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Monitoring Databases with Performance Hub

Use Performance Hub to monitor database activity, diagnose issues, and tune queries to improve the performance of Oracle databases.

You can use Performance Hub to view real-time and historical performance data for a database. Performance Hub shows Active Session History (ASH) analytics, SQL monitoring and workload information.

About Performance Hub

With Performance Hub, you can monitor your databases for defined time periods and download statistical reports.

What is Performance Hub?

Performance Hub displays information about the performance of your database for the time period you specify.

With this tool, you can view real-time and historical performance data.

Performance Hub supports:

- Autonomous Database on shared and dedicated Exadata infrastructure
- Databases running on Base Database Service and Exadata Database Service on Dedicated Infrastructure systems
- Databases managed with OCI's External Database

How Performance Hub Works

For Autonomous Database, you can access the Performance Hub feature from the Autonomous Database Details page.

To use Performance Hub for databases running on Base Database Service, Exadata Cloud Service, or databases managed with the External Database Service:

- Enable Database Management

While enabling Database Management for Base Database Service or Exadata Cloud service, the database administrator can select from two options, Basic Management or Full Management. For more information, see Enable Database Management.

> **Note:**
>
> If you enable Database Management for Autonomous Database, you can access Performance Hub from the Database Management service also.

In Database Management, you can set preferred credentials for users so they can automatically connect to the Managed Database and use Performance Hub.

For information about preferred credentials in Database Management, see Set Preferred Credentials.

> **Note:**
>
> Using Oracle Identity Cloud Service (IAM), you can create a policy that grants users access to Performance Hub while limiting actions they can take on the Oracle Database being analyzed. For more information, about policies and how to use them, see How Policies Work.

The following example shows a policy that grants access only to performance data without allowing general use access on Autonomous Databases.

```
Allow group <groupname>
   to inspect autonomous-database-family in compartment <name>
Allow group <groupname>
   to use autonomous-database-family in compartment <name>
   where request.operation = 'RetrieveAutonomousDatabasePerformanceBulkData'
```

Performance Hub Features

Performance Hub consists of a number of tabs and options, and provides reports so you can monitor your databases.

> **Note:**
>
> These tabs displayed in Performance Hub depends on the Database Management option that is enabled for the database you are monitoring, if the database is running in a Base Database Service or Exadata Database Service on Dedicated Infrastructure system, or is managed with External Database.

When a database is set to:

- **Basic Management** - Performance Hub displays only the ASH Analytics and SQL Monitoring tabs.
- **Full Management** - Performance Hub displays all the tabs described in the subsequent sections.

For more information, see About Management Options in Enable Database Management for Oracle Cloud Databases.

> **Note:**
>
> Performance Hub currently does not support Pluggable Databases in Base Database Service systems.

The Performance Hub page includes the following tabs:

- ASH Analytics
- SQL Monitoring
- Automatic Database Diagnostic Monitor (ADDM)
- Workload
- Blocking Sessions
- Exadata

  This tab is available for databases running in Exadata Database Service on Dedicated Infrastructure and for Exadata Databases managed by External Database.

Additionally, Performance Hub provides options for:

- AWR Snapshot Collection

Performance Hub is also available in another mode, namely Top Activity Lite. This mode is a simplified view of Performance Hub and focuses on fast response time to monitor the performance of database systems in real time.

You can explore these tabs and options to monitor a selected database and analyze its performance, which includes but is not limited to:

- How much is a database waiting for a resource, such as CPU or disk I/O
- Whether database performance degraded over a given time period, and what is the primary reason
- Which specific modules are causing a load on the system, and where most of the time a database spends on the modules
- Which SQL statements are the key contributors to changes in database performance, and which executions are causing them
- Which user sessions are causing performance bottlenecks
- Which sessions are currently blocking, and if outstanding requests exist for a lock
- Whether any databases are interfering with the current database
- Which databases, disks, and cells are causing high I/O load, and if the load is for Backup, Rebalance, or User I/O
- What cells are CPU bound, and how to determine the cell offload
- What a database's configuration is, including software version and disk status

ASH Analytics

The ASH Analytics tab shows Active Session History (ASH) analytics charts that you can use to explore ASH data. This tab is displayed by default.

You can use this tab to drill down into database performance across multiple dimensions, such as **Consumer Group**, **Wait Class**, **SQL ID**, **User Name**, and so on.

In the ASH Analytics tab, you can select an Average Active Sessions dimension and view the top activity for that dimension for the selected time period. The Average Active Sessions chart has a control at the right end of the chart to select the displayed resolution of ASH data.

For more information about ASH, see:

- Active Session History (ASH) in *Oracle Database Concepts*

ASH Sample Resolution

The ASH Sample Resolution menu gives users the ability to control the sampling of ASH data displayed in the Average Active Sessions chart.

Data resolution means displaying more or fewer data points in the sample data in given time period. Lower resolution displays coarser data with better performance and less effect on the database. Higher resolution aggregates more data to display finer detail, but can have a corresponding cost in latency and effect on the database.

The Sample Resolution menu is displayed at the right-side of the chart. The data resolution options are:

- **Low**: The chart displays the fewest data points in the selected data sample.
- **Medium**: The chart displays more data points in the selected data sample.
- **High**: The chart displays more data points in the selected data sample.
- **Maximum**: The chart displays the most data points available in the selected data sample.

For information about how to use this feature, see:

- Average Active Sessions Data

Activity Tables

By default, two tables under the **Average Active Sessions** graph display the top SQLs and user sessions for the time period covered by the Average Active Sessions graph. To view activities by other dimensions, use the menus at the top-left of each of the two tables.

You can use the ASH Analytics tab to monitor real-time SQL activity.

For more information, see:

- Real-time SQL Activity

SQL Monitoring

The SQL Monitoring tab contains a table that displays monitored SQL statements. To view this tab, click **SQL Monitoring** on the Performance Hub page.

The table in the SQL Monitoring tab displays SQL statement executions by dimensions, such as **Last Active Time**, **CPU Time**, **Database Time**, and so on. It not only provides information about SQL statements that are currently running but also SQL statements that completed, failed, or were terminated. The table consists of columns that include **Status**, **Duration**, **SQL ID**, and so on for monitored SQL statements.

> **Note:**
>
> SQL statements are monitored only if they have been running for at least five seconds or if they are run in parallel.

The **Status** column includes the following icons:

- A spinning icon indicates that the SQL statement is running.

- A green check mark icon indicates that the SQL statement completed its execution during the specified time period.
- A red cross icon indicates that the SQL statement did not complete. The icon displays when an error occurs because the session was terminated.
- A clock icon indicates that the SQL statement is queued.

You can end session to terminate a running or queued SQL statement.

Real-time SQL Monitoring

You can also click an **SQL ID** to go to the corresponding Real-time SQL Monitoring page. This page provides additional details that helps you tune the selected SQL statement.

Graphical Explain Plan

The Real-time SQL Monitoring page provides different options for viewing plan statistics for SQL execution, namely Tabular Execution Plan and Graphical Explain Plan.

- The default **Tabular Execution Plan** presents a tabular view of the execution plan.
- **Graphical Explain Plan** presents a graphical tree representation of the explain plan. In this plan, you can display as much or as little data as needed, and can rotate the tree to display the information either horizontally or vertically.

For more information, see:

- Graphical Explain Plan

Automatic Database Diagnostic Monitor (ADDM)

Automatic Database Diagnostic Monitor (ADDM) analyzes the data in Automatic Workload Repository (AWR) and provides options to resolve performance problems.

As AWR is a repository of historical performance data, ADDM analyzes the performance problems after the diagnosis, thus saving time and resources required to reproduce the problem.

Benefits of ADDM

- Performs time-based quantification of application problems
- Identifies the root causes of performance problems
- Provides recommendations for fixing the problems
- Identifies the nonproblem areas of the application
- Helps you create and run ADDM tasks to analyze the current or past performance

Besides production systems, you can also use ADDM on development and test systems to find early warnings of application performance problems.

Workload

The Workload tab graphically displays four sets of statistics that you can use to monitor the database workload and identify spikes and bottlenecks.

Each set of statistics is displayed in a separate region, as described in the following sections.

Monitored and Analyzed Time Indications

The time slider has more functionality in the Workload tab than it does in the Active Session History and SQL Monitoring tabs. Note the following **Quick Select** time range options:

- **Last Hour**, **Last 8 Hours**, and **Last 24 Hours** - The charts in the Workload tab display data for the entire time period of specified time range. A shadowed area is displayed in each chart that corresponds to the position of the time slider in the time range.
- **Last Week** - The charts in the Workload tab display data for the selected time period of the time slider in the time range. A shadowed area is not displayed in this case.
- **Custom** - The shadowed area display depends on whether the time period is up to and including 24 hours, or greater than 24 hours.

Regions

The tab contains four regions, namely CPU Statistics, Wait Time Statistics, Workload Profile, and Sessions.

Each region contains one or more charts that indicate the characteristics of the workload and the distribution of the resources. The data displayed on all the charts is for the same time period, as selected by the Time Range and time slider at the top of the window.

For more information about the Workload tab, its regions and the associated charts, see:

- Workload Metrics

Blocking Sessions

The Blocking Sessions tab displays the current blocking and waiting sessions in a hierarchical display.

In this tab, you can:

- View detailed information about each blocking session, and view sessions blocked by each blocking session.
- Inspect or drill down into the SQL involved, to determine the cause of the blocking.
- Perform several troubleshooting operations, including terminating one or more listed sessions to resolve a waiting session problem.

The hierarchical display nests waiting sessions underneath the session that is blocking them in an easily viewable parent-child relationship. The hierarchy can contain any number of levels to correctly represent the structure of the sessions involved.

The sessions listed include sessions that are waiting for a resource, and sessions that hold a resource that is being waited on that creates a blocking condition.

For more information, see:

- Blocking and Waiting Sessions

Exadata

The Exadata tab provides a unified view of Oracle Exadata hard disk and flash performance statistics.

It gives a deep insight into the health and performance of system components including the databases, Exadata storage cells, and Automatic Storage Management (ASM). You can use the Exadata tab for enhanced performance diagnostics for Exadata databases.

This tab is available for Exadata Databases managed through External Database and databases in Exadata Database Service on Dedicated Infrastructure deployments.

> **Note:**
>
> The Exadata tab is available only in the historical mode and supports only container databases. It does not provide real-time views, or any information about pluggable databases.

In the Exadata tab, you can:

- Analyze outliers that affect database performance, including finding a slow disk component that is affecting the system
- Analyze performance characteristics of multiple databases deployed in an Exadata system
- Identify a high I/O load and classify the load as Backup, Rebalance, User I/O, and others
- Identify CPU bound cells and determine cell offload
- Identify configurations such as versions and disk status

It provides various statistics about databases running on Exadata systems, including:

- Operating system statistics
- Storage server software statistics
- Smart scan statistics
- Database, disk, and cell statistics
- Exadata-specific ADDM recommendations
- Exadata system statistics

Exadata Details

The Exadata Details page contains nine tabs:

- **Performance** - shows database performance, including a summary, latency statistics, flash I/O statistics, and Hard Disk I/O statistics
- **Health** - shows the number and type of open alerts (Information, Warning, and Critical), the number of offline disks, open alert details, and offline disk details
- **ADDM** - displays Automatic Database Diagnostic Monitor (ADDM) performance findings specific to Exadata for the selected ADDM task, and makes specific recommendations to correct performance problems.

For more information, see:

- Automatic Database Diagnostic Monitor (ADDM)
- ADDM Data

- **Top Consumers** - identifies workload distribution across all databases including the databases that consume a significant amount of I/O bandwidth. I/O requests and I/O throughput aggregates the data to report the top databases captured. The tab shows the number of requests, I/O speed, and usage of the top databases per cell in the Exadata system. It also displays details of IORM Queue Time and the top databases per cell.
- **Cells** and **Disks** - compares the operational statistics of the flash drives and hard disks in the system.

  It provides I/O related information, such as:

  - how I/O is distributed between flash drives and hard disks
  - realize the benefit the system is getting from Flash Cache
  - how much disk I/O is caused by Flash Cache
  - how I/O correlates to database single block reads

  The tab displays statistics by cell, including the Top Cells, Outlier Cells, OS I/O Throughput, Cell Server I/O Requests, Cell Server I/O Throughput, % Disk Utilization, I/O Latency, and Cell Latency. You can select the default column group by which to display the data. Hover the cursor over a statistic to view details about it.
- **Smart I/O** - displays summaries and details of Flash log and Flash Cache statistics by cell.
- **I/O Reasons** - displays the number of requests and bytes for the set of selected cells to show the reasons for a high I/O load by category. Categories include backup, rebalance, and user I/O. The Requests and Bytes statistics bars for each cell are broken into sections that show the number of database control file reads per second, voting files I/O operations per second, and xrov I/O operations per second, and others.
- **Configuration** - displays the configuration of the storage server model, the storage server version, and the objective of each cell.

For more information, see:

- Exadata Statistics

Top Activity Lite

Top Activity Lite is a simplified yet highly efficient mode of Performance Hub in Database Management Service. In this mode, database administrators can monitor real-time performance of managed databases in a single view for quick visualization of issues.

The primary advantages of Top Activity Lite include streamlined UI options and quick response time for real-time monitoring while providing critical information required for performance diagnosis.

Simplified UI Options

In comparison to Performance Hub, the Top Activity Lite mode consists of only two tabs, **ASH Analytics** and **SQL Monitoring**. These tabs provide similar functionality as in Performance Hub. For more information, see ASH Analytics, SQL Monitoring.

Though the Top Activity Lite page appears similar to Performance Hub, the following distinguishes this mode as a separate view:

- **Time Range** - The Time Range selector is not enabled, and the time range used for data analysis is fixed at the last hour.
- **Auto Refresh** - The time interval to automatically retrieve new data from the database and update the current tab content.

  > **Note:**
  >
  > This option is **Off** by default.

- **Average Active Sessions** - A single chart combined with a time slider, which controls the time period of the data shown in the activity tables. The chart always shows an hour of ASH data. Every time the page refreshes, the chart is updated to show data for the last hour.

  As compared to Performance Hub, Top Activity Lite has fewer ASH dimensions available. However, you can use other functions, such as drill down a dimension, control sample resolution, change dimensions, and so on. For more information, see ASH Analytics.
- **Time slider** - A time period selector on the Average Active Sessions chart with a duration of five minutes. By default, the time slider is pinned to the right-side of the chart. When the time slider is pinned, the activity tables are updated on each refresh to show data for the last five minutes.

  You can explicitly move the time slider to select a historical period. This unpins the time slider and updates the activity tables to show data for the selected historical period.

  After it is unpinned, the time slider shifts left on the chart (covering the same historical period) until it reaches the left-side. Then the time slider is automatically pinned again to the right-side of the chart.
- **Activity tables** - By default, these tables display the top SQL and user sessions for the selected time period in the Average Active Sessions chart. You can open the details page and view more information for each SQL or user session. You can also use the dimension selector for an activity table to view top activity along a different ASH dimension.

  You can monitor the Average Active Sessions chart to identify any variations or unusual data points, then use the activity tables to perform detailed analysis on a specific time range. You can use the time slider at any time to adjust the time period covered by the activity tables data.
- **Data Source** - This option, by default, enables fetching data from **Memory and AWR**. To view data only from memory, you can change the data source to **Memory**.
- **View Option** - The Top Activity Lite mode provides two options, the default bar chart and an area chart view.

For more information about how to use this mode, see:

- Top Activity Lite Data

AWR Snapshot Collection

Oracle Database periodically collects statistical data or snapshots of its state, the workload, and the resources that is uses over a selected time.

It stores these snapshots in the Automatic Workload Repository (AWR) for problem detection and self-tuning purposes. You can use these snapshots to monitor and diagnose the database performance for a specific time period.

AWR compares the difference between snapshots to determine which SQL statements to capture based on the effect on the system load. This reduces the number of SQL statements that must be captured over time. After the snapshots are created, Automatic Database Diagnostic Monitor (ADDM) processes the data in the snapshots for performance analysis and resolution.

By default, Oracle Database automatically collects snapshots every hour and retains the statistics in AWR for eight days. However, you can use the **AWR Settings** option on the Performance Hub page and manually configure some settings for snapshot collection, such as:

- Enable and disable snapshot collection for the database.
- Set the interval for snapshots.

  A snapshot interval determines the frequency at which snapshots are captured. A smaller interval means higher frequency, which increases the volume of data collected by AWR.
- Specify the number of days to store the snapshots in AWR.

  A retention period determines how long the statistical data is maintained before it gets deleted permanently. A longer retention period takes more space in AWR.

For more information about how to configure these settings, see:

- AWR Settings

Reports

Performance Hub provides the following reports for your databases:

- Automatic Workload Repository (AWR)
- Active Session History (ASH)
- Performance Hub

Automatic Workload Repository (AWR)

Automatic Workload Repository (AWR) collects, processes, and maintains performance statistics for problem detection and self-tuning purposes. This data is both in memory and stored in the database.

From Performance Hub, you can generate and download a report of the gathered data.

AWR Report

An AWR report shows data captured between two points in time (or snapshots). Not only can you view diagnostic data of your database but you can also get instance level reports for Oracle Real Application Clusters (RAC) databases to view details about a specific instance.

AWR reports are divided into multiple sections. The content of the report contains the workload profile of the system for the selected range of snapshots. The HTML report includes links that you can use to navigate quickly between sections.

The statistics collected and processed by AWR include:

- Object statistics that determine both access and usage statistics of database segments
- Time model statistics based on time usage for activities, displayed in the `V$SYS_TIME_MODEL` and `V$SESS_TIME_MODEL` views
- Some of the system and session statistics collected in the `V$SYSSTAT` and `V$SESSTAT` views
- SQL statements that are producing the highest load on the system, based on criteria such as elapsed time and CPU time
- ASH statistics, representing the history of recent sessions activity

To generate and download an AWR report, see:

- Automatic Workload Repository (AWR) Report

Active Session History (ASH)

Performance Hub includes the ability to generate, view, and download Active Session History (ASH) reports for your managed databases.

An ASH report contains data that helps you to:

- Triage transient performance problems that typically last for a few minutes
- Perform scoped or targeted performance analysis by various dimensions or their combinations, such as time, session, module, action, or SQL identifier.

> **Note:**
>
> When the Database Management set to is Full Management, the ASH report is available for:
>
> - Databases running in Base Database Service and Exadata Database Service on Dedicated Infrastructure systems
> - Oracle Databases managed with External Database

To generate and download an ASH report, see:

- Active Sessions History (ASH) Report

Performance Hub

Performance Hub includes the ability to generate, view, and download active reports that contains information about the performance of your managed databases.

The report contains the Performance Hub UI backed by data collected and bundled with the report at the time you created it.

You can set the report to contain one of three levels of data:

- **Basic** - includes only the tab contents
- **Typical** - includes the tab contents with details for the top SQL statements
- **All** - includes the tab contents with details for all SQL statements

> **Note:**
>
> When the Database Management set to is Full Management, the Performance Hub report is available for:
>
> - Databases running in Base Database Service and Exadata Database Service on Dedicated Infrastructure systems
> - Oracle Databases managed with External Database

To generate and download a Performance Hub report, see:

- Performance Hub Report

Using Performance Hub to Analyze Database Performance

Sections:

- Access
- View
- Manage
- Download

Access

You can navigate to the Performance Hub page in the Oracle Cloud Infrastructure Console for your managed databases.

To navigate to these database systems, see:

- For Autonomous Database
- For Base Database Service and Exadata Databases
- For External Database Service

For Autonomous Database

To access Performance Hub for Autonomous Database:

1. Open the navigation menu and click **Oracle Database**.
2. Under Autonomous Database, select the type of database that you are managing:
   - **Autonomous Data Warehouse**

- **Autonomous JSON Database**
- **Autonomous Transaction Processing**

3. Select your **Compartment**.
4. In the list of databases, click the display name of the database that you want to analyze using Performance Hub.
5. On the details page of the database, click **Performance Hub** to open the Performance Hub page.

> **Note:**
>
> To exit the Performance Hub page and to go back to the database details page, click **Close** at the bottom-left of the page.

To learn more about Autonomous Database, see:

- Autonomous Database

For Base Database Service and Exadata Databases

To access Performance Hub for Base Database Service and Exadata databases:

1. Open the navigation menu and click **Oracle Database**.
2. Select the type of database that you are managing:
   - **Base Database Service (VM, BM)**
   - **Exadata**
3. Select your **Compartment**.
4. Access the database details page for Base Database Service or Exadata databases.

   For Base Database Service:

   a. Click a **Database System name**. The Database System page is displayed.

   b. In the list of databases, click a **database name**. The database details page is displayed.

   For Exadata:

   a. Click the **VM Cluster**.

   b. Click the database name. The database details page is displayed.

> **Note:**
>
> The **Associated Services** section on the database details page shows the status of the Database Management service, whether the service is enabled for the database. It also shows which database management option (Basic or Full) is enabled.
>
> - If Database Management is **Enabled**, then you can click **Disable** to disable it.
> - If Database Management is **Disabled**, then you can click **Enable** to enable it.

Click **Edit** to display the Edit Database Management page. For information about changing database management settings, see About Management Options in Enable Database Management.

5. On the details page of the database, click **Performance Hub** to open the Performance Hub page.

> **Note:**
>
> Performance Hub is enabled only under the following conditions.
>
> - The Database Management service must be enabled.
> - The database must be an Enterprise Edition, version 12.1.0.0.0 or later.

> **Note:**
>
> To exit the Performance Hub page and to go back to the database details page, click **Close** at the bottom-left of the page.

To learn more about Base Database Service, see:

- Base Database Service

For External Database Service

To access Performance Hub for External Database Service:

1. Open the navigation menu and click **Oracle Database**.
2. Click **External Database**.
3. Select your **Compartment**.
4. Under **External databases**, select the type of external database you are managing:
   - **Pluggable databases**
   - **Container databases**
   - **Non-container databases**

> **Note:**
>
> The **Associated Services** section on the database details page shows the status of the Database Management service, whether the service is enabled for the database. It also shows which database management option (Basic or Full) is enabled.
>
> - If Database Management is **Enabled**, then you can click **Disable** to disable it.
> - If Database Management is **Disabled**, then you can click **Enable** to enable it.

5. On the details page of the database, click **Performance Hub** to open the Performance Hub page.

> **Note:**
>
> Performance Hub is enabled only under the following conditions.
>
> - The Database Management service must be enabled.
> - The database must be an Enterprise Edition, version 12.1.0.0.0 or later.

> **Note:**
>
> To exit the Performance Hub page and to go back to the database details page, click **Close** at the bottom-left of the page.

To learn more about External Database, see:

- External Database

View

You can view the performance of the databases you are managing from the Performance Hub page in the Oracle Cloud Infrastructure Console.

Performance Hub displays performance data through various tabs and UI options.

- Average Active Sessions Data
- SQL Monitoring Report
- Real-time SQL Activity
- Graphical Explain Plan
- Workload Metrics
- Blocking and Waiting Sessions
- ADDM Data
- Exadata Statistics
- Top Activity Lite Data

Average Active Sessions Data

To view Average Active Sessions Data by a selected dimension:

1. Open the Performance Hub page from the database details page, if not already open.

   > **Note:**
   >
   > For more information about how to navigate to the Performance Hub page, see:
   >
   > - For Autonomous Database
   > - For Base Database Service and Exadata Databases
   > - For External Database Service

2. You can adjust the time slider to select the time period for which performance data is displayed on the current tab.

   The **ASH Analytics** tab displays the top activity for a selected dimension in the selected time period.

   The **Quick Select** field helps you to quickly select from a set of predetermined time ranges (for example, Last Hour, Last 8 Hours, and so on) or set a different custom time range.

3. Select a dimension in the ASH Dimension menu of the **Average Active Sessions** chart to display ASH analytics by that dimension.

   Optionally, you can:

   - Click the **Maximum Threads** check box to view the number of Max CPU Threads. The red line on the chart shows this limit.
   - Click the **Total Activity** check box to view a black border that denotes total activity of all the components of the selected dimension on the chart. This option is selected by default when you use the filtering capabilities to only view the data for a particular component within a dimension.

     For information about filtering capabilities, see Filter Average Active Sessions Data.

4. Use the Sample Resolution menu to select the sampling of ASH data displayed in the Average Active Sessions chart. The data resolution selections are **Low**, **Medium**, **High**, and **Maximum**.

   For more information about sample resolutions, see ASH Analytics.

5. For the dimension selected in the ASH Dimension menu of the **Average Active Sessions** chart, you can further drill down into session details by selecting dimensions in the two tables at the bottom of the **ASH Analytics** tab.

   By default, the following dimensions are selected for the two tables:

   - **SQL ID** - displays the SQL statements with the top average active sessions activity broken down by the main ASH dimension for the selected time period. You can right-click the bar charts to sort the SQL statements in ascending or descending order or click the SQL ID to go the SQL Details page.
   - **User Session** - displays the user sessions with the top average active sessions activity broken down by the main ASH dimension for the selected time period. You can right-click the bar charts to sort the user sessions in ascending or descending order or click the user session to go to the User Session page.

Filter Average Active Sessions Data

To filter Average Active Sessions Data:

1. Open the Performance Hub page from the database details page, if not already open.

   > **Note:**
   >
   > For more information about how to navigate to the Performance Hub page, see:
   >
   > - For Autonomous Database
   > - For Base Database Service and Exadata Databases
   > - For External Database Service

2. In the **ASH Analytics** tab, select a dimension in the ASH Dimension menu of the Average Active Sessions chart.

   > **Note:**
   >
   > By default, **Consumer Group** is selected for Autonomous Databases. For all other databases, **Wait Class** is selected by default.

   Each color in the chart denotes a component of the selected dimension. For example, the Consumer Group dimension has **High**, **Medium**, and **Low**, which are predefined service names assigned to your database to provide different levels of concurrency and performance.

3. Click a component in the legend.

   The selected component is displayed in the **Applied Filters** field and the chart is updated to only display data pertaining to that component.

   > **Note:**
   >
   > When ASH data is down sampled (maybe due to the selected data resolution), a new data request call is automatically triggered using the selected filters to ensure that precise data is displayed. Otherwise, filtering is performed on the UI layer only.

The total activity, which includes all the components of the dimension, is defined by a black outline and is displayed by default when you filter data.

SQL Monitoring Report

To view the SQL Monitoring report:

1. Open the Performance Hub page from the database details page, if not already open.

> **Note:**
>
> For more information about how to navigate to the Performance Hub page, see:
>
> - For Autonomous Database
> - For Base Database Service and Exadata Databases
> - For External Database Service

2. Click **SQL Monitoring** to display the SQL monitoring tab.

   Optionally, you can get detailed information about a specific SQL statement execution by clicking an ID number in the **SQL ID** column. When you click an ID number, it displays the Real-time SQL Monitoring page.

3. Click **Save Report** on the top-right corner to download the report for your selected SQL statement.

Real-time SQL Activity

To view Real-time SQL Activity:

1. Open the Performance Hub page from the database details page, if not already open.

> **Note:**
>
> For more information about how to navigate to the Performance Hub page, see:
>
> - For Autonomous Database
> - For Base Database Service and Exadata Databases
> - For External Database Service

2. Use **Quick Select**, **Time Range**, **Time Zone**, and **time slider** to set the time period of the SQL activity that you want to monitor.

You can view and monitor real-time SQL activity for databases in Oracle Cloud Infrastructure using the ASH Analytics tab or the SQL Monitoring tab.

View Real-time SQL Data from ASH Analytics

1. On the Performance Hub page, click **ASH Analytics** to display the ASH Analytics tab, if not already open.
2. Scroll down to the table containing the list of SQL queries.
3. Click an ID number in the **SQL ID** column to display detailed information about a specific SQL statement. It opens the Performance Hub SQL Details page.

   The Performance Hub SQL Details page contains the following tabs:

   - **Summary** - shows the overall information about the SQL statement and the SQL plans.
   - **ASH Analytics** - shows the active sessions and two tables. The default information shown for the SQL query is Wait Class and User Session. You can click the menu

containing the Wait Class option and select a specific parameter and subparameter to display the associated SQL data. Click a session in the **User Session** column to display the SQL activity during the selected user session.

- **Execution Statistics** - shows the SQL statement execution in Tabular Execution Plan or Graphical Explain Plan.

  For more information, see Graphical Explain Plan.

- **SQL Monitoring** - displays SQL data for the selected SQL statement. Click an **SQL ID** to display detailed data about the SQL statement. Depending on the database selected, the Details section includes Plan Statistics, Parallel, SQL Text, and Activity tabs.

  In the **Details** section of the page:

  – Click **Plan Statistics** to view the Tabular Execution Plan and Graphical Explain Plan.

    For more information, see Graphical Explain Plan.

  – Click **Parallel** to view the Parallel Server and the Instances and Parallel Groups it contains.

  – Click **SQL Text** to view the text of the active SQL query.

  – Click **Activity** to view the active sessions of the database that is selected. Use the menu on the Details page to view either the Active Sessions Resource Type or Plan Line of the selected SQL operation.

4. Click the **Back** arrow at the top-left corner of the page to go back to the ASH Analytics tab.

View Real-time SQL Data from SQL Monitoring

1. On the Performance Hub page, click **SQL Monitoring** to display the SQL monitoring tab.
2. In the **SQL ID** column, click an ID to display detailed information about the specific SQL statement execution.

   This action displays the Performance Hub Real-time SQL Monitoring page.
3. Scroll down to display the SQL activities.

   Depending on the database selected, the Details section includes Plan Statistics, Parallel, SQL Text, and Activity tabs.

   In the **Details** section of the page:

   - Click **Plan Statistics** to view the Tabular Execution Plan and Graphical Explain Plan.
   - Click **Parallel** to view the Parallel Server and the Instances and Parallel Groups it contains.
   - Click **SQL Text** to view the text of the active SQL query.
   - Click **Activity** to view the active sessions of the database that is selected.

     Use the menu on the details page to view either the Active Sessions Resource Type or Plan Line of the selected SQL operation.
4. Click the **Back** arrow at the top-left corner of the page to go back to the SQL Monitoring tab.

Graphical Explain Plan

To view the Graphical Explain Plan:

1. Open the Performance Hub page from the database details page, if not already open.

   > **Note:**
   >
   > For more information about how to navigate to the Performance Hub page, see:
   >
   > - For Autonomous Database
   > - For Base Database Service and Exadata Databases
   > - For External Database Service

2. Click **SQL Monitoring** to display the SQL monitoring tab.
3. In the SQL Monitoring tab, click an ID number in the **SQL ID** column to display detailed information on a specific SQL statement execution. It opens the Real-time SQL Monitoring page.

   The Real-time SQL Monitoring page displays the **Plan Statistics** tab by default. The plan statistics for the SQL execution is displayed in the default **Tabular Execution Plan** view.
4. Click **View Option** and change it to **Graphical Explain Plan**.

The SQL explain plan is presented as a collapsible tree of nodes where each node represents an operation.

Using Graphical Explain Plan

By default, the Graphical Explain Plan displays the operation nodes horizontally, with the root node of the tree on the right-side of the screen. Sections of the tree within a node can be collapsed or expanded by clicking the minus or plus sign for the node.

1. You can zoom in or zoom out on the Graphical Explain Plan using the mouse or the keyboard +/- keys. You can also click and drag the plan within the viewport.

   An overview section is located in the bottom-right corner of the content area. It provides a visual representation of the positioning of the viewport with respect to the overall content of the plan.
2. Click a **plus sign** to expand a node and display information for the operation subtree. Click a **minus sign** to collapse the operation subtree beneath a node.
3. Hover over a node to view the operation name and estimated row count. Click a **node** to display additional information about the operation in a message box. Click **Close** to close the message box.
4. Click **Rotate** (to the right of the Graphical Explain menu) to rotate the entire explain plan 90 degrees counterclockwise.

   Click **Rotate** subsequently to move the explain plan another 90 degrees counterclockwise. In any position of the tree, click the plus or minus sign to expand or contract the subtree of an operation node.
5. Click the **Back** arrow at the top-left corner of the page to go back to the SQL Monitoring tab.

Workload Metrics

To view Workload metrics:

1. Open the Performance Hub page from the database details page, if not already open.

   > **Note:**
   >
   > For more information about how to navigate to the Performance Hub page, see:
   >
   > - For Autonomous Database
   > - For Base Database Service and Exadata Databases
   > - For External Database Service

2. The **Quick Select** field helps you to quickly select from a set of predetermined time ranges (for example, Last Hour, Last 8 Hours, and so on) or set a different custom time range.

   You can adjust the time slider to select the time period for which performance data is displayed on the current tab.

3. Click **Workload** to view the Workload tab. It displays four regions and their associated charts. All charts show data for the entire specified time range if within 24 hours.

   - The **CPU Statistics** region contains two charts, CPU Time and CPU Utilization (%).
     - Select **CPU Time** to display how much CPU time is being used by the foreground sessions per second. It identifies where the CPU time is mostly spent in the workload and pinpoints any unusual CPU spikes. When CPU time is selected optionally, click the **Maximum Threads** check box to show the maximum CPU time available. This shows the CPU time component of Average Active Sessions.
     - Select **CPU Utilization (%)** to display the CPU Utilization (%) chart. This chart indicates the percentage of CPU time aggregated by consumer group as calculated by the resource manager.
   - The **Wait Time Statistics** region contains a chart that displays the time used in different wait classes. To see the total average active sessions, select the **DB Time** check box. The activities are broken down by 13 wait classes.
   - The **Workload Profile** region contains a group of charts that indicate patterns of user calls, executions, transactions, and parses, as well as the number of running statements and queued statements. This region includes a menu that you can use to select the data to display.

     Click the menu and select the metrics that you want to view in the Workload Profile.
     - Select **User Calls** to display the combined number of logons, parses, and calls executed per second.
     - Select **Executions** to display the combined number of user and recursive calls that executed SQL statements per second.
     - Select **Transactions** to display the combined number of user commits and user rollbacks per second.
     - Select **Parses** to display the combined number of hard and soft parses per second.

  - Select **Running Statements** to display the number of running SQL statements, aggregated by consumer group.
  - Select **Queued Statements** to display the number of queued parallel SQL statements, aggregated by consumer group.
- The **Sessions** region contains charts that show the number of current logons and sessions.

  Click the menu and select the metric that you want to view in the Sessions region.
  - Select **Current Logons** to display the number of current successful logons.
  - Select **Sessions** to display the number of sessions.

For more information about the Workload tab, its regions and the associated charts, see:

- Workload

Blocking and Waiting Sessions

To view blocking and waiting sessions:

1. Open the Performance Hub page from the database details page, if not already open.

   > **Note:**
   >
   > For more information about how to navigate to the Performance Hub page, see:
   > - For Autonomous Database
   > - For Base Database Service and Exadata Databases
   > - For External Database Service

2. The **Time Range** field displays a time period, which is the total amount of time available for analysis. You can adjust the time slider to select the time period in the Activity Summary.

   For more information about the time selector fields, see Time Range.

3. Click **Blocking Sessions** to display details about current blocking and waiting sessions.

   > **Note:**
   >
   > The Blocking Sessions option does not support analysis of historical sessions.

4. Click a link in each column to view details of the listed blocking and waiting sessions, as shown in the following table.

Tab Column	Description
User Name	The name of the user.
Status	Indicates whether the session is active, inactive, or expired.
Lock	The lock type for the session. Click **lock type** to display a table with more information about the session lock. It lists the Lock Type, Lock Mode, Lock Request, Object Type, Subobject Type, Time, ID1, ID2, Lock Object Address, and Lock Address of the selected session.

Tab Column	Description
User Session	Lists the Instance, SID, and Serial number.
SQL ID	The ID of the SQL associated with the session.
Wait Event	The wait event for the session. Click **wait event** to show additional wait event details.
Object Name	The name of the locked database object.
Blocking Time	The time that a blocking session has been blocking a session.
Wait Time	The time that a session is waiting.

Set the Minimum Wait Time

The minimum wait time works as a filter for the Blocking Sessions information. It sets the minimum time that a session must wait before it is displayed in the tab.

For example, if the minimum wait time is set to three seconds, and a session has waited only two seconds, then it is not displayed in the table. If you change the minimum wait time to one second, then the session that waited only two seconds is added to the display.

> **Note:**
>
> The minimum wait time default setting is three seconds.

Terminate a Session

1. Click the check box at the left of the session **User Name** to select a session. The **Kill Session** button is enabled.
2. Click the **Kill Session** button. A confirmation dialog box is displayed for terminating the session.
3. Click the **Kill Session** button in the dialog box to end the session.

Display Lock Details

1. In the session **Lock** column, click the name of the lock type (Lock or Exclusive Lock) for the session. The **Wait Event Details** message box is displayed.
2. You can note the information and take action, as needed.

Display Wait Event Information

1. In the session **Wait Event** column, click the name of the wait event for the selected session. The **Session Lock Information** table is displayed.
2. You can note the information and take action, as needed.

Display Session Details

1. In the session **User Session** column, click **Session Identifier** for the session. The Performance Hub Session Details page is displayed.

Optionally move the time slider to display a specific time range of the session.

2. Use the Session Details page to explore additional details about the session.

Display SQL Details

1. In the session **SQL ID** column, click the SQL ID associated with the session. The Performance Hub SQL Details page is displayed.

   Optionally move the time slider to display a specific time range of the session.

2. Select one or more of the following tabs. You can note the information and take action, as needed.
   - **Summary** - displays the SQL Overview and Source details
   - **ASH Analytics** - displays the SQL average active sessions
   - **Execution Statistics** - displays the SQL plans and plan details
   - **SQL Monitoring** - displays information about monitored SQL executions
   - **SQL Text** - displays the SQL

ADDM Data

To view the Automatic Database Diagnostic Monitor (ADDM) information:

1. Open the Performance Hub page from the database details page, if not already open.

   > **Note:**
   >
   > For more information about how to navigate to the Performance Hub page, see:
   > - For Autonomous Database
   > - For Base Database Service and Exadata Databases
   > - For External Database Service

2. Click **ADDM** to open the ADDM tab.
3. Select a time range from the **Quick Select** field. The page displays data for the selected time period.
4. In the **Activity Summary** area, click one of the gray AWR Snapshot icons to display findings for the associated ADDM task.

   A white check mark in the gray icon indicates that there are problem findings available. When selected, the gray icon changes to blue.

   For a wider time period, for example **Last Week**, there may be multiple ADDM tasks. The **Activity Summary** area displays icons indicating groups of tasks. Click an icon to open the list where you can select a particular ADDM task.

> **Note:**
>
> Alternatively, you can select a **Task Name** in the ADDM tab or by moving the time slider close to a snapshot icon.

> **Note:**
>
> When you manually change the ADDM task selection, either by clicking the gray icon for an associated AWR Snapshot, or by selecting an option from the ADDM task menu, the time slider position and size are adjusted to cover the analysis period for the ADDM task.

5. Hover over the icon to display a message about the AWR Snapshot and ADDM task, including the number of findings for the ADDM task.

   The findings are displayed in two tables:

   - **Findings** - If there are findings, then this table shows the Name of the finding, Impact, Number of Recommendations, and Average Active Sessions for that finding. If there are no findings available, then the table displays a message that says there are no ADDM analysis available for the selected time period.
   - **Warnings and Information** - This table is displayed next to the Findings table.

     It lists messages related to the findings.

     – Warning messages identify issues such as missing data in the AWR that may affect the completeness or accuracy of the ADDM analysis.

     – Information messages provide information that is relevant to understanding the performance of the database but does not represent a performance problem. This may include identification of nonproblem areas of the database and automatic database maintenance activity.

   > **Note:**
   >
   > Both the Findings table and the Warnings and Information table are collapsible to save space when many findings are found. Click the minus icon (-) to collapse a table. Similarly, click the plus icon (+) to expand the table again.

6. If a finding has ADDM recommendations available, then the name of the finding is displayed as a link. Click the name of the finding to display more information about the finding, including a table of recommendations for corrective actions.

   Each recommendation includes the problem area, the suggested action to take to solve it, and the estimated benefit that will result when the action is taken.

7. Click the expand icon at the end of a row in the recommendations table to view a rationale for the recommendation.

Run an ADDM Task

> **Note:**
>
> This feature is supported for databases running on Base Database Service, External Databases, and Exadata Database Service on Dedicated Infrastructure, but not for Autonomous Database.

To set up and run an Automatic Database Diagnostic Monitor (ADDM) task:

1. Open the Performance Hub page from the database details page, if not already open.

   > **Note:**
   >
   > For more information about how to navigate to the Performance Hub page, see:
   >
   > - For Autonomous Database
   > - For Base Database Service and Exadata Databases
   > - For External Database Service

2. Click the **ADDM** tab.
3. Select a time range from the **Quick Select** field. The page displays data for the selected time period.
4. In the ADDM tab, click **Run ADDM Task**.
5. In the Run ADDM Task dialog box, select from the following options:
   - **Capture and analyze current performance** - to create a current snapshot. This option is selected by default.
   - **Analyze past performance** - to create a historical snapshot.

To create a current snapshot

1. Select **Capture and analyze current performance**.
2. Click **Run ADDM**.

   The status of the task is shown in the top-right corner of the window.

See the section on how to view a completed ADDM task.

To create a historical snapshot

1. Click **Analyze past performance**.
2. Select a **Start Snapshot** date and time and an **End Snapshot** date and time from the drop-down.
3. Click **Run ADDM**.

   The status of the task is shown in the upper right corner of the window.

See the section on how to view a completed ADDM task.

> **Note:**
>
> Running multiple tasks at the same time is possible, but Oracle recommends that you run only one task at a time. This helps speed the processing of each task and presents the results sooner.

View a Completed ADDM Task

> **Note:**
>
> The time for an ADDM task to complete depends on the current system workload, the time length of the snapshot and the amount of data it contains. Performance Hub displays a message to check later if the job is taking a while to run.

When an ADDM task completes, the snapshot it created is displayed in the **Activity Summary** area. The time slider changes size to match the start and end times of the analyzed snapshot range and moves over the AWR snapshot icon in the graphical display.

1. In the Activity Summary area, click the gray AWR snapshot icon to display the AWR snapshot. Hover over the icon to view the statistics of the snapshot, including the snap ID, snapshot times, task name, task owner, and the number of findings of the associated ADDM task.

   A white check mark in the gray icon indicates that findings are available. When selected, the gray icon changes to blue.

   > **Note:**
   >
   > If you have run multiple tasks concurrently, then an AWR icon for each snapshot appears under the activity summary graph and the time slider appears over the first task that you ran. To display a different snapshot, click the AWR snapshot icon for that task. The time slider moves over the AWR snapshot icon and expands or contracts to match the snapshot time.

2. The task name, analysis period, and type are generated and displayed in the ADDM task list under the Activity Summary area.
3. The findings for the ADDM task are displayed in the Findings tables. To view a short description of the reason for the finding, scroll down to the Findings table. Then click the **information icon** at the end of the name of the finding you are interested in.

   The message box explains the reason for the finding.
4. To view the task finding details, scroll down to the Findings table and click the name of the finding. It opens the **ADDM Performance Finding Details** page.

   The page shows the name of the finding, the impact of the finding, the analysis period, the type of recommendation, the recommended action for the finding, and the impact of each recommendation.

Exadata Statistics

To view statistics of databases running on an Exadata system:

1. Open the Performance Hub page from the database details page, if not already opened.

   > **Note:**
   >
   > For more information about how to navigate to the Performance Hub page, see For Base Database Service and Exadata Databases.

2. Click the **Exadata** tab. The Exadata summary page is displayed.

   It includes the following sections:

   - **Summary** - displays open alerts and type, I/O requests per disk, cell server I/O throughput per disk, and disk utilization for the database you have selected.
   - **Latency** - displays the latency of OS and cell I/O, small reads and writes, and large reads and writes.
   - **Flash I/O - System Total** - displays I/O requests, database throughput, and the maximum capacity of the flash drives used by the database.
   - **Hard Disk I/O - System Total** - displays I/O requests, database throughput, and the maximum capacity of the hard disks used by the database.

3. Click **Exadata Details** to display the Exadata Details page.

   The Exadata Details page contains the following tabs:

   - Performance (displayed by default)
   - Health
   - ADDM
   - Top Consumers
   - Cells
   - Disks
   - Smart I/O
   - I/O Reasons
   - Configuration

4. Click a tab to view the statistics information in it.

For more information about each tab, see:

- Exadata under Performance Hub Features

Top Activity Lite Data

To view the activities of your database in the Top Activity Lite mode of Performance Hub:

1. Open the Performance Hub page from the database details page, if not already open.

> **Note:**
>
> For more information about how to navigate to the Performance Hub page, see:
>
> - For Autonomous Database
> - For Base Database Service and Exadata Databases
> - For External Database Service

2. Click the **Top Activity Lite** button on the top-right corner to access the Top Activity Lite mode of Performance Hub.

> **Note:**
>
> The **Time Range** is fixed to the last hour.

3. Select **Auto Refresh** and set the time interval to 15 Seconds. This option updates data in the current tab at the set interval.

   Similarly, you can select the refresh rate as 30 Seconds or 1 Minute, or turn it off completely.

4. In the **ASH Analytics** tab, move the time slider in the Average Active Sessions chart to a specific position of your choice.

   The tables at the bottom of the page refreshes and displays the activities of your database for the selected time.

5. In the activity tables, click an ID in the **SQL ID** column to view details for that particular SQL.

   Click **Back** on the top-left corner to go back to the Top Activity Lite page.

6. Click a session in the **User Session** column to view details for that session.

   Click **Back** on the top-left corner to go back to the Top Activity Lite page.

7. Go to the **SQL Monitoring** tab to view information about SQL executions.

For more information about these tabs, see:

- Average Active Sessions Data
- SQL Monitoring Report

Manage

Performance Hub provides options to run administrative tasks for monitoring and managing your databases.

- AWR Settings

AWR Settings

To view and modify AWR Settings for snapshot collection from Performance Hub:

1. Open the Performance Hub page from the database details page, if not already open.

> **Note:**
>
> For more information about how to navigate to the Performance Hub page, see:
>
> - For Base Database Service and Exadata Databases
> - For External Database Service

2. Click the **AWR Settings** button in the top-right corner.

   It opens the AWR Settings dialog box and displays the current settings for snapshot collection.

> **Note:**
>
> Currently, this feature is supported for Base Database Service and External Database.

3. Click the switch next to **AWR Snapshot Collection** to enable or disable snapshot collection for the database. When enabled, you can specify an interval for snapshot collection.
4. Set the **Snapshot Interval** frequency in minutes.

> **Note:**
>
> The default value for snapshot interval is *60* minutes.

5. You can use the **Retain Forever** check box to manage the retention period for snapshots as follows:
   - Select this check box to retain snapshots indefinitely.
   - Deselect this check box to specify a fixed retention period for snapshots.

> **Note:**
>
> The default value for snapshot retention period is *8* days.

   Enter the number of days to maintain the snapshots in AWR before it gets deleted permanently.

6. Click **Save** to update the AWR settings, or click **Cancel** to discard any changes. It closes the AWR Settings dialog box.

The Performance Hub page displays a confirmation message at the top-right corner indicating that AWR snapshot settings are saved successfully. You can click **AWR Settings** again to open the AWR Settings dialog box for viewing or modifying the current settings for snapshot collection.

To reduce AWR space consumption, increase the snapshot interval and reduce the retention period.

> **Note:**
>
> Oracle recommends that you set the AWR retention period large enough to capture at least one complete workload cycle.

Download

Performance Hub provides options to download reports for your managed databases.

For more information, see:

- Automatic Workload Repository (AWR) Report
- Active Sessions History (ASH) Report
- Performance Hub Report

Automatic Workload Repository (AWR) Report

To download an AWR report, identify the database version and follow the respective steps.

Open the Performance Hub page from the database details page, if not already open.

> **Note:**
>
> For more information about how to navigate to the Performance Hub page, see:
>
> - For Autonomous Database
> - For Base Database Service and Exadata Databases
> - For External Database Service

For Oracle Database 18c and older

1. Click the **Reports** button in the upper-right corner and select **Automatic Workload Repository**. It opens the Generate Automatic Workload Repository dialog box.

   You can generate a report either from two snapshots close to the current date and time or from a custom time range of your choice.

   To generate a report from a custom time range, select **Custom** and then select the start and end time for the range.
2. Click **Download** to download the AWR report.

Oracle Database generates a report in the format `AWRReport_date_range.html` for the selected time range.

For Oracle Database 19c and later

1. In the **Quick Select** menu, select a time period for the AWR report.

2. Click the **Reports** button in the upper-right corner and select **Automatic Workload Repository**. It opens the Generate Automatic Workload Repository dialog box.
3. Select the begin time of the snapshot from **Start Snapshot** and the end time from **End Snapshot**.

   You can also get information about a specific instance and monitor its performance. This option is not enabled by default. To include details of a particular instance in the AWR report, click the check box **Instance Level Report** and select the instance from the drop-down list.

   > **Note:**
   >
   > Currently, this feature is supported for Base Database Service and External Database.

4. Click **Download** to generate the report and download it.

Oracle Database generates the report in the format `AWRReport_date_range.html` for the selected time range. When the report is complete, the report name is displayed at the top of the screen, and the report is downloaded automatically.

Active Sessions History (ASH) Report

To download an ASH report:

1. Open the Performance Hub page from the database details page, if not already open.

   > **Note:**
   >
   > For more information about how to navigate to the Performance Hub page, see:
   >
   > - For Autonomous Database
   > - For Base Database Service and Exadata Databases
   > - For External Database Service

2. From the menu in the upper-right corner, click **Reports** and select **Active Session History**. The Generate ASH Report dialog box is displayed.
3. Select the date of the **Start Time**. In the calendar and time dialog boxes that are displayed, select the **start date** and **time** for the report.

   Repeat this step for the **End Time** date and time.

4. Click **Download** to generate the report for the selected time range and download it.

While the report is being generated, a message `Report generation is in progress` appears at the upper-right corner of the screen. When the report is complete and downloaded, a confirmation message with the name of the report file is displayed.

Performance Hub Report

To download a Performance Hub report:

1. Open the Performance Hub page from the database details page, if not already open.

> **Note:**
>
> For more information about how to navigate to the Performance Hub page, see:
>
> - For Autonomous Database
> - For Base Database Service and Exadata Databases
> - For External Database Service

2. From the menu in the upper right corner, click **Reports** and select **Performance Hub**.
3. In the Generate Performance Hub Report dialog box dialog box, select the type of report:
   - **Basic** - saves tab contents but no further details
   - **Typical** - saves tab contents with details for top SQL statements
   - **All** - saves tab contents with details for all SQL statements
4. Click **Download** to generate the report for the selected time range and download it.

While the report is being generated, a message `Report generation is in progress` appears at the upper-right corner of the screen. When the report is complete and downloaded, a confirmation message with the name of the report file is displayed.