

VSI OpenVMS

VSI Reliable Transaction Router Installation Guide

Operating System and Version: VSI OpenVMS IA-64 Version 8.4-1H1 or higher
VSI OpenVMS Alpha Version 8.4-2L1 or higher

Software Version: VSI Reliable Transaction Router Version 5.1

VSI Reliable Transaction Router Installation Guide



VMS Software

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Preface

This guide explains how to install 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.

1. About VSI

VMS Software, Inc. (VSI) is an independent software company licensed by Hewlett Packard Enterprise to develop and support the OpenVMS operating system.

2. Structure of this Document

This guide contains the following chapters and appendixes:

- Chapter 1 gives brief installation instructions for RTR on HP-UX I64, Linux I64, Linux I32, OpenVMS, and Windows. 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 HP-UX I64, including:
 - Preparing for installation
 - Installing RTR and reading the Release Notes
 - Completing RTR setup
- Chapter 4 describes a full installation for Linux I64, including:
 - Preparing for installation
 - Installing RTR and reading the Release Notes
 - Completing RTR setup
- Chapter 5 describes a full installation for LINUX I32 (Frontend), including:
 - Preparing for installation
 - Installing RTR and reading the Release Notes
 - Completing RTR setup
- Chapter 6 describes a full installation for OpenVMS, including:
 - Preparing for installation
 - Installing RTR and reading the Release Notes

- Completing RTR setup
- Chapter 7 describes a full installation for Windows, including:
 - Preparing for installation
 - Installing RTR and reading the README
 - Completing RTR setup
- Appendix A provides information on recovering from errors.
- Appendix B provides instructions on how to remove (uninstall) RTR from your system.

3. Related Documentation

Table 1 describes RTR documents and groups them by audience.

Table 1. RTR Documents

Document	Content
For all users:	
<i>VSI Reliable Transaction Router Release Notes</i> ¹	Describes new features, corrections, restrictions, and known problems for RTR.
<i>VSI Reliable Transaction Router Getting Started</i>	Provides an overview of RTR technology and solutions, and includes the glossary that defines all RTR terms.
<i>VSI Reliable Transaction Router Software Product Description</i>	Describes product features.
For the system manager:	
<i>VSI Reliable Transaction Router Installation Guide</i>	Describes how to install RTR on all supported platforms.
<i>VSI Reliable Transaction Router System Manager's Manual</i>	Describes how to configure, manage, and monitor RTR.
For the application programmer:	
<i>VSI Reliable Transaction Router Application Design Guide</i>	Describes how to design application programs for use with RTR, with both C++ and C interfaces.
<i>JRTR Getting Started</i> ²	Provides an overview of the object-oriented JRTR Toolkit including installation, configuration and Java programming concepts, with links to additional online documentation.
<i>VSI Reliable Transaction Router C++ Foundation Classes</i>	Describes the object-oriented C++ interface that can be used to implement RTR object-oriented applications.
<i>VSI Reliable Transaction Router C Application Programmer's Reference Manual</i>	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.

¹Distributed on software kit.

²In downloadable kit.

4. OpenVMS Documentation

The full VSI OpenVMS documentation set can be found on the VMS Software Documentation webpage at <https://docs.vmssoftware.com>.

5. VSI Encourages Your Comments

You may send comments or suggestions regarding this manual or any VSI document by sending electronic mail to the following Internet address: <docinfo@vmssoftware.com>. Users who have VSI OpenVMS support contracts through VSI can contact <support@vmssoftware.com> for help with this product.

6. Conventions

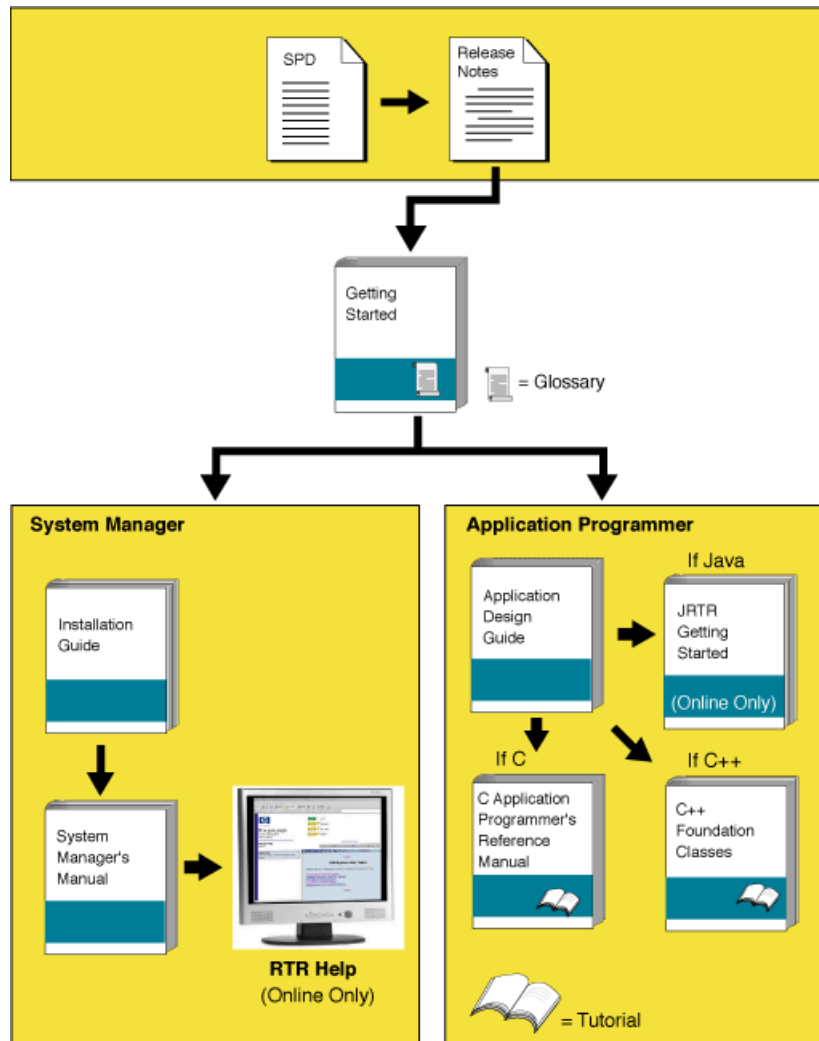
Table 2 describes the conventions used in this guide.

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 and Linux systems.
\$	A dollar sign (\$) is the default user prompt for OpenVMS systems.
	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 <i>not</i> 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.

7. 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

VM-0818A-AI

Chapter 1. Quick Installation

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

- HP-UX I64
- Linux I64
- Linux I32 (Frontend)
- OpenVMS
- Windows 2000, Windows 2003, Windows XP

User-Changed Monitor Files

For non-Linux platforms, 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. For the Linux platform, see Chapter 5.

1.1. Installing RTR for HP-UX I64

Your Reliable Transaction Router for HP-UX I64 kit is supplied on CDROM. After installation, the *Release Notes* file is located in the `/usr/share/doc` directory; you are advised to read the Release Notes file before using RTR.

User-Changed Monitor Files

If you have changed any RTR monitor (*.mon) files, they will automatically be renamed when using `swremove` to uninstall. For more information, see Chapter 3.

1.1.1. 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.

1.1.2. Installation Procedure

1. If RTR is already installed on your system, see Section B.1 for information on uninstalling RTR and removing related processes.
2. To install on HP-UX, log in as the root user.
3. Insert the RTR CD-ROM into the drive.
4. The Reliable Transaction Router for HP-UX installs in the standard way on HP-UX systems. You may run `swinstall` and select the Local CD as the Source depot and install RTR or on the command line you can specify the depot file as `swinstall -s /FULL-SOURCE-PATH/packageName.depot` as the root user. If you previously installed an RTR HP-UX kit, you will need to uninstall the old one before installing the new one.

1.2. Installing RTR for Linux I64

Your Reliable Transaction Router for Linux I64 kit is supplied on CD-ROM. After installation, the *Release Notes* file is located in the `/usr/share/doc` directory; you are advised to read the *Release Notes* file before using RTR.

User-Changed Monitor Files

If you have changed any RTR monitor (*.mon) files, they will automatically be renamed when using `rpm` to uninstall. For more information, see Chapter 4.

1.2.1. 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.

1.2.2. Installation Procedure

1. If RTR is already installed on your system, see Section B.2, for information on uninstalling RTR and removing related processes.
2. To install on Linux, log in as the root user.
3. Insert the RTR CD-ROM into the drive.

If Red Hat does not automatically mount your CD-ROM, you will need to mount it before proceeding to the next step.

4. CD to your CD-ROM drive.
5. The Reliable Transaction Router for Linux installs in the standard way on Red Hat systems. You may use `gnorpm` on Red Hat Workstation for a graphical install, or, on the command line with Red Hat use `rpm -i packagename.rpm` as the root user. If you previously installed an RTR Linux kit, you will need to uninstall the old one before installing the new one.

1.3. Installing RTR for Linux I32 (Frontend)

Your Reliable Transaction Router for Red Hat Linux I32 (Frontend) kit is supplied on CD-ROM. After installation, the *Release Notes* file is located in the `/usr/share/doc` directory; you are advised to read the *Release Notes* file before using RTR.

User-Changed Monitor Files

If you have changed any RTR monitor (*.mon) files, they will automatically be renamed when using `rpm` to uninstall. For more information, see Chapter 5.

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.3, for information on uninstalling RTR and removing related processes.
2. To install on Linux, log in as the root user.
3. Insert the RTR CD-ROM into the drive.

If Red Hat does not automatically mount your CD-ROM, you will need to mount it before proceeding to the next step.

4. CD to your CD-ROM drive.
5. The Reliable Transaction Router for Linux Frontend installs in the standard way on Red Hat systems. You may use `gnorpm` on Red Hat Workstation for a graphical install, or, on the command line with Red Hat 9, use `rpm -i packagename.rpm` as the root user. If you previously installed an RTR Linux kit, you will need to uninstall the old one before installing the new one.

1.4. 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.

1.4.1. 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 6.

1.4.2. Installation Procedure

1. If RTR is already installed on your system, see Section B.4, 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 6 for instructions.

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.

2. Log in 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]
```

Installing on an ODS-5 Disk

RTR can be installed on an ODS-5 disk.

4. Check disk space and system parameters GBLPAGES and GBLSECTIONS.
5. Check OpenVMS version number.

```
$ SHOW CLUSTER
```

Minimum Required Version of OpenVMS

The minimum VMS version on which you can install RTR Version 5.1 is OpenVMS 7.3-2. If you attempt to install RTR Version 5.1 on an earlier version of OpenVMS, you will receive an error message of the following form:

```
This system does not meet the RTR minimum required VMS version. The
minimum required version is V7.3-2.
Terminating is strongly recommended. Do you want to terminate? [YES]
```

If you see this error message, end your attempted RTR installation and upgrade your OpenVMS system to version 7.3-2.

6. Start the installation with the following command:

```
$ PRODUCT INSTALL RTR
```

1.4.2.1. Sample OpenVMS Installation

This sample installation includes running the IVP.

```
$ product install rtr
The following product has been selected:
DEC AXPVMS RTR V5.1-zzz                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 V5.1-zzz: Reliable Transaction Router for OpenVMS
  Copyright 2005 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 V51-zzz: 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 ...
The following product will be installed to destination:
  DEC AXPVMS RTR V5.1-zzz <logical for SYS$COMMON>
Portion done: 0%
...10%
...20%
...30%
...40%
...50%
...60%
...70%
...80%
...90%
...100%
The following product has been installed:
  DEC AXPVMS RTR V5.1-zzz      Layered Product
%PCSI-I-IVPEXECUTE, executing test procedure for DEC AXPVMS RTR V5.1-
zzz ...
%PCSI-I-IVPSUCCESS, test procedure completed successfully
DEC AXPVMS RTR V5.1-zzz: Reliable Transaction Router for OpenVMS
  Insert the following lines in SYS$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 6.3.1.1.

For additional information, see Chapter 6.

1.5. 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. For supported Windows systems, see the *VSI Reliable Transaction Router Software Product Description* (SPD) for Windows.

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.

1.5.1. 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.

1.5.2. Installation Procedure

1. If RTR is already installed on your system, see Section B.5, for information on uninstalling RTR and removing related processes.
2. To install on Windows, 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 RTRV51.
5. Double click on SETUP.EXE to start the InstallShield that takes you through the setup process.

Chapter 2. Upgrade Process

To upgrade RTR, use the following process:

1. Shut down 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 5.1.

Migrating from V2

See Chapter 6 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 5.1, then the router that will be used for recovery must also be running RTR Version 5.1. This generally means that any RTR router nodes should be upgraded to RTR Version 5.1 before any RTR backend nodes. There is no restriction in the order that RTR backends should be upgraded to Version 5.1.

The order in which RTR nodes should be upgraded for a rolling upgrade from V3.2 to Version 5.1 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, maintaining continuous application availability.

Chapter 3. Full Installation on HP-UX I64

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

- Preparing for installation
- Installing RTR
- Completing RTR setup

3.1. Prepare for Installation

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

User-Changed Monitor Files

On the HP-UX platform, if you have changed any RTR monitor (*.mon) files, any customized monitor files are renamed during uninstall with the extension `.rpmsave`. Except for such customized monitor files, uninstalling RTR removes the RTR monitor files.

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 Login Privileges

You must be logged in as the `root` user to install RTR on HP-UX. For more information on RTR privileges, see the *VSI Reliable Transaction Router System Manager's Manual* section on RTR Privileges.

3.1.3. Check Required Hardware

- Any I64 system that runs HP-UX version 11i-v2.
- For ACTIVE/STANDBY configuration, any storage system that supports Serviceguard CFS Version A11.17.

3.1.4. Check Required Software

Required software for each system to be used with RTR:

- HP-UX version 11i-v2
- For ACTIVE/STANDBY configuration Serviceguard CFS Version A11.17 (T2775BA)
- TCP/IP support as provided by the operating system

- At least one Reliable Transaction Router Backend license for a supported operating system for development and application deployment

3.1.5. Check Required Disk Space

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

3.1.6. Check System Parameters

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

3.1.6.1. Check Memory-Mapped I/O Requirements

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

3.1.6.2. Check Virtual Memory Requirements

The basic memory requirement for an unconfigured RTRACP is 5.6 MB. Additional memory may be required.

3.2. Install RTR

1. If you are installing on HP-UX Integrity servers (I64), ensure that you are logged in as the root user.
2. If RTR is already installed on your system, see Section B.1 for information on uninstalling RTR and removing related processes.
3. Insert the RTR CDROM to the drive.
4. The Reliable Transaction Router for HP-UX installs in the standard way on HP-UX systems:
 - run `swinstall` and select the Local CD for source depot or
 - run `swinstall -s /FULL-SOURCE-PATH/packageName.depot` on the command line as the root user.
5. If you previously installed an RTR HP-UX I64 kit, you will need to uninstall the old one before installing the new one.

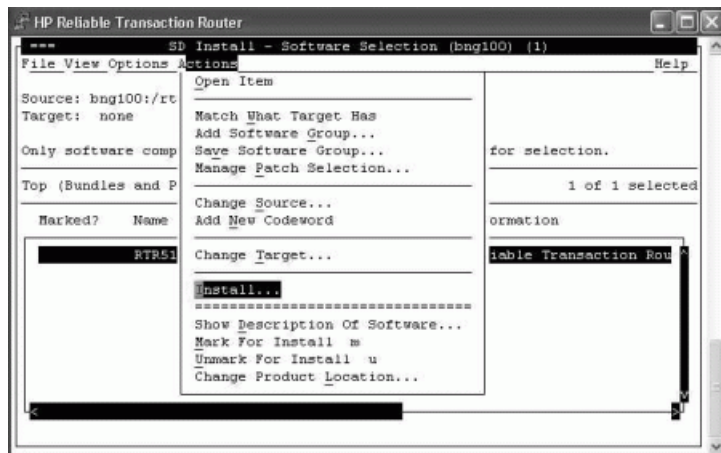
For example, the following shows the installation display:

```
# swinstall -s /rtrkit/rtr51_417_ia64.depot
Starting the terminal version of swinstall...
To navigate in swinstall:
- use the "Tab" key to move between screen elements
- use the arrow keys to move within screen elements
- use "Ctrl-F" for context-sensitive help anywhere in swinstall
On screens with a menu bar at the top as displayed below:
-----
|File View Options Actions                                     Help|
```

```
| ----- |
- use "Tab" to move from the list to the menubar
- use the arrow keys to navigate
- use "Return" to pull down a menu or select a menu item
- use "Tab" to move from the menubar to the list without selecting a menu
  item
- use the spacebar to select an item in the list
On any screen, press "CTRL-K" for more information on how to use the
  keyboard.
Press "Return" to continue...
```

The sample installation is as shown in the Figure 3.1

Figure 3.1. HP-UX Sample Installation



To verify your installation, run the IVP:

```
# cd /opt/rtr/examples/IVP
# ./rtr_ivp_osf.sh
Starting Reliable Transaction Router V5.1 for HP-UX
Installation Verification Procedure
keeping any existing log file settings (RTR_DBG not set)
starting RTR . . .
%RTR-S-RTRSTART, RTR started on node bng100
creating a journal, if not already created . . .
%RTR-S-JOURNALINI, journal has been created on device /dev/vg00/lvol3
creating test facility . . .
%RTR-S-FACCREATED, facility rtr_ivp_facility created
stopping RTR.
%RTR-S-RTRSTOP, RTR stopped on node bng100
[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 bng100
%RTR-I-TRMCENTRYNFND, no termcap-entry for terminal-type : xterm
```

```
%RTR-S-FACCREATED, facility RTR$DEFAULT_FACILITY created
starting an rtr server application
running an rtr client application, should complete in a few seconds
stopping rtr
%RTR-I-TRMCENTRYNFND, no termcap-entry for terminal-type : xterm
%RTR-S-RTRSTOP, RTR stopped on node bng100
Reliable Transaction Router V5.1 for HP-UX
Installation Verification Procedure successful
#
```

3.3. Complete RTR Setup

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.)

To use RTR for ACTIVE/STANDBY configuration, a journal should be created in the shared disk (Cluster File System (CFS)) that is accessible from all the nodes configured in the cluster. Also, the following environmental variables must be set:

- **RTR_CLU_MEM_NODES:** This variable enables RTR to recognize the backend nodes of the cluster participating in ACTIVE/STANDBY mode. For example:

```
RTR_CLU_MEM_NODES="BE1, BE2"
```

- **RTR_CLU_LCK_DISK:** This variable enables RTR to maintain the "cluster node locks" on a common shared disk in the cluster. All backend nodes in the cluster should use the same disk for maintaining "cluster node locks". For example:

```
RTR_CLU_LCK_DISK= "/dev/vx/dsk/rtrdata/rtr_files"
```

3.3.1. Check Network Availability

RTR cannot start until after the network has started. Check the network status before using RTR.

3.3.2. Check Installed Files

Navigate to the directory where you installed RTR. The default is `/var/opt/rtr`. To see what has been installed, check the display from the following command:

```
# swlist -v RTR510
```

3.3.3. Enable RTR Remote Commands

While this is not required to use RTR for HP-UX, to make it possible to execute RTR commands on remote systems, you must use the remote shell (RSH). In case of HP-UX REMSH is the remote shell program, you can create a soft link or alias so that `rsh` points to `remsh`. See the documentation on remote shell on your HP-UX 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.

3.3.4. Display Documentation

Soft copy 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.

Release Notes are placed in the `/usr/share/doc` directory with the .pdf files.

3.3.5. Run RTR

You must be in the `rtroper` group to run RTR. For more information on RTR privileges, see the *VSI Reliable Transaction Router System Manager's Manual* section on RTR Privileges. To run RTR, follow these steps:

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

```
# rtr
RTR>
```

- To start RTR, enter Start RTR at the `RTR>` prompt.

3.3.5.1. Configure RTR Facilities and Partitions

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

3.3.6. 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 *VSI Reliable Transaction Router Application Design Guide*; for information on deployment and monitoring, refer to the *VSI Reliable Transaction Router System Manager's Manual*.

Chapter 4. Full Installation on Linux I64

This chapter describes how to install Reliable Transaction Router on Linux I64 systems. It includes steps for:

- Preparing for installation
- Installing RTR
- Completing RTR setup

4.1. Prepare for Installation

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

User-Changed Monitor Files

On the Linux platform, if you have changed any RTR monitor (*.mon) files, any customized monitor files are renamed during uninstall with the extension `.rpmsave`. Except for such customized monitor files, uninstalling RTR removes the RTR monitor files.

4.1.1. 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.

4.1.2. Check Login Privileges

You must be logged in as the `root` user to install RTR on Linux. For more information on RTR privileges, see the *VSI Reliable Transaction Router System Manager's Manual* section on RTR Privileges.

4.1.3. Check Required Hardware

- Any Itanium system that runs Redhat Enterprise Linux ES/AS Version 4.0.
- For ACTIVE/STANDBY configuration, any storage system that supports Redhat Cluster suite and GFS of version 6.1

4.1.4. Check Required Software

Required software for each system to be used with RTR:

- Redhat Enterprise Linux ES/AS Version 4.0
- TCP/IP support as provided by the operating system
- For ACTIVE/STANDBY configuration Redhat Cluster suite and GFS of version 6.1

- At least one Reliable Transaction Router Backend license for a supported operating system for development and application deployment

4.1.5. Check Required Disk Space

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

4.1.6. Check System Parameters

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

4.1.6.1. Check Memory-Mapped I/O Requirements

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

4.1.6.2. Check Virtual Memory Requirements

The basic memory requirement for an unconfigured RTRACP is 5.6 MB. Additional memory may be required.

4.2. Install RTR

1. If you are installing on Linux I64, ensure that you are logged in as the root user.
2. If RTR is already installed on your system, see Section B.2: Uninstalling on Linux I64, for information on uninstalling RTR and removing related processes.
3. Insert the RTR CD-ROM into the drive.

If Redhat does not automatically mount your CD-ROM, you will need to mount it before proceeding to the next step.

4. CD to the CDROM drive.
5. The HP Reliable Transaction Router for Linux installs in the standard way on Redhat systems:
 - use `gnorpm` for a graphical install on Redhat Workstation systems
 - use `rpm -i packagename.rpm` on the command line with Redhat 9 as the root user.
6. If you previously installed an RTR Linux I64 kit, you will need to uninstall the old one before installing the new one.

For example, the following shows the installation display:

```
# rpm -i rtr-5.1-416.ia64.rpm
```

RTR for Linux is licensed per processor, with one license required for each processor in the system. If more processors or systems are added, then additional RTR licenses must be purchased.

To verify your installation, run the IVP:

```
# ./rtr_ivp_osf.sh
Starting Reliable Transaction Router V5.1 for Linux
Installation
Verification Procedure
keeping any existing log file settings (RTR_DBG not set)
starting RTR . . .
%RTR-S-RTRSTART, RTR started on node localhost
creating a journal, if not already created . . .
%RTR-S-JOURNALINI, journal has been created on device /dev/sda7
creating test facility . . .
%RTR-S-FACCREATED, facility rtr_ivp_facility created
stopping RTR.
%RTR-S-RTRSTOP, RTR stopped on node localhost
[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 localhost
%RTR-S-FACCREATED, facility RTR$DEFAULT_FACILITY created
starting an rtr server application
running an rtr client application, should complete in a few seconds
stopping rtr
%RTR-S-RTRSTOP, RTR stopped on node localhost
Reliable Transaction Router V5.1 for Linux
Installation Verification Procedure successful
```

4.3. Complete RTR Setup

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.)

To use RTR for ACTIVE/STANDBY configuration, a journal should be created in the shared disk (Global File System (GFS)) that is accessible from all the nodes configured in the cluster. Also, the following environmental variables must be set:

- **RTR_CLU_MEM_NODES:** This variable enables RTR to recognize the backend nodes of the cluster participating in ACTIVE/STANDBY mode. For example:

```
RTR_CLU_MEM_NODES="BE1, BE2"
```

- **RTR_CLU_LCK_DISK:** This variable enables RTR to maintain the "cluster node locks" on a common shared disk in the cluster. All backend nodes in the cluster should use the same disk for maintaining "cluster node locks". For example:

```
RTR_CLU_LCK_DISK= "/dev/mapper/rtrvg-lvol0"
```

4.3.1. Check Network Availability

RTR cannot start until after the network has started. To check network status, use the command:

```
/etc/init.d/network status
```

To start your network, execute the command

```
/etc/init.d/network start
```

4.3.2. Check Installed Files

Navigate to the directory where you installed RTR. The default is `/var/opt/rtr`.

To see the list of files installed, enter the following command:

```
# rpm -q -l rtr
```

To see what has been installed, check the display using the following command:

```
# rpm -q -i rtr
```

4.3.3. Enable RTR Remote Commands

While this is not required to use RTR for Linux I64, to make it possible to execute RTR commands on remote systems, you must use the remote shell (RSH). On a Linux system, see the documentation on remote shell for more information.

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 *VSI Reliable Transaction Router System Manager's Manual*.

4.3.4. Display Documentation

Soft copy 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.

Release Notes are placed in the `/usr/share/doc` directory with the .pdf files.

4.3.5. Run RTR

You must belong to the `rtroper` group to run RTR. For more information on RTR privileges, see the *VSI Reliable Transaction Router System Manager's Manual* section on RTR Privileges. To run RTR, follow these steps:

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

```
# rtrRTR>
```

- To start RTR, enter Start RTR at the `RTR>` prompt.

4.3.5.1. Configure RTR Facilities and Partitions

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

4.3.6. 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 *VSI Reliable Transaction Router Application Design Guide*; for information on deployment and monitoring, refer to the *VSI Reliable Transaction Router System Manager's Manual*.

Chapter 5. Full Installation on Linux Frontend

This chapter describes how to install Reliable Transaction Router on Linux Frontend 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

On the Linux platform, if you have changed any RTR monitor (*.mon) files, any customized monitor files are renamed during uninstall with the extension `.rpmsave`. Except for such customized monitor files, uninstalling RTR removes the RTR monitor files.

5.1.1. 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.

5.1.2. Check Login Privileges

You must be logged in as the `root` user to install RTR on Linux. For more information on RTR privileges, see the *VSI Reliable Transaction Router System Manager's Manual* section on RTR Privileges.

5.1.3. Check Required Hardware

- For client functionality, any Intel32 system that runs Redhat Enterprise Linux WS Version 3.0.

5.1.4. Check Required Software

Required software for each system to be used with RTR:

- Redhat Enterprise Linux WS Version 3.0
- TCP/IP support as provided by the operating system
- At least one Reliable Transaction Router Backend license for a supported operating system for development and application deployment

5.1.5. Check Required Disk Space

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

5.1.6. Check System Parameters

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

5.1.6.1. Check Memory-Mapped I/O Requirements

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

5.1.6.2. Check Virtual Memory Requirements

The basic memory requirement for an unconfigured RTRACP is 5.6 MB. Additional memory may be required.

5.2. Install RTR

1. If you are installing on Linux, ensure that you are logged in as the root user.
2. If RTR is already installed on your system, see Section B.3, for information on uninstalling RTR and removing related processes.
3. Insert the RTR CD-ROM into the drive.

If Redhat does not automatically mount your CD-ROM, you will need to mount it before proceeding to the next step.

4. CD to the CDROM drive.
5. The Reliable Transaction Router for Linux Frontend installs in the standard way on Redhat systems:
 - use `gnorpm` for a graphical install on Redhat Workstation systems
 - use `rpm -i packagename.rpm` on the command line with Redhat 9 as the root user.
6. If you previously installed an RTR Linux kit, you will need to uninstall the old one before installing the new one.

For example, the following shows the installation display:

```
# rpm -i rtr_frontend-x_y-zzz.i386.rpm
RTR for Linux Front End is licensed per processor, with
one license required for each processor in the system.
If more processors or systems are added, then additional
RTR licenses must be purchased.
#
```


To verify your installation, run the IVP:

```
# cd /opt/rtr/examples/IVP
# ./rtr_ivp_osf.sh
Starting      Reliable Transaction Router V5.1   for Linux
Installation Verification Procedure

    keeping any existing log file settings (RTR_DBG not set)
    starting RTR . . .
%RTR-S-RTRSTART, RTR started on node bznbnzn
    creating a journal, if not already created . . .
%RTR-S-JOURNALINI, journal has been created on device /dev/hda3
    creating test facility . . .
%RTR-S-FACCREATED, facility rtr_ivp_facility created
    stopping RTR.
%RTR-S-RTRSTOP, RTR stopped on node bznbnzn

[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 bznbnzn
%RTR-S-FACCREATED, facility RTR$DEFAULT_FACILITY created
    starting an rtr server application
    running an rtr client application, should complete in a few seconds
    stopping rtr
%RTR-S-RTRSTOP, RTR stopped on node bznbnzn

Reliable Transaction Router Vx.y   for Linux

Installation Verification Procedure successful

#
```

5.3. Complete RTR Setup

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.)

5.3.1. Check Network Availability

RTR cannot start until after the network has started. To check network status, use the command:

```
/etc/init.d/network status
```

To start your network, execute the command

```
/etc/init.d/network start
```

5.3.2. Check Installed Files

Navigate to the directory where you installed RTR. The default is `/var/opt/rtr`.

To see a list of the files installed, enter the following command:

```
# rpm -q -l rtr_frontend
```

To see what has been installed, check the display from the following command:

```
# rpm -q -i rtr_frontend
Name       : rtr_frontend           Relocations: /opt/rtr
Version    : x.y                  Vendor: VSI
Release    : zzz                  Build Date: Fri 07 Feb 2020 01:27:4T
Install date: Fri 07 Feb 2020 02:13:13 PM   Build Host: hostnm
Group      : Development/Middleware Source RPM: rtr_frontend-x_y-zzz.nom
Size       : 22029958              License: Per Processor License fd
Packager   : RTR Engineering
URL        : https://www.vmssoftware.com
Summary    : Reliable Transaction Router
Description:
Reliable Transaction Router(TM) (RTR) is an open client/server
software fault tolerant middleware for continuous high performance
distributed transaction processing.
#
```

(The Source RPM value may be higher than shown.)

5.3.3. Enable RTR Remote Commands

While this is not required to use RTR for Linux Frontend, 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 Linux 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 *VSI Reliable Transaction Router System Manager's Manual*.

5.3.4. Display Documentation

Soft copy 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.

Release Notes are placed in the `/usr/share/doc` directory with the .pdf files.

5.3.5. Run RTR

You must be in the `rtroper` group to run RTR. For more information on RTR privileges, see the *VSI Reliable Transaction Router System Manager's Manual* section on RTR Privileges. To run RTR, follow these steps:

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

```
# rtr  
RTR>
```

- To start RTR, enter Start RTR at the RTR> prompt.

5.3.5.1. Configure RTR Facilities and Partitions

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

5.3.6. 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 *VSI Reliable Transaction Router Application Design Guide*; for information on deployment and monitoring, refer to the *VSI Reliable Transaction Router System Manager's Manual*.

Chapter 6. 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

6.1. Prepare for Installation

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

User-Changed Monitor Files

For all non-Linux platforms, 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, to `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`.

6.1.1. 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.

6.1.2. Check Login Privileges

You must have `RTR$OPERATOR` privileges to install and run RTR. For more information on RTR privileges, see the *VSI Reliable Transaction Router System Manager's Manual* section on RTR Privileges.

6.1.3. 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 Alpha Server or Itanium that runs OpenVMS

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

6.1.4. Check Required Software

Table 6.1 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 *VSI Reliable Transaction Router Software Product Description* (SPD) for the list of prerequisite and optional software and their required versions.

Table 6.1. Required Software

Prerequisite Products	Purpose
OpenVMS I64 Version 8.2-1 minimum	System Software
or	
OpenVMS Alpha Version 7.3-2 minimum	System Software
One of the following must be present on your system to use RTR:	
Networking Products	
TCP/IP Services for OpenVMS (version depends on the platform and version of OpenVMS. Refer to the relevant SPD.)	Network Transport
DECnet or DECnet-Plus (version depends on the platform and version of OpenVMS. Refer to the relevant SPD.)	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.

For OpenVMS Alpha, there is no requirement that you must register a software license for RTR for OpenVMS. However, for OpenVMS I64, a license is required to run RTR. For further details, refer to the RTR for OpenVMS SPD.

6.1.5. Check Required Disk Space

Reliable Transaction Router's requirements for free disk storage space are different during installation and after installation. Table 6.2 summarizes the storage requirements.

Table 6.2. Disk Space Requirements for OpenVMS

Kit	Blocks During Installation	Blocks After Installation
Reliable Transaction Router for OpenVMS	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
```

6.1.6. 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 *VSI Reliable Transaction Router System Manager's Manual*.

Value of CHANNELCNT

In rare instances and only as directed by VSI, 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 *VSI Reliable Transaction Router System Manager's Manual*.

6.1.6.1. Size Global Pages and Sections Appropriately

Size global pages and global sections appropriately. (Refer to the section on RTR Shared Memory Sizing in the *VSI Reliable Transaction Router System Manager's Manual* for information on sizing.) Table 6.3 lists the minimum free amount of global pages and global sections required for the installation.

Table 6.3. System Parameter Values Used by the RTR Installation

System Parameter	Required Amount
GBLPAGES	4000
GBLSECTIONS	4

6.1.6.2. Size Virtual Memory Appropriately

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

6.2. Install RTR

If RTR is already installed on your system, see Section B.4, 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 *VSI 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]
```

Installing on an ODS-5 Disk

RTR can be installed on an ODS-5 disk.

6.2.1. 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].

Minimum Required Version of OpenVMS

The minimum VMS version on which you can install RTR Version 5.1 is OpenVMS 7.3-2. If you attempt to install RTR Version 5.1 on an earlier version of OpenVMS, you will receive an error message of the following form:

```
This system does not meet the RTR minimum required VMS version. The
minimum required version is V7.3-2.
Terminating is strongly recommended. Do you want to terminate? [YES]
```

If you see this error message, end your attempted RTR installation and upgrade your OpenVMS system to version 7.3-2.

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 Vx.y-zzz ❶ 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 Vx.y-zzz: Reliable Transaction Router for OpenVMS
Copyright 2005 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 ❷
Run installation verification procedure [NO] yes ❸
DECnet users: Have you read the Release Note regarding
minimum version? [YES] yes
Do you want the V2 programming kit installed? [NO] yes ❹
Do you want to review the options? [NO] yes
DEC AXPVMS RTR Vx.y-zzz: 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 ...
The following product will be installed to destination:
  DEC AXPVMS RTR Vx.y-zzz <logical for SYS$COMMON> ❶

Portion done: 0%
...10%
...20%
...30%
...40%
...50%
...60%
...70%
...80%
...90%
...100%
The following product has been installed:
  DEC AXPVMS RTR Vx.y-zzz    Layered Product
%PCSI-I-IVPEXECUTE, executing test procedure for
DEC AXPVMS RTR Vx.y-zzz ... ❷
%PCSI-I-IVPSUCCESS, test procedure completed successfully
DEC AXPVMS RTR Vx.y-zzz: Reliable Transaction Router for OpenVMS
Insert the following lines in SYS$MANAGER:SYSTARTUP_VMS.COM: ❸
  @sys$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. ❹
$
```

- 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 6.3.1.1 for information on use of the optional P1 parameter.

6.2.2. Read Release Notes

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

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

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

6.3. Complete RTR Setup

After completing the installation, you can:

- Edit system files
- Verify user account requirements

6.3.1. 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:SYSHUTDOWN.COM.

6.3.1.1. 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 6.4. 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 6.5.

Table 6.5. 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

To use the following protocol:	Set the value as:
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 preferred 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 explicitly 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 6.5. For example, the following command would ensure that RTR detects the preferred protocol:

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

6.3.2. 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.

6.3.2.1. Check User Account Quotas

Table 6.6 summarizes the required user account quotas.

Table 6.6. User Account Quotas for Using Reliable Transaction Router

Account Quota	Value
ASTLM	At least 2000
BIOLM	At least 2000
BYTLM	At least 500000 ¹
DIOLM	At least 2000
TQELM	At least 2000

¹At least 80000 for accounts running RTR applications. At least 500000 for accounts running the RTR ACP. These 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.

6.3.2.2. 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).

6.3.2.3. 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.

6.3.3. 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]
```

6.3.4. 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 *VSI Reliable Transaction Router System Manager's Manual*.

6.3.5. Run RTR

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

```
$ run SYS$COMMON:[SYSEXEC]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.

6.3.5.1. Configure RTR Facilities and Partitions

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

6.3.6. 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 *VSI Reliable Transaction Router Application Design Guide*; for information on deployment and use, refer to the *VSI Reliable Transaction Router System Manager's Manual*.

Chapter 7. 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

7.1. Prepare for Installation

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

User-Changed Monitor Files

For non-Linux platforms, 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. For the Linux platform, see Chapter 5.

7.1.1. 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.

7.1.2. Check Login Privileges

You must have RTROperator and RTRInfo privileges to run RTR, and Windows Administrator privileges to install RTR. For more information on privileges, see the *VSI Reliable Transaction Router System Manager's Manual* section on RTR Privileges.

7.1.3. Check Required Hardware

- For client/server/router functionality, any Intel system that runs Windows 2000, Windows 2003 or Windows XP.
- For client functionality, any Intel system that runs Windows 2000, Windows 2003, or Windows XP.

7.1.4. Check Required Software

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

- Windows 2000, Service Pack 1

- Windows 2003
- Windows XP
- All systems must include TCP/IP support

7.1.5. 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.

7.1.6. Check System Parameters

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

7.1.6.1. Check Memory-Mapped I/O Requirements

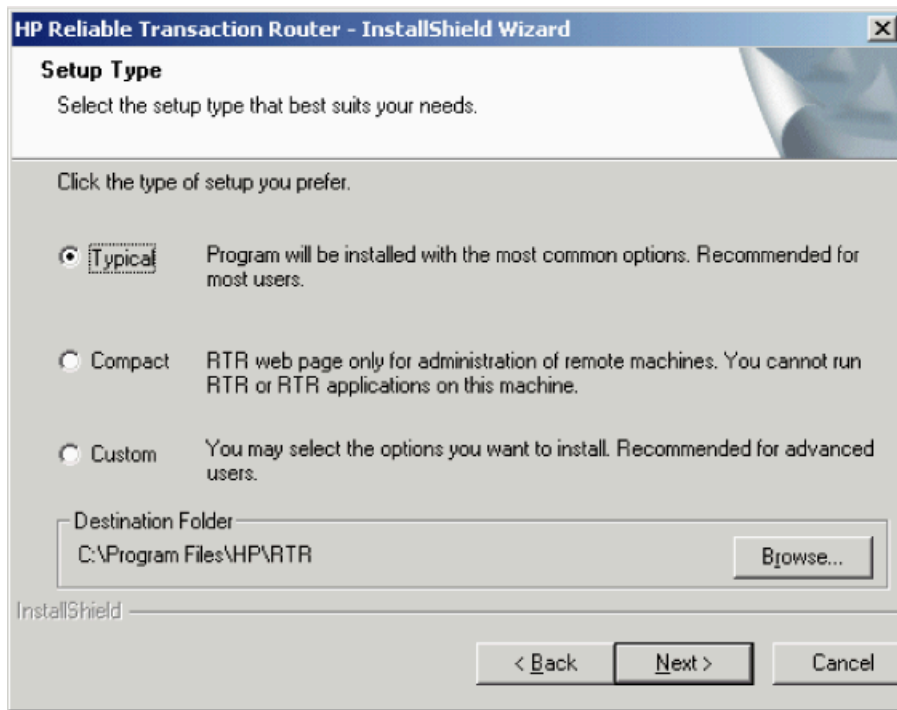
For information on how to size memory-mapped I/O appropriately, refer to *VSI Reliable Transaction Router System Manager's Manual*, RTR Shared Memory Sizing.

7.1.6.2. 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 *VSI Reliable Transaction Router System Manager's Manual*, RTRACP Virtual Memory Sizing for All Systems.

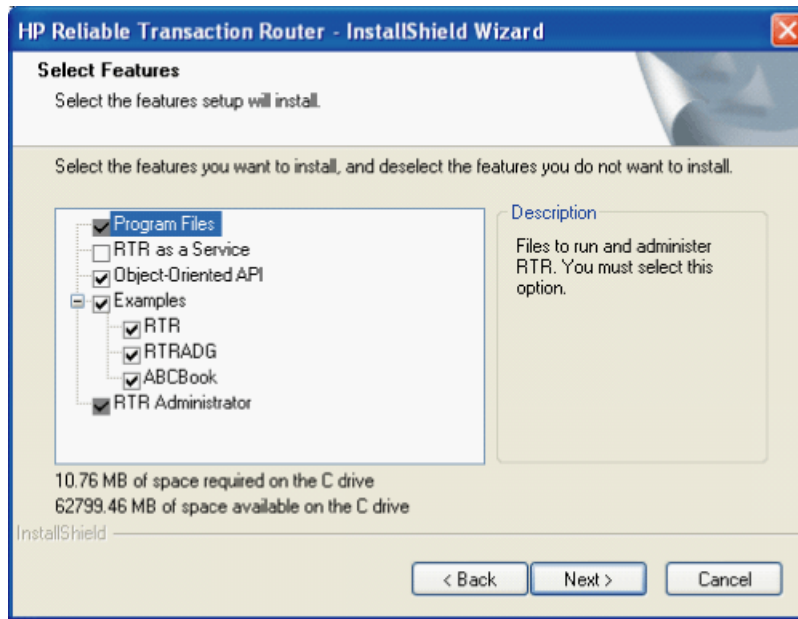
7.2. Install RTR

1. If you are installing on Windows 2000, Windows 2003, or Windows XP, 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.5: 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. Select the Typical, Compact or Custom installation as shown in Figure 7.1: Setup Type Screen.

Figure 7.1. Setup Type Screen

VM-1182A-AI

- The typical installation provides the most common options. This choice is recommended for most users.
- The Compact installation installs only those parts of RTR that are needed for administration of remote systems. You cannot run RTR or RTR applications on the machine where you do the Compact installation. You will have access to a web browser from which you can administer remote systems running RTR.
- If you select the Custom installation, you can choose to install only certain parts of RTR, as shown in Figure 7.2.

Figure 7.2. Select Features Screen

All Custom installations must include Program Files and the RTR Administrator. Other selections are optional.

Select this choice:	To install
RTR as a Service	A backend or router
Object-Oriented API	The C++ API
Examples	Working examples for RTR (C API code), RTRADG (C API code described in the <i>VSI Reliable Transaction Router Application Design Guide</i>), or ABCBook (C++ API code).

9. Accept the terms of the License Agreement. If you reject the terms, installation is stopped.
10. 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
```

VSI recommends that you install RTR on a local hard disk (NTFS or FAT).

RTR as a Service runs only on Windows 2000, Windows 2003 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 -> HP -> RTR -> Service -> Register
```

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.

7.2.1. 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 -> HP -> RTR -> Readme

7.3. 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.

7.3.1. Check Network Availability

RTR cannot start if the network is not available. Check that the network has started before starting RTR.

7.3.2. 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
```

7.3.3. 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 *VSI Reliable Transaction Router System Manager's Manual*.

7.3.4. Display Documentation

Soft copy 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.

7.3.5. Run RTR

To run RTR on Windows you must have `RTROperator` or `RTRInfo` privileges, which must be set by the Administrator. For more information on RTR Privileges, see the *VSI Reliable Transaction Router System Manager's Manual* section on RTR Privileges. To run RTR, follow these steps:

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

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

7.3.5.1. Configure RTR Facilities and Partitions

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

7.3.6. 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 *VSI Reliable Transaction Router Application Design Guide*; for information on deployment and monitoring, refer to the *VSI Reliable Transaction Router System Manager's Manual*.

Appendix 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.

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 VSI Customer Support Service.

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

The Customer Support Service 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 email address: `<info@vmssoftware.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.

Appendix 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.

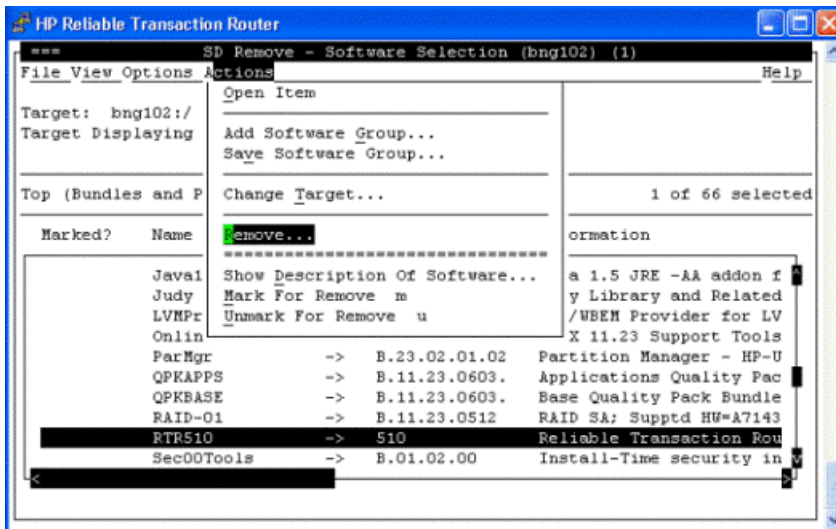
If `/rtrjnl` or `/rtr` is a symbolic link to another directory, first remove the target directory and all files contained in it, and then remove the symbolic link.

B.1. Uninstalling on HP-UX I64

Run `swremove` and select RTR for uninstalling. For example, the following shows the uninstallation display:

```
# swremove
Starting the terminal version of swremove...
To navigate in swremove:
-use the "Tab" key to move between screen elements
-use the "arrow" keys to move within screen elements
-use "Ctrl-F" for context-sensitive help anywhere in swremove
On screens with a menu bar at the top like this:
-----
|File View Options Actions                                Help|
|---- - - - - - - - - - - - - - - - - - - - - - - - - - -|
- use "Tab" to move from the list to the menu bar
- use the "arrow" keys to navigate
- use "Return" to pull down a menu or select a menu item
- use "Tab" to move from the menu bar to the list without selecting a menu
  item
- use the spacebar to select an item in the list
On any screen, press "CTRL-K" for more information on how to use the
  keyboard.
Press "Return" to continue...
```

The sample uninstallation is as shown Figure B.1

Figure B.1. HP-UX Sample Uninstallation

B.2. Uninstalling on Linux I64

Following is the command to uninstall a Linux package:

```
rpm -e rtr
```

When executing this command, the system displays the following information:

```
uninstalling RTR...
```

B.3. Uninstalling on Linux I32 (Frontend)

The command to uninstall a Linux package is the following:

```
rpm -e rtr_frontend
```

When executing this command, the system displays the following:

```
uninstalling RTR_FRONTEND...
#
```

To list all installed packages, issue the command `rpm -qa`.

B.4. 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/DAEMON
```
- 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.5. Uninstalling on Windows Systems

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

- If you installed RTR as a service, you must unregister RTR as a service. Do this with the following menu selections from the Program menu:

```
Programs -> HP -> 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/DAEMON
```

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

```
Programs-> HP -> 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`.

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, follow this menu selection process:

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