

Storage Consumption

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Discussion

Storage Consumption is [Resource Consumption](#) concerning the amount of storage used by a subject while performing specified activities under specified conditions.

Storage Consumption can apply to:

- A [Candidate Solution](#)
- A [Distributed System](#)
- A [Node](#)
- A Qualified Node
- A [Node Set](#)
- A service
- A software component
- A data store
- A [Test Environment](#)
- A [Test Run](#)
- Another subject using storage

Storage Consumption can include storage used for:

- Executable Artifacts
- Configurations
- Dependencies
- Operational data
- Transaction data
- Temporary data
- Cached data
- Replicated data
- Backup data
- Log records
- Audit records
- [Test Definitions](#)
- [Test Results](#)
- [Evidence](#)
- Provenance records
- Traceability records
- Another stored information set

Storage Consumption can identify:

- The evaluated subject
- The specified activity
- The storage type

- The storage location
- The applicable workload
- The applicable [Configuration](#)
- The measurement starting event
- The measurement completion event
- The measurement interval
- The amount of storage allocated
- The amount of storage used
- The amount of storage retained
- The amount of temporary storage used
- The amount of replicated storage used
- The applicable measurement unit
- The required measurement precision
- The permitted exclusions
- The permitted tolerance
- The applicable normalization method
- The applicable retention requirements
- The applicable DIDO [Baseline](#)
- The applicable [Validation Criteria](#)
- The applicable [Acceptance Criteria](#)
- Its Evidence
- Its [Provenance](#)
- Its [Traceability](#)

Storage Consumption can be expressed as:

- Total storage used
- Average storage used
- Maximum storage used
- Storage used per transaction
- Storage used per Test Run
- Storage used per Node
- Storage used per unit of time
- Storage growth over time
- Storage retained after completion
- Storage released after completion
- Another value established by the Acceptance Criteria

Definition

[Resource Consumption](#) concerning the amount of storage used by a subject while performing specified activities under specified conditions

Source

Adapted from:

- [ISO/IEC 25010:2023, Systems and software Quality Requirements and Evaluation \(SQuaRE\) — Product quality model](#)
- [ISO/IEC 25023:2016, Systems and software Quality Requirements and Evaluation \(SQuaRE\) — Measurement of system and software product quality](#)
- [Resource Consumption](#)
- [Performance Efficiency](#)
- DIDO Reference Implementation Conceptual Model
- DIDO-TE draft Requirements Register

ISO/IEC 25010 includes resource utilization within its product-quality model, and ISO/IEC 25023 provides related quality measures.

This definition specializes Resource Consumption for storage used during DIDO and DIDO-TE operations.

Note

Storage Consumption differs from storage capacity:

- Storage capacity identifies the amount of storage available
- Storage Consumption identifies the amount of storage used

Storage Consumption differs from storage allocation:

- Storage allocation identifies the amount of storage reserved or made available
- Storage Consumption identifies the amount of storage actually used

A subject can consume less storage than allocated.

Storage Consumption differs from Storage Efficiency:

- Storage Consumption identifies an amount of storage used
- Storage Efficiency relates completed work, retained information, or another useful outcome to the storage used

Lower Storage Consumption does not necessarily indicate a better Candidate Solution. Lower consumption can result from:

- Retaining less required information
- Omitting Evidence
- Using greater processing time
- Using greater network capacity
- Reducing redundancy
- Applying more effective compression
- Another design or operational difference

The applicable Acceptance Criteria determine which stored information must be included and which exclusions are permitted.

Storage Consumption measurements should identify whether they include:

- Primary storage
- Replicated storage
- Temporary storage
- Cached storage
- Backup storage
- Log and audit storage
- Evidence storage
- Storage-system overhead

Example

DIDO-TE evaluates three Candidate Solutions using the same Test Definition, Test Environment, workload, retention period, and Evidence requirements.

For each Candidate Solution, DIDO-TE records:

- Maximum storage used
- Average storage used
- Storage used per transaction
- Storage used for logs
- Storage used for Evidence
- Storage retained after Test Run completion

The comparative evaluation uses these measurements to compare Candidate Solution Storage Consumption.

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