

Twin Node

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Discussion

A Twin Node specializes the [Digital Twin](#) concept for a [Node](#).

A Twin Node maintains a controlled relationship with a corresponding Node so that selected aspects of the Node's identity, [Configuration](#), state, behavior, communication, or lifecycle may be observed, represented, simulated, synchronized, or compared.

The corresponding Node may reside in the same [Test Environment](#), another Test Environment, an operational environment, a simulated environment, or an independently administered environment.

A Twin Node may obtain information from multiple eligible data sources. The applicable Configuration, communication policies, and Quality of Service controls determine which information participates in the twin relationship.

A Twin Node does not inherently possess authority to control or modify the corresponding Node. Any interaction capable of altering the corresponding Node requires an explicitly governed capability.

Definition

a [Node](#) that serves as a [Digital Twin](#) of a corresponding Node through a controlled relationship among their selected identities, configurations, states, behaviors, or exchanged data

Source

- [DIDO Reference Architecture — Digital Twin](#)
- DIDO-TE specialization of the Digital Twin concept for Nodes

Note

A Twin Node and its corresponding Node need not execute the same implementation or use the same infrastructure.

The twin relationship identifies which characteristics require correspondence and which differences are intentional. The applicable Test Definition, Configuration, and requirements establish the required degree of fidelity.

Where DDS provides communication between a Twin Node and corresponding Nodes or data sources, DDS publication, subscription, and Quality of Service policies provide realization mechanisms for the

controlled exchange of data. They do not, by themselves, define the semantic relationship between the Twin Node and its corresponding Node.

Example

A Twin Node may subscribe to state produced by an operational Node, reproduce selected behavior under controlled Test Environment conditions, and publish comparable outputs for Validation without modifying the operational Node.

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