

ISO/IEC TS 22237-31:2023-12 (E)

Information technology - Data centre facilities and infrastructures - Part 31: Key performance indicators for resilience

Contents		Page
Foreword.....		v
Introduction.....		vi
1	Scope.....	1
2	Normative references.....	1
3	Terms and definitions.....	1
3.1	Terms and definitions.....	1
3.2	Symbols and abbreviated terms.....	6
3.2.1	Symbols.....	6
3.2.2	Abbreviated terms.....	7
4	Area of application.....	8
4.1	General.....	8
4.2	DCI service definition.....	8
5	Resilience considerations as part of the life cycle.....	9
5.1	Implementation in the design process.....	9
5.1.1	General.....	9
5.1.2	Phase 1 — Strategy.....	9
5.1.3	Phase 2 — Objectives.....	10
5.1.4	Phase 3 — System specifications.....	10
5.1.5	Phase 4 — Design proposal.....	10
5.1.6	Phase 6 — Functional design.....	10
5.1.7	Phase 8 — Final design and project plan.....	10
5.1.8	Phase 10 — Construction.....	11
5.1.9	Phase 11 — Operation.....	11
5.2	Documentation during operation.....	11
5.2.1	General.....	11
5.3	Documentation of resilience level.....	11
5.3.1	General.....	11
5.3.2	Requirements.....	12
5.4	Documentation of dependability.....	12
5.4.1	Requirements.....	12
5.4.2	Recommendations.....	12
5.5	Documentation of fault tolerance.....	12
5.5.1	Requirements.....	12
5.6	Documentation of availability tolerance.....	12
5.6.1	Requirements.....	12
5.6.2	Recommendations.....	13
6	Determination of KPIs for resilience.....	13
6.1	General.....	13
6.2	Structuring of the KPIs for resilience.....	13
6.2.1	General.....	13
6.2.2	KPIs.....	14
6.2.3	Failure rate.....	15
6.2.4	Metrics.....	15
6.3	Dependability.....	16
6.3.1	Provided KPIs.....	16
6.3.2	Reliability.....	17
6.3.3	Availability.....	18

6.3.4	Failure rate	19
6.4	Fault tolerance	20
6.4.1	General	20
6.4.2	Single point of failure (SPoF)	20
6.4.3	Double point of failure (DPoF)	20
6.5	Availability tolerance	21
6.5.1	General	21
6.5.2	Single point of reduced availability (SPoRA)	21
6.5.3	Double point of reduced availability (DPoRA)	21
6.6	Resilience level (RL)	22
6.6.1	General	22
6.6.2	Operation at normal resilience level	22
6.6.3	Operation at reduced resilience level	23
6.7	Application to data centre infrastructures	24
6.7.1	Methodology and analysis considerations	24
6.7.2	Analysis process	25
6.7.3	Method of reliability block diagrams (RBD)	26
6.7.4	Method of Failure Mode Effects and Criticality Analysis	26
Annex A (informative) Resilience analysis for DCIs		28
Annex B (informative) SPoF Analysis for DCIs		33
Annex C (informative) Resilience level analysis for DCIs		36
Annex D (informative) Example of Failure Mode Effects and Criticality Analysis		38
Annex E (informative) Interval of confidence		40
Bibliography		43