

*Telelogic Synergy*  
*Installation Guide for UNIX on Oracle*  
*Release 7.0*

Before using this information, be sure to read the general information under “Appendix B: Notices” on page 57.

This edition applies to **VERSION 7.0, Telelogic Synergy Installation Guide for UNIX on Oracle (product number 5724V66)** and to all subsequent releases and modifications until otherwise indicated in new editions.

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# Table of Contents

<b>Chapter 1: Introduction</b>	<b>1</b>
Readme . . . . .	1
Upgrade from a previous release . . . . .	1
Release summary . . . . .	2
Interfaces installed by Telelogic Synergy 7.0 . . . . .	2
Release compatibility . . . . .	3
User prerequisites . . . . .	3
Contacting IBM Rational Software Support . . . . .	3
Product support . . . . .	4
Other information . . . . .	4
Conventions used in this guide . . . . .	4
Shell conventions . . . . .	4
Command line interface . . . . .	5
Default text editor . . . . .	5
Fonts and symbols . . . . .	5
Telelogic Synergy documentation . . . . .	6
<b>Chapter 2: Terms and Concepts</b>	<b>7</b>
<b>Chapter 3: Telelogic Synergy Installation Worksheet</b>	<b>9</b>
Print and complete the worksheet . . . . .	9
<b>Chapter 4: Pre-Installation</b>	<b>13</b>
Checklist . . . . .	13
Print the worksheet . . . . .	13
Plan the installation . . . . .	13
Installation machine requirements . . . . .	14
Database server and engine machine requirements . . . . .	15
Client machine requirements . . . . .	16
Installation directories . . . . .	17

---

Disk space requirements. . . . .	18
Routing, services, hosts, passwords, and groups. . . . .	19
Prepare the Telelogic Synergy installation machine . . . . .	20
Set up ccm_root and group. . . . .	20
Create an installation directory. . . . .	21
Set up the router service. . . . .	22
Identify the media drive . . . . .	23
Prepare the Oracle database . . . . .	24
Create a tablespace . . . . .	24
Verify temporary tablespace. . . . .	24
Set up authentication . . . . .	25
Potential data loss when Telelogic Synergy and Oracle database use different character encoding . . . . .	26
Allow access by Windows clients (optional) . . . . .	27
Oracle license information . . . . .	27
Install the Telelogic license server . . . . .	28
Switching the authentication mode . . . . .	29

## **Chapter 5: Installation 31**

Checklist. . . . .	31
Download the software. . . . .	31
Load the software . . . . .	32
Complete the installation . . . . .	34
Set up the Telelogic Synergy environment . . . . .	34
Create an Oracle database . . . . .	35
Set up for remote engine hosts (optional). . . . .	35
Start the Telelogic Synergy daemons . . . . .	37

## **Chapter 6: Post-Installation 39**

Checklist. . . . .	39
Configure for remote processes (optional). . . . .	39
Unpack a test database . . . . .	40
Start a Telelogic Synergy session. . . . .	41

---

Download Windows client installations .....	43
Guidelines for the web-based installation process .....	43
<b>Appendix A: Alternative Installations</b>	<b>45</b>
Create multiple installations of Telelogic Synergy .....	45
Install onto the primary machine .....	46
Install multiple releases onto the primary machine .....	47
Install binary-incompatible versions onto the primary machine .....	48
Install onto a remote file system .....	49
Run Telelogic Synergy processes across a network .....	50
Telelogic Synergy daemon processes .....	50
Engine processes .....	51
Telelogic Synergy databases .....	51
Set up a UNIX client .....	52
Set up a UNIX client that uses NFS .....	52
Set up a UNIX client that does not use NFS .....	53
ESD authentication through PAM .....	55
Set up the esd client .....	55
<b>Appendix B: Notices</b>	<b>57</b>
Trademarks .....	60
<b>Index</b>	<b>61</b>



# 1

## Introduction

This chapter explains what you must know before installing Telelogic<sup>®</sup> Synergy<sup>™</sup> on UNIX<sup>®</sup> running on Oracle<sup>®</sup>.

The following information is available:

- “Readme” on page 1
- “Upgrade from a previous release” on page 1
- “Release summary” on page 2
- “User prerequisites” on page 3
- “Contacting IBM Rational Software Support” on page 3
- “Contacting IBM Rational Software Support” on page 3
- “Conventions used in this guide” on page 4
- “Telelogic Synergy documentation” on page 6

### Readme

The *Readme* file contain vital information about your Telelogic Synergy software, including information about new features in this release, and a list of the supported hardware and operating systems. Review this information before installing your software. The *Readme* is available on the Telelogic Synergy Support site at <https://support.telelogic.com/synergy>. For more information about obtaining documents, see “Telelogic Synergy documentation” on page 6.

**Note** If necessary, the *Readme* is revised and reissued to provide the most current information. To ensure you have the latest version, download an electronic copy from the Telelogic Synergy Support site.

### Upgrade from a previous release

Existing Telelogic Synergy servers and databases can be upgraded to the current release of Telelogic Synergy. The upgrade process is described in the *Telelogic Synergy Upgrade Instructions for UNIX*. These instructions are available on the Telelogic Synergy Support site (<https://support.telelogic.com/synergy>).

## Release summary

For a synopsis of the new features of Telelogic Synergy release 7.0, see the *Readme*.

### **Interfaces installed by Telelogic Synergy 7.0**

Telelogic Synergy for UNIX offers the following graphical user interfaces.

- **Telelogic Synergy**

This interface was formerly called Telelogic Synergy for Developers. It is for users in the *developer* or *build\_manager* role. It contains functionality for daily development and build management activities.

- **Telelogic Synergy Classic**

This interface is also called the Original client and contains functionality for build managers and CM administrators.



## Release compatibility

The following are important characteristics of this release:

- In order for Telelogic Synergy to run, the client, engine, and database must all be from the same release and service pack; you cannot mix components from different Telelogic Synergy releases or service packs.
- In order for Telelogic Synergy to run, you must install the Telelogic License server.
- Windows clients may be used with both UNIX and Windows servers.
- UNIX clients may only be used with UNIX servers.
- UNIX clients and servers can share a single installation if the install directory is accessible across the network.

Telelogic Synergy 7.0 is compatible with Telelogic Change 5.1 or later. If you are already using Telelogic Change, you must upgrade to Telelogic Change 5.1 or later at the same time as you upgrade to Telelogic Synergy 7.0.

## User prerequisites

This guide is for Change Management (CM) Administrators who need to install Telelogic Synergy. You must have experience installing software onto a UNIX system and setting up UNIX system files. For deployment planning, you should read the *CM Live* document.

In addition, you must have:

- *root* access on each machine where Telelogic Synergy will be installed, and database server and engine server machines.
- Knowledge of your company's hardware infrastructure and network topology.
- Knowledge of your Oracle installation.
- A working knowledge of how your company will use Telelogic Synergy. For example, will you want to configure your installations for remote builds?

## Contacting IBM Rational Software Support

Support and information for Telelogic products is currently being transitioned from the Telelogic Support site to the IBM Rational Software Support site. During this transition phase, your product support location depends on your customer history.

## **Product support**

- If you are a heritage customer, meaning you were a Telelogic customer prior to November 1, 2008, please visit the [Synergy Support Web site](#).

Telelogic customers will be redirected automatically to the IBM Rational Software Support site after the product information has been migrated.

- If you are a new Rational customer, meaning you did not have Telelogic-licensed products prior to November 1, 2008, please visit the [IBM Rational Software Support site](#).

Before you contact Support, gather the background information that you will need to describe your problem. When describing a problem to an IBM software support specialist, be as specific as possible and include all relevant background information so that the specialist can help you solve the problem efficiently. To save time, know the answers to these questions:

- What software versions were you running when the problem occurred?
- Do you have logs, traces, or messages that are related to the problem?
- Can you reproduce the problem? If so, what steps do you take to reproduce it?
- Is there a workaround for the problem? If so, be prepared to describe the workaround.

## **Other information**

For Rational software product news, events, and other information, visit the [IBM Rational Software Web site](#).

## **Conventions used in this guide**

The conventions used in this guide are described in the following sections.

### **Shell conventions**

All command-line instructions and examples are shown for the standard Bourne shell, `/bin/sh`. If you use another shell, such as the C shell, you must modify your commands accordingly.

For example, add `/usr/local/ccm70` to the path using the `sh` shell as follows:

```
$ PATH=/usr/local/ccm70/bin:$PATH; export PATH
```

Add `/usr/local/ccm70` to the path using the `csh` shell as follows:

```
% setenv PATH /usr/local/ccm70/bin:$PATH
```

## Command line interface

The command line interface (CLI) is supported on all UNIX platforms. You can execute any Telelogic Synergy command from the command prompt.

### Prompt

This guide uses the dollar-sign prompt (\$).

### Options delimiter

Telelogic Synergy supports the dash option delimiter (-) for all UNIX platforms.

### Location of \$CCM\_HOME

\$CCM\_HOME is the Telelogic Synergy product installation directory. This guide sometimes uses the *ccm\_home* variable to represent \$CCM\_HOME.

### Default text editor

The default Telelogic Synergy UNIX text editor is vi. You can change the default text editor as described in “Default Settings” in the Telelogic Synergy CLI help. For more information about online help, visit the Telelogic Synergy Support site at <https://support.telelogic.com/synergy>.

### Fonts and symbols

The table below describes the typeface and symbol conventions used in this guide.

Typeface	Description
<i>Italic</i>	Used for book titles and terminology. Also designates names of roles ( <i>developer</i> ), states ( <i>working</i> ), groups ( <i>ccm_root</i> ), and users ( <i>john</i> ).
<b>Bold</b>	Used for items that you can select and menu paths, also used for emphasis.
Courier	Used for commands, filenames, and directory paths. Represents command syntax to be entered verbatim. Signifies computer output that displays on-screen. Also used for the names of attributes ( <code>modify_time</code> ), commands ( <code>ccm start</code> ), functions ( <code>remote_type</code> ), and types ( <code>csrc</code> ).
<i>Courier Italic</i>	Represents values in a command string that you supply. For example, ( <code>database_path/username/commands</code> )

This document also uses the following conventions:

**Note** Contains information that should not be overlooked.

**Caution** Contains critical information that must be observed or damage to the database or system could result.

## Telelogic Synergy documentation

Unless otherwise noted, Telelogic documents are available on the Telelogic Synergy Support site (<https://support.telelogic.com/synergy>), and on the Documentation shipped with Telelogic Synergy.

**Note** You must provide a user name and password to enter the Telelogic Synergy Support Site. If you do not have a user name and password, click **Cancel** when prompted for these items, and follow the on-screen instructions to obtain them.

# 2

## Terms and Concepts

To perform the operations described in this guide, you should first understand the following terms and concepts.

**Telelogic Synergy client** A *Telelogic Synergy client* is a user interface process.

**Telelogic Synergy database** A *Telelogic Synergy database* is an object-oriented repository that stores controlled files, change requests, and their properties. A file's properties include the file's source and creation date, and many other properties such as its relationship to other files.

**Telelogic Synergy database server** The *database server* hosts the Telelogic Synergy databases.

**Telelogic Synergy CCM server** The *Telelogic Synergy CCM server* hosts the web-based Telelogic Synergy help, the Windows client installation image, . For details on the Telelogic Synergy CCM Server, see "CCM Server Administration" in the *Telelogic Synergy Administration Guide for UNIX on Oracle*.

**engine server** An *engine server* hosts the engine processes that communicate between the Telelogic Synergy client and the Telelogic Synergy Oracle database.

**ESD** The *ESD* (Engine Startup Daemon) is an optional secure method for starting a user's Telelogic Synergy traditional mode session. ESD is not used for web

	mode sessions. If you decide to use ESD, you must run one ESD on each engine host.
<b>installation machine</b>	The <i>installation machine</i> hosts the Telelogic Synergy executables.
<b>object registrar</b>	The <i>object registrar</i> “registers” all changes made to Telelogic Synergy database objects so that each user’s view of the database remains up to date. You must run one object registrar per database host.
<b>router</b>	The <i>router</i> manages the communications among Synergy processes. You must run one router per network installation.
<b>Telelogic license server</b>	The <i>license server</i> validates users’ access to Telelogic Synergy databases. FLEXnet is used to manage licenses. You must run one license manager per network installation, and only on the machine for which Telelogic issued the license.
<b>Traditional mode</b>	Standard network communication for users who need administration. Traditional mode behaves as it did in Telelogic Synergy 6.5.
<b>Web mode</b>	Web mode Telelogic Synergy clients communicate to a Web-based Telelogic Synergy server using the HTTP protocol. This architecture reduces the dependency on network latency by using parallel, asynchronous network communication between the client and server. If you are using a UNIX work area, the files can be either copies or links. If you are using a Windows work area, the files can only be copies.

# 3

## Telelogic Synergy Installation Worksheet

### Print and complete the worksheet

Use the following worksheet to organize the information you need to install Telelogic Synergy.

To make your installation easier, print a copy of the worksheet and enter information for all possible items before starting. You will enter other items during the installation.

Save the worksheet after completing the installation; this is valuable reference information.

**1. Telelogic Synergy installation machine** (*ccm\_install\_server*)

This is the machine onto which the Telelogic Synergy executables will be installed. For more information, see “Installation machine requirements” on page 14 and “Prepare the Telelogic Synergy installation machine” on page 20.

Default: None

Actual: \_\_\_\_\_

**2. Telelogic Synergy database server** (*ccmdb\_server*)

This is the machine on which the Telelogic Synergy databases will reside. For more information, see “Database server and engine machine requirements” on page 15. This machine might be the same as the installation machine (*ccm\_install\_server*, item 1). Also see “Start a Telelogic Synergy session” on page 41 for information on daemons.

Default: None

Actual: \_\_\_\_\_

**3. *ccm\_root* home directory** (*ccm\_root\_home*)

This is *ccm\_root*'s home directory path on the installation machine. For more information, see “Set up *ccm\_root* and group” on page 20.

Use Default: None

Use Path: \_\_\_\_\_

**4. Telelogic Synergy installation directory or \$CCM\_HOME (*ccm\_home*)**

This is the directory into which Telelogic Synergy will be installed. For more information, see “ccm\_home” on page 17, and step 4 on page 32. This should **not** be the same as or under *ccm\_root*’s home directory (*ccm\_root\_home*, item 3). For information on using a release-specific directory, see “Create an installation directory” on page 21.

Default Path: None

Actual: \_\_\_\_\_

**5. Media device name (*dvd*)**

This is the path to the mount point of the media drive on the installation machine, or a temporary directory set up by you for downloadable installations. For more information, see “Identify the media drive” on page 23, and step 2 on page 32.

Default Path: None

Actual: \_\_\_\_\_

**6. Database path (*ccmdb*)**

This is the path to the Telelogic Synergy database. For more information, see, and “Create an Oracle database” on page 35. This should **not** be the same as or under either *ccm\_root*’s home directory (*ccm\_root\_home*, item 3) or *ccm\_home*, item 4.

Default Path: None

Actual: \_\_\_\_\_

**7. Router service host name (*router\_host*)**

This is the name used for the Telelogic Synergy router host. You should install Telelogic Synergy on this machine first. For more information, see “Set up the router service” on page 22, and the end of “Set up the Telelogic Synergy environment” on page 34.

Default: *system name*

Actual: \_\_\_\_\_



**8. Router service name** (*router\_service*)

This is the name used for the Telelogic Synergy router service. For more information, see “Set up the router service” on page 22.

Default: `ccm7.0_router`

Actual: \_\_\_\_\_

**9. Router service port number** (*router\_port*)

This is the router port used for the *router\_service*. For more information, see “Set up the router service” on page 22.

Default: `5412` (reserved)

Actual: \_\_\_\_\_

**10. ESD port number** (*esd\_port*)

This is the port used for the Engine Startup Daemon. The port number must be a value that is not already in the system `services` file.

Default: `8830`

Actual: \_\_\_\_\_

**11. Telelogic Synergy primary ccm server host** (*primary\_server\_host*)

This machine on which the primary server will run. This must be the same as the router server host name (number 7 in this worksheet).

Default: `system name`

Actual: \_\_\_\_\_

**12. Telelogic Synergy primary ccm server port number**  
(*primary\_server\_port*)

This is the port used for accessing the web-based product help. The web server will use this port, and this port + 100. The port numbers must be values that are not already in use.

Default: `8400` (and thus `8500`)

Actual: \_\_\_\_\_

**13. Telelogic license service host** (*license\_serverhostname*)

This is the name of the host where the license server is installed. For more information, see the section “Setting up your server license” in the *Telelogic Lifecycle Solutions Licensing Guide*.

Default: None

Actual: \_\_\_\_\_

**14. Telelogic license service port number** (*license\_server\_port*)

This is the port number used by the license server host. For more information, see the section “Setting up your server license” in the *Telelogic Lifecycle Solutions Licensing Guide*.

Default: None

Actual: \_\_\_\_\_

**15. Oracle installation directory** (*ORACLE\_HOME*)

This is the directory where Oracle is installed. For more information where this is used, see “Load the software” on page 32.

Default: None

Actual: \_\_\_\_\_

**16. Oracle instance identifier** (*ORACLE\_SID*)

This is the name of the unique Oracle system identifier for the Oracle instance. For more information, see “Prepare the Oracle database” on page 24.

Default: None

Actual: \_\_\_\_\_

# 4

## Pre-Installation

This chapter describes how to prepare your system for Telelogic Synergy software installation. Work through this chapter carefully. It will help you make decisions during your installation.

### Checklist

Use the following checklist, in the sequence shown, to work through this chapter:

- “Print the worksheet” on page 13
- “Plan the installation” on page 13
- “Prepare the Telelogic Synergy installation machine” on page 20
- “Prepare the Oracle database” on page 24
- “Oracle license information” on page 27
- “Install the Telelogic license server” on page 28

### Print the worksheet

Before proceeding, print the *Telelogic Synergy Installation Worksheet*. Fill in the worksheet as you work through this chapter. Your answers will be needed during the installation process, and the written worksheet will form a valuable record of your installation decisions.

### Plan the installation

Read these installation instructions carefully, and review the *Readme*. For information about accessing the latest version of the *Readme*, see page 1. If you are upgrading from a previous release, read the *Telelogic Synergy Upgrade Instructions*.

If you are installing Telelogic Synergy on multiple machines or platforms (for example, on both UNIX and Windows), install it first on the machine where you will run the Telelogic Synergy router.

Plan your UNIX installations as directed in the sections that follow.

### **Installation machine requirements**

The installation machine hosts the Telelogic Synergy executables. The table below shows the disk space requirements of this device when installed.

**Note** You should have three times as much disk space available during installation to allow for extraction of files.

Make sure that your machine characteristics are compatible with those in this table.

<b>Machine Characteristics</b>	<b>Minimum Configuration</b>
Hardware and Operating System	See the <i>Readme</i> for the list of supported systems
Database	Oracle10g R2 (10.2.0.3), or access to an Oracle10g R2 (10.2.0.3), installation area
Disk Space	For Solaris: 750 MB For AIX: 600 MB

## Database server and engine machine requirements

The engine machine hosts the engine processes that access the file system portions of your system. You should run the engine processes on the database server machine unless your site is running so many sessions that the engine sessions slow down the server unacceptably. The following table shows the minimum requirements for the server and engine machine. Your installation may require more than the amounts shown in these tables, depending on the number of simultaneous users you have.

**Note** For the latest information on server resource requirements, see the *Readme*.

Machine Characteristics	Minimum Configuration
Hardware and Operating System	See the <i>Readme</i> for the list of supported systems
CPU	2 GHz quad CPU or better
Memory (per machine)	2 GB and 25 MB per concurrent session.
Swap Space (per machine)	3 times physical RAM per database server
Repository DB Space	2 GB partition
Required Additional Software	The <code>tsort</code> command must be in the path

## Client machine requirements

Each user must run a Telelogic Synergy interface, and must have access to one or more file systems that can be used for the user's work area(s). The table below shows the minimum requirements for client machines. Your installation may require more than the amounts shown in this table.

**Note** Each user's work area must be a directory owned and writable by the user. By default, this directory is placed under \$HOME for each user. The directory must be visible to all build/compile servers.

Machine Characteristics	Minimum Configuration
Hardware and Operating System	See the <i>Readme</i> for the list of supported systems
CPU	1.5 GHz dual CPU or better
Memory (per machine)	2 GB
Swap Space (per machine)	3 times physical RAM
Browser	See the <i>Readme</i> for the most current list of supported browsers.
Windowing System	X11R4 or better

**Note** An alternative to installing a UNIX client is to install a Windows client. See the *Telelogic Synergy Installation Guide for Windows*.

## Installation directories

This section describes the directories used to install Telelogic Synergy.

- *ccm\_home*

In this guide, the *ccm\_home* variable represents the path to the Telelogic Synergy installation. The default installation directory is `/user/local/ccm`. The installation includes Telelogic Synergy executables.

**Note** This guide sometimes uses the `$CCM_HOME` variable to represent *ccm\_home*.

You must be able to write to *ccm\_home* as user *root*. If the file system is on a local disk, you should be able to install the Telelogic Synergy software without changing your mount options.

For more information, refer to "Installation machine requirements" on page 14, specifically for disk space requirements for this directory.

Write your value for *ccm\_home* in item 4 on the worksheet on page 10.

- *ccmdb*

In this guide, the *ccmdb* variable represents the path to the Telelogic Synergy database directory on the server. Individual databases reside in this directory.

The databases in the *ccmdb* directory must be visible to all engine hosts that will access those databases and must, therefore, be either local or mounted across the network. The databases must also be visible (that is, use the same logical path) on machines running Telelogic Synergy processes.

**Note** You should separate programs and data as follows:  
Install Telelogic Synergy software into one directory,  
install the database server files into a different directory,  
then create the Telelogic Synergy databases into another directory when you unpack a database.

Write your value for *ccmdb* in item 6 on the worksheet on page 10.

## Disk space requirements

The following table shows how to allocate disk space on your server.

Database Directories	Space Required
<i>ccm_home</i> (installation)	750 MB See “Installation machine requirements” on page 14.
<i>ccmdb</i> Starting size per database: 3 x the total size of all objects to be controlled. <b>Note</b> Be sure to allocate generous disk space for the <i>ccmdb</i> directory. This is where all controlled file content is stored and where the database typically grows the most. This space might grow much larger, depending on the number of versions maintained, particularly if the versions are binaries.	3 x _____ MB = _____ MB
Total Minimum Disk Space Needed ( <i>ccm_home</i> + <i>ccmdb</i> )	_____ MB

**Note** On some UNIX systems, NFS caches are not updated even as a result of local activity. This can cause problems if you run an interface and engine on some UNIX systems with the file system part of the Telelogic Synergy database NFS-mounted from another system. To solve this problem, mount the *ccmdb* database file system with NFS caching disabled.



## Routing, services, hosts, passwords, and groups

The following table shows the routing, services, hosts, passwords, and groups files used to run Telelogic Synergy.

Purpose	Product	Using NIS	Not Using NIS
Routing	Telelogic Synergy	master <code>services</code> file on the NIS server for each network entry: <code>ccm7.0_router</code>	<code>/etc/services</code> on every Telelogic Synergy machine for each network entry: <code>ccm7.0_router</code>
Passwords	Telelogic Synergy	master <code>passwd</code> file on the NIS server	<code>/etc/passwd</code> (and <code>/etc/shadow</code> ) file on each dbserver
Groups	Telelogic Synergy	master <code>group</code> file on the NIS server	<code>/etc/group</code> (and <code>/etc/shadow</code> ) file on each dbserver
Hosts	Telelogic Synergy	master <code>hosts</code> file on the NIS or DNS server entries: the dbserver and each engine host	<code>/etc/hosts</code> on every machine running Telelogic Synergy entries: the dbserver and each engine host
		master <code>hosts.equiv</code> on the NIS server, or <code>ccm_root's .rhosts</code> file entries: dbserver and each engine host for user <code>ccm_root</code>	<code>/etc/hosts.equiv</code> on each dbserver, or <code>ccm_root's .rhosts</code> file entries: dbserver and each engine host for user <code>ccm_root</code>
	DCM (and Telelogic Synergy platform attribute)	<code>ccm_home/etc/om_hosts.cfg</code> <code>ccm_home/etc/remexec.cfg</code> (For more information, see "Set Up for Remote Command Execution" in the <i>Telelogic Synergy Administration Guide</i> .)	same as using NIS

## Prepare the Telelogic Synergy installation machine

Use this information to prepare your Telelogic Synergy installation machine.

### Set up *ccm\_root* and group

User *ccm\_root* owns most of the files and directories, and is the user with permissions to run the administrative commands for Telelogic Synergy. You must have *ccm\_root* defined to install Telelogic Synergy.

**Note** If you are not using NIS, you must do the following: Set up *ccm\_root* on each engine host, using the same numeric user and group IDs on every machine.

Place the *ccm\_root* home directory wherever appropriate for your site.

**Note** You should not install the software into *ccm\_root*'s home directory.

Perform the user and group setup as user *root*.

1. Create the *ccm\_root* user.
2. Create the *ccm\_root* group.

Make *ccm\_root* a member of group *ccm\_root*.

To the *ccm\_root* group, add the names of any users who will have the *build\_mgr* (build manager) role.

3. If you are running Telelogic Synergy on an Linux platform, link `/etc/login/group` to the `/etc/group` file.
4. Create *ccm\_root* home directory. Write the value for *ccm\_root\_home* in item 3 on the worksheet on page 9.

The following examples include `/users/ccm_root`:

```
root# mkdir /users/ccm_root
root# chown ccm_root /users/ccm_root
root# chgrp ccm_root /users/ccm_root
root# chmod 755 /users/ccm_root
```

## Create an installation directory

You must create an installation directory to install Telelogic Synergy. The installation directory path is `ccm_home`, as described in “`ccm_home`” on page 17.

The installation directory can be anywhere, and have any name. However, you should install each Telelogic Synergy release into a release-specific directory (such as `/usr/local/ccm70`), then link `/usr/local/ccm` to your current default release. This allows you to have more than one installation of Telelogic Synergy on a machine, which may be necessary if you are upgrading to a new release.

For example, if you have a previous Telelogic Synergy installation in the `/usr/local/ccm65` directory, install the new version into `/usr/local/ccm70`, then link `/usr/local/ccm` to `/usr/local/ccm70`.

**Note** For more information about multiple installations, see “Create multiple installations of Telelogic Synergy” on page 45.

Record the path to this directory in item 4 on the worksheet on page 10.

To create an installation directory, do the following:

1. Log into the installation machine as user `root`.
2. Create the installation directory.

```
root# mkdir ccm_home
root# chown ccm_root ccm_home
root# chgrp ccm_root ccm_home
root# chmod 755 ccm_home
root# ln -s ccm_home /usr/local/ccm
```

**Note** The installation directory must be visible from the client machine, or a local client must be installed, as discussed in “Set up a UNIX client” on page 52.

## Set up the router service

Telelogic Synergy requires a dedicated TCP port for its router service. To reserve this port, add a Telelogic Synergy router service entry to the `/etc/services` file or its NIS equivalent (for more information, see “Routing” in the table on page 19). You must edit the `services` file as user `root`.

The router service entry in the `/etc/services` file has the following syntax:

```
router_service router_port/tcp # comment
```

The following is the optimal `/etc/services` router service entry:

```
ccm7.0_router 5412/tcp # Telelogic Synergy router port
```

The first column is the service name, which should be `ccm7.0_router`. The second column starts with the port number, which can be any unallocated, unreserved port. On most systems, port numbers in the range of 0 to 1023 are reserved (privileged). If port 5412 is not in use, you should use it because it is reserved for Telelogic Synergy by the Internet Assigned Number Authority (IANA).

Write the following on the worksheet on page 9:

- the router service host name in item 7 (the default is your `system_name`)
- the unique router service name in item 8
- the unique router service port number in item 9

You will need this information during installation. If you do not have a dedicated port defined when you install Telelogic Synergy, the installation program will prompt you to choose one.

**Note** For heterogeneous installations, you need only one Telelogic Synergy router process if the `ccm_home/etc` directory is linked to a single location. Even so, you must have separate Telelogic Synergy router processes for separate releases and for separate networks. For more information, refer to “Create multiple installations of Telelogic Synergy” on page 45.

You can also run the router on a Windows machine. For more information, see the *Telelogic Synergy Installation Guide for Windows*.

### **Identify the media drive**

Determine the device name of the installation machine's media drive, and enter the name in item 5 on the worksheet on page 10. You must know the drive location to install Telelogic Synergy.

**Note** On some systems, the media device may be mounted automatically when you insert the media. On such systems, you need not issue a mount command. However, you must know the directory in which the media is mounted (that is, *media*).

If you are downloading the software, please see "Download the software" on page 31 for more information.

## Prepare the Oracle database

Oracle must already be installed and running before you can use these installation instructions; the instructions do not include information about Oracle database administration.

Also, your database administrator must prepare the Oracle database to run with Telelogic Synergy by performing the following operations.

### **Create a tablespace**

You must create a tablespace named `ccm` in your Oracle database for Telelogic Synergy data storage. The following SQL statement is an example of creating the `ccm` tablespace:

```
create tablespace ccm
datafile '/sargasso1/oracle/oradata/sargasso/ccm01.dbf' size
500M
autoallocate extent management local;
```

### **Verify temporary tablespace**

For Telelogic Synergy to run, you must have a `temp` tablespace. Verify that `temp` tablespace already exists.

## Set up authentication

Two types of authentication are allowed: external or database. You must choose one, as mixed mode authentication is not supported.

- External authentication authenticates users by checking the operating system or network service. This is the default setting.
- Database authentication authenticates users by using a password managed by the Oracle database. This type of authorization only supports a single Oracle database. For information about switching from external to database authentication, see “Switching the authentication mode” on page 29.

## External authentication

### 1. Create User OPS\$CCM\_ROOT

You must create user OPS\$CCM\_ROOT in your Oracle database in order for Telelogic Synergy to run. Use the following SQL statement as an example:

```
create user OPS$CCM_ROOT identified externally
default tablespace ccm
temporary tablespace temp
quota unlimited on ccm;
```

### 2. Grant Privileges to User OPS\$CCM\_ROOT

After creating user OPS\$CCM\_ROOT, grant the "CREATE SESSION" and "SELECT\_CATALOG\_ROLE" privileges to user OPS\$CCM\_ROOT as follows:

```
grant CREATE SESSION, SELECT_CATALOG_ROLE to OPS$CCM_ROOT;
```

## Set up remote authentication (optional)

If you plan to run on remote engines, you must enable remote authentication. You must set the initialization parameter as follows.

- Set REMOTE\_OS\_AUTHENT to TRUE
- Set REMOTE\_LOGIN\_PASSWORDFILE to EXCLUSIVE
- Set OS\_AUTHENT\_PREFIX to OPS\$

## Database authentication

For database authentication, you must also set the following parameters:

1. Create user CCM\_ROOT

You must create user CCM\_ROOT in your Oracle database in order for Telelogic Synergy to run. Use the following SQL statement as an example:

```
create user CCM_ROOT identified by ccm_root
default tablespace ccm
temporary tablespace temp
quota unlimited on ccm;
```

2. Grant privileges to user CCM\_ROOT

After creating user CCM\_ROOT, grant the "CREATE SESSION" and "SELECT\_CATALOG\_ROLE" privileges to user CCM\_ROOT as follows:

```
grant CREATE SESSION, SELECT_CATALOG_ROLE to CCM_ROOT;
```

3. Make sure `ccmdb auth -d` is run after the installation is completed to set the password of the Oracle database user CCM\_ROOT.

## **Potential data loss when Telelogic Synergy and Oracle database use different character encoding**

If any Telelogic Synergy client does not use the same character encoding schemes as the underlying Oracle database, certain characters entered into the client may be replaced when they are saved to Oracle, resulting in data loss.

For example, assume the following:

- A user configures an Oracle database to use the 7-bit ASCII character set (US7ASCII).
- A Telelogic Synergy client runs on a German operating system that uses the 8-bit ISO character set (WE8ISO8859P1).
- A user enters a German character in the Telelogic Synergy client that is not part of the 7-bit ASCII character set.

The German character is converted as it is saved to the database. Different characters are converted in different ways; for example, the character “ß” is replaced with “?” and the character “ä” is replaced with “a.”

To avoid data loss, configure the Oracle database so that its character set is a superset of, or equivalent to, the character sets on all systems that run Telelogic Synergy clients. For example, if German data is expected to be stored in Telelogic



Synergy, configure the Oracle database and the client systems to use a character set that supports German characters.

### **Allow access by Windows clients (optional)**

For Windows traditional mode clients to be able to connect to a UNIX database server without using ESD, you must verify that the `rexec` daemon is enabled in the `inetd` configuration file on each UNIX database server or engine machine that will be accessed by Windows clients. **The location of this configuration file may vary depending on the platform on which you are running.** If you are using web mode or a secure engine connection with ESD, it does not matter whether the `rexec` daemon is enabled.

## **Oracle license information**

Your Telelogic Synergy for Oracle license agreement does not license you to use the underlying Oracle database; the Oracle database is separately licensed by Oracle Corporation. Your Oracle license must cover all users who will access a Telelogic Synergy database.

## Install the Telelogic license server

Telelogic Synergy uses the Telelogic License Server. The Telelogic™ License Server® is a FLEXnet-based license server used to manage licenses. You must install the Telelogic License Server separately from the product installation process documented here in order to run Telelogic Synergy, even if you are not running other Telelogic products. You should install the Telelogic License Server before you perform the Telelogic Synergy product installation.

For complete information about installing the license, see the *Telelogic Lifecycle Solutions Licensing Guide*. This document is available from the Telelogic Lifecycle Solutions kit or can be downloaded from the Lifecycle Solutions section of the Support web site at (<http://support.telelogic.com/lifecyclesolutions>).

## Switching the authentication mode

The `ccmdb auth` command is used to switch authentication modes. It can also be used to display the current authentication configuration.

```
ccmdb auth [-d|-e]
```

If no option is provided, it will show the current configuration.

### Options

```
-d|-database
```

Sets the authentication to use database authentication.

```
-e|-external
```

Sets the authentication to use external authentication.

Avoid switching from one type of authentication mode to another. If you must switch the authentication mode, use the follow procedures.

### Switching from external to database authentication

1. Back up all the Telelogic Synergy databases.
2. Perform the steps described earlier to “Create user CCM\_ROOT” on page 26 and “Grant privileges to user CCM\_ROOT” on page 26.
3. Run `ccmdb auth -d` command to set the database authentication configuration.
4. Delete all the Telelogic Synergy databases.
5. Unpack all the Telelogic Synergy databases.

### Switching from database to external authentication

1. Back up all the Telelogic Synergy databases.
2. Perform the steps described earlier to “Create User OPS\$CCM\_ROOT” on page 25.
3. Run `ccmdb auth -e` command to set the external authentication configuration.
4. Delete all the Telelogic Synergy databases.
5. Unpack all the Telelogic Synergy databases.



# 5

## Installation

This chapter explains how to install Telelogic Synergy on a UNIX platform.

**Note** To install Telelogic Synergy, you will need the “Telelogic Synergy Installation Worksheet” on page 9 that you completed during pre-installation.

### Checklist

Use the following checklist, in the sequence shown, to install Telelogic Synergy:

- “Download the software” as described below
- “Load the software” on page 32
- “Complete the installation” on page 34
- “Start the Telelogic Synergy daemons” on page 37

### Download the software

Use the following procedure to extract and install download images from the Telelogic Synergy web site.

1. Create a temporary directory on a file system with at least 750 MB of disk space; this is in addition to the space required for the installed software as documented in this guide.  

```
mkdir /tmp/synergy_image
```
2. On the Telelogic Synergy support site, find the Telelogic Synergy 7.0 downloads page (for support information, see “Product support” on page 4). You will see a single file for each platform; each file is a gzipped tar archive of the Telelogic Synergy installation image for that platform. Download the file or files you need into your temporary directory.

Extract the installation image:

```
cd /tmp/synergy_image  
cat download.tar.gz | gzip -d | tar xf -
```

3. Proceed with the installation as directed in “Load the software”, as if the temporary directory was your DVD mount point. Add any other flags required by the installation or upgrade procedure you are following.

```
/tmp/synergy_image/ccm/unix/bin/ccm_install -x -d
ccm_home
```

4. After installation is complete, remove the temporary directory and its contents.

```
cd /rm -rf /tmp/synergy_image
```

## Load the software

Load the Telelogic Synergy software as follows:

**Note** If you are installing Telelogic Synergy on a non-local file system, read “Install onto a remote file system” on page 49 before proceeding.

1. Log on to the installation machine as user *root*.
2. Mount the installation media. Your system may auto-mount the DVD, if not, use the appropriate mount command shown in the following table.

Platform	Command
Solaris	<code>mount -r -F hsfs /dev/sr0 /cdrom</code>
AIX	<code>mount /cdrom</code>

**Note** If your DVD is mounted automatically, you need to know the directory in which the media is mounted (that is, *media*, which is item 5 on the worksheet on page 10).

3. Set the Oracle home directory and SID.

```
$ ORACLE_SID=sargasso; export ORACLE_SID
$ ORACLE_HOME=/opt/oracle; export ORACLE_HOME
```

4. Run the installation program (`ccm_install`).

**Note** Installation requires *root* access to the Telelogic Synergy installation directory (*ccm\_home*). If the installation directory is on an NFS file system, be sure that its path was exported with *root* access to the machine where you are performing the installation.

You must run `ccm_install` either on the same machine type as the binaries you are installing, or on a different machine type using the `-p [platform]` flag to designate the type of binary. If you are using the `-p`

flag, you must use one of the arguments shown in the following table for the flag.

Platform	Attribute Value
Sun	solaris
AIX	ibm or aix

The `ccm_install` program installs into either `$CCM_HOME` or the directory specified with the `-d` (destination directory) option. For more information about the `-d` option, see “Install onto a remote file system” on page 49.

If you are using the Bourne shell, the commands for setting the environment variables and executing the install command are as follows:

```
root# CCM_HOME=ccm_home; export CCM_HOME
root# PATH=$CCM_HOME/bin:$PATH; export PATH
root# /media/ccm/unix/bin/ccm_install -x
```

Use the values for `ccm_home` and `media` that you entered in items 4 and 5 on the worksheet on page 10.

**Note** You will be prompted to accept the software license agreement. If you do not agree, the installation will be terminated. You must agree in order to complete the installation.

The `ccm_install` program will prompt you for the router service host name, router service name, router service port number, ESD (engine startup daemon) port number, CCM server port number, license server host name, and license server port number. To answer these prompts, refer to items 7 to 14 on the worksheet on page 10.

## Complete the installation

After you successfully run the `ccm_install` program, the following message displays:

```
ccm_install: Telelogic Synergy installation succeeded
```

Do the following, in the sequence shown, to complete the installation:

- “Set up the Telelogic Synergy environment” described below
- “Create an Oracle database” on page 35
- “Set up for remote engine hosts (optional)” on page 35

### Set up the Telelogic Synergy environment

To set up the Telelogic Synergy environment for X applications, `CCM_HOME`, and `PATH`, do the following:

1. Copy the X application defaults file for Telelogic Synergy to the `app-defaults` directory on all machines that run clients (interface processes).

#### All Sun Solaris platforms using Open Windows:

```
root# cp $CCM_HOME/etc/Ccm /usr/openwin/lib/app-defaults
```

#### All other platforms including Sun Solaris using CDE:

```
root# cp $CCM_HOME/etc/Ccm /usr/lib/X11/app-defaults
```

If your environment is mixed, copy the file for both the OpenWindows and the non-OpenWindows platforms.

2. **On Sun OpenWindows only**, check to see if the X11 translation table is already installed. If it is not, copy the X11 translation table.

```
root# cp $CCM_HOME/etc/XKeysymDB /usr/openwin/lib
```

3. Set `ccm_root` environment variables.

Some Telelogic Synergy commands require the `tsort` command in the path. Check your installation to see if you need to modify the path to include `tsort`. For example, on Solaris `tsort` is in `/usr/ccs/bin`.

- a. Set the command path for user `ccm_root`.

```
$ su - ccm_root
Password: *****
$ vi .profile
```

If the `.profile` file is not the correct file for your shell, edit the correct file (for example, `.cshrc` or `.login`).



Add the following lines, then exit from user *ccm\_root*.

```
CCM_HOME=ccm_home; export CCM_HOME
PATH=$CCM_HOME/bin:$PATH:/usr/ccs/bin; export PATH
exit
```

## Create an Oracle database

Ensure that an Oracle database has been created and is open. For more information, see “Prepare the Oracle database” on page 24.

Create a directory for the Telelogic Synergy databases (for example, */data/ccmdb*).

**Caution** To avoid losing files when you upgrade, do not put the database directory under the installation directory (*ccm\_home*).

```
root# mkdir ccmdb
root# chown ccm_root ccmdb
root# chgrp ccm_root ccmdb
root# chmod 755 ccmdb
```

## Set up for remote engine hosts (optional)

If you are running Telelogic Synergy engines and the database server on the same machine, you do not need to set up remote engine hosts. However, if you plan to run engine processes on machines other than the database server, you must define the engine hosts in the following network system files:

- *hosts* (or DNS)
- *hosts.equiv* (or *.rhosts*)

Ensure that your host IP addresses are unique and consistent, and be sure to check access to each host. Additionally, you must run *ccm\_install -l* on the engine hosts.

If you do not intend to use the Engine Startup Daemon (ESD) for traditional mode sessions, you must enable the *rsh* and *rexec* daemons by editing the appropriate *inetd* or *xinetd.d* files. On some systems these daemons are disabled by default. For web mode sessions, ESD, *rsh*, or *rexec* daemons are not needed.

For VPN clients, you must add the VPN IP address to */etc/hosts* or the DNS equivalent. You can give the VPN IP address any name as long as it has a name. An example of the type of entry you can make in your *hosts* file is:

```
192.168.45.10 vpnclient1
```

```
192.168.45.11 vpnclient2
192.168.45.12 vpnclient3
```

Alternatively, instruct your DNS server to construct host names spontaneously for reverse lookups of IP addresses in the subnet used for your VPN.

By default, Linux does not interpret the plus sign (+) in either the `.rhosts` file or the `/etc/hosts.equiv` file. If you need to allow the use of +, you must add the argument `promiscuous` at the end of the `.rhosts` auth line in `/etc/pam.d/rsh`.

For Linux users, you must also set permissions in the `/etc/hosts.allow` file. Using the setting `ALL:ALL`, which allows any client to use any service, is optimal. However, this setting might raise network security concerns.

For more information, see "Set Up for Remote Command Execution" in the *Telelogic Synergy Administration Guide for UNIX*.

**Note** You must run the object registrar on your database server if the database and installation machines are not the same. Also, if the database server is not the same as the installation machine, you must run `ccm_install -l` on the engine hosts.

For more information, see the `ccm_objreg` command in the *Telelogic Synergy Administration Guide for UNIX*.

**Note** You must run `ccm_server` on each machine on which you intend to run web mode sessions.

## Start the Telelogic Synergy daemons

The Telelogic Synergy daemons must be running before a Telelogic Synergy session can be started. The `ccm_start_daemons` command starts all daemons on the same machine. For more information, see “Oracle license information” on page 27.

**Note** If you do not want to run all daemons on one machine, or if you want to run additional daemons on other machines, see the *Telelogic Synergy Administration Guide for UNIX*.

Also, you will need to start these daemons and the primary CCM server each time the server machine is rebooted. For your convenience, you should create boot scripts for this purpose, as described in the *Telelogic Synergy Administration Guide for UNIX*.

**Note** You must run CCM server on each machine supporting a web mode session.

1. Set user to `ccm_root`.

```
$ su - ccm_root
Password: *****
$ CCM_HOME=ccm_home; export CCM_HOME
$ PATH=$CCM_HOME/bin:$PATH; export PATH
```

2. Start the daemons.

```
$ ccm_start_daemons
```

If all the daemons do not start, use the `ccm_stop_daemons` command to stop all daemons before attempting to start them again.

3. Exit from user `ccm_root`.

```
$ exit
```

**Note** You must run the object registrar on your database server if the database and installation machines are not the same. Also, if the database server is not the same as the installation machine, you must run `ccm_install -l` on the engine hosts.

For more information, see the `ccm_objreg` command in the *Telelogic Synergy Administration Guide for UNIX*.



# 6

## Post-Installation

This section explains how to verify correct installation by unpacking a test database into the directory and setting up for Telelogic Synergy databases (*ccmdb*) on the database server. If any of the steps in this section fail, contact Telelogic technical support as explained in “Contacting IBM Rational Software Support” on page 3.

The ability to perform web-based installations for Windows clients running on UNIX servers is also described. See “Download Windows client installations” on page 43.

### Checklist

Use the following checklist, in the sequence shown, to verify your Telelogic Synergy installation:

- “Configure for remote processes (optional)” described below
- “Unpack a test database” described below
- “Start a Telelogic Synergy session” on page 41

### Configure for remote processes (optional)

To use Telelogic Synergy Distributed (also referred to as DCM), you must set up hosts for distributed builds and DCM. For more information, see “Set Up for Remote Command Execution” in the *Telelogic Synergy Administration Guide for UNIX*.

## Unpack a test database

Unpack a database from the installation directory, `$CCM_HOME/patchfiles`. For example, on the database server machine, unpack a base model database (`base.cpk`) to a new database, `/data/ccmdb/testdb`.

**Note** If you are not using the default server name, you must use the `-s servername` option on the `ccmdb unpack` command.

1. Log in as `ccm_root` and set the environment variables.

```
$ su - ccm_root
Password: *****
$ ORACLE_SID=sargasso; export ORACLE_SID
$ ORACLE_HOME=/opt/oracle; export ORACLE_HOME
$ CCM_HOME=ccm_home; export CCM_HOME
$ PATH=$CCM_HOME/bin:$PATH; export PATH
```

2. If necessary, create an Oracle user that has the privileges required to unpack a database.

The `ccmdb unpack` command will prompt you for an Oracle user that has the privileges required for unpacking a database. You can use the `sys` or `system` Oracle users, both of which have the privileges, or you can create an Oracle user that has the required privileges.

Note that you cannot enter `/` (meaning yourself), as this syntax is not supported by the `unpack` command. You also cannot use the `ccm_root` user (equivalent to `OP$CCM_ROOT`).

The Oracle user must have the following privileges:

```
CREATE USER
DROP USER
CREATE ANY INDEX
DROP ANY INDEX
CREATE ANY SEQUENCE
ALTER ANY TABLE
CREATE ANY TABLE
INSERT ANY TABLE
DROP ANY TABLE
DELETE ANY TABLE
SELECT ANY TABLE
UPDATE ANY TABLE
GRANT ANY OBJECT PRIVILEGE
SELECT ANY SEQUENCE
ALTER ANY INDEX
ALTER ANY TABLE
ALTER ANY SEQUENCE
```

**3. Unpack the database.**

```
$ ccmdb unpack $CCM_HOME/packfiles/base.cpk -t /data/ccmdb/
testdb
```

**Note** For more information about the `ccmdb unpack` command and database naming conventions, see the *Telelogic Synergy Administration Guide for UNIX*.

**Troubleshooting - NLS\_LANG and NLS\_CHARACTERSET do not match**

Telelogic Synergy for Oracle may encounter problems when mismatching a client's `NLS_LANG` and a database's `NLS_CHARACTERSET`.

For example, if the client's `NLS_LANG` is set to `American_America.WE8ISO8859P1` and the server's `NLS_CHARACTERSET` is `UTF8`, then `ccmdb unpack` fails with an error like:

```
ERROR: Failed to add record to table attrib (-
1401), terminating
ERROR: Cannot load database.
```

As another example, the Telelogic Synergy Classic session startup fails with an error like:

```
Warning: The value of the 'active_model' attribute
on the admin
component version, ba, is not a model in this
database.
Warning: Oracle: ORA-03127: no new operations
allowed until the active
operation ends
```

**Start a Telelogic Synergy session**

To verify that the server is online and that all Telelogic Synergy daemons are running, start a Telelogic Synergy session.

For example, to start a session on the `/data/ccmdb/testdb` database, do the following:

**4. Start a web mode session.**

```
$ cmsynergy& -d/data/ccmdb/testdb -s server_url
```

**1. Start a traditional mode session.**

```
$ cmsynergy& -d/data/ccmdb/testdb -h engine_host
```

**Note** If you are prompted to enter a password, you are starting a secure client session. You must enter your password to continue.

2. Monitor the Telelogic Synergy daemons.

```
$ ccm monitor -d /data/ccmdb/testdb
```

```
Telelogic Synergy process monitor...5 process(es) located:
user      process  host      port  pid      database path
-----
ccm_root  router   galaxy    1512  2954     -
ccm_root  objreg   galaxy    34820 2994     -
joe       monitor  pacifica  44351 13654    -
joe       gui      pacifica  1705  322     /vol/data/ccmdb/testdb
joe       engine   pacifica  40308 8386    /vol/data/ccmdb/testdb
```

If the daemons are running and the session starts, you have successfully completed the Telelogic Synergy installation.

3. Exit both session.



## Download Windows client installations

You can now provide a web-based Windows client installation program for the Windows Client. You must provide a URL that identifies the Telelogic Synergy CCM Server, as this is where the installation is served. The URL has the format: `http://ccm_server_host:ccm_server_port/install.html`, where

`primary_ccm_server` is the hostname of the server where the server is installed, and  
`primary_ccm_port` is the port number of the server.

These are items 11 and 12 in your installation worksheet.

The CM administrator must provide the URL to users who will be performing the Client installation via download.

### **Guidelines for the web-based installation process**

In order for Windows users to successfully complete the installation process, users must provide the information requested. The CM administrator should send mail to all Windows users providing all the necessary information the users need to complete the installation. The user will see the client installation wizard, so the following information will be requested:

- Router host name
- Router port number
- Host name of the main Windows server
- UNIX server installation path

When the user starts any client on UNIX, the user may be notified that an update to the product is required. The client cannot continue, and the update must be installed manually, as the downloadable is not available on UNIX platforms. To start web mode sessions, you need to know the URL of the CCM server.



## Appendix A: Alternative Installations

If required, you can set up alternative installations as described in the following sections:

- “Create multiple installations of Telelogic Synergy” described below
- “Run Telelogic Synergy processes across a network” on page 50
- “Install onto a remote file system” on page 49
- “Set up a UNIX client” on page 52
- “ESD authentication through PAM” on page 55

### Create multiple installations of Telelogic Synergy

Telelogic Synergy supports multiple simultaneous installations of the Telelogic Synergy software. Multiple installations let you use more than one release of Telelogic Synergy on the same platform, or run binary-incompatible versions on a network of Telelogic Synergy-supported machines. For example, you might have a network with both Linux and Solaris machines.

If you are installing onto a heterogeneous network, perform the following consistency checks:

- Ensure that user IDs are consistent throughout the network (with or without NIS).
- Verify that group IDs are consistent throughout the network (with or without NIS).
- Ensure that host names are consistent throughout the network.

Choose a machine for the primary installation. (Installations for all other platforms are considered secondary installations.) The *file server* machine is where the installed Telelogic Synergy files physically reside. To avoid problems writing these files to the installation directory as *root*, use the same machine for the primary installation machine and the file server, and perform the installation on that machine. Symbolically link `/usr/local/ccm` to the installation directory. This makes it easy to upgrade to a new release by re-linking `ccm`.

In the examples used in this appendix, note the following:

1. A Solaris platform is the primary installation machine.
2. The primary machine is the file server for all (primary and secondary) installations.
3. The machines are assumed to have NFS access to each other.

**Note** The installation requires that *root* be able to write to the installation directory. If you are installing onto a remote file system, see “Install onto a remote file system” on page 49.

### **Install onto the primary machine**

You must first install onto the primary machine because its installed binaries are used to execute the `ccm_install` command when you create installation areas on other machines.

Follow the steps in “Load the software” on page 32 to set up the primary installation. Be sure that the `CCM_HOME` directory points to a symbolic link and that the symbolic link (or mount point and its contents) is accessible throughout the network.

You can set up the primary installation much like a normal Telelogic Synergy installation. However, you may want to choose an installation directory that is named according to the platform.

For example, on a Solaris platform, enter the following commands to use the `/vol/sun/ccm70` directory for the primary installation.

```
root@sol# mkdir /vol/sun/ccm70
root@sol# cd /usr/local
root@sol# ln -s /vol/sun/ccm70 ccm70
root@sol# CCM_HOME=/usr/local/ccm70; export CCM_HOME
root@sol# PATH=$CCM_HOME/bin:$PATH; export PATH
root@sol# cd ccm70
root@sol# /media/ccm/unix/bin/ccm_install -x
```

*media* is item 5 of the worksheet on page 10.

## Install multiple releases onto the primary machine

You can install multiple releases onto the primary machine using the same procedure for installing on the primary machine for the first time. Select a different installation directory (*ccm\_home*), and different port numbers for the router, ESD, CCM server, and Informix database server.

Follow the installation instructions (see “Load the software” on page 32) for each new Telelogic Synergy installation directory. The new installation will then have its own `$CCM_HOME` directory.

For example, suppose the primary installation is `ccm70` on a Solaris platform and you want to install a test release onto `/vol/sun/ccmtest` on the same platform. The commands are as follows:

```
root@sol# mkdir /vol/sun/ccmtest
root@sol# cd /usr/local
root@sol# ln -s /vol/sun/ccmtest ccmtest
root@sol# CCM_HOME=/usr/local/ccmtest; export CCM_HOME
root@sol# PATH=$CCM_HOME/bin:$PATH; export PATH
root@sol# cd ccmtest
root@sol# /media/ccm/unix/bin/ccm_install -x
```

*media* is item 5 of the worksheet on page 10.

Users can then set `CCM_HOME` to `/usr/local/ccm70` for the primary installation, or set `CCM_HOME` to `/usr/local/ccmtest` for the test installation.

For example, to run using the primary installation, set user to `ccm_root` and execute the following commands:

```
$ su - ccm_root
Password: *****
$ CCM_HOME=/usr/local/ccm70; export CCM_HOME
$ PATH=$CCM_HOME/bin:$PATH; export PATH
```

To run using the secondary installation, set user to `ccm_root` and execute the following commands:

```
$ su - ccm_root
Password: *****
$ CCM_HOME=/usr/local/ccmtest; export CCM_HOME
$ PATH=$CCM_HOME/bin:$PATH; export PATH
```

## **Install binary-incompatible versions onto the primary machine**

You can install a binary-incompatible version onto the primary machine using the same procedure for installing on the primary machine for the first time, but specifying the new platform's type.

Follow the installation instructions (see "Load the software" on page 32) for each new Telelogic Synergy installation directory. Select a different installation directory (*ccm\_home*), but use the **same** port numbers for the router, ESD, CCM server, and Informix database server as you used for the primary installation.

For example, suppose the primary installation is *ccm70* on a Solaris file server and you want to install a Linux version onto */vol/linux/ccm70* on the same machine. The steps are as follows:

1. Create the secondary, binary-incompatible installation.

```
root@sol# mkdir /vol/linux/ccm70
root@sol# CCM_HOME=/usr/local/ccm70; export CCM_HOME
root@sol# PATH=$CCM_HOME/bin:$PATH; export PATH
root@sol# cd /vol/linux/ccm70
root@sol# /media/ccm/unix/bin/ccm_install -x -d /vol/linux/ccm70
-p linux
```

*media* is item 5 of the worksheet on page 10.

CCM\_HOME and PATH must point to the installation executables on the local machine, **not** to the destination directory for the new Linux installation. The Linux installation's destination is specified using the *-d* option, and the new installation's type is specified using the *-p* option.

**Note** When you perform a secondary installation, you receive a message about library links. This message reminds you to log on to the secondary platform and run the `ccm_install -l` command after you successfully execute the `ccm_install -x` command on the primary platform.

2. Set up mounts and links so that users access the correct installation for their platforms.

Set up all machines of the **same platform** so that the `cd /usr/local/ccm70` command will take users to the appropriate directory (for example, */vol/sun/ccm70* or */vol/linux/ccm70*).

3. Share the primary installation configuration files among all platforms.

Create a symbolic link for Telelogic Synergy configuration files from the secondary installation to the primary platform.

```
root@sol# cd /vol/linux/ccm70
root@sol# mv etc etc_linux
root@sol# ln -s /vol/sun/ccm70/etc etc
```

4. Set up the secondary machine.

- a. Log on to the secondary machine (for example, Linux) as *root*.

- b. Set up the environment.

```
# CCM_HOME=/usr/local/ccm70; export CCM_HOME
# PATH=$CCM_HOME/bin:$PATH; export PATH
# ccm_install -l
```

- c. If necessary, create a database server, set up engines hosts, and start daemons. For more information, see “Run Telelogic Synergy processes across a network” on page 50.

**Note** If you have trouble starting Telelogic Synergy after a heterogeneous installation, check that the path of `local.ccm.home` is correct in the `$CCM_HOME/etc/ccm.server.properties` file. It may need to be reset to point to the correct directory structure, as it may be using an incorrect path.

## Install onto a remote file system

To install onto a remote file system, you need to be logged on as user *root* and be able to write to the installation directory. If *root* access is **not** allowed, then either run the `ccm_install` program on the NFS server, or temporarily allow *root* access across NFS.

## Run Telelogic Synergy processes across a network

To run Telelogic Synergy processes across network installations, all machines share one set of Telelogic Synergy daemons. However, you might want to run your daemons on different machines, and these machines need not be the same platform. For example, you could manage your databases using a Sun server, but run the Telelogic Synergy software on a Linux workstation.

The following sections describe where you can run Telelogic Synergy daemons when you have multiple installations.

### **Telelogic Synergy daemon processes**

- Router  
You must run one router process for the network Telelogic Synergy installation. You can run this process on any machine where Telelogic Synergy is installed. You must choose this machine during the primary installation.
- Object Registrar  
You can run multiple object registrars per CCM\_HOME location. The object registrar typically runs on each database host.
- Engine Startup Daemon  
You must run one ESD process on any machine where you will run Telelogic Synergy engines with secure connections.
- Telelogic Synergy primary Server  
You must run one primary server for the network Telelogic Synergy installation. By default, the primary server runs on the same machine as the router.



### **Engine processes**

After installing the software on the primary platform, and after installing any secondary platforms onto the file server, you must execute the `ccm_install -l` command once on each engine host. This command and option creates library links in the `/usr/lib` directory, from the local machine to the Oracle installation. You must run the command as *root*.

### **Telelogic Synergy databases**

You can create Telelogic Synergy databases on any database server.

## Set up a UNIX client

You can install Telelogic Synergy onto a UNIX client regardless of whether NFS is used. The following paragraphs explain what you need to do to set up each of these installations.

On UNIX, you need only one installation of Telelogic Synergy. However, all UNIX clients must be able to access the installation directory.

### Set up a UNIX client that uses NFS

To set up a client that uses NFS, do the following:

1. If you have multiple installations, or if you do not have any installation below or linked from `/usr/local/ccm`, set `CCM_HOME` and `PATH`. Otherwise, skip this step.

```
$ CCM_HOME=ccm_home
$ PATH=$CCM_HOME/bin:$PATH
$ export CCM_HOME PATH
```

`ccm_home` is the directory into which Telelogic Synergy is installed.

2. Be sure that the following requirements are met:

- For traditional mode sessions, you must enable either `rsh` or `ESD` on the server to allow remote UNIX clients.

If `ESD` is not in use, engine hosts must trust the users and machines. To enable this, configure your `.rhosts` or `hosts.equiv` file accordingly. (Both files are discussed in the *Telelogic Synergy Administration Guide*.)

- For traditional mode sessions, you must enable either `rexec` or `ESD` on the server for Windows clients.
- The database server must trust `ccm_root` on the engine machines.

To enable this, configure `ccm_root's` `.rhosts` or `hosts.equiv` file accordingly. (Both files are discussed in the *Telelogic Synergy Administration Guide*.)

- The client must be able to resolve the name or IP address of the server.
- On the client, the `ccm_root` user ID (UID) and group ID (GID) must match the server.
- The router service must be listed in the `/etc/services` directory on the client.

For more information, contact your system administrator.

- `$CCM_HOME` must be the same on the client and server.

Do this by mounting the server's installation so it appears on the client in the same path.

- The `$CCM_HOME/etc/.router.adr` file must point to the correct location. Typically, the router is running on the server.

3. Start a Telelogic Synergy session.

```
$ ccm start -d ccmdb
```

`ccmdb` is the path to the Telelogic Synergy database.

### Set up a UNIX client that does not use NFS

To set up a client that does not use NFS, do the following:

1. If you have multiple installations, or if you do not have any installation below, or linked from, `/usr/local/ccm`, set `CCM_HOME` and `PATH`. Otherwise, skip this step.

```
$ CCM_HOME=ccm_home
$ PATH=$CCM_HOME/bin:$PATH
$ export CCM_HOME PATH
```

`ccm_home` is the directory into which Telelogic Synergy is installed.

2. Be sure that the following requirements are met:

- For traditional mode sessions, you must enable either `rsh` or `ESD` on the server to allow remote UNIX clients.

If `ESD` is not in use, engine hosts must trust the users and machines. To enable this, configure your `.rhosts` or `hosts.equiv` file accordingly. (Both files are discussed in the *Telelogic Synergy Administration Guide*.)

- For traditional mode sessions, you must enable either `rexec` or `ESD` on the server for Windows clients.
- The database server must trust `ccm_root` on the engine machines, regardless of whether `ESD` is in use.

To enable this, configure `ccm_root's` `.rhosts` or `hosts.equiv` file accordingly. (Both files are discussed in the *Telelogic Synergy Administration Guide*.)

- The client must be able to resolve the name or IP address of the server.
- On the client, the `ccm_root` user id (UID) and group id (GID) must match the server.
- `$CCM_HOME` must be the same on the client and server.

Do this by creating a copy of the server's installation so it will appear on the client in the same path.

- The `$CCM_HOME/etc/.router.adr` file on the client must point to the correct host and port on the server.
3. Load the software by performing steps 1 through 4 in “Load the software” on page 32.
  4. Start a Telelogic Synergy session.

- Enter the following for a web mode session:

```
$ cmsynergy& -h engine_host_name -d ccldb
```

**Note** Web mode sessions only support copy-based work areas.

- Enter the following for a traditional mode session:

```
$ cmsynergy& -s server_url -d ccldb
```

To set Telelogic Synergy to start in copy-based mode, you must change an entry either in the `$CCM_HOME/etc/ccm.properties` file or the `$HOME/.ccm.user.properties` file.

Enter the following setting in the file:

```
user.allow.link.based.workareas=false
```

Setting this value to anything other than `false` will cause Synergy to start in link-based mode. The value is case-insensitive.

- Or, to start a Telelogic Synergy Classic session:

```
$ ccm start -h engine_host_name -rc -d ccldb
```

`ccldb` is the path to the Telelogic Synergy database.

Users on distributed UNIX installations not using NFS must start sessions using the `ccm start -rc` remote client option. This ensures that necessary libraries located under the database path are visible to the UI process.

## ESD authentication through PAM

On Solaris and LINUX<sup>®</sup> systems, the engine startup daemon (ESD) will use PAM to authenticate users. The PAM service name is “cmsynergy”. To allow the ESD to authenticate users, the PAM configuration must be updated to specify the authentication methods to use for the “cmsynergy.” service unless a reasonable default already exists.

example additions to Solaris `/etc/pam.conf` file:

```
cmsynergy auth required /usr/lib/security/$ISA/pam_unix.so.1
cmsynergy account required /usr/lib/security/$ISA/pam_unix.so.1
```

example `/etc/pam.d/cmsynergy` file for LINUX:

```
auth required /lib/security/pam_stack.so service=system-auth
auth required /lib/security/pam_nologin.so
account required /lib/security/pam_stack.so service=system-auth
```

For additional information about how to configure PAM, please refer to your system’s documentation.

### **Set up the esd client**

You must tell the client to connect to `esd` rather than use the normal engine startup procedure. This is done by editing the `ccm.ini` file in the Synergy client installation’s `etc` directory to specify how the engine is started. You must add the following line to the first section of the `ccm.ini` file:

```
engine_daemon = TRUE
```

You should change the `$CCM_HOME/etc/ccm.ini` file, not your own `ccm.ini` file.



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# Index

## Symbols

/etc/group file 19  
/etc/hosts.allow file 36  
/etc/hosts.equiv file 19  
/etc/passwd file 19  
/etc/services file 22

## A

authentication  
    external 25  
    remote 25

## B

before installing 13

## C

caution, defined 6  
ccm\_home variable 17  
ccm\_install program, running 32  
ccmdb variable 17  
CD-ROM drive, identifying 24  
client  
    installation 52  
    machine requirements 16  
completing the installation 34  
configuring for remote execution 39  
create CCM\_ROOT user 26  
creating  
    an installation directory 21  
    Oracle database 35  
    tablespace 24  
    the database server 35  
    the databases directory 35

## D

daemons  
    inetd 27  
    on a heterogeneous network 50  
    starting 37  
database servers  
    creating 35  
    machine requirements 15  
databases  
    creating the parent directory 35  
    unpacking 40  
    where to create 51  
DCM  
    defined 39  
    remote host file (om\_hosts.cfg) 19  
disk space  
    requirements 18  
distributed build file (om\_hosts.cfg) 19  
documentation  
    available 6  
documentation for Telelogic Synergy 6  
downloading install image 31  
drive, identifying 23

## E

engine server, defined 7  
engine startup daemon 7, 11, 27, 33, 35, 50  
environment, setting up 34  
ESD 7, 11, 27, 33, 35, 50  
ESD, defined 7  
esd, updating configuration 55  
exit from a session 42

---

## F

### files

- /etc/group 19
- /etc/hosts.allow 36
- /etc/hosts.equiv 19
- /etc/passwd 19
- /etc/services 22
- group 19
- hosts.equiv 19
- om\_hosts.cfg 19
- passwd 19
- services 19

## G

getting started 13

group file 19

## H

heterogeneous network, daemon sharing  
50

host IDs, for multiple installations 45

hosts.equiv file 19

## I

IBM Customer Support 3

inetd daemon 27

initSID.ora file 25

installation

- client 52
- completing 34
- directory requirements 17
- multiple 45
- preparing for 13

installation machine

- defined 8

installation machine requirements 14

installing

- from download 31
- on a remote file system 49
- onto a client 52

## L

library link message 48

license information

- obtaining 27

license manager, defined 8

loading the software 31, 32

## M

media drive, identifying 23

modes

- traditional 8, 41
- Web 8
- web 41

multiple installations 45

- object registrar 50

- router process 50

## N

note, defined 6

## O

object registrar

- in multiple installations 50
- where to run 50

object registrar, defined 8

om\_hosts.cfg file 19

Oracle

- running on remote engines 25
- setting external authentication 25

## P

PAM, updating configuration for ESD 55

passwd file 19

planning for the installation 13

## R

readme 1

release notes 1

remote processes, configuring for 39

---

- requirements
  - client machine 16
  - database server machine 15
  - disk space 18
  - for routing 19
  - installation directories 17
  - installation machine 14
- requirements files
  - hosts 19
  - om\_hosts.cfg 19
  - passwords 19
  - services 19
- rexec 27
- root user, access during remote installs 49
- router process
  - in multiple installations 50
  - where to run 50
- router service, setting up 22
- router, defined 8
- run area (\$CCM\_HOME) 5

## **S**

- services file 19
- session types
  - traditional mode 41
  - web mode 41
- setting up
  - for remote engine hosts 35
  - the ccm\_root user and group 20
  - the router service 22
  - the Telelogic Synergy environment 34
- setting up a client
  - that does not use NFS 53
  - that uses NFS 52
- shells 4
- starting
  - a Telelogic Synergy session 41
  - daemons 37
- symbols used in document 5
- sys.dba\_segments permissions 26

## **T**

- tablespace
  - create 24
  - temp requirements 24
- technical support 3
- Telelogic Synergy
  - documentation 6
- terms and concepts 7
- traditional mode 8, 41
- tsort command 15, 34

## **U**

- unpacking a database 40
- upgrading
  - from a previous release 1

## **V**

- VPN IP address, adding 35

## **W**

- Web mode 8
- web mode 41
- web site, installing from 31
- Windows clients, access to UNIX database server 27

## **X**

- X applications, setting up 34

