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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 analysis performance. Performance 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].

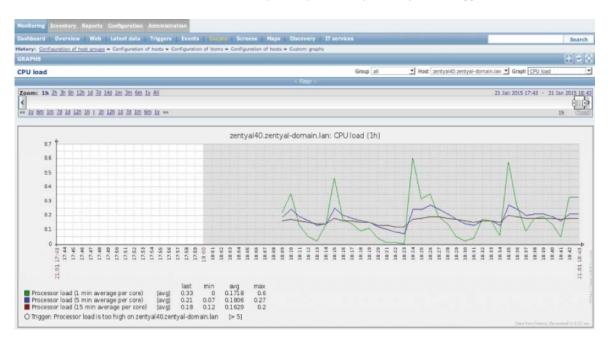
Proposed Work: All Client computers are configured with three different servers. We have deployed each client computers with different servers such as fedora 21, hadoop, Zentyal servers. First we simply describe the servers which are used for our research.Zentval Server is a Linux small business server, 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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Zentyal	Communi	ity Edition 4.0				Search	۹ 🛙
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🔆 System	¢	Time	Mon Oct 27 17:49:47 CET 2014	1999	Network	Running	
Network	<	Hostname	zentyal-ux		Firewall	Disabled	
Logs		Core version	4.0	200	Certification Authority	Available	
Software		Software	No updates		DNS	Running	D Restart
Managemen	ne f	System load	0.76, 0.40, 0.15		Logs	Disabled	
Users and		Uptime	2 min		Mail	Running	D Restart
Computers	٤	Users	0		NTP	Running	D Restart
Domain	٠				OpenChanpe	Running	D Restart
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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.

	00.00.120/120	bbix/dashboard.php			10 tz
ABBIX					Help Get support Print Profile Log
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ory: Dashboard	Web Latest d	sta Triggers Events Graphs Screens Ma	ips Dis	covery IT services	Searc
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vourite graphs		Status of Zabbix			
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	Graphs =	Zabbix server is running	Yes	localhost:10051	
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no sereens augeu.	Screens >	Number of triggers (enabled/disabled) [problem/ok]	0	0 / 0 [0 / 0]	
		Number of users (online)	2	1	
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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.



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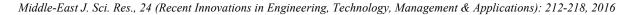


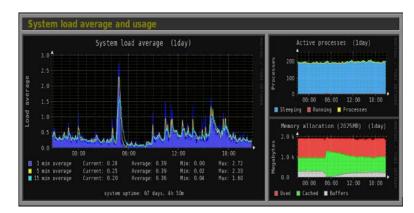
Then the client systems are configured. Using Nagios monitoring tool the performance are noted.

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].

😔 📾 💿 hduser@ubuntu: /	
hduser@ubuntu:/\$ /home/hduser/hadoop/bin/hadoop namenode -format 12/05/19 04:26:05 INFO namenode.NameNode: STARTUP_MSG:	×
STARTUP_MSG: Starting NameNode	
STARTUP_MSG: host = ubuntu/127.0.1.1	
STARTUP_MSG: args = [-format]	
STARTUP_MSG: version = 0.20.2	
STARTUP_MSG: build = https://svn.apache.org/repos/asf/hadoop/com ranch-0.20 -r 911707; compiled by 'chrisdo' on Fri Feb 19 08:07:34 ************************************	
Re-format filesystem in /home/hduser/tmp/hadoop/dfs/name ? (Y or N	
12/05/19 04:26:07 INFO namenode.FSNamesystem: fsOwner-hduser,hadoo	
12/05/19 04:26:07 INFO namenode.FSNamesystem: supergroup=supergrou	
12/05/19 04:26:07 INFO namenode.FSNamesystem: isPermissionEnabled=	
12/05/19 04:26:07 INFO common.Storage: Image file of size 96 saved	
12/05/19 04:26:08 INFO common Storage: Storage directory /home/hdu	iser/tmp/hadoop
/dfs/name has been successfully formatted.	
12/05/19 04:26:08 INFO namenode.NameNode: SHUTDOWN_MSG:	
/	
SHUTDOWN_MSG: Shutting down NameNode at ubuntu/127.0.1.1	

hduser@ubuntu:/\$	

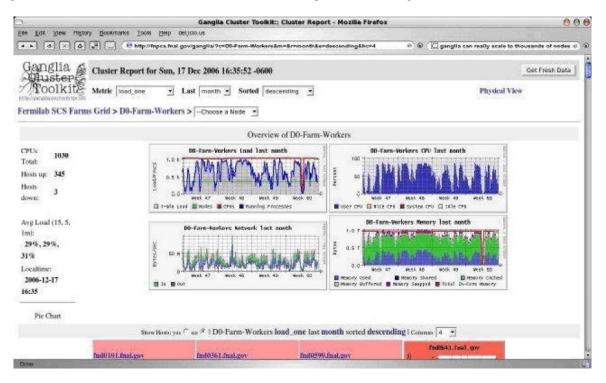
In this Hadoop Single node cluster is being installed and their by we get localhost dashboard for Hadoop.

localhost:50070/dfshealth.htm	#tab-overview	🗇 🕶 🕲 😸 🕶 Google	
Overview loca	lhost:9000' (active)		
	· · · · · · · · · · · · · · · · · · ·		
Started:	Fri Feb 13 13:05:44 IST 2015		
Version:	2.4.0, r1583262		
Compiled:	2014-03-31T08:292 by jenkins from branch-2	4.0	
Cluster ID:	CID-915b7671-ad9c-44af-8da4-fef8c1f45824		
Block Pool ID:	BP-890146336-127.0.1.1-1423812580546		
Summary			
Security is off.			
Satemode is off.			
2 Ellers word discolary 7 black	ks = 1 total filesystem object(s).		
	of 89.5 MB Heap Memory, Max Heap Memory is 889 MB.		

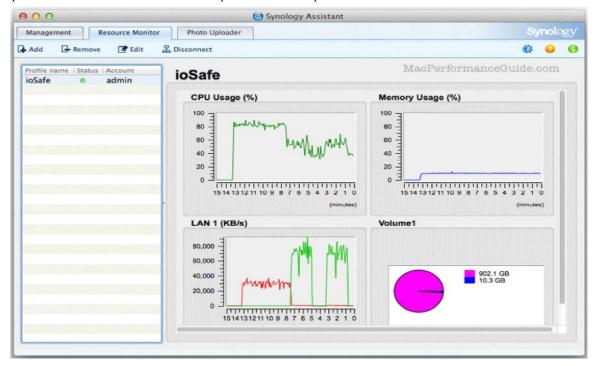
Now client computers can be configured.

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 comparing zentyal and fedora 21 server, Hadoop computers to note data transfer speed. While performs much faster.



Data Packet transferring in Hadoop

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	Total	Total	Incoming	Incoming	Outgoing	Outgoing
	Packets		Packets		Packets	
		Bytes				Bytes
Total:	9492	5046545	4710		4782	4305498
IP:	9492	4907016	4710		4782	4238556
TCP:	9190	4856215	4564	658065	4626	4198150
UDP:	287	49658	144	10261	143	39397
ICMP:	15	1143	2	140	13	1003
Other IP:	θ	0	θ	θ	θ	6
Non-IP:	0	0	0	0	θ	e
Total rates:		66.4 kbits/		Broadcast pa		θ
		27.8 packet	s/sec	Broadcast by	tes: *	θ
Incoming rates:		17.8 kbits/	sec			
		14.4 packet	s/sec	120020000000		18
Outraine -		48.6 kbits/		IP checksum	errors:	θ
Outgoing r	ates:	13.4 packet				

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 = 48 kb/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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