ISO/IEC TS 7339:2024-12 (E)

Information technology - Cloud computing - Overview of platform capabilities type and platform as a service

Contents

Page

Foreword vi

Introduction vii

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 1

4 Abbreviated terms 3

5 Overview of platform capabilities type 4
5.1 General 4
5.2 Examples of capabilities 4
5.3 Capabilities not included in the platform capabilities type 5
5.4 The legal status of CSC-provided code as customer data 5
5.5 Intellectual property considerations 5
5.6 Cloud service agreement elements for the platform capabilities type 6

6 The cloud service developer sub-role (CSD) 7
6.1 The definition of cloud service developer 7
6.2 CSD activities 7
6.3 CSDs and the CSC application code lifecycle 7

7 Platform as a Service (PaaS) concepts 8
7.1 PaaS as a cloud service category 8
7.2 Benefits of choosing PaaS 8
7.2.1 General 8
7.2.2 Reduced maintenance 8
7.2.3 Scalability 8
7.2.4 Access to advanced features 8
7.3 The "fuzzy" boundaries between IaaS, PaaS, and SaaS 9
7.3.1 General 9
7.3.2 IaaS vs PaaS 11
7.3.3 PaaS vs SaaS 11
7.3.4 DSaaS as an example 11
7.3.5 Relevance of the boundaries 12
7.3.6 Selective use of the boundaries 12
7.3.7 Implications 12
7.4 Common functions included within a PaaS 12
7.4.1 General 12
7.4.2 Documentation of CSP-provided interfaces 12
7.4.3 CSC-provided code lifecycle management 13
7.4.4 Identity and access management (IAM) 13
7.4.5 Message queuing 13
7.4.6 Load balancing 13
7.5 Life-cycle of a CSC application on PaaS 14
7.5.1 General 14
7.5.2 Conceptualisation 14
7.5.3 Requirements analysis 14

7.5.4 Code development ... 14
7.5.5 Application integration ... 14
7.5.6 Staging and Deployment of an application on PaaS ... 15
7.5.7 Operation of an application on PaaS ... 15
7.5.8 Scaling of an application on PaaS ... 15
7.5.9 Maintenance of an application running on PaaS ... 16
7.5.10 Disposal of an application running on PaaS ... 16
7.5.11 Evolution of a CSC application over time ... 17
7.6 Evolution of a PaaS cloud service implementation over time ... 17
7.7 The use of PaaS to build SaaS offerings for others ... 17

8 Architectures for PaaS ... 17
8.1 PaaS as a category of pure platform cloud service ... 17
8.1.1 General ... 17
8.1.2 General layering ... 18
8.1.3 Generic architecture for PaaS cloud services ... 18
8.1.4 Example illustration of the generic PaaS architecture using Kubernetes ... 19
8.2 Microservice architectures ... 20
8.3 Native PaaS ... 21
8.4 PaaS over an IaaS ... 21
8.5 PaaS within a SaaS ... 21
8.6 PaaS linked with a SaaS ... 21
8.7 User interfaces for PaaS ... 21

9 Serverless architectures ... 22
9.1 General ... 22
9.2 Function as a Service (FaaS) ... 22
9.3 Stateless functions ... 22

10 Applications that leverage cloud native computing ... 23
10.1 Background ... 23
10.2 Intended Advantages ... 23
10.3 Orchestration ... 23
10.4 Architecture ... 23

11 General considerations for platform capabilities and PaaS ... 24
11.1 General ... 24
11.2 Auditability ... 24
11.3 Availability ... 24
11.4 Governance ... 24
11.5 Interoperability ... 24
11.6 Maintenance and Versioning ... 25
11.7 Performance ... 25
11.8 Portability ... 25
11.9 Protection of PII (privacy) ... 25
11.10 Regulatory ... 25
11.11 Resiliency ... 25
11.12 Reversibility ... 25
11.13 Security ... 25
11.13.1 General ... 25
11.13.2 Malware avoidance ... 26
11.13.3 Code access to resources ... 26
11.14 Service levels and service level agreements ... 26
11.15 Sustainability ... 26

12 Portability between PaaS Cloud services ... 26
12.1 General ... 26
12.2 Endpoint identification ... 26
12.3 Portability-ready development ... 27
12.4 Addressing "Exit strategy" requirements ... 27
12.5 Portability through container orchestration ... 27

13 Related technologies and platform capabilities type 28
13.1 General 28
13.2 Artificial Intelligence (AI) 28
13.3 PaaS and generative AI 29
13.4 Quantum Computing (QC) 30

14 Other cloud services exhibiting the platform capabilities type 31
14.1 General 31
14.2 Table of examples 31

15 Recommendations for CSPs and CSCs 31
15.1 Transparency of status and rights pertaining to CSC or CSN sourced artefacts 31
15.2 Performance reporting 31
15.3 Security reporting 32
15.4 Accessibility of CSD-created user interfaces 32

Annex A (Informative) Platform as a Service in a multiple CSP environment 33

Annex B (Informative) Example of cloud native computing using Docker and Kubernetes 36

Bibliography 38