NOD-005 — Execute a Node

Go to Node Requirements

Statement

The DIDO-TE SHALL control the execution of each Node participating in Test Execution.

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 execution governs the operation of a Node while it performs its assigned role in Test Execution.

The applicable Node Definition, Node Implementation, Node Configuration, and Test Definition determine the authorized Node behavior, execution parameters, Test Inputs, Node Bindings, resource constraints, operating conditions, and expected outputs.

Node lifecycle control establishes and maintains the Node state required for execution. Node execution control governs the Node activity performed within that state. A ready Node does not participate in Test Execution until the DIDO-TE authorizes and initiates its execution.

Controlled Node execution coordinates Node activity with other Nodes and Test Resources, supplies authorized Test Inputs, observes behavior and outputs, detects deviations, handles execution exceptions, and records the resulting activity.

Uncontrolled, unauthorized, incorrectly sequenced, or unobservable Node execution may produce invalid Test Results, affect other Nodes, compromise Test Environment isolation, or prevent reconstruction of Test Execution.

Applies To

- DIDO-TE
- Node
- Node Definition
- Node Implementation
- Node Configuration
- Node Binding

- Test Definition
- Test Input
- Test Resource
- Test Environment
- Test Execution
- Test Execution Exception
- Test Result
- Evidence
- Traceability

Verification

Verification confirms that:

- The DIDO-TE uniquely identifies each Node subject to execution control.
- The DIDO-TE identifies the Test Execution in which each Node participates.
- The DIDO-TE identifies the Node Definition, Node Implementation, Node Configuration, and Test Definition governing each Node execution.
- The DIDO-TE confirms that the Node has a current and successful validation result before authorizing execution.
- The DIDO-TE confirms that the Node has a current and successful readiness result before authorizing execution.
- The DIDO-TE confirms that each mandatory Node Binding and Test Resource is available before initiating execution.
- The DIDO-TE authorizes each Node execution before initiating Node activity.
- Each execution authorization identifies the responsible authority, target Node, Test Execution, permitted activity, parameters, constraints, and validity period.
- The DIDO-TE prevents unauthorized, duplicate, conflicting, or out-of-sequence Node execution.
- The DIDO-TE initiates Node execution through an identified and authorized procedure.
- The DIDO-TE supplies each Test Input to the intended Node through its specified mechanism and in its required sequence.
- The DIDO-TE coordinates Node execution with applicable Nodes, Node Bindings, Dependencies, and Test Resources.
- The DIDO-TE observes the Node state, activity, interactions, resource use, and outputs during execution.
- The DIDO-TE associates each observed Node activity and output with the applicable Node and Test Execution.
- The DIDO-TE detects behavior that differs from the applicable Test Definition, Node Definition, Node Configuration, execution parameters, or authorized operating conditions.
- The DIDO-TE detects a Node that becomes unready, unavailable, degraded, unresponsive, incorrectly configured, or disconnected during execution.
- The DIDO-TE detects an unauthorized Node interaction, Test Input, output, resource use, or configuration change.
- The DIDO-TE detects an unsuccessful, incomplete, interrupted, stalled, duplicated, or timed-out Node execution.
- The DIDO-TE identifies and handles each applicable Test Execution Exception.
- The DIDO-TE suspends, resumes, terminates, isolates, restarts, or recovers the Node only through an identified and authorized procedure.
- The DIDO-TE determines the effect of a Node execution deviation or exception on affected

Nodes, Test Inputs, Test Resources, Test Results, and Evidence.
- The DIDO-TE prevents an unsuitable Node from continuing to participate in Test Execution.
- The DIDO-TE confirms the resulting Node state when Node execution ends.
- The DIDO-TE records the Node identity, Test Execution, authorization, procedure, configuration, inputs, parameters, interactions, observations, outputs, timing, resource use, state changes, findings, exceptions, actions, and resulting status.
- Repeated execution of an unchanged Node under equivalent controlled conditions produces equivalent behavior and outputs within specified tolerances.
- The DIDO-TE maintains Traceability among the Node Definition, Node Implementation, Node Configuration, Node Bindings, Test Definition, Test Inputs, Test Resources, execution authorization, Node activity, observations, outputs, exceptions, Test Results, and resulting Evidence.
- An unauthorized, uncontrolled, incomplete, incorrectly sequenced, unobservable, or untraceable Node execution constitutes nonconformance with this requirement.

Verification includes:

- Inspection of the Node identity and applicable Test Execution
- Inspection of the governing Node Definition, Node Implementation, Node Configuration, and Test Definition
- Confirmation of successful Node validation and readiness results
- Inspection of the execution authorization and responsible authority
- Observation of authorized Node execution
- Observation of Test Input delivery and Node outputs
- Observation of coordination with other Nodes, Node Bindings, Dependencies, and Test Resources
- Confirmation that unauthorized or out-of-sequence execution is prevented
- A negative assessment involving an unavailable mandatory Node Binding or Test Resource
- A negative assessment involving an unauthorized Test Input or Node interaction
- A negative assessment involving an unresponsive or degraded Node
- A negative assessment involving an interrupted or timed-out Node execution
- Confirmation that an unsuitable Node cannot continue participating in Test Execution
- Repeated execution under equivalent controlled conditions
- Inspection of execution records, findings, exceptions, Test Results, Evidence, and Traceability

Contents

Referenced By

- NOD-005a — Authorize Node Execution
- NOD-005b — Initiate Node Execution
- NOD-005c — Provide Node Inputs
- NOD-005d — Observe Node Execution
- NOD-005e — Control Node Execution
- NOD-005f — Handle a Node Execution Exception
- NOD-005g — Complete Node Execution
- NOD-005h — Record Node Execution

Related Architecture Sections

- Add links to the architecture sections governing Node execution, Node lifecycle control, Test Inputs, Test Resources, Test Execution, Test Execution Exceptions, Test Results, 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-005-execute-a-node:start#Statement&noheader&nofooter&noeditbtn}}
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