Rational. Synergy

IBM

Administration Guide for Windows

IBM Rational Synergy

Administration Guide for Windows

Release 7.1

Before using this information, be sure to read the general information under Appendix: "Notices" on page 171.

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1   *Introduction*

The *IBM® Rational® Synergy Administration Guide for Windows®* contains complete administrative command descriptions and step-by-step instructions for administering Rational Synergy. If you are installing Rational Synergy for the first time, see the *Rational Synergy Installation Guide for Windows*.

For installation and upgrade instructions, please see the following documents:

- *IBM Rational Synergy Installation Guide for Windows*

- *IBM Rational Synergy Installation Guide for UNIX®*

- *IBM Rational Synergy Upgrade Instructions for Windows*

- *IBM Rational Synergy Upgrade Instructions for UNIX*

You can obtain this guide in PDF format on the Documentation section of the DVD, the Rational Software Information Center (at `http://publib.boulder.ibm.com/infocenter/rsdp/v1r0m0/index.jsp`), or the FTP site.

Information in this guide may be superseded by information in the *Rational Synergy Readme*, which is shipped with the product. The latest updates to the *Readme* are available in the Information Center.

For administration information specific to installing the product for the first time, including hardware configuration requirements, see the *IBM Rational Synergy Installation Guide for Windows*.

Using this guide

This guide is intended for the change management (CM) administrator.

The CM administrator is responsible for the smooth, day-to-day operation of the Rational Synergy tools. This document describes the Rational Synergy services and databases, including how to run the Rational Synergy database backup programs, how to use space effectively, and so forth.

Changes in version 7.1

Telelogic Synergy is now called IBM Rational Synergy. Also, if you are upgrading from Telelogic Synergy 7.0, the feature called Telelogic Synergy Distributed is now referred to as Rational Synergy Distributed and is included in the Rational Synergy product.

Rational Synergy administrator road map

The following items briefly describe the tasks you need to complete to prepare the Rational Synergy environment for the use of your team. This road map assumes that you have installed Rational Synergy already.

- See the *Readme* for any last-minute information.
- Install the IBM® Rational® License Server TL and the license.

  This procedure is described in the *IBM Rational License Server TL Guide*.
- Unpack a database.

  This procedure is described in "Creating through unpack" on page 87.
- Add users to the database.

  This procedure is described in "Adding users to a Rational Synergy database" on page 14.
- Coordinate the customization of local types with your site type developer.
- Devise a database backup plan.

  For guidelines, see "Performing database integrity checks" on page 79 and "Knowing when to archive database servers" on page 60.
- Monitor space to plan for growth.

  This procedure is described in "Monitoring product usage" on page 25.

About Rational Synergy

This release supports Windows clients, engines, and database servers on a variety of Windows operating systems. Windows clients can be used with Windows or UNIX servers. For the most current list of supported platforms, see the *Readme*. When you run Rational Synergy, the client, engine, and database all must be at the same release level. Do not mix components from different Rational Synergy releases. This means that you must install this release of Rational Synergy clients on all Windows client machines that will access a Windows or UNIX server.

See the *IBM Rational Synergy Installation Guide for Windows* and the *IBM Rational Synergy Administration Guide for Windows* for information about installing and administering Windows clients. See the *IBM Rational Synergy Installation Guide for UNIX* and the *IBM Rational Synergy Administration Guide for UNIX* for information about installing and administering UNIX servers. All documents are located on the Rational Software Information Center.

Running Rational Synergy administrative commands

Depending on which administrative commands you use, you need to have the following access:

- Rational Synergy administrator

  In previous releases, the *ccm_root* user was a fixed name. You can now set the name for that user to whatever you would like. This document uses the term Rational Synergy administrator for that user.

  For example, to run the Rational Synergy database commands and to perform a model install, you need to log on as the Rational Synergy administrator.

- Local administrator

  The Local administrator is a member of the Administrators group on the local machine.

  For example, to run the database server administrative commands, you need to have Local administrator privilege.

- *Informix-Admin* group member

  The Informix-Admin group member is a user who has membership in the Informix-Admin group on the domain.

  For example, to use the database server administration commands, you need to be an Informix-Admin group member.

Opening command windows

When you run administrative commands, you can use the Rational Synergy command prompt instead of typing the full path to your Rational Synergy installation area (*CCM_HOME*). This starts a command prompt window with the environment properly set for Rational Synergy command use.

To open a command prompt window, from the Windows task bar, select **Start** > **All Programs** > **IBM Rational** > **IBM Rational Tools** > **IBM Rational Synergy 7.1** > **CM Command Prompt**.

Conventions

The following conventions are used in this document.

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 (*developer*), states (*working*), groups (*ccm_root*), and users (*sue*).
Bold	Used for dialog box names and options, 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 typed 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, (`drive:\username\commands`).

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.

Command line interface

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

Prompt

This document uses the greater than (>) character as the prompt.

Option delimiter

Rational Synergy supports the slash (/) option delimiter.

Universal naming convention

You can use the universal naming convention (UNC) any time you enter a path to an administrative command. UNC makes network access to files, machines, and other devices easier, enabling you to reference remote machines and files.

The UNC format is as follows:

`\\`*`computer_name`*`\`*`share_name`*`\`*`path`*`.`

In the following example, "`c:\users\ccmdb\base`" is a regular database path. A UNC-style path is "`\\loon\ccmdb\tstgonzo`":

`> ccmdb copy c:\users\ccmdb\base \\loon\ccmdb\tstgonzo`

Most Rational Synergy commands accept **both** UNC paths and paths with drive letters. However, three commands, `ccmdb create`, `ccmdb copy`, and `ccmdb unpack`, require UNC paths to create databases.

CCM_HOME location

CCM_HOME is the Rational Synergy product installation directory. Many procedures shown in this document require that you change a file somewhere in the *CCM_HOME* directory hierarchy. For example, if you want to edit the `remexec.cfg` file, which resides in the `etc` directory in the Rational Synergy installation area, you would need to change the directory to *CCM_HOME*`\etc`.

Default text editor

Instructions for editing text files are given using Notepad™, which is the Rational Synergy default text editor. If you change text editors, substitute the appropriate command. See Rational Synergy Help for instructions on changing your text editor.

Rational Synergy Web mode and traditional mode

Beginning with the Rational Synergy 7.0 release, Rational Synergy performance was improved with the introduction of an architecture that allowed Rational Synergy clients to communicate to a Web-based Rational 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.

Rather than replacing the original network communication with this new technique, Rational Synergy 7.0 introduced the new technique as Web mode. The previous RFC architecture, which is referred to as traditional mode, is still available for use by some users.

Most developers and build managers will be able to use Web mode. Users who need administration capabilities or other advanced features can use traditional mode instead. Traditional mode behaves as it did in Synergy 6.5.

Users need to use one of the Classic clients (CLI or GUI) for the following reasons:

- Administrative operations

- Data migration

- Save offline and delete

Rational Synergy Architecture

The following picture shows the Rational Synergy architecture for Web mode and traditional mode.
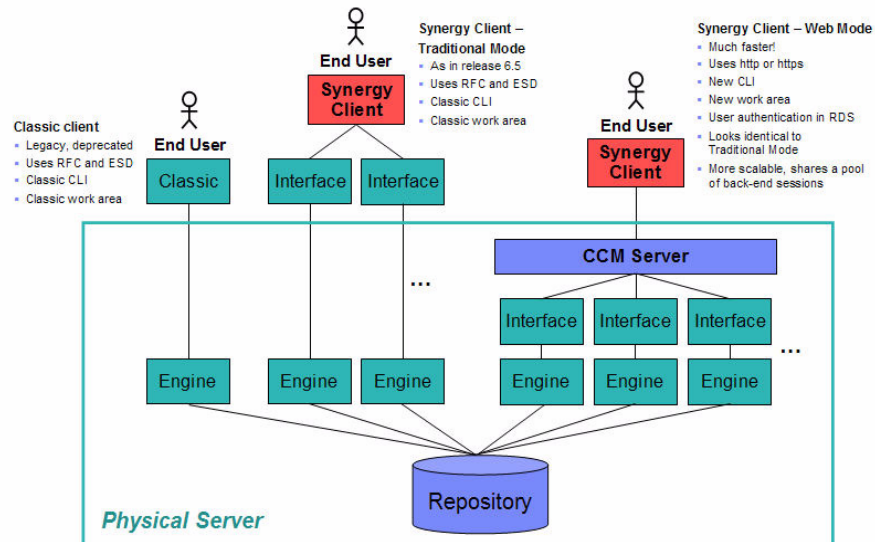
Web mode clients connect to a Rational Synergy Web server using HTTP. The Rational Synergy server manages a pool of back-end sessions, which all run on the server system.

The Web mode and traditional mode differ in some ways that are important for the CM administrator to understand.

- **CCM server**—The Web mode Web server. This process manages back-end Rational Synergy sessions on the server system. This document provides information about configuring and administering the CCM server.

  For more information on administering the CCM server, see "Administering the CCM Server" on page 33.

- **Authentication**—Web mode users are authenticated using IBM®
  Rational® Directory Server (RDS). Rational Synergy can share a single RDS
  LDAP installation with IBM® Rational® Change and other software tools.
  RDS is installed and administered separately from Rational Synergy. For
  more information, see the *IBM Rational Directory Server Administration Guide*
  and the *IBM Rational Directory Server Install Guide.* All documents are located
  on the <u>Rational Software Information Center</u> at `http://`
  `publib.boulder.ibm.com/infocenter/rsdp/v1r0m0/`
  `index.jsp`.

  In addition to defining users in RDS, the CM administrator must add user
  IDs and their associated roles to each Rational Synergy databases in which
  they will work, to identify which databases they can access and the privileges
  they have in each databases.

  Traditional mode users are authenticated using OS authentication, as in
  previous releases. On UNIX operating systems, it is possible to configure
  PAM to authenticate users using RDS. RDS can also be configured to
  authenticate users against the operating system.

  For more information on authentication, see the *IBM Rational Directory Server
  Administration Guide.*

  Also, users can change their RDS password on the CCM server Web site at
  `http://`*`server:port`*`/user`.

- **Session start** —To start a Web mode session, users must specify a URL
  rather than a host name for the server. The CM administrator can provide
  the appropriate startup information for different sets of users.

  Note You can only start a Rational Synergy client or Rational
  Synergy CLI in Web mode. Neither the Classic GUI nor
  the Classic CLI can be started in Web mode.

  - To start a Rational Synergy GUI session in Web mode, in the **Start
    Rational Synergy** dialog box, in **Server**, type the CCM server URL.
  - To start a Rational Synergy CLI session in Web mode, type the CCM
    server URL with the /s argument. For example:
    ```
    % ccm start /d \\vod\ccmdb\mydb /s http://vod:8400
    ```

- **Scripting**—Rational Synergy 7.0 introduced a new command line interface (CLI). This CLI is referred to as the Rational Synergy CLI, and the original CLI is referred Classic CLI.

  - The Rational Synergy CLI runs only in Web mode.
  - The Classic CLI runs only in traditional mode.

  The Rational Synergy CLI is not as complete compared to the Classic CLI, but provides equivalent commands for most functions available in the Rational Synergy GUI. Most administration commands are not supported in the new Rational Synergy CLI yet, including those described in this book.

  You may choose to continue running your existing scripts in the Classic CLI, or port them to the Rational Synergy CLI if it includes all of the functionality needed by your scripts. Because the Rational Synergy CLI runs in Web mode, it is faster than the Classic CLI, but the Classic CLI continues to run as it has in previous releases.

Obtaining additional information

The *Readme* describes the new features in Rational Synergy, provides updates to the documentation, and contains sections on troubleshooting, contacting support, and known errors. Look in the *Readme* for the latest updates to the installation documentation.

The *Readme* is in an HTML document available on the product DVD and on the Rational Software Information Center. The *Readme* is also available to Rational Synergy GUI users from the **Welcome** page. To display the **Welcome** page, from the main menu, select **Help** > **Welcome**.

Information in the *Readme* takes precedence over information in the documentation or in the Help.

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 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 https://www.ibm.com/software/rational/support/ 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 http://www.ibm.com/software/support/help.html

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

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

2 *General System Administration*

The General System Administrator is responsible for maintaining non-specific areas of the Rational Synergy installation area. General administrative tasks include the following:

- "Installing the Rational License Server TL" on page 14
- "Adding users to a Rational Synergy database" on page 14
- "Customizing user environments" on page 16
- "Setting and changing default settings" on page 16
- "Configuring for trusted users" on page 20
- "Configuring for remote execution" on page 21
- "Managing audit files" on page 24
- "Monitoring product usage" on page 25
- "Monitoring the services" on page 26
- "Other services" on page 28
- "Monitoring output to log files" on page 28
- "Setting up databases for read security" on page 30
- "Troubleshooting" on page 31

Installing the Rational License Server TL

The Rational License Server TL installation is described in the *IBM Rational License Server TL Guide*. See this document for step-by-step instructions.

Adding users to a Rational Synergy database

Each Rational Synergy database has a list of users. After you unpack a database from base.cpk, the list contains suggestions of user roles that you might want to give to users of a database. Each user list needs to contain the team members who can use the database. You need to add user names to the list of users for each Rational Synergy database, and give each user at least one role to define his capabilities within a Rational Synergy database.

Before you assign user names, consider whether you are going to use automatic email notification. If this is the case, make sure your email tool can recognize the OS user name and deliver mail to the appropriate address.

A user can have multiple roles within a single database. For example, user *sue* could have the role of *writer* and *developer*.

Roles identify which privileges a user has within a database. For example, if user *sue* is only given the *developer* role, she can perform all *developer* operations, but she cannot perform any *build_mgr* operations. The *ccm_admin* role is only used in Synergy Classic and CLI.

Caution Users with the *ccm_admin* role can perform administrative actions on a database, and **have the right to modify any and every object in a database**. You should limit access to this role, and also to the Rational Synergy administrator, to those who specifically need this level of access.

You must be working as the Rational Synergy administrator to perform this procedure.

Note The first time you add users to a database, you need to do so as the Rational Synergy administrator. Once you establish the administrative user (the user with *ccm_admin* role), then he can add users to the user list while logged in as himself.

The following steps describe how to add user names to your database.

1. Log on as the Rational Synergy administrator.

2. Start Rational Synergy on the database where you need to add user names.

   > `ccm start /nogui /r ccm_admin /d `*`database_path`*

3. Open the list of users.

   ```
   > ccm users
   ```

   You can add or remove users from this file, or change a user's role. To add a user, read through the user list, and then give users the appropriate role(s).

   Additionally, you can add comments and blank lines.

   The list of users looks similar to the following:

   ```
   user john = build_mgr developer;
   user sue  = ccm_admin developer;
   user mary = writer developer;
   user joe  = developer;

   #testing group
   user bill = tester;
   user tom  = tester;
   user linda= tester;
   user ann  = tester;
   user bob  = tester;

   user user1= developer;
   user user2= developer;
   ```

   In the example above, *john*, *sue*, *mary*, and *joe* are the users' logon names. *sue* has the roles of *ccm_admin* and *developer*, *john* has *build_mgr* and *developer* roles, *mary* has *writer* and *developer* roles, while *joe* has *developer* role only. Below the first group of users, a second group, including only testers, is defined.

Note Create only one line, with all the user's roles, for each user. Also, end each line with a semicolon.

Additionally, user names in databases on UNIX servers must not be longer than eight characters, must not contain spaces, and must start with an alphabetical character.

4. Stop the Rational Synergy session.

   ```
   > ccm stop
   ```

5. Log off as the Rational Synergy administrator.

Note Users who run Web mode sessions must be added to RDS as well as the Rational Synergy databases. See the *IBM Rational Directory Server Administration Guide*.

Customizing user environments

The following sections describe how to customize user environments to run Rational Synergy efficiently.

Setting and changing default settings

You can customize settings for Rational Synergy options and for database options. Some of the settings can be modified by users and some can be modified by the CM administrator only.

In general, if there is a conflict between a user's personal settings and system settings, the personal settings override the system settings.

Changing personal settings for Synergy Classic

Synergy Classic users can set their own defaults for engine host, database, browser, and other options.

ccm.ini

Initialization files (for example, the users' ccm.ini files) are usually the files used to customize defaults. The personal ccm.ini file is located in the **%USERPROFILE%** directory.

If you start Synergy Classic by adding /f *filename* to the ccm start command, Rational Synergy checks the file specified by the /f switch instead of the ccm.ini file in the **%USERPROFILE%** directory.

Note The ccm set command overrides any settings in the ccm.ini file.

Additionally, you can use /f to set up multiple shortcuts to start Rational Synergy sessions with different settings on different databases, or to start different releases of Rational Synergy.

You can change GUI settings in the ccm.ini file or in the **Object Color Options** dialog box. Refer to Synergy Classic Help for instructions on setting GUI options in either place.

See Rational Synergy CLI Help for information about default Rational Synergy options and settings.

ccminit

The ccminit file lists Synergy Classic commands that are executed at startup.

Changing personal settings for Rational Synergy

Rational Synergy users can use the settings in the ccm.user.properties file to set their own defaults.

ccm.user.properties

This file provides local workstation settings, such as startup options for Rational Synergy. Most user settings can also be configured using the **Options** dialog box. This file is located in the **%USERPROFILE%** directory.

Changing system settings for Synergy Classic

ccm.ini

Synergy Classic checks the ccm.ini file located in the installation area for system-wide settings. This file is located in the CCM_HOME\etc directory.

Changing system settings for Rational Synergy

Rational Synergy has options that can be configured for the interface and server.

ccm.ini

Rational Synergy checks the ccm.ini file located in the installation area for system-wide settings. This file is located in the *CCM_HOME\etc* directory.

ccm.properties

This file provides system-wide settings for Rational Synergy, such as default tools. Settings in this file can be overwritten by the settings in the ccm.user.properties file. This file is located in the **%USERPROFILE%** directory.

ccm.server.properties

This file provides settings for tuning the server for Rational Synergy This file is located in the *CCM_HOME\etc* directory.

Restart the server so that the changed values have an effect.

system_info.txt

This file provides settings for configuring the Rational Synergy installation system information. The file is located in the $CCM_HOME/etc. directory and includes the following settings:

- PROBLEM_SUBMIT_EMAIL—Email address to which problem information will be sent from the **Submit Request** dialog box in the Rational Synergy GUI. Set this option to an internal email address so that Rational Synergy experts at your company can review end-user requests to ensure they are valid and do not contain company-confidential information before passing them on to IBM Rational Software Support.

  For the IBM Support email, uncomment the line that corresponds to your geographic location.

  See "Contacting IBM Rational Software Support" on page 10 for more information.

- PROBLEM_SUBMIT_ICN—Your IBM Customer Number (ICN), which is required when you send email to IBM. Your ICN is included in the email that is sent from the **Submit Request** dialog box.

- LICENSE_SERVER—Host and port where the license server is running. For possible formats of the license server address, see the *IBM Rational License Server TL Licensing Guide* documentation.

- HELP_SERVER—Host and port where the CCM server is running.

- RATIONAL_DIRECTORY_SERVER—Host and port where RDS is running.

  For possible formats of the license server address, see the *IBM Rational License Server TL Licensing Guide* documentation.

- VIDEO_RECORDING_DISALLOWED—Uncomment this line to disable the video recording and snapshot features in the Synergy GUI.

Configuring for trusted users

This section does not apply to Web mode users.

This option allows users to start a client without providing a password. When using this option, sessions on UNIX databases must be started using ESD.

To enable this feature, the administrator needs to create a file named `trusted_clients` on the router machine `$CCM_HOME\etc` directory. The file must have the following format:

> *hostname1* [user_name1]
>
> *hostname2* [*user_name2*]
>
> Where the *hostname* is the client's hostname and the *user_name* is the client's logon user name.

Both *hostname* and *user_name* fields accept + (plus sign) for ANY hosts or ANY user.

If the *user_name* field is missing, it has the same meaning as *user_name* set to +.

If the client is trusted, Rational Synergy displays the following behavior.

Synergy Classic:
On the startup dialog, **User name** and **Password** are disabled.The User name displays the OS user name.

If the user name is specified from the command line (`/n` option), the client is no longer considered trusted and behaves like non-trusted clients.

Rational Synergy Command Line Interface (CLI):
If the client is trusted, the CLI does not prompt for the password.

If the user name is specified from the command line (`/n` option), the client is no longer consider trusted and behaves like non-trusted clients.

Rational Synergy:
The logon pane does not display **UserID** or **Password** (like Rational Synergy on UNIX). The User name displays the OS user name.

If the user name is specified from the command line (`/u` option), the client is no longer considered trusted and behaves like non-trusted clients.

Configuring for remote execution

If you want Rational Synergy to run remote operations, such as running the remote DCM `receive` operation, you must specify the remote execution method to use. Because a different machine might use a different protocol, you must configure Rational Synergy for proper remote execution on your system.

Rational Synergy uses a configuration file, `remexec.cfg`, to determine the method it will use for remote execution on a specific host.

You must be working as *local administrator*, and your `PATH` variable must contain `CCM_HOME\bin` to perform this procedure.

1. Log on as *local administrator*.

2. Change to the directory where the `remexec.cfg` file resides.

3. Launch your editor, and then edit the `remexec.cfg` file.

   Add the method for each host.

   Specify the source host, destination host, purpose, environment variables, and command using the following syntax:

   source_host   *dest_host*   [%purpose envvar]   command

   where *source_host* is the name of the source host machine.

   dest_host is the name of the destination host machine.

   purpose is an optional remote execution purpose, normally either `DCM` or `DEFAULT`. If specified, the purpose must include a leading percent symbol (%) so that `ccm_remexec` can determine that a purpose was specified.

   If the purpose is not specified, it is treated as a `DEFAULT` purpose. If both `DEFAULT` purpose and matching purpose exist between two machines, the entry with the matching purpose is used.

   envvar is a list of environment variables that starts with an optional leading dash (-), and is separated by commas and no extra spaces. This defines the environment variables that `ccm_rem` will pass to the process executing the remote command. A list that starts with a dash means that all environment variables except the specified ones will be passed by `ccm_rem`. A list that does not start with a dash means that only the specified environment variables will be passed by `ccm_rem`. The keyword value `ALL` means pass all environment variables.

An environment variable can be in one of the following formats:

- `NONE`—None of the environment variables are passed to the remote machine.
- `ALL`–All environments variables are passed to the remote machine.
- Only the listed environment variable is passed to the remote machine (for example, `env1, env2, ..., env`*n*`).`
- All the environment variables except the listed ones (`-env1, env2, ...` env*n*) are passed to the remote machine.

Note `ccm_rsh` only performs this environment processing when the remote execution host has a different IP address than the local host. In other words, if you use a `ccm_remexec` command that ultimately calls `ccm_rsh` to execute a command on the local host, all environment variables are propagated, regardless of the settings defined in `remexec.cfg`.

Both `purpose` and `envvar` are optional. However, if `envvar` is specified, then *purpose* must also be specified. If the `purpose` field is not specified, then all environment variables are passed when `ccm_rem` is used as the remote execution method.

The `remexec.cfg` file is shipped with the following default:

```
DEFAULT DEFAULT ccm_rem %hostname [%shell /C] %cmd_line
```

Note If you are using Rational Synergy Distributed, it only uses `ccm_remexec` for auto-receives on remote UNIX systems. A Windows to Windows auto-receive is not affected by entries in `remexec.cfg`.

The following are the search rules for `remexec.cfg`:

```
source_host    dest_host    matching_purpose  Highest Priority
ALL            dest_host    matching_purpose
source_host    ALL          matching_purpose
DEFAULT        DEFAULT      matching_purpose
source_host    dest_host    DEFAULT
ALL            dest_host    DEFAULT
source_host    ALL          DEFAULT
DEFAULT        DEFAULT      DEFAULT           Lowest Priority
```

See "remexec_method" on page 23 for an example of a shipped `remexec.cfg` file.

4. Save, and then exit from this file.

5. Log off from *local administrator*.

remexec_method

The remexec.cfg file is used for defining remote execution tools on particular machines. The following are predefined keywords in this module:

%hostname	Remote hostname on which to run the command.
%cmdline	Command to be executed (as one line).
%cmdargv	Command to be executed (parsed as argv).
%shell	Shell that is used to run this command, if required.
%command	Overall parsed argv of shell + command.

The remexec_method string must contain the keywords %hostname and %command_line, which Rational Synergy expands automatically to the name of the remote host and the command to be executed remotely. This enables you to specify a remote execution command containing options in any position.

Sample methods

The following is a possible remexec.cfg file:

```
DEFAULT DEFAULT %DEFAULT -COMSPEC ccm_rem %hostname
[ %shell /C ] %cmdline
```

In Windows environments, not all machines have their operating system installed at the same location. The COMSPEC environment variable points to the command prompt of the local system. Therefore, do not pass the COMSPEC environment variable if the executed command is a batch file.

Customizing remote execution tools

Rational Synergy uses ccm_rem as the default tool to execute remote commands between two Windows machines. If you decide to use your own tool, or if you need to run remote execution to a UNIX machine, you need to change the remexec.cfg file.

1. Develop your own tool to have similar functionality as ccm_rem, keeping the following in mind:

   - Preserve the return status of the remote commands.
     This is required.
   - Add the ability to replicate local environment variables to remote machines.
     This is optional.
   - Preserve the current directory for remote commands.
     This is optional.

2. Modify the corresponding fields in the remexec.cfg file to use your own tool.

   For example, change it to use your tool by changing the following line in the remexec.cfg file.

   Change this line:

   ```
   DEFAULT DEFAULT ccm_rem %hostname [ %shell /C ] %cmdline
   ```

   Make the following changes:

   ```
   DEFAULT DEFAULT my_rexec_tool %hostname %cmdline
   ```

Managing audit files

The audit log contains security-related messages from all Rational Synergy processes accessing each database.

One audit log is maintained per database.

The default location for the audit_log file is *database_path*\audit_log.

Monitoring product usage

The following subsections describe ways to monitor product usage. The commands that actually do the monitoring are described later, starting in "Administrative Commands" on page 101, but each of the following subsections contain references to the pages where the command information is located.

Users

You can monitor a variety of Rational Synergy processes by using the `ccm monitor` command.

The `ccm monitor` command provides a network-wide view of Rational Synergy users and processes. It provides a list of the user, process type, host name, process ID, port number, and the associated database path.

For a complete description of all command parameters, including usage examples, refer to "ccm monitor" on page 111.

Process status

The `ccm ps` command provides network-wide process status information of the various Rational Synergy users and processes. It is a maximum verbosity version of the `ccm monitor` command.

For a complete description of all command parameters, including usage examples, see "ccm ps" on page 114.

Database server usage

The `ccmsrv status` command shows the status of the database server. This information complements the data provided by the `ccm monitor` and `ccm ps` commands.

For a complete description of all command parameters, see "ccmsrv status" on page 169. For a usage example, see "Displaying the database server status" on page 54.

Broadcast system messages

The `ccm message` command enables you to communicate with specific users or sets of users for administration purposes. You can send a message to an individual Rational Synergy user on a specific Rational Synergy database, or even on a specific Rational Synergy host.

For a complete description of all command parameters, including usage examples, see "ccm message" on page 109.

Monitoring the services

Rational Synergy uses the following services that are started automatically:

- Engine startup service is called `ccm_ess`.

- Router service is called `ccm_router`.

- Object registrar service is called `ccm_objreg`.

- Help service is `ccm_server`.

All of the services display with a version number. For example, for Release 7.1, you will see the following service names: `ccm7.1_ess`, `ccm7.1_router`, `ccm7.1_objreg`, and `ccm7.1_server`.

Rational Synergy supports all services running on machines with more than one IP address.

If the interface process will not start and the router is running on a machine that has multiple IP addresses, you may need to modify the `_router.adr` file, located in the `CCM_HOME\etc` directory. The additional IP addresses need to be appended to the end of the `_router.adr` file. The format for machines with a host name is:

```
hostname:port[:IP]*
```

The format for machines with no known host name is:

```
ip:port[:IP]*
```

> where `[:IP]*` represents zero or more IP addresses separated by colons.

ccm_ess

To use an engine process, you must have local logon permission. You must run one `ccm_ess` service process per engine machine. The `ccm_ess` service starts automatically upon installation and reboot. It registers with the router. When you start a Rational Synergy session, the interface process requests that `ccm_ess` start the engine.

This service runs as the Rational Synergy administrator.

ccm_router

You must run one router process per network installation. The router starts automatically upon installation and reboot.

Note that you must specify the same router host and port for each Rational Synergy installation that is located on the same local network. You will do this when you install Rational Synergy. If you need to refer to this information, look in CCM_HOME\log\setup.log.

The router is a central point for registering and requesting information about Rational Synergy processes. It does not explicitly route messages between processes. Rather, it supplies a process with the addresses of other processes, and allows the individual processes to independently communicate among themselves.

The log file for the router service is CCM_HOME\log\ccm_router.log.

This service runs as system user.

Note You may be running the router on a UNIX server.

ccm_objreg

You must run one object registrar process per database host. The object registrar process forwards notifications from one session to another as modifications are made to Rational Synergy databases. This allows each user interface to update its views as other programs modify the data it displays.

An object registrar must execute at all times on each host with an active Rational Synergy database, as determined by the object registrar host name property of each database. The object registrar starts automatically upon installation and reboot.

The object registrar host name of a database defaults to the host on which the database server resides, but you can change the name by using the ccmdb info command, which is described in "ccmdb info" on page 135.

The default log file for the object registrar is CCM_HOME\log\ccm_objreg.log.

This service runs as system user.

ccm_server

Rational Synergy uses a Web server to serve Rational Synergy Web mode sessions and help requests from users' sessions. The CCM server runs on the same system as the router.

Additionally, Rational Synergy uses this Web server to provide client downloads and to distribute patches for Windows clients.

Other services

In addition to services that are started automatically, two other services are required. These are Informix® services.

Informix services

Two Informix services are required per database server installation:

- Informix Dynamic Server

- Informix Message

You should start and stop the Informix services by using the Rational Synergy administrative commands, `ccmsrv online` and `ccmsrv offline`, rather than using the service manager.

This service runs as user *informix*.

For more information, see "ccmsrv offline" on page 165 and "ccmsrv online" on page 166.

Monitoring output to log files

The Rational Synergy services write their output to log files stored in the following locations:

- The router, object registrar, and CCM server write output to log files in `CCM_HOME\log`

- The engine startup writes output to the Event Log.

- The Rational License Server TL log file is typically located in `c:\Program Files\Rational`.

The log files for each service reside on the machine where the service is running. Therefore, if one of the services did not start or it stopped running, the appropriate log file holds the information that usually explains the reason for the failure.

Customer feedback module logs

Rational Synergy produces a series of log files in one of the following locations:

- **UNIX Server**—$CCM_HOME/log/*synergy_host_port.log*

- **UNIX client**—$HOME/ccmlog/synergy.log

- **Windows Server**—$CCM_HOME\log\synergy_host_port.log

- **Windows client**—*<Application Data>*\IBM
  Rational\Synergy\synergy.log

As each log file grows past a configurable limit, the files are rotated, producing log files such as synergy1.log, synergy2.log, and so forth, for the older versions. The size of each generation and the number of generations kept may be configured in the $CCM_HOME\etc\logging.properties file, with the properties com.rational.cm.logging.TLogFileHandler.limit and com.rational.cm.logging.TLogFileHandler.count. The default file size limit is 4MB, and the default number of files kept is 4.

On the server side, logs for the back-end sessions supporting Web mode clients are produced in the $CCM_HOME\log directory, using names in the format username_ui.log and username_eng.log, for each client user name.

Setting up databases for read security

Group security allows restriction of check out and modify permissions to a specified group of users. In addition, read security, which limits visibility of source to designated groups, can be specified.

Read security is implemented by providing access control to an object source attribute. Users can query for objects and see other attributes regardless of any read restrictions. Read security applies to source objects which can be versioned, and does not apply to directories and projects.

Read security does not have any affect on link-based work areas.

Your database should be set up to deny read access to the database path to all regular users. You can do this by mounting the database on a machine that no one can access, or by changing permissions at the system level so no one has access to the database path. This requires that users run remote clients. The remote clients will only be able to use copy-based work areas.

Three different levels of read access security can be defined:

• An object that has no read access restrictions to its source can be accessed by any user.

• An object that has one or more groups defined for read access only allows access to the source if the user is a member of at least one of those groups. All other users are denied access to the source contents of that object.

• An object with the highest level of security (no access to the source) cannot be viewed, checked out, or modified, but other attributes can be viewed. However, users working in the *ccm_admin* role can always view the source contents of files.

Any object that is checked out inherits the same group security restrictions as its predecessor, including read security restrictions. Use the `ccm groups` command to implement and define security for objects. Group settings on individual objects may be viewed or modified in the Rational Synergy GUI.

Troubleshooting

The following sections describe some problems you might encounter while using Rational Synergy and how to solve the problems. To read technical support technical bulletins, go to the [Rational Software Information Center](#).

- **Services Terminated**

  Problem: The engine startup service, router or object registrar terminated abnormally.

  Solution: Any Rational Synergy interfaces that are still running will issue a pop-up warning message(s) and suspend operation until the service(s) are restarted. Restart the service, using the **Services** dialog box on the appropriate machine. After you restart the service(s), the user processes resumes operation.

- **ccm monitor Command Fails**
  Cannot locate *daemon_name* **message**

  Problem: After you issue the `ccm monitor` command, you receive a message similar to the following:

  ```
  Cannot locate router.
  Please notify your administrator that router must be run.
  ```

  Solution: The router is not running. Start the router from the **Services** dialog box, on the router host.

- **Error Received When Trying to Start a Session.**

  Problem: When trying to start a session, you receive the `Database type not licensed` error message.

  Solution: Check the following:

  1. Ensure that *ccm_home*`\etc\license_data.txt` contains *port@host*.

  2. Use the LMTOOLS program on the license host to verify that it is running.

     See the *[IBM Rational License Server TL Guide](#)* for details on the Rational License Server TL commands.

  3. Check the license manager log file, `license.log`, located in the installation directory of the Rational License Server TL.

The following are some other messages that you might see in log files. If you need help understanding these messages, see the *IBM Rational License Server TL Guide*.

- `TCP_NODELAY NOT enabled`

- ```
  14:16:17 (IBM) Multiple dup-groupings in effect for
  DOORS:
  14:16:17 (IBM) NONE  vs. USER HOST DISPLAY
  14:16:17 (IBM) No further warnings about this.
  ```

- ```
  14:46:39 (IBM) DENIED: 'DOORS' ann@annpc [IBM]
  (Licensed number of users already reached. (-
  4,342:10054 ""))
  14:46:39 (IBM) DENIED: 'DOORS' ann@annpc [IBM]
  (Licensed number of users already reached. (-
  4,342:10054 ""))
  14:46:39 (IBM) OUT: 'TLOG-token' ann@annpc
  [DOORS] (3 licenses)
  ```

3   *Administering the CCM Server*

This chapter discusses the following:

- "About the CCM server" on page 34
- "Starting and stopping the CCM server" on page 34
- "Monitoring the CCM server" on page 35
- "Refreshing databases" on page 36
- "Managing log files" on page 37
- "Using the Web Administrator User interface" on page 38
- "Tuning the CCM server" on page 40

About the CCM server

The CCM server is a Web server that is responsible for the following tasks:

- Serves requests from Rational Synergy sessions running in Web mode.

- Serves online help pages for all Rational Synergy GUI sessions, both Web mode and traditional mode.

- Hosts patches for automatic deployment to Rational Synergy client installations.

Every Rational Synergy server installation needs at least one CCM server. For better scalability, you can start additional CCM servers, for example, if you have multiple Rational Synergy databases with many users. One CCM server can manage multiple databases, but one database cannot be managed by more than a single CCM server. One CCM server must be designated to serve help. For more information, see `system_info.txt` in "Changing personal settings for Rational Synergy" on page 17.

A CCM server can run on any system on your network that is running a server platform supported by Rational Synergy 7.1.

The CCM server starts back-end command interface sessions to process user requests from Rational Synergy Web mode clients. It manages the back-end sessions, starting new ones as needed and shutting down old ones when they are no longer needed.

Starting and stopping the CCM server

The CCM server is started automatically by the installation program and runs as a service.

Start or stop the CCM server manually using the **Windows Services** dialog box.

The CCM server runs the port number you specified at the time of installation. The port number is located in the HELP_SERVER setting in the `system_info.txt` file. See "system_info.txt" on page 18.

Monitoring the CCM server

The following commands can be used to monitor CCM server processes:

- `ccm monitor` shows a dynamic display of all Rational Synergy processes on the network for a given Rational Synergy installation. CCM servers are shown with the process name **server**, and the server URL is shown in the **Database** column. To start a session, Rational Synergy Web mode users need to specify the server URL.

- `ccm ps` lists all Rational Synergy processes on the network for a given Rational Synergy installation. CCM servers are shown with the process name **server**, and the server URL is shown in the **Database** column.

See "Monitoring the services" on page 26.

Refreshing databases

The `ccmdb refresh` command refreshes all Web mode back-end sessions for the specified database. Use this command after you create or change a model object attribute that affects the behavior of Rational Synergy clients, so your changes will take effect for all users.

After you run this command, the Rational Synergy server starts new back-end sessions to process all new incoming user requests for that database, and shuts down existing sessions on that database as they finish processing requests. Because back-end sessions are reused by different Web mode users, restarting a Rational Synergy GUI Web mode session will not cause model changes to take effect. Therefore, it is necessary to refresh the database using this command.

Examples of model changes for which you may want to refresh the database include:

- Changing the `conflict_parameters` or `conflict_exclude_rules` that control which conflicts are shown.

- Changing the `parallel_exclude_rules` that control which parallel conflicts are shown.

- Setting the default work area template for all users.

- Changing the range for keyword expansion in source files.

It is not necessary to use this command after adding, removing, or editing users. Modifying the users attribute causes back-end sessions to be refreshed automatically.

Group changes that require a database refresh so that you do not need to refresh databases more than necessary. Although the refresh should be transparent to end users, their session response time may be somewhat slower during a refresh.

For more information about this command, see "ccmdb refresh" on page 146.

Managing log files

The CCM server log is contained in the synergy_*host_port*.log file, located in the log directory of the Rational Synergy server installation, for example, boon.8400.54123. For more information, see "Other services" on page 28.

The Rational Synergy back-end sessions managed by the CCM server all run on the server host. Their log files (both ui and engine) are saved in the log directory of the Rational Synergy server installation. There will be one pair of log files for each user who runs Rational Synergy Web mode sessions.   The names of the log files are <*userid*>_ui.log and <*userid*>_eng.log.

Because these back-end session log files tend to grow and end users do not have direct access to them, the administrator should monitor the sizes of the files in the log directory and move those approaching a limit such as 1GB to a different name. When a log file is moved, the Rational Synergy logger continues logging to the original file name. Older log files that were moved can be deleted after a period of time. It is good practice to keep them for some time period after moving them in case you need to investigate an issue for the user.

The CM administrator may want to automate the process of monitoring the directory for large log files, moving large log files, and deleting very old moved log files.

Using the Web Administrator User interface

The Web Administrator User interface is located at <*server URL*>/admin. For example:

```
http://myhost:8400/admin
```

To use this interface, log on as *cm_admin*.

This interface contains the following sections:

- "Databases tab" on page 38
- "Archive Conversion tab" on page 39
- "Debug Server tab" on page 39

Databases tab

This tab lists all databases and CCM servers that are used to start Web mode sessions. You can perform the following operations:

- "Assigning databases to other servers" on page 38
- "Removing relationships between databases and servers" on page 39
- "Adding databases to the database list" on page 39

You can only modify the databases that are assigned to the current server or the databases where the assigned server of the database is not running.

Assigning databases to other servers

This tab displays the CCM servers and the databases they serve. You can assign a database to another server. For example, if you have a large number of users on a CCM server, you can start a new CCM server on a new physical system and assign a database to that server for better scalability. By default, when you unpack a database, it is automatically associated to the database on the default CCM server on the machine where the database was created.

Note An alternative way to perform this operation is to run the /url *server_url* option with the ccmdb load, ccmdb unpack, and ccmdb upgrade commands.

To assign a database to another server:

1. Click **Change**.
2. In **Server**, type the server URL.

Click **Save**.

Removing relationships between databases and servers

To remove a relationship between a database and a server:

1. Click **Delete**.

2. Click **OK**.

Adding databases to the database list

To add a database to the database list:

1. Click **Add Database**.

2. In **Database**, type the database path.

3. Click **Save**.

Archive Conversion tab

Use this tab to convert the data from previous Rational Synergy releases that is stored in the old archive format.

See the *IBM Rational Synergy Upgrade Instructions* document for more information.

Debug Server tab

Use this tab for debugging.

Caution Contact IBM Rational Software Support before using the features provided in this tab.

Tuning the CCM server

This section discusses the settings that can be changed to tune the CCM server to fit your environment. All server settings are located in the `ccm.server.properties` file, under the server `$CCM_HOME/etc` directory, in the Web server settings section of the file.

Note The server must be restarted so that the changed values take effect.

To change the server configuration, first stop the server, and then edit the `ccm.server.properties` file to change the settings. Then restart the server.

The following settings can be configured. They govern the behavior of the back-end sessions managed by the CCM server.

Changing the number of back-end sessions

Several factors affect how many back-end sessions are needed for each database. Back-end sessions are started and stopped based on the loads of each database. So, if a database is heavily used, the server keeps more back-end sessions for that database. The server does stop excessive sessions when the load is not that heavy.

The following sections describe which settings in the `ccm.server.properties` file can be changed to tune the number of back-end sessions the server uses. Many of these settings allow a global setting that sets the value for all databases, and a database specific setting which only affect individual databases. When both settings exist for a database, the database specific value will be used.

Controlling the maximum back-end sessions

This setting controls the maximum number of back-end session the server starts for each database. To change this value for all databases, modify the **cm.webserver.max.sessions** value in the `ccm.server.properties` file.

To set a different value for a specific databases, create a new key called **cm.webserver.max.sessions.*database name*** in the `ccm.server.properties` file and assign the new value. For example,

    cm.webserver.max.sessions.mydb = 50

sets the maximum number of back-end sessions to 50 for the `mydb` database.

Note The `<database name>` is the last part of the full database path. For example, `<database name>` for `/vol/ccmdb/mydb` is `mydb`.

Controlling parallel back-end session startup

This setting controls the maximum number of back-end sessions that will be started in parallel for a given database. Sometimes, there is a burst of requests for one database (such as starting up a Rational Synergy client) but the load slows down after a while. Instead of starting a lot of back-end sessions at the same time, which slows down the startup and many of those back-end sessions may not be necessary after the short burst periods, the serve only starts back-end sessions in parallel up to the number that is set by this key.

- Change this value for all databases by modifying the **cm.webserver.parallel.startups** value in the `ccm.server.properties` file.

- To set a different value for a specific database, create a new key called **cm.webserver.parallel.startups.*database name*** in the `ccm.server.properties` file and assign the new value.

Examples for setting database specific values are located in the "Controlling the maximum back-end sessions" on page 40.

Controlling idled back-end session timeout

This setting controls how the server terminates unused back-end sessions. When a back-end session is idled longer than the timeout periods set by this value, it becomes a candidate to be terminated.

- To change this value for all databases, modify the **cm.webserver.session.min.free.time** value in the `ccm.server.properties` file.

- To set a different value for a specific databases, create a new key called **cm.webserver.session.min.free.time.*database name*** in the `ccm.server.properties` file and assign with it the new value.

Examples for setting database specific values are located in the "Controlling the maximum back-end sessions" on page 40.

Controlling persistent back-end sessions

This setting controls how many back-end session the server keeps for each database regardless the idle period. The purpose of this setting is to reduce the warm-up time for an idle database.

This ensures that several back-end sessions are available to handle increased demand. When the CCM server is first started, it does not automatically start this number of back-end sessions unless there is sufficient demand. However, after the number of back-end sessions reaches this value, that number persists.

- To change this value for all databases, modify the **cm.webserver.persistent.sessions** value in the `ccm.server.properties` file.

- To set a different value for a specific databases, create a new key called **cm.webserver.persistent.sessions.*database name*** in the `ccm.server.properties` file and assign the new value.

Examples for setting database specific values are located in the "Controlling the maximum back-end sessions" on page 40.

Changing the maximum heap size of the CCM server

The CCM server, a Java™ program, runs within a Java Virtual Machine (JVM™). Each JVM has a maximum set of memory (heap) that can be used to store program data. For a very large and busy database, users may want to increase the server heap size.

To change the maximum heap size of the CCM server, append the **-Xmx*size*** option to the end of the **java.option.additional setting**.

The *size* is the size of memory that can be used for heap.
For example, **-Xmx200M**.

Caution Before changing any other Java option in the key, contact IBM Rational Software Support for assistance.

Changing the session timeout period for the Web Administrator User interface

The CCM server provides a Web interface so that the Rational Synergy administrator can perform various administrative tasks. For the security reason, the server expires any browser session that is idled for a certain period of time. To change the expiration period, modify the **cm.webapps.user.session.timeout** value in the `ccm.server.properties` file.

For example, the following value sets the expiration period to 10 minutes:

```
cm.webapps.user.session.timeout = 600
```

Changing the frequency of user credential checks

This setting controls the number of seconds between user credential checks. The Rational Synergy server rechecks user credentials with RDS at intervals controlled by this setting.

Note There should be no reason to change this setting unless directed to do so by IBM Support.

To change this value for all databases, modify the **cm.webserver.user.authentication.timeout** value in the `ccm.server.properties` file.

4 *Administering the Database Server*

Rational Synergy commands are provided for managing and manipulating Informix databases, but you do not need to have knowledge of Informix products to use these commands.

The database server administrator is responsible for all aspects of the database server, including the following major activities:

- "Informix database server" on page 46
- "Creating the database server" on page 49
- "Using the database server commands" on page 54
- "Archiving and restoring database servers" on page 59
- "Logical log files" on page 68
- "Using logical log backup to restore database servers" on page 72
- "Obtaining detailed Informix messages" on page 74
- "Informix tuning guidelines" on page 75

This section describes how to start the database server network services and how to access database server messages.

Informix database server

The Rational Synergy database uses the Informix server to store its metadata. The terms *database server*, *online server*, *Informix server*, *online Dynamic Server*, and *Informix server* are used interchangeably in this document.

An Informix server consists of four dbspaces: `rootdbs`, `log`, `tempdbs`, and `ccm`. Each dbspace serves a specific purpose and requires a minimum of one chunk file. (A chunk file is a physical disk space.) At least four chunk files are required for a server.

rootdbs

Informix servers use the `rootdbs` dbspace to store system data, physical logs, initial logical logs, and temporary data. It requires a chunk file, ROOTPATH, to store its data. The ROOTPATH and the size of it is specified by the user when an Informix server is created.

log

The `log` dbspace is used to store logical logs that the Informix servers use to store database changes. The `log` dbspace requires a chunk file that will be specified by the user during server creation. The size is 1 MB per user. You can override the calculated size by specifying a size larger than the default when prompted by the server creation program.

tempdbs

The `tempdbs` dbspace is used to store temporary tables and sort files. Decision support queries usually create and access large temporary files, so placement of temporary dbspace is a critical factor for performance.

ccm

The `ccm` dbspace is used to store data for Rational Synergy databases. A single chunk file is used initially. The user can specify the path and the size of the chunk file.

Dbspace chunk files

Chunk files are physical disk spaces used by dbspaces in Informix Dynamic servers. Each dbspace must consist of at least one chunk file.

Note Once you use a chunk file in a database server, you cannot move it. If you move it, the database server will no longer function. Consequently, the database server might lose data.

Rational Synergy databases are made up of two parts:

• File system—Uses an NTFS partition. A Rational Synergy database is referred to by the UNC representation of the directory path.

• Metadata—Stored in a database server, specifically the Informix Dynamic Server.

As Rational Synergy databases grow, the capacity to house the metadata must also grow. The Rational Synergy administrator is responsible for managing the growth of the database server. The administrator can monitor the status of a database server by using the ccmsrv status command (see "ccmsrv status" on page 169). When you need to expand the capacity of a database server, use the ccmsrv expand command (see "ccmsrv expand" on page 162) to perform this operation.

Caution Do not perform system backups of chunk files. Backup tools can prevent Informix from being able to access the chunk files, which can result in the database server marking the chunk files as inaccessible. To recover from this condition, you may need to restore from backup or give IBM Rational Support access to your system.

The recommended way to back up Rational Synergy databases is discussed in "Performing database integrity checks" on page 79.

It is more efficient to archive the database server, as described in "Archiving the database server" on page 62, rather than backing up chunk files.

If you must back up chunk files as part of a system backup, you must take the database server offline to avoid serious data corruption.

In a Rational Synergy database server, there are four dbspaces: `rootdbs`, `temp`, `log`, and `ccm`.

The `rootdbs` and `log` dbspaces contain system data, and are not used to store Rational Synergy database metadata. The `ccm` dbspace stores the Rational Synergy database metadata.

You can specify the size of the `ccm` dbspace during main or additional server creation when you install Rational Synergy. The recommended value is based upon the number of users that you configure for the database server. This initial value is only a rough estimate, and will not suit the needs for all development teams. The Rational Synergy administrator should monitor the usage of this dbspace and expand it if necessary.

Keep in mind the following when expanding the `ccm` dbspace:

- Be generous. You'd rather give more space than needed if at all possible.

- Do not use an existing file. The content of the file is re-initialized each time it is used for a dbspace.

Database server states

As the database server administrator, you manage the creation, modification, and deletion of your database server(s). These operations require the database to be in certain states: either in the online, offline, or quiescent state.

- Online—Database server is available to all users who connect to it.

- Offline—Database server disconnects users currently connected to the server and renders it unavailable to all users.

- Quiescent—Users are disconnected, but the administrator can run administrative commands.

  The quiescent state is mainly used for database server administration and should not be used for any other purpose.

Creating the database server

Before you create the database server, read the "Preinstallation" chapter in the *IBM Rational Synergy Installation Guide for Windows*.

Creating the Informix Dynamic Server

Note Installing a main or additional server creates and starts the Informix Dynamic Server.

You do not need to use the ccmsrv create command to create a server. Use this command only if you delete an online server by using the ccmsrv delete command, then want to create a new online server. Additionally, use the ccmsrv create command if you chose not to create a server during installation, or if the database server creation failed during installation.

Install only one database server on a computer.

The ccmsrv create command creates an Informix Dynamic server to accommodate one or more Rational Synergy databases on a specific machine.

When you create a new Informix Dynamic server, a file that resides in the CCM_HOME\informix\etc directory is generated and/or updated. This file is called the configuration file. Additionally, the registry is updated.

The configuration file is named onconfig and contains a number of important parameter settings for the server. This file is essential for certain Rational Synergy commands to work properly and, under normal circumstances, should not be modified manually.

Note The names of your chunk files paths must contain fewer than 66 characters.

You must be an *Informix-Admin* group member and working as *local administrator* to perform this command. You must run the ccmsrv create command on the machine where Informix was installed.

*Running the **ccmsrv create** command*

You will be prompted to provide the following information:

- maximum number of users
- `root` dbspace chunk path and size
- `log` dbspace chunk path and size
- `temp` dbspace chunk path and size
- `ccm` dbspace chunk path and size

The example shows the output you will see when you create a database server without using a parameter file.

```
> ccmsrv create

    Please enter the maximum number of users [40]

    Please enter the primary chunk path for the rootdbs dbspace
    Hit Enter as default or type in different path
    [c:\ifmxdata\rootdbs.000]
    Size of the root chunk file in Mbytes [60]

    Please enter the primary chunk path for the temp dbspace
    Hit Enter as default or type in different path
    [c:\ifmxdata\tempdbs.000]
    Size of the temp chunk file in Mbytes [40]

    Please enter the primary chunk path for the log dbspace
    Hit Enter as default or type in different path
    [c:\ifmxdata\log.000]
    Size of the log chunk file in Mbytes [40]

    Please enter the primary chunk path for the ccm dbspace
    Hit Enter as default or type in different path
    [c:\ifmxdata\ccm.000]
    Size of the chunk file in Mbytes [80]
    *********************************************
     Database Server Configuration

     Maximum number of Users: 40

      Dbspace Name:            rootdbs
      Root Chunk Path:          c:\ifmxdata\rootdbs.000
      Root Chunk Size:        60 MBytes
```

```
Dbspace Name:              temp
Temp Chunk Path:           c:\ifmxdata\tempdbs.000
Temp Chunk Size:         40 MBytes

Dbspace Name:              log
Log Chunk Path:            c:\ifmxdata\log.000
Log Chunk Size:          40 MBytes

Dbspace Name:              ccm
Ccm Chunk Path:            c:\ifmxdata\ccm.000
Ccm Chunk Size:          80 MBytes
*********************************************

Would you like to create the database server? (Y/N) [Y]

Initializing Disk Space and Shared Memory, please wait ...
..
Processing temp, log and ccm dbspaces, please wait ...
..................
Building sysmaster and sysutils databases, please wait ....
```

Using a file to specify parameters

A parameter file is a file that you create, based on the following template. It contains all of the information that Informix needs to create the database server.

The following is an example of a parameter file.

```
*************************************************************
# Maximum Number of Users
USERS               40
# Root Dbspace Parameters
ROOT_CHUNK_PATH     D:\ifmxdata\rootdbs.000
ROOT_CHUNK_SIZE     60
# Temp Dbspace Parameters
TEMP_CHUNK_PATH     D:\ifmxdata\tempdbs.000
TEMP_CHUNK_SIZE     40
# Log Dbspace Parameters
LOG_CHUNK_PATH      D:\ifmxdata\log.000
LOG_CHUNK_SIZE      40
# Dbspace Parameters
CCM_CHUNK_PATH      D:\ifmxdata\ccm.000
CCM_CHUNK_SIZE      80
*************************************************************
```

The following example shows how to create a database server using a parameter file (assume you called it `tonnyx.dat`).

> `ccmsrv create /file tonnyx.dat`

`/file tonnyx.dat` specifies the name of the parameter file.

The above parameter file creates a database server with a maximum of 20 users (the default) and with chunk files created under `D:\`.

The results of this command are as follows:

```
*************************************************************
Database Server Configuration of
Maximum Number of Users:40
Dbspace Name:       rootdbs
Root Chunk Path:    D:\ifmxdata\rootdbs.000
Root Chunk Size:    60 MBytes
Dbspace Name:       log
Log Chunk Path:     D:\ifmxdata\log.000
Log Chunk Size:     40 MBytes
Dbspace Name:       ccm
Ccm Chunk Path:     D:\ifmxdata\ccm.000
Ccm Chunk Size:     80 MBytes
*************************************************************
```

After you indicate that you want to create the database server by using a parameter file, you are asked if you are ready to create the database server. Before proceeding, check your values.

If you have typed any incorrect values, quit by typing **N**, and then start again, typing the correct values. When your values are correct, create the database server.

```
Would you like to create the database server? (Y/N) [Y]
```

A Y response uses the previous configuration to create the database server. If you choose to create the database server, type Y. A message similar to the following appears:

```
************************************************************
Initializing Disk Space and Shared Memory, please wait...
....
Processing log and ccm dbspaces, please wait...
...........................
************************************************************
```

If your database server is created successfully and brought online, you will not receive a message. If the database server is not created, an error message explains why.

Using the database server commands

The following sections describe how to use the database server commands. Pay special attention to the "Preinstallation" chapter in the *IBM Rational Synergy Installation Guide for Windows*, and ensure that you have completed the requirements before attempting to use a command.

Bringing a database server online

The `ccmsrv online` command brings the database server online. The database server is online as soon as you finish installing a Rational Synergy main server, and remains online even if the computer is rebooted. If the database server is taken to a state other than online, you can use the `ccmsrv online` command to bring the database server online. For more information see "ccmsrv online" on page 166.

You must be an *Informix-Admin* group member and working as *local administrator* to perform this command. You must run the `ccmsrv online` command on the machine where Informix was installed.

• Bring the database server online.

```
> ccmsrv online
```

Displaying the database server status

The `ccmsrv status` command displays the current status of the database server. For more information see "ccmsrv status" on page 169.

You must run this command on the machine where the database server resides.

• Request the status of all options on the database server named `joe`.

```
> ccmsrv status /all

*** database server joe ***
server number:       0
state:               online mode
maximum users allowed: 100
number of users:     4
archive device:      NUL
network service:     turbo

--- logical logs ---

log size:            1024 KBytes
maximum logs allowed: 38
total number of logs: 34
number of free logs:  0
```

```
--- dbspace rootdbs ---

chunk files:
h:\ifmxdata\rootdbs.000  102400 Kbytes total,  89744 Kbytes
free.
total free space:       89744 Kbytes

--- dbspace log ---

chunk files:
h:\ifmxdata\log.000  51200 Kbytes total,  16172 Kbytes free.
total free space:       16172 Kbytes

--- dbspace ccm ---

chunk files:
h:\ifmxdata\ccm.000  819200 Kbytes total,  624540 Kbytes free.
total free space:       624540 Kbytes

--- dbspace temp ---

chunk files:
h:\ifmxdata\tempdbs.000  102400 Kbytes total,  102188 Kbytes
free.
total free space:       102188 Kbytes

Database List:
Informix Dbname      Version    Database Path
=================== ========== =======================
agincourt@irvine5    7.1         \\irvine5\devccmdb\agincourt
ccm_nt@irvine5       7.1         \\irvine5\devccmdb\ccm_nt

There is a total of 2 databases.
```

Modifying parameter values for a database server

The `ccmsrv modify` command enables you to modify the number of users allowed on a database server. For more information see "ccmsrv modify" on page 164.

Note If you change the *max_users* option, your database server requires more memory.

You must be an *Informix-Admin* group member and working as *local administrator* to perform this command. You must run the `ccmsrv modify` command on the machine where Informix was installed.

• Change the maximum number of users allowed in the database.

> `ccmsrv modify /user max_users`

/user *max_users* specifies the maximum number of users allowed in the database.

Putting a database server in quiescent state

The ccmsrv quiescent command puts the server in a quiescent state so that you can perform administrative tasks. For more information see "ccmsrv quiescent" on page 167.

You must be an *Informix-Admin* group member and working as *local administrator* to perform this command. You must run this command on the machine where the Informix server resides.

• Put the database server in a quiescent state.

> `ccmsrv quiescent`

Taking a database server offline

The `ccmsrv offline` command allows you to take the database server offline.

You must be an *Informix-Admin* group member and working as *local administrator* to perform this command. You must run this command on the machine where the Informix server resides.

1. Send out a message to all users of the `tstgonzo` database that you are about to take the server offline.

   ```
   > ccm message /database "?tstgonzo" "Taking server offline in 15
   minutes. Close all sessions!"
   ```

2. Shut down all databases. (In this example, there is only one database.)

   ```
   > ccmdb shutdown \\sue\ccm_db\tstgonzo
   ```

3. Take the database server offline.

   ```
   > ccmsrv offline
   ```

Deleting a database server

This operation removes the parameter file, the record of the specified server in the `sqlhosts` registry entry, and all chunk files.

Caution When you delete a database server, the Informix data portion of all Rational Synergy databases under this database server are destroyed. However, the file system portion is not destroyed. Therefore, you should back up all the database server databases (for example, using `ccmdb backup`), and then in most cases delete the databases (for example, using `ccmdb delete`) one by one before deleting the database server. Deleting the databases prior to deleting the database server removes all parts (file system and metadata) of each database.

You must be an *Informix-Admin* group member and working as *local administrator* to perform this command. You must run this command on the machine where the Informix server resides.

- Delete the database server.
  ```
  > ccmsrv delete
  ```

Increasing the dbspace of the database server

Informix allocates space for its databases. You can increase the allocated dbspace capacity by using the `ccmsrv expand` command. This command expands the dbspace of an Informix server by adding a chunk file. This is useful when you want to increase the size for a server that is running out of room in a dbspace.

Caution Do not use an existing file.

You must be an *Informix-Admin* group member and working as *local administrator* to perform this command. You must run this command on the machine where the Informix server resides.

- Assume that you want to increase the `ccm` dbspace by 100 MB, and you want to use the ccm chunk path
  `c:\informix_chunkfiles_path\ccm_2.dbs`.

  ```
  > ccmsrv expand /size 100000 /path \
  c:\informix_chunkfiles_path\ccm_2.dbs
  ```

`/size 100000` specifies by how much you want to expand the chunk size in Kbytes.
`/path c:\informix_chunkfiles_path\ccm_2.dbs` specifies the absolute path to the **new** chunk file. This **must** be a new file on an NTFS partition.

Archiving and restoring database servers

The `ccmsrv archive` and `ccmsrv restore` commands are presented together to give a clear understanding of how you can create and restore archives for a database server. This high-speed backup command is an alternate database backup strategy to the `ccmdb backup` command. Ensure that you understand the following requirements before using the commands.

1. You will perform the database server archive/restore procedures at the online server level, not at the individual database level. Therefore, there is no way to restore a specific database. You can only restore the entire online server. As a side effect, all other databases in the same database server reverts back to the latest archive after the restore.

2. Carefully read the following information, and then devise an archiving plan for your environment. Test your plan to ensure that it will not affect your current production environment and that the archive works.

3. Coordinate any archive or restore procedures with the local system administrator to verify that the file system part of the Rational Synergy database is backed up properly and in sync with the database server archive. When the archive is in progress, users may still be editing in the file system while the database activities are frozen. This can cause data inconsistencies.

Note You must restore from both database server and file system archives during a restore procedure. If they are not in sync with each other, you may end up with data inconsistencies.

Reasons to archive database servers

This procedure helps prevent unexpected loss of data due to abnormal circumstances. Some examples of abnormal circumstances include:

- Disk failure

- Machine failure

- Software failure, including system and application software packages

- User error, such as a user accidentally deleting a project

Note Back up databases using the `ccmdb backup` command, (see page 123 and page 79). Archive a database only when using the `ccmdb backup` command is not possible or practical because of the database size.

Knowing when to archive database servers

Typically, you should plan on performing some level of archiving daily. Under extreme circumstances, you may even want to perform archiving more than once a day. (For example, you might want to archive files three times a day prior to a major release or during a major bug fix phase.)

The three levels of archiving are described as follows:

- Level 0 is the baseline archive.

- Level 1 includes all changes since the last Level 0 archive.

- Level 2 includes all changes since the last Level 0 or Level 1 archive.

The following is an example of an incremental archiving strategy. Each archive level is performed according to the following schedule:

- Level 0 archive is created once every nine days.

- Level 1 archive is created once every three days except when a lower level archive is performed.

- Level 2 archive is created once a day except when a lower level archive is performed.

   Note In the table below, numbers 1 through 11 denote the tape numbers.

Levels	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu
Level 0:	1									10	
Level 1:				4			7				
Level 2:		2	3		5	6		8	9		11

Archive media

You must have archive tapes to restore the online server. To restore, use your archive plan to determine what tapes you need. For example, if you used the sample plan provided in the previous table, the following table shows the tape requirements for each day in the archive plan.

Day	Tapes Needed
Tue	Tape 1
Wed	Tapes 1 and 2
Thu	Tapes 1 and 3
Fri	Tapes 1 and 4
Sat	Tapes 1, 4, and 5
Sun	Tapes 1, 4, and 6
Mon	Tapes 1 and 7
Tue	Tapes 1, 7, and 8
Wed	Tapes 1, 7, and 9
Thu	Tapes 10
Fri	Tapes 10 and 11

Archiving the database server

The `ccmsrv archive` command allows you to archive your database server.

Ensure that users working outside of Rational Synergy are working in their work areas. Before you archive the database server, ask users to sync (reconcile) their work areas with the database. See the Rational Synergy Help for instructions on how to sync.

You must be an *Informix-Admin* group member and working as *local administrator* to perform this command. You must run this command on the machine where the database server resides.

This example creates a Level 0 archive using the tape device `\\.\TAPE0` with a 1 GB tape for the database server.

1. Insert the tape.

2. Type the archive command.

   ```
   > ccmsrv archive /level 0 /size 1000000 /device \\.\TAPE0
   ```

   `device` specifies the archive device, `\\.\TAPE0`
   `level` specifies the archive level, `0`
   `size` specifies the size of the archive device, in kilobytes, `1000000`

   The size of the tape device you specify should match the capacity of the tape.

   You will see a message similar to:

   ```
   Archive Level:  0
   Archive Device: \\.\TAPE0
   Device Size:    1000000 Kbytes
   Device Label:   level0_1115_1996_1107
   Are you sure you want to continue? (Y/N) [Y]
   Please mount tape 1 on \\.\TAPE0 and press Return to continue
   ...
   100 percent done.
   Please label this tape as number 1 in the arc tape sequence.
   This tape contains the following logical logs:
   8
   Program over.
   A copy of the database server config file has been saved as
   D:\ccm\informix\ETC\ONCONFIG.level0_1115_1996_1107
   Database server archive succeeded.
   ```

3. Label the tape clearly.

   This step is important. The success of the restore procedure depends on the accuracy of the labels.

Restoring a database server

If you experience any of the following problems, it may be time to perform a restore procedure:

1. One or more of your databases was corrupted so severely that you want to go back to the last archive.

2. The disk containing chunk files for any of the dbspaces for a database server experiences media failure.

3. You want to replace the disk containing chunk files for any of the dbspaces for a database server.

If you are unsure that this is the correct procedure, before proceeding, contact IBM Rational Software Support.

If you restore from an archive, the database server is restored to the state when the last archive level was performed. For example, if you restore from an archive completed the previous night, your database server is restored to the state when the archive took place. This also means that all changes made after the previous night archive are lost unless your system administrator performed a logical log backup. See "Using logical log backup to restore database servers" on page 72.

Before you can restore a database server, ensure that the system configuration, the relevant database server parameter file, and, **most importantly**, the archive tapes are correct.

System configuration

System configuration includes disk path, chunk file size, shared memory capacity, and so forth. The system configuration must be identical to or larger than the time the last Level 0 archive was created. For instance, if you are restoring from tape to replace a bad disk, the new disk must have the same path for those directories that were used for the chunk files for the dbspaces of the database server, and the sizes of those drives must be at least as large as before.

Configuration file

The configuration file, `CCM_HOME\informix\etc\onconfig`, must be identical to the configuration file used to perform the Level 0 archive. A copy of this file is always saved when a Level 0 archive is performed. If this file is changed for any reason, perform a Level 0 archive immediately.

Restoring database servers

Use the `ccmsrv restore` command to restore a database server.

You must be an *Informix-Admin* group member and working as *local administrator* to perform this command. You must run this command on the machine where the database server resides.

1. Verify the system configuration (see "System configuration" on page 63) and the configuration file (see "Configuration file" on page 63).

2. If possible, view the status of the database server.

    ```
    > ccmsrv status
    ```

    The output of this command is:

    ```
    *** database server tonnyx ***
    server number:      1
    state:              online mode
    maximum users allowed:10
    number of users:    1
    archive device:     \\.\TAPE0
    network service:    turbo
    Database List:
    ```

3. The server must be offline before you begin the restore process. Take the server offline.

    ```
    > ccmsrv offline
    ```

4. Verify that the server is offline.

    ```
    > ccmsrv status
    ```

    If the server is offline, you see a message similar to the following:

    ```
    Database server is Off-Line64
    ```

You now can restore the database server from tape. The following section describes the restore procedure.

Restoring Database Servers from archive

If you archived to tape, insert the most recent level 0 tape before you run the `ccmsrv restore` command. If you used a directory as the archive device, you need to perform some manual steps to simulate an archive device. The manual steps are described below.

1. Restore the database server from an archive tape.

   ```
   > ccmsrv restore /device \\.\TAPE0
   ```

   `\\.\TAPE0` is a tape device.

   The following warning displays:

   ```
   WARNING: this program will restore database server from an
            archive. All existing data will be destroyed.
   ```

   When asked if you want to continue, type `y`.

   Messages similar to the following appear on-screen:

   ```
   Please mount tape 1 on \\.\TAPE0 and press Return to continue…
   Archive Tape Information
   Tape type:       Archive Backup Tape
   Online version:  Informix Version 7.20.TC2
   Archive date:    Mon Dec 02 08:51:17 2006
   User id:         cougie
   Terminal id:     ASAL
   Archive level:   0
   Tape device:     \\.\TAPE0
   Tape blocksize (in k):  16
   Tape size (in k):10240
   Tape number in series:  1
   Space to restore:1 [rootdbs      ]
   2 [log          ]
   3 [ccm          ]
   Archive Information
   Informix-OnLine Copyright (C)1999-2006 Informix Software, Inc.
   Initialization Time    11/26/06 10:53:31
   System Page Size       4096
   Version                4
   Archive CheckPoint Time 12/02/06 08:51:19
   Dbspaces
   number    flags   fchunk  nchunks  flags   owner      name
   1      1      1          1      N      informix    rootdbs
   2      1      2          1      N      informix    log
   3      1      3          1      N      informix    ccm
   Chunks
   chk/dbs   offset  size   free   bpages  flags   pathname
   11     0      2560   1246           PO-
   D:\ifmxdata\rootdbs.000
   ```

```
22     0     2048   459              PO-  D:\ifmxdata\log.000
33     0     2560   1111             PO-  D:\ifmxdata\ccm.000
```

You will be asked if you want to continue the restoration.

```
Continue restore? (y/n)
```

Type y to continue.

2. You are asked if you want to back up the logs.

    ```
    Do you want to back up the logs? (y/n)
    ```

    Type n.

3. You are asked if you want to restore a level 1 archive.

    ```
    Restore a level 1 archive? (y/n)
    ```

    For this example, you need to restore incremental archives, so type y.

4. You are asked to insert the tape containing your most recent level 1 archive.

    ```
    Ready for level 1 tape
    Please mount tape 1 on \\.\TAPE0 and press Return to continue
    ...
    ```

    You see the information on the following page display on-screen.

    ```
    Archive Tape Information
    Tape type:      Archive Backup Tape
    Online version: Informix-OnLine Version 7.20.TC2
    Archive date:   Mon Dec 02 08:54:52 2006
    User id:        cougie
    Terminal id:    ASAL
    Archive level:  1
    Tape device:    \\.\TAPE0
    Tape blocksize (in k): 16
    Tape size (in k): 10240
    Tape number in series: 1
    ```

5. You are asked if you want to restore a level 2 archive.

    ```
    Restore a level 2 archive? (y/n)
    ```

    For this example, you need to restore incremental archives, so type y.

6. You are asked to insert the tape containing your most recent level 2 archive.

    ```
    Ready for level 2 tape
    Please mount tape 2 on \\.\TAPE0 and press Return to continue
    ...
    ```

You see the following information on-screen.

```
Archive Tape Information
Tape type:      Archive Backup Tape
Online version: Informix-OnLine Version 7.20.TC2
Archive date:   Mon Dec 02 08:57:50 2006
User id:        sue
Terminal id:    ASAL
Archive level:  2
Tape device:    \\.\TAPE0
Tape blocksize (in k): 16
Tape size (in k): 10240
Tape number in series: 2
```

7. You are asked if you want to restore the log tapes.

```
Do you want to restore log tapes? (y/n)
```

Type n.

8. The restoration finishes, and then you see the following message:

```
Program over.
Database server restored successfully.
```

9. Bring the database server online.

```
> ccmsrv online
```

Logical log files

Informix uses logical log files for data recovery and consistency. Logical log files store changes to the Rational Synergy database and are stored in the `log` dbspace. Each Informix server created by Rational Synergy tools contains a log dbspace. Depending on the configuration of the Informix server, the size of the dbspace and the number of logical log files stored in it may vary.

In an operational Informix server, logical log files receive logical log records that are generated from the following events:

- Structured Query Language (SQL) Data Definition Language (DDL) statements

- SQL Data Manipulation Language (DML) statements

- Changes to the Informix server configuration

- Checkpoint

If the Informix server needs to rollback a transaction, it uses the corresponding logical log record to revert the changes initiated by the transaction.

During the data restore operation, you can use logical log files to do the following:

- Roll forward transactions that took place after the last archive was performed.

- Perform a Fast Recovery following an unexpected shutdown.

    This is done automatically at start up.

Before performing a logical log backup, you must thoroughly understand what the commands do and do not do.

Note Devise a comprehensive backup plan, which should include a regular database archive/restore and the logical log backup/restore procedure. Test this backup plan before using it on the production Informix server, and constantly update and maintain the backup procedures.

You should have a high availability solution for the file system portion of your databases (that is, Informix and the file system must be in sync at **all** times).

Backing up logical log files

Logical log backups are used mainly to achieve high availability and reliability of the Informix server used by Rational Synergy as the RDBMS engine. Without logical log backups, you can restore your Informix server to the last archive, but all work done between the last archive and the time the Informix server was corrupted may be lost. However, if logical log backups are activated, you can recover the Informix server to the last committed transaction before the Informix server was corrupted.

Logical log files are filled with logical log records. As they are filled, they must be copied to a backup device (usually a tape drive). Logical log backup accomplishes the following:

• Stores the logical log records on the specified backup device so they can be used to roll forward transactions, if a data restore operation requests such actions to be taken.

• Frees logical log file space to receive new logical log records.

Backup device

The backup device is specified by the LTAPEDEV parameter in the Informix server parameter file. It is typically a tape drive. Alternatively, you can use a directory. If you specify a directory, it will be treated like a tape device (that is, the directory must exist and be writable by members of the *Informix-Admin* group).

The parameter LTAPESIZE determines the size of the backup media.

Backup plan

A logical log backup plan must be accompanied by the system archive for the Informix server. If the Informix server is not archived, the logical log backup is unusable.

Logical log backups can be done in one of two ways:

1. Continuous backup of logical logs

2. Explicit backup of logical logs

To continuously back up the logical logs, you must have a dedicated backup device that is always available for the backup program to load data onto the device. Whenever the device reaches its capacity, new media needs to be swapped in.

Preparing for backup

The logical log backup procedures require the following setup procedures.

You must be an *Informix-Admin* group member and working as *local administrator* to perform this command. You must run this command on the machine where the Informix server resides.

Ensure that the tape capacity is appropriate.

1. Take the database server offline.

    ```
    > ccmsrv offline
    ```

2. Modify the tape parameter in the Informix server parameter file to use a different tape from the regular database server archive device.

    ```
    > ccmsrv modify /p LTAPEDEV /v \\.\TAPE1
    > ccmsrv modify /p LTAPESIZE /v 1000000
    ```

    `\\.\TAPE1` is the name of the tape device.
    `1000000` is the tape size in kilobytes.

3. Bring the database server online.

    ```
    > ccmsrv online
    ```

4. Verify that the database server is online.

    ```
    > ccmsrv status
    ```

5. Since you have changed the parameters, perform an Informix server Level 0 archive.

    ```
    > ccmsrv archive /level 0
    ```

Once you complete a successful database server archive, you can put the next archive on the same tape.

Backup procedures

The following section describes the procedures for performing logical log backups.

You must be an *Informix-Admin* group member and working as *local administrator* to perform this command. You must run this command on the machine where the Informix server resides.

1. Set the environment variables for the Informix directory.

```
> CCM_HOME\informix\setenv.cmd
```

2. Mount the tape drive specified in the LTAPEDEV parameter, and then insert a blank tape.

3. Run the `ontape` command to back up the logical log files.

Caution If you choose to back up logical log files, you must ensure that the media to which the logical logs will be written are always available and have free space. If the backup is not able to write data onto the media, and the logical logs are full, the database server will not be able to operate normally. It will freeze until the logical log files are writable.

To back up the logical log files continuously, type the following:

```
> ontape /c
```

This type of backup is recommended because it requires a tape device to be available **at all times**.

To back up the logical log files explicitly, type the following:

```
> ontape /a
```

4. Swap and label the tape when it is full. It is very important to clearly label the tapes so that later when you restore the Informix server, the appropriate tapes can be identified easily. An example of good labeling follows:

```
Date: April 20, 2006
Server: servername
Type: logical log backup
Log numbers: 3 - 5
Tape sequence number: 1
```

Using logical log backup to restore database servers

While restoring an Informix server from an archive, you may want to recover all of the work that has been done since the archive took place. If you have performed logical log backups, continue with the section to restore the logical log files.

Note   Server machine crashes are normally recovered by an Informix server mechanism called Fast Recovery. Fast Recovery can recover Informix server data when the Informix server was not shutdown properly. This kind of situation does not require the restore procedure, because it is performed automatically whenever you bring the Informix server to the o*nline* state.

If an Informix server must be restored, you can backup the remaining logical log files that were not yet backed up, and then proceed with your regular restore procedure. Near the end of the restore procedure, you can restore logical logs from the backup by doing the following.

You must be an *Informix-Admin* group member and working as the *local administrator* to perform this command. You must run this command on the machine where the Informix server resides.

1. Run the restore program.

    ```
    > ccmsrv restore
    ```

    You need to answer a prompt regarding the type of archive media that was used.

2. Back up current logical log files. You should mount the tape drive and insert a blank tape first. During the restore, you will be prompted with the following:

    ```
    Would you like to back up any of logs 11 - 12? (y/n) y
    Logical logs 11 - 12 may be backed up.
    Enter the id of the oldest log that you would like to back up? 11
    Backing up logical logs 11 - 12 ...
    ```

3. Restore the database server from the latest archive. This procedure restores the Informix server from various levels of archive performed regularly. Answer the prompts accordingly and restore the Informix server to the latest state.

4. Restore from the logical log backup.

```
Roll forward should start with log number 12
Is there a logical log tape to restore? (y/n) y
Please mount tape and press Return to continue ...
Processing logical logs, please wait ...
Is there another logical log to restore? (y/n) n
```

5. Bring the Informix server online, and verify that the data was restored properly.

```
> ccmsrv online
```

6. Log off.

7. Log on as the Rational Synergy administrator.

8. Check the database to ensure that it was restored successfully to its previous state.

```
> ccmdb check dbpath
```

9. Log off from the Rational Synergy administrator.

10. Log on as a member of the *Informix-Admin* group.

11. Perform a Level 0 archive.

```
> ccmsrv archive /level 0
```

Obtaining detailed Informix messages

Use the `finderr` command to display more detailed error messages whenever you encounter database server error(s). The command is available in the `CCM_HOME\informix\bin` subdirectory of your Rational Synergy installation. Its usage is:

`finderr` *message_number*

You must run this command on an installation that includes the Admin Tools (that is, main server or additional server).

• Type the following commands to receive a descriptive error message for error 131:

```
> CCM_HOME\informix\setenv.cmd
> finderr -131
```

A Windows help dialog box displays the output, as shown below.
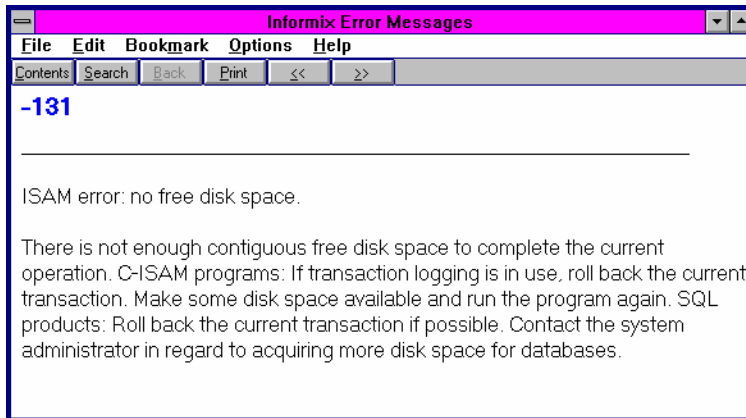
Informix tuning guidelines

This section describes proper configuration and maintenance for the Informix database.

Chunk file distribution

You should create four (4) separate physical disk drives, and then, for optimal performance from you UNIX server, place each chunk file (`ccm`, `log`, `rootdbs`, `tempdbs`) on a separate drive.

Dedicated Informix server

For better performance, dedicate your CM database server machine to run Rational Synergy. If you have a dedicated CM database server machine, make the following change to the `RESIDENT` parameter in the Informix `ONCONFIG` file:

```
RESIDENT = 1
```

The default setting is `0`. This parameter specifies whether shared memory remains in operating-system physical memory. If the default setting remains, shared memory is swapped to disk, which might slow CM server performance for large sites and at various usage times.

For more information on the Informix `ONCONFIG` file, see the appropriate Informix administrator document.

5 *Administering Databases*

The Rational Synergy database administrator is responsible for the smooth operation of the Rational Synergy processes and databases that project teams use in their daily activity. This involves setting up procedures for starting the various Rational Synergy-related processes, running the Rational Synergy backup programs, and managing space utilization.

Many of these tasks can be automated, but Rational Synergy database administrator is responsible for reviewing the results and ensuring smooth operation. Specifically, the tasks involved in this role include:

- "Performing database integrity checks" on page 79

- "Repairing a database" on page 86

- "Creating, modifying, and deleting a Rational Synergy database" on page 86

- "Managing Rational Synergy database space" on page 93

- "Performing database maintenance" on page 98

Rational Synergy database overview

The following subsections explain the foundation of the database so that you are able to make informed decisions about how to administer it.

Caution   You must check and back up your database at least once a day in case of a system failure. If your database is corrupted, you **must** have a backup of the database or you could lose all data.

Supplied Rational Synergy databases (pack files)

The following databases are provided with the installation program. They are installed in the *CCM_HOME\packfiles* directory.

Base database

The base model pack file, `base.cpk`, works with the default development model. The `base.cpk` pack file is empty. It contains no data, but it has been loaded with the base model. To create a new database, unpack `base.cpk` to the new database.

Training database

The training database, called training.cpk, is populated with projects, subprojects, tasks, and change requests. This database is intended to help users learn how to use Rational Synergy.

Model database

The model database file, base.model, is used for upgrades. The model.cpk file is no longer used for upgrades and is no longer shipped. For more information about this database, see the *IBM Rational Synergy Upgrade Instructions*.

Database directory structure

Each Rational Synergy database directory typically contains several subdirectories:

bin

> Model scripts and executables not used on the Windows platform.

bitmaps

> Bitmaps used by this database as icons for types.

db

> Information about the database, in particular, the parameters and the RDBMS database name.

dcm

> Information for DCM.

etc

> DCM support files.

guild

> GUI definitions of dialogs for this database, in GUILD syntax.

include

> ACCENT model include files for this database.

lib

> ACCENT model libraries for this database. In addition, initialization files, help files, and migrate rules are stored in the lib directory.

pt

> Parameter files used by Rational Synergy and Rational Change.

```
st_root
```

> Rational Synergy storage root, used to store source files, product files (such as executables, object files and libraries) and archived sources. The `st_root` subdirectory may not exist if the database has no source files in it.

Performing database integrity checks

Use the `ccmdb check` command to verify the integrity of the database meta data. The command checks both at the RDBMS level and at the semantic level. Your database may never fail an integrity check, but if a failure does occur, you will want to know about it immediately so that you can correct it to avoid data loss. So, you should run the `ccmdb check` program on each database daily, and also after you reboot your system from a hardware failure or system OS crash.

Note that if you run the `ccmdb backup` command, a `ccmdb check` is performed automatically prior to the backup.

You must be working as the CM administrator to perform this command. You must run this command on the machine where the database server resides.

1. Check the database.

   ```
   > ccmdb check database_path
   ```

   The command will report any problems that are found. If a problem is found, call [IBM Rational Software Support](#).

2. Log off from the Rational Synergy administrator.

Verifying file systems

Use the `ccm fs_check` command to verify the file system portion of the database. You should run this command weekly on each database.

1. Start Rational Synergy as user *admin* from the command prompt.

   ```
   > ccm start /nogui /r ccm_admin /d database_path
   ```

2. Run `ccm fs_check`.

   ```
   > ccm fs_check
   ```

3. Stop the Rational Synergy session.

   ```
   > ccm stop
   ```

Note In the rare event that a database has been corrupted, call [IBM Rational Software Support](#).

Rational Synergy database naming restrictions

Each Rational Synergy database carries the following naming restrictions:

- If two databases use the same database server, they cannot have the same name, where the name is the leaf directory in the full path name of the database.

- A database name can contain letters, digits, and underscores only.

- Uppercase and lowercase characters are equivalent.

- A database name must be 18 characters or fewer.

- The database name must begin with a letter.

Backing up and recovering the Rational Synergy database

Database backup methods

A Rational Synergy database has two portions: metadata, which is held in Informix, and a file system. To protect your data, you must back up both portions of your databases regularly.

Rational Synergy provides the following three methods for backing up databases:

- Packing databases
- Dumping databases
- Archiving database servers

You must determine which method is appropriate for your environment. You might back up some databases with one method, and others with another method. However, it is best to choose one method.

After you have chosen a backup method, you should test it, and then automate it. Remember to test the backup method corresponding restore procedures, as well.

The methods discussed here archive information from the metadata and file systems of the database. They do not back up work areas. Users with copy-based work areas must reconcile changes before the administrator runs the backup. If this is not done, changes to work areas must be backed up separately.

The following sections describe the Rational Synergy backup methods.

Packing databases

Packing individual databases is the recommended backup method because this method creates a pack (`.cpk`) file that contains a complete backup of both the file system and metadata portions of your database.

A pack file is also useful when you upgrade from one release of Rational Synergy to the next: you can pack a database using an older release and unpack it under a new release as part of the upgrade process.

You can move the pack file to different machines, and usually to different architectures. (You can move a pack file from one UNIX platform to another UNIX platform, or from UNIX to Windows, but not from Windows to UNIX.)

Note Never back up Rational Synergy metadata using non-Rational Synergy backup tools.

Backing up

Create a pack file by executing either the `ccmdb backup` or `ccmdb pack` command. You should use `ccmdb backup` because `ccmdb backup` also runs the consistency checker, `ccmdb check`. The `ccmdb check command` also runs `ccmdb update_statistics`, which improves the speed of database queries. If you use `ccmdb pack`, you can run `ccmdb check` independently.

See "ccmdb backup" on page 123, "ccmdb pack" on page 140, or "ccmdb check" on page 126 for more about the commands.

Database locking and data consistency

Both `ccmdb backup` and `ccmdb pack` lock the database while they are being executed so that the file system and metadata portions of the backup are consistent. Developers can edit checked out files while the backup is running. However, if users are editing during a backup, the backup might not contain those changes.

Backing up schedules and scripts

You should develop a backup plan that enables you to back up each active production database daily. Because the file system portions of the databases are included in the pack files, you should exclude these areas from any other backups.

If you choose database packing as your backup method, you should write a script batch file that includes `ccmdb backup` or `ccmdb pack` for each of your production databases, and you should run this script batch file according to your backup plan.

Recovering using a pack file

Recover from system failure by deleting the current and unpacking the packed database using the `ccmdb unpack` command. All work performed in the database since the last backup is lost. In copy-based work areas, the lost changes can be recovered by reconciling copies of checked-out and recently checked-in files from the work area.

See "ccmdb unpack" on page 151 for more about the command.

Dumping databases

If your database is quite large or takes too long to pack, dumping a database is the recommended backup method because this method creates a dump (`.dmp`) file containing only the database metadata, instead of producing a pack file that contains the file system data as well as the metadata.

One significant advantage to using the dump method is that you can perform an incremental backup of the file system portion independent of the metadata backup. The metadata dump is not incremental, but the size of this is much less than that for the file system data, so both the time and disk space required for each backup can be considerably less than a full pack file.

A dump file is also useful when you upgrade from one release of Rational Synergy to the next: you can dump a database using an older release and load it under a new release as part of the upgrade process.

You also can move a dump file to different machines and different architectures. That is, you can move a dump file from one UNIX platform to another, or from UNIX to Windows. If you move a dump file between Windows and UNIX databases and use standard file system tools to move the file system portion of the database, you must run `ccmdb upgrade /w` on the reconstructed database before using it. See "Moving a database between UNIX and Windows" on page 92.

Note Never back up Rational Synergy metadata using non-Rational Synergy backup tools.

Dump file

Create a database dump file by executing the `ccmdb dump` command.

The `ccmdb dump` command does not copy file system data. Therefore, it is your responsibility to back up the file system data using other tools, such as those included with the operating system.

See "ccmdb dump" on page 134 for more about the command.

Database locking and data consistency

To ensure consistency between the metadata and file system portions of these two separate backups, you must shut down the databases before performing the dump and the file system backup.

Scheduling and scripting backups

You should develop a backup plan that enables you to back up each active production database daily. Because the file system portions of the databases are excluded from dump files, you should perform the file system backups using separate tools.

If you choose database dumping as your backup method, you should write a script batch file that includes `ccmdb dump` for each of your production databases, and you should run this script batch file according to your backup plan. The script batch file also can include the file system backup commands, or you can perform the file system backups using a separate script batch file. (The latter method will not, of course, ensure consistency between metadata and the file system.)

Recovering using a dump file

Recover from complete system failure by deleting the database, reloading the metadata from the dump file using the `ccmdb load` command, and then restoring the file system data from its separate backup.

Although the work performed in the file system since the last dump is lost, because the metadata dumps are relatively small and fast, you can perform dumps frequently and limit the amount of work lost since the last dump.

Recover from metadata loss by reloading the saved metadata using `ccmdb load` with the overwrite option. If the failure occurred in the file system, you can restore from the file system backup without having to restore the metadata. Either of these partial restorations might leave the metadata and file system inconsistent. Use `ccm fs_check` to locate areas where these inconsistencies are serious.

See "ccmdb load" on page 138 for more about the command.

Archiving database servers

Archiving and restoring the server is the most complex—and the most difficult—way to back up and restore databases. Therefore, avoid using the server archive and restore commands unless you are familiar with database logging techniques and neither of the methods discussed previously is practicable in your environment.

Because the administrative complexities of this backup method are considerable, it might be more cost effective for you to invest in hardware solutions for high availability, such as disk mirrors or other RAID capabilities, and to use one of the other backup methods to protect against complete system failure and satisfy other backup requirements.

A server archive creates an archive (`servername`) file containing only the metadata for the server databases, instead of producing a pack file that contains the file system data as well as the metadata or a dump file that contains metadata for a single database.

The only significant advantage to server archive is that it enables incremental or even continuous online backup of the metadata.

You cannot use a server archive to upgrade to a new release of Rational Synergy.

Creating database server archives

Create a database server archive file by executing the `ccmsrv archive` command. Note that the entire Informix server is archived. This means that you cannot back up or restore just one database, but all the databases in the entire server. As an option, you can put each Rational Synergy database in its own server.

The `ccmsrv archive` command archives only the databases metadata. Therefore, it is your responsibility to back up each database file system data using other tools, such as those included with the operating system.

See "ccmsrv archive" on page 157 for more about the command.

Also, see "Archiving and restoring database servers" on page 59 for more information.

Locking databases and ensuring data consistency

To ensure consistency between the metadata and file system portions of these two separate backups, you must shut down the databases before archiving the server and performing the file system backup.

Scheduling backups

You can arrange for incremental backups by running `ccmsrv archive` at regular intervals, and you can augment these incremental backups with logical log backups. You can write the logical log backups directly to tape while the system is running.

Repairing a database

In the rare event that a database has been corrupted, call <u>IBM Rational Software Support</u>.

Creating, modifying, and deleting a Rational Synergy database

Rational Synergy is shipped with a pack file called `base.cpk`, which contains the standard development model and no user application data. If you are using the standard base model, then you can use the `base.cpk` pack file to create new databases. You can unpack the `base.cpk` pack file to another database name. A database can be stored in two formats: standard and pack file. Pack files have the extension `.cpk` and must be unpacked with the `ccmdb unpack` command before they can be used.

Creating through unpack

You can create a new database easily and quickly by unpacking the base database from the pack file that is shipped with the Rational Synergy software. For further information see "ccmdb unpack" on page 151.

Before you unpack a database, note the following:

- When typing the database path to the location where you want the database unpacked, type the path using the universal naming convention (UNC). Additionally, ensure that you are unpacking to a directory on an NTFS drive.

- The directory you unpack into must be a valid share point or a subdirectory of a valid share point. Also, you must have Full Control permissions of the directory.

You must be working as *local administrator* to perform this command. You must be logged on to a machine where the Admin Tools are installed, such as on a server machine.

1. Log on as the Rational Synergy administrator.

2. Unpack the `base.cpk` file, which contains the base database.

   ```
   > ccmdb unpack packfile /to database_path
   ```

   `packfile` is the name of the file you want to unpack.
   `database_path` is the path name to your new database. Type the path using the universal naming convention (UNC).

   For example, to restore `base` to a database named `test`, type the following:

   ```
   > ccmdb unpack base.cpk /to \\loon\ccmdb\test
   ```

3. Optionally, you can change the case keyword from `LOWER` to `PRESERVE`.

Caution Do not change the case mode of a database in which any upper-case or mixed-case objects have been created. Doing so causes inaccurate or incomplete query results.

Rational Synergy supports case sensitive file names in two ways. `PRESERVE` maintains the case preserving default setting. (Case sensitive means that you must **always** type the file or project name exactly the way you created it, that is, `Foo.c`, never `foo.c` or `FOO.C`.) `LOWER` causes file and directory names to be stored in the Rational Synergy database in lower case.

The default is `LOWER`.

If you do not need to change the case, skip this step.

   a. Set the CASE keyword to PRESERVE.

   ```
   > ccmdb info database_path /keyword case /value preserve
   ```
   b. Check the CASE keyword.

   ```
   > ccmdb info database_path /keyword case
   CASE=PRESERVE
   ```

4. If you want to change the delimiter for this database, it is strongly recommended that you do so now. See the delimiter command in Rational Synergy CLI Help for more information on this command.

   a. Start a Rational Synergy session in the *ccm_admin* role.

   ```
   > ccm start /d database_path /r ccm_admin
   ```

OR

Double-click the Rational Synergy icon. When the session is up, change your role to *ccm_admin* in the Synergy Classic **Project View Role** list.

   b. Change the delimiter to the new character to be used in this database.

   ```
   > ccm delim ","
   ```

5. If you need to add users to the Rational Synergy database, this is a good point to do so. Refer to "Adding users to a Rational Synergy database" on page 14. If you do not need to add users to the Rational Synergy database, proceed to the next step.

6. Stop the Rational Synergy session.

7. Implement a check and backup plan for your database, and then execute it daily.

8. Log off from the Rational Synergy administrator.

Caution You must check and back up your database at least once a day in case of a system failure. If your database is corrupted, you **must** have a backup of the database or you could lose all data.

Certain considerations regarding database location are important in configuring your system. See "Managing Rational Synergy database space" on page 93 for more information.

Renaming (or moving) a database

The `ccmdb copy` command enables you to rename a Rational Synergy database or to move a database from one location to another. You can copy a packfile from UNIX to Windows but not from Windows to UNIX.

When you rename a database, note the following restrictions:

• If two databases use the same database server, they cannot have the same name.

• A database name can contain letters, digits, and underscores only.

• Uppercase and lowercase characters are equivalent.

• A database name can contain 18 or fewer characters.

• The database name must begin with a letter.

When moving a Rational Synergy database, you can pack it in one version, and then unpack it in a higher version. Unpacking to a higher version requires additional steps. See the *Rational Synergy Upgrade Instructions* for further details.

Note After moving a database, you might need to change some of the database properties, such as the paths to projects work areas. See Rational Synergy CLI Help for the `ccm wa` (work area) command for important information about changing a moved database properties.

You must be working as the *local administrator* to perform this operation. You must be logged on to a machine where the Admin Tools are installed. A main server and additional server include the Admin Tools.

1. Log on as the Rational Synergy administrator.

2. Copy the database to a new location.

   ```
   > ccmdb copy src_database_path dest_database_path
   ```

   `src_database_path` specifies the source path of the database. `dest_database_path` specifies the destination path of the new database (UNC).

   For example:

   ```
   > ccmdb copy \\loon\ccmdb\prod_db \\loon\ccmdb\tstgonzo
   ```

3. Verify that the new database is usable.

   Run this command on the database server machine.

   > `ccmdb check` *`database_path`*

   Rational Synergy protects the database so that users do not log on to it, and then unprotects it when the check is over.

4. Pack the new database.

   Modify your backup plan.

   > `ccmdb pack` *`database_path`* `/to` *`packfile`*

   `database_path` is the path (full or relative) to the database.
   `packfile` is a path to the directory where the backup files will be written.
   You should use a path that goes to a directory that is regularly backed up through normal file system backup procedures or a path that goes to a directory on an independent file system.

5. Remove the old database.

   > `ccmdb delete` *`database_path`*

6. Log off from the Rational Synergy administrator.

Deleting a database

Rational Synergy databases are a combination of file system and RDBMS data, so it is important to remove them using the *ccmdb delete* command. If a Rational Synergy database was accidently removed with a `del` command, see the "ccmdb drop" on page 133.

You must be working as *local administrator* to perform this operation. You must be logged on to a machine where the Admin Tools are installed, such as on a server machine.

1. Log on as the Rational Synergy administrator.

2. Remove the Rational Synergy database.

```
> ccmdb delete \\bulldog\ccmdb\tststar
```

Caution Never use the `del` command to remove a Rational
 Synergy database.

3. Log off from the Rational Synergy administrator.

Moving a database between UNIX and Windows

You can move a database between a UNIX server and a Windows server.

However, when moving a database from Windows to UNIX, the resulting database may have Windows-style ASCII data in important files, which should be updated. The command `ccmdb upgrade` has an option, `/w,` which converts the database files in addition to performing the upgrade. All database configuration files and controlled files of type `ascii` or its subtypes are be examined and converted to UNIX ASCII format. The conversion affects controlled files in the archive and cache only. Work areas are not updated.

Caution This operation changes the contents of static, archived files, and should be used with caution. **Always retain the original packfile in case you encounter any problems later.**

Additionally, you can transfer the contents from one database to another by using Rational Synergy Distributed.

For a brief description, see "ccmdb upgrade" on page 172. For a detailed description and usage instructions, see the *IBM Rational Synergy Upgrade Instructions*.

To move a database between UNIX and Windows:

1. On the database server that you are on, pack the database.

2. Copy the packfile to the server that you want to move to, and then unpack the database on that server.

3. Run the `ccmdb upgrade /w` command.

Managing Rational Synergy database space

Space management is an on-going task. While Rational Synergy goes to great lengths to conserve space, most project teams find that they like having multiple versions and variants online (for example, all debug and optimize versions of their object code), so there is typically the desire to keep large amounts of data available online.

You need to monitor two forms of space: the database space and the file system space.

You can take the following actions when file system space runs low:

- Delete obsolete product files.

  See "Deleting product files from Rational Synergy" on page 94.

- Delete obsolete source files from the cache.

  See "Deleting cache files" on page 95.

- Save files offline, and then delete them.

  See "Using the Save Offline and Delete tool" on page 97.

- Delete obsolete data.

  See "Performing other housekeeping activities" on page 97.

Additionally, allocate enough space at installation for the growth of your company. For more information about gauging the amount of space you need, see the "Installation Instructions."

You can do one of two things when database space runs low:

- Increase the size of the dbspace. See `ccmsrv expand` on page 162 for more information.

- Delete objects or projects in databases.

  Verify that the objects and projects you want to delete are not in use by using the `ccm finduse` command, described in Rational Synergy CLI Help, or the Find operation, described in Rational Synergy Help.

- Delete unused databases.

Deleting product files from Rational Synergy

The `ccm collapse` command enables you to delete one or more obsolete products based on a set of selection criteria. Use this command to reclaim disk space used by obsolete products.

You must be working as the CM administrator to perform this operation.

1. Start a Rational Synergy session from the command line as user *ccm_admin*.

   ```
   > ccm start /d \\loon\ccmdb\testrme /r ccm_admin
   ```

2. Query for all products not used in any projects.

   ```
   > ccm query "is_product=TRUE and not is_bound()"
   ```

3. Collapse the object versions.

   ```
   > ccm collapse @
   ```

   Alternatively, you could develop a batch file comprised of commands such as query and collapse, and then automate product file deletion using the Scheduler.

4. Change back to your previous role.

Deleting cache files

The ccm clean_cache command enables you to delete previously archived source files from the cache directory. This command is useful for reclaiming disk space used by files that are archived and rarely used.

The contents of source attributes of objects are stored in files in the cache directory under the database storage root (st_root). When an object is transitioned to the *integrate* state, it triggers the source file to be archived. All objects in the *test*, *integrate*, *sqa*, *released*, and *rejected* states are archived.

The Rational Synergy administrator can use the ccm clean_cache command to remove these archived cache files on demand, with the capability to select which cache files will be removed. Any deleted archived cache file are restored to the cache whenever it is needed for a Rational Synergy command.

You must be working as the CM administrator to perform this operation.

Only files that have been archived are eligible to be deleted, regardless of the options you specify.

You must use the command line interface to delete cache files. The ccm clean_cache command is described in detail in Rational Synergy CLI Help.

• Delete all cache files of archived objects that have not been accessed in the last month.

```
> ccm clean_cache /c -30:0:0:0
```

• Delete the cache files for all *test* csrc objects that have not been accessed since June 1.

```
> ccm clean_cache /type csrc /status test /cutoff_time "June 1"
```

Monitoring database space

Informix pre-allocates space for its databases. You can monitor this pre-allocated space to determine whether you need to increase its size or remove unneeded objects.

You must be working as *local administrator* to perform this operation. You must be logged on to the machine where the database server is installed.

1. Log on as the Rational Synergy administrator.

2. Monitor the size of a database.

    ```
    > ccmdb info /k size \\loon\ccmdb\database_name
    ```

3. Monitor the space utilization status of the database server named `tonnyx`.

    ```
    > ccmsrv status /dbspace
    ```

4. Log off from the Rational Synergy administrator.

To increase the Informix dbspace, refer to "Increasing the dbspace of the database server" on page 58. Another section of interest is "Informix database server" on page 46, which explains the Informix Dynamic server and the dbspace chunk files.

Deleting unused databases

Use the `ccmsrv status` command to view all databases. See "Database server usage" on page 25 for information on listing current databases. To remove any unnecessary databases, see "Deleting a database" on page 91.

Using the Save Offline and Delete tool

In addition to using the `ccm collapse` or `ccm clean_cache` commands to delete objects, you can use the Save Offline and Delete (SOAD) tool to remove unwanted data, or to save data offline before deleting it from the database. Objects that are saved offline are saved in a DCM package that can be received at a later time. To save objects offline, the current database must be initialized for DCM, and a DCM license must be available.

This feature uses scopes to define what should be deleted. You can define a new scope, use pre-defined (default) scopes, or modify an existing user-defined or default scope. For information about using the SOAD feature, including the `ccm soad` command, see the Synergy Classic Help.

Performing other housekeeping activities

There are several other ways you can reduce the size of your database. These activities do not need to be performed on a regular basis. They can be performed on an as-needed basis. Here are some suggestions:

- Keep your user lists up-to-date.

  When people leave the company, remove their userid and role definitions, and delete working and checkpoint objects belonging to those users. The Save Offline and Delete (SOAD) tool provides a scope for this purpose called **All non-static projects and products for a specified user**.

- Keep release information up-to-date.

  When releases are completed or abandoned, mark them as inactive. You can delete old baselines and old prep hierarchies using the following SOAD scopes:

  - **Non released baselines for specified release older than specified date**
  - **Integration Testing prep projects and products for a specified release**

- Clean up Rational License Server TL log files.

See the *IBM Rational License Server TL Guide* for instructions on checking the Rational License Server TL log files.

Performing database maintenance

If you continually delete obsolete data to keep the database clean, you should also perform periodic database maintenance tasks to improve performance, as described here.

Nightly

Back up your databases. Backups help queries to run more quickly. This also updates the database statistics.

1. Log on to the database server as the Rational Synergy administrator.

2. Warn users that a backup is about to occur.

    a. Broadcast a backup message to the database users.

    > `ccm message /database database_path "backup message"`

    b. Show the database usage.

    > `ccm monitor database_path`

3. Check and back up the database, and update statistics.

    > `ccmdb backup database_path /to destination_dir`

Weekly

Repair database indices for all tables to reduce disk fragmentation.

1. Log on to the database server as the Rational Synergy administrator.

2. Shut down database sessions and protect the database.

   a. Broadcast a shutdown message to the database users.

   ```
   > ccm message /database database_path "shutdown message"
   ```
   b. Show the database usage.

   ```
   > ccm monitor database_path
   ```
   c. Perform the shutdown.

   ```
   > ccmdb shutdown database_path
   ```

3. Back up the database.

   ```
   > ccmdb backup database_path /to destination_dir
   ```

4. Repair indices for all tables.

   ```
   > ccmdb repair database_path /repair_index ""
   ```

5. Unprotect the database.

   ```
   > ccmdb unprotect database_path
   ```

6. Start a session in the *ccm_admin* role.

   ```
   > ccm start /nogui /r ccm_admin /d database_path
   ```

7. Protect the database.

   ```
   > ccmdb protect database_path
   ```

8. Check the database cache and archive.

   ```
   > ccm fs_check
   ```

   If the full ccm fs_check takes more time than your site can afford on a daily or weekly basis, you can run a reduced check. See "ccm fs_check" on page 105 for information about options and arguments. You should run a full ccm fs_check at least once a month.

9. > End your session.

   ```
   > ccm stop
   ```

10. Unprotect the database, if the database is not corrupt.

    ```
    > ccmdb unprotect database_path
    ```

Monthly or less often

Rebuild the database by packing and unpacking it. This reduces fragmentation of the databases.

1. Shut down database sessions and protect the database.

   a. Broadcast a shutdown message to the database users.

   ```
   > ccm message /database database_path "shutdown message"
   ```
   b. Perform the shutdown.

   ```
   > ccmdb shutdown database_path
   ```
   c. Show the database usage to ensure everyone is out of the database.

   ```
   > ccm monitor database_path
   ```

2. Back up the database. First check the database, and then pack it.

   ```
   > ccmdb check database_path
   > ccmdb pack database_path /to destination_dir
   ```

3. Delete the database.

   ```
   > ccmdb delete database_path
   ```

4. Unpack the database, using the pack file you created in step 2.

   ```
   > ccmdb unpack packfile /to database_path
   ```

6 *Administrative Commands*

This chapter contains a quick reference to the Rational Synergy administrative commands. Usage examples of these commands are available in the following chapters:

- "General System Administration" on page 13

- "Administering the CCM Server" on page 33

- "Administering the Database Server" on page 45

Command summary

The following table shows the commands available for administering Rational Synergy.

All commands shown here must be run in the Classic CLI.

Command	Description
`ccm admin_user_name`	Displays the user domain and user name of the Rational Synergy administrator. See page 104.
`ccm fs_check`	Checks the file consistency of a Rational Synergy database. See page 105.
`ccm message`	Notifies users directly or by broadcast. See page 109.
`ccm monitor`	Displays status information. See page 111.
`ccm ps`	Obtains process status information. See page 114.
`ccm version`	Displays the version of Rational Synergy. See page 116.
`ccmadm admin_user`	Updates the name of the Rational Synergy administrative user for Windows. See page 117.
`ccmadm config_admin`	Sets up the permissions of the local installation area so that the Rational Synergy administrative user has the necessary access. See page 119.
`ccmadm password`	Changes the Rational Synergy administrator and *informix* users passwords. See page 120.
`ccmdb backup`	Checks, and then backs up a database (recommended command). See page 123.
`ccmdb check`	Tests the integrity of a database. See page 126.

Command	Description
`ccmdb copy`	Copies a database. See page 128.
`ccmdb create`	Creates a root database. See page 130.
`ccmdb delete`	Deletes a database. See page 132.
`ccmdb drop`	Removes a database from the database server when the database path, or other database information, has been removed accidentally. See page 133.
`ccmdb dump`	Dumps the database meta data excluding the file system in the *database_path* area. Seepage 134.
`ccmdb info`	Reports the characteristics of a database. See page 135.
`ccmdb load`	Restores a database from a `.dmp` file created by `ccmdb dump`. See page 138.
`ccmdb pack`	Dumps a database contents to a single, portable file. See page 140.
`ccmdb prepare_admin_user_change`	Prepares a database to accept a new Rational Synergy administrator name. See page 142.
`ccmdb protect`	Protects a database from new sessions. See page 145.
`ccmdb refresh`	Refreshes back-end sessions for Web mode sessions. See page 146.
`ccmdb repair`	Repairs database indexes. See page 147.
`ccmdb shutdown`	Shuts down all active sessions, and then protects a database. See page 149.
`ccmdb unpack`	Restores a database from a `ccmdb pack` file. See page 151.
`ccmdb unprotect`	Unprotects a database. See page 154.
`ccmdb update_statistics`	Updates system catalog tables with information used to determine optimal query plans. See page 155.
`ccmsrv archive`	Archives a database server. See page 157.
`ccmsrv create`	Creates a database server. See page 159.
`ccmsrv delete`	Deletes a database server. See page 161.
`ccmsrv expand`	Increases the size of a database server. See page 162.
`ccmsrv modify`	Changes the number of users allowed in the database server. See page 164.
`ccmsrv offline`	Takes a database server offline. See page 165.

Command	Description
ccmsrv online	Brings a database server online. See page 166.
ccmsrv quiescent	Puts a database server in the Quiescent state. See page 167.
ccmsrv restore	Restores a server from an archive device. See page 168.
ccmsrv status	Shows the status of a database server. See page 169.

ccm admin_user_name

Synopsis

```
ccm admin_user_name
```

Description and uses

The `ccm admin_user_name` command displays the user domain and user name of the Rational Synergy administrator.

If you want to change the password for the Rational Synergy administrator, see "ccmadm password" on page 120.

If you want to change the name of the Rational Synergy administrator, see "ccmadm admin_user" on page 117.

Options and arguments

This command has no options or arguments.

Example

View the Rational Synergy administrator's user domain and user name.

```
> ccm admin_user_name

  marathon\cmadmin
```

See also

"ccmadm admin_user" on page 117

"ccmadm config_admin" on page 119

"ccmadm password" on page 120

"ccmdb prepare_admin_user_change" on page 142

ccm **fs_check**

Synopsis

```
ccm fs_check    [/d|/dir directory_path] [/f|/fix] [object_spec...]
                [/t|/type type][/v|/verbose]
                [/e|/empty_skip] [/u|/unused_skip]
                [/nd|/no_duplicates] [/w|/windows]
                [/nb|/null_byte][/z|/zero_counts]
```

Description and uses

Use the `ccm fs_check` command to check the consistency of a Rational Synergy database file systems. By default, the `ccm fs_check` command checks that:

- Every static file, project, or directory has an entry in the archive.

- Every non-static file, project, or directory has an entry in the cache.

- Every file in the cache area corresponds to an existing object version.

- Every file in the archive area corresponds to one or more static object versions.

- Every entry in an archive file corresponds to one static object version.

- The source for a project or directory is empty.

Checking all the files in the cache and archive areas takes time and memory resources, and may be suppressed using the `/u|/unused` option.

You should execute `ccm fs_check` to check your entire database because this command can be used regularly to reduce the disk space taken up by cache files. However, as the check can take a long time on large databases, you can perform a quicker check by checking only specific types of objects. You can use the `/t` option to check only objects of the specified type, or you can check a list of objects using `object_specs` (for example, using query results). You cannot use both the `/t` option and a list of objects. If you check only objects of the specified type, checking for unused cache and archive entries are suppressed.

Also, you should direct the output to a file so that you can examine the results.

If unexpected or extra files or archive entries are found, they are reported individually and summarized at the end. However, such cases are not counted as errors and do not cause `ccm fs_check` to fail with a non-zero exit status. The `/fix` option to `ccm fs_check` does not remove these extra entries. Doing so might lead to data loss in cases where you have created such files manually for your own purposes, or where you have restored a file system and metadata

backup taken at slightly different times. For assistance in removing unwanted extra cache and archive entries, contact [IBM Rational Software Support](#).

All users can perform this operation. However, you must be in the *ccm_admin* role to perform the `/fix` option. You must start a session (using the `ccm start` command) before running this command.

Controlled files are subject to asynchronous archiving when they are checked in to a *static* state. This process requires that you allocate one extra back-end session per database for asynchronous archiving. If you plan to run the archive conversion, you must also allocate one additional back-end session for the archive conversion. Also, when an object has not been archived, you receive a warning that the file has not been archived.

See the *Rational Synergy Upgrade Instructions for Windows* for more details about asynchronous archiving.

Options and arguments

`/d|/dir` *directory_path*

> Specifies the directory into which inconsistent archive entries are written. By default, these files are written to
> *database_path*`\st_root\tmp\check`.

`/e|/empty_skip`

> Suppresses warnings about empty files for static object versions.
>
> This warning may also be suppressed for individual object versions, by creating a boolean attribute `deliberately_empty` with the value `TRUE` on the object versions for which you want to suppress the warnings.

`/f|/fix`

> Fixes some simple errors, including the following:
>
> - If you unpack a database from a pack file created on UNIX, it is likely that cache files are in UNIX format. If this newline style is the only difference between the cache and the archive, the `/f|/fix` flag causes the cache file to be deleted.
> - If the cache file is zero length, but the archived content is not, the `/f|/fix` flag causes the cache file to be deleted.
> - If the cache file has the wrong modify time, but is equal in content to the archive, use the `/f|/fix` option to update the modify time to be equal to the `source_modify_time` attribute.

This option does not remove extra or redundant files. This ensures that you can examine the content of such files to verify that they are not required before deleting them.

/nd|/noduplicates

Specifies to skip checks for duplicate archive entries. Use this option to reduce the memory resources used when checking very large databases that might otherwise fail due to lack of memory. Since it reduces the strength of archive checking, it should only be used when necessary.

/nb|/null_byte

Checks in the source attribute for null (0x00) bytes. Generates a warning message when objects of type `ascii` and subtypes of `ascii` contain null bytes.

object_spec

Provides a list of objects to check. You can use query results for this argument.

You cannot use this argument with the `/t` option. Using this option implies the `/u|/unused_skip` option.

/t|/type *type*

Specifies the type of objects to check.

You cannot use this option with *object_spec*. Using this option implies the `/u|/unused_skip` option.

/u|/unused_skip

Specifies to skip checks for extra files and entries in the cache and archive files. This option does not remove or delete files or entries.

/v|/verbose

Generates more detailed information about each error. The errors report the following:

- Objects with no `source` attributes, excluding problems and tasks. These objects have no cache or archive entries, and are skipped.
- Files still archived by the old pre-4.1 archives (SCCS, compress, and RCS, not `ccm_rcs`). This means that you must perform archive conversion.
- Objects with no cache files. Such objects were probably affected by an earlier execution of `ccm clean_cache`.
- Objects with no `source_modify_time` attributes. This is a minor error. Such objects have not been correctly upgraded to current

database standards. You can create the `source_modify_time` attribute, of type `time`, and set it to the correct time (the time when the source file was last edited, before it was checked in). This should be the modify time on the cache file.

- Object cache files with times earlier than their `source_modify_times`. This error is not serious and might have been caused by the failure of a call to set the cache file time. Fix this by deleting the cache file `after` you have ensured that the archive entry is correct.

`/z|/zero_counts`

In the summary at the end, zero counts (reporting conditions not seen) are normally suppressed. If you use the `/z` option, all counts are printed, including those with zero values. This can be useful when the output of `fs_check` is being analyzed by another program.

Example

Check the file system consistency of the database and provide detailed output information.

1. Log on as the Rational Synergy administrator.

2. Check the file system consistency of the database.

   > `ccm fs_check` **/v**

See also

ccm message

Synopsis

```
ccm message [/attr value][/d|/database database]
             [/rfc_address address] [/u|/user username]
```

Description and uses

The `ccm message` command communicates a message directly or broadcasts the message to users who are running a Rational Synergy session.

Messages are prepended with the name of the user who sends the message. If you want to send messages to specific sessions, use the `/rfc_address` switch.

For more information, see "Broadcast system messages" on page 25.

Options and arguments

`/attr value`

Enables you to send a broadcast message to a specific audience by specifying one of the following values in place of the `/attr` switch: `process`, `display`, `pid`, `user`, `host`, `database`, `engine_address`, and `pwa_path`.

`/d|/database database`

Specifies that all users of `database` will be sent the message.

You can use a regular expression to specify multiple databases. The regular expression must contain a leading question mark (`?`) character.

`/rfc_address address`

Specifies the Remote Function Call (RFC) address of the Rational Synergy interface (GUI) process to which the message will be sent. RFC supports machines with multiple IP addresses.

The RFC address used must be the exact RFC address of the target process. This address can be determined by running the `ccm ps` command.

The format for machines with a known host name is:

`hostname:port:ip[:ip]*`

The format for machines with no known host name is:

`ip:port[:ip]*`

where `[:ip]*` represents zero or more IP addresses separated by colons.

`/u`|`/user` *username*

> Specifies the user to whom the message will be sent.

Example

Send a message to the `\\joe\ccmdb\juno` database.

```
> ccm message /d \\joe\ccmdb\juno "Server going down for repair
in 2 minutes."
```

Caveats

If the specified `/rfc_address` is for an engine, the `ccm message` command will fail.

See also

"ccm monitor" on page 111

"ccm ps" on page 114

ccm monitor

Synopsis

```
ccm monitor [/attr value][/d|/database database]
            [/rfc_address address][/u|/user username]
```

Description and uses

The `ccm monitor` command provides a network-wide view of Rational Synergy user and process information including:

- user

- process type (engine, user interface, router, license manager, or object registrar)

- host

- port

- process ID

- database path

The `ccm monitor` command appends an exclamation point (!) to the status field of a process when that process has not responded to the router for a fixed amount of time. This failure to respond is assumed to indicate a problem, for example, the machine that was running the process has gone down or the process is hung.

If a delay in response is due to a busy machine, the exclamation point disappears when the operation that is using the machine is finished.

The process names shown by the `ccm monitor` command indicate the following processes:

Name shown by `ccm monitor`	Process
engine	Engine (any kind)
cmd	Classic CLI or back-end sessions
gui	Classic GUI
dev_clnt	Rational Synergy GUI
usr_cmd	Rational Synergy CLI
server	CCM server
router	Message router daemon
objreg	Object registrar notification daemon
ccm_ess	Engine start service for Windows
monitor	Monitor (this command)

For more information, refer to "Users" on page 25.

Options and arguments

`/attr` *value*

Specifies the name of the field to be monitored. The possible `/attr` switch values are as follows: `process`, `display`, `pid`, `user`, `host`, `database`, `engine_address`, and `pwa_path`.

`/d|/database` *database*

Specifies that all users of `database` will be monitored.

You can use a regular expression to monitor multiple databases. The regular expression must contain a leading question mark (`?`) character.

`/rfc_address` *address*

> Specifies the Remote Function Call (RFC) address of the Rational Synergy interface (GUI) process to be monitored. RFC supports machines with multiple IP addresses.
>
> The rfc address used must be the exact RFC address of the target process. This address can be determined by running the `ccm ps` command.
>
> The format for machines with a known host name is:
>
> `hostname:port:ip[:ip]*`
>
> The format for machines with no known host name is:
>
> `ip:port[:ip]*`
>
> where `[:ip]*` represents zero or more IP addresses separated by colons.

`/u|/user` *username*

> Specifies the user to be monitored.

Examples

- Monitor engine processes for user ann.

```
> ccm monitor /user ann /process engine
IBM Rational Synergy process monitor...2 process(es) located:
user      process   host    port    pid  database path
----      -------   ----    ----    ---  -------------
ann       engine    marlin  34728   21182  \\fish\ccmdb\ann_test
ann       engine    marlin  34725   21181  \\fish\ccmdb\ann_eval
```

- Monitor process with a host address of guppy

```
> ccm monitor /host guppy
IBM Rational Synergy process monitor...1 process(es) located:
user     process   host   port   pid    database path
----     -------   ----   ----   ---    -------------
ann      gui       guppy  34725  21181  \\fish\ccmdb\ann_eval
```

ccm ps

Synopsis

```
ccm ps    [/attr value][/d|/database database][/rfc_address address]
          [/u|/user username]
```

Description and uses

The `ccm ps` command provides network-wide process status information on Rational Synergy users and processes. It is a maximum verbosity version of `ccm monitor`.

The process names shown by the `ccm ps` command indicate the following processes:

Name shown by `ccm monitor`	Process
`engine`	Engine (any kind)
`cmd_interface`	Classic CLI or back-end sessions
`gui_interface`	Classic GUI
`dev_clnt_interface`	Rational Synergy GUI
`usr_cmd_interface`	Rational Synergy CLI
`server`	CCM server
`router`	Message router daemon
`objreg`	Object registrar notification daemon
`ccm_ess`	Engine start service for Windows
`ps`	Ps (this command)

For more information, refer to "Process status" on page 25.

Options and arguments

`/attr value`

> Specifies the name of the field to be monitored. The possible `/attr` *values* are as follows: `process`, `display`, `pid`, `user`, `host`, `database`, `engine_address`, and `pwa_path`.
>
> You can use only one switch at a time.

`/d|/database database`

> Specifies that all users of *database* will be monitored.
>
> You can use a regular expression to specify multiple databases. The regular expression must contain a leading question mark (`?`) character.

`/rfc_address address`

> Specifies the Remote Function Call (RFC) address for the process status to be displayed. RFC supports machines with multiple IP addresses. The format for machines with a known host name is:
>
> `hostname:port:ip[:ip]*`
>
> The format for machines with no known host name is:
>
> `ip:port[:ip]*`
>
> where `[:ip]*` represents zero or more IP addresses separated by colons.

`/user username`

> Specifies the user whose process status you want to display.

Examples

- Display the process information for the interface with a host address of `horse:cwi.com`.

  ```
  > ccm ps /host horse.cwi.com
  ```

- Display the process information for all databases that have names containing the string `training`.

  ```
  > ccm ps /d "?training"
  ```

See also

"ccm monitor" on page 111

ccm version

Synopsis

```
ccm version [/a|/all] [/c|/ccm] [/d|/dbschema] [/i|/informix]
```

Description and uses

The `ccm version` command displays the version of Rational Synergy that is running. If you specify `ccm version` alone, Rational Synergy is the default.

Options and arguments

`/a|/all`

>   Displays the versions of the current database schema, the Informix database server, and the Rational Synergy release.

`/c|/ccm`

>   Displays the version of the Rational Synergy release.

`/d|/dbschema`

>   Displays the version of the database schema.

`/i|/informix`

>   Displays the version of the database server.

Example

Show the version of the current database schema, the Informix database server, and the Rational Synergy release that are running.

```
> ccm version /a

INFORMIX Dynamic Server Version 11.50.TC3
Rational Synergy Version 7.1
Rational Synergy Schema Version 0111
```

ccmadm admin_user

Synopsis

```
ccmadm admin_user
```

Description and uses

The `ccmadm admin_user` command changes the name of the Rational Synergy administrator for Windows.

Before you change the name of the Rational Synergy administrator, back up the databases ("Performing database integrity checks" on page 79), and then prepare the databases ("ccmdb prepare_admin_user_change" on page 142).

After you change the name of the Rational Synergy administrator, you must run the `ccmadm config_admin` command on each Windows Rational Synergy server installation.

The first time you open a database after changing the Rational Synergy administrator user name, Rational Synergy updates the ownership of the database files. This causes the startup time to be slower. The startup time depends on the size of the database, and might be significant for large databases.

If you want to change the password for the Rational Synergy administrator, see "ccmadm password" on page 120.

Options and arguments

This command has no options or arguments.

Example

The following example shows all of the steps necessary to change the name of the Rational Synergy administrative user.

1. Log on as the current Rational Synergy administrator.

2. Back up all databases from the database server machine to an existing directory where you perform regular backups.

   ```
   > ccmdb backup \\bulldog\ccmdb\database /to d:\backup_directory
   ```

3. Prepare the databases to accept the new Rational Synergy administrator name.

   ```
   > ccmdb prepare /d domain /u new_admin_name
   \\bulldog\ccmdb\database
   ```

   Portions of the preparation might take some time, depending on the size of your databases. See "ccmdb prepare_admin_user_change" on page 142 for more information.

4. Log on as *local administrator*.

5. Change the name of the Rational Synergy administrator.

   ```
   > ccmadm admin_user
   ```
   a. You will be prompted to continue or exit.

   b. You will be prompted to enter the new admin user name.

   c. You will be prompted to enter the new password, and then asked to confirm it.

   d. You will be prompted to exit.

6. Set up the permissions of the local installation area so that the Rational Synergy administrator has the necessary access.

   a. Log on as *local administrator*.

   b. Issue this command on each relevant Windows database server.

   ```
   > ccmadm config_admin
   ```

7. Log on as the new Rational Synergy administrator.

8. Unprotect each database.

   ```
   > ccmdb unprotect \\database_name
   ```

See also

"ccm admin_user_name" on page 104

"ccmadm config_admin" on page 119

"ccmadm password" on page 120

"ccmdb prepare_admin_user_change" on page 142

ccmadm config_admin

Synopsis

```
ccmadm config_admin
```

Description and uses

The `ccmadm config_admin` command sets up the permissions of the local installation area so that the Rational Synergy administrator has the necessary access.

You need to run this command on each additional server after you change the Rational Synergy administrative user name with the `ccmadm admin_user` command. Running this command updates permissions, which allows the Rational Synergy administrator to access this installation. However, you do not need to restart the `ccm7.1_ess` service.

You must be logged on as a *local administrator* to use this command.

Options and arguments

This command has no options or arguments.

Example

An example of this command usage is part of the example for "ccmadm admin_user" on page 117.

See also

"ccm admin_user_name" on page 104

"ccmadm admin_user" on page 117

"ccmadm password" on page 120

"ccmdb prepare_admin_user_change" on page 142

ccmadm password

Synopsis

```
ccmadm password /admin_user
ccmadm password /informix [database_servers_computer_names]
```

Description and uses

The `ccmadm password` command updates Rational Synergy and Informix services after the passwords for the *informix* and *admin_user* users have been changed for Windows.

You must run the `ccmadm password` command for the Rational Synergy server to operate after the passwords have been changed for the *informix* and *admin_user* users.

After changing the *admin_user* password on or in Windows, you must run the `ccmadm password` command on a machine in the domain.

Before you change the Rational Synergy administrator user password, protect all Rational Synergy databases. After changing the Rational Synergy administrator password in Windows, you must run the `ccmadm password` command on a machine in the domain.

Before you change the *informix* user password, shut down all Rational Synergy databases and Informix services because you need to stop, and then start all Informix database servers, including the main server and all additional servers. After changing the Informix password in Windows, you must run the `ccmadm password` command on the main and/or additional servers where you changed the *informix* password.

The command prompts you for the new password twice. If both password entries match, the Rational Synergy and Informix services are updated. Keep in mind that you must type the passwords correctly. The program will not check them.

The user for this command **must be** a local administrator on the server.

Satisfy the following prerequisites:

- The *informix* and the Rational Synergy administrator passwords must have been changed for Windows.

- Run this command on the main server machine.

> **Note** If you need to change the server IP address and are
> unable to restart the router after the change, you need to
> teach the router about the new address.
>
> Change the IP address for the server in the
> `_router.adr` file, located in the `CCM_HOME\etc`
> directory, and then restart the router.

Options and arguments

`/admin_user`

>   Updates the Rational Synergy services after the Rational Synergy
>   administrator user password has changed.

`/informix [`*`database_servers_computer_names`*`]`

>   Updates the Rational Synergy services after the *informix* user password.
>   You must restart all Informix services throughout the network. The
>   *`database_servers_computer_names`* option is a list of computers
>   that house the main server and all additional servers that are installed.

Examples

- Change the password for the Rational Synergy administrator.

1. Log on as the Rational Synergy administrator.

2. Protect all Rational Synergy databases.

   ```
   > ccmdb protect \\bob\ccmdb\tools
   ```

3. Change the Rational Synergy administrator password.

4. Run the `ccmadm password` command on the main server to update the
   Rational Synergy services.

   ```
   > ccmadm password /admin_user
   ```

   You will be prompted to enter the new password, and then asked to confirm
   it.

5. Unprotect all Rational Synergy databases.

   ```
   > ccmdb unprotect \\bob\ccmdb\tools
   ```

- Change the password for user *informix*.

1. Shutdown all databases.

   ```
   > ccmdb shutdown \\bob\ccmdb\tools
   ```

2. Take the Informix server offline.

   ```
   > ccmsrv offline
   ```

3. Change the Windows password for user *informix*.

4. Run the `ccmadm password` command on the main server to update the Informix services.

   ```
   > ccmadm password /informix main_server
   ```

5. Bring the Informix server online.

   ```
   > ccmsrv online
   ```

6. Unprotect all Rational Synergy databases.

   ```
   > ccmdb unprotect \\bob\ccmdb\tools
   ```

See also

"ccm admin_user_name" on page 104

"ccmadm admin_user" on page 117

"ccmadm config_admin" on page 119

"ccmdb prepare_admin_user_change" on page 142

ccmdb backup

Synopsis

```
ccmdb ba|backup database_path] [/no_check]
                [/o|/outfile filename] [/t|/to packfile]
```

Description and uses

The `ccmdb backup` command verifies the integrity of a Rational Synergy database, and then creates a compressed backup file (`.cpk`-format file) of a Rational Synergy database.

Note This command performs the same actions as executing a `ccmdb check` command followed by a `ccmdb pack` command. If the check fails, the database is still packed. The `ccmdb check command` also runs `ccmdb update_statistics`, which improves the speed of database queries.

Run the `ccmdb backup` command daily to ensure reliable backups of Rational Synergy databases.

Note The `ccmdb backup` and `ccmdb pack` commands archive information from the metadata and file systems of the database. They do not back up work areas. Users with copy-based work areas must reconcile changes before the administrator runs the backup. If this is not done, changes to work areas must be backed up separately.

The database is locked during backups, which prevents users from changing data in the Rational Synergy database while a backup is being performed. Users receive a message that the database is protected when they attempt to start a new session while a backup is in progress. Users already in a session being backed up cannot perform any operation until the backup is completed.

The maximum size of a pack file produced by `ccmdb backup` is limited by the destination file system. For more information, refer to "Preparing for backup" on page 70.

The user for this command is the Rational Synergy administrator, if backing up from the command prompt.

Satisfy the following prerequisites:

- This command must be run from the database server machine.

- You can schedule this command with the Scheduler. The Scheduler requires that the user scheduling a command be *local administrator* on the database server machine. You need to enable the NT Schedule service, change the startup mode to automatic, and have the Schedule service log on as the system account.

Options and arguments

`database_path`

> Specifies the full, relative, or UNC path to the database. A full path is required if you are scheduling this command with the Scheduler.

`/no_check`

> Suppresses the database integrity verification. If you do not specify this option, `ccmdb check` is called, and an update statistics operation is performed automatically.

`/o|/outfile filename`

> Specifies the absolute path to a file, where you want the output of the command to be written. Always use this option if you schedule this command.
>
> By default, output is written to standard output.

`/t|/to packfile`

> Specifies the full path or the directory in which the backup file will be created. (The backup file is called the "pack file.") This path should be to a directory that is regularly backed up through your normal file system backup procedure. The backup should be done to a different file system than the one on which the database resides.

Examples

- Check and back up a database named `tstbill`.

1. Log on as the Rational Synergy administrator.

2. Back up `tstbill` to an existing directory where you perform regular backups, called `backups`.

```
> ccmdb backup \\bulldog\ccmdb\tstbill /to d:\backups
```

- Schedule a daily database backup at 6:00 a.m., on the `north` database server, using the NT `AT` command.

```
> at \\north 06:00 /every "f:\ccm\bin\ccmdb backup
\\north\ccmdb\prod_db /to \\north\backup\prod_db.cpk /o
\\north\backup\prod_db.out"
```

For a description of the `AT` command switches, refer to your Microsoft documentation or see the help file by typing `AT /?`.

Note Do not rely on file system backup utilities alone. Use the `ccmdb backup` command to guarantee reliable data recovery.

See also

"ccmdb check" on page 126

"ccm fs_check" on page 105

"ccmdb pack" on page 140

"ccmdb unpack" on page 151

"ccmdb update_statistics" on page 155

"Performing database integrity checks" on page 79

ccmdb check

Synopsis

`ccmdb ch|check [`*database_path*`] [/c] [/d]`

Description and uses

Use the `ccmdb check` command to verify the integrity of a database.

The command reports any problems that are found. If a problem is found, call [IBM Rational Software Support](#).

Databases rarely fail an integrity check, but if failure does occur, you should detect it quickly so that you can correct the problem immediately. Therefore, execute the `ccmdb check` program daily, on each database, and after rebooting the system following a hardware failure or operating system crash.

You can perform checks at the Rational Synergy level using the `/c` flag, at the Informix level using the `/d` flag, or at both levels. If no option is specified, both checks are run.

Shut down the database before checking it at the Informix level using the `/d` flag (or with no option). If records are locked by users while the Informix level check is running, the command may give false failures.

It is not necessary to shut down the database before checking it at the Rational Synergy level using the `/c` flag. To extend the availability of your database:

- Use the `ccmdb check /c` option during the week without shutting down the database.

- Use the `ccmdb check` option without any arguments on the weekend, after shutting down the database, to provide full checking on a weekly basis.

The Informix database is locked by the `ccmdb check` program during checks, which prevents users from changing data in the database while a check is being performed. Users receive a message that the database is locked when they attempt to start a new session while a check is in progress.

You must execute this command on the database server as the CM administrator.

For more information, see "Performing database integrity checks" on page 79.

Options and arguments

database_path

> Specifies the full or relative path to the database you are checking.

/c

> Performs all the checks except Informix database level checks.

/d

> Only performs Informix database level checks.

Example

Check the project1 database.

```
> ccmdb check \\data\ccmdb\project1
```

See also

"ccmdb backup" on page 123

"ccm fs_check" on page 105

ccmdb copy

Synopsis

```
ccmdb co|copy   src_database_path dest_database_path
                [/p|/space destdbspace]
```

Description and uses

The `ccmdb copy` command copies a full Rational Synergy database.

Note The new database resides on the same database server as the source database, but you can use any *dest_database_path*, as long as it is on an NTFS file system.

Before you copy a database, note the following:

•   Know the file limit option setting.

    If you give the new database a name that does not conform to the file limit option setting, the `ccmdb copy` command will exit with the following error message:

    ```
    Destination database name name does not conform to file_limit
    file name format.
    ```

    To view the file limit option setting for your database, see "ccmdb info" on page 135.

•   When typing the database path to the location where you want the database created, type the path using the universal naming convention (UNC).

Note After copying a database, you might need to change some of the database properties, such as the paths to project work areas. See Rational Synergy CLI Help for the `ccm wa` (work area) command for important information about changing a copied database properties.

The user for this command is the Rational Synergy administrator.

Options and arguments

`dest_database_path`

> Specifies the destination path of the new database. Type the path using the universal naming convention (UNC).

`/p|/space destdbspace`

> Specifies the dbspace to be used by the database server for the new database. By default, the dbspace used is `ccm`.

`src_database_path`

> Specifies the source path of the database.

Example

Copy the `base` database to `tstgonzo`.

```
> ccmdb copy \\loon\ccmdb\base \\loon\ccmdb\tstgonzo
```

Caveats

Databases should not be created under the Rational Synergy installation directory.

See also

ccmdb create

Synopsis

```
ccmdb cr|create    [/e|/empty] database_path
                   [/p|/space dbspace][/s|/server servername]
```

Description and uses

The `ccmdb create` command creates a Rational Synergy `root` database, which is used for a new model installation. This command creates a database **without** a model, which means that it contains **no** roles, types, users, and so forth. It is intended for model developers **only**.

If you want a database with a model, see "ccmdb unpack" on page 151 or "Creating through unpack" on page 87. Both sections describe how to unpack a Rational Synergy database that contains a model.

The user for this command is the Rational Synergy administrator.

Options and arguments

`database_path`

Specifies the path to which the database is being created. Type the path using the universal naming convention (UNC). Additionally, verify that you are running on an NTFS system.

`/e|/empty`

Specifies that the database should be empty. This creates a database **without** a model or contents.

`/p|/space dbspace`

Specifies that the dbspace to be used by the database server for the new database. By default, the dbspace used is `ccm`. You can specify a different dbspace for the database server on which the database is being created.

`/s|/server servername`

Specifies the database server. If you do not specify this switch, the new database is created on the current computer, if it is a database server. If not, then the new database is created on the main server.

Example

Create a root database called `test_ccm`.

```
> ccmdb create \\macky\ccmdb\test_ccm
```

See also

ccmdb delete

Synopsis

```
ccmdb delete database_path [/y]
```

Description and uses

The *ccmdb delete* command removes a database from the system. You must use this command and **not** the standard del command.

If you do remove a database path with the del command, refer to "Troubleshooting" on page 31.

The user for this command is the Rational Synergy administrator.

Options and arguments

database_path

Specifies the path to the database that you want to remove.

/y

Executes the command without displaying confirmation messages.

Example

Delete the test_ccm database.

```
> ccmdb delete \\bulldog\ccmdb\test_ccm
```

Note Do not remove a Rational Synergy database using standard Windows commands, nor by using the File Manager or Explorer. Each Rational Synergy database contains data that exists in the file system and on the database server. Using the del command, the File Manager, or Explorer removes the file system copy only.

See also

"ccmdb create" on page 130

"ccmdb unprotect" on page 154

ccmdb drop

Synopsis

```
ccmdb drop database_name [/s|/server servername] [/y]
```

Description and uses

The ccmdb drop command drops a database from the database server but does not remove the Rational Synergy database in the file system.

The user for this command is the Rational Synergy administrator.

Satisfy the following prerequisite:

• This command must be run from the database server machine or on a client with admin tools installed.

Options and arguments

database_name

Specifies the name of the database to be dropped.

/s|/server *servername*

Specifies the name of the database server. If not specified, the servername defaults to the host_name.

/y

Executes the command without displaying confirmation messages.

Example

Drop the sandbox database from the hawk server.

```
> ccmdb drop \\bulldog\ccmdb\sandbox /s hawk
```

See also

"ccmdb delete" on page 132

ccmdb dump

Synopsis

```
ccmdb dump database_path [/t|/to dumpfile]
```

Description and uses

The `ccmdb dump` command dumps **only** the database meta data (excluding the file system) in the `database_path` area. If a destination argument is not provided, Rational Synergy creates a dumpfile in the current directory named `database_name.dmp` where `database_name` is the last directory name of `database_path`.

The user for this command is the Rational Synergy administrator.

Satisfy the following prerequisite:

- This command must be run from the database server machine or on a client with admin tools installed.

Options and arguments

`database_path`

Specifies the path to the database that you want dumped.

`/t|/to dumpfile`

Specifies the destination of the database dump.

The default dump file path is `database_name.dmp` in the directory above the `database_name` leaf under the `database_path`.

Example

Dump the `\\loon\ccmdb\test_ccm` database to the `mad50.dmp` file.

```
> ccmdb dump \\loon\ccmdb\test_ccm /t mad50.dmp
```

See also

"ccmdb backup" on page 123

"ccmdb load" on page 138

ccmdb info

Synopsis

```
ccmdb i|info database_path [/k|/keyword keyword] [/v|/value value]]
```

Description and uses

The `ccmdb info` command reports or modifies the characteristics of the specified database.

The user for this command is the Rational Synergy administrator and any user. Any user can obtain information about the database by using the `keyword` switch. However, only the Rational Synergy administrator can change the database information with the `value` switch.

Options and arguments

`database_path`

Specifies the database for which characteristics are being reported.

`/k|/keyword keyword`

Obtains database information. By default, all keyword database information is shown. Keywords are case insensitive.

Use any one of the following keywords to designate the kind of database information you will receive:

```
active | all | case | database | dbpath | hostname |
orhost | platform | protect | schema | size |
version
```

- `active` shows whether or not users have sessions on the specified database.
- `all` shows all keywords and their values.
- `case` displays information regarding the case in which a file or directory created in or migrated to Rational Synergy is stored.
- `database` is the name of the DBMS, which is always Informix.
- `dbpath` is the full UNC path to the `db` directory of the database.
- `hostname` is the database server host.
- `orhost` is the host for the object registrar service. If `orhost` does not exist, `hostname` is used as the object registrar host.
- `platform` is the type of host on which the database resides; for example, `WINDOWS_XP`.
- `protect` shows whether a database is protected or unprotected.

- `schema` displays the database schema version.
- `size` calculates and reports the size of the Informix database, the storage root, and then the total, all in kilobytes.
- `version` is the version of the database schema.

`/v|/value` *value*

You must use any one of the following keyword settings to change database information:

`[hostname | dbpath | case | next_cvid]`

Note For each of these values, you must run as the Rational Synergy administrator.

`/k hostname /v` *value*

Enables you to change the hostname. This would be required if a machine name is changed or a database is copied.

`/k dbpath /v` *value*

Enables you to change the database path. This would be required if the file system or a shared name is changed.

The following two keyword settings have special values you should know about.

`/k case /v` *value*

Enables you to change a Rational Synergy database between two modes: LOWER or PRESERVE.

The default LOWER mode causes file and directory names to be stored in lower case. The PRESERVE mode maintains the case preserving setting.

Caution Do **not** change case from PRESERVE to LOWER for a database in which upper- or mixed-case objects have been created.

If a database contains objects with upper- or mixed-case names, changing case from PRESERVE to LOWER downcases all user input; queries, scripts, and so forth, containing upper- or mixed-case objects will not work correctly.

For a detailed description of these two modes, see "Creating through unpack" on page 87.

```
/k next_cvid /v value
```

> Sets the next cvid number to the given value. Note that the value
> passed must be greater than the maximum cvid currently in use.
> You cannot adjust the next cvid counter downwards.

Examples

- Set the ORHOST to bill so that the database can use an object registrar
  that is running on bill.

  ```
  > ccmdb info \\orbit\ccmdb\test_ccm /k ORHOST /v bill
  ```

- In the database called \\bulldog\ccmdb\alpha, change the case mode
  setting to PRESERVE.

  ```
  > ccmdb info \\bulldog\ccmdb\alpha /k case /v preserve
  ```

- Display the characteristics of the \\boon\ccmdb\test_db database.

  ```
  > ccmdb info \\boon\ccmdb\test_db
        VERSION=7.1
        PLATFORM=WINDOWS
        HOSTNAME=vortex
        ORHOST=vortex
        DBPATH=\\boon\ccmdb\test_db
        DATABASE=informix
        PROTECT=unprotected
        ACTIVE=YES (database is active)
        CASE=PRESERVE
        SIZE=2992 KBYTES
        SCHEMA= 0109
  ```

- Set the next cvid number for the basek2 database to 10000.

  ```
  > ccmdb info /k next_cvid /v 10000 \\orbit\ccmdb\basek2
        Setting next cvid to 10000 for database
  \\orbit\ccmdb\basek2.
  ```

ccmdb load

Synopsis

```
ccmdb load dumpfile /t|/to database_path [/s|/server servername]
                 [/p|/space dbspace_name] [/o|/overwrite]
                 [/n|/nocreate] [/url server_url]

ccmdb load stdin  t|/to database_path [/s|/server servername]
                 [/p|/space dbspace_name] [/o|/overwrite]
                 [/n|/nocreate] [/url server_url]
```

Description and uses

The `ccmdb load` command restores a database from a `.dmp` file created by `ccmdb dump`. By default, this command creates a protected empty database, loads the `dumpfile` to the database, creates indices, and then unprotects the database.

The user for this command is the Rational Synergy administrator.

Satisfy the following prerequisite:

- This command must be run from the database server machine or on a client with admin tools installed.

Options and arguments

`/`

Loads the dumped metadata from standard input.

`database_path`

Specifies the path to the database into which you are loading the dumped metadata.

`dumpfile`

Specifies the dump file you are loading.

`/n|/nocreate`

Does not create a new database. Use this option if a database already exists in the database server.

`/o|/overwrite`

Overwrites the `database_path` if one exists. If this option is specified, Rational Synergy reuses the `database_path` that is specified for the upgrade.

`/p|/space` *dbspace_name*

> Specifies the name of the dbspace. If not specified, the *dbspace_name* defaults to the `ccm` dbspace.

`/s|/server` *servername*

> Specifies the name of the database server. If not specified, the *servername* defaults to the *host_name*.

`stdin`

> Read from standard input.

`/t|/to` *database_path*

> Specifies the path and name of the database to be restored.

`/url` *server_url*

> When this option is specified, the new database is assigned to the specified server. Otherwise, it is assigned to the default CCM server running on the database server machine.

Example

> Load the `test_ccm.dmp` file into the `sandbox` database from the `hawk` server.
>
> ```
> > ccmdb load test_ccm.dmp /t \\boon\ccmdb\sandbox /s hawk
> ```

See also

> "ccmdb dump" on page 134

ccmdb pack

Synopsis

```
ccmdb pa|pack database_path [/t|/to packfile]
```

Description and uses

The `ccmdb pack` command dumps a database contents to a single, portable file, appropriate for moving to another system. Packed files have the extension `.cpk`.

Note The `ccmdb backup` and `ccmdb pack` commands archive information from the metadata and file systems of the database. They do not back up work areas. Users with copy-based work areas must reconcile changes before the administrator runs the backup. If this is not done, changes to work areas must be backed up separately.

Note that you can move a database from a UNIX server to a Windows server by packing the database using the `ccmdb pack` command, and vice versa, but you must run `ccmdb upgrade /w` after moving from Windows to UNIX.

The database is locked while a pack is in progress, which prevents users from changing data in the Rational Synergy database during a pack. Users receive a message that the database is locked because it is being packed.

The maximum size of a pack file produced by `ccmdb pack` is limited by the destination file system.

For more information, refer to "Performing database integrity checks" on page 79.

The user for this command is the Rational Synergy administrator.

Options and arguments

database_path

    Specifies the path to the database you want to pack.

/t|/to packfile

    Specifies the name of the pack file to be created.

    packfile is the name of the database portable file. The default pack file is *database_name*.cpk in your current directory.

Example

Generate a pack file called test_ccm.cpk under the c:\data\ccmdb directory.

```
> ccmdb pack \\bulldog\ccmdb\test.ccm /to
c:\data\ccmdb\test_ccm.cpk
```

Caveats

You should use the ccmdb backup command for scheduled backups.

See also

"ccmdb backup" on page 123

"ccmdb unpack" on page 151

ccmdb prepare_admin_user_change

Synopsis

```
ccmdb pauc|prepare|prepare_admin_user_change /d domain
      /u user_name database_path
```

Description and uses

The `ccmdb prepare_admin_user_change` command prepares a database to accept a new Rational Synergy administrator name. When the command is invoked, the preparations include the following:

- Databases are shut down.
- Permission of all database objects is modified to allow the new Rational Synergy administrator user name to have access.

This step might take some time, depending on the size of the database.

You need to run the `ccmdb prepare_admin_user_change` command for each database that will run under the new Rational Synergy administrator user name.

Note that you must be logged in as the current Rational Synergy administrator to run this command.

Options and arguments

`/d domain`

> Specifies the name of the domain of the Rational Synergy administrator.

`database_path`

> Specifies the path to the database that you want to prepare.

`/u username`

> Specifies the new name of the Rational Synergy administrator.

Example

Prepare the database `\\cmserv\ccmdb\db` for a new Rational Synergy administrator name with a domain of `MYDOMAIN` and a user name of `my_cmadmin`.

```
> ccmdb prepare /d MYDOMAIN /u my_cmadmin \\cmserv\ccmdb\db
```

Caveats

If the Rational Synergy administrator name was changed without first preparing a database for that change, you need to fix the permissions of the database files so that the new Rational Synergy administrator can take ownership of the files. You also need to fix the permissions of the Informix database so that the new Rational Synergy administrator can access the database.

The following sets of steps show you how.

To fix the permissions of the database files:

1. Log on as *local administrator*.

2. In Windows Explorer, open the properties of the database path folder.

3. Select the **Security** tab.

   You might see the following message:

   ```
   You only have permission to view the current security
   information on dbname.
   ```

   Click **OK** to proceed.

4. Press the **Advanced** button, and then select the **Owner** tab.

   Change the owner to **Administrators**. Include subcontainers.

   Click **OK** in the **Access Control Settings** dialog box, and again in the **Properties** dialog box.

5. Open the **Properties** dialog box of the database path folder again. Select the **Security** tab again. Type the new Rational Synergy administrator name, and then grant him full control. Click **OK**.

To fix the permissions of the Informix database:

1. Log on as user *informix*.

2. Change directories to the *informix* subdirectory under the Rational Synergy installation
   (cd /d %CCM_HOME%\informix).

3. Run the setenv.cmd command.

4. Run the dbaccess command.

5. Type Q to select Query-language.

6. Use the up and down arrow keys to select the database to fix, and then click **Enter**.

7. Press **N** to select **New**.

8. Type `grant dba to name`

    where `name` is the Rational Synergy administrator name. (Do not include the domain.)

    Press **Esc** when you have finished typing.

9. Press **R** to select **Run**.

    The message `Permission granted` should appear at the bottom of the screen.

10. Exit `dbaccess` by pressing **E** twice.

See also

"ccm admin_user_name" on page 104

"ccmadm admin_user" on page 117

"ccmadm config_admin" on page 119

"ccmadm password" on page 120

ccmdb protect

Synopsis

```
ccmdb pr|protect database_path
```

Description and uses

The `ccmdb protect` command prevents users from starting new sessions on the protected database.

You want to prevent users from starting new sessions if a database is corrupted or if you are installing a model into a database.

The user for this command is the Rational Synergy administrator.

Options and arguments

database_path

Specifies the path to the database that you want to protect.

Example

Protect the `\\boon\ccmdb\test_ccm` database.

```
> ccmdb protect \\boon\ccmdb\test_ccm
```

Caveats

This command prevents new sessions from being started on the specified database but does not protect the database from sessions already running. Stop current sessions by executing the "ccmdb shutdown" on page 149.

See also

"ccmdb shutdown" on page 149

"ccmdb unprotect" on page 154

ccmdb refresh

Synopsis

```
ccmdb refresh database_path
```

Description and uses

Use the `ccmdb refresh` command to refresh back-end sessions used by Rational Synergy Web mode sessions. Use this command when you change model settings that affect the behavior of a database to ensure that those changes take effect for Web mode users. (Because back-end sessions are shared for Web mode sessions, restarting a Rational Synergy Web mode session does not cause model settings to take effect for that user.)

It is not necessary to use this command after adding or modifying users. Rational Synergy automatically refreshes back-end sessions when the users attribute is modified.

For more information, see "Administering the CCM Server" on page 33.

You must be user *ccm_root* to execute this command.

Options and arguments

database_path

Specifies the path to the database Web server that you want to refresh.

Examples

Refresh the `\vol\orbit1\ccmdb\base` database.

```
orbit% ccmdb refresh \\boon\ccmdb\sandbox
\\boon\ccmdb\sandbox successfully refreshed.
```

See also

"ccmdb info" on page 135

"ccmdb shutdown" on page 149

ccmdb repair

Synopsis

```
ccmdb|repair database_path /i|/repair_index table_name|index_name|""
             [/y]
ccmdb|repair database_path /t|/repair_table table_name [/y]
```

Description and uses

The `ccmdb repair` command repairs indexes and tables at the Informix level in a Rational Synergy database.

For more information, refer to "Performing database integrity checks" on page 79.

Note Ensure that all Rational Synergy sessions are shut down before executing the `ccmdb repair` command. If any sessions are running when you execute the command, you will receive an Informix error. (For information on shutting down a database, see "ccmdb shutdown" on page 149.)

The user for this command is the Rational Synergy administrator.

Back up your current database **before** you run this command.

Options and arguments

database_path

Specifies the path to the database to be protected.

`/i|/repair_index` *table_name|index_name|''*

Indicates that you want to re-create an index. If `/repair_index` is specified with a table name, all of the indexes in the table are repaired. If an index name is specified, only the specified index is repaired. If "" is specified, all indexes in the database are repaired.

The possible tables are as follows: `acckeys`, `attrib`, `bind`, `bsite`, `compver`, `control`, `relate`, and `release`.

`/t|/repair_table` *table_name*

Indicates that you want to repair table data for *table_name*. This is done by renaming the table, creating the new table, copying to the new table, and then deleting the old table.

`/y`

Executes the command without displaying confirmation messages.

Example

Assume that `ccmdb check` reports an index corruption in the `attrib` table. Fix the inconsistency by running the following command:

```
> ccmdb repair \\bulldog\ccmdb\primo /repair_index attrib
```

ccmdb shutdown

Synopsis

`ccmdb shutdown` *database_path*

Description and uses

The `ccmdb shutdown` command automates several important steps required to bring down all Rational Synergy user sessions safely, and to ensure that a database is in a protected state. Use this command to close down a Rational Synergy database for maintenance.

This program operates on the database that you specify. The `ccmdb shutdown` command does the following:

1. Prevents new users from starting sessions. See "ccmdb protect" on page 145.

2. Notifies active users with a series of warning messages that the database will be brought down.

3. Issues remote `exit` commands to sessions that have not exited.

4. Waits until all users have exited or successfully shut down.

After you have started the `ccmdb shutdown` command, only an interrupt keyboard sequence can stop the shutdown from happening.

The user for this command is the Rational Synergy administrator.

Options and arguments

database_path

Specifies the path to the database to be shut down.

The *database_path* will be the same path on the user interface machine unless you specified a user interface database path in the **Startup Info** dialog box. (To display the database path, run the `ccm monitor` command. The output displays the correct UNC path.)

Example

Shut down a Rational Synergy database.

1. Display a list of active sessions by executing the `ccm monitor` command.

    ```
    > ccm monitor
    ```

2. Send out a broadcast message telling users that you are shutting down the `test_ccm` database.

    ```
    > ccm message /database "?test_ccm" "Shutting down server in 15
    minutes. Close sessions!"
    ```

3. Shut down the `test_ccm` database.

    ```
    > ccmdb shutdown \\data\ccmdb\test_ccm
    ```

See also

"ccm monitor" on page 111

ccmdb unpack

Synopsis

```
ccmdb unpa|unpack packfile [/p|/space dbspace]
        [/s|/server servername] /t|/to database_path [/url server_url]
```

Description and uses

The `ccmdb unpack` command restores a database from a `.cpk` file created by `ccmdb pack` or `ccmdb backup`.

Before you unpack a database, note the following:

- When typing the database path to the location where you want the database unpacked, type the path using the universal naming convention (UNC). Additionally, verify that you are unpacking to a directory on an NTFS drive.

- The directory you unpack into must be a valid share point or a subdirectory of a valid share point. Also, the directory must be writable by the Rational Synergy administrator.

  Note After unpacking a database (particularly from a packed production database), you might need to change some of the database properties, such as the paths to project work areas. See Rational Synergy CLI Help for the `ccm wa` (work area) command for important information about changing a database properties.

For more information, see "Creating, modifying, and deleting a Rational Synergy database" on page 86.

The user for this command is the Rational Synergy administrator.

Options and arguments

`/p|/space dbspace`

Specifies the name of the dbspace. If not specified, the dbspace name defaults to the `ccm` dbspace.

`packfile`

Specifies the file to be unpacked.

`/s|/server servername`

Specifies the database server. If you do not specify this switch, the new database is created on the current computer, if it is a database server. If not, then the new database is created on the main server.

`/t`|`/to` *database_path*

> Specifies the path and name of the database to be restored. Type the path using the UNC. Additionally, verify that you are running on an NTFS system.

`/url` *server_url*

> When this option is specified, the new database is assigned to the specified server. Otherwise, it is assigned to the default CCM server running on the database server machine.

Example

Unpack the training database to a new database named `train71`.

```
> ccmdb unpack packfiles\training.cpk /t \\orbit1\ccmdb\train71

Enter user-name who has privileges of
CREATE USER, DROP USER, CREATE ANY INDEX, DROP ANY INDEX,
CREATE ANY SEQUENCE, CREATE ANY TABLE, INSERT ANY TABLE,
DROP ANY TABLE, SELECT ANY TABLE, UPDATE ANY TABLE,
DELETE ANY TABLE, and GRANT ANY OBJECT PRIVILEGE: sys
Enter password:
Unpacking database \\orbit1\ccmdb\train71.
Creating Rational Synergy database \\orbit1\ccmdb\train71.
Database create succeeded.
Extracting pack file
\\pulsar2\ccmred\ccmred.sol\cmred_odd\packfiles\training.cpk.
Loading database.
loading Rational Synergy dump file version 7.1 platform UNIX ...
loading table attrib...
...............................3380 records.
loading table bind...
...343 records.
loading table bsite...
..223 records.
loading table compver...
...368 records.
loading table control...
0 records.
loading table relate...
..224 records.
loading table release...
10 records.
loading table acckeys...
22 records.
Database unpacked successfully.
```

See also

"ccmdb backup" on page 123

"ccmdb check" on page 126

"ccmdb pack" on page 140

ccmdb unprotect

Synopsis

```
ccmdb unpr|unprotect database_path
```

Description and uses

The `ccmdb unprotect` command unprotects a database that was protected with the `ccmdb protect` command.

The user for this command is the Rational Synergy administrator.

Options and arguments

`database_path`

Specifies the path to the database to be unprotected.

Example

Unprotect the `\\bulldog\ccmdb\tstgonzo` database.

```
> ccmdb unprotect \\bulldog\ccmdb\tstgonzo
```

See also

"ccmdb protect" on page 145

ccmdb update_statistics

Synopsis

ccmdb update_statistics *database_path* [/l|/low]

Description and uses

Use the ccmdb update_statistics regularly to update Informix system tables so that your queries execute more quickly. This command is run for you as part of the ccmdb check, ccmdb load, and ccmdb unpack commands.

The user for this command is the Rational Synergy administrator.

Satisfy the following prerequisite:

- The command must be run from the database server machine or on a client with admin tools installed.

Options and arguments

database_path

Specifies the path to the database containing the system tables to be updated.

/l|/low

Causes the command to perform a quicker, less comprehensive system catalog table check and update. The default is to perform the most comprehensive table check and update, which executes more slowly.

Example

Perform a quick update of the Informix system tables to the \\bulldog\ccmdb\tstgonzo database.

```
> ccmdb update_statistics /low \\bulldog\ccmdb\tstgonzo
```

ccmdb upgrade

The following is a brief description of the `ccmdb upgrade` command. For a detailed description and usage instructions, see the *IBM Rational Synergy Upgrade Instructions for Windows*.

The upgrade program converts a database from Releases 6.4, 6.5, or 7.0 to Release 7.1 You must upgrade a database from a previous release before using it with Release 7.1.

The upgrade program performs the following actions on each database that it upgrades:

1. Updates the target database schema to the Release 7.1 schema.

2. Updates the target database version to 7.1.

3. Saves the previous migrate rules as
   database_path`\lib\Windows\migrate.old`.

4. Saves the previous `pt` directory as *database_path*`\oldpt`.

5. Saves the previous `bin` directory as *database_path*`\oldbin`.

6. Saves the previous `notify` directory as *database_path*`\lib\oldnotify`.

7. Protects the target database.

8. Exports any types that were modified since a previous model install to the `database_path\old_types` directory. If upgrade cannot determine the time of the previous model install, then it exports all standard types and attempts to identify any modified types by using an alternative algorithm.

9. Finds the list of models installed in the target database.

10. Installs the required list of models and model additions from the `model` database to the target database.

11. Unprotects the target database.

12. Restores the original migrate rules file saved in step 3, and performs any upgrade that is required.

13. Starts a 7.1 session on the target database.

14. Runs the `ccm db_update /update` command to update the data in the target database to 7.1 format.

15. Removes obsolete files from the target database.

16. Assigns the new database to the appropriate server.

ccmsrv archive

Synopsis

```
ccmsrv archive /l|/level archive_level /d|/device archive_device
                [/s|/server servername][/size device_size] [/y]
```

Description and uses

The `ccmsrv archive` command archives a database server.

For a full discussion of this command, along with Rational Synergy recommendations for archiving a database server, see "Archiving and restoring database servers" on page 59.

Caution Ensure that you have a blank tape for every archive. This command overwrites any previous archives on your tape.

The users for this command are *Informix-Admin group member* and *local administrator*.

Satisfy the following prerequisites:

• Run this command on the machine where the Informix server resides.

• Use this command as part of a backup plan that includes a backup of the files under the Rational Synergy database directories.

Options and arguments

`/d|/device archive_device`

> Specifies the archive device. The archive device must be a tape device name. Once you specify the archive device with the `/d` switch, it becomes the default for both archive and restore commands. Once you specify the default, you do not need to specify this parameter again, unless you want to change the default.

`/l|/level archive_level`

> Specifies the archive level, 0, 1, or 2.

`/s|/server servername`

> Specifies the name of the database server. The default is the server of the current machine.

```
/size device_size
```

> Specifies the size of the archive device in KBytes. Once you specify the size with the `/size` switch, it becomes the default. This is typically the size of the tape, if you use a tape device.
>
> The default size is 10240.

```
/y
```

> Executes the command without displaying confirmation messages.

Example

Create a Level 0 archive using the tape device `\\.\TAPE0` with a 1 GB tape for the database server.

1. Insert the tape.

2. Type the archive command.

   ```
   > ccmsrv archive /level 0 /size 1000000 /device \\.\TAPE0
   ```

   The size of the tape device you specify should match the capacity of the tape.

Caveats

When you archive the server, back up the Informix server configuration file, `ONCONFIG`, as well. This file is necessary to run or restore the Informix server.

The file `ONCONFIG` server configuration file resides in `CCM_HOME\informix\etc\ONCONFIG`.

ccmsrv create

Synopsis

```
ccmsrv create [/f|/file parameter_file] [/y]
```

Description and uses

The `ccmsrv create` command creates a database server. Generally, you will use the Rational Synergy installation program to create database servers. This command is included for special cases, for example, in case the server creation fails during installation. If this occurred, the installation would complete, but you would need to create the database server as a separate step.

Note You can install one and only one main server before you can install additional servers.

The users for this command are *Informix-Admin group member* and *local administrator.*

Satisfy the following prerequisite:

• You must have tried to install a main server or an additional server on this machine.

Options and arguments

`/f|/file parameter_file`

Specifies the path to the parameter file, which is shown in "Creating the Informix Dynamic Server" on page 49. If you do not specify this switch, you are prompted for the following:

• maximum number of users
• `root` dbspace storage location
• `log` dbspace storage location
• `ccm` dbspace storage location
• `temp` dbspace storage location

To read the complete creation script message and to know what information you need to provide, see "Creating the database server" on page 49.

`/y`

Executes the command without displaying confirmation messages.

Example

An example of this command is available in "Informix database server" on page 46.

Caveats

The Informix server name cannot contain a dash and must start with an alpha character. The default is the name of the host.

ccmsrv delete

Synopsis

```
ccmsrv delete [/y]
```

Description and uses

The ccmsrv delete command deletes the database server on the current computer. This operation removes the configuration file, the record of the database server in the sqlhosts registry entry, and all chunk files.

Caution Avoid data loss by backing up all Rational Synergy databases **before** you delete a database server.

For a full discussion of this command, see "Deleting a database server" on page 57.

The users for this command are *Informix-Admin group member* and *local administrator*.

Satisfy the following prerequisite:

• Run this command on the machine where the database server resides.

Options and arguments

/y

Executes the command without displaying confirmation messages.

Example

An example of this command is available in "Deleting a database server" on page 57.

ccmsrv expand

Synopsis

```
ccmsrv expand /size kbytes /d|/dbspace dbspacename /p|/path chunk_path
              [/y] [/s|/server servername]
```

Description and uses

Use the ccmsrv expand command to increase the database server dbspace capacity. This command expands a dbspace of a database server by adding a chunk file. This is useful when you want to increase the size of a server that is running out of room in a dbspace.

Caution Do not use an existing file.

For a discussion of this command, see "Increasing the dbspace of the database server" on page 58.

The users for this command are *Informix-Admin group member* and *local administrator*.

Satisfy the following prerequisites:

- Run this command on the machine where the Informix server resides.

- The path you specify must be a local NTFS path.

Options and arguments

/d|/dbspace *dbspacename*

> Specifies the dbspace. If not specified, the dbspace defaults to the ccm dbspace. Possible dbspace names are as follows: rootdbs, log, temp and ccm.

/p|/path *chunk_path*

> Specifies the path to the new chunk file.

> You can give the full path of the new chunk file, or you can give a directory path. If you specify a directory, the default next name (for example, ccm.001, ccm.002, ccm.003) will be the name of the new chunk file.

/s|/server *servername*

> Specifies the name of the database server. The default is the server on the current machine.

/size *kbytes*

> Specifies the chunk size in Kbytes.

/y

Executes the command without displaying confirmation messages.

Example

Increase the ccm dbspace by 100,000 KB, and use the following chunk path:
c:\ifmxdata

```
> ccmsrv expand /size 100000 /path c:\ifmxdata /dbspace ccm
```

ccmsrv modify

Synopsis

```
ccmsrv modify /u|/user max_users [/y] [/s|/server servername]

ccmsrv modify    /p|/parameter parameter [/s|/server servername]
                 /v|/value value [/y]
```

Description and uses

The `ccmsrv modify` command modifies the number of users or other parameters allowed in the database server.

The users for this command are *Informix-Admin group member* and *local administrator*.

Satisfy the following prerequisite:

- Run this command on the machine where the database server resides.

Options and arguments

`/p|/parameter` *parameter*

Specifies parameters to be modified in the Informix server configuration file. Valid parameters are `LTAPEDEV` or `LTAPESIZE`.

Use `/p` for logical log backups. For information on logical log backups, see "Logical log files" on page 68.

`/s|/server` *servername*

Specifies the name of the database server. If a server is not specified, it defaults to *host_name*.

`/u|/users` *max_users*

Specifies the maximum number of users allowed in the database.

`/v|/value` *value*

Specifies the value of *parameter*, for example, the name of the tape device or the size of the tape.

`/y`

Executes the command without displaying confirmation messages.

Example

Change the maximum number of users allowed in the database to fifty.

```
> ccmsrv modify /user 50
```

ccmsrv offline

Synopsis

```
ccmsrv offline [/s|/server servername][/y]
```

Description and uses

The `ccmsrv offline` command takes the database server offline.

Use this command when you want to make a database server unavailable to all users. You should send a broadcast message warning users of your intention to take the server offline. For instructions about sending a broadcast message, refer to "ccm message" on page 109.

Caution This command disconnects all users who are currently connected to the server.

The users for this command are *Informix-Admin group member* and *local administrator*.

Satisfy the following prerequisite:

• Run this command on the machine where the database server resides.

Options and arguments

`/s|/server servername`

Specifies the name of the database server. The default is the name of the current machine. This option is required when the Informix *servername* does not match the machine name.

`/y`

Executes the command without displaying confirmation messages.

Example

An example of this command is available in "Taking a database server offline" on page 57.

ccmsrv online

Synopsis

```
ccmsrv online [/s|/server servername][/y]
```

Description and uses

The `ccmsrv online` command brings the database server online.

Use this command when you want to make a database server available to all users.

The users for this command are *Informix-Admin group member* and *local administrator*.

Satisfy the following prerequisite:

• Run this command on the machine where the database server resides.

Options and arguments

`/s|/server servername`

Specifies the name of the database server. The default is the name of the current machine. This option is required when the Informix `servername` does not match the machine name.

`/y`

Executes the command without displaying confirmation messages.

Example

An example of this command is available in "Bringing a database server online" on page 54.

ccmsrv quiescent

Synopsis

```
ccmsrv quiescent [/s|/server servername][/y]
```

Description and uses

The *ccmsrv quiescent* command puts the database server in a quiescent state so that you can perform administrative tasks.

Caution All active Rational Synergy sessions will lose connections to the database server. You should run a ccmdb shutdown command first.

The users for this command are *Informix-Admin group member* and *local administrator.*

Satisfy the following prerequisite:

• Run this command on the machine where the database server resides.

Options and arguments

```
/s|/server servername
```

> Specifies the name of the database server. The default is the name of the current machine. This option is required when the Informix servername does not match the machine name.

```
/y
```

> Executes the command without displaying confirmation messages.

Example

Put the server in the quiescent state.

1. Send out a message to all users of the tstgonzo database that you are about to put the server in the quiescent state.

   ```
   > ccm message /database "?tstgonzo" "Putting server in quiescent
   state in 15 minutes. Close sessions!"
   ```

2. Shut down all databases. (In this example, there is only one database.)

   ```
   > ccmdb shutdown \\sue\ccmdb\tstgonzo
   ```

3. Put the database server in a quiescent state.

   ```
   > ccmsrv quiescent
   ```

ccmsrv restore

Synopsis

```
ccmsrv restore [/d|/device archive_device] [/y]
```

Description and uses

The `ccmsrv restore` command enables you to restore a server from an archive device.

The users for this command are *Informix-Admin group member* and *local administrator*.

Satisfy the following prerequisite:

• Run this command on the machine where the database server resides.

Options and arguments

`/d|/device archive_device`

Specifies the archive device. The archive device must be a tape device name.

Once you specify the archive device with the `/d` switch, it becomes the default for both the archive and restore commands. Once you specify the default, you do not need to specify this parameter again, unless you want to change the default.

`/y`

Executes the command without displaying confirmation messages.

Example

Restore the database server from archive tape `TAPE0`.

```
> ccmsrv restore /device \\.\TAPE0
```

Caveats

If one or more of the Informix chunk files were deleted, you need to create a zero-length file in its place. Without the zero-length file, `ccmsrv restore` will not work.

See also

"ccmsrv archive" on page 157

ccmsrv status

Synopsis

```
ccmsrv status [/a|/all] [/d|/dbspace] [/l|/log]
```

Description and uses

Use the `ccmsrv status` command to display the current status of the database server.

The user for this command is *Informix-Admin group member.*

Satisfy the following prerequisite:

• Run this command on the machine where the database server resides.

Options and arguments

`/a|/all`

Displays all information.

`/d|/dbspace`

Displays dbspace information.

`/l|/log`

Displays logical log information.

Example

An example of this command is available in "Displaying the database server status" on page 54.

Appendix: Notices

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