

MO-001

[Go to C.1 Mission Objectives](#)

Statement

Crucible SHALL create [Infrastructure Environments](#) that satisfy the applicable [acceptance criteria](#) for deployment time, [Reproducibility](#), security, and compliance.

Source Statement

Crucible SHALL enable rapid creation of repeatable, compliant, and secure infrastructure environments.

Source

Crucible System Requirements Specification, Version 1.1 Draft, Section 2, Mission Objectives, MO-001.

Assessment

The source statement preserves the approved mission objective but does not express a fully testable requirement.

The following Specification Discipline and Authoring findings apply:

- **Enable** is a weak verb that describes facilitation rather than the behavior that [Crucible](#) performs
- **Rapid** does not identify a duration, threshold, baseline, or comparison method
- **Repeatable** does not identify the controlled inputs or comparison criteria required to determine equivalence
- **Compliant** does not identify the applicable [Compliance Baseline](#) or acceptance criteria
- **Secure** does not identify the applicable [Security Baseline](#) or required security controls

The normalized Statement replaces the weak verb and undefined qualifiers with a direct action and references to defined acceptance criteria.

Rationale

Organizations often require substantial manual effort to construct [Infrastructure Environments](#), apply security configurations, perform [Compliance Assessments](#), and reproduce the resulting environments.

Crucible reduces this effort by coordinating:

- **Declarative Descriptions**
- Reusable **Baselines**
- **Baseline Composition**
- **Image Layers**
- **Infrastructure Baselines**
- **Machine Image** construction
- **Infrastructure Deployment**
- **Provisioning**
- **Compliance Assessment**
- **Evidence** generation

The **Security Plane** governs the application and verification of security controls throughout these activities.

Controlled and repeatable workflows support **Reproducibility**, security control application, compliance evaluation, and consistent environment creation across connected and disconnected operational contexts.

Applies To

This requirement applies to:

- **Crucible**
- **Crucible Descriptions**
- **Baseline Composition**
- **Baselines**
- **Image Layers**
- **Infrastructure Baselines**
- **Machine Image** construction
- **Infrastructure Deployment**
- **Provisioning**
- **Compliance Assessment**
- **Security Plane**
- **Connected Environments**
- **Disconnected Environments**
- **Air-Gapped Environments**
- CI/CD pipeline integration
- Operational lifecycle management

Verification

Verification SHALL confirm that **Crucible** creates an **Infrastructure Environment** from controlled **Declarative Descriptions** and reusable **Baselines**.

Verification SHALL confirm that environment creation satisfies the deployment time acceptance

criteria defined for the applicable test.

Verification SHALL confirm that repeated execution with equivalent [Controlled Inputs](#) produces equivalent [Infrastructure Environments](#) according to defined comparison criteria.

Verification SHALL confirm that the workflow applies the security controls required by the selected [Security Baseline](#).

Verification SHALL confirm that the resulting environment satisfies the selected [Compliance Baseline](#).

Verification SHALL confirm that each identified [Compliance Finding](#) is recorded in the applicable compliance output.

Verification may include:

- [Baseline Composition](#) tests
- [Machine Image](#) build tests
- [Infrastructure Deployment](#) tests
- Compliance scan tests
- [Evidence](#) generation tests
- Repeated build comparisons
- Repeated deployment comparisons
- Connected and disconnected workflow demonstrations
- End-to-end CI/CD pipeline tests

The verification record SHALL identify:

- The [Controlled Inputs](#)
- The applicable deployment time acceptance criteria
- The environment comparison criteria
- The selected [Security Baseline](#)
- The selected [Compliance Baseline](#)
- The observed results
- The generated [Evidence](#)

Traceability

This requirement supports:

- FR-CFG-001 through FR-CFG-005
- FR-IMG-001 through FR-IMG-006
- FR-DEP-001 through FR-DEP-007
- FR-AG-001 through FR-AG-005
- FR-COMP-001 through FR-COMP-010
- FR-DSO-001 through FR-DSO-006
- FR-BAS-001 through FR-BAS-004
- FR-DEPC-001 through FR-DEPC-005
- KVP-001
- KVP-003
- KVP-004
- KVP-005

This requirement also relates to:

- [5. Descriptions, Composition, and Baselines](#)
- [6. Machine Images and Image Layers](#)
- [7. Infrastructure and Deployment](#)
- [8. Dependencies and Air-Gap Operations](#)
- [9. Compliance and Security](#)
- [10. Reproducibility, Provenance, and Traceability](#)

ConOps Relationship

The Crucible Concept of Operations describes Phase 1 as a command-line utility invoked through CI/CD pipeline steps.

The Phase 1 workflow:

1. Composes [Image Layers](#) and [Infrastructure Baselines](#)
2. Builds and hardens [Machine Images](#)
3. Captures dependencies and [Compliance Findings](#)
4. Performs [Infrastructure Deployment](#)
5. Produces supporting [Evidence](#)

This workflow provides the operational realization of environment creation, [Reproducibility](#), security control application, and compliance evaluation.

Delivery Phase

Phase 1 and subsequent phases

Implementation Status

Not Assessed

Implementation status requires verification against the current Crucible implementation and applicable [acceptance criteria](#).

Requirement Status

Draft

The source System Requirements Specification identifies Version 1.1 as a draft.

Notes for Editors

This requirement page should retain the stable requirement identifier `MO-001`.

Changes to the Statement SHALL preserve the approved intent of the source requirement.

Material changes should receive review and should update the related Traceability, verification criteria, and source records.

The Source Statement should preserve the original wording from the controlling System Requirements Specification.

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