

Change Management System Process Guide

Preface

The purpose of this document is to outline the procedures that govern the Change Management process at VCU Technology Services. This document describes how to use the Change Management Process and provides a definition of the management controls required, as well as some rationale for instituting those controls.

Summary of TS Change Management Process

The following summarizes the process to be used when implementing changes in the IT environment. A more detailed explanation of this process is contained in the following document.

- All changes are proposed using the Change Management System.
 - A Change Request form is submitted for all changes to be implemented regardless of the category, level, or type of change. Change Requests ensure that all changes are sufficiently documented.
 - The Change Requester completes a Risk & Impact Assessment for all changes. Based upon the Risk & Impact Assessment, the Change Level is automatically assigned by the Change Management System.
 - Depending on the type of change, a Change Request may require approval by the Change Approver, Change Manager, and/or Change Advisory Board (CAB).
 - The change implementation is considered complete when the Change Requester validates and documents whether or not the change was successful.
 - The Change Manager closes successful changes and facilitates review of failed changes.
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Objectives, Activities and Scope

Change Management is the process of planning, coordinating, implementing and monitoring changes affecting any production platform within VCU Technology Services' control. A Change Request is how any change is documented, proposed, analyzed, reviewed and voted on by the Change Approver, Change Manager, and Change Advisory Board (CAB).

The objectives of the Change Management process are to:

- Ensure that changes are made with minimum disruption to IT services.
- Support the efficient and prompt handling of all changes.
- Provide accurate and timely information about all changes.
- Ensure all changes are consistent with business and technical plans and strategies.
- Reduce failed changes.
- Ensure that technical and management accountability is maintained for every change.
- Monitor the number, reason, type, and associated risk of all changes.
- Document the configuration changes to the IT environment over time.

Activities of the Change Management Process include:

- Proposal and documentation of Change Requests.
- Determining whether or not a change is in the best interests of the business.
- Analyzing risk and impact of a change.
- Accepting or rejecting Change Requests.
- Scheduling changes.
- Communicating changes to appropriate stakeholders.
- Documenting and evaluating change outcomes.

Tasks not included in the Change Management process:

- Contingency/Disaster Recovery.
- Routine administrative processes.

The CAB may periodically modify the scope of the Change Management Process.

Change Management Standards

- All changes to the IT environment adhere to the Change Management Process.
 - All changes to production systems are proposed with a Change Request and receive approval before being implemented.
 - All Change Requests describe the change and document its schedule, outcome, recovery plan, communications plan, and business reasoning when applicable.
 - All Change Requests are evaluated with a Risk & Impact Assessment.
 - Users who have successfully completed training and assessment receive access to the Change Management System and may submit Change Requests.
 - All Level 3 and 4 Production Change Requests are approved by an appropriate Change Approver and by the CAB pre-implementation.
 - Emergency changes are not expected to be entered into the Change Management System prior to implementation.
 - Emergency changes which require involvement of the ECAB are approved by the ECAB pre-implementation and evaluated by the CAB post-implementation. Determination of ECAB involvement is left up to the Change Requester and Change Approver based on the impact of the Emergency Change.
 - Level 1 and 2 change Production Change Requests are approved by an appropriate Change Approver and the Change Manager.
 - Change documentation is retained according to agency records retention policy.
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Roles and Responsibilities

Change Requester

- Owns individual changes requested and is ultimately responsible for the success of the change.
- Reviews Change Requests with Change Approver, when applicable.
- Ensures that Change Requests are complete, with all required information including accurate representation of priority, impact and change window/time requirements, as well as any updates as required.
- Communicates the change to all relevant stakeholders.
- Coordinates the change and is responsible for recovery of failed changes.

Change Approver

- Is assigned based on the change being requested.
- Ensures the business justification of the change is warranted.
- Is responsible for the initial approval of a Change Request prior to submission to the CAB.
- Ensures recovery of failed changes by the Change Requester.

Change Manager

- Chairs and facilitates the Change Advisory Board.
- Is accountable for the accuracy of the Change Schedule.
- Ensures that the CAB has evaluated all changes for compliance, appropriate planning, and communication to protect the interests of VCU and TS.
- Is accountable for the change approval and rejection process.
- Validates, approves, or rejects all level 1 and level 2 changes except where input from the CAB is needed
- Closes completed changes.
- Coordinates post change reviews as needed.

- Schedules and attends all meetings concerning the Change Management process.
- Responsible for reporting issues regarding the Change Management Process and/or Change Management Tool to the Change Management Process Owner.
- Provides input regarding Change Management service improvement.
- Captures and reports Change Management service measurement data as needed.

Change Management Process Owner

- Is accountable for development, implementation, and communication of the Change Management mission and strategy in line with VCU and Technology Services strategies.
- Ensures overall compliance with Change Management process standards and procedures.
- Is involved with development of, and subsequent agreement on, service level targets and target improvements related to the Change Management service.
- Captures and reports appropriate Change Management service measurement data.

ITSM Architects

- Develops requirements for Change Management standards, procedures, measurements, tools and technology in conjunction with other IT Process Owners.
- Manages the tools and procedures that support Change Management.
- Builds and maintains the Change Schedule.
- Escalates Change Management System issues to VCU TS senior management as appropriate.
- Communicates changes to Change Management System standards, processes, procedures and technology.

Change Advisory Board

The Change Advisory Board (CAB) is a team comprised of TS representatives, including managers and technical experts. It is chaired by the Change Manager. The mission of the CAB is to monitor all level 3 and level 4 changes introduced into the IT environment and ensure the Change Management Process is being followed appropriately.

The CAB meets according to a regular schedule (Mondays and Thursdays) to review new Change Requests and perform post-implementation review of emergency and failed changes. Responsibilities also include the authorization of pre-approved changes to the whitelist. All CAB members must exercise good judgment and due diligence in the voting process.

The CAB ensures the following:

- All Change Requests have been submitted with sufficient information.
- Accurate Risk and Impact Analyses have been completed and the appropriate Change Level is assigned for every Change Request.
- Proposed pre-approved changes are evaluated and voted upon.
- All failed and emergency changes undergo a post-implementation review.

Emergency Change Advisory Board

The Emergency Change Advisory Board (ECAB) is comprised of TS representatives chaired by the CIO, the Chief of Staff, and other members based on the nature of the emergency. The ECAB meets as needed in response to an emergency change requiring ECAB involvement.

Change Categories

The following categories of changes to the VCU IT environment are subject to the Change Management Process and require Change Requests to be submitted in the Change Management system:

- **Application Changes** - Installations, changes, and retirements to any application code that is running on or linked to by any hardware or software.
 - **Hardware Changes** - Installations, changes, and retirements to all equipment.
 - **Operating System Changes** - Installations, changes, and retirements to any operating system.
 - **Visual Image Changes** – Changes to the overall layouts and templates of the website, CMS, mobile apps, digital signage, etc. (Content changes are exempt).
 - **Network Changes** - Installations, changes, and retirements to all equipment and software used for IT networking and telecommunication.
 - **Environmental Changes** - Changes involving the facilities associated with IT infrastructure. These changes include but are not limited to items such as air conditioning, chilled water or glycol, raised flooring, physical security, motor generators, electricity, and plumbing, etc.
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Change Types and Processes

Emergency Change Process

Emergency changes are changes that are vital to ensure that committed service levels are maintained, and must be implemented as soon as possible to resolve a major incident, restore a service, or remediate a security vulnerability.

Emergency changes which require Emergency Change Advisory Board (ECAB) involvement proceed to the implementation phase when the Change Approver and the (ECAB) acknowledge that an emergency situation exists and authorizes the change. These changes are urgent and of high impact to service delivery, requiring the involvement of the ECAB to ensure communication and collaboration to resolve the emergency.

Emergency changes not requiring Emergency Change Advisory Board (ECAB) involvement may proceed to the implementation phase when the Change Approver acknowledges that an emergency situation exists and authorizes the change. These emergency changes are urgent but have a lower impact to service delivery, and do not require involvement of the ECAB. These situations may require system restoration or action to prevent service disruption which must take place immediately. Additionally, this encompasses situations where the planned change timeline cannot be met due to external circumstances (and an appropriate pre-approved change is not available.)

Emergency changes require the same documentation as any other change. The Change Requester is responsible for meeting all requirements for the change documentation within one business day following completion of the change.

Emergency changes are reviewed by the CAB post-implementation. This review evaluates the reason for the emergency change to determine how to eliminate the reason in the future.

An emergency change should not be used in order to bypass the appropriate lead time for a planned change.

How do you know that the change is an emergency change?

- Is the change needed to restore immediate service?
- Is the change necessary to fix an existing problem immediately?
- Is this a change that must be installed immediately but the need for it was not recognized early enough to be approved through the regular process?

Planned (Normal) Change Process

Planned changes, also called normal changes, are any service change that is neither a pre-approved nor an emergency change. Prior to implementation, planned changes are proposed with a Change Request, approved by an appropriate Change Approver and the CAB, and then published to the Change Schedule.

1. The Change Requester creates a Change Request in the Change Management System which proposes the change.
 - A Change Request details the outcome, technical description, business reasoning, communication plan and recovery plan for the change. It also requires a "public description," written in plain, non-technical language, which is published to the Change Schedule and visible to all members of the VCU community.
 - A Risk & Impact Assessment is completed and a Change Level is automatically assigned by the Change Management System.
 - The Change Request must include assets affected by the change.
2. The Change Request is submitted for initial approval from the Change Approver.
3. The Change Approver may approve, reject or request additional information from the Change Requester.
 - Rejected changes are permanently closed and a new Change Request is required.
4. If approved, the Change Request is submitted to the CAB. All CAB members review the Change Request and vote to approve, reject or require additional discussion.
 - If approved, the change is added to the Change Schedule by the Change Manager.
 - If rejected, the Change Request is permanently closed and a new Change Request is required for resubmission.
 - If additional information is required, the Change Manager returns the Change Request to the Change Requester for resubmission.
5. The Change Requester implements scheduled changes and assigns a "succeeded" or "failed" status depending on the outcome of the change.
 - The Change Requester and Change Approver are responsible for implementing the recovery plan in the instance of a failed change.
6. The Change Manager reviews all successful changes and marks them "Closed."

7. The CAB and Change Manager review all failed changes and determine if additional action is required, what that action should be, and who is responsible for the action. The Change Manager marks all reviewed failed changes “Closed with Failure.”

Pre-Approved (Standard) Change Process

Pre-approved changes, also called standard changes, are low risk and relatively common, but still require documentation in the Change Management System.

All pre-approved changes are initially submitted as a planned change and proposed to be whitelisted. Each pre-approved change requires submission of an individual Change Request, which follows the same process as a planned change, but bypasses the CAB approval process. Any failed pre-approved change is reviewed by the CAB and Change Manager for continued inclusion on the whitelist.

Test Change Process

Test changes are implemented on non-production systems, have zero risk and bypass the CAB approval process.

Status of Changes

The following status codes are used to reflect the status of a Change Request:

- **Open** – The Change Request is being developed as a draft and has not yet been submitted for approval by the Change Approver.
- **Pending Approval** – The Change Request has been submitted for approval by the Change Approver.
- **Pending CAB Approval** - The Change Request has been submitted to CAB for approval.
- **Pending Additional Information** – The Change Request has been routed back to Open status. Sent back to the Change Requester with an explanation and a recommended course of action for resubmission.
- **Rejected** – The Change Request has been rejected.
- **Scheduled** – The Change Request has been received by CAB, approved, and assigned for completion. Work is in progress to fulfill the Change Request.

- **Succeeded** – The change has been completed successfully and is pending closure by the Change Manager.
 - **Failed** – The change has not been completed successfully and is pending review by the CAB and closure by the Change Manager.
 - **Canceled** – The Change Request has been canceled.
 - **Closed** – The Change Request has been closed and logged as a successful change.
 - **Closed With Failure** – The Change Request has been closed and logged as a failed change.
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Change Levels

Change Levels are defined by the Risk & Impact Assessment for the purpose of establishing the timeline for a change. These requirements are the minimum for each of the defined levels. The Change Requester may wish to plan additional lead times, documentation or reviews to ensure that targets can be met and planned implementation schedules can be achieved.

Level 1 Changes

A Level 1 Change has minimal or no associated risk and impact and does not require a significant effort to implement and/or back out. Level 1 Changes should be submitted for approval at least one business day prior to the proposed implementation date. Level 1 changes are vetted by the Change Manager for inclusion in the Change Schedule.

Level 2 Changes

A Level 2 Change has low risk and impact and does not require a significant effort to implement and/or back out. Level 2 Changes should be submitted for approval at least one business day prior to the proposed implementation date. Level 2 changes are vetted by the Change Manager for inclusion in the Change Schedule.

Level 3 Changes

A Level 3 Change has moderate risk and impact and may require a significant effort to implement and/or back out. Level 3 Changes should be submitted for approval at least five business days prior to the proposed implementation date. Level 3 changes are vetted by the Change Advisory Board for inclusion in the Change Schedule.

Level 4 Changes

A Level 4 Change has high risk and impact, the install time is lengthy, and back out is very difficult or impossible. Level 4 Changes should be submitted for approval at least twenty business day prior to the proposed implementation date. Level 4 changes are vetted by the Change Advisory Board for inclusion in the Change Schedule.

Risk & Impact Assessment

The following matrix is used to determine the Change Level and is designed to assist in determining the change schedule.

Level 1: Minimal risk and impact < 20 points

Level 2: Low risk and impact >21 points & < 30 points

Level 3: Moderate risk and impact >= 30 points & <= 45 points

Level 4: High risk and impact > 45 points

Factor	Low	Medium	High
How many steps will the change require?	<5 steps (3 points)	5-10 (6 points)	>10 (9 points)
How many times has the implementation team performed changes similar to this?	> 10 times (3 points)	3-10 times (6 points)	<3 times (9 points)
Was this change tested on a test system?	Yes (1 point)		No (3 points)
Are any other units involved in making this change or are there any related changes involving different activities?	No (0 points)		Yes (6 points)
What is the profile of the system undergoing this change or maintenance?	Departmental/ local (4 points)	Multi-school/ multi-dept (8 points)	Enterprise/ university-wide (12 points)
How long will there be a service disruption?	< 5 minutes (2 points)	< 1 hour (4 points)	> 1 hour (6 points)
Can this change potentially affect the availability, integrity and security of other IT systems?	No (0 points)		Yes (6 points)
Does this change reduce the security posture of the system, keeping in mind transmission, storage and access to category 1 or 2 data?	No (0 points)		Yes (9 points)
In the worst case scenario, how long would it take to back out of the change and restore the affected systems to previous settings if the change is not successful?	< 1 hour (3 points)	> 1 hour, < 1 day (6 points)	> 1 day (9 points)
Is this change occurring during a scheduled maintenance window?	Yes (1 point)		No (3 points)
When will this change occur? (*Peak dates include registration periods, start and end of the semester, parking permit sales, grant submission and deadlines, etc.)	Non-business hours on non-peak* dates (1 point)	Business hours on non-peak* dates (2 points)	Anytime on peak* dates (3 points)

Scheduling Changes

Maintenance Windows

A regular, agreed-upon time when changes may be implemented with minimal impact on services. Maintenance windows are specific to a system or service and are usually documented in service level agreements. They should be published and accessible to stakeholders.

Lead Times for Changes

The following guidelines for submitting a Change Request state the minimum time required for planned changes to be reviewed for approval by the CAB or Change Manager. Lead times do not apply to emergency or pre-approved changes.

Business days are defined as Monday through Friday.

Emergency: No mandatory lead time except time taken to obtain Change Approver and ECAB approval

- **Level 1:** One business day
- **Level 2:** One business day
- **Level 3:** Five business days
- **Level 4:** Twenty business days

CAB Meeting Schedule

The CAB is scheduled to meet Monday's and Thursday's, during normal business operations. The format of the CAB meetings is determined by CAB members. Exceptions to the CAB meeting schedule are publicly posted.

Change Schedule

Changes approved by the CAB, or Change Manager are published to the Change Schedule.

Failed Changes

For any change that fails, the Change Requester must enter into the Change Management system the reason(s) why the change was unsuccessful. All failed changes are reviewed by the CAB. Failed changes must be resubmitted and approved by CAB before being implemented.

The following guidelines are used to determine if a change has failed:

- Expected results did not occur.
- Change negatively impacted service delivery.
- Change must be backed out.
- Change could not be completed during the scheduled time period.
- Incidents reported as a direct result of the change.

Reporting

Standard reports on change activities are available within the Change Management system. Metrics include, at minimum, the following:

- Types of changes by category
- Number of approved, rejected or rescheduled changes by type □
- Number of changes by risk/impact
- Number of failed changes
- Number of successful changes
- Number of canceled changes
- Number of postponed changes

Archived Change Requests

All Change Requests that have been closed, canceled, or rejected are archived in the Change Management System. They will remain visible in accordance with Records Retention policies.