

NET-004 — Configure Communication Characteristics

[Go to C.3.4 Virtual Network and Communication Requirements](#)

NET-004 is a non-leaf requirement group governing configuration of the [Communication Characteristics](#) associated with communication through a [Virtual Network](#).

Communication Characteristics describe aspects of information exchange that may affect the behavior of a distributed system during testing.

The DIDO-TE source material explicitly identifies communication latency, communication protocols, and [Quality of Service](#) concepts as characteristics relevant to communication among distributed Nodes.

A [Communication Parameter](#) specifies a value, condition, or constraint governing a Communication Characteristic. This requirement group therefore separates the characteristic being configured from the values or constraints used to configure that characteristic.

Communication Characteristics remain distinct from the [Network Topology](#) defined under NET-002. Network Topology establishes communication relationships among participating entities. Communication Characteristics govern how communication behaves across those relationships.

Conformance is assessed against the individual leaf requirements listed below. NET-004 does not establish a separate conformance obligation.

Requirements

Requirement ID	Requirement Title	Purpose
NET-004a	Configure Communication Latency	Configure the communication latency specified for a Virtual Network.
NET-004b	Configure Communication Protocol	Configure the communication protocol specified for a Virtual Network.
NET-004c	Configure Quality of Service	Configure the Quality of Service characteristics specified for a Virtual Network.

Contents

- [NET-004a — Configure Communication Latency](#)
- [NET-004b — Configure Communication Protocol](#)
- [NET-004c — Configure Quality of Service](#)

Source

- [\[DTE1\] U.S. Patent Application US20220237111A1](#), representation and configuration of distance, latency, and communication protocols within Virtual Networks

- [\[DTE2\] Non-Traditional BAA Submission](#), Virtual Networks and Communication
- [\[DTE9\] Distributed Immutable Data Object Reference Architecture \(DIDO-RA\)](#), DDS publish-subscribe and Quality of Service concepts

Rationale

Distributed-system behavior may depend upon the characteristics of communication among participating [Nodes](#) and other communicating entities.

A [Virtual Network](#) therefore requires the ability to represent the Communication Characteristics specified for a test independently of the physical communication infrastructure used to realize the network.

The source material explicitly identifies latency and communication protocols as configurable aspects of a Virtual Network. The DIDO Reference Architecture additionally provides Quality of Service concepts relevant to distributed communication.

These characteristics are independently configurable and independently verifiable. NET-004 therefore decomposes them into separate leaf requirements rather than combining them into a single normative Statement.

A Communication Characteristic identifies the aspect of communication being controlled. A [Communication Parameter](#) provides the value, condition, or constraint governing that characteristic.

The requirement group remains implementation-neutral. It does not require DDS, a particular network emulator, software-defined networking, middleware, or another specific communication technology.

Applies To

- [DIDO-TE](#)
- [Virtual Network](#)
- [Communication Characteristic](#)
- [Communication Parameter](#)
- [Network Topology](#)
- [Node](#)
- [Test Environment](#)
- [Test Definition](#)
- [Configuration](#)
- [Quality of Service](#)
- [DDS](#)

Traceability

- [C.3.4 Virtual Network and Communication Requirements](#)

ConOps Relationship

This requirement group governs configuration of the Communication Characteristics applied to communication through the Virtual Network.

NET-001 establishes the Virtual Network, NET-002 defines its Network Topology, and NET-003 connects participating Nodes through that network.

The subordinate NET-004 requirements configure individual characteristics of communication without prescribing the implementation mechanism used to realize those characteristics.

Delivery Phase

TBD

Requirement Status

Draft

Notes for Editors

NET-004 is a non-leaf requirement group and does not contain an independent normative Statement or Verification section.

The explicit child links under Contents remain while the subordinate requirement pages are being created and reviewed. After all child pages exist, you may remove the explicit links because the `indexmenu` automatically discovers them.

Add subordinate Communication Characteristic requirements only when the source material or an approved architectural derivation establishes an independently verifiable obligation.

Do not infer packet loss, jitter, bandwidth limitations, routing behavior, or other specific Communication Characteristics solely from references to degraded or contested communication conditions.

NET-004 governs configuration of Communication Characteristics. NET-005 separately governs reproduction of [Degraded Communication Conditions](#).

Do not prescribe DDS, a network emulator, software-defined networking, a cloud networking service, or another particular implementation technology in the subordinate requirement Statements unless an authoritative source requires that technology.

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