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Information technology — Cloud computing — Concepts for multi-cloud and the use of multiple cloud services

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Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 38, *Cloud computing and distributed platforms*.

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Introduction

Cloud service customers (CSCs) create cloud solutions that satisfy their requirements and benefit from the use of cloud computing. In creating these cloud solutions, CSCs sometimes use cloud services from multiple cloud service providers (CSPs). The use of multiple CSPs gives rise to cloud deployment models (CDM) such as hybrid cloud, multi-cloud and hybrid multi-cloud. Similarly, the CSPs themselves sometimes utilize cloud services from other CSPs resulting in CDMs such as inter-cloud and federated cloud.

The use of cloud services from multiple CSPs, either through CSC cloud solutions or by CSPs utilizing cloud services from other CSPs, can potentially enhance availability, resilience, fault-tolerance, latency, flexibility, business continuity, cost optimization, the ability to operate in multiple geographies or jurisdictions, and the ability to meet compliance requirements. On the other hand, use of multiple cloud services in general and multiple cloud services from multiple CSPs can result in increased complexity and other operational and administrative challenges. These challenges, which can manifest in various ways, are addressed in order to create a cloud solution. Examples of such challenges include the necessary integrations and data transformations; additional burdens on management such as logging, monitoring and error resolution; the reconciliation of the cloud service agreements and cloud SLAs from multiple CSPs; the complexity of total cost estimation; identity management and access control across multiple CSPs; and privacy.

This document provides an overview of, and foundational concepts for, cloud computing involving multiple cloud service providers (CSPs). This document establishes a common understanding of cloud solutions that use cloud services from multiple CSPs by building on the cloud computing concepts defined in the ISO/IEC 22123 series. It also provides characteristics, benefits and challenges relating to multi-cloud and other cloud deployment models involving multiple CSPs.

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Information technology — Cloud computing — Concepts for multi-cloud and the use of multiple cloud services

1 Scope

This document specifies foundational concepts for multiple cloud services including multi-cloud, hybrid cloud, inter-cloud and federated cloud.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 22123-1, *Information technology — Cloud computing — Part 1: Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 22123-1 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Symbols and abbreviated terms

API	application programming interface
CDM	cloud deployment model
CSA	cloud service agreement
CSC	cloud service customer
CSF	cloud service federation
CSN	cloud service partner
CSP	cloud service provider
CSU	cloud service user
IDaaS	identity as a service
PII	personally identifiable information
SLA	service level agreement
SO	service objective

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