hp Reliable Transaction Router

Installation Guide

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This guide describes how to install Reliable Transaction Router for all operating systems on which RTR is supported.

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Software Version: Reliable Transaction Router Version 4.2

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Palo Alto, California

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Contents

Preface ix

1 Quick Installation

1.1 Installing RTR for OpenVMS 1–1
1.1.1 Disk and Time Requirements 1–1
1.1.2 Installation Procedure 1–2
1.1.3 Sample OpenVMS Installation 1–2
1.2 Installing RTR for Tru64 UNIX 1–4
1.2.1 Disk and Time Requirements 1–4
1.2.2 Installation Procedure 1–4
1.2.3 Sample Tru64 UNIX Installation 1–5
1.2.4 Sample IVP Output 1–7
1.3 Installing RTR for Windows Systems 1–9
1.3.1 Disk and Time Requirements 1–9
1.3.2 Installation Procedure 1–9
1.4 Installing RTR for Sun Solaris 1–9
1.4.1 Disk and Time Requirements 1–10
1.4.2 Installation Procedure 1–10
1.4.3 Sample Sun Solaris Installation 1–12
1.4.4 Sample IVP Output 1–14

2 Upgrade Process

2.1 Rolling Upgrade Restrictions 2–1

3 Full Installation on OpenVMS

3.1 Prepare for Installation 3–1
3.1.1 Check Software Distribution Kit 3–2
3.1.2 Check Required Hardware 3–2
3.1.3 Check Required Software 3–2
3.1.4 Check Required Disk Space 3–3
3.1.5 Check System Parameters 3–4
3.1.5.1 Size Global Pages and Sections Appropriately 3–4
3.1.5.2 Size Virtual Memory Appropriately 3–4
3.2 Install RTR 3–4
3.2.1 Installation Example 3–5
3.2.2 Read Release Notes 3–7
3.3 Complete RTR Setup 3–7
3.3.1 Edit System Files 3–7
3.3.1.1 Establishing Protocol Preference 3–7
3.3.2 Verify User Account Requirements 3–9
3.3.2.1 Check User Account Quotas 3–9
3.3.2.2 Check User Account Privileges 3–9
3.3.2.3 Check System Manager Account Privileges 3–10
3.3.3 Check Installed Files 3–10
3.3.4 Enable RTR Remote Commands 3–10
3.3.5 Display CONOLD Documentation 3–10
3.3.6 Run RTR 3–10
3.3.6.1 Configure RTR Facilities and Partitions 3–11
3.3.7 Install and Run Applications 3–11

4 Full Installation on Tru64 UNIX

4.1 Prepare for Installation 4–1
4.1.1 Check Software Distribution Kit 4–1
4.1.2 Register Your Software License 4–1
4.1.3 Check Login Privileges 4–2
4.1.4 Check Required Hardware 4–2
4.1.5 Check Required Software 4–3
4.1.6 Determine Which Subsets to Load 4–3
4.1.7 Check Required Disk Space 4–4
4.1.7.1 Check Current Disk Space 4–4
4.1.7.2 Increase Disk Space 4–5
4.1.8 Check System Parameters 4–5
4.1.8.1 Check Shared Memory Requirements 4–5
4.1.8.2 Check Virtual Memory Requirements 4–6
4.1.8.3 TCP Services File 4–6

4.1.9 Back Up Your System Disk 4–6
4.2 Install RTR 4–6
4.2.1 Install from Media or RIS 4–6
4.2.1.1 Install from CD-ROM 4–7
4.2.1.2 Install from RIS 4–8
4.2.2 Read the Online Release Notes 4–9
4.2.3 Installation Example 4–9
4.2.3.1 Select Subsets 4–9
4.2.4 Run the Installation Verification Procedure 4–12
4.2.5 Stop the Installation 4–12
4.2.6 Delete RTR from Your System 4–12
4.2.7 Display Documentation from CD-ROM 4–13
4.3 Complete RTR Setup 4–13
4.3.1 Check Installed Files 4–13
4.3.2 Enable Remote RTR Commands 4–14
4.3.3 Run RTR 4–14
4.3.3.1 Configure RTR Facilities and Partitions 4–14
4.3.4 Install and Run Applications 4–14

5 Full Installation on Windows

5.1 Prepare for Installation 5–1
5.1.1 Check Required Hardware 5–1
5.1.2 Check Required Software 5–2
5.1.3 Check Required Disk Space 5–2
5.1.4 Check System Parameters 5–2
5.1.4.1 Check Memory-Mapped I/O Requirements 5–2
5.1.4.2 Check Virtual Memory Requirements 5–2
5.2 Install RTR 5–2
5.2.1 Read the Readme File 5–4
5.3 Complete RTR Setup 5–4
5.3.1 Check Installed Files 5–4
5.3.2 Enable RTR Remote Commands 5–4
5.3.3 Display Documentation 5–5
5.3.4 Run RTR 5–5
5.3.4.1 Configure RTR Facilities and Partitions 5–5
5.3.5 Install and Run Applications 5–5

6 Full Installation on Sun Solaris

6.1 Prepare for Installation 6–1
6.1.1 Check Software Distribution Kit 6–1
6.1.2 Check Login Privileges 6–1
6.1.3 Check Required Hardware 6–1
6.1.4 Check Required Software 6–2
6.1.5 Determine Which Subsets to Load 6–2
6.1.6 Check Required Disk Space 6–2
6.1.7 Check System Parameters 6–3
6.1.7.1 Check Shared Memory Requirements 6–3
6.1.7.2 Check Virtual Memory Requirments 6–3
6.1.7.3 TCP Services File 6–3
6.1.8 Back Up Your System Disk 6–3
6.2 Install RTR 6–3
6.2.1 Read the Release Notes 6–5
6.2.2 Installation Example 6–5
6.2.2.1 Select Package 6–5
6.2.2.2 Output During Package Loading 6–5
6.2.3 Stop the Installation 6–9
6.2.4 Run the Installation Verification Procedure 6–10
6.2.4.1 Sample IVP Output 6–10
6.2.5 Delete RTR from Your System 6–11
6.2.6 Display Documentation from CD-ROM 6–11
6.3 Complete RTR Setup 6–11
6.3.1 Check Installed Files 6–12
6.3.2 Run RTR 6–12
6.3.2.1 Configure RTR Facilities and Partitions 6–12
6.3.3 Install and Run Applications 6–12

A Recovering from Errors

A.1 Problems During Product Installation A–1
A.2 Problems After Installation A–2

B Uninstalling RTR

B.1 Uninstalling on OpenVMS B–1
B.2 Uninstalling on Windows Systems B–2
B.3 Uninstalling on Tru64 UNIX B–3
B.4 Uninstalling on Sun B–4

Index

Figures

1	RTR Reading Path	xiii

Tables

1	RTR Documents	x
2	Conventions Used in this Guide	xii
3–1	Required Software	3–2
3–2	Disk Space Requirements for OpenVMS	3–3
3–3	System Parameter Values Used by the RTR Installation	3–4
3–4	RTR Protocol Preference	3–8
3–5	Preferred Protocol Values	3–8
3–6	User Account Quotas for Using Reliable Transaction Router	3–9
4–1	RTR Subset Size (in Kilobytes) for Tru64 UNIX	4–4
6–1	RTR Subset Size (in Kilobytes) for Sun Solaris	6–2

Preface

This guide explains how to install HP Reliable Transaction Router (RTR) on supported platforms. If you are installing RTR on only one platform, you need only read the sections that apply to that platform.

Keep this guide with your distribution kit. You may need it to install maintenance updates or to reinstall RTR for some other reason.

Structure of this Document

This guide contains the following chapters and appendixes:

- Chapter 1 gives brief installation instructions for RTR on OpenVMS, Tru64 UNIX, Windows, and Sun Solaris. For a complete list of versions for each supported operating system, refer to the relevant *Software Product Description* (SPD). The brief installation instructions include sample installation output.
- Chapter 2 includes instructions on how to perform an upgrade to RTR.
- Chapter 3 describes a full installation for OpenVMS VAX and OpenVMS Alpha, including:
  - Preparing for installation
  - Installing RTR and reading the Release Notes
  - Completing RTR setup
- Chapter 4 describes a full installation for Tru64 UNIX including:
  - Preparing for installation
  - Installing RTR and reading the Release Notes
  - Completing RTR setup
- Chapter 5 describes a full installation for Windows including:
  - Preparing for installation

  - Installing RTR and reading the Readme
  - Completing RTR setup
- Chapter 6 describes a full installation for Sun Solaris including:
  - Preparing for installation
  - Installing RTR and reading the Release Notes
  - Completing RTR setup
- Appendix A provides information on recovering from errors.
- Appendix B provides instructions on how to remove (uninstall) RTR from your system.

Related Documentation

Table 1 describes RTR documents and groups them by audience.

Table 1 RTR Documents

Document	Content
For all users:	
Reliable Transaction Router Release Notes[1]	Describes new features, changes, and known restrictions for RTR.
Reliable Transaction Router Getting Started	Provides an overview of RTR technology and solutions, and includes the glossary that defines all RTR terms.
Reliable Transaction Router *Commands*	A pocket-sized handbook that lists all RTR commands, their qualifiers and defaults.
Reliable Transaction Router *Software Product Description*	Describes product features.
For the system manager:	
Reliable Transaction Router Installation Guide	Describes how to install RTR on all supported platforms.
Reliable Transaction Router System Manager's Manual	Describes how to configure, manage, and monitor RTR.

[1]Distributed on software kit.

(continued on next page)

Table 1 (Cont.) RTR Documents

Document	Content
Reliable Transaction Router Migration Guide[2]	Explains how to migrate from RTR Version 2 to RTR Version 3 or 4 (OpenVMS only).
For the application programmer:	
Reliable Transaction Router Application Design Guide	Describes how to design application programs for use with RTR, with both C++ and C interfaces.
Reliable Transaction Router C++ Foundation Classes	Describes the object-oriented C++ interface that can be used to implement RTR object-oriented applications.
Reliable Transaction Router C Application Programmer's Reference Manual	Explains how to design and code RTR applications using the C programming language and the RTR C API. Contains full descriptions of the basic RTR API calls.

[2]Softcopy only.

You can find additional information about RTR, including the Software Product Descriptions, on the RTR website found through http://www.hp.com links to middleware products or at http:://www.hp.com/go/rtr.

Conventions

Table 2 describes the conventions used in this guide.

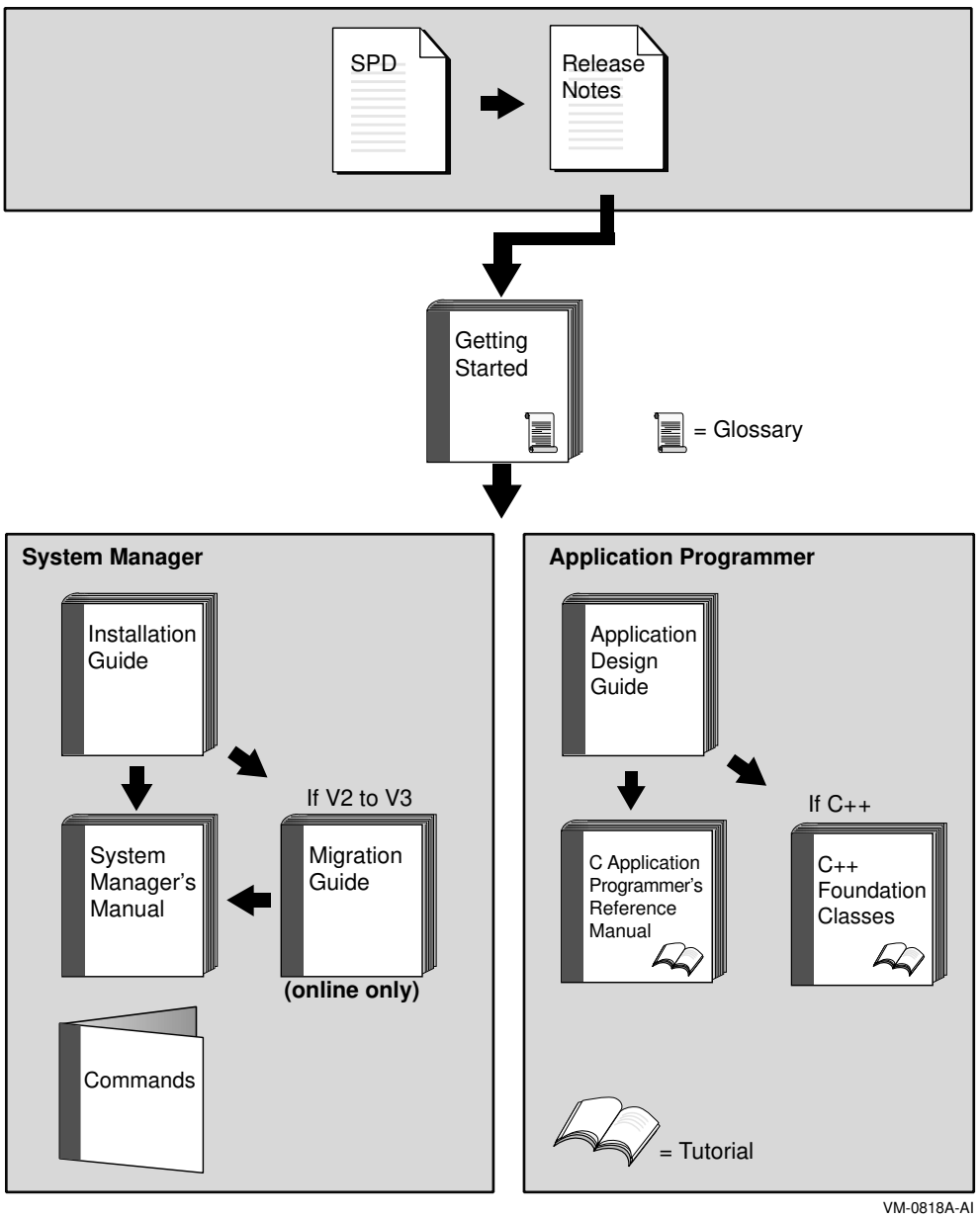
Table 2 Conventions Used in this Guide

Convention	Meaning
#	A number sign (#) is the default superuser prompt.
%	A percent sign (%) is the default user prompt for many UNIX systems.
$	A dollar sign ($) is the default user prompt for OpenVMS systems.
Return	In examples, a boxed symbol indicates that you must press the named key on the keyboard.
Ctrl/C	This symbol indicates that you must press the Ctrl key while you simultaneously press another key (in this case, C).
`user input`	In interactive examples, this typeface indicates input entered by the user.
`filesystem`	In text, this typeface indicates the exact name of a command, routine, partition, pathname, directory, or file. This typeface is also used in interactive examples and other screen displays.
UPPERCASE lowercase	The UNIX operating system differentiates between lowercase and uppercase characters. Examples, syntax descriptions, function definitions, and literal strings that appear in text must be typed exactly as shown. Commands typed to the RTR CLI are *not* case sensitive unless enclosed in quotation marks.
`[y]`	In a prompt, square brackets indicate that the enclosed item is the default response. For example, `[y]` means the default response is Yes.

Reading Path

The reading path to follow when using the Reliable Transaction Router information set is shown in Figure 1.

Figure 1 RTR Reading Path



1
Quick Installation

This chapter gives brief instructions for installing Reliable Transaction Router on the following platforms:

- OpenVMS
- Windows 2000, Windows NT, Windows 98, Windows ME, Windows XP
- Tru64 UNIX
- Sun Solaris

User-Changed Monitor Files

If you have changed any RTR monitor (*.mon) files, you must rename them or they will be overwritten during installation. To avoid this, always work from renamed copies of RTR monitor files when making local modifications.

1.1 Installing RTR for OpenVMS

Your Reliable Transaction Router for OpenVMS kit is supplied on CD-ROM. After installation, the *Release Notes* are located in the directory `SYS$COMMON:[SYSHLP]`; you are advised to read the *Release Notes* before using RTR.

1.1.1 Disk and Time Requirements

The installation of the RTR base product requires about 53000 blocks during installation, and about 36000 blocks after installation is done. The installation takes less than five minutes to complete. For more detailed instructions, see Chapter 3.

1.1.2 Installation Procedure

1. If RTR is already installed on your system, see Section B.1, Uninstalling on OpenVMS, for information on uninstalling RTR and removing related processes.

   Retaining the RTR V2 Help File

   If you plan to keep the RTR V2 help file in addition to the help file for the current release, see Chapter 3 for instructions.

2. Log on to the System Manager's account.
3. Define the logical name for the location of the software kit, for example:

   ```
   $ DEFINE PCSI$SOURCE DISK1:[KITS]
   ```

4. Check disk space and system parameters GBLPAGES and GBLSECTIONS.
5. Start the installation with the following command:

   ```
   $ PRODUCT INSTALL RTR
   ```

1.1.3 Sample OpenVMS Installation

This sample installation includes running the IVP.

```
$ product install rtr

The following product has been selected:
    DEC AXPVMS RTR V4.2-320              Layered Product

Do you want to continue? [YES] y

Configuration phase starting ...

You will be asked to choose options, if any, for each
selected product and for
any products that may be installed to satisfy software
dependency requirements.

DEC AXPVMS RTR V4.2-320: Reliable Transaction Router for OpenVMS

  Copyright 1994, 2003 Hewlett-Packard Development Company, L.P.

Do you want the defaults for all options? [YES] n
```

```
    Have all RTR processes on the system been stopped? [YES] y
    Run installation verification procedure [NO] y
    DECnet users: Have you read the Release Note regarding
    minimum version?
    [YES] y
    Do you want the V2 programming kit Installed? [NO] yes

Do you want to review the options? [NO] y

DEC AXPVMS RTR V42-320: Reliable Transaction Router for OpenVMS
    Have all RTR processes on the system been stopped?: YES
    Run installation verification procedure: YES
    DECnet users: Have you read the Release Note regarding
    minimum version?: YES
    Do you want the V2 programming kit Installed ?: YES

Are you satisified with these options? [YES]

Execution phase starting ...

The following product will be installed to destination:
    DEC AXPVMS RTR V4.2-320
   <logical for SYS$COMMON>

Portion done: 0%
...10%
...20%
...30%
...40%
...50%
...60%
...70%
...80%
...90%
...100%

The following product has been installed:
    DEC AXPVMS RTR V4.2-320               Layered Product

%PCSI-I-IVPEXECUTE, executing test procedure for DEC AXPVMS RTR V4.2-320 ...
%PCSI-I-IVPSUCCESS, test procedure completed successfully

DEC AXPVMS RTR V4.2-320: Reliable Transaction Router for OpenVMS

    Insert the following lines in SYS$MANAGER:SYSTARTUP_VMS.COM:
        @sys$startup:rtr$startup.com
    Insert the following lines in SYS$MANAGER:SYSHUTDWN.COM:
        @sys$manager:rtr$shutdown

 See the Release Notes and documentation for use of the optional
 rtr$startup.com P1 parameter. ❶
$
```

❶ For information on the optional preferred protocol (P1) parameter, see Section 3.3.1.1.

For additional information, see Chapter 3, Full Installation on OpenVMS .

1.2 Installing RTR for Tru64 UNIX

Your Reliable Transaction Router for Tru64 UNIX kit is supplied on CD-ROM. After installation, the *Release Notes* are located in the directory */usr/opt/RTR420/hlp*; you are advised to read the *Release Notes* before using RTR.

User-Changed Monitor Files

If you have changed any RTR monitor (*.mon) files, you must rename them or they will be over-written during installation. To avoid this, always work from renamed copies of RTR monitor files when making local modifications.

TruCluster Restrictions

To install RTR on a TruCluster, see the description in Section 4.2.1.

1.2.1 Disk and Time Requirements

The installation requires about 23 MB (megabytes), 5.6 MB for the `/rtr` area, and 2 MB for the RTR journal. The installation procedure takes about two minutes to complete.

1.2.2 Installation Procedure

1. Log in as user `root` or `su` to `root`.
2. Use the `setld` utility to check if you have a version of RTR already installed:

   ```
   # setld -i | grep RTR
   ```

3. If RTR is already installed on your system, see Section B.3, Uninstalling on Tru64 UNIX, for information on uninstalling RTR and removing related processes.
4. Install from the directory (disk or CD-ROM) where the kit is located, for example:

   ```
   # setld -l /cdrom/rtr4xx/kit
   ```

   Where ‘‘xx’’ is the version number, for example, `rtr420`.

5. Answer ‘‘1’’ and ‘‘y’’ to the questions from `setld`.
6. To run the IVP (Installation Verification Procedure) use the following command:

Caution

Do not run the IVP program on a production system, as it may alter the RTR journal or interrupt processing of transactions. You will be prompted to abort the IVP before it can do any damage. Consider your situation carefully before running the IVP.

```
# setld -v RTRBASE4xx
```

Where ‘‘xx’’ is the kit number, for example, `RTRBASE420`.

Note that the Installation Verification Procedure requires a working C language compiler to run.

Requirements for Application Permissions

If the RTR executable is modified after installation to no longer be `suid` root or the mode of the `/rtr` directory is changed, an application process (for example a client) can encounter a fatal error (Unable to locate a socket) when the client process finds it cannot create an `rtr_ipc_sock_*` file for the process ID (pid) in the `/rtr` directory.

To avoid this, ensure that application processes run with user and group IDs that have access permission to create and remove files in this directory.

1.2.3 Sample Tru64 UNIX Installation

```
# setld -l RTRBASE420

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  subsidiaries required for possession, use or copying. Consistent
  with FAR 12.211 and 12.212, Commercial Computer Software, Computer
  Software Documentation, and Technical Data for Commercial Items
  are licensed to the U.S. Government under vendor's standard
  commercial license.

The subsets listed below are optional:
```

```
     There may be more optional subsets than can be presented on a
     single
     screen. If this is the case, you can choose subsets screen by
     screen
     or all at once on the last screen. All of the choices you make
     will
     be collected for your confirmation before any subsets are
     installed.

     1) RTR API & Management Utility

Or you may choose one of the following options:

     2) ALL of the above
     3) CANCEL selections and redisplay menus
     4) EXIT without installing any subsets

Estimated free diskspace(MB) in root:67.7 usr:198.8

Press RETURN to display the next screen.


Enter your choices or press RETURN to redisplay menus.

Choices (for example, 1 2 4-6): 1

You are installing the following optional subsets:

        RTR API & Management Utility

Estimated free diskspace(MB) in root:67.7 usr:177.9

Is this correct? (y/n): y

Checking file system space required to install selected subsets:

File system space checked OK.

1 subsets will be installed.

Loading subset 1 of 1 ...

  Reliable Transaction Router V4.2 for Tru64 UNIX

  Installation started at Wed Apr 10 16:08:17 EDT 2002.

  Installation proceeds automatically, and should complete in
  approximately
  1 minute.

RTR API & Management Utility
   Copying from . (disk)
        Working....Wed Apr 10 16:08:29 EDT 2002
   Verifying
```

```
1 of 1 subsets installed successfully.
reusing existing /usr/doc/rtr directory
/usr/doc/rtr//rtr_relnotes.txt: File exists
/usr/doc/rtr//rtr_relnotes.ps: File exists
mkdir: cannot create /var/opt/rtrjnl.
/var/opt/rtrjnl: File exists

Configuring "RTR API & Management Utility" (RTRBASE420)

  directory /var/run/rtr created


  reusing existing /rtr directory

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  subsidiaries required for possession, use or copying. Consistent
  with FAR 12.211 and 12.212, Commercial Computer Software,
  Computer
  Software Documentation, and Technical Data for Commercial Items
  are licensed to the U.S. Government under vendor's standard
  commercial license.

  Reliable Transaction Router V4.2 for Tru64 UNIX

  Installation completed at Wed Apr 10 16:09:31 EDT 2002.

  You can run the Installation Verification Procedure using this
  command:
                  setld -v RTRBASE420


  Release Notes are available in: /usr/opt/RTR420/hlp/rtr_relnotes.*
#
```

1.2.4 Sample IVP Output

```
# setld -v RTRBASE420
RTR API & Management Utility (RTRBASE420)

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  Confidential computer software. Valid license from HP and/or its
  subsidiaries required for possession, use or copying. Consistent
  with FAR 12.211 and 12.212, Commercial Computer Software, Computer
  Software Documentation, and Technical Data for Commercial Items
  are licensed to the U.S. Government under vendor's standard
  commercial license.

  Starting     Reliable Transaction Router V4.2  for Tru64 UNIX
  Installation Verification Procedure
WARNING: This is not a first time install.
WARNING: Please ensure that you have terminated *all* existing
WARNING: rtr processes and rtr applications before continuing.
```

```
Rtr will find and reuse any existing rtr journal files in the
top level rtrjnl directory on each suitable filesystem, and will
reuse any existing shared memory segment associated with
/rtr/RTRENVPS
Normally this is intended and should not cause any problems.

WARNING: Any existing journal will be used and modified,
otherwise
WARNING: a new journal will be created on the default filesystem.
WARNING: Facilities RTR_IVP_FACILITY and RTR$DEFAULT_FACILITY
will be created.
WARNING: Result may be affected by size and contents of any
existing journal.
WARNING: The sample client and server do not necessarily complete
if they
WARNING: encounter previously journalled transactions for their
facilities.

Would you like to abort the IVP? (y/n)
n
IVP continuing ...

  keeping any existing log file settings (RTR_DBG not set)
  starting RTR . . .
  creating a journal, if not already created  . . .
  creating test facility . . .
  stopping RTR.

  [OPTIONAL] attempting to compile and link rtr test applications . . .

  If this system is not configured with an application development
  environment, or the platform does not support threads, then some
  messages about application compilation not succeeding are normal.

  multithreaded server rtr application compiled
  single-threaded client rtr application compiled
  applications rtrreq and rtrsrv available
  starting rtr and creating default facility
%RTR-I-NOLOGSET, logging not set
%RTR-S-RTRSTART, RTR started on node nodea in group "root"
%RTR-S-RTRSTOP, RTR stopped on node nodea in group "root"

  Copyright 1994, 2003 Hewlett-Packard Development Company, L.P.

      Reliable Transaction Router V4.2  for Tru64 UNIX

  Installation Verification Procedure successful
```

1.3 Installing RTR for Windows Systems

Your Reliable Transaction Router for Windows kit is supplied on CD-ROM. After installation, the *Readme* file is located in the directory where you installed RTR; you are advised to read the *Readme* file before using RTR.

User-Changed Monitor Files

If you have changed any RTR monitor (*.mon) files, you must rename them or they will be over-written during installation. To avoid this, always work from renamed copies of RTR monitor files when making local modifications.

1.3.1 Disk and Time Requirements

The installation of the RTR base product requires about 22 MB (megabytes) of disk space. The installation procedure takes about two minutes to complete.

1.3.2 Installation Procedure

1. If RTR is already installed on your system, see Section B.2, Uninstalling on Windows Systems, for information on uninstalling RTR and removing related processes.
2. If you are installing on Windows NT or Windows 2000, log in as the Administrator, or with administrator privileges.
3. Insert the RTR CD-ROM into the drive.
4. From Windows Explorer, choose the drive letter of your CD-ROM and open the directory RTRV42.
5. Double click on SETUP.EXE to start the InstallShield that takes you through the setup process.

1.4 Installing RTR for Sun Solaris

Your Reliable Transaction Router for Sun Solaris kit is supplied on CD-ROM. After installation, the *Release Notes* are located in the directory */opt/rtr/RTR420/hlp*; you are advised to read the *Release Notes* before using RTR.

User-Changed Monitor Files

If you have changed any RTR monitor (*.mon) files, you must rename them or they will be over-written during installation. To avoid this,

always work from renamed copies of RTR monitor files when making local modifications.

1.4.1 Disk and Time Requirements

The installation requires about 15.5 MB (megabytes) on the partition on `/opt`, the package base directory, about 8 MB on `/rtr` and about 2 MB for the RTR journal. The installation procedure takes about two minutes to complete.

Note that the Installation Verification Procedure (IVP) requires a working C language compiler to run.

1.4.2 Installation Procedure

Note

There are both an `rtr` and an `rtr_r`; (`rtr_r` is installed only on SunOS 5.6/Solaris 2.6 systems). A soft link is established to the appropriate one from `/usr/bin/rtr`.

RTR provides both `librtr_r.so` and `librtr.so` for SunOS 5.6 in case you need to link your application with the threaded version. On SunOS 5.6, RTR uses `librtr_r.so` to enable asynchronous I/O (aio) support.

---

1. Log in as user `root` or `su` to `root`.
2. Use the `pkginfo` utility to check if you have a version of RTR already installed:

   ```
   # pkginfo -l rtr
   ```

3. If RTR is already installed on your system, see Section B.4, Uninstalling on Sun, for information on uninstalling RTR and removing related processes.
4. Insert the CD-ROM and mount the volume at a convenient mount point (for example, `/cdrom`).
5. Decide if you want to run the IVP after installation. By default, the installation process will not run the IVP (see the Caution in the Running the IVP section). To run the IVP after installation is done, you must define the NONABI_SCRIPTS environment variable when starting the installation. To define this variable, use the following commands:

   ```
   # sh
   # NONABI_SCRIPTS=TRUE
   ```

6. Install RTR from the CD-ROM directory where the kit is located. For example, use the following commands:

```
# cd /cdrom/rtr_kit
# pkgadd -d .
```

   - You can accept the defaults for most questions from the pkgadd utility.
   - When asked "This package contains scripts which will be executed with super-user permission during the process of installing this package. Do you want to continue with the installation of <rtr> [y,n,?]", answer ''y''.

7. RTR is then installed in /opt/rtr.

Requirements for Application Permissions

If the RTR executable is modified after installation to no longer be suid root or the mode of the /rtr directory is changed, an application process (for example a client) can encounter a fatal error (Unable to locate a socket) when the client process finds it cannot create an rtr_ipc_sock_* file for the process ID (pid) in the /rtr directory.

To avoid this, ensure that application processes run with user and group IDs that have access permission to create and remove files in this directory.

Section 1.4.3 shows an example of an RTR intallation for the Sun Solaris.

Running the IVP

The Installation Verification Procedure (IVP) requires a working C language compiler to run.

Caution

Do not run the IVP program on a production system as it may alter the RTR journal or interrupt processing of transactions. You will be prompted to abort the IVP before it can do any damage. Consider your situation carefully before running the IVP.

You may run the IVP separately from the installation procedure. If you are not using the C shell, start it by typing /usr/bin/csh and run the IVP by typing the following:-

```
# setenv BASEDIR /opt
```

and then executing the file

opt/rtr/RTRxxx/examples/IVP/rtr_ivp_osf.sh

where xxx = 420 for RTR V4.2.

Section 1.4.4 shows an example of IVP output for RTR on the Sun Solaris.

1.4.3 Sample Sun Solaris Installation

```
# pkgadd -d .

The following packages are available:

  1  rtr     Reliable Transaction Router
             (sun4u) 420

Select package(s) you wish to process (or all to process
all packages). (default: all) [?,??,q]:

Processing package instance <rtr> from
</CDROM/rtr420/rtrkit>

Reliable Transaction Router
(sun4u) 420
Hewlett-Packard Development Company, L.P.

Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.

This package contains scripts which will be executed with super-user
permission during the process of installing this package.

Do you want to continue with the installation of <rtr> [y,n,?] y

Installing Reliable Transaction Router as <rtr>

## Executing preinstall script.

  Copyright 1994, 2003 Hewlett-Packard Development Company, L.P.

  Confidential computer software. Valid license from HP and/or its
  subsidiaries required for possession, use or copying. Consistent
  with FAR 12.211 and 12.212, Commercial Computer Software, Computer
  Software Documentation, and Technical Data for Commercial Items
  are licensed to the U.S. Government under vendor's standard
  commercial license.

This kit will only run on Sun Solaris 2.6 and higher.
Installation should complete in approximately 1 minute.
## Installing part 1 of 1.
```

```
[All installed files are listed in the output. See Chapter 6,
"Full Installation on Sun Solaris" for the list.]

   .
   .
   .

[ verifying class <none> ]
## Executing postinstall script.

  Copyright 1994, 2003 Hewlett-Packard Development Company, L.P.

  Confidential computer software. Valid license from HP and/or
  its
  subsidiaries required for possession, use or copying.
  Consistent
  with FAR 12.211 and 12.212, Commercial Computer Software,
  Computer
  Software Documentation, and Technical Data for Commercial Items
  are licensed to the U.S. Government under vendor's standard
  commercial license.

    directory /rtr -> /var/opt/rtr created

  Starting     Reliable Transaction Router V4.2  for SunOS
  Installation Verification Procedure

WARNING: This is not a first time install.
WARNING: Please ensure that you have terminated *all* existing
WARNING: rtr processes and rtr applications before continuing.
See man fuser or lsof to identify processes using
/usr/*lib/librtr*.so

Rtr will find and reuse any existing journal files in the
top level rtrjnl directory on each suitable filesystem, and will
reuse any existing shared memory segment associated with
/rtr/RTRENVPS
Normally this is intended and should not cause any problems.

WARNING: Any existing journal will be used and modified, otherwise
WARNING: a new journal will be created on the default filesystem.
WARNING: Facilities RTR_IVP_FACILITY and RTR$DEFAULT_FACILITY
will be created.
WARNING: Result may be affected by size and contents of any
existing journal.
WARNING: The sample client and server do not necessarily complete
if they
WARNING: encounter previously journalled transactions for these
facilities.

NOTE: The following question is ignored in a non-interactive
install
NOTE: unless NONABI_SCRIPTS=TRUE, see man pkgadd for details...
```

```
You may run the IVP separately from the installation
procedure by executing the file:
/opt/rtr/RTRxxx/examples/IVP/rtr_ivp_osf.sh

Would you like to abort the IVP? (y/n) [y] IVP aborted

Installation of <rtr> was successful.

The following packages are available:

  1  rtr     Reliable Transaction Router
             (sun4u) 420

Select package(s) you wish to process (or all to process
all packages). (default:all) q
#
```

1.4.4 Sample IVP Output

```
    .
    .
    .


Would you like to abort the IVP? (y/n) n
IVP continuing ...

  keep any existing log file settings (RTR_DBG not set)
  starting RTR . . .
  creating a journal, if not already created . . .
  creating test facility . . .
  stopping RTR.

      Reliable Transaction Router V4.2 for SunOS

  Installation Verification Procedure successful

The following packages are available:

  1 rtr      Reliable Transaction Router
             (sun4u) 420

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]: q
#
```

2
Upgrade Process

To upgrade RTR, use the following process:

1. Shutdown RTR
2. Upgrade to new version
3. Run the IVP (optional)
4. Start RTR

2.1 Rolling Upgrade Restrictions

Take note of the following restrictions if upgrading an RTR environment from RTR V3.2 to Version 4.2.

Migrating from V2

See Chapter 3 for how to retain the V2 help file when migrating to a later version of RTR. Refer to the *Reliable Transaction Router Migration Guide* for information on performing this migration.

The RTR recovery protocol consists of messages sent from one backend, via a router, to the target backend. If either of the RTR backends is upgraded to RTR Version 4.2, then the router that will be used for recovery must also be running RTR Version 4.2. This generally means that any RTR router nodes should be upgraded to RTR Version 4.2 before any RTR backend nodes. There is no restriction in the order that RTR backends should be upgraded to Version 4.2.

The order in which RTR nodes should be upgraded for a rolling upgrade from V3.2 to Version 4.2 is as follows:

1. Frontend-only nodes can be upgraded at any time

2. Router-only and mixed frontend/router nodes
3. Mixed router/backend nodes
4. Router-only nodes
5. Backend-only nodes

For more complex configurations, where a node may have combinations of facilities with different backend/router groupings, use the command SET NODE/RECOVERY=V32 to set the recovery protocol to the V3.2 algorithm.

Once RTR has been upgraded on all nodes, the recovery protocol can be reset to its default value (V4.0), and RTR restarted at a convenient time on each node. This need not be a simultaneous restart on all nodes. RTR can be restarted on each node one by one after resetting the default recovery protocol, so that continuous application availability is maintained.

3
Full Installation on OpenVMS

This chapter describes how to install Reliable Transaction Router on OpenVMS Alpha systems. It includes steps for:

- Preparing for installation
- Installing RTR
- Completing RTR setup

3.1 Prepare for Installation

Before you start the installation, complete the preparation tasks outlined in this section.

User-Changed Monitor Files

If you have changed any RTR monitor (*.mon) files, you must rename them or they will be overwritten during installation. To avoid this, always work from renamed copies of RTR monitor files when making local modifications.

RTR V2 Command-line API Help

To retain RTR V2 help when installing later versions of RTR, before uninstalling RTR make a copy of the RTR V2 help file that is on `SYS$COMMON:[SYSHLP]RTRHLP.HLB`. Rename it, for example, RTRHLPV2.HLB. After completing installation of the later version of RTR with its current help file, copy the old RTRHLPV2.HLB file back. You can then access the old file from the DCL command line with the DCL command HELP @RTRHLPV2.

3.1.1 Check Software Distribution Kit

Reliable Transaction Router is distributed on CD-ROM. Use the Bill of Materials (BOM) received with your kit to verify the contents of your software distribution kit.

3.1.2 Check Required Hardware

To install RTR, you need the following minimum hardware:

- Software distribution device such as a CD-ROM
- Terminal

  You can use a character-cell or video terminal or a workstation when installing RTR.
- An AlphaServer that runs OpenVMS

See the *Reliable Transaction Router Software Product Description* for additional hardware requirements.

3.1.3 Check Required Software

Table 3–1 provides information on the software that must be installed on your system before installing Reliable Transaction Router. The table also includes information about optional software that you can use with Reliable Transaction Router. See the Reliable Transaction Router *Software Product Description* (SPD) for the list of prerequisite and optional software and their required version numbers.

Table 3–1 Required Software

Prerequisite Products	Purpose
OpenVMS Alpha Version 6.2,7.2-2,7.3	System Software
One of the following must be present on your system to use RTR:	

(continued on next page)

Table 3–1 (Cont.) Required Software

Networking Products	Purpose
TCP/IP Services for OpenVMS (Version 4.2 or higher, depending on OpenVMS version)	Network Transport
DECnet (Version 6.2 or higher, depending on OpenVMS version) or DECnet-Plus (Version 6.3 ECO5 or higher, depending on OpenVMS version)	Network Transport

The Installation Verification Procedure (IVP) will complete successfully only if at least one of the supported network protocols (DECnet or TCP/IP) is installed.

There is no requirement that you must register a software license for RTR for OpenVMS.

3.1.4 Check Required Disk Space

Reliable Transaction Router's requirements for free disk storage space are different during installation and after installation. Table 3–2 summarizes the storage requirements.

Table 3–2 Disk Space Requirements for OpenVMS

Kit	Blocks During Installation	Blocks After Installation
Reliable Transaction Router for OpenVMS Alpha	53000	36000

To determine the number of free disk blocks on the current system disk, enter the following command at the DCL prompt:

```
$ SHOW DEVICE SYS$SYSDEVICE
```

3.1.5 Check System Parameters

Installing Reliable Transaction Router for OpenVMS may mean that you have to increase the values for some system parameters. For more details, see the *Reliable Transaction Router System Manager's Manual*.

Value of CHANNELCNT

In rare instances and only as directed by HP, you may need to change the value of CHANNELCNT, which is typically set at 256. CHANNELCNT specifies the number of permanent I/O channels available to the system. For details on how to set this, see the *Reliable Transaction Router System Manager's Manual*.

3.1.5.1 Size Global Pages and Sections Appropriately

Size global pages and global sections appropriately. (Refer to *Reliable Transaction Router System Manager's Manual*, Section 2.10, RTR Shared Memory Sizing, for information on sizing.) Table 3–3 lists the minimum free amount of global pages and global sections required for the installation.

Table 3–3 System Parameter Values Used by the RTR Installation

System Parameter	Required Amount
GBLPAGES	4000
GBLSECTIONS	4

3.1.5.2 Size Virtual Memory Appropriately

RTR has basic memory requirements. For information on how much virtual memory to allocate, refer to *Reliable Transaction Router System Manager's Manual*, Section 2.11, RTR ACP Virtual Memory Sizing.

3.2 Install RTR

If RTR is already installed on your system, see Section B.1, Uninstalling on OpenVMS, for information on uninstalling RTR and removing related processes.

Log on to the System Manager's account to do the installation.

The Reliable Transaction Router installation procedure uses the POLYCENTER Software Installation Utility (PCSI). For details on using PCSI, refer to the *OpenVMS System Manager's Manual*, Section ''Installing with the POLYCENTER Software Installation Utility.''

The logical name PCSI$SOURCE is used to define the location of the software kits you want to install. For example, if the Reliable Transaction Router software is located in DISK1:[KITS], enter the following at the DCL prompt (or include the line in the system manager's login command file):

```
$ DEFINE PCSI$SOURCE DISK1:[KITS]
```

3.2.1 Installation Example

The installation prompts you with questions. Enter your response to each question and press the Return key. Defaults are shown in square brackets, for example, [YES].

To start the installation, enter the command:

```
$ PRODUCT INSTALL RTR
```

A display similar to the following appears:

```
The following product has been selected:
    DEC AXPVMS RTR V4.2-xxx  (1)            Layered Product

Do you want to continue? [YES] yes

Configuration phase starting ...

You will be asked to choose options, if any, for each
selected product and for
any products that may be installed to satisfy software dependency
requirements.

DEC AXPVMS RTR V4.2-xxx: Reliable Transaction Router for OpenVMS

  Copyright 1994, 2003 Hewlett-Packard Development Company, L.P.

Do you want the defaults for all options? [YES] no

  Have all RTR processes on the system been stopped? [YES] yes (2)
  Run installation verification procedure [NO] yes (3)
  DECnet users:Have you read the Release Note regarding
  minimum version? [YES] yes
  Do you want the V2 programming kit installed? [NO] yes (4)

Do you want to review the options? [NO] yes

DEC AXPVMS RTR V4.2-xxx: Reliable Transaction Router for OpenVMS
    Have all RTR processes on the system been stopped?: YES
    Run installation verification procedure: YES
    DECnet users: Have you read the Release Note regarding
    minimum version?: YES
    Do you want the V2 programming kit Installed ?: YES

Are you satisfied with these options? [yes]

Execution phase starting ...
```

Full Installation on OpenVMS
3.2 Install RTR

```
The following product will be installed to destination:
    DEC AXPVMS RTR V4.2-xxx               <logical for SYS$COMMON> ❺

Portion done: 0%
...10%
...20%
...30%
...40%
...50%
...60%
...70%
...80%
...90%
...100%

The following product has been installed:
    DEC AXPVMS RTR V4.2-xxx                Layered Product

%PCSI-I-IVPEXECUTE, executing test procedure for
DEC AXPVMS RTR V4.2-xxx ...❻
%PCSI-I-IVPSUCCESS, test procedure completed successfully

DEC AXPVMS RTR V4.2-xxx: Reliable Transaction Router for OpenVMS

    Insert the following lines in SYS$MANAGER:SYSTARTUP_VMS.COM: ❼
        @sys$startup:rtr$startup.com
    Insert the following lines in SYS$MANAGER:SYSHUTDWN.COM:
        @sys$manager:rtr$shutdown

    See the Release Notes and documentation for use of the
    optional
    rtr$startup P1 parameter. ❽
$
```

❶ Kit name, version and number.

❷ All RTR processes must be stopped before a successful installation.

❸ Optional request to run IVP after installation.

❹ Answer yes if you need definition files required for programming to the V2 API. Otherwise, answer no.

❺ The destination defaults to the logical defined for SYS$COMMON.

❻ Indicates that the installation verification procedure (IVP) has started.

❼ Add the indicated lines for automatic startup and shutdown of RTR.

❽ See Section 3.3.1.1 for information on use of the optional P1 parameter.

3.2.2 Read Release Notes

To access the Reliable Transaction Router *Release Notes*, type the command:

```
$ PRODUCT EXTRACT RELEASE_NOTES RTR /file=rtr_relnotes.txt
```

You should read the *Release Notes* before using Reliable Transaction Router.

3.3 Complete RTR Setup

After completing the installation, you can:

- Edit system files
- Verify user account requirements

3.3.1 Edit System Files

You must edit the system startup and shutdown files to provide for automatic startup and the installation of Reliable Transaction Router images when your system is rebooted.

Add the command line that starts Reliable Transaction Router to the system startup file, SYS$MANAGER:SYSTARTUP_VMS.COM. Reliable Transaction Router cannot start until after the network has started. You must position this new command line *after* the lines that invoke the network startup command procedures.

Add the command line that stops Reliable Transaction Router to the system shutdown file, SYS$MANAGER:SYSHUTDWN.COM.

3.3.1.1 Establishing Protocol Preference

In RTR$STARTUP.COM, the symbol RTR_PREF_PROT defines the preferred network protocol. There are four choices:

RTR_DNA_FIRST (DECnet first)
RTR_DNA_ONLY (DECnet only)
RTR_TCP_FIRST (TCP first)
RTR_TCP_ONLY (TCP only)

By default, protocol preference depends on whether DECnet has been installed as follows:

Table 3–4 RTR Protocol Preference

If SYS$NODE is defined (DECnet installed), the default is:	If SYS$NODE is not defined, the default is:
RTR_DNA_FIRST	RTR_TCP_ONLY

This default behavior is the same as in previous versions of RTR and is backwards compatible with previous versions of RTR.

Previously the RTR system manager could override this default behavior by removing the comment character (!) from the appropriate DEFINE statement in RTR$STARTUP.COM. This is no longer valid or supported. To override the default behavior, add the following line to SYS$MANAGER:SYSTARTUP_VMS.COM:

```
@sys$startup:rtr$startup.com preferred_protocol (P1)
```

Set the optional preferred protocol to one of the values in Table 3–5.

Table 3–5 Preferred Protocol Values

To use the following protocol:	Set the value as:
DECnet first	RTR_DNA_FIRST
DECnet only	RTR_DNA_ONLY
TCP/IP first	RTR_TCP_FIRST
TCP/IP only	RTR_TCP_ONLY

For example, the following line in SYS$SYSMANAGER:SYSTARTUP_VMS.COM sets the preferred protocol as TCP/IP first:

```
@sys$startup:rtr$startup.com RTR_TCP_FIRST
```

Setting the prefered protocol eliminates the need to change the RTR$STARTUP.COM file on every system after each RTR upgrade or install. In addition, RTR$SHUTDOWN.COM internally detects the preferred protocol and shuts down RTR accordingly. In the unlikely event that RTR$SHUTDOWN.COM does not correctly detect the preferred protocol, the RTR system manager can explictly pass the value by adding the following line to SYS$MANAGER:SYSHUTDWN.COM:

```
@sys$startup:rtr$shutdown.com preferred_protocol
```

where the optional preferred protocol is taken from Table 3–5. For example, the following command would ensure that RTR detects the preferred protocol:

```
@sys$startup:rtr$shutdown.com RTR_TCP_FIRST
```

3.3.2 Verify User Account Requirements

To work with Reliable Transaction Router, user accounts on your system must have certain quotas and privileges. The next two sections contain information on these requirements. If current settings are less than those required, increase them to the amounts required.

3.3.2.1 Check User Account Quotas

Table 3–6 summarizes the required user account quotas.

Table 3–6 User Account Quotas for Using Reliable Transaction Router

Account Quota	Value
ASTLM	At least 2000
BIOLM	At least 2000
BYTLM	At least 150000 [1]
DIOLM	At least 2000
TQELM	At least 2000

[1] At least 80000 for accounts running RTR applications. At least 150000 for accounts running the RTR ACP. This may need to be increased to accommodate large numbers of application programs and/or users. The formula to use is: *32K + 32K * n* where *n* equals the number of application processes plus the number of users in the ACP's group.

3.3.2.2 Check User Account Privileges

To use the features of Reliable Transaction Router, each account must have the following privileges:

- NETMBX
- TMPMBX
- SYSLCK

In addition, the Rights Identifier RTR$INFO is required.

On Identifiers

A fresh installation of RTR adds RTR$INFO and RTR$OPERATOR identifiers to those on your system (they are removed during an uninstall).

3.3.2.3 Check System Manager Account Privileges

The RTR System Manager (that is, the account that starts up RTR and creates facilities) must also have either OPER privilege or have the Rights Identifier RTR$OPERATOR.

3.3.3 Check Installed Files

To see the files installed on your system by the installation process, use the following command:

```
$ PRODUCT LIST RTR/SOURCE=[pcsi kit location]
```

3.3.4 Enable RTR Remote Commands

To make it possible to execute RTR commands on remote systems, enable the capability with the SYSMAN Utility. See the documentation for SYSMAN in the OpenVMS documentation set for information on this utility. You can also execute remote commands with /NODE qualifiers on certain RTR commands, and in conjunction with the RTR SET ENVIRONMENT command. For more information on executing RTR commands remotely, refer to the *Reliable Transaction Router System Manager's Manual*.

3.3.5 Display CONOLD Documentation

Documentation for Reliable Transaction Router is available on the OpenVMS Online Documentation Library CD-ROM in hypertext (.html) file format. You can display the hypertext files on your workstation or PC using any HTML browser such as Internet Explorer or Netscape.

3.3.6 Run RTR

To run RTR, enter the following command at the OpenVMS system prompt:

```
$ run SYS$COMMON:[SYSEXE]RTR
RTR>
```

or

```
$ RTR
RTR>
```

You can then enter commands at the RTR prompt to configure RTR facilities and partitions, and run applications that use RTR.

3.3.6.1 Configure RTR Facilities and Partitions

For information on configuring RTR facilities and setting up partitions, refer to the *Reliable Transaction Router Getting Started* and the *Reliable Transaction Router System Manager's Manual*.

3.3.7 Install and Run Applications

Once applications that use RTR have been designed and tested, they can be deployed on the systems configured for use with RTR. For information on designing RTR applications, refer to the *Reliable Transaction Router Application Design Guide*; for information on deployment and use, refer to the *Reliable Transaction Router System Manager's Manual*.

4

Full Installation on Tru64 UNIX

This chapter describes how to install Reliable Transaction Router on Tru64 UNIX systems. It includes steps for:

- Preparing for installation
- Installing RTR
- Completing RTR setup

4.1 Prepare for Installation

Before you start the installation, complete the preparation tasks outlined in this section.

User-Changed Monitor Files

If you have changed any RTR monitor (*.mon) files, you must rename them or they will be overwritten during installation. To avoid this, always work from renamed copies of RTR monitor files when making local modifications.

4.1.1 Check Software Distribution Kit

RTR software is distributed on CD-ROM. Use the Bill of Materials (BOM) to check the contents of your RTR software distribution kit.

4.1.2 Register Your Software License

RTR includes support for the License Management Facility (LMF). You must register your License Product Authorization Key (License PAK) in the License Database (LDB) in order to use RTR on a newly licensed node. The License PAK may be shipped along with the kit if you ordered the license and media together; otherwise, it is shipped separately to a location based on your license order.

If you are installing RTR as an update on a node already licensed for this software, you have already completed the License PAK registration requirements.

If you are installing prerequisite or optional software along with RTR, review the PAK status and install the PAKs for any prerequisite or optional software before you install RTR.

To register a license under the Tru64 UNIX operating system, first log in as superuser.

At the superuser prompt, edit an empty PAK template with the `lmf register` command as follows, and include all the information on your License PAK:

```
# lmf register
```

After you register your license, use the following `lmf reset` command to copy the license details from the License Database (LDB) to the kernel cache:

```
# lmf reset
```

For complete information on using the License Management Facility, see the *Guide to Software License Management* and the `lmf`(8) reference page.

Installing RTR, including running the Installation Verification Procedure (IVP), takes approximately 10 to 15 minutes, depending on your type of media and system configuration.

4.1.3 Check Login Privileges

You must have superuser privileges to install the RTR software.

4.1.4 Check Required Hardware

To install RTR, you need the following hardware:

- Software distribution device (if installing from media)

  Locate the CD-ROM drive for the CD-ROM software distribution media. The CD booklet or the documentation for the CD-ROM drive you are using explains how to load the CD-ROM media.

- Terminal

  You can use a hardcopy or video terminal or a workstation to communicate with the operating system and respond to prompts from the installation procedure.

See the RTR Software Product Description (SPD) for additional hardware requirements.

4.1.5 Check Required Software

RTR requires that the following Tru64 UNIX software subset be loaded on the system where you install RTR:

- OSFBASE—the Base System subset

One of the following is required:

- DECnet-Plus for Tru64 UNIX, for DECnet configurations
- TCP/IP as provided for Tru64 UNIX

The following Tru64 UNIX software subsets are optional on the system where you install RTR:

- OSFCLINET200—Basic Networking Services (TCP/IP) subset
- DNABASE110—DECnet/OSI Base Components subset, together with
- DNANETMAN110—DECnet/OSI Network Management subset

To check whether these subsets are loaded:

1. Log in to the system where you will install RTR.
2. Enter the following command:

```
# setld -i | egrep 'OSFBASE|DNA'
```

If your path is not set as /usr/sbin/, you must enter the full path of the command. For example:

```
% /usr/sbin/setld -i | egrep 'OSFBASE|DNA'
```

Check the displayed rows for the name of the relevant subset and any related patches. The word ''installed'' appears after the subset identifier when a subset is loaded. If the word ''installed'' does not appear (the second column in a row is blank), the subset or patch is not loaded. In this case, you must load the missing Tru64 UNIX software before installing RTR. (For information on how to load the operating system software, see the *Guide to Installing Tru64 UNIX*.)

4.1.6 Determine Which Subsets to Load

RTR has only one subset:

– rtrbase420

  RTR runtime and system management.

4.1.7 Check Required Disk Space

Table 4–1 lists the disk space requirements for loading the RTR software subset. These requirements apply to the disks where you load the RTR subset. The requirements are listed by directory for convenience if you are doing installations on systems where these directories are mount points for different disk partitions.

Table 4–1 RTR Subset Size (in Kilobytes) for Tru64 UNIX

Subset Title	Subset Name	/usr/opt/	/rtr
RTR	rtrbase420	21000	5600
Total:		26600	

Using these disk space requirements, calculate the total values for the subsets you will load in each directory. You will also require at least 2MB disk space for the RTR journal, which defaults to `/rtrjnl`.

Compare the space required for the subset with the free space currently on the disks where RTR files will reside.

4.1.7.1 Check Current Disk Space

To check the current amount of free space for a directory path, log in to the system where you will install RTR. You can check which directories are mounted and where they are by viewing the `/etc/fstab` file. For example:

```
# more /etc/fstab
/dev/rd0a:/:rw:1:1:ufs::
/dev/rd0g:/usr:rw:1:2:ufs::
/usr/staff/r1/leslie@bigsys:/usr/staff/r1/leslie:rw:0:0:nfs:bg:
/usr/man@bigsys:/usr/man:ro:0:0:nfs:bg:
```

The display indicates that `/usr` (mounted to `/dev/rd0g`) is the only mount point that affects where RTR files will reside; the system has only one local disk drive, and the `/usr/lib` and file system resides in the `g` partition of the disk on that drive.

To check the total space and the free space for the directories where RTR will reside, enter the `df` command. Given the previous display of the `/etc/fstab` file, which shows that only `/usr` is a mount point, you need to check free space only in the `/usr` file system. For example:

```
# df -k /usr
Filesystem   1024-blocks    Used   Available  Capacity Mounted on
/dev/rd0g         122598   54447       55892     49%   /usr
```

This display shows that there are 55,892 Kbytes (55 MB) free. This free space is sufficient to accommodate the subset requirements listed in Table 4–1, RTR Subset Size (in Kilobytes) for Tru64 UNIX.

On systems where /usr/lib and /usr/man are mounted to different devices from /usr, enter the following command:

```
# df /usr/lib /usr/man
```

In this case, you compare space required for RTR files in /usr/lib to the free space displayed in the first line of the df output list, and compare the space required for RTR files in /usr/man to the free space displayed in the second line of that list.

4.1.7.2 Increase Disk Space

The RTR installation procedure creates the following directory and loads files into subordinate directories:

/usr/opt/RTR420

If the /usr/opt/RTR420 directory in the previous path does not exist, the installation procedure creates it.

If the RTR420 directory does exist, the installation procedure uses it.

If you find that there is insufficient disk space for the RTR subsets and you know that you have additional space on alternative disks or disk partitions for your system, perform the following steps before installing RTR:

1. Log in as superuser.
2. Create the directory /usr/lib/RTR420.
3. Specify in the /etc/fstab file that one or more of the newly created directories are mount points to new disk partitions where there is additional space.
4. Enter the mount -a command so that the new mount points take effect.

4.1.8 Check System Parameters

Installing RTR for Tru64 UNIX may mean that you have to increase the values for some system parameters.

4.1.8.1 Check Shared Memory Requirements

RTR has basic memory requirements. For information on how much shared memory to allocate, refer to the *Reliable Transaction Router System Manager's Manual*, RTR Shared Memory Sizing.

4.1.8.2 Check Virtual Memory Requirements

For information on how much virtual memory to allocate, refer to the *Reliable Transaction Router System Manager's Manual*, RTRACP Virtual Memory Sizing for All Systems.

4.1.8.3 TCP Services File

RTR uses TCP/IP port number 46000 for the network communication daemon `rtr rtrd`. On UNIX platforms, edit the `/etc/services` file to add the following line:

```
rtracp 46000/tcp
```

This informs the system administrator that port number 46000/tcp is reserved for RTR. Note that the RTR daemon is started by the RTRACP, not by `inetd`.

4.1.9 Back Up Your System Disk

HP recommends that you back up your system disk before installing any software. For information about backing up your system disk, see the Tru64 UNIX system documentation.

4.2 Install RTR

Before you start the installation, read Section 4.1, Prepare for Installation to ensure that you are prepared to complete the installation.

You can install RTR locally (using CD-ROM media) or from a server area. If you encounter any failures during installation, see Appendix A.

4.2.1 Install from Media or RIS

Someone from your site must perform at least one RTR installation from the distribution medium. Your site system manager can then decide whether or not to make a RTR distribution kit available online so that subsequent installations of RTR can use the Remote Installation Service (RIS). For information on extracting RTR subsets to a RIS distribution area, see the *Guide to Sharing Software on a Local Area Network*.

If you expect to use RTR subsets from the RIS area of a remote system for installation on your local system, first check with your site system manager to ensure that:

- A RTR network kit is available for use.
- Your system is registered as a RIS client.

If RTR subsets are available to you on a RIS server system, you must know the name of that system.

For more information on installing RTR from a RIS distribution area, see Section 4.2.1.2.

Note on Cluster Installation

To support TruCluster Server 5, the /rtr directory is now a symbolic link to a target directory, which is a context-dependent symbolic link (CDSL), so that it is a different physical directory on each cluster member.

Before installing RTR on a TruCluster Server, you must first remove any existing /rtr directory or /rtr symbolic link, its target directory and the directory's contents on all member nodes. If you do not need the previous journal, HP recommends that you remove /rtrjnl and its contents; it will then be recreated as a symbolic link to a shared directory in /var, which usually has more space than the / filesystem.

Note that although the /rtrjnl directory can also be replaced by a symbolic link, the target should be an ordinary cluster-wide directory and not a member-specific CDSL so that each member can access the journal files belonging to the other members. Similarly, any other devices that you may specify when creating journals should normally also refer to cluster-wide shared directories.

To create a subdirectory within a suitable existing member-specific directory using the following commands:

```
# mkdir /var/run/rtr
# cp -pr /rtr/* /var/run/rtr/
# rm -fr /rtr
# ln -s /var/run/rtr /rtr
```

The rtr directory still contains a mixture of temporary and permanent files, so whichever directory is chosen must not be cleared on reboot.

4.2.1.1 Install from CD-ROM

This procedure loads RTR files on to a disk belonging to the system where you perform the installation. When RTR is run, its executable images are mapped into memory on your system.

Follow these steps to install RTR from CD-ROM media:

1. Mount the media on the appropriate disk drive.
2. Log in as superuser (login name root) to the system where you will install RTR.

3. Make sure you are at the root (/) directory by entering the following command:

```
# cd /
```

4. Use the `setld` utility to check if you have a version of RTR already installed:

```
# setld -i | grep RTR
```

5. If RTR is already installed on your system, see Section B.3 for information on uninstalling RTR and removing related processes.

6. Specify the `/CD-ROM` directory to be the mount point for the distribution file system on the drive. For example, if your drive is `rz0`, enter the following command:

```
# mount -dr /dev/rz0c /CD-ROM
```

7. Enter a `setld` command that requests the load function (`-l`) and identifies the directory in the mounted file system where RTR subsets are located.

   For example, if the directory location for these subsets is `RTRBASE420`, enter the following command:

```
# setld -l RTRBASE420
```

See Section 4.2.3 to continue the installation.

4.2.1.2 Install from RIS

If you are installing RTR subsets that reside in an `/etc/ris` RIS distribution area on a remote system, follow these steps:

1. Log in as superuser (login name `root`) to the system where you will install RTR.

2. Make sure you are at the root directory (/) by entering the following command:

```
#cd
```

3. Enter a `setld` command that requests the load function (`-l` option) and identifies the system where the RTR subsets are located. For example, if you are loading RTR subsets from a RIS distribution area on node `orion`, enter the following:

```
#setld -l orion:
```

Remote Installation Services now displays a menu that lists all the software subsets available to you and asks you to specify the subsets you want to load.

4.2.2 Read the Online Release Notes

The *Release Notes* provide information for RTR that could not be included in the printed documentation. After installation the *Release Notes* are located in the directory */usr/opt/RTR420/hlp*; you are advised to read the *Release Notes* before using RTR.

To read the release notes, navigate to the directory where RTR is installed and issue the following command:

```
more rtr_relnotes.txt
```

4.2.3 Installation Example

This section explains the installation procedure prompts and displays.

4.2.3.1 Select Subsets

You must specify which RTR subsets you want to load.

Note

If you are installing from a RIS distribution area, the number of subsets can vary depending on what products are available in the RIS area and how many subsets they have.

```
# setld -l RTRBASE420

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  Confidential computer software. Valid license from HP and/or
  its subsidiaries required for possession, use or copying.
  Consistent  with FAR 12.211 and 12.212, Commercial Computer
  Software, Computer Software Documentation, and Technical
  Data for Commercial Items are licensed to the U.S.
  Government under vendor's standard commercial license.

The subsets listed below are optional:

      There may be more optional subsets than can be presented
      on a single
      screen. If this is the case, you can choose subsets
      screen by screen
      or all at once on the last screen. All of the choices
      you make will
      be collected for your confirmation before any subsets
      are installed.

      1) RTR API & Management Utility

Or you may choose one of the following options:
```

```
     2) ALL of the above
     3) CANCEL selections and redisplay menus
     4) EXIT without installing any subsets

Estimated free diskspace(MB) in root:33.2 usr:198.8

Press RETURN to display the next screen.


Enter your choices or press RETURN to redisplay menus.

Choices (for example, 1 2 4-6): 1
```

If you specify more than one number at the prompt, separate each number with a space, not a comma.

Next, the script lets you verify your choice. For example, if you enter `1` in response to the previous prompt, you will see the following display:

```
You are installing the following optional subsets:

        RTR API & Management Utility

Estimated free diskspace(MB) in root:33.2 usr:177.9

Is this correct? (y/n): y
```

If the displayed subsets are not the ones you intended to choose, enter `n`. In this case, the subset selection menu is again displayed and you can correct your choice of optional subsets.

If the displayed subsets are the ones you want to load, enter `y`.

The installation procedure loads and verifies the selected RTR subset.

The following example shows a display where the RTR subset is being loaded from CD-ROM:

```
Checking file system space required to install selected subsets:

File system space checked OK.

1 subsets will be installed.

Loading subset 1 of 1 ...

  Reliable Transaction Router V4.2 for Tru64 UNIX

  Installation started at Wed Apr 10 16:08:17 EDT 2002

  Installation proceeds automatically, and will complete in
  approximately
  1 minute.


RTR API & Management Utility
   Copying from . (disk)
        Working....Wed Apr 10 16:08:29 EDT 2002
   Verifying
```

```
1 of 1 subset(s) installed successfully.
reusing existing /usr/doc/rtr directory
/usr/doc/rtr//rtr_relnotes.txt: File exists
/usr/doc/rtr//rtr_relnotes.ps: File exists
mkdir: cannot create /var/opt/rtrjnl.
/var/opt/rtrjnl: File exists

Configuring "RTR API & Management Utility" (RTRBASE420)

  directory /var/run/rtr created

  reusing existing /rtr directory

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its
subsidiaries required for possession, use or copying. Consistent
with FAR 12.211 and 12.212, Commercial Computer Software,
Computer
Software Documentation, and Technical Data for Commercial Items
are licensed to the U.S. Government under vendor's standard
commercial license.

  Reliable Transaction Router V4.2 for Tru64 UNIX

  Installation completed at Wed Apr 10 16:09:31 EDT 2002.

  You can run the Installation Verification Procedure using
  this command:
                  setld -v RTRBASE420

  Release Notes are available in:
  /usr/opt/RTR420/hlp/rtr_relnotes.*
#
```

When you see the ''Verifying'' message during the subset installation, the installation procedure is checking to see that the files are copied correctly; it is not an Installation Verification Procedure (IVP) message.

During the installation, if you get errors from the `setld` utility, see the Diagnostics section of the `setld`(8) reference page for an explanation of the errors and the appropriate actions to take.

Section 4.2.4 explains how to run the IVP after installation, and how to delete old RTR subsets before installing a new version of RTR.

4.2.4 Run the Installation Verification Procedure

After installing RTR, you can run the Installation Verification Procedure (IVP) independently to verify that the software is available on your system. You might also want to run the IVP after a system failure to be sure that users can access RTR.

Note that the Installation Verification Procedure (IVP) requires a working C language compiler to run.

The RTR IVP verifies the installation as follows:

- Starts RTR
- Creates an RTR journal
- Creates an RTR facility
- Stops RTR
- Compiles and links the example client and server programs

To run the IVP after an installation, enter the following command:

```
# setld -v RTRBASE420
```

For a sample RTR IVP, see Section 1.2.4.

If the verification process fails, look in the `/var/adm/smlogs/fverify.log` file for information to help diagnose the problem.

4.2.5 Stop the Installation

To stop the installation procedure at any time, press Ctrl/C. You must then delete files created up to this point interactively. The directories and files created during the RTR installation are listed in the following file (on your CD-ROM):

`/rtr40/kit/instctrl/rtrbase420.inv`

4.2.6 Delete RTR from Your System

If you must remove a version of Reliable Transaction Router from your system, delete each subset that you previously installed.

To delete subsets:

1. Log in as superuser (login name `root`).

2. Make sure you are at the root directory (/) by entering the following command:

```
# cd /
```

3. Enter the following form of the `setld` command:

```
# setld -i | grep RTRBASE
```

4. Look for the word ''installed'' in the listing produced, and then delete the installed subsets. For example:

```
# setld -d RTRBASE420
```

4.2.7 Display Documentation from CD-ROM

The Reliable Transaction Router documentation is provided on the Tru64 UNIX Layered Products Online Documentation CD-ROM in hypertext (.html) file format. You can display the hypertext files on your workstation using any HTML browser such as Netscape or Internet Explorer.

4.3 Complete RTR Setup

This section explains what you need to do after the installation on Tru64 UNIX to make RTR ready for use.

Requirements for Application Permissions

If the RTR executable is modified after installation to no longer be `suid` root or the mode of the `/rtr` directory is changed, an application process (for example a client) can encounter a fatal error (Unable to locate a socket) when the client process finds it cannot create an `rtr_ipc_sock_*` file for the process ID (pid) in the `/rtr` directory.

To avoid this, ensure that application processes run with user and group IDs that have access permission to create and remove files in this directory.

4.3.1 Check Installed Files

To see the list of files installed on your system, use the following command:

```
% setld -i subset_name
```

4.3.2 Enable Remote RTR Commands

RTR supports the use of remote commands (described in Chapter 1 of the *Reliable Transaction Router System Manager's Manual*). To use this feature on Tru64 UNIX, check your operating system documentation for how to ensure access to a TCP/IP environment.

You may, for example, need to create an `.rhosts` file in the home directory of the RTR user on the target node or nodes, among other things. This file would contain the hostname (and, optionally, the username) of the node where the remote commands will be issued. For more information on the `.rhosts` file, see the `rhosts`(4) reference page.

4.3.3 Run RTR

To run RTR, enter the following command at the system prompt:

```
% RTR
RTR>
```

You can then enter commands at the RTR prompt to configure facilities and partitions, and run applications that use RTR.

4.3.3.1 Configure RTR Facilities and Partitions

For information on configuring RTR facilities and setting up partitions, refer to the *Reliable Transaction Router Getting Started* and the *Reliable Transaction Router System Manager's Manual*.

4.3.4 Install and Run Applications

Once applications that use RTR have been designed and tested, they can be deployed on the systems configured for use with RTR. For information on designing RTR applications, refer to the *Reliable Transaction Router Application Design Guide*; for information on deployment and use, refer to the *Reliable Transaction Router System Manager's Manual*.

Application programming interfaces that can be used to write transaction processing applications used with RTR are described in the *Reliable Transaction Router C++ Foundation Classes* manual and the *Reliable Transaction Router C Application Programmer's Reference Manual*.

5
Full Installation on Windows

This chapter describes how to install Reliable Transaction Router on Windows systems. It includes steps for:

- Preparing for installation
- Installing RTR
- Completing RTR setup

5.1 Prepare for Installation

Before you start the installation, review the hardware and software requirements described in the following sections.

User-Changed Monitor Files

If you have changed any RTR monitor (*.mon) files, you must rename them or they will be overwritten during installation. To avoid this, always work from renamed copies of RTR monitor files when making local modifications.

5.1.1 Check Required Hardware

- For client/server/router functionality, any Intel system that runs Windows NT, Windows 2000, or Windows XP.
- For client functionality, any Intel system that runs Windows 2000, Windows NT, Windows XP, Windows 98, or Windows ME.

5.1.2 Check Required Software

The following list contains the required version of Windows for each system to be used with RTR:

- Windows NT Version 4.0, Service Pack 4
- Windows 2000, Service Pack 1
- Windows XP
- Windows ME (client only)
- Windows 98 (client only), Service Pack 1, Y2K update
- all systems must include TCP/IP support

5.1.3 Check Required Disk Space

The installation of the RTR base product requires about 19 megabytes of disk space. The installation procedure takes about two minutes to complete.

5.1.4 Check System Parameters

RTR has basic memory requirements. This section references setup instructions for the relevant system parameters.

5.1.4.1 Check Memory-Mapped I/O Requirements

For information on how to size memory-mapped I/O appropriately, refer to *Reliable Transaction Router System Manager's Manual*, RTR Shared Memory Sizing.

5.1.4.2 Check Virtual Memory Requirements

The basic memory requirement for an unconfigured RTRACP is 5.6MB. Additional memory may be required. For additional information, refer to the *Reliable Transaction Router System Manager's Manual*, RTRACP Virtual Memory Sizing for All Systems.

5.2 Install RTR

1. If you are installing on Windows 2000, Windows XP, or Windows NT, ensure that you are logged in as the Administrator, or have administrator privileges.
2. If RTR is already installed on your system, see Section B.2, Uninstalling on Windows Systems, for information on uninstalling RTR and removing related processes.
3. Insert the RTR CD-ROM into the drive.

4. Exit all Windows programs to run Setup.
5. From the Start button, invoke Windows Explorer to view files.
6. Choose the drive letter of your CDROM and open the directory **I386**. Double click on the file SETUP.EXE. This starts the InstallShield that takes you through the setup process.
7. The InstallShield wizard steps you through the installation. Click on the Next button to continue installation or on the Cancel button to stop it.
8. Accept the terms of the License Agreement. If you reject the terms, installation is stopped.
9. Follow the screen instructions to enter the name of the directory where you want to install RTR. The default is:

   ```
   C:\Program Files\HP\RTR
   ```

   HP recommends that you install RTR on a local hard disk (NTFS or FAT).
10. Choose the Setup Type: Typical, Compact, or Custom by selecting a radio button. Choices are:

    - Typical: RTR is installed with the most common options. Recommended for most users.
    - Compact: RTR is installed with the minimum required options. Selecting compact installs RTR with no example files.
    - Custom: Choose the options to install (for users familiar with RTR only). Choose this to install an add-on such as RTR as a Service (NT only).

    If you select Custom, the components screen appears. Choose components to install. The screen display indicates how much disk space is required for each component.

    RTR as a Service runs only on Windows NT, Windows 2000, or Windows XP; the InstallShield does not register the service but RTR provides batch procedures to do so in the target directory.

    To use the batch procedures for RTR as a Service, follow this sequence:

    Start -> Programs -> Compaq -> RTR -> Service -> Register

    To remove RTR as a Service, end the above sequence with -> Unregister.
11. Setup adds a program icon to the Program Folder you select, and installs files in the appropriate location.
12. The InstallShield completes the installation, displaying a progress graphic until installation is complete.

13. Click on Finish to complete the installation of RTR.

5.2.1 Read the Readme File

The *Readme* file provides information about RTR that could not be included in the printed documentation. The *Readme* file is located in the directory where you installed RTR. You should read the *Readme* before you use RTR. You can also open the RTR Readme from the Start menu as follows:

Start -> Programs -> Compaq -> RTR -> Documentation -> Readme

5.3 Complete RTR Setup

If you install RTR on an NTFS drive, you will need to give RTR users access to the RTR directories. Use Windows Explorer and select the RTR root directory. Pull down the Security menu and choose File permissions. Give the RTR root directory and all its subdirectories ''Full Control'' access for all RTR users. You may then restrict access on individual files to read only. (All RTR users require write access to the RTR journal directory.)

Note

The Windows registry is modified slightly as a result of a RTR installation.

5.3.1 Check Installed Files

Navigate to the directory where you installed RTR.

To see a list of the files installed, use Windows Explorer or enter the following command:

```
Tree/F
```

5.3.2 Enable RTR Remote Commands

To make it possible to execute RTR commands on remote systems, you must use the remote shell (RSH). See the documentation on remote shell on your Windows system.

The RSH service runs commands on remote computers running the RSH service. This command is available only if the TCP/IP protocol has been installed.

You can also execute remote commands with /NODE qualifiers on certain RTR commands, and in conjunction with the RTR SET ENVIRONMENT command. For more information on executing RTR commands remotely, refer to the *Reliable Transaction Router System Manager's Manual*.

5.3.3 Display Documentation

Softcopy documentation for Reliable Transaction Router is available on the RTR Software Kit in distilled PostScript (.pdf) file format. You can display .pdf files with Acrobat Reader, a free reader of electronic files from Adobe Systems.

5.3.4 Run RTR

To run RTR, follow these steps:

- Click on
  Start -> Programs -> Compaq -> RTR -> Reliable Transaction Router

  This brings up a DOS-style RTR command window. To start RTR, enter Start RTR at the `RTR>` prompt.

- Click on Start -> Programs -> Compaq -> RTR -> Web Browser Interface

  This brings up the browser-based RTR screens with which you monitor and manage RTR.

5.3.4.1 Configure RTR Facilities and Partitions

For information on configuring RTR facilities and setting up partitions, refer to the *Reliable Transaction Router Getting Started* and the *Reliable Transaction Router System Manager's Manual*.

5.3.5 Install and Run Applications

Once applications that use RTR have been designed and tested, they can be deployed on the systems configured for use with RTR. For information on designing applications, refer to the *Reliable Transaction Router Application Design Guide*; for information on deployment and monitoring, refer to the *Reliable Transaction Router System Manager's Manual*.

6

Full Installation on Sun Solaris

This chapter describes how to install Reliable Transaction Router on Sun Solaris systems. It includes steps for:

- Preparing for installation
- Installing RTR
- Completing RTR setup

6.1 Prepare for Installation

Before you start the installation, complete the preparation tasks outlined in this section.

6.1.1 Check Software Distribution Kit

RTR software is distributed on CD-ROM. Use the Bill of Materials (BOM) to check the contents of your RTR software distribution kit.

If your software distribution kit is damaged or incomplete, contact your HP representative.

6.1.2 Check Login Privileges

You must have superuser (`root`) privileges to install RTR software.

6.1.3 Check Required Hardware

To install RTR, you need the following hardware:

- Software distribution device (if installing from media)

  Locate the CD-ROM drive for the CD-ROM software distribution media. The CD booklet or the documentation for the CD-ROM drive you are using explains how to load CD-ROM media.

- Terminal

You can use a hardcopy terminal, a video terminal, or a workstation to communicate with the operating system and respond to prompts from the installation procedure.

- Sun Server

  You must have a Sun Server that runs the Sun Solaris operating system.

See the RTR Software Product Description (SPD) for additional hardware requirements.

6.1.4 Check Required Software

One of the following is required:

- SunLink DNI Version 8.0
- TCP/IP as provided by the operating system

See the RTR Software Product Description (SPD) for additional software requirements.

6.1.5 Determine Which Subsets to Load

RTR has only one subset:

– rtrbase420

  RTR runtime and system management.

6.1.6 Check Required Disk Space

Table 6–1 lists the approximate disk space requirements for loading the RTR software subset. These requirements apply to the disks where you load RTR. The requirements are listed by directory for convenience if you are doing installations on systems where these directories are mount points for different disk partitions.

Table 6–1 RTR Subset Size (in Kilobytes) for Sun Solaris

Subset Title	Subset Name	/usr/opt/	/rtr
RTR	rtrbase420	15500	8000
Total:		23500	

Using these disk space requirements, calculate the total values for the subsets you will load in each directory. You will also require at least 2MB disk space for the RTR journal, which defaults to `/rtrjnl`.

Compare the space required for the subset with the free space currently on the disks where RTR files will reside.

6.1.7 Check System Parameters

RTR has basic memory requirements. This section references setup instructions for the relevant system parameters.

6.1.7.1 Check Shared Memory Requirements

For information on how much shared memory to allocate, refer to the *Reliable Transaction Router System Manager's Manual*, RTR Shared Memory Sizing.

6.1.7.2 Check Virtual Memory Requirments

For information on how much virtual memory to allocate, refer to the *Reliable Transaction Router System Manager's Manual*, RTRACP Virtual Memory Sizing for All Systems.

6.1.7.3 TCP Services File

RTR uses TCP/IP port number 46000 for the network communication daemon `rtr rtrd`. On UNIX platforms, edit the `/etc/services` file to add the following line:

```
rtracp 46000/tcp
```

This informs the system administrator that port number 46000/tcp is reserved for RTR. Note that the RTR daemon is started by the RTRACP, not by `inetd`.

6.1.8 Back Up Your System Disk

HP recommends that you back up your system disk before installing any software. For information about backing up your system disk, see the Sun Solaris documentation.

6.2 Install RTR

Install RTR from CD-ROM using the following procedure.

This procedure loads RTR files on to a disk belonging to the system where you perform the installation. When RTR is run, its executable images are mapped into memory on your system.

Installing RTR, including running the Installation Verification Procedure (IVP), takes approximately 10 to 15 minutes, depending on your media and system configuration.

Follow these steps to install RTR from CD-ROM:

1. Mount the CD-ROM on the appropriate disk drive.

2. Log in as superuser (login name `root`) to the system where you will install RTR.
3. Make sure you are at the root (/) directory by entering the following command:

```
# cd /
```

4. Use the `pkginfo` utility to check if you have a version of RTR already installed:

```
# pkginfo -i | grep RTR
```

5. If RTR is already installed on your system, see Section B.4 for information on uninstalling RTR and removing related processes.
6. Specify the `/CD-ROM` directory to be the mount point for the distribution file system on the drive. For example, if your drive is `rz0`, enter the following command:

```
# mount -dr /dev/rz0c /CD-ROM
```

7. Install RTR from the CD-ROM directory where the kit is located. For example:

```
# cd /cdrom/rtr_kit
# pkgadd -d .
```

Note

By default, the IVP is not run. To run the IVP you must define the NONABI_SCRIPTS environment variable when starting the installation by issuing the following commands:

```
# sh
# NONABI_SCRIPTS=TRUE
# pkgadd -d .
```

8. Select the package to install.
9. Respond to prompts during installation.

   You can accept the defaults for most questions from the `pkgadd` utility.
10. Decide whether to run the IVP.
11. Exit from the `pkgadd` utility.

6.2.1 Read the Release Notes

The *Release Notes* provide information for RTR that could not be included in the printed documentation. After installation the *Release Notes* are located in the directory */usr/opt/RTR420/hlp*; you are advised to read the *Release Notes* before using RTR.

To read the release notes, navigate to the directory where RTR is installed and issue the following command:

```
more rtr_relnotes.txt
```

6.2.2 Installation Example

This section explains the installation procedure prompts and displays.

6.2.2.1 Select Package

You must specify which package you want to load.

If the displayed package is the one you intended to choose, enter `1`.

If the displayed package is not the one you want to load, enter `q`.

6.2.2.2 Output During Package Loading

The installation procedure loads and verifies the selected RTR package.

The following example shows a display where the RTR package is being loaded from CD-ROM:

```
# pkgadd -d .

The following packages are available:

  1  rtr     Reliable Transaction Router
             (sun4u) 420 ❶

Select package(s) you wish to process (or all to process
all packages). (default: all) [?,??,q]: ❷

Processing package instance <rtr> from </CDROM/rtr420/rtrkit>

Reliable Transaction Router
(sun4u) 420
Hewlett-Packard Company
Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.
```

Full Installation on Sun Solaris
6.2 Install RTR

```
This package contains scripts which will be executed with
super-user
permission during the process of installing this package. ❸

Do you want to continue with the installation of <rtr> [y,n,?] y

Installing Reliable Transaction Router as <rtr>

## Executing preinstall script.
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subsidiaries required for possession, use or copying. Consistent
with
FAR 12.211 and 12.212, Commercial Computer Software, Computer
Software
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the U.S. Government under vendor's standard commercial license.

This kit will only run on Sun Solaris 2.6 and higher.
Installation should complete in approximately 1 minute.

Hit any key to continue....
## Installing part 1 of 1. ❹
/opt/rtr/RTR420/bin/rtr
/opt/rtr/RTR420/bin/rtr_r
/opt/rtr/RTR420/bin/rtr_remote
/opt/rtr/RTR420/bin/rtr_rqif
/opt/rtr/RTR420/bin/rtr_snapshot.sh
/opt/rtr/RTR420/examples/ABCBook/ABCBook.cpp
/opt/rtr/RTR420/examples/ABCBook/ABCBook.h
/opt/rtr/RTR420/examples/ABCBook/ABCCHandlers.cpp
/opt/rtr/RTR420/examples/ABCBook/ABCCHandlers.h
/opt/rtr/RTR420/examples/ABCBook/ABCCommon.h
/opt/rtr/RTR420/examples/ABCBook/ABCMagazine.cpp
/opt/rtr/RTR420/examples/ABCBook/ABCMagazine.h
/opt/rtr/RTR420/examples/ABCBook/ABCOrder.cpp
/opt/rtr/RTR420/examples/ABCBook/ABCOrder.h
/opt/rtr/RTR420/examples/ABCBook/ABCOrderProcessor.cpp
/opt/rtr/RTR420/examples/ABCBook/ABCOrderProcessor.h
/opt/rtr/RTR420/examples/ABCBook/ABCOrderTaker.cpp
/opt/rtr/RTR420/examples/ABCBook/ABCOrderTaker.h
/opt/rtr/RTR420/examples/ABCBook/ABCSClassFactory.cpp
/opt/rtr/RTR420/examples/ABCBook/ABCSClassFactory.h
/opt/rtr/RTR420/examples/ABCBook/ABCSHandlers.cpp
/opt/rtr/RTR420/examples/ABCBook/ABCSHandlers.h
/opt/rtr/RTR420/examples/ABCBook/README.html
/opt/rtr/RTR420/examples/ABCBook/SAMPLE1.COM
/opt/rtr/RTR420/examples/ABCBook/SAMPLE1.MMS
/opt/rtr/RTR420/examples/ABCBook/Sample1.cpp
/opt/rtr/RTR420/examples/ABCBook/Sample1.dsp
/opt/rtr/RTR420/examples/ABCBook/Sample1.dsw
/opt/rtr/RTR420/examples/ABCBook/Sample1.h
/opt/rtr/RTR420/examples/ABCBook/Sample1.mk
```

```
/opt/rtr/RTR420/examples/ADG/adg_client.c
/opt/rtr/RTR420/examples/ADG/adg_header.h
/opt/rtr/RTR420/examples/ADG/adg_server.c
/opt/rtr/RTR420/examples/ADG/adg_shared.c
/opt/rtr/RTR420/examples/IVP/rtr_ivp_osf.sh
/opt/rtr/RTR420/examples/IVP/rtrreq.c
/opt/rtr/RTR420/examples/IVP/rtrsrv.c
/opt/rtr/RTR420/hlp/copyright.txt
/opt/rtr/RTR420/hlp/license.txt
/opt/rtr/RTR420/hlp/rtr.hlb
/opt/rtr/RTR420/lib/rtr.h
/opt/rtr/RTR420/lib/rtr_v2.h
/opt/rtr/RTR420/lib/rtrapi.h
   .
   .
   .
/opt/rtr/RTR420/mon/*.mon  files
   .
   .
   .
/opt/rtr/RTR420/shlib/librtr.so
/opt/rtr/RTR420/shlib/librtr_r.so
/opt/rtr/RTR420/shlib/librtrapicpp.so
/opt/rtr/RTR420/shlib/librtrapicpp_r.so
/opt/rtr/RTR420/wbi/graphics/blank.jpg
   .
   .
   .
/opt/rtr/RTR420/wbi/graphics/*.gif files
   .
   .
   .
/opt/rtr/RTR420/wbi/rtr_accept_node.js
/opt/rtr/RTR420/wbi/rtr_command_displ.js
/opt/rtr/RTR420/wbi/rtr_command_form.js
/opt/rtr/RTR420/wbi/rtr_create_fac.js
/opt/rtr/RTR420/wbi/rtr_create_jou.js
/opt/rtr/RTR420/wbi/rtr_create_par.js
/opt/rtr/RTR420/wbi/rtr_create_tree.js
/opt/rtr/RTR420/wbi/rtr_create_tree_sub.js
/opt/rtr/RTR420/wbi/rtr_delete_fac.js
/opt/rtr/RTR420/wbi/rtr_delete_par.js
/opt/rtr/RTR420/wbi/rtr_extend_fac.js
/opt/rtr/RTR420/wbi/rtr_left_frame.html
/opt/rtr/RTR420/wbi/rtr_log_displ.js
/opt/rtr/RTR420/wbi/rtr_main.html
/opt/rtr/RTR420/wbi/rtr_modify_jou.js
/opt/rtr/RTR420/wbi/rtr_monitor.js
/opt/rtr/RTR420/wbi/rtr_set_btx.js
/opt/rtr/RTR420/wbi/rtr_set_fac.js
/opt/rtr/RTR420/wbi/rtr_set_lnk.js
/opt/rtr/RTR420/wbi/rtr_set_log.js
```

```
/opt/rtr/RTR420/wbi/rtr_set_par.js
/opt/rtr/RTR420/wbi/rtr_trim_fac.js
/opt/rtr/RTR420/wbi/smm.html
/opt/rtr/RTR420/wbi/smm_contents.html
/opt/rtr/RTR420/wbi/smm_contents_001.html
/opt/rtr/RTR420/wbi/smm_contents_002.html
/opt/rtr/RTR420/wbi/smm_index.html
/opt/rtr/RTR420/wbi/smm_index_001.html
[ verifying class <none> ]
## Executing postinstall script. ❺
(C) 1994, 2003 Hewlett-Packard Development Company, L.P.

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commercial license.

    directory /rtr -> /var/opt/rtr created

  Starting     Reliable Transaction Router V4.2  for SunOS
  Installation Verification Procedure

WARNING: This is not a first time install.
WARNING: Please ensure that you have terminated *all* existing
WARNING: rtr processes and rtr applications before continuing.❻
See man fuser or lsof to identify processes using
/usr/*lib/librtr*.so

RTR will find and reuse any existing journal files in the
top level rtrjnl directory on each suitable filesystem, and will
reuse any existing shared memory segment associated with
/rtr/RTRENVPS
Normally this is intended and should not cause any problems.

WARNING: Any existing journal will be used and modified, otherwise
WARNING: a new journal will be created on the default filesystem. ❼
WARNING: Facilities RTR_IVP_FACILITY and RTR$DEFAULT_FACILITY
will be created.
WARNING: Result may be affected by size and contents of
any existing journal.
WARNING: The sample client and server do not necessarily
complete if they
WARNING: encounter previously journalled transactions
for these facilities.

NOTE: The following question is ignored in a non-interactive
install
NOTE: unless NONABI_SCRIPTS=TRUE, see man pkgadd for details...

You may run the IVP separately from the installation
procedure by executing the file:
/opt/rtr/RTRxxx/examples/IVP/rtr_ivp_osf.sh
```

```
Would you like to abort the IVP? (y/n)  IVP aborted ❽

Installation of <rtr> was successful.

The following packages are available:

  1  rtr     Reliable Transaction Router
             (sun4u) 420

Select package(s) you wish to process (or all to process
all packages). (default:all) q ❾
#
```

❶ Lists kit name and number.

❷ Select package to install.

❸ Warning about use of superuser privileges.

❹ Start of first installation segment, followed by list of files installed.

❺ Indication of postinstallation processing.

❻ Warning for reinstallation of RTR.

❼ Warning about overwriting existing journal.

❽ Prompt for decision to run IVP.

❾ Enter `q` to exit from utility.

The ''Verifying'' message that precedes the postinstall message is a check to see that the files are copied correctly; it is not an Installation Verification Procedure (IVP) message.

Section 6.2.4 explains how to run the IVP after installation, and Section 6.2.5 explains how to delete old RTR subsets before installing a new version of RTR.

6.2.3 Stop the Installation

To stop the installation procedure at any time, press Ctrl/C. You must then delete files created up to this point interactively. The directories and files created during RTR installation are listed in the following file (on your CD-ROM):

```
/rtr40/kit/instctrl/rtrbase420.inv
```

6.2.4 Run the Installation Verification Procedure

After installing RTR, you can run the Installation Verification Procedure (IVP) independently to verify that the software is available on your system. You might also want to run the IVP after a system failure to be sure that users can access RTR.

Note that the Installation Verification Procedure (IVP) requires a working C language compiler to run.

The RTR IVP verifies the installation as follows:

- Starts RTR
- Creates an RTR journal
- Creates an RTR facility
- Stops RTR
- Compiles and links the example client and server programs

To run the IVP after an installation, enter the following command:

```
# /opt/rtr/RTRxxx/examples/IVP/rtr_ivp_osf.sh
```

6.2.4.1 Sample IVP Output

```
    .
    .
    .


Would you like to abort the IVP? (y/n) n
IVP continuing ...

  keep any existing log file settings (RTR_DBG not set)
  starting RTR . . .
  creating a journal, if not already created . . .
  creating test facility . . .
  stopping RTR.

       Reliable Transaction Router V4.2 for SunOS

  Installation Verification Procedure successful

The following packages are available:

  1 rtr      Reliable Transaction Router
             (sun4u) 420
```

```
Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]: q
#
```

If the verification process fails, look in the `/var/adm/smlogs/fverify.log` file for information to help diagnose the problem.

6.2.5 Delete RTR from Your System

If you must remove a version of Reliable Transaction Router from your system, delete each subset that you previously installed.

To delete subsets:

1. Log in as superuser (login name `root`).
2. Make sure you are at the root directory (/) by entering the following command:

   ```
   # cd /
   ```

3. Enter the following form of the `pkginfo` command:

   ```
   # pkginfo -i rtr
   ```

4. Look for the word ''installed'' in the listing produced, and then delete the installed subsets. For example:

   ```
   # pkgrm rtr
   ```

6.2.6 Display Documentation from CD-ROM

The Reliable Transaction Router documentation is provided on the Reliable Transaction Router CD-ROM kit in hypertext (.html) file format. You can display the hypertext files on your workstation using an HTML browser such as Netscape or Internet Explorer.

6.3 Complete RTR Setup

This section explains how to make RTR ready for use after installation on Sun Solaris.

Requirements for Application Permissions

If the RTR executable is modified after installation to no longer be `suid` root or the mode of the `/rtr` directory is changed, an application process (for example a client) can encounter a fatal error (Unable

to locate a socket) when the client process finds it cannot create an `rtr_ipc_sock_*` file for the process ID (pid) in the `/rtr` directory.

To avoid this, ensure that application processes run with user and group IDs that have access permission to create and remove files in this directory.

6.3.1 Check Installed Files

To see the list of files installed on your system, use the following command:

```
% pkginfo i rtr
```

6.3.2 Run RTR

To run RTR, enter the following command at the system prompt:

```
% RTR
RTR>
```

You can then enter commands at the RTR prompt to configure facilities and partitions, and run applications that use RTR.

6.3.2.1 Configure RTR Facilities and Partitions

For information on configuring RTR facilities and setting up partitions, refer to the *Reliable Transaction Router Getting Started* manual and the *Reliable Transaction Router System Manager's Manual*.

6.3.3 Install and Run Applications

Once applications that use RTR have been designed and tested, they can be deployed on the systems configured for use with RTR. For information on designing applications, refer to the *Reliable Transaction Router Application Design Guide*; for information on deployment and use, refer to the *Reliable Transaction Router System Manager's Manual*.

Application programming interfaces that can be used to write transaction processing applications used with RTR are described in the *Reliable Transaction Router C++ Foundation Classes* manual and the *Reliable Transaction Router C Application Programmer's Reference Manual*.

A

Recovering from Errors

This appendix provides information to help you deal with problems that might occur during product installation or product use.

If you find an error in the documentation, send an email message to the internet address on the last page of this appendix. Include the manual title, publication date, section and page numbers where the error occurred.

A.1 Problems During Product Installation

If errors occur during the installation, the system displays failure messages. For example, if the Tru64 UNIX installation fails due to insufficient disk space, the following message appears:

```
There is not enough space for subset RTRBASExxx
Reliable Transaction Router for Tru64 UNIX
(RTRBASExxx) will not be loaded.
```

Errors can occur during the installation if any of the following conditions exist:

- The operating system version is incorrect.
- The prerequisite software version is incorrect.
- There is insufficient disk space.
- The system parameter values for successful installation are insufficient.

For descriptions of error messages generated by these conditions, see the operating system documentation on system messages, recovery procedures, and software installation. For information on system software requirements, see the software and disk space requirements for your operating system.

A.2 Problems After Installation

U.S. customers who encounter a problem while using Reliable Transaction Router can report it to HP by telephoning the HP Customer Support Center (CSC) at 1-800-354-9000. (Customers with service contracts can also use an electronic means such as DSNlink.)

Customers without a service contract can arrange for per-call support.

The CSC will need the following information:

- The name and version number of the operating system you are using
- The Reliable Transaction Router version number you are using
- The hardware system you are using (such as a model number)
- A brief description of the problem (one sentence if possible)
- Whether or not the problem is critical
- Any other information that is helpful, such as the specific commands you used to run the software, the error messages displayed, and source listings of the relevant software module or lines of code

If the problem is related to Reliable Transaction Router documentation, send comments electronically to the following internet address: *rtrdoc@hp.com*.

If you are reporting a specific documentation error, be sure to include the manual title, date from title page, section and page numbers where the error occurred.

B
Uninstalling RTR

Remove commands do not remove all RTR files from your disks. This is particularly important when you are upgrading from one version of RTR to another. You must eliminate all RTR files from your system, but do not discard any customized monitor files in `/rtr` or a journal containing recoverable transactions in `/rtrjnl`. Copy these to another directory before completing the uninstall instructions.

If `/rtrjnl` or `/rtr` is a symbolic link to another directory, first remove the target directory and all files contained in it, and then remove the symbolic link.

B.1 Uninstalling on OpenVMS

Complete the following steps to uninstall RTR from your system.

- Stop all RTR processes on the system:

  ```
  $ RTR STOP RTR
  $ RTR DISCONNECT SERVER
  ```

- Check for any surviving processes such as `rtrd` and applications programmed to handle RTR_STS_NOACP, and terminate any such processes until there are none left. Note that all the RTR ACP and comserver processes must be terminated before `rtrd`, otherwise they will create a new `rtrd`.

  The `rtrd` process can now be terminated with the STOP command or by issuing the following command:

  ```
  $ RTR DISC SERVER/DAEMON
  ```

- Terminate all application processes linked to RTR. If you are running in a cluster configuration, you must remove RTR application processes from all the cluster members that use the disk where RTR was installed.

  Processes can be terminated with the STOP command, or by a program that uses $FORCEX.

To verify that no RTR-related processes are still running on a node or cluster member, use the SHOW DEVICE/FILES command to make sure that there are no remaining SYS$SHARE:LIBRTR*.EXE shareable images.

- Remove RTR from your system.

```
$ PRODUCT REMOVE RTR
```

B.2 Uninstalling on Windows Systems

You must perform the following actions before uninstalling RTR on a Windows system:

- If RTR has previously been registered as a service, unregister RTR as a service. Do this with the following menu selections from the Program menu:

  Compaq -> RTR -> Service -> Unregister

- Delete all `*.LCK` files located in the directory used for the previous installation, and the `RTRenvps` file (shared memory).

- Stop all RTR processes on the system:

```
RTR STOP RTR
RTR DISCONNECT SERVER
```

  If you are uninstalling RTR Version 4.0, use the /DAEMON option:

```
RTR DISCONNECT SERVER/DAEMON
```

  You can also use the Shutdown command, which executes `Shutdown.bat`.

```
Programs-> Compaq -> RTR -> Utilities ->Shutdown
```

- Check for any surviving processes such as `rtrd` and applications programmed to handle RTR_STS_NOACP, and terminate any such processes until there are none left. Note that all the RTR ACP and comserver processes must be terminated before `rtrd`, otherwise they will create a new `rtrd`.

  The `rtrd` process can now be terminated with this command:

```
$ RTR DISC SERVER/DAEMON
```

  To verify that no RTR-related processes are still running on a node or cluster member, check for the existence of the `rtrdll.dll` file. The `rtrdll.dll` file cannot be deleted if it is in use.

- To uninstall RTR, perform one of the following options:

  Programs -> Compaq -> RTR -> Utilities -> Uninstall

or

Control Panel -> Add/Remove Programs -> Reliable Transaction Router -> Add/Remove

- Terminate all application processes linked to RTR. If you are running in a cluster configuration, you must remove RTR application processes from all the cluster members that use the disk where RTR was installed.
- Remove previous versions of RTR from the disk:

```
DEL /S/Q C:\RTR
```

B.3 Uninstalling on Tru64 UNIX

Complete the following steps to uninstall RTR from your system.

- Stop all RTR processes on the system:

```
# rtr stop rtr
# rtr disconnect server
```

- Check for any surviving processes such as `rtrd` and applications programmed to handle RTR_STS_NOACP, and terminate any such processes until there are none left. Note that all the RTR ACP and comserver processes must be terminated before `rtrd`, otherwise they will create a new `rtrd`.

  The `rtrd` process can now be terminated with the KILL command or by issuing the following command:

```
$ rtr disc server/daemon
```

  To verify that no RTR-related processes are still running on a node or cluster member, use the `fuser` or `lsof` command to make sure that the threaded or unthreaded `librtr*.so` shared libraries are not in use.

- Terminate all application processes linked to RTR. If you are running in a cluster configuration, you must remove RTR application processes from all the cluster members that use the disk where RTR was installed.
- Uninstall all previous versions that you find:

```
# setld -d RTRBASE4xx
```

  where ‘‘xx’’ is the version number.

- Remove all RTR files with the following commands:

  Note

  The last directory is user configurable, so verify its location before executing the last command.

```
rm -rf /rtr
rm -rf /rtrjnl
rm -rf /usr/opt/rtr
```

B.4 Uninstalling on Sun

Complete the following steps to uninstall RTR from your system.

- Stop all RTR processes on the system:

```
# rtr stop rtr
# rtr disconnect server
```

- Check for any surviving processes such as `rtrd` and applications programmed to handle RTR_STS_NOACP, and terminate any such processes until there are none left. Note that all the RTR ACP and comserver processes must be terminated before `rtrd`, otherwise they will create a new `rtrd`.

  The `rtrd` process can now be terminated with the KILL command or by issuing the following command:

```
$ rtr disc server/daemon
```

- Terminate all application processes linked to RTR. If you are running in a cluster configuration, you must remove RTR application processes from all the cluster members that use the disk where RTR was installed.

  To verify that no RTR-related processes are still running on a node or cluster member, use the `fuser` or `lsof` command to make sure that the threaded or unthreaded `librtr*.so` shared libraries are not in use.

- Uninstall all previous versions that you find:

```
# pkgrm rtr
```

- Remove all RTR files with the following commands:

Note

The last directory is user configurable, so verify its location before executing the last command.

```
rm -rf /rtr
rm -rf /rtrjnl
rm -rf /opt/rtr
```

Index

B

Batch procedures
  Windows, 5–3

C

CHANNELCNT, 3–4
Channels
  OpenVMS, 3–4

D

Daemon
  network, 4–6, 6–3
Disk space
  OpenVMS, 1–1

F

Files
  monitor, 1–1

G

GBLPAGES, 1–2
GBLSECTIONS, 1–2

H

Help
  OpenVMS, 1–1

I

I/O channels
  OpenVMS, 3–4
inetd, 4–6, 6–3
IVP
  OpenVMS, 1–2
  Tru64 UNIX, 4–12

L

Logical name
  OpenVMS, 1–2

M

Memory sizing
  Sun, 6–3
  Tru64, 4–5
  Windows, 5–2
Monitor files, 1–1

N

Network daemon, 4–6, 6–3

O

OpenVMS
  channels, 3–4
  global pages, 1–2
  global sections, 1–2
  help, 1–1
  IVP, 1–2

OpenVMS (cont'd)
logical, 1–2
Release Notes, 1–1

P

Port
TCP/IP, 4–6, 6–3

R

Readme
Windows, 5–4
Release Notes
OpenVMS, 1–1
Sun, 6–5

S

Shared memory
Tru64, 4–5
Sun
Release Notes, 6–5
shared memory, 6–3
virtual memory, 6–3
SYS$COMMON:[SYSHLP], 1–1

T

TCP/IP port, 4–6, 6–3
Tru64 UNIX
IVP, 4–12
shared memory, 4–5
virtual memory, 4–5

V

Virtual memory
Tru64, 4–5
VMS Installation, 3–1

W

Windows
batch procedures, 5–3
Readme, 5–4
sizing memory, 5–2