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Analysing Performance of Small Business Servers

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Abstract: Analysing the performance evaluation of Small Business Servers of client computers in Real time by deploying each sets of client computers with different servers such as fedora 21, Hadoop, Zentyal servers. Now by observing the data transfer and performance rate the best performance server is going to be identified and the amount of data transfer is calculated. Hence the drawback of servers are noted.

Key words: Zentyal Server · Fedora server · Hadoop · Zabbix tool · Nagios tool · Ganglia tool

INTRODUCTION

Today's servers are expensive and high performance working. So, keeping them running smoothly is critical. However, managing high levels of server performance and keeping up with growing computing demands doesn't happen on its own. Analysing the performance and making the most of hardware resources is an ongoing process that can keep data centre administrators work free. But, there are ways where IT professionals can simplify server management while maintaining the performance. Performance analysis can help administrators monitor server resources, optimize performance, manage utilization and even identify problems before it happens [1].

All the organisations deals with different servers. Servers in current scenario is in difficult condition because of various problems which affects the system like More number of Load balance, data transferring speed, etc.

Benchmark testing can help establish baseline performance expectations and track a system's performance. Administrators can also use performance analysis to help with virtualization capacity planning and better manage server resources, performance and utilization. This can allow data centre administrators to identify potential performance problems and plan for future capacity needs of the servers. In this section, we offer several tips explaining how to pick the best performing server for your organization and how to get the most out of the tools you choose, we explain what metrics are important and help you evaluate results [2].

All performance testing will produce result, but testing may not be relevant or helpful when best practices are not followed. Following a structured approach to performance analysis will ensure the correct servers are being suggested for your organisations accurate result [3].

Proposed Work: All Client computers are configured with three different servers. We have deployed each client computers with different servers such as fedora 21, hadoop, Zentyal servers. First we simply describe the servers which are used for our research.Zentyal Server is a Linux small business server, that can act as a Infrastructure Manager, Gateway, Unified Threat Manager, Office Server or a combination of them. These functionalities are tightly integrated, avoiding mistakes and saving time for system administrators. Zentyal Server is open source and runs on top of Ubuntu GNU. We using zentyal server as one of the server in our analysis process. We tried with a working system which consisted of 3 client computers, changed the status of the three systems from workgroup to domain controller [4]. Then configured zentyal server in the client system. Such that the client computers comes under the control of zentyal server.

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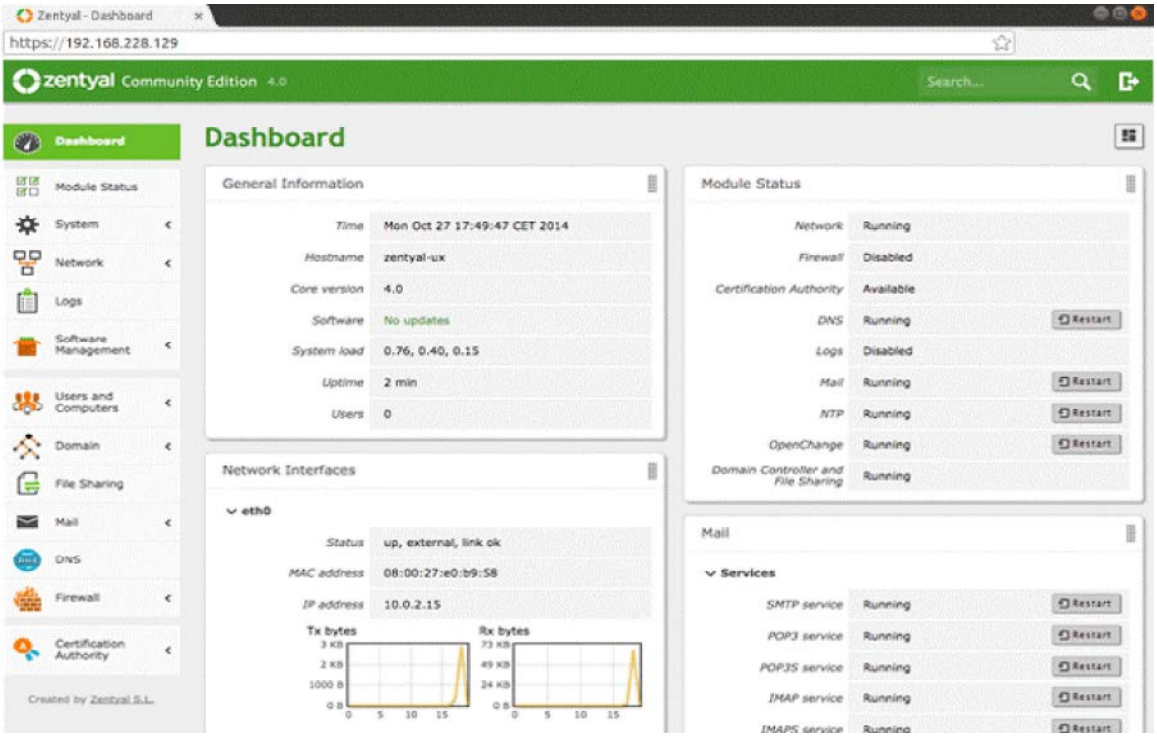
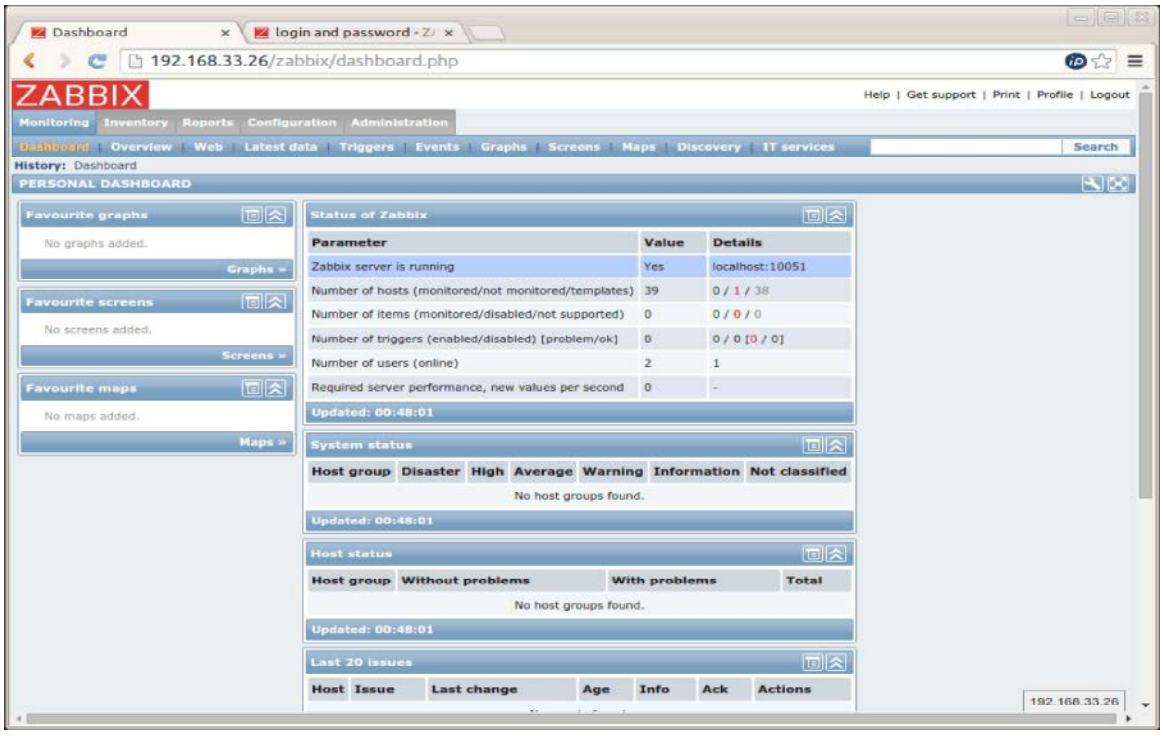
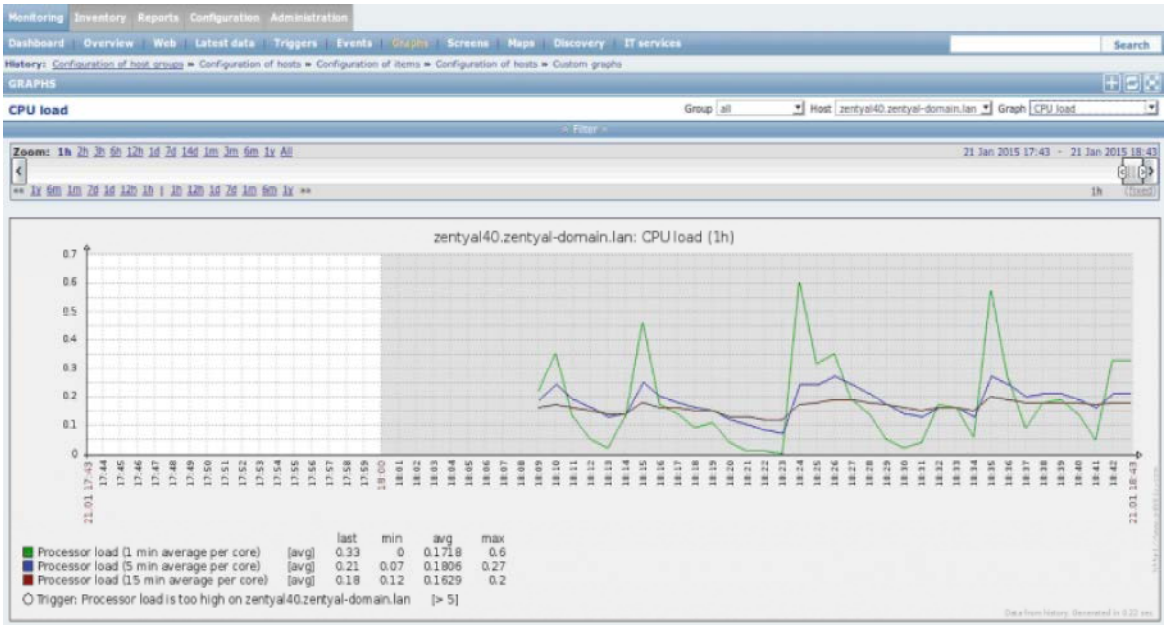


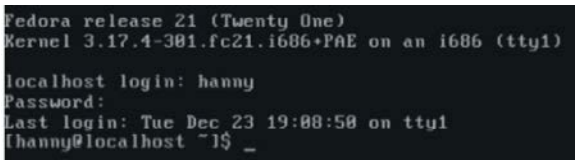
So now we can monitor the performance of the client computers. The above shown screen shot is Zentyal dashboard which is used to configure the client sysytmes [5]. Herezabbix monitoring tool is used to view the performance of the client systems. Zabbix monitoring tool dashboard will display the number of client systems connected and the number of localhost in that server.



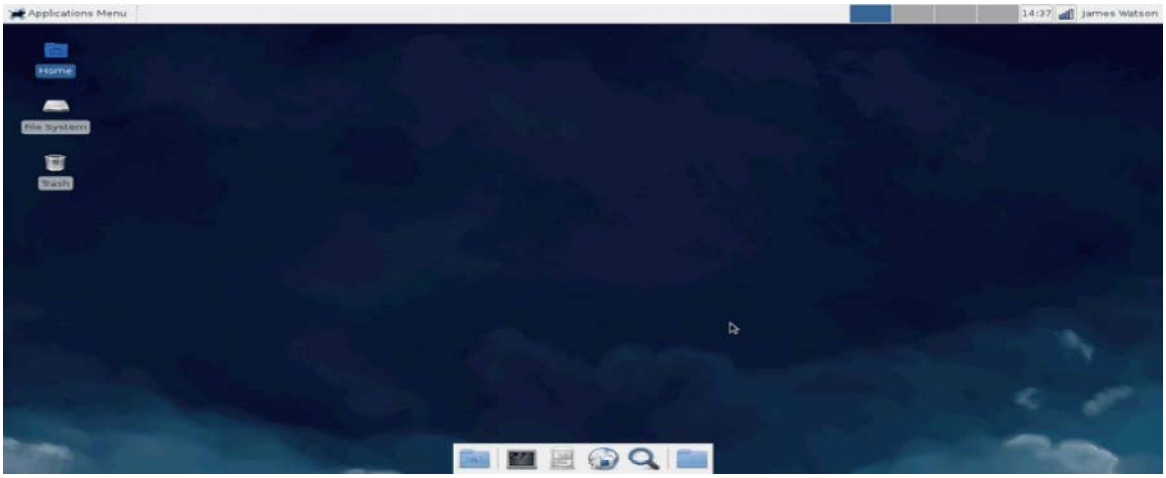


The performance metrics of the client computers are noted by passing 100MB of data to all the client computers. Now the data traffic of the 3 client systems are noted [6].

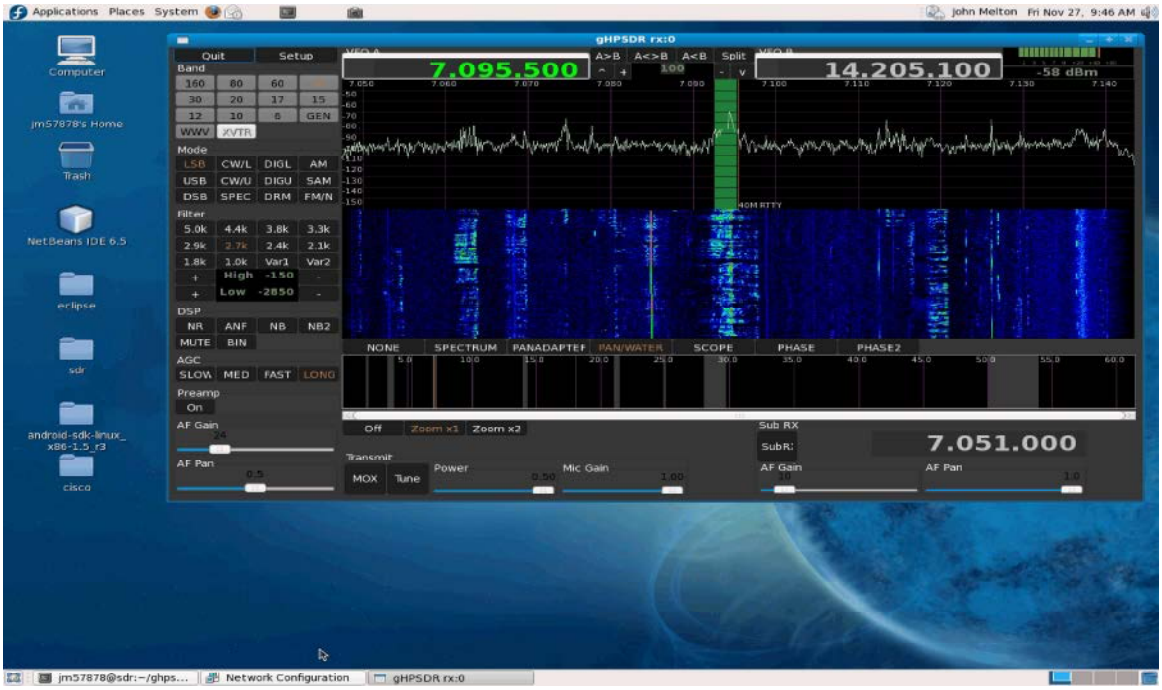
Fedora Server is a common base platform with 'featured application stacks' built on top of it. Which is used to commit to produce, test and distribute application stacks. Fedora Server is a powerful, flexible operating system that includes the best and latest data center technologies. It puts you in control of all your service infrastructure.There's no need to set up your server from scratch when you use server roles.



This is the second server we deployed for performance analaysis. In order to configure the client systems with fedora 21 server we need to be in graphical mode [7]. There is no graphical view for fedora 21 server after installation, So Command mode should be changed to Graphical mode using xfce desktop environment.

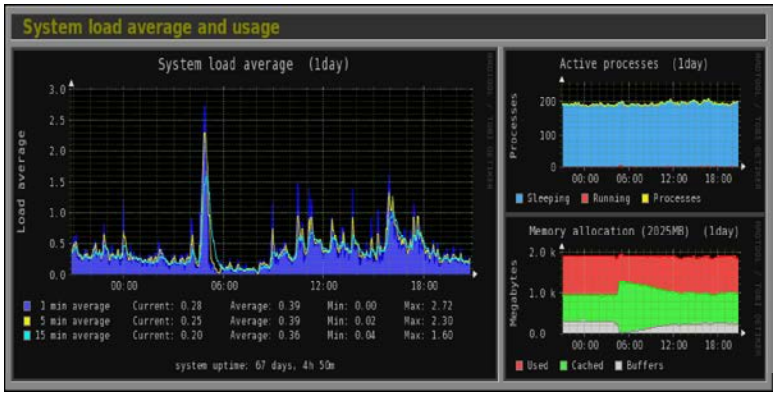


Then the client systems are configured. Using Nagios monitoring tool the performance are noted.

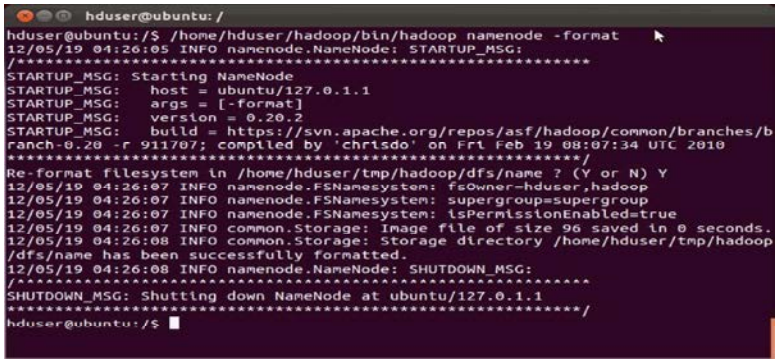


In fedora 21 server we have an option for analysis the performance metrics of big data. In which network traffic of individual port like SMTP FTP HTTP SSM POP3 NETBIOS MYSQL DNS IMAP traffic can be calculated [8].

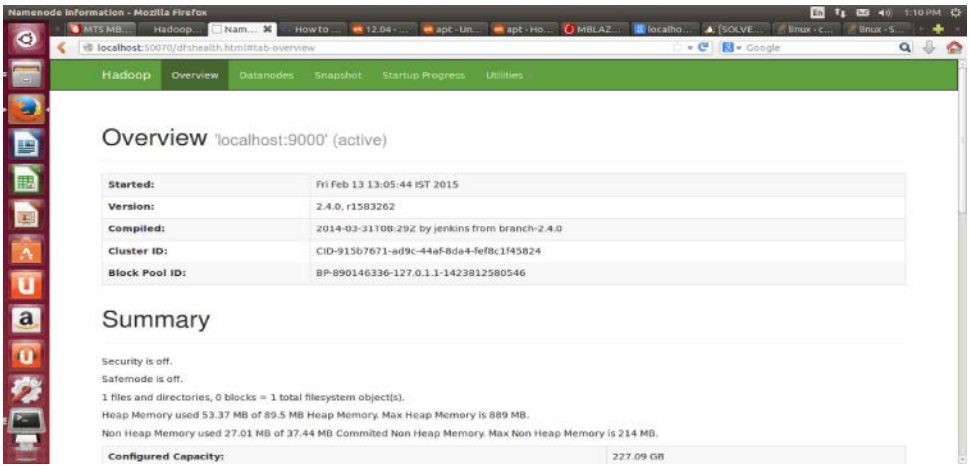
As well as Load analysis is possible. Where system load average can be calculated by passing same 100MB of data to the client system. In fedora 21 server 20% load will be allocated to memory allocation. So data transfer speed will be less while comparing with zentyal server [9].



Hadoop is an open-source software framework written in Java for distributed storage and distributed processing of very large data sets (Big Data) on computer clusters [10]. All the modules are designed with a fundamental assumption and thus should be automatically handled in software by theHadoop framework. The core of Hadoop consists of a Hadoop Distributed File System (HDFS) and a Map Reduce [11]. Hadoop splits files into very large blocks and distributes the blocks to the nodes of the cluster. To process the data, Hadoop transfers code to nodes that have the required data, which the nodes process in parallel. This approach takes advantage to allow the data to be processed efficiently and faster via distributed processing than by using a conventional supercomputer architecture that depends on a parallel file system where data and computation are connected via high-speed networking [12].

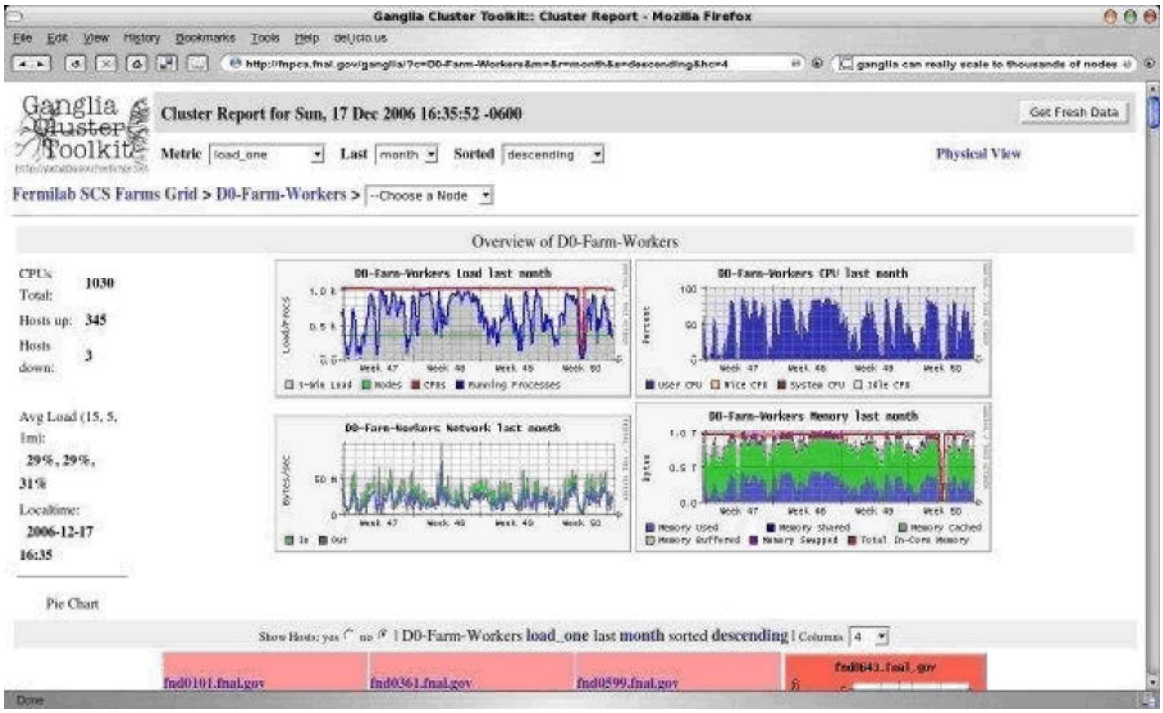


In this Hadoop Single node cluster is being installed and their by we get localhost dashboard for Hadoop.



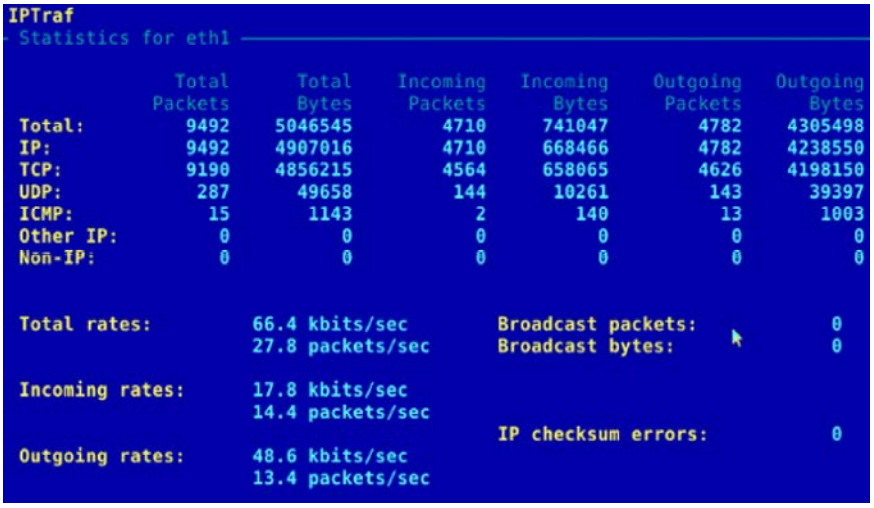
Now client computers can be configured.

For Hadoop we have Ganglia monitoring tool. Using ganglia tool we can monitor the data load of the client systems, as well as there is an option for monitoring data packet transferring.



Same 100MB of data is processed in client computers to note data transfer speed. While comparing zentyal and fedora 21 server, Hadoop performs much faster.

Data Packet transferring in Hadoop



Parameters	Zentyal Server	Fedora Server	Hadoop
Processor Load	1 min= 0.6	1 min= 0.4	1 min= 2.6
	5 min= 0.27	5 min= 0.2	5 min= 1.57
	15 min= 0.2	15 min= 0.05	15 min= 1.2
Data Speed	100MB/s	100MB/s	100MB/s
Network Traffic	Nil	SMTP =60kb/s	
		FTP = 250b/s	
		HTTP = 38kb/s	
		SSM = 470b/s	FTP = 49kb/s
		POP3 = 50kb/s	TCP = 48kb/s
		NETBIOS = 1.0b/s	UDP = 49b/s
		MYSQL = 5.0b/s	ICMP = 0.11b/s
		DNS = 150b/s	
		IMAP = 11.5kb/s	

CONCLUSION

Now by observing the data transfer and performance rate of client computers, Hadoop is concluded as the best performance server because zentyal server can be used to analyse only load processing where as fedora can be used to analyse both the load processing and also network traffic but 20% of the processing will be allocated to memory so fedora will perform less while comparing to the zentyal server. While working with Hadoop it has been analysed that Hadoop can perform much faster than other two servers. Since performance speed is mandatory.

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