MFG/PRO®

Installation Guide

ORACLE DATABASE ON UNIX SERVER

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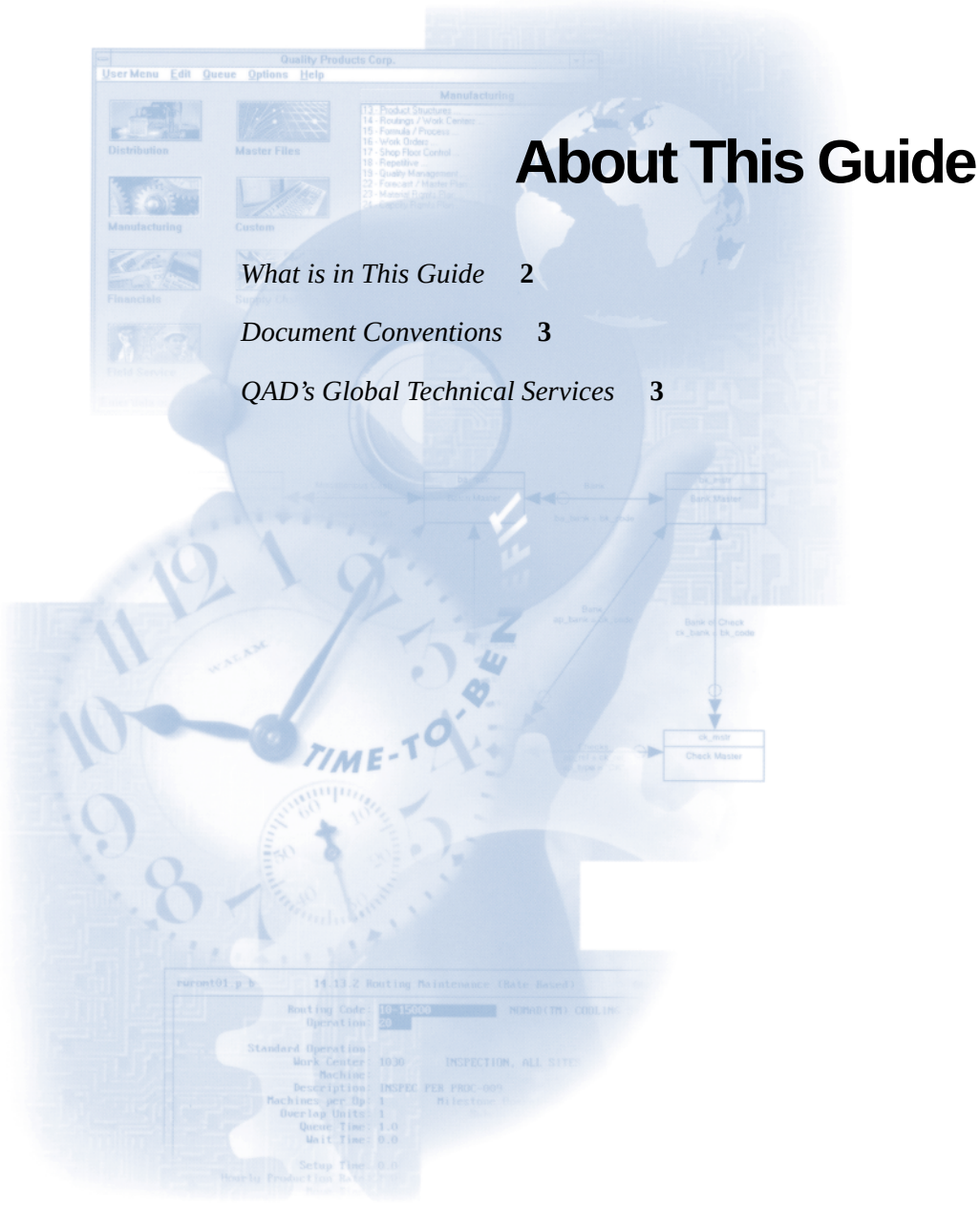

What is in This Guide

Use this guide to install MFG/PRO 9.0 for Oracle server software versions 7.x and 8.1.x on supported UNIX systems.

The instructions in this guide include how to:

- Install MFG/PRO server software on a UNIX server
- Install MFG/PRO Character Client software
- Install MFG/PRO Windows graphical user interface (GUI) client software
- Configure a standard MFG/PRO 9.0 environment including character and GUI clients

Audience

These instructions are for the MFG/PRO system administrator who manages the MFG/PRO database and is familiar with UNIX,® PROGRESS,® Oracle,® Microsoft Windows,™ and networking.

Installation Errata

In addition to these instructions, you may receive a supplementary errata sheet with changes and additional instructions. Check your product package.

Release Bulletin

In conjunction with these instructions, see the *MFG/PRO 9.0 Release Bulletin* for additional utilities required for the modules you use. These utilities, which are related to a particular programming patch (ECO), correct possible corruptions in your data.

QAD Web Site

For QAD customers with a Web account, MFG/PRO documentation is available for review or downloading at:

http://support.qad.com/documentation/

To obtain a QAD Web account, go to:

http://www.qad.com/

Other MFG/PRO Version 9.0 Documentation

- For an overview of new features and software updates, see the *Release Bulletin*.
- For instructions on navigating the MFG/PRO environment, see the *User Interface Guide*.
- For information on the entire system, see the *User Guides*.
- For technical details, see the *File Relationships* and *Database Definitions*.
- For system administration information, see the *System Administration Reference Guide*.
- To view documents online in PDF format, see the *Documents on CD*.

Document Conventions

This guide uses the conventions listed in the following table.

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

QAD's Global Technical Services

MFG/PRO installations have a wide variety of configuration possibilities, are highly scalable, and are easily customized. While this guide provides basic installation and conversion information, it cannot consider every possible MFG/PRO computing environment or configuration.

To take full advantage of MFG/PRO's flexibility and potential in your specific environment, contact your QAD support representative for information on the installation and customization offerings supplied by

QAD's Global Technical Services. These offerings include performance enhancements as well as technical and administration training.

Converting an Existing Oracle Database

Converting an existing Oracle database requires a qualified Oracle Database Administrator (DBA) be on site, and that adequate PROGRESS expertise is available. If these resources are not available, it is strongly recommended that you work with a QAD-certified Oracle conversion consultant.

These recommendations are based on experience. Please contact QAD's Global Technical Services to evaluate your conversion options.

This manual does not include specific steps for converting Oracle databases. For that information, refer to the Oracle installation or migration guides provided with the Oracle media. Also, refer to the operating system specific guide for the appropriate migration information on the web at:

http://metalink.oracle.com

http://docs.oracle.com

CHAPTER 1

Installation Overview

This chapter covers the pre-installation requirements for a MFG/PRO 9.0 system, including an installation summary, a multi-language overview, and a description of MFG/PRO installation utilities.

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Installation Summary

The basic MFG/PRO installation consists of the following major tasks. It is assumed you want to set up Windows clients.

Installing the Oracle RDBMS

- Check hardware and operating system requirements
- Set up environment
- Install software
- Perform post-installation tasks

Building PROGRESS DataServer Components

- Run PROBUILD utility
- Run link scripts created by PROBUILD

Database Server Setup

- Launch the installation to load the UNIX files on the database server and create a schema holder and SQL scripts.
- Run SQL scripts to create the Oracle database.
- Copy the schema holder under a new name.
- Configure database set start-up scripts
- Load system and help data.
- Install the Service Pack Server media onto the server, if applicable.

See “Loading Service Pack Media” on page 7.

Loading and Setting Up Windows Clients

- Load the Windows client media onto a file server.
- Load the Service Pack Windows Client media onto the file server, if applicable.
- Set up the needed files and Windows start-up icons on the first PC.
- Set up all other PCs; you can use the *express setup* feature.

Loading Service Pack Media

Service Packs contain MFG/PRO product updates issued between releases. Service Packs include important patches, code updates, system administration tools, drivers, and additional components. Service Packs offer a distinct advantage over the single-patch delivery mechanism by bundling a carefully controlled group of fixes and updates in an easily installed and well-documented package.

Service Packs are not offered for every release of MFG/PRO. If your product package does not contain Service Pack media, your release does not currently have a Service Pack.

The following major tasks are required to load Service Pack media.

- Load the Service Pack Server media onto your MFG/PRO server after installation and configuration.
- Load the Service Pack Windows Client media onto each Windows client or onto your network file server, depending upon your MFG/PRO configuration.

If you are upgrading to an MFG/PRO release with a Service Pack, the following major tasks are required to load Service Pack media.

- Load the Service Pack media onto your MFG/PRO database server after completing your upgrade.
- Load the Service Pack Windows Client media onto each Windows client or onto your network file server, depending upon your MFG/PRO configuration.

Refer to the Service Pack installation instructions in your product package for specific procedures.

Multiple Language Installation Overview

To install multiple languages, repeat the following installation tasks for each language:

- Load the UNIX files on the database server for each language
- Load the help data for each language
- Load the Windows files on the file server for each language

You do not need to build translated databases and compile against them because the programs come precompiled.

See Appendix A, "Terminal Type and Codepages," on page 117 for additional information.

In multi-language environments, the language codepage controls how PROGRESS stores and retrieves data. A codepage applies to one or more languages; for example, codepage ibm850 applies to all western European languages. Because data storage and retrieval must use a single codepage, the languages in a multi-language environment must be in the same codepage family. The correct codepage for the MFG/PRO databases is assigned during installation.

MFG/PRO Language Codes

During installation and user setup, you use a MFG/PRO language code to specify which language you are installing. Table 1.1 lists all the MFG/PRO language codes. (Some languages may not be available for this release.) The language code also appears on the label of your product media.

Table 1.1 MFG/PRO Language Codes

Language	Code
Arabic	AR
Bulgarian	BU
Chinese (Traditional)	TW
Chinese (Simplified)	CH
Czech	CZ
Danish	DA
Dutch	DU
Finnish	FI
French	FR

Language	Code
Japanese	JP
Korean	KO
Norwegian	NO
Polish	PL
Portuguese	PO
Romanian	RO
Russian	RU
Spanish (Castilian)	CS
Spanish (Latin)	LS

Language	Code
German	GE
Greek	GR
Hungarian	HU
Italian	IT

Language	Code
Swedish	SW
Turkish	TU
US English	US

How Language Sessions Operate

After installation, you assign a language code to each user to determine which language they use. Based on the language code, the user connects to a language-specific set of programs and accesses language-specific system data (menus, messages, and help).

MFG/UTIL

MFG/UTIL is the installation and system management tool for MFG/PRO. It is launched automatically during installation of both the database server and Windows clients. After installation, use MFG/UTIL to perform maintenance, such as compilation and editing start-up scripts or Windows client icons. On Windows clients, you access MFG/UTIL from its start-up icon.

Keyboard Commands

When using MFG/UTIL in a character user interface, the keyboard commands are as follows.

Keyboard Entry	Command Name	Description
F1	Go	Moves to next frame or run a program.
F2	Help	Displays context-sensitive help (may not be available on all windows).
F3	Menu Bar	Accesses the menu bar.
F4	End	Exits a frame, program, or menu.
Space Bar	Select	Selects check-boxes and on/off options.
Enter or Tab	Tab	Moves to next field or command.
Shift+Tab or Control+U	Back Tab	Moves to the previous field or command.

Note In the character interface, button commands appear within brackets; for example: `< OK >`. To choose a button command, use the Tab key to move to the button and press Enter.

Log Files

You can refer to the following log files created by the installation utilities.

Utility	Log File Name	Directory Location
Installation script	install.log and mfgpro.log	Sub-directory /log under the installation destination directory
MFG/UTIL	mfgutil.log	MFG/PRO installation directory

Each time MFG/UTIL runs a prolonged task such as compiling or loading a `.df` file, it creates a new log file. The most recent log file is always called `mfgutil.log`. Older log files are named with the convention `mfgulog.xxx`, where `xxx` is a number from 001 through 999. The lower the number, the older the file. For example, these files are listed newest to oldest:

```
mfgutil.log
mfgulog.002
mfgulog.001
```

MFG/UTIL does not delete or purge any log files. If you want to delete older log files, use the standard operating system commands.

Database Sets

One of the functions of MFG/UTIL is to configure start-up parameters using the concept of *database sets*. A database set defines the connection parameters for a group of databases. In the case of MFG/PRO on Oracle, the required databases are the PROGRESS schema holder database and the Oracle database. Optionally, you can also include one or more custom side databases.

You can set up different database sets for different purposes. For example, you could have one database set that connects to a production database and schema holder, and one that connects to a training database and schema holder. In this case, both database sets could connect to the same schema holder but different Oracle databases.

In the UNIX environment, MFG/UTIL uses the database set information to create start-up scripts. In Windows, it creates start-up icons, a Windows initialization file (for example, `progress.svg`), and a start-up parameter file (for example, `producti.pf`). The parameter file contains the required connection parameters for your databases.

Example Oracle Directory Structure

You should set up your Oracle directory structure so that the data files are spread among various disks.

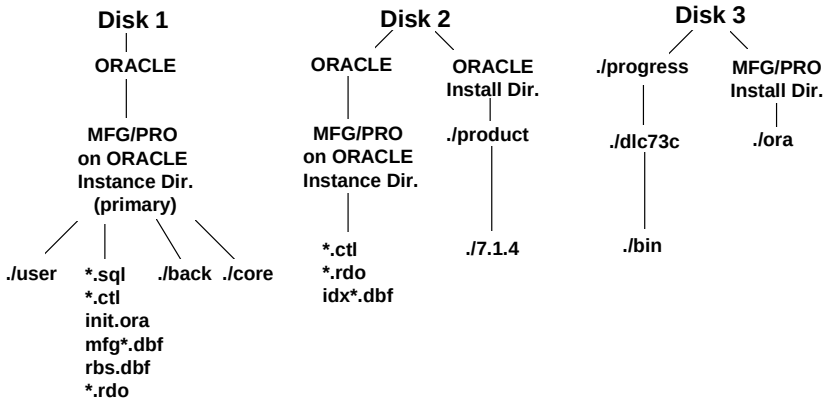

Fig. 1.1
Oracle Disk Structure Example

User License Overview

User licensing tracks user counts on MFG/PRO and alerts QAD customers to license violations. Additionally, user licensing alerts customers to the expiration of MFG/PRO evaluation software.

License utilities do not currently restrict the total number of users that can log into MFG/PRO. This means that a user is not prevented from logging in when the total number of licensed users is exceeded. User counts are tracked according to the two licensing schemes QAD currently sells: concurrent and named users.

Note The user license utility applies only to MFG/PRO modules licensed by user count. For example, it does not apply to the EDI module.

User Licensing System

When QAD ships an order, a unique license code is supplied to each customer site. When a product is not actually shipped (for example, a license upgrade to increase user count), a license code sheet is still sent to the customer site. This license code identifies to the software the number of users for which the site is licensed.

When the software is first installed, the first user logging into MFG/PRO—typically the system administrator—is prompted to enter the supplied license code.

When a user logs in and the number of logged-in users exceeds licensed users, two error messages display. The user must press OK or Enter to exit each message.

When a user logs in within 10 days of evaluation software's expiration date, a warning displays. After expiration, no users can log in and the customer must contact their distributor or QAD for a renewal or temporary license code.

User Licensing Programs

The programs related to user licensing are on the Database Management Menu (36.16). They are:

- License Registration (36.16.10): program to modify the license code
- License Violation Report (36.16.11): a report showing system logins that violate the user license count
- User Inquiry (36.16.12): a browse to monitor the activity of users

Named and Concurrent User Licensing

The user count is calculated differently depending on whether you purchased concurrent or named user licensing. In concurrent user licensing, each concurrent login to MFG/PRO is counted as a concurrent user. If a single user logs into multiple MFG/PRO sessions simultaneously, each login is counted separately. In named user licensing, each physical user logging into MFG/PRO is counted as one user, regardless of how many simultaneous sessions they have.

Table 1.2 is an example of QAD licensing schemes.

Table 1.2
Licensing Schemes

Physical Users	**Named User License Count**	**Concurrent User License Count**
John logs into an MFG/PRO session.	Counts as one user.	Counts as one user.
Mary logs into an MFG/PRO session.	Counts as one user.	Counts as one user.
Mary logs into another MFG/PRO session.	Does not count as an additional user.	Counts as one user.
Total Physical Users: 2	**Total User Count: 2**	**Total User Count: 3**

Online Help Options

During installation and implementation, keep in mind the two mechanisms for displaying online help about MFG/PRO: the character help database and Windows hyperlink files (WinHelp). Although the display methods differ, the help content is the same.

Important When you create the help databases, they are empty. You must load the `.fhd` help file to populate the help databases. If you do not, character help will not be available system wide. See Chapter 5, “Database Server Setup,” for field help load instructions.

Table 1.3 Comparison of Online Help Methods

Method	Source	Interface	Custom Support
Help Database	Database	Character or Windows GUI clients in any language	Add custom help using Field Help Maintenance (36.4.13)
Windows Hyperlink Help (WinHelp)	The .hlp files under: *`WinInstallDir/LanguageDir`*`/help`	Only Windows GUI clients in English	Currently does not allow custom help

You can control which type of help displays for each user through User Interface Profile (36.20.4).

Do not confuse a similar maintenance program, Window Help Maintenance (36.7.21), with the Windows hyperlink help. Window Help Maintenance controls a look-up feature called scrolling windows and does not affect the Windows hyperlink help.

CHAPTER 2

System Requirements

An Oracle installation requires planning for adequate system resources. This chapter provides approximate guidelines as well as more detailed formulas you can use to generate an accurate estimate of hardware requirements for your installation.

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Minimum Requirements

General Requirements

- Compared with MFG/PRO on PROGRESS, MFG/PRO on Oracle databases require more hardware resources—CPU capacity, memory, and disk space—and more system performance tuning.
- The system administrator must be a certified Oracle database administrator and must know how to manage PROGRESS client processes.
- You must know what system configuration you will use in order to build the correct DataServer components. For more information, refer to the configuration descriptions in this chapter.

Database Server

- MFG/PRO: Version 9.0 server media.
- Oracle: Version 7.x or 8.1.x have slightly different requirements. You should implement one or the other, but not a combination of the two. Check whether the version you plan to use is compatible with the PROGRESS DataServer. SQL*DBA or Server Manager, SQL*PLUS, and PRO*C will be used. You may also need networking components; see “Client/Server and Networking” below.
- PROGRESS: Version 8.3 or later UNIX DataServer and client executable is required. Contact your PROGRESS or MFG/PRO sales representative for the specific lettered release best suited to your hardware. You may need networking components; see “Client/Server and Networking” below. Also, at least one license of PROGRESS 4GL or ProVISION is required for complete system administration.
- Client/Server and Networking: You can set up the PROGRESS DataServer for Oracle to be either remote from the PROGRESS client executable or local to it. In a remote configuration, you need PROGRESS networking. In a local configuration, you access Oracle remotely.
  - If you are using Oracle 7.x, you need SQL*Net V2.1 and the appropriate protocol adapters.
  - If you are using Oracle 8.1.x, you need SQL*Net/NET8 and the appropriate protocol adapters.

In either local or remote configuration, you should also have a host-mode configuration installed for a single user. This way, you can run batch processes such as MRP and reports without creating adverse network traffic.

- Disk Space: You need at least 1 gigabyte (GB) of free disk space to install PROGRESS and MFG/PRO Version 9.0 on your database server machine. For each MFG/PRO language release you install, you need an additional 600 megabytes (MB). You also need more space if you load the source code cross-reference data. These requirements do not include space needed for your database data.

  Note Depending on your Oracle version, your disk space requirements will differ. Refer to your Oracle documentation for specific disk space requirements for your Oracle version.

Windows Clients

- PROGRESS: Version 8.3 or later software on each PC client or on a file server that is accessible to each PC client. Contact your PROGRESS or MFG/PRO sales representative for the specific 8.3 lettered release. Having PROGRESS on each PC will give you better performance.
- PROGRESS Query Version 8.3.
- MFG/PRO: Version 9.0 Windows media.
- Network: You need a client/server environment and a working knowledge of PROGRESS networking.

  For details, see the *PROGRESS Networks Guide*.

  The network should be a WINSOCK-compliant 1.1 TCP/IP protocol stack, such as MS TCP/IP or PC-TCP from FTP software. QAD recommends a 10Mbit Ethernet or 16Mbit token ring network or faster.

  For Oracle 7.1.x, you need SQL*Net V2.1 or higher. For Oracle 8.1.x, you need SQL*Net/NET8 or higher. Both protocols require the appropriate protocol adapters.
- PC Clients:
  - 150MHz (or faster) Intel Pentium processor.
  - RAM: 32MB for Windows 95 or 32MB for Windows NT Workstation.

- Super VGA video.
- 1.0GB (or larger) hard drive.
- 32-bit network card.

Note PC client requirements vary depending on your Oracle database and PROGRESS software versions. Review the PROGRESS and Oracle documentation for updates on supported client platforms and system requirements.

- File Server: A file server machine is recommended to store and download Windows programs. To load the media, you must have a CD-ROM drive on this machine or on a PC networked to it.
- Disk Space: For an Oracle 7.x database, a networked or local drive with at least 650MB for all modules is required. For an Oracle 8.1.x database, a networked or local drive with at least 1 GB for all modules is required. These estimates are based on the Windows NT file system (NTFS) disk format. If you use a file allocation table (FAT) disk format, you need more disk space; however, a FAT disk format is not recommended for the Windows file server.

The following section covers sizing guidelines in more detail and recent benchmark information to support sizing of basic MFG/PRO on Oracle systems. However, until a system is built, exact performance and disk layout are to some extent unknown.

Sizing worksheets are available in Appendix A, “Tablespaces in the Oracle Database,” on page 113.

Hardware Sizing

Hardware sizing consists of determining memory requirements for the server and the clients.

Host Mode or Server Memory Formulas

The following memory size formula is for an MFG/PRO host mode system or a database server in a client/server environment. This memory formula estimates the MFG/PRO memory requirement. In some cases additional memory is required to maintain an MFG/PRO-related system,

such as barcode or EDI packages, or non-related software systems on the same host/server.

Oracle Database Memory Size Formula

[(Number of Concurrent Users x 6) + O/S Kernel + (Number of Production DBs x P)] x 1.2 = MB Memory

A description of each variable in the memory size formulas follows.

Number of Concurrent Users

The memory required to run an MFG/PRO session is 3MB for a PROGRESS RDBMS implementation. An Oracle RDBMS implementation of MFG/PRO requires 6MB per MFG/PRO session because each user spawns both an Oracle database process and a PROGRESS DataServer process.

A concurrent user is considered any MFG/PRO client connected to a database. Some examples of this are a person entering sales order data, a report being printed, or a background batch process loading data via CIM. This holds true for both MFG/PRO host mode systems and client/server configurations.

In host mode, the UNIX processes running the MFG/PRO programs utilize this memory. In the client/server mode, the memory is for additional database buffers and operating system functions to increase disk I/O throughput.

O/S Kernel

This is the amount of memory that the operating system requires. Most operating systems require 32MB.

Number of Production DBs x P

A certain amount of memory is required for each MFG/PRO production database. In a standard MFG/PRO installation there is one MFG/PRO production database. The MFG/PRO help, GUI, GL Report Writer, development, or test databases are not considered production databases and are not used in this calculation.

The P in this formula represents the total memory required for the PROGRESS database server start-up parameters. The most common server start-up parameters are -B, -L, -hash, and -spin. If the total of these parameters is unknown, use 48MB. Larger, more fragmented databases should use a -B start-up parameter larger than 30MB and a P value greater than 48MB. For MFG/PRO in an Oracle implementation, the P value should be 80MB or twice the number of users, whichever is greater.

(User + OS + DB) x 1.2

Add together the user, O/S kernel, and production database memory requirements. An additional 20 percent must then be added for operating system input/output buffers to ensure you have enough memory. Round up the resulting memory to the nearest multiple of 64MB. This is done because hardware vendors usually sell machine memory in increments of 64MB. (If memory is sold in smaller increments, round up to the next memory size increment.)

Example

An MFG/PRO site has 75 users, two production (or site) databases, and an O/S kernel requiring 32MB. The PROGRESS start-up parameters total 48MB for each production database. The P value is 48MB for a PROGRESS implementation and 80MB for an Oracle implementation (greater of 80MB or 2 times the number of users).

Oracle Databases

[(75 x 6) + 32 + (2 x 160)] x 1.2 =

[450 + 32 + 320] x 1.2 = 962.4MB, rounded up to 1GB

Client Workstation Memory Requirements

The minimum memory requirement for a client workstation is 32MB. The 32MB RAM is needed to load Windows, PROGRESS, and MFG/PRO. For simultaneous use of MFG/PRO and other Windows applications, 48MB RAM is recommended.

Disk Drive Requirements

Like hardware sizing, disk drives are sized for the server and the clients. Disk drive controllers are also sized.

Host Mode and Server Disks

With MFG/PRO, as with any commercial application environment, disk I/O is a major factor. Properly spreading the information across disk drives reduces access time. When determining the disk requirements for MFG/PRO, the number of drives is more important than the amount of space needed. The number of disk drives is based on the recommendation that no more than 500MB of any database resides on a given disk drive. Excess disk space on the drives can be used when preparing for MFG/PRO upgrades and training systems.

The hard disk sizing is the same for an MFG/PRO host mode system and a database server in a client/server environment. A general formula for calculating disk drive requirements follows.

Number of Disk Drives =

[(Base DB + History + AL) x Number of Production DBs x RDBMS factor] + OS + MP + User Dirs.

A description of each variable in the disk drives formula follows.

Base DB

One of the most difficult estimates to make is the size of the database before it is built. QAD's experience has shown that many customers' databases total 1GB per 50 users in the first production year.

This assumes that most MFG/PRO modules are being used except Field Service or Service Support Management and that General Ledger consolidations are done after each period closing.

Based on the guideline of 1GB per 50 users (500MB per 25 users) and the rule of only populating 500MB on a drive, the following formula can be used to determine the number of disk drives for the Base DB:

```
Number of Users / 25 = Number of Disk Drives (round up)
```

History

The Base DB disk requirement accounts for current year information only. Additional disk space is required for prior year historical data. As a general rule, we recommend 50% of the base database size for each year of history.

AL (Oracle Archive Log Files)

The archive log files should reside on their own disk drive. Use 1 for this component of the formula.

Number of Production Databases

Disk space is required for the base database, history and the archive log files for the production databases. Once base database, history, and archive log file requirements are added, the number of production databases that will reside on a host or database server must multiply the total.

RDBMS Factor

The total requirements for the base databases, history, and archive log files for all production databases must then be multiplied by a factor for the appropriate RDBMS product (PROGRESS or Oracle). For PROGRESS, the RDBMS factor is 1. For Oracle the RDBMS factor is 3. The RDBMS factor in the disk requirements formula accounts for the differences in requirements between a PROGRESS and an Oracle implementation.

OS (Operating System)

The operating system and related functions and utilities will require some disk space. One drive is usually sufficient to hold the operating system; use 1 for this factor in the formula. Some hardware vendors recommend putting the operating system swap space on an additional drive. If this is the case, use 2 for this factor in the formula.

MP (MFG/PRO Programs and PROGRESS)

MFG/PRO programs and the PROGRESS 4GL typically require 1 disk drive.

User Dirs. (User Directories)

User directories should be placed on their own drive. The user temporary files usually require 2MB to 5MB per concurrent user. Use the following formula for this portion of the disk requirements:

```
Number Users / 200 = Number of Disk Drives (round up)
```

Example

A MFG/PRO site has 75 users, one production database, and one year of history.

MFG/PRO Server with Oracle Drive Configuration

Disks	**Usage**
1x2GB	Operating system and swap
1x2GB	MFG/PRO, PROGRESS, and Oracle
1x2GB	Users and TEMP
1x2GB	SYSTEM
2x2GB	ROLLBACK
8x2GB	Tables and indexes
1x2GB	Online redo logs
1x2GB	Archived redo logs
32 GB	**Total**

Client Workstation Disk Requirements

A minimum of 35MB disk space is required for temporary file storage. Sorts and buffers utilize temporary files. The following items require disk space and can be stored either on the client or on a network file server.

Disk space	Usage
300MB	MFG/PRO image libraries. These are MFG/PRO files that have the .pl extension. These should be installed on the client.
750MB	Full set of MFG/PRO programs
65MB	Minimum PROGRESS (run-time) or 225MB full PROGRESS
1GB	Qwizard

Disk Controller Requirements

There should not be more than four disk spindles per disk I/O channel with SCSI or SCSI II disk controllers. The Fast and Wide SCSI controllers may be able to handle five disk spindles per disk I/O channel.

CPU Sizing

The central processing unit (CPU) size is split into server and client requirements.

Host Mode and Server CPU Requirements

CPU sizing varies depending on system usage. Several hardware vendors can make CPU recommendations for MFG/PRO on their equipment. Also, QAD has a sizing matrix available for Digital, Hewlett Packard, and IBM.

MFG/PRO and PROGRESS support symmetric multi-processing environments (SMP machines).

Client Workstation CPU Requirements

In a client/server environment (MFG/PRO for Windows), the power of the client workstation is a factor in overall system performance. The minimum client workstation is a 150MHz Pentium system; a 166MHZ Pentium processor is recommended.

The client monitor should be VGA (640 x 480 resolution) or Super VGA (800 x 600). A Super VGA monitor is recommended. The 800 x 600 resolution is the highest resolution supported by MFG/PRO for Windows.

Network Sizing

LAN

The MFG/PRO for Windows software requires a TCP/IP WINSOCK 1.1-compliant network to access the MFG/PRO production database(s) in a client/server environment.

At a minimum, the network must be a 10Mbit Ethernet or 16Mbit Token Ring. A 16-bit network interface card (NIC) may be used, but a 32-bit NIC is preferred. It is recommended that no more than 16 MFG/PRO GUI users are on the same single 10Mbit network segment.

WAN

It is recommended that standard MFG/PRO GUI client/server not be run over a WAN. MFG/PRO GUI client/server can be run over a WAN using Winframe from Citrix. The following bandwidth requirements can be used for initial WAN sizing:

Viewer	**Bandwidth**
Character	5kbs per user
WEB	12kbs per user
GUI (using Winframe)	20 to 30kbs per user

Network Fileserver

A network fileserver is typically required in a GUI client/server environment.

Oracle Database Sizing

The important database sizing areas to be considered are database memory sizing, tablespace sizing, and number of rollback segments.

SGA (System Global Area)

The Oracle database memory, allocated in terms of SGA (System Global Area), is comprised of Database Buffer cache (DB_BLOCK_BUFFERS), Shared Pool (SHARED_POOL_SIZE), and Log Buffer (LOG_BUFFER).

Outlined here are some examples of Oracle database memory sizing. The information is derived from existing MFG/PRO sites and benchmarks. The sizing values apply for the database Block Size (DB_BLOCK_SIZE) of 8K. Most of the values are for initial set-up and are not tested for full work loads.

Table 2.1 Oracle Database Memory Sizing

Number of Connected Users	Total SGA	Buffer Cache	Shared Pool	Log Buffer
25	125 MB	96 MB	25 MB	128 K
200	241 MB	200 MB	40 MB	512 K
500	315 MB	262 MB	52 MB	1 MB
1000	525 MB	409 MB	109 MB	2.5 MB

Rollback Segments

The number of rollback segments determines how many concurrent transactions can be run. If there are more transactions then they will have to wait for freeing up of rollback segment entries, which can be re-used. The recommended number of rollback segments varies for different numbers of concurrent users.

Table 2.2 Rollback Segment Sizing

Number of Concurrent Users	Number of Rollback Segments	Rollback Segment Sizing
25	4	
200	30	Initially 1M. Next 1M. Optimal 2M. Percent increase 0. Minimum extents 2.
500	40	
1000	60	Initially 5M. Next 5M. Optimal 10M. Percent increase 0. Minimum extents 2.

Database I/O and Tablespace Sizing

The Oracle database writes to a number of system files and tablespace data files during its operation. Tablespace sizing and placement of system files and data files on different disks are both important tasks in implementing MFG/PRO on Oracle.

Distributing I/O

The I/O distribution example shown below indicates how to distribute Oracle's system files and tablespaces among the 10 disks available.

To distribute I/O among the 10 disks, items should be placed on different disks as per Oracle's recommendations (Ref. Oracle DBA Handbook 7.3 by Oracle Press). 43 tablespaces (QAD User DATA and INDEX) can be distributed on 4 disks. The following configuration will give a fair distribution of I/O on the disks.

Table 2.3 Placement of Oracle System and Data Files

Disk#	Disk Path	Contents
1	/opt/oracle	Oracle software
2	/ora_sys	Control file 1, SYSTEM
3	/ora_roll	Control File 2, RBS
4	/ora_log	Log Files 1-5
5	/ora_temp	TEMP
6	/ora_dump	Destination for Background/Core dump, User dump, Audit File
7	/ora_data1	Control File 3, CONTROL, GLRPWRTR, GLTDET, GLTRHIST, GUI, HISTORY, INTRASTAT, MFGHELP, MRPDET, QADWKFL, USERS

Disk#	Disk Path	Contents
8	/ora_index1	CONTROL_IDX, GLRPWRTR_IDX, GLTDET_IDX, GLTRHIST_IDX, GUI_IDX, HISTORY_IDX, INTRASTAT_IDX, MFGHELP_IDX, MRPDET_IDX, QADWKFL_IDX
9	/ora_data2	REFERENCE, SODDET, SOMSTR, STATIC, TRANSACTION, TRGLDET, TRHIST, WODDET, WOMSTR, WORKFILE, WRROUTE
10	/ora_index2	TOOLS, REFERENCE_IDX, SODDET_IDX, SOMSTR_IDX, STATIC_IDX, TRANSACTION_IDX, TRGLDET_IDX, TRHIST_IDX, WODDET_IDX, WOMSTR_IDX, WORKFILE_IDX, WRROUTE_IDX

Tablespace Sizing

To determine tablespace sizes, you must consider the number of users to be supported and how much data they will generate in a year. The example in table 2.4 shows initial tablespace sizing for a 500-user database.

Except for the SYSTEM tablespace, the settings in the following table apply to Oracle 7.x and 8.1.x environments. For Oracle 8.1.x, set the tablespace to 60MB even though the autoextend option is active for it. Review and modify any settings in the `crdb2ORACLE_SID.sql` file as needed for your Oracle database environment. See “2: Running SQL Scripts to Create the Oracle Database” on page 62.

Table 2.4 Tablespace Sizing for a 500-user Database

Tablespace	Size
SYSTEM	50 MB
ROLLBACK (RBS)	220 MB
TOOLS	15 MB
TEMP	120 MB
LOG FILE SIZE	05 MB
USERS	01 MB
MFGHELP	03 MB
MFGHELP_IDX	03 MB
GUI	16 MB
GUI_IDX	16 MB

Tablespace	Size
GLRPWRTR	02 MB
GLRPWRTR_IDX	08 MB
INTRASTAT	02 MB
INTRASTAT_IDX	02 MB
TRANSACTION	80 MB
TRANSACTION_IDX	90 MB
HISTORY	10 MB
HISTORY_IDX	14 MB
STATIC	30 MB
STATIC_IDX	90 MB
CONTROL	03 MB
CONTROL_IDX	12 MB
REFERENCE	03 MB
REFERENCE_IDX	03 MB
WORKFILE	03 MB
WORKFILE_IDX	03 MB
GLTDET	14 MB
GLTDET_IDX	23 MB
GLTRHIST	03 MB
GLTRHIST_IDX	06 MB
TRHIST	53 MB
TRHIST_IDX	52 MB
TRGLDET	20 MB
TRGLDET_IDX	31 MB
MRPDET	90 MB
MRPDET_IDX	190 MB
QADWKFL	19 MB
QADWKFL_IDX	11 MB
SOMSTR	03 MB
SOMSTR_IDX	06 MB
SODDET	13 MB
SODDET_IDX	10 MB
WOMSTR	08 MB

Tablespace	Size
WOMSTR_IDX	11 MB
WODDET	35 MB
WODDET_IDX	40 MB
WRROUTE	19 MB
WRROUTE_IDX	06 MB

Oracle Software Requirements

The Oracle RDBMS is the primary product that QAD uses underneath MFG/PRO. Oracle is being used to store all relevant data from the QAD applications.

In addition to the standard offering, extra functionality can be obtained by deploying the Oracle Server Options or tools for administration, development, and reporting.

Required Oracle Software Components

Most of the Oracle software required to run MFG/PRO on UNIX is included in the standard Oracle Server. The following components are used by MFG/PRO:

Oracle 7.x

- Oracle RDBMS, currently supported versions are 7.3.x and above.
- SQL*Net with the TCP/IP Protocol Adapter, currently supported versions are 2.x and above.
- SQL*Plus.
- For a Windows client installation on an Oracle 7.1.x database, only SQL*Net is required.

Oracle 8.1.x

- Oracle RDBMS, currently supported versions are 8.0.5 and above.
- SQL*Net/NET8 components appropriate for your Oracle server version, including the TCP/IP Protocol Adapter.

- SQL*Plus.
- For a Windows client installation on an Oracle 8.1.x database, only NET8 is required.

Note These version and release numbers may change without notice. Always review the QAD, PROGRESS and Oracle Web sites for the most up–to–date list of component versions supported.

CHAPTER 3

MFG/PRO-on-Oracle Considerations

Prior to installing Oracle software to support MFG/PRO, there are specific issues to resolve or plan for.

Choosing the MFG/PRO-on-Oracle Architecture **34**

Hardware Setup and Disk Layout **34**

Use of Oracle Tablespaces **35**

Use of Oracle Character Sets **35**

Oracle Environment Variables **36**

Client/Server Installs **37**

Client and Server Configuration Files **38**

Choosing the MFG/PRO-on-Oracle Architecture

When choosing between the different types of configurations, you should consider the level of effort that would be required to modify the selected configuration at a later time.

- Adding more hardware resources by increasing capacities of existing systems is normally rather simple—but you may encounter limits to potential increases.
- Adding more hardware resources by adding extra systems normally implies going to a client/server environment or from two-tier to multiple-tier environment. This always implies that more software must be added.
- Moving or duplicating the application to another system implies that software must be installed on the other system. However, this does not require database export, rebuild, and import; the switch to client/server can be accomplished by modifying environment variables or setup files.
- Moving the database to a different system requires a full database export, rebuild, and import, which can be time-consuming. Such modifications are normally the most complex. Careful initial planning can help you avoid them.

Hardware Setup and Disk Layout

A typical MFG/PRO-on-Oracle installation can require a disk capacity of several gigabytes. It is therefore important to chose a setup that is reasonable from both administrative and performance perspectives. From the administrative standpoint, you should consider separating the following components:

- Oracle software
- Oracle database, including database files and control files
- Oracle startup files, log files, and so on
- MFG/PRO software
- PROGRESS software

Performance considerations become more important with increased database size. For example, if the database is in the 750MB to 1GB range, and only one physical disk is available, there is only one possibility. However, if a configuration includes databases of several gigabytes and several physical disks are available, performance will be significantly influenced by how the disk space is used.

In some environments, database files can be put on raw devices to increase performance; however this configuration is more difficult to administer.

Use of Oracle Tablespaces

An Oracle database is comprised of a number of tablespaces, or logical storage areas. Each tablespace is physically stored on one or more file systems or raw devices. By default, MFG/PRO uses approximately 40 tablespaces to store data and indexes. In addition, at least three other tablespaces are necessary:

- The system tablespace used by Oracle to store all internal information, such as information about tables
- A rollback tablespace
- A temporary tablespace

Additionally, tablespace users and tools are built during MFG/PRO Oracle database creation.

Use of Oracle Character Sets

Oracle includes comprehensive mechanisms to support different languages and character sets, most of which can be controlled after installation. MFG/PRO is available for many different languages. You should consider several factors before actually doing the installation:

- When creating the database, take care of choosing the appropriate character set. Once the database is created, its character set cannot be changed.
- At the client side, the environment variable NLS_LANG should be set to achieve the correct character set conversion.

- If using the NLS_LANG parameter in init.ora, make sure to set NLS_SORT = binary.

MFG/PRO uses WE8ISO8859P1 as the default character set for its installation. You should choose a character set that contains all characters that are needed in your environment. The right choice will depend on your location. In the United States, Canada, and most of western Europe, a good choice is E8ISO8859P1; in most of eastern Europe, a good choice is WE8ISO8859P9.

Applies to Oracle 7.x only.

Because the NLS_LANG environment variable is not set by default in most MFG/PRO-on-Oracle 7.x environments, Oracle may unexpectedly use the default of *American_America.US7ASCII*, which causes problems with MFG/PRO when the database is created with a different character set. Therefore, if the Oracle database is created with the WE8ISO8859P1 character set, for example, it is imperative that the NLS_LANG be set to *american_america.WE8ISO8859P1*.

Oracle Environment Variables

A number of environment variables are used by Oracle; the full description can be found in the *Oracle Installation and Configuration Guide*. However, you should in particular understand two of these before starting the installation:

- ORACLE_HOME

  This variable points to the root of the Oracle product directory, and it frequently includes the release number of Oracle. An example that follows the normal standard of the Oracle installation procedure is:

  ```
  /usr/oracle/app/oracle/product/8.1.6
  ```

  This would be used for an installation of Oracle release 8.1.6. Note that this directory normally is different from the home directory of the Oracle UNIX login account.

- ORACLE_SID

  This variable, which is frequently referred to as the Oracle System Identifier, is the name of the database. It is unrelated to the ORACLE_HOME directory and the Oracle release number.

  QAD recommends using any name other than `qad` or `qaddb`. These names are used by standard MFG/PRO programs—`qad` for the PROGRESS schema holder and `qaddb` for the Oracle database logical reference. On most operating systems, there is a restriction on the length of the name, so it should be short.

Client/Server Installs

Many MFG/PRO-on-Oracle systems are large—100 users or more. In these cases, Oracle is installed on a separate system used solely as a database server. Communication between MFG/PRO—more specifically, the PROGRESS DataServer and the Oracle 7.x database engine—is provided by SQL*Net. Communication with the Oracle 8.1.x database is provided by SQL*Net/NET8.

This section covers that configuration from an Oracle perspective. The two systems required are the database server and the application server.

Installations on the Database Server

The database server runs Oracle, and where host-mode is implemented, it also runs PROGRESS, the DataServer, and MFG/PRO. The first step in the client/server installation is installing Oracle. Keys areas in a client/server install include:

- First install the Oracle Server, the Oracle Server utilities, and depending on your Oracle version, or SQL*Net/Net8, along with any necessary protocol adapters, normally TCP/IP.
- Set up Oracle server networking, including the SQL*Net or Net8 listener using the `listener.ora` file.
- Finally, create the Oracle database with the necessary tablespaces, rollback segments, and other elements required for MFG/PRO.

Installations on the Application Server

On the application server, MFG/PRO, PROGRESS 4GL and DataServer, and Oracle SQL*Net/Net8 client software are required. Considerations include:

- The DataServer should be implemented in client mode.
- The Oracle software to install is SQL*Net/Net8 client software with the needed protocol adapters necessary, normally TCP/IP. No server software is installed.
- The SQL*Net/Net8 client must be configured. A file, `tnsnames.ora`, must be created to map logical database names to network connections and ORACLE_SID on the database server.
- An environment variable, TWO_TASK, must be set to point at a valid entry in the `tnsnames.ora` file for all MFG/PRO users.

  The TWO_TASK environment variable ensures that all Oracle data processing takes place on the database server.

Client and Server Configuration Files

This section describes the most important configuration files for each component in the network. It includes the types of information required in each file and shows the relationships between them. Normally, these files should be generated using the SQL*Net configuration tool. They are described in detail in the *Oracle Installation and Configuration Guide*. Oracle recommends that you do not create these files by hand or modify them.

Server Configuration Files

The database server needs to have a SQL*Net listener process running; this will accept incoming connection requests and make the connection to the actual database instance. The configuration of this process is done in the listener.ora file.

Client Configuration Files

On the application server, which is a client in the Oracle context, the TWO_TASK environment variable names an entry in the Oracle configuration file tnsnames.ora. This file maps this name to a network connection and an ORACLE_SID. A simple example of an entry is:

```
QADDB_REMOTE=
  (DESCRIPTION =
    (ADDRESS_LIST =
        (ADDRESS =
          (PROTOCOL = TCP)
          (Host = Production1)
          (Port = 1521)
        )
    )
    (CONNECT_DATA = (SID =QADDB)
    )
  )
```

The Oracle setup for networking can easily be tested with Oracle's SQL*Plus. Before setting TWO_TASK for the MFG/PRO connection, make sure remote connect works for SQL*Plus.

For a detailed description of SQL*Net and the formats of connect strings and protocols, please refer to the Oracle SQL*Net documentation.

CHAPTER 4

Building PROGRESS DataServer Components

This chapter provides DataServer installation tips that supplement the installation instructions in the *PROGRESS DataServer for Oracle Guide*, Chapter 3, “Building the DataServer.”

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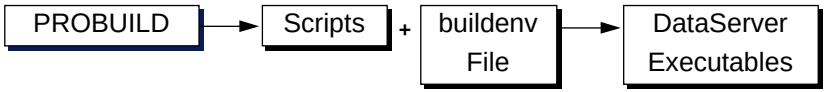
Tips for Running PROBUILD **43**

Tips for Running Link Scripts **44**

Database Server Build Overview

Figure 4.1 shows the work flow for building the DataServer.

Fig. 4.1
DataServer Work Flow



First you run the PROBUILD utility, which creates UNIX scripts that contain the commands to link new PROGRESS executables. You then run the scripts to actually create the DataServer executables.

The link scripts refer to the file `buildenv` for environment variables. If you receive errors while running the link scripts, you can usually resolve them by editing the `buildenv` file.

You must build the DataServer on at least the host machine (for running batch processes). If you have chosen a UNIX client/server configuration, you must also build the DataServer on the UNIX client machines.

Products and Configurable Elements

For configuration details, see the *MFG/PRO 9.0 System Administration Guide.*

While using the PROBUILD utility, you specify which products and configurable elements you want, according to the hardware configuration you have chosen.

For a host-mode and local DataServer, you build a single executable. You do not need to build any DataServer components for PROGRESS client processes running on MS-Windows, because they dynamically link to the Oracle PRO*C library.

Tips for Running PROBUILD

Use this summary in conjunction with Section 3.2, “Building the Local DataServer,” or Section 3.5, “Building the Remote DataServer” in the *PROGRESS DataServer for Oracle Guide*.

Environment Settings

Before you run PROBUILD, follow these guidelines relating to the environment settings:

- You must be logged in as the root user ID to run the link scripts.
- If DLC is not set, use the command below to set it:

  ```
  DLC=YourProgressDir; export DLC
  ```

- If the UNIX PATH does not contain the $DLC/bin directory, use the command below to set it:

  ```
  PATH=$PATH:$DLC/bin;
  ```

- The TERM variable must be set to match an appropriate entry in the PROTERMCAP file.
- Make sure to add the ORACLE_HOME environment variable in the `buildenv` file. For example, if the Oracle home directory is `/d2/oracle7`, type:

  ```
  ORACLE_HOME=$/d2/oracle7 ; export ORACLE_HOME
  ```

- If you have a Sun Solaris system, add the LD_LIBRARY_PATH environment variable in the `buildenv` file.
- Run PROBUILD from the directory *`ProgressDir`*`/probuild/eucapp` (where *`ProgressDir`* is your actual PROGRESS path).
- You must use the standard C compiler for the machine.
- The Oracle OCI must be installed.

Running PROBUILD

1. Change to *ProgressDir*/probuild/eucapp.
2. Type ./probuild.
3. In the Install Link Script Into prompt, specify where to create the link scripts.
4. In the Product List, select PROGRESS Client.
5. In the Link Script and Executable prompt, specify your desired names or accept the default.
6. In the Configurable Elements prompt, select Oracle DataServer and TCP/IP network protocol.

Warning Even if you will not use TCP/IP at all, link errors occur on several UNIX platforms if you do not include the TCP/IP option.

Tips for Running Link Scripts

Once PROBUILD is finished, you are ready to run the link scripts that generate the DataServer executable. Make sure that ORACLE_HOME is correctly defined, pointing to where Oracle was installed. Then run the link script.

This works in most cases. In very exceptional cases, you might have to set ORALIB manually prior to running the link script. If this is the case, refer to Section 3.3, “Creating the DataServer Executables on UNIX,” in the *PROGRESS DataServer for Oracle Guide*. Also note the following.

- Steps 1 to 6 are not necessary unless you receive unresolved external reference errors during the link. Refer to the next section for more information.
- The names of the link scripts are taken from the prompts you answered while running PROBUILD. If you do not remember the names, you can use the following command to display the newest files in a directory.

  ```
  ls -ltr
  ```

Missing PRO*C Libraries

If you receive unresolved external reference errors during the link, you must find the Oracle PRO*C libraries that contain the missing objects and add them to the ORALIB setting in the `buildenv` file, which sets the environment variable.

First try following steps 1 to 6 in Section 3.3, "Creating the DataServer Executables on UNIX," in the *PROGRESS DataServer for Oracle Guide*. These steps involve making a sample application that is delivered with the Oracle PRO*C library and copying the options and link map used by that application. Progress Software Corporation also supports a knowledge-base entry about the ORALIB settings.

Note The instructions in Section 3.3 of the *PROGRESS DataServer for Oracle Guide* are partially incorrect. In step 4, type `sample1` in the make command instead of `sample`. Also, before step 7, you must copy the contents of the `tmpfile` to the `buildenv` file and change to the $DLC/bin directory.

Locating Missing Libraries

If you still receive unresolved external reference errors, use the following steps to find the missing library.

1. Change to the $ORACLE_HOME/lib directory and use the **ar** command (a UNIX command) to list the contents of all the libraries in that directory. A short script to do this is:

```
for File in *.a
do
   echo $File >>liblist.txt
   ar -t $File >>liblist.txt
done
```

2. Use a text editor and look through the file `liblist.txt` for the objects that are missing.

3. When you find a missing object, scan backward to find the library file. Check whether the object is in two libraries.

Tip
With the vi text editor, you can use the command ?\.a to search backward for the most recent library.

4 Add the library names to the ORALIB setting in the `buildenv` file and run the link scripts again. If an object is in more than one library, add only one of them; if the link script fails again, enter the other library instead. However, if one of the two libraries already appears in the `buildenv` file, add that library as a second entry (the link script needs to refer to it twice). For example:

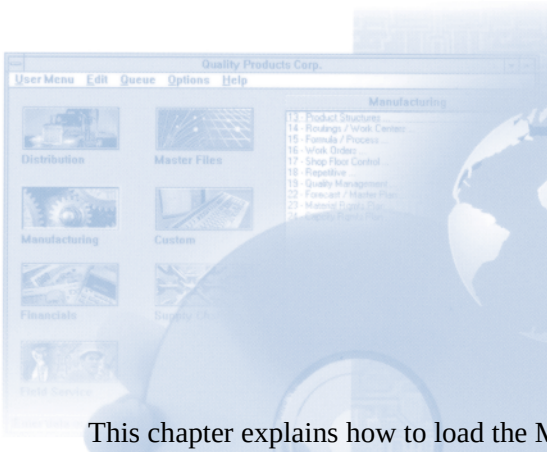
In this example, the libcore and libsqlnet libraries are repeated because they depend on each other.

```
ORALIB="$ORACLE_HOME/lib/libocic.a \
$ORACLE_HOME/lib/osntab.o \
$ORACLE_HOME/lib/libsqlnet.a \
$ORACLE_HOME/lib/libora.a \
$ORACLE_HOME/lib/libcv6.a \
$ORACLE_HOME/lib/libcore.a \
$ORACLE_HOME/lib/libnlsrtl.a \
$ORACLE_HOME/lib/libsqlnet.a \
$ORACLE_HOME/lib/libcore.a"
```

5 If you cannot find which library contains the missing object, open a man-page for the missing object (`man MissingObjectName`). The missing object may be in a nonstandard system library. In this case, you will find a man-page on it that should give you a sample command line with a requisite `-l` parameter. The `-l` parameter will be a library you must add to the ORALIB setting in the `buildenv` file.

Notes on PROBUILD on Solaris for Oracle

- The LD_LIBRARY_PATH must contain /usr/ucblib both a link time and at runtime.
- The resulting DataServer executables cannot be owned by root (the link script will do that by default). It should be owned by the Oracle dba user and have 775 permission instead of 4775.



CHAPTER 5

Database Server Setup

This chapter explains how to load the MFG/PRO media, set up the databases, and configure database sets for the start-up scripts.

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Mounting the CD-ROM **51**

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8: Loading Online Help Data **76**

9: Loading the Source Code Cross-Reference (Optional) **77**

Setup Overview

The standard database setup creates a single database for an Oracle instance. If you want additional MFG/PRO databases associated with the instance—such as training and demonstration—see “Setting Up Multiple Databases” on page 122.

For details, see Chapter 6, “Loading Client Media,” on page 81.

Note While setting up the database server, you can simultaneously load the Windows client media.

The main database setup tasks are:

- Creating the Schema Holder and SQL Scripts

  Launch the installation process that loads UNIX media and creates the schema holder. The default schema holder name is `oraempty`. The foreign database reference is `qaddb`, which you must change later. The program also generates the SQL scripts that create the new Oracle database.

- Running SQL Scripts

  Run the SQL scripts to create the new Oracle database.

- Copying the Schema Holder Under a New Name

  Make a copy of the default schema holder `oraempty` for use in production. You must also change the foreign database reference from the default, `qaddb`, to the actual Oracle database files and tablespaces.

- Configuring Database Sets

  Configure the parameters for the MFG/PRO start-up scripts.

- Loading MFG/PRO Data

  Load the default MFG/PRO data including menu names, messages, and codes. If you have an existing MFG/PRO system, you also load that data.

Host-Mode and Client/Server

If you are installing in a UNIX client/server configuration, you should first install in a host-mode configuration on the machine running Oracle. Follow all the sections in this chapter, which include creating the Oracle database and loading MFG/PRO data.

Afterward, to set up a UNIX client/server configuration, you also need to perform some of the same installation tasks on the client machine. The sections you must complete are:

- “1: Creating the Schema Holder and SQL Scripts” on page 51 (Only creating the schema holder is required.)
- “3: Copying the Schema Holder Under a New Name” on page 65
- “4: Configuring the Database Set” on page 66

Assumptions

The installation instructions assume you have:

- Backed up your existing MFG/PRO system, if any
- Installed Oracle and applicable networking, if any
- Installed and built the required version of the PROGRESS DataServer
- Changed to the Korn shell
- Logged on as user `mfg`

Loading MFG/PRO from Tape Media

Complete these steps only if you are installing from tape media. If the software is on CD-ROM, skip to “Mounting the CD-ROM” on page 51.

For details on extracting MFG/PRO, see “1: Creating the Schema Holder and SQL Scripts” on page 51.

You must load the tape media into a temporary directory and then extract MFG/PRO from the temporary directory into a permanent installation directory. The temporary directory requires 700MB disk space in addition to the space required for MFG/PRO. After you complete all the installation tasks, you can remove the temporary directory and its contents.

1. Create a temporary installation directory on the same machine as your MFG/PRO installation directory.

Note Make sure you have an extra 700MB disk space on your machine in addition to the space required for MFG/PRO.

2. Insert the tape into the tape drive.

3. Change to the temporary installation directory.

   ```
   cd TemporaryTapeDir
   ```

4. Load the tape using one of the following commands or the equivalent command for your version of UNIX.

On this type of hardware...	**Enter this load command...**
NCR Tower 600 or Unisys 5000/50	`dd if=/dev/rtp conv=swab | cpio -iumvdBc`
HP 9000/800 Series, 1/4” cartridge	`tcio -i /dev/rct/YourTapeDevice | cpio -iumvdBc`
All others	`cpio -iumvdBc < /dev/YourTapeDevice`

Note All MFG/PRO tapes are written using a block size of 5120 bytes.

5. Remove the tape and store it safely.

6. Continue with “1: Creating the Schema Holder and SQL Scripts” on page 51.

Mounting the CD-ROM

If you are installing from CD-ROM media, follow these steps to mount the CD-ROM.

1. Log on as the root user ID.
2. Make a CD-ROM directory if it does not already exist. The installation process assumes the directory name is `/cdrom`.
3. Place the MFG/PRO Database Server CD-ROM into the CD-ROM drive.
4. Mount the CD-ROM. The mount command differs from system to system. Listed below are example commands for mounting the MFG/PRO CD-ROM.

Note Always check your system's documentation to verify the mount syntax.

Hardware:	**Mount Command:**
Sun	`volcheck cdrom`
HP	`mount -F cdfs -r /dev/dsk/`*`YourcdDevice`*` /cdrom`
Digital	`mount -r -o noversion -t cdfs /dev/`*`YourcdDevice`*` /cdrom`
All others	Refer to your hardware system documentation or vendor for requirements to mount a CD-ROM. You may be able to type `man mount` to determine the correct command.

1: Creating the Schema Holder and SQL Scripts

In this section you execute the installation process to load the server media, create the schema holder, and create SQL scripts. The tasks involved are:

- "Create a UNIX Group and User for Administration Use" on page 52
- "Preliminary Setup" on page 54
- "Start Installation" on page 55
- "Enter Schema Holder Information" on page 57
- "Enter SQL Script Information" on page 59

Create a UNIX Group and User for Administration Use

Before you begin installing any MFG/PRO media, you must create a group called `qad` and a user called `mfg` within that group on your database server. All QAD installation and maintenance programs store pertinent information under this user's home directory. This strategy enables QAD scripts to find data about installed products automatically and reliably. Also, you can maintain your system without having to log on as the root user ID.

Use the following instructions to create this group and user before beginning the MFG/PRO installation:

1 Start your UNIX system administration utility.

Important It is important to use the utilities provided with your UNIX system since they typically handle a shadow password file.

2 Create a group called `qad`.

   a There is no requirement for a specific group ID (gid) for this group. If possible, try to use gid 65535, because this is the gid of the files on QAD CD-ROMs.

   b To verify that the group has been created successfully, type the following command at the system prompt:

   ```
   grep ^qad /etc/group
   ```

   c The output should resemble the following but may vary depending on your system:

   ```
   qad::65535:
   ```

3 Create a user called `mfg`.

   a If possible, specify user ID 65535, because this is the user ID of the files on QAD CD-ROMs.

   b Assign the Korn login shell to this user. All of the scripts delivered on a QAD CD-ROM use Korn shell syntax.

   c Use any standard file system location for the user; it is not important where this user is created. However, make sure the `$HOME` environment variable is set, because the scripts and programs that access this user directory reference this variable.

d Assign the standard umask of 022 to maintain permissions and security.

e To verify that the user was created with the proper values, type the following command at your system prompt:

```
grep ^mfg /etc/passwd
```

f The output should resemble the following but may vary depending on your system:

```
mfg:*:65535:65535:Q/ADMIN (administrative)
    login:,,,:/home/mfg:/user/bin/ksh
```

4 Create a directory called `cfg` under the home directory of user `mfg`. This directory is *mandatory* because it is where important installation and configuration information is stored. The directory needs to have read, write, and execute permissions (`rwx`) for the owner group and others.

a Log on as user `mfg`.

b To verify that the directory has been created successfully, type the following command at the system prompt:

```
ls -ld $HOME/cfg
```

c The output should resemble the following but may vary depending on your system:

```
drwxrwxrwx  7  mfg  qad  1024  Jun 18 11:03  cfg
```

5 Now that the user and group have been created, here are some optional but useful things that you can add to the user's profile (`.profile`).

Profile Setting	Description
`PROPATH=${PROPATH:-"`*`YourPROPATH`*`"}`	Sets a default PROPATH.
`DLC=${DLC:-"`*`YourPROGRESSDirectory`*`"}`	Sets a default PROGRESS directory.
`PATH=$PATH:$DLC/bin`	Adds the default PROGRESS `/bin` subdirectory to the execution path.

Preliminary Setup

1. Log on as user `mfg` under the group `qad`.
2. Use the standard terminal types while installing MFG/PRO. For example, for a vt100, set your TERM variable to vt100 during the installation. Once the MFG/PRO software has been installed, you can use one of the language-dependent versions of vt100, such as vt100fr.
3. Verify that the ORACLE_HOME and DLC environment variables point to the correct locations.
4. Set the ORACLE_SID environment variable to the desired SID of a new or existing instance—limited to four characters.

Important Do *not* use any of the MFG/PRO schema names, `qad`, or `qaddb` as the ORACLE_SID value. Do *not* use a number as the first character of the ORACLE_SID value.

5. Determine the following information regarding the Oracle database structure. MFG/UTIL will prompt you for this information and use it to create SQL scripts, which create the Oracle database.

Note As you design your directory structure, also refer to Appendix A, “Tablespaces in the Oracle Database,” and to Figure 1.1, “Oracle Disk Structure Example,” on page 11.

MFG/UTIL prompts:

- ORACLE Instance Name (it is assumed this is a *new* instance)
- ORACLE Database Name (used in the CREATE DATABASE command; it usually matches the instance name)
- ORACLE Home Directory
- ORACLE Instance Directory
- ORACLE Code-page (defaults based on your language code, but you may want to verify the default)
- ORACLE NLS Language
- ORACLE NLS Territory
- Location of Control File 1
- Location of Control File 2
- Location of Bkgrd Dump Dir

- Location of Core Dump Dir
- Location of User Dump Dir
- System Datafile Dir
- LogFile 1 Directory
- LogFile 2 Directory
- Directories and Sizes for the following Tablespaces and Indexes: COMPCONF, CONTROL, GLRPWRTR, GLTDET, GLTRHIST, GUI, HISTORY, INTRASTAT, MFGHELP, MRPDET, QADWKFL, RBS, REF (reference), STATIC, TEMP, TOOLS, TRANSACTION, TRGLDET, TRHIST, USER, WORKFILE.

6 Create the MFG/PRO installation directory by typing the following command, replacing *InstallDir* with the name you choose:

```
mkdir InstallDir
```

To set up the permissions for this directory, type:

```
chmod 777 InstallDir
```

Start Installation

1 Change to the drive containing the MFG/PRO media; for example:

```
cd MediaDir
```

2 Execute the script for your specific Oracle environment.

- For Oracle 7.x, enter `./install`
- For Oracle 8.1.x, enter `./installora8`

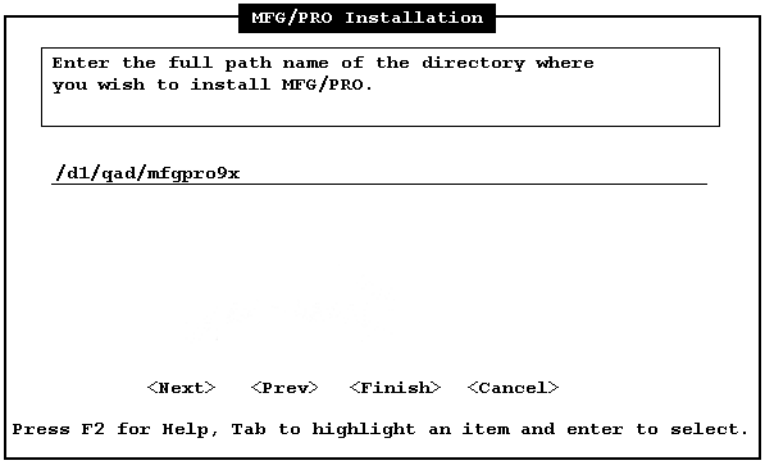
Note If you loaded MFG/PRO from tape, enter the temporary installation directory at this time.

3 At the confirmation prompt, choose OK.

4 Depending on your system configuration, the following prompts appear. Complete the prompts or accept the defaults.

```
Enter the Progress installation directory
CONFIRM: Progress version and installation directory
Enter your terminal type
```

5 When the installation question wizard appears, enter an explicit directory name for your MFG/PRO installation directory. If it does not already exist, it will be created. Choose Finish.



6 If you are reinstalling MFG/PRO, you may receive a message indicating you that you are overwriting a current installation. At the prompt, indicate whether to continue the installation.

7 When the following prompt appears, answer Yes to continue or No if you are not ready.

```
Expand the media to InstallDir now (y/n)?
```

Note The installation script first checks for available disk space. If there is not enough space, the installation stops and you must obtain adequate disk space and restart the installation.

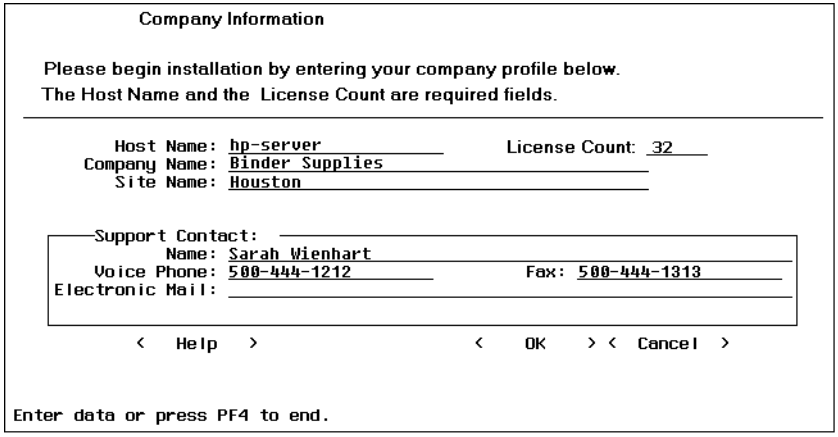
8 Wait for the installation script to unload MFG/PRO. This process can take several hours. You can leave it unattended while it is copying.

Note You may be prompted for the ORACLE_HOME directory if this variable is not set. You may also be prompted to confirm the Oracle version and installation directory.

Enter Schema Holder Information

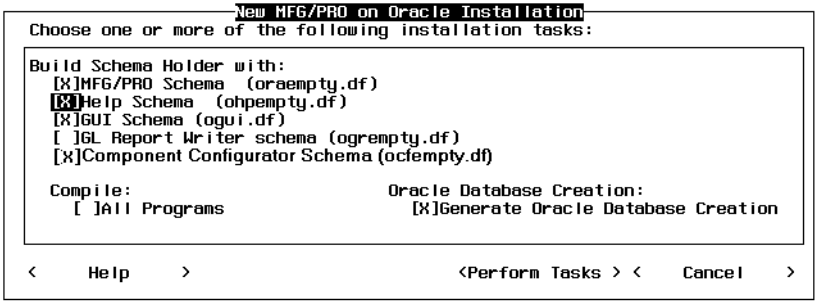
1 After the media is unloaded, the creation process begins for the schema holder and SQL script. This process uses programs from the MFG/UTIL installation tool.

First complete the Company Information screen. The only required fields are Host Name and License Count. In Host Name, enter your UNIX machine name. In License Count, enter the number of MFG/PRO user licenses you purchased.



Note For more information on MFG/UTIL keyboard commands, see “MFG/UTIL” on page 9.

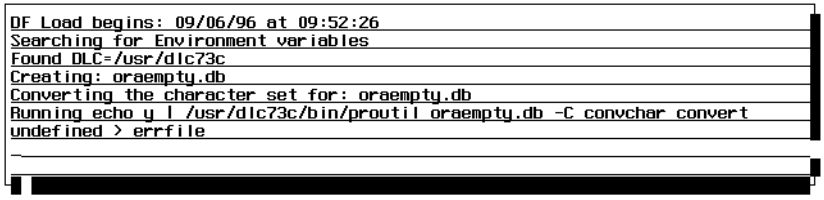
2 When you have completed the company information, choose OK. MFG/UTIL then displays the New MFG/PRO on Oracle Installation window.



3 In most cases, accept the defaults in this window and choose Perform Tasks to continue. Note the following:

- Build Schema Holder with: You should have at least the MFG/PRO, Help, GUI (graphical user interface), and Configurator schemas chosen; GL Report Writer is not needed because the MFG/PRO schema contains it by default.
- Compile: In Version 9.0, all programs are pre-compiled, so you do not need to compile—the selection box should be blank.
- Oracle Database Creation: Leave this option selected to generate the SQL scripts that create the Oracle database. However, you can deselect this option if you only want to build a schema holder, such as when you are updating an existing MFG/PRO system.

4 MFG/UTIL displays the Installation Log window as it creates the schema holder and generates dump and load procedures. (The default schema holder name is `oraempty`, the foreign database ID is `qaddb`, and the database type is Oracle.)



Note MFG/UTIL may appear paused as it completes these time-consuming tasks.

5 When MFG/UTIL finishes these tasks, you may be prompted whether to clean up temporary directories.

6 You are prompted to Close. Use the Tab key to select the Close button.

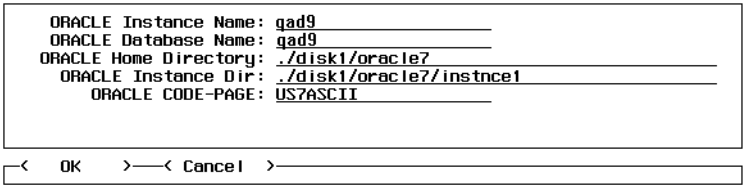
Note Do not press F4 at this screen.

Enter SQL Script Information

To complete the SQL script information, you must provide your Oracle directory structure. Refer to Appendix A, “Tablespaces in the Oracle Database,” and to Figure 1.1, “Oracle Disk Structure Example,” on page 11 in Chapter 1.

Note If you are updating an existing system, the remaining prompts are not necessary because you will use your existing instance and database. Accept the default for all prompts.

1 The installation continues with the task of creating the SQL scripts. First, you must complete a series of windows. Complete the first window using the following example illustration and table.



Field	Enter
Oracle Instance Name	Enter a new instance and database name; typically, you use the same name for both. These names are used in the database creation scripts and MFG/PRO start-up scripts. Do *not* use any of the MFG/PRO schema names, `qad` or `qaddb`. Do *not* use a number as the first character.
Oracle Database Name	
Oracle Home Directory	The home directory you specified earlier defaults; change it if necessary.
Oracle Instance Directory	Enter the primary instance directory containing key files such as init.ora and key subdirectories, such as `./back`, `./core`, and `./user`. This directory name becomes the default for the next set of Oracle file location prompts.
Oracle NLS Language Oracle NLS Territory Oracle CODE-PAGE	These are the values used to build the Oracle database for a given language. The defaults are based on the language code you used to run the mfgtailor script. Change the defaults if needed.

2 In the subsequent windows, you must give the directory paths and sizes for various tablespaces in your ORACLE directory structure. Use the following table and “Tablespaces in the Oracle Database” on page 113 as reference. If needed, you can later change the sizes using MFG/UTIL.

Tip
The source code cross-reference is useful for programming. It provides a map of MFG/PRO program relationships.

Warning You may need to increase the default size of the MFGHELP tablespace and index. If you plan to load several languages, multiply the default size per language. The default sizes are 40MB for MFGHELP and 45MB for MFGHELP_IDX. Also, if you plan to load source code cross-reference information, add 100MB for MFGHELP and 135MB for MFGHELP_IDX.

Tablespace	Description
RBS	All rollback segments; expect it to grow and contract.
TEMP	Temporary tablespace; use it at your discretion.
TOOLS	DBA default tablespace; use it at your discretion
USERS	User default tablespace; use it at your discretion.
MFGHELP and MFGHELP_IDX	All help tables and indexes; expect this tablespace to be static.
GUI and GUI_IDX	All MFG/PRO GUI tables and indexes, including browse and view records.
GLRPWRTR and GLRPWRTR_IDX	Tables and indexes used with the General Ledger Report Writer feature.
INTRASTAT and INTRASTAT_IDX	Tables and indexes used with the Intrastat feature.
TRANSACTION and TRANSACTION_IDX	All transaction tables and indexes, such as sales orders; expect large growth in number and size.
HISTORY and HISTORY_IDX	All history tables and indexes; expect large growth in number and size if you have auditing enabled.
STATIC and STATIC_IDX	Tables and indexes with little growth in number or size.
CONTROL and CONTROL_IDX	Control tables and indexes; generally one record per table with little growth in number or size.
REFERENCE and REFERENCE_IDX	Reference tables and indexes such as generalized codes, menus, and messages; expect little growth.
WORKFILE and WORKFILE_IDX	Workfile tables and indexes; some grow and then contract, while others grow continuously.
GLTDET and GLDET_IDX	The General Ledger transactions table (glt_det) and index; data is added to the end of the file.

Tablespace	Description
GLTRHIST and GLHIST_IDX	The General Ledger transaction history table (gltr_hist) and index; data is added to the end of the file if you have auditing enabled.
TRHIST and TRHIST_IDX	The Inventory transaction history table (tr_hist) and index; data is added to the end of the file if you have auditing enabled.
TRGLDET and TRGLDET_IDX	The Inventory Transaction General Ledger Cross-Reference table (trgl_det) and index; data is added to the end of the file.
MRPDET and MRPDET_IDX	The Material Requirements Planning table (mrp_det) and index.
QADWKFL and QADWKFL_IDX	The QAD Workfile table (qad_wkfl) and index; expect large growth in number and size.
COMPCONF	All tables and indexes for the Component Configurator module.

3 After you complete the last window, MFG/UTIL creates the schema holder. If you chose the compile option in step 3 on page 58, the MFG/PRO code is also compiled.

Note The compile process for the MFG/PRO code is time-consuming.

4 Answer the following prompt. Typically, you should answer Yes to remove the temporary files used during installation. However, you can answer No if you are researching an installation problem and want to examine these files.

```
Cleanup the /tmp/mfgpro stage directory? (y/n)
```

5 At the following prompt, choose OK.

```
Installation complete; see product log for details.
```

6 Before you proceed, review the log file `mfgutil.log` for any errors. It is located in the MFG/PRO installation directory.

7 Verify that the following files have been created in the current directory:

- `oraempty.db` (empty schema holder database)
- `oraempty.bi` (empty schema holder before image file)

- `crdb1`*`ORACLE_SID`*`.sql` (script to create Oracle database files for a new instance)
- `crdb2`*`ORACLE_SID`*`.sql` (script to create MFG/PRO tablespaces and database objects)
- `config.`*`ORACLE_SID`* (Oracle start-up parameter file)
- `init`*`ORACLE_SID`*`.ora` (Oracle start-up parameter file)

Note You can also refer to `mfgutil.log` for installation transactions.

8 Unmount and remove the CD-ROM. Return it to the case for safekeeping.

2: Running SQL Scripts to Create the Oracle Database

In this section you create a new instance and new tablespaces and database objects required to run MFG/PRO. You do so by running the following SQL scripts, including those created in the previous section:

Script Name	Description
`crdb1`*`ORACLE_SID`*`.sql`	Creates database files for a *new* instance
`crdb2`*`ORACLE_SID`*`.sql`	Creates tablespaces and database objects
`oraempty.sql`	Main production MFG/PRO schema
`ogui.sql`	Windows interface schema
`ohpempty.sql`	Online help schema
`ocfempty.sql`	OBCM Configurator schema

Note If you want to create these tablespaces in an existing instance, do not run `crdb1`*`ORACLE_SID`*`.sql`. You also need to modify `crdb2`*`ORACLE_SID`*`.sql`, as explained below.

The tablespace sizing that defaults in the SQL scripts is appropriate for loading the MFG/PRO demonstration or training data. Note the following:

- If you plan to load production data into Oracle from a source other than MFG/PRO, you must modify the SQL scripts to ensure that the Oracle database is properly set up. To help with this task, refer to Appendix A, “Tablespaces in the Oracle Database,” on page 113.

- If you plan to load production data from an existing MFG/PRO PROGRESS database, you must first modify the tablespace sizes in the SQL script `crdb2`*`ORACLE_SID`*`.sql` to match the number of records in your MFG/PRO database. Use the standard ORACLE table sizing algorithm.

Note Loading from versions earlier than 8.6 is not supported.

- If you have an existing MFG/PRO system and you need to migrate a custom, side database, refer to "Migrating a Custom PROGRESS Database to Oracle" on page 116.

1. Create the directories required for the Oracle database system if you have not already done so.

See "Example Oracle Directory Structure" on page 11.

2. Log on as a member of the Oracle database administration group, which usually does not include root. You must do so in order to run the SQL commands that create the Oracle instance and tablespaces.

Note Only this task requires an Oracle database administrator login.

3. Verify that the ORACLE_HOME, DLC, and ORACLE_SID environment variables point to the correct locations. Also, make sure ORACLE_HOME and ORACLE_HOME/bin are in the UNIX path.

4. Copy the following files from the *`InstallDir`* to your primary MFG/PRO on Oracle instance directory.

   - `config.`*`ORACLE_SID`*
   - `init`*`ORACLE_SID`*`.ora`
   - `oraempty.sql`
   - `ohpempty.sql`
   - `lvorasp.plb`
   - `crdb1`*`ORACLE_SID`*`.sql`
   - `crdb2`*`ORACLE_SID`*`.sql`
   - `ogui.sql`
   - `ocfempty.sql`

5. By default, the SQL files create tablespaces sized for loading the MFG/PRO demonstration or training data. If you plan to load data from a different source, you should examine and edit the SQL scripts so that the tablespaces are sized correctly.

Note Use MFG/UTIL to size Oracle tablespaces.

6 If you want to create the database files for an existing instance instead of a new instance, you must edit `crdb2`*`ORACLE_SID`*`.sql` and consolidate the QAD-supplied files `config.`*`ORACLE_SID`* and `init`*`ORACLE_SID`*`.ora` with your existing files.

7 Update the `compatible` variable in the `init<`*`sid`*`>.ora` file.

   a Open the file with a text editor.

   b Update the `compatible` variable to a value that is compatible with the server version you currently have installed.

Important If this setting is not updated correctly you will receive an error and be unable to continue.

8 Change to the MFG/PRO-on-Oracle instance directory. Check that the core, user, and back directories exist; if they do not, create them with read, write, and execute permissions.

9 To create the database files for a new instance, run the first SQL script with the command below. (If you want to use an existing instance, skip this step.)

```
svrmgrl < crdb1ORACLE_SID.sql
```

Note The script is finished when the operating system prompt reappears.

10 Run the next SQL script to create tablespaces, rollback segments, and the Oracle User ID.

```
svrmgrl < crdb2ORACLE_SID.sql
```

Note You can expect some error messages to appear on the screen. They occur because the SQL script performs a drop command for each object created, even if the object does not yet exist.

11 Examine the list files `crdb1`*`ORACLE_SID`*`.lst` and `crdb2`*`ORACLE_SID`*`.lst` to check for unexpected errors.

12 Load the following MFG/PRO schemas into the newly created Oracle tablespaces by using the following commands. Each script takes a few minutes to run; the last script, `oraempty.sql`, takes the longest.

Command	Description
`sqlplus qad/qad < ogui.sql`	GUI objects
`sqlplus qad/qad < ohpempty.sql`	Help database objects
`sqlplus qad/qad < ocfempty.sql`	Configurator schema objects
`sqlplus qad/qad < oraempty.sql`	Main MFG/PRO schema objects

13 Examine the log files for the SQL scripts listed above to check for unexpected errors. The log file names are the same as the SQL script name, but with a `.lst` or `.log` extension.

If there is an error, you can safely rerun the SQL scripts `ogui.sql`, `ohpempty.sql`, `oraempty.sql`, and `ocfempty.sql`.

14 Log off and log on again as user `mfg` under the group `qad`.

3: Copying the Schema Holder Under a New Name

The original schema holder was created with the default name `oraempty`. You must now create a copy of this database with a new name. You must also update the foreign database reference from the default, `qaddb`, to the actual Oracle database name.

Note Complete this section even if you are updating an existing system.

Prerequisites:

- Set the PROGRESS environment variables, such as DLC and the UNIX PATH, to the correct setting.
- Log on as user `mfg` under the group `qad`.

1 Start MFG/UTIL.

```
./mfgutil
```

2 From within MFG/UTIL, press F3 and use the arrow keys to select the DataServer menu, then the Oracle option, and then Create New Schema Holder from Oraempty.

3 In the Original Database field, enter the existing schema holder name, `oraempty` (it should default). Also type the path to `oraempty` if it is not in your current directory. If needed, select `<Db Files>` to search for the correct path.

4 In the New Database Name field, type a new schema holder name.

5 Accept the window and continue to the next.

6 In the Oracle Database Name field, type the actual Oracle database name and choose OK.

Important Do *not* use any of the MFG/PRO schema names, `qad`, or `qaddb` as the Oracle database name. Do *not* use a number as the first character of the Oracle database name.

7 At the following prompt, press Enter to verify your entry.

`Verify Oracle DB name: YourDBName`

MFG/UTIL changes the foreign database reference in the schema holder from `qaddb` (the default) to the actual Oracle database name.

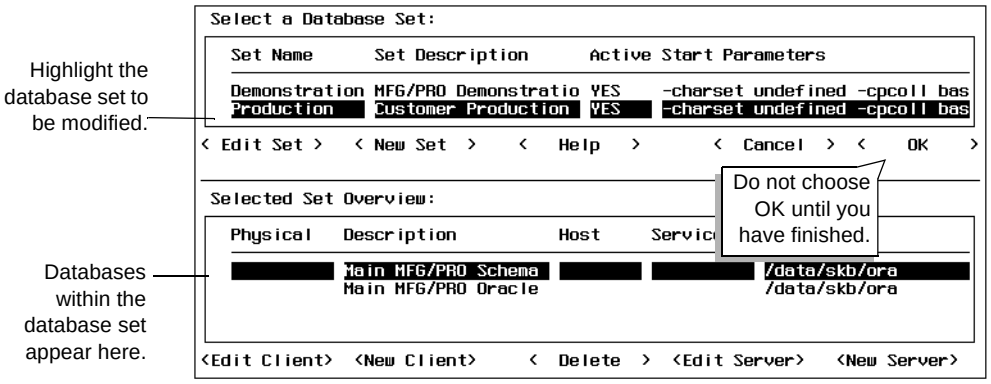
8 While still in MFG/UTIL, continue with the next section, “4: Configuring the Database Set” on page 66.

4: Configuring the Database Set

Note Complete this section even if you are updating an existing system.

1 From within MFG/UTIL, select the Configure menu and choose Any Database Set. The Database Set Configuration window appears.

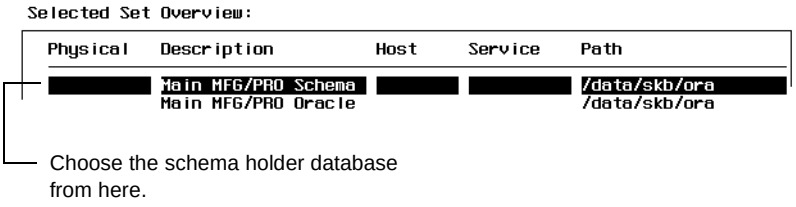
Review the following notes to become familiar with this window.



2 If the Active flag in the Select a Database Set portion of the Database Set Configuration window is set to Yes, MFG/UTIL will build a server start-up icon for that database set. To change the setting of the Active flag, select the database set, choose Edit Set, and modify the Active field when the Database Sets window appears.

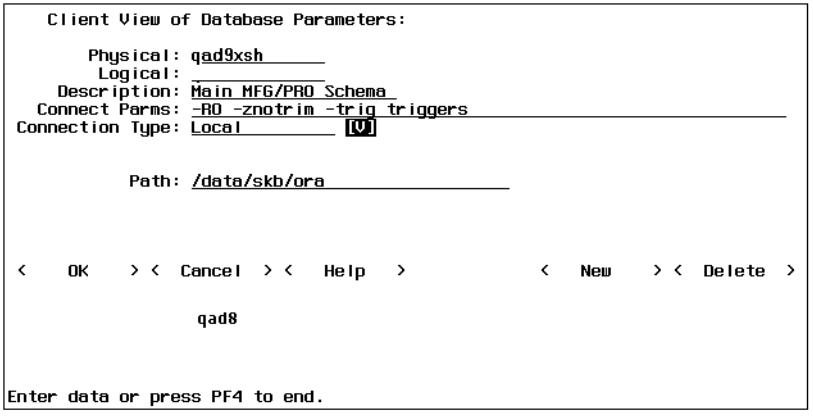
3 Highlight the Production database set. (The global parameters for this set appear to the right. Normally, you do not need to change them, but you can by choosing Edit Set.)

4 **Configure the schema holder** by selecting the schema holder database from the Selected Set Overview list and choosing the Edit Client button.



a When the Client View of Database Parameters window appears, complete the fields using the following table and example illustration.

Field	Enter
Physical	Enter the physical name of your new, version 9.0 schema holder database.
Logical	Leave this field blank.
Description	Enter a different description if you want.
Connect Parms	Enter any PROGRESS connection parameters you want that apply specifically when clients connect to this database.
Connection Type	Choose the Local type if you are configuring for a host mode or local DataServer connection. Choose the Client/Server type if you are configuring for a remote DataServer connection using PROGRESS Networking.
Path	Specify the drive and directory containing the schema holder database. In a host mode configuration, it is typically in your MFG/PRO installation directory. In a client/server configuration, it can be on a local or networked drive.

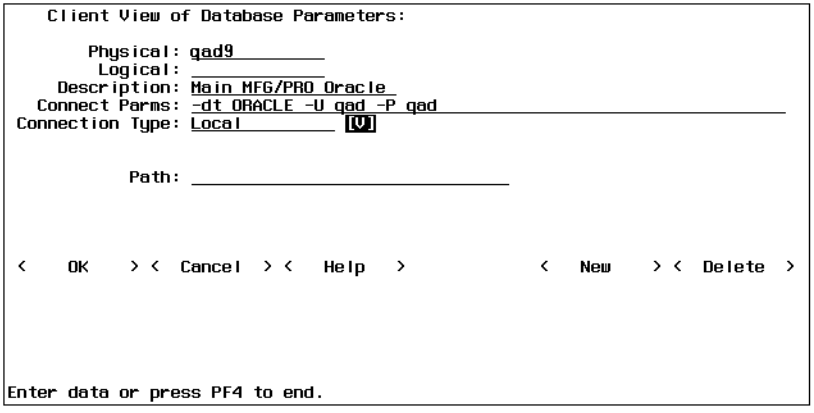


b Choose OK in the Client View of Database Parameters window.

5 **Configure the Oracle database** by selecting the Oracle database from the Selected Set Overview and choosing Edit Client.

a When the Server View of Database Parameters window appears, complete the fields using the following table and example illustration.

Field	Enter
Physical	Enter the name of your Oracle instance.
Logical	Leave this field blank.
Description	Enter a different description if you want.
Connect Parms	Enter any PROGRESS connection parameters you want that apply specifically when clients connect to this database. The default parameters are for a remote DataServer configuration. To connect to the database through SQL*Net (a local DataServer configuration), edit the -U parameter as shown: -U qad@*ORACLE_SID*
Connection Type	Choose the Local type for a host mode or local DataServer connection (using SQL*Net). Choose the Client/Server type for a remote DataServer connection using PROGRESS Networking.
Path	Delete the contents of this field and leave it blank.



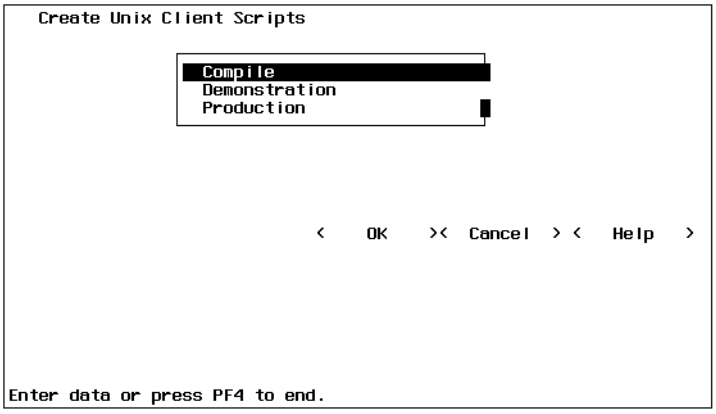
b Choose OK in the Client View of Database Parameters window.

6 If you want to configure a Demonstration or Training database set, highlight the set name in the Database Set Configuration window and complete the parameters as described in the preceding steps. You will also have to change the Active setting from No to Yes.

7 When you have entered information for all the database sets you are installing, choose OK in the Database Set Configuration window.

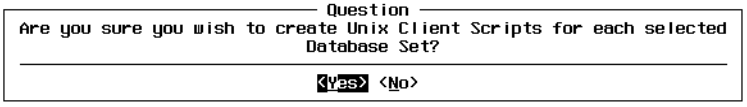
User Script Generation

1 On the MFG/UTIL main menu, select Scripts and choose Generate User Startup. The Create UNIX Client Scripts window appears.



2 Select the desired database set or sets from the list by highlighting each one and pressing Spacebar. Choose OK when finished.

3 Choose Yes at the following prompt:



MFG/UTIL creates the start-up script `client.DBsetName`.

4 When MFG/UTIL finishes, choose Close from the Installation Log window.

5 While still in MFG/UTIL, you can continue with the next section.

5: Loading MFG/PRO Data

This section explains how to load MFG/PRO data to create either a production, demonstration, or training database. You must load the default data before you can run an MFG/PRO session. The default data consists of system data, Windows interface (gui) data, and component configurator data, which is needed if you plan to use the Component Configurator module.

Note Loading online help and source code cross-reference data is documented separately.

This section assumes:

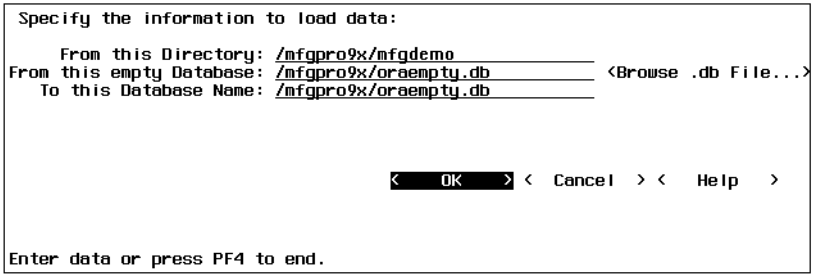
- You have set the PROGRESS environment variables, such as DLC, and the UNIX PATH.
- You have set the Oracle environment variables, such as ORACLE_HOME and ORACLE_SID.
- The Oracle instance is running and the database is mounted.

1 Choose which type of system data you want to load from the following list. Each type of data is kept in its own MFG/PRO sub-directory.

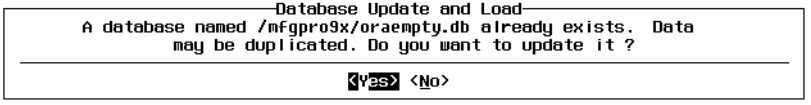
To Load This Type of Data...	**...You Will Use This Sub-directory**
Minimal menu names, messages, and codes only	`/InstallDir/mfg`
Data from mfg, plus demonstration data	`/InstallDir/mfgdemo`
Data from mfg, plus training data	`/InstallDir/mfgtrain`

2 From within MFG/UTIL, select the Database menu and choose Load Data from Directory. Refer to the following table and example illustration as you complete the fields.

From this Directory	Enter the directory path for the type of data you want to load. For example, to load demonstration data, type: */InstallDir*/mfgdemo MFG/UTIL loads all .d files in the specified directory with a corresponding table name in the destination database.
From this Empty Database	In both fields, enter the path and name of the schema holder oraempty.db.
To this Database Name	



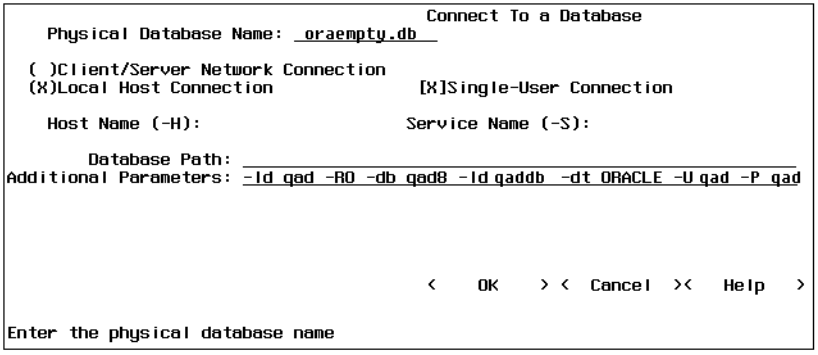
3 Choose OK and answer Yes to the following prompt.



4 The Connect to a Database window appears automatically. Refer to the following table and example illustration as you complete the fields. Choose OK when finished.

Field	Enter
Physical Database Name (-db)	Enter the path and name of the schema holder oraempty.db.
Client/Server Network Connection, Host Name, Service Name	To connect in a client/server environment using PROGRESS networking, choose this option and enter the host and service name.

Field	Enter
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	This setting has no effect in the Oracle environment.
Database Path	Leave this field blank.
Additional (Startup) Parameters	Type the following parameters in this order: -ld qad -RO -db *ORACLEDbName* -ld qaddb -dt ORACLE -U qad -P qad



5 When the load is complete, choose Close from the Installation Log window.

6 Exit from MFG/UTIL and then restart it.

7 Load gui data by repeating the previous steps. However, in the field From this Directory, enter:

`/InstallDir/gui`

8 Load Configurator data using the same steps; however, in the field From this Directory, enter:

```
/InstallDir/cfg
```

Note Loading the Configurator data is required to use the Component Configurator module.

9 Exit MFG/UTIL once all data is loaded.

10 To verify the load, review the MFG/UTIL log file in the directory *InstallDir*.

6: Loading Service Pack Media

See "Loading Service Pack Media" on page 7.

If your release of MFG/PRO has a Service Pack, use the installation instructions provided with the Service Pack Server media to load and update MFG/PRO.

7: Starting MFG/PRO and Registering the License

Test your start-up scripts with the following steps. These are the same steps you will use on a regular basis for starting UNIX clients.

If necessary, you can use MFG/UTIL to change the start-up scripts; see the section "Using MFG/UTIL for Administration" on page 115.

To start MFG/PRO, you must meet the following prerequisites.

- Have the Oracle instance started and the database mounted.
- Have the environment variables ORACLE_SID, ORACLE_HOME, and DLC set correctly.
- If you use a remote client/server configuration, have the remote DataServer and DataServer broker started (refer to the PROGRESS documentation for instructions).

1 Change to the MFG/PRO installation directory.

```
cd /InstallDir
```

2 Run the startup script by typing the following command.

```
./client.DBSetName
```

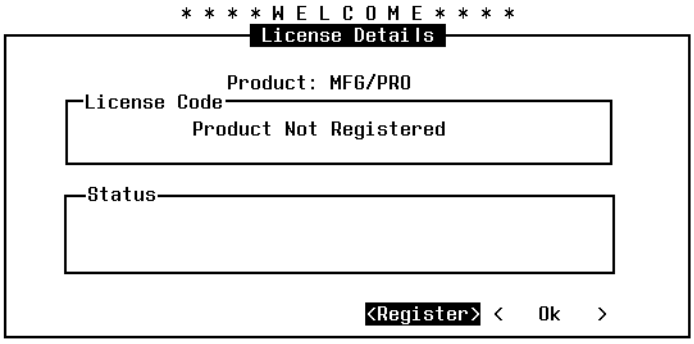
License Registration

Register your MFG/PRO license the first time you log on. These steps require that you have the license code sheet included with your release media.

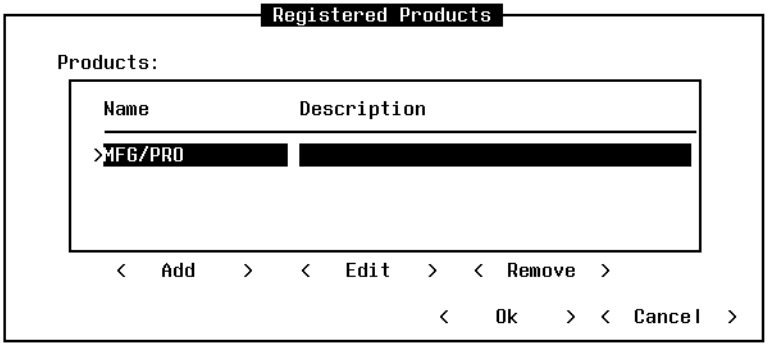
For more information on licensing, see "User License Overview" on page 12.

1 At the MFG/PRO Sign On screen, press Return.

2 At the License Details screen, choose Register.



3 At the Registered Products screen, choose Add.



4 In the Add Product screen, type the code from the license code sheet included with your release media in the License Code fields. Choose Ok.

5 Choose Ok at the Registered Products screen.Your license code and details display in the License Detail screen.

6 Choose Ok at the License Detail screen. You are returned to the operating system. To begin a session, restart MFG/PRO and log in.

Note If you need to modify your license code, use License Registration (36.16.10).

Exiting MFG/PRO

Exit MFG/PRO by pressing End (F4) at the Main Menu.

8: Loading Online Help Data

You can load field help data at any time after you create the Oracle database. You need to load field help data in each Oracle instance. However, you can only load or update field help *after* starting an MFG/PRO session. You might want to first perform all the installation and maintenance tasks on your Oracle database before loading help.

1 Ensure that the Oracle database server, the DataServer, the Schema Holder, and the networking (if any) are running.

2 Start an MFG/PRO session.

3 From the MFG/PRO Main Menu, open Field Help Load (36.4.19).

4 In the Language field, enter the language code of your first language. The language code should be listed on the product media.

5 Skip to Field Help Load File, leaving all other fields blank, and enter the two-letter language code directory followed by the help file `fieldhlp.fhd`. For example, for the `us` language, enter: `us/fieldhlp.fhd`.

Note If you enter an uninstalled language code, the following message displays: `Field Help file not found. Continue with English?` Respond Yes to load the default English field help file. Respond No to return to the Language field and enter a language code. If you input an invalid language code a second time, the default field help data file is loaded.

6 Accept the default values in all other fields.

7 Press F1 to begin the load process.

As the load proceeds, the number of records that have been read and loaded displays on the screen.

8 Load help for any other languages, using the appropriate language code in the Language field and Field Help Load File field.

9: Loading the Source Code Cross-Reference (Optional)

Note If you are updating an existing system, skip this section.

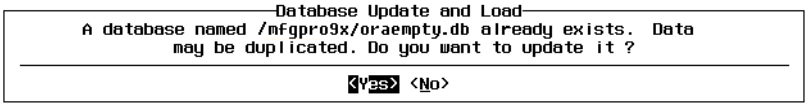
The source code cross-reference information provides a map of how the MFG/PRO programs and other components relate to each other. Loading this data is optional.

Important Before you load it, make sure you increased the default MFGHELP tablespace and index size in the MFG/UTIL prompts to the recommended size. Refer to the warning on page 60.

1 From within MFG/UTIL, select the Database menu and choose Load Data from Directory. Refer to the following table to complete the fields.

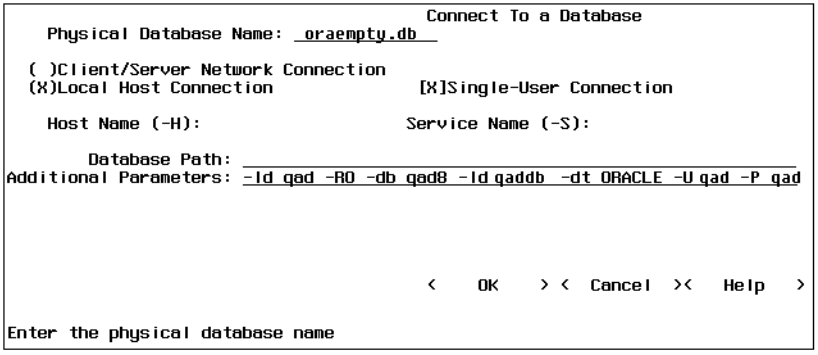
Field	Enter
From this Directory	Enter the path to the Version 9.0 installation directory, followed by the mfghelp directory: *InstallDir*`/mfghelp`
From this Empty Database	In both fields, enter the path and name of the schema holder oraempty.db.
To this Database Name	

2 Choose OK and answer Yes to the following prompt.

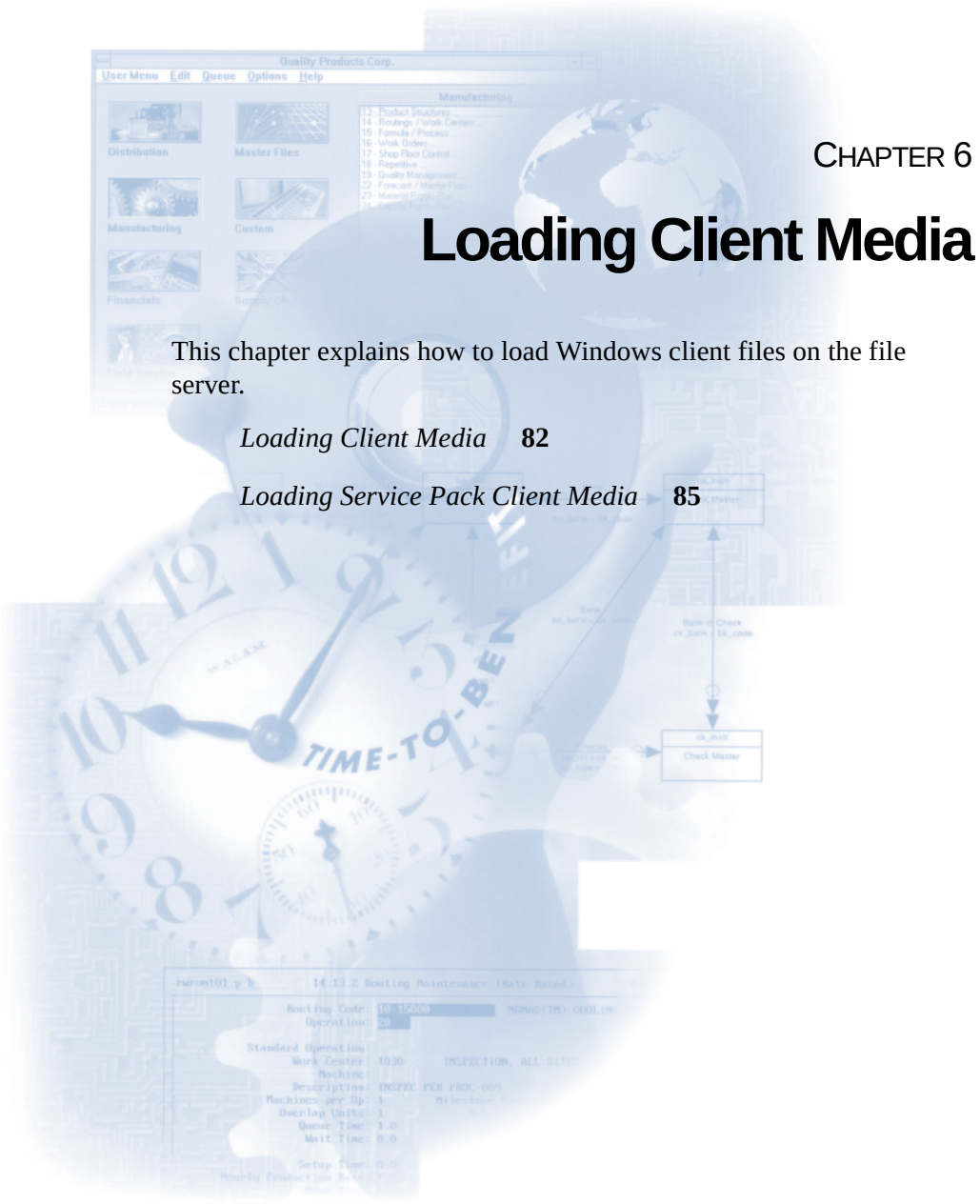


3 The Connect to a Database window appears automatically. Refer to the following table and example illustration as you complete the fields.

Field	Enter
Physical Database Name (-db)	Enter oraempty.db.
Client/Server Network Connection, Host Name, Service Name	To connect in a client/server environment using PROGRESS networking, choose this option and enter the host and service name.
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	This setting has no effect in the Oracle environment.
Database Path	Enter the directory path to oraempty.db.
Additional (Startup) Parameters	Type the following parameters in this order: -ld qad -RO -db *ORACLEDbName* -ld qaddb -dt ORACLE -U qad -P qad



4 When the load is complete, choose Close from the Installation Log window.



CHAPTER 6

Loading Client Media

This chapter explains how to load Windows client files on the file server.

Loading Client Media **82**

Loading Service Pack Client Media **85**

Loading Client Media

Preliminary

Before you install the Windows client files from your CD-ROM, you should:

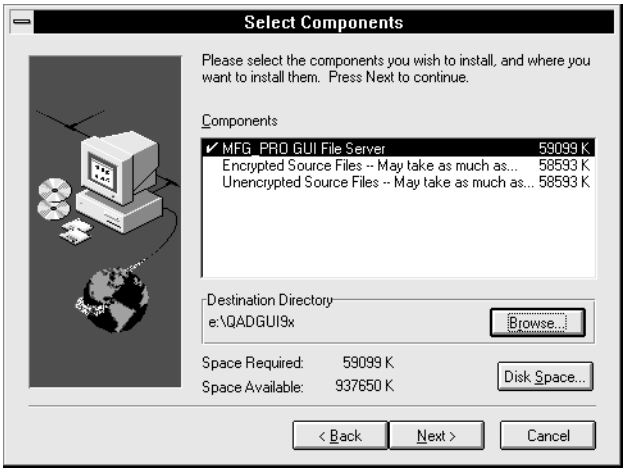
- Know the directory name where you will store the MFG/PRO for Windows files.
- Log on to your network with write permission for this directory.

Running the Client Installation

1. Insert the MFG/PRO for Windows CD-ROM in the CD-ROM drive.
2. Run the `install.exe` program using File Manager, Explorer, or the Start button.

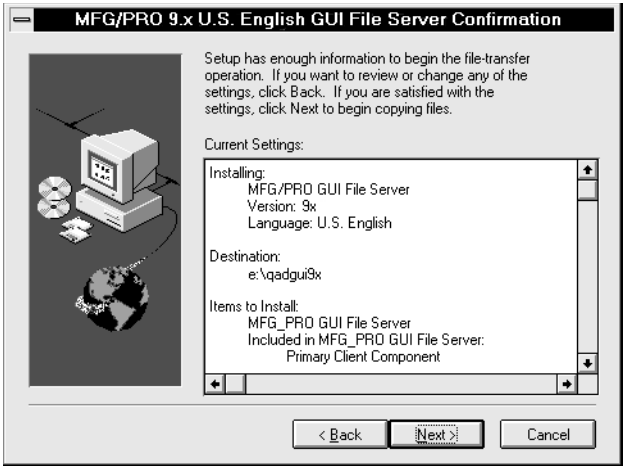
   `CD-ROMDriveName``:\install.exe`
3. Choose Next when the welcome message window appears.

4 In the following window, choose the components to install by selecting the item and pressing Spacebar. Also specify the destination directory. Choose Next when finished.

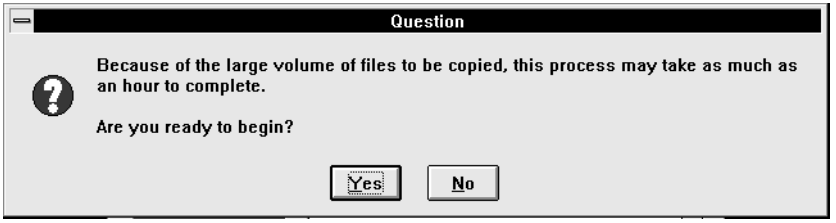


Destination Directory	You should specify a directory that identifies the MFG/PRO version; for example, `C:\mfggui90`. Choose Browse to select an alternate directory.
Disk Space	This button shows available disk space on any connected drive.

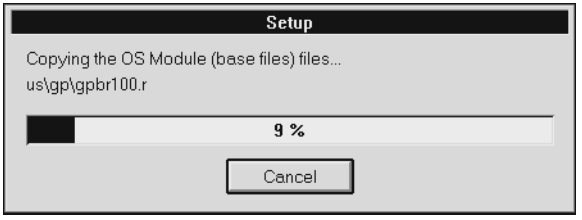
5 At the confirmation window, verify that the installation information is correct. Choose Next to begin installing or choose Back to make changes.



6 Choose Yes at the following prompt when you are ready.



During the load, the following window appears.



7 After the files are copied, the following window appears; choose Finish.

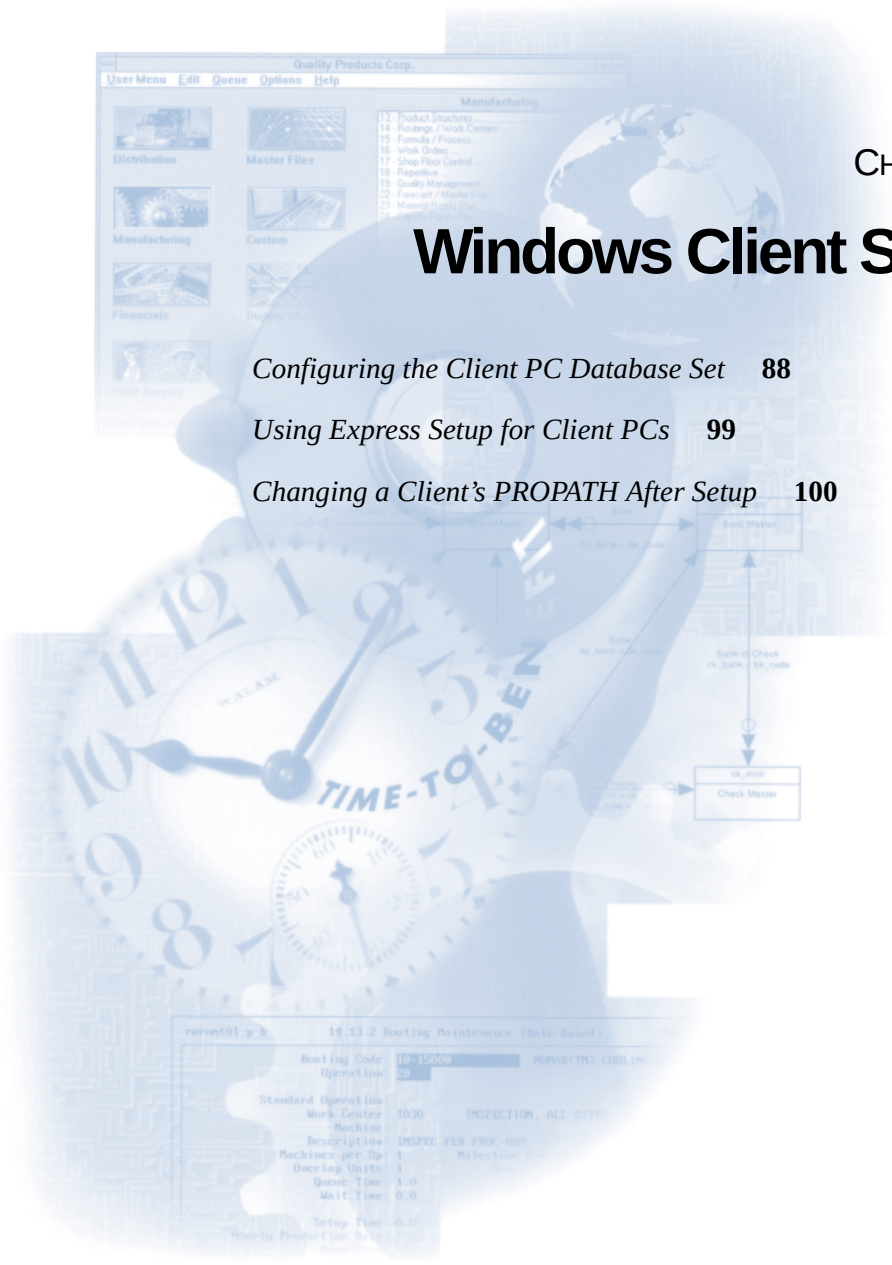
8 If you have multiple languages, repeat the preceding steps for each language. However, note the following differences.

- Specify a different installation directory; for example, `mfgfrgui` (where `fr` is the French language code).
- Once the second language is loaded, open File Manager or Windows Explorer and find the two-letter language code directory under the new installation directory. For example, `fr` is for French.
- Copy the language code sub-directory into the first installation directory. The language directories must be on the same directory level.

Loading Service Pack Client Media

If your MFG/PRO release has a Service Pack, after installing your MFG/PRO client files, use the installation instructions provided with the Service Pack Windows Client media to load client update files on your file server.

See “Loading Service Pack Media” on page 7.



CHAPTER 7

Windows Client Setup

Configuring the Client PC Database Set **88**

Using Express Setup for Client PCs **99**

Changing a Client's PROPATH After Setup **100**

Configuring the Client PC Database Set

After installing the client files on the file server, you can configure each client PC. The goal of configuration is to copy needed files onto the client PC and create start-up icons. Creating the start-up icons requires setting up database sets.

See "Database Sets" on page 11 for more information.

Once you define a database set for the first time, MFG/UTIL gives you the option of storing your settings on the file server so that subsequent client PC installations can reuse the same settings. This feature is called *express setup*.

If you encounter an error when running MFG/PRO or need to change the database sets after you first define them, choose Any Database Set from the MFG/UTIL Configure menu. You can change the start-up parameters and create a new PROGRESS parameter (.pf) file.

Note These steps assume your MFG/PRO Version 9.0 software and database server are set up and accessible by the client PCs.

Setup Prerequisites

- You have met the system requirements for Windows clients, outlined in Chapter 2, "System Requirements," on page 15.
- Your network is operating.
- You have loaded the Windows client programs. It is recommended that you load them onto a file server.
- You have set up the gui (Graphical User Interface) tables in the Oracle database and loaded the default system data related to the gui tables.
- You have installed PROGRESS client software on each client PC or accessible network drive. The required products are Query and DataServer for Oracle.
- You have installed Oracle software, including SQL*Net and the Oracle PRO*C library, on each PC or an accessible network drive.
- You have set up database aliases for the Oracle SID in the SQL*Net configuration tool.

- You have verified that the `oracle.ini` file, which is in the Oracle installation directory of each PC, contains the correct nls_lang value. This setting format is: *`language_territory.characterset`*, corresponding respectively to the server variables NLS_LANGUAGE, NLS_TERRITORY, and Code Page.
- You have mapped network drives for any components installed on a file server. Networked components may include MFG/PRO GUI, PROGRESS, or Oracle media.
- The first client PC has write access to the file server installation directory. Write access is needed to use the express setup feature.

Client Setup

1. Start on any PC connected to the network file server. Verify that your display resolution is no greater than 800 x 600 dpi. If you are using a higher resolution, follow the procedures for your video card to change the resolution to 800 x 600dpi.

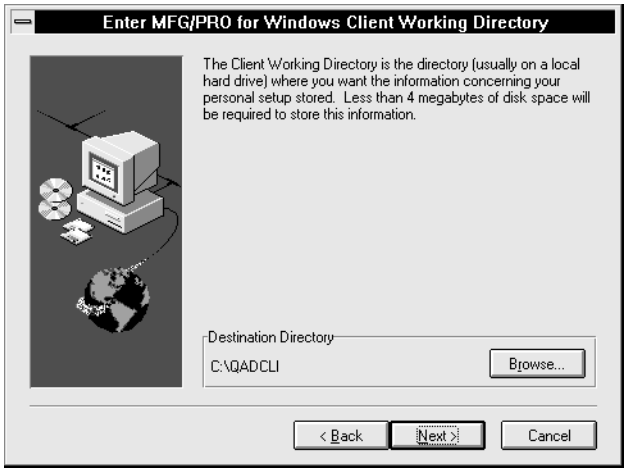
2. Start the `setup.exe` program using File Manager, Explorer, or the Start button.

   `InstallDrive``:\`*`WinInstallDir`*`\setup.exe`

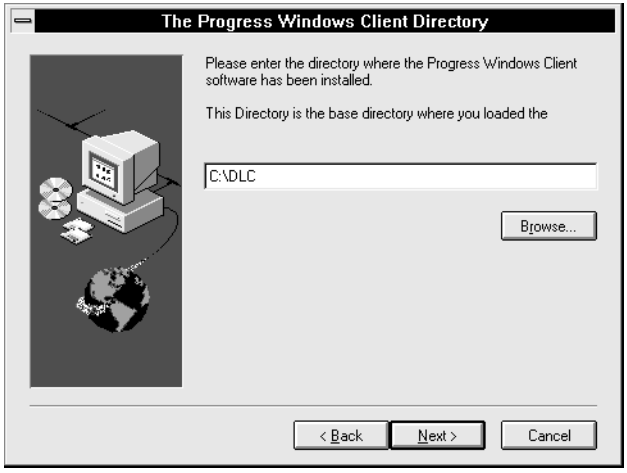
Note *`InstallDrive`* and *`WinInstallDir`* correspond to the path you used to install MFG/PRO for Windows in Chapter 6, “Loading Client Media,” on page 81.

3. Choose Next when the welcome message window appears.

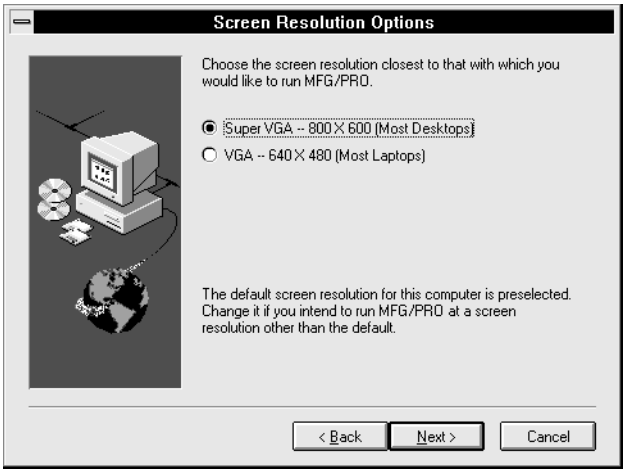
4 Accept the default working directory, QADCLI, or specify a different directory. Use the Browse button to select an alternate directory. Choose Next to continue.



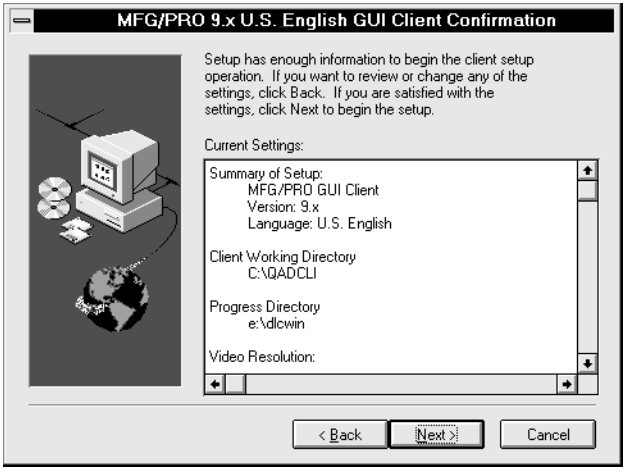
5 Specify the appropriate PROGRESS client directory for either Windows or character clients. (The example illustration is for Windows clients.) Use the Browse button to search for the directory. Choose Next to continue.



6 Select the display resolution of the PC and choose Next.

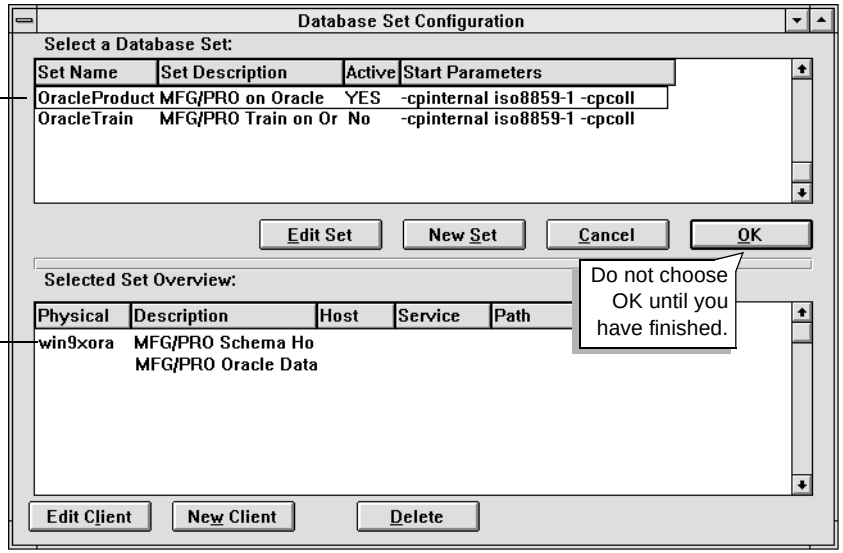


7 At the confirmation window, verify that the installation information is correct. Choose Next to begin installing or Back to make changes.



8 Choose OK when the following message appears.

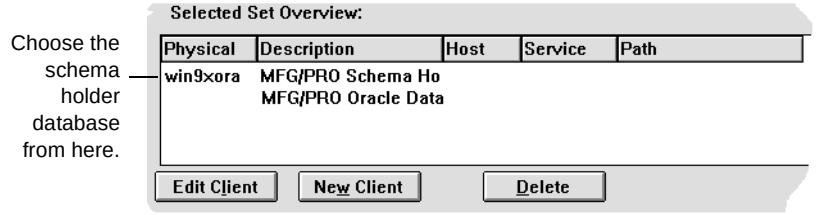
9 When the Database Set Configuration window appears, review the following notes to become familiar with this window.



10 If the Active flag in the Select a Database Set portion of the Database Set Configuration window is set to Yes, MFG/UTIL will build a start-up icon for that database set. To change the setting of the Active flag, double-click on the database set name. When the Database Sets window displays, click on the Active field to select Yes or No.

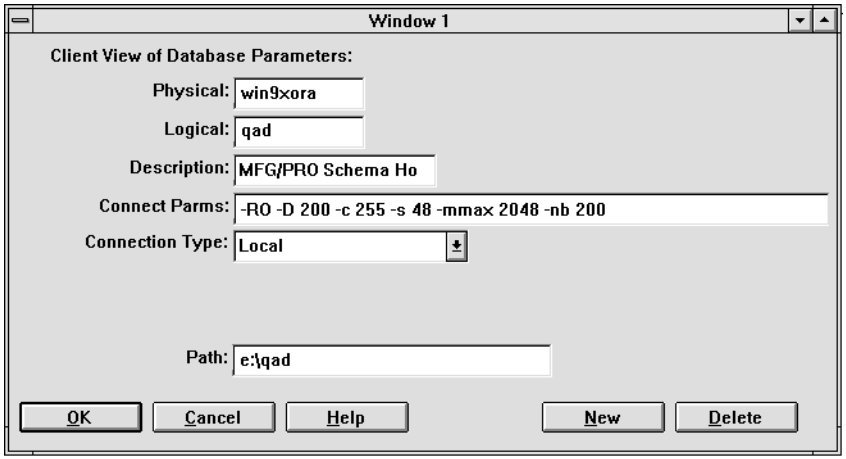
11 Highlight the Oracle Production database set. The global parameters for this set appear to the right. Normally, you do not need to change them; but you can by choosing Edit Set.

12 **Configure the schema holder** by selecting the schema holder database, win90ora, and choosing Edit Client.



a When the Client View of Database Parameters window appears, complete the fields using the table and the example picture that follow.

Field	Enter
Physical	Enter the physical name of your new, version 9.0 schema holder database; accept the default if there is one.
Logical	Do *not* change the logical name for any database.
Description	Enter a different description if you want.
Connect Parms	Enter any PROGRESS connection parameters you want that apply specifically when clients connect to this database.
Connection Type	Choose the Local connection. Do not choose Client/Server unless you have PROGRESS Networking; however, PROGRESS Networking is not recommended for use with Windows clients on Oracle.
Path	Specify the drive and directory containing the database. Typically, the schema holder database is in your installation directory on the file server, unless you copied the schema holder to each client PC. For the Oracle database connection, you should leave this field blank because the Windows clients do not connect to it directly.



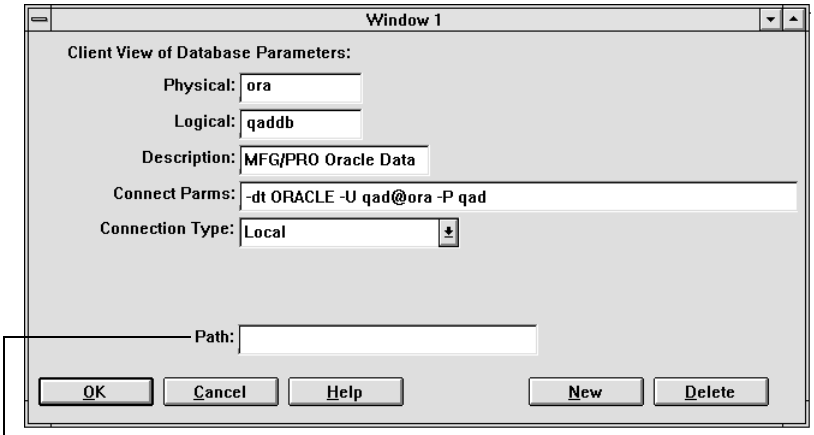
b Choose OK in the Client View of Database Parameters window.

13 **Configure the Oracle database** by selecting the second item from the Selected Set Overview and choosing Edit Client. The Physical name is blank because you must provide the name of your database.

14 When the Client View of Database Parameters window appears, complete the fields using the table and the example picture that follow.

Field	Enter
Physical	Enter the physical name of your database; accept the default if there is one. **Note:** If you are performing an update, you can enter the name of your former production database.
Logical	Do *not* change the logical name for any database.
Description	Enter a different description if you want.
Connect Parms	Enter any PROGRESS connection parameters you want that apply specifically when clients connect to this database.

Field	Enter
Connection Type	Choose the Local connection. Do not choose Client/Server unless you have PROGRESS Networking; however, PROGRESS Networking is not recommended for use with Windows clients on Oracle.
Path	Specify the drive and directory containing the database. Typically, the schema holder database is in your installation directory on the file server, unless you copied the schema holder to each client PC. For the Oracle database connection, you should leave this field blank because the Windows clients do not connect to it directly.

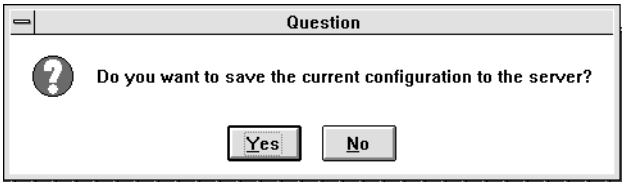


15 Choose OK in the Client View of Database Parameters window.

16 If you want to configure a Training database set, highlight the set name in the Database Set Configuration window and complete the parameters as described in the preceding steps.

17 When you have entered information for all the database sets you are installing, choose OK in the Database Set Configuration window.

The following prompt appears.

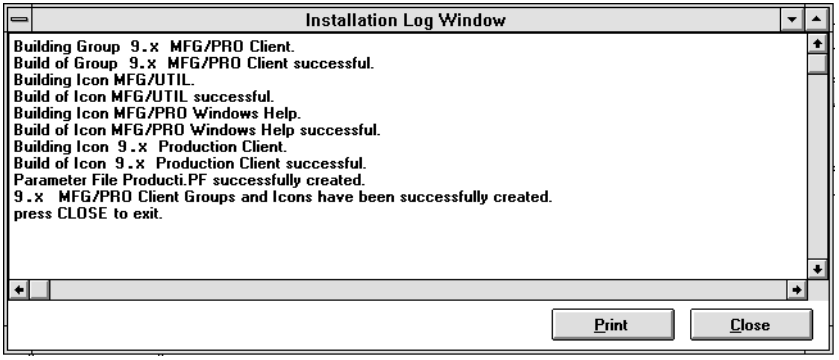


See "Using Express Setup for Client PCs" on page 99 for more information.

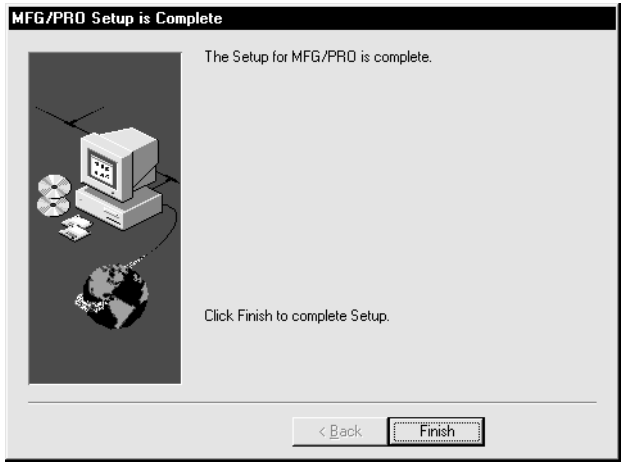
18 Choose Yes to save the current configuration to the file server. This enables you to use the express setup on subsequent clients.

If you choose No, the installation ends without the current configuration being saved to the file server; however, it will be saved to the client working directory of this PC.

The Installation Log Window appends messages indicating steps completed by the installation program.

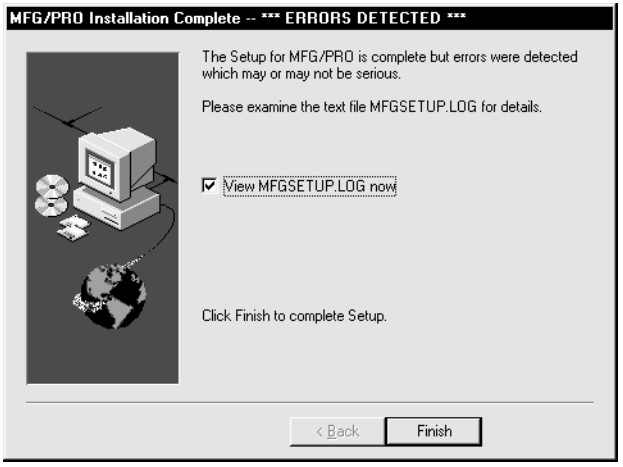


19 Choose Close. When the following window appears, choose Finish.



If Files Are Missing

1 If the installation program encounters errors, the following window appears. You may, for example, have a permissions problem.



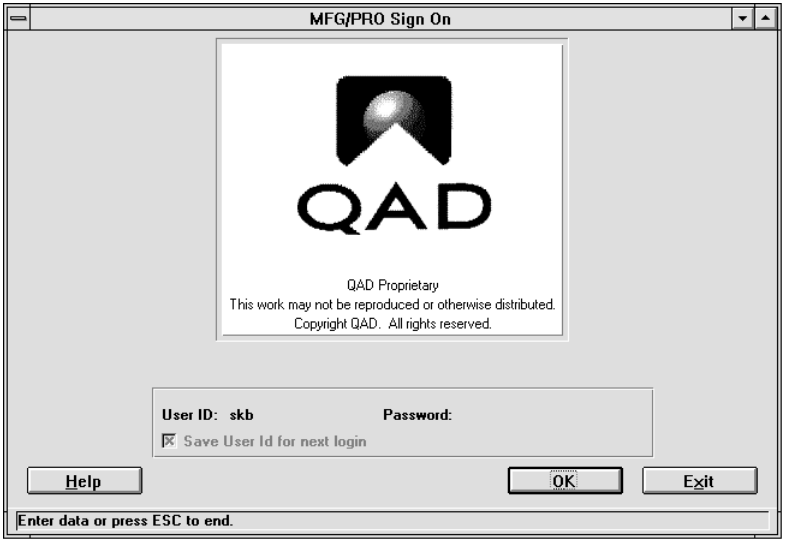
2 In this case, choose Finish. The `mfgsetup.log` file appears in the Windows Notepad. Examine the log file, correct the problem, and rerun the setup program.

Testing the Client PC Setup

Before you test the client PC installation, ensure that the Oracle instance is running and the database is mounted for the chosen database set.

1 Double-click the MFG Production, Demo, or Training icon in the MFG/PRO program group.

The MFG/PRO Sign On window appears.



2 Choose OK or Exit.

Using Express Setup for Client PCs

The subsequent client installations can use an express setup, based on the settings of the first client installation. This feature is enabled if you answered Yes to the prompt:

```
Do you want to save the current configuration to the
server?
```

If you answered Yes, the first client settings are stored on the file server so that the other clients can copy them. If necessary, however, you can change the settings on the file server to set up some client PCs differently.

1. Repeat steps 1 through 8, starting on page 89, for each subsequent Windows client you want to set up. MFG/UTIL completes the rest of the client setup automatically.

2. If you want to use different settings than the first Windows client, do the following:

   a. Start MFG/UTIL from any client PC by clicking the MFG/UTIL icon.

   b. Select the Configure menu and choose Any Database Set to open the Database Set Configuration window.

   c. In the Database Set Configuration window, make your changes.

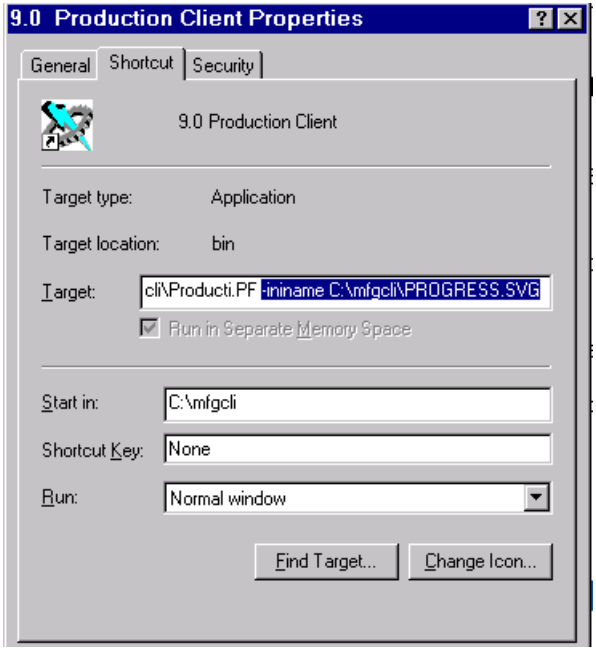
   d. Select the File menu and choose Save Default mfgutil.ini. MFG/UTIL stores your changes in the client administration directory on the file server, as well as on the current machine. Subsequent clients you set up will use these same settings.

Changing a Client's PROPATH After Setup

If you want to modify the PROPATH setting for MFG/PRO clients after installation, complete the following instructions.

1 Right-click the client icon and choose Properties.

2 From the Properties window, choose the Shortcut tab.



3 In the Target field, use the `-ininame` parameter to locate the client's initialization file; for example, PROGRESS.SVG.

4 Open the initialization file in a text editor.

5 Modify the `PROPATH` setting in the `[Startup]` section of this file.

CHAPTER 8

Multiple Language Setup

This chapter explains the tasks needed to set up an additional language for MFG/PRO. Repeat all the tasks in this chapter for each additional language. For an overview of the multiple language environment, see “Multiple Language Installation Overview” on page 8.

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Loading an Additional Language on the Database Server **102**

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Multiple Language Assumptions

It is assumed that:

- The installed languages all share the same codepage family.
- There is one production database shared by all language sessions.
- You have completed all MFG/PRO installation tasks for the first language.

Loading an Additional Language on the Database Server

Complete these steps to load the language-specific programs onto the server.

1. Verify that you have adequate disk space on the database server.
2. Create a temporary installation directory where you will load the additional language.
3. Back up the existing MFG/PRO installation directory.
4. Load the media into a temporary installation directory according to instructions given in Chapter 5, “Database Server Setup,” on page 47. However, note the following:
   - Specify the temporary installation directory, not your existing MFG/PRO installation directory.
   - Choose Cancel when the MFG/UTIL Company Information window appears. Also cancel all subsequent windows. This portion of the installation creates databases and start-up icons, which were already created when you installed the first language.
5. Change to the temporary installation directory.

6 Copy the two-letter language code directory (*LanguageDir*) to your existing MFG/PRO installation directory (*InstallDir*).

```
cp -R ./LanguageDir /InstallDir/LanguageDir
```

For example, if the language directory is fr and the MFG/PRO installation directory is mfg, type:

```
cp -R ./fr /mfg/fr
```

7 Determine which language installation has the most up-to-date data by comparing the date of the `mnt_det.d` file in the `mfg` sub-directory of the temporary installation with the date of the same file in your existing installation directory.

8 If the data from the temporary installation directory is the most up-to-date, you must copy the `mfg` and `gui` sub-directories to overwrite the data in the existing installation directory. However, if the data from the *existing* installation is more up-to-date, you can skip this step.

a Before you copy the `mfg` and `gui` sub-directories, create copies of the following data files in your existing installation directory by renaming the file extension to `.old`. If you need to recover these files later, you can rename them to the `.d` extension.

Files in *InstallDir*/mfg:	**Files in *InstallDir*/gui:**
• `lng_mstr.d`	• `pwc_mstr.d`
• `lngd_det.d`	• `pwcd_det.d`
• `mnt_det.d`	• `mnts_det.d`
• `msg_mstr.d`	

For example:

```
mv ./mfg/lng_mstr.d ./mfg/lng_mstr.old
```

b Copy the `gui` and `mfg` sub-directories using the following commands.

```
cp -R ./gui /InstallDir
cp -R ./mfg /InstallDir
```

Loading an Additional Language for Windows Clients

To load language-specific programs for Windows (GUI) clients onto the file server, repeat the instructions given in Chapter 6, “Loading Client Media,” on page 81.

However, note the following differences.

- Specify a temporary installation directory; for example, `mfgfrgui` (where fr is the French language code).
- Once the second language is loaded, open File Manager or Windows Explorer and find the two-letter language code directory under the temporary installation directory; for example, `mfgfrgui\fr`.
- Copy the language code sub-directory into the first installation directory. The language directories must be on the same directory level; for example, *`InstallDir`*`\mfggui` and *`InstallDir`*`\qadfrgui`.

Windows and Win32 Character Client Setup

You do not need to run the `setup.exe` program for additional languages because the start-up icon for the first language will work for all other languages, assuming they share the same codepage family.

Updating Translated Default Data

To complete the installation of an additional language, you must update the system data—including online help—with translated data.

If you have custom changes to menu and message settings, be aware that updating translated data overwrites these customizations. If you want these customizations available in your updated system, you must reenter them.

Loading Menus and Messages

1 Start an MFG/PRO 9.0 session for the first language.

```
./client.DBSetName
```

2 At the Main Menu, enter:

```
mgdload.p
```

Warning `mgdload.p` overwrites custom changes to menu and message settings. You must reenter these changes after the program runs.

3 When mgdload opens, complete the fields according to the following table.

Note To run mgdload in report mode, enter Yes in the Count Only field.

Field	Enter
Input Directory	Enter your new Version 9.0 installation directory followed by the `mfg` subdirectory.
Load Menu Detail	Type Yes in these fields.
Load Message Master	
Load Language Master	
Load Language Detail	
All other Load fields	Type No.
Count Only	Type Yes to run the mgdload program in report mode. The program reads and counts the records to be loaded without actually loading them. Use this feature to review the results of the load in the `mgdload.log` file before executing the load. If you are ready to make the database changes, type No.
Allow Errors	Type Yes.

4 Press F1 to start the load.

5 At the prompt `Enter a password, userid, or group name`, you can specify your security information.

6 In another window, open the `mgdload.log` file in the working directory of the MFG/PRO session. Make sure no errors occurred from the mgdload process. The log file notes the number of records read for each of the files above, the messages changed in `msg_mstr`, and the menus added or removed in `mnd_det`.

7 Return to MFG/PRO and exit from mgdload.

Loading Translated Online Help

1 Open Field Help Load (36.4.19).

2 In the Language field, enter the two-letter language code of the *additional* language installation, such as fr.

3 Leaving other fields blank, skip to the Load File field and enter the explicit path to the `fieldhlp.fhd` file within the language directory of the language you are adding; for example:

`g:/`*`InstallDir/LanguageCode/`*`fieldhlp.fhd`

4 Press F1 to begin the load.

5 Repeat the steps in “Loading Menus and Messages” on page 105 for the training and demonstration databases, if you use them.

Replacing User Interface (gui) Data

Follow these steps to replace the user interface (gui) data with the most up-to-date cumulative data.

If you have custom additions in the User Interface module (gui), you can incorporate them through the following tasks.

- Use Database Dump/Load (36.16.3) to dump the data from your existing gui tablespace into a temporary directory.
- After truncating and loading the new gui data, load the dumped data files.

- If you loaded custom browses, you must open and resave each of them in Browse Maintenance (36.20.1) and then compile the resulting source code.

1. Have all users logged off your existing MFG/PRO system.
2. Log on with an ID that is a member of the Oracle database administration group (usually not root).
3. Make sure the Oracle instance is started and the database is mounted.
4. From the UNIX prompt, run the following command to truncate gui data.

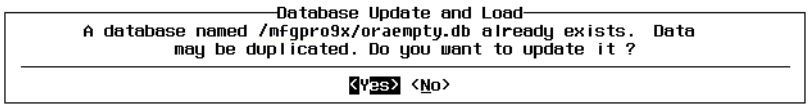
   ```
   sqlplus qad/qad < guitrunc.sql
   ```

   The script is finished when the operating system prompt reappears.
5. Set the PROGRESS environment variables, such as DLC and the UNIX PATH.
6. In the new MFG/PRO 9.0 installation directory, start MFG/UTIL.

   ```
   ./mfgutil
   ```
7. From within MFG/UTIL, select the Database menu and choose Load Data from Directory. Refer to the following table and example illustration as you complete the fields.

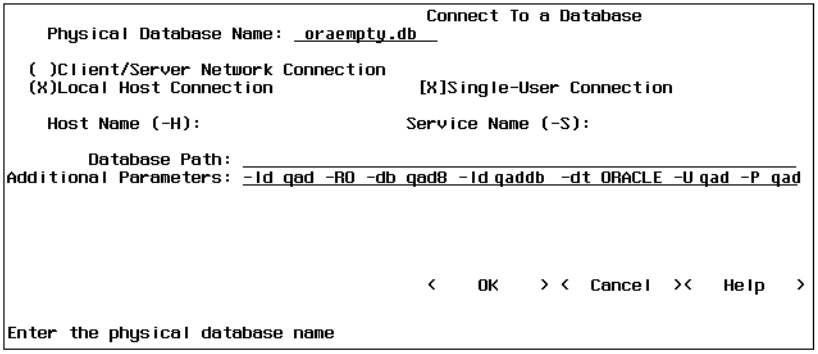
Field	Enter
From this Directory	Enter the path to the Version 9.0 installation directory and the `gui` sub-directory: `/InstallDir/gui`
From this Empty Database	In both fields, enter the path and name of the schema holder oraempty.db.
To this Database Name	

8. Choose OK and answer Yes to the following prompt.



9 The Connect to a Database window appears automatically. Refer to the following table and example illustration as you complete the fields.

Field	Enter
Physical Database Name (-db)	Enter the schema holder name oraempty.db.
Client/Server Network Connection, Host Name, Service Name	To connect in a client/server environment using PROGRESS networking, choose this option and enter the host and service name.
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	Deselect this option.
Database Path	Enter the directory path to the schema holder oraempty.db.
Additional (Startup) Parameters	Type the following parameters in this order: -ld qad -RO -db *ORACLEDbName* -ld qaddb -dt ORACLE -U qad -P qad



10 When the load is complete, choose Close in the Installation Log window.

11 Exit from MFG/UTIL and then restart it.

```
./mfgutil
```

12 Load Configurator data by repeating steps 7 through 10; however, in the field From this Directory, enter:

```
/InstallDir/cfg
```

13 Exit MFG/UTIL once all data is loaded.

14 To verify the load, review the MFG/UTIL log file in the *InstallDir*.

Creating a Language Schema Holder

In order to compile any part of MFG/PRO for a non-English language, you must connect to a schema holder with translated schema labels. Follow these instructions to create a schema holder with translated schema labels for the languages you are installing.

Note You should use the language schema holder only for performing compilation. It is not needed for running MFG/PRO.

1 Change to the MFG/PRO installation directory, top level.

```
cd InstallDir
```

2 Copy the following schema holder files to new names under your language sub-directory.

```
cp oraempty.db LanguageDir/oraLanguageCode.db
cp oraempty.bi LanguageDir/oraLanguageCode.bi
```

3 From the installation directory (*InstallDir*), start MFG/UTIL.

```
./mfgutil
```

4 In MFG/UTIL, select the Database menu and choose Load Translated Labels.

5 When the Database Connect screen appears, complete the fields as follows.

Field	Enter
Physical Database Name:	Type `oraempty`.
Local Host Connection:	Select this option.
Single-User Connection:	Do not select this option.
Database Path:	Leave blank.
Additional Parameters:	Type the parameters: `-ld qad -1`

6 Choose OK.

7 After a connection is made, complete the following field with the path and name of the xdc_mstr table.

```
Update This Database File: InstallDir
   /LanguageDir/xdc_mstr
```

Note Choose the button `<Browse .db File>` to search for this file.

8 Choose OK and the load process begins.

Setting Up Users and Testing the Language Installation

In MFG/PRO, you must assign languages to each user. Open User Maintenance (36.3.18) and modify the Language field to the appropriate two-letter language code.

For Windows clients using a non-English language, you must also deactivate the Microsoft WinHelp viewer help display. This way, the help displays from the help tablespace, which contains the translated help. To deactivate WinHelp, open User Interface Profile (36.20.4), select each non-English user, and deselect the WinHelp check-box. (It should be blank.)

Language Test

To test your language installation, start an MFG/PRO session and log on as a user who is set up with the language code you want to test.

Open menu item 1.4.1 (in English, Item Master Maintenance) and verify that the fields are translated.

Cleaning Up the System

Once you have completed your language test and verified that your MFG/PRO fields have been translated, delete the temporary language directories created in “Loading an Additional Language on the Database Server” on page 102 and “Loading an Additional Language for Windows Clients” on page 104.

These directories were created to temporarily hold your additional language information until it was copied into your main installation directory. The temporary language directories are now duplicate directories and are no longer needed. Delete them to provide additional disk space.

APPENDIX A

Installation Reference

This chapter provides optional instructions related to an MFG/PRO installation.

Oracle Database Administration **114**

Using MFG/UTIL for Administration **115**

Migrating a Custom PROGRESS Database to Oracle **116**

Terminal Type and Codepages **117**

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Special Compilation **121**

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Oracle Database Administration

Use standard Oracle procedures for administering the database, including start-up, shutdown, and backup procedures. The PROGRESS schema holder database will not require as much administration, such as backups, because it does not contain data.

Note If you do need to back up the schema holder, make sure no client sessions are running against it, truncate the before-image file (extension `.bi`), and use UNIX commands to make a copy.

Index Rebuilds: As with any Oracle database, periodic index rebuilds are recommended because the index tends to become fragmented.

Application Security: MFG/PRO on Oracle still relies on the system security available in PROGRESS.

Database Security: You can utilize any of the Oracle database security features in addition to the MFG/PRO security. For example, if you use other tools to access the Oracle database directly, you would probably want to implement Oracle database security.

Upgrades: Before you upgrade Oracle or PROGRESS, check to see if it is compatible with the other components. For example, if Oracle releases a new version, the PROGRESS DataServer may not immediately support it.

Modifying the Oracle Database

If you are creating a new custom program, you may need to add tables or tablespaces to the Oracle database. However, you should *not* modify the standard MFG/PRO tables.

If you change Oracle, you must also change the PROGRESS schema holder. To do this, use the DataServer utility, Update/Add Oracle Table Definitions. This utility uses the objects in the Oracle schema to create the schema holder. You can then compile your custom code against the new schema holder.

Using MFG/UTIL for Administration

There are various system maintenance programs in MFG/UTIL. Some of the MFG/UTIL features you may want to use are listed below. For details on using MFG/UTIL, refer to the *MFG/PRO System Administration Reference Guide*.

Start MFG/UTIL	From the MFG/PRO installation directory, type: `./mfgutil`.
Modify Start-Up Scripts	From the MFG/UTIL Configure menu, choose Any Database Set and complete the Database Set Configuration window. To save your changes to the start-up scripts, choose one of the generate options from the Scripts menu.
Compile Code	To compile source programs, select the MFG/UTIL Program menu and choose Compile Procedures.
Generate Oracle Database Scripts	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).
Create New Schema Holder from Oraempty	Copies the oraempty schema holder to a new schema holder.
Change Oracle Connection Parameters	Alters an existing schema holder to connect to a different Oracle database.

Migrating a Custom PROGRESS Database to Oracle

If you need to migrate a side PROGRESS database to an Oracle database, you must use the DataServer utility `protoora.p`. However, this utility can only provide a starting point, and you must perform some additional steps to convert the database correctly.

About Protoora

Because some of the conventions used by `protoora` may not be appropriate for your Oracle database, you cannot use the database it creates. For example, the utility creates only one tablespace for all schema objects and data. Also, some of the character columns will probably be undersized because `protoora` uses the format value from the data dictionary as the default size value. To correct these problems, you must make various adjustments to the SQL script and rerun it to create a corrected Oracle database.

For details, see the *PROGRESS DataServer Guide*.

1. Run `protoora`.
2. The `protoora` utility sets up the Oracle database and a PROGRESS schema holder to match it. The first half of the utility examines your side PROGRESS database and produces SQL scripts that in turn create the Oracle database. (These database objects are incorrect and you will replace them with corrected ones.)

   The second half pulls across schema information from the Oracle database to create the PROGRESS schema holder database.
3. In the SQL script created by `protoora.p`, modify the tablespace sizes to match the number of records in your custom side database. Use the standard Oracle tablespace sizing algorithm.

Note Labels for columns (also called fields) are stored in the PROGRESS schema holder and not the Oracle database.

4. Use the modified SQL script as input into SQL*DBA to create corrected Oracle database objects (tablespaces, tables, etc.).

   ```
   sqldba < YourSQLScriptName
   ```

5 Remove the incorrect Oracle database objects originally created by `protoora`.

6 While connected to the new schema holder, open the Data Dictionary, choose the Admin menu, and choose the Dump Data Definitions option. The system creates a data definition file (`.df` extension).

7 Using a text editor, open the data definition file. For each ADD TABLE command, make sure the FOREIGN-OWNER statement is blank; for example:

```
FOREIGN-OWNER " "
```

Note If you are adding sequences to the data definitions, you must define a FOREIGN OWNER.

8 Append the new data definition statements to the main MFG/PRO database definitions file.

9 Compile your custom program(s) against the updated MFG/PRO schema.

10 Once the Oracle database is set up, dump the PROGRESS data into data files (extension `.d`) and load them into the Oracle database. Refer to *PROGRESS DataServer Guide*, Chapter 4, Section 5 for details.

11 Make sure to test your custom software.

Terminal Type and Codepages

Since PROGRESS uses a terminal type to format data on your screen and to interpret certain keystrokes, you need to set the terminal type whenever you install MFG/PRO or start a new session. It must be set at the start of every installation or conversion process.

In most cases, the terminal type you normally use is compatible with MFG/PRO and with PROGRESS.

To ascertain your current TERM variable, type:

```
echo $TERM
```

To set the TERM variable, type:

```
TERM=terminaltype ; export TERM
```

Refer to the appendix of your PROGRESS installation documentation for a list of valid terminal types.

The terminal type you choose must be supported by both the TERMCAP variable of your UNIX environment and the PROTERMCAP setting in your PROGRESS environment. Otherwise, you will receive an error when installing and running MFG/PRO.

Multi-Language Terminal Types

In a multi-language version of MFG/PRO, your terminal type determines the character set used when transmitting and displaying language-specific characters. Since each terminal type can represent characters differently, a single character such as the u-umlaut can be stored with different values by different terminals.

Note This section does *not* apply to releases in Chinese, Japanese, or Korean.

Some terminal types are language-independent; that is, they can be used with all languages. Some examples include:

```
hp700/92
vt220
```

If you are using one of these language-independent terminals, the terminal type remains the same no matter what language the terminal is configured for.

Other terminals are language-dependent. These terminals require that a different terminal type be used depending on the language. Some examples include:

```
wy60
vt100
```

For these language-dependent terminals, the actual terminal type is constructed by appending the appropriate language code to the standard terminal type. For example, a vt100 configured for French should be defined as vt100fr.

During Installation

Use the standard terminal types while installing MFG/PRO. For example, for a vt100, set your TERM variable to vt100 during the installation. Once the MFG/PRO software has been installed, you can use one of the language-dependent versions of vt100, such as vt100fr, vt100ge, or vt100du.

Multiple Languages and Codepages

You may have a terminal codepage that does not match the codepage used for data storage and retrieval. (During installation, you are prompted for the Oracle database codepage.)

For details on setting up and converting codepages, see the *PROGRESS System Administration Reference*.

In cases where the codepages do not match, PROGRESS requires you to set up a map between them so that it can convert the data. This mapping is often necessary for languages that utilize extended characters, such as German. (Its extended characters are ä, ö, ü, Ä, Ö, Ü, ß.)

Adding MFG/PRO Modules

If you purchased add-on modules, QAD typically sends you a complete release including the new modules. Installing the add-on modules involves integrating the programs from the new modules with your existing MFG/PRO installation directory. You do not need to change your production database; it already has the default data for all modules.

Important You should only add modules of the same MFG/PRO version and letter release.

1. Load the MFG/PRO add-on server media into a separate, temporary directory. Use the instructions in Chapter 5, “Database Server Setup,” on page 47.
2. If you have Windows clients, load the Windows client add-on media into a temporary directory. Refer to Chapter 6, “Loading Client Media,” on page 81. You do not need to set up the client PCs; this function is performed by the `setup.exe` program.
3. Back up your existing MFG/PRO system.

4 For the database server and Windows client file server, integrate the programs from the add-on media with your existing production system. Use one of the following methods.

- If you have not made any code modifications, you can copy the language code directory (for example, us) from the add-on release into your existing installation directory. This option overwrites your existing programs, both source and compiled.
- If you have modified MFG/PRO code, copy only the new program sub-directories from the add-on module into your existing installation directory. All program directories appear under the two-letter language code directory. For example, if you purchased Advanced Repetitive and your language is English, the additional directory is: *TempInstallDir*/us/er.

  To determine the appropriate program directories, you can use the following UNIX diff command (where *AddOnDir* is the directory for the add-on media).

  ```
  diff /InstallDir/LanguageDir /AddOnDir/LanguageDir
  ```

5 Recompile MFG/PRO only if you made customizations or if your existing PROGRESS version differs from the PROGRESS version used to compile the add-on release.

6 Start MFG/PRO to test the installation. You do not need to modify the start-up scripts.

7 If you have multiple languages, repeat the previous steps for each language.

8 Remove the temporary installation directories for the database server and Windows client media.

9 Refer to the MFG/PRO user guides for instructions on implementing the modules you added.

Special Compilation

Whenever you compile all of MFG/PRO, you must recompile the following programs separately using the parameter -nojoinbysqldb. Otherwise, they will generate a run time error: Bus Error (48). The programs are:

- `rescrp2a.p`
- `rescrp2b.p`
- `rewarp2a.p`
- `rewarp2b.p`

Note For performance reasons, no other programs should be compiled with the -nojoinbysqldb parameter.

For UNIX Character Programs

1. In the MFG/PRO installation directory, create a text file named compspec.wrk. Using a text editor, enter each of the programs listed above, one to a line. There should be no extra blank lines.
2. Next, edit the start-up script mfgutil, found in the MFG/PRO installation directory.
3. Locate the MFG/UTIL start-up command lines at the end of the file, which start with the _progress execution program. For each command line, add the parameter -nojoinbysqldb at the end of the command line.
4. Start MFG/UTIL. Choose Compile Procedures from the Program menu, select the option Contents of the Work File, and type the work file name you created, compspec.wrk.
5. After compiling, reopen the file mfgutil in a text editor and remove the -nojoinbysqldb parameter.

For Windows Client Programs

1. Copy the work file, compspec.wrk, to the MFG/PRO for Windows file server installation directory.
2. On a Windows client, add -nojoinbysqldb to the end of the shortcut properties for the MFG/UTIL icon. To access the MFG/UTIL icon properties, you can open Windows Explorer and perform a search for "mfg_util." Once the icon appears in the search, select it, choose Properties from the File menu, and choose the Shortcut tab.
3. Compile the four programs in MFG/UTIL the same way you did in UNIX. Remove the -nojoinbysqldb parameter from the MFG/UTIL icon when you are finished.

Setting Up Multiple Databases

See Chapter 5, "Database Server Setup," on page 47.

The instructions in Chapter 5 explain how to set up a single database in Oracle. If you want multiple MFG/PRO databases in a single instance, such as mfgdemo and mfgtrain, you need to perform different installation steps.

This section summarizes the steps required to *add* one or more MFG/PRO databases to an instance that already contains an MFG/PRO database owner. For example, you can add the training database to an instance containing the demonstration database.

Multiple Database Overview

The recommended setup for multiple databases is to use one instance with multiple database owners, one for each MFG/PRO database. As shown in Figure A.1, each MFG/PRO database requires its own schema holder, Oracle database owner, and MFG/PRO start-up script (or its own section in a multi-database start-up script).

The schema holder and the start-up script must reference the correct database owner. In the start-up script, the -U (user) parameter specifies the user with access privileges to the database owner. (For simplicity, the examples in this section assume the user is the same name as the database owner.) In the schema holder, the database owner is assigned by the FOREIGN_OWNER schema element.

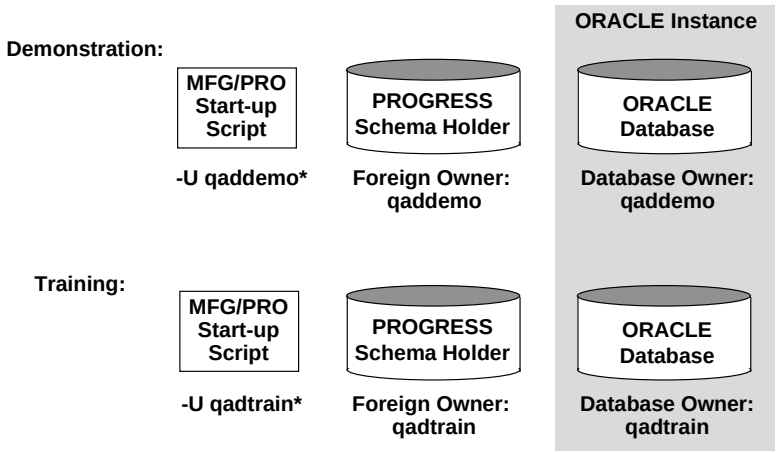

Fig. A.1
MFG/PRO-on-Oracle Multiple Database Overview

***Note: For simplicity, the user and owner are the same in this example.**

The overall steps to add additional MFG/PRO databases to an instance are:

- Create an empty schema holder that references the new Oracle database owner.
- Edit and run a SQL script to create an additional database owner. Also run the SQL scripts that load the MFG/PRO schemas for that database owner.
- Create an MFG/PRO start-up script that references the new database owner.

Schema Holder

Follow these general steps to create a schema holder that references your new Oracle database owner.

Note These steps assume you have PROGRESS 4GL or ProVISION.

1. Open the PROGRESS Data Dictionary and dump the database definitions from the database `oraempty.db`. To do this, choose Dump Data and Definitions from the Admin menu.
2. Exit from the Data Dictionary when the dump is complete. The resulting file should be named `oraempty.df`.

3 Copy `oraempty.df` to *`oraNewDB`*`.df`, replacing *`oraNewDB`* with the name of the MFG/PRO database; for example, `oratrain`.

4 Open the file *`oraNewDB`*`.df` in a text editor and make the following modifications:

   a Change all Oracle database references to your ORACLE_SID.

Note You cannot use any of the MFG/PRO schema names, `qad`, or `qaddb` as the Oracle database name. Also, do not use a number as the first character of the Oracle database name.

   b Replace all "FOREIGN_OWNER" references from `qad` to the new database owner name, such as `qadtrain`.

5 Open the Data Dictionary and create an empty database from the PROGRESS `empty.db` database. Do this by choosing Create from the Database menu.

6 Connect to your new `empty.db` database by choosing Connect from the Database menu.

7 Load the edited `oraNewDB.df` into the new `empty.db` database by choosing Load Data and Definitions from the Admin menu.

8 Exit the Data Dictionary and truncate the empty database `.bi` file.

9 You now have one of the schema holder databases for use in your multiple-database environment. Repeat the preceding steps for each database you want in the instance.

SQL Scripts

These steps explain how to add a database owner in an Oracle instance already containing an MFG/PRO database owner.

1 Edit the MFG/PRO example SQL script `crdbtmpl.sql` (or a copy of it) using the general steps that follow. The `crdbtmpl.sql` script is located in the root `InstallDir` directory.

   a Modify the size of every tablespace to allow for the additional databases. By default, the SQL script is sized for a single demonstration or training database. Therefore, to set up both the

demonstration and training databases, you should approximately double the default size allotment.

b Modify the variables [NEWUSER] and [NEWPASSWD] to your desired new database owner, making sure to match the FOREIGN_OWNER reference in your schema holder. These variables appear at the end of the SQL script.

For example, you could use the following lines of script to add a database owner for a training database.

```
connect system/manager
create user qadtrain identified by qadtrain;
grant dba to qadtrain;
alter user qadtrain default tablespace tools
        temporary tablespace temp;
connect qadtrain/qadtrain
@/d1/oracle/rdbms/admin/catdbsyn.sql
```

c If you want to set up the multiple database switching feature, your SQL script should also contain a line that grants DBA privileges between all MFG/PRO database owners. For example, to set up the sample MFG/PRO databases newyork, chicago, and seattle, type:

```
grant dba to newyork, chicago, seattle;
```

2 Run the edited SQL script `crdbtmpl.sql`.

```
sqldba < crdbtmpl.sql
```

If you have Oracle Version 7.3.2, type the command below instead.

```
svrmgrl < crdbtmpl.sql
```

3 Examine the list file `crdbtmpl.lst` for unexpected errors.

4 For each database owner, run the following SQL scripts to load the MFG/PRO schemas: `ogui.sql`, `ohpempty.sql`, and `oraempty.sql`. For example, to load schemas for an owner “qadtrain,” the commands are:

```
sqlplus qadtrain/qadtrain < ogui.sql
sqlplus qadtrain/qadtrain < ohpempty.sql
sqlplus qadtrain/qadtrain < oraempty.sql
```

5 Examine the log files for the SQL scripts listed above to check for unexpected errors. The log file names are the same as the SQL script name, but with a `.log` extension.

Start-Up Script

Your MFG/PRO start-up scripts must reference the Oracle database owner or owners in the -U and -P parameter. Use a text editor or MFG/UTIL to create the scripts.

For example, the following execution command includes the qadtrain Oracle owner in the -U and -P parameter.

```
exec $DLC/bin/_progres \
  /mfgpro/Training -RO -znotrim -trig triggers \

  -db /data/ora/qad -dt ORACLE -U qadtrain \
         -P qadtrain -c 100 -Dsrv qt_nolookahead \

  -charset undefined -cpcoll basic -Bt 350 -D 100 \
         -mmax 3000 -nb 200 -s 48 -p mf.p;
```

Compiling with an Unknown FOREIGN_OWNER

In order for sequence schema objects work to correctly, you must recompile all MFG/PRO programs against a schema holder with the FOREIGN_OWNER setting of “?” (unknown).

1 From the PROGRESS Data Dictionary, dump the database definitions of the `oraempty` database.

2 In a text editor, open a copy of the resulting .df file.

3 For each CREATE SEQUENCE section in the .df file, replace the FOREIGN_OWNER reference from “qad” to “?”.

4 From the PROGRESS Data Dictionary, create an empty database, connect to it, and load the edited .df file.

5 Compile all of MFG/PRO.

APPENDIX B

Oracle Upgrades

This chapter provides a conceptual overview of needs and possibilities for upgrading Oracle to a newer release. The following topics are covered in this chapter:

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Different Levels of Upgrade **128**

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Upgrading Possibilities **130**

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Overview of Oracle Upgrades

A complete system has different software components including the operating system, Oracle, MFG/PRO, and PROGRESS software with the Oracle DataServer component. All of these are available in different versions and releases. You sometimes must convert from one version to another of these components. This chapter contains an overview of the considerations and actual steps for an upgrade of the Oracle version.

An Oracle upgrade normally involves several of the steps listed below, depending on the level of upgrade:

- Shut down database
- Install new software
- Apply special upgrade scripts
- Migrate the Oracle database
- Start up the database with the new software

Under normal circumstances, you will not need to recreate your database when upgrading Oracle. However, in rare cases the use of pre-production software may make this necessary.

Different Levels of Upgrade

Oracle distinguishes between different types of upgrades depending on the difference between the two releases. Oracle uses a three-level numbering scheme for its base product, augmented with a fourth and occasionally a fifth number for releases for a certain operating system.

Version Release

A version release upgrade changes the first digit of the release. For example, an upgrade from Oracle Version 7 to Oracle 8 is a version release upgrade.

Feature Release

A feature release upgrade changes the second digit of the release. For example, an upgrade from Oracle 7 release 7.2 to Oracle 7 release 7.3 is a feature release upgrade.

Maintenance Release Upgrade

A maintenance release upgrade changes the third digit of the release. For example, an upgrade from Oracle 7 release 7.3.2 to Oracle 7 release 7.3.3 is a maintenance release upgrade.

Changes in the fourth or fifth digit are patches with no database modifications necessary.

QAD Considerations

QAD publishes a release matrix that lists a number of supported combinations of MFG/PRO and the Oracle database for each operating system. Under all circumstances you should comply closely with this release matrix because combining releases not specifically tested and certified may cause trouble. For example, QAD has certified 7.2.3 and 7.3.2, but not 7.2.4 and 7.3.1, so it is safe to upgrade Oracle from 7.2.3 to 7.3.2, but you should not upgrade from 7.2.3 to 7.2.4 or to 7.3.1.

As a general rule, you can safely do maintenance release upgrades of supported versions. You can also do feature release upgrades if you exercise caution. However, do not perform Oracle version release upgrades unless specifically supported by QAD. When in doubt, always contact your QAD support representative before doing an Oracle upgrade.

Upgrading Possibilities

Oracle upgrades are described in detail in the *Oracle Server Migration* manual, which you should always use as a reference. All upgrades generally involve two necessary steps:

1. Software upgrade, in which you either overwrite your existing software with a new release or install a new release next to the previous one.
2. Database upgrade, which can involve different steps such as running a migration utility or special SQL scripts.

Backward Compatibility

The Oracle release mechanism lets you upgrade or downgrade if necessary. If you are upgrading to solve specific problems or to obtain specific performance benefits, and you are not using any new features, Oracle is backward compatible with the previous release. Thus, you can downgrade to your previous release should you require this. If you want to enable new features of the new Oracle release, you must explicitly specify this using the `compatible` parameter of the `init<SID>.ora` file.

Patch Installation

Patches (changes to the fourth or fifth digit) normally involve the following steps:

1. Database shutdown and backup.
2. Installation of the patch, typically using a script delivered with the patch.
3. Start up the database.

Maintenance or Feature Release Upgrades

Upgrading from one maintenance or feature release to the next—for example, 7.3.2 to 7.3.3—typically involves these steps:

1. Database shutdown and backup.
2. Installation of the new software in a new location with a new value of ORACLE_HOME. This is particularly easy if the installation follows Oracle's recommendation to have each maintenance release in a separate directory under the home directory of the Oracle account.
3. Database start-up in DBA mode.
4. Execution of release-dependent SQL scripts logged on as the database administrator.
5. Full start-up of the database.

Once the upgrade is verified, the old software can be backed up and deleted to save space.

Version Release Upgrades

A version release upgrade is by far the most complex and time-consuming option. It should be carefully planned using the instructions in the *Oracle Server Migration* manual. Backward compatibility of the database is not necessarily supported.

The following steps are normally involved in a version release upgrade:

1. Database shutdown and complete backup, including a backup using Oracle export.
2. Migration preparations.
3. Installation of new software in a new location with a new value of ORACLE_HOME.
4. Execution of the Oracle migration utility, including steps such as database start-up and shutdown, special considerations, `init<SID>.ora` modifications, running of SQL scripts, and so on.
5. Database start-up and full application verification.

Downgrading

For some upgrade scenarios, Oracle ensures backward compatibility so that under certain conditions you can undo a software upgrade. This is controlled using the `compatible` parameter in the `init<SID>.ora` file. By default, backward compatibility is guaranteed as far back as possible, and this implies that certain features of newer releases are not immediately available. Once made available by means of the `compatible` parameter, you can no longer perform a downgrade.

A downgrade typically involves these steps:

1. Database shutdown and backup.
2. Recovery of previous software release from backup or by re-installation and similar modification of ORACLE_HOME.
3. Database start-up in DBA mode using the previous software, and running of special downgrade SQL scripts.
4. Full start-up of the database for normal use.

If the `compatible` parameter has been set to a value related to the newest release, the database cannot be downgraded. You must restore a full database backup.

Glossary

Application Conversion. The procedure for setting up records to support features introduced in a new version of MFG/PRO.

cdrom (variable name). Name of the directory to which you will mount the CD-ROM.

Client Machine. The machine in a client/server configuration, often a PC, that runs the client session.

Client Session. An executable running an application that accesses a server running a database. PROGRESS, regardless of the hardware platform, uses a client process and a server process.

Client/Server. The configuration in which a client session runs on a separate machine from the database server process. MFG/PRO on Oracle can use a client/server configuration.

Column. Oracle's term for an element in a table that holds one type of information, such as an address. PROGRESS's term is *field*.

Conversion. Refers to the transition from one numbered release to the next, such as MFG/PRO 7.3 to 9.0. Conversions involve program fixes and, in some cases, major schema changes. (Transitions between lettered releases, which preclude major schema changes, are called updates.)

Database. *See Oracle database.*

Database Conversion. An update of your database from one version of MFG/PRO to another that requires you to convert the database schema to add new files, fields, or indexes.

Database Definitions. Characteristics of the database schema, including field names, table names, validation expressions, labels, initial values, and others.

DataServer for Oracle. A PROGRESS product that enables PROGRESS applications to access and store information in an Oracle database.

Default Data (Initial Data). The data that initially populates the menu, messages, printers, language code, and other default data files.

Field. PROGRESS's term for an element in a table that holds one type of information, such as an address. Oracle's term is *column*.

Foreign Database Reference. A logical database name used by MFG/PRO programs to connect to the Oracle database. The standard name is qaddb.

General Release. A new release of MFG/PRO that has completed additional testing as a limited release.

InstallDir (variable name). The directory name where you are installing MFG/PRO. To distinguish between the installation directory of one version and another, this variable is sometimes set, for example, to *ver74dir* and *ver90dir*. Note that the installation directory should be different than the directory where you create your production databases.

Instance. A mechanism for accessing and controlling an Oracle database. It is composed of a shared memory area and a set of processes.

Instance Directory. *See* Oracle Instance Directory.

LanguageCode (variable name). Identifies the language code(s) in a multi-language release.

languageDir (variable name). A directory containing language-specific files such as programs and help. The directory is named after the language code.

Limited Release. A new release of MFG/PRO that is available only as a standard version, which has undergone beta testing.

Multi-Language Release. A release that supports multiple languages, which may include US English. The US English version in a multi-language release is distinct from the standard release. When you install a multi-language release, you must specify a language code for every language, including English.

NewDirectory (variable name). The name of a new directory

Oracle Database. For the purposes of this manual, this term refers to a logical set of schema objects owned by a particular Oracle user.

OracleDBName (variable name). The name of your new, unique Oracle database.

Oracle Instance Directory. The primary instance directory containing key files such as init.ora and key subdirectories, such as ./back, ./core, and ./user.

ORACLE_SID. The environment variable that defines the system ID for your new Oracle database. In most cases, it should be the same as the actual Oracle database name.

PRO*C. A C-language library that contains the standard Oracle Call Interface (OCI) and becomes part of the DataServer when you build it.

Record. PROGRESS's term for an entry in a table; Oracle's term is *row.*

Row. Oracle's term for an entry in a table; PROGRESS's term is *record*.

Schema Holder. A special type of PROGRESS database that has no data, only database definitions. Because PROGRESS client sessions can access the schema holder in read-only mode, you do not need the PROGRESS RDBMS license.

SchemaHolderName (variable name). The name of your production schema holder. The default name is `oraempty`.

Schema Update (Major Update). CRCs and timestamps are affected by these major changes: new files/fields/indexes, modified indexes, changes of field type, changes of field order. All programs must be recompiled.

Schema Update (Minor Update). CRCs and timestamps are unaffected by these minor changes only: modifications of formats, labels, and validation expressions/messages. All programs must be recompiled to see the effect of minor changes.

SID. *See* ORACLE_SID.

SQL. Structured Query Language used by Oracle. QAD provides SQL files to set up the Oracle database(s) and load the Oracle schema objects.

Tablespace. A segment of data in the Oracle database.

TerminalType (variable name). The terminal type of the workstation or PC from which you are performing the installation steps.

Update. Refers to the transition from one lettered release to the next, such as MFG/PRO 8.6B to 8.6C. Updates involve program fixes and some minor schema changes. (Transitions between numbered releases, which can involve major schema changes, are called conversions.)

YourTapeDevice (variable name). The tape drive from which you will load the MFG/PRO files. For example, it might be /dev/rmt/0.

YourCDDevice (variable name). CD from which you will load the MFG/PRO files. For example, it might be /dev/sr0.

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