Cloud computing strategic alliance technical standards

The Technology Standards of Cabin Generation and Management System

Preface

The "Technical Standards for Cabin Cabin Generation and Management System" consists of the following 3 parts:

——Part 1: Terms and definitions;

——Part 2: Function and composition of cabin generation and management system;

——Part 3: The interface of cabin generation and management system.

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed by Tongji University.

This standard is under the jurisdiction of the Information Technology Standardization Technical Committee (SAC/TC180).

The organization responsible for drafting this standard: Tongji University.

Participated in the drafting of this standard: Donghua University.

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Introduction

With the continuous development of information technology, the accumulated data of various applications has shown explosive growth. Correspondingly, in order to improve data processing capabilities, cloud computing and other providers have also invested a lot of manpower, material resources and financial resources to purchase various hardware equipment. In order to further improve the efficiency of resource use, cabin computing have appeared. Cabin computing should be built flexibly in response to the needs of IT tasks, managed by expansion and contraction in response to the execution of IT tasks, and died dynamically when the IT task ends. Contains the completion of the four functions of "recognition of requirements, resource allocation, task execution, and completion of tasks" from the vertical dimension of the full life cycle of IT tasks. It can realize the overall configuration and coordinated operation of data resources and physical resources from the horizontal dimension of the resources required for IT tasks. The cabin generation and management system is the interface between the user and the cabin system. In order to standardize the functions and workflow of the cabin generation and management system, technical standards for cabin generation and management system are formulated to ensure the standardization of the cabin generation and management system .

Technical standards for cabin generation and management system

1 Scope

This standard regulates the structure and work flow of the cabin generation and management system, provides a unified name specification and definition description, and provides a reference for the preparation of other standards related to cabin calculation.

This standard applies to cabin computing related organizations and their products and systems designed, developed, issued, managed, and maintained, and provides reference specifications for the service platform of the industry.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this document. For undated references, the latest version (including all amendments) applies to this document.

GB/T 1.1-2009 Standardization Guidelines

GB/T 32431-2015 Information Technology SOA Service Delivery Guarantee Specification

GB/T 32430-2015 Information Technology SOA Application Service Analysis and Design

GB 4943.1-2011 Information Technology Equipment Safety Part 1: General Requirements

GB/T 20988-2007 Information Security Technology Information System Disaster Recovery Specification

GB/T 22081-2008 Information Technology Security Technology Information Security Management Practical Rules

GB/T 22239-2008 Information Security Technology Basic Requirements for Information System Security Level Protection

3 Terms and definitions

Cabin computing:

The cabin generation and management system: According to the needs of users, combined with the data resource distribution map provided by the virtual in-situ data center and the resource distribution map provided by the cross-domain resource management system, the cabin resource suggestion table is generated for the user, and according to the user's Request to submit a resource request.

Cross-domain resource management system: Register and collect available computing, storage, and network resources in the Internet, provide external query services for resource distribution and resource application, monitoring, and cancellation services, and can manage and configure host mirroring and other software environments system.

Virtual in-situ data center: A data center that explores Internet data resources, generates and maintains Internet data resource distribution maps, and provides external data distribution query services.

Cabin Gateway: A platform that provides users with cabin application, monitoring and management in a distributed deployment environment.

4   Function and composition of cabin generation and management system

4.1   Overview

The cabin generation and management system is the connector between the user and the cabin network. The cabin generation and management system can have two types of centralized deployment and autonomous deployment, no matter which method, the cabin generation and management system is provided An interface through which users can connect to the cabin network, and build an optimal temporary IT environment according to the needs of the task. The cabin generation and management system obtains the available computing, storage, network and other resource information through the cross-domain resource management system, obtains the data resource distribution map information from the virtual in-situ data center, and combines the needs of users to calculate the optimal resource according to the algorithm The application list is provided to users for reference. Once the user determines the resource application plan, the cabin generation and management system will submit the requirements to the cross-domain resource management system for real resource application. After the application for both resources and environment is completed, the cabin generation and management system returns to the user the information on the use and management of cabin resources.
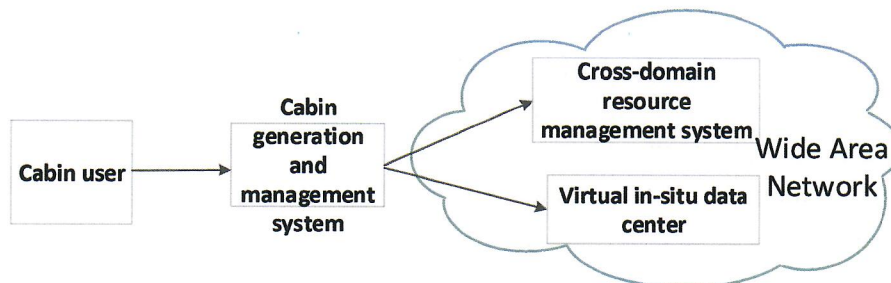

Figure 1 The location of cabin generation and management system

4.2   Functions of cabin generation and management system

The cabin generation and management system provides the following functions:

（1）   The cabin generation and management system provides the user's demand input and cabin management interface;

（2）   The cabin generation and management system automatically connects to the in-situ virtual data center, and performs real-time query according to the data demand information input by the user to obtain the optimal data distribution map;

（3）The cabin generation and management system automatically connects to the cross-domain resource management system, and regularly updates and obtains the resource distribution data of the cross-domain resource management system;

（4）The cabin generation and management system combines virtual data resource distribution and cross-domain resource distribution information according to user needs, and uses optimization algorithms to recommend optimal resource applications, data access lists, and environmental configuration information to users;

（5）The cabin generation and management system submits a cabin resource application request to the cross-domain resource management system to complete the cabin resource application and the construction of the cabin operating environment;

（6）The user can submit the request to cancel the cabin through the cabin generation and management system to realize the automatic cancellation of the cabin.

4.3　The components of cabin generation and management system
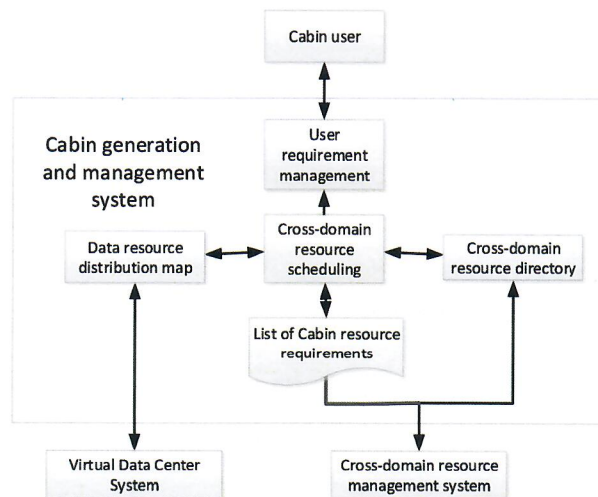

Figure 2 components of the cabin generation and management system

The cabin generation and management system is mainly composed of modules such as user demand management, cross-domain resource scheduling, data resource distribution map, cross-domain resource catalog, and cabin resource application list.

（1）User requirement management: The user demand management module mainly realizes the input of user demand, and the user demand is mainly divided into two parts: data demand and resource and environmental demand;

（2） Cross-domain resource directory: The cabin generation and management system regularly obtains the latest cross-domain resource directory from the cross-domain resource management system and caches it locally;

（3） Cross-domain resource scheduling: The cross-domain resource scheduling module realizes the recommendation of data and IT resources according to the user data distribution map and cross-domain resource catalog according to the optimization algorithm;

（4） Data resource distribution map: According to the data requirements input by the user, the cabin generation and management system initiates a query to the in-situ virtual data center, and temporarily stores the obtained data resource distribution map data locally;

（5） List of cabin resource requirements: After the user's resource application catalog confirmation is completed, the final resource requirement list for cabin generation and management system awards is stored here for subsequent processing;

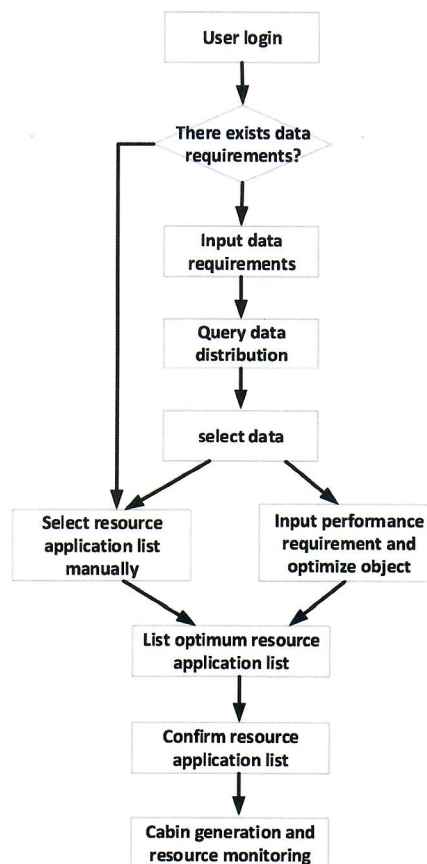**4.4** User demand input processing flow of cabin generation and management system

Figure 3   User requirement input processing flow of cabin generation and management system

5   The interface protocol of the cabin gateway

5.1   User access interface

（1） Login

Request parameters:
        Usr: username,
        Pas: password
Return: Tok: token (string) or failure

（2） Task request submission

Request parameters:
        Tok: token
        Data: Data requirements
        Key: Keyword string {Key1: Keyword, Key2: Keyword...},
        Type: Resource type
        Vol: Capacity
        Top: Back to the top
        rule1: minimum time,
        rule12: best price

Return: List: list {Url: resource address, Type: resource type, Para1: parameter, Para2:

parameter...}

（3） Resource application submission

Request parameters:
        Tok: token
        List: list {Url: resource address, Type: resource type, Para1: parameter, Para2:
        parameter...}
        Return: List: list {Url: resource address, Type: resource type, Para1: parameter, Para2:
        parameter...,

        Sta: Status (successful or not))

（4） Revocation of resource submission

Request parameters:
        Tok: token
        List: list {Url: resource address, Type: resource type, Para1: parameter, Para2:
        parameter...}
        Return: List: list {Url: resource address, Type: resource type, Para1: parameter, Para2:
        parameter...,

        Sta: Status (successful or not))

5.2 Virtual data center access interface

（1） Login

Request parameters:
  ID: Gateway ID,
  Usr: username,
  Pas: password
Return: Tok: token (string) or failure

（2） Data resource query

Request parameters:
  Tok: token,
  Key: Keyword string {Key1: Keyword, Key2: Keyword...},
  Type: Resource type
  Vol: Capacity
  Top: Return to the first few websites (second-level domain)
Return: Lurl: website URL list (second-level domain)

（3） Token update

Request parameters:
  ID: Gateway ID,
  Tok: token (string)
Returns: Tok: new token

5.3 Cross-domain resource management center access interface

（1） Get a list of virtual resources

Request parameters:
  Tok: token,
  Page: page number
Return: Page: page number, Time: update time, List: list {Url: resource address, Type: resource type, Para1: parameter, Para2: parameter...}

（2） Resource list update

Request parameters:
  Tok: token,
  Time: Last update time
Return: Page: page number, Time: update time, Alist: list {Url: resource address, Type: resource type, Para1: parameter, Para1: parameter...}
  Dlist: list {Url: resource address, Type: resource type, Para1: parameter, Para2: parameter...}

（3） Resource application submission

Request parameters:

Tok: token,

List: list {Url: resource address, Type: resource type, Para1: parameter,
Para2: parameter...}

Return: List: list {Url: resource address, Type: resource type, Para1:
parameter, Para2: parameter..., Sta: status (whether successful)}

（4） Revocation of resource submission

Request parameters:

Tok: token,

List: list {Url: resource address, Type: resource type, Para1: parameter,
Para2: parameter...}

Return: List: list {Url: resource address, Type: resource type, Para1:
parameter, Para2: parameter..., Sta: status (whether successful)}

Reference

[1] GB/T 1.1-2009 Standardization Guidelines

[2] GB/T 32431-2015 Information Technology SOA Service Delivery Guarantee Specification

[3] GB/T 32430-2015 Information Technology SOA Application Service Analysis and Design

[4] GB 4943.1-2011 Information Technology Equipment Safety Part 1: General Requirements

[5] GB/T 20988-2007 Information Security Technology Information System Disaster Recovery Specification

[6] GB/T 22081-2008 Information Technology Security Technology Information Security Management Practical Rules

[7] GB/T 22239-2008 Information Security Technology Basic Requirements for Information System Security Level Protection