

Change Configuration and Release Management Solution (CCRM)

HP Service Manager, HP Release Control, and HP Universal CMDB

Solution Version: 9.10

Solution Concept Guide

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Table of Contents

Welcome to This Guide

This guide provides general information about the Change Configuration and Release Management (CCRM) solution—what the solution can accomplish and for whom.

This chapter includes:

- ▶ How This Guide Is Organized on page 9
- ▶ Who Should Read This Guide on page 10
- ▶ Additional Online Resources on page 10

Note: If you have any feedback or comments about this document, please contact solutionpackagingandscp@hp.com.

How This Guide Is Organized

This guide contains the following chapters:

Chapter 1 Introduction to CCRM

Provides a brief description of the Change Configuration and Release Management (CCRM) solution and illustrates a typical deployment.

Chapter 2 CCRM Customer Scenarios

Provides sample customer scenarios implementing the CCRM Solution capabilities. This section demonstrates what you can achieve with this solution.

Chapter 3 CCRM Specific Use Cases

Provides examples of use cases carried out with the CCRM Solution.

Who Should Read This Guide

This guide explains the motivation to install and use the CCRM solution. It describes what the solution implementation will achieve, which Information Technology Infrastructure Library (ITIL) processes it will answer, and describes the workflow between the products comprising the solution.

This guide is intended for:

- ▶ Customers
- ▶ Presales and sales personnel
- ▶ Professional service office
- ▶ Anyone who wants to learn about the solution, its workflow, and its contribution

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

Additional Online Resources

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1

Introduction to CCRM

This chapter includes:

Concepts

- ▶ CCRM – Overview on page 13
- ▶ Core CCRM 9.1 Solution Diagram on page 15
- ▶ CCRM 9.1 Solution Automation Extension Diagrams on page 16
- ▶ Personas on page 18

Reference

- ▶ Terms and Definitions on page 20

Concepts

CCRM – Overview

IT organizations today are plagued with numerous incidents that result from unplanned or improperly planned changes to the organization.

Changes to your IT infrastructure arise for the following reasons:

- ▶ proactively – to provide benefits to your organization, either through lower total cost of ownership (TCO), or by providing options that enable your business to develop
- ▶ reactively – to resolve errors that have an impact on the level of services that are provided

This document describes using the Change Configuration and Release Management (CCRM) solution to implement three closely linked ITIL processes—Change Management, Configuration Management, and Release and Deployment Management.

The CCRM solution enables the IT organization to:

- ▶ provide the structure and formal workflow necessary to implement changes
- ▶ reduce the risk of making changes by providing an accurate picture of your IT infrastructure, as well as the impact any change may have on IT services
- ▶ enable early detection of unplanned changes
- ▶ maintain an accurate record of the IT infrastructure

Change Configuration and Release Management Solution

The CCRM solution is comprised of three individual, but integrated products that are brought together. The products that comprise the CCRM solution are:

- ▶ HP Universal Configuration Management Database 9.03 (UCMDB)
- ▶ HP Service Manager 9.30 (SM)
- ▶ HP Release Control 9.13 (RC)

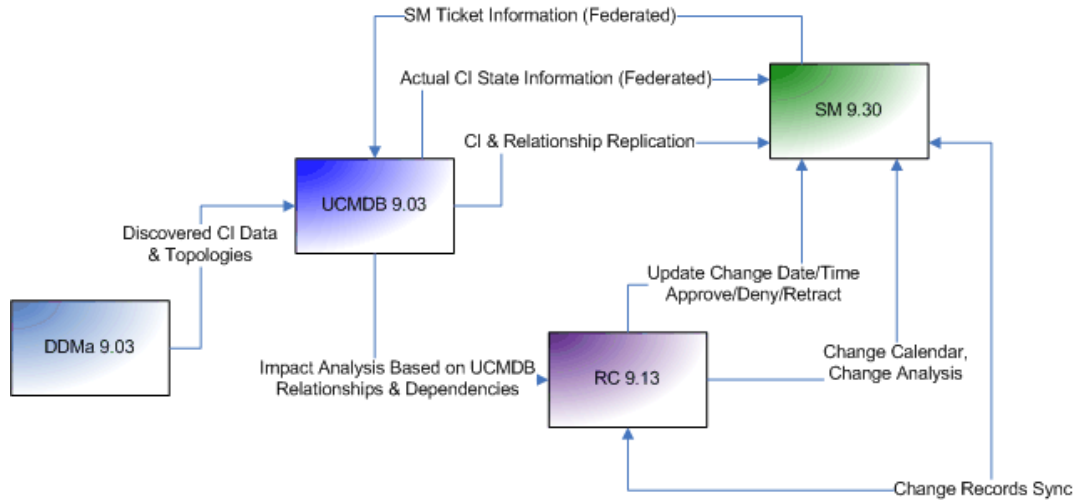
Additionally, the CCRM Automation Extension solution includes:

- ▶ HP Operations Orchestration 9.00 (OO)
- ▶ HP Project and Portfolio Management 9.12 (PPM)

For deployment and configuration instructions, see the *Change Configuration and Release Management (CCRM) Configuration Guide*.

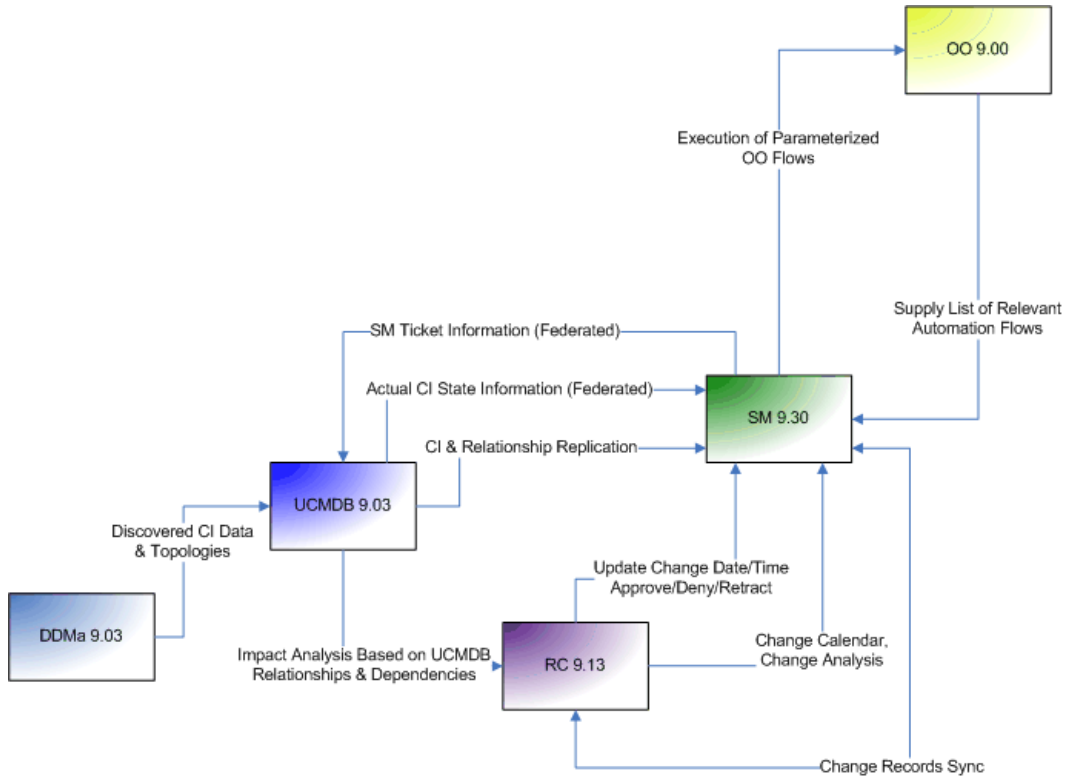
Core CCRM 9.1 Solution Diagram

The following diagram displays the various data flows of the Core CCRM Solution.

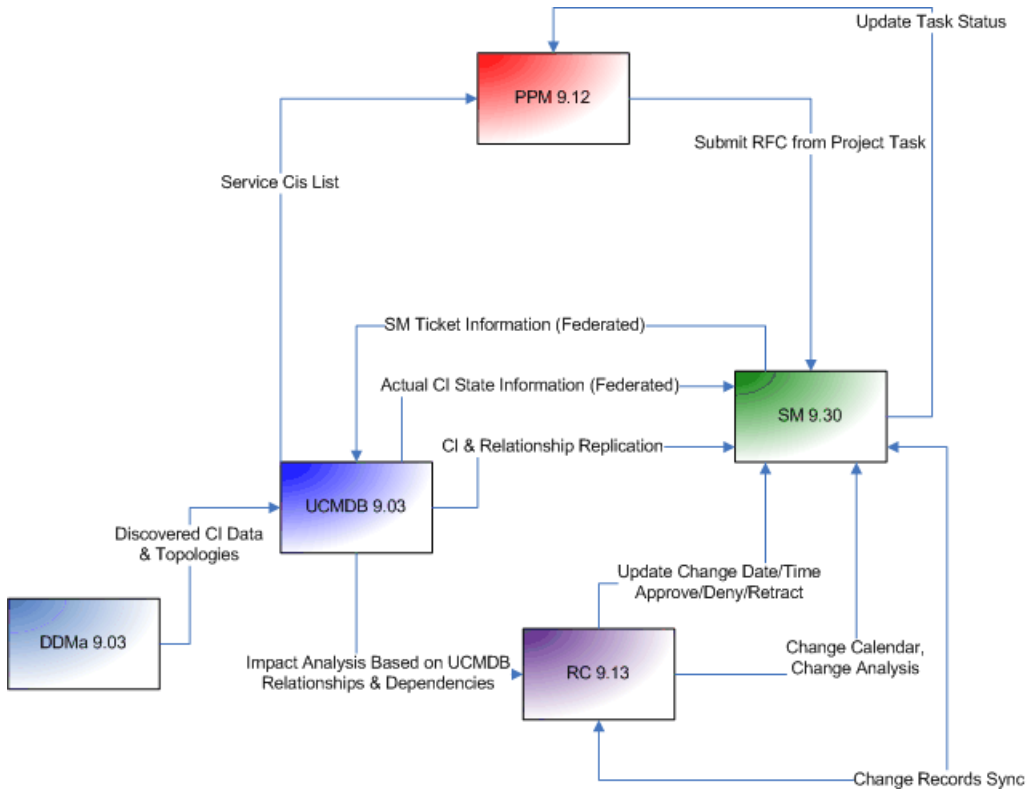


CCRM 9.1 Solution Automation Extension Diagrams

The following diagram displays the various data flows of the CCRM Solution Automation Extension utilizing HP Operations Orchestration.



The following diagram displays the various data flows of the CCRM Solution Automation Extension utilizing HP Project and Portfolio Management.



Personas

The main personas in the following CCRM core story line are as follows:

► **Business Relationship Manager**

Responsible for maintaining an ongoing relationship with the business and ensuring that service providers are satisfying the needs of the business. The Business Relationship Manager reviews all newly submitted Project Proposals for approval so they can progress to later stages of their life cycle.

► **Business Service Owner**

Responsible for maintaining defined levels of availability and performance of applications. The Business Service Owner is also responsible for notifying the customers of problems, as well as validating that they are handled and resolved according to the Service Level Agreement (SLA).

► **Change Management Team**

Headed by the Change Manager, this team is entrusted with the responsibility of reviewing and approving Request For Change (RFC) to progress to its later life cycle stages.

► **Change Manager**

Authorizes and documents all changes in the IT infrastructure and its components (Configuration Items), in order to maintain a minimum amount of interruptive effects on the running operation.

► **Configuration Manager**

Responsible for ensuring the IT infrastructure configuration integrity that is required to support a service. Responsible for maintaining an updated Configuration Management Database (CMDB). In addition, the Configuration Manager is responsible for defining the organizations's authorized state for the IT infrastructure.

► **Portfolio Manager**

A member of the Strategic sector of many IT organizations that is responsible for reviewing the approved proposals—bringing into account the various business needs, budget constraints, and ongoing IT activities.

► **Problem Manager**

Responsible for managing the life cycle of all problems, the most important of which is preventing incidents from happening, and minimizing the impact of incidents that cannot be prevented.

► **Project Manager**

Responsible for detailing and managing the Project from its initial stages as a Project Proposal throughout its life cycle until completion of the Project.

► **Technical Group**

Group assembled of the relevant technical people necessary in order to plan, build, test, and deploy a change to the IT infrastructure. This group may include people from various areas of the expertise, as well as vendor representatives.

Reference

Terms and Definitions

Actual State

The current physical and logical state of the IT infrastructure.

Authorized State

The physical and logical state in which the organization expects the IT infrastructure to be.

Change Advisory Board (CAB)

Group of people that advises the Change Manager in the assessment, prioritization, and scheduling of changes. This board is usually made up of representatives from all areas within the IT service provider, the business, and third parties such as suppliers.

Change Conflicts

When two or more changes require the same resources, such as people or components of the IT infrastructure, or that impact the same CIs in a given time frame.

Deployment Release

The implementation of a change into an environment (either test or production).

Emergency Change Advisory Board (ECAB)

A sub-set of the Change Advisory Board who make decisions about high impact emergency changes. Membership in the ECAB may be decided at the time a meeting is called, and depends on the nature of the emergency change.

Request For Change (RFC)

An initial request that entails some form of modification, addition, or removal of CI(s). Once approved, these requests evolve into changes.

2

CCRM Customer Scenarios

The story detailed in this document describes using the Change Configuration and Release Management solution to help IT organizations better manage the challenges related to controlling the risk, cost, and governance of change in increasingly complex and dynamic environments.

Concepts

- ▶ CCRM Use Case Solution on page 21

Tasks

- ▶ CCRM Customer Scenarios on page 23

Concepts

CCRM Use Case Solution

The CCRM use case solution that follows consists of one core story line, and two extensions. The core module is a simplified version of the CCRM solution that can be easily implemented. An extension module can be added on top of the core module in order to cover broader functionalities and processes within the CCRM solution.

The core story describes an operational change throughout its life cycle from creation to closure. The products depicted in the core story line are:

- ▶ Universal Configuration Management Database (UCMDB): Provides an essential foundation enabling all other products to use a common language (BTO Data Model—BDM) in order to support inter-application data synchronization processes. This foundation is the core of the CMS offering of HP.
- ▶ Service Manager (SM): Service Desk application that provides a central repository for all operational and transition records, such as incidents, problems, changes, and catalog requests.
- ▶ Release Control (RC): Provides the IT organization with an advanced set of capabilities designed to assist in the proper planning and implementation of planned changes to the IT infrastructure.

The products depicted in the two extension stories are:

- ▶ Operations Orchestration (OO): Provides an automated change process.
- ▶ Project and Portfolio Management (PPM): Provides changes as part of a process.

Assumptions and Notes:

- ▶ In the core story, the Request For Change (RFC) is submitted by the Problem Manager as a result of a problem. However, this is not the only source for RFCs. Other sources may include any of the following—strategy, service desk, supplier/contractor, and so on.
 - ▶ The core story describes an operational change. Application changes are currently not a part of this solution version.
-

Tasks

CCRM Customer Scenarios

This task illustrates the CCRM core story.

- "CCRM Core Story—Operational Change" on page 23
- "CCRM Extension Story—Change Process with Automation" on page 30
- "CCRM Extension Story—Change Process as Part of Project" on page 34

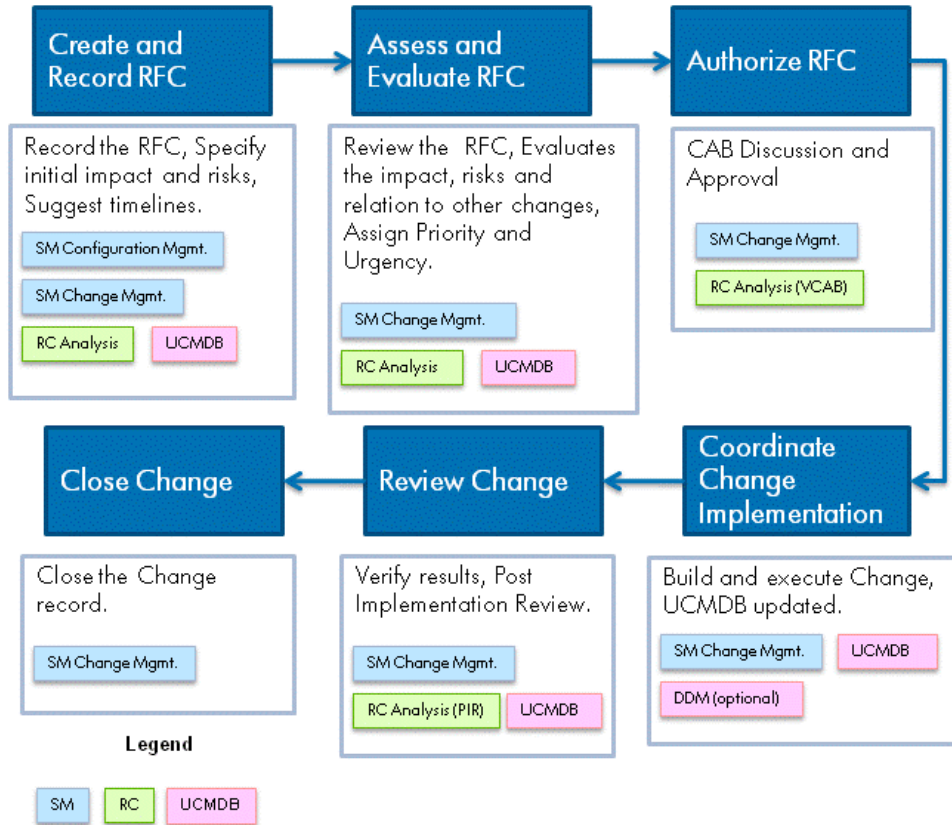
CCRM Core Story—Operational Change

An operational change is any change to the software infrastructure that does not require software development. It is part of the service life cycle and may be triggered in order to maintain, restore, and/or improve service life cycles.

- "CCRM Core Story—Operational Change Flow Diagram" on page 24
- "Basic Operational Deployment" on page 25
- "Core Story Variations" on page 29

CCRM Core Story—Operational Change Flow Diagram

The following diagram summarizes the flow detailed in the CCRM core story for an operational change.



Basic Operational Deployment

1 The Problem Manager evaluates all open problems and decides to create a Request For Change (RFC) to deal with a number of issues hindering key business services in the organization. To do so, the Problem Manager submits a new RFC in Service Manager (SM) supplying the following information:

- Related service
- Changed configuration items (CIs)
- Suggested urgency
- Suggested priority
- Suggested schedule for the RFC

2 In order to better analyze the RFC, the initiator is provided with the following information within SM:

- Risk analysis
- Impact analysis
- Collision detection
- Forward Schedule of Changes as seen through the RC Change Planner

This information will be automatically populated in the RFC record, thus saving SM users from manually updating these values, as well as providing a single source of truth for change information.

3 The Change Management Team receives notification of the newly created RFC record. To review this record, a team member logs into SM via a link provided in the email notification. He reviews the RFC to make sure that it meets the organization's requirements for an RFC, as well as validating that the RFC is CAB ready.

4 During the next regular Change Advisory Board (CAB) meeting, all aspects of the RFC are discussed and the CAB decides whether or not to proceed with the change as is.

Initially the RFC can be reviewed and scheduled offline (each participant reviews it at their convenience) using RC's built-in collaboration functionality (also known as virtual CAB or VCAB, accessed from within the SM user interface). This saves the time and effort necessary to bring all CAB parties to the same meeting for RFCs that do not require further discussion. In addition, minor RFCs that do not require additional discussion can be approved in the VCAB.

- 5** The CAB members will assess and evaluate the RFC in the following aspects (also know as the "7 Rs" of Change Management):
- ▶ Who Raised the RFC?
 - ▶ What is the Reason for the RFC?
 - ▶ What Return (of investment) is required?
 - ▶ What are the Risks involved?
 - ▶ What Resources are required?
 - ▶ Who is Responsible for build, test, and implementation?
 - ▶ What is the Relationship between this change and other existing changes?

To do so, the CAB members each utilize the Release Control Analysis module to get better insight into risks, impact, conflicts with other changes, and change windows/blackout periods. They are provided with a convenient view of the Forward Schedule of Changes, all of which are based on change information from SM and CI dependencies and relationships from UCMDB.

Note:

- For minor changes, the Change Management Team can be responsible for assessment and evaluation ("7 Rs") and not the CAB/ VCAB.
 - The RFC can be approved within the offline CAB without the need for an online CAB. RC enables voting and approval via the collaboration modules.
-

- 6 In this case, the RFC is of major impact requiring an online CAB meeting to be convened. The Change Manager sends out an invitation to the CAB to all the relevant members of the CAB with a list of all the RFCs to be discussed.
 - 7 During the online CAB meeting, CAB members use RC to coordinate resources and find the optimal time to implement the change. In addition, RC provides an in-depth view of the change impact, as well as the Change Planner. This enables the CAB to optimize the implementation time slots bringing into account blackout periods, change windows, and Change Conflicts. Deployment plans, test results, and a back-out plan as part of the RFC details are also brought into account when change authorization is discussed.
-

Note: Having successful test results can either be a precondition for the CAB to approve the Change, or can be dealt with by utilizing RC's Action Items that can be reviewed by the CAB as well.

- 8 At the end of the online CAB meeting, the CAB members vote to approve/reject the change as presented; the results of which, in addition to any modifications in field values, update the SM change record and move it to the next phase of the workflow.

- 9 The Change Manager assigns the change in SM to the relevant Technical Group responsible for building, testing, and executing the change in both test and production environments.
- 10 The Technical Group entrusted with the task of building and executing the change will determine the content of the change from a technical aspect, as well as the deployment method (manually or using automation).
- 11 The Technical Group builds and tests the change in a test environment to see that the roll-out meets their expectations.

Note: If testing was done before the CAB meeting, no testing is required in this step and the implementation is done in production.

- 12 After the change was successfully implemented in a test environment, the Technical Group prepares for deployment in production. As a part of their preparations, the Technical Group takes a UCMDB snapshot of the business service at hand. This will later be utilized to verify and review that the expected result was achieved.
- 13 Impact modifications that occur between RFC approval and implementation in production will trigger an automatic notification to the Change Management Team that this RFC should be re-evaluated to make sure that the organization is still ready for the implementation in production.
- 14 The change to the IT infrastructure detailed in the RFC is deployed by the Technical Group.
- 15 Once deployment is complete, normal business service behavior is verified. A discovery tool (DDMa, DDMi, or any third party tool) discovers the modified CIs and updates their records in UCMDB accordingly. The Technical Group takes another UCMDB snapshot, which they then compare to the previous one taken prior to implementation. Using UCMDB's Compare Snapshot capability, the Technical Group validates that the expected modifications took place.

- 16** The Change Manager asks the necessary parties to perform the change's Post Implementation Review (PIR). This review is intended to confirm that the change has met its objectives, the initiator and other stakeholders are satisfied with the results, and that there have been no unexpected side effects. This process can be done either online or offline, similar to the CAB/VCAB capabilities. During the PIR process, the reviewers log their observations for the RFC at hand. This information assists RC in more accurately calculating risks for future changes of a similar nature.
- 17** Once the review is completed, the Change Management Team closes the RFC.

Core Story Variations

- There are two types of pre-authorized changes:
 - **ITIL definition:** An RFC could be one of a predefined set of requests that has a defined implementation process and does not have impact on the IT infrastructure. These RFCs do not require going through the formal change process. Once logged, it is automatically approved and assigned to the relevant parties who implement the change.
 - **Custom IT organization definition:** The Change Manager can define the level of risk and impact that requires the full change process to be implemented. RFCs that do not meet these criteria can follow the pre-authorized process. RC enables filtering RFCs by various conditions, thus exposing low risk which will be approved immediately by the Change Management Team, without requiring deep analysis assessment and approval procedures.
- Other types of changes include:
 - **Emergency change:** In most cases of emergency change, authorization is granted by the Emergency Change Advisory Board (ECAB). Emergency changes may require senior stakeholder approval or any other criteria defined by the organization. In addition, there may be less testing effort, based on risk assessment, in order to implement the change quickly. Full documentation of the change and configuration items may be done after the change has been implemented in order to save time.

- ▶ **Unplanned automated tasks:** While the IT management strives to document all changes to the IT infrastructure, some activities which are not documented in the form of RFCs in SM may be executed by automated tools such as Network Automation or Server Automation (to name just two). In these cases, Change Management would still like to have insight into these tasks' impact, or possible impact on other RFCs in the organization. RC enables review of these automated tasks, as well as analyzing their impact, risks, and collisions with all other RFCs/changes going on in the organization. This enables more accurate analysis, planning, and implementation of changes in the IT organization.

Note: In this case, the change record is available in RC alone and there is no corresponding record in SM, which manages the change process. In order to achieve the complete solution and have these changes in SM as well, the automation extension needs to be implemented (see "Automated Process for Change Management" on page 34).

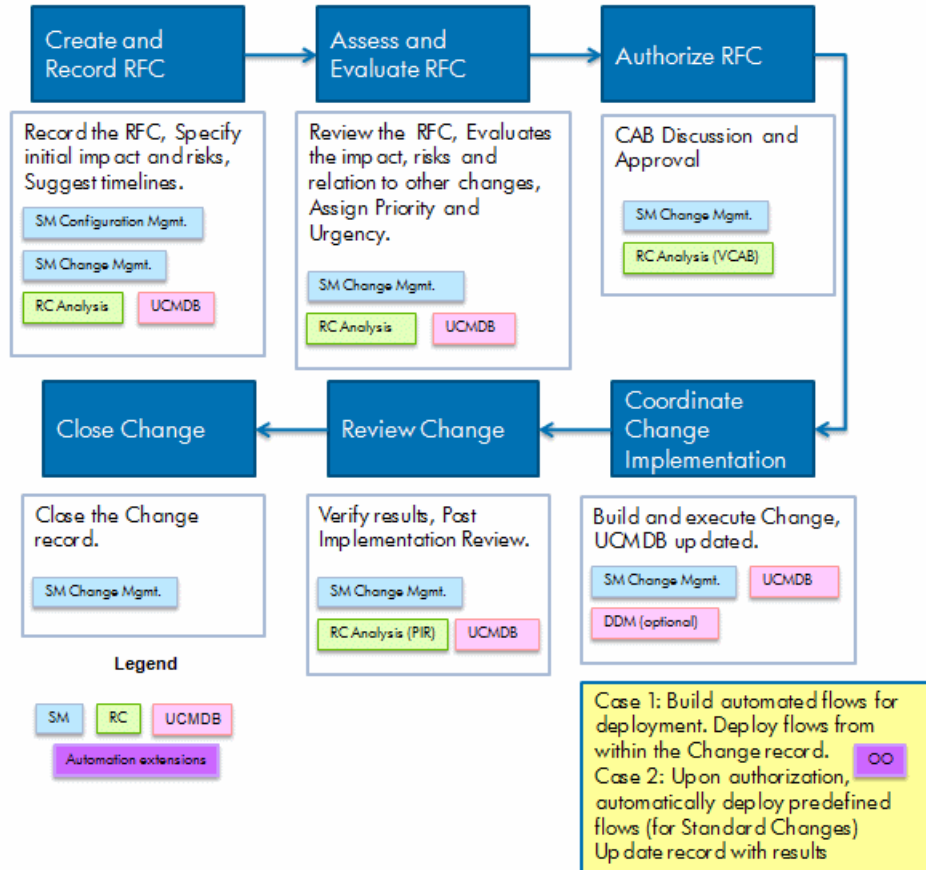
CCRM Extension Story—Change Process with Automation

CCRM Extension Story—Change Process with Automation enables some parts of the basic operational deployment already illustrated to be automated.

- ▶ "Automated Deployment Diagram" on page 31
- ▶ "Automated Deployment" on page 32
- ▶ "Automated Process for Change Management Diagram" on page 33
- ▶ "Automated Process for Change Management" on page 34

Automated Deployment Diagram

The following diagram summarizes the flow detailed in the Automated Deployment.



Automated Deployment

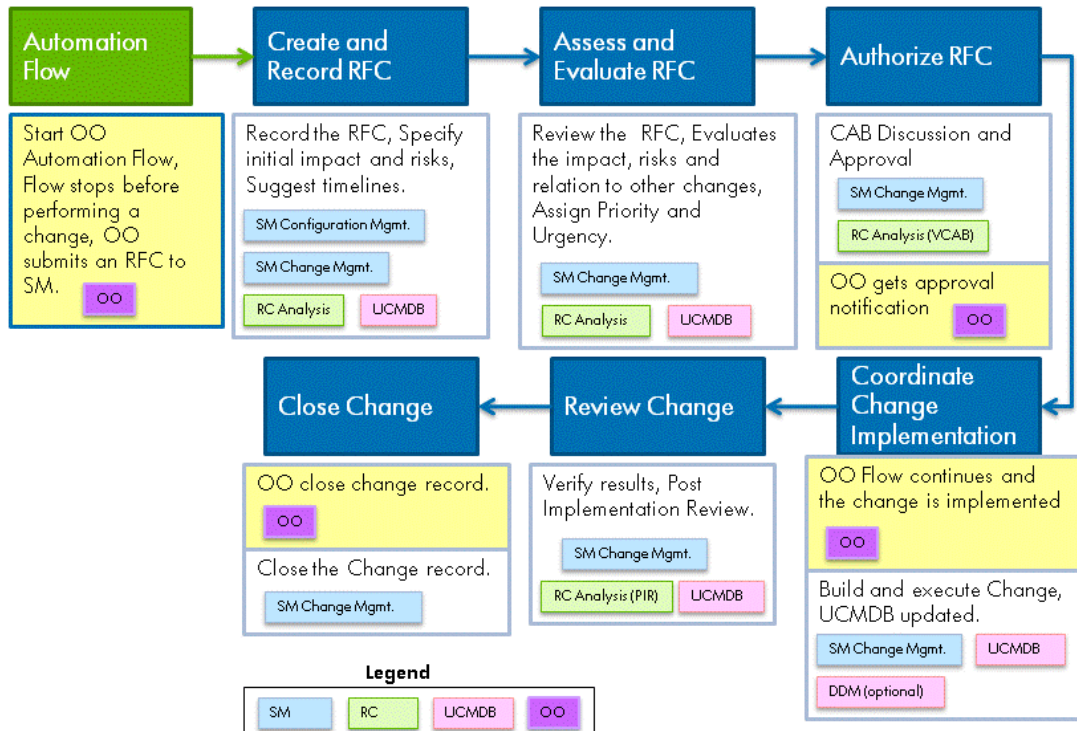
- 1** Start with Steps 1-10 from the core story starting on page 25.
Replace Steps 11-14 with the following steps.
- 2** The Technical Group builds the Deployment Release. In order to automate the deployment process, the group creates flows in Operations Orchestration (OO) that will perform each of the deployment steps and return the results. The Technical Group uses content that is provided out-of-the-box in OO that is intended to support common change use cases, such as database script execution, service/server restart, running batch files, and so on.
- 3** The automated flow is run in a test environment iteratively until the rollout meets their expectations.
- 4** After the change was successfully implemented in a test environment, the Technical Group prepares for automated deployment in production. In order to run the automated flow, the user selects the relevant OO flow and supplies any and all of the flow's required parameters (These parameters can be fixed, or can be references to attributes of the RFC or CIs in the RFC.). Moreover, the user selects when and how the flow will be triggered—upon change approval, based on a schedule, or manually.
- 5** Notifications are sent out to the relevant parties in advance. OO's automated deployment of the change into production is triggered from within SM, based on the user's previously supplied criteria. OO utilizes the previously defined parameters.
- 6** After deployment is completed, normal business service behavior needs to be verified. A predefined automated flow is executed in OO to give an accurate account of the business service behavior. Once behavior is verified, this flow sends out notifications to stakeholders and updates the change ticket with the information collected.

Note: Once verification is complete, the OO flow can also automatically close the change ticket.

7 Continue with Steps 15-17 from the core story starting on page 28.

Automated Process for Change Management Diagram

The following diagram summarizes the flow detailed in the Automated Process for Change Management.



Automated Process for Change Management

- 1** The OO flow starts. One of its actions introduces a change into the IT infrastructure.
- 2** Before executing the action that introduces the change, the flow stops and an OO sub-flow is called to submit an RFC to SM. The original flow remains on hold until an approval from SM is received.
- 3** The RFC is approved in SM by the appropriate user for normal changes or automatically approved for standard (pre-approved) changes.
- 4** Upon approval, OO receives a notification that the RFC is approved.
- 5** The OO flow continues and the action that introduces a change is executed.
- 6** The OO flow calls an additional sub-flow that updates the change record in SM and closes it.

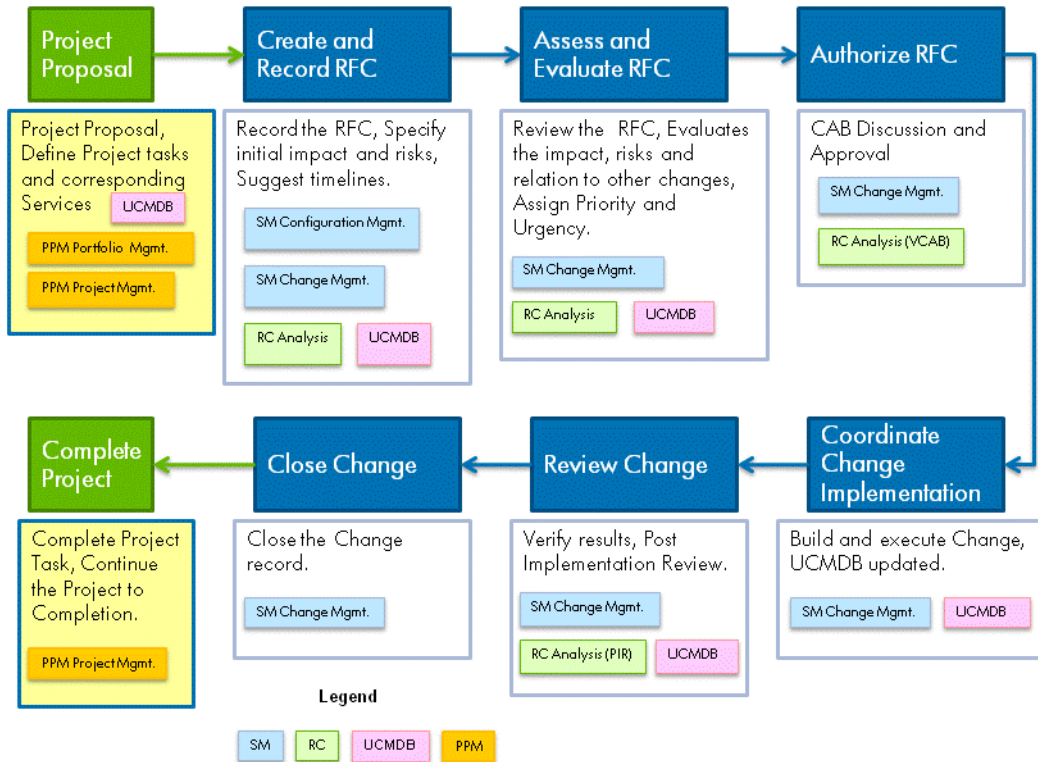
CCRM Extension Story—Change Process as Part of Project

CCRM Extension Story—Change Process as Part of Project enables a part of the basic operational deployment already illustrated to be automated.

- "Change as Part of a Project Diagram" on page 35
- "Change Process as Part of Project" on page 35

Change as Part of a Project Diagram

The following diagram summarizes the flow detailed in the Change Process as Part of a Project.



Change Process as Part of Project

- 1 The business would like to upgrade a strategic business application to the latest version in order to enable the usage of new modules that will be implemented in the organization. To do so, a Project Proposal is created.
- 2 This Project Proposal is reviewed by the Business Relationship Manager who approves the proposal. The proposal is then assigned to the Portfolio Manager, who approves it and assigns it to the appropriate Project Manager.

- 3** The Project Manager fills in the required information pertaining to the financial and resource management of the project, as well as business cases, high level requirements, and so on.
- 4** In the final stage of the Project Proposal's life cycle, it must be determined if the business would like to turn the proposal into an actual project. As this is a business critical application, the proposal is approved and a project is created in PPM.
- 5** The Project Manager defines the steps for completing the project in the form of Project Tasks. One of these Project Tasks entails the creation of a Change Request in SM. In this Project Task, the PPM user defines the RFC priority and impact, provides a description for the RFC, as well as selects the affected Service CI from a list of UCMDB Service CIs to associate with the change.
- 6** When this task is reached in the project workflow, a RFC is created in SM. The RFC is assigned to the corresponding SM Service CI.
- 7** Continue with Steps 2-17 from the core story starting on page 25.
- 8** Once the change request has been closed, the Project Task is automatically marked as completed. The project ends when all Project Tasks have been completed.

3

CCRM Specific Use Cases

This chapter portrays examples of use cases carried out with the Change Configuration and Release Management Solution. These use cases are only samples of what CCRM offers.

Concepts

- CCRM Specific Use Cases on page 37

Tasks

- Examples of CCRM Use Cases on page 38

Concepts

CCRM Specific Use Cases

The use cases that follow are examples of very common CCRM customer scenarios. Various others, depending on the customer's specific needs, can be constructed as well.

Tasks

Examples of CCRM Use Cases

These tasks illustrate the following use case scenario examples.

- ▶ Use Case #1: Security Patch on page 38
- ▶ Use Case #2: VM Provisioning on page 39
- ▶ Use Case #3: Network Change on page 40
- ▶ Use Case #4: Unauthorized Changes on page 41
- ▶ Use Case #5: Rollback on page 41

Use Case #1: Security Patch

Customers have to deploy security patches to their production servers as a standard change (pre-approved change). This CCRM flow describes how CCRM automates this process and minimizes the customer effort on a routine procedure and mitigates the involved risk.

- 1** Creation: Open RFC in Service Manager for the security patch and the list of servers it applies to.
- 2** Risk Evaluation: The impact analysis is done and Release Control (RC) demonstrates what applications might be impacted by the patch.
- 3** Execution Planning: An Operations Orchestration (OO) flow is selected, scheduled, and attached to the RFC in Service Manager (SM).
- 4** Approval: The approval process is done manually in SM.
- 5** Execution: The OO flow runs to deploy the security patch deployment.
- 6** Validation: After the OO flow is executed, the change is manually moved into the Evaluation & Change Closure phase.

Note: The OO flow must have the following parameters:

- Security patch must be able to be deployed on more than one CI at the time.
 - Patch ID
 - Patch location (general repository)
 - Target CI (from Change record)
-

Use Case #2: VM Provisioning

Customers have an increasing virtual environment. In this environment, the need to provision a new VM is a standard procedure that needs to be efficient.

- 1** Creation: Open RFC in Service Manager for the VM needed, with the relevant hardware requirements.
- 2** Risk Evaluation: Virtual Center (VC) impact analysis is done and RC demonstrates what the risks are, if any.
- 3** Execution Planning: An OO flow is selected, scheduled, and attached to the RFC in SM.
- 4** Approval: The Approval process is manually done in Service Manager (move to Change Implementation Phase).
- 5** Execution: An OO flow runs to provision new VM either from the customer portal or directly from VC.
- 6** After the OO flow is executed, the change is manually moved into the Evaluation & Change Closure phase.

Important: External OO content was imported from Slick project to support ESX 4 operations.

Use Case #3: Network Change

Network changes are the most common changes customers do on a daily basis. Opening a port in the firewall or altering a router's access list has become a standard request when a new integrated application is updated. This process needs to be efficient and result in the UCMDB being updated with the newly created relationship between the application and the port.

- 1** Creation: Network team opens an RFC in Service Manager for blocking an IP range to access the http User Interface (UI) management of a Cisco router. (Only authorized personnel should access the UI.)
- 2** Risk/Impact Analysis: RC evaluates the risk and impacts related to this change.
- 3** Execution Planning: An OO flow is selected, scheduled, and attached to the RFC in SM. The OO flow can directly update the Cisco router—or activate Network Automation to do so.
- 4** Approval: The Approval process is done in Service Manager (move to Change Implementation Phase).
- 5** Execution: An OO flow runs to configure the Cisco router's access list.

Note: OO flow notifies the relevant user, which manually updates UCMDB.

- 6** After the OO flow is executed, the change is manually moved into the Evaluation & Change Closure phase.

Use Case #4: Unauthorized Changes

One of the biggest customer problems is enforcing a formal process for change management. Unauthorized changes are a back door for any formal process causing risk to the success of the process. DDM can be used to reduce unauthorized changes.

- 1 Discovery:** DDM discovers a change in the Oracle database parameters and reports it to the UCMDB. UCMDB evaluates if this is a change on a managed CI and attributes and pushes the data to Service Manager.
- 2 Creation:** SM evaluates if this change is part of an existing RFC and, if not, creates a new RFC for the database CI.
- 3 Approve/Reject:** The RFC is either approved and the SM record is updated, or rejected and another RFC is created in order to roll back the unauthorized change.

Use Case #5: Rollback

Providing steps to roll back changes is a critical part of the change design process. This reduces the risk associated with changes. Customers want to know that if something goes wrong, they can roll back and return to the CI's original state.

- 1 Creation:** Open RFC in Service Manager to apply a patch to an application. In this case, we are deploying a new WAR file for a myApp application.
- 2 Risk/Impact Analysis:** RC evaluates the risk and impact related to this change. In this case, the impact is high as the myApp application is part of a critical business service.
- 3 Execution Planning:** An OO flow is selected, scheduled, and attached to the RFC in SM. The OO flow applies the application patch to the Tomcat Server by replacing a WAR file. As part of the execution planning, due to the high risk of this change, the implementation team also backs up the existing WAR file and creates a rollback flow in OO in case the implementation fails.
- 4 Approval:** The Approval process is done manually in Service Manager (change to Implementation Phase).

- 5** Execution: An OO flow runs to update the application while the old WAR is saved as backup.
- 6** Validation: After the OO flow is executed, the change is evaluated by the user to see if it was successful. In this case, it was not. (Webtier is not up!)
- 7** Rollback: Returning to the SM ticket, the user removes the previously attached OO flow and replaces it with the rollback flow, then triggers it (using Automation Type: Use fixed date). The flow replaces the defective WAR file with the one that was previously stored in the backup directory.
- 8** Rollback Validation: After the OO flow is executed, the change is manually moved into the Evaluation & Change Closure phase.

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