

NOD-004 — Control the Node Lifecycle

[Go to Node Requirements](#)

Statement

The [DIDO-TE](#) SHALL control the lifecycle of each [Node](#) participating in a [Test Environment](#).

Derived From

- [\[DTE5\] DIDO-TE Requirements Register](#), source requirement identifier and obligation to be assigned
- [\[DTE6\] Structured Information Processing Reference Architecture \(SIP-RA\)](#)
- [\[DTE7\] Federated Data Interpretation Systems Reference Architecture \(FDIS-RA\)](#)

Rationale

Node lifecycle control governs the states through which a Node passes and the operations that move the Node between those states.

A Node may require initialization, startup, readiness confirmation, activation, suspension, resumption, shutdown, restart, recovery, or termination during the preparation and operation of a Test Environment. The applicable lifecycle states and permitted transitions depend on the Node Definition, Node Implementation, Node Configuration, Test Definition, and Test Environment.

Each lifecycle operation identifies the target Node, current state, requested state, applicable preconditions, authorized procedure, responsible authority, operation time, resulting state, findings, exceptions, and required recovery action.

Controlled lifecycle transitions prevent a Node from participating in Test Execution while it occupies an unknown, invalid, unauthorized, failed, or otherwise unsuitable state.

Lifecycle records support synchronization among Nodes, diagnosis of failures, reconstruction of Test Execution, evaluation of Test Results, and production of Evidence.

Applies To

- [DIDO-TE](#)
- [Node](#)
- [Node Definition](#)
- [Node Implementation](#)
- [Node Configuration](#)
- [Test Definition](#)

- [Test Environment](#)
- [Test Execution](#)
- [Test Result](#)
- [Evidence](#)
- [Traceability](#)

Verification

Verification confirms that:

- The DIDO-TE uniquely identifies each Node subject to lifecycle control.
- The applicable Node Definition or Node Implementation identifies the lifecycle states and transitions supported by the Node.
- The DIDO-TE identifies the current lifecycle state of each Node.
- The DIDO-TE identifies the lifecycle state required for each Node before the Node participates in Test Execution.
- The DIDO-TE uses identified and authorized lifecycle procedures.
- Each lifecycle operation identifies its initiating authority and target Node.
- Each lifecycle operation identifies its source state, requested transition, and intended resulting state.
- Each lifecycle operation verifies its applicable preconditions before initiating the transition.
- The DIDO-TE permits only defined and authorized lifecycle transitions.
- The DIDO-TE performs lifecycle operations in the required sequence.
- The DIDO-TE coordinates dependent lifecycle operations among applicable Nodes and Test Resources.
- The DIDO-TE verifies the completion and outcome of each material lifecycle operation.
- The DIDO-TE confirms the actual Node state after each lifecycle transition.
- The DIDO-TE detects an unsuccessful, incomplete, interrupted, duplicate, conflicting, unauthorized, or out-of-sequence lifecycle operation.
- The DIDO-TE detects a difference between the requested and actual Node state.
- The DIDO-TE prevents a Node in an unknown, invalid, unauthorized, failed, or otherwise unsuitable state from participating in Test Execution.
- The DIDO-TE detects an unexpected Node state change during Test Execution.
- The DIDO-TE identifies the effect of an unexpected Node state change on the applicable Test Execution and Test Results.
- A failed lifecycle operation leaves the Node in a known state or identifies the resulting state and required recovery action.
- A Node restart or recovery operation preserves or re-establishes the required Node Configuration and Node Bindings.
- A material change to the Node Definition, Node Implementation, Node Configuration, lifecycle procedure, or Test Environment triggers applicable revalidation.
- The DIDO-TE records the target Node, initiating authority, lifecycle procedure, source state, requested state, operations, timing, actual resulting state, findings, exceptions, and recovery actions.
- The DIDO-TE maintains Traceability among the Node Definition, Node Implementation, Node Configuration, lifecycle procedure, lifecycle operations, Node states, Test Environment, Test Execution, Test Results, findings, exceptions, and resulting Evidence.
- An incorrect, incomplete, unsuccessful, unauthorized, ambiguous, or untraceable lifecycle operation constitutes nonconformance with this requirement.

Verification includes:

- Inspection of the lifecycle states and transitions defined for each applicable Node
- Inspection of authorized lifecycle procedures and responsible authorities
- Observation of Node initialization and startup
- Observation of Node readiness determination
- Observation of an authorized transition between supported Node states
- Observation of Node shutdown
- Observation of Node restart or recovery
- Confirmation that a Node in an unsuitable state cannot participate in Test Execution
- A negative assessment involving an undefined or unauthorized lifecycle transition
- A negative assessment involving an interrupted lifecycle operation
- A negative assessment involving a difference between the requested and actual Node state
- Confirmation that an unexpected state change during Test Execution produces a detectable condition
- Confirmation that a failed transition leaves the Node in a known state or produces a recovery action
- Inspection of lifecycle records, findings, exceptions, Evidence, and Traceability

Contents

Referenced By

- [NOD-004a — Establish the Initial Node State](#)
- [NOD-004b — Start the Node](#)
- [NOD-004c — Confirm Node Readiness](#)
- [NOD-004d — Transition the Node State](#)
- [NOD-004e — Stop the Node](#)
- [NOD-004f — Restart or Recover the Node](#)
- [NOD-004g — Handle a Node Lifecycle Exception](#)
- [NOD-004h — Record Node Lifecycle Activity](#)

Related Architecture Sections

- Add links to the architecture sections governing Node lifecycle states, lifecycle transitions, Node Configuration, Node Bindings, Test Environment control, Test Execution, recovery, Evidence, and Traceability.

Delivery Phase

☐ Assign the applicable delivery phase.

Requirement Status

Draft

Statement Reference

Use the following syntax to reference this requirement's Statement section from another DokuWiki page:

```
{{section>dido:03-dido-te:99-annexes:annex-c-requirements:03-node-requirements:nod-004-control-the-node-lifecycle:start#Statement&noheader&nofooter&noeditbtn}}
```

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Last update: 2026/08/17 14:20

