DATABASE ADMINISTRATION

Lab 7 – Database performance

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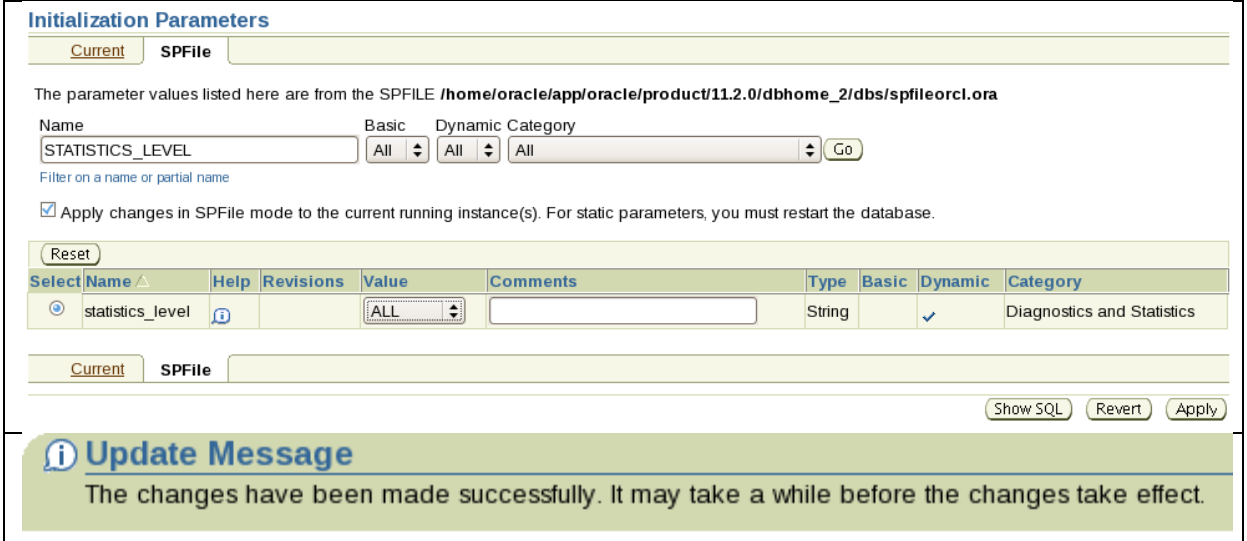
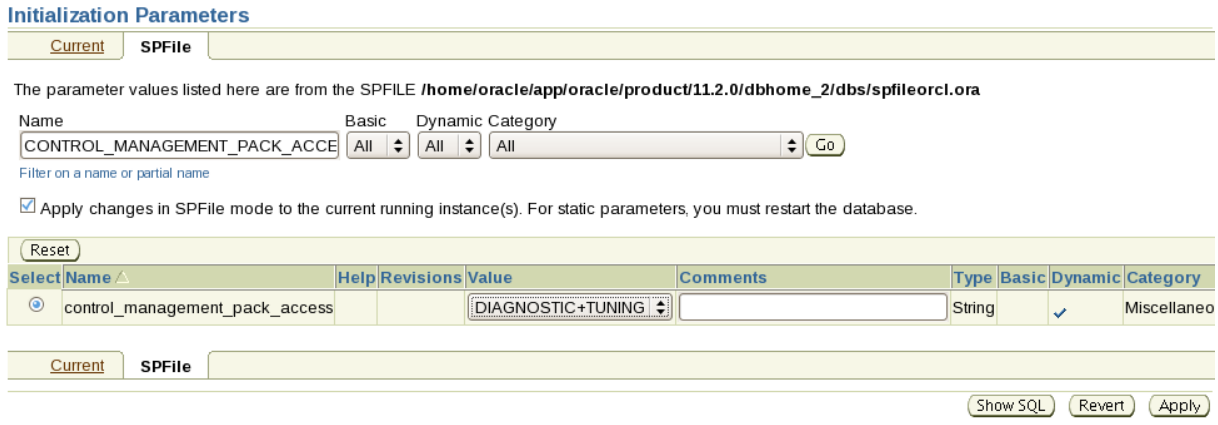
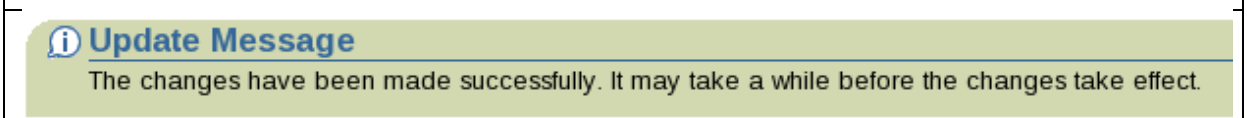
Database perfomance

1. We set the value of the STATISTICS_LEVEL initialization parameter: on the Server tab in the Database Configuration section, select the Initialization Parameters option. In the Initialization Parameters window, on the SPFile tab, in the Name field, enter STATISTICS_LEVEL and click the Go button. Then, on the list of initialization parameters, from the Value drop-down list, select the value ALL, select the Apply changes in SPFile mode to the current running instance (s) option. For static parameters, you must restart the database and click the Apply button.



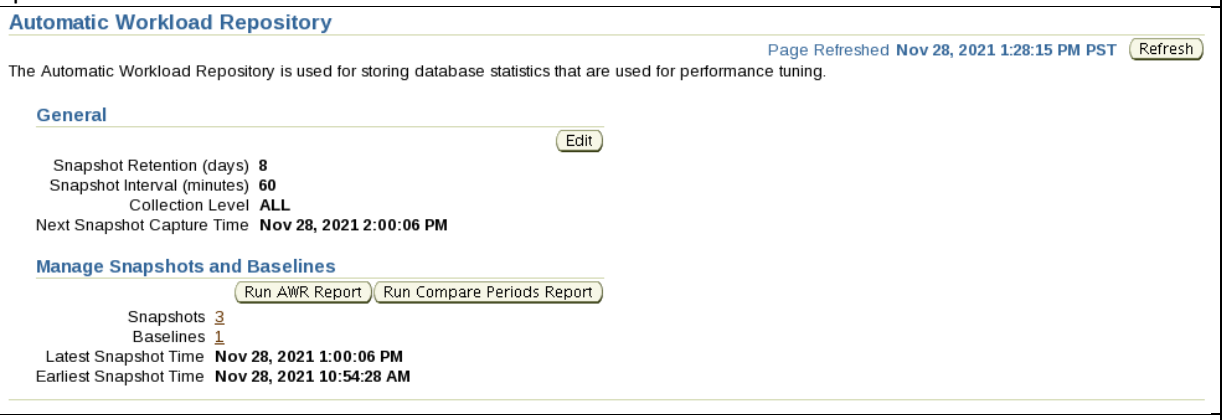
2. Possible values for this parameter are TYPICAL (default), ALL, and BASIC (disable ADDM, not recommended). Set the value of the CONTROL_MANAGEMENT_PACK_ACCESS initialization parameter: on the Server tab in the Database Configuration section, select the Initialization Parameters option. In the Initialization Parameters window, on the SPFile tab, in the Name field, enter CONTROL_MANAGEMENT_PACK_ACCESS and click the Go button. Then, on the list of initialization parameters, from the Value drop-down list, select the DIAGNOSTIC + TUNING value, select the Apply changes in SPFile mode to the current running instance (s) option. For static parameters, you must restart the database and click the Apply button. Possible values for this parameter are DIAGNOSTIC + TUNING, (default value), DIAGNOSTIC and NONE (disable ADDM, not recommended).





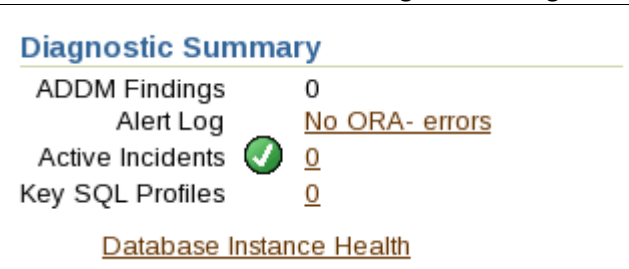
3. Each hour, the database creates a snapshot containing statistical data that can later be used to create reports. Each snapshot data is stored for 8 days by default. You can change these two values (how often the snapshots are taken and how long the snapshots are retained). For this purpose, on

the Server tab in the Statistics Management sectionwe choose the Automatic Workload Repository option.



4. In the Automatic Workload Repository window, click the Edit button. In the Edit settings window, in the Snapshot Retention section, select the Use Time-Based Retention option and enter a different value in the Retention period (Days) field. Then, in the Snapshot Collection section, select the System Snapshot Interval option and enter a value between 10 minutes and 1 hour in the Interval field. Then click the OK button.

5. The results of the automatic analysis performed by ADDM can be found on the Home tab in the Diagnostic Summary section. To view the list of ADDM findings found by ADDM, click the link next to ADDM Findings in the Diagnostic Summary section on the Home tab.



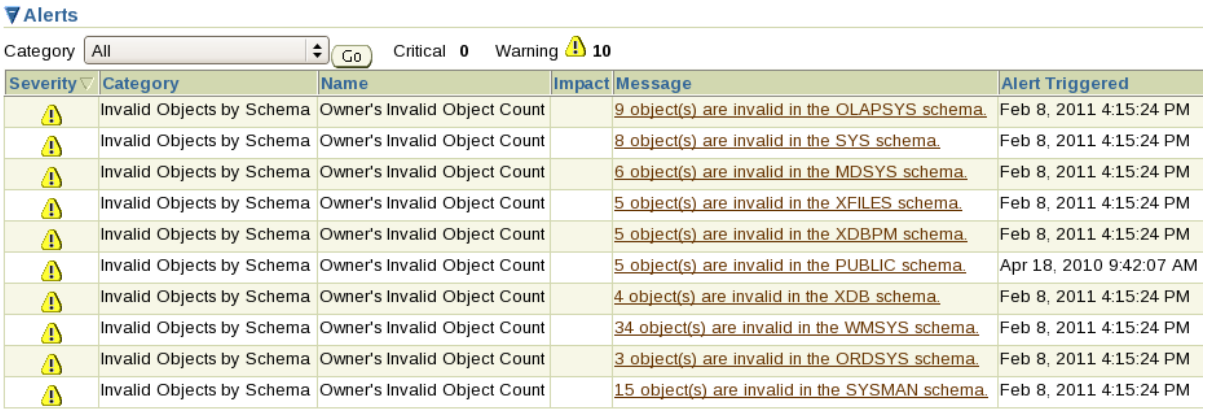
There isn't link next to „ADDM Findings"

6. The Automatic Database Diagnostic Monitor window appears with a list of notes sorted by most significant at the bottom. To view the details of each comment, click on the link in the Finding column. Attention! A sample list of notes found by ADDM and an example scenario for viewing details of notes found is shown below.

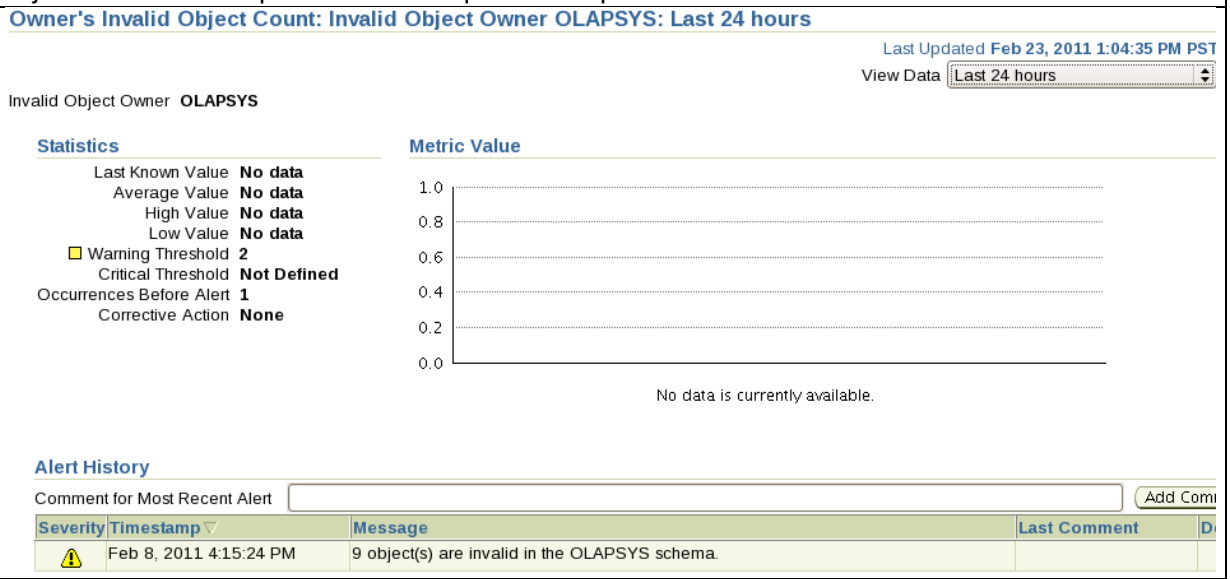
7. By clicking on the Virtual Memory Paging, Commits and Rollbacks, I / O Throughput and Session Connect and Disconnect links, you can see the details of the selected comments in the following windows. After viewing the proposal in the Recommendations section in the Action field to perform administrative actions related to the comment found, we can adapt to this proposal.

8. Viewing the list of alerts. Alerts are database system events that indicate errors and exceeding certain thresholds of various metrics. The system defines a certain set of metrics for which we can set two thresholds: a notification threshold and a critical threshold. Exceeding these thresholds generates an alert with an appropriate message. Due to the

degree of danger to the proper operation of the system, alerts can be divided into ordinary and critical. The administrator must read each alert message and perform some administrative steps to correct the problem. To view the list of alerts, go to the Home tab. The list of alerts is at the bottom of the page.
Attention! An example list of alerts and an example scenario for performing administrative tasks related to selected alerts is presented below.



9. On the list of alerts, click on the first position marked by a rectangle. It concerns 9 database objects that are not up-to-date and require recompilation



10. A window appears in which we click the Invalid Objects Details option.

Invalid Object Details: OLAPSYS

Page Refreshed **Nov 28, 2021 2:00:56 PM** Refresh

This table shows the current invalid objects in the database. Some objects may become valid after Recompilation.

Recompile Delete

Select All | Select None

Select	Name	Type	Status
☐	CWM2_OLAP_MANAGER	PACKAGE BODY	INVALID
☐	CWM2_OLAP_UTILITY	PACKAGE BODY	INVALID
☐	CWM2_OLAP_EXPORT	PACKAGE BODY	INVALID
☐	CWM2_OLAP_PC_TRANSFORM	PACKAGE BODY	INVALID
☐	CWM2_OLAP_AW_AWUTIL	PACKAGE BODY	INVALID
☐	OLAPFACTVIEW	PACKAGE BODY	INVALID
☐	OLAPDIMVIEW	PACKAGE BODY	INVALID
☐	DBMS_ODM	PACKAGE BODY	INVALID
☐	CWM2_OLAP_OLAPAPI_ENABLE	PACKAGE BODY	INVALID

TIP You have selected 0 rows from previously viewed record sets.

11. A window appears in which we click on the Select All option and then click on the button Recompile.

Invalid Object Details: OLAPSYS

Page Refreshed **Nov 28, 2021 2:00:56 PM** Refresh

This table shows the current invalid objects in the database. Some objects may become valid after Recompilation.

Recompile Delete

Select All | Select None

Select	Name	Type	Status
☑	CWM2_OLAP_MANAGER	PACKAGE BODY	INVALID
☑	CWM2_OLAP_UTILITY	PACKAGE BODY	INVALID
☑	CWM2_OLAP_EXPORT	PACKAGE BODY	INVALID
☑	CWM2_OLAP_PC_TRANSFORM	PACKAGE BODY	INVALID
☑	CWM2_OLAP_AW_AWUTIL	PACKAGE BODY	INVALID
☑	OLAPFACTVIEW	PACKAGE BODY	INVALID
☑	OLAPDIMVIEW	PACKAGE BODY	INVALID
☑	DBMS_ODM	PACKAGE BODY	INVALID
☑	CWM2_OLAP_OLAPAPI_ENABLE	PACKAGE BODY	INVALID

TIP You have selected 0 rows from previously viewed record sets.

12. A window appears displaying a message stating that all selected objects have been recompiled. Thus, the problem was solved.

Invalid Object Details: OLAPSYS

Update Message

All objects selected have been successfully compiled and become valid objects, they are removed from the invalid objects result table.

Successfully Recompiled Objects - OLAPSYS.CWM2_OLAP_MANAGER, OLAPSYS.CWM2_OLAP_UTILITY, OLAPSYS.CWM2_OLAP_EXPORT, OLAPSYS.CWM2_OLAP_PC_TRANSFORM, OLAPSYS.CWM2_OLAP_AW_AWUTIL, OLAPSYS.OLAPFACTVIEW, OLAPSYS.OLAPDIMVIEW, OLAPSYS.DBMS_ODM, OLAPSYS.CWM2_OLAP_OLAPAPI_ENABLE

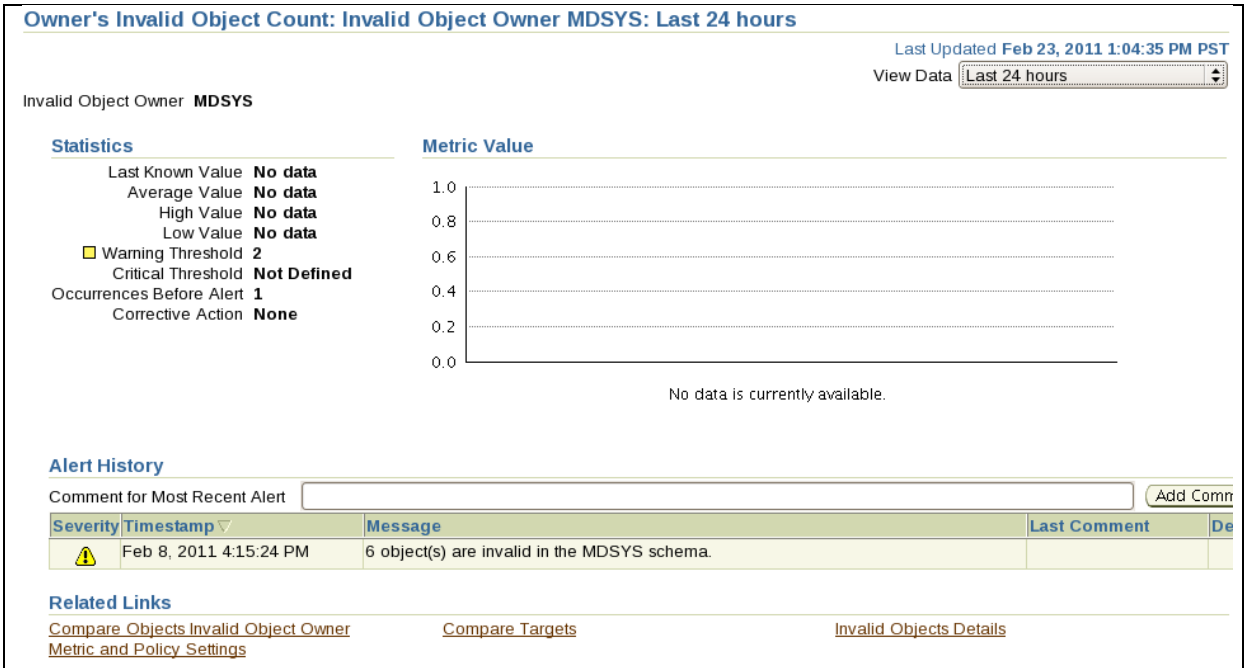
Page Refreshed **Nov 28, 2021 2:00:56 PM** Refresh

This table shows the current invalid objects in the database. Some objects may become valid after Recompilation.

Select	Name	Type	Status
	No object found.		

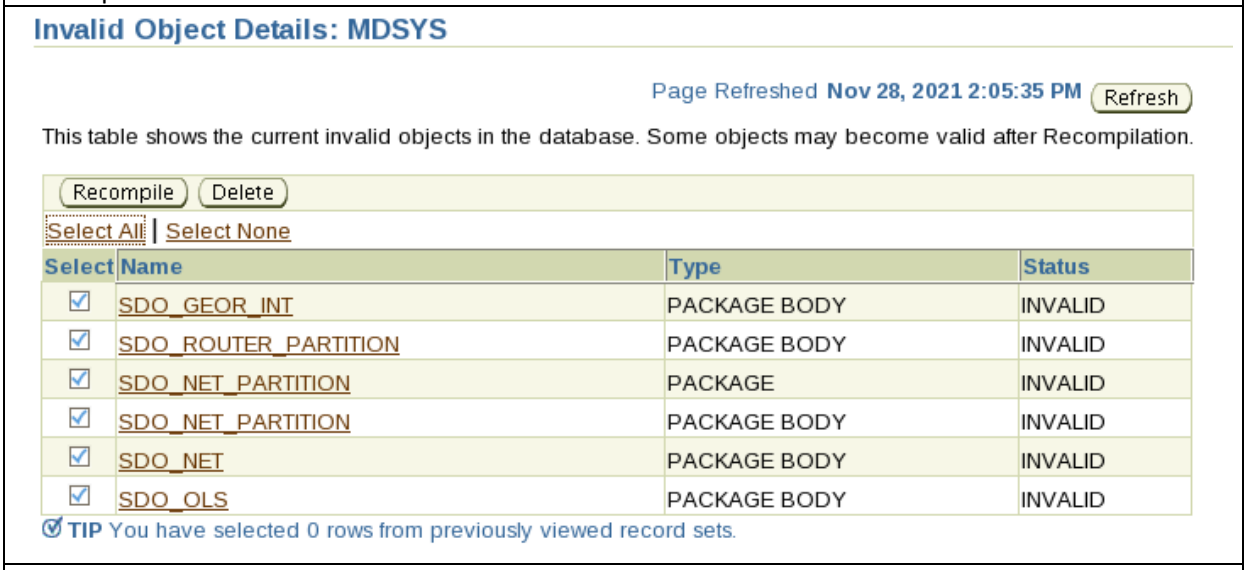
TIP You have selected 0 rows from previously viewed record sets.

13. Next, on the list of alerts, click on the second position marked by a rectangle. It concerns 6 database objects that are not up-to-date and require recompilation.

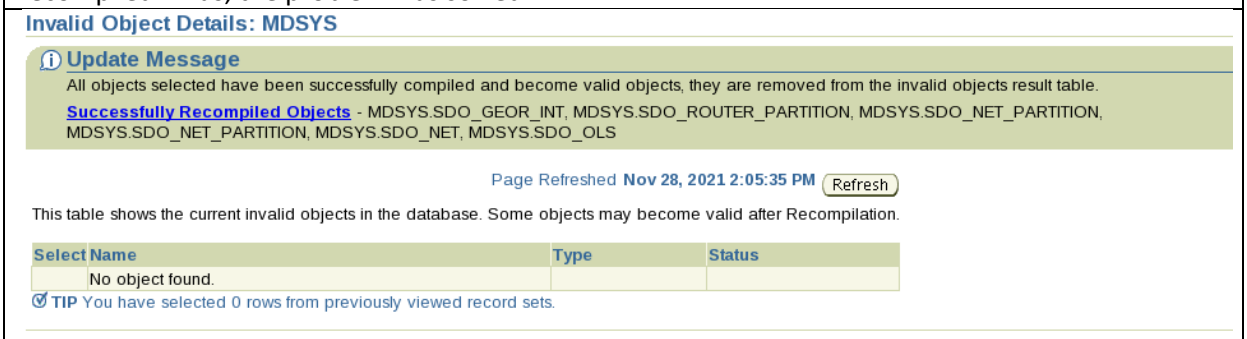


14. A window appears in which we click on the Invalid Objects Details option.

15. A window appears in which we click on the Select All option and then click on the button Recompile.

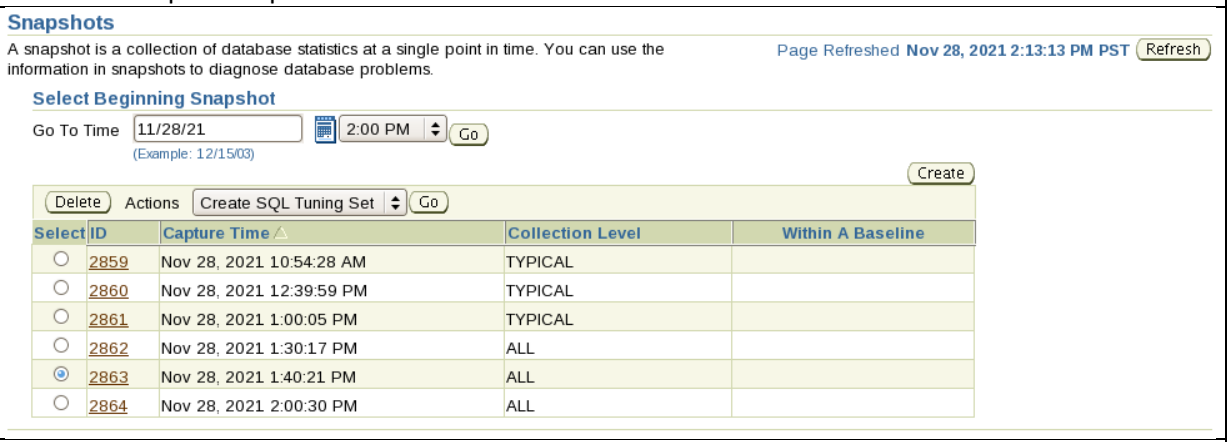


16. A window appears displaying a message stating that all selected objects have been recompiled. Thus, the problem was solved.

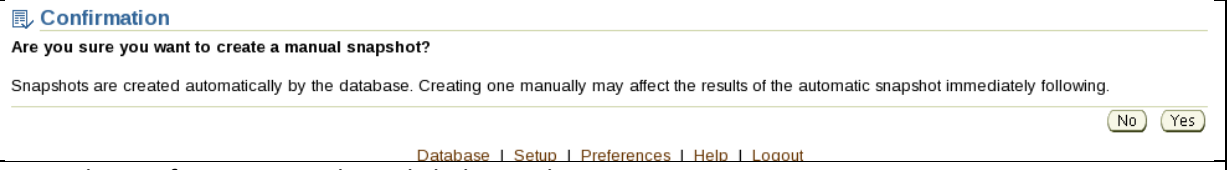


17. Manually create snapshots of statistical data. We create snapshots manually in a situation when we
need to create such a snapshot immediately. We cannot wait for the snapshot to be automatically

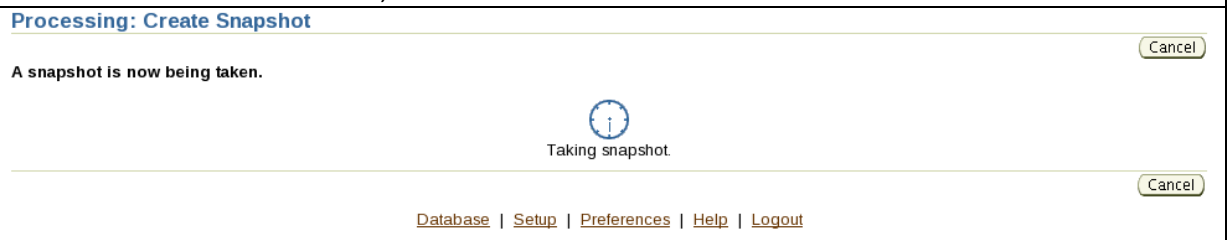
generated. To create a snapshot, on the Performance tab in the Additional Monitoring Links section, select the Snapshots option.



18. In the Snapshots window, click the Create button.



19. In the Confirmation window, click the Yes button.



20. The Snapshots window appears with the new snapshot added. Click on the link with the snapshot number.

Snapshot Details

View ADDM Run

Details | Report

Beginning Snapshot ID **2864**
Beginning Snapshot Capture Time **Nov 28, 2021 2:00:30 PM**

Ending Snapshot ID **2865**
Ending Snapshot Capture Time **Nov 28, 2021 2:14:09 PM**

Previous 1-27 of 27 Next

Name	Value	Per Second	Per Transaction
DB cpu (seconds)	0.00	0.00	0.00
DB time (seconds)	2,843.10	3.48	8.75
db block changes	32,944.00	40.27	101.37
execute count	27,682.00	33.84	85.18
global cache cr block receive time (seconds)	0.00	0.00	0.00
global cache cr blocks received	0.00	0.00	0.00
global cache current block receive time (seconds)	0.00	0.00	0.00
global cache current blocks received	0.00	0.00	0.00
global cache get time (seconds)	0.00	0.00	0.00
global cache gets	0.00	0.00	0.00
opened cursors cumulative	25,251.00	30.87	77.70
parse count (total)	12,952.00	15.83	39.85
parse time cpu (seconds)	9.10	0.01	0.03
parse time elapsed (seconds)	22.33	0.03	0.07
physical reads	11,958.00	14.62	36.79
physical writes	2,024.00	2.47	6.23
redo size (KB)	8,005.86	9.79	24.63
session cursor cache hits	19,146.00	23.41	58.91
session logical reads	145,002.00	177.26	446.16
sql execute cpu time (seconds)	0.00	0.00	0.00
sql execute elapsed time (seconds)	0.00	0.00	0.00
user calls	3,500.00	4.28	10.77
user commits	325.00	0.40	1.00
user rollbacks	0.00	0.00	0.00
workarea executions - multipass	0.00	0.00	0.00
workarea executions - onepass	0.00	0.00	0.00
workarea executions - optimal	4,000.00	4.89	12.31

Previous 1-27 of 27 Next

21. The Snapshot Details window appears. The data contained in this window is useful for experienced administrators. We go to the Report tab.

Snapshot Details

Details | **Report**

WORKLOAD REPOSITORY report for

DB Name	DB Id	Instance	Inst num	Startup Time	Release	RAC
ORCL	1229390655	orcl	1	28-Nov-21 11:11	11.2.0.2.0	NO

Host Name	Platform	CPUs	Cores	Sockets	Memory (GB)
localhost.localdomain	Linux IA (32-bit)	2	2	1	3.46

	Snap Id	Snap Time	Sessions	Cursors/Session
Begin Snap:	2864	28-Nov-21 14:00:30	49	4.5
End Snap:	2865	28-Nov-21 14:14:09	51	4.3
Elapsed:		13.64 (mins)		
DB Time:		4.49 (mins)		

Report Summary

Cache Sizes

	Begin	End		
Buffer Cache:	68M	68M	Std Block Size:	8K
Shared Pool Size:	180M	180M	Log Buffer:	5,868K

22. On the Report tab, we can see details about the database statistics.

23. And in the Report tab, click the View ADDM Run button.

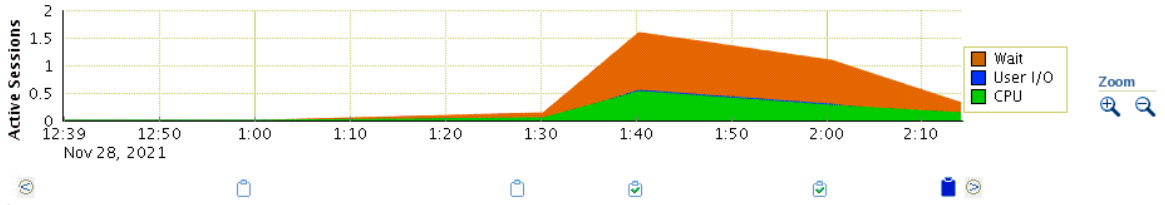
Automatic Database Diagnostic Monitor (ADDM)

Page Refreshed **Nov 28, 2021 2:21:18 PM PST** Refresh

Database Activity

Run ADDM | Finding History

The icon selected below the graph identifies the ADDM analysis period. Click on a different icon to select a different analysis period.



TIP For an explanation of the icons and symbols used in this page, see the Icon Key

ADDM Performance Analysis

Task Name **ADDM:1229390655_1_2865**

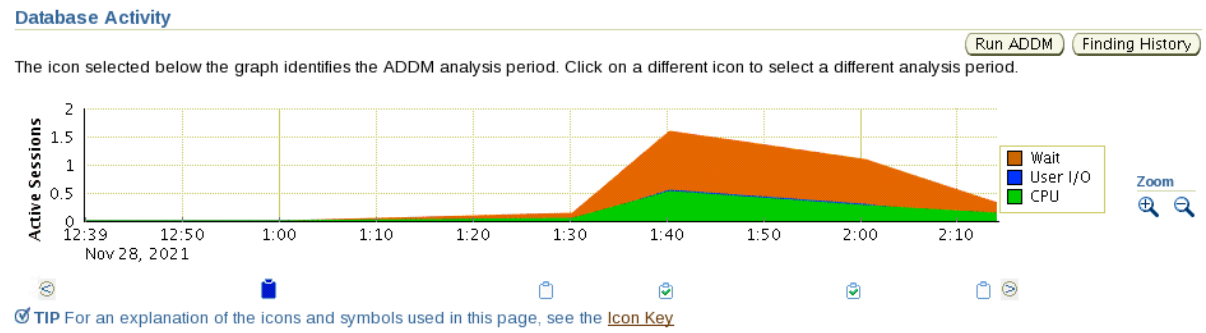
Filters | View Snapshots | View Report

Task Owner **SYS** Average Active Sessions **0.3** Period Start Time **Nov 28, 2021 2:00:30 PM PST** Period Duration (minutes) **13.6**

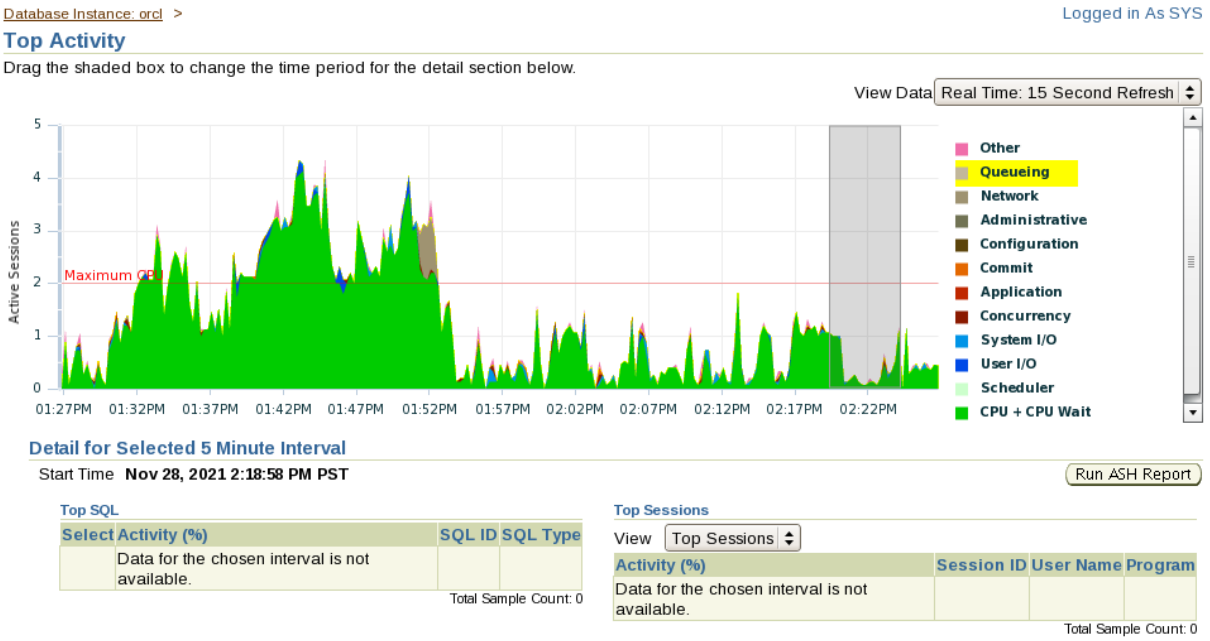
Impact (%)	Finding	Occurrences (24 hrs ending with analysis period)
ADDM did not find any problems during this period		

Informational Findings

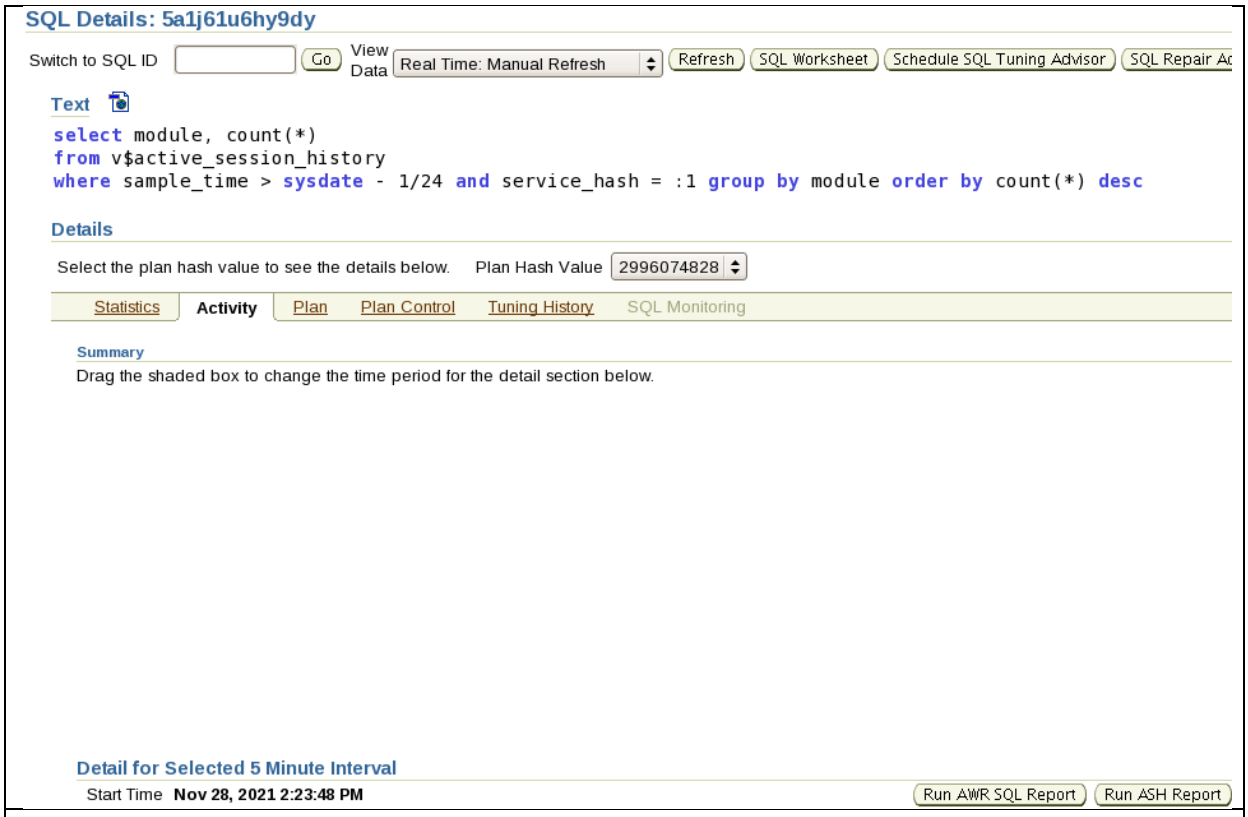
24. The ADDM window appears. In the ADDM window, by clicking on the buttons below the graphs, you can change the period for which the statistical data is displayed.



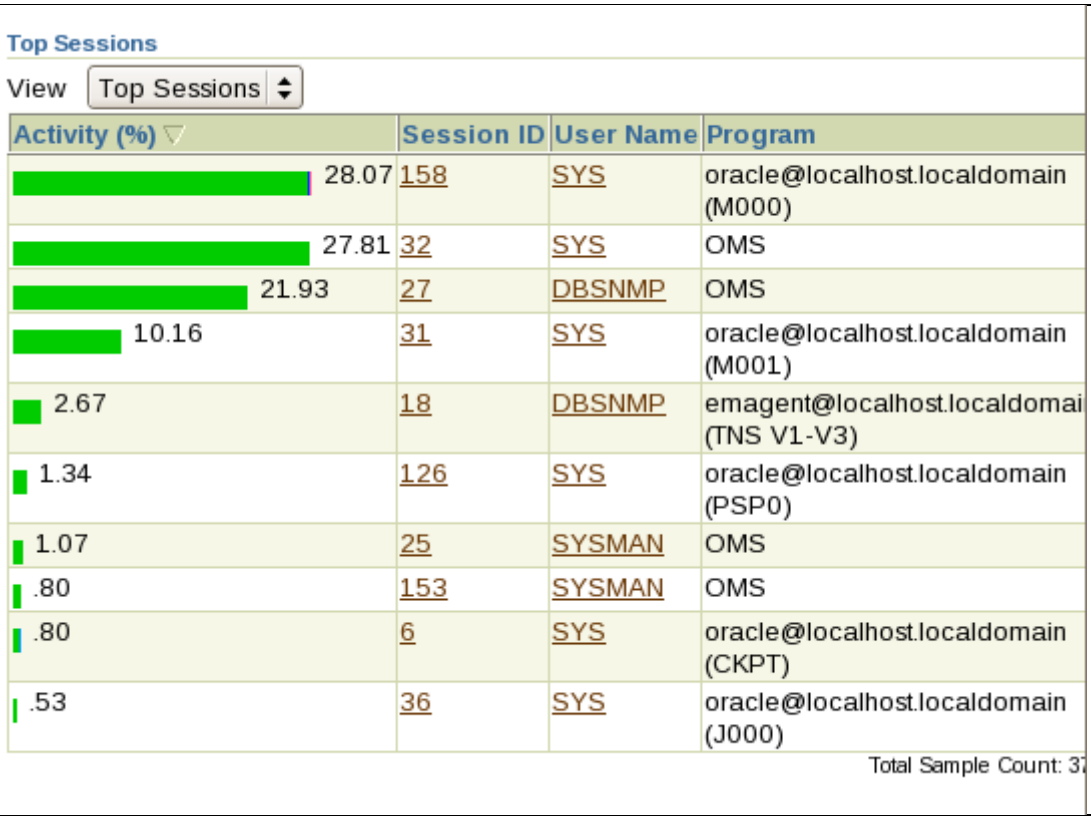
25. Viewing statistical data on the operation of an instance. In order to display statistics on sessions and SQL commands consuming the most resources, on the Performance tab in the Additional Monitoring Links section, select the Top Activity option.



26. In this window, you can grab the gray box representing the period for which the statistical data has been displayed with the mouse and move the box to display the data for the period of interest. On the right side there is a legend containing the individual resources of the base. Below is the Top SQL section for the commands that consume the most system resources. We can click on the link with the command ID and view the details related to that command.



27. There is also a Top Sessions section in the Top Activity window. We can click on the link in the Session Id or User Name column and view the details related to that session.



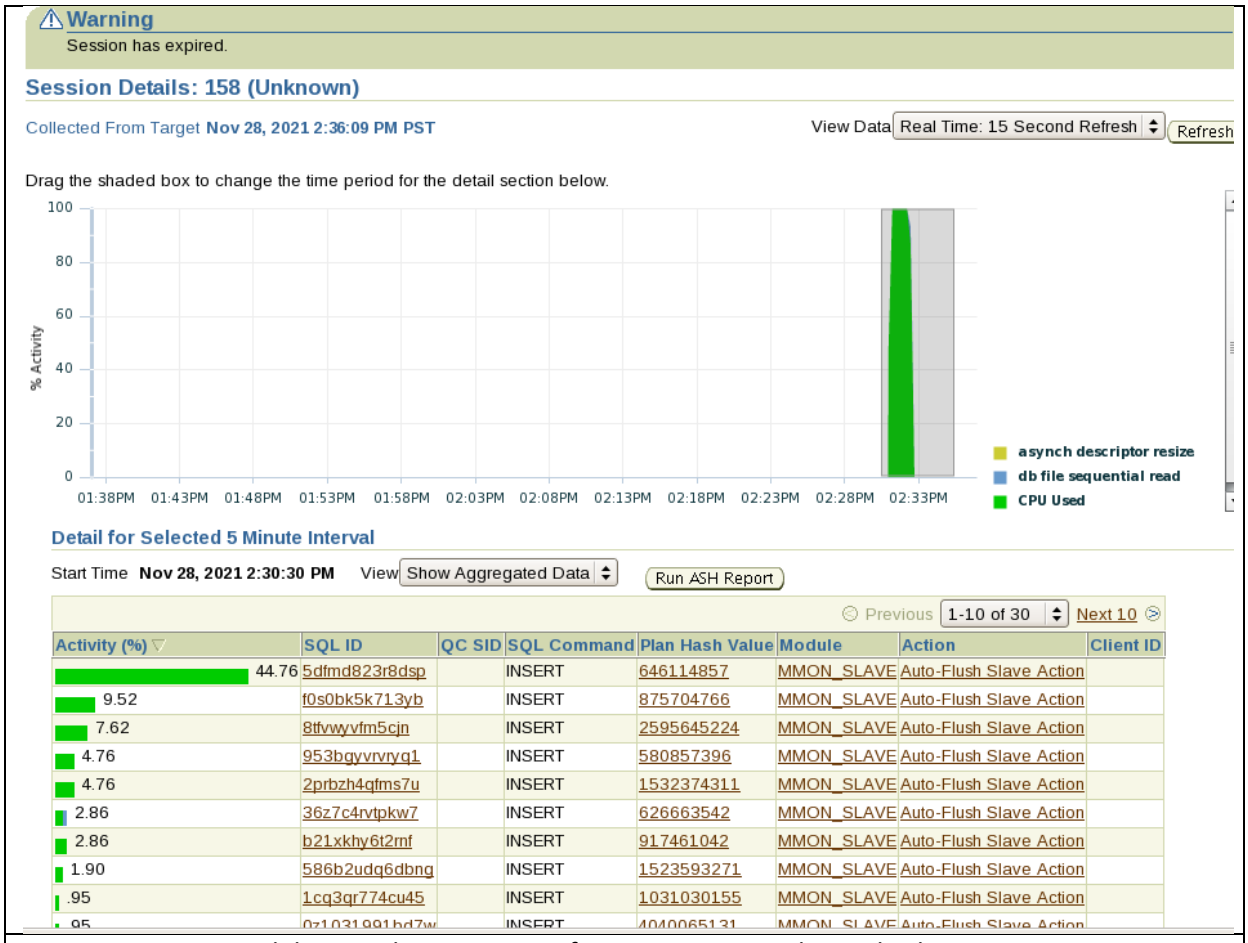
Top Sessions

View: Top Sessions

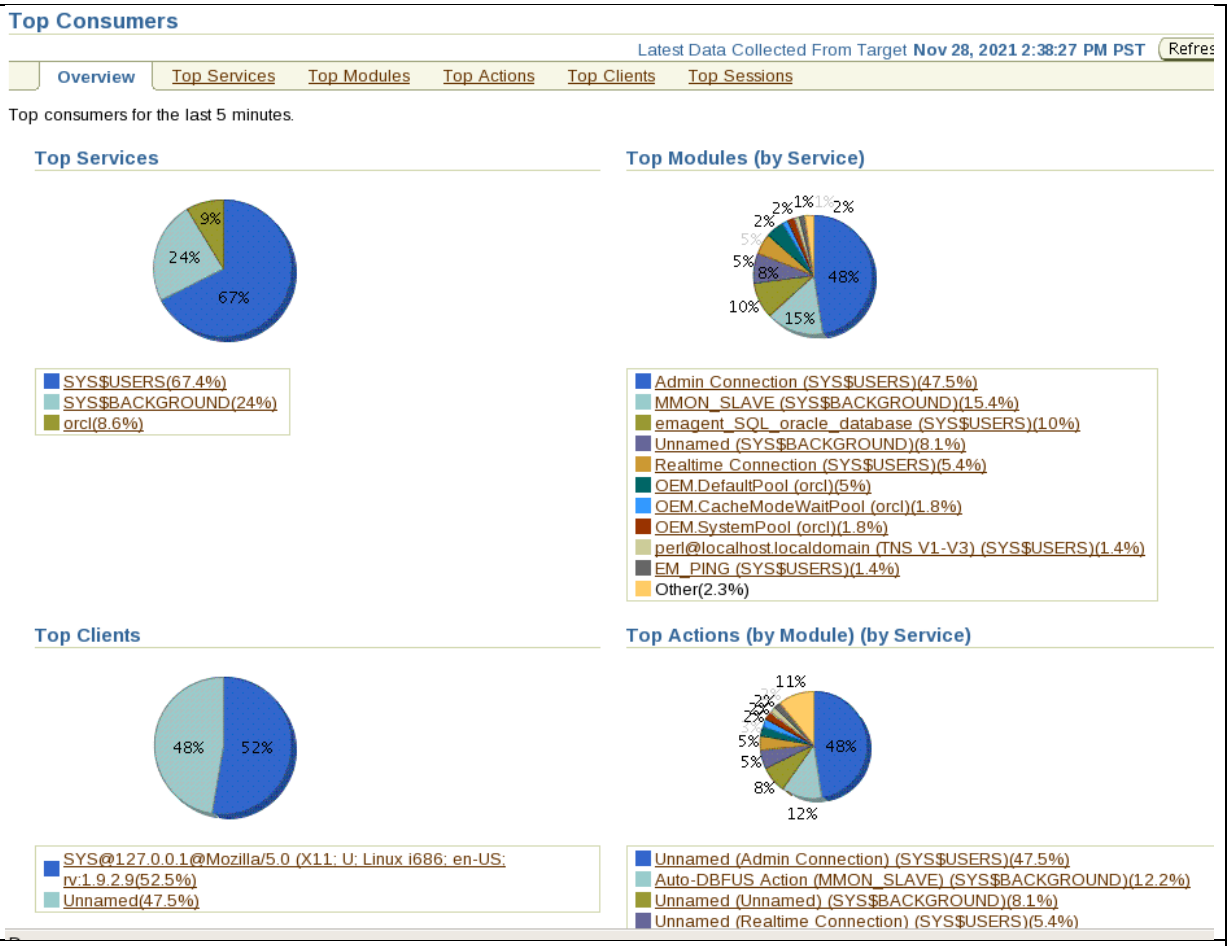
Activity (%)	Session ID	User Name	Program
28.07	158	SYS	oracle@localhost.localdomain (M000)
27.81	32	SYS	OMS
21.93	27	DBSNMP	OMS
10.16	31	SYS	oracle@localhost.localdomain (M001)
2.67	18	DBSNMP	emagent@localhost.localdomai (TNS V1-V3)
1.34	126	SYS	oracle@localhost.localdomain (PSP0)
1.07	25	SYSMAN	OMS
.80	153	SYSMAN	OMS
.80	6	SYS	oracle@localhost.localdomain (CKPT)
.53	36	SYS	oracle@localhost.localdomain (J000)

Total Sample Count: 37

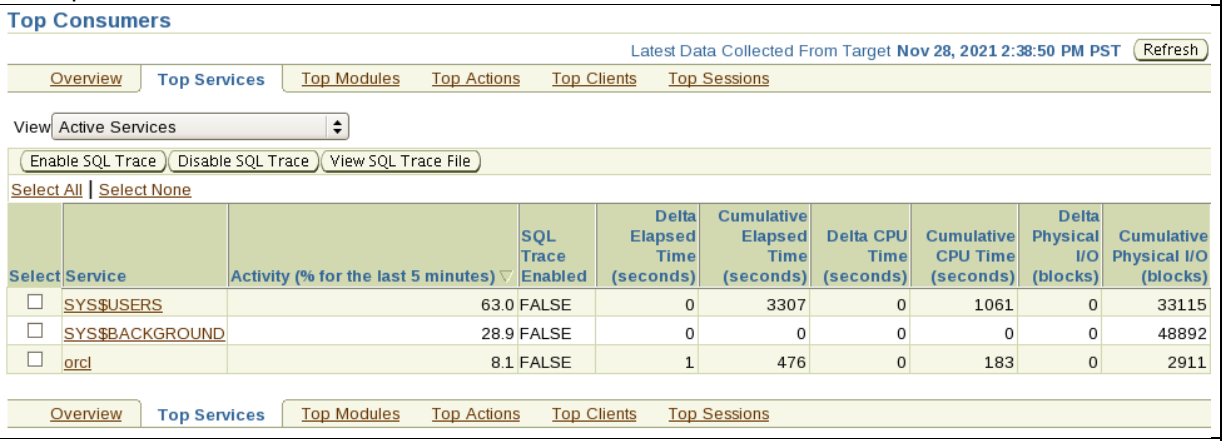
A window appears showing details related to the selected session.



28. Viewing statistical data on the operation of an instance. In order to display statistics on sessions and SQL commands consuming the most resources, on the Performance tab in the Additional Monitoring Links section, select the Top Consumers option and view the data on individual tabs: Overvie tab.



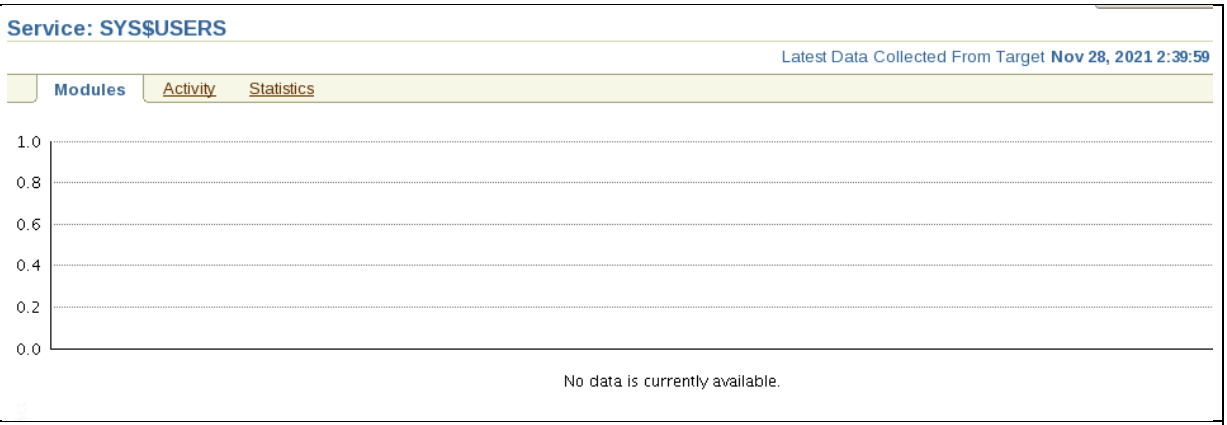
29. Top Services tab.



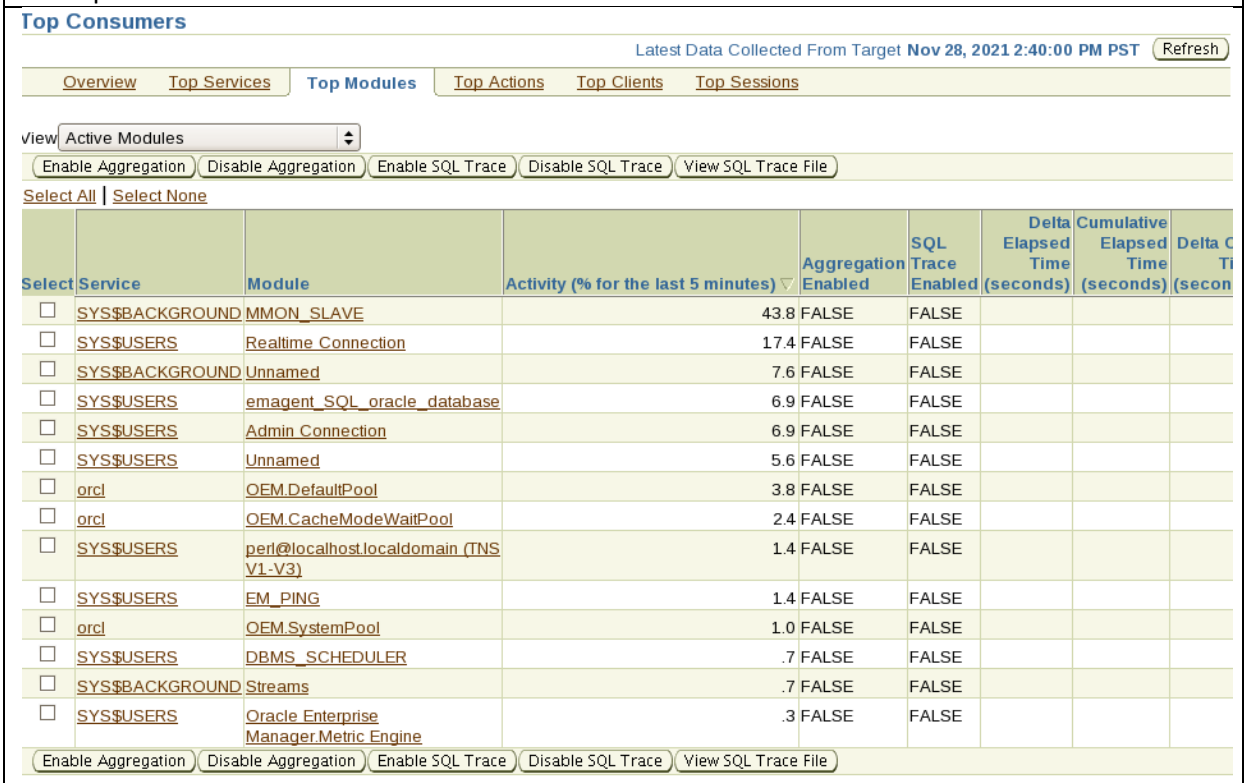
Select	Service	Activity (% for the last 5 minutes)	SQL Trace Enabled	Delta Elapsed Time (seconds)	Cumulative Elapsed Time (seconds)	Delta CPU Time (seconds)	Cumulative CPU Time (seconds)	Delta Physical I/O (blocks)	Cumulative Physical I/O (blocks)
☐	SYS$USERS	63.0	FALSE	0	3307	0	1061	0	33115
☐	SYS$BACKGROUND	28.9	FALSE	0	0	0	0	0	48892
☐	orcl	8.1	FALSE	1	476	0	183	0	2911

Overview
Top Services
Top Modules
Top Actions
Top Clients
Top Sessions

30. By clicking on the selected session identifier in the Service column, we can obtain information about that session.



31. Top Modules tab.



32. Top Actions tab

Top Consumers

Latest Data Collected From Target **Nov 28, 2021 2:41:51 PM PST** Refresh

Overview | Top Services | Top Modules | **Top Actions** | Top Clients | Top Sessions

View: Active Actions

Enable Aggregation | Disable Aggregation | Enable SQL Trace | Disable SQL Trace | View SQL Trace File

Select All | Select None

Select	Service	Module	Action	Activity (% for the last 5 minutes)	Aggregation Enabled	SQL Trace Enabled	(s
☐	SYS$BACKGROUND	MMON_SLAVE	Auto-DBFUS Action	49.3	FALSE	FALSE	
☐	SYS$USERS	Realtime Connection	Unnamed	25.8	FALSE	FALSE	
☐	SYS$BACKGROUND	Unnamed	Unnamed	6.8	FALSE	FALSE	
☐	SYS$USERS	Unnamed	Unnamed	4.7	FALSE	FALSE	
☐	orcl	OEM.DefaultPool	/database/instance/sitemap	3.3	FALSE	FALSE	
☐	SYS$BACKGROUND	MMON_SLAVE	Monitor FRA Space	1.8	FALSE	FALSE	
☐	orcl	OEM.CacheModeWaitPool	Unnamed	1.8	FALSE	FALSE	
☐	SYS$USERS	EM_PING	AGENT_STATUS_MARKER	1.5	FALSE	FALSE	
☐	SYS$USERS	perl@localhost.localdomain (TNS V1-V3)	Unnamed	1.2	FALSE	FALSE	
☐	SYS$BACKGROUND	Streams	QMON Slave	.6	FALSE	FALSE	
☐	SYS$BACKGROUND	Streams	QMON Coordinator	.6	FALSE	FALSE	
☐	SYS$USERS	emagent_SQL_oracle_database	wait_bottlenecks	.3	FALSE	FALSE	
☐	SYS$USERS	emagent_SQL_oracle_database	streams_latency_throughput	.3	FALSE	FALSE	
☐	SYS$BACKGROUND	MMON_SLAVE	Abnormal Termination Cleanup	.3	FALSE	FALSE	
☐	SYS$USERS	emagent_SQL_oracle_database	dbjob_status	.3	FALSE	FALSE	
☐	orcl	OEM.SystemPool	NotificationMgr	.3	FALSE	FALSE	
☐	SYS$BACKGROUND	Streams	EMON Reliable Slave	.3	FALSE	FALSE	
☐	SYS$USERS	Oracle Enterprise Manager.Metric Engine	Unnamed	.3	FALSE	FALSE	
☐	orcl	OEM.SystemPool	Unnamed	.3	FALSE	FALSE	

33. Top Clients Tab.

Top Consumers

Latest Data Collected From Target **Nov 28, 2021 2:41:52 PM PS**

Overview | Top Services | Top Modules | Top Actions | **Top Clients** | Top Sessions

View: Active Clients

Enable Aggregation | Disable Aggregation | Enable SQL Trace | Disable SQL Trace | View SQL Trace File

Select All | Select None

Select	Client ID	Activity (% for the last 5 minutes)	Aggregation Enabled	SQL Trace Enabled	Delta Elapsed Time (seconds)	Cumulative Elapsed Time (seconds)	Delta CPU Time (seconds)	Cumulative CPU Time (seconds)	Delta Physical I/O (blocks)
☐	Unnamed	96.4	FALSE	FALSE					
☐	SYS@127.0.0.1@Mozilla/5.0 (X11; U; Linux i686; en-US; rv:1.9.2.9	3.6	FALSE	FALSE					

34. Top Sessions tab.

Top Consumers

Overview | Top Services | Top Modules | Top Actions | Top Clients | **Top Sessions**

Show Active SQL | Customize

First sample completed, please wait for automatic refresh to get interval-based sessions data

Overview | Top Services | Top Modules | Top Actions | Top Clients | **Top Sessions**

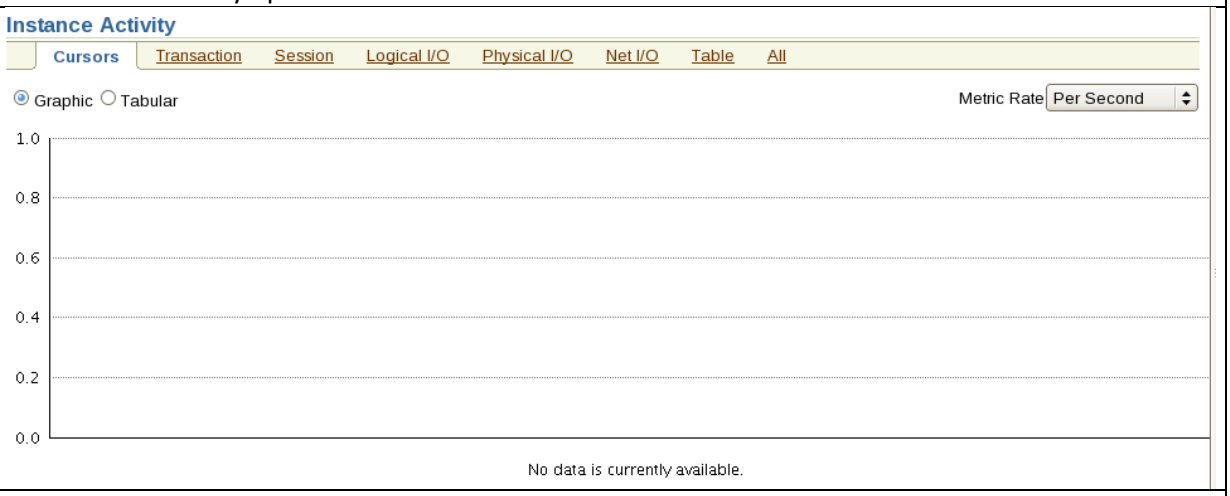
Additional Monitoring Links

Top Sessions and Top SQL data from ASH can be found on the Top Activity page.

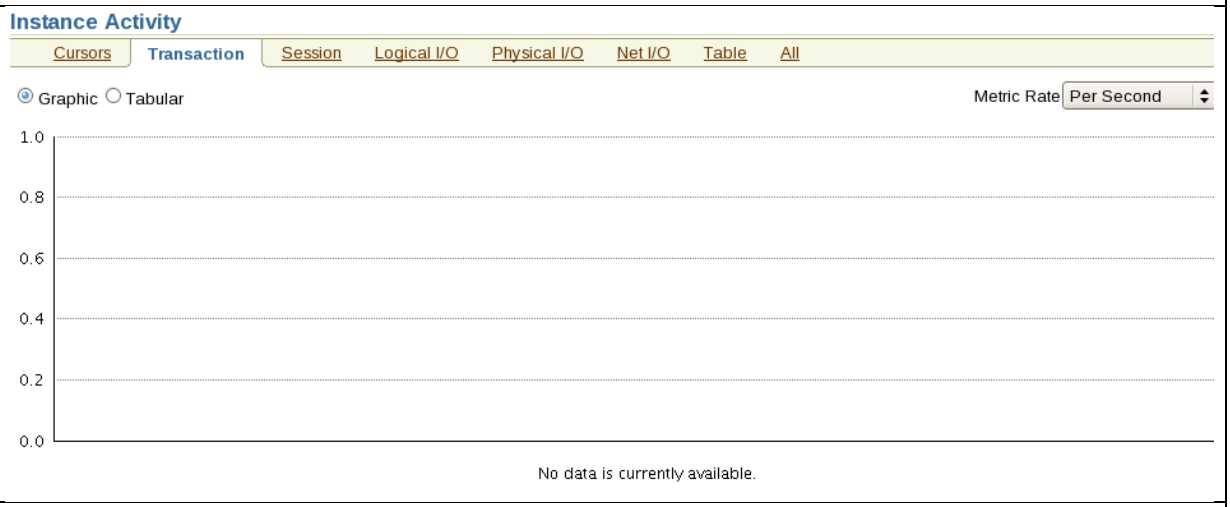
- Top Activity
- Duplicate SQL
- Blocking Sessions
- Hang Analysis
- Instance Locks
- Instance Activity
- Search Sessions
- Search SQL
- Snapshots
- AWR Baselines
- SQL Tuning Sets
- SQL Performance Analyzer
- SQL Monitoring

35. Viewing statistics about the operation of an instance. In order to display statistics on the

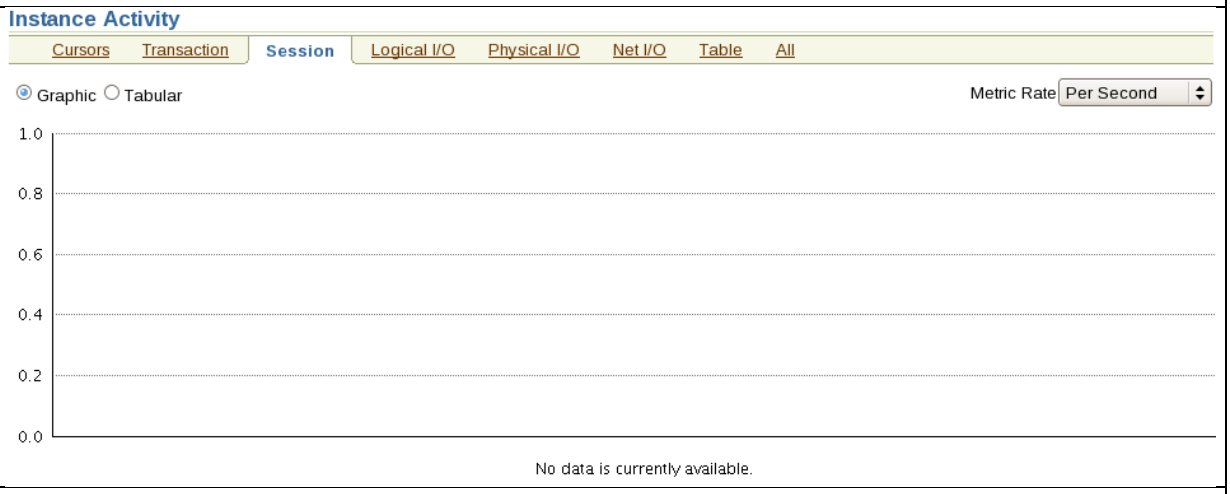
functioning of an instance, on the Performance tab in the Additional Monitoring Links section, select the Instance Activity option and view the data on individual tabs: Cursors tab.



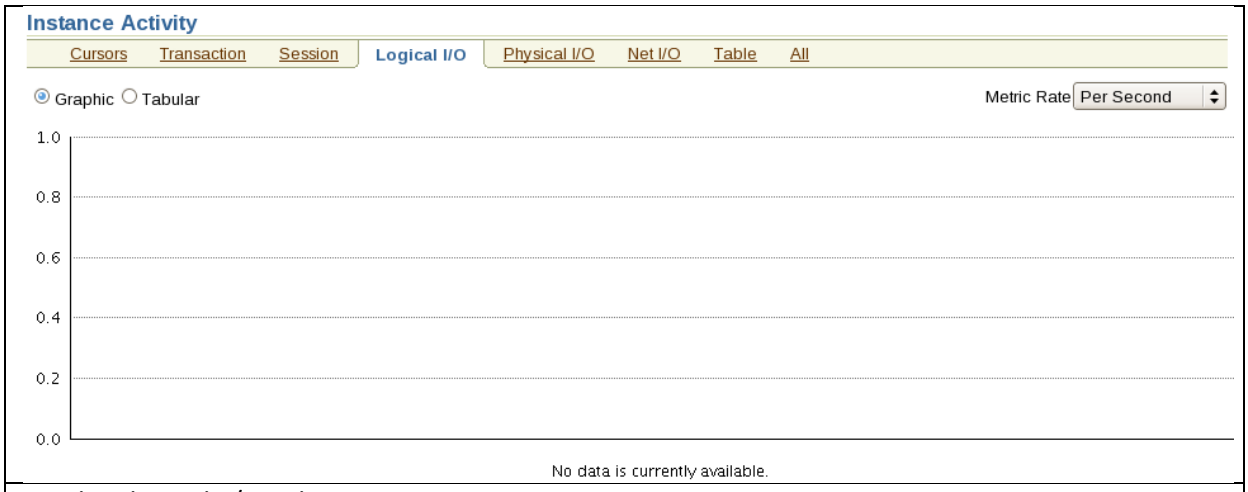
36. The Transactions tab.



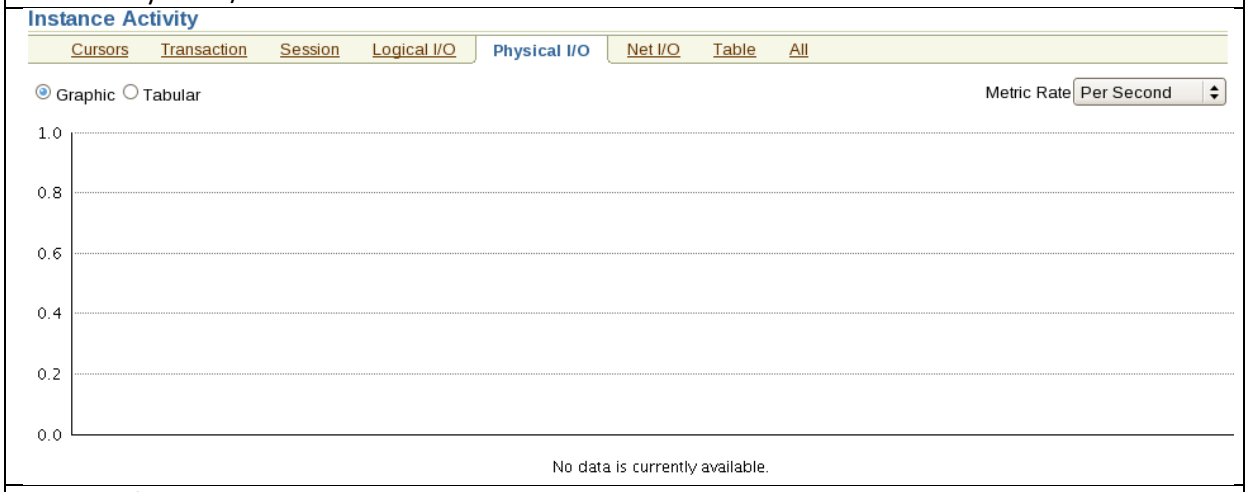
37. Sessions tab.



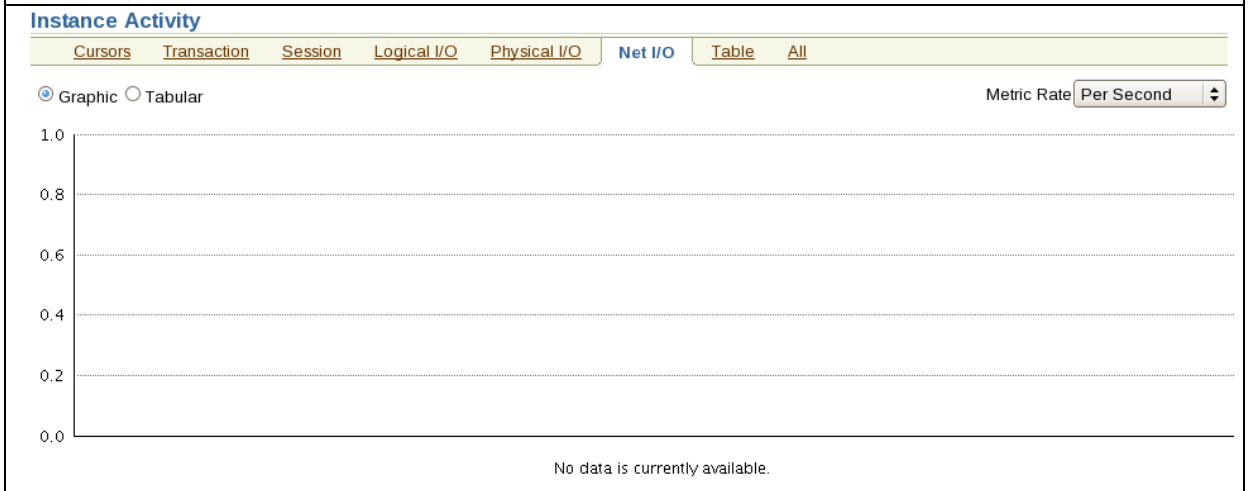
38. The logical I / O tab.



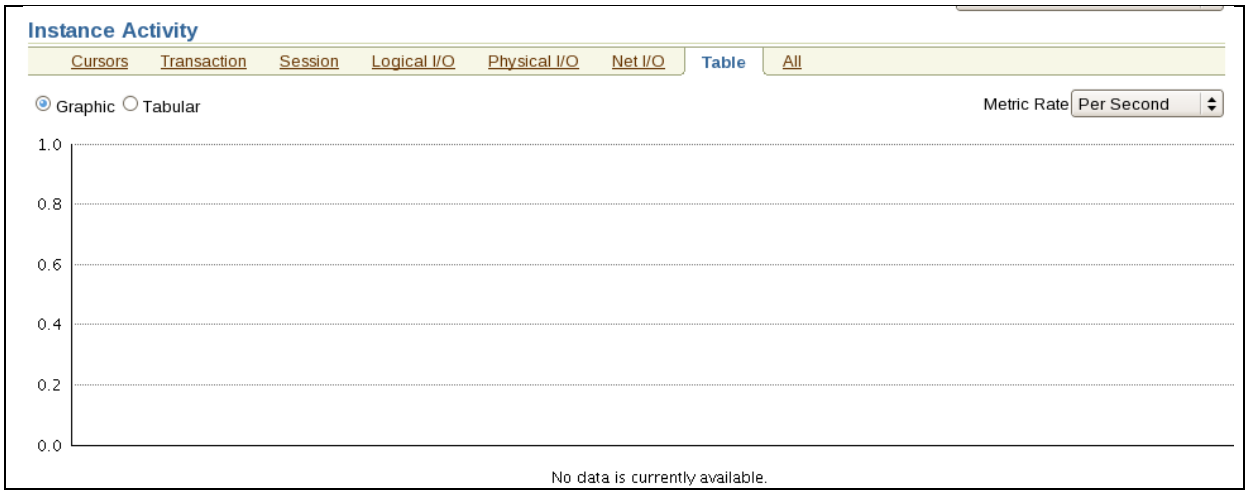
39. The Physical I / O tab



40. Net I / O tab.



41. Table tab.


Instance Activity
Cursors
Transaction
Session
Logical I/O
Physical I/O
Net I/O
Table
All
Graphic
Tabular
Metric Rate
Per Second
1.0
0.8
0.6
0.4
0.2
0.0
No data is currently available.