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DB2 Server Management



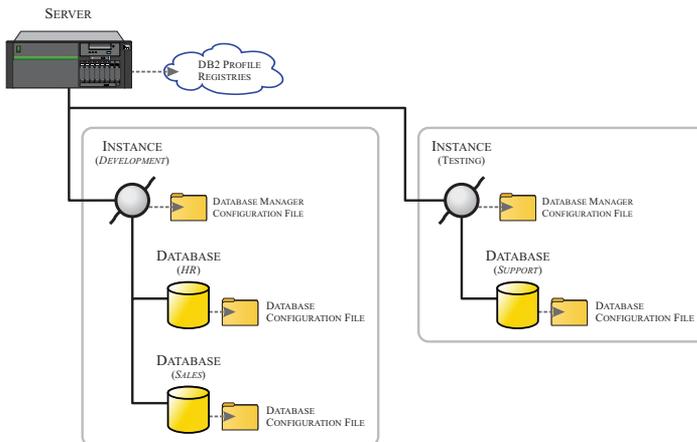
Seventeen percent (17%) of the DB2 10.5 Database Administration for LUW Upgrade Exam (Exam 311) is designed to test your knowledge of basic DB2 10.5 server management.

Servers, Instances, and Databases



DB2 for Linux, UNIX, and Windows (otherwise known as DB2 for LUW) sees the world as a hierarchy of objects. *Servers* occupy the highest level of this hierarchy, *instances* occupy the second level, and *databases* make up the third.

DB2 Servers, Instances, and Databases – Illustrated



Configuring The DB2 Server Environment



The behavior of a DB2 server is controlled, in part, by a collection of environment variables, whose values are stored in the following *profile registries*:

- ❖ The DB2 Global Level Profile Registry
- ❖ The DB2 Instance Level Profile Registry
- ❖ The DB2 Instance Node Level Profile Registry

The contents of each of these profile registries can be examined using the **db2set** command; this command is also used to assign values to profile registry variables.

Configuring DB2 Instances



The behavior of a DB2 instance is controlled, in part, by a special configuration file. This file consists of several different parameters; the values assigned to each parameter can be viewed or altered using the following commands:

- ❖ **GET DATABASE MANAGER CONFIGURATION**
- ❖ **UPDATE DATABASE MANAGER CONFIGURATION**
- ❖ **RESET DATABASE MANAGER CONFIGURATION**

Configuring DB2 Databases



As with DB2 instances, the behavior of a DB2 database is controlled, in part, by a special configuration file. This file consists of more than 100 different parameters and the value assigned to each parameter can be viewed or modified using the following commands:

- ❖ **GET DATABASE CONFIGURATION**
- ❖ **UPDATE DATABASE CONFIGURATION**
- ❖ **RESET DATABASE CONFIGURATION**

Configuring a DB2 10.5 Database Environment For BLU Acceleration



The easiest way to configure a DB2 10.5 database environment for BLU Acceleration is by assigning the value **ANALYTICS** to the **DB2_WORKLOAD** registry variable *before* any databases are created. For example:

```
db2set DB2_WORKLOAD=ANALYTICS
```

Assigns appropriate values to a set of configuration parameters to enable DB2 10.5 BLU Acceleration

Behavior When DB2_WORKLOAD Is Set To ANALYTICS



When the **DB2_WORKLOAD** registry variable is assigned the value **ANALYTICS**:

- ❖ The **dft_table_org** (default table organization for user tables) database configuration parameter is set to **COLUMN**.
- ❖ The **dft_degree** (default degree of intrapartition parallelism) database configuration parameter is set to **ANY**.
- ❖ The **pagesize** (default database page size) database configuration parameter is set to **32 KB**.
- ❖ The **dft_extent_sz** (default extent size) database configuration parameter is set to **4**.

Behavior When DB2_WORKLOAD Is Set To ANALYTICS (Continued)



- ❖ The **intra_parallel** (use intrapartition query parallelism) database manager configuration parameter is set to **YES**. (*Intrapartition parallelism is turned on at the instance level; however, this behavior does not take effect until the instance is stopped and restarted.*)
- ❖ The values of the **sortheap** (sort heap) and **sheapthres_shr** (sort heap threshold for shared sorts) database configuration parameters are calculated and set specifically for an analytics workload.
- ❖ The **util_heap_sz** (utility heap size) database configuration parameter is set to a value that takes into account the additional memory that is required to load data into column-organized tables.

Behavior When DB2_WORKLOAD Is Set To ANALYTICS (Continued)



- ❖ The ***auto_reorg*** (automatic reorganization) database configuration parameter is set to **ON**.
- ❖ A default space reclamation policy is installed and automatic table maintenance is configured so that empty extents are automatically returned to table space storage for reuse whenever data is deleted from column-organized tables.

Prerequisites For Creating BLU Acceleration Databases



Once the value **ANALYTICS** has been assigned to the **DB2_WORKLOAD** registry variable:

- ❖ Only single-partition databases can be created.
- ❖ All databases must use the UNICODE code set and IDENTITY collation.
- ❖ The ***auto_runstats*** (automatic table RUNSTATS operations) database configuration parameter must be set to **OFF**.*
- ❖ The ***util_heap_sz*** (utility heap size) database configuration parameter should be set to at least **1,000,000** pages or assigned the value **AUTOMATIC**.

**This was required initially, but is no longer.*

DB2 Workload Manager



DB2 Workload Manager (WLM) is a comprehensive workload management feature that can help identify, manage, and control database workloads (applications, users, and so on) so that database server throughput and resource utilization are maximized.

WLM is designed to limit the number of disruptive activities that can run concurrently and to stop the execution of activities that exceed predefined boundaries.

DB2 Workload Manager Objects



The DB2 Workload Manager architecture consists of the following objects:

❖ **Service classes**

A service class acts as a unique execution environment for any grouping of work that you can assign resources to, control, and monitor.

❖ **Workloads**

A workload is an object that is used to identify submitted database work or a user connection so it can be managed.

❖ **Thresholds**

A threshold is an object that sets a predefined limit over specific criteria, such as the consumption of a specific resource or duration of time.