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**Cloud computing infrastructure engineering technical
standards**

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1 General

1.0.1 This standard is formulated in order to unify and standardize the construction of cloud computing infrastructure projects in various industries, and make the construction of cloud computing infrastructure projects technologically advanced, safe and reliable, economically reasonable, energy-saving and environmentally friendly.

1.0.2 This standard applies to the construction of new construction, expansion and reconstruction of cloud computing infrastructure.

1.0.3 Project construction should comply with the relevant national requirements on cloud computing infrastructure, implement the national basic construction guidelines and policies, and adhere to the scientificity, rationality and fairness of project construction.

1.0.4 Project construction should select materials and equipment that have issued qualified inspection reports and meet the relevant national technical requirements.

1.0.5 When constructing telecommunication networks in areas with seismic fortification intensity of 7 degrees and above, the requirements for seismic fortification shall be met, and the main telecommunication equipment used shall comply with the provisions of the current industry standard "Code for Seismic Performance Testing of Telecommunications Equipment" YD 5083.

1.0.6 The project construction should be compared with multiple schemes to improve economic efficiency and reduce project cost on the basis of meeting infrastructure quality and safety requirements.

1.0.7 The project construction should follow the principle of openness, and the system should meet the standardization requirements and have the ability to be expanded online.

1.0.8 In addition to complying with the provisions of this standard, the construction of cloud computing infrastructure projects shall also comply with the provisions of the relevant current national standards.

2.1.1 cloud computing cloud computing

A model for provisioning and managing scalable, elastic pools of shared physical and virtual resources over a network in an on-demand, self-service manner.

2.1.2 cloud computing infrastructure cloud computing infrastructure

The infrastructure supporting cloud computing composed of hardware resources and resource abstract control components, including the software and hardware equipment and cloud management platform required to provide computing, storage, network, and security resources for cloud service customers.

2.1.3 resource pool resource pool

A collection of physical or virtual resources that can be taken from a pool or recycled back to a pool. Resources include physical machines, virtual machines, physical network devices, virtual network devices, and IP addresses.

2.1.4 virtual machine virtual machine

A virtual data processing system is under the exclusive use of a specific user, but its functions are realized by sharing various resources of the real data processing system.

2.1.5 host machine host machine

Refers to the physical server that provides the hardware environment for the virtual machine.

2.1.6 physical machine physical machine

Refers to providing users with computing resources in the form of physical servers relative to physical servers of virtual machines.

2.1.7 virtual cluster virtual cluster

Consisting of a certain number of physical servers and the virtual machines on them, the virtual machines in the same cluster can support load balancing, online migration, failover and other high-availability functions.

2.1.8 virtual machine template

Configure the metadata collection required by the virtual machine, including the number of CPUs, memory size, and disk size.

2.1.9 virtual machine image virtual machine image

The file system image corresponding to the virtual machine, including the operating system and software required for running the virtual machine.

2.1.10 object storage object storage

Cloud storage that uses objects as storage units and provides object-level access interfaces.

2.1.11 file storage file storage

A storage system that connects to the server through Ethernet, and the server accesses data through standard protocols such as NFS, CIFS, HTTP, and FTP. The data is connected to the server through Ethernet, and the data has a packing/unpacking process.

2.1.12 block storage block storage

It is connected to the server through SCSI/SAS or FC SAN, and the server directly controls and accesses the data storage system through SCSI/SAS or FC protocol.

2.2 Abbreviations

AZ Availability Zone availability zone CIFS Common Internet File System Common Internet File System CPU Central Processing Unit Central Processing Unit CRM Customer Relationship Management Customer Relationship Management FC SAN Fiber Channel Storage Area Network Fiber Channel Storage Area Network FTP File Transfer Protocol file transfer protocol GPU Graphics Processing Unit graphics processing unit HA Host Aggregate host group HTTP Hyper Text Transfer Protocol Hypertext Transfer Protocol IB InfiniBand InfiniBand Technology IDS Intrusion Detection System Intrusion Detection System IOPS Input/Output Operations Per Second The number of read and write operations per second IP Internet Protocol Internet Protocol IPv6 Internet Protocol Version 6 Internet Protocol Version 6 IPS Intrusion Prevention System Intrusion Prevention System IPSec Internet Protocol Security Internet Protocol Security LAN Local Area Network RAID Redundant Array of Independent Disks independent redundant disk array SAN Storage Area Network storage area network SAS Serial Attached SCSI Serial Attached SCSI SCSI

Small Computer System Interface small computer system interface SDN Software Defined Network Software Defined Network SLA Service Level Agreement Service Level Agreement TCP Transmission Control Protocol Transmission Control Protocol vCPU Virtual Central Processing Unit virtual processor VLAN Virtual Local Area Network Virtual Local Area Network VxLAN Virtual Extensible LAN Virtual Extended Local Area Network VPN Virtual Private Network virtual private network WAF Web Application Firewall Web Application Firewall

3.1 Overall Architecture

3.1.1 The overall architecture of cloud computing infrastructure should include resource pools and cloud management platforms (Figure 3.1.1).

3.1.2 The resource pool shall include relevant hardware and software such as servers, storage devices, network devices, security devices, virtualization software, and storage software required to provide external computing resources, storage resources, network resources, and security resource services.

3.1.3 The cloud management platform should conduct unified management and scheduling of computing resources, storage resources, network resources and security resources in the resource pool, and should provide services to users.

3.1.4 Cloud computing infrastructure should have protection measures such as physical and environmental security, network and communication security, equipment and computing security, application and data security, and management security, and should comply with the current national standard "Information Security Technology Network Security Level Protection Basic Requirements" GB/T 22239 related regulations.

3.2 Functional requirements

3.2.1 Cloud computing infrastructure should provide users with computing, storage, network and security resources in the form of different service templates according to user needs; it should support on-demand resource usage and billing based on the network, and it should support self-service, rapid deployment and Resource dynamic elastic expansion.

3.2.2 The resource pool function shall comply with the following regulations.

1. Shared or exclusive physical and virtual computing resources should be provided;
- 2 should provide object storage, file storage or block storage resources;
- 3 should provide physical or virtual network resources;
- 4 Security resources such as access control, intrusion prevention, security audit, malicious code prevention, and vulnerability scanning should be provided.

3.2.3 The cloud management platform shall provide resource management, scheduling