RESOURCE AND PATIENT MANAGEMENT SYSTEM

Consolidated Clinical Document Architecture (CCDA)

(BCCD)

Technical Manual

Version 2.0 Patch 4
June 2024

Office of Information Technology
Division of Information Technology

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Revision History

Version	Date	Author	Section	Page Number	Summary of Change
1.0	July 31, 2020	OIT Developers	All	All	Initial Version
1.1	May 1, 2022	OIT Developers	Multiple	Multiple	Updated for patch 1
1.2	February 2, 2023	OIT Developers	Multiple	Multiple	Updated for patch 2
1.3	May 17, 2023	OIT Developers	Multiple	Multiple	Updated for patch 3
1.4	February 26, 2024	OIT Developers	2.1, 3.1, C.7	4, 9, 71	Updated for patch 4
1.4	February 26, 2024	OIT Developers	4.0, 7.3	10, 18	Changed name and description of ERR option
1.4	February 26, 2024	OIT Developers	B.8, B.25, C.8	34, 47, 74	Updated to reflect changes to data structures
1.4	February 26, 2024	OIT Developers	C.4	67	Added new class to support error resubmission process

Preface

The purpose of this manual is to provide technical information about the Consolidated Clinical Document Architecture (CCDA) v2.0 p4 (BCCD) package.

The BCCD package is designed to generate industry standard Continuity of Care Documents (CCD) in Health Level 7 (HL7) CCDA format, following the August 2015 Draft Standard for Trial Use (DSTU) standard, further restricted by 2015 Certified Health Information Technology (CHIT) and 21st Century Cures Act (Cures) requirements and Companion Guide Release 3 guidelines.

These documents can be transmitted to Indian Health Service (IHS) Health Information Exchange (HIE) repositories, retrieved by the Electronic Health Record (EHR) graphical user interface (GUI) using web services, or viewed as export summary documents.

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1.0 Introduction

The CCDA (BCCD) application is a component of the IHS Resource and Patient Management System (RPMS). The application provides facilities for generating industry standard Clinical Summary, Transitions of Care, Data Export summary, Health Information Exchange (HIE), and Case Reporting documents that meet the Health Level Seven (HL7) August 2015 DSTU standard, 2015 CHIT and 21st Century Cures specifications, and Companion Guide Release 3 guidelines.

Clinical Summary and Transitions of Care documents are retrieved by the EHR GUI using web services. Data Export summary documents are requested via an RPMS application programming interface (API). HIE documents are generated by a nightly background job or via an RPMS menu option and are transmitted to IHS HIE repositories via web services. Case Reporting documents are requested by the iCare (BQI) application, which retrieves completed documents for transmission.

1.1 Purpose

CCDA documents can serve a variety of purposes, including enabling clinician access to patient data in an emergency scenario, quality reporting, bio surveillance, patient access to the patient's own data via a personal health record (PHR) system, and medication or allergy reconciliation.

Each CCDA document consists of two components: a human-readable part known as a narrative block, which can be displayed by a web browser, and a machine-readable part intended for automated data processing. The machine-readable part may contain more detailed information than the human-readable part.

1.2 Scope

A CCDA document is an Extensible Markup Language (XML) document summarizing current and pertinent historical information about an individual patient's healthcare record at a given facility. Although not every document type contains every section, the current IHS implementation of the CCDA standard supports the following sections:

- Allergies
- Assessment and Plan
- Care Team
- Case Reporting
- Consultation Notes
- Discharge Diagnoses (inpatient visits only)

- Discharge Summary Notes (inpatient visits only)
- Encounters
- Functional Status
- Goals
- Health Concerns
- History and Physical Notes
- Hospital Course (inpatient visits only)
- Hospital Discharge Instructions (displayed for observation [O] and day surgery [S] visits, in addition to inpatient visits)
- Immunizations
- Instructions
- Medical Equipment
- Medications
- Mental Status
- Patient
- Problems/Encounter Diagnoses
- Procedures (includes Procedure Notes)
- Progress Notes
- Reason for Hospitalization (inpatient visits only)
- Reason for Referral (ambulatory visits only)
- Reason for Visit (ambulatory visits only)
- Results
- Security and Privacy Prohibitions
- Social History
- Vital Signs

1.3 Technical Information

This manual provides IHS site managers with a technical description of the CCDA routines, files, menus, cross references, globals, HealthShare classes, Ensemble productions, and other necessary information required to effectively manage the system.

All routines, files, options, and keys are namespaced, starting with the letters BCCD. The file number range for this package is 90310–90310.99. All CCDA HealthShare classes, productions, and data transformations are contained in the HealthShare class package BCCD.

The CCDA application accesses RPMS data through classes generated by the FileMan-to-Class (FM2C) utility. The FM2C classes are part of the BMW package, which must be installed before CCDA.

1.4 Architecture

There are four mechanisms for initiating CCDA documents. At sites running EHR v1.1, p28 or higher, Clinical Summary, and Transitions of Care documents may be requested via the EHR client. At sites that are a part of the IHS Health Information Exchange, HIE documents are automatically generated by a nightly background task for all patients whose data has changed since the previous nightly upload. Data Export summary documents can be generated for specific patients or for all patients via an RPMS API. Case Reporting documents are generated by the iCare (BQI) application.

1.5 Patient Preferred Name (PPN)

This application uses the AUPN DISPLAY PPN parameter functionality and is defaulted OFF until Patient Preferred Name (PPN) is available across the enterprise.

> **Note:** While this parameter is turned off, Patient Preferred Name will not display in this application. This allows the Patient Preferred Name to be turned on at once without requiring a coordinated release of all applications. Once all applications support the display of the PPN, instructions will be sent out on how to enable this parameter system-wide.

2.0 Orientation

2.1 Setup

The following steps are used to set up CCDA at an RPMS site:

1. Calculate the additional disk space required for the BCCD package and allocate disk space.
2. Perform pre-install steps, including enabling long strings, verifying access to the OS configuration file, designating a directory where the new CCDA database will reside, mapping BMW globals, and stopping CCDA.
3. Install CCDA 2.0.
4. Perform post-install steps, including setting up optional encryption, optional e-mail notifications, disabling journaling in the CCDA database, configuring the CCDA CSP application, setting up site-specific BCCD parameters, and starting CCDA Messaging.
5. Install BCCD*2.0*1, following the instructions in the patch notes.
6. Install BCCD*2.0*2, following the instructions in the patch notes.
7. Configure the maximum number of threads time ranges as described in the p2 patch notes.
8. Install BCCD*2.0*3, following the instructions in the patch notes.
9. Install BCCD*2.0*4, following the instructions in the patch notes.

See the *CCDA Installation Manual* for further details on the installation and configuration steps for CCDA 2.0.

2.2 Architecture

CCDA processing can be initiated in four ways. If EHR v1.1 p28 has been installed and configured at the site, then authorized EHR users are able to request Clinical Summary and Transitions of Care documents for display within the EHR GUI client. If the site is a part of the IHS HIE, then HIE documents are generated nightly for all patients whose data has changed since the previous nightly upload. Data Export summary documents can be generated for specific patients or for all patients via an RPMS API.

To accommodate requests from the EHR GUI, Ensemble has a web service process listening for requests for Clinical Summary and Transitions of Care documents.

If the site is part of the IHS HIE, a nightly TaskMan task called BCCD NHIE PUSH JOB is automatically scheduled to run every night at the time specified by the site manager in the **Edit CCDA Site Parameters** option. When this task runs for the first time, it creates new CCDA requests for *all* patients in the RPMS database. On subsequent executions, it finds all patients whose data has changed since the last time it ran and creates new requests in the CCDA queue.

To request Data Export summary documents, the site manager accesses an RPMS API. In order to prevent unintended initiation of Data Export documents, the API is not included as an RPMS option in the menu system. Instead, the site manager must first access Programmer Mode, then enter the necessary command. Because it is expected that this functionality will rarely, if ever, be used, the IHS Software Quality Assurance (SQA) team will distribute instructions for generating Data Export documents on an "as needed" basis.

Case Reporting documents are requested and processed by the iCare (BQI) application. Details on this process are outside the scope of this document. For further information, consult the appropriate iCare documentation.

The only difference between CCDA requests created by these four mechanisms is that the DocType property is set to the requested document type and several flags are set to control where the documents are sent. For all CCDA requests, a new entry is placed in the CCDA queue, recording the IDs of the requested patient and visit(s), and sets the record's status to R (Request).

The CCDA queue is monitored by BCCD BACKGROUND JOB, the main CCDA generator. It is a persistent TaskMan job started at TaskMan startup time or manually from menu option Manage CCDA transmissions. The job constantly runs in the background until the site manager chooses to stop CCDA. When this TaskMan job finds a new CCDA request with the status of R in the CCDA queue, it creates a background job to extract the data for that document.

The background job changes the request's status to CS (Compile Started). It then extracts all relevant RPMS data for the specified patient and visit and adds the data to the body of the CCDA request. Depending on the amount of eligible data in the patient's records, it may take anywhere from under a second to over 10 seconds to extract all needed data from RPMS. Once the extraction process for the patient is finished, the background job changes the status of the request to CE (Compile Ended).

After creating the background job to extract the data, BCCD BACKGROUND JOB checks the CCDA queue for other outstanding requests with the status of R. If it does not find any, it goes into hibernation for a specific amount of time, usually one second.

The CCDA queue is also monitored by the CCDA Ensemble production running in the CCDA namespace. When the CCDA production finds a new request, whose status is set to CE, it retrieves the CCDA data from the body of the request, changes the status to TS (Transmission Started), and transforms it into a valid CCDA document. For EHR Clinical Summary and Transitions of Care requests, the document is sent back to the requesting EHR. For Data Export and Case Reporting, the production saves this document to a file. For HIE documents, the production transmits it to an IHS HIE. Finally, the production changes the status of the request to T (Transmitted).

If a site is a part of the IHS HIE, then the site manager is provided with the URL of the associated CCDA repository. Ensemble uses this URL to send CCDA documents to the repository. HIE CCDA processing typically occurs at night to minimize the impact on RPMS performance.

3.0 Implementation and Maintenance

3.1 General Information

The CCDA application is designed to work with RPMS through Ensemble-based web services, HealthShare objects, and FM2C (BMW) classes.

Table 3-1 shows the prerequisite patch requirements for CCDA v2, Table 3-2 shows the prerequisite patch requirements for p1, and Table 3-3 shows the prerequisite patch requirements for p2.

Table 3-1: Prerequisite packages and descriptions for CCDA 2.0

Package and Version	Associated Patch Designation	Brief Patch Description
C32 (BJMD) 1.0 patch 4	BJMD*1.0*4	Disables C32 functionality has the application has been replaced by CCDA. This patch is required only if C32 has previously been installed
EHR 1.1 patch 28	EHR*1.1*28	Updates in order to meet 2015 Certified Health Information Technology (CHIT) Certification
BJPC 2.0 patch 24	BJPC*2.0*24	Updates in order to meet 2015 Certified Health Information Technology (CHIT) Certification
LR 5.2 patch 1047	LR*5.2*1047	Updates in order to meet 2015 Certified Health Information Technology (CHIT) Certification
RA 5.0 patch 1008	RA*5.0*1008	Updates in order to meet 2015 Certified Health Information Technology (CHIT) Certification
AUM 20.0 patch 3	AUM*20.0*3	Updates in order to meet 2015 Certified Health Information Technology (CHIT) Certification
AG 7.1 patch 15	AG*7.1*15	Updates in order to meet 2015 Certified Health Information Technology (CHIT) Certification
BCQM 1.0 patch 6	BCQM*1.0*6	Updates in order to meet 2015 Certified Health Information Technology (CHIT) Certification

Table 3-2: Prerequisite packages and descriptions for patch 1

Package and Version	Associated Patch Designation	Brief Patch Description
CCDA 2.0	BCCD 2.0	Contains the CCDA application.

Package and Version	Associated Patch Designation	Brief Patch Description
AUM v21.0 patch 5	AUM*21.0*5	Updates in order to meet 21st Century Cures Act certification.
BJPC v2.0 patch 26	BJPC*2.0*26	Updates in order to meet 21st Century Cures Act certification.
BMW v2022.3 or later	BMW 2022.3	Updates in order to meet 21st Century Cures Act certification.
EHR v1.1 patch 34	EHR*1.1*34	Updates in order to meet 21st Century Cures Act certification.
DTS cycle 50	DTS cycle 50	Updates in order to meet 21st Century Cures Act certification.

Table 3-3: Prerequisite packages and descriptions for p2

Package and Version	Associated Patch Designation	Brief Patch Description
BCCD v2.0 patch 1	BCCD*2.0*1	Contains CCDA patch 1.
AUPN v99.1 patch 29	AUPN*99.1*29	Contains the Patient Preferred Name (PPN) APIs.

Table 3-4: Prerequisite packages and descriptions for p3

Package and Version	Associated Patch Designation	Brief Patch Description
BCCD v2.0 patch 2	BCCD*2.0*2	Contains CCDA patch 2.
AUM v23.0 patch 4	AUM*23.0*4	Adds food insecurity health factors.
TIU v1.0 patch 1028	TIU*1*1028	Adds cross-references to support a trigger on TIU notes.
Optional: EHR p35	BGO*1.1*33	This patch is not strictly required. However, it fixes several issues with the display of CCDA documents in EHR, so sites are strongly encouraged to install it.

Table 3-5: Prerequisite packages and descriptions for p4

Package and Version	Associated Patch Designation	Brief Patch Description
BCCD v2.0 patch 3	BCCD*2.0*3	Contains CCDA patch 3.

3.2 System Requirements

Table 3-6: System requirements by module and minimum version

Module	Minimum Version
BMW	The BMW application generates HealthShare classes that are distributed in a CACHE.DAT file. These classes must be installed and must be version 2020.3 or later.
VA FileMan (DI)	v22.0 Patch 1020 or later
VA Kernel (XU)	v8.0 Patch 1020 or later
IHS/VA Utilities (XB)	v3.0 through Patch 11
Taxonomy (ATX)	v5.1 through Patch 10
IHS Pharmacy Modifications (APSP)	V7.0 through Patch 1007

3.3 Package-wide Variables

The CCDA application-wide variables start with the % character, which ensures that they have a process-wide scope when Caché ObjectScript procedures are used. Their use aids CCDA error analysis.

Table 3-7: Package variables and descriptions

Variable	Brief Description
%DFN	Internal entry number (IEN) of the requested patient; also known as the DFN
%BCCDQID	Internal ID of the CCDA queue record being processed

3.4 Security Keys

The security key BCCDZCLIN controls access to the **BCCD EDIT CLINICAL PARAMETERS** option. The remaining BCCD options are controlled with the XUMGR security key.

4.0 CCDA Menu

The CCDA application has one RPMS menu used by site managers, CCDA MENU (BCCD MENU), which comprises the following eight menu options:

- Edit CCDA Site Parameters (**BCCD EDIT SITE PARAMETERS**)
- Edit CCDA Clinical Site Parameters (**BCCD EDIT CLINICAL PARAMETERS**)
- Generate CCD for a single patient (**BCCD CCDGENONE**)
- Generate CCD documents for all patients in RPMS (**BCCD CCDALLGEN**)
- Generate CCD documents for a specified date range (**BCCD GEN CCD DATE RANGE**)
- Manage CCDA transmissions (**BCCD CCDA MGR**)
- Purge or Resubmit Error Documents (**BCCD ERROR PROCESSING**)
- Display the CCDA application status report (**BCCD APP STATUS**)
- Display the note type definitions as defined in the Edit Clinical Site Parameters option (**BCCD NOTES DEFINITION REPORT**)

The CCDA application contains no menu options accessible to end users.

5.0 Routine Descriptions

5.1 Routine List

Table 5-1: Routine list

Routine	Routine	Routine
BCCD2E00	BCCD2E01	BCCD2P00
BCCD2P01	BCCD2P02	BCCD2P03
BCCD2P04	BCCDCLAS	BCCDDPT
BCCDDPT1	BCCDEDIT	BCCDHIE
BCCDMON	BCCDNRPT	BCCDPAT
BCCDPUSH	BCCDSTAT	BCCDTSK
BCCDTX	BCCDTXA	BCCDTXAB
BCCDTXAC	BCCDTXAD	BCCDUTIL
BCCDUTL1	BCCDUTL2	

5.2 Routines with Description

Table 5-2: Routines and descriptions

Routine	Description
BCCD2E00	KIDS environmental check routine for BCCD 2.0
BCCD2E01	KIDS environmental check routine for patch 1
BCCD2P00	KIDS post-installation routine for BCCD 2.0
BCCD2P01	KIDS post-install routine for patch 1
BCCD2P02	KIDS post-install routine for patch 2
BCCD2P03	KIDS post-install routine for patch 3
BCCD2P04	KIDS post-install routine for patch 4
BCCDCLAS	Used by the post-installation routine to decrypt and decompress HealthShare class definitions
BCCDDPT	API for requesting Data Export summary documents
BCCDDPT1	Contains additional Data Export subroutines
BCCDEDIT	Edit CCDA site-specific parameters
BCCDHIE	APIs for uploading documents for a given date range or for a given visit
BCCDMON	Application monitor
BCCDNRPT	Notes definition report
BCCDPAT	RPMS options for requesting one patient upload to HIE, requesting all patients upload to HIE, and starting and stopping CCDA

Routine	Description
BCCDPUSH	TaskMan task active only if the site participates in the IHE HIE; identifies recently modified patient records that need new CCD documents generated
BCCDSTAT	API for displaying the application status and for reprocessing errors
BCCDTSK	TaskMan task that monitors the CCDA queue for new requests and extracts data from RPMS
BCCDTX	Creates the BCCD NO LIMIT LOINC CODES Taxonomy
BCCDTXA	Continuation of BCCDTX
BCCDTXAB	Continuation of BCCDTX
BCCDTXAC	Continuation of BCCDTX
BCCDTXAD	Continuation of BCCDTX
BCCDUTIL	Contains utility subroutines used by the extract process
BCCDUTL1	Contains additional utility subroutines used by the extract process
BCCDUTL2	Contains additional utility subroutines used by the extract process

6.0 Files and Tables

6.1 File List

Table 6-1: File numbers, names, and descriptions

File #	Filename	Description
90310.01	BCCD SITE PARAMETERS	Contains site-specific CCDA parameters
90310.02	BCCD MESSAGE TYPE	Contains message type-specific CCDA parameters
90310.03	BCCD CLASS TRANSPORT	Contains packed HealthShare classes, which are used to transfer class definitions via a KIDS build
90310.04	BCCD DP QUEUE DEFINITIONS	Contains saved Data Export definitions

6.2 File Access

Table 6-2: File access by number and filename

File #	Filename	GL	RD	WR	LYG	DD	DEL
90310.01	BCCD SITE PARAMETERS	^BCCDS(90310.01,	@	@	@	@	@
90310.02	BCCD MESSAGE TYPE	^BCCDS(90310.02,	@	@	@	@	@
90310.03	BCCD CLASS TRANSPORT	^BCCDCLS(	@	@	@	@	@
90310.04	BCCD DP QUEUE DEFINITIONS	^BCCDDPQ(	@	@	@	@	@

6.3 Cross References

90310.01 (BCCD SITE PARAMETERS)

.01 HOME SITE

B regular cross reference

90310.02 (BCCD MESSAGE TYPE)

.01 MESSAGE TYPE

B regular cross reference

90310.021 (ALLOWED CS PROVIDER CLASS)

.01 ALLOWED CS PROVIDER CLASS

B regular cross reference

90310.24 (EXCLUDE CODE FROM PROBLEMS)

.01 EXCLUDE CODE FROM PROBLEMS

B regular cross reference

90310.25 (CLINICAL NOTE)

.01 CLINICAL NOTE

B regular cross reference

90310.26 (SITE NOTE EXCLUSION)

.01 SITE NOTE EXCLUSION

B regular cross reference

90310.027 (MAX THREADS SCHEDULE)

.01 START TIME

B regular cross reference

90310.03 (BCCD CLASS TRANSPORT)

.01 PACKAGE NAME

B regular cross reference

90310.04 (BCCD DP QUEUE DEFINITIONS)

.01 QUEUE DEFINITION

B regular cross reference

AT01 MUMPS cross reference

.02 VISIT RANGE BEGIN DATE

AT02 MUMPS cross reference

.03 VISIT RANGE END DATE

AT03 MUMPS cross reference

.04 EXPORT OUTPUT LOCATION

AT04 MUMPS cross reference

.05 QUEUED TO RUN AT WHAT TIME

AT05 MUMPS cross reference

.06 RESCHEDULING FREQUENCY

AT06 MUMPS cross reference

.07 USER LAST MODIFIED

AT07 MUMPS cross reference

.08 DATE/TIME LAST MODIFIED

AT08 MUMPS cross reference

.09 DEFINITION STATUS

AT09 MUMPS cross reference

.1 PATIENT SELECTION

AT10 MUMPS cross reference

.11 VISIT RANGE SELECTOR

AT11 MUMPS cross reference

.12 TIMEFRAME

AT12 MUMPS cross reference

90310.41 (PATIENT LIST)

.01 PATIENT

B regular cross reference

AT1 MUMPS cross reference

6.4 Table File

File: 90310.01 BCCD SITE PARAMETERS

Global: ^BCCDS(90310.01,

Field #	Field Name	Subscript	Piece	Type
.01	HOME SITE	D0,0	1	F
.02	BACKGROUND JOB DELAY	D0,0	2	N
.03	RECORD GLOBAL REFERENCES	D0,0	3	S
.04	CCDA ENABLED	D0,0	4	S
.05	DATE CCDA INSTALLED	D0,0	5	D
.06	TIME TO RUN NIGHTLY TASK	D0,0	6	F
.07	LAST DP SCHEDULE CHEK	D0,0	7	D
1	BCCD MGR START FAILURE MESSAGE	D0,1	1	F

File: 90310.02 BCCD MESSAGE TYPE

Global: ^BCCDS(90310.02,

Field #	Field Name	Subscript	Piece	Type
.01	MESSAGE TYPE	D0,0	1	S
.02	LAST PUSH DATE TIME	D0,0	2	D
.03	DESCRIPTION	D0,0	3	F
.04	DAYS KEEP TRANSMISSION ENTRIES	D0,0	4	N
.05	ENABLED	D0,0	5	S
1	REPOSITORY LOCATION	D0,1	1	F
2.01	ADD SOCIAL ENVIRONMENT PROB	D0,2	1	S
2.02	ADD INACTIVE PERS HISTORY PROB	D0,2	2	S
2.03	DISCHARGE PLANNER PROV TYPE	D0,2	3	P
2.04	DATE DISPLAY FOR SMOKING STS	D0,2	4	S
2.05	USE VISIT INFO FOR AUTHOR DATA	D0,2	5	SI
3	ALLOWED CS PROVIDER CLASS	D0,3,D1,0	1	P
4	EXCLUDE CODE FROM PROBLEMS	D0,4,D1,0	1	MF
5	CLINICAL NOTE	D0,5,D1,0	1	MSIX
6	SITE NOTE EXCLUSION	D0,6,D1,0	1	MP
7	MAX THREADS SCHEDULE	D0,7,D1,0	1	MFX

File: 90310.03 BCCD CLASS TRANSPORT

Global: ^BCCDCLS(

Field #	Field Name	Subscript	Piece	Type
.01	PACKAGE NAME	D0,0	1	F
1.02	RPMS STATUS	D0,1	2	S
1.03	RPMS DATE/TIME INSTALLED	D0,1	3	D
10	XML	D0,10,D1,0	1	W
11	CLASS	D0,2,D1,0	1	F

File: 90310.04 BCCD DP QUEUE DEFINITIONS

Global: ^BCCDDPQ(

Field #	Field Name	Subscript	Piece	Type
.01	QUEUE DEFINITION	D0,0	1	F
.02	VISIT RANGE BEGIN DATE	D0,0	2	D
.03	VISIT RANGE END DATE	D0,0	3	D
.04	EXPORT OUTPUT LOCATION	D0,0	4	F
.05	QUEUED TO RUN AT WHAT TIME	D0,0	5	D
.06	RESCHEDULING FREQUENCY	D0,0	6	F
.07	USER LAST MODIFIED	D0,0	7	P
.08	DATE/TIME LAST MODIFIED	D0,0	8	D
.09	DEFINITION STATUS	D0,0	9	S
.1	PATIENT SELECTION	D0,0	10	S
.11	VISIT RANGE SELECTOR	D0,0	11	S
.12	TIMEFRAME	D0,0	12	F
1	PATIENT LIST	D0,1,D1,0	1	P

7.0 External Relations

7.1 Callable Routines

CCDA has no callable routines. All entry points and routines are called internally or via options with the exception of the Published Entry Point listed in Section 7.2.

7.2 Published Entry Points

Table 7-1: Published entry point and description

Routine	Description
AUDITHIE^BCCDUTIL	Returns the first successful HIE transmission date/time for a visit

7.3 Exported Options

Table 7-2: Exported option names and descriptions

Option Name	Description
BCCD APP STATUS	Option to display the CCDA application status report
BCCD BACKGROUND JOB	Main CCDA background processor; runs continuously in the background when CCDA is running
BCCD EDIT CLINICAL PARAMETERS	Option to edit CCDA clinical parameters, accessible by a clinician
BCCD EDIT SITE PARAMETERS	Option to edit CCDA site parameters, accessible by the site manager
BCCD ERROR PROCESSING	Option to resubmit or purge old error documents
BCCD GEN ALL	Option to generate HIE requests for all patients in RPMS
BCCD GEN CCD DATE RANGE	Option to generate HIE requests for a given date range
BCCD GEN ONE	Option to generate an HIE request for one patient in RPMS
BCCD MENU	Main CCDA menu; contains options accessible by the site manager. This menu should only be assigned to site managers.
BCCD MGR	Option to start and stop CCDA
BCCD NHIE PUSH JOB	Nightly task that identifies patient records for which CCDA document need to be generated and transmitted to HIE; runs only at sites that participate in IHS HIE
BCCD NOTES DEFINITION REPORT	Option to display the note type definitions as defined in the Edit Clinical Site Parameters option

8.0 Internal Relations

The document generation process, including transmission, requires the CCDA background jobs and the Ensemble production be running. Generally, these processes are started by accessing the Manage CCDA transmissions in CCDA Menu and electing to start CCDA. The site manager will be able to start CCDA only if the CCDA ENABLED setting in the **BCCD SITE PARAMETERS** file is set to **Y** (YES).

The CCDA web service requires the Ensemble production to be running. Web service requests made when the Ensemble production is stopped will receive a “CSP timeout” Simple Object Access Protocol (SOAP) fault.

The **ONE**, **ALL**, and DAT options on **CCDA Menu** can be accessed when CCDA is stopped. For the **ONE** and **DAT** options, the request will be put on the CCDA queue but will not be processed until CCDA is started. For the **ALL** option, the requests will not be queued until the BCCD NHIE PUSH JOB nightly task runs.

9.0 Archiving and Purging

The CCDA installation process automatically schedules a purge task for every Sunday at midnight. The purge task deletes successfully transmitted queue entries older than the value in the DAYS KEEP TRANSMISSION ENTRIES setting in the **BCCD MESSAGE TYPE** file. This parameter can be modified by site managers via the **BCCD EDIT SITE PARAMETERS** option.

The purge task also deletes Ensemble messages older than seven days. While the queue entries and Ensemble messages can be useful when investigating an issue with CCDA processing, they are no longer used once the CCDA document has reached its intended destination. Therefore, they should be purged regularly to prevent them from consuming an excessive amount of disk space.

Queue entries for documents that received an error are not purged by the purge task. These entries may be purged via the ERR (View and Purge Error Documents) option. This option will display the most recent error messages and will offer the option to purge old error records. The user may enter the minimum age to purge, from 0 to 365 days. Only error records older than the entered value will be purged.

10.0 Documentation Resources

This section describes a few methods to generate online technical documentation.

10.1 System Documentation

Online VPS system documentation can be generated through the use of several Kernel options, including, but not limited to:

- %INDEX
- Menu Management
- Inquire Option
- Print Option File
- VA FileMan
- Data Dictionary Utilities
- List File Attributes

For more option listings and further information about other utilities that supply online technical information, see the *Decentralized Hospital Computer Program (DHCP) Kernel Reference manual*.

10.1.1 %INDEX

The %INDEX option analyzes the structure of a routine to determine in part if the routine adheres to RPMS programming standards. The output can include the following components:

- Compiled list of errors and warnings
- Routine listing
- Local variables
- Global variables
- Naked globals
- Label references
- External references
- Running %INDEX for a specified set of routines allows users to discover any deviations from RPMS programming standards that exist, and to see how routines interact with one another (i.e., which routines call or are called by other routines).

To run %INDEX for the VPS system:

- At the “Routine(s)?” prompt, type the BCCD namespace.

10.1.2 Inquire Options

The Inquire menu management option provides the following information about a specified option:

- Option name
- Menu text
- Option description
- Type of option
- Lock (if any)

In addition, all items on the menu are listed for each menu option. To secure information about CCDA options, specify the BCCD namespace.

10.1.3 Print Option File

The Print Option File utility generates a listing of options from the Option file (#19). Users can print all of the entries or a single option or range of options.

10.1.4 List File Attributes

This VA FileMan option allows users to generate documentation pertaining to files and file structure. The standard format of this option provides the following data dictionary information for a specified file:

- File name and description
- Identifiers
- Cross-references
- Files pointed to by the file specified
- Files that point to the file specified
- Input, print, and sort templates

In addition, the following applicable data is supplied for each field in the file:

- Field name, number, title, and description
- Global location
- Help prompt
- Cross-references
- Input transform
- Date last edited
- Notes

Using the Global Map format of this option generates an output that lists the following information:

- All cross-references for the file selected
- Global location of each field in the file
- Input, print, and sort templates

For a comprehensive listing of BCCD files, see Section 6.0.

10.2 Online Help

In addition to system documentation, RPMS includes special help displays for most menu options and data entry prompts. Typing one question mark (**?**) at the "Select . . . Option" prompt displays information related to the current option, as described in Table 10-1.

Table 10-1: Online help

Typing . . .	Displays . . .
one question mark (**?**)	a list of all options accessible from the current option.
two question marks (**??**)	a list of all accessible options and their formal names
three question marks (**???**)	a brief description for each option in a menu.
one question mark (**?**) followed by an option name (**?OPTION**)	extended help, if available, for that option

10.3 HealthShare Online Help

HealthShare includes extensive online documentation for everything from the Caché ObjectScript language to HealthShare system management. The online documentation can be accessed by clicking on the HealthShare launcher and selecting **Documentation**. The online documentation includes search functionality and a master index to aid in finding relevant documentation.

10.4 HealthShare Class Documentation

Online documentation is available for HealthShare classes. The documentation includes a page for each class, containing a listing and brief description of each parameter, property, method, and query in the class and optionally a description of the class. The class documentation can be viewed by accessing the HealthShare online documentation page, as described in Section 10.3, then clicking on **Class Reference** near the top of the page.

Class information can also be obtained via the Class Browser, available in HealthShare Studio. The Class Browser allows the user to view class information, such as property information, interactively.

10.5 Web Service Specification

The CCDA web service provides an API for requesting and retrieving Clinical Summary and Transitions of Care documents from RPMS. The associated Web Services Description Language (WSDL) file defines the parameters of the web service, including the format of the request and response SOAP messages and the location of the web service. Further information about the web service, including the WSDL, sample request and response messages, and a list of error codes, is given in Appendix E.

11.0 SAC Requirements and Exemptions

The CCDA application has not been granted any SAC exemptions.

Appendix A CCDA HealthShare Class Development and Deployment

A.1 Description of Development Environment

The CCDA application was developed using RPMS routines, HealthShare objects, Caché ObjectScript, and Ensemble productions and data transformations. All new classes created for the CCDA application exist in the RPMS namespace BCCD.

All CCDA HealthShare classes are delivered in a KIDS build and stored in a regular FileMan file in packed, compressed, and Base64-encoded XML format. The KIDS post-install routine unpacks, uncompresses, decodes, and installs the CCDA classes in the designated HealthShare namespace using class package mapping.

A.2 CCDA Server Requirements

The CCDA application requires HealthShare 2017 or later to run. It does not run under any earlier version. CCDA does not require a specific version of the operating system (OS). The CCDA application requires the BMW classes to be installed (v2022.3 or later).

A.3 Deployment of CCDA Classes

All HealthShare classes included in the BCCD package are delivered to RPMS sites in packed format as global data within a standard KIDS build. When the KIDS build is created, classes are packed into global nodes using a class exporter, which exports their definitions to a stream as XML, compresses the result, Base64-encodes it, and outputs it to a FileMan word-processing field in file 90310.03.

At the RPMS site, the post-installation part of the KIDS build invokes DO IMPORT^BCCDCLAS, which reverses the packing operation. The subroutine reads the data from the FileMan word-processing field in file 90310.03, Base64-decodes it, uncompresses the result to a stream, then recreates the class definitions from the stream.

Even though the KIDS installation process takes place in the RPMS namespace, all BCCD classes are installed in the associated CCDA namespace due to package mapping. The installation process also stops the CCDA Ensemble production and the CCDA generator before installing the BCCD package.

Appendix B CCDA Data Elements

CCDA documents are properly formed XML documents that comply with the HL7 Implementation Guide for CDA Release 2: Consolidated CDA Templates for Clinical Notes (US Realm), Draft Standard for Trial Use, August 2015, updated June 2019 specification, further restricted by 2015 Certified Health Information Technology (CHIT) and 21st Century Cures Act (Cures) requirements. Individual data elements are listed in this appendix by section.

B.1 General Header

Patient and care team information is located in the general header in the CCDA document. However, the application handles general header, patient, and care team data separately, so they are documented as separate sections in this manual. CCDA locations in this section are assumed to be under the /ClinicalDocument element.

Table B-1: General Header

Data Element	Description	CCDA Location	Value Set
Start Date	Start date for the requested visit	componentOf/encompassingEncounter/effectiveTime/low/@value	
End Date	End date for the requested visit	componentOf/encompassingEncounter/effectiveTime/lhigh/@value	
Info Source Name	Name of the organization and facility the information came from	N/A	
Rep Organization	Name of organization and facility the document came from	author/assignedAuthor/representedOrganization/name	
Author ID	Identifier for the facility generating the document	author/assignedAuthor/id/@extension custodian/assignedCustodian/representedCustodianOrganization/id/@extension	
Author Address	Address of the facility generating the document	author/assignedAuthor/addr custodian/assignedCustodian/representedCustodianOrganization/addr	
Author Phone	Telephone number of the facility generating the document	author/assignedAuthor/telecom/@value custodian/assignedCustodian/representedCustodianOrganization/telecom/@value	
Author Email Address	Email address of the facility generating the document	author/assignedAuthor/telecom/@value	
Author Model Name	Name of the device generating the document	author/assignedAuthor/assignedAuthoringDevice/manufacturerModelName custodian/assignedCustodian/representedCustodianOrganization/name	

Data Element	Description	CCDA Location	Value Set
Author Software Name	Name of the software generating the document	author/assignedAuthor/assignedAuthoringDevice/softwareName	
Facility Name	Name of the facility generating the document	part of title	
Visit Location ID	Identifier for the facility where the visit took place	componentOf/encompassingEncounter/location/healthCareFacility/id/@extension	
Visit Location Name	Name of the facility where the visit took place	componentOf/encompassingEncounter/location/healthCareFacility/location/name	
Visit Location Address	Address of the facility where the visit took place	componentOf/encompassingEncounter/location/healthCareFacility/location/addr	
Visit Location Email Address	Email address of the facility where the visit took place	Comment with the format <!-- telecom="x" -->	
Visit Location Clinic Stop Code	Stop code of the facility where the visit took place	componentOf/encompassingEncounter/location/healthCareFacility/code/@code	
Visit Location Station Number	Station number of the facility where the visit took place	componentOf/encompassingEncounter/location/healthCareFacility/id/@extension	

B.2 Patient

CCDA locations in this section are assumed to be under the /ClinicalDocument/recordTarget/patientRole element.

Table B-2: Patient

Data Element	Description	CCDA Location	Value Set
CCD ID	Patient identifier	id/@extension	
CCD HRN	Patient health record number	id/@extension	
Name	Patient's primary or legal name	patient/name	
Other Names	Other patient names	patient/name	
Home Address	Patient's home address	addr	
Work Address	Patient's work address	addr	
Temporary Address	Patient's temporary address	addr	

Data Element	Description	CCDA Location	Value Set
Previous Address	Patient's previous address	addr	
Home Phone	Patient's home telephone number	telecom	
Work Phone	Patient's work telephone number	telecom	
Mobile Phone	Patient's mobile telephone number	telecom	
Age	Patient age	N/A	
Date of Birth	Patient's date of birth	patient/birthTime/@value	
Email Address	Patient's email address	telecom	
Gender	Patient's gender	patient/administrativeGenderCode/@code	Administrative Gender (HL7 V3): 2.16.840.1.113883.1.11.1
Marital Status	Patient's marital status	patient/maritalStatus/@code	HL7 Marital Status: 2.16.840.1.113883.1.11.12212
RaceCategory	Patient's first race category	patient/raceCode/@code	Race Category Excluding Nulls: 2.16.840.1.113883.3.2074.1.1.3
RaceDetail	Patient's race and additional race categories	patient/sdtc:raceCode/@code	Race Value Set: 2.16.840.1.113883.1.11.14914
EthnicityCategory	Patient's first ethnicity category	patient/ethnicGroupCode/@code	Ethnicity: 2.16.840.1.114222.4.11.837
EthnicityDetail	Patient's ethnicity and additional ethnicity categories	patient/sdtc:ethnicGroupCode/@code	Detailed Ethnicity: 2.16.840.1.114222.4.11.877
Language	Patient's preferred language	patient/languageCommunication/languageCode/@code	Language: 2.16.840.1.113883.1.11.11526
Communication Method	Patient's preferred communication method	Comment with the format <!--PreferredCommunicationMethod="x" -->	
Preferred Name	Patient's Preferred First Name	patient/name/given	

B.3 Allergy

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/act element.

Table B-3: Allergy

Data Element	Description	CCDA Location	Value Set
Allergy ID	Allergy identifier	id/@extension	
Start Date	Date when the allergy began	entryRelationship/observation/effectiveTime/low/@value	
Adverse Event Type	SNOMED code for the allergy/adverse event type	entryRelationship/observation/value/@code	Allergy and Intolerance Type: 2.16.840.1.113883.3.88.12.3221.6.2
Product Free Text	Name of the allergen	entryRelationship/observation/participant/participantRole/playingEntity/code/originalText/reference/@value (pointer)	
Status	Status of the allergy	statusCode/@code	HL7ActStatus: 2.16.840.1.113883.5.14
Severity	SNOMED code corresponding to the severity of the allergy	Narrative only	Reaction Severity 2.16.840.1.113883.3.88.12.3221.6.8
Comment	Additional information about the allergy	Narrative only	
No Allergy Code	Code indicating whether there was an allergy assessment	N/A	
Allergy Reaction: Reaction ID	Allergy reaction identifier	entryRelationship/observation/entryRelationship/observation/id/@extension	
Allergy Reaction: Reaction	Text indicating the reaction	Narrative only	
Allergy Reaction: Code	SNOMED code of the reaction	entryRelationship/observation/entryRelationship/observation/value/@code	Problem 2.16.840.1.113883.3.88.12.3221.7.4
Allergy Code: Product Code	Code indicating the product causing the allergy	entryRelationship/observation/participant/participantRole/playingEntity/code/@code	Substance Reactant for Intolerance: 2.16.840.1.113762.1.4.1010.1
Allergy Code: Product Code System	OID of the code system for the product code	entryRelationship/observation/participant/participantRole/playingEntity/code/@codeSystem	

B.4 Assessment and Plan

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/procedure element.

Table B-4: Assessment and Plan

Data Element	Description	CCDA Location	Value Set
Assessment and Plan ID	Identifier	id/@extension	
Text	Text of the assessment/plan	Narrative only	
Type	Code indicating whether the item displays under the Assessment/Care Plan, Plan of Treatment, or Ordered Tests subheading	Narrative only	
Date/Time	Date/time of the item	effectiveTime/ @value	
Code	SDOH intervention code	code/@code	
Organizer: Type	Code indicating whether the item displays under a problem subheading or the Summary List of Ordered Tests (not yet performed) or Tests awaiting results, Referrals and Consultations, Future Appointments, or Additional Instructions heading	Narrative only	
Organizer: Text	Problem name	Narrative only	
Organizer: Confidential	Flag indicating whether the problem is confidential	Narrative only	
Organizer: DateTime	Date/time of the problem	Used for sorting the problems in the narrative	

B.5 Care Team

CCDA locations in this section marked with [1] are assumed to be under both the /ClinicalDocument/documentationOf/serviceEvent/performer/assignedEntity and /ClinicalDocument/componentOf/encompassingEncounter/encounterParticipant/assignedEntity elements, and CCDA locations marked with [2] are assumed to be under /ClinicalDocument/component/structuredBody/component/section/entry/organizer/component/act element unless otherwise specified.

Table B-5: Care Team

Data Element	Description	CCDA Location	Value Set
Provider ID	Provider Identifier	[1]/id/@extension [2]/id/@extension	

Data Element	Description	CCDA Location	Value Set
Provider ID Type	Indication of whether the value in the Provider ID field is a National Provider Identifier (NPI) or local identifier	Used to determine [1]/id/@root and [2]/id/@root	
Label	Label used in the narrative	Narrative only	
NUCC Provider Code	NUCC provider taxonomy	[1]/code/@code	Healthcare Provider Taxonomy (NUCC - HIPAA) 2.16.840.1.114222.4.11.1066
Address	Provider address	[1]/addr	
Phone	Provider telephone number	[1]/telecom/@value	
Phone Use	Code indicating the type of telephone number in the Phone field	[1]/telecom/@use	Telecom Use (US Realm Header) 2.16.840.1.113883.11.20.9.20
Email	Provider email address	[1]/telecom/@value	
Email Use	Code indicating the type of email address in the Email field	[1]/telecom/@use	Telecom Use (US Realm Header) 2.16.840.1.113883.11.20.9.20
Name	Provider name	[1]/assignedPerson/name [2]/performer/assignedEntity/assignedPerson/name	
Referral Number	Referral number (for referring providers)	Narrative only	
Provider Role	Provider role	[2]/sdtc:functionCode	Care Team Member Function: 2.16.840.1.113762.1.4.1099.30
Start Time	Effective start time for the provider	[2]/effectiveTime/low/@value	

B.6 Case Reporting

CCDA locations in this section are assumed to be under the /ClinicalDocument element.

Table B-6: Case Reporting

Data Element	Description	CCDA Location	Value Set
Trigger	Indicates what triggered the document to be created	component/structuredBody/component/section/entry/observation/value	
Version	Version number	component/structuredBody/component/section/entry/observation/id/@root	
County	Patient's county of residence	recordTarget/patientRole/addr/county	
Community Of Residence	Patient's community of residence	recordTarget/patientRole/addr/precinct	
Asufac	ASUFAC of the facility	Component/structuredBody/component/section/entry/observation/id/@extension	

B.7 Consultation Note

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/act element.

Table B-7: Consultation Note

Data Element	Description	CCDA Location	Value Set
Date/Time	Timestamp of the note	effectiveTime/@value	
Text	Note text	text/reference/@value (pointer)	
Title	Note title	Narrative only	
Organizer: Date Time	Timestamp of the organizer	Narrative only	
Organizer: Text	Organizer note text	Narrative only	
Organizer: Title	Organizer note title	Narrative only	
Addendum: Date/Time	Timestamp of the addendum	Narrative only	
Addendum: Text	Addendum text	Narrative only	

B.8 Discharge Diagnosis

The Discharge Diagnosis section does not contain a structured data section, so all elements are narrative only.

Table B-8: Discharge Diagnosis

Data Element	Description	CCDA Location	Value Set
Label	Label for the diagnosis	Narrative only	
Text	Text of the diagnosis	Narrative only	
Confidential	Whether the problem associated with the diagnosis is marked for non-redisclosure	Narrative only	

B.9 Discharge Summary Note

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/act element.

Table B-9: Discharge Summary Note

Data Element	Description	CCDA Location	Value Set
Date/Time	Timestamp of the note	effectiveTime/@value	
Text	Note text	text/reference/@value (pointer)	
Title	Note title	Narrative only	
Addendum: Date/Time	Timestamp of the addendum	Narrative only	
Addendum: Text	Addendum text	Narrative only	

B.10 Encounter

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/encounter element.

Table B-10: Encounter

Data Element	Description	CCDA Location	Value Set
Encounter ID	Encounter identifier	id/@extension	
Code	Encounter type code	code/@code	EncounterTypeCode: 2.16.840.1.113883.3.88.12.80.32
Effective Time	Date/time of the encounter	effectiveTime/low/@value	
Performer Name	Primary provider	performer/assignedEntity/assignedPerson/name	
Performer Address	Provider address	performer/assignedEntity/addr	

Data Element	Description	CCDA Location	Value Set
Performer Phone	Provider phone	performer/assignedEntity/telecom/@value	
Location Code	Encounter location type code	participant/participantRole/code/@code	HealthcareServiceLocation: 2.16.840.1.113883.1.11.20275
Location Name	Encounter location name	participant/participantRole/playingEntity/name	
Location Address	Encounter location address	participant/participantRole/addr	
Location Phone	Encounter location phone	participant/participantRole/telecom/@value	
Disposition	Encounter disposition	dischargeDispositionCode	NUBC: 2.16.840.1.113883.6.301.5
Encounter Diagnosis: Problem Id	Problem identifier	entryRelationship/act/entryRelationship/observation/id/@root	
Encounter Diagnosis: Problem Code	SNOMED or ICD10 problem code	entryRelationship/act/entryRelationship/observation/value/@code if in valueset, otherwise entryRelationship/act/entryRelationship/observation/value/translation/@code	Problem: 2.16.840.1.113883.3.88.12.3221.7.4
Encounter Diagnosis: Code Status	Code indicating whether the problem code is active or inactive	Used to determine whether the problem code is in the value or translation element	
Encounter Diagnosis: Text	Problem description	Narrative only	
Encounter Diagnosis: Confidential	Flag indicating whether the diagnosis is confidential	Confidentiality information in entryRelationship/act/entryRelationship/observation/entryRelationship	

B.11 Functional Status

The Functional Status section does not contain a structured data section, so all elements are narrative only.

Table B-11: Functional Status

Data Element	Description	CCDA Location	Value Set
Value	Functional status text	Narrative only	

Data Element	Description	CCDA Location	Value Set
Date	Functional status date	Narrative only	
Code	SNOMED code for functional statuses related to problems	Narrative only	
Status	Active/inactive status	Narrative only	
Confidential	Flag indicating whether the functional status is confidential	Narrative only	

B.12 Goal

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/observation element.

Table B-12: Goal

Data Element	Description	CCDA Location	Value Set
Goal Id	Goal identifier	id/@extension	
Type	Code indicating whether the goal is a patient goal or provider/team goal	Narrative only	
Code	Code indicating the type of goal	code/@code	
Text	Text of the goal	Narrative only	
Effective Time	Goal date/time	effectiveTime/@value	
Problem	Problem description for provider/team goals	Narrative only	
Goal Value	Code indicating the goal value	value/@code	
Confidential	Flag indicating whether the problem is confidential	Confidentiality information in entryRelationship	

B.13 Health Concern

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/act element.

Table B-13: Health Concern

Data Element	Description	CCDA Location	Value Set
Health Concern ID	Health concern identifier	id/@extension	
Type	Code indicating whether the health concern is a problem or goal	Narrative only	
Text	Health concern text	Narrative only	
Effective Time	Date/time of the health concern	effectiveTime/@value	
POV	Flag indicating whether the health concern was a purpose of visit	Narrative only	
Severity	Level of severity	Narrative only	
Healing	Healing value associated with the health concern	Narrative only	
Exam Findings	Exam findings associated with the health concern	Narrative only	
Classification Control	Classification and control value associated with the health concern	Narrative only	
Confidential	Flag indicating whether the health concern is confidential	Confidentiality information in entryRelationship	
Parent ID	Identifier of the parent health concern (problems only)	Used to identify problems that are children of a health concern	
Problem Code	Code indicating the type of problem (problems only)	entryRelationship/observation/code/@code	
Problem ID	Identifier of the health concern's corresponding problem	entryRelationship/act/id/@extension	

B.14 History and Physical Note

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/act element.

Table B-14: Health and Physical Note

Data Element	Description	CCDA Location	Value Set
Date/Time	Timestamp of the note	effectiveTime/@value	
Text	Note text	text/reference/@value (pointer)	
Title	Note title	Narrative only	
Addendum: Date/Time	Timestamp of the addendum	Narrative only	
Addendum: Text	Addendum text	Narrative only	

B.15 Hospital Course

The Hospital Course section does not contain a structured data section, so all elements are narrative only.

Table B-15: Hospital Course

Data Element	Description	CCDA Location	Value Set
Date/Time	Hospital course date/time	Narrative only	
Text	Hospital course text	Narrative only	
Title	Hospital course title	Narrative only	
Hospital Course Addendum: Date/Time	Date/time of an addendum to the hospital course	Narrative only	
Hospital Course Addendum: Text	Text of an addendum to the hospital course	Narrative only	

B.16 Hospital Discharge Instructions

The Hospital Discharge Instructions section does not contain a structured data section, so all elements are narrative only.

Table B-16: Hospital Discharge Instructions

Data Element	Description	CCDA Location	Value Set
Date/Time	Date/time for one line of the instructions	Narrative only	
Text	Text of one line of the instructions	Narrative only	
Title	Title of the instruction	Narrative only	
Hospital Discharge Instructions Addendum: Date/Time	Date/time for an addendum to a hospital discharge instruction	Narrative only	

Data Element	Description	CCDA Location	Value Set
Hospital Discharge Instructions Addendum: Text	Text of an addendum to a hospital discharge instruction	Narrative only	

B.17 Immunization

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/substanceAdministration element.

Table B-17: Immunization

Data Element	Description	CCDA Location	Value Set
Immunization ID	Immunization identifier	id/@extension	
Refusal	Boolean value indicating whether the immunization was refused	Used to determine @negationInd	
Mood Code	Mood code indicating whether the immunization was given or is planned	@moodCode	MoodCodeEvnInt 2.16.840.1.113883.11.20.9.18
Free Text Product Name	Name of the immunization	text/reference/@value (pointer)	
Administered Date	Date the immunization was administered	effectiveTime	
Coded Product Name	CVX code of the vaccine	consumable/manufacturedProduct/manufacturedMaterial/code/@code if active, otherwise consumable/manufacturedProduct/manufacturedMaterial/code/translation/@code	CVX Vaccines Administered Vaccine Set: 2.16.840.1.113762.1.4.1010.6
Code Status	Code indicating whether the is active or inactive	Used to determine whether the coded product name is in the code or translation element	
Due Date	Recommended date for a future immunization	effectiveTime	
Dose Quantity	Immunization dose	doseQuantity/@value	
Lot Number	Lot number of the vaccine	consumable/manufacturedProduct/manufacturedMaterial/lotNumberText	
Drug Manufacturer	Manufacturer of the vaccine	consumable/manufacturedProduct/manufactureOrganization/name	

Data Element	Description	CCDA Location	Value Set
Performer	Provider administering the immunization	performer/assignedEntity/AssignedPerson/name	
Refusal Reason Code	Code indicating the reason for refusal	entryRelationship/observation/code/@code	No Immunization Reason: 2.16.840.1.113883.1.11.19717
Refusal SNOMED	SNOMED code indicating the reason for refusal	Narrative only	

B.18 Medical Equipment

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/procedure element.

Table B-18: Medical Equipment

Data Element	Description	CCDA Location	Value Set
Device ID	Unique Device Identification (UDI) or Device Identifier (DI) of the medical device	participant/participantRole/id/@extension	
Device ID Issuing Agency	Code indicating the agency that issued the device ID	participant/participantRole/id/assigningAuthorityName	
Device Code	SNOMED code of the device	participant/participantRole/playingDevice/code/@code	
Device Name	Name of the device	Participant/participantRole/playingDevice/code/displayName	
Text	Text description of the device	Narrative only	
Medical Equipment Procedure: Procedure ID	Procedure identifier	id/@extension	
Medical Equipment Procedure: Procedure Code	Code of the associated procedure	procedure/code/@code	
Medical Equipment Procedure: Procedure Code System	OID of the code system of the procedure code	procedure/code/@codeSystem	

Data Element	Description	CCDA Location	Value Set
Medical Equipment Procedure: Procedure Code Description	Description associated with the procedure code	procedure/code/@displayName	
Medical Equipment Procedure: Implanted Date	Date the device was implanted	effectiveTime/low/@value	
Medical Equipment Procedure: Target Site Code	Body site where the device was implanted	targetSiteCode/@code	
Medical Equipment Procedure: Target Site Description	Description of the body site	targetSiteCode/@displayName	
Medical Equipment Procedure: Performer ID	Performer identifier	performer/assignedEntity/id/@extension	
Medical Equipment Procedure: Performer Address	Address of the performer	performer/assignedEntity/addr	
Medical Equipment Procedure: Performer Phone	Phone number of the performer	performer/assignedEntity/telecom/@value	
Medical Equipment Procedure: Performer Name	Name of the performer	performer/assignedEntity/assignedEntity/representedOrganization/name	

B.19 Medication

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/substanceAdministration element.

Table B-19: Medication

Data Element	Description	CCDA Location	Value Set
Type of Medication	Specifies the type of medication	Used to group medications in the narrative	
Medication ID	Medication identifier	id/@extension	
Mood Code	Mood code indicating whether the medication was taken in the past or is intended to be taken in the future	@moodCode	MoodCodeEvnInt 2.16.840.1.113883.11.20.9.18
Sig	Medication sig.	text/reference/@value (pointer)	
Status	Medication status (HL7)	statusCode/@code	Medication Status: 2.16.840.1.113762.1.4.1099.11
RPMS Status	Medication status (RPMS)	In a comment in the narrative	
Started Date/Time	Date medication was started	effectiveTime/low/@value	
Stopped Date/Time	Date medication was stopped	effectiveTime/high/@value	
Fills	Number of administrations or number of allowed administrations	repeatNumber/@value	
Route	Code indicating the route of administration	routeCode/@code	Medication Route FDA Value Set 2.16.840.1.113883.3.88.12.3221.8.7
Dose	Dose	doseQuantity/@value	
Dose Units	Dose Units	doseQuantity/@unit	
Hold Text	Display status for hold and provider hold medications	Narrative only	
Refills Remaining	Number of refills remaining	Narrative only	
Coded Product Name	RxNorm code indicating the medication prescribed	consumable/manufacturedProduct/manufacturedMaterial/code/@code	Medication Clinical Drug: 2.16.840.1.113762.1.4.1010.4
Display Product Name	Display name of the medication	consumable/manufacturedProduct/manufacturedMaterial/code/@displayName	

Data Element	Description	CCDA Location	Value Set
Free Text Product Name	Human-readable name of the medication	consumable/manufacturedProduct/manufacturedMaterial/code/originalText/reference/@value (pointer)	
Drug Manufacturer	Name of the drug manufacturer	consumable/manufacturedProduct/manufacturerOrganization/name	
Include Med Supply Template	Flag indicating whether to include the Medication Supply Order template in the coded data	Used to determine whether to include the Medication Supply Order template	
Order Number	Order identifier	entryRelationship/supply/id/@extension	
Order Expiration Date/Time	Order expiration	entryRelationship/supply/effectiveTime/high/@value	
Quantity Ordered Value	Quantity ordered	entryRelationship/supply/quantity/@value	
Quantity Ordered Units	Quantity ordered units	entryRelationship/supply/quantity/@unit	
Order Date/Time	Date/time of order	entryRelationship/supply/author/time/@value	
Ordering Provider	Provider placing the order	entryRelationship/supply/author/assignedAuthor/assignedPerson/name	
Med Frequency: Conjunction	Conjunction linking medication frequencies	effectiveTime/@operator	
Med Frequency: Frequency	Text indicating the medication frequency	effectiveTime	
Med Frequency: Order	Number indicating the order of med frequency items	Used to sort the medication frequency items	
Med Dispense: Prescription Number	Prescription number	entryRelationship/supply/id/@extension	
Med Dispense: Fill Status	Code indicating whether the prescription was filled	entryRelationship/supply/statusCode/@code	Medication Fill Status 2.16.840.1.113883.3.88.12.80.64
Med Dispense: Dispense Date	Date the medication was dispensed	entryRelationship/supply/effectiveTime/@value	
Med Dispense: Fill Number	Number indicating which fill is being documented	entryRelationship/supply/repeatNumber/@value	

Data Element	Description	CCDA Location	Value Set
Med Dispense: Quantity Dispensed	Quantity dispensed	entryRelationship/supply/quantity/@value	
Med Dispense: Provider	Entity performing the dispensation	entryRelationship/supply/performer/assignedEntity/representedOrganization/name	
Med Dispense: Location	Address of the dispensing entity	entryRelationship/supply/performer/assignedEntity/addr	
Med Dispense: Station Number	Station number of the dispensing entity	entryRelationship/supply/fperformer/assignedEntity/id/@extension	
Med Dispense: Days Supply	Days supply dispensed	entryRelationship/supply/expectedUseTime/width/@value	
Med Class Code: VA Drug Classification	Description of the VA drug class code	entryRelationship/supply/product/manufacturedMaterial/code/translation/@displayName	
Med Class Code: VA Drug Code	VA drug class code	entryRelationship/supply/product/manufacturedMaterial/code/translation/@code	

B.20 Mental Status

The Mental Status section does not contain a structured data section, so all elements are narrative only.

Table B-20: Mental Status

Data Element	Description	CCDA Location	Value Set
Value	Mental status text	Narrative only	
Date	Mental status date	Narrative only	
Code	SNOMED code for mental statuses related to problems	Narrative only	
Status	Active/inactive status	Narrative only	
Confidential	Flag indicating whether this mental status is confidential	Narrative only	

B.21 Problem

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/act element.

Table B-21: Problem

Data Element	Description	CCDA Location	Value Set
Problem ID	Problem identifier	id/@extension	
POV	Purpose of visit flag	Narrative only	
Status	Problem status	statusCode/@code	ProblemAct statusCode 2.16.840.1.113883.11.20.9.19
Date of Diagnosis	Problem diagnosis date	effectiveTime/low/@value	
Date of Onset	Problem onset date	entryRelationship/observation/effectiveTime/low/@value	
Resolve Date	Problem resolution date	entryRelationship/observation/effectiveTime/high/@value	
Code	Code indicating the type of problem	N/A	
Text	Text description of the problem	entryRelationship/observation/value/@displayName if active SNOMED, otherwise entryRelationship/observation/value/translation/@displayName entryRelationship/observation/text/reference/@value (pointer)	
Coded Value	Code indicating the problem	entryRelationship/observation/value/@code if active SNOMED, otherwise entryRelationship/observation/value/translation/@code	Problem: 2.16.840.1.113883.3.88.12.3221.7.4
Coded Value Code System	OID of the code system of the Coded Value	entryRelationship/observation/value/@codeSystem entryRelationship/observation/value/translation/@codeSystem	
Code Status	Flag indicating whether the code is active or inactive	Used to determine whether the coded value goes in the value or translation element	
Age At Onset	Patient age at onset of problem	entryRelationship/observation/observation/entryRelationship/value/@value	

Data Element	Description	CCDA Location	Value Set
Confidential	Flag indicating whether this problem is confidential	Confidentiality information in entryRelationship/observation/entryRelationship	

B.22 Procedure

The Procedure section of the document consists of two subsets of data: procedures and procedure notes. Procedures are displayed first, followed by any procedure notes.

B.22.1 Procedure

CCDA locations in this subsection are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/procedure (procedures) or /ClinicalDocument/component/structuredBody/component/section/entry/act (patient education) element.

Table B-22: Procedure

Data Element	Description	CCDA Location	Value Set
Procedure ID	Procedure identifier	id/@extension	
Date/Time	Date/time of procedure	effectiveTime/@value	
Code	Code indicating the procedure performed	code/@code code/translation/@code	
Code System	OID of the code system for the Code	code/@codeSystem code/translation/@codeSystem	
Code Description	Description of the procedure	code/@displayName code/translation/@displayName code/originalText/reference/@value (pointer)	
Performer ID	Identifier of the person performing the procedure	performer/assignedEntity/id/@extension	
Performer Address	Address of the person performing the procedure	performer/assignedEntity/addr	
Performer Phone	Telephone number of the person performing the procedure	performer/assignedEntity/telecom/@value	
Type	Type of procedure	Used to determine the procedure template (Procedure Activity Procedure vs. Procedure Activity Act)	
Status Code	Procedure status	statusCode	

Data Element	Description	CCDA Location	Value Set
Confidential	Flag indicating whether the problem is confidential	Confidentiality information in entryRelationship	

B.22.2 Procedure Note

CCDA locations in this subsection are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/act element.

Table B-23: Procedure Note

Data Element	Description	CCDA Location	Value Set
Date/Time	Timestamp of the note	effectiveTime/@value	
Text	Note text	text/reference/@value (pointer)	
Title	Note title	Narrative only	
Addendum: Date/Time	Timestamp of the addendum	Narrative only	
Addendum: Text	Addendum text	Narrative only	

B.23 Progress Note

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/act element.

Table B-24: Progress Note

Data Element	Description	CCDA Location	Value Set
Date/Time	Timestamp of the note	effectiveTime/@value	
Text	Note text	text/reference/@value (pointer)	
Title	Note title	Narrative only	
Addendum: Date/Time	Timestamp of the addendum	Narrative only	
Addendum: Text	Addendum text	Narrative only	

B.24 Reason for Referral

The Reason for Referral section does not contain a structured data section, so all elements are narrative only.

Table B-25: Reason for Referral

Data Element	Description	CCDA Location	Value Set
Reason for Referral	Reason for referral text	Narrative only	
Confidential	Flag indicating whether the reason for referral is confidential	Narrative only	

B.25 Reason for Visit/Hospitalization

The Reason for Visit/Hospitalization section does not contain a structured data section, so all elements are narrative only.

Table B-26: Reason for Visit/Hospitalization

Data Element	Description	CCDA Location	Value Set
Label	Label for the reason	Narrative only	
Text	Text of the reason	Narrative only	
Confidential	Whether the problem associated with the reason is marked for non-redisclosure	Narrative only	

B.26 Result

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/organizer element.

Table B-27: Result

Data Element	Description	CCDA Location	Value Set
Result ID	Result identifier	component/observation/id/@extension	
Type Code	LOINC code indicating the type of result	component/observation/code/@code	
Type Code System	OID of the code system for Type Code	component/observation/code/@codeSystem	
Type Name	Text indicating the type of result	component/observation/code/@displayName component/observation/text/reference/@value (pointer)	
Value	Result value	component/observation/value/@value	
Unit	Result units	component/observation/value/@unit	UnitsOfMeasureCaseSensitive: 2.16.840.1.113883.1.11.12839

Data Element	Description	CCDA Location	Value Set
Interpretation Code	Result interpretation code	component/observation/interpretationCode/@code	Observation Interpretation (HL7): 2.16.840.1.113883.1.11.78
Reference Range Low	Result reference low value	component/observation/referenceRange/observationRange/value/low/@value	
Reference Range High	Reference range high value	component/observation/referenceRange/observationRange/value/high/@value	
Reference Range Critical Low	Critical reference range low value	component/observation/referenceRange/observationRange/value/low/@value	
Reference Range Critical High	Critical reference range high value	component/observation/referenceRange/observationRange/value/high/@value	
Specimen	SNOMED code of the specimen	component/observation/specimen/specimenRole/specimenPlayingEntity/code/@code	
SiteSpecimen	Description of the specimen	Narrative only	
Report Text	Result report	Narrative only	
Impression Text	Result impression	Narrative only	
Organizer: Organizer ID	Panel or individual test identifier	id/@extension	
Organizer: Code	LOINC code indicating the panel or individual test	code/@code	
Organizer: Code System	OID of the code system for Code	code/@codeSystem	
Organizer: Name	Name of the panel or individual test	code/@displayName	
Organizer: Group Type	Code indicating whether the group is a panel, individual test, or skin test	Used to sort results in the narrative	
Organizer: Date/Time	Date/time of the result	component/observation/effectiveTime/@value	
Organizer: Testing Lab ID	Testing lab identifier	performer/assignedEntity/id/@extension	
Organizer: Testing Lab Name	Name of the testing lab	performer/assignedEntity/representedOrganization/name	
Organizer: Testing Lab Address	Address of the testing lab	performer/assignedEntity/representedOrganization/addr	

Data Element	Description	CCDA Location	Value Set
Organizer: Testing Lab Phone	Phone number of the testing lab	performer/assignedEntity/representedOrganization/telecom	
Comment	Comment about the test or panel of tests	component/observation/entryRelationship/act/text/reference/@value (pointer)	

B.27 Social History

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/observation element.

Table B-28: Social History

Data Element	Description	CCDA Location	Value Set
Birth Sex	Patient's birth sex	value/@code	
Preferred Language	Patient's preferred language	value/@code	
Smoking Status: Item ID	Smoking status identifier	id/@extension	
Smoking Status: Start Date	Date the patient's smoking status became effective	effectiveTime/@value	
Smoking Status: End Date	Date the patient's smoking status stopped being effective	Narrative only	
Smoking Status: Code	Code indicating the patient's smoking status	value/@code	Smoking Status: 2.16.840.1.113883.11.20.9.38
Smoking Status: Comment	Comment associated with patient's smoking status	Narrative only	
Smoking Status History: Item ID	Historical smoking status identifier	id/@extension	
Smoking Status History: Start Date	Date the patient's historical smoking status became effective	effectiveTime/low/@value	
Smoking Status History: End Date	Date the patient's historical smoking status stopped being effective	effectiveTime/high/@value	
Smoking Status History: Code	Code indicating the patient's historical smoking status	value/@code	Tobacco Use: 2.16.840.1.113883.11.20.9.41

Data Element	Description	CCDA Location	Value Set
Smoking Status History: Comment	Comment associated with patient's historical smoking status	Narrative only	
Ecigarette Status: Start Date	E-cigarette usage start date	effectiveTime/low/@value	
Ecigarette Status: End Date	E-cigarette usage end date	effectiveTime/high/@value	
Ecigarette Status: Code	Code indicating the patient's e-cigarette status	value/@code	
Ecigarette Status: Comment	Comment associated with patient's e-cigarette status	Narrative only	
Sexual Orientation: Item ID	Sexual orientation identifier	id/@extension	
Sexual Orientation: Start Date	Date the patient's sexual orientation became effective	effectiveTime/low/@value	
Sexual Orientation: End Date	Date the patient's sexual orientation stopped being effective	N/W	
Sexual Orientation: Code	Code indicating the patient's sexual orientation	value/@code	
Sexual Orientation: Comment	Comment associated with patient's sexual orientation	N/A	
Gender Identity: Item ID	Gender identity identifier	id/@extension	
Gender Identity: Start Date	Date the patient's gender identity became effective	effectiveTime/low/@value	
Gender Identity: End Date	Date the patient's gender identity stopped being effective	N/Q	
Gender Identity: Code	Code indicating the patient's gender identity	value/@code	
Gender Identity: Comment	Comment associated with patient's gender identity	N/A	
Assessment: Organizer Id	Assessment identifier	id/@extension	

Data Element	Description	CCDA Location	Value Set
Assessment: Code	Code indicating the type of assessment	code/@code	
Assessment: Effective Date	Date of the assessment	effectiveTime/@value	
Assessment: Value	Assessment score	value	
Assessment Item: Item Id	Individual assessment item identifier	entryRelationship/observation/id/@extension	
Assessment Item: Code	Code for the specific assessment item	entryRelationship/observation/code/@code	
Assessment Item: Coded Value	Value of the specific assessment item	entryRelationship/observation/value/@code	

B.28 Vital Sign

CCDA locations in this section are assumed to be under the /ClinicalDocument/component/structuredBody/component/section/entry/organizer element.

Table B-29: Vital Sign

Data Element	Description	CCDA Location	Value Set
Vital Sign ID	Vital sign identifier	component/observation/id/@extension	
Result Type	LOINC code indicating the type of measurement	component/observation/code/@code	Vital Sign Result Type: 2.16.840.1.113883.3.88.12.80.62
Measurement Date/Time	Date/time of measurement	component/observation/effectiveTime/@value	
Unit	Measurement units	component/observation/value/@value	
Value	Measurement value	component/observation/value/@unit	
Organizer: Organizer ID	Vital sign organizer identifier	id/@extension	
Organizer: Date/Time	Date of measurement	effectiveTime/@value	

Appendix C List of CCDA Classes

C.1 Audit

The BCCD.Audit classes support the auditing of CCDA requests and the throttling of errors within the CCDA extract process.

- BCCD.Audit.AuditLog
- BCCD.Audit.ErrorThrottle
- BCCD.Audit.ProductionStatus

C.2 CCDA

The BCCD.CCDA classes were generated from the HL7 XML schema via HealthShare's XML Schema Wizard. The classes are used to support the generation of the document XML.

- BCCD.CCDA.ActClass
- BCCD.CCDA.ActClassComposition
- BCCD.CCDA.ActClassCondition
- BCCD.CCDA.ActClassContract
- BCCD.CCDA.ActClassControlAct
- BCCD.CCDA.ActClassDocument
- BCCD.CCDA.ActClassEntry
- BCCD.CCDA.ActClassExtract
- BCCD.CCDA.ActClassFinancialContract
- BCCD.CCDA.ActClassObservation
- BCCD.CCDA.ActClassObservationSeries
- BCCD.CCDA.ActClassOrganizer
- BCCD.CCDA.ActClassPublicHealthCase
- BCCD.CCDA.ActClassROI
- BCCD.CCDA.ActClassRoot
- BCCD.CCDA.ActClassSupply
- BCCD.CCDA.ActClinicalDocument
- BCCD.CCDA.ActContainer

- BCCD.CCDA.ActMood
- BCCD.CCDA.ActMoodCompletionTrack
- BCCD.CCDA.ActMoodIntent
- BCCD.CCDA.ActMoodPredicate
- BCCD.CCDA.ActRelationshipAccounting
- BCCD.CCDA.ActRelationshipConditional
- BCCD.CCDA.ActRelationshipCostTracking
- BCCD.CCDA.ActRelationshipExcerpt
- BCCD.CCDA.ActRelationshipFulfills
- BCCD.CCDA.ActRelationshipHasComponent
- BCCD.CCDA.ActRelationshipObjective
- BCCD.CCDA.ActRelationshipOutcome
- BCCD.CCDA.ActRelationshipPertains
- BCCD.CCDA.ActRelationshipPosting
- BCCD.CCDA.ActRelationshipReason
- BCCD.CCDA.ActRelationshipReplacement
- BCCD.CCDA.ActRelationshipSequel
- BCCD.CCDA.ActRelationshipType
- BCCD.CCDA.AD
- BCCD.CCDA.AdditionalLocator
- BCCD.CCDA.AddressPartType
- BCCD.CCDA.AddressUse
- BCCD.CCDA.ADXP
- BCCD.CCDA.adxp.additionalLocator
- BCCD.CCDA.adxp.buildingNumberSuffix
- BCCD.CCDA.adxp.careOf
- BCCD.CCDA.adxp.censusTract
- BCCD.CCDA.adxp.city
- BCCD.CCDA.adxp.country
- BCCD.CCDA.adxp.county

- BCCD.CCDA.adxp.delimiter
- BCCD.CCDA.adxp.deliveryAddressLine
- BCCD.CCDA.adxp.deliveryInstallationArea
- BCCD.CCDA.adxp.deliveryInstallationQualifier
- BCCD.CCDA.adxp.deliveryInstallationType
- BCCD.CCDA.adxp.deliveryMode
- BCCD.CCDA.adxp.deliveryModeIdentifier
- BCCD.CCDA.adxp.direction
- BCCD.CCDA.adxp.houseNumber
- BCCD.CCDA.adxp.houseNumberNumeric
- BCCD.CCDA.adxp.postalCode
- BCCD.CCDA.adxp.postBox
- BCCD.CCDA.adxp.precinct
- BCCD.CCDA.adxp.state
- BCCD.CCDA.adxp.streetAddressLine
- BCCD.CCDA.adxp.streetName
- BCCD.CCDA.adxp.streetNameBase
- BCCD.CCDA.adxp.streetNameType
- BCCD.CCDA.adxp.unitID
- BCCD.CCDA.adxp.unitType
- BCCD.CCDA.ANY
- BCCD.CCDA.ANYNonNull
- BCCD.CCDA.ApplicationMediaType
- BCCD.CCDA.AskedButUnknown
- BCCD.CCDA.AudioMediaType
- BCCD.CCDA.BIN
- BCCD.CCDA.bin1
- BCCD.CCDA.BinaryDataEncoding
- BCCD.CCDA.bl
- BCCD.CCDA.BL1

- BCCD.CCDA.bn
- BCCD.CCDA.BN1
- BCCD.CCDA.BuildingNumber
- BCCD.CCDA.BXITCD
- BCCD.CCDA.BXITIVLPQ
- BCCD.CCDA.CalendarCycle
- BCCD.CCDA.CalendarCycleOneLetter
- BCCD.CCDA.CalendarCycleTwoLetter
- BCCD.CCDA.CD
- BCCD.CCDA.CE
- BCCD.CCDA.CE1
- BCCD.CCDA.Classes
- BCCD.CCDA.CommunicationFunctionType
- BCCD.CCDA.CompressionAlgorithm
- BCCD.CCDA.ContextControl
- BCCD.CCDA.ContextControlAdditive
- BCCD.CCDA.ContextControlNonPropagating
- BCCD.CCDA.ContextControlOverriding
- BCCD.CCDA.ContextControlPropagating
- BCCD.CCDA.CR
- BCCD.CCDA.cs
- BCCD.CCDA.CS1
- BCCD.CCDA.Currency
- BCCD.CCDA.CV
- BCCD.CCDA.DeliveryAddressLine
- BCCD.CCDA.ED
- BCCD.CCDA.EIVL.event
- BCCD.CCDA.EIVLPPDTS
- BCCD.CCDA.EIVLTS
- BCCD.CCDA.EN

- BCCD.CCDA.en.delimiter
- BCCD.CCDA.en.family
- BCCD.CCDA.en.given
- BCCD.CCDA.en.prefix
- BCCD.CCDA.en.suffix
- BCCD.CCDA.EntityClass
- BCCD.CCDA.EntityClassContainer
- BCCD.CCDA.EntityClassDevice
- BCCD.CCDA.EntityClassLivingSubject
- BCCD.CCDA.EntityClassManufacturedMaterial
- BCCD.CCDA.EntityClassMaterial
- BCCD.CCDA.EntityClassNonPersonLivingSubject
- BCCD.CCDA.EntityClassOrganization
- BCCD.CCDA.EntityClassPlace
- BCCD.CCDA.EntityClassRoot
- BCCD.CCDA.EntityDeterminer
- BCCD.CCDA.EntityDeterminerDetermined
- BCCD.CCDA.EntityNamePartQualifier
- BCCD.CCDA.EntityNamePartType
- BCCD.CCDA.EntityNameSearchUse
- BCCD.CCDA.EntityNameUse
- BCCD.CCDA.ENXP
- BCCD.CCDA.GLISTPQ
- BCCD.CCDA.GLISTTS
- BCCD.CCDA.GregorianCalendarCycle
- BCCD.CCDA.hasSupport
- BCCD.CCDA.HomeAddressUse
- BCCD.CCDA.HXITCE
- BCCD.CCDA.HXITPQ
- BCCD.CCDA.II

- BCCD.CCDA.ImageMediaType
- BCCD.CCDA.int
- BCCD.CCDA.INT1
- BCCD.CCDA.IntegrityCheckAlgorithm
- BCCD.CCDA.IVLINT
- BCCD.CCDA.IVLMO
- BCCD.CCDA.IVLPPDPQ
- BCCD.CCDA.IVLPPDTS
- BCCD.CCDA.IVLPQ
- BCCD.CCDA.IVLREAL
- BCCD.CCDA.IVLTS
- BCCD.CCDA.IVXBINT
- BCCD.CCDA.IVXBMO
- BCCD.CCDA.IVXBPPDPQ
- BCCD.CCDA.IVXBPPDTS
- BCCD.CCDA.IVXBPQ
- BCCD.CCDA.IVXBREAL
- BCCD.CCDA.IVXBTS
- BCCD.CCDA.LicensedEntityRole
- BCCD.CCDA.listint
- BCCD.CCDA.MediaType
- BCCD.CCDA.MO
- BCCD.CCDA.ModelMediaType
- BCCD.CCDA.MultipartMediaType
- BCCD.CCDA.NamePseudonymUse
- BCCD.CCDA.NameRepresentationUse
- BCCD.CCDA.NoInformation
- BCCD.CCDA.NullFlavor
- BCCD.CCDA.oid
- BCCD.CCDA.ON

- BCCD.CCDA.OrganizationNamePartQualifier
- BCCD.CCDA.OrganizationNameUse
- BCCD.CCDA.Other
- BCCD.CCDA.ParticipationAncillary
- BCCD.CCDA.ParticipationIndirectTarget
- BCCD.CCDA.ParticipationInformationGenerator
- BCCD.CCDA.ParticipationInformationRecipient
- BCCD.CCDA.ParticipationPhysicalPerformer
- BCCD.CCDA.ParticipationTargetDevice
- BCCD.CCDA.ParticipationTargetDirect
- BCCD.CCDA.ParticipationTargetLocation
- BCCD.CCDA.ParticipationTargetSubject
- BCCD.CCDA.ParticipationType
- BCCD.CCDA.ParticipationVerifier
- BCCD.CCDA.PersonNamePartAffixTypes
- BCCD.CCDA.PersonNamePartChangeQualifier
- BCCD.CCDA.PersonNamePartMiscQualifier
- BCCD.CCDA.PersonNamePartQualifier
- BCCD.CCDA.PersonNameUse
- BCCD.CCDA.PIVLPPDTS
- BCCD.CCDA.PIVLTS
- BCCD.CCDA.PN
- BCCD.CCDA.POCDMT000040.Act
- BCCD.CCDA.POCDMT000040.AssignedAuthor
- BCCD.CCDA.POCDMT000040.AssignedCustodian
- BCCD.CCDA.POCDMT000040.AssignedEntity
- BCCD.CCDA.POCDMT000040.AssociatedEntity
- BCCD.CCDA.POCDMT000040.Authenticator
- BCCD.CCDA.POCDMT000040.Author
- BCCD.CCDA.POCDMT000040.AuthoringDevice

- BCCD.CCDA.POCDMT000040.Authorization
- BCCD.CCDA.POCDMT000040.Birthplace
- BCCD.CCDA.POCDMT000040.ClinicalDocument
- BCCD.CCDA.POCDMT000040.Component1
- BCCD.CCDA.POCDMT000040.Component2
- BCCD.CCDA.POCDMT000040.Component3
- BCCD.CCDA.POCDMT000040.Component4
- BCCD.CCDA.POCDMT000040.Component5
- BCCD.CCDA.POCDMT000040.Consent
- BCCD.CCDA.POCDMT000040.Consumable
- BCCD.CCDA.POCDMT000040.Criterion
- BCCD.CCDA.POCDMT000040.Custodian
- BCCD.CCDA.POCDMT000040.CustodianOrganization
- BCCD.CCDA.POCDMT000040.DataEnterer
- BCCD.CCDA.POCDMT000040.Device
- BCCD.CCDA.POCDMT000040.DocumentationOf
- BCCD.CCDA.POCDMT000040.EncompassingEncounter
- BCCD.CCDA.POCDMT000040.Encounter
- BCCD.CCDA.POCDMT000040.EncounterParticipant
- BCCD.CCDA.POCDMT000040.Entity
- BCCD.CCDA.POCDMT000040.Entry
- BCCD.CCDA.POCDMT000040.EntryRelationship
- BCCD.CCDA.POCDMT000040.ExternalAct
- BCCD.CCDA.POCDMT000040.ExternalDocument
- BCCD.CCDA.POCDMT000040.ExternalObservation
- BCCD.CCDA.POCDMT000040.ExternalProcedure
- BCCD.CCDA.POCDMT000040.Guardian
- BCCD.CCDA.POCDMT000040.HealthCareFacility
- BCCD.CCDA.POCDMT000040.Informant12
- BCCD.CCDA.POCDMT000040.InformationRecipient

- BCCD.CCDA.POCDMT000040.InfrastructureRoot.typeId
- BCCD.CCDA.POCDMT000040.InFulfillmentOf
- BCCD.CCDA.POCDMT000040.IntendedRecipient
- BCCD.CCDA.POCDMT000040.LabeledDrug
- BCCD.CCDA.POCDMT000040.LanguageCommunication
- BCCD.CCDA.POCDMT000040.LegalAuthenticator
- BCCD.CCDA.POCDMT000040.Location
- BCCD.CCDA.POCDMT000040.MaintainedEntity
- BCCD.CCDA.POCDMT000040.ManufacturedProduct
- BCCD.CCDA.POCDMT000040.Material
- BCCD.CCDA.POCDMT000040.NonXMLBody
- BCCD.CCDA.POCDMT000040.Observation
- BCCD.CCDA.POCDMT000040.ObservationMedia
- BCCD.CCDA.POCDMT000040.ObservationRange
- BCCD.CCDA.POCDMT000040.Order
- BCCD.CCDA.POCDMT000040.Organization
- BCCD.CCDA.POCDMT000040.OrganizationPartOf
- BCCD.CCDA.POCDMT000040.Organizer
- BCCD.CCDA.POCDMT000040.ParentDocument
- BCCD.CCDA.POCDMT000040.Participant1
- BCCD.CCDA.POCDMT000040.Participant2
- BCCD.CCDA.POCDMT000040.ParticipantRole
- BCCD.CCDA.POCDMT000040.Patient
- BCCD.CCDA.POCDMT000040.PatientRole
- BCCD.CCDA.POCDMT000040.Performer1
- BCCD.CCDA.POCDMT000040.Performer2
- BCCD.CCDA.POCDMT000040.Person
- BCCD.CCDA.POCDMT000040.Place
- BCCD.CCDA.POCDMT000040.PlayingEntity
- BCCD.CCDA.POCDMT000040.Precondition

- BCCD.CCDA.POCDMT000040.Procedure
- BCCD.CCDA.POCDMT000040.Product
- BCCD.CCDA.POCDMT000040.RecordTarget
- BCCD.CCDA.POCDMT000040.Reference
- BCCD.CCDA.POCDMT000040.ReferenceRange
- BCCD.CCDA.POCDMT000040.RegionOfInterest
- BCCD.CCDA.POCDMT000040.RegionOfInterest.value
- BCCD.CCDA.POCDMT000040.RelatedDocument
- BCCD.CCDA.POCDMT000040.RelatedEntity
- BCCD.CCDA.POCDMT000040.RelatedSubject
- BCCD.CCDA.POCDMT000040.ResponsibleParty
- BCCD.CCDA.POCDMT000040.Section
- BCCD.CCDA.POCDMT000040.ServiceEvent
- BCCD.CCDA.POCDMT000040.Specimen
- BCCD.CCDA.POCDMT000040.SpecimenRole
- BCCD.CCDA.POCDMT000040.StructuredBody
- BCCD.CCDA.POCDMT000040.Subject
- BCCD.CCDA.POCDMT000040.SubjectPerson
- BCCD.CCDA.POCDMT000040.SubstanceAdministration
- BCCD.CCDA.POCDMT000040.Supply
- BCCD.CCDA.PostalAddressUse
- BCCD.CCDA.PPDPQ
- BCCD.CCDA.PPDTS
- BCCD.CCDA.PQ
- BCCD.CCDA.PQR
- BCCD.CCDA.probability
- BCCD.CCDA.ProbabilityDistributionType
- BCCD.CCDA.QTY
- BCCD.CCDA.real
- BCCD.CCDA.REAL1

- BCCD.CCDA.RelatedLinkType
- BCCD.CCDA.RoleClass
- BCCD.CCDA.RoleClassAgent
- BCCD.CCDA.RoleClassAssignedEntity
- BCCD.CCDA.RoleClassAssociative
- BCCD.CCDA.RoleClassContact
- BCCD.CCDA.RoleClassDistributedMaterial
- BCCD.CCDA.RoleClassEmployee
- BCCD.CCDA.RoleClassInactiveIngredient
- BCCD.CCDA.RoleClassIngredientEntity
- BCCD.CCDA.RoleClassInvestigationSubject
- BCCD.CCDA.RoleClassIsSpeciesEntity
- BCCD.CCDA.RoleClassLocatedEntity
- BCCD.CCDA.RoleClassManufacturedProduct
- BCCD.CCDA.RoleClassMutualRelationship
- BCCD.CCDA.RoleClassOntological
- BCCD.CCDA.RoleClassPartitive
- BCCD.CCDA.RoleClassPassive
- BCCD.CCDA.RoleClassRelationshipFormal
- BCCD.CCDA.RoleClassRoot
- BCCD.CCDA.RoleClassServiceDeliveryLocation
- BCCD.CCDA.RoleClassSpecimen
- BCCD.CCDA.RoleLinkType
- BCCD.CCDA.RTOMOPQ
- BCCD.CCDA.RTOPQPQ
- BCCD.CCDA.RTOQTYQTY
- BCCD.CCDA.ruid
- BCCD.CCDA.SC
- BCCD.CCDA.setEntityNamePartQualifier
- BCCD.CCDA.setEntityNameUse

- BCCD.CCDA.SetOperator
- BCCD.CCDA.setPostalAddressUse
- BCCD.CCDA.setTelecommunicationAddressUse
- BCCD.CCDA.SLISTPQ
- BCCD.CCDA.SLISTTS
- BCCD.CCDA.st
- BCCD.CCDA.ST1
- BCCD.CCDA.State
- BCCD.CCDA.StreetAddressLine
- BCCD.CCDA.StreetName
- BCCD.CCDA.StrucDoc.Br
- BCCD.CCDA.StrucDoc.Caption
- BCCD.CCDA.StrucDoc.Col
- BCCD.CCDA.StrucDoc.Colgroup
- BCCD.CCDA.StrucDoc.Content
- BCCD.CCDA.StrucDoc.Footnote
- BCCD.CCDA.StrucDoc.FootnoteRef
- BCCD.CCDA.StrucDoc.Item
- BCCD.CCDA.StrucDoc.LinkHtml
- BCCD.CCDA.StrucDoc.List
- BCCD.CCDA.StrucDoc.Paragraph
- BCCD.CCDA.StrucDoc.RenderMultiMedia
- BCCD.CCDA.StrucDoc.Sub
- BCCD.CCDA.StrucDoc.Sup
- BCCD.CCDA.StrucDoc.Table
- BCCD.CCDA.StrucDoc.Tbody
- BCCD.CCDA.StrucDoc.Td
- BCCD.CCDA.StrucDoc.Text
- BCCD.CCDA.StrucDoc.Tfoot
- BCCD.CCDA.StrucDoc.Th

- BCCD.CCDA.StrucDoc.Thead
- BCCD.CCDA.StrucDoc.Title
- BCCD.CCDA.StrucDoc.TitleContent
- BCCD.CCDA.StrucDoc.TitleFootnote
- BCCD.CCDA.StrucDoc.Tr
- BCCD.CCDA.SXCMCD
- BCCD.CCDA.SXCMINT
- BCCD.CCDA.SXCMMO
- BCCD.CCDA.SXCMPPDPQ
- BCCD.CCDA.SXCMPPDTS
- BCCD.CCDA.SXCMPQ
- BCCD.CCDA.SXCMREAL
- BCCD.CCDA.SXCMTS
- BCCD.CCDA.SXPRTS
- BCCD.CCDA.TEL
- BCCD.CCDA.TelecommunicationAddressUse
- BCCD.CCDA.TemporallyPertains
- BCCD.CCDA.TextMediaType
- BCCD.CCDA.thumbnail
- BCCD.CCDA.TimingEvent
- BCCD.CCDA.TN
- BCCD.CCDA.ts
- BCCD.CCDA.TS1
- BCCD.CCDA.uid
- BCCD.CCDA.Unknown
- BCCD.CCDA.url
- BCCD.CCDA.URL1
- BCCD.CCDA.URLScheme
- BCCD.CCDA.uuid
- BCCD.CCDA.UVPTS

- BCCD.CCDA.VideoMediaType
- BCCD.CCDA.WorkPlaceAddressUse
- BCCD.CCDA.xActClassDocumentEntryAct
- BCCD.CCDA.xActClassDocumentEntryOrganizer
- BCCD.CCDA.xActMoodDefEvn
- BCCD.CCDA.xActMoodDefEvnRqoPrmsPrp
- BCCD.CCDA.xActMoodDocumentObservation
- BCCD.CCDA.xActMoodEvnOrdPrmsPrp
- BCCD.CCDA.xActMoodIntentEvent
- BCCD.CCDA.xActMoodOrdPrms
- BCCD.CCDA.xActMoodOrdPrmsEvn
- BCCD.CCDA.xActMoodRqoPrpAptArq
- BCCD.CCDA.xActRelationshipDocument
- BCCD.CCDA.xActRelationshipEntry
- BCCD.CCDA.xActRelationshipEntryRelationship
- BCCD.CCDA.xActRelationshipExternalReference
- BCCD.CCDA.xActRelationshipPatientTransport
- BCCD.CCDA.xActRelationshipPertinentInfo
- BCCD.CCDA.xDeterminerInstanceKind
- BCCD.CCDA.xDocumentActMood
- BCCD.CCDA.xDocumentEncounterMood
- BCCD.CCDA.xDocumentEntrySubject
- BCCD.CCDA.xDocumentProcedureMood
- BCCD.CCDA.xDocumentSubject
- BCCD.CCDA.xDocumentSubstanceMood
- BCCD.CCDA.xEncounterParticipant
- BCCD.CCDA.xEncounterPerformerParticipation
- BCCD.CCDA.xEntityClassDocumentReceiving
- BCCD.CCDA.xEntityClassPersonOrOrgReceiving
- BCCD.CCDA.xInformationRecipient

- BCCD.CCDA.xInformationRecipientRole
- BCCD.CCDA.xOrganizationNamePartType
- BCCD.CCDA.xParticipationAuthorPerformer
- BCCD.CCDA.xParticipationEntVrf
- BCCD.CCDA.xParticipationPrfEntVrf
- BCCD.CCDA.xParticipationVrfRespSprfWit
- BCCD.CCDA.xPersonNamePartType
- BCCD.CCDA.xRoleClassAccommodationRequestor
- BCCD.CCDA.xRoleClassCoverage
- BCCD.CCDA.xRoleClassCoverageInvoice
- BCCD.CCDA.xRoleClassCredentialedEntity
- BCCD.CCDA.xRoleClassPayeePolicyRelationship
- BCCD.CCDA.xServiceEventPerformer

C.3 Install

The BCCD.Install classes support the installation of the CCDA application.

- BCCD.Install.ConvertAuditLog
- BCCD.Install.Installer
- BCCD.Install.PostInstallTask
- BCCD.Install.PostInstallV2
- BCCD.Install.PreInstallTask
- BCCD.Install.PreInstallV2
- BCCD.Install.ProductionSettings

C.4 Manage

The BCCD.Manage classes support management of the CCDA application.

- BCCD.Management.ApplicationStatus
- BCCD.Management.Documents

C.5 Prod

The BCCD.Prod classes support the CCDA document generation and transmission, the Ensemble production, and the alert process.

- BCCD.Prod.Adapters.AlertInbound
- BCCD.Prod.Adapters.CompiledRecordInbound
- BCCD.Prod.Adapters.ErrorRecordInbound
- BCCD.Prod.Adapters.ErrorThrottleInbound
- BCCD.Prod.Adapters.SuspendedRecordInbound
- BCCD.Prod.Alert.AlertItem
- BCCD.Prod.Build.CCD
- BCCD.Prod.Build.DTL.AllergyComponent
- BCCD.Prod.Build.DTL.AllergyEntry
- BCCD.Prod.Build.DTL.AssessmentAndPlanComponent
- BCCD.Prod.Build.DTL.AssessmentAndPlanPlannedProc
- BCCD.Prod.Build.DTL.CareTeamAct
- BCCD.Prod.Build.DTL.CareTeamComponent
- BCCD.Prod.Build.DTL.CareTeamDocumentationOf
- BCCD.Prod.Build.DTL.CareTeamEncounterParticipant
- BCCD.Prod.Build.DTL.CareTeamEntry
- BCCD.Prod.Build.DTL.CareTeamPerformer
- BCCD.Prod.Build.DTL.CareReportingComponent
- BCCD.Prod.Build.DTL.ClinicalDocument
- BCCD.Prod.Build.DTL.ConsultationNoteComponent
- BCCD.Prod.Build.DTL.ConsultationNoteEntry
- BCCD.Prod.Build.DTL.DischargeDiagnosisComponent
- BCCD.Prod.Build.DTL.DischargeSummaryNoteComponent
- BCCD.Prod.Build.DTL.DischargeSummaryNoteEntry
- BCCD.Prod.Build.DTL.EncounterComponent
- BCCD.Prod.Build.DTL.EncounterEntry
- BCCD.Prod.Build.DTL.EncounterObservation
- BCCD.Prod.Build.DTL.FunctionalStatusComponent

- BCCD.Prod.Build.DTL.Functions
- BCCD.Prod.Build.DTL.GoalComponent
- BCCD.Prod.Build.DTL.GoalEntry
- BCCD.Prod.Build.DTL.HealthConcernComponent
- BCCD.Prod.Build.DTL.HealthConcernEntry
- BCCD.Prod.Build.DTL.HealthConcernProblemObs
- BCCD.Prod.Build.DTL.HistoryAndPhysicalComponent
- BCCD.Prod.Build.DTL.HistoryAndPhysicalEntry
- BCCD.Prod.Build.DTL.HospDischargeInstComponent
- BCCD.Prod.Build.DTL.HospitalCourseComponent
- BCCD.Prod.Build.DTL.ImmunizationComponent
- BCCD.Prod.Build.DTL.ImmunizationEntry
- BCCD.Prod.Build.DTL.InterventionComponent
- BCCD.Prod.Build.DTL.InterventionEntry
- BCCD.Prod.Build.DTL.MedFrequencyFunctions
- BCCD.Prod.Build.DTL.MedicalEquipmentComponent
- BCCD.Prod.Build.DTL.MedicalEquipmentEntry
- BCCD.Prod.Build.DTL.MedicationComponent
- BCCD.Prod.Build.DTL.MedicationEntry
- BCCD.Prod.Build.DTL.MentalStatusComponent
- BCCD.Prod.Build.DTL.ModuleContext
- BCCD.Prod.Build.DTL.OutcomeComponent
- BCCD.Prod.Build.DTL.OutcomeEntry
- BCCD.Prod.Build.DTL.ProblemComponent
- BCCD.Prod.Build.DTL.ProblemEntry
- BCCD.Prod.Build.DTL.ProcedureComponent
- BCCD.Prod.Build.DTL.ProcedureEntry
- BCCD.Prod.Build.DTL.ProcedureNoteEntry
- BCCD.Prod.Build.DTL.ProgressNoteComponent
- BCCD.Prod.Build.DTL.ProgressNoteEntry

- BCCD.Prod.Build.DTL.ReasonForReferralComponent
- BCCD.Prod.Build.DTL.ReasonForVisitComponent
- BCCD.Prod.Build.DTL.ResultComponent
- BCCD.Prod.Build.DTL.ResultEntry
- BCCD.Prod.Build.DTL.ResultNoteEntry
- BCCD.Prod.Build.DTL.ResultObservation
- BCCD.Prod.Build.DTL.SocialHistoryComponent
- BCCD.Prod.Build.DTL.SocialHistoryEntry
- BCCD.Prod.Build.DTL.SocialHistoryMultEntry
- BCCD.Prod.Build.DTL.SocialHistoryOrgEntry
- BCCD.Prod.Build.DTL.VitalSignComponent
- BCCD.Prod.Build.DTL.VitalSignEntry
- BCCD.Prod.Build.DTL.VitalSignObservation
- BCCD.Prod.Build.Main
- BCCD.Prod.Messages.DocumentRequest
- BCCD.Prod.Messages.DocumentResponse
- BCCD.Prod.Messages.ErrorResponse
- BCCD.Prod.Messages.QueueIdRequest
- BCCD.Prod.Messages.StreamRequest
- BCCD.Prod.Operations.CaseReporting
- BCCD.Prod.Operations.FileDoc
- BCCD.Prod.Processes.Alert
- BCCD.Prod.Processes.Alert.Context
- BCCD.Prod.Processes.Alert.Thread1
- BCCD.Prod.Processes.BuildDoc
- BCCD.Prod.Processes.BuildDoc.Context
- BCCD.Prod.Processes.BuildDoc.Thread1
- BCCD.Prod.Processes.TransmitPush
- BCCD.Prod.Production
- BCCD.Prod.PushWS.ns.DocumentComplexType

- BCCD.Prod.PushWS.ns.DocumentContent
- BCCD.Prod.PushWS.ns.DocumentType
- BCCD.Prod.PushWS.Op.PatientRecordReceiverOperationRequest
- BCCD.Prod.PushWS.Op.PatientRecordReceiverOperationResponse
- BCCD.Prod.PushWS.Op.PatientRecordReceiverPort
- BCCD.Prod.PushWS.PatientRecordReceiverPort
- BCCD.Prod.PushWS.PatientRecordReceiverPort.
  PatientRecordReceiverOperation
- BCCD.Prod.PushWS.xmime.base64Binary
- BCCD.Prod.PushWS.xmime.hexBinary
- BCCD.Prod.Services.Alert
- BCCD.Prod.Services.ClinicalDocumentService
- BCCD.Prod.Services.ClinicalDocumentService.RetrieveDocument
- BCCD.Prod.Services.CompiledRecord
- BCCD.Prod.Services.ErrorRecord
- BCCD.Prod.Services.ErrorThrottle
- BCCD.Prod.Services.SuspendedRecord

C.6 Tasks

The BCCD.Tasks classes consist of tasks that can be scheduled to run periodically or invoked from the RPMS namespace to run in the CCDA namespace. The classes support the application monitor, the weekly purge process, and the ability to start the Ensemble production from the RPMS namespace.

- BCCD.Tasks.ApplicationMonitor
- BCCD.Tasks.Purge
- BCCD.Tasks.UpdateProductionState

C.7 Version

The BCCD.Version classes support tracking the version of the installed classes.

- BCCD.Version.V2
- BCCD.Version.V2P1
- BCCD.Version.V2P2

- BCCD.Version.V2P3
- BCCD.Version.V2P4

C.8 Xfer

The BCCD.Xfer classes support the extraction of data from RPMS.

- BCCD.Xfer.Address
- BCCD.Xfer.Allergy
- BCCD.Xfer.AllergyCode
- BCCD.Xfer.AllergyReaction
- BCCD.Xfer.AssessmentAndPlan
- BCCD.Xfer.AssessmentAndPlanOrganizer
- BCCD.Xfer.CareTeam
- BCCD.Xfer.CaseReporting
- BCCD.Xfer.CCDMain
- BCCD.Xfer.CCDPopulate
- BCCD.Xfer.CodedValue
- BCCD.Xfer.ConsultationNote
- BCCD.Xfer.ConsultationNoteAddendum
- BCCD.Xfer.ConsultationNoteOrganizer
- BCCD.Xfer.DischargeSummaryNote
- BCCD.Xfer.DischargeSummaryNoteAddendum
- BCCD.Xfer.Encounter
- BCCD.Xfer.EncounterDiagnosis
- BCCD.Xfer.FieldTransformations
- BCCD.Xfer.FunctionalStatus
- BCCD.Xfer.GeneralHeader
- BCCD.Xfer.Goal
- BCCD.Xfer.HealthConcern
- BCCD.Xfer.HistoryAndPhysical
- BCCD.Xfer.HistoryAndPhysicalAddendum
- BCCD.Xfer.HospitalCourse

- BCCD.Xfer.HospitalCourseAddendum
- BCCD.Xfer.HospitalDischargeInstruction
- BCCD.Xfer.HospitalDischargeInstructionAddendum
- BCCD.Xfer.Immunization
- BCCD.Xfer.Intervention
- BCCD.Xfer.MedClassCode
- BCCD.Xfer.MedDispense
- BCCD.Xfer.MedFrequency
- BCCD.Xfer.MedicalEquipment
- BCCD.Xfer.MedicalEquipmentProcedure
- BCCD.Xfer.Medication
- BCCD.Xfer.MentalStatus
- BCCD.Xfer.Outcome
- BCCD.Xfer.Patient
- BCCD.Xfer.PerformanceData
- BCCD.Xfer.PersonName
- BCCD.Xfer.PopAllergy
- BCCD.Xfer.PopAssessmentAndPlan
- BCCD.Xfer.PopCareTeam
- BCCD.Xfer.PopCaseReporting
- BCCD.Xfer.PopConsultation
- BCCD.Xfer.PopDischargeDiagnosis
- BCCD.Xfer.PopEncounter
- BCCD.Xfer.PopFunctionalStatus
- BCCD.Xfer.PopGeneralHeader
- BCCD.Xfer.PopGoal
- BCCD.Xfer.PopHealthConcern
- BCCD.Xfer.PopImmunization
- BCCD.Xfer.PopIntervention
- BCCD.Xfer.PopMedicalEquipment

- BCCD.Xfer.PopMedication
- BCCD.Xfer.PopMentalStatus
- BCCD.Xfer.PopNote
- BCCD.Xfer.PopOutcome
- BCCD.Xfer.PopPatient
- BCCD.Xfer.PopProblem
- BCCD.Xfer.PopProcedure
- BCCD.Xfer.PopReasonForReferral
- BCCD.Xfer.PopReasonForVisitHosp
- BCCD.Xfer.PopResult
- BCCD.Xfer.PopSocialHistory
- BCCD.Xfer.PopVitalSign
- BCCD.Xfer.Problem
- BCCD.Xfer.Procedure
- BCCD.Xfer.ProcedureNote
- BCCD.Xfer.ProcedureNoteAddendum
- BCCD.Xfer.ProgressNote
- BCCD.Xfer.ProgressNoteAddendum
- BCCD.Xfer.PushQueue
- BCCD.Xfer.PushQueueDateRange
- BCCD.Xfer.Queue
- BCCD.Xfer.ReasonForReferral
- BCCD.Xfer.Result
- BCCD.Xfer.ResultOrganizer
- BCCD.Xfer.SocialHistory
- BCCD.Xfer.SocialHistoryItem
- BCCD.Xfer.SocialHistoryOrganizer
- BCCD.Xfer.TextWithLabel
- BCCD.Xfer.VitalSign
- BCCD.Xfer.VitalSignOrganizer

Appendix D Web Service API

This section summarizes the Web Service Application Programming Interface (API) provided for requesting CCDA documents from the EHR GUI and, potentially, other outside applications. Its goal is to assist RPMS sites and outside developers in understanding what the web service is and how to use it to retrieve CCDA documents from RPMS.

D.1 Web Service

The CCDA web service provides an API for requesting and retrieving a Clinical Summary or Transitions of Care CCDA document from RPMS. To access the web service, it is necessary to develop a web client. Instructions for developing a web client are beyond the scope of this document. However, there are a number of tools available for generating a web client from a WSDL for major platforms, such as Java and .NET. Once a web client has been developed it may be used to request a CCDA document by means of sending a SOAP request containing a Patient ID, one or more Visit IDs, and a Document Type to the web service and receiving a SOAP response containing the CCDA document.

The web service is accessed via HTTP. HTTPS (HTTP Secure or HTTP over SSL/TLS) is not currently supported, so it is the responsibility of the site to address security between the web client and the web service.

D.1.1 Request Message

A sample SOAP request is provided in Section D.3. The request consists of a SOAP header and a SOAP body. The request header must include a WS-Security section containing a valid access code/verify code pair. The request body has four required elements: the patient ID, one or more visit IDs, the requested document type, and the RPMS DUZ value of the person making the request.

The access code/verify code pair consists of the access code and verify code for a user in the RPMS NEW PERSON file. The codes are sent encoded just as they are stored in RPMS; they are not sent in plaintext. The access code is sent as the WS-Security username, and the verify code is sent as the WS-Security password.

The patient ID is the patient IEN in the RPMS namespace. It is a unique identifier within an RPMS namespace but might not be unique across namespaces. To ensure the correct patient record is retrieved, there is one web service for each RPMS namespace; the web client must access the web service corresponding to the RPMS namespace that contains the patient IEN being requested.

The list of visit IDs contains one or more visit IENs in the RPMS namespace. Like the patient IEN, each visit IEN is a unique identifier within an RPMS namespace.

The requested document type is a code to indicate whether the web client is requesting a Clinical Summary or Transitions of Care document. For a Clinical Summary, document type CS is sent. For a Transitions of Care document, document type TC is sent.

The requestor DUZ value must contain the RPMS IEN value of the person making the request. The value is stored in the CCDA audit log to meet CCDA auditing requirements. The value is required and must be a valid user identifier in RPMS.

D.1.2 Response Message

Unlike the C32 web service, the CCDA web service is synchronous, i.e., the response message is returned on the same session as the request. A portion of a sample response message is provided in Section D.4.

The response body contains the actual CCDA document. The document contains information about the patient's demographics, visit information, and medical history to meet CCD, CHIT, and Cures requirements. Details about each of the data elements in the CCDA document are included in Appendix B . While all of the information is encoded in XML, some of the information is also encoded in narrative blocks to allow it to be transformed into HTML to be used in generating a web page to make it easier for a person to read the information.

If there is a problem with the request, such as a missing or invalid value in the request, or a problem generating the document, then the response contains error information instead of the CCDA document. A sample error response is provided in Section D.5.

The error information consists of two elements: an error code and error text. The error code can be used by the web client to determine the cause of the error. A list of error codes is provided in Appendix E . The error text supplements the error code, providing more information about the cause of the error. Because the error text may vary, it is recommended that the web client use the error code when determining whether the error was caused by an improper request message or by an issue in document generation. Certain types of errors, such as a request that is not a valid SOAP message, may result in Ensemble returning a SOAP fault. In this case, the response will contain a standard SOAP fault and will not contain a CCDA document or the error code/error text pair.

D.2 WSDL Considerations

The following changes to the CCDA WSDL are required to produce a WSDL that corresponds to the web service at a given site:

```
Replace:
    <service name="ClinicalDocumentService">
```

```
        <port name="ClinicalDocumentServiceSoap"
binding="s0:ClinicalDocumentServiceSoap">
            <soap:address
location="http://10.24.196.43:57775/csp/healthshare/ccdagold4/BCCD.Prod.Ser
vices.ClinicalDocumentService.cls"/>
        </port>
    </service>

With:
    <service name="ClinicalDocumentService">
        <port name="ClinicalDocumentServiceSoap"
binding="s0:ClinicalDocumentServiceSoap">
            <soap:address location="http://(IP
address):(port)/csp/healthshare/(CCDA
namespace)/BCCD.Prod.Services.ClinicalDocumentService.cls"/>
        </port>
    </service>
```

Figure D-1: WSDL Considerations

D.3 Sample Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:urn="urn:hl7-org:v3">
   <soapenv:Header>
      <wsse:Security xmlns:wsse="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd">
         <wsse:UsernameToken wsu:Id="UsernameToken-4"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
            <wsse:Username>64D'odY4g0k}h#}mCY4p</wsse:Username>
            <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">nPv7(FwcTgU,G[m=l0a</wsse:Password>
         </wsse:UsernameToken>
      </wsse:Security>
   </soapenv:Header>
   <soapenv:Body>
      <urn:RetrieveDocument>
         <urn:DocumentRequest>
            <urn:DocumentType>CS</urn:DocumentType>
            <urn:RequestorDUZ>116</urn:RequestorDUZ>
            <urn:PatientId>2163</urn:PatientId>
            <urn:VisitId>
               <urn:VisitIdItem>3126</urn:VisitIdItem>
            </urn:VisitId>
         </urn:DocumentRequest>
      </urn:RetrieveDocument>
   </soapenv:Body>
</soapenv:Envelope>
```

Figure D-2: Sample Request

D.4 Sample Response: Valid

```
<SOAP-ENV:Envelope xmlns:SOAP-
ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:s="http://www.w3.org/2001/XMLSchema">
   <SOAP-ENV:Body>
      <RetrieveDocumentResponse xmlns="urn:hl7-org:v3">
         <ClinicalDocumentResponse>
            <ClinicalDocument xsi:schemaLocation="urn:hl7-org:v3 CDA.xsd"
xmlns:sdtc="urn:hl7-org:sdtc">
               <!--DFN=2163; VIEN=3126; QID=139; VisitType=Outpatient-->
               <realmCode code="US"/>
               <typeId root="2.16.840.1.113883.1.3"
extension="POCD_HD000040"/>
               <templateId root="2.16.840.1.113883.10.20.22.1.1"
extension="2015-08-01" assigningAuthorityName="US Realm"></templateId>
               <templateId root="2.16.840.1.113883.10.20.22.1.2"
extension="2015-08-01" assigningAuthorityName="CCD"></templateId>
               <templateId
root="2.16.840.1.113883.10.20.22.1.1"></templateId>
               <templateId
root="2.16.840.1.113883.10.20.22.1.2"></templateId>
               <id root="CCA231F5-34A1-4304-BFE7-076274B4F9B3"/>
               <code code="34133-9" codeSystem="2.16.840.1.113883.6.1"
codeSystemName="LOINC" displayName="Summarization of Episode Note"></code>
               <title>Clinical Summary from SAMPLE FACILITY</title>
<!-- The rest of the document has been removed for brevity -->
            </ClinicalDocument>
         </ClinicalDocumentResponse>
      </RetrieveDocumentResponse>
   </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Figure D-3: Sample Response: Valid

D.5 Sample Response: Error

```
<SOAP-ENV:Envelope xmlns:SOAP-
ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:s="http://www.w3.org/2001/XMLSchema">
   <SOAP-ENV:Body>
      <RetrieveDocumentResponse xmlns="urn:hl7-org:v3">
         <ClinicalDocumentResponse>
            <Error>
               <ErrorCode>124</ErrorCode>
               <ErrorText>No VisitId in request.</ErrorText>
            </Error>
         </ClinicalDocumentResponse>
      </RetrieveDocumentResponse>
   </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Figure D-4: Sample Response: Error

D.6 Additional Web Service Resources

W3Schools:

- Web Services tutorial: https://www.w3schools.com/xml/xml_services.asp
- SOAP introduction: https://www.w3schools.com/xml/xml_soap.asp
- WSDL introduction: https://www.w3schools.com/xml/xml_wsdl.asp
- XML tutorial: https://www.w3schools.com/xml/default.asp

Wikipedia:

- API: http://en.wikipedia.org/wiki/Application_programming_interface
- HTTP: http://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol
- HTTPS: https://en.wikipedia.org/wiki/HTTPS
- SOAP: http://en.wikipedia.org/wiki/SOAP
- Web Service: http://en.wikipedia.org/wiki/Web_service
- WSDL: http://en.wikipedia.org/wiki/Web_Services_Description_Language
- XML: http://en.wikipedia.org/wiki/XML

Appendix E CCDA Error Codes

Code	Description
111	CCDA for the requested document type disabled
120	No Document Request sent
121	Missing or invalid Requestor DUZ value in request
122	Missing or invalid Document Type value in request
123	Missing or invalid Patient ID value in request
124	Missing or invalid Visit ID value in request
125	Missing DirectoryPath (Data Export only)
130	Unable to instantiate Queue record
150	Repository Timeout
151	Unable to acquire document stream
201	Error in data extraction
202	Unable to save extracted data
203	Error trapped by BCCDTSK (background processor)
301	Error in data transformation
302	Error in document generation business process
303	Error in document transmission
310	Document in “Compile Started” status for more than 10000 seconds

Appendix F CCDA HealthShare Configuration and Management

F.1 Creation of CCDA Database, Namespace, and Mappings

The CCDA application adds a new HealthShare database, namespace, CSP application, and set of global and package mappings to each RPMS namespace on the system. The new database and its settings are created by the KIDS build automatically and should not require manual intervention. This section describes, for reference purposes, how the same settings can be created manually.

F.1.1 Creating the CCDA Namespace

If the CCDA namespace has already been created, skip this step. RPMS users can remain on the system during this operation.

F.1.1.1 Naming the CCDA Namespace

The CCDA application resides in a separate HealthShare namespace. There is one CCDA namespace for every RPMS namespace in the instance. If there are multiple RPMS namespaces running within the same HealthShare instance, create a separate CCDA namespace for each RPMS namespace.

To determine the name of the new namespace, concatenate CCDA with the name of the RPMS namespace associated with it. For example, if the RPMS namespace is named TST, then the CCDA namespace must be named CCDATST. If there is a second RPMS namespace named CHI, then its associated CCDA namespace must be named CCDACHI.

> **Note:** This naming convention is relied upon by the CCDA application. The CCDA application will not work if the CCDA namespace is given a different name.

F.1.1.2 Naming the CCDA Database

Each CCDA namespace will have an underlying HealthShare database. To avoid confusion, give the database the same name as the associated CCDA namespace, unless there is a specific reason to use a different name. Table F-1 provides a sample table that may be used by sites with multiple RPMS namespaces to record the database information. Sites should enter data for one RPMS namespace per row.

Table F-1: Sample table for recording namespace, database, and directory information

RPMS Namespace Name	CCDA Namespace Name	CCDA Database Name	OS Directory for CCDA Database

F.1.1.3 Choosing the Storage Location

See the Disk Space section of the CCDA installation manual for instructions for estimating the amount of disk space needed to accommodate the new CCDA database.

Based on the estimated disk space requirements and on how much disk space is available on the storage subsystem, select the disk drive (Windows) or file system (Unix) where each new CCDA database will be installed. Select the directory path and name to be used on that drive or file system. If the directory does not exist, create it, and verify that HealthShare can read from it and write to it.

F.1.1.4 Creating a New HealthShare Database

1. Navigate to the **Local Databases** page in HealthShare's Management Portal as follows:

   a. Access HealthShare's Management Portal and login as an administrator.

   b. Select **System Administration** at the bottom of the left column, then select **Configuration**, then select **System Configuration**, then select Local **Databases**.

   c. Click **Go** to go to the **Local Databases** page.

      The **Local Databases** page displays.

2. Select **Create New Database**. The **Database Wizard** dialog displays.

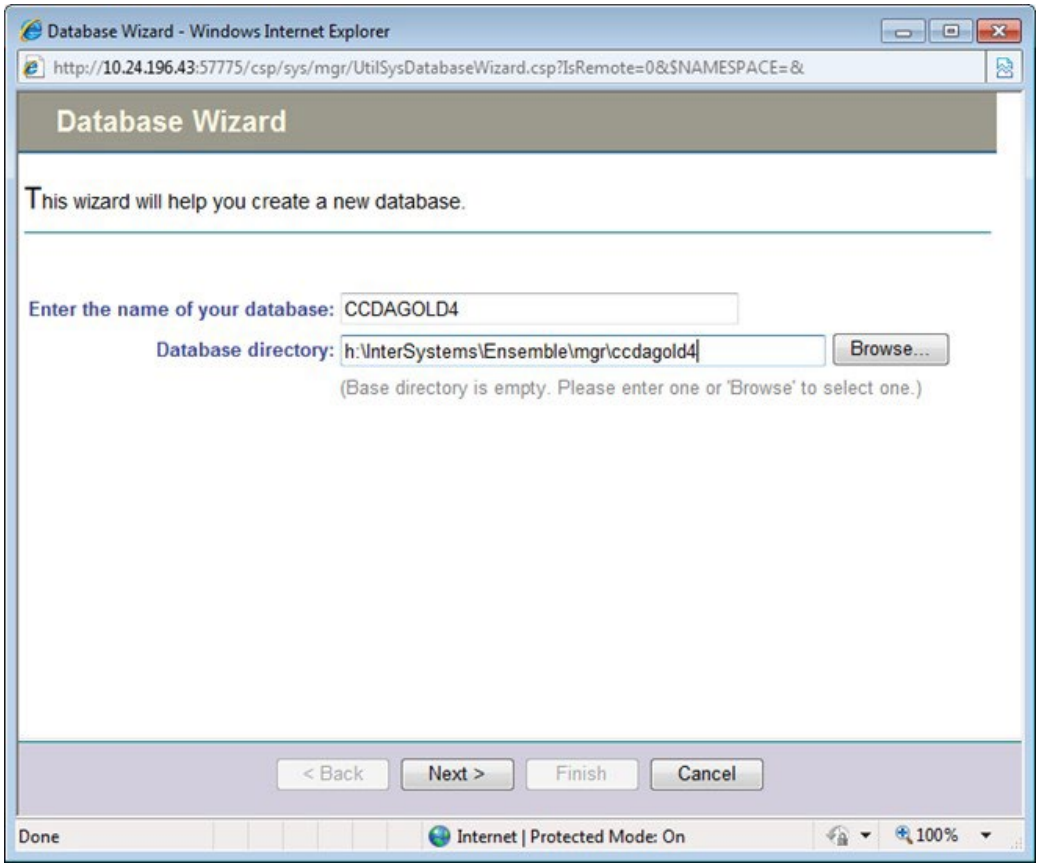

Figure F-1: Database Wizard

3. In the **Enter the name of your database** field, type the database name determined in Section F.1.1.2, e.g., **CCDATST**.

4. The **Management Portal** will display the default directory name where HealthShare will store the main CACHE.DAT file for this database. (This functionality may not be available depending on browser settings.) Change this directory to the directory set up in Section F.1.1.3.

5. Click **Next**. The **Database Details** dialog displays.

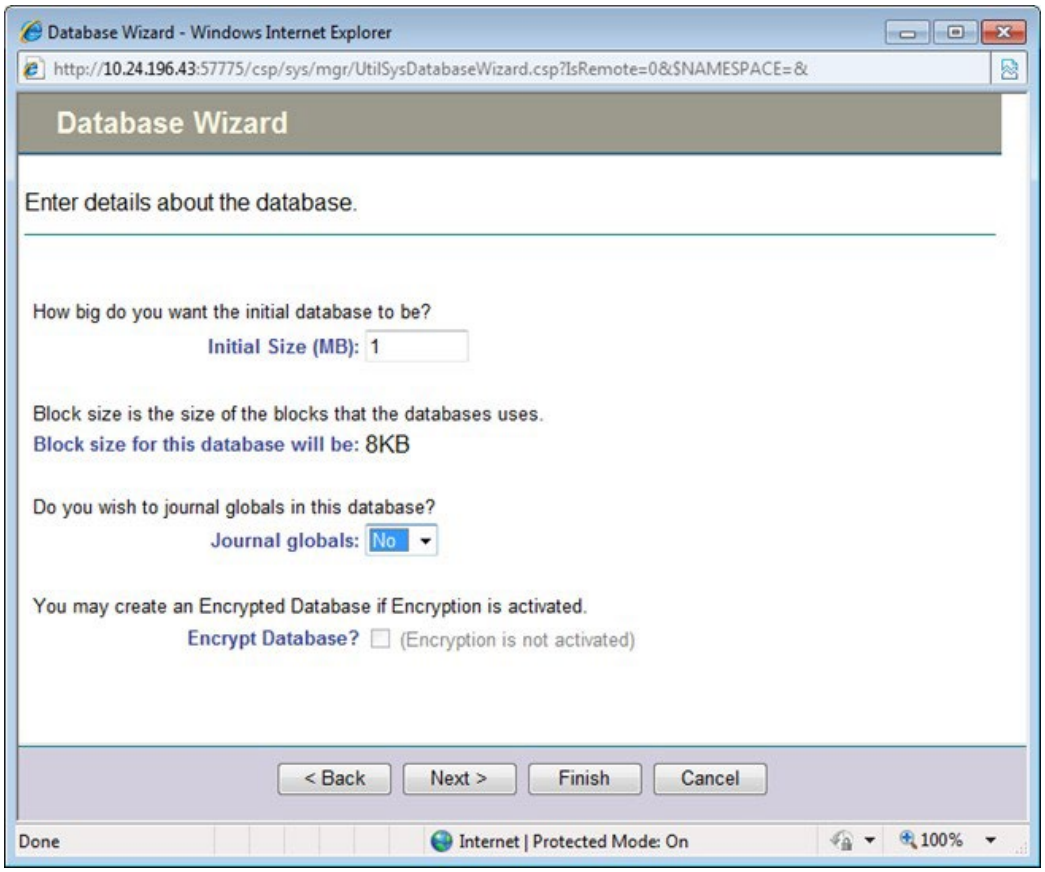

Figure F-2: Database Wizard, database details

6. In the **Initial Size (MB)** field, type **15**.
7. In the **Journal globals** field select **No**.

Note:	This is a very important setting. Double-check that **No** is selected.

8. Check the **Encrypt database?** check box if the site uses database encryption.
9. Click **Next**. The **Database Resource** dialog displays.

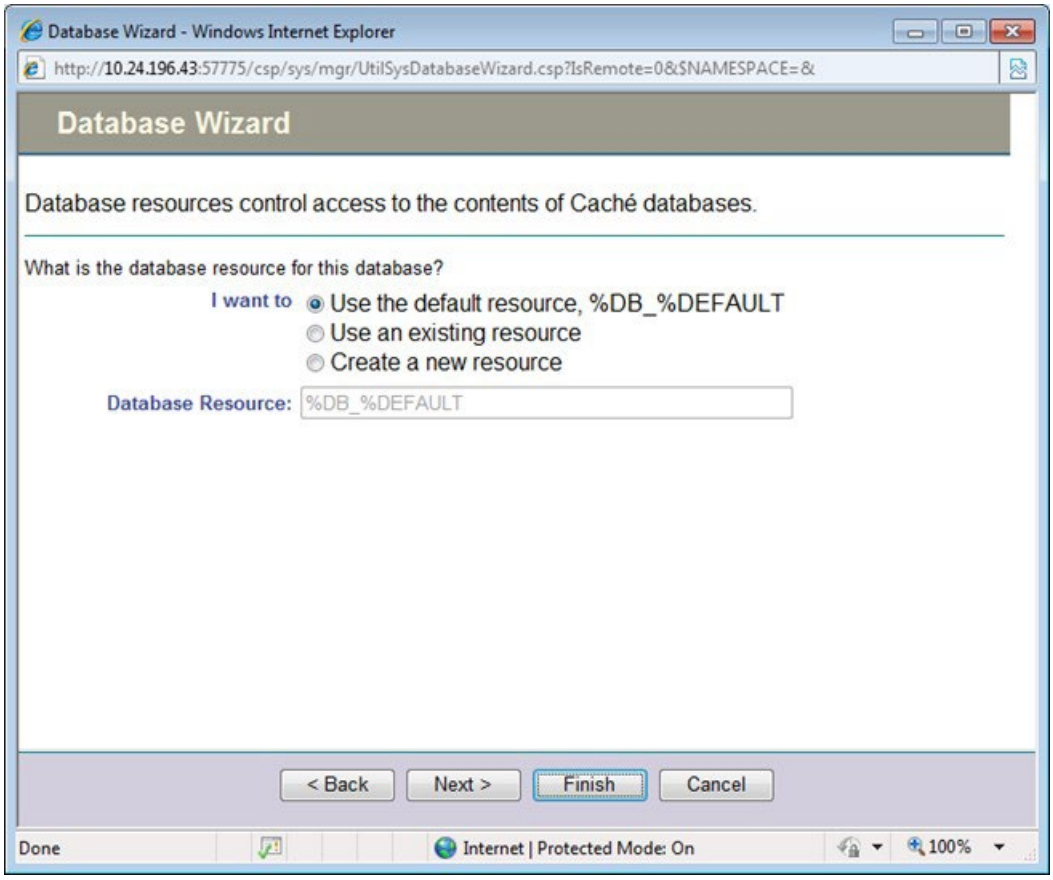

Figure F-3: Database Wizard, database resource

10. Choose the database resource for this new database. If the site does not have a policy on database resources, accept the default, **Use the default resource, %DB_%DEFAULT**.

11. Click **Next**. The **Review Settings** dialog displays.

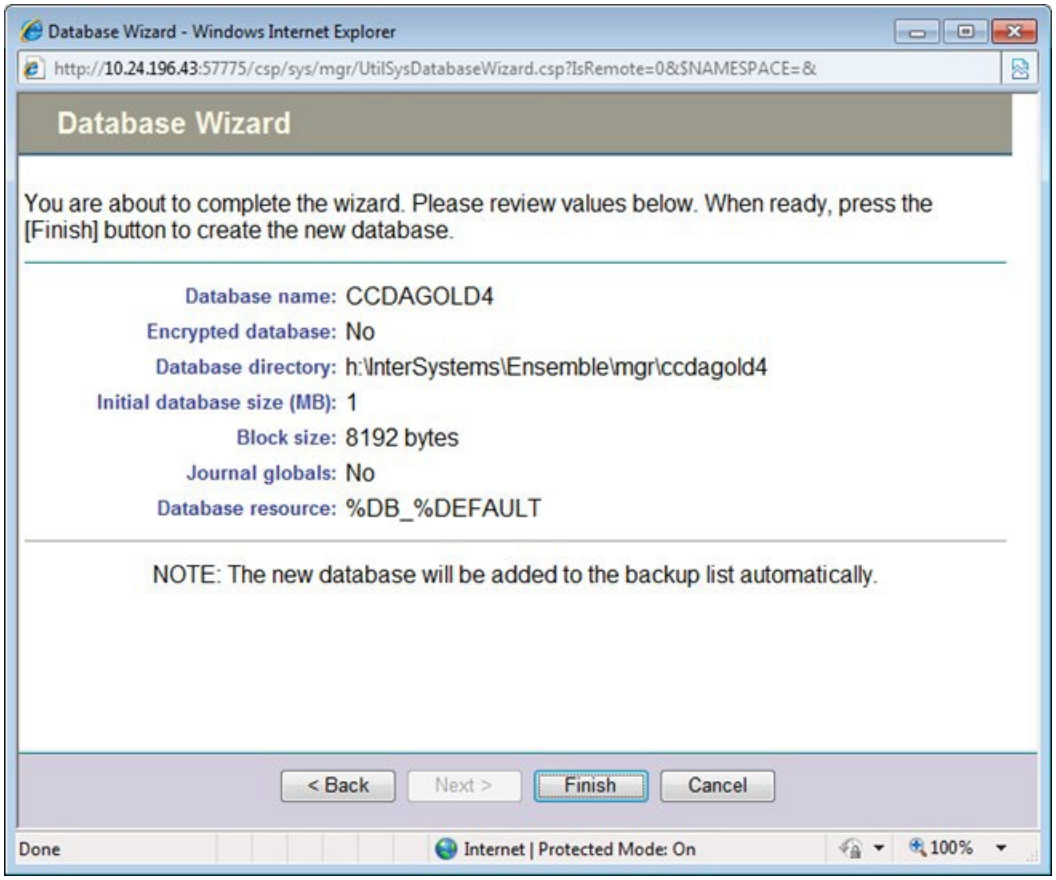

Figure F-4: Database Wizard, review settings

12. Review the values and, if they are correct, click **Finish**. To correct any mistakes, click **Back**. It may take a few seconds for HealthShare to create the database. When it finishes, the new database displays in the **Local Databases** list.

13. If the HealthShare instance hosts multiple RPMS namespaces, repeat these steps for all new CCDA databases to be created.

F.1.1.5 Creating a New HealthShare Namespace

1. Navigate to the **Namespaces** page in HealthShare's Management Portal as follows:

   a. Access HealthShare's Management Portal and sign on as an administrator.

   b. Select **System Administration** from the bottom of the left column, then select **Configuration**, then select **System Configuration**, then select **Namespaces**.

   c. Click **Go** to go to the **Namespaces** page.

   The **Namespaces** page displays.

2. Select **Create New Namespace** at the top of the page. **The New Namespace** page displays.

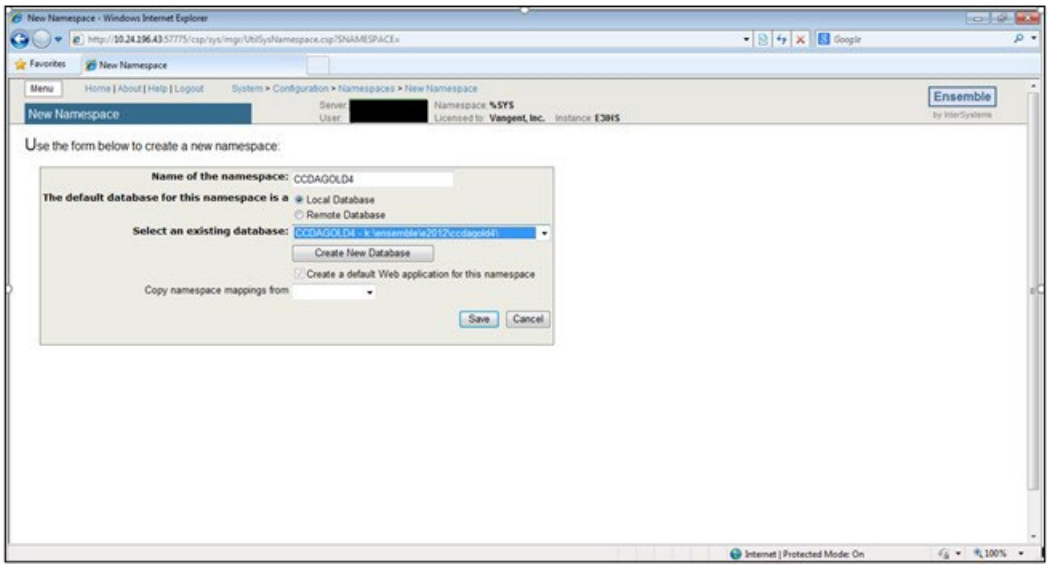

Figure F-5: New Namespace wizard

3. In the **Name of the namespace field**, type the name of the namespace established in Section F.1.1.1.

4. In the **The default database for this namespace is a field**, select **Local Database**.

5. In the **Select an existing database** list, select the database created in Section F.1.1.4.

6. Leave the **Copy namespace mappings from field** blank.

7. Click **Save**. It will take HealthShare a few seconds to create the new namespace.

8. If the HealthShare instance hosts multiple RPMS namespaces, repeat these steps for all new CCDA namespaces to be created.

F.1.2 Creating New Global Mappings

1. Navigate to the **Namespaces** page as follows:

   a. Access HealthShare's Management Portal and sign on as the administrator.

   b. Select **System Administration** from the bottom of the left column, then select **Configuration**, then select **System Configuration**, then select **Namespaces**.

   c. Click **Go** to go to the **Namespaces** page.

   The **Namespaces** page displays.

2. In the leftmost column, find the RPMS namespace associated with the new CCDA namespace created in Section F.1.1.5.

> **Note:** This is the pre-existing RPMS namespace, not the newly created CCDA namespace.

3. Select Global Mappings for the identified namespace. The Global Mappings page displays.

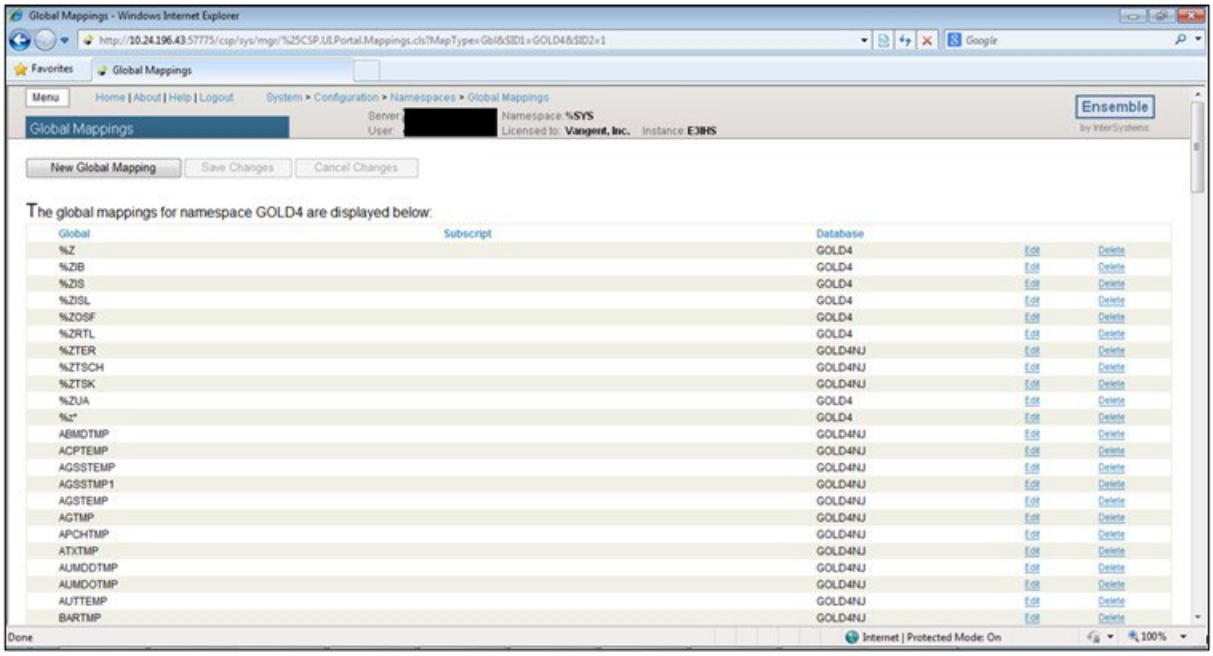

Figure F-6: Global Mappings

4. Click **New Global Mapping**, located near the top of the page. The **Global Mapping** dialog displays.

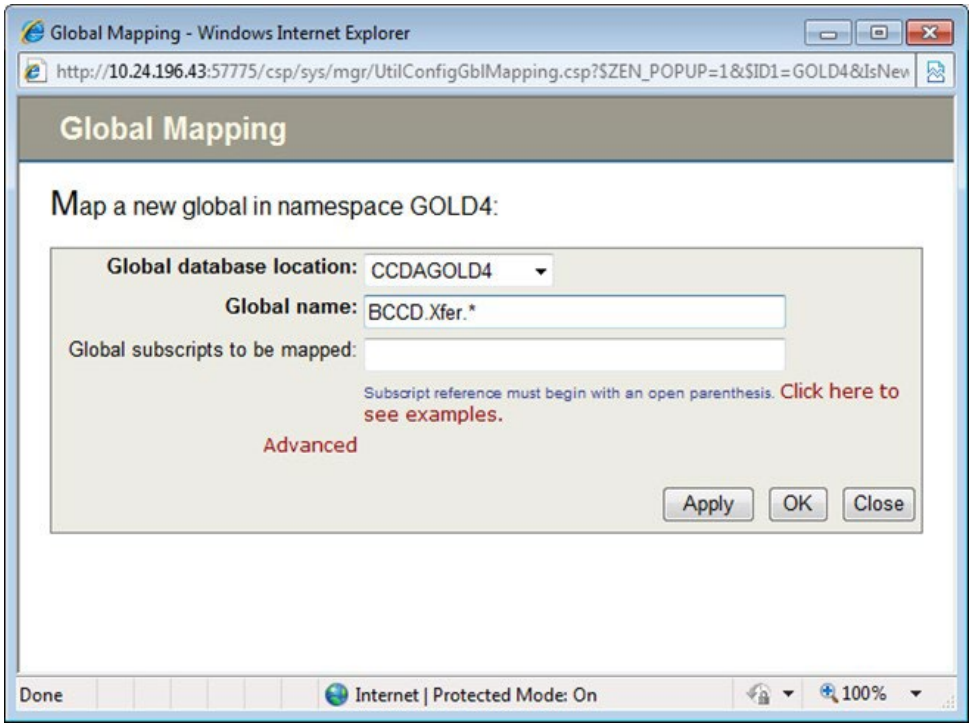

Figure F-7: Global Mapping dialog

5. In the **Global database location** list, select the name of the HealthShare database created in Section F.1.1.4.
6. In the **Global name** field type **BCCD.Xfer.***; make sure to include the asterisk.
7. Leave the **Global subscripts to be mapped** field blank.
8. Click **Apply**.
9. Click **Close**. The **Global Mappings** page displays.
10. Select **Save Changes** at the top of the page.
11. Click **Namespaces** in the blue line which reads **[Home] > [Configuration] > [Namespaces] > [Global Mappings]** at the top of the page. This will return to the **Namespaces** page.
12. In the leftmost column, find the name of the CCDA namespace created in Section F.1.1.5. This is the name of the newly created CCDA namespace rather than the name of the RPMS namespace selected in Step 2.
13. Select **Global Mappings** for the identified namespace. The **Global Mappings** page displays.
14. Click **New Global Mapping** at the top of the page. The **Global Mapping** dialog displays.

15. In the **Global database location** field, select the name of the RPMS database associated with this CCDA namespace.
16. In the **Global name field** type **BCCDS**.
17. Leave the **Global subscripts to be mapped** field blank.
18. Click **Apply**.
19. Click **Close**. The **Global Mappings** page displays.
20. Click **New Global Mapping**, located near the top of the page. The **Global Mapping** dialog displays.
21. In the **Global database location** list, select the name of the HealthShare database created in Section F.1.1.4.
22. In the **Global name** field type **BCCD.Audit.***; make sure to include the asterisk.
23. Leave the **Global subscripts to be mapped** field blank.
24. Click **Apply**.
25. Click **Close**. The **Global Mappings** page displays.
26. Click **New Global Mapping**, located near the top of the page. The **Global Mapping** dialog displays.
27. In the **Global database location** list, select the name of the RPMS database associated with this CCDA namespace.
28. In the **Global name** field type **VA**.
29. In the **Global subscripts to be mapped** field type **(200)**.
30. Click **Apply**.
31. Click **Close**. The **Global Mappings** page displays.
32. Click **Save Changes**.
33. Repeat steps 2-32 for each CCDA namespace added to the HealthShare instance.

F.1.3 Creating New Package Mappings

1. Navigate to the **Namespaces** page as follows:
    a. Access HealthShare's Management Portal and sign on as the administrator.
    b. Select **System Administration** from the bottom of the left column, then select **Configuration**, then select **System Configuration**, then select **Namespaces**.

c. Click **Go** to go to the **Namespaces** page.

The **Namespaces** page displays.

2. In the leftmost column, find the RPMS namespace associated with the new CCDA namespace created in Section F.1.1.5. This should be the pre-existing RPMS namespace, not the newly created CCDA namespace.

3. Select **Package Mappings** for the identified namespace. The **Package Mappings** page displays.

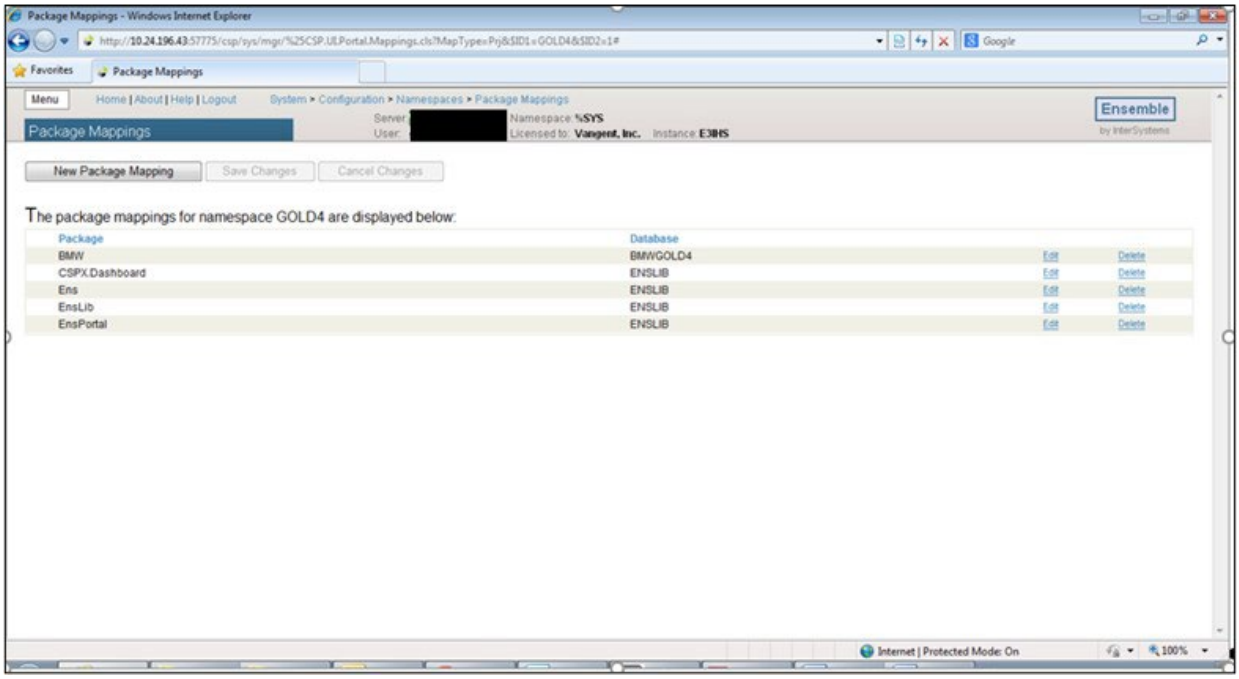

Figure F-8: Package Mapping

4. Click **New Package Mapping** at the top of the Package Mappings window. The **Package Mapping** dialog displays.

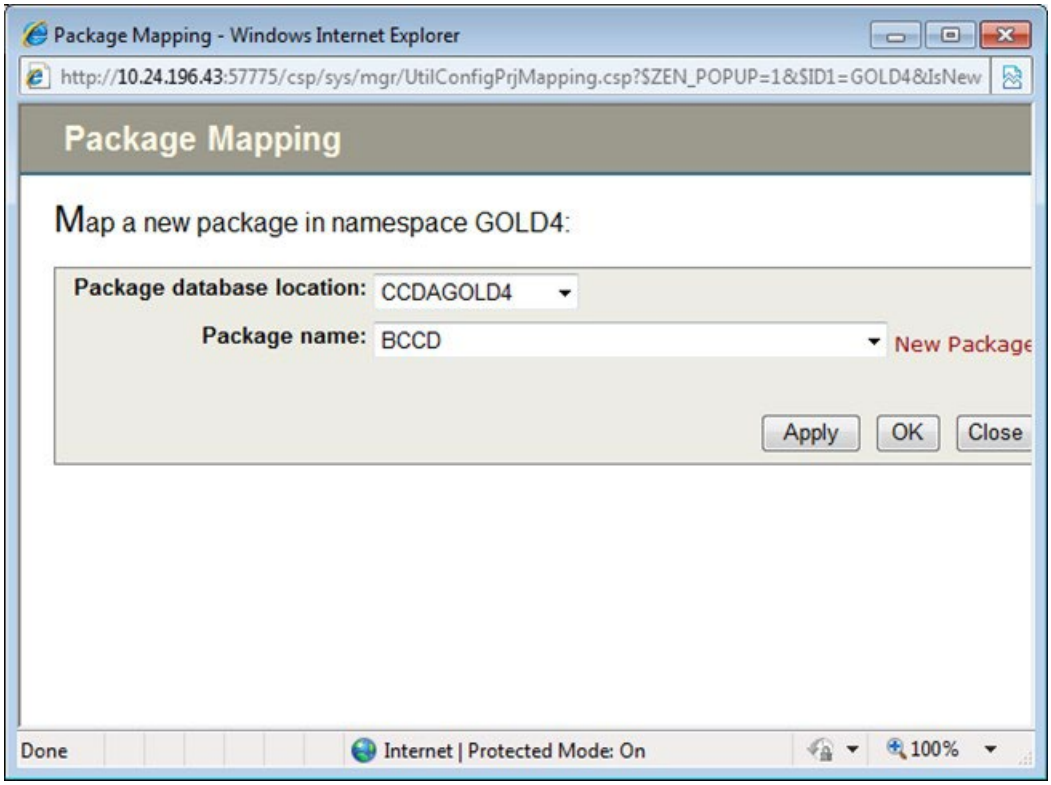

Figure F-9: Package Mapping dialog

5. In the **Package database location** list, select the newly created CCDA namespace associated with this RPMS namespace.

6. In the Package name list, do not select from the list; rather, click the **New Package** link to the right of the list. A new field called **New package name** will display.

Note:	Because **New Package** is not underlined, it may not look like a hyperlink.

7. In the **New package name** field, type **BCCD**.

8. Click **Apply**.

9. Click **Close**. The **Package Mappings** page displays.

10. Click **Save Changes** at the top of the page.

11. Find the row containing the package mapping for the **BMW** package. Make a note of the value in the **Database** column for this row. This value will need to be entered in Step 15 below.

12. Select **Namespaces** in the thin blue line which reads **Home > Configuration > Namespaces > Package Mappings** at the top of the page. The **Namespaces** page displays. Find the name of the newly created CCDA namespace in the leftmost column.

13. Select **Package Mappings** for the identified namespace. The **Package Mappings** dialog displays.

14. Click **New Package Mapping** at the top of the page. The **Package Mapping** dialog displays.

15. In the **Package database** location list, select the BMW database noted in Step 11.

16. In the **Package name** list, do not select from the list; rather, click the **New Package** link to the right of the list. A new field called **New package name** will display.

> **Note:** Because **New Package** is not underlined or highlighted, it may not look like a hyperlink.

17. In the **New package name** field, type **BMW**.

18. Click **Apply**.

19. Click **Close**. The **Package Mappings** page displays.

20. Click **Save Changes** at the top of the page.

21. Repeat Steps 5-20 for each CCDA namespace added to the HealthShare instance.

At this point the new CCDA database(s) and namespace(s) are fully configured. Use the site's backup configuration process to add the newly added database(s) to the list of backed up databases.

F.2 Managing CCDA Ensemble Production

As described in Section 1.4, CCDA documents are generated using the CCDA Ensemble production in response to requests via the web service, from the Data Export API, by the nightly HIE task, or from iCare.

The CCDA Ensemble production is automatically started whenever HealthShare is started or when CCDA is started via the **MANG** option on the RPMS CCDA menu. During normal business operations, the CCDA Ensemble production will remain running and will not require maintenance. If it is ever necessary to stop or start the CCDA Ensemble production manually, follow the instructions in Sections F.2.1 and F.2.2.

F.2.1 Stopping the CCDA Ensemble Production

1. Sign on to HealthShare's Management Portal as an administrator. At the top center, the main **Management Portal** page displays the server name, the current user, the current namespace, license and instance information, and a **Switch** link

2. Click the **Switch** link. The **Namespace Chooser** dialog displays.

3. Select the appropriate CCDA namespace. The namespace consists of **CCDA** followed by the name of the RPMS namespace. For example, if the RPMS namespace is named **TEST5**, then the associated CCDA namespace will be named **CCDATEST5**.

4. Click **OK** to select the namespace. The namespace displayed on the **Management Portal** page is updated to reflect the selection.

5. Select **Ensemble** in the left column, then select **Configure**, then select **Production**.

6. When the **View, Edit, Start**, or **Stop a Production** option displays, click **Go** to display the **Production Configuration** page.

7. Above the Services column on the left, the words **Production Running** will be displayed. If the words **Production Stopped** are displayed, then the production is already stopped. Otherwise, click **Stop**. The **Stop Production** dialog displays.

   It might take the production a few seconds to stop. When it stops, the message **Production 'BCCD.Prod.Production' stopped** displays, followed by the message **Done**. There might be additional messages on this screen if it takes Ensemble more than a few seconds to stop all associated processes.

8. Click **OK** to return to the **Production Configuration** screen.

F.2.2 Starting the CCDA Ensemble Production

1. Sign on to HealthShare's Management Portal as an administrator. At the top center, the main **Management Portal** page displays the server name, the current user, the current namespace, license and instance information, and a **Switch** link

2. Click the **Switch** link. The **Namespace Chooser** dialog displays.

3. Select the appropriate CCDA namespace. The namespace consists of **CCDA** followed by the name of the RPMS namespace. For example, if the RPMS namespace is named **TEST5**, then the associated CCDA namespace will be named **CCDATEST5**.

4. Click **OK** to select the namespace. The namespace displayed on the **Management Portal** page is updated to reflect the selection.

5. Select **Ensemble** in the left column, then select **Configure**, then select **Production**.

6. When the **View, Edit, Start, or Stop a Production** option displays, click **Go** to display the **Production Configuration** page.

7. Above the **Services** column on the left, the words **Production Stopped** will be displayed. If the words **Production Running** are displayed, then the production is already running; skip the rest of this section. Otherwise, click **Start**. The **Start Production** dialog displays.

   A dialog will appear and ask **Do you wish to start this Production?**. Click **OK**. It might take the production a few seconds to start. When it starts, the message **Production 'BCCD.Prod.Production' started** displays, followed by the message Done. There might be additional messages on this screen.

8. Click **OK** to return to the **Production Configuration** screen.

F.3 Encrypting the CCDA Database

The installation process for the CCDA application automatically creates a new HealthShare database for the CCDA Ensemble production. The installation process does not automatically encrypt the new database. Sites that have encryption enabled in HealthShare need to encrypt the new database. This section provides instructions for preparing the CCDA Ensemble production and HealthShare database before encrypting and for returning the database and production back to a running state afterward.

F.3.1 Stop CCDA Transmissions

1. Navigate to the CCDA menu in RPMS. If this menu cannot be accessed from the "OPTION NAME" prompt in RPMS, it will need to added to the user settings.

```
Select OPTION NAME: BCCD MENU       CCDA Menu


   EDIT   Edit CCDA Site Parameters
   CLIN   Edit CCDA Clinical Site Parameters
   ONE    Generate CCD for a single patient
   ALL    Generate CCD documents for all patients in RPMS
   DAT    Generate CCD documents for a specified date range
   MANG   Manage CCDA transmissions
   ERR    View and Purge Error Documents
   STAT   Display the CCDA application status report

Select CCDA Menu Option:
```

Figure F-10: Accessing the CCDA Menu

2. From the CCDA menu, select the **MANG** option.

3. The option will first check whether CCDA is running. If it is not running, do not make any changes. If it is running, then answer **Y** at the "Stop CCDA?" prompt.

```
Select CCDA Menu Option: MANG  Manage CCDA transmissions
CCDA status:
No configuration problems found

CCDA processing task is running

Stop CCDA? No// Y  (Yes)
Attempting to stop CCDA….CCDA stopped
```

Figure F-11: Stop CCDA Transmissions via the MANG option

4. The system will display a message indicating whether CCDA Messaging was stopped. If CCDA could not be stopped, contact the Help Desk for assistance.

F.3.2 Unschedule the Nightly Upload Task

1. Navigate to the CCDA menu in RPMS.
2. From the CCDA menu, select the **EDIT** option.
3. At the "TIME TO RUN NIGHTLY TASK" prompt, if there is a time entered for this field, make a note of the time as it will be needed in section F.3.7. Then type @ to delete the time. At the "SURE YOU WANT TO DELETE?" prompt, answer **Y** to confirm deletion.
4. Press **Enter** at the remaining prompts.

```
Select CCDA Menu Option: EDIT  Edit CCDA Site Parameters
Now editing CCDA parameters:

TIME TO RUN NIGHTLY TASK: 23:00// @
   SURE YOU WANT TO DELETE? y  (Yes)

Now editing CCD (Summarization of Episode Note)-specific parameters:

DAYS KEEP TRANSMISSION ENTRIES: 30//
REPOSITORY LOCATION: http://www.nowhere.com  Replace
ENABLED: YES//
```

Figure F-12: Unscheduling the CCDA Nightly Task via the EDIT option

F.3.3 Stop the CCDA Production

1. Sign on to HealthShare's Management Portal as an administrator.
2. At the top center, the main **Management Portal** page displays the server name, the current user, the current namespace, license and instance information, and a **Switch** link. Click the **Switch** link.

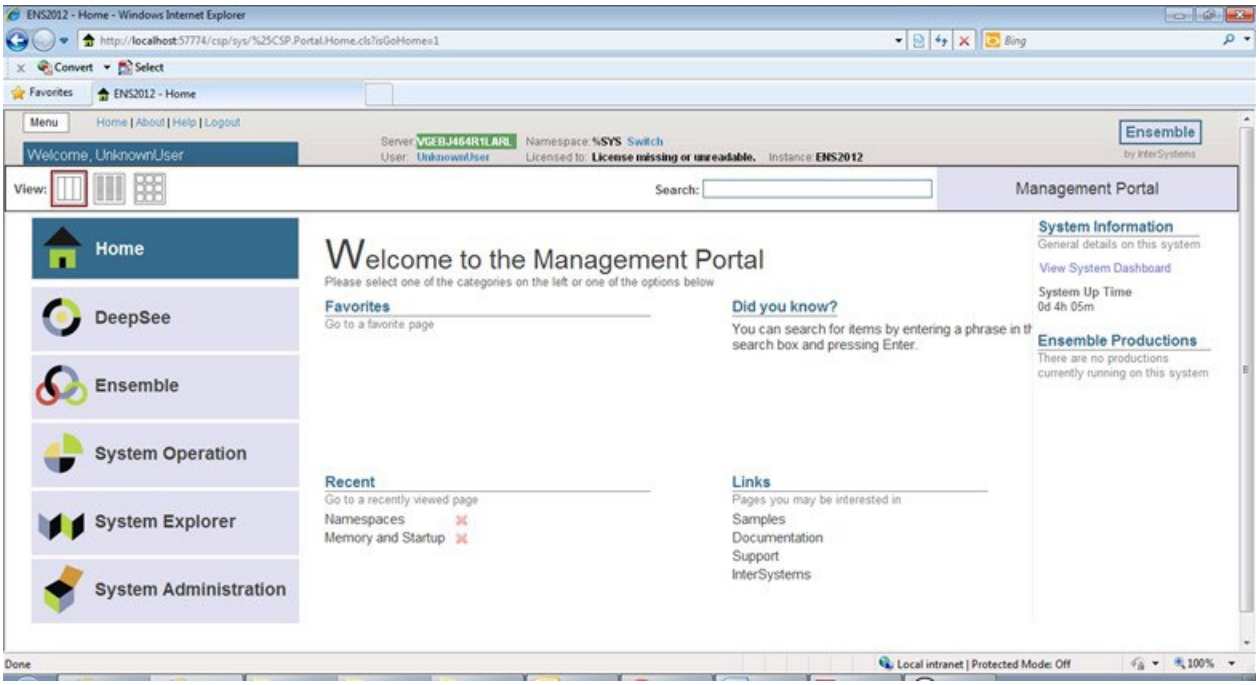

Figure F-13: Management Portal

In the **Namespace Chooser** box, choose the appropriate CCDA namespace. The namespace will consist of CCDA concatenated with the name of the RPMS namespace. For example, if the RPMS namespace is called GOLD4, then the associated CCDA namespace will be called CCDAGOLD4. Click **OK** to choose the namespace. The namespace displayed on the **Management Portal** page will be updated to reflect the selection.

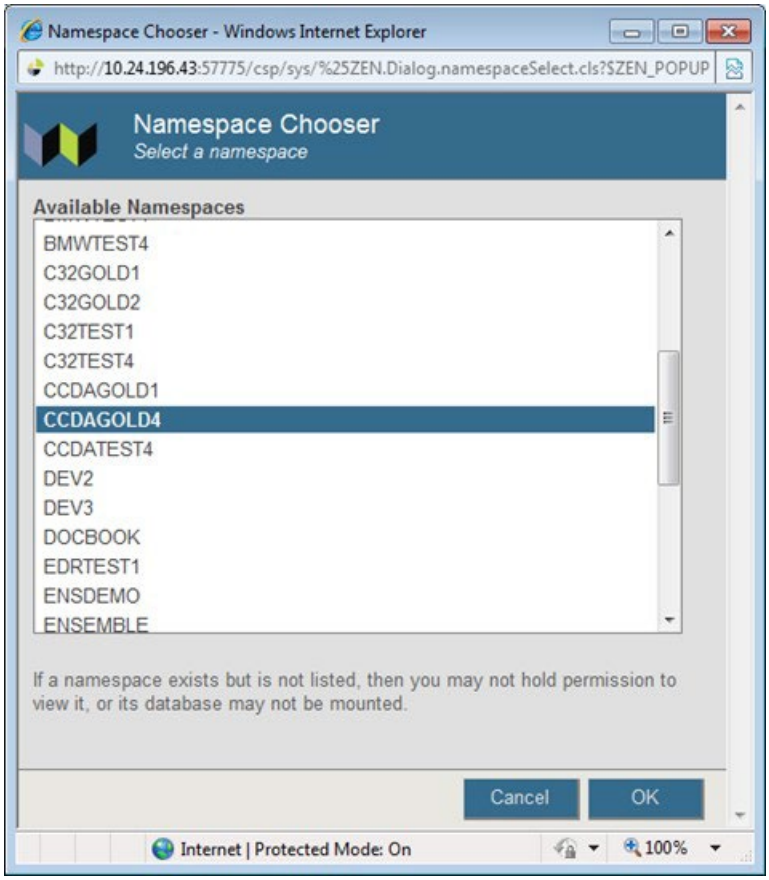

Figure F-14: Namespace Chooser

3. On the main **Management Portal** page, select **Ensemble** in the left column, then select **Configure**, then select **Production**. **When the View, Edit, Start, or Stop a Production** option displays, click Go to display the Production Configuration page.

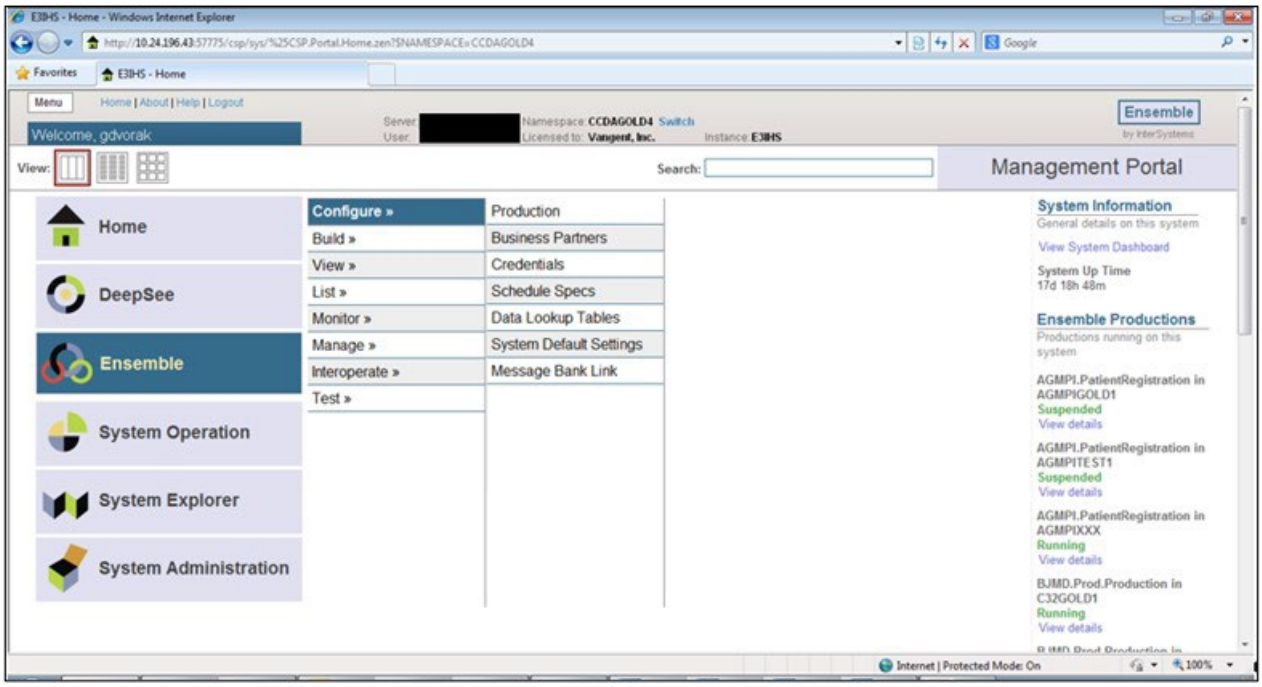

Figure F-15: Management Portal

4. Above the **Services** column on the left, the words **Production Running** will be displayed. If the words **Production Stopped** are displayed, the production is already stopped, skip to section F.3.4.

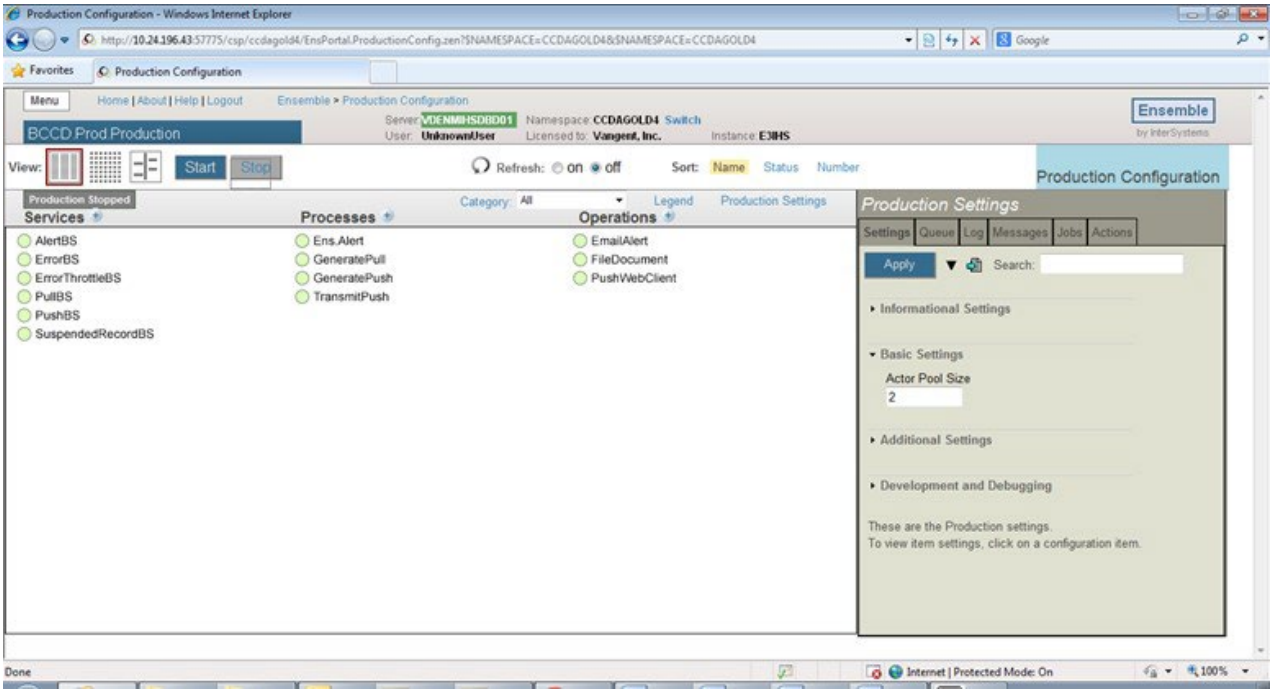

Figure F-16: Ensemble production in a stopped state

Click the **Stop** button. It might take the production a few seconds to stop. When it stops, the text in Figure F-17will display on the screen. There might be additional messages on this screen if it takes Ensemble more than a few seconds to stop all associated processes.

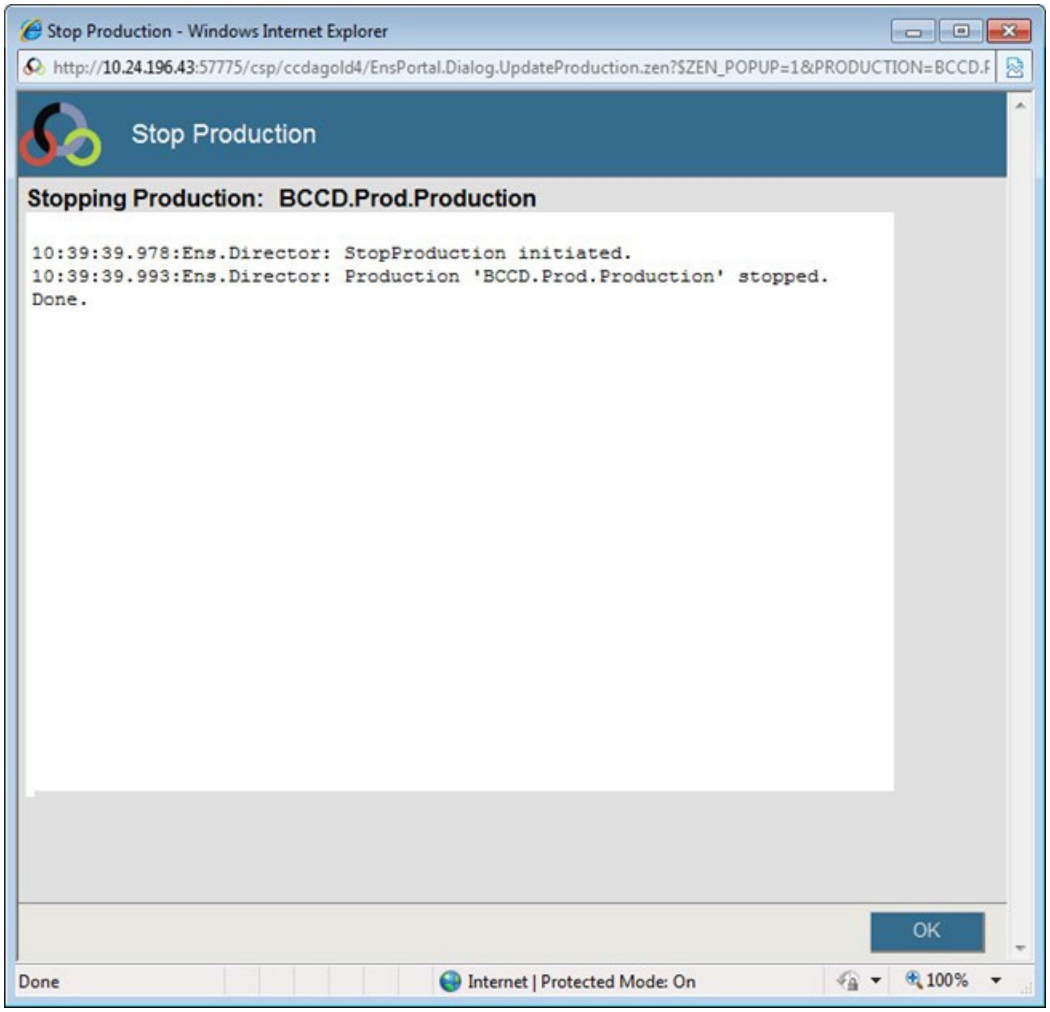

Figure F-17: Stopping the Ensemble production

5. Click **OK** to return to the **Production Configuration** screen.

F.3.4 Dismount the CCDA Database

1. Sign on to HealthShare's Management Portal.
2. Click on **System Operation** in the left column. Then click **Databases**.

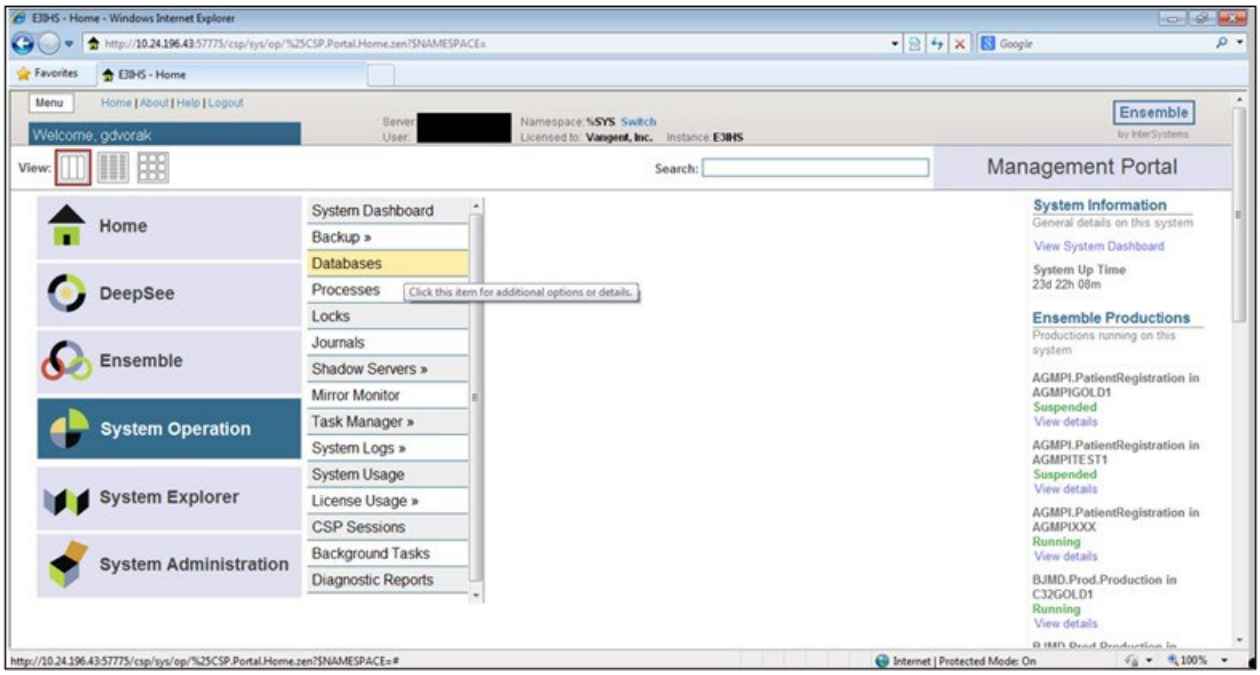

Figure F-18: HealthShare's Management Portal, Databases option

3. On the **Databases** screen, locate the CCDA database and click **Dismount** for that database.

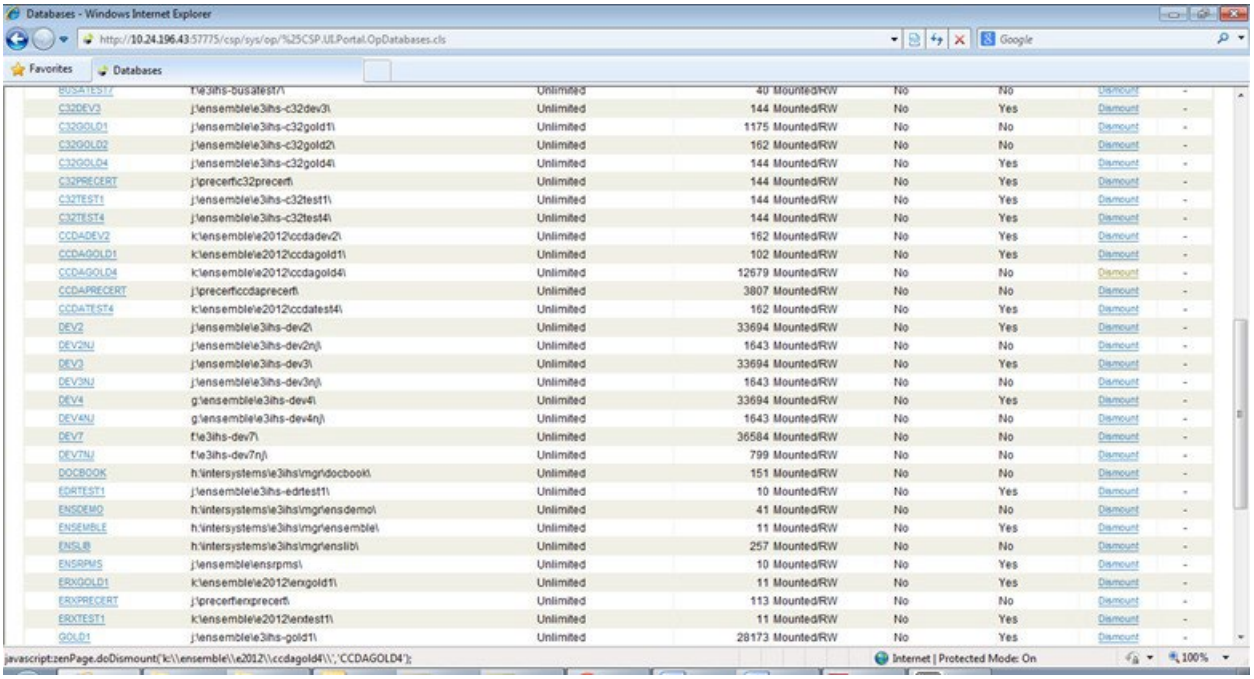

Figure F-19: Databases

4. At the "Are you sure you want to dismount database CCDAXXXX?" prompt, click **OK**.

F.3.5 Encrypt the Database

Encrypt the database following the instructions provided in the *How to Encrypt an RPMS Database* document. To obtain a copy of the document, contact OIT.

F.3.6 Re-mount the Database

1. Sign on to HealthShare's Management Portal.
2. Click on **System Operation** in the left column. Then click **Databases**.

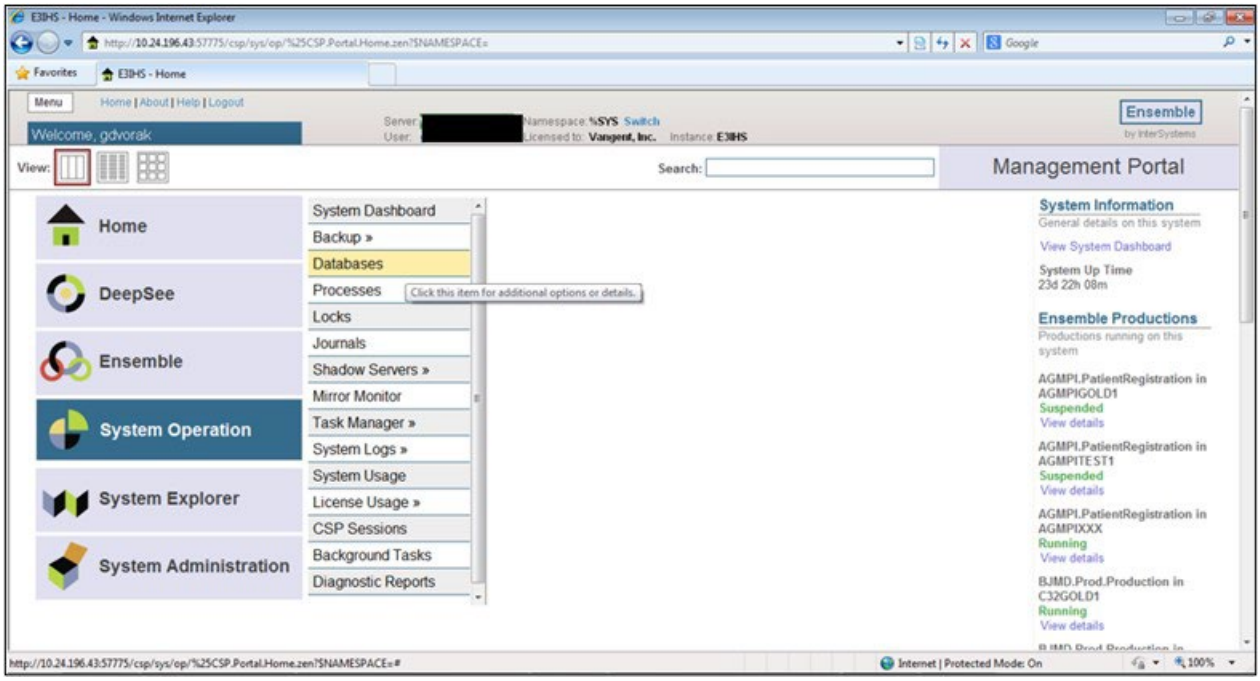

Figure F-20: HealthShare's Management Portal, Databases option

3. On the **Databases** screen, locate the CCDA database and click **Mount** for that database.

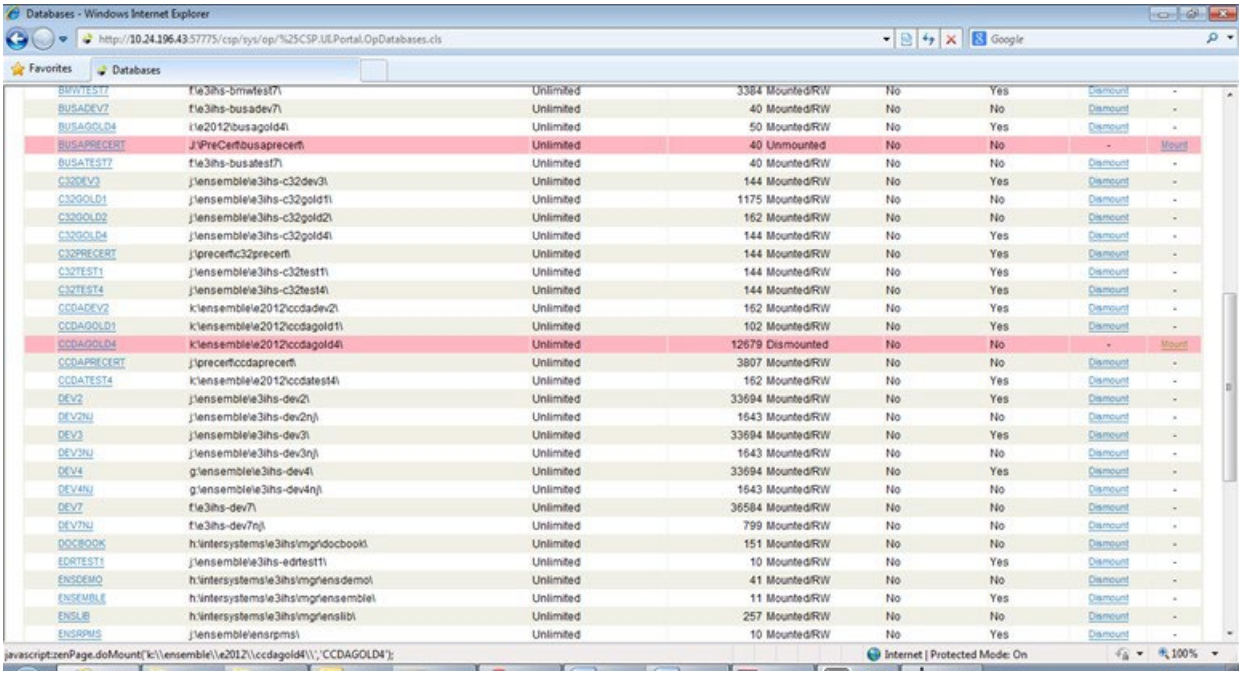

Figure F-21: Databases

4. On the **Mount Databases** dialog, verify that the Read Only check box is unchecked, then click **OK**.

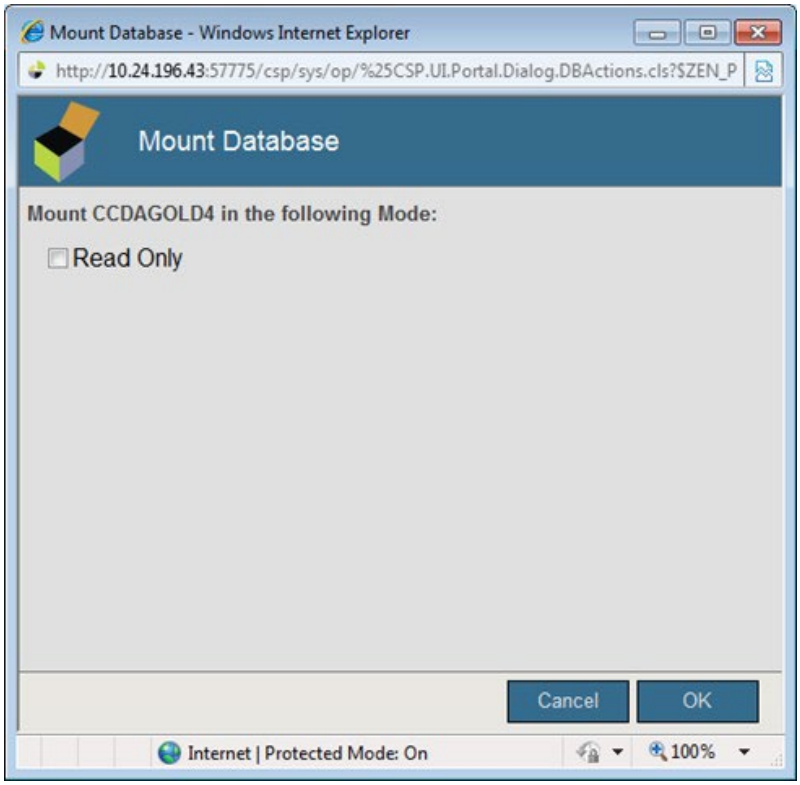

Figure F-22: Mount Databases

F.3.7 Reschedule the Nightly CCDA Task

If the nightly CCDA task was unscheduled in Section F.3.2, then reschedule the task. If the task was not unscheduled, then skip this section and proceed to Section F.3.8.

1. Navigate to the CCDA menu in RPMS.
2. From the CCDA menu, select the **EDIT** option.
3. At the "TIME TO RUN NIGHTLY TASK" prompt, enter the time that was deleted in Section F.3.2. In the example below, "23:00" was entered.
4. Press **Enter** at the remaining prompts.

```
Select CCDA Menu Option: EDIT  Edit CCDA Site Parameters
Now editing CCDA parameters:

TIME TO RUN NIGHTLY TASK: 23:00

Now editing CCD (Summarization of Episode Note)-specific parameters:

DAYS KEEP TRANSMISSION ENTRIES: 30//
REPOSITORY LOCATION: http://www.nowhere.com  Replace
ENABLED: YES//
```

Figure F-23: Re-scheduling the CCDA Nightly Task via the EDIT option

F.3.8 Restart CCDA

The steps in this section will start both the CCDA transmissions task and the CCDA Ensemble production.

1. Navigate to the CCDA menu in RPMS.

```
Select OPTION NAME: BCCD MENU       CCDA Menu


   EDIT   Edit CCDA Site Parameters
   CLIN   Edit CCDA Clinical Site Parameters
   ONE    Generate CCD for a single patient
   ALL    Generate CCD documents for all patients in RPMS
   DAT    Generate CCD documents for a specified date range
   MANG   Manage CCDA transmissions
   ERR    View and Purge Error Documents
   STAT   Display the CCDA application status report

Select CCDA Menu Option:
```

Figure F-24: Accessing the CCDA menu

2. From the CCDA menu, select the **MANG** option.
3. The option will first check whether CCDA is running. If it is running, do not make any changes. If it is not running, then answer **Y** at the "Start CCDA?" prompt.

```
Select CCDA Menu Option: MANG  Manage CCDA transmissions
CCDA status:
No configuration problems found

CCDA processing task is not running

Start CCDA? No// Y  (Yes)
Attempting to start CCDA  (MAY 01, 2014@12:00:00)..CCDA started
```

Figure F-25: Start CCDA Transmissions via the MANG option

4. The system will display a message indicating whether CCDA Messaging was started. If CCDA could not be started, contact the IT Service Desk for assistance.

Appendix G Restoring CCDA from Backup

This appendix contains instructions for restoring the CCDA environment from a backup.

G.1 Create CCDA Database, Namespace, and Mappings

The specific steps required to create the CCDA database, namespace, and mappings depend on the nature of the restoration effort. If it is necessary to re-install the CCDA KIDS build in the RPMS environment, then the installation process will automatically create the CCDA database, namespace, and mappings.

However, if the CCDA KIDS build is not to be re-installed, then the database, namespace, and mappings must be created manually. Follow the steps in Section F.1 to set up the CCDA database, namespace, and mappings.

G.2 Restore CACHE.DAT File

Regardless of the method used to create the CCDA database, namespace, and mappings in Section G.1, the new database will be created with a new CACHE.DAT file in the database directory. In order to restore the CCDA database, it is necessary to restore the CCDA database's CACHE.DAT file from the backup.

G.2.1 Dismount CCDA Database

1. Sign on to HealthShare's Management Portal.
2. Click on **System Operation** in the left column, then click **Databases**.

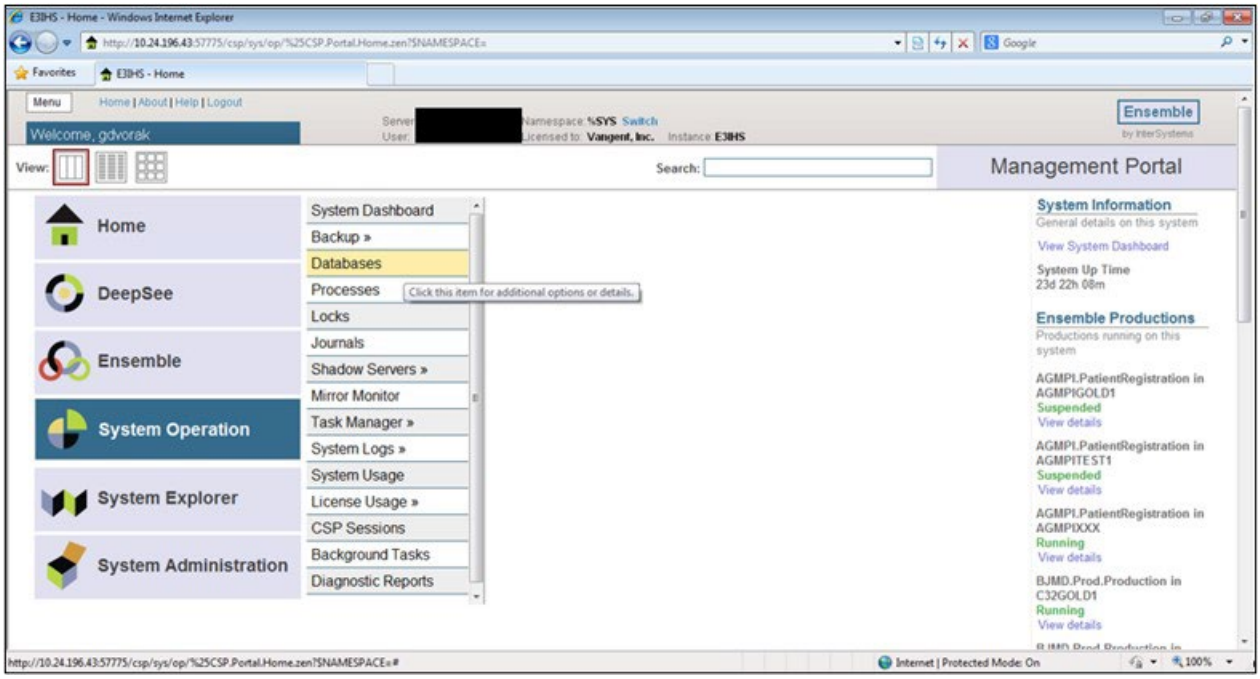

Figure G-1: HealthShare's Management Portal, Databases option

3. On the **Databases** screen, locate the CCDA database and make a note of the value in the **Directory** column. This value will be needed in Section G.2.2.

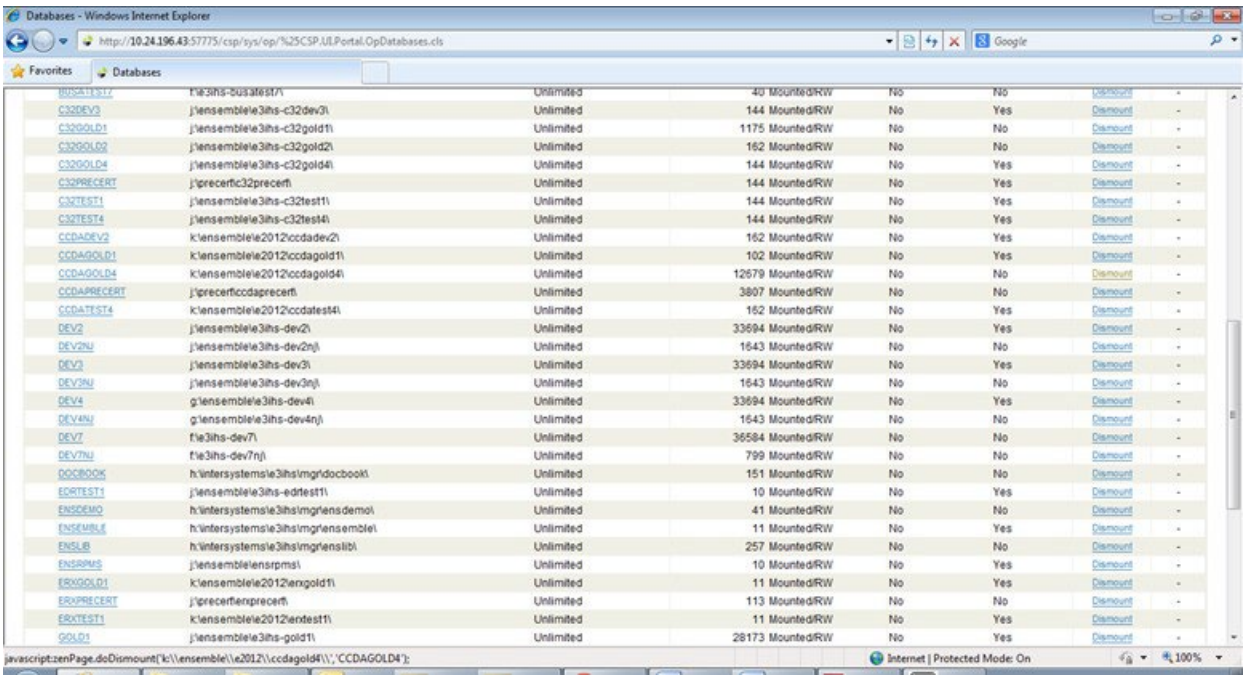

Figure G-2: Databases

4. Click **Dismount** in the row for the CCDA database. At the "Are you sure you want to dismount database CCDAXXX?" prompt, click **OK**.

G.2.2 Restore the CACHE.DAT File

In the operating system (Windows or Unix), restore the CACHE.DAT file for the CCDA database from the backup into the CCDA database directory. The CCDA database directory location can be found on the Databases screen in HealthShare's Management Portal (Figure G-2) and was noted in step 3 of Section G.2.1. For assistance restoring the file from backup, please contact the OIT Help Desk.

G.2.3 Remount CCDA Database

1. Sign on to HealthShare's Management Portal.
2. Click on **System Operation** in the left column, then click **Databases**.

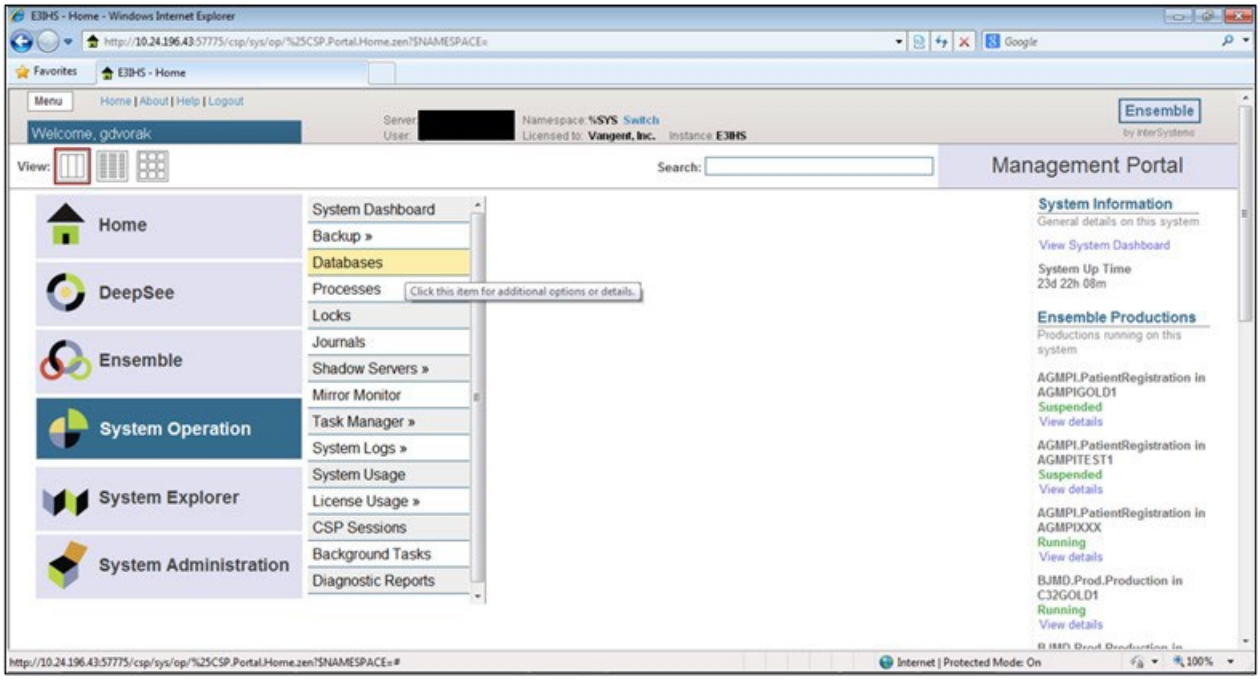

Figure G-3: HealthShare's Management Portal, Databases option

3. On the **Databases** screen, locate the CCDA database and click **Mount** for that database.

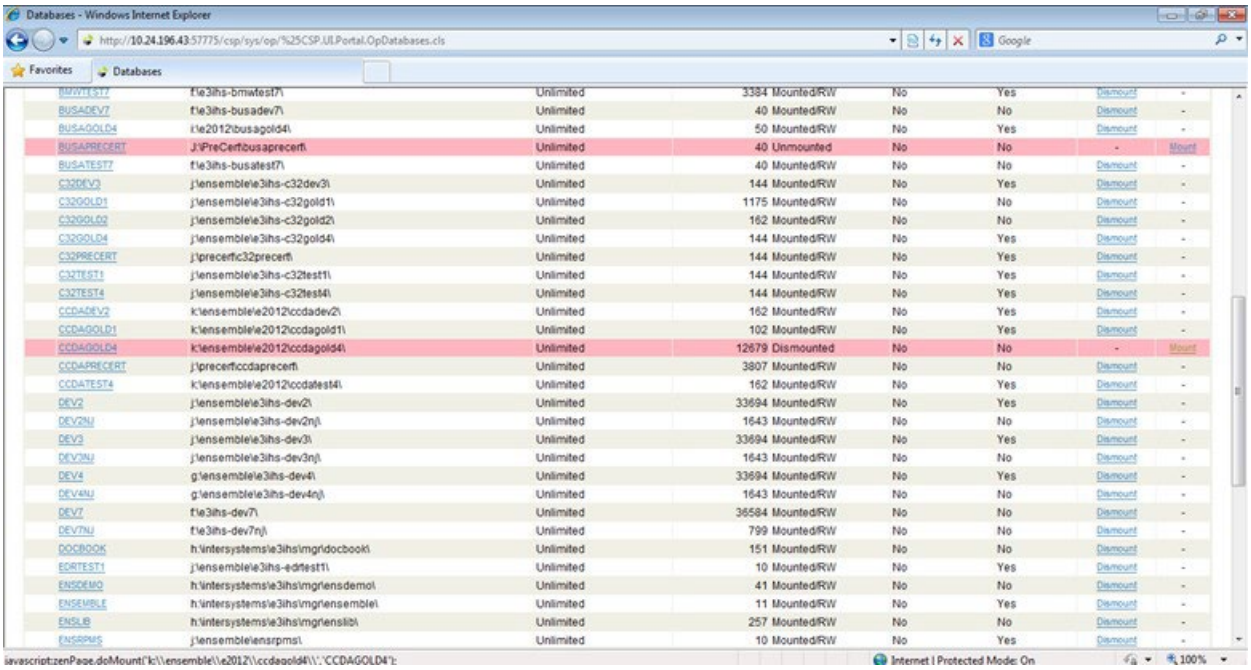

Figure G-4: Databases

4. On the **Mount Databases** dialog, verify that the **Read Only** check box is unchecked, then click **OK**.

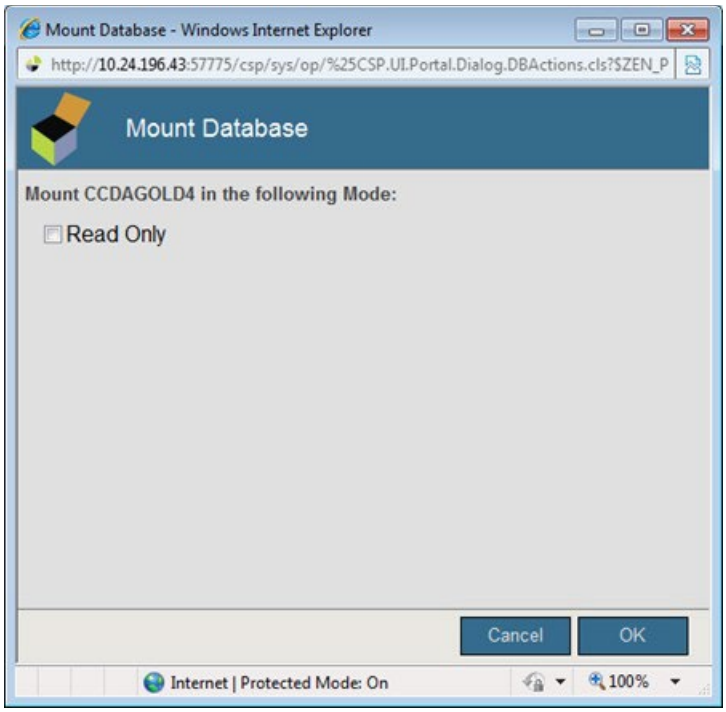

Figure G-5: Mount Databases

G.3 Verify Settings

The production settings and purge task schedule should be restored with the environment. However, it is important to double check these settings to ensure they were restored successfully, as they are necessary for CCDA to work properly.

G.3.1 Verify Custom Production Settings

1. Navigate to the **Production Configuration** screen in HealthShare's Management Portal.

2. For each item that had custom production settings, for example EmailAlert, click that item in the middle of the screen and verify that the setting has the correct value. If any settings need to be changed, enter the correct settings in the box on the right side of the screen. After changing the value for each item, click **Apply** at the top left of the settings box to save the settings.

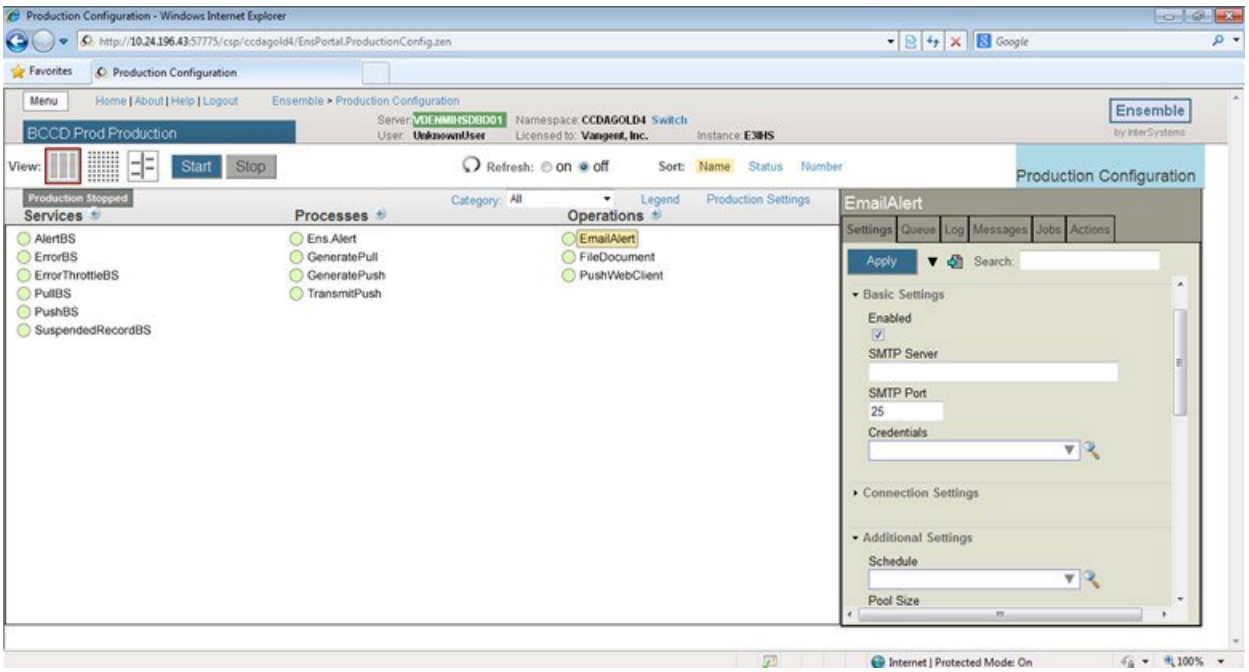

Figure G-6: Applying production settings

G.3.2 Verify Purge Task Schedule

1. Navigate to the main **Management Portal** page. From the **Production Configuration** page, navigate back to the main **Management Portal** page by clicking the **Home** link near the top left of the page.

2. Check whether the purge task is already scheduled by clicking **System Operation**, then clicking **Task Manager >>**, then click **Task Schedule**, then click **Go**. Look for a task named **Auto-Purge CCDA in CCDAXXX**, where "CCDAXXX" is the name of the CCDA namespace. If there is a task by that name, then the purge task is already scheduled, so skip the rest of this section.

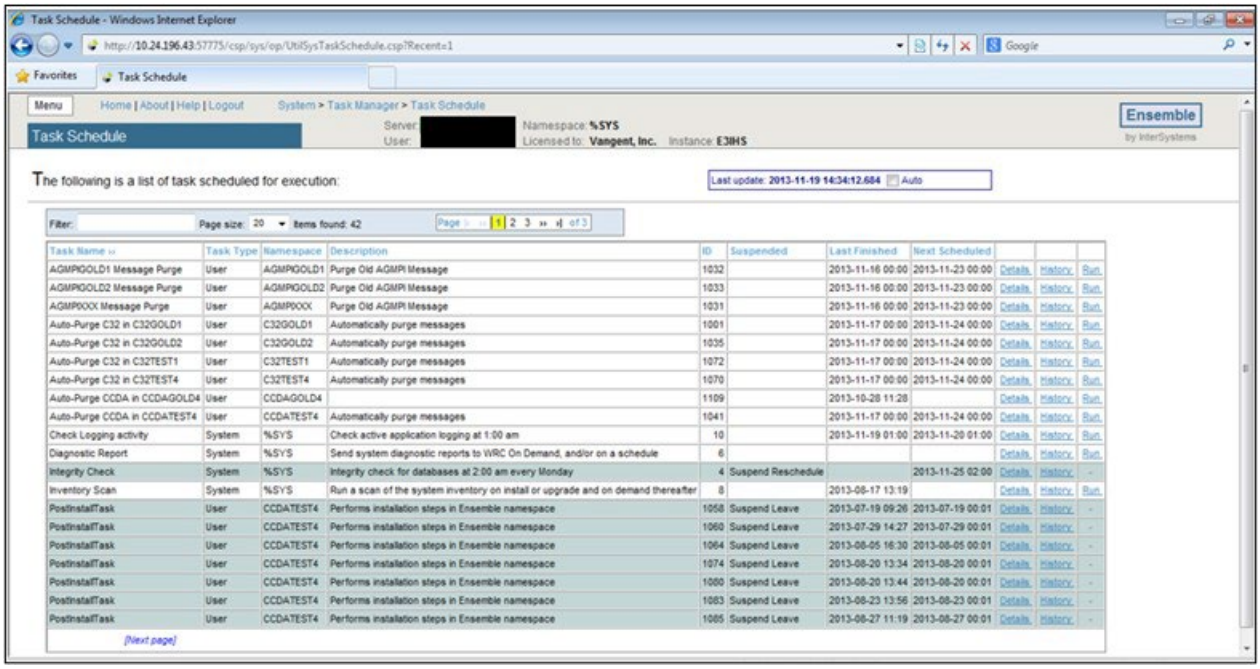

Figure G-7: View Task Schedule screen with a CCDA purge task already scheduled

3. Navigate back to the main **Management Portal** by clicking on the **Task Manager** link near the top center of the page.

4. Navigate to the **Task Scheduler Wizard** by clicking **New Task**.

5. In the Task Scheduler Wizard, enter the following values, substituting the name of the CCDA namespace for "CCDAXXX":

   - Task name: **Auto-Purge Task in CCDAXXX**
   - Description: **Automatically purge messages**
   - Namespace to run task in: **CCDAXXX**
   - Task type: **BCCD.Tasks.Purge**
   - BodiesToo: **checked**
   - KeepIntegrity: **checked**
   - NumberOfDaysToKeep: **7**
   - TypesToPurge: **Messages**

- Task priority: **Priority Normal**
- Run task as this user: **select a user with the %All role in HealthShare**
- Open output file when task is running: **No**
- Output file: **(blank)**
- Reschedule task after system restart: **Yes**

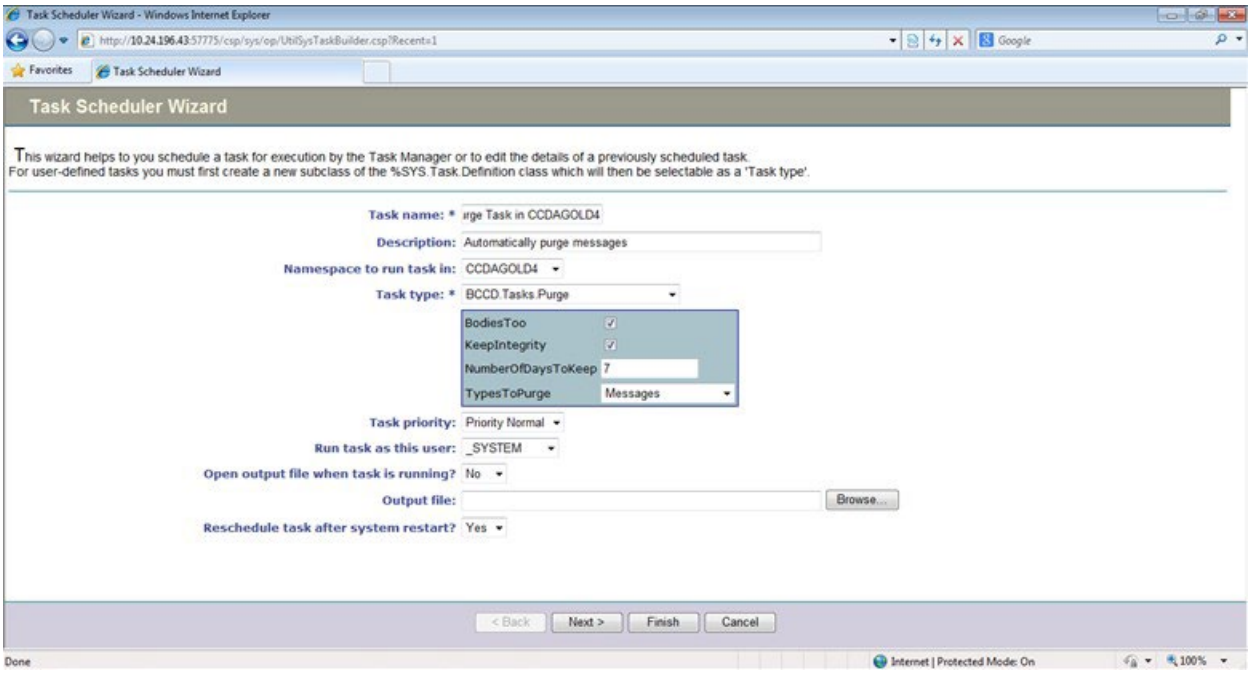

Figure G-8: First Screen on the Task Scheduler Wizard

6. Click **Next** to navigate to the next screen.
7. On the **Schedule** screen, enter the following values:
   - How often do you want the Task Manager to execute this task: **Weekly**
   - Every __ weeks: **1**
   - Monday-Saturday: **unchecked**
   - Sunday: **checked**
   - Start Date: **today's date**
   - End Date: **(blank)**
   - Run once at this time: **checked, 00:00:00**
   - Remaining fields: do not change

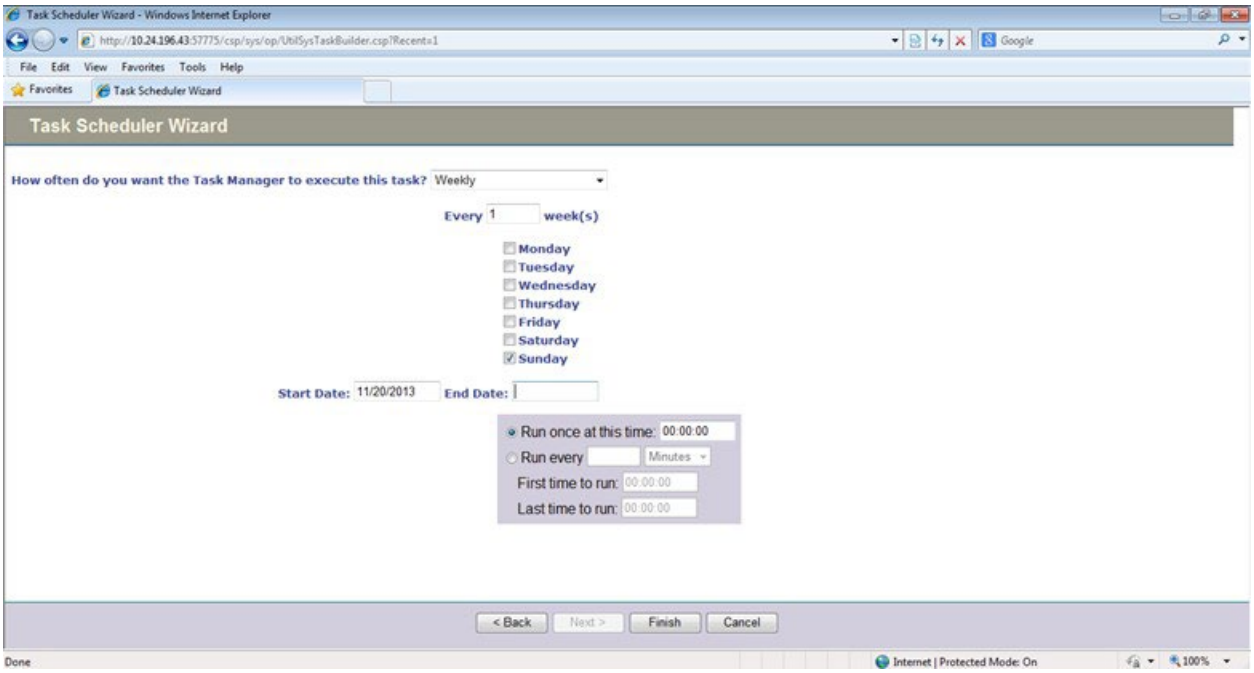

Figure G-9: Second screen of the Task Scheduler Wizard

Click **Finish** to schedule the task. The **View Task Schedule** screen will display with the CCDA purge task added to the list of tasks.

G.4 Start CCDA

At this point, the CCDA environment has been restored. Once any non-CCDA restoration tasks have been completed and TaskMan is running, CCDA processing may be started by following the steps in this section.

1. Navigate to the CCDA menu in RPMS.

```
Select OPTION NAME: BCCD MENU       CCDA Menu


   EDIT   CCDA Site Parameters
   CLIN   Edit CCDA Clinical Site Parameters
   ONE    Generate CCD for a single patient
   ALL    Generate CCD documents for all patients in RPMS
   DAT    Generate CCD documents for a specified date range
   MANG   Manage CCDA transmissions
   ERR    View and Purge Error Documents
   STAT   Display the CCDA application status report

Select CCDA Menu Option:
```

Figure G-10: Accessing the CCDA Menu

2. From the CCDA menu, select the **MANG** option.

3. The option will first check whether CCDA is running. If it is running, do not make any changes. If it is not running, then answer **Y** at the "Start CCDA?" prompt.

```
Select CCDA Menu Option: MANG  Manage CCDA transmissions
CCDA status:
No configuration problems found

CCDA processing task is not running

Start CCDA? No// Y  (Yes)
Attempting to start CCDA  (MAY 01, 2014@12:00:00)..CCDA started
```

Figure G-11: Start CCDA Transmission via the MANG option

4. The system will display a message indicating whether CCDA Messaging was started. If CCDA could not be started, contact the IT Service Desk for assistance.

Glossary

API

Application Programming Interface: an interface provided by a software application to allow other applications to interact with it.

BCCD

RPMS namespace for CCDA files, routines, and classes.

HTTP

Hypertext Transfer Protocol; a widely used communication protocol on the World Wide Web.

SOAP

Simple Object Access Protocol: the communication protocol and message format used in communicating with web services.

Taxonomy

In RPMS, a grouping of functionally related data elements, such as ICD codes. For CCDA, taxonomies are used to list procedures, test results and other data elements with non-standard data extraction criteria.

Web client

An application that consumes (accesses) a web service.

Web service

An API that allows communication with an application via SOAP messages over HTTP.

WSDL

Web Service Description Language: a file that describes a web service's API.

XML

Extensible Markup Language; a set of rules for encoding data in a machine-readable form.

Acronym List

Acronym	Term Meaning
API	Application Programming Interface
CCDA	Consolidated Clinical Document Architecture
CHIT	Certified Health Information Technology
DSTU	Draft Standard for Trial Use
EHR	Electronic Health Record
FM2C	FileMan-to-Class utility; prior to FM2C version 1.0, the abbreviation stood for FileMan-to-Caché mapper
GUI	Graphical User Interface
HIE	Health Information Exchange
HL7	Health Level Seven
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
ICD	International Classification of Diseases
IHS	Indian Health Service
KIDS	Kernel Installation and Distribution System
PHR	Personal Health Record
RPMS	Resource and Patient Management System
SDOH	Social Determinant of Health
SOAP	Simple Object Access Protocol
SNOMED	Systematized Nomenclature of Medicine
SSL	Secure Sockets Layer
TLS	Transport Layer Security
WSDL	Web Services Description Language
XML	Extensible Markup Language

Contact Information

If you have any questions or comments regarding this distribution, please contact the IHS IT Service Desk.

Phone: (888) 830-7280 (toll free)

Web: https://www.ihs.gov/itsupport/

Email: itsupport@ihs.gov