

ISO/IEC 19941:2017-12 (E)

Information technology - Cloud computing - Interoperability and portability

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
3.1	Interoperability terms	1
3.2	Data portability terms	2
3.3	Application portability terms	2
4	Abbreviated terms	3
5	Overview of cloud computing interoperability and portability	4
5.1	Description of cloud computing interoperability and portability	4
5.1.1	General	4
5.1.2	Considerations for cloud interoperability	5
5.1.3	Considerations for portability in a cloud computing environment	6
5.1.4	Relationship between cloud interoperability and cloud portability	9
5.2	Cloud interoperability and portability facet models	9
5.2.1	Cloud interoperability facet model	9
5.2.2	Cloud data portability facet model	13
5.2.3	Cloud application portability facet model	16
5.3	Key challenges related to interoperability and portability in cloud computing	18
5.3.1	General	18
5.3.2	Security	18
5.3.3	Identity and Access Management (IdAM)	20
5.3.4	Security during migration	21
5.3.5	Dynamic migration	21
5.3.6	Interfaces, APIs and interoperability	21
5.3.7	Open source	22
6	Interoperability and portability considerations related to cloud capabilities types	22
6.1	General	22
6.2	Functional components of interoperability	27
6.3	Functional components of data portability	28
6.4	Functional components of application portability	28
6.4.1	General	28
6.4.2	Functional views based on capabilities types	31
7	Cloud interoperability	36
7.1	Cloud interoperability types	36
7.1.1	General	36
7.1.2	Transport interoperability	38
7.1.3	Syntactic interoperability	39
7.1.4	Semantic data interoperability	39
7.1.5	Behavioural interoperability	39
7.1.6	Policy interoperability	40
7.1.7	Interoperability with connected devices consuming cloud services of application capabilities type	41

8	Cloud data portability	42
8.1	Cloud data portability types	42
8.2	Data syntactic portability	42
8.2.1	General	42
8.2.2	Data syntactic portability for infrastructure capabilities type cloud services	43
8.2.3	Data syntactic portability for platform capabilities type cloud services	43
8.2.4	Data syntactic portability for application capabilities type cloud services	44
8.3	Data semantic portability	45
8.3.1	General	45
8.3.2	Data semantic portability for infrastructure capabilities type cloud services	45
8.3.3	Semantic data portability for platform capabilities type cloud services	45
8.3.4	Data semantic portability for application capabilities type cloud services	45
8.4	Data policy portability	47
8.5	Considerations for cloud data portability of "cloud service derived data"	47
9	Cloud application portability	49
9.1	Cloud application portability types	49
9.2	Considerations for cloud application portability	50
9.3	Application portability for infrastructure capabilities type cloud services	53
9.3.1	Application portability from non-cloud to cloud service	53
9.3.2	Application portability from a cloud service to another cloud service	55
9.4	Application portability for platform capabilities type cloud services	57
9.4.1	Application portability from non-cloud to cloud service deployments	57
9.4.2	Application portability from one cloud service to another cloud service	60
9.5	Application portability for application capabilities type cloud service	62
9.6	Application portability: Policy facet	62
9.6.1	General	62
9.6.2	Law and regulations	62
9.6.3	Contracts and licenses	63
9.6.4	Organizational policies	63
	Bibliography	64