

MO-001

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Statement

Crucible SHALL:

1. Create an infrastructure environment from controlled [declarative inputs](#) and reusable baselines within the applicable deployment-time criteria
2. Reproduce an equivalent infrastructure environment from equivalent controlled inputs within defined comparison criteria
3. Apply the security controls required by the selected security baseline
4. Satisfy the acceptance criteria defined by the selected compliance baseline

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 expresses the approved mission objective but does not provide a fully testable requirement formulation.

The following Specification Discipline and Authoring findings apply:

- The verb **enable** identifies facilitation rather than the behavior Crucible performs
- The qualifier **rapid** does not identify a duration, threshold, baseline, or comparison method
- The terms **repeatable**, **compliant**, and **secure** identify separate outcomes that require independently defined criteria
- The source statement combines multiple independently verifiable obligations

The normalized Statement separates the obligations while preserving the intent of the source statement.

Rationale

Organizations often require substantial manual effort to construct infrastructure environments, apply security configurations, validate compliance, and reproduce the resulting environments.

Crucible reduces this effort by coordinating:

- [Declarative Descriptions](#)
- Reusable baselines
- [Machine Image](#) construction
- [Infrastructure as Code \(IaC\)](#)
- Infrastructure deployment
- Compliance assessment
- [Evidence](#) generation
- Controlled and repeatable workflows

The resulting process supports [Reproducibility](#), security control application, and compliance evaluation across connected and disconnected operational environments.

Applies To

This requirement applies to:

- [Crucible Descriptions](#)
- [Baseline composition](#)
- Image-layer baselines
- Infrastructure baselines
- [Machine Image](#) construction
- [Infrastructure deployment](#)
- [Provisioning](#)
- [Compliance assessment](#)
- [Connected Environments](#)
- [Disconnected Environments](#)
- [Air-Gapped Environments](#)
- CI/CD pipeline integration
- [Operational lifecycle management](#)

Verification

1. Verification SHALL confirm that Crucible creates an infrastructure environment from controlled [declarative inputs](#) and reusable baselines within the deployment-time criteria defined for the applicable test.
2. Verification SHALL confirm that repeated execution with equivalent controlled inputs produces equivalent infrastructure environments according to defined comparison criteria.
3. Verification SHALL confirm that the creation workflow applies the security controls required by the selected security baseline.

4. Verification SHALL confirm that the resulting environment satisfies the acceptance criteria defined by the selected compliance baseline.

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 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-layer and infrastructure baselines
2. Builds and hardens [Machine Images](#)
3. Captures dependencies and compliance findings
4. Deploys infrastructure
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 the 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 wording should remain in the Source Statement section unless the controlling System Requirements Specification changes.

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