Rational® ClearCase®
Rational® ClearCase MultiSite®

Installation Guide

VERSION: 2003.06.00 AND LATER

PART NUMBER: CT2TMNA, S126-5679-00

UNIX EDITION
Solaris 2.6, 7, 8
HP-UX 11.0, 11.0 ACE, 11.11
HP-UX/IPF 11.22
SGI IRIX 6.5.12 THROUGH 6.5.19
IBM AIX 4.3.3, 5.1, 5.2
RED HAT LINUX 7.2, 7.3, 8.0, 9 FOR X86
RED HAT ENTERPRISE LINUX 2.1, 3 FOR X86
SUSE LINUX STANDARD SERVER 8 FOR X86
SUSE LINUX ENTERPRISE SERVER 8 FOR X86
SUSE LINUX ENTERPRISE SERVER 7, 8 FOR IBM S/390 AND ZSERIES

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Preface

About This Manual

This manual provides instructions for installing Rational ClearCase and Rational ClearCase MultiSite. It also includes instructions for upgrading Rational ClearCase LT to Rational ClearCase. This document sometimes refers to these products collectively as “CPF products” (ClearCase Product Family products).

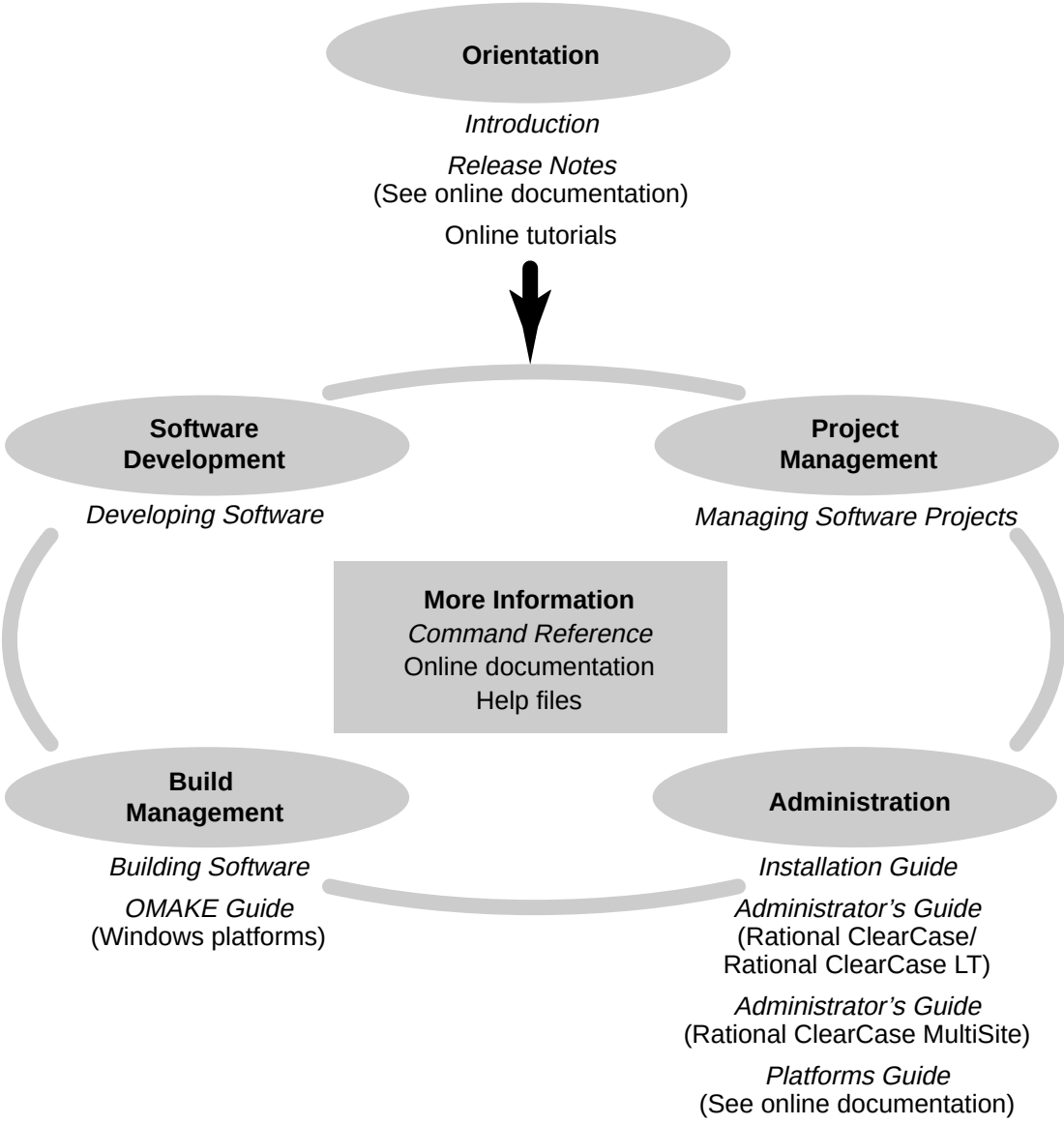
Follow these pointers to find the instructions for the type of installation you want to perform:

Type of installation	**Location of instructions**
Prerequisites for all installations	Chapter 1, *Before You Install*
Establishing a release area on a release host	Chapter 2, *Installing the ClearCase Product Family: Networkwide Resources*
Allocating licenses	*Send for Your License Authorization Code* on page 17
Installing CPF products on individual hosts	Chapter 3, *Installing the ClearCase Product Family: Individual Hosts*
Deinstalling CPF products on individual hosts	*The Deinstallation Model* on page 45
Upgrading ClearCase LT to ClearCase	Chapter 4, *Upgrading ClearCase LT to ClearCase*

Assumptions

This manual assumes you are a systems administrator and have experience running the tools and utilities provided with your operating system. It assumes you have proper administrative privileges to install software and to perform system maintenance tasks.

ClearCase Documentation Roadmap



ClearCase Integrations with Other Rational Products

Integration	Description	Where it is documented
Base ClearCase-ClearQuest	Associates change requests with versions of ClearCase elements.	ClearCase: *Developing Software* ClearCase: *Managing Software Projects* ClearQuest: *Administrator's Guide*
Base ClearCase-Apex	Allows Apex developers to store files in ClearCase.	*Installing Rational Apex* (UNIX)
Base ClearCase-ClearDDTS	Associates change requests with versions of ClearCase elements.	*ClearCase ClearDDTS Integration*
Base ClearCase-PurifyPlus	Allows developers to invoke ClearCase from PurifyPlus.	PurifyPlus Help
Base ClearCase-RequisitePro	Archives RequisitePro projects in ClearCase.	*RequisitePro User's Guide* RequisitePro Help
Base ClearCase-Rose	Stores Rose models in ClearCase.	Rose Help
Base ClearCase-Rose RealTime	Stores Rose RealTime models in ClearCase.	*Rose RealTime Toolset Guide* *Rose RealTime Guide to Team Development*
Base ClearCase-SoDA	Collects information from ClearCase and presents it in various report formats.	*Using Rational SoDA for Word* *Using Rational SoDA for Frame* SoDA Help
Base ClearCase-XDE	Stores XDE models in ClearCase	XDE Help
UCM-ClearQuest	Links UCM activities to ClearQuest records.	ClearCase: *Developing Software* ClearCase: *Managing Software Projects* ClearQuest: *Administrator's Guide*
UCM-PurifyPlus	Allows developers to invoke ClearCase from PurifyPlus.	PurifyPlus Help

Integration	Description	Where it is documented
UCM-RequisitePro	Allows RequisitePro administrators to create baselines of RequisitePro projects in UCM, and to create RequisitePro projects from baselines.	*RequisitePro User's Guide* RequisitePro Help *Using UCM with Rational Suite*
UCM-Rose	Stores Rose models in ClearCase.	Rose Help *Using UCM with Rational Suite*
UCM-Rose RealTime	Associates activities with revisions.	*Rose RealTime Toolset Guide* *Rose RealTime Guide to Team Development*
UCM-SoDA	Collects information from ClearCase and presents it in various report formats.	*Using Rational SoDA for Word* *Using Rational SoDA for Frame* SoDA Help
UCM-TestManager	Stores test assets in ClearCase.	*Rational TestManager User's Guide* TestManager Help *Using UCM with Rational Suite*
UCM-XDE	Stores XDE models in ClearCase	XDE Help
UCM-XDE Tester	Stores XDE Tester Datastores in ClearCase	XDE Tester Help

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 /opt/rational/clearcase on UNIX and C:\Program Files\Rational\ClearCase on Windows.
- **Bold** is used for names the user can enter; for example, command names and branch names.
- A sans-serif font is used for file names, directory names, and file extensions.
- **A sans-serif bold font** is used for GUI elements; for example, menu names and names of check boxes.

- *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 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, you can use "**...**" within a pathname as a wildcard, similar to "*" or "?". For more information, see the **wildcards_ccase** reference page.
- If a command or option name has a short form, a "medial dot" (·) character indicates the shortest legal abbreviation. For example:

  lsc·heckout

Online Documentation

The ClearCase Product Family (CPF) includes online documentation, as follows:

Help System: Use the **Help** menu, the **Help** button, or the F1 key. To display the contents of the online documentation set, do one of the following:

- On UNIX, type **cleartool man contents**
- On Windows, click **Start > Programs > Rational Software > Rational ClearCase > Help**
- On either platform, to display contents for Rational ClearCase MultiSite, type **multitool man contents**
- Use the **Help** button in a dialog box to display information about that dialog box or press F1.

Reference Pages: Use the **cleartool man** and **multitool man** commands. For more information, see the **man** reference page.

Command Syntax: Use the **–help** command option or the **cleartool help** command.

Tutorial: Provides a step-by-step tour of important features of the product. To start the tutorial, do one of the following:

- On UNIX, type **cleartool man tutorial**
- On Windows, click **Start > Programs > Rational Software > Rational ClearCase > ClearCase Tutorial**

PDF Manuals: Navigate to:

- On UNIX, *ccase-home-dir*/doc/books
- On Windows, *ccase-home-dir*\doc\books

Customer Support

If you have any problems with the software or documentation, contact Rational Customer Support by telephone or fax. You can find information about support hours, languages spoken, or other support information at www.ibm.com/software/rational/support/.

Your location	Telephone	Facsimile
Asia Pacific	61-2-9419-0111 Australia	61-2-9419-0123 Australia
Europe, Middle East, and Africa	+31-(0)20-4546-200 Netherlands	+31-(0)20-4546-201 Netherlands
Latin America and Mexico	+1-408-863-4000 Cupertino, CA	Use either location +1-408-863-4194 Cupertino, CA +1-781-676-2460 Lexington, MA
United States and Canada	1-800-IBM-SERV	Use either location +1-408-863-4194 Cupertino, CA +1-781-676-2460 Lexington, MA

Before You Install 1

This chapter contains important information about this release of Rational ClearCase and Rational ClearCase MultiSite. Read it before you begin to install either product. Note that 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 ClearCase and MultiSite products.

Hardware and Software Requirements

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

Supported Architectures

ClearCase and MultiSite Version 2003.06.00 run on the platforms listed in Table 1.

Table 1 Supported Platforms for ClearCase and MultiSite Version 2003.06.00

Hardware platform	Operating system
Solaris SPARC	Solaris 2.6,7,8, and 9 (2.6 32-bit only, others 32- and 64- bit)
HP 9000 Series 700 and Series 800	HP-UX 11.0, 11.0 ACE and 11.11 (11i version 1.0). Supported HP-UX ACE release is November 1999 ACE.
HP IPF	HP-UX 11.22
SGI MIPS[1]	IRIX 6.5.12 through 6.5.19 (64-bit only)
IBM pSeries, RS/6000	AIX 4.3.3, 5.1, 5.2
IBM PC-compatibles	Red Hat Linux 7.2[2], 7.3, 8.0, 9 Red Hat Enterprise Linux 2.1, 3 SuSE Linux Standard Server 8 SuSE Linux Enterprise Server 8

Table 1 Supported Platforms for ClearCase and MultiSite Version 2003.06.00

Hardware platform	Operating system
IBM S/390 and zSeries[3]	SuSE Linux Enterprise Server 7, 8

1. The mainframe connectors remote build feature is not supported on this platform.
2. Supports only kernels 2.4.9 and higher
3. The notation zSeries as used in these release notes refers to "Linux for S/390" running on the IBM zSeries hardware in the 32-bit run-time environment. Running ClearCase on "Linux for zSeries" in a 64-bit runtime environment is not supported.

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

- IRIX 6.5.7 through 6.5.14
- Red Hat Linux 7.0 and 7.1
- Caldera UnixWare
- Sun Solaris Intel

For more information about differences in features and functionality by platform, click Help for the *Platforms Guide*.

Supported Platforms for ClearCase Web Servers and Web Interface

The following platforms support the ClearCase Web server:

- Solaris SPARC
- HP-UX
- HP-UX/IPF
- AIX
- Linux for x86
- Linux for IBM S/390 and zSeries

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

Platform Requirements for ClearCase Mainframe Connectors Remote Build Feature

If you plan to install the ClearCase Mainframe Connectors Remote Build feature, see the platform requirements for the client (Table 1) and server (Table 2). You must use

TCP/IP to use this feature. For more information, see the *User's Guide* for Rational ClearCase Mainframe Connectors.

Table 2 Server Requirements for ClearCase Mainframe Connectors Remote Build Feature

Hardware platform	Operating system
IBM System/390	OS/390 2.10, including UNIX System Services (USS)
IBM zSeries	OS/390 2.10, including USS z/OS 1.3 and 1.4, including USS

Supported File Systems

Table 3 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 Customer Support or your sales representative of any concerns you have about this list.

Table 3 Supported File Systems by Platform

Platform	Supported file systems
Solaris SPARC	UFS, VxFS (Veritas)
HP-UX	JFS, UFS, HFS, VxFS
HP-UX/IPF	JFS, UFS, HFS, VxFS
SGI IRIX	EPS, XPS
IBM AIX	JFS
Linux for x86	ext2, ext3, reiserfs
Linux for IBM S/390 and zSeries	ext2, ext3, reiserfs

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.

Minimum Requirements

- For ClearCase client hosts:
  - 32 MB main memory
  - 300 MB disk space
- For ClearCase server hosts:
  - 64 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 following list shows the minimum disk space required for release areas on different platforms:

Platform	Disk space
Solaris SPARC	375 MB
HP-UX 11	394 MB
HP-UX/IPF	603 MB
SGI IRIX	318 MB

IBM AIX	361 MB
Linux for x86	341 MB
Linux for IBM S/390 and zSeries	329 MB

Disk Space Requirements for Individual Hosts

Table 4 shows the disk space requirement for each kind of installation. All the space must be contained in a single disk partition.

Table 4 Disk Space Requirements for ClearCase and MultiSite Releases (Part 1 of 2)

Platform	Type of installation	ClearCase	MultiSite[1]
Solaris SPARC	Full copy	305 MB	6 MB
	Standard	140 MB	2 MB
HP-UX 11	Full copy	325 MB	7 MB
	Standard	155 MB	2 MB
HP-UX/IPF	Full copy	537 MB	7 MB
	Standard	295 MB	3 MB
SGI IRIX	Full copy	253 MB	6 MB
	Standard	75 MB	2 MB
IBM AIX	Full copy	294 MB	6 MB
	Standard	150 MB	2 MB
Linux for x86	Full copy	314 MB	12 MB
	Standard	136 MB	3 MB
Linux for IBM S/390 and zSeries	Full copy	224 MB	7 MB
	Standard	59 MB	2 MB
All Platforms	Link	< 2 MB[2] (install of all ClearCase Product Family products)	
	Mounted	< 2 MB[2] (install of all ClearCase Product Family products)	

Table 4 Disk Space Requirements for ClearCase and MultiSite Releases (Part 2 of 2)

Platform	Type of installation	ClearCase	MultiSite[1]

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/rational/clearcase 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.

Basic Software Requirements

Unless they use the command-line interface exclusively, ClearCase users on HP-UX and Solaris systems require Netscape 7. You must install the Sun 1.4.2 JVM or the HP 1.4.1.01 JVM. Check to ensure that there are no mismatched versions of the JPI and JRE, as this situation can can problems with the ClearCase Web interface.

On systems running AIX, HP-UX/IPF, SGI IRIX, and Linux for x86, Mozilla 1.4 is required.

To read online manuals in PDF format, users require Adobe Acrobat Reader, version 4.0 or later.

Required Operating System Patches

Typically, correct ClearCase operation depends on your having installed a number of required or recommended operating system patches. These are available from your hardware 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 5 for a list of patches recommended or required for all hosts on which ClearCase software runs. There may also be required layered packages, as listed in *Layered Software Packages* on page 10.

In addition to the patches listed in Table 5, 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 9 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 5 Operating System Patches (Part 1 of 3)

Patch number	Release	Purpose	Notes
Patches for Solaris SPARC[1]			
105181-19 or later	2.6	kernel patch (includes **procfs** patch)	*Required for all ClearCase hosts.*
105181-32 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.*
108727-06 or later 106541-20 or later 105720-20 or later	8 7 2.6	NFS patch	Required for ClearCase servers that are NFS clients with NFS mounted VOB or view storage (typically using a NAS device).
Patches for HP-UX 11 (Series 700 and 800)[2]			
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.
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.*

Table 5 Operating System Patches (Part 2 of 3)

Patch number	Release	Purpose	Notes
PHSS_20865	11.0	X/Motif2.1 Run-time patch	*Required for all ClearCase hosts.*
PHKL_23406	11.0	kernel thread "nostop" patches[3]	*Required for all ClearCase hosts.*
PHKL_23407	11.0		
PHKL_23408	11.0		
PHKL_23409	11.0		
PHNE_23249[4]		ONC/NFS patch (part of kernel thread patch)	*Required for all ClearCase hosts*
DeviceIDs11	11.0	Device ID enablement patch bundle	Recommended for all ClearCase hosts.
Patches for HP-UX 11i (Series 700 and 800)[5]			
Bundle11i [6]	11.11 (11i version 1.0)	Required bundle of kernel header files, B11.11.0102.n	*Required for all ClearCase hosts.*
PHKL_24253	11.11	kernel thread "nostop" patches[7]	*Required for all ClearCase hosts.*
PHKL_24254	11.11		
PHKL_24255	11.11		
PHKL_24256	11.11		
PHKL_24257	11.11		
PHNE_28983[8]		ONC/NFS patch (part of kernel thread patch)	*Required for all ClearCase hosts.*
DeviceIDs11i	11.11i	Device ID enablement patch bundle	Recommended for all ClearCase hosts.
Patches for SGI IRIX			
4932[9]	6.5	7.4 C++ runtime environment	*Required for all ClearCase hosts.*
Patches for IBM AIX			

Table 5 Operating System Patches (Part 3 of 3)

Patch number	Release	Purpose	Notes
IY38541	4.3	Addresses performance problem	*Required for all ClearCase hosts.*
IY38471	5.1		
IY38979	5.2		
Patches for Linux for x86: None			
Patches for Linux for IBM S/390 and zSeries: None			

1. 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, see ClearCase Technical Bulletin #43.
2. All HP-UX 11 patches listed here are available in bundle QPK1100, dated September 2001 or later, with the exception of PHSS_16587 and PHSS_20865.
3. These patches are included in QPK1100, September 2001 or later.
4. This patch is included in QPK1100, September 2001 or later.
5. All HP-UX 11i patches listed here are available in bundle GOLDQPK11i, dated December 2001 or later.
6. This bundle is included in any 11i_OS installation media dated February 2001 or later. Separate installation of the bundle is required only on 11.11 systems installed prior to February 2001.
7. These patches are included in the GOLDBASE11i bundle, version SP-0112 or later (B.11.11.0112.6 or higher).
8. This patch is included in the GOLDBASE11i bundle, version SP-0112 or later (B.11.11.0112.6 or higher).
9. This patch is unecessary if the MIPSpro V7.4 C++ compiler is installed.

Operating System Vendor Web Sites

You can find up-to-date information on operating system patches at the vendor Web sites listed in Table 6.

Table 6 Web Sites of Operating Systems

Vendor	URL[1]
Sun	sunsolve.sun.com
Hewlett-Packard	us-support.external.hp.com
Silicon Graphics	sgi.com/support
IBM	ibm.com/support/us
Red Hat	www.redhat.com/apps/support/
SuSE	www.suse.de/us/private/support/index.html

1. Where support is regional, U.S. links are shown. Outside the U.S., choose your geographical region.

Layered Software Packages

In some cases, correct ClearCase processing requires installation of a layered software package. Before installing ClearCase on a host, see Table 7 to determine whether you need to install any such packages.

Table 7 Layered Software Packages Required by ClearCase

Host type	Package name	Description
Solaris SPARC	SUNWsprot	SPARC compilers, bundled tools; includes default make.rules file
	SUNWbcp	Binary compatibility
	SUNWscpr	Source compatibility, root
	SUNWscpu	Source compatibility, user
	SUNWmfrun	Motif Run-time kit to run ClearCase GUIs
HP-UX 11	Upgrade. UPG-TLINK	Compatibility links for file system
	11 X Window System: X11R6 (or later)	Window system
SGI IRIX	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"**

Patches Incorporated in This Release

ClearCase Version 2003.06.00 and ClearCase MultiSite Version 2003.06.00 include all the patches listed in Table 8. If you are using a more recent patch on any of the patch streams listed, contact IBM Customer Support to see whether there is a corresponding patch for Version 2003.06.00.

Table 8 ClearCase and MultiSite Patches Incorporated into This Release

Patch stream	Last patch incorporated into this release
ClearCase V4.2	clearcase_p4.2-27
ClearCase Version 2002.05.00	clearcase_p2002.05.00-19
MultiSite V4.2	multisite_p4.2-7
MultiSite Version 2002.05.00	multisite_p2002.05.00-4

MultiSite Compatibility with ClearCase

ClearCase MultiSite is layered on ClearCase. To use MultiSite on a host running Version 2003.06.00 of ClearCase, you must be running Version 2003.06.00 of MultiSite.

MultiSite Version 2003.06.00

ClearCase MultiSite Version 2003.06.00 is fully compatible with ClearCase Version 2003.06.00 client and server hosts:

- A MultiSite 2003.06.00 replicated VOB can reside on any ClearCase 2003.06.00 server host.
- Any ClearCase Version 2003.06.00 client program can access and modify any replicated VOB residing on a ClearCase 2003.06.00 server host.
- Installing MultiSite 2003.06.00 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 can replicate a VOB to a host running an earlier major version of ClearCase only if the feature level of the VOB or VOB family is the same as the feature level of the ClearCase release on the target host.

For example, if a host is running ClearCase Version 2003.06.00 and has a VOB whose feature level is 2, you can replicate that VOB to a host running ClearCase Release 4.2, which is associated with feature level 2. Similarly, if a host is running ClearCase

Version 2003.06.00 and has a VOB replica whose VOB family feature level is 3, you can export a replica-creation packet from that replica and import it on a host running ClearCase Version 2002.05.00, which is associated with feature level 3. However, you cannot import the packet on a host running ClearCase Release 4.2.

Note: You can run **mkreplica –export** on a host running an earlier major version of ClearCase and import the replica-creation packet on a host running a later major version of ClearCase.

Replica Synchronization

Existing replicas hosted on systems running ClearCase 2003.06.00 can synchronize with existing replicas on systems running ClearCase release 4.x or 2002.05.00. See the information about feature levels in the *Administrator's Guide* for Rational ClearCase MultiSite.

Upgrading to New Schema Version

If you decide to update one or more replicas in a VOB family to use the latest VOB database schema version (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 the **mkreplica –export** command on a release 4.2 host to replicate a VOB that is not enabled for interoperation, and then run **mkreplica –import** on a version 2003.06.00 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 2003.06.00 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 ClearQuest Version 2003.06.00.
- 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 of the UCM Integration with Rational 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

Table 9 shows the compatibility of different releases of ClearCase and ClearQuest, the UCM package revision number, and the ClearQuest database feature level.

Table 9 Supported Integrations Between ClearCase (Using UCM) and ClearQuest

ClearCase version	ClearQuest version	UCM Package revision number	ClearQuest Database feature level
4.2	2001A.04.00 2001A.04.20 2002.05.00 2003.06.00	2,0, 3.0, 4.0	3, 5
2002.05.00	2001A.04.00 2001A.04.20 2002.05.00 2003.06.00	2,0, 3.0, 4.0	3, 5

Table 9 Supported Integrations Between ClearCase (Using UCM) and ClearQuest

ClearCase version	ClearQuest version	UCM Package revision number	ClearQuest Database feature level
2003.06.00	2001A.04.00 2001A.04.20 2002.05.00	2,0, 3.0, 4.0	3, 5
2003.06.00	2003.06.00	2.0, 3.0, 4.0, 5.0	3, 5

The upgrade procedure that follows is supported on HP-UX (PA/RISC only), Solaris, AIX, and Linux for x86:

1. Upgrade either ClearQuest or ClearCase (client), or upgrade both ClearQuest and ClearCase (client) simultaneously.

   Note: ClearCase client upgrade is dependent on ClearCase server upgrades.

2. Upgrade your UCM-enabled ClearQuest schema with the new version of the UnifiedChangeManagement package.

   Note: To use UnifiedChangeManagement Package Revision 5.0, make sure that your ClearCase installation is upgraded to 2003.06.00

   UnifiedChangeManagement Package Revision 5.0, is dependent on AMStateTypes 1.0 and UCMPolicy Scripts 3.0 packages.

3. Upgrade your ClearQuest user database to the new version of the schema.

Upgrading from a Previous Release

Upgrading to Version 2003.06.00 does not require reformatting your VOBs, unless you are installing with the newer VOB format (schema 54). For more information about general VOB database structure and details on reformatting a VOB, see the *Administrator's Guide* for Rational ClearCase and the **reformatvob** reference page.

Upgrading to Version 2003.06.00 from a release prior to 4.1 does require upgrading your storage locations; Release 4.1 added enhanced support for creating and managing storage locations.

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

2003.06.00 hosts can use a ClearCase license server running a version 2002.05.00 of the software.

For more information, see *What Happens When You Upgrade?* on page 59.

Compatibility 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 executes in 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 version of ClearCase, compatibility is guaranteed.

Table 10, Table 11, and Table 12 show the compatibility paths if all hosts are not running the same versions of ClearCase. In these tables, *client* means ClearCase client software. In each table, a component in a row can use a component in a column if *yes* appears at the intersection of the row and column.

Table 10 Compatibility of Views with VOBs

	4.2 VOB	**2002.05.00 VOB**	**2003.06.00 VOB**
4.2 view	yes	yes	yes
2002.05.00 view	no	yes	yes
2003.06.00 view	no	no	yes

Table 11 Compatibility of Clients with Views

	4.2 view	**2002.05.00 view**	**2003.06.00 view**
4.2 client	yes	yes	yes
2002.05.00 client	no	yes	yes
2003.06.00 client	no	no	yes

Table 12 Compatibility of Clients with VOBs

	4.2 VOB	2002.05.00 VOB	2003.06.00 VOB
4.2 client	yes	yes	yes
2002.05.00 client	no	yes	yes
2003.06.00 client	no	no	yes

Specifically, these tables make the following points:

- ClearCase 2003.06.00 clients can use only views and VOBs that reside on ClearCase 2003.06.00 hosts.
- ClearCase 2002.05.00 clients can use views and VOBs that reside on 2002.05.00 or 2003.06.00 hosts.

In general, earlier versions of clients can access servers that are running the same or later versions, but current clients can access only servers that are running the same version. An exception is that 2003.06.00 clients and servers can communicate with 4.2 **albd_server** processes to support access to license servers and other administrative functions.

A version 2003.06.00 client on UNIX can access a VOB on Windows by using a snapshot view. However, the snapshot view storage directory and the VOB storage directory must be on a server that is running version 2003.06.00.

Installing the ClearCase Product Family: Networkwide Resources

2

The Rational ClearCase Product Family includes Rational ClearCase and Rational ClearCase MultiSite products. In this manual, the term CPF refers to the set of products included in the merged release area for the release.

Note: Read Chapter 1, *Before You Install* before proceeding with installation.

Full deployment of CPF in your network encompasses two major phases:

- Establishing a release area on a release host. This is a prerequisite to installing any CPF product on any host in your network. Because you cannot install directly from the CD to a host, you must load the files from the CD to a release host to make them available over the network. Procedures for doing this are described in this chapter.
- Installing CPF on individual hosts. These procedures are described in Chapter 3, *Installing the ClearCase Product Family: Individual Hosts*.

Send for Your License Authorization Code

All CPF products implement an active-user floating-license scheme. Product-specific licenses are issued as users run CPF programs or issue CPF commands. If, after a certain period, no further CPF commands are used, the license may be taken by another user. Details of how this scheme controls user access to CPF products are available in the *Command Reference* on the **clearlicense** reference page.

This section provides a brief overview and instructions for enabling one or more sets of CPF licenses.

A set of CPF licenses is defined in a license database file, stored on a license server host. Each license database file defines a set of user licenses, perhaps 5, or 10, or 100. A license database file is valid only if it contains a license authorization code, obtained from Rational Software Corporation or its designee.

The network can have one license server host or several. Each such host runs a ClearCase server process, and so must have ClearCase installed.

Note: All CPF products use the same license server, which is the host listed in /var/adm/rational/clearcase/config/license_host.

Decide How to Allocate Licenses to License Servers

This section presents guidelines for allocating ClearCase and MultiSite licenses.

Allocating ClearCase Licenses

Before you contact Rational (or its designee) to request a license authorization code, consider how many authorization codes you need. Suppose that your organization has purchased 25 ClearCase licenses. You must decide how many license servers to use and how to allocate licenses to them. Here are two simple examples:

- **Use a single license server host.** In this case, you request a single license authorization code for 25 licenses. You create a single license database file that incorporates this code.

  A drawback to this strategy is its single point of failure. If your network's sole license server host becomes unavailable, no one can use ClearCase. (You may consider making some important ClearCase data server also act as the license server; if that host goes down, important data is unavailable, so the incremental inconvenience of not being able to use ClearCase is small.)

- **Use two license server hosts**. In this case, you request two license authorization codes, one for 15 licenses and another for 10 licenses. You create two license database files that incorporate these codes on two different hosts.

  This strategy provides for more robustness. If the 15-license server goes down, developers can still use ClearCase—but only a maximum of 10 concurrent users, down from 25.

  Of course, all clients that point to the downed license server would have to be manually repointed to the remaining license server.

Allocating MultiSite Licenses

Each user of a replicated VOB must acquire both a ClearCase license and a MultiSite license; moreover, the two licenses must be acquired from the same license server host. Therefore, plan your MultiSite licenses by analyzing each current ClearCase license server host:

- If some or all of the client hosts that use a particular license server host will access replicated VOBs, you must install MultiSite licenses on that license server.
- If all users on those client hosts will access replicated VOBs, we recommend that you install the same number of MultiSite licenses as ClearCase licenses.
- If some users will be accessing standard (unreplicated) VOBs only, you can install a smaller number of MultiSite licenses.

For example, a company has two sites, with 20 developers at site A and 5 developers at site B. The company has three VOBs at site A; two of them will be replicated to site B and one will not be replicated. Five developers at site A will access only the unreplicated VOB, and the remaining 15 will work in all VOBs. Therefore, the company needs to purchase the following numbers of licenses:

Site	ClearCase licenses	MultiSite licenses
A	20	15
B	5	5

Note: This example assumes that you purchase a ClearCase license for each developer. If you have fewer ClearCase licenses than developers, you can purchase a proportionate number of MultiSite licenses. For example, if site B purchased three ClearCase licenses, it would also purchase three MultiSite licenses.

Complete the License Registration Form

After you decide how to allocate your CPF licenses, fill in the appropriate number of License Registration Forms and send them to Rational (or its designee) according to the instructions on the form. (A copy of this form is printed in the back of this manual.) You do not need to wait until you receive a response. A license is not required to install the software, so you can proceed to load the CPF software from the distribution medium.

Establishing Networkwide Resources

Send for Your License Authorization Code on page 17 describes one kind of networkwide resource, the license server. CPF requires several such resources:

- Networkwide CPF release host
- License server
- Registry server (and one or more optional backup registry servers)
- Registry region

Select the Hosts for Networkwide Resources

You can have one host for the license server, registry server, and the release host, or you can distribute them among multiple hosts.

The following sections present guidelines for selecting hosts to fulfill these roles.

Release Host

One host in the network acts as the networkwide release host, housing a release area that provides storage for the entire CPF distribution: executable files, configuration files, online documentation, and so on. This host is essentially a file-server host. It must be highly available, that is, with fast file-system access, visible to all other CPF hosts, robust, and infrequently rebooted.

CPF programs do not need to run on the release host; thus, it can have a nonsupported architecture. For example, it can be a multi-tera-byte mass-storage system. (If the release host has an architecture that ClearCase supports, you can also install the ClearCase software there, enabling the host to store VOBs and/or views, and to run ClearCase client programs.)

If you are upgrading from any previous ClearCase release, you can use your existing release host, but make sure it has enough disk space to accommodate this release. For more information, see *Disk Space Requirements for Individual Hosts* on page 5.

Note: Most examples in this chapter refer to specific architectural mnemonics, such as **sun5**, or to specific releases, such as 6.0 (for 2002.06.00). You will have to substitute mnemonics or release numbers appropriately.

License Server Host

One or more hosts in the network act as CPF license server hosts, as described in *Send for Your License Authorization Code* on page 17. A license server host must be highly available; if it becomes unavailable, so do the licenses defined in its license database file. (A user may be able to continue working for 15 minutes or so after the link to the license server host fails.)

You must install ClearCase on the license server host.

If you are upgrading from a previous ClearCase release you can still use your existing license server host. The ClearCase licensing scheme has not changed; thus, no licensing-level changes are required on that host.

Registry Server Host

One host in the network acts as the CPF registry server host. ClearCase client and server processes use the databases in directory /var/adm/rational/clearcase/rgy on this host to determine the locations of all the network's ClearCase data structures (VOBs and views). For example, a registry file is consulted when a VOB or view is activated, and when a derived object's data container is promoted from view storage to VOB storage.

The registry server host must be highly available; if it becomes unavailable, users are unable to access ClearCase data.

You must install ClearCase on the registry server host.

Administration is simpler when the license server and the registry server are on the same host.

Name a ClearCase Registry Region

A ClearCase registry region (or network region) is a conceptual partition of a local area network.

The administrator can define multiple ClearCase registry regions, in which clients use different global pathnames to access the same storage directories. This enables the registry mechanism to support (for example) multiple subnetworks with different host namespaces. For more information, see the *Administrator's Guide* for Rational ClearCase.

Before installing ClearCase for the first time, you need to choose a name for the default region. You can create the region (with the **cleartool mkregion** command) after you install.

Platform-Specific Information

This section presents platform-specific information you will need while creating a release area.

Architecture Mnemonics and mount Commands

Table 13 provides the architecture mnemonic and sample CD **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 13 Mounting the CD

Architecture	Mnemonic	Sample mount command
Solaris SPARC	**sun5**	Not necessary if Volume Manager is in use
HP-UX 11	**hp11_pa**	**mount -F cdfs -r /dev/dsk/c3d0s2 /cdrom**
HP-UX/IPF	**hp11_ia64**	**mount -F cdfs -r /dev/dsk/c3d0s2 /cdrom**
SGI IRIX	**sgi6**	**mount -r -t iso9660 /dev/sc0d610 /cdrom**

Table 13 Mounting the CD

Architecture	Mnemonic	Sample mount command
IBM AIX	**aix4_power**	**mount -o ro -v cdrfs /dev/dc0 /cdrom**
Linux for x86	**rhat_x86**	**mount –r /dev/cdrom /mnt/cdrom**
Linux for IBM S/390 and zSeries[1]	**linux_390**	

1. 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

Exporting the Release Area

Setting up the export is architecture specific; see Table 14. For details, see the standard reference pages for these files and programs.

Table 14 Exporting the ClearCase Release Area (Part 1 of 2)

Architecture	Steps to export ClearCase release area
Solaris SPARC	1. Revise **/etc/dfs/dfstab**: **share -F nfs /usr/clearcase_rls** *options*
	2. Enter command: # **/usr/sbin/shareall -F NFS**
HP-UX 11	1. Revise **/etc/exports**: **/usr/clearcase_rls options**
	2. Enter command: # **/usr/sbin/exportfs -a** *other-options*
HP-UX/IPF	1. Revise **/etc/exports**: **/usr/clearcase_rls** *options*
	2. Enter command: **/usr/bin/exportfs -a** *other_options*
IBM AIX	1. Revise **/etc/exports**: **/usr/clearcase_rls** *options*
	2. Enter command: **/usr/sbin/exportfs -a** *other_options*

Table 14 Exporting the ClearCase Release Area (Part 2 of 2)

Architecture	Steps to export ClearCase release area
SGI IRIX	1. Revise **/etc/exports**: **/usr/ccase_rls options**
	2. Enter command: **# /usr/etc/exportfs –a other-options**
Linux for x86,	Revise /etc/exports: **/usr/clearcase_rls (rw)**
Linux for IBM S/390 and zSeries	

Set Up the New CPF Release Host

Setting up the release host involves the following steps:

- Loading files from the CPF distribution media onto the release host's file system. See *Loading the Software Distribution from CD* on page 24.
- Setting the ownership and access modes of the release area and files. See *Running the site_prep Script* on page 25.
- Optionally, enabling non-**root** users to install CPF on individual hosts. See *site_prep Options* on page 26.
- Ensuring that other hosts in the network can access the files. See *Ensuring That the Release Area Is Accessible to All Hosts* on page 24.

The Merged Release Area

This release is distributed as part of a merged release area that includes ClearCase and MultiSite products.

The release area that you set up with the following procedures includes all of these products, which can be installed in any combination on other hosts in your network. This installation facility manages interdependencies and overlapping requirements of all CPF software products installed on UNIX platforms. A merged release area simplifies installation for the most common cases and requires slightly less disk space than a series of individual product release areas.

Setting Up a New Release Area

1. Log on as **root** user to the computer you have selected to be the networkwide release host.
2. Decide where to create the CPF release area, into which you will load the contents of the CPF distribution medium.

   Note: You must select a location in a file system that is (or can be) NFS-mounted by all current and prospective CPF hosts. Those hosts must not mount the release-area file system with the **nosuid** option. This option prevents use of the **reformatvob** command on hosts that are link installed.

   The file system must have sufficient disk space to hold the release area. For specific information, see *Disk Space Requirements for Individual Hosts* on page 5.

   Note: In this document, we assume that you choose /usr/clearcase_rls. If you choose another location (for example, /opt/clearcase_rls), modify the commands listed for subsequent steps accordingly. Do not use the name /opt/rational/clearcase for the release area. This name is reserved (but not required) for the home of CPF software on the individual installation hosts (as an actual file system or sym link in link installations). In general, the ClearCase Product Family documentation refers to the installation directory as *ccase-home-dir*.

Ensuring That the Release Area Is Accessible to All Hosts

Make sure that the release host exports the directory /usr/clearcase_rls (or the file system on which it resides). For details, see *Exporting the Release Area* on page 22.

Publicizing the Location of the Release Area

If users will install CPF on their own client hosts, they need the pathname for the CPF release area (for example, /net/filsvr1/usr/clearcase_rls).

Loading the Software Distribution from CD

CPF software is distributed on a ISO-9660 formatted CD ("High Sierra", **hsfs**, **cdfs**).

To copy the software from the CD to the computer you have selected as the networkwide release host:

1. Log on, as **root** user, to a host with a CD drive. Ideally, this is the networkwide release host itself. But if that host does not have a CD drive, log on to another host that is NFS-accessible to the networkwide release host and mount the CD drive using NFS.
2. (If necessary) Create a mount-point directory for the CD:

```
# mkdir /cdrom
```

3. Place the CPF distribution CD in the drive. On Solaris hosts, the volume manager mounts the CD automatically, so you can skip to Step 5.
4. Mount the CD. For the mount command for your platform, see *Architecture Mnemonics and mount Commands* on page 21.

   Note that CD drive names vary from host to host. Thus, you may need to adjust the **mount** command listed in *Architecture Mnemonics and mount Commands* on page 21.
5. If the CD drive is not on the networkwide release host, use NFS facilities to export the CD drive's mount point from its host, and mount it on the networkwide release host. *Exporting the Release Area* on page 22 gives the pathname of the export command for each architecture. For example:

   On the host with the CD drive:

   ```
   # /usr/etc/exportfs –i –o ro /cdrom
   ```

   On the release host:

   ```
   # mount drive-host:/cdrom /cdrom
   ```
6. From the Bourne shell, run the script to load the CPF software from the CD to the networkwide release host:

   ```
   # cd /cdrom     (most architectures)
     or
   # cd /cdrom/rational  (on Solaris)
   # sh copy_rel.sh
   ```

Running the site_prep Script

After the distribution has been loaded, run the **site_prep** script. **site_prep** is *required* to prepare the release area for installation of CPF software on individual hosts. This script requires **root** user permissions and does the following:

- Specifies the license server host, registry host, backup registry hosts, and region name
- Sets correct permissions on all files in the release area
- Enables or disables remote administration of hosts installing from this release area
- Enables or disables setuid/setgid mounting of the viewroot and VOB file systems for hosts installing from this release area

Setuid mounting can be enabled as a default only for public VOBs. For private VOBs, the **suid** mount option must be set in the ClearCase registry, or it must be passed on the **cleartool mount** command line by the **root** user.

You must run **site_prep** for each architecture that your site supports. To guarantee access, log on to the release host. Change to the install subdirectory for the first supported architecture. For architecture mnemonics, see *Architecture Mnemonics and mount Commands* on page 21.

For example:

```
# cd /usr/clearcase_rls/v6.0
# cd sun5/install
# ./site_prep
```

If you specify no options, **site_prep** does the following:

- Makes all files in the merged release area belong to **root** user and disables write permissions to all files
- Reprotects the **db_loader** and **db_dumper** programs (used by the **reformatvob** command) to setting them to uid root mode
- Checks whether the NIS services database can accommodate the addition of the **albd_server** with no collision of port numbers
- Prompts you to name several regionwide CPF resources:
  - Name of license server host
  - Name of registry server host (and the optional backup registry hosts)
  - Name of the default ClearCase registry region

  The names you specify are supplied later as suggested defaults when **install_release** is run to install individual hosts.
- Prompts you to specify the ClearCase Remote Administration setting

If you do not specify the **–setuid_mounts** option, **site_prep** asks whether you want to supply or change setuid/setgid mount information for hosts installing from this release area.

Remember to run **site_prep** for any additional architectures your site supports.

site_prep Options

Usage: **site_prep** [**–enable_non_root** | **–disable_non_root**]
[**–license_host** *hostname* | **–lh** *hostname*]
[**–registry_host** *hostname* | **–rh** *hostname*]
[**–registry_backup** *hostname ...* | **–rbh** *hostname ...*]
[**–registry_region** *registry_region* | **–rr** *registry_region*]

[**–setuid_mounts** *filename* | **–sm** *filename*
|**–setuid_mounts "leave unchanged"** | **–sm "leave unchanged"**
|**–setuid_mounts "disable for all hosts"** | **–sm "disable for all hosts"**]
[**–allow_remote_admin** | **–disallow_remote_admin**]
[**–no_query** | **–nq**] [**–help**] [**–chmod** | **–setuid**]
[**–rwp_port** *rational-web-platform-port-no* |**–wp** *rational-web-platform-port-no*]
[**–rwp_account** *account-name* | **–wa** *account-name*]
[**–rwp_group** *group-name* |**–wg** *group-name*]

Option	Description
–enable_non_root	Allows non-**root** users to install this release
–disable_non_root	Reverts to allowing only **root** users to install this release
–license_host *hostname*	Specifies location of license host
–registry_host *hostname*	Specifies location of registry host
–registry_backup *hostname ...*	Specifies locations of one or more optional backup registry hosts
–registry_region *registry_region*	Specifies registry region
–setuid_mounts *filename*	Enables or disables setuid/setgid mounts of viewroot and VOB file systems for the hosts in *filename*
–setuid_mounts "leave unchanged"	Preserves the existing setuid/setgid information
–setuid_mounts "disable for all hosts"	Disables setuid/setgid mounts for all hosts that install from this release area
–allow_remote_admin	Enable ClearCase Remote Administration on all hosts that install from this release area
–disallow_remote_admin	Disables ClearCase Remote Administration on all hosts that install from this release area

–no_query	If values *are not specified using the command line*: sets license host, registry host, registry region and backup registry host to `Unknown`; leaves the **setuid mount** options for install hosts unchanged; enables remote administration; suppresses querying for other values not set in the command line. For RWP, the port number, account name and group name may vary blatform.
–help	Displays this summary of **site_prep** options
–rwp_port *rational-web-platform-port-no*	Port number used by RWP for HTTP requests. The default is 80 for Sun platforms, and 81 for HP platforms.
–rwp_account *account-name*	Account name for RWP server.
–rwp_group *group-name*	Group name for RWP server.
–chmod	Disables write access to release area files and directories
–setuid	Marks certain files as setuid-**root**

Allowing Non-root Users to Install CPF

Optionally, you can allow non-**root** users to install ClearCase LT. To do this, use the **–enable_non_root** option:

```
# site_prep –enable_non_root
```

If you have enabled non-**root** installation, enter the following command after all ClearCase LT hosts have been installed to eliminate the possibility of a security breach.

```
# site_prep –disable_non_root
```

Rational has taken care to minimize the security risks of non-**root** installation, but taking this step provides extra assurance.

Specifying Regionwide Product Resources

If you do not specify the names of your license host, registry host, backup registry host, or registry region in the **site_prep** command line, you are prompted to enter them. The **–no_query** option suppresses the query, but sets the values as specified on the command line. If one of these names is not specified, **–no_query** sets its value to `Unknown`.

When you (or other users) install CPF on individual hosts (see Chapter 3), these locations are offered as defaults. Accepting the defaults ensures that all hosts are configured to use the same networkwide resources. (If your network has several license server hosts and/or several registry regions, some or all users must override the defaults.)

Configuring Rational Web Platform

You can use the following options to configure Rational Web Plaform (RWP):

- **–rwp_port** (short name **–wp**) Takes as its argument the port number that will be used by RWP.
- **–rwp_account** (short nam**e –wa**) Specifies the *account-name.*
- **–rwp_group** (short name **–wg**) Specifies the *group-name.*

Caution: Installing RWP on a host that is already running another Web server may result in a port conflict that can cause RWP or the other Web server to fail on startup. We recommend that you install RWP on a host that does not have to run any other Web servers. If this is impossible, we recommend that you configure the other Web server to use ports that are not being used by RWP. If you cannot do this, you must configure RWP to use ports not used by the other Web server. For more information, see the *Administrator's Guide*.

Notes on Configuring RWP on AIX and HP-UX/IPF

To configure RWP on AIX and HP-UX/IPF, use the default HTTP and HTTPS ports (80 and 443, respectively) if they are available. However, if another Web server is running on the intended RWP host and is using these ports, RWP must be configured to use other ports. If you are using a nondefault port for HTTP, such as 81 for example, then this must be specified in the URL:

```
http://server:81/ccweb
```

Similarly, if you are using a nondefault port for HTTPS, such as 444 for example, then this must be specified in the URL:

```
https://server:444/ccweb
```

HP-UX hosts often ship with an HP Apache Web server, which may use ports 80 and 443. AIX hosts often ship with a `httpdlite` to support serving documentation; it uses port 80. To account for these circumstances, HP-UX/IPF and AIX hosts are configured by default as follows:

Platform	HTTP Port	HTTPS Port
HP-UX/IPF	81	444
IBM AIX	81	443

To change the HTTP port, edit the `Listen` directive in the file /opt/rational/common/rwp/conf/rwp.conf. To change the HTTPS port, edit the file /opt/rational/common/rwp/conf/ssl.conf and change all instances of **443** (or of **444**) to another port.

According to platform, the `rwp` and the Tomcat `java` processes run under the following identities:

Platform	User ID	Group
HP-UX/IPF	`www`	`other`
IBM AIX	`guest`	`usr`

To change the user ID, edit the `User` directive in /opt/rational/common/rwp/conf/rwp.conf and edit the command **su** *user-id* ... in /opt/rational/common/rwp/bin/rwp_startup, specifying a different user ID. To change the group, edit the `Group` directive in /opt/rational/common/rwp/conf/rwp.conf.

Enabling setuid/setgid Mounting of Viewroot and VOB File Systems

At site preparation time, you must configure your release area to enable or disable setuid/setgid mount information for hosts installing from this release area. The recommended configuration is to mount the viewroot and VOB file systems on ClearCase hosts with setuid and setgid privileges disabled. To do so, when running **site_prep** in interactive mode, accept the default values for setuid/setgid mounting. When running **site_prep** in noninteractive mode, use **–setuid_mounts "disable for all hosts"**.

However, if any hosts at your site must mount the viewroot and VOB file systems with setuid and setgid enabled (for example, if you run setuid tools from within a VOB), you must configure the release area to allow these hosts to enable setuid/setgid mounting. To do so, create a file that contains the names of these hosts and specify this file as the argument to the **–setuid_mounts** option or at the interactive prompt. The information

in this file is copied to (overwrites) a configuration file in the release area. When ClearCase is installed on hosts listed in the configuration file, the viewroot and VOB file systems on these hosts are mounted accordingly. For hosts not specified in the file, setuid/setgid is disabled.

The file you create must use the following syntax:

[**+**|**–**]*reg-exp*[**,***reg-exp*...]

This file is governed by the following rules:

- Data lines must begin with a plus sign or a minus sign:
  + (enable setuid/setgid) or **–** (disable setuid/setgid)
- If no data lines are supplied, setuid/setgid is disabled for all hosts.
- If no **+** data lines are supplied but **–** data lines are, setuid/setgid is disabled for all hosts (because no **+** data lines are supplied).
- If no **–** data lines are supplied but **+** data lines are, only those hosts matching the **+** lines are enabled.
- *reg-exp* must be a valid Perl regular expression.
  - '$|^' is substituted inline for ',' in the entire data line
  - a '^' is appended and a '$' is prepended to the data line
- If *reg-exp* matches the Perl regular expression '^.+\..+\..+\..+$' (for example, 123.123.123.123), the *reg-exp* is interpreted as an IP address. Perl regular expression meta-characters are supported in this form as well.
- Blank lines, line beginning with #, spaces, and tabs are ignored.

At install time, the file is scanned until the first positive match is found.

The following file enables setuid/setgid for hosts **saturn**, **pluto**, and **neptune**, and disables it for all other hosts:

+saturn
+pluto
+neptune

The following file explicitly disables setuid/setgid for host **maintest**; enables it for all hosts on the 192.146 subnet, host **gandolf**, and any host with **test** in its name; and disables it for all other hosts:

–maintest
+192.146.[0-9]+.[0-9]+,gandolf,.*test.*

To leave the existing setuid/setgid information unchanged from the previous invocation of **site_prep** on this release area, use **–setuid_mounts "leave unchanged"**.

When you need to change setuid/setgid configuration information for a host, run the script *ccase-home-dir*/etc/utils/change_suid_mounts on an individual host and then stop and restart ClearCase on the host. This enables or disables honoring of setuid programs in VOBs mounted on that host. However, these settings do not persist across installations. (To have the new configuration information persist across installations, run **site_prep –setuid_mounts** *new-filename* on the release area.)

Setting Protections on Files in the Release Area

The **–chmod** and **–setuid** options are provided to allow for the situation in which you have not loaded the distribution as **root** user. (See *Setting Up a New Release Area* on page 24.) CPF requires that the files be write-protected and owned by **root**. These options are separated because you may need to use only **–setuid**, which only affects a few files; **–chmod** affects all files and therefore takes longer. If you did not load the distribution as **root**, the following situation may occur:

- The directories may have been created with write access enabled. The **–chmod** option corrects the write-protection problem.
- The programs **db_loader** and **db_dumper** are not **setuid**-**root** as required. The **–setuid** option corrects this.

Configuring for ClearCase Remote Administration

At site preparation time, you must configure the release area to enable or disable ClearCase Remote Administration on the clients installed from that release area. Use the **–allow_remote_admin** option to enable ClearCase Remote Administration for this release area. This allows any user who is logged on to a Windows NT host and who is a member of the ClearCase administrators group to change ClearCase properties on remote ClearCase clients installed from this release area. These ClearCase properties include the following:

- Registry regions
- License server
- Registry and backup registry servers

ClearCase Remote Administration is useful if, for example, you move your license server to a new host. You can then change the settings for all clients for which remote administration is enabled from one computer.

If you disable ClearCase Remote Administration (**–disallow_remote_admin**), users can change the ClearCase properties on a client, only if they are logged on to that client.

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

Verifying site_prep Selections

The **site_prep** script creates or edits a text file named site.dat in each architecture-specific directory of the release area for which **site_prep** is run. For the example release area and scenario mentioned in *Running the site_prep Script* on page 25, the directory is /usr/clearcase_rls/v6.0/sun5.

For each architecture that your site supports, examine site.dat to verify that there are no typographical errors in the information provided to **site_prep**. If the information is incorrect, rerun **site_prep** for that architecture.

Proceed to Individual Hosts

The setup of the networkwide release host is now complete. You have not installed any CPF product on this host; you have loaded the software there and set some default values to be used by the **install_release** program, which installs CPF on individual hosts.

You can now install CPF around the network yourself or allow users to perform their own installations. Installation on individual hosts is the subject of Chapter 3.

Installing the ClearCase Product Family: Individual Hosts

3

The Rational ClearCase Product Family is distributed as part of a merged release area that includes Rational ClearCase and Rational ClearCase MultiSite products. The term CPF refers to the set of products included in the merged release area for that release.

Note: Read the *Release Notes* for Rational ClearCase and ClearCase MultiSite before proceeding with installation.

This chapter presents both background information and detailed installation instructions for installing CPF on individual hosts.

The **install_release** program handles all CPF installation on UNIX. These products share a number of files and directories, and have various overlapping dependencies, which **install_release** handles.

The **install_release** program separates the choice of how the software is installed on the local system—the installation method and model—from the choice of products being installed. In addition, **install_release** supports installation of multiple CPF products in a single invocation. In multiple-product installations, the same selections (model and options) are used for all products. Installing a product by using different selections requires another invocation of **install_release.**

Note: ClearCase Product Family documentation uses *ccase-home-dir* as shorthand notation for the ClearCase Product Family installation directory. Substitute your own local installation directory for *ccase-home-dir*, whenever you encounter it. (The default installation directory is /opt/rational/clearcase.)

Client Hosts and Server Hosts

This section explains installation issues for client and server hosts.

ClearCase Considerations

ClearCase is a client/server application. When installing ClearCase on a host, consider whether it will be used as a client host, as a server host, or both.

Developers use client hosts to run the client programs that constitute the user-level interface to ClearCase. This interface includes **cleartool**, **clearmake**, **clearprompt**, and

xclearcase (for checkout/checkin, attaching labels and attributes, merging, performing builds, and so on).

ClearCase data (VOB storage directories and view storage directories) resides on server hosts. ClearCase server processes run on these hosts, as needed, communicating with client programs through remote procedure calls (RPCs).

Note: A typical developer's computer is both a client host (because the developer runs CPF programs on it) and a server host (because the developer's views reside there, too). Keep this dual role in mind as you read *Client Hosts* on page 36 and *Server Hosts* on page 37.

MultiSite Considerations

MultiSite can be installed on client and/or server hosts, but need not be installed on all ClearCase hosts. In most situations, only these hosts require MultiSite installation:

- Hosts on which one or more replicated VOBs reside.
- Hosts that belong to users with ClearCase and/or MultiSite administration responsibilities.
- Hosts on which the **shipping_server** utility will be used, even if no replicated VOBs will reside on that host. (These hosts do not require a full MultiSite installation; only the **shipping_server** software must be installed. Running **shipping_server** does not require a MultiSite license.)

Client Hosts

Your network may include a large number of potential ClearCase client hosts. **install_release** has options for installing a group of hosts at the same time. You can also allow users to run **install_release** themselves; they may not need to have **root** user privileges to run the program (see *Running the site_prep Script* on page 25). On each host, installation can vary from lightweight (little more than creating a link or mounting a file system on which ClearCase has already been installed) to heavyweight (copying all files from the networkwide release host to the client host).

For some system architectures, installing the ClearCase multiversion file system (MVFS) involves creation of a new UNIX kernel. This is handled by **install_release**. Some client hosts may require special adjustments—at installation time or afterward—to accommodate the MVFS. For example, you may need to revise a host's virtual file system table or change the MVFS cache configuration. Some of these changes may require you to reboot your computer.

Selection Criteria

ClearCase client programs make considerable demands on a host's processing power and main memory. The most successful approach is to have each developer use their own computer, which must meet or exceed the performance characteristics in *Minimum Requirements* on page 4.

Several users can share a client host (for example, using X terminals) if the host can provide appropriate multiples of these single-user performance specifications—both processing power and main memory.

Maintenance Requirements

A client host requires no maintenance specific to ClearCase.

Server Hosts

Usage characteristics for VOBs are quite different than for views. We recommend storing views and VOBs on separate hosts. For this reason, we distinguish between VOB hosts and view hosts in our discussion of selection criteria.

Selection Criteria for a VOB Host

Each ClearCase VOB requires several server programs, each of which places a load on its host's processing power, main memory, and operating system resources (for example, the open-file descriptor table). In particular, a typical VOB transaction involves database processing that is both compute intensive and memory intensive. A VOB server host must meet or exceed the requirements described in *Basic Software Requirements* on page 6.

Selection Criteria for a View Host

When a developer creates new derived objects (DOs) in a **clearmake** build, the DOs are physically stored within the developer's view. Thus, each view in which an entire application may be built from scratch must have enough disk space to hold an entire build image. If several variants of the application (for example, for different architectures) are built in the same view, the disk space requirement multiplies accordingly.

Two factors can reduce the disk space requirements for a view host:

- In practice, builds of entire applications often use relatively little disk space within the view storage directory; derived object sharing (winkin) reduces the load on view storage by accessing existing DOs in shared VOB storage.

- View storage can be distributed: the view's private storage area can be located on a remote host (perhaps a central file server), instead of within the view storage directory itself.

Maintenance Requirements

VOBs and views make up your organization's data repository. Views store the developers' current work—in particular, checked-out versions of file elements. If one or more views or VOBs reside on the host, you must back up their storage directories very frequently. For full information about backups, see the *Administrator's Guide* for Rational ClearCase.

General Issues with Upgrading

Here is some general information to keep in mind about upgrading:

- Back up all views and VOBs. For information on backing up VOBs and views, see the *Administrator's Guide for Rational ClearCase*.
- Back up the /var/adm/atria/clearcase directory.
- If you have added any files to or modified any files in *ccase-home-dir* (/opt/rational/clearcase, by default), move them or they will be lost when you install.
- Note that the contents of /var/adm/atria will be preserved as /var/adm/atria.preserve.
- Upgrade VOB and view servers before you upgrade client hosts; Version 2002.06.00 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.
- Before upgrading to a new ClearCase release, you must complete all deliver operations that are in progress.

Default Installation Directory

You do not need to remove the previous version of ClearCase unless you have installed the earlier version in a nondefault location and want to change the location of the ClearCase installation directory.

In Version 2003.06.00, the default installation directory for ClearCase has changed from /usr/atria to /opt/rational/clearcase. You do not need to uninstall the previous version of ClearCase and cannot specify /usr/atria as an alternate install location. This requirement is necessary to preserve backward compatibility of use scripts.

If you specify a nondefault installation directory, the directory /opt/rational/clearcase is created as a symbolic link to that directory.

VOB Database Support

The current ClearCase release supports two VOB database formats:

- Schema version 53, supported on all platforms except HP-UX/IPF and Linux for IBM S/390 and zSeries
- Schema version 54 (extended VOB support), supported on all platforms

  Schema version 54 allows VOB database files to grow beyond 2 GB. Element versions cannot be larger than 2 GB.

As part of installing this ClearCase release on a server, you must specify which VOB format you want to use:

- If you are installing on an HP-UX/IPF host or a Linux for IBM S/390 and zSeries host, you are not prompted to specify the VOB format because only schema 54 is supported.
- If you are an existing ClearCase customer, you probably want to select the format that you are currently using. You can run **cleartool -ver** from the command line to see the current VOB database schema version.
- If you are an existing customer who is using schema version 53 and you select schema version 54, you will have to reformat your existing VOBs immediately after installing to allow users to access VOB data.
- If you are a new ClearCase customer, you probably want to select the latest VOB format (schema version 54).

If a server host contains replicated VOBs using ClearCase MultiSite, we recommend that all VOB servers of the same set of replicas use the same VOB format.

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 file size limit of the previous schema (53). If you do not, synchronization imports will fail for any replica that has not been updated.

If you have an existing installation that uses schema version 53 and you select schema version 54 for this installation but change your mind before having reformatted your VOBs, you can reinstall ClearCase and select schema version 53. However, if you have

already reformatted your VOBs, Rational does not support reformatting back to the earlier VOB format.

See the **reformatvob** reference page for more information about VOB database formats, the implications of each selection, and what you need to know to reformat your VOBs.

Preparing a Host for CPF Installation

Before installing CPF on a host, you may need to make some UNIX-level adjustments.

Operating System Patches

CPF interacts with a host's operating system at a lower level than many other applications. Accordingly, CPF may be more sensitive than other applications to OS-level bugs, particularly kernel bugs. Rational works closely with hardware vendors to maintain an up-to-date list of required and recommended operating system patches. Such patches are available from your hardware or operating system vendor, not from Rational.

Before installing CPF on a host, consult *Required Operating System Patches* on page 6, obtain the appropriate operating system patches from the vendor, and install the patches.

Layered Software Packages

In some cases, correct ClearCase processing requires installation of a layered software package. Before installing ClearCase on a host, see *Layered Software Packages* on page 40.

Performing CPF Installation

The following sections describe how to use the various options of the **install_release** program to install CPF.

Installation Methods and Models

When you invoke **install_release**, you are prompted to select an installation method.

- Select **Local Install** if you want to install software on the local system (the one you are currently logged on to).
- Select **Remote Install** if you want to install software on a single remote system.

- Select **Multiple Remote Installs** if you want to install software—using identical install options—on more than one remote system of the same architecture.
- Select **Local Deinstall** if you want to remove software from the local system.

The remote methods operate exactly the same as the local method for all but the final steps. In the final steps of the remote methods, **install_release** runs a command that carries out one or more remote installations of the product (or products) you selected, using the model you specify. We recommend that you start with a **Local Install** to become familiar with the installation options before you try the remote methods.

If you choose **Multiple Remote Installs**, you must provide a file containing the host names on which you want to install CPF. This file must have one host name per line. You are prompted for the name of this file by **install_release**. Multiple installations are installed with identical options.

After you select the installation method, **install_release** prompts you to select an installation model. Choose from the following installation models (as well as a deinstallation model, which is discussed on page 45):

- **Standard** —Regular installation, with links to the release area
- **Full-Copy** — Regular installation, with no links to the release area
- **Mounted** — Host install using mounted, prepopulated installation directory
- **Link-Only** — Host install using a single symbolic link to a platform-specific release area

The model and method that you select applies to all installations performed in a given invocation of **install_release**. You may want to review the models and their characteristics before running **install_release** for the first time.

Your choice of model determines both the file type (directory, symbolic link, or NFS mount point) of *ccase-home-dir* (/opt/rational/clearcase or whatever other CPF installation directory you select) and, if it is a directory, its contents (files, or a combination of files and links to the release area). In choosing the model, you need to consider the amount of available storage and the expected patterns of use for the target computer:

- Is the computer a server or a client or both?
- Does it need to operate even when the network release area is unavailable?
- Does it have adequate local disk space for the ClearCase installation and any required VOB or view storage?
- Is *ccase-home-dir* on a read-only partition?

You may also want to consider the administrative advantages of one installation model over another:

- The **Standard** installation model is designed to be the best combination of features, reliability, performance, and disk space use.

- The **Full** installation model copies all of the software from the release area to the local host. It has no dependence on the network, but requires a large amount of disk space.
- The **Mounted** installation model can greatly simplify the task of maintaining CPF software on a large number of clients. But this advantage must be weighed against the potential for all ClearCase clients and servers to fail if the mounted *ccase-home-dir* becomes inaccessible because of system or network failure.
- The **Link-Only** installation model simplifies matters even further, though with similar drawbacks and a few additional constraints.

All of these models are described in the following sections.

Features Common to All Installation Models

No matter which installation model you choose, a subset of ClearCase files must be installed on the local system outside of *ccase-home-dir*. These include kernel components necessary on systems that require an MVFS, system startup/shutdown scripts, X Window System default files, and so forth. The amount of space on the local system that these files require varies from system to system, but rarely exceeds 1 MB.

The Standard Installation Model

The **Standard** installation model creates *ccase-home-dir* on the target system as a directory and populates it with a combination of locally installed files and links to files in the release area. All shared libraries and critical executables are copied to the target system. Other files, such as Help and various nonessential scripts and utilities, are installed as links to files in the release area. Systems installed using the **Standard** model perform all necessary ClearCase functions as long as the necessary VOBs and views are accessible, and as long as the registry and license server hosts are accessible. There is no significant performance penalty associated with the **Standard** installation model, and it consumes significantly less disk space than the **Full-Copy** model.

We recommend the **Standard** installation model for all servers, and for any client with adequate disk space that does not have to operate when disconnected from the network.

The Full-Copy Installation Model

The **Full-Copy** installation model creates *ccase-home-dir* directory on the target system and populates it completely with files. Systems installed using the **Full-Copy** model perform all ClearCase functions as long as the necessary VOBs and views are accessible, and as long as the registry and license server hosts are accessible.

We recommend the **Full-Copy** model if you are installing a host that must run essential and nonessential ClearCase operations even when the release area is unavailable.

You are required to use the **Full-Copy** model when you are installing a host that provides a shared *ccase-home-dir* for **Mounted** client installations.

For any other use, the **Full-Copy** model probably represents an unnecessarily conservative approach to installation.

The Mounted Installation Model

A host installed using the **Mounted** installation model mounts *ccase-home-dir* using NFS and requires only a small amount of local disk space for other ClearCase files that are not installed in *ccase-home-dir*. This model is useful at sites where systems share the disk partition on which the *ccase-home-dir* resides or where an administrator wants to maintain a single *ccase-home-dir* to be shared by many systems. In either case, *ccase-home-dir* is a remote disk partition, which is typically mounted read-only.

The **Mounted** installation model requires that a correctly populated *ccase-home-dir* is accessible from the system being installed, before **install_release** is run. When you run **install_release**, the **Mounted** model verifies that the preexisting *ccase-home-dir* directory contains software equivalent to that in the release area.

install_release then performs the installation steps that are common to all installation models. (See *Features Common to All Installation Models* on page 42.) The **install_release** program does not mount any file system to populate *ccase-home-dir* during a **Mounted** installation.

The **Mounted** installation model is the only model you can use if you cannot create or modify the *ccase-home-dir* directory on your local system. In this sense, you can think of the **Mounted** model as a read-only model.

This model is useful at sites where systems share the disk partition on which the *ccase-home-dir* resides or where an administrator wants to maintain a single *ccase-home-dir* to be shared by many systems. In either case, the *ccase-home-dir* is a remote disk partition, which is typically mounted as read-only.

To correctly populate the *ccase-home-dir* for use by a **Mounted** model installation, a system with write permission to the shared disk partition must be installed with a **Full-Copy** installation. The systems that share the disk partition then see the correctly populated *ccase-home-dir* necessary to perform a **Mounted** installation.

The **Mounted** installation model is highly dependent on a stable network. ClearCase executables, such as **vob_server** and **db_server** that are installed with this model, may experience difficulties on heavily loaded networks, as may **clearmake** builds. **Mounted** and **Link-Only** share these requirements.

Note: If you use the **Mounted** model, you must reinstall whenever a new version of a product you use is installed on the host housing the **Full-Copy** installation.

With the file system containing the installation now available, you can perform a **Mounted** install on any system on the network that has access to that file system. To perform the **Mounted** install, select a system that is not installed with ClearCase or ClearCase LT, and perform the following procedure:

Note: In the following steps, the system with the **Full-Copy** installation is referred to as Machine A and the system on which the **Mounted** install is performed as Machine B. The install directory is /opt/rational.

1. On Machine B, manually create the install directory **/opt/rational**
2. On Machine B, mount the directory **/opt/rational** that resides on Machine A as **/opt/rational** on Machine B. For example:

   ```
   # mount Machine A:/opt/rational  /opt/rational
   ```

On Machine B you should now see all the files under **/opt/rational**.

3. On Machine B, run **install_release** (and select the **Mount** installation model) to complete the installation.

The **Mounted** install model requires a stable network. ClearCase servers installed using this model may suffer performance degradation on heavily loaded networks. Both the **Mounted** and **Link-Only** models share these characteristics.

Restrictions

Note that your VOB database format must conform to schema 53. Extended VOB support (schema version 54) is not supported for use with the **Mounted** installation model.

The **Mounted** installation model does not support the ClearCase Web Server component.

The Link-Only Installation Model

The **Link-Only** installation model creates *ccase-home-dir* on the target host as a symbolic link to the appropriate release area. (It also creates /opt/rational/clearcase as a symbolic link to *ccase-home-dir* if they are not the same directory.) Hosts installed using the **Link-Only** model can perform ClearCase functions as long as this release area is accessible.

This model can be useful if all software to be installed on all target systems resides in a single release area. Do not use the **Link-Only** model if software from multiple release areas needs to be installed on a target system.

The **Link-Only** installation model is highly dependent on a stable network. ClearCase executables, such as **vob_server** and **db_server** that are installed with this model, may experience difficulties on heavily loaded networks, as may **clearmake** builds. **Mounted** and **Link-Only** installations share these requirements.

Restrictions

The **Link-Only** installation model does not support the ClearCase Web Server component.

Notes on Link-Only Installations

- If you use the **Link-Only** model, you must reinstall whenever a new version of a product you use is loaded into the release area from which you install.
- 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.

The Deinstallation Model

The **Local Deinstall** model provides you with a list of currently installed products and components to remove from the local system. All installed products or components can be deinstalled. After all the selections have been made, you are prompted to finish the deinstall. (The **Local Deinstall** method amounts to choosing the **Local** method and the **Deinstall** model.)

Local Deinstall preserves a number of important system files—such as rgy, rgy/backup, and license.db —in /var/tmp/Rational.preserve.

Additional Deinstall Steps for the Mounted Installation Model

The following steps must be performed before deinstalling an installation of ClearCase installed with the **Mounted** model:

1. On the **Mounted** installed machine, stop ClearCase:

   ```
   # ccase-home-dir/etc/clearcase stop
   ```

2. Perform a system unmount of *ccase-home-di*r. For example:

   ```
   # umount /opt/rational
   ```

You can then run **install_release**, selecting the **Local Deinstall** model.

Deinstalling May Remove Web Interface Views

By default, views for Web interface users are created under the host data directory for ClearCase (/var/adm/rational). 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 /var/adm/rational/common/rwp/conf/ccweb.conf file to designate some other location for Web interface views.

Compatibility Between Models

If you want to change from one installation model to any other, the best way to proceed is to deinstall your currently installed products before you install with the new model. The installation script warns you if you attempt to change models when installing new software.

Order of Installation

It is important to install CPF hosts in this order:

1. **License server host and registry server host**, on which important site information is stored. We recommend that these be the same host. If they are not, it does not matter which one is installed first.

   You can specify one or more backup registry hosts.
2. **VOB hosts**, on which VOB storage areas physically reside.
3. **View hosts**, on which view storage areas physically reside.
4. **Client hosts**, on which users run ClearCase client programs. Typically, users create one or more view storage directories on their computers, which makes it a *view host*, as well.

Selecting the Products for Installation

If you are upgrading from a previous release, upgrade all of the products you currently have installed.

install_release presents you with a list of products that you can install. The list of products is based on the contents of the networkwide release area from which **install_release** is being run, and can include any CPF product for UNIX. In addition, you can make any of the following procedural selections:

Selection and name		Description
x	*Toggle expanded descriptions*	Alternates between displaying the list of products with corresponding detailed descriptions and displaying the list of products with no descriptions. By default, no product descriptions are displayed.
a	*Select all*	Selects all listed components.
f	*Finish selection*	Indicates that you selected everything you want to install/deinstall and are ready to complete the installation/deinstallation.
r	*Reset selections*	Deselects everything.
q	*Quit*	Quits **install_release**.

Select each product, one at a time, by typing its number. **install_release** responds by displaying the list with an asterisk to the left of each selected product.

Note: You can select all products with the **a** option, or select a set of products by entering multiple numbers separated by spaces. For example, you can enter the following on a single line:

1 3 4 f

Running the Installation Script

After you make all the preparatory selections, the host is ready for CPF installation using **install_release**.

Before you begin performing installations:

- Verify that the CPF release area is visible from every host to be installed. This is typically done through NFS mounts, symbolic links, or both. Note that this is a requirement regardless of the installation model you choose.
- Verify that each host has adequate disk space for the intended model of installation, as well as for any local view or VOB storage you expect the host to require. See *Disk Space Requirements for Individual Hosts* on page 5.
- If you are performing any remote installations, verify that the **root** identity on the install host (the host on which you will run **install_release**) has remote shell access to all remote targets, as follows. On the install host, become **root** and run the following command, substituting each remote target name for *remote-hostname*:

  # **rsh** *remote-hostname* **date**

If the **root** user has remote shell access to the target, you see the date and time. If you receive a `permission denied` error, see your operating system vendor's **man** pages for **rsh**.

After the **site_prep** script runs, default values for most **install_release** pathname and host name parameters are established. If you are not going to use the default choices **site_prep** supplies to **install_release**, make sure you know the following information before you run **install_release**:

- The name of your license server host
- The name of your registry server host
- The name of your one or more optional backup registry server hosts
- The name of your registry region (network region)

Note: The following examples use the # character as the shell prompt; this is the standard prompt for the **root** user. The examples also assume use of the C shell in commands that set environment variables.

Running install_release

To invoke and run **install_release**:

1. Log on to the host to be installed. If non-**root** installation has been enabled at your site (see *Running the site_prep Script* on page 25), you can log on as a nonprivileged user. Otherwise, you must log on as **root** user.

   If you are already running ClearCase on this host, make sure that you are not set to any ClearCase views in any windows.

   If the **site_prep** script was not run on the release area, **install_release** aborts.

2. Go to the **install** subdirectory within the CPF networkwide release area for the appropriate architecture:

   # **cd /net/bigserver/usr/clearcase_rls/v5.0** *(typical release area)*

   # **cd sun5/clearcase/install** *(architecture-specific location within release area)*

   For architecture mnemonics, see *Architecture Mnemonics and mount Commands* on page 21.

3. Invoke the **install_release** program:

   # **./install_release**

   After a series of legal notices, you see the list of CPF products that can be installed from this release area. In addition, you are informed of both the temporary and

permanent locations of a transcript of your installation. The transcript includes everything you see during the installation and the results of your actions.

If the installation succeeds, even with errors, the transcript in /tmp is deleted and posted in /var/adm/rational/clearcase/log. If the installation fails, you can use the /tmp transcript.

You can type **q** at any prompt to quit the installation.

4 Choose your installation method.

5 Accept the license agreements. After you select an installation method, you see the Rational license agreement. You can view the agreement by pressing the space bar to display the next page. Press **x** or **q** to skip displaying the remainder of the license agreement.

When prompted, you must accept the terms of the license agreement to continue installation.

The Third_Party license agreement is then displayed. You can view the agreement by pressing the space bar to display the next page. Press **x** or **q** to skip displaying the remainder of the license agreement.

When prompted, you must accept the terms of the license agreement to continue installation.

6 Choose your installation model. All products installed in this session are installed using the same model. Selecting the **Standard** model results in an optimal trade-off between reliability and performance.

7 Specify the directory on the local host in which to place the products you plan to install. Unless you have been instructed otherwise, we recommend that you take the supplied defaults [listed in square brackets] on all such prompts. Accept the default by pressing RETURN.

8 Name the location of the networkwide release area. This is where any files or directories installed as symbolic links actually reside.

9 Now you are presented with the list of products to be installed. *The list you see may differ from the list shown here*. Select each product by number. You can select the entire list by entering **a** for **a**ll. If you change your mind, enter **r** for **r**eset. If you need more information, enter **x** to e**x**pand the component descriptions. When you have chosen all the products you want to install, enter **f** to indicate that you are **f**inished making selections.

When you select products that depend on other products, those products are installed, too.

install_release responds by displaying the list with an asterisk (*) to the left of each selected product. For example:

```
Please select for installation from the following components:

Components preceeded with a '*' are selected for installation.

1 : ClearCase Minimal Developer Installation
2 : ClearCase Server-only Installation
3 : ClearCase MultiSite Full Function Installation
4 : ClearCase Web Interface Server
5 : ClearQuest Integration with ClearCase
6 : ClearDDTS Integration with ClearCase
7 : ClearCase Mainframe Connectors
8 : ClearCase MultiSite Shipping Server-only Installation
*9 : ClearCase Full Function Installation
a : Select all
f : Finish selection
x : Toggle expanded descriptions
r : Reset selections
q : Quit

Selection number(s)>>
```

10 After you enter **f**, **install_release** displays a complete list of all the components you selected for installation. Note that some of these components were not on the list of selectable items. This list appears primarily so that it can be recorded in the install transcript. The components are then installed one at a time. Each component may prompt you for more information. These prompts depend on the list of products and components being installed.

Most of the remaining prompts display a suggested default response. Unless you have been instructed otherwise, accept the defaults [in square brackets] by pressing RETURN at the prompt. The defaults will be different on your system. (See *Running the site_prep Script* on page 25 to see where these default names come from.)

```
ClearCase License Server Host[neon]:
ClearCase Registry Server Host[infinity]:
ClearCase Registry Backup Host[celica]:
ClearCase Registry Region[cpf_unix]:
Choose whether to install extended VOB support.
Install this feature? (yes, no, quit)[no]:
```

After all the questions have been answered, **install_release** has the information needed to perform the installations you have requested, as stated in the on-screen information.

```
The interactive portion of the installation is complete.
If you choose to continue, the previously listed components
will be installed/updated.


Upon completion, the installation status will indicate whether
there were problems, and provide reminders of post-installation
steps.


This WILL include stopping all currently running ClearCase Product
Family software.
This MAY cause the install program to reboot the system.



**** Enter 'quit' or 'no' to abort the installation ****
**** Enter 'yes' or press <RETURN> to continue ****

Continue installation?(yes, no, quit)[yes]:
```

At this point, you must decide whether to go ahead with the installation. Until now, there has been no modification of the system (other than creating the transcript). No files have been moved, and no processes have been affected.

Note particularly these sentences:

```
This WILL include stopping all currently running ClearCase Product
Family software.
This MAY require a reboot of this system.
```

These sentences vary from installation to installation and platform to platform. Depending on the platform and on the mix of components being installed, it may or may not be necessary to stop all currently running CPF software or to reboot the system after the installation.

Caution: If you continue with the installation, you grant permission to **install_release** to reboot your system if necessary.

After the installation is finished, be sure to read carefully all messages displayed. In particular, look for errors that may have occurred during installation. If there is a problem, look in the installation transcript log (/var/adm/rational/clearcase/log/Rational_install.*time-stamp*) for information on how to correct the errors. If you are unsure how to proceed, call Rational Customer Support.

Note: If the installation was aborted, the installation log may be in /tmp.

A common installation error is lack of permission to create or modify standard system configuration files. Typically you must become **root** user on a remote host to modify a

configuration file or administrative file. If you are not accustomed to making such modifications, seek advice from your system administrator before proceeding.

MultiSite Shipping Configuration Files

Read this section if you are upgrading from a previous release of Rational ClearCase MultiSite.

If you have modified the shipping server configuration file (shipping.conf) or the request for mastership shipping configuration file (rfm_shipping.conf), the installation detects the changes and prints a note in the installation log that instructs you to compare the newly installed configuration template file with the current configuration file and update the current configuration file as necessary.

- For the shipping server, the template file is *ccase-home-dir*/config/services/shipping.conf.template and the current configuration file is /var/adm/rational/clearcase/config/shipping.conf.
- For the request for mastership server (**msadm**), the template file is *ccase-home-dir*/config/services/rfm_shipping.template and the current configuration file is /var/adm/rational/clearcase/config/rfm_shipping.conf.

Completing Installation

The different types of CPF hosts require different postinstallation steps.

Completing Installation on a License Server Host

If you are upgrading from a previous ClearCase release, you can skip this section (unless you have purchased additional licenses or want to change the license server host).

On each host that you have selected to be a license server host, create a license database file, using the following procedure. This file must contain the license authorization code obtained from Rational. (See *Send for Your License Authorization Code* on page 17.)

1. For a description of the CPF licensing scheme, read the following:
   - The license chapters in the *Administrator's Guide* for Rational ClearCase
   - The **clearlicense** reference page in the *Command Reference*
2. Using any text editor, open your license database file /var/adm/rational/clearcase/license.db. For example:

   # **vi /var/adm/rational/clearcase/license.db**

Enter the license authorization code as a line of text beginning with **–license**, *exactly* as it appears on the form provided by Rational (or its designee).

Note: All lines in the license.db file must be terminated with a new line character.

3 (optional) After the **–license** line, enter one or more **–user** lines to specify users' *license priorities*, in order of priority. For example:

–user susan *(highest priority)*
–user jo *(next highest priority)*

Note: This step can also be done at a later time.

Verifying That CPF Licenses Are Available

Use the **clearlicense** command to verify that CPF products have been properly licensed.

Completing Installation on the Registry Server Host

Whenever a user enters a command that creates a public VOB tag, the user must enter a password specific to ClearCase. This password is validated by comparing it with the contents of the VOB tag password file /var/adm/rational/clearcase/rgy/vob_tag.sec on the registry server host.

To complete installation of the registry server host, create this file:

1 Log on to the registry server host as the **root** user.

2 Create the VOB tag password file. For example:

```
# ccase-home-dir/etc/rgy_passwd
Password: <Enter password>
#
```

Verifying That the Registry Server Is Functioning

To verify that the registry is working, run the **cleartool lsregion** command on a host configured to use this registry server host.

Raising the Feature Level

If you are upgrading your VOB server hosts from a previous ClearCase release, and the feature level of the releases differ, you must raise the feature level of the existing VOBs. See the *Release Notes* to determine the feature level of both the new release and the release from which you upgraded.

- If the feature levels are the same, there are no additional steps to take.

- If the feature levels differ, see the **chflevel** reference page for instructions on raising the feature level of an unreplicated VOB or the *Administrator's Guide* for Rational ClearCase MultiSite for instructions on raising the feature level of replicated VOBs.

Automating MultiSite Synchronization

After installing MultiSite, you can automate replica synchronization by editing MultiSite configuration files and scheduling regular execution of synchronization scripts. For more information, see the *Administrator's Guide* for Rational ClearCase MultiSite.

Setting the Browser

On AIX, HP-UX/IPF, SGI IRIX, and Linux for x86 systems, you must use the Mozilla browser. To do so, set the environment variable CCASE_MOZILLA to the pathname of the Mozilla executable. For more information on environment variables for Mozilla, refer to *Release Notes*.

Installing Integrations with Third-Party Products

ClearCase integrations are separate products that provide tight integration between ClearCase and other popular software engineering tools. If you have purchased one or more integration products, you may want to install them at the same time you install ClearCase. (No separate installation is required for the SoftBench integration; it is bundled with ClearCase and is installed automatically.)

Installation instructions are provided with each integration.

Recommended Postinstallation Administrative Procedures

Administrative procedures and maintenance programs are described in the *Administrator's Guide* for Rational ClearCase. Recommended procedures include backing up view and VOB storage and backing up information from the registry and license hosts.

Additionally, maintenance programs must be run on VOBs regularly, to regulate their growth. No periodic maintenance procedures are automatically established for views. ClearCase provides administrators with a **view_scrubber** utility, which eliminates redundant derived object data from view storage.

User Preparation

After you install ClearCase on a host, notify all potential users; they may need to modify shell startup scripts and perform other customizations. See *Customizing a Client Host's Environment for ClearCase* on page 55.

No explicit user-level preparation is required for other CPF products.

Verifying Installation on Individual Hosts

Perform the following tasks to determine whether ClearCase is properly configured for an individual host.

- Check the installed version of ClearCase.

  To verify that the version of ClearCase installed is the intended version, use **cleartool –ver**.

- Verify the names of your license server host and your registry server host.

  Use **cleartool hostinfo –long**.

- Check your connection to the license server host.

  Use the **clearlicense** command to verify that you can access CPF licenses.

- Check your connection to the registry server host.

  If the command **cleartool lsregion** returns without error, you are properly connected to the registry server host.

Customizing a Client Host's Environment for ClearCase

If this is a first-time installation on your client host, you may want to perform several customizations to your environment to make it easier to use ClearCase.

Modifying Your Search Paths

Access to ClearCase programs and online documentation (reference pages) depends on certain environment variable settings. The most reliable way to establish these settings is to edit your shell startup script.

Shell program	Startup Script in home directory
C shell	**.cshrc**
Bourne shell	**.profile**
Korn shell	**.profile**

Note: We recommend that C shell users avoid placing ClearCase settings in file **.login**, which is run only by login shells.

Search Path for Executables

First, add the ClearCase bin directory to your executables search path, as shown in Table 15. The variable CLEARCASEHOME must be set if ClearCase is installed at a location other than /opt/rational/clearcase.

Table 15 Setting the Search Path for Executables

ClearCase installed	At standard location, /opt/rational/clearcase	At alternate location, /opt/ccase
.cshrc (C shell)	`set path=($path /opt/rational/clearcase/bin)`	`setenv CLEARCASEHOME /opt/ccase` `set path=($path $CLEARCASEHOME/bin)`

.profile (Bourne or Korn shell)	`PATH=${PATH}:/opt/rational /clearcase/bin`
	`export PATH`
		`CLEARCASEHOME=/opt/ccase`
		`PATH=${PATH}:$CLEARCASEHOME/bin`
		`export CLEARCASEHOME PATH`

Search Path for Reference Pages

Read this section only if you plan to access ClearCase online reference pages with the standard **man** or **xman** commands. You can skip this section if you intend to rely on the Help system built in to the ClearCase graphical user interface or if you will always use the **cleartool man** subcommand, which does not require a search path, to access reference pages.

Users of UNIX-based operating systems are accustomed to using the **man(1)** command to get online documentation. ClearCase includes a comprehensive set of reference pages, accessible in several ways:

- Through the standard **man** command (UNIX command-line interface)
- Through the standard **xman** command (X Window System graphical interface)
- Through the **man** subcommand built in to the **cleartool** program

The standard **man** and **xman** commands can locate reference page files in a variety of locations. These programs can use—but do not require—a search path specified by the environment variable MANPATH. If you want to read ClearCase reference pages using these programs, add the ClearCase **man** directory to your reference pages search path, as shown in Table 16.

Table 16 Setting the Search Path for Manual Pages

ClearCase installed	At standard location, /opt/rational/clearcase	At alternate location, /opt/ccase
.cshrc (C shell)	`setenv MANPATH \ ${MANPATH}:/opt/rational/ \ clearcase/doc/man`	`setenv MANPATH \ ${MANPATH}:$CLEARCASEHOME/ \ doc/man`
.profile (Bourne or Korn shell)	`MANPATH=\ ${MANPATH}:/opt/rational/ \ clearcase/doc/man export MANPATH`	`MANPATH=\ ${MANPATH}:$CLEARCASEHOME/ \ doc/man export MANPATH`

Note: If your shell startup file does not set the MANPATH environment variable, see the reference page for the **man** command to determine your system's default search path for **man** pages. Then, set MANPATH accordingly in your shell startup script, just before the commands that you copied from Table 16. For example:

 # setenv MANPATH /usr/man:/usr/contrib/man:/usr/local/man

Other ClearCase Search Paths

ClearCase uses configuration files and environment variables to find various other resources that it may require during processing. In particular, some ClearCase utilities need a way to distinguish different file types (text and binary files, for example) or to find a text editor. The graphical tools also need access to file typing data, icons and bitmaps, X Window System resource schemes, group files, and text editors.

Unlike the PATH and MANPATH variables, the configuration information for these additional resources is usually predefined, and you do not need to do anything.

However, if you choose to customize these resources, or if ClearCase behavior leads you to suspect that some adjustment is required, use Table 17 to find more information.

Table 17 Information on ClearCase Search Paths

Object or resource	Where to find more information
File typing data	**cc.magic** reference page
Icons, bitmaps	**cc.icon** reference page
X resource schemes	**schemes** reference page
group files	**env_ccase** reference page (GRP_PATH environment variable)
text editor	**env_ccase** reference page (VISUAL, EDITOR, WINEDITOR environment variables)

Note: X resource schemes control the overall appearance of the ClearCase graphical interface.

Upgrading ClearCase LT to ClearCase

4

Rational ClearCase LT can be easily upgraded to full-featured Rational ClearCase. ClearCase includes a tool that helps automate the upgrade process, although a few manual steps may be required to upgrade certain configurations.

This chapter explains the upgrade process for moving from Version 2003.06.00 of ClearCase LT to Version 2003.06.00 of full ClearCase and describes two common upgrade scenarios.

If you have an earlier release of ClearCase LT and want to upgrade to full ClearCase Version 2003.06.00, you have two options:

- Upgrading to full ClearCase in the same release
- Migrating to the most recent version of ClearCase LT

For example, you can move from ClearCase LT Version 2002.05.00 to ClearCase Version 2003.06.00 in two ways:

- Migrate from ClearCase LT Version 2002.05.00 to ClearCase LT 2003.06.00, and then follow the upgrade procedure in this chapter.
- Upgrade from ClearCase LT Version 2002.05.00 to ClearCase Version 2002.05.00, and then migrate from ClearCase Version 2002.05.00 to ClearCase Version 2003.06.00.

For more information, see the *Release Notes* and the *Installation Guide* for Rational ClearCase Version 2002.05.00 .

What Happens When You Upgrade?

When you upgrade to ClearCase, you add many new capabilities to your existing ClearCase LT environment without having to sacrifice any of your ClearCase LT data, change the way you use UCM or any other software development process, or incur extensive project downtime. The upgrade preserves all of your ClearCase LT VOB data, including UCM project data, event history, metadata, and customizations such as triggers and type managers. VOBs do not need to be reformatted. Your upgraded ClearCase LT server and client hosts do not need to be reconfigured in any way.

ClearCase supports a number of powerful features not available in ClearCase LT:

- The ability for a client to access multiple servers
- Dynamic views, which use the ClearCase multiversion file system (MVFS)
- ClearCase build auditing tools
- An expanded ClearCase registry that supports registry regions
- Compatibility with Rational ClearCase MultiSite, which you can purchase to provide support for geographically dispersed development teams

You can read about these and other ClearCase features in the *Introduction* to Rational ClearCase and in *Managing Software Projects*. The *Administrator's Guide* for Rational ClearCase also describes several procedures you may need to follow when you upgrade. These documents are available in hardcopy and as part of the ClearCase online document set.

To access the online documentation, type **cleartool man contents**. These documents are also available in HTML form on the ClearCase customer Web site www.rational.com/support/products/clearcase.jsp.

An upgrade from ClearCase LT to ClearCase requires these basic steps:

1. Acquire ClearCase licenses for users of the upgraded ClearCase LT hosts.
2. Check in any checked-out files or directories.
3. Remove all views. (This step may not be necessary if your ClearCase LT server is running on UNIX.)
4. Remove ClearCase LT software from the server host.
5. Install ClearCase on the server host in the same directory that had previously been used for ClearCase LT on this host.
6. Run the upgrade tool **cclt2cc** on the upgraded ClearCase LT server host.
7. Install ClearCase on the ClearCase LT client hosts.
8. Create new snapshot and/or dynamic views.

Additional steps may be needed, depending on the upgrade scenario you choose.

Note: If you are upgrading a ClearCase LT community whose ClearCase LT server is running Windows NT and you need to access VOBs on the upgraded server from dynamic views on ClearCase hosts running UNIX, you must move the VOBs to a ClearCase VOB server host running UNIX. ClearCase hosts running UNIX cannot use dynamic views to access VOBs hosted on Windows NT. Contact Rational Customer Support for information about moving a VOB from Windows NT to UNIX.

Upgrade Scenarios

This chapter describes two upgrade scenarios:

- **Simple Upgrade:** In this scenario, you upgrade a single ClearCase LT community (one server and some or all of its clients) to ClearCase. The ClearCase LT server becomes a ClearCase server and continues to host all the VOBs it hosted as a ClearCase LT server. It also becomes the ClearCase registry host and license server host. The ClearCase LT clients become ClearCase clients.

  You can upgrade your ClearCase LT server and its clients in a single operation or upgrade the server first and upgrade the clients later. A ClearCase LT client can access an upgraded ClearCase LT server as long as it can acquire a ClearCase license from that server; but the client cannot take advantage of ClearCase features until it has been upgraded.

- **Upgrade and merge:** In this scenario, you upgrade ClearCase LT server and all its clients to ClearCase, and then incorporate the ClearCase LT VOBs and upgraded hosts into an existing ClearCase installation. The VOBs can remain on the upgraded ClearCase LT server or can be moved to another ClearCase VOB server.

Preparing to Upgrade

Before you upgrade, you may need to take one or more of the following steps to ensure that the upgrade goes smoothly:

- Acquire ClearCase licenses for ClearCase LT users who are being upgraded. Acquire ClearCase MultiSite licenses for users of the upgraded ClearCase LT hosts who need access to replicated VOBs. Your existing ClearCase LT licenses will not work with ClearCase.
- If this is a simple upgrade, designate an appropriate host for the ClearCase networkwide release area. (The upgrade and merge scenario uses an existing release area.)
- Check in all checked-out files and directories. ClearCase LT views cannot be upgraded for use by ClearCase hosts. After the upgrade is complete, you can create new snapshot or dynamic views as needed.
- If upgraded users will need to access VOBs on UNIX hosts from dynamic views on Windows NT, you must acquire and configure an appropriate third-party software package to enable cross-platform file-system access.

Acquire ClearCase Licenses

ClearCase requires its own licenses and its own license server. ClearCase MultiSite requires an additional set of licenses, one for each user who will need access to a replicated VOB.

To ensure uninterrupted operation, obtain your ClearCase licenses and, if necessary, MultiSite licenses from Rational before you begin the upgrade process. Licensing forms and instructions for using them are included at the end of this document.

Note: ClearCase and ClearCase LT use different procedures for requesting and installing licenses. The Rational License Key Administrator and Rational AccountLink Web site cannot be used to acquire ClearCase licenses.

Select ClearCase License Server and Registry Server Hosts

ClearCase requires a license server host and a registry server host. These may be separate computers or the same computer. After a simple upgrade, the upgraded ClearCase LT server performs both functions. After an upgrade and merge, existing ClearCase license and registry server hosts perform these functions.

If you are performing a simple upgrade and designate your ClearCase LT server as the ClearCase license server and registry server host, all ClearCase LT clients, whether or not they have been upgraded, can access VOBs and views on the upgraded ClearCase LT server with a minimum of reconfiguration.

If you are upgrading and merging with an existing ClearCase site, you install ClearCase from that site's networkwide release area and can use that release area's site defaults for the license and registry server hosts. More ClearCase licenses may be needed after the upgrade, and you may have to add them to the license database of the existing license server host.

Plan for Registry Regions

ClearCase LT clients are members of a single region in a ClearCase registry that is maintained on the ClearCase LT server. The VOB tags and view tags in this registry region are unsuitable for use by ClearCase hosts.

For a simple upgrade, the upgrade tool **cclt2cc** registers the VOBs stored on the upgraded ClearCase LT server host and creates tags for them in the server's default ClearCase registry region.

If you need to access these VOBs from client hosts that are not of the same platform type (UNIX or Windows) as the ClearCase LT server, you must create an additional registry region for use by these clients, and then create tags appropriate for the hosts

that will use this region. Step 7 of *The Simple Upgrade Procedure* on page 65 describes this process in more detail.

In the upgrade and merge scenario, you can take advantage of existing registry regions.

Establish Your ClearCase Release Area

The first step in installing both ClearCase and ClearCase LT is to create a networkwide release area. Your existing ClearCase LT release area cannot be upgraded to a ClearCase release area, so you must create a new one if you are using the simple upgrade procedure. Before you begin, verify that you have adequate disk space on an appropriate host platform for a ClearCase release area. For more information, see *Set Up the New CPF Release Host* on page 23.

Note: If you are using the upgrade and merge procedure, you do not need to create a new networkwide release area, because you will use one that already exists.

Remove All ClearCase LT Views

ClearCase LT views must all be removed before you upgrade. These views will not work in a ClearCase environment and must be re-created after the upgrade. Even if you plan a simple upgrade in which some ClearCase LT clients are not upgraded right away, all views on these clients must usually (see note) be removed before the upgrade begins and re-created after the ClearCase LT server has been upgraded. UCM components, projects, and streams are available for use when the upgrade is complete. Only the views need to be re-created.

Note: If your ClearCase LT server is running UNIX and you plan to use the simple upgrade procedure to upgrade the server and some, but not all, ClearCase LT clients, you can leave your ClearCase LT views in place until all the clients have been upgraded.

To remove views:

1. If you are using UCM, complete any deliveries that are in progress.
2. Check in all checked-out versions of files and directories. Verify that there are no remaining checkouts by using the ClearCase Explorer or the **cleartool lscheckout** command.
3. Remove all views. To do so, we recommend that you use the ClearCase Explorer on any Windows platform or the **cleartool rmview** command on either Windows or UNIX.

Issues with Interoperability and Dynamic Views

ClearCase supports two kinds of views:

- **Snapshot views**, which are also supported on ClearCase LT, copy file and directory versions from a VOB into the platform's native file system. Snapshot view users cannot see changes checked in to the VOB by other users until they update their views.
- **Dynamic views**, which are not supported on ClearCase LT, use the ClearCase multiversion file system (MVFS), which permits users to see changes to files and directories made by other users as soon as they are checked in to the VOB. ClearCase supports dynamic views on UNIX and Windows NT computers.

When you use dynamic views in a homogeneous environment (views on UNIX hosts that access VOBs on UNIX servers or views on Windows hosts that access VOBs on Windows NT servers), the MVFS works with the native network file system (NFS on UNIX, LAN Manager on Windows NT) and needs no additional support. If your upgraded Windows NT clients will use dynamic views to access VOBs on UNIX servers, you must install and configure a third-party software package to support heterogeneous file-system access. Two types of software can provide support for this type of access:

- **An NFS client package** that enables a Windows NT client to access a UNIX file system using the NFS protocol. You install NFS client software on each upgraded ClearCase LT client that will use dynamic views to access any VOB on a UNIX server.
- **An SMB server package** that enables a UNIX server to support the LAN Manager SMB protocol, which is native to all Windows computers. You install SMB server software on the upgraded ClearCase LT server.

If you plan to install such a package, install it after the upgrade is complete; you can then create dynamic views—which you will need for testing cross-platform VOB access—on the upgraded Windows NT client hosts. For more information, see the *Administrator's Guide* for Rational ClearCase.

Note: You cannot use a dynamic view to access a VOB on Windows NT from a UNIX computer. This type of access is supported for snapshot views only.

Simple Upgrade

In the simple upgrade procedure, you upgrade a single ClearCase LT community (one server and some or all of its clients) to ClearCase. Use this procedure if any of the following are true:

- You are not already running ClearCase at your site.
- You are running ClearCase at your site but do not want to make the upgraded ClearCase LT hosts members of an existing ClearCase registry.
- You cannot upgrade all of your ClearCase LT client hosts at once and need to preserve VOB access for both ClearCase LT clients and upgraded clients.

In this procedure, you must upgrade the server first, and then upgrade some or all of the clients. Many steps in this procedure are also required in the upgrade and merge procedure.

The Simple Upgrade Procedure

To perform a simple upgrade:

1. **Prepare.** Complete the applicable upgrade prerequisites described in *Preparing to Upgrade* on page 61.
2. **Create a new networkwide release area.** Follow the process described in *Setting Up a New Release Area* on page 24. When you run the **site_prep** command, specify the name of the ClearCase LT server when you are prompted for the name of the ClearCase registry host. We recommend, but do not require, that you also configure the upgraded ClearCase LT server as the ClearCase license server host. If you need to preserve access to the upgraded server from ClearCase LT clients, you must configure the upgraded ClearCase LT server as the ClearCase license server host. For more information, see *If You Cannot Upgrade All Clients at the Same Time* on page 67.
3. **Remove ClearCase LT software from the ClearCase LT server.** Follow the instructions in the *Installation Guide* for Rational ClearCase LT. Do not remove ClearCase LT data unless you are sure you will not need it after the upgrade. The upgrade procedure preserves all ClearCase LT data and makes it available to ClearCase after the upgrade is complete.
4. **Install ClearCase on the ClearCase LT server.** Follow the instructions in *Performing CPF Installation* on page 40. Accept the default choices for registry and license server hosts and for registry region.

Note: When you upgrade the ClearCase LT server, you must install ClearCase in the directory where ClearCase LT had been installed (by default, /opt/rational/clearcase if you are migrating from ClearCase LT 2003.06.00 to ClearCase 2003.06.00). Otherwise, the upgrade procedure cannot complete successfully. This restriction does not apply when upgrading ClearCase LT clients.

5 **Copy the preserved ClearCase LT registry information.** Log in as **root**, stop ClearCase, copy the preserved ClearCase LT registry files back into the /var/adm/rational/clearcase/rgy directory, and then restart ClearCase.

ccase-home-dir/**etc/clearcase stop**
cd /var/tmp/rational.preserve
cp * /var/adm/rational/clearcase/rgy
ccase-home-dir/**etc/clearcase start**

Note: You should not be in any view context when running **clearcase**. If you are, get out of the view context by doing one of the following:

- Ending the view
- Changing to a directory that is not view extended

6 **Run the upgrade tool.** The **cclt2cc** command automates most of the upgrade process. It performs the following tasks:

- Registers VOB storage locations on the upgraded ClearCase LT server in the server's default registry region.
- Creates VOB tags for VOBs on the upgraded ClearCase LT server in the server's default registry region.

The installation process prompts you to specify whether you want the upgrade to be performed by the **cclt2cc** upgrade tool. Later, when you restart the system, you will be asked if you want to proceed with the upgrade and set a registry password. If you decline to upgrade, you can still invoke **cclt2cc** from the command line.

Note: If the installation process detects that a ClearCase LT server resides on the system, you will have to uninstall ClearCase LT and start the installation again. **cclt2cc** is located in the *ccase-home-dir*/etc/utils directory. To run **cclt2cc**:

- Log into the upgraded ClearCase LT server.
- Run the command in a shell. The example below upgrades all the VOBs on the ClearCase LT server and creates tags for them in the server's default region with the prefix /vobs:

  ccase-home-dir/**etc/utils/cclt2cc -w** *tag-registry-password* **-p /vobs**

  For complete information about **cclt2cc** command line options, see *cclt2cc Command Line Options* on page 71

cclt2cc will complete its operations and display any applicable error messages.

7 **Create an additional ClearCase registry region if needed.** For more information, see *Creating Additional Regions* on page 70.

8 **Install ClearCase on the ClearCase LT clients.** Follow the instructions in *Performing CPF Installation* on page 40. Accept the default choices for registry region and license server host.

9 **Create new snapshot and/or dynamic views.** Use the ClearCase Explorer or the **mkview** command. For information about reusing UCM streams, see *Creating New UCM Views Using Existing Streams*. If you want the view storage to be created in a server storage location, you must create the server storage location first using **cleartool mkstgloc**.

Creating New UCM Views Using Existing Streams

The upgrade process preserves all of a UCM project's streams. If your upgrade occurs while a project is active, you may want to create new views using the project's existing streams. You can use either the Project Explorer or the Join Project Wizard to do so.

In the Project Explorer:

1 Select the stream you want to use.

2 Click **File > New > View.**

In the Join Project Wizard:

1 Select the project you want to join.

2 In Step 2 (**Create a Development Stream**), click **Advanced Options**.

3 On the **Stream** tab, click **Reuse an existing development stream**, and then select the stream you want to reuse.

If You Cannot Upgrade All Clients at the Same Time

If you have chosen to do a simple upgrade, you can defer upgrading some of your ClearCase LT client hosts for a few days or weeks to accommodate development schedules or other organizational requirements. ClearCase LT client hosts can access VOBs on the upgraded ClearCase LT server as long as the server is configured as a ClearCase license server host.

The remaining ClearCase LT client hosts need to acquire ClearCase licenses to access VOBs on the upgraded server, which is possible only if the server itself has been configured as a ClearCase license server host. These clients cannot be configured to acquire ClearCase licenses from another ClearCase license server host, even if one is present in your environment. ClearCase LT clients that operate in this transitional mode are still limited to using the ClearCase LT feature set even though they require a ClearCase license.

Upgrade and Merge

In the upgrade and merge procedure, you upgrade the ClearCase LT server and all its clients at the same time, and then make the server and clients part of a ClearCase registry that exists at your site. Use this procedure if all of the following are true:

- You are running ClearCase at your site.
- You want the upgraded ClearCase LT server and clients to be members of the existing ClearCase registry.
- You can upgrade all ClearCase LT client hosts when you upgrade the server.

Caution: Do not use the upgrade and merge procedure unless you can upgrade all ClearCase LT clients at the same time. Upgrade and merge requires you to make the upgraded ClearCase LT server part of an existing ClearCase registry region. When you do this, the upgraded server cannot continue as the registry server for any remaining ClearCase LT clients, and these clients cannot access VOBs on the upgraded server.

The Upgrade and Merge Procedure

To upgrade and merge your ClearCase LT community:

1. **Prepare.** Complete the applicable upgrade prerequisites described in *Preparing to Upgrade* on page 61. Make sure that all of your ClearCase LT clients are ready to be upgraded. After you complete Step 3, no ClearCase LT client can access VOBs or views on the ClearCase LT server.
2. **Install additional ClearCase licenses on the license server host if needed.** Users who run ClearCase commands on upgraded ClearCase LT hosts can use licenses from the existing license pool. If you already have an adequate number of these licenses, you do not need to install additional licenses.
3. **Remove ClearCase LT software from the ClearCase LT server.** Do not remove ClearCase LT data unless you are sure you will not need it after the upgrade. The upgrade procedure preserves all ClearCase LT data and makes it available to ClearCase after the upgrade is complete.
4. **Install ClearCase on the ClearCase LT server.** Follow the instructions in *Performing CPF Installation* on page 40. Do not create a networkwide release area or run the **site_prep** command. The upgrade and merge procedure assumes that you are merging the ClearCase LT server and clients into a ClearCase installation for which these steps have already been completed.

   With the exception of the registry server host name, you should accept all of the site default values (license host, view text mode, and so on) as defined. Override

the site default value for registry server host, and instead, specify the ClearCase LT server's host name as the registry server.

Note: When you upgrade the ClearCase LT server, you must install ClearCase in the directory where ClearCase LT had been installed (normally /opt/rational/clearcase). Otherwise, the upgrade procedure cannot complete successfully. This restriction does not apply when upgrading ClearCase LT clients.

5 **Copy the preserved ClearCase LT registry information.** Log in as **root**, stop ClearCase, copy the preserved ClearCase LT registry files back into the /var/adm/rational/clearcase/rgy directory, and then restart ClearCase.

ccase-home-dir/**etc/clearcase stop**
cd /var/tmp/Rational.preserve
cp * /var/adm/rational/clearcase/rgy
ccase-home-dir/**etc/clearcase start**

Note: You should not be in any view context when running **clearcase**. If you are, get out of the view context by doing one of the following:

- Ending the view
- Changing to a directory that is not view extended

6 **Run the upgrade tool.** See Step 6 on page 66.

7 **Get information about storage locations and VOBs on the upgraded server.** Log in to the upgraded ClearCase LT server. Run the **cleartool lsstgloc -l** and **lsvob -l** commands to get information about server storage locations and VOBs on the upgraded server. You will use this information in Step 8 and Step 9 of this procedure.

8 **Register the upgraded server's storage locations in the existing registry.** On another ClearCase host—one that has network access to the file system of the upgraded ClearCase LT server and is a member of the registry in which you want VOBs on the upgraded ClearCase LT server to have tags—run the **cleartool mkstgloc** command to register storage locations on the upgraded ClearCase LT server.

9 **Register and create tags for the upgraded server's VOBs in the existing registry.** On the same ClearCase host that you used in Step 8, run the **cleartool register** and **mktag** commands to register and tag the VOBs on the upgraded ClearCase LT server.

10 **Verify that the VOBs are accessible.** Make sure that all ClearCase hosts in the region can access the VOBs on the upgraded ClearCase LT server.

11 **Make the upgraded server a member of the existing registry.** Reconfigure the upgraded ClearCase LT server so that it is no longer a registry server, and is instead a member of the existing registry region.

12 **Create an additional region if needed.** For more information, see *Creating Additional Regions*.

13 **Install ClearCase on the ClearCase LT clients.** Follow the instructions in *Performing CPF Installation* on page 40. Accept the default choices for registry region and license server host.

14 **Create new snapshot and/or dynamic views as needed for the upgraded clients.** Use the ClearCase Explorer or the **mkview** command. If you want the view storage to be created in a server storage location, you must create server storage location for views the using **cleartool mkstgloc** command. For information about reusing UCM streams, see *Creating New UCM Views Using Existing Streams* on page 67.

Creating Additional Regions

You need to create an additional registry region after the upgrade is complete if you are doing any of the following:

- Using the simple upgrade procedure to upgrade a ClearCase LT community that includes both UNIX and Windows computers.
- Using the upgrade and merge procedure to merge a ClearCase LT community that includes both UNIX and Windows computers into a ClearCase installation that only includes computers of one type or the other.
- In Step 4 of *The Simple Upgrade Procedure* on page 65, you specify that the upgraded ClearCase LT server will host the ClearCase registry after the upgrade. By doing this, you ensure that VOB tags created in the registry's default region are appropriate for hosts of the same type as the upgraded ClearCase LT server. Hosts of a different type cannot use these VOB tags to access the VOBs, so a peer region must be created and VOB tags must be imported into it.

Use the following procedure:

1 **Create the peer region.** Use the ClearCase Administration Console on Windows NT (click **Start > Programs > Rational ClearCase Administration > ClearCase Administration Console**), or use the **mkregion** command on either Windows NT or UNIX. The example below creates a new region named **NTdev**:

cleartool mkregion -tag NTdev -tco "NT peer region"

2 **Create VOB tags in the peer region**. After you create a peer region, you must use ClearCase commands to create VOB tags in it. If the peer region is a Windows region (created to make the upgraded VOBs accessible to Windows hosts), we recommend that you use the Region Synchronizer to import tags from the default (UNIX) region into the peer region. To run the Region Synchronizer, click **Start > Programs > Rational ClearCase Administration > Region Synchronizer** on any ClearCase host running Windows.

   If the peer region is a UNIX region, use the **cleartool mktag** command. You can also use the ClearCase Administration Console to create VOB tags and view tags in any region.

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

cclt2cc Command Line Options

This section summarizes the command line options for the **cclt2cc** upgrade tool.

SYNOPSIS

cclt2cc -w *tag-registry-password* [**–v** *vob-tag-list*] [**–d** *destination-region*] [**-p** *vob-tag-prefix*]

OPTIONS AND ARGUMENTS

Tag Registry Password

Default

None.

–w *tag-registry-password*

The registry password for the tag registry in which new VOB tags will be created.

VOBs to Upgrade

Default

Upgrade all VOBs.

–v *vob-tag-list*

Upgrade only the VOBs in *vob-tag-list*, a comma-separated list of VOB tags.

Destination Region

Default

The server's default region.

–d *destination-region*

Create VOB tags in *destination-region* instead of the default.

VOB-Tag Prefix

Default

/vobs

–p *vob-tag-prefix*

Create UNIX VOB tags with a prefix of *vob-tag-prefix* instead of the default. This option is ignored if specified on Windows NT.

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the software development company

Licensing Forms for the ClearCase Product Family

ClearCase Product Family License Registration Form

The ClearCase family of products includes a license enforcement mechanism. As described in the product's installation documentation, you must obtain a *license authorization code*, an encoded line of text to be inserted into a special *license database file*. Please fill in the following form completely. Upon completing the form, FAX it to Rational Software Corporation at **(781) 676-2460**. You will receive your authorization code via return FAX as soon as possible.

Product to License (check one):

_____ ClearCase _____ MultiSite

Your Company

1. Company name_____
2. Address _____
3. City/State/Country/Postal Code _____
4. Contact Person _____
5. Phone number (with area code): _____
6. FAX number (with area code): _____
7. Electronic mail address of contact person: _____

Licensing Information

8. Purchase Order Number (For new licenses purchased): _____
9. License server host ID:_____

   If ClearCase is installed, enter **clearlicense –hostid** on the license server. If not:

   Solaris: run **/usr/sbin/sysdef –h** to determine 8-digit hex number

   HP-UX and HP-UX/IPF: run **/bin/uname –i** to determine number (usually, 10 or 12 digits)

   AIX: run **/bin/uname –m** to determine 12-digit number

   IRIX: run **/etc/sysinfo**; use first four pairs of hex digits from first line

   Linux: run **hostid**

   Windows: on the command line, **cd** to the directory **SETUP\program files\Rational\SETUP** on the ClearCase CD-ROM and run **hostid.exe**

10. New licenses requested or additional licenses required:

    Number of licenses: _____

(Do not include licenses already installed. For additional licenses, add new License Authorization Code to the **.db** file.)

Please FAX — do not phone and do not use electronic mail

Request to MOVE ClearCase Product Family Licenses

Please complete and sign the following form. Upon completion, FAX to Rational Software Corporation at **(781) 676-2460**.

I certify that Rational's ClearCase software, under the terms of the signed Software License Agreement, will be deleted in its entirety from the *old* host referenced below, and will be installed on one or more *new* hosts.

Authorized Signature: _____

Move Licenses (check one):

_____ ClearCase _____ MultiSite

Your Company

1. Company name_____
2. Address _____
3. City/State/Country/Postal Code _____
4. Contact Person _____
5. Phone number (with area code): _____
6. FAX number (with area code): _____
7. Electronic mail address of contact person: _____

Licensing Information

8. Host ID of *old* license server:_____ # of licenses _____
   Host ID of *new* license server #1: _____ # of licenses _____
   Host ID of *new* license server #2: _____ # of licenses _____

   If ClearCase is installed, enter **clearlicense –hostid** on the license server. If not:

Solaris:	run **/usr/sbin/sysdef –h** to determine 8-digit hex number
HP-UX and HP-UX/IPF:	run **/bin/uname –i** to determine number (usually, 10 or 12 digits)
AIX:	run **/bin/uname –m** to determine 12-digit number
IRIX:	run **/etc/sysinfo**; use first four pairs of hex digits from first line
Linux:	run **hostid**
Windows:	on the command line, **cd** to the directory **SETUP\program files\Rational\SETUP** on the ClearCase CD-ROM and run **hostid.exe**

Please FAX — do not phone and do not use electronic mail