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Implementation of Monitoring System for Cloud Computing

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Abstract: *As the benefits of cloud computing have increased, its utilization has been higher, but it has caused overload problems for virtual server. This paper implements the monitoring dashboard of cloud computing in order to prevent the failure of virtual servers and desktops in the cloud computing environment.*

Keywords: *Cloud computing, Dashboard, Monitoring*

I. INTRODUCTION

Recently as the benefits of cloud computing has been magnified, the utilization of cloud computing is increasing. However, the increased utilization makes virtual servers and desktops increase, then the unexpected problems are caused by failure.

Examples of failure are with a virtual server hypervisor[1,2] and a virtual desktop. The performance of virtual servers and desktops eventually is affected by the server's physical resource. If CPU, memory, and storage are under an overload, then the virtual desktops running on the server is running will not be able to perform their normal function. Therefore the number of working desktops is higher, the loss of expenses is larger.

In order to prevent the problems, the monitoring system is required to check the virtual server's physical resource in the real time and notice the status to administrator .

In this paper, we show the real-time resource utilization of XenServer[3], and implement the monitoring dashboard that can respond instantly in the event of a failure of the server and virtual machine (VM).

II. DESIGN OF MONITORING SYSTEM

The proposed monitoring system for cloud computing is shown in Fig. 1. Xensever Broker performs the ability to get information about CPU, RAM, Storage of XenServer and then transfer to the Cloud Manager.

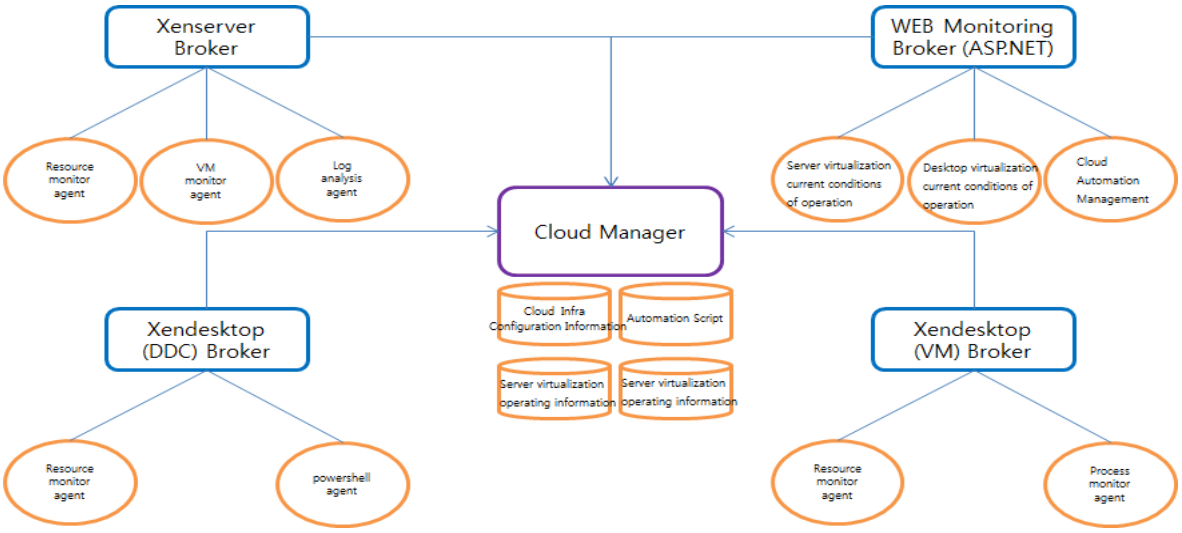

Fig. 1. System Architecture

Xendesktop DDC(Desktop Delivery Controller) Broker performs the Powershell Script through DDC's VM management tool and transfer the information of VM obtained by DDC to Cloud Manager. WEB Monitoring Broker gets the information of CPU, RAM, storage of Xensever and Xendesktop, then outputs the information to user in order to see. Xendesktop VM Broker performs the function to obtain the information about CPU, RAM, storage of Xendesktop VM, and then transfer to the Cloud Manager. Cloud Manager saves in memory the information from Xenserver Broker, Xendesktop DDC Broker, Xendesktop VM Broker, and transfer the data of memory to WEB Monitoring Broker.

III. IMPLEMENTATION OF MONITORING SYSTEM

We implement the monitoring system for cloud computing. Implemented system is classified four parts; Xenserver agent, Xendesktop agent, Cloud Manager, and Web monitoring page.

Xenserver agent is developed to be collected the server's real-time information such as CPU, memory, storage.

- Design of Linux-based agent compatible with Xenserver
- Gathering UUID (Universally Unique Identifiers) information required to identify the server
- Gathering information of Xenserver Version

- Check of connection status with Cloud Manager if agent is executed
- Transmission to Cloud Manager the total amount of resources of CPU, MEMORY, DISK, actual usage, remaining usage
- Performance testing and feedback through Q, A

Xendesktop agent is developed to be collected PC name, state, OS type, CPU, memory, storage of VM.

- Similar with Xenserver agent, but transmission detailed information of VM to Cloud Manager as VM customized agent
- Check of connection status with Cloud Manager if agent is executed
- Performance testing and feedback through Q, A

Cloud Manager is developed.

- Save in memory the information sent by agents, response when the Web Monitoring Page requests the information
- Calculation the value of the normal / fault depending on the connection state of the VM agent and Server agent
- Performance testing and feedback through Q, A

Web Monitoring page is finally developed.

- User authentication through Login page.
- Graph representation by using MS chart of numerical value for Xenserver and VM's resource usage
- Display of warning when the utilization of CPU, memory, storage is reached to the defined values of utilization. Fig. 2 shows that a warning is displayed when the memory utilization of the server DongEuiXen01exceeds 90%.
- Graph representation of VD's PC name, OS version, corresponding resource utilization, information of the IP as shown in Fig. 3 when a certain VD is clicked from the VD list.
- Turning active VD list as shown in Fig. 4 when each server box is clicked from the main screen
- Display of normal / fault of Xenserver & VM state as shown in Fig. 4, by determining the status of each VD from Cloud Manager

Fig. 2. Web Monitoring Main

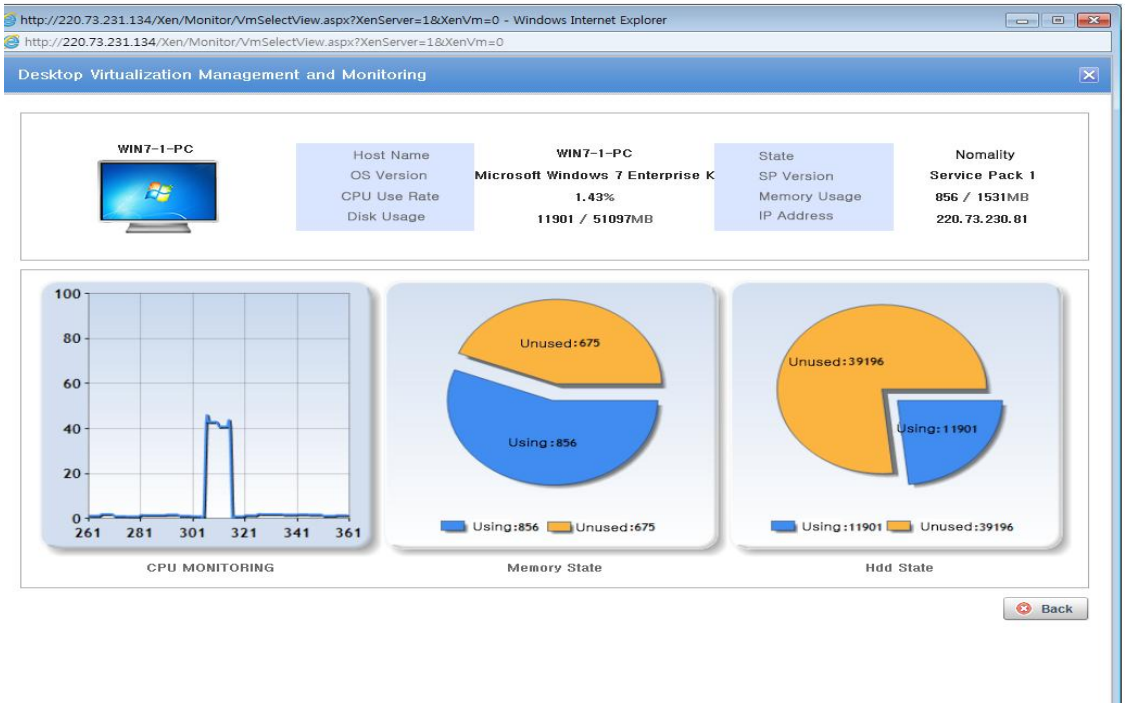

Fig. 3. VD Monitoring page

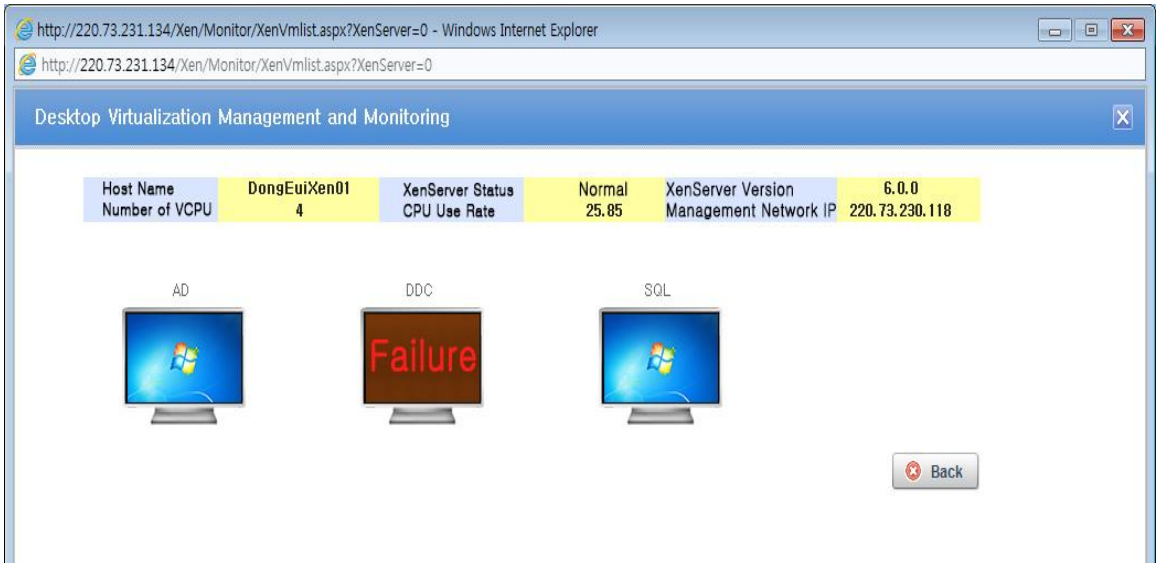

Fig. 4. Hypervisor's VD list

IV. CONCLUSION

In this paper, in order to solve the problem of a failure for clouding computing, the current states of resources are checked on the real-time detection, then the information are monitored when a failure occurs. Using the data processing of the non-cumulative resource usage, the data are immediately processed quickly on memory.

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