

PERFORMANCE NEWS

Issue 6 – April 2016

z/VM, Linux and Cloud on System z Updates

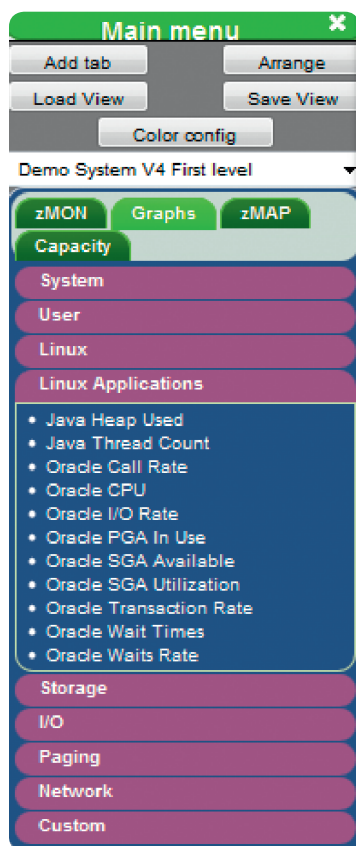


Monitoring Oracle Database with zVPS

KATHRYN ARRELL

This white paper describes the reports and graphs available in zVPS to enable you to monitor Oracle databases in Linux guests running under z/VM. It is intended to give system administrators a view into the Oracle databases running in their systems. The objective is to ensure that Oracle databases have sufficient system resources (CPU, memory, disk IO) to perform well.

ORACLE
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Accessing Oracle graphs

It is not intended to give Database Administrators all the information they would need to tune the database. AWR reports and other information would be used for this function.

The zVPS reports and graphs are most easily viewed through zVIEW. The reports are shown via the zMON tab under Linux Application Reports as shown in Figure 1. The graphs are shown via the Graphs tab under Linux Applications as shown in Figure 2. Reports on Java are included in these categories. zVPS provides over 160 reports and graphs to drill down for more information. This paper just covers the Oracle reports and graphs.



Accessing Oracle reports on zMON

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Overview of Oracle Reports Available

THERE ARE FOUR REPORTS AVAILABLE WHICH ARE SHOWN HERE

Oracle Configuration Report

This report shows information about the Oracle databases in the Linux guest. This information is helpful to size the memory for the Linux guest.

ESAORAC - Oracle Database Configuration - DEMO												
Time	Node	Database Name	Database Instance	Database Version	Database Start		Status	Storage Overview (MB)			PGA	
								Max	Fixed	Free	Size	Max
15:07:00	lxora12	db01	db01	12.1.0.1.0	2016/03/17	11:58	OPEN	796.4	2.3	287K	280.0	358.6
15:07:00	lxora12b	db01	db01	12.1.0.1.0	2016/03/17	11:58	OPEN	796.4	2.3	287K	280.0	358.6
15:07:00	oracle	orcl	orcl	10.2.0.4.0	2016/02/24	16:31	OPEN	264.0	2.0	0	89.0	49.9
15:07:00	redhat56	db01	db01	11.2.0.2.0	2016/02/17	09:40	OPEN	290.7	2.1	0	97.0	195.6
15:07:00	s11s2ora	db02	db02	11.2.0.2.0	2016/03/16	13:29	OPEN	250.9	2.1	61460	92.0	261.6
15:07:00	s11s2ora	db01	db01	11.2.0.2.0	2016/03/21	12:55	OPEN	199.1	2.1	20480	99.0	358.2

Oracle Subsystem Analysis Report

This report shows the call rate, CPU and IO information.

ESAORAS - Oracle Subsystem Analysis - DEMO												
Time	Node	Database Name	Database Instance	User Activity		CPU		Database Read Activity		Database Write Activity		Rate per sec
				Rate per second	Rate per second	Secs	Secs	Rate per second	Rate per second	Rate per second	Rate per second	
14:59:00	lxora12	db01	db01	28.4	0.0	0	1.0	0.1	0	0	0	0.5
14:59:00	lxora12b	db01	db01	28.6	0.0	0	1.0	0.1	0	0	0	0.5
14:59:00	oracle	orcl	orcl	12.1	0.0	0	0.0	0	0	0	0	0.1
14:59:00	redhat56	db01	db01	6.6	0.3	0	0.2	0.1	0	0	0	0.1
14:59:00	s11s2ora	db02	db02	6.4	0.0	0	0.2	0.0	0	0	0	0.1
14:59:00	s11s2ora	db01	db01	12.7	0.0	0	0.4	0.1	0.0	0.0	0	0.2

Oracle SGA/PGA Analysis Report

This is the report available for PGA information

ESAORAG - Oracle SGA/PGA Analysis - DEMO												
Time	Node	Database Name	Database Instance	Shared Global Area (MB)				Shared Global Area (MB)				Program Global Area
				Max	Fixed	Redo	Buffer	Max	Fixed	Redo	Buffer	
14:54:00	lxora12	db01	db01	796.4	2.3	2.2	200.0	280.0	304.0	4.0	4.0	0
14:54:00	lxora12b	db01	db01	796.4	2.3	2.2	200.0	280.0	304.0	4.0	4.0	0
14:54:00	oracle	orcl	orcl	264.0	2.0	2.0	100.0	0	152.0	4.0	4.0	0
14:54:00	redhat56	db01	db01	290.7	2.1	4.6	100.0	0	172.0	4.0	4.0	0
14:54:00	s11s2ora	db02	db02	250.9	2.1	4.7	20.0	60.0	152.0	4.0	4.0	0
14:54:00	s11s2ora	db01	db01	199.1	2.1	5.0	12.0	20.0	144.0	4.0	4.0	0

Oracle Waits Report

This is the report that is available in zVIEW under the zMON tab for Oracle Waits.

ESAORAW - Oracle Database Waits Analysis - DEMO												
Time	Node	Database Name	Database Instance	Rate per second, ms/wait		Rate per second, ms/wait		Rate per second, ms/wait		Rate per second, ms/wait		Rate
				Rate	ms/vs	Rate	ms/vs	Rate	ms/vs	Rate	ms/vs	
14:55:00	lxora12	db01	db01	0.0	1215	0	-	0	-	0	-	0.7
14:55:00	lxora12b	db01	db01	0.0	836.7	0	-	0	-	0	-	0.8
14:55:00	oracle	orcl	orcl	0.0	790.0	0	-	0	-	0	-	0.0
14:55:00	redhat56	db01	db01	0.0	1160	0	-	0	-	0	-	0.4
14:55:00	s11s2ora	db02	db02	0.0	1150	0.0	0	0	-	0	-	0.6
14:55:00	s11s2ora	db01	db01	0.0	590.0	0.0	0	0	-	0	-	1.2

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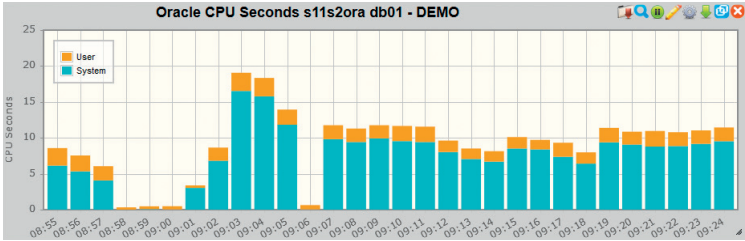
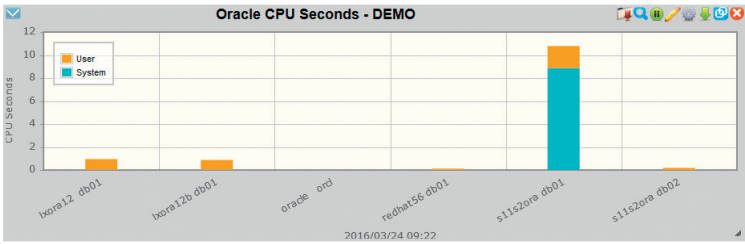
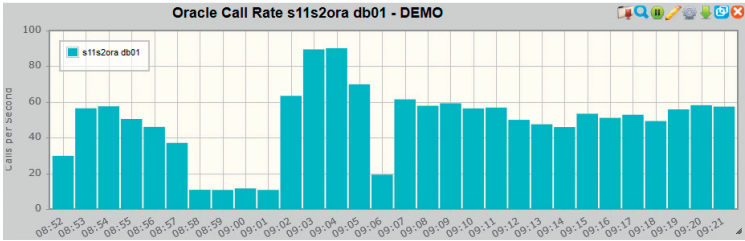
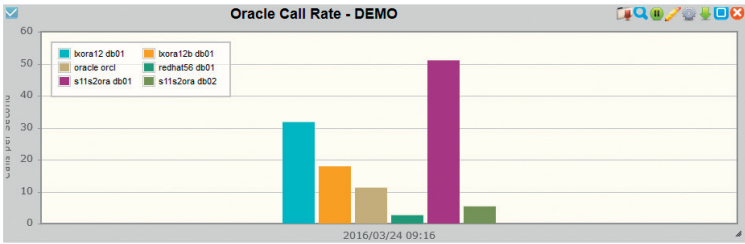
Overview of Oracle Graphs Available

THERE ARE NINE ORACLE GRAPHS AVAILABLE WITH DRILL DOWN OPTIONS. SEVERAL ARE SHOWN HERE

Call Rate Graphs

These graphs show the number of database calls per second for each of the six databases that are executing.

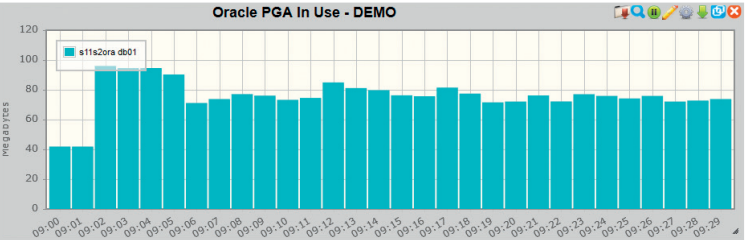
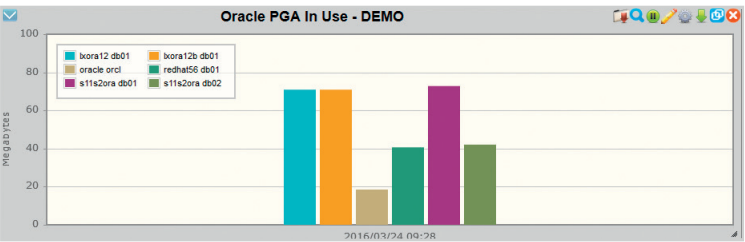
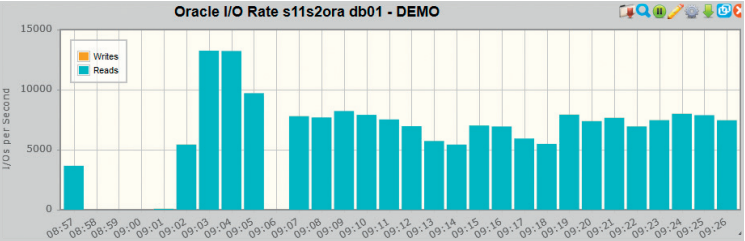
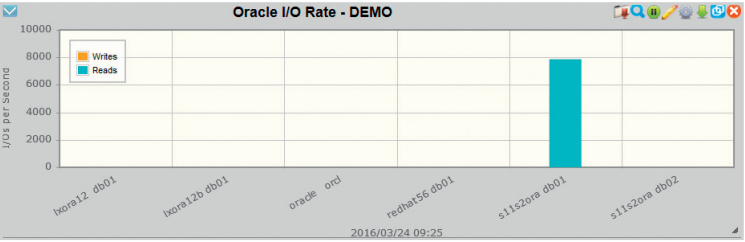
By clicking on the fifth column (the busiest database), you can see the call rate for database db01 on linux guest s11s2ora over time. You can drill down on the other columns to see the other database calls over time.



IO Rates

This shows the IO rates (reads and writes) for six Oracle databases at the noted time interval. At this point db01 on s11s2ora was running workload.

This shows the reads and writes for database db01 on linux guest s11s2ora over time.



PGA Information

This shows the PGA information for the 6 databases running on the Linux guests.

By clicking on the purple column you can get the PGA information over time for database db01 on s11s2ora.

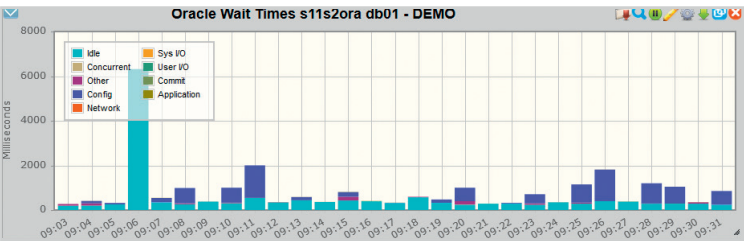
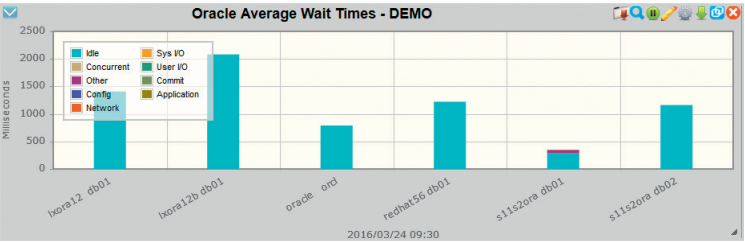
CPU Seconds

This shows the user and system CPU time used by the five Oracle databases at the time interval noted.

To see this over time for database db01 on Linux guest s11s2ora, click on the fifth column.

IO Wait Information

These are the graphs available that relate to waits. By clicking on the fifth column you can see the waits in each time interval for that database.



More Information

Further discussion on performance management of Oracle databases on Linux on System z can be found in presentations given at SHARE and in Chapter 9 of the Oracle 12c IBM Redbook and in IBM presentations given at SHARE. See: <http://www.redbooks.ibm.com/abstracts/sg248159.html?Open> and www.share.org

To see a demo of these Oracle reports and graphs go to <http://demo.velocitysoftware.com/ZVIEW/zview.cgi>

For more information contact support@velocitysoftware.com.

Areas to monitor for resource issues

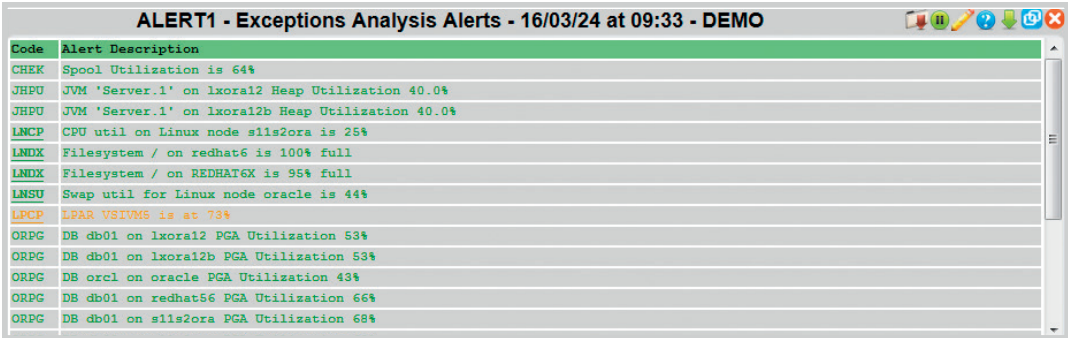
There are several key areas to monitor to ensure that Oracle databases running on Linux on z/VM have the optimum resources for best performance. The key areas are:

- LPAR and Linux Guest Layout
- CPU Usage
- Memory Usage
- I/O Contention

Areas to Monitor with zALERT

In the main menu under zMON and then under zALERT definitions, click on ALERT1 To see the Alerts that are being tracked. It includes Oracle Alerts for PGA and Wait conditions. You will see that these alerts are being tracked and the current result for each. For example, these are the Alerts for PGA Utilization →

ORPG	DB db01 on lxora12 PGA Utilization 53%
ORPG	DB db01 on lxora12b PGA Utilization 53%
ORPG	DB orcl on oracle PGA Utilization 43%
ORPG	DB db01 on redhat56 PGA Utilization 66%
ORPG	DB db01 on s11s2ora PGA Utilization 69%
ORPG	DB db02 on s11s2ora PGA Utilization 63%
ORSW	DB db01 on lxora12 System IO Waits 1 Time 0.000



You can click on these lines to see the graph showing more detailed information.

z/VM and Linux on z Systems
Performance Class, 21st and 22nd of June 2016



Foto Credit: Tom Sulcer/Wikimedia Commons

Use this great opportunity and join us for a two day class at Rutgers University, Busch Campus Center. 604 Bartholomew Rd, Piscataway Township, NJ 08854
Benefit and learn from Barton Robinson's 30 years of expertise and experience with hundreds of z/VM and Linux on z Systems customers.

- Agenda:**

 - Performance Best Practices
 - Performance Overview:
 - Monitoring z/VM and Linux on s/390
 - z/VM Performance Measurement
 - Measurement Methodologies
 - z/VM Scheduler/Dispatcher
 - Analyzing Subsystem Performance with zVPS:
 - Processor
 - Storage
 - Paging/Spooling
 - DASD
 - Capacity Planning Methodologies
- Linux Monitoring and Tuning:
 - Linux Process Analysis
 - Storage Analysis
 - Application Analysis (Oracle, Websphere)
 - Operations Support
 - zVIEW and zOperator
 - Setting up Alerts
- When:** 21st & 22nd of June 2016
Time: 8.30 - 16.30

The class is limited to 30 people.
Breakfast and lunch will be provided.
To sign up, please send an email with your name, company details and address to: Maggie Necoy:
necoy@velocitysoftware.com





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2016 System z Events and Conferences

Looking to improve your System z knowledge and skills in 2016? Here are some of the System z events we will be attending in the upcoming months. Check our next newsletters and social media sites for updates.

Events North America:

26 – 27 April: SIG (International Oracle on z Systems SIG Conference 2016)

HNA Palisades Premier Conference Center,
Palisades NY, USA

3 June: Linux on z Systems Executive Advisory Customer Council

545 Washington BLVD., Jersey City, NJ 07310

21 – 22 June: Performance Class Rutgers University NJ, USA

Piscataway, Rutgers University, NJ, USA

23 – 26 June: VM Workshop

Piscataway, Rutgers University, NJ, USA

31 July – 7 August: SHARE

Atlanta Marriott Marquis, Atlanta GA, USA

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