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Design standards for network engineering

网络工程设计标准

(English Translation)

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1 General

1.0.1

This standard is formulated in order to make the public Internet network engineering design achieve advanced technology, reasonable economy, safety and applicability, energy saving and material saving, and sustainable development.

1.0.2

This standard applies to the engineering design of new construction, reconstruction and expansion of public Internet networks.

1.0.3

The design of the public Internet network should follow the principle of openness. The designed network should be manageable, operable, and scalable, and the designed network should be safe and reliable.

1.0.4

The engineering design should select finalized products that meet the current relevant technical requirements of the country. The equipment and main materials that have not been certified by the product quality supervision and inspection agency shall not be used in the project.

1.0.5

In areas with a seismic fortification intensity of 7 degrees or above in my country, the main telecommunications equipment used in public Internet network projects shall pass the

seismic performance test of telecommunications equipment.

1.0.6

In addition to complying with this standard, the engineering design of the public Internet network shall also comply with the current relevant national standards.

2.1.1 Public Internet Internet

It is an IP network that provides services for public users and can carry voice, data and multimedia services.

2.1.2 Network node network node

It is one of the basic units that constitute an IP network. Provides connections with other network nodes, provides a routing mechanism between nodes, and forwards IP data packets. A network node provides one or more network functions, and generally consists of one or several routers, switches and other network devices and server devices that are locally connected to each other in the same computer room.

2.1.3 Trunk circuit trunk

It is one of the basic units that constitute an IP network. It connects different network nodes of the network and provides a physical or logical medium for communication between network nodes.

2.1.4 Service access control system

A system that connects users and services to the Internet network, implements functions such as authentication, authorization, and billing for user and service access, and implements functions such as service quality control and multicast control.

2.1.5 Operation and maintenance support system

The systems that support the network and ensure normal operation mainly include network management systems and security systems.

2.1.6 Security system security system

It is a system that guarantees the normal operation of various network element equipment, ensures the safe transmission of information on the IP network, guarantees the security of network operation, maintenance and management, and guarantees business security.

2.1.7 Network management system

A system that ensures the normal operation of network elements and networks, and implements functions such as configuration management, resource management, fault management, and performance management.

2.1.8 Dual stack dual stack

A technology that simultaneously supports IPv4 and IPv6 dual protocol stacks in network devices such as servers, routers, and switches.

2.1.9 Data packet

The packet that transmits data through the IP network is the end-to-end transmission unit of the IP network.

2.1.10 Backbone network backbone network

The backbone part of the Internet network is mainly used for the wide-area interconnection of various metropolitan area networks, and for inter-network interconnection with other IP networks. At the same time, it can directly access large-scale IDCs, large-scale business systems and important users.

2.1.11 Metro area network

The IP network within the metropolitan area is located between the backbone network and the metropolitan access network. It is the extension and coverage of the IP backbone network within the metropolitan area. It covers cities, suburbs, and counties and regions under their jurisdiction, providing A network for the interconnection, access and user access of various services in the metropolitan area.

2.1.12 Connectivity

The minimum number of nodes that need to be removed to break all paths between a pair of nodes.

2.1.13 Router

A network device that realizes network interconnection and works at the IP layer by forwarding data packets. A router can support multiple protocols, and this standard mainly refers to supporting TCP/IP protocol clusters and (or) MPLS-related protocols.

2.1.14 Bandwidth mean peak utilization ratio

The arithmetic mean value of circuit bandwidth utilization at each statistical granularity during the busiest hour of a day.

2.1.15 Autonomous domain autonomous system

Contains a group of subnets interconnected by a series of routers and other network devices, forming a connectable segment of the network topology. Network devices such as these subnets and routers are generally controlled by a single operation and maintenance management organization, have a single and clear routing policy, and are identified by an autonomous domain number.

2.1.16 Network interconnection

Use the IP protocol to connect multiple IP networks, and provide mutual forwarding of IP packets and routing information services at the network layer, so that users in one IP network can communicate with users in the connected IP network or use the connected IP Various business application resources in the network.

2.1.17 Transfer mode transfer mode

The provider's Internet unit provides necessary routing information to the client's Internet unit, and provides IP data packet forwarding services, so that the client's Internet unit can access the business and application resources in the provider's Internet unit's IP network, and through the provider's Internet unit's IP networks enable access to other IP networks.

2.1.18 Peer mode peer mode

Two interconnected units are connected equally, exchange routing information of both IP networks and realize mutual visits between users and business applications in both IP networks, and do not transfer traffic between third-party interconnected units.

2.1.19 Tunnel

The technology of encapsulating one protocol into another protocol, establishing a point-to-point transmission channel by encapsulating the transmission data header before the payload data message, so as to realize the transmission of payload data in the transmission message network.

2.1.20 Translation protocol translation

Establish a one-to-one mapping relationship between each field in one type of data packet and each field in another type of data packet, so as to realize the technology of data packet conversion at the interconnection of two networks.