Configuration Management Plan

*VAEC Amazon Web Services GovCloud High*

and <organization 2 Information System Name>

< organization 2 Information System Name in RiskVision (GRC)>



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Department of Veterans Affairs

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Provide organization Author name and System Acronym in the document change control record table.

Entries in BLUE are instructions

Entries in RED are to be completed

Entries in BLACK are not to be changed, they are boiler plate

[Organization2] is the organization joining VAEC AZURE

All colored texts should be removed

Table of Contents

[1. Executive Summary 1](#_Toc528306960)

[2. Introduction 1](#_Toc528306961)

[2.1 Purpose of the Configuration Management Plan 1](#_Toc528306962)

[2.2 Scope of the Configuration Management Plan 1](#_Toc528306963)

[2.3 Structure of the Configuration Management Plan 2](#_Toc528306964)

[2.4 Compliance with IT Security Requirements 2](#_Toc528306965)

[2.4.1 Configuration Management Policy and Procedures 3](#_Toc528306966)

[2.4.2 Baseline Configuration 3](#_Toc528306967)

[2.4.3 Configuration Change Control 3](#_Toc528306968)

[2.4.4 Security Impact Analysis 4](#_Toc528306969)

[2.4.5 Access Restrictions for Change 4](#_Toc528306970)

[2.4.6 Configuration Settings 4](#_Toc528306971)

[2.4.7 Least Functionality 4](#_Toc528306972)

[2.4.8 Information System Component Inventory 4](#_Toc528306973)

[2.4.9 Configuration Management Plan 5](#_Toc528306974)

[2.4.10 Software Usage Restrictions 5](#_Toc528306975)

[2.4.11 User-installed Software 5](#_Toc528306976)

[3 Configuration Management Activities 5](#_Toc528306977)

[3.1 Roles and Responsibilities 5](#_Toc528306978)

[3.2 Communication 7](#_Toc528306979)

[3.3 System Configuration Baseline 7](#_Toc528306980)

[3.5 Release Management and Version Control 9](#_Toc528306981)

[3.5.1 Release Management 10](#_Toc528306982)

[3.5.1.1 Release Planning 10](#_Toc528306983)

[3.5.1.2 Security Impact Assessment 10](#_Toc528306984)

[3.5.1.3 Release Building 10](#_Toc528306985)

[3.5.1.4 Vulnerability Scanning 10](#_Toc528306986)

[3.5.1.5 User Acceptance Testing 10](#_Toc528306987)

[3.5.1.6 Release Deployment 10](#_Toc528306988)

[3.5.2 Version Control 10](#_Toc528306989)

[3.5.2.1 Versioning of Directories 10](#_Toc528306990)

[3.6 Configuration Management Resources 11](#_Toc528306991)

[APPENDIX A: CONFIGURATION MANAGEMENT PLAN APPROVAL 14](#_Toc528306992)

[Appendix B: References 15](#_Toc528306993)

[Appendix C: Key Terms 17](#_Toc528306994)

[Appendix D: Suggested Configuration Items Data Elements 19](#_Toc528306995)

[Appendix E: Current Configuration Baseline Report 24](#_Toc528306996)

[Appendix F: Change Order Approval Checklist 25](#_Toc528306997)

[Appendix G: Change Order Implementation Plan Template 26](#_Toc528306998)

[Appendix H: Business Case Justification 28](#_Toc528306999)

[Appendix I: Change Management Back-Out Plan Template 29](#_Toc528307000)

# Executive Summary

The Configuration Management Plan (CMP) is a security artifact that supports identification, control, and auditing of VA Enterprise Cloud (VAEC) and [Organization 2 name/acronym] assets in an orderly and controlled manner. This artifact will also support the Authorizing Official with the information needed to maintain a robust continuous readiness and monitoring posture as the system moves through the lifecycle development process.

This document defines the change management process and evaluates change for potential adverse impacts. The VA Enterprise Cloud (VAEC) for Amazon Web Services (AWS) GovCloud High, hereafter known as VAEC AWS team, will determine the items to be managed, establish configuration baselines, and ensure modifications incorporate security considerations for security controls for the VAEC system in accordance with VA Continuous Readiness and Information Security Program (CRISP) Guidelines. Configuration Management (CM) is a security function within the System Development Life Cycle (SDLC) and has security implications if the baseline configurations are not managed and changes are not controlled.

The [Organization 2 name/acronym] [GRC Boundary Alignment] [Security Categorization] team, will determine the items to be managed, establish configuration baselines, and ensure modifications incorporate security considerations for security controls for the [Organization 2 name/acronym] system in accordance with VA Continuous Readiness and Information Security Program (CRISP) Guidelines. Configuration Management (CM) is a security function within the System Development Life Cycle (SDLC) and has security implications if the baseline configurations are not managed and changes are not controlled

This document is intended to be a living document. The final version will be placed under CM and the respective changes managed according to CM policies referenced.

# Introduction

## Purpose of the Configuration Management Plan

The overall objective of a CMP is to identify CM roles and responsibilities, resources, and formal processes and procedures to ensure that all proposed changes to a General Support System (GSS) / Major Application (MA) are evaluated and approved before implementation. This also includes the process used for controlling implementation, evaluation, and auditing of the CM processes and Configuration Items (CIs) to include maintaining a current baseline configuration of the system under Configuration Management Control. This CMP contains all the information pertinent to the VAEC.

## Scope of the Configuration Management Plan

The VAEC AWS GovCloud High CMP and [Organization 2 name/acronym] [GRC Boundary Alignment] [Security Categorization] document, along with the OIT CM Standard Operating Procedure (SOP), defines the Information System’s structure and methods for:

* Identifying, defining, and base-lining CIs
  + Creating CI Records
  + Identifying relationships
* Controlling modifications and releases of CIs
* Reporting and recording status of CIs and any requested modifications
* Ensuring completeness, consistency, and correctness of CIs
* Controlling storage, handling, and delivery of the CIs

## Structure of the Configuration Management Plan

The intended audience of the CMP is System Owners, Organizational Service Lines and divisions, Facility Chief Information Officers, System Administrators, Information Security Officers and Information Owners, Cloud Operations and Migration Services (COMS) staff, and Office of Information and Technology (OIT) staff within these identified areas responsible for the day-to-day maintenance of the configuration items.

This CMP, in conjunction with the Office of Information and Technology (OIT) Configuration and Change Management Process Documents, and Service, Delivery and Engineering (SDE) Change Management Policy and Standard Operating Procedures, identifies configuration management and change management roles and responsibilities and system relationships. In addition, the scope includes the automated tools and processes used to manage the information system baseline configuration.

## 2.4 Compliance with IT Security Requirements

The VAEC AWS CMP adheres to security requirements of the CM control family as prescribed in NIST SP 800-53 Rev. 4 and by the system’s FIPS 199 Security Categorization (SC) of **High**. The following table identifies the sections that contain control implementation statements that meets NIST SP 800-53 Rev. 4 CM control requirements.

**Table 2.4:** **Configuration Management Control Compliance**

|  |  |  |
| --- | --- | --- |
| **Control Number** | **Security Control Requirement** | **Section** |
| CM-1 | Configuration Management Policy and Procedures | *Section 2.4.1* |
| CM-2 | Baseline Configuration | *Section 2.4.2* |
| CM-3 | Configuration Change Control | *Section 2.4.3* |
| CM-4 | Security Impact Analysis | *Section 2.4.4* |
| CM-5 | Access Restrictions for Change | *Section 2.4.5* |
| CM-6 | Configuration Settings | *Section 2.4.6* |
| CM-7 | Least Functionality | *Section 2.4.7* |
| CM-8 | Information System Component Inventory | *Section 2.4.8* |
| CM-9 | Configuration Management Plan | *Entire Document* |
| CM-10 | Software Usage Restrictions | *Section 2.4.10* |
| CM-11 | User-installed Software | *Section 2.4.11* |

## 2.4.1 Configuration Management Policy and Procedures

**Control CM-1**

The VAEC inherits this control from OI&T. OI&T develops, documents, and disseminates policies and procedures enterprise-wide. In accordance with VA Directive and Handbook 6330, the Configuration Management Policy is reviewed every five (5) years. The VAEC develops and maintains SOPs as needed.

## 2.4.2 Baseline Configuration

**Control CM-2**

The VAEC develops, documents, and maintains configuration control, a current baseline configuration of the information system. Baseline configurations are developed and documented in the VAEC Configuration Management Plan.

* Code Baseline Configuration: GitHub Enterprise is used as the centralized repository and management of baselines.
* Servers: VA IBM BigFix is used to manage server configuration in accordance with VA CRISP Guidelines.

## 2.4.3 Configuration Change Control

**Control CM-3**

(a) The VAEC categorizes changes into two (2) categories. These are (1) changes that affect other VA information systems and (2) changes that affect the VAEC. For changes that only affect the VAEC, there are two (2) additional categories of changes:

**2.4.3.1** Changes that do not require CCB approval

* In accordance with the RACI chart, application support teams making changes to the Development and Staging environments.

**2.4.3.2** Changes that requires CCB approval

* All changes to the Production environment.
* Initial configuration of hosted application environment.
* All changes to Core Services.
* In accordance with the RACI chart, changes to hosted application environment is performed by the VAEC team.

(b) All configuration changes are documented and tracked in the Service Desk Manager (SDM) and Configuration Management Database (CMDB) (SDM and CMDB are defined in section 3.2).

(c) Based on the type of change, approval is required by the requisite CCB.

(d) In accordance with VA Handbook 6500, the VAEC will retain configuration-controlled records for five (5) years. The change request tickets are retained in the SDM and CMDB ticketing systems.

(e) All approved changes are reviewed prior to the closure of the change request ticket. IBM BigFix is used to identify and audit for unapproved changes.

(f) The VAEC coordinates and provides oversight for all configuration changes via a CCB.

## 2.4.4 Security Impact Analysis

**Control CM-4**

The VAEC utilizes a work flow change management process that includes a security review prior to approval. The security official will conduct a security impact assessment based on the probability and impact of the proposed change to the information system. This is documented in the CMP (referenced in Section 3.5.1.2).

## 2.4.5 Access Restrictions for Change

**Control CM-5**

The VAEC utilizes a work flow change management process that defines, documents, approves all proposed changes prior to implementation. Only system engineers have logical access to make changes to the operational environment. IBM BigFix is used to identify unapproved changes. The VA *ECSB Operations and Maintenance Responsibility Matrix(RACI)* documents authorized user(s) responsibilities.

## 2.4.6 Configuration Settings

**Control CM-6**

(a) The VAEC utilizes a gold image for initial baseline configurations. The baseline configuration settings are based on DISA STIGs and VA CRISP Guidelines.

* Windows Server 2012 and 2012 R2 DISA STIG – Version 2, Release 8, 28 Apr 2017
* Red Hat Enterprise Linux (RHEL) 7 DISA STIG – Version 1, Release 1, 13 Mar 2017

(b) The VAEC utilizes Ansible to deploy the gold image configuration settings.

(c) The VAEC conducts baseline configuration scans prior to a system going operational. Deviations from the gold image baseline are documented and approved prior to implementation into the operational environment.

(d) The VAEC utilizes IBM BigFix to monitor configuration settings.

## 2.4.7 Least Functionality

**Control CM-7**

(a) The VAEC operates under the principle of least functionality, where programs are executed with the minimum rights required. An RBAC methodology is used within the environment where programs are executed at the run-level of the authenticated user account.

(b) The VAEC only allows engineers to execute programs on servers in the environment that is required to complete their duties. Engineers must first login using non-privileged accounts and only escalate to privileged accounts, if needed.

## 2.4.8 Information System Component Inventory

**Control CM-8**

The VAEC maintains an online real-time inventory of system components inherited from VA Enterprise IBM BigFix and a cloud access security broker (CASB). The inventory includes network-based components and cloud services implemented. The real-time inventory list provides a level of granularity deemed necessary for tracking and reporting.

## 2.4.9 Configuration Management Plan

**Control CM-9**

The VAEC develops, documents, and implements a configuration management plan for the information system that:

(a) Addresses roles, responsibilities, and configuration management processes and procedures;

(b) Establishes a process for identifying configuration items throughout the system development life cycle and for managing the configuration of the configuration items;

(c) Defines the configuration items for the information system and places the configuration items under configuration management; and

(d) Protects the configuration management plan from unauthorized disclosure and modification.

## 2.4.10 Software Usage Restrictions

**Control CM-10**

(a) The VAEC system engineers are the only personnel allowed to install software programs within the environment.

(b) The VAEC tracks the use of software and associated documentation protected by quantity licenses to control copying and distribution.

(c) The VAEC does not utilize or permit the use of peer-to-peer file sharing technology.

## 2.4.11 User-installed Software

**Control CM-11**

The VAEC system engineers are the only personnel allowed to install software programs within the environment. System engineers are required to go through the CM approval process to install software.

Enter your organization Compliance with IT Security Requirements here.

The [Organization 2 name/acronym] [GRC Boundary Alignment] CMP adheres to security requirements of the CM control family as prescribed in NIST SP 800-53 Rev. 4 and by the system’s FIPS 199 Security Categorization (SC) of [Security Categorization]. The following table identifies the sections that contain control implementation statements that meets NIST SP 800-53 Rev. 4 CM control requirements.

**Table 2.4: Configuration Management Control Compliance**

|  |  |  |
| --- | --- | --- |
| **Control Number** | **Security Control Requirement** | **Section** |
| CM- i |  | *Section 2.4.i* |
| CM-ii |  | *Section 2.4.ii* |
| CM-iii |  | *Section 2.4.iii* |
| CM- |  | *Section 2.4.* |
| CM- |  | *Section 2.4.* |
| CM- |  | *Section 2.4.* |
| CM- |  | *Section 2.4.* |
| CM- |  | *Section 2.4.* |
| CM- |  | *Section 2.4.* |
| CM- |  | *Section 2.4.* |

## 2.4.i Security Control Requirement

**Control CM-i**

## 2.4.ii Security Control Requirement

**Control CM-ii**

## 2.4.iii Security Control Requirement

**Control CM-iii**

## 2.4.. Security Control Requirement

**Control CM-**

## 2.4.. Security Control Requirement

**Control CM-**

## 2.4.. Configuration Settings

**Control CM-**

# Configuration Management Activities

## Roles and Responsibilities

Process roles and responsibilities are identified in the context of the management function and are not intended to correspond with organizational job titles. Specific roles have been defined according to industry best practices. In some cases, individuals may share a single role; and in other cases, an individual may assume multiple roles.

Roles and responsibilities for the CCM programs as they pertain to the VAEC AWS are

found in the following SOPs:

* [OIT Configuration Management Process Document](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_configuration_management_process_document.pdf)
* [OIT Change Management Process Document](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_change_management_process_document.pdf)
* [SDE Field Operations Configuration Management Plan](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/National%20Configuration%20Management%20Plan.doc)
* [SDE Change Management SOP](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/National%20ChM%20Process%20SOP.pdf)

The following table includes defined roles and responsibilities of an organization in support of the CM process. The VAEC uses a Configuration Control Board (CCB) to manage change and includes an information technology expert as a key voting member of the board. The VAEC CM process defines the roles and responsibilities within the system lifecycle.

Table 3.1: Roles and Responsibilities

| Role | Responsibility | Name |
| --- | --- | --- |
| Configuration Control Board Chairperson | Responsible for chairing the configuration control board and ensuring the change has been reviewed and analyzed based on the requirements described in the charter |  |
| System Security Representative | Responsible for ensuring that the change has been reviewed and analyzed for impact to security |  |
| Enterprise Architecture Representative | Responsible for ensuring that the change has been reviewed and analyzed for impact to the standards and guidelines in the enterprise architecture |  |
| Software Configuration Manager | Responsible for tracking software components, and building and promoting software releases |  |
| System Engineer | Responsible for tracking and maintenance of system components |  |
| Security Operations (SecOps) | Responsible for:   * Developing new security configuration baselines * Reviewing and discussing proposed submitted change(s) * Evaluating the impact of the change(s) to the existing security configuration baseline (both before and after testing should that occur) * Approving/Denying change(s) * Determining implementation approach * GitHub to ensure compliance |  |
| Operations  (DevOps) | * Reviewing and discussing proposed submitted change(s) * Evaluating the impact of the change(s) to the existing * security configuration baseline (both before and after testing * should that occur) * Approving/Denying change(s) * Determining implementation approach * Implementing change (if approved) |  |

## 

## Enter your orgamization Roles and Responsibilities here.

Enter your orgamization Roles and Responsibilities in the table below.

Table 3.1: Roles and Responsibilities [Organization 2 name/acronym]

| Role | Responsibility | Name |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Table 3.2: CCB Board Members

| Name | Title | Role |
| --- | --- | --- |
|  |  | CCB Chairman |
|  |  | CCB Voting Member |
|  |  | CCB Voting Member |
|  |  | CCB Non-Voting Member |

## Enter your orgamization CCB Board Members below

CCB Board Members [Organization 2 name/acronym]

| Name | Title | Role |
| --- | --- | --- |
|  |  | CCB Chairman |
|  |  | CCB Voting Member |
|  |  | CCB Voting Member |
|  |  | CCB Non-Voting Member |

Table 3.3: Change Review Team Members

| Name | Title | Role |
| --- | --- | --- |
|  |  | Code Reviewer |
|  |  | Vulnerability Scan Reviewer |
|  |  | Information Security Officer (ISO) |

## Enter your orgamization change review team Members in the table below

Table 3.3: Change Review Team Members [Organization 2 name/acronym]

| Name | Title | Role |
| --- | --- | --- |
|  |  | Code Reviewer |
|  |  | Vulnerability Scan Reviewer |
|  |  | Information Security Officer (ISO) |

## Communication

Requests for Change (RFC)/Change Orders are entered into the appropriate Change Management

System (VA) for review, approval, and implementation by the appropriate Servicing Divisions.

Change Control and Advisory Board reviews are required for changes that impose downtime for

the system or service or pose a risk or affect multiple facilities or services.  It is the responsibility

of the implementation team to notify potentially affected customers and personnel required to

provide support, e.g.,Organizational Servicing Divisions, Network Chief Information Officer

(NCIO), Facility Chief Information Officer (FCIO), etc.

The VAEC utilizes the Service Desk Manager (SDM) and Configuration Management Database

(CMDB) systems to document, approve and track all changes related to the system infrastructure

and/or applications. The SDM and CMDB provides a workflow that follows the VAEC process.

The VAEC team coordinates and provides oversight for configuration change control activities

through SDM and CMDB.

Enter your organization communication here.

## System Configuration Baseline

The system infrastructure is deployed to Amazon Web Services (AWS), which is

connected through VA’s Trusted Internet Connection (TIC) and VA National Security

Operations Center (NSOC) for security compliance.  The VAEC team and the IO Cloud

Architect team define and manage the baseline for the GSS.  All changes to the baseline are

documented, communicated and reviewed.  The baseline follows NIST 800-53 Rev 4 guidance and VA 6500 Handbook and policy for the creation, maintenance and sustainment of secure information systems. The system does not currently store PHI or PII at this time. Server configuration items (CI) are implemented in accordance with VA CRISP Guidelines for Windows and Linux based operating systems (OS). These configuration baselines are documented in Section 2.4.6.

## Enter your organization System Configuration Baseline here.

**3.4 Configuration Control Process (CCP)**

The VAEC has established processes and procedures that dictate the configuration change

control for all software configuration items.  The SDM and CMDB tools are used for requesting,

approving, implementing, monitoring, and tracking, auditing and closing change orders affecting

configuration items under change and configuration control.  The phases associated witht the

CCP are listed below with their accompanying process steps:

* **Phase 1: Initiate Change**

***Step 1: Establish System Configuration Baselines***

The VAEC utilizes a gold image based on the VA CRISP Guidelines for server

configuration baselines. The baseline configuration is developed and deployed using

Ansible Tower. Code baseline configurations are managed using GitHub.

* **Phase 2: Analyze/Plan Change**

***Step 2: Identify changes and complete Change Request***

Change request tickets are documented and tracked in the SDM and CMDB. Change

requests that affect VA Enterprise Services, such as network and Active Directory (AD),

requires the creation of a separate ticket for approval by the VA Enterprise Services

Change Control Board (ESCCB).

***Step 3: Submit Change Request***

Change requests are submitted using SDM and CMDB. Change requests must contain

the following items:

* Date
* Name of Requester
* Implementation Date
* Type of Change
* Environment(s) Affected (e.g. Development, Stage, Production: AWS)
* Description of Change
* Implementation Details/Instructions
* Rollback procedures
* Test Results (e.g., UAT)
* Code Review Results (if applicable)
* Vulnerability Scan Results (if applicable)

***Step 4: Evaluate Change Request***

The following review/evaluation activities occur:

* **Code:** Peer review and static code scans
* **Application:** Dynamic application scans
* **Servers:** Host-based vulnerability scans

***Step 5: Perform Security and Operational Impact Analysis***

The Change Review Team reviews proposed change requests and make recommendations to the CCB. The impact assessments (security and operational) will be conducted taking into consideration the probability of a negative effect of the change and impact to the system.

* **Phase 3: Approve Change**

***Step 6: Approve, Disapprove, Defer, or Refer Change Request***

All change requests are routed to the appropriate CCB.

* **Code:** VAEC CCB
* **Network: VA ESCCB1**
* **AD:** VA ESCCB
* **All other:** VAEC CCB
* **Phase 4: Fix/Develop Change**

***Step 7: Schedule Approved Change***

Configuration changes to the information system are approved through a general consensus by the CCB. The CCB consists of a chairperson and voting representatives as specified in Table 3.1. The chairperson makes the determining decision if a consensus cannot be reached. Changes to the VAEC environment are restricted to individuals who are authorized by the CCB.

***Step 8: Release Approved Change***

The VAEC release management process leverages the VA SDLC process to manage, plan, schedule and control software builds through different stages of the deployment process. Code release management and version control steps are identified in Section 3.5

* **Phase 5: Implement Change**

***Step 9: Implement Approved Change***

* Approved change requests are implemented after obtaining COMS and VA CCB management approval.
* **Code deployment:** hosted applications are deployed using GitHub.
* **Core Service changes:** are implemented by the VAEC team.
* **Phase 6: Validate Change**

***Step 10: Verify Implemented changes are successful and did not introduce additional issues/incidents into the environment.***

Changes are tested and validated after the change being implemented. Changes for hosted applications are verified by the Application Owner.

***Step 11: Perform Configuration Status Accounting***

The VA SDM and CMDB ticketing systems automatically records the changes and configuration change status. Records of configuration-controlled changes (requested, approved, disapproved, implemented and pending) are retained for at least one (1) year.

***Step 12: Conduct Configuration Verification and Audit***

Auditing of the VAEC configuration is conducted by the VAEC security team as part of continuous monitoring efforts. Additionally, VAEC personnel receive alerts for some changes to the environment. These may include:

* Infrastructure changes, such as starting and stopping of instances and cloud services
* Changes to key files and folders

## Enter your organization Configuration Control Process (CCP) here.

## 3.5 Release Management and Version Control

The VAEC release management process seeks to manage, plan, schedule and control software

build through different stages from testing to deploying software releases. GitHub Enterprise is

used for source code repository and versioning. GitHub Enterprise provides code collaboration

and a secure code repository for hosted applications source code.

## 3.5.1 Release Management

## 3.5.1.1 Release Planning

Procedures for packaging and releasing software code are documented in the planning phase.

## 3.5.1.2 Security Impact Assessment

Throughout the SDLC, the ISO conducts security impact assessments (SIA). The phases include

requirement definitions and code release. During code release planning, the ISO will provide the

SIA.

## 3.5.1.3 Release Building

Code is packaged for release in this phase. The package is then deployed to the test/stage

environment for scanning and testing.

## 3.5.1.4 Vulnerability Scanning

In this phase, a scan is conducted to identify vulnerabilities. Identified vulnerabilities will be

remediated prior to release.

## 3.5.1.5 User Acceptance Testing

Application testing is conducted by end users. Feedback is then incorporated and necessary

changes are made prior to release.

## 3.5.1.6 Release Deployment

The release deployment step installs the software release in the production environment. Testing

is conducted subsequently to validate installation.

## 3.5.2 Version Control

## 3.5.2.1 Versioning of Directories

GitHub Enterprise versions directories as first-class objects.

* ***Copying, deleting, and renaming****–* Copying, deleting, and renaming are versioned

operations.

* ***Free-form versioned metadata ("properties***") – GitHub allows arbitrary metadata

("properties") to be attached to any file or directory. These properties are key/value pairs, and are versioned just like the objects they are attached to.

* ***Atomic commits*** – No part of a commit takes effect until the entire commit has

succeeded. Revision numbers are per-commit, not per-file, and commit's log message is

attached to its revision, not stored redundantly in all the files affected by that commit.

* ***Merge tracking*** – Provides automated assistance with managing the flow of changes between lines of development and with the merging of branches back into their sources.

## Enter your organization Release Management and Version Control here.

## 3.6 Configuration Management Resources

The following tools ensure that appropriate control is in place to manage the configuration items in accordance with VA Handbook 6500 Configuration Management controls.

**GitHub Enterprise**

GitHub Enterprise will be used as a centralized distributed version control system/repository that securely stores application code and configuration items, as well as audit history. The VAEC will retain three (3) versions of code baseline configuration: Legacy, Pre-Production, and Production.

**Ansible Tower**

A scripting framework for deploying configuration item changes. The VAEC will utilize a gold image for initial baseline configuration. The gold image baseline configuration settings will be based on DISA STIGs and VA Continuous Readiness in Information Security Program (CRISP) Guidelines. Ansible Tower will be used to develop and deploy the VAEC gold image configuration and other server configuration.

Ansible playbooks are stored in GitHub. It also provides an enterprise framework for controlling, securing and managing the Ansible automation with a UI and RESTful API.

**AWS Cloud Formation**

AWS CloudFormation is a service that helps organizations model and set up their Amazon Web Services resources so that less time is spent managing resources. A CloudFormation template is simply a JSON (JavaScript Object Notation) or YAML-formatted text file that describes the AWS infrastructure needed to run an application or service along with any interconnection between them. Organizations create a template that describes all the AWS resources that they require and CloudFormation takes care of provisioning, dependencies and configuration of the resources.

**AWS OpsWorks**

AWS OpsWorks is a configuration management service that uses Chef, an automation platform that treats server configurations as code. OpsWorks uses Chef to automate how servers are configured, deployed, and managed across your Amazon Elastic Compute Cloud (Amazon EC2) instances or on-premises compute environments. AWS OpsWorks is an automation tool that gives the user workflow automation for continuous deployment, automated testing for compliance and security. OpsWorks gives the user full stack automation by handling operational tasks such as software and operating system configurations, package installations, database setups, and more.

**IBM BigFix**

IBM BigFix will be used to centrally manage, apply, monitor, and verify server configuration settings in accordance with VA CRISP Guidelines. It is an endpoint security and management platform that provides real-time visibility and control across endpoints, however they are connected. The VAEC will employ IBM BigFix to automatically maintain an up-to-date, complete, accurate, and readily available server baseline configuration. The VAEC retains three (3) versions of server baseline configurations: Legacy, Pre-Production, and Production. IBM BigFix is also employed to identify and audit for unauthorized configuration changes to operational systems. An alert will be sent to system engineers/administrators from BigFix if an unauthorized change occurs. The VA OI&T SDE and NSOC will employ automated mechanisms (SCCM, BigFix, etc.) to continuously detect the presence of unauthorized hardware, software, and firmware components within the information system (as a series of dashboards). The VAEC will maintain an online real-time inventory of system components utilizing IBM BigFix and a CASB. The inventory includes network-based components and cloud services implemented. The real-time inventory list provides a level of granularity deemed necessary for tracking and reporting.

**Tenable Nessus**

The Tenable Nessus scanner will be used to provide vulnerability management detection and auditing of assets within VAEC.

**BigFix SCCD**

BigFix SCCD scans will be used to identify policy-violating configurations (STIGS).

**McAfee VSE**

McAfee VSE active and full system scans will used to detect malware and potential attackers attempting to compromise the VAEC.

**Hewlett Packard Enterprise (HPE) Fortify**

Fortify Static Code Analyzer (SCA) identifies security vulnerabilities in source code early in the software development lifecycle (SDLC) and provides best practices so developers can code more securely. The HPE Fortify SCA is used by development groups and security professionals to analyze the source code of an application for security issues. The SCA identifies root causes of software security vulnerabilities, and delivers accurate, risk-ranked results with line-of-code remediation guidance, making it easy to address serious issues first.

**IBM Security AppScan Enterprise**

The IBM Security AppScan enables organizations to miti\\\gate application security risk, strengthen application security program management initiatives and achieve regulatory compliance. Security and development teams can collaborate, establish policies and scale testing throughout the application lifecycle. Enterprise dashboards classify and prioritize application assets based on business impact and identify high-risk areas, allowing to maximize remediation efforts. Performance metrics are provided that help monitor the progress of application security programs.

The IBM Security AppScan Enterprise delivers:

* **Scalable application security testing** using a variety of testing techniques.
* **Test policies, scan templates and vulnerability remediation advisories** to help implement application security programs.
* **Detailed security reports and enterprise level dashboards** to provide visibility of risk and compliance.

APPENDIX A: CONFIGURATION MANAGEMENT PLAN APPROVAL

The undersigned acknowledge that they have reviewed the ***VAEC AWS GovCloud High* Configuration Management Plan** and agree with the information presented within this document. Changes to this **Configuration Management Plan** will be coordinated with, and approved by, the undersigned, or their designated representatives.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: Date:

Print Name: David Catanoso

Title: Director, Enterprise Cloud Solutions Office

Role: System Owner

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature:

Print Name: Charles Solomon-Jackson Date:

Title: Information Security Officer

Role: ISO

The undersigned acknowledge that they have reviewed the[Organization 2 name/acronym] [GRC Boundary Alignment] [Security Categorization] **Configuration Management Plan** and agree with the information presented within this document. Changes to this **Configuration Management Plan** will be coordinated with, and approved by, the undersigned, or their designated representatives.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: Date:

Print Name:

Title: Director,

Role:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature:

Print Name: Date:

Title:

Role:

Appendix B: References

The following table summarizes the documents referenced in this document.

| Document Name | Description | Location |
| --- | --- | --- |
| VA Directive 6500 | Managing Information Security Risk: VA Information Security Program | <http://www.va.gov/vapubs/landing2_relatedlinks.cfm> |
| VA Handbook 6500 | Risk Management Framework for VA Information Systems – Tier 3: VA Information Security Program | <http://www.va.gov/vapubs/landing2_relatedlinks.cfm> |
| OIT Configuration Management Process | OIT Configuration Management ProPath defined process and supporting document | [https://vaww.sde.portal.va.gov/](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_configuration_management_process_document.pdf)  [sites/fo/committees/ccb/CMDB/](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_configuration_management_process_document.pdf)  [Definitive%20Document%20Storage/](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_configuration_management_process_document.pdf)  [oit\_configuration\_management\_process](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_configuration_management_process_document.pdf)\_document.pdf |
| OIT Change Management Process Document | OIT Change Management ProPath defined process and supporting document | [https://vaww.sde.portal.va.gov/](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_configuration_management_process_document.pdf)  [sites/fo/committees/ccb/CMDB/](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_configuration_management_process_document.pdf)  [Definitive%20Document%20Storage/](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_configuration_management_process_document.pdf)  [oit\_change\_management\_process\_document.pdf](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_configuration_management_process_document.pdf) |
| SDE Change Management SOP | SDE Change Management Standard Operation Procedure | [https://vaww.sde.portal.va.gov/](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_configuration_management_process_document.pdf)  [sites/fo/committees/ccb/CMDB/](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_configuration_management_process_document.pdf)  [Definitive%20Document%20Storage/](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_configuration_management_process_document.pdf)  [National%20ChM%20Process%20SOP.pdf](https://vaww.sde.portal.va.gov/sites/fo/committees/ccb/CMDB/Definitive%20Document%20Storage/oit_configuration_management_process_document.pdf) |
| Master Test Plan | Master Test Plan Template | <http://vaww.oed.wss.va.gov/process/Library/master_test_plan_template.docx> |

Appendix C: Key Terms

The following table provides definitions and explanations for terms and acronyms relevant to the content presented within this document.

Enter additional key terms used in the table below.

| Term | Definition |
| --- | --- |
| [Insert Term] | <Provide definition of term and acronyms used in this document.> |
| ACL | Access Control List |
| AO | Authorizing Official |
| CAB | Change Advisory Board |
| CCP | Configuration Control Process |
| CI | Configuration Item |
| CM | Configuration Management |
| ChM | Change Management |
| CMDB | Configuration Management Database |
| CMP | Configuration Management Plan |
| CMS | Change Management System |
| COR | Contracting Officer Representative |
| CP | Contingency Plan |
| CTO | Chief Technology Officer |
| DRP | Disaster Recovery Plan |
| ESE | Enterprise System Engineering |
| FCIO | Facility, Chief Information Officer |
| FDCC | Federal Desktop Core Configuration |
| GPO | Group Policy Object |
| GRC | RiskVision Tool |
| GSS | General Support System |
| ISCPA | Information System Contingency Plan Assessment |
| IT | Information Technology |
| OIT | Office of Information & Technology |
| LAN | Local Area Network |
| MA | Major Application |
| MDIA | Medical Device Isolation Architecture |
| NCIO | Network, Chief Information Officer |
| RCCB | Region Change Control Board |
| RFC | Request for Change |
| SCCM | System Center Configuration Manager |
| SDE | Service Delivery and Engineering |
| SLM | Service Line Manager |
| SOP | Standard Operating Procedure |
| SSP | System Security Plan |
| TRM | Technical Reference Model |
| VA | Veterans Affairs |
| VISN | Veterans Integrated Service Network |
| WAN | Wide Area Network |
| WLAN | Wireless Local Area Network |

Appendix D: Suggested Configuration Items Data Elements

Suggested standard data elements (Data Type and CI Type) and what type of data would be collected and how it would be used.

| Field Name | Data Type | CI Type | Description |
| --- | --- | --- | --- |
| Resource Name | *Indexed Text* | *Hardware / Software / Service / Document* | A unique name of the Configuration Item (CI). A name that represents the Resource and is easy to identify what it is; a key search field within the Configuration Management Database (CMDB). |
| DNS Name | *Indexed Text* | *Hardware* | The name of the CI as identified within your Domain Name Service (DNS); this helps with association of services or servers to a CI. |
| Status | *Lookup Table* | *Hardware / Software / Service / Document* | The current status of the CI. For example: when first added to the CMDB, the CI may be in a status of Registered, then later it may be Accepted. This identifies how the record moves through the status/lifecycle; if a change is being performed on the CI the status would be changed to Change in Progress, thus identifying CI’s that are currently undergoing some form of a change. |
| Description | *Free Text Multiple Lines* | *Hardware / Software / Service / Document* | A short description that will provide additional feedback to the end user when looking up the CI. |
| CI Type | *Lookup Table* | *Hardware / Software / Service / Document* | This is the type that the CI belongs to. See list of suggested family types. |
| Asset Class | *Lookup Table* | *Hardware / Software / Service / Document* | This is the classification of the configuration item; it is related to the family, but is a more specific classification of an asset. This is the sub-type that the CI belongs to; it is used to group common types on configuration items. An example would be “Laptop”; the “Laptop” Class is within the hardware Type. |
| Comments | *Free Text Multiple Lines* | *Hardware / Software / Service / Document* | Comments regarding the specific CI; notes that need to be part of the record history but are not within the Description of the CI. |
| COR | *Contact Table Lookup* | *Hardware / Software / Service* | Contracting Officer Representative (COR) associated with this particular purchase or CI. |
| Customer Name | *Contact Table Lookup* | *Hardware / Software / Service / Document* | Name of the Customer point of contact for issues with the CI. This person or group is the primary focus point when issues or changes are related to the CI. |
| Customer Organization | *Lookup Table* | *Hardware / Software / Service / Document* | Name of the Organization that the customer belongs to. Provides reporting information about what CI’s are associated to a specific organization. |
| Deployed Date | *Date* | *Hardware / Software / Service / Document* | The date that a service, system, etc. was deployed to the production environment. |
| Financial Reference | *Free Text* | *Hardware / Software* | A Purchase Order that was used to obtain the hardware or software. It is useful when looking up other information that may be found in related databases like the Asset Management system. |
| Function | *Lookup Table* | *Hardware* | The function or purpose that the hardware Configuration Item serves. |
| Host Name | *Free Text* | *Hardware* | In some cases, like UNIX, there is a purpose to identify the host name; this is on the same as DNS Name. |
| License Count | *Numeric* | *Software* | A number of copies that a particular license allows the owner to distribute. It can be used to determine if additional software licenses are needed or if there are too many licenses unused. |
| Type of Licenses | Lookup Table | Software | The type of license that has been procured, perpetual or recurring. |
| License Key Maintained By | *Contact table Lookup* | *Software* | Who maintains the Software License Key that is used to install the software? |
| Lifecycle Date | *Date* | *Hardware / Software / Service* | This is a date in the future derived from the install date and IT equipment life expectancy. |
| Location | *Lookup Table* | *Hardware / Software / Service / Document* | The location where this particular CI is hosted or installed. More specific location fields may be needed, such as room, floor, and rack as part of the physical location. |
| Maintenance Organization | *Lookup Table* | *Hardware / Software / Service* | Name of the Organization that has Maintenance responsibility over the CI; normally found within the Operations and Maintenance (O&M) Plan. |
| Maintenance Vendor | *Lookup Table* | *Hardware / Software / Service* | The vendor that would support the Maintenance Organization with a Warranty or other type of maintenance agreement. |
| Manufacturer | *Lookup Table* | *Hardware / Software* | Manufacturer of the CI being entered into the CMDB. Name used for reporting maintenance contracts or other data related to a specific manufacturer. |
| Model | *Lookup Table* | *Hardware / Software* | The manufacturer’s model name for the device. Relates to the manufacturer; used for reporting and for maintenance contracts. |
| Version Number | *Free Text* | *Software / Document* | Version Number of software or documents. This provides a baseline as to what version of software is installed/authorized in production or the version of a document that was approved and published. No version changes unless there is a change process for it. |
| Maintenance Window | *Free Text* | *Hardware / Software / Service* | Maintenance windows are established based on Service Level Agreements (SLA’s) or other agreements for specific services that are available to the end user. The Maintenance windows that are associated with the CI’s should clearly state if they are recurring maintenance windows, the days of the week that they are available, and the hours of the day that they can be used. Example: Recurring - Monday – Friday 7 to 11 PM Contact *(name or role of the person that should be contacted to validate/verify the maintenance window).* |
| Operating System | *Look Up Table* | *Hardware / Software* | Identifies the Operating System (OS) running on the server, virtual machine, laptops or workstations. It is used for patching, SA assignment, reporting purposes, licensing, etc. NOTE: If this information is available from other tools that can report this information and is not needed as part of internal reporting or linked to other fields that are not part of the external data source, then this field could be left out. |
| Published Date | *Date* | *Document* | The date that a document was published for general consumption. |
| Region | *Lookup Table* | *Hardware / Software / Service / Document* | OIT is broken out into different regional areas. Most have their own processes and procedures or have equipment and software that is regionalized. If the CMDB holds cross-regional CI’s these should be identified for reporting purposes; otherwise, the Organizational field should provide the needed feedback. |
| Relationships | *Lookup Table* | *Hardware / Software / Service / Document* | Field is a one-to-many relationship used to identify a relationship between 2 or more CI’s and the type of relationship that the CI has. This relationship could be with contacts, other hardware, software, services or document CI’s. An example of types of relationships are listed below:  Changes Approved By  Connects To  Is Documented By  Runs/Runs On |
| Renewal Date | *Date* | *Hardware / Software* | A renewal date is used to establish when a particular CI’s maintenance agreement will expire and would require renewal to continue with the service. |
| Cost of Maintenance Agreement | *Numbers* | *Hardware / Software* | Recurring cost of maintenance agreements purchased under the contract. |
| Responsible Organization | *Lookup Table* | *Hardware / Software / Service / Document* | The Organization that has responsibility over the CI. It may be the same as maintenance or customer organization or a different one. |
| Responsible Owner | *Contact Lookup Table* | *Hardware / Software / Service / Document* | A primary point of contact who has been identified as the POC for the Responsible Organization. |
| Responsible Vendor | *Lookup Table* | *Hardware / Software* | The Responsible Vendor for a particular CI may be the same as Maintenance Vendor or may be a different vendor if maintenance is sub-contracted out by the Primary Responsible Vendor. |
| Secondary Contact | *Contact Lookup Table* | *Hardware / Software / Service / Document* | This would be an alternate Point of Contact that could be contacted in the absence of the Primary POC, |
| Serial Number | *Alpha-Numeric Free Text* | *Hardware* | Serial Numbers are unique identification elements that are directly related to asset management; but by including it within your CMDB you could link to other databases that track their CI’s by Serial Number. |
| Service Line | *Lookup Table* | *Hardware / Software / Service / Document* | Support is broken down by Service Lines within OIT Field Operations, providing a Service Line associated to the CI would expedite maintenance issues and provide reporting capabilities on the type and number of CI’s being maintained by a particular service line. |
| Service Line Team/Division | *Lookup Table* | *Hardware / Software / Service / Document* | As Service Lines are stood up, so are the Service Line Teams/Divisions that support the service line and have a more defined scope of their responsibilities. Capturing this type of information would provide you with the same information as Service Line would but allow you to break it down by the Service Line Team Division. |
| Source Supplier | *Lookup Table* | *Hardware* | Used for hardware support, this is the vendor that purchased the equipment from the manufacturer. It is received obtained from the Purchase Order Contract. |
| Created By | *System Contact Field* | *Hardware / Software / Service / Document* | This is an audit field; it captures the name of the person that created the record. This should be a system field and captured based on who was logged in during the creation of the record. |
| Created Date | *System Date Field* | *Hardware / Software / Service / Document* | Initial date of creation of the Configuration Item Record. |
| Modified By | *System Contact Field* | *Hardware / Software / Service / Document* | This is an audit field; the person who last edited the record would be listed. This should be a system field and captured based on who was logged in during the modification. |
| Modified Date | *System Date Field* | *Hardware / Software / Service / Document* | Date the Configuration Item Record was last modified. |

Appendix E: Current Configuration Baseline Report

The following table details the Software and Services associated with the system(s) under this CMP.

|  |  |  |
| --- | --- | --- |
| # | **Core Services** | **Tools/Software** |
| 1 | Server Configuration Management Service | Ansible Tower, SCCM, IBM BigFix, and Nessus |
| 2 | Code Configuration and Release Management Services | GitHub |
| 3 | Authentication Services | VA AD Service, AWS IAM, and CA-SiteMinder |
| 4 | Auditing Service | Splunk, AWS CloudWatch, AWS CloudTrail |
| 5 | Monitoring Service | Splunk, Nessus, AWS CloudWatch |
| 6 | Vulnerability Scanning Service | WASA Services (App Detective, Tenable Security Center, HP Fortify), Nessus, and McAfee VSE |
| 7 | JumpBox Service | Linux and Windows servers |

Enter details of Software and Services associated with the system(s) under this CMP.

[Organization 2 name/acronym]

|  |  |  |
| --- | --- | --- |
| # | **Core Services** | **Tools/Software** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |

Appendix F: Change Order Approval Checklist

Reviewer and Approver must be different (the person putting together the plan, and the person approving the plan)

Correct location entered?

Change Order description contains required information

What is being done?

The business case for doing it.

What is the impact of the change (what services will be impacted and what will the impact most likely be)?

What else may be impacted?

What will occur if we don’t do the change?

The implementation plan should be attached, never be pasted, into the description.

Were the customers/stakeholders notified as per the Change Advisory Board (CAB) process?

CAB notification in the ticket.

Facility OIT response or ignore entered as a log comment.

Is the implementation plan attached?

Is the Notification and Escalation section complete?

Does the implementation plan provide sufficient detail so that a peer who is unfamiliar with the particular facility where the implementation is taking place could execute the plan?

Does the implementation plan include a test plan that contains checkpoints for verification, coordination, or implementing back-out?

Are verification steps (Test Plan) included?

Do the verification steps ensure the customers are functioning and not just the item modified is working?

Is the back-out plan attached?

Is the notification plan included?

Are verification steps included?

Do the verification steps ensure the customers are functioning, the services impacted are operational, and not just the item modified is working?

Is the need by date realistic?

Is there an implementation date/time prior to the need by date?

**If everything is accurate and all documentation attached, change Status to Approved and/or escalate to next level CCB if this is a significant change/downtime required.**



Appendix G: Change Order Implementation Plan Template

Local facility Notification and Escalation Contacts

|  |  |  |
| --- | --- | --- |
| Name/Role | Business | After-hours |
| John Doe, FCIO | 333-345-6789 | 333-987-6543 |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

VISN/Service Line Notification and Escalation Contacts

|  |  |  |
| --- | --- | --- |
| Name/Role | Business | After-hours |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Any pre-implementation work that will be required

Enter required pre-implementation work here

Step-by-step guidance for what needs to be done including time estimates, escalation and coordination points

Enter step-by-step guidance here

Identification of areas that might cause problems

*Enter Identification of areas that might cause problems here*

Identification of roll-back points and/or criteria for initiating the Back-out plan

Enter Identification of roll-back points and/or criteria for initiating the Back-out plan here

Test/validation steps for the verification phase – include validation that customers are functioning and not just the item modified (See Master Test Plan Template)

Enter Test/validation steps for the verification phase



Appendix H: Business Case Justification

1. Please provide a detailed description of this change.
2. List the requirements needed for the change (i.e., servers, switches, software, etc.).
3. Describe the effect the change may have upon the end user, business operation, and infrastructure, if known.
4. Describe the impact on and the availability to other services that run on the same infrastructure (or on software development projects).
5. Describe the effect of not implementing the change.
6. Estimate the IT, business, and other resources required to implement the change, including the likely costs, the number and availability of people required, the elapsed time, and any new infrastructure elements required.
7. Estimate any additional ongoing resources required if the change is implemented.
8. Document downtime procedures.

Document communication procedures (i.e., who needs to be notified in the event of scheduled/unscheduled downtime and how to notify this person).



Appendix I: Change Management Back-Out Plan Template

| Change Order | Affected Systems |
| --- | --- |
|  |  |

Estimated time-frames for restoring service

Enter estimates here

Any pre-implementation work that will be required

Enter pre-implementation work here

Step-by-step guidance to restore service to the pre-change state

Enter step-by-step guidance here

