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IBM DB2 Database Plug-in User's Guide

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Oracle Enterprise Manager IBM DB2 Database Plug-in User's Guide, 24ai Release 1 (24.1)

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Preface

This document provides a description about the Oracle System Monitoring plug-in for IBM DB2 Database, details on the versions the plug-in supports, prerequisites for installing the plug-in, and step-by-step instructions on how to download, install, verify, and validate the plug-in.

Audience

This document is intended for systems and database administrators tasked with monitoring IBM DB2 Database through Oracle Enterprise Manager.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc`.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info` or visit `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs` if you are hearing impaired.

Related Documents

For information about the troubleshooting scenarios that you might encounter while working with the System Monitoring plug-ins, see Troubleshooting the IBM DB2 Database Plug-in in *Third-Party Database Plug-in Troubleshooting Guide*.

For a complete list of all the metrics contained in this plug-in, see IBM DB2 Database Metrics in *Non Oracle Database Management Reference Manual*.

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

IBM DB2 Database Plug-in Overview and Prerequisites

This chapter describes the system monitoring plug-in for IBM DB2 Database and provides a list of available features. Review the summary of prerequisites required before configuring IBM DB2 Database for monitoring by Oracle Enterprise Manager.
The following topics are provided:

- IBM DB2 Database Plug-in Overview and Feature Summary
- Platforms Supported
- Supported Versions
- IBM DB2 Database Plug-in Prerequisites
- Setting Up the JDBC Driver
- Deploying the Plug-in
- Upgrading the Plug-in
- Undeploying the Plug-in

IBM DB2 Database Plug-in Overview and Feature Summary

The System Monitoring Plug-in for IBM DB2 Database extends Enterprise Manager to add support for managing IBM DB2 Universal Database (UDB) for Linux, UNIX, and Windows (LUW) database instances. By deploying the plug-in in your Enterprise Manager environment, you gain the following management features:

- Monitor DB2 Database instances.
- Gather configuration data and track configuration changes for DB2 database instances.
- Raise alerts and violations based on thresholds set on monitored targets and configuration data.
- Provide rich, out-of-box reports based on the gathered data.
- Support monitoring by a remote Agent. Local Agent is an agent running on the same host as the DB2 database. Remote Agent is an agent running on a host that is different from the host where DB2 database is running.
- Collect and display top SQL statements and their related statistics, including CPU Time and Execution Count, of your IBM DB2 Database.
- Collect and display information regarding the top Lock Wait Events in IBM DB2, including top Wait Count by Table and top Wait Times.
- Utilization of Enterprise Manager jobs to start and stop the IBM DB2 database. These jobs are not only accessible from the Enterprise Manager Jobs Library but also from the IBM DB2 plug-in's UI home page.
- Expose vital IBM DB2 Database metrics in the form of easy-to-use charts and tables.

Platforms Supported

The plug-in supports monitoring of IBM DB2 Universal Database (LUW) on all the platforms where IBM DB2 Universal Database can be installed.

Supported Versions

The IBM DB2 Database plug-in supports the following versions of products:

- Enterprise Manager 24ai:

  - The plug-in is certified for the latest release of Oracle Enterprise Manager and higher (Oracle Management Server (OMS) and Oracle Management Agent).

- Version 9.1, 9.5, 9.7, 10.1, and 10.5 of single-partition IBM DB2 Universal Database (UDB) for Linux, UNIX, and Windows (LUW).

- IBM DB2 configured for High Availability and Disaster Recovery (HADR).

IBM DB2 Database Plug-in Prerequisites

The following prerequisites must be met before you can use the plug-in:

1. Install the following:

   - Enterprise Manager (Oracle Management Service and Oracle Management Agent).

   - Install the Inventory and Usage Patch (20692416), available from My Oracle Support (`https://support.oracle.com`).

   - IBM DB2 Universal JDBC Type 4 driver for IBM DB2 Database (see Setting Up the JDBC Driver)

   - IBM DB2 Universal Database

2. Create a suitable operating system user to access the table functions used in IBM DB2. For information about creating a user, see Using a Suitable Operating System User and Assigning Authorities and Privileges.

3. To avoid metric collection errors for *Database Monitoring* metrics, create the table `STMG_DBSIZE_INFO`. For more information, see Configurations Required for Avoiding Metric Collection Errors for Database Monitoring Metrics.

4. To configure your Management Agent to generate alerts using the IBM DB2 Diagnostic Log file (`db2diag.log`), then do the following:

   - Define your match patterns in the `Diag_log_file_match_pattern_file.txt` file that is present in `$ORACLE_HOME/plugins/oracle.em.sidb/scripts/emx/ibm_db2_database/`.

   - Define your ignore patterns in the `Diag_log_file_no_match_pattern_file.txt` file that is present in `$ORACLE_HOME/plugins/oracle.em.sidb/scripts/emx/ibm_db2_database/`.

   - Set the `DIAG_PATH` configuration parameter of the database manager (instance) to correspond to the monitored IBM DB2 database.

   - For performance reasons, you should set a maximum diagnostic log file size of 100 MB when this metric is enabled. You can set the maximum file size using the command:

```
db2 update dbm cfg using diagsize 100
```

Based on the patterns defined in the two files, the System Monitoring Plug-in for IBM DB2 parses the Diagnostic Log file and generates alerts for the satisfied conditions. First, the plug-in validates the two files to see if any patterns are defined. If no patterns are defined, then the plug-in does not parse the Diagnostic Log file. If matching patterns are not defined, but ignore patterns are defined, then the plug-in parses every entry in the Diagnostic Log file and checks if ignore patterns are satisfied. If matching patterns are also defined, then the plug-in first parses only those entries that satisfy the matching patterns, and then for those satisfied entries, the plug-in checks if ignore patterns are satisfied.

Also, if multiple log entries having the same function name are encountered in a collection, then only one alert is generated to represent the function name. This alert is based on the last log entry with a common function name, present in the Diagnostic Log file.

> **Note:**
>
> This feature is supported only for local monitoring, that is, when the IBM DB2 database on a host is monitored by an Oracle Management Agent that is running on the same host.

5. In the IBM DB2 Database SQL Statement Performance and IBM DB2 Database Applications Lock Performance reports and the Agent Monitoring metric, in order to see the SQL statement text along with the application name, enable the instance configuration parameter `DFT_MON_STMT`. Otherwise, you may not see any data in the column.

6. As part of JDBC URL, either IP Address or host name can be provided. Ensure that the host name can be resolved consistently on the network. Standard TCP tools such as "nslookup" and "traceroute" can be used to verify the host name. Validate using the following commands on Management Agent where plug-in is deployed:

   - `nslookup <host name>`

     This returns the IP address and fully qualified host name.

   - `nslookup <IP>`

     This returns the IP address and fully qualified host name.

Setting Up the JDBC Driver

The JDBC driver is available from IBM, and consists of the following files that the Agent must be able to access:

- `db2jcc.jar`
- `db2jcc_license_cu.jar`

To set up the `AGENT_BASE_DIR` directory for the IBM DB2 Universal Type 4 JDBC driver:

1. If it does not already exist, create the directory `$AGENT_BASE_DIR/plugins/dependencies/oracle.em.sidb/jdbcdriver/`.

2. Copy the three JDBC driver files into the directory `$AGENT_BASE_DIR/plugins/dependencies/oracle.em.sidb/jdbcdriver/`.

> ✎ **Note:**
>
> If you do not have access to or cannot find your `db2jcc.jar` driver, you can download a copy of it from IBM's support site:
>
> `http://www-01.ibm.com/support/docview.wss?uid=swg21363866`

Deploying the Plug-in

You can deploy the plug-in to an Oracle Management Service instance using the Enterprise Manager console, or using the Enterprise Manager Command-Line Interface (EMCLI). While the console enables you to deploy one plug-in at a time, the command line interface mode enables you to deploy multiple plug-ins at a time, thus saving plug-in deployment time and downtime, if applicable.

See the Managing Plug-ins chapter in the *Oracle Enterprise Manager Administrator's Guide* for instructions on deploying the plug-in.

Upgrading the Plug-in

The Self Update feature allows you to expand Enterprise Manager's capabilities by updating Enterprise Manager components whenever new or updated features become available. Updated plug-ins are made available via the Enterprise Manager Store, an external site that is periodically checked by Enterprise Manager to obtain information about updates ready for download. See the Updating Enterprise Manager chapter in the *Oracle Enterprise Manager Administrator's Guide* for steps to update the plug-in.

Undeploying the Plug-in

See the Managing Plug-ins chapter in the *Oracle Enterprise Manager Administrator's Guide* for steps to undeploy the plug-in.

2

Configuring the IBM DB2 Database Plug-in

This chapter provides the instructions for the configuration tasks you must complete before adding an IBM DB2 Database target to Oracle Enterprise Manager.
The following configuration tasks are provided:

- Configure the Management Agent to Deploy the Plug-In
- Using a Suitable Operating System User and Assigning Authorities and Privileges
- Configuring IBM DB2 for Health Indicator Metrics and Database Monitoring Metrics

Configure the Management Agent to Deploy the Plug-In

To configure the Agent, you must first ensure that the user starting the Agent service belongs to the Local Administrators Group. Also, you must set the preferred credentials on all Agents where you want to deploy the plug-in. To do so, follow the instructions given in the following sections:

- Assigning Advanced Privileges to User
- Setting and Validating Preferred Credentials

Assigning Advanced Privileges to User

To assign advanced privileges, do the following:

1. Locally on the Microsoft Windows node hosting the Agent, check that the user starting the Agent service belongs to the Local Administrators Group. If not, add it.

2. Open the Local Security Settings Windows Tool and give the following Advanced Privileges to the user starting the Agent service:

   - Act as part of the operating system
   - Adjust memory quotas for a process
   - Logon as batch job
   - Replace a process level token

3. Restart the Agent service if it is running.

4. Set the Preferred Credentials for the Host and the Agent in Enterprise Manager. For more information, see Setting and Validating Preferred Credentials.

   - The OS user set in the Preferred Credentials must belong to the Local Administrators Group.
   - This OS user must have the following Advanced Privileges:
     - Act as part of the operating system
     - Adjust memory quotas for a process
     - Log on as batch job
     - Replace a process level token

Setting and Validating Preferred Credentials

To set the preferred credentials on all Agents where you want to deploy the plug-in, do the following:

1. In Enterprise Manager, from the **Setup** menu, select **Security**, then **Preferred Credentials**.

   The Preferred Credentials page appears, showing a table of targets.

2. Select Host target type from the table and then click **Managed Preferred Credentials**.

   The Host Preferred Credentials page appears.

3. In the Host Preferred Credentials page, in the Target Credentials section, select the host that is running the Management Agent where the plug-in has to be deployed, and click **Set**.

4. In the Select Named Credential dialog box, Select Credential as **New** and specify the user name and password and click **Test and Save**. If your test runs successfully, your credentials are set correctly.

5. Run the OS Command job for the Management Agent where the plug-in has to be deployed.

   - Log in to Enterprise Manager.

   - From the Enterprise menu, select **Job** and then **Activity**.

   - In the Job Activity page, from the Create Job list, select **OS Command**, and click **Go**.

   - Fill up the details required in the following pages, and click **Submit** to run the job. If the job runs successfully, your credentials are set correctly.

> **Note:**
>
> In order to run jobs from the UI, the target's Agent Host Preferred Credentials must be for a user that can run the db2 command-line utility and has permissions to start, stop, quiesce, and unquiesce the IBM DB2 database.

Using a Suitable Operating System User and Assigning Authorities and Privileges

The IBM DB2 Database plug-in accesses the table functions used in IBM DB2. For the plug-in to have access to the table functions, you have to use a suitable operating system user and assign this new user to a user group. The operating system user must have at least the minimum privileges. In addition, you have to assign the correct authority levels to this user.

> **Note:**
>
> IBM DB2 users must be operating system users. IBM DB2 cannot have its own database users because it relies on the host operating system for security.

If you do not have an operating system user already created, first, create one on the host where IBM DB2 is running. Then, follow these steps to assign this user to a new or existing UserGroup:

1. Open the IBM Data Studio.

2. From the tree view, select the database that you wish to modify, and connect using an admin account as shown in Figure 2-1:

Figure 2-1   Connect to IBM Data Studio
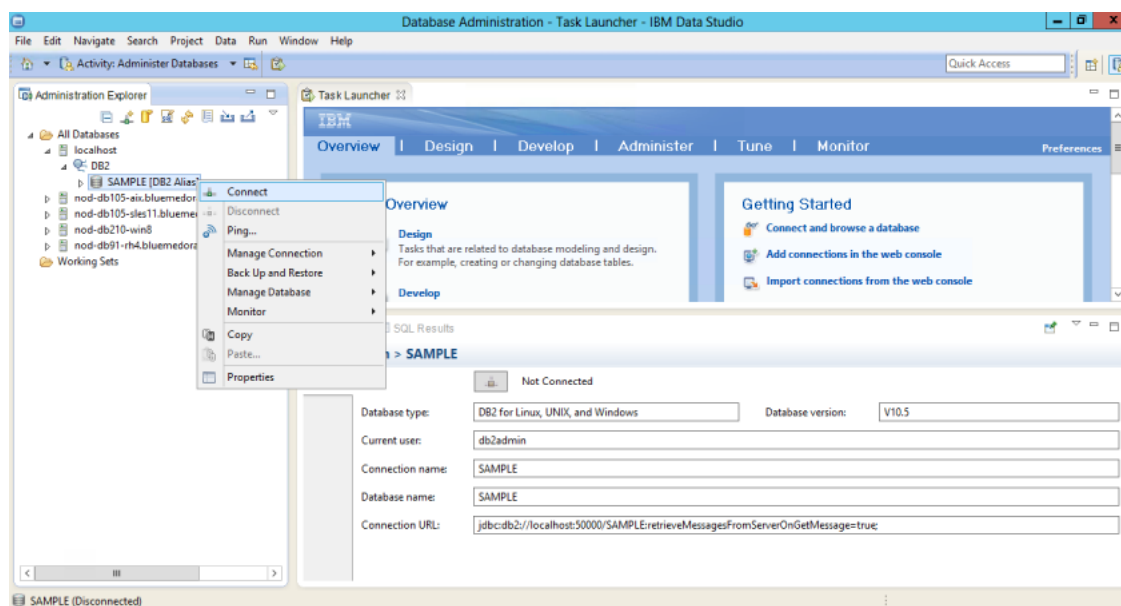
3. From the tree view, expand **Users and Groups** and select **Users**.

4. From the right pane, select **Create a New Object**.

5. In the General tab of the Properties window for the New User, enter the operating system user name.

6. From the Privileges tab, verify that the account is granted **CONNECT**.

7. To verify the applied changes, try connecting to the database with the newly created user as shown in Figure 2-2:

Figure 2-2   Connect to Database
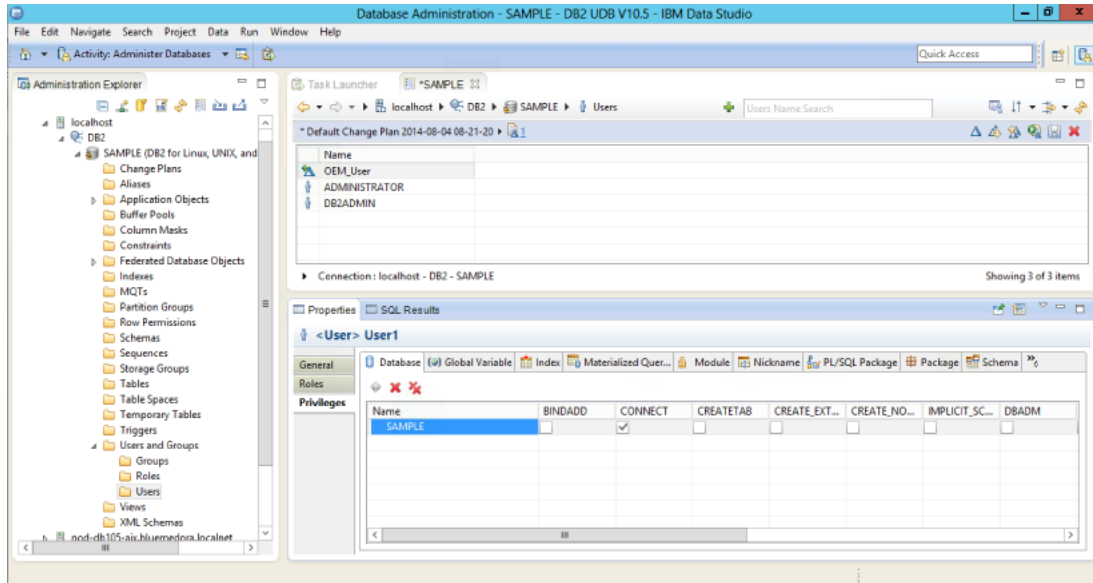
> **Note:**
>
> These steps can also be performed from the command line using IBM DB2 SQL.

Also, assign authorities and privileges for the operating system UserGroup. The authorities supported with IBM DB2 are SYSADM, SYSCTRL, SYSMAINT, DBADM, and LOAD. The SYSADM, SYSCTRL, and SYSMAINT authorities cannot be granted using the GRANT SQL statement. These special authorities can only be set from the database manager configuration file. DBADM privilege can only be granted by user at SYSADM authorization level.

SYSMON authority level is required to monitor IBM DB2. This level is required to access the table functions, such as `SYSPROC.SNAPSHOT_DATABASE`, which are used in IBM DB2.

Follow these steps to set SYSMON authority level to your UserGroup:

1. At the `db2=>` prompt, run the following commands:

    ```
    db2 => update dbm cfg using sysmon_group USERGROUP
    db2 => db2stop
    db2 => db2start
    ```

2. To check whether the changes are effective, run the following command:

    ```
    db2 => get dbm cfg
    ```

    The following will be the output of the previous command:

    ```
    Database Manager Configuration
    Node type = Enterprise Server Edition with local and remote clients
    ......
        SYSADM group name      (SYSADM_GROUP)    =
        SYSCTRL group name     (SYSCTRL_GROUP)   =
        SYSMAINT group name    (SYSMAINT_GROUP)  =
        SYSMON group name      (SYSMON_GROUP)    = USERGROUP
    ......
    ```

> **✎ Note:**
>
> To understand how authorities and privileges are implemented in IBM DB2, access the IBM website.

Configuring IBM DB2 for Health Indicator Metrics and Database Monitoring Metrics

The following sections explain the post-installation configuration steps you need to perform on IBM DB2:

- Configurations Required for Health Indicator Metrics
- Configurations Required for Avoiding Metric Collection Errors for Database Monitoring Metrics
- Configurations Required for Statement Monitoring
- Configurations Required for Lock and Lock Waits Monitoring
- Configurations Required for Database Collection Health Indicator Metric

Configurations Required for Health Indicator Metrics

The health indicators for instance and database objects are enabled and disabled using the database manager configuration parameter `HEALTH_MON`. Then, the table functions `HEALTH_TBS_HI`, `HEALTH_DB_HI`, and `HEALTH_DBM_HI` get populated. These functions are used by the plug-in to show the alerts triggered based on the thresholds of health indicators.

> **✎ Note:**
>
> Enabling these settings may result in some overheads, such as CPU and memory. Therefore, follow these steps only if you want to view the Health Indicator metrics.

To enable or disable `HEALTH_MON` by CLP (Command Line Processor), run the following command:

```
db2==> update dbm cfg using HEALTH_MON [on;off]
```

To check if your changes are effective, run the following command:

```
db2==> get dbm cfg
```

The following is the output:

```
.....
.....
.....
Monitor health of instance and databases (HEALTH_MON) = ON
.....
..........
```

For more information, access the IBM website.

Configurations Required for Avoiding Metric Collection Errors for Database Monitoring Metrics

To avoid metric collection errors for the "Database Monitoring" metrics, make a call to the `GET_DBSIZE_INFO` package so that the `STMG_DBSIZE_INFO` table gets created and populated with the required data.

The `GET_DBSIZE_INFO` procedure calculates the database size and maximum capacity. The calculated values are returned as procedure output parameters and cached in the `SYSTOOLS.STMG_DBSIZE_INFO` table. The procedure caches these values because the calculations are costly.

The `SYSTOOLS.STMG_DBSIZE_INFO` table is created automatically the first time the procedure runs. If there are values cached in the `SYSTOOLS.STMG_DBSIZE_INFO` table and they are current enough, as determined by the snapshot-timestamp and refresh-window values, then these cached values are returned.

If the cached values are not current enough, new cached values are calculated, inserted into the `SYSTOOLS.STMG_DBSIZE_INFO` table and returned, and the snapshot-timestamp value is updated. The last parameter in the `GET_DBSIZE_INFO` call is refresh window.

Default value refresh window (time difference between successive calls) is 30 minutes. If your database is growing at a faster rate, then you can set a lower value.

To make a call to `GET_DBSIZE_INFO` by CLP, run the following command:

```
db2==>CALL GET_DBSIZE_INFO(?, ?, ?, -1)
```

In this case, the refresh window is 30 minutes.

Configurations Required for Statement Monitoring

To avoid metric collection errors for the statement monitoring metrics, run the following command at the DB2 prompt to update the database manager configuration so the switch for monitoring statements is on:

```
db2 => update dbm cfg using DFT_MON_STMT on
```

Configurations Required for Lock and Lock Waits Monitoring

To avoid metric collection errors for the lock and lock waits information in the analysis page, run the following command at the DB2 prompt to set up permissions so the monitoring plug-in user can query the lock waits administrative view in DB2.

For IBM DB2 Versions 9.1 and 9.5, update the database manager configuration so the switch for locks and lock waits is on:

```
db2 => update dvm cfg using DFT_MON_LOCK on
```

For IBM DB2 Versions 9.7 and above, ensure that the DB2 user has select permission on `MON_LOCKWAITS` administrative view, and has `DATAACCESS` authority. Run the following commands where '[username]' is the monitoring user name used when configuring the target:

```
db2 => GRANT DATAACCESS ON DATABASE TO USER [username]
db2 => GRANT SELECT on TABLE SYSIBMADM.MON_LOCKWAITS TO USER [username]
```

Configurations Required for Database Collection Health Indicator Metric

In order to see data for the Database Collection Health Indicator metric, you must enable table monitoring (DFT_MON_TABLE) on the database you are monitoring.

To enable or disable table monitoring by CLP, run the following command:

```
db2 => update dbm cfg using DFT_MON_TABLE [on; off]
```

3

Discovering the IBM DB2 Database Target

This chapter describes how to add an IBM DB2 Database target to Oracle Enterprise Manager. The following sections are provided:

- Adding Instances for Monitoring
- Verifying and Validating the Plug-in

Adding Instances for Monitoring

After successfully deploying the plug-in, follow these steps to add the plug-in target to Enterprise Manager for central monitoring and management:

1. From the **Setup** menu, select **Add Target** and then **Add Targets Manually**.

2. In the Add Targets Manually page, select **Add Targets Declaratively by Specifying Target Monitoring Properties**, select **Target Type** as **IBM DB2 Database**, select a **Monitoring Agent** and click **Add Manually**.

3. In the Add IBM DB2 Database page (Figure 3-1), provide the following information for the properties:

   - **Target Name**: Unique target name across all the Enterprise Manager targets, such as `DB2_Hostname`. This is the display name in Enterprise Manager.

   - **Monitoring Database Host Credentials**

     – **Database Host User Name**: Operating System account for the DB2 Database Host.

     – **Database Host Password**: Corresponding password for the Database Host User Name.

     – **Confirm Database Host Password**: Confirm the Database Host Password.

   - **Monitoring Database Credentials**

     – **Database User Name**: Valid User Name for the Database.

     – **Database Password**: Password for the Database User Name.

     – **Confirm Database Password**: Confirm the Database Password.

   - **Properties**

     – **JDBC Driver**: (Optional) Name of the DB2 Universal JDBC Driver. For example:

       `com.ibm.db2.jcc.DB2Driver`

     – **JDBC URL**: URL name for the IBM DB2 JDBC Driver connectivity. For example:

       `jdbc:db2://<server>:<port>/<database>`

       The JDBC URL argument represents a data source. Parameter definitions are shown in Table 3-1:

Table 3-1   JDBC URL Parameter Definitions

JDBC URL Parameter	Definition
jdbc:db2	Indicates that the connection is to a DB2 UDB server.
server	Fully qualified host name or IP address of the database server.
port	TCP/IP server port number assigned to the database server, which is an integer between 0 and 65535. The default port for IBM DB2 Database is 50000.
database	Database alias, which refers to the DB2 database catalog entry on the DB2 client. The database argument is the database name defined during DB2 UDB (LUW) installation.

Figure 3-1   Add IBM DB2 Database Page

4. Click **Test Connection** to make sure the parameters you entered are correct.

> **Note:**
>
> After you deploy and configure the plug-in to monitor one or more targets in the environment, you can customize the monitoring settings of the plug-in. This alters the collection intervals and threshold settings of the metrics to meet the particular needs of your environment. If you decide to disable one or more metric collections, this could impact the reports that the metric is a part of.

Verifying and Validating the Plug-in

After waiting a few minutes for the plug-in to start collecting data, follow these steps to verify and validate that Enterprise Manager is properly monitoring the plug-in target:

1. Click the IBM DB2 Database target link from the All Targets page.

   The IBM DB2 Database home page appears as shown in Figure 3-2:

Figure 3-2   IBM DB2 Database Target Home Page
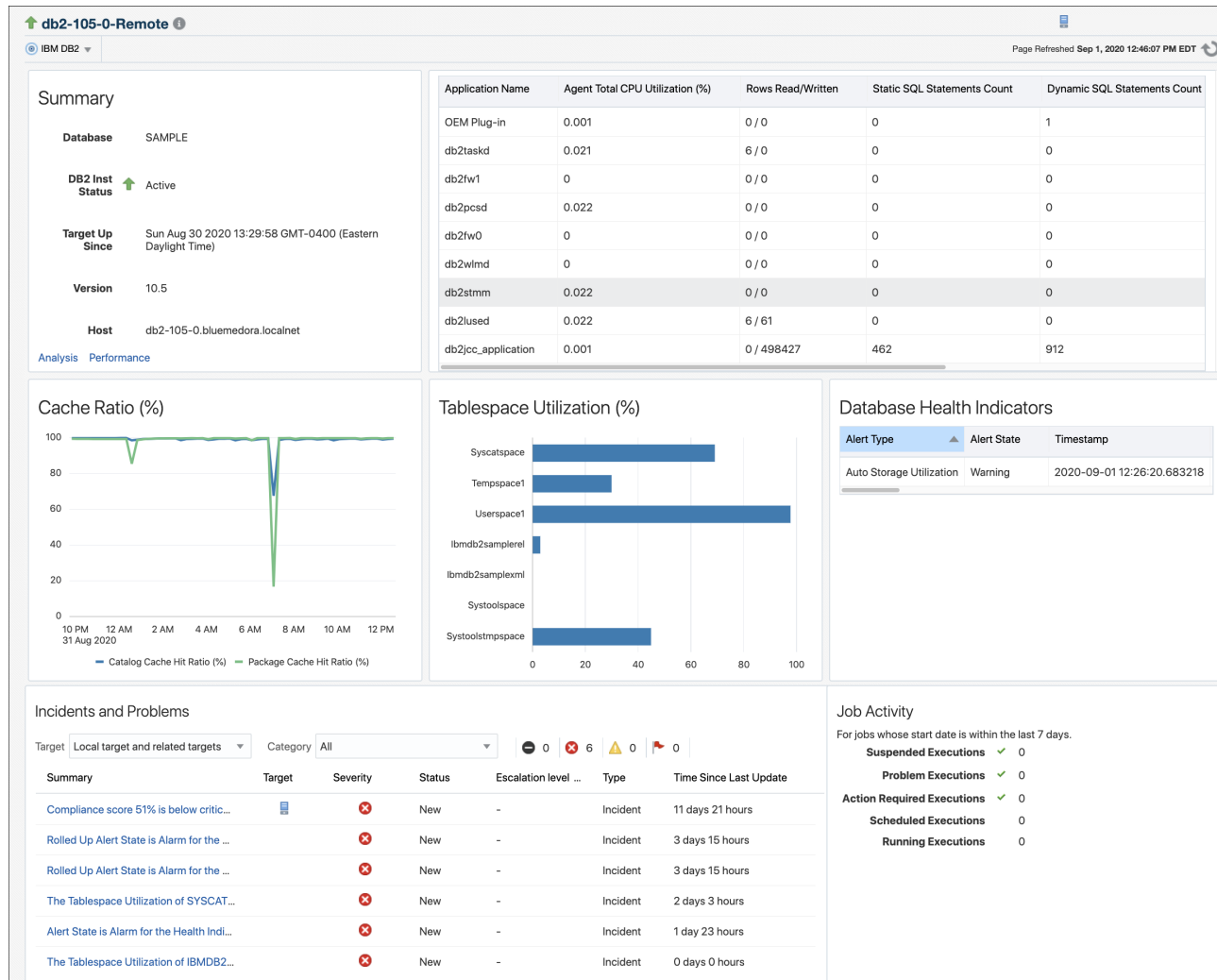
2. Verify that no metric collection errors are reported by clicking **Monitoring** and then **Metric Collection Errors** from the **Target** menu.

3. Ensure that reports can be seen and no errors are reported by clicking **Information Publisher Reports** in the **Target** menu and viewing reports for the IBM DB2 Database target type.

4. Ensure that configuration data can be seen by clicking **Configuration** and then **Last Collected** in the **Target** menu. If configuration data does not immediately appear, click **Refresh** in the Latest Configuration page.

5. Ensure that the Analysis page can be viewed by clicking **Analysis** in the Target menu. The IBM DB2 Database Analysis page appears as shown in Figure 3-3:

Figure 3-3   IBM DB2 Database Plug-in Analysis Page
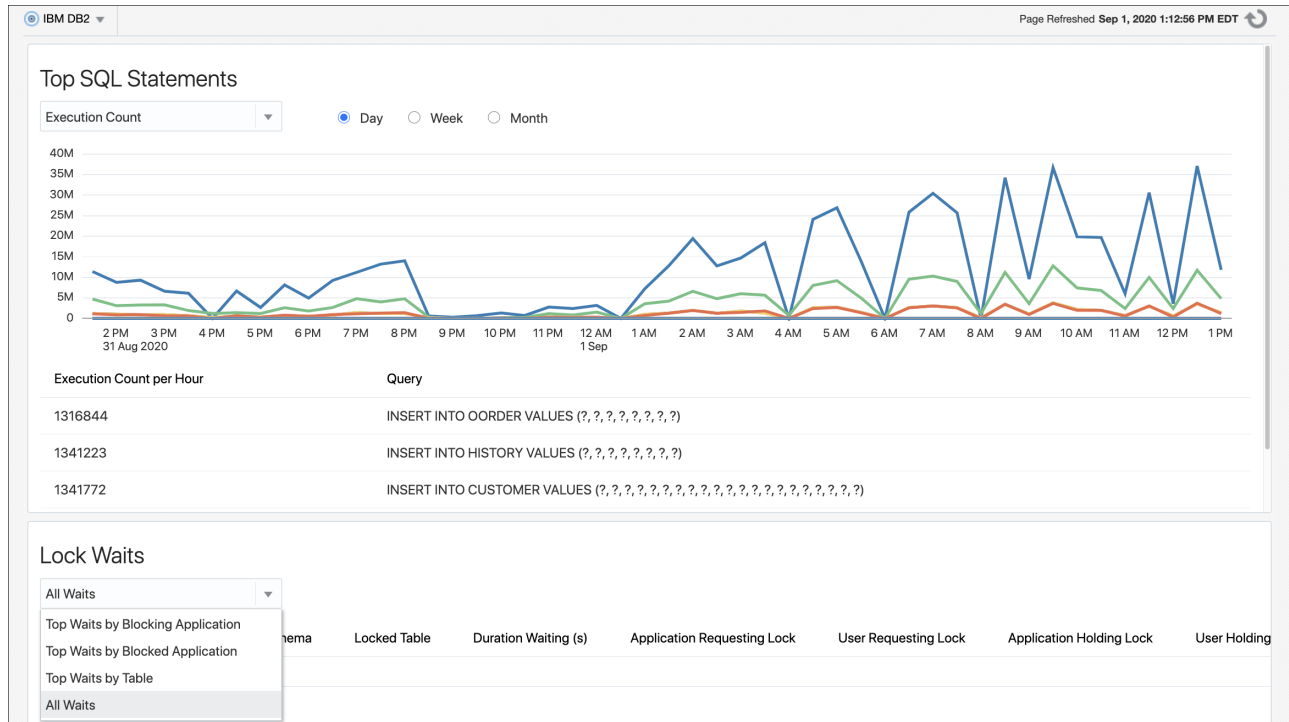
6. Ensure that the Performance page can be viewed by clicking Performance in the Target menu. The IBM DB2 Database Performance page appears as shown in Figure 3-4:

Figure 3-4   IBM DB2 Database Plug-in Performance Page

4
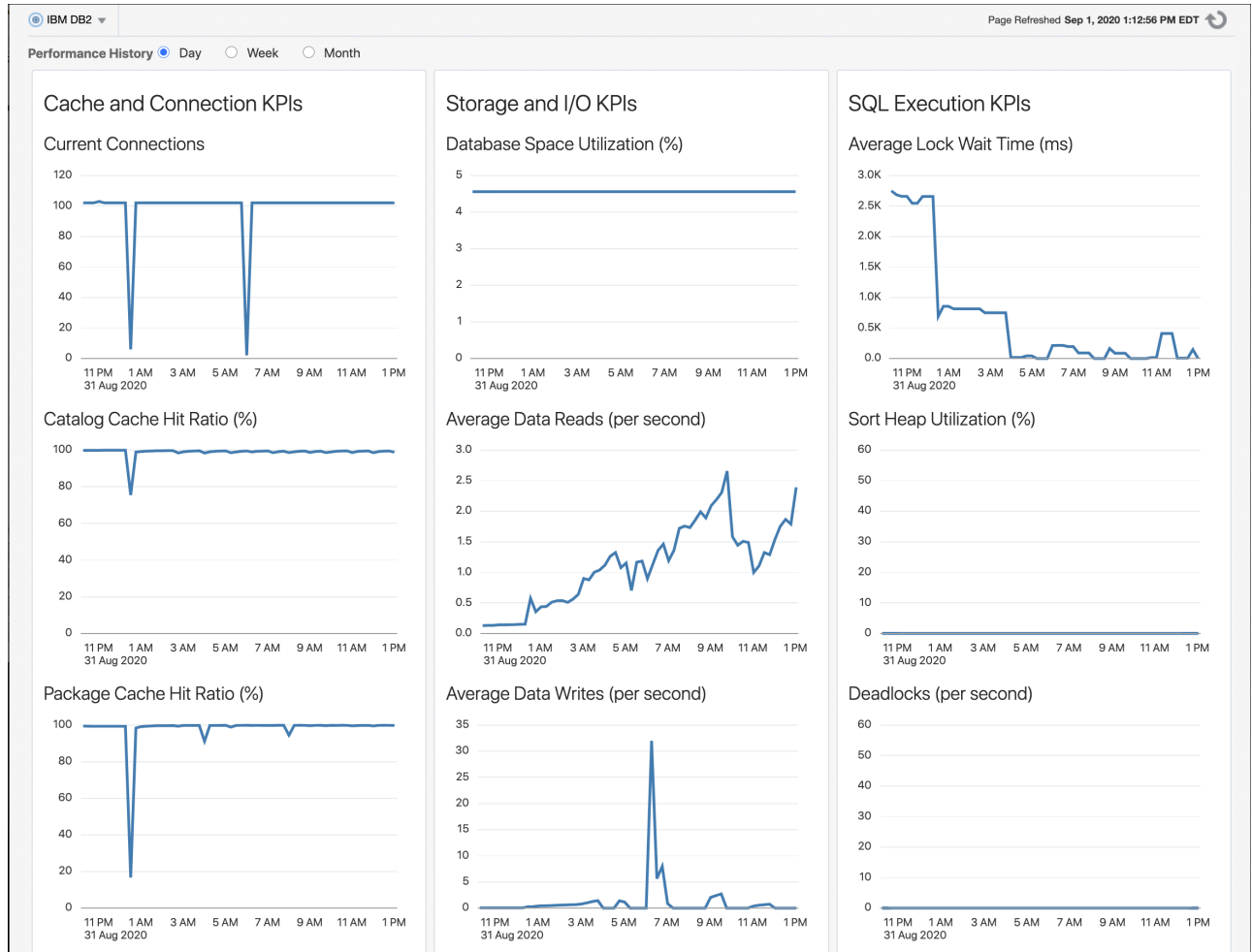
Creating and Editing Jobs

This topic describes how to create and edit jobs in Oracle Enterprise Manager for the IBM DB2 Database.

To create and edit jobs, follow these steps:

1. In Enterprise Manager, click **Enterprise**, then **Job**, then click **Activity**.

2. On the Job Activity page, select a job type from the Create Job menu and click **Go**.

    Select one of the following jobs:

    *   **Shutdown IBM DB2**: Performs a Shutdown of the IBM DB2 Database Instance. When the IBM DB2 Database Instance is started, the Shutdown job icon will be accessible in the Summary section of the Target Home page.

    *   **Startup IBM DB2**: Performs a Startup of the IBM DB2 Database Instance. When the IBM DB2 Database Instance is shut down, the Startup job icon will be accessible in the Summary section of the Target Home page.

    *   **Quiesce IBM DB2 DB**: Perform a Quiesce command on the IBM DB2 Database.

        (Select this option when you want to put the DB2 database into maintenance mode.)

    *   **Unquiesce IBM DB2 DB**: Perform an Unquiesce command on the IBM DB2 Database.

        (Select this option when you want to remove the DB2 database from maintenance mode.)

    *   **Kill DB2 Application**: Forcibly end an agent's session in DB2 to stop an application. This job is also accessible from the Analysis page as the **Kill Application** button when an Application when viewing Lock Wait By Blocking Application and an application is selected.

        (Select this option to end an application by specifying the agent ID in the Parameters tab when creating the job.)

    > **Note:**
    >
    > All jobs available for the IBM DB2 Database plug-in are only available when the plug-in is set up for local monitoring of the database.

3. In the General tab of the Create `<Job Type>` Job page, provide a name for the job and add the individual targets or one composite target such as a Group. If you are editing a job, then modify the job name and the selected targets.

    > **Note:**
    >
    > These jobs do not require and parameters to be set in the Parameters tab of the Create `<Job Type>` Job page.

4. In the Credentials tab of the Create `<Job Type>` Job page, select an appropriate option for credentials.

   You can choose to use the preferred credentials that are already set or override the preferred credentials with new credentials. In either case, you need to provide the credentials for agent host and database host.

   To set the preferred credentials, click **Preferences** at the top-right corner of the Enterprise Manager console. From the left-vertical navigation bar, click **Preferred Credentials**. Enterprise Manager displays the Preferred Credentials page. On this page, you can set the preferred credentials.

5. In the Schedule tab of the Create `<Job Type>` Job page, schedule the job.

6. In the Access tab of the Create `<Job Type>` Job page, define or modify the access you want other users to have to this job.

7. Click **Submit** to create the job.

> **Note:**
>
> To enable use of the Job Buttons found in the Summary section of the Target home page, be sure to set the Preferred Credentials for the IBM DB2 Database target type.

5

IBM DB2 Database Plug-in Metrics and Reports

This chapter describes how to generate reports to further aid administrators with critical tasks such as problem diagnosis, trend analysis and capacity planning.
The following topics are provided:

- Generating a New Report From Out-of-the-Box Reports
- Using the IBM DB2 Plug-in Monitoring Templates

Generating a New Report From Out-of-the-Box Reports

The IBM DB2 Database plug-in includes 19 out-of-box reports.

To generate a new report from one of the out-of-the-box reports provided by Oracle, follow these steps:

1. From the Enterprise menu, select **Reports**, then **BI Publisher Enterprise Reports**.

> ✎ **Note:**
>
> Oracle Enterprise Manager is no longer integrated with BI Publisher. To use the BI Publisher reporting functionality, you will need to install/access a standalone instance of Oracle Analytics Server (OAS). For more details, see Oracle Analytics Server in *Oracle Enterprise Manager Administrator's Guide*.

2. Scroll down to the IBM DB2 section, find the desired report, and click the report title hyperlink.

Table 5-1 shows the reports provided by Oracle:

Table 5-1   IBM DB2 Database Plug-in Reports

Report Name	Description
IBM DB2 Database DB Manager Configuration	Displays Database Manager Configuration Information for IBM DB2 Database.
IBM DB2 Database System Configuration	Displays System Configuration Information for IBM DB2 Database.
IBM DB2 Database Container Health	Displays Container Health Statistics for IBM DB2 Database.
IBM DB2 Database DB Health	Displays Database Health for IBM DB2 Database.
IBM DB2 Database DB Manager Health	Displays DBM Health Statistics for IBM DB2 Database.
IBM DB2 Database Tablespace Health	Displays Tablespace Health Statistics for IBM DB2 Database.
IBM DB2 Database Applications CPU Usage	Displays Applications CPU Usage for IBM DB2 Database.
IBM DB2 Database Applications Lock Performance	Displays Applications Lock Performance for IBM DB2 Database.

Table 5-1   (Cont.) IBM DB2 Database Plug-in Reports

Report Name	Description
IBM DB2 Database Applications Row Accesses and Sorts Performance	Displays Applications Row Accesses and Sorts for IBM DB2 Database.
IBM DB2 Database Bufferpool and Non-Buffered IO Statistics	Displays Bufferpool and Non-Buffered IO Statistics for IBM DB2 Database.
IBM DB2 Database Cache Statistics	Displays Cache Statistics for IBM DB2 Database.
IBM DB2 Database DB Manager Agents and Connections Statistics	Displays DBM Agents and Connections Statistics for IBM DB2 Database.
IBM DB2 Database DB Manager Sorts Statistics	Displays DBM Sorts Statistics for IBM DB2 Database.
IBM DB2 Database Locks Statistics	Displays Database Locks Statistics for IBM DB2 Database.
IBM DB2 Database SQL Statement Performance	Displays SQL Statement Performance for IBM DB2 Database.
IBM DB2 Database Sort Heap and Hash Join Statistics	Displays Sort Heap and Hash Join Statistics for IBM DB2 Database.
IBM DB2 Statement and Lock Wait Analysis	Displaying Information about the Analysis of the Most Active SQL Statements and Lock Waits of the DB2 Database.
IBM DB2 Database DB Disk Storage Statistics	Displays DB Disk Storage Statistics for IBM DB2 Database.
IBM DB2 Database Tablespace Statistics	Displays Tablespace Statistics for IBM DB2 Database.

Using the IBM DB2 Plug-in Monitoring Templates

To view the out-of-box templates, from the Enterprise menu, select Monitoring and then Monitoring Templates. Using the Target Type drop down, select IBM DB2 Database and press the arrow button.

A complete list of all out-of-box monitoring templates will be available for use as follows (see Figure 5-1):

*   **Basic IBM DB2 Monitoring Template:** Recommended basic template for monitoring IBM DB2.

*   **IBM DB2 I/O Monitoring Template:** Recommended template for monitoring IBM DB2 I/O.

*   **IBM DB2 Lock Monitoring Template:** Recommended template for monitoring locks and deadlocks in IBM DB2.

Figure 5-1   IBM DB2 Database Plug-in Monitoring Templates

To apply a monitoring template to an IBM DB2 Target, perform the following actions:

1. Click the desired monitoring template to select it.

2. Click **Actions** and select **Apply**.

3. Choose to either replace or override existing thresholds with the Apply Options radial button.

4. Click **Add** to add the IBM DB2 Targets to apply the template to. Follow the prompts through the target Search and Select Targets screen.

5. Click **Ok** and a confirmation message will appear at the top of the page notifying of a successful application.

The Actions button found on the Monitoring Templates screen will also give access to setting a selected template as "Default" for all new IBM DB2 Target deployments, or Edit an existing template's threshold values.

See the Using Monitoring Templates chapter in the *Oracle Enterprise Manager Administrator's Guide* for more information on how to use Monitoring Templates in Enterprise Manager.

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