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Dynamic Congestion Control in Network Layer for Advanced Cloud Computing

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GJCST-B Classification: *C.2.1, C.2.4, D.1.3*

Strictly as per the compliance and regulations of:

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I. Introduction

Cloud computing is being widely adapted across many industry sectors with adapted with security concern.Net- work layer in the clouding computing face a congestion problem, not able balancing the load. In existing network layer resource allocation is biggest problem, due to that regulation of the traffic is very difficult. In this proposed paper introduces application controller to act as centralized operator for the balancing the load, regulating the traffic over the clusters. In these dynamic networks always updated information multicast to each region. The basic structure of network is through access node make a user interface to application servers. In same layer application controller plays a major role to control the congestion by using suitable techniques. The backbone routers are always communicating with data path services and forwarding multicast message and also subscription of the updates. The cloud will be divided in to multiple clusters, every cluster have data centers switches. The application server receive the updated news, observe the its server object locations and subscribe server implicitly to required multicasts. Finally the subscription done by the observing the traffic.

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II. Dynamic Network in Cloud Computing

The Dynamic networks are support new infrastructure capabilities. These networks easy to allocate the resource at specific region and share load equally that means in which location have a less traffic allocate the path through that direction. Regulating the traffic by updated messages. Here consider portion of dynamic network. The figure consists of Data center, Application node, provisional Virtual link and Virtual output queues.

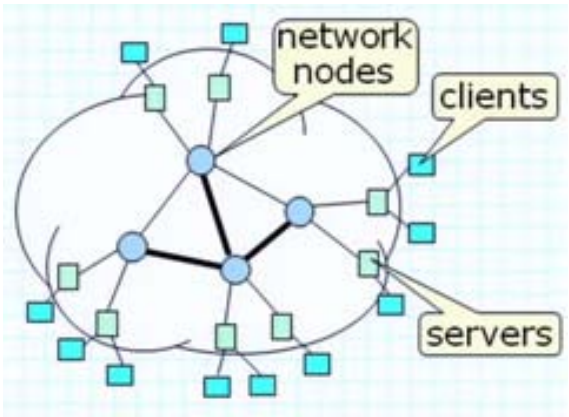

Figure 1

It support internet scale traffic volumes with router like latency, and flexible for high performance packet process. If require all sites are connected by backbone supporting the provisional virtual link.

Data center

Each Data center processor having cluster process resource specified by function, Data center consists of multiple stages for scalabiliy, each system with 1k-100k servers.

The additional edge capabilities are load balancing of flow or packets, regulating traffic flow within application cluster for avoiding congestion, multicast the packet forwarding within cluster.

III. Application Components

Overall Application Components are:

1. Access nodes
2. Application Controller
3. Application Server
4. Backbone Node

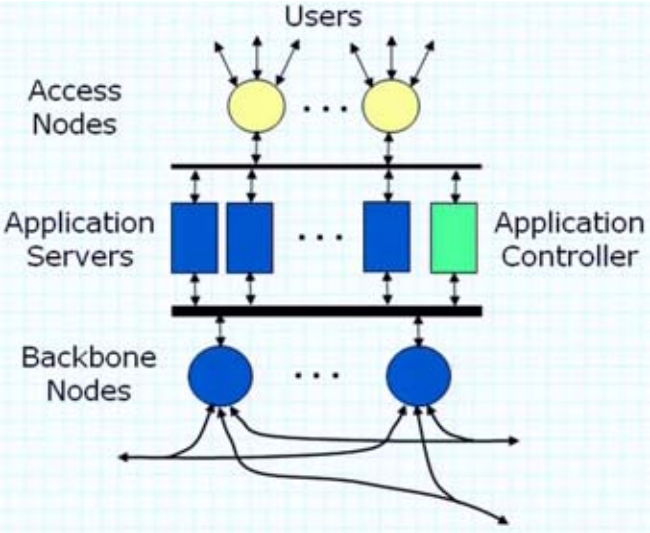

Figure 2

a) *Access Node*

Access nodes are User interface functions to pass the request and get the responses from servers. Each node has multiple user connections are directly connected with the respected servers.

Access node is part of the cluster and cluster is the portion of the data center.

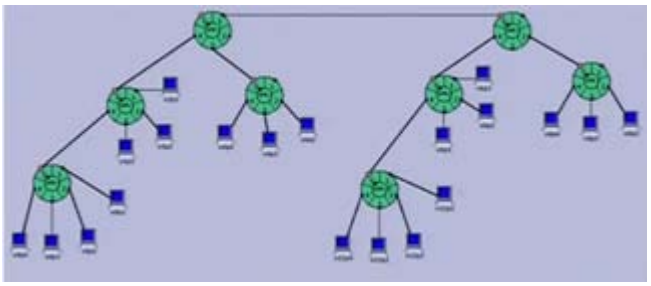

Figure 3

b) *Application controller*

It is system session level control. It will be create the sessions, increment multicast tree routing and controlling the updated information it distribute multicast message to all the regions in the cluster.

c) *Data center switching Issues*

Each switching center have multiple connection for scalability, switching center directly connected with other switching centers .it have multiple path to it neighboring switching centers. finally the performance is increases.

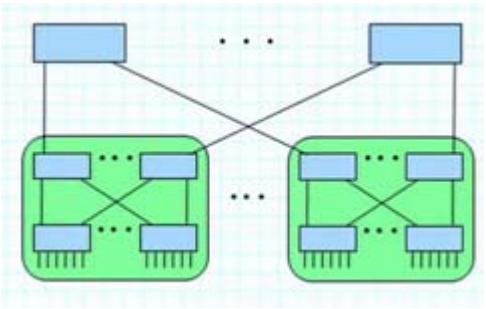

Figure 4

d) *Controlling the updated distribution*

For example divide the game in to multiple regions with multicast per region, and send object update on multicast for the region, receive state visible region. the server subscribe the regions as needed or network node can observe implicitly to required multicast. The subscription done by observing the traffic. When the server subscriber, starts for receiving updates: no coordination with sender required, send full updates periodically at lower rate

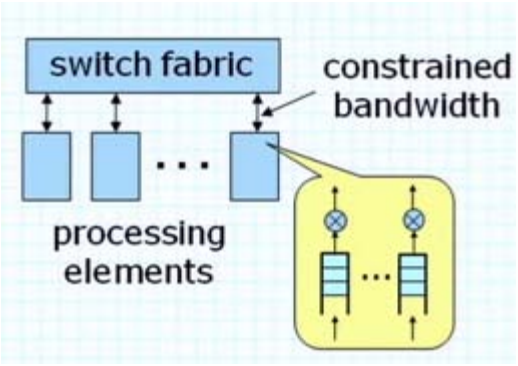

Figure 5

Regulating the traffic with cluster for avoid congesting outgoing interface to processing elements (PE) The PE's create virtual output queues. And dynamically VOQ rate will be adjusted. VOQ rate is adjusted to prevent output congestion while optimizing the performance.

e) *Backbone Nodes*

Backbone node provides data path services. To make a communication between any to data centers. And it can also multicast message forward and subscription. The nodes are act as intermediate nodes just share the message and subscription for following notifications.

IV. Conclusion

Each location constructs data center for processing of resource specified by function. Application controller updates the distribution information and multicast to access nodes for load balancing of flow of packets and regulating the traffic flow within application cluster to avoid congestion. The

processing elements create the virtual output queues to adjust to prevent output congestion. Finally reduce the congestion into minimal level in adaptive network layer in cloud computing

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