



BSI Standards Publication

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

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National foreword

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A list of organizations represented on this committee can be obtained on request to its committee manager.

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Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols and abbreviated terms	1
5 Notational conventions	2
6 Cloud computing using multiple CSPs	2
6.1 General	2
6.2 Interactions among parties	3
7 Multi-cloud	3
7.1 General	3
7.2 Multi-cloud sub-types	4
7.2.1 CSC-mediated multi-cloud	4
7.2.2 CSP-connected multi-cloud	4
7.3 Characteristics	5
7.4 Benefits	6
7.5 Considerations	8
7.6 Multi-cloud management	8
8 Federated cloud	9
8.1 General	9
8.2 Benefits	10
8.3 Considerations	11
8.4 Cloud service federation	11
8.4.1 Characteristics	11
8.4.2 CSF membership	12
8.4.3 Shared resource metadata and discovery	12
8.4.4 CSF governance	12
8.5 CSF domains	13
8.5.1 General	13
8.5.2 Administrative domains	13
8.5.3 Regulatory domains	13
8.6 CSF management sub-roles	14
8.6.1 General	14
8.6.2 CSF operator	14
8.6.3 CSF manager	14
8.6.4 CSF auditor	14
8.6.5 CSF broker	15
8.7 CSF topologies	15
9 Hybrid cloud	17
9.1 General	17
9.2 Characteristics	18
9.3 Benefits	19
9.4 Considerations	19
9.5 Hybrid cloud management	19
9.6 Hybrid multi-cloud	20
10 Inter-cloud	20
10.1 General	20
10.2 Characteristics	21
10.3 Benefits	21
10.4 Considerations	21

This is a preview of BS ISO/IEC 5140:2024. [Click here to purchase the full version from the ANSI store.](#)

Annex A (informative) Use cases for multi-cloud management	23
Bibliography	25

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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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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