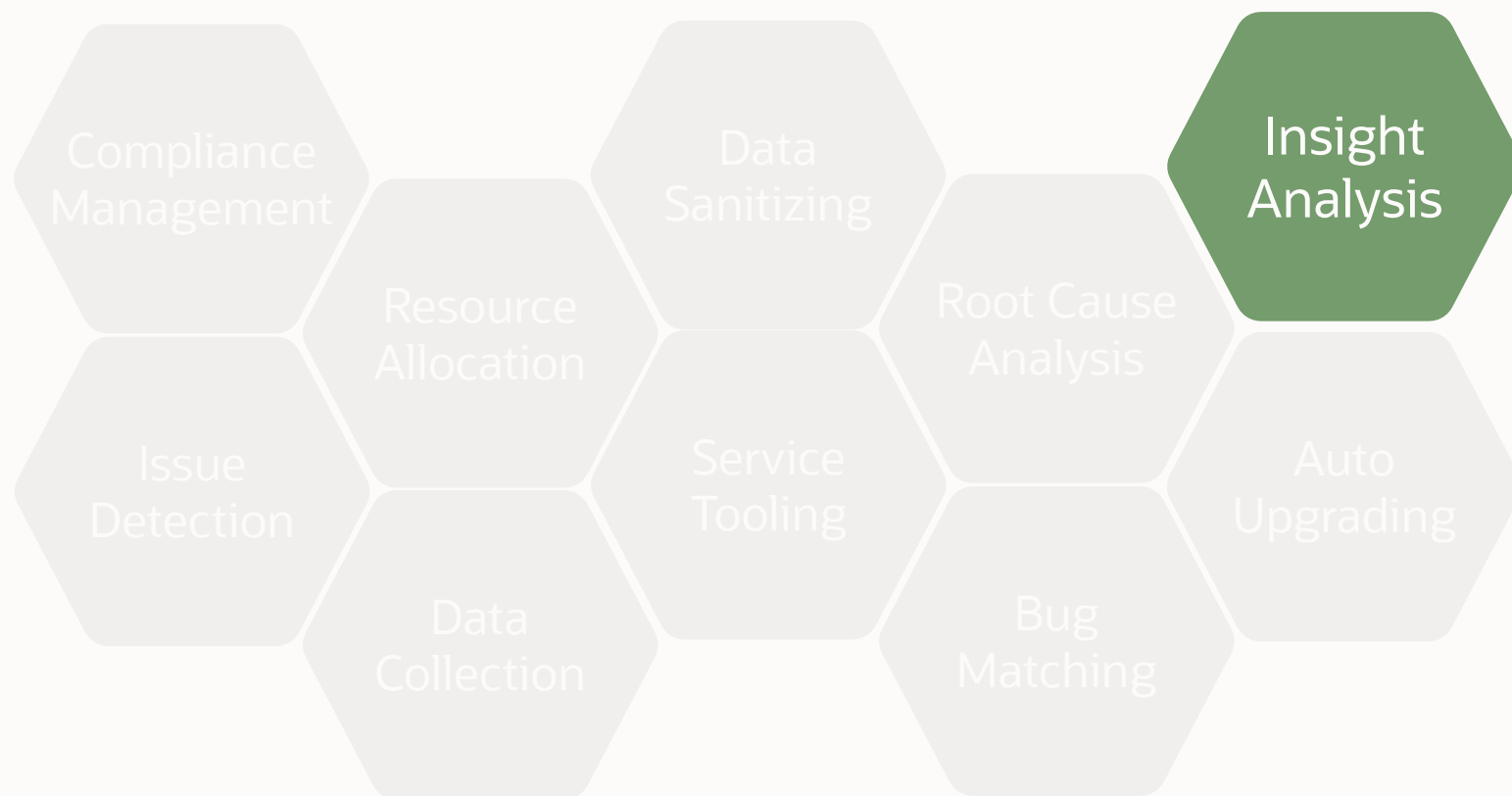


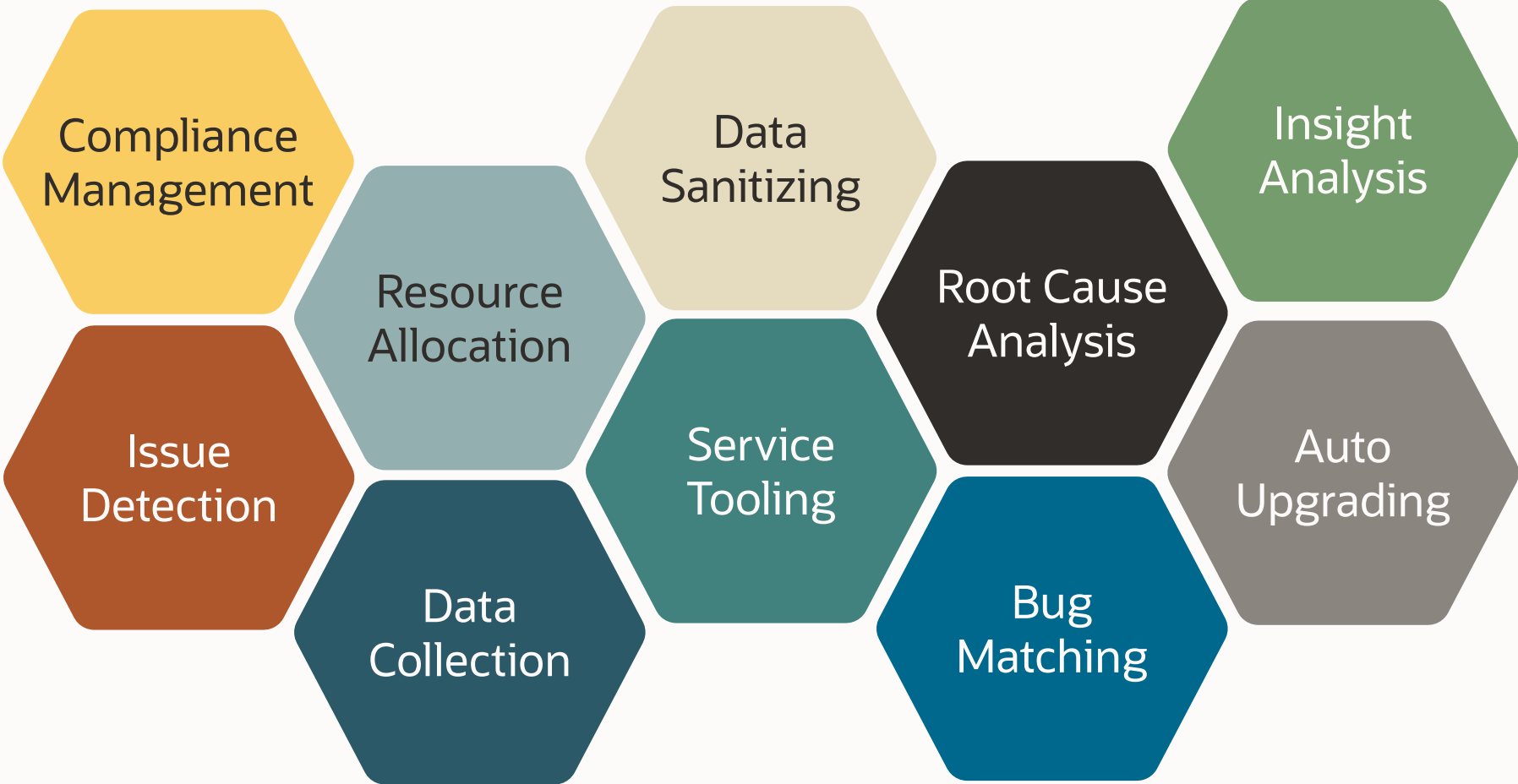
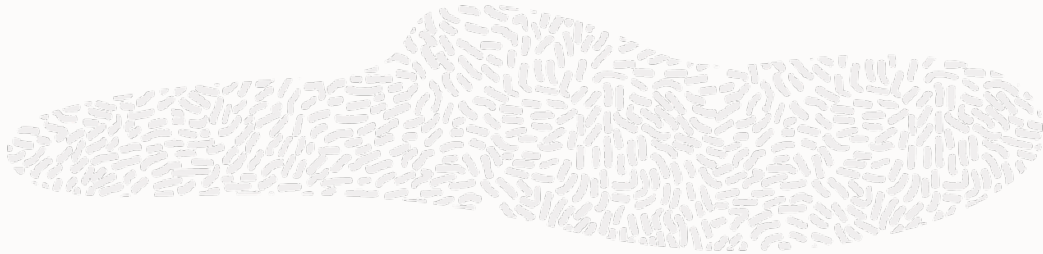
ORACLE

Autonomous Health Framework

Insight Analysis



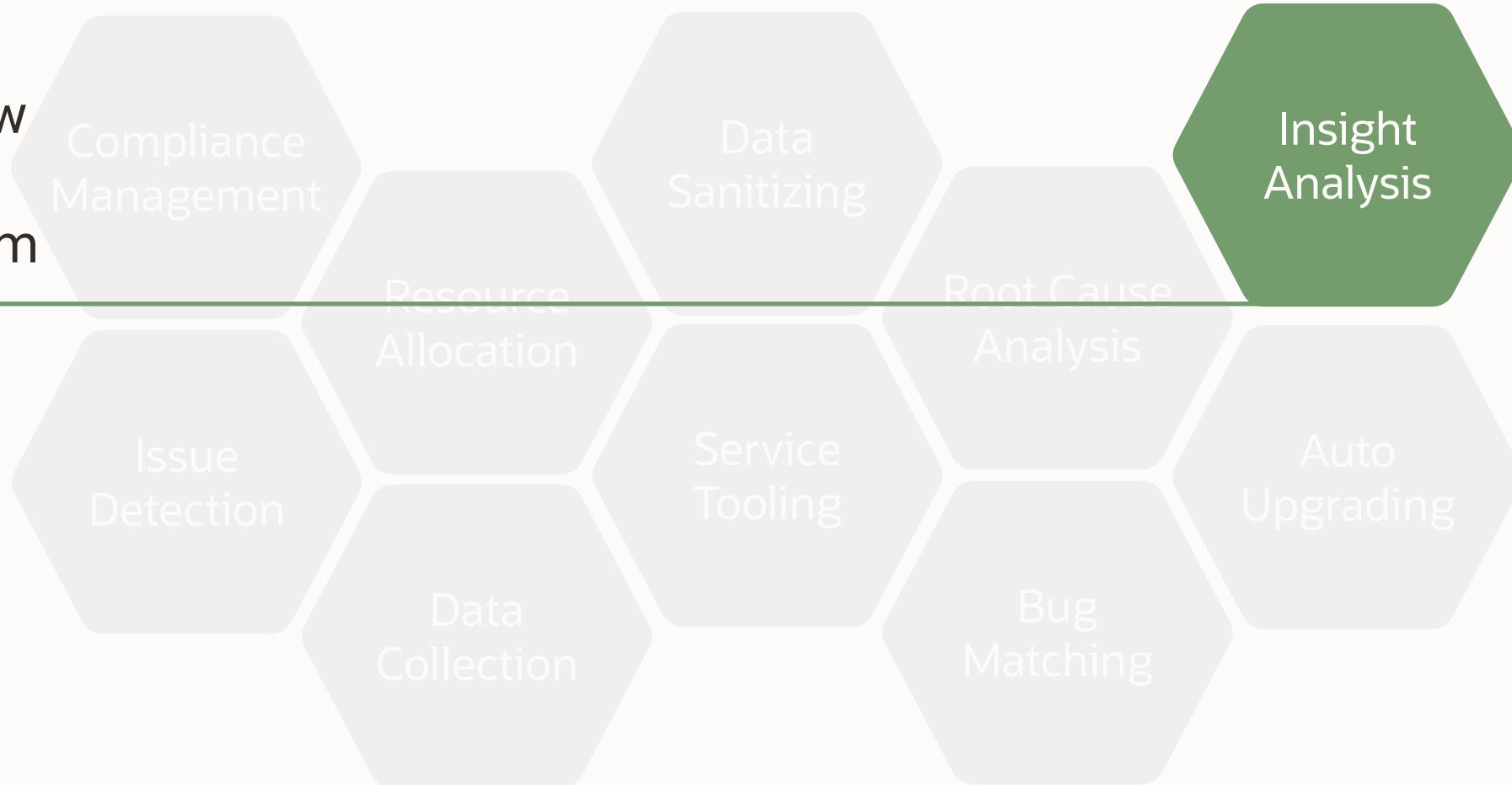
Oracle Autonomous Health Framework



Oracle Autonomous Health Framework



Insights view
into the
entire system



AHF Insights Overview



AHF Insights provides a bird's eye view of the entire system with the ability to further drill down for root cause analysis.

Previously, results from different AHF components were not available in a single dashboard making it challenging to combine and correlate. To mitigate this, AHF Insights provides a web-based graphical user interface, which does not require a web server to host the web pages, for all diagnostic data collectors and analyzers that are part of AHF Kit.

AHF performs a diagnostic collection for a given period to analyze the performance of database systems from:

- Configuration
- Environment Topology
- Metrics
- Logs

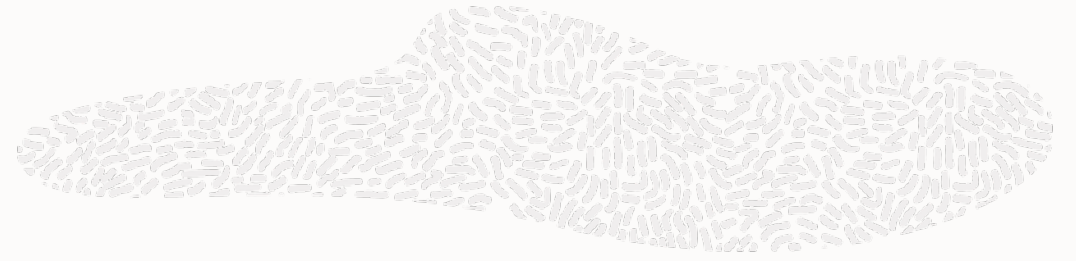
This diagnostic data collected from the system passes through AHF Insights and produce an offline report.

Information Captured



System Topology	<ul style="list-style-type: none">• Resource Information• Resource Configuration• Summarized viewing of resource data
Insights	<ul style="list-style-type: none">• Major events happening on the system• Operating system information and it's analysis• Best practice compliance issues• Software Recommendation• Software / Hardware alerts for Database Server• System changes over last 14 days• RPM details and RPM inconsistencies among hosts• Database Parameters and differences among databases• Kernel Parameters and differences among hosts

Prerequisites



- Latest AHF with AHF Insights code
 - Feature available from AHF 22.3
- Required AHF data sources (TFA, Exachk, CHM) should be enabled and running
- Currently we are generating report only for **Exadata Systems**

How can I generate it ?

```
[root@adcs11adm01 ~]# tfactl print status
```

Host	Status of TFA	PID	Port	Version	Build ID	Inventory Status
adcs11adm01	RUNNING	279609	5000	22.3.0.0.0	22300020221031131221	COMPLETE
adcs11adm02	RUNNING	320435	5000	22.3.0.0.0	22300020221031131221	COMPLETE
adcs11adm03	RUNNING	319559	5000	22.3.0.0.0	22300020221031131221	COMPLETE
adcs11adm04	RUNNING	349404	5000	22.3.0.0.0	22300020221031131221	COMPLETE

```
[root@adcs11adm01 ~]# ahf analysis create --type insights --last 2h
```

```
Starting analysis and collecting data for insights
```

```
Report is generated at : /opt/oracle.ahf/data/repository/collection_Mon_Oct_31_23_11_33_CDT_2022_node_all/adcs11adm01.us.oracle.com_insights_2022_10_31_23_15_11.zip
```

```
AHF Insights report is being generated for the last 2h
```

```
Please wait while we are generating the report collection ...
```

```
From Date : 10/31/2022 21:11:38 CDT
```

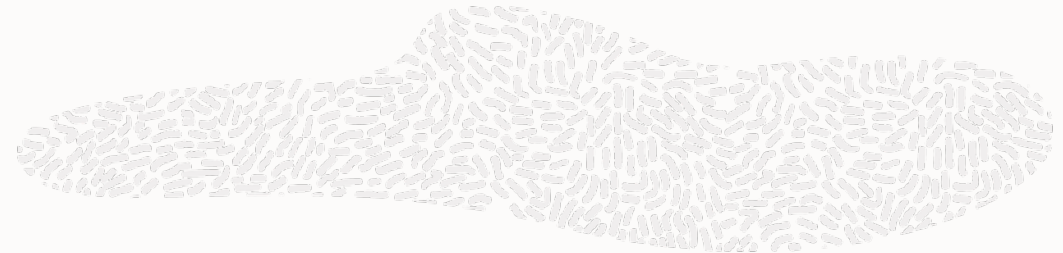
```
To Date : 10/31/2022 23:13:09 CDT
```

```
Please wait while we are generating the report ...
```

```
Report is being generated at path : /opt/oracle.ahf/data/repository/collection_Mon_Oct_31_23_11_33_CDT_2022_node_all ...
```

- **Command : ahf analysis create --type insights --last 2h**
- **Takes around : 3 - 4 minutes (depending on the system)**
- **Size : 46MB zip (depending on the system)**

AHF Insights Report



System Topology






- Cluster
- Databases
- Database Servers
- Storage Servers
- Fabric Switches

Insights










- Timeline
- Operating System Issues
- Best Practice issues
- System Change
- Recommended Software
- Database Server
- RPM List
- Database Parameters
- Kernel Parameters

AHF Insights - Summary AHF-22.3.0 System Type : **Exadata** | Time Range : 2022-11-15 21:51:00.455000 to 2022-11-15 23:51:00.455000 (2 Hours)

System Topology for : adcs11adm0104c1

 1 Cluster GI Version : 19.16.0.0.0	 1 Databases 1 CDB(s) [2 PDB(s) / [2 open]]	 4 Database Servers X5-2	 7 Storage Servers X5-2L_EXTREME_FLASH	 2 Fabric Switches Infiniband Switch
---	---	--	--	--

Insights

 740 Timeline Log Events	 6 Operating System Issues Across Database Servers	 19 Best Practice Issues CRIT:2 / FAIL:10 / WARN:7	 68 System Change 68 changes in last 30 Days	 4 Recommended Software All Components
 2 Database Server 2 Uncleared Alerts	 1 RPM List List of RPMs	 1 Database Parameters List of Database Parameters	 1 Kernel Parameters List of Kernel Parameters	

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Cluster

Cluster Summary

1. Showcase relevant system cluster information.

2. Get DB Home details by clicking on the dropdown button located inside the DB Home section.

3. Copy Cluster summary into user clipboard.

Cluster Summary for time range : 2022-11-15 21:51:00.455000 - 2022-11-15 23:51:00.455000

Cluster

Cluster Summary Cluster Resources ASM Details

System

Node Count	Type
13	Exadata

Copy as text

Grid Infrastructure

GI Version	Timezone	Cluster Name	CRS Home
19.16.0.0.0	America/Chicago	adcs11adm0104c1	/u01/app/gridsw/grid1916.220719

Database

Database Home	Database Version
▶ /u01/app/oracle/product/19.10.0/racdb1910.210119	19.10.0.0.0

Database Server

Node Count	Hardware Model	Image Version	Operating System	Operating System Version
4	X5-2	21.2.14.0.0.220810	Linux x86_64	4.14.35-2047.514.5.1.2.el7uek.x86_64

Storage Server

Node Count	Hardware Model	Image Version	Operating System Version	Cell Version
7	X5-2L_EXTREME_FLASH	21.2.14.0.0.220810	4.14.35-2047.514.5.1.2.el7uek.x86_64	OSS_21.2.14.0.0_LINUX.X64_220810

Switch

Node Count	Type
2	Infiniband Switch

About Copyright

Cluster

Cluster Summary

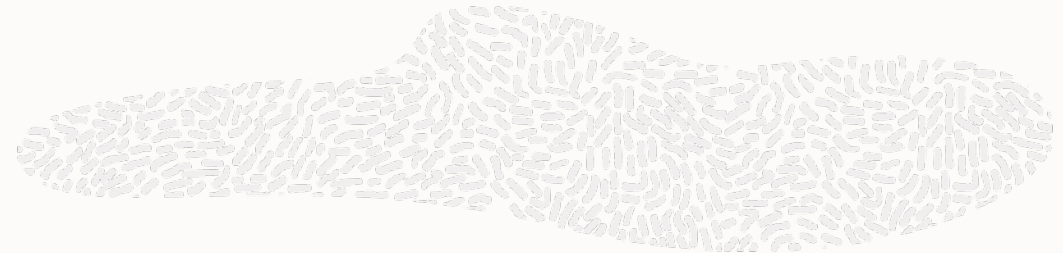
- 1. Showcase relevant system cluster information.
- 2. Get DB Home details by clicking on the dropdown button located inside the DB Home section.
- 3. Copy Cluster summary into user clipboard.

The screenshot displays the Oracle Cluster Summary page with the following sections:

- System:** Node Count: 13, Type: Exadata. Includes a "Copy as text" button.
- Grid Infrastructure:** GI Version: 19.16.0.0.0, Timezone: America/Chicago, Cluster Name: adcs11adm0104c1, CRS Home: /u01/app/gridsw/grid1916.220719.
- Database:** Database Home: /u01/app/oracle/product/19.10.0/racdb1910.210119 (with a dropdown arrow), Database Version: 19.10.0.0.0. Databases: cdb2db2.
- Database Server:** Node Count: 4, Hardware Model: X5-2, Image Version: 21.2.14.0.0.220810, Operating System: Linux x86_64, Operating System Version: 4.14.35-2047.514.5.1.2.el7uek.x86_64.
- Storage Server:** Node Count: 7, Hardware Model: X5-2L_EXTREME_FLASH, Image Version: 21.2.14.0.0.220810, Operating System Version: 4.14.35-2047.514.5.1.2.el7uek.x86_64, Cell Version: OSS_21.2.14.0.0_LINUX.X64_220810.
- Switch:** Node Count: 2, Type: Infiniband Switch.



Cluster



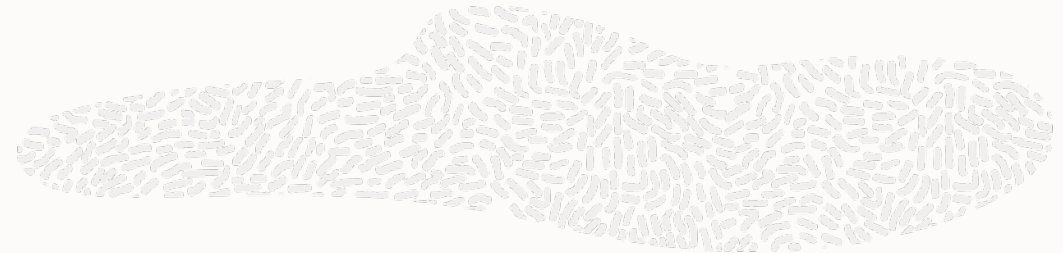
Cluster Summary

1. Showcase relevant system cluster information.
2. Get DB Home details by clicking on the dropdown button located inside the DB Home section.
3. Copy Cluster summary into user clipboard.

Area	Dimension	Value
System	Type	Exadata
System	Total Node Count	13
Cluster	Node Count	1
Cluster	GI Version	19.16.0.0.0
Cluster	Timezone	America/Chicago
Cluster	Cluster Name	adcs11adm0104c1
Cluster	CRS Home	/u01/app/gridsw/grid1916.220719
Databases	Count	1
Databases	Database Home	/u01/app/oracle/product/19.10.0/racdb1910.210119
Database Servers	Count	4
Database Servers	Hardware Model	X5-2
Database Servers	Image Version	21.2.14.0.0.220810
Database Servers	Operating System	Linux x86_64
Database Servers	Operating System Version	4.14.35-2047.514.5.1.2.el7uek.x86_64
Storage Servers	Count	7
Storage Servers	Hardware Model	X5-2L_EXTREME_FLASH
Storage Servers	Image Version	21.2.14.0.0.220810
Storage Servers	Operating System Version	4.14.35-2047.514.5.1.2.el7uek.x86_64
Storage Servers	Cell Version	OSS_21.2.14.0.0_LINUX.X64_220810
Fabric Switches	Node Count	2
Fabric Switches	Switch Type	Infiniband Switch



Cluster



Cluster Resources

- 1. Showcase Cluster Resources status.
- 2. Ability to get detailed information of each type showing resource status.
- 3. The user is able to expand all collapsible using the switch with the label of Expand All.

Cluster Summary for time range : 2022-11-15 21:51:00.455000 - 2022-11-15 23:51:00.455000

Cluster

Cluster Summary Cluster Resources ASM Details

Expand All

ora.database.type All resources are at the target state. Out of 4 resources, 4 are online and 0 are offline.

CRS Resource Name	Target	State	Server
ora.cdb2db2.db	ONLINE	ONLINE	adcs11adm01
ora.cdb2db2.db	ONLINE	ONLINE	adcs11adm02
ora.cdb2db2.db	ONLINE	ONLINE	adcs11adm03
ora.cdb2db2.db	ONLINE	ONLINE	adcs11adm04

ora.listener.type All resources are at the target state. Out of 4 resources, 4 are online and 0 are offline.

ora.scan_listener.type All resources are at the target state. Out of 3 resources, 3 are online and 0 are offline.

ora.asm_network.type All resources are at the target state. Out of 4 resources, 4 are online and 0 are offline.

ora.diskgroup.type All resources are at the target state. Out of 12 resources, 12 are online and 0 are offline.

ora.asm.type All resources are at the target state. Out of 4 resources, 4 are online and 0 are offline.

ora.cluster_vip_net1.type All resources are at the target state. Out of 4 resources, 4 are online and 0 are offline.

ora.service.type All resources are at the target state. Out of 4 resources, 4 are online and 0 are offline.

ora.chad.type All resources are at the target state. Out of 4 resources, 4 are online and 0 are offline.

ora.cvu.type All resources are at the target state. Out of 1 resources, 1 is online and 0 are offline.



Cluster

ASM Details

1. Showcase ASM Details
 - Instance Details
 - Disk Group Details

AHF

System

Insight

About O
Copyri

Cluster Summary for time range : 2022-11-15 21:51:00.455000 - 2022-11-15 23:51:00.455000

Cluster

Cluster Summary Cluster Resources ASM Details

Instance Details Disk Group Details

Node	Instance Name	Status	Disk Group Name	Disk Group Status	Used (%)
adcs11adm03	+ASM3	ONLINE	ora.ACFSC1.dg	ONLINE	21.35%
adcs11adm02	+ASM2	ONLINE	ora.DATA1.dg	ONLINE	17.1%
adcs11adm04	+ASM4	ONLINE	ora.RECO1.dg	ONLINE	81.41%
adcs11adm01	+ASM1	ONLINE			



Databases

Databases

1. Showcase basic Database information.
2. Ability to show detailed information of each database by clicking on the individual button or in the “Expand All” switch.

The screenshot shows the Oracle Enterprise Manager interface for a database. At the top, it says "Database information collected at : 2022-11-15 23:52:01.915000". The main heading is "Databases" with an "Expand all" toggle switch. Below this is a table with columns: CDB Name, Status, DB Version, DR Role, Cpu Count, SGA Target (GB), PGA Agg Target / Limit (GB), and Processes. The row for "cdb2db2" shows it is "OPEN", version "19.10.0.0.0", "Primary", with 5 CPUs, 3 GB SGA target, 3/3 GB PGA target, and 250 processes. A "DB Home" button is next to the path "/u01/app/oracle/product/19.10.0/racdb1910.210119".

Below the table are three detailed sections:

- Instance Details:** A table with columns "Instance Name", "Instance Hostname", and "Status". It lists four instances: cdb2db21 (adcs11adm01, ONLINE), cdb2db22 (adcs11adm02, ONLINE), cdb2db23 (adcs11adm03, ONLINE), and cdb2db24 (adcs11adm04, ONLINE).
- Pluggable Database Details:** A table with columns "PDB Name", "Instance Name", and "State". It lists two PDBs: WFPDB2 (cdb2db23, READ WRITE) and PDB\$SEED (cdb2db23, READ ONLY).
- TableSpace Details:** A table with columns "TableSpace Name" and "Used (%)". It lists three tablespaces: SYSAUX (0.008%), USERS (0%), and SYSTEM (0.003%).

Database Servers

Database Servers

User have all the database server information indicated at the top left, so in most of the cases we will have a single target with the same value.

AHF Database server information collected at : 2022-11-15 23:48:15.754166

System

Database Servers

Database Servers [adcs11adm01](#) [adcs11adm02](#) [adcs11adm03](#) [adcs11adm04](#)

Attribute	Target	Value
Exadata Image Version	All Database Servers	21.2.14.0.0.220810
Operating System	All Database Servers	Linux x86_64
Operating System Version	All Database Servers	4.14.35-2047.514.5.1.2.el7uek.x86_64
Hardware Model	All Database Servers	ORACLE SERVER X5-2
Disk Configuration	All Database Servers	<pre>Model is ORACLE SERVER X5-2 Number of LSI controllers: 1 Physical disks found: 4 (252:0 252:1 252:2 252:3) Logical drives found: 1 Linux logical drive: 0 RAID Level for the Linux logical drive: 5 [WARNING] Some local device(s) other than /dev/sda mounted [WARNING] /dev/asm/acfsvol01-16 on /acfs01 type acfs (rw,relatime,device,rootsuid,ordered) Physical disks in the Linux logical drive: 4 (252:0 252:1 252:2 252:3) Dedicated Hot Spares for the Linux logical drive: 0 Global Hot Spares: 0 Valid. Disks configuration: RAID5 from 4 disks with no global and dedicated hot spare disks. Valid. Booted: Linux. Layout: Linux.</pre>
Memory Size	All Database Servers	256 GB
CPUs Enabled	All Database Servers	72
CPUs Vendor	All Database Servers	GenuineIntel
Cpu Count	All Database Servers	72
Cpu Cores Count	All Database Servers	18

About Copyright



Storage Servers

Storage Servers

User have all the Storage servers indicated at the top left, so in

most of the cases we will have all targets with the same value.

Storage server information collected at : 2022-11-15 23:48:15.754166

Storage Servers

Storage Servers [adcs11celadm01](#) [adcs11celadm02](#) [adcs11celadm03](#) [adcs11celadm04](#) [adcs11celadm05](#) [adcs11celadm06](#) [adcs11celadm07](#)

Attribute	Target	Value						
Hardware Model	All Storage Servers	Oracle Corporation ORACLE SERVER X5-2L_EXTREME_FLASH						
Operating System Version	All Storage Servers	4.14.35-2047.514.5.1.2.el7uek.x86_64						
Exadata Image Version	All Storage Servers	21.2.14.0.0.220810						
Release Tracking Bug	All Storage Servers	34468356						
Cell Version	All Storage Servers	OSS_21.2.14.0.0_LINUX.X64_220810						
Cell Offload Group	adcs11celadm02 adcs11celadm07	<table border="1"><tr><td>SYS_121240_220712</td><td>running</td></tr><tr><td>SYS_112331_220513</td><td>running</td></tr><tr><td>SYS_2121400_220810</td><td>running</td></tr></table>	SYS_121240_220712	running	SYS_112331_220513	running	SYS_2121400_220810	running
SYS_121240_220712	running							
SYS_112331_220513	running							
SYS_2121400_220810	running							
Cell Offload Group	adcs11celadm03 adcs11celadm01	<table border="1"><tr><td>SYS_2121400_220810</td><td>running</td></tr><tr><td>SYS_112331_220513</td><td>running</td></tr><tr><td>SYS_121240_220712</td><td>running</td></tr></table>	SYS_2121400_220810	running	SYS_112331_220513	running	SYS_121240_220712	running
SYS_2121400_220810	running							
SYS_112331_220513	running							
SYS_121240_220712	running							
Cell Offload Group	adcs11celadm04	<table border="1"><tr><td>SYS_112331_220513</td><td>running</td></tr><tr><td>SYS_2121400_220810</td><td>running</td></tr><tr><td>SYS_121240_220712</td><td>running</td></tr></table>	SYS_112331_220513	running	SYS_2121400_220810	running	SYS_121240_220712	running
SYS_112331_220513	running							
SYS_2121400_220810	running							
SYS_121240_220712	running							
Cell Offload Group	adcs11celadm05	<table border="1"><tr><td>SYS_2121400_220810</td><td>running</td></tr><tr><td>SYS_121240_220712</td><td>running</td></tr><tr><td>SYS_112331_220513</td><td>running</td></tr></table>	SYS_2121400_220810	running	SYS_121240_220712	running	SYS_112331_220513	running
SYS_2121400_220810	running							
SYS_121240_220712	running							
SYS_112331_220513	running							



RDMA Network Fabric Switch



RDMA Network Fabric Switch

User have all the Switches indicated at the top left, so in most of the cases we will have all targets with the same value.

Fabric switch information collected at : 2022-11-15 23:48:15.754166

RDMA Network Fabric Switch

Fabric Switches: adcs11sw-iba0 adcs11sw-ibb0

Attribute	Target	Value
Fabric Switch Type	All Fabric Switches	Infiniband Switch
Firmware Version	All Fabric Switches	2.2.16-6

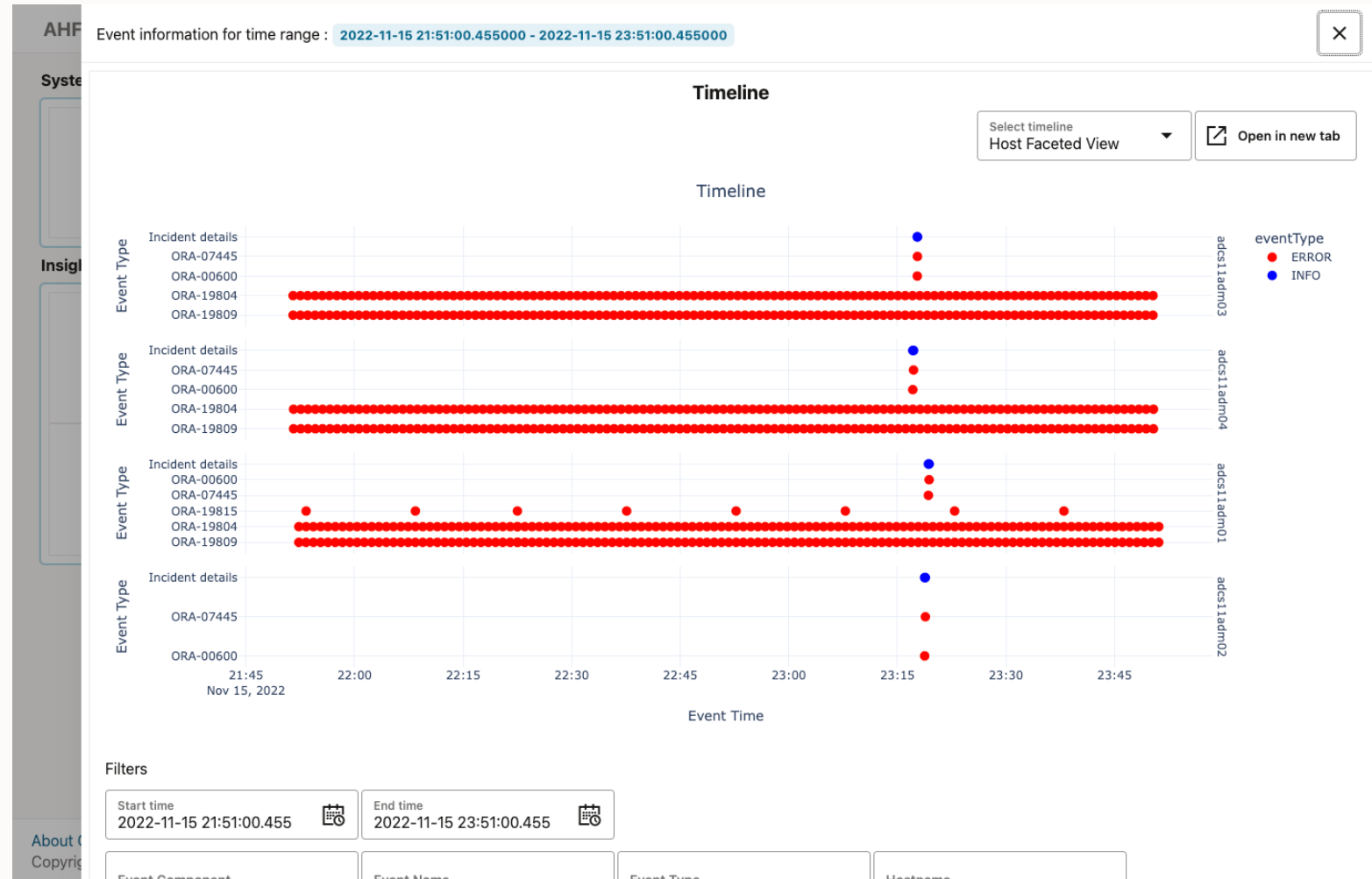
About Copyright



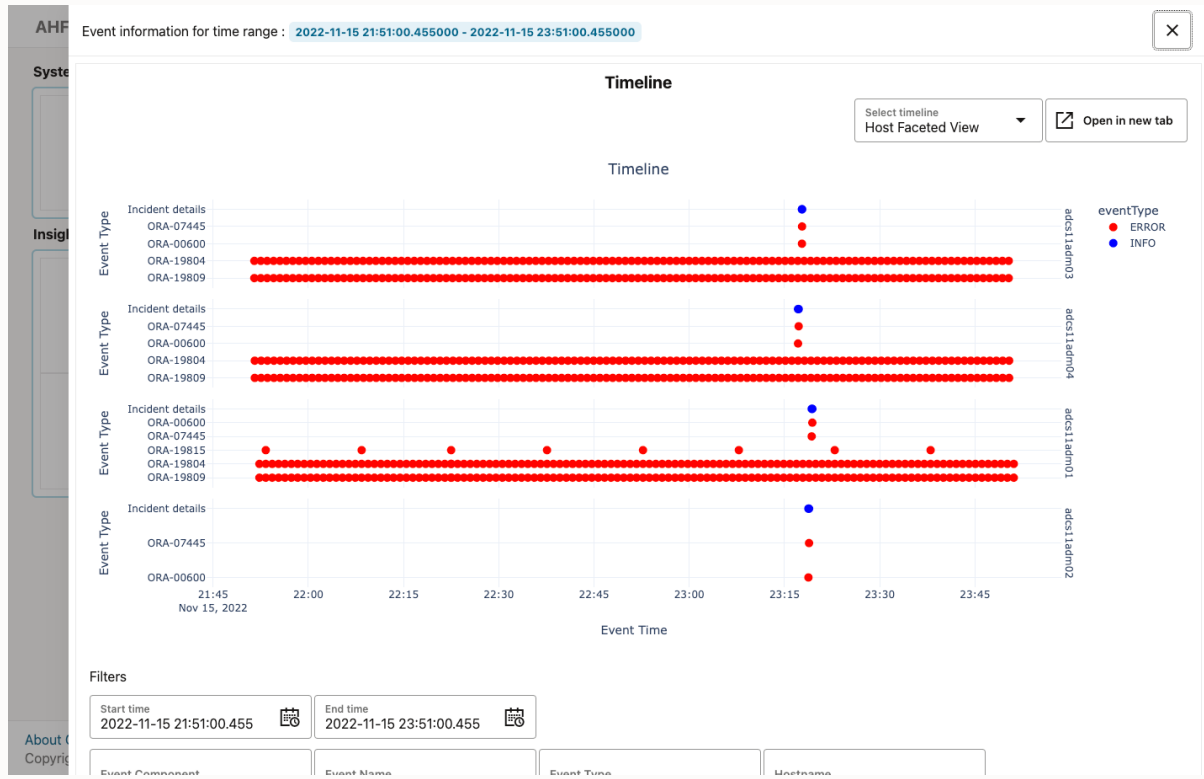
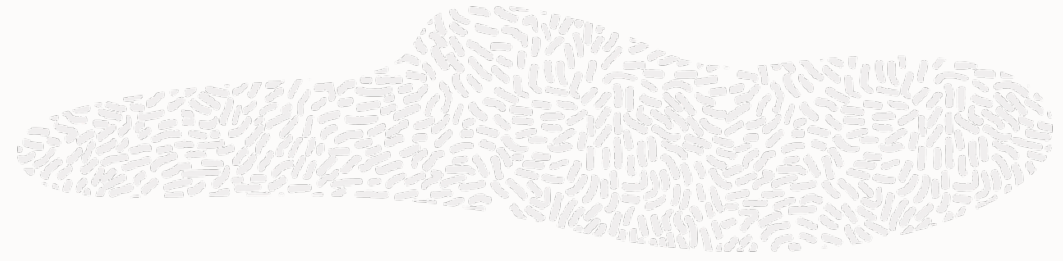
Timeline

Graph

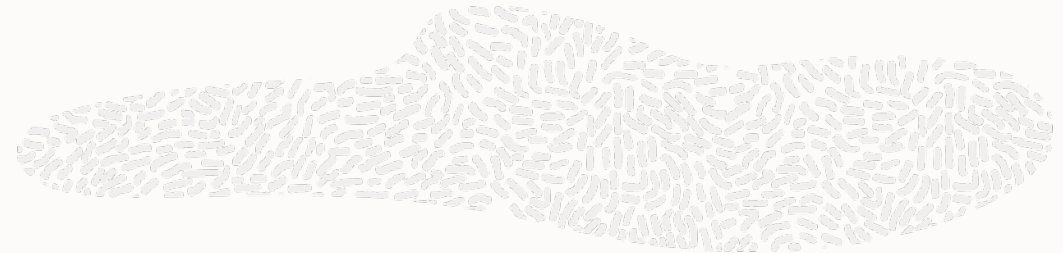
1. Showcase events that happened in two different views, Host Faceted and Event Faceted.
2. Ability to hover in a specific data point in the graph to get more information about that specific point in time.
3. Ability to zoom into the timeline.



Timeline



Timeline



Tabular format

1. Ability to search values by using the filter section.
2. Ability to filter by a specific time range.
3. Detailed information regarding a specific timestamp can be accessed by clicking on the arrow located at the left side of the specific date.

NOV 15, 2022

Event Time

Filters

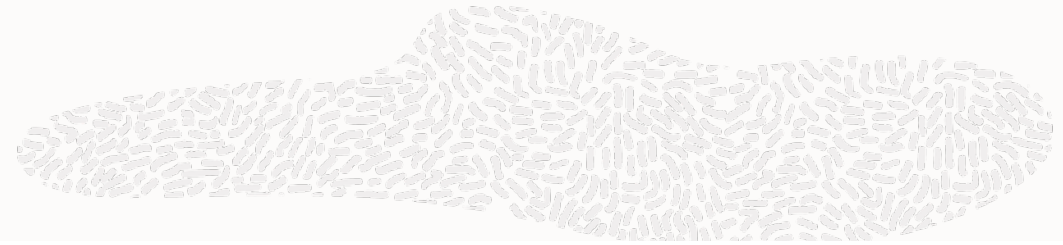
Start time: 2022-11-15 21:51:00.455 | End time: 2022-11-15 23:51:00.455

Event Component | Event Name | Event Type | Hostname

Timestamp	Type	Event	Hostname	Description
2022-11-15T21:51:30.000	ERROR	ORA-19809	adcs11adm03	ORA-19809: limit exceeded for recovery files
Component: RDBMS Database: cdb2db2 Instance: cdb2db23 Source file: /u01/app/oracle/diag/rdbms/cdb2db2/cdb2db23/trace/alert_cdb2db23.log				
▶ 2022-11-15T21:51:30.000	ERROR	ORA-19804	adcs11adm03	ORA-19804: cannot reclaim 4296015872 bytes disk space from 4498391040000 bytes limit
▶ 2022-11-15T21:51:34.000	ERROR	ORA-19809	adcs11adm04	ORA-19809: limit exceeded for recovery files
▶ 2022-11-15T21:51:34.000	ERROR	ORA-19804	adcs11adm04	ORA-19804: cannot reclaim 4296015872 bytes disk space from 4498391040000 bytes limit
▶ 2022-11-15T21:52:18.000	ERROR	ORA-19809	adcs11adm01	ORA-19809: limit exceeded for recovery files
▶ 2022-11-15T21:52:18.000	ERROR	ORA-19804	adcs11adm01	ORA-19804: cannot reclaim 4296015872 bytes disk space from 4498391040000 bytes limit
▶ 2022-11-15T21:52:31.000	ERROR	ORA-19809	adcs11adm03	ORA-19809: limit exceeded for recovery files
▶ 2022-11-15T21:52:31.000	ERROR	ORA-19804	adcs11adm03	ORA-19804: cannot reclaim 4296015872 bytes disk space from 4498391040000 bytes limit
▶ 2022-11-15T21:52:34.000	ERROR	ORA-19809	adcs11adm04	ORA-19809: limit exceeded for recovery files
▶ 2022-11-15T21:52:34.000	ERROR	ORA-19804	adcs11adm04	ORA-19804: cannot reclaim 4296015872 bytes disk space from 4498391040000 bytes limit



Operating System Issues



Metrics

The user can select between multiple nodes on the drop-down menu on the top right.

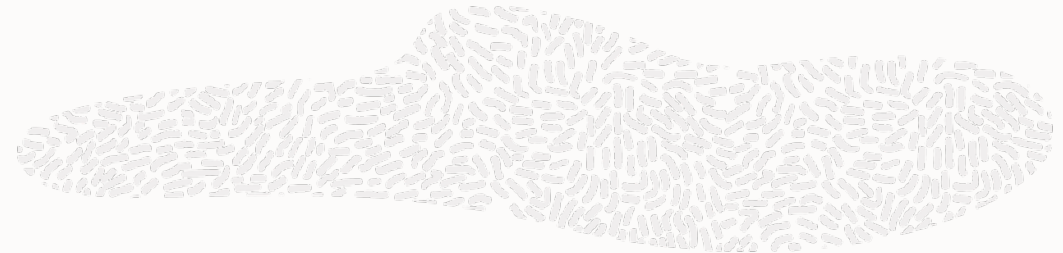
In each node we have tabs regarding some metrics like CPU, Memory, IO and Network and an icon indicating the status.

Metrics CPU

1. Showcase CPU Metrics
2. Ability to hover into a specific point in time of the graph in order to get detailed information.
3. Ability to zoom into the timeline.

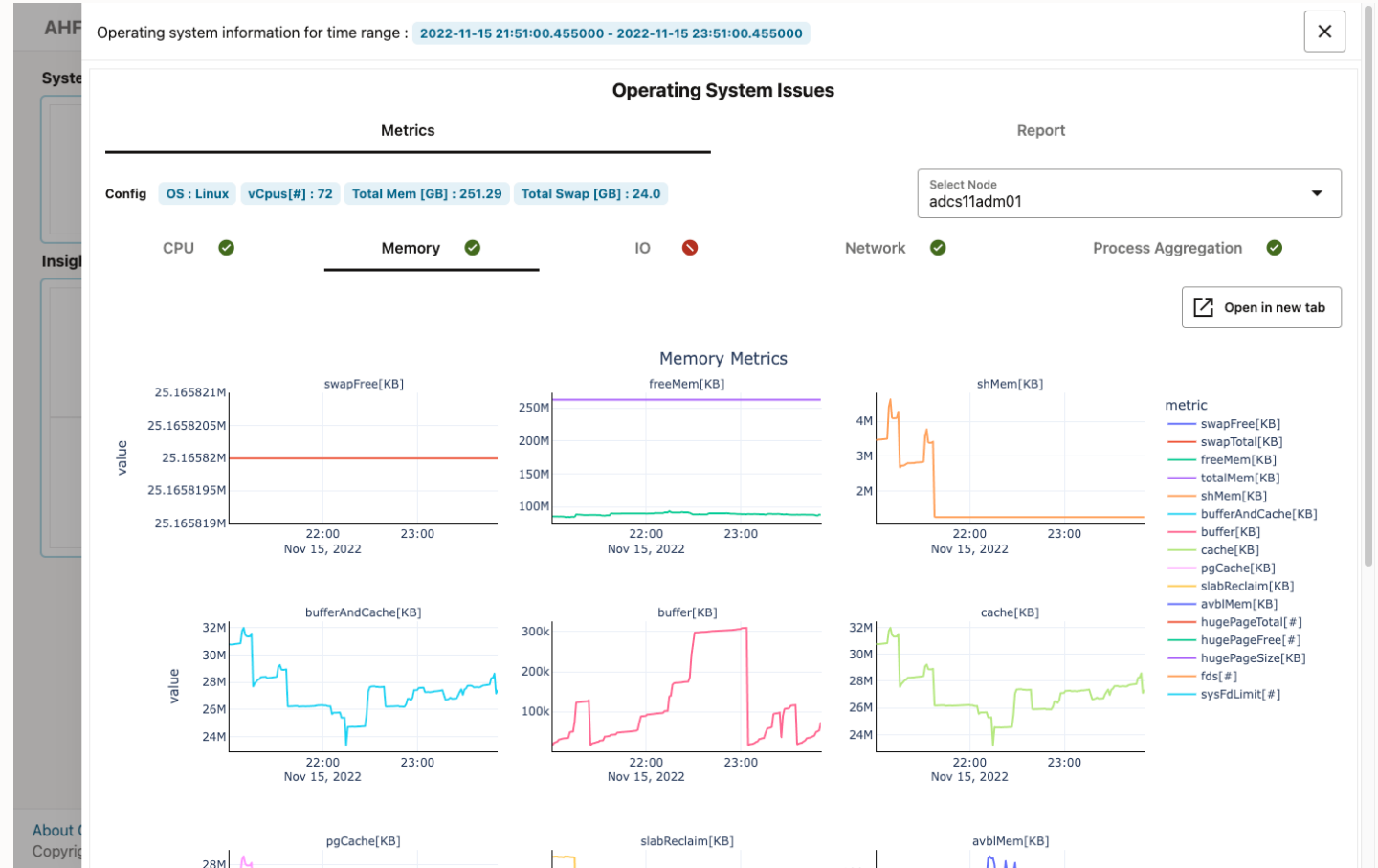


Operating System Issues



Metrics Memory

1. Showcase Memory Metrics
2. Ability to hover into a specific point in time of the graph in order to get detailed information.
3. Ability to zoom into the timeline.



Operating System Issues

Metrics IO

1. Show case System IO metrics
2. Show case Disk metrics
3. Ability to hover into a specific point in time of the graph in order to get detailed information.
4. Ability to zoom into the timeline.



Operating System Issues

Metrics IO

1. Show case System IO metrics
2. Show case Disk metrics
3. Ability to hover into a specific point in time of the graph in order to get detailed information.
4. Ability to zoom into the timeline.



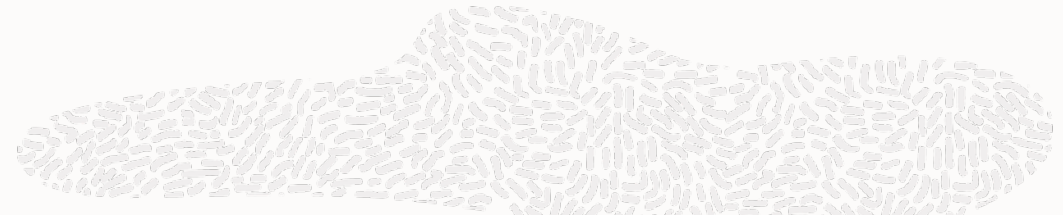
Operating System Issues

Metrics Network

1. Top bar menu so user can select between different Metrics related to network like interface, IP, UDP, TCP.
2. Showcase Network Interface Metrics
3. Ability to hover into a specific point in time of the graph in order to get detailed information.
4. Ability to zoom into the timeline.



Operating System Issues



Operating System Issues

Operating system information for time range : 2022-11-15 21:51:00.455000 - 2022-11-15 23:51:00.455000

Operating System Issues

Metrics **Report**

Config: OS : Linux | vCpus[#] : 72 | Total Mem [GB] : 251.29 | Total Swap [GB] : 24.0

Select Node: adcs11adm01

CPU ✔ | Memory ✔ | IO ✘ | Network ✔ | Process Aggregation ✔

Network Interface | Network IP | Network UDP | **Network TCP**

[Open in new tab](#)

TCP Protocol Metrics

Metric	Approximate Value at 22:00	Approximate Value at 23:00
failedConnErr[#]	1175	1210
estResetErr[#]	74.6k	75.2k
segRetransErr[#]	41.4k	42.3k
rxSeg[#]	39.0M	39.8M
txSeg[#]	57.0M	59.0M



Operating System Issues

Metrics Process Aggregation

1. Show case System process aggregation metrics
2. Ability to hover into a specific point in time of the graph in order to get detailed information.
3. Ability to zoom into the timeline.



Operating System Issues

Report

The user has a left navigation tree, with two main sections the summary that consist of Summary timeline and Observed findings and all the different findings found on the different nodes.

Operating system information for time range : 2022-11-15 21:51:00.455000 - 2022-11-15 23:51:00.455000

Operating System Issues

Metrics Report

Expand All Summary Timeline

- Summary >
- Findings - adcs11adm01 >
- Findings - adcs11adm02 >
- Findings - adcs11adm03 >
- Findings - adcs11adm04 >

Select timeline Host Faceted View [Open in new tab](#)

Findings Timeline by Host

hostname

- adcs11adm03
- adcs11adm01
- adcs11adm04
- adcs11adm02

finding

21:00 21:30 22:00 22:30 23:00 23:30
Nov 15, 2022

Observed Findings

Hostname	Area	Finding	Description
adcs11adm03	IO	IOWaitHigh	High IO Load And High Number Of Processes In Blocked State
adcs11adm03	IO	DiskWaitHigh	Disks with average wait time greater than 20 milliseconds
adcs11adm01	IO	DiskWaitHigh	Disks with average wait time greater than 20 milliseconds
adcs11adm04	IO	DiskWaitHigh	Disks with average wait time greater than 20 milliseconds
adcs11adm02	IO	DiskUtilHigh	High Disk Utilization



Operating System Issues

Report Summary

1. Showcase OS report with a timeline and a table of Observed findings
2. Ability to select a timeline by using the menu at the top of the timeline section
3. Ability to hover into a specific point in time of the graph in order to get detailed information.
4. Ability to get redirected into the findings section by clicking into the description of each item.
5. Ability to show Host Configuration
6. Ability to zoom into the timeline.

Operating system information for time range : 2022-11-15 21:51:00.455000 - 2022-11-15 23:51:00.455000

Operating System Issues

Metrics | Report

Expand All **Summary Timeline**

- Summary >
- Findings - adcs11adm01 >
- Findings - adcs11adm02 >
- Findings - adcs11adm03 >
- Findings - adcs11adm04 >

Select timeline: Host Faceted View | Open in new tab

Findings Timeline by Host

hostname

- adcs11adm03
- adcs11adm01
- adcs11adm04
- adcs11adm02

finding

21:00 21:30 22:00 22:30 23:00 23:30
Nov 15, 2022

Observed Findings

Hostname	Area	Finding	Description
adcs11adm03	IO	IOWaitHigh	High IO Load And High Number Of Processes In Blocked State
adcs11adm03	IO	DiskWaitHigh	Disks with average wait time greater than 20 milliseconds
adcs11adm01	IO	DiskWaitHigh	Disks with average wait time greater than 20 milliseconds
adcs11adm04	IO	DiskWaitHigh	Disks with average wait time greater than 20 milliseconds
adcs11adm02	IO	DiskUtilHigh	High Disk Utilization



Operating System Issues

Report Summary

1. Showcase OS report with a timeline and a table of Observed findings
2. Ability to select a timeline by using the menu at the top of the timeline section
3. Ability to hover into a specific point in time of the graph in order to get detailed information.
4. Ability to get redirected into the findings section by clicking into the description of each item.
5. Ability to show Host Configuration
6. Ability to zoom into the timeline.

Operating system information for time range : 2022-11-15 21:51:00.455000 - 2022-11-15 23:51:00.455000

Operating System Issues

Metrics Report

Expand All **Summary Timeline**

Summary ▼

Select timeline ▼ Finding Faceted View Open in new tab

Findings Timeline by Finding

finding

- DiskWaitHigh
- IOWaitHigh
- DiskUtilHigh

Observed Findings

Hostname	Area	Finding	Description
adcs11adm03	IO	IOWaitHigh	High IO Load And High Number Of Processes In Blocked State
adcs11adm03	IO	DiskWaitHigh	Disks with average wait time greater than 20 milliseconds
adcs11adm01	IO	DiskWaitHigh	Disks with average wait time greater than 20 milliseconds



Operating System Issues

Report Findings

1. Each finding has its own page.
2. The first section of each finding has a brief description of the finding and an index section so the user can click on that link and be redirected to the desired table.

Operating system information for time range : 2022-11-15 21:51:00.455000 - 2022-11-15 23:51:00.455000

Operating System Issues

Metrics Report

Expand All

Summary ▼ **Disks with average wait time greater than 20 milliseconds**
Captures samples where disk average wait time is greater than 20 msec. Disk wait time is average time (in milliseconds) for I/O requests issued to the device to be served. This includes the time spent by the requests in queue and the time spent servicing them.

- All timestamp ranges with DiskWaitHigh
- Disks with average wait time greater than 20 msec
- System metrics
- Top IO consuming processes

Summary Timeline

Observed Findings

Findings - adcs11adm01 ▼

Disks with average wait time greater than 20 milliseconds

Findings - adcs11adm02 ▼

High Disk Utilization

Disks with average wait time greater than 20 milliseconds

Findings - adcs11adm03 ▼

High IO Load And High Number Of Processes In Blocked State

Disks with average wait time greater than 20 milliseconds

Findings - adcs11adm04 ▼

Disks with average wait time

All timestamp ranges with DiskWaitHigh

Start Time	End Time	Duration(seconds)
2022-11-15T22:15:50	2022-11-15T22:16:00	15.0
2022-11-15T22:16:20	2022-11-15T22:16:30	15.0
2022-11-15T22:28:10	2022-11-15T22:28:20	15.0
2022-11-15T22:29:25	2022-11-15T22:29:40	20.0
2022-11-15T23:46:35	2022-11-15T23:46:45	15.0
2022-11-15T23:49:10	2022-11-15T23:49:20	15.0

Disks with average wait time greater than 20 msec

Timestamp	name	ioRKBs	ioWKBs	numIOss	qLen	aWaitmsec	svcTmr
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Best Practice Issues

1. Showcase Best Practice Issues with pagination. Menu allows for all Issues to be displayed at once or filter by category using the menu (Categories are: Exadata Critical Issues, Database server, Storage servers, etc.).

2. Ability to hide PASS Checks by toggling the switch button.

3. Ability to hide INFO Check by toggling the switch button.

4. Showcase all detailed information for each component by clicking on “Expand All” or expand one in specific by clicking the arrow on each entry of the table.

- Table with Target, status and output.
- Recommendation.
- Useful links

Best practice results collected at : 2022-11-15 23:48:15.754166

Best Practice Issues

Expand All Hide PASS checks Hide INFO checks

All Database Server Storage Server Findings needing further review Exadata Critical Issues MAA Scorecard Switch Platinum Certification >

Component	Best Practice Check	Status
▼ HOST	Check alerthistory for stateful alerts not cleared [Database Server]	FAIL
▶ adcs11adm01	AHF-5191: One or more database servers have stateful alerts that have not been cleared	FAIL
▼ adcs11adm02	AHF-5191: One or more database servers have stateful alerts that have not been cleared	FAIL
<pre>DATA FROM ADCS11ADM02 FOR CHECK ALERTHISTORY FOR STATEFUL ALERTS NOT CLEARED [DATABASE SERVER] FAILURE:there are one or more stateful alerts that have not been cleared. Details: SID: 1 NAME: 1_27 SEVERITY: warning MESSAGE: "Advanced Intrusion Detection Environment (AIDE) detected potential changes to software on this system. The changes are listed in /var/log/aide/aide.log and also at the end of this alert message. Summary ::Total number of files :78785 Added files :17 Removed files :3 Changed files :23 " ACTION: "Review the AIDE information below and determine if the changes are expected. If the changes are expected, then regenerate a new Intrusion Detection database to clear this alert. Log in as root and run # /opt/oracle.SupportTools/exadataAIDE -u If the changes are not expected, then the system or security administrator should investigate the changes as a possible intrusion. Added files::added::/bin/ahf added::/opt/cleantfa.sh added::/opt/modules/SUPERVISOR/11.3.0.0_r110195_1-1624371729/heartbeat.1668522714 added::/opt/sidpatel added::/opt/sidpatel/ahf_setup added::/root/.cache added::/root/.cache/pip added::/root/.cache/pip/selfcheck added::/root/.cache/pip/selfcheck/d9a854566a955bb934352c1347b9c4f58f4580fdd22549608cbef6e3 added::/root/.cache/pip/selfcheck/defd3e4bcd18ea6efcc132e10c5d6c93fb2433e394f0b13fe9e6ac9b added::/root/2022-11-08T12:20:13-0600 "</pre>		
▶ adcs11adm03	AHF-5191: One or more database servers have stateful alerts that have not been cleared	FAIL



Best Practice Issues

Expanded View

AHF

System

Insight

▶ HOST Exadata Critical Issue EX77 **CRITICAL**

▶ RDBMS Check for Underscore Parameter Without a Comment **WARNING**

▼ HOST Exadata Critical Issue DB50 **CRITICAL**

Target	Status	Output
▶ adcs11adm01	CRITICAL	AHF-9205: System is exposed to Exadata Critical Issue DB50
▶ adcs11adm02	CRITICAL	AHF-9205: System is exposed to Exadata Critical Issue DB50
▶ adcs11adm03	CRITICAL	AHF-9205: System is exposed to Exadata Critical Issue DB50
▶ adcs11adm04	CRITICAL	AHF-9205: System is exposed to Exadata Critical Issue DB50

Benefit / Impact:

A system exposed to a critical issue may experience system-wide impact to performance or availability.

Risk:

Issue #1 - Bug 33610957, Bug 34534868 - During operating system startup Oracle Clusterware may not start because the CSS daemon (OCSSD process ocssd.bin) cannot be set to run with real-time scheduler priority.

Recommendation

Issue #2 - Bug 34286265, Bug 34318125 - Set process priority fails on critical database background processes, such as VMTK and LMS, which can result in performance degradation.

Action / Repair:

See Exadata Critical Issue DB50 in MOS note 1270094.1(below link)

Links [Note: 1270094.1 - Exadata Critical Issues](#)

About Copyright



System Change

Display the changes detected in the system with its corresponding timestamp and type.

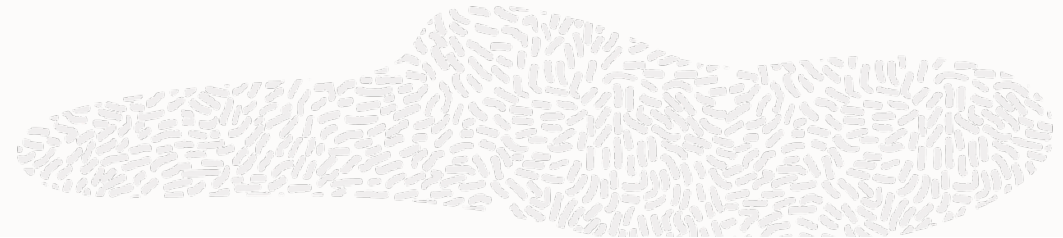
1. Ability to search values by using the filter section.
2. Ability to filter by a specific time range.

The screenshot displays the Oracle System Change interface. At the top, it shows "System change information since last : 30 Days". Below this, there are filter options for "Start time" (2022-10-22 08:21:53.000) and "End time" (2022-11-15 22:24:16.685). The main area lists several system changes, each with a "Patch" label, a timestamp, a description, and the Oracle Home path.

System Change Type
Patch
2022-10-22 08:21:53.000000 33575402 - DBWLM RELEASE UPDATE 19.0.0.0.0 (33575402)
Oracle Home : /u01/app/gridsw/grid1916.220719
Patch
2022-10-22 08:21:53.000000 33575402 - DBWLM RELEASE UPDATE 19.0.0.0.0 (33575402)
Oracle Home : /u01/app/gridsw/grid1916.220719
Patch
2022-10-22 08:21:53.000000 33575402 - DBWLM RELEASE UPDATE 19.0.0.0.0 (33575402)
Oracle Home : /u01/app/gridsw/grid1916.220719
Patch
2022-10-22 08:21:53.000000 33575402 - DBWLM RELEASE UPDATE 19.0.0.0.0 (33575402)
Oracle Home : /u01/app/gridsw/grid1916.220719
Patch
2022-10-22 08:22:31.000000 34133642 - Database Release Update : 19.16.0.0.220719 (34133642)
Oracle Home : /u01/app/gridsw/grid1916.220719
Patch
2022-10-22 08:22:31.000000 34133642 - Database Release Update : 19.16.0.0.220719 (34133642)
Oracle Home : /u01/app/gridsw/grid1916.220719
Patch
2022-10-22 08:22:31.000000 34133642 - Database Release Update : 19.16.0.0.220719 (34133642)
Oracle Home : /u01/app/gridsw/grid1916.220719
Patch
2022-10-22 08:22:31.000000 34133642 - Database Release Update : 19.16.0.0.220719 (34133642)
Oracle Home : /u01/app/gridsw/grid1916.220719

Recommended Software

Showcase Recommended Software.
1. Link with the supported versions.



Recommended software information collected at : 2022-11-15 23:48:15.754166

Recommended Software

Exadata Database Machine and Exadata Storage Server Supported Versions (Doc ID 888828.1)

Component	Target	Found version	Recommended version	Status
Database Server - Database Home	adcs11adm01	19.10.0.0.0	19.17.0.0.221018	19 RU is older than recommended. Database Home /u01/app/oracle/product/19.10.0/racdb1910.210119
	adcs11adm02			
	adcs11adm03			
	adcs11adm04			
Database Server - GI Home	adcs11adm01	19.16.0.0.0	19.17.0.0.221018	Version within recommended range (minimal version is 19.14.0.0.220118). Grid Infrastructure /u01/app/gridsw/grid1916.220719
	adcs11adm02			
	adcs11adm03			
	adcs11adm04			
Storage Server - Exadata	adcs11celadm01	21.2.14.0.0	21.2.17.0.0	Version within recommended range (minimal version is 21.2.11.0.0).
	adcs11celadm02			
	adcs11celadm03			
	adcs11celadm04			
	adcs11celadm05			
	adcs11celadm06			
	adcs11celadm07			
IB Switch - Firmware	adcs11sw-iba0	2.2.16-6	2.2.16-5	Version within recommended range (minimal version is 2.2.16-3).
	adcs11sw-ibb0			

About Copyright



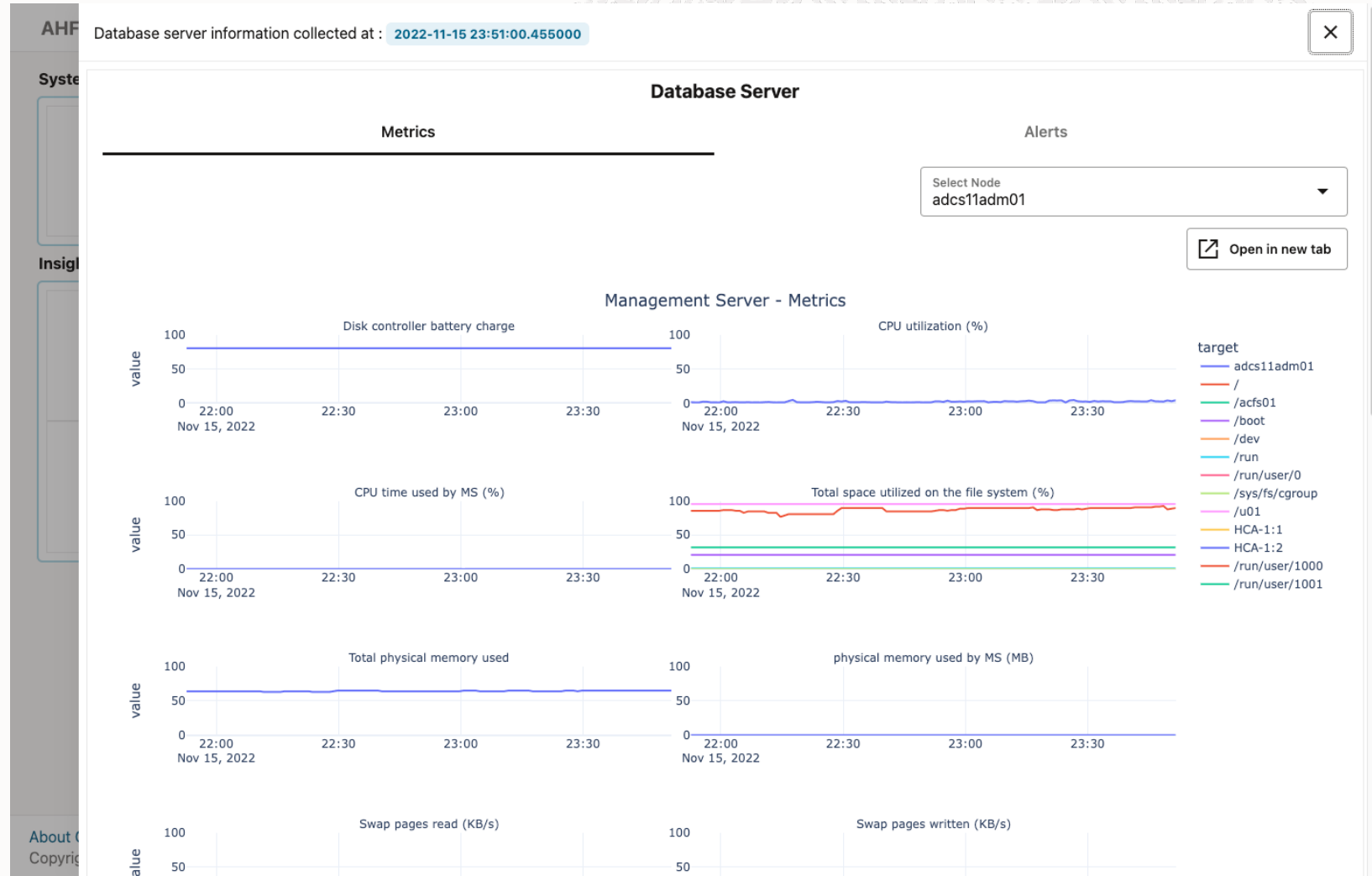
Database Server

Database Server:

- Metrics
- Alerts

Metrics

1. Selection for the host for which metrics are to be viewed
2. Graphs with shared x axis



Database Server

Alerts

1. Table

- The user can expand all the entries in the table using the switch button on the top right.

2. Graph

- Selection of the open alert filter, by default it is turned on.
- Selection of the plot as per the toggle selected.

The screenshot shows the Oracle Database Alerts page. At the top, it says "Database server information collected at : 2022-11-15 23:51:00.455000". Below this, there are tabs for "Metrics" and "Alerts". The "Alerts" tab is selected. Underneath, there is a sub-tab for "Table" (selected) and "Graph". A description reads: "Alerts recorded in Management Server across Hardware , Software and ADR." On the right side, there is an "Expand All" toggle switch which is currently turned off. The main content area displays a table of alerts with columns for "Id" and "Alert Details".

Id	Alert Details
56	<p>Start: 2022-11-15T23:19:06:00 Stateless ADR warning</p> <p>Alert Message: ORA-07445: exception encountered: core dump [] [] [] [] [] []</p> <p>Alert Action: Errors in file /u01/app/oracle/diag/rdbms/cdb2db2/cdb2db21/trace/cdb2db21_ora_210394.trc (incident=148137) (PDBNAME=CDB\$ROOT). Contact Oracle Support.</p>
56	<p>Start: 2022-11-15T23:19:06:00 Stateless ADR warning</p> <p>Alert Message: ORA-07445: exception encountered: core dump [] [] [] [] [] []</p> <p>Alert Action: Errors in file /u01/app/oracle/diag/rdbms/cdb2db2/cdb2db21/trace/cdb2db21_ora_210394.trc (incident=148137) (PDBNAME=CDB\$ROOT). Contact Oracle Support.</p>
57	<p>Start: 2022-11-15T23:19:06:00 Stateless ADR warning</p> <p>Alert Message: ORA-00600: internal error code, arguments: [ouch], [0], [0], [], [], [], [], [], [], [], []</p> <p>Alert Action: Errors in file /u01/app/oracle/diag/rdbms/cdb2db2/cdb2db21/trace/cdb2db21_ora_210394.trc (incident=148138) (PDBNAME=CDB\$ROOT). Contact Oracle Support.</p>

Database Server



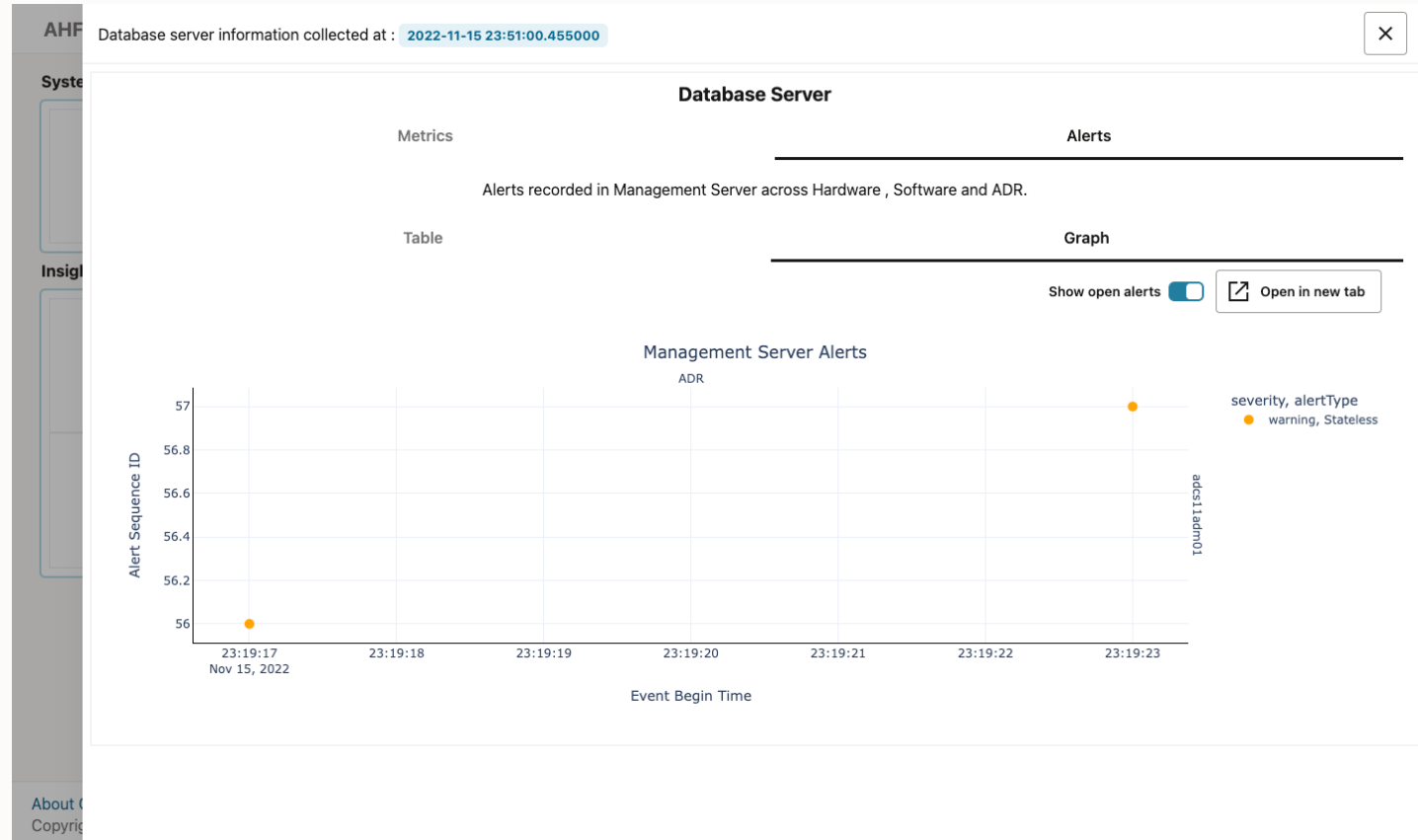
Alerts

1. Table

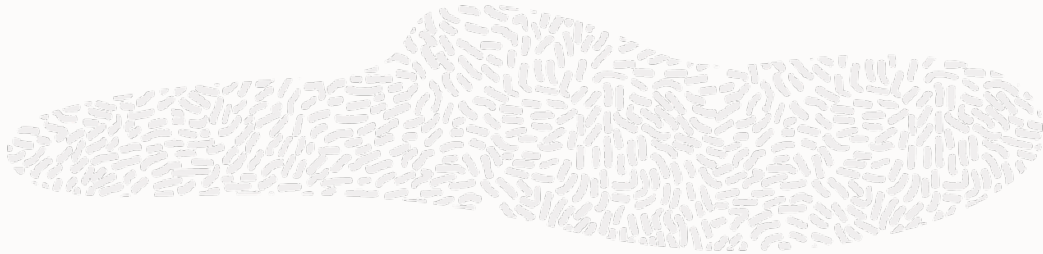
- The user can expand all the entries in the table using the switch button on the top right.

2. Graph

- Selection of the open alert filter, by default it is turned on.
- Selection of the plot as per the toggle selected.



Database Server



Database server information collected at : 2022-11-15 23:51:00.455000

Database Server

Alerts recorded in Management Server across Hardware , Software and ADR.

Alerts

Table

Graph

Show open alerts [Open in new tab](#)

Management Server Alerts

ADR

severity, alertType

- warning, Stateless

Alert Sequence ID	Event Begin Time	Severity	Alert Type
56	23:19:17	warning	Stateless
57	23:19:23	warning	Stateless

Table

Graph

Show open alerts [Open in new tab](#)

Management Server Alerts

ADR

Software

severity, alertType

- warning, Stateless
- clear, Stateful

Alert Sequence ID	Event Begin Time	Severity	Alert Type
56	23:15	warning	Stateless
57	23:15	warning	Stateless

severity, alertType

- warning, Stateless
- clear, Stateful

Alert Sequence ID	Event Begin Time	Severity	Alert Type
39	22:15	clear	Stateful



List of RPMs

List of RPMs

1. Showcase the List of RPM with pagination.
2. Ability to search values by using the filter section.
3. Ability to show RPM differences.

RPM Information collected at : 2022-11-15 23:51:00.455000

List of RPMs

Filter Show RPM differences

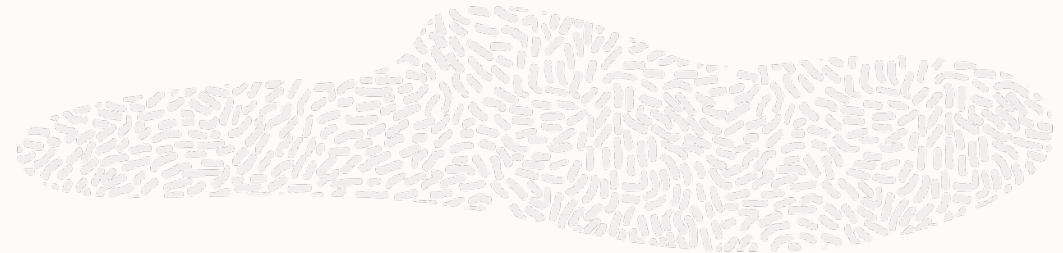
RPM Name	Version	Release	Arch	adcs11adm01	adcs11adm02	adcs11adm03	adcs11adm04
groff	1.22.2	8.el7	x86_64	YES	YES	YES	YES
libsss_nss_idmap	1.16.5	10.0.3.el7_9.12	x86_64	YES	YES	YES	YES
gpgme	1.3.2	5.el7	x86_64	YES	YES	YES	YES
keyutils	1.5.8	3.el7	x86_64	YES	YES	YES	YES
krb5-libs	1.15.1	51.0.3.el7_9	x86_64	YES	YES	YES	YES
hdparm	9.54	2.el7	x86_64	YES	YES	YES	YES
cryptsetup-libs	2.3.0	1.0.1.el7	x86_64	YES	YES	YES	YES
libXrandr	1.5.1	2.el7	x86_64	YES	YES	YES	YES
pcre	8.32	17.el7	x86_64	YES	YES	YES	YES
gettext	0.19.8.1	3.el7_9	x86_64	YES	YES	YES	YES

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About Copyright



List of RPMs



RPM Information collected at : 2022-11-15 23:51:00.455000

List of RPMs

Filter Show RPM differences

RPM Name	Version	Release	Arch	adcs11adm01	adcs11adm02	adcs11adm03	adcs11adm04
groff	1.22.2	8.el7	x86_64	YES	YES	YES	YES
libsss_nss_idmap	1.16.5	10.0.3.el7_9.12	x86_64	YES	YES	YES	YES
gpgme	1.3.2	5.el7	x86_64	YES	YES	YES	YES
keyutils	1.5.8	3.el7	x86_64	YES	YES	YES	YES
krb5-libs	1.15.1	51.0.3.el7_9	x86_64	YES	YES	YES	YES
hdparm	9.54	2.el7	x86_64	YES	YES	YES	YES
cryptsetup-libs	2.3.0	1.0.1.el7	x86_64	YES	YES	YES	YES
libXrandr	1.5.1	2.el7	x86_64	YES	YES	YES	YES
pcre	8.32	17.el7	x86_64	YES	YES	YES	YES
gettext	0.19.8.1	3.el7_9	x86_64	YES	YES	YES	YES

Page 1 of 78 (1-10 of 774 items) |< < 1 2 3 4 5 ... 78 > >|

About Copyright

RPM Information collected at : 2022-11-15 23:51:00.455000

List of RPMs

Filter Show RPM differences

RPM Name	Version	Release	Arch	adcs11adm01	adcs11adm02	adcs11adm03	adcs11adm04
xkeyboard-config	2.24	1.el7	noarch	YES			
libglvnd	1.0.1	0.8.git5baa1e5.el7	x86_64	YES			
xorg-x11-server-common	1.20.4	15.el7_9	x86_64	YES			
tigervnc-server-applet	1.8.0	22.el7	noarch	YES			
artwiz-aleczapka-smoothansi-fonts	1.3	19.el7	noarch	YES			
artwiz-aleczapka-lime-fonts	1.3	19.el7	noarch	YES			
fribidi	1.0.2	1.el7_7.1	x86_64	YES			
libXdamage	1.1.4	4.1.el7	x86_64	YES			
libXfont2	2.0.3	1.el7	x86_64	YES			
libepoxy	1.5.2	1.el7	x86_64	YES			

Page 1 of 7 (1-10 of 61 items) |< < 1 2 3 4 5 ... 7 > >|

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List of Database Parameters

1. Two tabs with normal and hidden parameters.
2. Showcase DB Parameter Table with pagination
3. Ability to filter database parameters while typing into filter box
4. The "Parameter" column remains fixed, and we can have as many database columns as required horizontally
5. Ability to filter parameters which have different values databases
6. Showcase hidden database parameters.
7. Ability to show different properties across databases

Database parameter information collected at : 2022-11-15 23:51:00.455000

List of Database Parameters

Normal Hidden

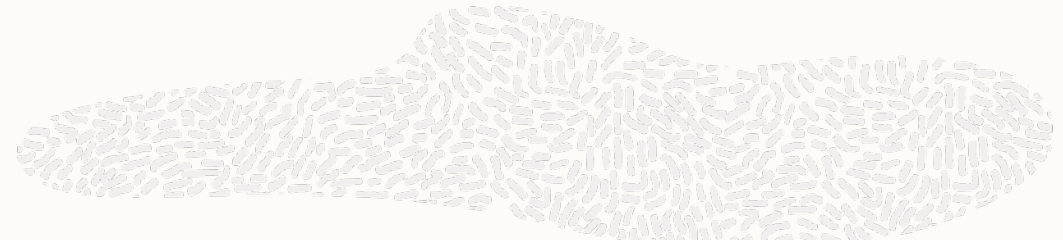
Filter

Parameter	cdb2db2
DBFIPS_140	FALSE
active_instance_count	
adg_account_info_tracking	LOCAL
adg_redirect_dml	FALSE
allow_global_dblinks	FALSE
allow_group_access_to_sga	FALSE
allow_rowid_column_type	FALSE
approx_for_aggregation	FALSE
approx_for_count_distinct	FALSE
approx_for_percentile	none

Page 1 of 46 (1-10 of 452 items) |< < 1 2 3 4 5 ... 46 > >|

About Copyright

List of Database Parameters



1. Two tabs with normal and hidden parameters.
2. Showcase DB Parameter Table with pagination
3. Ability to filter database parameters while typing into filter box
4. The "Parameter" column remains fixed, and we can have as many database columns as required horizontally
5. Ability to filter parameters which have different values databases
6. Showcase hidden database parameters.
7. Ability to show different properties across databases

Database parameter information collected at : 2022-11-15 23:51:00.455000

List of Database Parameters

Normal Hidden

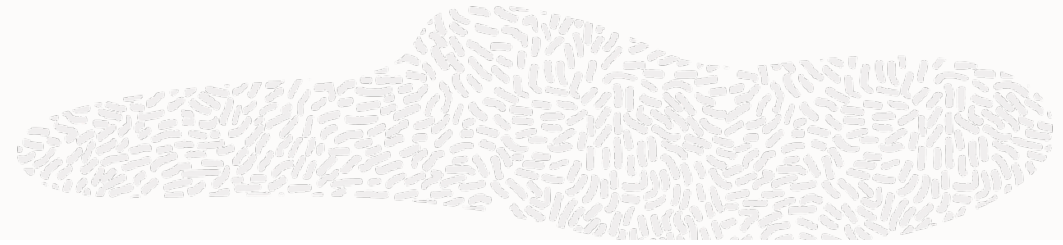
Filter

Parameter	cdb2db2
_appqos_qt	10
_appqos_po_multiplier	1000
_appqos_cdb_setting	0
_ior_serialize_fault	0
_shutdown_completion_timeout_mins	60
_inject_startup_fault	0
_wait_outlier_detection_enable	OFF
_wait_outlier_event_names	
_wait_outlier_lambda_x1000	1500
_wait_outlier_dump_flags	0

Page 1 of 496 (1-10 of 4957 items) | < > 1 2 3 4 5 ... 496 >|



List of Kernel Parameters



- 1. Showcase List of Kernel Parameters with pagination.
- 2. Ability to search values by using the filter section.
- 3. Ability to show different properties across databases by clicking the toggle bar.

AHF Kernel parameter information collected at : 2022-11-15 23:51:00.455000

List of Kernel Parameters

Filter Show different properties across nodes

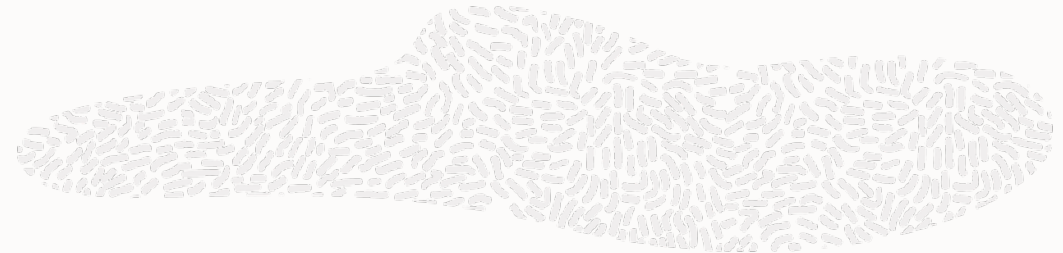
Parameter	adcs11adm01	adcs11adm02	adcs11adm03	adcs11adm04
abi.vsyscall32	1	1	1	1
crypto.fips_enabled	0	0	0	0
debug.exception-trace	1	1	1	1
debug.kprobes-optimization	1	1	1	1
dev.hpet.max-user-freq	64	64	64	64
dev.ipmi.poweroff_powercycle	0	0	0	0
dev.mac_hid.mouse_button2_keycode	97	97	97	97
dev.mac_hid.mouse_button3_keycode	100	100	100	100
dev.mac_hid.mouse_button_emulation	0	0	0	0
dev.raid.speed_limit_max	200000	200000	200000	200000

Page 1 of 458 (1-10 of 4575 items) |< < 1 2 3 4 5 ... 458 > >|

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List of Kernel Parameters



Kernel parameter information collected at : 2022-11-15 23:51:00.455000

List of Kernel Parameters

Filter Show different properties across nodes

Parameter	adcs11adm01	adcs11adm02	adcs11adm03	adcs11adm04
abi.vsyscall32	1	1	1	1
crypto.fips_enabled	0	0	0	0
debug.exception-trace	1	1	1	1
debug.kprobes-optimization	1	1	1	1
dev.hpet.max-user-freq	64	64	64	64
dev.ipmi.poweroff_powercycle	0	0	0	0
dev.mac_hid.mouse_button2_keycode	97	97	97	97
dev.mac_hid.mouse_button3_keycode	100	100	100	100
dev.mac_hid.mouse_button_emulation	0	0	0	0
dev.raid.speed_limit_max	200000	200000	200000	200000

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Kernel parameter information collected at : 2022-11-15 23:51:00.455000

List of Kernel Parameters

Filter Show different properties across nodes

Parameter	adcs11adm01	adcs11adm02	adcs11adm03
fs.dentry-state	3670381 3637313 45 0 2281171 0	12305306 12272099 45 0 11129733 0	11966452 11933146 45 0 10550856 0
fs.file-nr	39776 0 13631488	37328 0 13631488	38304 0 13631488
fs.inode-nr	1384557 1796	1170181 441	1410229 448
fs.inode-state	1384557 1796 0 0 0 0	1170181 441 0 0 0 0	1410229 448 0 0 0 0
fs.quota.syncs	298	576	440
kernel.hostname	adcs11adm01.us.oracle.com	adcs11adm02.us.oracle.com	adcs11adm03.us.oracle.com
kernel.ns_last_pid	22606	272517	65052
kernel.ptty.nr	3	5	1
kernel.random.boot_id	179f6dd6-0e61-4f4f-8419-0b9314b9af6c	9863549e-b6f3-4411-aa0c-1b00bed08948	72b21fbc-53bf-4848-b298-97d98a654020
kernel.random.entropy_avail	3091	3112	3116

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