

**CMVC frequently asked questions:
server installation, initial configuration and
configurable fields**

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Angel Rivera, Lee Perlov, Clifford Meyers

CMVC/TeamConnection Development
IBM Software Solutions
Research Triangle Park, North Carolina
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ABSTRACT

This technical report provides answers to frequently asked questions made by CMVC users with respect to server installation, initial configuration, database setup and configurable fields

ITIRC KEYWORDS

- CMVC
- server installation
- initial configuration
- database setup
- configurable fields

ABOUT THE AUTHORS

ANGEL RIVERA

Mr. Rivera is an Advisory Software Engineer and team lead for the development of CMVC 2.3. He joined IBM in 1989 and since then has worked in the development and support of library systems.

Mr. Rivera has an M.S. in Electrical Engineering from The University of Texas at Austin, and B.S. in Electronic Systems Engineering from the Instituto Tecnológico y de Estudios Superiores de Monterrey, México.

LEE PERLOV

Mr. Perlov is a Staff Software Engineer in the TeamConnection/CMVC development group. He started working for IBM in 1985 in Gaithersburg, Md, working in the Federal Systems Division on various projects for the United States intelligence community. He then moved to RTP to work on library development and support.

Mr. Perlov received a B.S.Acc degree in Accounting from the University of Florida in 1983. He also completed two years of graduate work in the Department of Computer Science at the University of Florida.

CLIFFORD MEYERS

Mr. Meyers is an Advisory Programmer in the TeamConnection/CMVC development group. He joined IBM in 1985 as support for AIX/370, AIX/ESA, and CMVC, before accepting his current assignment in 1997.

Mr. Meyers has an A.S. in Business Administration from SUNY Cobleskill and a B.S. in Computer Science from SUNY Postdam.

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INTRODUCTION

This technical report provides answers to frequently asked questions made by CMVC users with respect to server installation, initial configuration and configurable fields

This technical report covers the following topics:

- Installation of a CMVC family.
- Initial configuration of a CMVC family.
- Describing some installation topics related to databases.
- Handling configurable fields.

For many routine tasks related to the operating systems and the databases, see the technical report 29.2298 "CMVC frequently asked questions: hints and tips on using databases and OEM platforms".

ACKNOWLEDGEMENTS

Many of the questions and answers that are compiled in this technical report were obtained from the CMVC forum in the IBMPC conferencing disk, and from the CMVC6000 forum in the IBMUNIX conferencing disk.

We want to thank the main participants in these electronic forums for their support!

Also, we want to thank Dodde Stark for editing this technical report.

IMPORTANT WARNINGS ABOUT YOUR CMVC INSTALLATION

Do not alter the contents and/or structure of \$CMVC_HOME

After you install the CMVC code in its directory structure (represented by \$CMVC_HOME), please keep in mind the following guidelines:

- Do not remove directories, files or symbolic links from \$CMVC_HOME.
Exception: To uninstall the product, you need to remove \$CMVC_HOME.
- Do not change the file permissions nor the ownership of the directories and/or files in \$CMVC_HOME.
- Use \$CMVC_HOME only to store the CMVC code:

- Do not use \$CMVC_HOME as the home directory for users.
- Do not use \$CMVC_HOME as the home directory for CMVC families.

Do not alter the contents of the database or the \$HOME/vc directory

1. We strongly recommend to our customers to always use CMVC to access the database for the CMVC server. There are many relationships between objects and some of them are rather complex and some of them trigger some actions in CMVC.

If you decide to modify the database directly, you will be doing this at your own risk. IBM has fee-based services available to help you correct resulting damage to the database.

For completeness, here are a few guidelines:

- You can query the database in read-only mode to provide reports that you may want and that are not available from CMVC.
 - You cannot change the values of a field named "id" or "*id". These numeric values are pointers to records in other database tables.
 - Any field that contains values that you did not enter directly are probably limited to a specific set of values determined by the CMVC programs. Changing them without knowing what other corresponding values must also change can make the record unusable. For example, each entry in the Files table has a "type" field. There are only certain values that are acceptable (such as text, binary). Changing this value can cause CMVC to be unable to locate the appropriate SCCS archive, or cause extracts to behave differently.
2. Similarly, the file changes stored in the vc directory structure contain information that is used by CMVC.

If you rename, delete or move files in the vc directory structure, you will be doing this at your own risk and we will not help you in case you get into problems as a direct result of this action. If you do, please make a backup copy of the file before you modify it.

Avoid using the string "cmvc" in process names

Because the stopCMVC script uses "ps -ef" to identify the CMVC daemons that are logged, it is possible to incorrectly select some other processes that have the "cmvc" string in them, such as a user "cmvcdemo", "cmvca" (for user CMVC "A"), "cmvc23", a DB2 instance called "cmvc", etc.

The problem is that stopCMVC may kill these processes even though they are not running the cmvcd daemons.

If you really want to use the string "cmvc" in your userids, then you will need to modify stopCMVC to avoid terminating the processes for these userids.

Same version is needed if using both Server and Client in the same host

Because both the CMVC Server and the CMVC Client use the same message catalog file (cmvc.cat), it is critical that both CMVC components must be at the same version-release-level. For example, you should not have a CMVC Server version 2.3.0.0 in the same host with a CMVC Client version 2.3.0.14, because it is possible that the user may get strange warning or error messages, due to the mismatch in the version of the message catalog.

However, if the CMVC client is not in the same host as the CMVC server, then it is possible for the client to be a different level than the server, because they are not sharing the same message catalog. That is, you can use a CMVC 2.1 client from host A, with a CMVC 2.3.0.22 server in host B.

The only incompatibility problem is when you are using a CMVC client for OS/2 or for Windows, in which the version of the CMVC server must be 2.2 or later (that is, CMVC 2.1 or 2.1.1 servers do NOT support these clients).

Not only are the messages you see stored in the message catalog, but the text inserted into tables are in the message catalog. For example, if the message catalog is incorrect, all of the text that accompanies a remark (that is, the text that you do not type) will be wrong. In most cases this only looks weird, but in some cases, it can be sufficiently wrong to cause user exits and tools to fail.

Therefore, the CMVC server MUST point to the correct message catalog.

In case you want to install and keep different versions of CMVC, then you will need to use different directories to install the CMVC code, such as /usr/lpp/cmvc2300 and /usr/lpp/cmvc23025. Then you could write a shell script to use the proper NLSPATH in order to point to the correct message catalog.

Note: SunOS does not support message catalogs, so this is only an issue for AIX, HP-UX and Solaris.

Use the sample profiles for a CMVC family

It is strongly recommended that you use the sample profile for a CMVC family. For details, see "Sample profile for a CMVC family server" on page 15.

EXAMPLE OF A COMPLETE INSTALLATION AND INITIAL CONFIGURATION

HOW TO INSTALL DB2 AND CMVC TOGETHER.

Question:

How to install DB2 and CMVC together.

Answer:

The following instructions take you step by step through the installation of DB2 and CMVC for demonstration purposes. The instructions include the definition of all AIX users, loading of CMVC demo data, and the invocation of CMVC. At the end of this procedure, the CMVC family name should be "cmdemo" and the DB2 instance name should be "db2".

1. Create a group for DB2 instance (for example, syscmvca).
 - a. logon to root
 - b. smit groups
 - c. add a group
 - d. specify group-name (syscmvca) and leave ADMINISTRATIVE group as false.
2. Create two userids and set passwords for each userid:
 - a. smit users
 - b. add a user
 - c. specify user-name (db2) and PRIMARY Group (syscmvca) and Group set (syscmvca).
 - d. specify user-name (cmdemo) and PRIMARY Group (system) and Group set (syscmvca).
 - e. smit passwd
 - f. specify user-name (db2) and set password.
 - g. specify user-name (cmdemo) and set password.
3. Create a 15-20 MB file system to hold the CMVC family database (for example, /db2space). It is recommended to create it in a separate logical volume to allow for growth and possible future relocation. The CMVC server DB2_DBPATH environment variable will be set to this file system, for example: DB2_DBPATH=/db2space. This should be owned by the DB2 instance owner (for example, db2) and have the same group as the DB2 instance owner (for example, syscmvca).
 - a. smit storage
 - b. File Systems

- c. Add ... File Systems
 - d. Journaled File Systems
 - e. Add a Journaled File System
 - f. select a volume group
 - g. mount AUTOMATICALLY = yes, PERMISSIONS = read/write
 - h. return to screen to Mount a File System and select the filesystem just created.
 - i. chown db2:syscmvca /db2space
4. Install DB2 server (db2_##_##_####.db2)
- a. smit install
 - b. Install/Update Software
 - c. Install/Update Selectable Software
 - d. Install Software Products at Latest Available Level
 - e. select input device
 - f. get list of software to install and select db2_##_##_####.db2.
 - g. Automatically install PREREQUISITE software = yes and COMMIT software = no and Save replaced files = yes.
5. Configure DB2 according to the manuals. Execute the db2instance command. Update the nodelock file with the license information. Execute the db2ln command.
- a. /usr/lpp/db2_01_01_0000/instance/db2instance db2
 - b. /usr/lpp/db2_01_01_0000/cfg/db2ln
6. Install CMVC. The files required from the demo package are:
- ```

cmvcc1tsta1.obj
cmvcc1tsta1mEn_US.msg
cmvcsrvmEn_US.msg
cmvcsrvdb2.obj

```
- Ensure that you select ONLY one image for the CMVC server. If you select ALL, then all the CMVC server images will be installed and this will not be correct, because each CMVC server install image will overwrite the previously installed one.
- a. smit install
  - b. Install/Update Software
  - c. Install/Update Selectable Software
  - d. Install Software Products at Latest Available Level
  - e. select input device
  - f. get list of software to install and install those objects listed above and Automatically install PREREQUISITE software = yes and COMMIT software = no and Save replaced files = yes.
7. Add the CMVC family name as an alias of this workstation in the TCP/IP environment in the /etc/hosts file. Entries in this file are in the format:
- ```

IP address    alias-1 alias-2 ... alias-n

```


- a. hostname
 - b. vi /etc/hosts
 - c. Find the entry which has the hostname returned above in the second column.
 - d. Add the CMVC family name "cmdemo" to the end of this line.
 - e. Exit and save changes to /etc/hosts.
8. Define a TCP/IP port for the CMVC server in the /etc/services file.
- a. Entries in this file are in the format:


```

      identifier          port-number/usage
      
```

Note: Use only tabs between "identifier" and "port-number".
 - b. vi /etc/services
 - c. Select a number for the port which is not already defined in this file.
 - d. Add a unique entry (sequentially if appropriate) for this new port number as follows:


```

      cmdemo          3125/tcp
      
```

Note: Use only tabs between "identifier" and "port-number".
9. Exit from root and login as db2 instance owner (db2).
10. Set up the db2 profile by copying db2profile in the sqllib directory to .profile
- a. cp sqllib/db2profile .profile
 - b. logoff and login again to refresh your environment.
11. Start the DB2 database: db2start
12. Exit from the db2 instance owner and login as the cmvc family (cmdemo).
13. Extract the Demo tar files relative to the CMVC family home directory.
- a. cd \$HOME
 - b. tar -xvf /usr/lpp/cmvc/samples/mkdemo2.tar
14. Read \$HOME/demo2setup/README.demo2 for instructions. Set up the .profile for cmdemo from the db2.profile in demo2setup.
- a. cp demo1setup/demo1.profile.db2 .profile
 - b. vi .profile
 - c. Change the value for CMVC_FAMILY to reflect the cmdemo host name and the cmdemo port number.
 - d. If the values for db2 instance were used as above, uncomment and change DB2_DBPATH to /db2space. If different values were used, then change the variables DB2INSTANCE, DB2_HOME.
 - e. Change the value for DB2_PASS to reflect the password for the CMVC family userid.
 - f. Change the value of DEMO_CLIENT_HOSTNAME=hostname-of-client.
 - g. Exit and save changes to the profile.

h. logoff and login again to refresh your environment.

In case you want to use the non-demo profile, you could do the following:

```
cp /usr/lpp/cmvc/install/profile.db2 .profile
```

15. Copy the *.ld files from usr/cmvc/lpp/install to \$HOME:

```
cp $CMVC_HOME/install/*.ld $HOME
```

16. Create the family files and database:

```
$ cd $HOME
$ mkfamily
$ mkdb -d
```

17. Bring up the cmvcd server daemons:

```
$ cmvcd cmdemo 2
$ notifyd
```

18. Populate the Demo family data:

```
$ cd $HOME/demo2setup
$ mkdemo2
```

NOTE: If mkdemo2 does not complete without errors, then you should perform the following steps:

```
$ stopCMVC cmdemo
$ rmdb
$ rmfamily
```

return to step 16 and try again

19. Copy the CMVC demo resource file to the home directory:

```
$ cd $HOME
$ cp demo1setup/.cmvcrc .cmvcrc
```

20. You can now use the CMVC client to interact with the CMVC server.

PROBLEMS INSTALLING THE CMVC CODE

AIX: AFTER INSTALLING THE CMVC SERVER, THE WRONG ONE IS INSTALLED

Question:

During the installation of CMVC on AIX using "smit", I selected "all components" and "CMVC server for Oracle" was installed, even though I want to use Sybase. Why?

Answer:

One of the limitations of "smit" in AIX is the inability to provide an exclusive OR function when installing the CMVC server code. Only one CMVC server image can be installed in the same directory and installing a new server overwrites the previously installed server. Thus, when choosing "ALL" from "smit", the installation is ordered according to the table of contents (.toc). It happens that the last entry in ".toc" is for the CMVC server for Oracle. This is what happened in your installation:

1. The CMVC for DB2 server was installed,
2. Then on top of it, the CMVC for Informix server (erasing the one for DB2),
3. Then the CMVC for Sybase (erasing the Informix one),
4. Finally the one for Oracle (erasing the Sybase).

We have added a paragraph in the CMVC manuals to warn users about this situation, but unfortunately, it is rather common for the AIX administrator to always install "ALL".

Thus, when installing the CMVC server code, please select only one component for the server, plus the component for the Message Catalog for the Server (cmvcserverm_En_US).

WHERE ARE CMVC DAEMON AND DATABASES MESSAGES WRITTEN?

Question:

Where are CMVC daemon and databases messages written?

Answer:

The error messages from the CMVC daemon and the database are logged in the syslog. You need to enable the syslog facility, as explained in the technical report 29.2298 "CMVC frequently asked questions: hints and tips on using databases and OEM platforms", section "Where are the error messages from the CMVC daemon and databases?".

Notes:

1. We strongly recommend that you setup the syslog facility in order to better diagnose any possible problems with CMVC, the database, or the operating system.
2. We recommend using the entry "*.warning" in order to insure that all database and CMVC warnings and errors (that is, anything of severity warning or greater) will be written into the syslog.

It is highly recommended to have a set of syslog files which can be rolled periodically. For example, a syslog file can be copied into syslog.1 and this new file can be compressed; later, the file syslog.1 can be renamed syslog.2, and the normal syslog can be copied as syslog.1 and compressed. Usually a set of 4 such backup files is sufficient, and thus the file syslog.4 can be deleted during the rolling of the files.

WHAT ARE THE TRADE-OFFS OF USING INSTALLP (SMIT) VERSUS TAR FILES?

Question:

The CMVC code for AIX is provided in both installp (for use with the "smit" tool) and tar files. What are the trade-offs of using installp (smit) versus tar files?

Answer:

- For tar installations:

The main advantage of installing CMVC by means of tar files is that you can choose which directory to place the final code. With "smit" you do not have a choice, it is always /usr/lpp/cmvc. Thus, if you have disk space and would like to have the old version around, then you could create a new directory such as /usr/lpp/cmvc/23022 or whatever, and specify this directory when using tarinstall. Of course, if you specify /usr/lpp/cmvc, then the old version will be overwritten.

A secondary advantage is the ability to customize the installation script for specialized installations, such as from an NFS server.

The main disadvantage of using tar files is that the product database that is automatically maintained by "smit", is NOT updated, and thus, you cannot use the smit utilities to find out which level was installed by the tarinstall (but you can always do the following to find out):

1. `cd /usr/lpp/cmvc/bin` (or equivalent)
2. `what cmvcd | grep cmvc`

- For `installp` installations:

Here are the advantages provided by `installp` images:

- Inventory of the installed programs in AIX; you can view this inventory by using **lspp**.
- Verification that all installed files are not corrupted, by using the checksum feature of `installp` with the **lschk** command.

The primary disadvantage is that only one version of an LPP (Licensed Program Product) may be installed by `installp` at any one time.

INSTALLATION FROM TAPE: NEED TO ADD BS=31744 TO DD STATEMENT

Question:

Installation from tape: need to add `bs=31744` to `dd` statement.

Answer:

The instructions to install CMVC for SunOS, Solaris and HP-UX from tape need to be updated in the `dd` statement which needs the parameter `bs=31744`. Thus, the complete `dd` statement must be:

```
dd if=TAPEDEV skip=0 bs=31744 > cmvcinstall
or
dd if=TAPEDEV skip=0 bs=31744 of=cmvcinstall
```

Note: You probably want to know why 31744 is required. At one time, all images were stored in a mainframe. The hard disk was formatted with a record length of 31744 bytes.

SUPPORT FOR REMOTE INSTALLATION WHEN INSTALLING FROM TAPE

Question:

Support for remote installation when installing from tape.

Answer:

The tape installation script for CMVC for Solaris, SunOS and HP-UX systems has been enhanced to allow for remote installation. Furthermore, you may optionally install into directories other than /usr/lpp/cmvc.

To configure your system for remote installation, you must add an entry for "root" in the .rhosts file on the system with the tape drive attached.

Optionally, you can extract the script remotely with the following commands:

```
# Change the directory which will contain cmvc, default is /usr/lpp/cmvc
cd /usr/lpp/cmvc

# Retrieve the install script remotely
# For HP-UX systems, use "mt -t" instead of "mt -f"
rsh <system w/tape> mt -f <non-rewinding tape> rewind
rsh <system w/tape> "dd if=<non-rewinding tape> skip=0 bs=31744" > cmvcinstall

# Retrieve the install script remotely
# For HP-UX systems, use "mt -t" instead of "mt -f"
rsh <system w/tape> mt -f <non-rewinding tape> rewind
rsh <system w/tape> "dd if=<non-rewinding tape> skip=0 bs=31744" > cmvcinstall

# Run the cmvcinstall script
chmod u+x cmvcinstall
./cmvcinstall
```

DID ANYTHING IN AIX 4.1 CHANGE FROM AIX 3.2 THAT IMPACTS CMVC?

Question:

Did anything in AIX 4.1 change from AIX 3.2 that impacts CMVC?

Answer:

It is recommended that you install the AIX 3.2 compatibility packages on AIX 4.1:

```
bos.compat.libs 4.1
bos.compat.links 4.1
```

These packages contain links to the old file locations (such as: /etc/mount moved to /usr/sbin), and old libraries needed for some applications compiled on AIX 3.2:

HOW TO FIND THE INSTALL IMAGES FOR SCCS ON HP-UX

Question:

A customer wants to try CMVC on a HP-UX workstation, but SCCS seems not to be installed in that workstation. How can the customer obtain SCCS?

Answer:

SCCS is part of the SRC-CNTL fileset on HP-UX V9 & V10.

It might be part of the application development bundle which you need to buy separately if you want a proper C compiler.

PROBLEMS TRYING TO ADD CMVC TO THE STARTUP PROCESS ON SOLARIS

Question:

We have CMVC installed in a Solaris/Sybase environment, and we are trying to add CMVC to our startup procedures. The problem is that the following command, when run as root, gives a segmentation fault:

```
% su - tme -c "/cmvc/solaris2/bin/cmvcd tme 2"  
Segmentation fault
```

If I log into as the family administrator, tme, then I can start the daemons with no problem. It seems that cmvcd does not like it when my real user id is root, which is the case above (even though my effective userid is tme).

Answer:

Try putting your "cmvcd ..." command in a shell script and starting it with an "at" job:

```
% su - tme -c "at now /$HOME/bin/cmvcStart"
```

where cmvcStart contains:

```
#!/usr/bin/ksh  
cmvcd tme 2
```

CMVC explicitly checks to insure that you are NOT root when starting daemons.

INITIAL CONFIGURATION OF A NEW CMVC FAMILY

SAMPLE PROFILE FOR A CMVC FAMILY SERVER

Question:

Is there a sample profile ready-to-use for a CMVC family server?

Answer:

Starting with CMVC 2.3.0.18, we are providing an excellent sample profile for a CMVC family. We strongly recommend that for every new family, regardless of the expertise of the CMVC administrator, the CMVC server sample profile should be used as the profile for the CMVC family (or at least to be used as the basis for the profile). We are constantly adding new environment variables and adding new hints and tips, such as how to create a table space in Oracle and a dbspace for Informix.

Furthermore, each sample profile is tailored for a single database. Inside this sample profile there are environment variables that are dependent on the operating system and which are commented out; it is the responsibility of the CMVC administrator to review the entire profile and uncomment those variables that are appropriate and create the necessary table spaces or dbspaces.

To avoid confusion, only one CMVC server profile is provided with each CMVC server version. That is, if you install the CMVC server for Oracle, then only the profile for Oracle is provided.

The CMVC server profile is found in (starting with 2.3.0.18), where the default for \$CMVC_HOME is /usr/lpp/cmvc:

```
$CMVC_HOME/install/profile.<databaseName>
```

By the way, there is a CMVC user sample profile which is included with the CMVC client code in:

```
$CMVC_HOME/samples/profile.user
```

DOES CMVC SUPPORT SPLITTING THE DATABASE ACROSS SERVERS IN A NETWORK?

Question:

Does CMVC support splitting the database across servers in a network?

Answer:

The CMVC server sees the database and the file system for the change history of the files as being local resources in the serve host. CMVC has no facilities for explicitly working with remote resources.

Most databases provide distribution support utilities (such as DDCS for DB2) so that the database appears to be local when it is physically remote.

NFS and other distributed filesystem utilities are discouraged. These utilities have performance and reliability lower than local file systems.

HOW TO REINSTALL A CMVC FAMILY FROM SCRATCH

Question:

A customer has installed a CMVC family and decides to remove the CMVC family and start all over again.

Answer:

1. Login as the CMVC family to be installed.
2. Ensure that the CMVC family server is down:
`stopCMVC familyName`
3. Enter `rmdb` to remove the database.
4. Enter `rmfamily` to remove the directories created by `mkfamily`

You will be asked if you want to remove the directory that contains information about the configurable fields. Answer "yes" to delete any previous configurable fields in order to start from scratch.

5. Rename the `.profile` to `.profile.original`
6. Copy the sample profile for CMVC families using DB2:

```
cp /usr/lpp/cmvc/install/profile.db2 .profile
```

7. Edit and customize the new `.profile`. Please read the entire file because there are many actions to be taken.

8. Exit and login again to obtain a clean environment.
9. Enter `mkfamily`
10. Enter `mkdb -d`
11. Check that the syslog daemon is up and running.
12. Do `cmvcd newfamily 2`
13. Verify that the cmvc daemons are working: `ps -ef | grep cmvcd`
14. Issue a CMVC command to test the CMVC server:
`Report -testServer`
15. Ensure that there are no errors logged in the syslog due to action
`tail /var/spool/syslog`

ERROR MESSAGE 0010-525 WHEN CREATING A FAMILY

Question:

I am installing a new CMVC family and when I start the family daemons I am getting the following error:

```
0010-525 The User Exit Index was not found.
```

What does this mean?

Answer:

Check the following:

1. Login as the family id.
2. Check that the `$HOME/config` directory should be owned by the user id and group id of the CMVC family, and should have file permissions of 644.
3. Change to the `$HOME/config` directory.

Check the file "userExits". This file should be owned by the user id and group id of the CMVC family, and should have file permissions of 644.
4. If the file is there with the correct ownership and permissions, then edit the file and remove any blank lines that you find.
5. Restart the `cmvcd` family in order to pick up the new `userExits` file.

DO NOT CHANGE THE FILE PERMISSIONS OR OWNERSHIP OF CMVC FILES

Question:

A system administrator saw the cmvcd owned by root with setuid bit on and worried about a security impact, so she changed the file to owner "bin", group "bin", and removed the setuid bit. Afterwards, the following error message was returned on each release extract:

```
0010-063 with chown() ...
```

Answer:

Do not change the file permissions or the ownership of any of the CMVC executables.

The cmvcd process changes the owner to the id of the user issuing commands like Release -extract so that the proper ownership can be applied to files. Without the root ownership and the setuid bit on, this change of owners fails.

Use the following command to find out the file permissions for cmvcd:

```
ls -l /usr/lpp/cmvc/bin/cmvcd
```

The CMVC server daemon, cmvcd, should have the following settings in AIX (notice the s-bit and the ownership by root:system):

```
-rwsr-xr-x  1 root      system      /usr/lpp/cmvc/bin/cmvcd
```

In case the s-bit is not set, as user "root", you can do the following to set it:

```
chmod u+s /usr/lpp/cmvc/bin/cmvcd
```

In case the file ownership is not correct, as user 'root' do the following:

```
chown root:system /usr/lpp/cmvc/bin/cmvcd
```

All other CMVC executables should be:

```
-rwxr-xr-x  1 bin       bin        /usr/lpp/cmvc/bin/Report*
```

ERROR MESSAGE: 0010-063 WITH KEYWORD BIND()

Question:

Error Message:

```
0010-063 Error, Address already in use, occurred when the CMVC
Server/6000 attempted to process the bind() function.
```

Answer:

- Situation A: dealing with a new family

When creating and starting a new family, if this error appears, the most likely cause is that the port number for the new family is already being used by another service. Please take a look at the `/etc/services` file and ensure that the port number for the new family is unique and not in use by another service.

Select numbers greater than "1000". Also, try to avoid commonly used numbers such as "3000"; instead try to use "odd" numbers such as "3125". We have encountered a couple of situations where a port number with a "nice and round" number was hard-coded in an application instead of being defined in the `/etc/services` file.

- Situation B: dealing with existing families, part 1

We have seen these errors when there is a conflict with the shared memory. We have added some clean up code in the `stopCMVC` sample in CMVC 2.3.0.18.

In the meantime, please do the following steps:

1. Ensure that all the CMVC daemons are down and the shared memory is cleared:

```
stopCMVC familyName
```

2. Ensure that there are no "orphan" `cmvcd` daemons:

```
ps -ef | grep cmvcd
```

If there are "orphan" `cmvcd` daemons, terminate them gracefully with "kill -15". If these processes do not terminate in less than one minute, try again the kill command but use a stronger signal (which does not allow for a graceful termination): "kill -9"

3. Invoke the CMVC Activity Monitor which shows the activity of the CMVC daemons (which at this point there should be none) and performs the cleaning of the shared memory (which is what we are trying to accomplish in this step).

```
monitor 1
```

Press enter to terminate the monitor command.

4. Restart your family:

```
cmvcd yourFamily 2
```

5. Verify that the daemons are running:

```
ps -fu yourFamily | grep cmvcd
```

In this example there should be 4 entries with `cmvcd`.

- Situation C: dealing with existing families, part 2

When using an existing family and the situation above is not applicable, then this error may happen when stopping and restarting the `cmvcd` daemons; the most likely explanation is:

You tried to restart the daemons, while the nfsmounthelper process was still attempting to perform an NFS write. Therefore, the port or socket was already reserved for the communications between the current server and client. To correct the problem:

1. Restart NFS. If using AIX, this can be accomplished by:

- Using "smit".
- Manually run:

```
startsrc -s nfsd
```

This option uses the configuration defined in /etc/rc.nfs.

2. Try stopping NFS, perhaps via /etc/nfs.clean.

3. Then issue "kill -1 1" to restart the orphaned NFS process that got attached to init when you stopped NFS.

4. Reboot the server.

CANNOT CREATE DATABASE (MKDB) FOR NEW FAMILY - DB2 SQL1092N

Question:

I am trying to create a DB2 database for a new CMVC family and when I run the "mkdb" command it comes back with the error: SQL1092N "familyId" does not have authority to perform the requested command.

The userid has the database group "dba" and has the primary GID "0" (as does all the other families).

Answer:

These are some additional hints on how to setup a family under DB2:

1. Choose a name for your CMVC family, and create an account for that name with the primary group of ID 0 to prevent other groups from accessing files in the CMVC family. For example, the primary group of ID 0 on AIX systems is "system".

2. Find out the group ID for the DB2 instance. For example, the command "id db2inst1" (where "db2inst1" is the account for the DB2 instance) will give:

```
uid=201(db2inst1) gid=200(syscmvca) groups=1(staff)
```

3. Add the DB2 group ID as a secondary group ID for the CMVC family account. For example, if the group ID of the DB2 database instance owner "db2inst1" is "syscmvca", the secondary group ID of the CMVC family should be "syscmvca"; by using the "id" command, you may get the following:

```
$ id amstest3
uid=208(amstest3) gid=0(system) groups=200(syscmvca)
```

4. Ensure that the CMVC family name does not contain uppercase characters. This is a restriction from DB2.
5. Ensure that the length of the password must be less than or equal to 18 characters. This is a restriction from DB2.

ERROR WHEN THE INFORMIX DATABASE IS NOT IN "ON-LINE" MODE

Question:

Error when the Informix database is not in "on-line" mode.

Answer:

Below is a copy of a log file generated by mkdb. The log file is placed in the /tmp directory when mkdb encounters an error. This particular error is a result of the fact that the Informix database was not in "on-line" mode.

Creating the INFORMIX database.

```
529: Cannot attach to shared memory.
```

```
123: ISAM error: no shared memory
Error in line 1
Near character position 1
```

To fix this error, do the following:

1. Change the mode for Informix to be "on-line".
2. Restart the database.
3. Perform "mkdb" again.

ERROR WITH NOTIFYD, 0010-063, CHDIR() FUNCTION

Question:

Error with notifyd, 0010-063, chdir() function.

Answer:

If your CMVC family HOME directory does not have the queue sub-directory, notifyd will give you the following error in your syslog file:

```
May 12 19:01:07 case7 notifyd[17037]: 0010-133 /u/tutfam2/queue
May 12 19:01:07 case7 notifyd[17037]: 0010-063 Error, No such file or
directory, occurred when the CMVC Server/6000 attempted to process the
chdir() function.
```

To fix this problem, do the following:

1. Create the necessary directories:

```
login to the CMVC family account
mkdir -p $HOME/queue/messages
```

2. Restart "notifyd".

DATABASE ISSUES RELATED TO INSTALLATION AND CONFIGURATION

For details on how to start and stop the databases, how to backup and restore them, and how to do other system tasks such as adding additional file system space to them, see the technical report 29.2298 "CMVC frequently asked questions: hints and tips on using databases and OEM platforms".

GENERAL NOTES ON SQL STATEMENTS USED IN THE SERVER MANUAL

Question:

General notes on SQL statements used in the Server manual.

Answer:

CMVC supports 4 databases (DB2, Oracle, Informix and Sybase) and unfortunately the SQL syntax for each one of these databases is slightly different and to avoid repetition in the manual, we generally use one single case and we assume that the reader is familiar with her/his database. However, in order to aid those CMVC family administrators that are beginners with their databases, we are adding the following:

- For DB2:
 - When using the DB2 command line processor, you have to add a semicolon at the end of each statement.
 - If you do not use the DB2 command line processor (such as when using shell scripts), then keep in mind that a DB2 command cannot span multiple lines.
- For Oracle, you have to add a semicolon at the end of each statement.
- For Informix, you have to add a semicolon at the end of each statement.
- For Sybase, you do not need to add a semicolon, but you need to use the keyword "go" in order to commit the transaction.

LIMITATIONS OF CMVC SERVER FOR DB2

Question:

Limitations of CMVC Server for DB2.

Answer:

- The row length limitation in DB2 is 4005 bytes and this restricts the number of configurable fields which can be added to certain CMVC objects. The File object can have up to 17 configurable fields and Defect and Feature objects can have up to 19 configurable fields.
- The CMVC family name cannot contain upper case characters.
- The length of the family's password cannot be greater than 18 characters.
- The DB2 SQL limitation (SQL0129N) described as:
A single SQL statement can reference up to 15 tables.
Each table in any view referenced is included in this limit.

... may affect some customized Report queries if subselects are used in the 'where' clause.

NEW DB2_CODESET AND DB2_TERRITORY VARIABLES

Question:

New DB2_CODESET and DB2_TERRITORY variables.

Answer:

The mkdb CMVC installation utility (which calls mkrmchdf) and the sample profile.db2 were changed to use codeset/territory for DB2 during the creation of a DB2 database for the CMVC family. The new variables are DB2_CODESET and DB2_TERRITORY.

In common situations this is not really needed, but when migrating CMVC DB2 families from AIX 3 to AIX 4 it is critical that these variables are in sync: in AIX 3 the default is En_US.IBM-850 but in AIX 4 the new default is en_US.ISO8859-1.

If the user does not specify these variables, they will default to the proper value according to the version of AIX.

HOW MANY DB2 LICENSES ARE NEEDED FOR A CMVC FAMILY?

Question:

How many DB2 licenses are needed for a CMVC family?

Answer:

Because the chfield tool needs at least 4 licenses for DB2 (16 is recommended), the following example will show you how many licenses for DB2 are needed to run 10 cmvc daemons:

```
1  license for the notify daemon
4  licenses for chfield
2  licenses for other CMVC tools, such as cmvcarchive, vcPath, etc.
10 one license for each cmvcd daemon.
---
17 Total
```

CMVC AND DB2: COULD NOT LOAD LIBRARY LIBDB2.A[SHR.O]

Question:

I have just installed CMVC 2.3 with DB2. When I try to start the cmvcd daemon I get the following messages:

```
Could not load program cmvcd
Could not load library libdb2.a[shr.o]
Error was: No such file or directory
```

Answer:

During the installation of DB2, it is necessary to link the DB2 libraries over to /usr/lib. The user root needs to invoke the command db2/adm/db2ln. The DB2 manual says it is optional but it is indeed required for the CMVC daemon.

CMVC DOES NOT START WHEN SEVERAL VERSIONS OF DB2 ARE PRESENT

Question:

CMVC does not start when there are more than one version of DB2 installed in the machine (such as with version 1 and version 2).

Answer:

The following facts are important to keep in mind:

- DB2 has a utility called "db2ln" to link the runtime libraries for each particular version. This allows processes that exploit the LIBPATH to use the proper runtime library.
- The CMVC daemons are processes that run with the s-bit in order to get authority to change the user-id of the files and for mounting NFS.
- AIX does NOT allow a process that runs with s-bit to use the LIBPATH.
- When you combine all the previous facts, the end result is that when you install first DB2 V1 and then DB2 V2 to co-exist, the CMVC daemons are running with the DB2 V2 executables but with the DB2 V1 libraries because the contents in LIBPATH is ignored due to AIX !!

The workaround is to uninstall or deactivate one of the DB2 versions. In that way, CMVC will see only 1 version of DB2.

ERROR -818 FROM DB2

Question:

I tried to run cmvcd but I got a segmentation error. In addition, I got a DB2 error -818 in the syslog that is associated with the cmvc daemon.

Answer:

The DB2 error -818 happens when doing the following actions with a CMVC family:

- Installing a refresh of CMVC on an existing CMVC family.
- After migrating a family.
- After doing reorg.

The infamous DB2 error -818 is due to a characteristic of DB2 which requires that the time stamp that is used by the database must match the time stamp of the executable files from the application and for DB2.

To synchronize the time stamp, we have prepared the shell `/usr/lpp/cmvc/install/db2bind` which invokes the BIND command from DB2.

HOW TO PHYSICALLY FIND THE CONSISTENCY TOKEN (-818 ERROR)

Question:

How to physically find the consistency token (-818 error).

Answer:

Our CMVC product, when compiled for DB2, produces executable files as well as bind files (*.bnd). Later on the customer has to bind these *.bnd files to their CMVC database by using the CMVC utility "db2bind" (which calls the DB2 "bind" command).

In few occasions, after doing a bind, the customer gets the infamous 818 error message about the consistency token or timestamp being out of synch between all the players. In extremely rare situations, everything seems to be done in the proper way. Thus, it is necessary to find out which is the consistency token that is actually used.

The package name used in connection with the consistency token is by default the first 8 letters of the program name. Thus, the package name for "ora72db2rems" is ORA72DB2 and the one for "syb2db2rems" is SYB2DB2R. If the program name has less than 8 characters then the package name is the same as the program name.

How to find the consistency token in the bind file?

Question:

When looking at the contents of the bind file (such as ora72db2rems.bnd), how do you find the consistency token?

Answer:

1. If using the AIX 4 code for CMVC (which uses DB2 V2), then you can view the consistency token by using the following DB2 V2 command that only works with bind files that were produced with DB2 V2 (the CMVC code for DB2 on AIX 3 was developed with DB2 V1):

```
$DB2_HOME/sql1lib/misc/db2bfd fileName
```

For example:

```
$ cd /usr/lpp/cmvc/bind  
$ $DB2_HOME/sql1lib/misc/db2bfd resetAge.bnd -b
```

```
resetAge.bnd: Header Contents
```

| Element name | Description | Value |
|--------------|--------------------------|--------------------------------|
| bind_id | Bind file identifier | :BIND V02: |
| relno | Bind file release number | :0x300: |
| application | Access package name | :RESETAGE: |
| timestamp | Access package timestamp | :KBUyMeGN: 1997/06/30 12:50:20 |

2. Regardless of the DB2 version, you can view the bindfile for the 8-byte package name in the bindfile. The package name is in the first 30 or so bytes of the bind file, (such as ORA72DB2 or SYB2DB2) followed by 8 bytes that correspond to the 8 byte consistency token or contoken.

For example (ignore the warning message from vi about the last character; we are not going to change the file).

```
$ vi ora72db2rems.bnd
ÿÿIND-B-CORA72DB2XAIZNZGNBUILD
+++++*****
+      *--> consistency token (8 bytes)
+--> package name (up to 8 bytes)
```

How to find the consistency token in the executable and source files

Question:

When looking at the contents of the executable file and the modified C file, how do you find the consistency token?

Answer:

The consistency token, or contoken, immediately follows the package name in the program_id string at the top of the generated C file. It can be difficult to decipher, since it is in text code rather than a string. In the executable or dll or shared object resulting from the modified code, you can run 'strings -a' on the executable, piped into grep for the package name. The contoken immediately follows the 8-byte package name.

For example:

```
$ cd /usr/lpp/cmvc/bind
$ strings -a ora72db2rems | grep -i ora72
ÛtAoBAFACDBUILD  ORA72DB2XAIZNZGN0
                    *****

$ strings -a syb2db2rems | grep -i syb2
SYB2DB2RWA5MNNINBUILD  0
                    *****
```

How to find the consistency token in the package inside the database

Question:

How to find out what is the consistency token that the package inside the database is looking for.

Answer:

The consistency token that is stored in the database can be found in sysibm.sysplan:

For example:

```
$ db2 "select name,unique_id from sysibm.sysplan where name = 'ORA72DB2'"
```

```
NAME      UNIQUE_ID
-----
ORA72DB2  XAIZNZGN
          *****
```

1 record(s) selected.

HOW TO REBIND A SINGLE BIND FILE

Question:

How to rebind a single bind file.

Answer:

In some rare situations it is necessary to rebind only a single bind file. In these cases, do the following:

1. Connect to the family database:

```
db2 connect to familyDatabase
```

You need to specify your family database name.

2. Issue the bind command against one bind file, such as:

```
db2 bind /usr/lpp/cmvc/bind/ora72db2rems.bind
      or
db2 bind /usr/lpp/cmvc/bind/syb2db2rems.bind
```

3. Terminate the DB2 session:

```
db2 quit
```

HOW MANY CMVC FAMILIES CAN A SINGLE DB2 INSTANCE HANDLE?

Question:

It seems that the number of CMVC families (databases) per DB2 instance is 8 (by default):

1. Should I have 8 families per instance? Are there performance ramifications?
2. Should I create a new DB2 instance for every family?
3. From other people experience, is there a good ratio of families per DB2 instance?

Answer:

1. Eight databases per DB2 instance is the default value setting.

The DB2 Administration Guide states that you can increase the value, but it also states that other values may need to be changed.

Because each database creates its own database (with its own global memory, agent private memory, etc.) regardless of which instance it is in, it seems that there may not be much performance degradation when using eight databases per DB2 instance.

2. There is no need to create a new DB2 instance for each family.

However, you may want to do it to separate test databases from production databases, and to provide some separation for security reasons (you may want to keep, for example, a payroll database on its own instance).

You have to consider that the total configuration parameters of a database is a combination of what is configured at the instance level as well as on an individual database level.

Also, keep in mind that if you are handling a database in one instance and you encounter a bug in DB2 that causes the instance to crash, then all the databases that are running under that instance will crash.

3. If you plan to have more than one instance, then, given the above considerations, you should balance the load of the CMVC families across instances.

STOPCMVC PROBLEM WHEN DB2 INSTANCE NAME SIMILAR TO CMVC FAMILY

Question:

We are using CMVC with DB2 and we created a new DB2 instance called 'cmvc23'. We created a CMVC family called 'cmvc23'(same DB2 instance). We ran "db2start", "cmvcd cmvc23 3" and "notifyd". There are no problems at this point.

However, when we ran "stopCMVC cmvc23", besides killing the CMVC notifyd daemon and cmvcd daemons, all the db2 instance's daemons were killed at same time. Is this a bug or not?

Answer:

Your problem is caused by the stopCMVC script and it occurs because the name of the DB2 instance is the same as the family name.

The script stopCMVC script uses "ps -ef" to identify the CMVC daemons that are logged, it is possible to misidentify some other processes that have the "cmvc" string in them, such as a user "cmvcdemo", "cmvca" (for user CMVC "A"), "cmvc23", a DB2 instance called "cmvc", etc.

You will have to set the DB2 instance with a different name to overcome the problem.

HOW TO DEAL WITH THE DB2 SQL -954 PROBLEM

Question:

Shortly after creating a new family, when doing an action with CMVC, such as Defect -view, there is an error 0010-256 which indicates that there is a generic problem. Then in the /var/spool/syslog file there is a CMVC error 0010-061 which shows a DB2 -954 error message.

Answer:

First of all, you can issue the following command to find out more about the DB2 -954 (SQL0954) error message:

```
$ db2 ? sql0954
```

```
SQL0954C Not enough storage is available in the
         application heap to process the statement.
```

Explanation: All available memory for the application has been used.

The statement cannot be processed.

User Response: Terminate the application on receipt of this message. Increase the database configuration parameter (applheapsz) to allow a larger application heap.

```
sqlcode: -954
```

```
sqlstate: 57011
```

Second, the DB2 Version 1 Administration Guide, Chapter 10 "Configuring DB2", page 160 mentions some possible ways to update this parameter. The database "cmpc3db2" will be used as an example when using the command line processor (CLP):

1. Ensure that the CMVC family is not running.

2. login as the DB2 instance owner.

3. db2start

4. Issue:

```
db2 get database configuration for cmpc3db2
```

A listing of the configuration items is displayed. One of the entries will be for applheapsz:

```
Default application heap (4KB) (APPLHEAPSZ) = 128
```

5. Issue:

```
db2 update database configuration for cmpc3db2 using applheapsz 196
```

6. Repeat step to get the database configuration and verify that the value is indeed 196.

7. db2stop

8. db2start

9. Logoff and login into the CMVC family and restart it.

10. Repeat the CMVC action such as Defect -view. If the -954 still happens, then repeat this procedure and increase even more the value for applheapsz.

After changing the parameters, DB2 must be stopped (db2stop) and then restarted (db2start) in order for the new parameter values to take effect.

ADDITIONAL NOTES ON ORACLE 7

Question:

Additional notes on Oracle 7.

Answer:

- Due to the elimination in Oracle 7.3 of APIs that are used by CMVC, the CMVC server daemons cannot start when using Oracle 7.3. Thus, we do not support this version of Oracle.
- The environment variable ORACLE_PASS is required to start the CMVC daemons; therefore, the information in page 37 for this variable is incorrect because this variable should not be removed from the .profile file.

- ORACLE (Transaction Processing Options) TPO (Runtime) is not an option to install with Oracle 7. Thus, page 8 of the CMVC Server Administration and Installation manual for CMVC 2.3 has a redundant entry.

Oracle TPO is part of the RDBMS beginning with Release 7 and therefore is not an option to install. In fact it is automatically installed with Oracle RDBMS.

MKDB AND ORACLE/INFORMIX ERRORS

Question:

mkdb and ORACLE/INFORMIX errors

1. I got error "... cannot use system rollback segment for non-system tablespace ..." when I ran mkdb.
2. I got error " ... ISAM error: no more locks ..." when I ran mkdb.

Answer:

1. When you create a tablespace the first time, you also have to create at least one rollback segment for the CMVC database if you have only the system rollback segment.

You must include this new rollback segment in the database initialization file e.g. \$ORACLE_HOME/dbs/initSID.ora.

You must bring the database down and then up to pick up this new rollback segment. To store your CMVC tables and indexes into different tablespaces, set the ORACLE_TBLSP and ORACLE_NDXSP environment variables. These tablespaces must have been created prior to running mkdb.

The ORACLE command to create a rollback segment is as follows:

```
CREATE ROLLBACK SEGMENT rbs_1;
```

The entry that you have to put in /usr/oracle/dbs/initSID.ora is as follows:

```
rollback_segments=(rbs_1)
```

To store your CMVC/6000 tables and indexes into a different dbspace, set the INFORMIX_DBSP environment variable. This dbspace must have been created prior to running mkdb. Use the tbmonitor command to create a new dbspace.

2. Actually, it is recommended to have 2 rollback segments:
 - A small one, as explained in the previous paragraph. This is the one to use for most of the CMVC transactions which are small and brief in nature.
 - A very large one that will be used for those few CMVC transactions that are large and consume lots of database resources, such as the Level commit and check.

It is suggested to schedule these expensive operations to off-shift hours in which the normal (small) rollback segment is disabled and the large rollback segment is enabled. Then the expensive CMVC transactions are performed, and when they are finished, then you can disable the large rollback segment and enable the normal (small) one.

3. When you install INFORMIX, remember to set the number of locks to at least 3000.

When you initialize the parameters for your INFORMIX database, if you take all the default values, INFORMIX sets the number of locks to 2000.

Use the tbmonitor command option "Parameters" then option "Shared-memory" to change the number of locks to at least 3000.

CAN THE CMVC SERVER WORK UNDER INFORMIX 6 OR INFORMIX 7?

Question:

Can the CMVC server work under Informix 6 or Informix 7?

Answer:

The CMVC server can now work under Informix Version 6 and Version 7. It is necessary to add the following new Informix environment variables:

```
export INFORMIXSERVER=<hostname-of-Infomix-server>
export SQLEXEC=$INFORMIXDIR/lib/sqlrm
```

INFORMIX 7: NEED TO UPDATE .RHOSTS AND /ETC/HOSTS.EQUIV

Question:

When creating a new CMVC family using Informix ("mkdb"), I get the following error message:
Creating the Informix database.

```
956: Client host or user (cmhp3inf@oem-hp03) is not trusted by the
      server
No such file or directory
Error in line 1
Near character position 1
```

Answer:

When using the CMVC command "mkdb" to create the Informix database for the family, it is necessary to add the name of the CMVC family in the files \$INFORMIXDIR/.rhosts and /etc/hosts.equiv in order to become an Informix trusted user.

For example:

```
/users/informix(99) cat .rhosts
oem-hp03.raleigh.ibm.com informix
oem-hp03 informix
oem-hp03.raleigh.ibm.com cmhp3inf
oem-hp03 cmhp3inf
```

Note: The second item in each row is the Informix user id (in the first 2 rows) and the CMVC family (in the last 2 rows).

SPECIFY TCP/IP AND NOT SHARED MEMORY FOR SQLHOSTS IN INFORMIX 7

Question:

Specify TCP/IP and not shared memory for sqlhosts in Informix 7.

Answer:

To avoid problems with unreleased shared-memory when doing some CMVC tasks, it is critical to NOT use the shared-memory connection for the Informix databases and use the TCP/IP connection. For example the file /usr/informix/etc/sqlhosts below shows one correct entry and one incorrect entry (which is commented out):

```
oem_hp03 onsoctcp      oem-hp03      online3
# oem_hp03 onipcshm   oem-hp03      online3
```

PROBLEM WHEN USING UNBUFFERED SETTING FOR DATABASE LOGGING IN INFORMIX

Question:

There is a problem when using unbuffered setting for database logging in Informix.

Answer:

A customer reported problems using the Informix database when the setting for the database logging was "unbuffered". This causes the transactions to hang.

To avoid this situation the setting must be "unbuffered ANSI".

INFORMIX: INCREASE LOGICAL LOGS TO AVOID PROBLEMS WITH LEVEL -CHECK

Question:

Informix: increase logical logs to avoid problems with Level -check.

Answer:

You might need to increase the size of the logical logs (which need to be greater than 4MB) to avoid a problem with Level -check, which may fill up the logical logs if the logs are not big enough.

If these logical logs are filled up, the symptom from CMVC is:

```
0010-256 An error occurred when the CMVC server software tried to process
        function txLevelCheck. It is possible that the network or
        CMVC server is experiencing problems.
```

CONFIGURABLE FIELDS

WHAT ARE SOME OF THE CHARACTERISTICS OF THE CONFIGURABLE FIELDS?

Question:

What are some of the characteristics of the configurable fields?

Answer:

- New fields are always appended to the last column of the table.
- Database views are updated with the newly created fields:
 - Defect** DefectView
 - Feature** FeatureView
 - File** FileView
 - User** None (there is no view for User)
- Configurable fields access added to command lines after cmvcd is restarted.
- Configurable fields access added to GUI after family is switched or the GUI is restarted.

USING CHFIELD TO ADD A NEW CONFIGURABLE FIELD WITH SELECTION VALUES

Question:

How to use chfield to add a new configurable field to Defects whose values will be selected from a list of choices.

Answer:

The following sequence allows the CMVC family administrator to create a new configurable field for Defects called "answerCancel" whose values must be chosen from a limited set of values defined in config.Id (that is, it does not have a free form). This new configurable field should not be present when opening a defect, but only when modifying a defect. The stanza and table reports should be updated to reflect the new field.

Unfortunately the CMVC terminology may be a bit confusing at the beginning:

- If you want the user to fill in a CMVC field by selecting from a set of values, then you have to use the configurable values which are specified in the file config.ld and loaded into the database by using the chcfg utility.

Some examples are the prefix and the severity fields for Defects.

- If you want to add/modify a new field in Defect, Feature, File or User, then you have to use the command "chfield".
- You can select to have the new field to use configurable values from config.ld.

Follow these instructions to add a new configurable field to Defects:

1. Stop the CMVC family by using:

```
stopCMVC familyName
```

2. Because the desired field will have values that are NOT free form, and which need to be chosen from a set of values, it is necessary to create this set of values first in the file config.ld

- a. Logon into the CMVC family administrator account.

- b. Edit the config.ld file and add the entries for the new field "answerCancel", such as:

```
answerCancel|as_designed|no|0|0|"The program works as designed"
answerCancel|limitation|no|0|0|"The problem is a current limitation"
```

- c. Save the file and then reload the new contents of the config.ld into the database tables by using the CMVC utility:

```
chcfg
```

3. Use the chfield command to add the new configurable field.

- a. Enter:

```
chfield -object Defect
```

Then you will see the menu:

Select one of the following actions:

1. Create a configurable field
2. Modify a configurable field
3. Update stanza and table reports
4. Display HELP
5. Exit

Please enter command number: 1

- b. Select 1 to create a new field:

The Field Label is shown in the dialogs, and the Title label is shown in the column headers in the window lists. Thus, you can add spaces and colons to the string in Field Label (such as Answer Cancel:), but to avoid confusion with other column headers, it is recommended NOT to add spaces into the Title (such as AnswerCancel).

You have selected to create a new field.
 Enter DB Column Name: answerCancel
 Enter CMD Attribute: answerCancel
 Enter Field Label: Answer Cancel:
 Enter Title: AnswerCancel
 Is it an attribute for "Create" action (n): n
 Enter the field type: answerCancel

*New field properties:

| Active | DB Column Name | CMD Attribute | Field Label | Title |
|--------|----------------|---------------|----------------|--------------|
| Create | Required | Type | | |
| yes | answerCancel | answerCancel | Answer Cancel: | AnswerCancel |
| no | no | answerCancel | | |

Do you wish to commit the change (y)?

c. Type "y" to commit the change:

| Active | DB Column Name | CMD Attribute | Field Label | Title | Create | Required | Type |
|--------|----------------|---------------|----------------|--------------|--------|----------|--------------|
| yes | answerCancel | answerCancel | Answer Cancel: | AnswerCancel | no | no | answerCancel |

*Checking the columns in the Database ...
 *Check completed

d. The menu will be displayed again. Select "3. Update stanza and table reports":

Select one of the following actions:

1. Create a configurable field
2. Modify a configurable field
3. Update stanza and table reports
4. Display HELP
5. Exit

Please enter command number:

e. The appropriate template files will be shown to you by using the "vi" editor. Edit the files. Only the relevant portions of the files will be shown here, and the *** characters will be shown to indicate the new data; these marking characters should NOT be part of the file.

```
# StanzaViewFormat

prefix      %s
name        %s
reference   %s
abstract    %s
duplicate   %s
answerCancel %s   *** new ***

state       %-25.25s
severity    %-25.25s
age         %ld
```

```

...

# StanzaViewColumn
prefix,name,reference,abstract,duplicate,answerCancel,state,severity,age,...
*****

# TableViewFormat
%-4.4s %-15.15s %-15.15s %-8.8s %-8.8s %-8.8s %-3.3s %-3.3ld %-55.55s %-15.15s
*****

# TableViewColumn
prefix,name,compName,state,originLogin,ownerLogin,severity,age,abstract,answerCancel
*****

# TableViewHeader

pref name          compName          state    originLo ownerLog sev age abstract
                answerCancel
                *****
-----
-----
-----
                *****

```

f. From the menu, select 5 to exit.

```

Select one of the following actions:
  1. Create a configurable field
  2. Modify a configurable field
  3. Update stanza and table reports
  4. Display HELP
  5. Exit
Please enter command number: 5

```

4. Start the cmvc daemons:

```
cmvcd yourFamily 2
```

5. From the CMVC client issue the command:

```
Defect -configInfo
```

You should be getting something like this:

```

Attribute Name  DB Column Name  Create/Required Type
-----
answerCancel   answerCancel    no /no          answerCancel

```

This command is used by the CMVC GUI to find out which configurable fields to use.

6. Now test the change by using the CMVC GUI to do the following:

- a. Invoke the create defect dialog to verify that the new field is not show there.
- b. Invoke the modify defect dialog to verify that the new field is shown at the bottom. Select a value, such as "limitation" for this new field. Submit the change.

- c. Refresh the window list for Defects, and verify that the column AnswerCancel is shown, and that there is one entry that has the value "limitation" from the step above.
- d. Select the defect and show the details. Verify that there is an entry for the new field, such as:

```

prefix      c
name        6
reference
abstract    testing new variables
duplicate
answerCancel limitation
*****

state       verify
severity    2
age         0

```

- e. Issue the following command (if you have a large amount of defects, you can use a query that will show you a smaller set of defects)

```
report -view DefectView -where "1=1" -table
```

The results will look something like this (the width has been shortened to fit the entries in a single row):

```

pref name compName      state      originLo ownerLog sev age abstract answerCancel
-----
c    1    test-play   closed    rivera   rivera   2  000 test def
c    2    test-play   closed    rivera   rivera   1  000 adding m
d    3    test-import working    rivera   rivera   4  000 test imp
c    6    test-play   verify    rivera   rivera   2  000 testing limitation

4 records selected

```

To see how to create a new configurable field that has "free-format" text, instead of selecting the value from a list of choices, see "Using chfield to add a new configurable field with "free-format"."

USING CHFIELD TO ADD A NEW CONFIGURABLE FIELD WITH "FREE-FORMAT"

Question:

How to use chfield to add a new configurable field to Defects whose values are "free-format" text and which will not be selected from a list of choices.

Answer:

See "Using chfield to add a new configurable field with selection values" on page 37 for the details of the overall process.

However, you will need to just press enter at the question of "Enter the field type: " (that is, leave it blank). In that way the value for this field will be "free-text" when the user fills it in. Of course, there are limitations, such as no space blanks, but you can use underscores: this_is_an_example.

The main steps are shown below:

2) Select 1 to create a new field:

```
You have selected to create a new field.
Enter DB Column Name: answerCancel
Enter CMD Attribute: answerCancel
Enter Field Label: Answer Cancel:
Enter Title: AnswerCancel
Is it an attribute for "Create" action (n): n
Enter the field type:
          **** leave it blank, just press enter ****
```

*New field properties:

| Active | DB Column Name | CMD Attribute | Field Label | Title |
|--------|----------------|---------------|----------------|--------------|
| Create | Required | Type | | |
| yes | answerCancel | answerCancel | Answer Cancel: | AnswerCancel |
| no | no | | | |

***** this field (Type) should be blank *****

WHAT ARE THE FILES RELATED TO CHFIELD?

Question:

What are the files related to chfield?

Answer:

The following files in \$CMVC_HOME/install are related to chfield:

- mkdb
 - From the mkdb file, chfield determines which database is used for the family.
- ConfigFieldHelp
 - Help file for chfield
- DefectConfigTbl.default and DefectConfigFormat.default

- Shipped default configurable field files for Defect.
- These files will be loaded to \$HOME/\$CMVC_FAMILY/configField if mkdb -d is run.
- FeatureConfigTbl.default and FeatureConfigFormat.default
 - Shipped default configurable field files for Feature.
 - These files will be loaded to \$HOME/\$CMVC_FAMILY/configField if mkdb -d is run.
- DefectConfigDBTemplate, FeatureConfigDBTemplate, FileConfigDBTemplate and UserConfigDBTemplate
 - chfield uses these files as the base to update the object database view for the newly created configurable fields.

HOW TO REPLICATE THE CONFIGURABLE FIELDS FROM ONE FAMILY TO ANOTHER

Question:

How can I replicate the configurable fields from one family to another?

Answer:

Scenario: I have 2 families in the same host, and I just created several configurable fields using chfield in family-A and now I want to have family-B with the same configurable fields. I would like to avoid retyping the configurable field data for the family-B, is there a quicker way?

Procedure: If you want the family-B to have EXACTLY the same configurable fields as family-A, then you can do the following:

1. Copy all the files from the directory configField from family-A into the directory configField in family-B.
2. Run the command:


```
chfield -object Defect -source family-B
```
3. Repeat the previous step for Feature, File and User (when applicable).

Note: The above procedure works only when duplicating EXACTLY the configurable fields from one family to another. If you want to change the order of the fields, or just adding some but not all the configurable fields from the other family, it is better to manually add all the desired configurable fields and not to follow the procedure mentioned above.

For more details, see section "Running the chfield program with the -source Option" in page 52 of the CMVC 2.3 Server Administration manual.

HOW TO DISABLE A CONFIGURABLE FIELD

Question:

How to disable a configurable field.

Answer:

- Stop the CMVC family daemons.
- Use chfield program.
- Mark the active flag to 'no'.
- Exit from chfield.
- Restart the cmvcd daemons.

Some important facts to know about this process:

- The column in the database table will not be deleted.
- Configurable fields access is withdrawn from command lines after cmvcd is restarted.
- Configurable fields access is withdrawn from the GUI after the family is switched or the GUI is restarted.

HOW TO RETRIEVE INFORMATION ABOUT THE CONFIGURABLE FIELDS

Question:

How to retrieve information about the configurable fields.

You can obtain information about the configurable fields in your CMVC family by doing the following:

- Use the -configInfo option from the appropriate object command to show the characteristics of the configurable fields (only the active configurable fields are shown):
 - Defect -configInfo
 - Feature -configInfo
 - File -configInfo
 - Use -configInfo

If you want to process configurable fields from your user exits, then you can use the following parsing code to separate the arguments and its values from the configurable field string (which is passed as a parameter to the user exit):

```

#!/usr/bin/ksh

# This example is searching through a Configurable Field String
# looking for the values for configurable fields "configa" and
# "configc". If found their values will be stored in variables
# "avalue" and "cvalue" respectively.

CFS=${n}
ARG_SWITCH=0
for ITEM in ${CFS}
do
    if [ ${ARG_SWITCH} -eq 1 ]
    then case "${ARG}" in
            configa)    avalue=${ITEM}
                        ;;
            configc)    cvalue=${ITEM}
                        ;;
            esac
            ARG_SWITCH=0
        else ARG=${ITEM}
            ARG_SWITCH=1
        fi
done

```

I ADDED A NEW CONFIGURABLE FIELD BUT THE REPORT DOES NOT INCLUDE IT, WHY?

Question:

I added a new configurable field but the report does not include it, why?

Answer:

When you add a new configurable field, chfield does not automatically add that new field in the stanza report, nor in the table report because chfield does not know where you want to place the configurable field in the layout of the report.

You need to select the option in chfield that allows you to modify the report formats in order to specify where you want the field to be displayed.

HOW TO CONFIGURE REPORTS IN CMVC

Question:

How to configure reports in CMVC.

Answer:

The following report formats can be configured for Defects, Features, Users and Files:

- Stanza report format.
- Table report format.

The configuration is done by means of the "chfield" command:

- chfield verifies the report format file.
- If no previous report format is defined, chfield starts with the default formats.
- chfield invokes the vi editor.
- chfield verifies the user's new configurations, format and column names.
- chfield saves the new configuration into the system file.

The following files are used to keep the report format:

Defect \$HOME/configField/DefectConfigFormat
Feature \$HOME/configField/FeatureConfigFormat
File \$HOME/configField/FileConfigFormat
User \$HOME/configField/UserConfigFormat

The layout of the report format files is as follows:

- For Stanza Report
 - StanzaViewFormat
Stanza format described in C Language syntax.
 - StanzaViewColumn
The database column names appear in the same order as described in StanzaViewFormat.
- For Table Report
 - TableViewFormat
Table format described in C Language syntax.
 - TableViewColumn
The database column names appear in the same order as described in TableViewFormat.

- TableViewHeader
Header description for table report

Keep in mind the following information about the raw format report:

- The raw format report is not configurable.
- Raw format consist of two portions:
 - Fixed Portion - system predefined information.
 - Configurable Fields Portion - configurable fields information.

The Configurable Fields Portion is appended to the end of the Fixed Portion.

- The configurable fields information is organized in the same order as the -configInfo report.

CHFIELD: HOW TO FIX AN INVALID DATABASE COLUMN NAME

Question:

chfield: how to fix an invalid database column name.

Answer:

1. Execute chfield and verify the properties of the configurable fields:
 - If fields are not found or properties are not set properly, create the fields or modify the properties, and restart the cmvc daemon.
 - If field properties appear to be fine, exist from chfield and restart the cmvc daemon.

2. If problem persists, run:

```
chfield -object objectName -source familyName -s
```

This command checks the consistency of the database table with the system generated configurable field files.

The database table will be updated if any inconsistency has occurred

CHFIELD: HOW TO FIX A REPORT WITH DATABASE ERROR

Question:

What to do when you encounter reports with the following database errors:

- Error 0010-256: An error occurred when the CMVC server software tried to process function %1\$s.

- Error 0010-061: Database error, %1\$d (invalid column name), has occurred. If the error is a result of an invalid column name, then check the syntax of the command.

Answer:

It is important to notice that:

- chfield checks and validate the column names input to the ConfigFormat files.
- Possibly the file has been changed manually by the system administrator.

You could try do the following:

- Run chfield and select update report action.
- chfield will indicate what is wrong.
- Modify the file accordingly and exit chfield.
- Restart the cmvc daemon.

CAN I CHANGE ANY FIELD TO BE OPTIONAL OR MANDATORY?

Question:

Can I change any field to be optional or mandatory? For example, changing the Release field in a defect to be mandatory.

Answer:

By definition, only configurable fields can be configured and thus, they are the only ones that can be marked as optional or mandatory. The CMVC administrator has to do this task.

However, it is NOT possible to change non-configurable-fields.

For details on how to use a user exit to make an optional non-configurable field a mandatory field, see "How to make "release name" mandatory while opening a Defect."

HOW TO MAKE "RELEASE NAME" MANDATORY WHILE OPENING A DEFECT

Question:

How to make "release name" mandatory while opening a Defect.

Answer:

The Release field in a defect is not a configurable field. For more details, see “Can I change any field to be optional or mandatory?.”

The only way to make it a mandatory (required) field is to define/create a userExit (DefectOpen 0) that ensures that the field is filled in.

CANNOT DELETE AN EXISTING CONFIGURABLE FIELD

Question:

Cannot delete an existing configurable field.

Answer:

Once a configurable field has been created, it is not possible to delete it.

However, it is possible to rename some of the attributes for the field, but the DB Column Name cannot be changed.

USE ONLY THE DB COLUMN NAME IN REPORTS

Question:

Use only the DB Column Name in reports

Answer:

The only field that can be used in the reports, such as the stanza format, is the DB Column Name. If you use other fields, such as Field, Title, they will be ignored and no data will be shown for that field in the report.

CONFIGURABLE FIELDS ARE NOT SHOWN WHEN VIEWING THE DETAILS

Question:

I added two configurable fields to Features. These fields are shown in the list of features, but not when viewing the details for a feature.

What should I do to achieve this?

Answer:

You have to use the chfield tool and specify the option to "Update report details.". Then you should modify the Stanza Report format to add the new fields.

ADDING NEW CONFIGURABLE FIELD IN STANZA VIEW FORMAT

Question:

I would like to add a new configurable field for Defects on the same line as the "age" field in the Stanza View Report. After trying this, I cannot get the new field to line up with the field above it, because the new field is a string and age is an integer.

How can I add this new field in the second column next to "age" and have it line up? For example: the new field is called "due"

| | | | |
|----------|----------|----------|----------|
| state | %-25.25s | priority | %-20.20s |
| severity | %-25.25s | target | %-20.20s |
| age | %1d | due | %-20.20s |

Answer:

Updated format:

| | | | |
|----------|----------|----------|----------|
| state | %-25.25s | priority | %-20.20s |
| severity | %-25.25s | target | %-20.20s |
| age | %-25.11d | due | %-20.20s |

CREATE AND REQUIRED FIELDS FOR FILES USING CHFIELD

Question:

I am trying to add a configurable field to Files. I have modified and reloaded the config.ld to add the choices I want, but when I run chfield -object File, I do not get the option to specify Create or Required.

Answer:

The configurable fields for Files are different than the rest. You can specify only a field for the modify action but not for the create one.

One important limitation to keep in mind for Files is that the values for the configurable fields for Files are lost when linking files from one release to another.

DB2, MAXIMUM NUMBER OF CONFIGURABLE FIELDS IS 17 FOR DEFECT/FEATURE

Question:

In DB2 the maximum number of configurable fields is 17 for Defect/Feature.

Answer:

Although the CMVC Server manual says that the limit on active configurable fields for Defect and Feature objects is 19, in reality the limit is 17.

However, you can have more than 17 configurable fields (such as 30), but only 17 can be active at a time.

DB2 ERROR SQL1040N DURING CHFIELD

Question:

When using chfield, it might be possible to reach the limit of the maximum number of DB2 applications, and therefore the following message will be displayed:

```
SQL1040N The maximum number of applications is already connected to the
database.  SQLSTATE=57030
```

Answer:

Increase the "maxappls" parameter for the database:

1. Login as the DB2 instance owner.
2. Invoke "db2adm".
3. Select "System database directory".
4. From the "System database directory" window select the database in question (same name as the CMVC family).
5. From the menu bar, select "Local database" then "Configure".
6. From the "Configure Database" window, increase the number for "maxappls".
7. Exit "db2adm".
8. Make sure that the cmvc daemons and other tools that use the CMVC family database are disconnected.
9. Stop the database: db2stop

10. Restart the database: db2start

ORACLE PAUSE STOPS THE EXECUTION OF CHFIELD

Question:

Oracle pause stops the execution of chfield.

Answer:

The default Oracle options may be set in the file \$ORACLE_HOME/glogin/sql. If one of these options is "SET PAUSE ON", the query issued by chfield to get the columns in a table is truncated. Thus, chfield does not see all of the columns in the table and attempts to add a column which is already there. This can be avoided by including the directive "SET PAUSE OFF" in the Oracle instructions.

ONLY 10 CONFIGURABLE FIELDS CAN BE HANDLED WITH SYBASE

Question:

When I try to add more than 10 configurable fields in a CMVC family that uses Sybase, I get an error 416 from Sybase.

Answer:

There is a limitation on the number of configurable fields that a CMVC family can have when using Sybase. The maximum number is 10 for object. Note that the combination of the configurable fields for defects and features should be 10 because both objects in reality use the same database table.

APPENDIX A. BIBLIOGRAPHY

For more information on how to use CMVC, you can consult the following manuals and publications:

SC09-1596-01 IBM CMVC Client Installation and Configuration
SC09-1597-01 IBM CMVC User's Reference
SC09-1631-02 IBM CMVC Server Administration and Installation
SC09-1633-00 IBM CMVC Concepts
SC09-1635-01 IBM CMVC Commands Reference

The following Redbooks offer practical advice on CMVC:

GG24-4178-00 Did you say CMVC?
GG24-4345 CMVC: Customer's Perspective

The following technical reports describe in detail useful hints on using CMVC:

29.2169 How to use CMVC with National Language Support (NLS)
and Double-Byte Character Sets (DBCS)
29.2180 How to do routine tasks in the OEM Platforms for CMVC
29.2183 Using CMVC for Products with Multiple
National Language Versions (NLVs)
29.2232 How to do migration tasks with CMVC
29.2244 How to build and package the CMVC client for Windows 3.1
29.2245 How to build and package the CMVC client for OS/2
29.2253 Comparison between CMVC 2.3 and TeamConnection 2
29.2254 Migrating from CMVC 2.3 to TeamConnection 2
29.2268 CMVC frequently asked questions:
license management with NetLS/iFOR
29.2269 How to build and package the CMVC server/Client for UNIX
29.2296 CMVC frequently asked questions:
files, releases, levels, and tracks
29.2297 CMVC frequently asked questions:
version control and database synchronization issues
29.2298 CMVC frequently asked questions:
hints and tips on using databases and OEM platforms
29.2299 CMVC frequently asked questions:
client for UNIX, OS/2 and Windows 3.1
29.2321 Comparison between TeamConnection 2 and CMVC 2.3 (2nd Edition)
29.2322 CMVC/TeamConnection: How to cope with dynamic IP addresses
29.2323 CMVC frequently asked questions:
handling file, release and level extract problems

HOW TO GET ELECTRONIC COPIES OF MANUALS AND TECHNICAL REPORTS

Many of the manuals and technical reports mentioned in this document can be downloaded as follows:

- From the IBM intranet (only for IBM employees).
- From the Internet (open to everyone).

IBM Intranet

Web Home Page

You can access the CMVC Service/Development Home Page at:

<http://tc-cmvc.raleigh.ibm.com/cmvc>

From the index at the top of the page, select:

- Technical Reports and related tools
- Copies of ALL the archived versions for the forums CMVC and CMVC6000
- Documentation in ASCII text files

FTP

You can download the code from our internal FTP site, by doing:

1. ftp tc-cmvc.raleigh.ibm.com
2. login as 'anonymous' and for password give your email address.
3. cd e:\cmvc\doc\tr
4. binary
5. get fileName
6. quit

Internet

Web Home Page

Not available.

FTP

You can download the code from our external FTP site, by doing:

1. ftp ftp.software.ibm.com
2. login as 'anonymous' and for password give your email address.
3. cd ps/products/cmvc/doc
4. binary
5. get fileName
6. quit

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| TRADEMARK, REGISTERED TRADEMARK OR SERVICE MARK | COMPANY |
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| PostScript | Adobe Systems Incorporated |
| HP-UX | Hewlett-Packard Company |
| Informix | Informix Inc. |
| Microsoft Windows | Microsoft Corporation |
| Oracle | Oracle Corp. |
| NFS SunOS Solaris | Sun Microsystems Inc. |
| Sybase | Sybase Inc. |
| UNIX | X/Open Co., Ltd. |

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