

FR-CFG-003 — Reusable Infrastructure Blueprints

[Go to Crucible Configuration Management Requirements](#)

Statement

Crucible SHALL apply the same approved [Infrastructure Blueprint](#) to two or more [Infrastructure Environments](#) without modifying the approved blueprint content.

Source Statement

The system SHALL support reusable infrastructure blueprints.

Source

Crucible System Requirements Specification, Version 1.1 Draft, Functional Requirements, Configuration Management, FR-CFG-003.

Assessment

The source statement expresses the approved functional intent but does not provide all information required for deterministic verification.

The following Specification Discipline and Authoring findings apply:

- **The system** does not use the defined system name
- **Support** is a weak verb that does not identify the behavior [Crucible](#) performs
- **Infrastructure blueprint** does not identify the blueprint content, representation, approval state, or relationship to other configuration artifacts
- **Reusable** does not identify the minimum number of applications required to demonstrate reuse
- The source statement does not distinguish reuse of an approved blueprint from modification of that blueprint
- The source statement does not identify whether environment-specific values may vary between applications
- The source statement does not identify how each resulting environment records the blueprint identifier and revision used
- The source statement does not define the acceptance criteria used to determine whether each application produced an acceptable environment

The normalized Statement replaces the weak verb with **apply**, defines reuse as application to two or more Infrastructure Environments, and prohibits reuse from modifying the approved blueprint

content.

Environment-specific parameters, blueprint identification, revision control, validation, approval, and traceability require evaluation against the remaining Configuration Management requirements before allocation to this requirement or creation of derived requirements.

Rationale

An [Infrastructure Blueprint](#) captures reusable infrastructure intent for a defined class of environments.

Without a reusable blueprint, an organization may recreate similar configurations for each deployment. Repeated recreation increases engineering effort, produces inconsistent configurations, and weakens [Reproducibility](#) and [Traceability](#).

[Crucible](#) applies an approved Infrastructure Blueprint to multiple Infrastructure Environments while preserving the approved blueprint content.

Reuse allows each environment to share common infrastructure intent while separately recording environment-specific inputs, parameters, and resulting state.

This approach preserves the distinction between:

- Reusing an approved Infrastructure Blueprint
- Applying environment-specific parameters
- Creating a new blueprint revision
- Recording environment-specific state
- Recording the result of each blueprint application

Reusable Infrastructure Blueprints support:

- Consistent environment creation
- Reduced configuration duplication
- Reduced engineering effort
- Controlled variation
- Configuration comparison
- [Reproducibility](#)
- [Provenance](#)
- [Auditability](#)
- [Traceability](#)

Applies To

This requirement applies to:

- [Crucible](#)
- [Infrastructure Blueprints](#)
- [Infrastructure Environments](#)
- [Infrastructure Configurations](#)
- [Declarative Configuration](#)

- [Baselines](#)
- [Infrastructure Baselines](#)
- Blueprint reuse
- Blueprint application
- Approved blueprint content
- Environment-specific parameters
- Environment-specific state
- [Configuration Management](#)
- [Provenance](#)
- [Auditability](#)
- [Reproducibility](#)
- [Traceability](#)

Verification

1. Verification SHALL confirm that the tested [Infrastructure Blueprint](#) has an approved content state
2. Verification SHALL confirm that [Crucible](#) applies the same approved Infrastructure Blueprint to at least two [Infrastructure Environments](#)
3. Verification SHALL confirm that each tested application uses equivalent approved blueprint content
4. Verification SHALL confirm that applying the Infrastructure Blueprint does not modify the approved blueprint content
5. Verification SHALL confirm that environment-specific inputs and parameters remain distinguishable from the approved blueprint content
6. Verification SHALL confirm that each resulting Infrastructure Environment satisfies the applicable acceptance criteria
7. Verification SHALL confirm that each environment record identifies the Infrastructure Blueprint used
8. Verification SHALL confirm that each application record preserves the applicable [Provenance](#) and [Traceability](#)

Verification may include:

- Blueprint content inspection
- Blueprint approval inspection
- Repeated blueprint application tests
- Multi-environment deployment tests
- Blueprint content comparison
- Environment-specific parameter inspection
- Resulting environment comparison
- Acceptance criteria evaluation
- Application record inspection
- End-to-end [CI/CD Pipeline](#) tests

The verification record SHALL identify:

1. The tested Infrastructure Blueprint
2. The approved blueprint content
3. The blueprint approval state

4. The tested Infrastructure Environments
5. The environment-specific inputs
6. The environment-specific parameters
7. The blueprint content comparison result
8. The applicable acceptance criteria
9. The observed environment results
10. The applicable [Provenance](#)
11. The generated [Evidence](#)

Outgoing Traceability

This requirement refines:

- [MO-001 — Repeatable, Compliant, and Secure Infrastructure Environments](#)
- [MO-002 — Reduced Platform Deployment Timelines](#)
- [MO-003 — Platform Independent Deployment](#)
- [MO-005 — Reusable and Version-Controlled Infrastructure](#)
- [MO-006 — Infrastructure Lifecycle Management](#)

This requirement operates within the conditions established by:

- [OR-001 — Operational Roles](#)
- [OR-002 — Deployment Environments](#)
- [OR-003 — Classified and Unclassified Environments](#)
- [OR-004 — Concurrent Environment Management](#)
- [OR-005 — Distributed Environment Management](#)

This requirement also relates to:

- [5. Descriptions, Composition, and Baselines](#)
- [7. Infrastructure and Deployment](#)
- [10. Reproducibility, Provenance, and Traceability](#)

Referenced By

The wiki Backlinks function provides the current list of pages that reference FR-CFG-003.

Incoming traceability should be derived dynamically from backlinks rather than maintained as a duplicate manual list.

Backlinks identify incoming references but do not define the semantics of each relationship. Referencing pages should identify whether the relationship represents realization, refinement, verification, dependency, or another defined traceability relationship.

ConOps Relationship

The Crucible Concept of Operations describes the composition and reuse of versioned infrastructure

content within a [CI/CD Pipeline](#) workspace.

The Phase 1 workflow may use a reusable Infrastructure Blueprint to:

- Identify common infrastructure intent
- Select applicable [Baselines](#)
- Supply common deployment configuration
- Apply environment-specific parameters
- Perform [Infrastructure Deployment](#)
- Record the blueprint associated with each environment
- Preserve deployment results and [Evidence](#)

This workflow permits multiple environments to use the same approved blueprint while keeping environment-specific inputs and resulting state separate from the blueprint content.

Delivery Phase

Phase 1 and subsequent phases

Implementation Status

Not Assessed

Implementation status requires verification that [Crucible](#) applies the same approved Infrastructure Blueprint to two or more Infrastructure Environments without modifying the approved blueprint content.

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 FR-CFG-003.

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

Material changes should receive review and should update the related outbound traceability, verification criteria, blueprint records, acceptance criteria, and source records.

The Source Statement should preserve the original wording from the controlling System

Requirements Specification.

The Configuration Management completeness review should evaluate whether blueprint identification, revision control, validation, approval, environment-specific parameterization, and environment traceability are allocated to FR-CFG-004 or FR-CFG-005 or require derived requirements.

Incoming traceability should use the wiki Backlinks function rather than a manually maintained list.

To reference this requirement Statement from another wiki page, insert:

```
{{section>dido:02-crusible:99-annexes:annex-c-requirements:03-functional-requirements:03-01-configuration-management:fr-cfg-003#Statement&noheader&nofooter&noeditbtn}}
```

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