



# Db2 Data Management Console

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# Db2 Data Management Console

Introduction

# What is Data Management Console?



- Provides easy view of performance metrics of Db2 databases, focusing on problematic statements
- Keeps historical data for analysis
- Sends alerts when a threshold is reached
- Runs SQL
- Data Explorer
- Blackout events
- Execute and manage jobs
- Query tuning
- Replication
- Same look and feel for all Db2 databases, no matter where the database is located (cloud, Db2 Warehouse, PureScale, DPF, HADR, CP4D, etc)
- Free of charge, no license is required

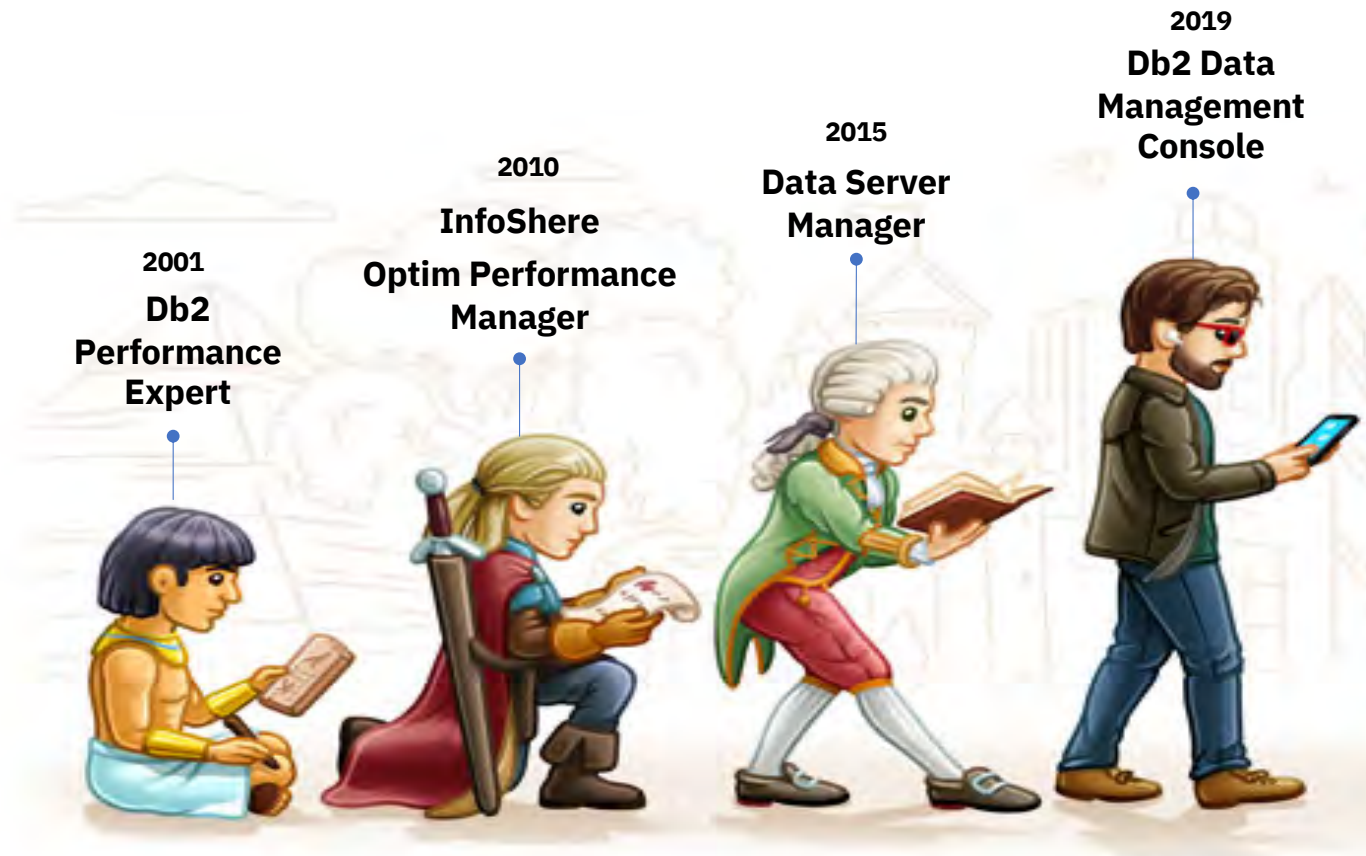
# Key features

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- Real-time and historical monitoring
- Alerts, Custom Alerts and notifications
- Monitor Reports
- Fully integrated SQL editor
- Query Tuning
- Replication
- Database object exploration and management
- Jobs and Scheduler
- Blackout
- Auditing
- Team collaboration
- RESTful services APIs support

# Evolution





# Db2 Data Management Console

Installation and Configuration

# Supported Db2 offerings and platforms

	On-premises			IBM Cloud		Cloud Pak for Data				Red Hat OpenShift	
	<i>Db2 10.1.0.2 and up</i>	<i>IIAS</i>	<i>Db2 Big SQL</i>	<i>Db2</i>	<i>Db2 Warehouse</i>	<i>Db2</i>	<i>Db2W</i>	<i>Data Virtualization</i>	<i>Db2 Big SQL</i>	<i>Db2</i>	<i>Db2W</i>
<b>DMC standalone on premises</b>	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes
<b>DMC service on Cloud Pak for Data</b>	No			No		Yes				No	



# System Requirements



<https://www.ibm.com/support/pages/system-requirements-ibm-db2-data-management-console>

- Select DMC version and Operating System
- Operating Systems tab
  - List of operating systems and levels supported for DMC server installation
- Prerequisites tab
  - Databases
    - List of Databases and levels supported for DMC repository database
  - JDBC Drivers
  - Web Browsers
- Supported Software
  - Managed Resources
    - List of databases and levels supported for monitored databases
- Hardware

## Supported platforms

- [AIX](#)
- Linux
- Windows
- Mac OS
- zLinux

# Capacity Planning

Table 1. Capacity recommendation

	Monitor DB#	CPU (Cores)	Memory (GB)	Disk for console (GB)	JVM (Max Heap size)	Network (GB)
Console	0-20	4	8	15	-Xmx 2048m	1 GB
	20-100	8	36	15	-Xmx 24576m	1 GB
	100-300	24	64	15	-Xmx 49152m	1 GB
Repository database	Monitor DB#	CPU (Cores)	Memory (GB)	Disk for repository (GB) - 4 weeks	JVM (Max Heap size)	Network (GB)
	0-20	4	4	95		
	20-100	8	16	950		
	100-300	16	32	2800		
Repository database (CFG)	logfilsiz = 8192, logprimary = 25, logsecond = 200					

## UNIX and Linux

At least 64K or 65536 units for both the nproc value and the nfile value in the limits file

Additional information  
<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=setup-capacity-planning>

## Capacity Planning – Repository database DSM vs. DMC



DSM	DMC	Example
Some metrics are available in realtime mode only	Some metrics are available in realtime and historical mode	Inflight Statements
Realtime data is not saved	Realtime data is saved	Each page refresh in Realtime mode
Delta data is saved	Raw and delta data is saved	Package cache metrics
Less metrics	More metrics	Index performance
Activity event monitor, only 5000 records are saved	All collected data from Activity event monitor is saved	

# Repository Database Requirements

- Rules and restrictions
  - User must have the DBADM WITH DATAACCESS and SYSCTRL privileges
  - Dedicated database for DMC
  - Cannot be Db2 database partitioning feature (DPF) or pureScale®
  - Must have a temporary table space with a page size of at least 32 KB
    - TS4CONSOLE\_TEMP will be created during repository database setup, if there is no existing temporary table space with at least 32 KB
  - Must be Unicode type to avoid SQL errors
  - Db2 version 11.1 or later
  - Oracle compatibility must be disabled
  - AUTOMATIC STORAGE option is set to YES
  - Minimum log settings: LOGPRIMARY 25 LOGSECOND 200 LOGFILSIZ 8192
  - Database configuration: EXTENDED\_ROW\_SZ enable
  - One repository database per DMC server
- Repository database needs to be at the same level of DMC code
  - Older DMC versions do not support repository databases already migrated to a newer version of DMC
    - If you have already upgraded your repository to a newer DMC release, there are several changes to tables that cannot be reverted. The rollback process will only work using a clean backup of your previous repository database, for example
      - Database backup taken when DMC version was V3.1.9
      - Migrate DMC to V3.1.10
      - To go back and use DMC V3.1.9 again, requires to restore the database backup taken at DMC V3.1.9 version
      - If an old database is restored, all information collected after that database backup will be lost

## Additional Information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=tasks-creating-repository-database>

# Repository Database

- Db2 Restricted License for the Repository database only, available at IBM Fix Central
- DMC does not create the repository database
  - Repository database needs to exist before the configuration

Select fixes  
Information Management, IBM Db2 Data Management Console (All releases, All platforms)

Need to download your product?  
→ Find full product install images on Passport Advantage

Continue Clear selections

Show 10 results

Filter fix details: restricted

Description	Release date
interim fix → DB2_SE.Restricted.Activation_11.1	2022/01/19
interim fix → DB2_SE.Restricted.Activation_11.5	2021/11/28

1-2 of 2 results (filtered from 103 total results)

Continue Clear selections Back

Filter your content

Fix type

- fix pack (71)
- interim fix (32)

And Applies to

- 3.1.1.0 (8)
- 3.1.2.0 (9)
- 3.1.3.0 (15)
- 3.1.4.0 (12)

- Create database example
  - db2 create database repodb pagesize 8 k
  - db2 UPDATE DATABASE CONFIGURATION FOR repodb USING LOGPRIMARY 25 LOGSECOND 200 LOGFILSIZ 8192
  - db2 UPDATE DATABASE CONFIGURATION FOR repodb USING EXTENDED\_ROW\_SZ enable
  - Additional Information
    - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=database-creating-db2-repository>

- Regularly scheduled maintenance is recommended
  - Backups
  - REORGs and RUNSTATs
    - ❖ reorg.sql file under `<dmc_home>/samples/DB2LUW`
    - ❖ Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=database-maintaining-repository>

# Download and Installation



## ▪ Download

- 4 ways to download Db2 Data Management Console
  - ❖ IBM Marketing Registration Services (MRS) Tool
  - ❖ Marketplace
  - ❖ IBM Fix Central
  - ❖ Passport Advantage
- Additional information  
<https://www.ibm.com/support/pages/node/885789>

## ▪ Installation

- Two different installation formats
  - ❖ Script
  - ❖ GUI
- Backup repository database
- Unzip image file
  - ❖ Existing directory is considered an upgrade
  - ❖ New directory is considered a new installation
- Configure setup.conf file (ports, repository database)
- Run setup script (DMC admin user)
- Additional information
  - ❖ Setting up IBM Db2 Data Management Console  
<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=configuring-setting-up-db2-data-management-console>
  - ❖ Upgrading  
<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=welcoming-upgrading>
  - ❖ Migrating from Data Server Manager (DSM)  
<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=upgrading-upgrade-data-server-manager-db2-data-management-console>

# Installation on AIX

- Bash is required
- Supported only on Power® 8 and later processors
- AIX® POWER7® compatible systems are not supported
  - **prtconf | grep -i proc**
    - ❖ Processor Type: PowerPC\_POWER8
    - Processor Implementation Mode: POWER 7
    - Processor Version: **PV\_7\_Compat\*\***
- libc++.a (shr\_64.o) could not be loaded error
  - Install XL C/C++ 16.1.0.10 by using the following steps:  
<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-cannot-install-db2-data-management-console-aix>
- Additional configuration steps when Stack Execution Disable Protection (SED) is enabled
  - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=ts-exempting-db2-data-management-console-by-using-sed-aix>

## Several Servers considerations

- Each DMC server can monitor up to 300 databases
- One repository database per DMC server
- One installation directory per DMC server
- If repository database and DMC server located in the same machine
  - The machine needs to have enough resources (memory, CPU, disk space)
    - ❖ If DMC server requires 64GB of memory according to the [DMC capacity planning](#), the machine will need to have 96GB of memory available (DMC server plus the repository database)
- If more than one DMC server installed on the same machine
  - The machine needs to have enough resources (memory, CPU, disk space) available for each DMC installation
    - ❖ If DMC server requires 96GB of memory according to the [DMC capacity planning](#), the machine will need to have 192GB of memory available
- Different port numbers for each DMC server
  - Including internal ports and job scheduler ([bootstrap.properties](#) file)
- Different DMC servers monitoring the same databases
  - Overhead on the monitored database by collecting duplicated information
  - Event monitor functions will have conflicts
    - ❖ Only enable event monitor on one DMC server, and keep disabled for the other DMC servers
      - ✓ HWCMON1007W error



Locating home installation or <dmc\_home>

## ▪ Script

- <dmc\_home> is the location where the installation package was decompressed after download.
- For example, on the Windows platform, if the installation package was decompressed to the below location: **C:\IBM\ibm-datamgmtconsole**, then the path of <dmc\_home> is: **C:\IBM\ibm-datamgmtconsole**

## ▪ GUI

### • Windows

- ❖ Right-click on the IBM Db2 Data Management Console icon on the desktop and select Open file location
- ❖ Continue to the resources\bin folder to find the <dmc\_home> directory
- ❖ For example, if the IBM Db2 Data Management Console was installed using GUI installer in the following location: **C:\Program Files\IBM Db2 Data Management Console**, then the path of <dmc\_home> is: **C:\Program Files\IBM Db2 Data Management Console\resources\bin**

### • Linux

- ❖ Find the location where you extracted the installation package, and enter the resources/bin directory to find the <dmc\_home> directory.
- ❖ For example, if the installation package of the GUI installer was decompressed to the below location: **/opt/IBM/ibm-datamgmtconsole** then the path of <dmc\_home> is: **/opt/IBM/ibm-datamgmtconsole/resources/bin**

### • Mac

- ❖ In the Applications folder, right-click on IBM Db2 Data Management Console and select Show Package Contents.
- ❖ Enter Contents/Resources/bin directory to find the <dmc\_home> directory
- ❖ For example, the default <dmc\_home> path is: **/Applications/IBM Db2 Data Management Console.app/Contents/Resources/bin**

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-locating-db2-data-management-console-home-directory>

# Required privileges to Start Data Management Console

Operating System	Installed by	Started by	Supported (Y/N)	Limitation
Windows	Administrator	Administrator	Y	
Windows	Administrator	Non-administrator	N	
Windows	Non-administrator		N	
Linux/AIX	root	root	Y	
Linux/AIX	root	non-root	N	
Linux/AIX	non-root	root	Y	Once DMC is started by root user, a non-root user cannot start DMC, as they do not have the required write permission to work with DMC folders
Linux/AIX	non-root	non-root	Y	A non-root user can download, extract (unzip) the installation image, and run the setup utility
Linux/AIX	non-root user A	non-root user B	N	DMC cannot be installed by one non-root user and started by another non-root user

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=securing-privileges-required-installing-starting-db2-data-management-console>

# Starting, Stopping, Checking Status

Option	Windows	Linux and UNIX
Start the server	start.bat	startup.sh
Stop the server	stop.bat	stop.sh
Restart the server	restart.bat	restart.sh
Check server status	status.bat	status.sh

- Scripts are located in <IBM Db2 Data Management Console install>/bin directory
- On Windows
  - Run the scripts as an administrator or from an Administrator CLP (Command Line Processor)
  - Start/Stop the server is also available using Windows Services
- Auto-start on Mac
  - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=administering-autostarting-console>
- Data Management Console URLs
  - `http://server_host_name_or_ip:http_port/console`
  - `https://server_host_name_or_ip:https_port/console`

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=administering-starting-stopping-restarting-server>

# Uninstalling Data Management Console



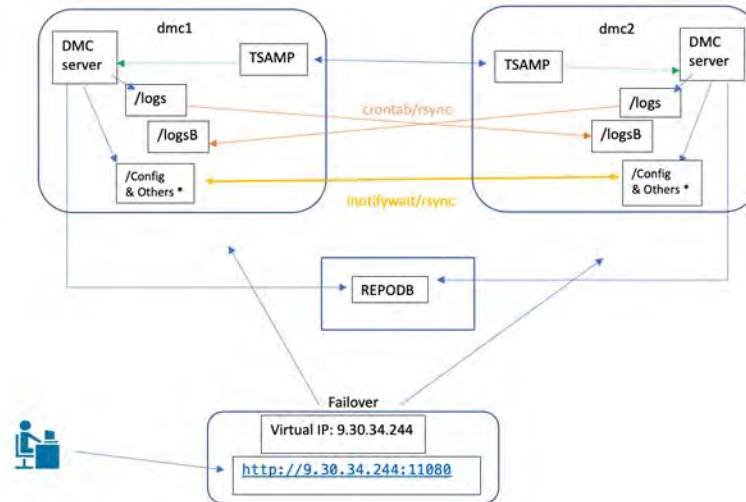
- Stop Data Management Console server
- Verify that the server is stopped
- On Windows
  - Go to [<dmc\\_home>/](#) bin directory
  - Run the script undo\_setup.bat as an administrator or from an Administrator CLP (Command Line Processor)
  - Uninstall DMC
- Remove DMC directory
- Optional
  - Drop DMC repository database

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=administering-uninstalling-db2-data-management-console>

# Data Management Console – HADR Configuration

- Run in a highly available environment to minimize access downtime to the console



- Example above using IBM Tivoli® System Administration for Multiplatforms (Tivoli SA MP)
- DMC and Tivoli SA MP are installed on both the nodes
- Connect both the DMC servers to the same repository database REPODB that is hosted by a Db2 server
- The repository database can be hosted anywhere including on one of the two nodes, but it is recommended to host it on another independent node
- Only one of the DMC servers is up (online) at a time
- Tivoli SA MP monitors the status of the online DMC server and when it detects the DMC is down, it attempts to bring that DMC up
- If startup fails, Tivoli SA MP switches (fail over) to the other node and brings up DMC server on that node

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=administering-setting-up-high-availability>

# Email Configuration

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges Replication Connection profile Monitoring profile Event monitor profile Settings

Authentication Email SMTP JVM HTTPS Security IBM event monitor profile

Enter the settings for the email server that is used for notifications. Contact your email provider for the values to enter for the SMTP settings.

Host name\* smtp.gmail.com Server port\* 587

Email address for sender\* cogura10@gmail.com

Use TLS

Requires authentication

Authentication user name\* cogura10@gmail.com Authentication password\* .....

Destination email address

Send test email

Cancel Save

## Settings

- Host name
- Server Port
- E-mail address for sender
- Use TLS
- Requires authentication
- Destination e-mail address

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=environment-configuring-email-server>

# SNMP Configuration

- Supports SNMP V3
- Settings
  - Host name
  - Server Port
  - Username
  - Security Level

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges Replication Connection profile Monitoring profile Event monitor profile Settings

Authentication Email **SNMP** JVM HTTPS Repository Stats event monitor option

Specify the details of the Simple Network Management Protocol (SNMP) Management's server that will receive the SNMP traps. When configuring the SNMP user in your environment, use Engine ID 80:00:13:70:04:80:00:13:70:c0:a8:01:0d.

Host name\*  Server port\*

Username\*

Security Level

No authentication & no privacy protocol  Authentication & no privacy protocol  Authentication & privacy protocol

Send test SNMP message

\*\*\*\*\*Local Engine ID:80:00:13:70:04:80:00:13:70:c0:a8:01:0d\*\*\*\*\*

0x800013700480001370c0a8010d

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=environment-configuring-snmp-notifications>

Integration with ServiceNow

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=notifications-integrating-db2-data-management-console-servicenow>

# JVM Configuration

The Java virtual machine (JVM) reserves a certain amount of memory to monitor databases. The memory allocated to JVM depends on the monitoring profile settings and the number of databases being monitored. Use this page to modify the default values for the default DMC monitoring profile. **Important:** If you are monitoring large number of databases, it is recommended to increase the initial (Xms) and maximum (Xmx) heap size values to prevent out of memory errors. Learn more.

Xmsize (MB): 1024

Xmxsize (MB): 2048

Cancel Save

- Xms is the amount of memory allocated by Java when starting DMC
- Xmx is the maximum amount of memory that Java can allocate for DMC server
- DMC server machine needs to have enough available memory for the Xmx
- Increase JVM configuration according to the [DMC Capacity Planning](#)
- Review JVM configuration after adding new monitored databases
- HADR standby databases, database partitions, and PureScale members counts as monitored databases
- Restart of DMC server is required after the changes

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=events-configuring-java-heap-size>



# Repository Database Configuration

**Connection and database**

Set up a repository on the database to enable monitoring, run SQL statements, and explore database objects. Make sure the database for the repository exists even before you start configuring the repository. You can use your own Db2 server or use the standard edition with the restricted license for this repository database. If the database is not already created, can also use the [Db2 docker](#) image and get started.  
**Important:** For a Db2 repository database, the user must have minimum of DBADM with DATAACCESS on the database and SYSCTRL on database instance privilege. To configure the repository by a normal Db2 user, refer to this [procedure](#).

Connection type: IBM Db2

Hostname: localhost

Port: 30000

Repository schema: IBMCONSOLE

Database: REPODMC

JDBC URL attribute (optional): jdbc:db2://localhost:30000/REPODMC

Port number for the Db2 instance (SVCENAME)

Schema for repository tables IBMCONSOLE (default)

**Security and credential**

Specify the security and credentials to establish a connection and manage your Db2 database.

Use SSL

Server certificate (path): /path/to/certificate

SSL configuration mandatory for the Job Server

Username: db2inst1

Password: [masked]

Userid and password to connect to the repository database

Test connection

Cancel Save

**3 ways to add repository database information**

- Installation
  - Edit setup.conf file and add the repository database before running setup script
- First time logging into DMC
- Administration → Repository

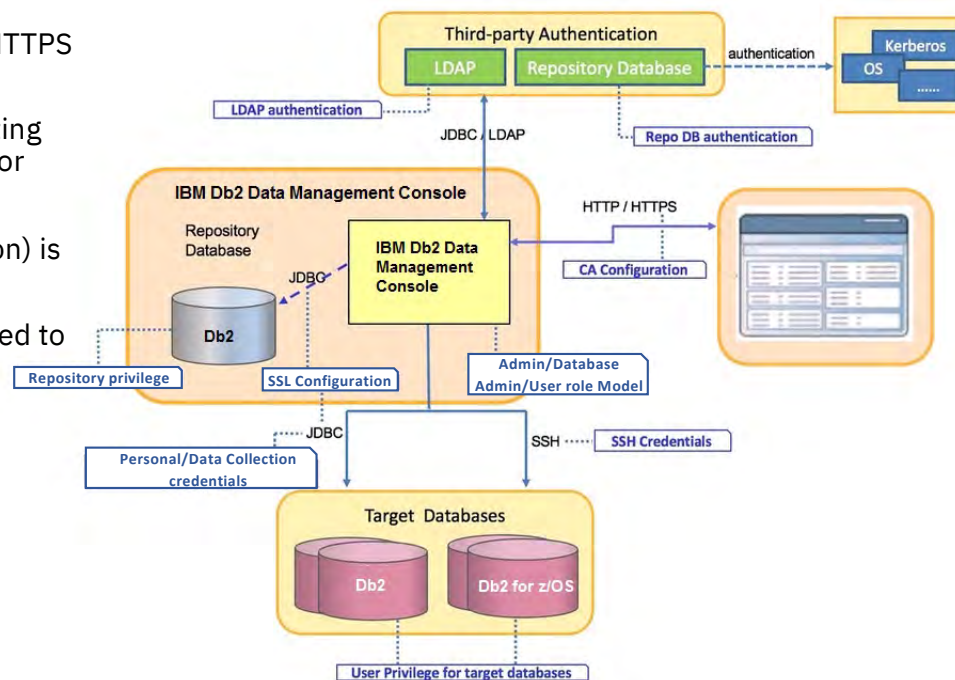


# Db2 Data Management Console

Security

# Security – Architecture

- Access to is controlled through authentication and authorization
- Can be accessed using both the secure HTTPS and unsecured HTTP protocol
- Access is managed either by the console itself or by authenticating facilities that reside outside of the console, like an LDAP server or repository database
- Access within IBM Db2 Data Management Console (authorization) is managed by assigning user roles and privileges
- User privileges and operation/data collection credentials are used to ensure the security for target databases



Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=securing-security-architecture-db2-data-management-console>

# Security – SSL Certificates

- Additional configuration when using SSL Certificates
  - HTTPS URL using SSL Certificate  
[https://www.ibm.com/support/knowledgecenter/SS5Q8A\\_3.1.x/com.ibm.datatools.dsweb.ots.security.doc/topics/https\\_cert.html](https://www.ibm.com/support/knowledgecenter/SS5Q8A_3.1.x/com.ibm.datatools.dsweb.ots.security.doc/topics/https_cert.html)
  - Repository database using SSL Certificate  
<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-enabling-ssl-connection-job-repository>
  - Monitored databases using SSL Certificate  
<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-enabling-ssl-connectivity-managed-db2-databases>

# Security – Console Privileges

IBM Db2 Data Management Console

Reports Blackouts Jobs **Users and privileges** Replication Connection profile Monitoring profile Event monitor profile Settings

Connection users **Privileges**

Find by feature

Action	Console Administrator	Database Administrator	Database User
Monitor applications	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Monitor databases	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manage monitoring profiles	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Manage event monitor profile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Run SQL statements	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
View visual explain plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Manage storage objects	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manage database authorization	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manage reports	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manage jobs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manage users and roles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manage connection profiles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Configure settings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Set up repository database	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manage replication monitoring	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
View replication monitoring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Console Administrator
- Database Administrator
- Database User

Cancel Restore to default Save

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=environment-assigning-privileges>

# Security – Authentication Methods

- Setup admin
  - User created during installation
  - Console Administrator privileges
  - Resetting authentication back to [Setup Admin](https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=configuration-resetting-authentication) (SuperAdmin)  
<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=configuration-resetting-authentication>
- LDAP  
<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=configuration-delegating-authentication-authorization-ldap>
- Repository  
<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=configuration-delegating-authentication-authorization-repository-database>

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges Replication Connection profile Monitoring profile Event monitor profile **Settings**

Authentication Email SNMP JVM HTTPS Repository Stats event monitor opt-in

**Set authentication type**

Once set and enable LDAP or Repository as authentication type, the setup admin user will be invalid to login console.  
If you want to quit the current authentication setting progress, please click Cancel button to discard all changes and return to the authentication type page.

Authentication type

Setup admin  LDAP  Repository

Only one authentication method is supported  
By selecting a different authentication method, the previous method will be disabled automatically

# Security – Authentication Methods: LDAP

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges Replication Connection profile Monitoring profile Event monitor profile Settings

Authentication Email SNMP JVM HTTPS Repository Stats event monitor opt-in

**Set authentication type**

Once set and enable LDAP or Repository as authentication type, the setup admin user will be invalid to login console.  
If you want to quit the current authentication setting progress, please click Cancel button to discard all changes and return to the authentication type page.

Authentication type

Setup admin  LDAP  Repository

Connection setting Authentication method setting User & Group setting

Host name \* Port \*

The host name for LDAP connection 389

SSL method \*

Plain  StartTLS  LDAPS

Cancel OK

- **Host name**  
The host name or IPv4 address of the target LDAP server  
IPv6 address is not supported
- **Port**  
The port of the LDAP server through which LDAP service is provided  
Number between 1 and 65535  
Usually two different ports will be used by LDAP service: one for LDAP connections and the other for LDAPS connections.
- **StartTLS ( LDAPv3 Transport Layer Security (TLS) extension)**  
Secure LDAP connections with StartTLS would be created
- **LDAPS (LDAP over SSL)**  
Secure LDAPS connections would be created

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=ldap-configure-connection-settings>

# Security – Authentication Methods: LDAP Bind Account

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges Connection profile Replication Connection profile Monitoring profile Event monitor profile Settings

Authentication Email SNMP JVM HTTPS Repository Stats event monitor opt-in

### Set authentication type

Once set and enable LDAP or Repository as authentication type, the setup admin user will be invalid to login console.  
If you want to quit the current authentication setting progress, please click Cancel button to discard all changes and return to the authentication type page.

Authentication type

Setup admin  LDAP  Repository

Connection setting Authentication method setting User & Group setting

Authentication method

Anonymous  Simple

Bind DN \* Bind password \*

Cancel Previous Next

- Access LDAP Server Anonymously
  - Anonymous bind operations
- Simple Authentication
  - Bind DN and bind password are required
  - Binding LDAP server with only bind DN or only bind password is not supported
  - **Bind DN**
    - Full DN value of bind account
    - Multiple bind accounts are not supported
  - **Bind password**
    - Clear text password associated with the bind DN

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=ldap-configure-bind-account>



# Security – Authentication Methods: LDAP User Groups

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges Replication Connection profile Monitoring profile Event monitor profile Settings

Authentication Email SHMP JVM HTTPS Repository Start event monitor api on

### Set authentication type

Once set and enable LDAP or Repository as authentication type, the setup admin user will be invalid to login console.  
If you want to quit the current authentication setting progress, please click Cancel button to discard all changes and return to the authentication type page.

Authentication type  
 Setup admin  LDAP  Repository

Connection setting Authentication method setting **User & Group setting** Test user login

**User info**

User base DN \*  Use login attribute type \*  preferredidentity

**Console Administrator**

Group DN \*  Member attribute type \*  User ID attribute type \*  ⊕

**Database Administrator**

Group DN \*  Member attribute type \*  User ID attribute type \*  ⊕

**Database User**

Group DN \*  Member attribute type \*  User ID attribute type \*  ⊕

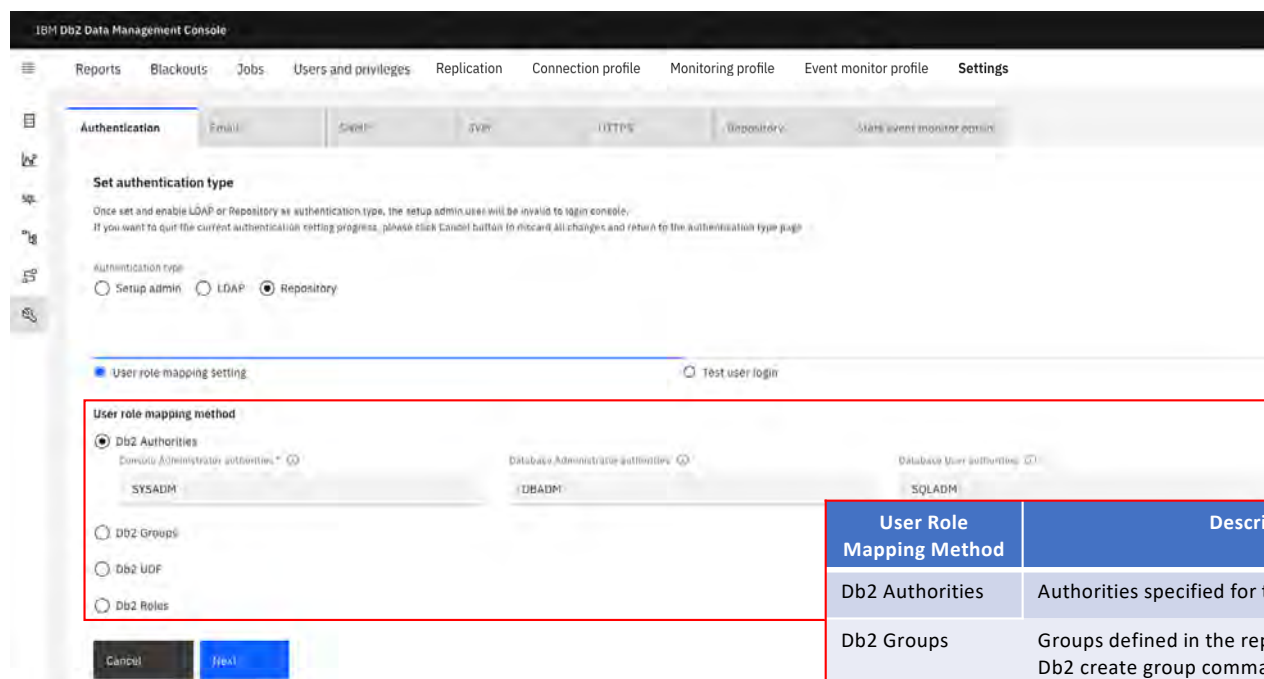
Cancel Previous Next

- **User base DN**
  - Full DN value of user base entry
- **User login attribute type**
  - User attribute type
- **Console Administrator Group is required**
  - Group DN
  - Member attribute type
  - User ID attribute type

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=ldap-configure-user-group-mapping>

# Security – Authentication Methods: Repository Database



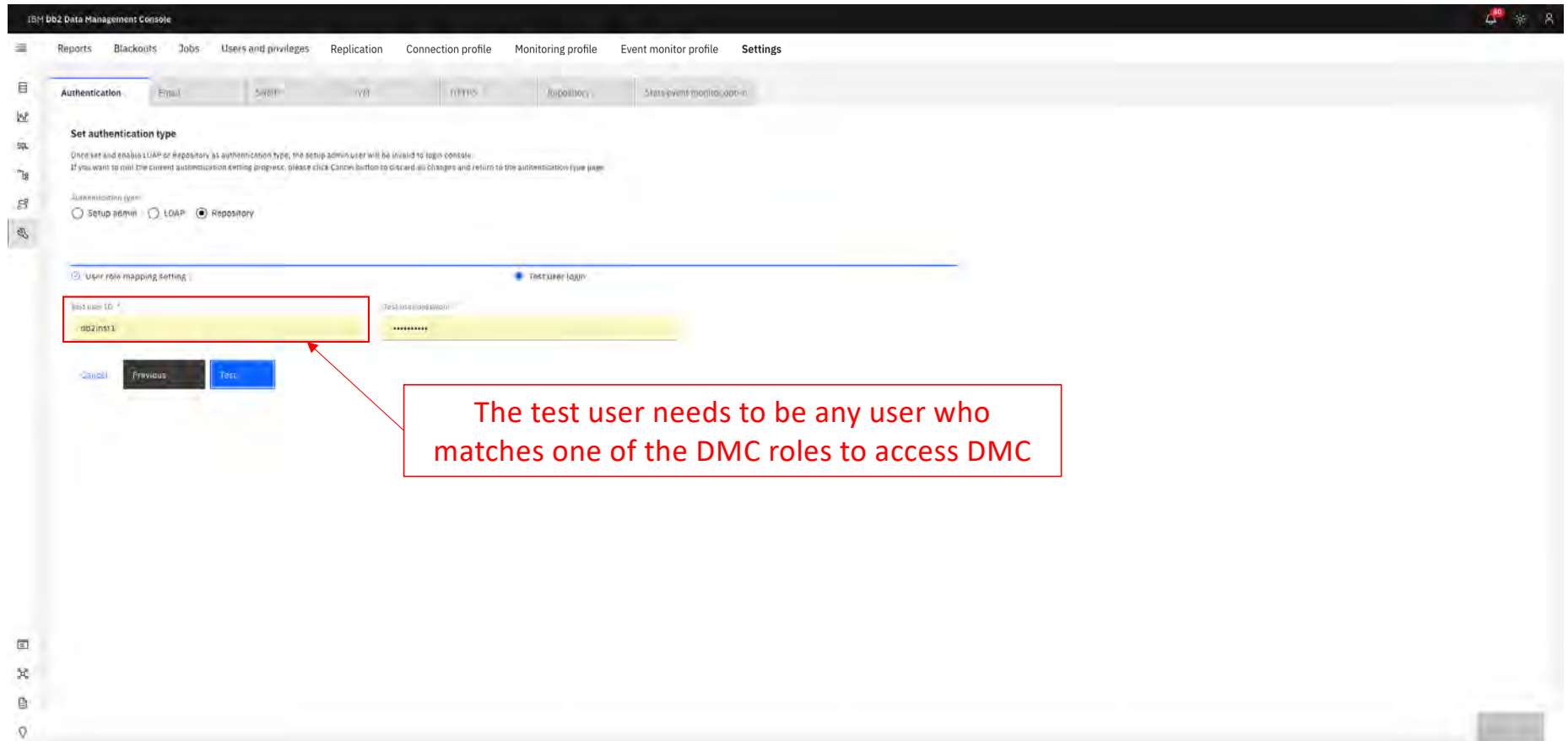
▪ Console Administrator Group is required

User Role Mapping Method	Description	Examples
Db2 Authorities	Authorities specified for the repository database	DBADM DATAACCESS SECADM SQLADM
Db2 Groups	Groups defined in the repository database using Db2 create group command	ADMINGROUP GROUP1 GROUP2
Db2 UDF	Execute privilege on specified UDFs created during the repository database setup: "<console_schema_name>.CANADMINISTER" "<console_schema_name>.CANDBA" "<console_schema_name>.CANVIEW"	IBMCONSOLE.CANADMINISTER
Db2 Roles	Roles defined in the repository database using Db2 create role command	ENTERPRISE_USER SYSTS_USR

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=database-configure-user-role-mapping-settings>

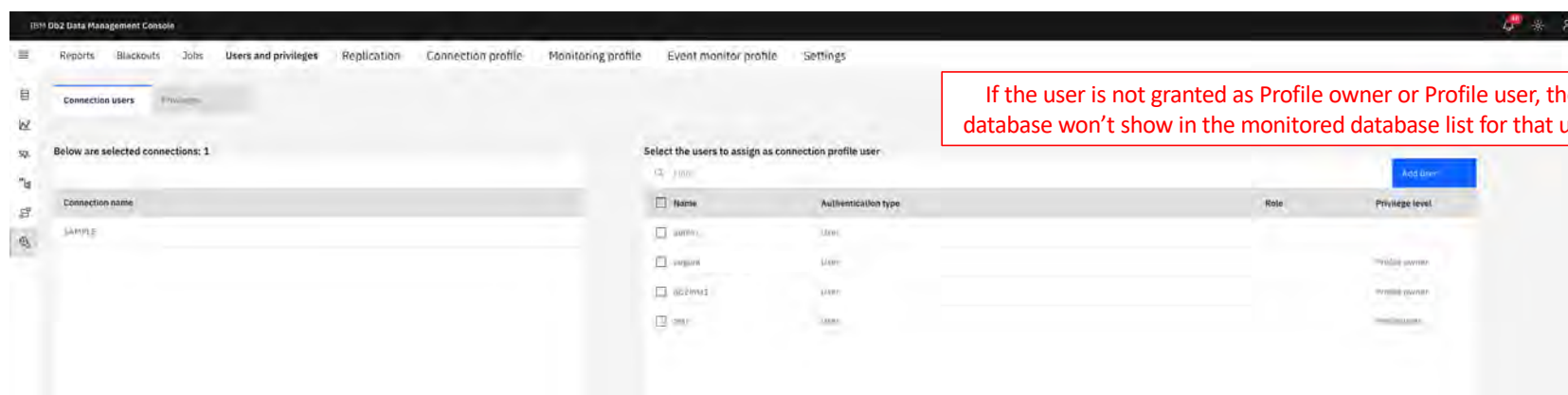
# Security – Authentication Methods: Repository Database IBM Db2 - Data Management Console



The screenshot shows the 'Authentication' configuration page in the IBM Db2 Data Management Console. The 'Repository' authentication method is selected. Under 'User role mapping setting', the 'Test user login' section is visible. A red box highlights the 'Test user ID' field, which contains the value 'db2inst1'. A red arrow points from a text box to this field.

The test user needs to be any user who matches one of the DMC roles to access DMC

# Security – Connection Users



- Grant access to users for monitored databases
  - **Profile owner**
    - ❖ The user who creates a connection profile is automatically granted the connection profile owner privilege
    - ❖ The user can use the connection profile, and can also edit or delete the connection profile for a database
    - ❖ The administrator or profile owners can assign connection profile owner or user privilege for the connection profile to other user IDs
  - **Connection profile user**
    - ❖ The user can use the connection profile (for example, run the SQL script on the target database) for which they have the connection profile user privilege

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=securing-managing-user-roles-privileges>

# Security – Additional Security Parameters

- **Configure User ID rule**
  - Although IBM Db2 Data Management Console delegates authentication to external security systems, defining a restriction pattern for user ID is still a good security practice
  - Default rules for user ID
    - ❖ Total length from 1 to 128 characters
    - ❖ Allowed characters are lower-case letters(a-z), numbers(0-9), underscore(\_), hyphen(-), dot(.), at(@) and comma(,);
    - ❖ Begin with a lower-case letter or number
- **Append customized HTTP response headers to web resources**
  - Set a rule to restrict the loading of web resource to preventing attacks like Clickjacking or XSS, you can append your own headers to HTTP responses
- **Verify server host name or IP address**
  - Prevent 'Host Header Injection' attack that someone intercept your HTTP requests and replace the value of host header, you can configure a list of host names and IP address of your server where IBM Db2 Data Management Console is installed to enable verification of the host header
- **Customize several JSSE security properties**
  - To meet the latest security requirement, IBM Db2 Data Management Console has overwritten some of the default JSSE security properties of IBM SDK, Java Technology Edition, Version 8.
- **Customize idle timeout value**
  - Customized idle timeout value that will automatically log off the console after 'x' minutes of user inactivity

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=securing-customize-security-parameters>

# SSH Configuration

Secure shell (SSH) services protocol to establish an encrypted communication channel with remote database servers  
Allows users to issue commands and complete transactions with databases on connected servers and accommodate the encryption requirements  
While the console primarily uses JDBC to communicate with remote database servers, it needs SSH to perform the following:

## Execute the scripts/utilities in the remote machine

- Db2 commands, such as *db2look* for generating DDLs
- Administration commands, such as *db2start* and *db2stop*
- Operating system commands, such as *ls* on linux machines, to browse the folders of a remote machine
- CLP from the SQL editor

A number of functions available which require that connected servers be configured to support SSH. The following table identifies these functions:

Category	Tasks that require an SSH service
Generation of SQL queries	Run SQL statements (SQL Editor) where the <i>Run method</i> option is set to <b>CLP WITH SSH</b>
Database Monitoring	Collect CPU information from an AIX server
Job	Run Job with type Db2 CLP Script Executable/Shell Script
General	Search for databases or objects using the <i>Browse</i> feature

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=securing-communicating-securely-remote-servers>

PasswordAuthentication property must be set to **yes** in sshd configuration file

# Console Port Numbers

Required to be open in the Firewall configuration

Property	Default	File location	Description
port	11080	<a href="#">&lt;dmc_home&gt;</a> /wlp/usr/servers/dsweb/bootstrap.properties	The HTTP port that is used to access the IBM Db2 Console web console from a web browser. If http access is not allowed, set the value to -1
https.port	11081	<a href="#">&lt;dmc_home&gt;</a> /wlp/usr/servers/dsweb/bootstrap.properties	The HTTPS secure port that is used to access the IBM Db2 Console web console from a web browser
internal.port	11082	<a href="#">&lt;dmc_home&gt;</a> /wlp/usr/servers/dsweb/bootstrap.properties	Internal port for the IBM Db2 Console server
job.http.port	11088	<a href="#">&lt;dmc_home&gt;</a> /wlp/usr/servers/dsweb/bootstrap.properties	Job-scheduler service port
drs.port	11098	<a href="#">&lt;dmc_home&gt;</a> /Config/dswebserver_override.properties	Dr.s service port

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=administering-modifying-db2-data-management-console-ports>



# Db2 Data Management Console

Monitored Databases



# Monitored Databases – Pre-Setup

Database Parameter	Description	Recommended value
MON_REQ_METRICS	For basic data collection of statements, activities, workloads, etc.	BASE
MON_ACT_METRICS	For basic data collection of statements, activities, workloads, etc.	BASE
MON_OBJ_METRICS	For data collection of database objects, such as TABLE, TABLESPACE, etc.	BASE
MON_RTN_DATA	For data collection of stored procedure	BASE
MON_LW_THRESH	For data collection of blocking and waiting connections	30,000,000 (microseconds)
MON_DEADLOCK	For data collection of blocking and waiting connections	history
MON_LOCKTIMEOUT	For data collection of blocking and waiting connections	history
MON_LOCKWAIT	For data collection of blocking and waiting connections	without_hist

**Note:** Enabling **Locking event monitor** option in **Administration > Event monitor profile** page, updates the MON\_LW\_THRESH, MON\_DEADLOCK, MON\_LOCKTIMEOUT, and MON\_LOCKWAIT parameters of the target database to the recommended value

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=tasks-setting-database-parameter-values>

## Monitored Databases – HADR Configuration Requirement IBM Db2 - Data Management Console

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- Required Configuration for historical monitoring data
  - DB2\_HADR\_ROS is ON
  - DB2\_STANDBY\_ISO is UR
- Event monitoring of an HADR standby connection is not supported

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=monitoring-hadr-historical>

# Monitored Databases – Required Privileges

Data collection credential ID must meet the following requirements

- SQLADM on the database
  - This privilege provides access to most of the required functions.
- WLMADM on the database
  - This privilege is required to create console workload(s)
- SYSMANT\_GROUP
  - A few monitoring calls use admin functions that use the snapshot monitor to capture information about the database and any connected applications
  - For example: SNAP\_GET\_UTIL\_PROGRESS table function

<https://www.ibm.com/docs/en/db2/11.5?topic=views-snap-get-util-progress-progress-snapshot>

Authorization

- ❖ One of the following authorizations is required:
  - EXECUTE privilege on the SNAP\_GET\_UTIL\_PROGRESS table function
  - DATAACCESS authority
- ❖ In addition, to access snapshot monitor data, one of the following authorities is also required:
  - SYSMON
  - SYSCTRL
  - SYSMANT
  - SYSADM

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=console-min-db-privileges-required-db2>

# Adding Monitored Databases

## Db2 version 10.1.0.2 or later after DMC V3.1.6 or later

- List of supported monitored databases in [System Requirements](#)
- Db2 10.1 databases are not enabled by default  
<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=new-version-316>

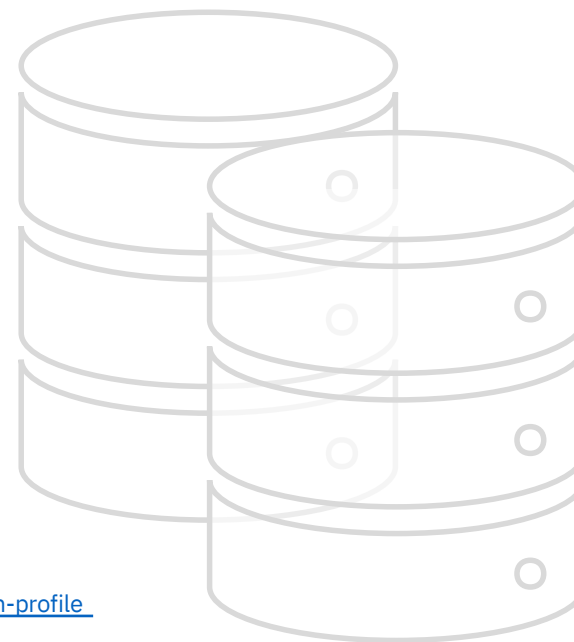
## Up to 300 monitored databases per DMC server

- To avoid performance issues in the DMC server

## 3 ways to add a connection profile

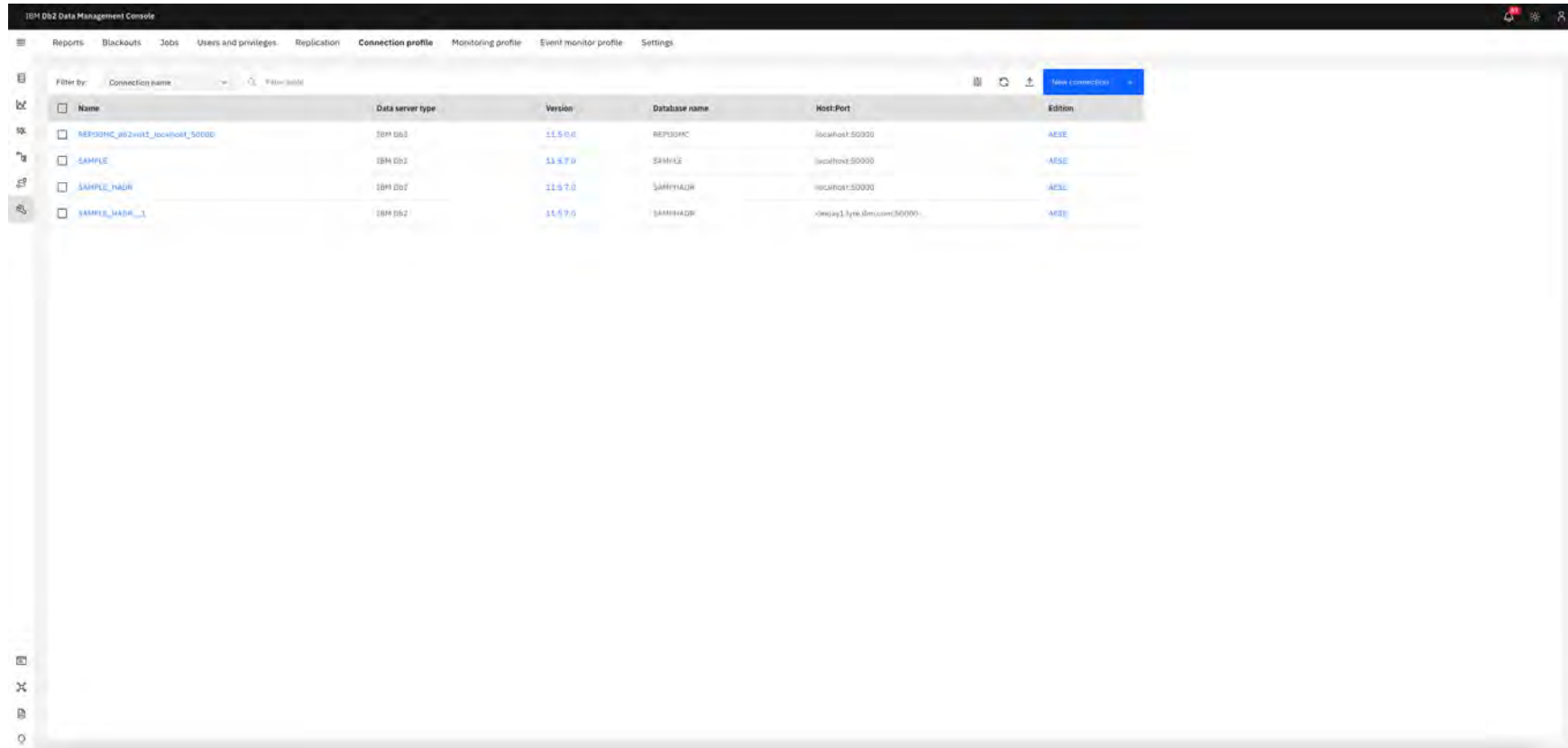
- Add a connection profile via Web UI
- Import connections from file
- REST API
- Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=environment-adding-connection-profile>



# Monitored Databases – Adding Connection Profile

- Administration → Connection profile → New connection



The screenshot displays the IBM Db2 Data Management Console interface. The top navigation bar includes tabs for Reports, Blackouts, Jobs, Users and privileges, Replication, Connection profile (selected), Monitoring profile, Event monitor profile, and Settings. Below the navigation bar, there is a filter section with 'Filter by: Connection name' and a search icon. A table lists existing connection profiles with the following columns: Name, Data server type, Version, Database name, Host-Port, and Edition. The table contains four entries:

Name	Data server type	Version	Database name	Host-Port	Edition
REP300MC_0020011_lockhost_50000	IBM Db2	11.5.0.0	REP300MC	localhost:50000	AESE
SAMPLE	IBM Db2	11.5.7.0	SAMPLE	localhost:50000	AESE
SAMPLE_HADR	IBM Db2	11.5.7.0	SAMPLEADR	localhost:50000	AESE
SAMPLE_HADR_1	IBM Db2	11.5.7.0	SAMPLEADR	<ip>:1.1.1.1:ibmcom30000	AESE

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=environment-adding-connection-profile>

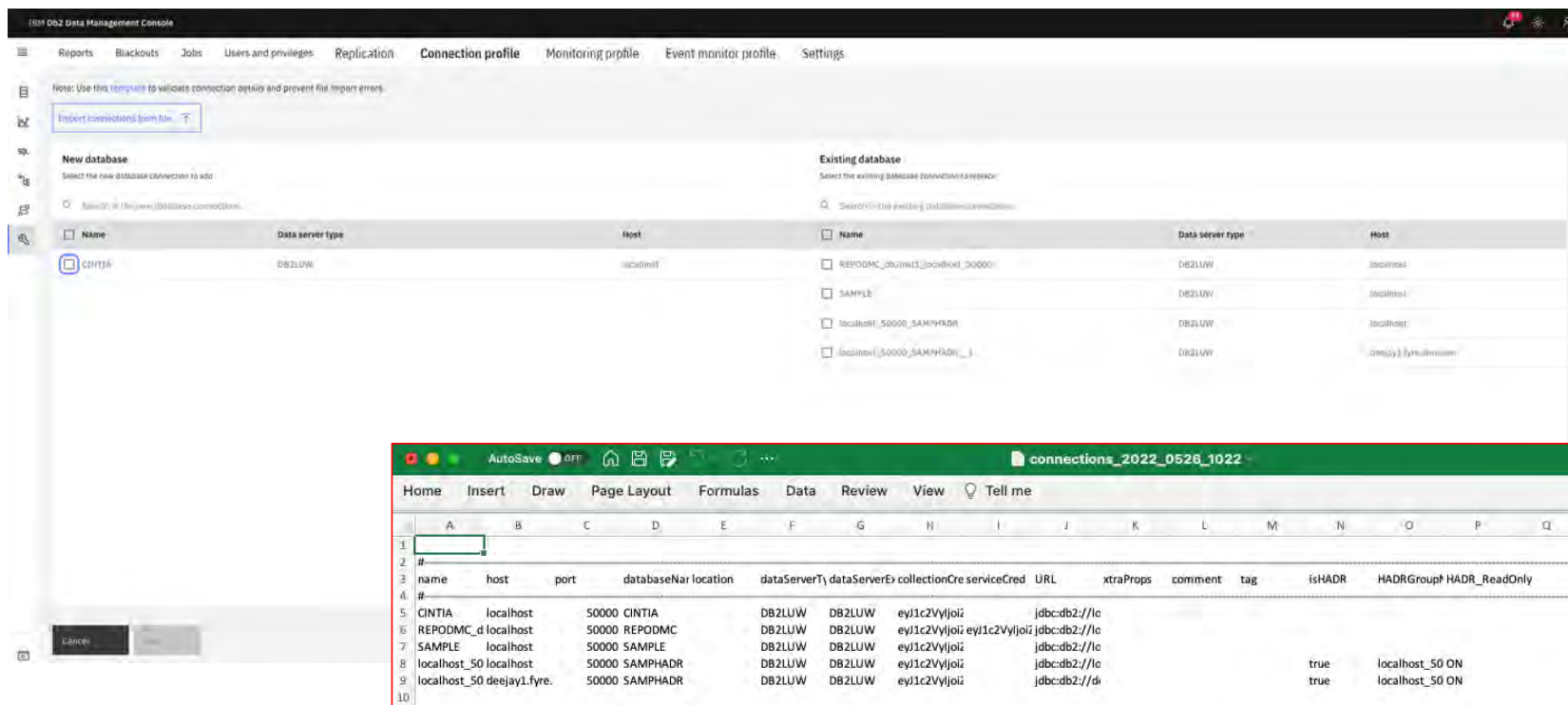
# Monitored Databases – Adding Connection Profile

The screenshot shows the 'Create connection' wizard in the IBM Db2 Data Management Console. The interface is divided into several sections with callouts explaining key configuration options:

- Connection and database:**
  - Connection name:** SAMPLE\_HADR. Callout: Identify the database, Unique name, Cannot have spaces or special characters, Used in e-mail subject for any alerts, Cannot be changed.
  - Host:** localhost. Callout: hostname or ip address where the database is located.
  - Database:** SAMPHADR. Callout: Database name.
  - Connection type:** IBM Db2. Callout: IBM Db2, IBM Db2 for z/OS.
  - Port:** 50000. Callout: port number for the Db2 instance (SVCEAME).
  - Additional JDBC parameters:** Example: traceLevel=3;progressiveStreaming=E. Callout: additional JDBC parameters (JDBC tracing).
- Security and credential:**
  - Use SSL:** . Callout: SSL configuration (Truststore location, Truststore password).
  - Enable monitoring data collection:** . Callout: Credentials (Monitoring data collection: default monitoring (background collection), Shared credential: run jobs, Personal credential: run jobs, SQL statements, editing tables, etc.).
  - Security type:** Clear text password. Callout: Security type for JDBC and SQL.
  - Username:** db2inst1. Callout: userid / password to connect to the database.
  - Password:** [Redacted].
  - Enable shared credential:** . Callout: Initialize HADR or Initialize pureScale (Each standby, or partition, or member is considered a different monitored database and is added automatically by DMC, Adding standby, or partition, or member manually, they will be considered regular monitored databases).
  - Enable personal credential:** .
  - Initialize HADR:** . Callout: Initialize HADR or Initialize pureScale.
  - Initialize pureScale:** .
- Standby 1:**
  - Connection name:** SAMPLE\_HADR\_1.
  - Host:** 096911.7yie.d65.com.
  - Port:** 50000.
  - Authentication:** Enter description.
  - Group:** [Empty].

# Monitored Databases – Importing connections from a file IBM Db2 - Data Management Console

- Import is asynchronous operation, profiles will be imported in turn
- Database connection information must be in CSV (comma-separated value) text format



The screenshot shows the IBM Db2 Data Management Console interface. The 'Import connections from file' dialog is open, displaying a list of existing databases. Below the dialog, a CSV file named 'connections\_2022\_0526\_1022' is open in a spreadsheet application. The CSV file contains the following data:

#	name	host	port	databaseName	location	dataServerType	dataServerName	collectionName	creationTime	serviceName	URL	extraProps	comment	tag	isHADR	HADRGroup	HADR_ReadOnly
5	CINTIA	localhost	50000	CINTIA		DB2LUW	DB2LUW	eyj1c2Vvjlolj			jdbc:db2://lo						
6	REPODMC_d	localhost	50000	REPODMC		DB2LUW	DB2LUW	eyj1c2Vvjlolj			jdbc:db2://lo						
7	SAMPLE	localhost	50000	SAMPLE		DB2LUW	DB2LUW	eyj1c2Vvjlolj			jdbc:db2://lo						
8	localhost_50	localhost	50000	SAMPHADR		DB2LUW	DB2LUW	eyj1c2Vvjlolj			jdbc:db2://lo				true	localhost_50	ON
9	localhost_50	deejay1.fyre	50000	SAMPHADR		DB2LUW	DB2LUW	eyj1c2Vvjlolj			jdbc:db2://di				true	localhost_50	ON

# Monitored Databases – Adding connection via REST API

- Create new connection profile REST API

**Create a new connection profile**

Create a new connection profile.

**REQUEST BODY SCHEMA: application/json**

Field	Type	Description
host	string	host name of connection profile
port	integer	database port
databaseName	string	database Name
dataServerType	string	database server type Value: 'DB2109'
name	string	name of the connection profile
collectionCred	object	the credential for collecting data from the target database
operationCred	object	credential for accessing and operation on the target database
sslConnection	Enum	use SSL connection or not Enum: 'false', 'true'
sslTrustStoreLocation	string	SSL connection related attribute, indicate the absolute path of the SSL trust store
sslTrustStorePassword	string	SSL connection related attribute, the password for accessing the SSL trust store
extraProps	string	extra JDBC properties, for inputting multiple properties, it needs to be separated by semicolon
comment	string	the description of the connection profile

**Responses**

- 201 Created
- 400 Invalid parameters
- 409 Connection profile already existed

**POST /dbprofiles**

**Request samples**

Payload

```
application/json
```

```
{  "host": "string",  "port": 0,  "databaseName": "string",  "dataServerType": "DB2109",  "name": "string",  "collectionCred": {    "user": "db2inst1",    "password": "password",    "apiKey": "string",    "kerberosUseCachedCred": "false",    "securityMechanism": "J",    "encryptionAlgorithm": "I"  },  "operationCred": {    "user": "string",    "password": "string",    "apiKey": "string",    "kerberosUseCachedCred": "string",    "securityMechanism": "J",    "encryptionAlgorithm": "I",    "saveOperationCred": "false"  },  "sslConnection": "false",  "sslTrustStoreLocation": "string",  "sslTrustStorePassword": "string",  "extraProps": "string",  "comment": "string"}
```

**Response samples**

201

```
application/json
```

```
{}
```



# Monitored Databases – Db2 upgrade

- db2updvnn command on the monitored database is required to update Db2 APIs and table functions used by DMC
- Run the following query on the monitored database to check the Db2 API level
  - db2 "select versionnumber from sysibm.sysversions order by 1 desc"
- Make sure that the query results matches db2level to avoid errors in DMC
  - <https://www.ibm.com/support/pages/ibm-db2-data-management-console-dmc-showing-sqlcode-206-not-valid-context-where-it-used-error>
- Update Connection Profile
  - Administration → Connection profile
  - Select connection profiles
  - Click on Synchronize, and Run button

The screenshot displays the IBM Db2 Data Management Console interface. The 'Connection profile' tab is active, showing a table with 2 items selected. The table columns are Name, Data server type, Version, Database name, Host:Port, and Edition. Two rows are visible: REPODMC\_db2inst1\_localhost\_50000 and SAMPLE. A 'Synchronize' button is highlighted in the top right of the table. A dialog box is open, asking 'Synchronize 2 selected profiles?' and providing instructions to refresh the page later. The dialog has 'Cancel' and 'Run' buttons.

Name	Data server type	Version	Database name	Host:Port	Edition
REPODMC_db2inst1_localhost_50000	IBM Db2	11.5.0.0	REPODMC	localhost:50000	AP5E
SAMPLE	IBM Db2	11.5.7.0	SAMPLE	localhost:50000	AP5E

# Monitored Databases – Update credentials

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges Replication **Connection profile** Monitoring profile Event monitor profile Settings

2 items selected

Name	Data server type	Version	Database name	Host:Port	Edition
<input checked="" type="checkbox"/> REP00DMC_db2iwatt_localhost_50000	IBM Db2	11.5.0.0	REP00DMC	localhost:50000	AP5E
<input checked="" type="checkbox"/> SAMPLE	IBM Db2	11.5.7.0	SAMPLE	localhost:50000	AP5E

Synchronize Update credentials Delete Cancel

Select one or more connection profiles to change the same credentials

### Update credentials

Set the collection credentials and the service credentials for multiple connection profiles, in bulk.

Data collection credentials  Shared credentials

Security type

Clear text password

Username Password

Enter username Enter password

Cancel Update data collection credentials

# Monitored Databases – Connection Profile List

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges Replication **Connection profile** Monitoring profile Event monitor profile Settings

Filter by: Connection name Filter table

New connection

Name	Data server type	Version	Database name	Host:Port	Edition
CINTIA	IBM Db2	11.5.7.0	CINTIA	localhost:50000	AESE
localhost_50000_SAMPHADR	IBM Db2	11.5.7.0	SAMPHADR	localhost:50000	AESE
localhost_50000_SAMPHADR__1	IBM Db2	11.5.7.0	SAMPHADR	deejay1.fyre.ibm.com:50000	AESE
REPODMC_db2inst1_localhost_50000	IBM Db2	11.5.0.0	REPODMC	localhost:50000	AESE
SAMPLE	IBM Db2	11.5.7.0	SAMPLE	localhost:50000	AESE

Connection Profile Page (all added databases)

Home Page (monitoring enabled databases)

IBM Db2 Data Management Console

Databases

Alerts Performance Availability Status Total: 5

0 Critical 0 Warning 0 Critical 0 Warning Available: 5 Disconnected: 0 Not monitored: 0

1 hour 6 hours 12 hours 24 hours

Connection Filter

New connection

Connection name	Tags	Alerts	CPU	Memory	Storage	Log space	Response time (ms)	Statements (total)	Rows read (/min)
SAMPLE			7%	2.93%	50%	13%	0		0
CINTIA			8%	3.53%	50%	5% 7%	0		0
REPODMC_db2inst1_localhost_50000			8%	35.32%	50%	1%	70		0
localhost_50000_SAMPHADR (Standby)	HADR		9%	2.88%	50%	0%	5		2
localhost_50000_SAMPHADR__1 (Primary)	HADR		8%	2.93%	50%	7%			2

Filters

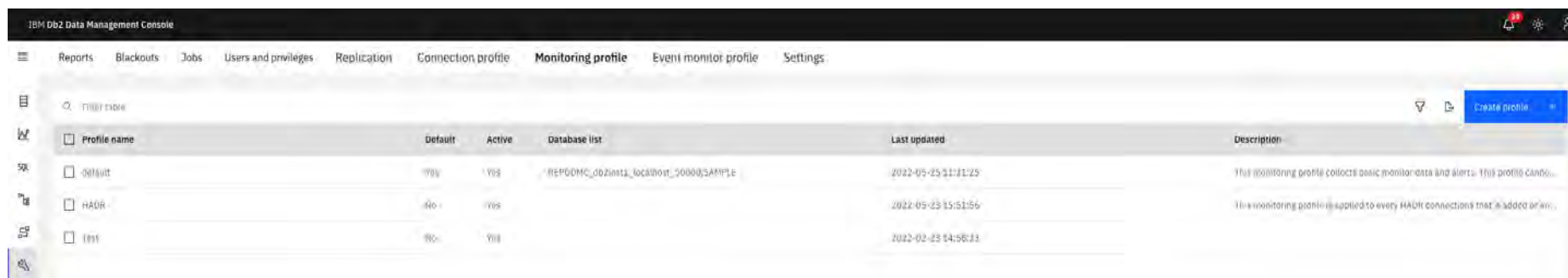


# Db2 Data Management Console

Monitoring Profile

# Monitoring Profile – Configuration

- Administration → Monitoring profile
  - Status
    - Default: Yes/No (only one default Monitoring profile)
      - New connection profiles will be assigned to the **default** monitoring profile automatically
    - Active: Yes/No
  - Profile name: unique name
  - Database list (assigned databases)
  - Description
- HADR monitoring profile
  - Predefined for standby databases



Profile name	Default	Active	Database list	Last updated	Description
Default	Yes	Yes	REP000MC_ob2imnt1_loc@ibot_50000;SAMPLE	2022-05-25 11:11:25	This monitoring profile collects basic monitor data and alerts. This profile can be...
HADR	No	Yes		2022-05-23 15:51:56	This monitoring profile is applied to every HADR connections that is added or an...
Test	No	Yes		2022-02-23 14:58:13	

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=monitoring-setting-up-profile>

# Monitoring Profile – Monitor Settings

## Collection

- Collect data every (minutes)

## Package cache

- SQL statements captured
- Table data read for a collection

Package cache only displays top **n** queries order by 16 KPIs

1. num\_exec\_with\_metrics
2. stmt\_exec\_time
3. total\_cpu\_time
4. rows\_read
5. rows\_returned
6. total\_act\_wait\_time
7. lock\_wait\_time
8. sort\_overflows
9. logical\_reads
10. physical\_reads
11. temp\_reads
12. pool\_data\_l\_reads
13. pool\_index\_l\_reads
14. lock\_escals
15. lock\_waits
16. wlm\_queue\_time\_total

**In this example:**

Every 1 minute, read maximum of 1000 records from the package cache, and keep the top 200 only

## Locks

- Lock wait threshold (milliseconds)
- Table data read for a collection

## Collect storage data

- Heavy query used to capture storage data
- It can impact the monitored database
- Disable the query or schedule the query to run when the monitored database is not busy
- Reorg/runstas on the monitored database catalog tables might help the query performance

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges Replication Connection profile **Monitoring profile** Event monitor profile Settings

Monitor settings Alerts settings Notification Custom alerts

### Collection

Collect data every (minutes)

1

Package cache

SQL statements captured (1)

200

Locks

Lock wait threshold (milliseconds) (1)

30000

Table data read for a collection (1)

1000

Collect storage data (1)

Storage data collection time (minutes)

00:00

Normalize captured SQL statements (1)

### Persistence

Persistence (1)

On

Monitoring data (1)

Keep data for (weeks)

3

Package cache (1) It is collected for smart alerts (see-wlm)

Keep data for (days)

7

Cancel Restore to default

# Monitoring Profile – Monitor Settings

## Normalize captured SQL statements

```
SELECT * FROM TABLEA WHERE NAME = 'IBM'  
SELECT * FROM TABLEA WHERE NAME = 'DATA'  
SELECT * FROM TABLEA WHERE NAME = 'MANAGEMENT'  
SELECT * FROM TABLEA WHERE NAME = 'CONSOLE'  
SELECT * FROM TABLEA WHERE NAME = 'SKILL'  
SELECT * FROM TABLEA WHERE NAME = 'TRANSFER'
```

→ 6 records

Affects disk space in repository database

```
SELECT * FROM TABLEA WHERE NAME = ?
```

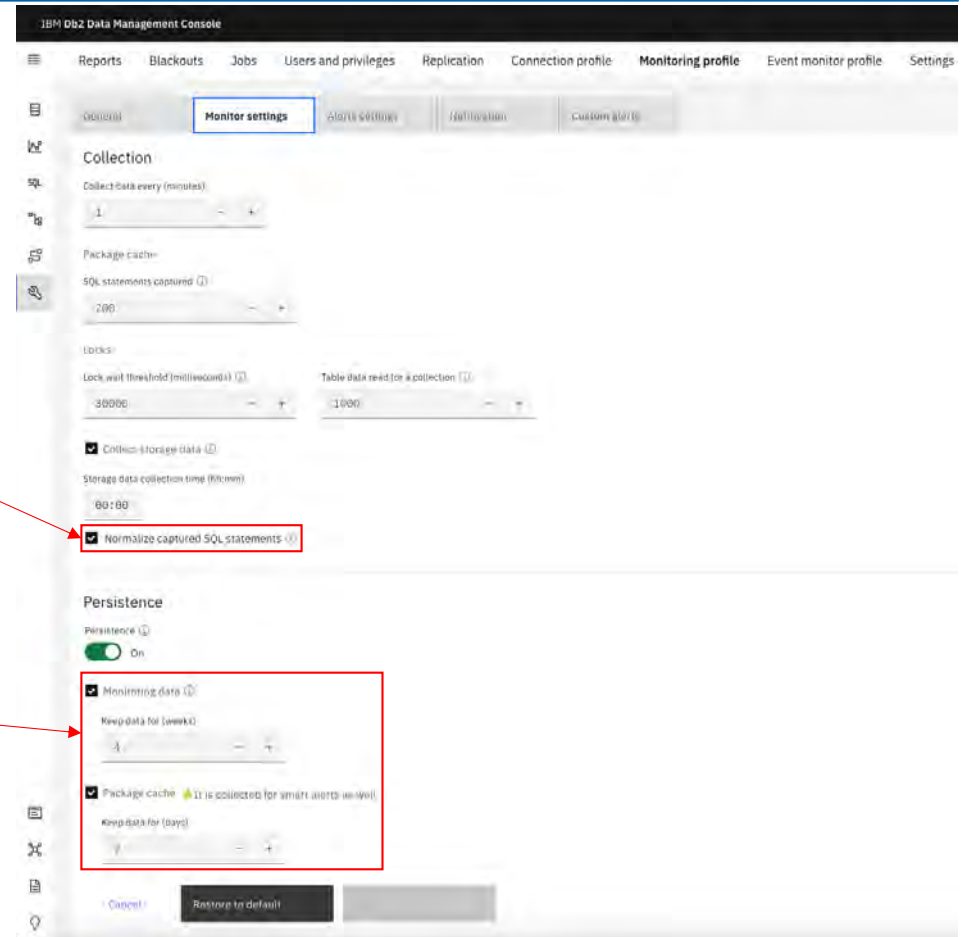
→ 1 records

## Persistence

- Historical data
  - Monitoring data
    - Keep data for (weeks)
  - Package cache
    - Keep data for (days)

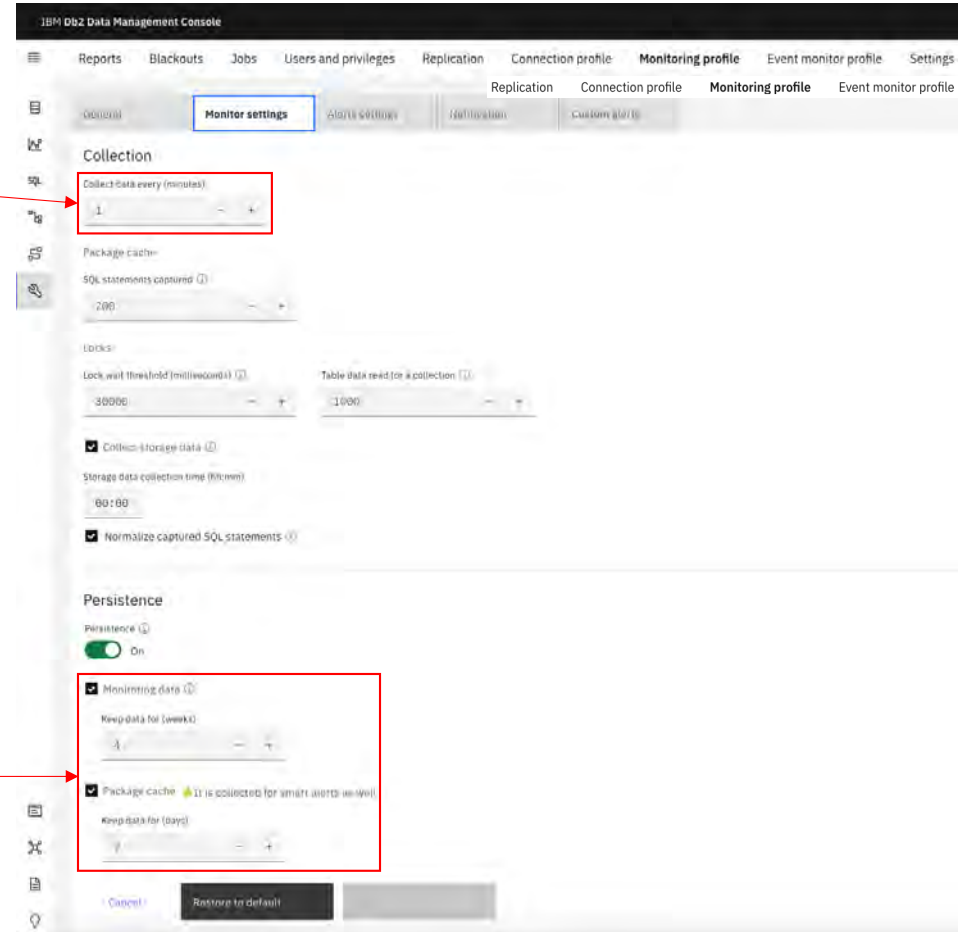
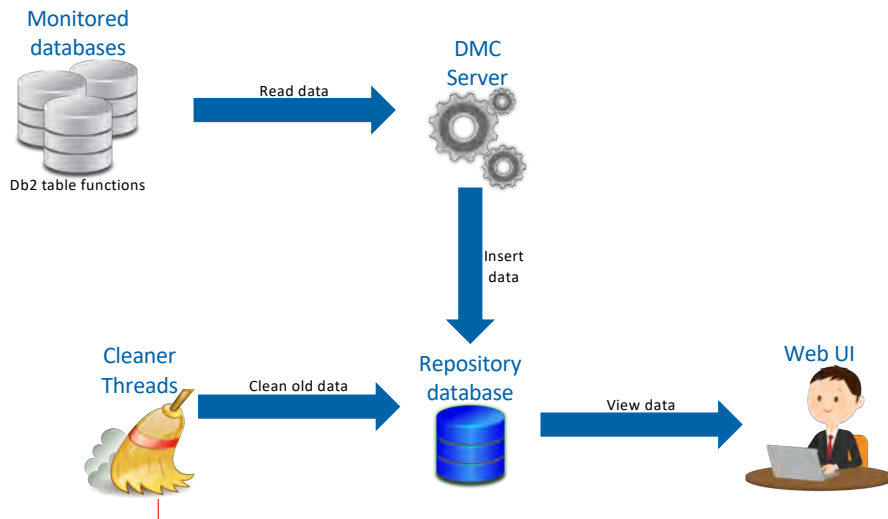
In case old data is not being deleted in repository database, use the [deleteRepoData\\_expired](https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-deleting-expired-monitor-data) script:

Deleting data for a deleted connection profile use the [deleteRepoData4DeletedConnection](https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-cleaning-up-monitor-data-deleted-connections) script:



# Monitoring Profile – Data Collection Cycle

- Collect data every (minutes)
  - Data might not be available if not captured during the cycle (snapshot)
- The lower the number the more data will be collected
  - Example of 1 hour monitoring with a database running 100 applications
    - ❖ Capturing information every 1 minute:  $100 \times (60 / 1) = 6000$  records
    - ❖ Capturing information every 5 minutes:  $100 \times (60 / 5) = 1200$  records
    - ❖ Capturing information every 15 minutes:  $100 \times (60 / 15) = 400$  records
    - ❖ Multiplied by the number of tables collecting data
    - ❖ Multiplied by the number of databases assigned to the monitoring profile





# Monitoring Profile – Alert Settings

## 4 Categories

- Availability
- Performance
- Configuration
- Custom

## Thresholds

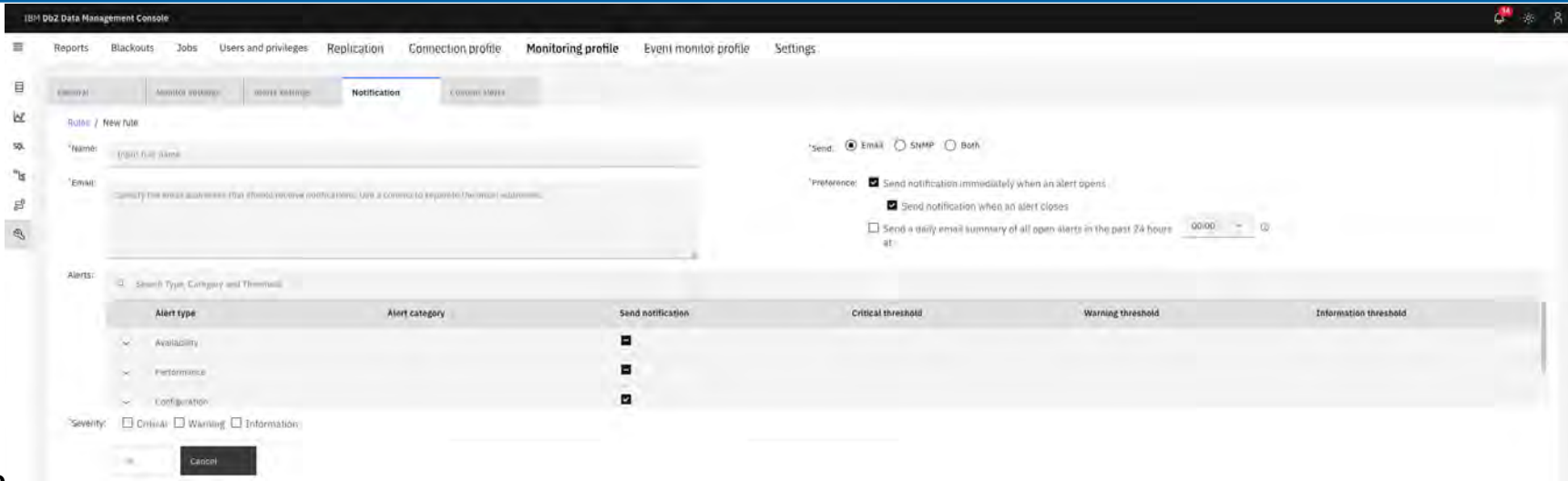
- Critical
- Warning
- Information

Alert type	Alert category	Activated	Critical threshold	Warning threshold	Information threshold
Availability		<input type="checkbox"/>			
Performance		<input type="checkbox"/>			
Configuration		<input checked="" type="checkbox"/>			
Custom		<input checked="" type="checkbox"/>			

Additional information (including list of alerts available)

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=alerts-grouping-by-type>

# Monitoring Profile – Notification (Rules)



- **Name**
- **3 types of notification**
  - e-mail (list of e-mails for the alert)
  - SNMP
  - Both
- **Preference**
  - Send notification immediately when an alert opens
  - Send notification when an alert closes
  - Send a daily email summary of all open alerts in the past 24 hours
- **Alert type**
- **Severity**
  - Critical
  - Warning
  - Information
- Click on **“OK”** button to apply the notification changes
- Click on **“Save”** button to save the monitoring profile

# Monitoring Profile – Custom Alerts

- **Script type**
  - SQL script
  - Shell Script
- **Script text**
  - Scripts must return severity column (returnValue) to trigger the alert
    - ❖ Information: 0
    - ❖ Warning: -1
    - ❖ Critical: -2
  - Stored procedures
    - ❖ OUT parameter must be included to return an exit code (-2,-1, or 0)
  - Second column to return auxiliary information as output (optional)
- **Timeout Settings**

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=profile-creating-custom-alerts>

Custom alerts samples

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=alerts-custom-code-snippets>

IBM Db2 Data Management Console

Reports Blackouts Jobs User Replication Connection profile Monitoring profile Event monitor profile file Settings

General Monitor activities Alerts settings Qualification Custom alerts

Define Select database Configure Schedule Finish

Define SQL

Choose a script type for the alert.

Note: The set alert should be enabled if you want to run CLP script or Shell script.

SQL script

Shell script

Db2 statement delimiter

:

Input your script. It should have a returnValue of 0, -1, or -2, or call a stored procedure with an OUT parameter of value 0, -1, or -2.

```
freemem=$(cat /proc/meminfo|grep SwapFree|cut-d 2|-f2|awk '{print $2}')
echo freemem is $freemem
if [ $freemem -le 1000000 ]; then
echo "Critical"
returnValue=-2
```

Alert severity

Choose which return values will generate alerts when your script returns.

Information (0)  Warning (-1)  Critical (-2)

Timeout Settings

Specify an action to perform if the script execution duration exceeds a timeout period.

Stop the script if the script runs for longer than \_\_\_\_\_ minutes and \_\_\_\_\_ seconds.

Generate an \_\_\_\_\_ alert if the execution exceeds \_\_\_\_\_ minutes and \_\_\_\_\_ seconds.

Cancel Back Next

Cancel Restore to default

# Notification Center

IBM Db2 Data Management Console

**Alerts**

Performance: 0  
Availability: 0  
Status: Total: 1

Only shows open Performance and Availability alerts

Connection name	Tags	Alerts	CPU	Memory	Storage	Log space	Response time (ms)
SAMPLE			2%	8.27%	04%	8%	2
CENT1A							
REPODOME_000000011				20.34%	02%		73

Notification center

02 20

- Backup Error - SAMPLE - Feb 22, 2022 3:44:09 PM
- Backup Database - SAMPLE - Feb 22, 2022 10:09:06 PM
- Package cache size - CENT1A - Apr 20, 2022 7:51:08 AM
- Log file size (logfilesiz) - CENT1A - Apr 21, 2022 1:42:47 PM
- Sort heap threshold - CENT1A - Apr 21, 2022 1:42:47 PM
- Workload management collection inte... - CENT1A - Apr 21, 2022 1:42:47 PM
- Log archmeth1 enable (logarchmeth1) - CENT1A - Apr 21, 2022 1:42:47 PM
- Block on log disk full configuration - CENT1A - Apr 21, 2022 1:42:47 PM
- Package cache overflows - SAMPLE - Apr 6, 2022 2:52:30 PM

For all other alerts, open Notification Center

# Notification Center

The screenshot displays the IBM Db2 Data Management Console Notification Center. The left pane shows a list of alerts, with the 'Package cache size' alert selected. The right pane provides a detailed view of this alert.

**Notification center**

Filter by: Easy filter to search for a specific alert

Alerts list (selected):

Name	Category
Backup Error	CUSTOM   CUSTOM DEFINED
Backup Database	CUSTOM   CUSTOM DEFINED
Package cache size	CONFIGURATION   MEMORY
Log file size (logfsiz)	CONFIGURATION   LOGGING
Sort heap threshold	CONFIGURATION   MEMORY
Workload management collection interval	CONFIGURATION   WORKLOAD
Log archmeth1 enable (logarchmeth1)	CONFIGURATION   LOGGING
Backup log disk full configuration	CONFIGURATION   LOGGING
Package cache overflows	CONFIGURATION   MEMORY
Sort memory not optimal	CONFIGURATION   MEMORY

**Warning - Package cache size**

EDVTA - Apr 21, 2022 1:01:08 AM

CONFIGURATION | MEMORY

Alert # 13.10 - Open

**Analysis**

PACKCACHESZ is a database configuration parameter which defines how much memory DB2 has available for storing packages and recently executed dynamic SQL. An SQL statement which is present in the package cache memory need not be re-loaded from the DB2 catalog (static SQL) or re-prepared (dynamic SQL). PACKCACHESZ memory is drawn from DATABASE\_MEMORY. If the PACKCACHESZ is too small relative to the demand for concurrent execution of SQL statements, a package cache overflow can occur. Overflows draw upon reserve memory and slow down SQL performance.

**Suggested resolution**

The package cache hit ratio is a percentage indicating how well the package cache is helping to avoid reloading packages and sections for static SQL from the system catalogs and helping to avoid recompiling dynamic SQL statements. A high ratio indicates that these activities are being successfully avoided.

The package cache size might be too low. For Db2 V.1 or later, consider using the self-tuning memory feature to have the package cache memory resources automatically allocated as required by the current workload. Consider disabling health checking of this parameter if it is self-tuning. However for the DPF systems consider allocating more package cache memory resources based on workload.

# Notification Center – Suggested Resolution

- Apply Auto-Fix

The screenshot shows the IBM Db2 Data Management Console Notification Center. A warning notification is displayed: "Warning - Block on log disk full configuration". The notification details include the instance name (CINTIA), date and time (Apr 21, 2022 1:02:47 PM), and the alert ID (0000 - Open). The analysis states: "Setting BLK\_LOG\_DSK\_FUL to YES causes applications to hang when DB2 encounters an error because the file system holding the log files becomes full." The suggested resolution section provides instructions: "Setting this configuration parameter to YES prevents log disk full errors from being generated when the DB2 database manager cannot create a new log file in the active log path... Set blk\_log\_dsk\_ful to YES, allowing the user to resolve the log disk full error and allows running transactions to be completed. A log disk full error can be resolved by moving old log files to another file system or by enlarging the file system." A blue "Apply Auto-Fix" button is visible below the resolution text.

The "Applying auto-fix" dialog box displays the following configuration steps:

```

connect to the database -> db2 connect to <dbname>
update blk_log_dsk_ful to YES -> db2 update db cfg for <dbname> using blk_log_dsk_ful YES
reset database -> db2 connect reset
    
```

At the bottom of the dialog, there are "Cancel" and "Apply Auto-Fix" buttons.

The "Applying auto-fix" dialog box shows the successful completion of the configuration steps:

```

db2 connect to CINTIA ...Success
db2 update db cfg for CINTIA using blk_log_dsk_ful YES ...Success
db2 connect reset ...Success
    
```

At the bottom of the dialog, there are "Cancel" and "Complete" buttons.

# Notification Center – Suggested Resolution

- View access plan
- Tune statement

The screenshot displays the IBM Db2 Data Management Console interface. On the left, the 'Notification center' is visible with filters for 'All connections', 'All severities', 'Open', and 'Performance'. A list of notifications is shown, with one selected: 'Total activity time' for 'SAMPLE' on 'Apr 12, 2022 4:17:46 AM'. The main panel shows the details of this notification, including an 'Information - Total activity time' section with a 'PERFORMANCE | STATEMENTS' tag. The 'Analysis' section states: 'The elapsed time that has been spent executing the SQL statement exceeded the threshold. To modify thresholds for a specific alert type, configure alert settings in the [Personal Profile](#) page.' The 'Suggested resolution' section provides the following advice: '- Reviewing statements currently executing might help in investigating the query performance. [View access plan](#) - You can use access plan graph view explained SQL statements as a graph. You can use the information available from the graph to tune your statements for better performance. [Tune statements](#) - Get advice and recommendations to help improve your statement performance. - If statement is still running, cancel the statement.'

Two callout boxes are overlaid on the image: a green box labeled 'Run Visual Explain' with an arrow pointing to the 'View access plan' link, and a red box labeled 'Query Tuning' with an arrow pointing to the 'Tune statements' link.



**System details**

Information threshold: 120 s	Rows returned: 6
Total activity wait time: 0 s	Total activity time: 170 s
Total CPU time: 570235 ms	Rows read: 156821321
Application name: db2hsp	User: DB2INST1
Client hostname: dmsjay1.hyv.ibm.com	Application handle: 31662
Time waited for lock: 0 s	



# Alerts – e-mail

**Inbox — cogura**  
6 messages

---

**cogura** 4/11/22  
SAMPLE: Alert 812 Database availability is closed  
Alert 812: Database availability is successfully closed. Login for more details.

**cogura** 4/7/22  
SAMPLE: CRITICAL Alert 812 Database availability  
Connection name: SAMPLE Alert category: Status Alert type: Database availability Alert severity: CRITICAL Alert details: &n...

**cogura** 2/23/22  
[SUCCESS] Execution status of job Backup Error run on the c...  
Hello, We are sending you this email because the job, Backup Error, has finished executing with status: SUCCESS. Please se...

**cogura** 2/23/22  
Custom Alert : Backup Error  
Additional comments: Regular custom alert email notification  
Connection name: SAMPLE Alert category: Custom defined Ale...

**cogura** 2/23/22  
[SUCCESS] Execution status of job Backup Error run on the c...  
Hello, We are sending you this email because the job, Backup Error, has finished executing with status: SUCCESS. Please se...

**cogura** 2/23/22  
Custom Alert : Backup Error  
Additional comments: Regular custom alert email notification  
Connection name: SAMPLE Alert category: Custom defined Ale...

**cogura**  
SAMPLE: CRITICAL Alert 812 Database availability  
To: cogura

---

**Connection name:** SAMPLE  
**Alert category:** Status  
**Alert type:** Database availability  
**Alert severity:** CRITICAL  
**Alert details:**  
Critical threshold: UNREACHABLE, QUIESCED  
Message returned: Connection failed, DB is in UNREACHABLE state. Error Code: -4461, SQLStatus: 42815  
Status: UNREACHABLE

[Login](#) for more details.





# Db2 Data Management Console

Event Monitor

# Event Monitor – Prerequisites

Prerequisites settings for the monitored database

- Privileges to create event monitoring-related objects: SYSCTRL or SYSADM privilege is required to create BUFFERPOOL and TABLESPACE
- WLMADM or DBADM privilege is required to CREATE / ALTER WORKLOAD
- ACCESSCTRL or SECADM privilege is required to GRANT EXECUTE on PROCEDURE
- SYSADM privilege is required to run db2set (ATS)
- [Tablespace](#) for event monitor tables

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=events-table-space-other-prerequisites-event-monitoring>

# Event Monitor Profile

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges Replication Connection profile Monitoring profile **Event monitor profile** Settings

Top connection consumption by tablespace usage

Top 20 connections with tablespace usage

Connections	Type	Source	Created by	Status
REPODMC_db2inst1_localhost_50000				
RTMON_EVMON_UTILITY	CHANGEHISTORY	Console	DB2INST1	Disabled
RTMON_EVMON_ACTIVITIES_1653325775702	ACTIVITIES	Console	DB2INST1	Disabled
RTMON_EVMON_LOCKING	LOCKING	Console	DB2INST1	Disabled
RTMON_EVMON_STATS	STATISTICS	Console	DB2INST1	Enabled
RTMON_EVMON_ACTIVITIES_1653504773281	ACTIVITIES	Console	DB2INST1	Enabled
DB2DETAILDEADLOCK	DETAILDEADLOCKS	Db2	DB2INST1	Enabled
SAMPLE				
RTMON_EVMON_ACTIVITIES_1653504773815	ACTIVITIES	Console	DB2INST1	Enabled
RTMON_EVMON_ACTIVITIES_1653355696281	ACTIVITIES	Console	DB2INST1	Disabled
RTMON_EVMON_STATS	STATISTICS	Console	DB2INST1	Enabled
DB2DETAILDEADLOCK	DETAILDEADLOCKS	Db2	DB2INST1	Enabled
localhost_50000_SAMPHDR				
RTMON_EVMON_STATS	STATISTICS	Console	DB2INST1	Enabled

Find Database or profile

Shows all event monitors for each database

Pencil icon to edit Event monitor profile

# Event Monitor – Settings

- When enabled, DMC issues Db2 CREATE EVENT MONITOR ... WRITE TO TABLES command on the monitored database
- Tablespace is required to store the event monitor tables
- Db2 creates the event monitor and event monitor tables, and insert data into those tables
- 4 event monitors
  - Activity
    - ❖ Activity event monitor
    - ❖ Monitor → Statement → [Individual executions](#)
  - Locking
    - ❖ Locking event monitor
    - ❖ Monitor → Locking → [Locking event monitor](#)
  - Utility
    - ❖ Change history event monitor
    - ❖ Monitor → Applications → [Utilities event monitor](#)
  - Statistics
    - ❖ Statistics event monitor
    - ❖ Monitor → Summary → [Responsiveness widget](#)

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges Replication Connection profile Monitoring profile **Event monitor profile**

Event monitor profile / SAMPLE

Tablespace usage

TS4MONITOR(2.0GB) 3%

Deactivation threshold: 100%

Event monitor configuration

Activity Locking Utility **STATISTICS**

Alarm: RTHON\_EVMON\_ACTIVITIES\_climestamp>

Collection interval (minutes): 1

Status:  Enabled

Data retention (days): 28

The activity event monitor captures data to help you better understand the performance and behavior of statements and of the load on your system in general.

Capture in-progress activity when possible:  On

Use Administrative Task Scheduler:  On

**Performance warning**  
Enabling event monitors reduces storage and may affect performance.

Find workload

Workload name	Member level	Collection level	Collection status
SYSDEFAULTUSERWORKLOAD	Coordinator	With details	<input checked="" type="checkbox"/> Enabled
SYSDEFAULTADMWORKLOAD	Coordinator	With details	<input checked="" type="checkbox"/> Enabled
CONSOLE_WORKLOAD	None	None	<input type="checkbox"/> Disabled

# Event Monitor – Tablespace

- Created on monitored database
- Not required for HADR standby databases
- New table space (created by DMC)
  - TS4MONITOR default name
- Existing table space requirements
  - 32K page
  - Across all database partitions or members
  - AUTOMATIC STORAGE AUTORESIZE YES
  - MAXSIZE 2G
- To increase the table space usage size, click 'Scale' to set new table space size

The screenshot displays the IBM Db2 Data Management Console interface. The main view is the 'Event monitor profile' for 'SAMPLE'. A 'Tablespace usage' section shows 'TS4MONITOR(2.0GB) 3%' with a 'Scale' button. An 'Event monitor configuration' section shows the monitor is 'Enabled' and has a 'Performance warning' about storage. A table lists workload names and their collection statuses. An 'Edit tablespace' dialog is open, showing options to 'Select an existing tablespace' (selected) and 'Deactivation threshold (%)' set to 80.

Workload name	Member level	Collection level	Collection status
SYSDEFAULTUSERWORKLOAD	Coordinator	With details	Enabled
SYSDEFAULTADMWORKLOAD	Coordinator	With details	Enabled
CONSOLE_WORKLOAD	None	None	Disabled

# Event Monitor – Tablespace Requirements

## Without ATS

```
--Create a bufferpool with page size 32kb
CREATE BUFFERPOOL CONSOLEPOOL ALL DBPARTITIONNUMS SIZE 1000 AUTOMATIC PAGESIZE 32768
--Create a partition spanning all partitions
CREATE DATABASE PARTITION GROUP CONSOLEGROUP ON ALL DBPARTITIONNUMS
--Create the 32kb tablespace with max size 2G specified
CREATE TABLESPACE TS4MONITOR IN CONSOLEGROUP PAGESIZE 32768 MANAGED BY AUTOMATIC STORAGE AUTORESIZE YES INITIALSIZE 100M MAXSIZE
2G BUFFERPOOL CONSOLEPOOL
--Create a 32kb pagesize temporary tablespace if there is not an existing one
CREATE TEMPORARY TABLESPACE TEMPSPACE2 PAGESIZE 32K MANAGED BY AUTOMATIC STORAGE EXTENTSIZE 4 BUFFERPOOL CONSOLEPOOL
--Disable the legacy console workload DSM_WORKLOAD if it exists
ALTER WORKLOAD DSM_WORKLOAD DISABLE
--Define a workload to filter the monitored console executed statements. Because the COLLECT ACTIVITY DATA option is not specified, the statement
history will not collect the statements of the workload.
CREATE WORKLOAD CONSOLE_WORKLOAD APPLNAME ("DSMAu**","DSMrt**","DS_ConnMgt**","DSSNAP**","DSMOQT","UC_**")
--Capture the statements for the default two workloads on the coordinator node. If you want to collect the activity data for all nodes of a multi-partition
database, change the COORDINATOR option to ALL.
ALTER WORKLOAD SYSDEFAULTUSERWORKLOAD COLLECT ACTIVITY DATA ON COORDINATOR WITH DETAILS;
ALTER WORKLOAD SYSDEFAULTADMWORKLOAD COLLECT ACTIVITY DATA ON COORDINATOR WITH DETAILS;
--Capture the aggregate responsiveness workload information
ALTER WORKLOAD SYSDEFAULTUSERWORKLOAD COLLECT AGGREGATE ACTIVITY DATA BASE;
ALTER WORKLOAD SYSDEFAULTADMWORKLOAD COLLECT AGGREGATE ACTIVITY DATA BASE;
```

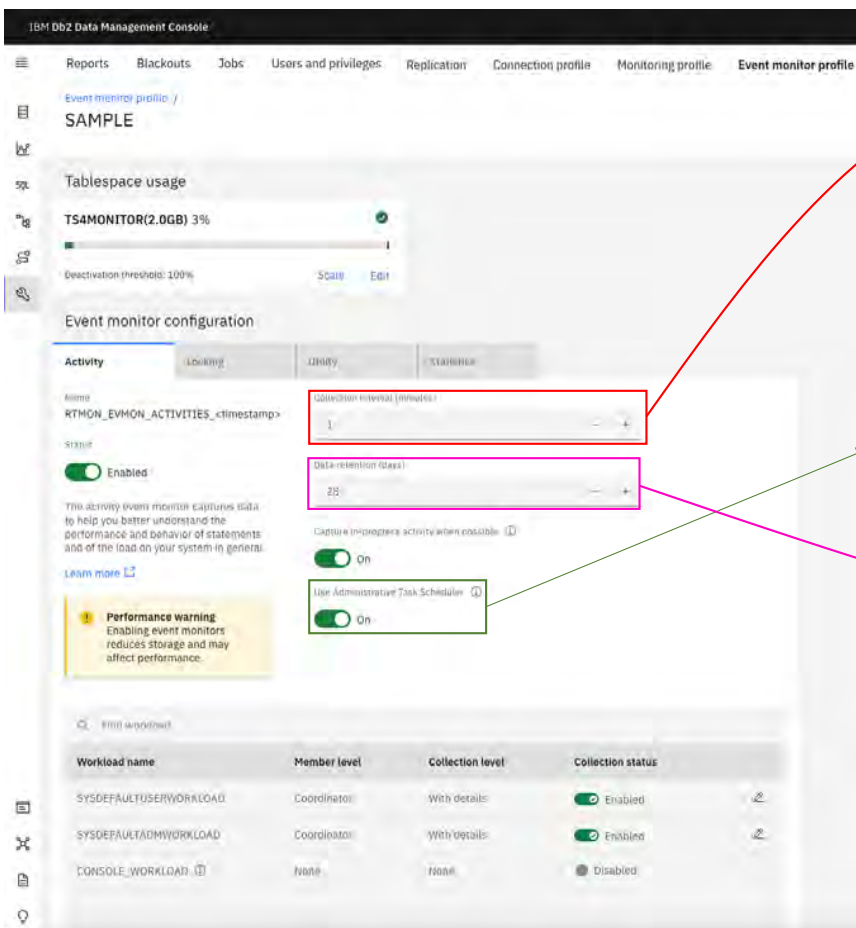
## With ATS

```
--Create a bufferpool with page size 32kb
CREATE BUFFERPOOL CONSOLEPOOL ALL DBPARTITIONNUMS SIZE 1000 AUTOMATIC PAGESIZE 32768
--Create a partition spanning all partitions
CREATE DATABASE PARTITION GROUP CONSOLEGROUP ON ALL DBPARTITIONNUMS
--Create the 32kb tablespace with max size 2G specified
CREATE TABLESPACE TS4MONITOR IN CONSOLEGROUP PAGESIZE 32768 MANAGED BY AUTOMATIC STORAGE AUTORESIZE YES INITIALSIZE 100M MAXSIZE
2G BUFFERPOOL CONSOLEPOOL
--Create a 32kb pagesize temporary tablespace if there is not an existing one
CREATE TEMPORARY TABLESPACE TEMPSPACE2 PAGESIZE 32K MANAGED BY AUTOMATIC STORAGE EXTENTSIZE 4 BUFFERPOOL CONSOLEPOOL
--Disable the legacy console workload DSM_WORKLOAD if it exists
ALTER WORKLOAD DSM_WORKLOAD DISABLE
--Define a workload to filter the monitored console executed statements. Because the COLLECT ACTIVITY DATA option is not specified, the statement
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--Capture the statements for the default two workloads on the coordinator node. If you want to collect the activity data for all nodes of a multi-partition
database, change the COORDINATOR option to ALL.
ALTER WORKLOAD SYSDEFAULTUSERWORKLOAD COLLECT ACTIVITY DATA ON COORDINATOR WITH DETAILS;
ALTER WORKLOAD SYSDEFAULTADMWORKLOAD COLLECT ACTIVITY DATA ON COORDINATOR WITH DETAILS;
--Capture the aggregate responsiveness workload information
ALTER WORKLOAD SYSDEFAULTUSERWORKLOAD COLLECT AGGREGATE ACTIVITY DATA BASE;
ALTER WORKLOAD SYSDEFAULTADMWORKLOAD COLLECT AGGREGATE ACTIVITY DATA BASE;
--Create SYSTOOLSPACE for Administrative Task Schedule(ATS)
CREATE TABLESPACE SYSTOOLSPACE IN IBMCATGROUP MANAGED BY AUTOMATIC STORAGE USING STOGROUP IBMSTOGROUP EXTENTSIZE 4
--Ensure you have ADMIN_TASK_ADD and ADMIN_TASK_UPDATE privileges to execute stored procedures(ATS)
GRANT EXECUTE ON PROCEDURE SYSPROC.ADMIN_TASK_ADD TO USER ${userName};
GRANT EXECUTE ON PROCEDURE SYSPROC.ADMIN_TASK_UPDATE TO USER ${userName};
--Enable on the database the setting related to ATS, please choose the "CLP with SSH" Run method in Options
!db2set DB2_ATS_ENABLE=YES;
```

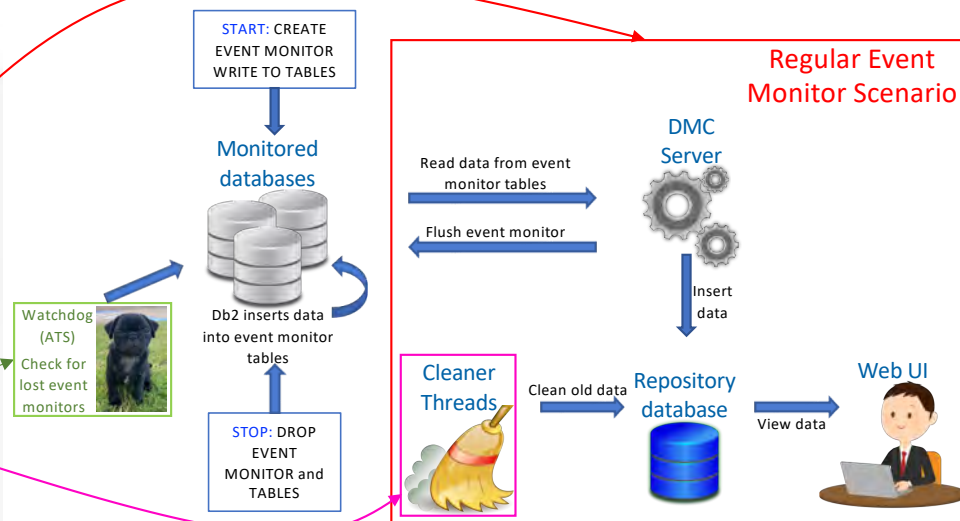
### Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=events-table-space-other-prerequisites-event-monitoring>

# Event Monitor – Data Collection Cycle



- Regular event monitor scenario happens according to the Collection interval configured in the Event monitor profile



## ATS (Administrative Task Scheduler) watchdogs

- Helpful when DMC loses the connection to the monitored database
- On
  - ❖ Automatically drop existing event monitors and event monitor tables
  - ❖ ATS needs to be configured and running on the monitored database
- Off
  - ❖ Possibility to reach tablespace full error
  - ❖ Need to drop existing event monitors and event monitor tables manually

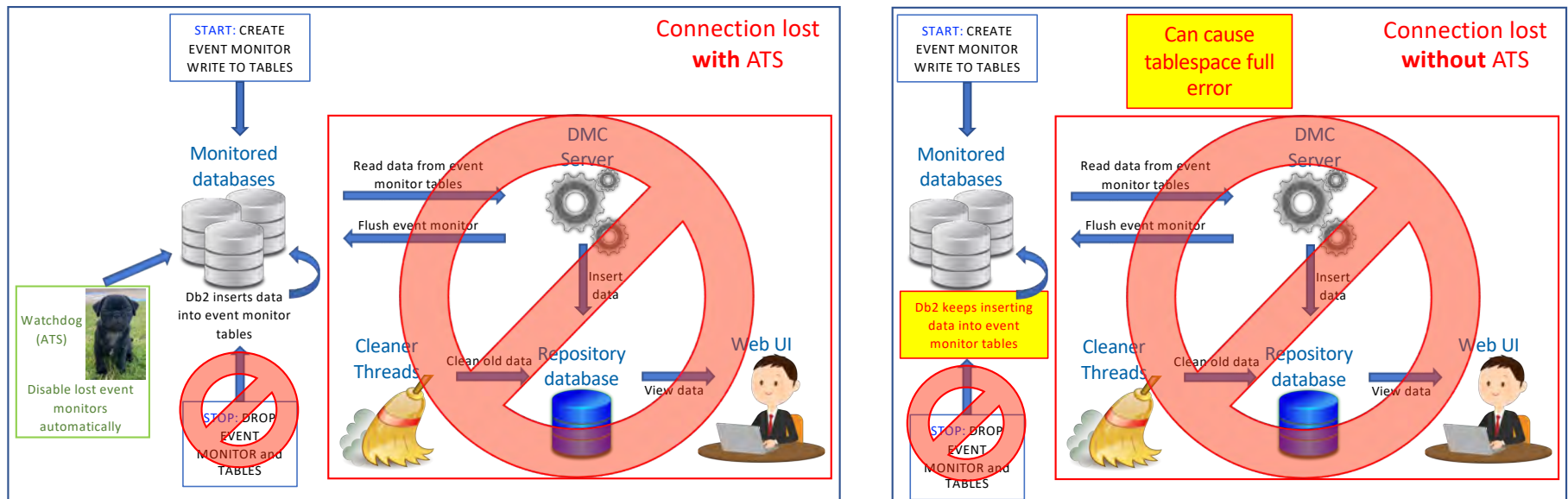
# Event Monitor – Administrative Task Scheduler (ATS)

Common scenarios when DMC loses the connection to the monitored database

- Connection from DMC to the monitored database was forced (force applications command)
- DMC crashes

Why use Administrative Task Scheduler (ATS)?

- Watchdogs drop the event monitors and event monitor tables automatically



Additional information about ATS:

<https://www.ibm.com/docs/en/db2/11.5?topic=scheduler-administrative-task>



# Event Monitor – Activity

The screenshot displays the IBM Db2 Data Management Console interface. On the left, the 'Event monitor profile' is selected, showing a table of connections. A red box highlights the entry 'RTMON\_EVMON\_ACTIVITIES\_14633529779702'. An arrow points from this entry to the configuration panel on the right. In the configuration panel, the 'Name' field is 'RTMON\_EVMON\_ACTIVITIES\_<timestamp>' and the 'Collection Interval (minutes)' is set to 1. A red callout box points to this interval with the text 'Timestamp changes every cycle'. Below the configuration, a 'Performance warning' is visible, and a table shows workload names and their collection statuses.

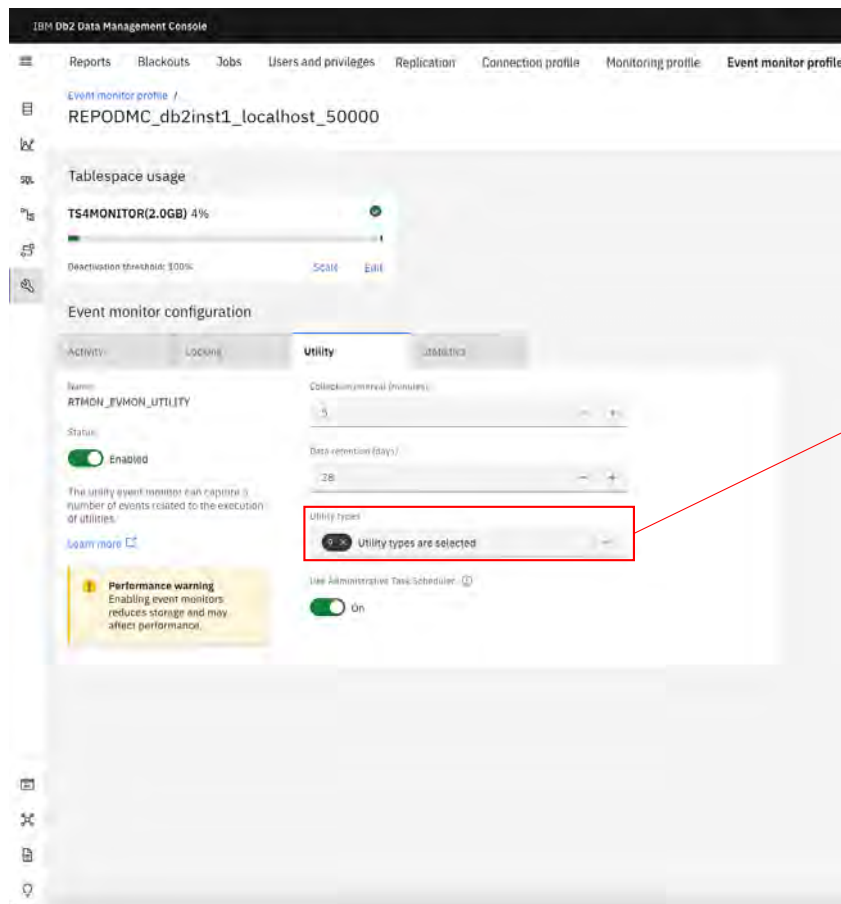
Workload name	Member level	Collection level	Collection status
SYSDEFAULTUSERWORKLOAD	Coordinator	With details	Enabled
SYSDEFAULTADMWORKLOAD	Coordinator	With details	Enabled
CONSOLE_WORKLOAD	None	None	Disabled

# Event Monitor – Locking

The screenshot displays the IBM Db2 Data Management Console interface. At the top, there is a navigation bar with tabs for Reports, Blackouts, Jobs, Users and privileges, Replication, Connection profile, Monitoring profile, and Event monitor profile. Below this, the breadcrumb path is 'Event monitor profile / REPODMC\_db2inst1\_localhost\_50000'. The main content area is divided into sections: 'Tablespace usage' showing 'TS4MONITOR(2.0GB) 4%' with a progress bar and a 'Deactivation threshold: 100%' setting; and 'Event monitor configuration' with tabs for Activity, Locking, Utility, and Statistics. The 'Locking' tab is active, showing the configuration for the event monitor 'RTMON\_EVMON\_LOCKING'. The status is 'Enabled'. The 'Lock wait threshold (microseconds)' is set to '-30000000', which is highlighted with a red box. Other settings include 'Collection interval (minutes)' at 5, 'Data retention (days)' at 28, and 'Use Administrative Task Scheduler' at On. A yellow warning box at the bottom left states: 'Performance warning: Enabling event monitors reduces storage and may affect performance.'

Only locks time up to threshold will be collected

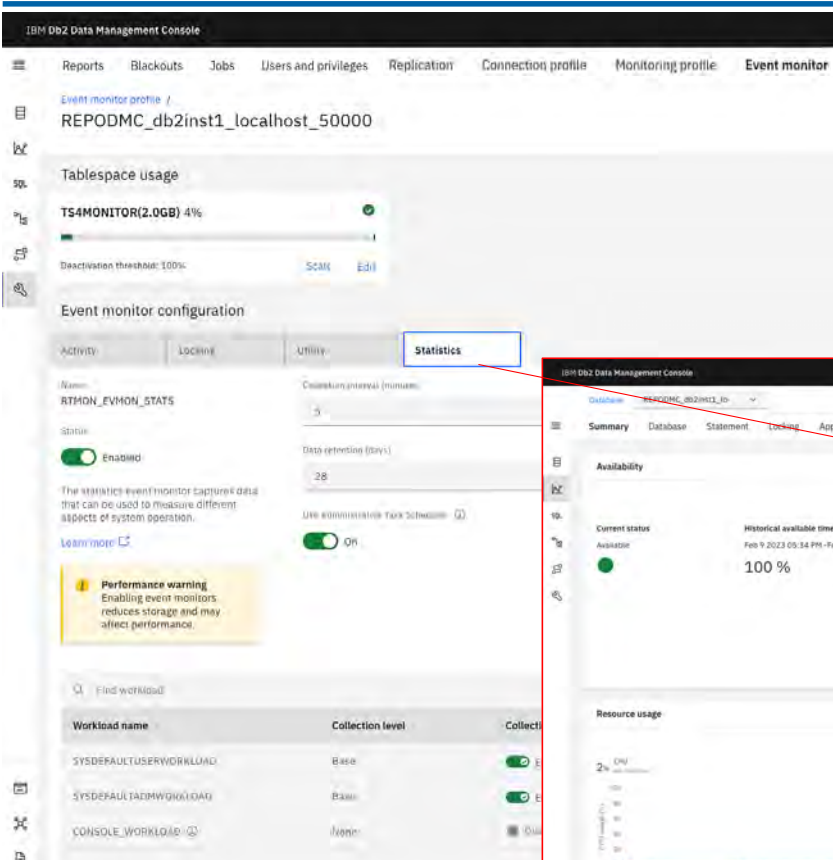
# Event Monitor – Utility



Only captures information from the **selected** Utility Types

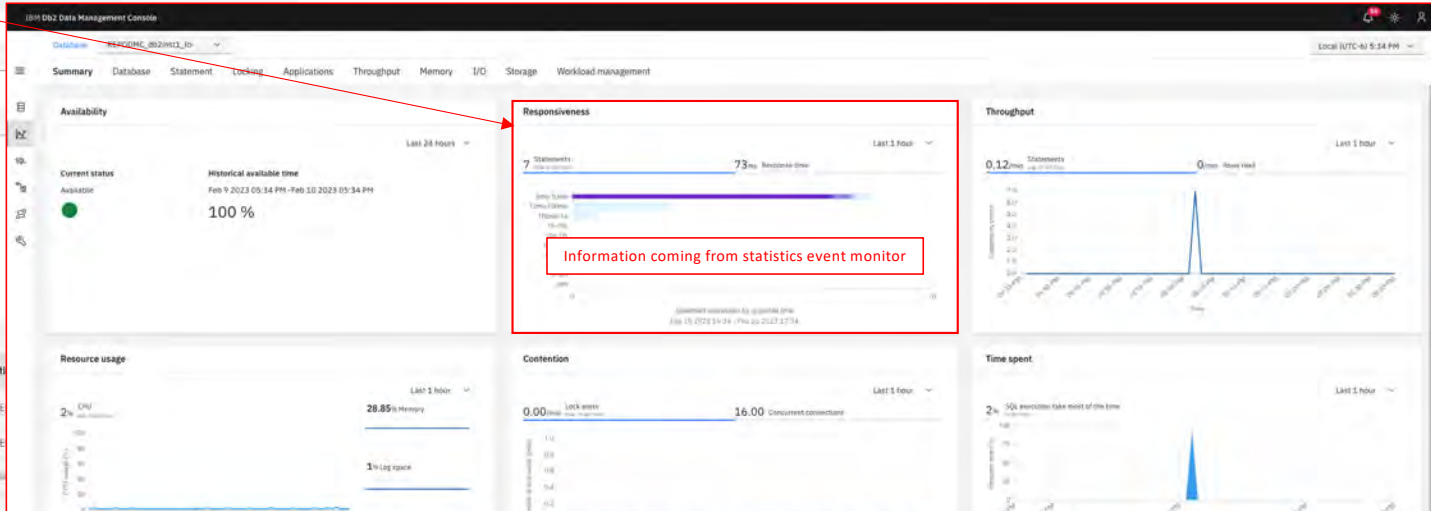
Utility Types
BACKUP
LOAD
MOVETABLE
ONLINERECOVERY
REDISTRIBUTE
REORG
RESTORE
ROLLFORWARD
RUNSTATS

# Event Monitor – Statistics



**Why should you opt-in?**  
Statistics event monitor must be enabled on a connected database for the 'Responsiveness' widget in the **Monitor > Summary page** to display data in the widget.  
**Note:** The **"Responsiveness" widget** is disabled (default) when the Statistics event monitor opt-in feature is disabled (default)

**What is the benefit?**  
The **"Responsiveness" widget** is a tool that gives you an insight on changes of query response time characteristics over time. This widget uses the aggregated activity data collected by the statistics event monitor and helps you understand how quickly the system is processing the statements. You can also view your workload composition and capture activities for diagnostic reasons.  
In most cases, statistic event monitor will only add a minor overhead to monitored databases, which should be safe to enable it



Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=events-setting-up-statistics-event-monitoring-opt-in>



# Db2 Data Management Console

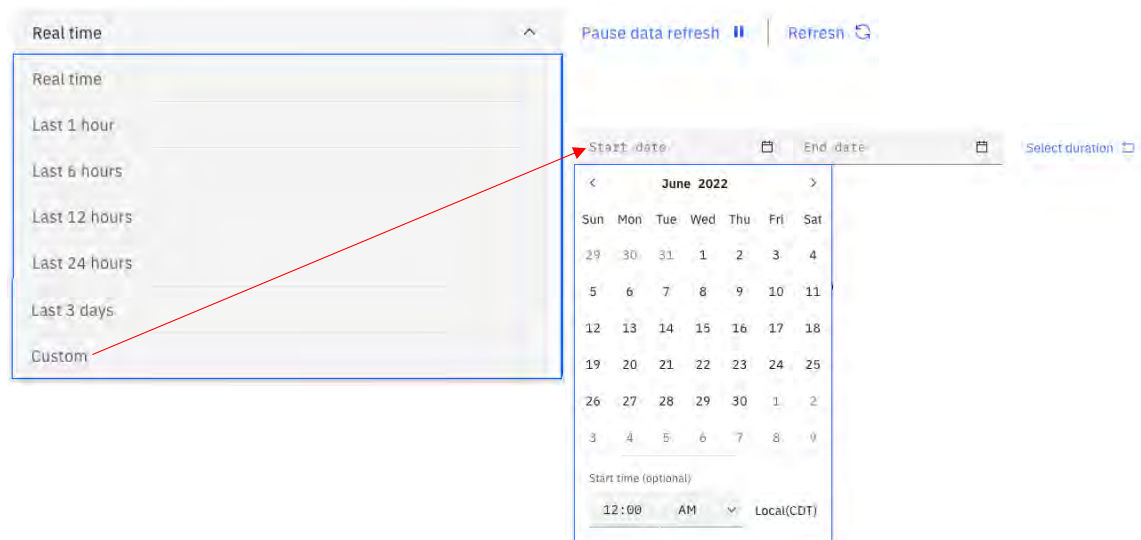
Monitoring Databases

# Monitor Database – Understanding Icons

The screenshot shows the IBM Db2 Data Management Console interface. The left sidebar contains navigation icons for 'Expand Side Menu', 'Databases', 'Monitor', 'Run SQL', 'Data', 'Tuning', and 'Administration'. The main area displays a table of database activity with columns for SQL, Statement execution time, CPU time, Workload queue time, Client IP address, Application name, Session authorization ID, Workload name, Activity type, Time started, Time completed, and Rows read. The CPU time column is highlighted with a red box and labeled 'Ascendant and Descendant Sort'. The table shows several rows of activity, including SQL statements like 'SELECT \* FROM TABLE(SNAP\_GET\_DBM(CAST(? AS INT)))' and 'SELECT \* FROM TABLE(SNAP\_GET\_DBM(CAST(? AS INT)))'. The right side of the interface has a toolbar with icons for 'Notification Center', 'Dark/Light Mode', 'User', 'Show/Hide System Objects', 'Export as CSV', 'Share the page', 'Show/Hide Column', 'Filter Conditions', and 'Additional options'. The bottom left has 'About', 'APIs', and 'Community' icons, with 'APIs' labeled 'IBM Documentation'. The bottom right shows 'Items per page: 10' and '1 of 6 pages'.

# Monitor Database – Show Data Interval

- Sampling data only
- To see all records, use Custom option and specify a date interval





# Monitor Statement – Statements

- All captured statements have an option to View details, Visual Explain, and Tune query
- Force application and cancel activity options for Real Time only

The screenshot displays the IBM Db2 Data Management Console interface. At the top, there are navigation tabs: Summary, Database, Statement, Locking, Applications, Throughput, Memory, I/O, Storage, and Workload management. The 'Statement' tab is active, showing 'In-flight executions' for a specific database. A table lists active statements, with one highlighted. To the right of the table are buttons for 'Tune query' and 'Cancel'. Below the table, a 'Real Time' section contains buttons for 'View details', 'Explain', 'Force application', and 'Cancel activity'. A red box labeled 'Real Time only' encompasses these buttons. Three arrows point from the 'View details', 'Explain', and 'Force application' buttons to three separate inset windows: 'Statement text', 'Visual Explain', and 'Query Tuning'. The 'Statement text' window shows the SQL code for the selected statement. The 'Visual Explain' window shows a graphical execution plan. The 'Query Tuning' window shows various performance metrics and optimization suggestions.

Client IP address	Application name	User ID	Start time	Coordinator	Statement execution time	Activity state	SQL	WLM queue time	Idle time	Rows read	Estimated query cost	Sort used	Peak sort used
127.0.0.1	URL_HYMON	DBZINST1	Feb 14, 2023 12:47:41 PM		0.000	EXECUTING	/* IBM_CSSNAP */ WITH unicode_fix() AS SELECT NULL F...	0.000	0.000	0	3.764	0.00%	0.00%







# Monitor Statement – Statements – View Details 3/4

Sort			
Name	Value	Name	Value
Total sorts	0	OLAP function overflows	0
Sort overflows	0	Hash group by overflows	0
Sort share heap currently allocated	41	Post threshold sorts	0
Max share heap allocated per part percent	0.00%	Hash join threshold	0
Estimated sort share heap top pages	61	OLAP function threshold	0
Max estimated share heap per part percent	0.00%	Hash group by threshold	0
Sort share heap high watermark	61	Columnar vector consumer overflows	0
Max share heap peak per part percent	0.00%	Post threshold columnar_vector consumers	0
Hash join overflows	0		

Rows properties	
Name	Value
Rows read	0
Rows returned	0
Rows modified	0

Locking	
Name	Value
Total lock waits	0
Global lock waits	0
Total lock escalations	0
Lock escalations in CF	0
Total deadlocks	0
Total lock timeouts	0
Global lock timeouts	0
Number of cluster caching facility waits	0

I/O			
Name	Value	Name	Value
Direct reads	0	Buffer pool temp physical reads	0
Direct writes	0	Buffer pool logical reads	0
FCM send+receive volume (kb)	0	Buffer pool physical reads	0
Buffer pool temp logical reads	0	Buffer pool writes	0

Log	
Name	Value
Log disk waits	0
Number of times full log buffer caused agents to wait	0
Unit of work log space used (kb)	0

# Monitor Statement – Statements – View Details 4/4

Federation	
Name	Value
Remote table rows deleted	0
Remote table rows inserted	0
Remote table rows updated	0
Remote table rows read	0
Total number of execution times for a federation server	0

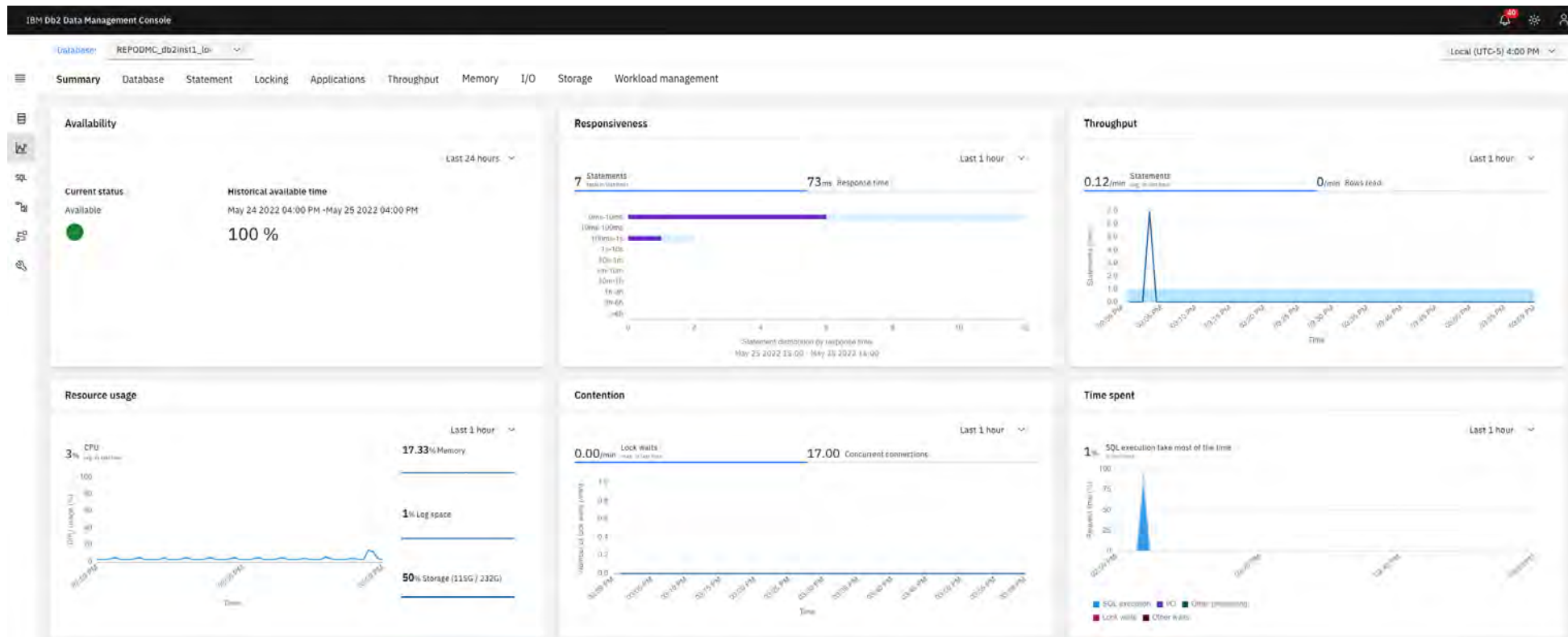
Ext table	
Name	Value
Total data read by external table readers (kb)	0
Total data written by external table writers (kb)	0
Total data sent to external table writers (kb)	0
Total data received from external table readers (kb)	0

Time spent	
Name	Value
WLM queue time	0.00%
Statement execution time: 0.00%	

# Monitor – Summary

Overview showing main metrics for the monitored database



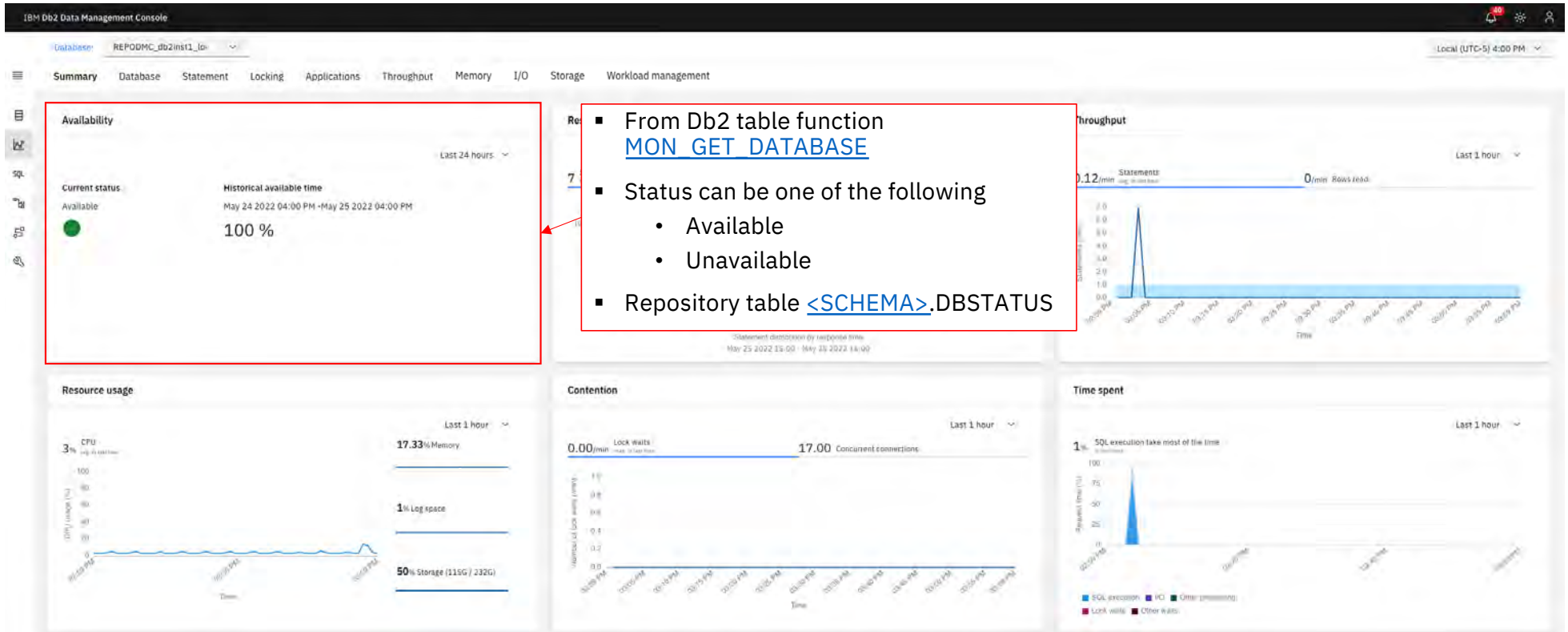
Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=metrics-summary>

[https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=SS5Q8A\\_3.1.x/com.ibm.datatools.dsweb.ots.installconfig.doc/topics/consolehome.html#baselinedesc](https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=SS5Q8A_3.1.x/com.ibm.datatools.dsweb.ots.installconfig.doc/topics/consolehome.html#baselinedesc)

[Back to Table of Contents](#)

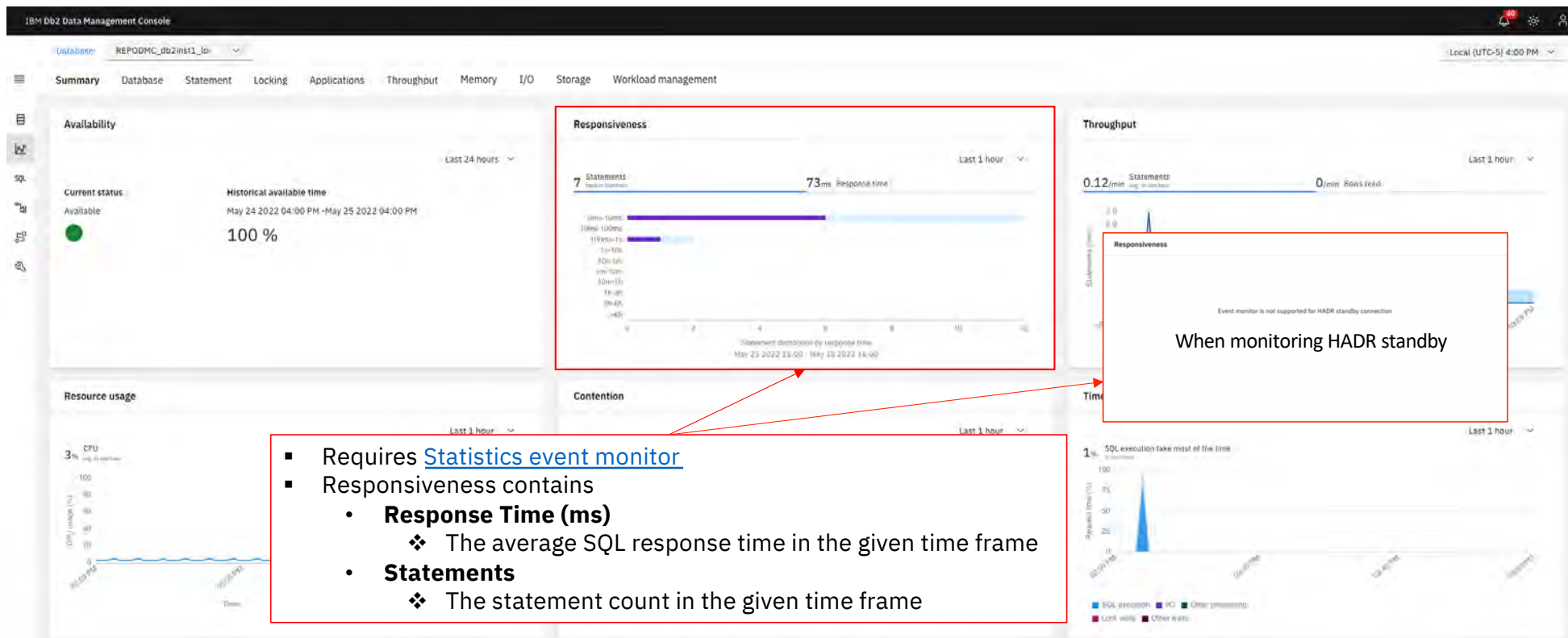
# Monitor – Summary – Availability



Additional information including table description

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=summary-availability>

# Monitor – Summary – Responsiveness



# Monitor – Summary – Throughput

IBM Db2 Data Management Console

Database: REPODMC\_db2inst1\_id

Local (UTC-5) 4:00 PM

Summary Database Statement Locking Applications Throughput Memory I/O Storage Workload management

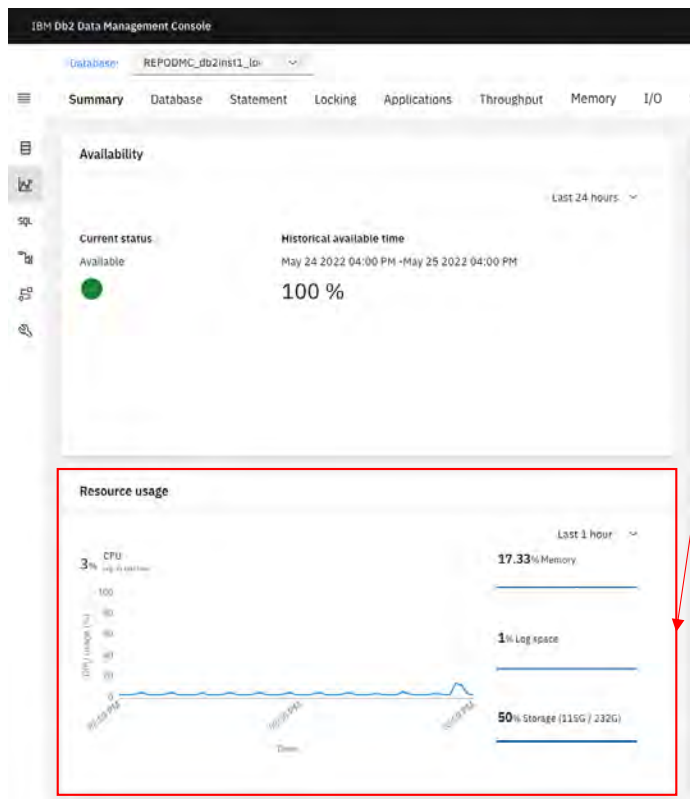
- Throughput contains
  - Rows Read / (min)**
    - The average rows read rate (number of rows read per minute) in the given time frame
  - Statements / (min)**
    - The average SQL rate (number of statements per minute) in the given time frame
- From Db2 table function [MON\\_GET\\_WORKLOAD](#)
- Repository table `<SCHEMA>.DATABASE`
- The throughput metric monitors the query performance by measuring the number of statements that are processed and the number of rows that are read from the table
- The statements contain the activities that are completed with errors and the activities that are completed successfully within a certain period
- The count of rows read is not the number of rows that were returned to the calling application. Instead, it is the number of rows that were read to return the result set
- Additionally, this count does not include any index accesses. This metric summary represents database throughput by quantifying the statements and rows that are read in two aspects
  - An average number per minute
  - Time series for an average

Additional information including table description

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=summary-throughput>



# Monitor – Summary – Resource Usage



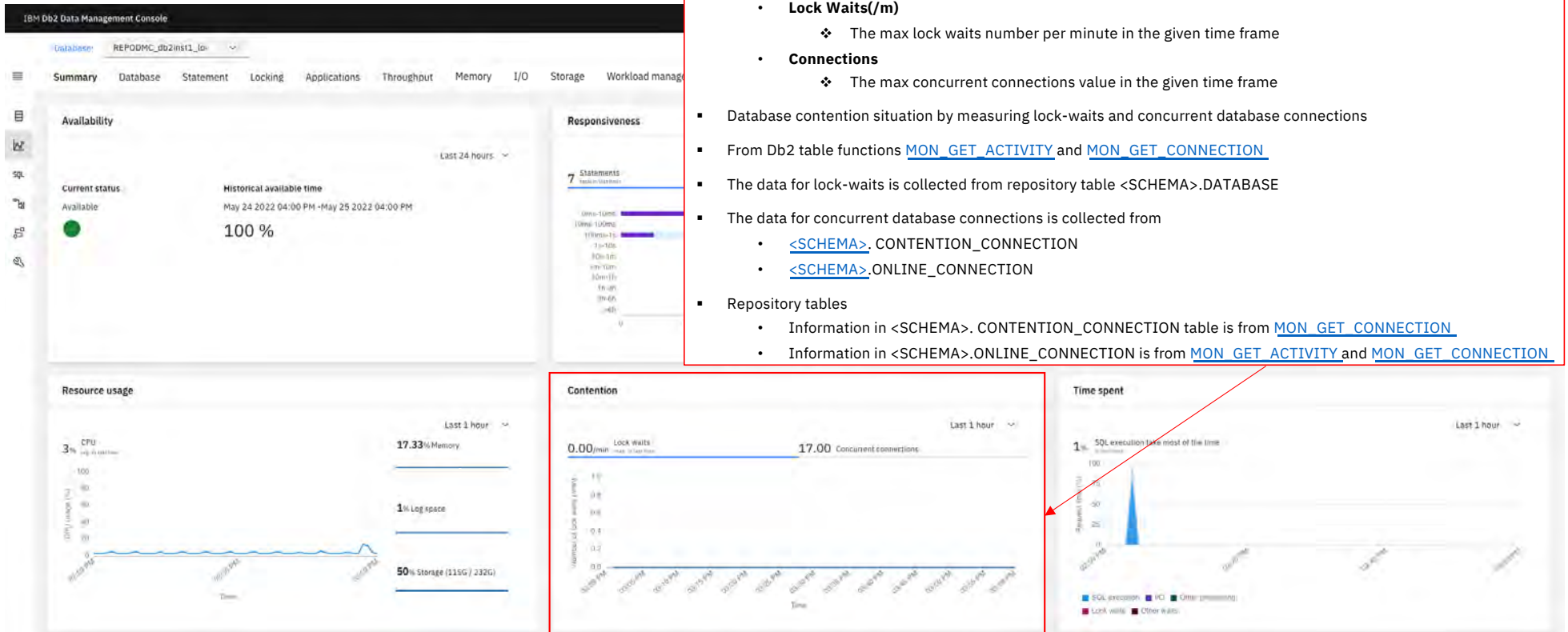
The screenshot shows the IBM Db2 Data Management Console interface. The top navigation bar includes 'Summary', 'Database', 'Statement', 'Locking', 'Applications', 'Throughput', 'Memory', 'I/O', and 'Storage'. The main content area is divided into two sections. The upper section, titled 'Availability', shows the current status as 'Available' and historical available time from May 24, 2022, 04:00 PM to May 25, 2022, 04:00 PM, with a 100% availability percentage. The lower section, titled 'Resource usage', features a line chart showing CPU usage (peaking at 3%) and a summary of resource usage: 17.33% Memory, 1% Log space, and 50% Storage (119G / 232G). A red box highlights the 'Resource usage' section, with an arrow pointing to a detailed list of resource usage metrics and repository tables.

- Resource usage contains
  - CPU (%)**
    - The average Db2 CPU usage percentage in the given time frame
    - If the database has multiple nodes, only the master node (member = 0) is considered
  - Memory (%)**
    - The average memory usage percentage in the given time frame
  - Storage (%)**
    - The latest storage usage percentage in the given time frame
  - Log Space (%)**
    - The max log space usage percentage in the given time frame
- From Db2 table function [ENV\\_GET\\_DB2\\_SYSTEM\\_RESOURCES](#) and [ENV\\_GET\\_SYSTEM\\_RESOURCES](#)
- SUM(CPU\_USER) and SUM(CPU\_SYSTEM) from the [ENV\\_GET\\_DB2\\_SYSTEM\\_RESOURCES](#) grouped by database members and joined with the columns from [ENV\\_GET\\_SYSTEM\\_RESOURCES](#) for those database members
- Repository tables
  - CPU (%)
    - [<SCHEMA>.RESOURCE\\_CPU](#)
    - Db2WoC - [<SCHEMA>.WOLVERINE\\_API\\_CPU](#)
  - Memory (%)
    - [<SCHEMA>.RESOURCE\\_MEMORY](#)
    - Db2WoC - [<SCHEMA>.WOLVERINE\\_API\\_MEMORY](#)
  - Storage (%)
    - [<SCHEMA>.RESOURCE\\_STORAGEGROUP](#)
    - Db2WoC - [<SCHEMA>.WOLVERINE\\_API\\_STORAGE](#)
  - Log Space (%)
    - [<SCHEMA>.RESOURCE\\_LOGSPACE](#)

Additional information including table description

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=summary-resource-usage>

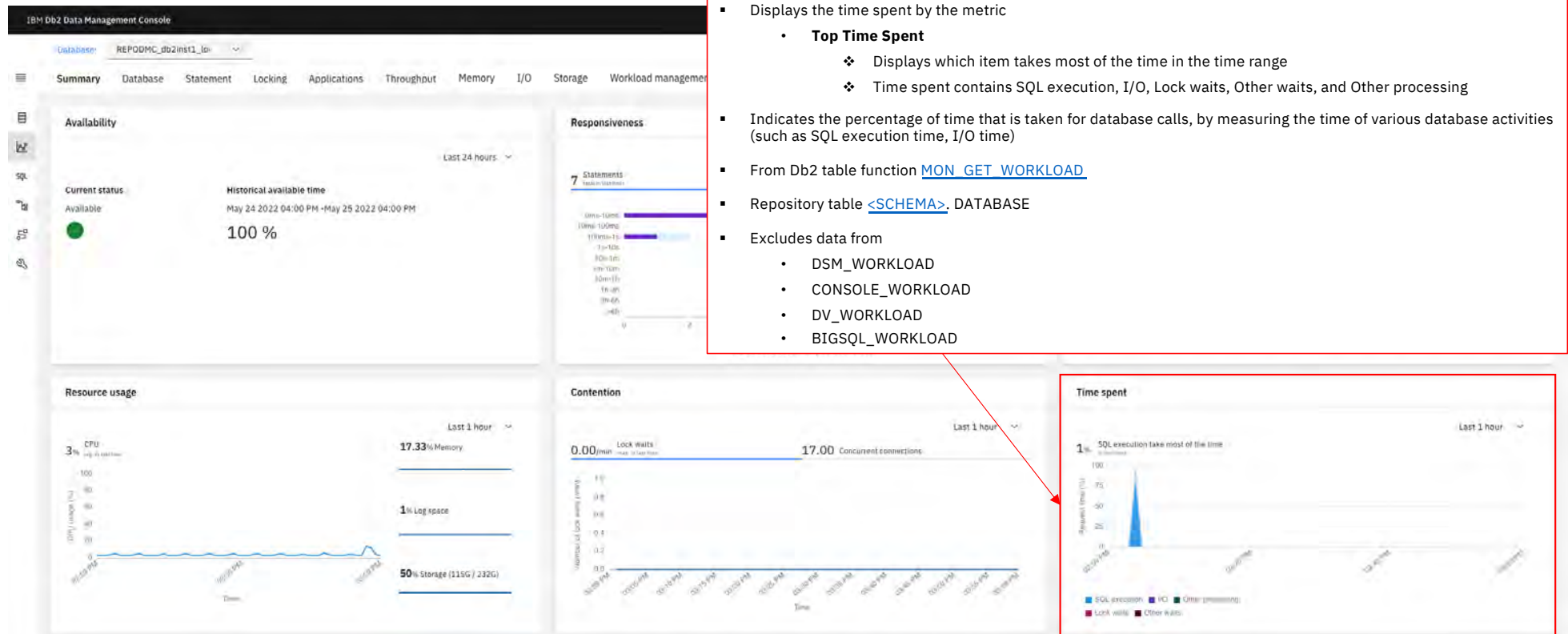
# Monitor – Summary – Contention



Additional information including table description

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=summary-contention>

# Monitor – Summary – Time Spent



The screenshot displays the IBM Db2 Data Management Console interface. The top navigation bar includes 'Summary', 'Database', 'Statement', 'Locking', 'Applications', 'Throughput', 'Memory', 'I/O', 'Storage', and 'Workload management'. The main content area is divided into several panels:

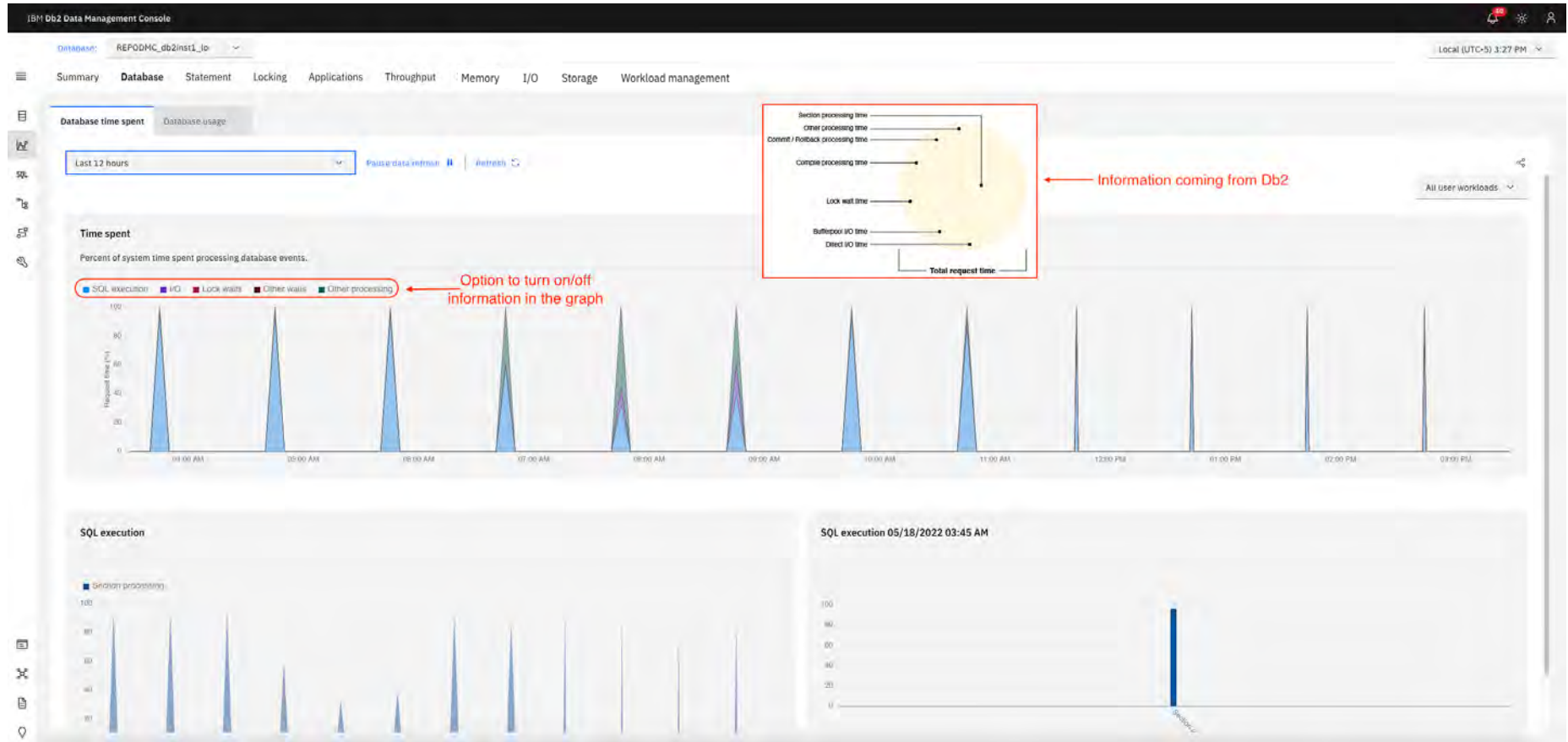
- Availability:** Shows 'Current status' as 'Available' and 'Historical available time' as '100%' for the period 'May 24 2022 04:00 PM - May 25 2022 04:00 PM'.
- Responsiveness:** Displays '7 Statements' with a bar chart showing execution times for various statements.
- Resource usage:** Shows 'CPU usage (avg)' at 3%, 'Memory' at 17.33%, 'Log space' at 1%, and 'Storage (119G / 232G)' at 50%.
- Contention:** Shows 'Lock waits' at 0.00/min and 'Concurrent connections' at 17.00.
- Time spent:** A bar chart showing 'SQL execution take most of the time' at 1%. The legend includes 'SQL execution', 'I/O', 'Other processing', 'Lock waits', and 'Other waits'.

A red box highlights the 'Time spent' chart and the 'Top Time Spent' section of the 'Responsiveness' panel. A red arrow points from the 'Top Time Spent' section to the 'Time spent' chart.

- Displays the time spent by the metric
  - Top Time Spent**
    - Displays which item takes most of the time in the time range
    - Time spent contains SQL execution, I/O, Lock waits, Other waits, and Other processing
- Indicates the percentage of time that is taken for database calls, by measuring the time of various database activities (such as SQL execution time, I/O time)
- From Db2 table function [MON\\_GET\\_WORKLOAD](#)
- Repository table [<SCHEMA>.DATABASE](#)
- Excludes data from
  - DSM\_WORKLOAD
  - CONSOLE\_WORKLOAD
  - DV\_WORKLOAD
  - BIGSQL\_WORKLOAD

Additional information including table description  
<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=summary-time-spent>

# Monitor Database – Database time spent



# Monitor Database – Database time spent details

Metrics from MON\_GET\_WORKLOAD function:

**Category: SQL execution**

- TOTAL\_SECTION\_PROC\_TIME
- TOTAL\_COL\_PROC\_TIME
- TOTAL\_ROUTINE\_USER\_CODE\_PROC\_TIME

**Category: I/O**

- POOL\_READ\_TIME
- POOL\_WRITE\_TIME
- DIRECT\_READ\_TIME
- DIRECT\_WRITE\_TIME

**Category: Lock waits**

- LOCK\_WAIT\_TIME
- LOCK\_WAIT\_TIME\_GLOBAL

**Category: Other waits**

- AGENT\_WAIT\_TIME
- WLM\_QUEUE\_TIME\_TOTAL
- LOG\_BUFFER\_WAIT\_TIME
- LOG\_DISK\_WAIT\_TIME
- TCPIP\_RECV\_WAIT\_TIME
- TCPIP\_SEND\_WAIT\_TIME
- IPC\_SEND\_WAIT\_TIME
- IPC\_RECV\_WAIT\_TIME
- AUDIT\_SUBSYSTEM\_WAIT\_TIME
- AUDIT\_FILE\_WRITE\_WAIT\_TIME
- DIAGLOG\_WRITE\_WAIT\_TIME
- EVMON\_WAIT\_TIME
- TOTAL\_EXTENDED\_LATCH\_WAIT\_TIME
- PREFETCH\_WAIT\_TIME
- COMM\_EXIT\_WAIT\_TIME
- IDA\_SEND\_WAIT\_TIME
- IDA\_RECV\_WAIT\_TIME
- RECLAIM\_WAIT\_TIME
- SPACEMAPPAGE\_RECLAIM\_WAIT\_TIME
- FED\_WAIT\_TIME

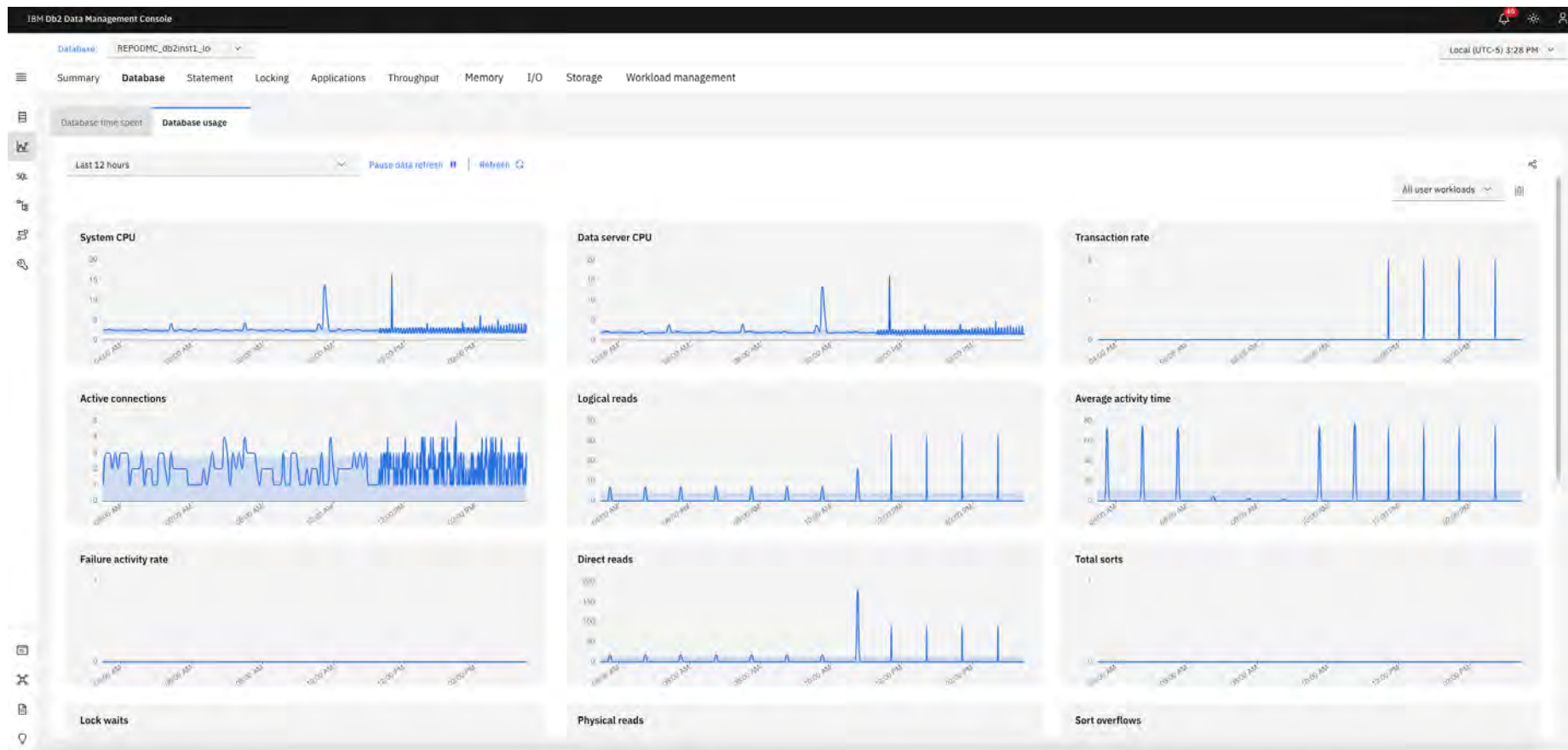
**Category: Other processing**

- TOTAL\_COMPILE\_PROC\_TIME
- TOTAL\_IMPLICIT\_COMPILE\_PROC\_TIME
- TOTAL\_LOAD\_PROC\_TIME
- TOTAL\_REORG\_PROC\_TIME
- TOTAL\_RUNSTATS\_PROC\_TIME
- TOTAL\_CONNECT\_REQUEST\_PROC\_TIME
- TOTAL\_CONNECT\_AUTHENTICATION\_PROC\_TIME
- TOTAL\_COMMIT\_PROC\_TIME
- TOTAL\_ROLLBACK\_PROC\_TIME
- TOTAL\_BACKUP\_PROC\_TIME
- TOTAL\_INDEX\_BUILD\_PROC\_TIME

**Additional information**

- Metrics from MON\_GET\_WORKLOAD function  
<https://www.ibm.com/docs/en/db2/11.5?topic=functions-mon-get-workload-get-workload-metrics>
- Additional Db2 information  
<https://www.ibm.com/docs/en/db2/11.5?topic=elements-time-spent-monitor>

# Monitor Database – Database usage



# Monitor – HADR Information

Monitoring HADR standby database

Standby ID	Standby host	HADR state	Connection status	Log gap(kb)	Standby replay gap(kb)	Standby lag latency (H:mm:ss)	Replay lag latency (H:mm:ss)	Heartbeat miss rate	Current logger wait time (H:mm:ss)
1	ibm011.fyre.ibm.com	Peer	Connected	0	0	0:00:00	0:00:00	0.00%	0:00:00

View details

Name	Value
Standby ID	1
HADR role	Primary
Replication type	PHYSICAL
StandbyStatusMode	Peer synchronous
Primary host	ibm012.fyre.ibm.com
Standby host	ibm011.fyre.ibm.com
HADR state	Peer
Connection status	Connected
Log system ID	1
Log gap(kb)	0
Standby replay gap(kb)	0
Standby lag latency (H:mm:ss)	0:00:00
Replay lag latency (H:mm:ss)	0:00:00
Heartbeat miss rate	0.00%
Current logger wait time (H:mm:ss)	0:00:00
Total logger wait events	0
Total logger wait time (H:mm:ss)	0:00:00
HADR timeout (s)	300
Standby status buffer	0.00%
Standby status buffer size (pages)	32
Peer wait time (s)	0
Primary log file path	00011472.005.134.4480337142
Standby log file path	00011472.005.134.4480337142
Primary log file path	00011472.005.134.4480337142



# Monitor Statement – In-flight executions

Current statements running at the moment of the collection interval configured in the monitoring profile

Information coming from Db2 table function on current statements running

Client IP address	Application name	User ID	Start time	Coordinator Statement execution time	Activity state	SQL	WLM queue time	Idle time	Rows read	Estimated query cost	Sort used	Peak sort used
127.0.0.1	UC_MYMON	DB2INST1	May 18, 2022 3:28:37 PM	0.000	EXECUTING	/* IBM_DSSNAP */ WITH unicode_fix(x) AS( SELECT NULL FROM sysib...	0.000	0.000	0	3,754	0.00%	0.00%
127.0.0.1	UC_MYMON	DB2INST1	May 18, 2022 3:27:37 PM	0.000	EXECUTING	/* IBM_DSSNAP */ WITH unicode_fix(x) AS( SELECT NULL FROM sysib...	0.000	0.000	0	3,754	0.00%	0.00%
127.0.0.1	UC_MYMON	DB2INST1	May 18, 2022 3:27:37 PM	0.000	EXECUTING	/* IBM_DSSNAP */ SELECT reg_val,reg_val FROM tabitemv_bot_reg_va...	0.000	0.000	0	1	0.00%	0.00%
127.0.0.1	UC_MYMON	DB2INST1	May 18, 2022 3:27:37 PM	0.000	EXECUTING	/* IBM_DSSNAP */ CALL WLM_COLLECT_STATS(?)	0.000	0.000	0	-1	0.00%	0.00%
127.0.0.1	UC_MYMON	DB2INST1	May 18, 2022 3:28:37 PM	0.000	EXECUTING	/* IBM_DSSNAP */ WITH unicode_fix(x) AS( SELECT NULL FROM sysib...	0.000	0.000	0	1,754	0.00%	0.00%
127.0.0.1	UC_MYMON	DB2INST1	May 18, 2022 3:29:37 PM	0.000	EXECUTING	/* IBM_DSSNAP */ WITH unicode_fix(x) AS( SELECT NULL FROM sysib...	0.000	0.000	0	3,754	0.00%	0.00%
127.0.0.1	UC_MYMON	DB2INST1	May 18, 2022 3:24:37 PM	0.000	EXECUTING	/* IBM_DSSNAP */ WITH unicode_fix(x) AS( SELECT NULL FROM sysib...	0.000	0.000	0	3,754	0.00%	0.00%
127.0.0.1	UC_MYMON	DB2INST1	May 18, 2022 3:23:37 PM	0.000	EXECUTING	/* IBM_DSSNAP */ WITH unicode_fix(x) AS( SELECT NULL FROM sysib...	0.000	0.000	0	3,754	0.00%	0.00%
127.0.0.1	UC_MYMON	DB2INST1	May 18, 2022 3:22:37 PM	0.000	EXECUTING	/* IBM_DSSNAP */ WITH unicode_fix(x) AS( SELECT NULL FROM sysib...	0.000	0.000	0	3,754	0.00%	0.00%
127.0.0.1	UC_MYMON	DB2INST1	May 18, 2022 3:22:37 PM	0.000	EXECUTING	/* IBM_DSSNAP */ CALL WLM_COLLECT_STATS(?)	0.000	0.000	0	-1	0.00%	0.00%



# Monitor Statement – Individual executions

Requires [Activity Event Monitor](#)

SQL	Statement execution time	CPU time	Workload queue time	Client IP address	Application name	Session authorization ID	Workload name	Activity type	Time started	Time completed	Rows read
<input type="checkbox"/> SELECT * FROM TABLE(SNAP_GET_DBM(CAST(? AS INT)))	0:02:00.972	0.000	0.000	127.0.0.1	drs-agent	DB2INST1	SYSDEFAULTUSER WORKLOAD	READ_DML	May 27, 2022 12:28:11 AM	May 27, 2022 12:30:12 AM	0
<input type="checkbox"/> SELECT * FROM TABLE(SNAP_GET_DBM(CAST(? AS INT)))	0:02:00.726	0.000	0.000	127.0.0.1	drs-agent	DB2INST1	SYSDEFAULTUSER WORKLOAD	READ_DML	May 27, 2022 10:08:38 AM	May 27, 2022 10:10:39 AM	0
<input type="checkbox"/> SELECT * FROM TABLE(SNAP_GET_DBM(CAST(? AS INT)))	0:00:50.9	0.000	0.000	127.0.0.1	drs-agent	DB2INST1	SYSDEFAULTUSER WORKLOAD	READ_DML	May 27, 2022 2:58:55 PM	May 27, 2022 2:58:55 PM	0
<input type="checkbox"/> SELECT * FROM TABLE(SNAP_GET_DBM(CAST(? AS INT)))	0:00:50.9	0.000	0.000	127.0.0.1	drs-agent	DB2INST1	SYSDEFAULTUSER WORKLOAD	READ_DML	May 27, 2022 5:24:04 PM	May 27, 2022 5:24:04 PM	0
<input type="checkbox"/> SELECT * FROM TABLE(SNAP_GET_DBM(CAST(? AS INT)))	0:00:50.8	0.000	0.000	127.0.0.1	drs-agent	DB2INST1	SYSDEFAULTUSER WORKLOAD	READ_DML	May 27, 2022 7:43:31 AM	May 27, 2022 7:43:31 AM	0
<input type="checkbox"/> SELECT * FROM TABLE(SNAP_GET_DBM(CAST(? AS INT)))	0:00:00.3	0.000	0.000	127.0.0.1	drs-agent	DB2INST1	SYSDEFAULTUSER WORKLOAD	READ_DML	May 27, 2022 4:12:24 PM	May 27, 2022 4:12:24 PM	0
<input type="checkbox"/> SELECT * FROM TABLE(SNAP_GET_DBM(CAST(? AS INT)))	0:00:00.3	0.000	0.000	127.0.0.1	drs-agent	DB2INST1	SYSDEFAULTUSER WORKLOAD	READ_DML	May 27, 2022 8:57:00 AM	May 27, 2022 8:57:00 AM	0
<input type="checkbox"/> SELECT SNAPSHOT_TIMESTAMP, SORT_HEAP_ALLOCATED, POST_THRESHOLD...	0:00:00.3	0.000	0.000	127.0.0.1	drs-agent	DB2INST1	SYSDEFAULTUSER WORKLOAD	READ_DML	May 27, 2022 5:24:04 PM	May 27, 2022 5:24:04 PM	0
<input type="checkbox"/> SELECT SNAPSHOT_TIMESTAMP, SORT_HEAP_ALLOCATED, POST_THRESHOLD...	0:00:00.3	0.000	0.000	127.0.0.1	drs-agent	DB2INST1	SYSDEFAULTUSER WORKLOAD	READ_DML	May 27, 2022 4:12:24 PM	May 27, 2022 4:12:24 PM	0
<input type="checkbox"/> SELECT SNAPSHOT_TIMESTAMP, SORT_HEAP_ALLOCATED, POST_THRESHOLD...	0:00:00.3	0.000	0.000	127.0.0.1	drs-agent	DB2INST1	SYSDEFAULTUSER WORKLOAD	READ_DML	May 27, 2022 12:30:12 AM	May 27, 2022 12:30:12 AM	0

# Monitor Statement – Package cache

IBM Db2 Data Management Console

Database: REPODMC\_db2inst1\_lo

Local (UTC-5) 3:29 PM

Summary Database **Statement** Locking Applications Throughput Memory I/O Storage Workload management

In-flight executions Individual executions **Package cache** Stored procedures

Last 24 hours Paused data refresh Refresh

Filter by: Average Search SQL

Alert	SQL	Number of executions	Statement execution time	CPU time	Rows read	Rows returned	Rows modified	Execution time	Activity wait time	Time waited on locks	Logical reads	Physical reads
<input type="checkbox"/>	SELECT * FROM TABLE(SNAP_GET_DBM(CAST(? AS INT)))	3	0:00.510	0.000	0	1	0	0:00.510	0.000	0.000	0	0
<input type="checkbox"/>	CALL SYSINSTALLOBJECTS(CAST(? AS VARCHAR(5)), CAST(? AS VARG...	2	0:00.020	0:00.015	8	0	0	0:00.020	0:00.002	0.000	38	0
<input type="checkbox"/>	SELECT * FROM TABLE(MON_GET_DATABASE(CAST(? AS INT)))	1	0:00.005	0.000	0	1	0	0:00.005	0:00.004	0.000	0	0
<input type="checkbox"/>	SELECT SNAPSHOT_TIMESTAMP, SORT_HEAP_ALLOCATED, POST_THRESHOLD...	3	0:00.003	0.000	0	1	0	0:00.003	0.000	0.000	0	0
<input type="checkbox"/>	SELECT ATM_SCHEMA, ATM_NAME, ATM_CREATE_TIME, ATM_LAST_WAIT, AT...	2	0:00.003	0:00.002	1,230	442	0	0:00.003	0.000	0.000	1,626	0
<input type="checkbox"/>	SELECT NAME, VALUE, VALUE_FLAG FROM TABLE(SYSPROC_DB_GET_CFO...	4	0:00.002	0:00.001	0	190	0	0:00.002	0.000	0.000	0	0
<input type="checkbox"/>	SELECT IBM_TID, IBM_PID FROM SYSIBM.SYSTABLES AS IBM.SYSTOOLS...	2	0:00.002	0:00.001	1,230	0	0	0:00.002	0.000	0.000	1,642	0
<input type="checkbox"/>	DELETE FROM SYSTOOLS.HMON_ATM_INFO AS ATM WHERE NOT EXISTS (SE...	2	0:00.002	0:00.001	1,236	0	3	0:00.002	0.000	0.000	642	0
<input type="checkbox"/>	UPDATE SYSTOOLS.HMON_ATM_INFO AS ATM SET REORG_FLAG = ? WHERE I...	2	0:00.001	0.000	788	0	0	0:00.001	0.000	0.000	772	0
<input type="checkbox"/>	SELECT CREATOR, NAME, CTIME FROM SYSIBM.SYSTABLES WHERE (TYPE=...	2	0:00.001	0.000	788	442	0	0:00.001	0.000	0.000	0	0

Items per page: 10 1-10 of 66 items

Information from Package Cache

Package cache only displays top n queries order by 16 KPIs

1. num\_exec\_with\_metrics
2. stmt\_exec\_time
3. total\_cpu\_time
4. rows\_read
5. rows\_returned
6. total\_act\_wait\_time
7. lock\_wait\_time
8. sort\_overflows
9. logical\_reads
10. physical\_reads
11. temp\_reads
12. pool\_data\_l\_reads
13. pool\_index\_l\_reads
14. lock\_escals
15. lock\_waits
16. wlm\_queue\_time\_total

# Monitor Statement – Stored procedures

Stored procedure monitoring is off for the database connection. To monitor stored procedures for this database, connect to the database and run the following Db2 command to set the mon\_rtn\_data.configuration parameter to "base": db2 update db cfg using mon\_rtn\_data base

Summary Database **Statement** Locking Applications Throughput Memory I/O Storage Workload management

Stored procedures

Search routine (schema or routine name)

Routine schema	Routine name	Invoked count	Logical reads /min	Physical reads /min	Routine specific name	Library ID
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- Requires MON\_RTN\_DATA [database configuration](#) set to BASE on the monitored database
- Displays the aggregated execution metrics for
  - Procedures
  - External procedures
  - Compiled functions
  - External functions
  - Compiled triggers
  - Anonymous blocks invoked since database activation

# Monitor Locking – Blocking and waiting connections

Type	Application handle	Application name	User ID	Lock wait time	Number of locks held	Lock mode	Event timestamp	Number of waiting connections	Database member
BLOCKER	12876	DB2HP	DB2HPST1	0.000	1	S	May 27, 2022 12:03:54 PM	1	0 1
WAITER	12878	DB2DP	DB2DPST1	0.000	4	S	May 27, 2022 12:03:54 PM	0	0 1

- Information about the blocker and waiter pair
- Table functions
  - [MON\\_GET\\_APPL\\_LOCKWAIT](#)
  - [MON\\_GET\\_CONNECTION](#)
  - [MON\\_GET\\_ACTIVITY](#)
  - [MON\\_GET\\_PKG\\_CACHE\\_STMT](#)
- To retrieve connection information for BLOCKER connections, information is gathered using the table function [MON\\_GET\\_CONNECTION](#) with parameters (HLD\_APPLICATION\_HANDLE, and HLD\_MEMBER) which is collected from [MON\\_GET\\_APPL\\_LOCKWAIT](#)
- To retrieve connection information for WAITER connections, information is gathered using the table function [MON\\_GET\\_CONNECTION](#) with parameters (REQ\_APPLICATION\_HANDLE, and REQ\_MEMBER) which is collected from [MON\\_GET\\_APPL\\_LOCKWAIT](#)
- To get the SQL statement of the application holding the lock, [MON\\_GET\\_PKG\\_CACHE\\_STMT](#) with parameters (NULL, LAST\_EXECUTABLE\_ID, NULL, and HLD\_MEMBER) is used, where LAST\_EXECUTABLE\_ID is collected from [MON\\_GET\\_CONNECTION](#) and HLD\_MEMBER is collected from [MON\\_GET\\_APPL\\_LOCKWAIT](#)
- To get the SQL statement for the waiting application, [MON\\_GET\\_ACTIVITY](#) with parameters (REQ\_APPLICATION\_HANDLE, and REQ\_MEMBER) is used, which is collected from [MON\\_GET\\_APPL\\_LOCKWAIT](#)
- Repository table <SCHEMA>. LOCKPAIR

Additional information including table description

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=metrics-blocking-waiting-connections>

# Monitor Locking – Connection statistics

IBM Db2 Data Management Console

Database: CINTJA

Local (UTC-5) 12:04 PM

Summary Database Statement **Locking** Applications Throughput Memory I/O Storage Workload management

Blocking and waiting connections **Connection statistics** Locked objects with waiting connections Find locked objects Locking event monitor

Real time  Pause data refresh  Refresh  Last collected: 22/05/27 12:04:17 PM

Search application handle or application name

Application name	Application handle	Connection start time	CPU time /min	Memory pool used (kb)	Idle time	Deadlocks detected /min	Locks held /min	Lock waits /min	Lock waits global /min	Number of lock escalations /min	Number of global lock escalations /min	Nu
00280	12875	May 27, 2022 12:03:42 PM	0.00,044	446.00	0.000	0	8	0	0	0	0	1
00280	12876	May 27, 2022 12:03:52 PM	0.000	128.00	0.000	0	1	0	0	0	0	1
00280	12877	May 27, 2022 12:00:00 PM	0.000	128.00	0:03:15.894	0	0	0	0	0	0	1



# Monitor Locking – Find locked objects

Displays the detailed information of locked operations

IBM Db2 Data Management Console

Database: CINTIA

Local (UTC-5) 12:04 PM

Summary Database Statement **Locking** Applications Throughput Memory I/O Storage Workload management

Blocking and waiting connections Connection Statistics Locked objects with waiting connections **Find locked objects** Locking event monitor

Real time Pause data refresh Refresh

Last collected: 22/05/27 12:04:28 PM

Search table schema or table name

Application handle	Application name	Session authorization ID	Object type	Table schema	Table name	Lock name	Number of waiting connections	Lock wait time of waiting transactions	SQL
12878	db2bp	DB2INST1	VARIATION			01000000070000000100E0410b	0	0:32.711	<a href="#">lock table tab2 in share mode</a>
12878	db2bp	DB2INST1	SEQUENCE			00000000000000000000000054D1	0	0:32.711	<a href="#">lock table tab2 in share mode</a>
12878	db2bp	DB2INST1	VARIATION			01000000010000000100E0410b	0	0:32.711	<a href="#">lock table tab2 in share mode</a>
12878	db2bp	DB2INST1	VARIATION			01000000020000000100E1410b	0	0:32.711	<a href="#">lock table tab2 in share mode</a>
12878	db2bp	DB2INST1	CATALOG	SYSTEM	SYSTABLES	000005000642000000EE678BC3	0	0:32.711	<a href="#">lock table tab2 in share mode</a>
12878	db2bp	DB2INST1	PLAN			41414141414147466566FCCC66C1	0	0:32.711	<a href="#">lock table tab2 in share mode</a>
12878	db2bp	DB2INST1	CATALOG	SYSTEM	SYSTABLES	000005000542000000E8678BC3	0	0:32.711	<a href="#">lock table tab2 in share mode</a>
12878	db2bp	DB2INST1	TABLE	DB2INST1	TAB1	020009000000000000000000054	0	0:32.711	<a href="#">lock table tab2 in share mode</a>
12878	db2bp	DB2INST1	TABLE	DB2INST1	TAB2	020006000000000000000000054	1	0:32.711	<a href="#">lock table tab2 in share mode</a>
12878	db2bp	DB2INST1	CATALOG	SYSTEM	SYSTABLES	000005000642000000EE678BC3	0	0:32.711	

Items per page: 10 1-10 items

page 1 Go to last page to load more items.



# Monitor Locking – Locking event monitor

Requires [locking event monitor](#)

IBM Db2 Data Management Console

Database: CINTIA

Local (UTC-5) 12:05 PM

Summary Database Statement Locking Applications Throughput Memory I/O Storage Workload management

Blocking and waiting connections Committed statistics Locked objects with waiting connections Find locked objects Locking event monitor

Real time Pause data refresh Refresh

Last collected: 22/05/27 12:05:26 PM

Search application handle and application name

Type	Application handle	Application name	User ID	Activity ID	Activity type	Lock wait time	Lock mode	Event timestamp	Event type	Database member
BLOCKER	12876	db2bp	DB2INST1	2	CURRENT	0:08.775	X	May 27, 2022 12:05:02 PM	DEADLOCK	0 1
WAITER	12876	db2bp	DB2INST1	2	CURRENT	0:08.775	X	May 27, 2022 12:05:02 PM		0 1
BLOCKER	12876	db2bp	DB2INST1	2	CURRENT	0:01:08.048	X	May 27, 2022 12:05:02 PM	DEADLOCK	0 1
WAITER	12878	db2bp	DB2INST1	2	CURRENT	0:01:08.048	X	May 27, 2022 12:05:02 PM		0 1
BLOCKER	12876	db2bp	DB2INST1	1	PAST	0:01:08.048		May 27, 2022 12:04:24 PM	LOCKWAIT	0 1
WAITER	12878	db2bp	DB2INST1	1	PAST	0:01:08.048		May 27, 2022 12:04:24 PM		0 1
BLOCKER	12876	db2bp	DB2INST1	1	PAST	0:01:08.048		May 27, 2022 12:04:24 PM	LOCKWAIT	0 1
WAITER	12878	db2bp	DB2INST1	2	CURRENT	0:01:08.048	X	May 27, 2022 12:04:24 PM		0 1



# Monitor Applications – Top consumers

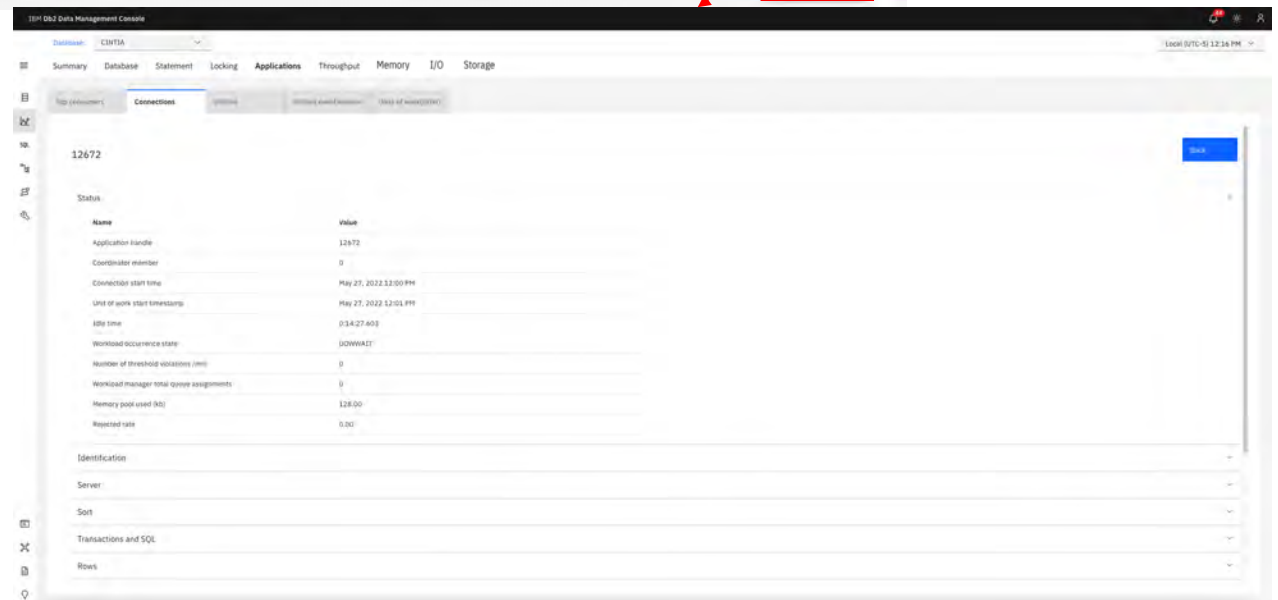
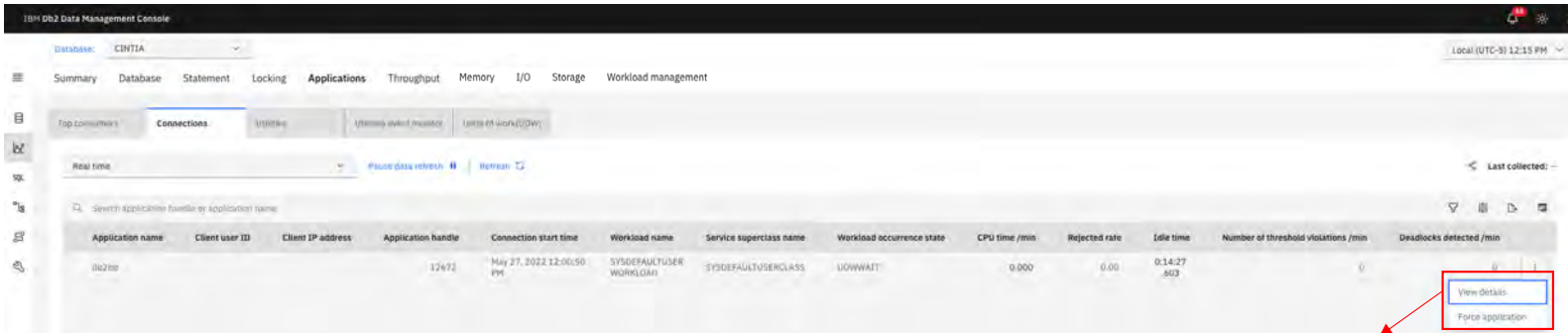
Displays the top consumers of the system resources

The screenshot shows the IBM Db2 Data Management Console interface. The 'Applications' tab is selected, and the 'Top consumers' sub-tab is active. The main content area displays a table of server resources and their application handles, ranked by top UOW value. The table includes columns for Server resource, Application handle, Application name, Rank #, Top UOW ID, Value of top UOW, Average excluding top UOW, Session authorization ID, and Workload name. The data is as follows:

Server resource	Application handle	Application name	Rank #	Top UOW ID	Value of top UOW	Average excluding top UOW	Session authorization ID	Workload name
Estimated SQL cost	53713	UC_MYMON	1	3	1,296 milliseconds	—	DB2INST1	CONSOLE_WORKLOAD
Num locks held	53713	UC_MYMON	1	1	0	—	DB2INST1	CONSOLE_WORKLOAD
Longest UOW	288	UC_REPO_dba	2	7	0:00:09.435.514	0:23.84.828	DB2INST1	CONSOLE_WORKLOAD
Memory	268	UC_REPO_exp	3	4	128 KB	—	DB2INST1	CONSOLE_WORKLOAD
Sort time			...	0	0	—		
Direct writes			...	0	0	—		
Remote table wait time			...	0	0	—		
Num sort overflows			...	0	0	—		
WLM queue time			...	0	0	—		
Rows read			...	0	0	—		

The interface also shows a search bar for application handles or application names, a 'Last collected' timestamp of 22/05/18 03:30:05 PM, and a pagination control at the bottom indicating 1 of 2 pages.

# Monitor Applications – Connections



- Application details
- Force application using Personal Credentials
- Force application option only available for Real time view

# Monitor Applications – Utilities

IBM Db2 Data Management Console

Database: REPODDMC\_db2init1\_jb

Local (UTC-5) 3:30 PM

Summary Database Statement Locking Applications Throughput Memory I/O Storage Workload management

Top consumers CONNECTIONS UTILITIES Utilities event monitor QUOTE OF WORK (QOW)

Last 24 hours Pause data refresh Refresh

Search Utilities by job, object schema

Type	State	Start time	Estimated percentage complete	Application name	Object type	Object schema	Object name	Phase start time	Phase	Invocation type	Completed work	Total work	Units	Throttling priority
RUNSTATS		May 18, 2022 11:39:24 AM	—	DB2ADM01	TABLE	IBMCOLE	unitsOfWorks	—		AUTO	—	—	—	400
RUNSTATS		May 18, 2022 11:38:23 AM	—	DB2ADM01	TABLE	IBMCOLE	INDEX	—		AUTO	—	—	—	400
REORG	COMPLETE	May 17, 2022 5:48:05 PM	100.0000					May 17, 2022 5:48:05 PM						

# Monitor Applications – Utilities event monitor

Requires [Utility Event Monitor](#)

IBM Db2 Data Management Console

Database: REPODMC\_db2inst1\_ib

Local (UTC-5) 12:31 PM

Summary Database Statement Locking Applications Throughput Memory I/O Storage Workload management

Utilities event monitor

Real time

Last collected: 22/05/27 12:30:18 PM

Utility type	Application name	SQLCODE	Object type	Object schema	Object name	Start time	End time	Execute time	Device type	Location	Location type	Coord member	Application ID	SQLCAID	SQLERRD2	SQLERRD1	SQLERRD6
RUNSTATS	DB2HMON	0	TABLE	IBM_RTMON	UTIL_START	May 27, 2022 12:28:13 PM	May 27, 2022 12:28:13 PM	0:00.014				0	*LOCAL0820M1 220527190306	SQLCA	0	0	0
RUNSTATS	DB2HMON	0	TABLE	IBM_RTMON	UTIL_STOP	May 27, 2022 12:28:15 PM	May 27, 2022 12:28:15 PM	0:00.016				0	*LOCAL0820M1 220527190306	SQLCA	0	0	0
RUNSTATS	UC_MYMON	0	TABLE	IBM_RTMON	ACTIVITY_METRICS_1653672017614	May 27, 2022 12:25:19 PM	May 27, 2022 12:25:19 PM	0:00.006				0	127.0.0.1 42790 220527190031	SQLCA	0	0	0
RUNSTATS	DB2HMON	0	TABLE	SYSTEM	SYSSEVENTMONITORS	May 27, 2022 12:28:13 PM	May 27, 2022 12:28:13 PM	0:00.013				0	*LOCAL0820M1 220527190306	SQLCA	0	0	0
RUNSTATS	UC_MYMON	0	TABLE	IBM_RTMON	ACTIVITY_1653672017614	May 27, 2022 12:25:19 PM	May 27, 2022 12:25:19 PM	0:00.004				0	127.0.0.1 42790 220527190031	SQLCA	0	0	0
RUNSTATS	DB2HMON	0	TABLE	SYSTEM	SYSWORKLOADS	May 27, 2022 12:28:15 PM	May 27, 2022 12:28:15 PM	0:00.018				0	*LOCAL0820M1 220527190306	SQLCA	0	0	0
RUNSTATS	DB2HMON	0	TABLE	IBM_RTMON	UTIL_CONMGR	May 27, 2022 12:28:13 PM	May 27, 2022 12:28:13 PM	0:00.018				0	*LOCAL0820M1 220527190306	SQLCA	0	0	0
RUNSTATS	UC_MYMON	0	TABLE	IBM_RTMON	ACTIVITY_STMT_1653672017614	May 27, 2022 12:25:19 PM	May 27, 2022 12:25:19 PM	0:00.007				0	127.0.0.1 42790 220527190031	SQLCA	0	0	0
REORG	UC_REPO_XDEV	0	TABLE	IBMCONSOLE	MIGRATE_DATA_RECORD	May 27, 2022 12:29:40 PM	May 27, 2022 12:29:40 PM	0:00.151				0	830221.111.49 572.220526205 910	SQLCA	0	0	0

# Monitor Applications – Units of work (UOW)

Indicates what transactions (units of work) are consuming the most resources in the data server

Database: REPODMC\_db2/nst1\_lo

Summary Database Statement Locking Applications Throughput Memory I/O Storage Workload management

Top containers Connectivity UOWs UOWs event monitor **Units of work (UOW)**

Last collected: 23/02/23 10:14:44 AM

Application handle	Application name	UOW ID	UOW state	Activities completed	Activities aborted	Activities rejected	Total activity time	Locks held	Time spent waiting
56008	UC_HYTHON	1	UOWREC	0	0	0	0.000	1	0.000
55814	UC_REPO_jvsn	35	UOWWAIT	0	0	0	0.000	0	0.000
55792	UC_REPO_jvsn	34	UOWWAIT	0	0	0	0.000	0	0.000
55687	UC_REPO_jvsn	176	UOWWAIT	0	0	0	0.000	0	0.000
55045	UC_REPO_jvsn	743	UOWWAIT	0	0	0	0.000	0	0.000
55031	UC_REPO_jvsn	289	UOWWAIT	0	0	0	0.000	0	0.000
54352	UC_REPO_jvsn	462	UOWWAIT	0	0	0	0.000	0	0.000
52160	UC_REPO_jvsn	252	UOWWAIT	0	0	0	0.000	0	0.000
50812	UC_REPO_jvsn	1043	UOWWAIT	0	0	0	0.000	0	0.000
47929	UC_REPO_jvsn	1277	UOWWAIT	0	0	0	0.000	0	0.000

Items per page: 10 1-10 of 10 items

# Monitor Throughput – Connection summary

Displays a summary of all connections established to the console

Application name	Application handle	CPU time /min	Completed activities /min	Rows read /min	Rows modified /min	Rows returned /min	Logical reads /min	Direct reads from database /min	Direct writes to database /min	Total sorts /min	Total application commits /min
UC_REPO_mon	25	0:00.019	279	111	2,623	221	0	0	0	0	19
UC_REPO_mon	84	0:00.015	242	84	2,180	88	0	0	0	1	25
UC_REPO_mon	165	0:00.019	278	851	5,716	319	0	0	0	1	25
UC_REPO_mon	166	0:00.037	783	399	4,140	413	0	0	0	1	33
UC_REPO_mon	169	0:00.025	457	582	4,188	196	0	0	0	1	49
UC_REPO_mon	212	0:00.032	446	463	0	492	0	0	0	1	52
UC_REPO_exe	266	0:00.003	0	0	0	0	0	0	0	0	0
UC_REPO_dbc	287	0:00.003	1	0	0	1	0	0	0	0	1
UC_REPO_dbc	288	0:00.000	0	0	0	0	0	0	0	0	0
UC_SYSPRM	316	0:04.183	1,016	5,454	0	12,727	0	0	0	3,636	1,016

# Monitor Throughput – Partition summary

Displays the information for each data partition used by a database

The screenshot shows the IBM Db2 Data Management Console interface. The top navigation bar includes tabs for Summary, Database, Statement, Locking, Applications, Throughput (selected), Memory, I/O, Storage, and Workload management. The 'Throughput' tab is active, and the 'Partition summary' sub-tab is selected. The database name is REPODMC\_db2inst1\_0e. The page shows a table with the following data:

Database member	CPU time /min	Activities completed /min	Rows read /min	Rows modified /min	Rows returned /min	Logical reads /min	Direct reads /min	Direct writes /min	Sorts /min	Total application commits /min	Total commit time /min	Total application rollback
0	0:01.641	8,683.00	321,837.00	7,847.00	7,368.00	85,087.00	2,052.00	2,006.00	50.00	379.00	0:00.358	

# Monitor Throughput – WLM workload summary

Represents the accumulation of all metrics for requests that were submitted by connections mapped to the identified workload objects

The screenshot shows the IBM Db2 Data Management Console interface. The 'Throughput' tab is selected, and the 'WLM workload summary' sub-tab is active. The table displays metrics for three workload objects: SYSDEFAULTUSER, SYSDEFAULTADM, and CONSOLE\_WORKLOAD. The CONSOLE\_WORKLOAD object shows the highest activity, with approximately 1,423 CPU minutes, 3,883 activities completed, 219,192 rows read, 8,871 rows modified, 1,318 rows returned, 80,661 logical reads, and 180 sorts per minute.

Workload name	Total CPU time /min	Activities completed /min	Rows read /min	Rows modified /min	Rows returned /min	Logical reads /min	Sorts /min	Total application commits	Total commit time	Total application rollbacks	External table send volume (kb/min)	External table send volume (kb/min)	External table send volume (kb/min)
SYSDEFAULTUSER WORKLOAD	0.000	0	0	0	0	0	0	0	0.000	0	0	0	
SYSDEFAULTADM WORKLOAD	0.000	0	0	0	0	0	0	0	0.000	0	0	0	
CONSOLE_WORKLOAD	0:01.423	3,883	219,192	8,871	1,318	80,661	180	372	0:00.350	0	0	0	



# Monitor Throughput – WLM service class summary

Represents the accumulation of all metrics for requests that have executed under the indicated service subclass

The screenshot shows the IBM Db2 Data Management Console interface. The 'Throughput' tab is selected, and the 'WLM service class summary' sub-tab is active. The table displays metrics for four service classes. The 'SYSDEFAULTUSERCLASS' row shows zero activity across all metrics. The 'SYSDEFAULTUSERCLASS' row shows significant activity, including 17,753 rows read and 88,857 logical reads per minute. The 'SYSDEFAULTSYSTEMCLASS' and 'SYSDEFAULTMAINTENANCECLASS' rows show zero activity.

Service class name	Service subclass name	Total CPU time /min	Activities completed /min	Rows read /min	Rows modified /min	Rows returned /min	Logical reads /min	Sorts /min	Total application commits	Total commit time	Total application rollbacks	External table
SYSDEFAULTUSERCLASS	SYSDEFAULTMANAGEDSUBCLASS	0.000	0	0	0	0	0	0	0	0.000	0	
SYSDEFAULTUSERCLASS	SYSDEFAULTSUBCLASS	0.01.219	8,513	17,753	7,074	8,630	88,857	28	559	0.00.381	0	
SYSDEFAULTSYSTEMCLASS	SYSDEFAULTSUBCLASS	0.000	0	0	0	0	0	0	0	0.00.0	0	
SYSDEFAULTMAINTENANCECLASS	SYSDEFAULTSUBCLASS	0.000	0	0	0	0	0	0	0	0.00.0	0	

# Monitor Throughput – Operating system time spent

The screenshot displays the IBM Db2 Data Management Console interface. The top navigation bar includes 'Summary', 'Database', 'Statement', 'Locking', 'Applications', 'Throughput', 'Memory', 'I/O', 'Storage', and 'Workload management'. The 'Throughput' section is active, showing 'Operating system time spent' as the selected category. The data is presented in a table with two columns: 'Category' and 'Value'. The table shows various system metrics and their corresponding values.

Category	Value
Average CPU load	0.46
DB2 data server kernel code run time	0.50%
DB2 user (non-kernel) code run time	1.76%
I/O wait time	3.10%
Other kernel code run time	0.21%
Other user (non-kernel) code run time	0.41%
Pages swapped (KB/min)	0.00
System idle time	94.01%

# Monitor Memory – Instance memory

The screenshot displays the IBM Db2 Data Management Console interface for monitoring instance memory. The main view shows a table with the following data:

Host name	Database name	Memory set type	Memory set used (MB)	Memory set committed (MB)
deejay1.fyre.ibm.com		TEMP	1.04	2.00
deejay1.fyre.ibm.com		UBHS	118.13	
deejay1.fyre.ibm.com		PRIVATE	95.56	139.31
deejay1.fyre.ibm.com	REPODMC	DATABASE	4470.88	4485.64
deejay1.fyre.ibm.com	REPODMC	APPLICATION	15.00	30.55

The 'View details' button for the 'DATABASE' memory set is highlighted. An inset window shows the detailed configuration for this memory set:

Name	Value
Host name	deejay1.fyre.ibm.com
Database name	
Memory set type	DBMS
Memory set used (MB)	118.13
Memory set committed (MB)	148.06
Memory set used high water mark (MB)	148.75
Percent of committed memory	8.09%
Percent of used high water mark	79.41%
Number of memory pages	15

# Monitor Memory – Database memory

The screenshot displays the IBM Db2 Data Management Console interface for monitoring database memory. The main view shows a table of memory pools with the following data:

Memory set type	Memory pool name	Percent used by memory pool	Current memory pool size (MB)	Memory tuning
DATABASE	XMLCACHE	0.00%	0.19	
DATABASE	UTILITY	0.01%	0.29	AUTOMATIC
PRIVATE	USER_DATA	0.13%	6.13	
DBMS	SQL_COMPILER	0.15%	6.81	
DATABASE	SHARED_SORT			
DBMS	RESYNL			
PRIVATE	PRIVATE			
PRIVATE	PERSISTENT_PRIVATE			
DATABASE	PACKAGE_CACHE			
DBMS	QSS_TRACER			

An inset window provides detailed configuration for the **DATABASE / XMLCACHE** pool:

Name	Value
Memory set type	DATABASE
Memory pool name	XMLCACHE
Percent used by memory pool	0.00%
Current memory pool size (MB)	0.19
Memory pool size high water mark (MB)	0.19
Memory tuning	---
DB configuration parameter name	---
DB configuration parameter value (MB)	0.00
Number of memory pools	1
Memory set size assigned to memory pools (MB)	4,411.88
Memory set size high water mark (MB)	4,442.56
Memory currently committed to memory set (MB)	4,409.44
Additional committed memory (MB)	18.00
Size limit of memory set (MB)	5,183.32

# Monitor I/O – Buffer pools

The screenshot displays the IBM Db2 Data Management Console interface. The main content area shows a table of Buffer Pools with the following columns: Buffer pool, Hit ratio, Prefetch ratio, Cleaner ratio, Logical reads /min, Physical reads /min, Number of pages, Self tuning enabled, Writes /min, Direct reads /min, and Direct writes /min. The table lists three buffer pools: IBMDEFULTP, INRESOLAP06, and IBMCONSOLE.

Buffer pool	Hit ratio	Prefetch ratio	Cleaner ratio	Logical reads /min	Physical reads /min	Number of pages	Self tuning enabled	Writes /min	Direct reads /min	Direct writes /min
IBMDEFULTP	99.99%	0.00%	0.00%	14,328	0	6,734	YES	0	1,888	2,919
INRESOLAP06	100.00%	0.00%	0.00%	18	0	2,850	YES	0	0	0
IBMCONSOLE	81.80%	0.00%	100.00%	97,718	10,302	110,589	YES	292	0	18

- Displays the usage of Db2 Buffer Pools and Table Spaces
- A directory server uses the Db2 buffer pools to store cached data and to improve database performance
- A buffer pool is associated with a single database and can be used by more than one table space
- Adequate buffer pool size is essential for good database performance because it reduces the disk I/O, which uses a considerable amount of time

# Monitor I/O – Prefetchers

IBM Db2 Data Management Console

REPODMC\_db2inst1\_j0

Local (UTC-5) 3:31 PM

Summary Database Statement Locking Applications Throughput Memory I/O Storage Workload management

Buffer pool: Prefetchers Logging performance

Pause data refresh Refresh

Last collected: 22/05/18 03:31:21 PM

Filter by: Buffer pool: Search buffer pool name

Buffer pool name	Prefetch ratio	Cleaner ratio	Asynchronous reads /min	Prefetch wait time	Page size	Is self tuning enabled	Main usage
BPACDS01E	0.00%	0.00%	0.00	0.000	32,768.00	YES	INDEX
DMS01E001	0.00%	0.00%	0.00	0.000	32,768.00	YES	
IBMDEFAULTBP	0.00%	0.00%	0.00	0.000	8,192.00	YES	

# Monitor I/O – Logging performance

The screenshot displays the IBM Db2 Data Management Console interface. The main view shows a table of logging performance metrics for database member 'REPODMC\_db2inst1\_0'. A 'View Details' button is highlighted with a blue box and an arrow pointing to a detailed view window.

Database member	Log writes / min	Average log write time (ms)	Log reads / min	Average log read time (ms)	Log hit ratio	Log buffer full events / min	Commits / min	Activities per commit	Average commit time (ms)	Percent active log used	Log to redo for recovery (KB)	Total log used (KB)	Total log available (K)
0	143.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34%	24,925	24,926	7,312,016

Name	Value
Log writes / min	291.00
Average log write time (ms)	0.00021
Log reads / min	0.00
Average log read time (ms)	0.000
Log hit ratio	0.00%
Log Buffer full events / min	0.00
Commits / min	0.00
Activities per commit	0.00
Average commit time (ms)	0.000

Name	Value
Percent active log used	0.34%
Log to redo for recovery (KB)	24,925
Total log used (KB)	24,926
Total log available (KB)	7,312,016
Number of in-usable logspace units	0

# Monitor Storage – Table performance

Displays the performance data of each table or each schema

The screenshot shows the IBM Db2 Data Management Console interface for monitoring table performance. The main content area displays a table with the following columns: Schema name, Table name, Table type, Table space name, Table scans /min, Rows read /min, Hit ratio, and Access /min. The table lists 10 tables across various schemas, including API\_TABLE\_TEST, PURCHASEORDER, ORG, ADEPUSR, EMP\_RESUME, STAFFG, SUPPLIERS, CUSTOMER, CL\_SCHED, and EMP\_PHOTO. The interface also features a 'Real time' filter, a search bar for schema and table names, and a 'Last collected' timestamp of 22/05/27 03:37:13 PM.

Schema name	Table name	Table type	Table space name	Table scans /min	Rows read /min	Hit ratio	Access /min
DB2INST1	API_TABLE_TEST	USER_TABLE	IBMDB2SAMPLEE1	0	11	0.00%	11
DB2INST1	PURCHASEORDER	USER_TABLE	IBMDB2SAMPLEX1L	0	8	25.00%	8
DB2INST1	ORG	USER_TABLE	USERSPACE1	0	11	0.00%	11
DB2INST1	ADEPUSR	USER_TABLE	USERSPACE1	0	11	0.00%	11
DB2INST1	EMP_RESUME	USER_TABLE	USERSPACE1	0	11	0.00%	11
DB2INST1	STAFFG	USER_TABLE	USERSPACE1	0	49	0.00%	49
DB2INST1	SUPPLIERS	USER_TABLE	IBMDB2SAMPLEX1L	0	8	11.54%	8
DB2INST1	CUSTOMER	USER_TABLE	IBMDB2SAMPLEX1L	0	8	25.00%	8
DB2INST1	CL_SCHED	USER_TABLE	USERSPACE1	0	7	0.00%	7
DB2INST1	EMP_PHOTO	USER_TABLE	USERSPACE1	0	11	0.00%	11



# Monitor Storage – Storage

Displays the storage usage data of each table or each schema

IBM Db2 Data Management Console

Database: SAMPLE

Local [UTC-5] 3:37 PM

Summary Database Statement Locking Applications Throughput Memory I/O **Storage** Workload management

Table performance **Storage** Table space performance Table space allocation

Real time: [Refresh] [Pause data refresh] [Refresh]

Last collected: 22/05/2022 03:36:37 PM

Filter by: Tables [Search in name of table name]

Schema name	Table name	Logical size (kb)	Physical size (kb)	Collect time
CAMDF	SF_ADDRESS	1,024	1,024	May 27, 2022 3:36:37 PM
CAMDF	SF_ADDRESS_REVERSE_PRESTD	1,024	1,024	May 27, 2022 3:36:37 PM
DB2INST1	API_TABLE_TEST	512	512	May 27, 2022 3:36:37 PM
DB2INST1	ACT	1,024	1,024	May 27, 2022 3:36:37 PM
DB2INST1	YDEFUSR	512	512	May 27, 2022 3:36:37 PM
DB2INST1	API_TABLE	768	768	May 27, 2022 3:36:37 PM
DB2INST1	CATALOG	1,536	1,536	May 27, 2022 3:36:37 PM
DB2INST1	CL_SCHED	512	512	May 27, 2022 3:36:37 PM
DB2INST1	CUSTOMER	1,792	1,792	May 27, 2022 3:36:37 PM
DB2INST1	DEPARTMENT	1,024	1,024	May 27, 2022 3:36:37 PM

Items per page: 10 1-10 of 34 items

# Monitor Storage – Table space performance

IBM Db2 Data Management Console

Database: SAMPLE

Local (UTC-5) 3:37 PM

Summary Database Statement Locking Applications Throughput Memory I/O **Storage** Workload management

Table performance Storage **Table space performance** Table space utilization

Real time Pause data/refresh Refresh

Last collected: 22/05/27 03:37:33 PM

Search (tablespace name)

Table space name	Logical reads / min	Logical data reads / min	Logical index reads / min	Logical temporary page reads / min	Logical XDA reads / min
IBMDB2SAMPLEREL	3,659.00	2,672.00	1,987.00	0.00	0.00
IBMDB2SAMPLEML	1,306.00	328.00	606.00	0.00	372.00
SYSCATSPACE	29,627.00	12,598.00	17,927.00	0.00	42.00
SYSTOOLSPACE	817.00	705.00	112.00	0.00	0.00
TEMPSPACE1	0.00	0.00	0.00	0.00	0.00
TEMPSPACE2	131.00	131.00	0.00	131.00	0.00
TS4CONSOLE	15,310.00	4,713.00	10,595.00	0.00	0.00
TS4MONITOR	1,007.00	1,323.00	584.00	0.00	0.00
USERSPACE1	1,891.00	915.00	776.00	0.00	0.00

# Monitor Storage – Table space utilization

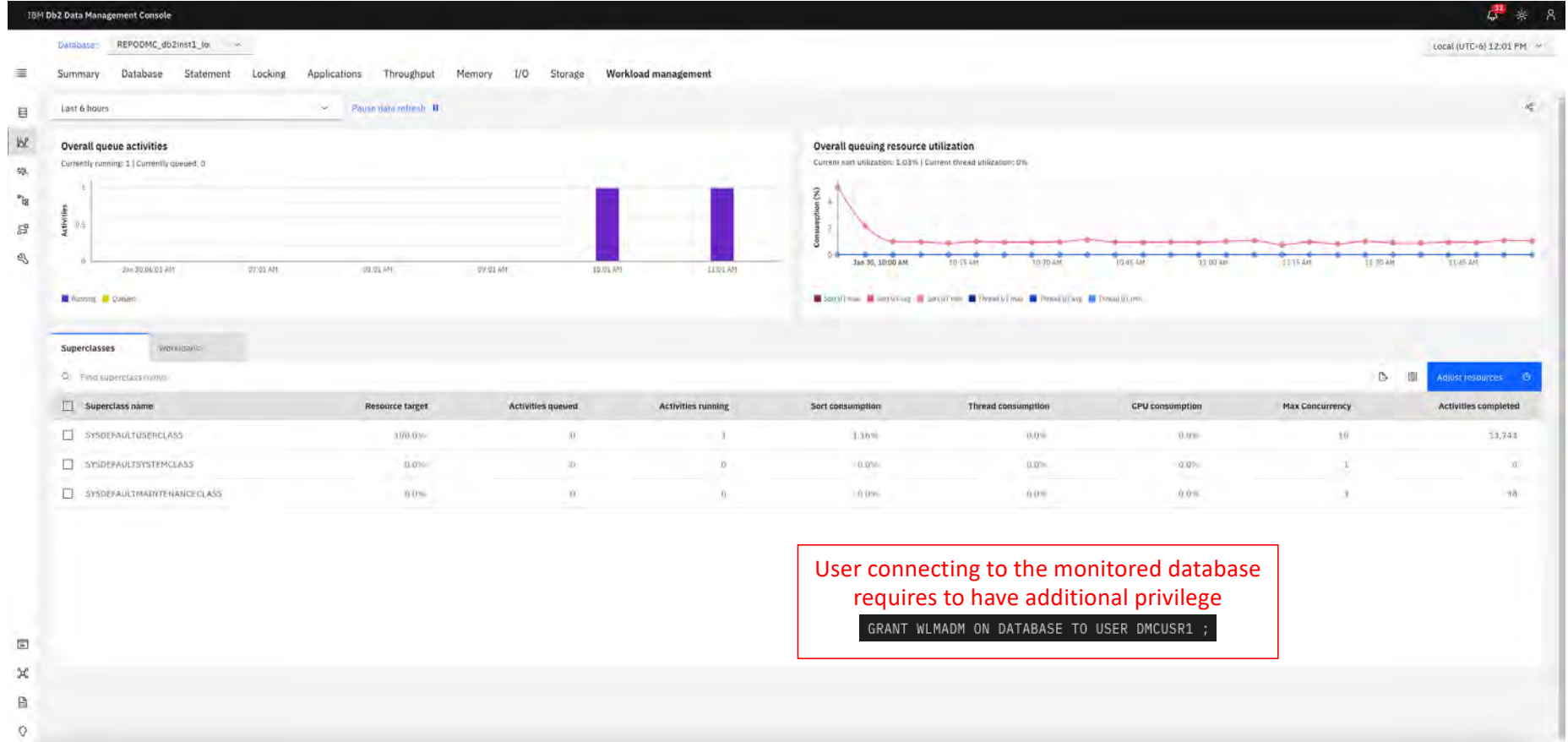
The screenshot displays the 'Table space utilization' page in the IBM Db2 Data Management Console for the 'SAMPLE' database. The main table shows the following data:

Table space name	Table space type	State	Logical reads	Pages used	Free pages	Total pages
USERSPACE1	DBCS	NORMAL	0.00	2,000	1,984	3,076
TS4MONITOR	DBD	NORMAL	0.00	2,354	1,930	3,284
TS4EDNSOLE						1,076
TEMPSPACE1						10,940
TEMPSPACE2						1,076
SYSTOOLSPACE						1,328
SYSCATSPACE						
IBMDBGSAMPLEXPL						
IBMDBGJAMHERRF						

A detailed view for 'USERSPACE1' is shown in a pop-up window with the following properties:

Name	Value
Table space name	USERSPACE1
Table space type	DBCS
Content type	LARGE
Page size	8,192
Automatic storage	1
Automatic recycle enabled	1
Next available space enabled	1
State	NORMAL
Modification state	UNAVAILABLE
Logical reads	6,880.00
Writes	0
Pages used	2,000
Free pages	1,984
Total pages	3,076
Max high water mark	3,000

# Monitor Workload Management



User connecting to the monitored database requires to have additional privilege  
`GRANT WLMADM ON DATABASE TO USER DMCUSR1 ;`

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=console-min-db-privileges-required-db2>



# Db2 Data Management Console

Data

The screenshot shows the IBM Db2 Data Management Console interface. At the top, there is a navigation bar with tabs for Tables, Views, Indexes, Remote tables, Aliases, MQTs, Schemas, Sequences, Storage objects, Application objects, Authorization, Workloads, and Configuration. Below this is a search bar and a 'Show system schemas' toggle. The main content area displays a table of schemas with columns for Name, Type, and Tables. The table lists several schemas, including DB2INST1, Schema, CAMDF, db2inst1, db2inst2, ABH, and LOGT. A red box highlights a list of actions available for these schemas.

Name	Type	Tables
DB2INST1	User	29
Schema	User	1
CAMDF	User	2
db2inst1	User	1
db2inst2	User	1
ABH	User	0
LOGT	User	0

- Generate DDL
- Generate SQL
- Object dependency
- Object level privilege
- Table-like object
- Browse data

# Data – Tables

The screenshot displays the IBM Db2 Data Management Console interface. On the left, the 'Schemas' table lists various schemas, with 'DB2INST1' selected. On the right, the 'Tables' table lists tables within the 'DB2INST1' schema, with 'ACT' selected. A configuration window for the 'ACT' table is open, showing detailed properties such as 'Table name: ACT', 'Object type: TABLE', 'Owner: DB2INST1', and 'Table space: USERSPACE1'. A context menu is open over the 'ACT' table in the 'Tables' table, with options including 'Export all as CSV', 'Privileges', 'Generate DDL', 'Generate DDL...', and 'Drop'.

Name	Definer type	Tables
<input checked="" type="checkbox"/> DB2INST1	User	29
<input type="checkbox"/> Schema	User	3
<input type="checkbox"/> CAMDF	User	2
<input type="checkbox"/> db2inst1	User	1
<input type="checkbox"/> db2inst2	User	1
<input type="checkbox"/> ADM	User	0
<input type="checkbox"/> OQT	User	0

Name	Schema	Properties
<input checked="" type="checkbox"/> ACT	DB2INST1	...
<input type="checkbox"/> API_TABLE	DB2INST1	...

Property	Value	Property	Value
Table name	ACT	Table schema	DB2INST1
Object type	TABLE	Owner	DB2INST1
Owner type	USER	Table space	USERSPACE1
Index table space		Long table space	
Organization	R	Drop rule	NO
Volatile		Row compression mode	NONE
Pages saved	0	Compress	No compression is enabled
Distribution type		Partition mode	NO DATABASE PARTITIONING
Average row size	36	Status	NORMAL
Append on model	OFF	Row count	1#
Create time	2020-06-04 15:48:42:536554	Last used	2022-04-13
Altered	2020-06-04 15:48:43:097009	Statistic time	2021-07-27 07:23:35:058786
Pctfree	-1	Data capture	NONE
Size of lock	ROW	Logged	NO
Comments		Primary key	ACTNO
Foreign key	ACTNO	Temporal value	NO

# Data – Views

The screenshot shows the IBM Db2 Data Management Console interface. The top navigation bar includes 'Database: SAMPLE' and 'Server (UTC-7) 12:46 PM'. The main menu contains 'Tables', 'Views', 'Indexes', 'Remote tables', 'Aliases', 'MQTs', 'Schemas', 'Sequences', 'Storage objects', 'Application objects', 'Authorization', 'Workloads', and 'Configuration'. The 'Views' tab is active, showing a list of views under the 'DB2INST1' schema. A modal window is open for the 'VACT' view, displaying its properties.

Name	Type	Views
<input checked="" type="checkbox"/> DB2INST1	User	19
<input type="checkbox"/> ADM	User	0
<input type="checkbox"/> db2inst2	User	0
<input type="checkbox"/> db2inst3	User	0
<input type="checkbox"/> Schema	User	0
<input type="checkbox"/> OQT	User	0
<input type="checkbox"/> CAMDF	User	0

Name	Schema	Properties
<input type="checkbox"/> VACT	DB2INST1	
<input type="checkbox"/> VASTRDE1		
<input type="checkbox"/> VASTRDE2		
<input type="checkbox"/> VDEPRG1		
<input type="checkbox"/> VDEFT		
<input type="checkbox"/> VEMP		
<input type="checkbox"/> VEMPOHT1		
<input type="checkbox"/> VEMRPL		
<input type="checkbox"/> VEMPROJACT		
<input type="checkbox"/> VDRPLA		
<input type="checkbox"/> VHDERT	DB2INST1	...
<input type="checkbox"/> VPHONE	DB2INST1	...
<input type="checkbox"/> VPRO2	DB2INST1	...
<input type="checkbox"/> VPRQJACT	DB2INST1	...
<input type="checkbox"/> VPRQJRE1	DB2INST1	...
<input type="checkbox"/> VPSTRDE1	DB2INST1	...
<input type="checkbox"/> VPSTRDE2	DB2INST1	...
<input type="checkbox"/> VSTAFACL	DB2INST1	...

View name	View schema
VACT	DB2INST1

Property	Value
Owner	DB2INST1
Owner type	U
Read-only	NO
Valid	YES
Checking type	NO
SQL	CREATE VIEW VACT AS SELECT ALL
Create time	2020-06-04 15:48:44:333425
Altered	2020-06-04 15:48:44:333425
Statistic time	
Query optimization	NO



# Data – Indexes

The screenshot displays the IBM Db2 Data Management Console interface. The top navigation bar includes 'Database: SAMPLE' and 'Server (UTC-7) 12:46 PM'. The main menu contains 'Tables', 'Views', 'Indexes', 'Remote tables', 'Aliases', 'MQTs', 'Schemas', 'Sequences', 'Storage objects', 'Application objects', 'Authorization', 'Workloads', and 'Configuration'. The 'Indexes' tab is active, showing a list of indexes for the 'SAMPLE' database. The 'Schemas' panel on the left shows a list of schemas, with 'DB2INST1' selected. The 'Indexes' panel on the right shows a list of indexes, with 'CUST\_CID\_XMLIDX' selected. A red box highlights the details for 'CUST\_CID\_XMLIDX'.

Name	Type	Indexes
<input checked="" type="checkbox"/> DB2INST1	User	27
<input type="checkbox"/> CAMDP	User	4
<input type="checkbox"/> Schema	User	1
<input type="checkbox"/> ADM	User	0
<input type="checkbox"/> db2inst2	User	0
<input type="checkbox"/> db2inst1	User	0
<input type="checkbox"/> OQT	User	0

Name	Schema	Properties
<input type="checkbox"/> CUST_CID_XMLIDX	DB2INST1	
<input type="checkbox"/> CUST_NAME_XMLIDX		
<input type="checkbox"/> CUST_PHONE_XMLIDX		
<input type="checkbox"/> CUST_PHONE_XMLIDX		
<input type="checkbox"/> PK_ACT		
<input type="checkbox"/> PK_CATALOG		
<input type="checkbox"/> PK_CUSTOMER		
<input type="checkbox"/> PK_DEPARTMENT		
<input type="checkbox"/> PK_EMPLOYEE		
<input type="checkbox"/> PK_EMP_PHOTO		
<input type="checkbox"/> PK_EMP_RESUME		
<input type="checkbox"/> PK_INVENTORY		
<input type="checkbox"/> PK_PRODUCT		
<input type="checkbox"/> PK_PRODUCTSUPPLY		
<input type="checkbox"/> PK_PRODUCT		
<input type="checkbox"/> PK_PROJECT	DB2INST1	...
<input type="checkbox"/> PK_PURCHASEORDER	DB2INST1	...
<input type="checkbox"/> PO_CID_XMLIDX	DB2INST1	...

Index name	CUST_CID_XMLIDX	Index schema	DB2INST1
Members	INFO	Table name	CUSTOMER
Table schema	DB2INST1	Table space	IBMDB2SAMPLEXML
Index type	NVIL	Unique	Yes
Clustered	NO	Compress	No
Reverse scans	Yes	Free(%)	-1
Level2 PCTFREE	-1	Owner	DB2INST1
Owner type	U	System generated index	No
Create time	2020-06-04 15:48:57.146373	Last used	0001-01-01
Statistic time			

# Data – Remote tables

The screenshot displays the IBM Db2 Data Management Console interface. At the top, the title bar reads 'IBM Db2 Data Management Console'. Below it, the database name 'SAMPLE' is shown. A navigation menu includes 'Tables', 'Views', 'Indexes', 'Remote tables', 'Aliases', 'MQTs', 'Schemas', 'Sequences', 'Storage objects', 'Application objects', 'Authorization', 'Workloads', and 'Configuration'. The 'Remote tables' tab is active, showing a search bar with the text 'Find schemas of tables'. A table lists the following schemas and their remote table counts:

Name	Remote tables
ADM	0
db2inst2	0
db2inst1	0
Schema	0
DQT	0
DB2INST1	0
CAMDF	0

At the bottom left of the table area, it says 'Total: 7, selected: 0'. On the right side, there are buttons for 'Manage server', 'refresh', and 'New instance schema'.

# Data – Aliases

The screenshot shows the IBM Db2 Data Management Console interface. On the left, the 'Schemas' table lists various user schemas. On the right, the 'Aliases' table lists aliases for the selected schema. A red box highlights the 'DEPT' alias, and a red arrow points to a detailed properties window for this alias.

Name	Type	Aliases
<input checked="" type="checkbox"/> DB2INST1	User	5
<input type="checkbox"/> ADM1	User	0
<input type="checkbox"/> db2inst2	User	0
<input type="checkbox"/> db2inst1	User	0
<input type="checkbox"/> Schema	User	0
<input type="checkbox"/> OQT	User	0
<input type="checkbox"/> CAMDF	User	0

Name	Schema	Properties
<input type="checkbox"/> DEPT	DB2INST1	...
<input type="checkbox"/> EMP	DB2INST1	...
<input type="checkbox"/> EMPACT	DB2INST1	...
<input type="checkbox"/> EMP_ACT	DB2INST1	...
<input type="checkbox"/> PROJ	DB2INST1	...

DEPT			
Alias name	DEPT	Alias schema	DB2INST1
Base object	DEPARTMENT	Base object schema	DB2INST1
Owner	DB2INST1	Owner type	USER
Create time	2020-06-04 15:48:37:859901	Altered	2020-06-04 15:48:37:859901

# Data – MQTs

The screenshot shows the IBM Db2 Data Management Console interface. On the left, the 'Schemas' panel displays a list of schemas with columns for Name, Type, and MQTs. The 'DB2INST1' schema is selected, showing 1 MQT. On the right, the 'MQTs' panel shows a list of MQTs, with 'ADEFUSR' selected in the 'DB2INST1' schema. A red box highlights the 'ADEFUSR' MQT details, which are shown in a pop-up window. The details include:

Property	Value	Property	Value
MQT name	ADEFUSR	MQT schema	DB2INST1
Object type	MQTs	Owner	DB2INST1
Owner type	USER	Table space	USERSPACE1
Index table space		Log table space	
Organization	R	Drop rule	NO
Volatile		Row compression mode	NOHE
Compress	No compression is enabled	Row count	0
Append on model	OFF	Date capture	NOHE
Size of lock	ROW	Logged	NO
Refresh		Create time	2020-06-04 15:48:47:252159
Last used	0001-01-01	Altered	2020-06-04 15:48:47:252159
Statistic time	2020-08-26 07:06:46:543582	Comments	
Maintained by	SYSTEM	SQL	CREATE SUMMARY TABLE

# Data – Schemas

The screenshot shows the IBM Db2 Data Management Console interface. The top navigation bar includes 'Tables', 'Views', 'Indexes', 'Remote tables', 'Aliases', 'MQTs', 'Schemas', 'Sequences', 'Storage objects', 'Application objects', 'Authorization', 'Workloads', and 'Configuration'. The 'Schemas' tab is active. A search bar for 'Find schemas' is present. The main area displays a table of schemas with columns for 'Name', 'Type', and 'Properties'. The 'DB2INST1' schema is selected. A red box highlights the 'Properties' column for 'DB2INST1', and a red arrow points to a pop-up window showing the details for 'DB2INST1'.

Name	Type	Properties
ADM	User	
C&MDC	User	
DB2INST1	User	
DEV1	User	
Schemas	User	
ib2inst1	User	
ib2inst2	User	

DB2INST1

Schema	DB2INST1	Owner	SYSIBM
Owner type	SYSTEM	Definer	DB2INST1
Definer type	U	Create time	2020-06-04 15:48:36.797958
Data capture	NONE	Comments	

# Data – Sequences

The screenshot shows the IBM Db2 Data Management Console interface. The left pane displays a list of Schemas, and the right pane displays a list of Sequences. A modal window is open, showing the properties for the sequence DB2INST1.SAMPSEQUENCE.

Schemas	
Name	Type
DB2INST1	User
ADM1	User
db2inst2	User
db2inst1	User
.Schema	User
QQT	User
CAMPF	User

Sequences	
Name	Schema
SAMPSEQUENCE	DB2INST1
SYSDATETIME	System

DB2INST1			
Sequence schema	DB2INST1	Sequence name	SAMPSEQUENCE
Increment by	1	Start	1
Maximum	9223372036854775807	Minimum	1
Cycle	NO	Comments	
Data type	BIGINT	Precision	19
Cache	20	Order	NO
Definer type	U		

# Data – Storage Objects – Table spaces

The screenshot displays the IBM Db2 Data Management Console interface. The top navigation bar includes 'Database: SAMPLE' and 'Server (UTC-7) 1:16 PM'. The main menu contains 'Tables', 'Views', 'Indexes', 'Remote tables', 'Aliases', 'MQTs', 'Schemas', 'Sequences', 'Storage objects', 'Application objects', 'Authorization', 'Workloads', and 'Configuration'. The 'Storage objects' section is active, showing a list of table spaces under the 'Table spaces' tab.

Table space	Database partition group	Buffer pool	Data type	Managed by	Tablespace state
<input checked="" type="checkbox"/> USERSPACE1	IBMDEFAULTGROUP	IBMDEFAULTBP	Large	Automatic Storage	Normal
<input type="checkbox"/> TS4MONITOR	CONSOLEGROUP	CONSOLEPOOL	Large	Automatic Storage	Normal
<input type="checkbox"/>		BIPACONSOLE	Large	Automatic Storage	Normal
<input type="checkbox"/>		CONSOLEPOOL	System Temporary	Automatic Storage	Normal

Below the table, the details for 'USERSPACE1' are shown:

USERSPACE1	
Tablespace name	USERSPACE1
Database partition group	IBMDEFAULTGROUP
Storage group name	IBMSTOGROUP
Drop recovery	YES
Reclaimable	YES
Transfer rate	INHERIT
File caching	
Page size	8192
Increase size	Default
Extend size	32
Tablespace ID	2
Buffer pool	IBMDEFAULTBP
Data type	Large
Managed by	Automatic Storage
Overhead	INHERIT
Data tag	INHERIT
State	NORMAL
Auto resize enabled	Yes
Max size	Default
Prefetch size	AUTOMATIC

On the right side of the table space list, there are three buttons: 'Edit table space', 'Edit user privileges', and 'View details'. The 'View details' button is highlighted with a red box. A red arrow points from this button to the 'USERSPACE1' details panel. Another red arrow points from the 'View details' button to the 'View dependencies' button, which is highlighted with a green box. A green arrow points from the 'View dependencies' button to the 'Dependencies' section of the table space details panel.

The 'Dependencies' section shows a diagram of the table space structure, including 'USERSPACE1' and its associated 'IBMDEFAULTBP' buffer pool.

# Data – Storage Objects – Buffer pools

The screenshot displays the IBM Db2 Data Management Console interface. At the top, the title bar reads "IBM Db2 Data Management Console" and shows the server name "Server (UTC-7) 1:29 PM". Below the title bar, a navigation menu includes "Tables", "Views", "Indexes", "Remote tables", "Aliases", "MOTs", "Schemas", "Sequences", "Storage objects", "Application objects", "Authorization", "Workloads", and "Configuration". The "Storage objects" menu item is selected, and the "Buffer pools" sub-tab is active. The main content area shows a table of buffer pools with the following columns: Name, Partition group, Automatic, Pages, Page size, Block pages, and Block size. Three buffer pools are listed: "IBMDEFBU200", "IBMDEFBU100", and "IBMDEFBU300". The "IBMDEFBU200" row is selected, indicated by a blue highlight and a checked checkbox in the "Name" column.

Name	Partition group	Automatic	Pages	Page size	Block pages	Block size
<input checked="" type="checkbox"/> IBMDEFBU200		Yes	1000	32768	32	32768
<input type="checkbox"/> IBMDEFBU100		Yes	2	32768	32	32768
<input type="checkbox"/> IBMDEFBU300				32768		



# Data – Application Objects – Stored procedures

The screenshot displays the IBM Db2 Data Management Console interface. The top navigation bar includes 'Tables', 'Views', 'Indexes', 'Remote tables', 'Aliases', 'MQTs', 'Schemas', 'Sequences', 'Storage objects', 'Application objects', 'Authorization', 'Workloads', and 'Configuration'. The 'Application objects' tab is active, showing 'Stored procedures'. The left pane lists schemas, with 'DB2INST1' selected. The right pane shows a list of procedures under the 'DB2INST1' schema, including 'BONUS\_INCREASE', 'PROCEDURE1', 'TESTPROC', and 'TESTPROCEDURE'. A red box highlights the 'BONUS\_INCREASE' procedure, and a red arrow points to a detailed view of this procedure.

Name	Type	Procedures
DB2INST1	User	4
QQT	User	1
ADM	User	4
db2inst2	User	0
db2inst1	User	0
Schema	User	9
CAMDF	User	0

Name	Schema	Properties
BONUS_INCREASE	DB2INST1	...
PROCEDURE1	DB2INST1	...
TESTPROC	DB2INST1	...
TESTPROCEDURE	DB2INST1	...

DB2INST1			
Stored procedure schema	DB2INST1	Stored procedure name	BONUS_INCREASE
Specific name	BONUS_INCREASE	Language	SQL
Parameter style		SQL data access	Contains SQL statements
Deterministic	NO	External action	External side-effects
Commit on return	NO	Parallel	
Fenced		Implementation	db2prmlpvm_entry
SQL	CREATE PROCEDURE	Owner	DB2INST1
Owner type	U	Create time	2020-06-04 15:48:46-972048
Comments		Valid	YES

# Data – Application Objects – User-defined Types

The screenshot displays the IBM Db2 Data Management Console interface. The top navigation bar includes 'Database: SAMPLE' and 'Server (UTC-7) 1:02 PM'. The main menu contains 'Tables', 'Views', 'Indexes', 'Remote tables', 'Aliases', 'MQTs', 'Schemas', 'Sequences', 'Storage objects', 'Application objects', 'Authorization', 'Workloads', and 'Configuration'. The 'Application objects' section is active, showing 'User-defined Types' and 'User-defined Functions'. The 'Schemas' section is expanded, displaying a table of user-defined types.

Name	Type	UDTs #
ADM	User	0
db2inst2	User	0
db2inst1	User	0
Schema	User	0
QDT	User	0
DB2INST1	User	0
CAMDF	User	0

Total: 7, selected: 0

# Data – Application Objects – User-defined Functions

The screenshot displays the IBM Db2 Data Management Console interface. The top navigation bar includes 'Database: SAMPLE' and 'Server (UTC-7) 1:02 PM'. The main menu shows 'Application objects' selected. The left sidebar lists 'User-defined Functions'. The main content area is divided into two panels: 'Schemas' and 'User-defined functions'. The 'Schemas' panel shows a list of schemas, with 'DB2INST1' selected. The 'User-defined functions' panel shows a table with one entry: 'RESIGN\_EMPLOYEE' in the 'DB2INST1' schema. A red box highlights this entry, and a red arrow points to a pop-up window showing the details for 'DB2INST1'.

Name	Type	UDFs
<input type="checkbox"/> ADM	User	1
<input checked="" type="checkbox"/> DB2INST1	User	1
<input type="checkbox"/> CAMDF	User	0
<input type="checkbox"/> db2inst2	User	0
<input type="checkbox"/> db2inst1	User	0
<input type="checkbox"/> Schema	User	0
<input type="checkbox"/> DQT	User	0

Name	Schema	Properties
<input type="checkbox"/> RESIGN_EMPLOYEE	DB2INST1	

DB2INST1			
UDF schema	DB2INST1	UDF name	RESIGN_EMPLOYEE
Specific name	SQL200604154847566	Language	SQL
Parameter style		SQL data access	Contains SQL statements
Deterministic	NO	External action	External side-effects
Commit on return		Parallel	
Fenced		Implementation	
SQL	CREATE FUNCTION	Owner	DB2INST1
Owner type	M	Create time	2020-06-04 15:48:47.762313
Comments		Valid	YES

# Data – Authorization

The screenshot displays the IBM Db2 Data Management Console interface, specifically the 'Authorization' tab. The main view shows a list of users and roles. A dropdown menu is open for the 'DB2INST1' user, showing 'Object privileges' and 'Roles'. A blue arrow points from the 'Object privileges' option to a smaller screenshot below, which shows the 'Object privileges' configuration page for 'DB2INST1'. A green arrow points from the 'Roles' option to another smaller screenshot below, which shows the 'Roles' configuration page for 'DB2INST1'.

Name	Type
CINTIA	USER
DB2INST1	USER
PUBLIC	GROUP
SYSDEBUG	ROLE

Number of	Type	With admin option
1	DB2INST1	Y
1	DB2INST1	Y
1	DB2INST1	Y
1	DB2INST1	Y

# Data – Workloads

IBM Db2 Data Management Console

Server (UTC-7) 11:20 AM

Tables Views Indexes Remote tables Aliases MQTs Schemas Sequences Storage objects Application objects Authorization Workloads Configuration

Find workloads

Workload id	Workload name	Connection attribute	Value	Collect activity data	Collect aggregate activity data
4	CONSOLE_WORKLOAD	APPNAME	DISMAUI*	None	None
5	CONSOLE_WORKLOAD	APPNAME	DSMQQI	None	None
6	CONSOLE_WORKLOAD	APPNAME	DSMRT*	None	None
8	CONSOLE_WORKLOAD	APPNAME	DSSNAP*	None	None
5	CONSOLE_WORKLOAD	APPNAME	DS_ConnMgr	None	None
3	CONSOLE_WORKLOAD	APPNAME	UC_*	None	None
2	SYSDEFAULTWORKLOAD			Activity data with details	None
1	SYSDEFAULTUSERWORKLOAD			Activity data with details	None

Items per page: 10 318 of 8 items

1 of 1 page

# Data – Configuration – Instance

The screenshot shows the IBM Db2 Data Management Console interface. The top navigation bar includes 'Tables', 'Views', 'Indexes', 'Remote tables', 'Aliases', 'MQTs', 'Schemas', 'Sequences', 'Storage objects', 'Application objects', 'Authorization', 'Workloads', and 'Configuration'. The 'Configuration' tab is active, showing a table of instance parameters. The 'AUTHENTICATION' parameter is highlighted, and its value is being changed from 'SERVER' to 'CLIENT'. A red box labeled 'Make the change' points to the dropdown menu. Another red box labeled 'Save to apply the changes' points to the 'Save' button. A 'View command' dialog is open, showing the SQL command: 'CALL SYSPROC.ADMIN\_CMD('UPDATE DBM CFG USING AUTHENTICATION CLIENT DEFERRED')'. A red box labeled 'View command' points to the dialog.

Name	Value	Pending change	Modification	Update
AUTHENTICATION	CLIENT	-	Manual	Deferred
CATALOG_NOAUTH	NO	-	-	-
CLNT_KRB_PLUGIN	-	-	-	-
CLNT_PW_PLUGIN	-	-	-	-
DFTOPATH	/home/ibm21net1	-	-	-
FED_NOAUTH	NO	-	-	-

```
CALL SYSPROC.ADMIN_CMD('UPDATE DBM CFG USING AUTHENTICATION CLIENT DEFERRED')
```

# Data – Configuration – Database

The screenshot displays the IBM Db2 Data Management Console interface for configuring a database. The 'Configuration' tab is active, showing a list of configuration parameters. The 'EXTENDED\_ROW\_SZ' parameter is selected, and its value is set to 'DISABLE'. A red box highlights this parameter with the text 'Make the change'. To the right, the 'Save' button is highlighted with a red box and labeled 'Save to apply the changes'. Below the parameter list, a 'View command' window is open, showing the command: 'CALL SYSPROC.ADMIN\_CMD('UPDATE DB CFG USING EXTENDED\_ROW\_SZ DISABLE');'.

Name	Value	Pending change	Modification	Update
AVG_APPLS	AUTOMATIC (3)		Automatic	Immediate
CONNECT_FPROC			Manual	Immediate
DATABASE_CONSISTENT	NO		Manual	Deferred
DLCHECKTIME	10000			
EXTBL_LOCATION	/home/db2inst1			
EXTBL_STRICT_ID	NO			
EXTENDED_ROW_SZ	DISABLE			

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=administering-updating-configuration-parameters>



# Db2 Data Management Console

SQL Editor



# Integrated SQL Editor

The screenshot shows the IBM Db2 Integrated SQL Editor interface. The main window displays a SQL query in the Editor/Builder. The interface includes a left-hand navigation pane for Data objects, a central SQL text panel, and a right-hand panel with execution options. Several callouts highlight key features:

- Save or export query for later use (script)**: Points to the Save icon in the top toolbar.
- Search/Replace in the SQL text panel**: Points to the Search/Replace icon in the top toolbar.
- Filter database objects**: Points to the search box in the Data objects pane.
- Editor/Builder**: Points to the SQL text area.
- Explain SQL statement (Visual Explain)**: Points to the Explain icon in the top toolbar.
- Tune SQL statement (Query Tuning)**: Points to the Tune icon in the top toolbar.
- Right click for additional options**: Points to a right-click context menu over the SQL text, showing options like Generate DML, View details, Select, Insert, Update, and Delete.

A red-bordered box in the center contains the following text:

- Check SQL syntax
- Requires Personal Credential to run statements

The bottom of the interface shows a History table with columns for Script, Date, Status, and Runtime. The current state is "No history".

# Run SQL – Editor

The screenshot displays the IBM Db2 Data Management Console interface. On the left, a tree view shows the database structure, including tables like EMPLOYEE. The main editor window contains a SQL query: `SELECT EMPNO, FIRSTNAME, MIDDLEINITIAL, LASTNAME, WORKDEPT, PHONENO, HIREDATE, JOB, EDLEVEL, SEX, BIRTHDATE, SALARY, BONUS, COMM FROM DBZINST1.EMPLOYEE;`. A red box highlights this query, labeled "Generated query". A red arrow points from the text "Right click on table name" to the "EMPLOYEE" table in the left pane. Another red arrow points from "Select the statement" to the "Select" option in the context menu. In the top right, a red box labeled "Run query" points to the "Run" button (a blue play icon). A dropdown menu is open next to the "Run" button, showing options like "Run all", "Run selected", "Run from Cursor", "Schedule", "Export as csv", and "Export as xls".

# Run SQL – Editor

The screenshot displays the IBM Db2 Data Management Console interface. At the top, the title bar reads "IBM Db2 Data Management Console". Below it, the "Database" is set to "SAMPLE". The main editor window shows a SQL query: `SELECT 'EMPNO', 'FIRSTNAME', 'MIDINIT', 'LASTNAME', 'WORKDEPT', 'PHONE0', 'HIREDATE', 'JOB', 'EDLEVEL', 'SEX', 'BIRTHDATE', 'SALARY', 'BONUS', 'COMM' FROM 'DBZINST1'.EMPLOYEE;`. The "Results" tab is active, showing a table with 17 columns: DEPTNO, DEPTNAME, MGRNO, ADMDEPT, LOCATION, EMPNO, FIRSTNAME, MIDINIT, LASTNAME, WORKDEPT, PHONE0, HIREDATE, JOB, EDLEVEL, SEX, BIRTHDATE, SALARY, and BONUS. The table contains 10 rows of data. Below the results, the "History" tab is visible, showing a list of scripts with columns for Script, Date, Status, and Runtime. A red box highlights the "History" tab and the "Results" tab, with a callout box containing the text: 

- List of scripts
- History

DEPTNO	DEPTNAME	MGRNO	ADMDEPT	LOCATION	EMPNO	FIRSTNAME	MIDINIT	LASTNAME	WORKDEPT	PHONE0	HIREDATE	JOB	EDLEVEL	SEX	BIRTHDATE	SALARY	BONUS
A00	SUPPORT SERVICES	000010	A00		000010	CHRISTINE	I	HAAS	A00	3978	1993-01-01	PRES	18	F	1963-08-24	152750.00	1000
E01	SUPPORT SERVICES	000050	A00		000050	CHRISTINE	I	HAAS	A00	3978	1993-01-01	PRES	18	F	1963-08-24	152750.00	1000
D01	DEVELOPMENT CENTER		A00		000010	CHRISTINE	I	HAAS	A00	3978	1993-01-01	PRES	18	F	1963-08-24	152750.00	1000
C03	INFORMATION CENTER	000030	A00		000010	CHRISTINE	I	HAAS	A00	3978	1993-01-01	PRES	18	F	1963-08-24	152750.00	1000
B03	PLANNING	000020	A00		000010	CHRISTINE	I	HAAS	A00	3978	1993-01-01	PRES	18	F	1963-08-24	152750.00	1000
E11	OPERATIONS	000040	E01		000050	JOHN	B	GEYER	E01	6789	1979-08-17	MANAGER	16	M	1955-09-15	80175.00	8000
J22	BRANCH OFFICE 22		E01		000050	JOHN	B	GEYER	E01	6789	1979-08-17	MANAGER	16	M	1955-09-15	80175.00	8000
L22	BRANCH OFFICE 22		E01		000050	JOHN	B	GEYER	E01	6789	1979-08-17	MANAGER	16	M	1955-09-15	80175.00	8000

Script	Date	Status	Runtime
SAMPLE; Untitled - 2	Feb 14, 2023 3:48:55 PM	1	0.005 s
SELECT 'EMPNO', 'FIRSTNAME', 'MIDINIT', 'LASTNAME', 'WORKDEPT', 'PHONE0', 'HIREDATE', 'JOB', 'EDLEVEL', 'SEX', 'BIRTHDATE', 'SALARY', 'BONUS', 'COMM' FROM 'DB...			0.005 s

# Run SQL – Visual Explain

■ The Db2 EXPLAIN command will try to use the explain tables under the user connected to the database.

■ If there is no explain tables under that user, then DB2 will try to use the explain tables under the SYSTOOLS schema, and the user connected to the database needs to have the INSERT/SELECT privileges for all the explain tables under SYSTOOLS.

# Run SQL – Builder

The screenshot shows the IBM Db2 Data Management Console SQL Builder interface. On the left, a 'Data objects' sidebar lists various database objects, with 'EMPLOYEE' highlighted. A red box around 'EMPLOYEE' is labeled 'Drag and drop tables'. In the main workspace, two table icons, 'DEPARTMENT' and 'EMPLOYEE', are connected by a join symbol. A red box around this symbol is labeled 'Create join'. To the right, a 'Configure join' dialog is open, showing a dropdown menu with 'Inner join' selected. Below the dropdown, two tables are listed: 'DEPARTMENT' with 'ADMDEPT' and 'EMPLOYEE' with 'WORKDEPT'. A 'Results' pane at the bottom displays a table with columns: DEPTNO, DEPTNAME, MGRNO, ADMRDEPT, LOCATION, EMPNO, FIRSTNAME, MIDINIT, LASTNAME, WORKDEPT, PHONENO, HIREDATE, JOB, EDLEVEL, SEX, BIRTHDATE, SALARY, and BONUS. The table contains data for employees like CHRISTINE HAAAS and JOHN DEYER.

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=sql-using-builder>



# Db2 Data Management Console

## Query Tuning

# Query Tuning

- Format and annotate the statement
- Generate access plan graph
  - Access plan graph describes both the operational details of query execution and how the data flows
  - A leaf node of an access plan graph is either a table node or an index node that represents a data source in the query execution plan
  - Typically a table node is at the bottom of the graph, and the access plan proceeds upward from there
- Recommend RUNSTATS commands
  - Generated by the Statistics Analyzer
  - Lists all the tables that are accessed by the queries in the single-query or workload that are tuned and recommended actions for updating their associated catalog statistics
- Recommend new indexes
  - The **Storage comparison** chart, **Performance comparison** chart, and **Index recommendations** table are displayed
  - The **Storage comparison** chart and **Performance comparison** chart provide a comparison between the original cost and the after-change cost if index recommendations are applied

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=welcome-tuning>



# Query Tuning – Creating a Tuning Task

## 3 ways to create a tuning task

- From [Run SQL Editor](#)
- From any of Statement tabs

The screenshot shows the IBM Db2 Data Management Console interface. The 'Statement' tab is active, displaying a table of query executions. The table has columns for Client IP address, Application name, User ID, Start time, Coordinator statement execution time, Activity state, SQL, WLM queue time, Idle time, Rows read, Estimated query cost, Sort used, and Peak sort used. A callout box with a green border points to a single row in the table, containing the text 'Tune query when one statement is selected'. Another callout box with a purple border points to the entire table, containing the text 'Tune workload when more than one statements are selected'.

- From [Notification Center](#)

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=tuning-creating-task>



# Query Tuning – Tuning Task definition

Select tuning activities to run

Name:  Tuning task name

Description:

Explain options

Current schema:	DBZINST1
Current path:	"/SYSIBM"/SYSFUN"/SYSPROC"/SYSIBMADM"/DBZINST1"
Current degree:	1
Current refresh age:	0
Current maintained table types for optimization:	SYSTEM
Current query optimization:	5
Current optimization profile:	
Current isolation level:	

Collect actual execution values to use in access plan tools, if the statement is a SELECT statement.

Tuning options

- Format and annotate the statement
- Generate access plan graph
- Recommend RUNSTATS commands
- Recommend new indexes

Notifications List of e-mails to receive notifications

Cancel

Set values for Db2 special registers (EXPLAIN options), used by Db2 to create an access plan

Tuning options

Information

The query tuning task  has started running.

The page will automatically switch to "Tuning->Tuning results" page. You can do the following actions:

- Click the Refresh icon on the Tuning results page to check the progress of the tuning task.
- Select the task from the grid, and then click the View result button to view the tuning task recommendations.

Close

# Query Tuning – View Results

The screenshot displays the IBM Db2 Data Management Console interface. The main window shows a table of tuning tasks. A red box highlights the 'View results' button in the top right of the table. Another red box highlights the 'Query1717' entry in the table, with an arrow pointing to a 'Tuning Menu' label. A third red box highlights the 'Query1717' entry in the table, with an arrow pointing to a 'Tuning task name' label. An inset window shows a detailed view of the tuning results for 'Query1717', including a bar chart for 'Rows read' and a donut chart for 'Top operations'.

Name	Type	Connection name	Created by	SQL text	Result	Start time	Run time
Query1717	Single-query	SAMPLE	admin	SELECT EMP...	Success	Tue 02/14/2023 09:36 PM	0:03.936
Query2007-Release6096	Single-query	REPODMC_db2inst1_localhost_50000	admin	SELECT * FR...	Success	Thu 08/11/2022 12:55 PM	0:03.392
Query2007	Single-query	REPODMC_db2inst1_localhost_50000	admin	SELECT * FR...	Success	Fri 05/27/2022 01:36 PM	0:03.151
Query2700	Single-query	SAMPLE					



# Db2 Data Management Console

Replication

- Available in V3.1.9 or later
- Enhancements in V3.1.10
  - Enhanced throughput chart to use bar chart format
  - Introduced the following tabs in throughput chart for displaying the Q capture and Q depth details
    - ❖ Capture throughput Capture throughput
      - Number of rows that are sent from the source table
    - ❖ Capture Q depth
      - Number of messages on the transmission queue that are associated with the send queue
    - ❖ Apply throughput Apply throughput
      - Number of rows that are applied to the target table
    - ❖ Apply Q depth
      - Number of messages on the receive queue.
  - Enhanced latency chart with an interactive legend
  - Improved performance on latency and throughput charts by reducing the data points and fetch time
  - Improved Replication home page load speed and performance
  - Added 15-minutes time interval in the monitoring group details page
  - Introduced bidirectional configuration type option for creating a monitoring group

# Replication – Monitoring Group

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges **Replication** Connection profile Monitoring profile Event monitor profile Settings

## Replication

CREATE and MANAGE replication monitoring group

### Create monitoring group

- Define group
- Select database server
- Select schema
- Select configurations
- Map aliases
- Summary

**Define group**  
A monitoring group is one or more replication or queueing configurations that you want to monitor together.

Name:

Description (optional):

Data retrieval frequency:  Seconds

**Name of the monitoring group to be created**

**Optional: Short description of the monitoring group**

Data retrieval frequency to determine how often the console must refresh in the replication monitoring page  
**Note:** The console reads the monitoring information that the Q Capture and Q Apply program insert into their control tables. If you need granular monitoring information, you must set a low value for the Q Capture, and Q Apply monitor\_interval parameters to enable the programs to update the performance information more frequently

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=replication-creating-monitoring-group>

# Replication – Database Server

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges **Replication** Connection profile Monitoring profile Event monitor profile Settings

## Replication

Create monitoring group

**Define group**

- Select database server
- Select schema
- Select configuration
- Map aliases
- Summary

**Select database server**

To create a monitoring group, select one server to start.

Database connection: **SAMPLE (localhost)**

Choose a database connection profile that corresponds to the database server that you selected for the monitoring group.

**Test connection**

Database connection profile that corresponds to the database server

Test connection to validate the connection to the selected connection profile

Back Next

# Replication – Schema

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges **Replication** Connection profile Monitoring profile Event monitor profile Settings

## Replication

Create monitoring group

Define group

Select database server

Select schema

Select configurations

Map aliases

Summary

Select schema

Select the schema that identifies the capture/apply that you are interested in monitoring.

Schema name	Capture	Apply
<input type="radio"/> QCAPT		
<input type="radio"/> QCAPPR1		
<input type="radio"/> QCAPPR2		
<input type="radio"/> QAPPL		

Select the schema that identifies the Q Capture or Q Apply program that you are interested in monitoring.

**Note:** The console automatically detects all the schemas that are created on the selected connection profile for Q Capture or Q Apply program. You can select a single schema.

CANCEL

BACK

# Replication – Configurations

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges **Replication** Connection profile Monitoring profile Event monitor profile Settings

## Replication

Create monitoring group

Define group Select configuration for DB1C.QAPP  
Select the configurations that you interested in monitoring.

Source alias/schema	Target alias/schema	Configuration Type
<input checked="" type="checkbox"/> DB1C.QAPP	DB1C.QAPP	QMAP/QMAP

Select the QMAP configurations  
**Note:** The console automatically detects all the QMAP configurations on the connection profile for the selected schema. You can select a single or multiple configurations.

Back Next



# Replication – Map Aliases

The screenshot shows the 'Create monitoring group' wizard in the IBM Db2 Data Management Console. The 'Map aliases' step is active, showing a list of aliases with 'SAMPADR [localhost]' selected. A 'Test connection' button is visible next to the selected alias. An orange callout box points to this button with the text: 'Test connection to validate the connection to the selected connection profile'. Another callout box points to the 'SAMPADR [localhost]' alias with the text: 'Connection profile for the other end of the selected QMAP configuration. Note: If you selected the QMAP configuration from DBSAMP1 to DBSAMP2 in the previous step, you must select the DBSAMP2 connection profile'. The wizard includes a sidebar with steps: Define group, Select database server, Select schema, Select configuration, Map aliases, and Summary. At the bottom, there are 'CANCEL', 'BACK', and 'NEXT' buttons.

# Replication – Summary

The screenshot displays the 'Create monitoring group' interface in the IBM Db2 Data Management Console. The page is titled 'Replication' and includes a sub-header 'Create monitoring group resource monitoring group'. A left-hand navigation pane lists steps: Define group, Select database server, Select schema, Select configurations, Map aliases, and Summary (which is currently selected). The main content area is divided into sections: 'Summary' (Name: Sample Replication, Description optional), 'Select database connection' (Database connection: SAMPLE (localhost)), 'Select schema' (a table with columns 'Schema name', 'Capture', and 'Apply'), and 'Select configuration'. At the bottom right, there are 'Back' and 'Create' buttons. A blue callout box with the text 'Review the information and click on Create button' has an arrow pointing to the 'Create' button.

Schema name	Capture	Apply
DAPP		YNA

# Replication – Monitoring

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges **Replication** Connection profile Monitoring profile Event monitor profile Settings

## Replication

Create and manage replication monitoring groups

Create monitoring groups

Monitoring group name	Description
Sample Replication	

Click on Monitoring group name to see data

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=replication-monitoring>

# Replication – Monitoring

The screenshot displays the IBM Db2 Data Management Console interface. At the top, there is a navigation bar with tabs for Reports, Blackouts, Jobs, Users and privileges, Replication, Connection profile, Monitoring profile, Event monitor profile, and Settings. Below this, the page title is 'Sample Replication' with a subtitle 'Monitor replication sets within group'. A search bar is present above a table of replication data. The table has the following columns: Consistency group name, Source alias.schema, Target alias.schema, Replication status, Latency, Throughput, Total Tables, Table subscription status, Consistency point, Replication set name, Source host, Source database, Source port, and Target host. One row is visible with the following data: QMIAG, DB1B.BXQCAF, DB1C.BXQAFP, Active, 00.00.00, 0 rows/s, a green progress bar, 04/26/2019 12:59 AM (COT), --, localhost, DB1B, 8220, and DB1B. An orange arrow points from a callout box to the 'QMIAG' cell in the 'Consistency group name' column. The callout box contains the text 'Click on Consistency group name to see data'.

Consistency group name	Source alias.schema	Target alias.schema	Replication status	Latency	Throughput	Total Tables	Table subscription status	Consistency point	Replication set name	Source host	Source database	Source port	Target host
QMIAG	DB1B.BXQCAF	DB1C.BXQAFP	Active	00.00.00	0 rows/s			04/26/2019 12:59 AM (COT)	--	localhost	DB1B	8220	DB1B

# Replication – Monitoring

The screenshot shows the IBM Db2 Data Management Console interface. The top navigation bar includes 'Reports', 'Blackouts', 'Jobs', 'Users and privileges', 'Replication', 'Connection profile', 'Monitoring profile', 'Event monitor profile', and 'Settings'. The main content area is titled 'QMIAG' and shows a 'Consistency group status' section with a 'Consistency point' of 'Fri 04/26/2019 12:59 AM (CDT)'. A red box highlights this section with the following text:

**Consistency point**  
It shows the Consistency point of transactions at the target for the active tables in the replication set, which helps you determine how caught up replication at the target is regarding database activity at the source. It is the source commit time for which all transactions to that point were applied to the target. The graph also displays whether the replication set is active, and then breaks down activity by table to show which tables in the set are active, which tables have errors, and the status of target table loading activity.

The 'Latency' section shows a graph with a legend for 'Queue latency', 'Apply latency', and 'Point-in-time latency'. A red box highlights the 'Average' section with the following text:

**Average**  
The end-to-end latency is the average time per transaction between commit at the source by the application and commits at the target by the replication process. The details page for each replication set depicts latency with a multicolored graph that gives you an at-a-glance view of the different types of replication latency.

**Queue latency**  
The average elapsed seconds between the time that messages are put on the send queue and the time that the target apply program gets them from the receive queue. This statistic includes the time that transactions were waiting in the receive queue of the target system, and is not necessarily a reflection of network performance.

**Apply latency**  
The average elapsed milliseconds that it takes the replication programs at the target to read transactions and commit them to target tables. This statistic includes the database latency.

**Point-in-time latency**  
The average elapsed milliseconds per transaction between the time that the first row change for a replicated transaction was applied at the target database and the time that the transaction was committed at the target database. This statistic indicates the performance of Db2® at the target system.

**Capture latency**  
The average elapsed milliseconds between the time transactions were committed to the source table by the application and the time that the transactions were put on the transmission queue for transport to the target. It indicates the performance of the log capture process. If you suspend replication, this number is high on restart because the capture process is reading older logs.

The 'Throughput' section shows a graph with a legend for 'Capture Throughput' and 'Apply Throughput'. A red box highlights the 'Throughput' section with the following text:

**Throughput**  
The number of insert, update, and delete operations per second that were applied to the target for all tables in the replication set. The graph breaks down throughput into two categories:

**Capture throughput**  
The number of rows per second that were sent from the source during the sampling interval. You can see the table details at the bottom of the page. The table name, schema, alert, and status are shown in the table. If the table is in error state, the alert column will show the error details. There is a filter, which can be used for filtering out the tables based on their status.

**Apply throughput**  
The number of rows per second that were applied at the target during the sampling interval.

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=replication-monitoring>



# Db2 Data Management Console

Additional Features

# Reporting

**Report name**

**Connection profile name**

- Database performance
  - Information on the overall status of each database and analyze the usage of key metrics in the database, such as CPU, memory, storage, throughput, SQL statements and more
- Enterprise trends
  - Information about the top ten representative databases that use the most CPU, memory, storage, and log space resources
  - It is compiled from data in the representative databases which can be used to evaluate the usage trends in those resource categories
- Top statements
  - Details on the monitoring metrics of top N SQL statements
  - The monitoring data is retrieved from package cache
- Table usage
  - Details on the top n table objects and related key metrics information
- Disk space usage
  - Information on the storage usage of the database

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=monitoring-creating-monitor-reports>

# Reporting

**Customize report**

Select the metrics to be shown in the Database performance report

Select metrics for the report

- Throughput:  Statements per minute,  Rows modified per minute,  Rows read per minute,  Rows returned per min,  Rows read per fetched row (Rows read / Rows returned),  Rows read per min, Rows returned per min, Rows read per fetched row,  Transaction commits per min,  Transaction rollbacks per min
- Resource usage:  CPU,  Memory,  Storage,  Log Space
- Read and write activity:  Logical read per minute,  Direct read per minute,  Direct write per minute,  Time spent
- SQL execution time breakdown:  I/O time breakdown,  Other processing time breakdown,  Other wait time breakdown,  Operating system time breakdown
- Sorts:  Sorts per minute,  Sorts per transaction,  Sort time
- Log:  Log buffer wait time,  Log disk wait time,  Buffer pool wait time,  Table space
- Top 10 statements:  Longest running queries,  Most expensive queries,  Most run queries

**Interval**

Select a time range. The report will be generated using the data collected during this interval.

\* A shorter interval equates to higher graph detail

**Notifications**

Receive an email whenever a report is ready. Separate multiple email addresses by line or with a comma and space.

**MonitoringReport**

Selected database report

Database: REPCADM\_db2mat1\_localnot\_50000  
Interval: 12 hours  
Scheduled

Report start time: Mon 05/27/2022 04:25 AM (P1 05/27/2022 09:25 AM UTC)  
Report stop time: Fri 05/27/2022 04:25 PM (P1 05/27/2022 09:25 PM UTC)  
Collection time range: Fri 05/27-Fri 05/27 (P1 05/27-Fri 05/27)  
Report generated on: --

**Throughput**

Statements per minute

Rows read per minute

Summary Page  
Click on Finish



# Reporting – Scheduling

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges Replication Connection profile Monitoring profile Event monitor profile Settings

### Create scheduled report

Select type Define **Schedule** Email

Next date: 02/14/2023 Time: 06:40 PM Location: (GMT)

Report: Daily Every day

- Hourly
- Daily
- Weekly
- Monthly
- Summary

Scheduled reports:

- Tue 02/14/2023 06:40 PM
- Wed 02/15/2023 06:40 PM
- Thu 02/16/2023 06:40 PM
- Fri 02/17/2023 06:40 PM
- Sat 02/18/2023 06:40 PM
- Sun 02/19/2023 06:40 PM
- Mon 02/20/2023 06:40 PM
- Tue 02/21/2023 06:40 PM
- Wed 02/22/2023 06:40 PM
- ...

Labels:

# Reporting – View Results

IBM Db2 Data Management Console

Reports Blackouts Jobs Users and privileges Replication Connection profile Monitoring profile Event monitor profile Settings

Active Completed

1 item selected

Report	Database	Created by	Interval	Collection time range	Generated	Result
MONITORINGREPORT	REPDDMC_DB2INST1_LOCALHOST_50000		12 hours	Fri 05/27/2022 04:26 PM	Fri 05/27/2022 04:26 PM	Download

- Active
  - Definition of reports and all scheduled reports
  - The on-demand reports are automatically deleted when the execution is complete
- Completed
  - The completed data table displays the execution results of all scheduled and on-demand reports

### MonitoringReport

Download

**Selected database report**

Database	REPDDMC_DB2INST1_LOCALHOST_50000
Interval	12 hours
Scheduled	
Report start time	Fri 05/27/2022 04:26 AM (Fri 05/27/2022 09:26 AM UTC)
Report stop time	Fri 05/27/2022 04:26 PM (Fri 05/27/2022 09:26 PM UTC)
Collection time range	Fri 05/27-Fri 05/27 (Fri 05/27-Fri 05/27)
Report generated on	Fri 05/27/2022 04:26 PM (Fri 05/27/2022 09:26 PM UTC)

**Throughput**

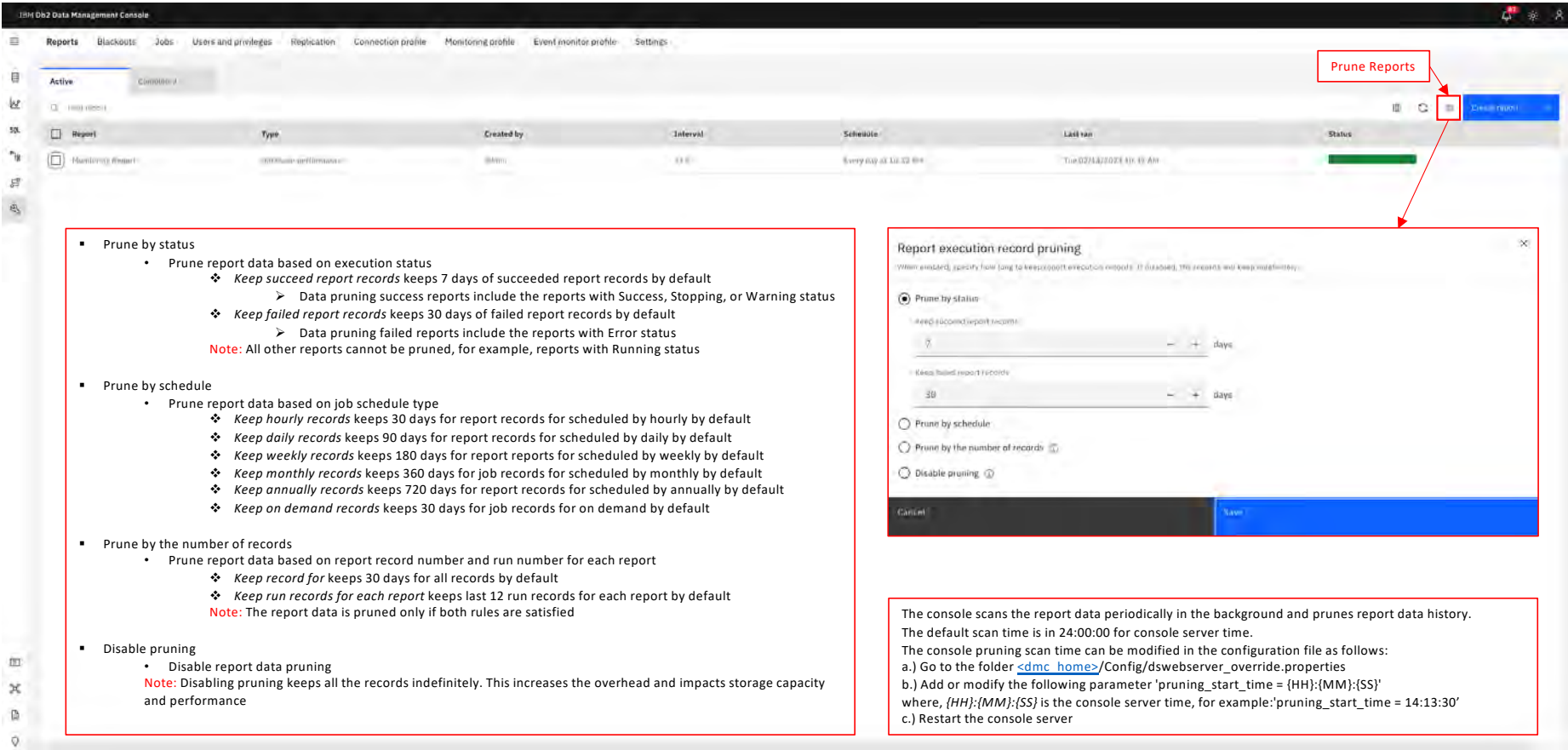
Statements per minute

Rows read per minute

Resource usage

CPU usage

# Reporting – Pruning



**Prune Reports**

- Prune by status
  - Prune report data based on execution status
    - Keep succeed report records keeps 7 days of succeeded report records by default
      - Data pruning success reports include the reports with Success, Stopping, or Warning status
    - Keep failed report records keeps 30 days of failed report records by default
      - Data pruning failed reports include the reports with Error status

**Note:** All other reports cannot be pruned, for example, reports with Running status
- Prune by schedule
  - Prune report data based on job schedule type
    - Keep hourly records keeps 30 days for report records for scheduled by hourly by default
    - Keep daily records keeps 90 days for report records for scheduled by daily by default
    - Keep weekly records keeps 180 days for report records for scheduled by weekly by default
    - Keep monthly records keeps 360 days for job records for scheduled by monthly by default
    - Keep annually records keeps 720 days for report records for scheduled by annually by default
    - Keep on demand records keeps 30 days for job records for on demand by default
- Prune by the number of records
  - Prune report data based on report record number and run number for each report
    - Keep record for keeps 30 days for all records by default
    - Keep run records for each report keeps last 12 run records for each report by default

**Note:** The report data is pruned only if both rules are satisfied
- Disable pruning
  - Disable report data pruning

**Note:** Disabling pruning keeps all the records indefinitely. This increases the overhead and impacts storage capacity and performance

**Report execution record pruning**

When enabled, specify how long to keep report execution records. If disabled, the records will keep indefinitely.

- Prune by status
  - Keep succeed report records: 7 days
  - Keep failed report records: 30 days
- Prune by schedule
- Prune by the number of records
- Disable pruning

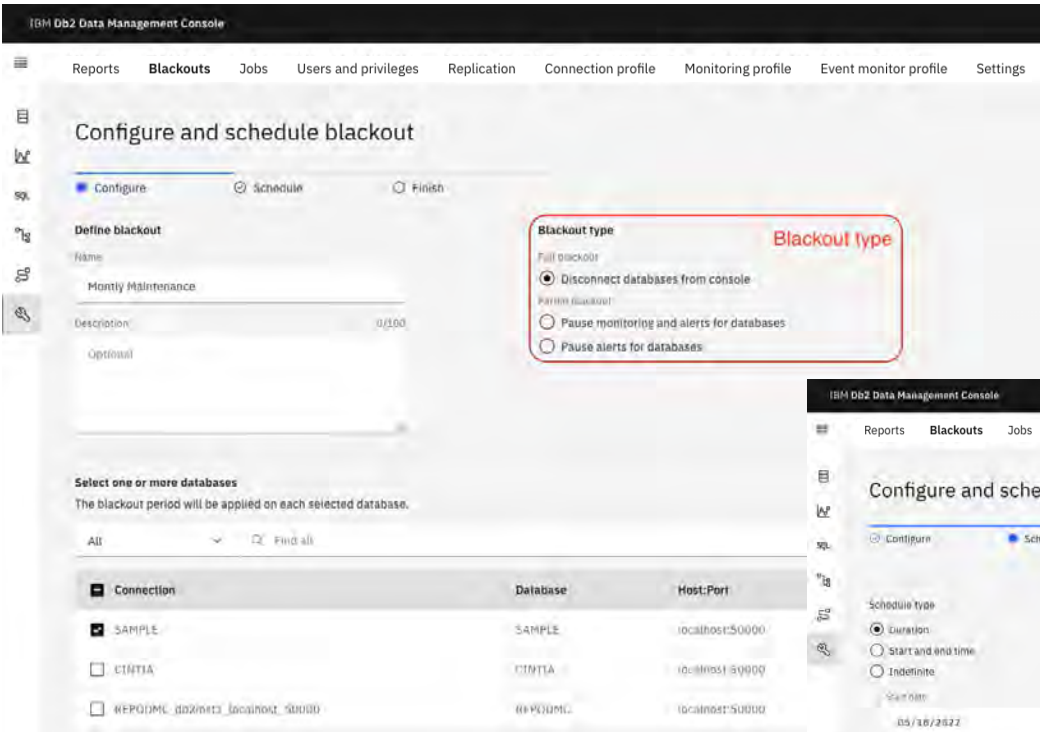
Cancel Save

The console scans the report data periodically in the background and prunes report data history. The default scan time is in 24:00:00 for console server time. The console pruning scan time can be modified in the configuration file as follows:  
a.) Go to the folder <dmc\_home>/Config/dswebserver\_override.properties  
b.) Add or modify the following parameter 'pruning\_start\_time = {HH}:{MM}:{SS}' where, {HH}:{MM}:{SS} is the console server time, for example: 'pruning\_start\_time = 14:13:30'  
c.) Restart the console server

## Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=reports-pruning-report>

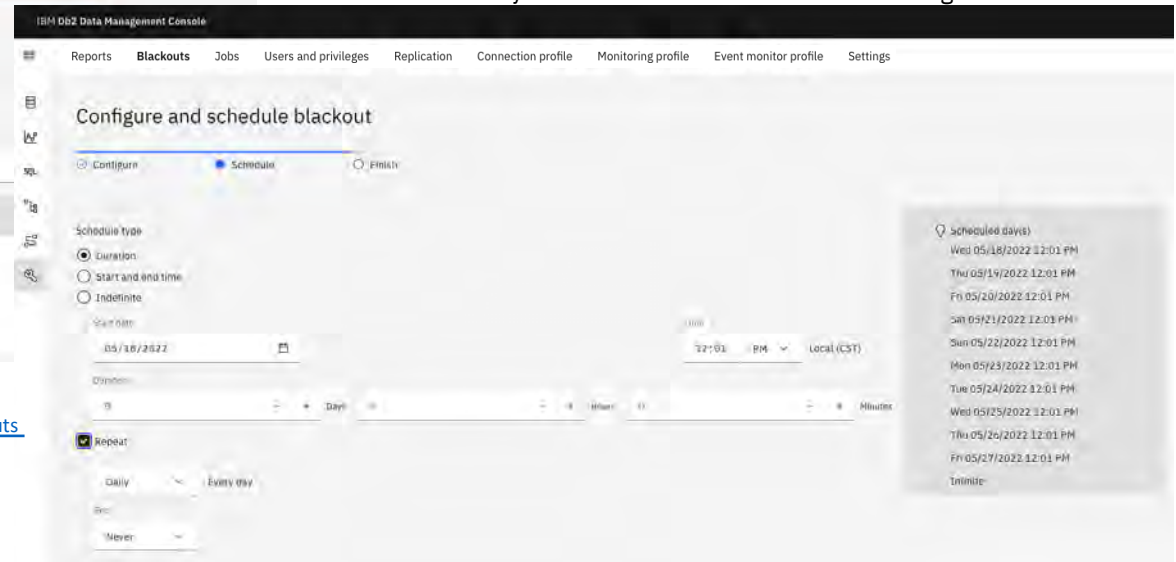
# Blackout – Web UI



Used to avoid a database connection from DMC to the monitored database, or disabling some of the functions such as monitoring and alerting during database maintenance window

## 3 Types of Blackout

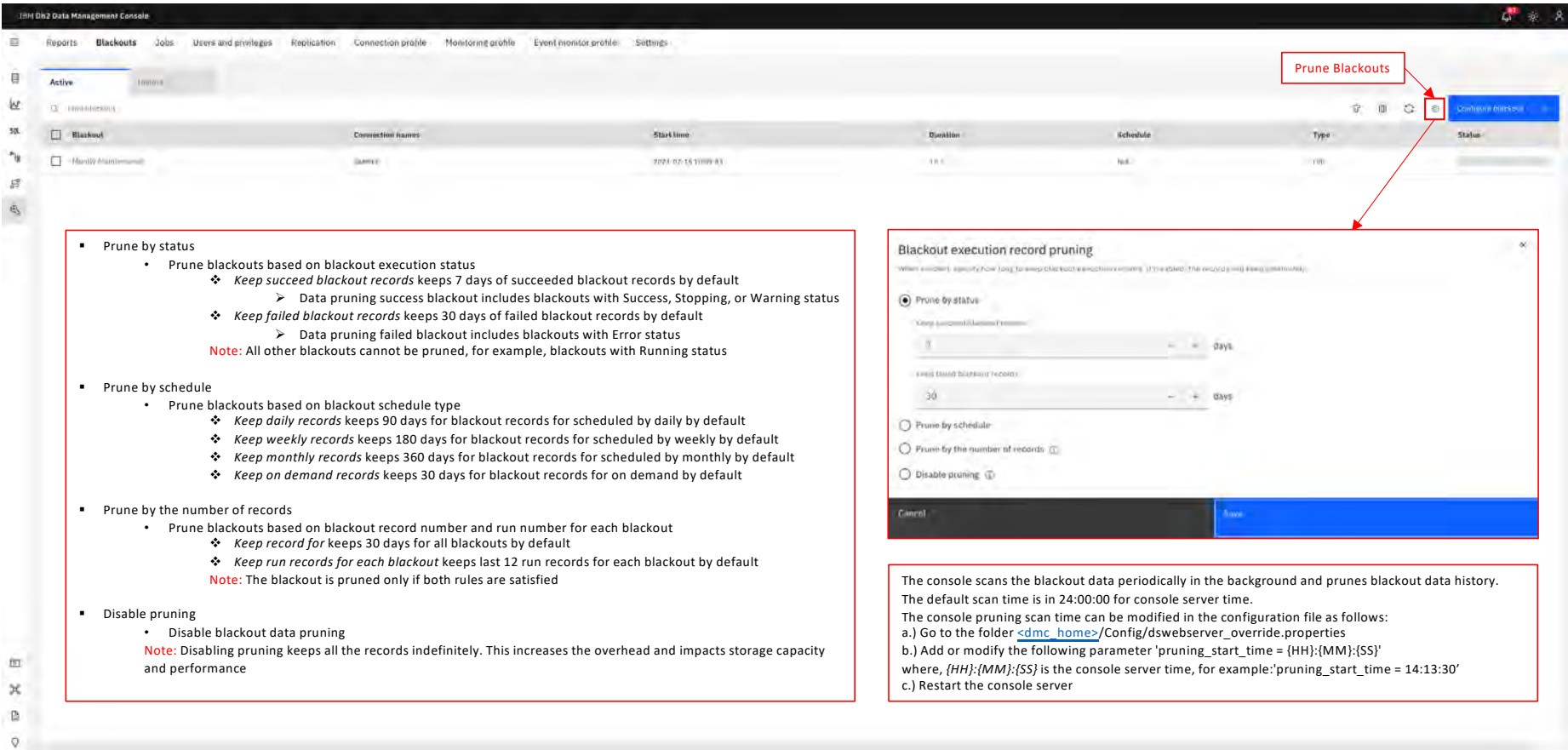
- Full blackout
  - ❖ Disconnects databases from console
- Monitor and alert blackout
  - ❖ Pauses monitoring and alerts for databases. The monitor does not collect metric data and the alert are not generated.
- Alert blackout
  - ❖ Pauses only alerts for databases. The alerts are not generated.



Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=jobs-creating-blackouts>

# Blackout – Pruning



The screenshot shows the IBM Db2 Data Management Console interface. At the top, there are navigation tabs for Reports, Blackouts, Jobs, Users and privileges, Replication, Connection profile, Monitoring profile, Event monitor profile, and Settings. Below this is a table of blackout execution records with columns for Active, Inactive, Blackout, Connection name, Start time, Duration, Schedule, Type, and Status. A red box highlights the 'Prune Blackouts' button in the top right corner of the table. A red arrow points from this button to a 'Blackout execution record pruning' dialog box. The dialog box has three radio button options: 'Prune by status' (selected), 'Prune by schedule', and 'Disable pruning'. Under 'Prune by status', there are two input fields: 'Keep succeed blackout records' (set to 7) and 'Keep failed blackout records' (set to 30), both with 'Days' as the unit. The dialog also has 'Cancel' and 'Prune' buttons at the bottom.

- Prune by status
  - Prune blackouts based on blackout execution status
    - Keep succeed blackout records keeps 7 days of succeeded blackout records by default
      - Data pruning success blackout includes blackouts with Success, Stopping, or Warning status
    - Keep failed blackout records keeps 30 days of failed blackout records by default
      - Data pruning failed blackout includes blackouts with Error status

Note: All other blackouts cannot be pruned, for example, blackouts with Running status
- Prune by schedule
  - Prune blackouts based on blackout schedule type
    - Keep daily records keeps 90 days for blackout records for scheduled by daily by default
    - Keep weekly records keeps 180 days for blackout records for scheduled by weekly by default
    - Keep monthly records keeps 360 days for blackout records for scheduled by monthly by default
    - Keep on demand records keeps 30 days for blackout records for on demand by default
- Prune by the number of records
  - Prune blackouts based on blackout record number and run number for each blackout
    - Keep record for keeps 30 days for all blackouts by default
    - Keep run records for each blackout keeps last 12 run records for each blackout by default

Note: The blackout is pruned only if both rules are satisfied
- Disable pruning
  - Disable blackout data pruning

Note: Disabling pruning keeps all the records indefinitely. This increases the overhead and impacts storage capacity and performance

**Blackout execution record pruning**

When enabled, specify how long to keep blackout execution records (blackout records are pruned based on the specified retention period).

Prune by status

Keep succeed blackout records: 7 Days

Keep failed blackout records: 30 Days

Prune by schedule

Prune by the number of records

Disable pruning

Cancel Prune

The console scans the blackout data periodically in the background and prunes blackout data history. The default scan time is in 24:00:00 for console server time. The console pruning scan time can be modified in the configuration file as follows:

- Go to the folder `<dmc_home>/Config/dswebserver_override.properties`
- Add or modify the following parameter `'pruning_start_time = {HH}:{MM}:{SS}'` where, `{HH}:{MM}:{SS}` is the console server time, for example: `'pruning_start_time = 14:13:30'`
- Restart the console server

## Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=blackouts-pruning>

# Blackout – REST API

## Perform or release blackout

Blackout a connection profile, only the profile owner can blackout the profile, administrators automatically get the owner privilege of all profiles.

AUTHORIZATIONS:	authToken
PATH PARAMETERS:	
dbprofile_name <small>required</small>	string The specific name of the connection profile on which the session user wants to perform blackout or release blackout.
REQUEST BODY SCHEMA: application/json	
blackout <small>required</small>	string Enum: "true" "false" perform or release blackout
blackout_type	string Enum: "full_blackout" "monitor_and_alert_blackout" "alert_only_blackout" blackout type. The default type is full_blackout.
blackout_duration_in_seconds	integer blackout duration. The default duration is indefinite.
job_id	string id of the job which trigger the blackout event.
job_name	string name of the job which trigger the blackout event. The default job name is Ad-hoc API.

### Responses

- 200 Perform or release blackout on a connection profile.
- 404 The connection profile does not exist
- default Error payload

```
PUT /dbprofiles/blackout/(dbprofile_name)
```

**Request samples**

Payload: Curl Go Java Node Python

```
curl -X PUT \
  https://(HOSTNAME)/dbapi/v4/dbprofiles/blackout/(dbprofile_name) \
  -H 'authorization: Bearer (AUTH_TOKEN)' \
  -H 'content-type: application/json' \
  -d '{"blackout": "true", "blackout_type": "full_blackout", "blackout_duration_in_seconds": 0, "job_id": "<ADD STRING VALUE"}
```

**Response samples**

200 404 default

```
application/json
```

```
{
  "result": "success"
}
```

- Does not support scheduling a blackout event
- You can setup a cronjob to enable and disable a blackout event by calling the RESTful APIs
- While setting a blackout event for a connection profile, every HADR/pureScale profile is considered as a common profile and the blackout event is set one at a time

### Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=apis-configuring-blackout-event-rest-api>

# Jobs

The screenshot shows the 'Jobs' page in the IBM Db2 Data Management Console. The navigation bar includes 'Reports', 'Blackouts', 'Jobs', 'Users and privileges', 'Replication', 'Connection profile', 'Monitoring profile', 'Event monitor profile', and 'Settings'. The 'Jobs' page has a sub-navigation bar with 'Jobs', 'Job chains', and 'History'. A 'History' label points to the 'History' sub-tab. A 'Job Chain' label points to the 'Job chains' sub-tab. A 'Prune jobs' label points to a 'Prune jobs' button in the top right. A 'Create a job' label points to a 'Create job' button in the top right. The main area contains a table of jobs with columns: Job, Script type, Tags, Created by, Schedule, Last run, Next run, and Status.

Job	Script type	Tags	Created by	Schedule	Last run	Next run	Status
CLP Test	On-demand	CLP script	admin	N/A	2023-01-18 14:55:33	-	
Manary Test	On-demand	Shell script	admin	N/A	2023-01-18 10:33:10	-	
TestHome	On-demand	Shell script	admin	N/A	2022-04-21 12:42:22	-	
Backup Error	On-demand	Shell script	admin	N/A	2022-02-23 12:44:11	-	
Backup return	On-demand	Shell script	admin	N/A	2022-02-22 21:23:46	-	
Backup	On-demand	Shell script	vagura@us.ibm.com	N/A	2022-02-11 09:01:40	-	
Tested_Call	On-demand	Shell script	vagura@us.ibm.com	N/A	2022-01-28 07:55:05	-	
Testing job	On-demand	Shell script	vagura@us.ibm.com	N/A	2022-01-24 18:32:08	-	
TestTab	On-demand	Shell script	ib2inst1	N/A	2022-04-19 09:02:21	-	
TestAsk	On-demand	Shell script	ib2inst1	N/A	2021-11-09 02:07:56	-	
TestMerg	Scheduled	SQL script	ib2inst1	N/A	2021-11-05 15:11:04	-	
Test123	Scheduled	SQL script	ib2inst1	N/A	2021-11-05 12:03:00	-	
Job4	On-demand	CLP script	admin	N/A	2021-02-04 15:14:27	-	
Job2	On-demand	SQL script	ib2inst1	N/A	-	-	

# Jobs – Creating a Job 1/3

The screenshot shows the 'Create new job' interface in the IBM Db2 Data Management Console. The page is divided into several sections: 'Details', 'Define SQL', 'Schedule', 'Timeout', and 'Notifications'. Annotations include:

- Job name:** A green box highlights the 'Name' field with the value 'Team CLP', and a callout points to it.
- SQL script selection:** A red box highlights the 'SQL script' radio button under the 'Define SQL' section.
- Format SQL statement:** A pink callout points to the 'Format SQL statement' button.
- Copy statement:** A pink callout points to the 'Copy statement' button.
- Job code:** A yellow box highlights the 'Job code' field.
- Script setting:** A yellow box highlights the 'Script setting' dialog box, which is open to show 'Automatically commit each statement' checked.
- Schedule:** A pink callout points to the 'Schedule' section, which includes a 'Run this job on a schedule' checkbox and a 'Stop the script to run during a specific time of the day' section with a time picker set to 12:00 AM to 11:59 PM.
- Timeout:** A pink callout points to the 'Timeout' section, which includes a 'Stop the script if it runs longer than the set duration' checkbox and a time picker set to 0 minutes and 0 seconds.
- Notifications:** A blue callout points to the 'Notifications' section, which includes a 'Select events' dropdown menu.
- Job Status:** A blue callout points to the 'Job Status' section, which includes checkboxes for 'Error', 'Stopped', 'Success', and 'Warning'.

**Job Status Legend:**

- Error** - Job execution returns an error
- Stopped** - Job execution is terminated or stopped due to timeout
- Success** - Job execution succeeds
- Warning** - Job execution succeeds with warning

**Note:** To run the Db2 CLP script jobs on a database, the user ID that is used to run the job must have permission to log in to the database server by using SSH. Ensure to specify the complete path if you want to read or execute files by using CLP script because the console might not receive the environment variable from the Db2 server.

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=environment-creating-scheduling-jobs>



# Jobs – Creating a Job 2/3

The screenshot shows the 'Create new job' interface in the IBM Db2 Data Management Console. The page is divided into several sections:

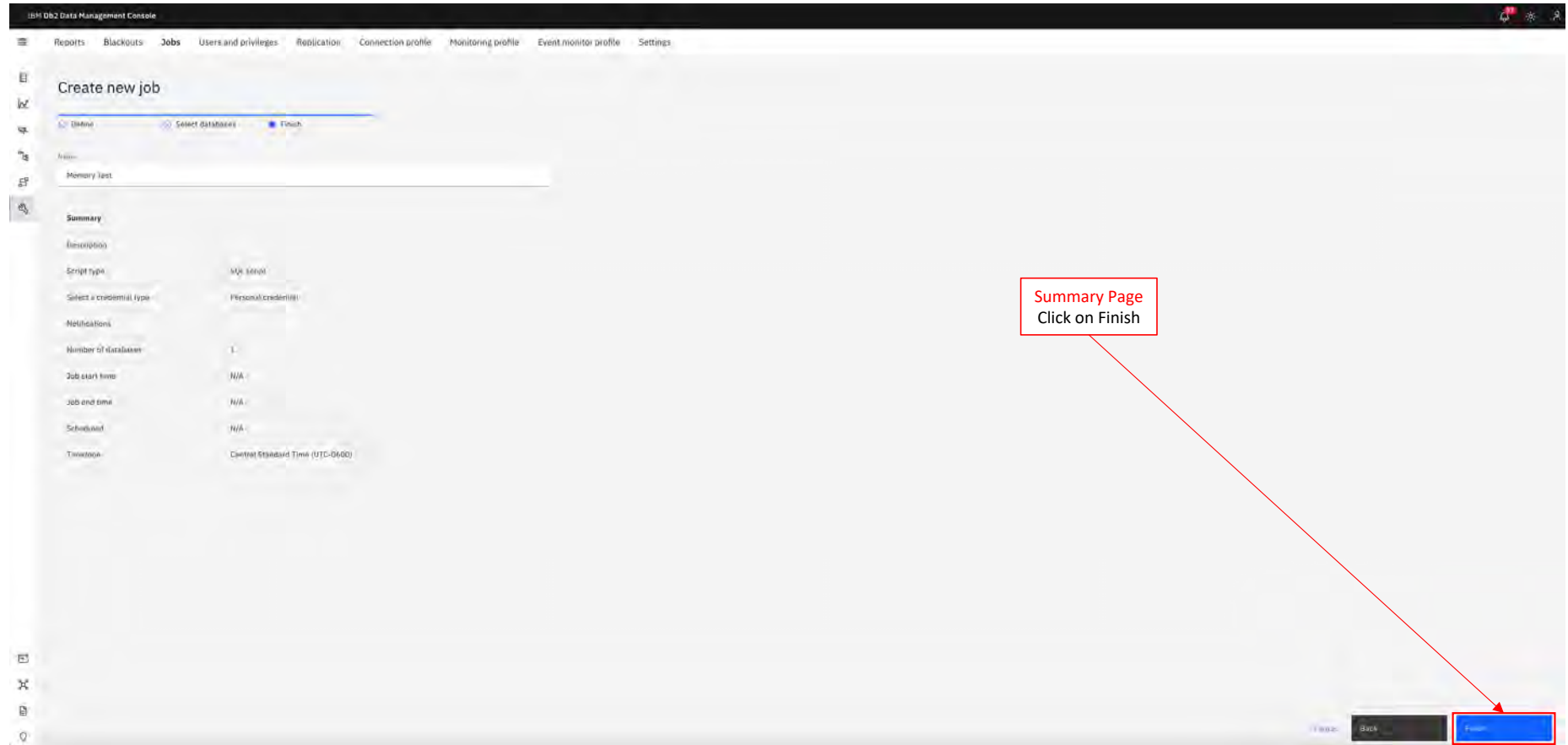
- Navigation:** Reports, Blackouts, **Jobs**, Users and privileges, Replication, Connection profile, Monitoring profile, Event monitor profile, Settings.
- Job Configuration:** Define, **Select databases**, Edit name.
- Credential Selection:** 'Select a credential type' with radio buttons for 'Shared credential' and 'Personal credential'. A green box labeled 'Credential Type' points to this section.
- Database Selection:** 'Select one or more databases' with a list of connections. A purple box labeled 'Select database(s)' points to this section and the table below.
- Table:** A table with columns: Connection, Database, Security type, and Credential.

Connection	Database	Security type	Credential
<input checked="" type="checkbox"/> SAMPLE	SAMPLE	Clear text password	db2inst1
<input type="checkbox"/> REPSCHEMA_002inst1 (localhost:5000)	REPSCHEMA	Clear text password	db2inst1

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=environment-creating-scheduling-jobs>

# Jobs – Creating a Job 3/3



Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=environment-creating-scheduling-jobs>

# Jobs – Running On-demand Jobs

IBM Db2 Data Management Console

Reports Blackouts **Jobs** Users and privileges Replication Connection profile Monitoring profile Event monitor profile Settings

Jobs Job context History

1 item selected

Job	Type	Script type	Tags	Created by	Schedule	Last run	Next run	Status
Memory Test	On-demand	SQL script		admin	N/A	-	-	
CLP Test	On-demand	CLP script		admin	N/A	2022-01-18 14:55:33	-	
Testnone	On-demand	Shell script		admin	N/A	2022-04-21 12:42:22	-	
Backup Error	On-demand	Shell script		admin	N/A	2022-02-23 12:44:11	-	
Backup return	On-demand	Shell script		admin	N/A	2022-02-22 21:23:44	-	
Backup	On-demand	Shell script		vogura@vs.ibm.com	N/A	2022-02-21 04:01:40	-	
JobTest_Call	On-demand	Shell script		vogura@vs.ibm.com	N/A	2022-01-28 09:55:06	-	
Testing job	On-demand	Shell script		vogura@vs.ibm.com	N/A	2022-01-24 18:32:09	-	
JobTest	On-demand	Shell script		ib2inst1	N/A	2022-01-19 09:02:21	-	
TestJob	On-demand	Shell script		ib2inst1	N/A	2021-11-09 22:07:56	-	
TestMsg	Scheduled	SQL script		ib2inst1	N/A	2021-11-05 15:11:09	-	
Test121	Scheduled	SQL script		ib2inst1	N/A	2021-11-05 17:03:00	-	
Job1	On-demand	CLP script		admin	N/A	2021-02-04 15:14:27	-	
Job2	On-demand	SQL script		ib2inst1	N/A	-	-	

View options

- Edit
- Copy
- View details
- View history
- Access control
- Run with existing credentials
- Run with alternative credentials
- Create job chain
- View related job chains
- Delete

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=environment-creating-scheduling-jobs>

# Jobs – History

The screenshot displays the 'Jobs History' page in the IBM Db2 Data Management Console. The main table lists job execution records. A 'View log' dialog is open, showing the job's execution details and script. Annotations highlight the 'Status' column and the 'View options' menu.

Name	Job chain	Database	Start time	Duration	Started by
Memory Test	No	SAMPLE	2023-02-14 11:27:31	-	ADMIN
Memory Test	No	SAMPLE	2023-02-15 12:27:06	1:38 s	ADMIN
Memory Test	No	SAMPLE	2023-02-15 12:28:22	0:48 s	ADMIN

**View log**

```
Database : SAMPLE
Run method: Shell script
Site : Feb 15, 2023 12:27:06 PM
Status : Success

-----
IBMJOB=IBMJOB /proc/monitoring/monitor -S "1" -E IBMJOB (JOBID 821)
IBMJOB=IBMJOB
if [ $? -eq 0 ]; then
  echo "Success"
  return 0
elif [ $? -eq 1 ]; then
  echo "Warning"
  return 1
else
  echo "Error"
  return 2
fi
exit $returnCode

IBMJOB=IBMJOB
"0"
```

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=environment-creating-scheduling-jobs>

# Jobs – Status

Notifications help you monitor the execution results for your jobs across multiple databases and schedules.

The following table provides the job status for execution of different type of scripts:

Script	Success	Error	Warning	Stopped
JDBC - only one statement	The statement is executed successfully.	SQL error is returned during execution or credential error and other backend error.	SQL warning is returned during execution.	The job is stopped by the user or due to timeout.
JDBC - multiple statements	All the statements are executed successfully, without any error or warning.	At least one statement has error. If there is both error and warning, the job will show error status as priority.  The job will stop at the current statement when an error is received.	There is no error, but at least one statement has SQL warning.	The job is stopped by the user or due to timeout.
CLP - only one statement	The statement is executed successfully, without any Db2 error.	SQL error is returned during execution or SSH error and other backend error.	SQL warning is returned during execution.	The job is stopped by the user or due to timeout.
CLP - multiple statements	All the statements are executed successfully, without any error or warning.	At least one statement has error. The job will stop at the current statement when an error is received.		The job is stopped by the user or due to timeout.
Shell - only one command	The command is executed successfully	SSH error and shell error and other backend error.		The job is stopped due to timeout.
Shell - multiple commands	All the commands are executed successfully. Unrecognized commands are ignored.	SSH error and shell error and other backend error.		The job is stopped due to timeout.

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=jobs-job-status>

# Jobs – Pruning Jobs

The screenshot shows the IBM Db2 Data Management Console interface. At the top, there is a navigation bar with tabs for Reports, Blackouts, Jobs, Users and privileges, Replication, Connection profile, Monitoring profile, Event monitor profile, and Settings. The 'Jobs' tab is active, displaying a table of jobs with columns for Job, Type, Script type, Tags, Created by, Schedule, Last run, Next run, and Status. A red box labeled 'Prune jobs' points to a button in the top right corner of the job list. Below the table, a red-bordered box contains a list of pruning options:

- Prune by status
  - Prune jobs based on job execution status
    - Keep succeed job records keeps 7 days of succeeded job records by default
      - Data pruning success job includes jobs with Success, Stopping, or Warning status
    - Keep failed job records keeps 30 days of failed job records by default
      - Data pruning failed job includes jobs with Error status

Note: All other jobs cannot be pruned, for example, jobs with Running status
- Prune by schedule
  - Prune jobs based on job schedule type
    - Keep minutes records keeps 7 days for job records for scheduled by every minute by default
    - Keep hourly records keeps 30 days for job records for scheduled by hourly by default
    - Keep daily records keeps 90 days for job records for scheduled by daily by default
    - Keep weekly records keeps 180 days for job reports for scheduled by weekly by default
    - Keep monthly records keeps 360 days for job records for scheduled by monthly by default
    - Keep on demand records keeps 30 days for job records for on demand by default

- Prune by the number of records
- Prune jobs based on job record number and run number for each job
  - Keep record for keeps 30 days for all jobs by default
  - Keep run records for each job keeps last 12 run records for each job by default

Note: The job is pruned only if both rules are satisfied
- Disable pruning
- Disable job data pruning

Note: Disabling pruning keeps all the records indefinitely. This increases the overhead and impacts storage capacity and performance

Below this list, a 'Job execution record pruning' dialog box is open. It has a title bar and a close button. The dialog contains the following options:

- Prune by status (selected)
  - Keep succeed job records: 7 days
  - Keep failed job records: 30 days
- Prune by schedule
- Prune by the number of records
- Disable pruning

Buttons for 'Cancel' and 'Save' are at the bottom of the dialog.

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=jobs-pruning-job>

The console scans the job data periodically in the background and prunes job data history. The default scan time is in 24:00:00 for console server time. The console pruning scan time can be modified in the configuration file as follows:  
a.) Go to the folder `<dmc_home>/Config/dswebserver_override.properties`  
b.) Add or modify the following parameter 'pruning\_start\_time = {HH}:{MM}:{SS}' where, {HH}:{MM}:{SS} is the console server time, for example: 'pruning\_start\_time = 14:13:30'  
c.) Restart the console server

# Job Chain – Creating a Job Chain 1/4

**Define**  
The settings you configure for the whole job chain will override the original settings of each job.

**Details**

Job chain name: [Job chain name]

**Schedule**

Run this job chain on a schedule

**Timeout**

Stop the script if it runs longer than the configuration

**Notifications**

Select the events that you want to be notified (optional) for:

Select events: [Error, Stopped, Success]

Include job output in the email notification

**Job Chain Status**

- Error – Job Chain execution returns an error
- Stopped - Job Chain execution is terminated or stopped due to timeout
- Success - Job Chain execution succeeds

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=jobs-creating-updating-job-chain>

# Job Chain – Creating a Job Chain 2/4

Job chain configuration diagram:

- 1.0 Main Memory Test (Main Job)
- 2.1 Success Job1 (Run Condition Success)
- 2.2 Failure Job2 (Run Condition Success)

Selected job properties:

- Job name: Job2
- Description: Test
- Created by: db2inst1
- Script type: SQL script

Annotations:

- Main Job (yellow box)
- Overflow menu (pink box)
- Properties (red box)

Instructions:

- You can combine the job nodes into a job chain. Each job that you add to the chain is triggered based on the run condition that is set for each node
- To add a node, click the **overflow menu**
- To edit an existing node, click the node and **view the properties on the right panel**

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=jobs-creating-updating-job-chain>





# Job Chain – Creating a Job Chain 4/4

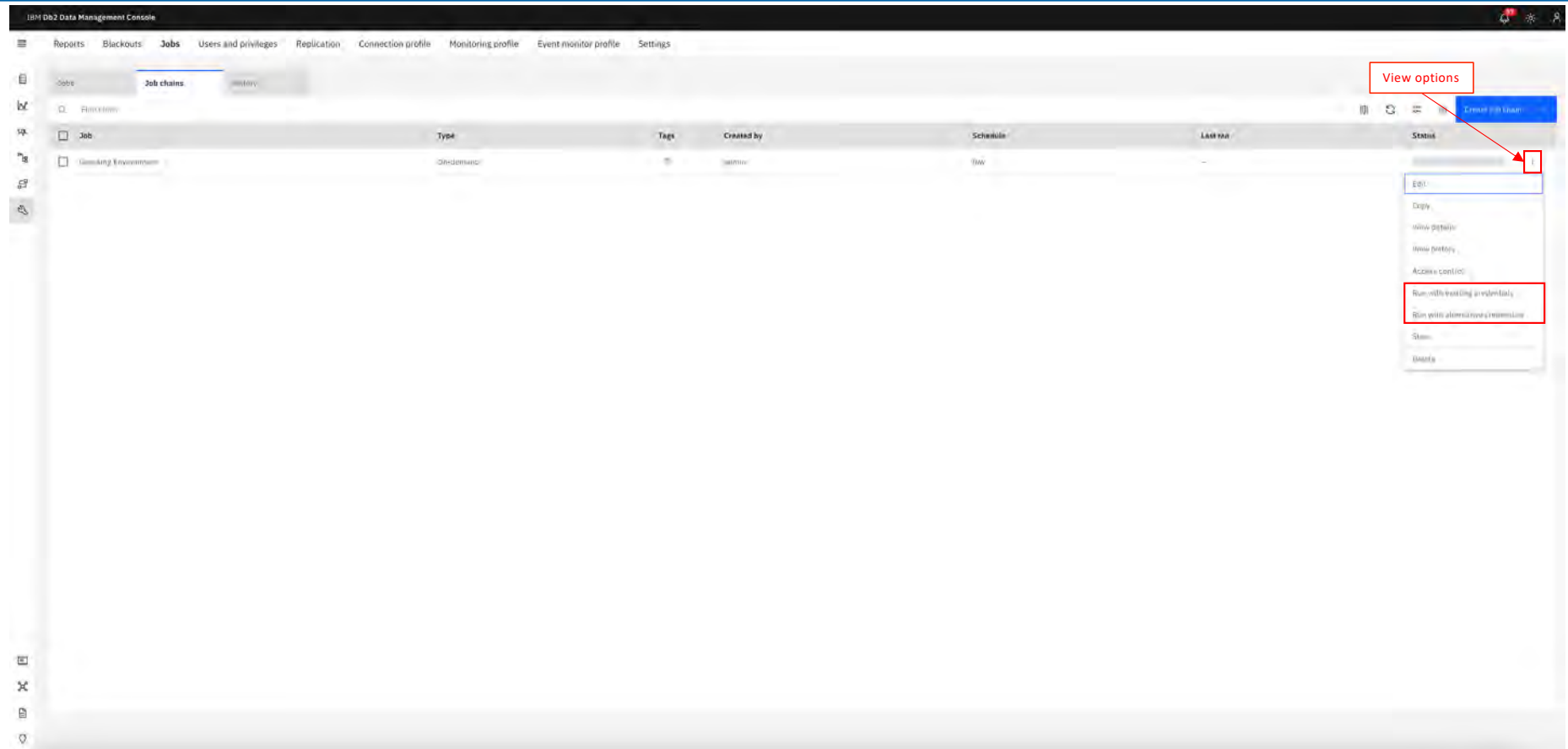
The screenshot displays the 'Create a job chain' interface in the IBM Db2 Data Management Console. The main area shows a job chain diagram with three steps: 1.0 Main Memory Test, 2.1 Success Job2, and 2.2 Failure Job2. A red box highlights the 'Summary' page, and a red arrow points to the 'Finish' button at the bottom right.

Summary Page  
Click on Finish

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=jobs-creating-updating-job-chain>

# Job Chain – Running On-demand Job Chain



Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=jobs-creating-updating-job-chain>

# Job Chain – Pruning Job Chain

**Prune job chain**

- Prune by status
  - Prune job chains based on job execution status
    - Keep succeed job chain records keeps 7 days of succeeded job records by default
      - Data pruning success job includes jobs with Success, Stopping, or Warning status
    - Keep failed job chain records keeps 30 days of failed job records by default
      - Data pruning failed job chain includes job chains with Error status

Note: All other job chains cannot be pruned, for example, job chains with Running status
- Prune by schedule
  - Prune job chains based on job schedule type
    - Keep minutes records keeps 7 days for job chain records for scheduled by every minute by default
    - Keep hourly records keeps 30 days for job chain records for scheduled by hourly by default
    - Keep daily records keeps 90 days for job chain records for scheduled by daily by default
    - Keep weekly records keeps 180 days for job chain records for scheduled by weekly by default
    - Keep monthly records keeps 360 days for job chain records for scheduled by monthly by default
    - Keep on demand records keeps 30 days for job chain records for on demand by default
- Prune by the number of records
  - Prune jobs based on job chain record number and run number for each job chain
    - Keep record for keeps 30 days for all job chains by default
    - Keep run records for each job keeps last 12 run records for each job chain by default

Note: The job chain is pruned only if both rules are satisfied
- Disable pruning
  - Disable job chain data pruning

Note: Disabling pruning keeps all the records indefinitely. This increases the overhead and impacts storage capacity and performance

**Chain execution record pruning**

Prune by status

Keep succeed chain records: 7 days

Keep failed chain records: 30 days

Prune by schedule

Prune by the number of records

Disable pruning

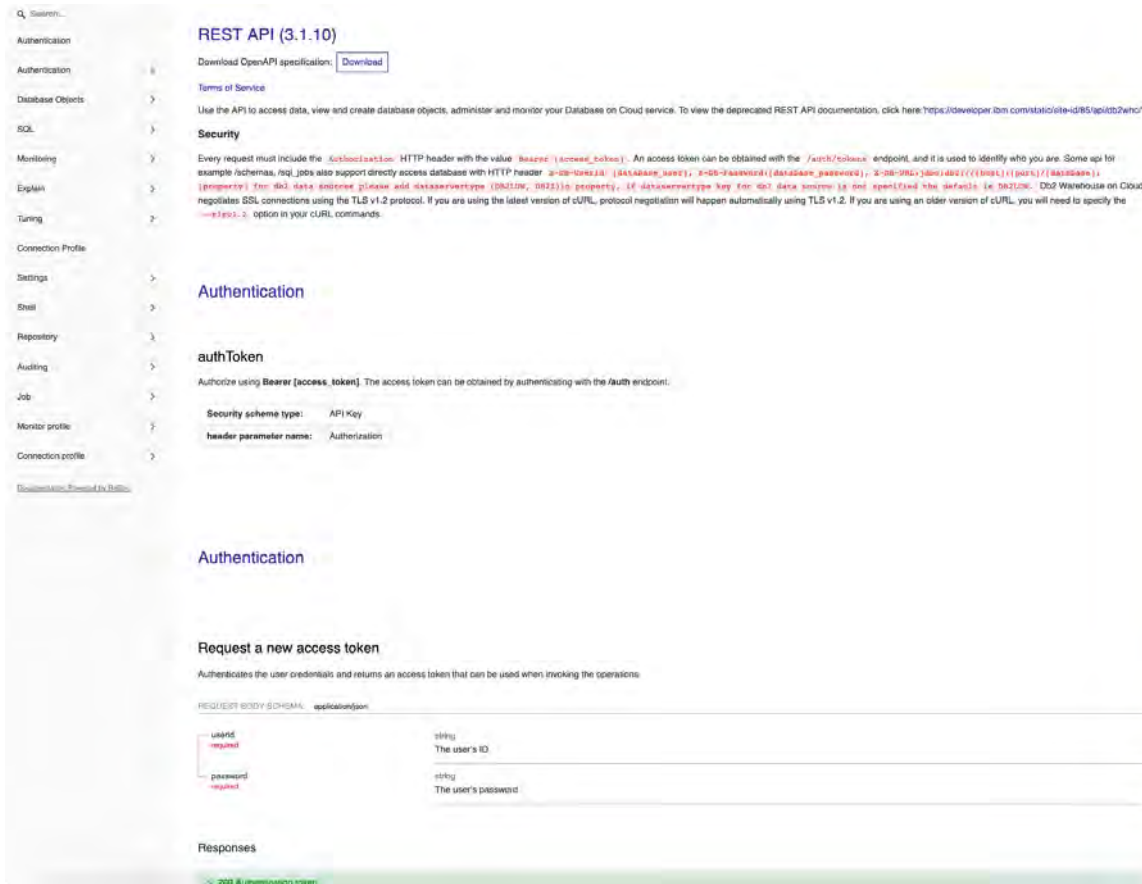
Cancel Save

The console scans the job chain data periodically in the background and prunes job chain data history. The default scan time is in 24:00:00 for console server time. The console pruning scan time can be modified in the configuration file as follows:  
a.) Go to the folder `<dmc_home>/Config/dswebserver_override.properties`  
b.) Add or modify the following parameter 'pruning\_start\_time = {HH}:{MM}:{SS}' where, {HH}:{MM}:{SS} is the console server time, for example: 'pruning\_start\_time = 14:13:30'  
c.) Restart the console server

## Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=chain-pruning-job>

# RESTful Services APIs Support



**REST API (3.1.10)**

Download OpenAPI specification: [Download](#)

**Terms of Service**

Use the API to access data, view and create database objects, administer and monitor your Database on Cloud service. To view the deprecated REST API documentation, click here: <https://developer.ibm.com/stx10/ele-id85/ap/1b29ehc/>

**Security**

Every request must include the `Authorization` HTTP header with the value `bearer {access_token}`. An access token can be obtained with the `/auth/token` endpoint, and it is used to identify who you are. Some APIs for example `/schemas`, `/sql_jobs` also support directly access database with HTTP header `Authorization: Basic {database_username}:{database_password}`, `Authorization: Basic {username}:{password}`, `Authorization: Basic {property}:{value}` for `data engine` please add `dataservertype (DB2LUW, DB2Z)` in property, if `dataservertype` key for `db2 data engine` is not specified the default is `DB2LUW`. Db2 Warehouse on Cloud negotiates SSL connections using the TLS v1.2 protocol. If you are using the latest version of cURL, protocol negotiation will happen automatically using TLS v1.2. If you are using an older version of cURL, you will need to specify the `--ssl` option in your cURL commands.

**Authentication**

**authToken**

Authorize using Bearer (access\_token). The access token can be obtained by authenticating with the /auth endpoint.

Security scheme type: API Key

header parameter name: Authorization

**Request a new access token**

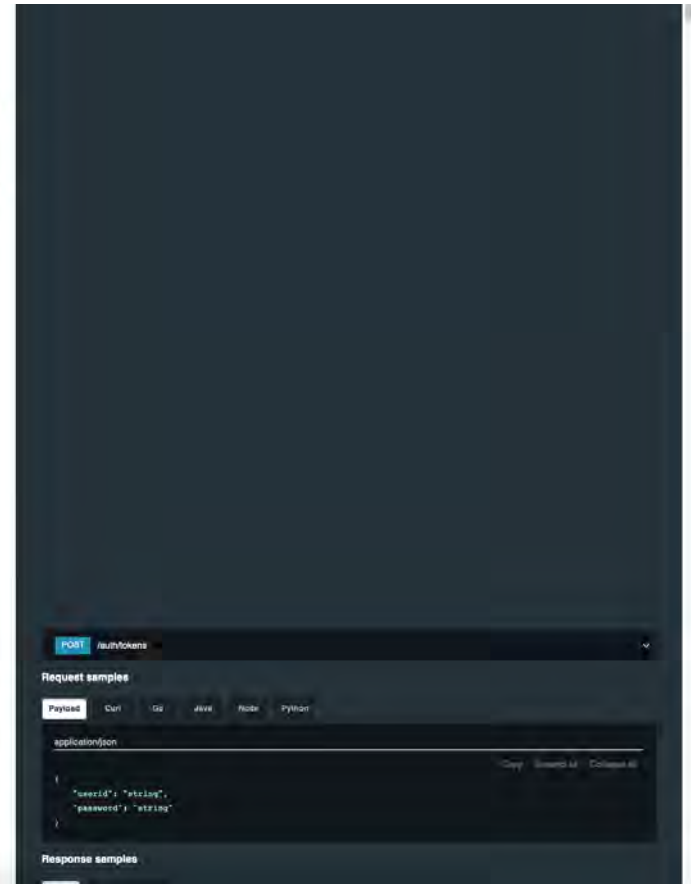
Authenticates the user credentials and returns an access token that can be used when invoking the operations

REQUEST BODY Schema: application/json

username	required	string	The user's ID
password	required	string	The user's password

**Responses**

200 Application/JSON



POST /auth/token

Request samples

Request: Curl, Go, Java, Node, Python

application/json

```
{
  "username": "string",
  "password": "string"
}
```

Response samples

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=welcome-working-apis>

# REST API – Examples

```
TOKEN=$(curl -X POST \
  http://localhost:11080/dbapi/v4/auth/tokens \
  -H 'content-type: application/json' \
  -d '{"userid":"admin","password":"admin"}' \
  | jq -r '.token'
)
echo $TOKEN
```

Getting a token

Requires **jq** command installed on the machine

```
TOKEN=$(curl --silent --insecure -X POST \
  http://localhost:11080/dbapi/v4/auth/tokens \
  -H 'content-type: application/json' \
  -d '{"userid":"admin","password":"admin"}' \
  | jq -r '.token'
)
BLACKOUTSTATUS=$(curl --silent --insecure -X PUT \
  http://localhost:11080/dbapi/v4/dbprofiles/blackout/SAMPLE \
  -H 'authorization: Bearer '$TOKEN \
  -H 'content-type: application/json' \
  -d '{"blackout":"$BLACKOUT"}'
)
```

Setting up blackout

```
TOKEN=$(curl --silent --insecure -X POST \
  http://localhost:11080/dbapi/v4/auth/tokens \
  -H 'content-type: application/json' \
  -d '{"userid":"admin","password":"admin"}' \
  | jq -r '.token'
)
STORAGESSTATUS=$(curl --silent --insecure -X $PARAMETER \
  http://localhost:11080/dbapi/v4/monitorprofile/front/config/tablestorage \
  -H 'accept: application/json' \
  -H 'authorization: Bearer '$TOKEN \
  -H 'content-type: application/json;charset=utf-8' \
  -d '{"enabled":"POST","include_sys":"false","max_rows_read":5000,"schedule_rule":"0 0 12 * * ?"}'
)
```

Disabling Storage Query



## ▪ Audit event types

- All successful and unsuccessful login attempts
- All logoff attempts
- Attempts to perform unauthorized functions
- Activities performed by admin accounts
- Attempts to update console settings
- Connection profile privilege management audit

## ▪ Audit storage methods

- Db2 Data Management Console's repository
  - ❖ AUDIT\_LOG table (Default)
    - Two columns
      - ❑ **TIMESTAMP** which is the timestamp in milliseconds since Jan 1 00:00, 1970
      - ❑ **LOG** which is the audit record
- Server's file system
  - ❖ audit.\* under <dmc installation dir>/logs directory

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=apis-audit-logs>

# Audit REST API

**Return current Audit settings with security credential \*\*ADMIN ONLY\*\***

property	value
userid	string The user id that has privilege to access auditing configuration table.
password	string The password of the user id.

**Responses**

- 200 Audit settings
- 400 Error payload

- You can view and update audit settings using APIs
- The settings are saved in the repository table named **AUDIT\_CONFIG**
- Audit settings are configured dynamically, and are effective when the API is called successfully
- Audit setting APIs are available in two groups
  - one group is to return or update settings individually
  - one group is to return or update settings collectively or as a whole
- By default, when the Audit APIs are called, the console uses the repository connection credential to perform Auditing actions. If additional security is added to SELECT or UPDATE of AUDIT\_CONFIG table, and the credential used is different from the repository connection credential, then, an optional input parameter to the API can be used to pass in the security credential.

```
GET /audit/settings
```

```
200 OK
```

```
application/json
```

```
{  "audit_enable": "enable",  "log_method": "repository",  "track_api_response_data": "enable",  "track_api_response_error": "enable",  "keep_data_for_days": 10}
```

```
POST /audit/settings
```

```
200 OK
```

```
application/json
```

```
{  "userid": "string",  "password": "string",  "request": {}}
```

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=logs-configuring-audit>





# Db2 Data Management Console

dmctop

# dmctop – Key Features



- Sessions
  - See at a glance which connections are active, blocked, or idle
  - Drill down on a connection to see details of the current state of execution of SQL that is in question
- Running SQL
  - See a list of recently run statements
  - Drill down is provided to see the full SQL text or run explain on a statement
- Top Consumers
  - Find which connections or activities are consuming the most CPU, IO or other resource
- Time spent
  - Shows a breakdown of where the monitored database is spending time broken down to the full granularity provided by Db2
- pureScale performance
  - See Db2 pureScale performance metrics and cache facility state
- HADR status
  - See primary and standby database HADR configuration state
- Federation
  - View federated activity for the federated database

# dmctop – Download and Installation

- Simple text-based tool for monitoring, similar to the dsmtop and db2top
- Can monitor Db2 V11.1 and above
- Beginning with IBM Db2 Data Management Console v3.1.5, dmctop v1.0.2 is bundled with Db2 v11.5.6
- Download the latest dmctop at IBM Fix Central
- Supported only on Power® 8 and later processors
- Setting up dmctop
  - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=dmctop-setting-up>
- dmctop manual
  - <https://ibm.github.io/dmctop-wiki/>

The screenshot shows the 'Select fixes' interface in the IBM Db2 Data Management Console. The page title is 'Select fixes' and the subtitle is 'Information Management, IBM Db2 Data Management Console (All releases, All platforms)'. Below the title, there is a section 'Need to download your product?' with a link to 'Find full product install images on Passport Advantage'. There are two buttons: 'Continue' and 'Clear selections'. A search filter 'dmctop' is applied to the results. The results are displayed in a table with columns for 'Description' and 'Release date'. The table shows 7 results, with the first one selected. The table data is as follows:

	Description	Release date
<input checked="" type="checkbox"/>	27 fix pack: → <a href="#">1.0.4.1-dmctop</a>	2022/06/27
<input type="checkbox"/>	37 fix pack: → <a href="#">1.0.4.0-dmctop</a>	2022/01/20
<input type="checkbox"/>	76 interim fix: → <a href="#">1.0.3.1-dmctop</a>	2021/08/22
<input type="checkbox"/>	86 fix pack: → <a href="#">1.0.3.0-dmctop</a>	2021/06/20
<input type="checkbox"/>	87 fix pack: → <a href="#">1.0.2.0-dmctop</a>	2021/03/02
<input type="checkbox"/>	113 fix pack: → <a href="#">1.0.1.0-dmctop</a>	2020/11/04
<input type="checkbox"/>	122 fix pack: → <a href="#">1.0.0.0-dmctop</a>	2020/06/19

Below the table, it says '1-7 of 7 results (filtered from 130 total results)'. There are buttons for 'Continue', 'Clear selections', and 'Back'. On the right side, there are 'Download options' (Download method: HTTPS, Include requisites: Yes), 'Change your selection' (Product selector: IBM Db2 Data Management C, Installed Version: All, Platform: All), and 'Filter your content' (Fix type: fix pack (98), interim fix (32), And Applies to: 3.1.1.0 (8), 3.1.2.0 (9), 3.1.3.0 (15), 3.1.4.0 (12), And Platform: AIX (36)).

# dmctop – Comparing dmctop and db2top

---



## Improvements and new features

- Default secured connection (SSL) support
- Support for Db2 features including pureScale, BLU (column store tables) and workload management
- Monitor remote database
- Monitor federated database
- Easier navigation with menus, view specific help available in the footer section
- Reset baseline, hide idle connections, visual alerts, spanning view across multiple monitors

## ▪ Running dmctop from Db2 server

- When running on database server, dmctop connects to local database without requiring credentials
  - Uses existing ODBC driver on the server hence installation of separate ODBC driver is not required
    - **Note:** Db2 v11.5.5. databases only contain dmctop v1.0.0.0 on Linux and Windows operating systems
- 1) Copy dmctop on server under the desired location
    - **Note:** If you want to use dmctop v1.0.0.0 for Db2 v11.5.5. databases, skip step1 and go directly to step 2
  - 2) Run the dmctop
    - ❖ For Linux/AIX/MacOS  
dmctop -d SAMPLE
    - ❖ For Windows  
dmctop.exe -d SAMPLE

## ▪ Running dmctop remotely

- The easiest way to run dmctop is to fully specify the database and user credentials
- dmctop utility will use the CLI driver
- For Linux/AIX/MacOS
  - ❖ dmctop -d <database\_name> -n <host\_name> -r <port\_number> -u <user\_id> [-cert-path Root-CA certificate absolute path]
- For Windows
  - ❖ dmctop.exe -d <database\_name> -n <host\_name> -r <port\_number> -u <user\_id> [-cert-path Root-CA certificate absolute path]
- For example
  - ❖ For Linux/AIX/MacOS  
dmctop -d SAMPLE -n localhost -r 50000 -u db2inst1
  - ❖ For Windows  
dmctop.exe -d SAMPLE -n localhost -r 50000 -u db2inst1

## ▪ Run dmctop in background mode

- When using the -b parameter, saves information to file in CSV format
- Issuing multiple sub-options for background mode (-b) is not supported
- The -b parameter takes one of the following single character sub-option values
  - ❖ d - overview
  - ❖ l - connections
  - ❖ a - top consumer activities
  - ❖ J - Skew monitor
  - ❖ s - in-flight statements
  - ❖ D - Package cache
  - ❖ L - Lock statistics
  - ❖ m - DB memory
  - ❖ I - Instance memory
  - ❖ F - Federation
  - ❖ A - HADR

- For example

### ❖ Using default file name

- For Linux/AIX/MacOS

```
dmctop -d SAMPLE -n localhost -r 50000 -u db2inst1 -insecure -b d
```

- For Windows

```
dmctop.exe -d SAMPLE -n localhost -r 50000 -u db2inst1 -insecure -b d
```

### ❖ Specifying output file name

- For Linux/AIX/MacOS

```
dmctop -d SAMPLE -n localhost -r 50000 -u db2inst1 -insecure -b d -f <outputFile>.csv
```

- For Windows

```
dmctop.exe -d SAMPLE -n localhost -r 50000 -u db2inst1 -insecure -b d -f <outputFile>.csv
```

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=dmctop-setting-up>

```

Menu
View
- Overview(d)
- Throughput(w)
- Top consumers(B)
- Connections(l)
- Statements(s)
- IO(I)
- Locking(L)
- Memory(O)
- Storage(t)
- Other(u)
Help(h)
- Shortcuts(h)
- About
Settings(E)
Quit(q)
    
```

DB overview Linux, member=[0/1], db2inst1:sample

[ 07:43:50 Data mode: delta, Baseline age: 0m, Next refresh: 10 secs

Act session	5%	=		
Log used	2%			

Overview	Resource consumption	Throughput	Contention	Timespent
<b>Start date</b> 2022-06-10 <b>Start time</b> 07:42:38 <b>Database status</b> ACTIVE <b>System physical mem</b> 15.5G	<b>CPU usage %</b> 2.44 <b>Instance mem committed</b> 141.9M <b>Database mem committed</b> 280.3M <b>Bufferpool memory used</b> 5.0G <b>Shared sort memory used</b> 4.0M <b>Storage usage %</b> 52.86 <b>Log usage %</b> 2.80 <b>Log used</b> 1.4M	<b>Transactions/s</b> 2.43 <b>Select stmts/s</b> 2.72 <b>Utd stmts/s</b> 0.20 <b>Activities completed/s</b> 3.50 <b>Activities aborted/s</b> 0.02 <b>Activities queued/s</b> 0.00 <b>Read efficiency</b> 20.92 <b>Log reads/s</b> 0.00 <b>Log writes/s</b> 9.70 <b>Logical reads/s</b> 746.85 <b>Physical reads/s</b> 182.98 <b>Async reads/s</b> 2.42 <b>Writes/s</b> 11.30 <b>Async writes/s</b> 0.58	<b>Connections</b> 17 <b>Active connections</b> 1 <b>Lock held</b> 0.0 <b>Lock waits</b> 0 <b>Lock timeouts</b> 0 <b>Lock escalations/m</b> 0.00 <b>Deadlocks/m</b> 0.00 <b>Threshold violations/m</b> 0.00 <b>Hit ratio</b> 99.47%	<b>Avg p read time</b> 0.36 <b>Avg d read time</b> 0.01 <b>Sorts/m</b> 43.00 <b>Sort overflows/m</b> 0.00 <b>Hash joins/m</b> 41.00 <b>Hash join overflows/m</b> 0.00 <b>Hash grpbys/m</b> 0.00 <b>Hash grpb overflows/m</b> 0.00 <b>Avg p write time</b> 1.24 <b>Avg d write time</b> 0.05 <b>Pct time queued</b> 0.00

deejay1.fyre.ibm.com

Quit: q, Help: h, Metrics: V, Reset baseline: r, Toggle delta value: K,  
Freeze display: f, Save preferences: E, Help: h

dmctop 1.0.3.0

# dmctop – Shortcuts

Use shortcuts to drill down information

Description	Shortcut
<b>** View **</b>	
1) Overview	d
2) Throughput	
- Workloads	w
- Workload Assignment	W
- Service Classes	C
- Members	p
- Skew monitor	J
- Time spent (system)	Q
3) Top Consumer	
- Units of Work	B
- Connections	c
- Activities	v
4) Connections	l
5) Statements	
- In-flight statement	s
- Executed SQL (pkg cache)	D
6) IO	
- Bufferpools	I
- Prefetchers	P
- Table Spaces	y
- Table	Y
- Logging Performance	N
- CF Status	x
- pureScale Performance	X
7) Locking	
- Lock Statistics	L
- Blockers, waiters	b
- Locks	U
- Locked Objects	o
8) Memory	
- Database memory pools	O
- Instance memory sets	n
9) Storage	
- Table Space Utilization	t
- Table Utilization	T
10) Other	
- Utilities	u
- REORG	R
- HADR	A
- Federation	F
11) Help	
- Shortcuts	h
12) Settings	
- Save Preferences	E
13) Quit	q
14) Set refresh interval	CTRL+t

Top consumers - Units of work

Item No	Server resource	Application handle	Resource usage	Resource value	Application name	UOW start time	Latest statement text
0	Log space used	55169	66.40	1002000	UC_MYPON	2022-06-10 07:53:53	
1	CPU time	3927	15.12	228200	db2ccc	2022-06-10 07:42:38	
2	Elapsed time	2385	6.25	0%	db2task	2022-06-10 07:42:38	
3	Rows read	2385	188.88	6	db2task	2022-06-10 07:42:38	
4	Rows returned	3378	13.42	382	db2fw2	2022-06-10 07:42:38	
5	Rows written	3378	18.82	333	db2fw2	2022-06-10 07:42:38	
6	Logical reads	3078	18.88	28	db2fw2	2022-06-10 07:42:38	
7	IO r/w	3078	48.68	1514	UC_MYPON	2022-06-10 07:53:53	
8	Memory	55169	-	-	-	-	-
9	FCM traffic	55169	67.82	754	UC_MYPON	2022-06-10 07:53:53	
10	Num locks held	-	-	-	-	-	-
11	Lock escalations	-	-	-	-	-	-
12	Lock timeouts	-	-	-	-	-	-
13	Locks waits	-	-	-	-	-	-
14	Local wait time	-	-	-	-	-	-
15	Local wait time (Global)	-	-	-	-	-	-
16	CF wait time	-	-	-	-	-	-
17	CF waits	-	-	-	-	-	-

Top consumers - Activities

Item No	Server resource	Application handle	Resource usage	Resource value	Application name	Activity type	Statement text
0	CPU time	-	-	-	-	-	-
1	Elapsed time	-	-	-	-	-	-
2	Statement exec time	-	-	-	-	-	-
3	Num Agents	1077	188.88	1	db2ccc	READ_OML	/* IBM_DMCTOP */WITH ACT_TA...
4	Rows read	-	-	-	-	-	-
5	Rows returned	-	-	-	-	-	-
6	Rows written	-	-	-	-	-	-
7	Logical reads	-	-	-	-	-	-
8	IO r/w	-	-	-	-	-	-
9	Sort time	-	-	-	-	-	-
10	Num sorts	-	-	-	-	-	-
11	Sort overflow	-	-	-	-	-	-
12	FCM traffic	-	-	-	-	-	-
13	Query Cost Estimate	1077	100.00	3	db2ccc	READ_OML	/* IBM_DMCTOP */WITH ACT_TA...
14	Query Cardinality Estimate	1077	100.00	2660	db2ccc	READ_OML	/* IBM_DMCTOP */WITH ACT_TA...
15	lock wait time	-	-	-	-	-	-
16	lock waits	-	-	-	-	-	-
17	lock escalations	-	-	-	-	-	-
18	local wait time (Global)	-	-	-	-	-	-
19	lock waits (Global)	-	-	-	-	-	-
20	CF wait time	-	-	-	-	-	-
21	CF waits	-	-	-	-	-	-





# Db2 Data Management Console

## Configuration Files

# Configuration Files – Config directory



Configuration files are located under [<dmc\\_home>/Config](#) directory

- dswebserver\_override.properties
  - Overrides the configuration in dswebserver.properties file
  - Not changed during DMC upgrade
  - Console hostname, ipaddress, URL
  - Authentication Configuration (SuperAdmin, LDAP, Repository Database)
  - e-mail configuration (e-mail host, port number, e-mail address)
- dswebserver.properties
  - Overwritten during DMC upgrade
  - Contains the current DMC version (build and release)
  - 10.01 support enabled/disabled
- ext\_ldap\_config\_v2.json
  - LDAP configuration information when LDAP authentication is used
- metadb\_override.properties
  - Overrides the configuration in metadb.properties file
  - Not changed during DMC upgrade
  - Repository database information (host, port number, database name)
- metadb.properties
  - Overwritten during DMC upgrade
  - [Repository database](#) internal information
- monitorProfile directory
  - Default configuration when creating new monitoring profiles
- product directory
  - about.properties file
  - License files

- server.crt and server.key
  - Original certificate to be used for SSL configuration
  - Recommended to be changed by using the steps from <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=securing-enabling-https-db2-data-management-console>
- SSLConfig.xml
  - SSL configuration
- TLSOnlyConfig.xml
  - TLS configuration sslProtocol="TLSv1.2"

**Relevant information only, do not to change the contents, unless requested by development or DMC manual**

- [Configuration files](#) for logging
  - admin\_log.properties
  - alert\_log.properties
  - deletedDBData\_log.properties
  - diagnosis\_log.properties
  - DS\_System\_log.properties
  - explain\_log.properties
  - fixnow\_log.properties
  - home\_log.properties
  - LOAD\_log.properties
  - monitor\_log.properties
  - repoUtil\_log.properties
  - runsql\_log.properties
  - sample\_log.properties
  - setup\_log.properties
  - tuning\_log.properties
  - UserUtils\_log.properties

# Additional Configuration Files

Under [<dmc\\_home>/wlp/usr/servers/dsweb](#)

- bootstrap.properties
  - [Port numbers](#)
    - ❖ port=11080
    - ❖ https.port=11081
    - ❖ job.http.port=11088
    - ❖ internal.port=11082
  - SSL configuration
    - ❖ <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=securing-enabling-https-db2-data-management-console>
  - Ciphers
- jvm.options
  - Contains the JVM configuration, memory allocation for the DMC java process
    - ❖ -Xms (start)
    - ❖ -Xmx (maximum)
  - Additional information
    - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-resolving-out-memory-errors>
- server.env
  - WLP\_OUTPUT\_DIR dump files directory configuration

**Relevant information only, do not to change the contents, unless requested by development or DMC manual**



# Db2 Data Management Console

Log Files

# Log Files

- Configuration files for logging located under [<dmc\\_home>/Config](#) directory
- Log files are located under [<dmc\\_home>/logs](#) directory
- DMC start is required after changing the logging property files
- Circular logging
- Parameters
  - MaxEdition
    - ❖ Default 4
    - ❖ Starts from 0, where 0 is the most recent data
  - MaxFileSizeInM
    - ❖ Default 10
    - ❖ Size in megabites
  - LogInitialLevel
    - ❖ Default 6
    - ❖ Frequently used
      - LOG\_ERROR = 2
      - LOG\_WARNING = 4
      - LOG\_INFO = 6
      - LOG\_DEBUG = 9
      - LOG\_TRACE = 13

Component	Property File	Log File
Admin	admin_log.properties	admin.0
Alert	alert_log.properties	alert.0
	deletedDBData_log.properties	deletedDBData.0
	diagnosis_log.properties	diagnosis.0
General	DS_System_log.properties	DS_System.0
Explain	explain_log.properties	explain.0
	fixnow_log.properties	fixnow.0
	home_log.properties	home.0
	LOAD_log.properties	LOAD.0
	monconn_log.properties	monconn.0
Monitor	monitor_log.properties	monitor.0
Repository	repoUtil_log.properties	repoUtil.0
Run SQL	runsql_log.properties	runsql.0
	sample_log.properties	sample.0
Setup	setup_log.properties	setup.0
Query Tuning	tuning_log.properties	tuning.0
	UserUtils_log.properties	UserUtils.0

# Additional Ways to Change Log Level

Logs level can also be changed by

- logUtils.sh script

```
<dmc_home>/dsutils/bin/logUtils.sh
```

Usage: "logUtils.sh <admin|dbapi|monitor|explain|runsql|all> <trace|info>"  
By default, the log level is info. To collect more debug information, set the value to trace.

Additional info

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-customizing-trace-log-settings>

- Logger REST API

```
curl -X PUT 'SCHEME://HOST:PORT/<component>/logger' \  
-H 'Authorization: Bearer {getting a token}' \  
-H 'cache-control: no-cache'-H 'content-type: application/json' \  
-d '{"loggerName": "<component>","logLevel": "13","maxFileSize": "10","editions": "4", "enableRolling": "true"}' -k
```

Where

- component: dbapi/v3, admin, monitor, run\_sql
- Parameters
  - ❖ loggerName is a must, accepted values are DS\_System, admin, monitor, runsql
  - ❖ logLevel: logger level, accepted values are 2, 4, 6, 9, and 13
    - LOG\_ERROR = 2
    - LOG\_WARNING = 4
    - LOG\_INFO = 6
    - LOG\_DEBUG = 9
    - LOG\_TRACE = 13
  - ❖ enableRolling: Whether to enable the rolling log – true or false
  - ❖ maxFileSize: Maximum size of rolling log files (MB)
  - ❖ editions: Maximum number of rolling log files

# Additional Log Files

- messages.log file
  - Under [<dmc home>/logs](#) directory
  - Show status of DMC server
  - Last date and time that the server was started
- ffdc directory
  - The FFDC (First Failure Data Capture) directory preserves the information that is generated from a processing failure used by IBM Support
  - You can remove the FFDC information after investigation
  - The dump file is created in the [<dmc home>/work/dsweb](#) directory. If you modify the WLP\_OUTPUT\_DIR attribute in [server.env](#), the dump file will be stored in <WLP\_OUTPUT\_DIR>/dsweb directory. You can remove the dump files (javadump, core, heapdump etc.) after investigation
- Job Scheduler Server log files
  - Under [<dmc home>/addons/job-scheduler/logs](#)
- Dr S log files
  - Under [<dmc home>/addons/drs/drs-agent/logs](#)



# Db2 Data Management Console

dsutil Files



# dsutil/bin Files – Utilities directory



Script files under [<dmc\\_home>/dsutil/bin](#) directory

- crypt.sh
  - Encrypt password
  - Additional information
    - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=installation-customized-product-setup>
- [deleteRepoData4DeletedConnection.sh](#)
  - Clean up monitor data for deleted database connections
  - Additional information
    - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-cleaning-up-monitor-data-deleted-connections>
- [deleteRepoData\\_expired.sh](#)
  - Clean up monitor data for deleted database connections
  - Additional information
    - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-deleting-expired-monitor-data>
- enable\_setup\_admin.sh
  - Reset the authentication configuration settings back to the [SuperAdmin](#) user during the installation
  - Additional information
    - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=configuration-resetting-authentication>
- libertyCertsCrypt.sh
  - Encrypt SSL certificate password
  - Additional information
    - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=securing-enabling-https-db2-data-management-console>
- logUtils.sh
  - Change [log\\_level](#) script
- repoUtil.sh
  - Resolving transaction log for the database is full error
  - Additional information
    - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-resolving-transaction-log-database-is-full-error>
- retrieveAdminCred.sh
  - Retrieve SuperAdmin credentials
- setupRepo.sh
  - Avoid LOB errors when setting up DMC repository database
  - Additional information
    - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-resolving-transaction-log-database-is-full-error>
- changeRepoDbUserPWD.sh
  - Change password for the userid connecting to the repository database
  - Additional information
    - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=administering-resetting-repository-user-password>

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# dsutil/bin/pre\_req\_script Files – Utilities directory

Script files under [<dmc\\_home>/dsutil/bin/pre\\_req\\_script](#) directory

## ▪ dmc sub-directory

- aix\_bash\_check.sh
  - ❖ Check if bash is enabled on AIX only
- check\_dmc\_server.sh
  - ❖ Check if the server has enough resources according to the DMC capacity planning
- check\_dmc\_capacity.sh
  - ❖ Called by check\_dmc\_server.sh script

## ▪ monitor\_db sub directory

- aix\_bash\_check.sh
  - ❖ Check if bash is enabled on AIX only
- check\_mon\_db.sh
  - ❖ Check required AIX bash if applicable
  - ❖ Check DB configuration for minimum requirements to collect monitor statistics
  - ❖ Check userid for minimum required object privileges
- check\_monitor\_dbcfg\_with\_auth.sh
  - ❖ Check target database to ensure database configuration parameters meet the [minimum requirements](#) to collect monitor statistics
- grant\_mondb\_min.sh
  - ❖ Grant the user minimum object privileges on a restrictive monitoring database
  - ❖ Exceptions
    - 1) user issuing job cancellation may require higher privileges.
    - 2) user running REORG or RUNSTAT in tuning may require higher privileges
- verify\_mondb\_min.sh
  - ❖ Verify if the user meets minimum required privileges on the monitored database

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## ▪ repository sub-directory

- aix\_bash\_check.sh
  - ❖ Check if bash is enabled on AIX only
- check\_repo\_capacity.sh
  - ❖ Check CPU, memory, and disk space for the repository database
- check\_repo\_config.sh
  - ❖ Check required [repository database configuration](#)
- check\_repo\_server.sh
  - ❖ Check if the user has required privileges for the repository database
- create\_repodb.sh
  - ❖ [Create the repository database](#)
- create\_repo\_objects.sh
- create\_repo.sh
  - ❖ Check requirements and create repository database
    - check\_repo\_config.sh
    - create\_repo\_objects.sh
    - create\_repodb.sh
    - create\_repo\_objects.sh
    - create\_repodb.sh
- grant\_repodb\_min.sh
  - ❖ Grant the user minimum object privileges on the repository database
- verify\_repodb\_min.sh
  - ❖ Script to verify if a user on repodb database meets minimum required object privileges



# Db2 Data Management Console

Common issues

# Out of Memory Errors

## ▪ Symptoms

- DMC server runs for a while and it gets unresponsive or has unpredictable behavior

## ▪ Causes

- By default, the Java virtual manager that is installed with IBM Db2 Data Management Console uses up to a certain amount of memory. The memory that is needed to monitor databases depends on the monitoring profile settings and the number of databases being monitored. If the memory that is needed to monitor databases is significant, you will see out-of-memory errors.

## ▪ Diagnosing the problem

- Investigate the resources available to the server according to the [Capacity Planning](#)
- Make sure that you have enough resources [available](#) for DMC server, increasing the configuration but not having enough memory available, DMC server will crash again

## ▪ Resolving the problem

- 2 ways to change JVM configuration
  - ❖ Web UI Administration → Settings → [JVM](#), if the DMC server is not down
  - ❖ Edit the [<dmc\\_home>/wlp/usr/servers/dsweb/jvm.options](#) file
- Default JVM configuration
  - ❖ -Xms512m
  - ❖ -Xmx2048m
- Modify the default JVM options for the initial (Xms) and maximum (Xmx) heap size values for memory allocation
- Restart DMC server

Additional information

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-resolving-out-memory-errors>

<https://www.ibm.com/support/pages/data-management-console-dmc-server-reports-out-memory-errors>

# Timestamp conversion



- Export data into a flat file (CSV), the timestamp value format in the exported file is unsupported

- Changing the date format

<https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-changing-date-format-in-excel-reports>

- Timestamp Converter

- <https://timestamp.online/>

# Questions?



## We are here to help!

- Data Management Console Community page
  - <https://community.ibm.com/community/user/hybriddatamanagement/blogs/maryia-rakina1/2021/04/21/db2-data-management-console-product-hub?CommunityKey=ea909850-39ea-4ac4-9512-8e2eb37ea09a&Tab=groupdetails>
  
- Help us improve our product using IBM Aha!
  - <https://ibm-data-and-ai.ideas.ibm.com/?category=7093947472735440072>
  
- Create a case with IBM Data Management Console Support team
  - [https://www.ibm.com/mysupport/s/?language=en\\_US](https://www.ibm.com/mysupport/s/?language=en_US)
    - Attach screen shots showing the problem
    - Provide monitored database name having the issue
    - dmccollector
  - <https://www.ibm.com/docs/en/db2-data-mgr-console/3.1.x?topic=support-exchanging-information>