iSecurity DB-Gate

Transparent Access To Any Database
Software Version: 2.60

About this Manual

This user guide is intended for system administrators and security administrators responsible for the implementation and management of security on IBM i systems. However, any user with basic knowledge of IBM i operations will be able to make full use of this product after reading this book.

Raz-Lee takes customer satisfaction seriously. Our products are designed for ease of use by personnel at all skill levels, especially those with minimal IBM i experience. The documentation package includes a variety of materials to get you familiar with this software quickly and effectively.

This user guide, together with the iSecurity Installation Guide, is the only printed documentation necessary for understanding this product. It is available in HTML form as well as in user-friendly PDF format, which may be displayed or printed using Adobe Acrobat Reader version 6.0 or higher. If you do not have Acrobat Reader, you can download it from the Adobe website: http://www.adobe.com/. You can also read and print pages from the manual using any modern web browser.

This manual contains concise explanations of the various product features as well as step-by-step instructions for using and configuring the product.

Raz-Lee's iSecurity is an integrated, state-of-the-art security solution for all System i servers, providing cutting-edge tools for managing all aspects of network access, data, and audit security. Its individual components work together transparently, providing comprehensive "out-of-the- box" security. To learn more about the iSecurity Suite, visit our website at http://www.razlee.com/.

Intended Audience

The DB-Gate User Guide document was developed for users, system administrators and security administrators responsible for the implementation and management of security on IBM® AS/400 systems. However, any user with a basic knowledge of System i operations is able to make full use of this document following study of this User Guide.

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NOTE: Deviations from IBM® standards are employed in certain circumstances in order to enhance clarity or when standard IBM® terminology conflicts with generally accepted industry conventions.

This document may also serve for new versions' upgrade approval by management.

Native IBM i (OS/400) User Interface

DB-Gate is designed to be a user-friendly product for auditors, managers, security personnel and system administrators. The user interface follows standard IBM i CUA conventions. All product features are available via the menus, so you are never required to memorize arcane commands.

Many features are also accessible via the command line, for the convenience of experienced users.

Conventions Used in the Document

Menu options, field names, and function key names are written in `Courier New Bold`.

Links (internal or external) are emphasized with underline and blue color as follows: "About this Manual" on the previous page.

Commands and system messages of IBM i® (OS/400®), are written in *Bold Italic*.

Key combinations are in Bold and separated by a dash, for example: **Enter**, **Shift-Tab**.

Emphasis is written in **Bold.**

A sequence of operations entered via the keyboard is marked as

> *STRDB>* `81 > 32`

meaning: Syslog definitions activated by typing *STRDB* and selecting option: **81** then option: **32**.

Menus

Product menus allow easy access to all features with a minimum of keystrokes. Menu option numbering and terminology is consistent throughout this product and with other Raz-Lee products. To select a menu option, simply type the option number and press **Enter**. The command line is

available from nearly all product menus. If the command line does not appear (and your user profile allows use of the command line), press **F10** to display it.

Data Entry Screens

Data entry screens include many convenient features such as:

- Pop-up selection windows
- Convenient option prompts
- Easy-to-read descriptions and explanatory text for all parameters and options
- Search and filtering with generic text support

The following describes the different data entry screens.

- To enter data in a field, type the desired text and then press Enter or Field Exit
- To move from one field to another without changing the contents press Tab
- To view options for a data field together with an explanation, press F4
- To accept the data displayed on the screen and continue, press Enter

The following function keys may appear on data entry screens.

- **F1**: **Help** Display context-sensitive help
- **F3**: **Exit** End the current task and return to the screen or menu from which the task was initiated
- **F4**: **Prompt** Display a list of valid options for the current field or command. For certain data items, a pop-up selection window appears
- **F6**: **Add New** Create a new record or data item
- **F8**: **Print** Print the current report or data item
- **F9**: **Retrieve** Retrieve the previously-entered command
- **F12**: **Cancel** Return to the previous screen or menu without updating

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Contents

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Why You Need DB-Gate

While IBM i systems offer databases that other systems can access, they cannot, as designed, access databases on other systems.

DB-Gate fixes this. It provides access to remote, non-DB2 databases such as Oracle, MS-SQL and Derby. These databases run on various operating systems and use standard languages (for example, SQL).

Other products attempt to address this via client-server configuration that requires additional hardware, or by using ambiguous or non-standard APIs that are not defined through RDBDIRE (Relational Database Directory Entry) and therefore make no use of ARD programs.

DB-Gate provides this access in any of three ways:

- [Mode 1 - Inline](#): Running separately for each job that requires external DB access.
- [Mode 2 - Internal Server](#): Running as a separate subsystem on the IBM i. A single internal server can support any number of jobs.
- [Mode 3 - External Server](#): Running on an external system, using its processing power rather than that of the IBM i. A single external server can support any number of jobs.

DB-Gate Benefits

- "Opens" the entire non-DB2 spectrum of databases.
- Greatly expands programmer's capabilities when working with non-DB2 databases.
- Reduces the need for redundant data and ETL (extract, transformation, load) data manipulation products. Eliminates the need for *SQLPKG, even when accessing another DB2 database (including one on the IBM i).
- Unique technology enables transparent access to any database (such as MySQL, ORACLE, MS SQL, DB2, Informix, SQLite) or data source (such as Excel) which resides on any IBM or non-IBM platform using STRSQL or programs in languages such as RPG, Cobol, and so on (compiled using CRTSQL)

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- Integration with STRSQL lets you prompt to see the Column names and more
- Expands IBM i-based DRDA functionality by enabling transparent connectivity with JDBC databases not supported by DRDA.
- Uses standard SQL syntax and is based upon standard IBM i functionality. You can use IBM Server Authentication Entries, injecting them seamlessly when needed. You don't have to remember and re-enter a user name and password for each CONNECT to a remote DB
- Provides detailed traceability logs.

DB-Gate Restrictions

The following functions are not supported:

- Database large objects (BLOBs, CLOBs, DBCLOBs)
- Data links
- User IDs longer than ten characters
- Passwords longer than ten characters
- Stored procedure result sets
- SQL statements longer than 32K
- Stored procedures with Commit on Return
- Scrollable cursors
- Multi-row input
- Extended diagnostics
- RDB aliases

Commitment Control

NOTE: When using an ARDPGM, the system enforces the use of commitment control. If for example session attributes for commitment control is set to *NONE, the system will change this setting immediately after the first connection with an RDB entry that is managed by DB-Gate. An RDB entry that is based on ARDPGM is always considered as a remote connection and thus cannot be assigned *NONE or *NC for commitment control as shown below.

Starting DB-Gate

To begin using DB-Gate, type STRDB on any command line. The DB-Gate main menu appears.

```
DBMENU                          DB-Gate                        iSecurity
                                                         System: RLDEV
Select one of the following:

Settings                            Activity Log
 1. Work with Directory Entries     41. Display Log
 2. Activation

DB Drivers                          Test Drive
11. Work with DB Drivers            51. Start SQL
15. Drivers & Licenses Folders      52. Verify Connection
                                    55. Work with SQL* program sources


Auto Injection of Remote User ID    General
21. Work with Server Authentication 81. System Configuration
                                    82. Maintenance Menu



Selection or command
===> _____
_____
F3=Exit    F4=Prompt    F9=Retrieve    F12=Cancel
F13=Information Assistant   F16=System main menu

```

System Configuration

DB-Gate is ready-to-run right out of the box. You should review a few system configuration parameters that control important features before you use it for the for the first time.

Connectivity products such as DB-Gate do not have "typical" or "optimal" configurations. Each installation or application has different operational criteria and security needs. For example, the log requirements for a large manufacturing environment may be quite different from those for a bank, a software developer or a service organization.

To **configure your system**, select **81. System Configuration** from the DB-Gate main menu. The **DB Directory Entry System Configuration** menu appears.

```
DBPARMR           DB Directory Entry System Configuration   17/01/21 16:29:47


 Select one of the following:


 DB-Gate
  1. General Definitions
  2. JVM Settings

  9. Log Retention




                                    General
                                     98. Driver Licenses
 Selection ===>  _                   99. Copyright Notice

 Release ID . . . . . . . . . . . . .  02.60 19-05-20    788C500  41A EP10   2
 Authorization code . . . . . . . . .  XXXXXXXXXX  123          2    RLDEV



 F3=Exit    F22=Enter Authorization Code                   F12=Cancel

```

After you modify any of the parameters accessible from this menu, the message **Modify data, or press Enter** appears upon return to the menu. You must press Enter a second time for any changes to be implemented.

Defining the Server Mode and Log Level

To set the **mode** in which DB-Gate runs and its level of **logging**, select `1.
     General Definitions` from the **System Configuration** menu
(*STRDB > 81*). The **General Definitions** screen appears:

```
                         General Definitions              17/01/21 18:33:48

 Type options, press Enter.

 Run mode  . . . . . . . . . . . . . .  2       1=Inline (no pre-activation)
                                                2=Internal server
                                                3=External server

 Log level (errors are always logged).  2       1=No Log
                                                2=Connects only
                                                4=All (only first FETCH logged)












 F3=Exit    F12=Cancel

```

The `Run Mode` field sets the mode in which DB-Gate runs:

- **1: Inline**, as shown in "Mode 1 - Inline" on page 20
- **2: Internal server**, as shown in "Mode 2 - Internal Server" on page 21
- **3: External server**, as shown in "Mode 3 - External Server" on page 25

The `Log Level` field sets what information (other than errors, which are
always captured) are logged:

- **1: No Log** No data is stored.
- **2: Connects only** The log will store a record of each connection and dis-
  connection from a database.
- **4: All** The log will store all commands sent, except that when a series of
  Fetch commands is sent, it will store only the first in the series.

NOTE: You can set specific logging details for individual directory entries, as
        shown in "Modifying a Directory Entry" on page 37. If the logging

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level for an entry is set to 0, it uses the value set here as a default. Otherwise, it overrides this general value.

Setting Values for the Java Virtual Machine

To **set values for the Java Virtual Machine** (JWM) within DB-Gate, select **2 JVM Settings** from the **DB Directory Entry System Configuration Menu** (*STRDB* > **81**). The **JVM Settings** screen appears:

```
                          JVM Settings              18/02/21 14:57:42

 Type options, press Enter.

 Auto set CLASSPATH  . . .  Y       Y=Yes, N=No
 The actual CLASSPATH is stored in /iSecurity/DB-Gate/sp.properties

 For Run mode 2=Internal server:
 JVM Path  . . . . . . . .   /QOpenSys/QIBM/ProdData/JavaVM/jdk60/64bit
                            _____
                            _____
                            _____

 JVM Properties  . . . . .   -Xmx1024m;-Djava.version=1.7;_____
                            _____
                            _____
                            _____

 Number of JVMs  . . . . .   _1
 IBM Java VM (J9) must be used for these parameters. This is standard since 7.1
 User profile SECURITYBP must be enabled and have a password


 F3=Exit   F12=Cancel
```

To **automatically set the CLASSPATH** value to that stored in **/iSecurity/DB-Gate/sp.properties**, set the **Auto set CLASSPATH** field to **Y**.

If DB-Gate is running in mode 2, with an internal server (as shown in "Mode 2 - Internal Server" on page 21), set the **JVM Path** and **JVM Properties** fields to appropriate values for your system. The screen image shows example values. They can often be left blank.

You may run multiple Java Virtual Machines, as set in the **Number of JVMs** field. By default, DB-Gate only uses one.

NOTE: You must use IBM Java VM (J9), which has been the default since OS/400 7.1, for these parameters.

The user profile **SECURITYBP** must be enabled and have a password.

Setting DB-Gate Log Retention

Log Retention parameters govern how DB-Gate backs up log files and how long it retains them. To preserve disk storage capacity and improve query response time, you should retain transactions for the minimum period necessary to maintain an effective audit program. The recommended initial settings are shown below.

To **set log retention parameters**, select **9. Log Retention** from the **DB Directory Entry System Configuration** menu. The **DB Log Retention** screen appears:

```
                        DB Log Retention              20/01/21 15:24:46

 Type options, press Enter.

   Data retention period (days)  . .   30           Days, 9999=*NOMAX
   Backup program for data . . . . .  *NONE          Name, *STD, *NONE
     Backup program library  . . . .  _____

   You may specify a backup program to run automatically before deleting old
   data. This program runs prior to automatic deletion of data whenever the
   retention period expires.

   The *STD program is SMZB/DBSOURCE DBDBGBKP.




   F3=Exit    F12=Cancel

```

The **Data retention period (days)** field controls the number of days for which DB-Gate logs are retained. The recommended value is **30**. If you set this to **9999**, the logs are never automatically deleted.

You may specify a backup program to run automatically before deleting old data. This program runs prior to automatic deletion of data whenever the retention period expires.

To **back up** the files via the default **DBDBGBKP** program in the **SMZB/DBSOURCE** library, set the **Backup program for data** field to ***STD**.

To **specify a different program**, set the **`Backup program for data`** field to the name of the program and the **`Backup program library`** field to the library that contains the file.

To **do no automatic backups** before deleting logs, set the **`Backup program for data`** field to **`*NONE`**.

Activation

Overview

DB-Gate can be activated to run in any of three modes:

- [Mode 1 - Inline](), running in the same job which requires external DB access.
- [Mode 2 - Internal Server](), running on a separate subsystem in the IBM i. The server supports any number of jobs. This mode is the default and is recommended for most situations.
- [Mode 3 - External Server](), running on an external system (consumes the processing power of a different computer). This server supports any number of jobs.

The functionality of DB-Gate is the same regardless of the mode run. No changes are required in the programs running on the IBM i. The choice of mode selected can be made at any stage.

NOTE: Before changing the DB-Gate mode, terminate any activity involved with DB-Gate.

Mode 1 - Inline

Activation

DB-Gate runs the internal mode, Mode 1, by default. No pre-activation is required.

NOTE: the first SQL command within a job activates a process within DB-Gate that may require a few seconds depending on available computing resources.

Mode 2 - Internal Server

In Mode 2, DB-Gate runs as server job on a dedicated subsystem. This subsystem must be started before processing any SQL statements. The product can be configured to start this subsystem automatically after every IPL.

This mode has no initial extra processing and requires fewer memory resources than Mode 1.

Before You Begin

1. Ensure that no SQL are using DB-Gate. This should be done by your organization's IT Administrator.
2. Set a password for the user profile **SECURITYBP** (which initially has a password of ***NONE**) and set the password expiration interval (**PWDEXPITV**) to ***NOMAX**. **SECURITYBP** is a power user. The user is never used for signing on to the system, and must be given a strong password.

Activation

To activate DB-Gate to run in Internal Server Mode (2):

1. Ensure DB-Gate mode is set to Internal Server (2) as follows:
    a. Select **81. System Configuration** from the **DB-Gate** main menu. The **DB Directory Entry System Configuration** menu appears.

```
DBPARMR              DB Directory Entry System Configuration   17/01/21 16:29:47


 Select one of the following:


 DB-Gate
  1. General Definitions
  2. JVM Settings


  9. Log Retention





                                          General
                                            98. Driver Licenses
 Selection ===>  __                         99. Copyright Notice


 Release ID . . . . . . . . . . . . . . 02.60 19-05-20    788C500  41A EP10   2
 Authorization code . . . . . . . . . . XXXXXXXXXX  123           2    RLDEV



 F3=Exit    F22=Enter Authorization Code                    F12=Cancel
```

b. Select **1. General Definitions** from the **DB Directory Entry System Configuration** menu. The **General Definitions** screen appears.

```
                           General Definitions              17/01/21 18:33:48

 Type options, press Enter.

 Run mode  . . . . . . . . . . . . . .  2      1=Inline (no pre-activation)
                                               2=Internal server
                                               3=External server


 Log level (errors are always logged).  2      1=No Log
                                               2=Connects only
                                               4=All (only first FETCH logged)










 F3=Exit    F12=Cancel
```

c. Set the **Run mode** to **2** (if set to another mode) and press **Enter** continuously (usually 2 or 3 times) to return to the **DB-Gate** main menu.

2. Activate the server as follows:

a. Select **2. Activation** from the **DB-Gate** main menu. The **Activation - Server Mode** menu appears.

```
DBSETMN                     Activation - Server Mode                  DB-Gate
                                                              System:  RLDEV
DB-Gate operates in Inline or Server mode. Server mode requires activation.

Internal Server Mode                    External Server Mode
 1. Activate Server                     Activation / De-activation is performed
 2. De-activate Server                  on the external server.
 5. Work with Active Jobs               See manual for details.

11. Activate Server at IPL
12. Do Not Activate Server at IPL


Monitor Internal/External Server        Special
31. Work with Active Sessions           71. Run DB-Gate Performance Test
                                        79. Recreate Data Queues



Selection or command
===>  _____
      _____

 F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
 F13=Information Assistant  F16=System main menu

```

b. Select **1. Activate Server** from the **Activation - Server Mode** menu. DB-Gate begins to operate in Internal Server Mode. A message appears at the bottom of the screen indicating this.

c. Select **5. Work with Active Jobs** from the **Activation - Server Mode** menu to verify that DB-Gate is working. The **Work with Subsystem Jobs** screen appears and displays active jobs within the **ZDBGATE** Subsystem Jobs and their status.

```
                    Work with Subsystem Jobs                 RLDEV
                                                    24/01/21  14:42:36 UTC
Subsystem . . . . . . . . . . :   ZDBGATE


Type options, press Enter.
  2=Change   3=Hold   4=End   5=Work with   6=Release   7=Display message
  8=Work with spooled files   13=Disconnect



Opt  Job         User        Type      -----Status-----  Function
__   DBMONITOR   SECURITYBP  AUTO      ACTIVE            DLY-120
__   DP24144053  SECURITYBP  BATCH     ACTIVE            PGM-jvmStartPa




                                                                  Bottom
Parameters or command
===> _____
F3=Exit      F4=Prompt    F5=Refresh   F9=Retrieve   F11=Display schedule data
F12=Cancel   F17=Top      F18=Bottom
```

Automatic Activation upon Startup

Internal Server Mode can be set to automatically activate upon startup of
the IBM System Initial Program Load (IPL) from the Activation screen.

- To **enable** automatic activation, select **11. Activate Server** at
  IPL.
- To **disable** automatic activation, select **12. Do Not Activate
  Server** at IPL.
- You can **verify** automatic activation status by typing *DSPJOBLOG* at the
  command prompt.

Mode 3 - External Server

DB-Gate runs as a server process on a different computer. That computer and the DB-Gate service running on it must be activated before any SQL processing is initiated.

The computer running this server mode can run on Windows, Unix, Linux, or any other operating system that supports Java. This mode has no initial extra processing and requires virtually no extra memory resources from the IBM i. Memory resources and processing power that would be used by the Java processing are consumed instead on the external computer running the DB-Gate server.

It is the user's responsibility to ensure activation of the computer and server running the external DB-Gate.

1. Install the DB-Gate server as follows:
    a. Close all applications.
    b. Run the setup file **`DB-Gate_setup.exe`** or the corresponding file for the server's operating system. The installation wizard opens.

2. Proceed through the Wizard choosing the destination path, name and shortcut settings and click **Install** on the **Ready to Install** screen. .
3. Upon completion select **`Launch DB-Gate Server`** and click Finish.

The **Connect to System** dialog appears.

Running the DB-Gate Server

The DB-Gate server is started either by:

- Selecting Launch DB-Gate server at the end of the installation process
- Starting the DB-Gate server from the Windows Start menu or the icon on the desktop

To run the server:

1. Right-click on the icon in the System tray. The DB-Gate menu opens.

2. Click Start DB-GateServer. The ConnectTo System dialog appears.
3. Connect to the system as follows:
    a. Type the address (IP or network path) or host name for the DB-Gate server.
    b. Type the User and Password to access that host.
    c. Click **OK**.

4. Log in to the IBM i.
5. Start SQL by typing *STRSQL*.
6. Connect to the SQL database instance.
7. You can now work with DB-Gate.

DB-Gate Server Logs

NOTE: Only use this procedure under the supervision of Raz-Lee support personnel.

To view DB-Gate Server logs:

1. Right-click on the icon in the System tray. The DB-Gate menu opens.
2. Click **About**. The About DB-Gate Server dialog appears.

3. Click Open Log… The Open File dialog box appears.
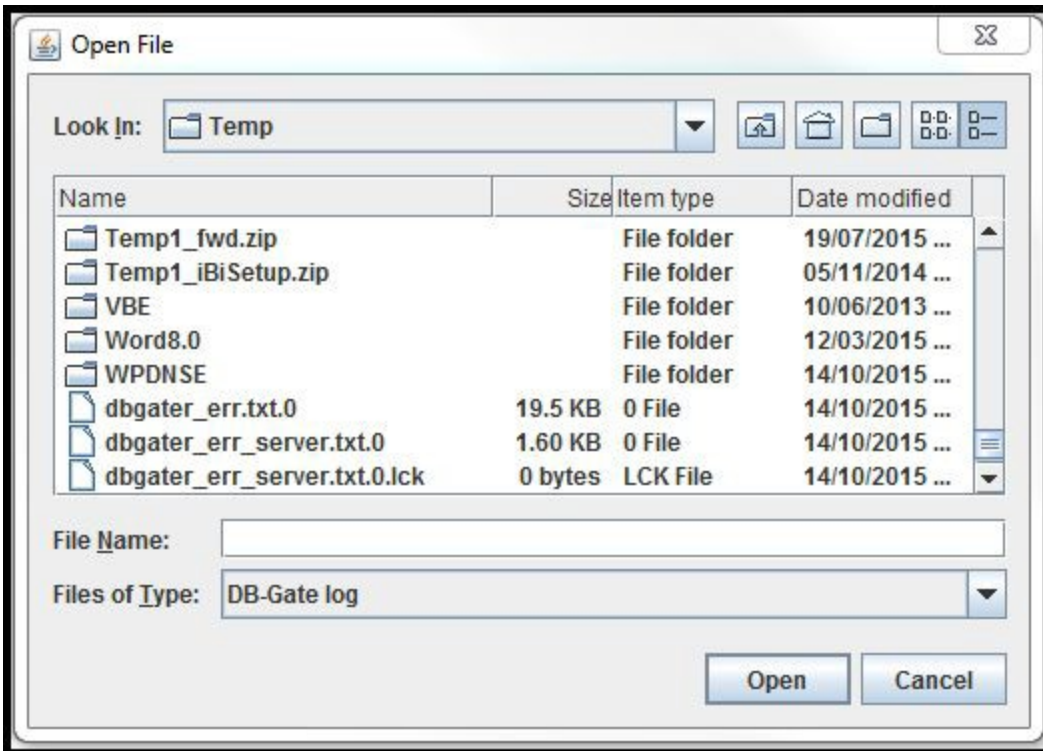
4. Select the log file you want to view and click **Open**. The file opens by default in the internal Java viewer but can be viewed in any external tool.

NOTE: All DB-Gate log file names begin with the string `dbgater` .

NOTE: If you have a problem opening the file, ensure that `txt.0 files` are associated with a text file viewer/editor.

Ending DB-Gate Server

To end the DB-Gate Server:

1. Right-click on the icon in the **System** tray. The **DB-Gate** menu opens.
2. Click About. The `Confirm Exit` dialog appears.

3. Click **OK**. The DB-Gate Server stops.

Changing the DB-Gate Mode of Operation

The mode of operation can only be changed when no active SQL processes are running in DB-Gate. When possible, change the mode of operation in conjunction with IPL.

To **change the Run mode**:

1. Notify all relevant users that you are about to stop and change the current Run mode.
2. Make sure all SQL jobs running through DB-Gate are signed off.
3. If DB-Gate is currently running in Server mode 2 or 3, stop the server.
4. Go to the **General Definitions** screen (*STRDB* `> 81 > 1`), as shown in "Mode 2 - Internal Server" on page 21 and set the new `Run Mode`.
5. Start DB-Gate:
    - For **Inline Mode (1)** no further action is necessary.
    - For I**nternal Server Mode (2)**, activate the server as shown in "Mode 2 - Internal Server" on page 21.
    - For **External Server Mode (3)**, activate the server as shown in "Mode 3 - External Server" on page 25

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Recreating Data Queues

DB-Gate uses a data queue for communication when operating in Server Mode 2 or 3. You can recreate this data queue by deleting it and building a new one using option **79** in the **Activation** screen (*STRDB > 2*). This maintenance task is useful when the data queue becomes too large.

NOTE: Only perform his task while the server is down and there are no SQL jobs employing DB-Gate. Any DB-Gate-related jobs running when it is performed would crash.

```
DBSETMN                     Activation - Server Mode                  DB-Gate
                                                        System:  RLDEV
DB-Gate operates in Inline or Server mode. Server mode requires activation.

Internal Server Mode                 External Server Mode
 1. Activate Server                  Activation / De-activation is performed
 2. De-activate Server               on the external server.
 5. Work with Active Jobs            See manual for details.

11. Activate Server at IPL
12. Do Not Activate Server at IPL



Monitor Internal/External Server     Special
31. Work with Active Sessions        71. Run DB-Gate Performance Test
                                     79. Recreate Data Queues



Selection or command
===> _____
   _____
F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
F13=Information Assistant  F16=System main menu


```

Monitoring Active Sessions

The Monitor feature enables you to observe and control the sessions managed by the DB-Gate server, regardless of whether the server is running on the IBM i or externally. A session consists of one or more RDB entries that are registered with DB-Gate and are running in the same job and the same activation group.

With the monitor you can see the active sessions, and even end any of them without causing any issues to the server.

To **monitor active sessions**, select **31. Work with Active Sessions** in the **Activation - Server Mode** menu (*STRDB >* **2**). The **Work DB-Gate Active Sessions** screen appears.

```
                    Work DB-Gate Active Sessions

Type options, press Enter.                    Subset  . . .  _____
  1=Display  4=End session  5=DSPJOB Rqstr  6=DSPJOB Server  7=DSPJOB Processor

Opt Last activity      Active RDB        Format        -- Requester job --
 _   2021-02-24-11.21.36   Y   LO        ARPS0100  DEP1#00003 DB         409749
 _   2021-02-24-11.21.36   Y   LO        ARFC0100  DEP1#00002 DB         409748
 _   2021-02-24-11.21.36   Y   LO        ARXI0100  DEP1#00001 DB         409747
 _   2021-02-24-11.07.56   Y   MS        ARDI0100  QPADEV002D DB         404115












                                                               Bottom
 F3=Exit    F5=Refresh    F12=Cancel    F23=End non-active
```

The screen contains these options:

Last Activity

The time of the last request from DB-Gate

Active

Y= currently being processed by DB-Gate

If the Active field is empty, the job displayed is usually a 'leftover' job from a previous activation of the DB-Gate server. The main

-

reason for keeping these jobs in the list is the ability to send them a release command. This is effective if the job is stuck waiting for a reply from a remote DB server. Since the remote connection does not exists anymore, it might wait till ENDJOB is performed. Sending a release command is the clean way to clear things up.

RDB

The targeted RDB. Every session may have several RDB involved, each called in a different time frame.

If a session is in commitment control (Format = COMMIT)

Format

The dedicated internal format structure used to carry the request or reply

Requester job

Details of the job that initiated the RDB connection

To **send a release command that ends the session**, type **4** in the **Opt** field for that session and press **Enter**.

Use this option with extra caution, especially if the session is active. When an active session is sent a release command, any remote connection is broken and DB-Gate stops processing the requester job.

Each requester job (including the user's job and the job executing SQL statements) is served by the service job **QZRCSRVS**. This option terminates that job.

NOTE:

- When the release command is sent to an active session. the service job deletes the record.
- When the release command is sent to a non-active session, the monitor deletes the record.
- Non-active sessions are deleted upon screen refresh when the requester job ends.

To open the DSPJOB option for the **job requester**, type **5** in the **Opt** field for that session and press **Enter**.

To open the DSPJOB option for the **server**, type **6** in the **Opt** field for that session and press **Enter**.

To open the DSPJOB option for the **main QZRCSRVS job** that is created when
DB-Gate starts, type **7** in the **Opt** field for that session and press **Enter**.

To **end all non-active sessions**, press the **F23** key **(Shift + F11)**.

-

Performance Testing

You can run performance and load tests of the DB-Gate engine and server without the need for any coding. The test submits a number of jobs (according to the **Number of jobs to run** parameter). Each job connects to the given RDB entry and, if you use the default program provided, repeatedly performs the following for the number of repetitions set in the Iterations per job parameter:

- Creates a table on the given schema
- Fills the table with data
- Fetches from the table
- Drops the table

The number of rows to insert and then fetch is defined in the **Rows to process** parameter.

To run a performance test, select **71. Run DB-Gate Performance Test** in the Activation - Server Mode menu (*STRDB* > 2). The Test DB-Gate Performance screen appears.

```
                   Test DB-Gate Performance (TSTDBPFR)

 Type choices, press Enter.


  RDB name . . . . . . . . . . .    _____
  Existing RDB schema  . . . . .    _____     Name
  Jobs prefix Id. . . . . . . .     ____           Name
  Number of jobs to run  . . . .    10_____       Number
  Iterations per job . . . . . .    50_____       Number
  Rows to process  . . . . . . .    200_____       Number
  RDB user . . . . . . . . . . .    *AUTO_____     Character value, *AUTO
  RDB password . . . . . . . . .                   Character value, *AUTO
  Test pgm (see SMZB/DBSOURCE) . .  DBPFRR____     Name, DBPFRR, DBPFR400R
    Library  . . . . . . . . . .       SMZB____    Name, SMZB, *LIBL




         Bottom
  F3=Exit    F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
 F24=More keys

```

The screen contains these options:

RDB name

One of your Directory entries, as shown in Working with Directory Entries.

Existing RDB schema

The name of one of the schemas in the directory. This schema must already exist. The test does not create it.

To create it, either:

- Use the *STRJRNLIB* (Start Journal Library) command, or
- Use the '**CREATE SCHEMA**" SQL statement. For the library to persist, it must **COMMIT**.

Jobs prefix ID

A meaningful job prefix, such as **TST1**.

Number of jobs to run

The number of jobs that you want to run simultaneously. This should be a reasonable approximation of the number of jobs you expect to be sent to the server.

Iterations per job

The number of times that the job will be run.

Rows to process

The number of rows to be inserted and fetched for each iteration.

RDB user

The User ID of one of the Remote Users you have defined for this RDB, as shown in Injection of Remote User IDs. This can also be ***AUTO**, as shown there.

RDB password

The password of the Remote User, or ***AUTO**.

Test pgm

The name of the program that will test the performance of the DB engine. Raz-Lee provides you with a default program to perform the test.

Library

The library where the test program is stored. The default test program is in library **SMZB**.

Enter the required parameters and press Enter. The performance test runs.

Remote Database Directory Entries (RDBDIRE)

The operating system keeps a directory of remote databases known to it. When definitions are activated, they create Remote DB Directory Entries (RDBDIRE).

To **work with directory entries**, `select 1. Work with Directory Entries` from the **DB-Gate** main menu. The **Work with Directory Entries** screen appears:

```
                   Work with DB Directory Entries      Allowed: No limit


Type options, press Enter.                  Subset  . . .    _____
  1=Select   3=Copy   4=Remove   7=Activate   8=Deactivate   9=Verify


Opt  Status    Directory entry
 _    ---       ALEX       TEST ALEX
 _    ---       A150
 _    ---       A520
 _    ---       BIG        IBM Big Data
 _    ---       DB2
 _    ---       DDD
 _    ---       FB         Firebird sample database
 _    ---       H2
 _    ---       JDEDEVTNS
 _   Active     LO
 _    ---       LOCALDB    Connection to local DB
 _    ---       LOPC
 _    ---       LOPC2
 _    ---       LO2
                                                          More...
 F3=Exit    F5=Refresh    F6=Add new    F8=Print       F12=Cancel
```

The body of the screen shows the `Directory Entry` name for each entry, along with an optional text description. If the entry is active, the `Status` field for the entry is set to `Active`.

To **view a specific subset** of directories, type the first alphanumeric characters of the driver followed by an asterisk (*) in the `Subset` field and `press Enter`.

The entries are redisplayed with results that match your query.

```
                     Work with DB Directory Entries          Allowed: No limit

 Type options, press Enter.                  Subset  . . .     LO*_____
   1=Select    3=Copy    4=Remove    7=Activate    8=Deactivate   9=Verify


 Opt   Status    Directory entry
   _   Active    LO
   _   ---       LOCALDB    Connection to local DB
   _   ---       LOPC
   _   ---       LOPC2
   _   ---       LO2
   _   ---       LO4




                                                                  Bottom
   F3=Exit    F5=Refresh    F6=Add new    F8=Print        F12=Cancel


```

You can perform the following activities:

- [Modifying a Directory Entry](#)
- [Copying an Existing Directory Entry](#)
- [Creating a New Directory Entry](#)
- [Removing a Directory Entry](#)
- [Activating a Directory Entry](#)
- [Deactivating a Directory Entry](#)
- [Verifying a Directory Connection](#)

Modifying a Directory Entry

You can update all of the information in directory entries except for the
`Directory entry` name.

To **modify** the details of a Directory Entry, type **1** in the **Opt** column for the
entry on the **Work with DB Directory Entries** screen (*STRDB >* **1**) and
press **Enter**. The **`Modify Directory Entry`** screen appears:

```
                    Modify Directory Entry - Part A

Directory entry . . . . . .   FB           Active: N      (Driver: FIREBIRD  )
Description . . . . . . . .   Firebird sample database
Log . . . . . . . . . . . .  0                   0=Dft, 1=None, 2=Basic, 4=All
Host or IP  . . . . .<host>   1.1.1.35
Port  . . . . . . . .<port>    3050
Catalog . . . . . <catalog>
Schema  . . . . . .<schema>
Database  . . . . . . .<db>
file  . . . . . . . .<adl1>   EMPLOYEE



URL, file://, http://...  .  jdbc:firebirdsql://<host>:<port>/<adl1>
Auto replacments are:
  <host><port><catalog>
  <schema><db><adl1-4>


                                                                    More...
F3=Exit  F4=Prompt  F7=Driver page  F8=Replace driver            F12=Cancel
```

The screen consists of two pages. Press the **PgDn** key to use the second page.

```
                    Modify Directory Entry - Part B

Directory entry . . . . . .   FB                      (Driver: FIREBIRD  )
Description . . . . . . . .   Firebird sample database


Language support  . . . . .  *AUTO           *AUTO, *NONE, 4-11 for Bidi
Keep alive interval . . . .      0           Minutes, 0=No
Keep alive statement  . . .  _____
                             _____
Fetch size  . . . . . . . .      0           Number of records, 0=Default
Force RDB User  . . . . . .  *NONE_____       Name, *NONE
        Password  . . . .                    Character (case sensitive)
Overrides CONNECT / Server Authentication Entry values.




                                                              Bottom
F3=Exit    F12=Cancel
```

The screens contain these fields. Some of the parameters may vary
depending on the selected driver.

Directory Entry

> Name of the directory (Read-only)

Active

> **Y** (yes) or **N** (no).

> NOTE: Active entries are registered within the system and are
> counted per the license.

Driver

> The driver you associated with the new entry

Description

> Description of the directory (optional)

Log

> **0**=Global default (this value is taken from System Configuration's
> General Definitions screen)

> **1**=No log (no data is stored)

> **2**=Connect (the log will store a record of each connection and
> disconnection from a database)

-

4=All (the log will store all commands sent; when a Fetch command is sent, it will only store the first in the series)

Host or IP

The address used to access the remote database

Port

The port number associated with the above address required for setting up a connection to the remote database

Catalog

If the database requires a Catalog for the connection, specify it here

Schema

The schema for the remote database

Database

Database name

Additional parameters:

Up to four different parameters, based on the selected driver.

URL

Provided by the DB driver provider. May include parameters:

<host><ip><user><pwd><catalog><port><schema><adl1-4>

If an empty Password is received when connecting, DB- Gate also ignores the User field and attempts to create a connection based on the JDBC URL, which points to am IBM i server in which the data imported from PC files will be stored (as shown in "Appendix A: JDBC Driver for Excel, CSV, etc." on page 85).

Language Support

Specifies whether the entry supports other languages. This is used, for example, for bi-directional data that mixes Hebrew or Arabic with English.

*AUTO = Default setting

*NONE

4-**11** = Based on an IBM setting for specific language support.

Keep alive interval

> Frequency with which the keep alive SQL statement is sent to DB to ensure that the connection is maintained.

Keep alive statement

> SQL statement sent to DB to ensure connection is maintained.

Fetch size

> The number of records to bring when writing SQL statements.

> The larger the number, the fewer accesses to the disk but also longer waiting time.

F8 Replace Driver

> Enables users to replace the driver configuration for this RDB entry

Copying an Existing Directory Entry

You can add a new Directory Entry by copying one that already exists. Copying a directory entry is also the only way you can change the name of an existing directory entry.

To **copy** an existing directory entry:

1. Type **3** in the **Opt** column for the entry on the **Work with DB Directory Entries** screen (*STRDB > 1*) and press **Enter**. The **Copy DB Directory Entry** screen appears, with the selected directory entry appearing in both the **Directory Entry** and **New Directory Entry** fields:

```
                        Copy DB Directory Entry

   Type choices, press Enter.

   From:
     Directory Entry  . . . . . FB

     Description  . . . . . . . Firebird sample database


   To:
     New Directory Entry  . . . FB_____





     F3=Exit    F4=Prompt       F12=Cancel

```

2. Modify the **New Directory Entry** description and press **Enter** twice.

All the existing directory entry details are automatically added. The **Work with Directory Entries** screen reappears with the newly created directory entry in deactivated status.

Creating a New Directory Entry

You can add a new Directory Entry either by copying one that already exists or by entering all the details on your own.

To **create a new directory entry**:

1. Select **F6 - Add New** on the **Work with DB Directory Entries** screen (*STRDB* **> 1**) to open the **Add New Directory Entry** screen.
2. Add a Directory Entry and Driver. To add the **Directory Entry**, do one of the following:
   - Type the new **Directory Entry** alias name.
   - Select **F4 - Prompt** (while in the **Directory Entry** field) to display the existing **Directory Entry** list. Select the **Directory Entry** by typing **1** in the **Opt** field for the entry. Press **Enter**. The selected Directory Entry is added to the new **Directory Entry** field.

```
                       Add New Directory Entry


Dir ...........................................................
Dri :                       Select Directory Entry              :
    :                                                           :
    :  Type options, press Enter.     Position to . . _____ :
    :    1=Select                     Subset  . . . . _____ :
    :                                                           :
    :  Opt Directory entry                                      :
    :   _  ALEX        TEST ALEX                                :
    :   _  A150                                                 :
    :   _  A520                                                 :
    :   _  BIG         IBM Big Data                             :
    :   _  DB2                                                  :
    :   _  DDD                                                  :
    :   _  FB          Firebird sample database                :
    :   _  H2                                                   :
    :   _  JDEDEVTNS                                            :
    :                                              More... :
    :  F3=Exit                        F12=Cancel               :
    :                                                           :
F3= :...........................................................:
```

3. To add a **driver**, do one of the following:
   - Type the new **Driver** name
   - Press the **F4 - Prompt** key when in the Driver field to display a list of the existing database drivers. Select the Driver by typing **1** in the **Opt** field next to it. Press **Enter**. The selected Directory Entry is added to the new **Directory Entry** field.

```
                          Add New Directory Entry

Dir .................................................................
Dri :                           Select DB Driver                      :
    :                                                                 :
    :  Type options, press Enter.     Position to . . . _____    :
    :    1=Select                     Subset  . . . . . _____ :
    :                                                                 :
    :  Opt DB Driver                                                  :
    :  _  AS400DB2   DB2 on OS/400 platform                           :
    :  _  BIG_SQL    Big SQL                                          :
    :  _  CSV        CSV (Comma Separated Values)                     :
    :  _  DB2        DB2 for Windows/Linux                            :
    :  _  DB2JDBC4   DB2 for Windows/Linux                            :
    :  _  DERBY      JavaDB/Derby                                     :
    :  _  DERBYMY    JavaDB/Derby                                     :
    :  _  EXCEL      Microsoft Excel                                  :
    :  _  FEDERATED  Federated database                               :
    :                                                       More... : 
    :  F3=Exit                           F12=Cancel                   :
    :                                                                 :
F3= :.................................................................:
```

4. Click **Enter** to move on to the empty Add New Directory Entry Details screen.
   This screen is the same as the Modify Directory Entry screen.

NOTE: Information that is already saved in the driver entry is automatically added.

Removing a Directory Entry

To **remove a directory entry**:

1. In the **Work with DB Directory Entries** screen (*STRDB* **> 1**), type **4** in the **Opt** field for the directory to be removed and press **Enter**. The **Delete Directory Entry - Part A** screen appears with the Directory Entry details.

```
                  Delete Directory Entry - Part A


Directory entry . . . . . .    FB             Active: N      (Driver: FIREBIRD   )
Description . . . . . . . .    Firebird sample database
Log . . . . . . . . . . . .    0                      0=Dft, 1=None, 2=Basic, 4=All
Host or IP . . . . .<host>     193.158.21.35
Port  . . . . . . . .<port>     3050
Catalog . . . . . <catalog>
Schema  . . . . . .<schema>
Database  . . . . . . .<db>
file  . . . . . . . .<adl1>    EMPLOYEE




URL, file://, http://... .    jdbc:firebirdsql://<host>:<port>/<adl1>
Auto replacments are:
  <host><port><catalog>
  <schema><db><adl1-4>



                                                                  More...
F3=Exit                                               F12=Cancel


Press Enter to confirm DELETE.
```

2. Press **Enter**, and then again **Enter** when the **Delete Directory Entry - Part B** screen appears to confirm. The **Work with DB Directory Entries** screen reappears with the Directory Entry removed.

Activating a Directory Entry

To **activate a directory entry**, in the **Work with DB Directory Entries** screen (*STRDB > 1*), type **7** in the `Opt` field for the directory entry to be activated and press **Enter**. The directory entry is activated.

Deactivating a Directory Entry

To **deactivate a directory entry**, in the **Work with DB Directory Entries** screen (*STRDB > 1*), type **8** in the `Opt` field for the directory entry to be deactivated and press **Enter**. The directory entry is deactivated.

Verifying a Directory Connection

To **verify a directory connection**:

1. In the **Work with DB Directory Entries** screen (*STRDB* **> 1**), type **9** in the **Opt** field for the directory entry to be verified and pressing **Enter**. The **Verify DB-Gate RDB** screen appears.

```
                          Verify DB-Gate RDB (VFYRDB)

 Type choices, press Enter.


 RDB name . . . . . . . . . . . .   _____
 RDB user . . . . . . . . . . . .   *AUTO_____   Character value, *AUTO
 RDB password . . . . . . . . . .                  Character value

















                                                                  Bottom
 F3=Exit    F4=Prompt    F5=Refresh    F12=Cancel    F13=How to use this display
 F24=More keys

```

2. Type the **RDB Name** and **RDB Password** used for the selected RDB, where relevant.

   NOTE: If the RDB does not supply the username and password directly and does not require credentials, use the default value ***AUTO**. Indirect credentials can be sent to **ARDPGM** via the use of a server authentication entry or JDBC URL.

3. Press **Enter**. A message is displayed with the status of the connection.

Database Drivers

A database driver enables you to access a remote database, first by recognizing the database and then by establishing a connection with it.

DB-Gate comes with pre-installed DB drivers. The default path for drivers is **/iSecurity/DB-Gate/Drivers** on the IBM i's IFS.

To **list** the DB drivers that have been established on your system, select **11. Work with DB Drivers** from the **DB-Gate** main menu. The **Work with DB Drivers** screen appears:

```
                          Work with DB Drivers
                                     Subset by driver  . . _____
Type options, press Enter.                    by text  . . . . _____
  1=Select    3=Copy    4=Delete    8=Driver page


Opt Driver   Available
 _  AS400DB2    Yes  DB2 on OS/400 platform
 _  BIG_SQL     Yes  Big SQL
 _  CACHE        -   Cache
 _  CSV         Yes  CSV (Comma Separated Values)
 _  DAFFODILLO   -   DaffodilDB Local
 _  DAFFODILSR   -   DaffodilDB Server
 _  DB2         Yes  DB2 for Windows/Linux
 _  DB2JDBC4    Yes  DB2 for Windows/Linux
 _  DERBY       Yes  JavaDB/Derby
 _  DERBYMY     Yes  JavaDB/Derby
 _  EXCEL       Yes  Microsoft Excel
 _  FEDERATED   Yes  Federated database
 _  FIREBIRD    Yes  Firebird
 _  FRONTBASE   Yes  FrontBase
                                                          More...
 F3=Exit    F6=Add new    F8=Print    F12=Cancel
```

For each driver, the body of the screen shows the driver's name, whether is it available, and a free-form description. A driver is marked as available if the path to the driver file has been set on its **Modify DB Driver** screen, as shown in "Modifying a DB Driver" on page 48.

To **view a specific subset of drivers**, do one of the following:

1. In the **Subset by driver** field, at the top right of the screen, enter the first alphanumeric characters of the Driver field and press **Enter**. The driver list is redisplayed with results that match your query.

2. In the **`Subset by text`** field, enter any alphanumeric characters you want to match in either the Driver or Description fields and press **Enter**. The driver list is redisplayed with results that match your query.

If the URL for the driver manufacturer's web page has been saved within the driver's details, you can open the page in your browser and read detailed information on the database.

To **view the manufacturer's page** for the driver, type **8** in the **`Opt`** field for the driver and press **Enter**. The web page appears in your local computer's default browser.

Modifying a DB Driver

To **modify a DB driver**, type **1** in the `Opt` field in the **Work with DB Drivers** screen (*STRDB > 11*) for the DB driver you want to update then press **Enter**. The **Modify DB Driver** screen appears:

```
                          Modify DB Driver

Driver . . . . .   FIREBIRD   Firebird
Driver file  . .   firebird/jaybird-full-2.1.6.jar

Class  . . . . .   org.firebirdsql.jdbc.FBDriver

Driver page  . .   http://www.firebirdsql.org

Default port . .   _3050
Additional parms   Label                Possible values
Parm 1 . .<adl1>   file_____    _____
Parm 2 . .<adl2>   _____    _____
Parm 3 . .<adl3>   _____    _____
Parm 4 . .<adl4>   _____    _____
URL dft schema .   jdbc:firebirdsql://<host>:<port>/<adl1>
Std replacement:
<host><db>
<catalog><port>
<schema><adl1-4>


F3=Exit             F7=Driver page   F9=Restore Default      F12=Cancel
```

The screen contains these fields:

Driver

> The driver name and a free-form text description, as they appear on the **Work with DB Drivers** screen. The driver name is read-only.

Driver file

> The path to the jar file on the IFS that contains the JDBC driver for this database. This can be either an absolute path, beginning with the "/" character, or relative to the default path, **/iSecurity/DB-Gate/Drivers**

Class

> The JDBC driver class name.

Driver page

> The URL of the web page for driver information on the developer's web site.

-

To **view the web page** in your local computer's default browser, press the **F7** key.

Default port

The default port to use in setting up a connection.

Additional parms

Up to four additional parameters that can be specified in connecting to the database, as in the **URL dft schema** field. For each, you can specify a **Label** and a free-form description of **Possible values**. The four parameters are referenced by the strings **<adl1>** through **<adl4>**.

URL dft schema

The default schema used in connecting to the database. The schema can automatically substitute the values of the variables **<host>**, **<db>**, **<catalog>**, **<port>**, **<schema>**, and the four parameters specified in the **Additional parms** field.

In the example value, **jdbc:firebirdsql://<host>:<port>/<adl1>**, the host name, port, and "file" value specified in the first additional parameter would be included in the schema when it is used.

To **save the values** that you have entered, press **Enter**. A confirmation message appears asking if you want to modify any of the entries. Press **Enter** again to save the changes to the driver.

To **revert to the original definition** of the driver as it was supplied, press the **F8** key.

Copying a DB Driver

To **copy a DB driver**, type **3** in the `Opt` field in the **Work with DB Drivers** screen (*STRDB > 11*) for the DB driver you want to copy then press **Enter**. The **Copy DB Driver** screen appears:

```
                          Copy DB Driver

 Type choices, press Enter.

 From:
   Driver . . . . . . . . . FIREBIRD

   Description  . . . . . . . Firebird


 To:
   New Driver . . . . . . . . FIREBIRD


 F3=Exit    F4=Prompt         F12=Cancel
```

Type the name of the new driver in the `New Driver` field and press **Enter**. A confirmation message appears asking if you want to modify any of the entries. Press **Enter** again to save the new driver.

Adding a New DB Driver

To **add a DB driver**, press the **F6** key from the **Work with DB Drivers** screen (*STRDB >* **11**). The **Add DB Driver** screen appears:

```
                        Add New DB Driver

Driver . . . . .    _____  _____
Driver file  . .    _____
                    _____
Class  . . . . .    _____
                    _____
Driver page  . .    _____
                    _____
Default port . .    ____
Additional parms    Label                Possible values
Parm 1 . .<adl1>    _____    _____
Parm 2 . .<adl2>    _____    _____
Parm 3 . .<adl3>    _____    _____
Parm 4 . .<adl4>    _____    _____
URL dft schema .    _____
Std replacement:    _____
<host><db>          _____
<catalog><port>     _____
<schema><adl1-4>    _____


F3=Exit   F4=Prompt   F7=Driver page   F9=Restore Default        F12=Cancel
```

The screen contains these fields:

Driver

> The driver name and a free-form text description, as they appear on the **Work with DB Drivers** screen.

Driver file

> The path to the jar file on the IFS that contains the JDBC driver for this database. This can be either an absolute path, beginning with the "/" character, or relative to the default path, **/iSecurity/DB-Gate/Drivers**

Class

> The JDBC driver class name.

Driver page

> The URL of the web page for driver information on the developer's web site.

`Default port`

> The default port to use in setting up a connection.

`Additional parms`

> Up to four additional parameters that can be specified in connecting to the database, as in the **URL dft schema** field. For each, you can specify a **Label** and a free-form description of **Possible values**. The four parameters are referenced by the strings **<adl1>** through **<adl4>**.

`URL dft schema`

> The default schema used in connecting to the database. The schema can automatically substitute the values of the variables **<host>**, **<db>**, **<catalog>**, **<port>**, **<schema>**, and the four parameters specified in the **Additional parms** field.
>
> In the example value, **jdbc:firebirdsql://<host>:<port>/<adl1>**, the host name, port, and "file" value specified in the first additional parameter would be included in the schema when it is used.

After you complete the fields, press Enter. A confirmation message appears asking if you want to modify any of the entries. Press Enter again to save the new DB driver.

Deleting a DB Driver

To **delete a DB driver** from the list in the **Work with DB Drivers** screen (*STRDB> 11*), type **4** in the **Opt** field for the DB driver you want to delete then press Enter. A message appears confirming that you want to delete the driver listing. Press Enter again to delete the driver.

Drivers and Licenses Folders

To **view and update a connection** to a remote database: Select **15 – Drivers & Licenses Folders** from the **DB-Gate** main screen (*STRDB*). The standard **Work with Object Links** screen appears, showing the contents of the default directory on the IFS, **/iSecurity/DB-Gate/Drivers**:

-

```
                      Work with Object Links

 Directory  . . . . :   /iSecurity/DB-Gate/Drivers

 Type options, press Enter.
   2=Edit   3=Copy   4=Remove   5=Display   7=Rename   8=Display attributes
   11=Change current directory ...

 Opt    Object link          Type              Attribute    Text
 __      db2                  DIR
 __      derby                DIR
 __      firebird             DIR
 __      hsqldb               DIR
 __      h2sql                DIR
 __      jtds                 DIR
 __      mysql                DIR
 __      oracle               DIR
 __      pc                   DIR
                                                             More...
 Parameters or command
 ===> _____
 F3=Exit   F4=Prompt   F5=Refresh   F9=Retrieve   F12=Cancel   F17=Position to
 F22=Display entire field          F23=More options
```

The drivers belong to the official owners. They are supplied with the product for your convenience. The folders contain the driver's **jar** files as well as the licenses under which the drivers were supplied. These drivers have been downloaded and supplied by Raz-Lee with the understanding that they may be supplied in this way.

You can add and use other JDBC drivers, beyond those that Raz-Lee supplies. This might include updated drivers or drivers meant for other databases.

Viewing the DB-Gate Log

The DB-Gate Display Log shows the contents of the history log, which saves various data gathered from the different directory entries as you have defined them, in a standard format and using basic filter criteria. The "Backward Glance" feature lets you look at the last several minutes of activity without the need to define specific time or date parameters.

To **filter and view log entries**, select **41. Display Log** from the **DB-Gate** main menu. The **Display DB-Gate LogEntries** screen appears:

```
                  Display DB-Gate Log Entries (DSPDBLOG)

 Type choices, press Enter.

 Display last minutes . . . . . .   *BYTIME      Number, *BYTIME
 Starting date and time:
   Starting date  . . . . . . . .   *CURRENT     Date, *CURRENT, *START...
   Starting time  . . . . . . . .   000000       Time
 Ending date and time:
   Ending date  . . . . . . . . .   *CURRENT     Date, *CURRENT, *YESTERDAY...
   Ending time  . . . . . . . . .   235959       Time
 User profile . . . . . . . . . .   *ALL         Name, generic*, *ALL
 Remote user profile  . . . . . .   *ALL         Name, generic*, *ALL
 Relational DB Entry  . . . . . .   *ALL         Name, generic*, *ALL
 SQL Operation  . . . . . . . . .   *ALL         Name, *ALL, ALTER, CLOSE...
 SQL State  . . . . . . . . . . .   *ALL         Character, generic*, *ALL
 SQL Error code . . . . . . . . .   *ALL         Number, *ERR, *NOERR, *ALL
 SQL Statement contains . . . . .   *ALL


                                                                  More...
 F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
 F24=More keys
```

```
                  Display DB-Gate Log Entries (DSPDBLOG)

 Type choices, press Enter.

 SQL Message contains . . . . . .    *ALL

 _____
 From job name . . . . . . . . .    *ALL          Name, generic*, *ALL
   User . . . . . . . . . . . .      *ALL          Name, generic*, *ALL
   Number . . . . . . . . . . .      *ALL          000000-999999, *ALL
 From program name . . . . . . .    *ALL          Name, generic*, *ALL
   Library . . . . . . . . . .       *ALL          Name, generic*, *ALL
 Number of records to process . .   *NOMAX         Number, *NOMAX
 Output . . . . . . . . . . . .     *             *, *PRINT, *OUTFILE




                                                                  Bottom
 F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
 F24=More keys
```

The screen contains these fields:

Display last minutes

> To view activity in the immediate past, enter a number
> corresponding to the number of minutes that you would like to
> check. For example, to check activity in the past 120 minutes,
> enter 120 in this field. This value would override starting and
> ending date and time fields.

Starting date and time

Starting date

> The day or date on which the included data begins.
>
> Allowed values include:

- ***CURRENT**: The current date
- ***YESTERDAY**: Yesterday's date
- ***WEEKSTR**: The first day of the current week. By default, this is Sunday.
- ***PRVWEEKS**: The first day of the previous week
- ***MONTHSTR**: The first day of the current month
- ***PRVMONTHS**: The first day of the previous month
- ***YEARSTR**: The first day of the current year
- ***PRVYEARS**: The first day of the previous year

- ***MON**: Monday
- ***TUE**: Tuesday
- ***WED**: Wednesday
- ***THU**: Thursday
- ***FRI**: Friday
- ***SAT**: Saturday
- ***SUN**: Sunday

Starting time

The time on the Starting date at which the included data begins, in **HHMMSS** format.

Ending date and time

Ending date

The day or date on which the included data ends.

Allowed values are the same as for **Starting date**.

Ending time

The time on the **Ending date** at which the included data ends, in **HHMMSS** format.

User profile

All (default) or a specific user profile on the IBM i

Remote user profile

All (default) or a specific user profile on the remote database

Relational DB Entry

All (default) or a specific remote DB entry

SQL Operation

All (default) or a specific SQL operation that is used at the beginning of an SQL statement (such as CONNECT, CREATE, or DROP).

SQL State

All (default) or a specific state

SQL Error Code

All (default), a specific error code number or name that describes the problem, or entries without any error code

SQL Statement contains

All (default) or a specific SQL statement

SQL Message contains

All (default) or a specific error message that is associated with an error code

From job name

The job that made the change, or ***ALL** for all jobs.

User

The user who ran the job.

Number

The job number, from 000000 to 999999.

Number of records to process

The maximum number of records to process, or ***NOMAX** for all records.

Output

The destination for the report. Valid values include ***** (to send output to the screen). ***PDF**, ***HTML**, ***CSV**, ***OUTFILE**, and ***PRINT1** though ***PRINT9**.

Define your filter parameters and press **Enter**. The **DisplayDBGateLog** screen appears:

```
                          Display DB Gate Log              01/01/20 - 26/01/21
Log information is available from 01/01/20
DB->ORA: CONNECT
DB->ORA: DISCONNECT
DB->LOPC: SQL error -99999  detected for
DB->LOPC: SQL error -99999  detected for
DB->LOPC: CONNECT
DB->MS: CONNECT
DB->MS: SQL error -1 com/microsoft/sqlserver/jdbc/SQLServerDriver detected for
DB->MS: SQL error -99999  detected for
DB->MS: SQL error -1 java.lang.NullPointerException detected for
DB->MS: SQL error -1 com/microsoft/sqlserver/jdbc/SQLServerDriver detected for
DB->MS: SQL error -99999  detected for
DB->LO: CONNECT
DB->LO: SQL error -1 java.lang.NullPointerException detected for SET XXX
->LO: DISCONNECT
DB->LO: CONNECT
DB->LO: SQL error -1 java.lang.NullPointerException detected for SET XXX
DB->LO: SQL error -1 java.lang.NullPointerException detected for SET XXX
DB->LO: DISCONNECT
                                                                   More...
F3=Exit                 F10=Entire-Entry              F17=Top  F18=Bottom
```

To **view further details** for the output, select **F10. Entire Entry**. The **Additional Entry Information** screen appears.

```
                     Additional Entry Information      System: RLDEV
Remote DB Entry  . . . : MS             From User Profile  . . : DB
Date sent  . . . . . . : 21/01/25       Time sent  . . . . . . : 14:45:22
From Job . . . . . . . : QPADEV002G/DB/092834        SQL Opr.: CONNECT
Remote User  . . . . . : ILAN                        SQL Err.:          0

 SQL State  . . . . . . : 00000
 SQL Error Message  . . :
SQL Statement:
CONNECT






















 F3=Exit                            F12=Cancel
```

Server Authentication with Remote User IDs

DB-Gate can employ Server Authentication Entries to authenticate connections to servers automatically, without entering the logon values each time.

To **set up Server Authentication Entries**, select **21. Work with Server Authentication** from the **DB-Gate** main menu (*STRDB*). The **Work with Server Authentication Entries** screen appears:

```
                     Work with Server Authentication Entries
                                              Subset by user . . . .   _____
 Type options, press Enter.                             server . . .   _____
   1=Select    4=Remove                                 remote user.   _____

 Opt   User       Server                     Remote user            Password
  _    AMIR       LO                          AMIR                      *YES
  _    AMIR       MS                          SASHA                     *YES
  _    AMIR       MY                          SASHA                     *YES
  _    AMIR       ORA                         HR                        *YES
  _    AMIR       TTT                         AMIR                      *YES
  _    AU         RAZLEE2                     SECURITY2P
  _    AU         RSASECURID                  AU                        *YES
  _    AU         TTT                         QSECOFR
  _    AV         RDBRL2                      SECURITY2P                *YES
  _    AV         RSASECURID                  AV
  _    CT         RSASECURID                  CT                        *YES
  _    DB         ARD400                      sale                      *YES
  _    DB         ARD400LO                    db                        *YES
  _    DB         A150                        sale                      *YES
                                                                      More...
  F3=Exit     F6=Add New     F12=Cancel
```

Each line on the body of the screen shows a single entry: when a named **User** connects to a given **Server**, the connection uses the indicated **Remote user** name. If the **Password** field is set to ***YES**, the connection also uses a password set on the connection's detailed user authentication entry.

To **limit the display** to a subset of users, servers, or remote users, enter the first few characters of the value into the corresponding **Subset by** field at the top right of the screen, and press **Enter**.

To **add** a new server authentication entry, press the **F6** key. The **Add User Authentication Entry** screen appears, as shown in "Adding a New Server Authentication Entry" on the facing page.

To **modify** a server authentication entry, type **1** in the `Opt` field for the entry and press **Enter**. The **Modify User Authentication Entry** screen appears, as shown in "Modifying a Server Authentication Entry" on page 63.

To **remove** a server authentication entry, type **3** in the `Opt` field for the entry and press **Enter**. The **Remove User Authentication Entry** screen appears, showing the information for the entry again. Press **Enter** to confirm the removal or **F12** to cancel.

Adding a New Server Authentication Entry

To **add** a new server authentication entry, press the **F6** key from the **Work with Server Authentication Entries** screen (*STRDB* **> 21**). The **Add User Authentication Entry** screen appears:

```
                     Add User Authentication Entry

Type choices, press Enter.

User profile . . . . . . . . .  _____      Name
Server . . . . . . . . . . . .  _____
Remote user ID . . . . . . . .  _____
Password or *NONE  . . . . . .  _____




DB-Gate restricts Server to 18 characters. User and Password are restricted
to 10 characters.








F3=Exit                 F12=Cancel

```

The screen contains these fields:

User Profile

> The user's name on the IBM i.

Server

> The name of the server, as set in "Remote Database Directory Entries (RDBDIRE)" on page 35. The name must be in upper case and no more than 18 characters long.

Remote User ID

> The username to use on the remote system. It must be in upper case and no more ten characters long.

Password or *NONE

> The password to use on the remote system. It can be a mixed-case string, but must be no more than ten characters long. If there is no password, set this field to ***NONE**.

Press **Enter**. After a confirmation message appears, press **Enter** again to save your settings.

–

Modifying a Server Authentication Entry

To **modify** a server authentication entry, type **1** in the **Opt** field for the entry on the **Work with Server Authentication Entries** screen (*STRDB* **> 21**) and press **Enter**. The **Add User Authentication Entry** screen appears:

```
                       Modify User Authentication Entry

 Type choices, press Enter.

 User profile . . . . . . . . .   DB              Name
 Server . . . . . . . . . . . .   ARD400_____
 Remote user ID . . . . . . . .   sale_____
 Password or *NONE  . . . . . .   *YES_____




 DB-Gate restricts Server to 18 characters. User and Password are restricted
 to 10 characters.







 F3=Exit                 F12=Cancel

```

The screen contains these fields:

User Profile

> The user's name on the IBM i.

Server

> The name of the server, as set in "Remote Database Directory Entries (RDBDIRE)" on page 35. The name must be in upper case and no more than 18 characters long.

Remote User ID

> The username to use on the remote system. It must be in upper case and no more ten characters long.

Password or *NONE

> The password to use on the remote system. If there is a password, the field displays ***YES**. Replace that with the new password, if needed. It may be a mixed case string, but may be no more than

ten characters long. If there is no password, set this field to ***NONE**.

Press **Enter**. After a confirmation message appears, press **Enter** again to save your settings.

Working with SQL

Starting SQL

To **start working with SQL** and to begin writing SQL commands directly from
your IBM i, Select **51. Start SQL** from the **DB-Gate** main menu.
The **Enter SQL Statements** screen appears:

This is the main screen for interactive Structured Query Language (SQL), used
for running SQL statements. SQL messages also appear on this screen.

```
                        Enter SQL Statements

 Type SQL statement, press Enter.
      Current connection is to relational database S21A7E4V.
 ===> _____
      _____
      _____
      _____
      _____
      _____
      _____
      _____
      _____
      _____
      _____
      _____
      _____
      _____
      _____
      _____
      _____
                                                          Bottom
 F3=Exit    F4=Prompt    F6=Insert line    F9=Retrieve    F10=Copy line
 F12=Cancel              F13=Services      F24=More keys
```

Working with SQL Program Sources

To begin **working with SQL Program Sources**, Select **55. Work with SQL* program sources** from the **DB-Gate** main menu. The **Work with Members Using PDM** screen appears:

```
                  Work with Members Using PDM (WRKMBRPDM)

 Type choices, press Enter.

 File . . . . . . . . . . . . . .    *PRV          *PRV, name
   Library  . . . . . . . . . . .                  *PRV, name, *LIBL, *CURLIB
 Member . . . . . . . . . . . . .    *ALL          *ALL, name, *generic*...
 Member type  . . . . . . . . . > SQL*             *ALL, type, *generic*...




                                                                      Bottom
 F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
 F24=More keys
```

iSecurity provides you with SQL code examples in the **DBSOURCE** file in the **SMZB** library:

-

```
                   Work with Members Using PDM                 RLDEV

File  . . . . . .     DBSOURCE
  Library . . . .     SMZB              Position to  . . . . .  _____

Type options, press Enter.
 2=Edit        3=Copy  4=Delete 5=Display      6=Print     7=Rename
 8=Display description  9=Save  13=Change text  14=Compile  15=Create module...


Opt   Member      Type       Text
  __  COBOLSQL    SQLCBL     SQL COBOL sample program
  __  COBOLSQL1   SQLCBL     SQL COBOL sample program
  __  DBPFRR      SQLRPGLE   DB-Gate Performance test
  __  INSERT      SQLRPGLE   INSERT INTO ORACLE WITH BOUND VARIABLES
  __  PREPARE     SQLRPGLE   UPDATE WITH PREPARED STATEMENT
  __  REMOTECOPY  SQLRPGLE   COPY REMOTE DATA TO A LOCAL FILE
  __  SELECT      SQLRPGLE   SELECT EXAMPLE
  __  SELFILE     SQLRPGLE   INSERT INTO DB DATA READ BY NATIVE ACCESS
                                                                 More...
Parameters or command
===> _____
F3=Exit        F4=Prompt          F5=Refresh          F6=Create
F9=Retrieve    F10=Command entry  F23=More options    F24=More keys
This is a subsetted list.                                             +
```

Maintenance Menu

From the **Maintenance Menu**, you can set and display global definitions for DB-Gate. To display the **Maintenance Menu**, select **82. Maintenance Menu** from the **DB-Gate** main menu (*STRDB*). The **Maintenance Menu** appears:

```
DBMINTM                         Maintenance Menu                iSecurity/DB-Gate
                                                                System:  RLDEV
Select one of the following:                                    *Patent-Pending*


Definitions                           General
 5. Display DB-Gate Definitions       52. Check Locks




Operators                             Trace Definition Modifications
11. Work with Operators               71. Add Journal
                                      72. Remove Journal
                                      78. Real-Time Definition Change Alerts
                                      79. Display Journal

                                      Uninstall
                                      91. Uninstall


Selection or command
===> _____


F3=Exit    F4=Prompt    F9=Retrieve    F12=Cancel
F13=Information Assistant   F16=System main menu
```

Displaying DB-Gate Definitions

To **print or display definitions** for DB-Gate, select `5. Display DB-Gate Definitions` from the **Maintenance Menu** screen (*STRDB > 82*). The **Display DB-Gate Definitions** screen appears:

```
                    Display DB-Gate Definitions (DSPDBDFN)

Type choices, press Enter.

Report type  . . . . . . . . . . > *DBENTRY      *ALL, *DBENTRY, *DBDRVR
From item  . . . . . . . . . . .   *ALL          Character value, *ALL, *START
To item  . . . . . . . . . . . .   *SAME         Character value, *ONLY, *LAST
Format . . . . . . . . . . . . .   *DETAILS      *LIST, *DETAILS
Output . . . . . . . . . . . . .   *             *, *PRINT




















                                                                      Bottom
F3=Exit    F4=Prompt    F5=Refresh    F12=Cancel    F13=How to use this display
F24=More keys
```

The screen contains these fields:

Report Type

> The type of definitions included. Values include:
>
> - ***DBDRVR**: Definitions for database drivers
> - ***DBENTRY**: Definitions for directory entries
> - ***ALL**: Definitions for both database drivers and directory entries

From item

> The first item to be displayed. Valid values include character values identifying the item, and:
>
> - ***ALL**: All values
> - ***START**: From the beginning of all values

`To item`

The last item to be displayed. Valid values include character values identifying the items, and:

- **`*ALL`**: All values
- **`*ONLY`**: Include only the item in the From item field.

`Format`

The format of the report. Valid values include:

- **`*LIST`**
- **`*DETAILS`**

`Output`

The destination of the report. Valid values include:

- **`*`**: Screen
- **`*PRINT`**: Spool for printing

When you have entered the values, press **Enter**. A confirmation message appears. Press **Enter** again to save your settings.

Managing Operators' Authorities

The operators' authorities' management is maintained in one place for this product. It also offers the site a possibility of implementing a second password to protect use of the product.

There is one default group: ***AUD#SECAD**. It allows all users both *AUDIT and *SECADM special authorities. By default, this group has full access (Read and Write) to all the product's components.

You may add more operators, delete them, and give them authorities and passwords as required. You even have the option to make the new operators' definitions apply to all your systems; therefore, upon import, they will work on every system.

To **view and modify operator authorities**, select **11. Work with Operators** from the **Maintenance Menu** (*STRDB > 82*). The **Work with Operators** screen appears:

```
                         Work with Operators

 Type options, press Enter.
   1=Select    4=Delete
                                 Authority level: 1=*USE    9=*FULL
 Opt User            System    DB   Adm
   _  *AUD#SECAD      RLDEV      9    9
   _  *AUD#SECAD      S520       9    9
   _  A               S520
   _  AMIR            S520       9    9
   _  DB              S520       9    9
   _  NIV             S520       9    9
   _  TZION           S520       9    9




                                                            Bottom
 DB=DB-Gate        Adm=Administrator

 F3=Exit    F6=Add new    F8=Print   F11=*SECADM/*AUDIT authority   F12=Cancel

```

To **modify** an operator, enter **1** in the **Opt** field for the operator and press **Enter**. The **Modify Operator** screen appears.

To **add** an operator, press the **F6** key. The **Add Operator** screen, which has the same fields, appears.

```
                          Modify Operator

 Type choices, press Enter.


 Operator  . . . . . . . . .    DB
 System  . . . . . . . . . .    S520              *ALL, Name
 Password  . . . . . . . . .    *SAME             Name, *SAME, *BLANK


 Authorities by subject:
 DB-Gate . . . . . . . . . .    9                 1=*USE, 9=*FULL
 Product Administrator . . .    9                 1=*USE, 9=*FULL










 F3=Exit     F12=Cancel
```

The read-only **Operator** and **System** fields show the operator and system's names. If the settings are for all known systems and are to be imported automatically when the same operator is defined on a new system, the **System** field shows ***ALL**.

The **Password** field contains the user's password for iSecurity products, including DB-Gate. Possible values include:

- The password string itself.
- ***SAME**: The same as the user's system password.
- *BLANK: The password is empty.

The fields in the body of the screen show the user's authorization levels for each product.

The **DB-Gate** level is for users of DB-Gate. Possible values are:

- **1=*USE**: The user can use DB-Gate but cannot create or modify queries.
- **9=*FULL**: The user has full control over DB-Gate.

The **Product Administrator** is responsible for tasks such as backups and setting authorization codes. Possible values are:

- **1=*USE**: The user can use DB-Gatebut cannot create or modify queries.

- **9=*FULL**: The user has full control over DB-Gate.

NOTE: DB-Gate configures the IFS authorities upon installation in a way that is suitable for running in run mode 2 (as shown in "Mode 2 - Internal Server" on page 21). If you will be using DB-Gate in run mode 1 (as shown in "Mode 1 - Inline" on page 20), ensure that the SQL user is added to list of Operators.

Checking Locks

To **verify if objects are locked** in the system, select **52. Check Locks** from the **Maintenance Menu** (**STRDB > 82**). The **Check Locks** screen appears. Follow the instructions shown on that screen.

```
GSLCKMNU                        Check Locks                      iSecurity
                                                       System:   RLDEV
Select one of the following:

Check Locks
   1. Data Base Files

   -. Display Files
      End this session. From a new session, enter: CHKSECLCK TYPE(*DSPF)

   -. All File Types
      End this session. From a new session, enter: CHKSECLCK TYPE(*ALL)




Selection or command
===> _____

_____
F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
F13=Information Assistant  F16=System main menu
```

-

Journal Product Definitions

Add Journal

To **record changes** to physical files on the system in the data library, select **71. Add Journal** from the **Maintenance Menu** (*STRDB > 82*). The **Create Journal - Confirmation** window appears.

```
DBMINTM                        Maintenance Menu              iSecurity/DB-Gate
        ......................................................... RLDEV
Select :              Create Journal - Confirmation          : Pending*
       :                                                     :
Definit :    You are about to start journaling the product files.   :
 5. Dis :    The journal receivers will be created in library       :
        :    SMZBJRND . If this library does not exist, it will      :
        :    be automatically created.                       :
        :                                                     :
Operato :    If you wish to create the library in a specific ASP,   :
11. Wor :    you should press F3=Exit, create this library, and     :
        :    run again this option.                          :
        :                                                     : Alerts
        :    Run this program again after future release upgrades.   :
        :                                                     :
        :    Press Enter to start journaling, F3 to Exit.    :
        :                                                     :
        :    F3=Exit                                          :
Selecti :                                                     :
===> 71 :.........................................................:  _____

 F3=Exit    F4=Prompt    F9=Retrieve    F12=Cancel
 F13=Information Assistant  F16=System main menu
```

Press **Enter** to confirm. The process of journaling the product files begins. The journal receivers are created in library **SMZ8JRND**. If this library does not exist, it will be automatically created.

NOTE: To create the library in a different ASP, press **F3=Exit**, create the library, and run this option again.

NOTE: You must re-run this option after every release upgrade.

Remove Journal

To **stop recording changes** in the system physical files, select option **72.**
Remove Journal from the **Maintenance Menu** (*STRDB* **> 82**). The
End Journal - Confirmation window appears. Press **Enter** to confirm.

```
DBMINTM                        Maintenance Menu              iSecurity/DB-Gate
                                                            System:  RLDEV
Select  .......................................................... Pending*
       :                 End Journal - Confirmation            :
Definit :                                                      :
 5. Dis :   You are about to end journaling the product files. :
       :    The journaling will stop in library SMZBJRND       :
       :                                                       :
       :    Press Enter to end journaling.                     :
Operato :                                                      :
11. Wor :    F3=Exit                                           :
       :                                                       :
       :.......................................................:  Alerts
                                    79. Display Journal


                                    Uninstall
                                    91. Uninstall

Selection or command
===> 72


 F3=Exit    F4=Prompt   F9=Retrieve   F12=Cancel
 F13=Information Assistant  F16=System main menu

```

Display Journal

You can display journaled files in a readable form by installing the **iSecurity/AP-Journal** product. It does not require an additional authorization code.

To **view journaled files**, select option **79. Display Journal** from the Maintenance Menu (*STRDB > 82*). If you have installed AP-Journal, the **Display APP Current Journal (DSPAPCRJ)** window appears, showing the information in a readable form, as shown here. Otherwise, the standard IBM screen appears, showing the records in a less readable display.

```
                    Display APP Current Journal (DSPAPCRJ)

Type choices, press Enter.

Display last minutes . . . . . .    *BYTIME       Number, *BYTIME
Starting date and time:
  Starting date  . . . . . . . . > *PRVMONTHS     Date, *CURRENT, *YESTERDAY...
  Starting time  . . . . . . . .   000000         Time
Ending date and time:
  Ending date  . . . . . . . . .   *CURRENT       Date, *CURRENT, *YESTERDAY...
  Ending time  . . . . . . . . .   235959         Time
User profile . . . . . . . . . .   *ALL           Name, *ALL
Program name . . . . . . . . . .   *ALL           Name, *ALL
Job name . . . . . . . . . . . .   *ALL           Name, *ALL
  User . . . . . . . . . . . . .                  Name
  Number . . . . . . . . . . . .                  000000-999999
Number of records to process . .   *NOMAX         Number, *NOMAX
Output . . . . . . . . . . . . .   *              *, *PRINT, *PDF, *HTML..


                                                                       Bottom
F3=Exit    F4=Prompt    F5=Refresh    F10=Additional parameters    F12=Cancel
F13=How to use this display          F24=More keys
```

The screen contains these fields:

Display last minutes

> To view activity in the immediate past, enter a number corresponding to the number of minutes that you would like to check. For example, to check activity in the past 120 minutes, enter 120 in this field. This value would override starting and ending date and time fields.

Starting data and time

Starting date

> The day or date on which the included data begins.

Allowed values include:

- ***CURRENT**: The current date
- ***YESTERDAY**: Yesterday's date
- ***WEEKSTR**: The first day of the current week. By default, this is Sunday.
- ***PRVWEEKS**: The first day of the previous week
- ***MONTHSTR**: The first day of the current month
- ***PRVMONTHS**: The first day of the previous month
- ***YEARSTR**: The first day of the current year
- ***PRVYEARS**: The first day of the previous year
- ***MON**: Monday
- ***TUE**: Tuesday
- ***WED**: Wednesday
- ***THU**: Thursday
- ***FRI**: Friday
- ***SAT**: Saturday
- ***SUN**: Sunday

Starting time

The time on the Starting date at which the included data begins, in **HHMMSS** format.

Ending data and time

Ending date

The day or date on which the included data ends.

Allowed values are the same as for **Starting date**.

Ending time

The time on the **Ending date** at which the included data ends, in **HHMMSS** format.

User profile

The user profile under which the change was made, or ***ALL** for all users.

Program name

The program that made the change, or ***ALL** for all programs.

Job name

The job that made the change, or ***ALL** for all jobs.

-

User

>   The user who ran the job.

Number

>   The job number, from 000000 to 999999.

`Number of records to process`

>   The maximum number of records to process, or ***NOMAX** for all records.

`Output`

>   The destination for the report. Valid values include ***** (to send output to the screen). ***PDF**, ***HTML**, ***CSV**, ***OUTFILE**, and ***PRINT1** though ***PRINT9**.

Press **Enter** to confirm your selections. the **Display Journal Entries** screen appears with the entries that you have selected:

```
                        Display Journal Entries

Type options, press Enter.
   5=Display entire entry   6=SQL   9=Screen   U=Undo


Opt      Object     Job         Program    User      Date-time               RRN
 _  UP   DBPARM     QPADEV000B SETISAUTR   VICTOR    2020-12-21-09.54.49        1
 _  UP   DBPARM     QPADEV000C SETISAUTR   VICTOR    2021-01-06-12.15.56        1
 _  UP   DBIPWD     QPADEV000F DBIPWDR     JOE       2021-01-20-16.30.15       26
 _  UP   DBIPWD     QPADEV000F DBCHGPR     JOE       2021-01-20-16.30.15       26
 _  UP   DBIPWD     QPADEV000F DBIPWDR     JOE       2021-01-20-16.30.16       27
 _  UP   DBIPWD     QPADEV000F DBCHGPR     JOE       2021-01-20-16.30.16       27
 _  UP   DBIPWD     QPADEV000F DBIPWDR     JOE       2021-01-20-16.30.16       28
 _  UP   DBIPWD     QPADEV000F DBCHGPR     JOE       2021-01-20-16.30.16       28
 _  UP   DBIPWD     QPADEV000F DBIPWDR     JOE       2021-01-20-16.30.16       29
 _  UP   DBIPWD     QPADEV000F DBCHGPR     JOE       2021-01-20-16.30.16       29
 _  UP   DBIPWD     QPADEV000F DBIPWDR     JOE       2021-01-20-16.30.16       30
 _  UP   DBIPWD     QPADEV000F DBCHGPR     JOE       2021-01-20-16.30.16       30
 _  UP   DBIPWD     QPADEV000F DBIPWDR     JOE       2021-01-20-16.30.16       31
 _  UP   DBIPWD     QPADEV000F DBCHGPR     JOE       2021-01-20-16.30.16       31
 _  UP   DBIPWD     QPADEV000F DBIPWDR     JOE       2021-01-20-16.30.16       32
                                                                        More...
 F3=Exit   F7=Subset   F10=Detail mode   F12=Cancel   F17=Top   F22=Display entire
```

To **view details** of any record, type **5** in the **Opt** field for that record and press **Enter**. The **Display Database Updates** screen appears:

```
                              Display Database Updates                    RRN:        26
                                                                              UP Update
Date-Time .: 2021-01-20-16.30.15                              Object. . .: DBIPWD
Program . .: DBIPWDR    Library .: SMZB                          Library .:   SMZBDTA
Job . . . .: QPADEV000F/JOE/081584                            Member  . .: DBIPWD
IP address : 1.1.1.77                                         Port . . .: 61944
User  . . .: JOE        JOE

                                         After value            Before value
                             USER        *AUD#SECAD             *AUD#SECAD
                           SYSTEM        RLDEV                  RLDEV
                      CHANGE DATE        █.                     260720.
                    ENCRIPTED PWD        █.                     497322837.-

                                                                           Bottom
   F3=Exit   F5=Sql   F7=Subset   F8=Print   F9=132/80   F10=List mode   F12=Cancel   F17=Top   F19=Screen   F22=Entire field
```

Uninstalling DB-Gate

To **remove DB-Gate** from your IBM i, select **91. Uninstall** from the
Maintenance Menu (*STRDB* **>** **82**). The **Uninstall SECURITYBP** screen
appears. Follow the instructions listed on it.

```
                        Uninstall SECURITYBP

  You are about to uninstall this product.
  All program files, data and definitions will be deleted.
  You are advised to print this screen for further reference.
  Before proceeding, ensure that:
    o No user or batch job is working or intends to work with this product




  To run uninstall procedure you should do the following:
    o Exit from the current session
    o Open a new session using QSECOFR or equivalent user profile
    o Enter: CALL SMZB/DBRMVPRD

  Once the uninstall is completed, enter: DLTLIB SMZB
  Manually delete IFS directory /iSecurity/DB-Gate
  Backups of previous releases might exist under the name QGPL/P_SMZ*
  To confirm proper uninstall, use DSPUSRPRF SECURITYBP TYPE(*OBJOWN)



  F3=Exit
```

Troubleshooting

This chapter describes various issues that may arise and how to handle them. Please review the following sections prior to contacting your Raz-Lee distributor or customer support.

Issue: Java versions lower than v5.0 loaded by default.

Workaround: DB-Gate requires Java v. 5 or higher to run. If any job has an earlier version of Java loaded, perform the following workaround, running either

- Mode 1 - Inline
- Mode 2 - Internal Server (recommended)

Mode 1 - Inline

These steps will affect all Java programs running in every job.

1. Copy the file: **/iSecurity/DB-Gate/sp.properties** to: **/iSecurity/DB-Gate/SystemDefault.properties**
2. Update the Home Directory for the user profile to your own unique IFS folder. Modify the desired user profile by typing the following command: *CHGUSRPRF USRPRF(xxx) HOMEDIR('/iSecurity/DB-Gate')*
3. Run the command sequence: *STRDB > 81 > 1*
4. Turn off **Auto Set Java version** and **CLASSPATH**
5. Make sure that the file **SystemDefault.properties** contains the line: **java.version=1.5**
6. Start a new job to test.

-

Mode 2 - Internal Server

It is recommended to use Mode 2 since only the internal DB-Gate user will be affected.

1. Copy the file: **`/iSecurity/DB-Gate/sp.properties`** to: **`/iSecurity/DB-Gate/SystemDefault.properties`**
2. Update the Home Directory for the user profile to your own unique IFS folder For example, to modify the SECURITYBP user profile, type: *CHGUSRPRF USRPRF(SECURITYBP) HOMEDIR('/iSecurity/DB-Gate')*
3. Run the command sequence: *STRDB* **`> 81 > 1`**
4. Turn off **Auto Set Java version** and **CLASSPATH** by changing the status to N
5. Make sure that the **`SystemDefault.properties`** file contains the line: **`java.version=1.5`**
6. Deactivate and then reactivate the server.

Issue: The installation of the product failed.

Workaround: Perform a manual installation

1. On the System i, run the following command: *CRTSAVFQGPL/SMZB*.
2. On the server, perform the following to extract the save file (**`.A2P`** extension) from the zip file **`FTP xyzxyz.A2P`** and copy it to the IBM i as save file **`QGPL/SMZB`**
   a. *ftp AS400_IP*
   b. ...
   c. *bin*
   d. *cd QGPL*
   e. *put DB0220V71.A2P SMZB*
   f. *bye*
3. On the System i, run the following commands:
   - *RSTOBJ OBJ(DBI) SAVLIB(SMZB) DEV(*SAVF) SAVF(QGPL/SMZB) RSTLIB(QTEMP)*
   - *CALL QTEMP/DBI ('*SAVF' 'DB' 'QGPL' 'SMZB')*

The installation should now be complete.

Issue: Error Messages in Server Mode

The following error messages may appear when running in server mode.

Message: DB-Gate server disconnected.

Reason. DB-Gate has disconnected from running the SQL job due to activation group end, job end or explicit disconnect request for that job ('Release Job' from GUI).

Message: No response from DB-Gate server.

Reason. DB-Gate server is not currently active.

**Message: Connection terminated. Job should be restarted.**

Possible Reasons:

- DB-Gate server has been deactivated while the SQL job was working with DB-Gate. This doesn't mean DB-Gate server is not currently active but any connection made with DB-Gate until that message is lost. It is recommended to restart the job.
- Error in the DB-Gate Java engine

Appendix A: JDBC Driver for Excel, CSV, etc.

DB-Gate is shipped with an internal JDBC driver for MS Excel (97/2000/XP/2003/2007/2010) files, comma-separated values, and ODF spreadsheets (LibreOffice/OpenOffice). Any text file, including XML format files, is read line by line by the driver.

The driver reads a file that resides on the IFS, web, SMB share on the local network, FTP server etc. This data is written to a target file that resides on any DB (or data source) that can be accessed by JDBC on the current system or another IBM i.
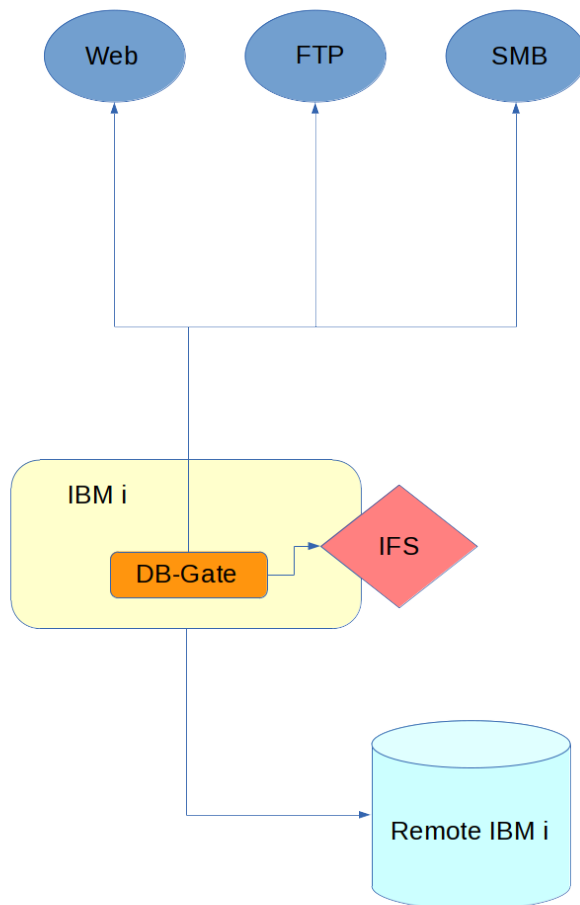
Note: the target DB can be the local IBM i

Adding an Entry

To **add an entry**, specifying the location to which data will be written, either on the current system or a different IBM i:

NOTE: While this resembles other IBM i tools that specific where they will read data, these Directory Entries specify where DB-Gate **writes** it.

1. Type *STRDB*. The **DB-Gate** main menu appears.
2. Select option **1. Work with Directory Entries**.
3. Press the **F6** key. The **Add New Directory Entry** screen appears:

```
                      Add New Directory Entry

Directory Entry . . . . .    PCTST
Driver  . . . . . . . . .    PC FILE            F4=Prompt

















 F3=Exit     F4=Prompt           F12=Cancel
```

4. Set the **Directory Entry** field to the name of the new entry.
5. Set the **Driver** field to the supplied **PC_FILE** driver.
6. Press Enter. The **Add New Directory Entry Details** screen appears. (It appears in two parts, **Part A** and **Part B**. You can move between them by pressing the **PgUp** and **PgDn** keys.) The fields specify where the data will be written. The label for the **URL** field shows values that can be automatically included from the corresponding fields above it. For example, **<host>** includes the value of the **Host or IP** field.
7. Set the **Log** and **Language Support** fields if needed and confirm. The entry is activated and available for use.

```
                 Add New Directory Entry Details - Part A

Directory entry . . . . . .  PC2          Active: Y    (Driver: PC_FILE   )
Description . . . . . . . .  _____
Log . . . . . . . . . . . .  0                      0=Dft, 1=None, 2=Basic, 4=All
Host or IP  . . . . .<host>  _____
Port  . . . . . . . .<port>  ____
Catalog . . . . . <catalog>  _____
Schema  . . . . . .<schema>  _____
Database  . . . . . . .<db>  _____




URL, file://, http://... .  jdbc:smz:<host>;errors=full;translate binary=true;
Auto replacments are:        prompt=false_____
  <host><port><catalog>      _____
  <schema><db><adl1-4>       _____
                             _____
                             _____
                             _____
                                                                     More...
F3=Exit  F4=Prompt                                              F12=Cancel
```

```
                 Add New Directory Entry Details - Part B

Directory entry . . . . . .  DBTMP4                    (Driver: DB2        )
Description . . . . . . . .

Language support  . . . . .  *AUTO             *AUTO, *NONE, 4-11 for Bidi
Keep alive interval . . . .      0             Minutes, 0=No
Keep alive statement  . . .  _____
                             _____
Fetch size  . . . . . . . .      0             Number of records, 0=Default
Force RDB User  . . . . . .  *NONE_____       Name, *NONE
        Password  . . . .                      Character (case sensitive)
Overrides CONNECT / Server Authentication Entry values.




                                                                     Bottom
F3=Exit   F12=Cancel
```

The driver operates based on target file's extension:

- **xls/xlsx** for MS Excel
- **csv** for comma-separated values

- **ods** for ODF spreadsheet
- **txt** and any other extension is treated as text file.

Working with the JDBC Driver

To work with the JDBC driver, you must first connect to the **target system** with an SQL **CONNECT TO** command.

- If the target is on the same IBM i, or the username and password to connect to a remote DB is specified elsewhere such as a server authentication entry or in the **Force RDB User** and **Password** fields of the **Add New Directory Entry Details - Part B** screen, use the command:
  CONNECT TO directory_entry
  where **directory_entry** is the name of the Directory Entry to which data will be written.
- Otherwise, connect using the username and password from the target's DB credentials:
  CONNECT TO directory_entry USER username USING 'password'

To associate the library and table on the target system to which you are writing with the source that you are reading, use the **COMMENT ON** command:
COMMENT ON library.table IS source_url

where

- **library.table** shows the library and table on the **target** system to which you are **writing**
- **source_url** shows the file on the **source system** that you are **reading**

such as
COMMENT ON QGPL.MY_TABLE IS 'file:///tmp/ customers.xls'
which specifies that data is

- **read** from the **/tmp/customers.xls** file on the current system's IFS, and
- **written** to the **MY_TABLE** table in the **QGPL** library, also on the current system.

If you omit the library name, as in

COMMENT ON MY_TABLE IS 'file:///tmp/ customers.xls'

-

or use the library name **QTEMP**, the table is created in a temporary library that only exists during the current session. It is not to be confused with the current job's **QTEMP** library.

The URL for accessing the table depends on the protocol being used:

- **File**: primarily for accessing files in the IFS file system:
  COMMENT ON QGPL.MY_TABLE IS 'file:///tmp/customers.xls'
- **HTTP**: primarily for the web
  COMMENT ON QGPL.MY_TABLE IS 'http://www.example.info/gui/db_ gate/ms.xls'
- **FTP**
  COMMENT ON QGPL.MY_TABLE IS 'ftp://example.com/readme.txt'
- **SMB** for Microsoft Windows shares for which a server authentication entry for the target server exists
  COMMENT ON QGPL.MY_TABLE IS 'smb://192.168.1.181/shareddocs/sales.csv'
- **SMB** when supplying User + Password for Microsoft Windows shares:
  COMMENT ON QGPL.MY_TABLE IS 'smb://user:password@192.168.1.181...'

To specify that you are reading from a sheet within an Excel file or a table embedded in ODF Text Documents (LibreOffice/OpenOffice), include an **@** sign and the number of the sheet in the **COMMENT ON** statement. For example, to specify sheet 2 in the example, use the command:
COMMENT ON QGPL.MY_TABLE IS 'file:///tmp/customers.xls@2'

You can then access the table with a **SELECT** statement such as
SELECT* FROM QGPL.MY_TABLE

You must indicate the library name, even if you did not state it in the **COMMENT ON** statement (in which case it would be the **QTEMP** library that only exists for the current session).

The table is created within the specified library. The driver then has read-only access to the source PC file.

Appendix B: Oracle TNS Names

Working with Oracle TNS

An RDB entry for Oracle can be defined using the ORACLE_TNS driver. There are two methods for specifying the JDBC URL; inline on the System i or by referring to a TNS entry name in the external file (**tnsnames.ora**).

Inline Method

To define the RDB for Oracle, add a new Directory Entry (as shown in "Creating a New Directory Entry" on page 42

Ensure that the **URL** entry, as entered on the **Modify DIrectory Entry - Part A** screen, is of the form:

jdbc:oracle:thin@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=
(PROTOCOL=TCP)(HOST=1.1.1.221)(PORT=1521)))(CONNECT_DATA=
(SERVICE_NAME=XE)))

External File Method

If you are running in "Mode 1 - Inline" on page 20 or "Mode 2 - Internal Server" on page 21, you can find the available **TNSNAMES** entries listed in the **tnsnames.ora** file in the IFS of your IBM i.

If you are running in "Mode 3 - External Server" on page 25, they are listed on the client computer from which you are connecting.

The file is located and loaded upon an attempt to connect the RDB entry. The location of the file is written to the IFS file **/iSecurity/DB-Gate/ sp.properties**

for example, the default location of the `tnsnames.ora` file is:

```
oracle.net.tns_admin=/iSecurity/DB-Gate
```

If you move it to another location, you must also update the **sp.properties** file.

After modifying the **sp.properties** file in either mode, you must restart DB-Gate. If inline run mode is used, any new SQL job will be affected.

Below is an example of the **tnsnames.ora** file:

```
PROD=
(DESCRIPTION = (ADDRESS_LIST =
(ADDRESS = (PROTOCOL = TCP)(HOST = 192.168.1.221)(PORT =
1521))
)
(CONNECT_DATA = (SERVICE_NAME = XE)
)
)
TEST=
(DESCRIPTION = (ADDRESS_LIST =
(ADDRESS=(PROTOCOL=TCP)(HOST=192.168.1.21)(PORT=1521))
(ADDRESS=(PROTOCOL=TCP)(HOST=192.168.1.22)(PORT=1521))
)  (CONNECT_DATA=
(SERVICE_NAME=XE2)
)
)
```

In the **Modify Directory Entry - Part A** screen, set the URL field to either **jdbc:oracle:thin:@PROD** or **jdbc:oracle:thin:@TEST** as appropriate.