Role Workflow Model Applied to Multi Node Fog Computing System

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Abstract. A role task scheduling method for fog computing system based on behavior flow is proposed. As traditional computing has shift from face data to the edge of the distributed computing, task scheduling method by establishing the role behavior flow system, the role of the resource node cooperation behaviors definition and role of organization behavior, and set up from center to edge the role behavior of flow pattern, enables the compute nodes according to their respective role behavior line classification processing. Therefore, it can effectively solve the problems of slow service response, high power consumption and frequent task interruption caused by large data volume and redundant operation in the traditional cloud computing system.

1. Introduction

The purpose of fog computing is to distribute data and computation to the edge, so as to solve the network bandwidth pressure and data center burden brought by traditional cloud computing [1]. Fog computing is based on a center-independent approach. A lightweight distributed service architecture is proposed, which can be accessed through interface proxy. This distributed service architecture of microservices can satisfy the edge computing services required by the caller's application and complete the corresponding tasks [2]. The entire edge calculation can be considered as a gyro calculation system. In the gyro computing system, a large number of resource business applications are solved by sharing the resources of various edge nodes. Scheduling efficiency of fog computing workflow is the most important part of the system, and edge computing is conducive to accessing various service resources quickly and efficiently [3].

The workflow invocation method is applied to different fiber optic gyroscope computing architectures. Through a large number of work designs, the efficient workflow allocation of fog computing can be realized through different environments and data dispersion similar to that of gyro computing [5]. To sum up, efficient workflow management and service decomposition in the fog computing environment need further analysis and research. At present, a large number of researches at home and abroad mainly focus on the system algorithm of workflow, while there are few researches on the feature extraction of execution time of distributed response time of node workflow [6]. Pan-foster and barl-tesse found that in the complex environment of multi-layer dynamic change, multi-structure and multi-task, flexible sharing of various resources through workflow decomposition and allocation is the key problem. By using a flexible and powerful workflow allocation model, an efficient system needs a flexible fog computing algorithm model to build computing resources. The efficient operation of fog computing tasks depends on whether the computing platform can establish the relationship between user needs and tasks according to each link in the workflow through the designed algorithm model, so
that tasks can realize automatic control of a series of processes from the resource discovery task decomposition task operation [8]. In the fiber optic gyro computing system, a large number of operating node resources are distributed on the node terminals, and a series of efficient algorithms are needed to simplify a large number of operating applications. The task scheduling function is also a key factor affecting the computing efficiency of fog. The efficient solution of workflow decomposition in fog calculation can enable application tasks to complete the work of nodes faster and more efficiently [9]. The workflow scheduling task in fog computing can ensure that the application task can achieve high quality and complete service realization through resources and ensure higher utilization of resources. In the work of fiber optic gyroscope (fog) computing system, the resource information point is always in the state of low utilization. A study conducted at the University of New Virginia found that even in the most idle hours, nearly 30 percent of its nodes are busy and can use a large number of nodes on average. A few of these free nodes are caused by the temporary absence of the resource owner or by various reasons. Although different systems have different definitions of "different usage states for nodes," one thing is certain: if a node is heavily loaded, it will not be able to take on more workflow tasks. The main and effective resource task model for optimal scheduling can improve the utilization efficiency of node resources, and at the same time make the load of service information flow of resources low, so as to ensure that the service is in a low-load computing state most of the time [10]. This will give the task owner more computing benefits.

Based on the above reasons, this paper proposes a new behavior flow-based role task scheduling method and applies it to the fiber optic gyroscope (fog) computing system. This method establishes a multi-agent role interaction and connection mechanism, and divides a large number of information resources into several hierarchical models according to the task function of the computing nodes [11]. In order to establish a complete task workflow system, each agent role in the system is divided into the bottom layer, the middle layer and the top layer. In each given role task layer, multi-role agent integration is used to realize the cooperative work of child roles, share edge node resources, and map the resources at a given level in the parent system. Meanwhile, in the method model, all functions of edge nodes can be completed through the collaboration between roles [12]. Various proxy roles in the algorithm can be implemented.

2. Role Object Resource Model Theory

2.1. Basic Concept of Role Object Resource

The role object is the abstract structure of the resource receiving process, resource processing and resource sending tasks. In the definition of the role object resource model, the role object resource is a unified role responsibility weight. The weight values define the behavior patterns and resource constraints of the role objects. In other words, role object resources are aggregated through the attributes, patterns, behaviors, capabilities and other behaviors of resource objects, through the centralized reflection of members' purposes, energy efficiency, responsibilities, licenses, restrictions and methods, and through the standardized definition of the classification of things. According to the relationship between users and the way of role object association, the member completes the establishment of role object joint cooperative activity. The role object resource is defined to simulate the decomposition of the role object according to the efficiency and capability of the member. With the participation of more role objects, multiple users can have different role objects. The role object is a relatively independent abstract unit, which has a certain purpose in the collaborative process and can complete a group of operation unit activities in order. Role objects are composed of activities, resources, and states, and tasks for which the activity plays the role of a role actor. Role object resources are relationships between roles and information. The role object has a variety of role activity conditions, among which all kinds of information materials required by the role activity need to form the event premise. Events are triggered by role object activities. By changing the state of the role activity, the role object can be realized through the role object relationship under different states, thus forming the role relationship and the role object task relationship.
2.2. The Character and Relationship of Role

The character of role

(1) The behavior object of the same role object can share the same plan and execution. Taking the fog computing system as an example, the resource role object node has a unified information structure and can set the information and resources of the role object at the same time.

(2) Resource collection and processing of role object behavior. For example, when working with multi-modal task data, we can define a role object to handle work resources. After the resource object structure mapping is completed, authorization is accomplished through the task category of the authorization role object.

(3) Role objects can be collected and shared uniformly.

(4) The actor of the role object represents the specific process model of the role object. For example, the roles of different resource categories of edge computing nodes reflect the different control scopes and capabilities of the nodes.

(5) The behavior of the role object is controlled by the access of the special object interface. For example, the edge computing node is taken as the computing role of the parent node object, whose work is the upper level computing and capability processing, and its task group is the computing task group of the parent node. Other related tasks are not accessible.

3. Realize Role Agent Processing by Establishing Role Object Level

3.1. Role Object Agent Task Level Description Model

The traditional methods of fog processing have great influence on the process efficiency of higher level computer system. At the same time, authoritative processing is considered as an orderly combination of a series of logical activities, and the simple processing of complex models is realized through a simple work objective.

Figure 1. Role object level task processing mo.

Depending on the interaction of the multi-function system volunteers to deepen the role processing model, the role of polythunder syndrome is divided into functions by type. By reprogramming the sub-region of the single agent classification system from below, different secondary systems of identity agents can be broken down and separated. They are now getting younger and younger. After receiving the function of the intergenerational system of parents, super capital congregates and commands Mrs. Morlow to complete the work through the multi-pole iteration. Multiple agents are involved to fulfill internal roles and to develop relevant organizational skills so that agents can communicate with each other in order to achieve rapid change. We need this architecture to adapt to emergencies, especially to solve many conflict problems. The hierarchical structure model can be changed automatically by increasing the size of the problem in order to realize the dispersion of the actual space acting as the bottom pin and the spatial separation of the multi-dimensional space. In general, a multi-tier processing mode is established to handle different application resources. Its basic function is

(1) the functional configuration of the role object into a unified body reflects the relationship between its activities, as well as the reinforcing role in the interaction between the wheelchair themes. Thus, a unified description of its approach can determine whether the project is simple to use.

(2) in the atomization computing system, all the different types of substrate are used as the abstract concept of the role object. If the role object is decomposed by the descending ladder method, the
relationship between the role processing and the hospitality interaction will be abstract. By including all types of agents in the role model, the job must be done, and make sure that the role-playing activities are always described in a dynamic way. Role interaction process, automatic interaction and processing of role objects. The role model determines the representation of the object in the object environment, and the agent can use the independent operation of the different curve calculation to achieve the purpose of the collection. It is computer-centric, with transportation, independence and identity. The role proxy pattern has this feature.

(3) Environmental indicators are environmental indicators. Their characters, through the container format, can change the entire backlog by constantly changing the character objects, the environmental framework is constantly changing. Continuous processing of role objects increases the flexibility of role objects and the efficiency of streamlining between roles. Moreover, there are many problems in the mixed structure, such as the structure is not extensive, the universality is not good, the characteristic is not sufficient, and the design problem can be solved in a very short time. Interactions between different characters are analyzed on autopilot, maps, and levels.

3.2. Hierarchical Dynamic Role Object Task Processing

In a computing system, it is not easy to find a dynamic format, but the automatic spacing strategy can effectively solve the problem. Since the general approach is based on the basic conditions of the bridge, automatic loading machines are neither self-controlling nor self-balancing. Basic form and form the real problems of the low end of the dynamic strategy is that it can not rely on the smooth surface of the object because treatment may cause reaction speed of the slowest low efficiency as a result, through the analysis of the basic form of the fog of the complex computing system platform, this paper puts forward the various work level of powerful combination method of the processing system. How to calculate the surrender quantity and calculation mode of several static concepts of each computing mode not only solves the decomposition problem of information resources of multilayer processor. Role-playing resources can be effectively managed by mediators, depending on the processing pattern adopted in the work process. When the role resources reach the critical point, the broker will allocate the role resources to each role by pausing. Therefore, the efficiency of resource should include the replacement of resources, as well as the interaction and reception between multiple resource resource entities.

The different level of role object is not only an objective vocabulary, it is the high difficulty and indispensable of the replacement work. Depending on the division of labor, this can become a path of life.

![Figure 2](image)

Figure 2. Agent role object model hierarchical task processing.

Roll can set up a single service-robol-agent-management processing side by developing objects through communication to initiate a smart decision making process to ensure the current nervous role and trigger to disarm the object management determining sponsored the next round of execution country to disarm and transfer is belonging to how naming roles. Role object management decides on the next fellowship unit and deletes the cast of roles. Through feedback to roll object and future leaders roll- task-management-punk roll - task-management-agent roll-task-management-agent-agent then becomes the role of Entity roll-entity-information will go back to the multi-agent node for power supply, and the rolle-information supplier proposes to train the user to become a performance Entity, in
which the acting object will provide the operational interface used and necessary composite services, and the role unit will complete the whole role target allocation and execution together. By playing the role of interaction between enterprises to ensure the execution of tasks and execution for different tasks. The role exits data entry and feedback.

The application process is the "job calculation" process. Generally speaking, he talks about the process of aged brandy. In fact, the purpose of the entire navigation system's role-playing service is to go through several major role flows. From an internal systems point of view, each process of manufacturing the same effect can be completed. For example, the operation process includes three categories: multi-dimensional creation of interactive area, fusion model of visual interaction area, multi-task processing and scene disease. Different role structures are complemented by service functions. Different roles involve different processes. The navigation of different roles will result in different handlers depending on the user's requirements. The form of the office is a form of knotting and rolling, with which one person shares the cooperation. In short, the role is critical, and the most effective way to achieve the ultimate goal and the essence of the workstation is the process supply chain.

4. Experiments and Analysis

The role computing experiment, multi-task model and multi-work package model were performed on 20 computers in a single network environment. Check and compare the above models several times.

(1) Analysis of workflow twist rate

![File conversion rate buffer display](image1)

The higher the workstation speed, the higher the file error rate that changes based on the task spectrum data (the higher the deviation rate, the file is converted on the spot and no additional segments are required). Figure 4 shows that the transformation speed of the proposed algorithms on these papers is relatively low, while the other algorithms are basically consistent with time.

5. Conclusion

The critical role planning model proposed in this paper determines the interaction between information and tasks. This shows that this is not only the responsibility of "good computing", but also the main purpose of improving the efficiency of resource allocation. The division of labor of multiple components can be modified as the task changes to meet the requirements of the replacement task. He didn't have to use other capabilities to do the case and finally the algorithm solved the problem of looking for a balance with the other half and the analysis and the experiments showed that it was very useful in the role processing mode to identify all types of trial junctions, to expand the types of trial junctions, to do more trials. Finally, the way to simulate a large data environment is to verify efficiency.

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