RATIONAL SOFTWARE CORPORATION

RATIONAL® CLEARCASE® AND CLEARCASE MULTISITE®

RELEASE NOTES

VERSION: 2002.05.000

PART NUMBER: 800-025557–000

UNIX EDITION
SOLARIS 2.6, 7, 8
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Rational®
the software development company

RELEASE NOTES
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Technical Acknowledgments

This software and documentation is based in part on BSD Networking Software Release 2, licensed from the Regents of the University of California. We acknowledge the role of the Computer Systems Research Group and the Electrical Engineering and Computer Sciences Department of the University of California at Berkeley and the Other Contributors in its development.

This product includes software developed by Greg Stein <gstein@lyra.org> for use in the mod_dav module for Apache (http://www.webdav.org/mod_dav/).

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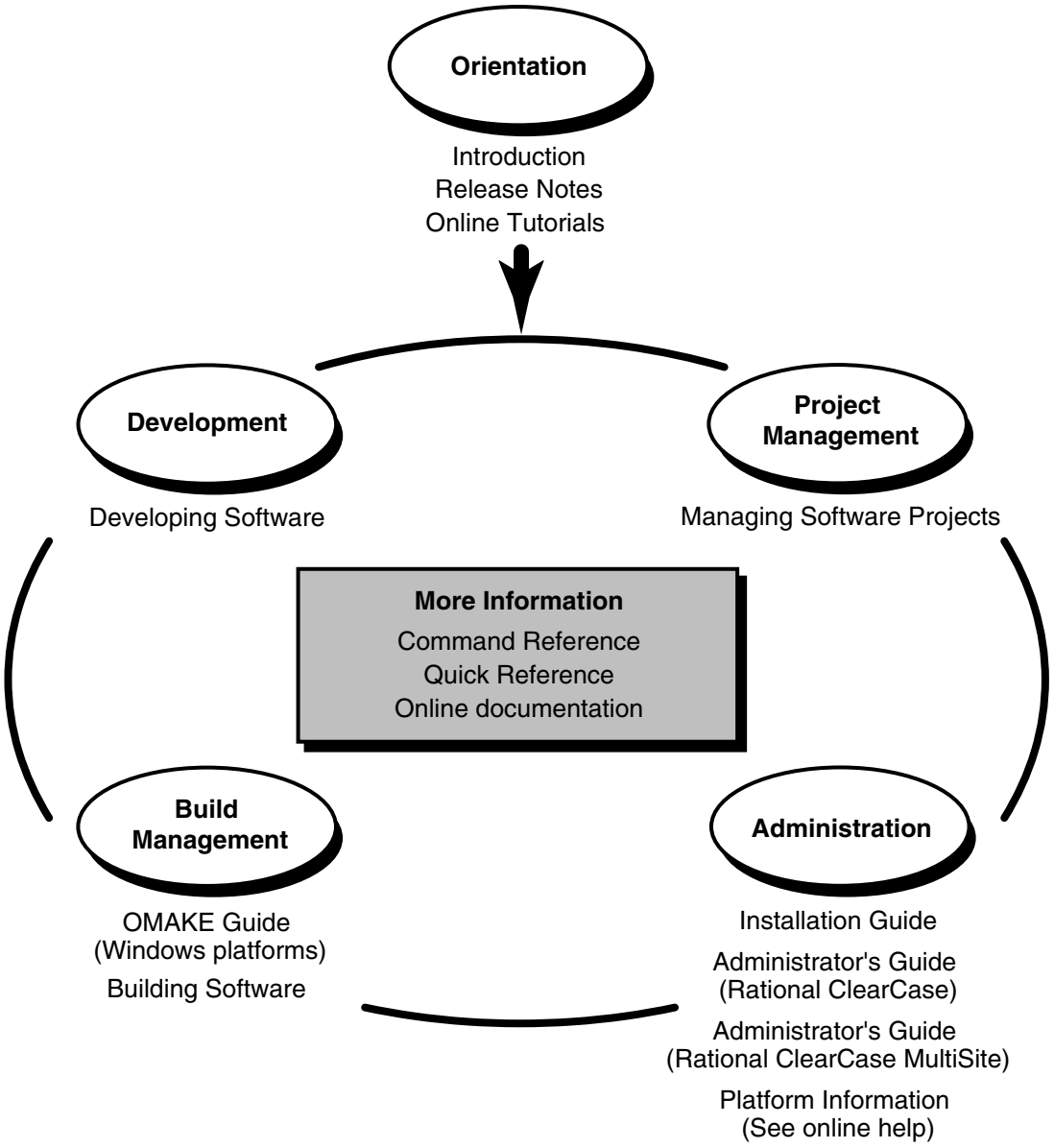
Preface

About This Manual

This document describes Version 2002.05.00 of both Rational ClearCase configuration management software and Rational ClearCase MultiSite software for the UNIX operating system.

ClearCase Documentation Roadmap



Typographical Conventions

This manual uses the following typographical conventions:

- ccase-home-dir represents the directory into which the ClearCase Product Family has been installed. By default, this directory is /usr/atria on UNIX and C:\Program Files\Rational \ClearCase on Windows.
- attache-home-dir represents the directory into which ClearCase Attache has been installed. By default, this directory is **C:\Program Files\Rational \Attache**.
- **Bold** is used for names the user can enter; for example, all command names, file names, and branch names.
- *Italic* is used for variables, document titles, glossary terms, and emphasis.
- `A monospaced font` is used for examples. Where user input needs to be distinguished from program output, **bold** is used for user input.
- Nonprinting characters are in small caps and appear as follows: <EOF>, <NL>.
- Key names and key combinations are capitalized and appear as follows: SHIFT, CTRL+G.
- [ ]Brackets enclose optional items in format and syntax descriptions.
- { }Braces enclose a list from which you must choose an item in format and syntax descriptions.
- | A vertical bar separates items in a list of choices.
- ...In a syntax description, an ellipsis indicates you can repeat the preceding item or line one or more times. Otherwise, it can indicate omitted information.

  Note: In certain contexts, ClearCase recognizes "**...**" within a pathname as a wildcard, similar to "*" or "?". See the **wildcards_ccase** reference page for more information.

- If a command or option name has a short form, a "medial dot" (·) character indicates the shortest legal abbreviation. For example:

  lsc·heckout

  This means that you can truncate the command name to **lsc** or any of its intermediate spellings (**lsch**, **lsche**, **lschec**, and so on).

Online Documentation

The ClearCase graphical interface includes a Microsoft Windows-like help system.

There are three basic ways to access the online help system: the **Help** menu, the **Help** button, or the F1 key. **Help > > Contents** provides access to the complete set of ClearCase online documentation. For help on a particular context, press F1. Use the **Help** button on various dialog boxes to get information specific to that dialog box.

ClearCase also provides access to full "reference pages" (detailed descriptions of ClearCase commands, utilities, and data structures) with the **cleartool man** subcommand. Without any argument, **cleartool man** displays the **cleartool** overview reference page. Specifying a command name as an argument gives information about using the specified command. For example:

```
% cleartool man (display the cleartool overview page)

% cleartool man man (display the cleartool man reference page)
```

% **cleartool man checkout***(display the cleartool checkout reference page)*

ClearCase's **–help** command option or **help** command displays individual subcommand syntax. Without any argument, **cleartool help** displays the syntax for all **cleartool** commands. **help checkout** and **checkout –help** are equivalent.

```
% cleartool uncheckout –help
Usage: uncheckout | unco [-keep | -rm] [-cact | -cwork ] pname ...
```

Additionally, the online *ClearCase Tutorial* provides important information on setting up a user's environment, along with a step-by-step tour through ClearCase's most important features. To start the *ClearCase Tutorial* from the command line, type **hyperhelp cc_tut.hlp**.

Technical Support

If you have any problems with the software or documentation, please contact Rational Technical Support via telephone, fax, or electronic mail as described below. For information regarding support hours, languages spoken, or other support information, click the **Technical Support** link on the Rational Web site at www.rational.com.

Your Location	Telephone	Facsimile	Electronic Mail
North America	800-433-5444 toll free or 408-863-4000 Cupertino, CA	408-863-4194 Cupertino, CA 781-676-2460 Lexington, MA	support@rational.com
Europe, Middle East, and Africa	+31-(0)20-4546-200 Netherlands	+31-(0)20-4546-201 Netherlands	support@europe.rational.com
Asia Pacific	61-2-9419-0111 Australia	61-2-9419-0123 Australia	support@apac.rational.com

READ ME FIRST 1

This chapter contains important information about Version 2002.05.00 of Rational ClearCase and Rational ClearCase MultiSite. Read it *before* you attempt to install either product. Beginning with this release, ClearCase and MultiSite releases use the same version number and version number format as other Rational Software products released in the same period.

Note: The term CPF stands for ClearCase Product Family and refers to the products ClearCase, Attache, and MultiSite. The term 4.*x* refers to versions 4.0, 4.1, and 4.2 of ClearCase.

ClearCase and MultiSite Hardware and Software Requirements

This section lists the basic platform, hardware, and software requirements for running ClearCase and MultiSite software.

Supported Platforms

ClearCase and MultiSite Version 2002.05.00 run on the platforms listed in Table 1.

Table 1 Supported Platforms for ClearCase and MultiSite Version 2002.05.00

Hardware platform	Operating system
Solaris SPARC	Solaris 2.6, 7, 8 (2.6 32–bit only, others 32– and 64–bit)
HP 9000 Series 700 and Series 800 (32- and 64-bit support for all 11.*x* releases)	HP-UX 10.20, 10.20 ACE[1] (except diskless workstations), 11.0, 11.0 ACE[2] and 11.11 (11i version 1.0)
SGI IRIX (32- and 64-bit support)	IRIX 6.5.7 through 6.5.14 (all 32- and 64-bit support)
IBM RISC System/6000	AIX 4.3.2, 4.3.3 AIX 5L, 5.1 (32–bit support)
Compaq Alpha (formerly Digital Alpha)	Tru64 UNIX 4.0G, 5.0A, 5.1, 5.1A

Hardware platform	Operating system
IBM PC-compatibles	Red Hat Linux 7.0 (2.2.16–22 kernel) Red Hat Linux 7.1 (2.4.2– 2 and 2.4.9 kernels) Red Hat Linux 7.2 (2.4.7 and 2.4.9 kernels) Caldera UnixWare 7.1.0, 7.1.1 Caldera Open UNIX 8.0 Sun Solaris Intel 2.6, 7, 8
IBM S/390 and zSeries [3]	SuSE Linux Enterprise Server 7 [4](2.4.7 kernel) [5]

1 Supported HP-UX ACE releases are July 1997, April 1998, June 1998, June 1999, and December 1999 Workstation ACE, and April 1998, June 1998, June 1999, and December 1999 Networking ACE.
2 Supported HP-UX ACE release is November 1999 ACE.
3 The notation zSeries as used in these release notes refers to "Linux for S/390" running on the IBM zSeries hardware in the 31-bit run-time environment. Running ClearCase on "Linux for zSeries" in a 64-bit runtime environment is not supported.
4 The terms “SuSE Linux Enterprise Server 7” and “SuSE Linux 7.2” are used interchangeably in this document.
5 This release has been tested on SuSE Linux Enterprise Server 7 images running under VM and Linux running native. It has not been tested for Linux running under VIF or for Linux running on the IBM zSeries, although these architectures are supported (with the limitations for zSeries noted previously).

This release of ClearCase does not include support for the following architectures:

- Tru64 UNIX 5.0
- SuSE Linux for zSeries (64–bit run-time environment)
- IRIX 6.5.2 through 6.5.6
- SuSE Linux for S/390 7.0
- Red Hat Linux 6.2

This release of ClearCase is the final release that will include support for the following platforms:

- Caldera UnixWare and OpenUnix
- Solaris Intel/x86

Patches for ClearCase 2002.05.00 will continue to be available for Solaris Intel/x86 and Caldera UnixWare and OpenUnix, but no future product releases of ClearCase will be made available for these platforms.

For more information about differences in features and functionality by platform, see the *Platform-Specific Guide* in online help. To access the platform guide, go to ClearCase help and click **Help Topics**.

Supported Platforms for ClearCase Web Servers and Web Interface

The following platforms support a ClearCase Web server:

- Solaris SPARC
- HP-UX
- AIX
- Red Hat Linux
- SuSE Linux for S/390 7.0

All supported ClearCase platforms support the ClearCase Web interface. For details about the Web servers and Web browsers supported on different platforms, see *Basic Software Requirements* on page 6.

Supported File Systems

Table 2 lists the file systems that ClearCase supports for view and VOB storage. If a file system does not appear in the table, it is not supported. Inform Rational Technical Support or your sales representative of any concerns you have about this list.

Table 2 Supported File Systems by Platform

Platform	Supported file systems
Solaris SPARC	UFS, VxFS (Veritas)
HP-UX	JFS, UFS, HFS, VxFS
IRIX	EFS, XFS
AIX	JFS
Tru64 UNIX	UFS, ADVFS
Red Hat Linux	UFS, EXT2
Caldera UnixWare and Open UNIX	UFS, VxFS
Solaris Intel	UFS, HSFS
IBM S/390 and zSeries	UFS, EXT2

The following file systems cannot be used to store any ClearCase data on any platform:

- Andrew File System (AFS), DCE Distributed File System (DFS)
- Any memory-based file system (such as memFS, tmpFS, swapFS)

NFS Support

Third-party automounters are not supported on any platform.

For a given platform, we support the NFS implementations that the platform supports.

If you use non-ClearCase access, see the *Administrator's Guide* for Rational ClearCase for a description of the limitations associated with use of NFS and potential workarounds.

Hardware Requirements

This section describes hardware requirements for installing and running ClearCase and MultiSite.

Basic Hardware Requirements

For ClearCase client hosts:

- 64 MB main memory
- 300 MB disk space

For ClearCase server hosts:

- 128 MB memory
- 2 GB disk space
- 128 UNIX processes
- 600 UNIX file descriptors per host (not per process)

Note: UNIX processes and UNIX file descriptors per host are set as kernel parameters.

Disk Space Requirements for the Release Area

The file system of the networkwide *release host* must have sufficient disk space to hold the release area. The minimum disk space required for release areas on different platforms is shown below:

Solaris SPARC	209 MB	Tru64 UNIX	166 MB
HP-UX 10	217 MB	Red Hat Linux	119 MB
HP-UX 11	214 MB	UnixWare and	122 MB
IRIX (32-bit)	168 MB	Open UNIX	106 MB
IRIX (64-bit)	169 MB	Solaris Intel	125 MB
AIX	200 MB		
IBM S/390 and zSeries	149 MB		

Disk Space Requirements for Individual Hosts

Table 3 shows the disk space requirement for each kind of installation. All the space must be contained in a single disk partition.

Table 3 Disk Space Requirements for ClearCase Product Family Releases

Platform	Type of installation	ClearCase	MultiSite[1]	Attache helper
Solaris SPARC	Full copy	175 MB	6 MB	2 MB
	Standard	52 MB	2 MB	2 MB
HP-UX 10	Full copy	184 MB	5 MB	2 MB
	Standard	45 MB	2 MB	2 MB
HP-UX 11	Full copy	182 MB	6 MB	2 MB
	Standard	49 MB	3 MB	2 MB
IRIX 32-bit	Full copy	157 MB	6 MB	2 MB
	Standard	31 MB	1 MB	2 MB
IRIX 64-bit	Full copy	152 MB	6 MB	2 MB
	Standard	36 MB	2 MB	2 MB
AIX	Full copy	240 MB	6 MB	1 MB
	Standard	58 MB	2 MB	1 MB
Tru64 UNIX	Full copy	150 MB	6 MB	2 MB
	Standard	34 MB	1 MB	1 MB
Red Hat Linux	Full copy	94 MB	5 MB	2 MB
	Standard	17 MB	700 K	1 MB
UnixWare	Full copy	112 MB	6 MB	1 MB
	Standard	24 MB	2 MB	1 MB

Platform	Type of installation	ClearCase	MultiSite[1]	Attache helper
Solaris Intel	Full copy	95 MB	6 MB	
	Standard	18 MB	700 K	
SuSE Linux for IBM S/390 and zSeries	Full copy	111 MB	4 MB	2 MB
	Standard	31 MB	850 K	2 MB
All Platforms	Link	< 2 MB[2] (install of all ClearCase Product Family products)		
	Mounted	< 2 MB (install of all ClearCase Product Family products)		

1 These disk requirements are only for the incremental installation of this product over ClearCase. Disk space requirements for any components shared with ClearCase are included in the ClearCase numbers.
2 Disk space requirements for Link and Mounted installations represent the space required for items loaded in the /var/adm/atria directory.

In addition, any host that will have snapshot view directories needs enough disk space to contain all files loaded into the snapshot views and all view-private files added to the views. The amount of space required depends on the number and sizes of the files in the views.

Any host that will have VOB- or view-storage directories must have enough disk space to contain the files and databases used for storage of VOB- or view-storage directories. The amount of space required depends on the characteristics and use of the VOBs and views.

Software Requirements

This section describes software requirements for running ClearCase and MultiSite.

Basic Software Requirements

ClearCase requires the following software:

- The HTML Diff Merge (**xcleardiff**) tool requires a Netscape Web browser (version 4.6 or later, but before 6.0); the browser must support the level of HTML used in the files to be compared or merged.
- The Web interface requires
  - On the system acting as a ClearCase Web server, either an Apache Web server (version 1.3.14 and above) or an iPlanet Enterprise Server (version 4.1 SP8 through 6.0). The iPlanet server is supported on AIX systems only for version 4.1 SP8.
  - On any system accessing ClearCase through the Web interface, a Web browser, Netscape Communicator (version 4.72 through 4.78). Netscape 6 is not supported. (Note that it is not necessary to install ClearCase on such a system.)
- Use of the online manuals in PDF format requires an Adobe Acrobat Reader, version 3.0 or later.

Exporting the Release Area

Setting up the export is architecture specific; see Table 4. For details, see the standard reference pages for these files and programs.

Table 4 Exporting the ClearCase Product Family Release Area

Architecture	Steps to export ClearCase product family release area	
Solaris SPARC, UnixWare, Open UNIX, Solaris Intel	1. Revise /etc/dfs/dfstab:	**share –F nfs /usr/ccase_rls** *options*
	2. Enter command:	# **/usr/sbin/shareall –F NFS**
HP-UX 10, HP-UX 11	1. Revise /etc/exports:	**/usr/ccase_rls** *options*
	2. Enter command:	# **/usr/sbin/exportfs –a** *other-options*
IRIX	1. Revise /etc/exports:	**/usr/ccase_rls** *options*
	2. Enter command:	# **/usr/etc/exportfs –a** *other-options*
AIX	1. Revise /etc/exports:	**/usr/ccase_rls** *options*
	2. Enter command:	# **/usr/sbin/exportfs –a** *other-options*
Tru64 UNIX	1. Revise /etc/exports:	**/usr/ccase_rls** *options*

Architecture	Steps to export ClearCase product family release area
Red Hat Linux	1. Revise /etc/exports: **/ (rw)**
SuSE Linux for IBM S/390 and zSeries	Revise /etc/exports: **/(rw, no_all_squash)**

Architecture Mnemonics and mount Commands

Table 5 provides the architecture mnemonic and sample **mount** commands for supported platforms. The architecture mnemonic is used as the name of root of the release area for each platform or set of platforms.

Table 5 Mounting the CD-ROM

Architecture	Mnemonic	Sample mount command
Solaris SPARC	**sun5**	Not necessary (if Volume Manager is in use)
HP-UX 10	**hp10_pa**	**mount –F cdfs –r /dev/dsk/c3d0s2 /cdrom**
HP-UX 11	**hp11_pa**[1]	**mount –F cdfs –r /dev/dsk/c3d0s2 /cdrom**
IRIX (32-bit)	**sgi5**	**mount –r –t iso9660 /dev/sc0d6l0 /cdrom**
IRIX (64-bit)	**sgi6**	
AIX	**aix4_power**	**mount –o ro –v cdrfs /dev/cd0 /cdrom**
Tru64 UNIX 4.0	**osf1_axp**	**mount –r –t cdfs /dev/rz4c /cdrom**
Tru64 UNIX 5.0A	**osf1_axp**	**mount –r –t cdfs /dev/disk/cdrom0c /cdrom**
Tru64 UNIX 5.1 and 5.1A	**osf1_axp**	**mount —r —t cdfs /dev/**
Red Hat Linux	**rhat_x86**	**mount –r /dev/cdrom /mnt/cdrom**
UnixWare and Open UNIX	**uw2_x86**	**mount –F cdfs –r /dev/cdrom/c1b0t6l0 /cdrom**[2]
Solaris Intel	**sol_x86**	Not necessary (assuming Volume Manager is in use)
SuSe Linux for IBM S/390 and zSeries	**linux_390**	**mount —r /dev/cdrom /mnt/cdrom** [3]

1 When installing ClearCase on an individual host, you must use the appropriate release area for the architecture on your host. For example, if you have HP-UX 11 on your host, you must install from the **hp11_pa** release area.
2 Under UnixWare, the file name c1b0t6l0 is “c-one-b-zero-t-six-el-zero”.

3 The CD drive may not be mountable from a Linux image running under VM. In that case, use a CD drive on another computer accessible over the network and mount that drive from the Linux image VM.

Platform-Specific Information Relating to Installation

This section provides information that varies from platform to platform. The *Installation Guide* for the ClearCase Product Family specifies when you will need this information and defines the terms used in this section.

Operating System Patches May Be Required

Typically, correct ClearCase operation depends on your having installed a number of required or recommended operating system patches. These are available from your OS vendor. The operating system patches are cumulative. Therefore, if you install a more recent patch, it will include the fix required for ClearCase. See Table 6 for a list of patches recommended or required for all hosts on which ClearCase software will run. There may also be required layered packages, as listed in *Layered Software Packages* on page 14.

In addition to the patches listed below, which fix problems known to affect ClearCase functionality, you may require other OS vendor patches to keep your systems functioning properly. See *Operating System Vendor Web Sites* on page 13 for information on where to obtain these patches.

ClearCase is guaranteed to be Y2K-compliant only on operating systems that are themselves Y2K-compliant.

MultiSite has no known dependencies on operating system patches.

Table 6 Operating System Patches

Patch number	Release	Purpose	Notes
Patches for Solaris SPARC			
105181-19 (or later)	2.6	kernel patch (includes procfs patch)	*Required for all ClearCase hosts.*
105778-01 (or later)	2.6	specfs (file system patch)	*Required for all ClearCase hosts.*
105780-05 or later)	2.6	fifofs (file system patch)	*Required for all ClearCase hosts.*

Patch number	Release	Purpose	Notes
108727-06 or later)	8	NFS patch	*Required for ClearCase servers that are NFS clients with NFS mounted VOB or view storage (typically using an NAS device).*
Patches for HP-UX 10 (Series 700 and 800)			
PHCO_20441	10.20	cumulative libc patch	Recommended for all ClearCase hosts.
PHCO_20061	10.20	fixes **mount** command	*Required for all ClearCase hosts.*
PHCO_16961	10.20	Xcurses library cumulative patch	*Required for all ClearCase hosts.*
PHNE_15202	10.20 (700)	cumulative streams patch	*Required for all ClearCase hosts.*
PHNE_19187	10.20 (800)		
PHNE_20839	10.20	cumulative mux and pty patch	Recommended for all ClearCase hosts.
PHNE_20091	10.20	cumulative NFS/NIS megapatch	Recommended for all ClearCase hosts. Check the prerequisites for these patches.
PHNE_19937	10.20 (700)	ARPA transport patch	Recommended for all ClearCase hosts.
PHNE_19936	10.20 (800)		
PHNE_20021	10.20	NFS kernel patch	Recommended for all ClearCase hosts.

Patch number	Release	Purpose	Notes
PHKL_9270	10.20 (700)	fix for current pathname in process/thread	*Required for all ClearCase hosts.*
PHKL_9271	10.20 (800)		
PHKL_16750	10.20 (700)	NFS hangs, NFS write gathering, buffer cache cumulative patch, VxFS cumulative patch	*Required for all ClearCase hosts.*
PHKL_16751	10.20 (800)		
PHKL_17857	10.20 (700)	fix for mount/access of disk sections	*Required for all ClearCase hosts.*
PHKL_17858	10.20 (800)		*Required for all ClearCase hosts.*
PHKL_17573	10.20 (700)	Kernel Interaction (KI) NFS performance patch	Recommended for ClearCase hosts using Glance or Measureware performance tools.
PHKL_17574	10.20 (800)		
PHKL_18748	10.20 (700)	NFS **open()** patch	Recommended for all ClearCase hosts.
PHKL_18749	10.20 (800)		
PHSS_17225	10.*x*	**dld.sl(5)** cumulative patch	*Required for all ClearCase hosts.*
PHSS_17872	10.*x*	HP aC++ run-time libraries (aCC A.01.21) (requires PHSS_17225)	*Required for all ClearCase hosts.*
Patches for HP-UX 11 (Series 700 and 800)			
PHNE_14620	11.0	RPC/XDR patch	*Required for all ClearCase hosts.*
PHKL_16074	11.0	Kernel Interaction (KI) NFS performance patch	Recommended for ClearCase hosts using Glance or Measureware performance tools.

Patch number	Release	Purpose	Notes
PHKL_16983	11.0	NFS **open()** patch	Recommended for all ClearCase hosts.
PHCO_19182	11.0	10.20 libc compatibility patch	Recommended for all ClearCase hosts.
PHSS_16587	11.0	HP aC++ run-time libraries (aCC A.03.13)	*Required for all ClearCase hosts.*
PHSS_20865	11.0	X/Motif2.1 Runtime patch	*Required for all ClearCase hosts.*
PHKL_23406	11.0	kernel thread patches	*Required for all ClearCase hosts.*
PHKL_23407	11.0		
PHKL_23408	11.0		
PHKL_23409	11.0		
PHNE_23249	11.0	ONC/NFS patch	Recommended for all ClearCase hosts.
Patches for HP-UX 11i (Series 700 and 800)			
Bundle11i	11.11 (11i version 1.0)	Required bundle of kernel header files, B.11.11.0102.n	*Required for all ClearCase hosts.*
PHKL_24253	11.11	kernel thread “nostop” patches	*Required for all ClearCase hosts.*
PHKL_24254	11.11		
PHKL_24255	11.11		
PHKL_24256	11.11		
PHKL_24256	11.11		
PHNE_23502	11.0	ONC/NFS patch	Recommended for all ClearCase hosts
Patches for IRIX			
	None required		
Patches for AIX			
IX77879	4.3.2 or later	fix crash in NFS mount path	*Required for all ClearCase hosts.*

Patch number	Release	Purpose	Notes
IX79570	4.3.2 or later	support for non-ClearCase access	*Required for all ClearCase hosts.*
IY05834	4.3.2 or later	performance fix required by NFS	*Required for all ClearCase hosts.*
IY11534	4.3.3 or later	fixes recursive **cp** on empty directories	Recommended for all ClearCase hosts.
IY21485	5.1 or later	exports kernel RPC symbols required by ClearCase	Required for all ClearCase hosts
Patches for Tru64 UNIX			
	None required		
Patches for Red Hat Linux			
	See *Red Hat Linux Software Version Numbers on page 23*		
Patches for SuSE Linux for IBM S/390 and zSeries			
	None required		
Patches for UnixWare and Open UNIX			
	None required		
Patches for Open UNIX			
	None required		
Patches for Solaris Intel			
	None required		

Note: ClearCase users running Solaris 2.6 should avoid installing NFS patches 105720-15, 105720-16, or 105720-17 (current version). ClearCase users running Solaris 7 should avoid installing kernel patches 106541-13, 106541-14, or 106541-15 (current version). For more information on this, see ClearCase Technical Bulletin #43.

Operating System Vendor Web Sites

You can find up-to-date information on operating system patches at the vendor Web sites listed in Table 7.

Table 7 Web Sites of Operating System Vendors

Vendor	URL
Sun	sunsolve.sun.com
Hewlett-Packard	us-support.external.hp.com
SGI	www.sgi.com/support/patch_intro.html
IBM [1]	techsupport.services.ibm.com/server/fixes www10.software.ibm.com/developer-works/opensource/linux390/index.shtml www.suse.com
Compaq	www.compaq.com/support/
Red Hat	www.redhat.com
Caldera	www.caldera.com

1 IBM suggests using the **fixdist(1**) utility to download patches

Layered Software Packages

In some cases, correct ClearCase processing requires installation of a layered software package. Before installing ClearCase on a host, see Table 8 to determine whether you need to install any such packages.

Table 8 Layered Software Packages Required by ClearCase

Host type	Package name	Description
Solaris SPARC	SUNWsprot	SPARCompilers, bundled tools; includes default make.rules file
	SUNWbcp	Binary compatibility
	SUNWscpr	Source compatibility, root
	SUNWscpu	Source compatibility, user
	SUNWmfrun	Motif RunTime kit to run ClearCase GUIs
HP-UX 10	Upgrade. UPG-TLINK	Compatibility links for file system
	X Window System: X11R5 (or later)	Window system

Host type	Package name	Description
HP-UX 11	Upgrade. UPG-TLINK	Compatibility links for file system
	X Window System: X11R6 (or later)	Window system
IRIX 64–bit	nfs	Network File System
	Development Environment Headers	Header files for software development. Get the name of the package for your version of IRIX 6 by using the following command: % **versions | grep -i "development environment headers"**
IRIX 32–bit		
AIX	bos.net.nfs.client	NFS
Compaq Tru64 UNIX (formerly Digital UNIX)	OSFX11	Basic X Window System environment
	OSFCLINET	Basic Networking Services
	OSFNFS	NFS Utilities
Red Hat Linux	XFree	X Window System Kit
UnixWare and Open Unix	none	
Solaris Intel	SUNWsprot	Bundled tools: Includes default make.rules file

Installation and Configuration Issues for Linux Systems

This section discusses installation and configuration issues when installing Rational ClearCase Version 2002.05.00 on Linux systems.

See *Functionality Specific to Linux* in the *Platform-Specific Guide* for related information on Linux functionality and Rational ClearCase. To locate this document, type **hyperhelp cc_main.hlp** at the command prompt. When the HyperHelp screen appears, click **Help Topics** to display a contents list that includes the *Platform-Specific Guide*.

Linux Software Version Numbers

Table 9 lists the Linux software version numbers supported by this release of Rational ClearCase.

Table 9 Linux Software Version Numbers

Component	Red Hat Linux 7.0	Red Hat Linux 7.1	Red Hat Linux 7.2	SuSE Linux 7.2
Supported Linux kernel	2.2.16–22	2.4.2–2 and 2.4.9	2.4.7 and 2.4.9	2.4.7

Additional Installation Steps

This section presents information relevant to installing Rational ClearCase Version 2002.05.00 on Red Hat Linux 7.1, Red Hat Linux 7.2, kernel 2.4.*x*, or SuSE Linux 7.2.

Follow the instructions in the *Installation Guide* to install the Version 2002.05.00 software. This section describes installation steps presented after the standard installation selections.

1 `Do you want to relink the MVFS when install is complete (yes, no, quit, help) [no]:`

Answer **no** to leave the MVFS as is. The MVFS is able to run only if the symbols used by the MVFS in the release area match the symbols in your running kernel.

Answer **yes** to relink the MVFS module using those kernel sources, and set up the relinked module for use. The following question appears.

2 `Enter path to your top-level kernel source directory.`

`Default is [/usr/src/linux]:`

If your Linux kernel sources have been installed in a different directory, specify the directory here.

For Linux 2.4.*x* kernels, the Linux kernel sources are not necessary, only the kernel header files are needed, and these only if you need to relink your MVFS module. However, the kernel headers should come from a configured and built kernel source tree reflecting the running kernel. Also, the .config file created during kernel configuration must be present in the top-level kernel source directory.

MVFS Support for Red Hat 7.0 Linux

This section presents information relevant to installing Rational ClearCase 2002.05.00 on Red Hat 7.0 Linux.

Rebuilding the Kernel

You must patch and rebuild the kernel before you can run the ClearCase MVFS (multiversion file system). Rebuilding a Linux kernel is not always straightforward because variety of hardware and the variety of configurable options are available under Linux. If you are not familiar with the process of building and rebooting the Linux kernel, we recommend that you try this before you install ClearCase. For more information on configuring and compiling the Linux kernel, see the Web site www.linuxdoc.org/HOWTO/Kernel-HOWTO.html.

Useful information is also available in the Linux release notes, which you can find in the README file in the top-level kernel source directory.

The tasks presented in the following sections must be performed before you can run the MVFS on Red Hat Linux 7.0 systems:

1. Installing the Linux Kernel Sources
2. Installing Rational ClearCase or ClearCase MultiSite
3. Additional ClearCase Installation Steps for Red Hat Linux 7.0
4. (Optional) Manually Applying the Linux Kernel Patch for Red Hat Linux 7.0
5. Configuring the Linux Kernel After Applying the Kernel Patch

Installing the Linux Kernel Sources

The installation process for version 2002.05.00 of Rational ClearCase expects that the Linux kernel sources are loaded on your system. If installed, these sources are located in /usr/src/linux. If you do not have the Linux sources installed, follow these instructions:

1. Log on as **root**.
2. Insert the Linux distribution in your CD drive. If necessary, mount the drive. For Linux kernel version 2.2.16, insert Disk 1.
3. Change to the SRPM directory on the CD (or to the directory where you downloaded the SRPMs).
4. Enter the following command:

```
# mkdir -p /usr/src/redhat/SOURCES
# rpm -ivh kernel-2.2.16.0.src.rpm
# mkdir -p /usr/src/redhat/BUILD
# rpm -bp /usr/src/redhat/SPECS/kernel-2.2.16.spec
```

Additional Installation Steps for Red Hat Linux 7.0

This section presents installation steps specific to Linux systems. These steps are presented after the standard installation selections.

1 `Do you want to patch your Linux sources (yes, no, quit, help) [yes]:`

Answer **yes** to apply the patch (recommended if the patch has never been applied). The product install process attempts to apply the kernel patch to the Linux source directory tree.

Answer **no** to skip applying the patch. Answer **no** only if this patch was previously applied.

2 `Do you want to relink the MVFS when install is complete (yes, no, quit, help) [no]:`

Answer **no** to leave the MVFS as is. The MVFS is able to run if the symbols used by the MVFS in the release area match the symbols in your running kernel. This is the normal case.

Answer yes to relink the MVFS module using those kernel sources, and set up the relinked module for use. Normally, this should not be necessary.

3 You are prompted for the following information only if you have answered yes to either or both of the questions presented in Step #1 and Step #2.

`Enter the path to your top-level kernel source directory.  Default is [/usr/src/linux]:`

If your Linux kernel sources have been installed in a different directory, specify the directory here.

Let the install process complete. The following sections outline the subsequent steps and issues associated with how you answered the patch question in step 1 above.

If You Answered yes to the Kernel Patch Question in Step #1

If the kernel patch was not initially present, it is now present, and the first part of the product installation is complete. Follow the next steps to finish the product installation.

1 Rebuild the kernel and reboot the system. For instructions, see the section *Configuring the Linux Kernel After Applying the Kernel Patch*. After the rebuild and reboot are complete, continue to Step #2.

2 Reinstall ClearCase. With the kernel rebuilt and the system rebooted, you must reinstall ClearCase to complete the product installation. When reinstalling

ClearCase, you must answer the following questions as specified below to ensure that it includes a working version of MVFS:

a `Do you want to patch your Linux sources (yes, no, quit, help) [yes]:`

Answer **no**. You patched the Linux sources before the kernel was rebuilt. It's not necessary to patch them again.

b `Do you want to relink the MVFS when install is complete (yes, no, quit, help) [no]:`

Answer **no**.

After the reinstall is complete, you are finished. Clearcase and MVFS should both be running on your system.

If the kernel patch was initially present, after you answer the standard install questions, the install process displays a message indicating that the patch cannot be installed because it is already present. You are then asked if you want to continue the ClearCase product installation. Answer **yes**.

At this point the product is installed and the previously applied kernel patch is present in the Linux source directory tree.

- If the kernel rebuild, system reboot, and reinstall of ClearCase associated with that kernel patch have also been done, installation is complete. Clearcase and MVFS should both be running on your system
- If the kernel patch has been applied but the kernel rebuild, system reboot, and reinstall of ClearCase has not been performed, you must do that now. For instructions on rebuilding and rebooting, see *Configuring the Linux Kernel After Applying the Kernel Patch*. For information on the reinstall step, see Step #2 earlier in this section.

If You Answered no to the Kernel Patch Question in Step #1

If the kernel patch was previously applied, it is now present in the source directory tree and the product is fully installed.

- If the kernel rebuild, system reboot, and reinstall of ClearCase associated with that kernel patch have also been done, installation is complete. Clearcase and MVFS should both be running on your system
- If the kernel patch has been applied but the kernel rebuild, system reboot, and reinstall of ClearCase has not been performed, you must do that now. For instructions on rebuilding and rebooting, see Configuring the Linux Kernel After Applying the Kernel Patch. For information on the reinstall step, see Step #2 earlier in this section.

If the kernel patch was not initially present, the MVFS does not load, and the product install fails. In this case you must apply the patch. For instructions, see *Manually Applying the Linux Kernel Patch*. You must then rebuild the kernel and reboot the system. For instructions, see *Configuring the Linux Kernel After Applying the Kernel Patch*.

Manually Applying the Linux Kernel Patch for Red Hat Linux

This section explains how to apply the Linux kernel patch manually. A precondition is that Rational ClearCase is installed and the kernel patch has not been applied.

Note: You do not need to follow this procedure if you chose to have the 2002.05.00 install apply the Linux kernel patch (the recommended method) as described in the section *Additional Installation Steps for Linux*.

1. Copy the following patch to /usr/src/linux (or to the top-level Linux kernel source directory that you specified in Step #3 of *Additional Installation Steps for Linux*). The patch file is linux-mvfs-4.2-patch-2.2.16, located in the directory /usr/atria/etc/conf/rhat.

   For example:

   # cp /usr/atria/etc/conf/rhat/linux-mvfs-patch-2.2.16 /usr/src/linux/.

2. Change to the /usr/src/linux directory (or to the top-level Linux kernel source directory that you specified in Step #3 of *Additional Installation Steps for Linux* for Red Hat Linux):

   # cd /usr/src/linux

3. To patch the Linux sources, run the following command:

   # patch -Np1 < linux-mvfs-4.2-patch-2.2.16

   Verify that no errors were reported.

   After you apply linux-mvfs-4.2-patch-2.2.16, you must rebuild the Linux kernel and reboot the system. (For the procedure, see the next section, *Configuring the Linux Kernel After Applying the Kernel Patch*).

Configuring the Linux Kernel After Applying the Kernel Patch

1. If you have built your own Linux kernel, your system already has a .config file. In this case, we recommend that you back up the file because the process described in this step will overwrite it.

   a. Go to the directory /usr/src/linux:

      #**cd /usr/src/linux**

   b. Create a configuration file by issuing the following commands:

      # make mrproper

 # make menuconfig

The command **make menuconfig** brings up a menu of kernel configuration options. Selected items are indicated by an asterisk or an M. Do not select 2 GB memory from the CPU-specific parameters screen. Doing so will cause **mvfs.o** to fail.

c If you do not have a configuration file on your system, select the **Load an Alternate Configuration File** menu from the **menuconfig** utility main menu. Take the default that appears.

d Return to the **Main** menu and select the **Processor type and features** menu. In the **Processor type and features** menu, select **Symmetric multiprocessing support**. This is the only supported configuration.

e Return to the **Main** menu and select the **Loadable module support** menu. On the **Loadable module support menu**, ensure that both of the following options are selected:

* **Enable loadable module support**

* **Kernel module loader**

f Return to the **Main** menu and select the **Filesystems** menu. In the **Filesystems** menu, select **Kernel automounter support** and then select the **Network File Systems** submenu. In the **Network File Systems** menu, select **NFS filesystem support** and **NFS Server support**.

g Exit the **menuconfig** utility. When prompted, enter **yes** to save the new .config file.

h Run the following command:

 # make dep

2 From your /usr/src/linux directory, create a compressed Linux kernel image. Type the following:

 # make image

Note: If you have turned on or off any of the modules in addition to the default configuration, it may be necessary to run the following commands:

 # make modules

 # make modules_install

3 The **install** command can be used to copy the new kernel and related files and back up the necessary files for recovering from a bad kernel build. Backing up these files is highly recommended. Use the following commands to copy the

rebuilt kernel files to the /boot directory, so that they can be used the next time you boot the machine.

```
# install -backup -suffix=.save System.map /boot/System.map-2.2.16
# install -backup -suffix=.save .config /boot/image.config
# install -backup -suffix=.save include/linux/autoconf.h /boot/image.autoconf.h
# install -backup -suffix=.save include/linux/version.h /boot/image.version.h
# install -backup -suffix=.save arch/s390/boot/image /boot/image
# install -backup -suffix=.save arch/s390/boot/ipldump.boot /boot/ipldump.boot
# install -backup -suffix=.save arch/s390/boot/ipleckd.boot /boot/ipleckd.boot
# install -backup -suffix=.save arch/s390/boot/iplfba.boot /boot/iplfba.boot
```

Note: In the event that you have built a kernel that does not boot, these files are crucial because they can be used to restore the previous kernel. This can be done by booting from a second disk (or the initial ramdisk) and mounting the first disk with the bad kernel. Then copy all the *.save files in the /boot directory to their original names and boot off the first disk.

4 To complete the kernel build, type the following:

Note the path /dev/dasdb is given as an example. The appropriate path depends on the path to the boot device on your system.

```
# cd /boot
```

```
# silo -d /dev/dasdb
```

5 Reboot the system:

```
# reboot
```

ClearCase and MultiSite Patches Incorporated in This Release

ClearCase Version 2002.05.00 and ClearCase MultiSite Version 2002.05.00 include all the patches listed in Table 10. If you are using a more recent patch on any of the patch streams listed, contact Rational Technical Support to see whether there is a corresponding patch for Version 2002.05.00.

Table 10 ClearCase and MultiSite Patches Incorporated into This Release

Patch stream	Last patch incorporated into this release
ClearCase V4.0	clearcase_p4.0-27 and earlier
ClearCase V4.1	clearcase _p4.1-20 and earlier
ClearCase V4.2	clearcase _p4.2-7 and earlier
MultiSite V4.0	multisite_p4.0-4 and earlier

Patch stream	Last patch incorporated into this release
MultiSite V4.1	multisite_p4.1-4 and earlier
MultiSite V4.2	multisite_p4.2-2 and earlier

In addition to the above patches, a fix for defect #CMBU00052278 is also included in this release. For more information on that defect, see the cc_issues.htm file available from the ClearCase CD and available from the *ccase-home-dir*/install directory after the product is installed.

Upgrading from a Previous Release

If you have a version of ClearCase prior to Release 4.0 installed, you cannot upgrade directly to Version 2002.05.00, but must upgrade to any one of the Release 4.*x* versions first.

To upgrade to Release 4.*x*, see the 4.*x Release Notes*.

Upgrading to Version 2002.05.00 does not require reformatting your VOBs, unless you are installing with the newer VOB format (schema 54). For more information on general VOB database structure, and for details on reformatting a VOB, see the *Administrator's Guide* for Rational ClearCase and the **reformatvob** reference page.

General Issues with Upgrading

The *Installation Guide* for the ClearCase Product Family provides information necessary to install the ClearCase family of products. Here is some general information to keep in mind about upgrading:

- Make sure that all views and VOBs are fully backed up. For information on backing up VOBs and views, see the *Administrator's Guide* for Rational ClearCase.
- You do not need to upgrade your license server or get new ClearCase licenses. Licenses work with any version of ClearCase product family software, and ClearCase Version 2002.05.00 hosts can use a ClearCase license server running a 4.*x* version of the software.
- Be sure that VOB and view servers are upgraded before you upgrade client hosts; Version 2002.05.00 clients cannot access VOBs or views on hosts that are running an earlier release of ClearCase.
- Updating your VOBs to use the latest VOB database schema (schema 54) requires that you reformat them. We recommend updating your VOB database schema only if your site clearly needs support for greater than 16 million records and VOB database file sizes greater than 2 GB.

Caution: If you use MultiSite and update one or more replicas in a VOB family to the new format, you must update all other replicas in the family before the reformatted replicas exceed the database limit of the previous schema (53). If you do not, synchronization imports will fail at any replica that has not been updated.

- Make sure the /var/adm/atria directory is backed up.
- If you have added any files to or modified any files in *ccase-home-dir* (/usr/atria, by default), move them; if you do not, they will be lost when you install.
- Check Table 6, *Operating System Patches*, to determine whether you need to install any recommended or required patches.
- You need not remove the previous version of ClearCase unless you want to change the location of your ClearCase installation directory.

  Note: At Release 4.1, installation of HP-UX 11 systems was supported from the hp10_pa release area. At Releases 4.0 and 4.2, as well as at this release, installation of HP-UX 11 systems is from the hp11_pa release area.

- Before upgrading to a new ClearCase release, you must complete all deliver operations that are in progress.

See also *Known Issues Related to Installation* on page 29.

Upgrading to the New Feature Level for UCM PVOBs

This version of ClearCase introduces a new feature level, FL3, to support some of its new functionality.

To enable Version 2002.05.00 in UCM environments, you first install Version 2002.05.00 on all systems in a specific order (for UCM, this order is different from the order required at previous releases of ClearCase and MultiSite), then raise the feature level of VOBs and PVOBs, and finally set the recommended baselines. Following is the procedure:

1. Install Version 2002.05.00 on ClearCase hosts in the following order:
   a. The license server.
   b. The registry server

c VOB servers on all replicas

d All clients (clients must be upgraded, or will be inoperable)

2 Raise all PVOBs and VOB families to FL3 see the reference page for **chflevel**.

3 Set the recommended baselines on integration streams that are in use; otherwise, existing development stream configurations may be unexpectedly changed when you perform a **rebase -recommend** operation.

For more information, see the ClearCase white paper on migrating to Version 2002.05.00 on the Rational Web site, **www.rational.com/support/products/clearcase.jsp**.

If servers are upgraded to Version 2002.05.00 before all client systems have beem upgraded, new VOBs must be created on servers that run ClearCase Release 4.*x*, because Release 4.*x* clients cannot communicate with VOBs created on systems that run the new release.

After you upgrade the feature level on your PVOBs, you must also set the recommended baselines on integration streams that are in use. If you do not, existing development stream configurations may be unexpectedly changed when you perform a **rebase -recommend** command.

For more information, see the ClearCase white paper on migrating to Version 2002.05.00 on the Rational Web site, www.rational.com/support/products/clearcase.jsp.

Evaluating This Release of ClearCase

The way in which you evaluate Version 2002.05.00 depends on which release of ClearCase you are currently running.

If you are running a 4.*x* release and you want to evaluate Version 2002.05.00, you can install this version on one or more test systems in your existing environment of servers, clients, views, and VOBs, and configure the test systems to use your 4.*x* license server.

Feature Compatibility Issues Across Releases

Even the simplest ClearCase operation invokes a communications chain that can involve several components. For example, the act of checking out a file element involves a client program (running on the developer's workstation), which acts through a particular view (located on that workstation or elsewhere) and uses a particular VOB (typically located on a dedicated VOB server host). If all the components in this operation are running the same ClearCase release, compatibility is guaranteed.

Table 11, Table 12, and Table 13 show the compatibility paths if all hosts are not running the same ClearCase release. In these tables, *client* means ClearCase client

software. In each table, a component in a row can use a component in a column if there is a **yes** at the intersection of the row and column. For example, Table 11 shows that a 4.*x* view can use a 2002.05.00 VOB or a 4.*x* VOB, but a 2002.05.00 view cannot use a 4.*x* VOB.

Table 11 Compatibility: Views with VOBs

	4.*x* VOB	**2002.05.00 VOB**
4.*x* view	yes	yes
2002.05.00 view	no	yes

Table 12 Compatibility: Clients with VOBs

	4.*x* VOB	**2002.05.00 VOB**
4.*x* client	yes	yes
2002.05.00 client	no	yes

Table 13 Compatibility: Clients with Views

	4.*x* View	**2002.05.00 View**
4.*x* client	yes	yes
2002.05.00 client	no	yes

Specifically, these tables make two points:

- ClearCase 2002.05.00 clients can use only views and VOBs that reside on ClearCase 2002.05.00 hosts.
- ClearCase 4.*x* clients can use views and VOBs that reside on 4.*x* or 2002.05.00 hosts.

In general, 4.*x* clients can access 4.*x* and 2002.05.00 servers, but 2002.05.00 clients can access only 2002.05.00 servers. A notable exception is that 2002.05.00 clients and servers will talk to 4.*x* **albd_server** s to support access to registry, license and other administrative functions.

A Version 2002.05.00 client on UNIX can access a VOB on Windows NT using a snapshot view. However, the snapshot view storage directory and the VOB storage directory must be on servers running Version 2002.05.00 or later.

Upgrading from ClearCase LT

Rational ClearCase LT can be easily upgraded to full-featured Rational ClearCase. ClearCase includes a tool that helps automate the upgrade process, though a few

manual steps may be required to upgrade certain configurations. The upgrade preserves all of your ClearCase LT VOB data.

The chapter *Upgrading ClearCase LT to ClearCase* in the *Installation Guide* for the ClearCase Product Family explains the upgrade process in detail and describes two common upgrade scenarios.

MultiSite Compatibility with ClearCase

ClearCase MultiSite is layered on ClearCase. To use MultiSite on a host running Version 2002.05.00 of ClearCase, you must be running Version 2002.05.00 of MultiSite.

MultiSite Version 2002.05.00

ClearCase MultiSite Version 2002.05.00 is fully compatible with ClearCase Version 2002.05.00 client and server hosts:

- A MultiSite 2002.05.00 replicated VOB can reside on any ClearCase 2002.05.00 server host.
- CMBU00058967

  Any ClearCase Version 2002.05.00 client program can access and modify any replicated VOB residing on a ClearCase 2002.05.00 server host. Other client-VOB access is the same as that documented in *Feature Compatibility Issues Across Releases* on page 25.
- Installing Clear Case MultiSite 2002.05.00 does not require you to reformat VOBs or views.

Compatibility Issues Across MultiSite Releases

The following sections describe compatibility restrictions and issues when different sites are running different MultiSite releases.

Replica Creation

There are compatibility restrictions on creating replicas. You *cannot* create a replica on a Release 4.*x* host from a replica-creation packet created on a Version 2002.05.00 host. If you want to create a new VOB family with replicas on Release 4.*x* and Version 2002.05.00 hosts, the VOB from which you export the replica-creation packet must be located on a host running Release 4.*x*.

Replica Synchronization

Existing replicas hosted on systems running ClearCase 2002.05.00 can synchronize with existing replicas on systems running ClearCase 4.*x*. See the information on feature levels in the *Administrator's Guide* for Rational ClearCase MultiSite.

Upgrading to New Schema Format

If you decide to update one or more replicas in a VOB family to use the latest VOB database schema format (schema 54), you do not have to update all other replicas in the VOB family at the same time. However, you must update all other replicas in the family before the reformatted replicas exceed the database limit of the previous schema (53). If you do not, synchronization imports will fail at any replica that has not been updated.

Enabling VOB Replicas for Interoperation

In ClearCase Releases 4.1 and later, VOBs are enabled for interoperation (MS-DOS text mode) by default. When you create a new VOB on a host running Release 4.1 or later, the VOB is enabled for interoperation. However, when you create a new replica, the new replica gets the same text-mode property as the original VOB.

For example, you run **mkreplica –export** on a Release 4.0 host to replicate a VOB that is not enabled for interoperation, and then run **mkreplica –import** on a Version 2002.05.00 host. The new VOB replica is not enabled for interoperation.

Note: When you replicate a VOB, the new replica has the same text-mode property as the original VOB, but changes to the text mode are not included in synchronization update packets.

ClearQuest Compatibility with ClearCase

ClearCase and MultiSite Version 2002.05.00 can be integrated with Rational ClearQuest software in two different ways:

- If you are using ClearCase with the Unified Change Management (UCM) process, a UCM-ClearQuest integration is built in to this release; you can use it with Rational ClearQuest Version 2002.05.00.
- If you are using base ClearCase (that is, not using the UCM process), you can integrate with ClearQuest 2001A.04.00 or later using the ClearCase-ClearQuest integration 1.0.

Installation and Licensing

This section contains an overview of information on installing and licensing ClearCase and MultiSite software.

Pointer to Installation and Licensing Information

For detailed information about installing and licensing ClearCase and MultiSite, see the *Installation Guide* for the ClearCase Product Family.

Known Issues Related to Installation

This section discusses restrictions or defects that involve the installation of the ClearCase product. Take into account the information in this section before or during installation to be sure that ClearCase software or particular features are installed properly.

Deinstalling ClearCase May Remove Web Interface Views

By default, views for Web interface users are created under the host data directory for ClearCase (/var/adm/atria). If ClearCase is deinstalled, the view directories are deleted, but the views remain registered. To avoid leaving entries for nonexistent views in the ClearCase registry, do one of the following:

- Remove any views created by Web interface users before you remove ClearCase from a Web server that is used to provide access to the ClearCase Web interface.
- Use the **–view_storage** option in the ccweb.conf file to designate some other location for Web interface views.

Problems with Link-Only Installations

Link-Only installations may create either of the following problems:

- Web server setup restriction

  If you set up a ClearCase Web server on a system that has ClearCase installed using the Link-Only method, you must enable **setuid** execution across an NFS network for the ClearCase Web server to function properly.

  We strongly recommend that you set up a ClearCase Web server only on a system that has ClearCase installed using either the Standard or Full installation.

- Installation appears to provide access to all software in release area

  On a host that has a Link-Only installation, you cannot tell which products have been installed by looking in *ccase-home-dir*. By definition, the Link-Only installation

model provides access to all files in the networkwide release area, even if the product to which the files belong is not installed on your host. In other words, it may appear that you can run a certain program when, in fact, the software has not been installed.

Installation of UCM Integration with ClearQuest

To use the UCM integration with Rational ClearQuest, take into account the following issues with the compatibility and version support of the following elements:

- ClearCase version (client and server)
- ClearQuest version
- UCM schema package
- ClearQuest metaschema feature level

Consider the following points:

- The feature level of the metaschema for ClearQuest 2001.03.00 database is 3. The feature level for ClearQuest 2001A.04.00 or 2002.05.00 database is 5.
- A ClearCase 2002.05.00 client requires either a ClearQuest 2001A.04.00 or a ClearQuest 2002.05.00 client, because the integration of UCM with ClearQuest uses new ClearQuest API calls.

As a rule, the UCM integration is supported on all of the platforms that are common to both CC and CQ clients. It is important to note that for any given release, ClearCase and ClearQuest may not support all of the same versions of a particular vendor's operating system. The UCM integration is therefore only supported on the set of operating system versions that are supported by both ClearCase and ClearQuest. For example, ClearQuest doesn't support 64-bit versions of Solaris and HP/UX but ClearCase does. The integration, therefore, only supports the 32-bit versions.

Table 14 shows the compatibility of different releases of ClearCase and ClearQuest, the UCM package revision number, and the ClearQuest database feature level.

Table 14 Supported Integrations Between ClearCase (Using UCM) and ClearQuest

ClearCase release	ClearQuest releases	UCM package revision numbers	ClearQuest database feature levels
Release 4.1	2000.02.10, 2001.03.00	2.0	3
Release 4.2	2001A.04.00, 2001A.04.20, 2002.05.00	2.0, 3.0	3, 5

ClearCase release	ClearQuest releases	UCM package revision numbers	ClearQuest database feature levels
Release 4.2 + patch	2001A.04.00, 2001A.04.20, 2002.05.00	2.0, 3.0, 4.0	3, 5
Version 2002.05.00 [1]	2001A.04.00, 2001A.04.20, 2002.05.00	2.0, 3.0, 4.0	3, 5

1 The UCM integration with ClearQuest is not supported for AIX in this release of ClearCase.

To upgrade to Release 4.2 from 4.1 and continue to use your integration of UCM with ClearQuest, you must perform the first two steps. The last two steps are optional.

1. Install ClearQuest.
2. Install the ClearCase client (or both ClearQuest and ClearCase simultaneously).
3. Upgrade your UCM-enabled ClearQuest schema with the new version of the UnifiedChangeManagement package.
4. Upgrade your ClearQuest user database to the new version of the schema.

Recovering from an Unsuccessful Installation

You may encounter problems running **install_release** on previously installed systems. At a certain point, **install_release** attempts to shut down the running CPF product software on the system. This is done by running the shutdown script. In Release 4.*x*, this script is *ccase-home-dir*/etc/atria_start.

There is a known problem with the shutdown script. When the installation is no longer intact, the script sometimes encounters an error and prevents **install_release** from completing the installation or deinstallation.

Workaround: Delete *ccase-home-dir*/etc/atria_start, which lets the installation proceed as if it did not need to stop a current installation.

Note: If an installation continues to fail because CPF software is running, reboot the computer.

ClearCase Client Computers Need Consistent Character Encoding

All ClearCase client computers that access a common set of VOBs and views must use a single common character encoding system. If all computers are not configured this way, ClearCase operations may fail or produce confusing or unreadable output.

For example, the Japanese SJIS and Japanese EUC encoding systems are available. They both represent Japanese characters but are incompatible. For this reason, you cannot mix SJIS and EUC in ClearCase clients.

DDTS Integration Uses Wrong Environment Variable

The DDTS trigger scripts use the CLEARCASE_PNAME environment variable, but this EV is not set. Instead, the CLEARCASE_PN EV is set to the correct value.

Workaround: Set CLEARCASE_PNAME to CLEARCASE_PN at the beginning of each trigger that uses the EV.

Installing the ClearCase Integration with Forte for Java

Root privileges are required to sucessfully install the ClearCase Integration with Forte for Java on the sun5 platform.

What's New in ClearCase 2

This chapter summarizes significant new and changed features in Version 2002.05.00 of Rational ClearCase.

Summary of Changes in This Release

This version of ClearCase introduces the following significant new and changed features:

- *New UCM Features*
- *Enhanced ClearCase Web Interface Support*
- *Enhancement to UCM ClearCase-ClearQuest Integration*
- *Enhancements to Base ClearCase-ClearQuest Integration*
- *clearmake Changes*
- *GUI Support for Date and Time Preservation*
- *Additional Support for Moving VOBS*
- *Extended VOB Support for SuSE Linux*
- *New View Database Format*
- *Changes to clearhistory and clearmrgman*
- *Changes to ClearCase Commands*
- *Changes to Documentation*

New UCM Features

This section describes the main changes to UCM in this version of ClearCase.

Development Stream Hierarchies

In the basic UCM process, the integration stream is the project's only shared work area. You may want to create additional shared work areas for developers who work

together on specific parts of the project. Now you can accomplish this by creating a hierarchy of development streams. For example, you can create a development stream and designate it as the shared work area for the developers working on a particular feature. Developers then create their own development streams and views under the feature-specific development stream. In other words, the developers join the project at the feature-specific development stream level rather than at the integration stream level. The developers deliver work to the feature-specific development stream and rebase their streams to recommended baselines in that development stream.

Interproject and Intraproject Deliver Operations

You can now deliver work from an integration stream or a development stream in one project to an integration stream or development stream in another project. In addition, you can deliver work from one development stream to another within a project. These features make it easier to manage related areas of development within a project and parallel releases of multiple projects.

Nondefault Deliver Target Policies

The default target for a deliver operation is the source stream's parent stream. You can also deliver work to nondefault target streams. Because any stream can now be the target of a deliver operation, this release adds several policies that you can set on streams to control what kind of deliver operations the target stream will accept. For example, you can set a policy to reject deliver operations that contain changes to components that are not in the target stream's configuration. You can set these policies at the project level so that the policy settings apply to all streams within the project, or you can set the policies on a per-stream basis.

Composite Baselines

A baseline selects one version of every element visible in a component. This release lets you create composite baselines. A *composite baseline* is a baseline that selects baselines from other components. By creating a composite baseline that selects baselines from every component in your project, you can use one baseline to represent the entire project.

After you create a composite baseline to represent the project, the next time you invoke the make baseline operation on the composite baseline, UCM performs the operation recursively. If a component that contributes to the composite baseline has changed since its latest baseline, UCM creates a new baseline in that component.

A composite baseline can select other composite baselines. This feature allows you to use a composite baseline to represent a system that consists of multiple projects. The system-level composite baseline can select project-level composite baselines.

Multiple-Component VOBs

You now have greater flexibility in storing components in VOBs. For example, you can now store multiple components in a VOB. Within a VOB you can make an existing directory tree into a component. The component's root directory must be the VOB's root directory or one level beneath it. To store multiple components within a VOB, each component's root directory must be one level beneath the VOB's root directory.

Enhanced GUI Support

This version of ClearCase provides enhanced support for UCM-related GUIs, as follows:

- Project Explorer supports sorting of data, both within the Detail view and in all property sheets. In any display where columns of data are displayed, users can sort a column by clicking the column header.
- If a deliver or rebase is in progress, users can now get detailed information about the status of the operation in progress from the stream property sheet's **Get Status** button. In addition, the detailed list of items to be merged in the operation provides additional options from the shortcut menu.
- Additional functionality is available from the Add and Change baselines dialog boxes.

Support for Triggers on Additional UCM Operations

This release adds support for triggers to the following UCM commands.

- **chbl**
- **chfolder**
- **chproject**
- **chstream**
- **mkcomp**
- **mkfolder**
- **mkproject**
- **rmbl**
- **rmcomp**
- **rmfolder**
- **rmproject**
- **rmstream**
- **setplevel**

Other New Features

Other new features in this product release include:

- Ability to deliver selected baselines from a stream.
- Deliver from Stream Preview option. The Deliver from Stream Preview dialog box now gives you the option to pause the merge to allow you to perform any merge-related activities. If you select this option, the merge operation stops after it identifies the versions that require merging, checks out all versions, and performs all directory merges. You can then perform any operations related to the merge. When you are finished, continue the deliver operation.

Enhanced ClearCase Web Interface Support

This version of ClearCase provides a number of enhancements to the ClearCase Web interface.

UCM Support

This version of the ClearCase Web interface supports the UCM developer role. A developer can use the Web interface to join a project, create new activities, perform work in those activities, deliver work to an integration stream, and rebase a development stream to recommended baselines.

Web-Based Diff/Merge Capability

Performing the UCM rebase or deliver operation requires the ability to merge changes in files. The ClearCase DiffMerge tool has been implemented for this purpose within the Web interface context. The DiffMerge tool is called automatically when you do a rebase or deliver operation from within the Web interface; you can also run the Merge Manager directly from the Web interface toolbar.

Improved Workspace Management for Web Views

ClearCase now provides workspace management capabilities for Web views which are similar to those for standard ClearCase snapshot view functionality on a local copy of element versions.

Improved Control Over Session Timeout Length

A new configuration variable has been added to the ccweb.conf file to control the length of time that elapses before an unattended ClearCase Web session times out. The new variable is **–session_timeout** *age_in_seconds* where the minimum value for *age_in_seconds* is 600 (10 minutes) and the default value is 14400 (4 hours).

Interop Text Mode Supported in Web View Creation

It is now possible to specify **interop text mode** as a characteristic of a ClearCase Web view during the view creation process.

Web Server Component Installation Is Now Optional

Installing the ClearCase Web server components is now optional; previously these components had been installed on all systems.

To install the Web Server components, select **ClearCase Web Interface Server** from the list of components to select for installation. The Web Interface Server components require about 3 MB of disk space.

Changes to Web Interface Documentation

The online help for the ClearCase Web interface has been updated to reflect the enhanced functionality of this feature. In addition, the chapter *Configuring a Web Server for the ClearCase Interface* in the *Administrator's Guide* for Rational ClearCase contains updated information on configuring the ClearCase Web server.

Enhancement to UCM ClearCase-ClearQuest Integration

The UCM ClearCase-ClearQuest integration has been enhanced to support relationships between a single PVOB and multiple ClearQuest user databases.

In previous versions of the software, all UCM ClearCase projects controlled by a single PVOB had to point to the same ClearQuest user database. Now different projects can point to different user databases, even if they are all controlled by a single PVOB.

Enhancements to Base ClearCase-ClearQuest Integration

This release adds a new version of the base ClearCase-ClearQuest integration, which allows you to associate versions of ClearCase elements with change requests in a ClearQuest user database.

The integration uses triggers on ClearCase commands to allow developers to associate versions with change requests. In previous releases, the integration used a Visual Basic trigger on Windows clients and a Perl trigger on UNIX clients. This release adds a new Perl library, including a trigger, that runs on Windows and UNIX. The new integration provides the following benefits:

- Support for UNIX and Windows platforms is now in a common code base.
- The integration is implemented as a set of object classes that provide modularity, extensibility, and reusability. The integration loads optional classes dynamically

depending on the client environment. For example, if ClearQuest is not installed on a client, the integration does not load classes that support the ClearQuest Perl application programming interface (API).

- Performance has been improved by eliminating unnecessary communications operations.
- Windows clients no longer need Rational ClearQuest installed to access ClearQuest user databases. Like UNIX clients, Windows clients can now use the ClearQuest Web Interface to connect to ClearQuest.
- Because the integration supports the ClearQuest Perl API, ClearCase clients on UNIX can now, like Windows clients, access Oracle user databases on ClearQuest hosts that run on UNIX. This provides enhanced support for customization by administrators, because changeable data is isolated from other layers of the interface.
- The integration provides improved security, in that Clearquest user logon information, stored in the .cqparams file, can no longer be copied as a file between users. The session user logon name is now encrypted into the file and checked when it is used to make sure that only the original user is using the file.
- ClearQuest MultiSite support is provided through optional checking of change request mastership.

Note: The new integration provides a text-based user interface for developers who use the **cleartool** command-line interface and a **clearprompt** pop-up window user interface for developers who use one of the ClearCase GUIs such as ClearCase Explorer (on Windows) or **xclearcase** (on UNIX). The new integration does not provide a GUI for developers. For Windows client hosts that have ClearQuest installed, you may want to use the existing integration that uses a Visual Basic trigger to provide a GUI for developers.

Because the new trigger package, identified as V2 in the ClearQuest Integration Configuration GUI, completely replaces the functionality provided by the existing Perl trigger, V1, on UNIX, the existing Perl trigger is obsolete and will be removed from ClearCase in a future release. Therefore, we strongly recommend that you use the V2 Perl trigger on UNIX.

Enhancements to ClearCase Integrations with Third-Party Products

This version of ClearCase includes the following new or improved integrations with third-party products:

- Forte Developer (C++ IDE) Support

Sun Forte for C++ Support

Forte Developer V6.0 now supports a ClearCase integration. This integration provides a set of commands and tools that allow a software development team to share, control, and track files created with Forte Developer.

Using this integration, you can check out, modify, and check in your files without leaving the Forte Developer IDE or starting another application. You can also use this integration to access files under version control.

You can access commands and tools supported by the integration from the Forte Developer's Tools menu.

The following ClearCase commands and tools are available:

- **Add to Source Control**
- **Check In**
- **Check Out**
- **Compare**
- **Properties**
- **Source Control History**
- **Undo Check Out**
- **Version Tree**
- **Help**
- **xclearcase**

The first nine commands and tools give you all the capabilities you generally need. However, when you need advanced capabilities, the last command on this list, **xclearcase**, gives you access to the complete set of functions of the ClearCase system.

Enhancements to Installation

This version of ClearCase includes the following enhancements to installation.

clearprompt Is Now Installed with Miminal Developer Installation

With this version of ClearCase, the **clearprompt** command is included in the minimal developer installation as well as the full-function installation.

ClearCase LT Server Install Now Allows Selection of VOB Schema 53 or 54

In this version of ClearCase LT, you have the option during installation of the ClearCase LT server to install support for either VOB schema 53 or 54.

clearmake Changes

This release provides enhancements to **clearmake** that do the following:

- Record makefile versions within configuration records
- Improve reporting

Recording makefiles Within Configuration Records

clearmake now offers support to record the versions of makefiles, and optionally to have changes to them affect reuse of derived objects. Two new makefile special targets have been added: **.MAKEFILES_IN_CONFIG_REC** and **.MAKEFILES_AFFECT_REUSE**. The **.MAKEFILES_IN_CONFIG_REC** special target causes makefiles read by a build session to be recorded in the configuration record of all derived objects built during that build session. You can use the **.MAKEFILES_AFFECT_REUSE** special target to specify changes to makefiles as criteria affecting the reuse of derived objects during builds. For more information, see the *Building Software* manual for Rational ClearCase.

Improved Reporting

When **clearmake** rebuilds a target because a build script mismatch is detected, you can now use the **–d** and **–v** options to generate a print of the actual script differences to standard output.

Improved Handling of Special Characters in Macro Names

The command **clearmake -C gnu** now allows special characters such as ";" to be used in macro names.

Improved Handling of Special Characters in File Names

The **clearmake** utility now supports the use of special characters such as "$$" (as an equivalent to a literal "$") or “\%” (as the string literal "%") in target names. This has been implemented by default for **-C gnu**, and through the **.JAVA_TGTS** special target for all other compatibility modes.

GUI Support for Date and Time Preservation

This release provides support for preserving the modification time of a file when it is added to source control, checked out, or checked in using the ClearCase GUI. The command-line interface, through the **cleartool checkout**, **checkin**, and **mkelem** subcommands, already provided this functionality with the **–ptime** option.

Additional Support for Moving VOBS

ClearCase now supports the following:

- Moving a VOB from Windows to UNIX
- Moving a VOB from UNIX to Windows

The **vob_sidwalk** and **vob_siddump** tools enable you to read and change Windows SIDs that are stored in schema 54 VOB databases. These tools are typically used for moving VOBs from one Windows NT or Windows 2000 domain to another or to an Active Directory domain, or for moving a VOB between a Windows host and a UNIX host.

For more information, see the **vob_sidwalk** reference page and the *Administrator's Guide* for Rational ClearCase.

Extended VOB Support for SuSE Linux

This release of ClearCase continues to support the creation of VOBs capable of handling record counts of greater than 16 million and file sizes of greater than 2 GB. This support is newly available for VOBs on platforms running supported versions of SuSE Linux for S/390 and the IBM zSeries.

Note that VOBs in the new format and VOBs in the previous format cannot co-exist on a single system; if you choose to have the latest VOB format on a system, all VOBs on that system must be reformatted to use the new database schema (schema version 54).

In addition, within a VOB family in a MultiSite environment, all VOB replicas must be either in the new format or in the previous format; after you reformat one replica in a family to use the new format, all the other replicas in the family must be reformatted for the new format as well. Therefore, to use the new VOB format on any replicated VOB, you must install ClearCase 2002.05.00 on the servers for all the VOB replicas in that replica's VOB family.

Note: The underlying format of a VOB does not affect users' ability to access and use elements and other ClearCase objects stored in the VOB. In other words, you do not have to install ClearCase 2002.05.00 using the new VOB format on a client host to access objects stored in a new format VOB hosted on another ClearCase system.

See the Administrator's Guide for Rational ClearCase for more information on general VOB database structure, and for details on reformatting a VOB. Also see the **reformatvob** reference page.

New View Database Format

This version of ClearCase uses a new view database format.

Existing view databases will be reformatted the first time the view is used after this version of ClearCase is installed. You may also reformat the views manually using **cleartool reformatview**. We recommend that you reformat views manually if they have large databases. Doing so minimizes the chances that clients will experience view access time-outs during the reformatting.

When a view database is reformatted, its size grows by about 50%, which increases the size of the total view storage area by 10%.

Note: After a view is reformatted to the new ClearCase format, it cannot be reformatted to an earlier format.

Changes to clearhistory and clearmrgman

clearhistory is being reimplemented to be more consistent with the Windows version; for example, it will have the **Comment**, **Labels**, and **Attributes** boxes under the event log. The only Windows feature that will not be available is the **File > Open** dialog box.

clearmrgman is also being reimplemented, based on the new deliver/rebase GUI.

Other Enhancements

The following sections discuss additional enhancements made to this version of ClearCase.

Some ClearCase Programs Access Databases as VOB Owner

Certain Clearcase applications on UNIX systems—**db_server**, **vobrpc_server**, **db_loader**, and the **db_dumper**—now access the databases as the owner of the VOB. The permissions on the database files automatically have their ownership changed to those of the **vob_owner** account.

chevent-Type Triggers Set to MODIFY_TYPE Now Fire Correctly

chevent type triggers now fire correctly when a trigger is set on MODIFY_TYPE. The **chevent** operation for element triggers is now a suboperation of the MODIFY_ELEM operation rather than the MODIFY_MD and MODIFY_DATA operations that it fell under previously.

Improved Shared Lock Memory Manager on HP-UX 11

This release supports an improved Lock Manager on HP-UX 11 platforms. The Lock Manager takes advantage of a shared memory implementation to provide greater scalability and better performance under stress. For more information, see the *Administrator's Guide* for Rational ClearCase.

New MVFS Tuning Parameter

Operations that enumerate the contents of VOB or view-private directories (such as **/bin/ls** on UNIX, **dir** on Windows in a command shell or in Windows Explorer) can be accelerated by MVFS caching of the directory contents. Directory contents at the MVFS level are handled in blocks of entries. This value determines the upper limit of how many blocks can be cached per directory. The default setting of 4 blocks is enough space for approximately 600 directory entries.

For more information, see the *Administrator's Guide* for Rational ClearCase.

clearfsimport Checks for VOB Locks During Operation

The **clearimport** command now checks for VOB locks before processing an element or version. If it detects a VOB lock, it shows a message indicating that the VOB is locked and that it will wait 60 seconds to retry. It remains in this state until either the VOB is unlocked or the user interrupts the import.

rmelem Use Now Restricted to VOB Owner or Privileged User

Beginning with this version of ClearCase, use of **rmelem** is restricted to the VOB owner or privileged user unless no versions have metadata (labels, attributes, or hyperlinks) and all branches were created by the user.

rmelem Triggers Fire When Symbolic Link Is Removed

Removing a VOB symbolic link with the **rmelem** command now causes all-element **rmelem** triggers to fire. This works only for all-element trigger types and does not work with per-instance triggers.

recoverview Now Dumps or Loads Very Large Views

The **view_server** now dumps and/or loads very large views. Previously it would fail to dump or load a view if the dump file exceeded 2 GB in size. The **view_server** now creates multiple dump files for very large views, each of which is limited to about 1 GB.

Improved Error Reporting for diffbl

Previously, **diffbl** displayed confusing error messages when it failed while comparing imported baselines, initial baselines, or baselines/streams based off imported or initial baselines, to other, similar baselines or streams. These messages described the failure as resulting from the fact that the baselines or streams involved did “not share a common ancestor (initial or imported) baseline”.

Now the error message describes the cause of the failure more accurately as resulting from the fact that the baselines/streams “are derived from different import baselines or the initial baseline”.

xcleardiff Can Now Compare Files with Names containing ’-dir’

xcleardiff can now compare files whose pathnames contain the "-dir" substring. Before, **xcleardiff** could not compare such files because the "-dir" string can be used as a keyword for a ClearCase directory comparison.

Improvements to mktrtype, mkeltype, and cptype

It is now possible to use the **cleartool mktrtype** and **cleartool cptype** commands for creating and copying trigger types that have locked obsolete types in the restriction list. It is also possible to use the **cleartool mkeltype** and **cleartool cptype** commands to create and copy element types whose super types are locked as obsolete.

Improvement to describe

Previously, the command **cleartool describe oid:***oid-number* returned an extra version ID string when the version was not selected by the view. In the current version of ClearCase, it returns exactly one version ID string.

Changes to ClearCase Commands

This section describes new commands, changes to existing commands, and commands that have been made obsolete in this release of the product.

New Commands

Table 15 lists new commands in this version of ClearCase. In addition, the **clearprompt** command is now available as part of the minimal developer installation.

Table 15 New Command in ClearCase Version 2002.05.00

Command	Description
vob_sidwalk/ **vob_siddump**	Read and change Windows SIDs that are stored in schema 54 VOB databases.

New Options and Arguments

Table 16 lists new options and arguments to commands in this version of Rational ClearCase.

Table 16 New Options and Arguments to Existing ClearCase Commands

Command	New option/argument	Use
catcr	**–follow**	Lists link targets only
	–scripts_only	Lists configuration record header and build script only
chbl	**–nrecurse**	Causes the changes specified by **–full** or **–incremental** to only apply to the composite and not its members
chmaster	**–obsolete_replica** *old-replica-selector*	Transfers mastership of all objects in the replica specified with *old-replica-selector*
chproject	**–dmodcomp** *component-selector* [,...]	Removes one or more modifiable components
	–spolicy *policy-keyword* [,...]	Allows the specified policy to be enabled or disabled by individual streams in the project

Command	New option/argument	Use
chstream	**–target** *stream-selector*	Sets the default deliver stream for an integration stream only
	–ntarget	Clears the default deliver stream setting
	–generate	Forces an update of the stream's copy of the config spec
	–policy *policy-keyword* [,...]	Enables the specified policy
	–npolicy *policy-keyword* [,...]	Disables the specified policy
	–recommended {*baseline-selector* {,...}} | **default**}	Sets the list of recommended baselines for the stream
	–nrecommended {*baseline-selector* {,...}} | **default**}	Clears the list of recommended baselines previously set in a stream

Command	New option/argument	Use
clearmrgman	**–deliver** [**–to** *target-view-tag*]	Specifies a view attached to the deliver target stream
	–deliver [**–target** *stream-selector*]	Specifies a nondefault deliver target in the same or a different project
	–rebase [**–stream** *stream-selector*]	Specifies a stream to be used as the source for the UCM rebase operation
	–directory	For each directory, considers only the directory itself, not the directory or file versions or VOB symbolic links it catalogs
	–nrecurse	For each directory version, considers the file and directory versions within it, but does not descend into its subdirectories
	–follow	Causes VOB symbolic links to be traversed
	–noautomerge	Turns off automated merging of directories
	–query	Turns off automatic merging for nontrivial merges and prompts you to proceed with every change in the from-versions
	–qall	Turns off automated merging. Prompts you to determine whether you want to proceed with each change
	–file *mrgman-file*	Loads the specified merge manager file
clearprompt	**–n**	Allows use of **\n** to represent the newline character

Command	New option/argument	Use
cleartool	**–status**	In interactive mode, returns the status of each cleartool subcommand executed.
describe	*replica-uuid-selector*	Displays the properties of a replica by specifing its OID
deliver	**–target** *stream_selector*	Specifies an alternate deliver target stream in the same or a different project
	–-baseline *baseline-selector ...*	Specifies a list of baselines to deliver
diffbl	**–baselines**	Displays differences in terms of member baselines for the named composite baselines
	–nrecurse	For composite baselines, displays differences between the named baselines themselves and not between their members
diffcr	**–follow**	Lists link targets only
lsactivity	**–contrib**	Displays contributing activities delivered in an integration activity
lsbl	**–cview**	Lists baselines in the stream attached to the current view
lsvob	**–family** *vob-family-uuid*	Lists the VOB with the specified VOB family UUID
mkbl	**–adepends_on**	Adds dependency references to baselines in its member components
	–ddepends_on	Drops dependency references to baselines in its member components
	–nact	Makes a baseline only in the specified component
	–component *component-selector*	Specifies the component whose dependency relationship you wish to change. When used with **–import**, specifies the component that contains the label type

Command	New option/argument	Use
mkcomp	**–nroot**	Specifies the nonroot directory for components which only contain baselines
mklabel	**–follow**	Label the targets of VOB symbolic links
mkproject	**–policy** *policy-keyword* [,...]	Enables the specified policy
	–npolicy *policy-keyword* [,...]	Disables the specified policy
	–spolicy *policy-keyword* [,...]	Allows the specified policy to be enabled or disabled by individual streams in the project
mkstream	**–target** *stream-selector*	Sets the default deliver target for an integration stream only
	–policy *policy-keyword* [,...]	Enables the specified policy
	–npolicy *policy-keyword* [,...]	Disables the specified policy
	–in *stream-selector*	Selects the parent stream of the stream to be created
rebase	**–stream** *stream-selector*	Specifies the stream to be rebased

Obsolete Options and Arguments

The **-title** *title* option/argument pair, previously used by the ClearCase commands **chfolder**, **chproject**, **chstream**, **mkfolder**, **mkproject**, and **mkstream**, is obsolete at this release of the product.

In addition, the **–generate** *old-object-selector* option to the **rename** command is also obsolete.

Obsolete Commands

The **clearexport_ffile** command is obsolete; use **clearfsimport** instead.

Other Changes

Redefinition of element types (**mkeltype –replace**) is no longer allowed in replicated VOBs.

Changes to Documentation

The following major changes have been made to the documentation:

- Integration of UNIX and Windows material in a single *Command Reference*.
- There is significant reorganization of material in the following Rational ClearCase manuals: *Administrator's Guide*, *Building Software*, and the *Command Reference*.

Unified *Command Reference* for UNIX and Windows

The *Command Reference* is now published in a single edition for both UNIX and Windows. At the beginning of each reference page are tables that show the platforms and ClearCase Product Family products to which the interface described applies.

Changes to Release Notes

The *READ_ME_FIRST* chapter of the *Release Notes* for Rational ClearCase and ClearCase MultiSite (this document) has been reorganized. All the material related to basic hardware and software requirements for installing and running the products has been moved to a single section titled *Hardware and Software Requirements* , to make it easier for customers to prepare for installation of new versions of the products.

Manual Reorganization

Large sections of material in the *Command Reference* have been moved to other manuals, and some material from *Building Software* has been moved to the *Command Reference*.

- Certain build-related information that was formerly published in *Building Software* is now published in the following reference pages:
  - **clearmake.options**
  - **makefile_aix**
  - **makefile_ccase**
  - **makefile_gnu**
  - **makefile_pmake**
  - **makefile_smake**
  - **makefile_sun**
- Some reference pages that do not describe any user interface—but rather ClearCase internals or concepts—have been removed from the *Command Reference* and the information has been incorporated into other titles.

  In particular, information from the following obsolete reference pages is now published in the *Administrator's Guide* for Rational ClearCase:

- **abe**
- **admin_server**
- **albd_server**
- **db_server**
- **db_dumper/db_loader**
- **errorlogs_ccase**
- **license.db**
- **lockmgr**
- **registry_ccase**
- **type_object**
- **view**
- **view_server**
- **vob**
- **vob_server**
- **vobrpc_server**

- Information from the following obsolete reference pages is now published in *Building Software*:
  - **bldhost**
  - **bldserver.control**
  - **config_record**
  - **derived_object**
- A new reference page, **intro**, provides a broad orientation by organizing all ClearCase Product Family commands into various lists.

Changes to the *Command Reference*

In previous releases, restrictions for commands were in a section called *PERMISSIONS AND LOCKS*. In this release, the section is named *RESTRICTIONS*. The section that was previously named *Permissions Checking* is now called *Identities*. There is a new section named *Mastership*, which describes any restrictions applied when the command is run in a replicated VOB.

The **msdostext_mode** reference page now describes the options **–r** and **–f**. The **–r** option resets the line counters for elements of type **text_file** that have been changed to a binary type, and the **–f** option forces a recalculation of the line count of all VOB objects of type **text_file**.

What's New in MultiSite 3

This chapter summarizes new and changed features in this release of Rational ClearCase MultiSite.

For more information about the commands described in this chapter, see the reference pages in the *Administrator's Guide* for Rational ClearCase MultiSite. For information about the feature level requirements for using these features, see *PVOB Feature Level Requirements* in Chapter 4.

Requests for Mastership of Branch Types Now Supported

In this release, the **reqmaster** command supports requests for mastership of branch types. For more information, see the **reqmaster** reference page, the MultiSite online help, and the *Implementing Requests for Mastership* chapter in the *Administrator's Guide* for Rational ClearCase MultiSite.

New Tool to Check Epoch Numbers

The **epoch_watchdog** script checks whether a VOB replica's epoch numbers have rolled back without a **restorereplica** command being run. This script is intended to be run regularly by the ClearCase scheduler. For more information, see the **epoch_watchdog** reference page in the *Administrator's Guide* for Rational ClearCase MultiSite.

MultiSite installation does not create a task or job for the script. For information on setting up a scheduled job to run **epoch_watchdog**, see the **scheduler** reference page in Command Reference and the **scheduler** information in the *Administrator's Guide* for Rational ClearCase.

Note: A previous version of this script was shipped as part of a patch. The Version 2002.05.00 script no longer supports the **-notify** option. To set up notification, use the notification option in the ClearCase scheduler.

New Object Selector for describe Command

The **describe** command now accepts a *replica-uuid-selector* argument, which you can use to display the properties of a replica by specifing its UUID. Specify *replica-uuid-selector* in the following form:

oid:*replica-uuid***@replicauuid:***replica-uuid*

The replica you specify must be at your current site. If the replica is located at a remote site, the command does not return any output.

The description of this object selector in the **describe** reference page incorrectly uses *replica-oid*; it should use *replica-uuid*.

New Option for lsvob Command

The **lsvob** command has a new option, **–family** *vob-family-uuid*. This option prints information about the VOB with the specified VOB family UUID.

Changes to Commands

Table 17 lists new options and arguments in this release. For more information, see the reference page for the command.

Table 17 New Options and Arguments in MultiSite Version 2002.05.00

Command	New option or argument	Use
chmaster	**–stream** [**–override**]	Changes mastership of a UCM stream and its associated objects.
chreplica	**–isconnected** **–nconnected**	Indicates whether a sibling replica has IP connectivity to the local replica.
describe	*replica-uuid-selector*	Describes a replica when you specify the replica's UUID.
lsvob (**cleartool** command)	**–family** *vob-family-uuid*	Lists the VOB with the specified VOB family UUID.
multitool	**–status**	Returns status of multitool subcommands when you enter them in multitool interactive mode.
reqmaster	*branch-type-selector*	Requests mastership of a branch type.

Changes to Command Syntax

chmaster

The **–force** option has been changed to **–obsolete_replica**.

mkreplica

The **–vob** option for **mkreplica –export** is now obsolete. This option was replaced by the *replica-selector* argument in Release 3.0.

reqmaster

The **–instances** option is now optional.

restorereplica

The **–completed** option has been changed to **–override**.

Changes to Command Output

The following sections describe the changes to command output in this release.

describe

The output for **describe replica:** includes the connectivity property.

multitool

The output for **–version** and **–VerAll** displays the version string in a different format. The new format uses a version string like the following:

```
2002.05.00
```

restorereplica

Additional warning text has been added to the output from **restorereplica –override**.

Changes to MultiSite Documentation

The MultiSite permuted index (*ccase-home-dir*/doc/man/ms_permuted_index) is no longer shipped with MultiSite.

In the MultiSite reference pages, the section named *Permissions Checking* is now named *Identities*.

The following chapters contain significant new information:

- The chapter *Introduction to MultiSite* contains a summary of mastership restrictions for ClearCase operations.
- The chapter *Planning a MultiSite Implementation* contains information about different kinds of synchronization patterns.
- The chapter *Synchronizing Replicas* contains information about synchronizing more efficiently by using the **chepoch –actual** command.

Restrictions and Guidelines for Using ClearCase

4

This chapter provides restrictions on and guidelines for using Rational ClearCase Version 2002.05.00 software that are considered noteworthy. These are not considered defects because the behavior reported is not expected to change in a future release of the product.

Guidelines for Using UCM

The following sections provide guidelines for using UCM.

PVOB Feature Level Requirements

This version of ClearCase introduces a new feature level, Feature Level 3 (FL3). To support all of the new UCM functionality provided with the new release, a PVOB must be upgraded to the new feature level. Until a 2002.05.00 PVOB has been upgraded to FL3, it will support ClearCase Release 4.*x* clients as well as Version 2002.05.00 clients, but without providing support for all the new UCM functionality delivered with the new release.

Specifically, the following new features are not supported, even on 2002.05.00 clients accessing 2002.05.00 servers, until the feature level of the associated PVOB has been raised to FL3:

- Creation of baseline dependencies (composite baselines)
- Creation of components without root directories
- Using composite baselines to configure a stream
- Creation of sub-VOB components
- Creation of nested streams
- Support for relationships between a single PVOB and multiple ClearQuest user databases

Installing this software on a PVOB server that is running a previous release of ClearCase does not automatically change the PVOB's feature level; you must raise the feature level manually. Before raising the feature level, all ClearCase clients accessing

that PVOB must be upgraded to Version 2002.05.00. ClearCase UCM operations will fail on clients that run previous versions of ClearCase if they try to access a PVOB whose feature level has been upgraded to FL3.

When Setting Up a Project, Make Components Read-Only Initially

This release of ClearCase supports the ability to change a stream's configuration from one using a modifiable component to one using a nonmodifiable one. However, we generally recommend that components initially be specified to be nonmodifiable when creating a new project. After verifying that the project builds and tests correctly, update the project policies to allow modifications to any or all components.

Using UCM in a MultiSite Environment

When you join a project in which the integration stream is not mastered by your current replica, you can create a development stream and view, but not an integration view. The Join Project Wizard displays a message that you will not be able to create an integration view; but when you click **Finish**, the wizard attempts to create the integration view and fails. If creation of the development view and stream succeeded, you can ignore the error.

Notes on Using the UCM-ClearQuest Integration

The UCM process in ClearCase is enhanced for sites that have installed Rational ClearQuest by a very tight integration between the activity management provided by UCM and the change request management provided by ClearQuest. Use the following guidelines with the UCM-ClearQuest integration.

Transitioning an Activity Enabled for ClearQuest After Delivery

If the **Do ClearQuest action after delivery** policy is enabled on a UCM project, delivery of a UCM activity enabled for ClearQuest using the command-line interface (CLI) may result in an attempt to transition the activity to a Complete state type.

If the activity record has a field that must be filled in before it can transition to the Complete state, the program displays an error. An example is the Defect record type in the default UnifiedChangeManagement schema, whose Resolution field must be nonempty before it can be resolved.

Workaround: Modify the UCU_CQActAfterDeliver global script to include code similar to that below, which fills in the Resolution field when the activity is delivered.

```
REM Add complete resolution code
REM Defect record type requires Resolution field to be non-empty
'Get hook's session context
Set Session = GetSession()
'Get the entity
```

```
Set entity = Session.GetEntity(entity_type,entity_id)
REM If record type is "Defect"
... If(entity.GetEntityDefName = "Defect") Then
REM If Resolution field is empty
... If(entity.GetFieldValue("Resolution").GetValue = "") Then
REM Fill in required field
    session.EditEntity entity, "modify"
    Call entity.SetFieldValue("Resolution", "Fixed")
    msg = entity.Validate
REM Remember to do some action if validate fails
    entity.Commit
    End If End If
```

For information on editing entities, see the ClearQuest API documentation.

Schema Requires Submitted State

If you are applying the UCM package to a custom ClearQuest schema (as opposed to using the out-of-the-box Unified Change Management schema), be aware that this package depends on the existence of a state whose name is Submitted. If your custom schema does not include a Submitted state, you can apply the package to your schema by using one of the following methods:

- Before applying the package, temporarily rename the state that is the target of the Submit action to Submitted. After applying the UCM package, you may rename it to its original name.
- Create a dummy state called Submitted, and assign its state type to Complete. If you do this, you must also create a dummy action whose target is the Submitted state. After applying the UCM package, you may delete the dummy state and action.

Changes to UCM CustomQuery1 Do Not Appear in Dialog Box

When using the UCM-ClearQuest integration, the list of records displayed in the list on the Add To Source, Check Out, and Check In dialog boxes is generated by running the UCMCustomQuery1 query, which can be customized. (To see the effect of your changes, you must click **File > Save** to save the query edits.)

However, if you copied the Public Queries UCMCustomQuery1 query to your **Personal Queries** folder and edited it there, the changes are not immediately visible. To see your changes, you must stop the integration server process.

To do so on your UNIX clients, type **cqintsvr stop** on the command line.

Cannot Import UCM-Enabled Records from ClearQuest Database

In general, you cannot import UCM-enabled records from a ClearQuest database; ClearCase cannot guarantee that UCM information that references an arbitrary ClearQuest database is correct. However, this restriction does not prevent data recovery in the event of a data loss. Records may be successfully imported into a ClearQuest database if all of the following conditions are true:

- The records have been backed up from that database.
- The name of the database has not changed.
- The ClearCase UCM information in the record is still valid.

Cannot Delete a Project Record in ClearQuest

If you are working with a UCM project that is linked to a ClearQuest user database and attempt to delete the project record, you get a run-time error. You cannot delete the record or undo the CommitAction hook. The workaround is to use the **squid_patch** utility to force the **ucm_vob_object** field of the orphaned project to 0.

Availability of Check Mastership Policy

The ClearQuest page of the UCM project Properties Browser has a check box for the policy **Check mastership before deliver**. This is supported with the UCM 3.0 and UCM 4.0 package revisions. If you are using the 2.0 package revision, the check box is unavailable.

Changing a Project Name Does Not Automatically Update ClearQuest

If information in ClearQuest records is changed from a ClearCase application, such as **cleartool** or the UCM Project Explorer, the ClearQuest display may not always reflect the actual contents of the database. To refresh the display, close and reopen the database from the **File** menu.

When Running Integration, Certain Operations Do Not Require ClearCase Installed

The following ClearQuest operations do not require ClearCase to be installed on the user's system when working with the ClearCase-ClearQuest integration:

- Submitting new CQ records (Defect, BaseCMActivity, or UCM_Project).
- Modifying an activity record if its headline field has not been changed.
- Modifying a UCM_Project record if its name field has not been changed.

Rebasing a Stream

A stream can be rebased to a baseline that meets the following criteria:

- The baseline is not from the stream that is being rebased.
- The baseline is labeled. Baselines created by deliver operations are not labeled by default. For information about how to change a baseline's labeling status, see the **chbl** reference page.

Additional rules apply to integration streams and development streams in selecting a baseline:

- An integration stream can be rebased only to a baseline created in another project or to an imported or initial baseline of that project.
- A development stream can be rebased to a baseline that meets one of the following criteria:
  - The baseline was created in its parent stream.
  - The baseline is in its parent stream's foundation.
  - The baseline was created in a stream other than its parent stream and is contained in its parent stream. A baseline is contained in another baseline if all changes in the first baseline are included in the second baseline.

Rebase is typically used to advance a stream's configuration, that is, to replace its current foundation baselines with more recent ones. However, under certain conditions, rebase can be used to revert a baseline, and to add or drop a component in a stream's configuration. It can also switch to a baseline that is neither an ancestor nor a descendant of the current foundation. The rules explained above are general rules for all rebase operations. You need to satisfy only the general rules when adding a component to a stream. When you advance, revert, drop, or switch a baseline, you need to satisfy the general rules and some additional ones.

- To advance a stream's configuration, the new baseline must contain the current foundation baseline.
- To revert or drop a baseline for a component in a stream, one of the following conditions must be met:
  - The component is nonmodifiable.
  - The component is modifiable but has not been modified in the stream, and the component is not in the configuration of any child streams.
- To switch to a baseline that is neither an ancestor nor a descendant of the current foundation, one of the following conditions must be met:

- The component is nonmodifiable.
- The component is modifiable but has not been modified in the stream, and the component is not in the configuration of any child streams.
- The component has been modified but the new baseline contains the current foundation baseline, and the component is not in the configuration of any child streams.

These rules ensure that any changes made in a stream are not lost when the configuration changes.

Clear Recommended Baseline Setting if Baseline Is Removed

If a baseline is recommended for a stream, and then that baseline is removed, clear the recommended baseline setting in the stream by typing the command **chstream –nrecommended**. Then you can set new recommended baselines by using the command **chstream –recommended**.

Delivering Changes to a Read-Only Component

The deliver operation cannot allow changes to a read-only component. This situation can occur if someone changes the component modifiability in your project. The actions you take depend on whether you are doing an intraproject or an interproject deliver.

For an Intraproject Deliver

If you are performing an intraproject deliver for a component that was previously modifiable, you receive a warning message. Decide what can be delivered from your stream. If the changes in the other components are independent of the changes in the read-only component, move the versions from the read-only component into a new activity. Deliver all activities in your stream except the new one.

If any changes in the other components depend on changes to the read-only component, decide whether those versions can be separated into a new activity. This may involve not delivering a subset of activities in your development stream.

If there are dependencies among the versions, your stream may no longer be deliverable to its default target. Determine whether there is a project to which you can deliver the changes. The project integrator may have to create a new development stream in this project and use **findmerge** (**findmerge -insert**) to selectively merge the changes from the versions into the new stream. Deliver cannot be used.

As a last resort for an intraproject deliver, you can remove all the versions (**rmver**) that should not have been made. Also, remove all changes dependent on that component. You must use **rmver -xhlink** to remove the versions from the change set. You may need

to manually recode some changes to remove the dependence on the changes to the read-only component.

For an Interproject Deliver

If you are performing an interproject deliver, you can also receive a warning message. The project from which you are delivering and the target project can have differences in component modifiability at any time. You have the following choices:

- Set the policies on the target stream and target project so that deliver can ignore the changes in both the read-only component and in other components that are dependent on the changes to the read-only component.
- Isolate the changes in the read-only component and changes in other components that are dependent on the changes to the read-only component. Deliver only the activities that contain changes to modifiable components.

Recommending a Baseline

You can recommend a baseline for a stream if the baseline is from the stream or the stream's foundation.

For a baseline not from the stream or the stream's foundation, the following rules apply:

- The baseline must be from the same project as the stream.
- The baseline must be contained in the stream, which means the baseline has been delivered to the stream, or the stream has rebased to the baseline or one of its descendents.
- The baseline must contain the current recommended baseline, which means it must be a descendent of the current recommended baseline.

You are not required to recommend a baseline for every component in the stream's configuration.

You can clear the list of recommended baselines. Note that doing this step alone will cause problems when existing development streams rebase to the recommended baselines. The rebase operation will attempt to drop all baselines in the development streams' configuration. This operation will probably fail or produce errors and is, therefore, not desirable.

You can choose to reset the recommended baselines to baselines from the stream or the stream's foundation with or without clearing the recommended list. This allows the stream to return to a known correct state after being changed inadvertently to a bad list.

Delivering Selected Activities to a Nondefault Target

Delivering selected activities to a nondefault target is subject to the following restrictions:

- If the full set of activities in the stream violates one of the policy settings, you will not be allowed to proceed with the selected activity delivery, even if the selected activities would not violate the policies.
- If the full set of activities in the stream contains changes from a foundation baseline, you will not be allowed to deliver selected activities from this stream, regardless of the deliver policy settings.
- If the set of activities you want to deliver contain versions in components that are not visible in the target stream or are not modifiable by the target stream, you will not be allowed to deliver the set of activities. Delivering an activity requires that you deliver all versions in all components in the change set. You can move the versions of the missing or nonmodifiable components into another activity.

Remote Deliver May Fail if Remote Site Has Not Synchronized

It is possible for a remote deliver to include changes to a component when the component is nonmodifiable in the project. This only happens when the remote site has not synchronized with the local site and does not know that the component has been made nonmodifiable. When the integrator attempts to resume the remote deliver, a check is made to ensure that no versions in nonmodifiable components will be changed. If there are such versions in the deliver, the operation fails and the user has to cancel the deliver operation.

Notes on Using the Base ClearCase-ClearQuest Integration

This section provides guidelines for using base ClearCase and ClearQuest together.

Support Policy on Modifying Perl Trigger Source Code

In this release, the integration includes a new trigger, which runs on Windows and UNIX platforms. The release includes the source code, in the form of Perl scripts, that the trigger uses. The Perl scripts include extensive comments that describe the purpose of their classes. For additional source code documentation, including an architectural overview and formatted class documentation, contact Rational Support. However, Rational Support cannot and will not support changes that you make to this source code.

Guidelines on Using the ClearCase Web Interface

The following restrictions and guidelines apply to using the ClearCase Web Interface.

Restrictions on the Web Interface in a UCM Environment

If you are using the Web interface in a UCM environment, you cannot use the Web interface to work effectively in projects enabled for ClearQuest. You can view such projects, but you cannot perform any integration operations through the Web interface; also, you cannot use the interface as a suitable client in a UCM project enabled for ClearQuest.

Interactive Triggers Fail When Accessed Through Web Interface

The ClearCase Web interface supports noninteractive triggers. Interactive triggers, such as those that attempt to read input or create a window, fail.

If a trigger attempts to read input using **clearprompt**, the ClearCase Web interface prints this error:

```
clearprompt is not supported in the Web interface
```

If a trigger attempts to read directly from standard input, it receives an error, because standard input does not specify a valid file descriptor.

In addition, any trigger failure in the Web interface context displays this error message:

```
Interactive triggers are not supported in the Web interface.  If the
trigger was interactive, it may have failed for that reason.
```

Trigger script writers can detect whether a trigger is running in the Web interface context by checking for the environment variable ATRIA_WEB_GUI. It is set to **1** if you are running in the Web interface context.

Note that the base ClearCase-ClearQuest integration is dependent on the operation of interactive triggers; for this reason, the ClearCase Web interface is not a viable interface for using that integration.

Host Name Resolution Must Be Enabled on Web Interface Clients

The Java program used in the Web interface attempts to connect to the Web server to transfer files. Web browsers only allow Java programs to open connections to the server from which the programs were downloaded.

To enforce this rule, the Web browser on the Web interface client must be able to resolve the Web server's host name to an IP address. If you use a host name in a URL that cannot be resolved by the client host, the Java program cannot connect to the

server. In this case, Web-interface file-transfer operations such as checkout, checkin, and download fail.

If the Web server is being accessed through a firewall by means of a proxy server, the proxy server being used must support DNS lookup outside the firewall.

ClearCase Web Interface Problem in Overriding Primary Group

When the ClearCase Web server on Windows logs on to a client, it sets the primary group to the designated primary group in the client user's domain account. In Release 4.0, you could not override this group setting. As a result, sites that use domain mapping to allow user accounts in multiple domains to share VOBs could not access those VOBs through the ClearCase Web interface.

Workaround: Specify a configuration variable in the ccweb.conf file, and add a value to the registry that enables domain mapping.

Adding the Variable to the ccweb.conf file

To enable a single Web server to support one primary group override, add the **–primary_group** variable with a *groupname* value to the ccweb.conf file. The allowable values for *groupname* are the same as for the CLEARCASE_PRIMARY_GROUP environment variable. The ccweb.conf file must be located in /var/adm/atria/config. If you need more than one primary group override, configure additional Web servers.

Setting the Registry

Typically, when domain mapping is used to allow users from multiple domains to access the same VOB, each user must create the DomainMappingEnabled value (set to **1**) in the HKEY_CURRENT_USER\Software\Atria\ClearCase\CurrentVersion registry key.

To enable domain mapping for a Web server, create the DomainMappingEnabled value in the HKEY_LOCAL_MACHINES\Software\Atria\ClearCase\CurrentVersion key on the Web server machine. The value must be of type DWORD and set to **1**.

If you log on directly to the computer instead of logging on through the Web interface, user values for DomainMappingEnabled override the machine value.

Netscape MOZILLA_HOME Environment Variable Must Be Set

When you use the ClearCase Web interface on a Netscape browser, the MOZILLA_HOME environment variable must be set to the Netscape Communicator installation directory. Otherwise, messages similar to the following may be displayed when you try to check out or download files.

```
Netscape:Error
Java reported the following error on startup:
```

```
java.lang.SecurityException: system classes were not signed.
Netscape: Error
# Error: Issuer certificate is invalid. (-8156)
# jar file:   ./java/classes/java40.jar
# path:       ./java/classes/java40.jar
```

We recommend that you check the Netscape Web site, www.netscape.com, for more information on general Netscape requirements.

Problems with Toolbar Menus When Using Netscape

Toolbar popup menus don't close properly when running the Web interface using Netscape Navigator. Rather than closing automatically when the pointer is moved out of the menu location, they close only when you reselect the menu button.

Some Fonts in Netscape on UNIX Are Difficult to Read

The fonts used for ClearCase Web interface pages in UNIX versions of Netscape Navigator can be hard to read. Users can work around this by setting font preferences in Navigator:

1. Click **Edit > Preference > Fonts**.
2. Set variable width font to **Helvetica (Adobe)**, size **12**
3. Set fixed width font to; size **Clean (Schumacher)** size **12**
4. Select **Use my default fonts, overriding document-specified fonts**

Web Views Can Only Be Accessed Using the Web Interface

Web views can only be accessed from the Web interface; they cannot be used with native ClearCase interfaces (for example ClearCase Explorer or **cleartool**). Various native GUIs may allow selection of a Web view (for example as a deliver target), but any attempt to access a Web view using a native ClearCase interfaces will result in a warning or error message.

Preparing Old Web Views to Run with ClearCase 2002.05.00

Rational ClearCase Version 2002.05.00 introduces a new ClearCase Web interface. This interface is not compatible with Web views created by previous ClearCase Web interface clients. If you want to reuse existing Web views, we recommend that you clean them up before you upgrade the ClearCase Web server host to ClearCase 5.0.

Use the following procedure:

1. Check in all checked-out files and directories, or cancel the checkouts.
2. Make a note of the files and directories you have loaded into the view. You can use this information to configure the view to load these objects after the Web server host has been upgraded.
3. Unless the view contains important view-private files or directories (or hijacked files that you cannot convert to checkouts and then check in), delete all files and directories under the Web view root directory, but not the root directory itself.

Guidelines on Using the XML Diff Merge Tool

The tool presents some problems with scrolling:

- Windows restricts the height of a window to 32,767 pixels. This may not be enough to display the contents of large XML files. If this maximum size is exceeded, XML Diff Merge compensates for this restriction by reporting the number of lines that are not visible. This line count is displayed in the title bar of any affected tree view pane. The size (height) of the tree control window may be reduced by collapsing tree nodes. When nodes are collapsed or expanded, the count of lines not visible is updated. When the entire file is visible, the title bar indicator is removed.

  The collapse branch, collapse level and collapse attributes operations can be used to collapse many nodes in the tree at once. For navigating differences in an especially large file, we recommend that you collapse the tree entirely by selecting **collapse branch** on the root element, and then use the difference navigation buttons to expose the individual differences.

- If a tree control is scrolled horizontally, and then the control is widened such that the horizontal scroll bar is removed (the control is now wide enough to display the entire horizontal contents), the tree remains scrolled horizontally. Its scroll position should be pulled back to the left (zero).

  Workaround: Scroll the control to the left (zero) before resizing it.

- When an attribute name node is collapsed, it also displays the attribute value in the form *'name = "value"'*. The length of this summary text should be measured when computing horizontal scroll extents. Currently, *name* and *value* are measured separately, and this may cause the horizontal scroll extent to be too small if the *'name = "value"'* line is the longest line.

  Workaround: The right scrollbar button always scrolls, so any horizontal extent can be made visible.

- When the display is horizontally scrolled, the background rectangle of some attribute name nodes may not be computed correctly, causing a certain amount

of the default selection rectangle to peek through. This default rectangle will be colored in the user's default selection background color.

Workaround: Make the tree control wider, instead of using horizontal scrolling. The background rectangle will be displayed correctly.

Problems Using Netscape 4 to Compare HTML Files

A bug in some versions of Netscape Navigator 4 may cause problems when using Diff Merge to compare HTML files.

Under some circumstances, Netscape opens a mail window, instead of a browser window, when you try to render HTML files for comparison using Diff Merge. This can happen when you have both a mail window and a browser window minimized on the desktop. When you are comparing two HTML files and click **Render HTML**, the Netscape browser opens correctly. If you minimize the browser window and select the browser or another file to render, the mail window may open instead.

A different problem may occur if you close both the browser and mail windows and leave the Message Center open on the desktop. (The Message Center is a toolbar that can start, among other things, the browser and mailbox windows.) When you click **Render HTML**, Netscape attempts to open a new instance of Netscape rather than use the one that is running. As a result, you see multiple dialog boxes (some unreadable) from **xcompare** and a message from Netscape that it has found a lock file.

Guidelines on Using UNIX Snapshot Views

The following sections describe restrictions when using ClearCase snapshot views on UNIX platforms.

Version Tree Browser Opens a Temporary File

Using the Version Tree Browser to open a file from within a snapshot view on a UNIX system creates a temporary file that contains the text for that version of the element. Although the name assigned to the temporary file is not the version-extended pathname of the element, it provides all the information contained within that version-extended pathname, including the version number and branch structure of the selected element version. For example, the temporary file name for an element foo.c@@/main/11 would be *unique_id*_foo.c_main_11.

The temporary file is removed when the editor exits.

Version Tree Browser Displays Error on Attempt to Access Eclipsed Element

The Version Tree Browser now displays an error message if you try to access a checked-out version that is eclipsed. Previously, accessing the checked-out version would appear to work but the version actually accessed was the version visible in the view (that is, the eclipsing version) instead of the checked-out version. The error message now includes the following text with the pathname of the checked-out version:

`Cannot_generate_name_for_checkout_in_view:<`*`view_tag`*`>`

Problems When Administrative VOBs Are Unavailable

An administrative VOB is used by one or more other VOBs as a central repository of global type objects. For a description of this feature, see the *Administrator's Guide* for Rational ClearCase.

ClearCase users may see errors when the administrative VOB is unavailable. Following are examples of situations when this may happen:

- A user attempts to attach a version label, using a label type that was previously created automatically, as a local copy of a global label type. The ClearCase **mklabel** command tries to contact the administrative VOB that contains the global label type. If that administrative VOB is unavailable, the **mklabel** command fails.
- A VOB backup script attempts to lock the entire VOB object of /vobs/proj before copying data to tape. For each administrative VOB used by /vobs/proj, the ClearCase **lock** command tries to contact the administrative VOB. If any administrative VOB is unavailable, the **lock** command fails, which causes the backup script to fail.

To disable the above checking for a particular ClearCase command (for example, to keep working while an administrative VOB is offline):

1. Become the **root** user.
2. Set the environment variable CG_PROCFLAGS to the value **no_process**.
3. Execute the command.

Restrictions on Use of VOB Schema 54

There are a number of restrictions on the use of the larger VOBs created using the extended VOB functionality (VOB schema 54):

- **reformatvob –rm** may not completely remove an old VOB database directory during the load phase of the reformat operation. If the reformat cannot be

completed because there is not enough disk space on the host, remove the old VOB database directory manually. This directory has a name of the form *VOB-storage-directory*/db.reformat. After you remove this directory, run **reformatvob –load**.

- **reformatvob** uses the **space** command to calculate the amount of space needed for a reformatting operation. This fails for large database files, although the failure does not cause the reformat itself to fail.
- The **space** command cannot successfully run the **stat()** routine on large database files. As a result, the **cleartool space –vob –generate** command can fail. This, in turn, can cause the **Standard ClearCase Daily Tasks** task, supported as part of new administration functionality in Release 4.0, to fail. If you have a VOB with large database files, the **space** command fails nightly on scheduled jobs.

  To avoid this problem, edit the scheduled job list so that it runs only on VOBs that do not have large database files.

If TZ Variable Is Set, ClearCase Uses It

If the TZ environment variable is set to a value different from the time maintained by the operating system, ClearCase uses the TZ time rather than the system time. In this case, file creation and change dates can be in error, and config specs may not work as expected.

Change to Behavior of Keep checked out Check Box

Prior to ClearCase Release 4.2, if you selected this check box, the view-private file that you added to source control would remain checked out. This behavior is consistent with that of the **cleartool mkelem** command. As a result, you could lose the contents of this file before it was truly part of the VOB. This was most likely to happen if you canceled the checkout.

In the current version of ClearCase, the file is checked in and checked out. You can continue working on the file, but its contents at element-creation time are preserved, even if you cancel the checkout.

Verbose Mode Slows xclearcase Performance

If you want **xclearcase** to display the following annotations, select **display version** in the browser preferences dialog box.

- `checked out but eclipsed`
- `eclipsed`

- `eclipsed by checkout`
- `checked out but removed`
- `error on reference`
- `view vob hard link`
- `no config record`
- `disputed checkout`

Note: Selecting **display version** slows **xclearcase** performance, especially if **xclearcase** is working with larger directories.

Problem Using dtpad Editor on Systems Running CDE

The **dtpad** editor that is part of the Common Desktop Environment (CDE) is implemented as a client/server application. By default, one **dtpad** server process is spawned for each **dtsession**, and all subsequent **dtpad** invocations run on clients that connect to this server. The server process, however, has no ClearCase view context, and thus cannot process VOB files properly.

Workaround: There are two possible workarounds for this problem:

- Invoke **dtpad** with the **–standalone** option. This forces the current invocation of the editor to run independently of the server process, and as such, it can run and retain the current view context.
- Before editing, start the **dtpad –server** process manually in a process set to a view. Subsequent invocations of **dtpad** then connect to this server. To edit files from a different view, stop and restart the server.

xclearcase Reuses Old Comments During Checkin

The checkin comment is taken from the comment text box. If the comment text box is blank, the new version is checked in with the comment string "" (empty string).

DDTS Integration Uses Wrong Environment Variable

The DDTS trigger scripts use the CLEARCASE_PNAME environment variable, but this environment variable is not set. Instead, the CLEARCASE_PN environment variable is set to the correct value.

The workaround is to set CLEARCASE_PNAME to CLEARCASE_PN at the beginning of each trigger that uses the environment variable.

Documentation Issues

This section presents late changes to documentation and describes errors or information missing from the documentation delivered with ClearCase software.

Problem with Reference Pages

The following problems relevant to ClearCase exist in the *Command Reference*.

config_ccase

The **config_ccase** reference page on UNIX systems does not mention the file /var/adm/atria/config/admin.conf, which allows or disallows remote administration of the host. Also, this reference page says that anyone can edit files in the ../config directory. That may not be true for all files there, including admin.conf. You must be **root** to edit admin.conf.

mount

The **mount** reference page should contain a section on *AUTOMATIC VOB DEACTIVATION AT SYSTEM SHUTDOWN* with the following contents:

At system shutdown, the architecture-specific ClearCase startup script is invoked with the **stop** option to execute the ClearCase shutdown procedure. As part of this procedure, a **umount -all** command deactivates all VOBs currently active on the local host.

On AIX 4, **umount -all** invokes the architecture-specific **mount** command **/sbin/helpers/mvfsmnthelp** with **U** as its first argument, and **/sbin/helpers/mvfsmnthelp** then invokes **umount(1M)**.

On UnixWare, **umount -all** invokes the architecture-specific **umount** command **/etc/fs/mvfs/umount**.

On other UNIX platforms, **umount -all** invokes the standard **umount(1M)** utility directly.

In addition, on some UNIX platforms, mounting VOBs with the **ro** option works properly; that is, it prevents writes to view-private files within the VOB, but does not prevent other clients from modifying the VOB nor does it prevent changes that do not go through the MVFS, such as some **cleartool** operations. However, on other UNIX platforms (namely, HP-UX 11.0 mounting VOBs with the **ro** option prevents view-private changes to the file namespace (such as creation or deletion of view-private files) but does not prevent writes to view-private files.

rebase

With the introduction of stream hierarchies at this release, most of the rules for rebasing an integration stream and a development stream are now the same. The **rebase** reference page contains sections on *Rules for Development Streams* and *Rules for Integration Streams*. These sections are superseded by information in the section *Rebasing a Stream* on page 61 in this version of the release notes.

softbench_ccase

The **softbench_ccase** reference page is incorrect in the following ways:

- It states that ClearCase integration with SoftBench supports SoftBench 4.*x* and 5.*x*; ClearCase supports 5.*x* and 6.*x*, but does not support SoftBench 4.*x*
- The description of the integration is accurate for the ClearCase integration with SoftBench 5.*x*, but not for Softbench 6.*x*. SoftBench functionality changed significantly at 6.*x,* causing the ClearCase integration user interface to change also. For an accurate description of the integration for this user interface, see the online help for third-party integrations (available from the top-level online help menu).

Problem with *Developing Software* Manual

The *Developing Software* manual is missing information relating to the following topics.

Cannot Run ClearCase Commands in a UNIX Snapshot View from a Windows Client

You can access a snapshot view that was created on a UNIX host from a ClearCase client on Windows, but you cannot run ClearCase commands from that Windows client and have them be effective in the UNIX snapshot view. For example, if you use Windows Explorer to navigate to a team member's view on a different computer and right-click a file in the view, ClearCase options may not be available. To perform ClearCase operations on the files in a team member's view, register the view as follows:

1. In Windows Explorer, navigate to the root directory of the view you want to register.
2. Right-click the root directory of the view.

When you right-click the root directory of the view, ClearCase registers the view by adding an entry to your Windows User Profile.

Delivering Work to a Snapshot View

If you deliver your work to a snapshot view, you can encounter an error caused by your not having ever registered the snapshot view. This condition occurs because ClearCase cannot find the path to the snapshot view root directory until you register the view. Typically a view is registered when you run the **mkview** command.

On UNIX systems, if you are using the command line interface, you see the following messages:

```
Error: Can't find root directory of snapshot view with tag "..."
Error: Unable to determine view root of snapshot view "..."
Error: View "..." is inaccessible.
Error: Unable to prepare view common.
Error: Unable to deliver stream "..."
```

On UNIX systems, if you are using the GUI, you see the following messages:

```
It appears that you have never before accessed the snapshot view (view tag).
As a result, we're unable to locate the view's root path name
Please 'cd' to the snapshot view's root directory and do a
'cleartool update'. This establishes you as a user of the view.
```

If you see either of these messages, change directory to the view root directory of the snapshot view and use the following command in that directory:

cleartool update -print

This preview form of the **update** command is quicker than **update** and does not change the loaded files. After the command completes, retry the deliver.

Handling Elements That Are Not Visible

(The following material should be used as part of Section 5.4, *Merging Versions* in Part 2, *Working in UCM*.)

During a deliver (or rebase) operation, you can see the following warning message about elements not being visible in the integration view:

```
1 elements were skipped because they are not visible. You should
determine why they are not visible before you complete this deliver
or rebase operation. If these elements should be visible, cancel
this operation, fix the problem, and re-run the operation.
```

Do not ignore this situation. The deliver operation found versions of elements in the development stream that need to be considered for merging to the target stream, but did not find the elements in the target stream. Possible causes for this situation:

- A new element was added to source control, but the directory that catalogs the element is not checked in.

  In this case, cancel the deliver or rebase operation, check in the directory, and start deliver or rebase again.

- While a change to the element was being made (in the development stream, for a deliver; in the stream from which you are rebasing, for a rebase), someone operated on the element (in the target stream, for a deliver; in the development stream, for a rebase), as follows:

  - The name of the element or the name of a VOB symbolic link to the element was removed.
  - The element itself or the VOB symbolic link to the element was removed.

  In either case, decide whether the removal was appropriate. If the removal was appropriate, you can allow the deliver or rebase to ignore the element.

- The change may be obsolete, because you intended to remove the name of the element or the element itself.

Because ClearCase cannot tell what caused the situation, you must find the cause, fix the problem, cancel the current operation, and start over.

Problems with *Managing Software Projects* Manual

The wording of one of the UCM policies governing deliver operations has changed in this release to the following:

Do not allow deliver to proceed with checkouts in the development stream.

Previously, the wording for this policy was

Allow deliveries from stream with pending checkouts.

The online help and the *Managing Software Projects* manual continue to use the old wording for this policy.

Problems with the *Administrator's Guide*

Because of a change in the scaling algorithm, Table 13 on page 507 of the *Administrator's Guide* for Rational ClearCase shows incorrect values for the effect of memory size on the MVFS Scaling Factor for memory sizes greater than 256 MB. These are the correct values:

Memory size	MVFS scaling factor
< 24 MB	0
24 MB - 511 MB	1

Memory size	MVFS scaling factor
512 MB - 2.99 GB	2
>= 3 GB	Memory Size (in GB)

The largest value that the Scaling Factor is automatically set to is 24.

Problems with Online Help

The following issues exist with online help.

Using xman to Display Man Pages

ClearCase and MultiSite reference pages are supplied in ASCII catman format in directories named cat1, cat4, and cat5. If you want to use **xman** to display ClearCase and MultiSite reference pages, you must create symbolic links named **man1**, **man4**, and **man5** in ccase-home-dir/doc/man that point to the cat directories. For example:

```
% cd /usr/atria/doc/man
% su
Password:xxxxxx
% ln -s cat1 man1
% ln -s cat4 man4
% ln -s cat5 man5
```

Caution: If you create man directories, do not run **cleartool man** as the **root** user. If you do, the man page will be deleted.

Issues with Bristol HyperHelp

The ClearCase online documentation is displayed using Bristol HyperHelp. If your site already is using HyperHelp, make sure that ccase-home-dir/bin appears in the path before any other reference to Bristol HyperHelp. Rational Software has extended HyperHelp to support special features in the ClearCase online documentation. The HyperHelp viewers supplied with ClearCase will display conventional HyperHelp files, but conventional HyperHelp viewers may not display ClearCase HyperHelp files.

Help Window Is Blank

Occasionally, a ClearCase help topic fails to appear: the title appears, but the body of the window is blank. When this happens, you can correct the problem as follows:

1. In the Help window menu bar, click **Options > Font > Normal**. The Help window is refreshed.
2. If the wrong help topic is displayed when the Help window is refreshed, click the **Back** button to return to the original topic.

Problems with API Reference Update and Release Notes for Rational ClearCase

The section Using the API on HP-UX states that the API examples include references to **-lperl** and **-lperlDynaloader**. The examples have been fixed for this release and no longer include these references.

Issues with Tutorials

This section describes problems with running tutorials.

Platform Support for Tutorials

Tutorials are supported for Solaris and HP-UX platforms only.

Tutorials in a Mixed Environment

The ClearCase tutorials cannot be run on Windows client hosts that use UNIX servers. VOB creation is not supported across heterogeneous network configurations, and all ClearCase tutorials create private VOBs.

Restrictions and Guidelines for MultiSite

5

This chapter contains release notes for Rational ClearCase MultiSite Version 2002.05.00.

Change to Name of Lock File Used by Scripts

In previous releases, the name of the lock file created by the **sync_export_list** and **sync_receive** scripts may not be unique because the name was based on the replica name. In this release, the name of the lock file is based on the UUID of the replica, not on the replica name.

Warning on Receipt of Packet from Earlier MultiSite Version

Table 18 lists the packet protocols for MultiSite versions.

Table 18 MultiSite Versions and Packet Protocols

MultiSite version	Packet protocol
3.2, 3.2.1	1.2
4.0, 4.1, 4.1.1, 4.2	3
2002.05.00	4

When **multitool** with a newer protocol reads a packet with the older protocol, it prints this message:

```
multitool:  Warning:  Version mismatch, software:new-protocol, packet:old-
protocol
```

This message does not indicate a problem. It means one of the following things:

- The feature level of the VOB family is lower than the feature level of the receiving replica.
- The feature level of the VOB family is the same as the feature level of the sending and receiving replicas. However, when the sending replica created the update

packet, it had not yet received a packet containing the information about the new VOB family feature level.

Synchronization Error When Database Limit Is Exceeded

ClearCase Releases 4.*x* include support for a new VOB database schema. If you update one or more replicated VOBs in a family to the new schema (version 54), you do not have to update the other replicas in the VOB family immediately. However, you must update all replicas before one of the updated replicas exceeds the database limit of the previous schema (version 53). If you do not, replicas that have not been updated will not be able to import synchronization update packets from the updated replica.

When this type of import failure occurs, **syncreplica** output includes a VOB database error, and an error is written to the `db` log.

The **syncreplica** output includes an error like the following:

```
multitool: Error: Error from VOB database: ''\\vob.setup''.
```

The `db` log includes an error like the following:

```
09/20/96 10:40:49 db_server(19528):  Error:  DBMS error in "../db__lock.c" line
79
*** db_VISTA database error -909 - file record limit exceeded
09/20/96 10:40:49 db_server(19528):  Error:  DBMS error
09/20/96 10:40:49 db_server(19528):  Error:  db_VISTA error -909
```

To fix this problem, you must convert all replicas in the family to schema version 54. To display the schema version for a VOB replica, use the **cleartool describe vob:** *vob-tag* command. To display the schema version of the ClearCase release installed on your computer, use the **cleartool –ver** command.

Limitation on Editing Mastership Request ACL

In this release, you do not have to be logged on to a VOB server host to edit the mastership request ACL for a replica on that host. However, if you are not already on the ACL, both of the following conditions must be true in order for you to edit the ACL:

- You must be the VOB owner or privileged user.
- You must be logged on to a host in the same domain as the VOB server host.

Do Not Use MultiSite to Clone a VOB

Do not use MultiSite to create multiple copies of a VOB in a single ClearCase region. Because the VOB UUID is identical for all replicas in a VOB family, and is stored in many structures within a VOB, there is no way to make the copy of the VOB unique. Creating and using multiple copies of a VOB in a single region causes **clearmake** and views to exhibit unpredictable behavior, may cause data loss, and is not supported by Rational Software.

Using UCM and MultiSite

The following restrictions apply to use of UCM and MultiSite:

- You cannot request mastership of branches or branch types that are associated with streams.
- If a UCM component is replicated, its associated UCM project VOB (PVOB) must be replicated.
- You must synchronize a UCM component and its associated PVOB at the same time.
- UCM projects enabled for ClearQuest can be replicated and synchronized. In addition to using ClearCase MultiSite to replicate and synchronize UCM project and component VOBs, you can use Rational ClearQuest MultiSite to replicate and synchronize associated ClearQuest user databases. You must synchronize a UCM PVOB and its associated ClearQuest user database at the same time.

Problems with Documentation

The **epoch_watchdog** reference page has an *EXAMPLES* heading but does not contain any examples. For an example of using **epoch_watchdog**, see *Troubleshooting MultiSite Operations* in the Administrator's Guide for Rational ClearCase MultiSite.

In the **reqmaster** reference page, the output for **reqmaster -deny** for a branch type is incorrect. The correct output does not include the words branch type.

On page 151 of the *Administrator's Guide* for Rational ClearCase MultiSite, the output for the command

cleartool describe -fmt"%[reqmaster]p\n" brtype:boston_main@/vobs/dev

is incorrect. The corrected example:

cleartool describe -fmt "%[reqmaster]p\n" brtype:boston_main@/vobs/dev

```
denied for branch type
denied for all instances
```

Status of ClearCase Software Change Requests

6

Noteworthy problems found in or resolved in Version 2002.05.00 of Rational ClearCase are listed in the file cc_issues.htm.

You can find this file in two places:

- On your ClearCase CD, in the directory Rational/doc/*platform*, where *platform* is an architecture mnemonic like ux (for UNIX computers) or nt (for Windows computers).
- In the directory *ccase-home-dir*/install/ after you've installed the product.

Note that any problems relating to installation or setup of ClearCase are noted in the section *Known Issues Related to Installation* on page 29.

Status of MultiSite Software Change Requests

7

Noteworthy problems found in or resolved in Version 2002.05.00 of Rational ClearCase MultiSite are listed in the file ms_issues.html.

You can find this file:

- On your ClearCase CD, in the directory Rational/doc/*platform*, where *platform* is an architecture mnemonic like ux (for UNIX computers) or nt (for Windows computers).
- In the directory *ccase-home-dir*/install/ after you've installed the product.

Note that any problems relating to installation or setup of MultiSite are noted in the section .*Known Issues Related to Installation* on page 29

Network Attached Storage Devices Certified for Use with ClearCase

A

Network-attached storage (NAS) devices communicate with other hosts on a local area network using a network file system protocol like the Network File System (NFS) or the Common Internet File System (CIFS). Any NAS device can provide storage for ordinary files that are created and used by ClearCase, but only the NAS devices described in this appendix have been certified for use with VOB server and view server hosts. When configured and used as described, these devices can provide remote storage for VOB and view databases in addition to ordinary files.

Caution: Every certified NAS device must be specially configured to support remote VOB or view databases. If you do not configure a certified NAS device as described, you put your VOB or view data at risk. If you host a VOB or view database on a NAS device that has not been certified for this purpose, you will put your VOB or view data at risk.

The *Administrator's Guide* for Rational ClearCase has more information about putting VOB or view databases on certified NAS devices.

Supported Platforms and Protocols

Rational has certified the following NAS devices for the uses described in the*Administrator's Guide*. Not all NAS devices can support VOB or view servers on Windows hosts.

Table 19 Supported NAS Devices

Vendor	Product	Software version	VOB or view server platforms supported
Auspex	NS2000	NetOS 3.0.1	UNIX only

Vendor	Product	Software version	VOB or view server platforms supported
EMC	Celerra File Server	2.2 (contact EMC Customer Service for ClearCase patch)	UNIX and Windows
Network Appliance	Series 7xx Filer, Series 8xx Filer	DataOnTAP OS V5.3.6, DataOnTAP OS V6.0.1	UNIX and Windows

Note: Rational supports use of the NFS protocol only to connect a UNIX VOB server host with a VOB database on a NAS device. You must use the CIFS protocol to connect with NAS devices from Windows hosts. Use of NFS software to connect Windows hosts to NAS devices is not supported.

All of the NAS devices described in this appendix can be configured to support native interoperation with both UNIX and Windows hosts. You do not need to install a third-party NFS product on Windows or an SMB server product on UNIX to make VOBs and views on NAS devices accessible to both UNIX and Windows hosts.

The following sections describe procedures for configuring and using various NAS devices with ClearCase. In these sections, we make these assumptions:

- You are familiar with the basic configuration and operation the NAS device that you are using.
- You have already installed the device on your network and verified that it can be used with applications other than ClearCase.

We also assume that you have established the appropriate level of cross-platform interoperability for your site if both UNIX and Windows computers are in use as ClearCase hosts. All the requirements detailed in the *Administrator's Guide* for Rational ClearCase for user and group accounts on both UNIX and Windows must be met if you are using a NAS device to host ClearCase data that is accessed from UNIX and Windows computers. NAS devices often provide their own implementation of cross-platform file-access solutions such as NFS and CIFS (SMB), but these implementations usually require that any user who must access files on the NAS device can be authenticated using the same user name and group name regardless the type of platform (UNIX or Windows) they are using. If ClearCase users at your site use UNIX and Windows computers, verify that users can create and delete file and directories on the NAS device from both platforms before you proceed with additional NAS device configuration steps.

Caution: Rational does not support use of CIFS oplocks on any NAS device used for VOB or view storage. By enabling oplocks on such a NAS device, you put any ClearCase data on that device at risk. Instructions for disabling oplocks on each certified NAS device are included in this appendix.

Auspex NS2000

This section describes configuration procedures that you must perform before you can use an Auspex NS2000 NAS device for VOB or view storage as described in the Administrator's Guide for Rational ClearCase. For more information about the NS2000, see www.auspex.com.

Data stored on an Auspex NS2000 can be organized into virtual file systems and shares on virtual partitions and RAID sets. A RAID set may be "sliced" into independent file systems using virtual partitions. A RAID set must contain at least three data disks. Auspex recommends a RAID set with at least six data disks for frequently accessed ClearCase data.

Configuring the Auspex NS2000 for ClearCase

To configure the Auspex NS2000 for use by ClearCase:

1. **Create a file system if necessary.** You may use an existing file system or create a new one specifically for use by ClearCase.
2. **Create partitions.** For ease of administration, Auspex recommends using virtual partitions on the NS2000 to hold ClearCase data. The remaining steps in this section assume you are using a virtual partition named /dev/axvp/fsp*N*vp*X* where *N* is the number of the file system partition and *X* is the virtual partition number:
3. **Create a file system mount point.** Log on to the NS2000 as **root**. Run the following command to create a mount point for the virtual file system you created in *Step #2*:

   ```
   mkdir /vobstg
   ```

4. **Mount the virtual file system.** Run the following command to mount the virtual file system you created in *Step #2* at the mount point you created in *Step #3*:

   ```
   mount -F lfs /dev/axvp/fspNvpX /vobstg
   ```

   To ensure that a virtual file system is mounted at boot time, create an entry for it in /usr/AXbase/etc/lfstab.

5. **Enable read/write access for the albd_server.** All volumes used for VOB or view storage *must* be configured with read/write (**rw**) access by the ClearCase server process user account (Windows) and **root** (UNIX).

6 **Make the file system accessible.** Volumes that will be accessed only by UNIX computers must be shared using the NetOS **share** command. Volumes that will be accessed only by Windows computers must be shared using the NetOS **net share** command. Volumes that must be accessed by both UNIX and Windows computers must be made accessible using both commands. The following command makes the file system mounted at /vobstg accessible to NFS clients:

share -F NFS /vobstg

7 **Disable oplocks.** Opportunistic locking (CIFS oplocks) is enabled by default on the NS2000. You must disable oplocks by setting the NS2000 registry key

HKLM\SYSTEM\CurrentControlSet\Services\AdvancedServer\FileServiceParameters\UseOplocks

to a value of **0** using the NetOS **regconfig** command or the Windows **regedt32** command. To use **regedt32** to edit the registry on the NS2000, click **Registry > Select Computer** and type the name of the NS2000 in the Select Computer dialog box.

Using NS2000 Snapshot Backups

The Auspex NS2000 snapshot backup tool **ax_snapshot** allows you to quickly make a read-only copy of a virtual file system. We support use of **ax_snapshot** to make backups of all ClearCase data, including VOB data. The following command line creates a snapshot on cache partition fsp1m0rd1s0 of a virtual partition mounted at /vobstg:

ax_snapshot ckpt /vobstg fsp1m0rd1s0

As with any VOB backup strategy, you must lock the VOB before backing it up. Because the snapshot backup copy can be made quickly, lock time required for the backup will be minimal.

A cached snapshot backup should also be backed up to hard media such as tape or CD, using backup software (for example, the Auspex utility **ax_gtar**) that will preserve all file system information, including ACLs if the file system is used to hold VOBs or views served by a VOB or view server on Windows.

Note: To back up a cached snapshot, you must first mount it.

By default, NS2000 file-based backup does not back up files larger than 2GB. VOBs using schema version 54 may include some files larger than 2GB. To ensure that these files are included in hard-media (file-based) backups of a snapshot cache, edit the file /usr/AXndmp/etc/config on the NS2000 as follows:

1 Locate the following line:

```
#ALLOW_TAR_EXTENSION # auspex extension to support large files (>=2GB)
```

2 Remove the first comment delimiter (#) to enable this feature.

```
ALLOW_TAR_EXTENSION # auspex extension to support large files (>=2GB)
```

Note: When this option is enabled and a large file is encountered during file-based backup, Auspex's proprietary extension to standard GNU-tar format is used instead of the standard GNU-tar format. With this option on, you may not be able to use the standard GNU-tar command to recover data from file-based backups

EMC Celerra File Server

This section describes configuration procedures that you must perform before you can use an EMC Celerra File Server for VOB or view storage as described in the *Administrator's Guide* for Rational ClearCase. For additional information about the Celerra File Server, see www.emc.com.

Configuring a Celerra File Server for ClearCase

To configure a Celerra File Server for use by ClearCase:

1 **Configure storage.** Create an appropriate network interface, metavolume, and file system for use by ClearCase.

2 **Create a mount point** for the file system you created in *Step #1*.

3 **Mount the file system.** Use the **-o nooplock** option to **server_mount** to disable CIFS oplocks. The default access checking policy for **server_mount** is **NATIVE**. We recommend that you use this default.

4 **Export the file system** as needed for UNIX (NFS) and/or Windows (CIFS) clients. The following commands export the file system /ufssc1 on Data Mover **server_2** for NFS and CIFS access.

```
server_export  server_2  /ufssc1
server_export server_2 -P cifs -n ufssc1 /ufssc1
```

Note: You must also configure and start CIFS services if you are exporting a file system for CIFS access.

Using Celerra TimeFinder and SnapSure Backups

The EMC Celerra TimeFinder facility creates a mirrored copy of a file system on the Celerra device. The SnapSure facility creates a read-only copy of a Celerra file system on another volume on the device. We support use of either facility to make backups of all ClearCase data, including VOB data.

As with any VOB backup strategy, you must lock the VOB before backing it up. Because these copies can be made quickly, lock time required for the backup will be minimal.

Network Appliance Filer

This section describes configuration procedures that you must perform before you can use a Network Appliance Filer for VOB or view storage as described in the *Administrator's Guide* for Rational ClearCase. For additional information about Network Appliance Filers, see www.netapp.com.

Data on a Network Appliance filer is organized in volumes. A volume is an independent file system with its own RAID groups. Every RAID group must contain at least two disks. The default is eight. Network Applicance recommends creating volumes with at least four data disks if they contain frequently accessed ClearCase data. Smaller volumes may be adequate for storage pools containing infrequently accessed or read-only data.

In addition to creating volumes to hold ClearCase data on a Network Appliance Filer, you must also create qtrees to manage access control for the files and directories in these volumes, and you must use the appropriate commands to make these volumes accessible to UNIX and/or Windows clients.

Configuring a Network Appliance Filer for ClearCase

To configure a Network Appliance Filer for use by ClearCase:

1 **Create volumes.** Create one or more volumes on the Filer for use by ClearCase. You must use the **nvfail on** option to the Data ONTAP **vol** command. The following commands create a volume named ccvol that uses 10 disks.

```
vol create ccvol 10
vol options ccvol nvfail on
```

Note: Network Appliance Filers provide a specialized snapshot backup facility (not related to the ClearCase snapshot backup program), which is managed at the volume level. Keep backup considerations in mind when allocating volumes to hold VOB data or other ClearCase data. It will simplify implementation of Network Appliance snapshot VOB backups if you dedicate one or more volumes exclusively to VOB storage.

2 **Disable quotas on volumes to be used for VOB storage.** If quotas are enabled, Network Appliance recommends disabling them on volumes used for VOB storage. The following Data ONTAP command reports on whether the volume ccvol has quotas enabled:

quota report ccvol

The following Data ONTAP command disables quotas on the volume ccvol:

quota off ccvol

3 **Make the volumes accessible.** Volumes that will be accessed only by UNIX computers must be exported using the Data ONTAP **exportfs** command. Volumes that will be accessed only by Windows computers must be shared using the Data ONTAP **cifs_shares** command. Volumes that must be accessed by both UNIX and Windows computers must be exported and shared.

4 **Enable read/write access for the albd_server.** All volumes used for VOB or view storage *must* be configured with read/write (**rw**) access by the ClearCase server process user account (Windows) and **root** (UNIX).

5 **Create qtrees.** A qtree is a special subdirectory of the root directory of a volume. The following Data ONTAP command creates a qtree named vobstg in a volume named **ccvol**:

qtree create /vol/ccvol/vobstg

6 **Specify each qtree's security style.** The Data ONTAP **qtree** command allows you to specify the type of access checking (security style) that will be used when a determining whether a user has rights to access a file or directory. You can specify any of three security styles:

- **unix** evaluates user access rights by considering the UID and GID of the user and the access mode of the file or directory.
- **ntfs** evaluates user access rights by considering the SID of the user and the ACL of the file or directory.
- **mixed** provides support for both security styles.

The following Data ONTAP command specifies that the **unix** security style will be implemented in the qtree named vobstg:

qtree security vobstg unix

Note: For any qtree used to provide VOB storage server by a VOB server running Windows, you must set the qtree security style to **ntfs**.

7 **Disable oplocks.** Opportunistic locking (CIFS oplocks) is enabled by default when a qtree is created. The following Data ONTAP command disables oplocks on the qtree named vobstg:

qtree oplocks vobstg disable

Using Network Appliance Snapshot Backups

The Network Appliance snapshot backup facility creates a read-only copy of a volume on another volume on the Filer. We support use of this facility to make backups of all ClearCase data, including VOB data.

As with any VOB backup strategy, you must lock the VOB before backing it up. Because the snapshot backup copy can be made quickly, lock time required for the backup will be minimal.