

iSecurity



DB-GateTM User Manual

Software Version: 02.22

November 2013





Copyright Notice

© Copyright Raz-Lee Security Inc. All rights reserved.

This document is provided by Raz-Lee Security for information purposes only.

Raz-Lee Security© is a registered trademark of Raz-Lee Security Inc. Action, System Control, User Management, Assessment, Firewall, FileScope, Screen, Password, Audit, Capture, View, Visualizer, Anti-Virus, AP-Journal © are trademarks of Raz-Lee Security Inc. Other brand and product names are trademarks or registered trademarks of the respective holders. Microsoft Windows© is a registered trademark of the Microsoft Corporation. Adobe Acrobat© is a registered trademark of Adobe Systems Incorporated. Information in this document is subject to change without any prior notice.

The software described in this document is provided under Raz-Lee's license agreement.

This document may be used only in accordance with the terms of the license agreement. The software may be used only with accordance with the license agreement purchased by the user. No part of this document may be reproduced or retransmitted in any form or by any means, whether electronically or mechanically, including, but not limited to: photocopying, recording, or information recording and retrieval systems, without written permission given by Raz-Lee Security Inc.

Visit our web site at www.razlee.com.

Record your product authorization code here.

Computer Model	
Serial Number	
Authorization Code	



Table of Contents

Copyright Notice.....	ii
Table of Contents	iii
About This Manual	1
Product Documentation Overview	1
Printed Materials.....	1
Online Help.....	1
Typography Conventions.....	1
iSecurity Product Suite	2
Overview.....	5
System Requirements	5
Starting DB-Gate	5
Why You Need DB-Gate.....	7
<i>Typical Remote Access Limitations</i>	<i>7</i>
DB-Gate Benefits.....	7
DB-Gate Restrictions.....	8
<i>Commitment Control</i>	<i>8</i>
Native IBM i Text Based User Interface	9
New Features and Functionality	10
Activation	11
Overview.....	11
Mode 1 - Inline	12
<i>Activation.....</i>	<i>12</i>
Mode 2 - Internal Server.....	12
<i>Before You Begin</i>	<i>13</i>
<i>Activation.....</i>	<i>13</i>
<i>Automatic Activation upon Startup.....</i>	<i>15</i>
Mode 3 - External Server.....	15
<i>Running the DB-Gate Server.....</i>	<i>17</i>
<i>DB-Gate Server Commands</i>	<i>18</i>
Changing the DB-Gate Mode of Operation.....	19
Data Queues.....	20
Remote DB Definitions.....	21
Working with Directory Entries	21
Viewing Subsets of Drivers	22
Modifying a Directory Entry	23
Copying an Existing Directory Entry	25
Creating a New Directory Entry	26
Removing a Directory Entry.....	27
Activating a Directory Entry	27



Deactivating a Directory Entry	27
DB Drivers.....	29
Working with Database Drivers.....	29
<i>Description for the driver.....</i>	<i>30</i>
Modifying a DB Driver.....	31
Copying a DB Driver	33
Adding a New DB Driver.....	33
Deleting a DB Driver	34
Drivers and Licenses Folders	34
DB-Gate Log	35
Display Log Entries.....	36
Remote User ID.....	39
Injection of Remote User IDs.....	40
Modifying a Server Authentication Entry.....	40
Adding a New Server Authentication Entry	41
Test Drive	43
Starting SQL.....	43
Working with SQL Program Sources	44
System Configuration	45
General Definitions	46
Log Retention.....	47
<i>Setting DB Log Retention Parameters</i>	<i>47</i>
Maintenance Menu	49
Display DB-Gate Definitions	50
Work with Operators.....	51
Check Locks.....	53
Uninstall	54
Troubleshooting.....	55
Error Messages in Server Mode.....	56
<i>DB-Gate messages in server mode</i>	<i>56</i>
Appendix A: JDBC Driver for Excel, CSV, etc.	59
Adding an Entry	59
Connecting	60
Appendix B: Oracle TNS Names	61
Working with Oracle TNS	61
<i>Inline Method</i>	<i>61</i>
<i>External File Method</i>	<i>61</i>

About This Manual

This user guide is intended for system administrators and security administrators responsible for the implementation and management of security on AS400 systems. However, any user with basic knowledge of AS400 operations will be able to make full use of this product after reading this book.

Product Documentation Overview

Raz-Lee takes customer satisfaction seriously. Our products are designed for ease of use by personnel at all skill levels, especially those with minimal AS400 experience. The documentation package includes a variety of materials to get you familiar with this software quickly and effectively.

Printed Materials

This user guide is the only printed documentation necessary for understanding this product. It is available in user-friendly PDF format and may be displayed or printed using Adobe Acrobat Reader version 4.0 or higher. Acrobat Reader is included on the product CD-ROM.

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

Online Help

AS400 context sensitive help is available at any time by pressing the F1 key. A help window appears containing explanatory text that relates to the function or option currently in use. Online help will shortly be available in Windows help format for viewing on a PC with terminal emulation.

Typography Conventions

- Menu options, field names, and function key names are written in **Courier Bold**.
- References to chapters or sections are written in *Italic*.
- IBM i (OS/400) commands and system messages are written in **Courier**.
- Key combinations are separated by a dash, for example: Shift-Tab.
- Emphasis is written in **Times New Roman bold**.



iSecurity Product Suite

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.

The iSecurity Product Suite includes:

Product	Description
Change Tracker 	Change Tracker automatically tracks modifications in the software and file structure within production libraries. Changes are tracked at both the object and source levels. It does not require any special actions by programmers.
COMMAND 	COMMAND monitors and filters commands and its parameters before they are run, enabling you to control each parameter, qualifier or element, in conjunction with the context in which it is about to run. Options include Allow, Allow with Changes and Reject. It includes a comprehensive log, proactive alerting and easily integrates with SIEM.
Authority On Demand 	Authority on Demand provides an advanced solution for emergency access to critical application data and processes, which is one of the most common security slips in IBM System i (AS/400) audits. Current manual approaches to such situations are not only error-prone, but do not comply with regulations and often-stringent auditor security requirements.
Capture 	Capture silently captures and documents user screens for tracking and monitoring, without any effects on system performance. It also preserves job logs for subsequent review. Capture can run in playback mode and can be used to search within texts.



Product	Description
AP-Journal 	AP-Journal automatically manages database changes by documenting and reporting exceptions made to the database journal.
Anti-Virus 	Anti-Virus is a dedicated iSeries-specific product engineered to provide full protection to the server, its file contents, and resident iSeries or System i dedicated software.
Visualizer 	Visualizer is an advanced DWH statistical tool with state-of-the-art technology. This solution provides security-related data analysis in GUI and operates on summarized files; hence, it gives immediate answers regardless of the amount of security data being accumulated.
Firewall 	Firewall protects and secures all types of access, to and from the System i, within or outside the organization, under all types of communication protocols. Firewall manages user profile status, secures entry via pre-defined entry points, and profiles activity by time. Its Best Fit algorithm determines the validity of any security-related action, hence significantly decreasing system burden while not compromising security.
Audit 	Audit is a security auditing solution that monitors System i events in real-time. It includes a powerful query generator plus a large number of predefined reports. Audit can also trigger customized responses to security threats by means of the integrated script processor contained in Action.



Product	Description
View 	View is a unique, patent-pending, field-level solution that hides sensitive fields and records from restricted users. This innovative solution hides credit card numbers, customer names, and so on. Restricted users see asterisks or zeros instead of real values. View requires no change in existing applications. It works for both SQL and traditional I/O.
Screen 	Screen protects unattended terminals and PC workstations from unauthorized use. It provides adjustable, terminal- and user-specific timeout capabilities.
Password 	Password provides a first-tier wall of defense for users by ensuring that user passwords cannot be easily cracked.
Assessment 	Assessment checks your ports, sign-on attributes, user privileges, passwords, terminals, and more. Results are instantly provided, with a score of your current network security status with its present policy compared to the network if iSecurity were in place.

Overview

Raz-Lee Security's DB-Gate, part of the iSecurity suite, lets you open concurrent and transparent SQL connections to numerous types of remote data sources and databases. You can do this on any IBM or non-IBM platform using STRSQL and compile using CRTSQL for programs which refer to these databases.

DB-Gate is a client-only product, so it saves you both money and time you would otherwise require to integrate new hardware or set up a complicated API.

System Requirements

Make sure your system meets the following requirements:

- DB-Gate requires the V5R3 operating system or higher
- DB-Gate requires Java 5.0 or higher

Starting DB-Gate

To begin using DB-Gate, type **STRDB** on any command line. The **DB Gate main** screen is displayed as shown below in [Figure 2-1 on page 6](#).

You can access the different features from the main DB-Gate screen. The various feature groups are described in the following chapters:

- Remote DB Definitions
- DB Drivers
- Activity Log
- General Configuration and Maintenance



DBMENU		DB-Gate	iSecurity
Select one of the following:		System: S520	*Patent-Pending*
Remote DB Definitions		Activity Log	
1. Work with Directory Entries		41. Display Log	
DB Drivers		Test Drive	
11. Work with DB Drivers		51. Start SQL	
15. Drivers & Licenses Folders		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=AS/400 main menu			

Figure 2-1. DB Gate Main Screen



Why You Need DB-Gate

IBM System i (AS/400) users often require access to remote, non-DB2 databases that do not support DRDA server behavior, such as Oracle, MS-SQL and Derby. These databases run on various operating systems and use standard languages (for example, SQL).

Typical Remote Access Limitations

To successfully access remote databases, companies have selected products based on either of the following limited methods:

- Using ambiguous or non-standard APIs that are not defined through RDBDIRE (relational Database Directory Entry) and therefore make no use of an ARD program.
- Selecting a client-server configuration that requires additional hardware.

These options are cumbersome and require special settings which often prevents the user from fully utilizing standard SQL commands on the IBM System i and often include hidden infrastructure costs as well.

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 System i).
- Unique technology enables transparent access to any database (MySQL, ORACLE, MS SQL, DB2, Informix, SQLite) or data source (for example, 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...).
- Integration with the STRSQL lets you prompt to see the Column names and more, and 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 – so there is virtually no learning curve to get up and running Remote Server Authentication that makes use of the IBM Server Authentication Entries, injecting them seamlessly when needed and eliminating the need to remember and re-enter a user name and password for each CONNECT to a remote DB Provides detailed traceability logs.
- Uses standard SQL syntax and is based upon standard IBM i functionality - so there is virtually no learning curve.
- Use of the IBM Server Authentication Entries, injecting user and password seamlessly when needed and eliminating the need to remember and re-enter a user name and password for each CONNECT to a remote DB.



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 connection. 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 in [Figure 2-2 on page 8](#).

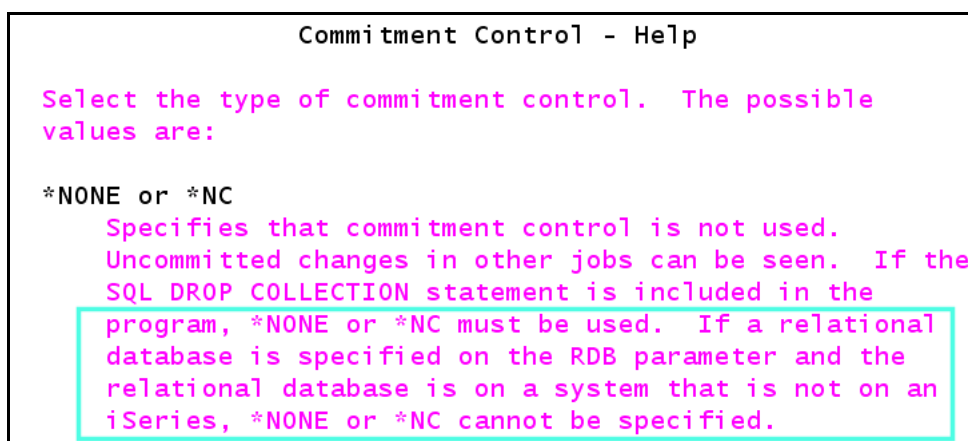


Figure 2-2. Commitment Control - Help



Native IBM i Text Based User Interface

DB-Gate is designed to be a user-friendly product. The user interface follows standard System 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.

Menus

Product menus allow for easy access to all features with a minimum of keystrokes. Menu option numbering and terminology are consistent throughout this product as well as 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**.



Table 2-1 on page 10 describes the standard function keys that may appear on data entry screens.

Table 2-1: Functions Keys

Function Key	Description
F1 - Help	Displays context-sensitive help.
F3- Exit	Ends the current task and returns to the screen or menu from which the task was initiated.
F4 - Prompt	Displays a list of valid options for the current field or command. For certain data items, a pop-up selection window appears.
F6 - Add New	Creates a new record or data item.
F8 - Print	Prints the current report or data item.
F9 - Retrieve	Retrieves the previously-entered command.
F12 - Cancel	Returns to the previous screen or menu without updating.

New Features and Functionality

Version 2.1

The following improvements have been made in this version:

- A path relative to the DB-Gate default driver's location can be used for specifying drivers' files (in addition to absolute path).
- The URL field in the RDB Entries screen can contain a URL that points to a text file that contains the full JDBC URL.
- Internal JDBC driver for PC files:
 - Improved calculation of the length of fields
 - Added a link to the manual in the driver's screen
 - Improved Excel xlsx format handling
- Server mode now works with single data queue. This data queue can be recreated via the Activation menu
- PC installer for mode #3 (DB-Gate as an external server).
- Can run as an internal server on the IBM i, thereby eliminating the JVM starting time.
- Can run as an external server on a Windows, Linux or other platform supporting Java rather than using resources on the IBM i.
- Keep alive statement is sent repeatedly
- Support for SMB protocol to allow access to Excel/CSV files on shared folder.
- Added support for reading Excel 2007-2010 (XLSX) formats.
- Running on a PC enables DB-Gate to work with additional data sources by employing the JDBC-ODBC bridge. That means for example that we can get data from MS Access.
- Enhancements made to better support embedded SQL in RPG/COBOL.
- Added Bidi String Type option (-1 = NONE) in RDB entry screen.
- The product is bundled with a new JDBC driver for MS Excel (97/2000/XP/2003/2007/2010), CSV, ODF spreadsheet (LibreOffice/OpenOffice) and text files. This driver is an in house development. See Appendix A for a description of how to use it.
- Support added for NVARCHAR field type.

Activation

Overview

DB-Gate can be activated to run in either:

- **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. This server supports any number of jobs.
- **Mode 3 - External Server**, running in 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.

Figure 3-1 on page 11 shows the architecture of the 3 run modes.

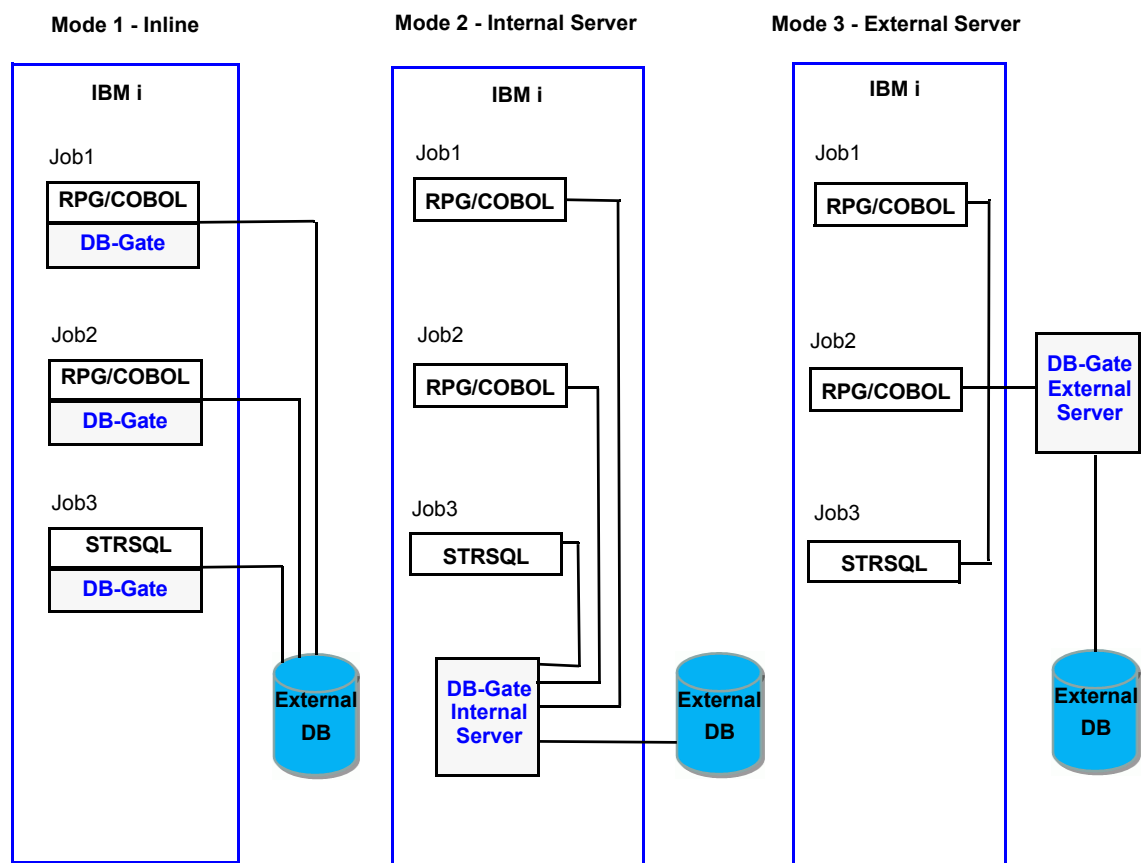


Figure 3-1. Run Mode Architecture



Mode 1 - Inline

Activation

DB-Gate runs the internal mode by default. No pre-activation is required. Note that first SQL command within a job activates, within DB-Gate, a process which may require a few seconds depending on available computing resources.

Mode 2 - Internal Server

DB-Gate runs as server job on a dedicated subsystem. This subsystem must be started before processing any SQL statement. 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.



Before You Begin

1. Ensure that all SQL jobs using DB-Gate are signed off. 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**.

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. Go to the DB-Gate Main screen and select
81 - System Configuration to open that screen as shown in [Figure 3-2 on page 13](#).

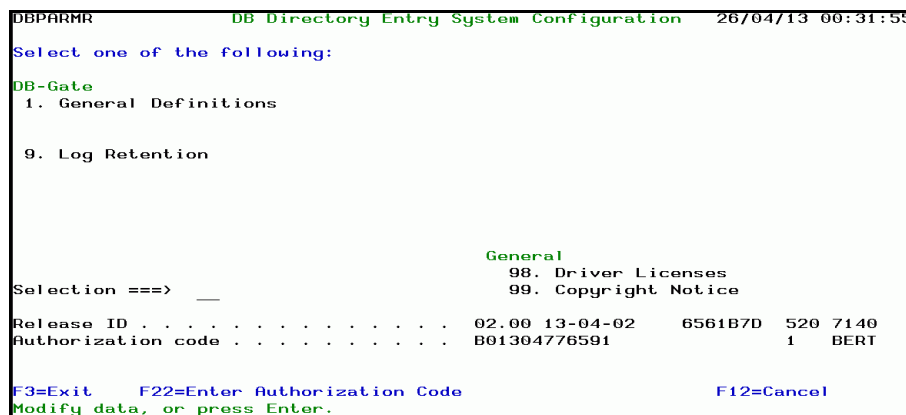


Figure 3-2. DB Directory Entry System Configuration Screen

- b. Select **1 - General Definitions** to open that screen as shown in [Figure 3-3 on page 13](#).

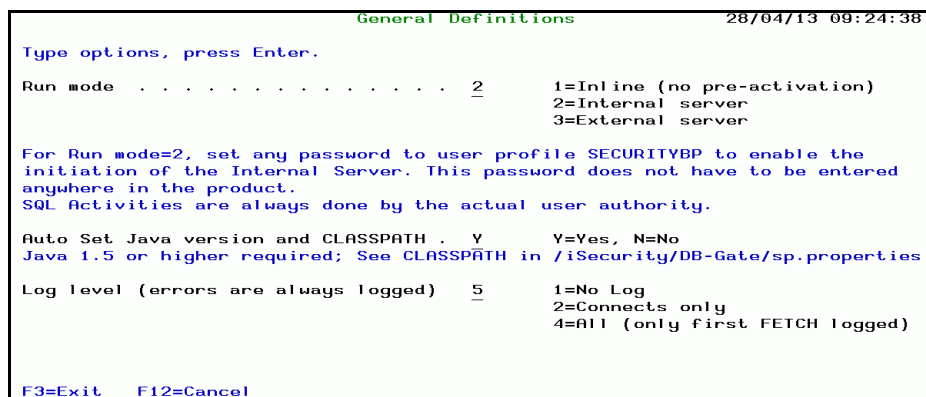


Figure 3-3. General Definitions Screen

- 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 screen.



2. Activate the server as follows:

- a. Select **2 - Activation** to open that menu as shown in Figure 3-4 on page 14.

```

DBSETHN                      Activation                      DB-Gate
                                                                    System: S520
DB-Gate can function in server mode, which requires pre-activation.
The actual operation mode is set in System Configuration on Main Menu.

Internal Server Mode
1. Activate Server
2. De-activate Server
5. Work with Active Jobs

External Server Mode
Activation / De-activation is performed
on the external server.
See manual for details.

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

Special
71. Recreate Data Queue

Note that Inline Mode does not require pre-activation.

Selection or command
==>

F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
F13=Information Assistant   F16=AS/400 main menu

```

Figure 3-4. Activation Screen

- b. Select **1 - Activate Server**. DB-Gate begins to operate in Internal Server Mode. A message appears at the bottom of the screen indicating
- c. Select **5 - Work with Active Jobs** to verify that DB-Gate is working. The **Work with Subsystem Jobs** screen appears and displays active Subsystem Jobs and their status as shown in Figure 3-5 on page 14.

```

                                Work with Subsystem Jobs
                                                                    S520
                                                                    25/04/13 12:51:19
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      PGM-DBSRVR

Parameters or command
==>

F3=Exit   F4=Prompt   F5=Refresh   F9=Retrieve   F11=Display schedule data
F12=Cancel F17=Top      F18=Bottom

```

Figure 3-5. Work with Subsystem Jobs Screen



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 (See [Figure 3-4 on page 14](#)).

- 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. All memory resources and processing power are consumed 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**. The installation wizard opens.

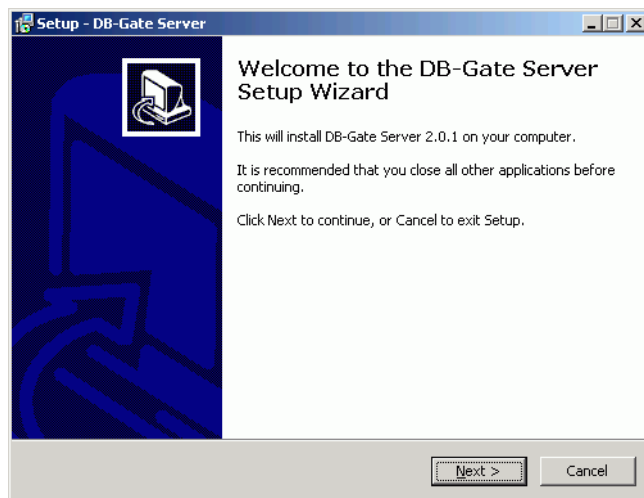


Figure 3-6. DB-Gate Server Setup Wizard - Welcome Screen



- c. Proceed through the Wizard choosing the destination path, name and shortcut settings and click **Install** on the **Ready to Install** screen. See [Figure 3-7 on page 16](#).

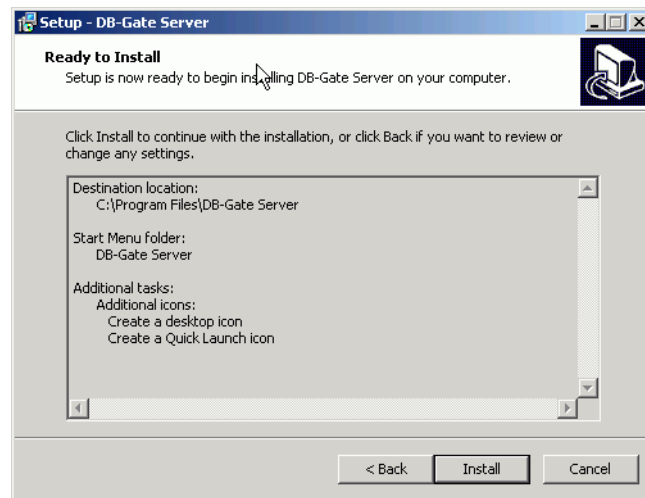


Figure 3-7. Ready to Install Screen

- d. Upon completion select **Launch DB-Gate Server** and click **Finish**.

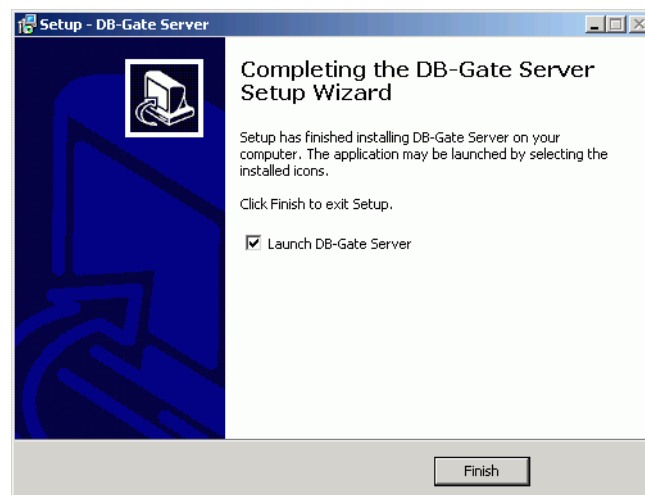


Figure 3-8. DB-Gate Server Setup Wizard - Finish Screen

The Connect to System dialog appears. See [Running the DB-Gate Server on page 17](#).



Running the DB-Gate Server

The DB-Gate server is started either by:

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

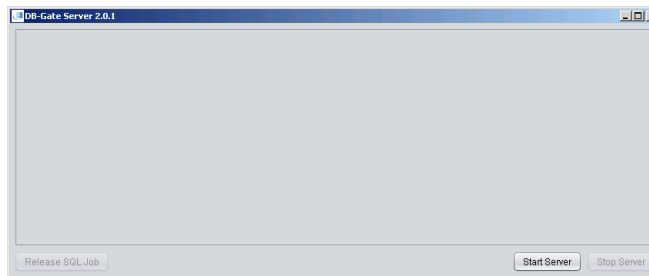


Figure 3-9. DB-Gate Server Startup Screen

1. Click **Start Server**. The **Connect To System** dialog appears. See [Figure 3-10 on page 17](#).
2. 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**.

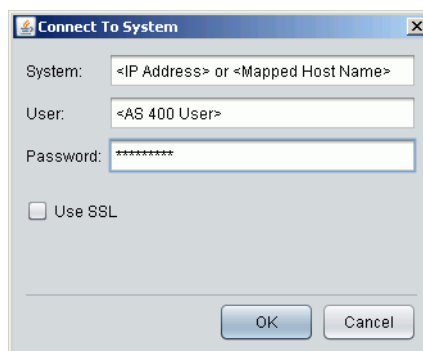


Figure 3-10. Connect to System Dialog

3. Log in to the IBM i.
4. Start SQL by typing **STRSQL**.
5. Connect to the SQL database instance as shown in [Figure 3-11 on page 18](#).



```

Enter SQL Statements

Type SQL statement, press Enter.
> commit
Commit completed.
> disconnect pcpc
External function exception - SQLSTATE 38xxx, SQLCODE -438.
Session was saved and started again.
STRSQL parameters were ignored.
Current connection is to relational database PRODDB.
> connect to pcpc
Current connection is to relational database PCPC.
Session was saved and started again.
STRSQL parameters were ignored.
Current connection is to relational database PRODDB.
====> CONNECT TO LOPC

F3=Exit  F4=Prompt  F6=Insert line  F9=Retrieve  F10=Copy line
F12=Cancel  F13=Services  F24=More keys
Bottom

```

Figure 3-11. Connecting to Database Instance

6. Open the DB-Gate Server GUI by double-clicking from the Windows **Start** menu or the icon.

The options are described in [DB-Gate Server Commands on page 18](#).

DB-Gate Server Commands

The DB-Gate **Connected To [Database]** screen indicates active jobs connected to the DB-Gate server. See [Figure 3-12 on page 18](#) and [Table 3-1 on page 18](#) for a description of the relevant parameters and options.

Time	Job Name	User	Job Number	Activation Group
2013-06-05 15:30:24	ILAN_MR	DB	885408	2
2013-06-05 15:32:17	ILAN_MR1	DB	885414	2
2013-06-05 15:32:35	ILAN_MR2	DB	885417	2
2013-06-05 15:32:52	ILAN_MR3	DB	885422	2
2013-06-05 15:33:08	ILAN_MR4	DB	885425	2

Figure 3-12. Database Connection Screen

Table 3-1: Database Connection Parameters and Options

Button / Column	Description
Release Job	Stops the selected job.
Stop Server	Deactivates the DB-Gate Server.
Job Name	Name of the job.
User	User who initiated the job
Job Number	Number of the job
Activation Group	Activation Group number in which the application is running.



Each job consists of one or more activation groups and it is important to note that DB-Gate operates on the level of Activation Group. Therefore, the same job attributes can appear more than once but in different Activation Groups. An example is provided in [Table 3-2 on page 19](#)

Table 3-2: Sample List of Connections

Job Name	User	Job Number	Activation Group
QPADEV0010	DB	123456	2
QPADEV0010	DB	123456	3

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. It is recommended to 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 the General Definitions screen (81) and set the new Run Mode.
5. Start DB-Gate:
 - For Inline Mode (1) no further action is necessary.
 - For Internal Server Mode (2), activate as described in [Activation on page 12](#).
 - For External Server Mode (3), activate as described in [Activation on page 13](#).



Data Queues

DB-Gate uses a data queue for communication when operating in server mode (2 or 3). You can recreate this data queue (delete and build) using option **71** in the Activation screen (see [Figure 3-13 on page 20](#)). This maintenance task is useful when the data queue becomes too large. This task action should be only be performed while the server is down and there are no SQL jobs employing DB-Gate.

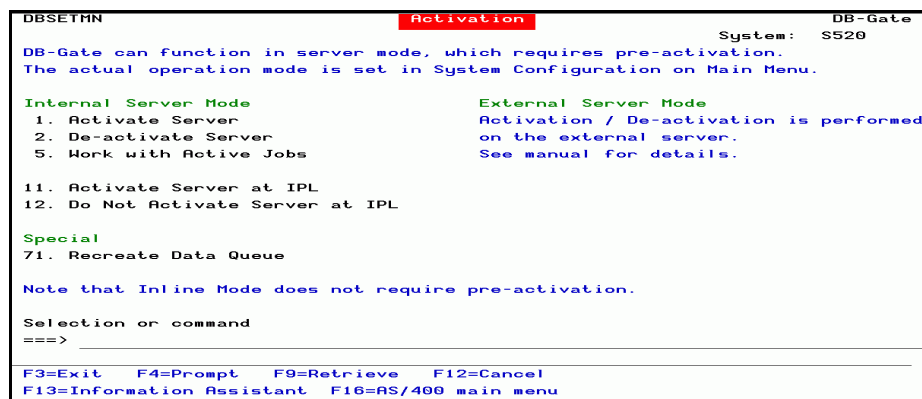


Figure 3-13. Activation Screen

Remote DB Definitions

This chapter describes how to define a remote database.

When definitions are activated, they create an RDBDIRE (Remote DB Directory Entry) in the operating system.

Working with Directory Entries

To begin working with directory entries, select **1 - Work with Directory Entries** from the main screen.

The **Work with Directory Entries** screen opens as shown in [Figure 4-1 on page 21](#). Directories are marked as Active or (deactivated). You can perform the following activities:

- [Viewing Subsets of Drivers](#)
- [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](#)

```

Work with Directory Entries

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

Opt  Status  Directory entry
  1  Active  CRM
  -  Active  SALES
  -  ---    SHIPMENTS
  -  Active  TESTDB

F3=Exit  F5=Refresh  F6=Add new  F8=Print  F12=Cancel
DB Directory Entry deleted.
Relational database directory entry deactivated.
Bottom
  
```

Figure 4-1. Work with Directory Entries



Viewing Subsets of Drivers

To view a specific subset of drivers, type the first alphanumeric characters of the driver in the **Subset by driver** field and **press Enter**.

The driver list is redisplayed with results that match your query.

Work with DB Drivers

Type options, press Enter.

1=Select 3=Copy 4=Delete 8=Driver page

Subset by driver . . . LINUX

by text

Opt	Driver	Available
—	DB2	Yes DB2 for Windows/Linux
—	DB2JDBC4	Yes DB2 for Windows/Linux

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

Figure 4-2. Work With DB Drivers



Modifying a Directory Entry

You can update all directory entries except for the names of the Directory.

To modify the details of a Directory Entry:

1. Type **1** in the **Opt** column to select it and press **Enter**.

The **Modify Directory Entry** screen appears with the selected directory entry filled in as shown in [Figure 4-3 on page 23](#).

Modify Directory Entry			
Directory Entry	LOGISTICS	Active: Y	(Driver: MSSQL2005)
Description	This is a MS SQL		
Log	0	0=Dft, 1=None, 2=Basic, 4=All	
Host or IP<host>	1.1.1.197		
Port<port>	1433		
Catalog<catalog>			
Schema<schema>			
Database<db>	AdventureWorks		
URL	jdbc:sqlserver://<host>:<port>;databaseName=<db>		
Auto replacements are:			
	<host><port><catalog>		
	<schema><db><adl1-4>		
Language Support	4	*AUTO, *NONE, 4-11 for Bidi	
F3=Exit F4=Prompt F7=Driver page F8=Replace driver F12=Cancel			

Modify Directory Entry - Part B			
Directory entry	ORACLE	(Driver: ORACLE_SID)	
Description			
Language support	*AUTO	*AUTO, *NONE, 4-11 for Bidi	
Keep alive interval	5	Minutes, 0=No	
Keep alive statement	SELECT * FROM DUAL		
F3=Exit F12=Cancel			
Bottom			

Figure 4-3. Modify Directory Entry Screen

[Table 4-1 on page 23](#) describes the detailed information you enter to create a new RDB Entry. Some of the parameters may vary depending on the selected driver.

Table 4-1: RDB Entry Parameters

Parameter	Description / Options
Directory Entry	Name of the directory
Active	Y (yes) or N (no)



Table 4-1: RDB Entry Parameters

Parameter	Description / Options
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: SID in this example	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> The URL field can contain a URL that points to a text file that contains the full JDBC URL. For example, the file at http://www.acme.com/gui/jdbc_ms.txt could contain the following: jdbc:sqlserver://<host>:<port>;databaseName=<db>
Language Support	*AUTO = Default setting *NONE 4-11 = Based on an IBM setting for specific language support.
Keep alive interval	Frequency the keep alive SQL statement is sent to DB to ensure connection is maintained.
Keep alive statement	SQL statement sent to DB to ensure connection is maintained.
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:

1. Highlight it and select **3 - Copy**.

The **Copy DB Directory Entry** screen appears with the selected directory entry appearing in both the **From** and **To: / Directory Entry** fields, as shown in [Figure 4-4 on page 25](#).

2. Modify the **To: / Directory Entry** description and press **Enter** twice.

```

Copy DB Directory Entry
Type choices, press Enter.
From:
Directory Entry . . . . . MSACCESS
Description . . . . .
To:
New Directory Entry . . . . . MSACC COPY
F3=Exit    F4=Prompt    F12=Cancel
Modify data, or press Enter to confirm.
    
```

Figure 4-4. DBG Copy Directory Entry Screen

All the existing directory entry details are automatically added and the **Work with Directory Entries** screen is redisplayed with the newly created directory entry in deactivated status. See [Figure 4-5 on page 25](#).

```

Work with DB Directory Entries          Allowed: No Limit
Type options, press Enter.              Subset . . .
1=Select  3=Copy  4=Remove  7=Activate  8=Deactivate
Opt  Status  Directory entry
-   Active  ALEX          TEST ALEX
-   Active  A150
-   Active  A520
-   Active  LO
-   Active  LOPC
-   Active  MS             This is a MS SQL
-   Active  MS_JTDS
-   Active  MS_R0B         This is a MS SQL
-   ---     MSACC COPY
█   Active  MSACCESS       This is a MS SQL
-   Active  MSPC
-   Active  MY
-   Active  MYFED
-   Active  MYH2
F3=Exit    F5=Refresh  F6=Add new  F8=Print    F12=Cancel    More...
Directory Entry copied.
    
```

Figure 4-5. Work with Directory Entries Screen



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** to open the **Add New Directory Entry** screen.
2. Add a Directory Entry by doing 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** next to it. Press **Enter**. The selected Directory Entry is added to the new Directory Entry field. See [Figure 4-6 on page 26](#).

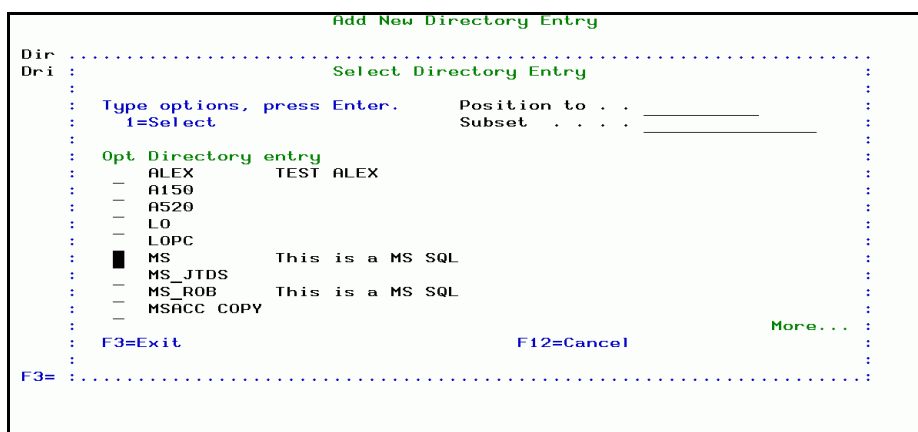


Figure 4-6. DBG Add New Directory Entry

3. Add a Driver by doing one of the following:
 - Type the new **Driver** name
 - Select **F4 - Prompt** (when in the Driver field) to display a list of the existing DB drivers. Select the **Driver** by typing **1** next to it. Press **Enter**. The selected Directory Entry is added to the new Directory Entry field.
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 above as shown in [Figure 4-3 on page 23](#).

NOTE: If the URL is already saved in the driver, it is automatically added.



Removing a Directory Entry

To remove a Directory Entry:

1. In the **Work with DB Directories** screen, select the directory to be removed by typing a **4** next to it and pressing **Enter**.
The **Delete Directory Entry - Part A** screen appears with the Directory Entry details.
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:

1. In the **Work with DB Directories** screen, select the directory to be activated by typing a **7** next to it and pressing **Enter**.
2. The Directory Entry is activated.

Deactivating a Directory Entry

To deactivate a Directory Entry:

1. In the **Work with DB Directories** screen, select the directory to be deactivated by typing a **8** next to it and pressing **Enter**.
2. The Directory Entry is deactivated.



DB Drivers

Working with Database Drivers

A database driver enables you to access a remote database, first by recognizing it 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

You can enter a full path or a path relative to DB-Gate default driver's location as shown in [Figure 5-1 on page 29](#).

Modify DB Driver

Driver ORACLE_SID Oracle SID

Driver file . . . /iSecurity/DB-Gate/Drivers/oracle/ojdbc5.jar

Class oracle.jdbc.OracleDriver

Driver page . . . http://www.oracle.com/technology/tech/java/sql_j_jdbc/index.html

Default port . . . 1521

Additional parms	Label	Possible values
Parm 1 . . . <adl1>	System ID	DB instance, XE
Parm 2 . . . <adl2>		
Parm 3 . . . <adl3>		
Parm 4 . . . <adl4>		

URL dft schema . . . jdbc:oracle:thin:<host>:<port>:<adl1>

Std replacement:

<host><db>

<catalog><port>

<schema><adl1-4>

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

Modify DB Driver

Driver ORACLE_SID Oracle SID

Driver file . . . oracle/ojdbc5.jar

Class oracle.jdbc.OracleDriver

Driver page . . . http://www.oracle.com/technology/tech/java/sql_j_jdbc/index.html

Default port . . . 1521

Additional parms	Label	Possible values
Parm 1 . . . <adl1>	System ID	DB instance, XE
Parm 2 . . . <adl2>		
Parm 3 . . . <adl3>		
Parm 4 . . . <adl4>		

URL dft schema . . . jdbc:oracle:thin:<host>:<port>:<adl1>

Std replacement:

<host><db>

<catalog><port>

<schema><adl1-4>

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

Figure 5-1. Modify DB Driver - Full and Relative Paths



You may add any number of additional drivers or modify the existing ones.

To set up a database driver:

1. Select **11 - Work with DB Drivers** from the Main Menu.

The **Work with DB Drivers** screen as shown in [Figure 5-2 on page 30](#) with a three-column list of the different types of database already entered in the system is displayed.

2. You can create a remote connection from this screen which includes the following details:

Driver Name **Available – Yes** indicates that the driver's Driver file parameter (in the **Modify DB Driver** screen as shown in [Figure 5-3 on page 31](#)) has been filled in with the path to the jar file on the IFS.

Description for the driver

```

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

Opt Driver Available
- AS400DB2 Yes DB2 on OS/400 platform
- CACHE - Cache
- DAFFODILLO - DaffodilDB Local
- DAFFODILSR - DaffodilDB Server
- DB2 Yes DB2 for Windows/Linux
- DB2JDBC4 Yes DB2 for Windows/Linux
- DERBY Yes JavaDB/Derby
- FIREBIRD Yes Firebird
- FRONTBASE Yes FrontBase
- HSQldb Yes HSQldb
- HSQldbEMBD Yes HSQldb Embedded
- H2_EMBED Yes H2 Database Engine (Embedded)
- H2_MEM Yes H2 Database Engine (In memory mode)
- H2_SERVER Yes H2 Database Engine (Server mode)

F3=Exit F6=Add new F8=Print F12=Cancel
More...

```

Figure 5-2. Work with DB Drivers

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

To do this, select **8 - Driver page** and then press **Enter**.

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 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 Name or Description fields and press **Enter**.

The driver list is redisplayed with results that match your query.



Modifying a DB Driver

To modify a DB driver, do the following:

1. In the **Work with DB Drivers** screen, select the DB driver you want to update and press **1 - Select** and then press **Enter**.

The **Modify DB Driver** screen as shown in [Figure 5-3 on page 31](#) opens with the driver's details.

2. Update the fields, then press **Enter**.

A confirmation message appears asking if you want to modify any of the entries.

3. Press **Enter** again to save the changes to the driver.

From within the driver page, you can view open the URL for the driver manufacturer to read detailed information on the DB driver by selecting

F7 - Driver page.

To restore the default settings of the current driver, select **F9 - Restore Default**.

Modify DB Driver	
Driver	DB2 DB2 for Windows/Linux
Driver file . .	/iSecurity/DB-Gate/Drivers/db2jcc.jar
Class	com.ibm.db2.jcc.DB2Driver
Driver page . .	http://www-306.ibm.com/software/data/db2/java
Default port . .	50000
Additional parms	Label Possible values
Parm 1 . . <adl1>	
Parm 2 . . <adl2>	
Parm 3 . . <adl3>	
Parm 4 . . <adl4>	
URL dft schema .	jdbc:db2://<host>:<port>/<db>
Std replacements:	
<host><db>	
<catalog><port>	
<schema><adl1-4>	
F3=Exit	F7=Driver page F9=Restore Default F12=Cancel

Figure 5-3. Modify DB Driver

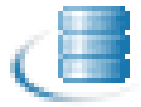
The following table describes the information in the DB Driver screen.

Table 5-1: DB Driver Parameters and Commands

Parameter / Command	Description
Driver	Driver's name and description. It will appear in the DB Drivers list when configuring a connection.
Driver file	Path to the jar file on the IFS that contains the JDBC driver for this database.
Class	JDBC driver class name.
Driver page	URL for the driver developer's web-page.

**Table 5-1: DB Driver Parameters and Commands**

Parameter / Command	Description
Default port	The default port to use when setting up a connection.
Additional Parameters	You may define up to four parameters which are specific for this driver. The definition includes the label, as well as a short explanation or the possible values. Parameters which are defined here will be displayed when this driver is selected.
F4	When in the Driver field, displays a Select DB Driver window with the option to select a specific DB Driver. After entering 1 - Select , the window closes and your selection is displayed in the Driver field.
F7	Once the Driver page has been entered, selecting F7 opens the URL in your default browser.
F9	Restores the original definition of a driver if it was supplied alongside the DB-Gate and replaces the current settings.



Copying a DB Driver

To copy a DB driver, do the following:

1. In the **Work with DB Drivers** screen, select the DB driver you want to copy, press **3 - Copy** and then press **Enter**.
The **Copy DB Driver** screen opens with the name and description of the selected driver as shown in [Figure 5-4 on page 33](#).
2. In the new Driver field, change the name and then press **Enter**.
3. After a confirmation message appears asking if you want to modify any of the entries, press **Enter** again to save the new driver.

```
Copy DB Driver

Type choices, press Enter.

From:
Driver . . . . . DAFFODILSR
Description . . . . . DaffodilDB Server

To:
New Driver . . . . . DAFFODILSR

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

Figure 5-4. Copy DB Driver

Adding a New DB Driver

To add a new DB driver:

1. From the **Work with DB Drivers** screen, press **F6**.
An empty **Add New DB Driver** screen appears.
2. After you complete the fields, press **Enter**.
3. After 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:

1. In the **Work with DB Drivers** screen, select the DB driver and then select **4 - Delete**.
The driver's page is displayed.
2. Press **Enter** to confirm the delete request.
The driver is deleted.

Drivers and Licenses Folders

To view and update a connection to a remote database:

- ☒ Select **15 - Drivers & Licenses Folders** from the main screen.

The **Work with Object Links** screen opens.

This resource screen lets you see the paths to the third party drivers and their licenses.

```

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
---  -
    .                DIR
    ..               DIR
    █ db2            DIR
    derby            DIR
    excel            DIR
    firebird         DIR
    hsqldb           DIR
    h2sql            DIR
    jtds             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

```

Figure 5-5. Work with Object Links

The drivers belong to the official owners. They are supplied with the product for your convenience. Next to each driver you may find the actual license under which it is supplied. These drivers have been downloaded and are supplied by Raz-Lee with the understanding that they may be supplied in this way.

DB-Gate Log

DB-Gate's 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.



Display Log Entries

To begin filtering log entries, select **41. Display Log** from the main menu. The **Display DB-Gate Log Entries** screen is displayed, as shown in [Figure 6-1 on page 36](#).

Display DB-Gate Log Entries (DSPDBLOG)

Type choices, press Enter.

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

More...

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

Figure 6-1. Display DB-Gate Log Entries Screen (1)

Display DB-Gate Log Entries (DSPDBLOG)

Type choices, press Enter.

SQL Message contains	<u>*ALL</u>	
From job name	<u>*ALL</u>	Name, generic*, *ALL
User	<u>*ALL</u>	Name, generic*, *ALL
Number	<u>*ALL</u>	000000-999999, *ALL
From program name	<u>*ALL</u>	Name, generic*, *ALL
Library	<u>*ALL</u>	Name, generic*, *ALL
Number of records to process . .	<u>*NOMAX</u>	Number, *NOMAX
Output	<u>*</u>	*, *PRINT, *OUTFILE

Bottom

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

Figure 6-2. Display DB-Gate Log Entries Screen (2)



Table 6-1 on page 37 describes the various settings you can define to filter log entries.

Table 6-1: Filter Log Settings

Parameter	Description
Display last minutes	Number, *BYTIME This “Backward Glance” feature lets you enter the number of minutes of recent activity you want to view, without the need to define any other time or date parameters. The feature is particularly helpful when trying to clarify the cause of problems.
Starting date	Choose from: Current, Start, Yesterday, Week Start, Previous Weeks, Month Start, Previous Months, Year Start, Previous Years , and each day of the week
Starting time	hh:mm:ss format
Ending date	Same options as Starting date
Ending time	hh:mm:ss format
User profile	All (default) or a specific user profile on the IBM System 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 (for example, CONNECT, CREATE, DROP , and so on)
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	All (default) or specific job
User	All (default) or specific user
Number	All (default) or a specific number
From program name	All (default) or the program in the IBM System i that created this log
Library	All (default) or specific library of the program name
Number of records to process	No Maximum amount (NOMAX) or a specific number
Output	On the screen (*), Printed on one of the defined printers. If you enter Outfile , you must then define the following additional parameters: File to receive output, Library, Member to receive output, Replace or add records



Once you have defined the filter for the log, press **Enter** to view the results. The following screen is an example of the output displayed.

```

Display DB Gate Log
Log information is available from 22/03/12
DB -> WAREHOUSE PREPARE SQLERR -204 [SQL0204] DEMOPF21 in ILAN type *FILE not
DB -> WAREHOUSE PREPARE SQLERR -104 [SQL0104] Token FROM1 was not valid. Valid
DB -> WAREHOUSE PREPARE SQLERR -204 [SQL0204] DEMOPF21 in ILAN type *FILE not
SASHA -> CRM PREPARE SQLERR 1146 Table 'ilan.demopf21' doesn't exist: select *
SASHA -> CRM PREPARE SQLERR 1146 Table 'ilan.demopf21' doesn't exist: select *
SASHA -> CRM PREPARE SQLERR -1 Table 'ilan.demopf21' doesn't exist: select * f
DB -> WAREHOUSE PREPARE SQLERR -204 [SQL0204] DEMOPF21 in ILAN type *FILE not
DB -> WAREHOUSE PREPARE SQLERR -204 [SQL0204] DEMOPF21 in ILAN type *FILE not
SASHA -> CRM PREPARE SQLERR -204 Table 'ilan.demopf21' doesn't exist: select *
SASHA -> CRM PREPARE SQLERR -204 You have an error in your SQL syntax; check t
SASHA -> CRM PREPARE SQLERR -204 You have an error in your SQL syntax; check t
DB -> WAREHOUSE PREPARE SQLERR -104 [SQL0104] Token FROM1 was not valid. Valid
SASHA -> CRM PREPARE SQLERR -204 You have an error in your SQL syntax; check t

F3=Exit                      F10=Entire-Entry              Bottom
                              F17=Top  F18=Bottom

```

Figure 6-3. Display DB-Gate Log

To view further details on the output, select **F10. Entire Entry**. The following screen appears.

```

Additional Entry Information      System: S520

Remote DB Entry . . . : WAREHOUSE      From User Profile . . . : DB
Date sent . . . . . : 12/03/22         Time sent . . . . . : 10:23:47
From Job . . . . . : QZRCRVS/QUSER/215534   Program : DBCRTLGR
Remote User . . . . . : DB              Library: SMZB
Remote IP . . . . . :                   SQL Opr.: PREPARE
SQL State . . . . . : 42704             SQL Err.: 204-
SQL Error Message . . : [SQL0204] DEMOPF21 in ILAN type *FILE not found.
SQL Statement:
select * from ilan.demopf21

F3=Exit                      F12=Cancel

```

Figure 6-4. Additional Entry Information from DB-Gate Log

Remote User ID

This chapter describes how to work with server authentications. The parameters and settings rely on standard IBM commands, such as **ADDSVRAUTE** and **CHGSVRAUTE**, which are described in detail in the IBM documentation.

At the time that authentication information is required, the data entered here will be used. This eliminates the need for repetitive entries of the authentication information.



Injection of Remote User IDs

To set up auto injection of remote user IDs, select **21 - Work with Server Authentication** from the main menu and press **Enter**.

The **Work with Server Authentication Entries** screen is displayed as shown in [Figure 7-1 on page 40](#).

```

Work with Server Authentication Entries
Subset by user . . . .
server . . .
remote user.

Type options, press Enter.
1=Select  4=Remove

Opt  User      Server      Remote user      Password
  ─  ──      ───      ─────────      ─────────
  █  AU       CRM1      SASHA2
  ─  AU       RDBIMP     QSECOFR          *YES
  ─  AU       S520DDM    QSECOFR          *YES
  ─  AV       testrdb10   AV
  ─  DB       CRM        SASHA            *YES
  ─  DB       LOGISTICS  sasha            *YES
  ─  DB       SALES      tm1              *YES
  ─  DB2ADMIN acum_db    DB2ADMIN         *YES
  ─  DB2ADMIN ACUMSDB   db2admin         *YES
  ─  DPROP    ODED      DPROP
  ─  DPROP    REPLICA    ODED
  ─  DPROP    SHI        DPROP
  ─  DPROP    192.168.168.182 DPROP
  ─  DPROP    192.168.168.4  DPROP

F3=Exit  F6=Add New  F12=Cancel

More...

```

Figure 7-1. Work with Server Authentication Entries

To view a specific subset of server authentication entries:

1. Select one of the following subset fields:
 - **User**
 - **Server**
 - **Remote User**
2. Enter the first alphanumeric characters of the entry and press **Enter**.
The list is redisplayed with results that match your query.



Modifying a Server Authentication Entry

To modify a server authentication entry:

1. Highlight the server authentication entry that you want to update in the **Work with Server Authentication Entries** screen and press **1 - Select** and then press **Enter**. The **Modify User Authentication Entry** screen opens as shown in [Figure 7-2 on page 41](#).
2. Update the User profile, Server and Remote user ID details displayed.
3. Press **Enter**. After a confirmation message appears, press **Enter** again to save your settings.

Modify User Authentication Entry

Type choices, press Enter.

User profile	AU	Name
Server	CRM1	
Remote user ID	SASHA2	
Password or *NONE		

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

F3=Exit
F12=Cancel

Figure 7-2. Modify User Authentication Entry

Adding a New Server Authentication Entry

To add a new server authentication entry:

1. In the **Work with Server Authentication Entries** screen, press **F6 - Add New**. An empty **Add User Authentication Entry** screen appears.
2. Update the User profile, Server and Remote user ID details displayed.
3. Press **Enter**. After a confirmation message appears, press **Enter** again to save your settings.



Test Drive

This chapter describes the various ways you can start SQL and work with SQL programs. These features rely on standard IBM commands, which are described in detail in the IBM documentation.

Starting SQL

To start working with SQL:

To begin writing SQL commands directly from your IBM System i select **51 - Start SQL** from the main menu and press **Enter**.

The **Enter SQL Statements** screen appears, as shown in [Figure 8-1 on page 43](#). This is the main screen for interactive Structured Query Language (SQL) for running SQL statements. SQL messages also appear on this screen.

```

Enter SQL Statements

Type SQL statement, press Enter.
> CONNECT TO SALES
Current connection is to relational database SALES.
> SELECT FIRST_NAME, LAST_NAME, EMAIL, PHONE_NUMBER FROM
"HR"."EMPLOYEES" WHERE FIRST_NAME BETWEEN 'Jack' AND 'Oliver'
SELECT statement run complete.
===>

F3=Exit  F4=Prompt  F6=Insert line  F9=Retrieve  F10=Copy line
F12=Cancel  F13=Services  F24=More keys

Bottom
  
```

Figure 8-1. Enter SQL Statements



Working with SQL Program Sources

To begin working with SQL Program Sources, select **5 - Work with SQL*** program sources from the main screen and press **Enter**.

The **Work with Members Using PDM** screen is displayed as shown in [Figure 8-2 on page 44](#).

```

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*...

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

Figure 8-2. Work with Members using PDM

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 prior to using the product for the first time.

It should be pointed out that there is no “typical” or “optimal” configuration for a connectivity product such as DB-Gate. 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 begin system configuration, select **81 - System Configuration** from the main screen and press **Enter**. The **DB Directory Entry System Configuration** screen appears as shown in [Figure 9-1 on page 45](#).

```

DBPARMR          DB Directory Entry System Configuration  25/03/12 12:18:36

Select one of the following:

DB-Gate
  1. General Definitions

  9. Log Retention

                                     General
                                     98. Driver Licenses
                                     99. Copyright Notice

Selection ==> █

Release ID . . . . . 01.0  12-03-20   44DE466  520  7459
Authorization code . . . . . B01203731542                1

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

Figure 9-1. DB Directory Entry System Configuration

After you modify any of the parameters accessible from this menu, the message **Modify data, or press Enter** appears upon return to the menu.



General Definitions

Refer to [Activation on page 11](#) for detailed descriptions and instructions on the three Run modes.

To change the global settings of DB-Gate:

1. Select **1 - General Definitions** from the **System Configuration** screen. The **General Definitions** screen appears as shown in [Figure 9-2 on page 46](#).

```
General Definitions 28/04/13 09:24:38
Type options, press Enter.
Run mode . . . . . 2      1=Inline (no pre-activation)
                          2=Internal server
                          3=External server

For Run mode=2, set any password to user profile SECURITYBP to enable the
initiation of the Internal Server. This password does not have to be entered
anywhere in the product.
SQL Activities are always done by the actual user authority.

Auto Set Java version and CLASSPATH . Y      Y=Yes, N=No
Java 1.5 or higher required; See CLASSPATH in /iSecurity/DB-Gate/sp.properties

Log level (errors are always logged) 5      1=No Log
                                          2=Connects only
                                          4=All (only first FETCH logged)

F3=Exit  F12=Cancel
```

Figure 9-2. General Definitions Screen

2. Enter a Log level setting from one of the following options:

Option	Description
1 = No Log	No data is stored.
2 = Connects only	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.

NOTE: [Modifying a Directory Entry on page 23](#) describes how to change a global default setting (**0=Global**) default setting for a specific directory entry. The above procedure overrides the global default setting (**0**).



Log Retention

Setting DB Log Retention Parameters

Log Retention parameters govern the retention and backup of the DB-Gate history log files. In order 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 the log retention periods:

1. Select **9 - Log Retention** from the **DB Directory Entry System Configuration** screen.
The **DB Log Retention** screen appears as shown in [Figure 9-3 on page 47](#) and described in [Table 9-1 on page 47](#).
2. Enter the parameters as defined in the table below.
3. Press **Enter**. After a confirmation message appears, press **Enter** again to save your settings.

DB Log Retention 25/03/12 10:40:10

Type options, press Enter.

Data retention period (days) . . . 99 Days, 99=*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 DBDBGKBP.

F3=Exit F12=Cancel

Figure 9-3. DB Log Retention

Table 9-1: DB Log Retention Parameters

Parameter	Description
Data retention period	The number of days that the queries are retained. At the end of this period, queries are purged from the log. Enter 99 to retain all data indefinitely.
Backup Program for data	Enter the name of the backup program you wish to use: *STD to use the standard backup program, or *NONE for no backup.
Library	Enter the name of the library where the backup program is located.



Maintenance Menu

The **Maintenance Menu** enables you to set and display global definitions for DB-Gate.

To access the Maintenance menu, select **82 - Maintenance Menu** from the main menu.

The **Maintenance Menu** appears as shown in [Figure 10-1 on page 49](#).

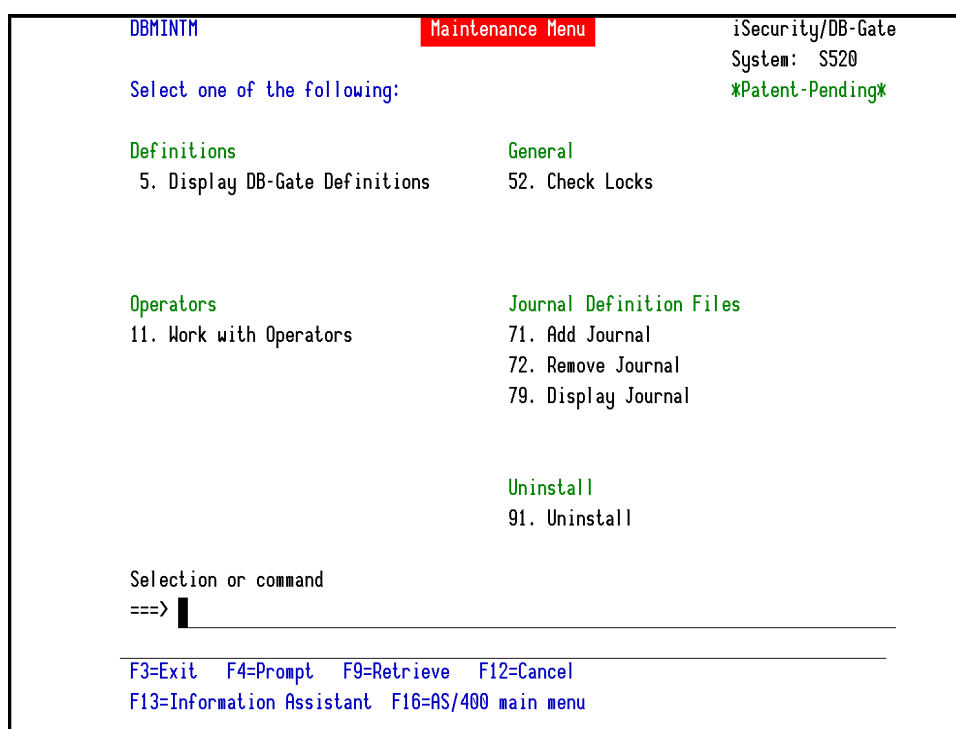


Figure 10-1. Maintenance Menu



Display DB-Gate Definitions

To print or display the definitions that you entered for DB-Gate:

1. From the **Maintenance Menu** screen, select **5 - Display DB-Gate Definitions**.
The **Display DB-Gate Definitions** screen appears as shown in [Figure 10-2 on page 50](#).
[Table 10-1 on page 50](#) explains the options.

Table 10-1: DB Gate Definition Options

Parameter	Value	Description
Report Type	*ALL	All of the following options
	*DBENTRY	The definitions for the Directory Entries
	*DBDRV	The definitions for the DB Drivers
From Item	*All	
	*Start	From the beginning of all values
To Item	*Only	
	*Last	
Format	*List	Short form
	*Details	Full form
Output	*	Screen
	*Print	Spool

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

```

Display DB-Gate Definitions (DSPDBDFN)

Type choices, press Enter.

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

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

```

Figure 10-2. Display DB-Gate Definitions Screen



Work with Operators

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 existing operator authorities and modify them, do the following.

1. From the **Maintenance Menu**, select **11 - Work with Operators**.

The **Work with Operators** screen appears as shown in [Figure 10-3 on page 51](#).

Work with Operators

Type options, press Enter.
1=Select 4=Delete

Authority level: 1=*USE 9=*FULL

Opt	User	System	DB	Adm
█	*AUD#SECAD	S520	9	9
—	CS	S520	9	9
—	GS	S520	9	9
—	OS	S520	1	1

Bottom

DB=DB-Gate Adm=Administrator

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

Figure 10-3. Work with Operators

2. To modify an operator, highlight it and choose **1 - Select**.
The **Modify Operator** screen appears as shown in [Figure 10-4 on page 52](#).
3. To add a new operator, press **F6**.



Modify Operator

Type choices, press Enter.

Operator *AUD#SECAD

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

Figure 10-4. Modify Operator Screen

Table 10-2 on page 52 explains the parameters on the **Modify Operator** Screen.

Table 10-2: Modify Operator - Parameters

Parameter	Value	Description
Operator		The Operator can be a user or group profile. DB-Gate provides one type of Operator group: *AUD#SECAD. This group has full access (Read and Write) to all parts of DB-Gate.
System	*ALL	
	Name	
Password	Name	Password
	*SAME	Same as previous password when edited
	*BLANK	No password
DB-Gate Controls use of the product	1	*USE (Read authority only)
	9	*FULL (Read and Write authority)
Product Administrator Can perform backups, set authorization codes, and so on	1	Person responsible for backups, setting authorization codes, and so on *USE (Read authority only)
	9	Person responsible for backups, setting authorization codes, and so on *FULL (Read and Write authority)



Check Locks

To verify if objects are locked in the system, select **52 - Check Locks** from the **Maintenance Menu**. The **Check Locks** screen appears as shown in [Figure 10-5 on page 53](#).

GSLCKMNU	Check Locks	iSecurity
		System: S520
Select one of the following:		
Check Locks		
1. Data Base Files		
-. Display Files		
End this session. Enter CHKSECLCK OBJTYPE(*DSPF) from a new session.		
-. All File Types		
End this session. Enter CHKSECLCK OBJTYPE(*ALL) from a new session.		
Selection or command		
==> █		
F3=Exit F4=Prompt F9=Retrieve F12=Cancel		
F13=Information Assistant F16=AS/400 main menu		

Figure 10-5. Check Locks Screen



Uninstall

Use the Uninstall feature to remove DB-Gate from your computer.

1. Select **91 - Uninstall** from the Maintenance Menu.
2. Follow the directions that follow on the **Uninstall SECURITYBP** screen.

```
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 QSEC0FR 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
```

Figure 10-6. Uninstall SECURITYBP Screen

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

The following steps will impact on 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

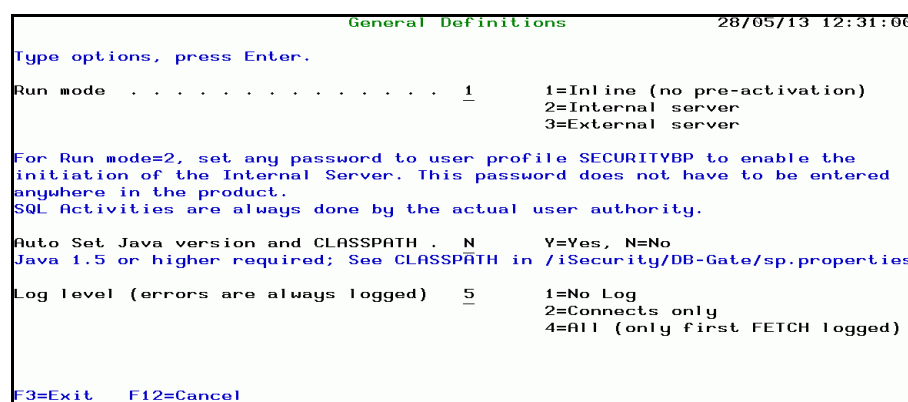


Figure 11-1. General Definitions Screen - Mode 1 Options

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: CRTSAVF QGPL/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 AS/400 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.

Error Messages in Server Mode

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

DB-Gate messages 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.

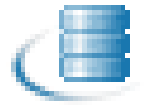
Reason. DB-Gate server is not currently active.

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.

Adding an Entry

To add an entry:

1. Type **STRDB**, then select option **1 - Work with Directory Entries**.
2. Press **F6**, give it a name and point it to the supplied PC_FILE driver as shown in [Figure A-1 on page 59](#).
3. Press **Enter**. Set log level and language support if needed and confirm.

The entry is activated and available for use.

Add New Directory Entry		
Directory Entry	PC_____	
Driver	PC_FILE_____	F4=Prompt

Figure A-1. Add New Directory Entry

Opt	Driver	Available
—	ORACLE_SID	Yes Oracle SID
—	ORACLE_SRV	Yes Oracle Service
—	ORACLE_TNS	Yes Oracle TNS
—	PC_FILE	Yes CSV, Microsoft Excel, Text, ODF Spreadsheet, XML
—	PERVASIVE	- Pervasive
—	POINTBASEL	Yes PointBase Local
—	POINTBASES	Yes PointBase Server

Figure A-2. Opt Driver Available

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.



Connecting

Working with the JDBC Driver Connect the entry (no user/password is required): **CONNECT TO PC**

Complete either of the following steps:

- An SQL 'COMMENT ON' statement: **COMMENT ON QGPL.MY_TABLE IS 'file:///tmp/customers.xls'**
- One can also use: **COMMENT ON QTEMP.MY_TABLE IS...** or **COMMENT ON MY_TABLE IS...**

NOTE: In both cases, the file MY_TABLE is created in an internal QTEMP library. This is not to be confused with the current Job's QTEMP lib.

When issuing the SELECT statement the QTEMP library must be specified:

SELECT* FROM QTEMP.MY_TABLE

When completed, the file QGPL/MY_TABLE is created and available with the data.

An SQL 'SELECT' statement: **SELECT * FROM QGPL.MY_TABLE**

The driver accesses the source PC file in a read only manner.

Excel sheets can be accessed by specifying the sheet number in the '**COMMENT ON**' statement.

Example:

COMMENT ON QGPL.MY_TABLE IS 'file:///tmp/customers.xls@2'

On this example, the file is **customers.xls** and the query targets the second sheet **@2**.

The first sheet is '@1'.

Tables embedded in ODF Text Documents (LibreOffice/OpenOffice) can be accessed in the same manner as sheets on Excel spreadsheet.

Table A-1: Access Protocols Examples

Function Key	Description
File	Mainly for accessing files in the IFS file system: COMMENT ON QGPL.MY_TABLE IS 'file:///tmp/customers.xls'
HTTP	Mainly for the web COMMENT ON QGPL.MY_TABLE IS 'http://www.razlee.info/gui/db_gate/ms.xls'
FTP	COMMENT ON QGPL.MY_TABLE IS 'ftp://myserver.com/readme.txt'
SMB	MS Windows shares COMMENT ON QGPL.MY_TABLE IS 'smb://192.168.1.181/shareddocs/sales.csv'

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:

1. Add a new Directory Entry, as described in [Creating a New Directory Entry on page 26](#).
2. Ensure that the **URL** entry is as shown in [Figure B-1 on page 61](#).

Modify Directory Entry - Part A

Directory entry	ORACLE_TNS	Active: Y	(Driver: ORACLE_TNS)
Description	0		
Log	0=Dft, 1=None, 2=Basic, 4=All		
Host or IP	<host>		
Port	<port>		
Catalog	<catalog>		
Schema	<schema>		
Database	<db>		
TNSName	<adl1>		

URL, file://, http://... .	jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=1.1.1.221)(PORT = 1521))))(CONNECT_DATA=(SERVICE_NAME=XE))
Auto replacements are:	
<host><port><catalog>	
<schema><db><adl1-4>	

More...

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

Figure B-1. Oracle TNS RDB

External File Method

You can find the available TNSNAMES entries listed in the **tnsnames.ora** file 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:

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

This is the default location for the **tnsnames.ora** file. If you move it to another location, you must also update the **sp.properties** file.

After modifying the **sp.properties** file, you must restart DB-Gate. If you are running in either internal server mode or external server mode, you must restart the server. 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 screen, ensure that the **JDBC URL** field is set to **jdbc:oracle:thin:@PROD** or **jdbc:oracle:thin:@TEST** as appropriate.



Modify Directory Entry - Part A

Directory entry	ORACLE_TNS	Active: Y	(Driver: ORACLE_TNS)
Description			
Log	0	0=Dft, 1=None, 2=Basic, 4=All	
Host or IP	<host>		
Port	<port>		
Catalog	<catalog>		
Schema	<schema>		
Database	<db>		
TNSName	<adl1>		

URL, file://, http://... . jdbc:oracle:thin:@PROD

Auto replacements are:

<host><port><catalog>

<schema><db><adl1-4>

More...

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

Figure B-2. Oracle TNS RDB Defined Externally

