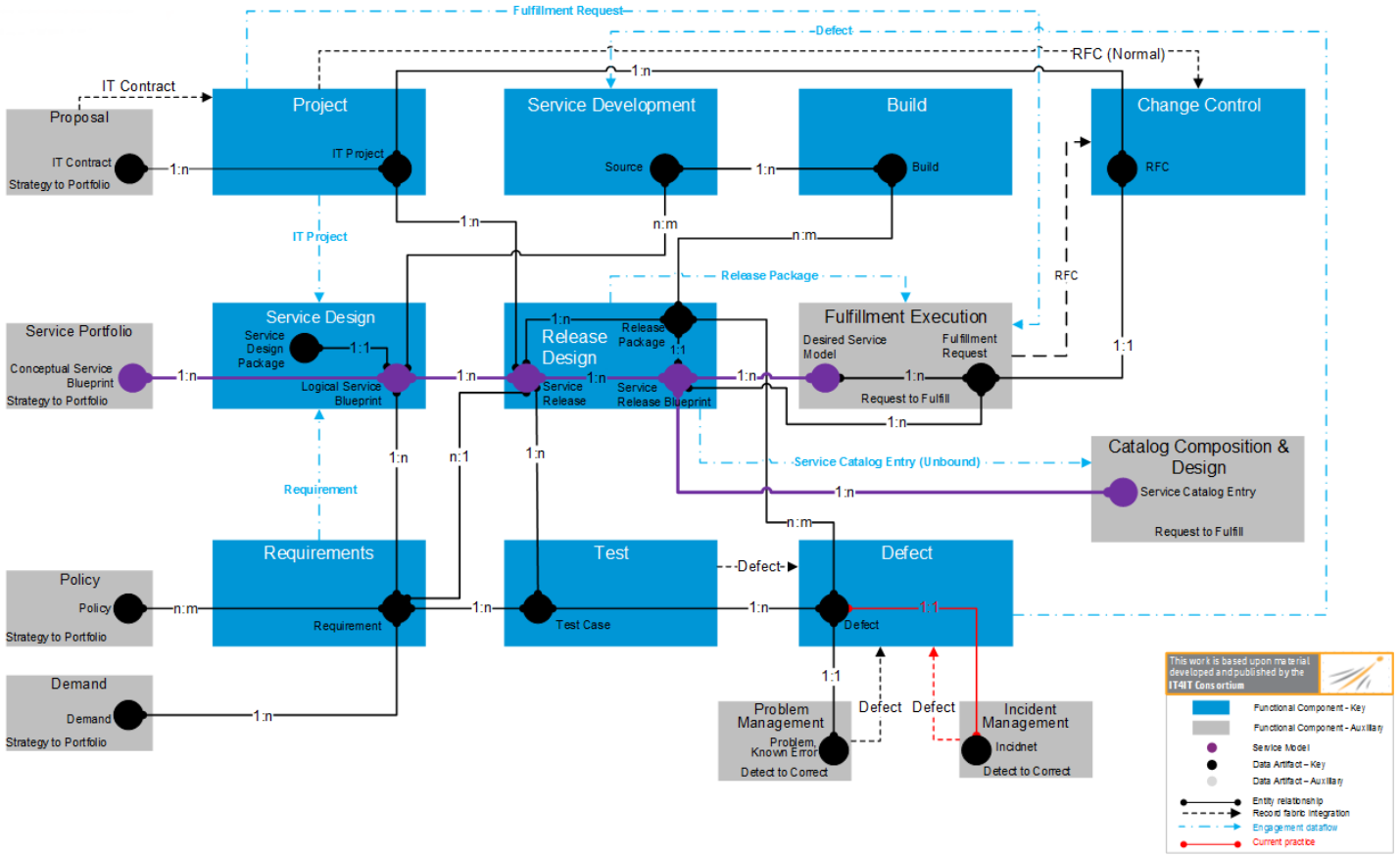
  High turnover in IT means knowledge is lost and schedules are impacted—particularly in low cost labor markets where employers are suffering high employee turnover rates. The R2D Value Stream helps capture the knowledge that would otherwise be lost and cause schedules to be delayed.

- **Drive predictable outcomes without driving out innovation**

  Innovation and process efficiency are two pillars of competitive advantage that IT departments bring to the business, yet these two pillars often have trouble co-existing. The emphasis on on-time project delivery tends to stifle innovation, creating a conflict between these two priorities. IT must continuously improve its ability to execute in such a way that on-time innovation is the norm. The R2D Value Stream identifies the core automation enablers and the key data exchanges required to accomplish this goal. For example, focusing efforts on automation of test, release, and deployment provides more time and resource for innovation in service design and development.

Requirement to Deploy Value Stream Diagram

The following diagram illustrates the Functional Components and Artifacts that comprise the Requirement to Deploy Value Stream as described in version 1.2 of Reference Architecture.



Requirement to Deploy Functional Components

The following functional components support the definition, development, and governance of the artifacts and service model entities utilized in the R2D Value Stream:

- **Project.** Receive IT contracts, coordinate the creation, and provide ongoing execution oversight of IT Projects aimed at the creation of new or enhancements to existing IT services.
- **Requirements.** Manage requirements through the life cycle of the service. Maintain traceability of each requirement to the original request that generated the demand throughout the service life cycle. Collect, refine, scope, and track progress of requirements.
- **Service Design.** Create the logical service blueprint and service design technical specifications for the service(s). Ensure these meet the requirements from the IT Contract, IT Project and/or demand, and make it perform against the Key Performance Indicators (KPIs), Key Risk Indicators (KRIs) and Service Level Agreements (SLAs). The output of the Service Design Functional Component is used by the Service Development Functional Component to guide, source, create, and secure the service.
- **Service Development.** Ensure that the service is developed in accordance with design specifications, organizational policies and standards, and both functional and non-functional requirements, so that the service can be operated successfully and in line with customer expectations and requirements. Produce and manage source and documentation that is stored in the definitive media library (DML).
- **Build.** Create, manage, secure, and track builds. Implement build automation. Manage the delivery of builds to Release Design Functional Component. Maintain builds in the DML.
- **Release Design.** Manage the service release, release packages, and service release blueprints for developing and delivering new or changed services into production, and facilitate a smooth transition to IT operations. Ensure the appropriate security measures (based on the risk posture of the service) are part of plan.
- **Test.** Plan and execute tests which ensure that the service will support the customer's requirements at the agreed service levels, including system/integration testing, user acceptance testing, performance testing, and load testing.
- **Defect.** Keep track of all defects, including their origin, status, importance, and relation to requirements and known errors.
- **Change Control.** Ensure standardized, auditable methods and procedures, with efficient and prompt handling of all changes to mitigate business risk and minimize impact.

The R2D Value Stream is process agnostic in that while methods and processes may change—for example, Agile, Waterfall, ITIL, Cobit, and so on—the functional components and data artifacts that comprise the value stream remain constant.

Requirement to Deploy Artifacts

The Requirement to Deploy Value Stream contains both key and auxiliary artifacts that interact with the configuration items that comprise the physical service model.

The artifacts for this value stream are:

- **Build.** A build is the activity of assembling a number of configuration items to create part of an IT service. The term is also used to refer to a release that is authorized for distribution—for example, software build, server build, or laptop build. The build is part of the release package.
- **Defect.** A defect is a flaw in a component or system that can cause the component or system to fail to perform its required function, such as an incorrect statement or data definition. A defect, if encountered during execution, may cause a failure of the component or system.
- **IT Project.** An IT Project is a temporary endeavor with a defined beginning and end, undertaken to achieve an objective or outcome at a certain cost. In the context of this reference architecture, the typical project outcome is the delivery of a new service or modification of an existing service or application.
- **Logical Service Blueprint.** A logical service blueprint provides the structure, behavior, and design for the components that make up a new or changed service and describes how those components relate to one another. The logical service blueprint can be thought of as what is traditionally expressed in IT terms as the design. The logical service blueprint, together with the service release and service release blueprint, make up the logical service model.
- **Requirement.** A requirement is a formal statement of what is needed. Such a statement identifies a necessary attribute, capability, characteristic, or quality of a system for it to have value and utility to a user. Requirements are managed throughout the life of an IT service, not just through the duration of an IT Project. Requirements are increasingly framed as use cases, user stories, scenarios, or similar concepts and, rather than always in large “batches,” may move independently through the R2D pipeline.
- **Release Package.** A release package is a collection of one or more builds, together with a service release blueprint, which describes how these builds can be deployed (as one build for the application server, one build for the database, and one for the front end). The release package is the collection of the builds and service release blueprint which shows how this can be deployed in various infrastructure environments. A release package might also contain other release objects that are not the result of a build process, such as training material, known errors, or run books.
- **Request for Change.** A request for change (RFC) is a formal proposal for a change to be made. It includes details of the proposed change, and may be recorded on paper or electronically. An RFC is an artifact that describes the intended addition, modification, or removal of anything that could have an effect on IT services. The scope should include all IT services, configuration items, processes, and documentation. Its intention is to make sure that anything that is needed is tracked to minimize the risk in operations.
- **Service Design Package.** The design package provides the necessary details that describe the

design of the IT service—at least sufficient to a given stage in its development. It may be iteratively refined.

- **Service Release.** The service release describes the characteristics associated with a specific release of a service. The service release not only contains the blueprints and packages, but also the support components of a release; such as value delivery chain activities, training, and documentation.
- **Service Release Blueprint.** A service release blueprint provides the description and procedures in order to activate, deploy, and operate a service and its underlying components, including applications and technology.
- **Source.** Represents all kinds of sources used within the build process or packaged into a build to make up an application or service. This may include, but is not limited to: build scripts, configuration files, localization files, code in programming languages, code of monitors, HTML, CSS, and JavaScript.
- **Test Case.** A test case is one or a set of test cases which contain a set of input values, execution preconditions, expected results and execution post conditions, developed for a particular objective or test condition, such as to exercise a particular program path or to verify compliance with a specific requirement. A test case is developed based on a requirement or a defect, and the same test case can be applied across many releases.

Part II: Requirement to Deploy Use Cases

Chapter 2: Requirement to Deploy Use Cases

This chapter includes:

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Generic End-to-End Service Development Use Case 21

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Overview

The use cases in this document describe the Requirement to Deploy Value Stream, which covers planning and designing a new or modified service, through development and testing, to release and deployment.

Generic End-to-End Service Development Use Case

This section contains the following topics:

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Use Case Steps 22

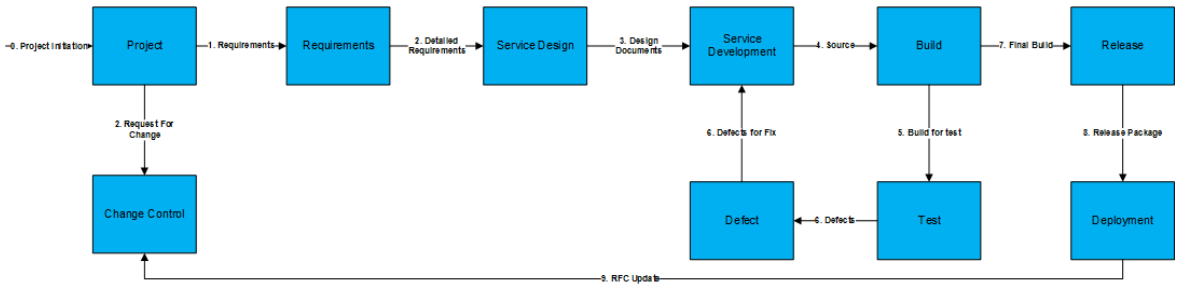
Example: Delivering New Mobile Employee Expense Management Service 23

Overview

The Generic End-to-End Service Development Use Case illustrates the creation of a new service or modification of an existing one. The use case starts with the creation of a project; goes through service design, development and testing; and ends with releasing new content.

Use Case Diagram

The following diagram provides a high level data flow for a generic end-to-end service development use case of the Requirement to Deploy Value Stream.



Use Case Steps

1. Project Manager receives IT contract and creates an IT Project. Creates corresponding Development Project/Releases. Specifications captured in the original project forwarded to Requirements Management system—preserving a link to enable review of the requirements status and progress at the project level.

2. Project Manager submits a request for change (RFC) for each service release. The RFC goes through the normal change process until approval.

3. Business Analyst logs requirements linked to Business Services. Refines and updates existing requirements; prioritizes.

4. IT Architect receives IT contract, conceptual service, and related requirements. Creates a logical service blueprint for new/modified service. Associates logical service blueprint with conceptual service, corresponding requirements, release entities, and design specifications.

5. Developer develops according to design specifications, including monitors. Manages source code.

6. Build Manager produces builds and runs unit testing. Automatically provisions and runs integration, performance, and user interface tests.

7. Tester creates test plan and defines manual and automated tests, executes tests, and logs defects. Defects considered as known errors published in the Knowledge Management system. Tests linked to the requirements. Status and progress can be reported in the release level and the project level.

8. Release Manager tracks release progress, defines dependencies between releases, and assembles all release artifacts—deployment model, build artifacts, monitor templates, documentation, known errors, training assets, maintenance scripts, and so on. Defines schedule for deployment into production.

9. Deployment Manager deploys new release to production, including:
   - Monitors
   - Known errors to the knowledge base
   - Documentation and training assessment
   - New catalog entry (when relevant) and creates configuration items (CIs) in the CMDB for each instantiation
   - Updates the Service Portfolio with the status of the new available service
   - Updates the Request for Change

Example: Delivering New Mobile Employee Expense Management Service

The Deliver New Mobile Employee Expense Management Service is a real life example of the generic use case. It describes the service life cycle from the early planning phases until the delivery phase.

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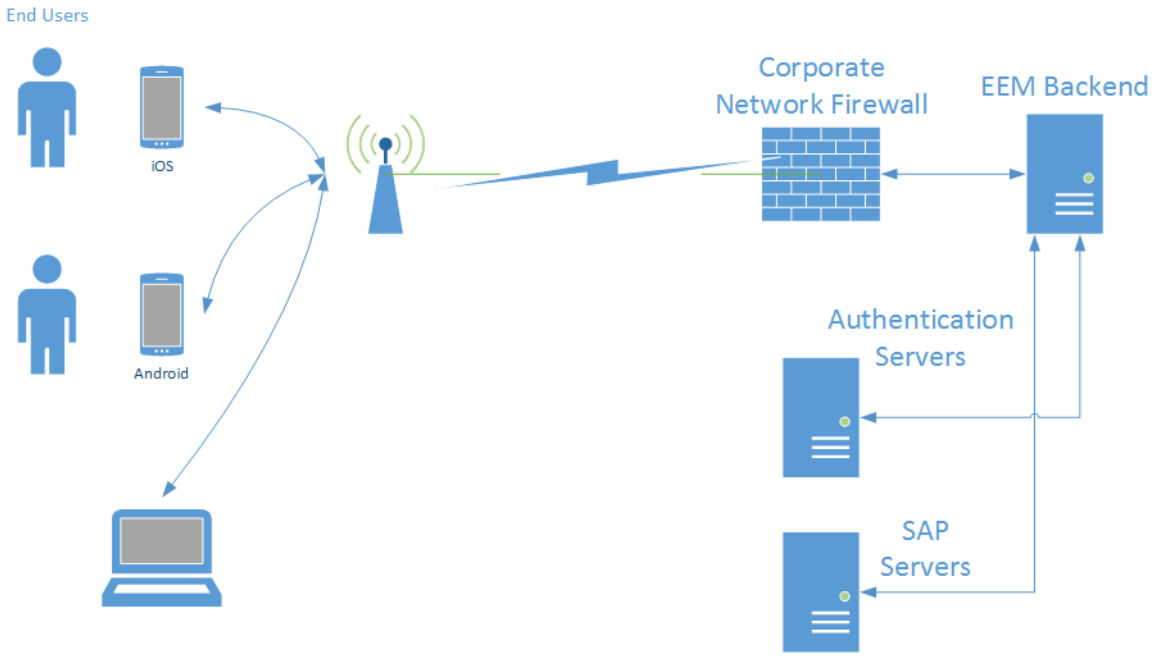
Overview

An Enterprise IT organization is delivering a new business service. To achieve this, a project needs to be created, planned, and executed. This includes defining and managing the project tasks, budgets, and schedules; developing the appropriate service components in accordance with business requirements; and deploying them to designated environments.

New Mobile Employee Expense Management Service Diagram



Delivering the New Mobile Employee Expense Management Service

The service that is implemented is a new Expense Management service for employees, accessible from mobile devices. It is an IT service composed of several business applications—iOS and Android clients for supporting mobile device users, and application back end for management and administration. In addition, non-software components are needed to enable service operation; namely, knowledge briefs, known errors data for support personnel, and training videos for end users. The service also depends on two other services—an Employee Authentication Service and a SAP system with an expense tracking module.

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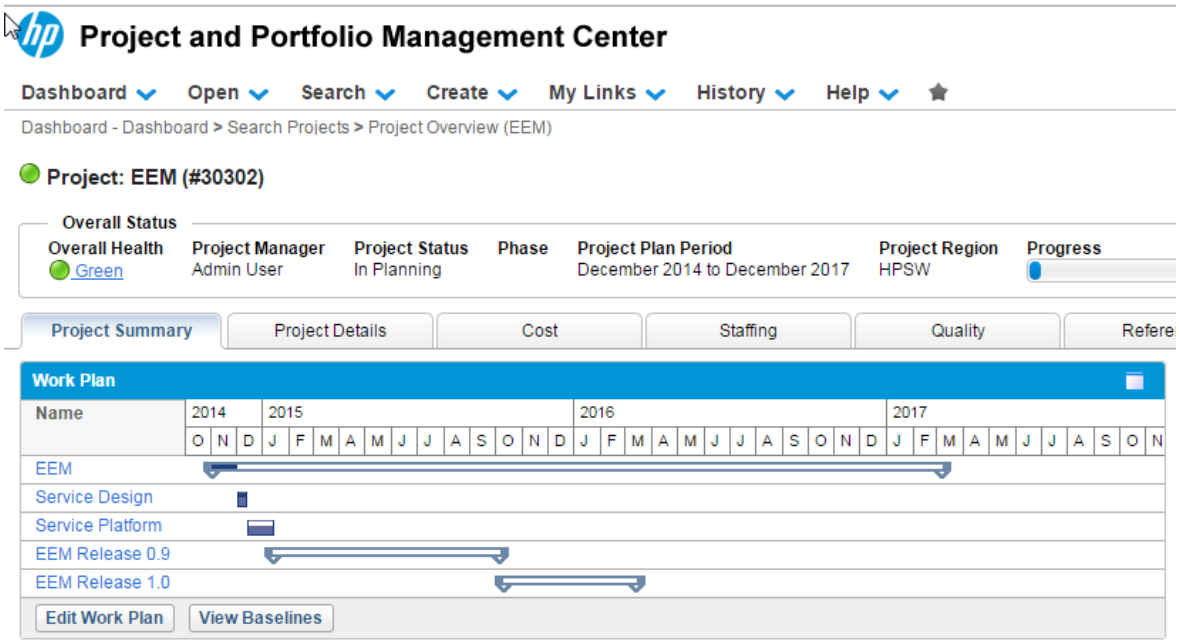
Step 3: Release Planning 26
Step 4: Developing the Applications 28
Step 5: Deploying the Service 30

Step 1: Project Initiation

Step 1 creates and manages the project for the EEM service implementation—as preparation for the development stage.



First, the Project Manager takes the lead by creating the new project in the HP Project and Portfolio Management (PPM) Suite. The project is based on an IT contract for an Expense Management service. That IT contract is the **what** of the service release and contains requirements, boundaries, resources, schedules, and so on. The project contains several tasks for project planning, application development, service deployment, and other activities.

After defining the tasks that require a change process for their implementation, the Project Manager creates requests for change (RFCs) in HP Service Manager (SM). At this stage, the required RFCs for this implementation are reviewed and the appropriate teams start working on them. As a result, the RFCs can be approved before the development is completed, thus avoiding delays in the deployment.

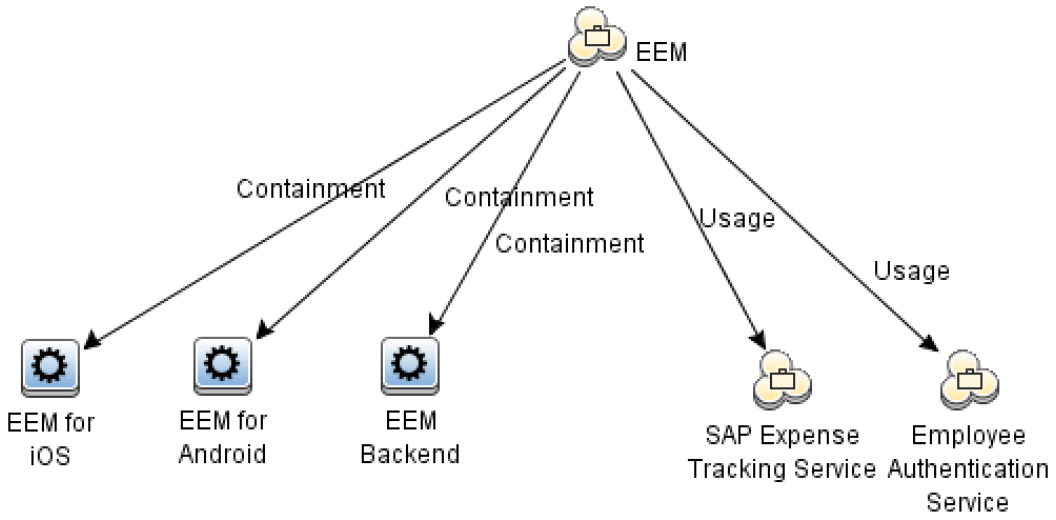
The RFCs contain a reference to the PPM Project, which allows the Change Manager to review a list of all changes created for the EEM development project simply by filtering. This is possible with the PPM – SM Integration ID#255 "Creating an SM RFC from PPM Project Task" on page 207.

Step 2: Service Design

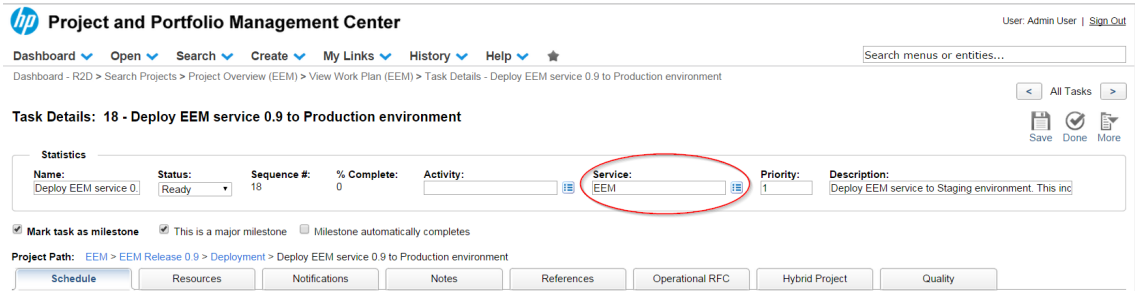
Architects are creating a design for the EEM service based on an IT contract and associated requirements. The service is modeled using Enterprise Architecture tools, and this model is exported to UCMDB. UCMDB-PPM and UCMDB-SM integrations allow using this model as unified service context in PPM and SM.

The results of these actions are:

- a design of the EEM service modeled in UCMDB



- a project in PPM detailing the tasks and resources needed for successful EEM service implementation, with the SM RFCs that are related to the PPM project already in progress



Step 3: Release Planning

Step 3 covers the elaboration of requirements, assigning the requirements to appropriate application releases, and enabling tracking project progress.

In our example, the EEM service is comprised of three applications that need to be developed—the iOS client, Android client, and the back-end management application.

Different teams work on the development of each application, thus enabling different methodologies to be used. The EEM service components are developed either in Agile or in a classically developed fashion.

The iOS and Android client applications are developed using the Agile methodology, thus the releases of these applications are managed in Agile Manager.

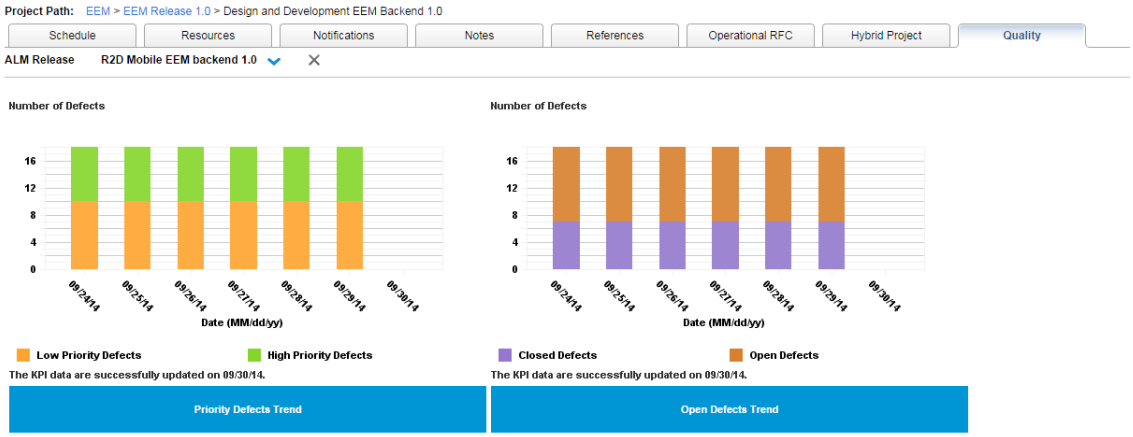
On the other hand, the back-end application is developed using classic methodology, and its releases are managed in ALM.

In the PPM project, the development tasks are linked to both Agile Manager and ALM releases. This allows users to obtain release data and quality information directly from the PPM user interface.

The following integrations make this linkage possible:

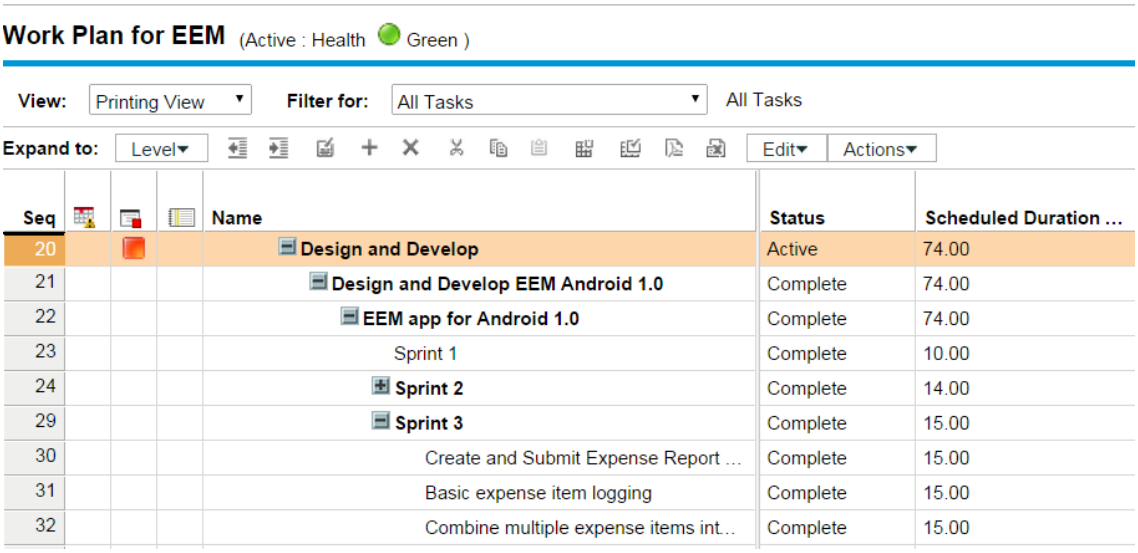
- PPM – ALM ID#633 integration. For more information, see "Viewing ALM Quality Metrics in PPM" on page 72.

  The following screen shot shows project task details with the focus on the **Quality** tab. In this screen shot, the tab shows defect summary graphs for a specific release linked to the task.



- PPM – AgM ID#634 integration. For more information, see "Viewing Agile Manager Release Information in PPM" on page 183.

  The following screen shot shows a project task linked to an Agile Manager release. The sprint details are synchronized automatically.



Requirements logged by the business analyst are elaborated and enriched, and assigned to the appropriate releases in ALM (for the back-end application) and Agile Manager (for client-side applications). The requirements and user stories define the action items for the development teams.

It is important to ensure the requirements are being created, prioritized, and linked to an appropriate application release.

During the work on requirements, Agile Manager and ALM tools are integrated and synchronized to allow information to exist in the ALM application for the advanced testing capabilities it provides.

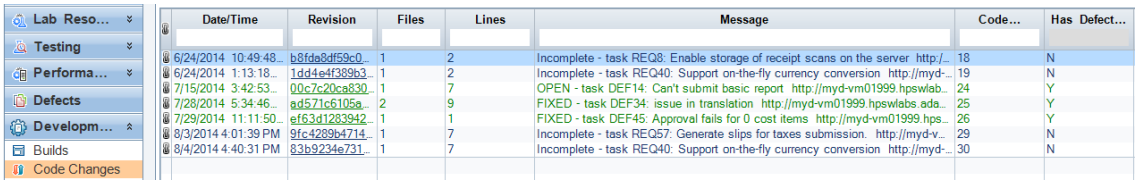
The outcome of this step is:

- PPM project tasks are linked to the appropriate application releases.
- Requirements and user stories that define the application releases are elaborated and prioritized.

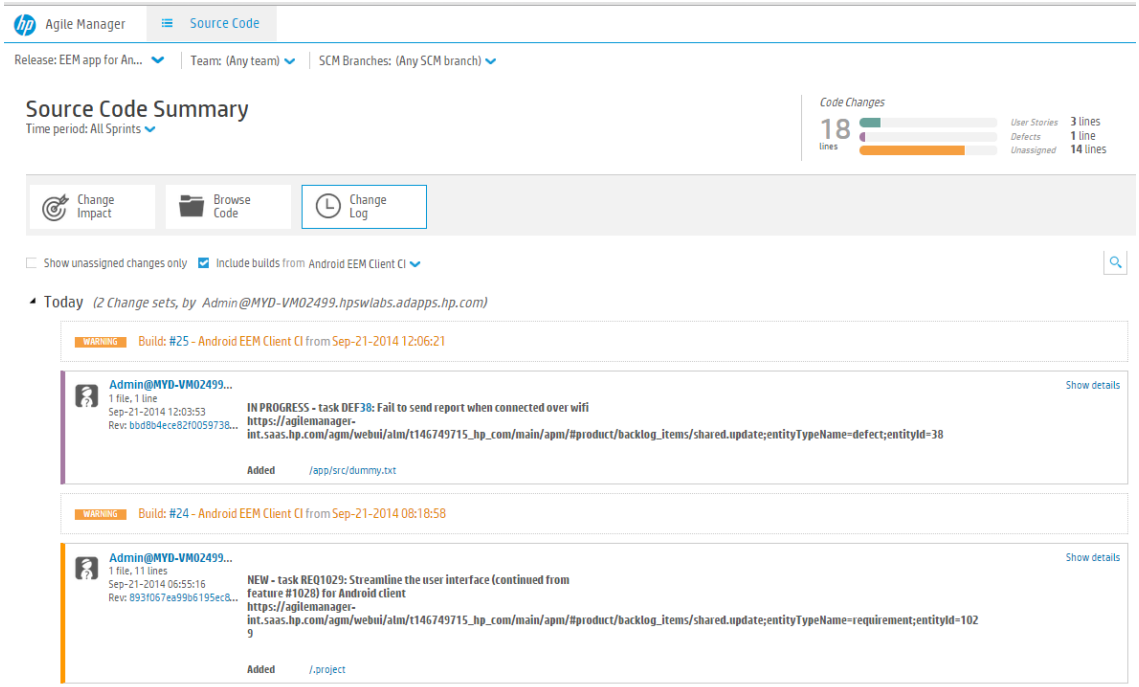
Step 4: Developing the Applications

Developers work on implementing the requirements and user stories from Agile Manager and ALM, while developing the three EEM service applications. When working on the source code, developers use HP Application Lifecycle Intelligence (ALI) capabilities to attach source code changes to appropriate context either in ALM or Agile Manager. The use of ALI enables developers to review the source code changes in the context of implemented user stories or fixed defects, thus enhancing the clarity of the development process.

- List of code changes linked to Requirements or Defects in ALM



- List of code changes linked to User Stories, Defects or Tasks in Agile Manager



The build server compiles the applications so that planned testing activities on the specific build (manual and automatic) can begin. ALI allows build results to be viewed and shows details directly from ALM or Agile Manager. In addition, the tests and defects that are opened are linked to the specific build.

The deployment process becomes increasingly more complex and time consuming. Therefore, Codar is implemented to integrate with the build system, automatically provision the environment, and deploy build results. This enables the development and testing teams to commence with verifying that the software is being built according to a defined quality standard. When the testing on various levels is complete, a decision is made to promote the software build further through the release pipeline as it goes through more and more thorough testing types.

In this phase, defects are reported in ALM. Some of these defects are fixed in future builds, while others are published as known errors to SM for Help Desk agents to be aware of.

In parallel with managing the development of the applications related to the EEM service, work is being done to provide additional content that is also a part of the EEM service. Training videos are being created, help desk documentation is being written, and a set of known errors is being gathered and published in SM. These additions provide the necessary information for future users of the EEM service in the organization.

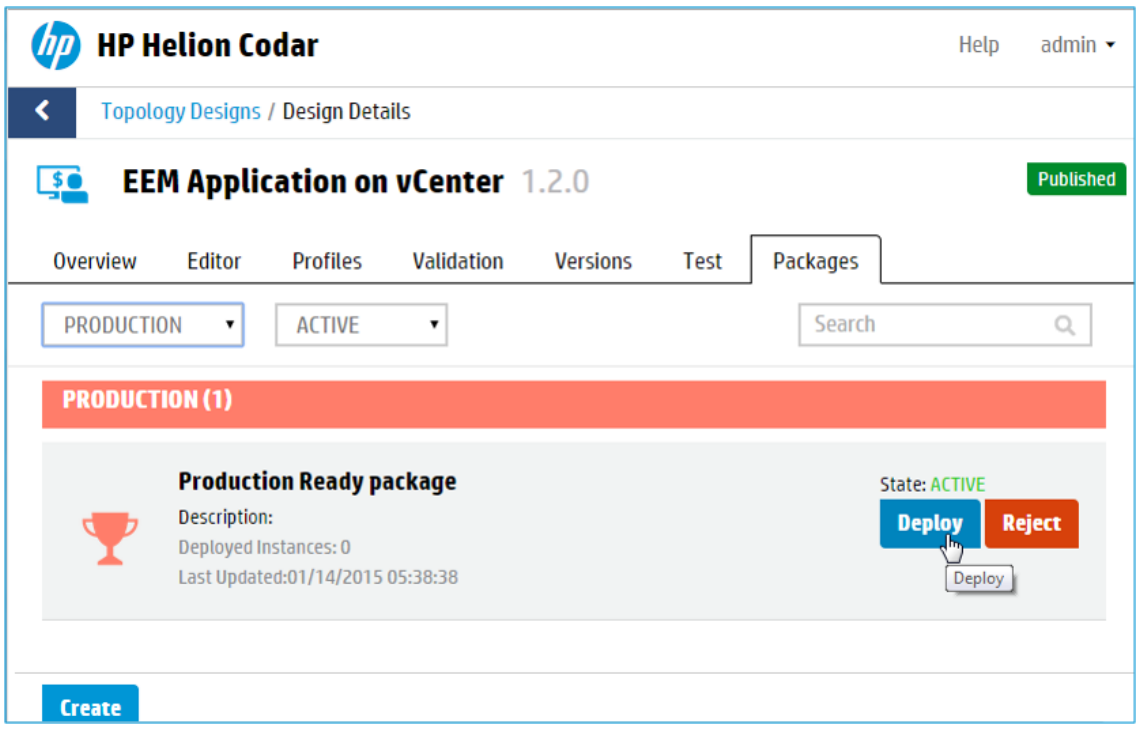
The outcome of this phase is to have a build ready for deployment for all three applications, with some defects and known errors that can be addressed in future releases.

Step 5: Deploying the Service

Service deployment means to deploy all of the help desk documents, training videos, known errors, and other components of the service, and make them available to the users.

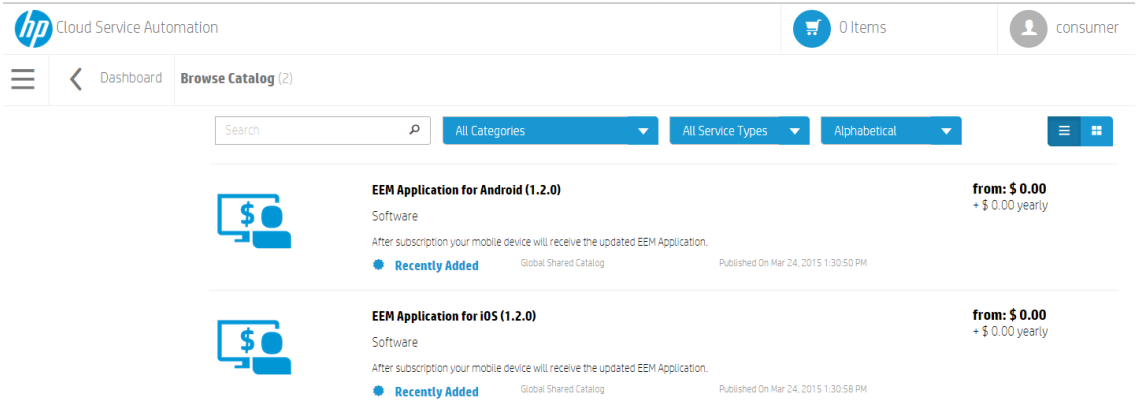
The business applications that the service depends on should be deployed to appropriate environments when desired quality is achieved. The most advanced phase is when the build is ready for deployment to production. Depending on the nature of the application, it can end with either:

- a deployment to production environment using Codar, as in the case of the Expense Management web application



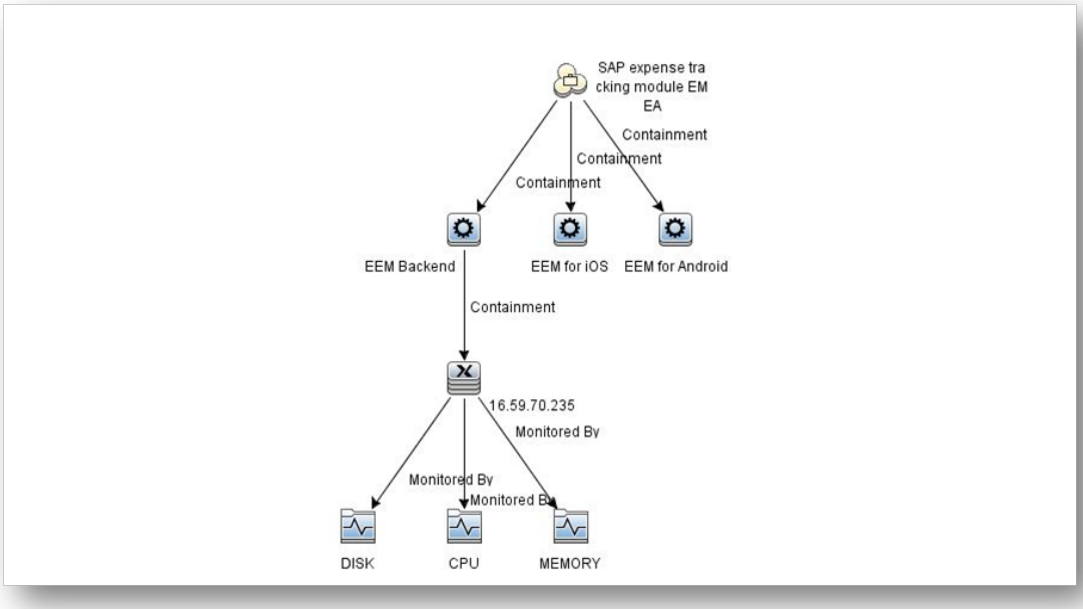
or

- a publication to the IT service catalog where a service offering is created in CSA based on a Codar design and end users can order it from the IT self-service portal—for instance, the mobile client applications for the Expense Management system that the employees use

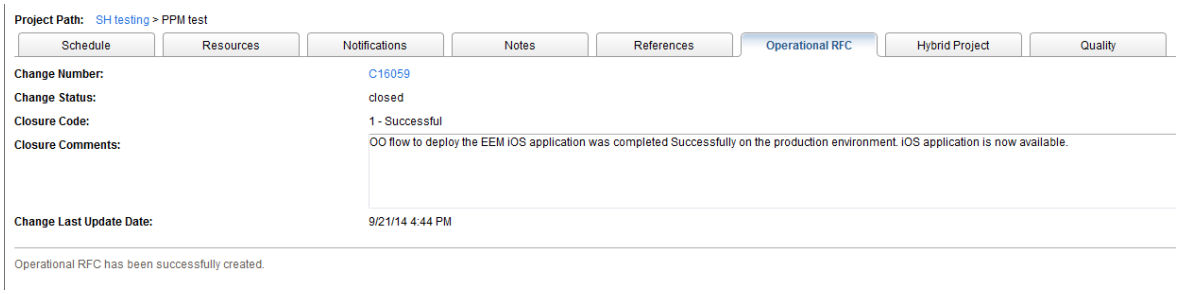


For more information, see HP Codar version 1.00 Concepts Guide.

The RFC for complete service deployment, which was created in the project planning stage, ensures that the approvals from the necessary personas are there before the deployment occurs. Then after it is implemented, all components of the service—both software and non-software—are in place. The UCMDB is updated with new configuration items and relations when service components (such as servers and applications) are discovered.



The outcome of this final phase is that the new EEM service is deployed and operational. The appropriate PPM project task for the deployment is updated with closure comments from the implemented RFC, thus closing the feedback loop.



DevOps Use Cases

The "Generic End-to-End Service Development Use Case" on page 21 focused on a complete service. These use cases focus on parts of the complete service.

This section contains the following topics:

Overview 33
Build Software Use Case 33
Deploy Software to Dev/Test Use Case 36
Deploy Software to Staging/Production Use Case 39

Overview

The DevOps Use Cases illustrate how to develop and deploy software functionality from development to operations in a maximally automated model, with sustainable velocity and demonstrating effective feedback.

Build Software Use Case

This section contains the following topics:

Use Case Steps 33
Example: Building Software 34

Use Case Steps

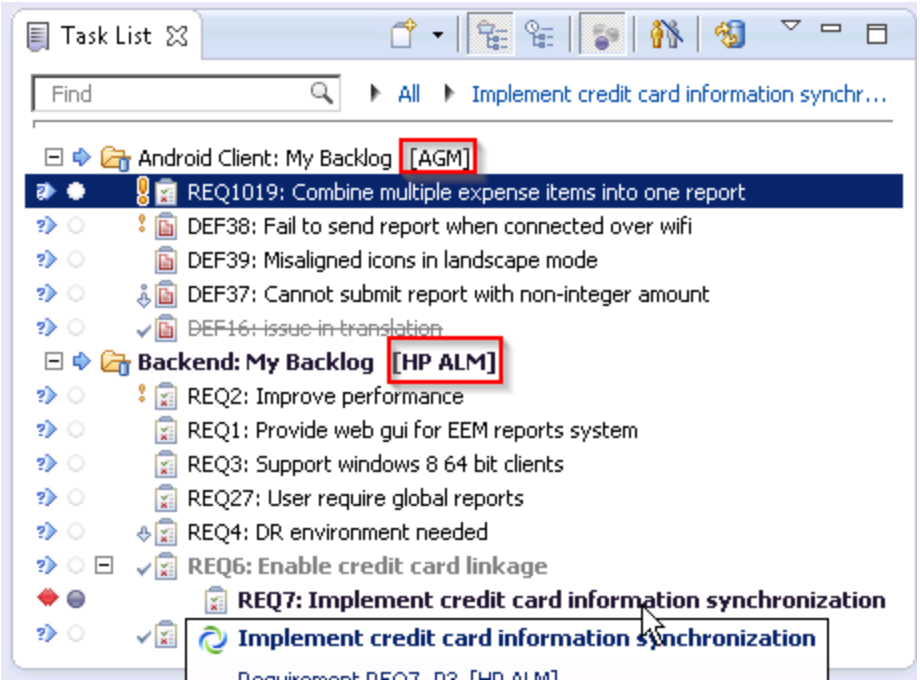
1. Developer checks in code to the **Source Control Management** system.
2. This triggers the workflow to start the new build. This may be done immediately or on a batch basis (that is, the **nightly build**).
3. The **Build Management** system, performing a continuous integration, runs tests which include unit tests, as well as external static analysis.
4. Test execution may result in defects being logged.
5. If the build succeeds, the built package is stored in a package repository.

Example: Building Software

This example covers a web application for an Expense Management system that is used by payroll employees to review and approve expenses submitted by employees from their mobile devices.

To develop and build the web application for the Employee Expense Management system:

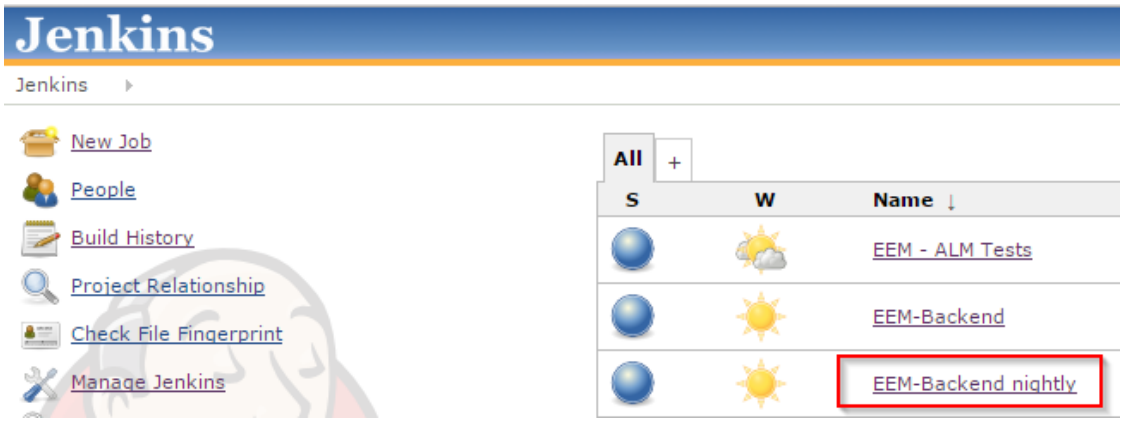
1. Developer reviews development task and implements a requirement and/or fixes a defect in their integrated development environment (IDE). Integration of IDE and ALM or Agile Manager allows review and update of the requirements/defects/tasks from within the IDE.



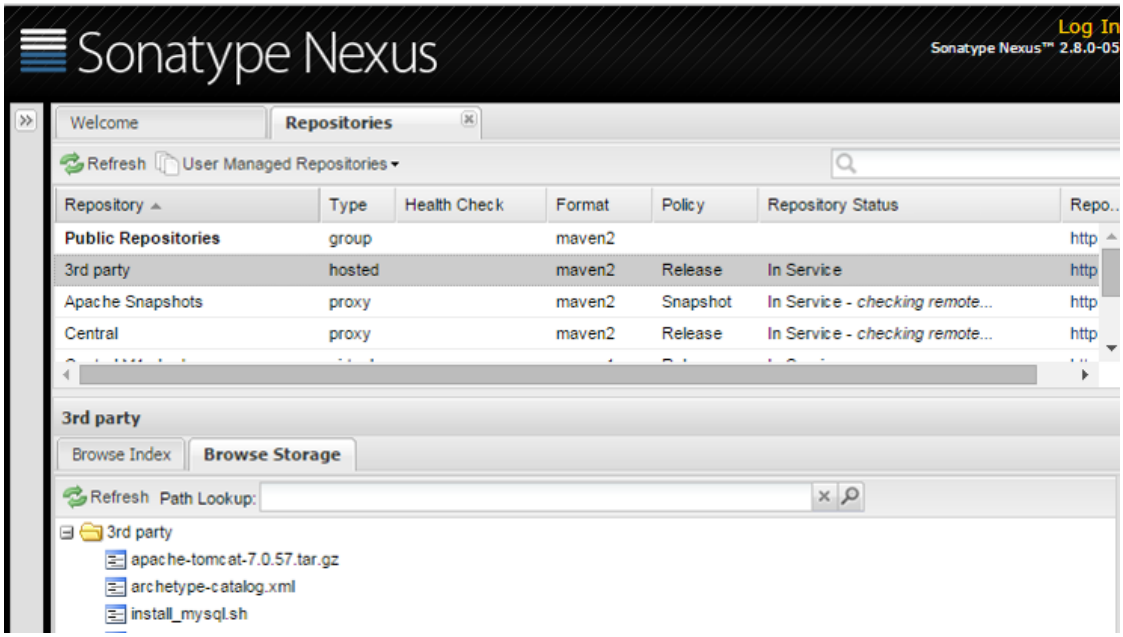
2. Modified code is committed to the Source Code Management (SCM) with an appropriate commit message, which enables linking the code change to a specific defect/requirement (for ALM) or development task (for Agile Manager).

   The following screen shot shows a commit message by the developer.

3. Each night a build job is triggered automatically—pulling the latest source code from SCM and building the web application.



4. Basic tests, such as unit tests, are executed and, if successful, the build is stored in an artifact repository such as Nexus, as shown in the following screen shot:



Deploy Software to Dev/Test Use Case

This section contains the following topics:

Use Case Steps 36
Example: Deploying Software to Dev/Test 36

Use Case Steps

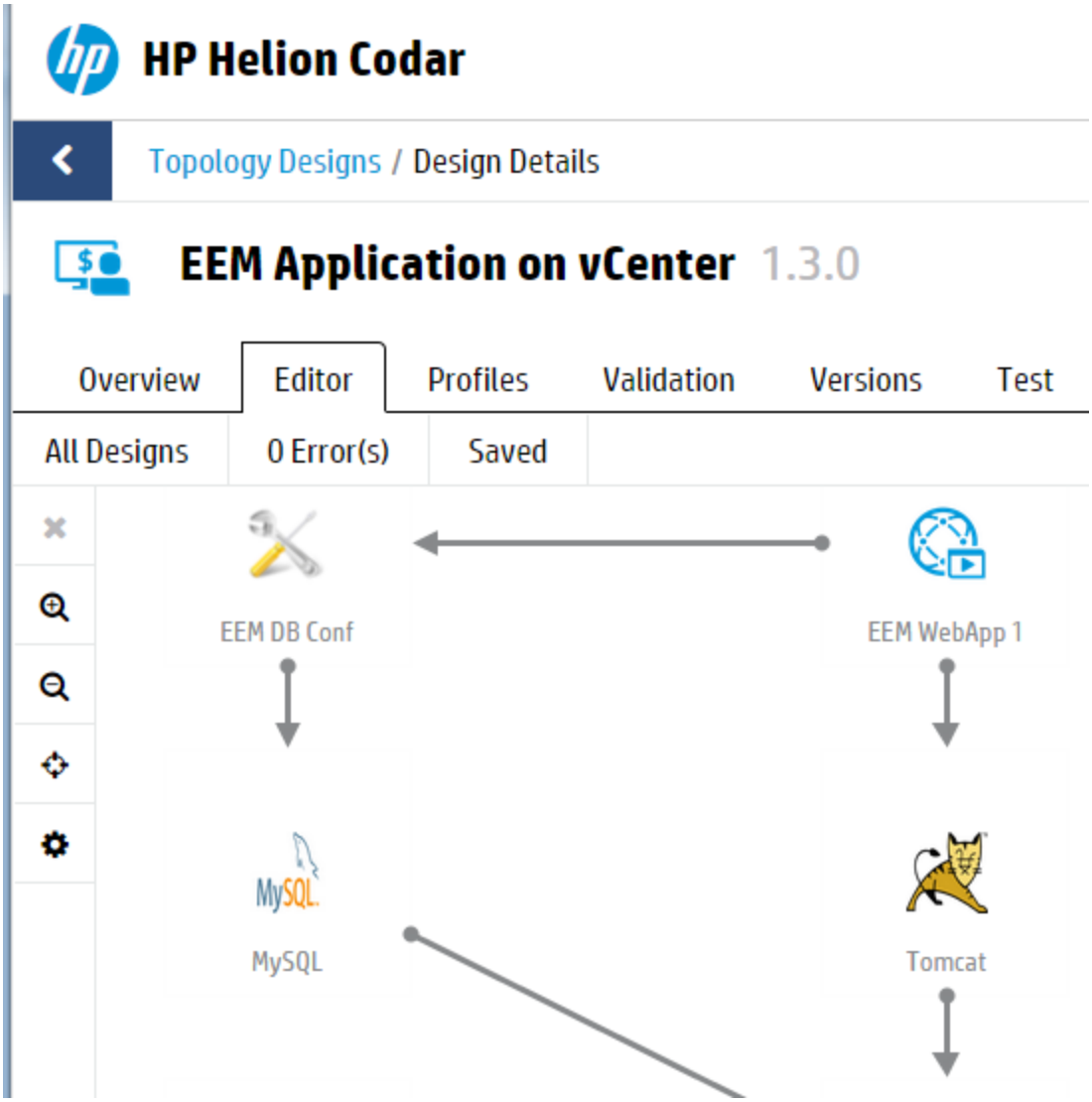
1. The **Deployment** process is initiated manually or automatically—for example, from a successful build.
2. The built package is pulled from the package repository and applied to the target system.
3. (Optional) Monitors are also deployed.
4. Developer or tester executes tests against the target system.
5. Test execution may result in defects being logged.

Example: Deploying Software to Dev/Test

Continuing from "Example: Building Software" on page 34, the development team modifies the source code, which results in a new build being created and ready for additional testing at varying depth levels.

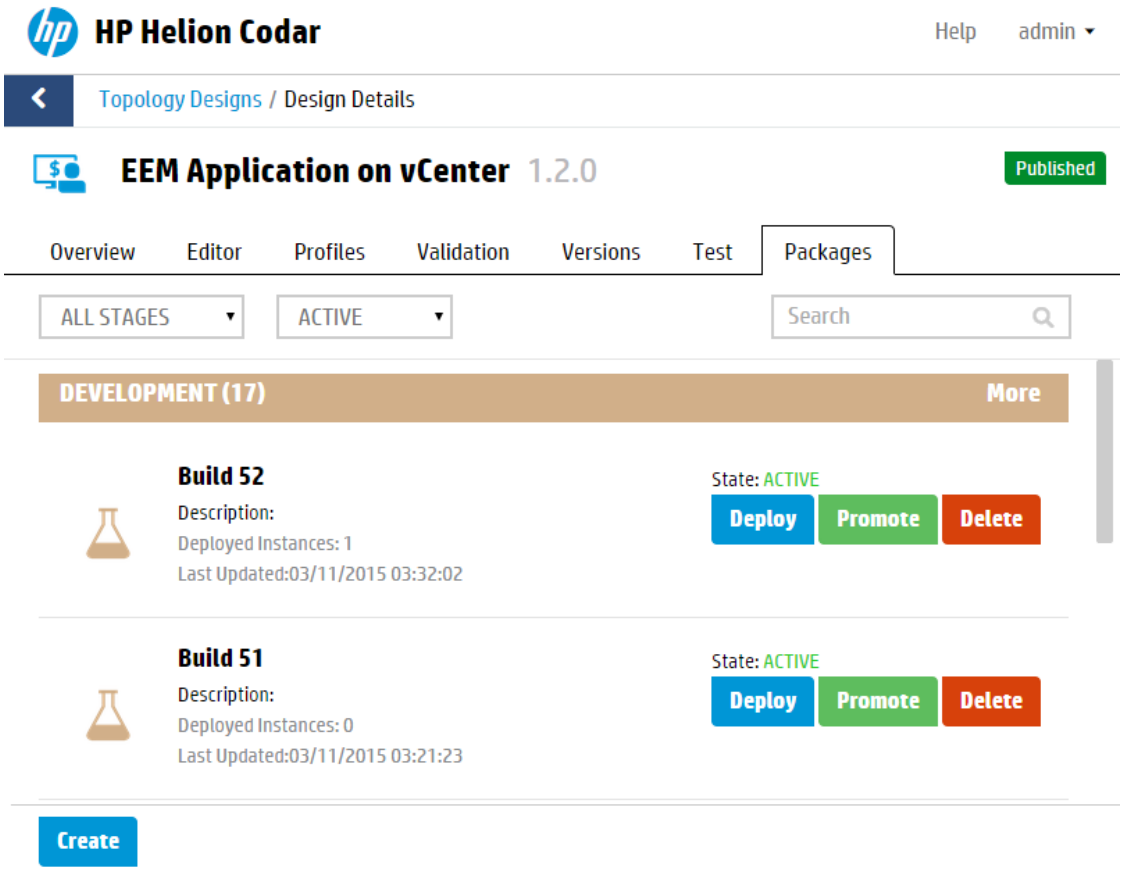
To deploy the software to dev/test:

1. During the initial phases of the project, application architect uses Codar to create the design for application deployment, which will be used to deploy the application builds automatically.



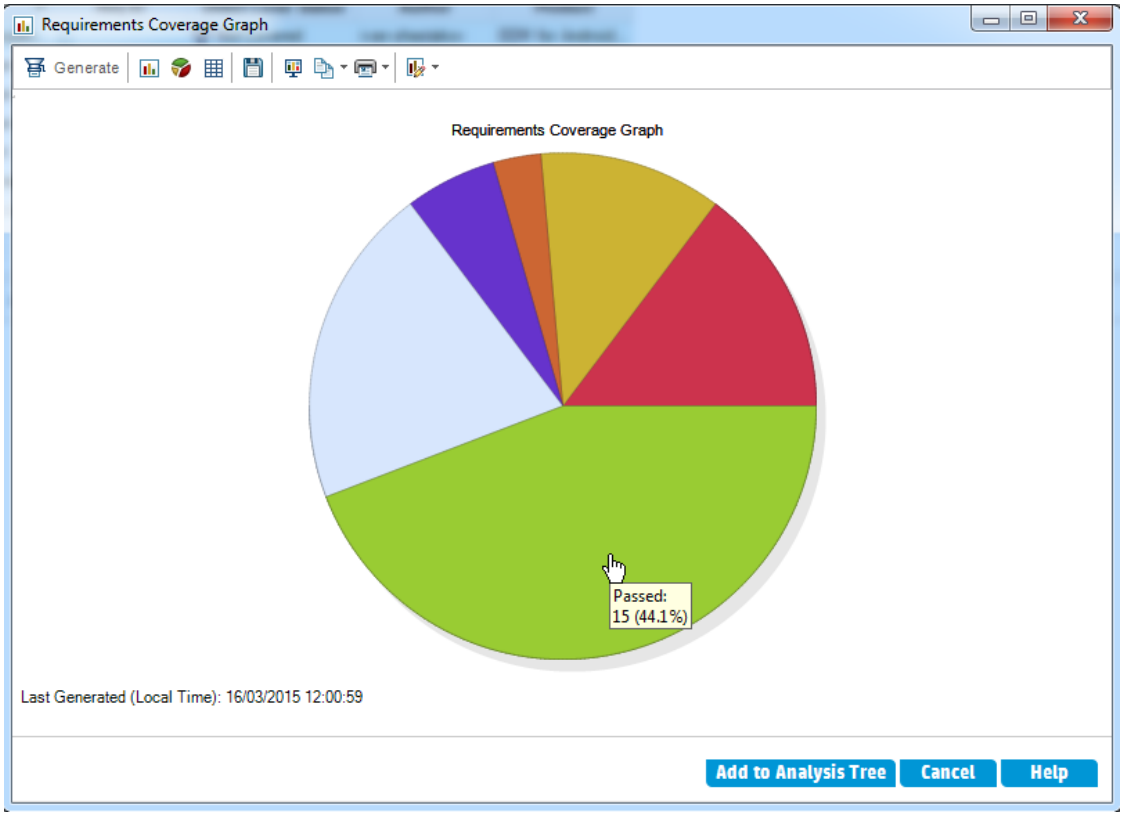
2. Build manager configures Jenkins plug-in for Codar, to create a new build package for the Expense Management web application when a new build is completed successfully, and to deploy it on a Development environment.

3. Members of the testing team can use Codar to deploy additional environments of the same build, and use those to execute different types of tests (functional, performance, and others). ALM integrations with several testing tools—such as UFT for functional testing and PC for performance testing—are leveraged to test the software from different perspectives.



4. As part of preparation for production, HP Unified Functional Testing (UFT) tests that were used for testing can be reused (with modifications) as HP Business Process Monitor (BPM) scripts to monitor the application behavior.

5. As tests are written based on specific requirements, their execution affects the requirements coverage, as illustrated in the following Requirements Coverage Graph. Test execution results are stored in ALM, and defects are logged accordingly.



Deploy Software to Staging/Production Use Case

This section contains the following topics:

Use Case Steps 39
Example: Deploying Software to Staging/Production 40

Use Case Steps

1. The **Deployment** process is initiated manually or automatically—for example, from a successful build.

2. A proposed change is submitted to the **Change Control** system.

> **Note:** This may be a standard change and approved in an automated manner.

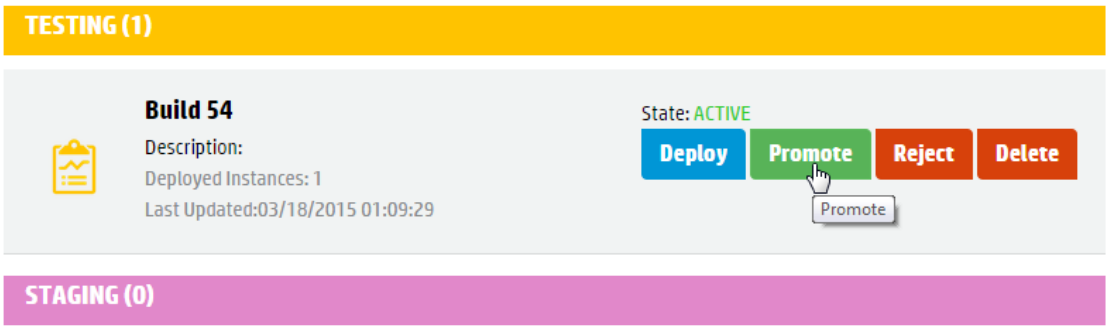
3. Upon RFC approval, the built package is pulled from the package repository and applied to the target system.
4. Monitors are deployed.
5. The CMDB is updated as required with any new configurations and dependencies or originating from the package manifest.
6. In the staging phase, testers execute system-level, integration, and/or performance tests against the target system.
7. In the staging phase, test execution may result in defects being logged.

Example: Deploying Software to Staging/Production

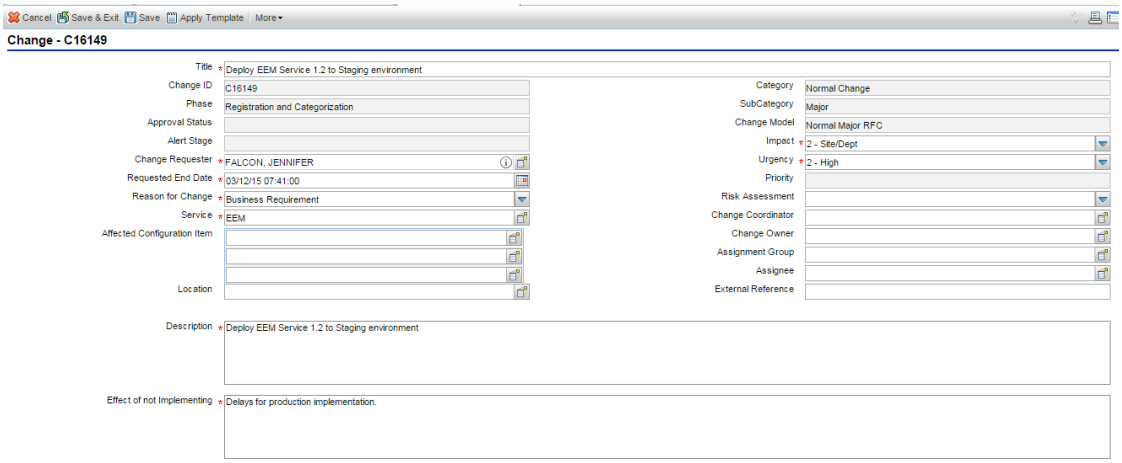
The build package of the Expense Management web application, which was tested extensively while in the Testing phase, is ready to be deployed to the Staging environment.

To deploy software to staging/production:

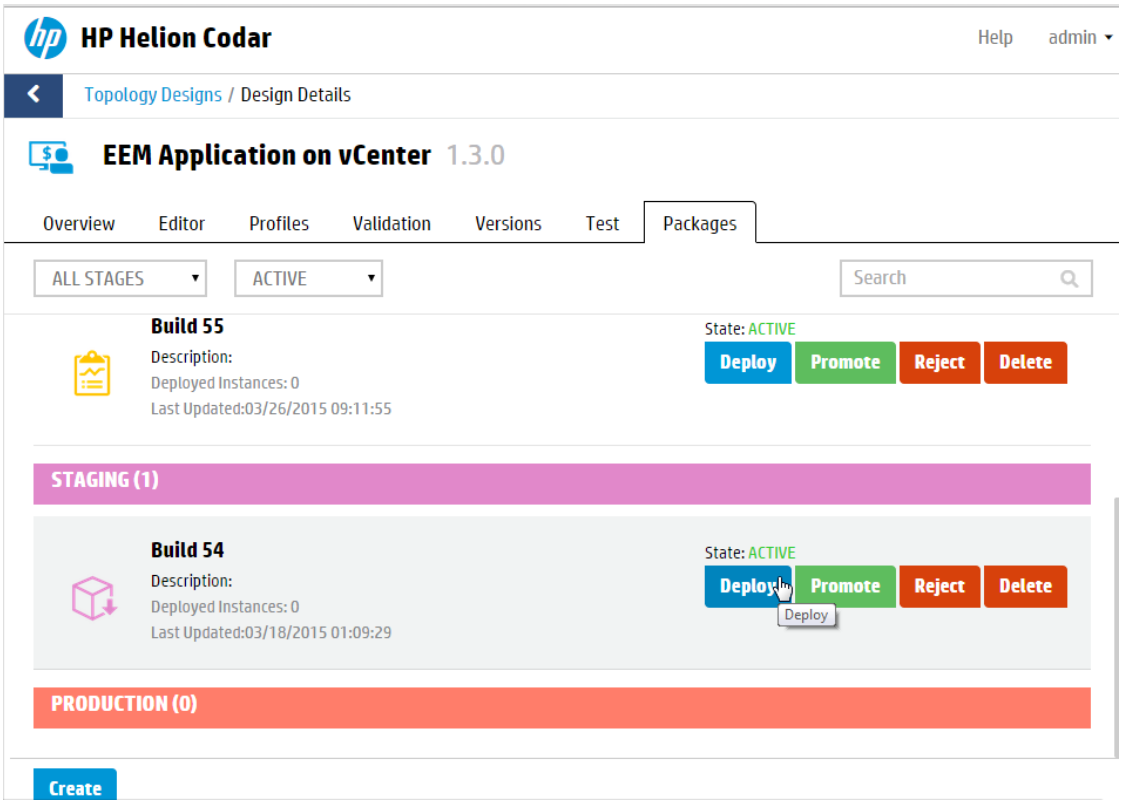
1. QA manager approves that the build satisfies the quality requirements and the build package is promoted to staging in Codar.



An RFC is submitted in HP Service Manager (SM) and needs to be approved before the deployment, which consumes substantial resources and affects the work of multiple teams.



2. When RFC is approved, the build package is deployed automatically on the Staging environment.



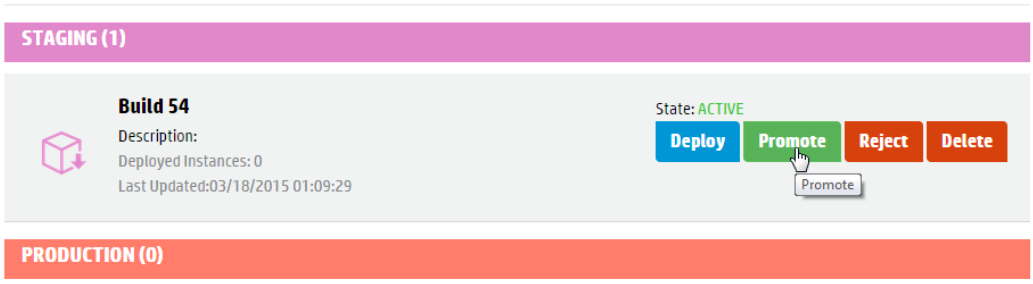
Usually this is the phase when User Acceptance Tests and Performance Tests are executed. In addition, at this phase the automated deployment of monitors is tested to ensure that the application will be monitored appropriately from the moment it is deployed.

3. Once all of the tests are complete on the staging environment, and the results are satisfactory, preparation to production deployment begins:

   a. An RFC is submitted in SM, reviewed, and approved.

   b. The time window for change implementation is scheduled.

   c. The build package is promoted to the Production phase in Codar.

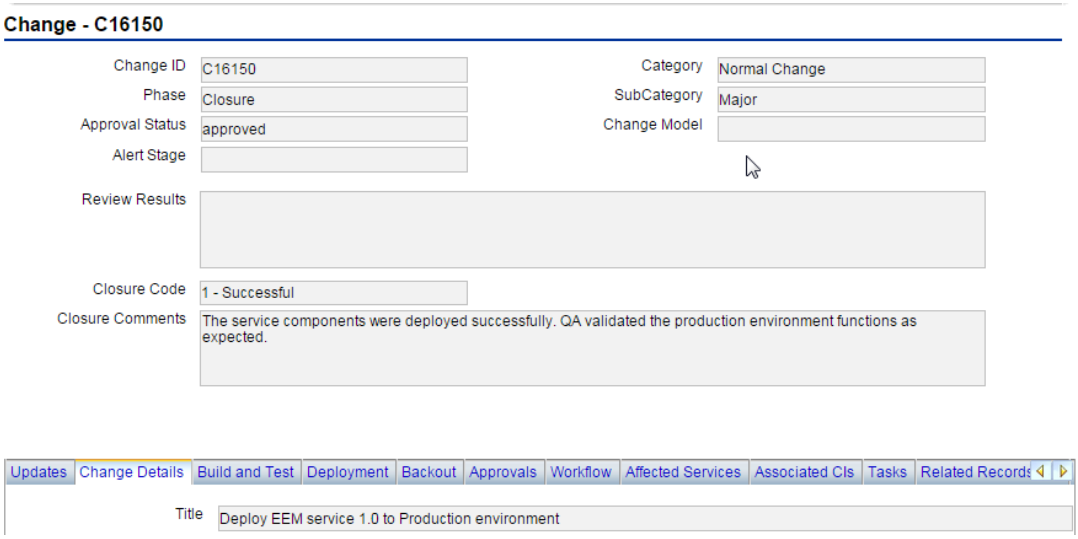


   d. Non-software components which accompany the release are prepared for distribution.

4. When the time to deploy the application to production comes, the automatic deployment is triggered.

   Once it is successfully completed:

   - QA approves that all functions are operating normally,
   - Operation's team confirms successful deployment of monitors,
   - HP Universal CMDB (UCMDB) is updated with new configuration items and relations,
   - RFC is updated and closed.



Part III: Requirement to Deploy Configuration Guide

Chapter 3: Requirement to Deploy Value Stream Configurations

This chapter includes:

Overview 44
HP Products 45
HP Products and Related Integrations 47
Hardware and Software Requirements 48
HP Project and Portfolio Management – Overview 52
HP Application Lifecycle Management – Overview 52
HP Service Manager – Overview 53
HP Universal CMDB – Overview 54
HP Agile Manager – Overview 54
HP Operations Orchestration – Overview 55

Overview

The balance of this guide provides the information necessary to implement the integrations needed to achieve the preferred IT management ecosystem. The user decides how many configurations to implement in order to achieve the management level required.

Feel free to use the entire solution, a mix of the various products, or just use a single product to address your management needs.

Note: Throughout this document, italicized text enclosed in angle brackets (for example, "<your_server_name>") indicates replaceable text.

HP Products

To utilize the complete end-to-end Requirement to Deploy Value Stream, the following products are recommended. These products must be installed and fully functional. Although we recommend using only HP tools, based on your requirements, you can use whatever products and integrations you want or need—including any third-party tools of your choice.

Note: Subsets of the following products can also be used. Keep in mind that the functionality of the Requirement to Deploy Value Stream is dependent on the products you choose to employ.

- **HP Universal CMDB.** Server is installed. Data flow probe is connected and running (different server than HP Business Service Management server).
- **HP Application Lifecycle Management.** Server, client, and synchronizer package are installed.

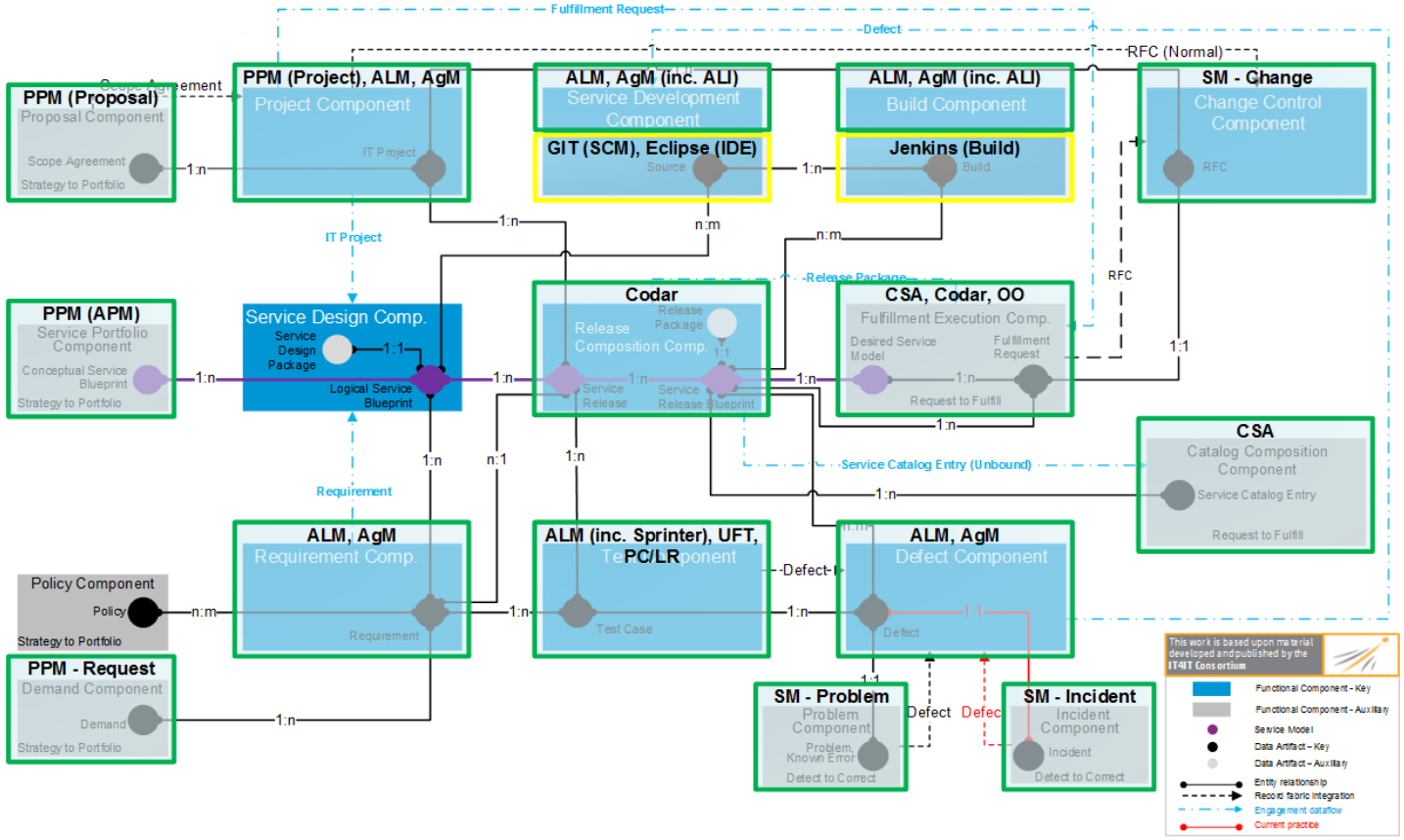
  HP offers a wide array of testing tools that can be integrated with ALM to cover various aspects of the testing process—for example:

  - **HP ALM Performance Center**
  - **HP United Functional Testing**
  - **HP Sprinter**
  - **HP LoadRunner**
- **HP Service Manager.** Server, Client, Web Tier, and Knowledge Management are installed and running.
- **HP Operations Orchestration.** Central and Studio are installed and available for use.
- **HP Project And Portfolio Management Center.** Server is installed.
- **HP Agile Manager.** Agile Manager is managed by HP via a Software-as-a-Service model.
- **HP Business Service Management.** Server is installed with EUM model enabled, and integrated with SiteScope.
- **HP SiteScope.** Server is installed and integrated with BSM and CODAR.

Note: Third-party tools are used in this guide for example purposes only.

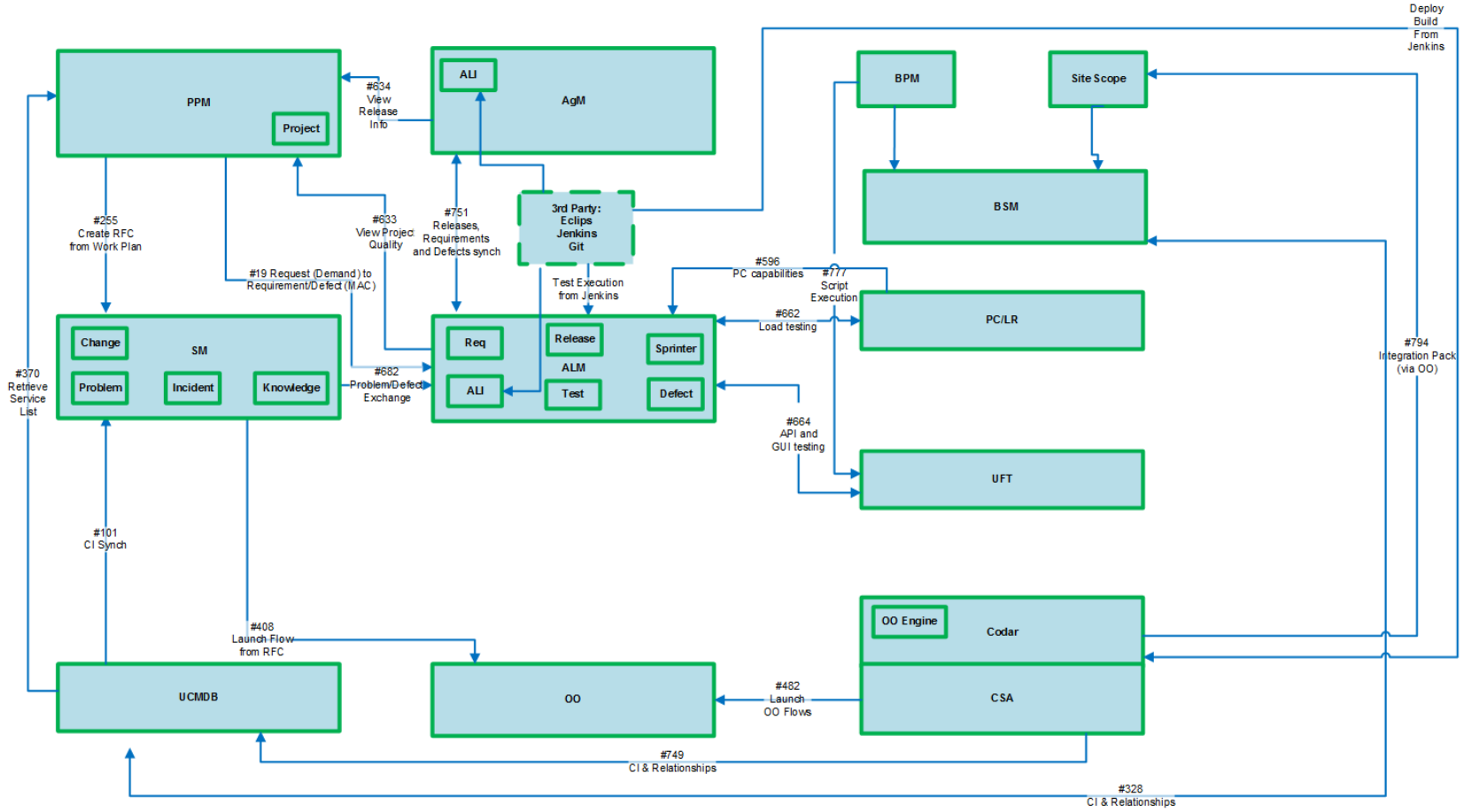
Requirement to Deploy Value Stream Products and Functional Components

The following diagram illustrates the mapping between the products and the functional components of the Requirement to Deploy Value Stream:



HP Products and Related Integrations

The following diagram displays how HP Products integrate in the Requirement to Deploy Value Stream Reference Implementation:



Hardware and Software Requirements

This section contains the following topics:

Supported Versions 48

Enterprise Hardware and Software Requirements 50

Additional Online Resources 51

Supported Versions

Note: For the hardware and software requirements, see the product documentation.

Product	Version	Instructions
Project and Portfolio Management	• 9.30 or later **Recommended.** 9.30	For installation instructions, see the *HP Project and Portfolio Management version 9.30 Installation and Administration Guide*.
Service Manager	• 9.32 or later **Recommended.** 9.32 **Note:** In this document, Service Manager is installed with the Process Designer Content Pack. This is optional and is available from HP Live Network.	For installation instructions, see the *HP Service Manager version 9.30 Interactive Installation Guide* to install version 9.30. Then upgrade to version 9.32 using the following guides: • *HP Service Manager version 9.32 Release Notes* • *Application Compatibility Matrix*
Universal CMDB	• 10.10 or later **Recommended.** 10.10	For installation instructions, see the *HP Universal CMDB version 10.10 Interactive Deployment Guide*.
Operations Orchestration	• 10.02 or later **Recommended.** 10.02	For installation instructions, see the *HP Operations Orchestration version 10.02 Installation Guide*.
Application Lifecycle Management	• 11.52 or later **Recommended.** 12.01	For installation instructions, see the *HP Application LIfecycle Management version 11.52 Installation installation and Upgrade Guide*.

Product	Version	Instructions
HP Helion Codar	• 1.00 or later **Recommended.** 1.00	For installation instructions, see the *HP Helion Codar version 1.00 Installation and Configuration Guide*.
Business Service Management	• 9.24 or later **Recommended.** 9.24	For installation instructions, see the *HP Business Service Management version 9.24 BSM Installation Guide*.
SiteScope	• 11.24 or later **Recommended.** 11.24	For installation instructions, see the *HP SiteScope version 11.24 Deployment Guide*.

Note:

- HP Application Lifecycle Intelligence (ALI) supports third-party products such as Source Code Management (SCM), Build Manager (BM), and Integrated Development Environment (IDE). For more information, see the *HP Application Lifecycle Intelligence version 2.7 User Guide*.
- Make sure that each application you install is up and running before you perform any configuration steps.

Enterprise Hardware and Software Requirements

Note: The following list details the deployment environments that have been rigorously tested by HP quality assurance personnel.

For the complete listing of hardware and software requirements, see the relevant Support Matrix for each product.

- **HP Project and Portfolio Management.** For more information, see the *HP Project and Portfolio Management Center version 9.30 System Requirements and Compatibility Matrix for PPM Center*.
- **HP Service Manager.** For more information, see the *HP Service Manager version 9.3x Compatibility Matrix for SM Applications Contents* and *HP Service Manager version 9.32 Support Matrix*.
- **HP Universal CMDB.** For more information, see the *HP Universal CMDB version 10.10 Support Matrix*.
- **HP Operations Orchestration.** For more information, see the *HP Operations Orchestration version 10.02 System Requirements*.
- **HP Application Lifecycle Management.** For more information, see the *HP Application Lifecycle Management version 11.52 System Requirements*.
- **HP Helion Codar.** For more information, see the *HP Helion Codar version 1.00 Support Matrix*.
- **HP Business Service Management.** For more information, see the *HP Business Service Management version 9.24 BSM System Requirements and Support Matrixes*.
- **HP SiteScope.** For more information, see the system requirements and support matrices in the *HP SiteScope version 11.24 Deployment Guide*.

Additional Online Resources

Troubleshooting & Knowledge Base accesses the Troubleshooting page on the HP Software Support web site where you can search the Self-solve knowledge base. Choose **Help > Troubleshooting & Knowledge Base**. The URL for this web site is http://h20230.www2.hp.com/troubleshooting.jsp.

HP Software Support accesses the HP Software Support web site. This site enables you to browse the Self-solve knowledge base. You can also post to and search user discussion forums, submit support requests, download patches and updated documentation, and more. Choose **Help > HP Software Support**. The URL for this web site is www.hp.com/go/hpsoftwaresupport.

Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract.

To find more information about access levels, go to:
http://h20230.www2.hp.com/new_access_levels.jsp

To register for an HP Passport user ID, go to:
http://h20229.www2.hp.com/passport-registration.html.

HP Software Web site accesses the HP Software Web site. This site provides you with the most up-to-date information on HP Software products. This includes new software releases, seminars and trade shows, customer support, and more. Choose **Help > HP Software Web site**. The URL for this Web site is www.hp.com/go/software.

HP Project and Portfolio Management – Overview

HP Project and Portfolio Management (PPM) Center standardizes, manages, and captures the execution of project and operational activities.

Most PPM Center users work in the standard user interface, which appears as a collection of specialized Web pages. These pages open in a Web browser and offer you a customized view into PPM Center. From these pages, you can run reports, submit requests, and create projects. You can also view and use the PPM Dashboard. The PPM Dashboard is a real-time Web page view into your PPM Center system. Using portlets, you can view important information about your work environment, from the status of requests assigned to you to comparisons between current projects and staffing profiles.

In addition to the standard user interface, some users require the PPM Workbench to accomplish certain tasks. Unlike the Web pages, which open in a Web browser, the PPM Workbench opens in its own window. Designed for more advanced users, the PPM Workbench is where much of PPM Center is configured. Configurators can use the PPM Workbench to define workflows, create request types, set up automatic notifications, as well as a host of other tasks and procedures.

HP Application Lifecycle Management – Overview

HP Application Lifecycle Management (ALM) empowers organizations to manage the core application life cycle, from requirements through deployment, granting application teams the crucial visibility and collaboration needed for predictable, repeatable, and adaptable delivery of modern applications.

ALM simplifies and organizes application management by providing you with systematic control over the process. It helps you create a framework and foundation for your application life cycle management workflow in a central repository.

HP Application Lifecycle Management provides:

- **Release Tracking**

  ALM features a system for organizing and tracking application releases, enabling you to align your business priorities and quality expectations with your project requirements, tests, and defects. ALM helps you make more informed release decisions with real-time key performance indicators (KPIs).

- **Requirements and Tests**

  ALM helps you define and maintain a repository of requirements and tests. Requirements help ensure that business and testing needs are covered. Tests can then be automatically generated from these requirements to ensure the correct aspects of the application are being tested. To meet the various goals of a project, you can organize the tests in your project into unique groups. ALM provides a method for scheduling and executing tests, collecting test results, and analyzing the data.

- **Defects Tracking**

  Analyzing defects and defect trends helps you make effective **go/no-go** decisions. ALM features a system for tracking defects, enabling you to monitor defects from initial detection until resolution. It also allows you to share defects across projects, reducing risk by helping developers find, prioritize, and resolve defects sooner. A centralized defect repository also enables reporting of aggregated defect status and trends across projects.

- **Analysis Tools**

  The ability to track progress throughout the application life cycle process is vital to predictability. ALM provides tools for analyzing each phase of the process, including specific instrumentation for Agile projects (for example, burn-up and burn-down charts). You can generate interactive graphs that demonstrate a wide variety of business performance perspectives, or define reports with any cross section of data. You can also monitor multiple business metrics by arranging multiple graphs alongside each other in a single view.

- **Asset Libraries**

  ALM supports sharing and reuse of asset libraries across projects. Sharable libraries help you manage initiatives with multiple applications to verify that changes to one application do not negatively impact another application. They also help to drive greater consistency and repeatability by empowering asset reuse. Specific changes can be applied to the shared assets for each project while allowing the library to maintain its integrity.

- **ALM Integrations**

  ALM offers integration with HP tools (for example, Unified Functional Testing and LoadRunner) as well as third-party and custom testing tools, and requirement and configuration management tools. ALM communicates with the testing tool of your choice, providing you with a complete solution to fully automated application testing.

ALM supports you through all phases of managing the application life cycle. By integrating the tasks involved in application management, ALM enables you to better align IT with your business needs, and optimize efficiency.

HP Service Manager – Overview

HP Service Manager (SM) is a comprehensive and fully-integrated IT service management software suite that enables you to improve service levels, balance resources, control costs, and mitigate risk exposure to an organization. Service Manager enables you to manage services using a "life cycle" approach, with consistent improvement built into the governance model.

HP Universal CMDB – Overview

HP Universal CMDB (UCMDB) consists of a rich business-service-oriented data model with built-in discovery of configuration items (CIs) and configuration item dependencies, visualization and mapping of business services, and tracking of configuration changes.

UCMDB enables you to manage all the CIs contained in a managed world. A managed world refers to any self-contained environment that can be described using a topology model (defined with HP's Topology Query Language (TQL)). For example, the IT infrastructure of a large business represents a managed world, where the topology comprises multiple layers such as networks, protocols, databases, operating systems, and so on. You manage views to view the information in exactly the format you require.

Additionally, the information contained in the results of each TQL is updated automatically with the latest data entering the configuration management database (CMDB). As a result, once a TQL and View have been defined, they continue to provide up-to-date information about the current state of your managed world. Views appear in multi-level maps that enable you to identify key CIs, as required. You can also create reports (in HTML, Excel, or table format) about information collected by the system.

HP Agile Manager – Overview

HP Agile Manager (AgM) is an Agile management solution for organizing, planning, and executing Agile projects. It can support single teams or multiple, geographically distributed teams across an enterprise. Agile Manager provides:

- A drag-and-drop interface that enables easy release and sprint planning, task allocation, and capacity management across teams and individuals
- Task and release planning boards that give all team members ready insight into the entire project landscape, the flow of work, and potential issues or bottlenecks
- Real-time feedback on progress through highly customizable dashboards, metrics, and KPIs, minimizing administration while increasing predictability
- Advanced development analytics that aggregate source code and build information to surface meaningful insights into application changes, allowing for precise risk analysis and more informed decisions

HP Operations Orchestration – Overview

HP Operations Orchestration (HP OO) is a system for creating and using actions in structured sequences (called Ops flows, or flows) which maintain, troubleshoot, repair, and provision your IT resources by:

- Checking the health of, diagnosing and repairing, networks, servers, services, software applications and individual workstations
- Checking client, server, and virtual machines for needed software and updates, and, if needed, performing the necessary installations, updates, and distributions
- Performing repetitive tasks, such as checking status on internal or external web site pages

The two main components of HP OO are Central and Studio.

HP OO Central

This is a web-based interface in which you can:

- Run flows
- Administer the system
- Extract and analyze data resulting from the flow runs

HP OO Studio

This is a standalone authoring program in which you can:

- Create, modify, and test flows, including flows that run automatically, as scheduled
- Create new operations

  You can create operations within Studio and run them in Central. You can also create operations that execute outside of Central in a remote action service (RAS). You do so in a development environment that is appropriate to the task, then associate the code you have created with an operation that you create in Studio.
- Specify which levels of users are allowed to run various parts of flows

Chapter 4: Creating ALM Requirement/Defect from PPM Request

This chapter includes:

Overview 56

Setting up the PPM - ALM Configuration 57

Verification 70

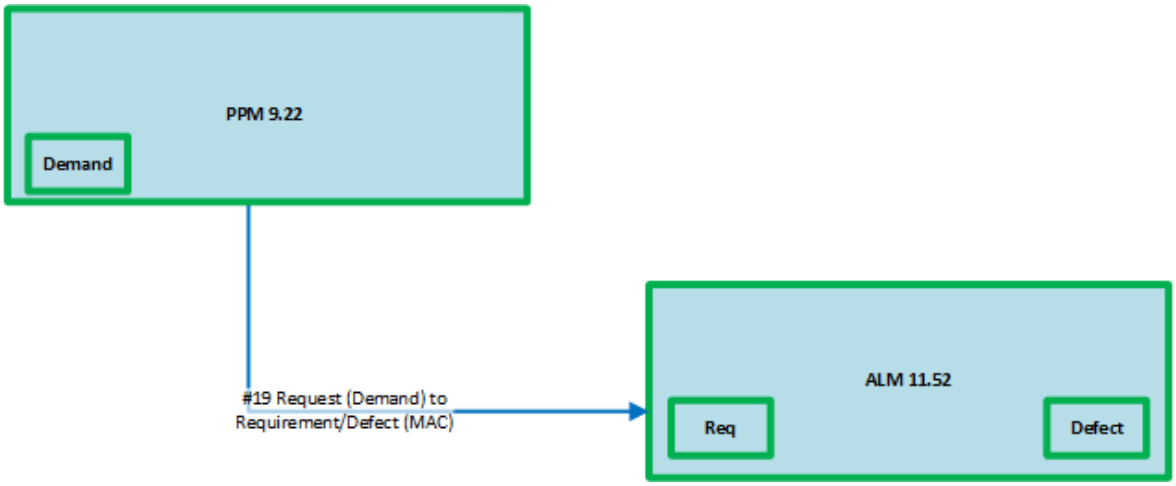
Overview

This chapter describes how creating a request in the HP Project and Portfolio Management (PPM) Demand Management Module automatically creates a defect or requirement in the HP Quality Center (QC) or HP Application Lifecycle Management (ALM) project with which the PPM Center request type is integrated. For example, a PPM Center request of type **Defect** could create a defect in a Quality Center or ALM project, whereas a PPM Center request of type **RequestForChange (RFC)** could create a requirement in a Quality Center or ALM project.

In the context of the Requirement to Deploy (R2D) Value Stream, this integration enables receiving inputs from the Strategy to Portfolio Value Stream in the form of requirements or defects.

For more information, see Integration ID#19: Application Lifecycle Management – RFC to Requirement/Defect (PPM – QC) in **HP Software Solutions Now**.

The following diagram illustrates the relationship between the products for this integration:



Setting up the PPM - ALM Configuration

This section contains the following:

Prerequisites 57
Configuring PPM Center 58
Configuring Workflow for Request to Requirement Integration 66

Prerequisites

The following products must be installed:

1. PPM is installed with the ALM Content Bundle. If not, install the ALM content bundle on your PPM.

   For more information, see Chapter 2, "Installing and Setting Up ALM Content Bundle" in the *HP Project and Portfolio Management Center version 9.30 HP Solution Integrations Guide*.

2. The ALM Connectivity Add-in file is running on the ALM server.

   For more information, see Chapter 5, "Integrating PPM Center with HP Quality Center, Using ALM > Configuring Integration with HP ALM Version 11.00 and Later > Installing the PPM Center-ALM Integration Tool (for HP ALM Version 11.50 and later) > Requirements for the PPM Center-ALM Integration Tool > Client-Side Requirements" in the *HP Project and Portfolio Management Center version 9.30 HP Solution Integrations Guide*.

3. The PPM Center-ALM Integration Tool is running on the PPM server.

   For more information, see Chapter 5, "Integrating PPM Center with HP Quality Center, Using ALM > Configuring Integration with HP ALM Version 11.00 and Later > Installing the PPM Center-ALM Integration Tool (for HP ALM Version 11.50 and later) > Download and Install the PPM Center-ALM Integration Tool" in the *HP Project and Portfolio Management Center version 9.30 HP Solution Integrations Guide*.

Note: If the integration tool is not working, you can manually add the fields to Quality Center. For more information, see *How to enable PPM related OOTB fields in QC project for ALM integration.*

Configuring PPM Center

To configure the PPM Center:

1. Log on to PPM Center with administrative privileges.
2. From the menu bar, select **Open > Administration > Integration**.

   The **Integration Configurations** screen opens.
3. In the navigation pane, select **Manage Application Change**.

   The Manage Application Change panel opens.
4. In the **Server Configuration Details** section, from the **Add Integration Configuration** drop-down list of available request types, select either **ALM – Defect Template with Quality Center Integration** or **ALM – Request for Change (RFC) Integration** and click **Add Integration Configuration**.

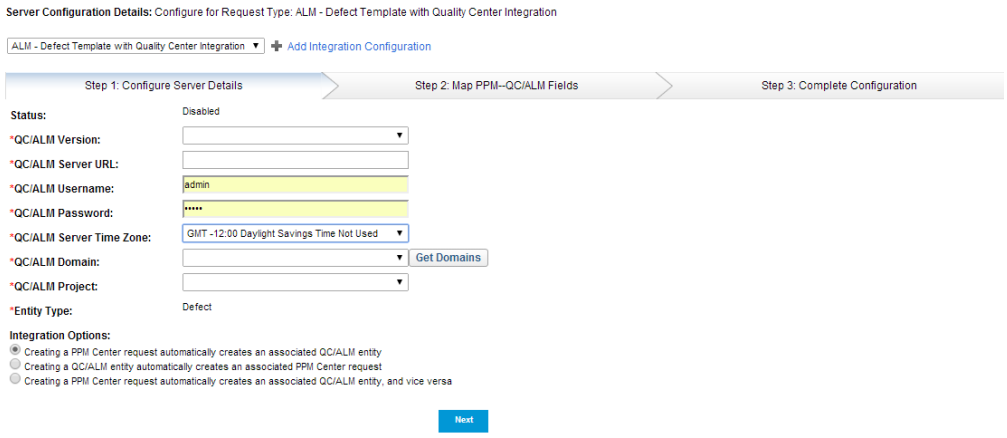
   Complete the following tasks for each request type:

   > **Note:** The tasks for both **ALM – Defect Template with Quality Center Integration** and **ALM – Request for Change (RFC) Integration** must be completed. The order this is done in does not matter, but the tasks for both request types must be completed in an R2D environment.

   - **ALM – Defect Template with Quality Center Integration.**

     i. The Configure QC/ALM Integration for Request Type: ALM – Defect Template with Quality Center Integration section opens showing **Step 1: Configure Server Details**.

In this example, the selected request type ALM – Default Template with Quality Center Integration includes the **QC/ALM Defect Information** field group. It is associated with an HP ALM defect, as indicated in the **Entity Type** field. For a new integration, the status is **Disabled** by default.

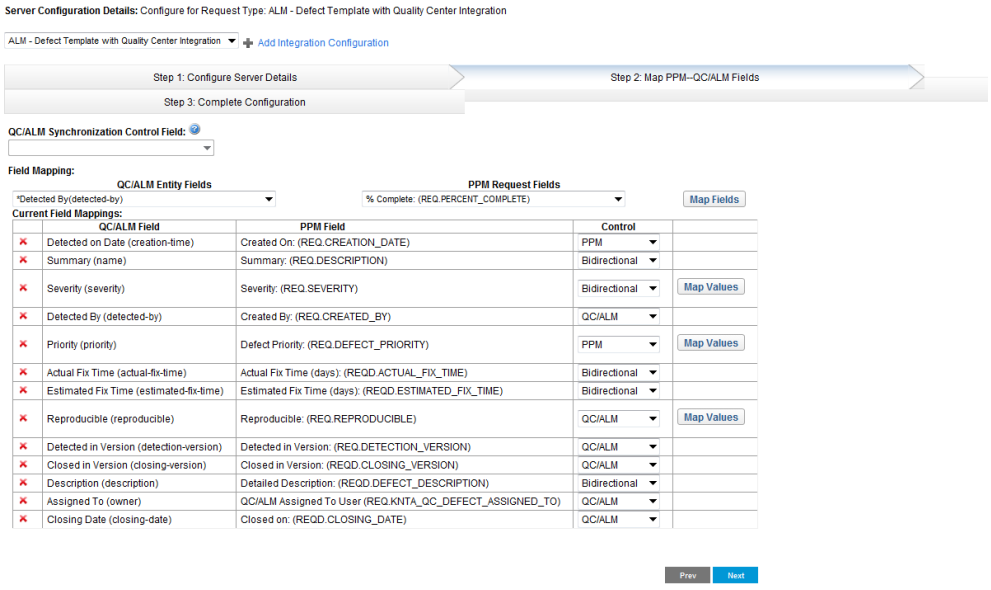


Complete the fields using the following information and click **Next.**

Field Name	Description
***QC/ALM Version**	Select your HP ALM version from the drop-down list of supported versions.
***QC/ALM Server URL**	URL of the HP ALM server in the following format: `http://<ALM_Server_Host>:<Port>/qcbin/` **Note:** HTTPS is supported. Use `https` in the URL as needed.
***QC/ALM Username**	User name used to access HP ALM.
***QC/ALM Password**	Password for the QC/ALM user name.

Field Name	Description
***QC/ALM server time zone**	Time zone for the ALM server. Required to ensure that the integration correctly manages updates between fields mapped as bidirectional between PPM Center requests and associated HP ALM defects. Default is the time zone for the PPM Server. **Note:** For some of the GMT time zones, only the **Daylight Savings Time Not Used** option is available. Time zone names that include city names are not available due to changes with a third-party product. For example, you may only see the **GMT +9:00 Daylight Savings Time Not Used** option, which means that the **GMT +9:00 (Asia/Yakutsk) Yakutsk Time** option is not available.
***QC/ALM Domain**	Domain on the HP ALM server to use for the integration. **Note:** To retrieve the set of domains, click **Get Domains**.
***QC/ALM Project**	HP ALM project to use for the integration. **Note:** List is populated when QC/ALM Domain is selected.
***Entity Type**	HP ALM entity type to be used for integration—**Defect**.
Integration Options	Additional options for ALM defect template with a QC integration. Select one of the following three values: • Creating a PPM Center request automatically creates an associated QC/ALM entity. • Creating a QC/ALM entity automatically creates an associated PPM Center request. • Creating a PPM Center request automatically creates an associated QC/ALM entity, and vice versa.

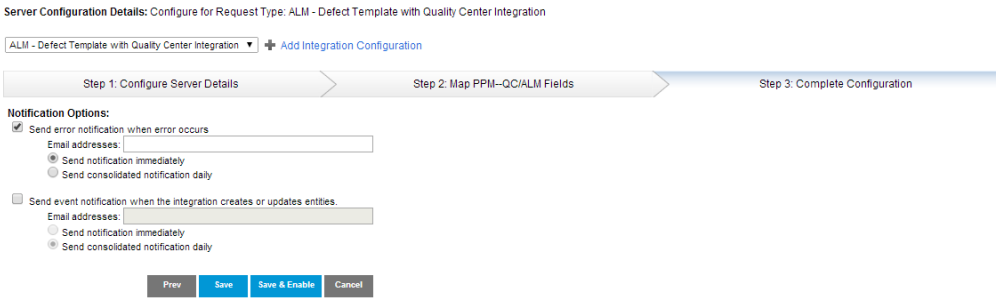
ii. The Configure QC/ALM Integration for Request Type: ALM – Defect Template with Quality Center Integration section opens showing **Step 2: Map PPM – ALM Fields**.



Complete the fields using the following information and click **Next.**

Field Name	Description
QC/ALM Synchronization Control Field	Specify a value in this field to allow the QC/ALM end users to control whether they want to create a defect in PPM Center as a result of creating a defect in ALM. The values in the drop-down list are fields (with Y/N values) retrieved from the Defect entity type of the ALM project specified in the **Project** field.
Field Mapping	Separate lists of unmapped QC/ALM Entity fields and PPM Request fields, followed by a table of the preconfigured Current Field Mappings

iii. The Configure QC/ALM Integration for Request Type: ALM – Defect Template with Quality Center Integration section opens showing **Step 3: Complete Configuration**.



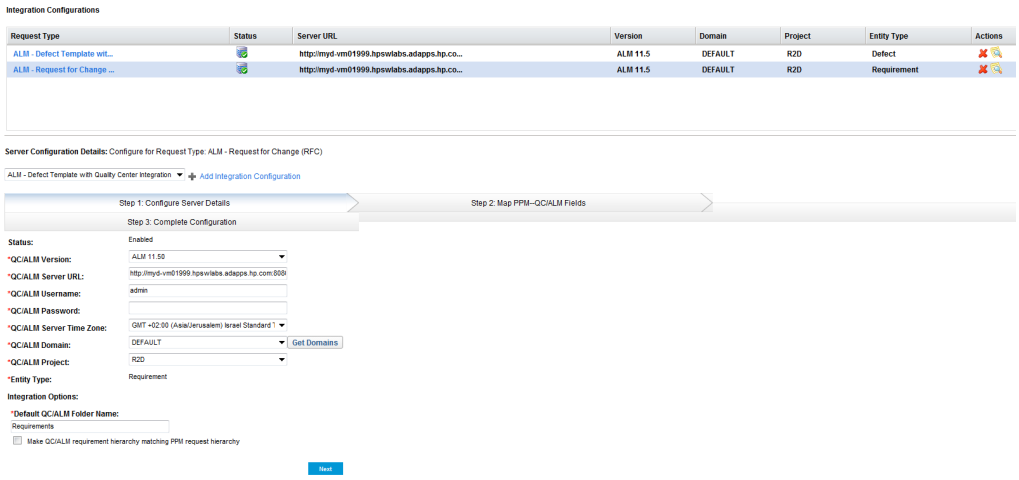
Edit the notification options, if necessary. When finished, click **Save & Enable**.

Field Name	Description
Notification Options	Options for email notification when integration errors occur, and when integration creates or updates entities

- **ALM – Request for Change (RFC) Integration.**

  i. The Configure QC/ALM Integration for Request Type: ALM – Request for Change (RFC) Integration section opens showing **Step 1: Configure Server Details**.

  In this example, the selected request type ALM – Request for Change (RFC) Integration includes the **QC/ALM Defect Information** field group. It is associated with an HP ALM defect, as indicated in the **Entity Type** field. For a new integration, the status is **Disabled** by default.

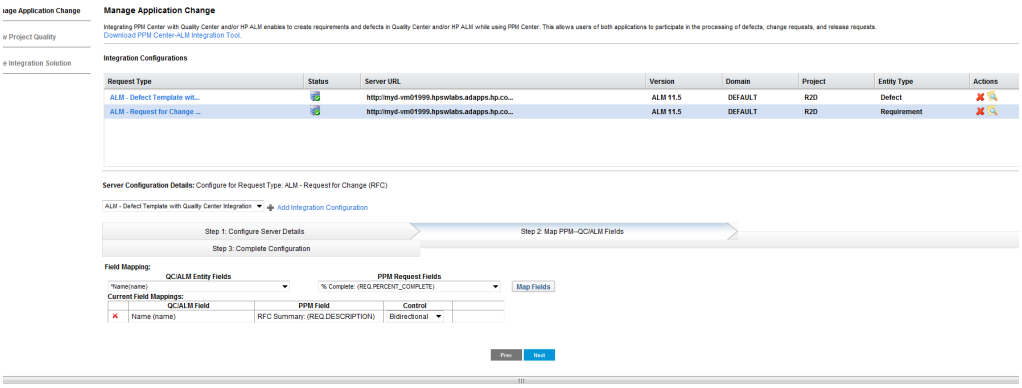


Complete the fields using the following information and click **Next.**

Field Name	Description
***QC/ALM Version**	Select your HP ALM version from the drop-down list of supported versions.
***QC/ALM Server URL**	URL of the HP ALM server in the following format: `http://<ALM_Server_Host>:<Port>/qcbin/` **Note:** HTTPS is supported. Use `https` in the URL as needed.
***QC/ALM Username**	User name used to access HP ALM.
***QC/ALM Password**	Password for the QC/ALM user name.

Field Name	Description
***QC/ALM server time zone**	Time zone for the ALM server. Required to ensure that the integration correctly manages updates between fields mapped as bidirectional between PPM Center requests and associated HP ALM requirements. Default is the time zone for the PPM Server. **Note:** For some of the GMT time zones, only the **Daylight Savings Time Not Used** option is available. Time zone names that include city names are not available due to changes with a third-party product. For example, you may only see the **GMT +9:00 Daylight Savings Time Not Used** option, which means that the **GMT +9:00 (Asia/Yakutsk) Yakutsk Time** option is not available.
***QC/ALM Domain**	Domain on the HP ALM server to use for the integration. **Note:** To retrieve the set of domains, click **Get Domains**.
***QC/ALM Project**	HP ALM project to use for the integration. **Note:** List is populated when QC/ALM Domain is selected.
***Entity Type**	HP ALM entity type to be used for integration—**Requirement**.
Integration Options	Additional options for ALM – Request for Change (RFC) Integration. Location in ALM where requirements are created while integrating with a PPM request. Recommended value for **Default QC/ALM Folder Name** is **Requirements**.

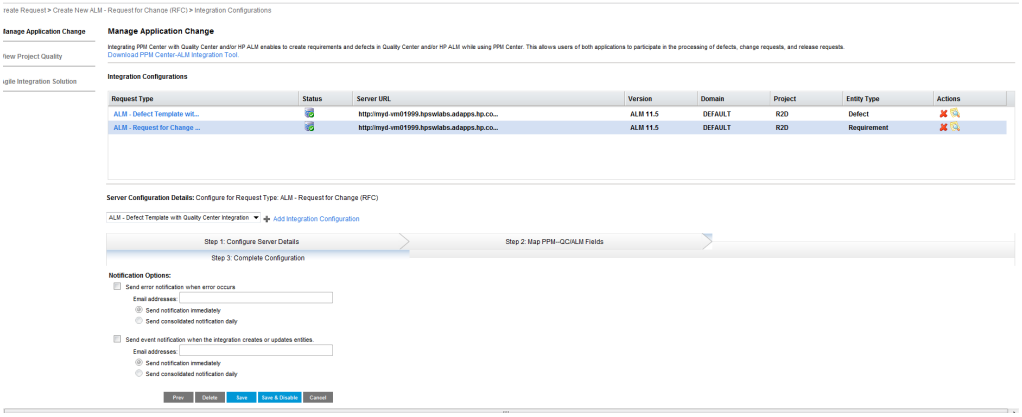
ii. The Configure QC/ALM Integration for Request Type: ALM – Request for Change (RFC) Integration section opens showing **Step 2: Map PPM – ALM Fields**.



Complete the fields using the following information and click **Next.**

Field Name	Description
Field Mapping	Separate lists of unmapped QC/ALM Entity fields and PPM Request fields, followed by a table of the preconfigured Current Field Mappings.

iii. The Configure QC/ALM Integration for Request Type: ALM – Request for Change (RFC) Integration section opens showing **Step 3: Complete Configuration**.



Edit the notification options, if necessary.

Field Name	Description
Notification Options	Options for email notification when integration errors occur, and when integration creates or updates entities

5. Click **Save & Enable**.

Configuring Workflow for Request to Requirement Integration

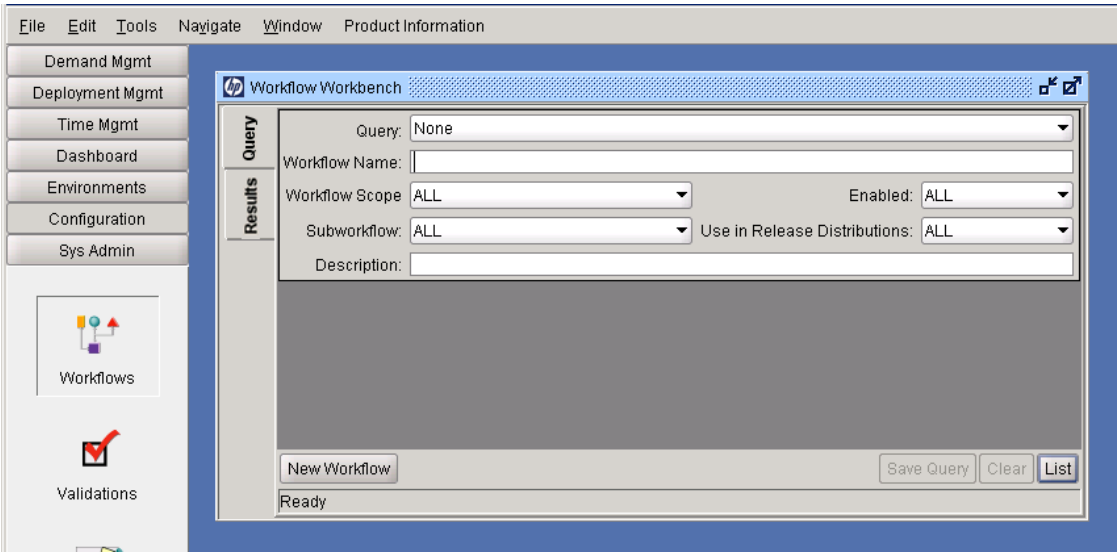
To configure the workflow for the Request to Requirement integration:

1. From the menu bar, select **Open > Administration > Open Workbench**.

   The **PPM Workbench** opens.

2. From the navigation pane, select **Configuration > Workflows**.

   The Workflow Workbench dialog box opens with the **Query** tab selected.



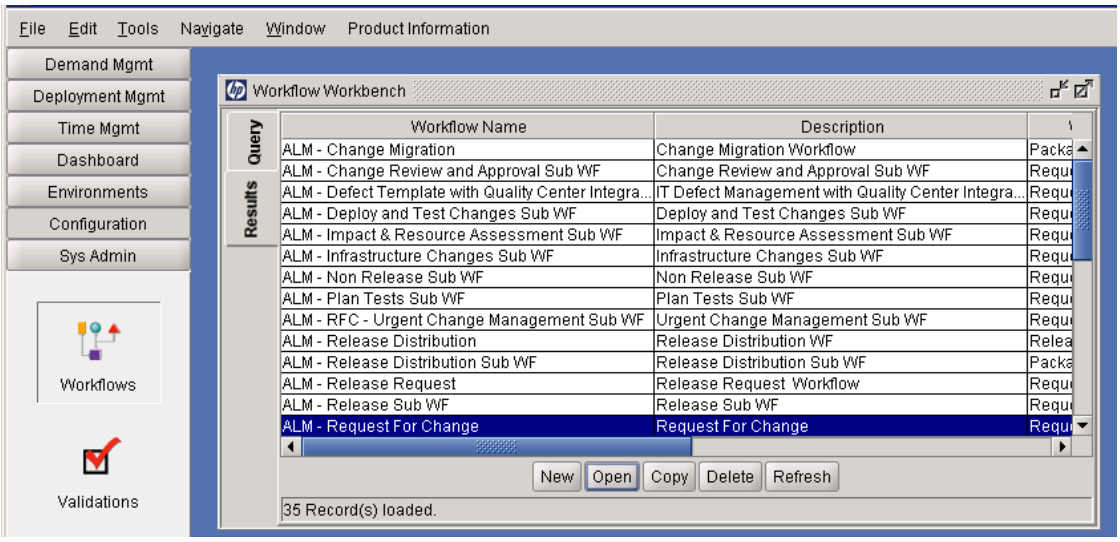
3. Click **List**

.

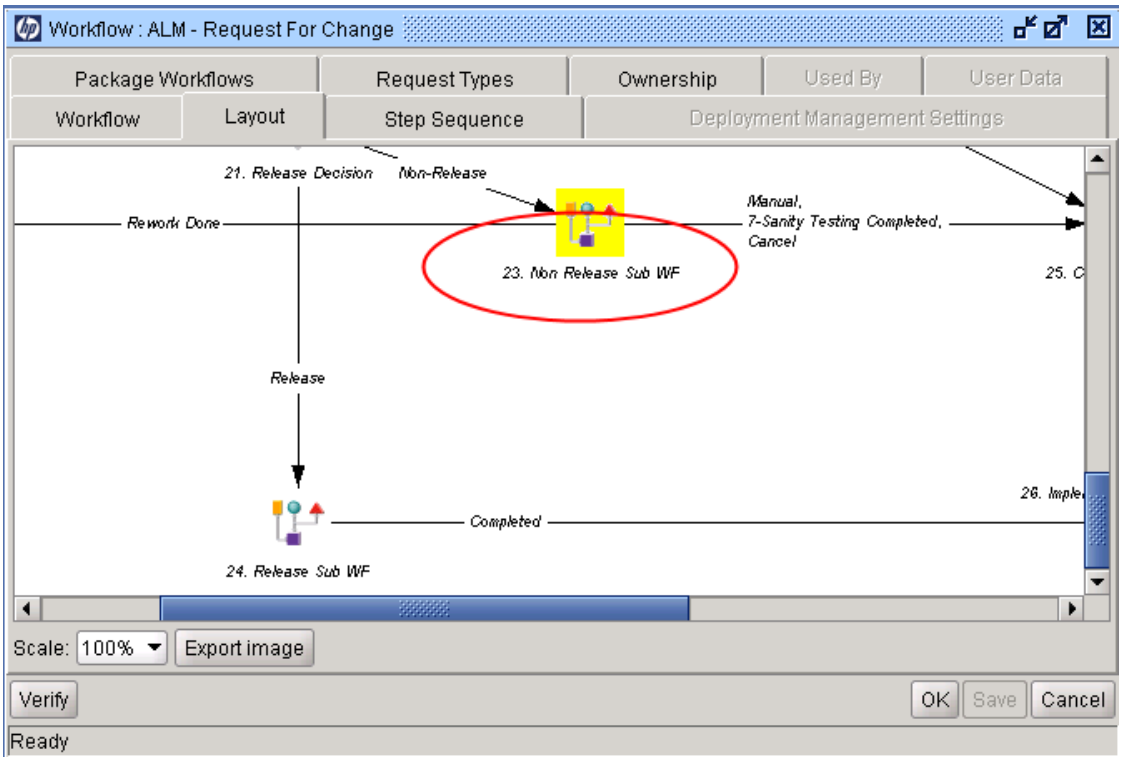
   The **Results** tab opens.

4. Double-click **ALM – Request For Change**.

   The Workflow: ALM – Request for Change dialog box opens with the **Layout** tab selected.



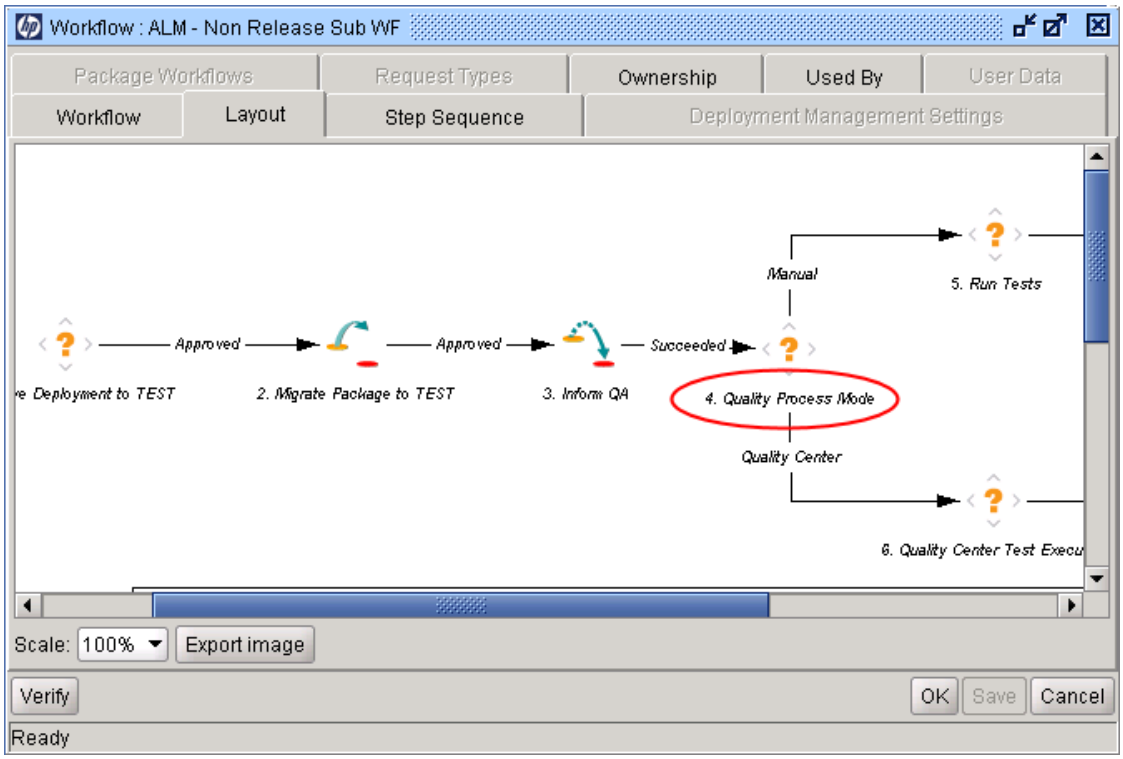
5. Right-click Step 23 **Non Release Sub WF**.



6. Select **Edit Source**.

The Workflow: Non Release Sub WF dialog box opens with the **Layout** tab selected.

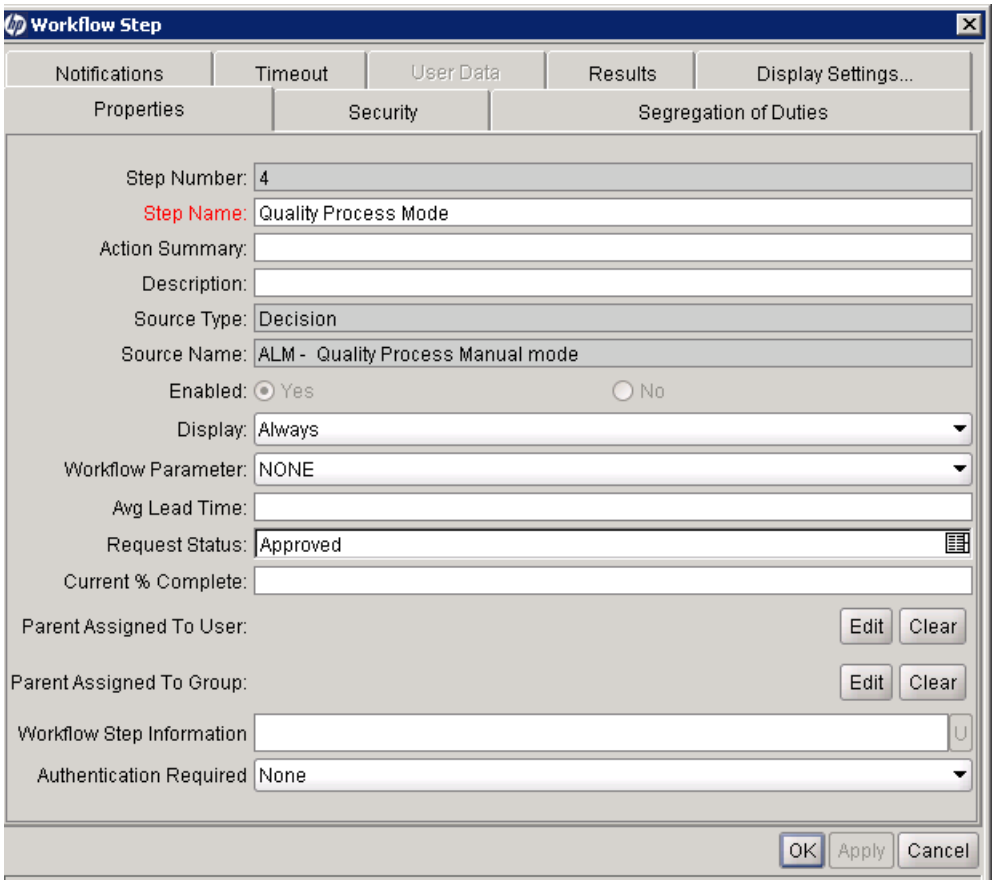
7. Right-click Step 4 **Quality Process Mode**.



8. Select **Edit**.

The Workflow Step dialog box opens with the **Properties** tab selected for Workflow Step 4.

9. Update the Step 4 **Request Status**:



   a. Click the **Selection** icon.

      The Validate dialog box opens.

   b. Select **Approved** and **OK**.

10. In the Workflow Step dialog box, click **OK**.

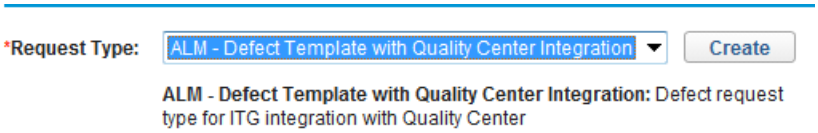
11. In the Workflow: ALM – Request for Change dialog box, click **Save** and close the Workflow Workbench.

Verification

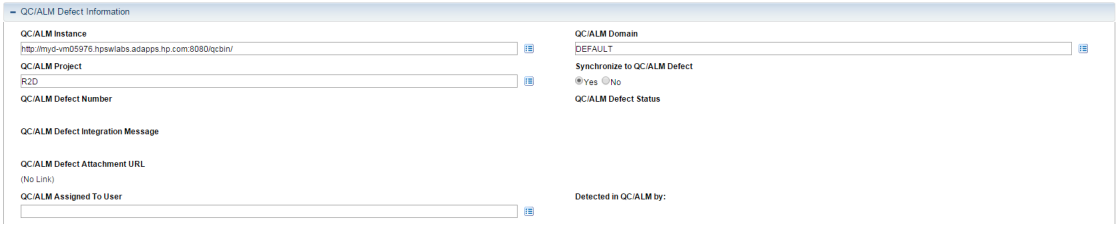
Note: This procedure is to verify that the implementation was done successfully.

To open an ALM defect from a PPM request:

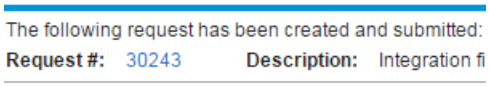
1. In PPM, click **Create > Requests > Other types ...**.
2. In the Request Type window, select **ALM – Defect Template with Quality Center Integration**.



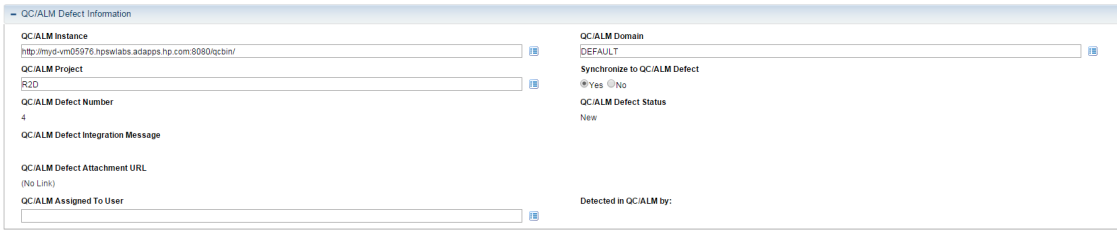
3. Click **Create**.
4. Fill in the mandatory requests fields.
5. Check that the information in the QC/ALM Defect Information pane is correct and that Synchronize to QC/ALM Defect is checked **Yes**.



6. Click **Submit**.
7. In the Request Creation Confirmed window that opened, click the **Request ID**.



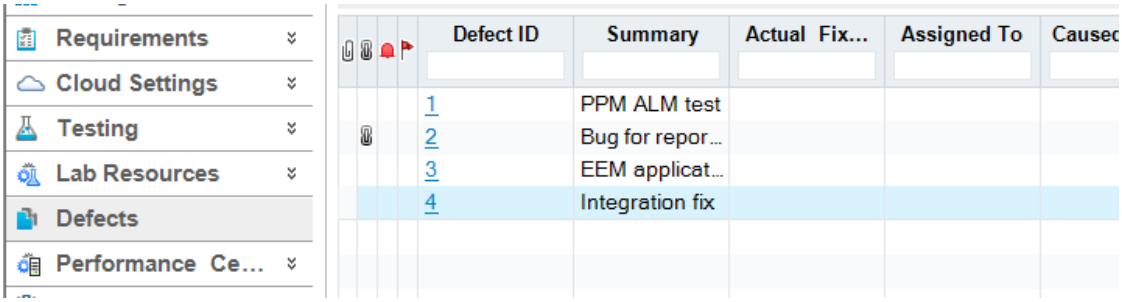
8. In the QC/ALM Defect Information pane, check that QC/ALM Defect Number contains a valid defect number from ALM and that the QC/ALM Defect Status contains the value **New**.



9. Go to the **ALM client**.

10. Open the Defect pane.

11. Search the Defect according to the Defect number in PPM.



Note: To verify opening an ALM requirement from a PPM request, follow the same procedure using the **ALM – Request For Change** request type.

Chapter 5: Viewing ALM Quality Metrics in PPM

This chapter includes:

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Configuring ALM – PPM View Project Quality Integration for PPM Project 73

Configuring ALM – PPM View Project Quality Integration for PPM Task 79

Verification 85

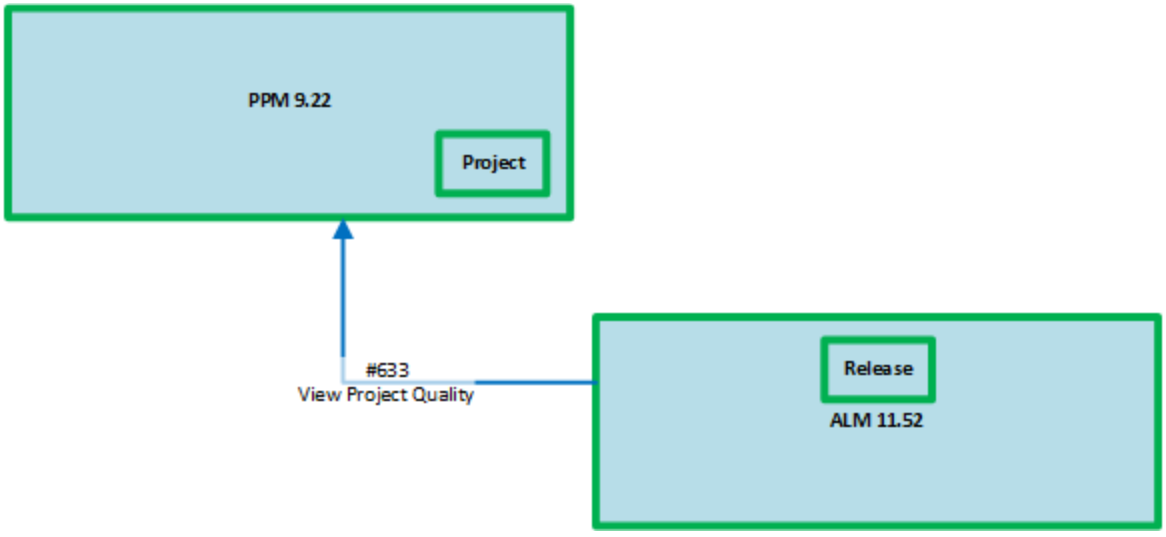
Overview

This chapter describes how to configure the **View Project Quality** integration. The View Project Quality integration solution integrates HP Project and Portfolio Management (PPM) Center with the Releases module of the HP Application Lifecycle Management (ALM) product. The integration allows project management officers, project managers, development managers, and QA managers to have visibility into quality KPIs and ALM scorecards from PPM Center projects, and allows them to optimize the management of project quality.

In the context of the Requirement to Deploy (R2D) Value Stream, this integration is used mainly in complex projects which include multiple application releases.

For more information, see Integration ID#633: View Project Quality (PPM – ALM) in **HP Software Solutions Now**.

The following diagram illustrates the relationship between the products for this integration:



Configuring ALM – PPM View Project Quality Integration for PPM Project

This section contains the following topics:

Overview 73
Configuring ALM – PPM View Project Quality Integration for PPM Project 73

Note: This integration is part of the Requirement to Deploy Value Stream. Step 3 is mandatory whether you are configuring the ALM – PPM View Project Quality Integration for PPM Projects and/or PPM Tasks.

Overview

The integration between a PPM project and ALM release provides quality-related information into the PPM project that can be retrieved from ALM for project stakeholders and participants.

Configuring ALM – PPM View Project Quality Integration for PPM Project

This section contains the following steps:

Step 1: Adding the QC/ALM Release Information Field Group to the Request Header Type Associated with the Request Type 73
Step 2: Adding an ALM Integration Configuration 77
Step 3: Enabling and Scheduling the QC Integration Sync KPI Service 78

Note: This integration is part of the Requirement to Deploy Value Stream. Step 3 is mandatory whether you are configuring the ALM – PPM View Project Quality Integration for PPM Projects and/or PPM Tasks.

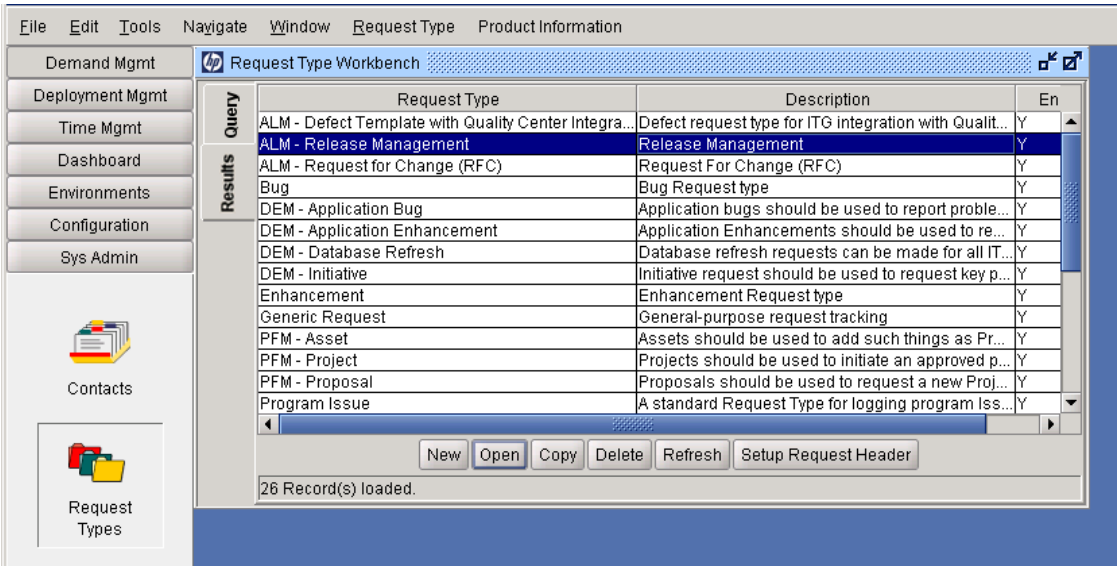
Step 1: Adding the QC/ALM Release Information Field Group to the Request Header Type Associated with the Request Type

1. Log on to PPM Center with administrative privileges.
2. From the menu bar, select **Open > Administration > Open Workbench**.

The **PPM Workbench** opens.

3. From the navigation pane, select **Demand Mgmt > Request Types**.

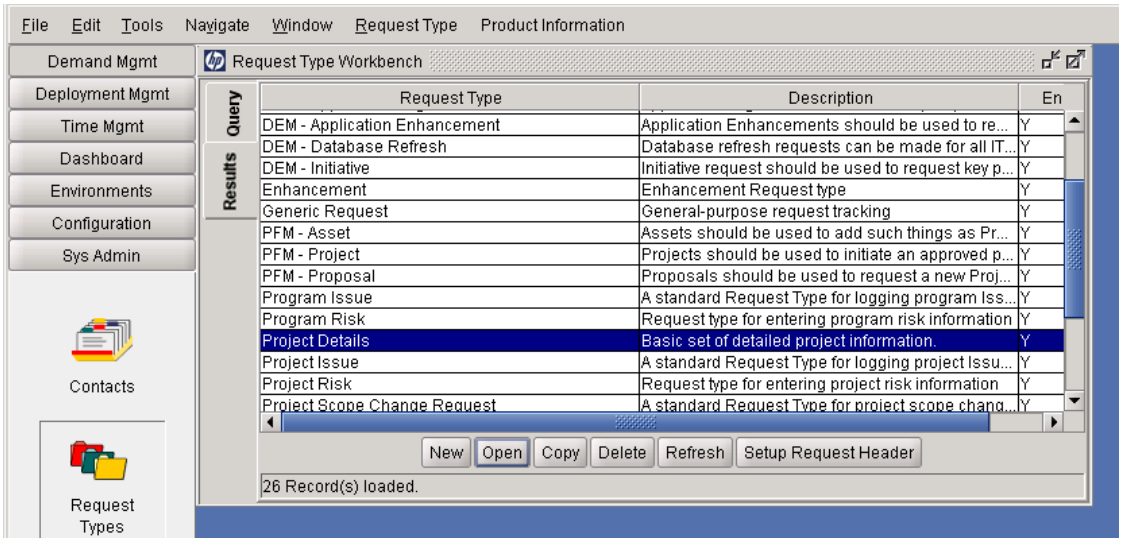
   The **Request Type Workbench** opens.



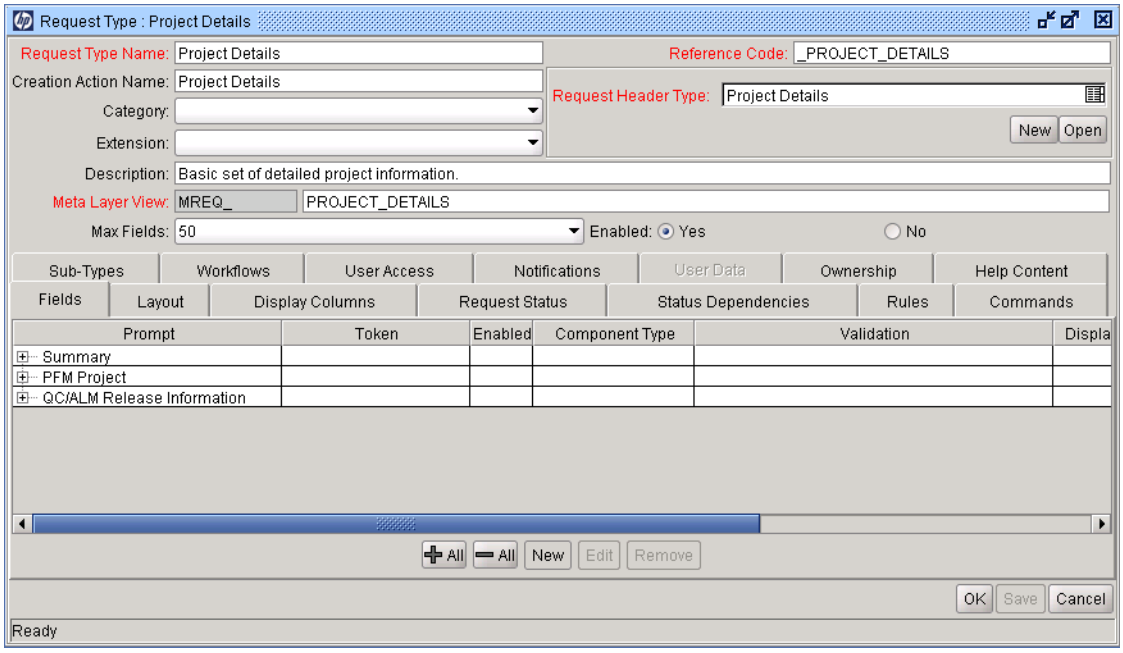
4. In the **Request Type** field, enter **Project Details**.

> **Note:** You can create new project types. Instead of using the system default request types directly, create your own project types with customized project type associated request types.
>
> For details, see Chapter 10, "Integrating PPM Center Projects with HP ALM Releases – View Project Quality" > "Configuring the Integration Solution" > "Configuring Project Types" > "Creating New Project Types with Customized Project Type Associated Request Types" on page 308 in the *HP Project and Portfolio Management Center Solution Integrations Guide*.

5. In the **Results** tab, open the **Project Details** request type.

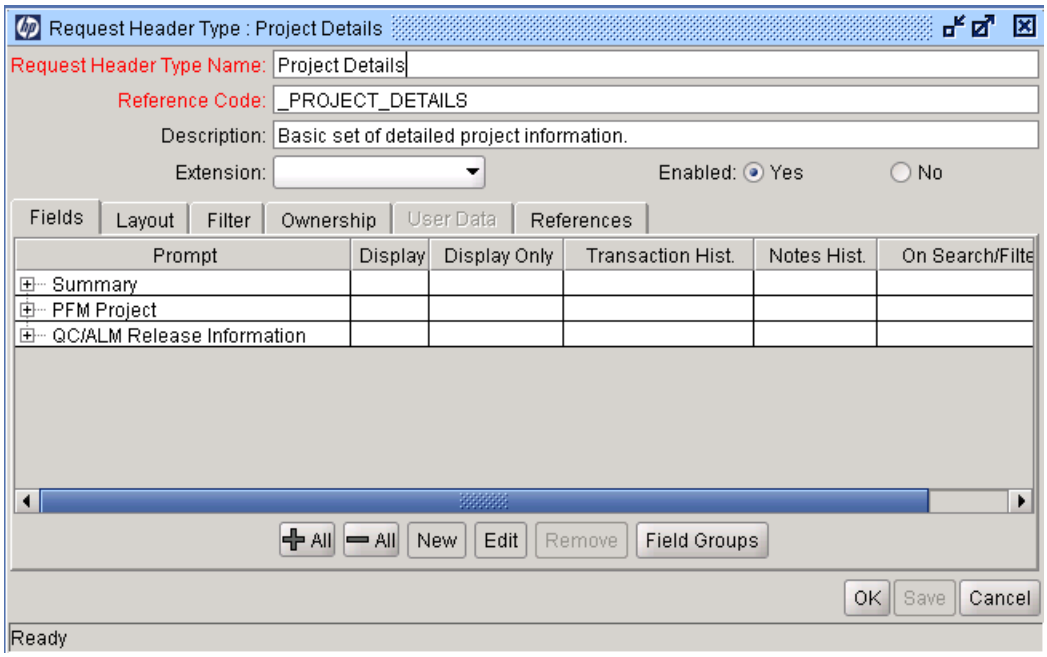


The Request Type: Project Details dialog box opens.



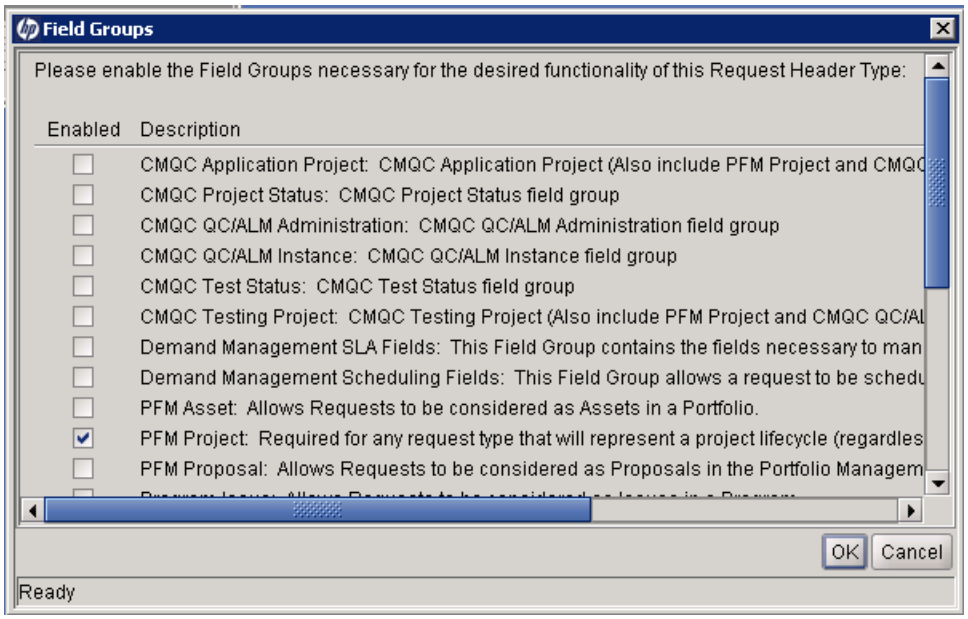
6. In the **Request Header Type** field, click **Open**.

   The Request Header Type dialog box opens.



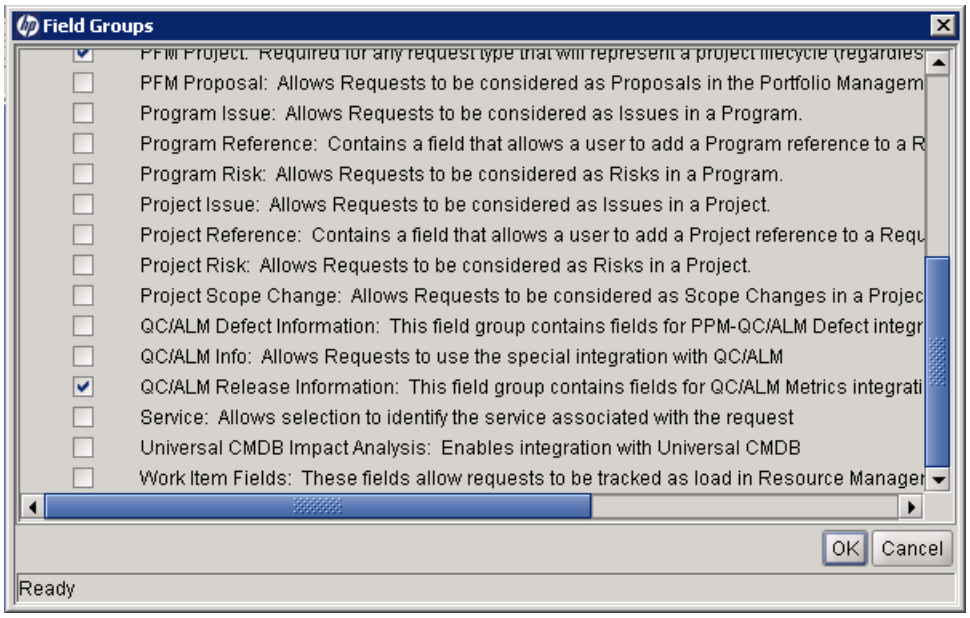
7. Click **Field Groups**.

   The Field Groups dialog box opens.



8. Select the check box for the **QC/ALM Release Information** field group, and click **OK**.

   The **QC/ALM Release Information** field group is added to the request header type.



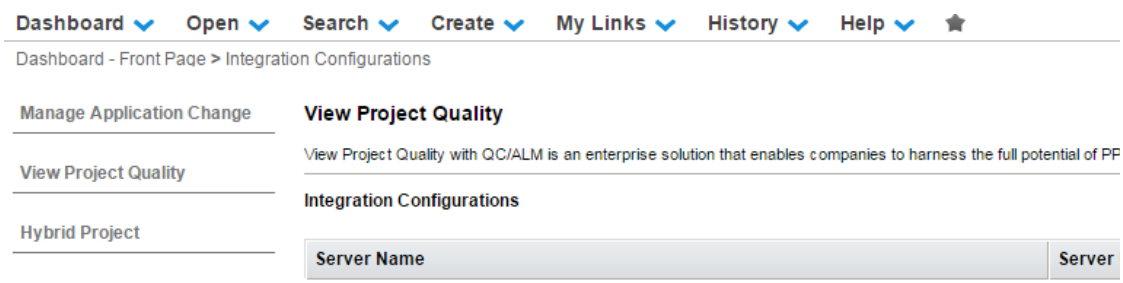
9. Click **OK**.

Step 2: Adding an ALM Integration Configuration

Note: This integration is part of the Requirement to Deploy Value Stream. This step is mandatory whether you are configuring the ALM – PPM View Project Quality Integration for either PPM Projects and/or PPM Tasks. This task only has to be done once.

1. Log on to the PPM Center with administrative privileges.
2. From the menu bar, select **Open > Administration > Integrations**.

   The **Integration Configuration** landing page opens.



3. In the navigation pane, click **View Project Quality**.

   The View Project Quality integration configurations page opens.

4. In the Server Configuration Details section, click **Add Integration Configuration**.

   The Server Configuration Details section appears.

5. Complete the fields described in the following table.

Field (*Required)	Description
***QC/ALM Server Name**	Specify a unique name for the target ALM server **Note:** The server name shall not contain pound sign (#) or space
***QC/ALM Version**	Select ALM server version from the drop-down list of supported versions. Valid values include **ALM 11.00**, **ALM 11.20**, **ALM 11.50**, and **ALM 12.00**.
***QC/ALM Server URL**	URL of the ALM server you want to integrate with. For example, `http://ALM11.company.net:8080/qcbin/`
***QC/ALM Username**	ALM account user name that you use to log on to the ALM server
***QC/ALM Password**	Password of your ALM account
Description	Provide a description for the ALM server

6. Click **Save**.

Step 3: Enabling and Scheduling the QC Integration Sync KPI Service

1. Log on to PPM Center with administrative privileges.
2. From the PPM Center menu bar, select **Open >Administration > Schedule Services**.

   The **Schedule Services** page opens.

3. Click the table row that displays the **QC Integration Sync KPI Service**.

   The editable fields for that service are enabled.

4. To enable the service, from the **Status** list, select **Enabled**.

5. Leave/change the type of expression in the **Schedule Type** list to **Simple**.
6. In the **Schedule** column, leave/change the default value (24 hours).
7. Click **Save**.

> **Note:** Once you save the changes, they take effect immediately. There is no need to restart the PPM Server.

Configuring ALM – PPM View Project Quality Integration for PPM Task

This section contains the following topics:

Overview 79
Configuring ALM – PPM View Project Quality Integration for PPM Task 80

Overview

This integration extension enables project managers to manage multiple HP Application Lifecycle Management (ALM) releases with one HP Project and Portfolio Management (PPM) Center project by integrating project tasks with ALM releases.

The integration of PPM Center tasks with the Releases module of the ALM product allows project management officers, project managers,development managers, and QA managers to have visibility into quality KPIs and ALM scorecards of multiple ALM releases from PPM Center projects. This is accomplished by integrating the PPM Center tasks with ALM releases and allowing them to optimize the management of project quality.

The integration allows project managers to link a task under a project to a specific release managed in ALM. Each PPM Center task is associated with a single release in ALM throughout the task life cycle. This is a one-way one-to-one mapping relationship. This association begins when a project manager maps one task to a specific ALM release.

After the mapping relationship is established, the project managers are able to view quality KPIs and ALM scorecard reports for a release retrieved from ALM. In addition, project managers can also view the overall release hierarchy information of a specific work package from within PPM Center.

Configuring ALM – PPM View Project Quality Integration for PPM Task

This topic contains the following steps:

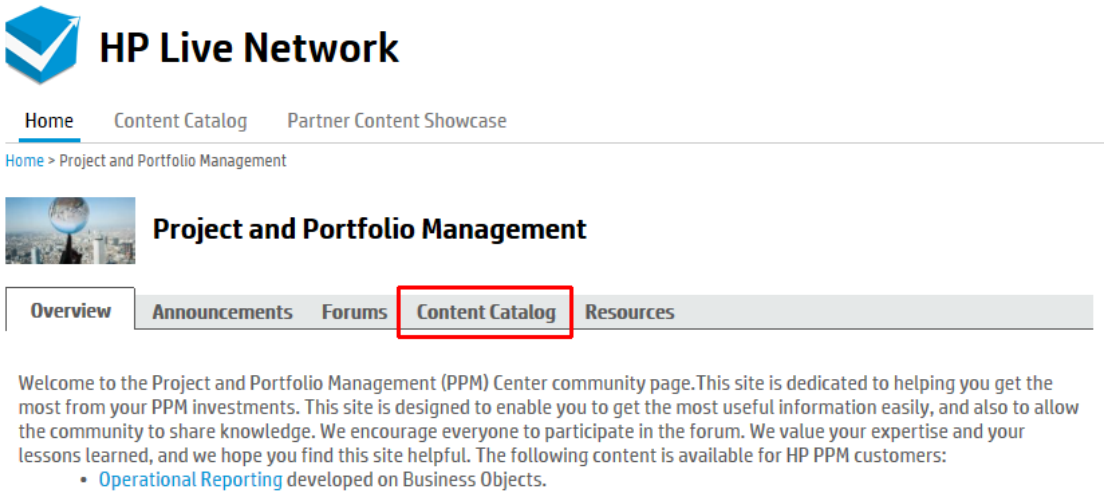
Step 1: Downloading the HP PPM Plug-in for ALM Integration 80
Step 2: Installing the HP PPM Plug-in for ALM Integration 81
Step 3: Adding an ALM Integration Configuration 82
Step 4: Enabling and Scheduling the Project Quality Sync Service 84

Note: This integration is part of the Requirement to Deploy Value Stream. Step 3 is mandatory whether you are configuring the ALM – PPM View Project Quality Integration for PPM Projects and/or PPM Tasks.

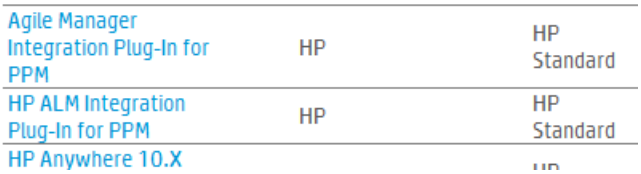
Step 1: Downloading the HP PPM Plug-in for ALM Integration

To integrate PPM Center tasks with HP ALM releases, download and install the free HP ALM Integration Plug-in for PPM. Obtain the plug-in bundles from the HP Live Network PPM Community.

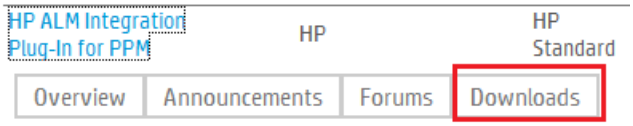
1. On the PPM Community home page, click **Content Catalog**.



2. Click **HP ALM Integration Plug-in for PPM** (where HP is the provider).



3. Click **Downloads**.



The HP ALM Integration Plug-in for PPM – Downloads page opens.

4. Select the **ALM Integration Plug-in for PPM 9.30** folder.

5. Click **ppm-930-ALMPlugin.zip** and download the package.

This package contains the following two bundles:

- **ppm-930-PluginQuality.jar**
- **ppm-930-PluginQualityVPQ.jar**

Step 2: Installing the HP PPM Plug-in for ALM Integration

1. Copy the **ppm-930-ALMPlugin.zip** package to the PPM Server.
2. Log on to the PPM Server via a remote desktop protocol (RDP).
3. Stop the PPM Server.
   a. In the PPM Server, open a command line.
   b. Go to the **<PPM home>\bin** folder.

c. Run the following script: `sh kStop.sh -now -user <admin_user>`

> **Note:** `<admin_user>` is a user with administrative privileges in PPM.

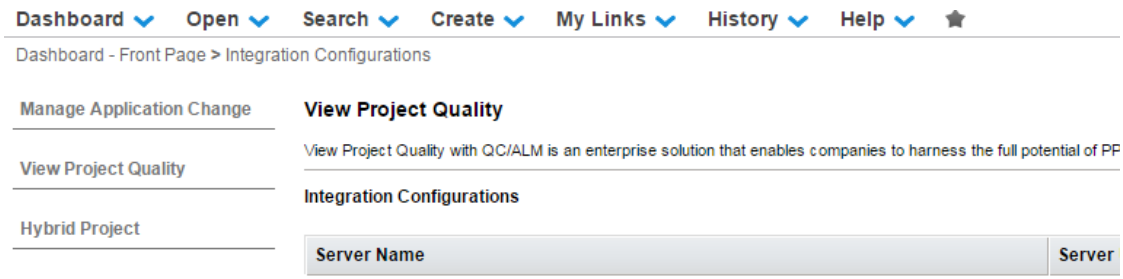
4. Unzip the **ppm-930-ALMPlugin.zip** package and copy the two bundles to the **<PPM_Home>** directory.
5. Deploy the bundles.
   a. Open a command line.
   b. Go to the **<PPM home>\bin** folder.
   c. Run the following script: `sh ./kDeploy.sh -i PluginQuality`
   d. Run the following script: `sh ./kDeploy.sh -i PluginQualityVPQ`
6. After deploying the two bundles described in steps 5.c. and 5.d., run the following script: `sh ./kUpdateHtml.sh`
7. Start the PPM server.
   a. Open a command line.
   b. Go to the **<PPM home>\bin** folder.
   c. Run the following script: `sh kStart.sh`

Step 3: Adding an ALM Integration Configuration

> **Note:** This integration is part of the Requirement to Deploy Value Stream. This step is mandatory whether you are configuring the ALM – PPM View Project Quality Integration for either PPM Projects and/or PPM Tasks. This task only has to be done once.

1. Log on to the PPM Center with administrative privileges.
2. From the menu bar, select **Open > Administration > Integrations**.

The **Integration Configuration** landing page opens.



3. In the navigation pane, click **View Project Quality**.

   The View Project Quality integration configurations page opens.

4. In the Server Configuration Details section, click **Add Integration Configuration**.

   The Server Configuration Details section appears.

5. Complete the fields described in the following table.

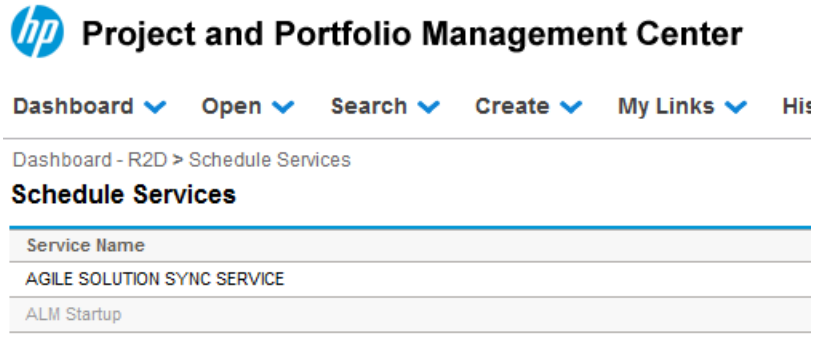
Field (*Required)	Description
***QC/ALM Server Name**	Specify a unique name for the target ALM server **Note:** The server name shall not contain pound sign (#) or space
***QC/ALM Version**	Select ALM server version from the drop-down list of supported versions. Valid values include **ALM 11.00**, **ALM 11.20**, **ALM 11.50**, and **ALM 12.00**.
***QC/ALM Server URL**	URL of the ALM server you want to integrate with. For example, `http://ALM11.company.net:8080/qcbin/`
***QC/ALM Username**	ALM account user name that you use to log on to the ALM server
***QC/ALM Password**	Password of your ALM account
Description	Provide a description for the ALM server

6. Click **Save**.

Step 4: Enabling and Scheduling the Project Quality Sync Service

1. Log on to PPM Center with administrative privileges.
2. From the PPM Center menu bar, select **Open > Administration > Schedule Services**.

   The Schedule Services page opens.



3. Click the table row that displays the **Project Quality Sync Service**.

   The editable fields for that service are enabled.
4. To enable the service, from the Status list, select **Enabled**.
5. Leave/change the type of expression in the **Schedule Type** list to **Simple**.
6. In the **Schedule** column, leave/change the default value of **24 hours**.

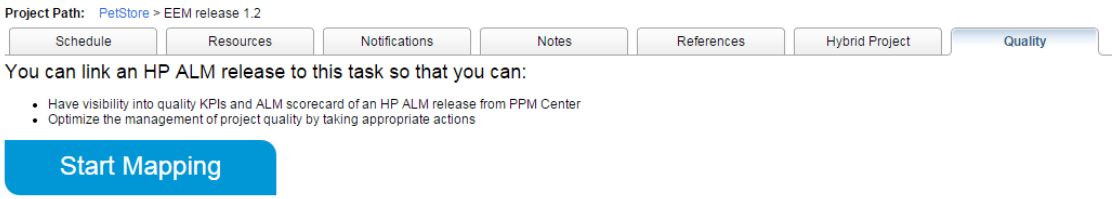
7. Click **Save**.

Verification

Note: This procedure is to verify that the implementation was done successfully.

To relate a PPM task to an ALM release:

1. In PPM, navigate to **Search > Projects** and select your project.
2. In the **Project Summary**, click **Edit Work Plan**.
3. Double click the task you want to relate to an ALM release.
4. Go to the **Quality** tab.
5. Click **Start Mapping**.



6. Select the ALM server you've configured in previous steps, and click **Next**.
7. Enter the user name and password that you use to log on the target ALM server, and click Next.
8. Specify a quality development project that you want to link to:
   a. Choose an ALM **domain**.
   b. Choose an ALM **project**.
   c. Choose an ALM **release**.
9. Click **Confirm**.
10. In the confirmation step, click **Done**.

11. Check the **Quality** tab the following day to confirm that the data was updated from the ALM release.

> **Note:** Since we scheduled the Sync Service Schedule to run every 24 hours, we can only verify the integration the following day. You can change that, thus allowing the integration verification to run faster.

Chapter 6: Viewing Source Code and Build Data in ALM via ALI

This chapter includes:

Overview 87

Prerequisites 88

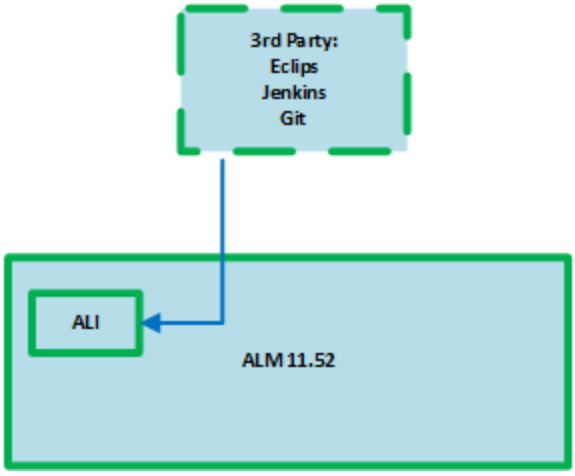
Retrieving and Displaying Build Information 88

Overview

This integration enables HP Application Lifecycle Management (ALM) to connect to a customer's source code management system (SCM) and build systems. This is facilitated by the HP Application Lifecycle Intelligence (ALI) component. For the latest version of the ALI plug-in and accompanying documentation, see HP Application Lifecycle Intelligence on HP Live Network.

In the context of the Requirement to Deploy (R2D) Value Stream, this integration enables the traceability between a defined requirement (in ALM) to a set of source code changes (done in the Source Code Management tool of the customer's choice) and the build which contains this set of source code changes.

The following diagram illustrates the relationship between the products for this integration:



Prerequisites

The following products must be installed:

- ALM is installed.
- At least one ALM project with:
  - ALM Dev Extension
  - Application Lifecycle Intelligence 2.6 (or higher)
  - ALM Lab Extension for functional and performance testing

Note: HP ALI supports several common Source Code Management (SCM) and Build Management solutions. For detailed instructions, refer to the ALI documentation on the HP Software Product Manuals Web site. The instructions provided here are specific for using Git as SCM and Jenkins as Build Management.

Retrieving and Displaying Build Information

This section contains the following topics:

Installing Hudson/Jenkins Plug-in 88
Configuring Hudson/Jenkins Plug-in 90
Integrating with the Git Source Code Management System 93

Installing Hudson/Jenkins Plug-in

According to the instructions in HP Live Network (HPLN), download the ALI bundle from HPLN at https://hpln.hp.com/group/application-lifecycle-intelligence. The ALI bundle version depends upon your ALM version.

From the ALI bundle at `agents\buildintegration\hudson\`, install the HP ALI Hudson/Jenkins plug-in. This plug-in supports both the Hudson and Jenkins systems.

To install the HP ALI Hudson/Jenkins plug-in:

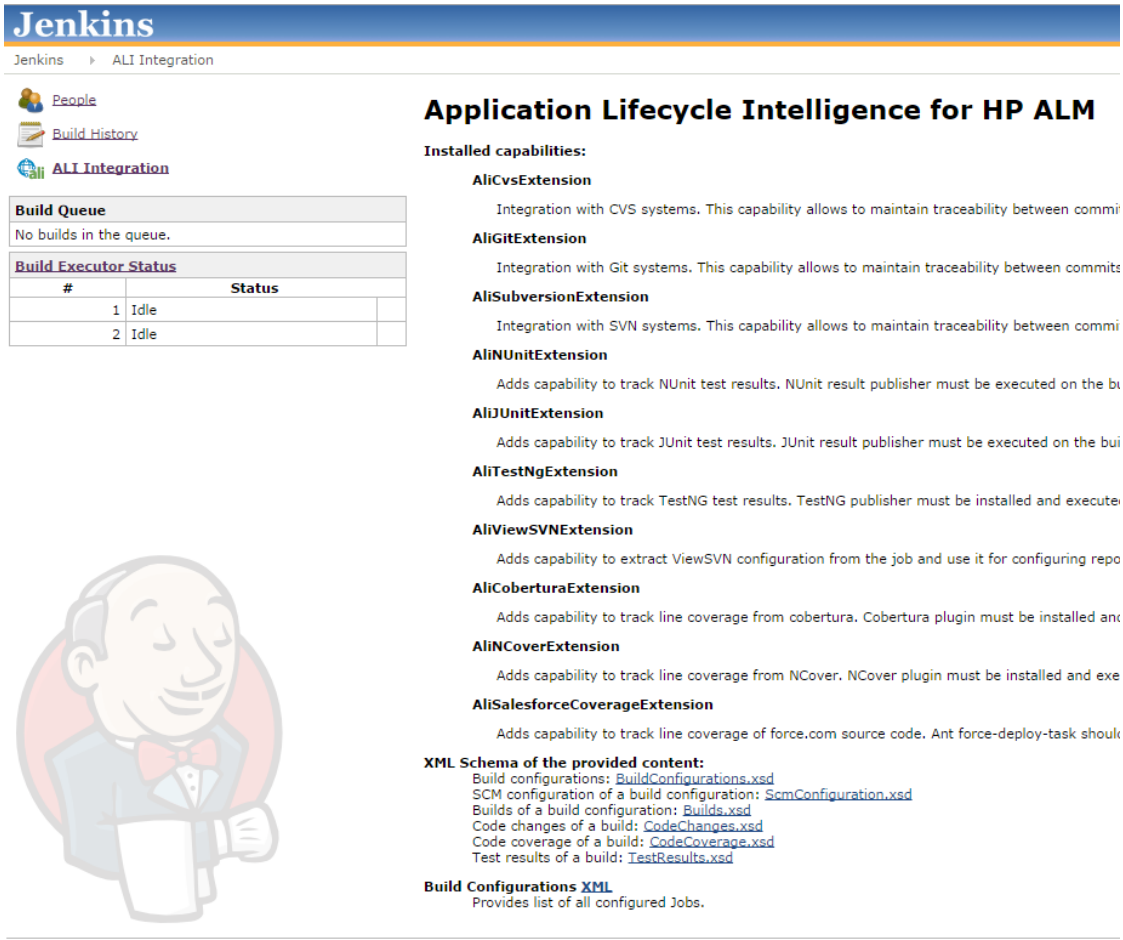
1. From the Hudson/Jenkins home page, open the Plug-in Manager and click the **Advanced** tab.
2. In the Upload Plug-in section, browse to `ali-hudson-plugin.hpi` located in the ALI bundle, and

click **upload**.

> **Note:** If the project source code built by Jenkins is stored in Git, first download and install the Jenkins Git plug-in from Jenkins and then install the `alihudson-git-plugin.hpi` and the base `ali-hudson-plugin.hpi`.

3. After uploading the plug-ins, restart the Hudson/Jenkins server to enforce the changes.
4. Confirm that the installed plug-ins are listed in the **Installed** tab in the Plug-in Manager.
5. Confirm that the **ALI Integration** link is visible in the Jenkins menu on the left side of the screen.

6. Click the **ALI Integration** link to display the capabilities provided by the Hudson/Jenkins plug-in. The Jenkins and Git plug-in appear as follows:



Note: For more information, see the latest *HP Application Lifecycle Intelligence (ALI) User Guide*.

Configuring Hudson/Jenkins Plug-in

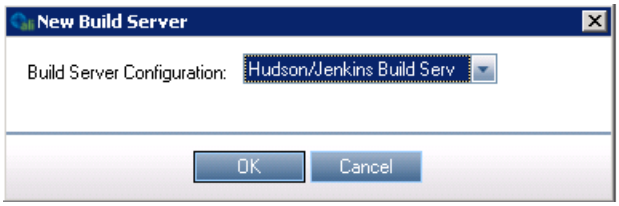
To configure the ALI-related settings in the Jenkins build server:

1. Navigate to **Jenkins > Manage Jenkins > Configure System** and scroll down to ALI-related settings.

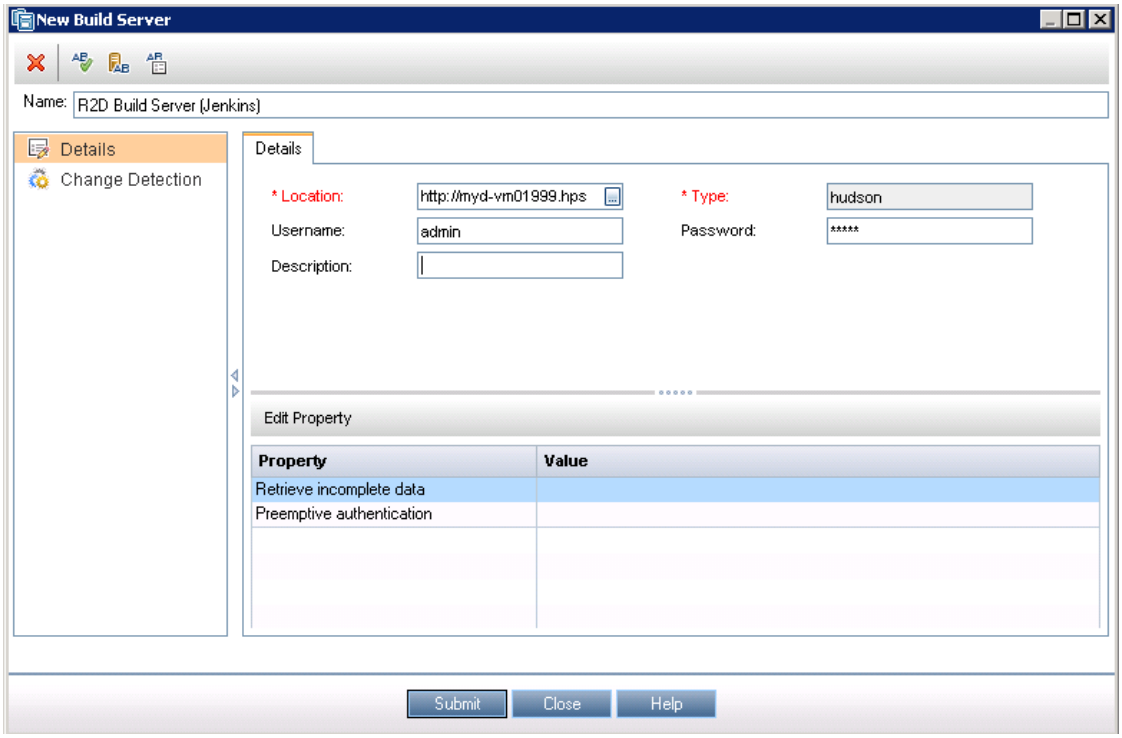
2. Provide default settings in order to be able to alter the configuration for individual build jobs. The default settings should include the ALM URL, domain and project names, ALM user credentials, and the name of the build server as defined in ALM configuration.

To set up the name of the build server in ALM:

1. Log on to the ALM project with administrator credentials.
2. In the **Management** module, select **Build Servers** and click the **New Server** button.

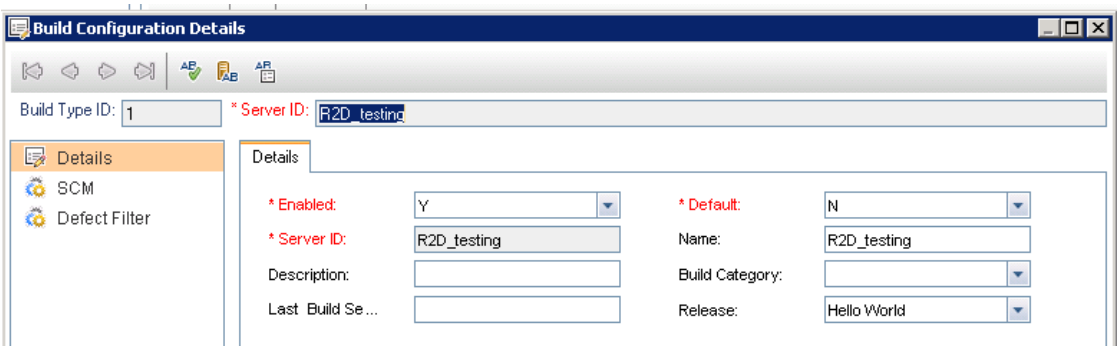


3. Use your own build server details to fill in the details of the build server.

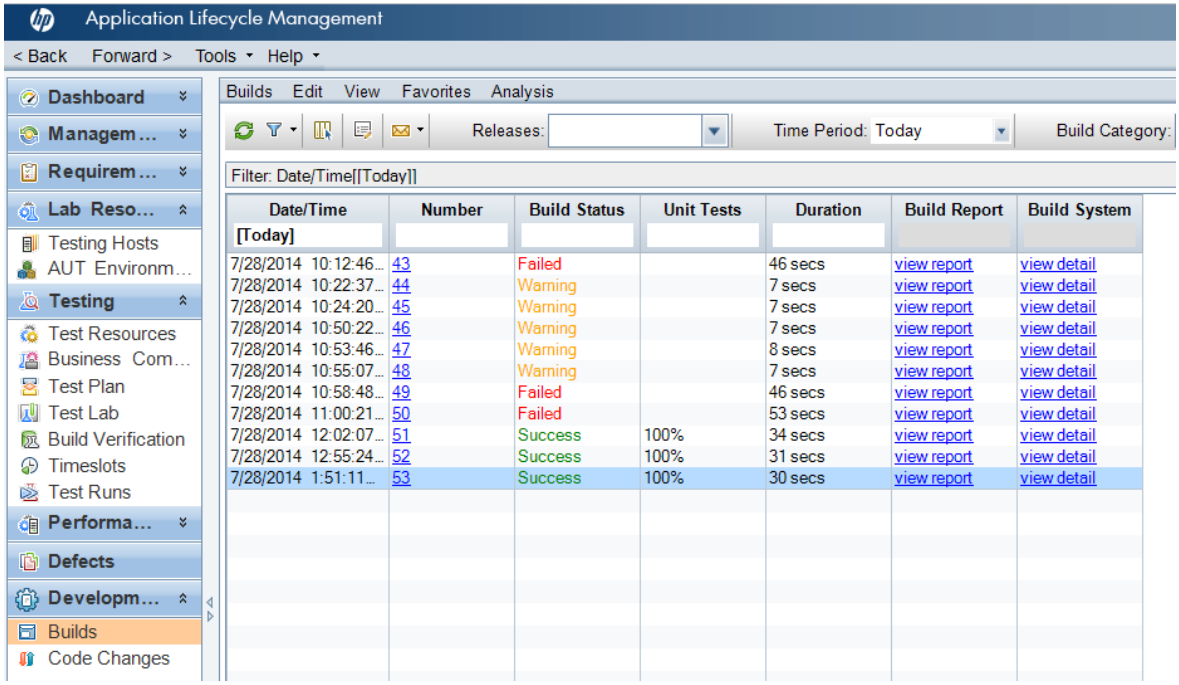


4. In the Jenkins configuration created in Step 2 in the previous section, test the connection to the ALM project and, if the test passes, apply the changes.

5. In the ALM build server configuration, edit the **Build Configurations** tab to include the build jobs and assign them to a specific release.



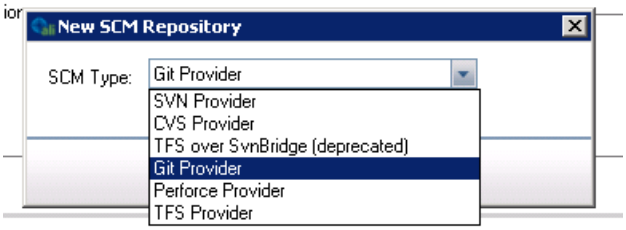
The result of this configuration is the capability of ALM to periodically (default 60 minutes) retrieve build information from build servers and display the build information in the **Builds** module of the **Development** tab.



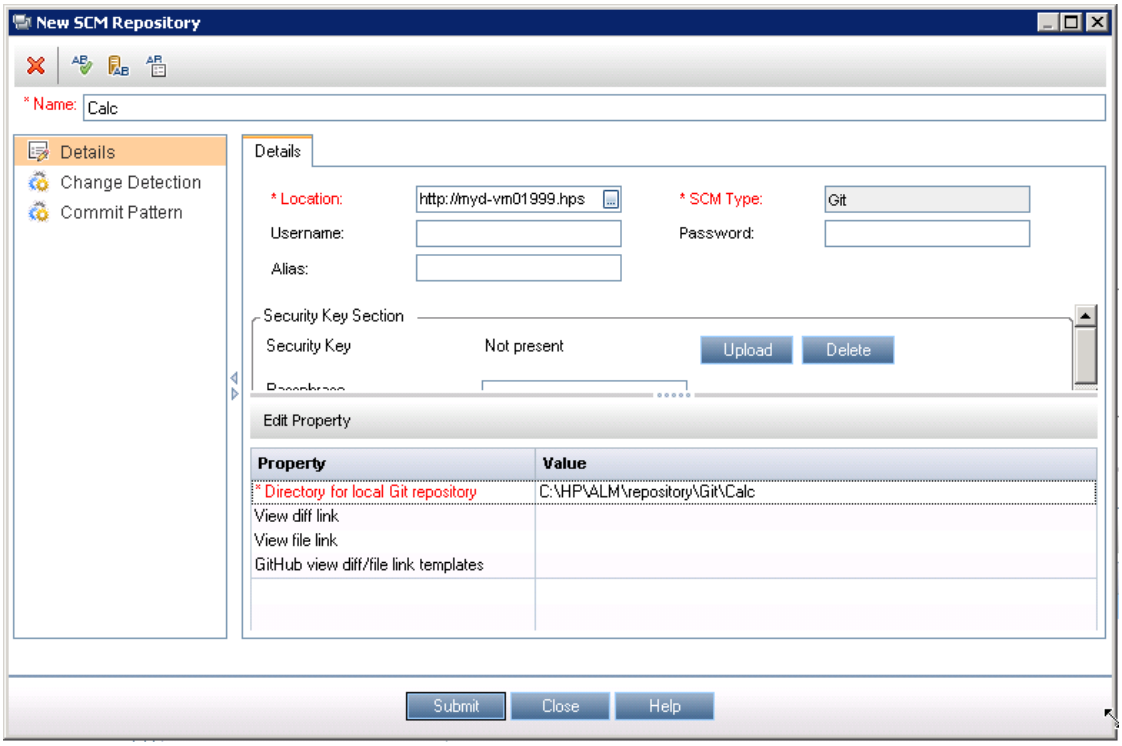
Integrating with the Git Source Code Management System

To integrate with the Git Source Code Management System:

1. In ALM, navigate to **Management > SCM Repositories** and click the **New Repository** button.
2. Select **Git Provider** as the type of Source Code Management (SCM).



3. Fill in the details of the SCM system, including the location (URL of Git server), and a shared folder for local copy of the repository. The path should be located in the ALM repository folder.



4. Modify the **Change Detection** and **Commit Pattern** settings, if necessary.

Note: There are two check boxes—Scheduled Polling and Receive from Agents.

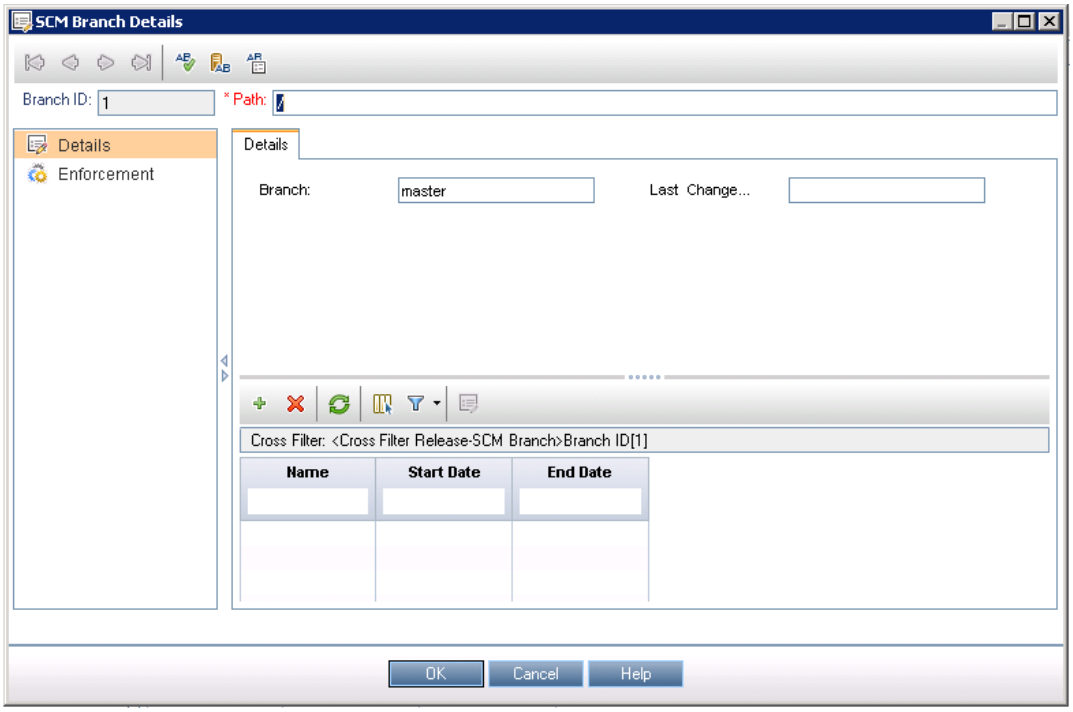
- For **Change Detection**, it is recommended to at least enable the Scheduled Polling.
- For **Commit Pattern**, the default is **Basic** and allows utilization of most features, such as linking code changes to requirements and defects.

5. Edit the newly added SCM repository as follows:

   a. Select the **Branches** tab.

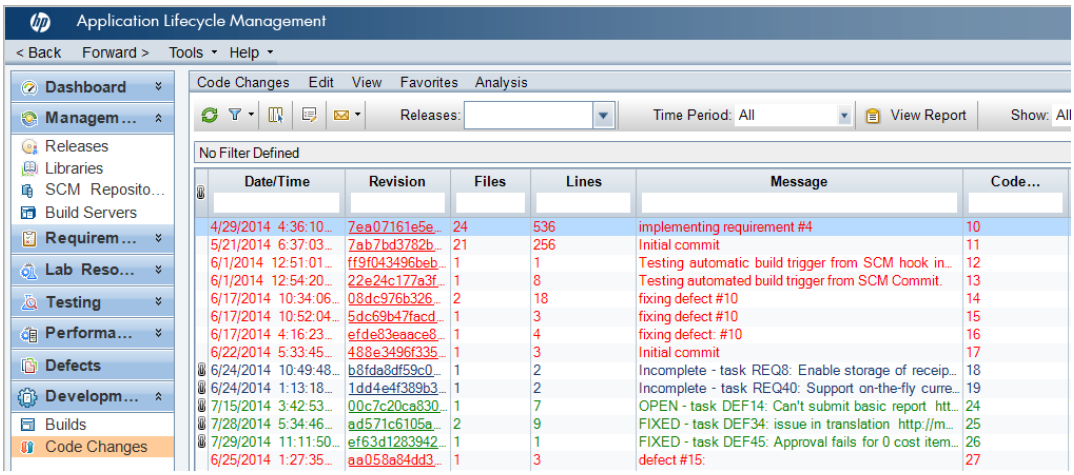
   b. Click the **New SCM Branch** button and edit the details.

Note: For Git SCM, the branch path will usually be "*/*" and the branch name will be something simple like "**master**" (and not "refs/head/master").

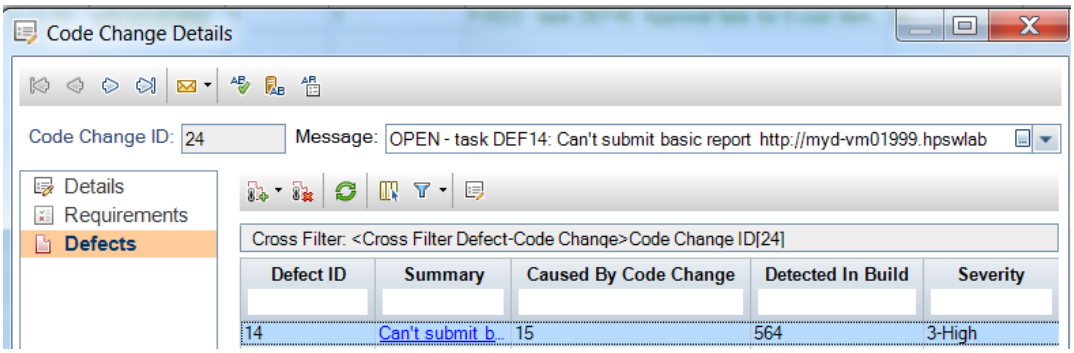


6. To validate successful configuration, commit some code changes to the SCM system.

   a. After scheduled synchronization (default every 60 minutes) is executed, the list of changes can be seen in the ALM Development module under **Code Changes**.



   b. If the commit message matches the rules defined in **Commit Pattern** (for example, fixing defect #14), the code change will be linked to the defect with ID#14 in ALM, shown in the following screen shot.



Chapter 7: Building and Deploying an Application

This chapter includes:

Overview 96

Prerequisites 96

Software Build and Deployment 97

Test Execution 100

Overview

To build an application and then deploy it in a development environment, start with a Jenkins build job, which pulls source code from the Git repository, and then builds it and archives the build artifacts. Those artifacts are then automatically deployed on freshly provisioned servers based on the deployment template stored in Codar. Another Jenkins job uses the details of the deployment to configure an AUT environment in ALM Lab Management and trigger a Build Verification Suite execution.

Thus the process of **Check-in > Build > Deploy > Test** is executed automatically.

Prerequisites

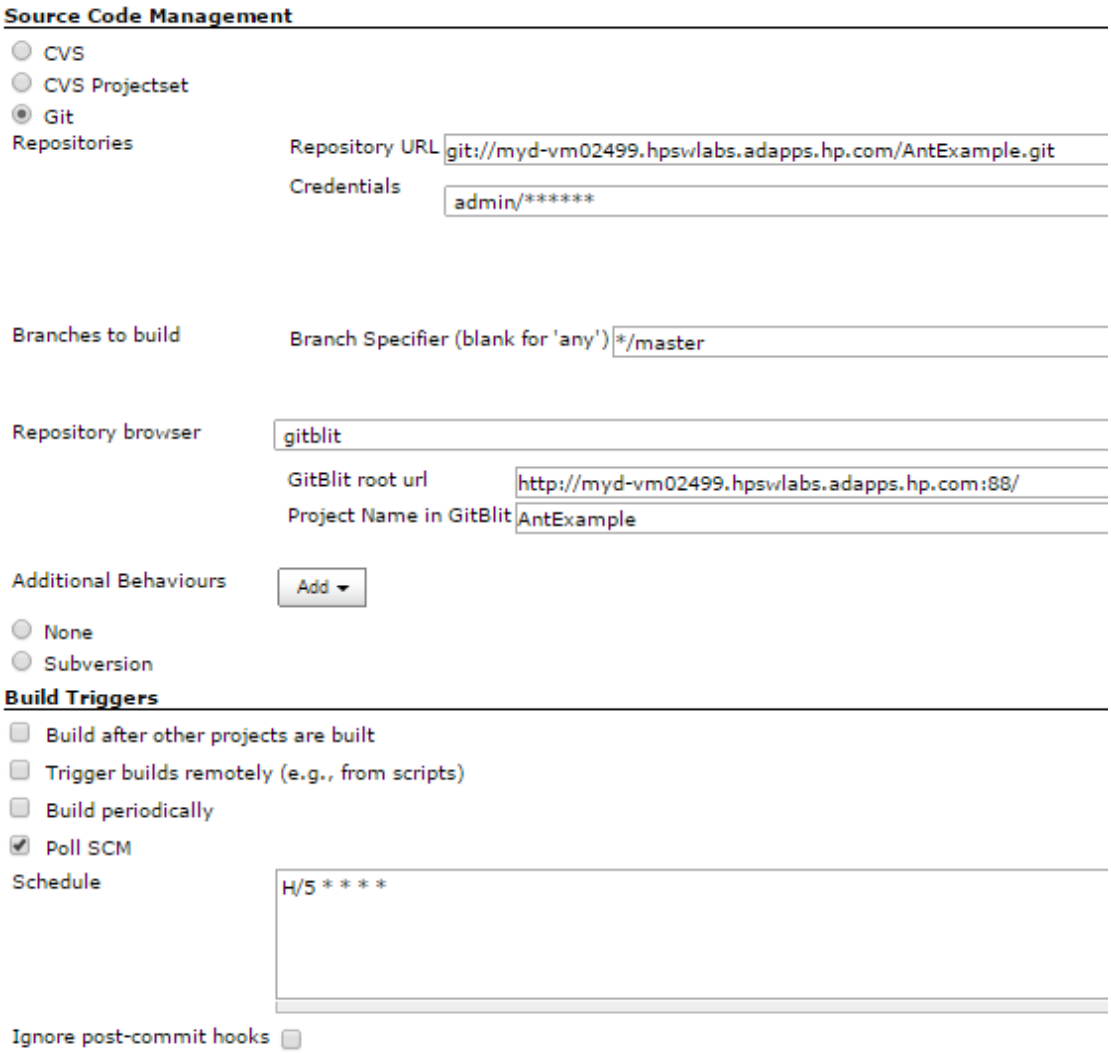
- Build server (in our example, Jenkins) configured to build the software that is being developed
- Codar installed and ready to deploy the application design
- ALM installed and configured to execute automated tests (for example, via an integration with United Functional Testing)

Software Build and Deployment

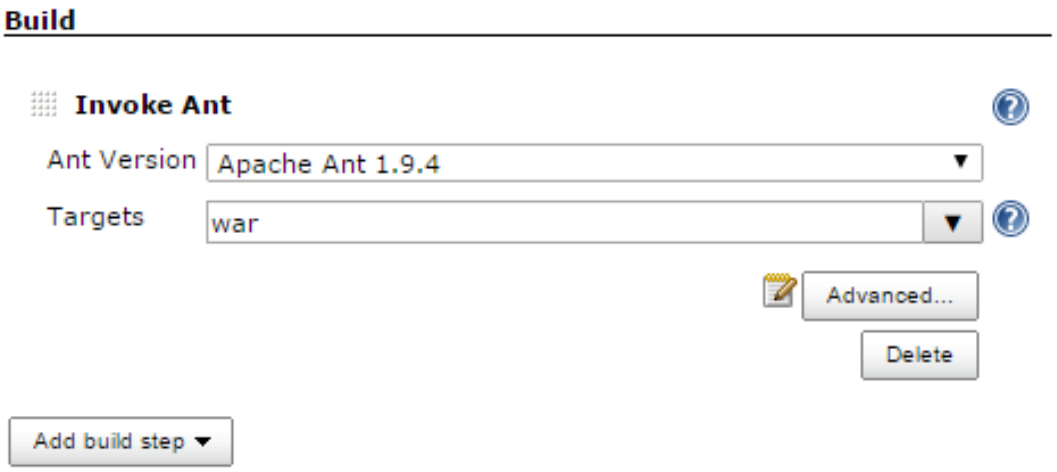
To create a software build and deployment job:

1. Begin with a new Jenkins free-style build job that queries the source code repository (in this example, Git) for changes and, If changes are found, triggers the build process and archives the build artifacts.

   For example,



2. Add actual build step/steps as shown in the following example that uses an Apache Ant target. You can also use Maven, Gradle, or any other build automation tool that is supported by the build server—for instance, Jenkins.



3. Add a post-build step that will trigger automatic deployment of the build artifacts on a newly-provisioned environment.

   To add the post-build action:

   a. Click the **Add post-build action** drop-down arrow and select **HP Helion Codar Plugin** from the list.

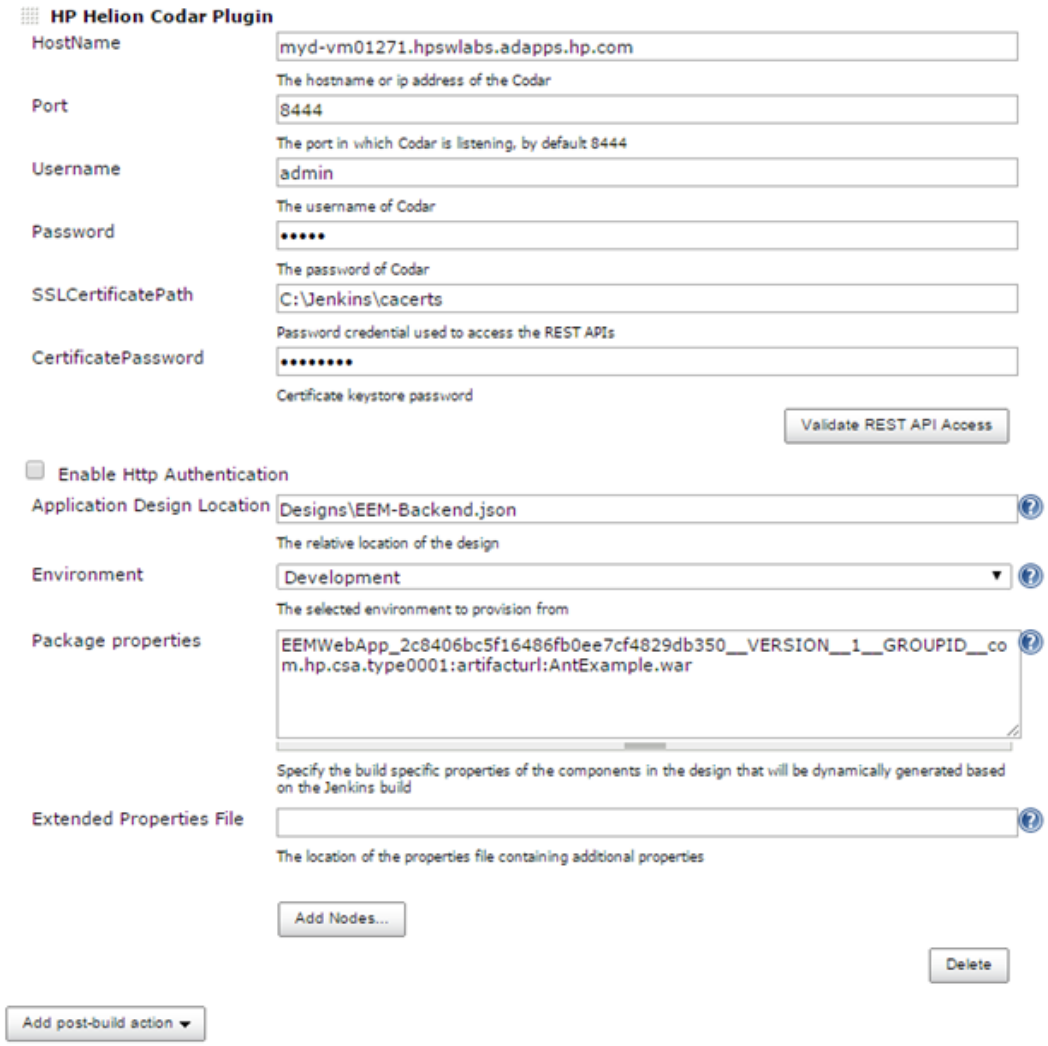
   b. Complete the form with details for the HP Codar instance used, plus the location of the application design exported from Codar.

   > **Note:** This must be done in **.json** format.

   For instructions on how to export the application design, see HP Helion Codar API Quick Start Guide.

   For instructions on installing the HP Helion Codar Jenkins Plug-in, see “Install the Helion Codar Jenkins Plug-in” in the HP Helion Codar Installation and Configuration Guide (https://softwaresupport.hp.com/group/softwaresupport/search-result/-/facetsearch/document/KM01288418).

For instance:



c. Click the **Add Nodes** button and fill in the NodeId field with the ID of the VCenter component from the application design JSON. In our example, it is **VcenterServerType__VERSION__04.20.0000__GROUPID__com.hp.csa.type0002**. This enables the plug-in to store the details of the specific node that was deployed by Codar for test execution as described in "Test Execution" on the next page.

d. Click the **Save** button.

Validation

When these steps are completed successfully, triggering a new build results in the built software package being deployed according to the application deployment template in Codar for the appropriate development environment.

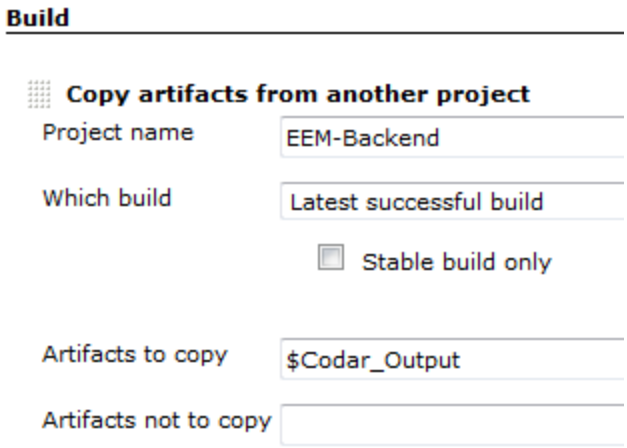
Test Execution

To create a build job that will execute automated tests on software built and deployed in previous steps:

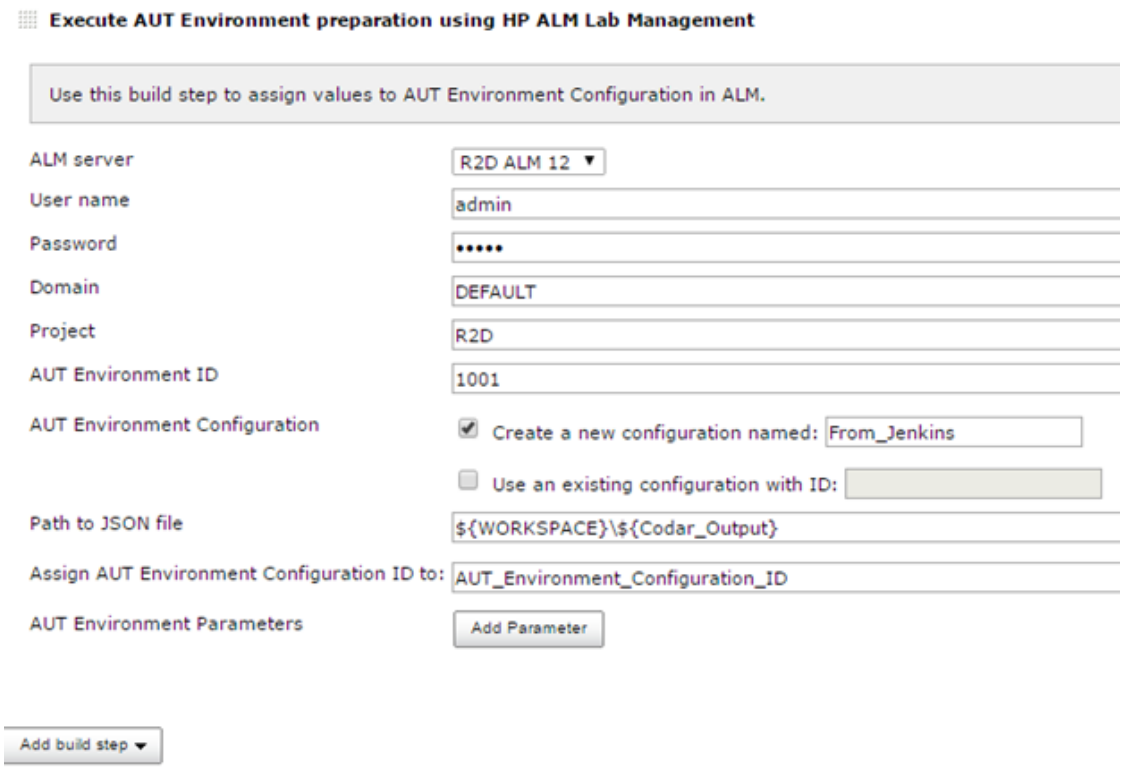
1. Install the Copy Artifact Plugin (https://wiki.jenkins-ci.org/display/JENKINS/Copy+Artifact+Plugin) for Jenkins.
2. Create a new Jenkins freestyle job. It should be parameterized with the following parameters:

Type	Name	Default Value
String	**AUT_Environment_Configuration_ID**	
String	**Codar_Output**	CodarOutput.json
String	**Port**	8080

3. Add the build step **Copy artifacts from another project** and select the project which builds and deploys the developed product.



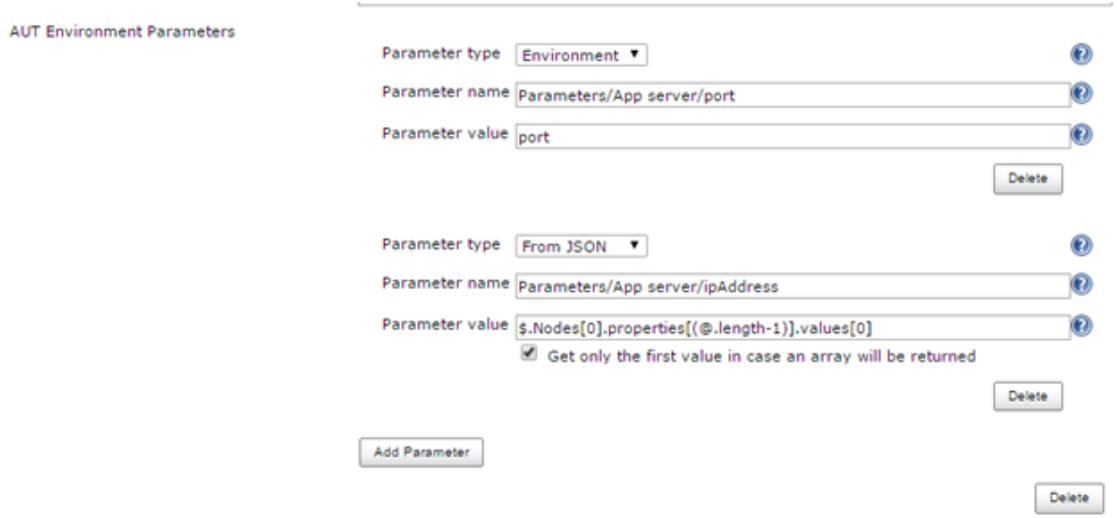
4. Add another build step: **Execute AUT Environment preparation using HP ALM Lab Management**.



Fill in the following fields according to the environment specifics:

Field	Value (example)	Comment
AUT Environment ID	**1001**	AUT environment ID should exist in ALM Lab Management
AUT Environment Configuration	Check box: Create new configuration named—**From_ Jenkins**	Used to discern the AUT configurations created automatically
Path to JSON file	**${WORKSPACE}\${Codar_ Output}**	
Assign EUT Environment Configuration ID to:	**AUT_Environment_ Configuration_ID**	

5. Click the **Add Parameter** button.



Add the following additional parameters:

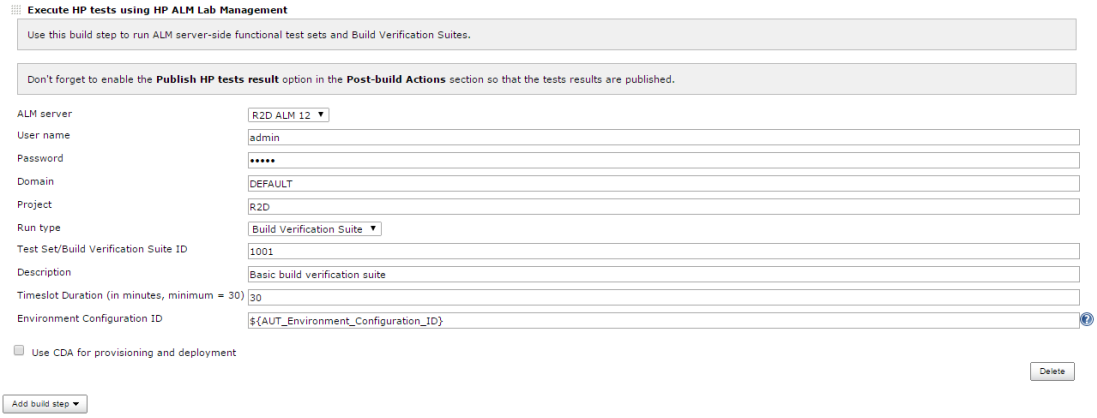
Parameter Type	Parameter Name	Parameter Value
Environment	Parameters/App server/port	Port
From JSON	Parameters/App server/ipAddress	$.Nodes[0].properties[(@.length-1)].values[0]

6. Click the **Save** button to save the changes.

7. Click the **Add build step** drop-down arrow and select **Execute HP tests using HP ALM Lab Management** from the list.

   Provide the details of the appropriate ALM environment, as well as the Test Set/Build Verification Suite ID.

For example:



8. Click the **Add Post-build Actions** drop-down arrow and select **Publish HP tests tesult** from the list.

9. Click **Save** button.

Validation

When these steps are configured correctly, running a new build with the same parameters creates a new Environment Configuration in ALM and triggers the appropriate test set execution.

The overall result is a build triggered upon code change that gets built, is deployed by Codar, and is automatically tested by HP Automation tools.

Chapter 8: Syncing Defects, Releases and Requirements Between ALM and Agile Manager

This chapter includes:

Overview 104

Integrating ALM with Agile Manager 105

Verification 131

Overview

HP Application Lifecycle Management (ALM) Synchronizer enables you to link ALM projects and HP Agile Manager (AgM) workspaces, and synchronize their releases, requirements/user stories, and defects.

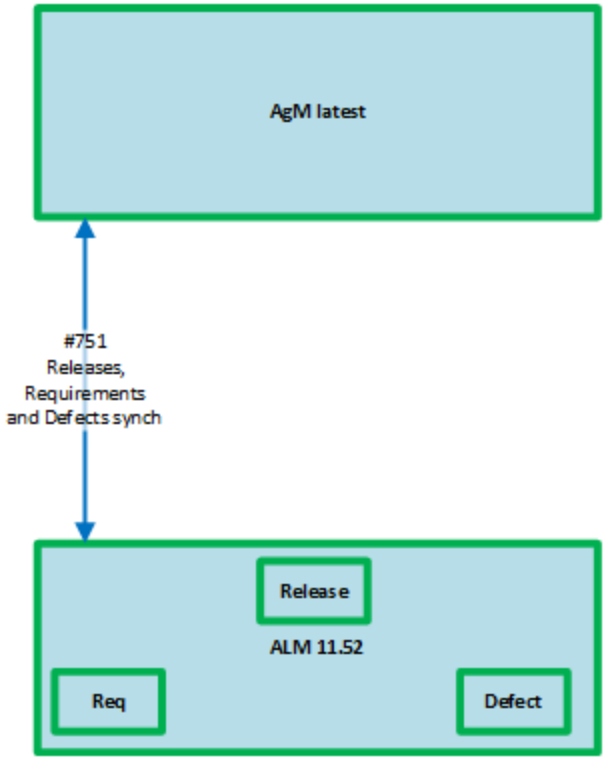
> **Note:** For the integration between ALM and Agile Manager, a specialized version of ALM Synchronizer is used.

In the context of the Requirement to Deploy (R2D) Value Stream, this integration enables the following:

- Provides the testing aspect for user stories managed in Agile Manager.
- Ability to publish an Agile Manager defect to Service Manager users as a **Known Error**, using the current ALM – SM integration to create an SM Problem based on an ALM Defect. For more details, see "Creating an SM Problem from ALM Defect" on page 133.
- Views project quality in PPM for Agile releases managed in Agile Manager. ALM is the central system for managing quality for both ALM and Agile Manager releases.

For more information, see Integration ID#751: Agile Manager Integration with HP ALM (AgM – ALM) in **HP Software Solutions Now**.

The following diagram illustrates the relationship between the products for this integration:



Integrating ALM with Agile Manager

Synchronizer checks ALM and Agile Manager for recent updates in the synchronized items, and updates the other endpoints accordingly. You can configure the direction in which changes are synchronized between the endpoints—from ALM to Agile Manager, from Agile Manager to ALM—or in some cases, both ways.

This section contains the following steps:

Step 1: Installing the Synchronizer Server and Client 106
Step 2: Adapting Your Agile Manager Project 106
Step 3: Adapting Your ALM Project 107
Step 4: Creating a Synchronization Link 110
Step 5: Configuring Link Properties 114

Step 1: Installing the Synchronizer Server and Client

Synchronizer contains the following components, which can reside on either the same or separate machines:

- **Synchronizer Client.** Displays current links and provides a user interface for creating and managing links, and running link tasks. Sends user requests to the Synchronizer server using SOAP/HTTP.
- **Synchronizer Server.** Synchronizes data between ALM and Agile Manager. Manages synchronization and communication between endpoints, and retrieves and stores information in an integrated database.

Note: For the complete installation procedure, see *HP ALM Synchronizer for Agile Manager* or go to your **Agile Manager Help Center** and select **HP ALM Synchronizer for Agile Manager > Install a Synchronizer System**.

Step 2: Adapting Your Agile Manager Project

1. Log on to Agile Manager.
2. Go to **Configuration**.
3. Click **Customization**.
4. In Custom Fields, click **Add Field** and add the following fields:

Apply To	Field Label	Field Type
Detect	ALM_Defect_ID	Numeric
User Story	ALM_End_Date	Date

5. After adding each field, click either **Save and Add Another** or **Save** as required.

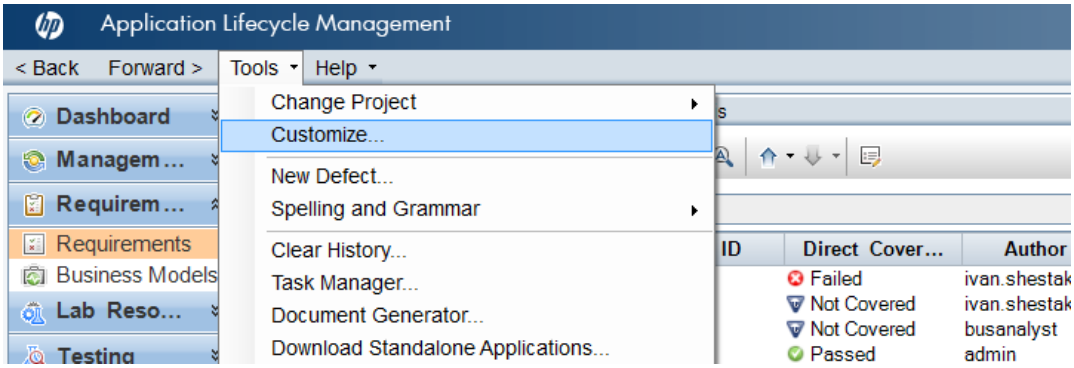
Note: If the additional fields are required from ALM entities to be synchronized with Agile Manager, add them during this stage—or use these instructions to add them later.

Step 3: Adapting Your ALM Project

1. Create new requirement types in ALM.

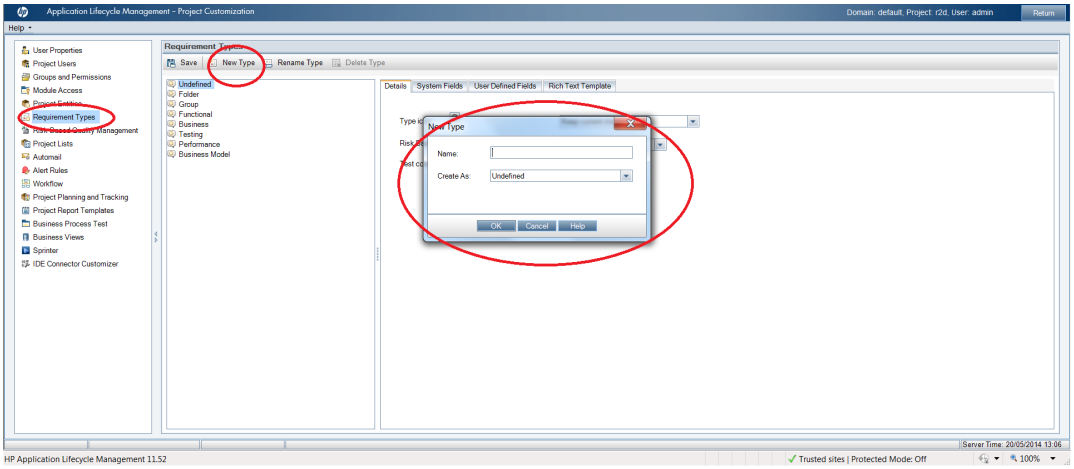
   a. Log on to the ALM project as an administrator.

   b. Click **Tools** > **Customize**.

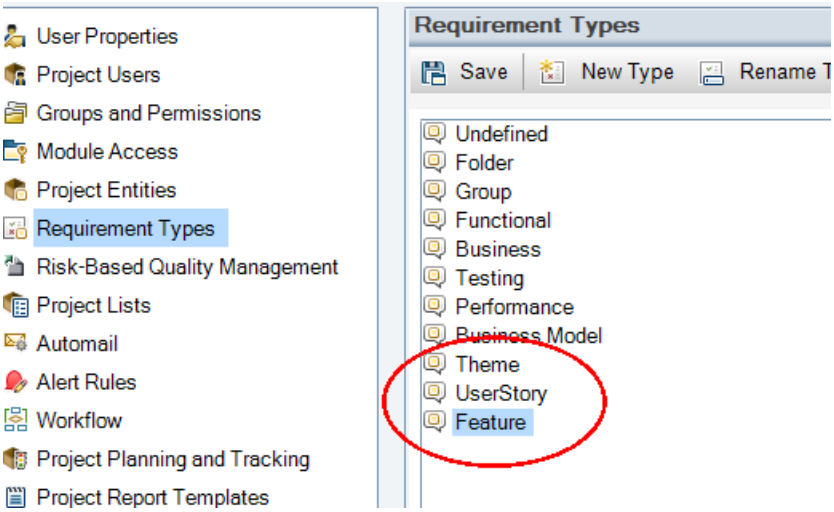


   c. Click **Requirement Types**.

   d. Click **New Type** and add three types of requirements that represent HP Agile Manager themes, features, and user stories.

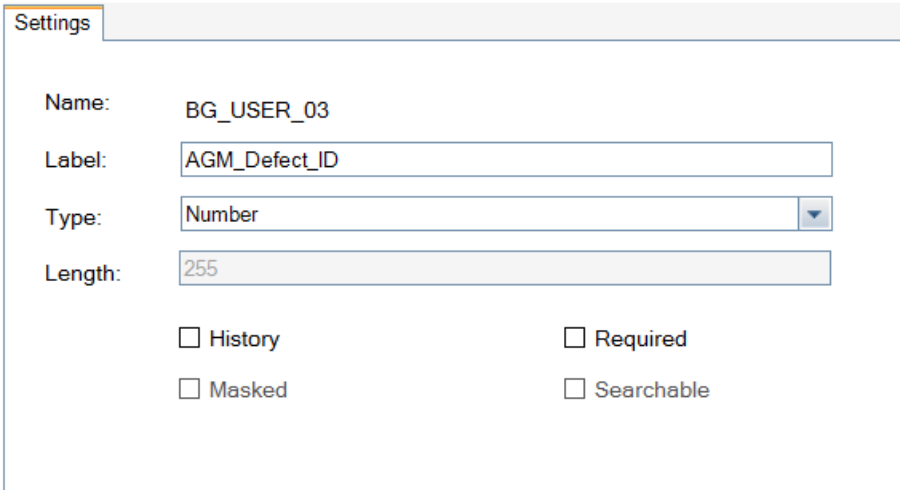


The new Requirement Types should look as follows:



2. Create user defined fields for additional Agile Manager fields.
    a. Log on to ALM project as an administrator.
    b. Click **Tools** > **Customize**.
    c. Click **Project Entities** and create the following fields:
        i. **Defect**.
            A. In the Project Entities window, click **Defect**.
            B. Click **User Fields**.
            C. Click **New Field**.

D. In the Settings window, enter the following information:



E. In the Project Entities window, click **Save**.

ii. **Release.**

A. In Project Entities window, click **Release**.

B. Click **User Fields**.

C. Click **New Field**.

D. In the Settings window, enter the following information:

Label	AGM_End_Date
Type	Date

E. In the Project Entities window, click **Save**.

iii. **Requirement.**

A. In Project Entities window, click **Requirement**.

B. Click **User Fields**.

C. Click **New Field**.

D. In the Settings window, enter the following information:

Label	AGM_Author
Type	User List

E. Click **New Field**.

F. In the Settings window, enter the following information:

Label	AGM_Req_ID
Type	Number

G. Click **New Field**.

H. In the Settings window, enter the following information:

Label	FeatureStoryPoints
Type	Number

I. In the Project Entities window, click **Save**.

d. In the Project Entities window, click **Save**.

Step 4: Creating a Synchronization Link

Synchronization is defined by links, which you create and manage in the HP ALM Synchronizer Client.

Links are created between a pair of endpoints—namely an instance of ALM and an instance of Agile Manager. Links run tasks to synchronize records between the endpoints.

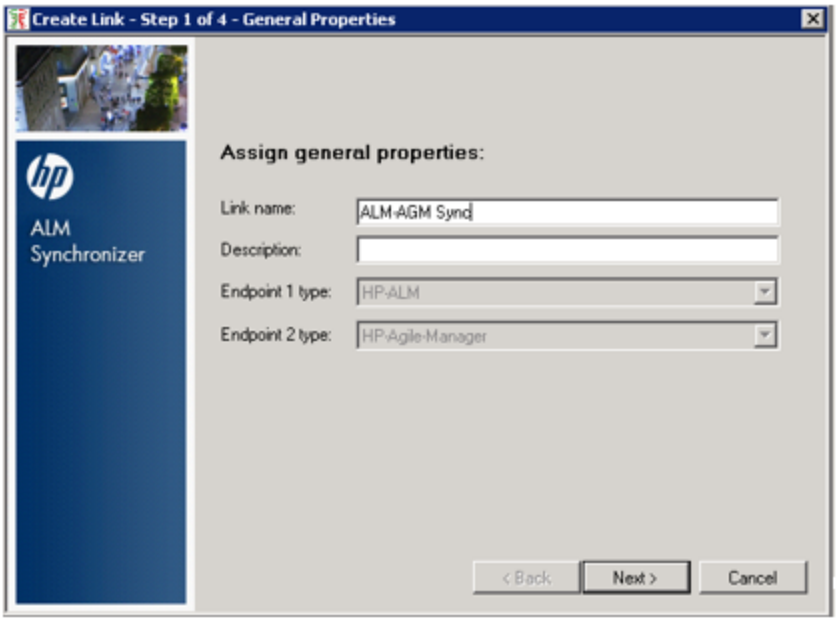
Each link defines the types of records that are synchronized, how often, and under what circumstances. The entity type being synchronized in a specific link determines the fields that you can map from each endpoint.

Note: A link must be created for each of the three entity types—releases, requirements/user stories, or defects.

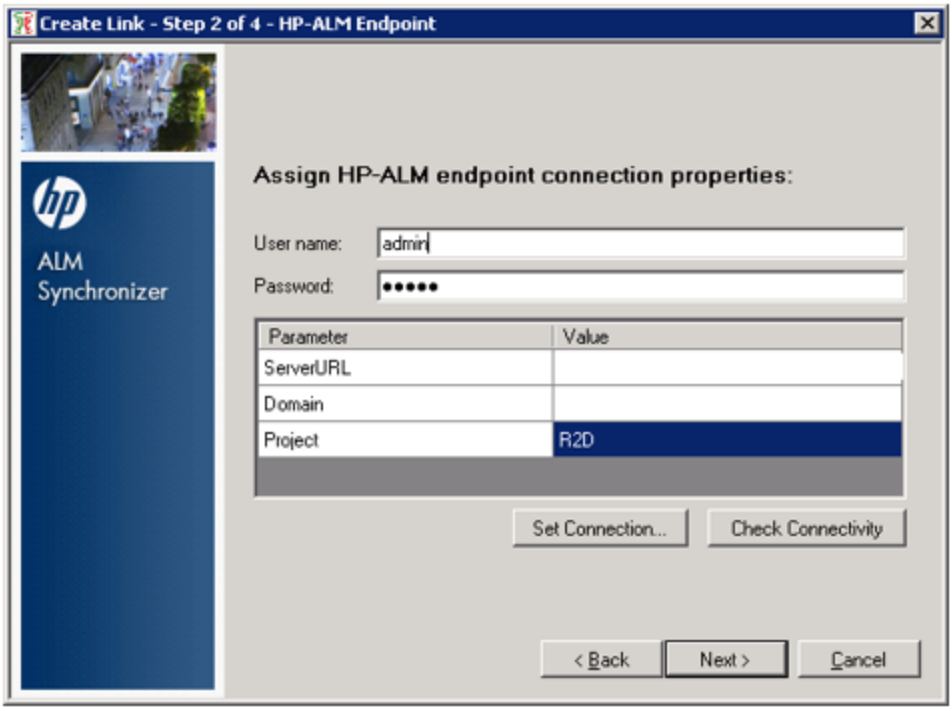
1. Open **HP ALM Synchronizer Client**.
2. Log on to HP ALM Synchronizer Client as an administrator.
3. In the main toolbar, click **Link > Create**.

4. In the new Create Link dialog box, perform the following Steps 1-4 for all three project entities—defects, requirements and releases:

   a. In the Step 1 of 4 – General Properties dialog box, Assign general properties, enter the **Link name** and click **Next**.



b. In the Step 2 of 4 – HP ALM Endpoint dialog box, assign HP ALM endpoint connection properties.



i. Specify authentication details for the ALM user name you want to use to connect to the ALM endpoint.

> **Note:** The ALM user defined for the synchronization link must have create, modify, and delete permissions for the entity being synchronized (defect or requirement) in the ALM project.

ii. Populate the **ServerURL** using the following syntax:

```
http://<ALM server name>[<:port number>]/qcbin
```

iii. Fill in the **Domain** and **Project** fields for the ALM project you want to connect to.

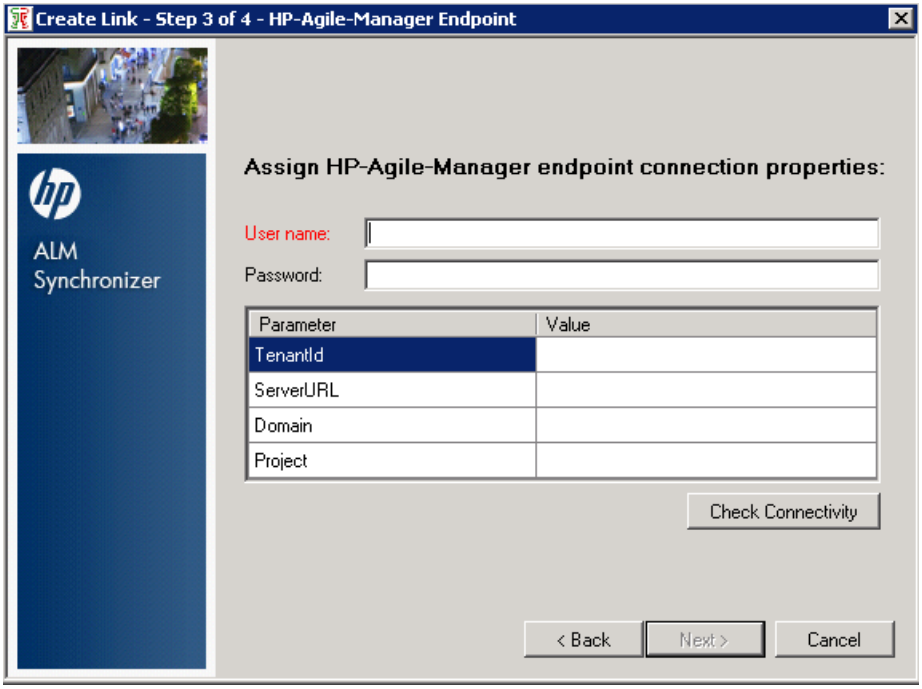
> **Note:** You can also select a project from a list of available projects.
>
> To do so, click **Set Connection**. In the HP ALM Connection dialog box, enter the connection settings for the ALM server you want to connect to, and then enter the user and project details.

iv. To verify the connection to the ALM project, click **Check Connectivity**. You may want

to test connectivity to several projects before finalizing a project for the link.

v. Click **Next**.

c. In the Step 3 of 4 – Assign HP Agile Manager Endpoint dialog box, assign endpoint connection properties.



i. Specify authentication details for the Agile Manager user name you want to use to connect to the Agile Manager endpoint.

ii. Define the following settings for the Agile Manager site and workspace you want to connect to:

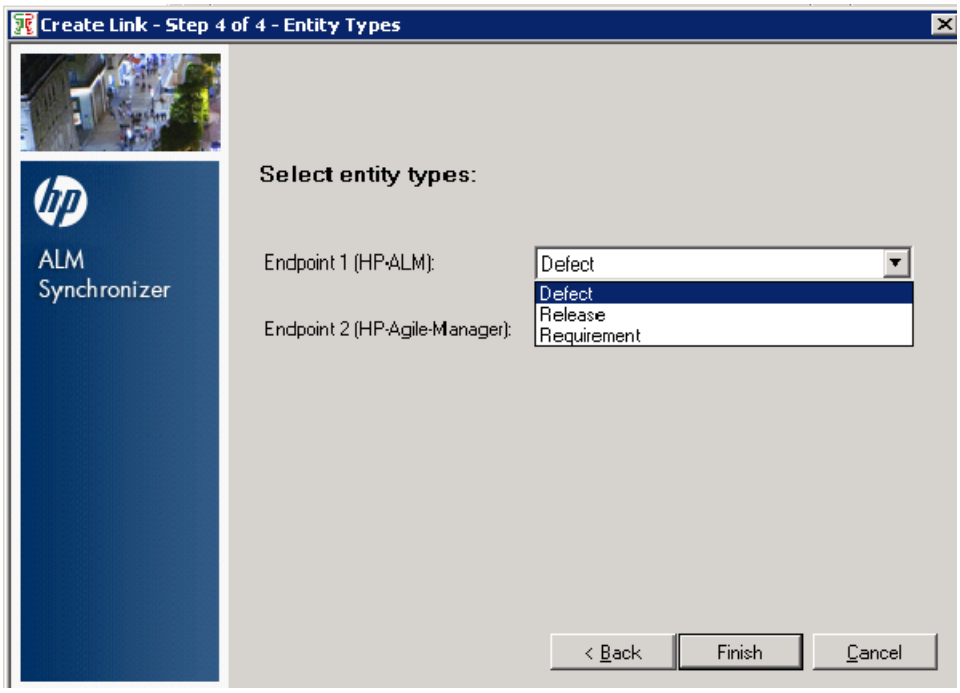
ProductGroupId	The workspace ID, as displayed in the **Workspaces** configuration page (**Site > Workspaces**)
TenantID	You can find the tenant (site) ID in the Agile Manager URL. For example, `TENANTID=123456789`.
ServerURL	Use the following syntax: `http(s)://<server name>:<port number>/agm`

Domain	You can find the server URL in the Agile Manager URL. For example, `https://myserver.mycorp.com/agm/webui/alm/<Domain>...`
Project	Always defined as **Main**

iii. Click **Check Connectivity** to verify the connection to the Agile Manager workspace.

iv. Click **Next**.

d. In the Step 4 of 4 – Entity Types dialog box, select the entity you wish to sync.



5. Repeat steps a-d for the two remaining entity types.

Be sure you have three links—one for each of the three entity types (releases, requirements/user stories, and defects).

Step 5: Configuring Link Properties

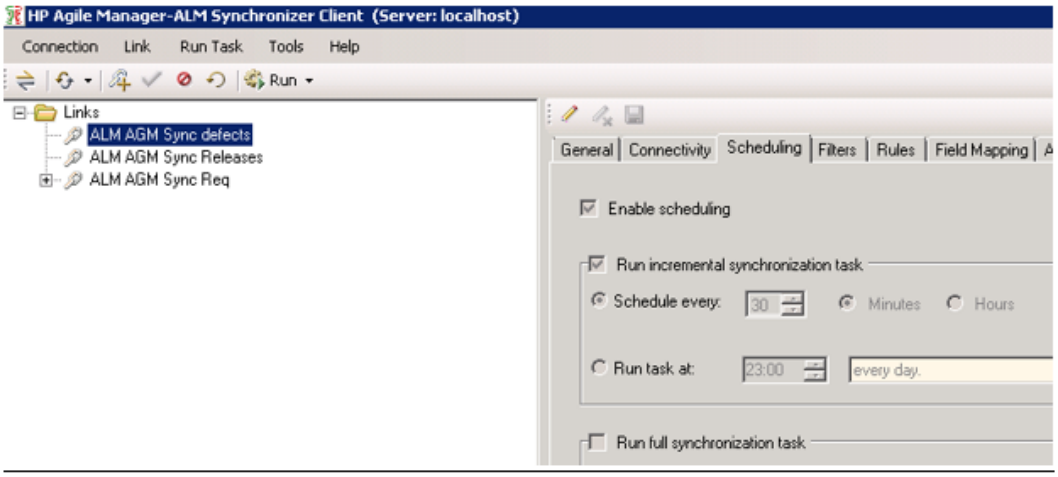
Link properties include all information about the link. Some main properties are displayed for all links in a sortable grid, and additional properties are displayed for a specific link in a series of tabs.

Although we recommend setting the synchronization job as described below (which will suit most customers), this can be modified for specific needs. For more details, in **Agile Manager Help**, see **HP ALM Synchronizer for Agile Manager > Set up Synchronizer > Configure server options**.

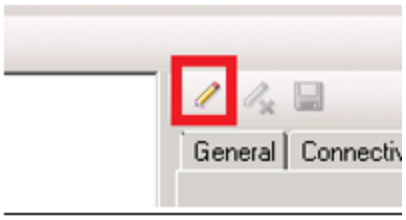
Note: For more information, see HP ALM Synchronizer for Agile Manager > Configure Links.

1. **Defect.**

   a. Click the **Defect** link.



   b. Click **Edit** button.



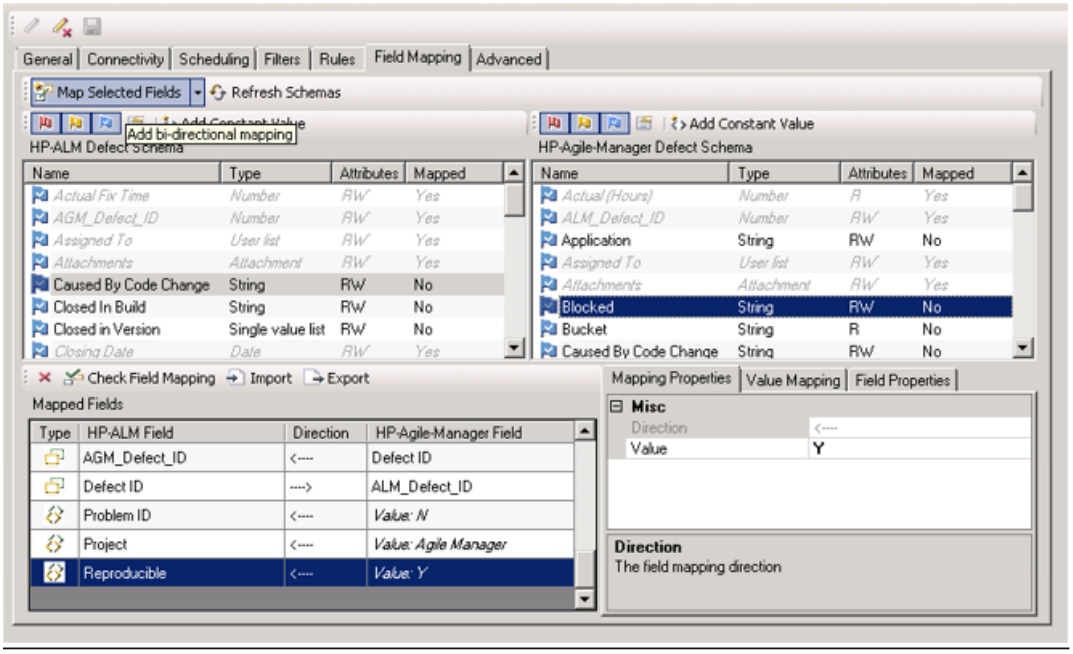
   c. Go to the **Scheduling** tab.

      i. Select **enable scheduling**.

      ii. Select **Run incremental synchronization task**.

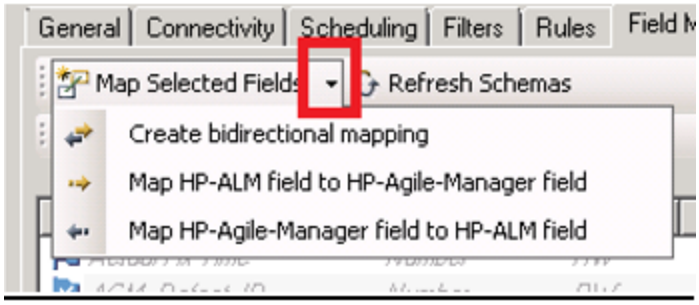
      iii. Select **Schedule every X** and set it up as you wish.

d. Go to the **Field Mapping** tab and map the fields as follows:



i. To set up Value Mapping, go to the lower right-hand tab and click **Value Mapping**.

ii. To set the direction of the link, click **Map Selected Fields** and select a direction. The default is bi-directional mapping.

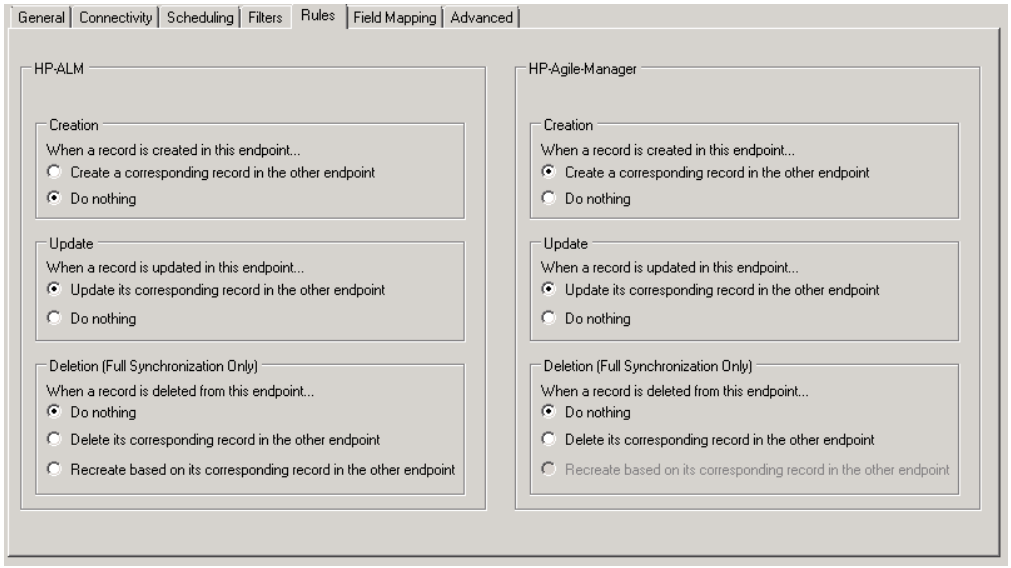


The following table provides the recommended mapping values for the R2D deployment:

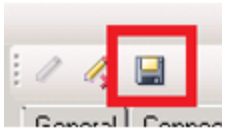
HP-ALM Defect Schema	HP-Agile-Manager Defect Schema	Direction	Value Mapping
Summary	Summary	Bi-directional	No
Status	Defect Status	Bi-directional	Yes. Map the status to the appropriate value between Agile Manager and ALM.
Detect on Date	Detect on Date	Bi-directional	No
Severity	Severity	Bi-directional	Yes. Map the severity to the appropriate value between Agile Manager and ALM. For example, `5-Urgent <-> 1-Critical`.
Assigned To	Assigned To	Agile Manager to ALM	Yes. Map the users that are assigned to the defect between Agile Manager and ALM.
Description	Description	Bi-directional	No
Closing Date	Closing on Date	Bi-directional	No
Detected By	Detected By	Bi-directional	Yes, map the users to whom the map was detected by between Agile Manager and ALM. This should be bi-directional.
Comments	Comments	Bi-directional	No
Link	Link	Bi-directional	No
Detected in Cycle	Sprint	Agile Manager to ALM	No
Detected in Release	Detected in Release	Bi-directional	Yes, map the ALM versions to the appropriate Agile Manager releases.

HP-ALM Defect Schema	HP-Agile-Manager Defect Schema	Direction	Value Mapping
Priority	Priority	Bi-directional	Yes, map the values for priorities between Agile Manager and ALM. For example, `2-Medium <-> 3-Medium`
Target Release	Release	Agile Manager to ALM	Yes, map the Agile Manager versions to the appropriate ALM releases.
Attachments	Attachments	Bi-directional	No
Actual Fix Time	Invested (Hours)	Agile Manager to ALM	No
Estimated Fix Time	Actual (Hours)	Agile Manager to ALM	No
AGM_ Defect_ID	Defect ID	Agile Manager to ALM	No
Defect ID	ALM_ Defect_ID	ALM to Agile Manager	No

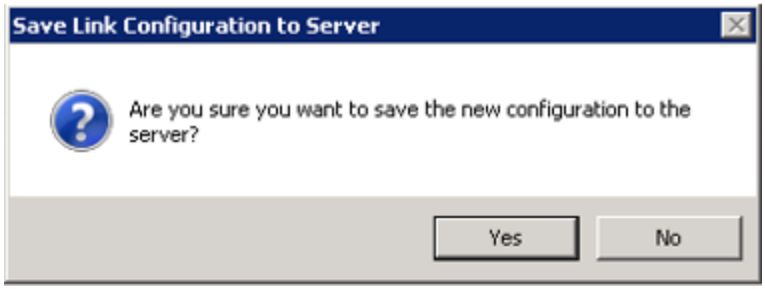
iii. Go to the **Rules** tab. Make your selections as shown in the following screen shot or you can choose to set it up differently according to your organization's needs.



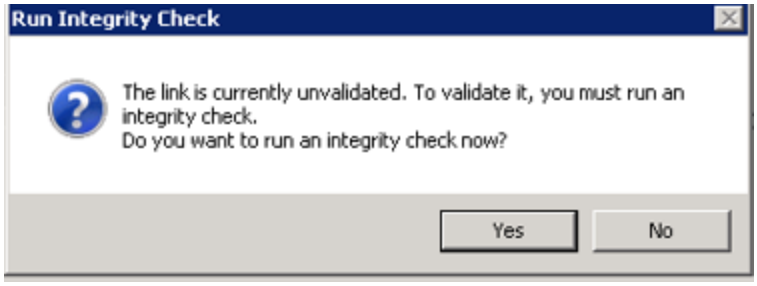
iv. Click **Save**.



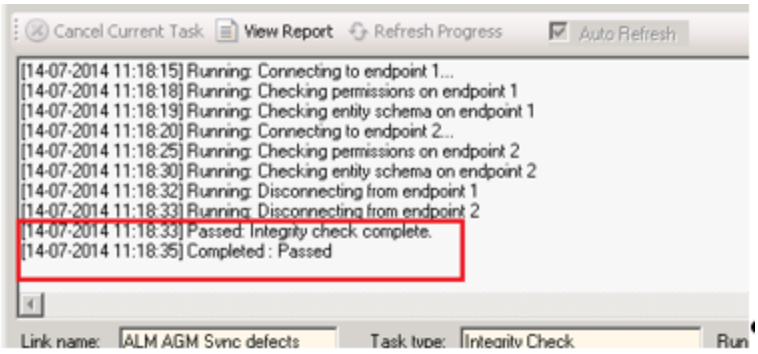
v. Click **Yes** in the pop-up window.



vi. Click **Yes** in the pop-up window.



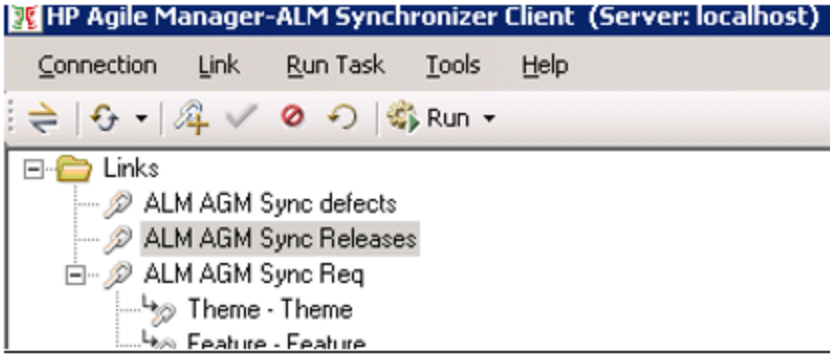
vii. Check that the integrity check is complete.



viii. Click **Enable Link.**

2. **Release.**

a. Click the **Release** link.



b. Click the **Edit** button.

c. Go to the **Scheduling** tab.

   i. Select **enable scheduling**.

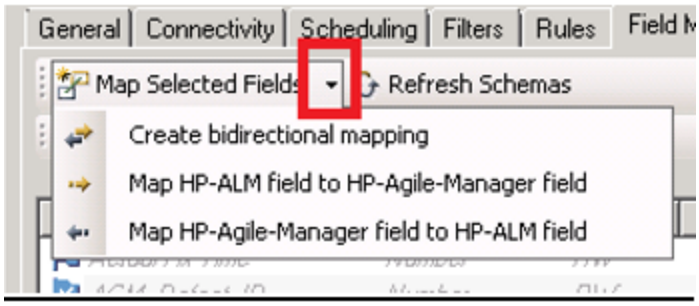
   ii. Select **Run incremental synchronization task**.

   iii. Select **Schedule every X** and set it up as you wish.

d. Go to the **Field Mapping** tab and map the fields as follows:

   i. To set up Value Mapping, go to the lower right-hand tab and click **Value Mapping**.

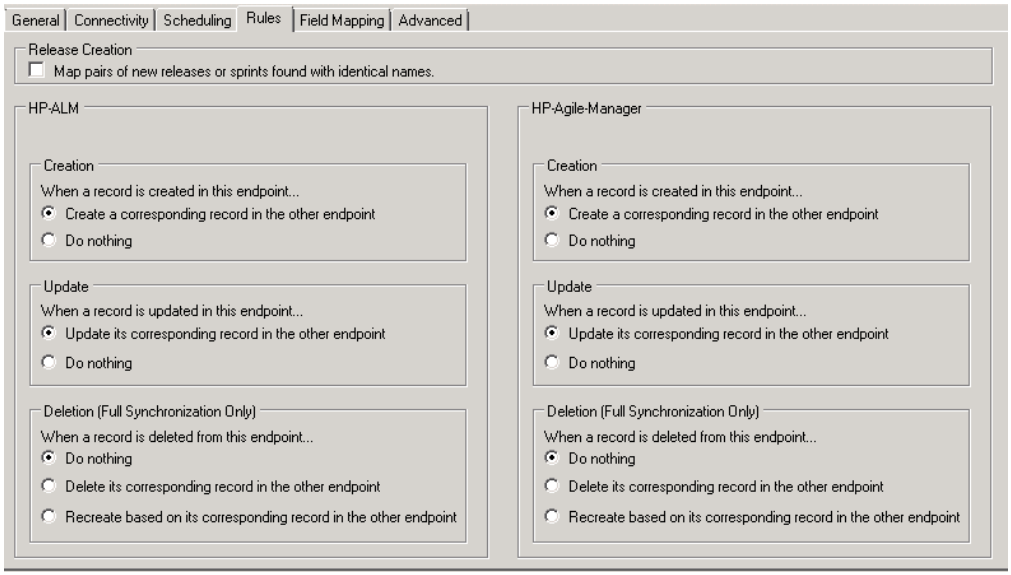
   ii. To set the direction of the link, click **Map Selected Fields** and select a direction. The default is bi-directional mapping.



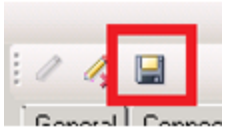
The following table provides the recommended mapping values for the R2D deployment:

HP-ALM Defect Schema	HP-Agile-Manager Defect Schema	Direction	Value Mapping
Name	Name	Bi-directional	No
Start Date	Start Date	Bi-directional	No
Description	Description	Bi-directional	No
Attachments	Attachments	Bi-directional	No
Cycles	Sprints	Bi-directional	No
End Date	End Date	Bi-directional	No

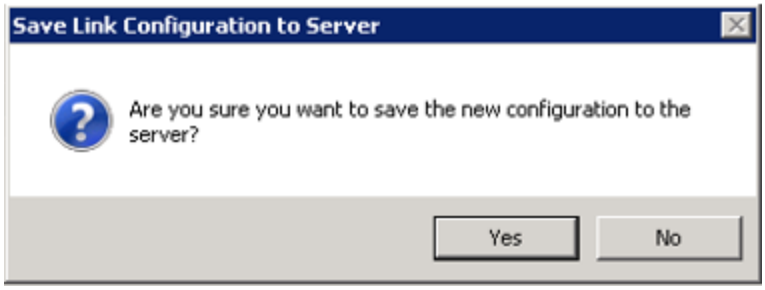
iii. Go to the **Rules** tab. Make your selections as shown in the following screen shot or you can choose to set it up differently according to your organization's needs.



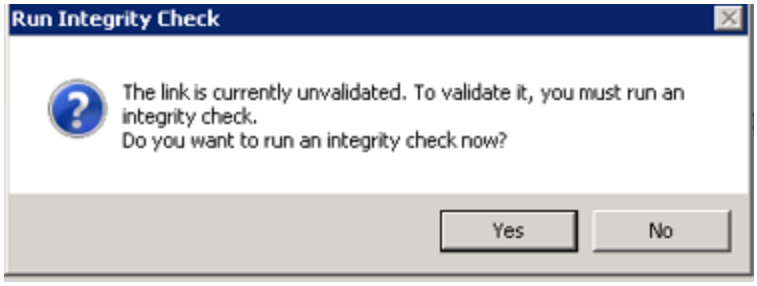
iv. Click **Save**.



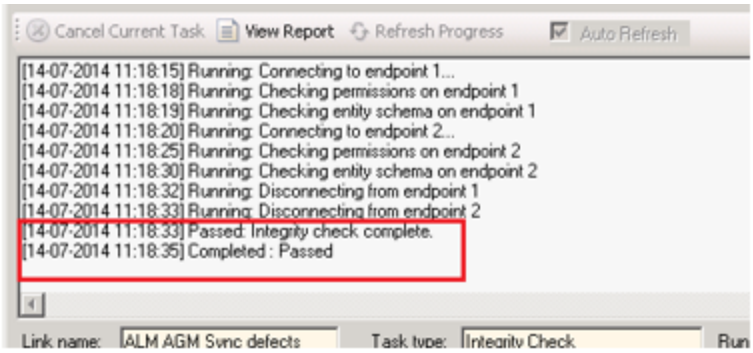
v. Click **Yes** in the pop-up window.



vi. Click **Yes** in the pop-up window.



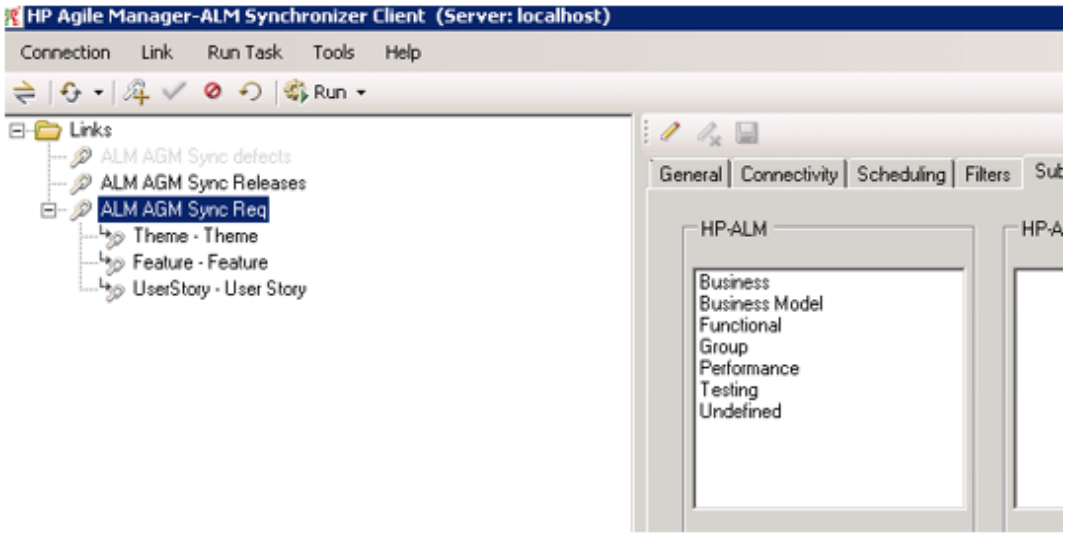
vii. Check that the integrity check is complete.



viii. Click **Enable Link.**

3. **Requirements.**

   a. Click the **Requirement** link.



   b. Click the **Edit** button.

   c. Go to the **Scheduling** tab.

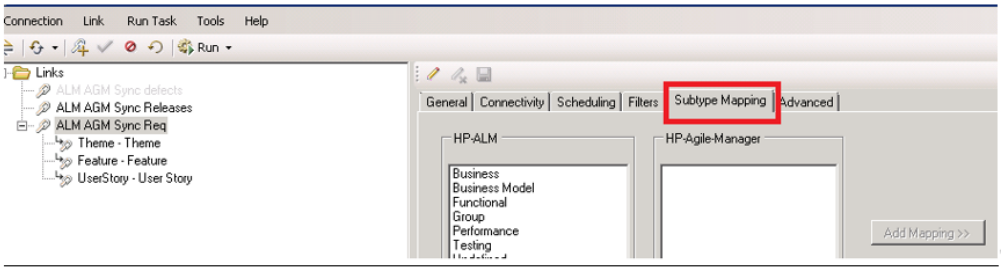
      i. Select **enable scheduling**.

      ii. Select **Run incremental synchronization task**.

      iii. Select **Schedule every X**and set it up as you wish.

   d. Edit **Subtype Mapping**.

      i. Go to the **Subtype Mapping** tab.



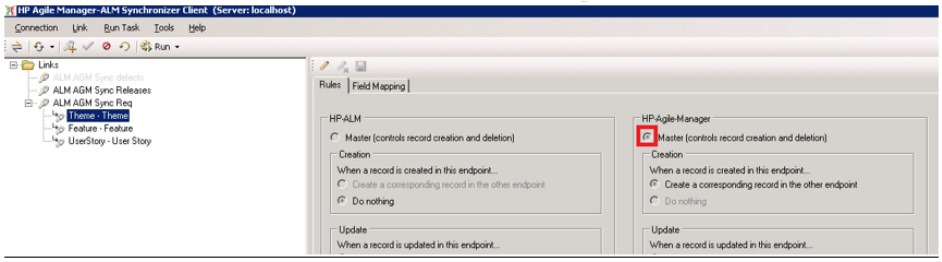
      ii. In the HP ALM sub-window, select the **Theme**, **Feature**, and **UserStory** requirements that you created in ALM in Step 3: Adapt your ALM project > Step 1.d, and click **Add Mapping**.

iii. Click **Save**.

> **Note:** Confirm the three requirement types are created under the link.

iv. Select the **Theme** requirement type.

A. Go to the **Rules** tab and define which endpoint you want to define as the Master endpoint. Under **HP Agile-Manager**, select **Master**.



v. Select the **Feature** requirement type.

A. Go to the **Rules** tab and define which endpoint you want to define as the Master endpoint. Under **HP Agile-Manager**, select **Master**.

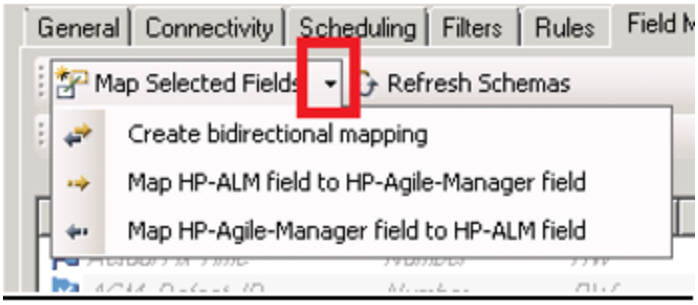
vi. Select the **UserStory** requirement type.

A. Go to the **Rules** tab and define which endpoint you want to define as the Master endpoint. Under **HP Agile-Manager**, select **Master**.

vii. Go to the **Field Mapping** tab for the **Theme** requirement type.

A. To set up Value Mapping, go to the lower right-hand tab and click **Value Mapping**.

B. To set the direction of the link, click **Map Selected Fields** and select a direction. The default is bi-directional mapping.



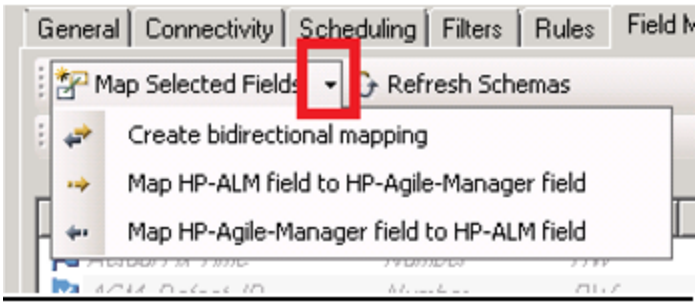
The following table provides the recommended mapping values for the R2D deployment:

HP ALM Defect Schema	HP Agile Manager Defect Schema	Direction	Value Mapping
Name	Name	Bi-directional	No
Comments	Comments	Bi-directional	No
Creation Date	Creation Date	Agile Manager to ALM	No
Creation Time	Creation Time	Agile Manager to ALM	No
Description	Description	Bi-directional	No
Attachments	Attachments	Bi-directional	No
Link	Link	Bi-directional	No
Author	Author	Bi-directional	Yes. Map between Agile Manager and ALM authors. If not, the synchronizer will not be able to sync requirements for authors that do not exist in each application.

viii. Go to the **Field Mapping** tab for the **Feature** requirement type.

A. To set up Value Mapping, go to the lower right-hand tab and click **Value Mapping**.

B. To set the direction of the link, click **Map Selected Fields** and select a direction. The default is bi-directional mapping.



The following table provides the recommended mapping values for the R2D deployment:

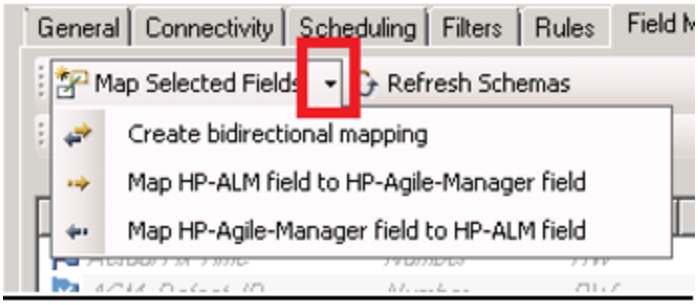
HP-ALM Defect Schema	HP-Agile-Manager Defect Schema	Direction	Value Mapping
Name	Name	Bi-directional	No
Comments	Comments	Bi-directional	No
Creation Date	Creation Date	Agile Manager to ALM	No
Creation Time	Creation Time	Agile Manager to ALM	No
Description	Description	Bi-directional	No
Attachments	Attachments	Bi-directional	No
Link	Link	Bi-directional	No

HP-ALM Defect Schema	HP-Agile-Manager Defect Schema	Direction	Value Mapping
Author	Author	Bi-directional	Yes. Map between Agile Manager and ALM authors. If not, the synchronizer will not be able to sync requirements for authors that do not exist in each application.

ix. Go to the **Field Mapping** tab for the **UserStory** requirement type.

A. To set up Value Mapping, go to the lower right-hand tab and click **Value Mapping**.

B. To set the direction of the link, click **Map Selected Fields** and select a direction. The default is bi-directional mapping.

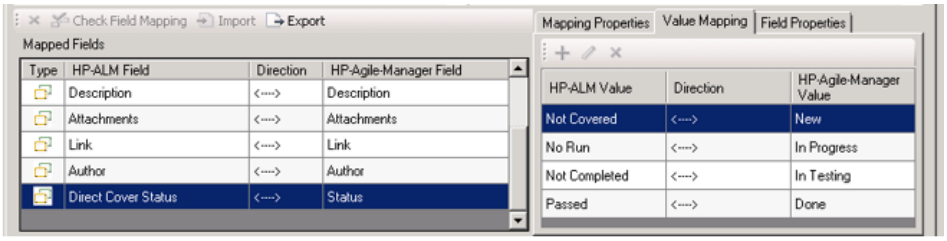


The following table provides the recommended mapping values for the R2D deployment:

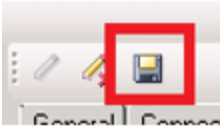
HP ALM Defect Schema	HP Agile Manager Defect Schema	Direction	Value Mapping
Name	Name	Bi-directional	No
Comments	Comments	Bi-directional	No
Creation Date	Creation Date	Agile Manager to ALM	No

HP ALM Defect Schema	HP Agile Manager Defect Schema	Direction	Value Mapping
Creation Time	Creation Time	Agile Manager to ALM	No
Description	Description	Bi-directional	No
Attachments	Attachments	Bi-directional	No
Link	Link	Bi-directional	No
Author	Author	Bi-directional	Yes. Map between Agile Manager and ALM authors. If not, the synchronizer will not be able to sync requirements for authors that do not exist in each application.
Direct Cover Status	Status	Bi-directional	Yes. Map the values for the status between Agile Manager and ALM.

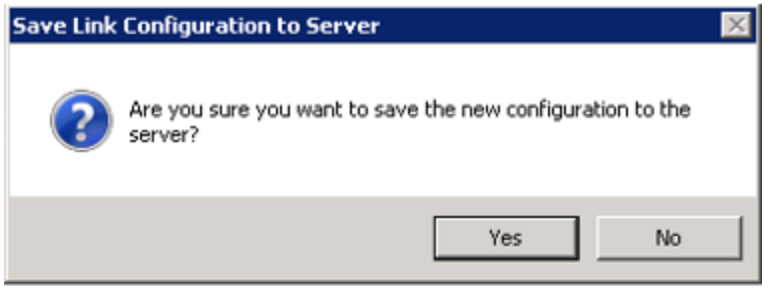
The UserStory displays as shown in the following figure:



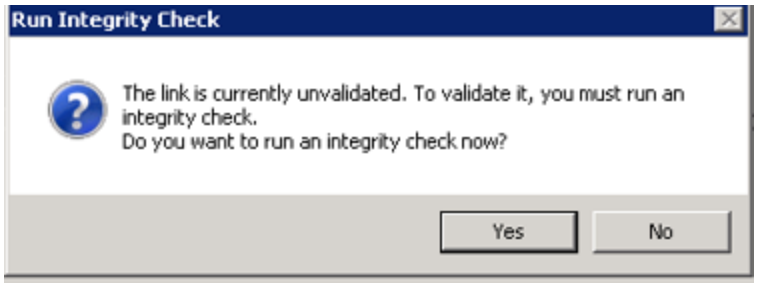
x. Click **Save**.



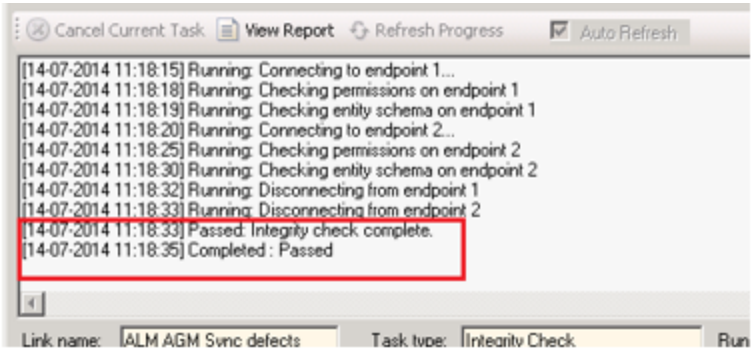
xi. Click **Yes** in the pop-up window.



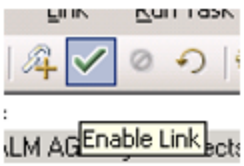
xii. Click **Yes** in the pop-up window.



xiii. Check that the integrity check is complete.



xiv. Click **Enable Link**.

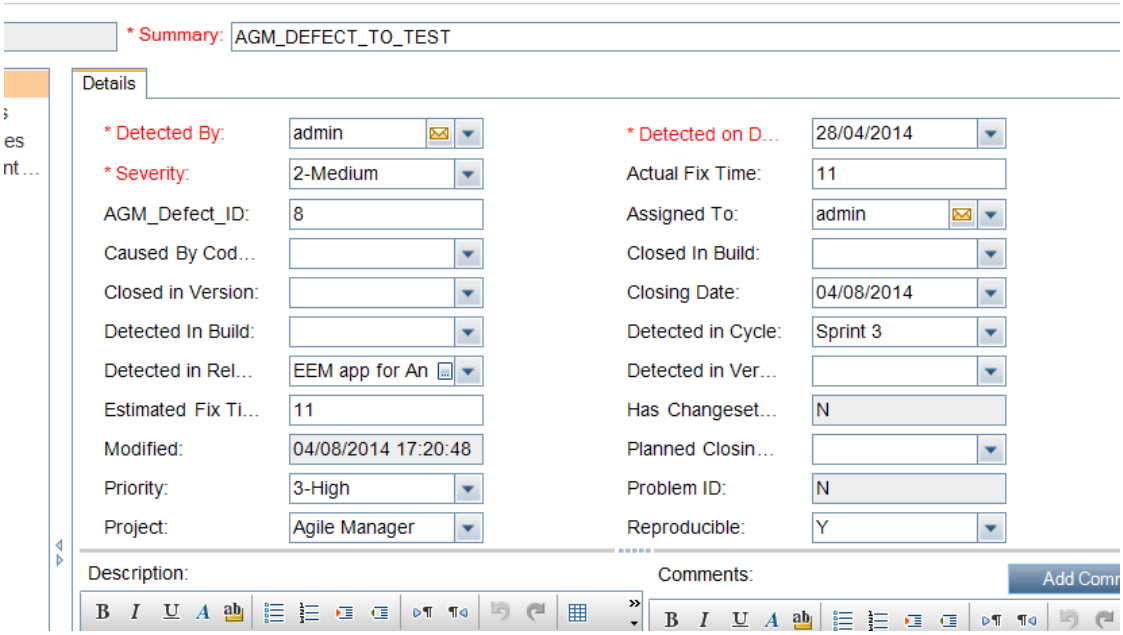


Verification

Note: These procedures are to verify that the implementations were done successfully.

To verify that defect data is being synced from Agile Manager to ALM:

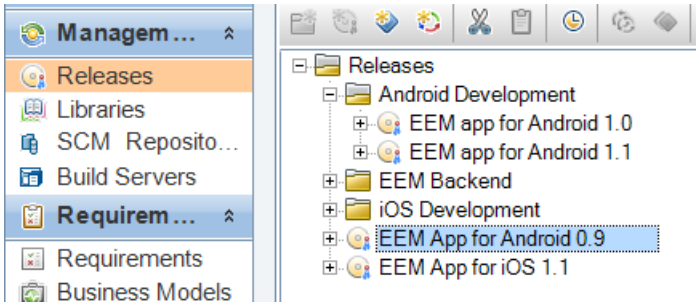
1. Go to the ALM client.
2. In the left pane of the ALM client, open **Defects**.
3. Search for defects that were synced from Agile Manager. For example, compare the defect name to the one being synced from Agile Manager or search for Agile Manager-related fields as seen in the following screen shot (such as the **Project** field).



To verify that release data is being synced from Agile Manager to ALM:

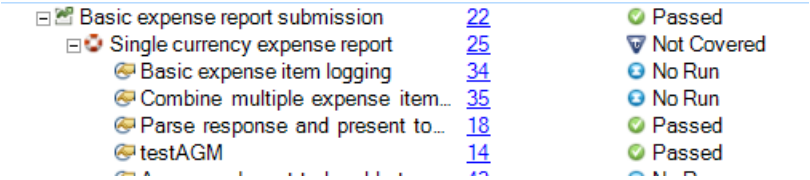
1. Go to the ALM client.
2. In the left pane of the ALM client, open **Management**.
3. Select **Releases**.

4. Search for releases that were synced from Agile Manager.



To verify that requirement data is being synced from Agile Manager to ALM:

1. Go to the ALM client.
2. In the left pane of the ALM client, open **Requirements**.
3. Select **Requirements**.
4. Search for requirements that were synced from Agile Manager. There should be requirements for **Theme**, **Feature** and **User Story** types.



Chapter 9: Creating an SM Problem from ALM Defect

This chapter includes:

Overview 133
Prerequisites 134
Configuring Service Manager 134
Configuring Application Lifecycle Management 150
ALM Synchronizer 157
Verification 169

Overview

This integration supports the synchronization of various entities between HP Service Manager (SM) and HP Application Lifecycle Management (ALM). This chapter describes setting up a specific subset of the integration capabilities—namely the capability to open a Service Manager problem based on information in ALM defect fields. Once the record is created in Service Manager, it can be marked as a known error.

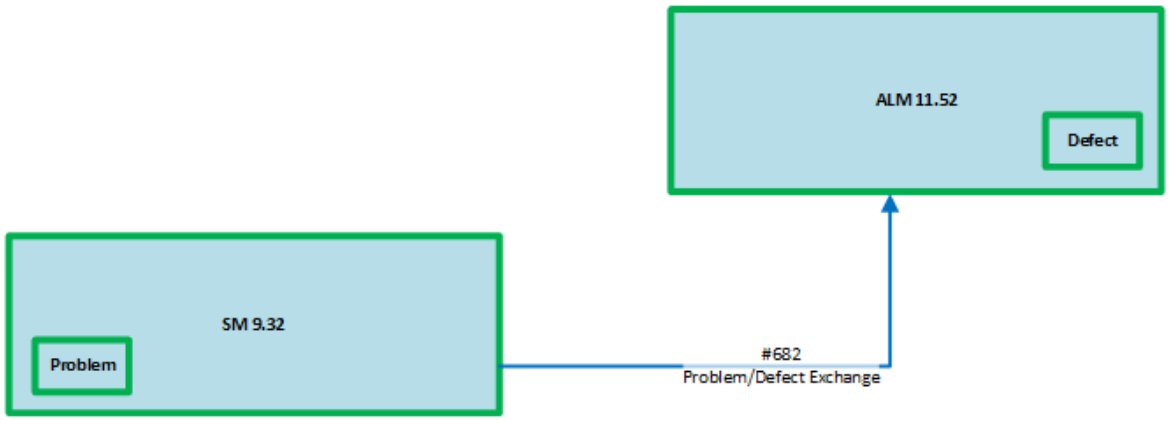
The outline for configuration includes modifying settings in Service Manager, modifying settings in ALM, installing a synchronizer component, and configuring link(s) which are responsible to synchronize relevant entities between Service Manager and ALM.

Note: The following configuration steps are an example and are provided here for your reference. If the product is installed on a different operating system, database type, or was customized for specific customer requirements, the screens and menus may be different.

In the context of the Requirement to Deploy (R2D) Value Stream, this integration enables traceability between defects managed in ALM as part of R2D and problems managed in SM as part of the Detect to Correct Value Stream..

For more details, see the integration documentation—such as *HP Defects and Requirements Exchange with HP Service Manager/ServiceCenter and HP Quality Center/Application Lifecycle Management Installation and Administration Guide*.

The following diagram illustrates the relationship between the products for this integration:



Prerequisites

The following products must be installed:

- Service Manager is available via Windows and a Web client.
- ALM is up and running and a project has been created.

Configuring Service Manager

The following procedure is an example of how to configure the default Service Manager installation with the Process Designer (PD) Content Pack installed. This affects multiple application menus and options. Configuration instructions for the default Service Manager system can be found in *HP Defects and Requirements Exchange with HP Service Manager/ServiceCenter and HP Quality Center/Application Lifecycle Management*.

This section contains the following steps:

Step 1: Creating an Integration Account That Will be Used by ALM Synchronizer to Connect to Service Manager 135

Step 2: Creating a "Security Role" Record for the Integration Account 135

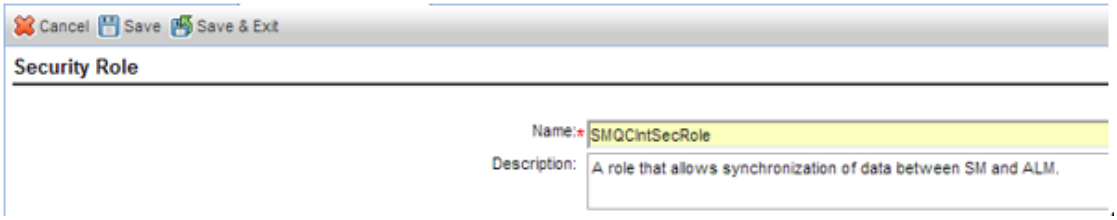
Step 3: Modifying Problem Management to Allow for the Storage of Information About ALM Defects 136

Step 1: Creating an Integration Account That Will be Used by ALM Synchronizer to Connect to Service Manager

1. In main menu, select **System Administration > Base System Configuration > Contacts**.
2. Complete the form and click the **Add** button.

Step 2: Creating a "Security Role" Record for the Integration Account

1. Navigate to **System Administration > Security > Roles** and fill out the form as shown in the following figure.

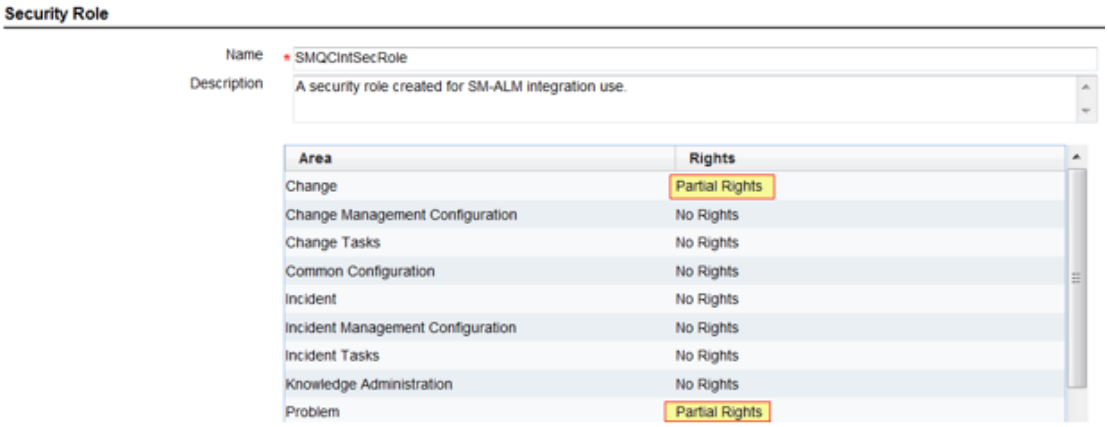


   Click **Save**.

2. Update the created role with the parameters shown in the following table:

No	Tab Page	Field	Value	Comment
1		**Security Role Name**	SMQCIntSecRole	
2		**Security Area**	Change	
3	Rights	**View**	Yes	Check box
4		**Update**	Always	
5		**Security Area**	Problem	
6	Rights	**View**	Yes	Check box
7		**New**	Yes	Check box
8		**Update**	Always	

3. Remove all rights from all areas with the exception of the **Change** area and the **Problem** area.



Step 3: Modifying Problem Management to Allow for the Storage of Information About ALM Defects

1. Navigate to **Tailoring > Database Dictionary** and execute a search for **rootcause**.

2. Click the **New Field/Key**

button and add the following fields to the root cause table:

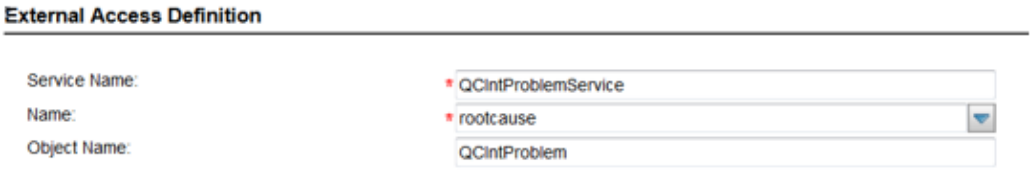
Field Name	Data Type
qcintegration.type	StringType
qcintegration.id	Number
qcintegration.project	StringType
qcintegration.created.from	StringType

Note: If there is a requirement to store additional information from ALM in the Service Manager database, include those custom fields using the appropriate data type. Refer to **SM Online Help** for additional information about Service Manager customization.

3. Create a custom **External Access Definition**, a web service endpoint that will allow ALM Synchronizer to access specific Service Manager records.

   a. Navigate to **Tailoring > Web Services > Web Service Configuration**.

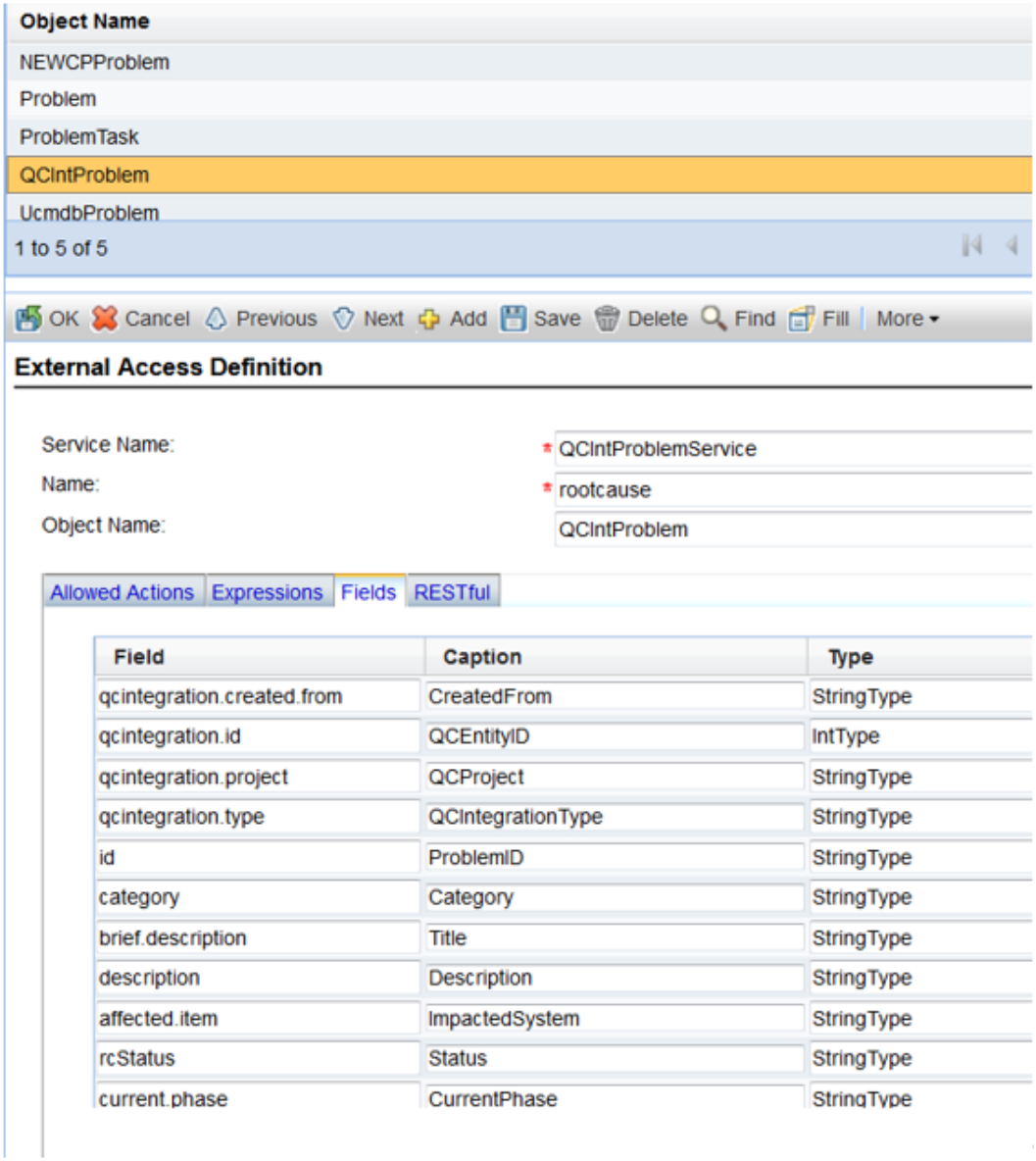
   b. Populate the form with new service details:



   Note: The captions and values are mandatory and hard-coded. Otherwise the Synchronizer is not able to access Service Manager data.

   c. Click the **Add** button and modify the values of the Web service definition.

The **Fields** tab lists exposed fields which can be mapped in the ALM Synchronizer link configuration. Be sure to include all of the fields that are necessary to create/update a Problem record. The example below shows the minimum for an out-of-the-box Service Manager installation with Process Designer Content Pack.



Note: For fields starting with the **qcintegration** prefix, it is important to configure the field captions exactly as shown. Otherwise the Synchronizer will fail to process the records.

d. In the **Expressions** tab of the Web service configuration, add the following lines:

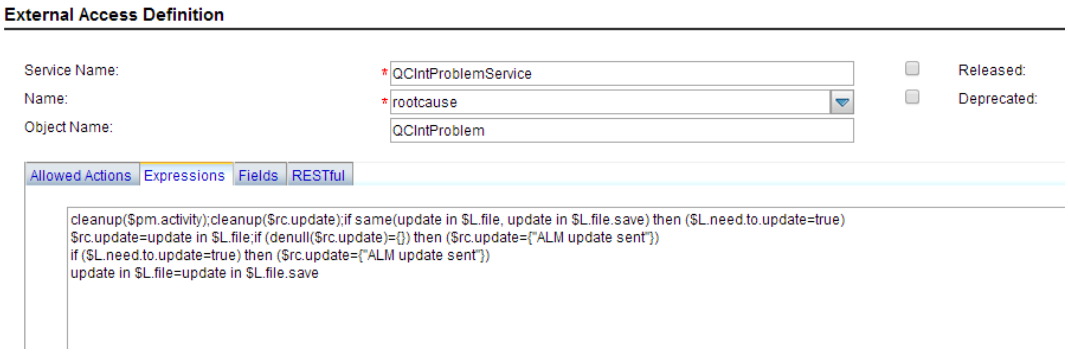
> **Note:** This is necessary because the Service Manager workflow requires an update to be completed whenever a Problem record is updated.

```
cleanup($pm.activity);cleanup($rc.update);if same(update in $L.file, update
in $L.file.save) then ($L.need.to.update=true)

$rc.update=update in $L.file;if (denull($rc.update)={}) then ($rc.update=
{"ALM update sent"})

if ($L.need.to.update=true) then ($rc.update={"ALM update sent"})

update in $L.file=update in $L.file.save
```

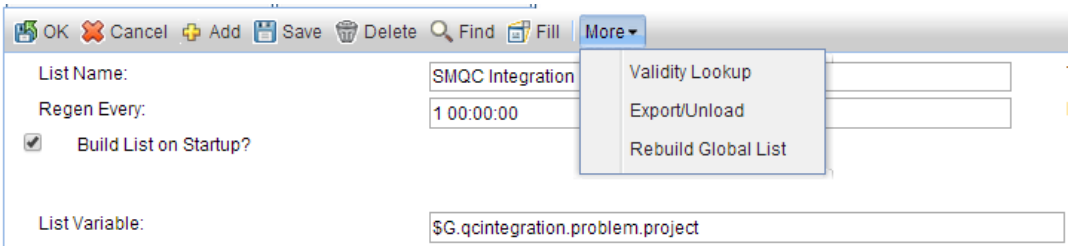


4. Create a global list that contains a list of ALM projects that will be used to open and update the defects on the ALM side.

   a. In the Service Manager console, navigate to **Tailoring > Tailoring Tools > Global Lists** and create a global list with the following parameters:

Parameter	Value	Remarks
List Name	SMQC Integration PM Project List	List
Regen Entry	1 00:00:00	Check box
Build List on Startup?	Yes	
List Variable	$G.qcintegration.problem.project	Check box
User Defined List?	Yes	
Value List	<ALM server host>/Domain/Project	List of ALM Projects targeted for integration

b. Click the **Add List** button. Click the **More** menu and click **Rebuild Global List**.



5. Create a subform that displays ALM defect-related information in Problem forms. For this task, it is necessary to use a Service Manager Windows client.

   In the main menu, select **Tailoring > Forms Designer** and create a new form called **pbm.almint.subform**. As a minimum, it should contain the following components:

Component	Properties
Label	Caption: ALM Defect ID
Text	Input: qcintegration.id Read-Only: Yes
Label	Caption: Server/Domain/Project
Combo Box	Input: qcintegration.project Mandatory condition: [qcintegration.type]>0
Label	Caption: Created From
Text	Input: qcintegration.created.from Read-Only: Yes
Label	Caption: Synchronize with ALM
Combo Box	Input: qcintegration.type

6. Add the subform created in the previous step to selected Problem Management forms:

   a. In Forms Designer, locate one of the Problem Management forms and click **Design**.

      Note: This could be named differently depending on which version of Service Manager is being used—for example, **pbm.problem.logging**.

   b. Add a **Notebook** tab with the caption **ALM Integration** and add the **pm.almint.subform** to it. Save the changes.

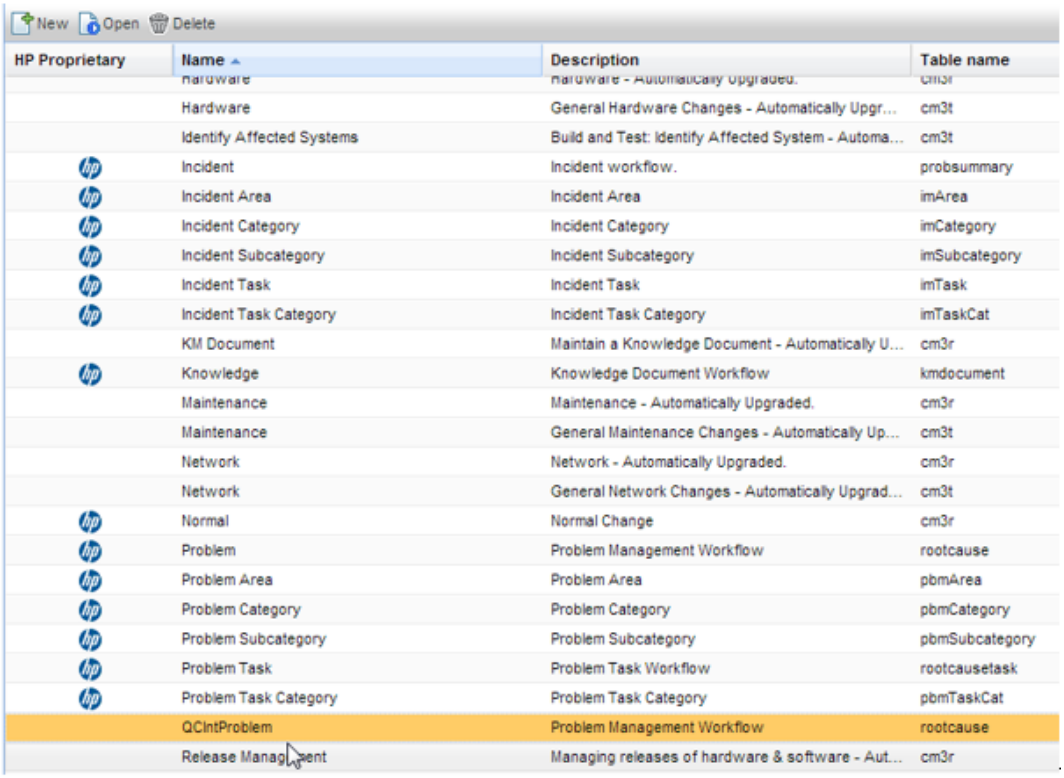
   c. Where needed, repeat the steps above for additional Problem Management forms to display ALM-related information.

7. Create rules that will define the behavior of the fields we added in different phases of the Problem record life cycle.

   Note: Since we are using Service Manager with the Process Designer Content Pack, the following steps are different from the out-of-the-box Service Manager setup.

a. Navigate to **Tailoring > Process Designer > Copy Existing Workflow**.

b. Locate, select, and copy the **Problem** entry. Create a name for the new workflow—for example, **QCIntProblem**.



HP Proprietary	Name	Description	Table name
	Hardware	General Hardware Changes - Automatically Upgr...	cm3t
	Identify Affected Systems	Build and Test: Identify Affected System - Automa...	cm3t
hp	Incident	Incident workflow.	probsummary
hp	Incident Area	Incident Area	imArea
hp	Incident Category	Incident Category	imCategory
hp	Incident Subcategory	Incident Subcategory	imSubcategory
hp	Incident Task	Incident Task	imTask
hp	Incident Task Category	Incident Task Category	imTaskCat
	KM Document	Maintain a Knowledge Document - Automatically U...	cm3r
hp	Knowledge	Knowledge Document Workflow	kmdocument
	Maintenance	Maintenance - Automatically Upgraded.	cm3r
	Maintenance	General Maintenance Changes - Automatically Up...	cm3t
	Network	Network - Automatically Upgraded.	cm3r
	Network	General Network Changes - Automatically Upgrad...	cm3t
hp	Normal	Normal Change	cm3r
hp	Problem	Problem Management Workflow	rootcause
hp	Problem Area	Problem Area	pbmArea
hp	Problem Category	Problem Category	pbmCategory
hp	Problem Subcategory	Problem Subcategory	pbmSubcategory
hp	Problem Task	Problem Task Workflow	rootcausetask
hp	Problem Task Category	Problem Task Category	pbmTaskCat
	QCIntProblem	Problem Management Workflow	rootcause
	Release Management	Managing releases of hardware & software - Aut...	cm3r

c. From the System Navigator, navigate to **Problem Management > Configuration > Problem Categories** and click **Search**.

d. In the **Problem Category** page, remove the currently assigned workflow from the **Workflow** field.

e. Select the problem category for which you want to add a workflow—for example, **Problem**.

f. Enter **QCIntProblem** in the **Workflow** field.

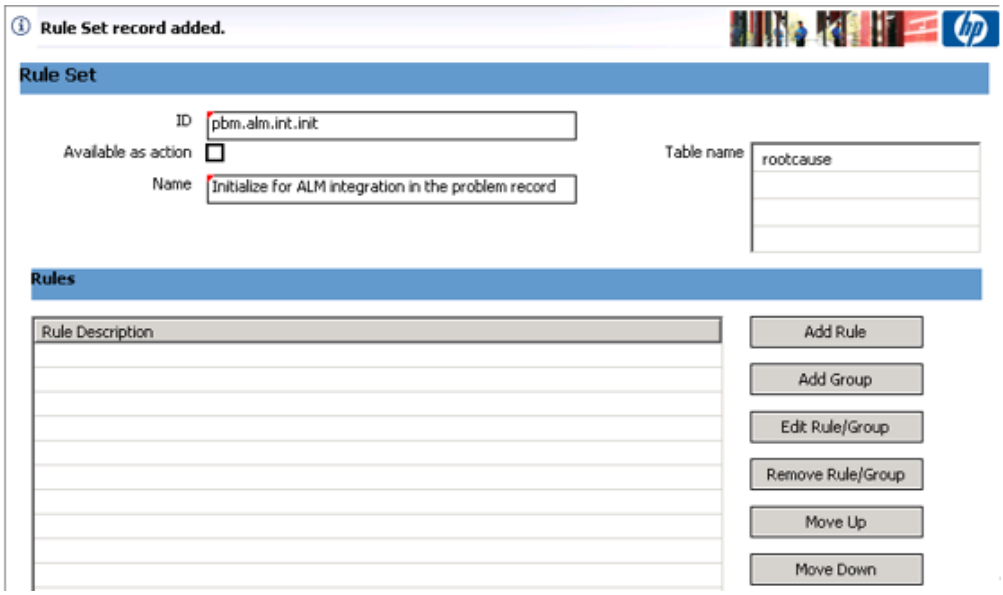
> **Note:** Use the new workflow name defined in step b above.

g. Click **Save** to associate the Problem Category with the workflow.

h. Click **Add Rule**.

i. Create a new rule set for initialization.

   i. From the System Navigator, navigate to **Tailoring > Process Designer > Rule Sets** and enter the values as shown in the following figure:



   ii. Click **New** and **Save**.

   iii. Click the **Add Rule** button.

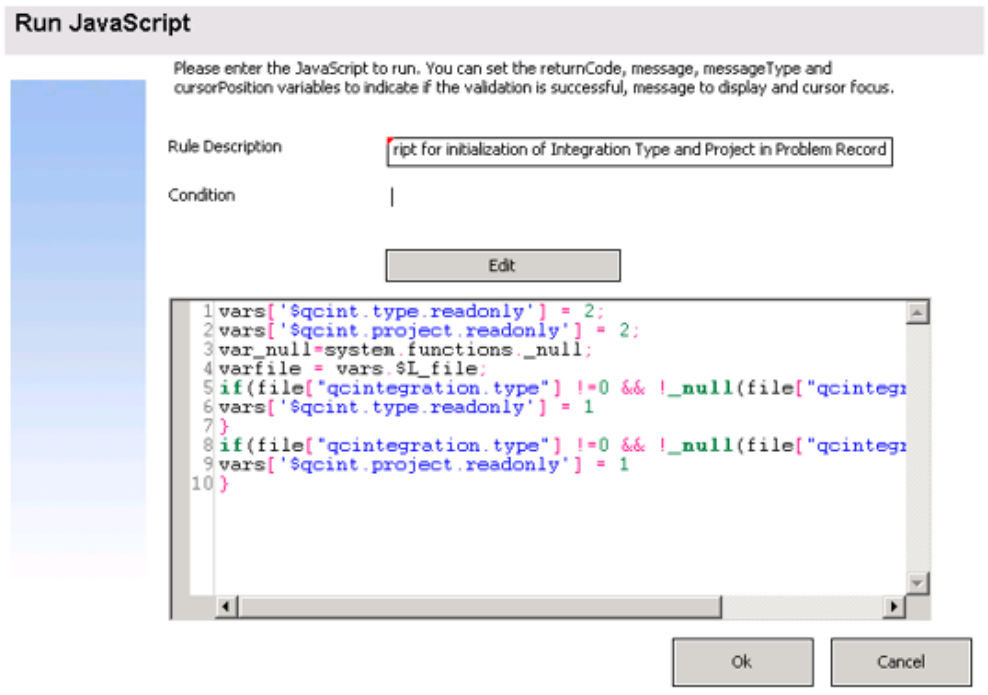
   iv. In the **Select Rule Type** page, click **Run JavaScript**.

   v. On the **Run JavaScript** page, enter the following values and click **OK**.

Field Name	Description
Rule Description	Run JavaScript for initializing Integration type and project in the Problem Record

Field Name	Description

Statement	`vars['$qcint.type.readonly'] = 2;`
	
	`vars['$qcint.project.readonly'] = 2;`
	
	`var_null=system.functions._null;`
	
	`varfile = vars.$L_file;`
	
	`if(file["qcintegration.type"] !=0 && !_null(file ["qcintegration.type"])) {`
	
	`vars['$qcint.type.readonly'] = 1`
	
	`}`
	
	`if(file["qcintegration.type"] !=0 && !_null(file ["qcintegration.project"])) {`
	
	`vars['$qcint.project.readonly'] = 1`
	
	`}`



vi. Click **Save** and **Exit**.

8. Create a new rule set for validation.

   a. From the System Navigator, navigate to **Tailoring > Process Designer > Rule Sets** and enter the following values:

Field	Value
ID	pbm.alm.int.validation
Name	Validation for ALM integration in the Problem Record
Table Name	rootcause

   b. Click **New** and **Save**.

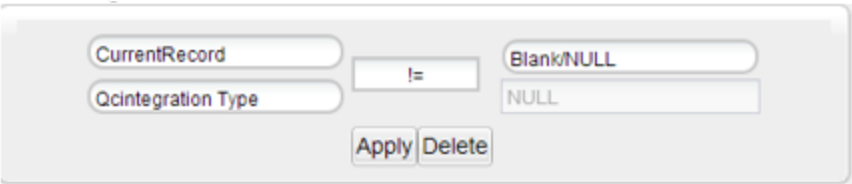
   c. Click **Add Rule**.

   d. In the **Select Rule Type** page, click **Set Mandatory Fields**.

   e. Click **Edit**.

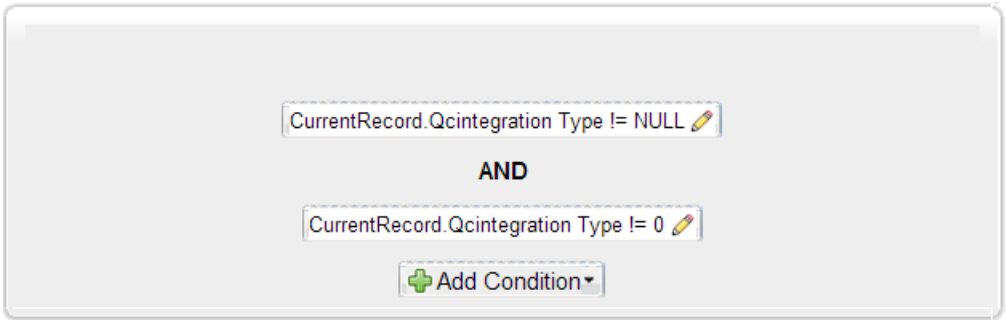
      The **Condition** editor opens.

   f. Add an expression as shown in the following figure and click **Apply**.



   g. Add another expression as shown in the following figure and click **Apply**.

h. After clicking **Apply**, the following dialog box appears:



Click **OK** at the bottom of the dialog box.

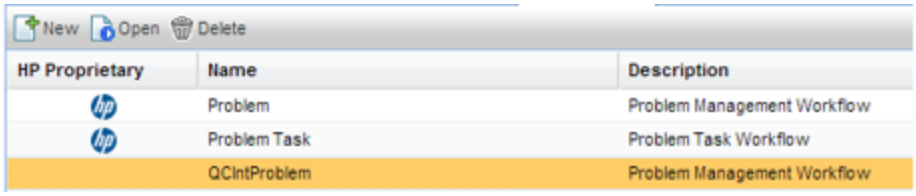
i. Click **OK**. The **Set Mandatory Fields** page closes.

j. Click **Save** and **Exit**.

9. Associate the new workflow with the new initialization and validation rule sets.

a. From the System Navigator, navigate to **Problem Management > Configuration > Workflows**.

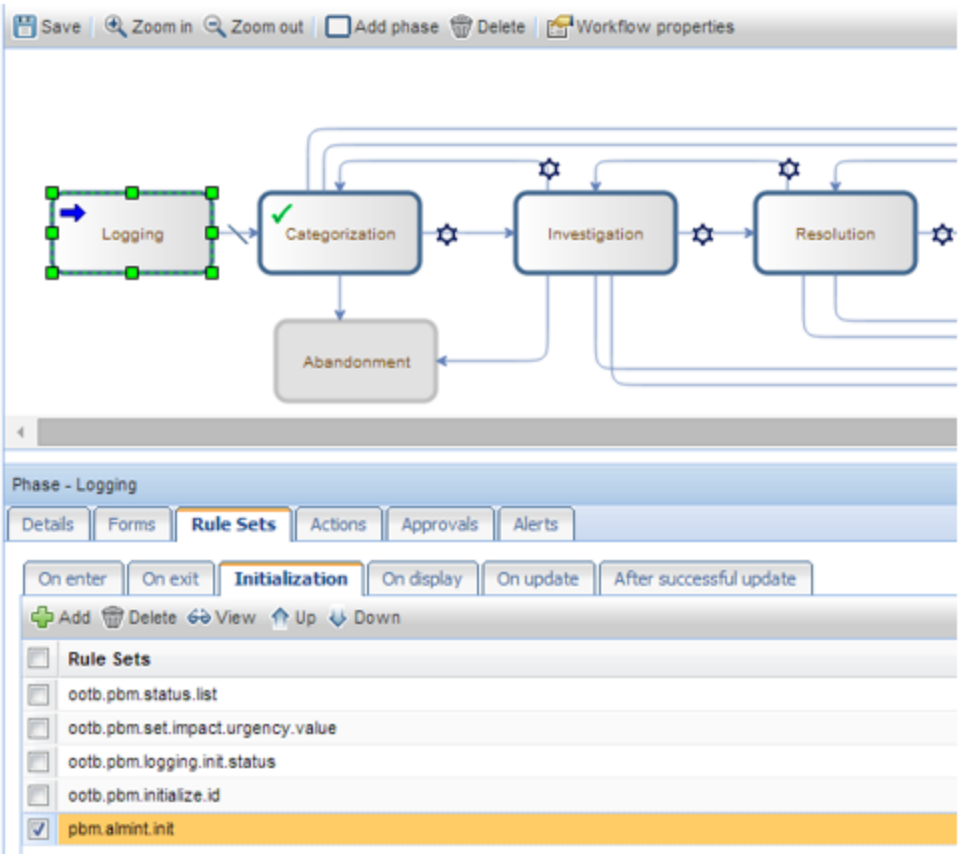
b. Select **QCIntProblem** in the workflows list and click **Open**.



c. Select the first phase in the workflow graph.

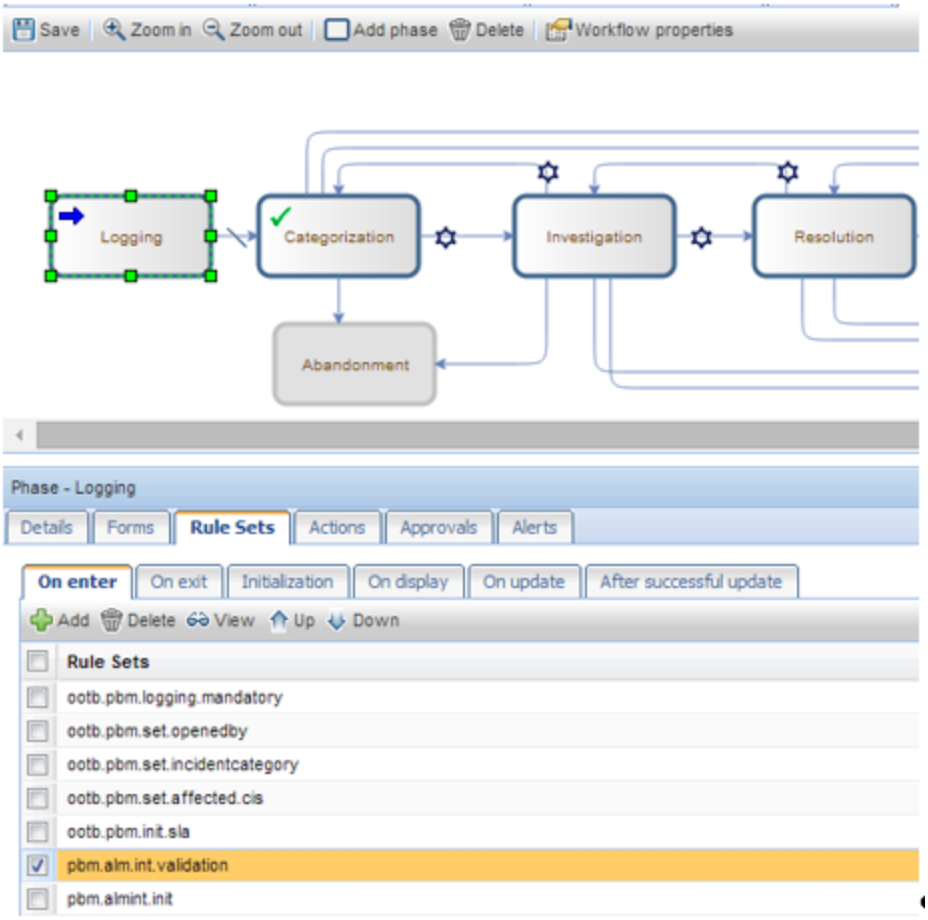
d. Click the **Rule Sets** tab and then the **Initialization** tab.

e. Click **Add** and select the initialization rule set you just created.



10. Repeat steps 4 and 5 for the **On display** and **On enter** tabs.

11. Select the **On enter** tab and select the Validation rule set you just created.



12. Click **Save**.

This concludes configuration on the Service Manager side. The result of the above modification allows storage of ALM Defect-specific data in Service Manager Problem tables.

Configuring Application Lifecycle Management

The following procedure describes how to configure Application Lifecycle Management (ALM) and includes:

- Adding custom fields to ALM entities (Defects) to store data from Service Manager Problem
- Creating workflow rules that will lock specific fields once the user chooses to create a Problem record based on Defect information
- Creating a filter for defects designated to be synchronized with Service Manager Problems

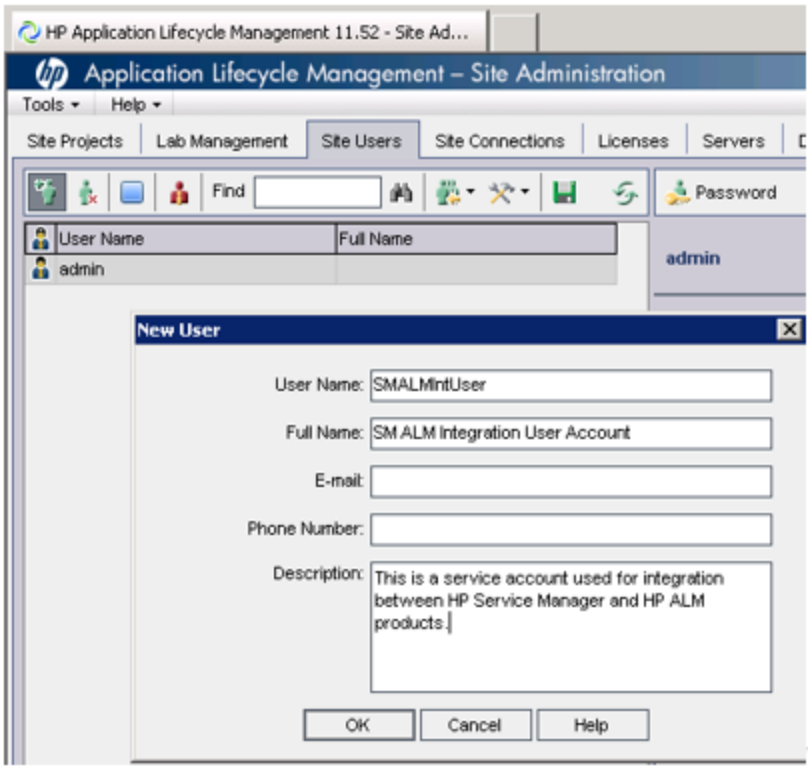
This section contains the following steps:

Step 1: Creating an Integration Account 151
Step 2: Adding the Newly Created User Account to ALM Projects 151
Step 3: Modifying ALM Defects Module Fields 153
Step 4: Creating a Filter in ALM 155

Step 1: Creating an Integration Account

To create an integration account that will be used by ALM Synchronizer to connect to ALM:

1. In ALM Site Administration, navigate to the **Site Users** tab and click the **Add User** button.
2. Fill in the details as shown in the following figure:

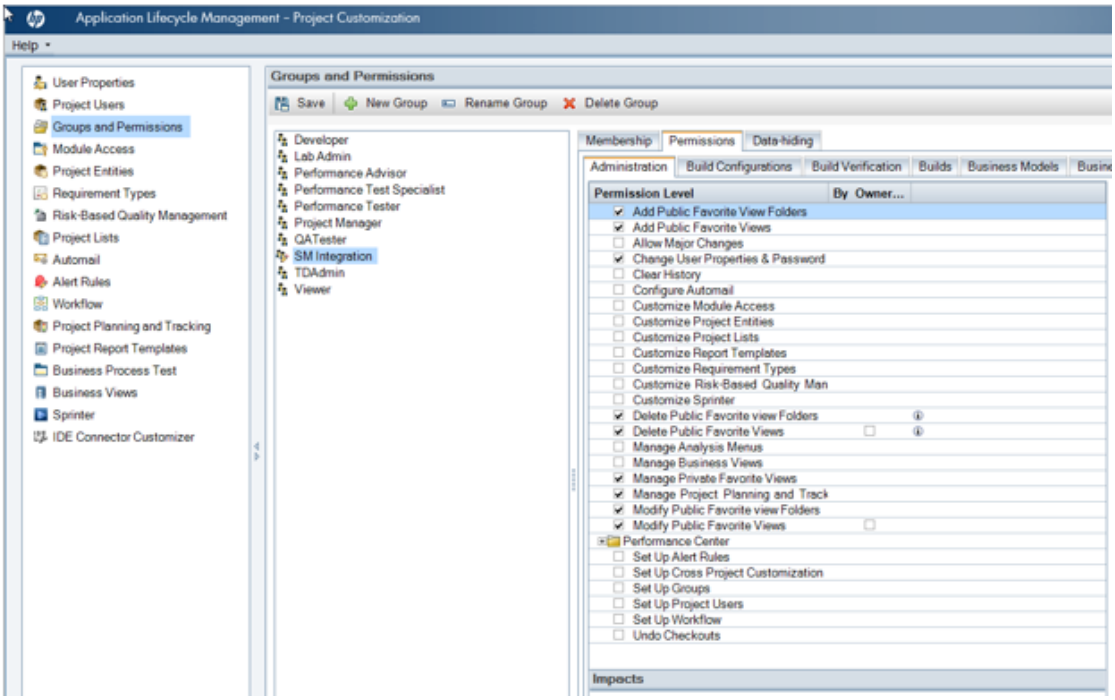


Step 2: Adding the Newly Created User Account to ALM Projects

To add the newly created user account to ALM projects where the synchronization is needed:

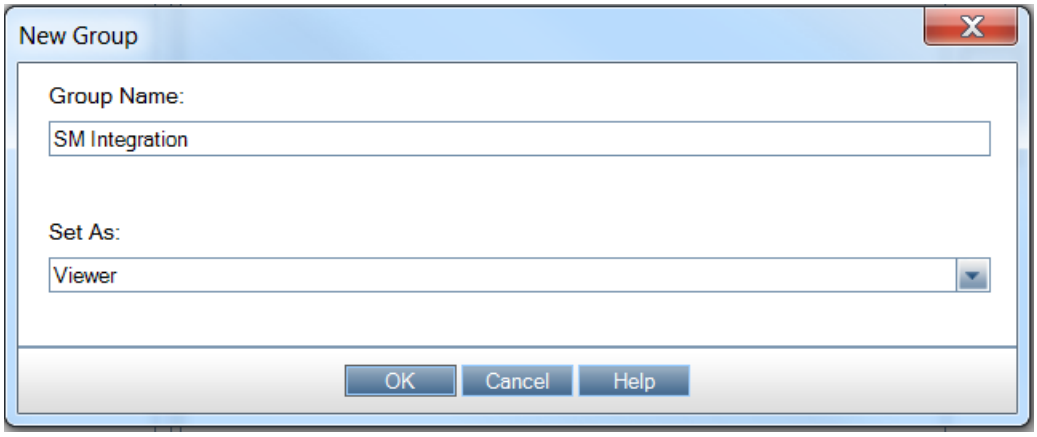
1. Log on to the ALM Project as a user with Project Administration permissions and open the **Project Customization** module.
2. From the toolbar, select **Tools**, and then **Customize**.

3. From the left-hand navigation pane, select **Groups and Permissions**.



4. In the Groups and Permissions pane, click the **New Group** button and create new user group named **SM Integration**.

   The **Set As** field sets the permissions as defined in selected existing groups. From the **Set As** drop-down list, select **Viewer**.



5. From the right side of the Groups and Permissions pane, select the **Permissions** tab.

   a. In the **Defects** tab, modify the group permissions to allow the users of the group to add and modify defects.

b. In the **Administration** tab, allow the user to add and modify public and private favorite views.

6. Select the **Membership** tab and add **SMALMIntUser** to this new group.

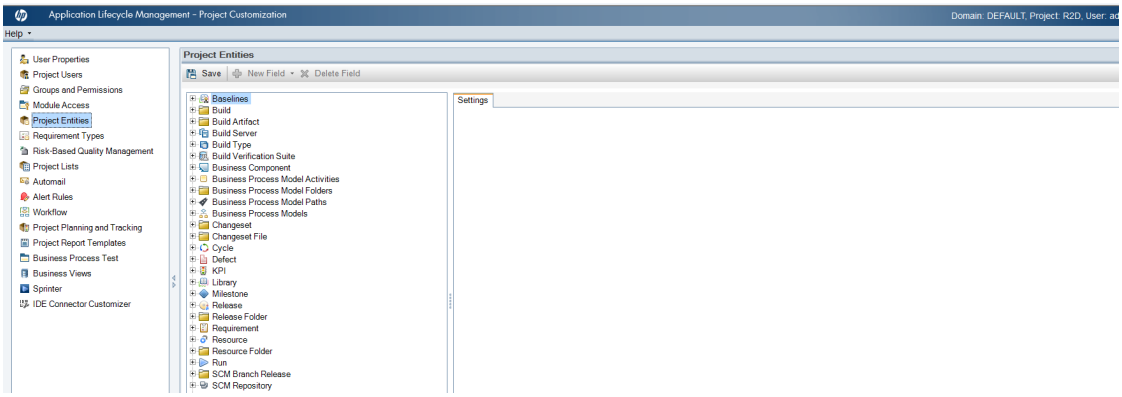
Step 3: Modifying ALM Defects Module Fields

To modify ALM Defects Module fields for storing SM Problem data:

1. Log on to the ALM Project as a user with Project Administration permissions and open the **Project Customization** module.

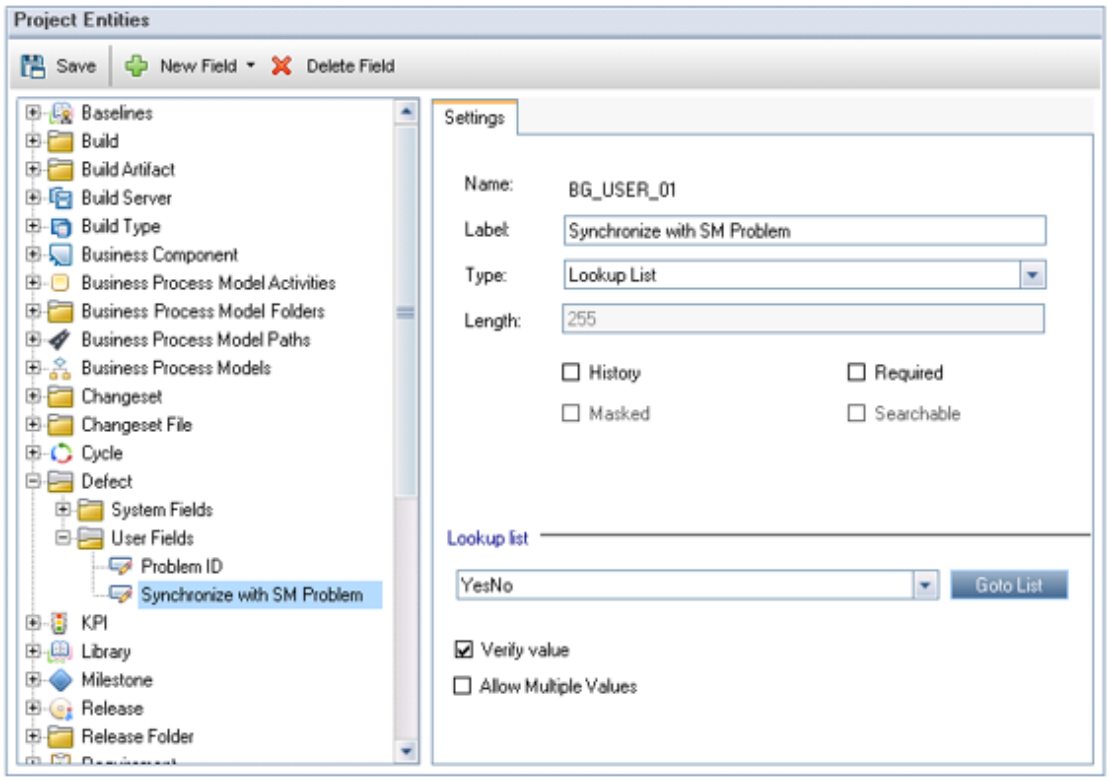
2. From the toolbar, select **Tools**, and then **Customize**.

3. From the left-hand navigation pane, select **Project Entitles**.



4. Add the following **User** fields to **Defect in Project Entities**:

Field Name (auto assigned)	Field Label	Field Type
BG_USER_XX	Synchronize with SM Problem	Lookup List: Yes/No (select the **Verify Value** check box)
BG_USER_XY	Problem ID	String



5. Click **Save** to apply changes.
6. Click **Workflow > ScriptEditor**.
7. Select the **Defects** module script.

8. Add the following lines to the **Bug_New** and **Bug_Moveto** subroutines (substitute XX and XY with actual field numbers).

   Note: We set the fields to be read-only once the user selects **Yes** in the **Synchronize with SM Problem** field.

   ```
   if (Bug_Fields("BG_USER_XX").Value="Y") then
   Bug_Fields("BG_USER_XX").IsReadOnly=True
   end if
   Bug_Fields.Field("BG_USER_XY").IsReadOnly=True
   ```

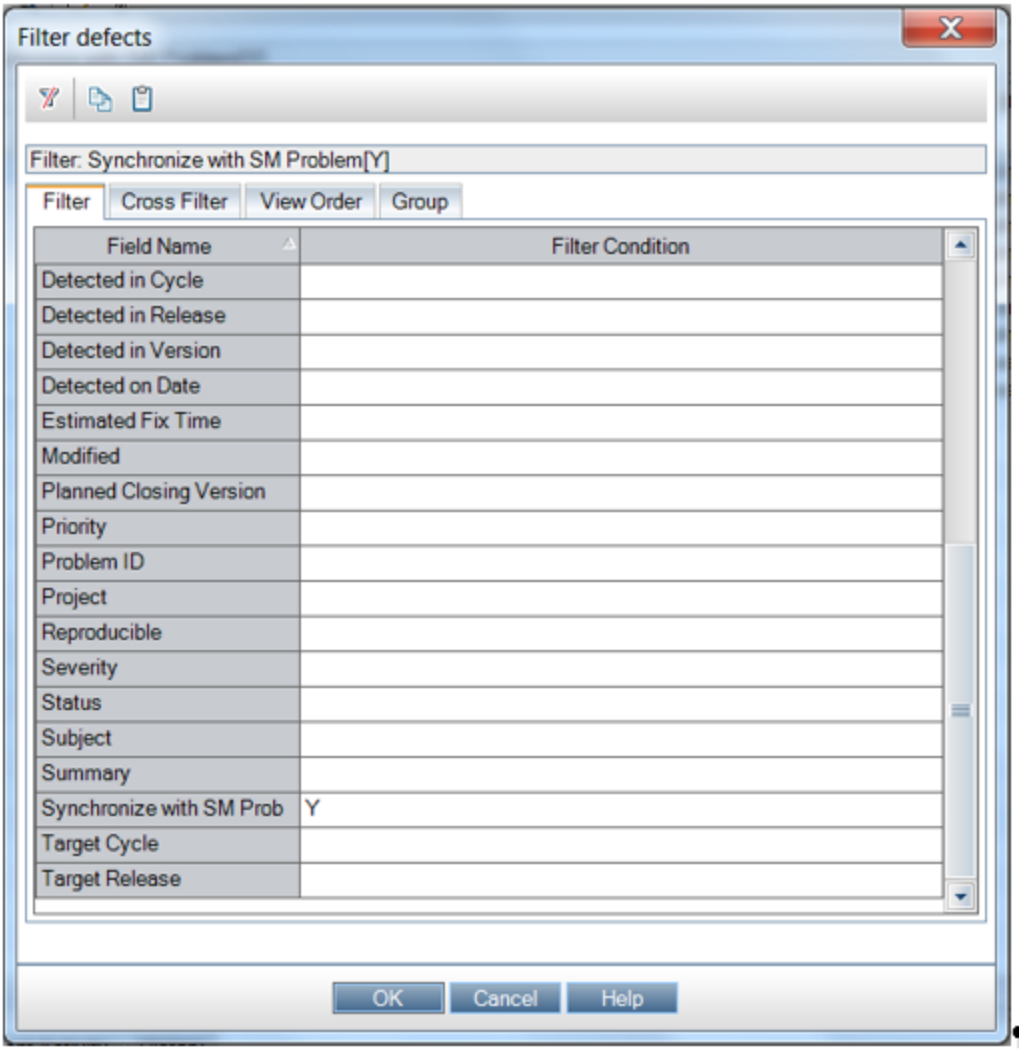
9. Save the updated Workflow scripts.
10. Click the **Return** button and return to main ALM screen.
11. In the Customization Changes dialog box, select the **Major Change** radio button and click **OK**.

Step 4: Creating a Filter in ALM

To create a defects filter that ALM Synchronizer uses to identify defects whose data needs to be synchronized with Service Manager:

1. Log on to ALM with the **SMALMIntUser** integration account.
2. In the **Defects** module, click **View > Filter > Sort > Set Filters/Sort**.

Note: The purpose of this view is to make ALM Synchronizer correctly filter those defects to be synchronized to Service Manager as problems. If the implemented process requires a more strict selection—for example, limit only defects in specific state—include those in the filter as well.



3. Set **Synchronize with SM Problem** to **Y**.
4. Add a view to **Favorites**:
   - **Name.** Synchronize with SM Problem
   - **Location.** Private
5. Log out.

ALM Synchronizer

This section contains the following topics:

Installing ALM Synchronizer 157
Configuring ALM Synchronizer 157
Creating Synchronizer Link 159
Working with Field Mapping 164

Installing ALM Synchronizer

1. Download ALM Synchronizer from HP Live Network (`https://hpln.hp.com/group/synchronizer-content-alm`) and extract the archive.

   Note: This requires an HP Passport account with a User Name and Password.

2. Execute **setup.exe** to set up the ALM Synchronizer Server and follow the Installation Wizard. The Configuration Wizard opens.

3. Follow the Configuration Wizard and provide the appropriate requested values for the environment (for instance, details such as the ALM version number, system credentials to run as a service, and so on).

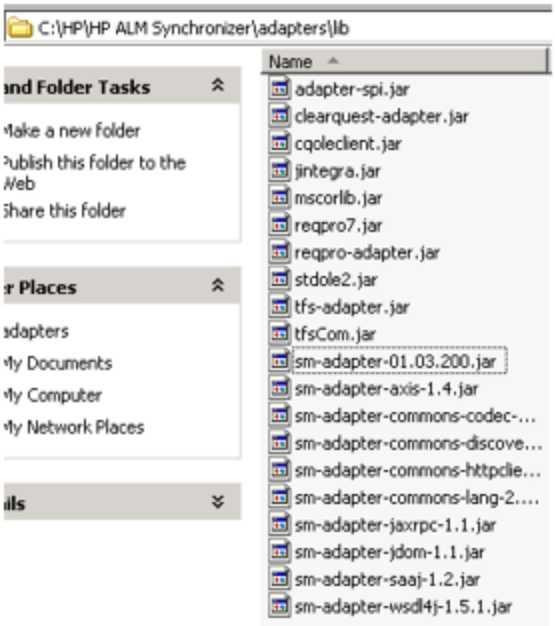
4. Execute **HP_ALM_Sync_Client_1.msi** to set up the ALM Synchronizer client following the Installation Wizard.

   Note: The only input needed is the destination folder.

Configuring ALM Synchronizer

1. Download the content package for ALM Synchronizer from HP Live Network (https://hpln.hp.com/page/defects-and-requirements-exchange-hp-service-managerservicecenter-and-hp-alm) and extract the archive on the ALM Synchronizer machine.

2. From the **Adapters** folder in the content package, copy the 10 .jar files to the ALM Synchronizer installation folder under the `adapters\lib` directory.



3. Generate and deploy the stub:

   a. Verify the Service Manager service is up and running.

   b. In the extracted files from the content package, locate and edit the `build.properties` file. Update the sample URL with actual values for the Service Manager server host, port, and the corresponding Web service name (Web service endpoint configured in the Service Manager Configuration section).

      For example,

      `http://<sm server host>:<sm server port>/SM/7/QCIntProblemService.wsdl`

      Validate that the URL is accessible from the ALM Synchronizer machine using a Web browser.

   c. Restart the ALM Synchronizer service. This will extract the Service Manager Problem Management folder in the ALM Synchronizer `install\adapters\dat` folder.

   d. Copy the `configuration_file_default.xml` example configuration file from the **content package\sample** folder to the **ALM Synchronizer\adapters\SM ProblemManagement** folder and edit it according to the specific customer environment.

      Note: Field types and allowed values for field lists may be significantly different from out-of-the-box values.

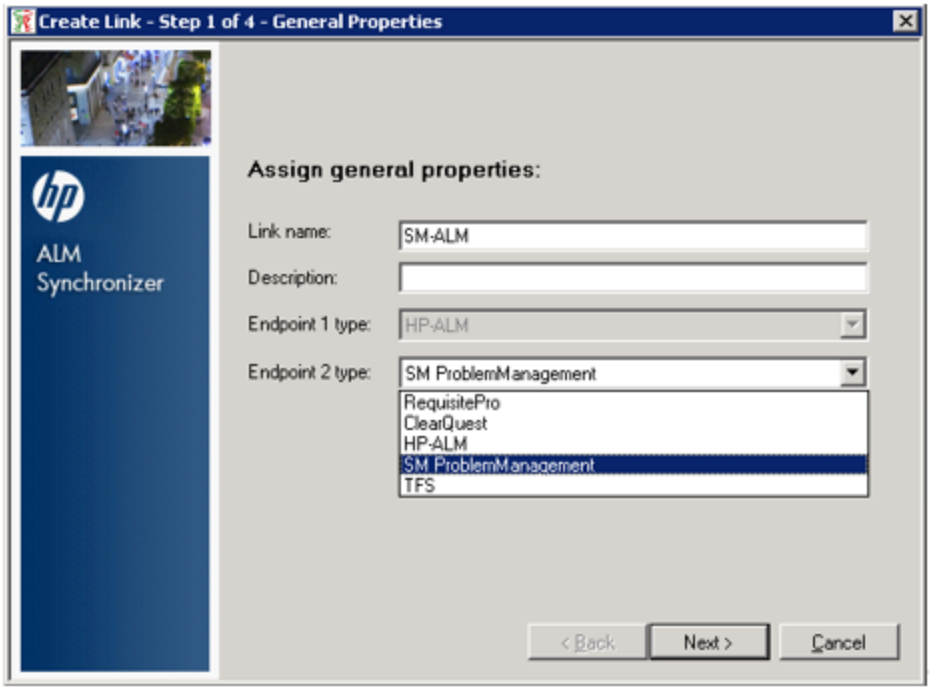
For more details about configuration file editing, see “Editing the Configuration Files” in Chapter 3, "Installing and Configuring QC/ALM Synchronizer" in *HP Defects and Requirements Exchange with HP Service Manager/ServiceCenter and HP Quality Center/Application Lifecycle Management Installation and Administration Guide*.

Creating Synchronizer Link

In order to create a synchronizer link, install the ALM client and ALM connectivity tool from the ALM add-ons page. Open the ALM Synchronizer client and connect to the synchronizer server.

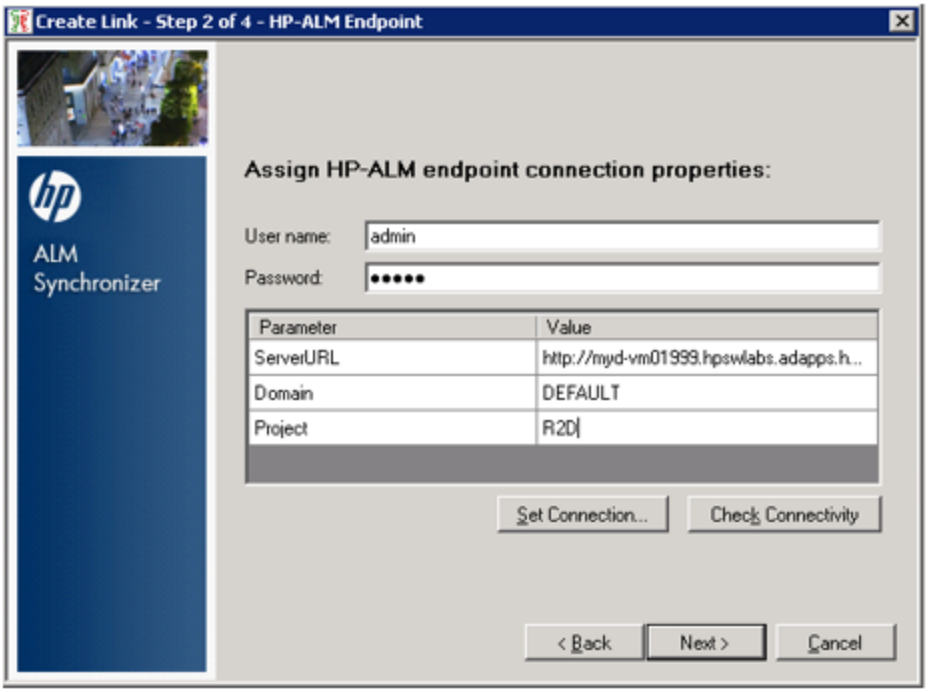
To create a new synchronization link:

1. In the menu near the top of the screen, select **Link > Create**.
2. In the **Create Link** wizard, fill in the following values:
   a. In the Step 1 of 4 – General Properties dialog box, enter the **Link name** and **Description** (optional). For **Endpoint 2 type**, select **SM ProblemManagement**.



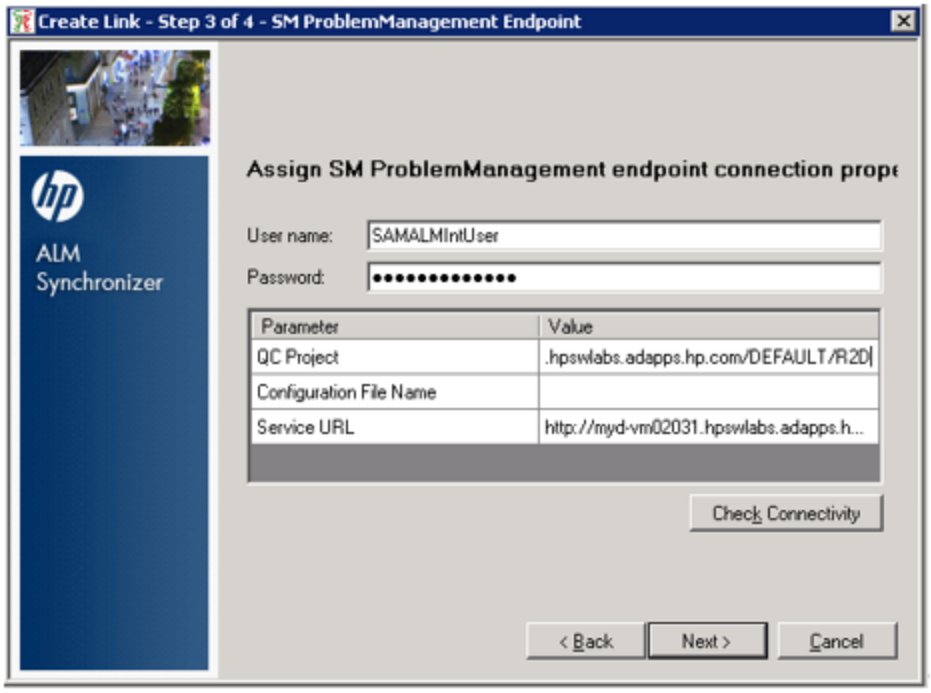
Click **Next**.

b. In the Step 2 of 4 – HP-ALM Endpoint dialog box, enter the ALM connection details; including the **User name** and **Password**, as well as the **ServerURL** (in form of `http://<hostname>:<port>/qcbin`), **Domain**, and **Project**.



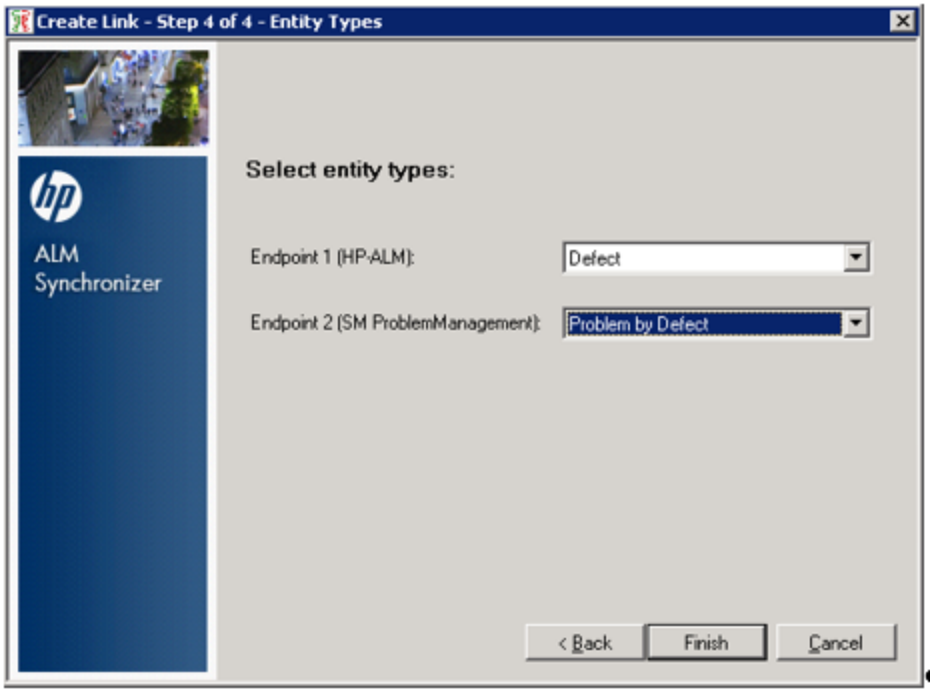
Click **Next**.

c. In the Step 3 of 4 – SM Problem Management Endpoint dialog box, enter the Service Manager connection details; including the **User name**and **Password**, **QC/ALM Project** details (in the form of <ALM hostname>/Domain/Project), Web **Service URL**, as well as the edited configuration.xml (Configuration File Name) from step 3.d of **Configuration of ALM Synchronizer**.



Click **Next**.

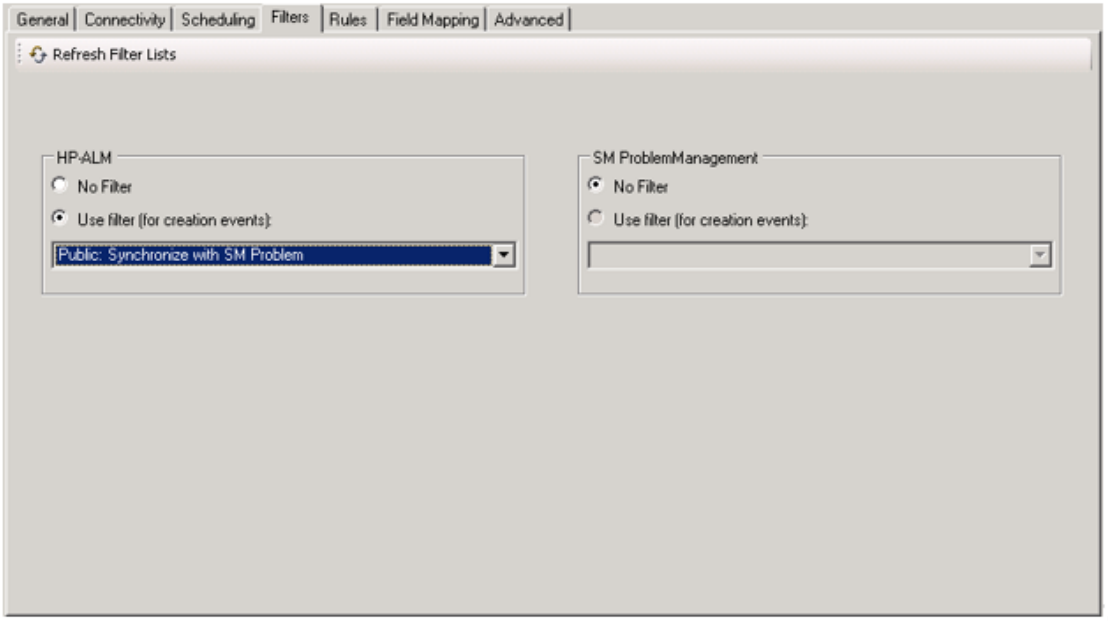
d. In the Step 4 of 4 – Entity Types dialog box, select the appropriate entity types. In the R2D use case, the relevant entities are **Defect** on the ALM side and **Problem by Defect** on the Service Manager side.



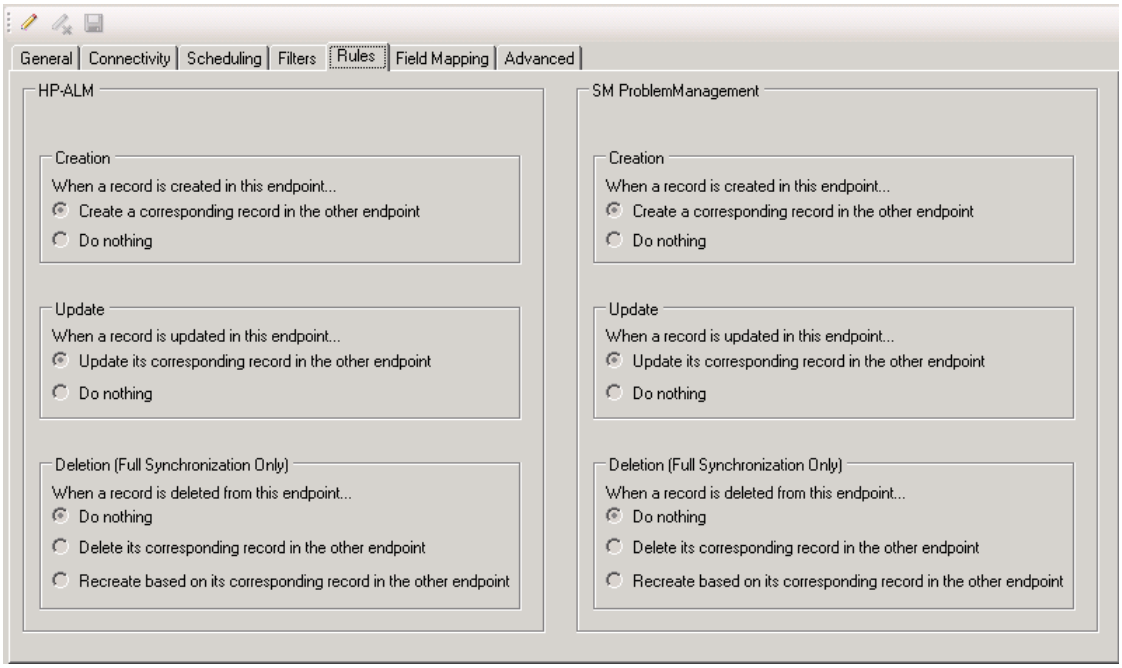
e. Click **Finish**.

3. Once the link is created, go to the **Filters** tab.

   In the HP ALM section, select the **Use filter (for creation events)** radio button. In the drop-down dialog box, select the favorite which was created in the ALM project configuration phase chapter.



4. Select the **Rules** tab and verify that the entity creation rules are appropriate. The default suggested rules are shown in the following figure:

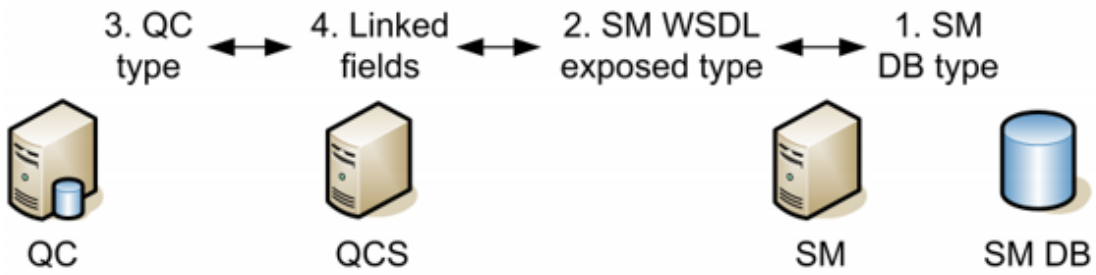


5. Select the **Field Mapping** tab and map the fields between ALM Defect and SM Problem.

   For complete details about this process, see Chapter 4, "Configuring Links in QC/ALM Synchronizer" in *HP Defects and Requirements Exchange with HP Service Manager/ServiceCenter and HP Quality Center/Application Lifecycle Management Installation and Administration Guide*.

Working with Field Mapping

HP Defects and Requirements Exchange with HP Service Manager/ServiceCenter and HP Quality Center/Application Lifecycle Management Installation and Administration Guide shows the field mapping chain. The fields which need to be mapped are different in each specific customer environment, thus this process has to be done in each implementation project. For more information, see Chapter 4, "Configuring Links in QC/ALM Synchronizer" in the document.



To work with Field Mapping:

1. Identify the required fields to create an ALM entity (Defect). In the out-of-the-box ALM version 11.52 environment, the fields are:

Field name in ALM User Interface	Field in ALM Database
Summary	BG_SUMMARY
Detected By	BG_DETECTED_BY
Severity	BG_SEVERITY
Detected On Date	BG_DETECTION_DATE

2. Identify additional optional fields which provide value if synchronized from ALM to Service Manager—Description, Defect status, and so on. This requires an appropriate modification of the database schema, forms, and Web service endpoint on the Service Manager side.

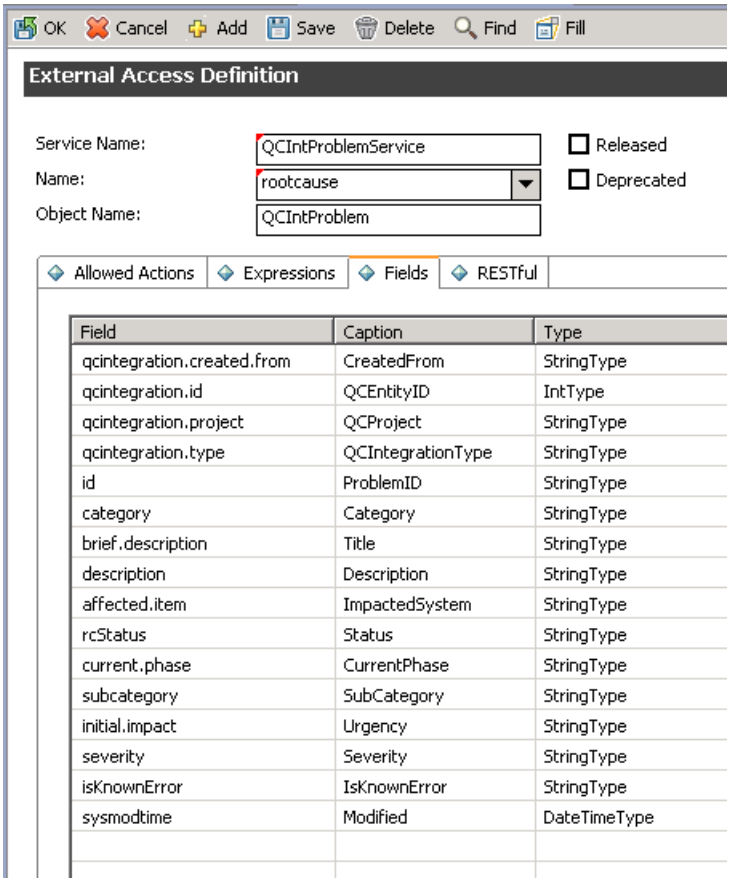
3. Identify the required fields to create a Service Manager entity (Problem record). In Service Manager version 9.32 (with Service Manager Process Designer Content Pack installed), the fields are:

Caption in SM User Interface	Field in SM Database	Caption in Web Service	Type
* Problem ID	id	SMProblemID	StringType
** N/A	sysmodtime	**Modified**	DateTimeType
Title	brief.description	Title	StringType
Description	description	Description	StringType
Affected Service	affected.item	AffectedService	StringType
Impact	initial.impact	Impact	StringType
Category	category	Category	StringType
Area	subcategory	SubCategory	StringType
Urgency	severity	Urgency	StringType
* Synchronize with ALM	qcintegration.type	QCIntegrationType	StringType
* Defect ID	qcintegration.id	QCEntityID	IntType
* Server/Domain/Project	qcintegration.project	QCProject	StringType
* Created From	qcintegration.created.from	CreatedFrom	StringType

Those values can be provided as constant values (simple case) or mapped to a custom value list in ALM.

* Not mandatory fields per say, but are required for enabling the integration.

** This field caption must be as shown in the following figure:

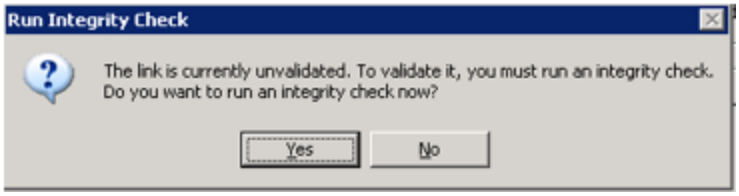


4. Identify additional optional fields that provide value if synchronized from Service Manager to ALM and add them to the mapping. It is important to include:

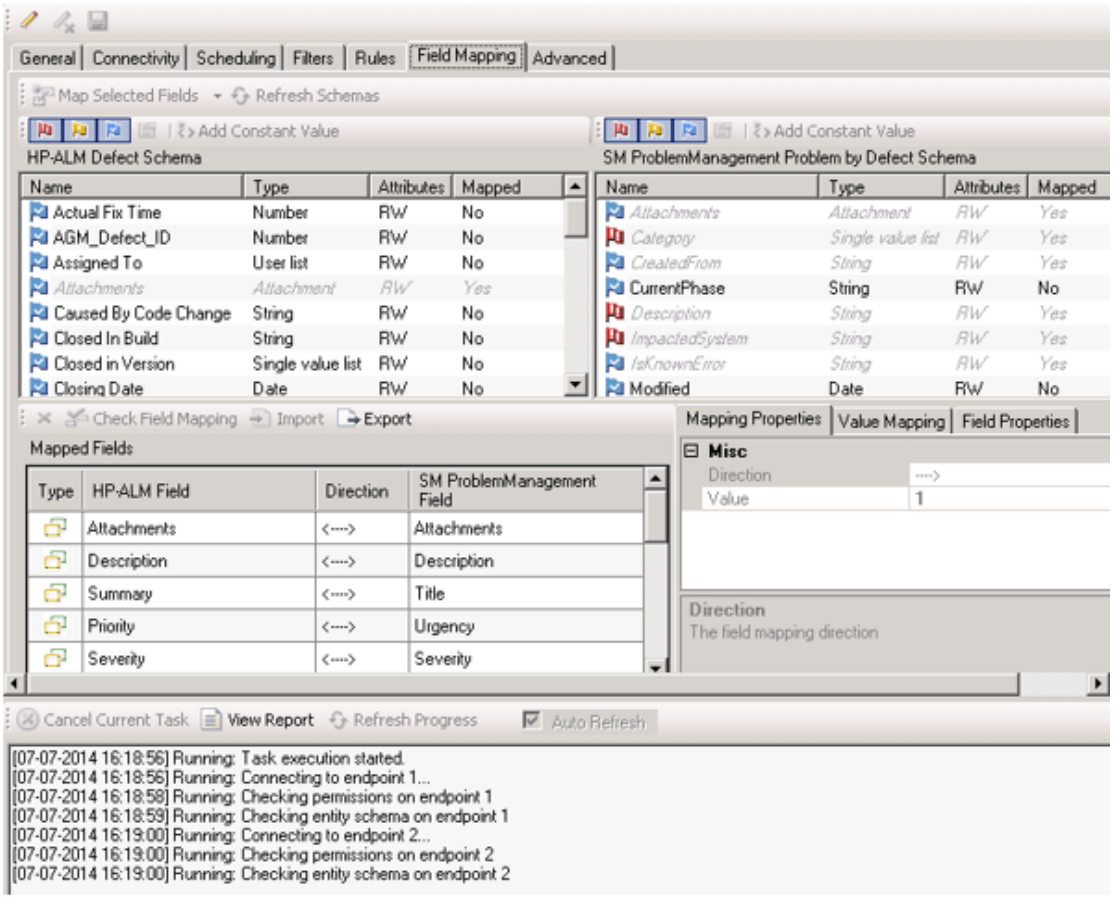
SM web service side	Direction	ALM Side	Comment
ProblemID	→	Problem ID	Required for traceability between the ALM Defect and the SM Problem
QCEntityID	←	Defect ID	Required for traceability between the SM Problem and the ALM Defect
QCIntegrationType	←	Constant value:1	Needed to lock the appropriate fields on the SM side

SM web service side	Direction	ALM Side	Comment
QCProject	←	Constant value: <ALM hostname>/Domain/Project	Value must be one of the values defined for the global list in the Configuring Service Manager > Step 3 > step 4.a.
CreatedFrom	←	Constant value: ALM Defect	
Constant value: Y	→	Synchronize with SM Problem	

5. Click **Save** to save the resulting link configuration.
6. A warning about an unvalidated link will appear. Click **Yes** to begin an integrity check. This is a basic setup check that confirms that the fields configured as mandatory in both products are mapped to values and field types that match.



7. In case of a failed validation check, update the mapping according to the error messages shown in **Run Report**. To view the report, click the **View Report** button.



8. In the menu near the top of the screen, select **Link > Enable Link**.

   The link is enabled.

9. In the menu near the top of the screen, select **Run Task > Run Full Synchronization**.

   The synchronization task runs.

Verification

Note: This procedure is to verify that the implementation was done successfully.

To validate the integration was set up successfully:

1. Log on to the ALM Client and create a defect:
    a. Fill in the mandatory fields and any optional fields which were added in the field mapping phase.
    b. Open a defect details form and modify the **Synchronize with SM Problem** field to **Y**.
2. Open the ALM Synchronizer client and run the **Incremental Synchronization** task. Review the task execution result report. If at least one entity was created in an SM endpoint, proceed further.
3. Log on to Service Manager.
    a. In Problem Management, select **Search Problem**, and do a true search.
    b. Go to the last Results page and review the latest problem records.
    c. By referring to its title, locate the problem that was opened from **ALM Defect ()** and review its details. Verify that all mapped information has passed from ALM Defect to SM Problem.

Chapter 10: Synchronizing CIs between UCMDB and SM

This chapter includes:

Overview 170

Setting Up UCMDB for Integration with SM Using ServiceManagerAdapter9-x 171

Setting Up SM for Integration with UCMDB 175

Verification 176

Setting Up UCMDB for Integration with SM Using ServiceManagerAdapter7-1 177

Setting Up SM for Integration with UCMDB 180

Verification 182

Overview

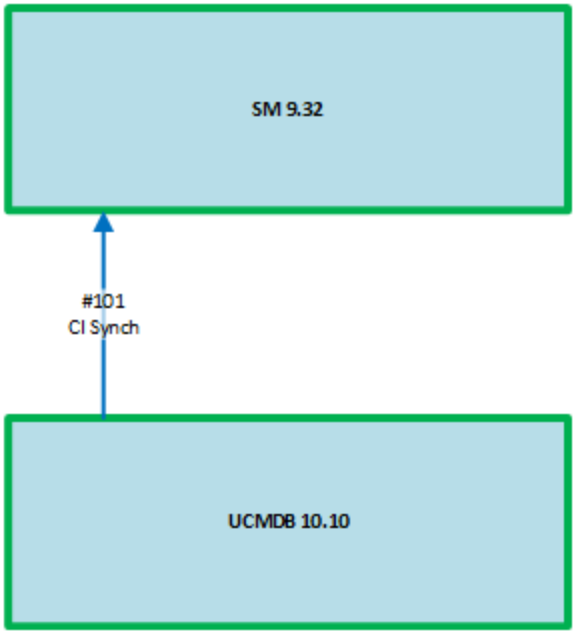
This section describes the necessary steps to configure and verify the integration between HP Universal CMDB (UCMDB) and HP Service Manager (SM).

Typically, UCMDB uses one or more discovery mechanisms (feeders) to automatically detect configuration item (CI) attribute values.

In the context of the Requirement to Deploy Value Stream, this integration allows the synchronization of configuration data for managed services between UCMDB and Service Manager. Having an up-to-date state of the configuration is essential for managing associated change requests that are part of deploying new or modified services.

For more information, see Integration ID#101: CI sync and actual state federation (UCMDB to SM) in **HP Software Solutions Now**.

The following diagram illustrates the relationship between the products for this integration:



Setting Up UCMDB for Integration with SM Using ServiceManagerAdapter9-x

This section describes the steps necessary to configure UCMDB in order to perform the integration with SM using ServiceManagerAdapter9-x.

This section contains the following topics:

Prerequisites 172
Configuring SM Adapter in UCMDB 172
Creating a New Integration Point 173
Setting Up the Data Push Job 174
Running the Data Push Jobs 174

Prerequisites

The following products must be installed:

- Log on to your UCMDB system as an administrator.
- Verify that all UCMDB services are running.

Configuring SM Adapter in UCMDB

To configure the SM adapter in UCMDB:

1. Browse to your UCMDB user interface.
2. Select the **Data Flow Management** tab.
3. Select **Adapter Management**.
4. From the resources window, select **ServiceManagerAdapter9-x** and expand it.
5. Expand the **configuration files** item.
6. Select **ServiceManagerAdapter9-x/sm.properties** from the list of items.
7. In the pane on the right side of the window, modify the **use.global.id** parameter, set it to **false**, and click **OK**.

Creating a New Integration Point

To create a new integration point:

1. Navigate to **Data Flow Management > Integration Studio**.

2. In the Integration Point pane, click the **Create New Integration Point** button. The Create New Integration Point dialog box opens.

   Enter the following information:

Name	Recommended Value	Description
Integration Name	**SM Integration**	Name you give to the integration point
Adapter	**<user defined>**	Select the appropriate adapter for the version of SM that you are using
Is Integration Activated	**selected**	Select this check box to create an active integration point
Hostname/IP	**<user defined>**	Name of the SM server
Port	**<user defined>**	Port through which you access SM
Credentials	**<user defined>**	If SM credentials appear in the Credentials column, select them. If no SM credentials appear, select **Generic Protocol** and click the **Add new connection details for selected protocol type** button. Enter the following information: **Description.** Enter **Service Manager**. **User Name.** Enter the SM user name. The default value is **falcon**. **User Password.** Enter and confirm a password.
Probe Name	**<user defined>**	The probe is selected from a drop-down list. This is the same probe that is being used for the UCMDB – BSM integration.

> **Note:** It is recommended to click the **Test Connection** button to verify that the details entered are working before continuing.

3. Click **OK**.
4. On the **Federation** tab, verify the **Incident**, **Problem**, and **RequestForChange** CI types are checked and click the **Save Integration** button.

Setting Up the Data Push Job

To push CIs and Relations from UCMDB to SM:

1. Edit the **SM Push** job.
2. Select **Scheduler Definition**.
3. For the **Repeat** field, select **Changes Sync/All Data Sync**.
4. Set the **Repeat Every** field to **1 Day**.
5. Click **OK**.

Running the Data Push Jobs

To run the data push jobs:

1. In the Integration Point pane, select the correct integration.
2. Select the **Data Push** tab. The Job Definition pane appears.

> **Note:** The Changes job must be run before the RMI job.

3. Select your job and click **Synchronize All** to run the push job.
4. When the Confirm synchronizing window appears, click **Yes**.
5. Click the **Statistics** tab to view the progress of the synchronization.
6. Click **Refresh** to view the updated synchronization status.

Setting Up SM for Integration with UCMDB

This section describes the steps necessary to configure SM in order to perform the integration with UCMDB.

This section contains the following topics:

Prerequisites 175
Adding the UCMDB Connection Information to the System Information Record 175

Prerequisites

The following products must be installed:

- Log on to your UCMDB system as an administrator.
- Verify that all UCMDB services are running.

Adding the UCMDB Connection Information to the System Information Record

To add the UCMDB connection information to the system information record:

1. Log on to your Service Manager system as an administrator.
2. Navigate to **System Administration > Base System Configuration > Miscellaneous > System Information Record**.
3. Select the **Active Integrations** tab.
4. Select the **HP Universal CMDB** option. The form appears in the UCMDB Web service URL field.
5. In the UCMDB Web service URL field, enter the URL to the UCMDB Web service API.

   The URL has the following format:

   ```
   http://<UCMDB server name>:<port>/axis2/services/ucmdbSMService
   ```

6. In the UserId dialog box, enter your **UCMDB user name** and **password** and click **Save**.

Verification

Note: This procedure is to verify that the implementation was done successfully.

To verify the UCMDB – SM integration:

1. Browse to your UCMDB server.
2. Navigate to **Managers > Modeling > CI Type Manager**.
3. Under **ConfigurationItem > InfrastructureElement**, click **Node**.
4. Right-click a Node object and select **Show CIT Instances**. The CIT Instances window for the selected Node object appears.
5. From the list of CIT instances, select one CI and right-click **Properties**. The Configuration Item Properties window appears showing the UCMDB ID at the top of the window.
6. Click **OK**. The Configuration Item Properties window closes.
7. Click **OK**. The Show IT Instances window closes.
8. Browse to your SM server.
9. Navigate to **Configuration Management > Resources > Search CIs**.
10. Click the **Search** button.
11. Click **More** on selected CI.
12. Select **Modify Columns**.
13. Click the down arrow and select your UCMDB ID, then click **Proceed**.
14. Verify that all the CIs from UCMDB are listed in SM and select the **Actual State** tab to view the CI properties in UCMDB.

Setting Up UCMDB for Integration with SM Using ServiceManagerAdapter7-1

This section describes the steps necessary to configure UCMDB in order to perform the integration with SM using ServiceManagerAdapter7-1.

This section contains the following topics:

Prerequisites 177
Configuring SM Adapter in UCMDB 177
Creating a New Integration Point 178
Setting Up the RMI Job 179
Setting Up the Changes Job 179
Running the Data Push Jobs 179

Prerequisites

The following products must be installed:

- Log on to your UCMDB system as an administrator.
- Verify that all UCMDB services are running.

Configuring SM Adapter in UCMDB

To configure the SM adapter in UCMDB:

1. Browse to your UCMDB user interface.
2. Select the **Data Flow Management** tab.
3. Select **Adapter Management**.
4. From the resources window, select **ServiceManager Adapter7-1** and expand it.
5. Expand the **configuration files** item.
6. Select **ServiceManagerAdapter7-1/sm.properties** from the list of items.
7. In the pane on the right side of the window, modify the **use.global.id** parameter, set it to **false**, and click **OK**.

Creating a New Integration Point

To create a new integration point:

1. Navigate to **Data Flow Management > Integration Studio**.

2. In the Integration Point pane, click the **Create New Integration Point** button. The Create New Integration Point dialog box opens.

   Enter the following information:

Name	Recommended Value	Description
Integration Name	**SM Integration**	Name you give to the integration point
Adapter	**<user defined>**	Select the appropriate adapter for the version of SM that you are using
Is Integration Activated	**selected**	Select this check box to create an active integration point
Hostname/IP	**<user defined>**	Name of the SM server
Port	**<user defined>**	Port through which you access SM
Credentials	**<user defined>**	If SM credentials appear in the Credentials column, select them. If no SM credentials appear, select **Generic Protocol** and click the **Add new connection details for selected protocol type** button. Enter the following information: **Description.** Enter **Service Manager**. **User Name.** Enter the SM user name. The default value is **falcon**. **User Password.** Enter and confirm a password.

> **Note:** It is recommended to click the **Test Connection** button to verify that the details entered are working before continuing.

3. Click **OK**.
4. On the **Federation** tab, select the **Incident**, **Problem**, and **RequestForChange** CI types and click the **Save Integration** button.

Setting Up the RMI Job

To replicate the relations from UCMDB to SM:

1. Edit the **SM Topology Comparison Push** job.
2. Select **Scheduler Definition**.
3. For the **Repeat** field, select **interval**.
4. Set the **Repeat Every** field to **1 Day**.
5. Click **OK**.

Setting Up the Changes Job

To replicate CIs from UCMDB to SM:

1. Edit the **SM History-based Push** job.
2. Select **Scheduler Definition**.
3. For the **Repeat** field, select **interval**.
4. Set the **Repeat Every** field to **1 Day**.
5. Click **OK**.

Running the Data Push Jobs

To run the data push jobs:

1. In the Integration Point pane, select the correct integration.
2. Select the **Data Push** tab. The Job Definition pane appears.

Note: The Changes job must be run before the RMI job.

3. Select your job and click **Synchronize All** to run the replication job.
4. When the Confirm synchronizing window appears, click **Yes**.
5. Click the **Statistics** tab to view the progress of the synchronization.
6. Click the **Refresh** button to view the updated synchronization status.

Note: Follow the same procedure for the RMI and Changes jobs.

Setting Up SM for Integration with UCMDB

This section describes the steps necessary to configure SM in order to perform the integration with UCMDB.

This section contains the following topics:

Prerequisites 180
Adding the UCMDB Connection Information to the System Information Record 180

Prerequisites

The following products must be installed:

- Log on to your UCMDB system as an administrator.
- Verify that all UCMDB services are running.

Adding the UCMDB Connection Information to the System Information Record

To add the UCMDB connection information to the system information record:

1. Log on to your Service Manager system as an administrator.
2. Navigate to **System Administration > Base System Configuration > Miscellaneous > System Information Record**.
3. Select the **Active Integrations** tab.

4. Select the **HP Universal CMDB** option. The form appears in the UCMDB Web service URL field.
5. In the UCMDB Web service URL field, enter the URL to the HP Universal CMDB Web service API.

   The URL has the following format:

   ```
   http://<UCMDB server name>:<port>/axis2/services/ucmdbSMService
   ```

6. In the UserId dialog box, enter your **UCMDB user name** and **password** and click **Save**.

Verification

Note: This procedure is to verify that the implementation was done successfully.

To verify the UCMDB – SM integration:

1. Browse to your UCMDB server.
2. Navigate to **Managers > Modeling > CI Type Manager**.
3. Under **ConfigurationItem > InfrastructureElement**, click **Node**.
4. Right-click a Node object and select **Show CIT Instances**. The CIT Instances window for the selected Node object appears.
5. From the list of CIT instances, select one CI and right-click **Properties**. The Configuration Item Properties window appears showing the UCMDB ID at the top of the window.
6. Click **OK**. The Configuration Item Properties window closes.
7. Click **OK**. The Show IT Instances window closes.
8. Browse to your SM server.
9. Navigate to **Configuration Management > Resources > Search CIs**.
10. Click the **Search** button.
11. Click **More** on selected CI.
12. Select **Modify Columns**.
13. Click the down arrow and select your UCMDB ID, then click **Proceed**.
14. Verify that all the CIs from UCMDB are listed in SM and select the **Actual State** tab to view the CI properties in UCMDB.

Chapter 11: Viewing Agile Manager Release Information in PPM

This chapter includes:

Overview 183

Configuring Agile Manager Integration Options 184

Adding an Agile Integration Configuration 185

Configuring PPM Center Project 186

Mapping a PPM Center Task to Agile Manager 187

Overview

The integration between HP Project and Portfolio Management (PPM) Center and HP Agile Manager (AgM) software can give you the information you need to make better business decisions, lower the cost of running both your Agile and traditional development projects, increase collaboration between business and IT, and improve application quality. We will explore how Agile development can be aligned with the basic principles of Project and Portfolio Management to make sure that IT objectives meet the company's business goals.

PPM Center integrates with Agile Manager using the HP PPM Plug-in for Agile integration. The integration between PPM Center and Agile Manager allows project managers, program managers, portfolio managers, and other project stakeholders to have:

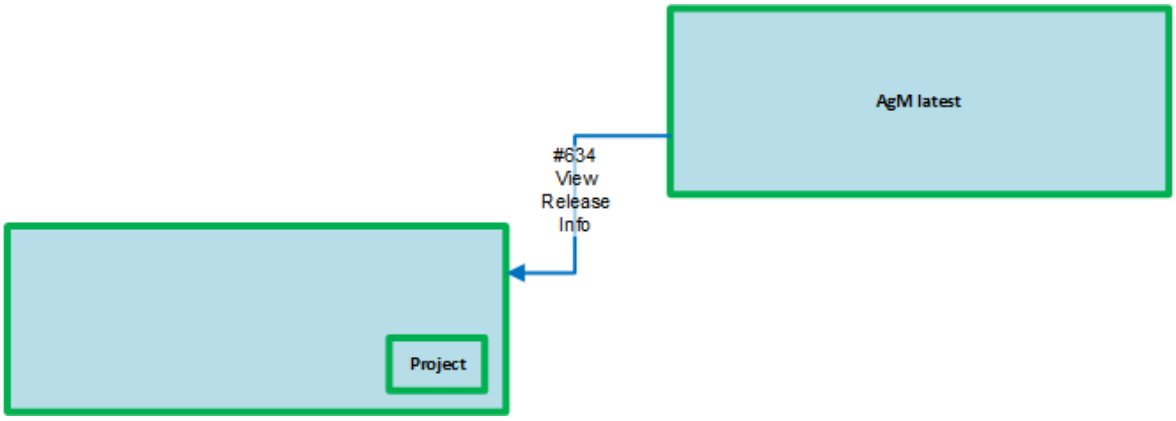
- Visibility into the real-time status and progress of Agile development projects from within PPM Center, without having to log on to Agile Manager for details;
- A consolidated view of their tasks and Agile development initiatives

The integration allows project managers to map a task under a project to a specific release managed in Agile Manager. Each PPM Center task is associated with a single release in Agile Manager throughout the task life cycle. This is a one-way one-to-one mapping relationship. This association begins when a project manager maps one task to a specific release.

After the mapping relationship is established, the project managers are able to view real-time Agile development related charts retrieved from Agile Manager. In addition, project managers can also view the overall release hierarchy information of a specific work package from within PPM Center.

For more information, see Integration ID#634: Agile Integration Solution (PPM – Agile Manager) in **HP Software Solutions Now**.

The following diagram illustrates the relationship between the products for this integration:



Configuring Agile Manager Integration Options

To configure the Agile Manager integration options:

1. Download and install the HP PPM 9.22 Plug-in for Agile Integration. Obtain the plug-in bundles from HP Live Network:

   a. Go to the PPM Community on HP Live Network.

   b. On the PPM Community home page, click **Content Catalog**.

   c. Click **Agile Manager Integration Plug-in for PPM** (where HP is the provider).

   d. Click **Downloads**.

      The **Agile Manager Integration Plug-In for PPM – Downloads** page opens.

   e. Click the **HP Agile Manager Connector for PPM 9.30** folder.

   f. Click **ppm-930-AgileManagerConnector.zip** to download the package. This package contains the **ppm-930-Connector-AGM.jar** bundle.

2. Stop the PPM Server.

   a. In the PPM Server, open a command line.

   b. Go to the **<PPM home>\bin** folder.

   c. Run the following script: `sh kStop.sh -now -user <admin_user>`

3. Unzip the package and copy the bundle to the **<PPM_Home> directory**.

4. Deploy the bundle by running the following command from the **<PPM_Home>/bin directory**:
   - `sh ./kDeploy.sh -i Connector-AGM`
5. Start PPM Server.
   a. In the PPM Server, open a command line.
   b. Go to the **<PPM home>\bin** folder.
   c. Run the following script: `sh kStart.sh`

Adding an Agile Integration Configuration

To add an Agile integration configuration:

1. Log on to PPM Center with administrative privileges.
2. From the menu bar, select **Open > Administration > Integrations**.
3. In the navigation pane, click the **Hybrid Project** tab.
4. In the **Instances** section, to the right of **HP Agile Manager 1.0**, click **+**.

5. Complete the fields described in the following table:

Field (Required)	Description
***Instance Name**	Specify a unique name for the target Agile Manager server
***Base URL**	URL of the HP Agile Manager server you want to integrate with Format of the URL: `http(s)://<agile_server_address>:<port>`
***Proxy Host**	Host name of the proxy if you have configured the proxy for the PPM Server to access the Internet
Proxy Port	Port of the proxy if you have configured the proxy for the PPM Server to access the Internet
Use Global Proxy	Flag whether or not to use the proxy specified in the parameter `HTTP_PROXY_URL`. For more information, see "Configuring Global Proxy" on page 112 of the HP Solution and integration Guide for PPM version 9.30.

6. Click **Save**.

Configuring PPM Center Project

In order to map a PPM Center task to an Agile Manager project, the project to which the task belongs must be set as a Hybrid Project.

To set the task as a Hybrid Project:

1. Log on to PPM Center.
2. From the menu bar, select **Search > Projects**.

   The **Search Projects** page opens.
3. Locate and open the desired project.

   In the upper right-hand corner of the **Project Overview** page, click **Settings**.
4. In the left-hand pane, click the **Hybrid Project** tab.
5. Select the **Set the current project as a Hybrid Project** option.
6. Click **Done**. The setting is saved.

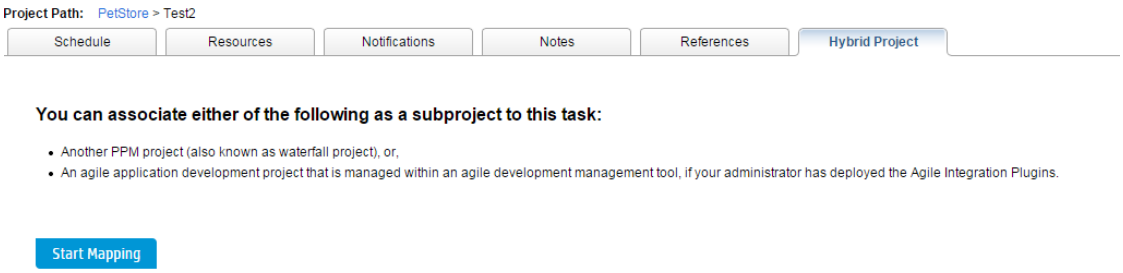
Mapping a PPM Center Task to Agile Manager

Note: This procedure is for validation only. It is not mandatory for an R2D configuration.

To associate an Agile release as a sub-project to a PPM Center task:

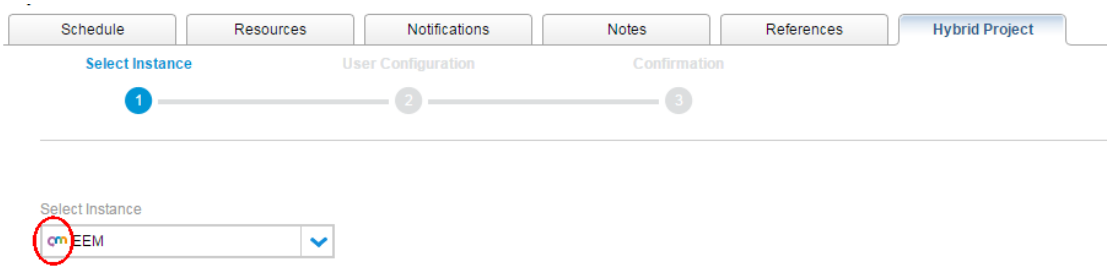
1. Log on to PPM Center with administrative privileges.
2. From the menu bar, select **Search > Projects**. The **Search Projects** page opens.
3. Locate and open the desired project.
4. On the **Project Summary** tab of the **Project Overview** page, click **Edit Work Plan** in the Work Plan portlet.

   The **Work Plan for <Project_Name>** page displays.
5. Open the **Task Details** page for the desired task that you want to associate to, and go to the **Hybrid Project** tab.
6. Select **Start Mapping**.



The **Hybrid Project** section displays **Step 1: Select Instance**.

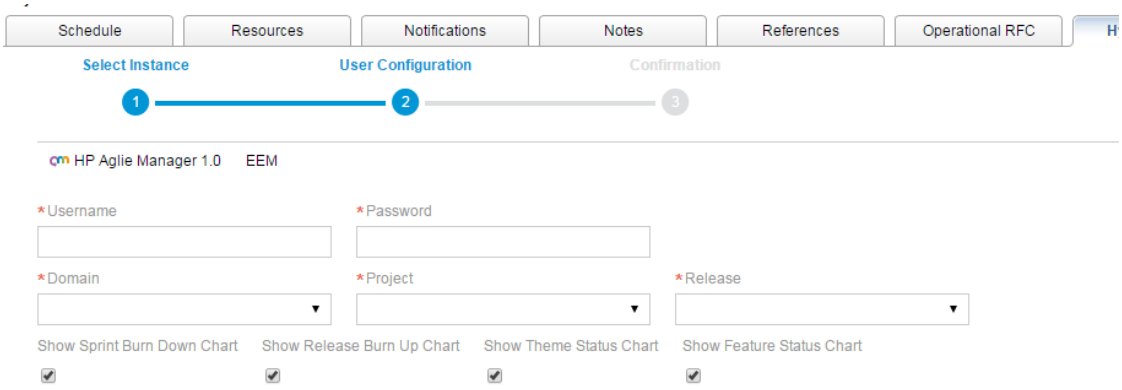
7. From the **Select Instance** drop-down list, select an instance of the appropriate agile project with the Agile Manager icon in front of the instance name.



8. Click **Next** and move to **Step 2: User Configuration**.

9. In the **Username** and **Password** fields, enter the user name and password that you use to log on to Agile Manager.

10. Select a value from the drop-down list for each of the **Domain**, **Project**, and **Release** fields.



11. After the mapping relationship is established, select the charts you want to display in the **Hybrid Project** the following options:

    - Show Sprint Burn Down Chart
    - Show Release Burn Down Chart
    - Show Theme Status Chart
    - Show Feature Status Chart

12. Click **Next**.

13. The mapping process moves to **Step 3: Confirmation**, displaying the information you provided in the User Configuration step. Click **Submit**.

The mapping relationship is established.The Agile Manager connector icon appears in the **Overall Status** section of the **Project Overview** page, indicating that the project has tasks mapped to agile projects.

Chapter 12: Associating UCMDB Service CI with PPM Entities

This chapter includes:

Overview 190

Configuring PPM and UCMDB 191

Adding a Service Context from UCMDB to PPM 201

Verification 205

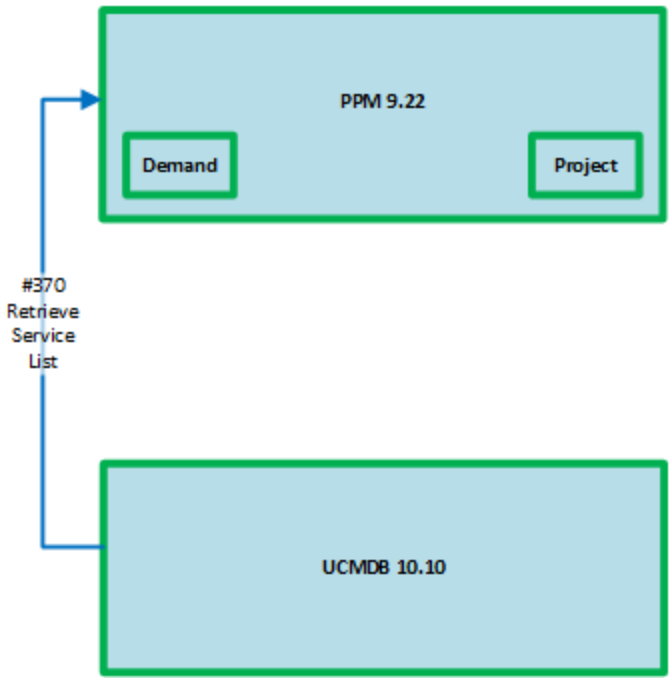
Overview

For service portfolio functionality, services can be associated with the Service field in HP Project and Portfolio Management (PPM) Center requests, and then labor costs can be tracked for each service. The list of services can be retrieved from HP Universal CMDB (UCMDB) in real time.

The primary goal of the Service concept is to have a place in PPM that allows users to identify the service that work is being performed against. User can specify a service attribute in a request. The service attribute is from a service list, which can be configured to be discovered from the UCMDB application in real time. From the perspective of PPM, we just need to retrieve a configuration item (CI) list of a certain CI type from UCMDB through a web service interface (SOAP) provided by UCMDB.

In the context of the Requirement to Deploy (R2D) Value Stream, this integration provides a service context for a PPM project. This service context can also be transferred to SM when submitting a request for change (RFC) from a work plan. For more information, see Integration ID#370: Retrieve Service List (PPM – UCMDB) in **HP Software Solutions Now**.

The following diagram illustrates the relationship between the products for this integration:



Configuring PPM and UCMDB

This section contains the following steps:

Step 1: Editing the PPM server.conf Configuration File 191
Step 2: Creating a Request Type Header with the Service Field 193
Step 3: Creating a Request Type That Uses the New Request Header Type 196
Step 4: Setting Up UCMDB CI Type Properties 199

Step 1: Editing the PPM server.conf Configuration File

1. Log on to the PPM server.
2. Stop the PPM Server.
   a. Log on to the PPM server as an administrator and open a command line.
   b. Go to the **<PPM home>\bin** folder.

c. Run the following script: `sh kStop.sh -now -user <admin_user>`

> **Note:** `<admin_user>` is a PPM user with administrative privileges.

3. Configure the **server.conf** file.

   a. In the PPM Server, go to the **<PPM home>** folder.

   b. Back up and edit the **server.conf** file in as follows:

   If not already present, add and specify the parameters and values related to the Service Manager integration to the PPM Center server.conf configuration file, as shown in the example file below. Set the parameters in the example to match your environment.

   > **Note:** For more information on each parameter, see page 323 in Chapter 9 of the *HP PPM Solution and Integration Guide*.

   The password for the UCMDB user is specified in UCMDB_WS_PASSWORD. You must encrypt this password using the `kEncrypt.sh` script that is located in the bin directory of the PPM Server.

   The parameters can be customized. For example, you can select another CIT.

   > **Note:** In this example, the parameter `com.kintana.core.server.SERVICE_LIST_UCMDB_CI_TYPE=business_service` means the integration will use a CI-Type business service from UCMDB.

   For more information, see Chapter 9 of the *HP PPM Solution and Integration Guide*.

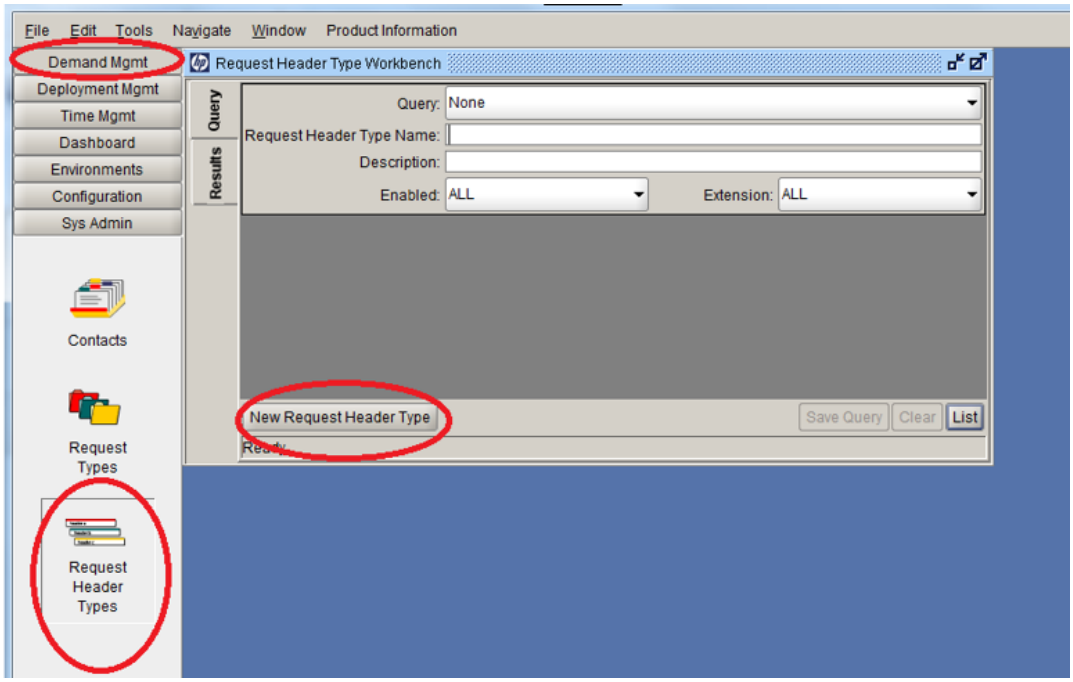
```
#
#
com.kintana.core.server.SERVICE_LIST_SOURCE=uCMDB
#
#
com.kintana.core.server.SERVICE_LIST_UCMDB_CACHE_TIMEOUT=300
#
#
com.kintana.core.server.SERVICE_LIST_UCMDB_CI_
MAPPINGS=name:name,description:description
#
```

```
#
com.kintana.core.server.SERVICE_LIST_UCMDB_CI_TYPE=business_service
#
#
com.kintana.core.server.SERVICE_LIST_UCMDB_MAX_CI_NUMBER=1000
#
#
com.kintana.core.server.UCMDB_SERVER_VERSION=10
#
#
com.kintana.core.server.UCMDB_GATEWAY_URL=http://<UCMDB URL
FQDN>:8080/mam/gateway?
#
#
com.kintana.core.server.UCMDB_SERVER_URL=http://<UCMDB URL FQDN>:8080/ucmdb/
#
#
com.kintana.core.server.UCMDB_WS_MAX_CONNECTION_NUMBER=10
#
#
com.kintana.core.server.UCMDB_WS_PASSWORD=<ucmdb admin user password>
#
#
com.kintana.core.server.UCMDB_WS_USER=<ucmdb admin user>
```

Step 2: Creating a Request Type Header with the Service Field

1. Log on to PPM Center with administrative privileges.
2. In PPM Center, click **Open > Administrator > Open Workbench**.
3. In the workbench:
   a. Go to **Demand Mgmt**.
   b. Click **Request Header Types**.

c. In the Request Header Type Workbench dialog box, click **New Request Header Type**.

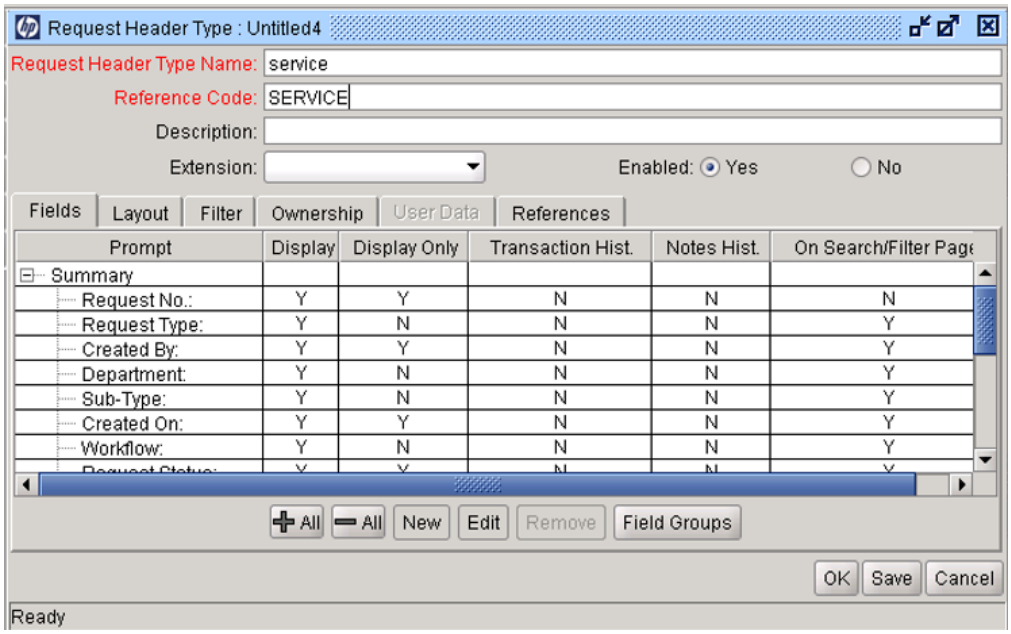


d. In the new Request Header Type dialog box, do the following:

   i. Enter the **Request Header Type Name**—for example, **Service**.

   ii. Click the **Reference Code** field.

iii. Click the **Field Groups** button.



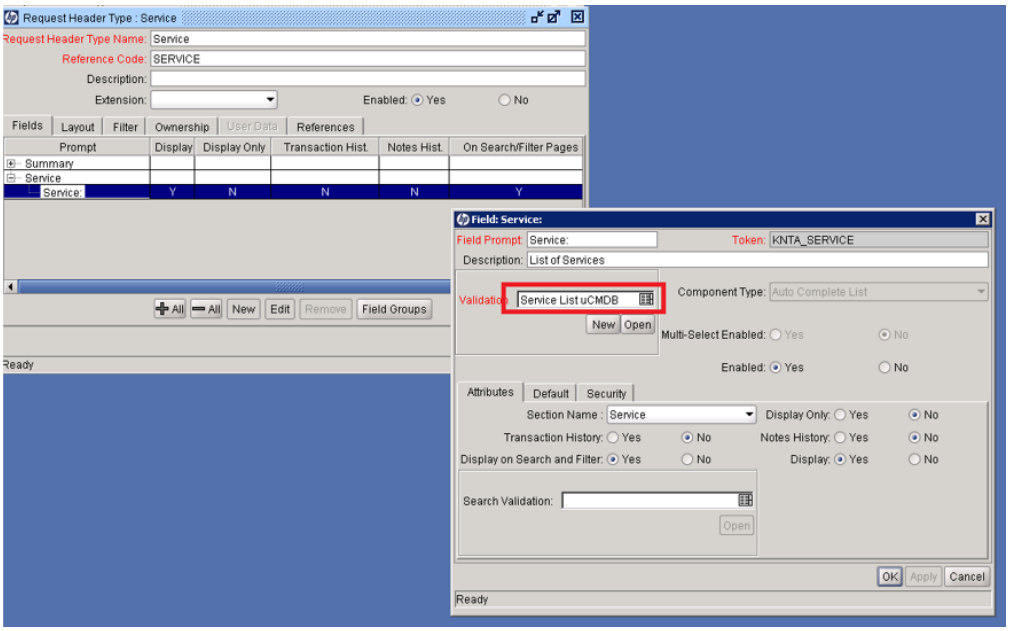
iv. In the Field Groups dialog box, select the **Service** field group.

v. Click **OK**.

vi. Double-click the **Service** field in the Request Header Type dialog box and confirm the validation for this field is **Service List UCMDB**.

Note: This validation is an autocomplete list. When users select autocomplete for the Service field, this validation invokes a special command to retrieve the Service list from Universal CMDB.

As with any request field, the administrator can make the Service field optional or required.



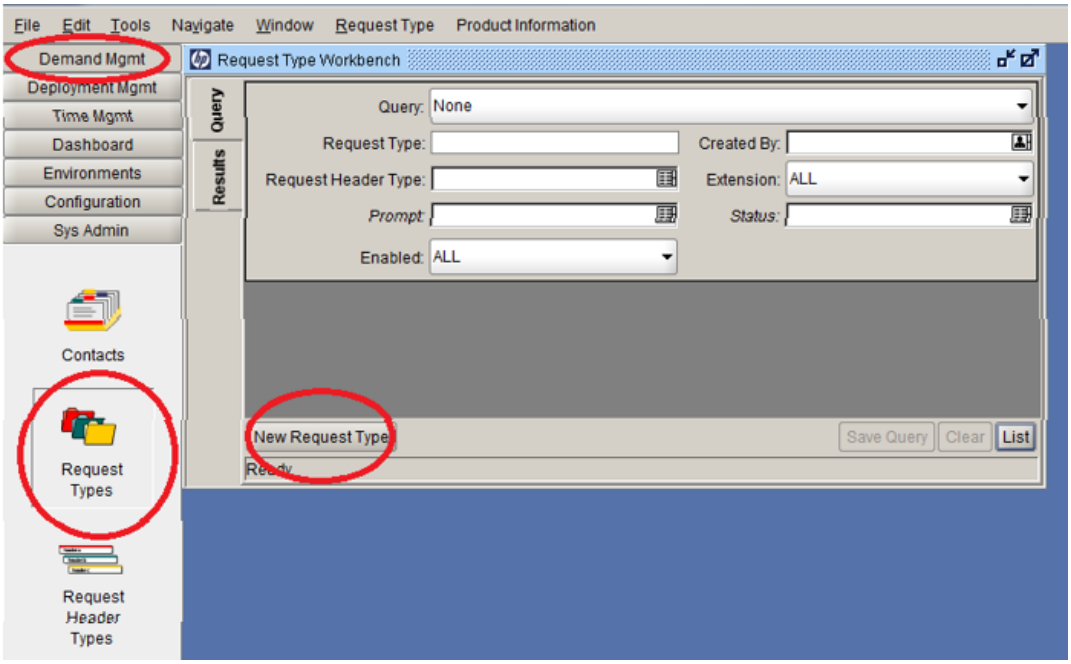
vii. Click **OK**.

viii. Click **OK**.

Step 3: Creating a Request Type That Uses the New Request Header Type

1. In PPM Center, click **Open > Administrator > Open Workbench**.
2. In the workbench:
   a. Go to **Demand Mgmt**.
   b. Click **Request Types**.

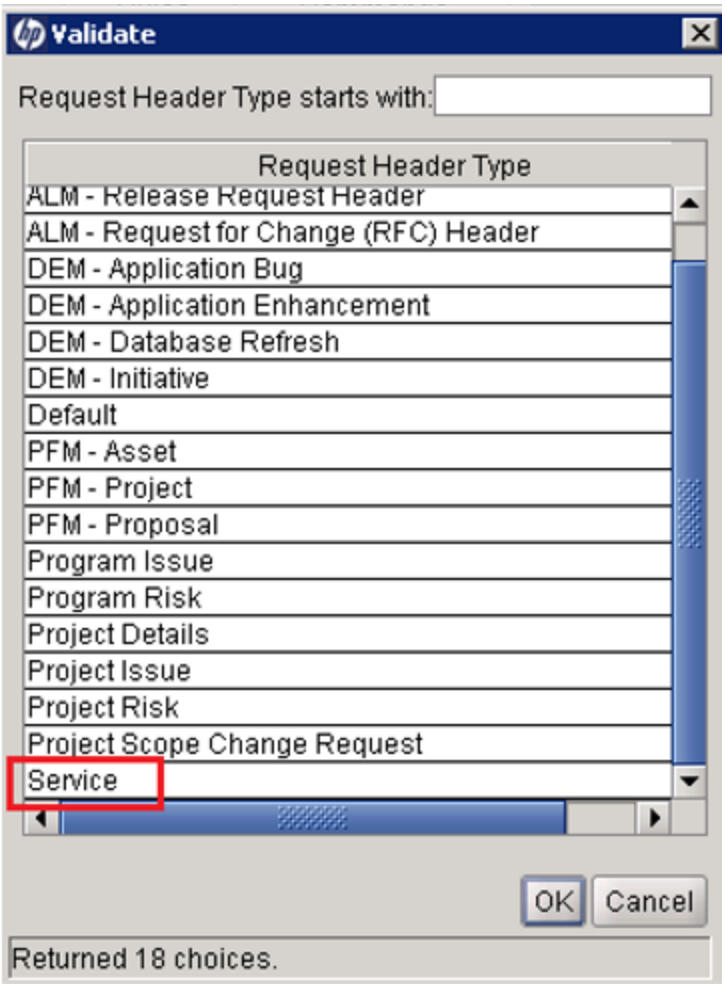
c. In the Request Type Workbench dialog box, click **New Request Type**.



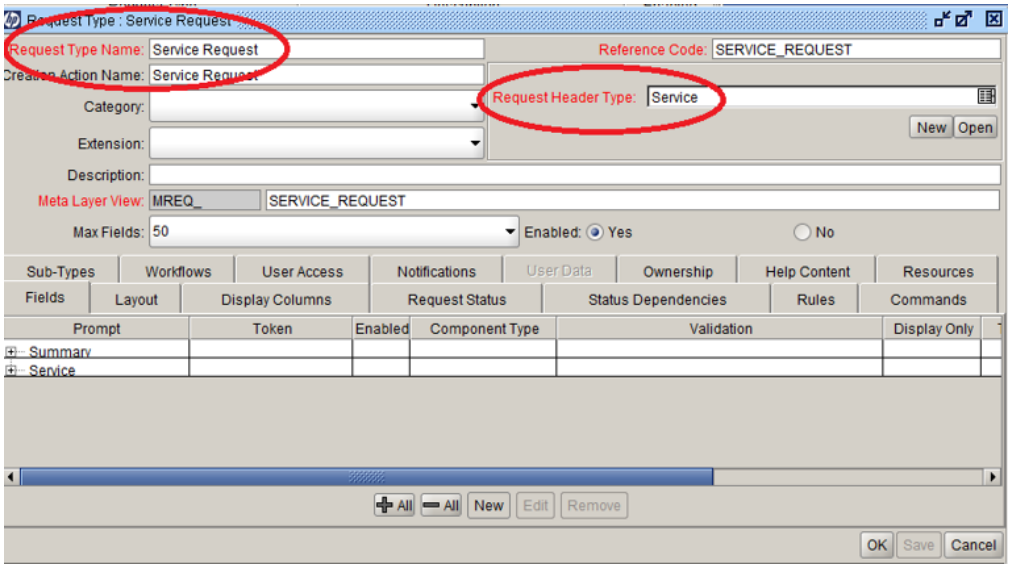
d. In the New Request Type dialog box, do the following:

i. **Request Type Name.** Select a name for the request type—for example, **Service Request**.

ii. **Request Header Type.** Click the **Selection** icon. The Validate dialog box opens. Select **Service** and click **OK**.



iii. Confirm that **Service** field is being added and click **OK**.



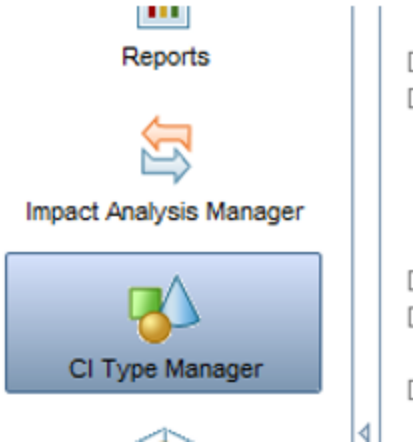
Note: When users create a request of that new request type and click the autocomplete for the Service field, the service list options are retrieved from Universal CMDB at that time.

Step 4: Setting Up UCMDB CI Type Properties

In UCMDB, the **Name** attribute of the CI Type must be a key attribute.

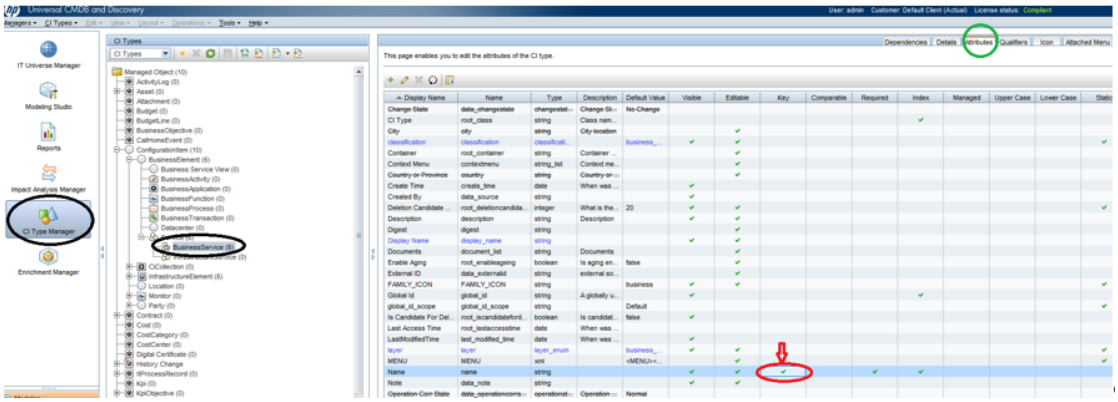
To confirm that the Name attribute is defined as a key attribute:

1. Open the UCMDB user interface with administrative privileges.
2. Go to the **CI Type Manager**.



3. Select the CI Type you are using for your service list—for example, **business_service.**

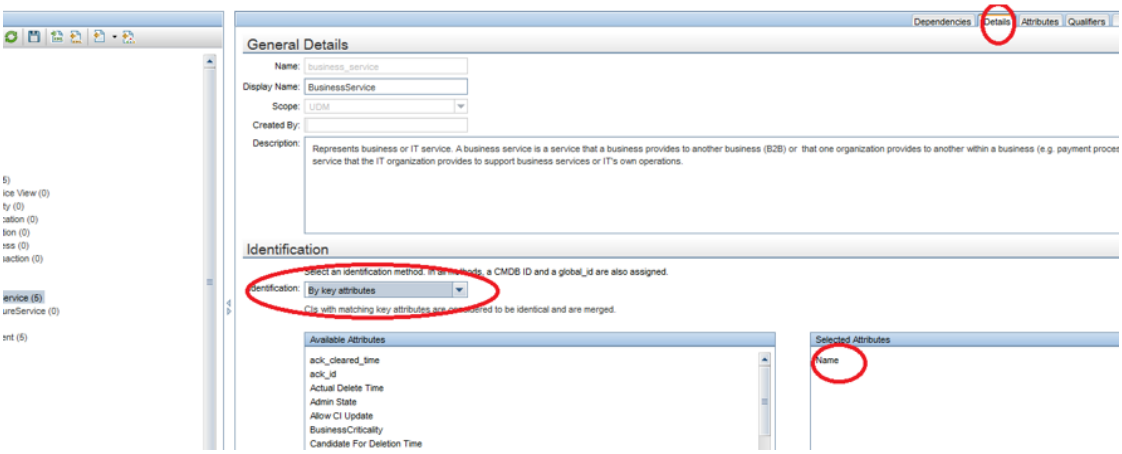
4. Go to **Attributes** and make sure that the **Name** attribute is marked as the key attribute:



If the Name attribute is not defined as a key attribute, define it as a key attribute.

To define the Name attribute as a key attribute:

1. Go to the **Details** tab.



2. In the Identification dialog box, change the default identification to **By key attributes**.

> **Caution:** Note the identification that is defined before changing it since you will need to change it back to this identification after the procedure.

3. In the Available Attributes dialog box, select **Name** as the key attribute.

4. Click **Save**.

5. In the Identification pane, change the identification back to whatever the default was before

changing it in Step 2.

Note: The original out-of-the-box default value was**By identification rule**.

6. Click **Save**.

Adding a Service Context from UCMDB to PPM

This section contains the following steps:

Step 1: Adding a Service Field from UCMDB to a PPM Project 201
Step 2: Adding a Service Field from UCMDB to a PPM Task 203

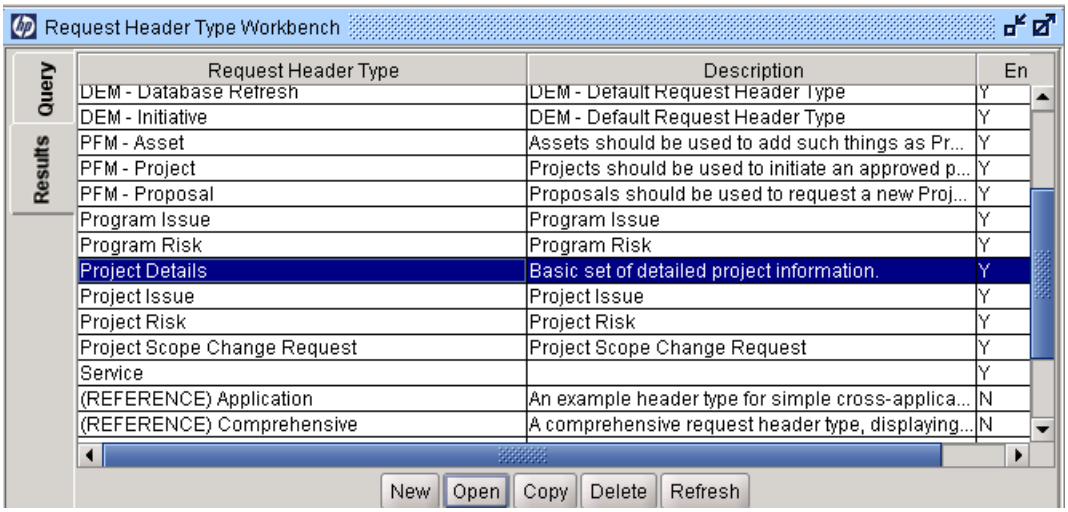
A Service context can be added from UCMDB to a PPM project, task, or request for change (RFC).

Step 1: Adding a Service Field from UCMDB to a PPM Project

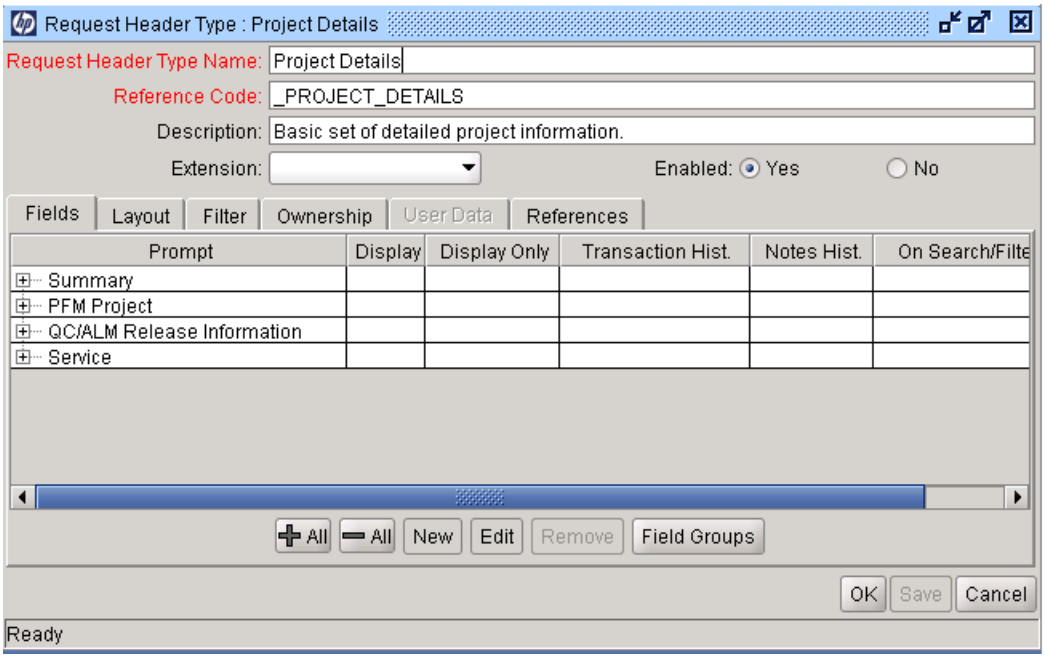
Note: The following must be configured after configuring integration ID#370 as described in "Configuring PPM and UCMDB" on page 191.

1. Log on to PPM Center as a user with administrative privileges.
2. In the PPM Center, navigate to **Open > Administrator > Open Workbench**.
3. In the workbench, go to **Demand Mgmt**.
4. Select **Request Header Types**.
5. In the Request Header Type Workbench window, click **List**.

6. In the **Results** tab, double click **Project Details Request Header Type**.



7. In the Request Header Type: Project Details window, click **Field Groups**.



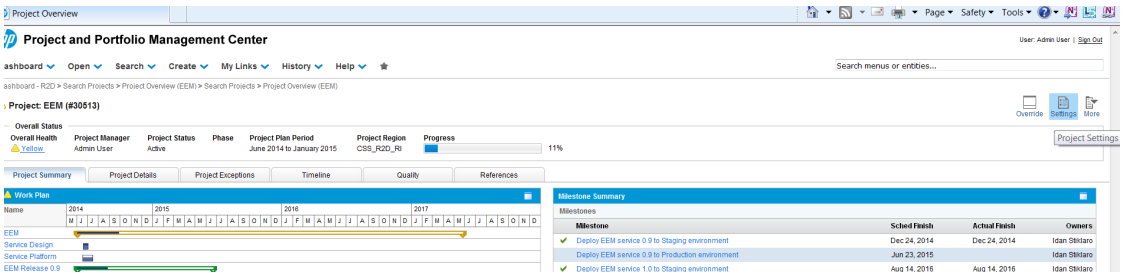
8. Select the **Service** field and click **OK**.
9. Click **Save**.
10. Click **OK**.

Step 2: Adding a Service Field from UCMDB to a PPM Task

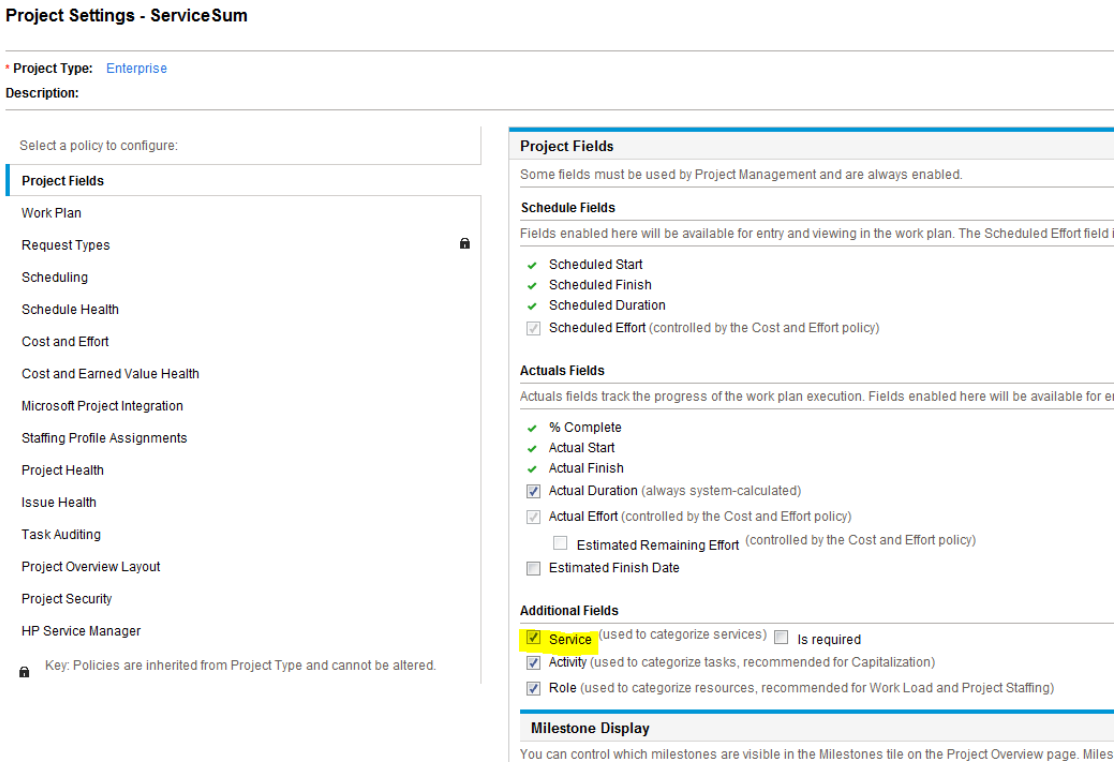
Note:

- This should be configured for each project separately and does not apply for all PPM projects.
- "Step 2: Add a Service field from UCMDB to a PPM task" can only be configured after "Step 1: Adding a Service Field from UCMDB to a PPM Project" on page 201.

1. Log on to PPM Center as a user with administrative privileges
2. From the Search Projects window, search and open your project.
3. Within the project, select **Settings**.



4. In the Project Settings window, Project Fields pane, Additional Fields section, select **Service**.



5. Click **Save**.

6. Click **Done**.

Verification

Note: These procedures are to verify that the implementations were done successfully.

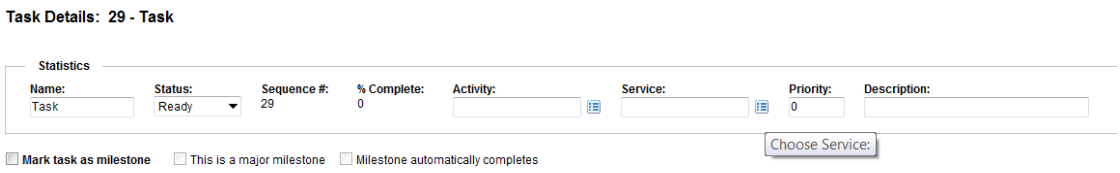
Caution: These verifications must be done in this order.

To verify that the Service field was added to the PPM Project:

1. Log on to PPM Center as a user with administrative privileges.
2. Navigate to **Search > Projects**.
3. From the Search Projects window, search and open your project.
4. Within the project, go to the **Project Details** tab.
5. Confirm that the **Service** field exists and that you can use it to add CIs from UCMDB.
   a. In the **Service** field, click the **Choose Services** button on the right-hand side of the field.
   b. Confirm that you can select service CIs from UCMDB.

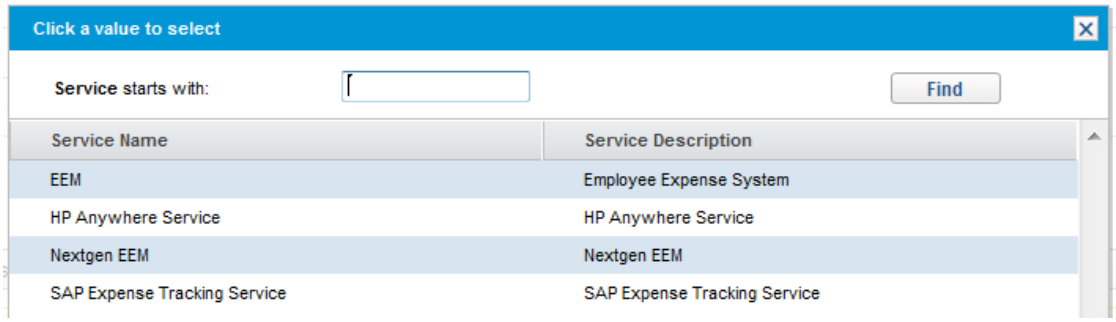
To verify that UCMDB CIs can be added to a PPM task:

1. In PPM, navigate to **Search > Projects**.
2. Search for and select your project.
3. In the **Project Summary**, click **Edit Work Plan**.
4. Double-click the task to which you want to add the UCMDB Service CI.



5. In the new **Service** field, click the **Choose Service** button.

6. Verify that the services in the list are the CIs from UCMDB that you wish to integrate with PPM, and select a service.



7. Click **Save**.

8. Confirm that the service was successfully added to the **Service** field and click **Done**.

Chapter 13: Creating an SM RFC from PPM Project Task

This chapter includes:

Overview 207

PPM – SM: Creating RFC from Work Plan 208

Verification 226

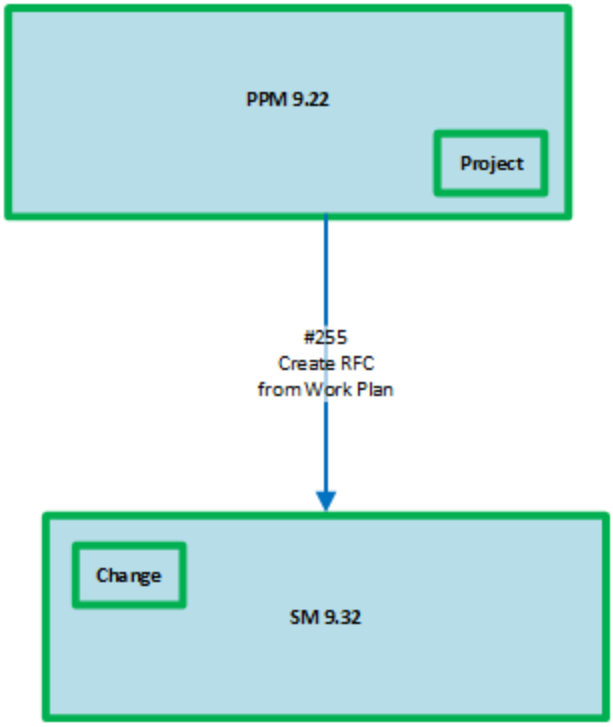
Overview

This solution integrates Project and Portfolio Management (PPM) Center project tasks with Service Manager (SM) Requests For Change (RFCs) to allow PPM Center project managers to specify which tasks in a project, if any, automatically create corresponding RFCs in Service Manager. Then PPM Center project managers can track the status of the corresponding RFCs in PPM. As the RFCs are completed in Service Manager, the statuses of the associated PPM Center tasks are automatically set to **Complete**. If the RFCs are rejected in Service Manager, the associated tasks in PPM are set to **Canceled**.

In the context of the Requirement to Deploy (R2D) Value Stream, this integration enables the traceability between a project and a set of RFCs associated with it.

For more information, see Integration ID#255: Create RFC from work plan (PPM – SM) in **HP Software Solutions Now**.

The following diagram illustrates the relationship between the products for this integration:



PPM – SM: Creating RFC from Work Plan

To configure this integration, perform the following steps in Project and Portfolio Management (PPM) Center and Service Manager (SM). You must have system administrator privileges in both PPM Center and Service Manager.

This section contains the following steps:

Step 1: Configuring the PPM Center Web Services Configuration 209
Step 2: Adding Task ID Field to SM Database Dictionary 209
Step 3: Configuring the Integration Mapping XML File 211
Step 4: Adding Fields for the Integration to the ChangeManagement WSDL 218
Step 5: Importing the PPM UNL Files to SM 219
Step 6: Editing JavaScript for Correct Host and Port for PPM Center 220
Step 7: Starting the ppmfailover Scheduler in Service Manager 221
Step 8: Configuring the server.conf File in PPM 222
Step 9: Enabling RFC Creation for a PPM Center Project 223
Step 10: Modifying the Service Manager Scripts 224

Step 1: Configuring the PPM Center Web Services Configuration

1. Stop the PPM Server.
   a. Log on to the PPM Server as an administrator.
   b. Open a command line.
   c. Go to the **<PPM home>\bin** folder.
   d. Run the following script: `sh kStop.sh -now -user <admin_user>`

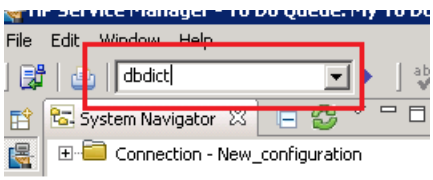
   Note: `<admin_user>` is a PPM user with administrative privileges.

2. Check the PPM Center Web services configuration. Confirm that the basic authentication mode is enabled.
   a. Log on to the PPM Server as an administrator.
   b. Open the configuration file located at `<PPM_Home>\server\<PPM_Server_Name>\deploy\itg.war\WEB-INF\conf\axis2.xml`.
   c. Check that `<PPM_Server_Name>` is the name or IP address of your PPM Center instance.
   d. Confirm that the value of **InFlowBasicAuth** is **true**.

3. Start the PPM Server.
   a. Open a command line.
   b. Go to the **<PPM home>\bin** folder.
   c. Run the following script: `sh kStart.sh`

Step 2: Adding Task ID Field to SM Database Dictionary

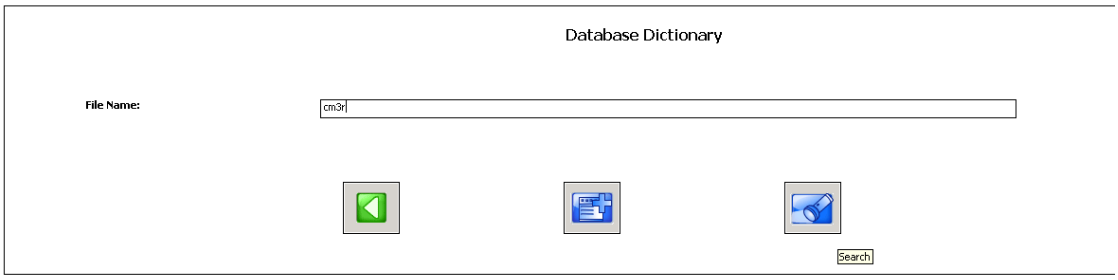
1. Log on to the Service Manager console as an administrator.
2. In the Service Manager command line, enter `dbdict`.



3. Press **Enter**.

   The Database Dictionary screen opens.

4. In the **File Name** field, enter `cm3r` and click **Search**.



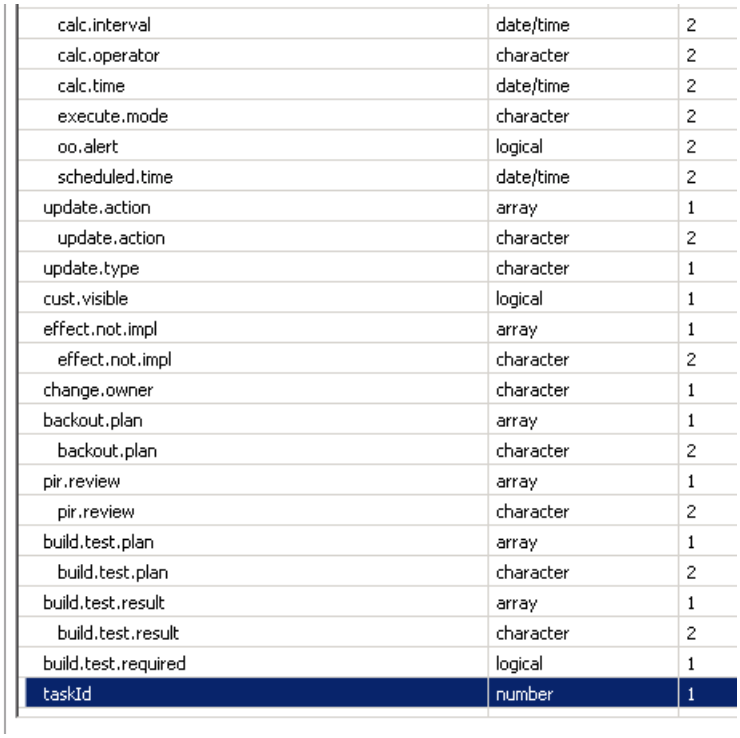
5. Select `cm3r` in the **File Name** section.
6. Click the **Name** column of the descriptor row.
7. Click **New Field/Key**.

   The **field.window** opens.

8. In the Name field, enter `taskId`.
9. From the **Type** drop-down list, select **number**.
10. Click the **Add Field** icon.

    The field is added to the `dbdict`.

11. Locate and double-click the `taskId` field.



calc.interval	date/time	2
calc.operator	character	2
calc.time	date/time	2
execute.mode	character	2
oo.alert	logical	2
scheduled.time	date/time	2
update.action	array	1
update.action	character	2
update.type	character	1
cust.visible	logical	1
effect.not.impl	array	1
effect.not.impl	character	2
change.owner	character	1
backout.plan	array	1
backout.plan	character	2
pir.review	array	1
pir.review	character	2
build.test.plan	array	1
build.test.plan	character	2
build.test.result	array	1
build.test.result	character	2
build.test.required	logical	1
taskId	number	1

12. In the **field.window** that opens, enter the following:

Table Field	Value
SQL Name	TASKID
SQL Type	FLOAT Note: You may also choose **VARCHAR2(400)**.
SQL Table	m1

13. Click **OK**.
14. After confirmation of the SQL statements, click `SM Alters`.

Step 3: Configuring the Integration Mapping XML File

1. Log on to the PPM Server as an administrator.
2. Go to the **<PPM_Home>\conf\smrfc** directory.
3. Copy the **sm-rfc-mapping.xml.sample** field mapping file and paste it in the same directory.

Note: You should have two files in the same directory with a different name.

4. Rename the copied file to **sm-rfc-mapping.xml**.
5. Customize the xml file. For R2D, we recommend customizing the mapping file in the following way:

Note: You can choose to alter the fields and values according to specific requirements. For more information, see "Integrating PPM Center Tasks with HP Service Manager RFCs" on page 303 in Chapter 8 of the *HP Project and Portfolio Management Center - HP Solution Integrations Guide*.

Caution: In the new mapping file, verify that the Status field in Service Manager is set to **initial**. This value will be maintained by Service Manager after the change record is created in Service Manager. Do not edit this field.

Here is an example of the xml file. It is recommended to use or edit this xml for the R2D environment.

Note: The fields in the mapping file are case-sensitive.

```
<?xml version="1.0" ?>
<PPMSMIntegration>
<SMRFCMapping>
<field>
        <smField>PPMTaskId</smField>
        <ppmField>TASK_ID</ppmField>
        <useOnCreate>true</useOnCreate>
        <useOnUpdate>true</useOnUpdate>
</field>
<field>
        <smField>BriefDescription</smField>
        <ppmField>TASK_NAME</ppmField>
        <useOnCreate>true</useOnCreate>
        <useOnUpdate>true</useOnUpdate>
```

```
</field>
<field>
        <smField>ExtProjectRef</smField>
        <ppmField>PROJECT_REQUEST_ID</ppmField>
        <useOnCreate>true</useOnCreate>
        <useOnUpdate>false</useOnUpdate>
</field>
<field>
        <smField>Description</smField>
        <ppmField>TASK_DESCRIPTION</ppmField>
        <useOnCreate>true</useOnCreate>
        <useOnUpdate>true</useOnUpdate>
        <defaultValue>ppm task does not have a description</defaultValue>
</field>
<field>
        <smField>EffectOfNotImplementing</smField>
        <useOnCreate>true</useOnCreate>
        <defaultValue>Unavailable</defaultValue>
</field>
<field>
        <smField>RequestedDate</smField>
        <ppmField>TASK_SCHEDULED_END_DATE</ppmField>
        <useOnCreate>true</useOnCreate>
        <useOnUpdate>true</useOnUpdate>
</field>
<field>
        <smField>RequestedBy</smField>
        <useOnCreate>true</useOnCreate>
        <defaultValue>FALCON, JENNIFER</defaultValue>
</field>
<field>
```

```
        <smField>Reason</smField>
        <useOnCreate>true</useOnCreate>
        <defaultValue>business</defaultValue>
</field>
<field>
        <smField>Category</smField>
        <useOnCreate>true</useOnCreate>
        <defaultValue>Normal Change</defaultValue>
</field>
<field>
        <smField>Subcategory</smField>
        <useOnCreate>true</useOnCreate>
        <defaultValue>Major</defaultValue>
</field>
<field>
        <smField>ChangeCoordinator</smField>
        <useOnCreate>true</useOnCreate>
        <defaultValue>CHANGE</defaultValue>
</field>
<field>
        <smField>ChangeOwner</smField>
        <useOnCreate>true</useOnCreate>
        <defaultValue>CHANGE</defaultValue>
</field>
<field>
        <smField>AssignmentGroup</smField>
        <useOnCreate>true</useOnCreate>
        <defaultValue>Application</defaultValue>
</field>
<field>
        <smField>InitialAssessment</smField>
```

```
        <useOnCreate>true</useOnCreate>
        <defaultValue>1 - Enterprise</defaultValue>
</field>
<field>
        <smField>Urgency</smField>
        <useOnCreate>true</useOnCreate>
        <defaultValue>2 - High</defaultValue>
</field>
<field>
        <smField>Emergency</smField>
        <useOnCreate>true</useOnCreate>
        <useOnUpdate>true</useOnUpdate>
        <defaultValue>false</defaultValue>
</field>
<field>
        <smField>Status</smField>
        <useOnCreate>true</useOnCreate>
        <useOnUpdate>true</useOnUpdate>
        <defaultValue>initial</defaultValue>
</field>
</SMRFCMapping>
</PPMSMIntegration>
```

6. Add a **Service** context to be integrated in Service Manager from PPM.

Note: The following can only be configured AFTER completing:

- Chapter 10, Integration ID#101 according to "Synchronizing CIs between UCMDB and SM" on page 170
- Chapter 12, "Adding a Service Context from UCMDB to PPM" on page 201

Caution:

- Be sure that Service Manager is synced with UCMDB and appropriate CIs that exist in UCMDB also exist in Service Manager.
- If the CI (service) that the RFC is being opened with does not exist in Service Manager, the RFC will not be created and the PPM users will not be notified that the RFC creation failed.

a. Edit the **sm-rfc-mapping.xml** file, and add the following field:

```
<field>
  <smField>Service</smField>
  <ppmField>TASK_SERVICE</ppmField>
  <useOnCreate>true</useOnCreate>
  <defaultValue>Applications</defaultValue>
</field>
```

The property values are described as follows:

Field Elements	Values	Description
smField	Service	Service field in the SM RFC
ppmField	TASK_SERVICE	Service that is associated with the PPM task that the RFC is being opened from
useOnCreate	true	Indicates if the service will be synced when opening an RFC
defaultValue	Applications	If the service field is empty for the task which opens the RFC, this value (Applications) will be synced into the SM service field. This field can be modified as long as the service does exist in SM.

b. Save the file.

7. Make sure that the Service Manager fields specified in the field mapping file are exposed through the ChangeIIA object in the ChangeManagement Web service in Service Manager.

   a. Log on to Service Manager as an administrator.

   b. Select **Menu Navigation > Tailoring > Web Services > Web Services Configuration**. The **External Access Definition** page opens.

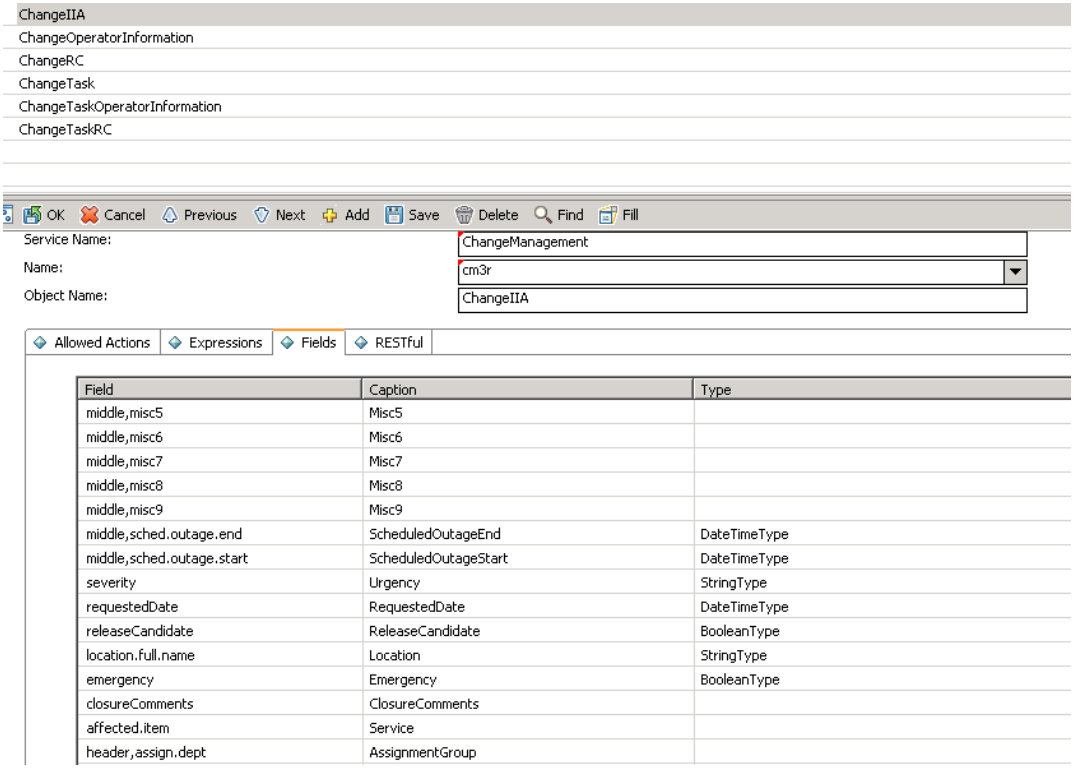
   c. In the **Service Name** field, enter **ChangeManagement** and click **Search**.

   d. In the **object.name** section, select **ChangeIIA**.

   e. In the **External Access Definition** section, select the **Fields** tab.

   f. Check that all of the fields that are used in the mapping xml file (sm-rfc-mapping.xml) are listed on the **Fields** tab of the **ChangeIIA** object (for the `cm3r` table) in the ChangeManagement Web service. If any field is not listed, add the field name and caption name to the **Field** and **Caption** columns.

      For details on how to expose the fields of a table through a Service Manager Web service, see the **Service Manager Online Help**.



Step 4: Adding Fields for the Integration to the ChangeManagement WSDL

1. Log on to Service Manager as an administrator.
2. Select **Menu Navigation > Tailoring > Web Services > Web Services Configuration**. The **External Access Definition** page opens.
3. In the **Service Name** field, enter **ChangeManagement** and click **Search**.
4. In the **object.name** section, select **ChangeIIA**.
5. In the **External Access Definition** section, select the **Fields** tab.
6. Scroll down to the bottom of the form, and click the next available line.
7. Enter the following fields in the last row:

Table Field	Value
Field	taskId
Caption	PPMTaskId Note: **Note:** This caption will be exposed to WSDL and must match the **smField** name defined in the **sm-rfc-mapping.xml** file.
Type	StringType

After entering the data, a new row is created.

8. Enter the following fields in the new last row:

Table Field	Value
Field	header,foreign.id
Caption	ExtProjectRef
Type	StringType

Step 5: Importing the PPM UNL Files to SM

The following unload files are provided with PPM Center (present in the `<PPM_Home>\conf\smrfc` directory):

- `PPMIntegration.unl` (the integration unload file)
- `PPMIntegration_Schedule.unl` (the ppmfailover schedule object file)

Note:

- If you are using an Oracle database with Service Manager, loading of the `PPMIntegration.unl` file might fail the first time. Reloading the file could solve the problem.
- If you load the `PPMIntegration_Schedule.unl` file more than once, duplicate ppmfailover schedules will be created in Service Manager. In this case, delete the redundant ppmfailover schedules.

1. Import/load the unload files provided with PPM Center.
   a. Log on to Service Manager as system administrator.
   b. Enter `db` in the Service Manager command line and press **Enter**. The Database Manager pane opens.
   c. Right click in the Database Manager pane, click the **More** drop-down arrow, and select **Import/Load** from the context menu. The HP Service Manager File Load/Import pane opens.
   d. In the **File Name** field, specify the file to load: `<PPM_Home>\conf\smrfc\PPMIntegration.unl`.
   e. Click **Load FG**. A message stating that the records have been loaded displays.
   f. Click **Back**.
   g. Repeat the steps for the **PPMIntegration_Schedule.unl** file.
2. Configure the integration table in Service Manager.
   a. Enter `db` in the Service Manager command line and press **Enter**. The Database Manager pane opens.

b. Select **ppmIntegration** from the Table drop-down list and click **Search**. The form for the **ppmIntegration** table displays.

> **Note:** If the ppmIntegraion does not exist in the drop-down list, log out and log back in to Service Manager.

c. Add the following new record to the table:

Table Field	Value
Id	1
Field to Store TaskId	Value of this field must match the field name you previously added to the `cm3r` table for the PPM Center task ID (see Step 8 "In the Name field, enter taskId." on page 210). For example, `taskId` **Note:** If the case-sensitive field names do not match, the integration will fail.
PPM Server URL	URL of the PPM Center Web services For example, `http://<Host_Name>:<Port>/itg/ppmservices/`
PPM Server Username	User name that Service Manager uses to call the PPM Center Web services. This user name must include only single-byte characters. HP recommends that you create a separate user account for this purpose.
PPM Server Password	Password of the user name that Service Manager uses to call the PPM Center Web services

Step 6: Editing JavaScript for Correct Host and Port for PPM Center

1. Log on to the Service Manager Web tier with administrative privileges.
2. Select **Menu Navigation > Tailoring > Script Library**.

3. In the **Name** field, enter **Integration**.
4. Click **Search**. The `IntegrationService` script opens.
5. Find the line that contains the URL for the PPM instance. The line should begin with `this.location = new String`.
6. Set the URL to `http://<Host_Name>:<Port>/itg/ppmservices/IntegrationService`.

   Note: `<Host_Name>` and `<Port>` are for connecting to PPM.

   The line should look as follows:

   ```
   this.location = new String("http://<Host_
   Name>:<Port>/itg/ppmservices/IntegrationService")
   ```

7. Click **Save**, then click **Compile**.
8. Click **Cancel** and return to the Search pane.
9. For **Project**, repeat steps 3 through 8, but instead of searching for **Integration** in step 3, enter **Project** and set the URL in step 6 to `http://<Host_Name>:<Port>/itg/ppmservices/ProjectService`.

   Note: `<Host_Name>` and `<Port>` are for connecting to PPM.

Step 7: Starting the ppmfailover Scheduler in Service Manager

Note: By default, the **Repeat Interval** of the ppmfailover schedule is one hour.

You can change the default **Repeat Interval** to another value. However, do not change other field values.

1. Start the **ppmfailover** scheduler in Service Manager.
   a. Log on to the Service Manager Web tier with administrative privileges.
   b. In SM, enter `status` in the command line.
   c. Click **Start Scheduler**.
2. Select the **ppmfailover** scheduler.

Step 8: Configuring the server.conf File in PPM

1. Log on to PPM server.
2. Stop the PPM server.
   a. Open a command line.
   b. Go to the **<PPM home>\bin** folder.
   c. Run the following script: `sh kStop.sh -now -user <admin_user>`

   Note: `<admin_user>` is a PPM user with administrative privileges.
3. Configure the **server.conf** file.
   a. In the PPM Server, go to the **<PPM home>** folder.
   b. Back up and edit the **server.conf** file in the following way:

   If the parameters are present, edit them according to the following table. If they are not present, add them.

Parameter	Description, Value
com.kintana.core.server.SM_RFC_ INTEGRATION_ ENABLED	Setting the parameter to **true** enables SM RFC integration with PPM Center
com.kintana.core.server.SM_ USERNAME	User name that PPM Center uses to access Service Manager. This user name must include only single-byte characters—for example, **admin**.
com.kintana.core.server.SM_ PASSWORD	Password that PPM Center uses to access Service Manager. You must encrypt this password by using the `kEncrypt.sh` script, which is located in the bin directory of the PPM Server. Then remove `#!#` from the beginning and the end of the encrypted password.
com.kintana.core.server.SM_URL	Host name or IP address of Service Manager For example, `http://<Host_Name>:13080`

Parameter	Description, Value
com.kintana.core.server.SM_ WEB_URL	Address of Service Manager Web tier For example, `http://<Host_Name>:<Port>/<WebTier_ Package_File_Name>/index.do` **To obtain the Service Manager Web tier URL:** 1. Log on to Service Manager as System Administrator. 2. Click **Navigation > System Administration > Base System Configuration > Miscellaneous > System Information Record**. 3. Click **Active Integrations** and get the WebServer URL value. By default, it would be `http://<Host_Name>:13080/sm/ index.do`.
com.kintana.core.server.ENABLE_ WEB_ SERVICES	Setting the parameter to **true** enables web services

4. After saving the server.conf file, start the PPM Server.
   a. Open a command line.
   b. Go to the **<PPM home>\bin** folder.
   c. Run the following script: `sh kStart.sh`

Step 9: Enabling RFC Creation for a PPM Center Project

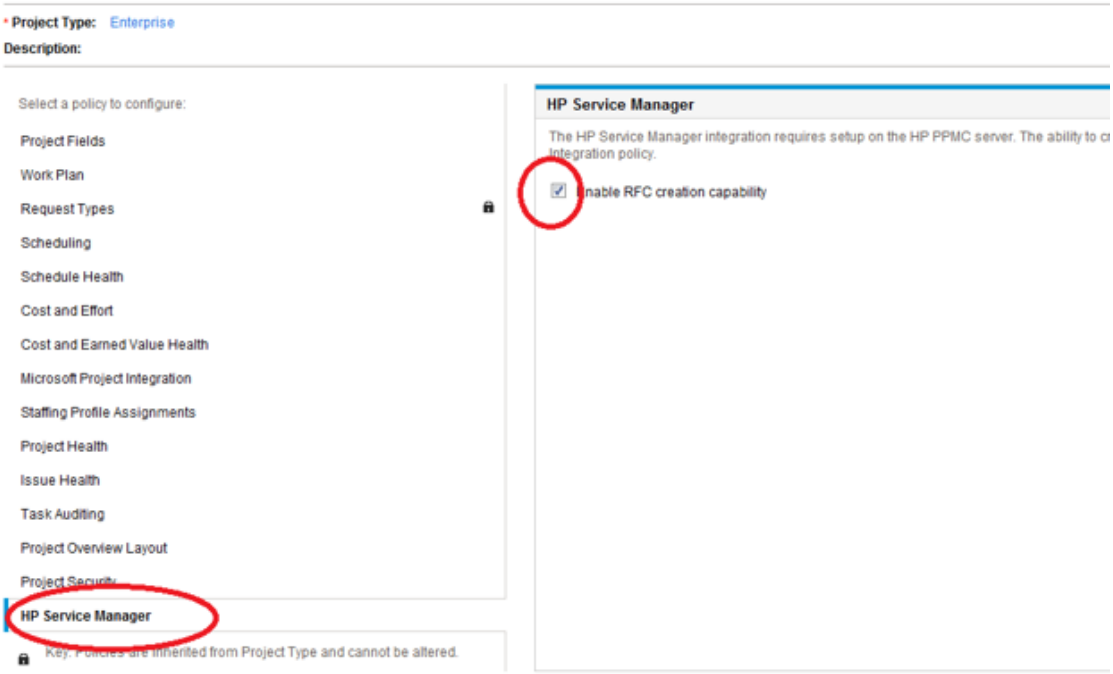
If the RFC creation capability is enabled for the project type used by a project, the RFC creation capability is, by default, enabled for the project when it is created.

To enable the RFC creation capability if it is not enabled for a project:

1. Log on to PPM Center with administrative privileges.
2. Open your project in PPM Center.
3. On the Project Overview page, click **Project Settings**.

4. In the list of policies, click **HP Service Manager**.

   The HP Service Manager policy opens.



5. If the **Enable RFC creation capability** check box is not selected but you can select it, select it. If you cannot select it, see "Integrating PPM Center Tasks with HP Service Manager RFCs" on page 312 in Chapter 8 of the *HP PPM Solution and Integration Guide*.

Step 10: Modifying the Service Manager Scripts

Before you modify the Service Manager Processes that call the PPM Center Web services to update the RFC status and task status, add the following code to the **Final JavaScript** tab of each process:

```
if(vars.$L_exit!="bad.val")

system.library.HPPPMSMIntegration.integratePPM();
```

Note: The code is added to the `cm.close`, `cm.reject`, `cm.update.save`, and `cm.next.phase` processes when you load the `PPMIntegration.unl` file. The standard **Save**, **Close**, **Reject**, **Next Phase**, and **Reopen** actions for RFCs invoke these processes. If you have added any other actions used to update changes (through tailoring of your Service Manager instance), you must also modify the processes that these self-defined actions will invoke.

To modify the Service Manager Processes:

1. Log on to Service Manager as System Administrator.
2. Select **Menu Navigation > Tailoring > Document Engine > Processes**.

   The Process Definition search screen appears.
3. Click **Search**.
4. In the **Process Name** field, enter `cm.close`.
5. In the **Process Definition** section, click the **Final JavaScript** tab.
6. Add the following code to the end of the line:

   ```
   if(vars.$L_exit!="bad.val")
   system.library.HPPPMSMIntegration.integratePPM();
   ```
7. Repeat step 4 through step 6 for the `cm.reject`, `cm.update.save`, and `cm.next.phase` processes.

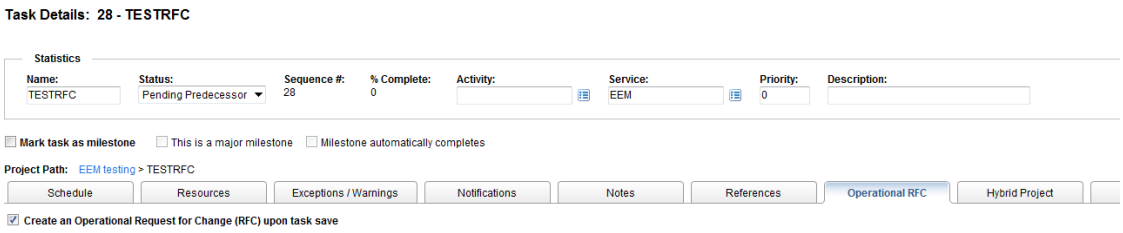
Verification

Note: This procedure is to verify that the implementation was done successfully.

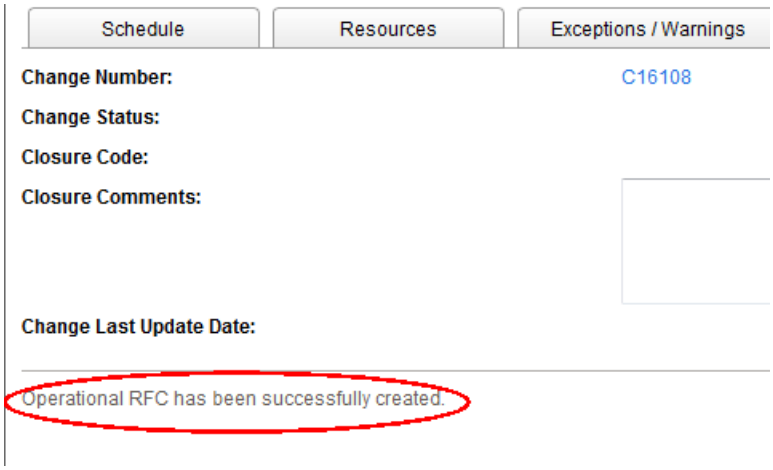
The recommended way to verify this integration is to select/create a PPM task that contains Service information as defined in "Associating UCMDB Service CI with PPM Entities" on page 190.

To open an RFC from a PPM task to SM:

1. In PPM, navigate to **Search > Projects**.
2. Search for and select your project.
3. In the **Project Summary**, click **Edit Work Plan**.
4. Go to the **Operational RFC** tab
5. Check the Create an Operational Request for Change (RFC) upon task save check box.

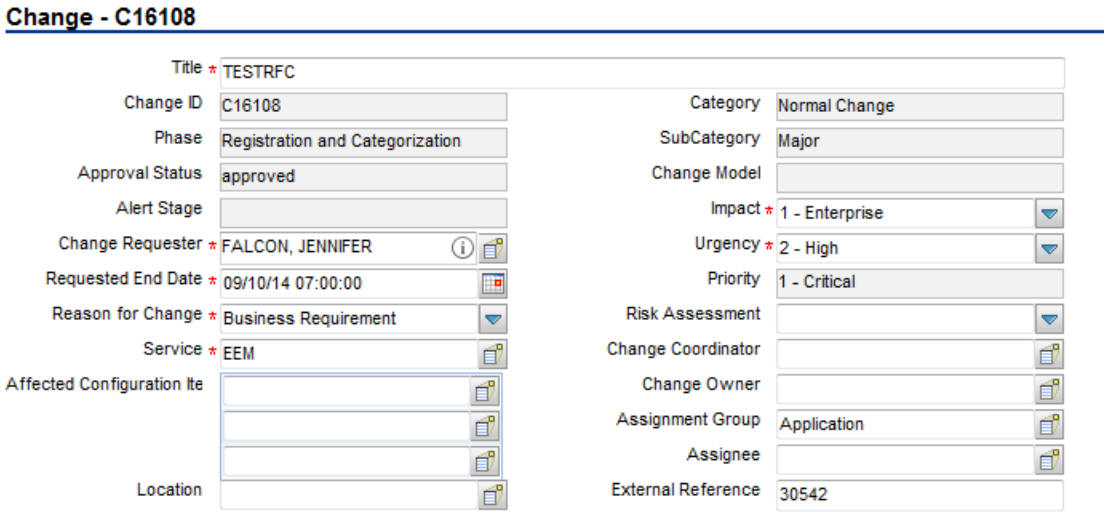


6. Click **Save**. Confirm that there is a change ID received from SM and the update status is **Operational RFC has been successfully created**.



7. Click the **Change Number** field in the **Operational RFC** tab and confirm that there is a change in Service Manager for this ID.

> **Note:** The **Service** field in SM should contain the Service from the PPM task, and the **External Reference** should contain the project ID from PPM.



Chapter 14: Launching an OO Flow from SM RFC

This chapter includes:

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Prerequisites 228

Adding an Operations Orchestration Integration 229

Enabling SSL Connection from SM to HP OO 232

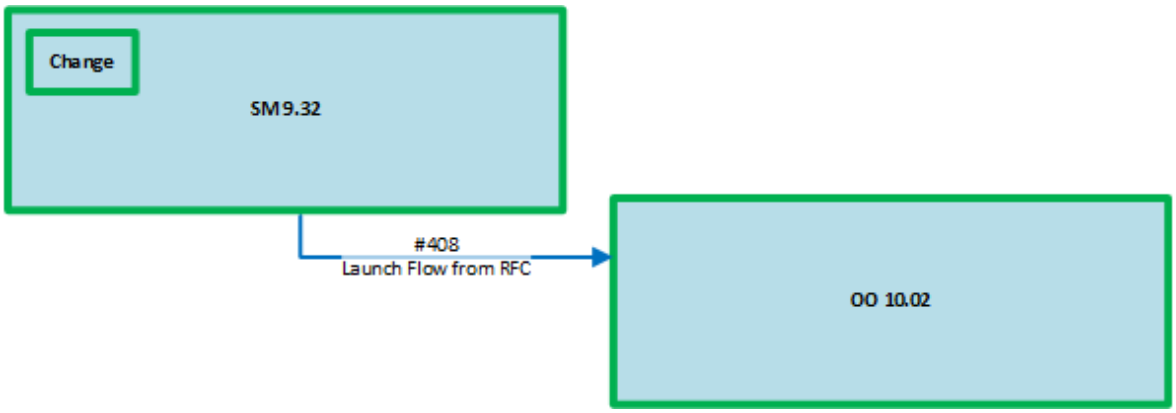
Verification 236

Overview

This chapter describes how to launch HP Operations Orchestration (OO) flows from HP Service Manager (SM), which enables you to provide quicker, more automated change processes, with the ability to automate the deployment of a change. The SM – OO integration also provides the capability to trigger OO flows within SM RFC and use SM record parameters in OO flows.

For more information, see Integration ID#408: Launch OO Flow from SM RFC (SM – OO) in **HP Software Solutions Now**.

The following diagram illustrates the relationship between the products for this integration:



Prerequisites

The following products must be installed.

- HP Service Manager version 9.32 with Process Designer (PD) Content Pack
- HP Operations Orchestration version 10.02

Reference Materials

- **HP Service Manager Online Help Center.** From the navigation pane, select **System Administration > Integrations**.

Adding an Operations Orchestration Integration

This task adds and enables an HP OO integration in the Service Manager Integration Suite (SMIS). It specifies all parameter values required to set up the integration.

To add and enable a Service Manager to HP OO integration instance:

1. Log on to the Service Manager Windows or Web client.
2. Navigate to **Tailoring > Integration Manager**.

   Integration Instance Manager opens.
3. Click **Add**.

   The **Integration Template Selection** wizard opens.
4. Select **SMOO** from the Integration Template list.

   Note: Ignore the **Import Mapping** check box, which has no effect on this integration.
5. Click **Next**.

   The **Integration Instance Information** page opens.
6. Complete the following fields as necessary:

Field	Value	Description
Name (required)	User-defined. Default: `SMOO`	Name of the integration instance
Version (required)	1.0	Version number of the integration
Interval Time (s) (required)	User-defined—for example, `600`	Polling interval (in seconds) for HP OO flow synchronization

Field	Value	Description
Max Retry Times (required)	`0` (zero)	Maximum allowed number of retries if the background scheduler fails to run **Note:** SMOO does not use this value.
SM Server	Name that identifies your SM server host—for example, `sm_host1`	Display name for your SM server host
Endpoint Server	Name that identifies your HP OO server host—for example, `oo_host1`	Display name for your HP OO server host
Log Level (required)	Select a level from the drop-down list. Default: `INFO`	Level of diagnostic information that the SM server logs to the log file directory. Possible log levels are: `DEBUG`, `INFO` (default), `WARNING`, `ERROR`, and `OFF`.
Log File Directory (required)	Specify a directory—for example, `c:\smoologs`	Directory that exists on the SM server host where log files of the SM to OO integration are stored. Log files are generated in the following format: `SMOO-<yyyy><mm><dd>.log` (for example, `SMOO-20100328.log`). **Note:** If you specify a directory that does not exist, the log files get lost. If you do not specify a directory, the SM to HP OO integration does not work.
Run at system startup	Selected/not selected	Automatically enable/disable the integration instance when the SM server is started
Description	HP OO flows linked to SM	Description of the integration instance

7. Click **Next**.

   The Integration Instance Parameters page opens.

8. Click the **General Parameters** and **Secure Parameters** tabs, and modify the parameter values as shown in the following table:

Parameter	Value	Example
oo.server.url	Server address of HP OO Central: `https://[servername]:[port]`. Note that `[servername]` should be the fully qualified domain name (FQDN) of the HP OO server host.	`https://oo.hp.com:8443`
oo.user.name	User name of the HP OO user account that the SM server uses to access HP OO Central to synchronize and launch HP OO flows.	`admin`
oo.password	Password of **oo.user.name**.	`admin`
basepath.delimiter	Delimiter between multiple base paths. The default delimiter is a semicolon (;).	;
basepath	basepath1;bathpath2;... The paths are separated by the base path delimiter. Only the HP OO flows under the base path and its sub-folders will be synchronized from HP OO.	/Library/ITIL/Change Management;/Library/ITIL/Incident Management
Accept-Language	Request Language Setting	`en`
http.conn.timeout	Http Connection Timeout setting (seconds)	`30`
http.rec.timeout	Http Receive Timeout setting (seconds)	`30`
OOKM	Set to `true`/`false` to enable/disable the visibility of this integration instance in Knowledge Management (default: `true`).	`true` or `false`
OOCM	Set to `true`/`false` to enable/disable the visibility of the HP OO integration instance in Change Management (default: `true`).	`true` or `false`

9. Click **Next** twice and then click **Finish**. Leave the **Integration Instance Mapping** and **Integration Instance** fields settings blank. This integration does not use these settings.

   Service Manager creates the instance. You can edit, enable, disable, or delete it in Integration Manager.

10. Enable the integration instance.

Enabling SSL Connection from SM to HP OO

This task enables SSL connection between the SM and HP OO servers. The SM server acts as a trusted client connecting to the HP OO server. This task creates a root CA and self-signed certificate in the HP OO server and then imports them into SM.

Note:

- The following procedures are provided as examples, assuming that you have not changed the security configurations of HP OO and SM since they were installed. You may need to adjust the procedures depending on your specific security configurations in HP OO and SM.
- To perform the following procedures, you must have OpenSSL installed on your Operations Orchestration Central host. In addition, you must have a Java platform installed on the HP OO and SM hosts.
- In the following procedures, `<OO_HOME>` represents the Operations Orchestration home directory, and `<SM_HOME>` represents the Service Manager home directory.
- The following procedure uses the Keytool utility that is located in `<OO_HOME>/java/bin/keytool`. Add the path to PATH environment variable for ease of use.

Tip: Replace the parameters that are shown in angle brackets <*XXX*> with the location of the keystore file and other personalized data on your computer.

To enable an SSL connection from SM to HP OO:

1. Stop **Central** and back up the original **key.store** file located in **<installation dir>/central/var/security/key.store**.
2. Open a command prompt and execute the following commands:

   ```
   c:\OpenSSL-Win32\bin\openssl.exe genrsa -des3 -out RSA_private.key 2048
   ```

   a. Enter a pass phrase for RSA_private.key:<*RSA_private.key*>

   b. **Verify.** Enter a pass phrase for RSA_private.key:<*RSA_private.key*>

   This creates a file called **RSA_private.key** in the current directory.
3. In same command prompt, run:

   ```
   c:\OpenSSL-Win32\bin\openssl.exe req -new -key RSA_private.key -x509 -days 1095
   -out <mycacert.pem>
   ```

Here is the console output:

```
C:\sm-oo>c:\OpenSSL-Win32\bin\openssl.exe req -new -key RSA_private.key -x509 -
days 1095 -out mycacert.pem

Enter pass phrase for RSA_private.key:

Loading 'screen' into random state - done

You are about to be asked to enter information that will be incorporated into
your certificate request.

What you are about to enter is what is called a Distinguished Name or a DN.

There are quite a few fields but you can leave some blank

For some fields there will be a default value,

If you enter '.', the field will be left blank.

-----

Country Name (2 letter code) [AU]:IL

State or Province Name (full name) [Some-State]:Israel

Locality Name (eg, city) []:Yehud

Organization Name (eg, company) [Internet Widgits Pty Ltd]:HP Software

Organizational Unit Name (eg, section) []:PFS

Common Name (e.g. server FQDN or YOUR name) []:MYD-
VM08690.hpswlabs.adapps.hp.com

Email Address []:admin@operations.orchestration.com
```

This will generate the mycacert.pem file in the current directory.

Caution: When asked for a Common Name, enter the fully qualified domain name (FQDN) of the Operations Orchestration host. To create a unique `.pem` file, provide a unique Organization Name (for example, `org1`).

4. Execute:

```
keytool -genkey -alias sm -keyalg RSA -keystore "C:\Program Files\Hewlett-
Packard\HP Operations Orchestration\central\var\security\key.store" -storepass
changeit -keypass changeit -dname "CN=<MYD-VM08690.hpswlabs.adapps.hp.com>,
OU=<PFS>, O=<HP Software>, L=<Yehud>, ST=<Israel>,C=<IL>"
```

This generates a certificate key named `sm` and adds it to the key.store

5. Execute:

   ```
   keytool -certreq -keystore "C:\Program Files\Hewlett-Packard\HP Operations Orchestration\central\var\security\key.store" -alias sm -storepass changeit -file cert_request.crs
   ```

   The result is the `cert_request.crs` file created in current directory.

6. Execute:

   ```
    c:\OpenSSL-Win32\bin\openssl.exe x509 -req -days 1095 -in cert_request.crs -CA mycacert.pem -CAkey RSA_private.key -CAcreateserial -out smcertificate.pem
   ```

   Enter the pass phrase for `RSA_private.key:RSA_private.key`.

   Note: This was the private key defined in step 2.

   The `smcertificate.pem` file is generated.

7. Execute:

   ```
   keytool -import -v -alias rootca -keystore "C:\Program Files\Hewlett-Packard\HP Operations Orchestration\central\var\security\key.store" -storepass changeit -file <mycacert.pem>
   ```

   Confirm that certificate information is added into the keystore file.

   Note: The ca certificate was provided a few steps back when it was generated after step 3.

8. Execute:

   ```
   keytool -import -v -alias sm -keystore "C:\Program Files\Hewlett-Packard\HP Operations Orchestration\central\var\security\key.store"-storepass changeit -file <smcertificate.pem
   ```

   Note: The file name of the sm certificate was generated in step 6.

9. Restart OO Central service.

   Once you have successfully configured SSL in HP OO, you are ready to configure SSL in SM.

Create a trust store for SM:

a. Change to the following directory: `<SM_HOME>/Server/RUN`.

b. Copy the generated `mycacert.pem` and `smcertificate.pem` from `<OO_HOME>\Central\conf` to `<SM_HOME>/Server/RUN`.

c. Run the following command:

```
keytool -import -v -alias rootca -keystore key.store -storepass changeit -file mycacert.pem
```

The command window displays the certificate information. The command window prompts **Certificate was added to keystore**.

d. When the command window prompts **Trust this certificate?**, enter **y**.

e. Run the following command:

```
keytool -import -v -alias sm -keystore key.store -storepass changeit -file smcertificate.pem
```

Note: In this example, the trust store file name is **key.store**, and its store password is **changeit**. You will add this information to sm.ini in the next step.

10. Modify the sm.ini file to use the keystore for securing connections to HP OO by adding the following lines.

```
#
# Certificates
#
truststoreFile:<key.store>
truststorePass:<changeit>
```

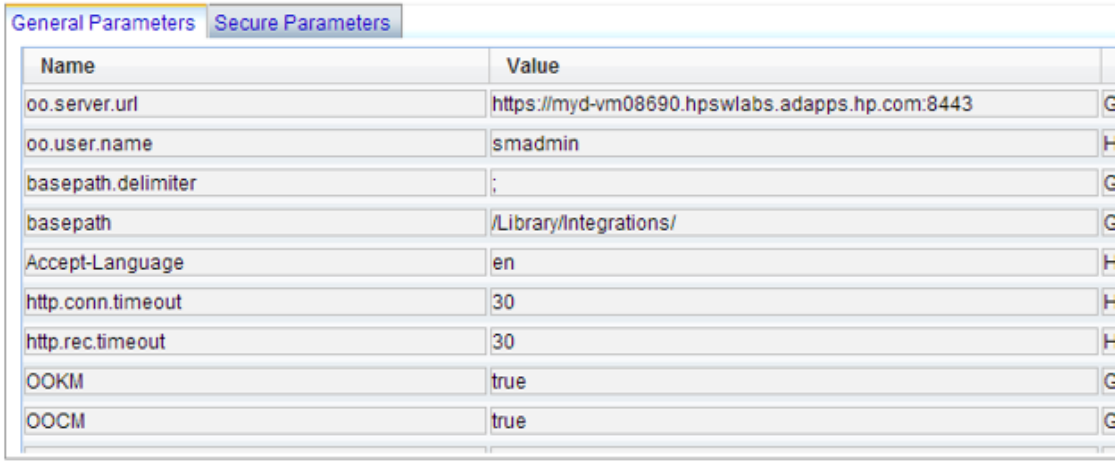
11. Restart SM Service.

Verification

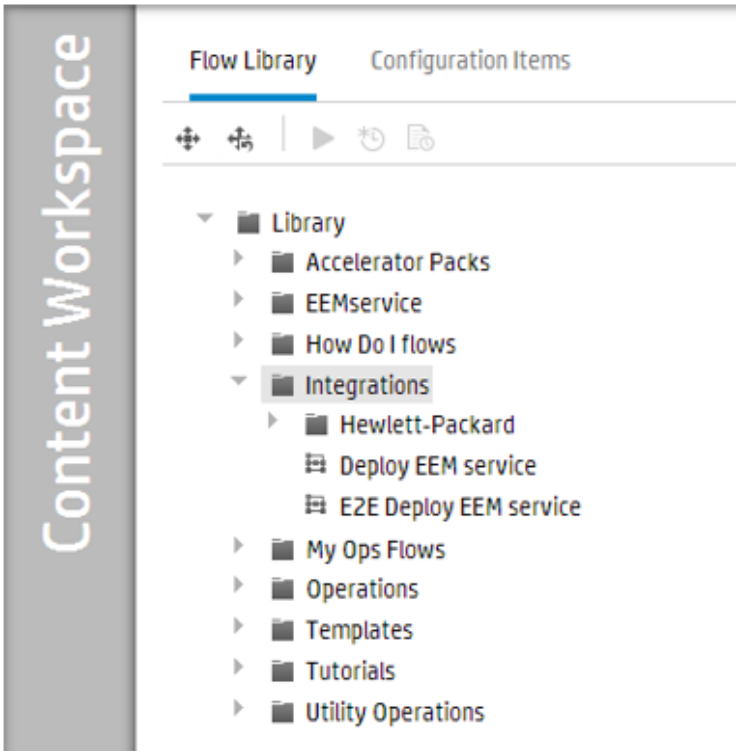
Note: This procedure is to verify that the implementation was done successfully.

To verify the integration:

1. Confirm that the base path in HP Operations Orchestration Central contains flows. In Service Manager, the base path is stored as one of the properties of SM-OO integration instances. In the following screen shot, the base path is `/Library/Integrations`.

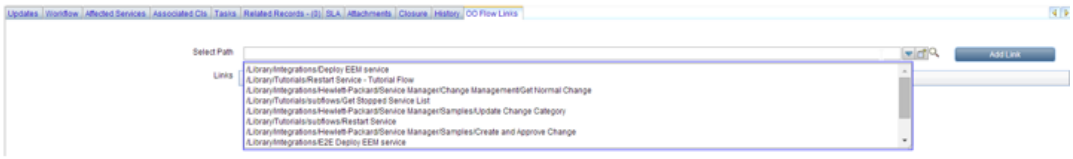


In the HP OO flow library, expand the base path and confirm that there are flows.



2. Log on to SM and create a Change record:

   a. In the Change logging form, select the **OO Flow links** tab.

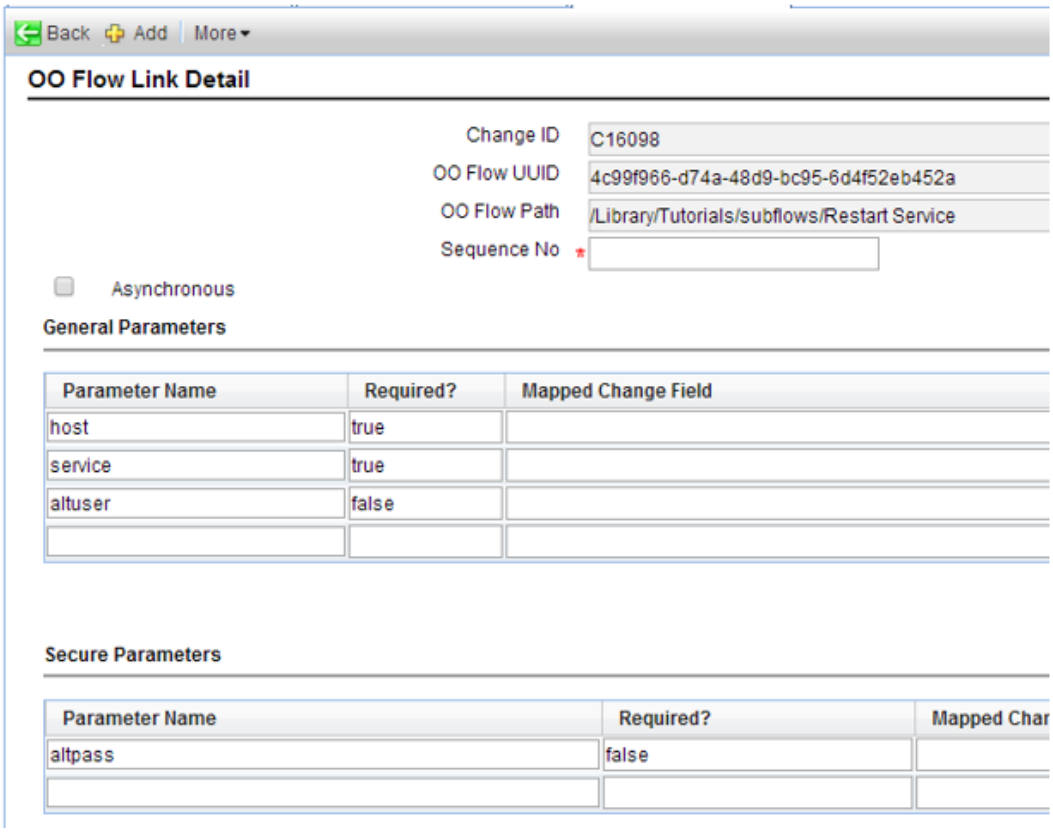


   b. Expand the **Select Path** drop-down box, and select the desired flow.

   c. Click the **Add Link** button.

      A form to provide values for input parameters is displayed.

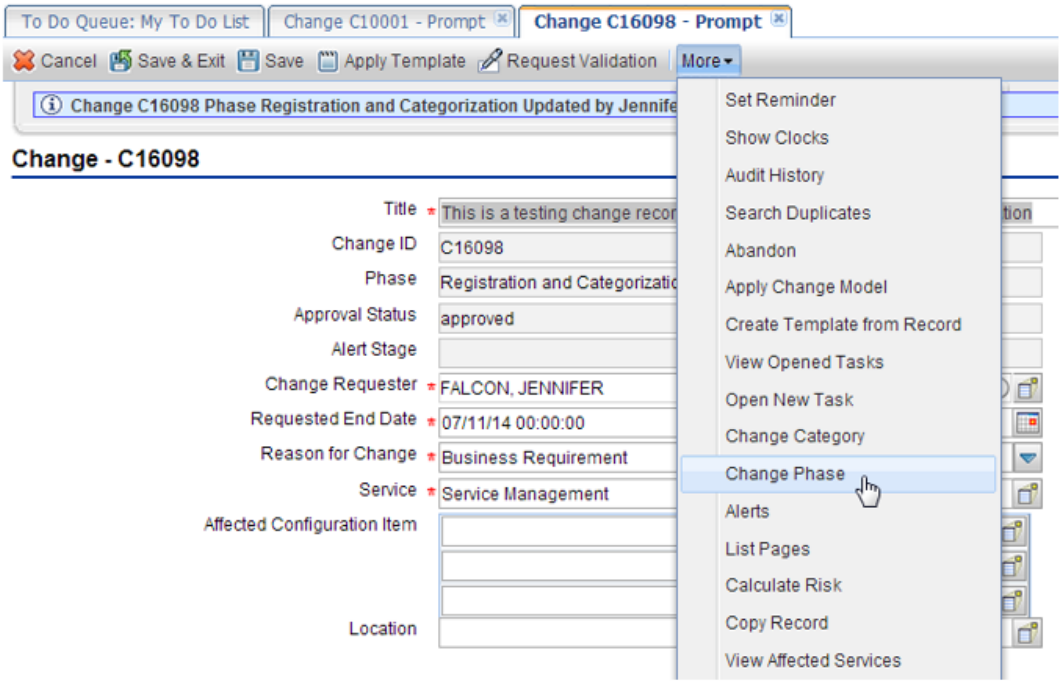
Define the appropriate sequence number (for changes which require linking multiple flows) and enter it in the appropriate field (sequence number). For a single flow, use **1**. Click the **Add** button.



The HP OO flow is linked to the SM Change record.

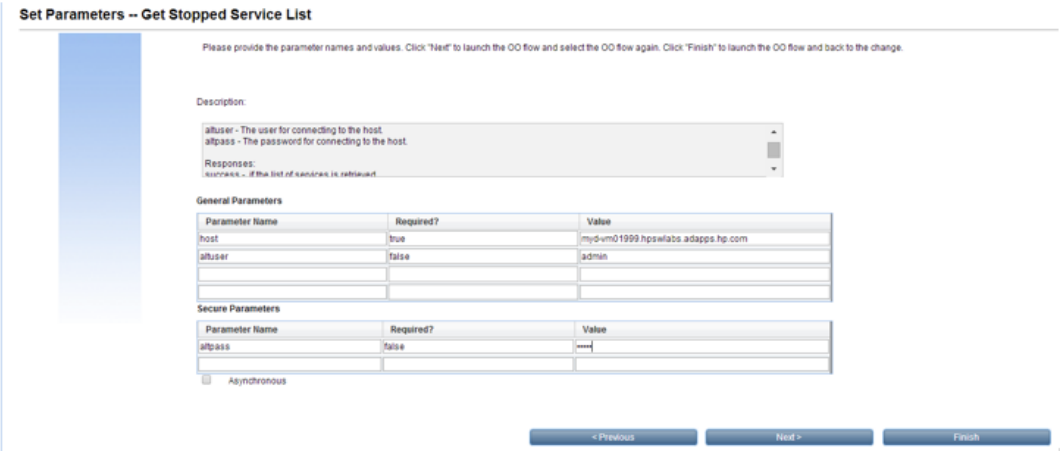
3. Execute the HP OO flow.

   a. If **No Automation** was selected when attaching the flow, forward the change record to the Deployment phase (availability of this phase depends on the Change Category). While viewing the change details, click the **More** button and select **Change Phase**.



   b. Select the **Deployment** phase and click **Save**.

   c. Click the **More** button, and select **Execute OO flow**. In the prompt, fill in the flow input parameters and click **Finish**.

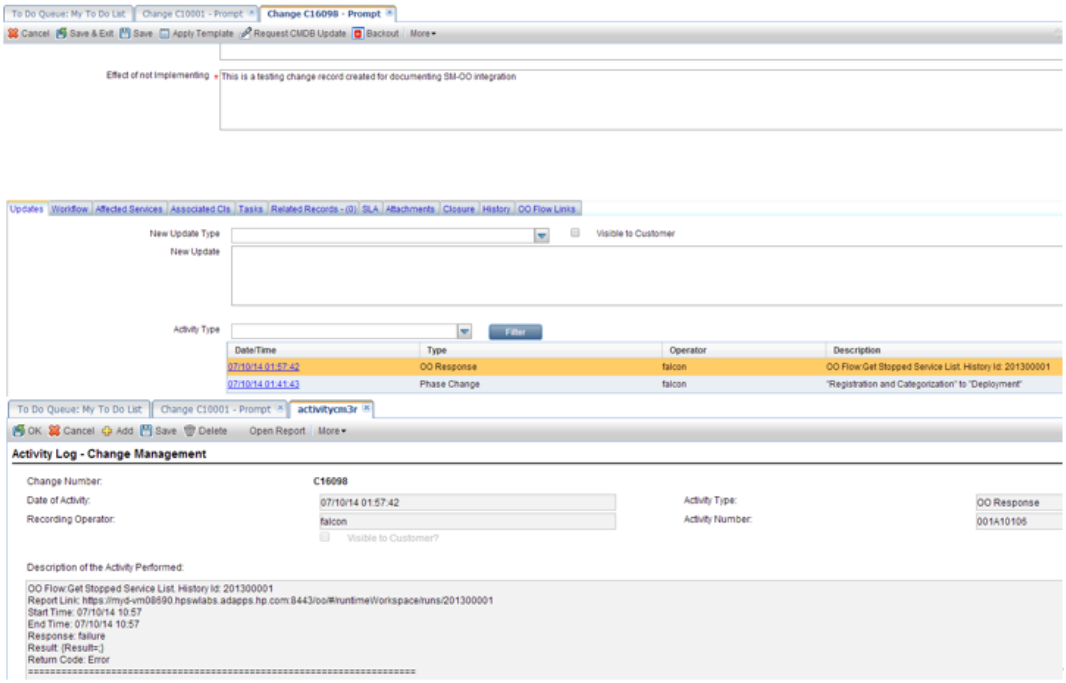


After a while, the execution summary is displayed. Depending on the flow, it can end with the status **Resolved** or **Error**.

4. To review the results recorded in **Change Updates**:

   a. In **Change Details**, select the **Updates** tab and see the result of the flow stored within the table.

   b. Click the link on the **Date/Time** field to review the execution report.



Chapter 15: Viewing Source Code and Build Data in Agile Manager via ALI

This chapter includes:

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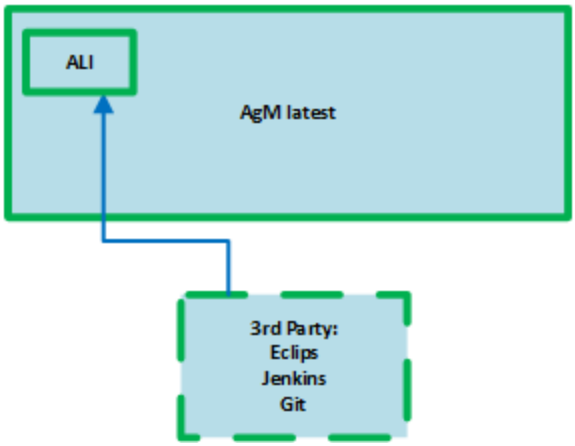
Prerequisites 241

Setting Up the Agile Manager, ALI, and Third-Party Integration Configuration 242

Overview

Similar to the way HP Application Lifecycle Intelligence (ALI) is used to provide HP Application Lifecycle Management (ALM) with the capability to access source code and build related data, HP Agile Manager (AgM) also relies on ALI to provide those capabilities and enable the Agile Manager user to view information about source code changes and builds in the context of Agile Manager user stories and defects.

The following diagram illustrates the relationship between the products for this integration:



Prerequisites

The following products must be installed:

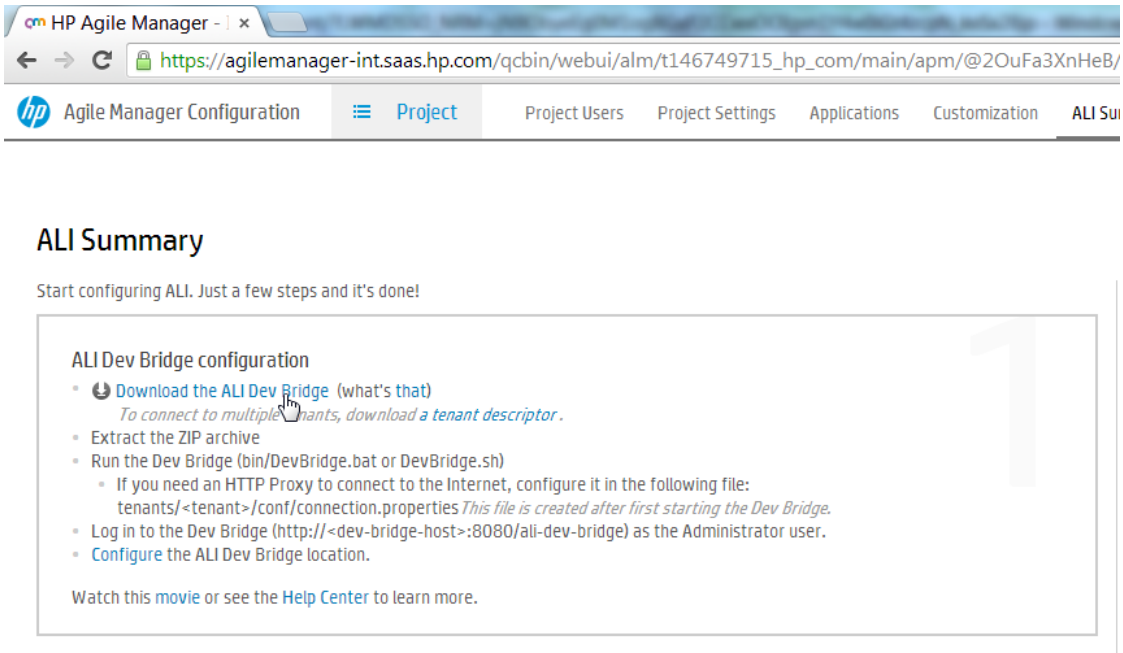
- Agile Manager account is enabled.
- SCM system is installed and running—for example, Git.
- Build system is installed and running—for example, Jenkins.

Setting Up the Agile Manager, ALI, and Third-Party Integration Configuration

Note: Agile Manager is an HP hosted product (SaaS), and is subject to continuous improvements following user's feedback. Therefore, the instructions provided below may be quickly outdated. Refer to **AgM Online Help** for the most current documentation.

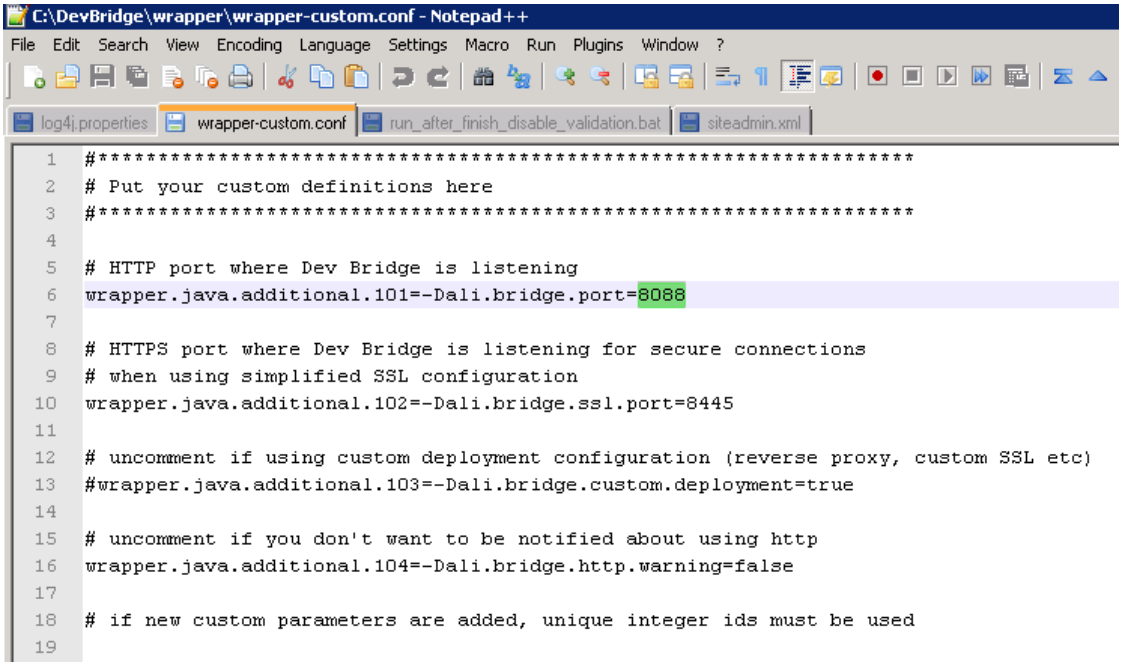
To set up the Agile Manager, ALI and third-party integration configuration:

1. Download the ALI Dev Bridge component. From the Agile Manager interface, select **Agile Manager Configuration > Project > ALI Summary**.



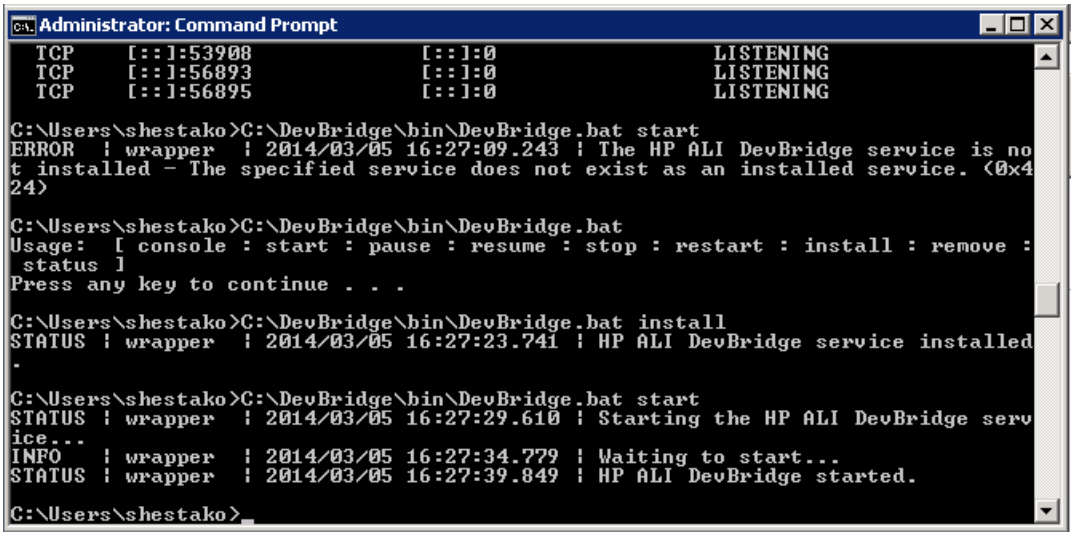
2. Extract the contents of the ALI Dev Bridge package on a machine which has network access for Agile Manager instance as well as build server and SCM system.

3. If the default port 8080 is not available, in **<extracted Dev Bridge folder>/wrapper**, modify the **wrapper-custom.conf** file. The property value for **–Dali.bridge.port=<insert free port number>** should be changed.

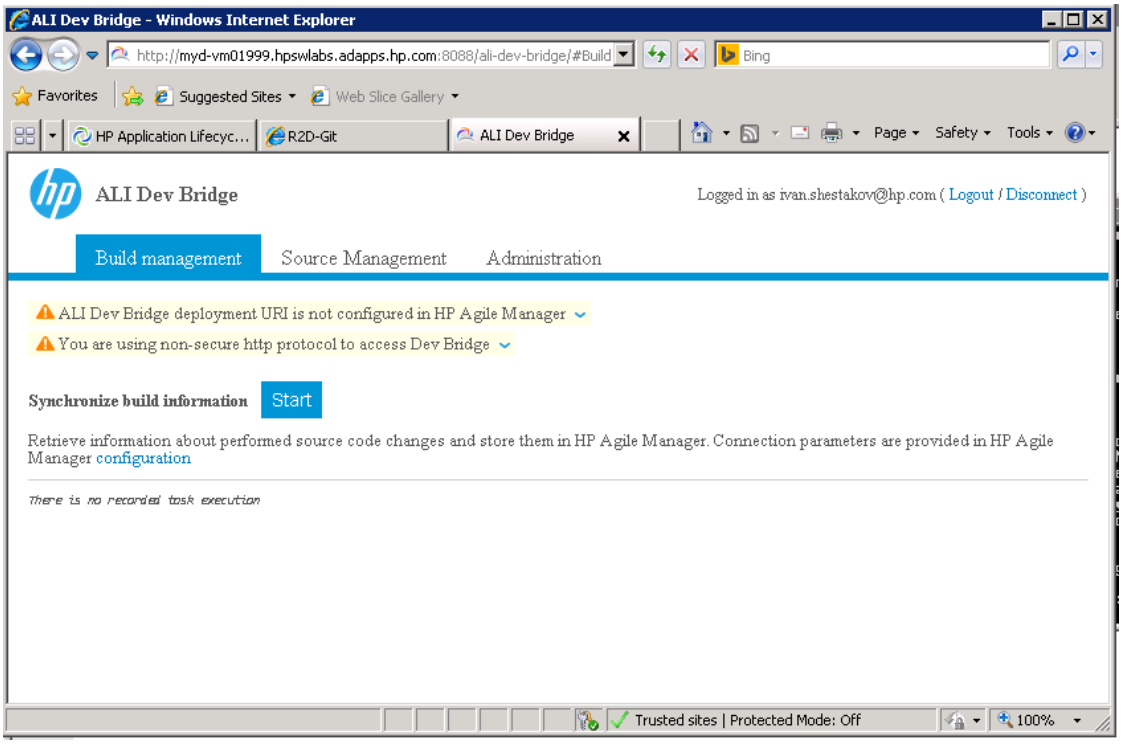


4. Using a Windows operating system, install ALI Dev Bridge as a service.

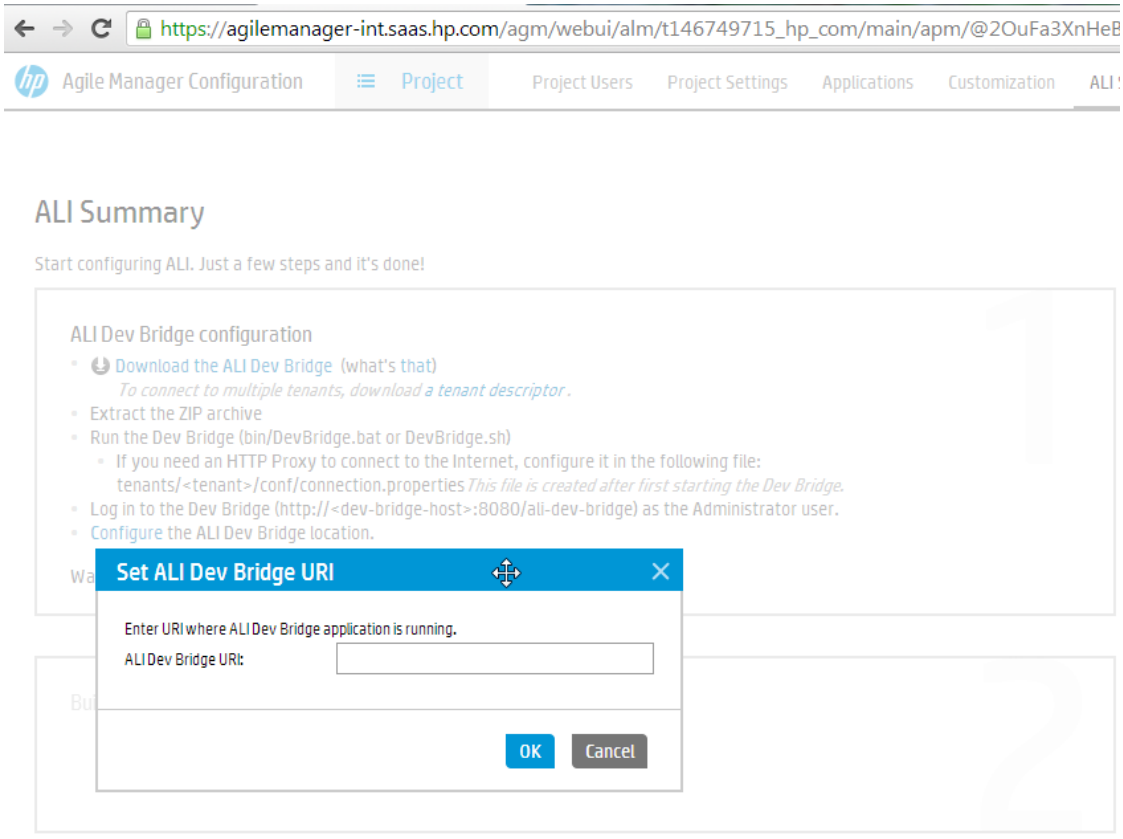
   Using a command line, execute the DevBridge.bat script with **install** and then **start** parameters—for example:



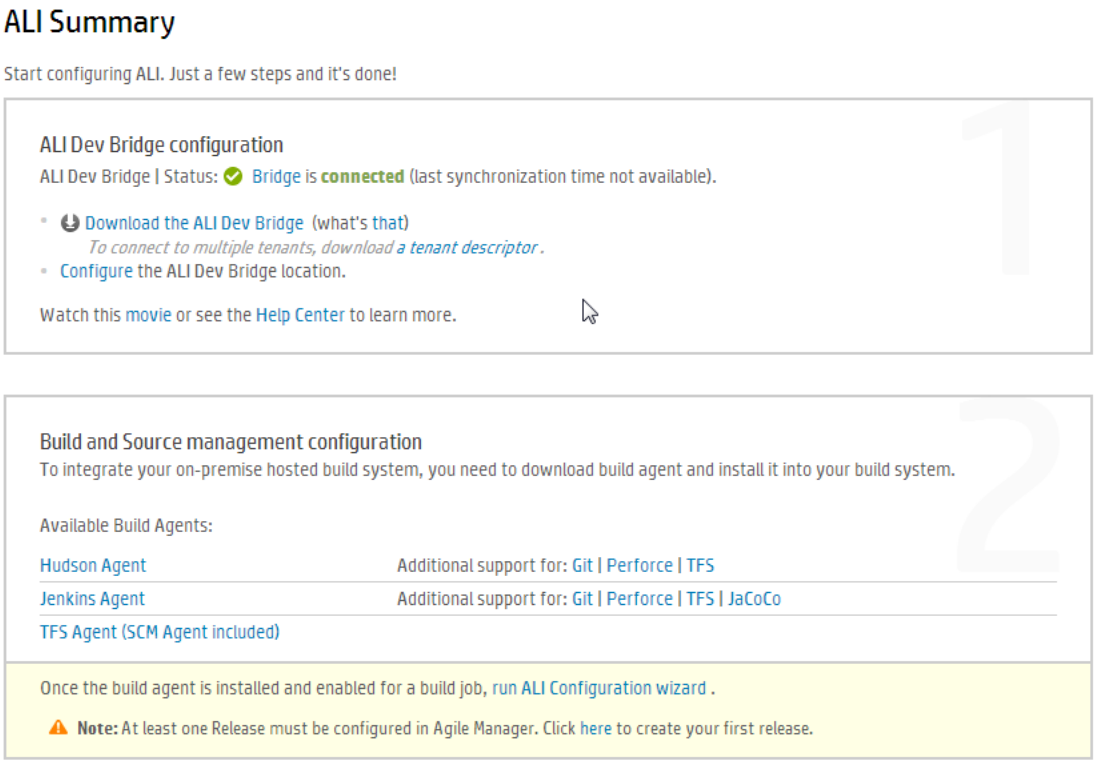
5. Verify that ALI Dev Bridge is accessible, and log on using the Agile Manager credentials.



6. In Agile Manager, edit the ALI Dev Bridge URL on the ALI Summary page.



The status of ALI Dev Bridge should be connected now.



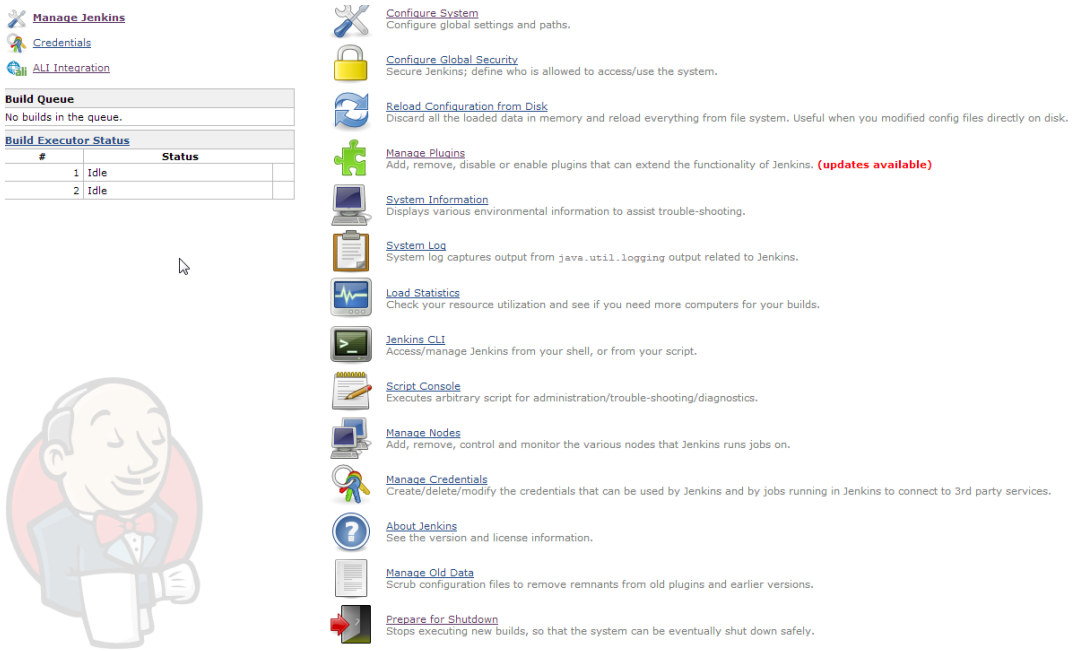
7. From the ALI Summary page in the Agile Manager configuration, download and install the Build Management agent. It is a plug-in that allows Agile Manager to communicate with the build management server.

   Using Jenkins as an example, navigate to the **Jenkins > Manage Jenkins > Manage Plugins > Advanced** tab, and then upload **ali-jenkins-plugin.hpi**.

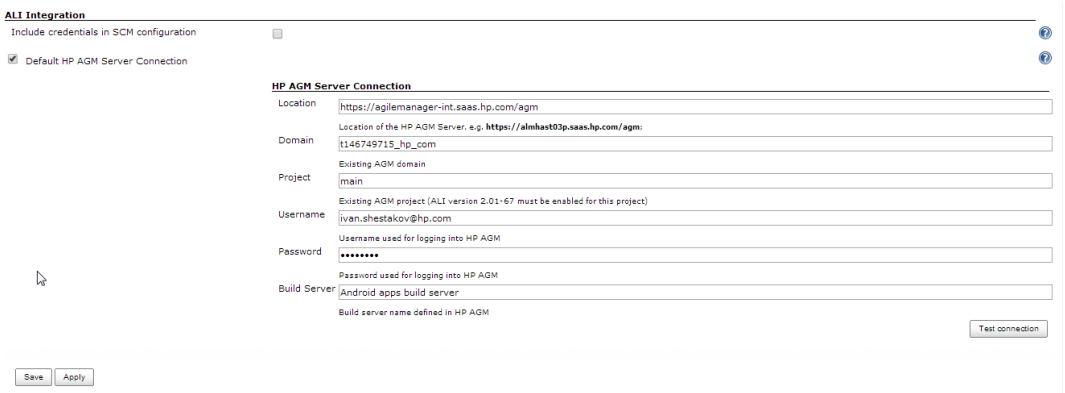
8. Configure the plug-in using Jenkins.

   a. Log on to Jenkins as a user with administrative permissions.

   b. In the main menu, select **Manage Jenkins**, then **Configure System** in the opened menu.



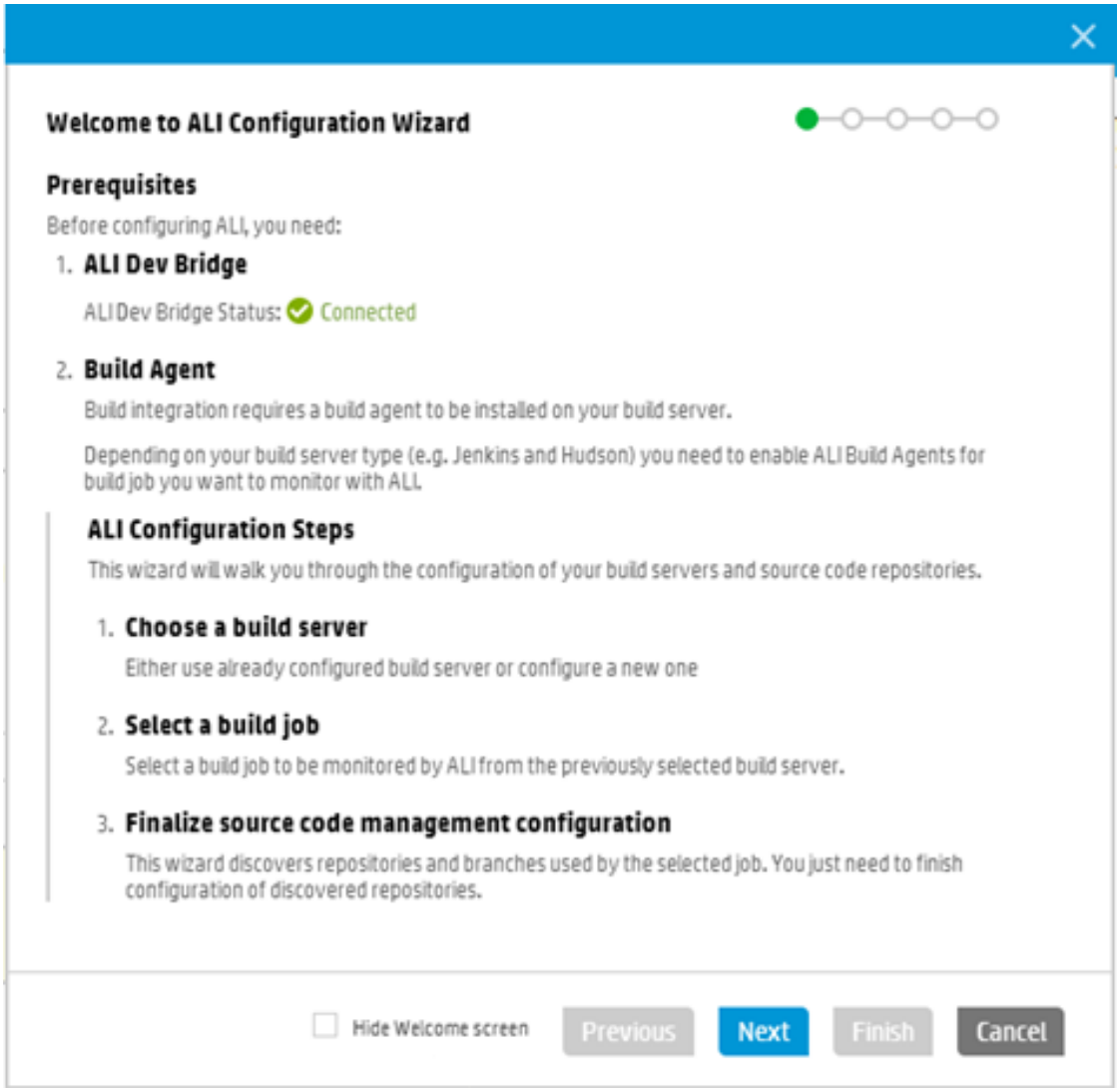
   c. In the **System Configuration** menu, scroll down to the ALI Integration section.



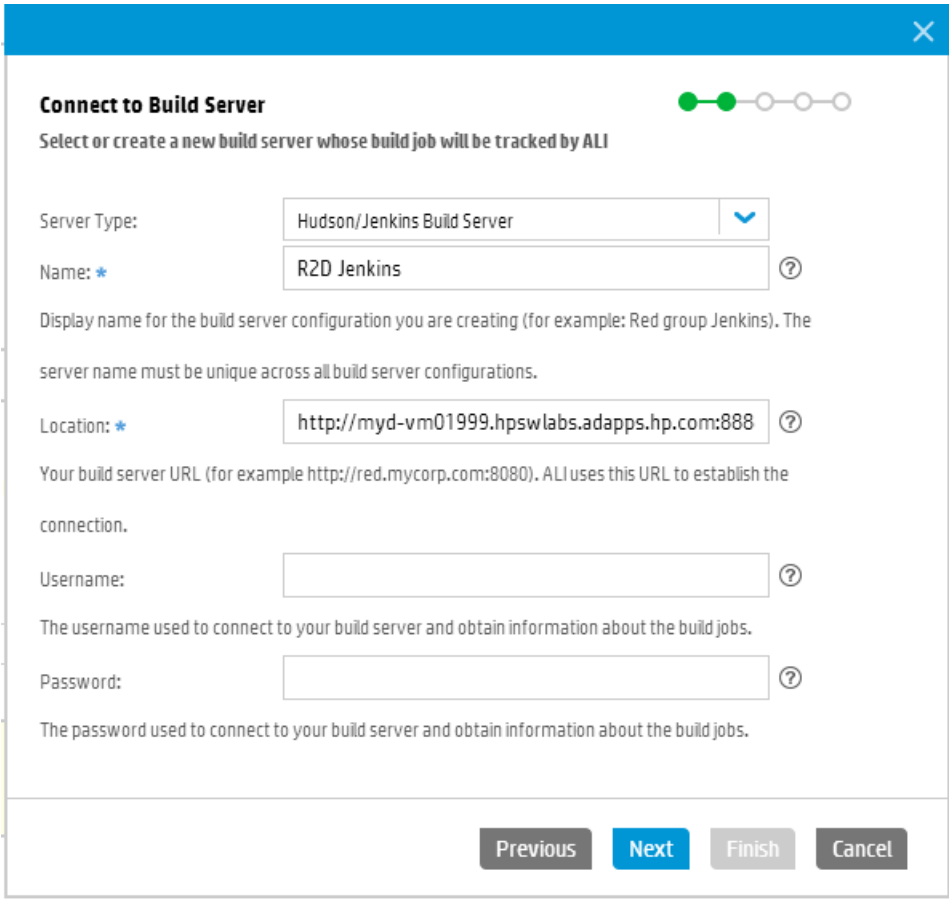
   d. Fill in the Agile Manager system connection details: Agile Manager URL, Domain, Project (can be inferred from the URL you use to access the Agile Manager environment), username and password, as well as the name under which this Jenkins instance will be listed in the Agile Manager environment.

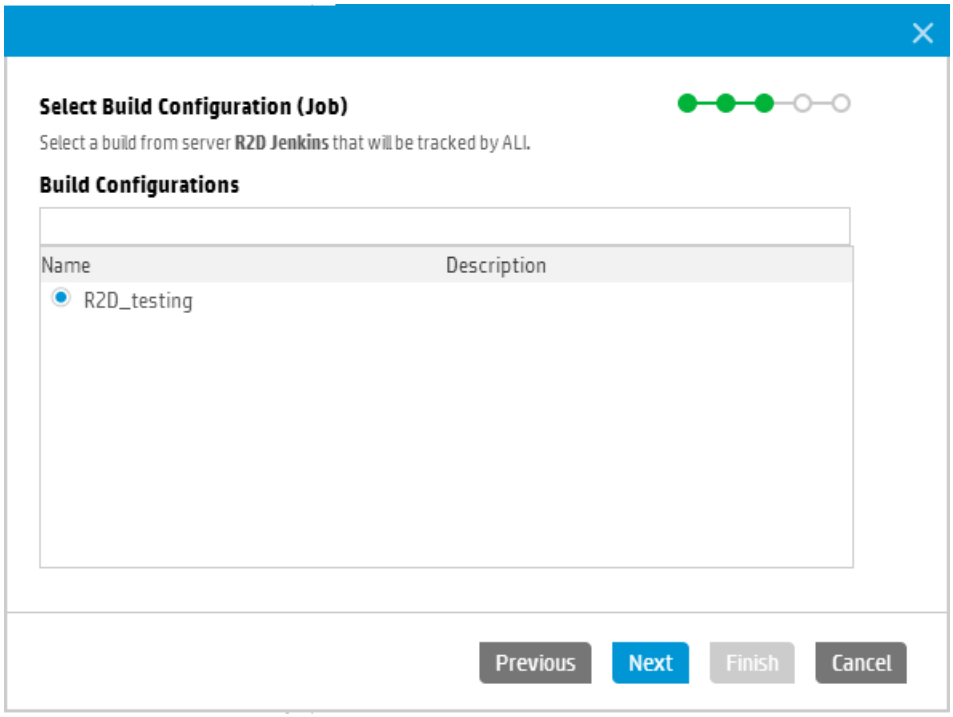
   e. Click the **Test Connection** button to validate successful connection to Agile Manager server.

9. In the Agile Manager Project configuration, launch the **ALI Dev Bridge configuration wizard**.

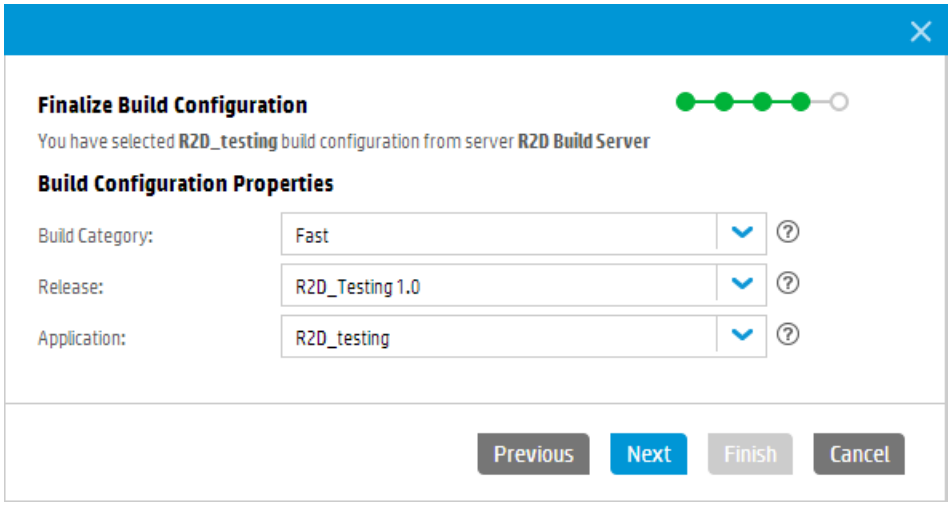


10. Fill in the Build Management system details:

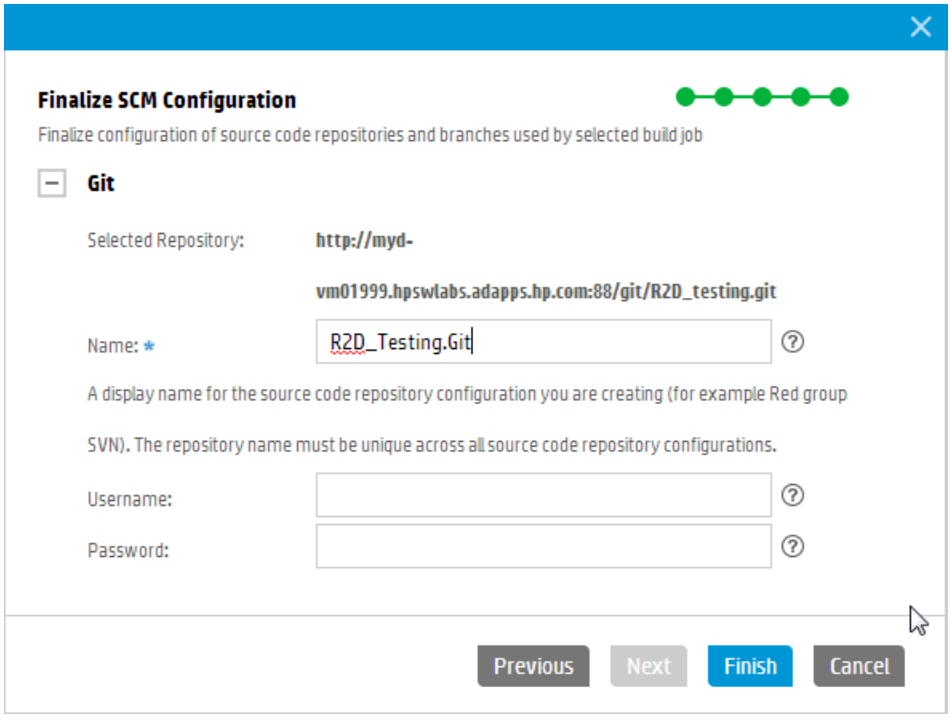




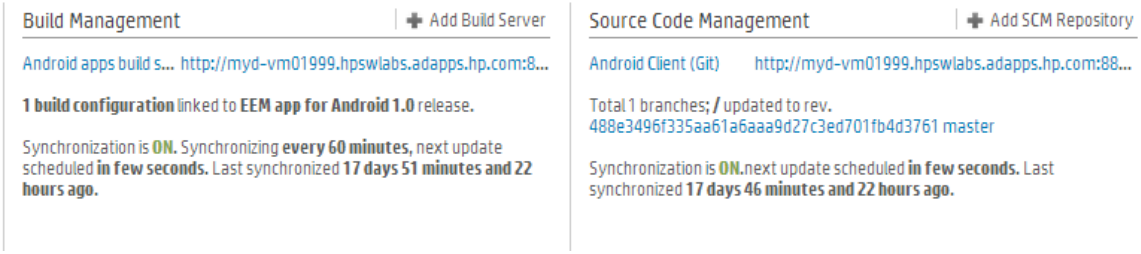
11. Provide the required details about the application and release:



12. Finalize by providing SCM details in the wizard:



The capability of Agile Manager to communicate with SCM and the Build Management system in order to allow traceability between Agile Manager entities (User Stories and or Defects) and code changes and builds is the result of the above actions. This can be seen in Agile Manager's Configuration page on the **ALI Summary** tab:



Chapter 16: ALM Testing Tools

This chapter includes:

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HP ALM Performance Center Testing Process 252

HP Unified Functional Testing 253

HP Sprinter 253

HP LoadRunner 254

Overview

Software testing is a broad discipline and HP offers multiple tools that cover various aspects of testing. This chapter briefly describes those tools and provides references for additional information resources.

The tools mentioned in this chapter provide unique testing capabilities that can be used by ALM users in order to run manual and automatic tests written using various methods. For more information, see page 552 in Chapter 31 of the HP ALM version 11.52 User Guide.

HP ALM Performance Center Testing Process

Using HP ALM Performance Center, you create performance tests to define the events that occur during a testing session. During a test, ALM Performance Center replaces human users at physical machines with virtual users—or Vusers. These Vusers create load on your system by emulating the actions of typical users in a repeatable and predictable manner.

Each step in the testing process is carried out by one of the HP load testing tool components. The components are as follows:

- **HP Virtual User Generator (VuGen).** Creates the script and generates virtual users—or Vusers. VuGen does this by capturing actions that typical end-users would perform on your application, and then records these actions into automated Vuser scripts. These Vuser scripts form the foundation of a performance test.
- **HP ALM Performance Center.** Provides the central console from which you build, manage, and monitor a test.
- **HP Analysis.** Analyzes the performance test and provides graphs and reports with in-depth performance analysis information. Using these graphs and reports, you can pinpoint and identify the bottlenecks in your application and determine the changes that need to be made to your system to improve its performance.

For more information on using PC and all of its components, see the *HP ALM Performance Center Quick Start Guide*.

HP Unified Functional Testing

HP Unified Functional Testing's (UFT) combined solution for graphical user interface (GUI) and API (service) testing enables you to test functionality across multiple application layers, such as the front-end GUI layer, as well as back-end service layers. Additionally, the integrated BPT features enable a wider range of both technical and non-technical UFT users, maximizing your opportunity to create comprehensive automated tests.

For information on how to integrate UFT with ALM, see Part 5, "UFT Integration With HP ALM" on page 706 in the *HP Unified Functional Testing User Guide*.

HP Sprinter

You run tests manually from HP Application Lifecycle Management (ALM) using HP Sprinter. Sprinter provides advanced functionality and tools to make manual testing more efficient and effective.

Manual testing often requires that you leave your testing application to accomplish tasks related to your test. For example, you may need to use graphic software to take a screen capture of your application, you may want to record a movie of the application during the test, or you may need to switch to your defect tracking software to report defects.

Sprinter enables you to accomplish these tasks without disrupting your test flow. With Sprinter, you can also perform many of the repetitive and tedious tasks of manual testing automatically. Sprinter includes many tools to help you detect and submit defects. These features ensure that you can perform all the tasks necessary for your manual test with minimum interruptions to your testing work.

Sprinter also enables you to create, edit, and manage manual tests and business components directly in Sprinter, and then save them to Application Lifecycle Management.

Sprinter is fully integrated with Application Lifecycle Management, enabling you to get the maximum benefit from both solutions.

For more information on Sprinter's integration with ALM, see “Connect to Application Lifecycle Management” on page 47 in the *HP Sprinter Readme.*

HP LoadRunner

HP LoadRunner (LR) is the HP solution for application performance testing. LoadRunner stresses your entire application to isolate and identify potential client, network, and server bottlenecks.

LoadRunner includes:

- **HP Virtual User Generator (VuGen).** HP's tool for creating Vuser scripts. You use VuGen to develop a Vuser script by recording a user performing typical business processes. The scripts let you emulate real-life situations.
- **HP Controller.** Allows you to easily and effectively control all the Vusers from a single point of control and monitor the scenario performance during test execution.
- **HP Analysis.** You use Analysis after running a load test scenario in the HP LoadRunner Controller or HP Performance Center. The Analysis graphs help you determine system performance and provide information about transactions and Vusers. You can compare multiple graphs by combining results from several load test scenarios or merge several graphs into one.

For more information regarding LR's integration with ALM, see “Working with Application Lifecycle Management” on page 140 in the *HP LoadRunner Virtual User Generator User Guide.*

Chapter 17: Execution of GUI and API Vusers as LoadRunner Scripts for BPM

This chapter includes:

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Installing and Configuring UFT and BPM 256

Overview

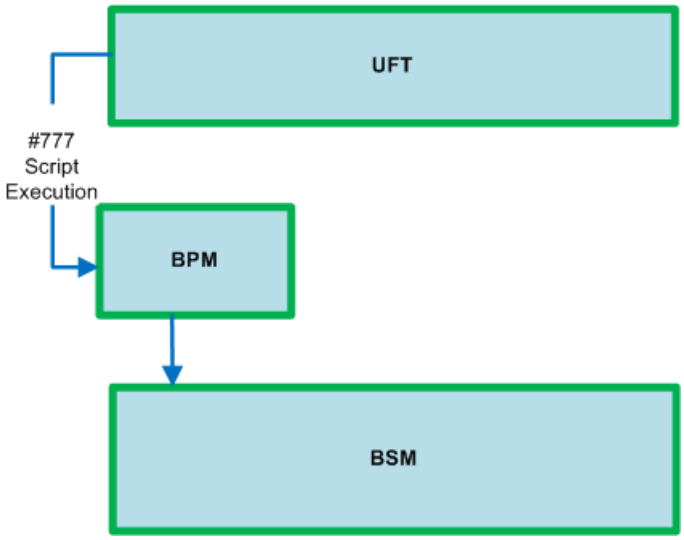
HP United Functional Testing (UFT) enables the creation of complex tests to examine the full spectrum of your application's functionality and API.

In the HP Requirement to Deploy (R2D) Value Stream, after creating a test in UFT,you can run that test automatically from HP Application Lifecycle Management (ALM) via the integration between ALM and UFT.

You can use the tests created in UFT for testing purposes and also to create monitoring scripts combining the tests. This saves time by avoiding the need to rewrite the monitoring scripts from scratch. The scripts can be added to the list of scripts in the HP Business Service Management (BSM) End-User Management module, as you would do with any script created with VuGen—LoadRunner's script generation tool. You can then assign the monitoring scripts and execute them in an HP Business Process Monitor (BPM) application configuration.

It is highly recommended to adjust the scripts for end-user monitoring purposes before using them in BSM. This includes configuring SLAs, monitoring thresholds, editing or combining scripts to provide better coverage of monitoring, and so on. For more information, see End-to-End Service Monitoring and Event Management Best Practices.

The following diagram illustrates the relationship between the products for this integration:



Installing and Configuring UFT and BPM

This procedure provides the capability to leverage UFT tests created during product development to be used as BPM monitors on the deployed service in order to validate that the critical functionality required from the product is available for the end users.

To install and configure UFT and BPM:

1. Install UFT on a BPM server. For details, see Chapter 2, "Installing UFT" on page 12 in HP Unified Functional Testing version 12.01 Installation Guide.
2. After the installation of UFT is complete, install BPM on the same machine. For details, see Chapter 6, "Installing BPM" on page 22 in HP Business Process Monitor version 9.24 Business Process Monitor Deployment Guide.

   Note: During the installation, the BPM Configuration Wizard opens. The configuration for the UFT – BPM integration is included in the BPM Configuration Wizard.

3. Configure the integration between UFT and BPM. For details, see "QuickTest Professional (QTP) /Unified Functional Testing (UFT) Integration Page" on page 34 in *Business Process Monitor version 9.24 Deployment Guide*.