

ClearCase Remote Client and Change Management Server Data Collection for Problem Analysis

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Introduction

The purpose of this white paper is to provide some suggestions on what data could be collected and useful when working with IBM Client Support on analyzing IBM Rational ClearCase Remote Client (CCRC) and IBM Rational ClearCase Change Management (CM) Server environments for problem analysis.

The version of the product coverage is 7.1.2.1, which is the current release at the time of this writing.

Terminology

ClearCase Remote Client (standalone) CCRC RCP Platform. This is the client that is a standalone application and is installed using IBM Installation Manager, it is a self contained application with its own underlying JRE and Eclipse runtime.

ClearCase Remote Client for Eclipse (CCRC Plug-in) – This is the ClearCase Remote Client functionality to be installed into an existing Eclipse shell. This installation is done using the Eclipse functionality to install plugins from an update site.

ClearCase Remote Client Extension Offering – This is the ClearCase Remote Client functionality that can be installed, through the use of IBM Installation Manager, into other Rational tools, like IBM Rational Application Developer (RAD) or IBM Rational Software Architect (RSA).

ClearCase Remote Client for Visual Studio - (also known as CCRC.net) this is the client that is a standalone application and is installed using IBM Installation Manager specifically into Microsoft Visual Studio development IDE's.

1 Client Side Data to Investigate and Gather

The following is a list of data and information that can be gathered when doing problem analysis with IBM client support for ClearCase Remote Client:

1.1 .log file (client workspace error log)

What is it ?

Each eclipse instance provides a standard log file for client side errors (and warnings). This is a general Eclipse technology, and ClearCase Remote Client records any client error to this log.

Why is it used in troubleshooting?

This is an important file to gather if the user observes an exception or error message in the user interface. Sometimes the user interface may not provide the full details of the error. This log is appended with errors as they are recorded, if the log is not cleared or removed (it gets re-created at startup time, the data can sometimes be overwhelming if the workspace has been in use for a long time).

If the user is using the CCRC RCP, the log files is located at:

```
<user_home_directory>/Rational/CCRC71/workspace/.metadata/log
```

If the user is using the CCRC Plugin, or the CCRC Extension, the file would be located at:

```
<eclipse_workspace_dir>/.metadata/.log
```

If the ClearCase Remote Client for Eclipse or ClearCase Remote Client Extension Offering is in use, the client could have many "workspaces".

Where to find it?

- **ClearCase Remote Client and CCRC.net**

Help>About ClearCase Remote Client>Configuration Details>View Error Log

- **ClearCase Remote Client for Eclipse**

Help>About Eclipse Platform>Configuration Details>View Error Log

1.2 Configuration Details

What is it?

Configuration Details is an Eclipse provided tool for collecting useful information specific to the Eclipse framework and other general information in use. More applicable to Rational ClearCase Remote Client for Eclipse users, it has been useful in all CCRC clients.

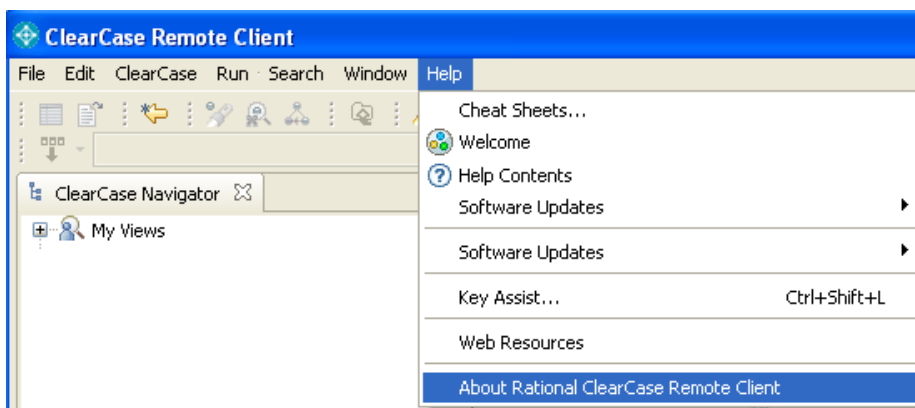
Why is it used in troubleshooting?

Configuration Details can provide useful information for debugging issues that come from the Eclipse core. It can be used to determine what JRE is being used, the classpath, environment variables, runtime variables passed to Eclipse and what plugins are installed, active and other configuration information.

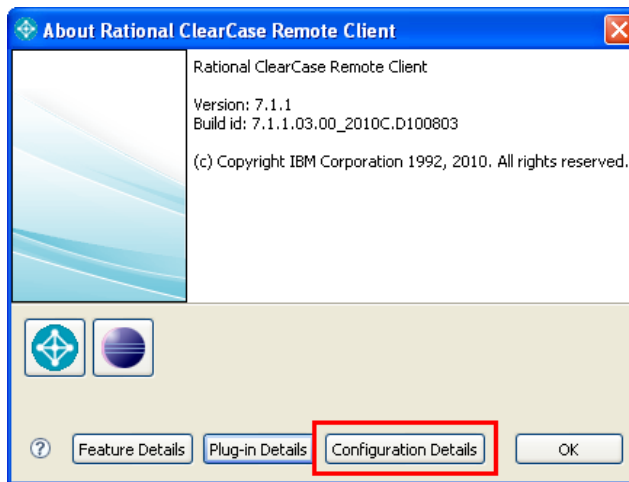
Where to find it?

- **For ClearCase Remote Client**

Help>About Rational ClearCase Remote Client



On the CCRC informational page, click on Configuration Details:

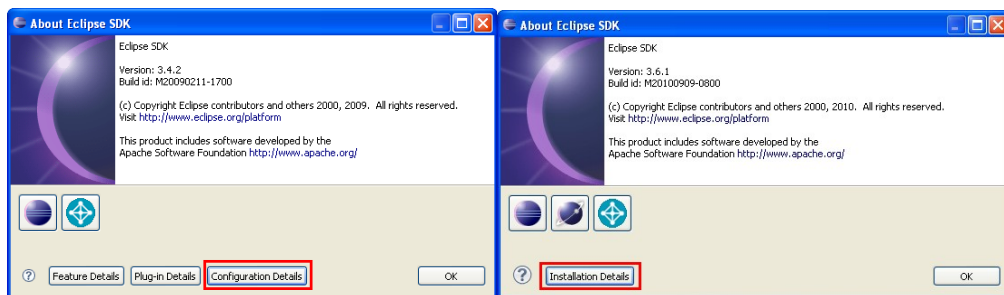


This file can be saved to your clipboard buffer for pasting into a text editor or email.

- **For ClearCase Remote Client for Eclipse**

Help>About Eclipse SDK (or whatever your Eclipse IDE is named)

Depending on the version of Eclipse, the information may be located in slightly different locations.



On the left is Eclipse 3.4 which is very similar to ClearCase Remote Client. On the Right is Eclipse 3.6 which has the same information under "Installation Details".

1.3 .ccase_wvreg

What is it ?

Each clients machine and each CCRC end user maintains a listing of copyareas (location of where local copies of source are stored). This file is read at the start up of the client to display the users views.

Technote on .ccase_wvreg file:

<http://www.ibm.com/support/docview.wss?&uid=swg21228258>

Why is it used in troubleshooting?

This file can be used to investigate issues around the display of views or possibly with problems accessing views inside CCRC.

Where to find it ?

Typically this file is stored in the users home directories:

Microsoft Windows:

```
C:\Documents and Settings\username\.ccase_wvreg
```

Linux or UNIX:

```
~username/.ccase_wvreg
```

Take note that this file is preceded with a "." which means it may not be visible in some user interface (UI) file browser tools.

This file can be recreated by hand if the path[s] to the copyareas is changed or moved (see Changing the location of a ClearCase Remote Client view below).

1.4 .server_reg

What is it ?

Each clients machine and each CCRC enduser maintains a listing of where server named connections it stores (location of where local copies of source are stored). This file is read at the start up of the client to display the various server nodes in ClearCase Explorer.

This file contains a list of servers.

Example:

<http://localhost:12080>
http://CmServerHost:12080

Each client also has a file called `.server_reg.created`. This file merely contains the string "created" to let the client know that CCRC has created a `.server_reg` file.

Why is it used in troubleshooting?

This file can be used to investigate issues around display of servers or possibly with problems accessing server inside CCRC.

Where to find it?

Typically this file is stored in the users home directories:

Windows:

```
C:\Documents and Settings\username\.server_reg
```

Linux or UNIX:

```
~username/.server_reg
```

Take note that this file is preceded with a "." which means it may not be visible in some UI file browser tools.

1.5 Workspace Information

What is it?

Workspaces are where CCRC clients store Eclipse information. For all versions of CCRC a workspace can be re-created at any time, yet workspaces can be backed up to expedite getting started with CCRC.

Why is it used in troubleshooting?

Workspaces are where the Rational ClearCase Remote Client error log (`.log`) file[s] are stored. Workspaces have, on a rare occasion, become corrupt and a workspace typically can be deleted and recreated.

Where to find it ?

- **Workspaces for ClearCase Remote Client**

Windows:

```
C:\Documents and Settings\username\.Rational\CCRC71\workspace
```

Linux or UNIX:

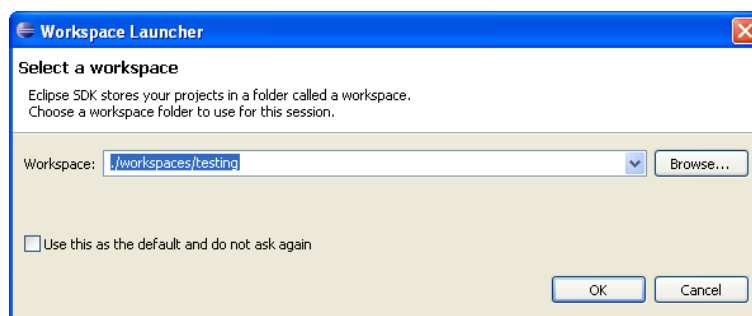
```
~username/.Rational/CCRC71/workspace
```

- **Workspaces for ClearCase Remote Client for Visual Studio (Windows Only)**

```
C:\Documents and Settings\username\.Rational\CCRC71\Integration
```

- **Workspaces for ClearCase Remote Client for Eclipse**

Typically workspaces can be located anywhere users wish, yet can be determined at start up (as the users are prompted) see image below:



1.6 Client CopyArea Files (*copyarea.dat* and *copyarea.db*)

What are they?

Each CCRC view on each CCRC client maintains a copy of the source they have loaded from each VOB repository in what is called a copyarea.

The copyarea can be anywhere the user decides to place the view, yet each copyarea starts with a parent directory that contains a *.copyarea.dat* file and then a folder for each VOB that is loaded. In each folder that is loaded from the VOB, a file *copyarea.db* is stored. This file maintains the state of objects in that directory.

Why is it used in troubleshooting?

If a client does not see the changes they make (for example a file showing that it is checkedout), analysis of the copyarea.db file could be needed. When a CCRC client cannot correct or update a copyarea.db file, a state of discordance could be recorded.

Technote on discordance:

<https://www.ibm.com/support/docview.wss?&uid=swg21305088>

Where to find it?

Each ClearCase Remote Client view has a copyarea.dat file at the root of the view (same level as the folders that represent the VOB[s] that are loaded.)

Each subsequent subfolder, that is loaded from the CM Server has a .copyarea.db (this file may be hidden from some Operating systems display). This file stores the information about what element versions are stored in each directory, status of the file (for example checkedout or checkedin) and other metadata.

1.7 Legacy Client (Remote Core) Tracing

What is it ?

Debug tracing that is used to trace legacy calls. Previous versions of CCRC used a remote_core API (internal API) to perform operations. As of version 7.1, some ClearCase Remote Client operations were replaced with CM API.

Why is it used in troubleshooting?

Although this is tracing for legacy calls, some commands (especially ones that interact with workspace manipulation) still use remote_core. This tracing ** is usually only used when instructed by IBM client support.

Where to find it ?

The instructions for enabling remote_core tracing are the same as previous versions of CCRC.

See Technote <https://www.ibm.com/support/docview.wss?uid=swg21234118>

** The server side of remote_core tracing is not applicable to versions 7.1 and later. Below is a typical .options file for 7.1 Client side remote_core tracing:

```
# -----Client Only Tracing-----  
com.ibm.rational.clearcase/client_trace=true  
com.ibm.rational.clearcase/client_trace/params=HTTP_CLIENT:4 CTRC_UI:3 CTRC_CORE:3  
com.ibm.rational.clearcase/client_trace/output=file  
com.ibm.rational.clearcase/client_trace/file_name={path to a text file}  
# -----
```

1.8 Client Tracing (CM API)

To enable client side tracing of CM API, refer to documentation on the IBM Support Assistant (ISA) Lite:

<http://www.ibm.com/support/docview.wss?uid=swg21407512>

ISA Lite for Rational ClearCase version 7.1 is a customized subset of the IBM Support Assistant Workbench that provides automated data collection capability specific for Rational ClearCase version 7.1.

Details regarding ClearCase Remote Client specific collection:

<http://www.ibm.com/support/docview.wss?uid=swg21407512#Details%3A%20ClearCase%20Remote%20Client>

2 Server Side Data to Investigate and Gather

2.1 CM Server Log Files

What is it ?

CM Server leverages IBM Rational Websphere Application Server as the application server that ClearCase and IBM Rational ClearQuest applications run on.

Why is it used in troubleshooting?

All errors and warnings that are generated by CM Server are recorded to the logs directory.

Typically when working with IBM Client Support, you could be asked to compress up the entire directory for submission. Below is a short breakout of the contents that are in this directory and how they are used for troubleshooting:

AboutThisProfile.txt – basic information about the Websphere Application Server instance, such as hostname, ports in use, and location of the profile

cmprofile Service.log – log file for startup of Websphere Application Server as a service. This contains a line:

```
ADMU3000I: Server server1 open for e-business; process id is 1304
```

This indicates the running process for CM Server, which should be the same as server.pid in the server1 subfolder.

iscinstall.log – Websphere Application Server log (not applicable)

wsadmin.traceout – Websphere Application Server log (not applicable)

wsadmin.valout – Websphere Application Server log (not applicable)

ffdc – This directory contains error logs of exceptions and warnings that are generated by the first failure data collection mechanism. Websphere starts recording these logs when it detects the possibility of an error occurring, and sometimes yields additional stack information.

server1 – This is the most important log folder and contains all errors and exceptions that are recorded during runtime of CM Server for ClearCase and ClearQuest. These are:

native_stderr.log and *native_stdout.log* – used infrequently, yet can contain native code (not Java) errors from Websphere Application Server.

These contain messages written by native code including the JVM. Typically these are not frequently written to. For CM Server usage, they are not often used for troubleshooting purposes.

server1.pid – This provides the process ID of the currently running CM Server.

startServer.log and *stopServer.log* – These logs are helpful when troubleshooting problems with CM Server not starting up or shutting down (less likely).

SystemErr.log and *SystemOut.log* -These are usually the most useful logs. These capture all JVM related errors warnings, both for Websphere Application Server itself, and applications running such as CCRC or CQ Search, or others.

An example of an entry below:

```
[1/10/11 16:38:06:583 EST] 0000002a CMLogger E CRVSV0571I Exception
reason code: server-busy
```

[1/10/11 16:38:06:583 EST]	<i>Date/Time Stamp of Event</i>
0000002a	<i>Thread</i>
CMLogger	<i>ShortName (Abbreviated Component)</i>
E	<i>Event Type (see Event Types below)</i>
CRVSV0571I	<i>Message ID String</i>
Exception reason code: server-busy	<i>Error Message</i>

In between Event Type and Message ID, ClassName(java) and MethodName(java) could also be recorded under some circumstances.

The above is an example of one entry. An actual error may contain multiple entries (errors and or warnings).

Event Types

ID	Description	ID	Description
F	Fatal Message	E	Error
W	Warning	A	Audit
I	Informational	C	Configuration
D	Detail		

Where to find it ?

Windows:

```
C:\Program Files\IBM\RationalSDLC\common\CM\profiles\cmprofile\logs
```

Linux or UNIX:

```
/opt/IBM/RationalSDLC/common/CM/profiles/cmprofile/logs
```

2.2 Clearbug2 Output

What is it ?

ClearBug2 is an IBM utility that you can download and use to gather ClearCase specific and basic system information on Windows only computers.

Why is it used in troubleshooting?

The tool is designed to gather all the typical ClearCase specific information, and some commonly used Windows system information (such as network, hardware, and application) that is used by IBM Client Support.

Where to find it ?

The utility can be downloaded from the following technote:

<https://www.ibm.com/support/docview.wss?uid=swg21131335>

2.3 CM Server Debug Tracing

To place CM Server in debug trace mode **, refer to documentation on the IBM Support Assistant Lite:

<http://www.ibm.com/support/docview.wss?uid=swg21407512>

ISA Lite for Rational ClearCase version 7.1 is a customized subset of the IBM Support Assistant Workbench that provides automated data collection capability specific for Rational ClearCase version 7.1.

Details regarding CM Server specific collection:

<http://www.ibm.com/support/docview.wss?uid=swg21407512#Server%20Collectors>

** **NOTE** – Enabling debug tracing on CM Server should only be enabled for diagnostic purposes upon recommendation of IBM Client Support.

2.4 Region Map File

What is it ?

The region map file is used for being able to segregate specific users and groups to have access to a controlled ClearCase region. This is helpful in providing some control for specific users on certain VOBs.

For more information on region mapping see:

<https://www.ibm.com/support/docview.wss?uid=swg21264782>

Why is it used in troubleshooting?

VOB access errors can occur if region map syntax is incorrect. If a region map path is not accessible, it can prevent login to some CM Servers.

If you need to determine how a user or group is mapped for the process of security or region segregation, the region map file will need to be evaluated.

Where to find it ?

For ClearCase CM Server 7.1 and later the region map file location is specified by the MBean setting `ccrcUserRegionMapfile`. See the section below on how to query and print out an MBean value.

2.5 Current Mbeans Running On Server

What is it ?

Mbeans are runtime variables used during the operation of CM Server, this is how an administrator can configure specific values for the CM Server.

Why is it used in troubleshooting?

Mbeans cover a wide array of data points to be used in troubleshooting, such as view storage location, temp directory location and other performance tunings and settings.

Where to find it?

Below is documentation on Mbeans in detail and includes steps on how to query and print out MBean values:

https://publib.boulder.ibm.com/infocenter/cchelp/v7r1m0/index.jsp?topic=/com.ibm.rational.clearcase.cc_admin.doc/topics/cm_server/admin_console.htm

What is usually the easiest way to manipulate Mbean values on a CM Server is to use the *importFile* and *ExportToFile* commands. In the above documentation these commands are discussed in detail under the section:

Additional convenience commands for importing and exporting MBean attributes

References

- About the CCRC .ccase_wvreg file
<https://www.ibm.com/support/docview.wss?&uid=swg21228258>
- About Discordance in ClearCase Remote Client
<https://www.ibm.com/support/docview.wss?&uid=swg21305088>
- Setting up debug tracing for the ClearCase Remote Client
<https://www.ibm.com/support/docview.wss?uid=swg21234118>
- Utility to collect ClearCase logs and diagnostic data on Windows - ClearBug2
<https://www.ibm.com/support/docview.wss?uid=swg21131335>
- IBM Support Assistant Lite for Rational ClearCase v7.1
<http://www.ibm.com/support/docview.wss?uid=swg21407512#Server%20Collectors>
- IBM Support Assistant Lite for Rational ClearCase v7.1 – Server Collectors
<http://www.ibm.com/support/docview.wss?uid=swg21407512#Server%20Collectors>
- About Multiple ClearCase Region Support for CCRC
<https://www.ibm.com/support/docview.wss?uid=swg21264782>
- Setting available MBean attributes
https://publib.boulder.ibm.com/infocenter/cchelp/v7r1m0/index.jsp?topic=/com.ibm.rational.clearcase.cc_admin.doc/topics/cm_server/admin_console.htm