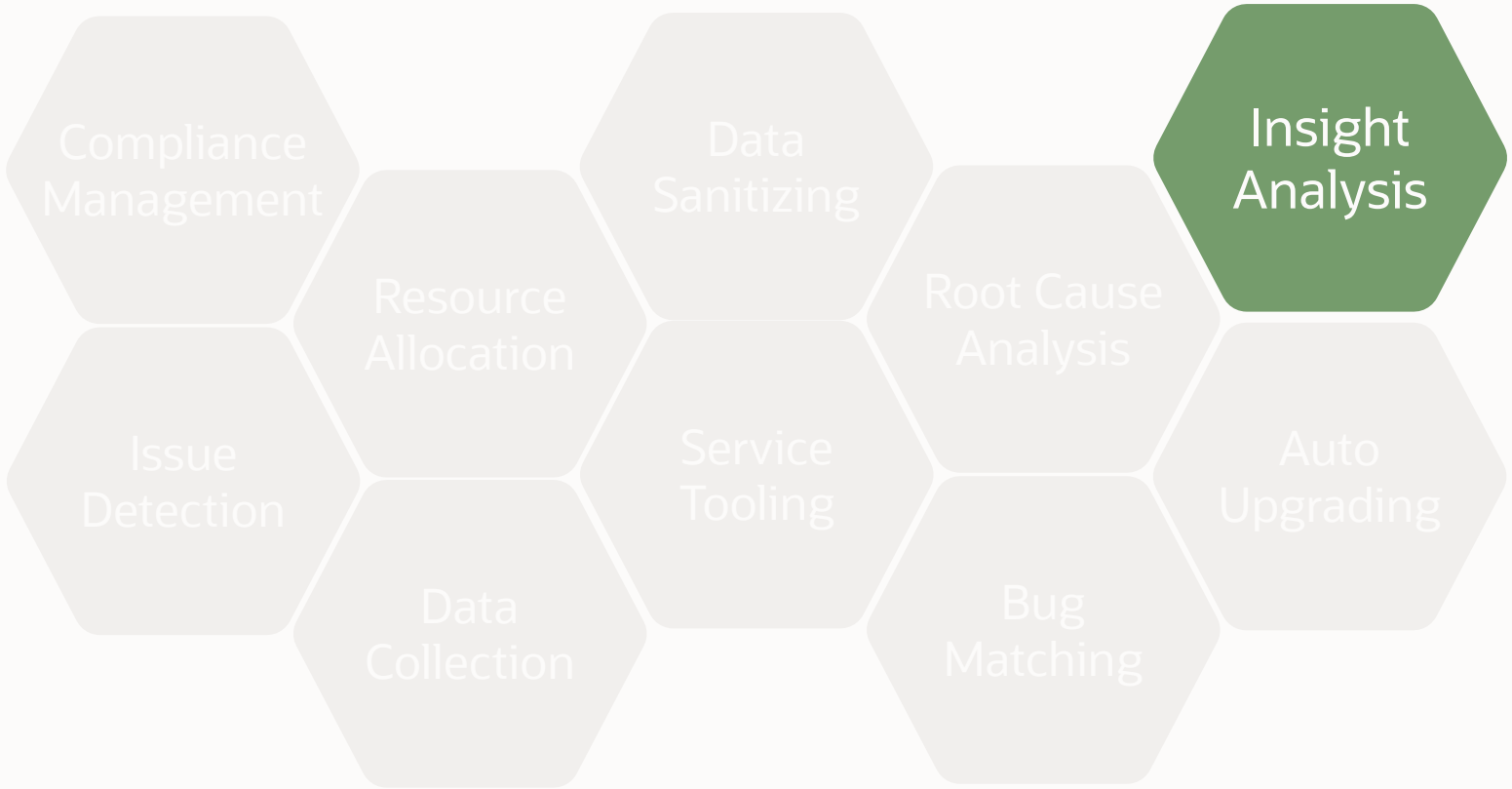
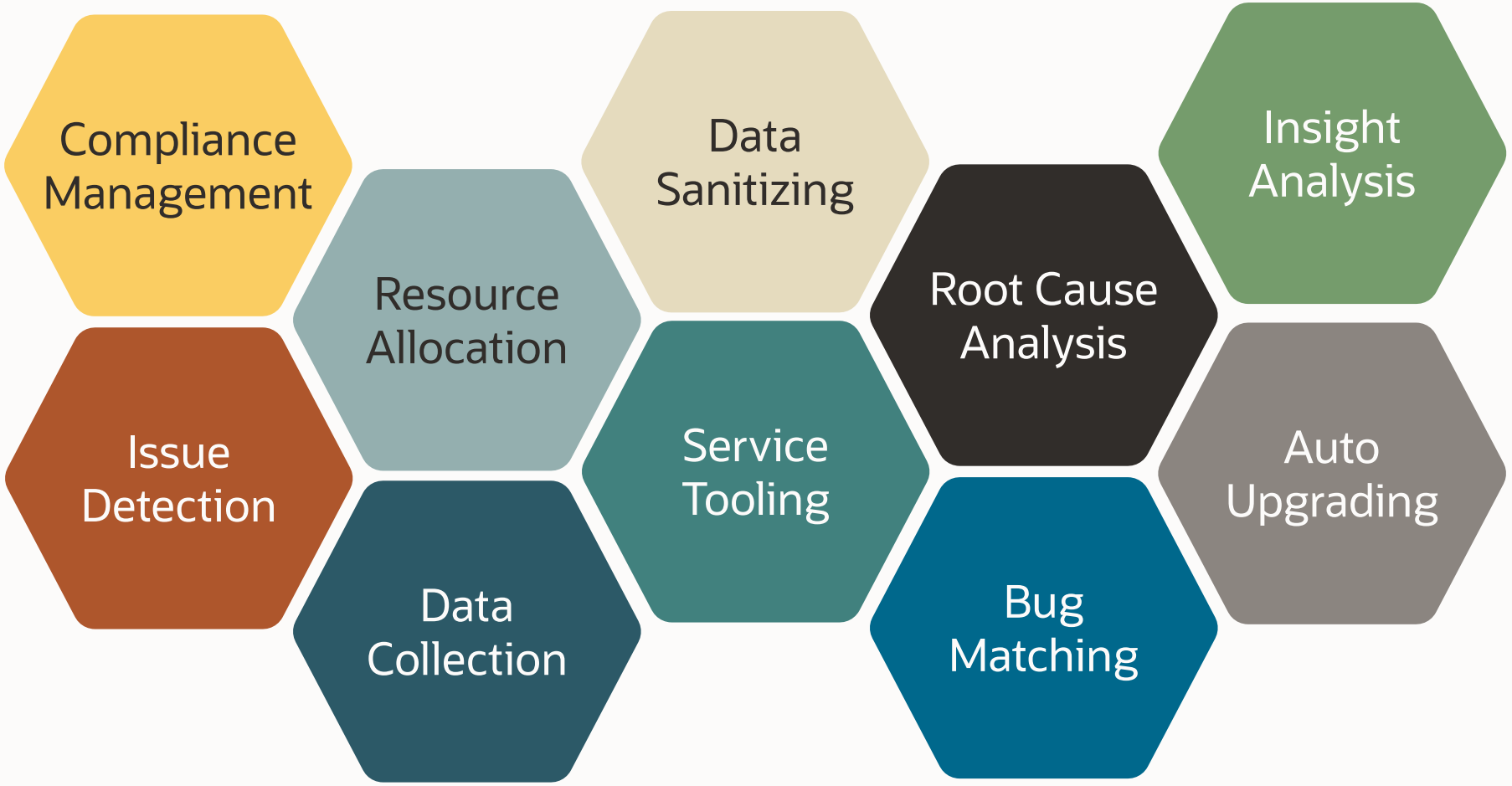
ORACLE

Autonomous Health Framework

Insight Analysis

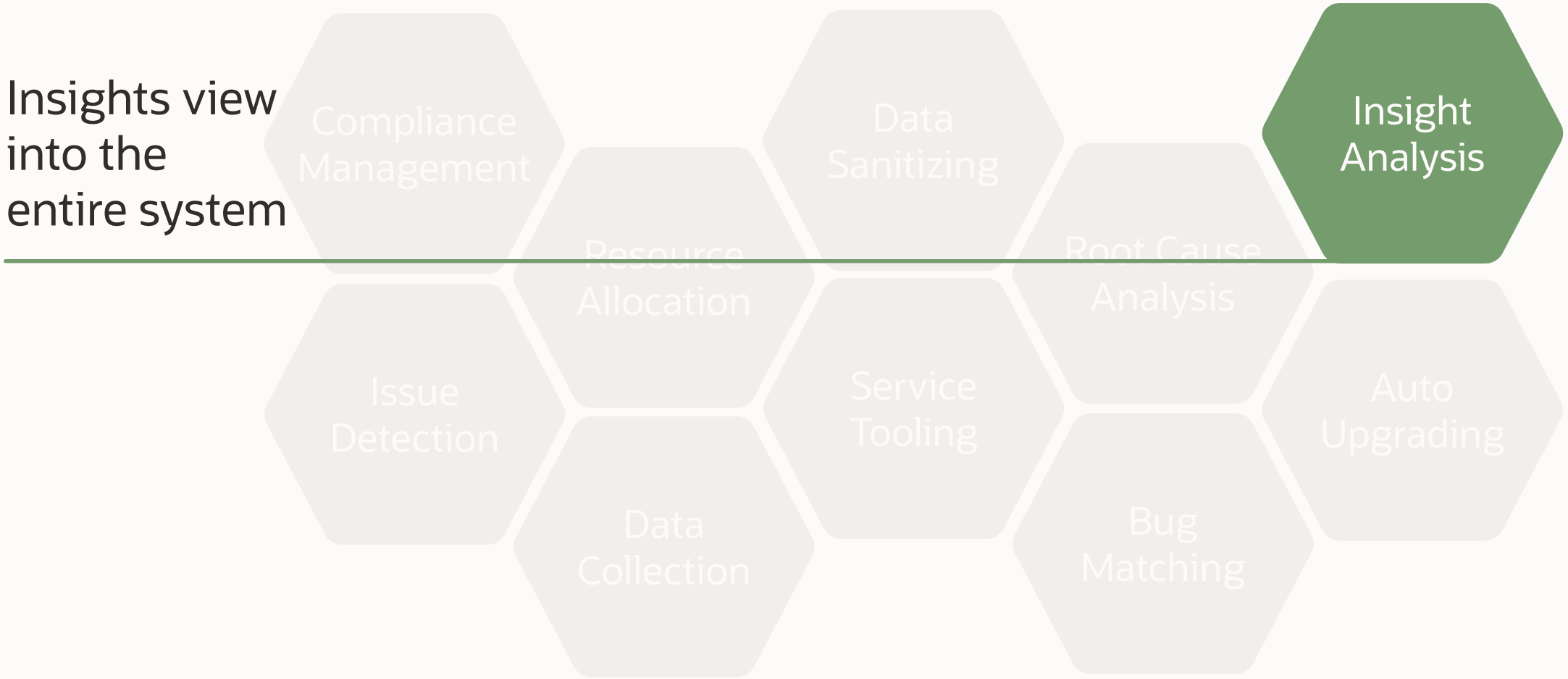


Oracle Autonomous Health Framework



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.

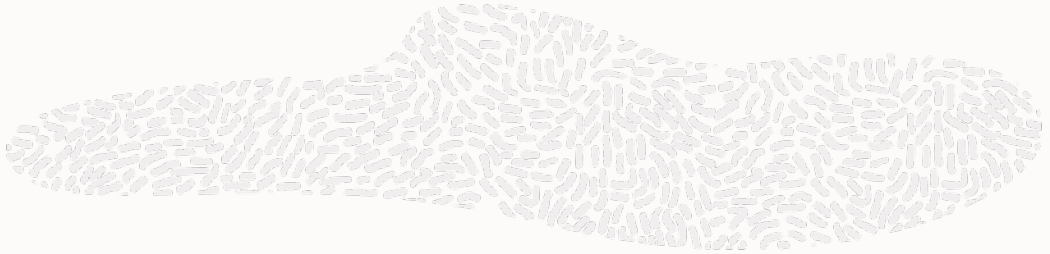
Previously, results from different AHF components were not available in a single dashboard making it challenging to combine and correlate. To mitigate this, AHF Insights provides a web-based graphical user interface, which does not require a web server to host the web pages, for all diagnostic data collectors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

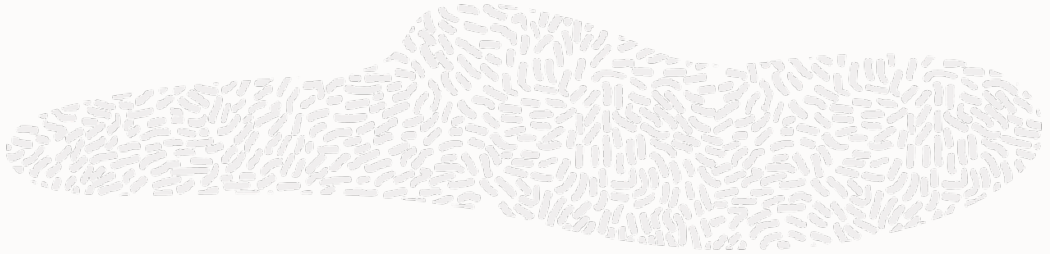
This diagnostic data collected from the system passes through AHF Insights and produce an offline report.

Information Captured



System Topology	• Resource Information • Resource Configuration • Summarized viewing of resource data
Insights	• 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)**

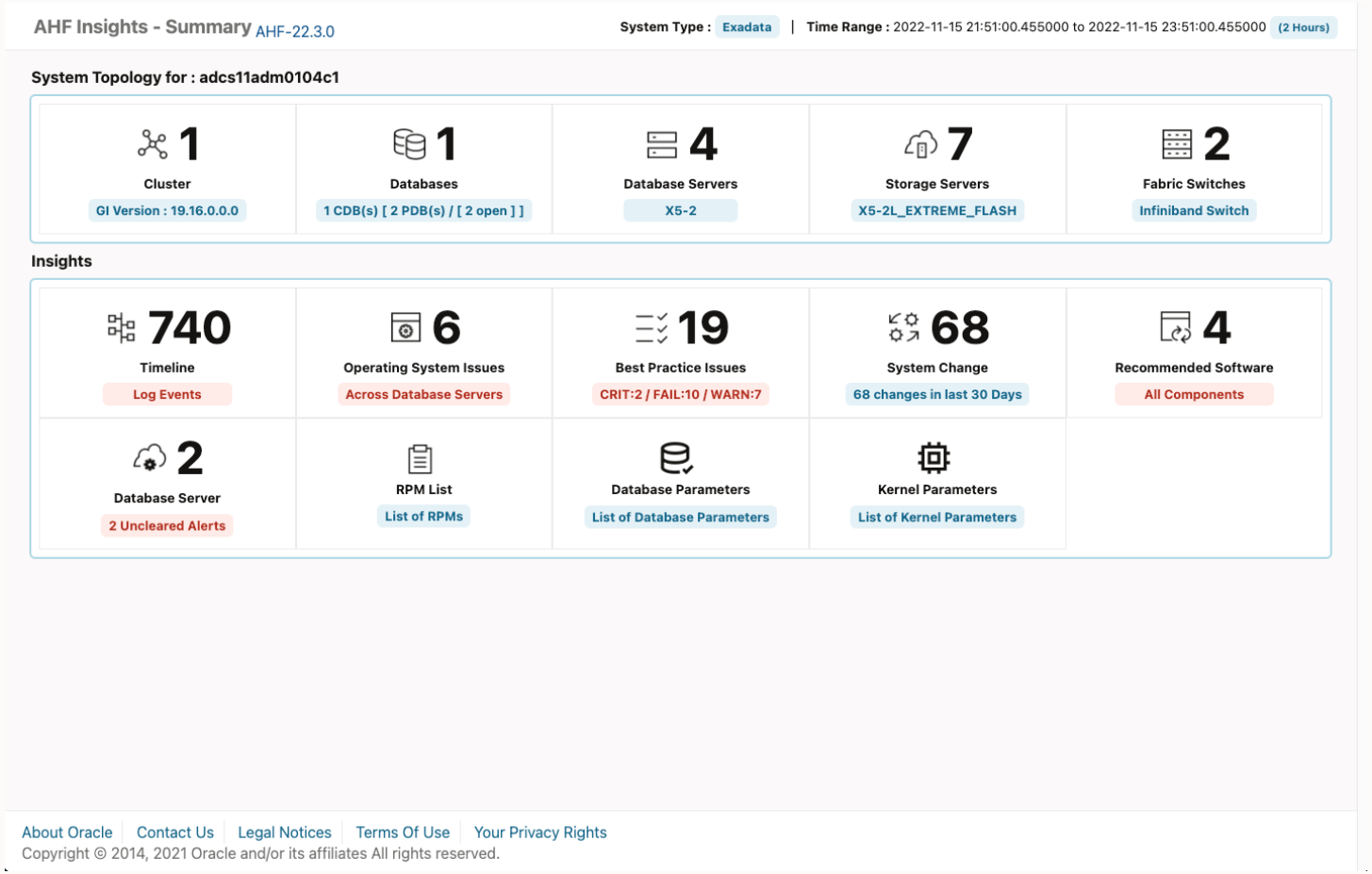
AHF Insights Report

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



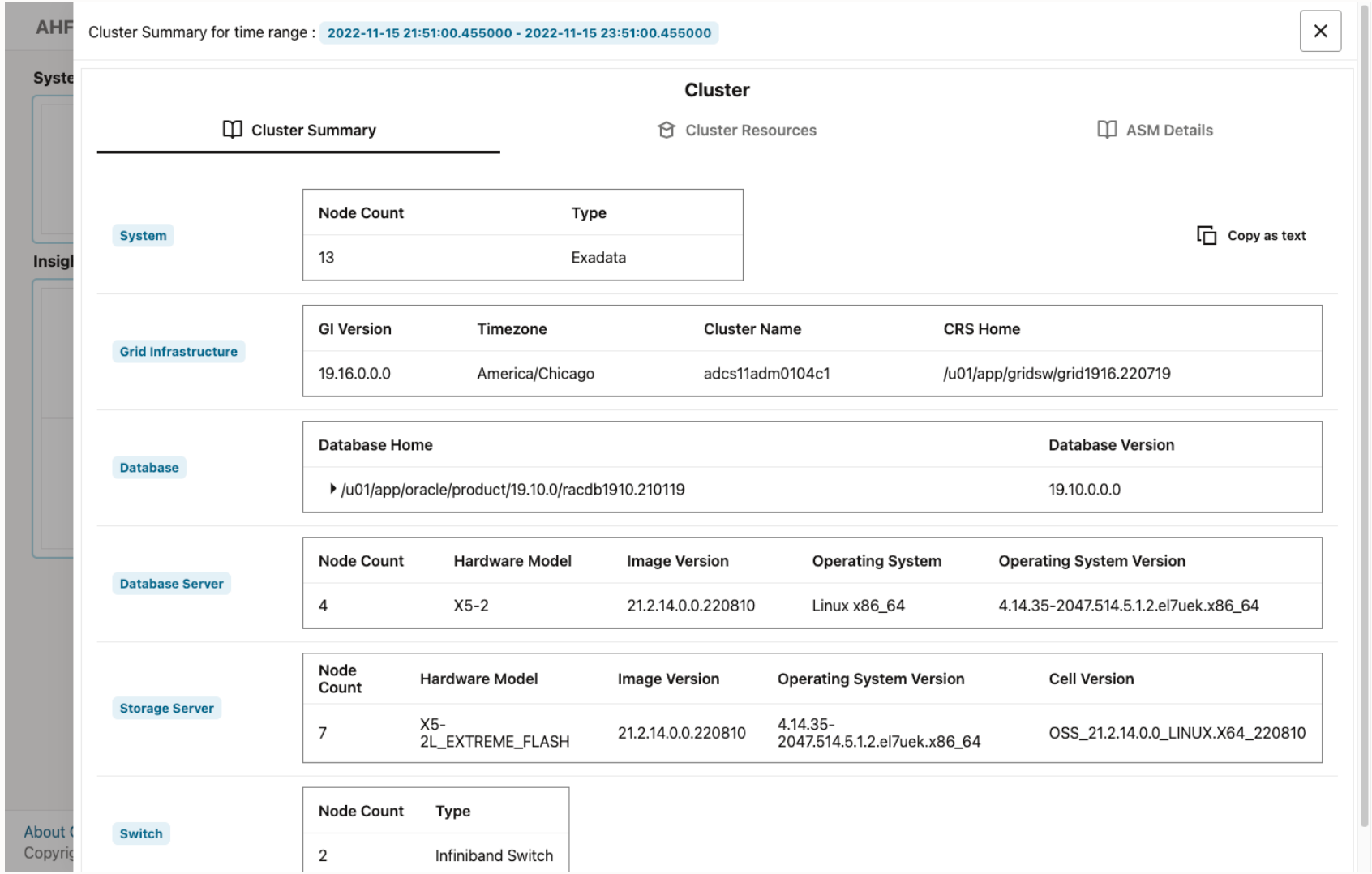
Cluster

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.



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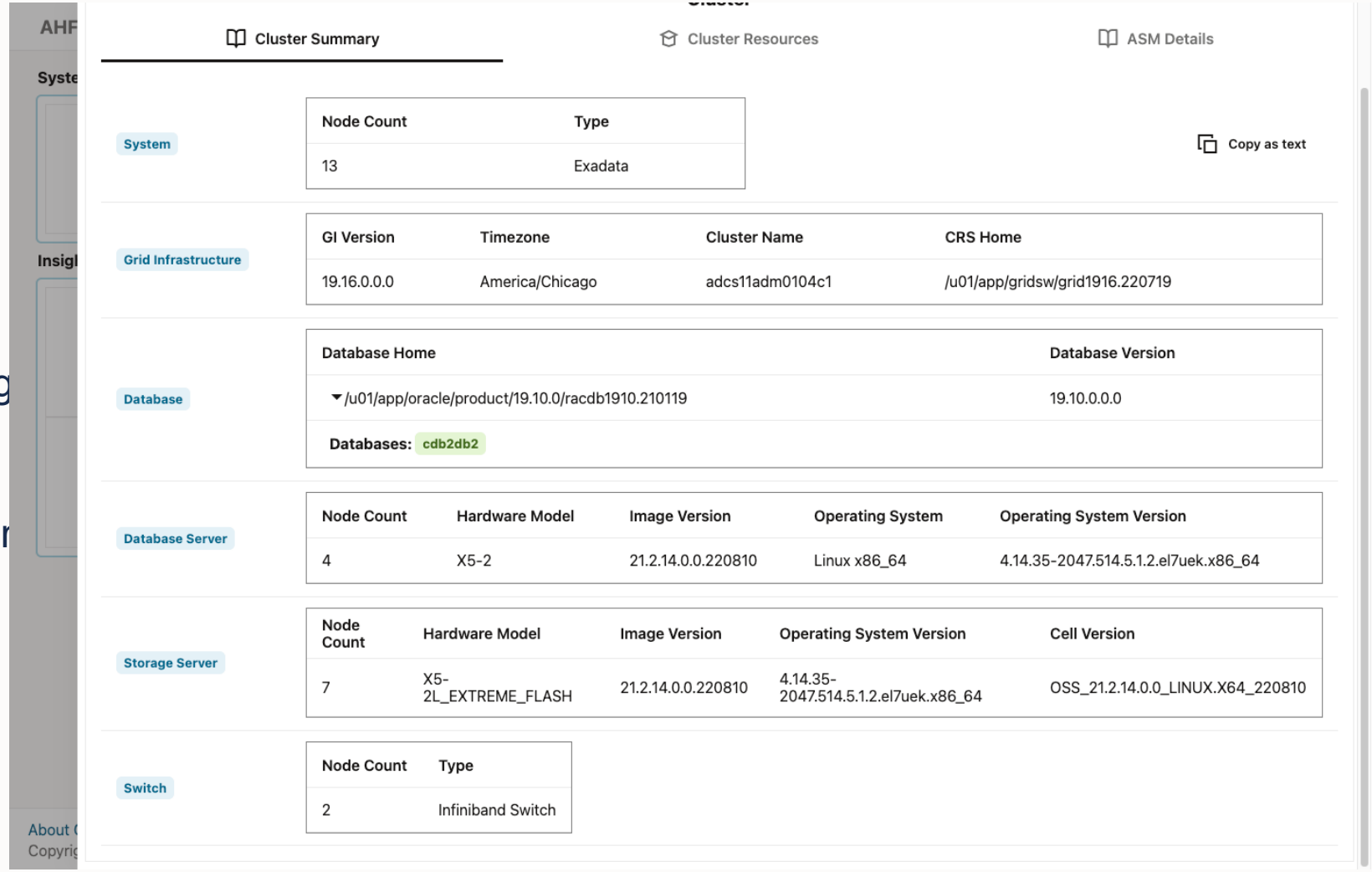

Cluster

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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

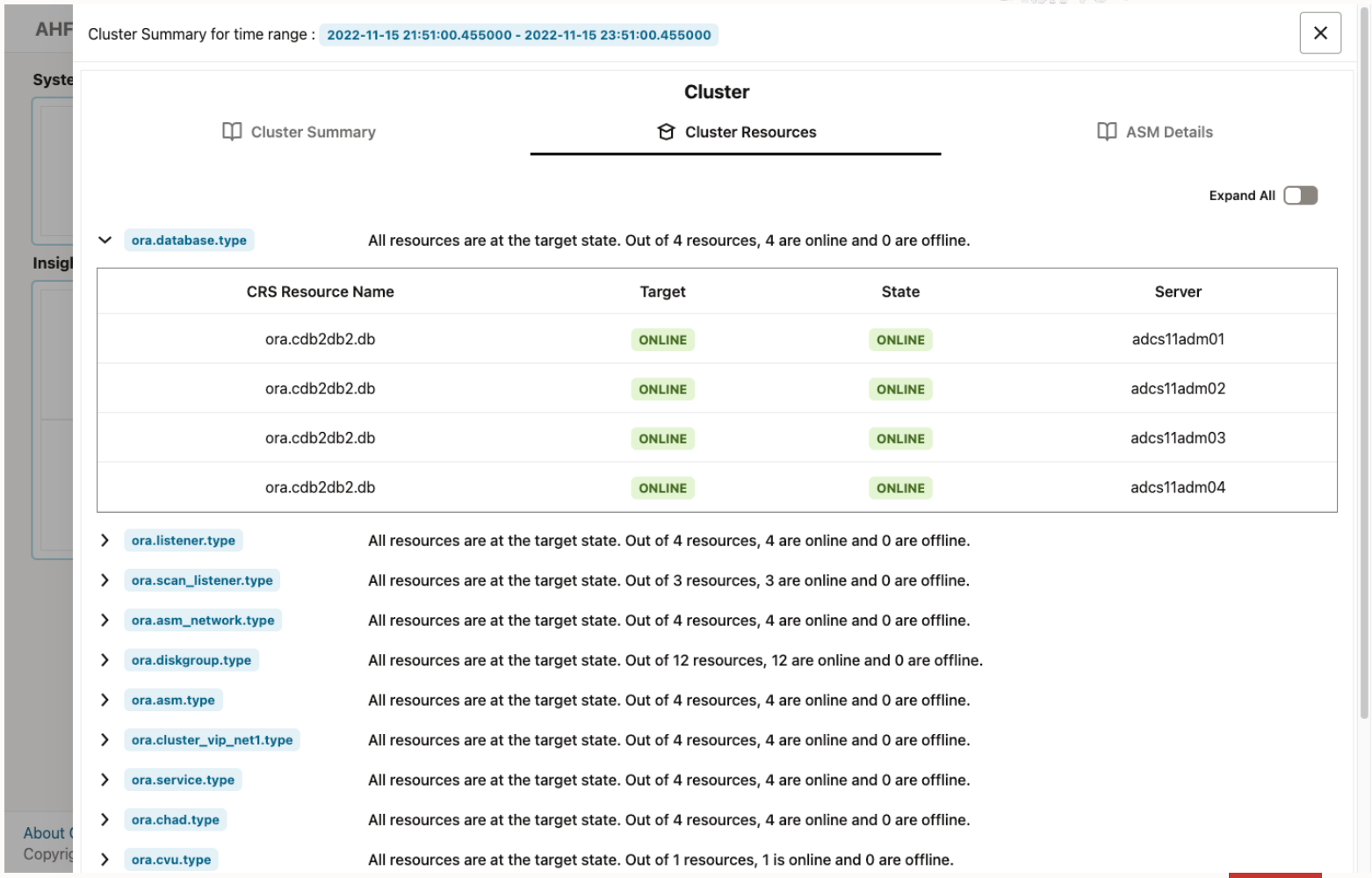
Cluster

Cluster Resources

1.Showcase Cluster Resources status.

2.Ability to get detailed information of each type showing resource status.

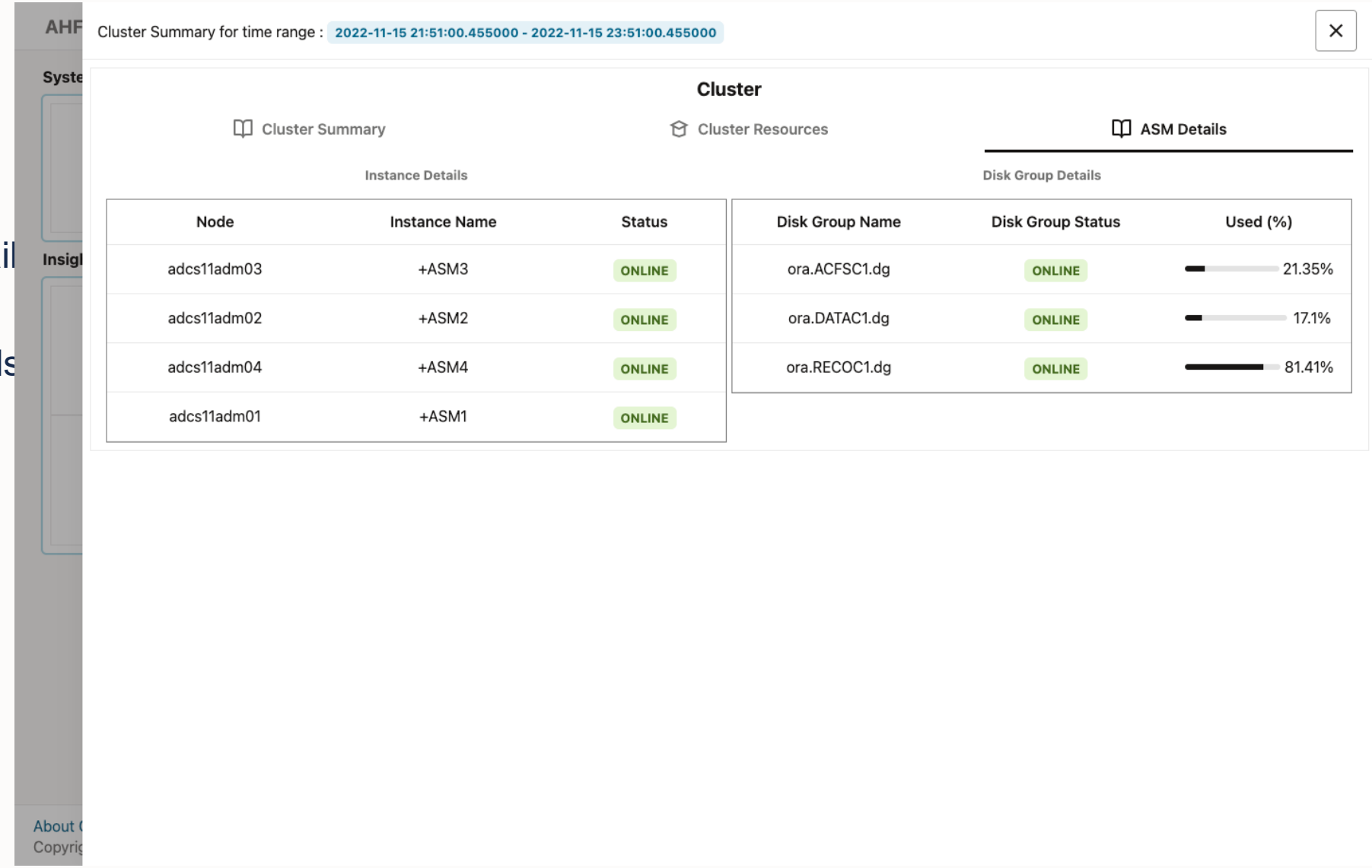
3.The user is able to expand all collapsible using the switch with the label of Expand All.



Cluster

ASM Details

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

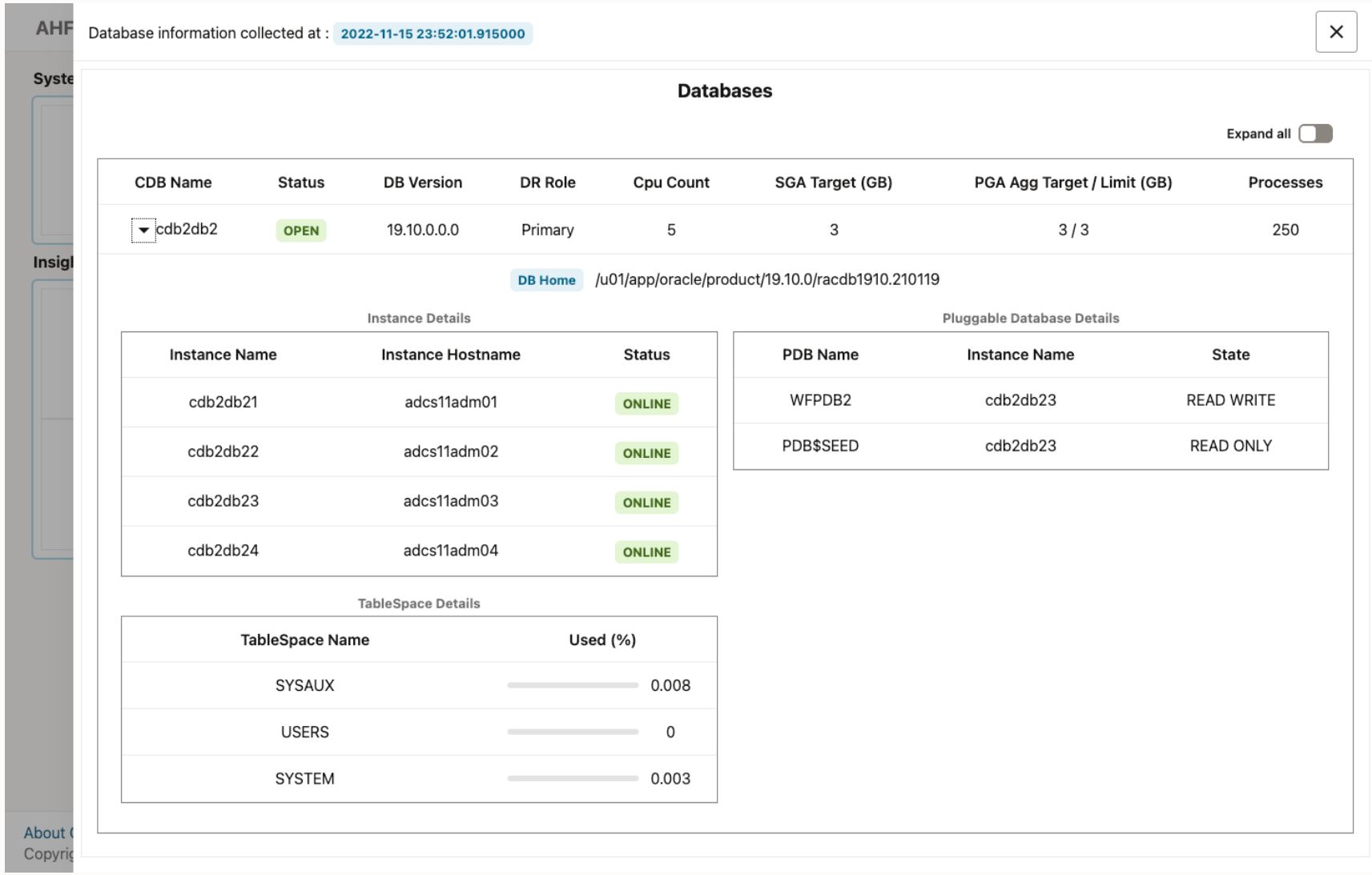


Databases

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.

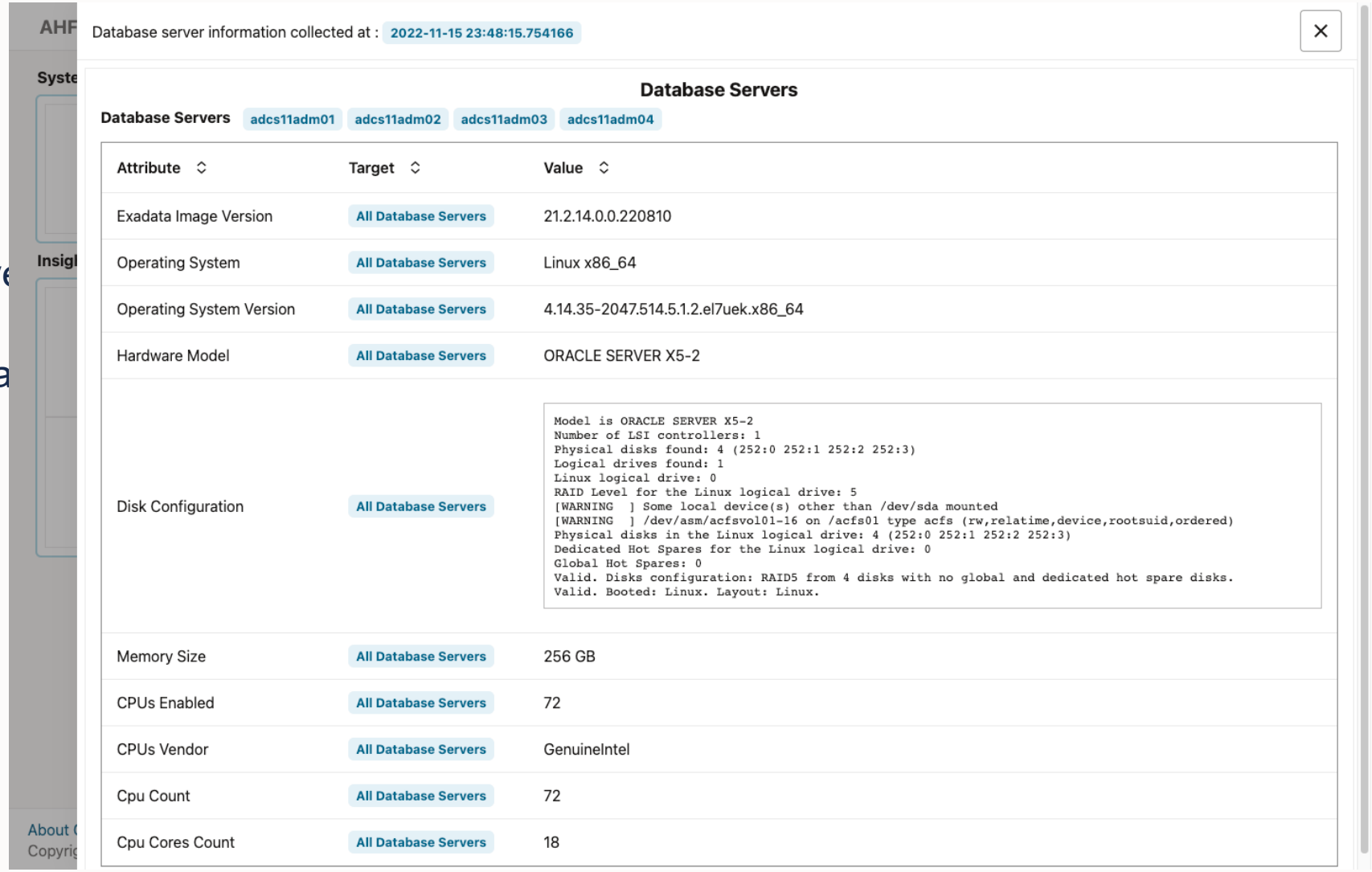


Database Servers

Database Servers

User have all the database serve
indicated at the top left, so in

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

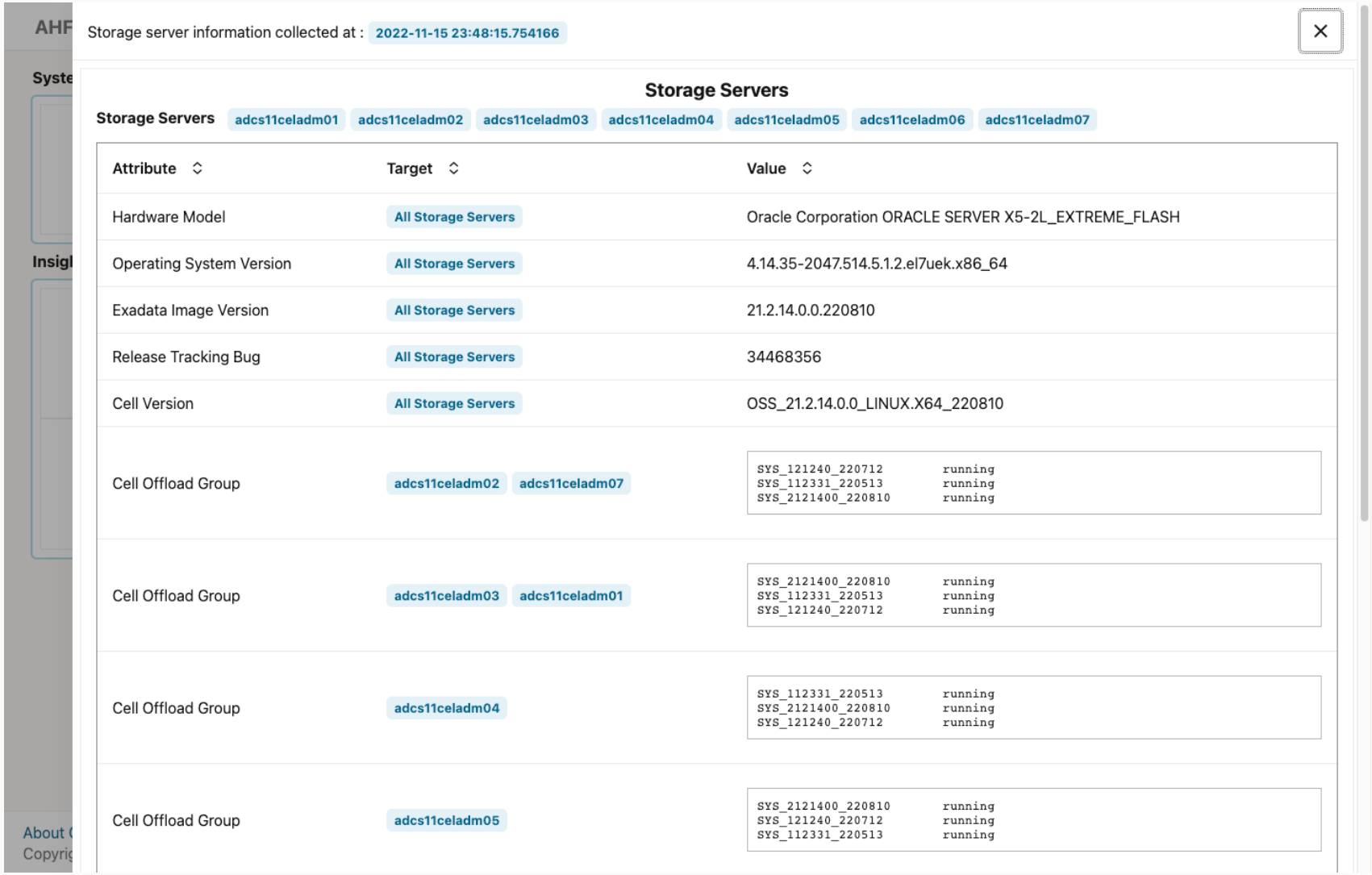


Storage Servers

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.

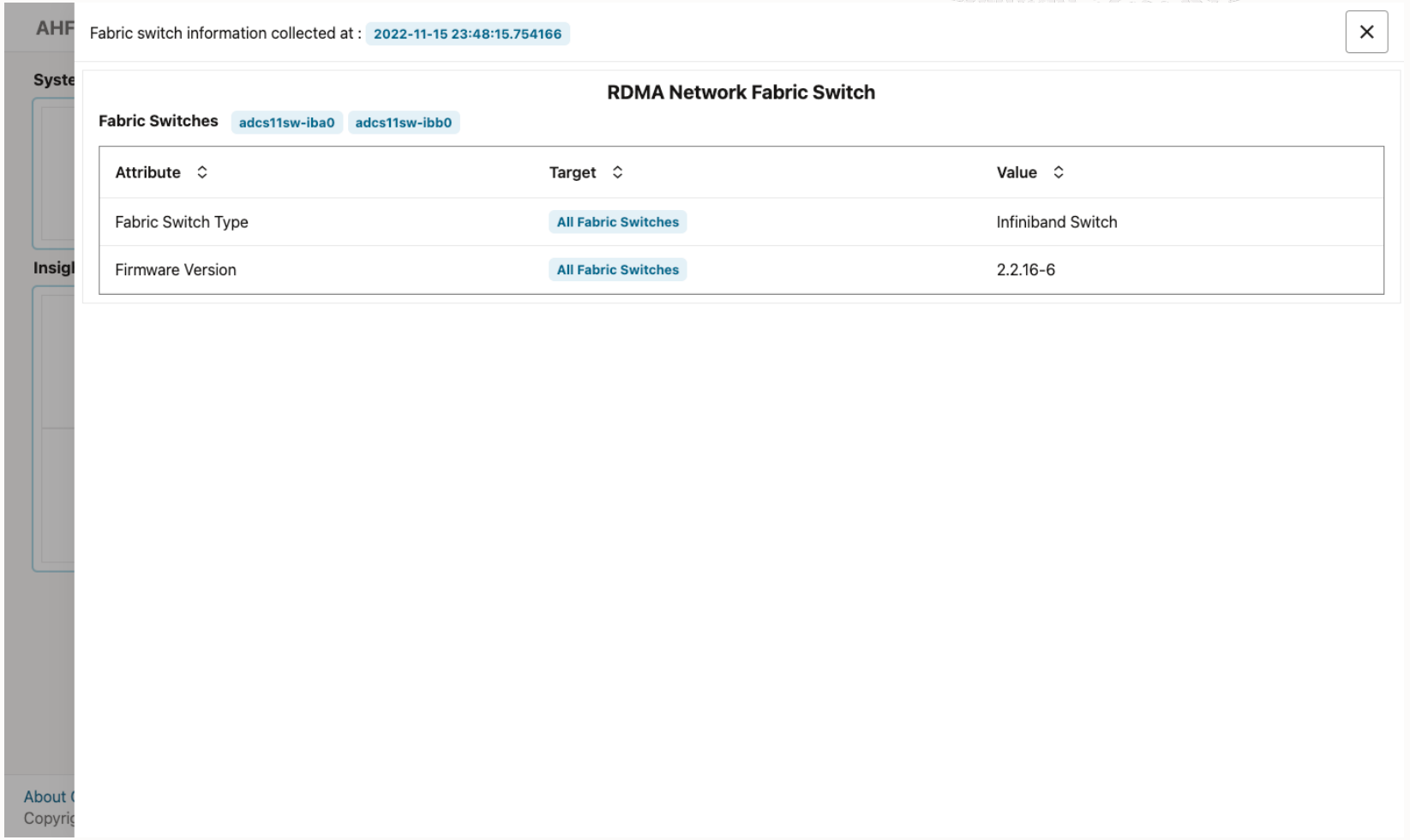


RDMA Network Fabric Switch

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.



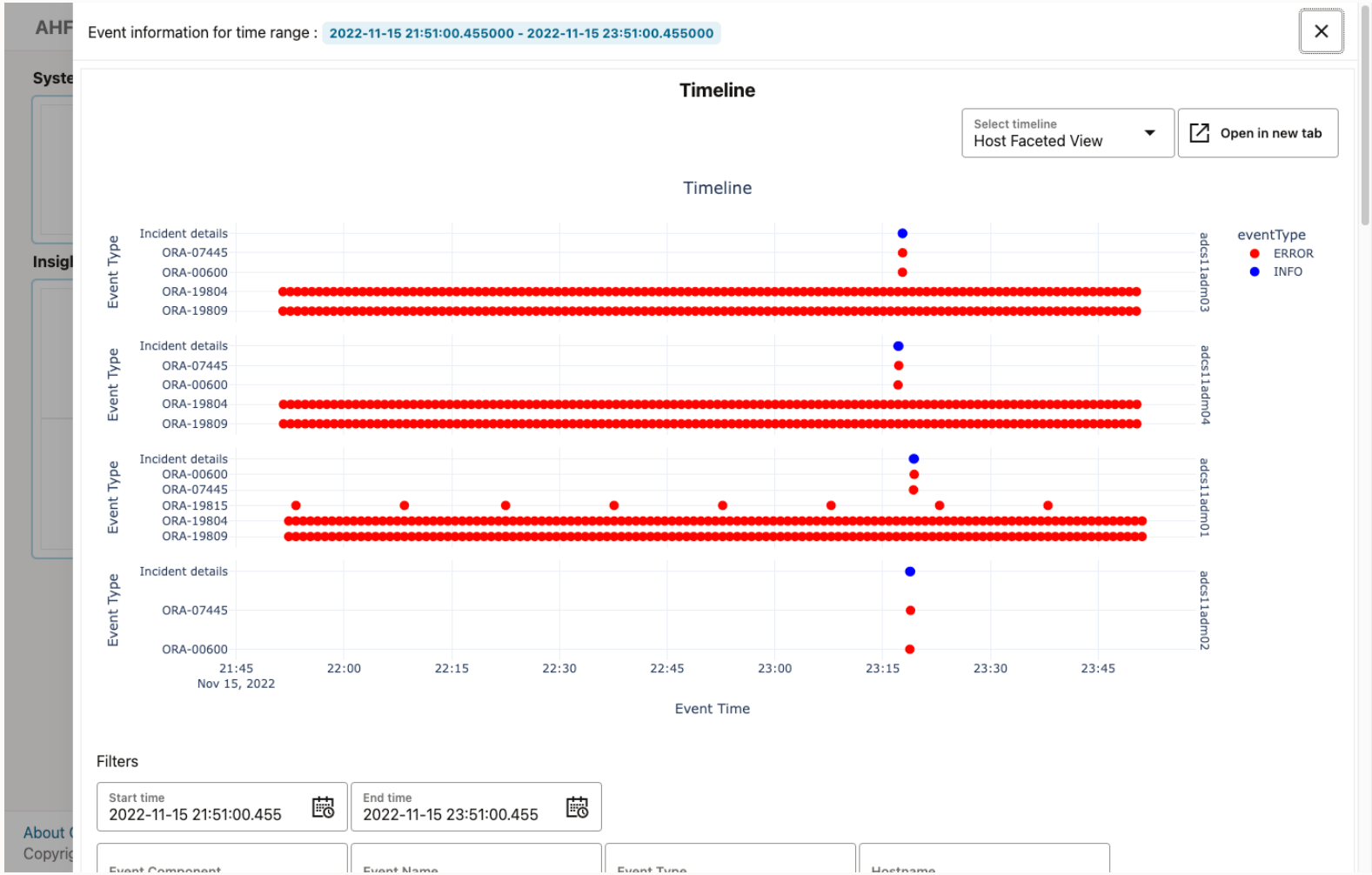
Timeline

Graph

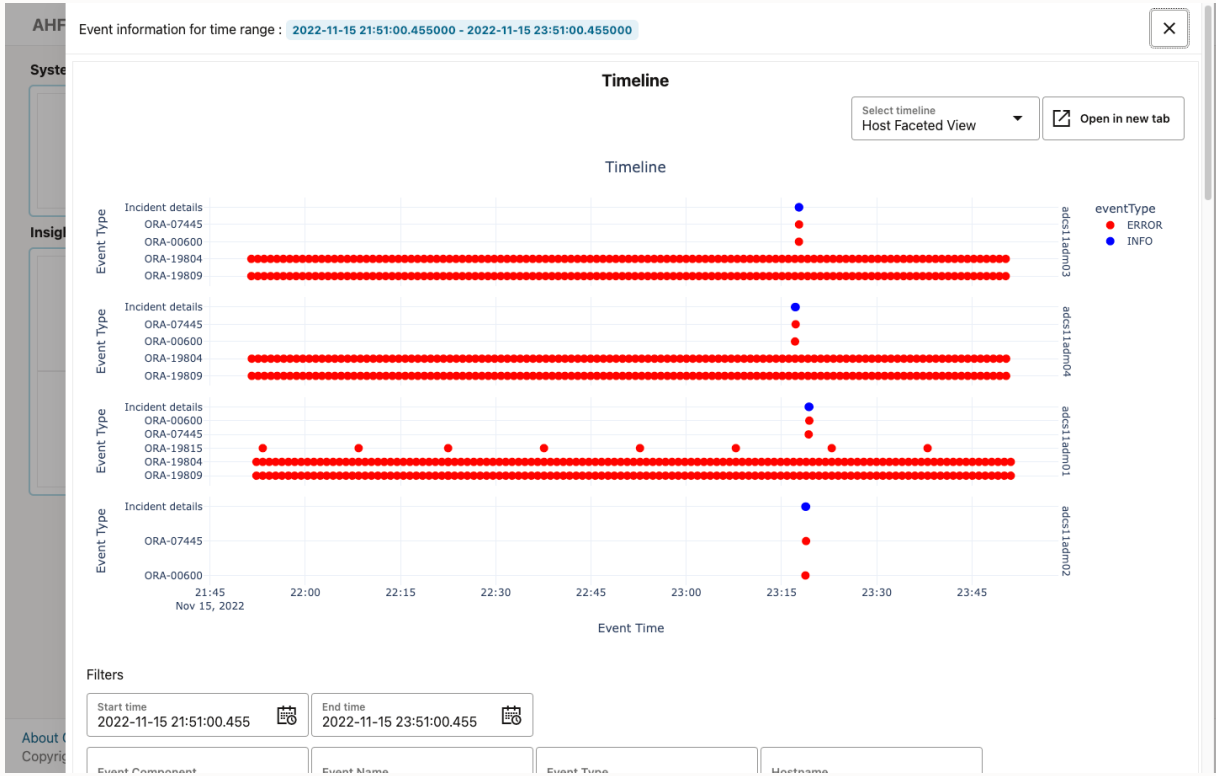
1. Showcase events that happened in two different views, Host Faceted and Event Faceted.

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

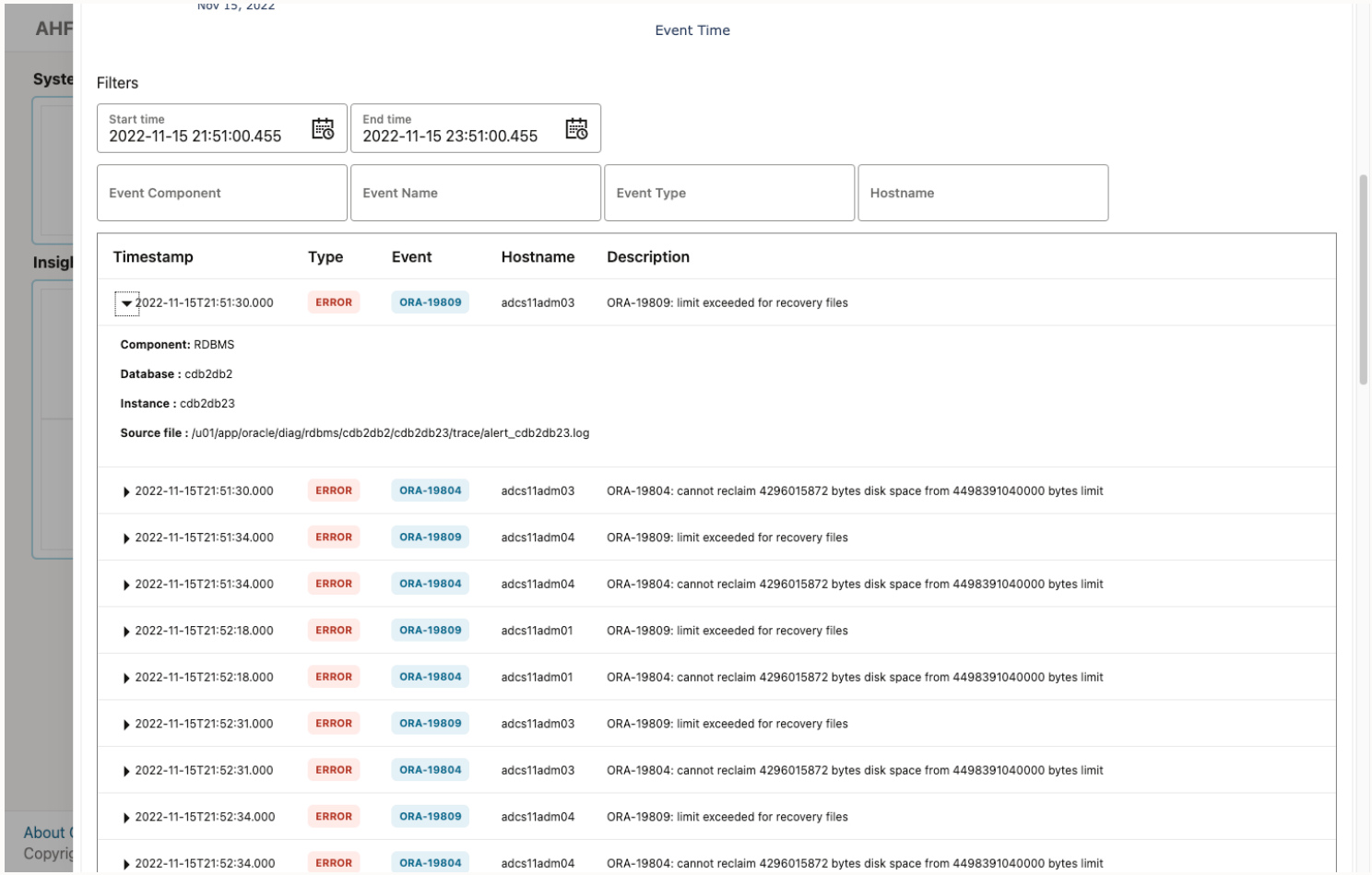

Event information for time range : 2022-11-15 21:51:00.455000 - 2022-11-15 23:51:00.455000
Timeline
Select timeline
Host Faceted View
Open in new tab
Timeline
Incident details
ORA-07445
ORA-00600
ORA-19804
ORA-19809
ORA-19815
Event Type
eventType
ERROR
INFO
adcs11adm03
adcs11adm04
adcs11adm01
adcs11adm02
21:45
Nov 15, 2022
22:00
22:15
22:30
22:45
23:00
23:15
23:30
23:45
Event Time
Filters
Start time
2022-11-15 21:51:00.455
End time
2022-11-15 23:51:00.455

Event information for time range : 2022-11-15 21:51:00.455000 - 2022-11-15 23:51:00.455000
Timeline
Select timeline
Event Faceted View
Open in new tab
Timeline
ORA-19815
ORA-07445
ORA-00600
ORA-19804
ORA-19809
Event Type
Incident details
hostname
adcs11adm03
adcs11adm04
adcs11adm01
adcs11adm02
ERROR
INFO
21:45
Nov 15, 2022
22:00
22:15
22:30
22:45
23:00
23:15
23:30
23:45
Event Time
Filters
Start time
2022-11-15 21:51:00.455
End time
2022-11-15 23:51:00.455

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.



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.

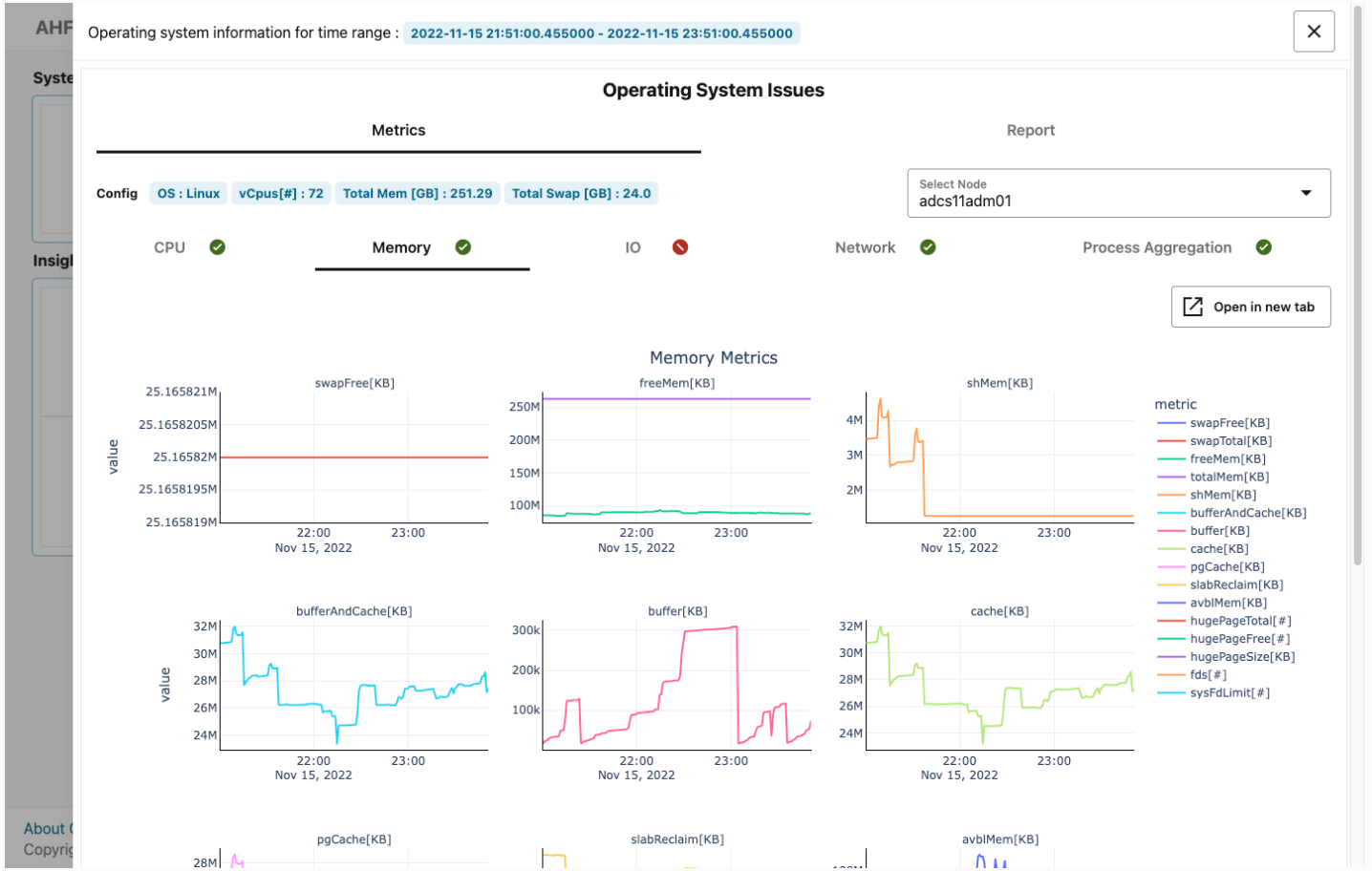
Metrics CPU

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

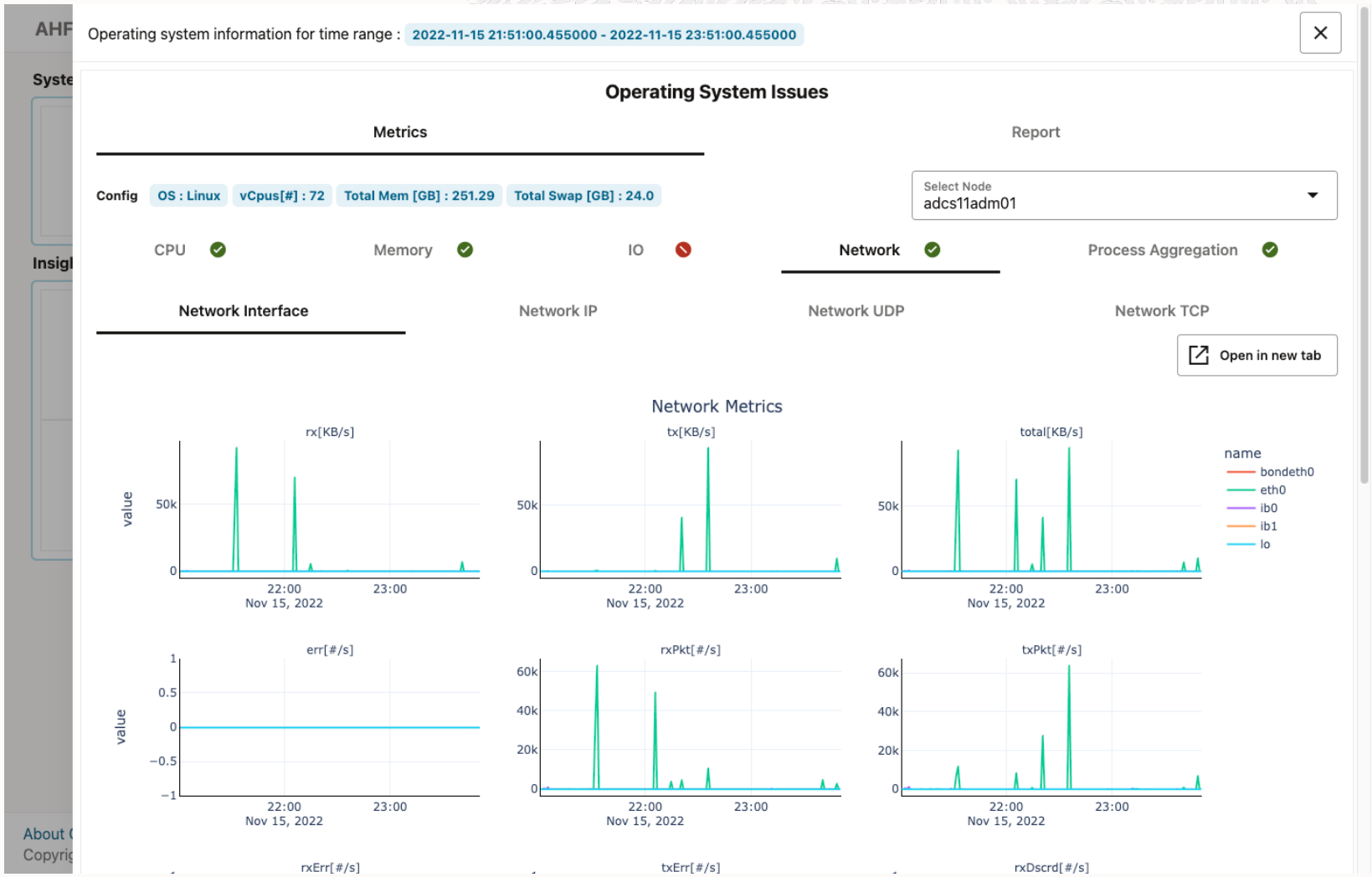
Metrics IO

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.

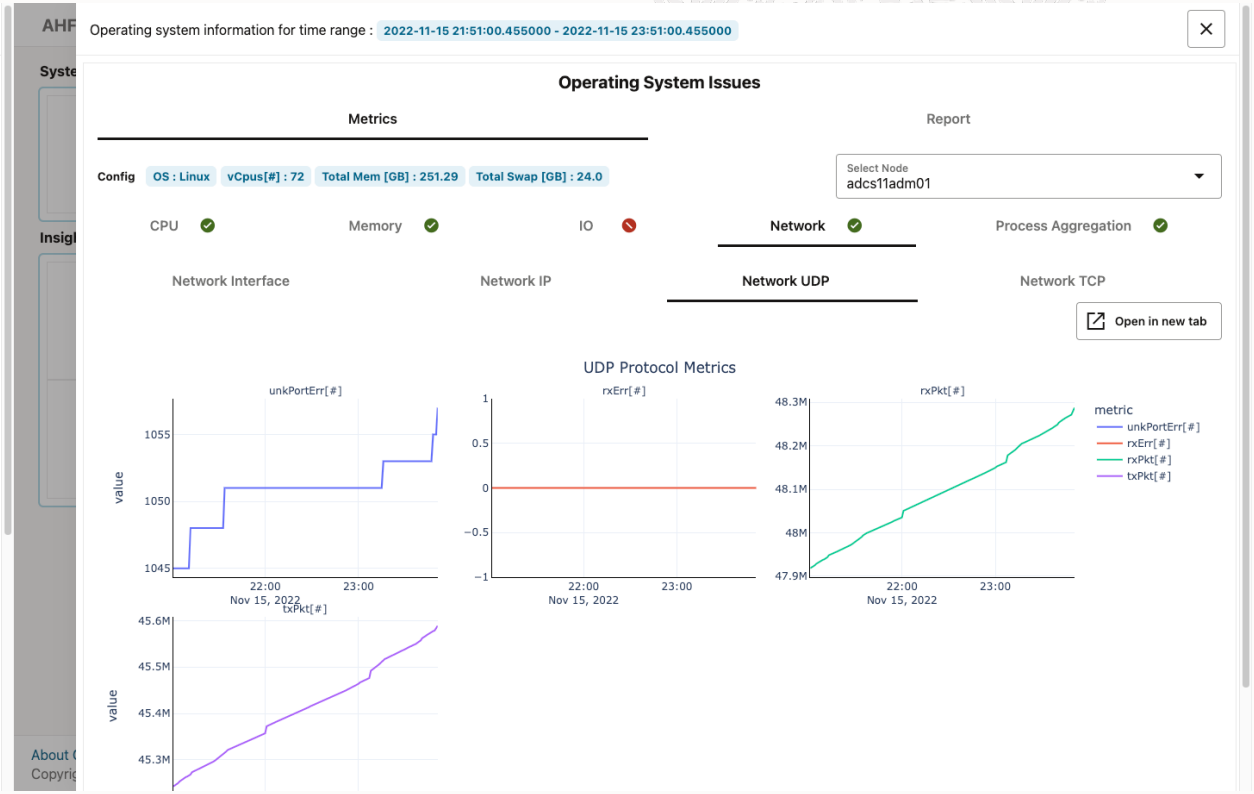
Operating System Issues

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



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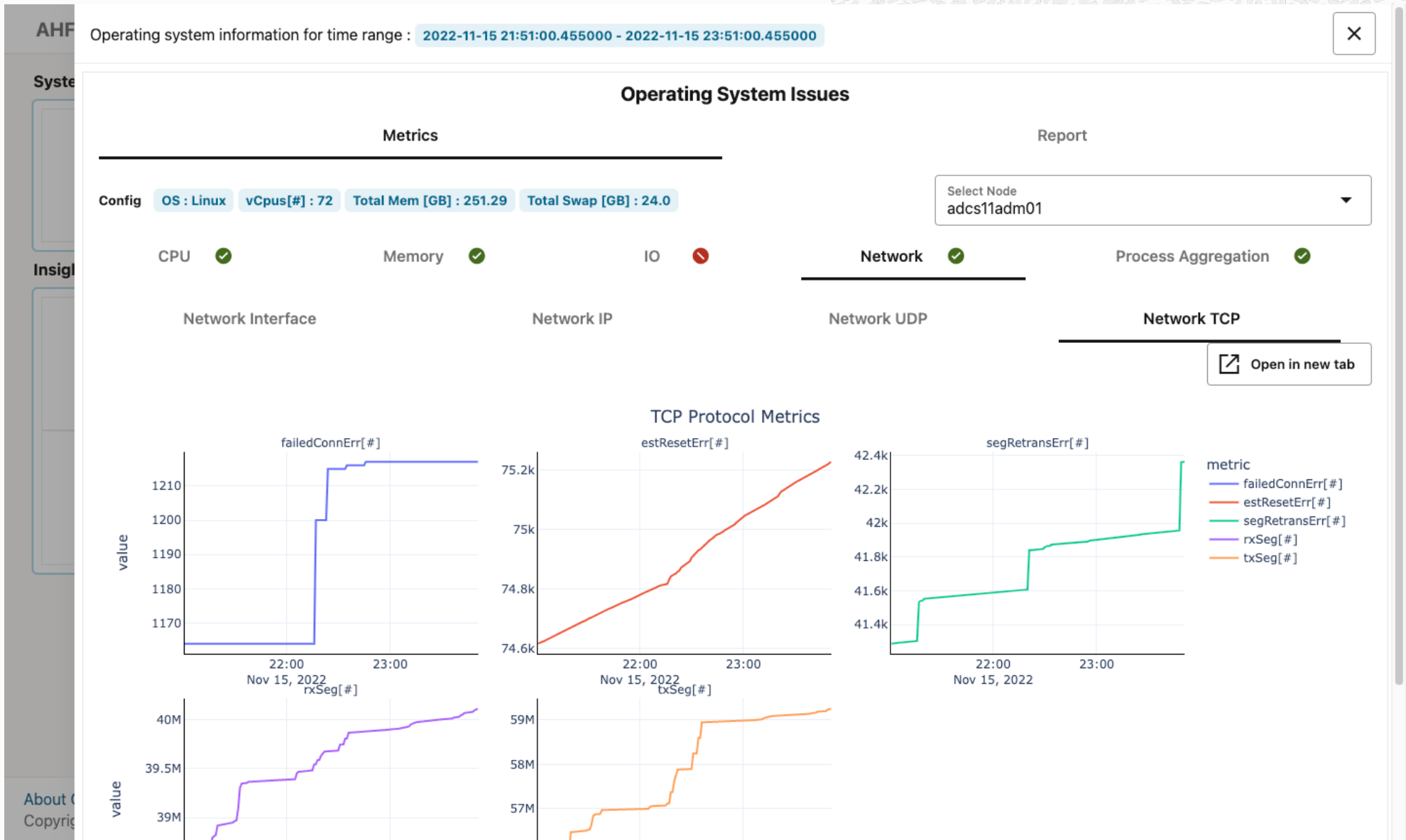


Operating System Issues

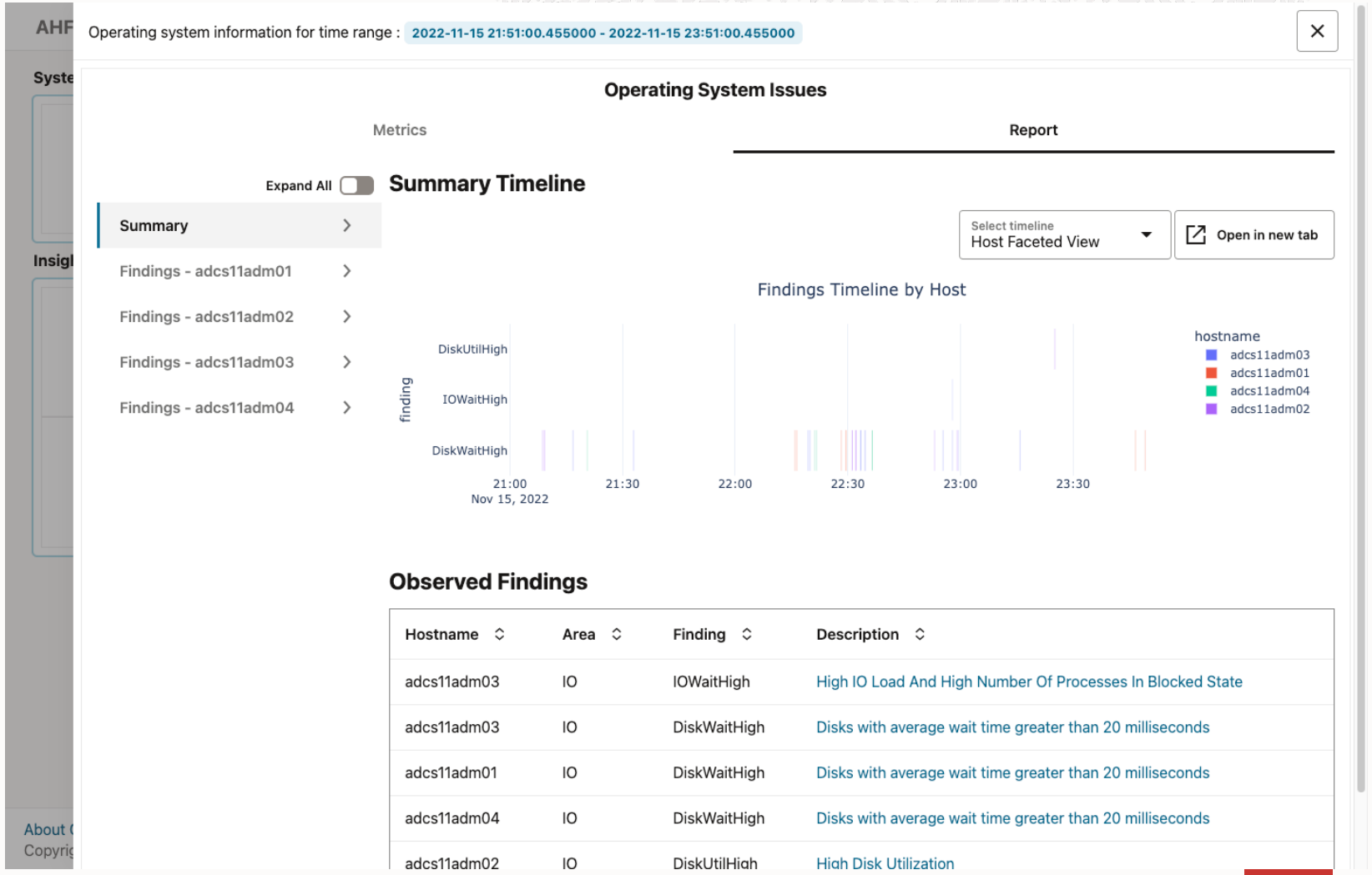
Metrics Process Aggregation

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

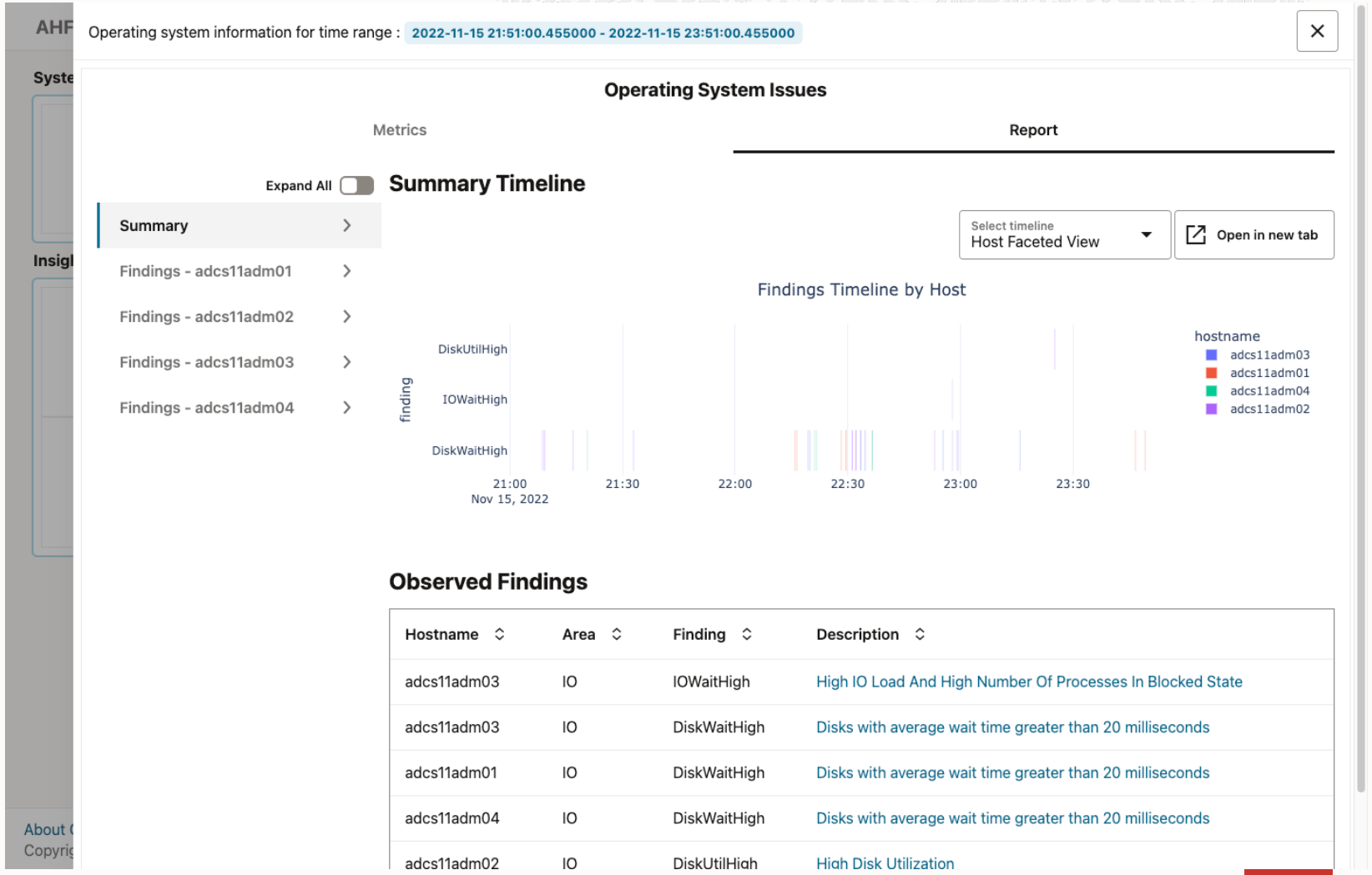
The user has a left navigation tree, with two main sections the summary that consist of Summary timeline and Observed findings and all the different findings found on the different nodes.



Operating System 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.



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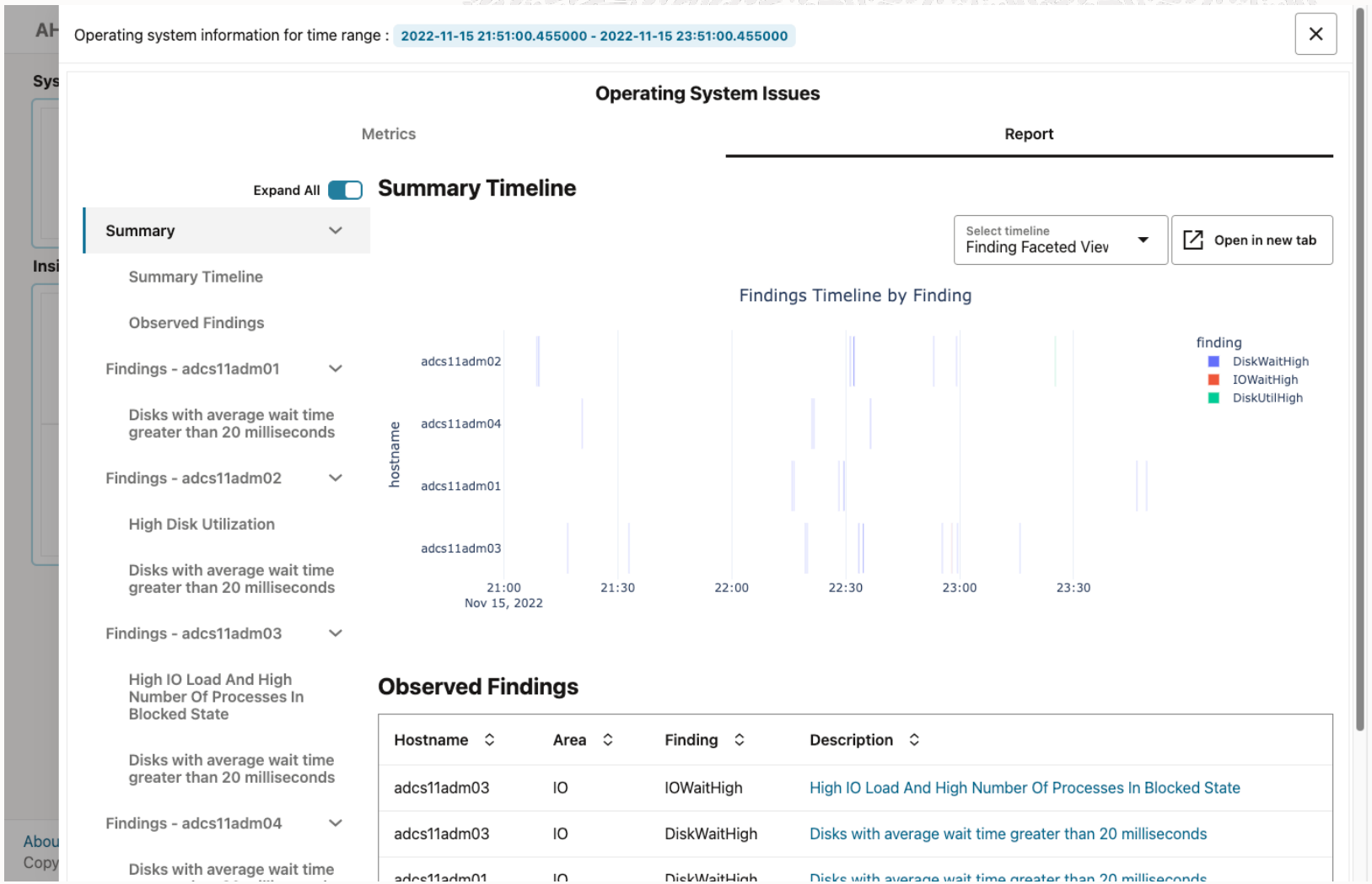
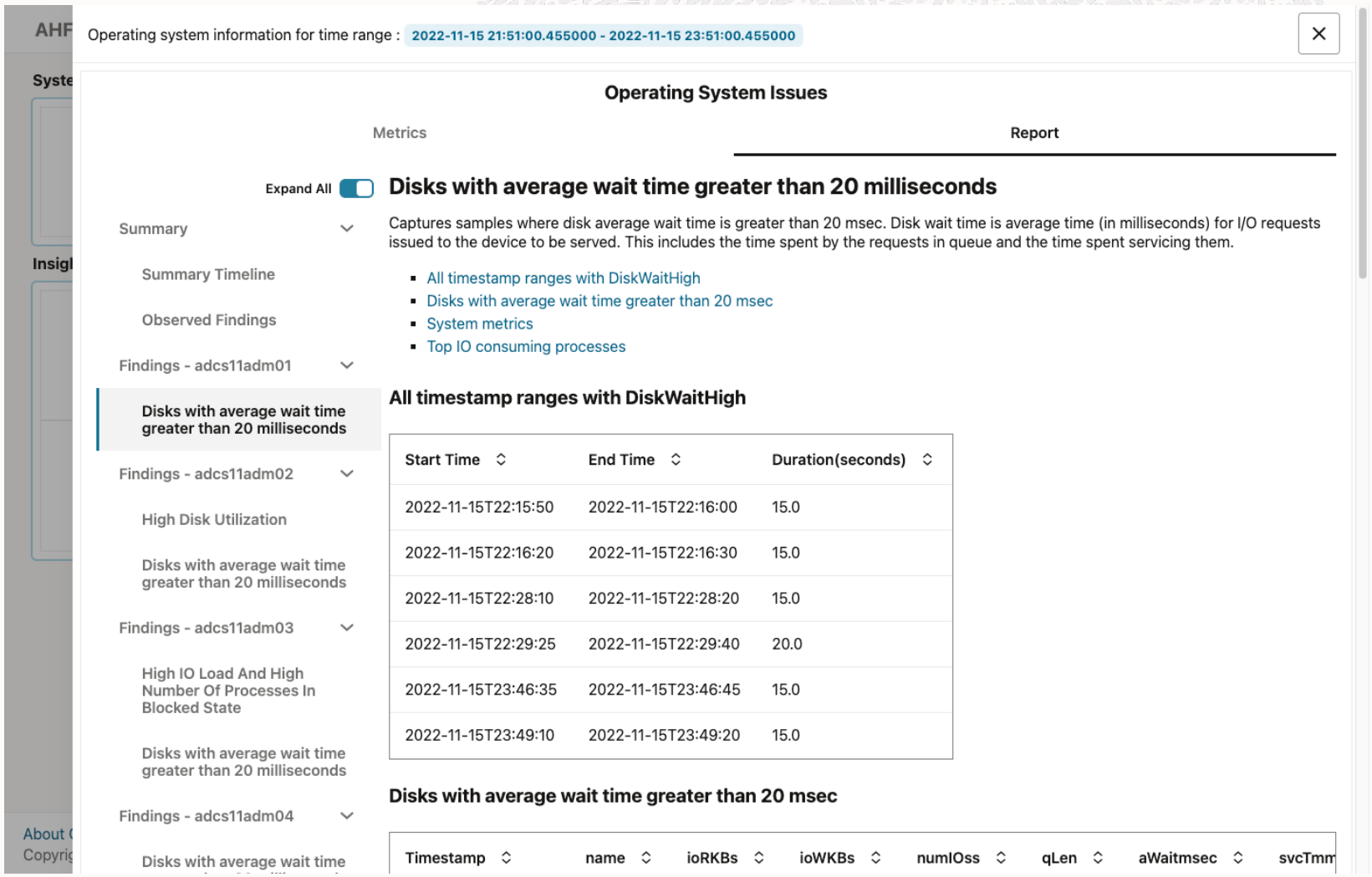


Operating System Issues

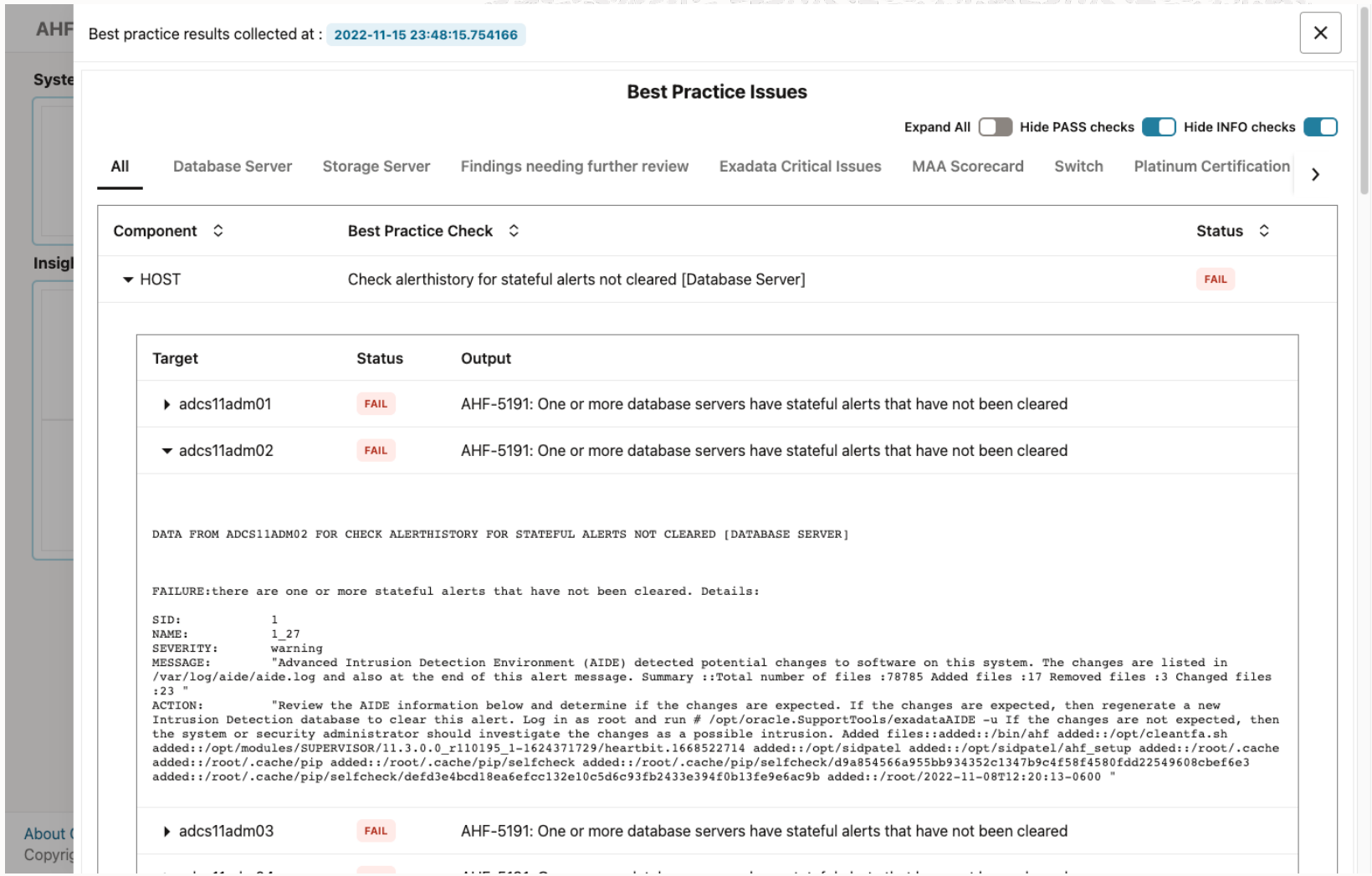
Report Findings

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.



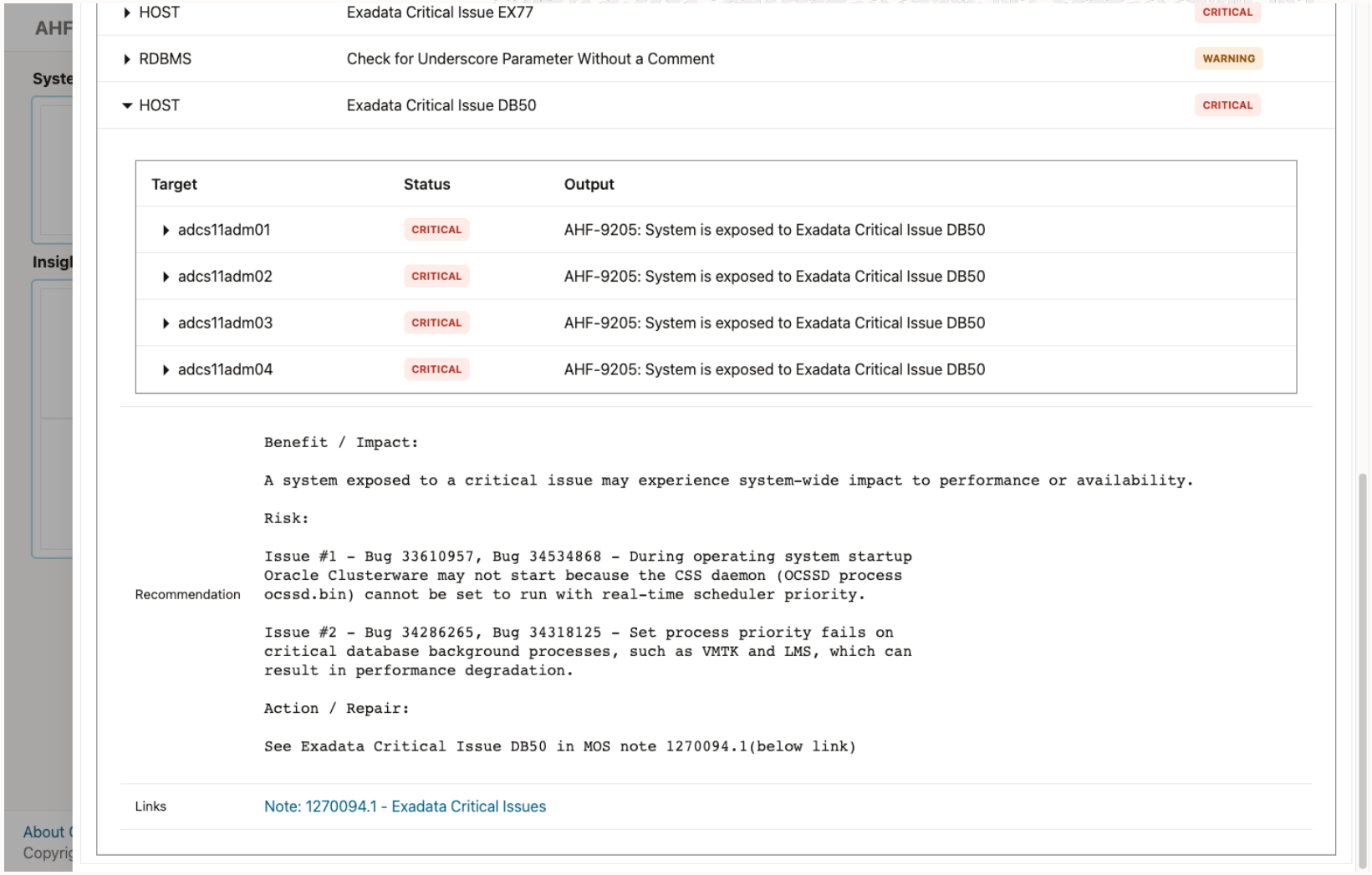
Best Practice Issues

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 Issues

Expanded View

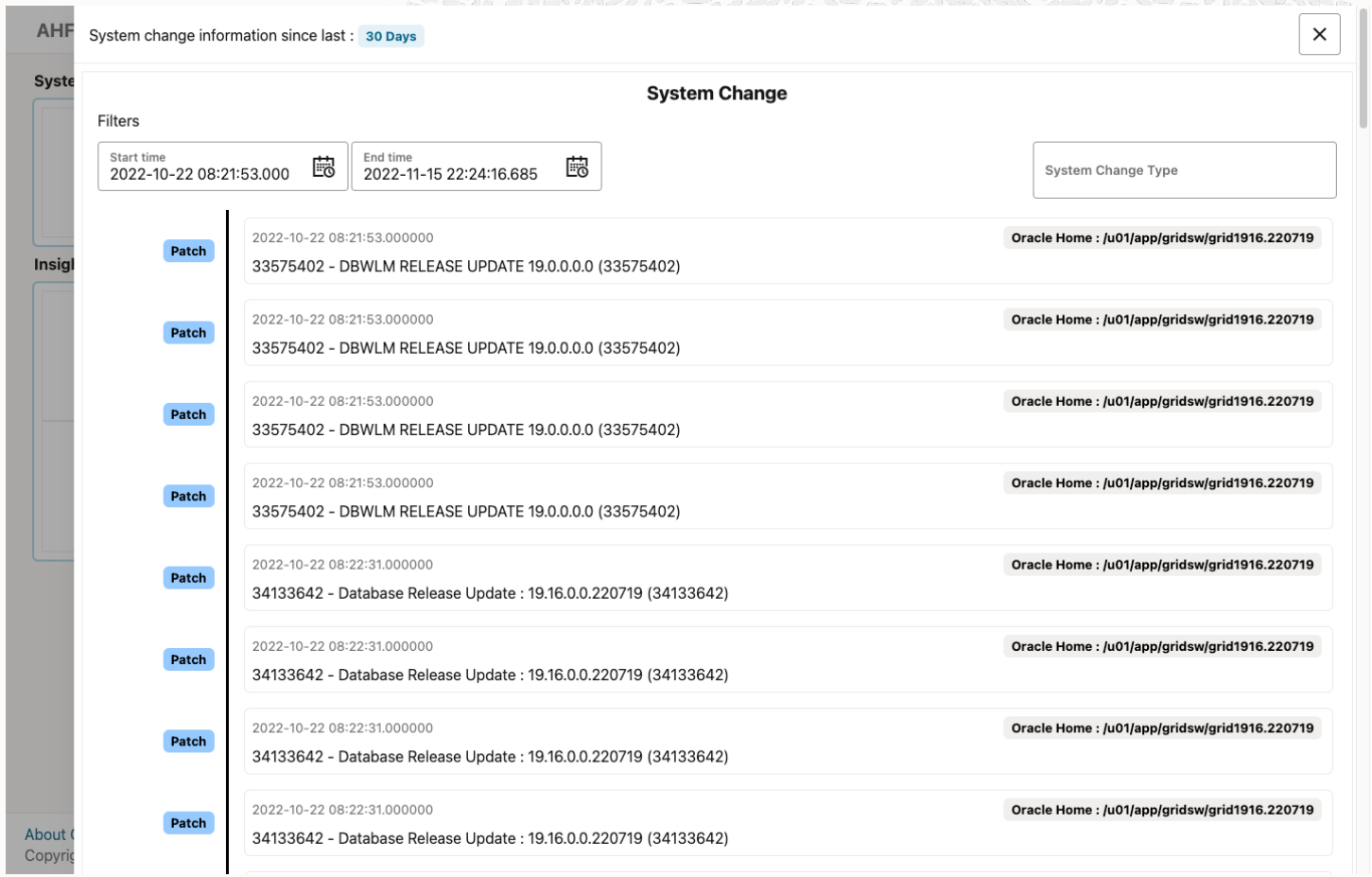


System Change

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

1. Ability to search values by using the filter section.

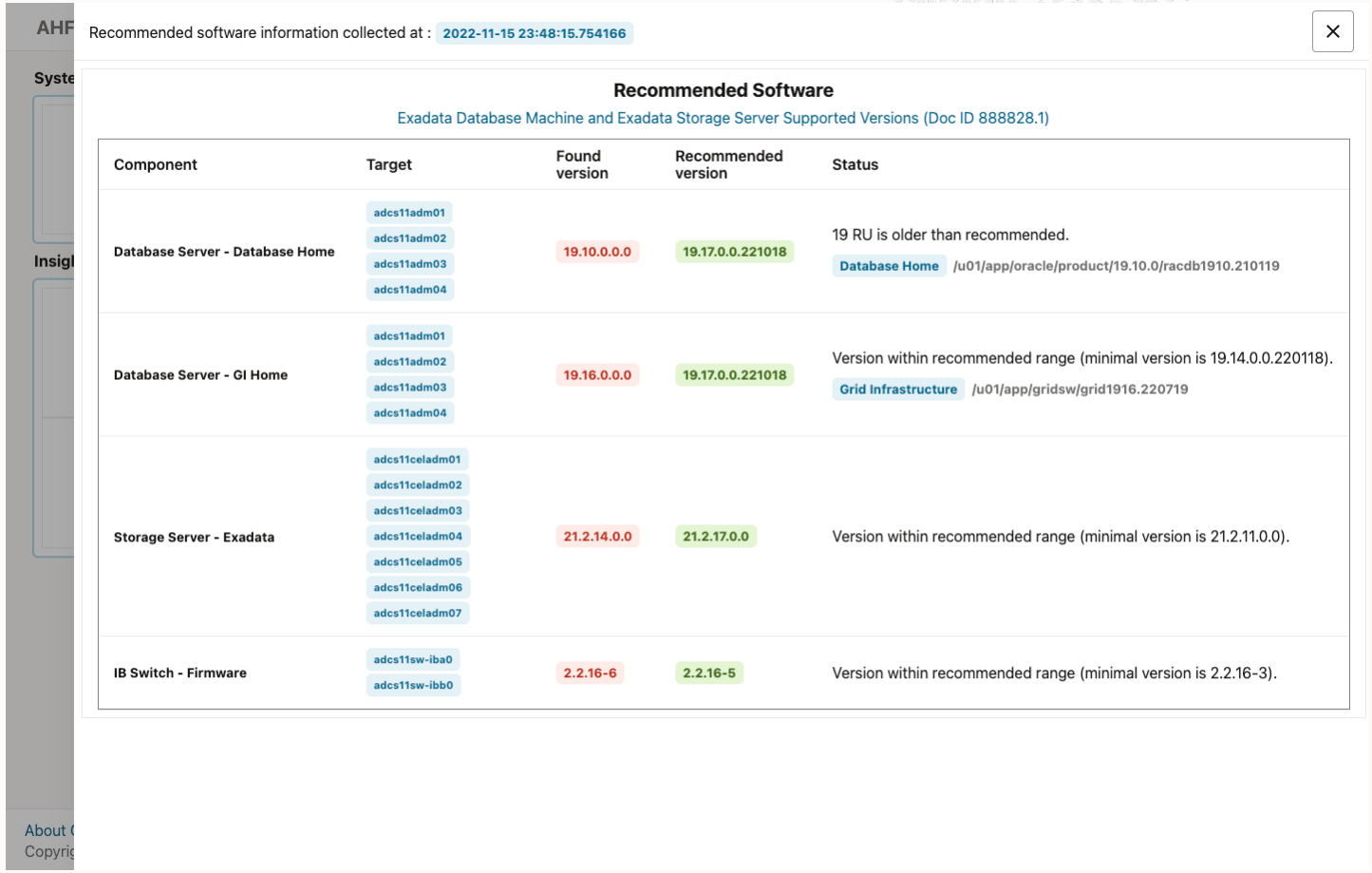
2. Ability to filter by a specific time range.



Recommended Software

Showcase Recommended Software.

1. Link with the supported versions.



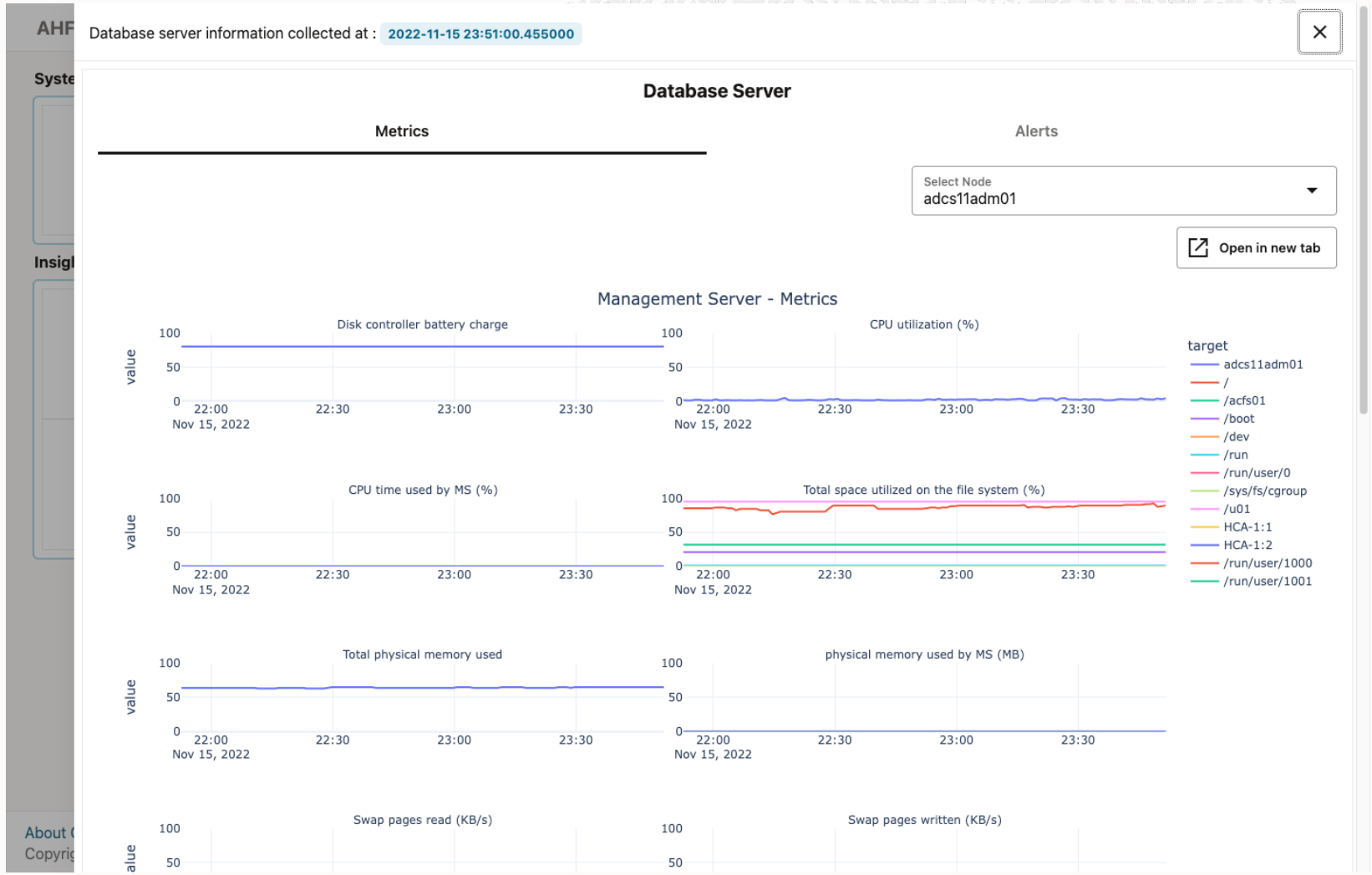
Database Server

Database Server:

- Metrics
- Alerts

Metrics

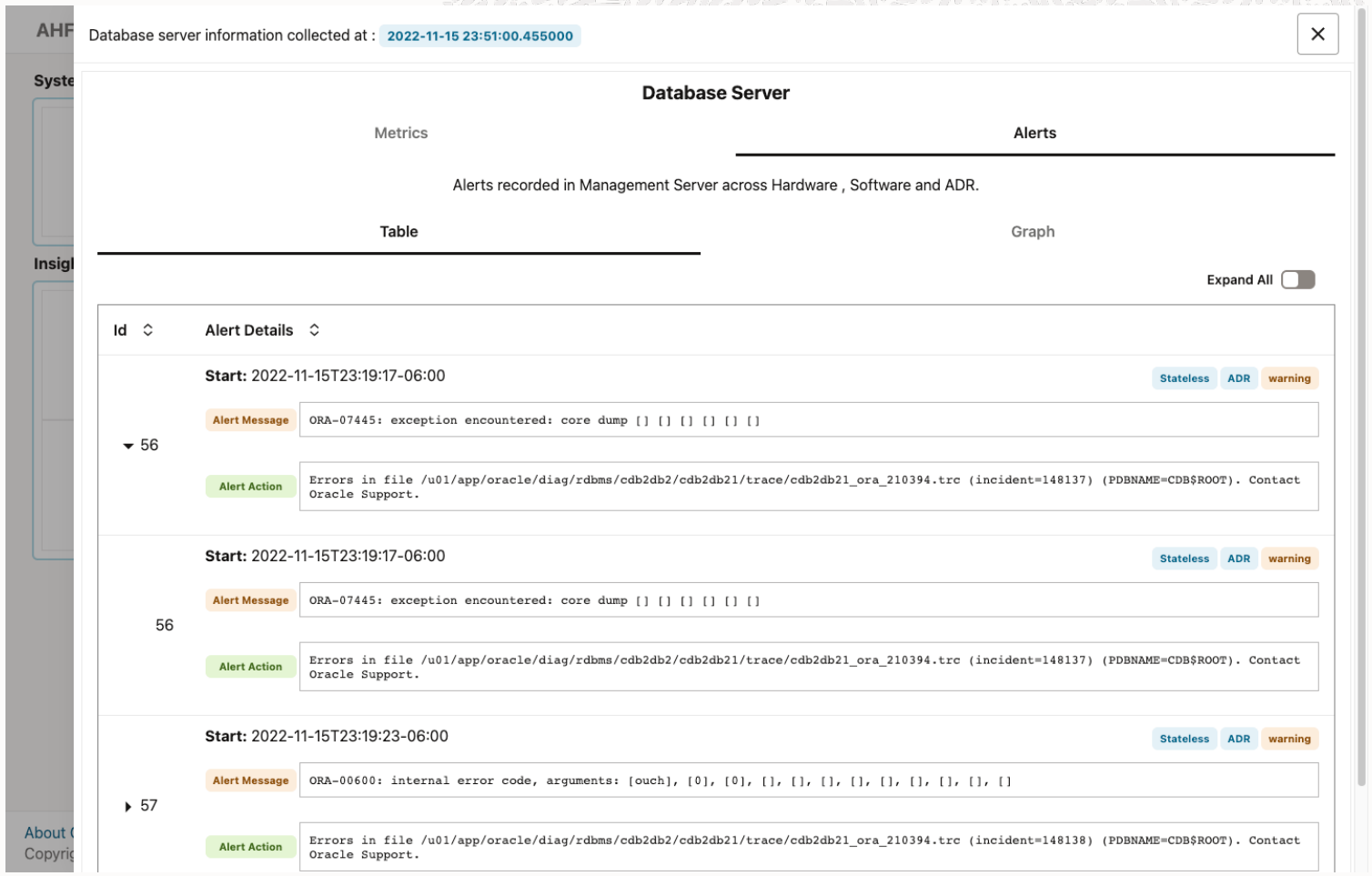
1. Selection for the host for which metrics are to be viewed
2. Graphs with shared x axis



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.



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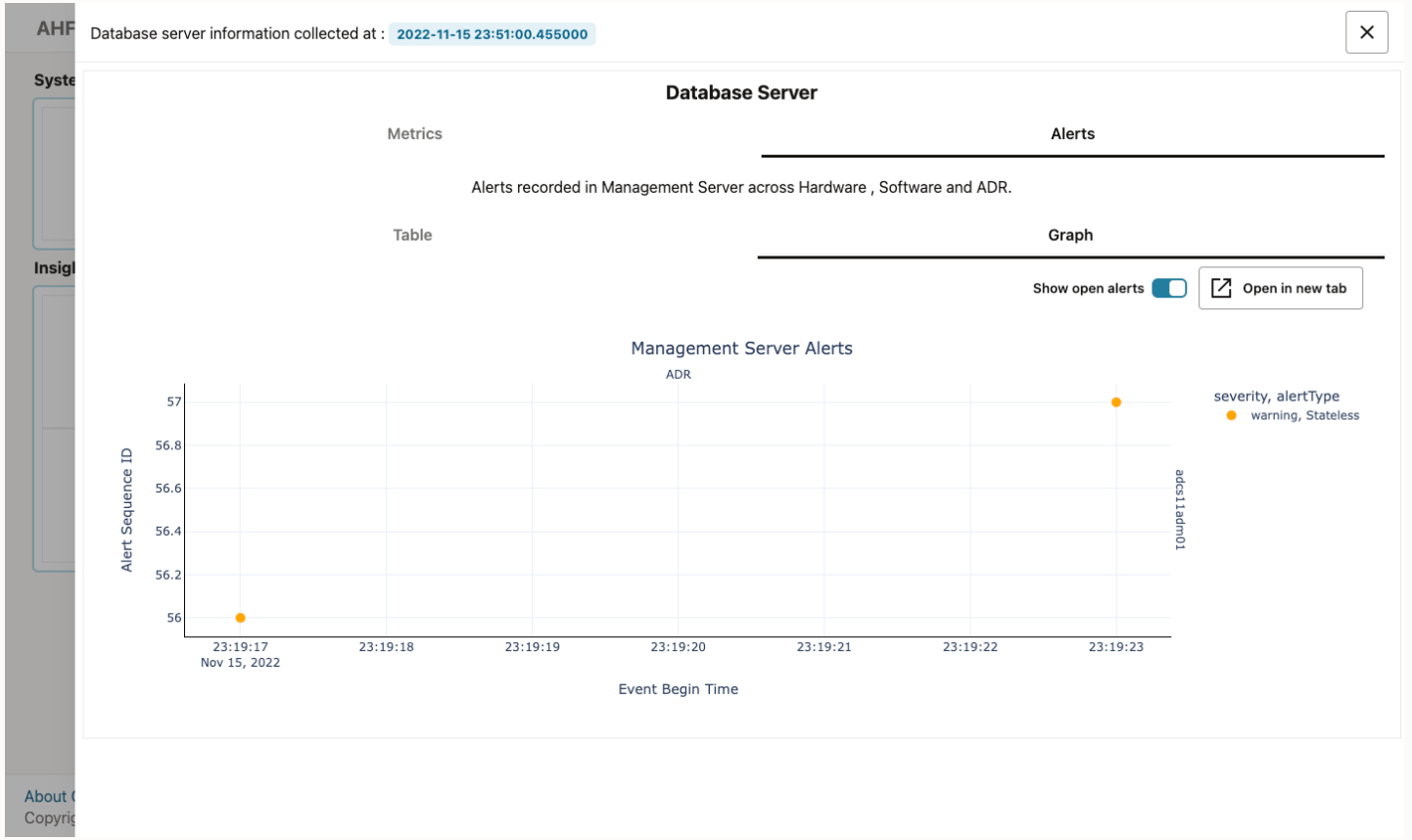
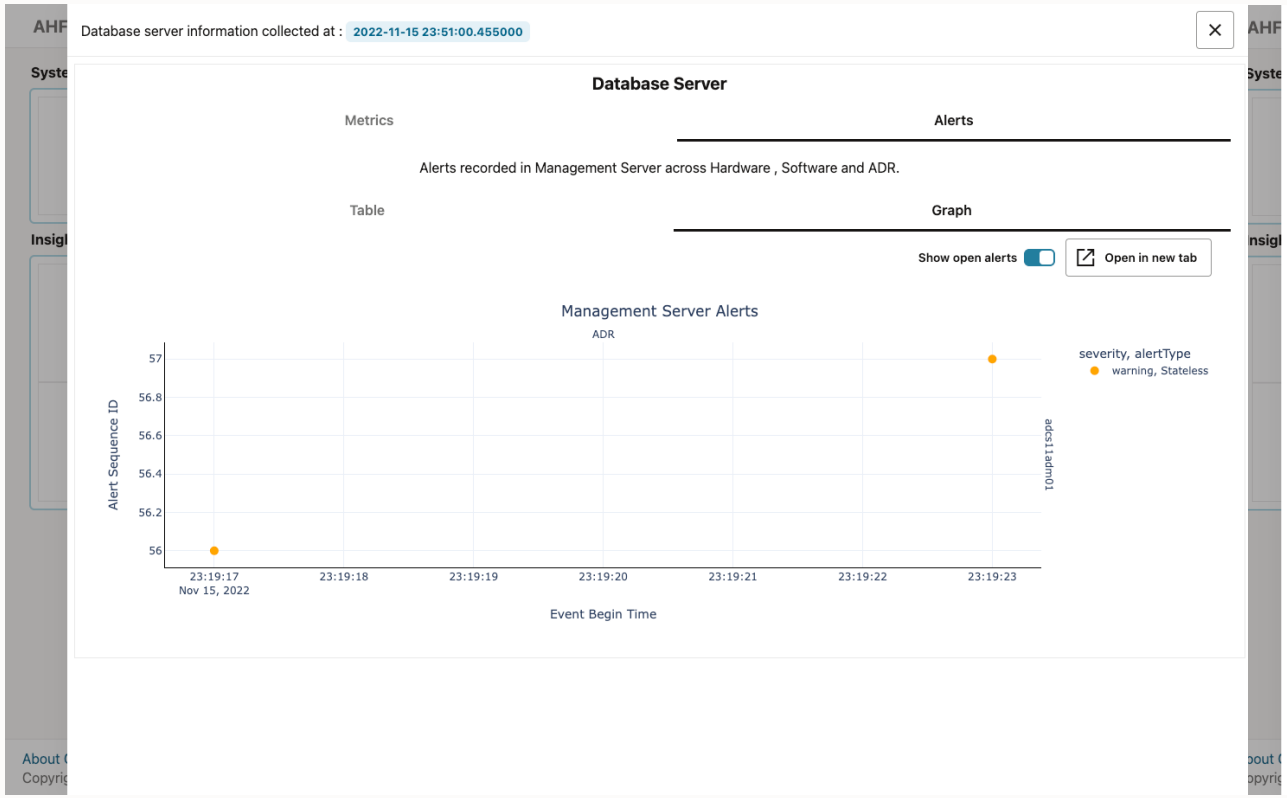
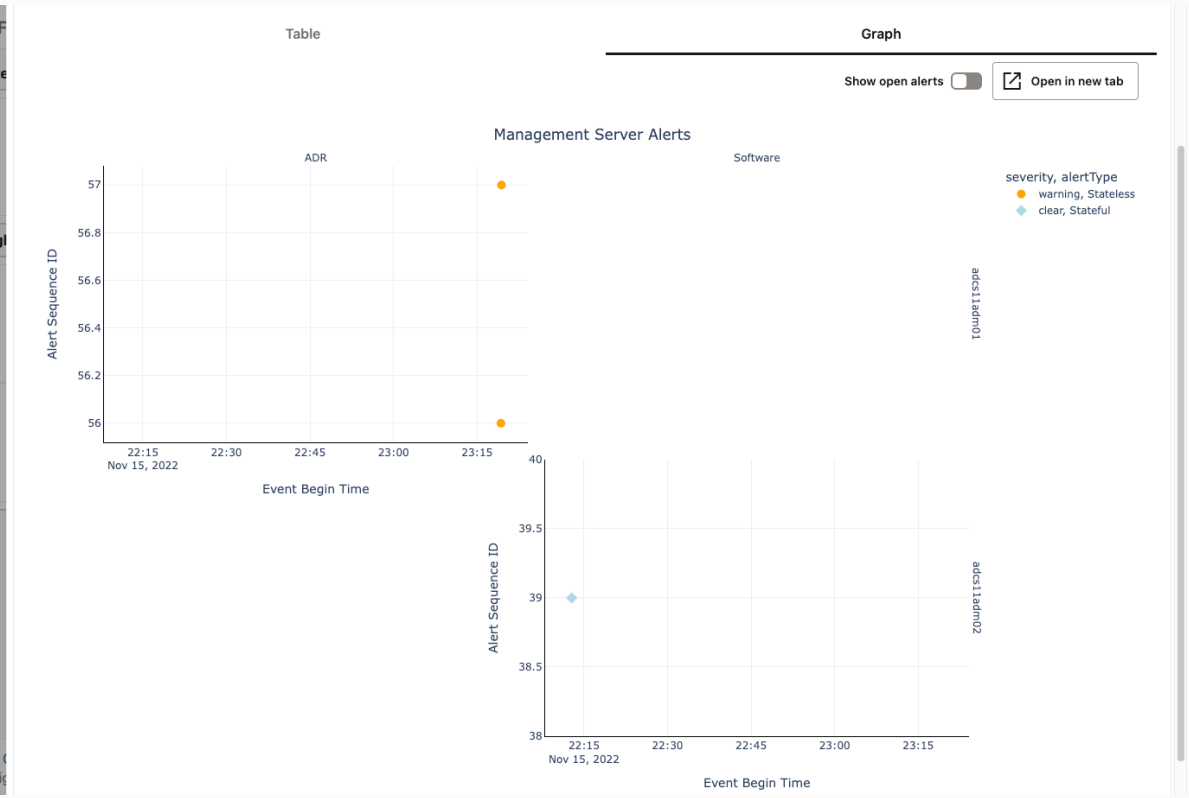


Database Server

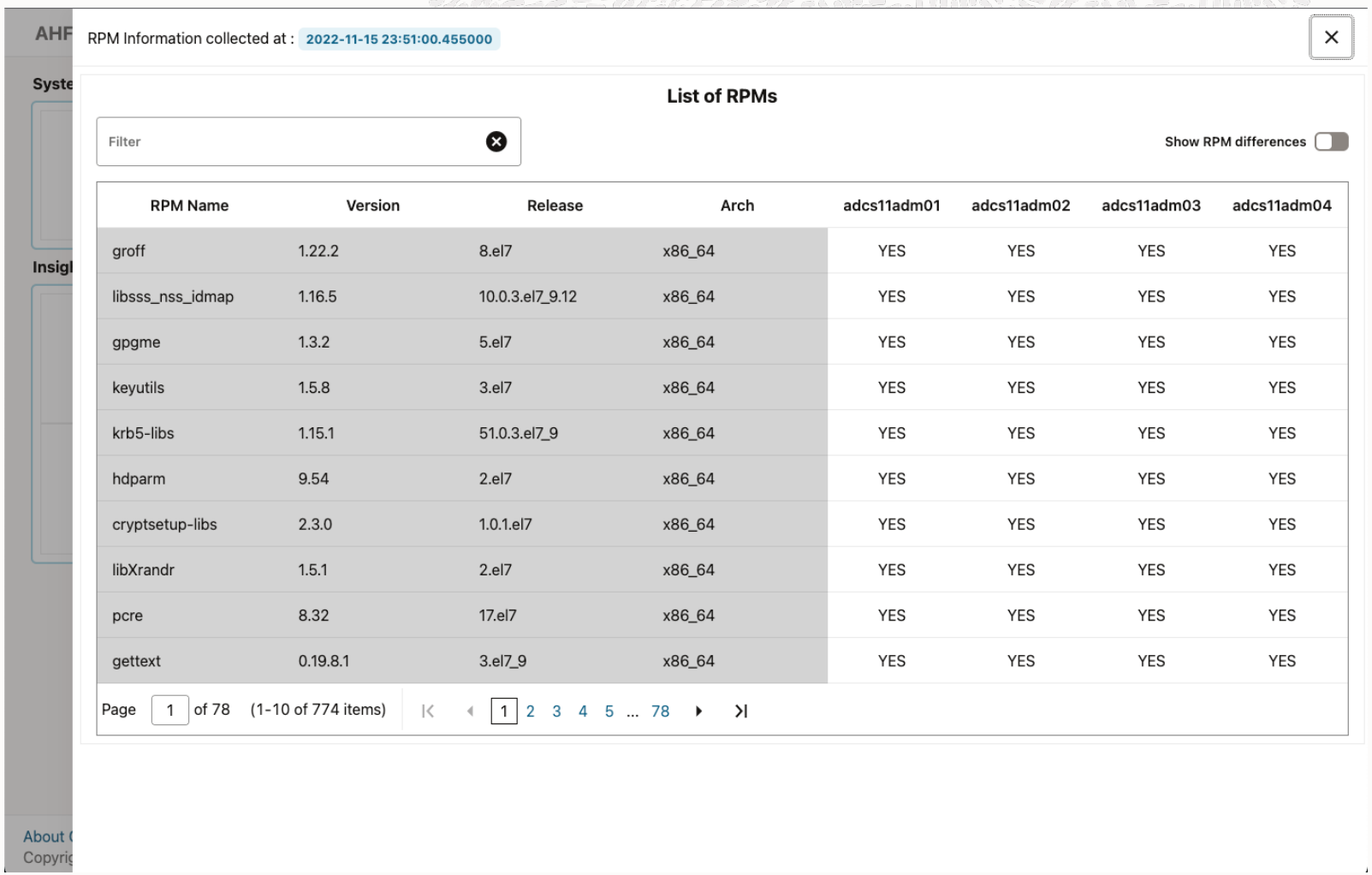




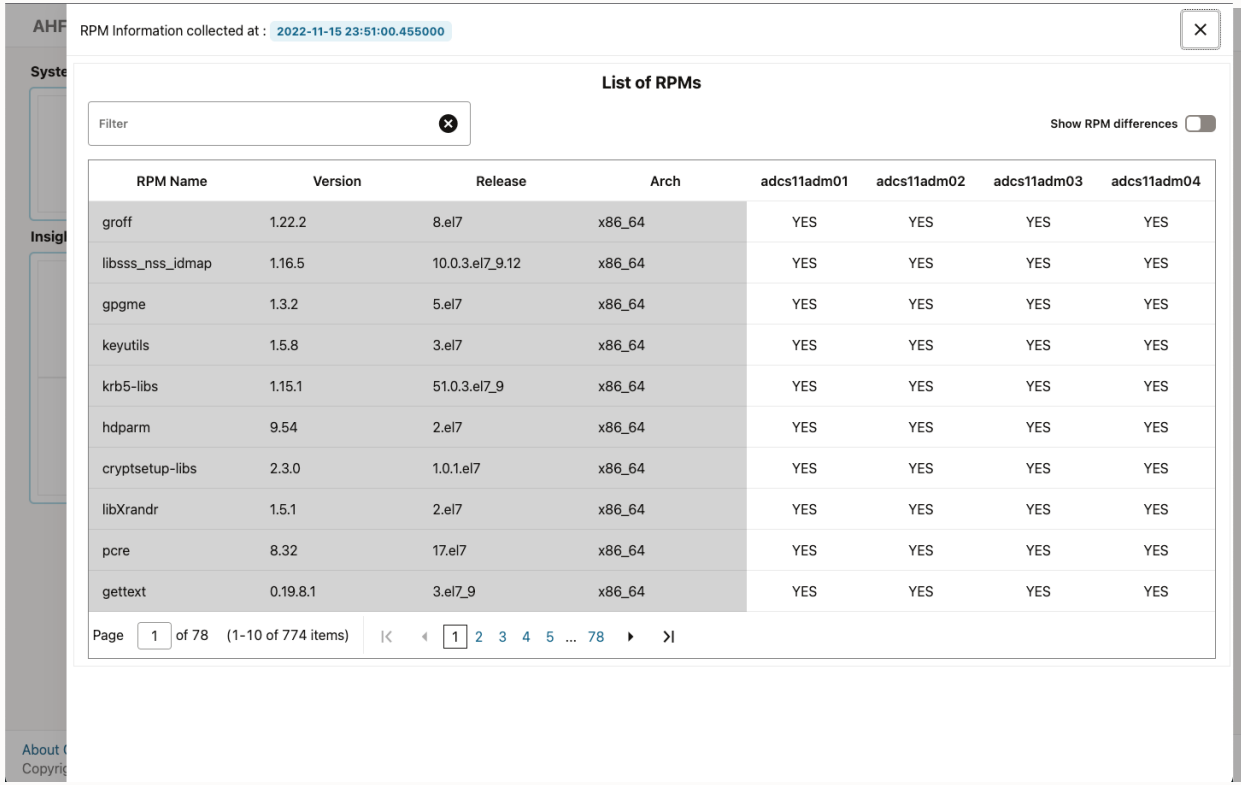
List of RPMs

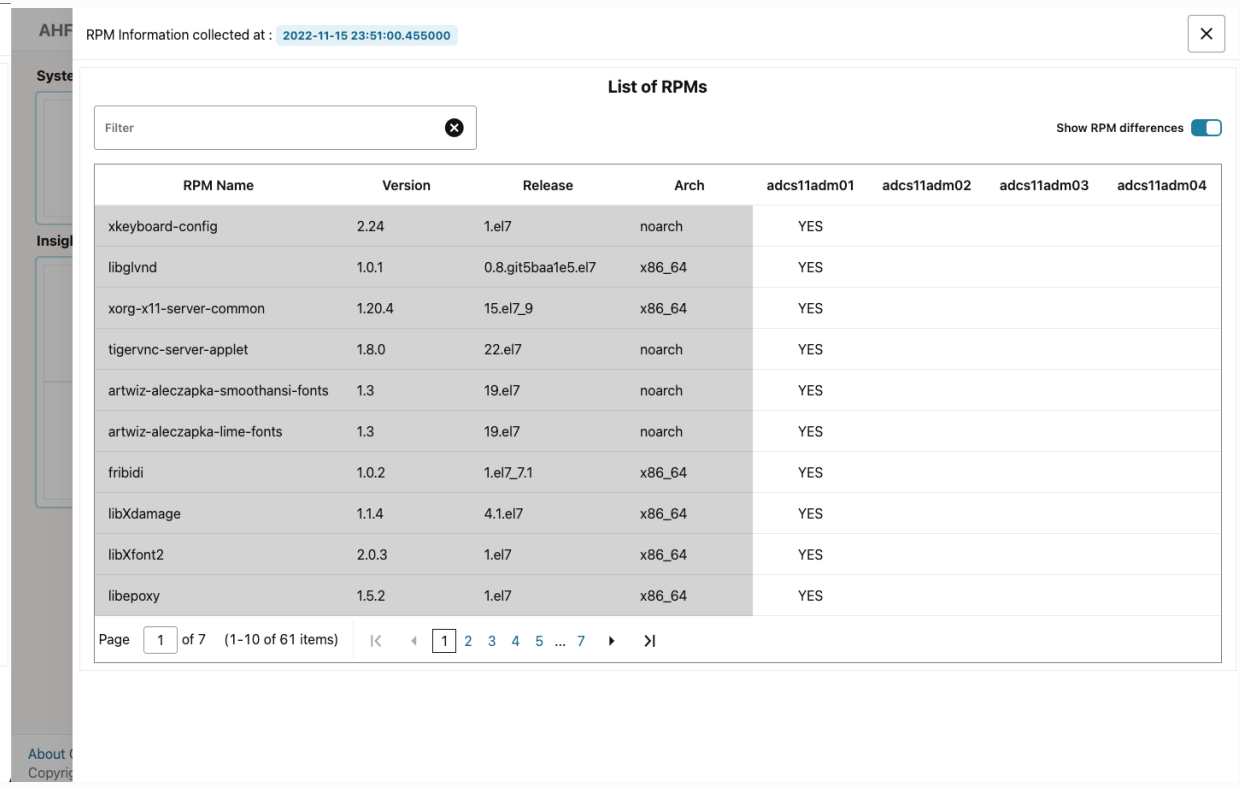
List of RPMs

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



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


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

List of Database Parameters

1. Two tabs with normal and hidden parameters.

2. Showcase DB Parameter Table with pagination

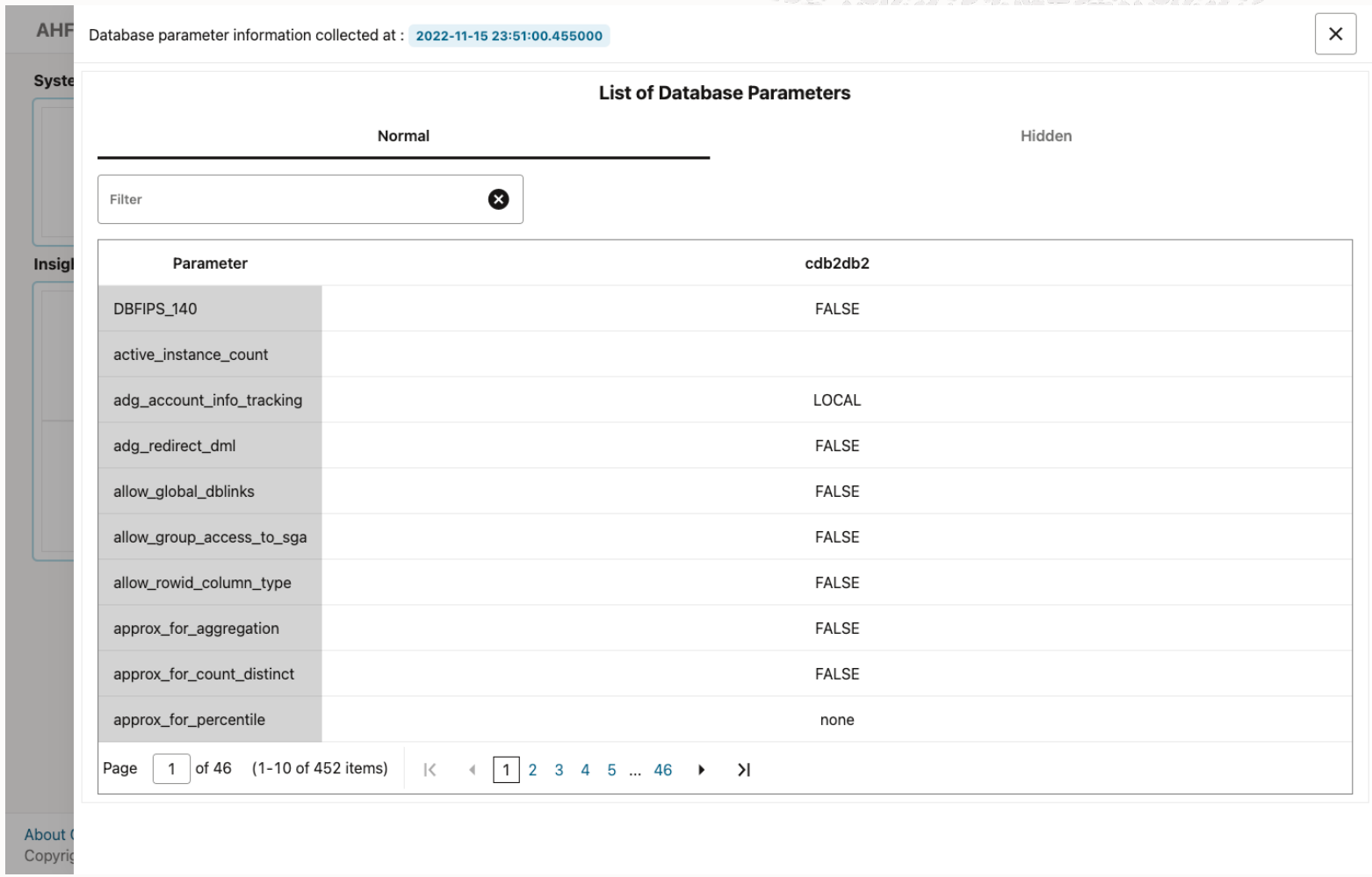
3. Ability to filter database parameters while typing into filter box

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



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

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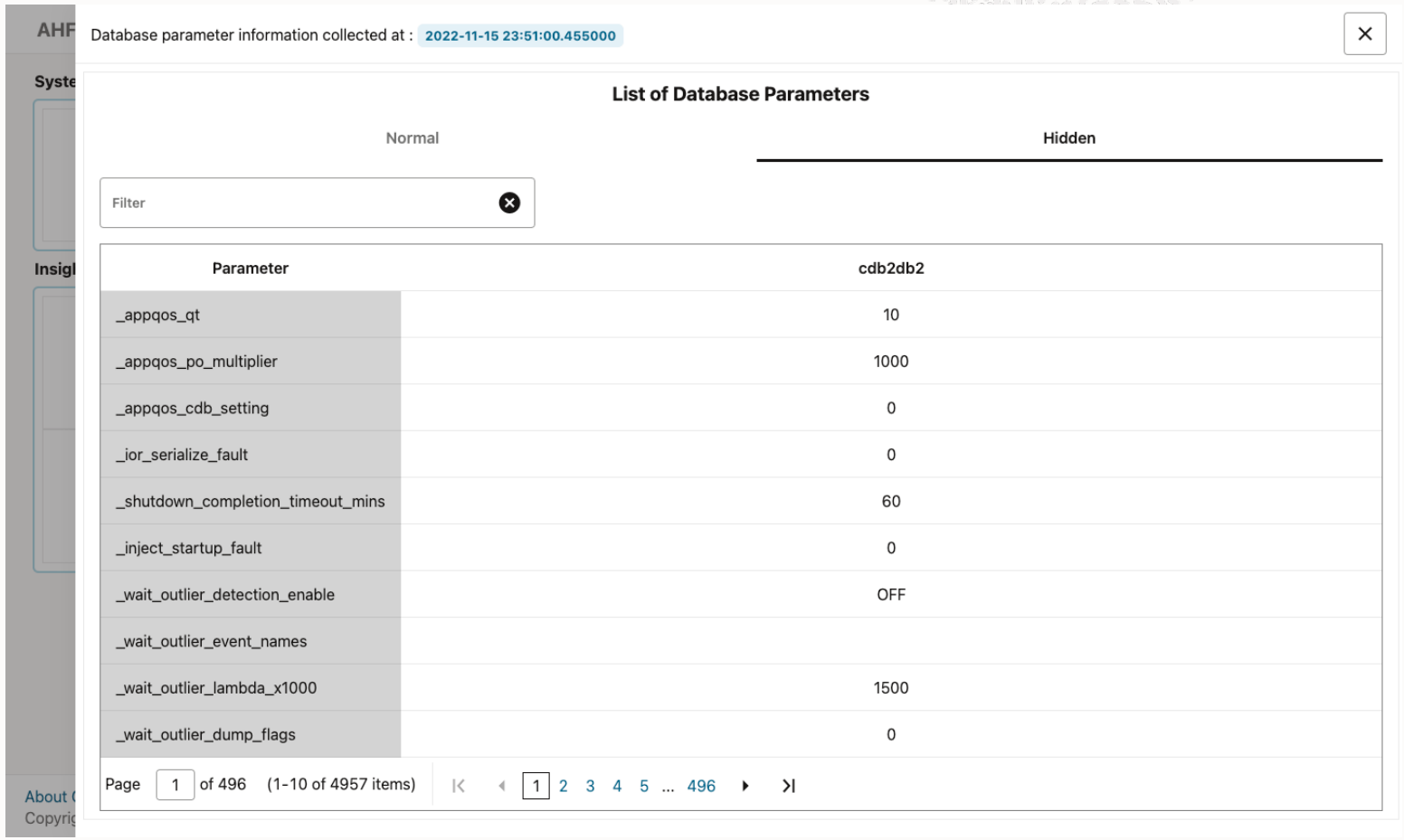
6. Showcase hidden database parameters.

7. Ability to show different properties across databases

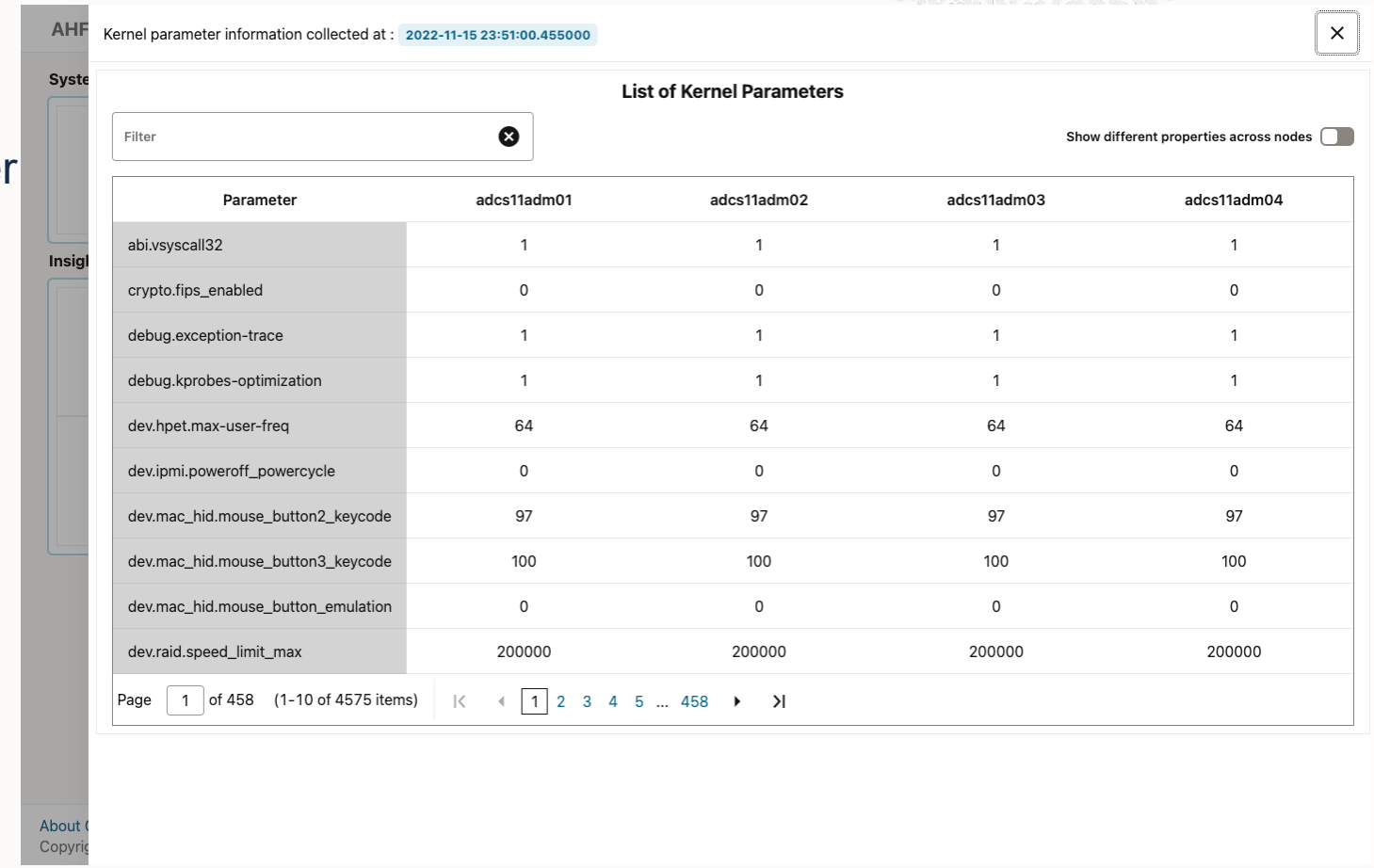


List of Kernel Parameters

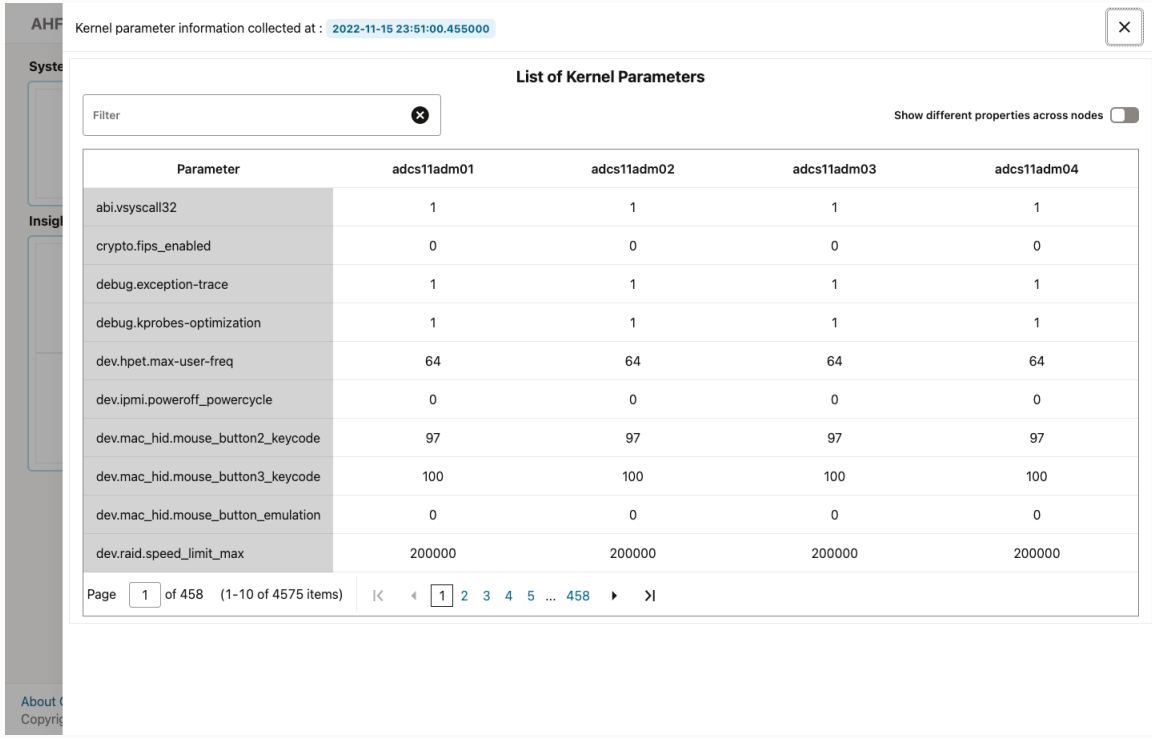
1.Showcase List of Kernel Parameters with pagination.

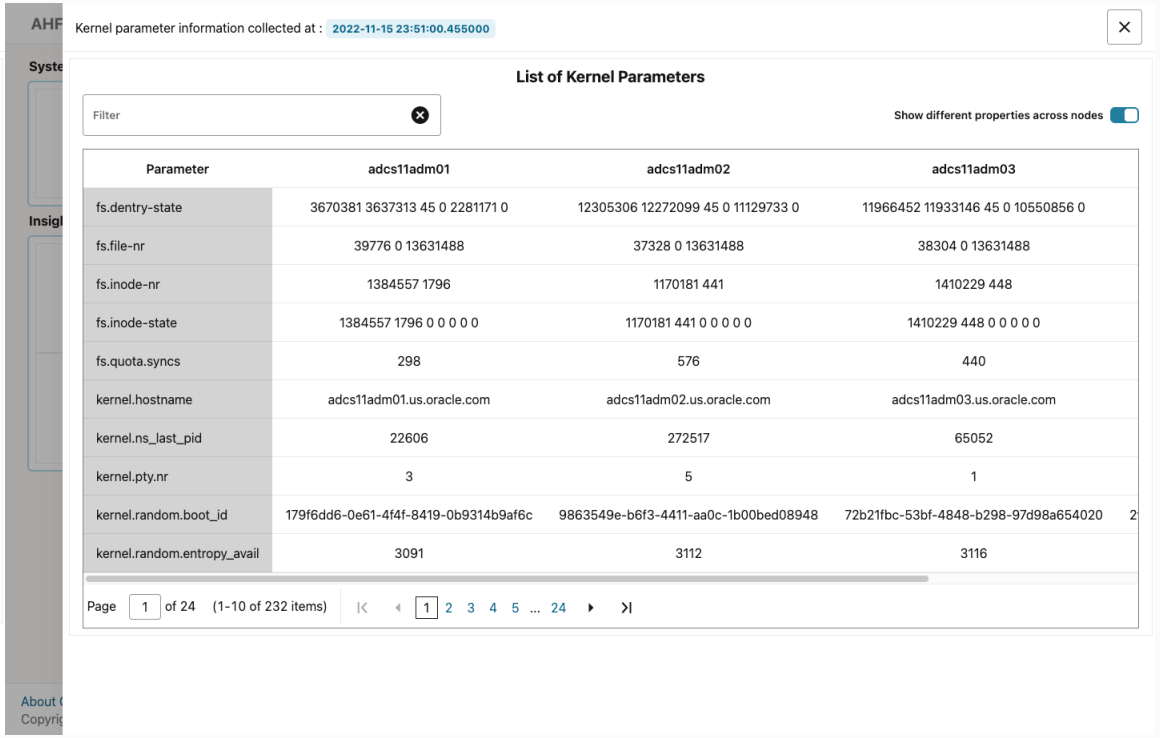
2.Ability to search values by using the filter section.

3.Ability to show different properties across databases by clicking the toggle bar.



List of Kernel Parameters





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