BNCS Applications

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BNCS Path Usage

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1 Introduction

During the history of BNCS (sometimes Colledia Control) there have been a number of different approaches taken to the location of the various files within the system.

In the earlier versions, V1 and V2, it was necessary for many of the files to be in C:\Windows (or C:\WINNT). This restriction has generally been removed in the period following the introduction of V3. However during this later period there have been two different approaches taken to the issue. The V3 approach uses a configuration file with a hard-coded name to find some of the files. Other files may be placed wherever the system implementer wishes, since the only other consideration is references from other files (primarily panels) within the system. The V4 approach standardizes the folder structure for all systems. The various parts of the system expect particular sets of files to be in particular locations within the system. The actual location is specified using environment variables.

The purpose of this document is to collect into one location all information relating to file path usage on all current BNCS software.

This is primarily for V4 (including 4.5) systems, though V3 and V2 systems will be mentioned where appropriate, and possibly even V1, though usually V1 and V2 share the same requirements.

The terms V2, V3 and V4 are often used as a shorthand description of particular types of configuration, and are the names I will use here.

2 Hosting Single or Multiple Systems

V3 and V2 users usually have only one system installed on a computer (usually directly in C:\BNCS).

The V4 arrangement is designed to support an arbitrary number of systems on one computer.

It should be noted that this is not a hard and fast distinction. It is possible to configure a V2 or V3 system with multiple systems on one computer. Also it is possible to use V4 configuration to specify a layout where only one system is possible on the computer.

3 V2 - V3 – V4

3.1 File Locations

The conventional locations where the dev_nnn.ini files are found are as follows. This applies for most other ini format files; though see individual driver documentation for any exceptions.

3.1.1 The v1/v2 Location

V2 is the oldest form (actually V1 is, but V2 is the oldest form still in use), where all the BNCS configuration files need to be in the Windows directory. This can be found in the "WINDIR" environment variable, and retrieved in a program using GetWindowsDirectory. It is usually either **C:\Windows** or **C:\WINNT**.

Log files are written in **C:\bncslogs**.

All other files used by the system (.dat, .lck, etc) are also in the Windows directory - **C:\Windows** or **C:\WINNT.**

3.1.1.1 Hosting Multiple Systems

If more than one system is to be run on a computer using this system then it will be necessary to remove all the first system's files from the Windows directory before the new system's files are put there. If this is not done there is a chance of the new system using files that are not properly relevant to it.

3.1.2 The V3 Location

V3 configuration allows the BNCS configuration files to be put in any folder.

The files are in a folder specified in **C:\bncs_config.ini**. The location of the configuration files is given by the ConfigPath key.

Log files are written in **C:\bncslogs**.

Some system files are found using the SystemPath key in **C:\bncs_config.ini.**

All other files used by the system (.dat, .lck, etc) are also in **C:\Windows** or **C:\WINNT.**

3.1.2.1 Hosting Multiple Systems

If the system has been set-up without any files needing to be in the Windows directory it should be straightforward to host multiple systems on one computer. If the Windows directory is used at all then the same warning as given above for V2 systems applies.

3.1.3 The V4 Location

V4 configuration allows the BNCS folder structure to be placed anywhere. Unlike earlier arrangements V4 systems need their files in a specific folder structure. See below for details.

The ini files are in a folder specified using environment variables CC_ROOT and CC_SYSTEM. The ini files are found in **%CC_ROOT%\%CC_SYSTEM%\config\system**.

Log files are written in **%CC_ROOT%\%CC_SYSTEM%\logs**.

Temporary files (eg v4csi cache files) are written in **%CC_ROOT%\%CC_SYSTEM%\temp**.

3.1.3.1 Hosting Multiple Systems

Multiple systems may be hosted using different system folder names and selected by changing CC_SYSTEM.

4 Core Configuration

The core parts of BNCS have slightly different logic regarding their configuration.

4.1 CSI Configuration

4.1.1 CSI32

CSI32 looks for CC_ROOT and CC_SYSTEM. If both are present it uses V4 configuration. If not, it attempts to read the ConfigPath key from C:\bncs_config.ini. If that is present it uses V3 configuration. If neither of the aforementioned applies it uses V1/V2 configuration.

4.1.2 V4CSI

V4CSI looks for CC_ROOT and CC_SYSTEM. If both are present it uses V4 configuration. If not it uses V1/V2 configuration.

4.1.3 V3CSI

V3CSI attempts to read the ConfigPath key from C:\bncs_config.ini. If it is present it uses V3 configuration. If not it uses V1/V2 configuration.

Csi's own config file is called csi.ini in V1/V2 and V3 systems and bncs_system.ini in V4 systems.

4.2 InfoDriver Configuration

4.2.1 InfoDriver32

InfoDriver32 looks for CC_ROOT and CC_SYSTEM. If both are present it uses V4 configuration. If not, it attempts to read the ConfigPath key from C:\bncs_config.ini. If that is present it uses V3 configuration. If the V3 configuration file was not present default values are written to it.

4.2.2 V4 InfoDriver

V4InfDrv uses V4 configuration exclusively. It will fail if tried with no CC_ROOT or CC_SYSTEM set.

4.2.3 V3 InfoDriver

V3InfDrv attempts to read the ConfigPath key from C:\bncs_config.ini. If it is present it uses V3 configuration. If not it uses V1/V2 configuration.

4.3 GRD Configuration

4.3.1 GRD32

GRD32 looks for CC_ROOT and CC_SYSTEM. If both are present it uses V4 configuration. If not, it attempts to read the ConfigPath key from C:\bncs_config.ini. If that is present it uses V3 configuration. If neither of the aforementioned applies it uses V1/V2 configuration.

4.3.2 V4 GRD

V4GRD looks for CC_ROOT and CC_SYSTEM. If both are present it uses V4 configuration. If not, it attempts to read the ConfigPath key from C:\bncs_config.ini. If that is present it uses V3 configuration. If neither of the aforementioned applies it uses V1/V2 configuration.

4.3.3 V3 GRD

V3Grd attempts to read the ConfigPath key from C:\bncs_config.ini. If it is present it uses V3 configuration. If not it uses V1/V2 configuration.

4.4 Driver Configuration

Drivers written according to current conventions will find their configuration according to the following algorithm.

1. Check for CC_ROOT and CC_SYSTEM. If both are present use V4 configuration. If not then proceed to the next step.
2. Attempt to read the ConfigPath key from C:\bncs_config.ini. If it is present then use V3 configuration.
3. If neither of the above is present then use V1/V2 configuration.

See individual driver documentation for any exceptions to this.

5 V4 Systems

The V4 system organization addresses a number of issues with the earlier designs.

- The presence of multiple systems on one computer. This is particularly relevant for:
  - Developers needing to work on multiple systems.
  - Servers where one server may be being used for multiple systems.
- Consistency between different systems. The V4 design means that all V4 systems are similar in layout. An engineer coming to an unfamiliar system will immediately know where to look for the various components.

  Given the consistency between the structures of different V4 systems it is now possible to manage the synchronization of a client workstation's files with those on the server.

The V4 structure comprises a root folder containing a folder for each system.

The parameters for V4 configuration are stored in environment variables. These can be seen programmatically using simple function calls, and can be used in batch files, registry entries, compiler settings etc.

Temporary files must not use the normal file tree (under "c:\bncs\bbc_cca" in our example below). This is because this tree must be an exact copy of that stored on the server. A file synchronising mechanism will delete temporary files when updating from the server.

6 V4 System Configuration

There are five environment variables that are setup when BNCS is installed (one is optional).

1. CC_ROOT
2. CC_SYSTEM
3. CC_WORKSTATION
4. CC_SERVER_ROOT
5. CC_RESERVE_SERVER_ROOT (optional)

The standard environment variable TEMP is also used to provide the directory for some purely temporary files.

6.1 CC_ROOT

The root path, in CC_ROOT, specifies the top level directory where all BNCS files are to be found. e.g.

```
C:\BNCS
```

Usually CC_ROOT is either C:\ColledіaControl or C:\BNCS.

6.2 CC_SYSTEM

The current system, in CC_SYSTEM, specifies the sub-directory for an individual system. Some examples might be:

```
bbc_cca
Lobh
CCM
```

To find the location of the files, CC_ROOT and CC_SYSTEM are concatenated, separated by '\'.

Using the CC_ROOT from the previous section and the BBC CCA system gives the path:

```
C:\BNCS\bbc_cca
```

6.3 CC_WORKSTATION

CC_WORKSTATION has the value of the workstation number. This is transferred by CSI into csi.ini or bncs_system.ini (according to whether CSI is V4 or earlier).

Storing the workstation number in an environment variable and not in a file means it can't be overwritten when all the files are synchronized from the server.

This is the one piece of information that this machine needs to know to give it its unique identity. Also, as it is an environment variable it can be seen programmatically using simple function calls, and can be used in batch files, registry entries, compiler settings etc.

6.4 CC_SERVER_ROOT

CC_SERVER_ROOT is the path to the system server. If it is set to be the same as CC_ROOT then no server synchronization is done (by Workstation Manager and File-Sync).

If the systems above were held on a server called \\main_server, CC_SERVER_ROOT would have the value

```
\\main_server\bncs
```

Synchronization will concatenate CC_SERVER_ROOT and CC_SYSTEM, separated by '\'. So with this server our BBC CCA system will be synchronized with

```
\\main_server\bncs\bbc_cca
```

6.5 CC_RESERVE_SERVER_ROOT

CC_RESERVE_SERVER_ROOT is optional. If it is present and the sync process can't contact CC_SERVER_ROOT then this is used instead.

6.6 Temporary files

Temporary files are those where it doesn't matter if they are deleted as a machine restarts – for example data cache files. An example of this is the set of BNCS ".cdf" compiled database files.

These can exist in the normal CC_ROOT\CC_SYSTEM directory structure under a "temp" directory, which is explicitly excluded from the file synchronism mechanism.

Alternatively their location may be selected using the TEMP environment variable.

6.7 Data files

Data files are those which contain persistent data. These can exist in the normal CC_ROOT\CC_SYSTEM directory structure under a "data" directory. An example of this is infodriver ".dat" files.

This directory is explicitly excluded from the file synchronism mechanism.

The method for ensuring that important data files are archived to the server has never been defined.

7 Paths within a V4.5 System

All the files for any one system are in folders under %CC_ROOT%\%CC_SYSTEM%; the standard 4.5 set is as follows:

- config
- data
- docs
- install
- logs

- panels
- source
- temp
- windows

Note that although all of these may be considered part of the system they are not all synchronized from the server to clients. Some are considered "for reference" and are not changed, and some are not valid to synchronize with anything.

The built-in list of folders not to be synchronized is : source, temp, docs, data, install, backup, logs

7.1 config

"config" contains all the (xml) configuration files.

It also contains a folder called "system" which contains all the dev_nnn files, bncs_system.ini, caplog.ini and any other configuration files.

V4-compliant versions of core applications and drivers know about "config/system".

7.2 data

"data" is where all .dat and .lck files are located.

Data files are those which contain persistent data. These can exist under the normal CC_ROOT\CC_SYSTEM directory structure under a "data" directory. Examples of this are infodriver ".dat" files.

Note that the method for ensuring that important data files are archived to the server has never been defined.

This directory is explicitly excluded from the file synchronism mechanism. The clients will build and maintain their own versions while they run.

V4-compliant versions of core applications know about "data". Some drivers do too.

7.3 docs

"docs" contains documentation.

This directory is explicitly excluded from the file synchronism mechanism. It is assumed not to be necessary on the clients.

7.4 Install

"install" usually contains just the workstation installer.

This directory is explicitly excluded from the file synchronism mechanism. It is assumed that the installer is not needed after the initial installation of a system onto a client.

The initial client installation is done either by running the installer directly from the server, or by first copying it and its support files to the new client.

7.5 logs

"logs" is where all log-files are written to; sometimes in sub-folders, sometimes directly.

This directory is explicitly excluded from the file synchronism mechanism. Logs generated on any client computer are usually specific to that machine and do not want to risk being overwritten by ones from the server.

V4-compliant versions of core applications and drivers know about “logs”.

7.6 panels

"panels" is where all panels are located. Each one has a folder to itself as there are usually multiple files for one panel.

7.7 source

"source" is where the common header and library files are found (in subfolders "include" and "lib") and also any project-specific automatics (in subfolders of source/windows/bin and source/windows/lib).

This directory is explicitly excluded from the file synchronism mechanism. It is assumed not to be necessary on the clients.

7.8 windows

"windows" contains two subfolders "bin" and "lib" which contain all the executables (in "bin") and dlls (in "lib"). "bin" contains a folder "drivers" where all driver executables reside. Sometimes automatics are also there, sometimes they're in a sibling folder called "automatics".

That's all the common parts. There may be project-specific extra folders or subfolders. In particular there is often a sub-folder of "panels" containing components

7.9 V4-Compliant Drivers

V4-compliant drivers reference "config/system", "data" and "logs".

They may have been built with reference to "source", though as this implies headers and libs from a current project they are more likely to have been built with reference to a "source" folder maintained separately for that purpose.

8 V3 System Paths

The selection of paths for a V3 system is essentially arbitrary, requiring only that all panels agree, where paths to files are used. The following arrangement is believed to be the most common.

Directory structure is:

c:\bncs\config

All run-time configuration files (dev inis & DBs , global & launch)

c:\bncs\lib

All run-time libraries (dlls)

c:\bncs\modules

BNCS drivers

c:\bncs\panels

V3 ApplCore panels & automatics

8.1 "Dual-Standard" Working

It is possible to use the V4 path structure and configuration system for a V3 system. In that case the entries in the V3 configuration file (ie C:\bncs_config.ini) can be pointed at the V4 locations.

9 Version history

9.1 Document version

Version No	Date	Details	Name
	Aug 2011	New document	Richard Kerry
	Sep 2011	Edited for clarification	Richard Kerry
	1 March 2013	More edits for publication.	Richard Kerry
	28 August 2013	More edits for publication.	Richard Kerry

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