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A reliable & secure Probability approach for intrusion detection and Rouge Node eviction in a complex Wireless Sensor Networks.

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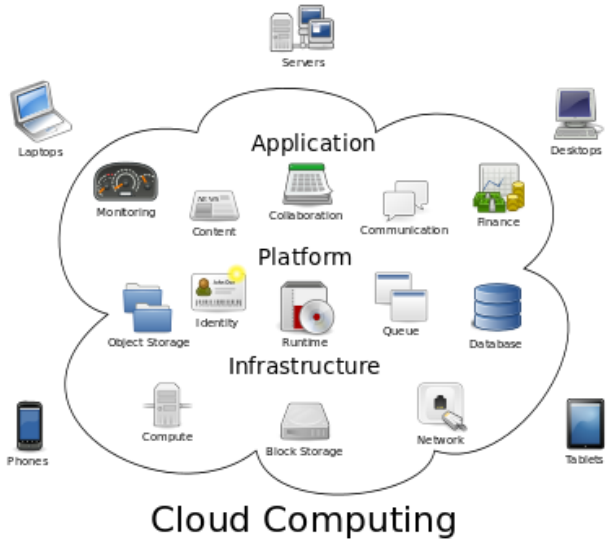
Abstract:

Cloud computing is typically defined as a type of computing that relies on sharing computing resources rather than having local servers or personal devices to handle applications. In cloud computing, the word cloud (also phrased as "the cloud") is used as a metaphor for "the Internet," so the phrase cloud computing means "a type of Internet-based computing," where different services — such as servers, storage and applications — are delivered to an organization's computers and devices through the Internet. In such systems the resources are not optimally used. Due to this the performance degrades and efficiency reduces. Cloud computing is made more efficient by better load balancing methods. User satisfaction also improves. This paper introduces a better load balancing model for the public cloud based on the cloud partitioning concept. A switch mechanism is introduced here to choose different strategies for different situations. The public cloud is divided into cloud partitions and different strategies are applied to balance the load on clouds. This paper studies a system which has main controller, balancers and servers. The main controller selects the appropriate balancer for a particular job. The balancer further selects the server having minimum load. Hence, this system will help dynamically allocate jobs (data) to the least loaded server which will result in an efficiently balanced cloud system.

Keywords: ***Reliability, security, Load balancing, Main controller, Balancers, Servers, energy conservation.***

Introduction:

In a cloud computing system, there's a significant workload shift. Local computers no longer have to do all the heavy lifting when it comes to running applications. The network of computers that make up the cloud handles them instead. Hardware and software demands on the user's side decrease. The only thing the user's computer needs to be able to run is the cloud computing system's interface software, which can be as simple as a Web browser, and the cloud's network takes care of the rest.



The National Institute of Standards and Technology's definition of cloud computing identifies "five essential characteristics":

On-demand self-service: A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.

Broad network access: Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, tablets, laptops, and workstations).

Resource pooling: The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources

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dynamically assigned and reassigned according to consumer demand.

Rapid elasticity: Capabilities can be elastically provisioned and released, in some cases automatically, to scale rapidly outward and inward commensurate with demand. To the consumer, the capabilities available for provisioning often appear unlimited and can be appropriated in any quantity at any time.

Measured service: Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts). Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and consumer of the utilized service.

Related Work:

Cloud computing is an attracting technology in the field of computer science. In Gartner's report[1], it says that the cloud will bring changes to the IT industry. The cloud is changing our life by providing users with new types of services. Users get service from a cloud without paying attention to the details[2]. NIST gave a definition of cloud computing as a model for enabling ubiquitous, convenient, on demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction[3].More and more people pay attention to cloud computing[4, 5]. Cloud computing is efficient and scalable but maintaining the stability of processing some any jobs in the cloud computing environment is a very complex problem with load balancing receiving much attention for researchers. Since the job arrival pattern is not predictable and the capacities of each node in the cloud differ, for load balancing problem, workload control is crucial to improve system performance and maintain stability.

Load balancing schemes depending on whether the system dynamics are important can be either static and dynamic[6]. Static schemes do not use the system information and are less complex while dynamic schemes will bring additional costs for the system but can change as the system status changes. A dynamic scheme is used here for its flexibility. The model has a main controller and balancers to gather and analyse the information. Thus, the dynamic control has little influence on the other working nodes. The system status then provides a basis for choosing the right load balancing strategy. The load balancing model given in this article is aimed at the public cloud which has numerous nodes with distributed computing resources in many different geographic locations. Thus, this model divide 1sthe public cloud into several cloud partitions. When the environment is very large and complex, these divisions simplify the load balancing. The cloud has a main controller that chooses the suitable partitions for arriving jobs while the balancer for each cloud partition chooses the best load balancing strategy.

EXISTING SYSTEM:

Since the job arrival pattern is not predictable and the capacities of each node in the cloud differ, for load balancing problem, workload control is crucial to improve system performance and maintain stability. Load balancing schemes depending on whether the system dynamics are important can be either static and dynamic. Static schemes do not use the system information and are less complex while dynamic schemes will bring additional costs for the system but can change as the system status changes. A dynamic scheme is used here for its flexibility.

DISADVANTAGES OF EXISTING SYSTEM:

- Cloud computing environment is a very complex problem with load balancing receiving.
- The job arrival pattern is not predictable and the capacities of each node in the cloud differ, for load balancing problem, workload control is crucial to improve system performance and maintain stability.

PROPOSED SYSTEM:

The load balancing model given in this article is aimed at the public cloud which has numerous nodes with distributed computing resources in many different geographic locations. Thus, this model divides the public cloud into several cloud partitions. When the environment is very large and complex, these divisions simplify the load balancing. The cloud has a main controller that chooses the suitable partitions for arriving jobs while the balancer for each cloud partition chooses the best load balancing strategy.

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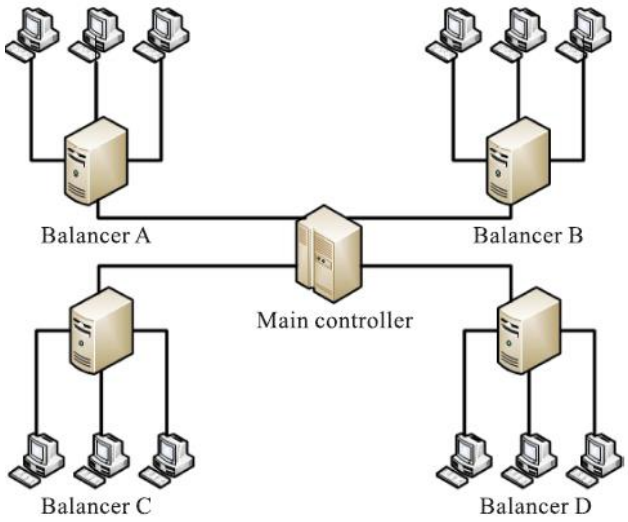
ADVANTAGES OF PROPOSED SYSTEM:

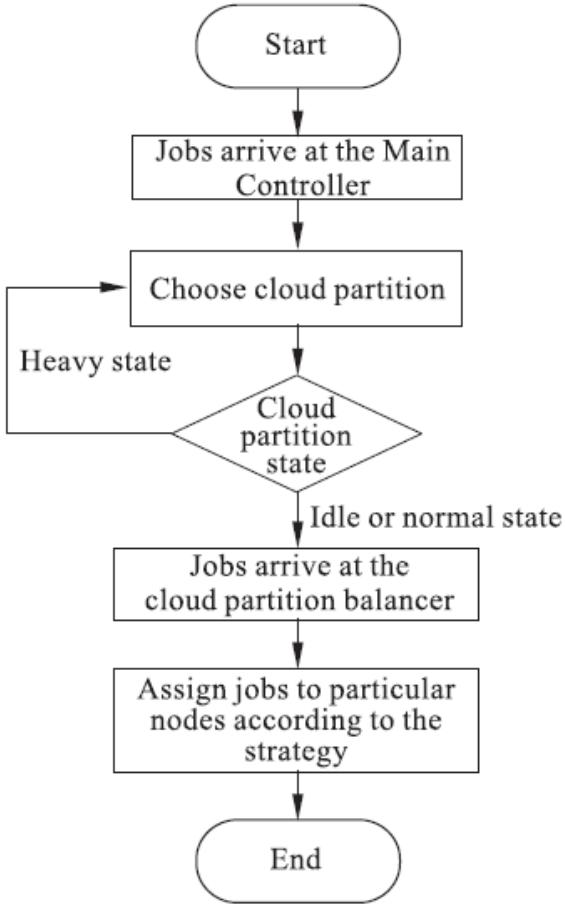
• This model divides the public cloud into several cloud partitions. When the environment is very large and complex, these divisions simplify the load balancing.

• The role that loads balancing plays in improving the performance and maintaining stability.

Architecture:



Project Flow:



Algorithms

The status of every server is updated by the balancers and depending on the status the partition is selected. The cloud partition status can be divided into three types:

(1) Idle: When the load exceeds alpha

(2) Normal: When the load exceeds beta

(3) Overload: When the load exceeds gamma

The parameters alpha, beta, and gamma are set by the cloud partition balancers.

Best Partition Searching Algorithm:

Begin

While User_request do

Best_partition_searching_strategy (User_request);

If partition_status == idle OR partition_status == normal then

Assign user_ request to Partition;

Else

Search for another Part;

End if

End while

End

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Conclusion:

A public cloud is one based on the standard cloud computing model, in which a service provider makes resources, such as applications and storage, available to the general public over the Internet. Public cloud is made up of several nodes situated in deferent geographic location. Cloud partitioning is a method to make partitions of huge public cloud is some segment of cloud. A public cloud is one based on the standard cloud computing model, in which a service provider makes resources, such as applications and storage, available to the general public over the Internet. Public cloud is made up of several nodes situated in deferent geographic location. Cloud partitioning is a method to make partitions of huge public cloud is some segment of cloud. The object of study in game theory is the game, which is a formal model of an interactive situation. It typically involves several players; a game with only one player is usually called a decision problem.

In future study we will try to find other load balance strategy because other load balance strategies may provide better results, so tests are needed to compare different strategies. Many tests are needed to guarantee system availability and efficiency. Also we will address the development of game theoretic models for load balancing in the context of uncertainty as well as game theoretic models for dynamic load balancing in future. We also plan to develop dynamic load balancing schemes based on dynamic game theory that provide fairness by taking the current system load into account and also consider other aspects of heterogeneity.

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