

NOD-001d — Define Node Dependencies

[Go to NOD-001 — Define a Node](#)

Statement

The [DIDO-TE](#) SHALL define each [Dependency](#) required by a [Node](#) within the applicable [Test Environment](#).

Derived From

- [NOD-001 — Define a Node](#)
- [\[DTE5\] 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

A Node may depend on other Nodes, services, software components, libraries, data, configurations, credentials, network facilities, time sources, storage, hardware, infrastructure, or external systems. These Dependencies affect whether the Node starts, executes, communicates, produces valid output, recovers from failure, and satisfies its assigned role.

A Dependency definition identifies the required capability or resource and the conditions governing its use. It also distinguishes mandatory Dependencies from optional Dependencies and identifies approved substitutes, compatibility constraints, availability requirements, and failure behaviour.

Explicit Dependency definitions permit the DIDO-TE to provision complete Test Environments, detect missing or incompatible Dependencies, reproduce Node execution, inject Dependency failures, and determine whether an observed failure originated in the Node or one of its Dependencies.

Applies To

- [Node](#)
- [Dependency](#)
- [Test Environment](#)
- [Test Definition](#)
- [Test Resource](#)
- [Configuration](#)
- [Constraint](#)
- [Evidence](#)

Verification

Verification confirms that:

- Each Node Dependency has a unique identity.
- The Node Definition identifies the purpose of each Dependency.
- The Node Definition identifies each Dependency as mandatory, conditional, or optional.
- The Node Definition identifies the Node role, function, interface, lifecycle state, or behaviour requiring the Dependency.
- The Node Definition identifies the required capability, service, artifact, information, or resource supplied by the Dependency.
- The Node Definition identifies the source, provider, owner, or authoritative specification associated with the Dependency.
- The Node Definition identifies the required version, revision, variant, configuration, interface, protocol, or compatibility characteristics.
- The Node Definition identifies constraints governing availability, capacity, performance, timing, location, security, integrity, and access.
- The Node Definition identifies the lifecycle period during which the Dependency must remain available.
- The Node Definition identifies Dependencies required during provisioning, configuration, initialisation, execution, observation, shutdown, recovery, and restoration.
- The Node Definition identifies relationships and ordering constraints among Dependencies.
- The Node Definition identifies each transitive Dependency material to provisioning or Test Execution.
- The Node Definition identifies permitted substitutes, replicas, test doubles, simulators, emulators, or alternative providers.
- Each permitted substitute has defined equivalence or acceptance criteria.
- The Node Definition identifies expected Node behaviour when a Dependency is unavailable, degraded, incompatible, delayed, altered, or returns an error.
- The Node Definition identifies Dependencies located outside the control boundary of the DIDO-TE.
- The Node Definition identifies the observations and controls applied to each externally controlled Dependency.
- The DIDO-TE detects a missing, unavailable, incompatible, incorrectly configured, or altered mandatory Dependency.
- The DIDO-TE verifies the identity, version, configuration, and integrity of each mandatory Dependency before its use.
- The DIDO-TE records the actual Dependencies and substitutes used during each applicable Test Execution.
- The DIDO-TE distinguishes a Dependency failure from a failure or nonconformance of the Node.
- The DIDO-TE maintains [Traceability](#) among each Dependency, its provider or source, the dependent Node, the Node Definition, the Test Environment, the Test Definition, the Test Execution, and resulting Evidence.
- An undefined, missing, incompatible, unverified, incorrectly substituted, or untraceable mandatory Dependency constitutes nonconformance with this requirement.

Verification includes:

- Inspection of each Node Dependency definition
- Inspection of Dependency identities, classifications, sources, versions, configurations,

constraints, and compatibility criteria

- Inspection of Dependency relationships and ordering constraints
- Confirmation that mandatory, conditional, and optional Dependencies remain distinguishable
- Confirmation that transitive Dependencies material to Test Execution are identified
- Verification of each mandatory Dependency before Node execution
- Testing with an available and compatible Dependency
- A negative assessment involving a missing or unavailable mandatory Dependency
- A negative assessment involving an incompatible Dependency version or configuration
- A negative assessment involving an unapproved or inequivalent substitute
- Testing of the Node's specified behaviour during Dependency degradation or failure
- Confirmation that the DIDO-TE distinguishes Dependency failure from Node behaviour
- Inspection of recorded Dependency identities, substitutions, Evidence, and Traceability

Referenced By

- [NOD-002c — Resolve Node Dependencies](#)

Related Architecture Sections

- Add links to the architecture sections governing Dependency management, provisioning, configuration, Test Environment composition, fault injection, 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-001-define-a-node:nod-001d-define-node-dependencies#Statement&noheader&nofooter&noeditbtn}}}
```

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