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CODAC Core System Version 7.2 Release Notes

This note is a supplementary document for CODAC Core System (CCS) to provide users with information on the changes introduced with the release of the CCS 7.2 version.

<i>Approval Process</i>			
	<i>Name</i>	<i>Action</i>	<i>Affiliation</i>
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Change Log

CODAC Core System Version 7.2 Release Notes (9UQ2CL)

<i>Version</i>	<i>Latest Status</i>	<i>Issue Date</i>	<i>Description of Change</i>
v0.0	In Work	08 Mar 2024	
v1.0	Signed	21 Mar 2024	Release Notes for CCS release 7.2.0
v1.1	Approved	21 Mar 2024	Fix of document version (CCS Overview)
v1.2	Signed	10 Oct 2024	Update for maintenance release CCSv7.2.1
v1.3	Approved	11 Oct 2024	Implementing review comments.

CODAC CORE SYSTEM VERSION 7.2 RELEASE NOTES

[ITER_D_9UQ2CL](#)

This note is a supplementary document for the CODAC Core System (CCS) to provide users with information on the changes introduced with the release of the CCS 7.2.0 version and those added with the CCS 7.2.1 maintenance version.

Additions for CCS 7.2.1 are kept in separate, clearly marked paragraphs; new version numbers in tables are underlined or in **bold** typeface.

See **warnings** in these notes for changes that may have a significant impact on existing I&C applications. Those that are present since previous versions are indicated with a **reminder**.

This document is complemented with on-line information that is available at the [CODAC Core System Community Pages](#) that provides the CCS users with the up-to-date status of:

- The [documentation](#)
- The [changes](#) introduced in each components (improvements and bug fixes)
- The [known issues](#) in the 7.2.1 version
- The [roadmap](#)
- The [training](#) material, which will be updated for hands-on workshops.

Warning I&C projects developed with previous versions of CCS shall be migrated following the instructions available in the [CODAC Core System Migration Guide \(7JCFUD\)](#).

Main changes in CCS 7.2.0:

1. The Control System Studio suite has been upgraded to version 4.9.1.
2. SDD toolkit has been upgraded to version 6.7.0 with Enterprise Architect integration and fixes in PLC and system monitoring generation.
3. Starting with this release, ITER Real-Time Framework (RTF) software is part of CODAC Core System. Release 2.4.0 of the RTF has been added to CODAC Core System Fast Controller related roles.
4. Starting with this release, NDSv3 Driver Development Framework (NDSv3) software is part of CODAC Core System. So far, the `nds-core` and `nds-epics` modules have been added to the Fast Controller related roles. More NDSv3 modules will follow.
5. The MRG-R kernel (real-time option) has been updated to allow installation and use of the NI drivers for PXI and PXIe devices.
Those NI drivers are now installable through the CCS Satellite distribution service.

Changes for CCS 7.2.1:

1. The Control System Studio suite has been upgraded to version 4.9.2.
2. The SDD toolkit has been updated to 6.8.0.
3. The ITER Real-Time Framework (RTF) has been updated to 2.4.1.

A new version of the [Plant Control Design Handbook \(27LH2V v7.1\)](#) core document is available.

Changes include addressing of obsolescence management and adding all clarifications since the last version of the PCDH (2013).

COMPONENTS UPDATE

	Components	6.2	6.3	7.0	7.1	7.2.0	7.2.1
OS	RHEL	7.4	7.4	8.5	8.5	8.5	8.5
EPICS	EPICS Base		7.0.4.1	7.0.6.1	7.0.7	7.0.8	<u>7.0.8.1</u>
	EPICS Base Java	7.0.3.1	7.0.6	7.0.7	7.0.8	7.0.9	7.0.9
Shared Units	Java	11.0.3	11.0.3	<u>11.0.13</u>	11.0.13	11.0.13	11.0.13
	Eclipse	4.11.0	4.16.0	4.20.0	4.24.0	4.24.0	4.24.0
	PostgreSQL	10.5	10.5	12.9	12.9	12.9	12.9
	Tomcat	8.5.13	8.5.13	9.0.46	9.0.46	9.0.46	9.0.46
	Firefox	52.3.0	52.3.0	91.4.0	91.4.0	91.4.0	91.4.0
Control System Studio	CS-Studio	<u>4.6.310</u>	4.7.802	4.8.0	<u>4.8.2</u>	4.9.1	<u>4.9.2</u>
Self Description Data	SDD tools	6.2.1	6.3.1	6.4.0	6.6.0	6.7.0	6.8.0
Maven Tools	Maven tools	6.2.0	<u>6.2.1</u>	6.2.1	<u>6.2.3</u>	6.3.0	6.3.0
Health Monitoring	Health Mon	2.0.1	2.0.1	2.0.1	2.0.1	2.0.1	2.0.1
PLC Driver	S7PLC ASYN	<u>1.6.1</u>	<u>1.6.2</u>	1.6.2	<u>1.6.3</u>	1.7.0	1.7.0
	SPSS (300/1500)	3.6/1.1	3.6/1.1	3.6/1.1	3.6/1.1	3.6/1.1	3.6/1.1
TCN Support	TCN API	3.3.2	3.3.2	3.3.2	3.3.2	3.3.2	3.3.2
	TCNd	5.2.3	5.2.3	5.2.3	5.2.3	5.2.3	5.2.3
	Unified PTPd	1.2.1	1.2.1	1.2.1	1.2.1	1.2.1	1.2.1
SDN Support	SDN Core	1.3.2	1.3.2	1.3.2	<u>1.3.3</u>	1.3.3	1.3.3
	SDN API ¹	2.2.0	1.2.1	2.2.0	<u>2.2.0</u>	2.2.0	2.2.0
	SDN Archiver	<u>1.2.1</u>		1.2.1	1.2.1	<u>1.2.3</u>	1.2.3
DAN Support	DAN API	<u>3.2.3</u>	<u>3.2.4</u>	3.2.4	<u>3.2.5</u>	3.2.5	<u>3.2.6</u>
Logging Library	LOG API	1.3.7	1.3.7	1.3.7	1.3.7	1.3.7	1.3.7
RTF	Real-Time Framework					2.4.0	<u>2.4.1</u>
NDSv3	Nominal Device Support v3					3.2.5	3.2.5
NI Sync	NI SYNC	2.2.1	2.2.1	2.3.0	2.3.0	2.3.0	2.3.0
	NI SYNC EPICS	2.1.2	2.1.2	2.1.2	2.1.2	2.1.2	2.1.2
PXI-6259	PXI-6259	2.5.3	2.5.3	2.6.1	2.6.1	2.6.1	2.6.1
	PXI-6259 EPICS	<u>2.6.2</u>	<u>2.6.3</u>	2.6.3	<u>2.6.4</u>	2.6.4	2.6.4
PXI-6528	PXI-6528	<u>1.3.2</u>	1.3.2	1.4.0	1.4.0	1.4.0	1.4.0
	PXI-6528 EPICS	1.3.4	1.3.4	1.3.4	1.3.4	1.3.4	1.3.4
PXIE-6368 / PXIE-6363	PXIE-6368	<u>3.0.1</u>	3.0.1	3.1.0	3.1.0	<u>3.1.1</u>	3.1.1
	PXIE-6368 EPICS	1.6.1	<u>1.6.2</u>	1.6.2	1.6.2	1.6.2	1.6.2
NI RIO	NI RIO	2.1.1	2.1.1	3.1.0	3.1.0	3.2.0	3.2.0
	IRIO EPICS	1.1.2	1.1.2	1.1.2	1.1.2	1.1.2	1.1.2
OPC UA	OPC UA Support	<u>0.5.2</u>	0.9.2	0.9.2	0.9.2	0.9.2	0.9.2
	UASDK Client	1.5.5	1.5.5	1.7.4	1.7.4	1.7.4	1.7.4

¹ Although still used by the SDD generated programs, the templated SDN API will eventually become deprecated in favour of the SDN Core library. For all new developments, it is recommended to use the SDN Core library.

Legend **Bold:** new version (major/minor) – Underlined: new version (bugfix)

1 Operating System

The RHEL version is RHEL 8.5.

The Linux kernel version is 4.18.0-348:

- 4.18.0-348.7.1 for the default installation
- 4.18.0-348.23.1.rt7.153 for the RT enhanced installation (MRG-R).

The RT enhanced kernel was updated to allow installation of the NI PXI/PXIe Linux drivers, needed for the new PXI backplane configuration tool,

2 Installation Tools

Main enhancements:

15715 Installation Tools CIT support for installation of older maintenance releases

Main bug fixes:

15786 Installation Tools Installation toolkit fails to register systems for organizations with mismatching name and label

15361 Installation Tools CIT attempts to update other installed CCS versions when installing a new minor version

3 CODAC Packaging and OS Integration

Main enhancements:

15703 Packaging Support for RT kernel version 4.18.0-348.23.1.rt7.153.el8_5

15710 Packaging Packaging of qt5-qtcharts

15925 Packaging Support for DAN-ODG network interface configuration

15766 Packaging ActiveMQ 5.18.3 upgrade

15773 Packaging Removed CCS built-in packaging of Qt5 in favour of RHEL provided version

15495 Packaging Packaging of saxon 11.5

Changes in 7.2.1:

16168 Packaging collectd: include loading of uptime

16349 Packaging EPICS pyDevSup does not package necessary configuration files

16374 Packaging DHCP client configuration package is missing dhcp-client dependency

16187 Red Hat Setup codac-network should disable NM management of HPN interfaces

4 EPICS

CODAC Core System uses a current release of EPICS 7.

Details for all the community maintained EPICS components included in the CCS 7 distribution are available in the [EPICS Community Modules Roadmap for CCS 7.x \(6C4XTJ\)](#).

The **p4p** module was added in CCSv7.2 to provide the new generation of the pvAccess Gateway application.

The versions included in this release are the following:

Module	Version
EPICS 7 C++	7.0.8
EPICS 7 Java	7.0.9
PVXS	1.3.1
areaDetector ²	Core: 3.12.1 SimDetector: 2.10
ASYN	4.44.2ccs1
autosave	5.11
busy ²	1.7.3
CA Gateway ²	2.1.3
calc	3.7.5
caSnooper	2.1.2.3ccs1
JCA	2.4.8
Multi-Core Utilities	1.2.2
Modbus ²	3.2
p4p	4.1.12
PCAS	4.13.3
pvaPy	5.3.0
pyDevSup	1.2
PyEpics	3.5.1
SNL-sequencer	2.2.9
std	3.6.4
StreamDevice	2.8.24
VisualDCT	2.8.2

For 7.2.1, EPICS Base C++ was updated to the bugfix release 7.0.8.1 and a bug in the name resolution algorithm of the PVXS library was fixed (not included in an upstream release yet).

5 Shared Units

No changes.

6 Control System Studio (CS-Studio)

In CODAC Core System 7.2, CS-Studio 4.9.1 ITER Edition has been released.

This version is based on unchanged framework modules, with the exception of EPICS JCA (updated to 2.4.8).

(If you have an IDM account: The most important enhancements and bug fixes for the user are described in more detail in the documents [CS-Studio Operator Training - 7.1.1 updates \(978TQP\)](#) and [CS-Studio Operator Training - 7.2.0 updates \(ADLV7X\)](#).)

Main enhancements:

15702	CSS BEAST	Alarm within mimics >> New Alarm Actions menu option with comment
15713	CSS BEAST	Alarm Message History >> Status Monitoring
15722	CSS BEAST	Alarm Server >> Status Monitoring
15744	CSS BEAST	Alarm Notifier>> Status Monitoring

² The RPMs are not installed as part of a CCS system profile. They shall be installed as required, see the CCS 7.x EPICS Roadmap for details.

15761	CSS BEAST	Alarm Configuration >> Last configuration time for an alarm node shall maximize all sub-items
15765	CSS BEAST	Alarm Message History >> Database Status Table
15780	CSS BEAST	Alarm Server >> Database Status Table
15781	CSS BEAST	Alarm Notifier >> Database Status Table
15805	CSS BEAST	Alarm Contextual Menu >> New option Export...
15828	CSS BEAST	Alarm Configuration >> alarm model reader batch size new preference
15837	CSS BEAST	Alarm Server >> alarm information persistence
15848	CSS BEAST	Alarms List >> Filtering on alarm priority level
15383	CSS BEAUTY	Data Plot >> Add a specific threshold
15469	CSS BEAUTY	Data Plot >> Add Annotation on a threshold line
15756	CSS BEAUTY	Data Plot >> Save and Save As plot contextual menu options
15621	CSS BEAUTY	Data Plot >> Edition of a graphical gradient line
15835	CSS BEAUTY	Data Plot >> Optimized data computed severity and status
15855	CSS BEAUTY	Archive engine >> archive alarm status change even if the PV value does not change
15451	CSS BEAUTY	Data Plot >> Samples for more than the retention policy
14587	CSS BOY	WebOPI >> Decrease network latency with WebSocket
15859	CSS BOY	OPI >> Add an additional PV to an opened plot
15863	CSS BOY	OPI >> start CS-Studio and navigate directly to a given LEVEL
15198	CSS ELog	Entry template >> New option to parse input PV fields
15403	CSS ELog	Java and Python API extensions
15751	CSS ELog	Rich text editor hyperlink support
15752	CSS ELog	Rich text editor contextual menu
15783	CSS ELog	Distributed configuration setup
15450	CSS General	Update JCA to version 2.4.8

Main bug fixes:

15919	CSS BEAST	Alarm configuration >> default configuration initialisation issue
10762	CSS BEAST	No trigger of automated actions when the alarm severity is UNDEFINED
15607	CSS BEAUTY	Data Plot >> Properties >> Traces >> Sample value and timestamp refresh issue
15753	CSS BEAUTY	Data Plot >> Crosshair issue on non-visible trace
15881	CSS BEAUTY	WebOPI >> Plot hangs trying to enlarge the time frame
13579	CSS BOY	WebOPI >> remove the toolbar: zoom, top OPIS and new plot
15284	CSS BOY	WebOPI >> dashed line styles not displayed
15418	CSS BOY	OPI Editor >> Attach Scripts issue
15856	CSS BOY	OPI >> CS-Studio open file issue when provided with the launcher.openFile option
15250	CSS ELog	Entry title shall ignore HTML tags
15251	CSS ELog	Entry title shall ignore punctuation marks
15757	CSS ELog	OPI >> Top OPIs preference issue

6.1 Table of 7.2.1 Enhancements

16315	CSS BEAST	WebOPI >> Alarm Contextual Menu >> Option Send E-Mail...
16314	CSS BEAST	OPI >> Alarm and Message history widgets inherit of parent macros
16230	CSS BEAST	Alarm messages history database schema >> new CBS and time partitioning

16213	CSS BEAST	Alarm Tree >> Alarm node statistics
16201	CSS BEAST	Alarm Tree >> Expand and Collapse toolbar actions
16133	CSS BEAST	Alarm >> Alarm actions inactive when the alarm PV is read-only
16119	CSS BEAST	Alarm >> Read-only mode
16429	CSS BEAUTY	Data Plot >> New template to plot the free and used memory by CS-Studio
16376	CSS BEAUTY	Data Plot >> Refresh optimization
16354	CSS BEAUTY	Data Plot >> Option to show the PV display name (or alias)
16353	CSS BEAUTY	Data Plot >> Show the last plotted sample value
16333	CSS BEAUTY	Data Plot >> Archived waveform SQL stored procedure limited to index 0
16318	CSS BEAUTY	Data Plot >> Add a ruler
16317	CSS BEAUTY	Data Plot >> Moving trace items up and down shall move the Y-axes
16313	CSS BEAUTY	Data Plot >> Live data indicator
16251	CSS BEAUTY	OPI >> Plot a PV warning when already configured
16250	CSS BEAUTY	Data Plot >> Optimized data indicator
16070	CSS BEAUTY	Data Plot >> Show Navigator
16027	CSS BEAUTY	Data Plot >> Y-Axis share same axis
16026	CSS BEAUTY	Data Plot >> Y-Axis PV limits scale
16343	CSS BOY	WebOPI >> Better support of touchscreen for mobile
16199	CSS BOY	OPI >> Plot a PV in a new window
16190	CSS BOY	OPI >> Add an additional PV to an opened plot in another window
16189	CSS BOY	OPI >> Open OPI actions simplification
16113	CSS BOY	OPI >> New rupture disc symbol
16112	CSS BOY	OPI >> Control the email size before sending it
16110	CSS BOY	Data Plot >> Screenshot with mouse feedback
16104	CSS BOY	OPI >> Show PV Info improvements
16103	CSS BOY	OPI >> Show main PV info
16084	CSS BOY	OPI >> Slideshow mode at startup
16039	CSS BOY	OPI >> Reopen ITER Home OPI
16010	CSS BOY	OPI >> OPIs navigation history shortcuts
15997	CSS BOY	OPI >> Closing all OPIs ends up with CS-Studio default windows
15839	CSS BOY	Data Plot >> Slideshow mode
16272	CSS ELog	ELOG >> export PDF progress
16239	CSS ELog	ELOG >> New Save option for intermediate versions
16238	CSS ELog	ELOG >> Un-submitted entry when exiting CS-Studio
16025	CSS ELog	ELOG >> Query JSON format
16024	CSS ELog	ELOG >> REST API documentation
16023	CSS ELog	ELOG >> PDF export command line tool
15970	CSS ELog	ELOG >> Entry edition at the end of the description
15947	CSS ELog	ELOG >> Entry default styles
15307	CSS ELog	ELOG >> export PDF report template improvement
16467	CSS General	Default garbage collector for tomcat
16414	CSS General	CSS scripts >> New package for SQL scripts
16273	CSS General	OPI >> Send email progress

6.2 Table of 7.2.1 Bug Fixes

15952	CSS General	ELK services should run as codac service account
16367	CSS ELog	ELOG >> PDF Export issue on extra </p>
16357	CSS ELog	ELOG >> exported entries order
16271	CSS ELog	ELOG >> Entries table current page issue
16182	CSS ELog	ELOG >> PDF Export issue on style
16064	CSS ELog	ELOG >> Entry title length issue
16008	CSS ELog	ELOG >> Attached image files suppression issue
15965	CSS ELog	ELOG >> Long entry description issue
15949	CSS ELog	ELOG >> Copy/paste issues in the entry description
15948	CSS ELog	ELOG >> PDF format issues
15320	CSS ELog	ELOG >> entry editor scrolling issue
16334	CSS BOY	OPI XY Graph >> X-Axis PV archived data missing
16200	CSS BOY	WebOPI >> Cannot open an OPI in a new window
16030	CSS BOY	WebOPI >> Vertical text orientation issue
16356	CSS BEAUTY	Data Plot >> UDA data source name
16323	CSS BEAUTY	Data Plot >> Annotation time format issue
16312	CSS BEAUTY	Data Plot >> Optimized data precision issue
16063	CSS BEAUTY	Data Plot >> Legend area size issue when traces are hidden
16031	CSS BEAUTY	WebOPI >> XY Graph limits from the PV issue
16028	CSS BEAUTY	Data Plot >> Dialog time precision issue
16407	CSS BEAST	Alarm pane >> Disable alarm toggle button issue
16404	CSS BEAST	Alarm notifier >> Notification issue in case of delayed alarm
16366	CSS BEAST	Alarm Table >> Race condition on the update of the alarms list
16327	CSS BEAST	Alarm Tree >> Configuration time of an empty alarm node exception
16321	CSS BEAST	Alarm >> Disabling an alarm impacts the TCR local alarm servers that share the same root
16222	CSS BEAST	Alarm >> Alarm priority flashing optimisation

(If you have an IDM account: The most important enhancements and bug fixes for the user are described in more detail in the document [CS-Studio Operator Training – 7.2.1 updates \(B82V22\)](#).)

7 Self-Description Data Tools

In CODAC Core System 7.2, the version of SDD Tools is **6.7**. No significant changes were made to SDD Tools in this release.

Main enhancements:

15184	SDD Editor	provide an IOC flag for cubicle monitoring
15024	SDD General	Drop the non-performance mode in SDD
14285	SDD General	Add SDD support for "asyn" record type
15146	SDD Sync	Include Enterprise Architect projects support in SDD tools

Main bug fixes:

15758	SDD Editor	PLC DBs not generated when "Generate one IOC per PLC" is selected
15653	SDD Editor	Export variables from I&C project level raises an error
15878	SDD Editor	After removing SYSM Variables & IOCs it is not possible to generate them again

15664	SDD Editor	usual PLC IOC not created when there is existing redundant interlock IPLC IOC already in the project
15657	SDD General	Excel export - Error when opening xlsx containing many 'locked' cells in MS Excel
15003	SDD Parser	Variables are not retrofitted in the correct function if they are above CBS2 and not in correct db file
15874	SDD Translator	Variables linked to a manually created IOC not being generated in a project with more than one PLC
14846	SDD Translator	SDD Project with CBS=*CUB* and with cubicle cannot be generated (NullPointerException)
15020	SDD Translator	Missing variables when Generating Multiproject Configuration Files in non performance mode

Notable remaining issues (if you run into one of these, please contact CODAC support):

10764	SDD Database	problem loading old project with signals
11507	SDD Editor	Importing from another project vis XLS files fails
13557	SDD Sync	POS.h and COSPSOS_BUIL_F000.st file are not getting created while loading via sync-direct
14277	SDD Editor	SDD-editor doesn't generate the files and records correctly for PXI6259

SDD reference data versions (no updates in this release):

- PBS snapshot version 20230130;
- CBS snapshot version 20230131;
- GBS snapshot version 20190204;
- TTT snapshot version 20230130;
- AAAA snapshot version 20230130;
- SS snapshot version 20140129;
- Units of measure snapshot version 20180130;
- Equipment catalog snapshot version 20190205, including:
 - ITER slow controller catalog 333J63 v4.1 (11 Aug 2017);
 - ITER fast controller catalog 345X28 v2.7 (19 Dec 2018).
- In CCS 7.2.1, the version of SDD Tools has been updated to **6.8**.
- CCS 7.2.1 enhancements:

16252	SDD General	SDD release 6.8.0
15394	SDD General	Fix Sonar Java-2024 issues in SDD tools
15567	SDD General	Fix Sonar issues in shell language in SDD tools
14343	SDD Editor	Allow free format string as a Slow Controller Interface Version
14410	SDD Editor	Instantiating large user template takes very long (15min per instance)
16371	SDD Editor	Fix pending minor Sonar issues from July 2024

- CCS 7.2.1 bug fixes:

15794	SDD Editor	When changing the DAN variables' order, they are overwritten/duplicated
15914	SDD Editor	Template variables are not being re-instantiated when the PLC is changed on the Cubicle page
11507	SDD Editor	Importing from another project vis XLS files fails
16302	SDD Editor	Cannot instantiate a system template on POC without CA
15980	SDD Editor	"Migrate template" GUI allows checking multiple projects, only works on one
15887	SDD Editor	BOY template location of a system template unconditionally requires WIDGET_TYPE macro

15597	SDD Editor	Automatic functions generator misfunction when instantiating from CSV
16410	SDD Parser	Retrofit from SDD Editor does not complete
16395	SDD Sync	sdd-sync-direct: xsl error at function sdd:macrodata when duplicate macros are encountered in template definition
16014	SDD Sync	SDD migration puts POD PVs into a wrong IOC
16330	SDD Sync	Failure to load SDD examples due to a non-existing format 5.3.0
15796	SDD Translator	DAN variables ordering is not translated in danconfig xml

8 Maven Tools

Main enhancements:

14819	Maven commands	Set SHRLIB_VERSION (SONAME of libraries) to POM version
15745	Maven commands	Make CODAC C/C++ template skeleton SWIL-1 compliant
14144	Maven Editor	Switch SVN support from SVNKit to JavaHL

Changes in 7.2.1:

16101	Maven commands	Fix "mvn sonar" compatibility issues with new SonarQube (v9.9.4)
16160	Maven commands	Allow packaging of kernel module for the installed version of kernel only

9 Health Monitoring

No changes for 7.2.0.

Changes in 7.2.1:

15890	System Monitoring	Add alarm dead band and alarm filter time constant field.
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10 PLC Driver

SPSS versions:

- SPSS v3.6 for S7-300/400
- SPSS v3.5 for S7-400H
- SPSS v1.1 for S7-1500

Bug fixes:

15907	S7 EPICS Driver	For S7-400, connection-down is not detected on simplecommand circuit
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11 TCN/PTP Support

No changes in 7.2.0.

Changes in 7.2.1:

16214	PTPd	Improve clarity on the ptpd logs for best master clock selection
14744	PTPd	Increase the default <i>pmc</i> tool's timeout and clarify usage instructions
16194	PTPd	Reduce severity and visibility on the ptpd log messages concerning the timed out UDS requests

12 SDN Support

No changes.

13 DAN/UDA Support

Main bug fixes:

14422 UDA Clients uda client is returning data even though the query is not valid

Enhancements in 7.2.1:

16422 DAN General dan replicator if the process is stopped it shall mark unmark the file and not mark them as error
 16329 UDA configure tcpkeepalive parameters when connecting to the DB
 16322 UDA uda shall use archive_ro to connect the beauty db and not the archive role
 16167 UDA uda-indexer too verbose
 15496 UDA [uda-index-lib] : support multiple databases
 14569 UDA provide two methods to get the different list of pulse categories and different pulse locations

Bug Fixes in 7.2.1:

15957 UDA uda-get-data is broken for field of type array
 16181 UDA with mix mode, if #of dan channels > 9 one can retrieve channels from 10 to X
 16451 UDA uda-indexer memory leak (again?)
 16418 UDA missing dependencies for arch-utils
 16385 UDA UDA indexer does not index properly the file is a DAN source contains channels of different units
 16325 UDA uda-indexer segfault on the production environment
 16202 UDA arch-downsampler/mirroring shall only downsampled the files which are matching the directory path
 16154 UDA Empty get last pulse request produces UDA server error
 15440 UDA mirroring does not replicate the file if the publisher is stopped prematurely
 14392 UDA extSamples is broken
 16151 UDA Migration script 7.1->7.2 : filetype and localhost are swapped

14 Logging Library

No changes.

15 NI Sync

No changes.

16 PXI-6259

No changes

17 PXI-6528

No changes.

18 PXIe-6368 / PXIe-6363 (X-Series)

No changes.

19 NI RIO

No changes.

20 OPC UA

No changes.

21 Real-Time Framework (RTF)

Version 2.4.0 of the ITER Real-Time Framework (RTF) has been added to CODAC Core System (fast controller related roles).

For CCS 7.2.1, the ITER Real-Time Framework (RTF) has been updated to version 2.4.1.

22 Nominal Device Support (NDSv3)

The NDSv3 modules nds-core and nds-epics have been added to the fast controller related roles. More modules are to be added for upcoming releases.

23 Other Components

A new PXI chassis configuration tool has been added allowing configuration of trigger lines on the PXI backplane across segment boundaries.

DOCUMENTATION UPDATES

Document	ID	6.3	7.0	7.1	7.2.0	7.2.1
CODAC Core System v7.2 Release Notes	9UQ2CL				v1.1	v1.3
CODAC Core System Overview	34SDZ5	v6.3	v7.0	v7.1	v7.1	
CODAC Core System User Manual	43PSH9	v3.13	v3.14	v3.15	v3.16	
INSTALLATION & SUPPORT						
CODAC Core System Installation Manual	33JNKW	v6.5	v7.0	v7.1	v7.2	
CODAC Core System Migration Manual	7JCFUD	v5.10	v5.11	v5.12	v5.13	
DEVELOPMENT & TESTING						
CODAC Core System App Development Manual	33T8LW	v5.8	v5.8	v5.9	v5.10	
SDD Editor User Manual	32Z4W2	v9.1	v10.0	v10.3	v10.4	
How to include a new I/O module in SDD	A4WQDZ	v2.0	v2.0	v2.0	v2.0	
Maven Editor User Guide	7MT2YC	v5.11	v5.11	v5.11	v5.11	
System Health Monitoring Variables	35XFCY	v2.0	v2.0	v2.0	v2.1	
Logging Library User Manual	QEK784	v1.5	v1.5	v1.5	v1.5	
CONTROL SYSTEM STUDIO						
CODAC Core System CS-Studio User Guide	QVBYD8	v1.6	v1.6	v1.7	v1.8	
OPI Standardisation - CSS BOY Edition and Runtime	7367JQ	v1.11	v1.12	v1.13	v1.14	
OPI Standardisation - CSS BOY Industrial Symbol Library	A69URK	v2.2	v2.3	v2.4	v2.4	
SLOW CONTROLLERS (PLC) and OPC UA						
SPSS User Manual	G4UMX5	v2.6	v2.6	v2.6	v2.6	
s7PLCAsyn EPICS Driver User's Manual	PJAHXJ	v1.10	v1.10	v1.10	v1.10	
PLC Sample Guide	2N8C3M	v4.2	v4.2	v4.2	v4.2	
OPC UA Integration User Manual	32N6MJ	v1.3	v1.3	v1.3	v1.3	
FAST CONTROLLERS – I/O						
NI Sync Linux Device Driver User's Guide	2PLQ4P	v2.8	v2.8	v2.9	v2.9	

NI Sync EPICS Driver User's Guide	33Q5TX	v2.14	v2.14	v2.14	v2.14
NI PXI-6259 Linux Driver User's Guide	32GTJY	v1.19	v1.19	v1.19	v1.20
NI PXI-6259 EPICS Driver User's Guide	3DEY52	v2.12	v2.12	v2.12	v2.12
NI PXI-6528 Linux Driver User's Guide	3ZHXC9	v1.8	v1.8	v1.8	v1.8
NI PXI-6528 EPICS Driver User's Guide	433VEW	v1.13	v1.13	v1.13	v1.13
NI X-Series Linux Device Driver User's Guide	3LTMR6	v2.0	v2.0	v2.0	v2.2
NI X-Series EPICS Driver User's Guide	3P4N3R	v1.9	v1.9	v1.9	v1.9
NI-RIO Linux Device Driver User Manual	LW3UFH	v2.14	v2.15	v2.15	v2.15
NI-RIO EPICS Device Driver User Manual	RAJ9P8	v1.7	v1.7	v1.7	v1.7
IRIO Library User's manual	RATM8Z	v1.3	v1.3	v1.3	v1.3
IRIO Design Rules for LabVIEW for FPGA	QQMYTY	v1.4	v1.4	v1.4	v1.4
CODAC PXI Config Users Guide	7ZQ27R				v1.1
NDSv3 Core Library User Manual	S37HD2				v1.6
NDSv3 EPICS Device Support User Manual	S977XP				v1.6
FAST CONTROLLERS – HPN					
TCN API - Software User Manual	N4XTGG	v1.16	v1.16	v1.16	v1.16
PTPd User Manual	U2TTSZ	v1.5	v1.5	v1.5	v1.5
TCNd User Manual	MUYNT6	v2.7	v2.7	v2.7	v2.7
SDN Software User Manual	B7SKFU	v2.13	v2.13	v2.13	v2.13
SDN Archiver User Manual	SD29MG	v1.7	v1.7	v1.7	v1.7
DAN User Manual	Q6GULS	v3.9	v3.9	v3.10	v3.10
OPERATIONAL APPLICATIONS					
CODAC Applications User Manual	RUZCJ9	v2.1	v2.2	v2.2	v2.2
SDN Tools User Manual	RGSWHS	v1.5	v1.5	v1.6	v1.6
SDN Monitor User Manual	S94S4T	v1.2	v1.2	v1.2	v1.2
RTF User Manual	2N2ZH8		[v1.2]	[v1.2]	v2.0
RTF Development Manual	2Q7QFZ		[v1.2]	[v1.2]	v2.0
UDA User Manual	TPLTKG	v2.0	v2.1	v2.2	v2.2
Data Visualization Tool User Manual	4N9E8W		v1.3	v1.3	v1.3

[] = not in CCS at that time