Rational. Change

IBM

Installation Guide for UNIX

IBM Rational Change Installation Guide

for UNIX

Release 5.2

Before using this information, be sure to read the general information under Appendix B, "Notices" on page 79.

Table of Contents

1   *Introduction*

IBM® Rational® Change is a generic change request management system that is Web-based and integrated with IBM® Rational® Synergy. This chapter provides basic information needed to install Rational Change:

- "Readme" on page 1
- "Conventions" on page 2
- "Contacting IBM Rational Software Support" on page 3

To make your installation easier, a "Worksheet" on page 27 is included in this document. Print a copy of the worksheet, and fill in as much information as possible before installing the product.

Readme

The *Readme* contains vital information about your Rational Change 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 Rational Software Information Center Web site and on the Documentation section of the DVD that was shipped with Rational Change.

When 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 Rational Software Information Center at http://publib.boulder.ibm.com/infocenter/rsdp/v1r0m0/index.jsp.

Changes in version 5.2

Telelogic Change is now called IBM Rational Change. Also, if you are upgrading from Telelogic Change 5.1, the feature called Telelogic Change Distributed is now referred to as Rational Change Distributed and is included in the Rational Change product.

Conventions

The following describes the conventions used in this document.

Typefaces and symbols

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

Typeface	Description
Italic	Used for book titles and terminology. Also designates names of roles (*User*), states (*working*), and users (*sue*).
Bold	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 (modify_time), functions (remote_type), and types (csrc).
Courier Italic	Represents values in a command string that you supply. For example, (/home/username).

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.

Contacting IBM Rational Software Support

If the self-help resources have not provided a resolution to your problem, you can contact IBM® Rational® Software Support for assistance in resolving product issues.

Note If you are a heritage Telelogic customer, a single reference site for all support resources is located at http://www.ibm.com/software/rational/support/telelogic/

Prerequisites

To submit your problem to IBM Rational Software Support, you must have an active Passport Advantage® software maintenance agreement. Passport Advantage is the IBM comprehensive software licensing and software maintenance (product upgrades and technical support) offering. You can enroll online in Passport Advantage from at http://www.ibm.com/software/lotus/passportadvantage/howtoenroll.html.

- To learn more about Passport Advantage, visit the Passport Advantage FAQs at http://www.ibm.com/software/lotus/passportadvantage/brochures_faqs_quickguides.html.

- For further assistance, contact your IBM representative.

To submit your problem online (from the IBM Web site) to IBM Rational Software Support, you must additionally:

- Be a registered user on the IBM Rational Software Support Web site. For details about registering, go to http://www.ibm.com/software/support/.

- Be listed as an authorized caller in the service request tool.

Submitting problems

To submit your problem to IBM Rational Software Support:

1. Determine the business impact of your problem. When you report a problem to IBM, you are asked to supply a severity level. Therefore, you need to understand and assess the business impact of the problem that you are reporting.

    Use the following table to determine the severity level.

Severity	Description
1	The problem has a *critical* business impact: You are unable to use the program, resulting in a critical impact on operations. This condition requires an immediate solution.
2	This problem has a *significant* business impact: The program is usable, but it is severely limited.
3	The problem has *some* business impact: The program is usable, but less significant features (not critical to operations) are unavailable.
4	The problem has *minimal* business impact: The problem causes little impact on operations or a reasonable circumvention to the problem was implemented.

2. Describe your problem and gather background information, When describing a problem to IBM, be as specific as possible. Include all relevant background information so that IBM Rational Software Support specialists 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?

        To determine the exact product name and version, use the option applicable to you:

        *   Start the IBM Installation Manager and select **File** > **View Installed Packages**. Expand a package group and select a package to see the package name and version number.
        *   Start your product, and click **Help** > **About** to see the offering name and version number.

- What is your operating system and version number (including any service packs or patches)?
- Do you have logs, traces, and messages that are related to the problem symptoms?
- Can you recreate the problem? If so, what steps do you perform to recreate the problem?
- Did you make any changes to the system? For example, did you make changes to the hardware, operating system, networking software, or other system components?
- Are you currently using a workaround for the problem? If so, be prepared to describe the workaround when you report the problem.

3. Submit your problem to IBM Rational Software Support. You can submit your problem to IBM Rational Software Support in the following ways:

- **Online**: Go to the IBM Rational Software Support Web site at <u>https://www.ibm.com/software/rational/support/</u> and in the Rational support task navigator, click **Open Service Request.** Select the electronic problem reporting tool, and open a Problem Management Record (PMR), describing the problem accurately in your own words.

  For more information about opening a service request, go to <u>http://www.ibm.com/software/support/help.html</u>.

  You can also open an online service request using the IBM Support Assistant. For more information, go to <u>https://www.ibm.com/software/support/isa/faq.html</u>.

- **By phone**: For the phone number to call in your country or region, go to the IBM directory of worldwide contacts at <u>http://www.ibm.com/planetwide/</u> and click the name of your country or geographic region.

- **Through your IBM Representative**: If you cannot access IBM Rational Software Support online or by phone, contact your IBM Representative. If necessary, your IBM Representative can open a service request for you. You can find complete contact information for each country at <u>http://www.ibm.com/planetwide/</u>.

2 *Terms and Concepts*

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

central CR database A *central CR database* contains change requests (CRs) only. These CRs might be associated to tasks in multiple development databases. The central CR database is connected directly to the central server. There is only one central server and one central CR database in a cluster.

central server A *central server* stores CRs in the central CR database. Remote development databases and the central server can be linked using remote servers. There should be only one central server. See "Server Modes and Types" on page 15.

change request A *change request* is a database object used to track problem or enhancement requests.

development database A *development database* contains tasks and objects (as opposed to CRs). It can be connected directly to a central server or indirectly through a remote server. If it is connected to a remote server, it is known as a remote development database.

Jetty Web server The *Jetty Web server* is bundled with the delivered product.

local admin user The *local admin user*, which replaces the *ChangeAdmin* user from previous releases, is a special Rational Change user account that is defined during installation. Unlike regular user accounts, the *local admin* user is authenticated by Rational Change directly, rather than by the IBM® Rational® Directory Server (RDS), and is used to perform certain background activities. See "Installing Rational Change" on page 35.

Rational Synergy back-end session A *Rational Synergy back-end session* is used by Rational Change to carry out database operations for each user logged in to Rational Change. Rational Synergy sessions can be run on the Rational Change server machine or any compatible machine on which Rational Synergy is operational.

Rational Synergy database The *Rational Synergy database* is a repository of change requests for an installation of Rational Change.

Rational Change Login page The *Rational Change Login page* is where you start a Rational Change session.

Rational Change server The *Rational Change server* is the machine on which Rational Change is installed. The Rational Change server is also used to represent the Rational Change Web server.

Rational Directory Server The *Rational Directory Server* (RDS) performs authentication and stores Rational Change user data.

remote server A *remote server* is a proxy between the central server and remote development databases. Multiple remote servers can be associated with the central server. See "Server Modes and Types" on page 15.

stand-alone server A *stand-alone server* is a "traditional" server that stores CRs in development databases. See "Server Modes and Types" on page 15.

task A *task* represents a unit of work that needs to be done, for example, in your software application. You can associate one or more tasks with a change request. A task includes a description of the unit of work and the user name of the person responsible for completing it. When a change needs to be made, someone in your organization creates a task. If you

are responsible for making the change, the task is assigned to you within Rational Synergy. After you select an assigned task, objects you check out are associated with that task.

WAS   This is the IBM® WebSphere® Application Server. It is not bundled with the delivered product but can be installed optionally.

WASCE   This is the IBM® WebSphere® Application Server Community Edition. It is not bundled with the delivered product but can be installed optionally.

3 *Product Requirements*

This chapter lists the requirements for the Rational Change server host and the Rational Synergy server:

- "Rational Change server machine" on page 12
- "Rational Synergy session machine" on page 13
- "Rational Change client host machine" on page 14

For the latest hardware requirements and for the latest supported versions of the software requirements, see the *Readme*.

Rational Change server machine

The following requirements are for the host that will run the Rational Change server.

Hardware requirements

The hardware requirements for each host running a Rational Change server are described in the *Readme*.

Software requirements

The software requirements for each host running a Rational Change server are as follows:

- One of the supported operating systems must be installed and operational on the server. For information about supported platforms, see the *Readme*.

- Rational Synergy must be installed and operational. For detailed information about installing Rational Synergy, see the *IBM Rational Synergy Installation Guide for UNIX®*, located in the Rational Software Information Center.

- The IBM® Rational® License Server TL must be installed and operational. For information about the license server, including when and how to install it, see the *IBM Rational License Server TL Guide*.

- RDS 5.0 must be installed and operational. See the *IBM Rational Directory Server Product Manual*, or the Help for information about RDS, including when and how to install it.

  - If you are using Rational Change by itself, you can use IBM® RDS 5.0 for Apache, which takes up less disc space and is not as complex to install.

  - If you are using the IBM® Rational® Change for DOORS® Interface, you must use IBM® RDS 5.0 for Tivoli.

For information about upgrading from older versions of RDS, see the "Data Migration" chapter in the *IBM Rational Directory Server Product Manual* or see the Help.

Rational Synergy session machine

The following requirements are for a Rational Synergy session host, which runs Rational Synergy sessions for Rational Change. You can run Rational Synergy and Rational Change on the same machine.

Note For maximum performance, run Rational Synergy sessions on the database server.

Hardware requirements

The hardware requirements for each host running a Rational Synergy session are described in the *Readme*.

If you expect a large number of users for your Rational Change installation, you can increase capacity by dedicating additional Rational Synergy session hosts. You can do so later by logging on to a Rational Change session using the *Admin* interface and changing the host settings on the **Administration** action **Server** tab.

Software requirements

The software requirements for each host running a session are as follows:

- One of the supported operating systems must be installed and operational on the server. For information about supported platforms, see the *Readme*.

- Rational Synergy must be installed and operational. For detailed information about installing Rational Synergy, see the *Rational Synergy Installation Guide for UNIX*, located on the Rational Software Information Center.

- All session hosts must be able to respond to remote execution requests using the `rsh` protocol on Rational Change UNIX servers, or `rexec` for Windows servers to UNIX databases.

  If using `rsh` protocol, their `rshd` daemons must be enabled.

  An alternative solution, ESD, is available if `rsh` is not supported.

To configure ESD:

1. Ensure that ESD (`ccm_esd`) is running on any host that will run Rational Synergy sessions. See the *Rational Synergy Administration Guide for UNIX* for details.

2. Set the `ENGINE_DAEMON` option to `true` in the `pt.cfg` file:

   `[CCM_SYSTEM][ENGINE_DAEMON]true[/ENGINE_DAEMON][/CCM_SYSTEM]`

3. Restart Rational Change.

Rational Change client host machine

A Web browser must be installed and functioning properly on the client host.

For the most current information about supported operating systems and browsers for Rational Change, see the *Readme*.

4 *Server Modes and Types*

This chapter discusses the Rational Change server modes and types. Because the server type cannot be changed once it has been installed, read this section before installing the product.

This chapter includes the following topics:

- "Modes of operation" on page 15
- "Central mode server types" on page 17
- "Choosing a server type" on page 18
- "Determining whether to upgrade from a stand-alone to a central server" on page 18

Modes of operation

Rational Change supports two modes of operation:

- Stand-alone
- Central

Stand-alone mode

In stand-alone mode, CRs are stored in development databases connected to the server. To access a CR, a user must log on to the database where the CR is stored. To establish a CR-task relationship, both items must be in the same database. The available databases are limited to the ones available to a particular Rational Synergy server on which Rational Change depends. This is the way it worked prior to the 5.0 or earlier release.

The following diagram shows the stand-alone Change server setup.
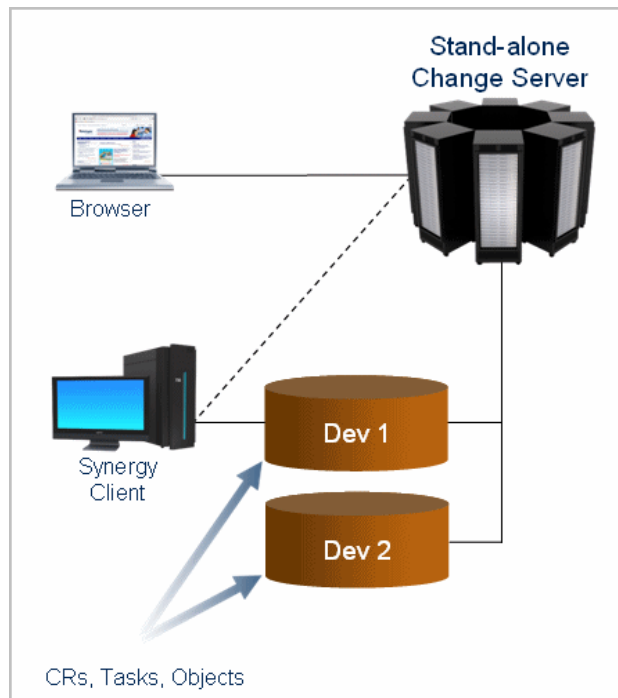
Central mode

In central mode, all CRs are stored in the central CR database, which is a repository exclusively for CRs. Because Rational Change is always implicitly connected to the central CR database, a user can log on to any database within the central server cluster and still have access to all CRs. CR-task relationships are not restricted by the location of either item. In addition, the databases in the central server cluster can span the Rational Synergy servers and can be in geographically disparate regions.

Central mode server types

There are two complementary server types in the central mode: central and remote. Within a central server cluster, there is always a single central server and zero or more remote servers. Each server, regardless of its type, can host multiple databases. The central server hosts the central CR database and, optionally, other databases. It is the only server end-users interact with.

A remote server acts as a proxy between the central server and remote development databases. A remote server is needed when you want databases that are hosted by different Rational Synergy servers to be part of the central server cluster.
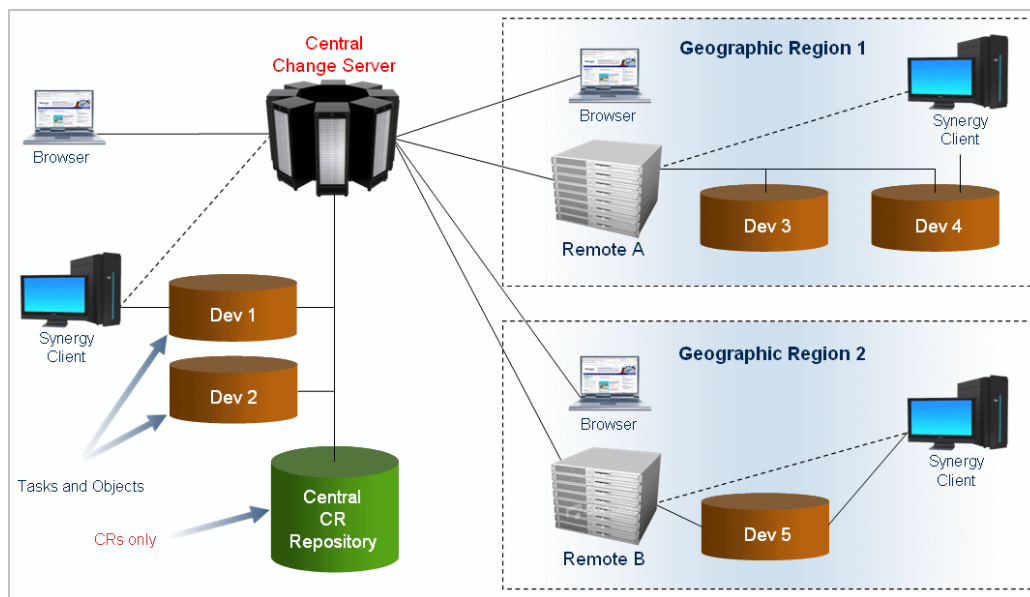
Consider this example, using the figure above. A company has its headquarters in San Francisco (Central Change Server) and offices in Madrid and Berlin (Geographic Regions 1 and 2, above). This company has Rational Synergy databases in each geographic region, each hosted by a Rational Synergy server per city. The central server and the central CR database are located in San Francisco and are able to communicate with the databases in Madrid and Berlin through a remote server located in each city. In this deployment situation, there is a central server and two remote servers. All users access Rational Change through the central server (not a remote server) and have access to all CRs, regardless of the database they are logged on to for task work.

Choosing a server type

The server type (stand-alone, central, or remote) is designated at the time of installation and cannot be changed thereafter. See "Installing Rational Change" on page 31.

Stand-alone servers work independent of each other, whereas a central server and its corresponding remote servers work together to form the central CR cluster. The order in which you install the central and remote servers is not a concern as they are linked together as a post-installation step. See "Connecting the central and remote servers" on page 51.

Determining whether to upgrade from a stand-alone to a central server

To upgrade from a stand-alone server to a central server, you need to:

- Select a central CR database.

- Migrate all existing CRs into the central CR database.

A central server offers many benefits, which are mentioned above. However, sometimes it is not the correct choice for all users.

Caution Make sure you read this entire section so that you understand all of the caveats before upgrading to a central server. Once you have upgraded, you cannot revert to a stand-alone server.

You should **not** use a central server if you use:

- Certain nested queries

    In central server mode, CRs and tasks are stored in separate databases, which impact the types of queries you can run on the different databases. When you know where objects are created, you understand on which queries you can rely.

    Your central CR database contains only CRs. As a result, you cannot use query strings that bridge the relationship from CRs to tasks. For example, the following query string would not return accurate results:

    ```
    has_associated_task(cvtype='task' and release='1.0') and
    crstatus='assigned'
    ```

    Queries in your development databases are not as limited. Although CRs are not created in development databases, ghost CRs, which are non-modifiable copies of CRs with subsets of their real CR attributes, are created in the

development database. Ghost CRs primarily exist to allow CR-based Update Members queries from Rational Synergy. When a task is associated to a CR, a ghost CR is created in all the development databases where that task is found. The ghost CR is directly related to the task to support most nested queries in those databases.

A ghost CR acts as a stand-in for the real CR. Rational Change automatically maintains ghost CRs so that they always reflect their corresponding real CRs. The attributes that are created on them can be controlled through the Rational Change Admin interface and should normally be agreed upon with your Rational Synergy build managers. With ghost CRs, a Rational Synergy Task Folder, in a development database, could still rely on a query, such as the following:

```
is_associated_task_of(cvtype='problem' and release='1.0' and
crstatus='resolved')
```

With ghost CRs, you can continue to use most CR-to-task nested query strings for CR-based Update Members. However, they have limitations. Ghost CRs only maintain the attributes they have been told to sync, though you can sync as many attributes as needed for your queries. They do not maintain any relationships beyond `associated_task`, and they only exist for CRs that have associated tasks. Besides their use in Update Members, ghost CRs can also be queried for through the Rational Synergy CLI, but they cannot be edited there.

Most other ways of traversing between CRs and associated tasks continue to work as always, including Queries and Reports using report formats with associated tasks, Relationship Reports to associated tasks, the associated tasks control on Show Forms, and the Change Requests Explorer in Rational Synergy.

- The Rational Change for DOORS Interface

  The Rational Change for DOORS Interface does not support transferring CRs between databases. If you are already using this product, you cannot migrate your existing CRs to a central CR database. If you do not currently use the interface, you can use the interface after you upgrade to a central server.

- The CreateMiscObject API

  The **misc** objects created by this API cannot be transferred to other databases. If you have used this API to create **misc** objects related to CRs, you must first delete those objects or unrelate them from your CRs. Otherwise, you cannot migrate your existing CRs to a central CR database.

- • Uncommon CR relationships

  When you migrate, your existing CRs, the CRs, and their directly related
  objects are transferred to your central CR database. If any of those objects
  must remain in their current development databases, do not migrate.
  Normally, CRs are only directly related to other CRs, attachments, and tasks.
  This setup is safe to migrate. However, if you have created any direct
  relationships from CRs to other objects, those objects would be incorrectly
  transferred. Examples of unsupported relationships that do not work in a
  central server include:

  - • CRs directly related to source files (for example, Java™, Visual C++®,
    Perl, and so forth). Source files should only be related to tasks.
  - • CRs directly related to projects or directories.
  - • CRs directly related to baselines.

    Rational Synergy has features to show which CRs are included in a
    baseline. These features do not rely on relationships and continue to
    work in central server mode.

  - • Relationships from non-CRs to CRs.

Selecting a central CR database

In a central server, all CRs live in a single, central CR database so you can view,
modify, and report on CRs without switching databases. This database is
dedicated to CRs. Your tasks and objects are kept in separate development
databases, but with Rational Change, you can associate CRs in your central CR
database to tasks in any of the your development databases. Before installing
Rational Change, decide which database will be your central CR database. You
select it during the installation process, see "Installing Rational Change" on page
31, and you **cannot** change it later.

In most cases, you unpack a new, empty database to be your central CR database.
This ensures that there are no development objects, such as tasks or source files,
in the database. Then, you can transfer all existing CRs into that database with
the CR migrate feature. See "Performing a CR migrate" on page 62.

Alternatively, you can designate an existing, non-empty database as your central
CR database. You should do this only when you have a database completely
dedicated to CRs. For example, you initially submit all CRs into one database and
use Rational Synergy Distributed, also called Distributed Configuration
Management (DCM), to transfer them to other databases before associating
tasks. If you have any tasks or objects, anything other than CRs and their
attachments, in that initial database, they might become inaccessible or damaged

in a central server. The advantage of using an existing database is that it might speed up migration if most of your CRs are already modifiable in that database.

Understanding how a central server changes data

This section discusses how the central server affects the following:

- "Database queries, specific reports, and preferences" on page 21
- "Change requests" on page 21

Database queries, specific reports, and preferences

Queries, reports, report formats, and preferences are no longer database specific. You see the same sets of these items no matter which development database you log on to. Existing items in your development databases are automatically transferred to your central CR database. You do not need to explicitly migrate them.

If there are name conflicts between items in different databases, the conflicting items are automatically renamed. For example, if one development database used to contain Report A and Report B, and another contained Report B and Report C, after upgrading to a central server, your central CR database contains Report A, Report B, Report B (2), and Report C.

Change requests

If you are converting an existing database into to your central CR database, the CRs are not affected.

However, the CRs in your development databases are not initially visible in a central server. To make them visible, migrate them to the central CR database, see "Performing a CR migrate" on page 62.

When migrating CRs from a development database, the system:

- Transfers all CRs from a development database to the central CR database.

  All CRs that are local to the development database are transferred to the central CR database and made local. Their `modifiable_in` attributes are changed. In some cases, non-modifiable copies of the CRs remain in the development database, but you should assume that CRs will be deleted from that development database. Non-local CRs are skipped. You must migrate their development databases separately to transfer them.

- Transfers all CR attachments and other directly related objects to the central CR database.

  If you have any objects associated to CRs that should not be transferred to the central CR database, you should not migrate. See "Determining whether to upgrade from a stand-alone to a central server" on page 18.

- Preserves your CR-to-CR relationships.

  These relationships remain intact in your central CR database. If you have CRs related to non-local CRs because you previously used DCM, the non-local CRs are not be migrated yet and do not show up as related CRs. When the databases that they are local to are migrated, then the CRs and relationships show up.

- Preserves CR-to-task associations.

  Associated tasks and their associated objects remain in the development database, but the relationships from CRs to tasks are preserved. When a CR with associated tasks has been migrated, you can see its original associated tasks.

If you have determined that you should upgrade from a stand-alone server to a central server, see "Planning the upgrade from a stand-alone server to a central server" on page 57 for instructions.

5   *Selecting a Change Request Process*

This chapter provides a high-level overview of the available change request processes to help you determine which process package to install.

For additional information about the different processes, see the *IBM Rational Change Process Guide*, located at http://publib.boulder.ibm.com/infocenter/rsdp/ v1romo/index.jsp.

Development process

The development process, contained in the `dev_process.xml` file, is a methodology for tracking CRs as they transition from being entered into the system to being resolved. The development process provides a basic software development change management lifecycle and is a good starting point for first time users.

Ultimately, the CR is either concluded successfully, marked as a duplicate of another change request, made obsolete, or rejected. The possible transitions and states for the development process are shown in the following figure.
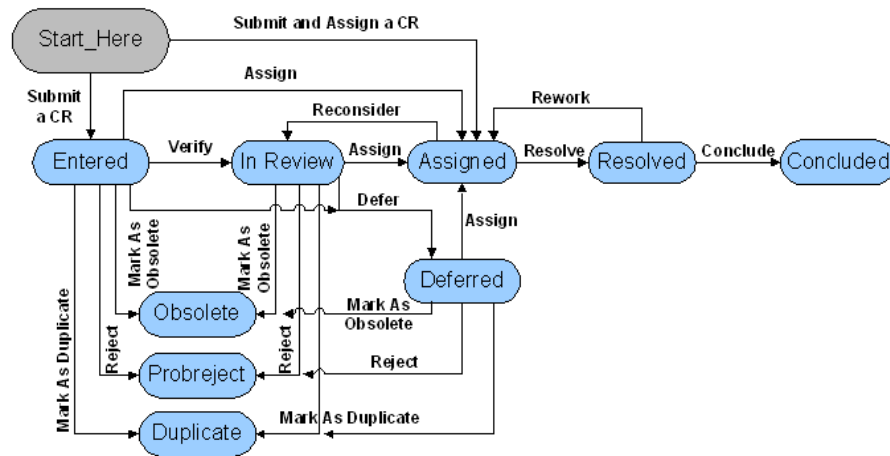
Benefits

The development process provides the following benefits:

- You can start with this process and, at a later time, customize it and make modifications based on your needs.

  For customization information, see the "Add or Change a CR Lifecycle" section of the Rational Change Admin Help.

Features

The following are the development process features:

- Optional interlocked requirements change management

- Change request resolution management

- Easy-to-use notifications

Enterprise Change Process

The Enterprise Change Process (ECP), contained in the `ECP_process.xml` file, provides an efficient and systematic enterprise-wide approach to change management. With ECP, you can monitor when defects are introduced and discovered. By analyzing this data, you can reduce development costs and improve product quality by finding defects closer to when they are introduced.

Benefits

ECP provides the following benefits:

- Scales to support change management needs for large or small enterprises, for straight forward or complex change requests.

- Optionally includes management and change of requirements, using IBM® Rational® DOORS®.

- Optionally supports requirements-driven development through creation of change requests directly from requirements and requirements-related documentation, using Rational DOORS.

Features

The following are ECP features:

- Five phase: submission, analysis, resolution, evaluation, and conclusion

- Extensible stages, both depth and breadth

- Optional interlocked requirements change management

- Change request resolution management

- Reports, which are ready-to-run and do not require calculation, that help support high maturity Capability Maturity Model Integration® and Six Sigma®

- Easy-to-use notifications

6 *Worksheet*

To make your installation easier, print a copy of the worksheet and document information for all possible items before starting. Then, use this work sheet to document other items during the installation. Save the worksheet after completing the installation. You might need it for upgrades.

This worksheet contains multiple server installations. Use the appropriate information for your installation. All items apply to the Jetty, WAS and WASCE installations, unless otherwise noted.

1. **Rational Change installation directory** (`CHANGE_HOME`)

    Directory into which Rational Change is installed.
    Use Default: `/usr/local/rc52`
    Use Value: _____

2. **Local admin user** (`admin`)

    User account that is authenticated by Rational Change and is used to perform certain background activities.
    Use Default: *admin*
    Use Value: _____

3. **Host server name** (`server_name`)

    Name of the host running the Rational Synergy session.
    Use Default: Name of local host
    Use Value: _____

4. **License server** (*port@host*)

    Server that validated product licenses.
    Use Default: 19353@*hostname*.

    Use Value: _____

5. **Server port number** (`port`)

    Port number for the Rational Change server. For Jetty, if you have an existing Rational Change installation, select a different port number for this installation.
    Use Default: 8600
    Use Value: _____

6. **Context** (*context*)

   Web-context on which the Rational Change application runs.
   Use Default: change
   Use Value: _____

7. **WebSphere profile** (`was_profile`)

   For the WAS installation, collections of user files that share core product
   files. A profile contains its own set of scripts, environment, and repository.
   Use Default: AppSrv01
   Use Value: _____

8. **WebSphere admin user** (`was_admin user` or `wasce_admin user`)

   Admin credentials for the WAS or WASCE server. This information is used
   to start the application.
   Use Default:
   Use Value: _____

9. **WebSphere server instance** (`was_server instance`)

   For the WAS installation, represents an instance of the application server on
   which the application will be deployed and run. Multiple server instances can
   exist for a profile. Each server instance has its own memory space allocated
   in the server JVM, which it uses for application management. Multiple
   applications can be deployed on a single server instance.
   Use Default: myServer
   Use Value: _____

10. **Rational Synergy installation directory** (`ccm_home`)

    Path to the Rational Synergy installation to use for Rational /Synergy back-
    end sessions. This path must be visible to all hosts used for Rational Synergy
    back-end sessions.
    Use Default: the value of the `ccm_home` environment variable
    Use Value: _____

11. **Rational Synergy database path** (`database_path`)

    Path to the Rational Synergy database. This database must be at the same
    release level as the Rational Synergy installation at `ccm_home`.
    Use Default: None
    Use Value: _____

12. **Rational Synergy Session User** (`cm_session_user`)

    OS user with which to run back-end sessions. This user must be defined in the operating system and be a user in the database. See "Creating a Rational Synergy session user in the OS" on page 33 and "Defining the Rational Synergy session user in the database" on page 34.
    Use Default: *csuser*
    Use Value: _____

13. **Configuration files directory** (`config_dir`)

    Subdirectory where Web application files are copied.
    Use Default - Jetty: `CHANGE_HOME`/jetty/webapps/`context`/WEB-INF/wsconfig
    Use Default - WAS: `CHANGE_HOME`/`context`.ear/`context`.war/WEB-INF/wsconfig
    Use Default- WASCE: `CHANGE_HOME`/`context`/WEB-INF/wsconfig
    Use Value: _____

14. **Mail server host** (`mailserver_host`)

    Host that runs the mail server.
    Use Default: None
    Use Value: _____

15. **Rational Directory Server URL** (`RDS_URL`)

    URL for a RDS installation.
    Use Default: `ldap://localhost:1389`
    Use Value: _____

7 *Installing Rational Change*

To install Rational Change, perform the following steps:

1. "Unpacking a database and preparing it for use" on page 32

2. "Creating a Rational Synergy session user in the OS" on page 33

3. "Defining the Rational Synergy session user in the database" on page 34

4. "Installing Rational Change" on page 35

5. "Preparing Rational Change for use" on page 52

6. "Updating Rational Synergy mail triggers" on page 53

To avoid installation failure, when installing Rational Change on WAS or WASCE, the user who installed WAS or WASCE should be the user who installs Rational Change.

To make your installation easier, use the "Worksheet" on page 27. Print out and fill in the worksheet before starting the installation.

Unpacking a database and preparing it for use

A database is required when installing Rational Change. Use the following information to determine whether an existing database can be used during installation:

- Stand-alone—unpack a new database or use an existing one.

- Central—unpack a new database or use an existing one.

- Remote—unpack a new database or use an existing one.

    If your database has existing CRs, migrate them. See "Performing a CR migrate" on page 62

For a detailed discussion about stand-alone and central servers, see "Server Modes and Types" on page 15.

- If you are using an existing database, skip this section and go to "Defining the Rational Synergy session user in the database" on page 34.
- If not, follow the steps below to unpack a Rational Synergy database (that is, unpack `base.cpk` from the Rational Synergy installation directory `packfiles` directory).

1. On the database server machine, set user to *ccm_root*.

   ```
   $ su ccm_root
   Password:*****
   ```

2. Set the path (if not already set) to include the Rational Synergy installation path, *ccm_home* (item 10 on your worksheet).

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

3. Unpack a Rational Synergy 7.1 database to *database_path* (item 11 on your worksheet).

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

Creating a Rational Synergy session user in the OS

You must define the Rational Synergy session user in the OS. Rational Change uses the Rational Synergy session user name to run back-end Rational Synergy sessions. Use *csuser,* which is predefined in the Rational Synergy 7.1 database.

Note For security and logging reasons, do not use *ccm_root* as the Rational Synergy session user. However, if you are having trouble creating an OS user account, you can use *ccm_root* temporarily. Later, you can use the *Admin* interface to change the Rational Synergy session user and other server values.

1. Contact your system administrator to add a new OS user. This user must be able to send email.

2. Add the entry for the Rational Synergy Session User (<u>item 12</u> on your worksheet).

Defining the Rational Synergy session user in the database

If *csuser* is defined as the Rational Synergy Session User, skip this section and go to "Installing Rational Change" on page 35. If not, follow the steps below to define the Rational Synergy session user for each database.

Note The user *csuser* is predefined in the Rational Synergy database. If you are not using this user name, remove the entry from the list of valid database users.

1. Set the path (if not already set) to include the Rational Synergy installation path, `ccm_home` (item 10 on your worksheet).

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

2. Start a Rational Synergy session from the command line.

   ```
   $ ccm start -d database_path -r ccm_admin
   ```

3. Open the users file.

   ```
   $ ccm users
   ```

4. In the users file, add the entry for the Rational Synergy Session User (item 12 on your worksheet).

   ```
   user username = no_privs;
   ```

5. Save and close the file.

6. Exit the Rational Synergy session.

   ```
   $ ccm stop
   ```

Installing Rational Change

To install Rational Change, follow the steps below, in the order listed.

1. "Setting environment variables" on page 35
2. "Installing the software" on page 35
3. "Verifying the Rational Change installation" on page 50
4. "Starting the Rational Change server for Jetty" on page 71

Setting environment variables

Before installing, set the Rational Change environment variables.

To set environment variables:

1. Set the `CCM_HOME` variable.

   `$ CCM_HOME=ccm_home; export CCM_HOME`

2. Add `CCM_HOME/bin` and `CCM_HOME/jre/bin` to the beginning of the path.

   `$ PATH=$CCM_HOME/bin:$CCM_HOME/jre/bin:$PATH; export PATH`

3. Set the `DISPLAY` variable, unless you are installing in command-line mode.

   `$ DISPLAY=display_setting; export DISPLAY`

   Note You must have write access to the `DISPLAY` (`display_setting`). For the correct `DISPLAY` setting, contact your system administrator.

Installing the software

To install the Rational Change software:

1. Change the directory to the DVD installation directory.

   `$ cd DVD02/change/unix`

2. Run the Rational Change Server installation script.

   To run the installation script in command-line mode instead of GUI mode, append `-nogui` to the command. When the script prompts you for values, type the values shown for the GUI steps.

   `$ ./csinst.sh`

   Note If a warning appears, your system might not meet the system requirements. For more information, see "Product Requirements" on page 11. Other reasons for a warning to appear might be that the installation program

> did not find the JRE or there was not enough disk space, or the DISPLAY might not be valid or writable. For additional information, please contact Rational Software Support. The Home page for Rational Change products is located at http://www.ibm.com/software/awdtools/ change/support/.

3. In the **Software License Agreement** dialog box, which follows the **Welcome** dialog box, read the license agreement information, and then click **Accept**.

4. In the **Change Info - Server Type** dialog box, select the applicable server type, and then click **Next**.

    Click **Lean More** to view details about the server types or see "Server Modes and Types" on page 15 for more information.
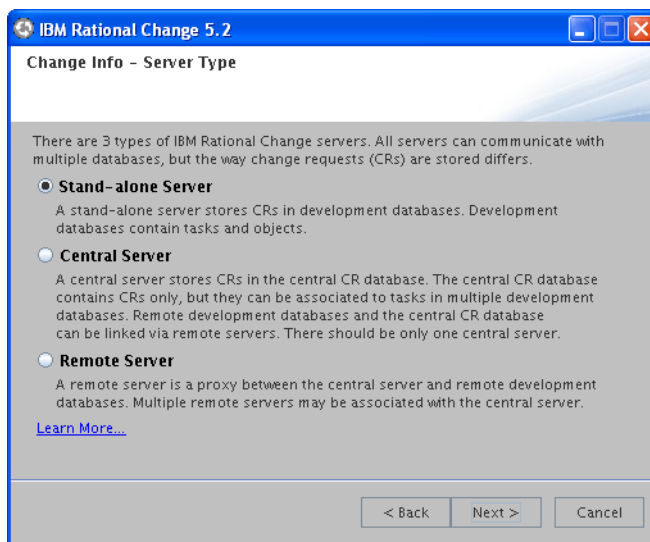
5. In the **Change Info - Install Directory** dialog box, accept the default path, or type the appropriate installation path, and then click **Next**.

If you change the installation directory, be sure to update item 1 on your worksheet for future reference.

For assistance choosing a path, click **Browse**.
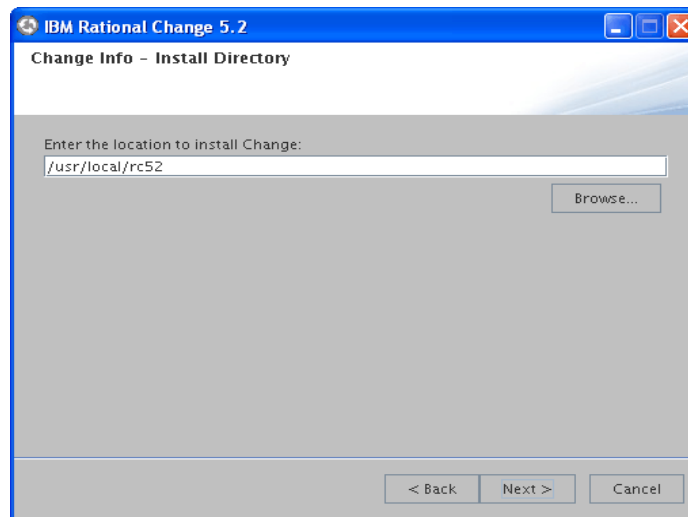
6. In the **Change Info - Local Admin User** dialog box, type the user name and password (item 2 on your worksheet), and then click **Next**.

The *local admin* user replaces the *ChangeAdmin* user from previous releases. For more information about the *local admin user* ID, see "local admin user" on page 7.
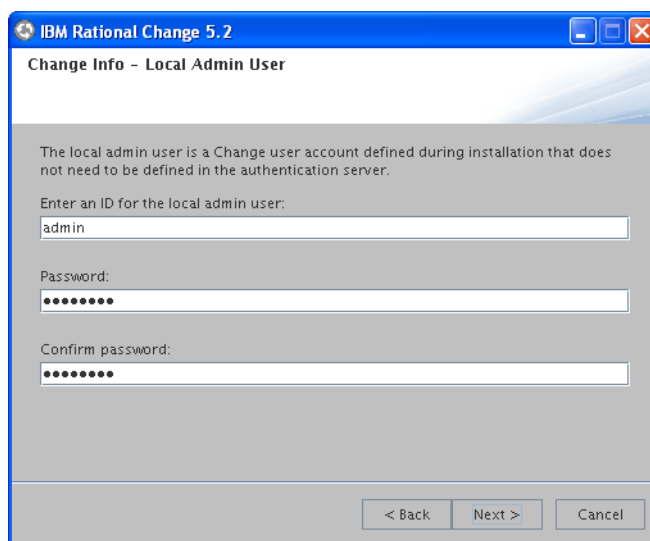
7. In the **Change Info - Host** dialog box, accept the default or type the name of the machine to run Rational Synergy sessions (this must be a UNIX machine), and then click **Next**.

For a description of this host, see "Rational Synergy back-end session" on page 8.

If you change the host name, be sure to update <u>item 3</u> on your worksheet. You can add more session hosts later.
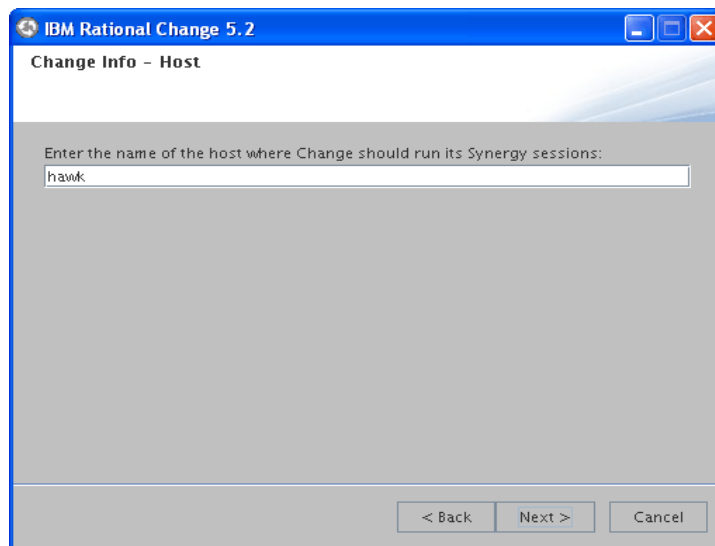
8. In the **Change Info - License Information** dialog box, select the applicable option (<u>item 4</u> on your worksheet), and then click **Next**.

If you select the "I will supply license information later" option, you are later reminded to edit the license data in the license_data.txt file. See step 20 for specific details.
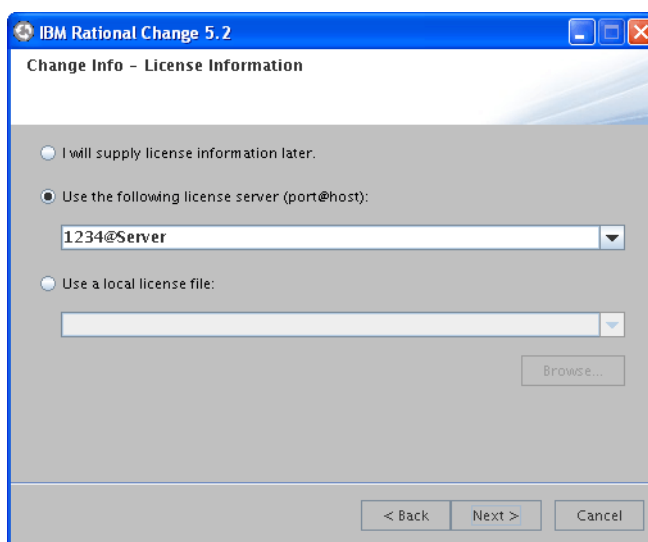
9. In the **Web Server Info - Choose a Web Server** dialog box, select a Web server. Then, for Jetty, accept the default or for WAS and WASCE, type the location of the existing Web server installation, and then click **Next**.

- Jetty
- WAS
- WASCE

The dialog box looks similar to the following:
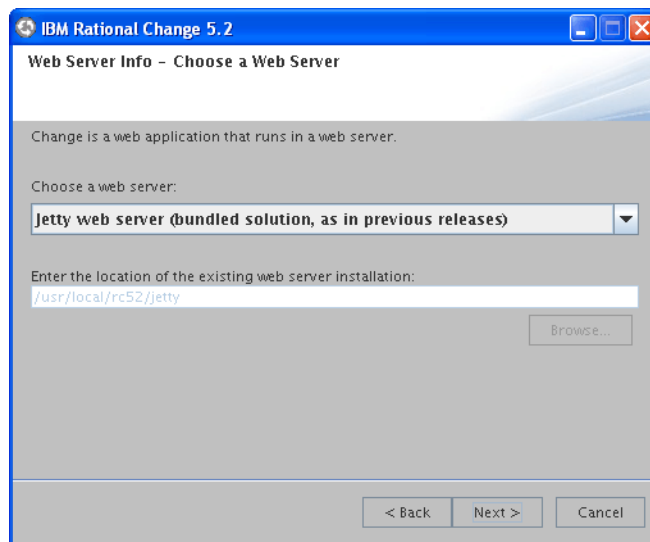
10. In the **Web Server Info - Port and Context** dialog box, accept the default or type the port number for the Rational Change server, type a unique context path for Rational Change, and then click **Next**.

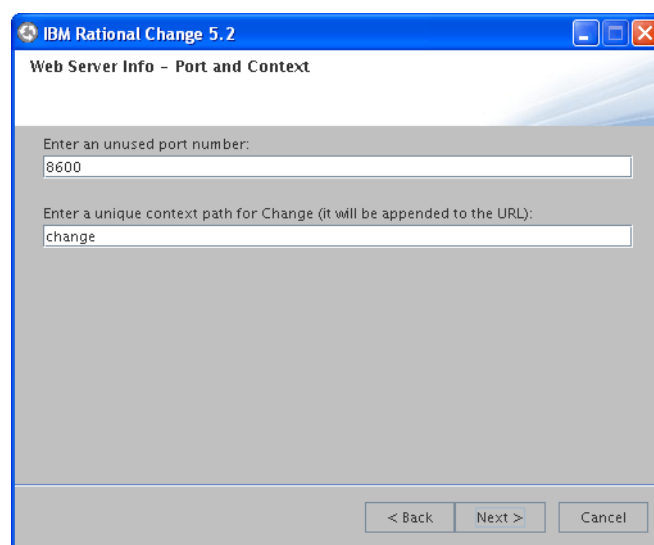If you change the port number, be sure to update <u>item 5</u> on your worksheet. The context is <u>item 6</u> on your worksheet.

To specify a port number less than 1024, you must start the Rational Change server as *root*.

After completing this step, if you are installing into:

- Jetty, skip to step 14.
- WAS, proceed to step 11.
- WASCE, skip to step 12.

The dialog box looks similar to the following:

11. If you are installing into WAS, in the **WebSphere Profile** dialog box, select a WebSphere profile (item 7 on your worksheet) where you want to install Rational Change, and then click **Next**.

At least one profile must exist to run the product.
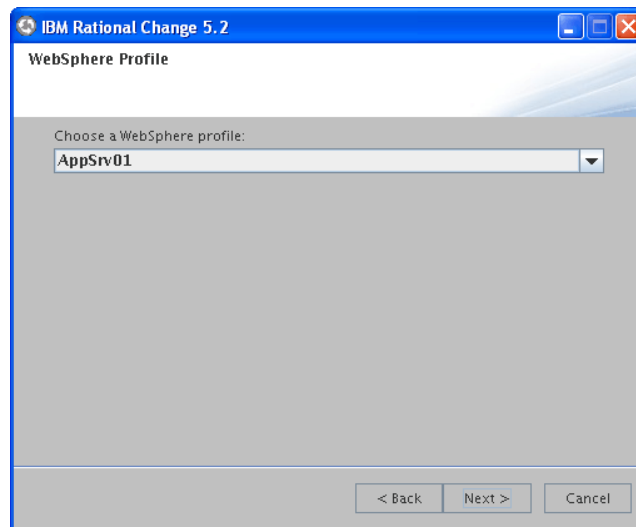
12. If you are installing into either WAS or WASCE, in the **Web Server Info -
Admin User** dialog box, type the WebSphere server admin ID (<u>item 8</u> on
your worksheet) and password, and then click **Next**.
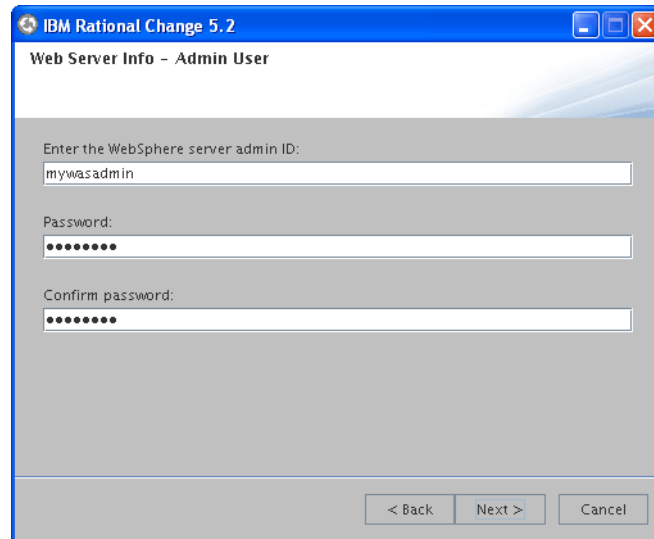
13. If you are installing into WAS, in the **WebSphere Server Instance** dialog box, select a WebSphere server (item 9 on your worksheet).
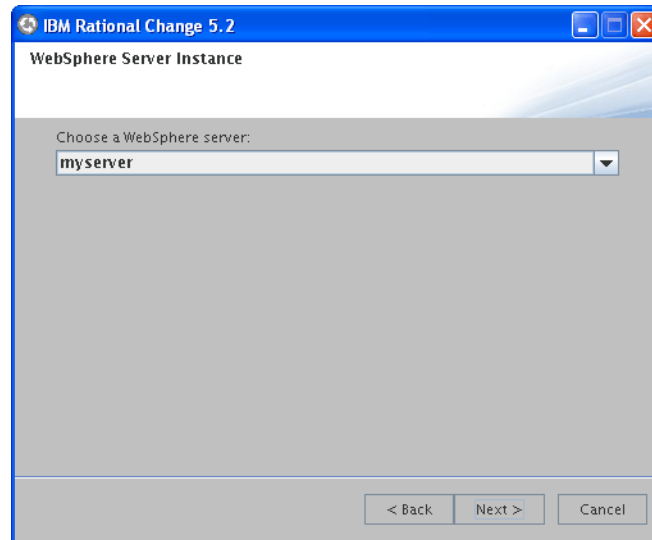
14. In the **Synergy Info - Directory** dialog box, accept the default or type a path to the Rational Synergy installation (`ccm_home`, item 10 on your worksheet), and then click **Next**.

If you change the path to the Rational Synergy installation, be sure to update your worksheet.

15. If you receive a warning message, follow the instructions in this step. If not, proceed to the next step.

If a warning appears about the installation path, the existing *ccm_home* installation might not be the required release of Ration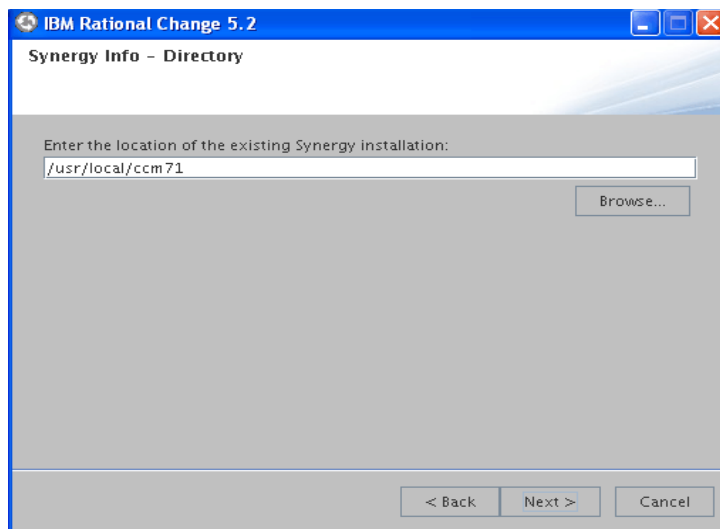al Synergy. Click **No** to specify a different path to *ccm_home* or **Yes** to proceed with the installation using the path you already specified.

16. In the **Synergy Info - Database** dialog box, type the path to the database (as indicated below), and then click **Next**.

- Stand-alone server—type a path to a Rational Synergy database.
- Central server—type a path to a DCM-initialized Rational Synergy central CR database.
- Remote server—type a path to a DCM-initialized Rational Synergy development database.

If you change the database path, be sure to update <u>item 11</u> on your worksheet. You can add more databases later.
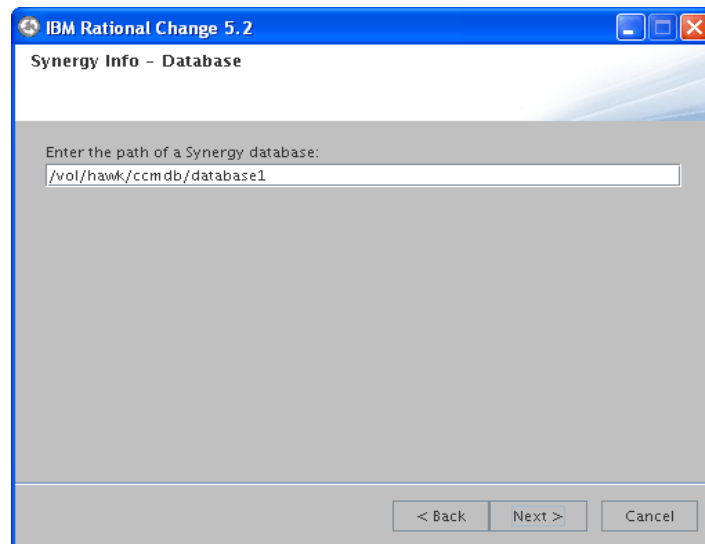
17. If a warning appears, the existing database might not be for the required release, or the path you specified might not be correct or visible. Click **No** to specify a different path to `database_path` or click **Yes** to proceed with the installation using the path you already specified.

18. In the **Synergy Info - Session User** dialog box, type the name of the session user and password ([item 12](#) on your worksheet), and then click **Next**.

The user name must be defined in the operating system and be a user in the Rational Synergy database.
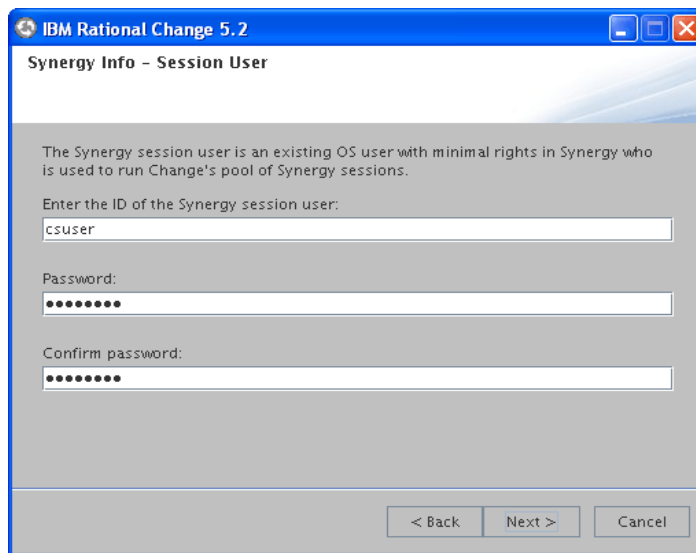
19. In the **Start Copying Files** dialog box, click **Install**.

The Rational Change files are copied to the installation directory. As the files are copied, a status screen shows the progress of the installation.
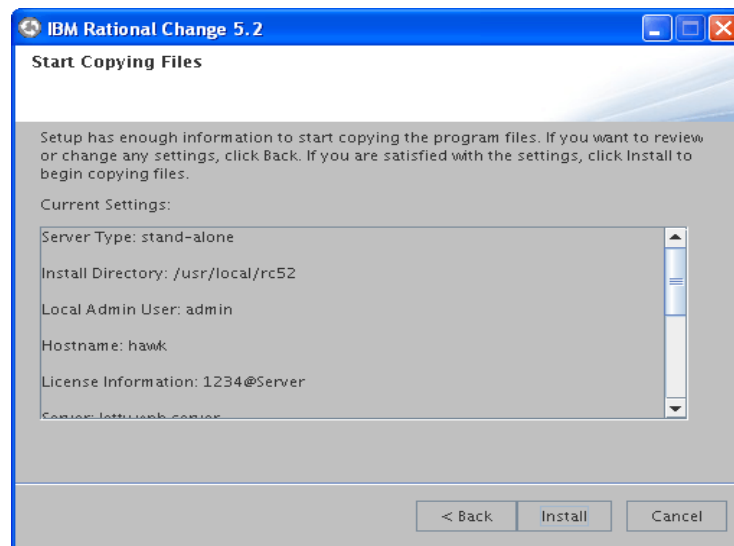
20. In the **Install Wizard Complete** dialog box, click **Finished** to exit the installation process.

On the **Change Info - License Information** dialog box, if you chose to specify license information later, you need to edit the `license_data.txt` file in the applicable directory:

For Jetty:

`CHANGE_HOME`/jetty/webapps/`context`/WEB-INF/wsconfig.

Note `context` is the context path you specified in step 10.

For WAS:

`CHANGE_HOME`/`context`.ear/`context`.war/WEB-INF/wsconfig.

For WASCE:

`CHANGE_HOME`/`context`/WEB-INF/wsconfig.

You must specify that information before you can log on to Rational Change.

21. Start the Rational Change server.

See "Starting the Rational Change server for Jetty" on page 71.

Verifying the Rational Change installation

Verify that Rational Change is installed correctly by using your browser to go to the **IBM Rational Change Admin Login** page on the Rational Change server. The URL is similar to the following (using <u>item 3</u> and <u>item 5</u> on your worksheet):

`http://`server_name`:`port`/`context`/admin`

- Since you have not yet configured Rational Change to use RDS, you see the **Configure IBM Rational Change to Use RDS** page. See "Configuring Rational Change to use RDS" on page 51.

Note The Rational Change server might take a few minutes to start. If the log on page does not appear in a few minutes, see `install.log`, located in `CHANGE_HOME/install.log`.

Configuring Rational Change to use RDS

The first time you browse to the **IBM Rational Change Admin Login** page, you are prompted to configure Rational Change to use RDS. You can use the same RDS for remote and central servers.

1. In the **Configure Rational Change to Use RDS** page, in **URL**, type the correct URL.

2. In **RDS Admin**, type the name of the *RDS admin* user.

3. In **Password**, type the password, and then click **Connect** to connect Rational Change to RDS.

   If the connection attempt should fail, an error message appears with the reason the connection failed.

Connecting the central and remote servers

Remote servers must be connected to the central server to participate in the central server cluster. It is possible to have a central server without any remote servers. This just means your cluster does not have any remote development databases (although it likely has, or will have, local development databases connected directly to the central server).

To connect remote servers from the central server, see "Add a Remote Server" in the Rational Change Admin Help.

To connect to the central server from a remote server, see "Add a Central Server" in the Rational Change Admin Help.

Preparing Rational Change for use

After Rational Change has been installed, a single user, *local admin*, is available in Rational Change so that you can use the *Admin* interface. You must log on to Rational Change and install a process package before other roles can be used. You must also define user privileges in the database.

Perform the following steps to prepare Rational Change for use. For more information, click the **Welcome Pages** link.

1. If you are upgrading Rational Change, initialize RDS before proceeding.

    For more information, see "Populating the Rational Directory Server" on page 57.

2. Log on to the Rational Change *Admin* interface as user *local admin*.

    The following steps do not apply to the remote server.

    a. Install a process package.

        For example, you could use the delivered `dev_process` or `ECP_process` package.

        For more information about process packages, see "Selecting a Change Request Process" on page 23.

        For more information about installing packages, see the Rational Change Admin Help.

    b. Set up users.

        For more information about setting up users, see the Rational Change Admin Help.

        When using OS authentication through RDS, the administrator must migrate the users into RDS. This may be done manually by recreating each user through RDS, or by importing users from a file. If you already have users defined in Rational Synergy databases, you can easily export them to a file through the Rational Change **Admin** > **Users** > **Export Database Users**. This file can then be imported into RDS.

    c. Set up email for triggers and the subscription feature by setting the "SMTP Server" and "From E-Mail Address" in the "Sending E-Mail" section of **Administration > General**.

For information about using Rational Change, for terms and concepts, for dialog box descriptions, and for step procedures, see the Rational Change Help.

For the most recent updates to Rational Change, see the *Readme*.

Updating Rational Synergy mail triggers

Rational Synergy mail triggers send email to a predefined list of users when a task is assigned. You must update mail triggers after installing Rational Change.

To update mail triggers for the Rational Change installation, run the `webdb_patch` script using the path *CHANGE_HOME*, [item 10](#), *database_path*, [item 11](#), and *mailserver_host*, [item 14](#), on your worksheet.

Run the mail trigger update script for each database.

For Jetty:

$ *CHANGE_HOME/jetty/webapps/context*

For WAS:

$ *CHANGE_HOME*/content.ear/content.war

For WASCE:

$ *CHANGE_HOME*/context

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Upgrading Rational Change

There are no automatic upgrade option for previous versions of Rational Change. Instead, you must install Rational Change into a new directory, and then apply any previous customizations to the new installation.

For information about upgrading Rational Change installation, see the following sections:

- "Upgrade guidelines" on page 56

- "Populating the Rational Directory Server" on page 57

- "Planning the upgrade from a stand-alone server to a central server" on page 57

- "Upgrading from a stand-alone server to a central server" on page 60

Upgrade guidelines

To prepare for an upgrade, read the following guidelines before installing Rational Change.

- Ensure that you have installed RDS 5.0. For information about installing the RDS, see the *IBM Rational Directory Server Install Guide*.

- If you are using Rational Change Distributed, see the *Rational Synergy Upgrade Instructions* for information about Rational Synergy Distributed compatibility.

- You can upgrade customizations performed using the Lifecycle Editor by copying your XML file to the new Rational Change 5.2 `cr_process` directory, loading the XML file, and following the instructions in the popup dialog box. In most cases, all that is required is saving the XML file, creating the package, and then installing the package.

- You can also upgrade a customization that was made manually. However, depending on the extent of the customization, additional work might be required to make it compatible with Rational Change 5.2.

  Save your manual customizations in a package template. If you have done so, you can copy your package template into the Rational Change 5.2 `package_templates` directory and use the package template to re-create your package.

- You must apply customizations that were made in the `ptcli.cfg` file.

  In version 5.2, this file is located in:

  For Jetty:

  `CHANGE_HOME`/jetty/webapps/`context`/WEB-INF/wsconfig

  For WAS:

  `CHANGE_HOME`/`context`.ear/`context`.war/WEB-INF/wsconfig

  For WASCE:

  `CHANGE_HOME`/`context`/WEB-INF/wsconfig

  In prior versions, the file is located in:

  `CCM_HOME`/etc

- Pre- and post-transition TRELATIONs are no longer supported. Their functionality can be duplicated with bean scripting framework (BSF) trigger scripts, found in the `wsconfig/triggers` directory. Although the built-in TRELATIONs are automatically mapped to the replacement BSF scripts when the CR process is upgraded, other TRELATIONs might require manual replacement.

- If you are upgrading from version 4.7 or older, attribute controls (for example, base.CCM_LISTBOX) were significantly updated in Rational Change 5.0. Most of the JavaScript™ that previously existed in the controls has been extracted into the file ctrlUtils.js, which is included on base templates. While an effort was made to preserve backward compatibility, certain types of customizations, such as interdependent controls, must be manually upgraded.

Populating the Rational Directory Server

Rational Change stores user profile information in the RDS.

For information about migrating from older versions of RDS, see the *Rational Directory Server Product Manual* or the Rational Change Help.

Planning the upgrade from a stand-alone server to a central server

Before you continue with this section, make sure you have read "Determining whether to upgrade from a stand-alone to a central server" on page 18 so that you understand all of the caveats before upgrading to a central server.

Caution Once you have upgraded, you **cannot** revert to a stand-alone server.

Remote servers

A Rational Change remote server acts as a bridge between a central server and remote development databases. A remote server is needed when you want databases that are hosted by different Rational Synergy servers to be available to your central server. Each remote server can potentially be paired with a different Rational Synergy server. By registering your remote servers with your central server, you give the central server access to all of the development databases those remote servers can access. Also, with remote servers, Rational Change can access more development databases. Users only need to log on to the central server. All CRs are stored in the central CR database.

When planning your upgrade, plan on one remote server for each additional Rational Synergy server. Remote servers can be installed on any host that can be reached from the central server over HTTP or HTTPS.

Required space for CRs

Before you upgrade, run the `ccm cr_summary` Rational Synergy command for each development database you want to migrate into your central CR database. This command provides the number of objects that will be migrated to your central CR database and an estimate of the space that database requires. Knowing this ensure there is enough free space in the following locations:

• The Rational Change installation area

 While migrating CRs, each of your Rational Changes installations need a minimum of 500 MB of free space. If the underlying Rational Synergy installations are on different file systems, there should be 500 MB of free space on those as well. This space is used to hold temporary copies of CRs while migrating and should be large enough to accommodate about one hundred CRs, plus their tasks and attachments, at the same time.

• Database server space

 Your database server holds information about CRs and their related objects. To determine the amount of space needed, use the total object count from your `cr_summary` output. If you are migrating multiple databases, sum the totals from each database. For every 1,000 objects in your total, you need about 5 MB of database server space. For example, if your total is 11, 500 objects, round up to 12, 000. You need about 60 MB (12,000/1000 x 5 MB = 60 MB). Use the `ccmsrv expand` command to increase your database server space. This command is located in your Rational Synergy installation.

• File system space

 The file system where your central CR database is located (for example, `/vol/ccmdb/central_cr_db`) needs enough free space to accommodate all the attachments you will migrate. The total size (MB) of your attachments is listed in your `cm_summary` output. If you are migrating multiple databases, sum the sizes from each database.

Overestimating the amount of space needed ensures that the CR migrate will be completed. It also allows for future growth of the central CR database.

Existing DCM Transfer Sets

While in central server mode, do not use DCM to transfer CRs between databases. Remove CRs from all of your DCM transfer sets in Rational Synergy by setting the **CR Scope** of your transfer sets to **None** and deleting their **CR Query** strings. You should also remove the `modifiable_in` attribute (Work In DB) from the show and transition forms of your existing, stand-alone Rational Change servers to prevent users from trying to transfer CRs before a CR migrate. Or you can remove the databases to be migrated from those servers.

Receiving all outstanding DCM transfer packages before you migrate your CRs ensures that no CRs are in transit between databases when you perform a CR migrate. If you later realize that you missed some CRs that were in transit, you can always migrate the database again to pick up the remaining CRs.

When you turn off CR transfers between your new central CR database and remote databases, consider what other data will continue to be transferred between the databases, and update your DCM transfer sets and scripts accordingly. For example, if you centrally administer releases and process rules, you need transfer sets and DCM scripts to continue maintaining that process, even after you turn off the transfer of CRs. For a discussion on the replication of releases, processes, and templates, see the "Advanced DCM Topics" chapter of the *IBM Rational Synergy Distributed Guide*, located at [http:// publib.boulder.ibm.com/infocenter/rsdp/v1r0m0/index.jsp](http://publib.boulder.ibm.com/infocenter/rsdp/v1r0m0/index.jsp).

Upgrading from a stand-alone server to a central server

To upgrade to a central server, you need to install a new copy of Rational Change. If you will continue to run your previous server in stand-alone mode, remove any databases from that server before adding them to your central server. This document gives you an overview of the steps necessary to install and setup a central server cluster. For more detailed installation instructions, see the Rational Change Help.

Prerequisites

Before upgrading to a central server, ensure that the:

- Databases are DCM initialized and DCM compatible with each other.

  Your central CR database and the development databases you will use with it must all be DCM initialized with unique database IDs. Additionally, you can only migrate databases that are DCM compatible with your central CR database. For example, your development databases must have the same case setting, LOWER or PRESERVE. For more details, see the *IBM Rational Synergy Distributed CM Guide.*

- System clocks are synchronized.

  If you are migrating from a remote Rational Change server on a different host than the central server, the system clocks of the two hosts must be synchronized.

Installing and setting up the central server

To install and set up the central server:

1. Install Rational Change.

    During installation, when prompted, select **Central Server**.

    For your database, type the path to the central CR database you selected in "Selecting a central CR database" on page 20. You **cannot** change this database later.

2. Optionally, install Rational Change remote servers.

    *   If you will access any of your development databases using remote servers, proceed to the next step to connect those servers now.
    *   If not, skip to step 4.

3. Connect your central server and remote servers.

    On each remote server, log on to the Admin interface. Click the **Administration** link in the panel. Navigate to the **Server** tab, the **Central Server** sub-tab, and click **Register**. Type the HTTP or HTTPS address of the central server. This can also be done from the central server.

4. Add development databases.

    Log on to your central server. Click the **Administration** link in the panel, and then navigate to the **Server** tab. Add your development databases that are local to the central server. Repeat this for each remote server and the development databases that are local to them.

At this point, a functional central server is connected to its development databases, and, optionally, the development databases of your remote servers. You can submit new CRs and associate them to tasks in any of the development servers, but you cannot see any pre-existing CRs from those development databases. To access those CRs, migrate them into your central CR database. For instructions, see "Performing a CR migrate" on page 62.

Performing a CR migrate

Before starting this procedure, note that CR migrate can take a long time to complete, sometime hours or even days for very large databases. Also, any DCM packages received while CR migrate is in progress can dramatically extend this time.

To perform a CR migrate:

1. Back up your databases.

   Be sure you have a full backup of your central CR database and the development database that you want to migrate.

2. Log on to the Admin interface.

   If you have one or more remote servers, log on to the server that manages the development database from which you wish to migrate.

3. Open the CR Migrate window.

   a. Click the **Administration** link in the panel.

   b. Click the **Admin** tab.

   c. In **Properties**, click **CR Migrate**.

4. Select the database to migrate.

   All of your development databases managed by this server are listed in a drop-down menu. Select the database containing the CRs you want to migrate.

5. Optionally, type an email address.

   Since migration can take a long time, you can request email notification of its completion. If your central server is configured to send email through an SMTP server, check the **E-Mail When Done** option. If your email address is incorrect, type the correct address.

6. Start the migrate.

   Click **Migrate**. If no errors occur, the CR migrate continues without any further intervention.

During the migrate

During the migrate, you can monitor its progress using the **CR Migrate** dialog box. Closing the dialog box does not stop the migrate. Reopen the **CR Migrate** dialog box at any time to check its current progress. To stop the migrate, click **Stop**. You can restart the migrate later by migrating the same database again.

Rational Change resumes from where you last stopped. A migrate can also be resumed if it fails midway due to a network problem or other error.

Users can use Rational Change during a CR migrate. Both the central CR database and the development database can remain enabled. As CRs are migrated into the central CR database, they are immediately available for users to view and edit, even before the entire migrate is complete. The newest CRs are transferred first.

After the migrate

After the CR migrate has finished, run the `ccmdb update_statistics` command to optimize your central CR database. This command can be run in the middle of a CR migrate. If you suspect the migrate is getting slower as it progresses, running this command in the background might improve performance.

Troubleshooting

The section discusses some common issues that can occur during the migration and provides possible solutions.

- The CR migrate failed.

  If CR migrate fails because of a transient problem (such as a network failure, a server restart, and so forth), re-migrate the failed database. Rational Change continues the process where the failure occurred. CRs that were already migrated are preserved.

  If the failure is not self-correcting, see the log files for more details. CR migrate uses Rational Synergy DCM technology to migrate your CRs, and, in many cases, the Rational Synergy and DCM related logs contain the most detailed information. The `ccm_ui.log` files for your Rational Change servers often describe failures in enough detail to resolve them. For even more details, including listings of every migrated CR, see the detailed DCM logs, which are in the database `dcm/log` directories. Depending on when the failure occurred, you might need to consult the logs in either your development or central CR database.

- Not all of the databases are DCM compatible.

  A few DCM compatibility checks can be disabled during CR migrate, specifically the checks for compatible version delimiters and release delimiters. If you are already running in a DCM environment where you know these checks can be safely ignored, disable them by creating the following file in your Rational Change central server installation area:

  For Jetty:

  ```
  CHANGE_HOME/jetty/webapps/context/WEB-INF/wsconfig/system/
  app.user.properties
  ```

  For WAS:

  ```
  CHANGE_HOME/context.ear/context.war/WEB-INF/wsconfig/system/
  app.user.properties
  ```

  For WASCE:

  ```
  CHANGE_HOME/context/WEB-INF/wsconfig/system/app.user.properties
  ```

  Then add the following lines as necessary:

  ```
  migrate_ignore_version_delimiter = true
  migrate_ignore_release_delimiter = true
  ```

  Finally, restart Rational Change to apply the changes.

9 *Uninstalling Rational Change*

To uninstall Rational Change, run the Uninstall Rational Change program.

Depending on the type of server, you are provided with information about the effects of uninstalling the server.

Also, if you are using WAS or WASCE, the:

- User who installed Rational Change has to uninstall the software.

- Servers should be up and running during uninstall.

Use the following procedure to uninstall Rational Change.

1. Stop the Rational Change server.

For steps, see "Stopping the Rational Change server for Jetty" on page 71.

2. Change the directory to the Rational Change installation directory (<u>item 1</u> on your worksheet).

```
$ cd CHANGE_HOME
```

3. Change the directory to the `uninstaller` directory.

```
$ cd uninstaller
```

4. Set the `DISPLAY` variable, unless you are uninstalling in command-line mode.

```
$ DISPLAY=host_name:0.0; export DISPLAY
```

Note You must have write access to the `DISPLAY` (`display_setting`). For the correct `DISPLAY` setting, contact your system administrator.

5. Add `CCM_HOME/bin` and `CCM_HOME/jre/bin` to the beginning of the path.

```
$ PATH=$CCM_HOME/bin:$CCM_HOME/jre/bin:$PATH; export PATH
```

6. Uninstall Rational Change.

Add "`-nogui`" to the command to uninstall in command-line mode.

```
$ ./Uninstall_RationalChange.sh
```

Appendix A: Reference Information

This section provides log file locations and explains how to resolve port conflicts or change port assignments, and provides information about installation options, including:

- "Log files" on page 68
- "Resolving port conflicts for Jetty" on page 70
- "Stopping the Rational Change server for Jetty" on page 71
- "Starting the Rational Change server for Jetty" on page 71
- "Installing multiple Rational Change servers for a database" on page 72
- "Configuring Change to use HTTPS" on page 75
- "Updating the RDS configuration file" on page 76

Log files

Check for status, error messages, and general information in the following log files:

- Rational Change
- The Rational Synergy session
- Jetty Web server
- WAS server
- WASCE server
- Installation log files

For information about the variables in the log file paths shown in the table, see the "Worksheet" on page 27.

Log file name and location	Comments
Jetty: *CHANGE_HOME*/jetty/webapps/*context*/logs/event.log WAS: *CHANGE_HOME*/*context*.ear/*context*.war/logs/event.log WASCE: *CHANGE_HOME*/*context*/logs/event.log	Rational Change application log
Jetty: *CHANGE_HOME*/jetty/webapps/*context*/logs/search.log WAS: *CHANGE_HOME*/*content.ear*/*content.war*/logs/search.log WASCE: *CHANGE_HOME*/*context*/logs/search.log	Rational Change search index log

Log file name and location	Comments
Jetty: *CHANGE_HOME*/jetty/webapps/*context*/logs/audit_log.xml WAS: *CHANGE_HOME*/*context*.ear/*context*.war/logs/audit_log.xml WASCE: *CHANGE_HOME*/*context*/logs/audit_log.xml	Rational Change admin audit log records the following admin operations: • Changes to users • Package install/uninstall • Group changes • ACL changes • Central/remote server registration
$HOME/ccm_ui.log $HOME/ccm_eng.log	Rational Synergy session logs. *cm_session_user* is [item 12](#) on your worksheet.
CHANGE_HOME/jetty/logs/*yyyy_mm_dd*.jetty.log	Jetty Web server log.
Jetty: *CHANGE_HOME*/jetty/webapps/install.log WAS: *CHANGE_HOME*/install.log WASCE: *CHANGE_HOME*/install.log	Installation log file created in the Rational Change installation directory. The log file is in the user's home directory within a temporary timestamp (13 digit) directory if the installation program terminates abnormally.
CHANGE_HOME/jetty/logs/stdout.log	Rational Change server startup log.

Resolving port conflicts for Jetty

Jetty port conflicts can occur when Rational Change installations are using the same port that are in use by another application. Look in the change.xml file to obtain the port number used by Rational Change. Port conflicts can also cause related errors, including undefined users and port access failures. These problems might not appear immediately.

Resolve any port conflicts by assigning a different port number to one of the conflicting port users. Then, restart the Rational Change server.

If the Jetty Web server log reports that there are port conflicts or that subsequent use of Rational Change causes errors, check the log files for warnings about port conflicts and related errors. For more information, see "Log files" on page 68.

To resolve port conflicts, see "Resolving Rational Change port conflicts on Jetty" on page 70.

Resolving Rational Change port conflicts on Jetty

If Rational Change port conflicts on Jetty occur, change the Rational Change port number to an unused number by editing the change.xml and web.xml files.

1. Stop the server.

   See "Stopping the Rational Change server for Jetty" on page 71.

2. Change the directory to *CHANGE_HOME*/jetty/etc (*CHANGE_HOME* is item 1 on your worksheet).

3. Make a backup copy of the change.xml file.

4. Open the change.xml file.

5. Change the Rational Change port entry.

   a. Find the entry for the Rational Change port, for example:

   ```
   <Call...>
       <Arg...>
       <Set name="Port">XXXX</Set>
       ...
       </Arg>
   </Call>
   ```

   b. Change the port setting to an unused port number, for example:

```
<Call...>
    <Arg...>
    <Set name="Port">8888</Set>
    ...
    </Arg>
</Call>
```

6. Save and close the `change.xml` file.

7. Repeat steps 4 - 6 for the `web.xml` file in the `CHANGE_HOME`/`jetty`/`webapps`/`context`/`WEB-INF` directory (`CHANGE_HOME` is <u>item 1</u> on your worksheet).

The entry in the `web.xml` file is slightly different, for example:

```
<init-param>
    <param-name>port</param-name>
    <param-value>8600</param-value>
</init-param>
```

8. Start the server.

See "Starting the Rational Change server for Jetty" on page 71.

Stopping the Rational Change server for Jetty

Stop the Rational Change server by running the control script.

1. Change the directory to the Rational Change installation directory.

```
$ cd CHANGE_HOME/jetty
```

2. Stop the Rational Change server.

```
$ ./csctl.sh stop
```

Starting the Rational Change server for Jetty

Start the Rational Change server by running the control script.

1. Change the directory to the Rational Change installation directory.

```
$ cd CHANGE_HOME/jetty
```

2. Start the Rational Change server.

```
$ ./csctl.sh start
```

Starting and stopping the Rational Change server for WAS and WASCE

To start or stop the Rational Change server for WAS and WASCE, you need to start or stop the entire application server. Do not merely start and stop the Rational Change Web application.

Installing multiple Rational Change servers for a database

Rational Change provides no explicit support for server load balancing, but it is possible to achieve a similar effect by installing duplicate Rational Change installations onto multiple servers. Ideally, each server should access a different set of databases, but multiple servers can share access to a common set of databases—provided you are willing to manually keep the settings of all the installations in sync. Different groups in your organization can then access the common databases through different servers, spreading the load among them.

Stand-alone server installation and planning

If you are using a stand-alone server, install Rational Change as usual on each of the servers that you want to access the common databases. Each installation must:

- Be the same release of Rational Change.

- Use the same authentication mechanism.

- Point to the RDS server.

- Point to the same Rational Synergy release.

Additionally, when a common database is added—either during installation or later through the **Admin Server** tab—its path must match exactly, including capitalization, across all installations.

At this time, you should mentally designate a single one of your installations as the primary server for the common databases. All other installations will be secondary servers. Rational Change does not distinguish primary and secondary servers, but changes to the CR process, listbox values, and other settings should always be made and controlled on the primary server, and then manually propagated to the secondary servers.

Settings requiring manual synchronization

- CR Process

  You should control and edit your CR process XML file only on the main server. The process package you generate from this file must be copied from the main server to all secondary servers. Your generated process package can be found on your primary server, and must be copied to the same directory on every secondary server. For each server, install the process package with the Package Installer as normal.

  For Jetty:

  `CHANGE_HOME/jetty/webapps/context/WEB-INF/packages`

  For WAS:

  `CHANGE_HOME/context.ear/context.war/WEB-INF/packages`

  For WASCE:

  `CHANGE_HOME/context/WEB-INF/packages`

- Listboxes

  You should control and edit your listbox entries only on the main server. Listbox values are saved in the applicable directory below. When modified, this file must be copied to the same location on every secondary server. For each secondary server, load the new listbox values by selecting **Load** on **Admin** > **General**.

  For Jetty:

  `CHANGE_HOME/jetty/webapps/context/`
  `WEB-INF/wsconfig/pt_listbox.cfg`

  For WAS:

  `CHANGE_HOME/context.ear/context.war/WEB-INF/wsconfig/`
  `pt_listbox.cfg`

  For WASCE:

  `CHANGE_HOME/context/WEB-INF/wsconfig/pt_listbox.cfg`

- ACLs

  You should control and edit your access control lists (ACLs) only on the main server. ACL definitions are saved in several files in the applicable directory listed below. When modified, all of these files must be copied to the same location on every secondary server. For each secondary server, load the new ACL definitions by selecting **Admin** > **General** > **Load**. Next, go to **Admin** > **ACL**, and enable the same ACLs as on your primary server.

  For Jetty:

  `CHANGE_HOME`/jetty/webapps/`context`/WEB-INF/wsconfig/acl

  For WAS:

  `CHANGE_HOME`/`context`.ear/`context`.war/WEB-INF/wsconfig/acl

  For WASCE:

  `CHANGE_HOME`/`context`/WEB-INF/wsconfig/acl

- Other Packages

  As with your CR process package, any packages installed onto the primary server must be copied to and installed on all secondary servers.

- **Admin** > **General** Tab

  If you modify any settings on **Admin** > **General** of the primary server, you must apply the same changes on every secondary server.

- Manual `pt.cfg` Settings

  If you manually modify any `pt.cfg` settings on your primary server, you must make the same changes on every secondary server. For each secondary server, load the new `pt.cfg` settings values by selecting **Admin** > **General** > **Load**.

Limitations

Rational Synergy has a number of features that interact with Rational Change. These features continue to work, but they know about only one of your Rational Change installations: the last installation on which you installed your process package. If your users primarily access Rational Change using Rational Synergy, then this solution does not provide any benefit. All users are connected to the same Rational Change server.

By default, each server maintains its own search index. Since the indices are not necessarily updated at the same time, different servers might show different results. This only applies to search results. Queries and reports always reflect what is currently in your databases.

It is possible to have multiple Rational Change servers configured against the same databases to share a search index. This is done by setting the `pt.cfg` configuration entry `[CCM_SYSTEM][SEARCH_INDEX_DIRECTORY]full path to search directory [/SEARCH_INDEX_DIRECTORY][/CCM_SYSTEM]` to have the same path on all servers. The default value for the search index is the `wsconfig/system` directory.

Do not point to another server `wsconfig/wsconfigsystem/wsconfigindex` directory as that creates another index. Point to its `wsconfig/wsconfigsystem` directory or point all servers to another directory outside of the Rational Change directory hierarchy.

Licensing

Using multiple servers does not affect your licenses. The same number of licenses are available whether you use one or more Rational Change installations.

Configuring Change to use HTTPS

For information about configuring Rational Change to use HTTPS, contact IBM Rational Software Support to obtain the technical note. The Home page for Rational Change products is located at http://www.ibm.com/software/awdtools/change/support/.

Updating the RDS configuration file

RDS is normally configured as a post-installation step, and the RDS connection information is stored in the `rds_config.xml` file. The administrator needs to edit `rds_config.xml` file only when the following occurs:

- The RDS URL changes when you want to use a different RDS server or when it is moved to another server.

  See "Editing the RDS URL" on page 76.

- The RDS admin user name or password was changed.

  See "Editing the RDS admin user name and password" on page 77.

The `rds_config.xml` file is located in the following directory.

> For Jetty:
>
> *CHANGE_HOME*`/jetty/webapps/`*context*`/WEB-INF/wsconfig`
>
> For WAS:
>
> *CHANGE_HOME*`/`*context*`.ear/`*context*`.war/WEB-INF/wsconfig`
>
> For WASCE:
>
> *CHANGE_HOME*`/`*context*`/WEB-INF/wsconfig`

All changes made to this file are applied when the configuration data is reloaded or when the server is restarted.

Editing the RDS URL

To edit the RDS URL:

1. In the `rds_config.xml` file, edit the `<url>` line.

    ```
    <rds-config>
    <url>ldap://local host:xxxx/</url>
    <user-id>rdsadmin</user-id>
    <password>xxxxxxxxxxx/xxxxxxxx==</password>
    </rds-config>
    ```

2. Save the file.

Editing the RDS admin user name and password

To edit the user name and password:

1. In the `rds_config.xml` file, edit the `<user-id>` line.

   ```
   <rds-config>
   <url>ldap://local host:xxxx/</url>
   <user-id>rdsadmin</user-id>
   <password>xxxxxxxxxxxx/xxxxxxxx==</password>
   </rds-config>
   ```

2. Type the new user name.

3. Replace the `<password>` line with the following:

   ```
   <password-unencrypted>my_new_password</password-unencrypted>
   ```

4. Save the file.

   The user name is changed, but the original `<password>` is replaced by `<password-unencrypted>`, whose content is a clear-text password. When the server reloads, the password is encrypted.

Appendix B: Notices

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