

IBM Rational Change Management Server & IBM Rational ClearCase Remote Client

Backup and Restoration Guidelines

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Introduction

The purpose of this document is to serve as a guide for customers who wish to plan for backup and recovery of Change Management Server (CM Server) and IBM Rational ClearCase Remote Client (CCRC). The document will cover the various configuration and environment files.

The version of the product coverage is 7.1.2, which is the current release at the time of this writing.

1 CM Server Areas for Backup Consideration

1.1 Websphere Mbeans

Mbeans are used by the Websphere Application Server component of CM Server to handle runtime settings. MBeans can be thought of as the Applications Server equivalent to environment variables. An administrator needs to ensure these are regularly backed up as to ensure that custom settings that might have taken place since initial installation are captured.

These Mbeans are applicable to both IBM Rational ClearCase and IBM Rational ClearQuest if these products are installed on the CM Server.



Referenced Reading:

Preserve the CM Server configuration before customizing the MBean attributes or upgrading from or reinstalling ClearCase and ClearQuest:

<http://www.ibm.com/support/docview.wss?uid=swg21384746>

1.1.1 BACKUP

To back up the MBeans for the CM Server, from a command shell, navigate to the scripts directory on the CM Server.

Windows:

```
C:\Program Files\IBM\RationalSDLC\common\CM\scripts
```

UNIX or Linux:

```
/opt/rational/common/CM/scripts
```

Set the WAS_BIN environment variable to the location of the wsadmin utility by using the syntax appropriate for your preferred shell**.

** UNIX and Linux systems have many different types of command shells, these commands could be different depending on the shell (.cshrc example provided).

Windows:

```
set WAS_BIN="C:\Program Files\IBM\RationalSDLC\common\eWAS\bin"
```

UNIX or Linux:

```
setenv WAS_BIN=/opt/rational/common/eWAS/bin  
export WAS_BIN=/opt/rational/common/eWAS/bin
```

Start the wsadmin utility by specifying the CM Server profile name. The default CM Server profile name is 'cmprofile'.

Windows:

```
%WAS_BIN%\wsadmin -profileName cmprofile
```

UNIX or Linux:

```
$WAS_BIN/wsadmin.sh -profileName cmprofile
```

The expected output would look similar to this:

```
WASX7209I: Connected to process "server1" on node dfltNode using SOAP
connector; The type of process is: UnManagedProcess
WASX7209I: For help, enter: "$Help help"
wsadmin>
```

This is the wsadmin console prompt, at this point the user would need to source (execute) a jacl script (wsadmin can take input from jacl [a java version of tcl] and jython [a java variant of python] scripts as input)

The following wsadmin command will load some common CM Server specific functions:

```
wsadmin> source teamAdminUtils.jacl
```

To make a copy of the CM Server MBean currently on the server, a user can use the exportToFile command. This makes an ascii file that contains the TeamServerMBean, CcServerFactoryMBean and the CqServerFactoryMBean MBeans.

NOTE: You must use forward-slashes in the pathname for each of these commands.

```
wsadmin> exportToFile C:/temp/CmServer.properties
```

It is also recommended to imbed the date and/or server name of the CM Server so this file can be stored for later restoration. This should be done anytime a Mbean value is changed.

Example of output (Windows), in this example ClearCase and ClearQuest is installed.

```
wsadmin>exportToFile C:/temp/CmServer_10_25_2010.properties
File "C:/temp/CmServer_10_25_2010.properties" does not exist, proceeding
with export...
Retrieving MBeans...
Exporting TeamServerMBean.sessionReaperThreadDelay...
Exporting TeamServerMBean.cqLoginSessionTimeout...
. . . . <snip>
```

In looking at the properties file exported we can see each MBean and their corresponding value:

```
# Export of CM Server MBean attributes, created: 2010-10-25_13-52-39
#
#
```

```
# TeamServerMBean writable attributes
#
TeamServerMBean.sessionReaperThreadDelay=900
TeamServerMBean.cqLoginSessionTimeout=1800
TeamServerMBean.cqLoginSessionWaitTimeout=300
TeamServerMBean.sessionObjectDefaultTimeout=1800
TeamServerMBean.sessionQueryObjectTimeout=1800
TeamServerMBean.sessionRecordObjectTimeout=10800
TeamServerMBean.oncrpcBufferLimit=100
TeamServerMBean.oncrpcInterruptLimit=1000
TeamServerMBean.ejbBufferLimit=100
TeamServerMBean.ccrpcLoginSessionTimeout=14400
TeamServerMBean.ccrpcViewStorage=
TeamServerMBean.ccrpcUploadLimit=0
TeamServerMBean.ccrpcTempDir=C:/temp/ccrctemp
TeamServerMBean.ccrpcPrimaryGroup=
TeamServerMBean.ccrpcUnixCqHome=
TeamServerMBean.ccrpcVobLineTerminator=
TeamServerMBean.ccrpcUserRegionMapfile=
. . . . <snip>
```

These values can be modified with a text editor, and upon the next import (or restoration) the MBean values will be updated.

1.1.2 RESTORE

To restore the CM Server Mbeans (assuming there are non default values that have been configured), after validating that the CM Server has been installed and running, use the wsadmin console (as outlined in Page 5) and instead of using `exportToFile` to perform a back up, the `importFile` command is used

```
wsadmin> importFile C:/temp/CmServer_10_25_2010.properties
```

for each MBean you will see the script walk thru each value and make any change or setting needed. For example:

```
File " C:/temp/CmServer_10_25_2010.properties " found, proceeding with
import...
Importing value '1000' into property sessionReaperThreadDelay in
MBean TeamServerMBean
    Old value=900
    New value=100
```

As you can see, the original or default value was 900, and was replaced by 1000 during the import phase.

MBean values are dynamic, thus, at the end of importing the values, yet some of the values will not be applicable until the next ccrpc or cqrpc process is spawned for the user. Therefore, it is recommended to import the values prior to restarting the CM Server to ensure that all these values are in place for all users.

1.2 IBM HTTP Server

Each CM Server installation includes the installation of a front end Web server that is IHS (IBM HTTP Server).

This HTTP server contains configuration files that might have been changed since initial installation and should be considered for backup purposes.

The configuration directory for the IBM HTTP Server being used by CM Server is typically located at:

Windows:

C:\Program Files\IBM\RationalSDLC\common\IHS\conf

Linux or Unix:

/opt/IBM/RationalSDLC/common/IHS/conf

This directory contains the important files:

- httpd.conf – configuration file for the general operation of the Web server itself
- ssl.conf – configuration file for the server is SSL (secured sockets layer) is enabled on the server.

Also inside this directory are the same files in their original default versions:

- httpd.conf.default
- ssl.conf.default

It is recommended that these be preserved as to allow for comparison or serve as references if needed.

If Secured Sockets is in use, there is an additional concern of backing up the SSL Keystore, by default this is located at:

Windows:

C:\Program Files\IBM\RationalSDLC\common\IHS\bin\key.kdb

Linux or Unix:

/opt/IBM/RationalSDLC/common/IHS/bin/key.kdb

** Please note that SSL keys and configuration could be different depending on the SSL provider.



Referenced Reading:

Configuring Secure Sockets for CM Server

https://publib.boulder.ibm.com/infocenter/cchelp/v7r1m2/index.jsp?topic=/com.ibm.rational.clearcase.cc_admin.doc/topics/cm_server/t_config_cmserver_for_secure_sockets.htm

1.2.1 BACKUP

Backing up the important individual files for IBM HTTP server may be a user specific decision as the configuration files for IBM HTTP Server (IHS) are merely ascii based text files. For better backup coverage (in case a configuration file modification is needed), It is recommended that if the entire IBM Rational product directory is not backed up, In this approach the entire installation directory can be saved offline if needed for restoration later.

1.2.2 RESTORE

To restore the IHS configuration files, an administrator needs to copy over the servers previous configuration files, even though there is a .default version of each config file, it is always recommended to copy the default CM Server's running config files to .old for reference if needed.

1.3 Registry Information (ClearCase)

If the CM Server is also a ClearCase Registry host, then registry information (such as Views, VOBs, regions, and other registry information) will need to be backed up.

1.3.1 BACKUP

It is recommended to backup the entire registry directory:

Windows:

```
C:\Program Files\IBM\RationalSDLC\ClearCase\var\rgy
```

Linux or UNIX:

```
/var/adm/atria/rgy
```

To determine if the CM Server is a registry host as well, the `cleartool hostinfo` command can be used.

Example:

```
>cleartool hostinfo -l

Client: CM_Server_Hostname
Product: ClearCase 7.1.2
Operating system: Windows NT 5.1 (build 2600) Service Pack 3
Hardware type: Pentium
Registry host: CM_Server_Hostname
Registry region: windows
License host: CM_Server_Hostname
```

If the CM Server is listed as a registry host, the above directories will have subdirectories like:

```
bbase_object
bbase_tag
ct_servers
dct_dbs
domains
regions
site_config
storage_path
view_object
view_tag
vob_object
vob_tag
```

1.3.2 RESTORE

After reinstalling ClearCase on the CM Server (if it is to still serve as a registry host), the entire directory structure backed up in 1.3.1, should be restored to its original location (`cleartool hostinfo -l` command can be used to confirm post install).

1.4 License Information (FLEXlm)

If CM Server is also being used as a Licensing server, then consideration should be taken to backup or make other license servers available during restoration.

Rational Licensing supports load balanced licenses, and a customer can choose to host licenses across servers, so if a server was to be unavailable, then the client will be able to consume a license from another server.

**Referenced Reading:**

IBM Rational Licensing Disaster Recovery Processes
<http://www.ibm.com/support/docview.wss?uid=swg2128149>

1.5 ClearCase Webview (Backing Store) Storage

To allow CCRC clients connectivity from previously existing views, it is required that the CM Servers backing store be preserved.

This data would need to be backed up in sync with the view storage itself (see Section 1.6 for ClearCase View Storage backup).

1.5.1 BACKUP

Windows backup the directory:

C:\ccweb\ or [\\$]:\ccweb , where [\$] is the root drive for which product is installed.

Unix or Linux the directory (default) is :

```
/var/adm/rational/clearcase/ccweb/
```

An administrator can approximate the last time a view was last used by looking at the .view file or view_db.state. These files will show timestamp change even if the user was to simply update the view. This is helpful to let users know if they may have a modification of a local copyarea file that they may want to investigate.

Directory of C:\ccweb\USERNAME\<VIEW-TAG>\view.stg

```
09/13/2010  10:18 AM                630 .access_info
09/13/2010  10:18 AM                306 .compiled_spec
09/13/2010  10:17 AM                 9 .hostname
10/27/2010  10:36 AM                 0 .pid
09/13/2010  10:17 AM       <DIR>      .s
10/27/2010  10:43 AM       147 .view
09/13/2010  10:17 AM       <DIR>      admin
09/13/2010  10:18 AM                69 config_spec
09/13/2010  10:17 AM       <DIR>      db
09/13/2010  10:17 AM                204 groups.sd
09/13/2010  10:17 AM                420 identity.sd
09/13/2010  10:17 AM                379 readme.txt
10/27/2010  10:43 AM           3 view_db.state
      10 File(s)                2,167 bytes
       3 Dir(s)      3,529,506,816 bytes free
```

1.5.2 RESTORE

Restoring the directories addressed in 1.5.1 will bring the CCRC view state back to the time of which it was backed up.

Depending on backup frequency, ClearCase Remote Clients state of ClearCase objects will be out of sync with the server; the clients will need to update or refresh their views to bring the clients back in sync with the current status of CM Server.

It is recommended that clients check their work in frequently to avoid losing any work that may be left on the client. If the plan is to have long running work, consider hijacking instead of checking out. More information about clients can be found in section 2

1.6 General Recommendations (ClearCase)

If the CM Server is to serve other ClearCase purposes, additional backup and restoration considerations may need to be considered. Below are some additional documents that cover general ClearCase configurations.

Backup for ClearCase General:

https://publib.boulder.ibm.com/infocenter/cchelp/v7r1m2/index.jsp?topic=/com.ibm.rational.clearcase.cc_admin.doc/topics/c_backup.htm

Some general tuning parameters for CM Servers (Operating System and other settings) that may need to be considered:

<http://www.ibm.com/support/docview.wss?uid=swg21328563>

1.7 cqServerConn.properties file (ClearQuest)

Depending on your deployment of the Rational ClearQuest Web and CM Server components, you might need to modify some properties in the cqServerConn.properties file.

The cqServerConn.properties file resides in the following directory:

Windows

```
C:\Program Files\IBM\RationalSDLC\common\CM\profiles\cmprofile
\installedApps\dfltCell\RationalClearQuestWeb.ear\CQWebModule.war
\WEB-INF\classes
```

UNIX or Linux

```
/opt/IBM/RationalSDLC/common/CM/profiles/cmprofile/ installedApps/
dfltCell/RationalClearQuestWeb.ear/CQWebModule.war/WEB-INF/classes
```

1.7.1 BACKUP

It is recommended that the entire `classes` directory (in case of other modifications) be backed up in its entirety.

Windows

```
C:\Program Files\IBM\RationalSDLC\common\CM\profiles\cmprofile
\installedApps\df1tCell\RationalClearQuestWeb.ear\CQWebModule.war
\WEB-INF\classes
```

UNIX or Linux

```
/opt/IBM/RationalSDLC/common/CM/profiles/cmprofile/ installedApps/
df1tCell/RationalClearQuestWeb.ear/CQWebModule.war/WEB-INF/classes
```

1.7.2 RESTORE

Restoration of the entire directories above is required.

1.8 ClearQuest Database Connections

For the purposes of CM Server the server is really considered a ClearQuest client, so it is important to preserve the connection to the ClearQuest Database Sets that are needed for the environment.

1.8.1 BACKUP

To backup the ClearQuest connections on Linux and UNIX, backup the directory (default: `/opt/IBM/RationalSDLC/clearquest/CQDB_rgysregistry/`).

This typically is the path that is indicated by:
`/opt/rational/clearquest/.Databases`

If you are unsure about what connections currently exist and if the database registry location is not the default, the `cqreg` command can display the connection details:

```
> /opt/IBM/RationalSDLC/clearquest/bin/cqreg show -all
17:07:29 ::: [cqreg show -all]
17:07:29 --- Default DB path is /opt/IBM/RationalSDLC/clearquest/
CQDB_rgysregistry/
17:07:29 --- Default version is 7.0.0
Database Set Name: 7.0.0
  Master Database: MASTR
    Description:   MasterRepository
    Vendor:       DB2
    Server:       9.99.999.999
    ConnectOptions:
    Database:    master_m
  User Database: UCM
    Description:   UserDatabase
    Vendor:       DB2
    Server:       9.99.999.999
    ConnectOptions:
    Database:    UCM_u
```

```
17:07:29 ::: [cqreg has finished]
bash-3.00#
```

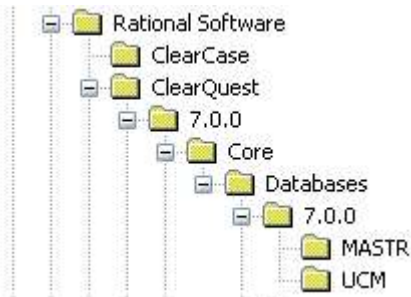
Example of output of that directory:

```
bash-3.00# ls -al /opt/IBM/RationalSDLC/clearquest/CQDB_rgys/
cqdb_registry/7.0.
0
total 18
drwxrwxrwx  9 root    root    512 Oct 21 22:54 .
drwxrwxrwx  3 root    root    512 Oct 21 17:19 ..
drwxr-xr-x  2 root    root    512 Oct 21 22:54 7.0.0
```

To backup the ClearQuest connections on Windows servers, the database connection is stored in the following Windows Registry key:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Rational Software\ClearQuest\7.0.0\Core\Databases
```

An example:



It is recommended that this hive (if not the entire Rational Software hive) is exported periodically as a .reg file.

1.8.2 RESTORE

On Linux and UNIX hosts, the directory in it's entirety will need to be replaced after the CM Server is installed

On Windows Hosts, restore the registry values either by manual input or replacement, or the importing of the previously mentioned .reg export.

For more information on the windows registry, see <http://support.microsoft.com/kb/256986>

2 ClearCase Remote Client Areas for Backup Consideration

2.1 Overview

In this section we will discuss the various clients and the areas of the product that should be considered for backup should an emergency arise.

2.1.1 Client Packaging

There are three (3) CCRC clients that we will reference in this section:

ClearCase Remote Client – This is the client that is a standalone application and is installed from the IBM Installation Manager. This can also mean ClearCase Remote Client Installed into an IBM IDE such as Rational Software Architect, Rational Application Developer, or other IDEs.

ClearCase Remote Client for Eclipse - This is the client that is installed as a plug-in into an Eclipse IDE or SDK.

ClearCase Remote Client for Visual Studio ** - This is the client that is a standalone application and is installed from the IBM Installation Manager specifically into Microsoft Visual Studio development IDE's.

** ClearCase Remote Client for Visual Studio uses the same underlying application as ClearCase Remote Client, and in this section should be considered the same. We will call out any differences should they be warranted.

2.2 User Preferences

Prior to 7.1.1, only the ClearCase Remote Client for Eclipse (plugin) had the capability to export and import a client preference. Exporting and Importing preferences allows for CCRC users to share specific values or settings and helps drive consistency of user experience. Importing or Exporting preferences does not prevent user customization of a specific preference on an individual basis. Preferences are the method CCRC controls options such as look and feel, primary group variable, 3rd party diff/merge tool control and other client side customizations.

2.2.1 BACKUP

Backing up client preferences (ClearCase Remote Client)

1. From the menu File>Export Preferences
2. Choose "Select All"
3. Supply a path to "To Preference File:". Preference files should be appended with .epf file extension.
4. Click Finish

Backing up client preferences (ClearCase Remote Client for Eclipse)

1. From the menu `File>Export`
2. Under the **Select Dialog** choose `General>Preferences`
3. Supply a path to "To Preference File:".
Preference files should be appended with `.epf` file extension.
4. Click `Finish`

2.2.2 RESTORE

Restoration of client preferences (ClearCase Remote Client)

1. From the menu `File>Import Preferences`
2. Choose "Select All"
3. Click `Finish`

Restoration of client preferences (ClearCase Remote Client for Eclipse)

1. From menu `File>Import`
2. Under the **Select Dialog** choose `General>Preferences`
3. Point to the path of the preference file.
4. Choose "All"
5. Click `Finish`

2.3 .ccase_wvreg

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

Typically this file is stored in the user's home directories:

Windows:

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

UNIX or Linux:

`~username/.ccase_wvreg`

Take note that this file is preceded with a "." which means it could not be visible in some operating systems graphical 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).



Referenced Reading:

About the `.ccase_wvreg` file:

<http://www.ibm.com/support/docview.wss?&rs=984&uid=swg21228258>

Changing the location of a ClearCase Remote Client view

<http://www.ibm.com/support/docview.wss?&rs=984&uid=swg21212918>

2.4 `.server_reg`

Each client's machine and each CCRC end user maintains a listing of the 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.

2.5 *Workspace Information*

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.

Workspaces Client Folder locations:

ClearCase Remote Client

Windows:

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

UNIX or Linux:

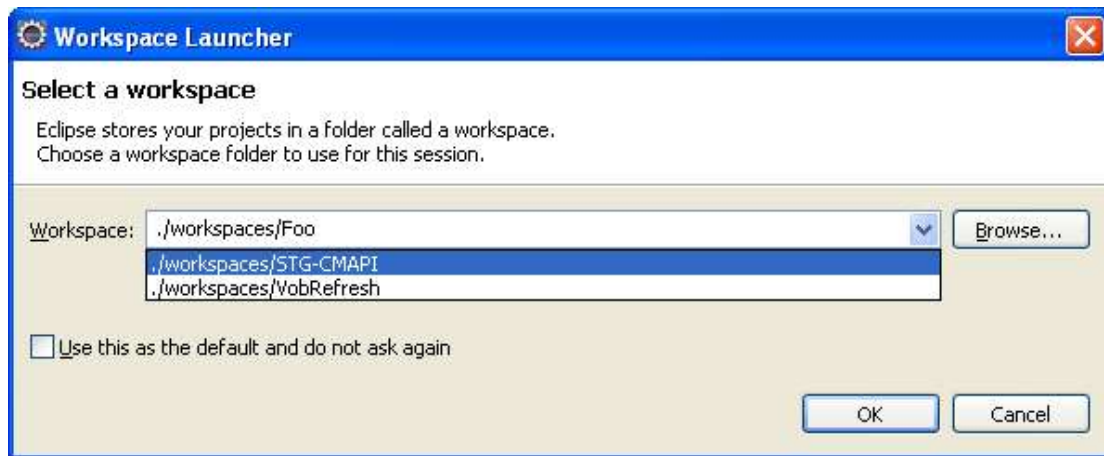
`~username/.Rational/CCRC71/workspace`

ClearCase Remote Client for Visual Studio (Windows Only)

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

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:



2.6 Microsoft Visual Studio

Additional files should be backed up for Visual Studio integrated clients, the following directories:

C:\Program Files\Common Files\Rational\ClearCase\CCVSI

C:\Program Files\IBM\RationalSDLC\ClearCase\RemoteClient\WanPackage

There are various registry key entries that are used for the Visual Studio clients, in the document below there is a technote that details how to integrate CCRC and Visual Studio and it contains scripts on registry modifications.



Referenced Reading:

Integrate ClearCase and CCRC versions 7.0.1 and 7.1.1 with Visual Studio 2010

<http://www.ibm.com/support/docview.wss?rs=984&uid=swg24024532>

2.7 Client CopyArea

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.

CCRC users should be aware that they could have a change to a file that is local in the copyarea, such as a hijacked or checkedout file that has been modified. When restoring users need to perform a view update to sync their view, However it is important that a CCRC remember that if a CM Server is restored, the state of that change in ClearCase could be earlier than a change they made locally, so view updates with the overwrite option(non default) could revert a change they made.

References

The following were used in references or as other sources of information:

- *Preserve the CM Server configuration before customizing the MBean attributes or upgrading from or reinstalling ClearCase and ClearQuest*
<http://www.ibm.com/support/docview.wss?uid=swg21384746>
- *Configuring Secure Sockets for CM Server*
https://publib.boulder.ibm.com/infocenter/cchelp/v7r1m2/index.jsp?topic=/com.ibm.rational.clearcase.cc_admin.doc/topics/cm_server/t_config_cmserver_for_secure_sockets.htm
- *IBM Rational Licensing Disaster Recovery Processes*
<http://www.ibm.com/support/docview.wss?uid=swg2128149>
- *Backing up critical Rational ClearCase data*
https://publib.boulder.ibm.com/infocenter/cchelp/v7r1m2/index.jsp?topic=/com.ibm.rational.clearcase.cc_admin.doc/topics/c_backup.htm
- *Change Management Server (CM Server) configuration guidelines*
<http://www.ibm.com/support/docview.wss?uid=swg21328563>
- *Windows registry information for advanced users*
<http://support.microsoft.com/kb/256986>
- *About the .ccase_wvreg file:*
<http://www.ibm.com/support/docview.wss?&rs=984&uid=swg21228258>
- *Changing the location of a ClearCase Remote Client view*
<http://www.ibm.com/support/docview.wss?&rs=984&uid=swg21212918>
- *Integrate ClearCase and CCRC versions 7.0.1 and 7.1.1 with Visual Studio 2010*
<http://www.ibm.com/support/docview.wss?rs=984&uid=swg24024532>