

Scalability

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Discussion

Scalability is a [Quality Characteristic](#) concerning the degree to which a subject maintains specified behavior as workload, size, volume, participation, complexity, or allocated resources change within defined limits.

Scalability can apply to:

- A market
- A deployment
- A [Candidate Solution](#)
- A [Distributed System](#)
- A [Node](#)
- A Qualified Node
- A [Node Set](#)
- A service
- A software component
- A data store
- A communication facility
- A governance process
- An [Execution Facility](#)
- Another subject whose workload, size, participation, complexity, or allocated resources can change

Changes relevant to Scalability can include changes to:

- Number of participants
- Number of [Users](#)
- Number of Nodes
- Number of Node Sets
- Number of Qualified Nodes
- Number of governed functions
- Number of work events
- Number of Evidence References
- Number of Compensation Claims
- Number of jurisdictions
- Number of Settlement Instructions
- Number of transactions
- Number of requests
- Number of events
- Number of providers
- Number of service instances
- Data volume
- Evidence volume

- Message volume
- Settlement-record volume
- Processing rate
- Geographic distribution
- Duration of operation
- Governance complexity
- Another characteristic established by the [Acceptance Criteria](#)

Allocated-resource changes can include changes to:

- Processor capacity
- Memory
- Storage
- Network capacity
- Number of service instances
- Number of Execution Facilities
- Number of [Deployment Targets](#)
- Number of [Operational Resources](#)
- Another allocated [Resource](#)

Scalability can identify:

- The evaluated subject
- The initial workload, size, volume, participation, complexity, or resource allocation
- The changed workload, size, volume, participation, complexity, or resource allocation
- The applicable scaling direction
- The applicable scaling method
- The applicable scaling limits
- The applicable [Test Environment](#)
- The applicable [Configuration](#)
- The characteristics required to remain within permitted limits
- The applicable measurement methods
- The applicable measurement units
- The required measurement precision
- The permitted tolerances
- The permitted degradation
- The applicable DIDO [Baseline](#)
- The applicable [Validation Criteria](#)
- The applicable Acceptance Criteria
- Its [Evidence](#)
- Its [Provenance](#)
- Its [Traceability](#)

Technical scaling can be:

- Vertical
- Horizontal
- Manual
- Automated
- Upward

- Downward
- Temporary
- Persistent

Vertical scaling changes the Resources allocated to an existing instance.

Horizontal scaling changes the number of instances participating in the evaluated operation.

In the Governed Node Service Market, Scalability supports:

- Ecosystem growth
- Expanded jurisdictional participation
- Increased provider participation
- Increased numbers of Qualified Nodes
- Increased governed work
- Larger Evidence volumes
- Increased Compensation Claim volume
- Increased Settlement Instruction volume
- Increased settlement-record volume
- Continued provider comparison
- Continued governance review

A scalable Governed Node Service Market supports increased size, volume, participation, and complexity while preserving:

- Qualification discipline
- Functional obligations
- Non-functional obligations
- Jurisdictional obligations
- Policy obligations
- Governance obligations
- Evidence continuity
- Cost attribution
- Provider comparison
- Settlement Traceability

Definition

Quality Characteristic concerning the degree to which a subject maintains specified behavior as workload, size, volume, participation, complexity, or allocated resources change within defined limits

Source

Adapted from:

- [ISO/IEC 25010:2023, Systems and software Quality Requirements and Evaluation \(SQuaRE\) — Product quality model](#)
- Financial Systems Archetype, Part 7: Governed Node Service Market
- [Quality Characteristic](#)

- [Performance Efficiency](#)
- DIDO Reference Implementation Conceptual Model
- DIDO-TE draft Requirements Register

The original shared definition described Scalability as the ability of a market or deployment to support increased numbers of participants, Nodes, governed functions, work events, Evidence References, Compensation Claims, jurisdictions, and Settlement Instructions.

This revision generalizes Scalability for use throughout the shared DIDO corpus while preserving the original Governed Node Service Market application.

Note

Scalability differs from capacity:

- Capacity identifies a maximum limit under specified conditions
- Scalability concerns behavior as workload, size, volume, participation, complexity, or allocated resources change within defined limits

Scalability differs from [Performance Efficiency](#):

- Scalability concerns changes in behavior as evaluation conditions or allocated Resources change
- Performance Efficiency concerns performance relative to Resources used under specified conditions

Performance Efficiency measurements can provide Evidence for a Scalability evaluation.

Scalability differs from Elasticity:

- Scalability concerns the degree to which a subject accommodates changes in workload, size, volume, participation, complexity, or allocated Resources
- Elasticity concerns adaptation to changing conditions by activating, deactivating, adding, removing, or substituting Resources or Qualified Nodes

Elasticity can be a mechanism for achieving Scalability. Scalability does not require automated adaptation unless the applicable Acceptance Criteria establish that requirement.

Scalability differs from growth:

- Growth identifies an increase in size, volume, participation, or complexity
- Scalability concerns whether the subject maintains specified behavior while growth or another defined change occurs

A subject is not scalable without qualification. A Scalability evaluation must identify:

- The characteristic that changes
- The evaluated range
- The required behavior
- The permitted degradation

- The applicable measurement conditions
- The applicable comparison method

A subject can scale successfully in one dimension and unsuccessfully in another.

For example:

- A Candidate Solution can scale with transaction volume but not with the number of geographically distributed Nodes
- A market can scale with the number of providers but not with the number of jurisdictions
- A governance process can scale with work-event volume but not with the number of required reviews
- A deployment can scale with processor capacity but not with storage volume

Scalability does not mean every measured characteristic remains constant. The Acceptance Criteria establish the permitted variation and degradation as the evaluated conditions change.

Example

A Governed Node Service Market expands from one FX Demo jurisdiction to several jurisdictions.

The number of:

- Participants
- Qualified Nodes
- Governed functions
- Work events
- Evidence References
- Compensation Claims
- Settlement Instructions

increases during the evaluation period.

The applicable Acceptance Criteria establish the required behavior, processing limits, response times, Evidence-continuity obligations, provider-comparison obligations, governance-review obligations, and Settlement Traceability requirements.

The market exhibits Scalability when it supports the increased size, volume, participation, and complexity while continuing to satisfy those obligations.

In a separate DIDO-TE evaluation, three Candidate Solutions process increasing transaction workloads under controlled resource allocations. DIDO-TE records performance, Resource Consumption, failures, and permitted degradation at each workload level.

The resulting Test Results support a comparative evaluation of Candidate Solution Scalability.

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