



DEPARTMENT OF THE NAVY  
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WASHINGTON, DC 20350-3000

IN REPLY REFER TO:  
2300/07A  
CP

DEC 4 2013

From: Commandant of the Marine Corps

Subj: ENTERPRISE INFORMATION TECHNOLOGY SERVICE MANAGEMENT RELEASE AND  
DEPLOYMENT MANAGEMENT PROCESS GUIDE

Ref: (a) MCO 5271.1B

Encl: (1) IRM-2300-07A Enterprise Information Technology Service Management  
Release and Deployment Management Process Guide

1. PURPOSE. The purpose of the Enterprise Information Technology Service Management (ITSM) Release and Deployment Management Process Guide is to establish a documented and clear foundation for process implementation and execution across the Marine Corps Information Environment (MCIE). Process implementation and execution at lower levels (e.g., Regional, Local and Programs of Record) must align and adhere to directives and schema documented within this guide. The use of this guide enables USMC Information Technology (IT) activities through promoting standardization of work instructions and operating procedures across a continuum of document specificity.

2. CANCELLATION. 2300-07.

3. AUTHORITY. The information promulgated in this publication is based upon policy and guidance contained in reference (a).

4. APPLICABILITY. This publication is applicable to the Marine Corps Total Force.

5. SCOPE.

a. Compliance. Compliance with the provisions of this publication is required unless a specific waiver is authorized.

b. Waivers. Waivers to the provisions of this publication will be authorized by the Director, Command, Control, Communications and Computers.

6. SPONSOR. The sponsor of this technical publication is HQMC C4 CP.

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DISTRIBUTION: PCN 18623000900

DIST STATEMENT A: Approved for public release; distribution is unlimited.



***Enterprise IT Service Management  
Release and Deployment Management  
Process Guide***

***Release Date:  
05 April 2013***

## Document Approval / Major Revision Change History Record

This table is used for initial release and subsequent revisions. Major revisions are indicated by the number to the left of the decimal point while minor revisions are indicated by the number to the right. Major revisions are required when the intent or process is changed rendering the prior version obsolete or when the number of minor releases total twenty (20). Changes to this document shall be recorded, described, and approved using the table below:

Release Date (MM/DD/YY)	Release No.	Approvals		Change Description
		Author	Process Owner/Approver	
09/21/09	0.1			Draft Release
		Printed Name	Printed Name	
11/24/09	1.0			Initial Release
		Printed Name	Printed Name	
12/03/09	1.1			Updated as per RFAs post CR
		Printed Name	Printed Name	
08/24/10	3.0			Updated as per CRMs from the follow-on Task Order 13, CDRL L0012
		Printed Name	Printed Name	
08/24/10	3.0			Updated as per CRMs from the follow-on Task Order 13, CDRL L0012
		Printed Name	Printed Name	
12/17/10	4.0			Updated as per CRMs from the follow-on Task Order 13, CDRL L0012
		Printed Name	Printed Name	
02/17/11	5.0			Updated as per CRMs from the follow-on Task Order 13, CDRL L0012
		Printed Name	Printed Name	
04/14/11	6.0			Updated as per CRMs from the follow-on E-ITSM Task Order CDRL L3004
		Printed Name	Printed Name	
04/05/13	7.0			Conducted a complete review of the guide and provided CRM to C4 via MCATs tasker
		Printed Name	Printed Name	



## Table of Contents

Section	Title	Page
1.0	Introduction .....	1
1.1	Purpose .....	1
1.2	Scope .....	1
1.3	Process and Document Control .....	2
2.0	Process Overview .....	3
2.1	Process Management Description .....	3
2.2	Relationships with Other Processes .....	3
2.2.1	Direct Relationships .....	4
2.2.2	In-Direct Relationships .....	6
2.3	High-Level Process Model .....	6
2.4	Key Concepts .....	9
2.4.1	Requirements of a Release .....	9
2.4.2	Designing Release and Deployment Packages .....	10
2.4.3	Release and Deployment Models .....	11
2.4.4	Release and Deployment Plans .....	11
2.5	Quality Control .....	11
2.5.1	Metrics, Measurements and Continual Process Improvement .....	11
2.5.2	Critical Success Factors with Key Performance Indicators .....	12
3.0	ROLES and RESPONSIBILITIES .....	13
3.1	Roles .....	13
3.2	Responsibilities .....	17
4.0	Sub-Processes .....	20
4.1	Plan and Prepare .....	20
4.2	Design Release .....	24
4.3	Build Release .....	26
4.4	Service Validation and Testing .....	28
4.5	Plan and Prepare for Deployment .....	31
4.6	Deploy and Verify .....	34
4.7	Early Life Support .....	36
4.8	Review and Close .....	38
	Appendix A – Acronyms .....	40
	Appendix B – Glossary .....	41

## List of Tables

Table	Title	Page
Table 1:	Document Design Layers .....	2
Table 2:	RDM Process Activity Descriptions .....	8
Table 3:	RDM Release Requirements for a Release Plan .....	9
Table 4:	RDM Critical Success Factors with Key Performance Indicators .....	12
Table 5:	RDM Defined Roles and Responsibilities .....	14
Table 6:	Organizational Responsibilities for Enterprise RDM .....	17
Table 7:	Role-Based Responsibilities for Enterprise RDM .....	19
Table 8:	RDM Plan and Prepare Sub-Process Descriptions .....	21
Table 9:	RDM Design Release Sub-Process Descriptions .....	25
Table 10:	RDM Build Release Sub-Process Descriptions .....	27
Table 11:	RDM Service Validation and Testing Sub-Process Descriptions .....	29



Table	Title	Page
Table 12.	RDM Plan and Prepare for Deployment Sub-Process Descriptions .....	32
Table 13.	RDM Deploy and Verify Sub-Process Descriptions .....	35
Table 14.	RDM Early Life Support Sub-Process Descriptions .....	37
Table 15.	RDM Review and Close Sub-Process Descriptions.....	39

### List of Figures

Figure	Title	Page
Figure 1:	Process Document Continuum .....	1
Figure 2.	RDM Relationship with other Initial Processes .....	4
Figure 3.	High-Level RDM Workflow.....	7
Figure 4.	RDM Roles .....	14
Figure 5.	RDM Plan and Prepare Sub-Process .....	21
Figure 6.	RDM Design Release Sub-Process.....	25
Figure 7.	RDM Build Release Sub-Process .....	27
Figure 8.	RDM Service Validation and Testing Sub-Process.....	29
Figure 9.	RDM Plan and Prepare for Deployment Sub-Process.....	32
Figure 10.	RDM Deploy and Verify Sub-Process.....	35
Figure 11.	RDM Early Life Support Sub-Process .....	37
Figure 12.	RDM Review and Close Sub-Process .....	39



# Enterprise IT Service Management Release and Deployment Management Process Guide

## 1.0 INTRODUCTION

### 1.1 Purpose

The purpose of this process guide is to establish a documented and clear foundation for process implementation and execution across the Marine Corps Information Environment (MCIE). Process implementation and execution at lower levels (e.g., Regional, Local, and Programs of Record) must align and adhere to directives and schema documented within this guide. The use of this guide enables USMC IT activities through promoting standardization of work instructions and operating procedures across a continuum of document specificity as represented in Figure 1.

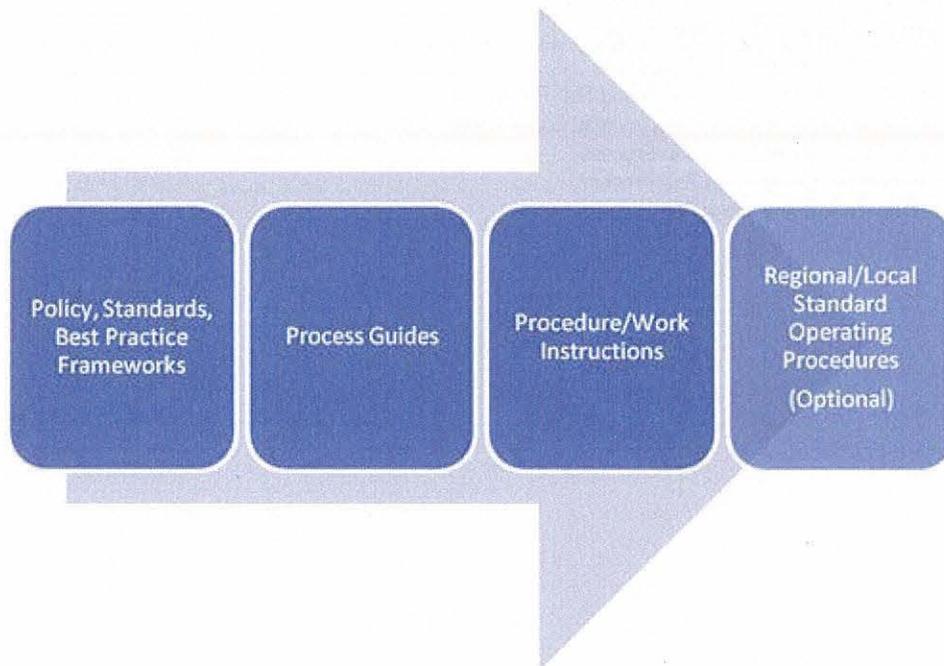


Figure 1: Process Document Continuum

### 1.2 Scope

The scope of this document covers all services provided in support of the MCIE for both the Secret Internet Protocol Router Network (SIPRNET), and the Non-Secure Internet Protocol Router Network (NIPRNET). Information remains relevant for the global operations and defense of the Marine Corps Enterprise Network (MCEN) as managed by Marine Corps Network Operations and Security Center (MCNOSC) including all Regional Network Operations and Security Centers (RNOSC) and Marine Air Ground Task Force Information Technology Support Center (MITSC) assets and supported Marine Expeditionary Forces (MEF), Supporting Establishments (SE) organizations, and Marine Corps Installation (MCI) commands.



Table 1 depicts the various layers of document design. Each layer has discrete entities, each with their own specific authority when it comes to promulgating documentation. This enterprise process operates at Level B, sub processes such as procedures and work instructions are not included within the scope of this document.

**Table 1: Document Design Layers**

	ENTITIES	DOCUMENTS GENERATED
<b>LEVEL A</b>	Federal Govt DoD DoN CMC/HQMC	Statutes/Laws DoD Issuances DoN Policies Marine Corps Orders/IRMS
<b>LEVEL B</b>	HQMC C4 MCNOSC MCSC	MCOs IRMs (Process Guides) Directives MARADMINS
<b>LEVEL C</b>	RNOSC MITSC	Regional Procedures Work Instructions
<b>LEVEL D</b>	MCBs POSTS STATIONS	Locally Generated SOP's

### 1.3 Process and Document Control

This document will be reviewed semi-annually for accuracy by the Process Owner with designated team members. Questions pertaining to the conduct of the process should be directed to the Process Owner. Suggested Changes to the process should be directed to USMC C4 CP in accordance with MCO 5271.1C Information Resource Management (IRM) Standards and Guidelines Program.



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## 2.0 PROCESS OVERVIEW

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### 2.1 Process Management Description

Release Management is responsible for planning, building, testing, and controlling the release of a new or changed service in test environments. In the pre-production environment, the integrity of the new or changed service is tested and validated as a quality function before deploying into the production environment.

Deployment Management is the process that follows Release Management by which a new or changed service is moved to the live or production environment once testing is complete.

The scope of RDM, therefore, includes the processes, systems, and functions to package, build, test and deliver a release into production, establishing the service specified in the Service Design Package (SDP) before a hand-off to service operations.

The RDM process supports:

- Implementation planning, including the back-out plan of a release as well as required resource plans
- Release preparation, including the distribution of hardware, software and support tools
- Preparation training, including the customer/user, operations, service desk and implementation team for the release deployment
- Testing plans, supporting production testing, end user acceptance testing and back-out testing procedures
- Controlled introduction testing (beta testing) after a cutover

The RDM process adds value to the USMC by:

- Delivering change faster with minimum risk
- Assuring customers/end users can use the new or changed service as designed to support the mission
- Improving consistency in implementation approach across the USMC environment
- Contributing to the auditing requirements for traceability

### 2.2 Relationships with Other Processes

All IT Service Management processes are interrelated. The other processes in Figure 2 were selected due to the strength of the relationships and dependencies between them and the degree to which they underpin USMC near-term objectives. While any one of the other processes can operate in the presence of an immature process, the efficiency and effectiveness of each is greatly enhanced by the maturity and integration of all Initial Processes. Figure 2 depicts key



relationships that exist between RDM and the other Processes. This figure is not all-encompassing and the relationships shown can be direct or indirect.

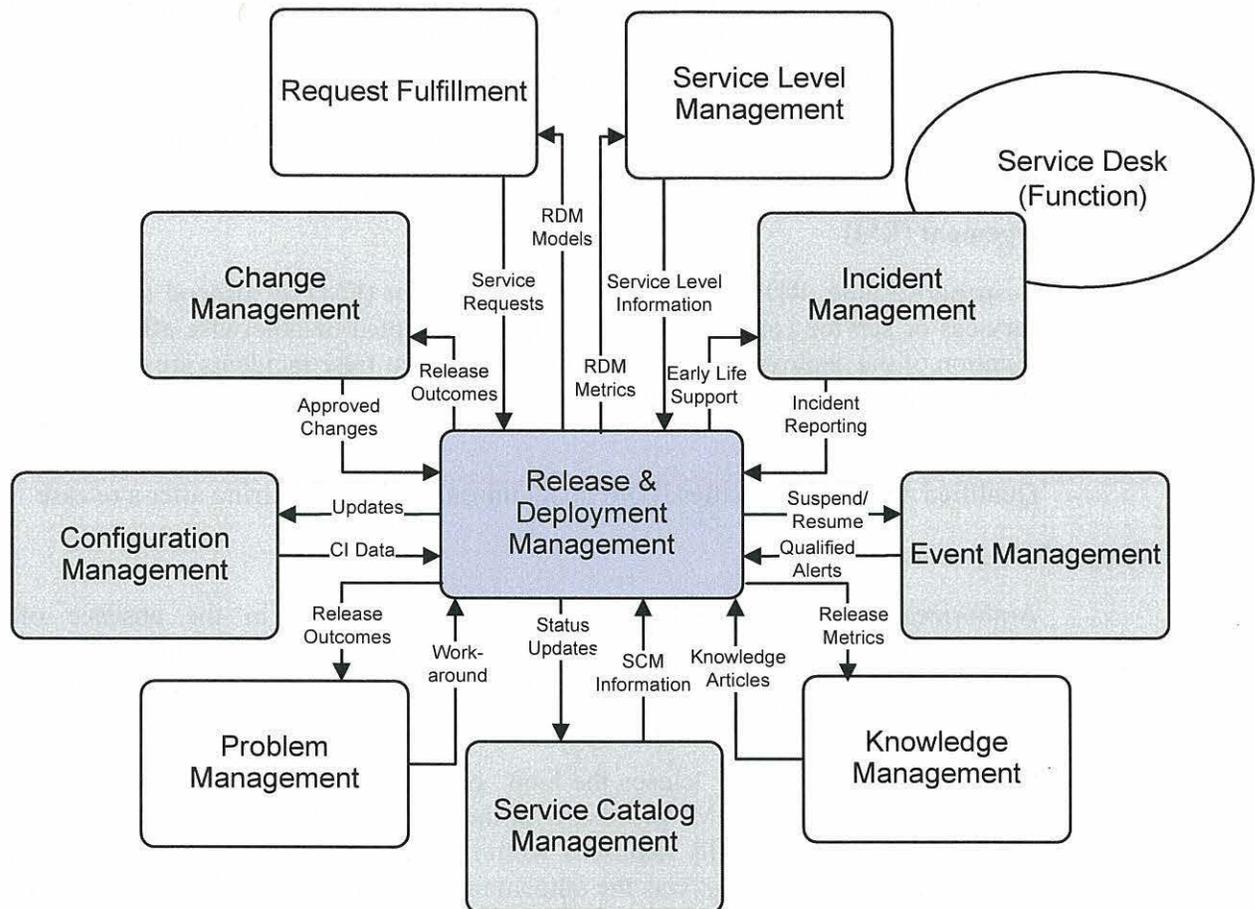


Figure 2. RDM Relationship with other Initial Processes

The following list describes the RDM relationship (input or output) to other Initial Processes, as depicted in Figure 2:

### 2.2.1 Direct Relationships

#### Service Catalog Management (SCM)

- **Planning Content:** Service Catalog Management (SCM) provides rapid, at-a-glance views into key service attributes to include availability targets, maintenance windows, and change freeze periods.
- **Service Updates:** The Service Catalog's value is dependent on the accuracy of its contents. As releases are deployed, service updates are received from Release and Deployment Management and implemented in the Service Catalog (based on approved RFCs).



### **Incident Management (IM) and the Service Desk**

- **Early Life Support:** Early Life Support (ELS) is the additional expert service support provided immediately after deployment to ensure service continuity and stakeholder satisfaction. RDM proactively supports deployment activities in the ELS process step by providing Incident Management an advanced level of training, documentation, and high-touch support as the new service is introduced into production.
- **Incident Metrics:** Incident metrics associated with releases are critical to continual process improvement.

### **Event Management (EM)**

- **Suspend/Resume:** RDM notifies Event Management (EM) to suspend monitoring of services or service components that will be interrupted or otherwise affected for the duration of the deployment activity. This ensures that false incidents are not triggered. RDM also notifies EM to resume monitoring once deployment activities have completed.
- **Qualified Alerts:** EM notifies RDM about unusual events occurring after a release.

### **Change Management (ChM)**

- **Authorized Changes:** RDM will not deploy a release in the absence of a corresponding and authorized Request for Change (RFC). Additionally, any constraints associated with the authorization, such as the start and end time of the release, are provided by this input.
- **Release Outcomes:** RDM “closes the loop” on authorized changes by informing the Change Management (ChM) process with the outcome of the release. For example, was the release successfully deployed within the approved window or did it extend beyond this window? What was the outcome of post-implementation testing? Did the release result in any incidents? This vital information enables ChM to determine how best to position the RFC associated with this release.

### **Configuration Management (CfM)**

- **Planning Content:** The Configuration Management Database (CMDB) and supporting processes provide invaluable information for the purposes of planning, preparing, and designing a release. In the presence of an accurate CMDB, it is not necessary to inventory the environment to predict work effort and manpower required to propagate a large-scale enterprise release.
- **Additions and Updates:** The Definitive Media Library will be the centralized storage for all certified solutions from the Enterprise Engineering Verification Environment (EVEE).



## 2.2.2 In-Direct Relationships

### Request Fulfillment (RqF)

- Service Requests: Calls that originate as incidents may be rerouted to Request Fulfillment if they involve standard, low-risk changes.
- RDM Models: may use RDM models to efficiently fulfill standard changes.

### Problem Management (PM)

- Release Outcomes: Release outcomes are important input for investigation of root cause. Release outcomes are analyzed over periods of time to identify trends that may indicate previously unidentified problems.
- Work-arounds: Work-arounds enhance the effectiveness and efficiency of Release and Deployment. Work-arounds are validated upon successful root cause analysis.

### Service Level Management (SLM)

- RDM Metrics: Metrics from Release and Deployment Management enables SLM to define measurable responses to service disruptions. It also provides reports that enable SLM to review Service Level Agreements (SLAs) objectively and regularly.
- Service Level Information: Release and Deployment Management is able to assist in defining where services are at their weakest, so that SLM can define actions as part of the service improvement plan.

### Knowledge Management (KM)

- Release Metrics: All data, metrics, and information useful for Release and Deployment Management activities must be properly gathered, stored and assessed.  
  
Knowledge Articles: Careful documentation of steps needed to support the Release and Deployment Management process can result in standardization.

## 2.3 High-Level Process Model

The RDM process consists of eight distinct sub-processes and is highly integrated with ChM Configuration Management (CfM), Event Management and Incident Management processes. The following workflow (Figure 3) depicts these processes and sub-processes that collectively enable and underpin RDM. See Section 4.0 for complete descriptions of the sub-process activities.



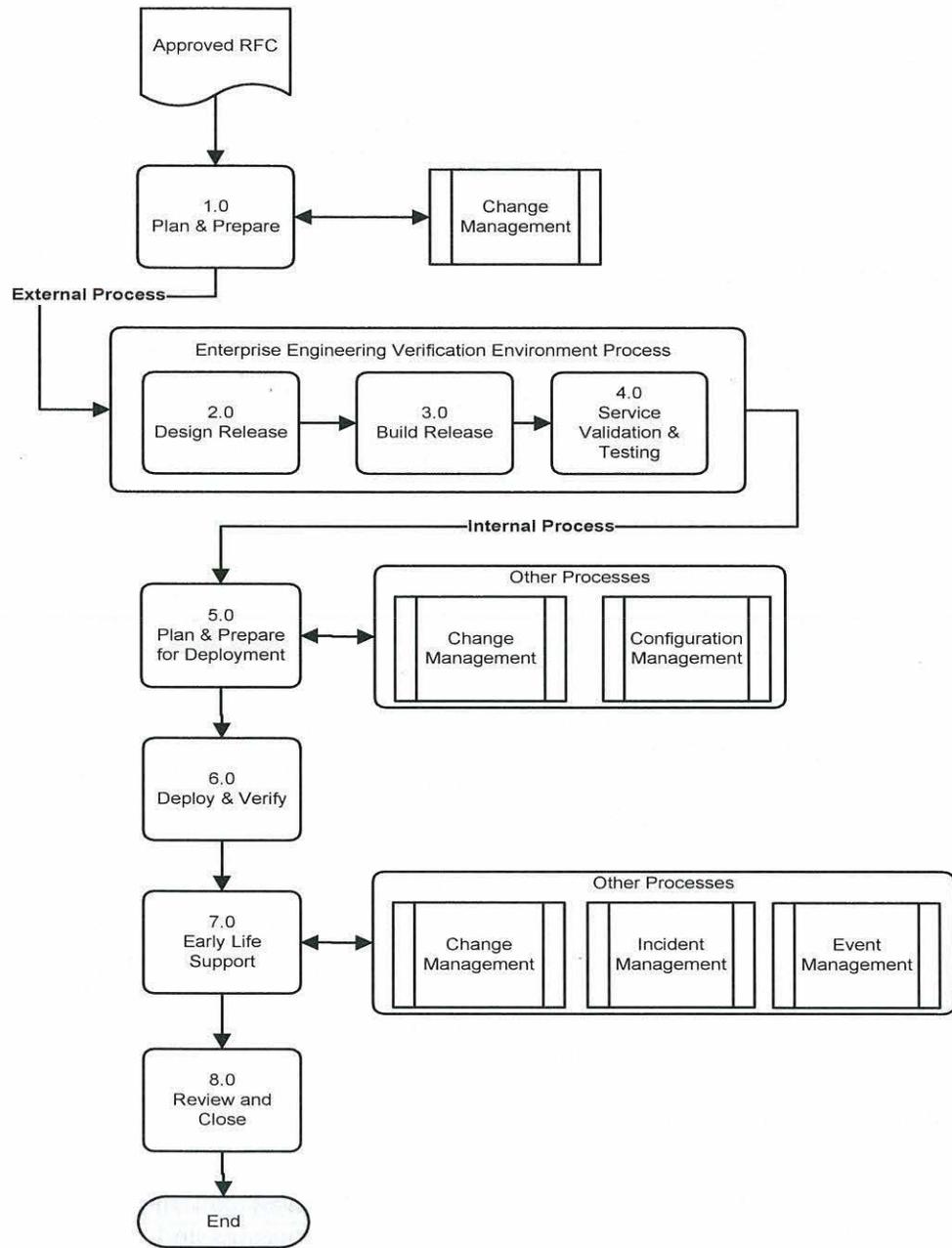


Figure 3. High-Level RDM Workflow

Table 2 contains descriptions of each sub-process. Each sub-process number is hyperlinked to its detailed description in Section 4.0, Sub-Processes.



Table 2. RDM Process Activity Descriptions

Number	Process Activity	Description
1.0	Plan and Prepare	A release plan, high-level test plans and acceptance criteria are documented in the RFC. Approvals are managed in ChM with input from RDM. The release plan is developed by the Project Officer. Approval requirements for the release plan will vary depending on the release size (Full, Package, or Delta), complexity, risk, and urgency.
2.0	Design Release	What needs to be built for the release and how it will be assembled and deployed is defined providing the overall testing approach for the Service Validation and Testing process through early build to final deployment. Necessary install scripts and mechanisms for testing and monitoring the install are designed at a high level. All Release documents are drafted in the design phase. Remediation procedures are developed for back-out if the deployment is unsuccessful. MCSC provides for the acquisition of IT and is involved with the full lifecycle.
3.0	Build Release	Procedures, tools, and checklists that come from the Design Release are utilized to provide repeatable practices and expected results. The deploying software capabilities are utilized. Baselines are recorded before and after the release package build to provide restore capability if needed in production. The proposed solution and test results are recorded and handed over to Service Operations for use in future releases. The USMC Program Manager for the Program of Record (POR) is responsible for the build release.
4.0	Service Validation and Testing	Service Validation and Testing performs a number of iterations throughout the Release and Deployment lifecycle: <ul style="list-style-type: none"> <li>Verifies that the deployment team, tools, and procedures can deploy the release package into a target deployment group or environment within the estimated timeframe.</li> <li>Ensures the release package contains all the service components required for deployment by initiating in a test environment and performing a configuration audit.</li> <li>Validates the defined Service-Level Requirements for deploying into production are achievable and sustainable.</li> <li>Ensures the proposed changes do not adversely affect authorized systems in the production environment.</li> <li>Ensures authorized configurations and systems in the production environment do not have an adverse impact on the proposed application or change.</li> <li>Tests the deployment team, tools, and procedures can install the release package into a target environment within the estimated timeframe.</li> <li>Tests a deployment has completed successfully and that all service assets and configurations are in place as planned and meet their quality criteria.</li> </ul> The Systems Integration Environment (SIE) managed by MCSC, provides a test and integration function for systems, applications, or services destined for or residing in the Enterprise IT Center (EITCs).
5.0	Plan and Prepare for Deployment	With recommendations from the Service Validation and Testing process, the RD Project Officer presents to the ChM Change Advisory Board (CAB) the testing report for review. The ChM CAB approves the release to be deployed. Deployment resources are assigned. Readiness assessments are conducted. Risks are identified and assessed in terms of potential disruption. Detailed implementation and backout plans are finalized and verified. When the detailed deployment plan is complete and readiness tests performed, the service is ready for deployment. The MCSC works with MCNOSC for implementation of the infrastructure.
6.0	Deploy and Verify	Deploying the release is the execution of the detailed deployment plan. A deployment can be installing of materials (hardware or software) and processes, the transfer of a service, the deployment of a new or changed service, the decommissioning or retirement of services, and/or the removal of assets. When complete, the RD Manager verifies the release with the stakeholders.



Number	Process Activity	Description
		Successful validation of the deployment triggers the launch of ELS. The MCSC works with MCNOSC during deployment of a new service or major upgrade.
7.0	Early Life Support	ELS is the additional expert service support provided immediately after deployment to ensure service continuity and stakeholder satisfaction. Resources from IT Operations introduce the new service capability and resources to operations in a controlled manner. Resource support scope is determined by the release content delivered.
8.0	Review and Close	The RD Manager conducts a review to ensure all RDM requirements for the RFC were met. The entrance and exit criteria for each stage of the process has been assessed and met. Project Officer(s) updates the RFC in ChM and issues a close notification with the final review. All release participants and end users are notified of the final review results for the release.

## 2.4 Key Concepts

The following is a description of concepts unique to RDM:

### 2.4.1 Requirements of a Release

The requirements cover release numbering, frequency, and the level of infrastructure that may be controlled by a definable release.

Table 3 shows the RDM release requirements.

**Table 3. RDM Release Requirements for a Release Plan**

Item	Description
Release Unit	<p>Describes the portion of the service or IT infrastructure to be released. The unit may vary in type or size of asset or CI, such as hardware or software. The size and impact of the release unit varies. Factors to be considered include ease and amount of change necessary; the amount of resources and time needed to build, test, distribute, and implement; the complexity of the interfaces affected by the release unit; and the storage available in the environment to perform the release activities of build, test, distribution, and going live.</p> <p>When building release units, the biggest factor to be considered is the potential impact to the user/customer. If the release unit can cause an outage to a critical system, the risk will need to be identified and planned for accordingly.</p>
Release Identification	<p>This is the unique release identification scheme and can be defined as:</p> <ul style="list-style-type: none"> <li>• Major release</li> <li>• Minor release</li> <li>• Emergency fix</li> </ul>



Item	Description
Type of Release	<p><b>Full</b> – A release that includes all components of the release unit. These components will be built, tested, distributed, and implemented together. This release is a completely new version of an application (e.g., Windows XP replaced by Vista). All components of the release unit are purchased/built, tested, and distributed together.</p> <p><b>Package</b> – A combination of a delta release unit and/or full release to reduce the frequency of roll-outs or to build, test, and roll-out related releases which can influence each other. Individual changes (to software and/or hardware) may be grouped together into package releases in every instance where it is beneficial to do so without undue risk to the business. Each technical domain determines the specific requirements to identify those changes that can be safely grouped together.</p> <p><b>Delta</b> – A delta, or partial, release is one that includes only CIs within the release unit that have actually changed or are new since the last full or delta release.</p>
Category of Release	<p><b>Major</b> – Contains a large planned upgrade of an IT service with major new functionality.</p> <p><b>Minor</b> – Contains a smaller update between major releases with small improvements or corrections.</p> <p><b>Emergency</b> – Contains an urgent release, for example, a fault in the infrastructure that causes multiple or major incidents. An emergency fix cannot wait until the next major or minor release.</p>
Release Design Options	<p><b>Big Bang vs. Phased Option</b> – Big Bang – a new or changed service is deployed to all user areas in one operation (introducing an application). Or, phased approach – the service is deployed in phases, and the deployment is incrementally repeated until the service is fully deployed (by unit, or base).</p> <p><b>Push–Pull</b> – The push approach is executed when a service is deployed from the center (a headquarters organization), followed by deployment to target locations. The push approach is used for updating service components. A pull approach is employed for software releases where software is made available at a central location and users can access the location to pull down the software at their convenience (i.e., software version upgrades). Pull is optimal when the software is restricted by licensing to a select group of users.</p> <p><b>Automated vs. Manual</b> – The deployment choice of automation or manual is determined in release planning. When a release can be automated, the benefit of repeatable and consistent actions, along with the efficient use of release resources is realized. Automated deployment requires extensive testing to avoid unnecessary problems but completes quicker and more efficiently since it does not require as many resources as a manual deployment. Manual deployments require closer monitoring, but sometimes are unavoidable.</p>

## 2.4.2 Designing Release and Deployment Packages

The scope and content of each release package is defined within the Release Plan for that release. The release and deployment team must understand the relevant architecture to plan, package, build and test a release. This knowledge helps to prioritize the release and deployment activities and manage dependencies. The dependencies can be identified by viewing service architectural elements in the Technical Service Catalog. The dependencies are built and tested by Service Validation and Testing. Coordination with the Program of Record (POR) team occurs during the design phase.



### 2.4.3 Release and Deployment Models

Service Design selects the most suitable release and deployment model including the approach, mechanisms, processes, procedures and resources required to build and deploy the release on time and within budget. Elements of the release and deployment models include: the release structure for building a package and target environments, the exit and entry criteria for each stage, the controlled environments for building and testing each release level, the roles and responsibilities for each Configuration Item (CI), the release promotion and configuration baseline, the release and deployment schedules, support activities for documenting and tracking the release activities, and the hand-off activities and responsibilities.

### 2.4.4 Release and Deployment Plans

Release and deployment plans must be reviewed and approved by the Enterprise Configuration Control Board (ECCB). They include:

- Scope and content of release
- The Implementation Plan
- Risk assessment of the release based on the release plan and operational test results
- Organizations and stakeholders affected
- Project Officer responsible for the release plan
- Approach for working with the stakeholders and the deployment groups to develop the delivery and implementation strategy, resources and amount of change that can be supported.
- The goal of the communications plan is to continuously inform all stakeholders at critical gates of relevant issues at each stage of the release.

The release plan identifies the modifications or updates to the catalog along with the release objectives in relation to the mission's goals. Release components and specific deliverables must be captured in detail in the plan. A release plan is developed with consensus of all stakeholders.

## 2.5 Quality Control

### 2.5.1 Metrics, Measurements and Continual Process Improvement

Effective day-to-day operation and long-term management of the process requires the use of metrics and measurements. Reports need to be defined, executed, and distributed to enable the managing of process-related issues and initiatives. Daily management occurs at the Process Manager level. Long-term trending analysis and management of significant process activities occurs at the process owner level.

The essential components of any measurement system are Critical Success Factors (CSFs) and Key Performance Indicators (KPIs).

