



# System Administration Reference Guide

PROGRESS DATABASE  
ON WINDOWS NT SERVER



78-0460A  
MFG/PRO Version 9.0  
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**QAD Inc.**  
6450 Via Real  
Carpinteria, California 93013  
Phone (805) 684-6614  
Fax (805) 684-1890

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# Preface

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param91.p 14.13.2 Routing Maintenance (Date Based)

|                    |                     |                       |
|--------------------|---------------------|-----------------------|
| Routing Code:      | 10-15000            | NONAD(75) COOLING     |
| Operation:         | 20                  |                       |
| Standard Operation |                     |                       |
| Work Center        | 1030                | INSPECTION, ALL SITES |
| Machine            |                     |                       |
| Description        | INSPEC PER PROC-005 |                       |
| Machines per Op    | 1                   | Milestone P           |
| Overlap Units      | 1                   |                       |
| Queue Time         | 1.0                 |                       |
| Wait Time          | 0.0                 |                       |
| Setup Time         | 0.0                 |                       |

Route by Production Route Control

## Using This Guide

Use this guide for background and reference information on MFG/PRO system administration, especially database management and related tasks.

### Audience

These instructions are for the MFG/PRO system administrator who manages the MFG/PRO database and is familiar with Microsoft Windows NT and networking.

### MFG/PRO Manager Functions Information

Although it is involved with system administration, this guide does not include documentation for the MFG/PRO Manager Functions (menu 36). For that information, refer to *User Guide Volume 11: Manager Functions*.

However, because this guide discusses various dump/load methods, it also covers the MFG/PRO dump/load programs found on the Manager Functions menu.

### Configuration and Sizing Information

Refer to your MFG/PRO installation guide for the following types of information:

- Configuration overview
- Minimum system requirements
- Hardware sizing recommendations

## Organization

This guide is organized as follows.

|   |                                     |                                                                                                                 |
|---|-------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 1 | Introduction                        | Explains the basic concepts of PROGRESS and the MFG/PRO system.                                                 |
| 2 | Database Management                 | Explains the common database management tasks, along with some step-by-step instructions.                       |
| 3 | Performance Tuning                  | Offers advice on how to boost system performance.                                                               |
| 4 | Multi-Volume Database               | Explains how to set up a multi-volume database, which is recommended for best performance.                      |
| 5 | Split Schema Database               | Explains the reasons and procedure for splitting the MFG/PRO production database.                               |
| 6 | General Administration              | Covers various tasks that support the MFG/PRO application, particularly how to schedule and process batch jobs. |
| 7 | Using PROGRESS RESULTS with MFG/PRO | Explains how to set up the custom reporting tool RESULTS.                                                       |
| 8 | MFG/UTIL Reference Information      | Provides MFG/UTIL reference information.                                                                        |
| 9 | Modified Browse Program Names       | Lists the old and current names for MFG/PRO browse programs.                                                    |

## Document Conventions

Command prompts use the conventions listed in the following table.

| If you see:                       | It means:                                                                                                                                             |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| monospaced text                   | A command or file name.                                                                                                                               |
| <i>italicized monospaced text</i> | Italicized monospaced text indicates a variable name for a value you enter as part of an operating system command. For example, <i>YourCDROMDir</i> . |
| indented command line             | A long command that you enter as one line (although it appears in the text as two lines).                                                             |



## CHAPTER 1

# Introduction

This chapter presents general information you need to know for successful system administration. The topics in this chapter are:

*System Administration Tasks*    **6**

*PROGRESS Basics*    **6**

*MFG/PRO Basics*    **9**

The screenshot displays a software window titled "Routing Maintenance (Date Based)". It contains a table of routing data for a specific routing code. The data includes operation numbers, standard operation times, machine descriptions, and various time parameters like queue, wait, and setup times. The interface is typical of a legacy manufacturing software system.

| Routing Code | Operation | Standard Operation | Machine | Description         | Machines per Op | Overlap Units | Queue Time | Wait Time | Setup Time |
|--------------|-----------|--------------------|---------|---------------------|-----------------|---------------|------------|-----------|------------|
| 10-15000     | 20        | 10.00              |         | INSPEC PER PROX-005 | 1               | 1             | 1.0        | 0.0       | 0.0        |

## System Administration Tasks

The following table summarizes the major tasks involved with system administration, along with how often they typically occur.

**Table 1.1**  
System  
Administration  
Tasks

| Task                   | Frequency                                              |
|------------------------|--------------------------------------------------------|
| System Backup          | Daily                                                  |
| Batch processing setup | During implementation and as needed                    |
| Client setup           | During implementation and as needed                    |
| Performance monitoring | Weekly or as needed                                    |
| Delete/Archive         | After financial close (yearly or as needed)            |
| Dump/Load              | After delete/archive (to alleviate disk fragmentation) |

## PROGRESS Basics

PROGRESS is both a relation database management system (RDBMS) and a fourth-generation (4GL) programming language. It is installed by default in the DLC directory. (DLC stands for Data Language Corporation, the previous name for PROGRESS, Inc.)

### PROGRESS Version Number

To find the PROGRESS version number, use a text editor to open a file called `version`, located in the main PROGRESS installation directory. A single line appears in this file, listing the version number and a revision letter. For example:

```
PROGRESS version 8.3A as of Mon Mar 8 1999
```

Another important file is `PROGRESS.cfg`, located in the PROGRESS installation directory. This file is a text file containing the serial numbers and other details about the installed PROGRESS products. To open it, double-click the file name in Explorer or File Manager.

**Note** To determine which PROGRESS version is required for a given MFG/PRO release, refer to the *MFG/PRO Installation Guide*.

## PROGRESS Executables

As you maintain start-up scripts and other parts of the system, keep in mind the various PROGRESS executables that perform tasks such as starting application sessions and database servers. These executables are located in sub-directories of the PROGRESS installation directory and typically have an underscore ( \_ ) in the first character of the name. For example, the PROGRESS executable that starts multiuser database servers is called `_mprosrv.exe`, located in the `bin` sub-directory.

MFG/PRO runs PROGRESS executables as needed; you normally do not need to run them directly. To start `_mprosrv.exe`, MFG/PRO uses the following command, where *PROGRESSInstallDir* is your PROGRESS installation directory and *DbName* is the name of an existing database.

```
ProgressInstallDir\bin\_mprosrv DbName
```

## PROGRESS Parameters

A PROGRESS parameter is a setting that instructs the RDBMS how to handle hardware factors such as memory and I/O resources. Parameters pass to the RDBMS when a PROGRESS executable starts or when connecting to a database.

You specify parameters after the PROGRESS executable command statement. For example, you can type the `-B` parameter (database buffer memory) in the following command line to allocate 8MB of memory as a database buffer:

```
ProgressInstallDir\bin\_mprosrv DbName -B 2000
```

When you use parameters, keep in mind the following tips.

- Each parameter works with a particular PROGRESS executable. For example, the `-B` parameter does not work with the executable `_prowin32.exe`.
- Each parameter takes affect at a specific point, such as program startup or database connection.
- You cannot specify parameters when running a PROGRESS script, such as `procopy`.

For a complete listing of PROGRESS startup parameters, refer to the PROGRESS system administration manuals. Also refer to for information on the main parameters: -B, -g, -L, -S, -H, -N, -S, and -mmax.

## PROGRESS Database Architecture

In its simplest form, a PROGRESS database is a single physical file on the computer. The file extension is .db. There are also related files, such as the before-image file (extension .bi).

Like any RDBMS system, PROGRESS databases have a structure, called a schema, that defines how data is stored and accessed. The schema consists of:

- Tables (also called files): logical groupings of data, such as customer information.
- Fields (known as columns in other systems): the data elements within tables, such as address.
- Indexes: a map of the fields within tables.

### Before-Image (.bi) File

PROGRESS employs a mandatory recovery technique called roll-backward recovery. Any time a transaction is called against a database, a snapshot of the data is recorded prior to alteration. The snapshot is held in the .bi file. If a transaction is aborted, PROGRESS resets the database record to the .bi file snapshot.

The .bi file incurs heavy use during I/O operations. Relocating this file to a different drive from the database file (.db, also an I/O intensive file) allows for less contention. Refer to Chapter 3, “Performance Tuning,” for more information on relocating the .bi file.

## Related Database Files

Some of the main files involved with building and running a PROGRESS database are:

- Empty Database (`empty.db`): Included with every PROGRESS release, this database has some version-specific header information, but is otherwise empty. By making a copy of `empty.db` and loading a database definition file, you create a working PROGRESS database.
- Database Definition (extension `.df`): An ASCII text file with descriptions of the tables and fields used to create the schema. Before MFG/PRO is shipped, database definitions are loaded into a copy of `empty.db` in order to create a given MFG/PRO database.
- Data files (extension `.d`): ASCII text files containing database records to be dumped from or loaded into a database.
- Bulkload definition file (extension `.fd`): Like the database definition file, this file lists all tables and fields in the schema. However, its purpose is to define how to insert records from data files into the database during a bulkload process.
- Lock file (extension `.lk`): A file created when you start a PROGRESS session against a database. If your database was shut down abnormally (such as a system failure), you may need to delete the lock file in order to connect to the database.
- Log file (extension `.lg`): A file containing a database event history, such as startup, shutdown, and errors.

## MFG/PRO Basics

MFG/PRO is a global supply chain management software package offered by QAD Inc. MFG/PRO programs are written in the PROGRESS 4GL programming language and the MFG/PRO databases run on the PROGRESS RDBMS. MFG/PRO is dependent on the installation of PROGRESS to function.

## MFG/PRO Version Number

Because MFG/PRO is supported on certain versions of PROGRESS, you must know how to identify the software version. To find the MFG/PRO version number, use a text editor to open a file called `version.mfg`, located in the main MFG/PRO installation directory. Like PROGRESS, the version number includes a revision letter. In some cases, it also includes an enhancement code at the end. For example:

```
"Release 9.0 02 as of Mar 8 1999"
```

## MFG/PRO Compiled and Source Code

The MFG/PRO programs are delivered as compiled code (also called object code). The file extension is `.r` and it is sometimes called `r-code`. The programs are grouped into modules, so your installation contains only those programs needed for the modules you purchased.

In addition to compiled code, the system includes source code (file extension `.p`). Source code is the high-level 4GL programming syntax. You may need to use source code to recompile MFG/PRO or make programming customizations.

**Note** You can also run directly from source code, in which case PROGRESS creates the compiled code in system memory at run time. However, running from source code is significantly slower.

There are two versions of source programs:

- **Encrypted Code:** This source code is passed through an encoder to prevent custom programming; however, you can use it to recompile MFG/PRO. It is provided for all modules purchased.
- **Non-Encrypted Code:** If you plan to customize MFG/PRO programs, you can purchase the non-encrypted source code. When purchased, the source code is provided for all modules.

## Empty Databases

The sources for all MFG/PRO databases are called empty databases because they only contain the schema and not any data. You can use these empty databases in case one of the standard databases is damaged and you need to replace it.

|          |                                                 |
|----------|-------------------------------------------------|
| mfgempty | Source database for mfg, mfgdemo, and mfgtrain. |
| hlpempty | Source database for mfghelp.                    |
| guiempty | Source database for gui.                        |
| cfempty  | Source database for cfg.                        |

Table 1.2  
Empty Databases

The data that are loaded into standard databases are kept in sub-directories under the MFG/PRO installation directory. The directory names correspond to the name of the standard database. For example, directory mfg contains data (.d files) for the mfg.db database.

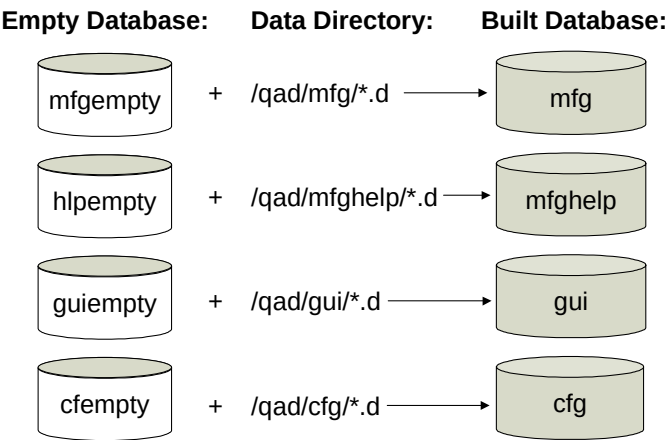


Fig. 1.1  
Empty and Built  
Databases

## Main MFG/PRO Databases

For Windows NT, the MFG/PRO databases come pre-built from the CD-ROM. A pre-built database means the schema is loaded, as well as any default data.

The bulk of MFG/PRO tables appear in one database. The source version of this database is called `mfgempty`. Copies of `mfgempty` are made to support different types of data: demonstration, training, and your production data.

**Table 1.3**  
Main  
MFG/PRO  
Databases

| Database Name           | Description                                                                                                                        |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <code>mfg</code>        | Source database used to make the production database. Contains only default menus, messages, and system codes.                     |
| <i>YourProductionDB</i> | A copy of <code>mfg</code> to be used as your production database. The production database name is determined during installation. |
| <code>mfgdemo</code>    | A copy of <code>mfgempty</code> with demonstration MFG/PRO data loaded.                                                            |
| <code>mfgtrain</code>   | A copy of <code>mfgempty</code> with training MFG/PRO data loaded.                                                                 |

## Help, User Interface (GUI), and Configurator Databases

In addition to the main database, MFG/PRO also uses the databases listed in Table 1.4.

**Table 1.4**  
Help, User  
Interface, and  
Configurator  
Databases

| Database Name        | Description                                                                                                                           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <code>mfghelp</code> | Contains all data for the system help feature. It is therefore mostly read-only information.                                          |
| <code>gui</code>     | Contains data used to create the MFG/PRO user interface, including the interface for MFG/PRO object programs.                         |
| <code>cfg</code>     | Contains the data from the Component Configurator Maintenance programs. This module enables you to customize MFG/PRO object programs. |

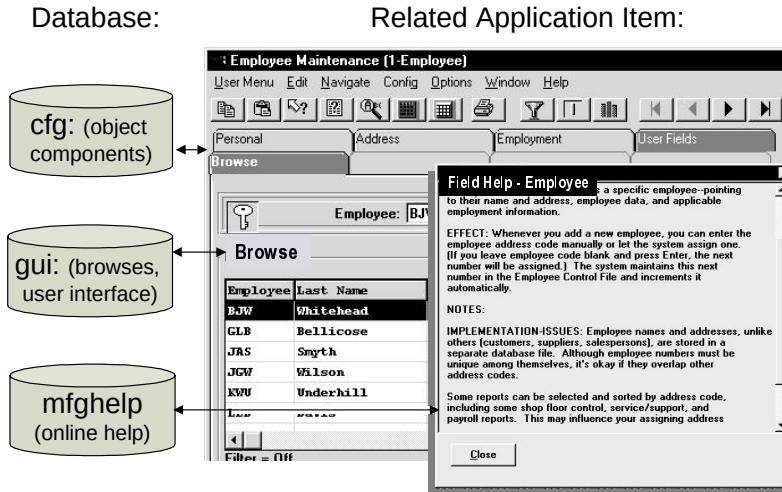


**Fig. 1.2**  
The cfg, gui, and  
mfghelp Databases

## Database Sequences

Sequences are a data structure in PROGRESS Version 7 and higher. Sequences generate a sequential stream of values for records that must be uniquely identified, such as the Inventory Transaction History file (tr\_hist). Starting with MFG/PRO Version 8.5, several control file numbering fields were replaced by sequences, which are faster, require less error checking, and reduce the amount of time MFG/PRO spends validating uniqueness.

In general, sequences are self-maintained. However, you may need to update sequence values when you perform a delete/archive. The sequencing functionality in MFG/PRO helps you maintain sequence values both manually and through the CIM interface.

## Multiple and Custom Databases

From the client's perspective, the existence of multiple databases and custom (side) databases merely requires that the client connects to additional databases at client start-up time, using the script or start-up icon and configuration files. The creation of the multiple databases and custom (side) databases occurs on the database server. This overview explains why a system administrator might be required to connect to these additional databases.

### Multiple Database

To operate multiple inventory sites while consolidating financial information, you must set up a multiple database environment. Use the Multiple Database module to set up and operate the multiple database environment. Multiple Database functions retrieve and update data in other databases. Database connections can be either automatic, manual, or scripted.

Database connection information is accessed for all multiple database functions: central sales orders, distributed purchase orders, and DRP. When these functions are called, MFG/PRO accesses the database connected to the site specified on the transaction. As long as the network connection is operating, the connection is invisible to the user.

### Custom (Side) Databases

If you customize MFG/PRO and the standard user fields provided for each file are not adequate, you can create custom (side) databases. These databases should be created and used to hold the new table and field definitions required for the custom programs.

The standard MFG/PRO schema should never be modified to add new tables and fields, since this could complicate subsequent updates. Instead, a copy of the PROGRESS empty database should be modified to create the tables and fields required by the custom programs.

When a client runs the custom code, the client must connect to the custom (side) database to ensure that the custom code will execute.

## CHAPTER 2

# Database Management

Topics in this chapter:

|                                                             |           |
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## Large Scale Data Movements

There are three types of large scale data movements, described in Table 2.1.

**Table 2.1**  
Types of Data  
Movement

| Method         | When                          | What                                                                |
|----------------|-------------------------------|---------------------------------------------------------------------|
| Backup         | Regularly                     | Makes exact copy of database or of changes.                         |
| Delete/Archive | When data is no longer needed | Frees space by removing records.                                    |
| Dump/Load      | After delete and archive      | Copies data from the database into ASCII files. No data is deleted. |

## Database Backup

Regular database backups are crucial to ensure against data loss. You should back up as often as practical, at least every day. Whatever your schedule, consistency is important.

Database backup involves transferring the database file (single-volume) or files (multi-volume) to media such as tape. Also, you must back up all related database files, including:

- Before-image (.bi) file because it is time-stamped to the database
- After-image (.ai) files, if after-imaging is enabled

However, if you truncate the before-image file, you do not need to back it up. When you truncate the .bi file, PROGRESS updates the database with pertinent before-image information and then empties the .bi file to its minimum length. PROGRESS recreates the .bi file at the next server startup. Truncating is recommended to save time and space during the backup, but it requires you to shut down the database, which may not be feasible if you must operate 24 hours per day, 7 days per week.

The command for truncating the database is:

```
ProgressDir\bin\_proutil.exe YourDbName -C truncate bi
```

### Types of Backup

There are various types of backup.

- Off-line backup means the database is shut down. This method ensures database integrity.
- On-line backup means the database is still running during the backup. It is about 99.9 percent accurate. This method is only available with the PROGRESS backup utility.
- Full backup includes all records and can be time consuming.
- Incremental backup includes only the differences since the date of the last full or incremental backup. For this reason, it is faster.

### Backup Schemes

When you choose your type of backup, you must also plan for how you will restore the data. In the simplest case, you perform a daily full backup and, in the event of a failure, restore the whole database.

If you choose incremental backups, you must choose whether to back up the changes for each day or to back up the cumulative changes since the last full backup. Table 2.2 presents two examples.

| Day     | Daily Incremental               | Cumulative Incremental      |
|---------|---------------------------------|-----------------------------|
| Friday  | Full backup                     | Full backup                 |
| Monday  | Backup changes since Friday     | Backup changes since Friday |
| Tuesday | Backup changes since Monday     | Backup changes since Friday |
| Restore | Friday, Monday, Tuesday backups | Friday and Tuesday backups  |

**Table 2.2**  
Backup Scheme  
Examples

### PROGRESS Backup Utilities

You can perform the backup with various third-party utilities or with the PROGRESS utilities. If you run your database 24-hours, 7 days a week, then you must do your backups online. In this case, the only option is to use the PROGRESS backup utility probkup.

With probkup and its counterpart, prorest (for restoration), you can:

- Back up online (servers up) or offline (servers down)
- Perform incremental backups

It is also advantageous to use probkup if you are running after-imaging. After-imaging is an optional type of recovery known as roll forward recovery. It requires a separate disk drive. It can be used without probkup, but some RFUTIL commands will need to be started.

## Validating the Backup

Validate the ability to back up and restore your database at least once a month, if not once a week. Use the production database if space is available. Otherwise, use a test database or the default mfg database.

### Reliability Test Procedure

You can use this procedure to validate your ability to back up and restore your database.

- 1 Shut down the database with the standard MFG/PRO shut-down icon.
- 2 Truncate the .bi file using the PROGRESS proutil utility.
- 3 Back up the database.
- 4 Restore the database to a different directory.
- 5 Run MFG/PRO against the restored database, or you can compare the two databases.

**Note** Use PROGRESS cmpdb for single-volume databases.

## Offsite Storage

It is a good idea to regularly rotate your backups to an offsite storage area. This provides you with greater security. There are numerous service providers who will assist you with this. Check your yellow pages under Data Storage. An alternative is to rent a bank safety deposit box and store backups there. Offsite storage is less a matter of theft prevention than security should your site burn down or be subject to a natural disaster. Offsite storage should be, if possible, at least 10 miles away.

## Delete/Archive and Database Fragmentation

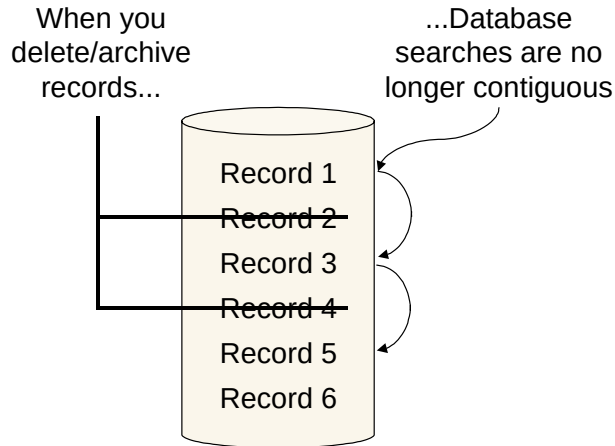
When you perform a delete/archive, the actual database records are deleted, fragmenting your logical database file. Whenever a deletion occurs within the database, the storage area occupied by that data record becomes available to the database to reuse. (The space is not available to the operating system; the .db file size does not decrease.) Quite possibly the deleted record was stored in a larger storage area that held many similar type records.

For example, you have deleted a group of work orders. The storage area they resided in becomes available for use. The RDBMS uses this area within the database file the next time someone enters any type of record(s) that can physically fit in the vacated storage area. For the purpose of this example, a sales quote is the next record entered, and it is placed in the newly vacated area.

Due to the way an indexed database retrieves records, both the work order and sales quote retrieval process will now be more complex. Both these files are fragmented, and so are their indexes.

For the system to retrieve a particular record within these files (work order and sales quote), it starts searching the disk at some point and reads a part of the entire file. It then needs to reposition the physical disk read/write head, and recommence the read process.

**Fig. 2.1**  
Database  
Fragmentation



Obviously the more fragmented any file becomes the more inefficient the search becomes. For this reason it is best to perform all sub-function delete/archive processes during one particular period, and then defragment your database by performing a dump and load.

## Dump and Load

A database dump replicates all data records from selected database tables into ASCII files. The dump does not delete any data from the database. The ASCII files are named after their source tables and have a .d extension. For example, if you dump the menu detail table (mnd\_det), the resulting file would be: mnd\_det .d.

The logic for a MFG/PRO dump, or load, is supplied using the programs contained in the **dmpprocs** (dump procedures) or **ldprocs** (load procedures) sub-directories. These sub-directories are found off the main MFG/PRO install directory.

If any errors occur during the dump/load, PROGRESS creates an error file (.e extension) in the dump/load directory.

**Note** Since the MFG/PRO application could produce several related file records during any single transaction, loading of single files into populated databases could result in loss of integrity between files and needed related files. For this reason, a database should be dumped as a whole, and loaded as a whole.

## Reasons for Dumping and Loading Data

The main reasons for a full dump/load of a database data are:

- Resolve database fragmentation, especially after a delete/archive
- Convert from one MFG/PRO version to another

A dump/load reduces the database fragmentation because records that were once scattered within the database are reloaded from the ASCII files in sequential order, creating one continuous logical file order in the database.

## Normal Dump/Load Procedure

These are the general steps to follow for a dump/load. Before you perform these steps on a production database, you should perform a test dump/load on a non-production database in order to estimate the amount of time your machine will take.

To help estimate the time, you can run Database File Size Report (36.16.2) and chose a representative 5-10% of the files (in terms of size). Dump and load these files and time the process.

- 1** Check the primary indexes using Database File Size Report (36.16.2). The primary indexes must be all right. If not, you need to rebuild the indexes using the proutil idxbuild command.
- 2** Create a dump directory on the server.
- 3** Check for adequate disk space. You will need about 75% of the database size in free space. If you do not have enough space, it is possible to perform a series of partial dumps. Refer to “Limited Disk Space Dump Procedure” on page 24.
- 4** Make sure all users are logged off.
- 5** Choose one of the following dump methods:
  - From MFG/PRO, use Database File Dump/Load w/Batch (36.16.4).
  - From PROGRESS, use the Data Administration Dump/Load.
- 6** When the dump is complete, shut down the database you dumped and back it up.

- 7 Prepare a copy of the empty MFG/PRO database (mfgempty) to load the dumped data.
- 8 Load the dumped data using one of the following methods:
  - Run the Bulk Loader option of the PROGRESS PROUTIL utility (recommended)
  - Use the PROGRESS Data Administration Dump/Load

**Note** Although you can use Database File Dump/Load w/ Batch to load data, it is not recommended for loading an entire database because of the performance impact on the network.

- 9 Once the data is loaded, initialize sequences with Database Sequence Initialization (36.16.17).
- 10 Back up the database.

**Note** In general, you should perform all dump and loads on your server machine. However, on DEC Alpha Windows NT machines, you cannot complete dump and loads on the server because ProVISION, which is required, is not available for DEC Alpha on Windows NT. In this case, you must install ProVISION on a client machine and build the .fd file using the client's Database Dictionary Admin Menu. You then transfer this file to the server using ftp, or another applicable file transfer method. You should always use ftp in binary mode.

## About PROGRESS Bulk Loader

The PROGRESS Bulk Loader utility is the fastest load method because it is the only method that does not maintain the indexes at load time. It discards them. This requires a separate index rebuild, but it is still faster than other methods, which reproduce indexes during the load. The overall tasks for performing a bulk load are:

- Create a bulk loader description file from the PROGRESS Data Administration tool. This file maps all of the tables and fields so that PROGRESS can place the data from the .d files.
- Run the proutil utility, bulkload option.
- Run the proutil utility, index rebuild option.

## Dumping Through MFG/PRO

### Prerequisites:

- Your dump directory must be created on the server.
  - If you have not done so, you must build the dump/load procedures for the Windows client PC. (Dump/load procedures are delivered pre-built with the server media, but they are only used for dumping through a non-interactive batch process.) To create the dump/load procedures, run utmkd1 from any MFG/PRO menu. This step takes several minutes.
- 1 In an MFG/PRO session against your training database, start Batch ID Maintenance (36.14.1). Create two batch IDs called Dump and Load.
  - 2 Select Database File Dump/Load w/Batch (36.16.4), and enter the following

| Field                  | Enter                                          |
|------------------------|------------------------------------------------|
| Database Name          | Defaults to physical name of primary database. |
| Dumpfile Directory     | <i>YourDumpDir</i>                             |
| Dump/Load              | Dump                                           |
| File Name              | Leave blank to include all fields.             |
| To                     | Leave blank to include all fields.             |
| Allow Errors, Log file | These fields are display only.                 |
| Output                 | Leave this field blank.                        |
| Batch ID               | Dump                                           |

- 3 Choose Go when ready.
- 4 Process the dump batch job with one of the following methods.
  - Run Batch Request Processor (36.14.13). Type Dump in the Batch IDs field. This method works for a small number of tables, but is not recommended when dumping the whole database.
  - If you are dumping an entire database, run a non-interactive batch process on the database server. Refer to “Batch Processes with PROGRESS Prowin32 Batch Client” on page 74 for instructions on setting up non-interactive batch processes.

## Dumping Through PROGRESS Data Administration Tool

As an alternative to dumping through MFG/PRO, you can use the tools from PROGRESS.

- 1 If you have not already done so, create a dump directory.
- 2 From an MFG/PRO session, start the PROGRESS Data Administration tool using the following substeps.
  - a From any menu, select the User Menu and choose PROGRESS Editor.
  - b In the PROGRESS Procedure Editor, select the Tools menu and choose Data Administration.
- 3 When the Data Administration tool starts, select the Admin menu, choose Dump Data and Definitions, and choose Table Contents.
- 4 In the Select Tables window, select all or some of the tables and choose OK.
- 5 In the next dialog, specify your dump directory in the Output File field. In the Code Page field, accept the default. Choose OK to continue.
- 6 Once the process is complete, you can find the .d file in the dump directory and view it using any text editor.

## Limited Disk Space Dump Procedure

If you do not have 75% of the database size in free disk space, you could perform partial dumps (for example, files a - g) into limited disk space. Then run these files to tape, delete them from the disk, and restart the dump/load, selecting files h - X, and so on.

Of course, you absolutely must have at least as much space as your single largest logical database file, typically `tr_hist` (plus an additional 10% as a safety factor). You can determine these file sizes by running the Database File Size Report (36.16.2).

## Preparing an Empty Database

Always load your dumped data into a copy of the mfgempty database, located in your MFG/PRO installation directory.

Use the PROGRESS prodb command and give the new database a meaningful name. Type the following DOS prompt command from the MFG/PRO installation directory.

```
ProgressDir\prodb NewProdDb.db mfgempty
```

If you plan to set up a multi-volume database (which is recommended), you can do so before loading the data. Refer to Chapter 4, “Multi-Volume Database,” on page 43 for further instructions.

## Bulk Load: Creating the Bulk Loader Description File

If you are using the bulk load method, you must create a bulk loader description file of the database.

- 1** From an MFG/PRO session, start the PROGRESS Data Administration tool using the following steps.
  - a** From any menu, select the User Menu and choose PROGRESS Editor.
  - b** In the PROGRESS Procedure Editor, select the Tools menu and choose Data Administration.
- 2** When Data Administration starts, select the Admin menu and choose Create Bulk Loader Description File.
- 3** In the Select Tables window, select all or some of the tables and choose OK.
- 4** In the next dialog, specify your dump directory in the Output File field. In the Code Page field, accept the default. Choose OK to continue.
- 5** Choose OK when informed of completion.

- 6 You can find the .fd file in the dump directory. You can also open it in a text editor to view the results.
- 7 Exit Data Administration.

## Bulk Loading the Data

Bulk loading data is the recommended method because it is the fastest.

**Prerequisite:** Complete the instructions “Preparing an Empty Database” on page 25 and “Bulk Load: Creating the Bulk Loader Description File” on page 25.

- 1 Verify no server is running against the database using one of the following methods.
  - Look in the database directory for the database lock file (.lk).
  - Use the Windows NT Task Manager to look for the \_mprosrv.exe process.

If a server is running, shut it down by choosing the Shut Down icon.
- 2 Open a DOS window.
- 3 Change to your dump directory.
- 4 From the dump directory, type the PROUTIL Bulk Loader command.

```
YourPROGRESSDir\bin\_proutil YourDBDir\NewProdDb.db
-C bulkload *.fd
```

The system proceeds to deactivate all the indexes, then load the .d files, as directed by the .fd file.

## Bulk Load: Rebuilding the Indexes

Upon completion of a Bulk Loader process, you must run an index rebuild. This task is required because the Bulk Loader does not construct indexes at load time. Since a relational database is useless without indexes, they must be rebuilt.

- 1 To run the index rebuild, enter the following:

```
YourPROGRESSDir\bin\_proutil YourDBDir\NewProdDb.db
-C idxbuild -TM 30 -TB 30
```

The TM parameter controls the sort speed, and the TB parameter controls blocking sizes.

- 2 At the following prompt, enter A (all) or S (some).

Select one of the following

All - Rebuild all of the indexes

Some - Rebuild only some of the indexes

- 3 If rebuilding only some indexes, enter the appropriate table and index names one at a time. When you have entered the last table and index, enter: !
- 4 If the data is correct, answer Yes at the confirmation prompt.
- 5 Answer Yes at the system prompt Do you have enough disk space for index sorting?  
The index sort requires about 75% of the total size of the database.

## Loading Through Progress Data Dictionary

As an option, you can perform this type of load instead of a bulk load.

**Prerequisite:** Complete the instructions “Preparing an Empty Database” on page 25.

- 1 Start a Progress Procedure Editor session, and connect to your empty target database.
- 2 Open the Data Administration tool from the Tools menu.

- 3** In the Data Administration tool, select the Admin menu, choose Load Data and Definitions, and choose Table Contents.
- 4** In the Select Tables window, select all or some of the tables and choose OK.
- 5** In the next dialog, specify your dump directory in the Output File field. In the Code Page field, accept the default. Choose OK to continue.

## Post Dump/Load Sequence Initialization

After a dump and load, you must initialize the database sequences. Sequences are mechanisms used to obtain system-generated sequential numbers.

Start an MFG/PRO session, and choose Database Sequence Initialization (36.16.17) or type `utsequp.p` at any menu.

## CHAPTER 3

# Performance Tuning

This chapter summarizes some of steps you can take to tune the database performance. For further details, refer to the *PROGRESS System Administration Guide*, “Managing PROGRESS Performance.”

Topics in this chapter:

*Start-Up Parameters and Performance* **30**

*Parameters Affecting Performance* **31**

*Relocation of the Before-Image File* **33**

*PROGRESS Performance Aids* **34**

*PROMON – PROGRESS Monitor* **36**

The screenshot displays the PROMON application window with the title "14.13.2 Routing Maintenance (Main Screen)". It features a menu bar with "File", "Edit", "Options", and "Help". The main content area is divided into two panes. The left pane lists various parameters for routing code "10-15000":

| Parameter          | Value               |
|--------------------|---------------------|
| Routing Code       | 10-15000            |
| Operation          | 20                  |
| Standard Operation | 10.30               |
| Work Center        | Machine             |
| Description        | INSPEC PER PROX-000 |
| Machines per Op    | 1                   |
| Overlap Units      | 1                   |
| Queue Time         | 1.0                 |
| Wait Time          | 0.0                 |
| Setup Time         | 0.0                 |

The right pane shows "Machines (75) CDR IN:" and "INSPECTION, ALL SITE:". At the bottom, it indicates "Route by Production Route Code".

## Start-Up Parameters and Performance

There are several PROGRESS parameters available to make the system perform better and be more stable. You specify the parameters as part of the command statement that starts a certain PROGRESS task. For example, the following command starts a database server with the database buffer parameter (-B), which allots a specified amount of memory to the database.

```
ProgressDir\bin\_mprosrv.exe \Path\YourProd.db -B 8000
```

Typically, you specify parameters within a .bat file script. Parameters can also be specified in a separate parameter file (.pf). You cannot specify parameters at the time you invoke the script unless the script was set up with variables. For example, in the following .bat file script, there is a variable (%1) that acts as a placeholder for the database name.

```
set DLC = \usr\dlc
set PROMSGS = %DLC%\promsgs
set PROTERMCAPI = %DLC%\protermcap

%DLC%\bin\_mprosrv.exe %1
```

You use this script by entering the script name (for example, startdb), followed by the database name.

```
startdb mfgtrain.db
```

However, if you type the script name, followed by the -B parameter, it would have no effect because the script startup has no provisions to accept the -B parameter input. You have to edit the command line of the script to read:

```
%DLC%\bin\_mprosrv.exe %1 -B 8000
```

## Parameter Applicability

Keep in mind that parameters apply to specific PROGRESS executables. In the above example, the -B parameter was passed to the \_mprosrv.exe (multiuser PROGRESS server) task. The -B parameter does not apply to the user session task, \_prowin32.exe.

Also, some parameters apply at the execution of a program while others apply at the time you connect to a database.

## Parameters Affecting Performance

This section discusses some of the more commonly used PROGRESS startup parameters. For a more comprehensive list and explanation, refer to *PROGRESS System Administration Reference*.

**Table 3.1**  
Performance  
Parameters

| Option | Effect           | Where To Set               | Notes                                                                                                                                                                                                                                                                                                                                                      |
|--------|------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -1     | Single User      | End User<br>(prowin32)     | Identifies the database is connected without using a server in a single-user mode. Not an option for client/server connections.                                                                                                                                                                                                                            |
| -B     | Database Buffers | Server Start<br>(_mprosrv) | Allocates a specified amount of system memory into which you can read and manipulate database records. It is much faster to manipulate a record in memory rather than through the I/O channel. This is a critical setting for system performance, and is set while using the PROGRESS Monitor (see “Block Access (PROMON Item 3)” on page 38 for details). |
| -L     | Lock Table       | Server Start<br>(_mprosrv) | Specifies how many records from the database can be locked at any one time cumulatively between all the users. May be useful for CIM load.                                                                                                                                                                                                                 |
| -n     | # of Users       | Server Start<br>(_mprosrv) | Specifies how many users can access the database at any given time. The system adds one to this number and reserves it for the PROGRESS Monitor. Typically, at the start of a MFG/PRO session, the user connects to several databases. The lowest -n inhibits the users from connecting.                                                                   |

| Option | Effect                    | Where To Set                                       | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------|---------------------------|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -g     | Before-Image File Name    | Everywhere                                         | Used by <code>_mprosrv</code> if the database is accessed using a server. It is passed to <code>_progres</code> if needed during single-user access, as well as to <code>PROUTIL</code> or other PROGRESS tasks connecting single users. Its purpose is to direct the system to the location of the <code>.bi</code> file if it has been moved anywhere other than the database directory.<br><br><b>NOTE:</b> PROGRESS recommends not using this parameter and instead relocating the <code>.bi</code> file through a multi-volume structure. |
| -mmax  | Maximum Memory            | Client Start ( <code>prowin32</code> )             | Specifies an allocation of memory for the end user. This memory is where compiled procedures can reside in memory, and scratch-pad work can be done.                                                                                                                                                                                                                                                                                                                                                                                           |
| -D     | Directory Entries         | Client Start ( <code>prowin32</code> )             | Specifies the length of the user's directory tables; i.e., the number of files a user can have open at any given point.                                                                                                                                                                                                                                                                                                                                                                                                                        |
| -a     | After-Image File Location | Everywhere                                         | Same as <code>-g</code> , but pertains to the <code>.ai</code> file, which is optional. If you use roll forward recovery, the server, or the user's session, needs to know where the <code>.ai</code> file is. This specifies where to find the file.                                                                                                                                                                                                                                                                                          |
| -T     | Temp Files                | Client Start ( <code>prowin32</code> )             | PROGRESS creates temp files, and sort files are created in the directory MFG/PRO was started from. You can redirect these files by using the <code>-T</code> followed by the directory.                                                                                                                                                                                                                                                                                                                                                        |
| -TB    | Temp File Block Size      | Client Start ( <code>prowin32</code> )<br>IDXBUILD | PROGRESS allocates a certain size to temporary files. When this size is exceeded, system operation halts, and then reallocates a new size. By using <code>-TB</code> , you can specify a larger block size for temporary files so that the system does not have to stop and reallocate as often. This parameter is particularly helpful during an index build.                                                                                                                                                                                 |

| Option | Effect     | Where To Set                             | Notes                                                                                                                                               |
|--------|------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| - TM   | Sort Speed | IDXBUILD                                 | Increases the speed at which the <code>idxbuild</code> sort is performed.                                                                           |
| - by   | Bypass     | Server Shut<br>( <code>_mprshut</code> ) | When the database is shut down, you are given a four-selection menu. Using <code>- by</code> bypasses this menu for unattended shutdown operations. |

## Relocation of the Before-Image File

One of the biggest factors contributing to poor system performance is I/O contention. In a multiuser system, you have several users simultaneously reading or writing to the database file. If there is only one physical I/O channel to the database, all users must wait their turn. In addition, with each potential record update operation, PROGRESS writes to the before-image (.bi) file. This additional file has an excessive amount of I/O.

By default, both the database and before-image files reside on the same physical disk drive (I/O channel), together creating severe I/O contention. For this reason, you can make your system more efficient by relocating the .bi file to a separate I/O channel and disk drive.

When you relocate the before-image file, you must specify to the system where it is. You can use one of the following methods.

- Set up a multi-volume database with .bi extents specified for a separate disk drive. This is the recommended method.
- If you do not set up a multi-volume database, you can move the .bi file with standard operating system commands and use the `- g` parameter in your start-up scripts and other operations.

Also, the system needs the `- g` parameter incorporated into any PROUTIL, DBUTIL, or RFUTIL command, whether called using a script, an icon, or on the command line.

## PROGRESS Performance Aids

There are several other performance aids available for use. Among these are:

- Before-Image Writers
- After-Image Writers
- Asynchronous Page Writers
- Watchdog
- PROMON

### Before-Image Writers

The before-image writer (BIW) queues up the before-image data in a memory cache area and actually performs the write at one time, after an entire block has been accumulated.

You can start only one BIW per database. To start the BIW use:

```
ProgressDir\bin\probiw dbpath\dbname
```

### After-Image Writers

The after-image writer (AIW) is similar to the before-image writer, except it deals with writes to the after-image file, if you enacted the roll-forward recovery feature. To start the AIW, use:

```
ProgressDir\bin\proaiw dbpath\dbname
```

### Asynchronous Page Writers

Similar to the before-image and after-image writers, an Asynchronous Page Writer (APW) queues up database writes, waiting for an entire page of data to be accumulated prior to performing the write. You can start as many APWs as needed per database; however, we recommend no more than two.

Using PROMON (PROGRESS Monitor) you can determine how many writes are being performed by the APW, and determine when starting another may be needed.

To start an APW enter:

```
ProgressDir\bin\proapw dbpath\dbname
```

## Watchdog

Watchdog is a PROGRESS task that monitors the system for abandoned processes, such as an end-user's session still connected to a database whose server has been shut down. This situation can occur when a user fails to log off. Watchdog kills the end-user session after a predetermined length of time. It is advisable to use this task on your production database.

To start Watchdog enter:

```
ProgressDir\bin\prowdog dbpath\dbname
```

## Performance Aid Summary

You should modify your server startup script or batch file to start up one BIW, one APW, WATCHDOG, and one AIW (if using after imaging) at production database startup time. At this point, you should be able to set up an advantageous client/server environment, coupled with efficiently defined startup parameters, to achieve a well-performing database system.

## PROMON – PROGRESS Monitor

PROGRESS offers a monitor utility, PROMON, that can be started against any multiuser database. It can be used to monitor your database setup to determine efficiency or problem areas. PROMON gives you some insight into current users, locked records, system resource settings, and so forth.

You start PROMON by typing:

```
ProgressDir\bin\promon dbpath\dbname
```

You receive the following menu:

```
PROGRESS MONITOR Version 8
Database: QAD\mfgpro\mfgtrain
```

- 1. User Control
- 2. Locking and Waiting Statistics
- 3. Block Access
- 4. Record Locking Table
- 5. Activity
- 6. Shared Resources
- 7. Database Status
- 8. Shut Down Database
  
- T. Transactions Control
- L. Resolve Limbo Transactions
- C. Coordinator Information
  
- M. Modify Defaults
- Q. Quit

Selections 1-4 present you with a secondary menu with the following options:

- 1. Display all entries
- 2. Match a user number
- 3. Match a range of user numbers
- 4. Match a record id (only on 4-Record Locking Table)
  
- Q. Return to Main Menu

The following sections discuss some of the more commonly used features of the monitor. The remainder of the PROMON utility is to be used in distributed database environment only, or to modify the defaults of the PROMON utility itself. For more information, refer to the *PROGRESS System Administration Reference* manual.

## User Control (PROMON Item 1)

This selection shows you all/specific users logged on to the database. You see the user number (as referred to by PROMON), login name, Type (broker, monitor, self-service user, server, etc.), previous and current transactions, process identifier, semaphores, server used, login date and time.

| User | Name     | Type | Wait | Trans    | PID   | Sem | SRV | Login    | Time  |
|------|----------|------|------|----------|-------|-----|-----|----------|-------|
| 0    | root     | BROK | --   | 0 0      | 12292 | 3   | 0   | 02/02/97 | 11:13 |
| 1    | sjtrain1 | SELF | --   | 115872 0 | 14970 | 4   | 0   | 02/03/97 | 13:18 |
| 2    | sjtrain5 | MON  | --   | 0 0      | 26811 | 5   | 0   | 02/03/97 | 14:32 |

## Locking and Waiting Statistics (PROMON Item 2)

This selection shows you all/specific users that are holding, or have held (during this database session), any record locks, or are currently waiting for specific records. The statistics are shown individually and cumulatively. This also shows completed transactions and schema changes.

| Type | Usr | Name     | Record | Trans | Schema |
|------|-----|----------|--------|-------|--------|
| Lock | 999 | TOTAL    | 1319   | 32    | 0      |
| Wait | 999 | TOTAL    | 0      | 0     | 0      |
| Lock | 0   | root     | 5      | 3     | 0      |
| Wait | 0   | root     | 1      | 0     | 0      |
| Lock | 1   | sjtrain1 | 2      | 0     | 0      |
| Wait | 1   | sjtrain1 | 0      | 0     | 0      |

## Block Access (PROMON Item 3)

This selection shows the number of database requests users have made, along with total requests. It also breaks down the requests into database writes and database reads from the .db, .bi, and .ai files.

| Type | Usr | Name     | DB Reqst | DB Read | DB Writes | BI Reads | BI Writes | AI Reads | AI Writes |
|------|-----|----------|----------|---------|-----------|----------|-----------|----------|-----------|
| ACC  | 999 | TOTAL    | 804590   | 72152   | 58        | 78       | 477       | 0        | 0         |
| ACC  | 0   | root     | 257      | 25      | 2         | 59       | 458       | 0        | 0         |
| ACC  | 1   | sjtrain1 | 4794     | 1132    | 0         | 0        | 0         | 0        | 0         |

The number of database reads vs the number of database requests is a critical measurement when determining the -B (database buffers) parameter setting.

As shown, we requested data from the database 804590 times. Of those requests, we had to go to the database through the relatively slow I/O channel 72152 times. This means that the other 732438 times we were able to retrieve database records directly from relatively fast buffer memory. This equates to a buffer hit percentage of 91% ( $732438 \div 804590 \times 100$ ). This is how you determine the setting for the -B parameter.

During peak transaction volume, monitor this selection and selection 5, Activity, which shows buffers hits as a percentage. After monitoring for one to two weeks, do the following.

- Shut down the database server
- Modify the startup script with a higher -B
- Restart the server
- Monitor again during peak load

Your buffer hits should increase. Continue this process until at some point the buffer hits percentage drops off. This is due to the system going into swapping. Revert the -B parameter to your previous setting, or split the difference and monitor again. You will zero in on the most optimal buffer hits percentage, ideally 85% or greater.

This selection can also aid in determining when to start additional APWs since the writes are shown here. If the APW writes account for 50% or less, start another one.

### Record Locking Table (PROMON Item 4)

This selection shows you the exact record ID and the chain number of each record a user currently has locked. It also shows the type of lock the user is holding (exclusive, shared, etc.).

| Usr | Name     | Chain | #    | Rec-id | Lock | Flags |
|-----|----------|-------|------|--------|------|-------|
| 7   | sjtrain5 | REC   | 210  | 246373 | SHR  |       |
| 2   | sjtrain1 | REC   | 463  | 207042 | SHR  |       |
| 7   | sjtrain5 | REC   | 1226 | 157088 | EXCL |       |

### Activity (PROMON Item 5)

This selection has a large amount of data and is useful when trying to calculate the -B parameter because it shows the buffer hits as a percentage. Also use this selection to determine when to start APWs, BIWs, and AIWs.

### Shared Resources (PROMON Item 6)

This selection shows the setting of the current system parameters. It also shows other information, such as whether a BIW is running, an AIW, Watchdog, how many APWs, how many monitors, etc.

|                                           |      |
|-------------------------------------------|------|
| <b>Shared Resources</b>                   |      |
| After-image file name (-a):               | -    |
| Number of database buffers (-B):          | 168  |
| Number of before-image buffers (-bibufs): | 5    |
| Number of after-image buffers (-aibufs):  | 1    |
| Before image file name (-g):              | -    |
| .                                         | .    |
| .                                         | .    |
| .                                         | .    |
| Current size of locking table (-L):       | 8000 |
| .                                         | .    |
| .                                         | .    |
| Maximum number of users (-n):             | 21   |

## Database Status (PROMON Item 7)

This selection gives physical characteristics about the database, the version number, whether it is open, whether it is damaged, total number of blocks, last transaction number, character set, last two open date and times, last two times the .bi file was opened, schema time stamp, last backup time, last bi truncation, etc.

## Shut Down Database (PROMON Item 8)

This selection gives you the same menu you get if you run the `_mprshut` task without using the `-by` (bypass menu) option.

Using this, you could shut down the database and disconnect users. This is how you could shutdown an APW, BIW, Watchdog, AIW, or disconnect a certain user.

| Usr | pid   | time of login            | user id  |
|-----|-------|--------------------------|----------|
| 1   | 29231 | Fri Dec 13 17:19:22 1996 | apw      |
| 2   | 20028 | Thu Dec 12 9:23:22 1996  | sjtrain1 |

The following submenu appears.

- 1 Disconnect a User
- 2 Unconditional Shutdown
- 3 Emergency Shutdown
- x Exit
- Enter Choice >

**Disconnect a User.** This option lets you disconnect a user. Selecting 1 results in a prompt asking for the user to be disconnected. If you wanted to stop the APW, choose User 1, and this would disconnect/stop the user.

**Unconditional Shutdown.** This option is a gracious shutdown. Any pending transactions are rolled backward from the .bi file as the users are disconnected.

**Emergency Shutdown.** This option kills all user processes. This is not a gracious shutdown, since the pending transactions are not rolled back from the .bi file. At next server startup, this condition is detected, and the transactions cleaned up at that point. Of course, you are vulnerable to any damage that occurs to your .bi file in this interim.

**Exit.** This option exits without disconnecting anything.



## CHAPTER 4

# Multi-Volume Database

This chapter summarizes the PROGRESS multi-volume database feature, which is recommended for better performance. For full details on multi-volume databases, refer to the *PROGRESS System Administration Guide*.

Topics in this chapter:

|                                                |           |
|------------------------------------------------|-----------|
| <i>Multi-Volume Database Overview</i>          | <b>44</b> |
| <i>Multi-Volume Components</i>                 | <b>45</b> |
| <i>Multi-Volume Set-Up Steps</i>               | <b>46</b> |
| <i>Determining the Allocation Sizes</i>        | <b>47</b> |
| <i>Creating the Structure Description File</i> | <b>47</b> |
| <i>Creating a Void Multi-Volume Database</i>   | <b>51</b> |
| <i>Load Schema and Data</i>                    | <b>52</b> |
| <i>Multi-Volume Database Administration</i>    | <b>53</b> |

## Multi-Volume Database Overview

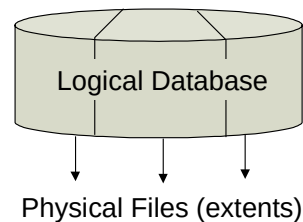
By default, PROGRESS databases—including the MFG/PRO databases—are single-volume, meaning the database equates to a single physical file on disk. Reading and writing to a single physical file often causes input and output (I/O) contention. To alleviate this problem and others, PROGRESS offers a multi-volume database configuration.

With a multi-volume database, one logical database is comprised of many physical files. These physical files have a pre-allocated size and directory location, usually scattered across many physical disks, I/O channels, or both. All these physical files together constitute the database.

**Note** Some operating systems offer a similar feature, called disk striping, that packages several physical disks into one logical disk volume. You can use striping in addition to the multi-volume database feature.

**Fig. 4.1**  
Multi-Volume  
Database Feature

- Translates a single logical database to many physical files (extents)
- Physical files can be distributed across disk volumes and file systems
- Can be used in addition to operating system striping



## Multi-Volume Database Advantages

In general, a multi-volume database configuration:

- Improves performance by avoiding disk channel I/O contention: With the physical files scattered across your disk drives, simultaneous read and write requests process more efficiently.
- Overcomes problems with operating system file size limits: For example, if your database was 5 gigabyte (GB) in size, but your operating system had a file size limitation of 2GB, you could create a multi-volume database using 25 200MB extents.

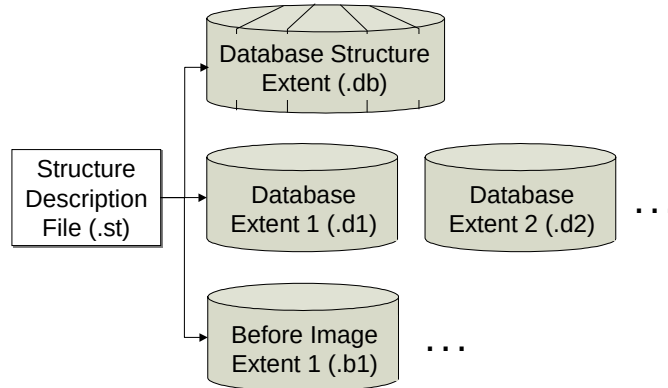
## Multi-Volume Components

The components of a multi-volume database are:

- Structure description file (extension .st): a text file used during the creation of the multi-volume database. It defines the number, location, and size of each extent.
- Database structure extent (extension .db): the main database extent that defines the location of all other extents. The physical .db file contains no data.
- Database extents (extension .dn): the files that contain database records.
- Before-image (BI) extents (extension .bn): the files containing before-image records.

**Note** A multi-volume database can also include after-image (AI) extents, if you implement the after-imaging feature. Since after-imaging is an optional feature, this chapter does not discuss it.

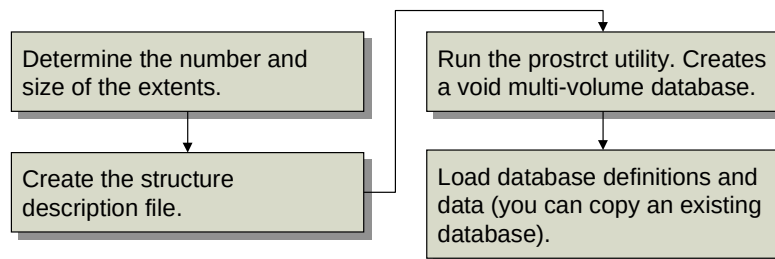
**Fig. 4.2**  
Components of a  
Multi-Volume  
Database



## Multi-Volume Set-Up Steps

The general set-up steps are:

- 1 Determine the number and size of extents.
- 2 Create a structure description file (.st extension) to identify the extents, sizes, and locations.
- 3 Run the PROSTRCT CREATE utility against the structure description file. This utility creates a *void multi-volume database* with no schema or data.
- 4 Load data definitions and, if applicable, data. Typically, you do this by copying an existing database to the multi-volume database structure.



## Determining the Allocation Sizes

To set up the multi-volume structure, you must decide how much space to allocate for the database, including the size and number of extents. There is no exact science for this task, but you can follow these guidelines:

- Target a total database size that allows for at least a year's growth. If your database has grown from 1GB to 2GB over the past year, and you foresee the same approximate growth rate, target at least a 3GB multi-volume structure.
- For a new installation, start off with a 2GB total database size at a minimum.
- Make no single extent greater than 500MB. The preferred extent size is 200MB.
- Limit your database to 20 fixed extents, unless this exceeds the 500MB size. The maximum is 256 extents.
- Pay attention to the operating system limits on the maximum number of open files or file handles per user. Because each extent is a separate file, they may add to this operating system limitation.

Example size allocations:

A 2GB database should have 10 extents, 200MB each.

A 6GB database should have 20 extents, 300MB each.

A 10GB database should have 20 extents, 500MB each.

A 20GB database should have 40 extents, 500MB each.

## Creating the Structure Description File

Once you have determined the allocation sizes, you must describe this data to the PROGRESS system. This is done by creating a structure description file in a text editor.

A line from a structure file looks like:

```
d          /DatabaseDir/DBName.d1      f          blocksize
```

The components of this line are explained in Table 4.1.

**Table 4.1**  
Structure  
Description File  
Components

| Component                     | Explanation                                                                                                                                                                                                         |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| d                             | Indicates a data type extent (b would indicate a .bi extent).                                                                                                                                                       |
| <i>/DatabaseDir/DBName.d1</i> | The path and name of the database extent.                                                                                                                                                                           |
| f                             | Indicates a fixed extent, which means the extent has a permanent, pre-allocated size. Otherwise, the extent is considered a variable length and continually grows in size.                                          |
| blocksize                     | Size of the fixed extent. The size is measured in 1024 byte blocks and must be a multiple of 32.<br><br>For example, if you specify 128 as the block size (divisible by 32), then $128 \times 1024 = 131072$ bytes. |

### Converting the Extent Size to Blocks

Use the following to determine the block size for each extent in the structure description file.

**Table 4.2**  
Extent Block Size

| Step                                       | Example                            |
|--------------------------------------------|------------------------------------|
| 1 Start with the extent size               | 200MB = 200,000,000 bytes          |
| 2 Divide by 1024 (bytes in each block)     | $200,000,000 \div 1024 = 195312.5$ |
| 3 Divide by 32                             | $195312.5 \div 32 = 6103.515625$   |
| 4 Round up if necessary                    | 6104                               |
| 5 Multiply by 32 and use as the block size | $6104 \times 32 = 195328$          |

The example block size—195,328—yields an extent size of 200,015,872 ( $195328 \times 1024$ ). This is as close to the 200MB target as you can get.

## Example Structure File

Assuming you have three data areas (data1, data2, data3) to stripe your database across, the structure file looks like:

|   |                       |   |        |
|---|-----------------------|---|--------|
| d | x:\data1\database.d1  | f | 195328 |
| d | x:\data2\database.d2  | f | 193528 |
| d | x:\data3\database.d3  | f | 193528 |
| d | x:\data1\database.d4  | f | 193528 |
| d | x:\data2\database.d5  | f | 193528 |
| d | x:\data3\database.d6  | f | 193528 |
| d | x:\data1\database.d7  | f | 193528 |
| d | x:\data2\database.d8  | f | 193528 |
| d | x:\data3\database.d9  | f | 193528 |
| d | x:\data1\database.d10 | f | 193528 |
| d | x:\data1\database.d11 |   |        |

Notice how each extent carries a .dx extension where *x* indicates the extent number. Also notice the striping of the extents across the three data areas. Notice in the last extent (.d11) that there is no file size specification (f).

The last extent should always be created as a variable extent (no f or size specification). This extent is allocated as one operating system block size. It remains the same size until all the fixed extents are full. Then, the system starts writing to the overflow variable extent. This extent will grow until it fills the available disk space or until you take some action. The action to take is to enlarge the database; refer to “Adding Extents” on page 53.

## Before-Image Extents

As an option, you can add before-image extents to the multi-volume database.

Having .bi extents is optional because it is unlike the database. The database has many logical files (tables) within it, such as ad\_mstr, cm\_mstr, and mnd\_det. The .bi file, however, is made up of only one logical file. The system writes to it sequentially and reads back from near

the bottom of the file. Therefore, multiple access channels do not offer as much I/O gain as with the database.

However, .bi extents offer some I/O advantage because the .bi file uses index keys, maintained in master blocks. These blocks are written to and read from often, just like the body of the file. Separating the master blocks from the body of the file eliminates some contention. Also, by defining a .bi extent, you can hard code the .bi file's location, alleviating the need to ever use the -g parameter.

Keep in mind the following recommendations.

- For the fixed-length .bi extent, the total .bi file size depends largely on how often you shut the server down and truncate the .bi file. If you shut down weekly, set your .bi file fixed extent to 20–40% of the total database size.
- You should also define a variable-length .bi extent because the .bi file may jump in size. PROGRESS shuts down if you run out of .bi space.
- Assign the .bi files to a separate disk or disks from the database.

The completed structure file could look like:

|   |                     |   |        |
|---|---------------------|---|--------|
| d | \data1\database.d1  | f | 195328 |
| d | \data2\database.d2  | f | 193528 |
| d | \data3\database.d3  | f | 193528 |
| d | \data1\database.d4  | f | 193528 |
| d | \data2\database.d5  | f | 193528 |
| d | \data3\database.d6  | f | 193528 |
| d | \data1\database.d7  | f | 193528 |
| d | \data2\database.d8  | f | 193528 |
| d | \data3\database.d9  | f | 193528 |
| d | \data1\database.d10 | f | 193528 |
| d | \data1\database.d11 |   |        |
| b | \bi1\database.b1    | f | 195328 |
| b | \bi2\database.b2    | f | 195328 |
| b | \bi1\database.b3    |   |        |

## Creating a Void Multi-Volume Database

You use the PROGRESS PROSTRCT utility to create and manage the multi-volume database. The command to start the utility enables you to specify from various options, including Create, Add, List, Statistics, and Repair. The syntax for the PROSTRCT command is:

```
DLC\bin\prostrct option dbpath\dbname stpath\stname
```

The components of this command are explained in Table 4.3.

| Syntax Item          | Explanation                                                                             |
|----------------------|-----------------------------------------------------------------------------------------|
| DLC                  | PROGRESS install directory.                                                             |
| prostrct             | The .bat file that starts the prostrct utility.                                         |
| <i>option</i>        | The prostrct option to use. Options include: create, add, list, statistics, and repair. |
| <i>dbpath/dbname</i> | The path and name of the actual .db file to create.                                     |
| <i>stpath/stname</i> | Path/name of structure file used for extent definitions.                                |

**Table 4.3**  
PROSTRCT  
Command  
Components.

The resulting database is void. It has no schema and no data. You can see the extents in their specified directories, but they are empty files.

In addition to creating the extents listed in the structure file (extension .d1, .d2, etc.), the PROSTRCT utility also creates the database structure extent (extension .db). The database structure extent contains no schema, data, or indexes. It simply contains the map of where each extent is located, as specified in the structure file. All PROGRESS commands should refer to the database structure extent as if it were a single-volume database file. PROGRESS resolves the actual location of database extents, which contain the data.

**Note** This could be a time-consuming step, depending on the size of the database and extents.

## Load Schema and Data

Since the newly created multi-volume database is void (no schema or data), you cannot start up an MFG/PRO session. You must first load a schema and, optionally, data. To perform the load you can either:

- Use the PROGRESS Data Dictionary or any other standard load method.
- Use a PROGRESS copy utility called PROCOPY.

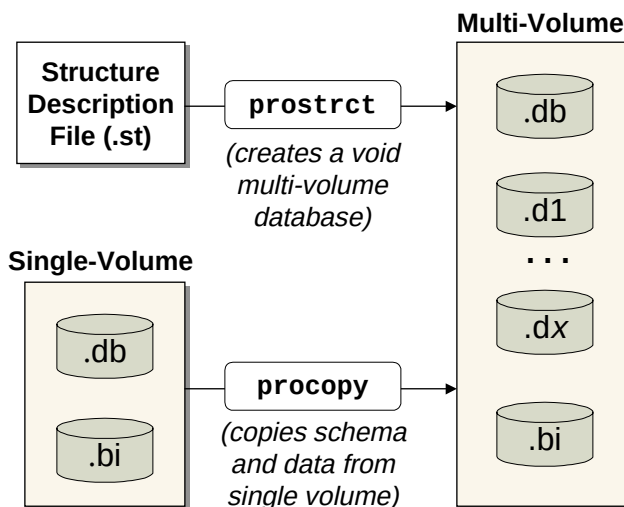
You can use PROCOPY for either an empty database (such as mfgempty) or a working database. With an empty database, only a schema loads. With a working database, both the schema and the data load. The procopy method is recommend if you want to convert a single-volume database to a multi-volume database.

The syntax for the command is:

```
$DLC\bin\procopy path\source.db path\target.db
```

Figure 4.3 summarizes how the prostrct and procopy commands work together.

**Fig. 4.3**  
Converting Single-  
Volume to Multi-  
Volume



## Multi-Volume Database Administration

To set up and maintain a multi-volume database, PROGRESS provides the PROSTRCT utility. For details on maintenance tasks, refer to the *PROGRESS System Administration Guide*.

One of the administration tasks commonly performed is adding extents.

### Adding Extents

If your variable extent is growing too large, you need to enlarge the database by adding more extents. This is done by creating another structure file (for example, add.st) in the same format as the original, except you do not include the extents already used. Using the example on page 49, the new add.st file would begin with .d12. The same rules apply to this structure file.

When ready, you run the PROSTRCT add command and specify your new structure file.

When this procedure is run, extent .d11 (variable extent) is locked in as a fixed extent at its current size, rounded to a size expressible as a multiple of 32 (to be multiplied by the 1024 block size). Once this procedure is run, you have two applicable structure files that together constitute the entire current database structure. For housekeeping reasons, you should concatenate these two files. You could do this using an editor tool, or the PROSTRCT utility has a List option that reads the database structure and creates a current structure file for you. PROSTRCT also has a Statistics option that reports total database size, current database usage, last backup time, and so forth.



## CHAPTER 5

# Split Schema Database

The reasons and procedure for splitting the MFG/PRO production database are described in this chapter.

|                                              |           |
|----------------------------------------------|-----------|
| <i>Reasons for Splitting Database Schema</i> | <b>56</b> |
| <i>Determining How to Split the Schema</i>   | <b>57</b> |
| <i>System Requirements</i>                   | <b>59</b> |
| <i>Creating a Split Schema Database</i>      | <b>60</b> |
| <i>Administering the Database</i>            | <b>62</b> |



## Reasons for Splitting Database Schema

The reasons for splitting the MFG/PRO production database schema include the following:

- Database becomes too large to efficiently administer
- Performance has slowed and is difficult to control
- Set of common files is beneficial

Splitting the database may solve these situations, as described in the following sections.

### Enhance Database Administration

If the MFG/PRO database has become too large (more than eight gigabytes), administrative tasks such as a Dump/Load or Index Rebuild require too much time and effort. For example, a Dump/Load or Index Rebuild may be required to recover from database corruption. This activity may take many days to accomplish. Two or more days downtime for a dump/load is unacceptable to most companies.

### Increase Performance

Another reason to split the schema is improved performance. With a single-schema production database, you cannot control the locations on disk of individual tables in the database. In addition, you cannot control the memory allotment for individual tables. For example, if a process (such as a long-running report) heavily engages a certain table (such as TR\_HIST), you cannot dedicate any extra memory to the use of that table or tables. Both these conditions cause poor performance because of either a lack of I/O balance or a lack of memory buffer balance. This issue is particularly critical for a large number of concurrent users (200 or more).

Can You Split Across Multiple Machines?

QAD does not recommend that customers put their split databases onto separate machines. In this scenario, there are several machines that host different portions of the database and they are connected through client/server PROGRESS to create the complete schema of MFG/PRO. If the customer chooses to follow this scenario, they must run two-phase commit and after-imaging to ensure database integrity. The reason a customer may want to follow this design is that it can be used to balance the CPU activity of machines. It can also be used to maintain common files without using replication.

Create Common Files

Splitting the schema also lets you create a set of common files that can be shared by multiple databases, such as CM\_MSTR, AD\_MSTR, IN\_MSTR, and PT\_MSTR.

**Note** Using a split schema in conjunction with multiple production databases, commonly called Central Order Processing with Multiple Databases, is not explained in this document. It involves making custom programming modification to MFG/PRO.

Determining How to Split the Schema

Once you have made the business decision to split the MFG/PRO schema, you must make additional business decisions to determine where to split the schema. Use the examples shown in Table 5.1.

|            | Tables in DB1                                                     | Tables in DB2        | Tables in DB3 | Tables in DB4 |
|------------|-------------------------------------------------------------------|----------------------|---------------|---------------|
| Example 1: | All tables not in DB2 and DB3. Must include required files.       | TR_HIST              | GLTR_HIST     |               |
| Example 2: | All tables not in DB2, DB3, and DB4. Must include required files. | QAD_WKFL<br>TRGL_DET | TR_HIST       | GLTR_HIST     |

Table 5.1  
Suggested Splits

## Recommended Split for ECommerce

If you have the ECommerce Gateway implemented, QAD recommends that you split the following tables and sequences into a second database to improve performance.

### Recommended ECommerce Tables

- |               |                |               |
|---------------|----------------|---------------|
| • edc_ctrl    | • edsdd_det    | • edtrf_mstr  |
| • edmfdd_det  | • edsdd_det    | • edtrp_mstr  |
| • edmfd_det   | • eds_mstr     | • edtrv_mstr  |
| • edmfrd_det  | • edsxx_ref    | • edtr_mstr   |
| • edmfr_mstr  | • edtadm_mstr  | • edval_mstr  |
| • edmfsdd_det | • edtarf_mstr  | • edxfdd_det  |
| • edmfsd_det  | • edtar_mstr   | • edxfd_det   |
| • edmfs_mstr  | • edta_mstr    | • edxfsd_det  |
| • edmf_mstr   | • edtg_mstr    | • edxfsd_det  |
| • edmidd_det  | • edtmx_ref    | • edxfs_mstr  |
| • edmid_det   | • edtpd_det    | • edxf_mstr   |
| • edmi_mstr   | • edtparm_mstr | • edxrd_det   |
| • edmsg_mstr  | • edtp_mstr    | • edxref_mstr |
| • edrrx_ref   | • edtrd_det    | • edxr_mstr   |

### Recommended ECommerce Sequences

- |              |              |            |
|--------------|--------------|------------|
| • edmfs_sq01 | • edxfs_sq01 | • edc_sq01 |
| • edc_sq02   |              |            |

## System Requirements

Physical disk and memory considerations are the primary requirements for setting up a system for splitting schema. These requirements are described in the following sections.

### Physical Disk Requirements

Configuring the physical disks is the most important factor when splitting the schema. Many people mistakenly think about the number of gigabytes (raw storage). Instead, they should think of the number of separate physical disks (spindles). Twelve 4-gigabyte drives provide a much better load balance than six 8-gigabyte drives. A greater number of drives (even smaller drives) provide more efficient splits because you can more effectively spread out the databases, before-image files, and after-image files among more disks.

Remember that the standard rule of keeping the before-image file on a separate disk still applies. The after-image files must also reside on a separate physical disk, preferably a separate controller from the database and before-image files, to ensure its integrity if the disk or controller containing the database or before-image file crashes. This technique is also required to balance I/O across disks because the after-image and the before-image files are single-threaded and must be written before any work can be performed on the database.

◆ See “Relocation of the Before-Image File” on page 33

**Example** As an example, consider a 12-gigabyte database, with a multi-volume structure spread across less than 13 fast and wide SCSI disks. Are there enough disks? If before the split you need five gigabytes for the GLTR\_HIST table, there are probably not enough disks. The general rule in this case is one gigabyte of data per physical disk and one gigabyte of data per before-image file. This rule can be expanded for EMC disks so that no more than 50 percent of the disk is used for data and the before-image file is on a separate disk.

## Memory Requirements

Another important requirement is your amount of memory and the system parameters that control memory. If the database is large, the buffer pool is likely to be several hundred megabytes or larger. In this case, reapportion memory so that virtually the same amount of memory is used for multiple databases instead of one large database.

As part of the memory requirements, you may need to tune several kernel parameters, such as MAXPROC, NFILE, SHMSMAX, SHMSEG, and MAXFILES. Because there are more files that must be opened to start a session, the MAXFILES and NFILE parameters most likely require tuning.

## Creating a Split Schema Database

This section outlines the overall steps for creating a split schema database. It does require having a 4GL version of PROGRESS and familiarity with the PROGRESS Data Dictionary.

These instructions assume you are connecting to only one cumulative MFG/PRO schema. It does not support setting up a split schema and also connecting to multiple MFG/PRO production databases (commonly called Central Order Processing with Multiple Databases). If you want that functionality, you need to modify several programs in MFG/PRO so that, when the database alias is changed, the split schema databases are moved as a set. If the programs are not modified, transaction data will be placed in the wrong database.

Prerequisites:

- Make sure you have analyzed all tables to decide which tables you want to centralize and which you want to localize.
  - Back up your databases.
- 1 Make a copy of the `mfgempty` database located in the standard QAD directory. This becomes a working copy of the database.
  - 2 Connect in single user mode to the database:

```
ProgressDir/bin/pro /qad/split
```

- 3 Run the Data Dictionary using either the Menu/Tools or the command `dict`.
- 4 Select Admin/Dump Data and Definitions/Data Definitions.
- 5 Select the database tables to separate (i.e. `TR_HIST`, `GLTR_HIST`, etc.) one at a time. This creates separate `.df` files that contain the database definitions for the individual files.
- 6 Select Utilities/Freeze Unfreeze from the Dictionary Menu.
- 7 Set frozen to NO for all the dumped file definitions.
- 8 Select Schema/Delete from the Dictionary menu and delete all the File Definitions for all the files to be separated.
- 9 Select Admin/Dump Data and Definitions/Data Definitions and dump the schema for the rest of the tables in the database.
- 10 Link together all the `.df` files together that are supposed to be in one database per the design chosen. Be sure to delete all but the last trailer record in the individual `.df` files so that the schema load will load all the tables.
- 11 Make a copy of the PROGRESS Empty database for each of the new databases to be created.
- 12 Connect to each of the databases in turn, and load the schemas created using the Dictionary/Admin/Load Data and Definitions/Data Definitions. You have now created the default databases in the split. These should be used at compile time and to make copies for the creation of new databases only.
- 13 Create a new compile database set in MFG/UTIL that contains all the databases in the split with the first database containing the files noted above and a logical set of `qaddb`.
- 14 Recompile all the MFG/PRO programs as given by the original file called `utcompil.wrk`.

After splitting the database, modify all scripts and parameter files to connect the new databases with the logical database names specified in the compile script or set.

## Administering the Database

Administration of the database is an important aspect of splitting the schema. Treat all databases in the split as one set. If one database crashes or becomes inoperative, all databases must be treated as if they are down.

Also, if one database must be restored from backup, all the databases must be restored. This must be done to maintain the integrity of the data since a transaction may now span multiple databases.

In addition, it is strongly recommended that after imaging be turned on for all databases. It is also imperative that all the databases are brought down together for backups so that data integrity can be maintained.

## CHAPTER 6

# General Administration

Topics in this chapter:

*Maintaining MFG/PRO Scripts and Database Sets*    **64**

*Setting Up Training Databases*    **64**

*Compiling Programs*    **68**

*Batch Processes with PROGRESS Prowin32 Batch Client*    **74**

Routing Code: 10-15000    OPERATION: 20    MFG/PRO CODE: 10-15000

Standard Operation: 10.00    INSPECTION, ALL SETS

Description: INSPEC PER PROX-000

Machines per Op: 1    Milestone: 1

Overlap Units: 1

Queue Time: 1.0

Wait Time: 0.0

Setup Time: 0.0

Route by Production Route

## Maintaining MFG/PRO Scripts and Database Sets

To modify the MFG/PRO start-up and shut-down scripts and icons, you can use the MFG/UTIL utility. The scripts and icons are based on database sets. A database set defines the connection parameters for a group of databases.

- 1 From the MFG/UTIL Configure menu, choose Any Database Set and complete the Database Set Configuration window.
- 2 To save your changes to the start-up scripts, choose one of the generate options from the Scripts menu.
- 3 If you added a new database name, set it up in the hosts and services files on both the server and client PCs. For detailed instructions, refer to the MFG/PRO installation guide.
- 4 Remember to make your changes on both the server and, if applicable, Windows clients. There is one version of MFG/UTIL on the server and another on the Windows client.

## Setting Up Training Databases

Starting with MFG/PRO Version 8.6E, additional training databases are available for specific business environments.

MFG/PRO 9.0 provides enhanced multiple currency capabilities to support the euro—the single European currency being introduced by the European Monetary Union (EMU). The standard MFG/PRO training database (mfgtrain) does not contain multi-currency instruction appropriate to this new business environment. To provide this instruction, QAD has created the Triangulation training database (tritrain).

To enable a business specific training database, you must complete the following tasks.

- Setting Up the Training Database Server
- Setting Up the Training Database Client

## Setting Up the Training Database Server

Follow these instructions to create a specialized training database server.

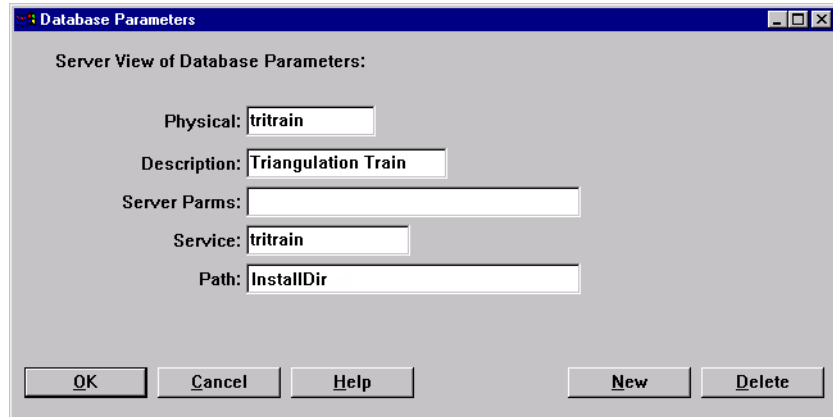
- 1 Start MFG/UTIL from the *database server* program group.
- 2 Select the Configure menu, and choose Any Database Set.
- 3 In the Database Set Configuration window, choose New Set.
- 4 In the Database Sets window, select the Set Name field and type the name you will use for your new training database set. For example, *tritrain*.

The screenshot shows a window titled "Database Sets". Inside, under "Database Set Parameters:", there are four fields: "Set Name:" with the value "tritrain", "Set Description:" with the value "Triangulation Training", "Start Params:" with the value "-d mdy -yy 1920 -cpinternal iso8859-1 -cpcoll basic -Bt 350 -c 30 -D 10", and "Active:" with a dropdown menu set to "YES". At the bottom, there are five buttons: "OK", "Cancel", "Help", "New", and "Delete".

- 5 Set the Active field to Yes, and accept the default in all other fields. Choose OK.
- 6 Add database servers to your training database set by choosing New Server and completing the Database Parameters window for each database.

Use the following table and graphic as an example. For this example, the *tritrain* database is used. Your training database may be different.

| Physical | Description           | Service  | Path                 |
|----------|-----------------------|----------|----------------------|
| tritrain | Triangulation Train   | tritrain | <i>InstallDir\</i>   |
| mfghelp  | Help Database         | mfghelp  | <i>InstallDir\us</i> |
| gui      | Gui Database          | gui      | <i>InstallDir\us</i> |
| cfg      | Configurator Database | cfg      | <i>InstallDir\us</i> |



- 7 Once the database set is complete, choose OK in the Database Set Configuration window.
- 8 At the MFG/UTIL window, select the Scripts menu and choose Generate Server Startup and Shutdown...
- 9 At the Server Script Creation window, select the your training database and choose OK.

MFG/UTIL will generate database server start-up and shutdown icons for your training database.

**Note** QAD *highly* recommends that you use the PROGRESS ProControl utility to run your MFG/PRO databases as registered Windows NT services.

## Setting Up the Training Database Client

Follow these instructions to create specialized training database clients. These instructions assume that you have already set up MFG/PRO GUI clients.

- 1 From an MFG/PRO client PC, start MFG/UTIL.
- 2 Select the Configure menu, and choose Any Database Set.
- 3 In the Database Set Configuration window, choose New Set.

▶ See the *MFG/PRO Installation Guide—PROGRESS on Windows NT*, for instructions.

▶ See the *MFG/PRO Installation Guide—PROGRESS on Windows NT*, for instructions.

- 4 In the Database Sets window, select the Set Name field and type the name you will use for your new training database set. For example, `tritrain`.
- 5 Set the Active field to Yes, and accept the default in all other fields. Choose OK.
- 6 Add database clients to your training database set by choosing New Client and completing the Client View of Database Parameters window for each database.
  - a In the Connection Type field, choose ClientServer for each database client.
  - b In the Host field, enter the name of your MFG/PRO 9.0 database server machine.
  - c Use the following table as an example for the remaining fields. For this example the tritrain database is used. Your new training database may be different.

| Database     | Physical | Logical            | Service  |
|--------------|----------|--------------------|----------|
| Training     | tritrain | <i>Leave blank</i> | tritrain |
| Help         | mfgghelp | qadhelp            | mfgghelp |
| Gui          | gui      | qadgui             | gui      |
| Configurator | cfg      | qadcf              | cfg      |

- 7 Once the database set is complete, choose OK in the Database Set Configuration window.
- 8 At the MFG/UTIL window, select the Scripts menu and choose Generate User Startup...
- 9 At the Server Script Creation window, select your training database and choose OK.

MFG/UTIL will generate a client icon for your training database. Test your training environment by double-clicking the new training client icon.

## Compiling Programs

Sometimes you may need to compile a custom program, or recompile an existing program. Do this using MFG/UTIL. You must have the source file you want to compile.

Once the source file is compiled, an object file with the same name and a .r extension is created. By default, MFG/UTIL saves the .r program in a sub-directory using the first two letters of the program name. This sub-directory is located under the two-letter language directory, below the main MFG/PRO installation directory. For example, the program somstr.p would be saved in: `InstallDir/us/so`.

Keep in mind that you have two sets of code to maintain: the Windows character programs on the server and the Windows client programs on the file server. (The Windows client source code is optional at MFG/PRO client installation.)

## Using MFG/UTIL to Compile

MFG/UTIL provides a compile function that lets you compile against an active database. Use the following instructions to compile.

**Important** Before using MFG/UTIL to compile MFG/PRO code, additional steps must be taken if you are planning to compile under one of the following circumstances.

- You are performing a non-English language compile.
- You are compiling character code.

### Non-English Language Compile

If you are compiling for a non-English language, you must first create a compile database set. Refer to the instructions in your installation guide, “Multiple Language Setup” chapter.

## Compiling Character Code

Compiled character code is not completely portable across platforms. Differences exist between character r-code compiled on Windows character client machines and UNIX machines.

**Important** Because many MFG/PRO programs reference, or share, the same program frame layout, run-time errors occur when character code compiled on different machines is mixed.

QAD compiles all MFG/PRO character code on UNIX. The compiled character code (.r extension, referred to as r-code) is initially portable across platforms because all the program frames have the same layout.

A problem arises when users compile programs at their sites, for custom programs or patch implementation. The recompiled programs reference frame layouts specific to the machine where they were compiled. For example, programs compiled on Windows character clients reference Windows frame layouts and can no longer reference the existing UNIX character code frames.

When incompatible code is run, the following PROGRESS error occurs. In this example, *ProgramName* refers to the recompiled program name, and *FrameName* refers to the shared frame the program uses.

```
ProgramName Shared frame layouts do not match for frame  
FrameName. (683)
```

### Solution

To solve this problem, choose one of the following options.

- Recompile all character programs on a single machine and perform all future compiles on the same machine.

For example, recompile all character code on a Windows character client and perform all future compiles on a Windows character client.

**Note** This option does not require any additional setup or software.

- Recompile all character programs using the PROGRESS 8.3 `-portableframes` start-up parameter. Perform all future compiles using this parameter.

Use the instructions in “Compiling with the `-portableframes` Parameter” on page 70 to implement this option.

### Compiling with the `-portableframes` Parameter

The `-portableframes` parameter enables you to compile on either UNIX or Windows machines. Use the following instructions to implement this solution.

Beginning with PROGRESS Version 8.3A03 for Windows, the `-portableframes` start-up parameter is provided to enable the creation of portable character code from either Windows character clients or UNIX machines.

**Important** Once this parameter is set, all character code must be compiled using it.

Run-time errors occur if you mix character code compiled with the `-portableframes` parameter and character code compiled without it. If you choose to use the `-portableframes` start-up parameter, you must recompile all MFG/PRO character code with it. Future compiles can be performed on either UNIX or Windows character client machines, but must have the `-portableframes` parameter set.

To implement the `-portableframes` start-up parameter, use the following instructions.

**Important** QAD recommends that you recompile all programs during installation. If not, you must recompile all MFG/PRO programs when you compile your first patch or custom program.

- 1 Right click the Start menu button.
- 2 Select Open All Users and the Start program group is displayed.
- 3 Double click on the Programs icon. The individual programs are displayed.
- 4 Double click the MFG/PRO program folder.
- 5 Edit the properties of the MFG/UTIL icon by performing the following:
  - a Right click the MFG\_UTIL icon and select Properties. From the Properties window, select the Shortcut folder tab.
  - b Add the `-portableframes` parameter to the end of the Target field.

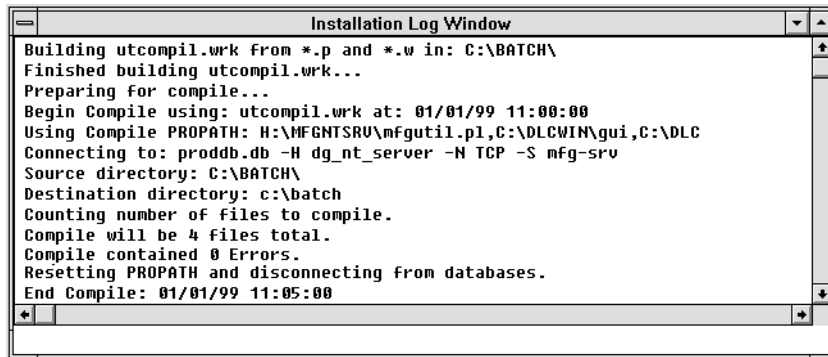
- c Click the Apply button to save your changes
- 6 When using PROGRESS Version 8.3 and MFG/UTIL to compile all—or a large number of—MFG/PRO programs, you may receive the following error.  
  
Error: Insufficient disk space or write access denied (291).  
  
To avoid this error, add the following start-up parameters to the target field after the -d and -yy parameters and before the -iname parameter.  
  
`-D 50 -TM 31 -TB 31 -B 100`
- 7 Perform all MFG/PRO compiles using this MFG/UTIL icon.

## Compiling Code

- 1 Start an MFG/UTIL session on either the server or a Windows client PC. This session must run against a copy of PROGRESS ProVISION or 4GL.
- 2 From the MFG/UTIL main menu, select Program, then Compile Procedures.
- 3 In the Source Directory field, enter the source directory where the .p and other source files are located. Using the two radio buttons, you can compile all of the files in the source directory or point to a work file that contains a list of the files to be compiled. If you select the Files listed in the work file option, another input field displays. Enter the full path name of the work file in this field.

- 4 Indicate if you want the new .r files saved. If you are performing test compiles, leave this box unchecked until you are ready to do your final compile. In the Destination directory field, enter the full path name of the destination directory.
- 5 If you choose to save the compiled files, do the following substeps.
  - a Enter or accept the default for the two-letter language code in the Language field. It is appended to the end of the directory you specify in the Destination directory field depending on your choice in the next step.
  - b Choose the MFG/PRO default option or the flat destination option. With the default option, your compiled .r code is placed in a series of two-letter sub-directories based on the first two letters of the program name. Also, if you compile triggers, they appear under a .\triggers sub-directory. With the flat destination option, all .r code is placed directly under the destination directory, with no language code directory appended.

- 6 The compile process must connect to an active database. In the Use this database set field, select a database set to run the compile against. If you have configured a compile database set, you should select that set; otherwise, select any database set that already has database servers started for it.
- 7 Choose Compile.
- 8 During the compile, an Installation Log Window displays the current status.



```
Installation Log Window
Building utcompil.wrk from *.p and *.w in: C:\BATCH\
Finished building utcompil.wrk...
Preparing for compile...
Begin Compile using: utcompil.wrk at: 01/01/99 11:00:00
Using Compile PROPATH: H:\MFGNTRSRU\mfgutil.pl,C:\DLCWIN\gui,C:\DLC
Connecting to: proddb.db -H dg_nt_server -N TCP -S mfg-srv
Source directory: C:\BATCH\
Destination directory: c:\batch
Counting number of files to compile.
Compile will be 4 files total.
Compile contained 0 Errors.
Resetting PROPATH and disconnecting from databases.
End Compile: 01/01/99 11:05:00
```

- 9 When the compile ends, choose Print or Close.

**Note** MFG/UTIL saves the settings you entered in the Compile Procedures Files window so that you can reuse or modify them for the next compile.

## Batch Processes with PROGRESS Prowin32 Batch Client

In an MFG/PRO for Windows NT Version 9.0 environment, you can significantly improve performance of certain functions by using the PROGRESS Prowin32 Batch Client. This client can be used to process long-running batch jobs such as regenerative MRP or provide continuous *Hotbatch* processing for background operations such as printing large reports.

The examples in this section illustrate how to set up batch processing to run a regenerative MRP against the `mfgdemo` database and set up Hotbatch processing.

### Overview

Setting up the batch process consists of implementing a pre-compiled `batch.p` program to be called by Prowin32. The following is an overview of the activities required to create this program.

- Editing the Batch Program and Input Control File  
To meet your specific requirements, you must modify the sample batch program and the input control file provided in this release.
- Copying and Editing the `progress.ini` File  
The `progress.ini` file, which you rename `progress.bch`, controls your batch processing environment variables, such as the `PROPATH`.
- Modifying the `batch.pf` File  
This file must point to your production database.
- Creating Unique Batch Directories  
Instructions on setting up batch directories for different batch jobs.
- Defining Batch IDs for MRP and Hotbatch  
An example MRP batch ID is explained, as well as a Hotbatch batch ID for running continuous batch processes.

- Submitting Batch Jobs in MFG/PRO

Once you define the batch IDs, you can schedule items in MFG/PRO.

- Scheduling Batch Jobs in Windows NT

You can schedule the batch jobs using an icon, the Windows NT AT command, or the Windows NT Resource Kit scheduler.

**Note** If you are using ProControl to start your databases, it is critical for batch processes that you set up the ProControl environment setting ACCESS=all.

For details, see  
*Installation  
Guide  
PROGRESS  
Database on  
Windows NT  
Server.*

## Editing the Batch Program and Input Control File

MFG/PRO for Windows NT Version 9.0 includes a pre-compiled batch control program. Below is a listing of that batch .r control program. The batch .r program is in the *InstallDir*\BATCH directory.

| Statements in batch.p Program | Comments                                                                           |
|-------------------------------|------------------------------------------------------------------------------------|
| INPUT from batchin.inp.       | Defines the input control file.                                                    |
| OUTPUT to batchout.out.       | Defines an output file for MFG/PRO screens. This can be very useful for debugging. |
| PAUSE 0 BEFORE-HIDE.          | Standard programming convention.                                                   |
| RUN MF.P.                     | Calls the MFG/PRO main program.                                                    |
| INPUT CLOSE.                  | Cleanup.                                                                           |
| OUTPUT CLOSE.                 | Cleanup.                                                                           |

There are two sample batch input control files in the sub-directory *InstallDir*\batch:

- mrpbatch.inp: Intended for MRP batch processes.
- hotbatch.inp: Intended for continuous background processing.

To use either of these sample files, you must first copy or rename the selected file to `batchin.inp`.

| Statements in <code>mrpbatch.inp</code> Input Control File | Comments                  |
|------------------------------------------------------------|---------------------------|
| " "                                                        | Positional field.         |
| "mgbatch.p"                                                | Call the mgbatch program. |
| "mrp"                                                      | Call the MRP Batch ID.    |
| .                                                          | Escape.                   |
| .                                                          | Escape.                   |
| "Y"                                                        | Log off confirmation.     |

| Statements in <code>hotbatch.inp</code> Input Control File | Comments                        |
|------------------------------------------------------------|---------------------------------|
| " "                                                        | Positional field.               |
| "mgbatch.p"                                                | Call the mgbatch program.       |
| "hotbatch" - - - - - "yes" "30"                            | Schedule the hotbatch Batch ID. |

If you choose to set up both `hotbatch` and `mrpbatch`, you must put each batch input control file, along with all other batch processing files, in unique directories. You need a unique directory for each input control file because the control file name, `batchin.inp`, is the same in all cases.

**Note** The minimum files required in each batch directory are: `batch.pf`, `batch.r`, `batchin.inp`, and `progress.bch`.

## Copying and Editing the `progress.ini` File

- 1 Copy the `DLC\bin\progress.ini` file to `InstallDir\batch\progress.ini`.
- 2 Rename the extension of the copied file to `progress.bch`.
- 3 Open the copy of the `progress.bch` file in a text editor.

- 4 In the [Startup] section, modify the PROPATH entry to point to your *InstallDir* directory and the *InstallDir*\triggers directory.

**Example** Original PROPATH.

```
PROPATH=., c:\DLC\PROBUILD\EUCAPP, C:\DLC\PROBUILD\
EUAPP\EUC.PL
```

**Example** Modified PROPATH. In the following, mfgntsvr is the MFG/PRO database server installation directory.

```
PROPATH=., d:\mfgntsvr, d:\mfgntsvr\triggers
This sets the batch PROPATH to point to the MFG/PRO Windows NT
9.0 character code on your database server.
```

- 5 Save your changes.

## Modifying the batch.pf File

In this section, you will modify a copy of the standard *batch.pf* file to use as the batch start-up parameter file. This file is used during batch processing to point to your production database and to set certain PROGRESS environment variables. You will find the *batch.pf* file in the *InstallDir*\batch sub-directory.

- 1 Open *batch.pf* in a text editor.

Sample File:

```
-db your-production-database -mmax 8192 -l 4096 -T your-
temp-drive
```

- 2 Change -db your-production-database to point to the location of your production database. Use the full path.

Example:

```
-db d:\mfgntsvr\mfgdemo.db
```

- 3 Change -T your-temp-drive to point to a temp file location.

Example:

```
-T c:\temp
```

- 4 Specify the location of your gui database using the following line.

```
-db your-gui-database -ld qadgui
```

Example:

```
-db d:\mfgntsvr\gui.db -ld qadgui
```

- 5 Add the `-cpinternal`, `-cpcoll`, and `-cprcodein` database connection parameters. Use the settings appropriate for your language.

The following example applies to most Western European language systems.

```
-cpinternal iso8859-1 -cpcoll basic -cprcodein iso8859-1
```

- 6 Save the `batch.pf` file.

**Note** If you change the location of your databases, make sure the `batch.pf` file is also changed to reflect the new database locations.

## Creating Unique Batch Directories

As an example of creating batch processes for various batch jobs, you will create unique directories for your Hotbatch and MRP batch jobs. Depending on your business, other batch directories might be set up for daily, weekly, and monthly batch processes.

- 1 With Windows NT Explorer or File Manager, create Hotbatch and MRP directories under *InstallDir*\batch.

```
InstallDir\batch\mrp
```

```
InstallDir\batch\hotbatch
```

- 2 Copy the *InstallDir*\batch\hotbatch.inp file to your Hotbatch directory, and rename it `batchin.inp`.
- 3 In your Hotbatch directory, open the `batchin.inp` file in a text editor.
- 4 Change the last variable in the final line from 30 to 300.

```
"hotbatch" - - - - - "yes" "300"
```

The batch ID hotbatch will now be run every 300 seconds.

- 5 Copy the *InstallDir\batch\mrpbatch.inp* file to your MRP directory, and rename it *batchin.inp*.
- 6 Copy the remaining batch files into both directories.

**Batch Process Files**

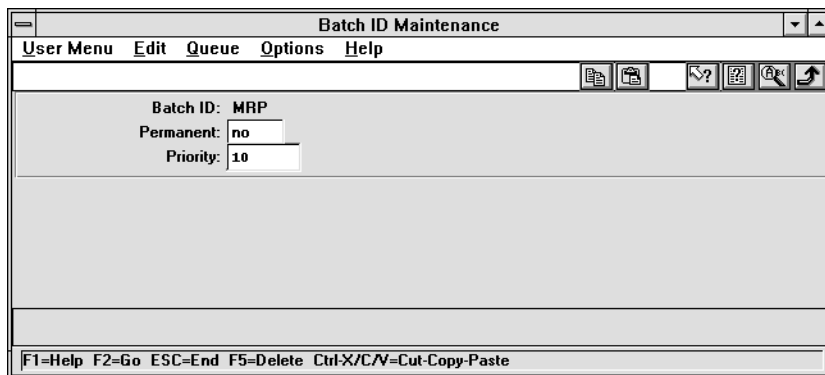
- *batch.pf*
- *batch.r*
- *progress.bch*

Both your Hotbatch and MRP directories should now contain the required batch files: *batchin.inp*, *batch.pf*, *batch.r*, *progress.bch*.

## Defining Batch IDs for MRP and Hotbatch

Use the following steps to define the MRP batch job.

- 1 Start an MFG/PRO client session against your production database. In this example, we are using *mfgdemo* as the production database.
- 2 Log in and select menu item Batch ID Maintenance (36.14.1).
- 3 In Batch ID Maintenance, do the following steps:
  - a Create a Batch ID called MRP. Enter the MRP Batch ID name, and press Enter.
  - b Enter the Permanent and Priority fields.



The screenshot shows a window titled "Batch ID Maintenance" with a menu bar (User Menu, Edit, Queue, Options, Help) and a toolbar. The main area contains the following fields:

|            |     |
|------------|-----|
| Batch ID:  | MRP |
| Permanent: | no  |
| Priority:  | 10  |

At the bottom, a status bar displays keyboard shortcuts: F1=Help, F2=Go, ESC=End, F5=Delete, Ctrl-X/C/V=Cut-Copy-Paste.

**Note** In this example, the Permanent field is set No and the Priority field is set to 10. This is the priority that this Batch ID runs in relationship to concurrent batch processes. Priority 10 is the highest.

Use the following steps to define the Hotbatch batch job.

- 1 In Batch ID Maintenance (36.14.1), complete the following steps to add a new Batch ID record.
  - a Create a Batch ID for a Hotbatch batch job.

The screenshot shows a window titled "Batch ID Maintenance" with a menu bar (User Menu, Edit, Queue, Options, Help) and a toolbar. The main area displays the following fields:

- Batch ID: **HOTBATCH** (with an up arrow icon)
- Permanent: **no**
- Priority: **5**

At the bottom, a status bar displays the keyboard shortcuts: F1=Help F2=Go ESC=End \*Next/Prev\* Ctrl-X/C/V=Cut-Copy-Paste.

- b Set the Permanent field to No. If the Permanent field is set to Yes for hotbatch jobs, they will run continuously at the rate specified in the batchin.inp file—for example, every 300 seconds.

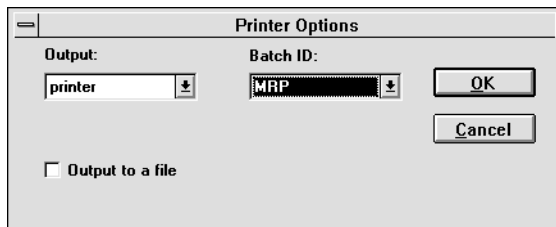
**Note** To shut down a continuous batch process without shutting down the associated databases, use the Windows NT Task Manager (Ctrl + Shift + Esc) to End Task the PROGRESS application.

- c Press F2 to add the new Batch ID record.
- 2 When the process is completed, press Esc.

## Submitting Batch Jobs in MFG/PRO

These steps explain how to submit batch jobs using the examples of Regenerate Materials Plan (MRP batch ID) and Control File Report (Hotbatch batch ID).

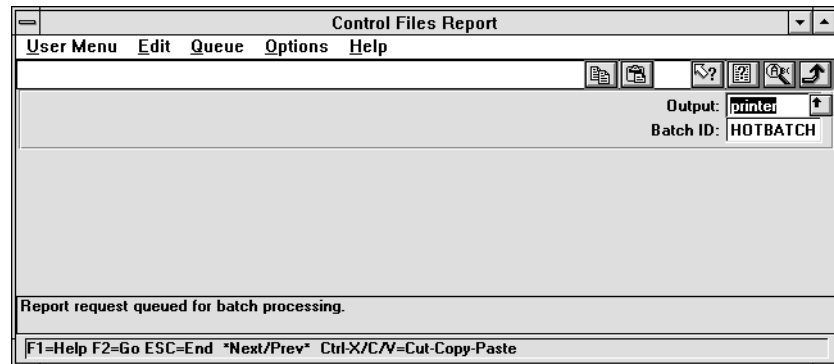
- 1 From the main menu, select Regenerate Materials Plan (23.2).
- 2 At the Regenerate Materials Plan window, enter a site range of 1000 to 5000, then choose Print.
- 3 At the Print Options window, select your output device, select the MRP Batch ID, and choose OK.



- 4 Exit from Regenerate Materials Plan. The MRP request is now queued for batch processing.

### Hotbatch Batch ID Example

- 1 Select any report; for example, Control Files Report (36.17.6).
- 2 In the Control Files Report window, select your output device, select the Hotbatch batch ID, and press F2.



Your Report is now scheduled for background printing under control of the batch processor.

- 3 You can check the status of your batch requests by selecting Batch Request Detail Maintenance (36.14.3).

### Scheduling Batch Jobs in Windows NT

To schedule a batch job, it is recommended you use a .bat (batch) file. Once you set up this file, you can use either or both of the example techniques shown in this section:

- Using an icon (launches the process on demand)
- Using the AT command (launches the process at a scheduled time)

You can also use the Microsoft NT Resource Kit to schedule batch processing. See that product's documentation for details.

### Set Up .bat File

These steps are required whether you use the icon or AT command method of scheduling.

- 1 In a text editor, create a .BAT (batch) file for each batch directory. For example, this chapter created MRP and Hotbatch directories. Use the following text.

```
ProgressDir\bin\prowin32.exe -b -p batch.p  
-ininame progress.bch  
-pf batch.pf
```

- 2 Use any name for the .BAT file. The subsequent steps see this file as *BATFileName.bat*.

### Using an Icon

Use these steps if you choose to set up a shortcut icon that launches MFG/PRO batch processing on demand.

- 1 Create a new batch client shortcut with the following properties in the Shortcut tab.

|           |                                         |
|-----------|-----------------------------------------|
| Target:   | <i>InstallDir\batch\BATFileName.bat</i> |
| Start In: | <i>InstallDir\batch</i>                 |

- 2 You can now call the Batch Process by clicking the new Batch icon. To track the process, use the Window NT Task Manager, Applications tab.

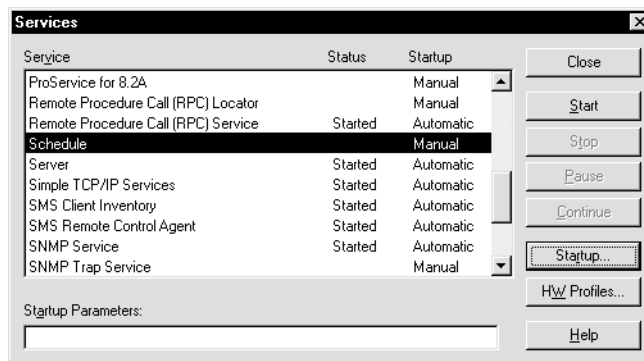
## Using the AT Command

Use these steps if you choose to set up MFG/PRO batch processing on a scheduled basis.

- 1 From the Control Panel, select Services.



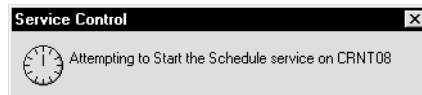
- 2 From the Services window, highlight Schedule and choose the Startup... button.



- 3 In the Service window, do the following.
  - a Select Automatic under the Startup Type so that the service is always running.
  - b Select Allow Service to Interact with Desktop (the box should be checked). This setting is required for the batch program to run. Choose OK.



- 4 When the Services window reappears, make sure Schedule is still highlighted and choose Start. The following window appears as this service starts.



- 5 Verify that "Started" appears in the Schedule status and choose Close.

- 6 To schedule the batch job with the AT command, open the DOS Command Prompt window and enter the appropriate AT syntax. Use the following examples as guidelines. For more information on the Windows NT AT command, see Microsoft's Windows NT documentation or online help.

To run the batch job every weekday at 7 pm, type the following *as one command line*:

```
at 19:00 /interactive /every:M,T,W,Th,F  
    "BatchDir/BATFileName.bat"
```

To run the batch job once at 6 pm the same day, type the following:

```
at 18:00 /interactive "BatchDir/BATFileName.bat"
```

- 7 To view the schedule of batch jobs, type:

```
at
```

## CHAPTER 7

# Using PROGRESS RESULTS with MFG/PRO

This chapter explains how to set up the RESULTS reporting tool for use with MFG/PRO. For details on using this tool to produce reports, refer to the PROGRESS documentation.

*About RESULTS*      **88**

*RESULTS Setup Overview*      **88**

*Setting Up RESULTS to Start from a MFG/PRO Menu*      **88**

Routing Code: 10-15000      OPERATION: 20      STANDARD OPERATION: 1030      MACHINE: INSPEC PER PROX-000      QUEUE TIME: 1.0      WAIT TIME: 0.0      SETUP TIME: 0.0

## About RESULTS

RESULTS is a PROGRESS ad-hoc reporting tool available for UNIX-based character clients, 16-bit Windows clients, or 32-bit Windows clients.

## RESULTS Setup Overview

This section explains how to set up RESULTS to run from the MFG/PRO menu.

If you run RESULTS from an MFG/PRO menu, you must make some programming changes to ensure that the F2 and F6 function keys operate correctly for both MFG/PRO and RESULTS. The way MFG/PRO defines these function keys differs from PROGRESS, which can create errors if you do not correct for this situation.

## Setting Up RESULTS to Start from a MFG/PRO Menu

Follow these steps to run RESULTS from an MFG/PRO menu.

- 1 Make certain that your PATH contains \$DLC/bin.
- 2 So that RESULTS starts correctly, make sure the RESULTS installation directory is part of the PROPATH system variable and that it is listed after the MFG/PRO installation directory.
- 3 Copy the MFG/PRO RESULTS files to your production database directory using the source directory:  
*MfgProInstallDir\results\v2*
- 4 In a MFG/PRO session, start Menu System Maintenance (36.4.4).
- 5 In Menu System Maintenance, complete the fields according to the following table. After you complete the line item entry, press End.

|                 |                                                                                                                |
|-----------------|----------------------------------------------------------------------------------------------------------------|
| Language ID     | Accept the default language code or another, if appropriate. For example, the language code for English is us. |
| Menu            | Menu number where RESULTS selection item appears.                                                              |
| Sel (selection) | Selection item that starts RESULTS.                                                                            |
| Selection Label | Type PROGRESS Results.                                                                                         |
| Name            | Type results.                                                                                                  |
| Exec File       | For a UNIX server, type <code>results1.p</code> . For a Windows NT server, type <code>results.p</code> .       |
| Help File       | Leave this field blank.                                                                                        |



## CHAPTER 8

# MFG/UTIL Reference Information

This chapter describes the MFG/UTIL functions, along with other reference information. MFG/UTIL is the installation and system management tool for MFG/PRO. There are two instances of MFG/UTIL: one on the server and one on each client PC. Depending on your administration task, you may need to run one or the other or both.

*Database Menu*    **92**

*Program Menu*    **97**

*DataServer Menu*    **99**

*Scripts Menu*    **99**

*Configure Menu*    **100**

*Sections in mfgutil.ini*    **103**

Routing Code: 10-15000    OPERATION: 20    STANDARD OPERATION: 1030

| Description     | INSPEC PER PROX-000 |
|-----------------|---------------------|
| Machines per Op | 1                   |
| Overlap Units   | 1                   |
| Queue Time      | 1.0                 |
| Wait Time       | 0.0                 |
| Setup Time      | 0.0                 |

By: Production Support

## Database Menu

### Create Database

Select this option from the Database menu to choose a data definition file and create a new PROGRESS database or schema holder. Once you have completed the information, choose OK to begin the database creation.

|                          |                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data Definition File     | The data definition file contains all the schema definitions for your database. You can also choose Browse .df File to browse your directories for the path and file name. You can load schema using one of the standard .df files or a .df file you have created. MFG/UTIL will load the schema specified in this .df file, using the dfloadx program.              |
| Database Name            | Enter the physical name of the database to create. Include the full path name.                                                                                                                                                                                                                                                                                       |
| Database Type            | MFG/UTIL currently installs the PROGRESS database type.                                                                                                                                                                                                                                                                                                              |
| Database ID              | Reserved for future use.                                                                                                                                                                                                                                                                                                                                             |
| Load Data                | To create the database and load the data from a set of files (.d), choose this option. MFG/UTIL uses the mgdload program to load the data into the new database.                                                                                                                                                                                                     |
| To this Database Name    | Enter the database name where you want to load the data. The new database name defaults to this field, but you can enter another database name if you want, for example, to create an empty database called mfgempty.db, and at the same time load data to another database called mfg.db.                                                                           |
| From this Directory      | Enter the path to the directory that contains the data files (.d files). The program then loads all .d files in this directory with a corresponding table name in the destination database.                                                                                                                                                                          |
| Load Data from Directory | Opened from the Database menu, this option enables you to load data from a set of data files (.d) into a new or existing database. MFG/UTIL uses the mgdload program to load the data into the specified database. For MFG/PRO on ORACLE, loading into a new database is not available. Also, after this dialog, you must complete the Connect to a Database dialog. |
| From this Directory      | Enter the full path to the directory that contains the data files (.d files). The program then loads all .d files in this directory with a corresponding table name in the destination database.                                                                                                                                                                     |

|                          |                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| From this Empty Database | If you want to load data into a new database, first specify which empty database you want to use as the basis of the new database. Enter the full path and physical name. For example, to load into a new copy of the main MFG/PRO database, specify mfgempty. For MFG/PRO on ORACLE, simply enter the path and name of the oraempty schema holder. |
| To this Database Name    | Enter the new or existing database name where you want to load the data. For MFG/PRO on ORACLE, enter the schema holder used to connect to your existing ORACLE database.                                                                                                                                                                           |

## Load Data File into Existing Database

Use this option to load a data file (extension .d) into an existing database. You can load only one data file at a time. MFG/UTIL first opens the Connect to a Database window, and then displays the following fields.

|                          |                                                                                                                    |
|--------------------------|--------------------------------------------------------------------------------------------------------------------|
| Choose a table to load   | Select the target database table.                                                                                  |
| Allow Errors During Load | By selecting this option, the load will continue even if an error is encountered.                                  |
| Input File               | Type the name of the data file (.d). Include the directory path if it is not within the current working directory. |

## Update Schema

Select this option from the Database menu to update the schema for an existing database. Be sure you have a complete backup of any database before you begin an update. Once you have completed the information, choose OK to begin the database update.

|                                 |                                                                                                                                                                                                 |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Update this Database File       | Enter the database file to update. Choose Browse .db File to choose the path and file name.                                                                                                     |
| Using this Data Definition File | Enter the data definition file that contains the new schema definitions. Choose Browse .df File to choose the path and file name of the data definition file.                                   |
| Allow CRC Changes               | Check this box to allow for CRC changes to the database during the update. Choosing this option might also require you to recompile programs before you can use them with the updated database. |

## Split Database Schema File

► For more information, see “Split Schema Database” on page 55.

This option enables you to split a single database schema file, such as `mfgempty.df`, into multiple database definition files. You can then use these `.df` files to create multiple databases in a split schema installation. Split schemas are generally used to enhance system performance or to maintain different information at different physical locations. To use this feature, select Split Database Schema File from the Database menu.

**Note** MFG/UTIL provides a tool only for splitting the schema definition file. Since setting up a split schema installation involves additional considerations and requirements, it should be attempted only by an experienced system administrator.

## Processing Logic

MFG/UTIL reads two files, the split schema definition file and the master `.df` input file. It produces a default `.df` output file plus one schema definition file for each section defined in the split schema definition file.

The split schema definition file has a syntax similar to a standard `.ini` file, but uses a `.spl` extension, by default. All other files use the syntax of a standard PROGRESS database definition file and have the `.df` extension. When splitting the schema, MFG/UTIL reads each line from the master `.df` input file and determines where to write it: in each `.df` file, in a specific `.df` file, or in the default `.df` file. The following logic is used:

- If a line contains a comment, the comment is included in all files defined in the split schema definition file, plus the default `.df` output file.
- If a line refers to a database table, it searches the split schema definition file to see if the table is referenced there; if so, the program writes the line to the `.df` file associated with the table.
- If a line does not refer to a table referenced in the split schema definition file, the line is written only to the default `.df` output file.

### Example Split Schema Definition File

An split schema definition file (extension .spl) might include these sections:

```
[Common]
Description=
Table=cah_hist
[Dynamic]
Description= Table=tr_hist
Table=gl_hist
[Service]
Description=All tables from a specific module
Table=bic_ctrl
Table=cac_ctrl
Table=caq_mstr
Table=cas_mstr
Table=ca_mstr
Table=ccd_mstr
[GL]
Table=gl_mstr
```

The result of this example split schema definition file would be four .df files: common.df, dynamic.df, service.df, and gl.df.

### Connect to a Database

This dialog is opened automatically when you choose the following Database menu commands:

- Load Data from Directory
- Load DataFile into Existing Database
- Create Dump and Load Procedures
- Load Translated Labels All of these options require that you connect to a database by completing the connection parameters and choosing OK

|                                  |                                                                                                                              |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Physical Database Name (-db)     | Enter the physical database name of the database. For MFG/PRO on ORACLE, enter the PROGRESS schema holder name.              |
| Client/Server Network Connection | To connect in a client/server environment using PROGRESS networking, choose this option and enter the host and service name. |
| Host Server Name (-H)            | Enter the name of the remote machine for this connection.                                                                    |
| Service Name(-S)                 | Enter the service name to be used for this connection.                                                                       |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Local Host Connection           | For a local host connection (meaning the database is on the same machine as your PROGRESS session), select this option and complete the following fields.                                                                                                                                                                                                                                            |
| Single-User Connection          | Select this option to connect to the database in single-user mode (-1 parameter). Turn off this option to connect in multi-user mode.                                                                                                                                                                                                                                                                |
| Database Path                   | Enter the directory path to the database or schema holder specified in the Physical Database Name field.                                                                                                                                                                                                                                                                                             |
| Additional (Startup) Parameters | <p>You can enter any additional server startup parameters in this field. For example, to connect to an ORACLE database, you would need the following parameters:</p> <p><i>-ld YourSchemaHolder -RO -db ORACLEDbName -ld ORACLE_SID -dt ORACLE -U userid -P password</i></p> <p>NOTE: Append the user ID (-U) and password (-P) with "@&lt;ORACLE_SID&gt;" if you want to connect using SQL*Net.</p> |

## Create Dump/Load Procs

Choose this option to create the dump/load procedures for the MFG/PRO database. Standard dump/load procedures come with MFG/PRO, but you may want to recreate them if you have made changes to the database schema.

## Load Translated Labels

If you are compiling for a non-English language, you must load the translated schema labels into the empty MFG/PRO databases before compiling. When you choose this option, you must first complete the database connect window. Connect to one of the empty databases, such as mfgempty.db.

After a connection is made, complete the following field with the path and name of the xdc\_mstr table.

Update This Database File: *MfgInstallDir\LanguageDir*  
*\xdc\_mstr*

# Program Menu

## Compile Procedure Files

Use this dialog box to select procedures based on file and directory names. You can perform a multi-tasking compile and choose the following options:

- Compile an entire directory and build a list file.
- Compile from a list file.
- Resume compiling where a previous compile was interrupted.
- Monitor the number of files compiled and remaining.
- Review the number of files with errors.
- Log all errors.
- Save all database connections.
- Save the PROPATH used during compiles.
- Compile a single file or an entire directory.
- Include files based on whether a compiled file (.r-code) currently exists in the database.

At compile time, MFG/UTIL reads your database names and environment variables from the mfgutil.ini file. This information is stored in a temporary database while the programs are compiled. The logical database names and CRC values are compiled in the .r code. The compile PROPATH variable and other changes are written out to the mfgutil.ini file once the compile is complete.

**Note** Compiles must be run using a screen resolution of 800x600 or lower.

|                           |                                                                                                                                                                                                                                           |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Files in source directory | Select this option to compile all source code in a given directory.                                                                                                                                                                       |
| Files listed in work file | Select this option to compile all source code listed in a work file.                                                                                                                                                                      |
| Source Directory          | Specify the directory containing the source code you want to compile. Use the Choose... button to browse for a directory or file. The standard MFG/PRO source code directory is /src and the standard encrypted source directory is /xrc. |

|                           |                                                                                                                                                                                                                                                                                                                      |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Save new .r-code          | To run a test compile, leave the option to save new files unchecked. You can then view the results of the compile before actually saving the compiled programs.                                                                                                                                                      |
| Resume Previous Compile   | This check box is available only if a previous compile was interrupted. You can restart a compile that was canceled or aborted by the system, without starting at the beginning. MFG/UTIL reads the log file to determine where to resume the compile.                                                               |
| Language                  | If you are saving the .r code, specify or accept the default for your language code directory (for example, us is the directory for English). MFG/UTIL appends this directory to the end of the directory you specify in the Destination directory field, provided you choose the option: r-code to MFG/PRO default. |
| r-code to MFG/PRO default | If you are saving the .r code, choose this option to save the programs in the default directory structure. In the default structure, the programs are contained in two-letter sub-directories corresponding to the first two letters of the program name.                                                            |
| r-code to flat dest dir   | If you are saving the .r code, choose this option to save the programs in a single, flat directory, as specified in the Destination directory field.                                                                                                                                                                 |
| Destination directory     | If you run the compile and choose the save option, you can enter a destination directory in this field. If you leave this field blank, the compiled programs are saved in the same directory from where you selected them.                                                                                           |
| Use this database set     | The database sets you defined are displayed in this drop down list. You must choose one of these sets against which to compile your procedures. After using this feature the first time, the database set defaults to the last set used for a compile.                                                               |
| Compile Propath           | The path name you enter here determines the PROGRESS version against which the selected files will be compiled.                                                                                                                                                                                                      |

## DataServer Menu

### Generate Oracle Database Scripts

This option changes the settings in the SQL scripts, which you run to create the ORACLE database. You must answer various prompts, including the directory locations for control files, dump directories, system data files, logfiles, and more. This information affects the scripts:

- crdb1<ORACLE\_SID>.sql
- crdb1<ORACLE\_SID>.sql
- init<ORACLE\_SID>.ora
- config.<ORACLE\_SID>

(where <ORACLE\_SID> is your ORACLE system ID).

### Change Oracle Connection Parameters

This option alters an existing schema holder to connect to a different ORACLE database.

## Scripts Menu

### Generate Server Startup and Shutdown

Select this option from the Scripts menu to generate server startup and shutdown scripts (in UNIX) or icons (in Windows NT). The start-up scripts or icons are based on the database sets you configured in the Database Set Configuration window. The program first prompts you to select a database set. To generate scripts, the program uses these parameters and one of the template scripts located in your MFG/UTIL directory.

## Generate User Startup

Select this option from the Scripts menu to generate or regenerate user startup scripts (in UNIX) or icons (in Windows). The start-up scripts or icons are based on the database sets you configured in the Database Set Configuration window. Specify which database set you want. If the script or icon already exists for that database set, MFG/UTIL overwrites it, but warns you first.

## Configure Menu

### DLC and PROPATH Variables (Set MFG/PRO Paths)

Since MFG/UTIL uses various PROGRESS programs to complete the installation, you may need to specify the path name where PROGRESS is installed. Enter the root path name where the PROGRESS executable files are installed. Your changes update the initialization file mfgutil.ini; they do not affect the MFG/PRO start-up scripts or icons.

### Company Information

The first time you use MFG/UTIL to set up your MFG/PRO system, this dialog box automatically appears and prompts you to enter the needed information. This information is for reference only. From the File menu, you can also print this company information along with company database names, path names, and other default information. To change existing company information, select this option from the Configure menu.

## Any Database Set (Database Set Configuration)

The purpose of this window is to display the parameters and databases within the database set. You enter or modify the parameter information in related windows, which appear depending on the buttons you choose.

|                         |                                                                                                                                                                                                     |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Select Database Set     | In the top frame, you choose the database set you want to configure.                                                                                                                                |
| Edit Set, New Set       | Choose one of these buttons to access the parameters for a database set. The Database Set Parameters window opens; it contains overall parameters for all the databases within the set.             |
| Selected Set Overview   | In the bottom frame, you choose one of the databases within the database set.                                                                                                                       |
| Edit Client, New Client | Choose one of these buttons to access the connection parameters related to starting an MFG/PRO client session.                                                                                      |
| Edit Server, New Server | These buttons appear if you are configuring the database server start-up scripts or icons. Choose one of these buttons to access the connection parameters related to starting the database server. |

## Database Set Parameters

This window controls overall parameters for the database set. It opens when you choose Edit Set or New Set from the Database Set Configuration window. The parameters you specify will be used to create start-up scripts or icons.

|                 |                                                                                                                                                                                                                                                            |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Set Name        | Accept the default.                                                                                                                                                                                                                                        |
| Set Description | Enter a different description if you want.                                                                                                                                                                                                                 |
| Start Params    | Defaults to the standard client start-up parameters, but can be changed as needed. The start-up parameters will be used by all clients that connect to this database set.                                                                                  |
| Active          | When the database set is active (set to Yes), MFG/UTIL generates start-up scripts or icons for it as part of the installation. When the database set is not active (set to No), MFG/UTIL does not generate start-up scripts or icons for the database set. |

## Client View of Database Parameters

This window contains the parameters that control how MFG/PRO client sessions will connect to the chosen database in the database set. It opens when you choose Edit Client or New Client from the Database Set Configuration window. The parameters you specify will be used to create start-up scripts or icons.

|                  |                                                                                                                                                                                                                                                                                     |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physical (-db)   | Enter the physical database name of your database; accept the default if there is one.                                                                                                                                                                                              |
| Logical (-ld)    | Enter the logical database name for the database; accept the default if there is one. For the main MFG/PRO database, always leave this field blank.                                                                                                                                 |
| Description      | Change the description if you want; it is for future reference.                                                                                                                                                                                                                     |
| Connection Parms | Enter any PROGRESS connection parameters you want that apply specifically to client connections to this database.                                                                                                                                                                   |
| Connection Type  | To configure a database set for either a host mode or client/server connection, refer to the information below.                                                                                                                                                                     |
| Host             | For a Client/Server connection type, enter the name of the remote machine to which this client should connect at startup. This host name populates both the mfgutil.ini file and MFG/PRO parameter file.                                                                            |
| Service          | For a Client/Server connection type, enter the service name affiliated with the host. The name must correspond to an entry in your services files. (For the entries in your client service file, you must make the entries with a text editor; MFG/UTIL does not change this file.) |
| Path             | For a Local connection type, enter the full path to the directory containing this database.                                                                                                                                                                                         |

## Server View of Database Parameters

The information you enter here configures the server startup. It opens when you choose Edit Server or New Server from the Database Set Configuration window. The parameters you specify will be used to create start-up scripts or icons.

|              |                                                                                                                                                                                                                |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description  | Enter a description of the database. You can accept the default description for one of the pre- defined databases or overwrite it.                                                                             |
| Path         | For a local host connection, simply enter the database path.                                                                                                                                                   |
| Server Parms | Enter any additional server startup parameters in this field. The PROGRESS startup parameters help you manage memory and performance on the server. Also enter your network protocol parameters in this field. |

## Sections in mfgutil.ini

MFG/UTIL uses an initialization file, mfgutil.ini, to configure most of its operations. This allows you to review and modify the MFG/UTIL configuration and operation with any standard text editor. The mfgutil.ini file functions as the initialization file on both character and Windows platforms. The mfgutil.ini file follows the standard Windows convention and contains sections, line items, and comments. A section is a group of related information, with the section name enclosed in brackets (for example, [Compile]). The line item format is Item Name=Item Value (for example, SaveFiles=NO). Values can be text, numeric, logical, or one item from a list of choices. The logical values Yes and No are allowed. There is no case-sensitivity.

## Summary of Sections

The following table lists the sections of the mfgutil.ini file and their description.

|              |                                                                                                                                                   |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| ClientSetup  | Various settings for running MFG/PRO for the current client.                                                                                      |
| Compile      | Controls the compile process.                                                                                                                     |
| DBSET        | Stores the definition for a client database set.                                                                                                  |
| General      | Contains general status information. For example, whether or not the current copy of MFG/UTIL is installed as part of a client or server release. |
| HasRun       | Tracks which procedures the current client has already run.                                                                                       |
| OracleValues | Stores information needed to install the Oracle database.                                                                                         |
| Paths        | Stores various paths used by MFG/UTIL. For example, a startup script's PROPATH variable.                                                          |
| ServerSetup  | Stores the definition for a server database set.                                                                                                  |
| Site         | Stores the current client's site information. For example, the company name and contact.                                                          |

## ClientSetup Section (mfgutil.ini)

This section is populated by setup.exe at client setup time. These line items are used to build the mfgpro.pf file and program icons.

|                        |                                                                                                                                                                                                                                                     |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ClientAdminDirectory   | Client administration directory, where all the client r-code is stored. Refers to the original directory where the client CD was installed.                                                                                                         |
| ClientResolution       | The screen resolution chosen by this client for MFG/PRO.                                                                                                                                                                                            |
| ClientWorkingDirectory | The home directory for this client when running MFG/PRO. In Microsoft Windows, this value is stored as the Working Directory for MFG/PRO. To view this value in Windows, highlight the MFG/PRO icon in Program Manager and select File- Properties. |
| FirstClient            | A logical value that determines whether the program prompts you to save the current client's configuration on the server as a default available to other clients.                                                                                   |

## Compile Section (mfgutil.ini)

This section describes the compile environment. Most settings are saved from the specifications entered from the previous compile. These settings are then the defaults used when you compile again.

|             |                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DataBaseSet | The database set used with the previous compile. This will always show a database set defined in mfgutil.ini.                                                                                                                                                                                                                                                                                                  |
| DestDir     | The destination directory for any r-code files saved from the compile.                                                                                                                                                                                                                                                                                                                                         |
| MultiTask   | The PROGRESS attribute, SESSION:MULTITASKING- INTERVAL, to use during the compile. This attribute determines how often PROGRESS internally filters events (messages) between itself and other Windows applications. The value stored in mfgutil.ini is set at the beginning of the compile and reset when the compile is finished. For more information on this attribute, refer to the PROGRESS on-line help. |
| ProPath     | The PROPATH variable to use during the compile.                                                                                                                                                                                                                                                                                                                                                                |
| SaveFiles   | A logical value set to YES to save r-code files to disk, or NO to perform syntax checking only.                                                                                                                                                                                                                                                                                                                |
| SourceDir   | The directory where the source (.p, .w, .v) files reside.                                                                                                                                                                                                                                                                                                                                                      |
| WorkFile    | The name of the file which contains a list of files to compile.                                                                                                                                                                                                                                                                                                                                                |

## OracleValues Section (mfgutil.ini)

This section stores the values needed to install MFG/PRO with the Oracle DataServer.

|            |                                                                                                                                   |
|------------|-----------------------------------------------------------------------------------------------------------------------------------|
| OracleSID  | The Oracle environment variable that determines which instance you will access from PROGRESS. This is entered as the Database ID. |
| OracleHome | The path to the Oracle database.                                                                                                  |

## ServerSetup Section (mfgutil.ini)

This section stores the following information about your server setup, which is entered in the Database Set Configure window.

|                       |                                                                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description           | A text description of this database.                                                                                                                                            |
| ServerHostName        | The host name for this server. Equivalent to the PROGRESS -H parameter.                                                                                                         |
| Path                  | The database's physical path. Used only for local host connections.                                                                                                             |
| Service               | The name given to the port for this database, also entered in the server's SERVICES file. (Clients will connect to this service name.) Equivalent to the PROGRESS -S parameter. |
| StartParms            | The server startup parameters for this database set.                                                                                                                            |
| ServerAdmin Directory | The directory where your MFG/PRO installation files reside.                                                                                                                     |

## DBSET Section (mfgutil.ini)

The DBSET or Database Set section has a slightly more complicated structure than other sections of mfguti.ini. The Section Name DBSET is always followed by a dash (-) and a database name. For example, DBSET-PRODUCTION is a production database section name. Most items found in this section apply to only one database in the database set. The exceptions are SetDescription and SetParms, which apply to the database set.

Any items that apply to only one database in a set are preceded by a database number prefix. This prefix is in the form DB-#, where # represents a number. The number corresponds to individual databases in the database set. For example, DB1- Physical=mfgempty shows that the physical name for database number 1 in this set is mfgempty.

A complete entry in this section might resemble this example:

```
[DBSET-Production]
DB1-Physical=mfgdemo
DB1-ConnectParms=
DB1-Description=Main MFG/PRO Database
DB1-Logical=qaddb
DB1-ConnectionType=Local
DB1-Host=cohs05
DB1-Service=jeffs-server
DB2-Physical=mfghelp
DB2-Description=Help Database
DB2-Logical=qadhelp
DB2-Host=cohs05
DB2-Service=old70-server
StartParms=cinternal ibm850 -cpcoll basic -p mf.p
```

The following table describes each database set entry.

|                |                                                                                                                                                                                                                                                |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ConnectionType | Type of connection for this database. The legal values are Local or Client/Server. With Local, the Path value will be used to locate the database. With Client/Server, the Host and Service name will be used to make the database connection. |
| ConnectParms   | Various connection parameters that can be entered by the user and are not covered in any other items within this section.                                                                                                                      |
| Description    | A text description of this database.                                                                                                                                                                                                           |
| ServerParms    | The server parameters for this database.                                                                                                                                                                                                       |
| Host           | The host (or server) name for a client/server connection. Equivalent to the PROGRESS -H parameter.                                                                                                                                             |
| Logical        | The logical name for this database. Equivalent to the PROGRESS -ld parameter.                                                                                                                                                                  |
| Path           | The database's physical path. Used only for local host connections. The physical name is appended on to the path when the connection command is issued.                                                                                        |
| Physical       | The physical file name for this connection.                                                                                                                                                                                                    |
| Service        | The name given to the port used for the connection. This value must be entered in a SERVICES file on the client and must match a value in the SERVICES file on the server. Equivalent to the PROGRESS -S parameter.                            |
| SetDescription | A text description for the entire database set.                                                                                                                                                                                                |
| StartParms     | The startup parameters used when writing a client startup parameter file (.pf) using this database set.                                                                                                                                        |
| Active         | A logical value that determines whether this database set is active for a specific client.                                                                                                                                                     |

## General Section (mfgutil.ini)

A general section to hold settings not applicable elsewhere.

|              |                                                                                                                                                                               |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ClientServer | A logical value set to YES if this client uses client/server connections for its production environment. Set to NO if the client uses a host connection.                      |
| InstallType  | Determines what type of process the system walks you through. Values are GUIClient, UnixServer, NTServer, or OracleDataServer.                                                |
| RunSilent    | A logical value set to YES to run the programs in the background. Set to NO to display the processes in a DOS Window and monitor the associated messages and possible errors. |

## HasRun Section (mfgutil.ini)

This section tracks the tasks that have run in this copy of MFG/UTIL.

|              |                                                                                                                                                                                                                         |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| InitialSetup | Determines whether the user has run the initial setup. If set to YES, MFG/UTIL will open at its Main Window. If set to NO, MFG/UTIL will display a Welcome screen and walk you through a client or server installation. |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Paths Section (mfgutil.ini)

Stores the paths needed by MFG/UTIL to create scripts of find PROGRESS.

|                     |                                                                             |
|---------------------|-----------------------------------------------------------------------------|
| ScriptDLC           | The DLC variable used when looking for PROGRESS or when generating scripts. |
| CompileProPath      | The \xrc or \src directory used for compiling.                              |
| InstallDir          | The directory where MFG/PRO is installed.                                   |
| DefaultDatabasePath | The directory where production databases are located.                       |

## Site Section (mfgutil.ini)

This section is populated by setup.exe at server setup time. These line items are used to build general information about a given site. This will be completed when setting up for server installations.

|              |                                                                                                                                           |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Company      | The user-defined company name.                                                                                                            |
| ContactName  | The user-defined name of the technical support contact at this site.<br>Might also be the name of the person performing the installation. |
| Location     | Company site name.                                                                                                                        |
| ContactPhone | The user-defined phone number.                                                                                                            |
| ContactFax   | The user-defined fax number.                                                                                                              |
| ContactEmail | The user-defined email address.                                                                                                           |



# Modified Browse Program Names

The browse program names changed after MFG/PRO 8.3/8.4. Use this table if you need to know the current name; for example, you may need to update drill down records.

| Version 8.3/8.4 Program Name | Current Program Name | Description                |
|------------------------------|----------------------|----------------------------|
| abs1br.p                     | gpbr001.p            | Containers Browse          |
| abs2br.p                     | gpbr002.p            | Unallocated Containers     |
| abs3br.p                     | gpbr003.p            | Shippers Browse            |
| abs4br.p                     | gpbr004.p            | Shippers/Containers        |
| acmbr.p                      | gpbr005.p            | Average Cost Method Browse |
| adcnbrty.p                   | gpbr006.p            | County Code Browse         |
| adcobr.p                     | gpbr007.p            | Company Address Master     |
| adcsbr.p                     | adbr001.p            | Customer Browse            |
| adcsbrbk.p                   | adbr002.p            | Customer/Supplier Banks    |
| adctbr.p                     | adbr003.p            | Credit Term Browse         |
| adctbr01.p                   | adbr004.p            | Detail Credit Terms        |
| adctbry.p                    | gpbr008.p            | City Code Browse           |
| adcubrst.p                   | gpbr009.p            | Address Master Customers   |
| addcbr.p                     | gpbr010.p            | Dock Codes Browse          |
| addkbr.p                     | adbr005.p            | Dock Code Browse           |
| addrbr.p                     | gpbr011.p            | Address Master Browse      |
| adembr.p                     | adbr006.p            | Employee Master Browse     |

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>           |
|-----------------------------------------|---------------------------------|------------------------------|
| adeubr.p                                | adbr007.p                       | End User Addresses           |
| adglbr.p                                | gpbr012.p                       | Cust Ship-To Addresses       |
| adlsbr.p                                | adbr008.p                       | Address List Browse          |
| adnmbr.p                                | gpbr013.p                       | Address Master (Name)        |
| adpsbr.p                                | gpbr014.p                       | Address Master (PO Ship)     |
| adrtbr.p                                | adbr009.p                       | Supplier Remit-To Browse     |
| adshbr.p                                | gpbr015.p                       | Ship-To Address Browse       |
| adspbr.p                                | adbr010.p                       | Salesperson Browse           |
| adspbr01.p                              | adbr011.p                       | Salesperson Commissions      |
| adstbr.p                                | adbr012.p                       | Customer Ship-To Browse      |
| adsubrpp.p                              | gpbr016.p                       | Address Master Suppliers     |
| adtxbr.p                                | adbr013.p                       | U.S. Sales Tax Browse        |
| adtybr.p                                | gpbr017.p                       | Address Master Browse        |
| advdbr.p                                | adbr014.p                       | Supplier Browse              |
| allobr.p                                | gpbr018.p                       | Allocation Master            |
| almbr.p                                 | gpbr019.p                       | Auto Lot Master Browse       |
| altrbr02.p                              | gpbr020.p                       | Alternate Routings           |
| altrbro1.p                              | gpbr021.p                       | Alternate Routings           |
| ancdbr.p                                | gpbr022.p                       | Report Writer Analysis Codes |
| ancdbrl.p                               | gpbr023.p                       | Analysis Codes Browse        |
| ancdbrt.p                               | gpbr024.p                       | Report Analysis Codes Browse |
| ancobrde.p                              | gpbr025.p                       | Analysis Code Master Browse  |
| ancubrst.p                              | gpbr026.p                       | Analysis Code Master Browse  |
| anpabrtr.p                              | gpbr027.p                       | Analysis Code Master Browse  |
| apbkbr.p                                | apbr001.p                       | Bank Browse                  |
| appabr.p                                | apbr002.p                       | Payment Browse               |
| aprfbr.p                                | gpbr028.p                       | AP Master Browse             |
| apvobr.p                                | gpbr029.p                       | Open AP Vouchers             |
| apvobr2.p                               | gpbr030.p                       | Open AP Vouchers             |
| arbr.p                                  | gpbr031.p                       | AR Browse                    |
| arblbr.p                                | arbr001.p                       | Customer Balances            |

*Modified Browse Program Names — (2 of 19)*

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>       |
|-----------------------------------------|---------------------------------|--------------------------|
| arbtbr.p                                | gpbr032.p                       | Unapplied Payments       |
| arcsbr.p                                | gpbr033.p                       | Open AR Browse           |
| ardrbm.p                                | gpbr034.p                       | Accounts Receivable      |
| arglbr.p                                | gpbr035.p                       | AR GL Browse             |
| arivbr.p                                | gpbr036.p                       | Invoices For Customers   |
| armbbr.p                                | gpbr037.p                       | Receivables Browse       |
| armpbr.p                                | gpbr038.p                       | AR Payments Browse       |
| arsnbr.p                                | gpbr039.p                       | Adjustment Reason Codes  |
| asbr.p                                  | gpbr040.p                       | Asset Master Browse      |
| asnbr.p                                 | gpbr041.p                       | ASN Browse               |
| bcbr.p                                  | gpbr042.p                       | Batch Control Master     |
| bmecbr.p                                | bmbr001.p                       | ECO Browse               |
| bmmabr.p                                | bmbr002.p                       | Product Structure Browse |
| bombr.p                                 | gpbr043.p                       | Product Structures       |
| bom1br.p                                | gpbr044.p                       | Formula Codes Browse     |
| bom2br.p                                | gpbr045.p                       | BOM Codes                |
| bomabr.p                                | gpbr046.p                       | Alternate BOM Browse     |
| btbr.p                                  | gpbr047.p                       | Deduction Base Types     |
| budcbrd.p                               | gpbr048.p                       | Budget Codes Browse      |
| cactbr.p                                | gpbr049.p                       | Call Categories Browse   |
| cainbr.p                                | gpbr050.p                       | Call Work Codes Browse   |
| cal2br.p                                | gpbr051.p                       | Open Calls Browse        |
| callbr.p                                | gpbr052.p                       | Open Call Browse         |
| carsbr.p                                | gpbr053.p                       | Resolution Code Browse   |
| casbr.p                                 | gpbr054.p                       | Call Status (Type C)     |
| casrbr.p                                | gpbr055.p                       | Problem/Skills Browse    |
| cassbr.p                                | gpbr056.p                       | Call Status (Type S)     |
| casvbr.p                                | gpbr057.p                       | Severity Codes Browse    |
| catybr.p                                | gpbr058.p                       | Call Types Browse        |
| cctrbr.p                                | gpbr059.p                       | GL Cost Center Master    |
| cdrfbr.p                                | gpbr060.p                       | Master Comments Browse   |

Modified Browse Program Names — (3 of 19)

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>              |
|-----------------------------------------|---------------------------------|---------------------------------|
| chmbr.p                                 | fsbr001.p                       | Service Call History            |
| citybr.p                                | gpbr062.p                       | Tax Master Browse               |
| ckbtbr.p                                | gpbr063.p                       | AP Checks—Batch Browse          |
| ckdtbr.p                                | apbr003.p                       | Check Detail Browse             |
| clatbr.p                                | clbr001.p                       | Work Order Attribute Browse     |
| clbabr.p                                | clbr002.p                       | Work Order Batch Browse         |
| clctbr.p                                | clbr003.p                       | Controlled Customer Browse      |
| clctbrs.p                               | clbr004.p                       | Controlled Site Browse          |
| clltbr.p                                | clbr005.p                       | Lot Master Browse               |
| clsbr.p                                 | fabr001.p                       | Class Codes Browse              |
| cmcfbr.p                                | cmbr001.p                       | Cash Flow—Misc Browse           |
| cmstbr.p                                | gpbr069.p                       | Customers—Sort Name             |
| cmtybr.p                                | gpbr070.p                       | Customers—Type Browse           |
| cntybr.p                                | gpbr071.p                       | Tax Master by County            |
| codebr.p                                | gpbr072.p                       | Code Master Browse              |
| colgbr.p                                | gpbr073.p                       | Column Group Browse             |
| combr.p                                 | txbr003.p                       | Commodity Code Browse           |
| cpbr.p                                  | gpbr075.p                       | Customer Items Browse           |
| csbr.p                                  | csbr001.p                       | Cost Set Master Browse          |
| csabr.p                                 | gpbr076.p                       | Authority Master Browse         |
| csbabrnk.p                              | gpbr077.p                       | Bank Addresses Browse           |
| csbkbr1.p                               | gpbr078.p                       | Bank Addresses by Name          |
| cscbr.p                                 | gpbr079.p                       | Controlled Sub Cust Mstr Browse |
| cscabrth.p                              | gpbr080.p                       | Controlling Authority Browse    |
| csctbrl.p                               | gpbr081.p                       | Item Control Numbers Browse     |
| cscubrst.p                              | gpbr082.p                       | Controlled Customer Num Browse  |
| csplbr.p                                | csbr002.p                       | Cost Plan by Site Browse        |
| cssabrth.p                              | gpbr083.p                       | Controlling Authority Browse    |
| cssibr01.p                              | csbr003.p                       | Site by Cost Set Browse         |
| cssibr02.p                              | csbr004.p                       | Cost Set by Site Browse         |
| cssibrte.p                              | gpbr084.p                       | Controlled Sites Browse         |

*Modified Browse Program Names — (4 of 19)*

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>       |
|-----------------------------------------|---------------------------------|--------------------------|
| cssmbr.p                                | gpbr085.p                       | Cost Set Master Browse   |
| cssnbr.p                                | gpbr086.p                       | Cost Set Master Browse   |
| csstbr.p                                | gpbr087.p                       | Customer/Ship-To Browse  |
| cstbr.p                                 | gpbr088.p                       | Custodian Codes Browse   |
| cstdbr.p                                | gpbr089.p                       | Address Master Browse    |
| ctrybr.p                                | gpbr090.p                       | Country Code Browse      |
| ctrybr1.p                               | adbr015.p                       | Country Codes Browse     |
| cueubr.p                                | gpbr091.p                       | End User Filtered Browse |
| dedbr.p                                 | gpbr092.p                       | Deduction Master Browse  |
| desdbr.p                                | txbr004.p                       | Port Browse              |
| desdbrm.p                               | gpbr094.p                       | Intersite Demand Request |
| devtbr.p                                | txbr005.p                       | Delivery Terms Browse    |
| dmbr.p                                  | gpbr096.p                       | AR Drafts Browse         |
| dm1br.p                                 | gpbr097.p                       | AR Unapproved Drafts     |
| dnftbr.p                                | dnbr001.p                       | Freight Rate Tables      |
| dnssbr.p                                | dnbr002.p                       | Network Code Browse      |
| dnssbr02.p                              | dnbr003.p                       | Transportation Networks  |
| dntmbr.p                                | dnbr004.p                       | Transportation Modes     |
| drdobr11.p                              | drbr001.p                       | Planned Intersite Reqs   |
| drllbr.p                                | mgbr001.p                       | Drill Master Browse      |
| drmpbr02.p                              | drbr002.p                       | Order Action Messages    |
| drsnbr.p                                | gpbr098.p                       | Down Time Reason Codes   |
| dscibrst.p                              | gpbr099.p                       | Discount Tables Browse   |
| dsddbr.p                                | drbr003.p                       | DRP Requisition Detail   |
| dsdmbr.p                                | dsbr001.p                       | Intersite Request Browse |
| dsdmbr01.p                              | dsbr002.p                       | Intersite Demand Browse  |
| dsdmbr03.p                              | dsbr003.p                       | Orders In Transit Browse |
| dsdobr.p                                | dsbr004.p                       | Distribution Orders      |
| earnbr.p                                | gpbr100.p                       | Earnings Master Browse   |
| ecapbrcd.p                              | gpbr101.p                       | Approval Codes Browse    |
| ecapbrdt.p                              | gpbr102.p                       | ECN Approval Detail      |

Modified Browse Program Names — (5 of 19)

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>        |
|-----------------------------------------|---------------------------------|---------------------------|
| ecapbrst.p                              | ecbr001.p                       | ECN Status Browse         |
| ecapbrtd.p                              | ecbr002.p                       | ECN Detail Approval       |
| eccobrde.p                              | ecbr003.p                       | ECN Approval Code Browse  |
| ecdbref.p                               | gpbr103.p                       | ECN Text Comments         |
| ecgrbr10.p                              | ecbr004.p                       | Distribution Groups       |
| ecgrbr20.p                              | ecbr005.p                       | Approval Group Browse     |
| ecgrbr30.p                              | ecbr006.p                       | Design Group Browse       |
| ecgrbrp.p                               | gpbr104.p                       | ECN Type Master           |
| ecgrbrp1.p                              | gpbr105.p                       | ECL Groups (All Types)    |
| ecgrbrp2.p                              | gpbr106.p                       | Design Groups Browse      |
| ecmbr.p                                 | gpbr107.p                       | ECM Master Browse         |
| ecm0br1.p                               | gpbr108.p                       | ECN Master Browse         |
| ecm0br3.p                               | gpbr109.p                       | ECN Master Browse         |
| ecm0br4.p                               | gpbr110.p                       | ECN Master Browse         |
| ecm0br5.p                               | gpbr111.p                       | ECN Master Browse         |
| ecrebrv.p                               | ecbr007.p                       | Item Revision History     |
| ectybrpe.p                              | ecbr008.p                       | ECN Type Master Browse    |
| ecusbrt.p                               | gpbr112.p                       | User Master Browse        |
| ecusbrt1.p                              | gpbr113.p                       | Approval Group Browse     |
| elmtbr.p                                | gpbr114.p                       | Cost Element by Category  |
| elmtbr1.p                               | gpbr115.p                       | Cost Elements by Element  |
| empbr.p                                 | gpbr116.p                       | Employee Master Browse    |
| empsbr.p                                | gpbr117.p                       | Employee Master Browse    |
| engbr.p                                 | gpbr118.p                       | Engineer Master Browse    |
| engcbr.p                                | gpbr119.p                       | Engineer Code Browse      |
| esbr.p                                  | gpbr120.p                       | Escalation Browse         |
| eshbr.p                                 | gpbr121.p                       | Schedule Master Browse    |
| essbr.p                                 | gpbr122.p                       | Work Schedule Browse      |
| eubr.p                                  | gpbr123.p                       | End User Browse           |
| eud2br.p                                | gpbr124.p                       | End Users Contacts (Name) |
| eudtbr.p                                | gpbr125.p                       | End User Detail Browse    |

*Modified Browse Program Names — (6 of 19)*

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>       |
|-----------------------------------------|---------------------------------|--------------------------|
| exbr.p                                  | gpbr126.p                       | Currency Exchange Browse |
| facobr.p                                | fabr002.p                       | Convention Browse        |
| facubr.p                                | fabr003.p                       | FA Custodian Browse      |
| fadbbr01.p                              | fabr004.p                       | Book Browse              |
| falobr.p                                | fabr005.p                       | FA Location Browse       |
| famebr.p                                | fabr006.p                       | Depreciation Methods     |
| famxbr.p                                | fabr007.p                       | Maximum Amount Browse    |
| famxbr01.p                              | fabr008.p                       | Maximum Amt Table Browse |
| fatybr.p                                | gpbr127.p                       | Type Codes Browse        |
| fatybr01.p                              | fabr009.p                       | Fixed Asset Type Browse  |
| fcfcbr.p                                | fcbr001.p                       | Seasonal Build Browse    |
| fcfbr.p                                 | gpbr128.p                       | Forecast Reference       |
| ffcmbrg.p                               | gpbr129.p                       | Customer Regions Browse  |
| ffgrbr.p                                | gpbr130.p                       | Item Group Browse        |
| ffidbr.p                                | gpbr131.p                       | Forecast Master Browse   |
| fflobrad.p                              | gpbr132.p                       | Loading Method Browse    |
| ffmtbrhd.p                              | gpbr133.p                       | Forecast Method Browse   |
| fftybrpe.p                              | gpbr134.p                       | Item Type Browse         |
| flcbbr.p                                | mubr002.p                       | Field Combo-Box Browse   |
| fmmabr.p                                | fubr001.p                       | Formula Code Browse      |
| fosobrb.p                               | fobr001.p                       | Sales Order Bill Browse  |
| fosqbrb.p                               | fobr002.p                       | Sales Quote Bill Browse  |
| frclbr.p                                | sobr001.p                       | Freight Class Codes      |
| frlsbr.p                                | sobr002.p                       | Freight Terms Master     |
| frtmbr.p                                | sobr003.p                       | Freight Terms Types      |
| frzbr.p                                 | gpbr135.p                       | Freight Zones Browse     |
| fsbobrm.p                               | fsbr002.p                       | Repair/PM BOM Codes      |
| fsbobrm1.p                              | gpbr136.p                       | Bills of Material Browse |
| fscqbr.p                                | fsbr003.p                       | Call Queue Code Browse   |
| fscsbr.p                                | fsbr004.p                       | Call Status Code Browse  |
| fsesbr.p                                | fsbr005.p                       | Call Escalation Browse   |

Modified Browse Program Names — (7 of 19)

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>       |
|-----------------------------------------|---------------------------------|--------------------------|
| fsfsbrhe.p                              | fsbr006.p                       | Holiday Coverage Browse  |
| fshabr.p                                | fsbr007.p                       | Area Service Holidays    |
| fsmnbrp.p                               | fsbr008.p                       | Custom Program Insertion |
| fsmnbrpv.p                              | fsbr009.p                       | Custom Program Entries   |
| fsocbrm.p                               | fsbr010.p                       | On-Call Schedule Browse  |
| fsopbrm.p                               | fsbr011.p                       | Repair/PM Standard Oper  |
| fspgbrh.p                               | fsbr012.p                       | Paging Browse            |
| fsptbr.p                                | fsbr013.p                       | Service Item Browse      |
| fsrmbra.p                               | fsbr014.p                       | RMA Browse               |
| fsrobr.p                                | fsbr015.p                       | Repair/PM Routing Browse |
| fssabr.p                                | fsbr016.p                       | Service Contract Browse  |
| fsscbr.p                                | fsbr017.p                       | Service Type Browse      |
| fssrbr.p                                | fsbr018.p                       | Service Request Browse   |
| fssrbrs.p                               | fsbr019.p                       | Serv Req Status Codes    |
| fssvbrar.p                              | fsbr020.p                       | Area Structure Browse    |
| fssvbrs.p                               | fsbr021.p                       | Service Contract Browse  |
| fssvbrw.p                               | fsbr022.p                       | Warranty Code Browse     |
| fswcbr.p                                | fsbr023.p                       | Repair/PM Work Centers   |
| glacbr.p                                | glbr001.p                       | Account Code Browse      |
| glbgbr.p                                | glbr002.p                       | Budget Browse            |
| glcabr.p                                | glbr003.p                       | GL Calendar Browse       |
| glccbr.p                                | glbr004.p                       | Cost Center Code Browse  |
| glccbr01.p                              | glbr005.p                       | Cost Center Code Detail  |
| glcrbr.p                                | glbr006.p                       | Custom Report Browse     |
| glcrbr1.p                               | glbr007.p                       | Custom Report Fmt Browse |
| glcrbr2.p                               | glbr008.p                       | Custom Report Accounts   |
| glcrbrd.p                               | glbr009.p                       | Custom Report Accounts   |
| glenbr.p                                | glbr010.p                       | Entity Code Browse       |
| glfmbr.p                                | glbr011.p                       | Format Position Browse   |
| glpjbr.p                                | glbr012.p                       | Project Code Browse      |
| glsbbr.p                                | glbr013.p                       | Sub-Acct Code Browse     |

*Modified Browse Program Names — (8 of 19)*

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>              |
|-----------------------------------------|---------------------------------|---------------------------------|
| glsbbr01.p                              | glbr014.p                       | Sub-Acct Valid Accounts         |
| grrpbrid.p                              | gpbr137.p                       | Report Run ID's Browse          |
| grrpbtr.p                               | gpbr138.p                       | Report Codes Browse             |
| iclobr.p                                | icbr001.p                       | Location Master Browse          |
| iclobr01.p                              | icbr002.p                       | Inventory Master Browse         |
| iclobr02.p                              | icbr003.p                       | Inventory Detail Browse         |
| iclobr03.p                              | icbr004.p                       | Site Inventory Detail           |
| icltbr.p                                | icbr005.p                       | Lot Transactions Browse         |
| icmabr.p                                | icbr006.p                       | Mirror Table Browse             |
| icptbr01.p                              | icbr007.p                       | Stock Available Browse          |
| icsibr.p                                | icbr008.p                       | Site Browse                     |
| icstbr.p                                | icbr009.p                       | Inventory Status Codes          |
| icstbr01.p                              | icbr010.p                       | Inventory Status Detail         |
| ictrbr01.p                              | icbr011.p                       | Inventory Trans Browse          |
| ictrbr02.p                              | icbr012.p                       | Lot Transactions by Tran        |
| iecobrm.p                               | gpbr139.p                       | Commodity Master Browse         |
| iecobrm2.p                              | iebr001.p                       | Commodity Code Browse           |
| ieflbrow.p                              | iebr002.p                       | Flow Indicator Browse           |
| iemobrt.p                               | iebr003.p                       | Mode of Transportation Browse   |
| ienobrt.p                               | iebr004.p                       | Nature of Transportation Browse |
| iepobrrt.p                              | iebr005.p                       | Ports Browse                    |
| ierebrg.p                               | iebr006.p                       | Regions Browse                  |
| iespbr.p                                | iebr007.p                       | Statistical Procedures Browse   |
| ietobrd.p                               | iebr008.p                       | Terms of Delivery Browse        |
| ihbr.p                                  | gpbr148.p                       | Invoice History Master          |
| ihadbr.p                                | gpbr149.p                       | Invoice History Browse          |
| ipdbr.p                                 | gpbr150.p                       | Test Results Detail             |
| isb1br.p                                | gpbr151.p                       | Installed Base Parts            |
| isb6br.p                                | gpbr152.p                       | Installed Base Parts            |
| isbpbrt.p                               | gpbr153.p                       | Installed Base Items            |
| isbpbrt3.p                              | gpbr154.p                       | Installed Base Items            |

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| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>       |
|-----------------------------------------|---------------------------------|--------------------------|
| isbpbtr7.p                              | gpbr155.p                       | Installed Base Items     |
|                                         | gpbr156.p                       | Installed Base Parts     |
| ladbr.p                                 | gpbr157.p                       | Location Allocation Num. |
| langbr.p                                | gpbr158.p                       | Language Master Browse   |
| ldbr.p                                  | gpbr159.p                       | Item Lot/Serial Qty O/H  |
| lda1br.p                                | gpbr160.p                       | Available to Allocate    |
| lda3br.p                                | gpbr161.p                       | Available to Allocate    |
| ldavbrl2.p                              | gpbr162.p                       | Avail to Detail Allocate |
| ldo3br.p                                | gpbr163.p                       | Item Location Detail O/H |
| ldohbr.p                                | gpbr164.p                       | Item Location Qty O/H    |
| lnbr.p                                  | gpbr165.p                       | Line Master Browse       |
| lnddbbr.p                               | gpbr166.p                       | Line Schedule Detail     |
| lngdbr.p                                | gpbr167.p                       | Cost Category Language   |
| locbr.p                                 | gpbr168.p                       | Location Master Browse   |
| loc1br.p                                | gpbr169.p                       | Location Master          |
| lotbr.p                                 | gpbr170.p                       | Item Lot/Serial Browse   |
| mcexbr.p                                | mcbrr001.p                      | Exchange Rate Browse     |
| mdtrbr.p                                | txbr006.p                       | Transportation Modes     |
| mgbrbr01.p                              | mgbr003.p                       | Browse Master Browse     |
| mgcobr.p                                | mgbr004.p                       | Generalized Codes Browse |
| mgfhbr.p                                | mgbr005.p                       | Window Help Browse       |
| mgmsbr.p                                | mgbr006.p                       | Message Browse           |
| mgmbr.p                                 | mgbr007.p                       | Reason Codes Browse      |
| mgufbr.p                                | mgbr008.p                       | User Function Browse     |
| mgupbr.p                                | mgbr009.p                       | Printer Default Browse   |
| mgurbr.p                                | mgbr010.p                       | User Browse              |
| mgutbr.p                                | mgbr011.p                       | User Tool Browse         |
| mgvubr.p                                | mgbr012.p                       | View Detail Browse       |
| mncrbr.p                                | gpbr172.p                       | Insertion Descriptions   |
|                                         | mgbr013.p                       | Menu Substitution Browse |
| mnpvbr.p                                | gpbr173.p                       | Custom Program Exits     |

*Modified Browse Program Names — (10 of 19)*

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>       |
|-----------------------------------------|---------------------------------|--------------------------|
| mntdbr.p                                | mgbr014.p                       | Menu Translation Browse  |
| mpbr.p                                  | gpbr174.p                       | Master Specifications    |
| mpcabr.p                                | mpbr001.p                       | Test Results Browse      |
| mpmpbr.p                                | mpbr002.p                       | Master Spec Detail       |
| mpmpbr01.p                              | mpbr003.p                       | Where Used—Specs         |
| mpmpbr02.p                              | mpbr004.p                       | Item Specifications      |
| mrpbr.p                                 | gpbr175.p                       | Order Browse             |
| mrwobr11.p                              | mrbr001.p                       | Planned Order Browse     |
| msmsbr02.p                              | msbr001.p                       | Master Schedule Orders   |
| natrbr.p                                | txbr007.p                       | Nature of Transaction    |
| ntwkbr.p                                | gpbr177.p                       | Network Master           |
| oacdb.p                                 | gpbr178.p                       | Action Codes Browse      |
| opmtbr.p                                | gpbr179.p                       | Standard Operation Tools |
| opnibrnv.p                              | gpbr180.p                       | Open Invoices Browse     |
| pc2br.p                                 | gpbr181.p                       | Price List Browse        |
| pilibrst.p                              | gpbr182.p                       | Price List Master        |
| pimabr.p                                | gpbr183.p                       | Price List Master        |
| pobr.p                                  | gpbr184.p                       | Purchase Order Master    |
| poacbr.p                                | pobr001.p                       | Purchase Approvals       |
| poacbr01.p                              | pobr002.p                       | Purchase Approval Limits |
| poblbr.p                                | pobr003.p                       | Blanket Order Browse     |
| pocrbr.p                                | gpbr185.p                       | PO Ship-Via Carriers     |
| polnbr.p                                | gpbr186.p                       | Purchase Order Detail    |
| popobr01.p                              | pobr004.p                       | Receipt Transactions     |
| popobr02.p                              | pobr005.p                       | Purchase Receipt Browse  |
| popqbr.p                                | pobr006.p                       | Purchase Order Browse    |
| poprbr.p                                | pobr007.p                       | Purchase Reqs Browse     |
| porqbr.p                                | gpbr187.p                       | Purchase Order Master    |
| poscbr.p                                | gpbr188.p                       | Scheduled Purchase Order |
| postbrby.p                              | gpbr189.p                       | Sort by Browse           |
| potrbr01.p                              | pobr008.p                       | Receipt Transactions     |

Modified Browse Program Names — (11 of 19)

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>         |
|-----------------------------------------|---------------------------------|----------------------------|
| ppcpbr.p                                | ppbr001.p                       | Customer Item Browse       |
| ppcsbr.p                                | ppbr002.p                       | Item Cost Set Browse       |
| pppcbr.p                                | ppbr003.p                       | Price List Browse          |
| pppcbra.p                               | ppbr004.p                       | Price List Min Qty 6–10    |
| pppcbrb.p                               | ppbr005.p                       | Price List Min Qty 11–15   |
| ppplbr.p                                | ppbr006.p                       | Product Line Browse        |
| ppplbr01.p                              | ppbr007.p                       | Product Line Inv Browse    |
| ppplbr02.p                              | ppbr008.p                       | Product Line Sale Browse   |
| ppplbr03.p                              | ppbr009.p                       | Product Line Purc Browse   |
| ppplbr04.p                              | ppbr010.p                       | Product Line WO Browse     |
| ppplbrd.p                               | ppbr011.p                       | PL Inventory Detail        |
| ppplbrs.p                               | ppbr012.p                       | PL Sales Detail Browse     |
| ppptbr.p                                | ppbr013.p                       | Item Master Data Browse    |
| ppptbr01.p                              | ppbr014.p                       | Item Inventory Data Browse |
| ppptbr02.p                              | ppbr015.p                       | Item Planning Browse       |
| ppptbr03.p                              | ppbr016.p                       | Item Cur Cost Summary      |
| ppptbr05.p                              | ppbr017.p                       | Cost Element Browse        |
| ppptbr11.p                              | ppbr018.p                       | Item Site Inv Browse       |
| ppptbr12.p                              | ppbr019.p                       | Item Site Plan Browse      |
| ppstbr.p                                | ppbr020.p                       | Item St Code Browse        |
| ppumbr.p                                | ppbr021.p                       | Unit of Measure Browse     |
| ppvpbr.p                                | ppbr022.p                       | Supplier Item Browse       |
| prbr.p                                  | gpbr307.p                       | Printer Master Browse      |
| prbnbr.p                                | gpbr302.p                       | Payroll Bank Browse        |
| prbtbr.p                                | prbr001.p                       | Deduction Base Types       |
| prckbrq.p                               | prbr002.p                       | Paycheck Request Browse    |
| prclbrst.p                              | gpbr190.p                       | Price Tables (Type L)      |
| prdbr.p                                 | gpbr191.p                       | Printer Detail Browse      |
| prdebrd.p                               | prbr003.p                       | Other Deductions Browse    |
| prdpbrt.p                               | prbr004.p                       | Department Detail Browse   |
| preabr.p                                | prbr005.p                       | Earnings Code Browse       |

*Modified Browse Program Names — (12 of 19)*

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>       |
|-----------------------------------------|---------------------------------|--------------------------|
| prdbr.p                                 | prbr006.p                       | Deductions Browse        |
| prffbr.p                                | prbr007.p                       | FICA/FUTA/Medicare Brws  |
| prhrbr.p                                | gpbr192.p                       | Receivers Browse         |
| prhsbr.p                                | gpbr193.p                       | Packing Slips Browse     |
| probbr.p                                | gpbr194.p                       | Problem/Skills Browse    |
| prshbrft.p                              | prbr008.p                       | Shift Differential Brows |
| prstbr.p                                | prbr009.p                       | State W/H, SUI, SDI      |
| psbr.p                                  | gpbr195.p                       | Product Structure Master |
| ps1br.p                                 | gpbr196.p                       | Product Structure Master |
| ptdebrsc.p                              | gpbr197.p                       | Item Descriptions Browse |
| ptpdr.p                                 | ptbr001.p                       | Item Planning Detail     |
| ptstbr.p                                | gpbr198.p                       | Item Status Master       |
|                                         | ptbr002.p                       | Item Substitution Browse |
| pttybr.p                                | gpbr199.p                       | Item Master Browse       |
| pwdbr.p                                 | mgb015.p                        | Program Window Detail    |
| pwcmb.p                                 | mgb016.p                        | Pgm Window Config Master |
| qcbr.p                                  | gpbr200.p                       | Quality Order Browse     |
| qcdobrc.p                               | gpbr201.p                       | Documents Available      |
| qcprbroc.p                              | gpbr202.p                       | Procedures Browse        |
| qcrobrot.p                              | gpbr203.p                       | Routing/Procedure Browse |
| qcspr.p                                 | qcbr001.p                       | Sampling Pattern Browse  |
| qctebs.p                                | gpbr204.p                       | Procedure Test Steps     |
| qctsbr.p                                | qcbr003.p                       | Procedure Browse         |
| qcwcbtr.p                               | gpbr205.p                       | Work Center & Machine    |
| qcwoer.p                                | qcbr004.p                       | Quality Order Browse     |
| qobr.p                                  | gpbr206.p                       | Sales Quote Master       |
| qocrbr.p                                | gpbr207.p                       | Quote Ship-Via Carriers  |
| qoshbr.p                                | gpbr208.p                       | Quote Master Browse      |
| qpsbr.p                                 | gpbr209.p                       | Inspection Components    |
| rbd2br.p                                | gpbr210.p                       | Invoice History Browse   |
| rbmbr.p                                 | gpbr211.p                       | Retrobill Master Browse  |

Modified Browse Program Names — (13 of 19)

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>       |
|-----------------------------------------|---------------------------------|--------------------------|
| rccabr.p                                | rcbr001.p                       | Customer Calendar Browse |
| rccabr1.p                               | rcbr002.p                       | Operating Hrs Exceptions |
| rccabr2.p                               | rcbr003.p                       | Shop Calendar Holidays   |
| rcpabr.p                                | rcbr004.p                       | Customer Order Periods   |
| rcsabr.p                                | gpbr212.p                       | Ship/Delivery Patterns   |
| rcsabr.p                                | gpbr213.p                       | Scheduled Sales Orders   |
| rechbr.p                                | rebr001.p                       | Line Changeover Browse   |
| regbr.p                                 | fsbr024.p                       | Region/Area Browse       |
| relnbr.p                                | rebr002.p                       | Production Line Browse   |
| relnbr01.p                              | rebr003.p                       | Production Line Detail   |
| repabr.p                                | gpbr214.p                       | Repetitive Pick List     |
| resbr.p                                 | gpbr215.p                       | Resource Master          |
| resqbr.p                                | rebr004.p                       | Line Schedule Browse     |
| rewabr.p                                | rebr005.p                       | Cumulative Order Browse  |
| rmdabr.p                                | gpbr216.p                       | Open RMA Lines Browse    |
| rmdabr.p                                | gpbr217.p                       | RMA Receipt Lines Browse |
| rmihbr.p                                | gpbr218.p                       | Shipped Items Browse     |
| rmdbr.p                                 | gpbr219.p                       | Rounding Method Codes    |
| roabr.p                                 | gpbr220.p                       | Routing Detail Browse    |
| roabr.p                                 | gpbr221.p                       | Alternate Routings       |
| rowgbr.p                                | gpbr222.p                       | Row Group Browse         |
| rppqbr.p                                | rpbr001.p                       | PL Resource Bill Browse  |
| rprabr.p                                | rpbr002.p                       | Item Resource Bills      |
| rprabr.p                                | rpbr003.p                       | Resource Detail Browse   |
| rrsnbr.p                                | gpbr223.p                       | Reject Reason Codes      |
| rsabr.p                                 | gpbr224.p                       | Reason Code Browse       |
| rsnabr.p                                | gpbr225.p                       | Reason Code Browse       |
| rspabr01.p                              | rsbr001.p                       | Scheduled Order Browse   |
| rspabr02.p                              | rsbr002.p                       | Sched Order—Line Items   |
| rspabr03.p                              | rsbr003.p                       | Sched Ord—Line Items(2)  |
| rspabr04.p                              | rsbr004.p                       | Sched Order MRP % Browse |

*Modified Browse Program Names — (14 of 19)*

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>       |
|-----------------------------------------|---------------------------------|--------------------------|
| rsscbr.p                                | rsbr005.p                       | Supplier Calendar Browse |
| rsscbr01.p                              | rsbr006.p                       | Supplier Cal Detail      |
| rsscbr02.p                              | mghr017.p                       | Holiday Browse           |
| rsscbrx1.p                              | gpbr226.p                       | Scheduled Order Items    |
| rtsbr.p                                 | gpbr227.p                       | Return to Supplier Order |
| rwabr.p                                 | rwbr001.p                       | Alternate Routing Browse |
| rwdpbr.p                                | prbr010.p                       | Department Browse        |
| rwopbr.p                                | rwbr002.p                       | Standard Oper Browse     |
| rwrobr04.p                              | rwbr003.p                       | Operation Cost Browse    |
| rwwcbr.p                                | rwbr004.p                       | Work Center Browse       |
| rwwrbr.p                                | rwbr005.p                       | Work Center/Routing Stds |
| sabsbr1.p                               | gpbr228.p                       | Containers Browse        |
| sabsbr2.p                               | gpbr229.p                       | Unallocated Containers   |
| sabsbr3.p                               | gpbr230.p                       | Shippers Browse          |
| sabsbr4.p                               | gpbr231.p                       | Shippers/Containers      |
| sapbr.p                                 | gpbr232.p                       | Contract PM Sched Dates  |
| saqobr.p                                | gpbr233.p                       | Service Quotes Browse    |
| sasabr.p                                | gpbr234.p                       | Service Contracts Browse |
| sasabr03.p                              | sabr001.p                       | Customer Sales Browse    |
| sasabr04.p                              | sabr002.p                       | Items Sales Browse       |
| sasabr05.p                              | sabr003.p                       | Salesperson Sales Browse |
| sasabr5a.p                              | sabr004.p                       | Slspn Monthly Browse     |
| satrb03.p                               | sabr005.p                       | Customer Tran Det Browse |
| satrb05.p                               | sabr006.p                       | Slspn Trans Det Browse   |
| sbcbp.p                                 | gpbr235.p                       | Service Billing Cycles   |
| sc03br.p                                | scbr001.p                       | Simul Work Center Rates  |
| sc04br.p                                | scbr002.p                       | Simul Subcontract Costs  |
| scabr.p                                 | gpbr236.p                       | Contract Options Browse  |
| sccebr.p                                | scbr003.p                       | Simulation Cost Elements |
| sccebr01.p                              | scbr004.p                       | Cost Element Browse      |
| scx2br.p                                | gpbr237.p                       | Scheduled Order Item POs |

Modified Browse Program Names — (15 of 19)

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>       |
|-----------------------------------------|---------------------------------|--------------------------|
| sfopbr11.p                              | sfbr001.p                       | Operation Trans Browse   |
| shnbr.p                                 | gpbr238.p                       | Transportation Network   |
| sobr.p                                  | gpbr239.p                       | Sales Order Master       |
| socrbr.p                                | sobr004.p                       | Sales Order Credits      |
| sodlbr.p                                | gpbr240.p                       | Sales Order Line Items   |
| sofcbr.p                                | sobr005.p                       | Freight Charges Browse   |
| sofzbr.p                                | sobr006.p                       | Freight Zone Browse      |
| soivbr.p                                | sobr007.p                       | Invoice History Browse   |
| solnbr.p                                | gpbr241.p                       | S/O Detail Browse        |
| sopobr.p                                | gpbr242.p                       | Sales Order Master (PO)  |
| soqobr.p                                | gpbr243.p                       | Sales Order Quote Browse |
| sosdbr.p                                | sobr008.p                       | Volume Discount Browse   |
| soshbr.p                                | gpbr244.p                       | Sales Order Ship-Tos     |
| sosobr.p                                | sobr009.p                       | Sales Order Browse       |
| sotlbr.p                                | sobr010.p                       | Trailer Code Browse      |
| sotrbr03.p                              | sobr011.p                       | Booking Trans Browse     |
| sotrbr04.p                              | sobr012.p                       | Shipment Trans Browse    |
| sotrbr05.p                              | sobr013.p                       | Sales Order Trans Browse |
| sotrbr4a.p                              | sobr014.p                       | Shipment GL Trans Browse |
| spbr.p                                  | gpbr245.p                       | Salesperson Master       |
| spambr.p                                | spbr001.p                       | Alternate Matrix Browse  |
| spedbri.p                               | spbr002.p                       | Marketing/Product Data   |
| sphhbr.p                                | mgb018.p                        | Salesperson Quota Browse |
| sphsbr01.p                              | spbr003.p                       | Salesperson History      |
| sppsbr.p                                | spbr004.p                       | Family Resource Bill     |
| spsbr.p                                 | gpbr246.p                       | Salesperson Master       |
| spsmbr.p                                | spbr005.p                       | Source Matrix Browse     |
| sptrbr.p                                | gpbr247.p                       | Salesperson Territories  |
| sqqobr.p                                | sqbr001.p                       | Sales Quote Browse       |
| srbr.p                                  | gpbr248.p                       | SR Master Browse         |
| srobr.p                                 | gpbr249.p                       | Customer Service System  |

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| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>       |
|-----------------------------------------|---------------------------------|--------------------------|
| sro1br.p                                | srbr001.p                       | SRO Status Browse        |
| sro2br.p                                | srbr002.p                       | SRO Failure Browse       |
| sro3br.p                                | srbr003.p                       | SRO Assigned Browse      |
| sro4br.p                                | srbr004.p                       | SRO Date Browse          |
| sro5br.p                                | srbr005.p                       | SRO Item Browse          |
| sro6br.p                                | srbr006.p                       | SRO Type Browse          |
| sro7br.p                                | srbr007.p                       | SRO Dispositions Browse  |
| sro8br.p                                | srbr008.p                       | SRO Customer Browse      |
| srotbr.p                                | gpbr250.p                       | Customer Service Browse  |
| srsnbr.p                                | gpbr251.p                       | Scrap Reason Codes       |
| srsvbr.p                                | gpbr252.p                       | Severity Codes Browse    |
| srtibr.p                                | gpbr253.p                       | Call Types Browse        |
| stbr.p                                  | gpbr254.p                       | State Code Browse        |
| statbre.p                               | gpbr255.p                       | State Codes Browse       |
| stprbr.p                                | prbr011.p                       | State Taxes Browse       |
| stprbrsw.p                              | gpbr256.p                       | Statistical Procedures   |
| svbr.p                                  | gpbr257.p                       | Contract/Warranty Types  |
| svddbr.p                                | gpbr258.p                       | Service Contract Detail  |
| svsbr.p                                 | gpbr259.p                       | Service Contract Types   |
| svwbr.p                                 | gpbr260.p                       | Service Warranty Types   |
| sx2br.p                                 | gpbr261.p                       | Scheduled Order Item POs |
| taxcbra.p                               | txbr008.p                       | Tax Class Codes Browse   |
| taxsbrt.p                               | gpbr263.p                       | Tax Master States        |
| tmbr.p                                  | gpbr264.p                       | Transportation Master    |
| trlbr.p                                 | gpbr265.p                       | Trailer Codes Browse     |
| trlpbr.p                                | gpbr266.p                       | Trailer Project Browse   |
| trnbbr.p                                | gpbr267.p                       | Transaction Numbers      |
| tx2br.p                                 | gpbr268.p                       | Tax Codes/Tax Types      |
| txbbr.p                                 | gpbr269.p                       | Tax Base Codes Browse    |
| txebr.p                                 | txbr009.p                       | Tax Environment Codes    |
| txmebrth.p                              | gpbr271.p                       | Tax Method Codes Browse  |

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| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>       |
|-----------------------------------------|---------------------------------|--------------------------|
| txptbrv.p                               | txbr001.p                       | Item Statistical Value   |
| txtbr.p                                 | txbr010.p                       | Tax Type Codes           |
| txubr.p                                 | txbr011.p                       | Tax Usage Codes          |
| txzbr.p                                 | txbr012.p                       | Tax Zones Browse         |
| txz1br.p                                | gpbr275.p                       | Tax Zone Descriptions    |
| umstbrr1.p                              | gpbr276.p                       | Unit of Measure Browse   |
| unitbr.p                                | gpbr277.p                       | Reporting Unit Codes     |
| uom2br.p                                | gpbr278.p                       | Alternate UOM Browse     |
| updbr.p                                 | gpbr279.p                       | Menu Browse              |
| utfibr1.p                               | utbr001.p                       | Database File Browse     |
| utflbrd.p                               | utbr002.p                       | Database Field Browse    |
| vdapbr.p                                | gpbr280.p                       | Supplier Master Contacts |
| vdpubr.p                                | gpbr281.p                       | Supplier Master Contacts |
| vdsbr.p                                 | gpbr282.p                       | Supplier Master Browse   |
| vobtbr.p                                | gpbr283.p                       | Vouchers by A/P Batch    |
| voenbr.p                                | gpbr284.p                       | Voucher Detail Browse    |
| voivbr.p                                | gpbr285.p                       | Voucher Master—Invoice   |
| vopjbr.p                                | gpbr286.p                       | Voucher Detail Browse    |
| vorfbr.p                                | gpbr287.p                       | Voucher Master Browse    |
| voshbr.p                                | gpbr288.p                       | Voucher Ship-To Browse   |
| vpbr.p                                  | gpbr289.p                       | Supplier Item Master     |
| vpmpbr.p                                | gpbr290.p                       | Supplier Item Browse     |
| vpmrbr.p                                | gpbr291.p                       | Supplier Item Master     |
| vpvdbp.p                                | gpbr292.p                       | Supplier Item Master     |
| vtbr.p                                  | ctbr001.p                       | VAT/GST Class Master     |
| vtesbr.p                                | gpbr293.p                       | Ship-To Address Browse   |
| vtevbr.p                                | gpbr294.p                       | Supplier Master Browse   |
| wcbr.p                                  | gpbr295.p                       | Work Centers by Machine  |
| wcmcbrrh.p                              | gpbr296.p                       | Work Center Master       |
| wkbr.p                                  | prbr012.p                       | Work Location Browse     |
| wkcbr.p                                 | prbr013.p                       | Worker's Compensation    |

*Modified Browse Program Names — (18 of 19)*

| <b>Version 8.3/8.4<br/>Program Name</b> | <b>Current<br/>Program Name</b> | <b>Description</b>       |
|-----------------------------------------|---------------------------------|--------------------------|
| wobr.p                                  | gpbr297.p                       | Work Order Master        |
| wodbr.p                                 | gpbr298.p                       | Work Order Operation BOM |
| woltbr.p                                | gpbr299.p                       | Work Order Master        |
| woopbr.p                                | wobr001.p                       | Work Order Routings      |
| wopbr.p                                 | gpbr300.p                       | Work Order Projects      |
| wosobr.p                                | gpbr301.p                       | Work Order Master        |
| wowabr.p                                | wobr002.p                       | Work Order Bill Browse   |
| wowobr.p                                | wobr003.p                       | Work Order Browse        |
| wrbr.p                                  | gpbr308.p                       | Work Order Routings      |
| wr2br.p                                 | gpbr303.p                       | Work Order Routings      |
| wrltbr.p                                | gpbr304.p                       | Work Order Routings      |
| wrsnbr.p                                | gpbr305.p                       | Rework Reason Codes      |
| zpbr.p                                  | gpbr306.p                       | Zip Code Browse          |

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