Setup for Remote Monitoring and Administration of DB2 for z/OS

Applies to:
This article applies to all SAP products based on the SAP NetWeaver 7.0 application server ABAP and higher. This includes also all Enhancement Packages for SAP NetWeaver 7.0 and higher.

Summary
This document describes the prerequisites and steps for setting up the monitoring and administration of remote DB2 for z/OS subsystems.

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Author Biographies
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Definitions and Prerequisites

In the subsequent chapters, we will use the following terminology:

- The term subsystem refers to a DB2 database subsystem, whereas system stands for an SAP System.
- There are two different types of systems: The monitoring system and the monitored system.

The monitoring system is the one used to display the monitoring results, and to schedule and run administration jobs. It must be an SAP product based on SAP NetWeaver 7.0 application server ABAP or higher. It needs to have the support package level listed in SAP note 1229346. In addition to this, we recommend having the support package level listed in SAP note 1310148.

The monitored system can be any SAP product running on a DB2 for z/OS database subsystem. It is also referred to as remote system.

The following procedure describes the steps to be performed in the monitoring system. The SAP product installed in the monitored subsystem does not need to be touched.

General Setup

Bind Call Level Interface (CLI) with db2radm

Note: This step is only necessary if CLI is not already bound in the monitored DB2 subsystem (for example, for SAP Java installations).

If you want to access the monitored subsystem remotely through a DB2 Connect gateway (fat client) and, in parallel, through the IBM DB2 Driver for ODBC and CLI (thin client), call db2radm from a system using the fat client. If db2radm is called from a thin client, fewer packages will be bound.

Use the following db2radm command:

```
db2radm -m db2i
-C <collection>
-H <DB2 host>
-P <DB2 port>
-L <DDF location>
-S <Subsystem name>
-U <Connect User>
-Q <SAP schema>
-u <DB2 sysadm user>
-p <DB2 sysadm password>
-B force
-G only
-W secondary_only
```

You can choose the collection name as you like. However, the following naming convention is recommended:

```
SAP<DB2 Connect Release><U>
```

If the SAP installation is a Unicode installation, use “U” at the end.

Example 1: SAP non-Unicode installation with DB2 V8.1

```
SAP0801
```

Example 2: SAP Unicode installation with DB2 V9.1

```
SAP0901U
```
Define a Remote Connection in DBACOCKPIT

Start transaction DBACOCKPIT in the monitoring SAP system and select DB Connections.
Select Add to insert a new database connection.
Select **DB2 for z/OS** as the database system and enter values into the required fields.

**Note:** The connection name must not start with `CCMS_DB2`_. The DB2 location must be entered in the field labeled *Database Name*.

Save and *Test* the connection.
Define a Remote System in DBACOCKPIT

Start DBACOCKPIT and press **System Configuration** to define the remote SAP system.
Select Add to insert the new system. Enter the required fields.

In the field System you can enter the same name as the previously defined database connection. If the remote system is a BW system, you also need to define the RFC destination in addition to the database connection. This is necessary for the RUNSTATS jobs (transaction DB13).

Select Save and change to the new defined system. This can take a couple of seconds because the DBACOCKPIT requires a set of tables that is created automatically in the remote system.

The creator (schema) of all tables is the schema name which has been defined for the remote connection.
Monitoring Setup

Job Control Language (JCL) Settings

The jobs that need to be submitted in order to set up monitoring require a minimum number of settings. Select Configuration and JCL Settings in the DBACOCKPIT navigation tree. Press Profile to define the profile settings. The profile settings are stored in the remote system in table DB2JOB.

Enter values for the marked fields on the General tabstrip.

Press Save and return to the previous screen. Select the Password button to set the password for the stored procedure user you entered in the General tabstrip. The password is encrypted and stored in the monitoring system.

Leave this screen to return to the navigation tree.
**SAP Collector Settings**

The SAP Collector (SAPCL) is a stored procedure. It collects performance data from the DB2 subsystem. To make SAPCL accessible for DB2, you must store the SAPCL files in the HFS and then link them into the DB2 load libraries. In addition, the SAPCL tables need to be defined and the access privileges granted. All this can be done using buttons Step 1 to Step 6.

Restart transaction DBACOCKPIT and change to the remote system. This is necessary because the JCL settings from the previous section are not active without restarting the DBACOCKPIT.

Select **Configuration** and **SAP Collector Settings** in the navigation tree. The fields are supplied with default values. Check the values and make changes where necessary. Ensure that the SAPCL files sapdb2cl and DBRM.db2cldb are located in the specified HFS path.

Press the buttons Step 1 to Step 6 in ascending order.

For further information on SAPCL, required permissions, and configuration options, refer to the *SAP Database Administration Guide for DB2 for z/OS*, Chapter Monitoring and Performance.
Administration

Activate Alert Data Collection (DSNACCOR)

The DB2 stored procedure DSNACCOR is used for collecting data for tablespaces and index spaces that require RUNSTATS, REORG, or COPY. The DB13 jobs RUNSTATS on obj. needing new statistics, Online reorg on suggested tablespaces, Online reorg on suggested indexes, and Backup of suggested object are based upon the results of DSNACCOR.

Switch on Collect Alert Data in the system configuration on one of the monitoring systems and save the changed configuration.

In order to activate the alert collection, make sure that the Control Center stored procedures are completely installed, as described in the chapter Stored Procedure Enablement of the SAP Database Administration Guide for DB2 for z/OS.
**DB13 Planning Calendar**

DB13 provides a number of different administration jobs.

With the Support Package level listed in SAP note 1229346, the following jobs are supported:

- Backup of suggested objects
- RUNSTATS on obj. needing new statistics
- Rebuilding of one SAP index
- Update statistics for all SAP objects
- Update statistics for one SAP object

With Support Package level listed in SAP note 1310148 and 1362838, the following jobs are supported:

- Backup System at DB2 System Level
- Backup for all SAP tablespaces
- Backup of suggested objects
- Increm. backup for all SAP tablespaces
- Online reorg of one SAP index
- Online reorg of one SAP tablespace
- Online reorg on suggested indexes
- Online reorg on suggested tablespaces
- RUNSTATS on obj. needing new statistics
- Rebuilding of one SAP index
- Update statistics for all SAP objects
- Update statistics for one SAP object

**Use of Remote Connections**

**General**

This section discusses the need for multiple remote connections to a monitored system. If multiple connections are required, this implies that for each remote connection a remote system has to be defined. For details, refer to the section *General Setup*.

**Monitoring**

For remote monitoring, you must define one remote connection to the monitored system. This applies to SAP ABAP systems, to SAP Java systems, and to SAP double stack systems. It also applies to DB2 data sharing systems. If the monitored system contains a schema that belongs to an ABAP system, we recommend using this schema in the definition of the remote connection.
**Administration with DB13 Jobs**

Depending on the SAP installation, it may be necessary to define one or two remote connections to the monitored system. This is irrespective of the number of DB2 data sharing members. The table below illustrates this:

<table>
<thead>
<tr>
<th>DB13 job</th>
<th>Monitored SAP ABAP system</th>
<th>Monitored SAP Java system</th>
<th>Monitored SAP double stack system</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Remote connection to ABAP schema</td>
<td>Remote connection to Java schema</td>
<td>Remote connection to ABAP schema</td>
</tr>
<tr>
<td>Backup System at DB2 System Level</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Backup for all SAP tablespaces</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Backup of suggested objects</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Increment. backup for all SAP tablespaces</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Online reorg of one SAP index</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Online reorg of one SAP tablespace</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Online reorg on suggested indexes</td>
<td>X</td>
<td>X</td>
<td>X (^1)</td>
</tr>
<tr>
<td>Online reorg on suggested tablespaces</td>
<td>X</td>
<td>X</td>
<td>X (^1)</td>
</tr>
<tr>
<td>RUNSTATS on obj. needing new statistics</td>
<td>X</td>
<td>X</td>
<td>X (^1)</td>
</tr>
<tr>
<td>Rebuilding of one SAP index</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Update statistics for all SAP objects</td>
<td>X</td>
<td>X</td>
<td>X (^1)</td>
</tr>
<tr>
<td>Update statistics for one SAP object</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

\(^1\) see OSS note 1278135
SAP Alert Router

Starting, checking, and stopping the Alert Router requires a direct connection to the subsystem on which the Alert Router runs. Hence, if DB2 data sharing is used, the definition of a remote connection is necessary to start and stop the SAP Alert Router for each DB2 data sharing member from the monitoring system.

Note: This behavior is different from the local case. For local data sharing, the monitoring system automatically generates connections with the naming convention CCMS_DB2_{SSID} to all members of the data sharing group. Therefore, this name prefix is reserved for such connections and must not be used for manually created connections.

High Availability of Remote Connections

Today, remote connections (also known as secondary connections) are not high available. If the host or the DB2 subsystem that has been defined in the DBACOCKPIT (DB connections) is not available, the remote connection cannot connect. In this case, the action requiring the remote connection fails. The mechanism for primary connections using connect.ini does not apply to secondary connections.
## Appendix

### List of Tables Used for Monitoring and Administration

Here is a list of the tables that are created at the remote system:

<table>
<thead>
<tr>
<th>Table Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2CCMO_IN1</td>
<td>For calling the stored procedure DSNACCMO and for storing the results of DSNACCMO</td>
</tr>
<tr>
<td>DB2CCMO_IN2</td>
<td></td>
</tr>
<tr>
<td>DB2CCMO_PARMS</td>
<td></td>
</tr>
<tr>
<td>DB2CCMO_OUTTS</td>
<td></td>
</tr>
<tr>
<td>DB2CCMO_ERROR</td>
<td></td>
</tr>
<tr>
<td>DB2CCMO_OBJERR</td>
<td></td>
</tr>
<tr>
<td>DB2UTILS_PARMS</td>
<td>For calling the stored procedure DSNUTILS and for storing the results of DSNUTILS</td>
</tr>
<tr>
<td>DB2UTILS_OUT</td>
<td></td>
</tr>
<tr>
<td>DB2JOB</td>
<td>For storing DB2J profile parameters</td>
</tr>
<tr>
<td>DB2MISC</td>
<td></td>
</tr>
<tr>
<td>DB2CCDAILY</td>
<td>For storing the results of the stored procedure DSNACCOR</td>
</tr>
<tr>
<td>DB2CCHOUR</td>
<td></td>
</tr>
<tr>
<td>DBSTATC</td>
<td>Filled with data from DB2CCDAILY and used from DB13 jobs RUNSTATS on obj. needing new statistics, Online reorg on suggested tablespaces, Online reorg on suggested indexes</td>
</tr>
<tr>
<td>DB2REOTS</td>
<td></td>
</tr>
<tr>
<td>DB2REOIX</td>
<td></td>
</tr>
<tr>
<td>DB2NORUN</td>
<td>Used by DB13 jobs</td>
</tr>
<tr>
<td>DB2ALERTSLIMITS</td>
<td></td>
</tr>
<tr>
<td>DB2TREORG</td>
<td></td>
</tr>
</tbody>
</table>