RED BRICK® WAREHOUSE
Version 5.1
INSTALLATION AND
CONFIGURATION GUIDE
for UNIX® Platforms
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About This Document

Purpose

This Installation and Configuration Guide describes how to install Red Brick® Warehouse and configure it for use on the following UNIX platforms:

- IBM® RISC System/6000™ with the AIX™ operating system.
- Digital™ AlphaServer™ with the Digital UNIX™ operating system.
- HP® 9000 Computer with the HP-UX operating system.
- Sun™ SPARC® based system with the Solaris® operating system.
- Silicon Graphics® Server with the IRIX™ operating system.
- Sequent® Symmetry® System with the DYNIX/ptx® operating system.
- NCR® WorldMark™ Server with the NCR UNIX® SVR4 MP-RAS operating system.
- Unisys® U6000 with the Unisys UNIX® System V operating system.

Appendixes C through J of this guide also contain platform-specific information for Red Brick Warehouse running on each of the supported platforms. Information common to all UNIX platforms is found in the Warehouse Administrator’s Guide for UNIX Platforms.

Audience

The intended users of this guide are system administrators and database administrators who plan the warehouse installation, configure the operating system, install the software, and maintain the data warehousing environment.

Knowledge of the operating system and basic system administration procedures is assumed.
Organization

This guide is divided into five chapters; however, not all chapters are appropriate for all readers. If you are installing Red Brick Warehouse for the first time, read:

- Chapter 1, “Preparing for an Installation”
- Chapter 2, “Installing Red Brick Warehouse”
- Chapter 5, “Miscellaneous Administrative Tasks”
- The appropriate appendix for your UNIX platform

If you already have Red Brick Warehouse running at your site and want to install a new release, read Chapter 3, “Installing a New Release,” instead of Chapter 2. If you are installing an update or “patch” release, first refer to the instructions delivered with the release media, then read the section about upgrading warehouse databases on page 3-6 of this guide (if upgrading is necessary).

If you want to install Red Brick client products (RISQL® Entry Tool, RISQL Reporter, Red Brick ODBCLib), refer to Chapter 4, “Installing Red Brick Client Products.”

Appendix A, “Warehouse Directories and Files,” illustrates the structure of the directories and files you have installed and configured, and briefly describes their contents.

Appendix B, “Recommended Locale Specifications,” identifies the languages, territories, character sets, and collation sequences supported by the Red Brick products.

Appendixes C through J describe platform-specific administration and configuration tasks.
## Related Documentation

The standard documentation set for Red Brick Warehouse includes the following documents:

<table>
<thead>
<tr>
<th>Documentation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Installation and Configuration Guide</strong></td>
<td>Installation and configuration information, as well as platform-specific material, about Red Brick Warehouse and related products. Customized for either UNIX-based or Windows NT systems.</td>
</tr>
<tr>
<td><strong>Warehouse Administrator’s Guide</strong></td>
<td>Description of warehouse architecture, supported schemas, and other concepts relevant to warehouse databases. Procedural information for designing and implementing a warehouse database, maintaining a database, and tuning a database for performance. Includes a description of the system tables and the configuration file (<code>rbw.config</code>). Customized for either UNIX-based or Windows NT systems.</td>
</tr>
<tr>
<td><strong>Table Management Utility Reference Guide</strong></td>
<td>Description of the Table Management Utility, including all activities related to loading and maintaining data. Also includes information about data replication and the <code>rb_cm</code> copy management utility.</td>
</tr>
<tr>
<td><strong>SQL Reference Guide</strong></td>
<td>Complete language reference for the Red Brick Systems SQL implementation and RISQL® extensions for warehouse databases.</td>
</tr>
<tr>
<td><strong>SQL Self-Study Guide</strong></td>
<td>Example-based review of SQL and introduction to the RISQL extensions, the macro facility, and Aroma, the sample database.</td>
</tr>
<tr>
<td><strong>RISQL Entry Tool and RISQL Reporter User’s Guide</strong></td>
<td>Complete guide to the RISQL Entry Tool, a command-line tool used to enter SQL statements, and the RISQL Reporter, an enhanced version of the RISQL Entry Tool with report-formatting capabilities.</td>
</tr>
<tr>
<td><strong>Messages and Codes Reference Guide</strong></td>
<td>Complete listing of all informational, warning, and error messages generated by warehouse products, including probable causes and recommended responses. Also includes event log messages that are written to the log files.</td>
</tr>
<tr>
<td><strong>Release Notes</strong></td>
<td>Information pertinent to the current release that was unavailable when the documents were printed.</td>
</tr>
</tbody>
</table>
In addition to the standard documentation set, the following documents are included for specific sites:

**Red Brick Vista User’s Guide**
Description of the Red Brick Vista™ aggregate navigation and advice system, including procedures for rewriting queries and getting advice on the best set of aggregate tables and views to create. Includes detailed examples of queries whose performance can be dramatically increased by using aggregate navigation.

**SQL-BackTrack for Red Brick Warehouse User’s Guide**
Complete guide to SQL-BackTrack™ for Red Brick Warehouse, a command-line interface for backing up and recovering warehouse databases. Includes procedures for defining backup configuration files, performing online and checkpoint backups, and recovering the database to a consistent state.

**Client Connector Pack Installation Guide**
Procedures for installing and configuring the Red Brick ODBC Driver, the RISQL Entry Tool, and the RISQL Reporter on client systems. Included for those sites that purchase the Client Connector Pack.

**ODBC Connectivity Guide**
Information about ODBC conformance levels as well as instructions for compiling and linking an ODBC application using the Red Brick ODBClib SDK.

**Red Brick Data Mine User’s Guide**
Description of the data mining process, and procedural information for using the Red Brick Data Mine™ SQL-based interface to find hidden or unpredictable relationships among the data in a data set. Included for those sites that purchase the Red Brick Data Mine option.

**Red Brick Data Mine Builder™ User’s Guide**
Description of the data mining process, and procedural information for performing data mining using Red Brick’s GUI-based product in a Microsoft Windows environment.

Additional references you might find helpful include:

- An introductory-level book on SQL
- An introductory-level book on relational databases
- Documentation for your hardware platform and operating system:
  **IBM RISC System/6000:**
  - *Getting Started: Managing RISC System/6000* (GC23-2378)
  - *RISC System/6000 Hypertext Information Base Library* (CD-ROM—SC23-2163)
HP 9000 Computer:
- System Administration Tasks Manual, HP 9000 Series 800 Computers

Sequent Symmetry System:
- DYNIX/ptx System Administration Guide
- DYNIX/ptx System Configuration and Performance Guide
- ptx/TCP/IP Administration Guide

NCR WorldMark Server:
- Administrator Guide: Command Line Interfaces General Administration (Volume 1)
- Administrator Guide: Command Line Interfaces System Configuration (Volume 3)

Sun SPARC-Based Systems:
- System Configuration and Installation Guide
- Administering Security, Performance, and Accounting
- Open Issues and Late Breaking News for System Administrators

The above three documents are published by SunSoft™ for Solaris 2.4, 2.5.1, and 2.6.

Digital AlphaServer:
- System Administration manual
- Network Configuration manual
- Sharing Software on a Local Network manual
- Digital UNIX Release Notes

Unisys U6000
- Unisys UNIX System V Release 4.0 System Administrator’s Guide
- Unisys UNIX System V Release 4.0 Release Notes

Silicon Graphics Servers:
- IRIX Advanced Site and Server Administration Guide

Online Documentation

The English version of the Red Brick Warehouse documentation is also available in Adobe Acrobat format (PDF) on a separate CD-ROM.
Conventions

Throughout Red Brick Systems technical publications, the following notation and syntax conventions are used.

- Computer input and output, including commands, code, and examples, appear in Courier.
- Information that you enter or that is being emphasized in an example appears in Courier bold to help you distinguish it from other text.
- Filenames, system-level commands, variables, and document titles appear in Palatino italic or Courier italic, depending on the context.
- Names of database tables and columns are capitalized (Sales table, Dollars column). Names of system tables and columns are in all uppercase (RBW_INDEXES table, TNAME column).

Syntax Notation

This guide uses the following conventions to describe the syntax of operating-system commands:

<table>
<thead>
<tr>
<th>Command Element</th>
<th>Example</th>
<th>Convention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values and parameters</td>
<td><code>table_name</code></td>
<td>Items that you replace with an appropriate name, value, or expression are in italic type style.</td>
</tr>
<tr>
<td>Optional items</td>
<td><code>[ ]</code></td>
<td>Optional items are enclosed by square brackets. Do not type the brackets.</td>
</tr>
<tr>
<td>Choices</td>
<td>`ONE</td>
<td>TWO`</td>
</tr>
<tr>
<td>Required choices</td>
<td>`{ONE</td>
<td>TWO}`</td>
</tr>
<tr>
<td>Default values</td>
<td>`ONE</td>
<td>TWO`</td>
</tr>
<tr>
<td>Repeating items</td>
<td><code>name,...</code></td>
<td>Items that can be repeated are followed by a comma and an ellipsis. Separate the items with commas.</td>
</tr>
<tr>
<td>Language elements</td>
<td><code>() , ; .</code></td>
<td>Parentheses, commas, semicolons, and periods are language elements. Use them exactly as shown.</td>
</tr>
</tbody>
</table>
Customer Support

Please review the following information before contacting the Customer Support Center at Red Brick Systems.

Support Solutions Warehouse

The Support Solutions Warehouse is the Customer Support Center’s external web site, an online resource that registered Red Brick customers can use to:

- Submit new cases.
- Read release notes.
- Find answers to frequently asked questions (FAQs).
- Search the Problems and Solutions database.

To use the Support Solutions Warehouse, point your web browser to the following URL and enter your registered username and password:

http://www.redbrick.com/RBCustomer/index.htm

If you do not have a registered username and password, contact the Customer Support Center by telephone, fax, or e-mail.

General and Technical Questions

If you have general sales-related questions or technical questions about Red Brick products or services, contact Red Brick Systems as follows:

**Telephone**
- General Questions: (408) 399-3200 or 1 (800) 777-2585
- Technical Questions: (408) 399-7100 or 1 (800) 727-1866

**FAX**
- General Questions: (408) 399-3277
- Technical Questions: (408) 399-3297

**Internet e-mail**
- General Questions: info@redbrick.com
- Technical Questions: support@redbrick.com

**World Wide Web**
- www.redbrick.com
**Existing Cases**

If you want to inquire about the status of an existing case, please have the case number ready. The case number will always be given to you by the support engineer who logs the case or first contacts you. This number is used to keep track of all the activities performed during the resolution of each problem.

**New Cases**

If you want to log a new case, please have the following information ready:

- Red Brick Warehouse version
- Platform and operating-system version
- Error messages returned by Red Brick Warehouse or the operating system
- Concise description of the problem, including any commands or operations performed prior to the occurrence of the error message
- List of Red Brick Warehouse and/or operating-system configuration changes made prior to the occurrence of the error message

If you think the problem concerns client-server connectivity, please have the following additional information ready:

- Name and version of the client tool in use
- Version of Red Brick ODBC Driver in use (if applicable)
- Name and version of client network and/or TCP/IP stack in use
- Error messages returned by the client application
Troubleshooting Tips

You can often reduce the time it takes to close your case by providing the smallest possible reproducible example of your problem. The more you can isolate the cause of the problem, the more quickly the support engineer can help you resolve it.

- For SQL query problems, try removing columns or functions, or restating WHERE, ORDER BY, or GROUP BY clauses until you can isolate the part of the statement causing the problem.
- For TMU load problems, verify the datatype mapping between the source file and the target table to ensure compatibility. Try loading a small test set of data to determine whether the problem concerns volume or data format.
- For connectivity problems, verify that the network is up and running by issuing the `rxbping` command from the client to the host. If possible, try another client tool to see if the same problem arises.

Documentation Questions and Comments

If you have questions or comments about the Red Brick Warehouse documentation, please contact the Technical Publications Department at Red Brick Systems as follows:

Telephone
+1 408 399 3200
+1 800 727 1866 (USA only)

Internet e-mail
docs@redbrick.com
Preparing for an Installation

This chapter will help you gather information and set up your environment in preparation for installing Red Brick® Warehouse or Red Brick Warehouse for Workgroups. After you have worked through this chapter, you will be ready to respond to the prompts from the installation script, and you will have configured some required operating-system parameters ahead of time.

If you are installing Red Brick Warehouse for the first time, complete the preparation steps discussed here before beginning the procedure in Chapter 2, “Installing Red Brick Warehouse.” If Red Brick Warehouse is already installed on your system and you want to install a new release, review this chapter before following the instructions in Chapter 3, “Installing a New Release.” If you want to install only Red Brick Client products, follow the procedures in Chapter 4, “Installing Red Brick Client Products.”

**Note:** Whether you are installing your first warehouse or a new release, read the release notes that accompany the software before beginning the preparation tasks.

The procedures in this chapter apply to both Red Brick Warehouse and Red Brick Warehouse for Workgroups, unless otherwise stated.
Preview of Preparation Tasks

Before installing Red Brick Warehouse or Red Brick Warehouse for Workgroups, you need to complete the following tasks:

- Determine the operating-system shell.
- Verify that your operating system version and available disk space meet Red Brick Warehouse requirements.
- Configure operating-system parameters.
- Determine the warehouse locale.
- Select a warehouse logical name.
- Select an IPC key (All operating systems except DYNIX/ptx) for the warehouse daemon. 
  or
  Identify a shared memory map file (DYNIX/ptx only).
- Determine the TCP/IP port for the warehouse daemon.
- Create the redbrick account for warehouse administration.
- Create the redbrick directory for the warehouse software.

Note: Some steps in this chapter require superuser (root) privileges and are typically performed by the operating-system administrator. If the operating-system administrator is not also the warehouse administrator, administration activities must be carefully coordinated to ensure the success of the warehouse installation.

Platform-Specific Considerations

The following operating systems include both System V and BSD UNIX® commands:

- Sun SPARC-based systems (throughout this document, “Solaris 2.4 , 2.5.1, or 2.6” implies a Sun SPARC-based system; likewise, “Sun SPARC-based system” implies hardware running Solaris software.)
- NCR UNIX SVR4 MP-RAS
- Silicon Graphics IRIX
- Unisys UNIX System V

All instructions and examples in this document are based on System V. To ensure you are using System V, verify that /bin precedes /usr/ucb in the path definition for the redbrick user account.
Determining the System Shell

Some steps in the installation procedure are shell-dependent. To determine the shell, enter:

```
$ ps -p $$
```

The `ps` utility returns a line indicating which shell you are using. The line will look somewhat different depending upon your platform, but will end with one of the following:

- `ksh` Korn shell
- `sh` Bourne shell
- `csh` C shell

For example, the following result of a `ps -p` command on an HP-UX system shows that the Korn shell is being used:

```
PID   TTY   TIME COMMAND
15588 ttys1 0:00 ksh
```

The operating system command-line prompt is shell-specific, with the following default prompts:

- Korn and Bourne shells: `$`
- C shell: `%`

For all shells, the default superuser prompt is a pound symbol (#). The Korn shell prompt ($) is used throughout this guide, except for commands specific to the C shell, which are shown with the C-shell prompt (%).
Preparing for an Installation
Verifying Operating-System Version and Disk Space

Verifying Operating-System Version and Disk Space

To install and run Red Brick Warehouse, you must be running the appropriate version of your operating-system software, depending upon your platform. (Contact your Red Brick Systems representative for information about the most current supported software versions). The operating-system versions currently supported are:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Supported Operating-System Versions</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM RISC/System 6000</td>
<td>AIX Version 4.1 or 4.2</td>
</tr>
<tr>
<td>Digital AlphaServer</td>
<td>Digital UNIX Version 4.0</td>
</tr>
<tr>
<td>HP 9000 Computer</td>
<td>HP-UX Release 10.0</td>
</tr>
<tr>
<td>NCR WorldMark Server</td>
<td>NCR UNIX SVR4 MP-RAS Version 2.03 or 3.0</td>
</tr>
<tr>
<td>Sequent Symmetry System</td>
<td>DYNIX/ptx Version 4.x</td>
</tr>
<tr>
<td>Sun SPARC-Based System</td>
<td>Solaris Version 2.4, 2.5.1, or 2.6</td>
</tr>
<tr>
<td>Silicon Graphics Server</td>
<td>IRIX Version 6.2 or 6.4</td>
</tr>
<tr>
<td>Unisys U6000 System</td>
<td>Unisys UNIX System V Release 4.0 Level 1.3 (or later)</td>
</tr>
</tbody>
</table>

You must also have the following system hardware and memory available:

• A CD-ROM drive.
• A minimum of 100 megabytes of free disk space on the filesystem where Red Brick Warehouse will be installed.
• A minimum of 32 megabytes of RAM, with at least 128 megabytes preferred for large-system configurations supporting 20 or more concurrent users.

In addition to the disk space required to install Red Brick Warehouse itself, you need sufficient disk space to store and manage the databases in Red Brick Warehouse. For information about how to estimate the disk space required for your database, refer to the Warehouse Administrator's Guide.
Preparing for an Installation

Verifying Operating-System Version and Disk Space

**Operating-System Version**

Perform the following steps to verify that you have the correct operating-system version for Red Brick Warehouse.

To determine the operating-system version, at the system prompt, enter the following command:

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td><code>$ uname -a</code></td>
</tr>
<tr>
<td>Digital UNIX</td>
<td></td>
</tr>
<tr>
<td>HP-UX</td>
<td></td>
</tr>
<tr>
<td>DYNIX/ptx</td>
<td></td>
</tr>
<tr>
<td>Solaris</td>
<td></td>
</tr>
<tr>
<td>Silicon Graphics IRIX</td>
<td></td>
</tr>
<tr>
<td>NCR UNIX SVR4 MP-RAS</td>
<td><code>$ cat /etc/.relid</code></td>
</tr>
<tr>
<td>Unisys UNIX System V</td>
<td><code>$ pkginfo -l osversion</code></td>
</tr>
</tbody>
</table>

The system returns operating-system information similar to that shown in the following table. The information highlighted in bold type indicates the operating-system version.
## Operating System Information

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Operating-System Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>AIX spock 2 4 00044442A000</td>
</tr>
<tr>
<td>Digital UNIX</td>
<td>OSF1 moe.RedBrick.COM V4.0 564 alpha</td>
</tr>
<tr>
<td>HP-UX</td>
<td>HP-UX larry B.10.10 C 9000/869 1409554301 32-user license</td>
</tr>
<tr>
<td>NCR UNIX SVR4 MP-RAS</td>
<td>052493 RELEASE 030000 Version 01 OS</td>
</tr>
<tr>
<td>DYNIX/ptx</td>
<td>shemp shemp 4.0 v4.03 i386</td>
</tr>
<tr>
<td>Solaris</td>
<td>SunOS joey.RedBrick.COM 5.4 Generic_101945-44 sun4d sparc</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Solaris 2.4, 2.5.1, and 2.6 are operating environments built on the SunOS™ 5.4, 5.5.1, and 5.6 operating systems, respectively; verify that the operating system is SunOS and that the version is 5.4 or 5.5.1.</td>
</tr>
<tr>
<td>Silicon Graphics</td>
<td>IRIX64 curly 6.2 11221457 IP19</td>
</tr>
<tr>
<td>Unisys UNIX</td>
<td>PKGINST: osversion</td>
</tr>
<tr>
<td>System V</td>
<td>NAME: osversion</td>
</tr>
<tr>
<td></td>
<td>CATEGORY: system</td>
</tr>
<tr>
<td></td>
<td>VERSION: 1.3 TAKE 18.7</td>
</tr>
<tr>
<td></td>
<td>STATUS: completely installed</td>
</tr>
</tbody>
</table>
Disk Space

Determine how much disk space is available on the filesystem where you want to install the warehouse. Be sure to use a filesystem with enough free space to provide the storage needed for Red Brick Warehouse, other optional Red Brick products, and the sample database.

Use the operating-system `df` command to determine the available disk space on your filesystems:

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Command</th>
<th>Default Block Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td><code>df</code></td>
<td>1,024 bytes</td>
</tr>
<tr>
<td>HP-UX</td>
<td><code>df</code></td>
<td>(1 kilobyte)</td>
</tr>
<tr>
<td>DYNIX/ptx</td>
<td><code>df</code></td>
<td>1,024 bytes</td>
</tr>
<tr>
<td>NCR UNIX SVR4 MP-RAS</td>
<td><code>df</code></td>
<td>(1 kilobyte)</td>
</tr>
<tr>
<td>Unisys UNIX System V</td>
<td><code>df</code></td>
<td>1,024 bytes</td>
</tr>
<tr>
<td>Solaris</td>
<td><code>df -k</code></td>
<td>512 bytes</td>
</tr>
<tr>
<td>Digital UNIX</td>
<td><code>df -k</code></td>
<td>(1/2 kilobyte)</td>
</tr>
<tr>
<td>Silicon Graphics IRIX</td>
<td><code>df -k</code></td>
<td></td>
</tr>
</tbody>
</table>

The system responds with a list of the various filesystems and available disk space on each. Because the commands display the available space in 1-kilobyte blocks, look for a filesystem with at least 100,000 kilobytes (100 megabytes) for Red Brick Warehouse.

If you need more information about how to identify the amount of disk space available on your system, refer to your operating-system documentation or `man` pages, or check with your system administrator.
Considerations for NFS Filesystems

Warehouse databases must be created and loaded on the same type of computer as the computer from which they will be accessed: For example, if you create and load the database using an AIX server, the database can be accessed only from an AIX server. The physical files holding the database can reside on any filesystem accessible via NFS, even a filesystem exported from a different hardware type, providing that compatible POSIX locking is available. Support for NFS, however, is limited to read-only access. Update and load operations must be performed on the system to which the warehouse disk is attached.

As with all database products, optimum performance of Red Brick Warehouse depends on a high-performance disk storage subsystem. In general, NFS filesystems are unable to provide the same high level of I/O throughput as local disk drives. Therefore, performance is better when the database is stored on local disk drives.

Red Brick Warehouse creates a zero-length file (.connection_name.lockfile) in the directory containing the rbw.config file and uses this file as the target of lock requests. Because the performance of such lock requests to NFS filesystems is substantially slower than those directed to local filesystems, the directory containing the rbw.config file should be located on a local filesystem. However, the Red Brick Warehouse program and support files can be located on an NFS filesystem with no significant performance degradation.
Configuring Operating-System Parameters

Red Brick Warehouse is a high-performance server designed to support the needs of tens, hundreds, or thousands of users in a distributed client/server computing environment. In order to provide sufficient resources for this large number of client users, certain operating-system configuration parameters may require modification.

Refer to the appropriate appendix for information about configuring operating-system parameters for your platform:

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>Appendix C</td>
</tr>
<tr>
<td>Digital UNIX</td>
<td>Appendix D</td>
</tr>
<tr>
<td>HP-UX</td>
<td>Appendix E</td>
</tr>
<tr>
<td>Solaris</td>
<td>Appendix F</td>
</tr>
<tr>
<td>Silicon Graphics IRIX</td>
<td>Appendix G</td>
</tr>
<tr>
<td>NCR UNIX SVR4 MP-RAS</td>
<td>Appendix H</td>
</tr>
<tr>
<td>DYNIX/ptx</td>
<td>Appendix I</td>
</tr>
<tr>
<td>Unisys UNIX System V</td>
<td>Appendix J</td>
</tr>
</tbody>
</table>
Determining the Locale

During the installation process, you will be asked to specify a locale. A **locale** is the unique combination of a language and a location. The locale you specify will apply to all databases created for this installation.

For more information about locale specifications, refer to the *Warehouse Administrator’s Guide*.

Locale Components

A locale consists of four components:

- Language
- Territory
- Character set
- Collation sequence

Each component is described briefly in the following sections.

Language

The language component (in conjunction with the territory) controls which translation is used. In general, text strings are accepted and displayed in the user’s chosen language. These strings include information and warning messages, object names, month and day names, and character data returned in query results. However, the fixed elements of a programming language, such as the keywords used in SQL commands, are not translated.

Territory

The territory component controls country-dependent information such as currency symbols, numeric and monetary formatting rules, and date and time formats. For example, although English is used in both the United States and the United Kingdom, and Spanish is used in both Spain and Mexico, the use of these languages differs according to location. (Sometimes, a single territory applies to more than one country in a region.)

Character Set

The character set, or code page, component specifies the character encoding or character set used to format and display information.
Collation Sequence

The sort component of the locale, or collation sequence, defines the rules used to compare character strings and arrange them in the correct order. There are two main types of character comparisons: binary and linguistic.

Defining the Warehouse Locale

During the installation of the Red Brick Warehouse software, a locale specification is requested for the data warehouse. The locale supplied during installation is stored as the NLS_LOCALE LOCALE parameter in the rbw.config file. If no locale is supplied, the default value of this parameter is used:

    English_UnitedStates.US-ASCII@Binary

This locale specification applies to the whole Red Brick Warehouse installation, regardless of the number of databases that will be created for that installation. (An installation is defined by the contents of the rbw.config file found in the directory referenced by the RB_CONFIG environment variable.)

If you want to specify a locale that is different from the default locale specification, you must define each of its four components—language, territory, character set, and collation sequence. Refer to Appendix B for a list of locale specifications supported by Red Brick Warehouse. Record your warehouse locale specification here:

<table>
<thead>
<tr>
<th>Locale specification:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(English_UnitedStates.US-ASCII@Binary by default)</td>
</tr>
<tr>
<td>Language:</td>
</tr>
<tr>
<td>Territory:</td>
</tr>
<tr>
<td>Character set:</td>
</tr>
<tr>
<td>Collation sequence:</td>
</tr>
</tbody>
</table>
Selecting a Warehouse Logical Name

The default for the warehouse logical name is the literal name “RB_HOST”. This name corresponds to the name assigned to the memory mapped file (Sequent Symmetry System) or the IPC key (SHMEM) (all other platforms) in the rbw.config file. For a full description of the rbw.config file, refer to the Warehouse Administrator’s Guide.

For standard installations, the installation script provides a default value for the warehouse logical name (RB_HOST). If you are planning to run two versions (for example, Version 5.0 and Version 5.1) simultaneously or if you want to use a name that is different from the default value, record a different warehouse logical name here:

```
Logical name of warehouse daemon:
(RB_HOST by default)
```
Selecting an IPC Key for the Warehouse Daemon

Note: If you are installing Red Brick Warehouse on a Sequent Symmetry System, this section does not apply to you. Refer to “Identifying a Shared Memory Map File” on page 1-15.

The Red Brick Warehouse server uses a shared memory segment for communication with client processes such as the RISQL® Entry Tool. You must select an interprocess communication (IPC) key value for Red Brick Warehouse to use for its shared memory communication and supply this value during the installation process.

The Red Brick Warehouse daemon allocates IPC resources based on the IPC key value, which is supplied by the user for the RB_HOST SHMEM entry in the rbw.config file during the installation process. This value allocates additional IPC resources for each additional server that will be supported by the warehouse daemon, as specified by the MAX_SERVERS entry in the rbw.config file. The IPC key value has two requirements:

• The number must be different from any other IPC key value so that Red Brick Warehouse processes do not conflict with other processes.

Note: When running two versions of Red Brick Warehouse simultaneously for new-release testing purposes, you must use unique IPC key values for each version.

• The number forms the base for a list of IPC entries in the shared memory environment. This list must allow at least as many entries as the maximum number of users who will have concurrent access to the warehouse. Therefore, select an IPC key that allows at least that many free IPC slots before the next reserved entry.

For example, if MAX_SERVERS is set to 50, and 100 is specified as a base IPC key value:

```
RBWAPI MAX_SERVERS 50
RBW_HOST1 SHMEM 100
```

then any additional IPC key values specified must be greater than 100 by at least 32 (50 in decimal is 32 in hexadecimal). For example, a new IPC key value of 120 might result in a resource conflict, while a value of 140 would provide sufficient range between the IPC keys to accommodate the specified MAX_SERVERS value:

```
RBW_HOST2 SHMEM 140
```
Preparing for an Installation
Selecting an IPC Key for the Warehouse Daemon

You can examine the current shared memory settings and IPC configuration using the operating-system `ipcs` command. For most system environments, the default value of 0x100 (hexadecimal) is an appropriate selection.

Record the selected IPC key here for use during installation; the installation procedure requires that you specify this value with a hexadecimal number:

Base IPC Key (base 16 integer):

Example

The warehouse daemon logical name and IPC key value that you specify during the installation procedure are stored in the `rbw.config` file as follows:

```bash
# The following is used for IPC key values. Note that for shared memory and semaphores, the key values will range from the IPC key number to IPC key + MAX_SERVERS.
#
RB_HOST SHMEM 100
```

For more information about the `rbw.config` file, refer to the Warehouse Administrator’s Guide.
Identifying a Shared Memory Map File

Note: This section applies only to the installation of Red Brick Warehouse on a Sequent Symmetry System. If you are installing Red Brick Warehouse on another UNIX platform, refer to “Selecting an IPC Key for the Warehouse Daemon” on page 1-13.

The Red Brick Warehouse Server uses a shared memory map file for communication with client processes such as the RISQL Entry Tool. By default, this file is created in the same directory as the rbw.config file and is named .RB_HOST.mapfile. (RB_HOST is the connection name.)

The interprocess communication (IPC) key for each process is generated automatically by the daemon based on the file used for the shared memory map.

If you do not want to use the default shared memory map file, you can specify another file during the installation procedure or modify the rbw.config file after installation. In general, there is no reason to change the default value unless you are specifically advised to do so by Red Brick Systems.

Record the filename in the space provided:

Example: Shared Memory Map Filename and Warehouse Daemon Logical Name in rbw.config File

The shared memory map filename and warehouse daemon logical name that you specify during the installation procedure are stored in the rbw.config file:

```
# The following is used for IPC key values. Note that for shared memory
# and semaphores, the key values will range from the IPC key number to
# IPC key + MAX_SERVERS.
#
RB_HOST SHMEM 100
RB_HOST MAPFILE /redbrick_dir/.RB_HOST.mapfile
#  Daemon logical name  Full pathname of the warehouse daemon memory map file
```
**Preparing for an Installation**

**Determining the TCP/IP Port for the Red Brick Warehouse Daemon**

**Determining the TCP/IP Port for the Red Brick Warehouse Daemon**

The Red Brick Warehouse installation process asks you to supply a TCP/IP port. Determine this port number as follows:

1. Ensure that the operating-system command `netstat` is in your path (typically `/usr/etc/netstat`).

2. Determine whether the default Red Brick Warehouse daemon TCP/IP port is in use:

   ```
   $ netstat -an | grep 5050
   ```

   The system responds with a list of information about the default port, if any. If the system returns no information, the default port (5050) is not currently in use and can be used for this Red Brick Warehouse daemon configuration. If information is returned, the default port (5050) is in use and you must select another port. For information about using the `netstat` command to display a list of available ports, refer to your operating-system documentation.

   **Note:** The `netstat` command lists only those ports currently in use; it does not list ports used by processes that are not currently active. If you are uncertain about obtaining a unique number, ask your system administrator for advice.

   Use the default port, if it is not already in use. Otherwise, use a number between 2048 and 65535 that is not being used. Because numbers between 1024 and 2048 are commonly used for standard system ports, Red Brick Warehouse installation and configuration utilities do not accept values below 2048. Use a number above 4098 to minimize the chance of conflict.

   If you plan to run two versions of Red Brick Warehouse simultaneously, you must specify a different port number for each one.

3. Record the Red Brick Warehouse daemon port here:

   **Red Brick Warehouse Daemon port:**
Creating the redbrick Account

Before you begin installing Red Brick Warehouse, you must create a user account to be used for warehouse installation and all subsequent database administration activity. This account is also used as the effective execution user ID for warehouse server processes (`rbwsrvr`), and all database files and directories are owned exclusively by this user. The default name for this account is `redbrick`, although you can choose any name. Throughout the Red Brick Warehouse documentation, this user account is referred to as `redbrick`, and this user ID is used for all warehouse administration activities at the operating system level.

As a superuser, create the `redbrick` account using the appropriate system management tool, depending upon your platform. The following table lists the system management tools for each platform; for more information about each tool, refer to your operating-system documentation or `man` pages.

<table>
<thead>
<tr>
<th>Platform</th>
<th>System Management Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>AIX System Management Interface Tool (SMIT)</td>
</tr>
<tr>
<td>Digital UNIX</td>
<td>Digital UNIX <code>adduser</code> script</td>
</tr>
<tr>
<td>HP-UX</td>
<td>System Administration Manager tool (SAM)</td>
</tr>
<tr>
<td>NCR UNIX SVR4 MP-RAS</td>
<td>NCR UNIX SVR4 MP-RAS <code>sysadm</code> tool</td>
</tr>
<tr>
<td>Unisys UNIX System V</td>
<td>Unisys UNIX System V <code>sysadm</code> tool</td>
</tr>
<tr>
<td>DYNIX/ptx</td>
<td><code>ptx/ADMIN</code> tool</td>
</tr>
<tr>
<td>Solaris</td>
<td>Solaris Administration Tool</td>
</tr>
<tr>
<td>Silicon Graphics IRIX</td>
<td>Graphical system manager tool</td>
</tr>
</tbody>
</table>

You do not need to create additional operating-system user accounts if all users of the data warehouse will connect via client tools. However, if the warehouse will be accessed by local users via the RISQL Entry Tool or RISQL Reporter, you need to create accounts that give those users login access to the system. Also, you must provide database access for all Red Brick Warehouse users (whether they connect via client tools or the RISQL tools) by using the SQL GRANT authorization command. For details, refer to the Warehouse Administrator’s Guide.

**Note:** Users connecting to a Red Brick Warehouse database via RISQL Entry Tool or RISQL Reporter running on a remote system do not need operating-system user accounts.
Preparing for an Installation
Creating the redbrick Directory

Access to the redbrick Account

To ensure that correct access is provided for files created by the redbrick user, make sure the umask for this account is set to 077. Look for the following line at the end of both the .cshrc and .profile files for the redbrick user:

```
umask 077
```

If this line is not present in both files, enter it as shown above. This umask setting provides the following file access for the redbrick user:

```
redbrick: rwx (read, write, execute)
group: --- (none)
other: --- (none)
```

Creating the redbrick Directory

The redbrick user must have read, write, and execute access to the directory where the warehouse software will be installed. Throughout this document, this directory is referred to as the redbrick directory (redbrick_dir in examples), although you can name it whatever you choose.

Create this directory in the filesystem where you have decided to install the warehouse software. In most cases, this directory is the home directory for the redbrick user created in the previous section.

Providing License Keys

Red Brick Warehouse requires that you provide a valid license key before you start the warehouse daemon. In addition, if you have purchased optional Red Brick products (for example, the Enterprise Control and Coordination option), you must enable these products with license keys before using them.

The menu-driven installation script provides an interface for entering license keys directly into the Red Brick Warehouse configuration file. This procedure is described in Chapter 2 of this guide. A license key for a licensed option is provided on a one-page document that is delivered with Red Brick Warehouse when an optional product is purchased.
Choosing an Installation Procedure

If you are installing Red Brick Warehouse for the first time, you are ready to begin the installation procedure described in Chapter 2, “Installing Red Brick Warehouse.”

If you already have Red Brick Warehouse and wish to install and work with a new version of the software before converting your existing databases to that new version, refer to Chapter 3, “Installing a New Release.”
## Checklist of Preparation Steps

<table>
<thead>
<tr>
<th>Action</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Determine the operating-system shell.</td>
<td>1-3</td>
</tr>
<tr>
<td>2. Verify that you are running the correct version of your operating system.</td>
<td>1-4</td>
</tr>
<tr>
<td>3. Verify that you have sufficient disk space to install and run the software, and configure NFS filesystems, if applicable.</td>
<td>1-7</td>
</tr>
<tr>
<td>4. Set up your environment by configuring the operating-system parameters discussed in the appropriate appendix for your platform.</td>
<td>1-9</td>
</tr>
<tr>
<td>5. Determine a locale for your installation.</td>
<td>1-10</td>
</tr>
<tr>
<td>6. Select a warehouse logical name (default is RB_HOST).</td>
<td>1-12</td>
</tr>
<tr>
<td>7. Select an IPC key for the warehouse daemon. (All operating systems except DYNIX/ptx) or Identify a shared memory map file for the warehouse daemon. (DYNIX/ptx only)</td>
<td>1-13</td>
</tr>
<tr>
<td>8. Determine the TCP/IP port for the warehouse daemon.</td>
<td>1-16</td>
</tr>
<tr>
<td>9. As a superuser, create the redbrick account and verify file access for the redbrick user (umask 077 should appear in the .cshrc and .profile files).</td>
<td>1-17</td>
</tr>
<tr>
<td>10. Create the redbrick directory in the filesystem where you will install the software.</td>
<td>1-18</td>
</tr>
<tr>
<td>11. Have your license keys ready; one for each product or option you have purchased is provided in a separate document delivered with the CD-ROM.</td>
<td>1-18</td>
</tr>
<tr>
<td>12. Go to Chapter 2 or 3 for installation instructions:</td>
<td></td>
</tr>
<tr>
<td>• First-time warehouse—Chapter 2</td>
<td></td>
</tr>
<tr>
<td>• Existing warehouse—Chapters 2 and 3</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Refer to the Warehouse Administrator’s Guide for guidelines on estimating disk space.
This chapter explains how to install Red Brick Warehouse or Red Brick Warehouse for Workgroups. The procedures in this chapter apply to both products, unless otherwise stated. The installation procedure installs the software, as well as a sample database named Aroma, a utility directory named util, and all optional Red Brick products (for example, Enterprise Control and Coordination). As part of the installation procedure, you also have to enable the license keys for Red Brick Warehouse and any optional products you have purchased.

The installation procedure uses a script named INSTALL.ISO (install.iso for Unisys UNIX System V), which displays a menu of installation options. You can use the script to do any of the following:

- Install a full-feature or maintenance release of Red Brick Warehouse
- Install a partial update, or “patch,” release.
- Enable optional Red Brick products with a license key.

For more information about installing an update release, refer to the release notes distributed with your update release CD-ROM and Chapter 3, “Installing a New Release.”

Red Brick Warehouse installation is typically done by the system or database administrator. However, you can start the installation procedure and the administration and log daemon processes (rbwadmd, and rbwlogd) as the redbrick user.
Before You Begin

Read the release notes delivered with the software and complete the pre-installation tasks described in Chapter 1, “Preparing for an Installation.” The release notes discuss important information that was unavailable when this document was printed.

The procedures described in the following sections describe the basic installation process for Red Brick Warehouse. If you plan to run two concurrent releases of Red Brick Warehouse or if you are replacing the current release with a new release, refer to Chapter 3 for additional information.

The following conditions will prevent you from successfully installing the software:

• Incorrect user privileges
• Insufficient disk space
• Media failure (damaged CD-ROM)

If you see an error message during installation, make sure you have read/write privileges on the redbrick directory and that you have sufficient disk space for the warehouse software. For more information about system requirements, refer to “Verifying Operating-System Version and Disk Space” on page 1-4.

If you are still unable to install the warehouse and the sample database, or if the CD-ROM is damaged, contact Customer Support at Red Brick Systems as described on page xiii.
Preview of Installation Tasks

To install Red Brick Warehouse, you will perform the following tasks:

- As the superuser, mount the CD-ROM device.
- Log in as the redbrick user and change to the directory where you want to install the Red Brick Warehouse software. If you are installing a new release of Red Brick Warehouse, this directory must be different from the existing redbrick directory.
- Run the installation script, responding to the prompts as required.
- Enable Red Brick Warehouse with a valid license key.
- Enable additional products or options with valid license keys, if applicable.
- As the redbrick user, start the daemon processes (rbwapid, rbwadmd, and rbwlogd).
- As the redbrick user, run the verification script to verify your Red Brick Warehouse software installation.
- If you are installing a new release of Red Brick Warehouse, follow the additional instructions in Chapter 3. Chapter 3 contains information about running two releases of Red Brick Warehouse, replacing an existing warehouse with a new release, upgrading databases, and migrating users to a new release.
Mounting and Unmounting the CD-ROM Device

This section describes the procedure for mounting and unmounting your CD-ROM device. You must be the superuser to mount and unmount the CD-ROM. To install Red Brick Warehouse, you must first mount the CD-ROM for your platform. When you have completed the installation, you can unmount the CD-ROM for other uses.

**Note:** If you need additional information about mounting your CD-ROM device, refer to your operating system documentation.

**Mounting the CD-ROM Device**

Use the appropriate `mount` command, depending on your platform, to mount your CD-ROM device:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Mount Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td><code>#/etc/mount -v cdrfs -o ro device_name /cdrom</code></td>
</tr>
<tr>
<td>Digital UNIX</td>
<td><code>#/usr/sbin/mount -t cdfs -o noversion device_name /cdrom</code></td>
</tr>
<tr>
<td>HP-UX 10.0</td>
<td><code>#/usr/sbin/mount -F cdfs -o cdcase device_name /cdrom</code></td>
</tr>
<tr>
<td>Solaris</td>
<td>No <code>mount</code> command is needed; mounting occurs automatically when the CD-ROM is inserted into the device. The Logical Volume Manager must be running.</td>
</tr>
<tr>
<td>Silicon Graphics IRIX</td>
<td><code>#/usr/etc/mediad -r device_name</code></td>
</tr>
<tr>
<td></td>
<td><code>#/sbin/mount -t iso9660 -o notranslate device_name /CDROM</code></td>
</tr>
<tr>
<td>DYNIX/pxt</td>
<td><code>#/etc/mount -f cdfs -o toupper /dev/dsk/cd0 /cdrom</code></td>
</tr>
<tr>
<td>NCR UNIX SVR4 MP-RAS</td>
<td><code># mount -F cdfs -o ro,perm=555,nmconv=c /dev/dsk/c11t5d0s0 /cdrom</code></td>
</tr>
<tr>
<td>Unisys UNIX System V</td>
<td><code>#/etc/mount -F cdfs /dev/cdrom/d0 /cdrom</code></td>
</tr>
</tbody>
</table>

where `device_name` is the name of your CD-ROM device, and `/cdrom` is an existing directory where you want to mount the device.
Unmounting the CD-ROM Device

To unmount your CD-ROM device, use the appropriate command for your platform from the following table:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Unmount Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>umount device_name</td>
</tr>
<tr>
<td>Digital UNIX</td>
<td>/usr/sbin/umount device_name</td>
</tr>
<tr>
<td>HP-UX 10.0</td>
<td>/user/sbin/umount device_name</td>
</tr>
<tr>
<td>Solaris</td>
<td>eject cdrom</td>
</tr>
<tr>
<td>Silicon Graphics IRIX</td>
<td>umount device_name</td>
</tr>
<tr>
<td>DYNIX/ptx</td>
<td>umount /cdrom</td>
</tr>
<tr>
<td>NCR UNIX SVR4 MP-RAS</td>
<td>umount /cdrom</td>
</tr>
<tr>
<td>Unisys UNIX System V</td>
<td>/etc/umount /cdrom</td>
</tr>
</tbody>
</table>

where `device_name` is the name of your CD-ROM device.
Running the Installation Script

You will use a script named INSTALL.ISO to install Red Brick Warehouse. This script contains a menu interface that calls the supporting installation files during the installation. You run the same script from the CD-ROM device to install either Red Brick Warehouse or Red Brick Warehouse for Workgroups. You can run this script as any user; however, that user will be the owner of the database and executable files, referred to throughout the Red Brick Warehouse documentation as the redbrick user.

Start the installation process by entering:

```
$ cd redbrick_dir
$ /cdrom/platform_name/INSTALL.ISO
```

**Note:** If you are installing Red Brick Warehouse on a Unisys U6000 system, the name of the script is install.iso (lowercase).

In this command, redbrick_dir is the directory in which you want to install Red Brick Warehouse; /cdrom is the directory where your CD-ROM device is mounted; and platform_name is the appropriate platform from the following table:

<table>
<thead>
<tr>
<th>Platform</th>
<th>platform_name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>aix</td>
</tr>
<tr>
<td>Digital UNIX</td>
<td>dec</td>
</tr>
<tr>
<td>HP-UX</td>
<td>hpx</td>
</tr>
<tr>
<td>NCR UNIX SVR MP-RAS</td>
<td>NCR</td>
</tr>
<tr>
<td>DYNIX/ptx</td>
<td>PTX</td>
</tr>
<tr>
<td>Solaris</td>
<td>sol</td>
</tr>
<tr>
<td>Silicon Graphics IRIX</td>
<td>SGI</td>
</tr>
<tr>
<td>Unisys UNIX System V</td>
<td>uni</td>
</tr>
</tbody>
</table>

For example, if your platform is HP-UX, enter:

```
$ /cdrom/hpx/INSTALL.ISO
```

If your platform is Silicon Graphics IRIX, enter:

```
$ /cdrom/SGI/INSTALL.ISO
```

Note that the command is case-sensitive.
The main Red Brick Warehouse Installation Menu is displayed.

    ###########################################################################
    #                                                                   #
    #                     Red Brick Installation Menu                   #
    #                                                                   #
    ###########################################################################

1. Install Full or Maintenance Release
2. Install Update Release
3. Install Client Connectivity Products
4. Enable Red Brick Products
   Enter "q" to quit.

Enter item number and press Return. >

To install a full or maintenance release, type 1 and press Return. The following output is displayed:

    Installation Script for Red Brick Warehouse
    (C) Copyright 1991-1998 Red Brick Systems, Inc., Los Gatos, California, USA
    All rights reserved.
    Current directory is redbrick_dir.

From this point on, the installation script prompts you for information and takes the necessary actions as you respond.

Default values appear in brackets ([ ]) throughout the installation procedure. To use a default value, simply press Return. To use another value, type that value and press Return.

**Note:** If you have not logged in as the recommended default user redbrick, the installation script will display the following warning:

    You are not logged in with the recommended default user 'redbrick.' You may continue, but all future UNIX administration tasks for this installation must be done as user <username>.
    Continue? (y|n) [n]:

You can choose to continue the installation using the user name specified in the message, or stop the installation, log in as the redbrick user, and re-start the installation.
Stopping the Installation

You can stop the installation and return to the main installation menu at any time by entering your interrupt key—Control-C on most systems.

Note: Control-C means hold down the key marked “control” and press the key marked “C.”

You can then enter q to quit the installation script and return to the operating-system prompt. If you stop the installation, the files that have already been installed are not removed automatically; you must remove them manually before you run the installation script again.

Specifying the Warehouse Directory

The installation script asks you to verify that you want the warehouse software to be installed in the current directory.

1. Install Red Brick Warehouse in current directory? (y|n) [y]:

To install Red Brick Warehouse in the directory shown (the current directory), press Return.

Caution: If you are installing a new release of Red Brick Warehouse, make sure that new_redbrick_dir is different from the production redbrick directory and is not a subdirectory of that directory.

If the directory name is not correct, stop the installation by entering Control-C, enter q to quit the installation script and return to the operating-system prompt, change to the correct directory, and begin the procedure again.

Entering n allows you to bypass this prompt—so you can use the INSTALL.ISO script just to install the administration database or the sample Aroma database, for example (prompts 2 and 3).

The installation script displays the following prompt:

   If you are installing a maintenance release of Red Brick Warehouse the installation can use some of the information used by the existing installation to help with this new installation.

   Is there a previous installation of Red Brick Warehouse on this machine? (y|n) [n]:

Note: If you are installing Red Brick Warehouse in a directory that already contains an rbw.config file, then this prompt does not appear.
If you are installing a new release of Red Brick Warehouse, type `y` and press Return. The script displays the following:

```
Enter the directory where the current Red Brick Warehouse is installed:
```

Type the full pathname of the directory where the current Red Brick Warehouse installation is installed and press Return.

### Specifying the Locale

The installation script asks you to supply a locale for the installation.

```
Specify a locale for this warehouse installation; this locale will apply to all databases created for this installation.
```

```
Do you want to use the following default locale?

English_UnitedStates.US_ASCII@Binary (y|n) [y]:
```

If you want to use the default locale, press Return to accept it. If you specified a different locale on page 1-11, type `n` and press Return.

### Specifying the Language

If you choose not to use the installation’s default locale, the script asks you to supply a language.

```
Red Brick Warehouse supports the following languages:

1) English
2) German
3) French
4) ...
```

Enter the number of the language component to use [1]:

The list contains the names of all the languages that are supported by Red Brick Warehouse.

To select the default language, English, press Return. To select another language, type the number of the language and press Return.
Specifying the Territory

The installation script asks you to specify a territory for the installation. The recommended territories for the language you have chosen are shown; for example, if you choose Japanese as your language, the prompt displays the following choices:

The supported territories for the language Japanese are:
1) Japan

Enter the number of the territory component to use [1]:

Type the number of the territory and press Return.

Specifying the Character Set

The installation script asks you to specify a character set. The recommended character sets for the language you have chosen are shown; for example, if you choose Japanese as your language, the prompt displays the following choices:

The supported character sets for the language Japanese are:
1) JapanEUC
2) MS932
3) UTF-8

Enter the number of the character set component to use [1]:

Specifying the Sort Component

The installation script asks you to specify a sort component. The recommended sort components for the language you have chosen are shown; for example, if you choose Japanese as your language, the prompt displays the following choices:

The supported sort components for the language Japanese are:
1) Binary

Enter the number of the sort component to use [1]:
Verifying the Locale Specification

After you have supplied the locale specification (either by choosing the default specification or by selecting components from the displayed lists), the script displays your choices and asks you to verify them. For example, if you choose Japanese as your language, Japan as your territory, MS932 as your character set, and Binary as your sort component, the script displays the following prompt:

You have chosen the following locale components:
Language: Japanese
Territory: Japan
Character Set: JapanEUC
Sort: Binary

These components correspond to the following locale:
Japanese_Japan.JapanEUC@Binary

Do you want to change this specification? (y|n) [n]:

If you do not want to change the specification, press Return. If you do want to change the specification, enter y. The script will then prompt you for the language, territory, character set, and sort component again.
**Installing Red Brick Warehouse**  
*Running the Installation Script*

**Installing the Administration Database**

The installation script asks if you want to build the administration database. This is a database that administrators can use to monitor and control multiple databases across an enterprise.

2. Would you like to build an administration database? (y|n)  
[y]:

You do not need to build this database if you have not purchased the Enterprise Control and Coordination option. If you have purchased this option, however, you must install the administration database in order to take advantage of all the option’s features. This database does not count against the two-database limit for Red Brick Warehouse for Workgroups.

For detailed information about the uses of this database, refer to the *Warehouse Administrator’s Guide*.

**Note:** You can run the `rb_setup` script, located in the `redbrick` directory, later and build the administration database as a separate task, as long as the warehouse files are already installed.

**Installing the Sample Database**

The installation script asks if you want to install the sample database files:

3. To verify the installation, you must install the sample database (Aroma). Install the sample database? (y|n)  
[y]:

The installation verification procedure requires the sample database named Aroma, which is also used extensively in the examples provided in Red Brick Warehouse documentation. Therefore, most sites should install the sample database. The Aroma scripts, data, and database require approximately 16 megabytes of disk space and can be removed later if they are no longer needed. This database does not count against the two-database limit for Red Brick Warehouse for Workgroups.

To install the sample database files, press Return. If you do not want to install the sample database files, type `n` and press Return.
**Specifying the Tape Device (Tape Installation Only)**

The installation script contains a placeholder that is only used when installing Red Brick Warehouse from a tape. Because you are installing from a CD-ROM, this step is not necessary.

**Providing IPC Key or Memory Map File and User Information**

The installation script asks you for the logical name of the IPC key that the Red Brick Warehouse daemon will support.

5. Enter the logical name of the base IPC key to be supported by the Red Brick Warehouse daemon [RB_HOST]:

To use the default logical name (RB_HOST), press Return. Alternatively, type the name you recorded on page 1-12 and press Return.

**Caution:** If you are installing a new release and you will be running two releases of Red Brick Warehouse simultaneously during the test period, specify a logical host name other than the name used for the existing installation. For example, if you use the default name RB_HOST for your existing installation, you could use RB_HOST_TEST for the new release.

**Providing the IPC Key Number (all platforms except Sequent Symmetry System)**

**Note:** If you are installing Red Brick Warehouse on a Sequent Symmetry System, this section does not apply to you. Refer to “Specifying the Memory Map File (Sequent Symmetry System only)” on page 2-14.

The installation script asks you to specify the IPC key number, which forms the base for a list of IPC entries in the shared memory environment.

**Caution:** If you are installing a new release and you intend to run two releases of Red Brick Warehouse simultaneously during the test period, choose a different IPC key from the one used for your existing installation. The new key must be different from other reserved IPC keys and must allow at least as many entries as the maximum number of concurrent warehouse users.

6. Enter the base IPC key used for shared memory (base sixteen integer) to be used by the Red Brick Warehouse daemon [100]: 
**Specifying the Memory Map File (Sequent Symmetry System only)**

Note: This section applies only to the Sequent Symmetry System. If you are installing Red Brick Warehouse on another UNIX platform, refer to “Providing the IPC Key Number (all platforms except Sequent Symmetry System)” on page 2-13.

The installation script asks you to specify the name of the memory map file:

6. Enter the name of file to use for memory mapping for the default connection.

Enter the filename you recorded on page 1-15 and press Return.

**Specifying the TCP/IP Port for the Red Brick Warehouse Daemon**

The installation script asks for the TCP/IP port to be used to connect to the Red Brick Warehouse daemon.

7. Enter the TCP/IP port number used to connect to the Red Brick Warehouse daemon [5050]:

Red Brick Systems recommends using the default port (5050) for the Red Brick Warehouse daemon. To use the default port, press Return. Alternatively, type the number you recorded on page 1-16 and press Return.

Caution: If you are installing a new release, you must use a port other than the one you used for your existing installation. For example, use 5051.

**Specifying the Maximum Number of Servers**

Enter the maximum number of servers (there is one server process per user) for which the warehouse is licensed.

8. Enter the maximum number of servers (base ten integer) to be supported by the Red Brick Warehouse daemon [50]:

To use the default number (50), press Return.

The installation script now builds directories, copies files, sets permissions, builds the rbw.config configuration file, and installs Red Brick Warehouse, the sample database, and Red Brick utility files.
Finishing the First Phase of Installation

You have completed the user-input phase of the installation process. The installation script now uses the information you supplied to create and configure Red Brick Warehouse files and scripts. For a description of these files, refer to Appendix A, “Warehouse Directories and Files.”

When the Red Brick Warehouse installation is complete, the script prints a message like this:

To start the Red Brick Warehouse daemon, the redbrick user must issue the following command:
redbrick_dir/bin/rbw.start redbrick_dir RB_HOST


You must enable Red Brick Warehouse with a license key before proceeding. Select option #4 in the Red Brick Warehouse Installation Menu to enable Red Brick products.

Press Return to display the Red Brick Installation Menu.

When the installation process is finished, the installation script adds execute permissions for “group” and “others” to the Red Brick Warehouse directories. These permissions allow third-party applications to access the interfaces file as needed.

You must now enable Red Brick Warehouse with a license key. Press Return to display the main installation menu.
Enabling Red Brick Warehouse and Optional Products

Before you can use Red Brick Warehouse, you must enable it by providing a license key, which is entered into the rbw.config file by the installation script. Option 3 of the Red Brick Installation Menu allows you to enable Red Brick Warehouse and any other Red Brick products that you have purchased.

**Note:** The Red Brick Installation Menu should be displayed as shown below. If it is not, refer to the instructions on page 2-6 to display it.

```
#########################################################
#                                                       #
#                Red Brick Installation Menu            #
#                                                       #
#########################################################
1.  Install Full or Maintenance Release
2.  Install Update Release
3.  Install Client Connectivity Products
4.  Enable Red Brick Products
    Enter "q" to quit.

Enter item number and press Return. >
```

Type 3 and press Return. You will see the following prompt:

```
1.  Enable Red Brick Warehouse Products
2.  Enable Red Brick Warehouse for Workgroups Products

Enter item number and press Return. >
```

Type 1 or 2, as appropriate, then press Return. Two different menus of Red Brick products and options are displayed, depending on your choice.
Product Licenses for Red Brick Warehouse

If you select option 1, Enable Red Brick Products, a list similar to the following is displayed. The list shows the product license options for Red Brick Warehouse.

```
# Red Brick Product License
1. RED_BRICK_WAREHOUSE
2. RED_BRICK_WAREHOUSE_10
3. RED_BRICK_WAREHOUSE_25
4. RED_BRICK_WAREHOUSE_50
5. RED_BRICK_WAREHOUSE_75
6. RED_BRICK_WAREHOUSE_100
7. RED_BRICK_WAREHOUSE_150
8. RED_BRICK_WAREHOUSE_200
9. ...
```
Enter "q" to quit.
Enter item number and press Return. >

Product Licenses for Red Brick Warehouse for Workgroups

If you select option 2, Enable Red Brick Warehouse for Workgroups Products, a list similar to the following is displayed. The list shows the product license options for Red Brick Warehouse for Workgroups.

```
# Red Brick Product License
1. RED_BRICK_WAREHOUSE_FOR_WORKGROUPS_5
2. RED_BRICK_WAREHOUSE_FOR_WORKGROUPS_10
3. RED_BRICK_WAREHOUSE_FOR_WORKGROUPS_20
4. RED_BRICK_WAREHOUSE_FOR_WORKGROUPS_30
5. ...
```
Enter "q" to quit.
Enter item number and press Return. >
Entering License Keys

If you have purchased Red Brick Warehouse, enter one of the RED_BRICK_WAREHOUSE license keys first (the option you select depends on the number of named users). If you have purchased Red Brick Warehouse for Workgroups, enter one of its product license keys first (the option you select depends on the number of named users). Then repeat the procedure for any other products or options you have purchased, such as Enterprise Control and Coordination.

**Note:** You can enable additional products and options at any time by running the `rb_setup` script located in the `redbrick` directory.

**Example**

For example, to enable Red Brick Warehouse for Workgroups for a 20-user license, type the appropriate number (3 in the example list shown) and press Return.

The script prompts for your license key:
```
Enter your license key for RED_BRICK_WAREHOUSE_FOR_WORKGROUPS_20 and press Return. >
```

Enter your license key (a string of characters and/or numbers), as printed on the one-page document delivered with the software. Each product listed in the menu has a separate license key document. You must enter the key exactly as it appears in the document.

If you enter a valid license key, the system responds:
```
LICENSE_KEY RED_BRICK_WAREHOUSE_FOR_WORKGROUPS_20
license_string entered in ./rbw.config
Press Return to continue.
```

The license key you provided is entered in the `rbw.config` file by the installation script. If you enter the license key incorrectly, a message like this is displayed:
```
Key license_string not valid for RED_BRICK_WAREHOUSE_FOR_WORKGROUPS_20
Enter your license key for RED_BRICK_WAREHOUSE_FOR_WORKGROUPS_20 and press Return. >
```

Re-enter the license key and press Return.
After you have entered all the license keys for the products and options you have purchased, enter "q" to exit the Red Brick Product License menu, and enter "q" again to exit the rb_setup script. You can now start the Red Brick Warehouse daemon processes, as described in the following section.

Starting the Red Brick Warehouse Daemons

To run Red Brick Warehouse, you need to start the warehouse daemon process (rbwapid), which in turn starts the administration and log daemon processes (rbwadmd and rbwlogd). If you are not using the Enterprise Control and Coordination option, the administration daemon is not started when you start the warehouse daemon. The log daemon starts whether or not you are using the Enterprise Control and Coordination option, but without this option, the log daemon’s sole function is to log diagnostic information for use by technical support at Red Brick Systems.

The warehouse, administration, and log daemons are described in the Warehouse Administrator’s Guide.

To start the daemons as a background task:

1. If the installation menu is still displayed, exit from the menu by typing q and pressing Return.
2. Log in as the redbrick user.
3. Ensure you are in the redbrick directory by entering:
   
   ```
   # cd redbrick_dir
   ```
   
   where redbrick_dir is the full pathname of the directory containing the Red Brick Warehouse directories and files.
4. *(This step applies to Unisys UNIX System V only.* If you built the kernel with the SAT_SGUIDSWITCH set to 1, as discussed in Appendix J, skip this step. If you did not build the kernel with the SAT_SGUIDSWITCH set to 1, you must now manually set the setuid and setgid bits by entering:
   
   ```
   # chmod u+s bin/rb_tmu bin/rb_ptmu bin/rbwsvr
   # chmod g+s bin/risql bin/risqlrpt
   ```
5. Start the daemons by entering:
   
   ```
   # ./bin/rbw.start config_path RB_HOST_name
   ```
Installing Red Brick Warehouse
Starting the Red Brick Warehouse Daemons

where:

config_path
Full pathname (beginning with /) to the directory containing the rbw.config file. The installation procedure installs this file in the redbrick directory.

RB_HOST_name
Logical name for the warehouse daemon process. This value is RB_HOST by default, but can be any value that matches the value you specified on page 2-13 or page 2-14. This name corresponds to the name assigned to the IPC key (SHMEM) in the rbw.config file, unless you are installing on a Sequent Symmetry System, where it corresponds to the pathname of the default shared memory map file in the rbw.config file (redbrick_dir/RB_HOST_value.mapfile).

Note: The util directory, which is installed with Red Brick Warehouse, contains a utility named op that allows users to start Red Brick Warehouse daemons or to run other privileged scripts or programs without superuser (root) access. For more information about the op utility, refer to the README file in the redbrick_dir/util/op directory.

After the daemons have started successfully, a message reflecting your specific installation parameters is returned to both the terminal where the rbw.start script was run and the rbwapid.log file:

Red Brick Warehouse API Daemon Version 5.1.y(zzzz)
(C) Copyright 1991-1998, Red Brick Systems, Inc., Los Gatos, California, USA
All rights reserved

Process Id :13201
Config File Directory :/redbrick_dir
Connection Name :RB_HOST
Port number :5050
Base IPC key :100
Maximum Connections :50
Server Program Name :/redbrick_dir/bin/rbwsvr
Log File Name :/redbrick_dir/rbwapid.log
Log File Size :1000
Global Lock File Name :/redbrick_dir/.RB_HOST.lockfile
Maximum Parallel Tasks:
   Across All Servers :0
   Per Server :0

Note: In the above example, you will see slightly different items if your are installing Red Brick Warehouse on a Sequent Symmetry System. For example, the Base IPC Key will be different, and a Memory Map File entry will appear.
6. Press Return to display the operating-system prompt.

**Note:** Red Brick Warehouse provides administrative scripts that show which daemons are active, stop active daemons, and make the daemons start automatically when the operating system starts. For more information about these scripts, refer to the appendix that corresponds to your platform.
Verifying the Red Brick Warehouse Installation

After the installation script has completed and you have started the daemon processes, run the verification script to verify that Red Brick Warehouse was installed correctly.

To verify the installation, change to the redbrick directory and enter:

```
$ ./bin/rbw.verify config_path RB_HOST_name
```

where:

- **config_path**
  
  Full pathname (beginning with /) to the directory containing the rbw.config file. The installation procedure installs this file in the redbrick directory.

- **RB_HOST_name**
  
  Logical name for the warehouse daemon process. This value is RB_HOST by default, but can be any value that matches the value you specified on page 2-13 or page 2-14. This name corresponds to the name assigned to the IPC key (SHMEM) in the rbw.config file, unless you are installing on a Sequent Symmetry System, where it corresponds to the pathname of the default shared memory map file in the rbw.config file (redbrick_dir/RB_HOST_value.mapfile).

The verification script returns a message that begins like this:

```
Red Brick Warehouse Version..
Installation Verification
(C) Copyright 1991-1998 Red Brick Systems, Inc., Los Gatos, California, USA
All rights reserved.
Creating an empty AROMA database...
(C) Copyright 1991-1998 Red Brick Systems, Inc., Los Gatos, California, USA
All rights reserved.
Version 5.1.y(zzzz)
Creation of an empty AROMA database finished.
Creating tables in the AROMA database...
```
The verification script creates and loads Aroma, the sample database, generating load statistics for each table and checking the contents of the database. Upon successful completion, the verification script issues the following message:

```
```
## Checklist of Installation Tasks

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**Note:** First complete the preparation tasks in Chapter 1.

**Note:** You must be logged in as redbrick to run the script.

**Note:** Log in as redbrick to start the daemons.
Installing a New Release

This chapter is for existing Red Brick customers who want to install a new feature or maintenance release of Red Brick Warehouse or Red Brick Warehouse for Workgroups. The procedures in this chapter apply to both products, unless otherwise stated.

The installation script installs the warehouse software, including the sample database named Aroma and the utility directory named util, as well as all optional Red Brick products (for example, Enterprise Control and Coordination). The script also includes a licensing mechanism that you use to enable the software and any optional products you have purchased.

There are two methods for installing Red Brick Warehouse over an existing installation:

- You can keep the current release of Red Brick Warehouse running at your site, installing the new release in a separate directory and with separate run-time configuration settings for test purposes. A description of this method begins on page 3-3.
- You can replace the existing release with the new release. A description of this method begins on page 3-8.

Deciding which method to use depends on the level of change in the release, the system resources, and the production status of the implementation at your site.
Installing a New Release

For example, if the new release represents a major release from your existing warehouse software; you have room on your system to run two concurrent warehouse servers and store two databases; and your warehouse is in full-production mode, then simply overwriting your existing system is not wise. In this case, you will want to install the new release in a separate directory, test it to see how the changes will affect your warehouse implementation, and then upgrade production databases later.

On the other hand, if the new release is a maintenance release that contains few functional changes from the release running in your production environment, you might decide to skip the test step and overwrite the existing release immediately.

Depending on the level of change between your installed release and the new release, you might have to upgrade existing databases with the Table Management Utility (TMU) before they can be accessed by the new warehouse server. This operation is described in “Upgrading Databases” on page 3-6.

For more information about the level of change in this release and whether you need to upgrade your existing databases, refer to the release notes distributed with the new release of Red Brick Warehouse.

Note: After a database has been upgraded, it cannot be accessed by earlier releases of the software. Therefore, Red Brick Systems recommends that you use newly loaded data or copies of your current databases for test purposes.
Running Two Releases of Red Brick Warehouse

The procedure for installing and simultaneously running two releases of Red Brick Warehouse is similar to the first-time installation procedure except for directory name and location and some configuration parameters.

You need not shut down any existing daemons to perform this installation. Full production use of the existing release can continue.

The installation procedure for Red Brick Warehouse uses a script named INSTALL.ISO (install.iso for Unisys UNIX System V), which displays a menu of installation options. These options let you do any of the following:

• Install a full-feature or maintenance release of Red Brick Warehouse.
• Install a partial update, or “patch,” release.
• Enable an additional Red Brick product with a license key.

For more information about installing an update release, refer to the release notes that are distributed with the update release.

Red Brick Warehouse installation is typically done by the system or database administrator. However, you can start the installation procedure and the administration and log daemon processes (rbwadmd, and rbwlogd) as the redbrick user.

You can install a new release of Red Brick Warehouse while users are accessing the currently installed release as long as you do not overwrite the current release with the new release.
Preview of Installation Tasks

To install a new release of Red Brick Warehouse, you will perform the following tasks:

- Select an installation directory to hold the new release of Red Brick Warehouse (new_redbrick_dir). This directory must be different from the existing redbrick directory.
- Follow the installation instructions in Chapter 2 to install Red Brick Warehouse and verify your installation.
- Redirect client-application systems to the new release for testing purposes.
- Upgrade your test database(s).
- Test the new features of Red Brick Warehouse before migrating production databases to the new release.
- Upgrade production databases to the new release.
- Migrate users to the new release.
- Optionally, replace the old release of Red Brick Warehouse with the new release.

**Note:** Database backups created with Red Brick Warehouse for the existing release might not be compatible with the new release you are installing. (For details, refer to the release notes for the new release.) If you might need access to backups, **do not** remove your existing warehouse software from your system.

Installing Red Brick Warehouse

The procedure for installing Red Brick Warehouse is described in Chapter 2. When installing a new version of Red Brick Warehouse in addition to your existing installation, you must select an installation directory that is different from your existing installation directory. For example, if your current installation is in redbrick_dir, then you might install your new installation in a directory named new_redbrick_dir.

You must also select a warehouse logical name that is different from the logical name you used for your existing installation. For example, if your existing warehouse logical name is RB_HOST, you might choose RB_HOST_TEST as the logical name for your new installation.

Follow the instructions in Chapter 2, starting on page 2-3, then continue with the instructions in the remainder of this chapter.
Redirecting Client Applications for Test Purposes

Redirect the client-application system(s) that you want to use to test the new release by specifying the TCP/IP port you chose during installation (for example, 5051) in the `win.ini` or `interfaces` file. You should probably leave most client systems directed to the existing TCP/IP port until you finish testing the new warehouse.

You now have two independent warehouse daemons running.

If you are going to use existing databases to test the new release, you must upgrade them to the new release as described in the following sections.

Migrating Databases to the New Release

After testing the new release of Red Brick Warehouse and becoming familiar with the new features and changes from previous releases, migrate your production databases to the new release. There are three ways to do this:

- Use the UPGRADE command provided with the new release to upgrade existing databases if necessary.
- Run a Table Management Utility (TMU) UNLOAD operation with the existing release of the TMU, re-create all tables and other database objects in the new server, and reload (LOAD) with the new TMU.
- Run a TMU LOAD DATA operation with the data input files for the existing database using the new warehouse server release.

Only the UPGRADE procedure is described in this guide, on page 3-6. For information about unloading and reloading data or loading from original data input files, refer to the Table Management Utility Reference Guide.

Note: Databases created under previous releases are not always compatible with new warehouse server releases. For example, if you need to access a database backup that was created with a previous release of Red Brick Warehouse, you might need access to a compatible server release. To check compatibility between releases, refer to the release notes for the new release.
Upgrading Databases

To upgrade an individual database, invoke the Table Management Utility (TMU) and specify a control file containing the UPGRADE statement.

Note: Upgrades are not required for all new releases; check the current release notes for compatibility issues.

The upgrade operation creates backup copies of certain files for your database (such as the RB_DEFAULT_IDX file), which you can delete when you are satisfied that the upgrade process was successful. Which files are backed up varies from upgrade to upgrade.

Caution: Make sure all database files (for example, system table files or PSUs on NFS filesystems) are online before upgrading.

Upgrade each database as follows:

1. Create a TMU control file containing an UPGRADE statement as specified in the Table Management Utility Reference Guide or the release notes for the version you are installing.

2. Invoke the TMU, using a command of the form:

```
$ rb_tmu -d db_name control_file dba_username dba_password
```

where:

- **db_name**
  - Database to upgrade. This is the logical database name, as defined in the new_redbrick_dir/rbw.config file. If you do not use the -d option, the TMU uses the logical database name specified by the RB_PATH environment variable.

- **control_file**
  - Name of file containing the UPGRADE command.

- **dba_username, dba_password**
  - Username and password for the user with DBA authorization for the database to be upgraded.

Depending on the releases involved in a given upgrade, you might have to perform a REORG operation on your databases after upgrading. To find out whether or not this operation is necessary, refer to the current release notes.

For more information about TMU syntax, refer to the Table Management Utility Reference Guide.
Upgrade Messages

If a database referenced by a logical database name in the rbw.config file or a database named with the RISQL Entry Tool or RISQL Reporter -d startup option does not point to a valid database, the TMU issues a message like this:

**FATAL** (519) Directory '/db/sample_db/aroma' does not contain a valid Red Brick Warehouse database. Missing '/db/sample_db/aroma/RB_DEFAULT_LOCKS'.

If the database is already a valid Version 5.1 database, the TMU issues a message like this:

**ERROR** (558) UPGRADE command does not need to be run on database /db/sample_db/aroma.

After the database has been successfully upgraded, the TMU issues a message like this:

**INFORMATION** (559) UPGRADE of Red Brick Warehouse database /db/sample_db/aroma successful.

Migrating Users to the New Release

To migrate users to the new release:

1. Back up your existing production databases.
2. Run the UPGRADE script, as described in previous sections, to make databases compatible with the new release.
3. If necessary, perform a REORG operation to ensure referential integrity and optimal performance. To find out whether you need to perform a REORG operation, refer to the release notes for the current release.
4. Redefine users’ existing environment variables to point to the directory containing the new release software (new_redbrick_dir/bin).

The production version of the new Red Brick Warehouse release is now ready for use.
Replacing an Existing Warehouse with the New Release

If the new release you are installing is a maintenance release containing few substantial changes from the release running in your production environment, you can install the new release directly in the `redbrick` directory rather than set up a test directory. Installing in a directory that already contains a release of Red Brick Warehouse consists of the following tasks:

- Shutting down the Red Brick Warehouse daemons.
- Installing the new software.
- Starting the new Red Brick Warehouse daemons.
- Upgrading existing databases, if necessary.
- Announcing to user groups that the new release is available.

These procedures are described in the following sections.

**Note:** You can perform all steps in the procedure—including stopping and starting the Red Brick Warehouse daemons—as the `redbrick` user.

**Caution:** Before you install the new software, schedule a warehouse shutdown and warn all users that warehouse databases will not be accessible during the shutdown period.

**Shutting Down the Daemons**

1. Log in as the `redbrick` user.
2. Change to the directory containing the Red Brick Warehouse binary files, and stop the daemons (`rbwapid`, `rbwadmd`, and `rbwlogd`):

   ```bash
   # cd redbrick_dir/bin
   # ./rbw.stop RB_HOST
   ``

3. Continue as the `redbrick` user.
Installing a New Release
Replacing an Existing Warehouse with the New Release

Installing the New Release

Follow the installation instructions in Chapter 2, “Installing Red Brick Warehouse,” to install the new release in your standard redbrick directory. When installing a new release in your existing Red Brick Warehouse directory, you can use the same logical name and IPC key that you used for your existing installation.

As each Red Brick Warehouse program file is created during the installation process, you will be prompted to specify the location where you want the existing release backed up.

Note: You might want to back up the existing release at this time in case you need access to backup copies of databases that were created with the earlier release of Red Brick Warehouse. Eventually, these Red Brick Warehouse backup files can be removed from your system.

During installation, you are asked if you want to install a new rbw.config file or retain the existing one. If you choose to retain your existing rbw.config file, it will be saved as rbw.config.TIME and the new rbw.config file will be installed. If you need to use parameter values from your existing rbw.config file, you must manually copy them into the new rbw.config file.

Enable each optional Red Brick product you have purchased with a valid license key at this time.

Starting the Daemons

After installing the software and entering license keys, start the daemon processes, as described under “Starting the Red Brick Warehouse Daemons” on page 2-19.

Upgrading Existing Databases

Upgrade existing databases, as described under “Migrating Databases to the New Release” on page 3-5.

Announcing the New Release

Finally, describe the changes and improvements this release offers to the user community at your site.
### Checklist of Installation Tasks

#### To run two releases of Red Brick Warehouse concurrently:

<table>
<thead>
<tr>
<th>Action</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Install and verify Red Brick Warehouse.</td>
<td>Chapter 2</td>
</tr>
<tr>
<td>Note: First complete the preparation tasks in Chapter 1.</td>
<td></td>
</tr>
<tr>
<td>2. Redirect client applications to the new release for testing purposes.</td>
<td>3-5</td>
</tr>
<tr>
<td>3. Migrate your databases to the new release by performing an upgrade.</td>
<td>3-5</td>
</tr>
<tr>
<td>Note: Check the release notes for upgrade requirements.</td>
<td></td>
</tr>
<tr>
<td>4. Migrate users to the new release.</td>
<td>3-7</td>
</tr>
</tbody>
</table>

#### To replace an old release of Red Brick Warehouse with the new release:

<table>
<thead>
<tr>
<th>Action</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stop the Red Brick Warehouse daemons for the existing release.</td>
<td>3-8</td>
</tr>
<tr>
<td>Note: Log in as redbrick to stop the warehouse daemon.</td>
<td></td>
</tr>
<tr>
<td>2. Install the new release.</td>
<td>Chapter 2</td>
</tr>
<tr>
<td>3. Start the new Red Brick Warehouse daemons, as directed in Chapter 2.</td>
<td>2-19</td>
</tr>
<tr>
<td>4. Upgrade existing databases, if necessary; check the release notes for details.</td>
<td>3-9</td>
</tr>
<tr>
<td>5. Announce the availability of the new release to users.</td>
<td>3-9</td>
</tr>
</tbody>
</table>
The Red Brick client installation process allows you to install Red Brick client products separately from the Red Brick Warehouse server installation procedure. When the Red Brick Warehouse server is installed, the Red Brick client products are automatically installed on the same machine; however, the client installation procedure described in this chapter lets you install Red Brick client products on machines other than the machine where the Red Brick Warehouse server is installed. This gives client users access to Red Brick Warehouse databases while eliminating the need for them to have accounts on the server machine.

This chapter explains how to install the following Red Brick Warehouse client products on UNIX platforms:

- RISQL Entry Tool, which lets you access Red Brick Warehouse databases on computers running UNIX-based and Windows NT-based operating systems.
- RISQL Reporter, which provides all the features of the RISQL Entry Tool and lets you format reports with data retrieved from warehouse databases.
- Red Brick ODBCLib Software Developer’s Kit (SDK), which provides the static libraries you need to build custom UNIX-based client applications.

The client installation procedure installs the Red Brick client software in a directory you define; if you install the RISQL Reporter product, you must also enable and license it during the installation procedure.

The client installation procedure uses the INSTALL.ISO script (install.iso for Unisys UNIX System V), which displays a menu of installation options. You can install one or more Red Brick client products or enable RISQL Reporter with a license key.
Installing Red Brick Client Products
Before You Begin

Before You Begin

Read the release notes delivered with the software. The release notes discuss important information that was unavailable when this document was printed.

The procedures described in the following sections describe the basic installation process for Red Brick Warehouse client products.

The following conditions will prevent you from successfully installing the software:

- Incorrect user privileges
- Insufficient disk space
- Media failure (damaged CD-ROM)

If you see an error message during installation, make sure you have read/write privileges on the directory into which you are installing the Red Brick client products and that you have sufficient disk space for the software. For more information about system requirements, refer to “Verifying Operating-System Version and Disk Space” on page 1-4.

If you are still unable to install the Red Brick client products or if the CD-ROM is damaged, contact Customer Support at Red Brick Systems as described on page xiii.

Mounting and Unmounting the CD-ROM Device

To install Red Brick Warehouse client products, you must first mount the CD-ROM for your platform. When you have completed the installation, you can unmount the CD-ROM for other uses.

For an explanation of the process of mounting and unmounting your CD-ROM device, refer to “Mounting and Unmounting the CD-ROM Device” on page 2-4.
Running the Installation Script

You will use the INSTALL.ISO script to install Red Brick Warehouse client products. This script contains a menu interface that calls the supporting installation files during the installation. You can run this script as any user (that is, you do not need to be the redbrick user).

Start the installation process by entering:

```bash
$ cd client_dir
$ /cdrom/platform_name/INSTALL.ISO
```

**Note:** If you are installing Red Brick Client products on a Unisys U6000 system, the name of the script is `install.iso` (lowercase).

In this command, `client_dir` is the directory in which you want to install Red Brick client products, `/cdrom` is the directory where your CD-ROM device is mounted, and `platform_name` is the appropriate value from the following table:

<table>
<thead>
<tr>
<th>Platform</th>
<th>platform_name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>aix</td>
</tr>
<tr>
<td>Digital UNIX</td>
<td>dec</td>
</tr>
<tr>
<td>HP-UX</td>
<td>hpx</td>
</tr>
<tr>
<td>NCR UNIX SVR MP-RAS</td>
<td>NCR</td>
</tr>
<tr>
<td>DYNIX/ptx</td>
<td>PTX</td>
</tr>
<tr>
<td>Solaris</td>
<td>sol</td>
</tr>
<tr>
<td>Silicon Graphics IRIX</td>
<td>SGI</td>
</tr>
<tr>
<td>Unisys UNIX System V</td>
<td>uni</td>
</tr>
</tbody>
</table>

For example, if your platform is HP-UX, enter:

```bash
$ /cdrom/hpx/INSTALL.ISO
```

If your platform is Silicon Graphics IRIX, enter:

```bash
$ /cdrom/SGI/INSTALL.ISO
```

Note that the command is case-sensitive.
The main Red Brick Warehouse Installation Menu is displayed.

```
# Red Brick Installation Menu
#
1. Install Full or Maintenance Release
2. Install Update Release
3. Install Client Connectivity Products
4. Enable Red Brick Products
   Enter "q" to quit.
Enter item number and press Return. >
```

To install a client product, type 3 and press Return. The following menu is displayed:

```
# Red Brick Client Products Installation Menu
#
1. Install RISQL Entry Tool and RISQL Reporter
2. Install Red Brick ODBCLib (SDK)
3. Enable RISQL Reporter
   Enter "q" to quit.
Enter item number and press Return. >
```

Type the number of the Red Brick client product you want to install, then press Return.
Stopping the Installation

You can stop the installation and return to the main installation menu at any time by entering your interrupt key—Control-C on most systems.

**Note:** Control-C means hold down the key marked “control” and press the key marked “C.”

You can then enter q to quit the installation script and return to the operating-system prompt. If you stop the installation, the files that have already been installed are not removed automatically; you must remove them manually before you run the installation script again.
Installing Client Products

This section describes the process for installing the Red Brick client software for the first time. For information about specifying the locale, refer to page 2-9 and to Appendix B. If you have already installed a Red Brick client product and you want to install other Red Brick client products in the same directory, refer to page 4-8.

Specifying the Installation Directory

The installation script displays a prompt similar to the following:

```
Install RISQL Entry Tool and RISQL Reporter in current directory? (y|n) [y]:
```

**Note:** If you have chosen a Red Brick client product other than RISQL Entry Tool and RISQL Reporter, that product’s name appears in the prompt.

To install the indicated client product in the current directory, press Return.

If the directory name is not correct, stop the installation by entering Control-C, then enter q to quit the installation script and return to the operating-system prompt. Change to the correct directory and begin the procedure again.

Specifying the Host Name

The installation script displays the following prompt:

```
Enter the host name of the machine which is running the Red Brick Warehouse server to which you wish to connect:
```

Enter the host name of the machine running the Red Brick Warehouse server (for example, spock) and press Return.

**Note:** If you do not know the host name of the machine running Red Brick Warehouse, ask your system administrator.
Specifying the TCP/IP Port for the Red Brick Warehouse Daemon

The installation script asks for the TCP/IP port to be used to connect to the Red Brick Warehouse daemon.

Enter the TCP/IP port number used to connect to the Red Brick Warehouse daemon [5050]:

Type the number of the port for the Red Brick Warehouse daemon and press Return. The default is 5050; if you do not know the TCP/IP port number, ask your system administrator. You can also find this port number in the SERVER entry in the rbw.config file for the Red Brick Warehouse server; for example:

```
RB_HOST SERVER 5050
```

The installation script now installs the Red Brick client product. When the installation is complete, the installation script returns you to the Red Brick Client Products Installation Menu, where you can choose additional Red Brick client products to install.

If you have finished installing Red Brick client products, enter “q” to exit the client installation process and return to the main installation menu, then enter “q” a second time to exit the installation script.

Note: If you install RISQL Reporter, you must enable it with a license key, as described on page 4-9.
Installing Additional Red Brick Client Products

After you have installed one Red Brick client product, you can install subsequent client products in the same directory without having to specify the locale, host, and TCP/IP port information each time.

After you have installed one Red Brick client product, the installation script returns you to the Red Brick Client Products Installation Menu. Type the number of the product you want to install and press Return.

The script asks if you want to install the client product in the current directory. If you enter “y,” the installation proceeds without asking you further questions. If you enter “n,” you will be prompted for the directory in which you want to install the software, and you must enter the locale, port, and host information in response to the installation script’s prompts.

If you have finished installing Red Brick client products, enter “q” to exit the client installation process and return to the main installation menu, then enter “q” a second time to exit the installation script.

Using UNIX ODBC Applications

If you will be running any UNIX ODBC applications that use DSNs (data source names), a file named .odbc.ini must exist in the home directories of each user of these applications. For more information about the .odbc.ini file, refer to the ODBC Connectivity Guide.
**Enabling RISQL Reporter**

Before you can use the RISQL Reporter product, you must enable it by providing a license key. Option 3 of the Red Brick Client Products Installation Menu allows you to enable RISQL Reporter.

The Red Brick Client Products Installation Menu should be displayed as shown below. If it is not, refer to the instructions on page 4-3 to display it.

```plaintext
# Red Brick Client Products Installation Menu
#
1. Install RISQL Entry Tool and RISQL Reporter
2. Install Red Brick ODBCLib (SDK)
3. Enable RISQL Reporter
   Enter "q" to quit.

Enter item number and press Return. >
```

Type **3** and press Return. The following menu is displayed:

```plaintext
# Red Brick Product License
#
1. RISQL_REPORTER
   Enter "q" to quit.
   Enter item number and press Return. >
```

Type **1** and press Return.
**Installing Red Brick Client Products**

**Enabling RISQL Reporter**

**Entering the License Key**

Enter the RISQL_REPORTER license key (a string of characters and/or numbers) as it appears on the one-page document delivered with the software.

**Note:** You can enable RISQL Reporter at any time by running the `rb_setup` script located in the `redbrick` directory.

If you enter a valid license key, the system responds:

```
LICENSE_KEY RISQL_REPORTER
license_string enabled in ./rbw.config

Press Return to continue.
```

The license key you provided is entered in the `rbw.config` file by the installation script. If you enter the license key incorrectly, a message like this is displayed:

```
Key license_string not valid for RISQL_REPORTER.
Enter your license key for RISQL_REPORTER and press Return.
```

Re-enter the license key and press Return.
## Checklist of Installation Tasks

To install Red Brick Client products:

<table>
<thead>
<tr>
<th>Action</th>
<th>Page</th>
<th>Note: For more information about mounting the CD-ROM device, refer to Chapter 2.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mount the CD-ROM device.</td>
<td>4-2</td>
<td></td>
</tr>
<tr>
<td>2. Run the installation script, choose option 3 from the main menu, and respond to the prompts.</td>
<td>4-3</td>
<td></td>
</tr>
<tr>
<td>3. If you have purchased RISQL Reporter, choose option 4 from the installation menu to enable it.</td>
<td>4-9</td>
<td></td>
</tr>
</tbody>
</table>
Installing Red Brick Client Products

Checklist of Installation Tasks
This chapter contains some information that you might need during installation or configuration of Red Brick Warehouse. This information is common to all supported UNIX platforms. For platform-specific system administration information, refer to the appropriate appendix.

This chapter explains the following administrative tasks:

- Administering Warehouse Daemons
- Changing the Simultaneous Connections Limit
- Changing the redbrick User ID
Administering Warehouse Daemons

Red Brick Warehouse provides commands and configuration settings for checking the status of the rbwapid, rbwadmd, and rbwlogd daemons; stopping the daemons; and configuring them to start automatically whenever the operating system starts.

Checking Active Daemons

To obtain information about active daemons and associated servers, run the script `rbw.show`.

Example

```
$ cd redbrick_dir
$ ./bin/rbw.show
```

Stopping Active Daemons

To stop an active daemon, run the script `rbw.stop` as the `redbrick` user.

Example

```
# cd redbrick_dir
# ./bin/rbw.stop RB_HOST
```

where `RB_HOST` is the logical name of the daemon to be stopped.

Note: The `util` directory, which can be installed with Red Brick Warehouse, contains a utility named `op` that allows users to start Red Brick Warehouse daemons or to run other privileged scripts or programs without superuser (`root`) access. For more information about the `op` utility, refer to the README file in the `redbrick_dir/util/op` directory.

Configuring Daemons for Automatic Startup

For information about how to configure the Red Brick Warehouse daemon for automatic startup, refer to the appendix appropriate to your platform.
Changing the Simultaneous Connections Limit

Red Brick Warehouse limits the maximum number of connections it accepts to the value specified in the warehouse configuration file, \textit{rbw.config}. This number, which is used by the warehouse daemon, is specified as:

\texttt{RBWAPI MAX\_SERVERS}

The default value is 50.

For more information about the connections limit and how to change it, refer to the \textit{Warehouse Administrator's Guide}. 
Changing the redbrick User ID

You can designate any user to install the Red Brick software and be the owner of the database files. By default, this user is named redbrick, but you can change the user that owns the Red Brick software and database files at any time.

There are two ways to change the user that owns the Red Brick software and database files:

- Add a new user ID and change the ownership of files.
- Change the name of the user ID.

These two methods are described in the following sections.

Adding a New User ID

Perform the following procedure to add a new UNIX user ID that owns the Red Brick software and database files. It is easier to add this user before you install Red Brick Warehouse, although you can add a new user and change the ownership of the software and database files at any time.

1. Locate the directories of all of the files that the database uses and record their names and locations. The following are locations where files are used by Red Brick Warehouse:
   - All files specified by performing the following query:
     
     ```sql
     select location from rbw_storage;
     ```
   - The database directories
   - The redbrick_dir/bin directory
   - The $RB_CONFIG directory
   - Any other directories owned by the user that owns the database files
   - Any other directories containing files owned by the user that owns the database files

2. Create a new UNIX user (named redbrick, for example). The new user must belong to the same group as the previous user that owned the database files (goldmine, for example). For information about creating a new UNIX user, refer to your operating-system documentation.

3. Shut down all Red Brick processes and daemons. These all run as the user that owns the database files.
4. As the root user, issue the following command:

   ```
   % find <directory_list> -user goldmine -print
   ```

   where `directory_list` is the list of directories from step 1, and `goldmine` is the user that owns the database files. This command lists the files and directories for which ownership will be changed.

   **Tip:** Save the output of this command to a file and check that you do not inadvertently change the ownership of a file.

5. Enter one of the following commands to change the owner of the files listed in step 4.

   ```
   % find <directory_list> -user goldmine -ok chown redbrick {}
   ```
   or
    ```
   % find <directory_list> -user goldmine -exec chown redbrick {}
   ```

   The only difference between these two commands is that the command with the `-ok` flag prompts you before each operation and the command with the `-exec` flag changes the owner without prompting you for approval.

6. Add a line to your `rbw.config` file similar to the following:

   ```
   # Changed <goldmine> to <redbrick> by <name> on <date>.
   ```

7. If you have not already installed Version 5.1, do so now as the user you just created (for example, `redbrick`).

When you have finished this procedure, run the `rbw.start` script to start the daemon processes.

### Changing the Name of the User ID

To change the name of the user ID that owns the Red Brick software and database files, edit the name field in your UNIX user database. You can do this by editing the password file (and shadow file on some systems) directly or by using an administrative tool supplied with your UNIX operating system. For more information about the UNIX user database, refer to your operating-system documentation.

**Note:** You must have superuser (`root`) privileges to perform these operations.

Although this method is quick and easy, the drawback is that it changes the original user definition. If you are running previous versions of Red Brick Warehouse, the `goldmine` user ID is required, so if you changed the name of `goldmine` to `redbrick`, for example, you could no longer run Version 4.0 or earlier versions of Red Brick Warehouse.
Miscellaneous Administrative Tasks

Changing the redbrick User ID
This appendix describes a typical warehouse directory structure, built using the standard configuration provided by the Red Brick Warehouse installation procedure. Throughout the Red Brick Systems documentation, the warehouse directory is referred to as the redbrick directory or redbrick_dir.
The following illustration is a graphical representation of the directory hierarchy. A brief description of each significant file follows the illustration.

Warehouse Directories and Files

The following illustration is a graphical representation of the directory hierarchy. A brief description of each significant file follows the illustration.

Warehouse Program Directory

redbrick directory

redbrick directory

Typical User Account Directory

Aroma Sample Data Directory

warehousing

program

program

directory

directory
The following table describes the directories and files in the *redbrick* directory. In the Name column, directories are marked with a slash (/) character, and their contents are indented.

### Directories and Files Under *redbrick* Directory

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.rbretrc</td>
<td>Optional initialization files for the RISQL Entry Tool or the RISQL Reporter at warehouse and user levels.</td>
</tr>
<tr>
<td>.rbwrc</td>
<td>Optional initialization files for server at warehouse, database, and user levels.</td>
</tr>
<tr>
<td><em>bin/</em></td>
<td>Directory for warehouse server binary files and scripts.</td>
</tr>
<tr>
<td><em>rb_cm</em></td>
<td>Utility used to move data between warehouse databases across networks. (Included with the Enterprise Control and Coordination Option.)</td>
</tr>
<tr>
<td><em>rb_creator</em></td>
<td>Script that creates the data dictionary and control tables for a warehouse by executing <em>rbwcrtr</em>.</td>
</tr>
<tr>
<td><em>rb_deleter</em></td>
<td>Script that deletes the default-named files for a warehouse database.</td>
</tr>
<tr>
<td><em>rb_ptmu</em></td>
<td>Optional binary file for the Parallel Table Management Utility (Parallel TMU).</td>
</tr>
<tr>
<td><em>rb_sample.cleanup</em></td>
<td>Sample script to include in startup file for automatic cleanup of temporary files.</td>
</tr>
<tr>
<td><em>rb_tmu</em></td>
<td>Binary file for the Table Management Utility (TMU).</td>
</tr>
<tr>
<td><em>rb_translate</em></td>
<td>Translation-support file.</td>
</tr>
<tr>
<td><em>rb_upgrade.all</em></td>
<td>Script that upgrades all databases built with previous releases to current release.</td>
</tr>
<tr>
<td><em>rbw.findserver</em></td>
<td>Script that displays a list of all active warehouse server processes, using information gathered by <em>rbw.servermon</em>.</td>
</tr>
<tr>
<td><em>rbw.servermon</em></td>
<td>Server-monitoring daemon.</td>
</tr>
<tr>
<td><em>rbw.show</em></td>
<td>Script that shows whether <em>rbwapid</em> daemon is running and lists all <em>rbwsvr</em> processes using that daemon.</td>
</tr>
<tr>
<td><em>rbw.start</em></td>
<td>Script that starts <em>rbwapid</em> daemon.</td>
</tr>
<tr>
<td><em>rbw.stop</em></td>
<td>Script that stops <em>rbwapid</em> daemon.</td>
</tr>
</tbody>
</table>
### Warehouse Directories and Files

**Directories and Files Under `redbrick` Directory** (Continued)

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>rbw.verify</code></td>
<td>Script that loads the Aroma sample database to verify the warehouse installation procedure.</td>
</tr>
<tr>
<td><code>rbwapid</code></td>
<td>Binary file for the warehouse daemon.</td>
</tr>
<tr>
<td><code>rbwadmd</code></td>
<td>Binary file for the administration daemon.</td>
</tr>
<tr>
<td><code>rbwcrtr</code></td>
<td>Binary file for program that creates a new database; only for use by <code>rb_creator</code> script.</td>
</tr>
<tr>
<td><code>rbwlogd</code></td>
<td>Binary file for the log daemon.</td>
</tr>
<tr>
<td><code>rbwlogmsg</code></td>
<td>Utility that enables scripts to log events.</td>
</tr>
<tr>
<td><code>rbwlogview</code></td>
<td>Utility that allows viewing of binary logs generated in the <code>logs</code> subdirectory.</td>
</tr>
<tr>
<td><code>rbwsvr</code></td>
<td>Binary file for program that services client requests.</td>
</tr>
<tr>
<td><code>risql</code></td>
<td>Binary file for the RISQL Entry Tool.</td>
</tr>
<tr>
<td><code>risqlrpt</code></td>
<td>Optional binary file for the RISQL Reporter.</td>
</tr>
<tr>
<td><code>.connection_name.lockfile</code></td>
<td>(All UNIX platforms except Sequent Symmetry System) Temporary file created for warehouse use as target of POSIX locks.</td>
</tr>
<tr>
<td><code>.connection_name.mapfile</code></td>
<td>(Sequent Symmetry System only) File created for communication with client processes (memory mapping).</td>
</tr>
<tr>
<td><code>install.log</code></td>
<td>File containing identification number and date reflecting when warehouse software was installed.</td>
</tr>
<tr>
<td><code>messages/</code></td>
<td>Directory containing the messages file for the language of choice (for example, English) and a corresponding log file.</td>
</tr>
<tr>
<td><code>rb_setup</code></td>
<td>Program used to install Red Brick Warehouse and to activate Red Brick products with license keys.</td>
</tr>
<tr>
<td><code>rbwcli.install</code></td>
<td>Script used for installation of Red Brick client products.</td>
</tr>
<tr>
<td><code>rbmt</code></td>
<td>Script used for tape control.</td>
</tr>
<tr>
<td><code>rbw.boot</code></td>
<td>Script for automatic startup of <code>rbwapid</code> during system bootup.</td>
</tr>
<tr>
<td><code>rbw.config</code></td>
<td>Text file containing configuration parameters.</td>
</tr>
</tbody>
</table>

*Note: `redbrick` directory contains the necessary files and directories for installing and configuring Red Brick Warehouse.*
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rbw.install</td>
<td>Script used by \textit{rb_setup} that controls the installation procedure.</td>
</tr>
<tr>
<td>rbw.update</td>
<td>Script used by \textit{rb_setup} that runs the installation procedure for update releases.</td>
</tr>
<tr>
<td>rbwapid.log</td>
<td>File where log entries are written; an \textit{old} extension indicates the previous log file.</td>
</tr>
<tr>
<td>rbwapid.pid</td>
<td>File containing process ID (PID), product version, and \textit{rbwapid.log} header information.</td>
</tr>
<tr>
<td>sample_input/</td>
<td>Directory containing files used to create Aroma, the sample database. File contents are indicated by their extensions as follows:</td>
</tr>
<tr>
<td></td>
<td>• \textit{.tmu}—Control statements for the Table Management Utility; for example, LOAD DATA</td>
</tr>
<tr>
<td></td>
<td>• \textit{.risql}—SQL and RISQL commands; for example, CREATE TABLE</td>
</tr>
<tr>
<td></td>
<td>• \textit{.txt}—Data input for the tables</td>
</tr>
<tr>
<td>aroma_db/</td>
<td>Sample database built by the \textit{rbw.verify} program that results from the \textit{sample_input} files.</td>
</tr>
<tr>
<td>admin_db/</td>
<td>Administration database built by the installation script for users of the Enterprise Control and Coordination option.</td>
</tr>
<tr>
<td>logs/</td>
<td>Default directory that contains log files created by the log daemon (\textit{rbwlogd}).</td>
</tr>
<tr>
<td>util/</td>
<td>Directory containing collection of miscellaneous tools and utilities for use with Red Brick Warehouse. For information on contents and use, refer to the README file in this directory.</td>
</tr>
</tbody>
</table>
Recommended Locale Specifications

This appendix identifies the languages, territories, character sets, and collation sequences supported by the Red Brick products. The following table lists the logical combinations of these locale components; however, any combination can be used in a locale specification.

The values shown in boldface are the default values for the corresponding language when an incomplete locale is specified. For example, the default character set for German is Latin1.

Refer to the Warehouse Administrator’s Guide for more information about locales.
### Recommended Locale Specifications

<table>
<thead>
<tr>
<th>Language</th>
<th>Territory</th>
<th>Character Set</th>
<th>Sort</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>United States</td>
<td>US-ASCII</td>
<td>Binary</td>
</tr>
<tr>
<td></td>
<td>Australia</td>
<td>Latin1 MS1252</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Canada</td>
<td>UTF-8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>United Kingdom</td>
<td></td>
<td>Default</td>
</tr>
<tr>
<td>German</td>
<td>Germany</td>
<td>Latin1 MS1252</td>
<td>Default</td>
</tr>
<tr>
<td></td>
<td>Austria</td>
<td>UTF-8</td>
<td>Binary</td>
</tr>
<tr>
<td></td>
<td>German-Switzerland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>French</td>
<td>France</td>
<td>Latin1 MS1252</td>
<td>Default</td>
</tr>
<tr>
<td></td>
<td>French-Canada</td>
<td>UTF-8</td>
<td>Binary</td>
</tr>
<tr>
<td></td>
<td>French-Switzerland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>Spain</td>
<td>Latin1 MS1252</td>
<td>Spanish</td>
</tr>
<tr>
<td></td>
<td>Argentina</td>
<td>UTF-8</td>
<td>TraditionalSpanish</td>
</tr>
<tr>
<td></td>
<td>Chile</td>
<td></td>
<td>Binary</td>
</tr>
<tr>
<td></td>
<td>Mexico</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portuguese</td>
<td>Portugal</td>
<td>Latin1 MS1252</td>
<td>Default</td>
</tr>
<tr>
<td></td>
<td>Brazil</td>
<td>UTF-8</td>
<td>Binary</td>
</tr>
<tr>
<td>Italian</td>
<td>Italy</td>
<td>Latin1 MS1252</td>
<td>Default</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UTF-8</td>
<td>Binary</td>
</tr>
<tr>
<td>Norwegian</td>
<td>Norway</td>
<td>Latin1 MS1252</td>
<td>Danish</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UTF-8</td>
<td>Binary</td>
</tr>
<tr>
<td>Swedish</td>
<td>Sweden</td>
<td>Latin1 MS1252</td>
<td>Swedish</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UTF-8</td>
<td>Binary</td>
</tr>
<tr>
<td>Danish</td>
<td>Denmark</td>
<td>Latin1 MS1252</td>
<td>Danish</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UTF-8</td>
<td>Binary</td>
</tr>
</tbody>
</table>
### Recommended Locale Specifications

<table>
<thead>
<tr>
<th>Language</th>
<th>Territory</th>
<th>Character Set</th>
<th>Sort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finnish</td>
<td>Finland</td>
<td>Latin1</td>
<td>Swedish</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MS1252</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>UTF-8</td>
<td></td>
</tr>
<tr>
<td>Japanese</td>
<td>Japan</td>
<td>JapanEUC</td>
<td>Binary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MS932</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>UTF-8</td>
<td></td>
</tr>
</tbody>
</table>

**Notes**

- The component strings in this table must be used in locale specifications exactly as shown, with the exception that they are not case-sensitive.
- In the Sort column, anything that is not “Binary” is a linguistic sort definition. “Default” refers to the sort definition specified by the CAN/CSA Z243.4.1 Canadian ordering standard, which covers English and several Western European languages.
- All character sets include US-ASCII as a subset, so any of the listed character sets can safely be used when the language is English; however, the character sets listed for each language are the most appropriate choices.
- Character set conversions can reliably be performed between any two character sets listed for a given language. Conversions outside the scope of each language row in the table are not supported. For example, characters can be converted from Latin1 to MS1252 but not from Latin1 to JapanEUC.
- The MS932 character set, listed for Japanese, is a superset of Shift-JIS.
- Unicode is not a supported character set, nor are any shifted encoding schemes.
Platform-Specific Information: IBM RISC System/6000

This appendix contains administration information for Red Brick Warehouse, much of which is specific to the IBM RISC System/6000 under the AIX operating environment.

Configuring Operating-System Parameters

Red Brick Warehouse is a high-performance server designed to support the needs of tens or hundreds of users in a distributed client/server computing environment. In order to provide sufficient resources for this large number of client users, certain operating-system configuration parameters may require modification.

General Guidelines

• If other applications will be running concurrently on the same system as Red Brick Warehouse, you may need to increase the parameter values recommended in this section.
• If no specific value for an operating-system parameter is specified in this guide, the default value is recommended.
• The parameter settings recommended here assume that only one version of Red Brick Warehouse is running on your system. If you plan to run two versions simultaneously (as described in Chapter 3, “Installing a New Release”) and both installations will be heavily loaded concurrently, you may need to modify your parameter settings.
• Modifying your AIX configuration is a complex system-administration task requiring superuser privileges. For information about the procedures used to make the necessary configuration changes, refer to “Changing Operating System Parameters” in the IBM AIX Hypertext Information Base publication.

**Number of Users and Parallel Query Processes**

Some configuration parameters depend on the maximum number of users licensed for your warehouse installation and/or the value of the TOTALQUERYPROCS parameter in the rbw.config file. If either of these parameters changes, you might have to adjust other operating-system parameters in turn. Therefore, you might want to configure your operating system to support a projected number of users or a larger TOTALQUERYPROCS value. This will allow you to expand your warehouse system without having to make adjustments later on.

For AIX, you need to set the maximum number of processes allowed per user to the maximum number of concurrent users to be supported in your warehouse configuration, plus the value of TOTALQUERYPROCS in the rbw.config file, plus 5. You can use the “System Environments” section of the System Management Interface Tool (SMIT) to make this change.

**Limits File Settings**

Ensure that there is no maximum file size limit set for the redbrick user in the file /etc/security/limits. Also, the maximum soft data size must be set to 524288 and the maximum soft stack size to 16384. Be sure to check these settings for both the default user and the redbrick user. If your system is properly configured, you will see lines in the file like this:

```
fsIZE = -1
data = 524288
stack = 16384
```
Configuring Daemons for Automatic Startup

The following commands let you configure the warehouse daemon for automatic startup, list entries in the /etc/inittab file (which contains instructions for automatic startup), and remove entries from the /etc/inittab file.

- To configure the warehouse daemon for automatic startup when the operating system starts, log in as the superuser and issue the following command:

  ```
  # mkitab 'rbwapid:2:once:/bin/sh -c "ulimit -d unlimited; \n    redbrick_dir/bin/rbw.start config_path RB_HOST > \n    /dev/console 2>&1"'
  ```

  This command modifies the /etc/inittab file. You must be superuser to modify this file.

- To list all entries in the inittab file, enter:

  ```
  # lsitab -a
  ```

- To remove the rbwapid entry from the inittab file, enter:

  ```
  # rmitab rbwapid
  ```
This appendix contains administration information for Red Brick Warehouse, much of which is specific to the Digital AlphaServer under the Digital UNIX operating environment.

**Configuring Operating-System Parameters**

Red Brick Warehouse is a high-performance server designed to support the needs of tens or hundreds of users in a distributed client/server computing environment. In order to provide sufficient resources for this large number of client users, certain operating-system configuration parameters may require modification.

**General Guidelines**

- If other applications will be running concurrently on the same system as Red Brick Warehouse, you may need to increase the parameter values recommended in this section.
- If no specific value for an operating-system parameter is specified in this guide, the default value is recommended.
- The parameter settings recommended here assume that only one version of Red Brick Warehouse is running on your system. If you plan to run two versions simultaneously (as described in Chapter 3, “Installing a New Release”) and both installations will be heavily loaded concurrently, you may need to modify your parameter settings.
Number of Users and Parallel Query Processes

Some configuration parameters depend on the maximum number of users licensed for your warehouse installation and/or the value of the TOTALQUERYPROCS parameter in the rbw.config file. If either of these parameters changes, you might have to adjust other operating-system parameters in turn. Therefore, you might want to configure your operating system to support a projected number of users or a larger TOTALQUERYPROCS value. This will allow you to expand your warehouse system without having to make adjustments later on.

Kernel Parameters

Configuring Digital UNIX for Red Brick Warehouse requires that you build and install a modified operating-system kernel. Modifying the kernel is a complex system administration task requiring superuser privileges and system downtime to complete. For information about how to build and install a modified operating-system kernel, refer to the Digital publication, System Administration.

Set the following kernel configuration parameters for Digital UNIX. Note that the values given are minimums required by Red Brick Warehouse when it is the only application running on the server system. If other applications are used concurrently on your system, you might need different settings.

The recommended kernel parameters assume a single PTMU operation. If you are running more than one PTMU load at one time, you might need an increase in the resource requirement on your system.

Note: Check the Release Notes for any changes to the kernel parameters.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>maxusers</td>
<td>( max_{rbw_users} + 8 )</td>
</tr>
<tr>
<td>maxproc</td>
<td>( 20 + 8 \times max_{users} + \max (load_processes, )</td>
</tr>
<tr>
<td></td>
<td>( 2 \times max_{rbw_users} + max_{parallel_tasks} )</td>
</tr>
<tr>
<td>maxuprc</td>
<td>( 5 + \max (59, \text{load_processes}, max_{rbw_users} + )</td>
</tr>
<tr>
<td></td>
<td>( max_{parallel_tasks} )</td>
</tr>
<tr>
<td>sem-mni</td>
<td>( max_{rbw_users} + 25 )</td>
</tr>
<tr>
<td>shm-max</td>
<td>16777216</td>
</tr>
<tr>
<td>shm-mni</td>
<td>If ( max_{parallel_tasks} = 0 ), use 100</td>
</tr>
<tr>
<td></td>
<td>Otherwise, use:</td>
</tr>
<tr>
<td></td>
<td>((100 + max_{rbw_users} + max_{parallel_tasks} \times 2))</td>
</tr>
<tr>
<td>shm-seg</td>
<td>( \max (32, 2 + max_{query_tasks}) )</td>
</tr>
<tr>
<td>msg-mnb</td>
<td>65535</td>
</tr>
<tr>
<td>msg-tql</td>
<td>( 40 + \max (max_{rbw_users} \times 40 + max_{parallel_tasks} \times 2, )</td>
</tr>
<tr>
<td></td>
<td>( \text{load_processes} \times 10) )</td>
</tr>
<tr>
<td>msg-mni</td>
<td>( 52 + max_{rbw_users} + \max [2 \times \min (max_{parallel_tasks}, )</td>
</tr>
<tr>
<td></td>
<td>( max_{rbw_users}), \text{load_processes}) }</td>
</tr>
<tr>
<td>dfldsz</td>
<td>268435456</td>
</tr>
<tr>
<td>dfllsz</td>
<td>8388608</td>
</tr>
</tbody>
</table>

**Note:** The `sem-mni`, `shm-max`, `shm-mni`, `msg-mnb`, `msg-tql`, and `msg-mni` parameters need to be set in the `/etc/sysconfig/tab` file.

where:

- \( max_{rbw\_users} \)
  - Maximum number of users licensed for your warehouse installation.

- \( max_{parallel\_tasks} \)
  - \( \text{TOTALQUERYPROCS} \) from the `rbw.config` file. If not specified, use 0.

- \( max_{query\_tasks} \)
  - \( \text{QUERYPROCS} \) from the `rbw.config` file (or the largest value used in any \( \text{SET QUERYPROCS} \) command if larger). If not specified, use 0.
Platform-Specific Information: Digital AlphaServer
Configuring Operating-System Parameters

load_processes
  If no parallel loads, use 0. Otherwise, use:
  \[ 3 + \max (1, \frac{\text{num_cpus}}{2}) + \text{max_nuniq_idx} \]

max_nuniq_idx
  Maximum number of non-unique indexes on any single table to
  be loaded by a parallel load.

num_cpus
  The number of CPUs on the machine.
Configuring Daemons for Automatic Startup

To configure the warehouse daemon for automatic startup when the operating system starts:

1. Log in as the superuser (root).
2. Copy the rbw.boot file generated by the install script into the /sbin/init.d directory:

   ```
   # cd redbrick_dir
   # cp rbw.boot /sbin/init.d
   ```

3. Create a link to the rbw.boot file for the Digital AlphaServer rc3 script to execute during initialization:

   ```
   # ln -s /sbin/init.d/rbw.boot /sbin/rc3.d/S99rbw
   ```
   (“S99” means start after all other processes are running.)

4. Create a link to cleanly shut down the daemons when the system shuts down:

   ```
   # ln -s /sbin/init.d/rbw.boot /sbin/rc2.d/K00rbw
   ```
   (“K00” means kill before other processes stop.)
Platform-Specific Information: HP 9000 Computer

This appendix contains administration information for Red Brick Warehouse, much of which is specific to the HP 9000 Computer under the HP-UX operating environment.

Configuring Operating-System Parameters

Red Brick Warehouse is a high-performance server designed to support the needs of tens or hundreds of users in a distributed client/server computing environment. In order to provide sufficient resources for this large number of client users, certain operating-system configuration parameters may require modification.

General Guidelines

- If other applications will be running concurrently on the same system as Red Brick Warehouse, you may need to increase the parameter values recommended in this section.
- If no specific value for an operating-system parameter is specified in this guide, the default value is recommended.
- The parameter settings recommended here assume that only one version of Red Brick Warehouse is running on your system. If you plan to run two versions simultaneously (as described in Chapter 3, “Installing a New Release”) and both installations will be heavily loaded concurrently, you may need to modify your parameter settings.
**Number of Users and Parallel Query Processes**

Some configuration parameters depend on the maximum number of users licensed for your warehouse installation and/or the value of the TOTALQUERYPROCS parameter in the `rbw.config` file. If either of these parameters changes, you might have to adjust other operating-system parameters in turn. Therefore, you might want to configure your operating system to support a projected number of users or a larger TOTALQUERYPROCS value. This will allow you to expand your warehouse system without having to make adjustments later on.

**Kernel Parameters**

Configuring HP-UX for Red Brick Warehouse requires that you build and install a modified operating-system kernel. Modifying the kernel is a complex system administration task requiring superuser privileges and system downtime to complete. For information about how to build and install a modified operating-system kernel, refer to the Hewlett-Packard publication, *System Administration Tasks Manual*.

Set the following kernel configuration parameters for HP-UX. Note that the values given are minimums required by Red Brick Warehouse when it is the only application running on the server system. If other applications are used concurrently on your system, you might need different settings.

The recommended kernel parameters assume a single PTMU operation. If you are running more than one PTMU load at one time, you might need an increase in the resource requirement on your system.

**Note:** Check the Release Notes for any changes to the kernel parameters.
## Platform-Specific Information: HP 9000 Computer
### Configuring Operating-System Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>semmni</td>
<td><code>max_rbw_users + 25</code></td>
</tr>
<tr>
<td>semmns</td>
<td><code>(max_rbw_users * 3) + 60</code></td>
</tr>
<tr>
<td>semmap</td>
<td><code>max_rbw_users + 27</code></td>
</tr>
<tr>
<td>maxfiles</td>
<td><code>max_PSUs + 50</code></td>
</tr>
<tr>
<td>maxfiles_lim</td>
<td><code>MAX (1024, max_PSUs + 100)</code></td>
</tr>
<tr>
<td>maxuprc</td>
<td><code>5 + MAX (20, load_processes, max_rbw_users + max_parallel_tasks)</code></td>
</tr>
<tr>
<td>nfile</td>
<td><code>16 * (NPROC + 16 + MAXUSERS)/10 + 32 + 2 * NPTY</code></td>
</tr>
<tr>
<td></td>
<td><code>+ (max PSU/table + max PSU/index) * number of tables in</code></td>
</tr>
<tr>
<td></td>
<td><code>fact-to-fact join * expected number of concurrent users</code></td>
</tr>
<tr>
<td>nflocks</td>
<td>Same as NFILE.</td>
</tr>
<tr>
<td>nproc</td>
<td><code>30 + 8 * MAXUSERS + MAX (load_processes, max_rbw_users * 2 + max_parallel_tasks)</code></td>
</tr>
<tr>
<td>nbuf</td>
<td>0</td>
</tr>
<tr>
<td>bufpages</td>
<td>0</td>
</tr>
<tr>
<td>shmmax</td>
<td>67108864</td>
</tr>
<tr>
<td>shmmni</td>
<td>If <code>max_parallel_tasks = 0</code>, use 100. Otherwise, use <code>MIN (1024, max_rbw_users + 100 + max_parallel_tasks * 2)</code></td>
</tr>
<tr>
<td>shmseg</td>
<td><code>MAX (12, 2 + max_query_tasks)</code></td>
</tr>
<tr>
<td>msgmap</td>
<td><code>msgtql + 2</code></td>
</tr>
<tr>
<td>msgmnb</td>
<td>65535</td>
</tr>
<tr>
<td>msgmni</td>
<td><code>52 + max_rbw_users + MAX [2 * MIN (max_parallel_tasks, max_rbw_users), load_processes]</code></td>
</tr>
<tr>
<td>msgseg</td>
<td><code>MIN (32767, MAX (2048, msgmni * 40))</code></td>
</tr>
<tr>
<td>msgssz</td>
<td>64</td>
</tr>
<tr>
<td>msgtql</td>
<td><code>MAX [{(max_rbw_users * 40 + max_parallel_tasks * 2), load_processes * 10}]</code></td>
</tr>
</tbody>
</table>
where:

$max_{rbw\_users}$

Maximum number of users licensed for your warehouse installation.

$max_{PSUs}$

Maximum number of PSUs (files) that you expect to assign to a database. For help in determining this number, refer to the Warehouse Administrator’s Guide.

$max_{parallel\_tasks}$

TOTALQUERYPROCS from the rbw.config file. If not specified, use 0.

$max_{query\_tasks}$

QUERYPROCS from the rbw.config file (or the largest value used in any SET QUERYPROCS command if larger). If not specified, use 0.

$load\_processes$

If no parallel loads, use 0. Otherwise, use:

\[3 + \text{MAX}(1, \frac{\text{num\_cpus}}{2}) + \max\_\text{nuniq\_idx}\]

$max\_\text{nuniq\_idx}$

Maximum number of non-unique indexes on any single table to be loaded by a parallel load.

$num\_\text{cpus}$

The number of CPUs on the machine.
Configuring Daemons for Automatic Startup

To configure the warehouse daemon for automatic startup when the operating system starts:

1. Log in as the superuser (root).
2. Copy the rbw.boot file generated by the install script into the /sbin/init.d directory:
   ```
   # cd redbrick_dir
   # cp rbw.boot /sbin/init.d
   ```
3. Create a link to the rbw.boot file for the HP-UX operating system rc3 script to execute during initialization:
   ```
   # ln -s /sbin/init.d/rbw.boot /sbin/rc3.d/S999rbw
   (The name “S999” is used so that this file will be executed late in the startup process.)
   ```
4. Create a link to cleanly shut down the daemons when the system shuts down:
   ```
   # ln -s /sbin/init.d/rbw.boot /sbin/rc2.d/K000rbw
   (The name “K000” is used to that this file will be executed early in the shutdown process.)
   ```
Platform-Specific Information: HP 9000 Computer
Configuring Daemons for Automatic Startup
Platform-Specific Information:  
Sun SPARC-Based Systems

This appendix contains administration information for Red Brick Warehouse, much of which is specific to Sun SPARC-based systems under the Solaris operating environment.

Configuring Operating-System Parameters

Red Brick Warehouse is a high-performance server designed to support the needs of tens or hundreds of users in a distributed client/server computing environment. In order to provide sufficient resources for this large number of client users, certain operating-system configuration parameters may require modification.

General Guidelines

- If other applications will be running concurrently on the same system as Red Brick Warehouse, you may need to increase the parameter values recommended in this section.
- If no specific value for an operating-system parameter is specified in this guide, the default value is recommended.
- The parameter settings recommended here assume that only one version of Red Brick Warehouse is running on your system. If you plan to run two versions simultaneously (as described in Chapter 3, “Installing a New Release”) and both installations will be heavily loaded concurrently, you may need to modify your parameter settings.
Number of Users and Parallel Query Processes

Some configuration parameters depend on the maximum number of users licensed for your warehouse installation and/or the value of the TOTALQUERYPROCS parameter in the `rbw.config` file. If either of these parameters changes, you might have to adjust other operating-system parameters in turn. Therefore, you might want to configure your operating system to support a projected number of users or a larger TOTALQUERYPROCS value. This will allow you to expand your warehouse system without having to make adjustments later on.

Kernel Parameters

Configuring Solaris for Red Brick Warehouse requires that you modify the operating-system kernel parameters. Modifying the kernel is a complex system administration task requiring superuser privileges and system downtime to complete. For information about modifying kernel parameters, refer to the *System Configuration and Installation Guide*, a SunSoft™ publication.

To configure the Solaris operating environment, first verify that the SUNWipc package is installed. If it is not installed, install it before you install Red Brick Warehouse; then set the kernel parameters to the values shown in the following table. (These values are minimums required by Red Brick Warehouse when it is the only application running on the server system. If other applications are used concurrently, you might need different settings.)

The recommended kernel parameters assume a single PTMU operation. If you are running more than one PTMU load at one time, you might need an increase in the resource requirement on your system.

**Note**: Check the Release Notes for any changes to the kernel parameters.
## Platform-Specific Information: Sun SPARC-Based Systems

### Configuring Operating-System Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>bufhwm</td>
<td>The default value is 2% of real memory (RAM); the recommended setting for Red Brick Warehouse is 15%. However, the absolute limit for this parameter is 35 megabytes (35,840 kilobytes), which represents less than 15% of memory for very large databases.</td>
</tr>
<tr>
<td>max_nprocs</td>
<td>$100 + \text{MAX}(\text{load_processes}, , \text{max_rbw_users} \times 2 + \text{max_parallel_tasks})$</td>
</tr>
<tr>
<td>maxusers</td>
<td>$\text{max_rbw_users} + 8$</td>
</tr>
<tr>
<td>semsys:seminfo_semmni</td>
<td>$\text{max_rbw_users} + 25$</td>
</tr>
<tr>
<td>semsys:seminfo_semmns</td>
<td>$(\text{max_rbw_users} \times 3) + 60$</td>
</tr>
<tr>
<td>semsys:seminfo_semmap</td>
<td>$\text{max_rbw_users} + 27$</td>
</tr>
<tr>
<td>shmsys:shminfo_shmmx</td>
<td>16777216</td>
</tr>
<tr>
<td>shmsys:shminfo_shmmni</td>
<td>If $\text{max_parallel_tasks} = 0$, use 100. Otherwise, use:  $100 + \text{max_rbw_users} + \text{max_parallel_tasks} \times 2$</td>
</tr>
<tr>
<td>msgsys:msginfo_msgmap</td>
<td>$\text{MAX}(100, \text{msgsys:msginfo_msgtql} + 2)$</td>
</tr>
<tr>
<td>msgsys:msginfo_msgmax</td>
<td>4096</td>
</tr>
<tr>
<td>msgsys:msginfo_msgmnb</td>
<td>65535</td>
</tr>
<tr>
<td>msgsys:msginfo_msgmni</td>
<td>$102 + \text{max_rbw_users} + \text{MAX}[2 \times \text{MIN}(\text{max_parallel_tasks}, \text{max_rbw_users}), \text{load_processes}]$</td>
</tr>
<tr>
<td>msgsys:msginfo_msgssz</td>
<td>64</td>
</tr>
<tr>
<td>msgsys:msginfo_msgtql</td>
<td>$\text{MAX}[\text{max_rbw_users} \times 40 + \text{max_parallel_tasks} \times 2, \text{load_processes} \times 10]$</td>
</tr>
<tr>
<td>msgsys:msginfo_msgseg</td>
<td>$\text{MIN}(32768, \text{msgsys:msginfo_msgtql} \times 4)$</td>
</tr>
</tbody>
</table>
where:

\textit{max\_rbw\_users}  
Maximum number of users licensed for your warehouse installation.

\textit{max\_parallel\_tasks}  
TOTALQUERYPROCS from the \texttt{rbw.config} file. If not specified, use 0.

\textit{max\_query\_tasks}  
QUERYPROCS from the \texttt{rbw.config} file (or the largest value used in any SET QUERYPROCS command if larger). If not specified, use 0.

\textit{load\_processes}  
If no parallel loads, use 0. Otherwise, use:
\[ 3 + \text{MAX} \left( 1, \frac{\text{num\_cpus}}{2} \right) + \text{max\_nuniq\_idx} \]

\textit{max\_nuniq\_idx}  
Maximum number of non-unique indexes on any single table to be loaded by a parallel load.

\textit{num\_cpus}  
The number of CPUs on the machine.
Configuring Daemons for Automatic Startup

To configure the Red Brick Warehouse daemons for automatic startup when the operating system starts:

1. Log in as the superuser (root).
2. Copy the rbw.boot file generated by the install script into the /etc/init.d directory:
   
   ```
   # cd redbrick_dir
   # cp rbw.boot /etc/init.d
   ```
3. Create a link to the rbw.boot file for the Solaris rc3 script to execute during initialization:
   
   ```
   # ln -s /etc/init.d/rbw.boot /etc/rc3.d/S99rbw
   ```
   ("S99" means start after all other processes are running.)
4. Create a link to cleanly shut down the daemons when the system shuts down:
   
   ```
   # ln -s /etc/init.d/rbw.boot /etc/rc2.d/K00rbw
   ```
   ("K00" means kill before other processes stop.)
Platform-Specific Information: Sun SPARC-Based Systems
Configuring Daemons for Automatic Startup
Platform-Specific Information:  
Silicon Graphics Servers

This appendix contains administration information for Red Brick Warehouse, much of which is specific to the Silicon Graphics Server under the IRIX operating environment.

Configuring Operating-System Parameters

Red Brick Warehouse is a high-performance server designed to support the needs of tens or hundreds of users in a distributed client/server computing environment. In order to provide sufficient resources for this large number of client users, certain operating-system configuration parameters may require modification.

General Guidelines

- If other applications will be running concurrently on the same system as Red Brick Warehouse, you may need to increase the parameter values recommended in this section.
- If no specific value for an operating-system parameter is specified in this guide, the default value is recommended.
- The parameter settings recommended here assume that only one version of Red Brick Warehouse is running on your system. If you plan to run two versions simultaneously (as described in Chapter 3, “Installing a New Release”) and both installations will be heavily loaded concurrently, you may need to modify your parameter settings.
Number of Users and Parallel Query Processes

Some configuration parameters depend on the maximum number of users licensed for your warehouse installation and/or the value of the TOTALQUERYPROCS parameter in the rbw.config file. If either of these parameters changes, you might have to adjust other operating-system parameters in turn. Therefore, you might want to configure your operating system to support a projected number of users or a larger TOTALQUERYPROCS value. This will allow you to expand your warehouse system without having to make adjustments later on.

Kernel Parameters

Configuring the IRIX operating system for Red Brick Warehouse requires that you modify the operating-system kernel parameters. Modifying the kernel is a complex system administration task requiring superuser privileges and system downtime to complete. For information about modifying kernel parameters, refer to the IRIX Advanced Site and Server Administration Guide, a Silicon Graphics publication.

Set the following kernel configuration parameters for IRIX. Note that the values given are minimums required by Red Brick Warehouse when it is the only application running on the server system. If other applications are used concurrently on your system, you might need different settings.

The recommended kernel parameters assume a single PTMU operation. If you are running more than one PTMU load at one time, you might need an increase in the resource requirement on your system.

Note: Check the Release Notes for any changes to the kernel parameters.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>semmni</td>
<td>max_rbw_users + 10</td>
</tr>
<tr>
<td>semmns</td>
<td>(max_rbw_users * 3) + 60</td>
</tr>
<tr>
<td>shlbmax</td>
<td>32</td>
</tr>
<tr>
<td>msgmax</td>
<td>32768</td>
</tr>
<tr>
<td>msgmnb</td>
<td>65536</td>
</tr>
<tr>
<td>msgmni</td>
<td>MIN [1000, max_rbw_users + 52 + [MAX(2 * MIN(max_parallel_tasks, max_rbw_users), load_processes)]</td>
</tr>
<tr>
<td>msgseg</td>
<td>msgmni * 40</td>
</tr>
</tbody>
</table>
**Platform-Specific Information: Silicon Graphics Servers**

**Configuring Operating-System Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>msgssz</code></td>
<td>64</td>
</tr>
<tr>
<td><code>msgtql</code></td>
<td><code>MIN(1000, 40 + MAX(max_rbw_users * 40 + max_parallel_tasks * 2, load_processes * 10))</code></td>
</tr>
<tr>
<td><code>shmmni</code></td>
<td>If <code>max_parallel_tasks</code> = 0, use 400; otherwise, use <code>MIN(1000, 400 + max_rbw_users + 2 * max_parallel_tasks)</code></td>
</tr>
<tr>
<td><code>sshmsseg</code></td>
<td><code>MIN[1000, MAX(100, 2 + max_query_tasks)]</code></td>
</tr>
<tr>
<td><code>svr3pipe</code></td>
<td>0</td>
</tr>
<tr>
<td><code>rlimit_no_file_cur</code></td>
<td>2500</td>
</tr>
</tbody>
</table>

where:

- `max_rbw_users`  
  Maximum number of users licensed for your warehouse installation.

- `max_parallel_tasks`  
  TOTALQUERYPROCS from the `rbw.config` file. If not specified, use 0.

- `max_query_tasks`  
  QUERYPROCS from the `rbw.config` file (or the largest value used in any SET QUERYPROCS command if larger). If not specified, use 0.

- `load_processes`  
  If no parallel loads, use 0. Otherwise, use:  
  `3 + MAX (1, num_cpus/2) + max_nuniq_idx`

- `max_nuniq_idx`  
  Maximum number of non-unique indexes on any single table to be loaded by a parallel load.

- `num_cpus`  
  The number of CPUs on the machine.
Configuring Daemons for Automatic Startup

To configure the Red Brick Warehouse daemons for automatic startup when the operating system starts:

1. Log in as the superuser (root).
2. Copy the rbw.boot file generated by the install script into the /etc/init.d directory:
   
   ```
   # cd redbrick_dir
   # cp rbw.boot /etc/init.d
   ```

3. Create a link to the rbw.boot file for the IRIX rc2 script to execute during initialization:
   
   ```
   # ln -s /etc/init.d/rbw.boot /etc/rc2.d/S99rbw
   ```
   (“S99” means start after all other processes are running.)

4. Create a link to cleanly shut down the daemons when the system shuts down:
   
   ```
   # ln -s /etc/init.d/rbw.boot /etc/rc1.d/K00rbw
   ```
   (“K00” means kill before other processes stop.)
Platform-Specific Information:
Sequent Symmetry System

This appendix contains administration information for Red Brick Warehouse, much of which is specific to the Sequent Symmetry System under the DYNIX/ptx operating environment.

Configuring Operating-System Parameters

Red Brick Warehouse is a high-performance server designed to support the needs of tens or hundreds of users in a distributed client/server computing environment. In order to provide sufficient resources for this large number of client users, certain operating-system configuration parameters may require modification.

General Guidelines

• If other applications will be running concurrently on the same system as Red Brick Warehouse, you may need to increase the parameter values recommended in this section.
• If no specific value for an operating-system parameter is specified in this guide, the default value is recommended.
• The parameter settings recommended here assume that only one version of Red Brick Warehouse is running on your system. If you plan to run two versions simultaneously (as described in Chapter 3, “Installing a New Release”) and both installations will be heavily loaded concurrently, you may need to modify your parameter settings.
Number of Users and Parallel Query Processes

Some configuration parameters depend on the maximum number of users licensed for your warehouse installation and/or the value of the TOTALQUERYPROCS parameter in the rbw.config file. If either of these parameters changes, you might have to adjust other operating-system parameters in turn. Therefore, you might want to configure your operating system to support a projected number of users or a larger TOTALQUERYPROCS value. This will allow you to expand your warehouse system without having to make adjustments later on.

Kernel Parameters

Configuring DYNIX/ptx for Red Brick Warehouse requires that you build and install a modified operating system kernel. Modifying the kernel is a complex system administration task requiring superuser privileges and system downtime to complete. For more information about how to build and install a modified kernel, refer to the DYNIX/ptx System Configuration and Performance Guide, published by Sequent.

Set the following kernel configuration parameters for DYNIX/ptx Version 4.x. The values given are minimums required by Red Brick Warehouse when it is the only application running on the server system. If other applications are used concurrently, you might need different settings.

The recommended kernel parameters assume a single PTMU operation. If you are running more than one PTMU load at one time, you might need an increase in the resource requirement on your system.

Note: Check the Release Notes for any changes to the kernel parameters.
Platform-Specific Information: Sequent Symmetry System
Configuring Operating-System Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX USERS</td>
<td>MIN (1024, \text{max_rbw_users} + 64)</td>
</tr>
<tr>
<td>NPROC</td>
<td>PROC_MULT * MAX_USERS + 20 + MAX (\text{load_processes}, 2 * \text{max_rbw_users} + \text{max_parallel_tasks})</td>
</tr>
<tr>
<td>SHMMAX</td>
<td>MAX(16 megabytes, \text{max_rbw_users} * 4200 + \text{max_parallel_tasks} * 104 + 32768)</td>
</tr>
<tr>
<td>SHMMNI</td>
<td>If \text{max_parallel_tasks} = 0, use 100.</td>
</tr>
<tr>
<td></td>
<td>Otherwise, use \text{max_rbw_users} + 100 + 2 * \text{max_parallel_tasks}</td>
</tr>
<tr>
<td>MSGMAP</td>
<td>MSG_MNI * 4</td>
</tr>
<tr>
<td>MSGMNB</td>
<td>65535</td>
</tr>
<tr>
<td>MSGMNI</td>
<td>52 + \text{max_rbw_users} + MAX[2 * MIN (\text{max_parallel_tasks}, \text{max_rbw_users}), \text{load_processes}]</td>
</tr>
<tr>
<td>MSGSEG</td>
<td>MIN (32767, MSG_MNI * 40)</td>
</tr>
<tr>
<td>MSGSSZ</td>
<td>64</td>
</tr>
<tr>
<td>MSGTQL</td>
<td>40 + MAX (\text{max_rbw_users} * 40 + \text{max_parallel_tasks} * 2, \text{load_processes} * 10)</td>
</tr>
</tbody>
</table>

where:

\text{max\_rbw\_users}

Maximum number of users licensed for your warehouse installation.

\text{max\_parallel\_tasks}

TOTALQUERYPROCS from the rbw.config file. If not specified, use 0.

\text{load\_processes}

If no parallel loads, use 0. Otherwise, use:

\[3 + \text{MAX (1, num\_cpus/2) + max\_nuniq\_idx}\]

\text{max\_nuniq\_idx}

Maximum number of non-unique indexes on any single table to be loaded by a parallel load.

\text{num\_cpus}

The number of CPUs on the machine.

When you modify the kernel, consider the following sections regarding TCP connections, semaphores, and tuning parameters for DYNIX/ptx.
Simultaneous Connections

The maximum number of Red Brick Warehouse Connect connections is limited by the maximum number of warehouse server processes (MAX_SERVERS) specified during the warehouse installation. Red Brick Warehouse Connect requires one protocol control block for each simultaneous connection, which must be reflected in the value of the kernel parameter N_TCP_PCB_FREE. For information about configuring the available number of TCP connections (protocol control blocks), refer to the \textit{ptx/TCP/IP Administration Guide}, published by Sequent.

Semaphores

The warehouse server creates a new semaphore set of three semaphores for each connection as that connection is established. The number of IDs in the system (SEMMNI) must always be at least the number of possible connections to Red Brick Warehouse.

\textbf{Example}

A limit of 50 Red Brick Warehouse users requires at least the following settings:

\begin{tabular}{|l|l|}
\hline
Parameter & Value \\
\hline
SEMMNS & 150 \\
SEMMNI & 50 \\
SEMMSSL & 3 \\
\hline
\end{tabular}
**Tuning Suggestions**

Use the following guidelines to tune your system for improved warehouse performance.

<table>
<thead>
<tr>
<th>Kernel Parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVGSZ_PROC</td>
<td>The average process size is 20 MB (20480). This parameter affects the size of the <em>usrptmap</em>. If this value is too small, it can cause swap-in failures; it can also induce swapping.</td>
</tr>
<tr>
<td>BUFPCT</td>
<td>The warehouse server uses the DYNIX/ptx filesystem and thus the buffer cache, which needs to be large enough to maximize the read/hit ratio (see <em>monitor</em>(1M)), within reason.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>vmtune Parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>desfree</td>
<td>Start with 2000; if your system exhibits swapping seizures, adjust up. The system will attempt to keep 2000 K memory free. If free memory drops below <em>minfree</em>, it will cause swapping seizures.</td>
</tr>
<tr>
<td>maxRS</td>
<td>To maximize the speed of the load process when loading a database, set <em>maxRs</em> to total available memory so that the TMU can use all available memory. You might need to set <em>maxRs</em> lower than this number during normal processing to facilitate concurrency.</td>
</tr>
<tr>
<td>dirtylow/</td>
<td>If <em>maxRs</em> is set lower than available memory, adjust these parameters. Start with 1000/2000/2500 and adjust up or down, depending on the number of major page faults.</td>
</tr>
<tr>
<td>dirtyhigh/</td>
<td></td>
</tr>
<tr>
<td>maxdirty</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Exceeding *maxdirty* and having less than *desfree* will cause swapping seizures. Increase the difference between *dirtyhigh* and *maxdirty* to help avoid such seizures.
Configuring Daemons for Automatic Startup

To configure the Red Brick Warehouse daemons for automatic startup when the operating system starts:

1. Log in as the superuser (root).
2. Copy the rbw.boot file generated by the install script into the /etc/init.d directory:

   ```
   # cd redbrick_dir
   # cp rbw.boot /etc/init.d
   ```

3. Create a link to the rbw.boot file for the Sequent UNIX System V rc2 script to execute during initialization:

   ```
   # ln -s /etc/init.d/rbw.boot /etc/rc2.d/S99rbw
   ```
   ("S99" means start after all other processes are running.)

4. Create a link to cleanly shut down the daemons when the system shuts down:

   ```
   # ln -s /etc/init.d/rbw.boot /etc/rc1.d/K00rbw
   ```
   ("K00" means kill before other processes stop.)
Platform-Specific Information:  
NCR WorldMark Servers

This appendix contains administration information for Red Brick Warehouse, much of which is specific to the NCR WorldMark Servers under the NCR UNIX SVR4 MP-RAS operating environment.

Configuring Operating-System Parameters

Red Brick Warehouse is a high-performance server designed to support the needs of tens or hundreds of users in a distributed client/server computing environment. In order to provide sufficient resources for this large number of client users, certain operating-system configuration parameters may require modification.

General Guidelines

- If other applications will be running concurrently on the same system as Red Brick Warehouse, you may need to increase the parameter values recommended in this section.
- If no specific value for an operating-system parameter is specified in this guide, the default value is recommended.
- The parameter settings recommended here assume that only one version of Red Brick Warehouse is running on your system. If you plan to run two versions simultaneously (as described in Chapter 3, “Installing a New Release”) and both installations will be heavily loaded concurrently, you may need to modify your parameter settings.
**Number of Users and Parallel Query Processes**

Some configuration parameters depend on the maximum number of users licensed for your warehouse installation and/or the value of the TOTALQUERYPROCS parameter in the `rbw.config` file. If either of these parameters changes, you might have to adjust other operating-system parameters in turn. Therefore, you might want to configure your operating system to support a projected number of users or a larger TOTALQUERYPROCS value. This will allow you to expand your warehouse system without having to make adjustments later on.

**Kernel Parameters**

Configuring NCR UNIX SVR4 MP-RAS for Red Brick Warehouse requires that you build and install a modified operating system kernel. Modifying the kernel is a complex system administration task requiring superuser privileges and system downtime to complete. For information about how to build and install a modified operating system kernel, refer to the NCR publication, *Administrator Guide: Command Line Interface System Configuration* (Volume 3).

Verify that the `ipc`, `msg`, `sem`, and `shm` modules are configured into your current kernel configuration. If they are not, follow the instructions in the NCR documentation to include these modules.

Set the following kernel configuration parameters for NCR UNIX SVR4 MP-RAS. The values given are minimums required by Red Brick Warehouse when it is the only application running on the server system. If other applications are used concurrently, you might need different settings.

The recommended kernel parameters assume a single PTMU operation. If you are running more than one PTMU load at one time, you might need an increase in the resource requirement on your system.

**Note:** Check the Release Notes for any changes to the kernel parameters.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEMMNI</td>
<td><code>max_rbw_users + 25</code></td>
</tr>
<tr>
<td>SEMMNS</td>
<td><code>MIN(1000, ((max_rbw_users * 3) + 60))</code></td>
</tr>
<tr>
<td>SEMMAP</td>
<td><code>max_rbw_users + 27</code></td>
</tr>
<tr>
<td>SFNOLIM</td>
<td><code>MIN (1024, (max_PSUs + 64))</code></td>
</tr>
<tr>
<td>FLCKREC</td>
<td>2000</td>
</tr>
</tbody>
</table>
Platform-Specific Information: NCR WorldMark Servers
Configuring Operating-System Parameters

### Configuring Operating-System Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAXUP</td>
<td>MAX (30, max_rbw_users + max_parallel_tasks + 5)</td>
</tr>
<tr>
<td>SHMMAX</td>
<td>MAX(16 megabytes, max_rbw_users * 4200 + max_parallel_tasks * 104 + 32768)</td>
</tr>
<tr>
<td>NPROC</td>
<td>55 + MAX(load_processes, 2 * max_rbw_users + max_parallel_tasks)</td>
</tr>
<tr>
<td>NINODE*</td>
<td>350 + (max_rbw_users * 2)</td>
</tr>
<tr>
<td>UFSNINODE*</td>
<td>350 + (max_rbw_users * 2)</td>
</tr>
<tr>
<td>SHMMNI</td>
<td>If max_parallel_tasks = 0, use 100. Otherwise, use MIN(500, max_rbw_users + 100 + 2 * max_parallel_tasks)</td>
</tr>
<tr>
<td>MSGMAP</td>
<td>400</td>
</tr>
<tr>
<td>MSGMAX</td>
<td>4096</td>
</tr>
<tr>
<td>MSGMNI</td>
<td>MIN (1000, 2 * max_rbw_users + 50)</td>
</tr>
<tr>
<td>MSGTQL</td>
<td>100</td>
</tr>
<tr>
<td>HVMMMLIM</td>
<td>0x7FFFFFFF</td>
</tr>
<tr>
<td>SVMMLIM</td>
<td>0x7FFFFFFF</td>
</tr>
<tr>
<td>HDATLIM</td>
<td>0x7FFFFFFF</td>
</tr>
<tr>
<td>SDATLIM</td>
<td>0x7FFFFFFF</td>
</tr>
<tr>
<td>HSTKLIM</td>
<td>0x7FFFFFFF</td>
</tr>
<tr>
<td>SSTKLIM</td>
<td>0x1000000</td>
</tr>
</tbody>
</table>

where:

- **max_rbw_users**
  - Maximum number of users licensed for your warehouse
  - For help in determining this number, refer to the Warehouse Administrator’s Guide.

- **max_parallel_tasks**
  - TOTALQUERYPROCS from the rbw.config file. If not specified, use 0.

- **load_processes**
  - If no parallel loads, use 0. Otherwise, use:
    - 3 + MAX (1, num_cpus/2) + max_nuniq_idx
Platform-Specific Information: NCR WorldMark Servers
Configuring Operating-System Parameters

\textit{max\_nuniq\_idx}

Maximum number of non-unique indexes on any single table to be loaded by a parallel load.

\textit{num\_cpus}

The number of CPUs on the machine.

\textbf{Note:} If the above recommendations yield values such that \textsc{MAXUP} exceeds the system maximum of 400 and/or \textsc{NPROC} exceeds the system maximum of 5104, reduce \textit{max\_rbw\_users} and/or \textit{max\_parallel\_tasks}.

The maximum value for \textsc{NINODE} and \textsc{UFSNINODE} is 5000. If \textit{max\_rbw\_users} exceeds 2325, set these parameters to 5000.

NCR UNIX does not allow a message queue to be any longer than 4K. Also, the total space available for all message queues is fixed at 8K.
Configuring Daemons for Automatic Startup

To configure the Red Brick Warehouse daemons for automatic startup when the operating system starts:

1. Log in as the superuser (root).
2. Copy the rbw.boot file generated by the install script into the /etc/init.d directory:
   
   ```bash
   # cd redbrick_dir
   # cp rbw.boot /etc/init.d
   ```

3. Create a link to the rbw.boot file for the NCR UNIX SVR4 MP-RAS rc3 script to execute during initialization:

   ```bash
   # ln -s /etc/init.d/rbw.boot /etc/rc3.d/S99rbw
   ```

   (“S99” means start after all other processes are running.)

4. Create a link to cleanly shut down the daemons when the system shuts down:

   ```bash
   # ln -s /etc/init.d/rbw.boot /etc/rc2.d/K00rbw
   ```

   (“K00” means kill before other processes stop.)
Platform-Specific Information: NCR WorldMark Servers
Configuring Operating-System Parameters
This appendix contains administration information for Red Brick Warehouse, much of which is specific to the Unisys U6000 System under the Unisys UNIX System V operating environment.

Configuring Operating-System Parameters

Red Brick Warehouse is a high-performance server designed to support the needs of tens or hundreds of users in a distributed client/server computing environment. In order to provide sufficient resources for this large number of client users, certain operating-system configuration parameters may require modification.

General Guidelines

- If other applications will be running concurrently on the same system as Red Brick Warehouse, you may need to increase the parameter values recommended in this section.
- If no specific value for an operating-system parameter is specified in this guide, the default value is recommended.
- The parameter settings recommended here assume that only one version of Red Brick Warehouse is running on your system. If you plan to run two versions simultaneously (as described in Chapter 3, “Installing a New Release”) and both installations will be heavily loaded concurrently, you may need to modify your parameter settings.
**Number of Users and Parallel Query Processes**

Some configuration parameters depend on the maximum number of users licensed for your warehouse installation and/or the value of the TOTALQUERYPROCS parameter in the *rbw.config* file. If either of these parameters changes, you might have to adjust other operating-system parameters in turn. Therefore, you might want to configure your operating system to support a projected number of users or a larger TOTALQUERYPROCS value. This will allow you to expand your warehouse system without having to make adjustments later on.

**Kernel Parameters**

Configuring Unisys UNIX System V for Red Brick Warehouse requires that you build and install a modified operating system kernel. Modifying the kernel is a complex system administration task requiring superuser privileges and system downtime. For information about how to build and install a modified operating system kernel, refer to the *Unisys UNIX System V Release 4.0 System Administrator’s Guide*.

Verify that the *ipc*, *msg*, *sem*, and *shm* modules are configured into your current kernel configuration. If they are not, follow the instructions in the Unisys documentation to include these modules.

**Caution:** The SAT_SGUIDSWITCH parameter in the */etc/conf/pack.d/sat/space.c* file used to build the kernel should be set to 1 so that the Red Brick installation program can use the UNIX *chmod* command to set the setuid and setgid bits on several Red Brick processes. If you prefer not to use a kernel built with the SAT_SGUIDSWITCH set to 1, then you must manually set these bits during the installation process, as directed on page 2-19. For more information about setting this parameter, refer to the Unisys documentation release notes for the current release.

Set the following kernel configuration parameters for Unisys UNIX System V. These values are minimums required by Red Brick Warehouse when it is the only application running on the server system; if other applications are used concurrently, you might need different settings.

The recommended kernel parameters assume a single PTMU operation. If you are running more than one PTMU load at one time, you might need an increase in the resource requirement on your system.

**Note:** Check the Release Notes for any changes to the kernel parameters.
**Platform-Specific Information: Unisys U6000 System**

**Configuring Operating-System Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEMMNI</td>
<td>max_rbw_users + 25</td>
</tr>
<tr>
<td>SEMMNS</td>
<td>(max_rbw_users * 3) + 60</td>
</tr>
<tr>
<td>SEMMAP</td>
<td>max_rbw_users + 27</td>
</tr>
<tr>
<td>SFNOLIM</td>
<td>max_PSLUs + 50</td>
</tr>
<tr>
<td>FLCKREC</td>
<td>2000</td>
</tr>
<tr>
<td>MAXUP</td>
<td>MAX (30, max_rbw_users + max_parallel_tasks + 5)</td>
</tr>
<tr>
<td>SHMMAX</td>
<td>16777216</td>
</tr>
<tr>
<td>NPROC</td>
<td>MAX (400, 50 + (max_rbw_users * 2) + max_parallel_tasks)</td>
</tr>
<tr>
<td>NINODE</td>
<td>512 + (max_rbw_users * 2) + max_parallel_tasks</td>
</tr>
<tr>
<td>UFSNINODE</td>
<td>600 + (max_rbw_users * 2) + max_parallel_tasks</td>
</tr>
<tr>
<td>SHMMNI</td>
<td>If max_parallel_tasks = 0, use 100. Otherwise, use:</td>
</tr>
<tr>
<td></td>
<td>MIN(1000, max_rbw_users + 100 + max_parallel_tasks * 2).</td>
</tr>
<tr>
<td>SHMSEG</td>
<td>MAX (10, 2 + max_query_tasks)</td>
</tr>
<tr>
<td>MSGMAP</td>
<td>MIN (1024, MSGMNI * 4)</td>
</tr>
<tr>
<td>MSGMAX</td>
<td>4096</td>
</tr>
<tr>
<td>MSGMNB</td>
<td>65535</td>
</tr>
<tr>
<td>MSGMNI</td>
<td>52 + max_rbw_users + MAX[2 * MIN (max_parallel_tasks, max_rbw_users) load_processes]</td>
</tr>
<tr>
<td>MSGTQL</td>
<td>256 + MAX (max_rbw_users * 40 + max_parallel_tasks * 2, load_processes * 10)</td>
</tr>
<tr>
<td>MSGSEG</td>
<td>8192</td>
</tr>
</tbody>
</table>

where:

*max_rbw_users*

Maximum number of users licensed for your warehouse installation.

*max_PSLUs*

Maximum number of PSUs (files) that you expect to assign to a database. For help in determining this number, refer to the *Warehouse Administrator’s Guide*. 
Platform-Specific Information: Unisys U6000 System
Configuring Operating-System Parameters

max_parallel_tasks
TOTALQUERYPROCS from the rbw.config file. If not specified, use 0.

max_query_tasks
QUERYPROCS from the rbw.config file (or the largest value used in any SET QUERYPROCS command if larger). If not specified, use 0.

load_processes
If no parallel loads, use 0. Otherwise, use:
3 + MAX(1, num_cpus/2) + max_nuniq_idx

max_nuniq_idx
Maximum number of non-unique indexes on any single table to be loaded by a parallel load.

num_cpus
The number of CPUs on the machine.

Note: If the above recommendations yield values such that NPROC exceeds the system maximum of 2000, reduce max_rbw_users and/or max_parallel_tasks.

The maximum values for NINODE and USFINODE under Unisys UNIX System V are 1300 and 6200, respectively. If the above recommendations yield larger values, set these parameters to their maximum values.
Configuring Daemons for Automatic Startup

To configure the warehouse daemon for automatic startup when the operating system starts:

1. Log in as the superuser (root).
2. Copy the rbw.boot file generated by the install script into the /etc/init.d directory:
   ```
   # cd redbrick_dir
   # cp rbw.boot /etc/init.d
   ```
3. Create a link to the rbw.boot file for the Unisys UNIX System V rc3 script to execute during initialization:
   ```
   # ln -s /etc/init.d/rbw.boot /etc/rc3.d/S99rbw
   ("S99" means start after all other processes are running.)
   ```
4. Create a link to cleanly shut down the daemons when the system shuts down:
   ```
   # ln -s /etc/init.d/rbw.boot /etc/rc2.d/K00rbw
   ("K00" means kill before other processes stop.)
   ```
Loading Data from ANSI Standard-Labeled Tapes

If you plan to load data from ANSI standard-labeled tapes into a warehouse database, the tapes must be written with variable-length block format; ANSI standard-labeled tapes with fixed-length blocks cannot be read by the TMU. If you are reading ANSI standard-labeled tapes with variable-length blocks, be sure that the tape device name that you specify in the TMU LOAD DATA input clause indicates variable-length blocks.

Unisys UNIX System V uses the following device naming conventions for fixed-length (512 bytes) and variable-length blocks:

\[/dev/rmt/c1dn\] \hspace{1cm} Fixed-length, or FBS (fixed block serial)
\[/dev/rmt/c0dn\] \hspace{1cm} Variable-length, or VBS (variable block serial)

where \(n\) is the drive number.

For more information about the tape formats for the TMU input data, refer to the Warehouse Administrator's Guide. For more information about device names, refer to the Unisys documentation.
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    Digital UNIX D-1 to D-5
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<td></td>
<td>1120 Avenue of the Americas, 4th Floor, New York, NY 10036 +1 212 626 6815</td>
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<td>5314 Arapaho Road, Dallas, TX 75248 +1 972 702 1750</td>
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<td></td>
<td>2010 Corporate Ridge, 7th Floor, McLean, VA 22102 +1 703 883 9310</td>
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<tr>
<td><strong>UK SALES OFFICE</strong></td>
<td>Red Brick Systems UK Ltd., 45 Berkeley Square, Mayfair, London W1A 1EB United Kingdom +44 171 290 8373</td>
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<tr>
<td><strong>AUSTRALASIA HEADQUARTERS</strong></td>
<td>Red Brick Systems Australasia Pty. Ltd., Level 20, 99 Walker Street, North Sydney, NSW 2060 Australia +61 02 9911 7744</td>
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<tr>
<td><strong>JAPAN HEADQUARTERS</strong></td>
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