

Software Test Plan (STP)

Project: Software Change Management System (SCMS)

Version: 1.0

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Date: September 11, 2025

Status: Draft

1. Introduction

Purpose:

This document outlines the test plan for the Software Change Management System (SCMS) v1.0. It defines the objectives, scope, strategy, resources, schedule, and responsibilities for testing to ensure the system meets all functional and non-functional requirements as per the SRS.

Scope:

Testing covers SCMS features:

- Change request (CR) submission
- Impact analysis
- Approval workflows
- Version control integration
- Deployment and release management
- Reporting
- Compliance

Excludes: actual code development, CI/CD pipeline execution, and third-party system internals.

References: SCMS SRS v1.0, ITIL v4 Standards, ISO/IEC 27001, SOX Compliance Guidelines

Definitions:

- SCMS: Software Change Management System
- CR: Change Request
- CAB: Change Advisory Board
- CI/CD: Continuous Integration/Continuous Deployment
- RFC: Request for Change
- RBAC: Role-Based Access Control
- VCS: Version Control System

2. Test Items

- Change Request Management Module
- Impact Analysis Module
- Approval Workflow Module

- Version Control Integration Module
- Deployment and Release Management Module
- Reporting and Analytics Module
- Notification Module
- System Administration Module

3. Features to be Tested

Mapped to SRS requirement IDs:

- SCMS-F-001: Submit CR with technical details and attachments
- SCMS-F-002: Generate unique CR identifiers (CR-YYYY-NNNN)
- SCMS-F-003: Categorize changes (Emergency, Standard, Normal)
- SCMS-F-004: Automated dependency analysis
- SCMS-F-005: Conflict detection for pending CRs
- SCMS-F-006: Risk scoring for changes
- SCMS-F-007: Configurable approval workflows
- SCMS-F-008: Approval actions with comments
- SCMS-F-009: Emergency change procedures
- SCMS-F-010: Git commit linking to CRs
- SCMS-F-011: Auto-update CR status on Git merges
- SCMS-F-012: Traceability from CR to deployment
- SCMS-F-013: CI/CD pipeline integration
- SCMS-F-014: Automated rollback procedures
- SCMS-F-015: Release window coordination
- SCMS-F-016: Real-time dashboards
- SCMS-F-017: Export compliance reports
- SCMS-F-018: Track CR implementation status
- SCMS-F-019: Validate CI test coverage per CR
- SCMS-F-020: Coordinate CAB meetings
- SCMS-F-021: Configure CI/CD integration settings
- SCMS-F-022: Manage Git webhooks
- SCMS-F-023: Manage infrastructure configuration metadata
- SCMS-F-024: Configure notification channels
- SCMS-F-025: Validate deployment health
- SCMS-F-026: Generate deployment reports
- SCMS-F-027: Trigger pipeline builds from CR/release page
- SCMS-F-028: Ensure 99.5% uptime
- SCMS-F-029: Ensure 2-second response time for 95% of actions
- SCMS-F-030: Support 1000 concurrent users
- SCMS-F-031: AES-256 encryption at rest, TLS 1.3 in transit
- SCMS-F-032: WCAG 2.1 AA accessibility compliance
- SCMS-F-033: Archive logs for 7 years
- SCMS-F-034: $RTO \leq 1$ hour, $RPO \leq 15$ minutes
- SCMS-F-035: Zero-downtime upgrades
- SCMS-F-036: Export audit logs in CSV/PDF
- SCMS-SR-001: TLS 1.3 for network communications

- SCMS-SR-002: MFA for privileged roles
- SCMS-SR-003: Account lockout after 5 failed attempts
- SCMS-SR-004: Comprehensive audit logging
- SCMS-SR-005: Regular vulnerability scanning
- SCMS-SR-006: Secure token authentication for integrations
- SCMS-SR-007: Immutable audit logs with RBAC

4. Features Not to be Tested

- Git/CI/CD pipeline internals
- Third-party issue trackers (Jira, Azure Boards)
- Notification services (Slack, Teams, SMTP) internals
- Hardware-level configurations beyond API integrations

5. Test Approach / Strategy

Levels:

- Unit tests
- Integration tests (SCMS ↔ Git, CI/CD, notifications)
- System tests (end-to-end workflows)
- Acceptance tests (UAT with stakeholders)

Types:

- Functional testing
- Regression testing
- Performance testing
- Security testing
- Usability testing

Entry Criteria: Stable build, test data, environment configured.

Exit Criteria: 100% test cases executed, 0 critical defects, acceptance criteria met.

5.1 Security Validation

- Verify TLS 1.3
- Test MFA for privileged roles
- Validate account lockout
- Ensure audit logs are immutable
- Penetration testing (webhooks, APIs)
- Vulnerability scanning

6. Test Environment

Hardware: Web servers + client devices

Software: SCMS v1.0, PostgreSQL/MySQL, REST/GraphQL APIs, Docker

Tools: Selenium, Postman, JMeter, OWASP ZAP, Jira

Test Data: Dummy CRs, accounts, Git repos, CI/CD configs

7. Test Schedule

- TBD

8. Test Deliverables

- Test Plan(this document)
- Test Cases (≥ 50)
- Test Scripts
- Test Data
- Test Execution Logs
- Defect Reports
- Test Summary Report

9. Roles and Responsibilities

Role	Name	Responsibility
QA Lead	Manchikanti Sharvani	Prepare plan, coordinate execution
Test Engineer	K S Niharika	Design & execute test cases, log defects
Test Engineer	N Riddhi Samitha	Design & execute test cases, log defects
Developer	TBD	Support defect fixes, triage
Product Owner	Prof. Anand M S	Approve results, sign-off readiness

10. Risks and Mitigation

- **Delay in stable build** → Request early smoke builds
- **Test environment downtime** → Backup cloud VM
- **Dependency on third-party** → Use stubs/mocks
- **Incomplete test data** → Pre-generate datasets

11. Assumptions & Dependencies

- Stable Git/CI/CD/notification APIs
- Test data provided before execution
- Stakeholder availability for UAT
- Network connectivity available

12. Suspension & Resumption Criteria

Suspend if:

- Env unavailable >4 hrs
- Build blocks >30% test cases

Resume if:

- Blocking defects resolved
- Environment stabilized

13. Test Case Management & Traceability

The following **50 test cases** are mapped to the SRS requirements to ensure complete coverage.

Test Case ID	Requirement ID	Priority	Description	Expected Result
TC-F-001	SCMS-F-001	High	Submit CR with valid attachment	CR submitted, unique ID generated
TC-F-002	SCMS-F-001	High	Submit CR with invalid file (>5MB)	Submission blocked, error shown
TC-F-003	SCMS-F-002	High	Submit multiple CRs in same day	Each CR has unique ID (CR-YYYY-NNNN)
TC-F-004	SCMS-F-003	Critical	Submit Emergency CR	Immediate implementation, bypass approval

TC-F-005	SCMS-F-003	Medium	Submit CR with invalid category	Error shown, CR not created
TC-F-006	SCMS-F-004	High	Run dependency analysis	Affected modules/services listed
TC-F-007	SCMS-F-005	High	Submit overlapping CRs	Conflict warning displayed
TC-F-008	SCMS-F-006	Medium	Submit complex CR	Risk score displayed in approval
TC-F-009	SCMS-F-007	High	Configure approval workflow	CR routed correctly per rule
TC-F-010	SCMS-F-008	Critical	Approve CR without comment	Blocked until comment added
TC-F-011	SCMS-F-009	Critical	Submit Emergency CR	Immediate implementation, post-approval required
TC-F-012	SCMS-F-010	High	Commit with CR ID in message	Commit linked to CR in dashboard
TC-F-013	SCMS-F-011	High	Merge commit to main branch	CR status auto-updated to Implemented
TC-F-014	SCMS-F-012	High	Trace CR to deployment	Deployment audit trail maintained

TC-F-01 5	SCMS-F-013	High	Monitor pipeline linked to CR	Status reflected, failures notify
TC-F-01 6	SCMS-F-014	Critical	Trigger rollback	Rollback executed, state restored
TC-F-01 7	SCMS-F-015	Medium	Schedule release window	No conflicts, scheduled successfully
TC-F-01 8	SCMS-F-016	Low	View dashboard	Real-time CR metrics displayed
TC-F-01 9	SCMS-F-017	Low	Export compliance report	Report exported in PDF/CSV
TC-F-02 0	SCMS-F-018	High	Update CR status	Transition logged, dashboard updated
TC-F-02 1	SCMS-F-019	High	Verify CI test coverage	Coverage % displayed, warnings if low
TC-F-02 2	SCMS-F-021	Medium	Schedule CAB meeting	Event stored, notifications sent
TC-F-02 3	SCMS-F-022	Medium	Auditor reviews logs	Logs accessible, read-only exportable
TC-F-02 4	SCMS-F-023	High	Configure CI/CD settings	Validation succeeds, saved

TC-F-025	SCMS-F-024	High	Register Git webhook	Webhook triggers on commit
TC-F-026	SCMS-F-025	Medium	Manage infra config metadata	Changes saved with RBAC enforced
TC-F-027	SCMS-F-026	Low	Configure notification channel	Test message delivered successfully
TC-F-028	SCMS-F-027	High	Run deployment health check	Status displayed, failures escalate
TC-F-029	SCMS-F-028	Low	Generate deployment report	Report generated and exportable
TC-F-030	SCMS-F-029	High	Trigger pipeline build from CR	Build triggered, result linked

Non-Functional Test Cases (9)

Test Case ID	Requirement ID	Priority	Description	Expected Result
TC-NF-001	SCMS-NF-001	High	Monitor uptime for 24 hrs	≥99.5% uptime maintained
TC-NF-002	SCMS-NF-002	High	Load test with 20 users	95% actions ≤2s

TC-NF-003	SCMS-NF-003	High	Scalability with 1000 users	System stable, response $\leq 2s$
TC-NF-004	SCMS-NF-004	High	Verify encryption at rest & transit	AES-256 + TLS 1.3 enforced
TC-NF-005	SCMS-NF-005	Medium	Accessibility test with screen reader	WCAG 2.1 AA compliant
TC-NF-006	SCMS-NF-006	Medium	Retrieve 7-year-old log	Data retrievable, integrity maintained
TC-NF-007	SCMS-NF-007	High	Simulate disaster recovery	RTO $\leq 1h$, RPO $\leq 15m$
TC-NF-008	SCMS-NF-008	Medium	Blue-green deployment	Zero downtime during switch
TC-NF-009	SCMS-NF-009	Medium	Export audit logs	Logs exported correctly

Security Test Cases (7)

Test Case ID	Requirement ID	Priority	Description	Expected Result
TC-SR-001	SCMS-SR-001	High	Test TLS protocol support	Only TLS 1.3 accepted

TC-SR-002	SCMS-SR-002	High	Login with/without MFA	MFA required for privileged roles
TC-SR-003	SCMS-SR-003	High	Attempt 5 failed logins	Account locked after 5 tries
TC-SR-004	SCMS-SR-004	High	Submit CR and check logs	Complete, immutable audit log created
TC-SR-005	SCMS-SR-005	Medium	Run vulnerability scan	Issues detected, logged
TC-SR-006	SCMS-SR-006	High	Send request without token	Unauthorized requests blocked
TC-SR-007	SCMS-SR-007	High	Auditor attempts to modify logs	Modification blocked, read-only access

Regression Test Cases (5)

Test Case ID	Source Requirement	Priority	Description	Expected Result
TC-REG-001	SCMS-F-001	Medium	Re-test CR submission	Same result as TC-F-001
TC-REG-002	SCMS-F-007	Medium	Re-test workflow routing	CR routed correctly

TC-REG-003	SCMS-F-010	High	Re-test Git integration	Commit linked correctly
TC-REG-004	SCMS-F-014	High	Re-test rollback procedure	Rollback works, state restored
TC-REG-005	SCMS-SR-002	High	Re-test MFA enforcement	MFA enforced, no bypass

14. Test Metrics & Reporting

Metrics:

- % test cases executed
- % passed/failed
- Defect density
- Defect aging
- Requirement coverage

Reports:

- Daily execution status
- Final summary report

15. Approvals

Role	Name	Signature / Date
QA Lead	Manchikanti Sharvani	Sharvani(11-09-25)
Test Engineer	K S Niharika	Niharika(11-09-25)
Test Engineer	N Riddhi Samitha	Riddhi(11-09-25)
Developer	TBD	-
Product Owner	Prof. Anand M S	-