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SERIES Y: GLOBAL INFORMATION
INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS,
NEXT-GENERATION NETWORKS, INTERNET OF
THINGS AND SMART CITIES

Cloud Computing

Cloud computing – Functional architecture for cloud service brokerage

Recommendation ITU-T Y.3536

ITU-T

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Recommendation ITU-T Y.3536

Cloud computing – Functional architecture for cloud service brokerage

Summary

Recommendation ITU-T Y.3536 describes functional architecture for cloud service brokerage (CSB) based on functional requirements defined in Recommendation ITU-T Y.3506. This Recommendation also provides the reference points among CSB functions, and the relationship between the CSB functional architecture and the cloud computing reference architecture specified in Recommendation ITU-T Y.3502.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
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Recommendation ITU-T Y.3536

Cloud computing – Functional architecture for cloud service brokerage

1 Scope

This Recommendation specifies the functional architecture for cloud service brokerage (CSB) based on the functional requirements defined in [ITU-T Y.3506]. It addresses the following subjects:

- Functions of cloud service brokerage;
- Functional architecture of cloud service brokerage;
- Relationship between the CSB functional architecture and the cloud computing reference architecture.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [ITU-T X.1601] Recommendation ITU-T X.1601 (2015), *Security framework for cloud computing*.
- [ITU-T Y.3502] Recommendation ITU-T Y.3502 (2014), *Information technology – Cloud computing – Reference architecture*.
- [ITU-T Y.3506] Recommendation ITU-T Y.3506 (2018), *Information technology – Cloud computing – Functional requirements for cloud service brokerage*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

- 3.1.1 cloud service customer** [b-ITU-T Y.3500]: Party which is in a business relationship for the purpose of using cloud services.
- 3.1.2 cloud service provider** [b-ITU-T Y.3500]: Party which makes cloud services available.
- 3.1.3 cloud service broker** [b-ITU-T Y.3500]: Cloud service partner that negotiates relationships between cloud service customers and cloud service providers.
- 3.1.4 product catalogue** [ITU-T Y.3502]: A listing of all the cloud service products which cloud service providers make available to cloud service customers.
- 3.1.5 cloud service agreement** [b-ISO/IEC 19086-1]: Documented agreement between the cloud service provider and cloud service customer that governs the covered service(s).
- NOTE – A cloud service agreement can consist of one or more parts recorded in one or more documents.
- 3.1.6 cloud service brokerage** [ITU-T Y.3506]: A service that arbitrates, delivers, and manages cloud services provided by cloud service providers (CSPs) for cloud service customers (CSCs).

NOTE – Cloud service brokerage is realized by cloud service broker with new activities. The new activities are (i) assist CSC for accessing service and (ii) check and control service status.

3.1.7 cloud service level agreement [b-ISO/IEC 19086-1]: Part of the cloud service agreement (clause 3.1.5) that includes cloud service level objectives (clause 3.1.8) and cloud service qualitative objectives (clause 3.1.9) for the covered cloud service(s).

3.1.8 cloud service level objective [b-ISO/IEC 19086-1]: Commitment a cloud service provider makes for a specific, quantitative characteristic of a cloud service, where the value follows the interval scale or ratio scale.

NOTE – A cloud service level objective commitment may be expressed as a range.

3.1.9 cloud service qualitative objective [b-ISO/IEC 19086-1]: Commitment a cloud service provider makes for a specific, qualitative characteristic of a cloud service, where the value follows the nominal scale or ordinal scale.

NOTE 1 – A cloud service qualitative objective may be expressed as an enumerated list.

NOTE 2 – Qualitative characteristics typically require human interpretation.

NOTE 3 – The ordinal scale allows for existence/non-existence.

3.2 Terms defined in this Recommendation

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

API	Application Programming Interface
BM-F	Business Management Function
CSAM-F	Cloud Service Access information Management Function
CSAM-FG	Cloud Service Agreement Management Function Group
CSB	Cloud Service Brokerage
CSC	Cloud Service Customer
CSC-F	Cloud Service Configuration Function
CSD-F	Cloud Service Deregistration Function
CSM-F	Cloud Service Monitoring Function
CSN	Cloud Service Partner
CSP	Cloud Service Provider
CSR-F	Cloud Service Registration Function
CSRM-F	Cloud Service Requirement Management Function
CSS-F	Cloud Service Search Function
OS	Operating System
PCM-FG	Product Catalogue Management Function Group
RD-F	Request Delivering Function
RV-F	Request Validation Function
SC-FG	Service Control Function Group
SDM-F	SLA Document Management Function

SLA	Service Level Agreement
SLO	Service Level Objectives
SM-F	SLA Management Function
SQO	Service Qualitative Objectives
UAM-F	User Account Management Function
UAUTH-F	User Authentication and authorization Function
UIM-F	User Interface Management Function
UM-FG	User access Management Function Group
URL	Uniform Resource Locator

5 Conventions

Throughout this Recommendation, the term "CSB user" stands for "CSP and CSC".

6 Relationship between CSB logical components and CSB functions

A cloud service broker described in [ITU-T Y.3506] is a sub-role of cloud service partner (CSN) that negotiates relationships between cloud service customers (CSCs) and cloud service providers (CSPs). A cloud service brokerage (CSB) as described in [ITU-T Y.3506] is a service between CSCs and CSPs, in which the cloud service broker arbitrates, delivers, and manages the cloud services from the CSPs to the CSCs. The objectives of cloud service brokerage (CSB) are to provide a single access, easily managed and value-added service to CSCs from multiple CSPs. There are five CSB logical components in [ITU-T Y.3506]:

- workspace;
- product catalogue management;
- contract management;
- service access management;
- service management.

These CSB logical components are realized by the following CSB function groups:

- user access management function group: provides authentication of CSB users and grants authorization to access other CSB functions;
- product catalogue management function group: supports registering, deregistering, searching cloud services within the CSB product catalogue, and allowing CSCs to select cloud services;
- cloud service agreement management function group: manages contracts between CSPs and CSCs including cloud service level agreements (SLAs);
- service control function group: requests CSPs to initiate contracted cloud services accompanied by access information and, also, requests service controls (such as initiate, resume/suspend, create, and stop) and monitors the status of running cloud services.

Table 6-1 shows the relationship between CSB logical components and CSB function groups in this Recommendation. The mapping between the functional requirements of each of the CSB logical components in [ITU-T Y.3506] and CSB functions in clause 7 of this Recommendation is described in Appendix I.