



RESOURCE AND PATIENT MANAGEMENT SYSTEM

Consolidated Clinical Document Architecture (CCDA)

(BCCD)

Installation Guide and Release Notes

Version 2.0
September 2020

Office of Information Technology
Division of Information Technology

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Preface

The purpose of this manual is to provide installation instructions for the Consolidated Clinical Document Architecture (CCDA) v2.0 (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 the Office of the National Coordinator (ONC) 2015 Certified Health Information Technology (CHIT) requirements. 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 Release Notes

Version 2.0 contains a complete release of the BCCD package. It does not require any previous version to be installed first.

Note: The RPMS server's operating system (OS) and Ensemble must be patched before this application is installed. The Office of Information Technology (OIT) has distributed a technical bulletin with patching instructions. Failure to apply all necessary patches may result in installation failure, application errors, and/or system crashes. OIT contact information is provided near the end of this document.

The intended audiences for this document are IHS site managers and other technical staff. Technical documentation accompanies this installation document in this release. Please refer to the CCDA (BCCD) Technical Document v2.0 (bccd020t.pdf) for additional information.

The CCDA application is an RPMS-based application which generates 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) requirements. The CCD-generated documents will be referenced as "CCDA documents" through the remainder of the installation guide. The software provides facilities for generating five types of CCDA documents: Clinical Summary, Transitions of Care, Data Export summaries, HIE documents, and Case Reporting documents.

A CCDA document is an XML document summarizing information about an individual patient's health care record at a given facility. The CCDA document consists of a human-readable part, known as a narrative block, which can be displayed by any web browser, and a machine-readable part intended for automated data processing.

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.

The CCDA installation process creates new CCDA namespaces within Ensemble, one for each production RPMS namespace. CCDA data is extracted by a TaskMan job running within the RPMS namespace. The data is converted to a CCDA document in XML format and transmitted by the CCDA Ensemble production running in the CCDA namespace.

2.0 Installation Notes

Prefix: BCCD

Current Version: 2.0

2.1 Contents of Distribution

File	Description
bccd0200.k	CCDA version 2.0 KIDS installation file
bccd020i.pdf	CCDA version 2.0 Installation Manual
bccd020t.pdf	CCDA version 2.0 Technical Manual
bccd020u.pdf	CCDA version 2.0 User Manual

2.2 Required Resources

2.2.1 RPMS

The CCDA application requires HealthShare version 2017 or greater. The CCDA software does not require a specific version of the operating system (OS).

The RPMS server's OS and Ensemble must be patched before this application is installed. OIT has distributed a technical bulletin with patching instructions. Failure to apply all necessary patches may result in installation failure, application errors, and/or system crashes.

2.2.2 Required Installation Parameters

The following RPMS software is required:

Table 2-1: Required software

Module	Minimum Version
BMW classes	The BMW application generates Ensemble classes that are distributed in a CACHE.DAT file. These classes must be installed and must be version 2020.3 or higher.
C32 (BJMD)	v1.0 Patch 4 is required if C32 has previously been installed
EHR	v1.1 Patch 28
BJPC	v2.0 Patch 24
LR	v5.2 Patch 1047
RA	v5.0 Patch 1008
AUM	v20.0 Patch 3

Module	Minimum Version
AG	v7.1 Patch 15
BCQM	v1.0 Patch 6
VA FileMan (DI)	v22.0 Patch 1018 or later
VA Kernel (XU)	v8.0 Patch 1018 or later

2.3 Before Beginning: Installation Issues

1. The following OIT bulletins have been made available to assist with getting a site ready to install CCDA. Follow the instructions in these OIT bulletins before starting CCDA installation.

Note: The bulletins were created for the C32 application, but the information applies to CCDA as well.

- [How to Enable a Namespace in Ensemble.pdf](#)
 - [HowToConfigureEnsembleforC32.pdf](#)
2. Make a copy of this package distribution for offline storage.
 3. Print all notes/readme files.
 4. Capture the terminal output during the installation using an auxport printer attached to the terminal used to perform the software installation to ensure a printed audit trail should any problems arise.

3.0 Installation Issues

3.1 Architectural Issues

The exact CCDA disk space and journaling requirements depend on whether the site participates in the IHS Health Information Exchange (HIE).

If the site is not a part of the IHS HIE at this time, then CCDA documents are generated only when a user requests CCDA documents via the EHR GUI or the Data Export API. For the EHR GUI functionality to be available to EHR users, EHR version 1.1 Patch 28 or higher must be installed.

If the site is a part of the IHS HIE, then CCDA documents will also be generated nightly and sent to the designated off-site repository. When the site becomes a part of the IHS HIE, an upload process is initiated which creates CCDA documents for all patients in the database and sends them to the repository. After the initial upload, the repository is kept up to date by the nightly job mentioned above. This process will require additional disk space and journal space as described below.

3.2 Overview of Installation Steps

The RPMS server's OS and HealthShare must be patched before this application is installed. OIT has distributed a technical bulletin with patching instructions. Failure to apply all necessary patches may result in installation failure, application errors, and/or system crashes.

Installation of the BCCD package consists of the following activities:

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 OS configuration file, designating a directory where the new CCDA database will reside (one for each RPMS database), mapping BMW globals, and stopping CCDA.
3. Install the provided Kernel Installation and Distribution System (KIDS) build, bccd0200.k, which will install the CCDA software and the new CCDA Ensemble production.
4. Perform post-install steps, including setting up optional encryption, optional email notifications, disabling journaling in the CCDA database, configuring the CCDA CSP Application, setting up site-specific BCCD parameters, and starting CCDA Messaging.

3.3 Disk Space

Before installing the BCCD package, be sure that there is sufficient disk space to store the new globals and software. To estimate the amount of space needed, first determine whether the site will be participating in the IHS HIE as described above.

The calculations in this section need to be performed for every RPMS database running within the HealthShare instance, so if the site has three RPMS databases, the total will be the sum of the three separate estimates.

3.3.1 Disk Space Required for Installation

The site will need to have enough free disk space in the directory which will hold the KIDS build with the CCDA software. The unzipped version of the KIDS build is approximately 847 KB in size.

3.3.2 Disk Space for the New CCDA Database

For each RPMS namespace in the HealthShare instance, a new CCDA namespace and an associated CCDA database will be created automatically during the first installation of the BCCD KIDS build, which will require at least 80 MB of disk space for the CCDA software.

The CCDA database is also used to store three potentially large globals. First, it contains the global `^Ens.MessageBodyD`, which stores XML-formatted CCDA documents before they are transmitted. CCDA documents can be quite large, sometimes in excess of 8 MB. The CCDA software will pause if the number of untransmitted CCDA documents reaches 500, thus ensuring that they do not consume too much disk space. It is estimated that this global can contribute up to 1 GB to the size of the CCDA database if Ensemble is generating CCDA documents faster than they can be transmitted. Once transmitted, the data in this global is purged.

Second, the CCDA database contains the global `^BCCD.Xfer.QueueD`, which contains intermediate patient compile data extracted from RPMS during CCDA compilation. This data is not XML-formatted, so it does not take as much space. It is estimated that on average each processed patient record contributes 50 KB to the size of this global. While each record does not take a large amount of space, the global can get quite large due to the number of records that are created. The size of this global can be controlled by changing the value of the field **DAYS KEEP TRANSMISSION ENTRIES** field in the **Edit CCDA Site Parameters** menu option, which is described in the post-installation section of this guide. Keep in mind that the data in `^BCCD.Xfer.QueueD` is not directly accessible by end users and is only useful for debugging purposes.

The detailed instructions for calculating the amount of disk space which will be needed to store the CCDA data are provided below.

3.3.3 Disk Space for Sites within the IHS HIE

If the site is a part of the IHS HIE, then additional disk space will need to be allocated to accommodate the original upload of CCDA documents to the outside repository and for nightly CCDA uploads as described below. If the site is not a part of the IHS HIE at this time, skip this section and continue on to Section 3.3.4. However, if the site becomes a part of the IHS HIE later, additional disk space will need to be added to the CCDA database at that time.

3.3.3.1 Calculate the Disk Space Required for a Complete Upload

When the CCDA software is installed at an RPMS site which participates in the IHS HIE, it initiates an “original upload” of CCDA documents for all patients in the RPMS database. Subsequent CCDA patches may also require complete re-uploads of CCDA documents.

In order to determine how much disk space will be used during an upload of CCDA documents for all patient records, perform the following calculations:

1. Determine the number of patients in the RPMS database by looking at the fourth piece of the zero node of the AUPNPAT global. In the example below, there are 131,584 patients:

```
>W ^AUPNPAT(0)
```

```
PATIENT^9000001sIP^132027^131584
```

2. Multiply the number of patients in the RPMS database by 50 kilobytes and then divide by 1024 (i.e., the number of kilobytes per megabyte). This calculation is the minimum storage size needed for ^BCCD.Xfer.QueueD for the initial data upload of all patients in the database. Using the example above of 131,584 patients in the RPMS database:
 - $(131584 * 50) / 1024 = 6,425$ MB or 6.3 GB needed
3. Add 1 GB (1024 MB) for the global ^Ens.MessageBodyD. Using the example in step, 1, this would give a total calculation of 7.3 GB.

Note: The data in ^BCCD.Xfer.QueueD is purged after a site-specific number of days, so the size of this global will decrease at some point after the original upload. See Section 3.3.2 for more explanation on the length of time the data is kept in this global.

3.3.3.2 Calculate Disk Space Required for Nightly Uploads

1. Estimate the average number of patient and visit records that are modified in the database on a daily basis. Include patients with changes to any of the following areas: patient demographics, visits, problems, immunizations, allergies, prescriptions, test results, procedures.
2. To determine the average amount of disk space used by the ^BCCD.Xfer.QueueD global on a daily basis, take the estimated number of patient and visit records that are modified and multiply it by 50 KB. For example, if it is estimated that the RPMS data for 1,000 patients and/or visit is changed on a daily basis:
 - $(1000*50)/1024 = 48.9$ MB needed
3. Determine how long to keep the compiled data before it is purged. The allowable range is between 7 and 9,999 days and the default is 30 days. As noted above, keep in mind that this is just intermediate compile data and is not directly accessible by the end users. It is only useful for debugging purposes and purging it has no impact on the generated CCDA documents. Record this number since it will be used later to populate the **DAYS KEEP TRANSMISSION ENTRIES** field in the **Edit CCDA Site Parameters** menu option.
4. Multiply the number of days determined in step 3 by the number of megabytes calculated in step 2. For example, if the intermediate data is kept for 30 days, the calculation will be:
 - $48.9*30 = 1,465$ MB or 1.4 GB needed

If a decision is made to change how long to keep the ^BCCD.Xfer.QueueD data, the disk space needs will change accordingly, and this calculation should be redone.

3.3.3.3 Calculate Total Disk Space

Add the numbers calculated in the two previous sub-sections. Using the examples above, the calculation will be:

- 7.3 GB (from Section 3.3.3.1) + 1.4 GB (from Section 3.3.3.2) = 8.7 GB needed

This is the maximum amount of additional disk space that will be needed. Once the data compiled for the original upload of CCDA documents becomes older than the value of **DAYS KEEP TRANSMISSION ENTRIES**, it will be purged and the disk space utilization will stabilize around the number calculated in Section 3.3.3.2.

However, if the number of patients whose data changes on a daily basis increases in the future, it can affect the disk space requirements.

3.3.4 Disk Space for the CCDA Audit Log

For audit purposes, the CCDA application keeps a log of each CCDA document in the RPMS database. The CCDA audit log data is stored in the global `^BCCD.Audit.AuditD`. Instructions for accessing and viewing the audit log data can be found in the CCDA Security Manual.

To calculate how much disk space will be required to maintain the CCDA Audit Log, estimate how many CCDA documents will be generated on a daily basis. As this can be difficult to predict, an assumption can be made and later re-evaluated CCDA has been running for some time. It is possible to examine the utilization pattern by checking the CCDA Audit Log, which permits searching by request date.

The average audit log entry occupies about 0.26 KB in the database. Assuming that there are 1000 CCDA documents generated per day, the daily disk space requirements will be:

- $1000 * 0.26 = 260$ KB per day

Multiplying this number by the number of business days in one year, we get:

- $260 * 250 = 65,000$ KB or 63.8 MB per year

This information is stored in the globals `^BCCD.Audit.AuditLogD` and `^BCCD.Audit.AuditLogI` in the new CCDA database, which is described below. This information is expected to be kept on file for six years due to government data retention requirements.

3.4 Journaling

3.4.1 Impact of Regular CCDA Operations on Journaling

The globals used by the BCCD package should not be journaled. This will be accomplished by disabling journaling in the new CCDA database at post-install time as described later in this document. Nonetheless, the CCDA Ensemble production will do a limited amount of journaling even when the CCDA database is set up not to be journaled. This additional journaling is estimated to contribute 2–3 KB per processed CCDA document. Depending on whether the site participates in the IHS HIE, see the appropriate section below to determine the estimated impact of the CCDA application on journaling at the site.

3.4.2 Impact on Journaling at Sites within the IHS HIE

If the site is a part of the IHS HIE, then there will be a spike in journaling activity immediately after the CCDA application is onboarded due to the initial generation and upload of CCDA documents to the outside repository. Calculate the additional disk space which will be consumed by taking the number of patient records in the RPMS database and multiplying it by 3 KB. Using the same number of patients as in the example in Section 3.3.3.1, the amount of disk space would be:

- $(131584*3)/1024 = 385.5$ MB needed during the original upload

Once the journal files created during the initial upload have been auto-purged based on the site's journal purging settings, the impact of the CCDA application on journaling will be limited to the activity during the nightly upload job and the requests coming from the EHR GUI. This impact will be determined by the number of patient records updated within RPMS daily and by the number of times CCDA documents are requested within the EHR GUI during the day. For example, if the expected patient records to be updated daily is 3,000 and another 200 CCDAs requested by the EHR GUI, the additional disk space consumed by journaling will be:

- $(3200*3)/1024 = 9.375$ MB needed daily

3.4.3 Impact on Journaling at RPMS Sites Not in the IHS HIE

If the site is not a part of the IHS HIE at this time, then the impact of the CCDA application on journaling will be limited to the requests coming from the EHR GUI. This impact will be determined by the number of times CCDA documents are requested within the EHR GUI during the day.

Calculate the additional disk space which will be consumed by taking the expected daily number of CCDA lookups within the EHR GUI and multiplying it by 3 KB. For example, if the expected CCDA lookup within the EHR GUI is 200, the additional disk space consumed by journaling will be:

- $(200*3)/1024 = 0.58$ MB daily

3.5 Upgrading from CCDA Version 1

If CCDA 2.0 is installed in an environment where CCDA 1.0 was previously installed, the installation process will be the same, except that some configuration that was performed during the initial installation will not need to be repeated. However, it is recommended to follow each step to ensure the correct configuration.

At a minimum, the following steps should be performed for any installation of CCDA 2.0, regardless of whether CCDA was previously configured:

- **Section 4.6 Stop CCDA** – This step must be performed before any installation of CCDA 2.0.

- **Section 4.7 Install the BCCD 2.0 KIDS Build** – A sample upgrade/re-installation can be found in Section 5.4.2.
- **Section 6.2 Configuring Email Notifications** – Verify that the email settings were preserved during the installation.
- **Section 6.3 Configure SSL/TLS** – The production setting in Section 6.3.2 will need to be reapplied.
- **Section 6.7 Setting up Site-Specific CCDA Parameters** – Some of the parameters have changed from CCDA 1.0. Review these parameters after installing the KIDS build.
- **Section 6.8 Starting CCDA Messaging** – This step is required after any installation.
- **Section 6.9 Hospital Course Information** – This section contains information new to CCDA 2.0. Review the information when upgrading from CCDA 1.0.

When CCDA 2.0 is installed in an environment where CCDA 1.0 was previously installed, the installation process will automatically save unsubmitted HIE documents before the installation and requeue them with the same information after the upgrade. This process is necessary due to changes in the storage structure of the document request, to ensure untransmitted HIE documents are not lost. Additionally, the installation process will start a background conversion task to accommodate a change to the audit log.

4.0 Installation Instructions

This section contains instructions for configuring the environment for CCDA and installing the application. These are the same configuration steps as performed when installing version 1.0 of the CCDA application. If installing CCDA 2.0 in an environment that has already been configured for CCDA 1.0, skip the configuration steps and start at Section 4.7.

Note: The KIDS installation process will create a new CCDA namespace, database, and production automatically and set up the appropriate mappings between the RPMS and CCDA namespaces. Do not create the new namespace, database, or production manually.

4.1 Pre-Installation Instructions

1. Refer to the Installation Steps and the Sample Installation sections below for the applicable prompts and user responses. User responses display in **bold** type.
2. Download the bccd0200.k file from the anonymous FTP directory.
3. Review all test and demo patients in the RPMS database and make sure that their social security numbers start with five zeroes. This will ensure that CCDA documents are not generated for test/demo patients.
4. Ensure that the site manager's accounts that are used to restart TaskMan manually have the Ensemble role %All. If this is not done, CCDA will not run whenever TaskMan is restarted manually.

If the user account that was used to start TaskMan does not have the %All role, then do one of the following:

- a. Assign the %All role to the user account, then stop and restart TaskMan.
- b. Stop TaskMan, then restart it as a different user which has the %All role.

In either case, when stopping TaskMan the sub-managers must be stopped so all the TaskMan processes have the %All role.

4.2 Enable Long Strings

The CCDA software requires that Long Strings be enabled in Ensemble. If Long Strings are not enabled, it will not be possible to install the CCDA KIDS build.

Check the current status of the Long Strings setting and, if necessary, change it by following the steps below.

1. Sign on to HealthShare's Management Portal.

- Click on **System Administration** at the bottom of the left column. Then click **Configuration >> | System Configuration >> | Memory and Startup**.

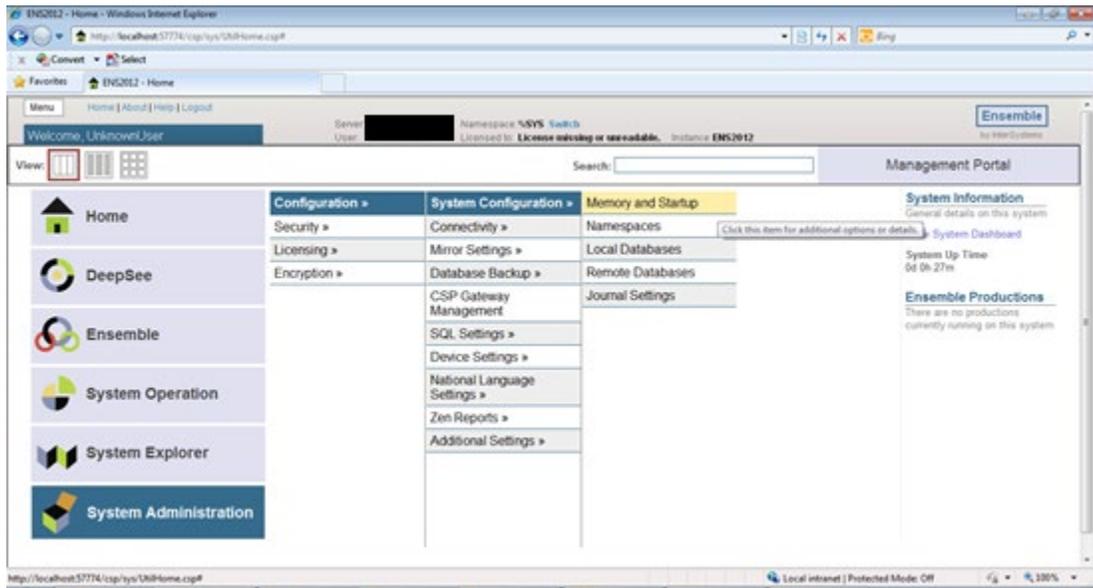


Figure 4-1: Management Portal, **Memory and Startup** option

- If the **Enable Long Strings** check box at the bottom of the screen is checked, then Long Strings are already enabled; skip to Section 4.3.
- Check the **Enable Long Strings** check box and click **Save**.

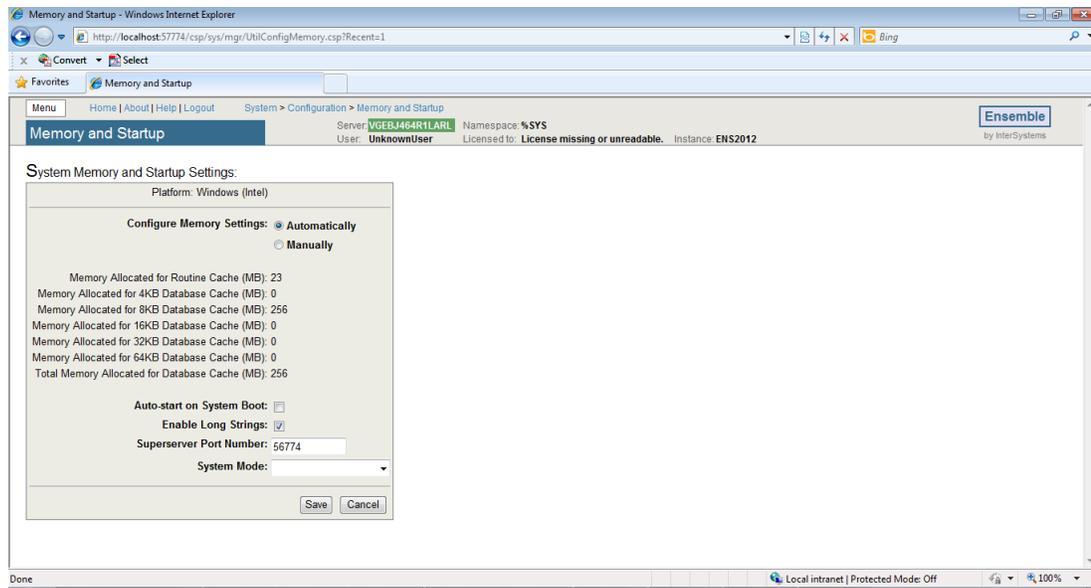


Figure 4-2: **Memory and Startup**

5. If Long Strings in step 4 above had to be enabled, then the new settings will not take effect until after HealthShare is restarted. In that case it will not be possible to install CCDA until HealthShare has been restarted. If Long Strings were already enabled, proceed with the next step immediately.

Stopping HealthShare will stop TaskMan and all Ensemble productions, so it should be performed after hours to minimize disruption.

6. Follow the standard procedures for preparing to stop HealthShare.
7. From the HealthShare launcher, click **Stop HealthShare**. In the box that displays select **Restart**, then click **OK**.

Note: If there are multiple HealthShare instances running on this server, be sure to access the cube that corresponds to the specific instance of HealthShare that CCDA is being installed in.

4.3 Verify Access to Configuration File

The CCDA installation process will modify the HealthShare configuration file and add new database and mapping definitions for the CCDA application. This will require write access to the HealthShare configuration file at installation time.

Sites running Windows should follow the instructions in Section 4.3.1. Sites running AIX, skip Section 4.3.1 and follow the instructions in Section 4.3.2.

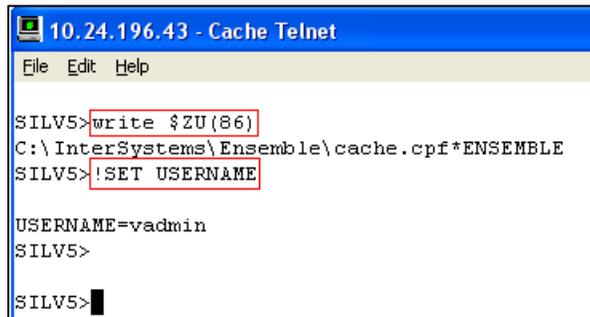
4.3.1 Windows

1. Access the HealthShare prompt in any HealthShare namespace using the user account that will be used to perform the CCDA installation. Type the following two commands and record the output for future reference:

```
TST> write $ZU(86)
```

```
TST> !SET USERNAME
```

Figure 4-3 gives an example of what will be shown.

A screenshot of a Telnet window titled "10.24.196.43 - Cache Telnet". The window has a menu bar with "File", "Edit", and "Help". The terminal text shows a user prompt "SILV5>" followed by the command "write \$ZU(86)", which returns the path "C:\InterSystems\Ensemble\cache.cpf*ENSEMBLE". The next command is "!SET USERNAME", which returns "USERNAME=vadmin". The prompt "SILV5>" appears again, and finally "SILV5>" with a cursor.

```
10.24.196.43 - Cache Telnet
File Edit Help
SILV5>write $ZU(86)
C:\InterSystems\Ensemble\cache.cpf*ENSEMBLE
SILV5>!SET USERNAME
USERNAME=vadmin
SILV5>
SILV5>
```

Figure 4-3: HealthShare prompt

2. Sign on directly onto the RPMS server in order to determine for which groups the selected user is a member.
3. Right-click on **My Computer**, usually located on the desktop or on the **Start** menu. Then select **Manage**. The **Computer Management** screen displays.
4. On the **Computer Management** screen, expand **System Tools**, then expand **Local Users and Groups**, and then click **Users**.
5. Right-click on the user name (in the example shown above it was **vadmin**).
6. Select **Properties**, and then select the **Member Of** tab. Record the list of user groups to which this user belongs.

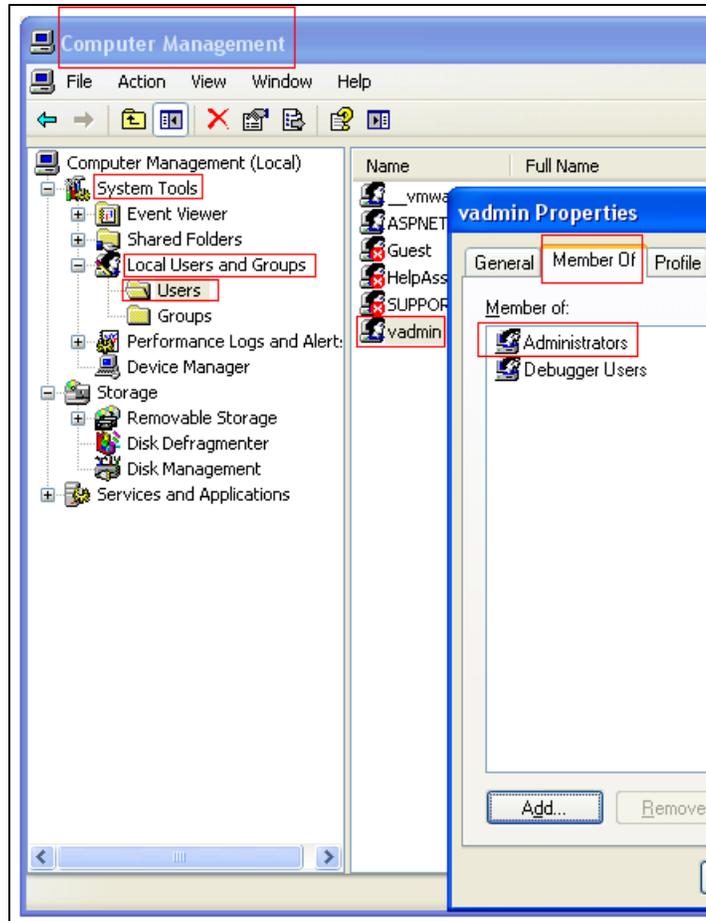


Figure 4-4: **Computer Management** and **vadmin Properties**

7. In Windows Explorer, navigate to the folder displayed in step 1 next to the **\$ZU(86)** command and find the file whose name was displayed. In the example shown above the name of the file was **cache.cpf**.
8. Right-click on the file and select **Properties**.

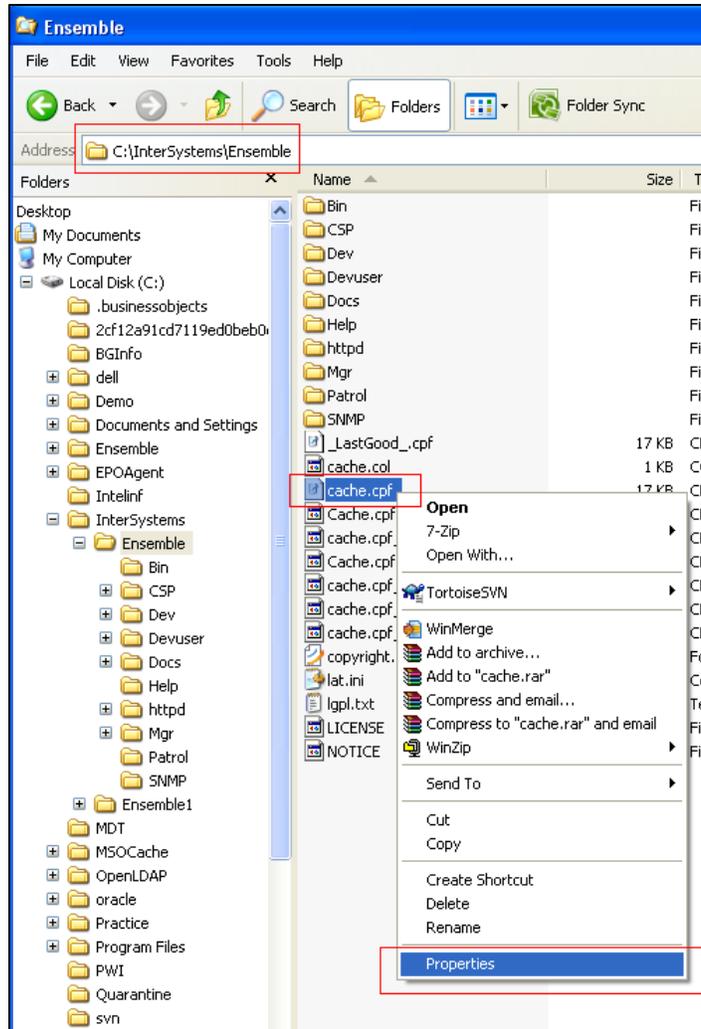


Figure 4-5: Windows Explorer

9. Go to the **Security** tab and verify that either the user has write permissions to this file or that one of the groups that the user belongs to (as recorded in step 2 above) has write permissions.

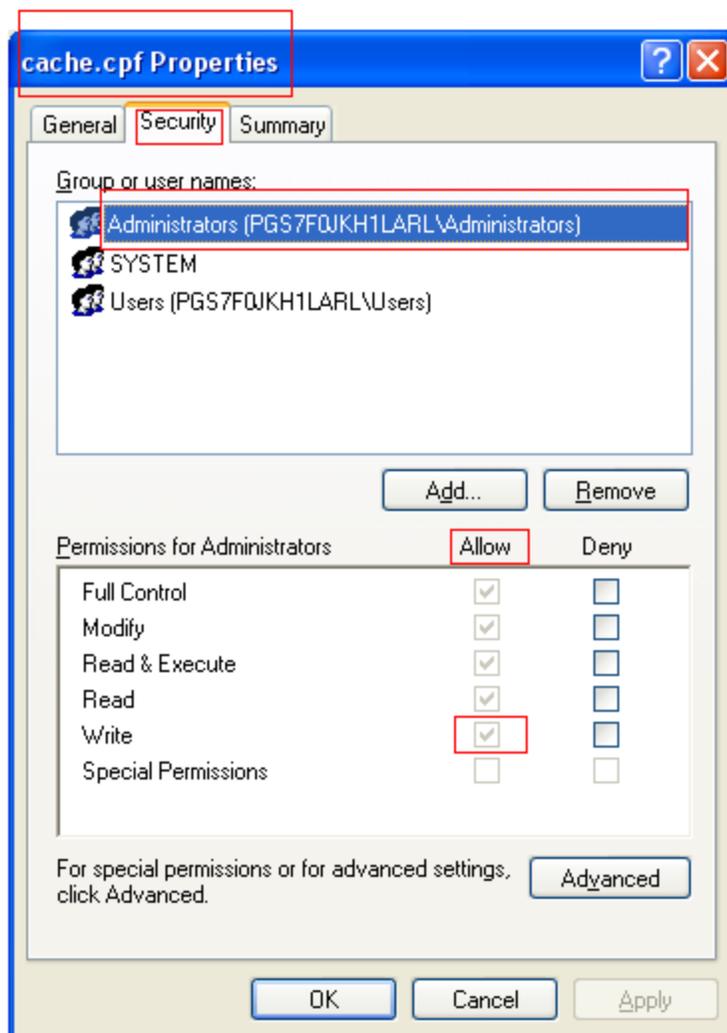


Figure 4-6: **cache.cpf properties**

In Figure 4-6, user **vadmin** does not display on the user list. However, since **vadmin** is a member of the **Administrators** group and the **Administrators** group displays on the list and has **write** permissions, **vadmin** also has write permissions to the file.

10. If the selected user account does not have write permissions to this file, either choose another user account with write permissions or change the current user's permissions or group membership. If attempting to install the CCDA software using a user account that cannot write to this file, the installation process will not proceed and will display an error message.

4.3.2 UNIX/AIX

1. Access the HealthShare prompt in any HealthShare namespace using the user account which will be used to perform the CCDA installation. Type the following two commands and record the output for future reference:

```
TST> write $ZU(86)
```

```
/opt/cache.cpf*HEALTHSHARE
```

```
TST> !whoami
```

```
vadmin
```

2. Log onto the AIX server hosting RPMS as the superuser (“root”). Run the following command and substitute the user name that was identified in step 1 above for vadmin:

```
# > id vadmin
```

```
uid=1004(cacheusr) gid=1004(cacheusr) groups=1004(cacheusr),90(ensemble)
```

Record the list of group membership for this user.

Note: The UIDs and GIDs are specific to the server and will be different on different servers.

3. Change directory to the location of the **cache.cpf** file. In the above example the directory is **/opt**. Do a long directory listing of the file whose name was displayed in step 1 above (cache.cpf in this example):

```
# > cd /opt
```

```
# > ls -al cache.cpf
```

```
-rw-rw-r-- 1 root cacheusr 13639 2011-05-29 15:37 cache.cpf
```

The meaning of different parts of the line displayed above is as follows:

-rw-rw-r-- : file type and permissions

1 : the number of links to the file

root : the owner of the file

cacheusr : the group that owns the file

Check the AIX man page on the **ls** command for a full description of all the fields in the output.

In the permissions field the first dash indicates that this is a regular file. The next three characters, **rw-**, show the file owner permissions. The following three characters, **rw-**, show the group permissions. The last three characters show the world permissions **r--**, in this case “read only” for users who are not the file owner or a member of the group **cacheusr**. Notice that in this example user **vadmin** does not own the file **cache.cpf**, but, since the **cacheusr** group has **read/write** permissions on the file and since **vadmin** is a member of the group **cacheusr**, **vadmin** will be able to write to that file.

4. If **vadmin** does not belong to the group that has read/write permissions, then add **vadmin** user to the group **cacheusr**. Consult the AIX management guide for instructions on how to perform this operation.
5. If the **cacheusr** group does not have permissions to read and write to the file, then, while logged on as the root user (superuser), change the permissions on the file with the following command:

```
# > chmod g+rw cache.cpf
```

4.4 Create a Directory for the CCDA Database

See Section 3.3.2 of this installation guide for instructions on estimating how much disk space will be needed to accommodate the new CCDA database(s). The CCDA installation process will make sure that the directory has at least 500 MB of free space.

Based on the estimated disk space requirements and on how much disk space is available on the storage subsystem, select the disk drive (if running Windows) or file system (if running UNIX/AIX) where each new CCDA database will be installed. Determine the directory path and name that will be used on that drive/file system. If the directory does not exist, create it, and verify that Ensemble can read from the directory and write to it. Sections 4.4.1 and 4.4.2 contain instructions for verifying the amount of available disk space and for verifying the directory permissions.

Record the name of the newly created directory, because it will need to be entered at KIDS installation time. After the installation process creates the CCDA database in the specified directory, add the newly added database to the list of backed up databases. Consult the backup documentation or contact OIT for more information on how to add a new database to the site’s backups.

Note: A separate directory with the correct permissions is required for each RPMS namespace.

Sites running Windows should follow the instructions in Section 4.4.1. Sites running UNIX/AIX should skip Section 4.4.1 and follow the instructions in Section 4.4.2.

4.4.1 Windows

1. Verify the amount of available disk space by performing the following steps:
 - a. Login to Windows as a user with administrative privileges.
 - b. Open Windows Explorer and navigate to **Computer** in the folder list. This should display a list of all the drives on the system and their available free space.
 - c. If the available free space does not display, then right-click on the drive to be used for the new database and click **Properties** to display the available free space on that drive.
2. Determine the directory permissions of the RPMS database by performing the following steps:
 - a. Sign on to HealthShare's Management Portal.
 - b. Click on **System Administration** at the bottom of the left column. Then click **Configuration >> | System Configuration >> | Local Databases**.

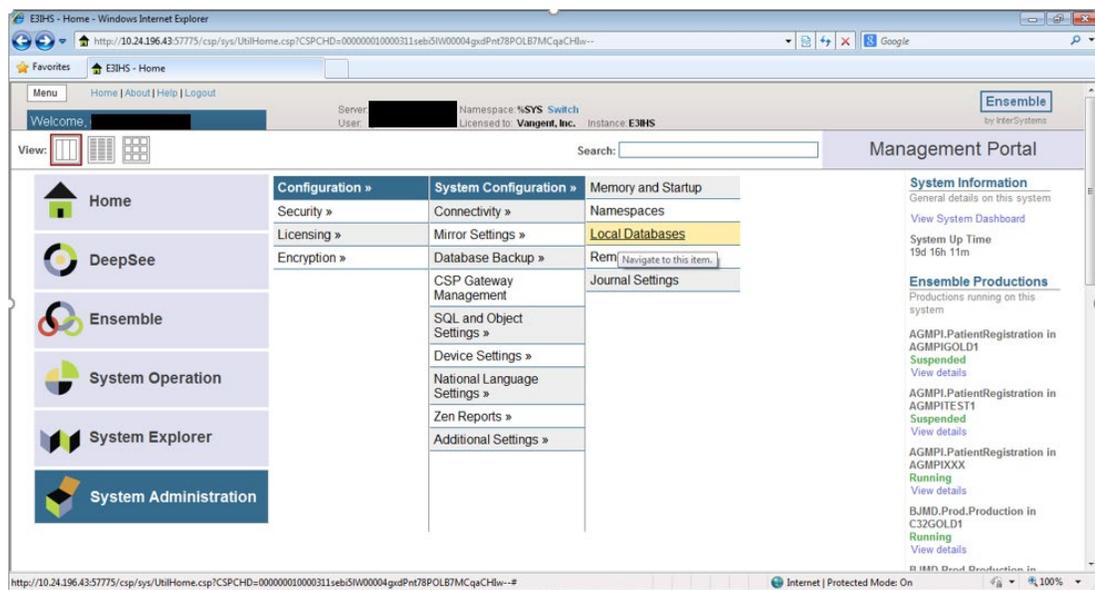


Figure 4-7: Management Portal, Local Databases option

- c. On the **Local Databases** screen, find the row corresponding to the RPMS database and make a note of the value in the **Directory** column. This value is the RPMS database directory.
- d. Open Windows Explorer and navigate to the parent directory of the RPMS database directory.
- e. Right-click on the RPMS database directory and click **Properties**.
- f. In the **Properties** dialog, click on the **Security** tab.

- g. Leave the **Properties** dialog open. Reference the security values in step 2.
3. Verify that the directory for the new CCDA database has the same permissions by performing the following steps:
 - a. In Windows Explorer, navigate to the parent directory of the CCDA database directory.
 - b. Right-click on the CCDA directory name and click **Properties**.
 - c. Click on the **Security** tab.
 - d. Return to the RPMS directory **Properties** dialog from the previous step. Click on each entry in the **Group or user names** box and compare the settings in the **Permissions** box with the settings in the **Permissions** box for that same group or user in the CCDA directory **Properties** dialog. If there are any permission differences, click **Edit** on the CCDA directory **Properties** dialog and make the necessary changes. If any group or user is missing from the CCDA directory **Properties** dialog, click **Edit** and add the missing group or user.
 - e. Click **OK** in each **Properties** dialog to save the changes and close the dialog.

4.4.2 UNIX/AIX

1. Verify the amount of available disk space by performing the following steps:
 - a. Login to the UNIX system as a privileged user, then type the following command to become the superuser (“root”) user:

```
# > sudo su -
```

If the command is not successful, then enter the command without the “sudo” prefix:

```
# > su -
```
 - b. Type the following command to display all the drives on the system and their available free space:

```
# > df -e
```
2. Determine the directory permissions of the RPMS database by performing the following steps:
 - a. Sign on to HealthShare’s Management Portal.
 - b. Click on **System Administration** at the bottom of the left column. Then click **Configuration >> | System Configuration >> | Local Databases**.

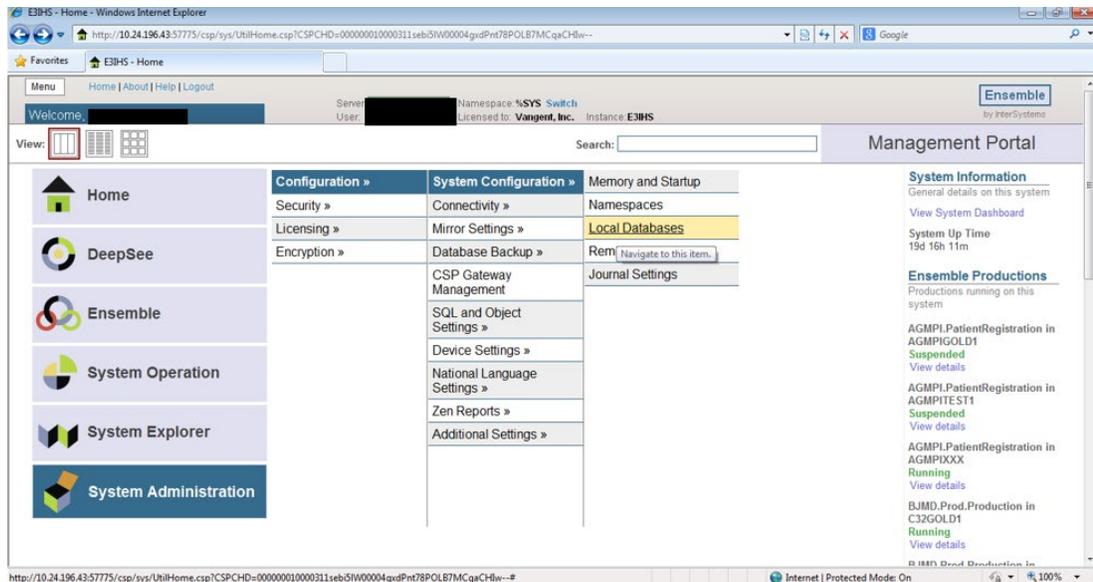


Figure 4-8: Management Portal, Local Databases option

- c. On the **Local Databases** screen, find the row corresponding to the RPMS database and make a note of the value in the **Directory** column. This value is the RPMS database directory.
- d. Log in to the UNIX system as the superuser (“root”).
- e. Type the following command to find the permissions for the RPMS database directory:

```
# > ls -l /usr1/cachedata
```

where **/usr1/cachedata** is the parent directory of the RPMS database directory.

The system will display one or more lines similar to the following:

```
drwxrwxrwx 1 user group 4096 RPMS
```

Find the line for the RPMS database directory and note the permissions. In this example, the permissions are “rwxrwxrwx”. The initial “d” indicates this is a directory and may be ignored here.

3. Verify that the directory for the new CCDA database has the same permissions by performing the following steps:
 - a. Log in to the UNIX system as the superuser (“root”).
 - b. Type the following command to find the permissions for the RPMS database directory:

```
# > ls -l /usr1/cachedata
```

where **/usr1/cachedata** is the parent directory of the new CCDA database directory.

The system will display one or more lines similar to the following:

```
drwxrwxrwx 1 user group 4096 CCDARPMS
```

Find the line for the CCDA database directory and note the permissions. In this example, the permissions are “rwxrwxrwx”. The initial “d” indicates this is a directory and may be ignored here.

- c. If the directory permissions for the CCDA database directory are not the same as the directory permissions for the RPMS database directory, enter the following command to change the permissions of the CCDA database directory:

```
# > chmod u=rwx,g=rwx,o=rwx /usr1/cachedata/CCDARPMS
```

where:

u=rwx contains the first three characters of the RPMS directory permissions (user permissions)

g=rwx contains the second three characters of the RPMS directory permissions (group permissions)

o=rwx contains the third three characters of the RPMS directory permissions (others permissions)

/usr1/cachedata/CCDARPMS is the name of the new CCDA database directory.

4.5 BMW Global Mapping

One of the checks in the CCDA environmental check routine is that it verifies that the BMW classes are compatible with CCDA. In order for that check to be done, the BMW global needs to be mapped from the BMW namespace to the production namespace. If the global mapping has not already been set up, follow the steps in Appendix C (Global Mappings) of the Practice Management Application Suite (BMW) Installation Guide to set up this mapping.

Figure 4-9 shows the global mapping where the RPMS database name is **GOLD4** and the BMW global mapping is shown after the **<Some rows deleted>** row. The global mappings for namespace GOLD4 are shown in Figure 4-9.

Global	Subscriber	Database		
%Z		GOLD4	Edit	Delete
%ZIB		GOLD4	Edit	Delete
%ZIS		GOLD4	Edit	Delete
%ZISL		GOLD4	Edit	Delete
BGPTMP		GOLD4NJ	Edit	Delete
BGPXPA		GOLD4NJ	Edit	Delete
BGPXPE		GOLD4NJ	Edit	Delete
BGUTMP		GOLD4NJ	Edit	Delete
BHLERR		GOLD4NJ	Edit	Delete
BITEMP		GOLD4NJ	Edit	Delete
BITMP		GOLD4NJ	Edit	Delete
<Some-rows-deleted>				
BMW		BMW	Edit	Delete
BMXTEMP		GOLD4NJ	Edit	Delete
BMXTMP		GOLD4NJ	Edit	Delete
BNIRTMP		GOLD4NJ	Edit	Delete
BPCTMP		GOLD4NJ	Edit	Delete
BQIPAT		GOLD4NJ	Edit	Delete

Figure 4-9: BMW Global Mappings

4.6 Stop CCDA

If CCDA is currently running at the site, it will be necessary to stop CCDA before the new version of the application can be installed. If this is the first time installing CCDA, then skip this section and proceed to Section 4.7.

4.6.1 Stop CCDA Transmission Option

1. Navigate to the **CCDA** menu in RPMS. If the menu from the “OPTION NAME” prompt in RPMS cannot be accessed, it will need to be 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 4-10: Accessing the BCCD Menu

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

3. The option will first check whether CCDA Messaging 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 4-11: Stop CCDA Messaging via the MANG option

4. A message will be received indicating whether CCDA Messaging was stopped. If CCDA Messaging could not be stopped, contact the Help Desk for assistance.

4.6.2 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 later for Section 6.7. Then type the at symbol (@) 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: 08:55// @
  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 4-12: Unscheduling the Nightly Task via the EDIT option

4.6.3 Stop the CCDA Ensemble Production

1. Sign on to HealthShare’s Management Portal as the 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.

3. Click the **Switch** link.

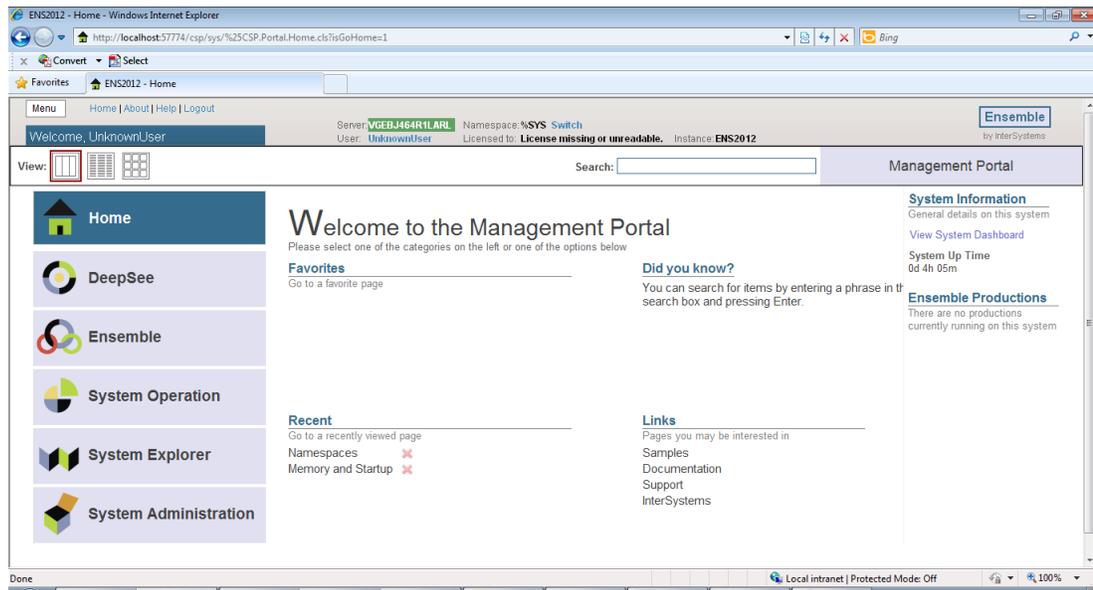


Figure 4-13: Management Portal

4. 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**.
5. Click **OK** to choose the namespace. The namespace displayed on the **Management Portal** page will be updated to reflect the selection.

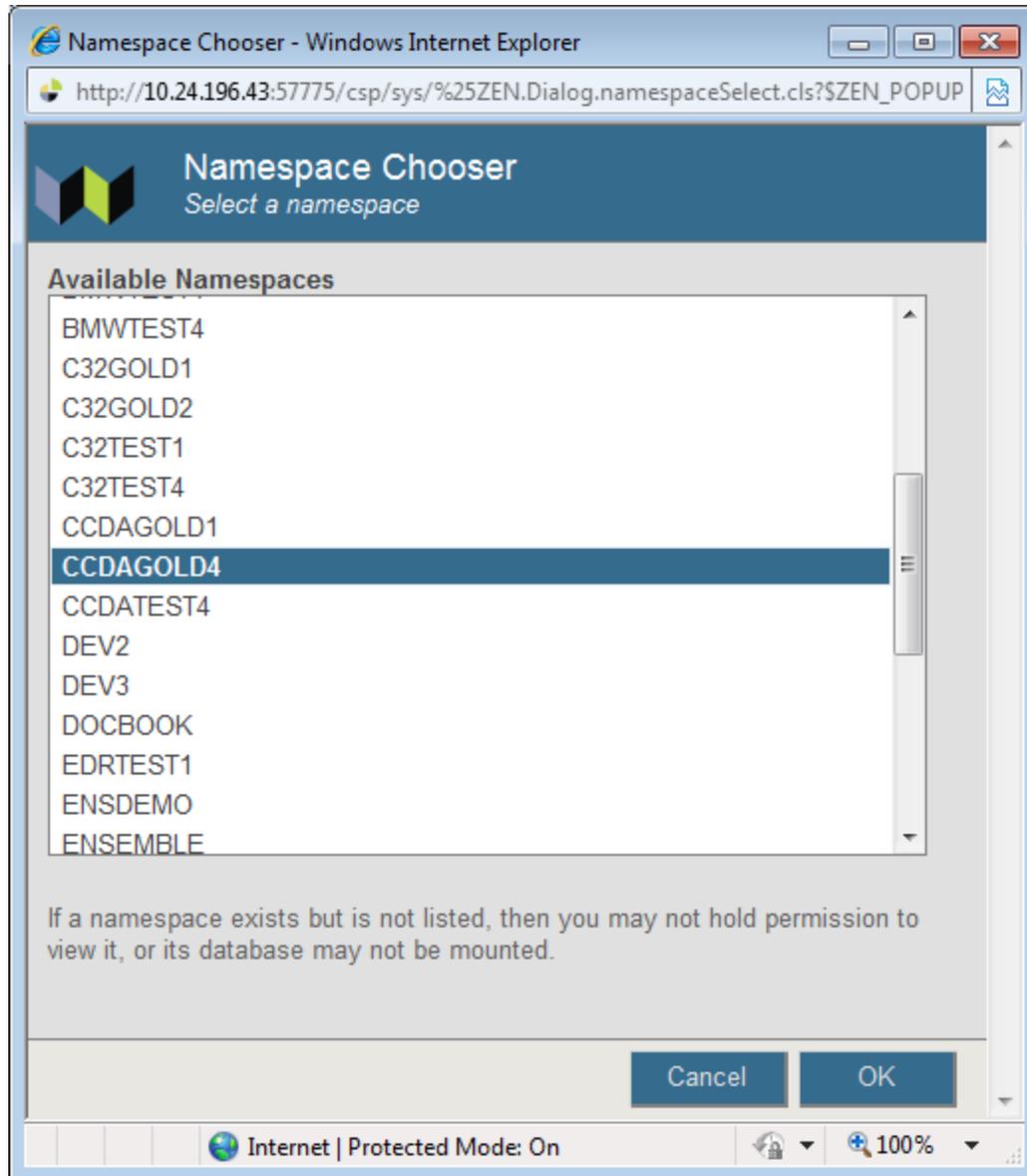


Figure 4-14: **Namespace Chooser**

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

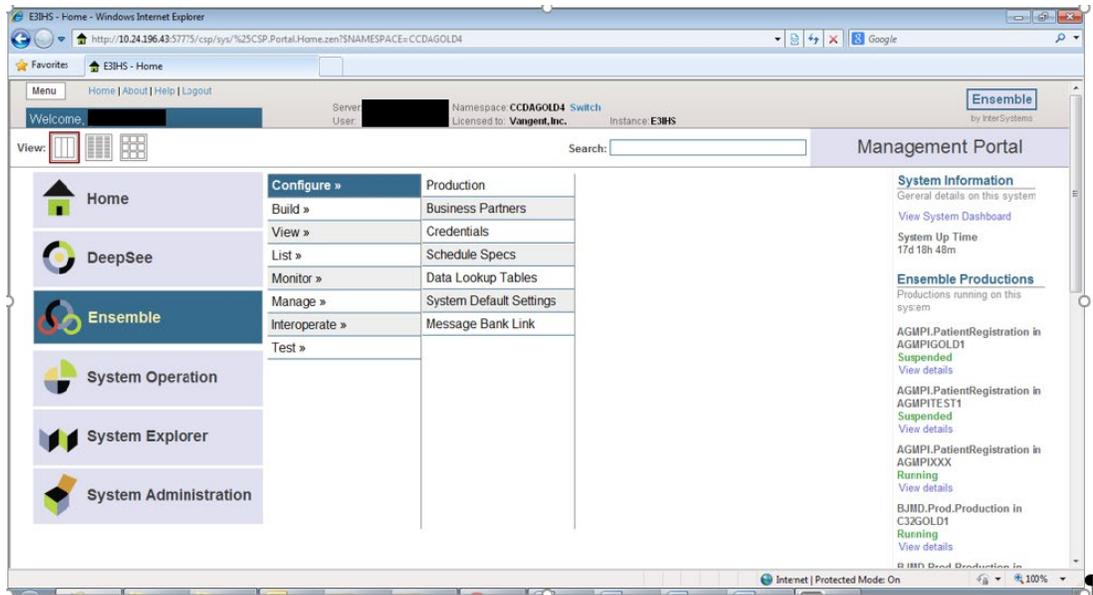


Figure 4-15: Management Portal

- Above the **Services** column on the left, the words **Production Running** will display. If the words **Production Stopped** display, then the production is already stopped; skip to Section 4.7.

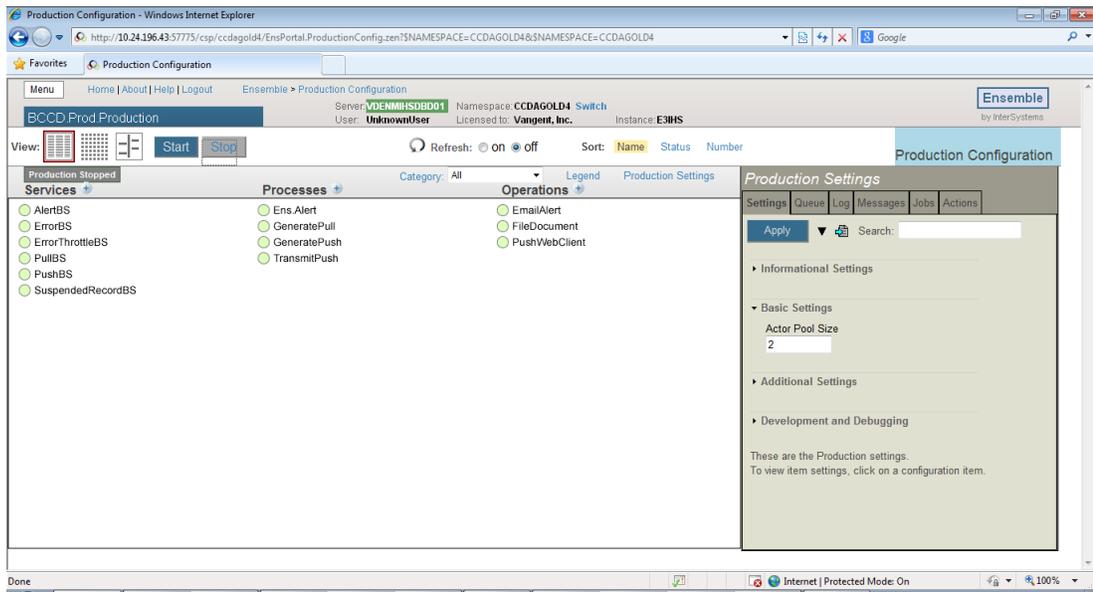


Figure 4-16: Ensemble production in a stopped state

Click **Stop**. It might take the production a few seconds to stop. When it stops, the text shown in Figure 4-17 displays 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.

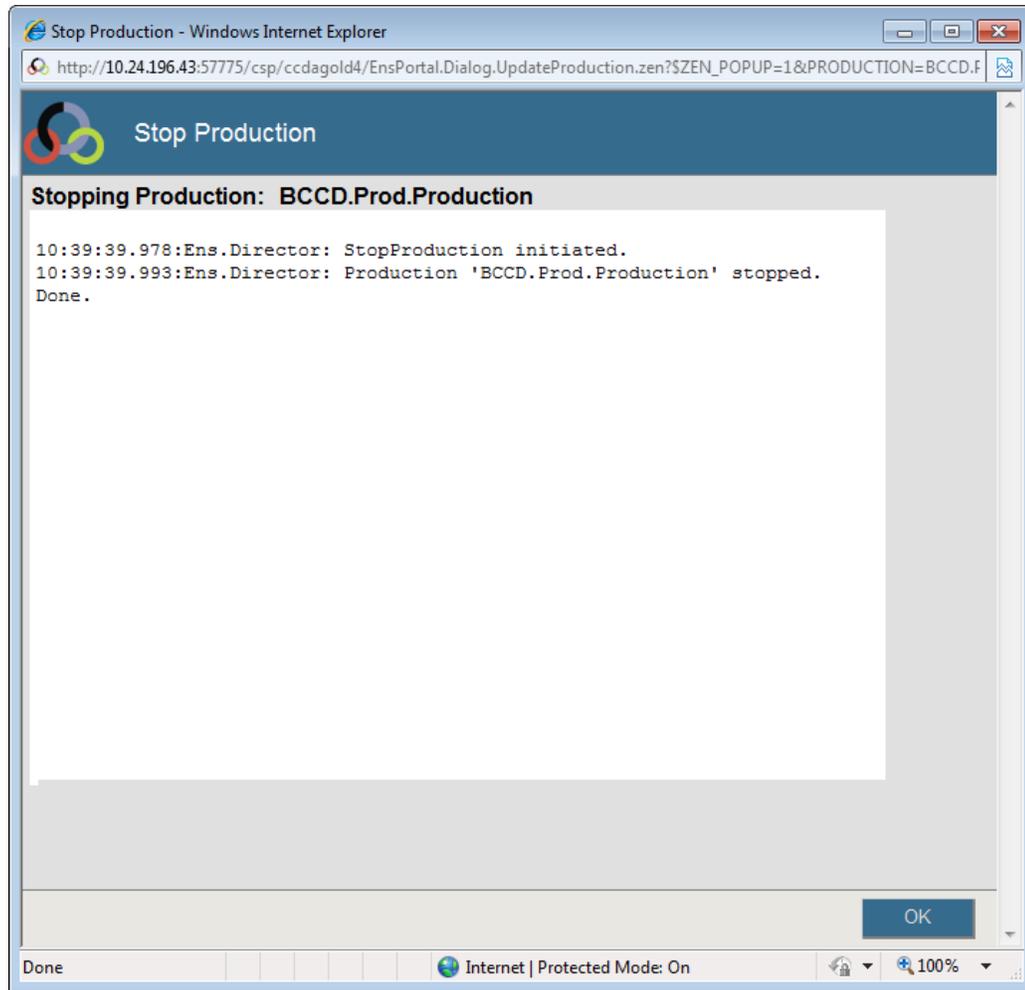


Figure 4-17: Stopping the Ensemble production

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

4.7 Install the BCCD 2.0 KIDS Build

Note: If there are multiple RPMS namespaces, this step will need to be performed in each of them, one at a time.

The installation process automatically performs certain steps before and after the KIDS installation. If the site configuration prevents the installation process from performing these steps automatically, the installation process will display a message to perform the steps manually. Detailed instructions for these steps may be found in Appendix B and Appendix C.

1. Sign on to RPMS in the RPMS namespace as an Ensemble administrator with the %All role. If the account does not have the %All role, it will not be possible to proceed with the KIDS install.

2. Access the **KIDS** menu options, **XPD MAIN**.
3. From the **KIDS** menu, select the **Installation** menu.
4. From the **Installation** menu, select option **1: Load a Distribution**.
5. Type **bccd0200.k** at the “Enter a Host File” prompt. It may be necessary to precede the file name with the appropriate host path. This file was retrieved from the anonymous directory as part of pre-installation.
6. Type **Yes** (or press Enter to accept the default) at the “Want to Continue with Load? YES” prompt.

An environmental check has been added for those systems that may not have an up-to-date version of Ensemble and/or RPMS software. It also makes sure that the server has sufficient disk space. If the check fails, it will not be possible to proceed with the installation. If this happens, correct the problem or contact the Help Desk.

7. From the **Installation** menu, select option **2: Verify Checksums in Transport Global**. This option provides a mechanism for ensuring the integrity of the routines. It verifies checksums for the components of the Transport global, and reports any errors uncovered.

Type **CCDA 2.0** as the install name.

8. Optional: The following installation options are optional. If using one of these options, use **CCDA 2.0** as the install name.
 - a. **Back Up a Transport Global**—This option creates a MailMan message that will back up all current routines on the system that would be replaced by this release. (Because this is a new release, no files will be replaced.)
 - b. **Compare Transport Global**—This option displays all changes that will result from the installation of this patch and compares them with the values currently loaded on the system (routines, data dictionaries, templates, etc.).

<p>Note: Users should be off the system for the Install Package(s) section of the CCDA 1.0 KIDS installation (steps 9–14 below).</p>

9. From the **Installation** menu, select the **Install Package(s)** option.
10. At the “Select Install Name” prompt, type **CCDA 2.0**.

11. At the “Specify the name of the BMW database” prompt, enter the local database name for the BMW database used by that RPMS instance. If BMW was installed per the BMW installation guide, this will be BMW. Get this value by looking at the **Local Databases** in HealthShare’s Management Portal under **System Administration | Configuration >> | System Configuration >> | Local Databases**.
12. At the “Specify Full Directory path for the database for new namespace CCDAPRD” prompt (where PRD stands for the name of the RPMS namespace), enter the name of the directory that was created in Section 4.4 of this guide. Once the directory name is entered, the system will create a new database file in it and configure all necessary settings and mappings. The process will display about two dozen messages on the screen and may take a few minutes to complete. If reinstalling this KIDS build and the CCDA database was previously created, this step will be skipped.
13. Respond to the following prompts as indicated:
 - a. At the “Want KIDS to Rebuild Menu Trees Upon Completion of Install? YES” prompt, type **NO**.
 - b. At the “Want KIDS to INHIBIT LOGONs during the install? YES” prompt, type **NO**.
 - c. At the “Want to DISABLE Scheduled Options, Menu Options and Protocols? YES” prompt, type **NO**.
14. When prompted for DEVICE, accept the default to display the output on the screen or enter the name of the printer/file that to which the installation output should be redirected.

Note: The output from this installation will generate about 75–80 pages worth of messages. Consider this when selecting the device.

15. The installation process will take a few minutes. When it is complete, exit the **Installation** menu.

Note: There are post-installation instructions that must be followed. Proceed to Section 6.0 for further information and setup instructions.

5.0 Sample Installations

In this section, user responses appear in bold type.

5.1 Accessing the Installation Menu

```

Select OPTION NAME: XPD MAIN           Kernel Installation & Distribution
System

      Edits and Distribution ...
      Utilities ...
      Installation ...
      Patch Monitor Main Menu ...

Select Kernel Installation & Distribution System <TEST ACCOUNT> Option:
Installation

  1      Load a Distribution
  2      Verify Checksums in Transport Global
  3      Print Transport Global
  4      Compare Transport Global to Current System
  5      Backup a Transport Global
  6      Install Package(s)
          Restart Install of Package(s)
          Unload a Distribution

Select Installation <TEST ACCOUNT> Option: 1 Load a Distribution

```

Figure 5-1: Selecting Installation option

5.2 Loading the Distribution

Be sure to select the appropriate path for the system.

```

Enter a Host File: d:\builds\bccd0200.k

KIDS Distribution saved on Jul 06, 2020@17:02:53
Comment: CCDA 2.0

This Distribution contains Transport Globals for the following Package(s):
  Build CCDA 2.0
Distribution OK!

Want to Continue with Load? YES// <ENTER>
Loading Distribution...

Build CCDA 2.0 has an Environmental Check Routine
Want to RUN the Environment Check Routine? YES// <ENTER>
  CCDA 2.0
Will first run the Environment Check Routine, BCCD2E00

Use INSTALL NAME: CCDA 2.0 to install this Distribution.

```

Figure 5-2: Loading the Distribution for CCDA

5.3 Verifying Checksums in Transport Global

```

Select Installation Option: 2  Verify Checksums in Transport Global
Select INSTALL NAME:  CCDA 2.0      Loaded from Distribution      Loaded
from Distribution  7/6/20@17:03:27
=> CCDA 2.0 ;Created on Jul 06, 2020@17:02:53

This Distribution was loaded on Jul 06, 2020@17:03:27 with header of
CCDA 2.0 ;Created on Jul 06, 2020@17:02:53
It consisted of the following Install(s):
    CCDA 2.0

Want each Routine Listed with Checksums: Yes// <ENTER>  YES
DEVICE: HOME// <ENTER>  VT

PACKAGE: CCDA 2.0      Aug 05, 2020 3:30 pm                        PAGE 1
-----

BCCD2E00  Calculated  11800212
BCCD2P00  Calculated  127159025
BCCDCLAS  Calculated  17947583
BCCDDPT   Calculated  205848464
BCCDDPT1  Calculated  196384299
BCCDEDIT  Calculated  20674313
BCCDHIE   Calculated  32263175
BCCDMON   Calculated  8602149
BCCDPAT   Calculated  74215133
BCCDPUSH  Calculated  3932704
BCCDSTAT  Calculated  7822109
BCCDTSK   Calculated  12613577
BCCDTX    Calculated  81208
BCCDTXA   Calculated  44219545
BCCDTXAB  Calculated  31015445
BCCDTXAC  Calculated  31408318
BCCDTXAD  Calculated  5493737
BCCDUTIL  Calculated  153719818
BCCDUTL1  Calculated  158009686

    19 Routines checked, 0 failed.

```

Figure 5-3: Verifying Checksums in Transport Global

5.4 Installing the CCDA Package

The installation output is different for a new installation versus a re-installation.

5.4.1 New Installation

Be sure to enter the correct directory information for the system.

```

Select Installation Option: 6  Install Package(s)
Select INSTALL NAME:  CCDA 2.0      Loaded from Distribution      Loaded
from Distribution  7/6/20@17:03:27
=> CCDA 2.0 ;Created on Jul 06, 2020@17:02:53

```

```
This Distribution was loaded on Jul 06, 2020@17:03:27 with header of
  CCDA 2.0 ;Created on Jul 06, 2020@17:02:53
  It consisted of the following Install(s):
    CCDA 2.0
Checking Install for Package CCDA 2.0
Will first run the Environment Check Routine, BCCD2E00

Install Questions for CCDA 2.0

Incoming Files:

    90310.01 BCCD SITE PARAMETERS
Note: You already have the 'BCCD SITE PARAMETERS' File.

    90310.02 BCCD MESSAGE TYPE
Note: You already have the 'BCCD MESSAGE TYPE' File.

    90310.03 BCCD CLASS TRANSPORT (including data)
Note: You already have the 'BCCD CLASS TRANSPORT' File.
I will OVERWRITE your data with mine.

    90310.04 BCCD DP QUEUE DEFINITIONS
Note: You already have the 'BCCD DP QUEUE DEFINITIONS' File.

Want KIDS to Rebuild Menu Trees Upon Completion of Install? YES// N NO

Want KIDS to INHIBIT LOGONs during the install? YES// N NO
Want to DISABLE Scheduled Options, Menu Options, and Protocols? YES// N NO

Enter the Device you want to print the Install messages.
You can queue the install by enter a 'Q' at the device prompt.
Enter a '^' to abort the install.

DEVICE: HOME// <ENTER> VT

Install Started for CCDA 2.0 :
      Jul 06, 2020@17:03:44

Build Distribution Date: Jul 06, 2020

Installing Routines:

Installing Data Dictionaries:

Installing Data:

Installing PACKAGE COMPONENTS:

Installing INPUT TEMPLATE

Installing OPTION

Running Post-Install Routine: POST^BCCD2P00

Starting Post-Install Routine
```

```

    Creating Taxonomies
Updating [BCCD NO LIMIT LOINC CODES] taxonomy...

    Updating BCCD SITE PARAMETERS

    Stopping BCCD background processes

    Importing pre-install and installer classes
List started on 07/06/2020 17:03:45
Listing file E:\InterSystems\HealthShare\mgr\Temp\hdXhRbfs34zv4Q.xml as xml
List finished successfully.

Load started on 07/06/2020 17:03:45
Loading file E:\InterSystems\HealthShare\mgr\Temp\6tbEHE07NPWiXw.xml as xml
Imported class: BCCD.Install.Installer
Imported class: BCCD.Install.PreInstallV2
Imported class: BCCD.Install.ProductionSettings
Compiling 3 classes, using 3 worker jobs
Compiling class BCCD.Install.PreInstallV2
Compiling class BCCD.Install.Installer
Compiling class BCCD.Install.ProductionSettings
Compiling table BCCD_Install.ProductionSettings
Compiling routine BCCD.Install.PreInstallV2.1
Compiling routine BCCD.Install.Installer.1
Compiling routine BCCD.Install.ProductionSettings.1
Load finished successfully.

Updating 90310.03 record

    Running Ensemble Pre-Install Tasks
17:03:45.685:Ens.Director: StopProduction initiated.
17:03:45.685:Ens.Director: No Production is running (Suspended)

Specify the name of the BMW database: BMWGOLD4
Specify Full Directory path for the database for new namespace CCDAGOLD4:
k:\ensemble\ccdagold4\

    Creating CCDAGOLD4 namespace

    2020-07-06 09:35:39 0 BCCD.Install.Installer: Installation starting at
2020-07-06 09:35:39, LogLevel=1
2020-07-06 09:35:39 1 CreateDatabase: Creating database CCDAGOLD4 in
K:\Ensemble\ccdagold4\ with resource %DB_%DEFAULT
2020-07-06 09:35:44 1 CreateNamespace: Creating namespace CCDAGOLD4 using
CCDAGOLD4/CCDAGOLD4
2020-07-06 09:35:45 1 ActivateConfiguration: Activating Configuration
2020-07-06 09:35:46 1 GlobalMapping: Adding globalmapping BCCDS to
CCDAGOLD4 from GOLD4
2020-07-06 09:35:46 1 GlobalMapping: Adding globalmapping VA(200) to
CCDAGOLD4 from GOLD4
2020-07-06 09:35:46 1 ClassMapping: Adding classmapping BMW to CCDAGOLD4
from BMWGOLD4
2020-07-06 09:35:46 1 EnableEnsemble: Enabling CCDAGOLD4

Compilation started on 07/06/2020 09:35:56 with qualifiers 'ck', compiling
6 classes
Compiling class EnsLib.EDI.ASTM.SearchTable
Compiling class EnsLib.EDI.EDIFACT.SearchTable
Compiling class EnsLib.EDI.X12.SearchTable
Compiling class EnsLib.EDI.XML.SearchTable
Compiling class EnsLib.HL7.SearchTable

```

```

Compiling class EnsLib.XML.SearchTable
Compiling table EnsLib EDI ASTM.SearchTable
Compiling table EnsLib EDI EDIFACT.SearchTable
Compiling table EnsLib EDI X12.SearchTable
Compiling table EnsLib EDI XML.SearchTable
Compiling table EnsLib HL7.SearchTable
Compiling table EnsLib XML.SearchTable
Compiling routine EnsLib.EDI.ASTM.SearchTable.1
Compiling routine EnsLib.EDI.EDIFACT.SearchTable.1
Compiling routine EnsLib.EDI.X12.SearchTable.1
Compiling routine EnsLib.EDI.XML.SearchTable.1
Compiling routine EnsLib.HL7.SearchTable.1
Compiling routine EnsLib.XML.SearchTable.1
Compilation finished successfully in 23.81s.
2020-07-06 09:36:21 1 ActivateConfiguration: Activating Configuration
2020-07-06 09:36:24 1 SystemSetting: Setting
Config.Miscellaneous.EnableLongStrings to 1
2020-07-06 09:36:24 1 CreateNamespace: Creating namespace GOLD4 using
GOLD4/GOLD4
2020-07-06 09:36:24 1 ActivateConfiguration: Activating Configuration
2020-07-06 09:36:26 1 GlobalMapping: Adding globalmapping BCCD.Xfer.* to
GOLD4 from CCDAGOLD4
2020-07-06 09:36:26 1 GlobalMapping: Adding globalmapping BCCD.Audit.* to
GOLD4 from CCDAGOLD4
2020-07-06 09:36:26 1 ClassMapping: Adding classmapping BCCD to GOLD4 from
CCDAGOLD4
2020-07-06 09:36:26 1 EnableEnsemble: Enabling GOLD4

Compilation started on 07/06/2020 09:36:34 with qualifiers 'ck', compiling
6 classes
Compiling class EnsLib.EDI.ASTM.SearchTable
Compiling class EnsLib.EDI.EDIFACT.SearchTable
Compiling class EnsLib.EDI.X12.SearchTable
Compiling class EnsLib.EDI.XML.SearchTable
Compiling class EnsLib.HL7.SearchTable
Compiling class EnsLib.XML.SearchTable
Compiling table EnsLib EDI ASTM.SearchTable
Compiling table EnsLib EDI EDIFACT.SearchTable
Compiling table EnsLib EDI X12.SearchTable
Compiling table EnsLib EDI XML.SearchTable
Compiling table EnsLib HL7.SearchTable
Compiling table EnsLib XML.SearchTable
Compiling routine EnsLib.EDI.ASTM.SearchTable.1
Compiling routine EnsLib.EDI.EDIFACT.SearchTable.1
Compiling routine EnsLib.EDI.X12.SearchTable.1
Compiling routine EnsLib.EDI.XML.SearchTable.1
Compiling routine EnsLib.HL7.SearchTable.1
Compiling routine EnsLib.XML.SearchTable.1
Compilation finished successfully in 74.23s.
2020-07-06 09:37:48 1 ActivateConfiguration: Activating Configuration
2020-07-06 09:37:51 0 BCCD.Install.Installer: Installation succeeded at
2020-07-06 09:37:51
2020-07-06 09:37:51 0 %Installer: Elapsed time 131.287893s

Deleting BCCD package, if it exists

Importing BCCD package
List started on 07/06/2020 17:03:46
Listing file E:\InterSystems\HealthShare\mgr\Temp\6jbczeZHU9LVWw.xml as xml
List finished successfully.

```

```
Load started on 07/06/2020 17:03:47
Loading file E:\InterSystems\HealthShare\mgr\Temp\nTQSW3ILxdmfEA.xml as xml
Imported class: BCCD.Audit.AuditLog
Imported class: BCCD.Audit.ErrorThrottle
Imported class: BCCD.Audit.ProductionStatus
Imported class: BCCD.CCDA.AD
Imported class: BCCD.CCDA.ADXP

(long list of classes, tables, and routines omitted for brevity)

Imported class: BCCD.Xfer.Result
Imported class: BCCD.Xfer.ResultOrganizer
Imported class: BCCD.Xfer.SocialHistory
Imported class: BCCD.Xfer.VitalSign
Imported class: BCCD.Xfer.VitalSignOrganizer
Compiling 586 classes, using 16 worker jobs
Compiling class BCCD.CCDA.ActClassContract
Compiling class BCCD.CCDA.ActMoodCompletionTrack
Compiling class BCCD.CCDA.ActRelationshipAccounting
Compiling class BCCD.CCDA.ActContainer
Compiling class BCCD.CCDA.ActClassObservation

(long list of classes, tables, and routines omitted for brevity)

Compiling routine BCCD.Prod.Processes.Alert.Thread1SyncResponses.1
Compiling routine BCCD.Prod.Processes.BuildDoc.Thread1.1
Compiling routine BCCD.Prod.Processes.BuildDoc.Thread1ChildThreads.1
Compiling routine BCCD.Prod.Processes.BuildDoc.Thread1PendingResponses.1
Compiling routine BCCD.Prod.Processes.BuildDoc.Thread1SyncResponses.1
Load finished successfully.

Updating 90310.03 record

    Updating BCCD parameters

        Running Ensemble post-install tasks
17:04:19.139:Ens.Director: StopProduction initiated.
17:04:19.154:Ens.Director: No Production is running (Suspended)
Compilation started on 07/06/2020 17:04:19 with qualifiers 'ck'
Compiling class BCCD.Prod.Production
Compiling routine BCCD.Prod.Production.1
Compilation finished successfully in 0.329s.

Post-install routine is complete

    Updating Routine file...

    Updating KIDS files...

CCDA 2.0 Installed.
        Jul 06, 2020@17:04:19

    Not a VA primary domain

    NO Install Message sent

Install Completed
```

Figure 5-4: New installation of the CCDA package

5.4.2 Re-installation

```
Select Installation Option: 6 Install Package(s)
Select INSTALL NAME: CCDA 2.0 Loaded from Distribution
7/6/20@17:03:27
=> CCDA 2.0 ;Created on Jul 06, 2020@17:02:53

This Distribution was loaded on Jul 06, 2020@17:03:27 with header of
CCDA 2.0 ;Created on Jul 06, 2020@17:02:53
It consisted of the following Install(s):
CCDA 2.0
Checking Install for Package CCDA 2.0

Install Questions for CCDA 2.0

Incoming Files:

90310.01 BCCD SITE PARAMETERS
Note: You already have the 'BCCD SITE PARAMETERS' File.

90310.02 BCCD MESSAGE TYPE
Note: You already have the 'BCCD MESSAGE TYPE' File.

90310.03 BCCD CLASS TRANSPORT (including data)
Note: You already have the 'BCCD CLASS TRANSPORT' File.
I will OVERWRITE your data with mine.

90310.04 BCCD DP QUEUE DEFINITIONS
Note: You already have the 'BCCD DP QUEUE DEFINITIONS' File.

Want KIDS to Rebuild Menu Trees Upon Completion of Install? YES// N NO

Want KIDS to INHIBIT LOGONs during the install? YES// N NO
Want to DISABLE Scheduled Options, Menu Options, and Protocols? YES// N NO

Enter the Device you want to print the Install messages.
You can queue the install by enter a 'Q' at the device prompt.
Enter a '^' to abort the install.

DEVICE: HOME// <ENTER> VT

Install Started for CCDA 2.0 :
Jul 06, 2020@17:03:44

Build Distribution Date: Jul 06, 2020

Installing Routines:

Installing Data Dictionaries:

Installing Data:
Jul 06, 2020@17:03:44

Installing PACKAGE COMPONENTS:

Installing INPUT TEMPLATE
```

```
Installing OPTION

Running Post-Install Routine: POST^BCCD2P00

Starting Post-Install Routine

    Creating Taxonomies
Updating [BCCD NO LIMIT LOINC CODES] taxonomy...

    Updating BCCD SITE PARAMETERS

    Stopping BCCD background processes

    Importing pre-install and installer classes
List started on 07/06/2020 17:03:45
Listing file E:\InterSystems\HealthShare\mgr\Temp\hdXhRbfs34zv4Q.xml as xml
List finished successfully.

Load started on 07/06/2020 17:03:45
Loading file E:\InterSystems\HealthShare\mgr\Temp\6tbEHE07NPWiXw.xml as xml
Imported class: BCCD.Install.Installer
Imported class: BCCD.Install.PreInstallV2
Imported class: BCCD.Install.ProductionSettings
Compiling 3 classes, using 3 worker jobs
Compiling class BCCD.Install.PreInstallV2
Compiling class BCCD.Install.Installer
Compiling class BCCD.Install.ProductionSettings
Compiling table BCCD_Install.ProductionSettings
Compiling routine BCCD.Install.PreInstallV2.1
Compiling routine BCCD.Install.Installer.1
Compiling routine BCCD.Install.ProductionSettings.1
Load finished successfully.

Updating 90310.03 record

    Running Ensemble Pre-Install Tasks
17:03:45.685:Ens.Director: StopProduction initiated.
17:03:45.685:Ens.Director: No Production is running (Suspended)

    Deleting BCCD package if it exists
Deleting class BCCD.Prod.Processes.Alert.Context
Deleting class BCCD.Prod.Processes.Alert.Thread1
Deleting class BCCD.Prod.Processes.BuildDoc.Context
Deleting class BCCD.Prod.Processes.BuildDoc.Thread1
Deleting class BCCD.Audit.AuditLog

(long list of classes omitted for brevity)

Deleting class BCCD.Xfer.Result
Deleting class BCCD.Xfer.ResultOrganizer
Deleting class BCCD.Xfer.SocialHistory
Deleting class BCCD.Xfer.VitalSign
Deleting class BCCD.Xfer.VitalSignOrganizer

    Importing BCCD package
List started on 07/06/2020 17:03:46
Listing file E:\InterSystems\HealthShare\mgr\Temp\6jbcrcZHU9LVWw.xml as xml
List finished successfully.

Load started on 07/06/2020 17:03:47
Loading file E:\InterSystems\HealthShare\mgr\Temp\nTQSW3ILxdmfEA.xml as xml
```

```
Imported class: BCCD.Audit.AuditLog
Imported class: BCCD.Audit.ErrorThrottle
Imported class: BCCD.Audit.ProductionStatus
Imported class: BCCD.CCDA.AD
Imported class: BCCD.CCDA.ADXP

(long list of classes omitted for brevity)

Imported class: BCCD.Xfer.Result
Imported class: BCCD.Xfer.ResultOrganizer
Imported class: BCCD.Xfer.SocialHistory
Imported class: BCCD.Xfer.VitalSign
Imported class: BCCD.Xfer.VitalSignOrganizer
Compiling 586 classes, using 16 worker jobs
Compiling class BCCD.CCDA.ActClassContract
Compiling class BCCD.CCDA.ActMoodCompletionTrack
Compiling class BCCD.CCDA.ActRelationshipAccounting
Compiling class BCCD.CCDA.ActContainer
Compiling class BCCD.CCDA.ActClassObservation

(long list of classes, tables, and routines omitted for brevity)

Compiling routine BCCD.Prod.Processes.Alert.Thread1SyncResponses.1
Compiling routine BCCD.Prod.Processes.BuildDoc.Thread1.1
Compiling routine BCCD.Prod.Processes.BuildDoc.Thread1ChildThreads.1
Compiling routine BCCD.Prod.Processes.BuildDoc.Thread1PendingResponses.1
Compiling routine BCCD.Prod.Processes.BuildDoc.Thread1SyncResponses.1
Load finished successfully.

Updating 90310.03 record

  Updating BCCD parameters

    Running Ensemble post-install tasks
17:04:19.139:Ens.Director: StopProduction initiated.
17:04:19.154:Ens.Director: No Production is running (Suspended)
Compilation started on 07/06/2020 17:04:19 with qualifiers 'ck'
Compiling class BCCD.Prod.Production
Compiling routine BCCD.Prod.Production.1
Compilation finished successfully in 0.329s.

Post-install routine is complete

  Updating Routine file...

  Updating KIDS files...

CCDA 2.0 Installed.
      Jul 06, 2020@17:04:19

  Not a VA primary domain

  NO Install Message sent

Install Completed
```

Figure 5-5: Re-installing the CCDA Package

6.0 Installation Configuration

After successfully installing the CCDA 2.0 build, there are six post-installation steps: optionally encrypt the CCDA database, optionally configure email notifications, turn off journaling in the newly created CCDA database, configure CCDA CSP application, set up site-specific CCDA parameters, and start CCDA Messaging.

6.1 Encrypt CCDA Database

The CCDA KIDS installation creates a CCDA database but does not encrypt this new database. If the site uses encryption, then the newly created CCDA database must be encrypted. The steps in this section describe how to encrypt the new database. If the database was encrypted for CCDA 1.0, then it is not necessary to perform these instructions; instead skip to Section 6.2.

6.1.1 Dismount the Database

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

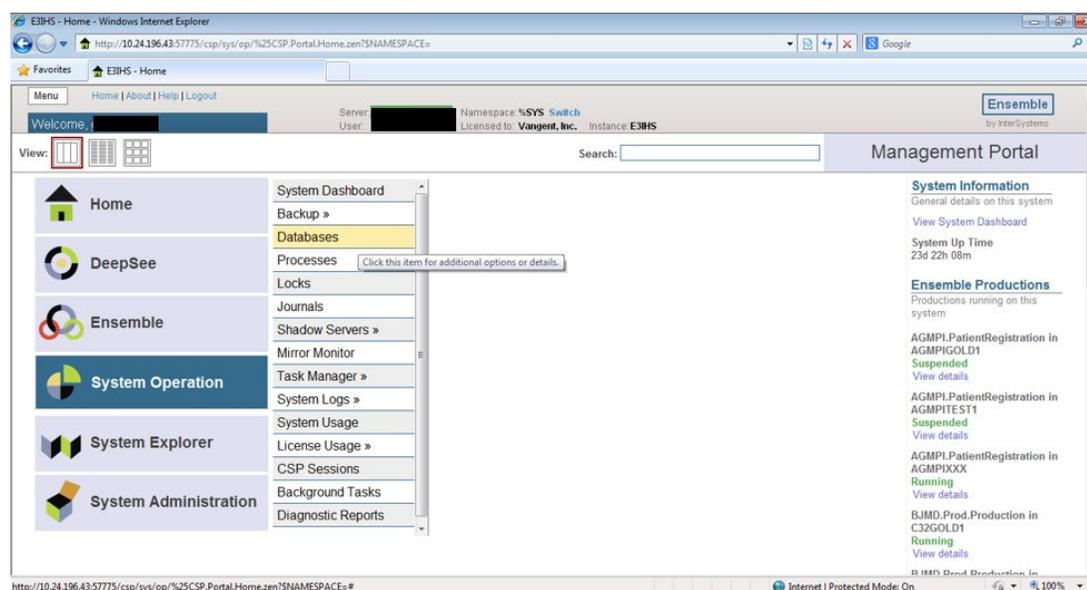


Figure 6-1: HealthShare's Management Portal, **Databases** option

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

Database Name	File Path	Size	Status	Mount	Read Only	Backup	Action
BUSATEST1	h:\e3rns-bus\test1	Unlimited	40 MountedRW	No	No	Dis-mount	-
C32DEV3	j:\ensemble3rns-c32dev3	Unlimited	144 MountedRW	No	Yes	Dis-mount	-
C32GOLD1	j:\ensemble3rns-c32gold1	Unlimited	1175 MountedRW	No	No	Dis-mount	-
C32GOLD2	j:\ensemble3rns-c32gold2	Unlimited	162 MountedRW	No	No	Dis-mount	-
C32GOLD4	j:\ensemble3rns-c32gold4	Unlimited	144 MountedRW	No	Yes	Dis-mount	-
C32PRECERT	j:\precert\c32precert	Unlimited	144 MountedRW	No	Yes	Dis-mount	-
C32TEST1	j:\ensemble3rns-c32test1	Unlimited	144 MountedRW	No	Yes	Dis-mount	-
C32TEST4	j:\ensemble3rns-c32test4	Unlimited	144 MountedRW	No	Yes	Dis-mount	-
CCDADEV2	k:\ensemble2012\ccdadev2	Unlimited	162 MountedRW	No	Yes	Dis-mount	-
CCDAGOLD1	k:\ensemble2012\ccdagold1	Unlimited	102 MountedRW	No	Yes	Dis-mount	-
CCDAGOLD4	k:\ensemble2012\ccdagold4	Unlimited	12679 MountedRW	No	No	Dis-mount	-
CCDAPRECERT	j:\precert\ccdaprecert	Unlimited	3807 MountedRW	No	No	Dis-mount	-
CCDATEST4	k:\ensemble2012\ccdatest4	Unlimited	162 MountedRW	No	Yes	Dis-mount	-
DEV2	j:\ensemble3rns-dev2	Unlimited	33694 MountedRW	No	Yes	Dis-mount	-
DEV2NJ	j:\ensemble3rns-dev2nj	Unlimited	1643 MountedRW	No	No	Dis-mount	-
DEV3	j:\ensemble3rns-dev3	Unlimited	33694 MountedRW	No	Yes	Dis-mount	-
DEV3NJ	j:\ensemble3rns-dev3nj	Unlimited	1643 MountedRW	No	No	Dis-mount	-
DEV4	j:\ensemble3rns-dev4	Unlimited	33694 MountedRW	No	Yes	Dis-mount	-
DEV4NJ	j:\ensemble3rns-dev4nj	Unlimited	1643 MountedRW	No	No	Dis-mount	-
DEV7	l:\e3rns-dev7	Unlimited	36584 MountedRW	No	No	Dis-mount	-
DEV7NJ	l:\e3rns-dev7nj	Unlimited	799 MountedRW	No	No	Dis-mount	-
DOCBOOK	h:\intersystems\3rns\mgr\docbook	Unlimited	151 MountedRW	No	No	Dis-mount	-
EDRTTEST1	j:\ensemble3rns-edrttest1	Unlimited	10 MountedRW	No	Yes	Dis-mount	-
ENSEMO	h:\intersystems\3rns\mgr\ensdemo	Unlimited	41 MountedRW	No	No	Dis-mount	-
ENSEMBLE	h:\intersystems\3rns\mgr\ensemble	Unlimited	11 MountedRW	No	Yes	Dis-mount	-
ENSLIB	h:\intersystems\3rns\mgr\enslib	Unlimited	257 MountedRW	No	No	Dis-mount	-
ENSRPMS	j:\ensemble\ensrpm	Unlimited	10 MountedRW	No	Yes	Dis-mount	-
ERXGOLD1	k:\ensemble2012\enrgold1	Unlimited	11 MountedRW	No	Yes	Dis-mount	-
ERXPRECERT	j:\precert\enrprecert	Unlimited	113 MountedRW	No	No	Dis-mount	-
ERXTEST1	k:\ensemble2012\enrtest1	Unlimited	11 MountedRW	No	Yes	Dis-mount	-
GOLD1	j:\ensemble3rns-gold1	Unlimited	28173 MountedRW	No	Yes	Dis-mount	-

Figure 6-2: Databases

- At the “Are you sure you want to dismount database CCDAXXXX?” prompt, click **OK**.

6.1.2 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.

6.1.3 Re-mount the Database

- Sign on to HealthShare’s Management Portal.
- Click on **System Operation** in the left column. Then click **Databases**.

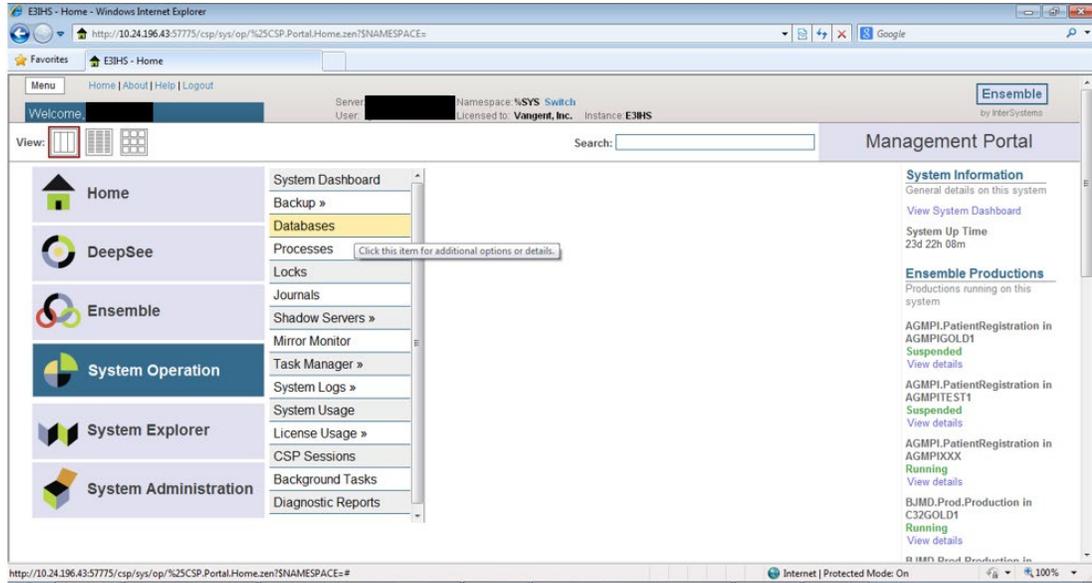


Figure 6-3: HealthShare's Management Portal, **Databases** option

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

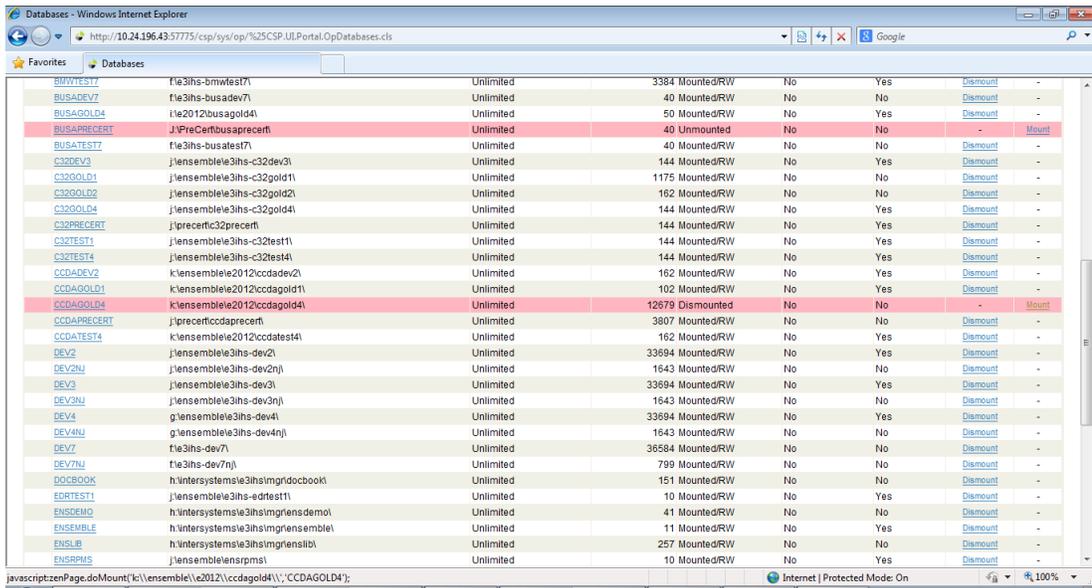


Figure 6-4: **Databases**

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

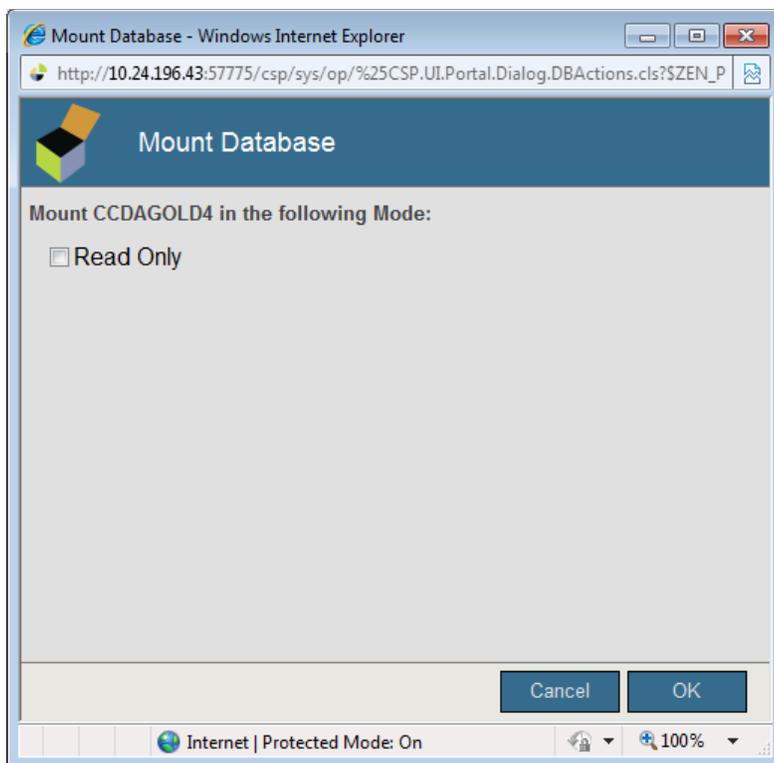


Figure 6-5: **Mount Databases**

6.2 Configuring Email Notifications

This step allows the configuration of the CCDA Ensemble production to automatically send email notifications about new errors to select users. A notification is typically sent as soon as a new error occurs, but the number of emails is limited to one per 15 minutes in order to prevent flooding the recipients' mailboxes with multiple errors. This functionality is only available on systems that have an email server configured. This step is optional and may be skipped to not be notified about CCDA errors by email. For requests coming from the EHR GUI, errors may be viewed in the CCDA Audit Log, which is described in the *CCDA Security Manual*, even if email notifications are not set up.

If email notifications were configured for CCDA 1.0, the KIDS installation for CCDA 2.0 attempts to preserve these settings.

Follow the steps in this section to verify the settings were preserved and re-apply them if they were not preserved.

First, check if the email server requires signing on. If it does, credentials need to be set up first. To set up credentials, sign on to HealthShare's Management Portal as an administrator and follow the following instructions:

1. Switch to the CCDA namespace. Instructions for switching namespaces can be found in Section 4.6.2. The namespace will consist of “CCDA” concatenated with the name of the RPMS namespace.
2. On the **Management Portal** screen, click **Ensemble | Configure >> | Credentials**.

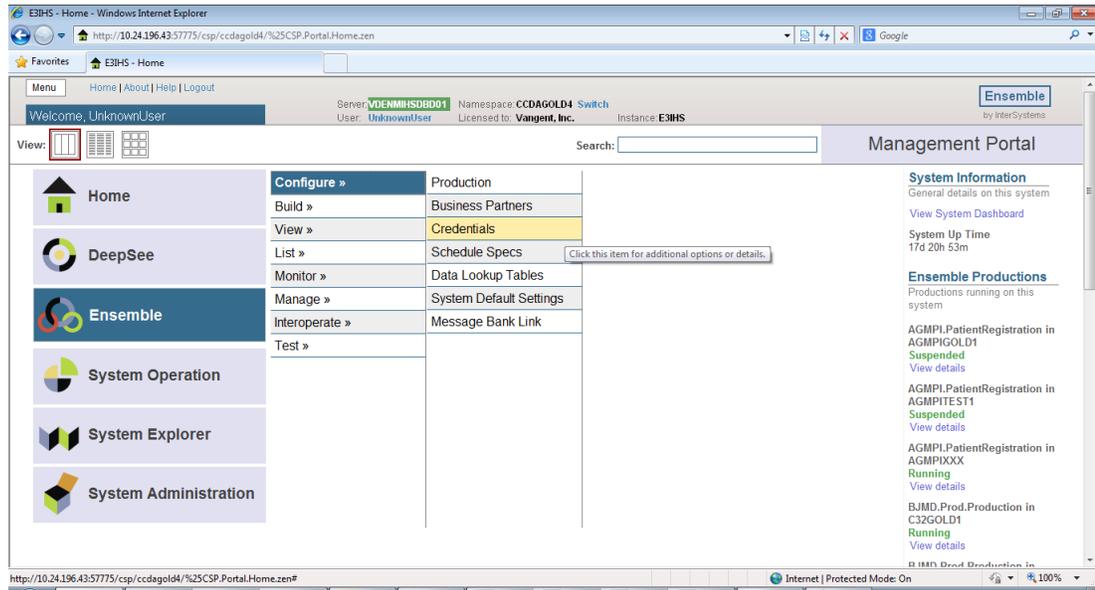


Figure 6-6: Management Portal, Credentials option

The **Credentials Viewer** screen will appear.

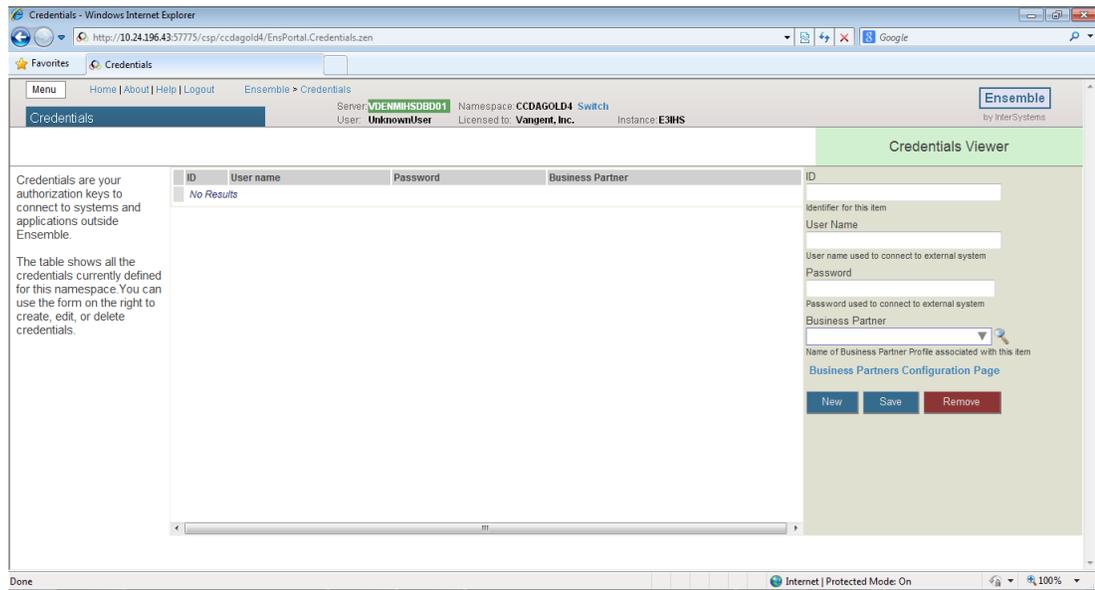


Figure 6-7: Credentials

3. In the **ID** field, enter an arbitrary ID that will identify the email server, e.g., **mail-server**. This ID will be entered later in the **Credentials** field of the email notification screen.
4. In the **Username** field, the Ensemble user name will be defaulted. Change it to a valid user name on the email server that can be used to sign on to the server and send emails.
5. In the **Password** field, enter the password for the user name that was entered in the previous step.
6. Leave the **Business Partner** field blank.
7. Click **Save**. The newly entered credential in the list in the center of the screen will be displayed.

Once credentials have been configured or it has been confirmed that the email server does not require sign on credentials, sign on to HealthShare's Management Portal as the administrator.

8. Switch to the CCDA namespace. Instructions for switching namespaces can be found in Section 4.6.2. The namespace will consist of "CCDA" concatenated with the name of the RPMS namespace.
9. On the **Management Portal** page, click **Ensemble | Configure >> | Production**.

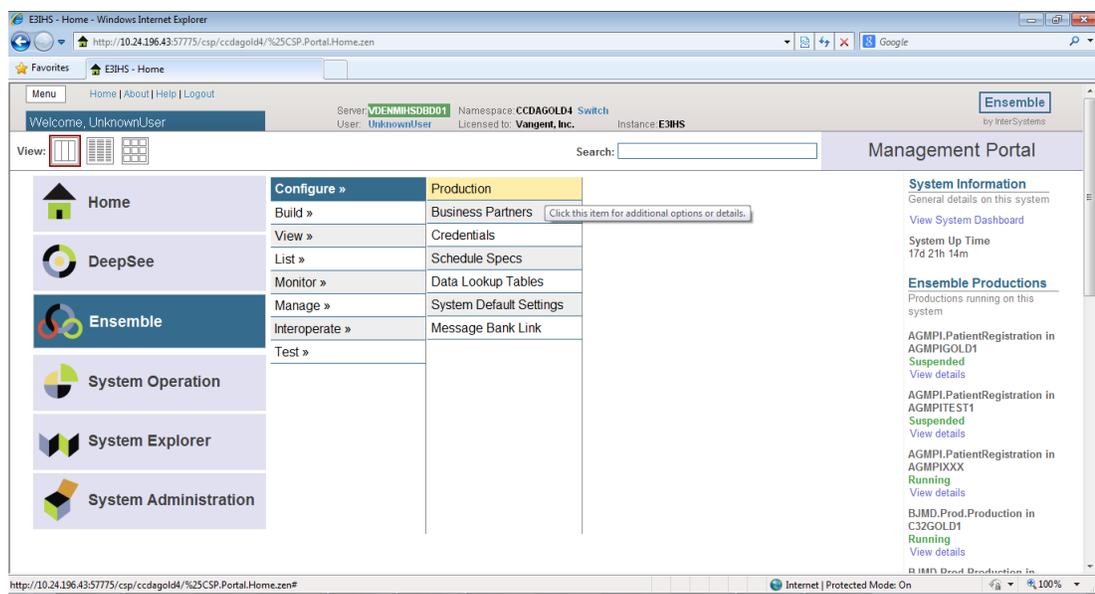


Figure 6-8: Management Portal, Production option

10. On the **Production Configuration** screen, click **Open**.

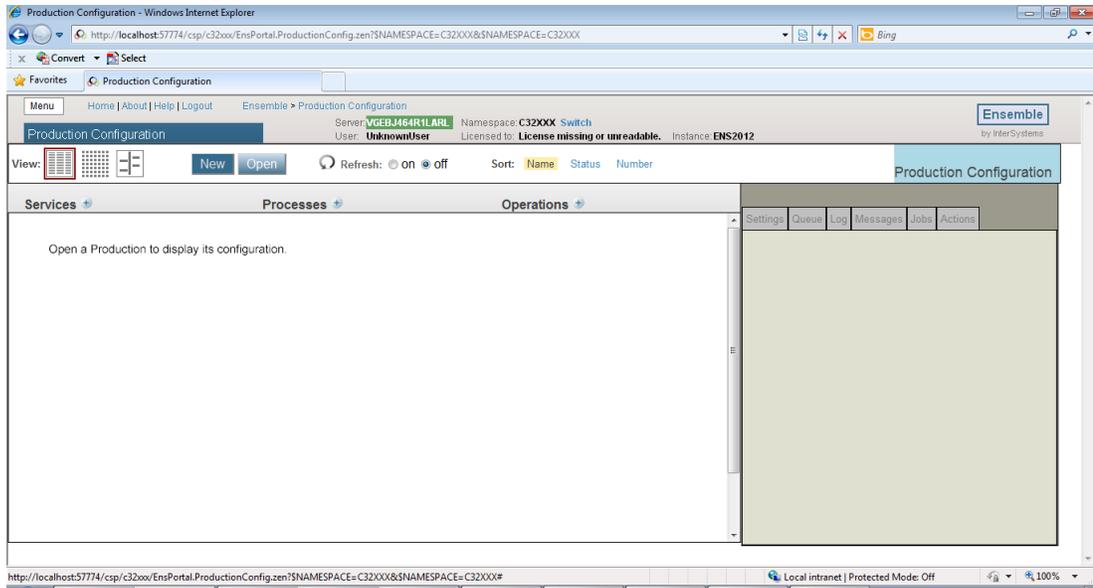


Figure 6-9: **Production Configuration**, no production open

11. In the **Finder Dialog** window, click **BCCD >>| Prod >> | Production** to select the **CCDA production**.

The **Production Configuration** screen will update to display the items for the **CCDA production**.

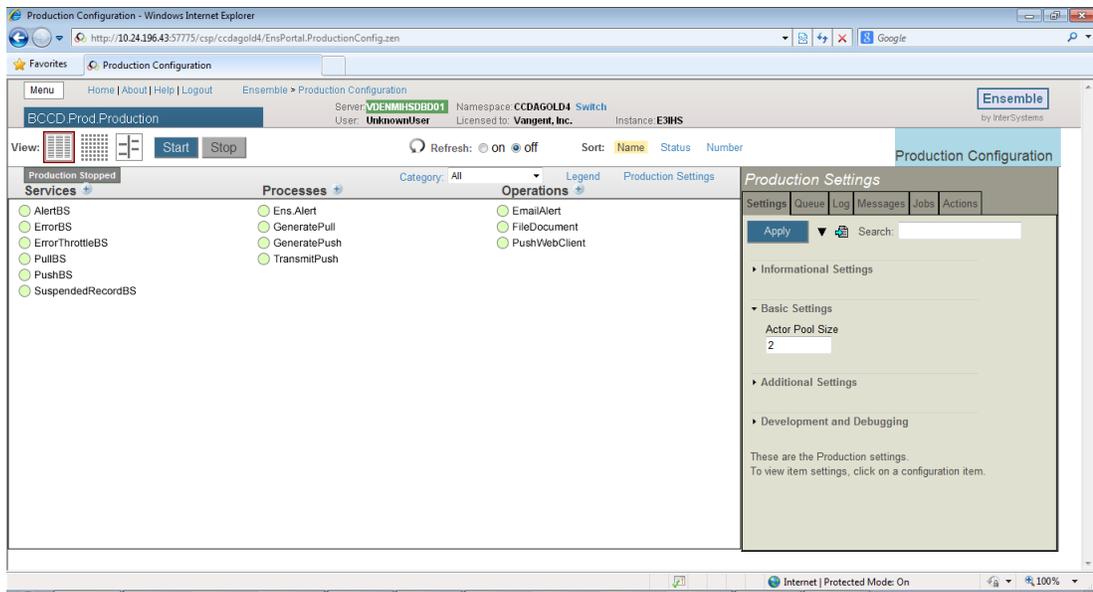


Figure 6-10: **Production Configuration**, CCDA production open

12. Click on **EmailAlert** in the **Operations** column. The details of this process will be displayed in the **Production Settings** box on the right side of the page.

13. In the **EmailAlert** box on the right side, be sure the **Basic Settings** and **Additional Settings** sections are expanded, and then enter values in Table 6-1.

Table 6-1: EmailAlert settings

Field Name	Value
SMTP Server	IP address or name of the email server at the site
SMTP Port	Port number used by the email server. The default is 25
Credentials	Only required if the email server requires authentication (see instructions above)
Recipient	A comma-delimited list of email addresses that Ensemble will be sending alerts to, e.g. John.Doe@ihs.gov , Jane.Doe@ihs.gov . For production systems, be sure to include OIT's CCDA alert group, CCDAalert@ihs.gov .
From	The email address that the alerts will appear as coming from, e.g. CCDA@sitename.ihs.gov

If the site has a functional email server but some of this information is not known, contact the Help Desk. Do not modify any other values on this screen since it can invalidate the Ensemble production. Once all required data has been entered, click **Apply** at the top of the **EmailAlert** box.

Figure 6-11 contains a sample screenshot which shows what the page will look like during the configuration process.

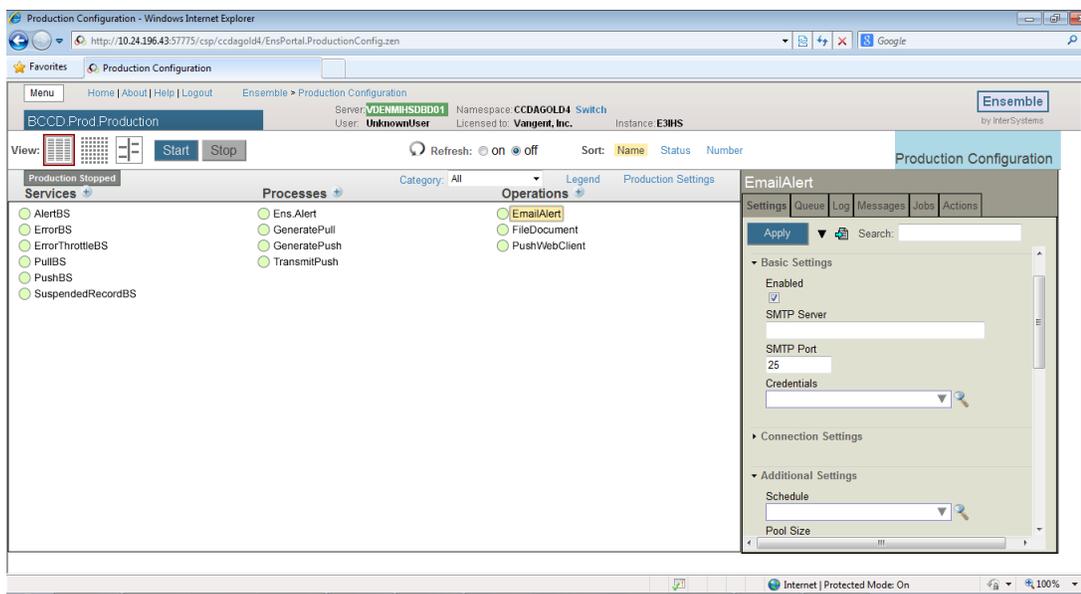


Figure 6-11: Ensemble email server configuration

6.3 Configure SSL/TLS

If SSL/TLS was configured in a prior CCDA installation, skip Section 6.3.1 but follow the steps in Section 6.3.2 as the production settings are overwritten during installation.

If installing the CCDA application for the first time, follow the steps in Sections 6.3.1 and 6.3.2.

6.3.1 Create SSL/TLS Configuration

1. Sign in to Ensemble's Management Portal.
2. Click on **System Administration** at the bottom of the left column. Then click **Security >> | SSL/TLS Configurations**.
3. Click the **Create New Configuration** button.
4. On the **New SSL/TLS Configuration** screen, type **CCDA** in the **Configuration Name** box. You may enter a description in the **Description** box, but it is not required.
5. Verify that the **Enabled** check box is checked.
6. In the **Type** section, verify that **Client** is selected.
7. In the **Peer Certificate Verification Level** section, verify that **None** is selected.
8. Verify that the text boxes in the **File Containing Trusted Certificate Authority X.509 Certificate**, **File Containing Certificate Revocation List**, and **This Client's Credentials** sections are blank.
9. In the **Cryptographic Settings** section, ensure that only the **TLSv1** check box is checked. The **SSLv2** and **SSLv3** checkboxes should be unchecked.
10. Click the **Save** button to save the configuration.

The settings should look like the example in Figure 6-12.

Use the form below to create a new SSL/TLS configuration:

Configuration Name: Required.

Description:

Enabled:

Type: Client Server

Peer certificate verification level: None Require

File containing trusted Certificate Authority X.509 certificate: Browse...

File containing Certificate Revocation List: Browse...

This client's credentials:

Note: Only necessary if this client will be asked to authenticate itself to servers.

File containing this configuration's X.509 certificate: Browse...

File containing associated private key: Browse...

Private key type: RSA DSA

Private key password:

Private key password (confirm):

Cryptographic settings:

Protocols: SSLv2 SSLv3 TLSv1

Enabled ciphersuites: TLSv1:SSLv3:ADH:LOW:EXP:@STRENGTH

Figure 6-12: New SSL/TLS Configuration screen

6.3.2 Update Ensemble Production

1. Navigate to the home screen in Ensemble's Management Portal by clicking the **Home** link at the top of the screen.
2. Click the **Switch** link at the top center of the screen. In the **Namespace Chooser** window, select the **CCDA** namespace and click **OK**. The **CCDA** namespace will consist of the letters **CCDA** followed by the name of the **RPMS** namespace. For example, if the **RPMS** namespace were named **ABC**, then the **CCDA** namespace would be named **CCDAABC**.
3. Click on **Ensemble** in the column on the left. Then click **Configure >> | Production**.
4. On the **Production Configuration** screen, click on **PushWebClient** in the **Operations** column.
5. In the **PushWebClient** pane on the right, expand the **Connection Settings** group if necessary. For the **SSL Configuration** field, select **CCDA** from the list.
6. Click the **Apply** button at the top of the pane to save the changes.

Figure 6-13 shows an example of the Production Configuration screen.

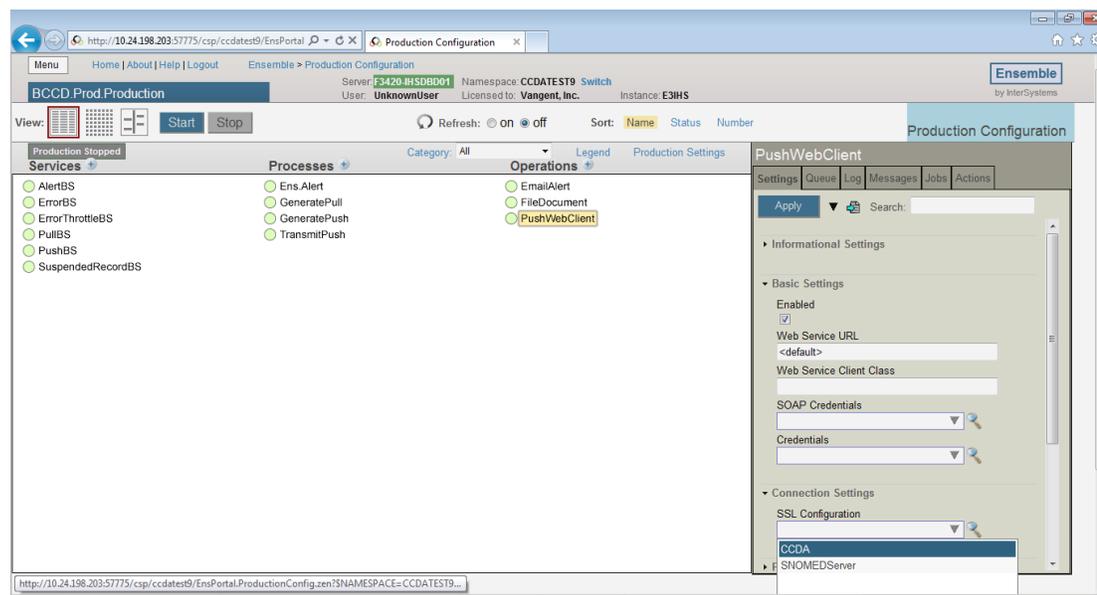


Figure 6-13: Production Configuration screen

6.4 Turning Off Journaling in the CCDA Database

The newly created CCDA database will have journaling turned on by default. It is important to disable it before starting CCDA. If it is not disabled, CCDA processing will generate a high volume of journaling activity, which may fill up the journaling area.

If installing CCDA 2.0 in an environment where CCDA 1.0 was previously configured, it is not necessary to perform this step again; skip to Section 6.5.

In order to turn off journaling for CCDA, follow these instructions:

1. Access HealthShare's Management Portal, and sign on as an administrator.
2. Select **System Administration** at the bottom of the left column, then select **Configuration >> | System Configuration >> | Local Databases**.

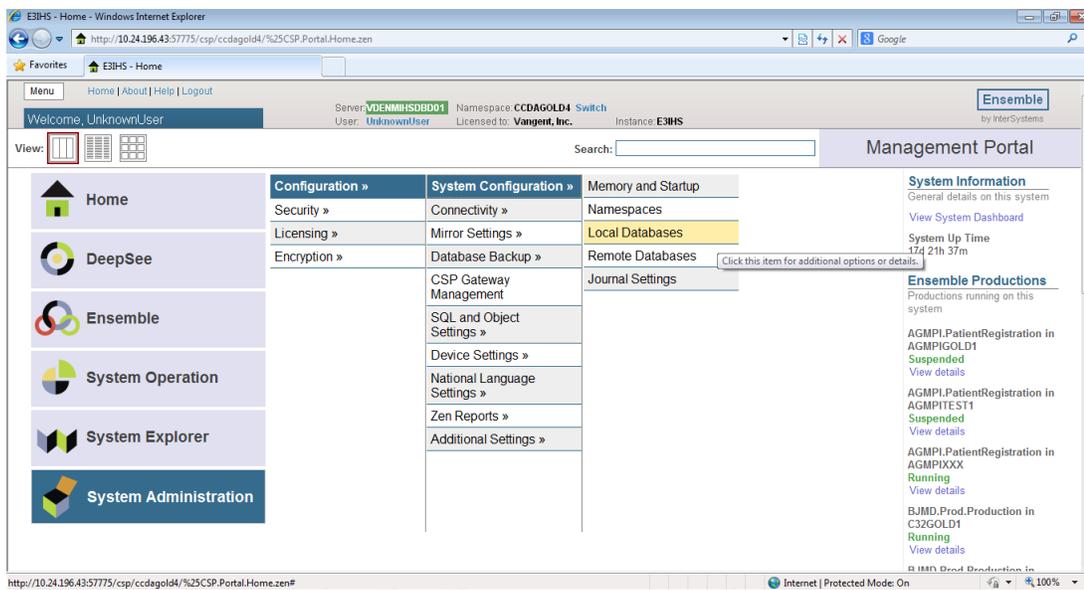


Figure 6-14: Management Portal, Local Databases option

- When the **Local Databases** page displays, find the row with the name of the newly created CCDA database. The name of the database will consist of **CCDA** concatenated with the name of the RPMS database. For example, if the RPMS database is called TEST5, then the associated CCDA database will be called CCDATEST5.

Note: The **Journal** column in this row will display **Yes**.

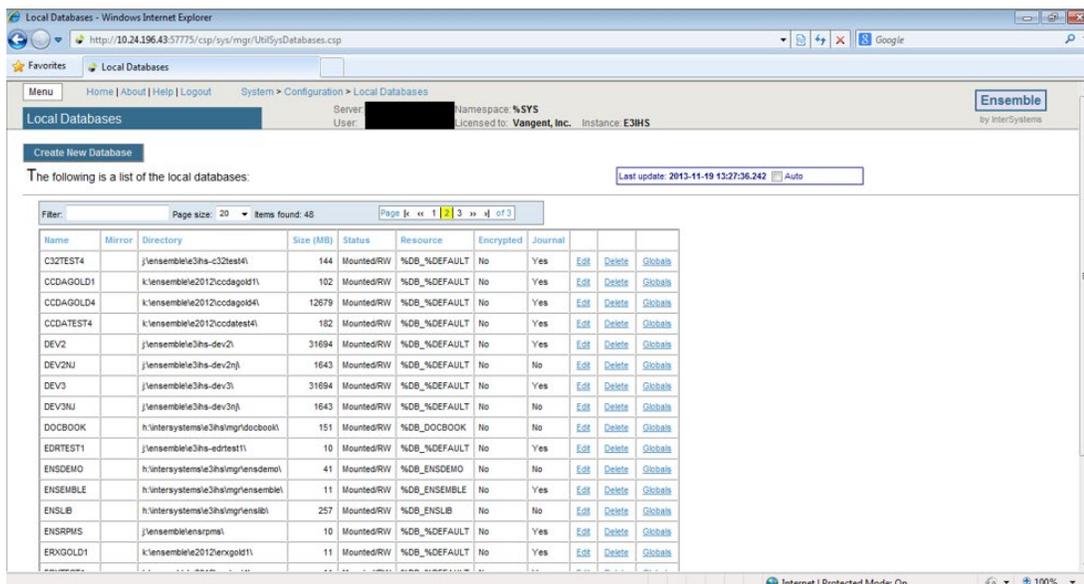


Figure 6-15: Local Databases

- Click **Edit** in the identified row to open the **Database Properties** page. Find the line which says **Global Journal State** and change the value from **Yes** to **No**. Ignore the warning that displays on the page.

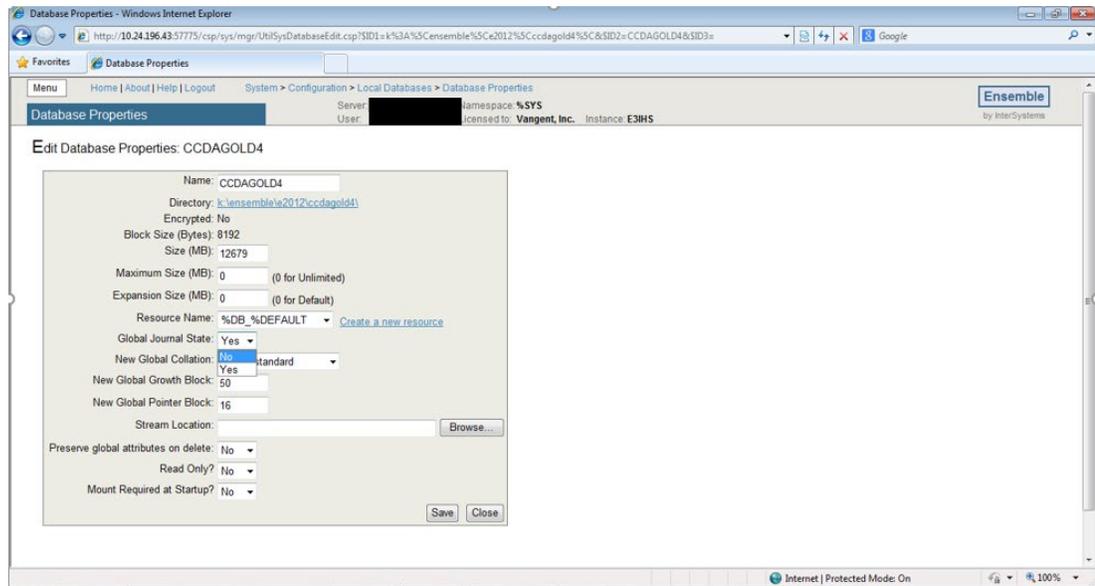


Figure 6-16: Database Properties

- After making the change, click **Save** at the bottom of the screen.
- If the HealthShare instance hosts multiple RPMS namespaces, repeat steps 1–5 for all new CCDA databases.
- As mentioned earlier, add the newly created CCDA database(s) to the list of backed-up databases.

6.5 Configuring the Resource for the CCDA Database

Each HealthShare database has a resource assigned to it. In order to access the database, a user must have the same or higher resource assigned to them. The CCDA database is assigned the %DB_%DEFAULT resource during the installation. To make it easier to manage user resources, it is recommended that the resource of the CCDA database match the resource of the RPMS database. This section contains steps for determining the resource of the RPMS database and changing the resource of the CCDA database, if needed.

If installing CCDA 2.0 in an environment where CCDA 1.0 was previously configured, it is not necessary to perform this step again; skip to Section 6.6.

1. Navigate to the **Local Databases** page in HealthShare’s Management Portal. Navigate there by clicking on the **Local Databases** link at the top of the **Database Properties** page at the end of Section 6.4, or by following steps 1–2 in Section 6.4.

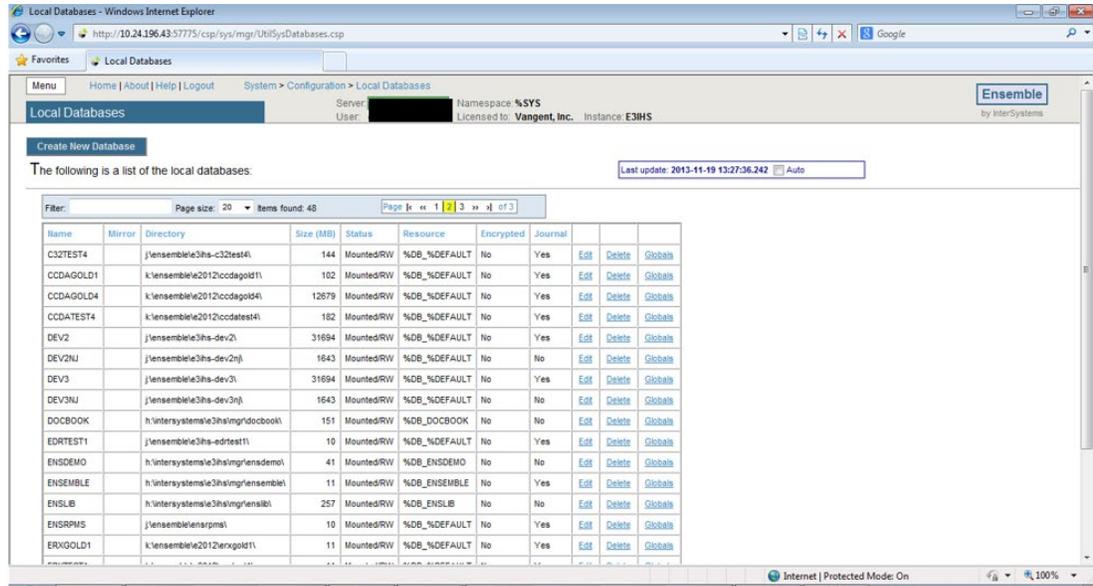


Figure 6-17: Local Databases

2. Find the row with the name of the RPMS database, and click **Edit** in that row to display the **Database Properties** page.

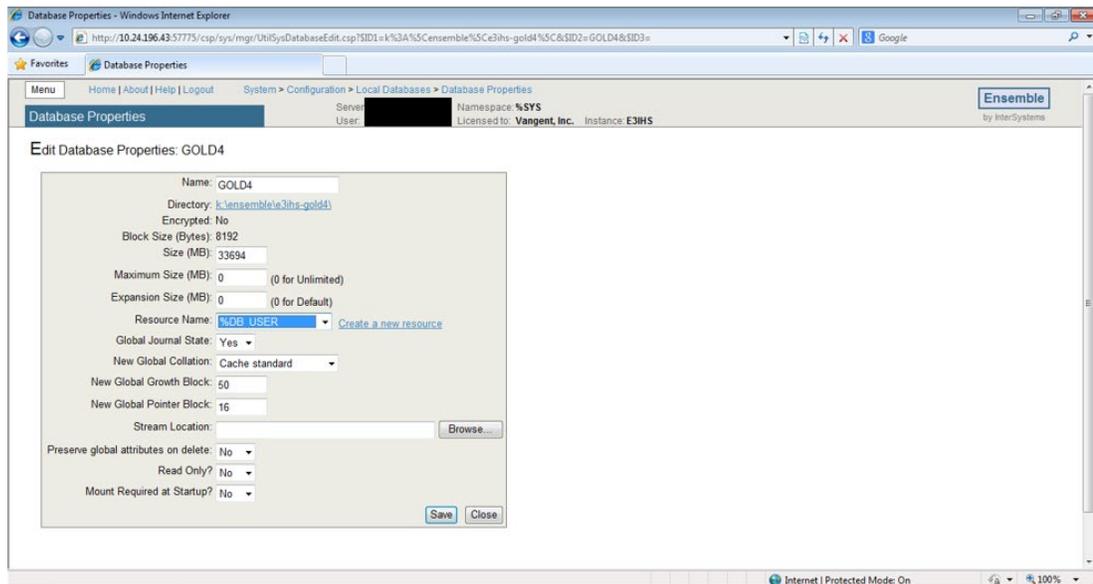


Figure 6-18: Database Properties page

3. Find the value of the **Resource Name** field. If the value is %DB_%DEFAULT, it is not necessary to change the resource for the CCDA database; skip to Section 6.6. If the **Resource Name** is another value, make a note of the value. This value will need to be selected later.
4. Return to the **Local Databases** page by clicking the **Local Databases** link at the top center of the page.
5. On the **Local Databases** page, find the row with the name of the CCDA database. Click **Edit** in the identified row.
6. On the **Database Properties** page for the CCDA database, change the value of **Resource Name** to the value noted in step 3.
7. Click **Save** at the bottom of the screen.

6.6 Configuring the CCDA CSP Application

Next security settings need to be configured for the CCDA CSP application which was automatically created by the installation process. If this step was not completed, the EHR GUI application will not be able to display CCDA documents. If installing CCDA 2.0 in an environment where CCDA 1.0 was previously configured, it is not necessary to perform this step again; skip to Section 6.7.

The steps are as follows:

1. Sign on to HealthShare's Management Portal as an administrator.
2. Select **System Administration** in the left column, then select **Security >> | System Security >> | Authentication/CSP Session Options**.

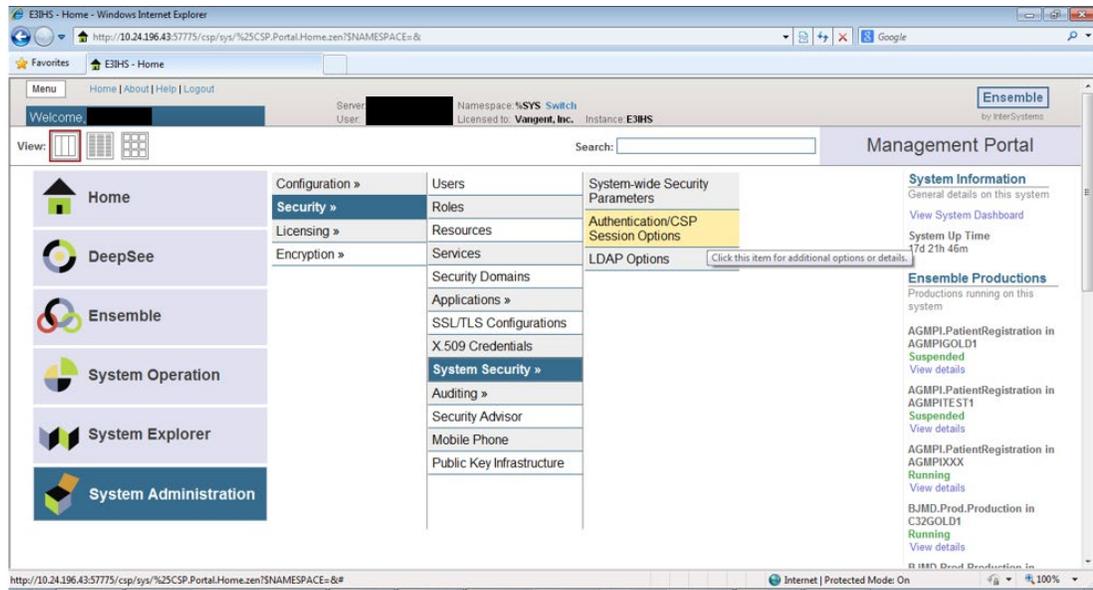


Figure 6-19: Management Portal, Authentication/CSP Session Options option

A page similar to Figure 6-20 will display:

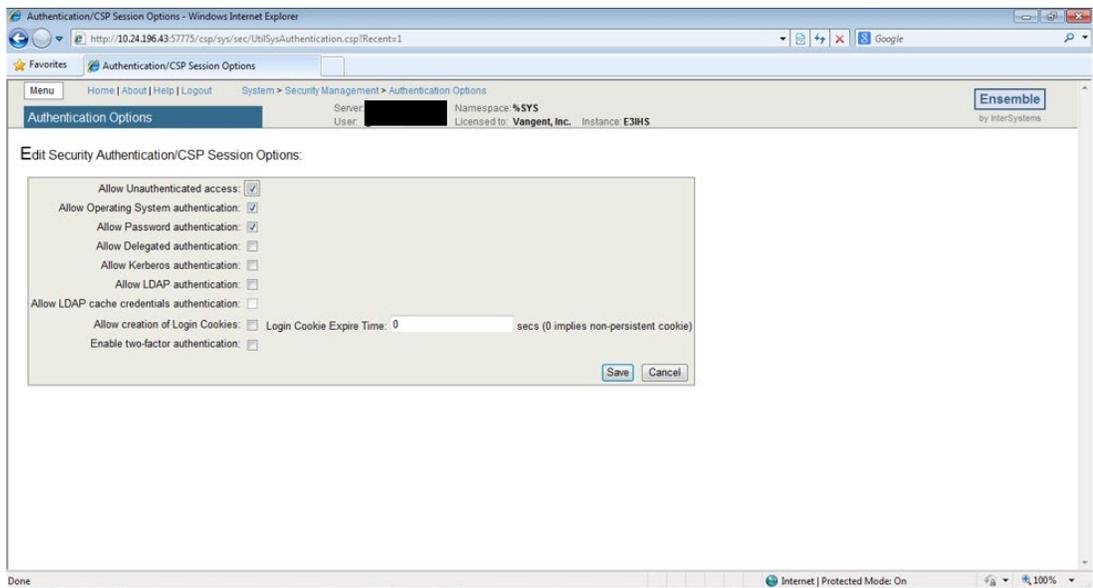


Figure 6-20: Authentication Options

3. On the **Authentication Options** page, make sure that the **Allow Unauthenticated access** check box is checked. If the box is not checked, select the check box, and click **Save**. The change will take effect immediately.
4. Return to the main **Management Portal** page. Select **System Administration** in the left column, then select **Security >> | Applications >> | Web Applications**.

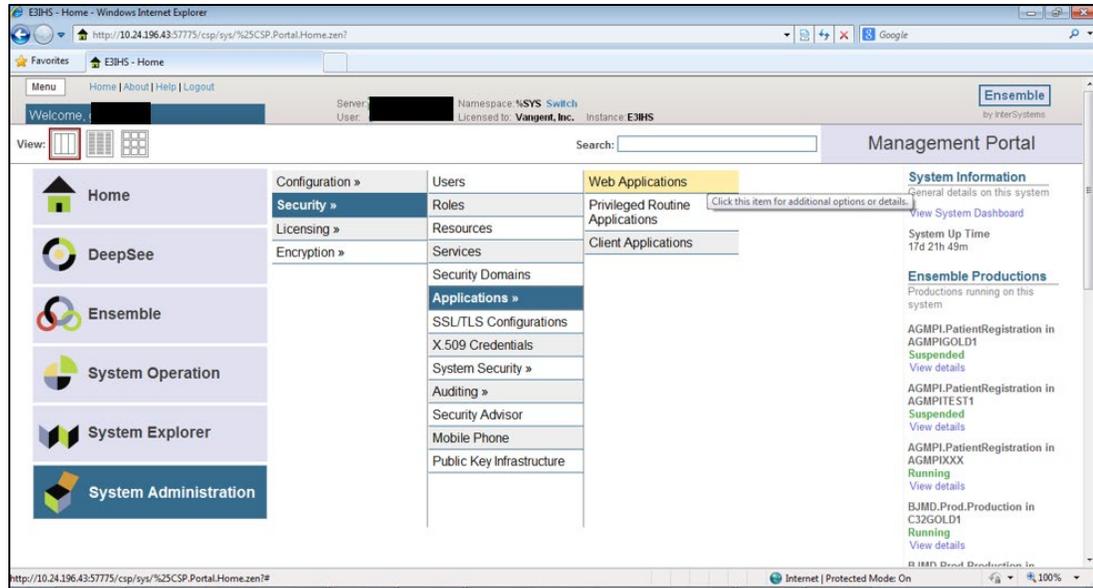


Figure 6-21: Management Portal, Web Applications option

A page similar to Figure 6-22 will display.

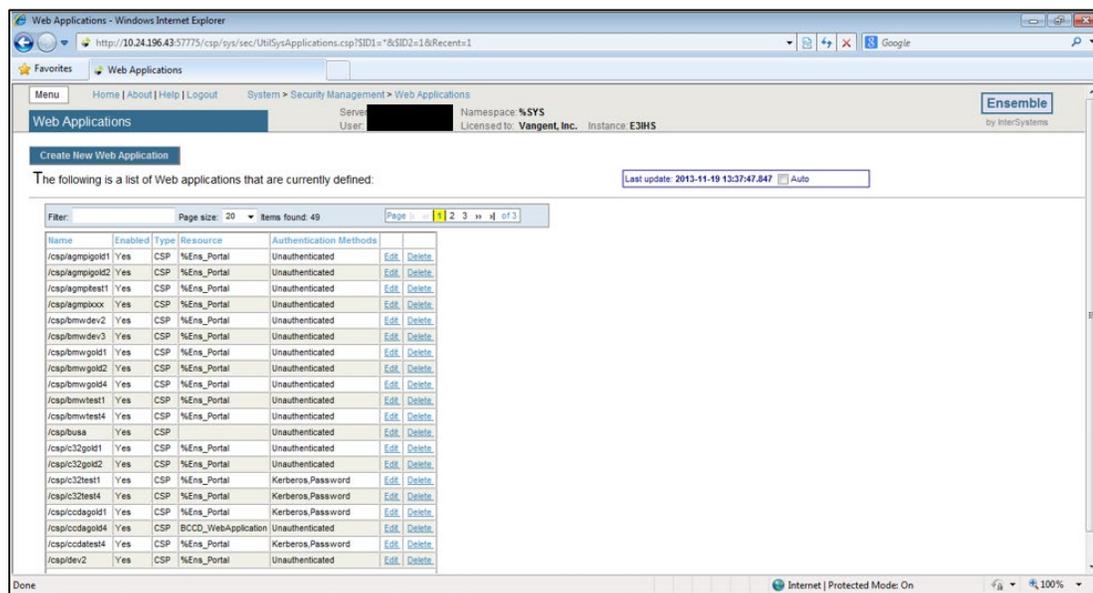


Figure 6-22: Web Applications

- Identify the newly created CCDA CSP application in the **Name** column. The name will start with “/csp/” and will be followed by “ccda” and then the name of the production namespace. For example, if the production namespace is “PRD”, the new CCDA application will be called “/csp/ccdaprd”.

- Check that the **Authentication Methods** column for this CSP application contains the word **Unauthenticated** and *no* other words. If the column contains anything else, click the **Edit** link in the same row to display the page shown in Figure 6-23.

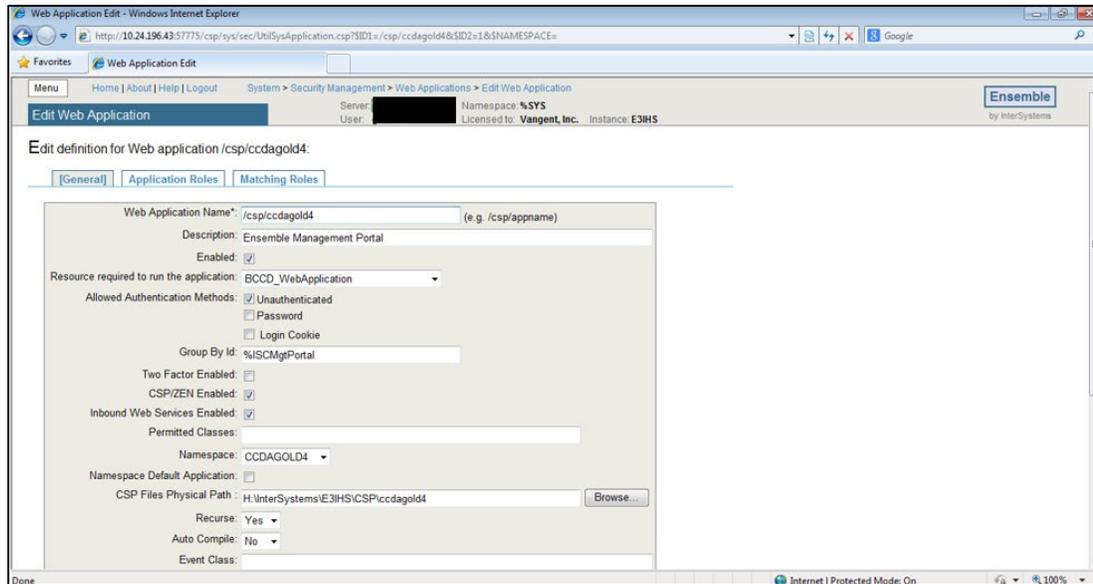


Figure 6-23: **Edit Web Application**

- Find the words **Allowed Authentication Methods** on the left side. Check the **Unauthenticated** box next to them. Deselect the **Password** box immediately below the **Unauthenticated** box. If a **Kerberos** displays, clear that box. Scroll down to the bottom of the screen and click **Save**. The changes will take effect immediately.
- Return to the main **Management Portal** page. Select **System Administration** in the left column, then select **Security >> | Users**.

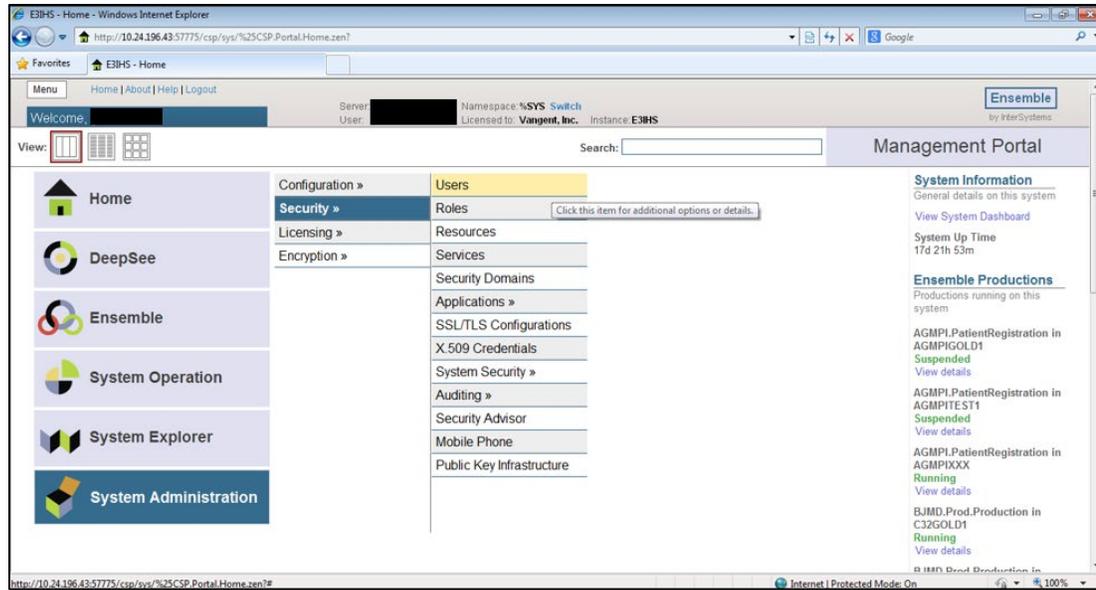


Figure 6-24: Management Portal, Users option

A page similar to Figure 6-25 will display.

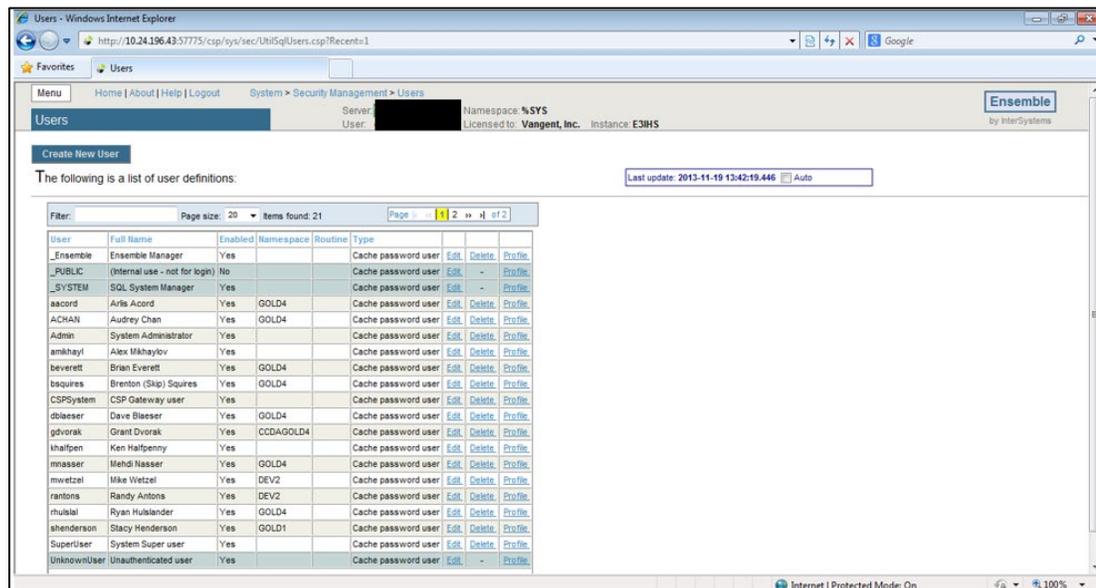


Figure 6-25: Users

9. Find the user called **UnknownUser** on this page.

Note: If there are many Ensemble users defined on the system, the list will take up more than one page. In that case, type **Unknown** in the **Filter** field at the top of the page and the list will display all users whose names include the word **Unknown**.

10. Once **UnknownUser** is found, click the **Edit** link in that row. The page shown in Figure 6-26 will display.

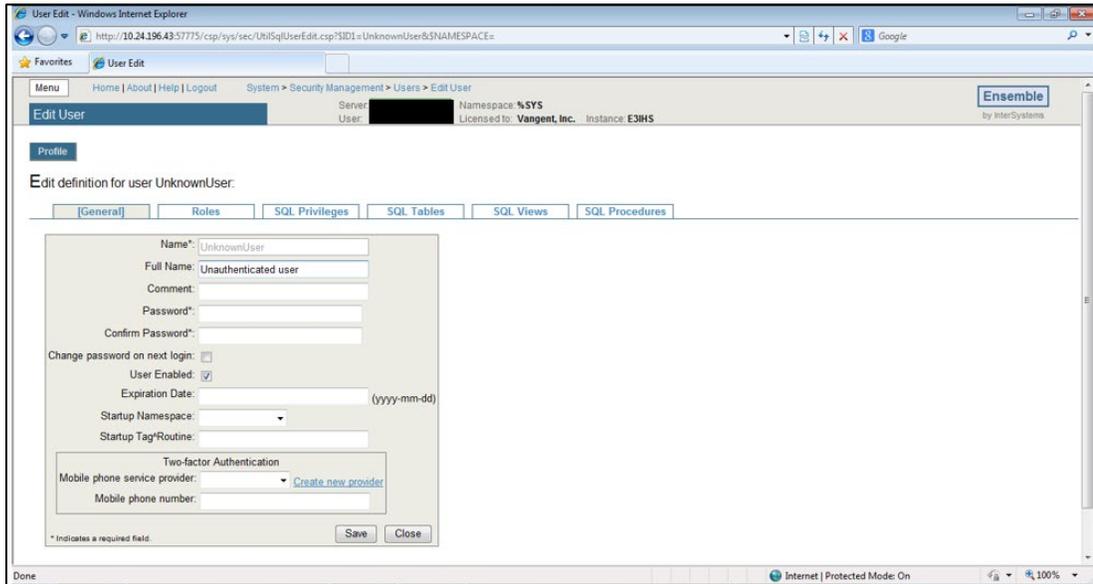


Figure 6-26: **Edit User, General tab**

11. Make sure that the **User Enabled** box is checked. If the box is not checked, check it and click **Save** at the bottom of the screen.

12. Next, click on the word **Roles** immediately under **Edit definition for user UnknownUser**. The page shown in Figure 6-27 will display.

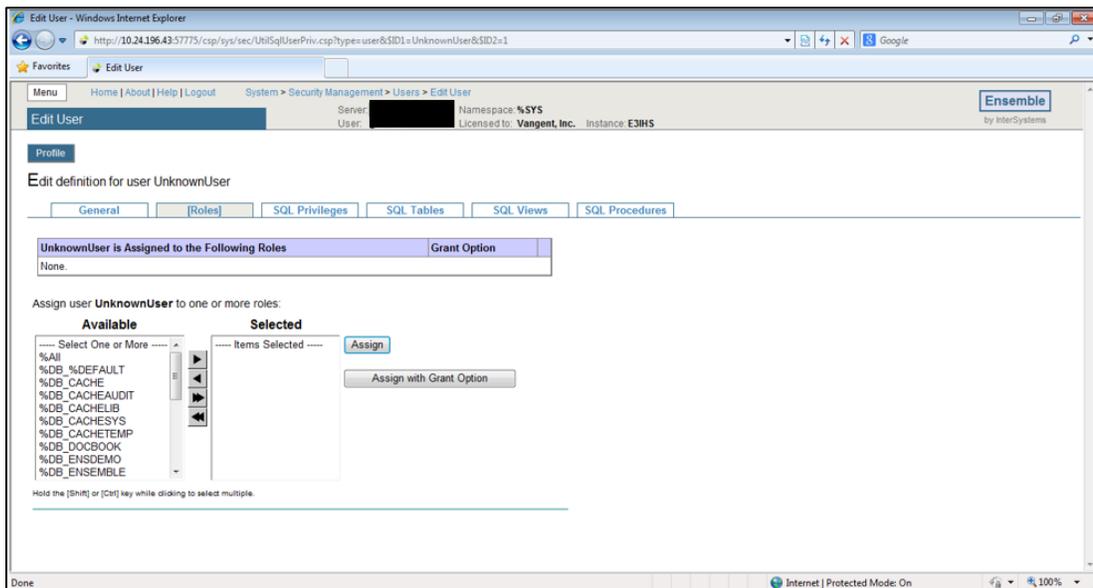


Figure 6-27: **Edit User, Roles tab**

13. If the list of roles which appears at the top of the page immediately under **UnknownUser is Assigned to the Following Roles** includes **%All**, then no changes are needed. If not, then select **%All** in the list of **Available roles** on the left side of the page and click the top arrow located between the **Available** and **Selected** columns. Once **%All** displays in the **Selected** column, click on the **Assign** button and **%All** will appear under **UnknownUser is Assigned to the Following Roles** as shown in Figure 6-28.

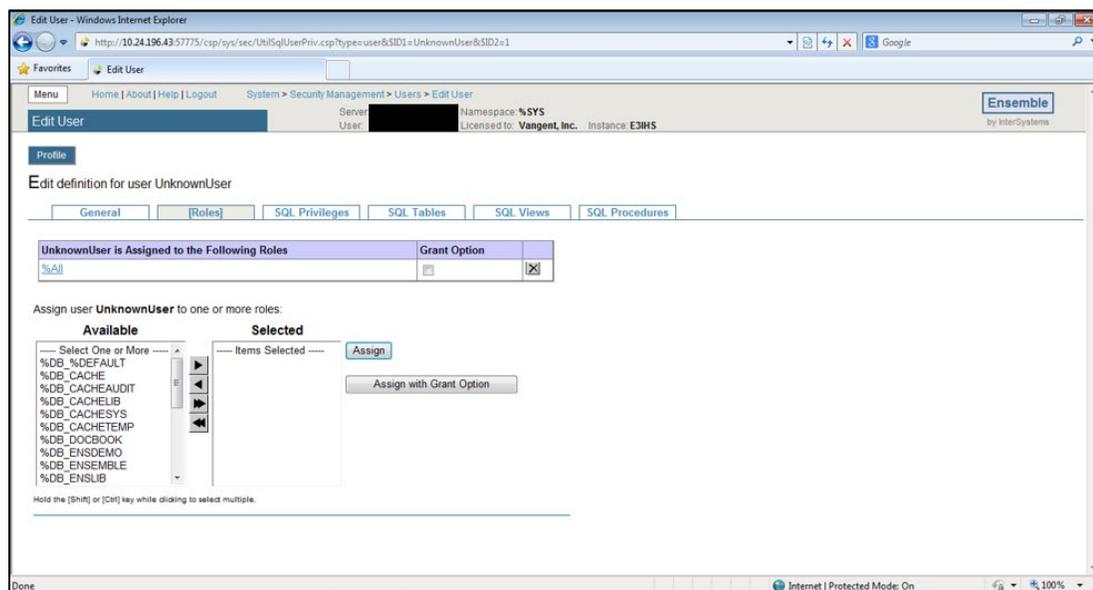


Figure 6-28: **Edit User**, **%All** role assigned

At this point the CCDA CSP application is set up and ready to be accessed from the EHR GUI.

Note: The firewall settings on all Windows workstations running the EHR GUI client need to be configured to accept incoming Web Services connections from Ensemble in order to display CCDAs. Contact the firewall administrator or Area Support to help resolve firewall issues.

6.7 Setting up Site-Specific CCDA Parameters

Access the RPMS menu **CCDA Menu** and configure the site-specific CCDA parameters.

Note: This menu is locked by security key **XUMGR**, which a site manager should already have. If this menu cannot be accessed from the regular “OPTION NAME” prompt in RPMS, add the key to the user settings.

The **BCCD Menu** consists of the eight menu options shown in Figure 6-29.

```
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 <TEST ACCOUNT> Option:
```

Figure 6-29: BCCD Menu

Access option **Edit CCDA Site Parameters**. It will ask four questions, which will determine how CCDA processing is performed at the site.

Note: Do not enter a value at the “TIME TO RUN NIGHTLY TASK” or “REPOSITORY LOCATION” prompts until the site is ready to begin the CCDA onboarding process.

The first prompt is “TIME TO RUN NIGHTLY TASK,” and there is no default value. If the RPMS site is not a part of the IHS HIE at this time, then skip the “TIME TO RUN NIGHTLY TASK” prompt. If the RPMS site is a part of the IHS HIE and the site manager has been provided with the location of the off-site CCDA repository, then enter the time when the site wants CCDA documents to be generated and transmitted on a nightly basis. It is recommended to enter a time outside of the regular business hours to minimize impact on the end users. The “TIME TO RUN NIGHTLY TASK” prompt accepts time values in all valid FileMan formats, e.g., 15:34 or 03:34PM. If this field was cleared in Section 4.6.2, then re-enter that value here.

The second prompt is “DAYS KEEP TRANSMISSION ENTRIES” and it is set to 30 days by default. The value may be between 7 and 999 days. The higher the number, the more disk space the intermediate compile structures created by the CCDA application will consume as described in Section 3.3 of this installation guide. On the other hand, if the default value is set too low, the compile data may be purged too soon and will not be available to facilitate debugging should any problems arise. If the site manager is not sure what value to enter, accept the default value of 30 days.

The third prompt is “REPOSITORY LOCATION” and there is no default value. If the RPMS site is not a part of the IHS HIE at this time, then skip the “REPOSITORY LOCATION” prompt. If the RPMS site is a part of the IHS HIE and the site manager has been provided with the location of the off-site CCDA repository, then enter that location at the “REPOSITORY LOCATION” prompt *exactly* as it was provided to the site manager. When a value is entered for both the “REPOSITORY LOCATION” and the “TIME TO RUN NIGHTLY TASK” prompts, the system will check whether the CCDA database has enough disk space to accommodate the process of generating CCDA documents for all patients in the system. An error message will be displayed if there is not enough disk space. If not enough disk space error message displays, allocate more disk space and try again.

The fourth prompt is “ENABLED,” and the default value is **NO**. This **NO** value controls whether CCDA documents are generated when CCDA is running. Change this value to **YES**.

Figure 6-30 displays a typical setup session.

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

TIME TO RUN NIGHTLY TASK: 01:00

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

DAYS KEEP TRANSMISSION ENTRIES: 30//
REPOSITORY LOCATION:
http://sample.ihs.gov:19090/PatientRecordReceiverService/PatientRecordReceiverService
ENABLED: YES//YES
```

Figure 6-30: Setting up CCDA Site Parameters

6.8 Starting CCDA Messaging

CCDA Messaging can be started once all site-specific CCDA parameters have been set up.

Sign on to the system as an Ensemble administrator using an account with the **%All** role. (It will not be possible to start CCDA Messaging using a non-privileged account.) Access the **Manage CCDA transmissions** option in the CCDA Menu. The option will first check that all site-specific CCDA parameters were set up properly and then ask to start CCDA. Answer **YES** and CCDA will be started. Figure 6-31 contains a typical screen capture.

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

CCDA processing task is not running
```

```
Start CCDA? No// YES (Yes)
Attempting to start CCDA (JUL 16, 2013@16:09:54)..CCDA started
```

Figure 6-31: Starting CCDA

Once CCDA has been started, CCDA documents will be available via the EHR GUI in about two minutes. If the site is a part of the IHS HIE and the location of the off-site repository has been specified, the system will not start generating CCDA documents until TIME TO RUN NIGHTLY TASK, which was entered while setting up CCDA site parameters.

Note: The first time the nightly job runs, it can take over two days to generate CCDA documents for all patients in the database.

Normally, starting CCDA will automatically start the associated Ensemble production within two minutes. If the _SYSTEM user account has been disabled, then it will not be possible to automatically start the Ensemble production. In that case, the production will need to be started manually. Follow these steps to start the Ensemble production manually:

1. Sign on to HealthShare's Management Portal as the administrator.
2. Switch to the CCDA namespace. Instructions for switching namespaces can be found in Section 4.6.2. The namespace will consist of "CCDA" concatenated with the name of the RPMS namespace.
3. On the main **Management Portal** page, select **Ensemble** in the left column, then select **Configure >> | Production**.

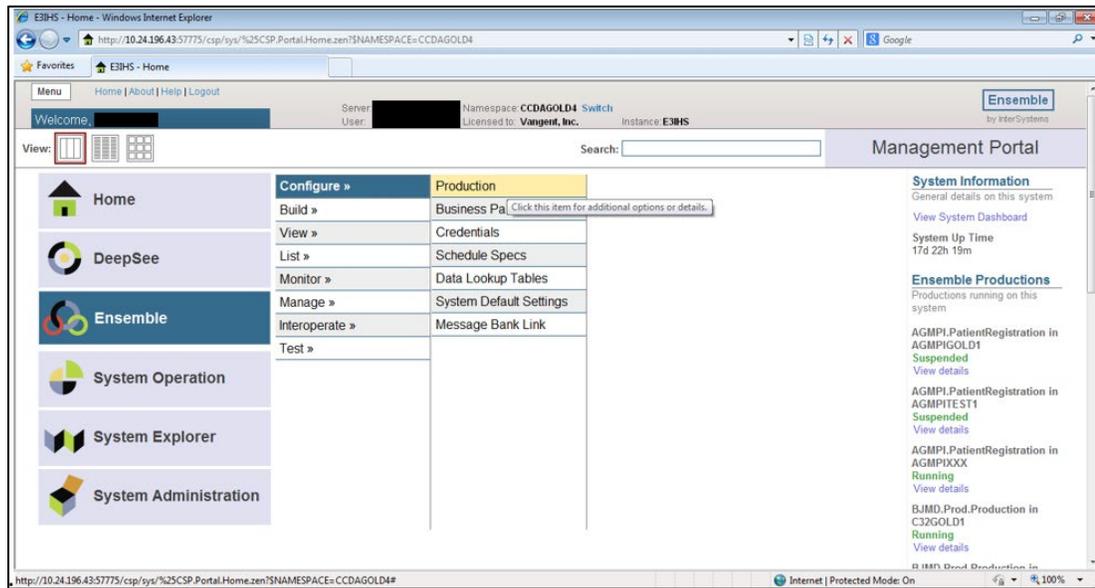


Figure 6-32: Management Portal

- Above the **Services** column on the left, the words **Production Stopped** will display. If the words **Production Running** display, the production is already running; skip the rest of this section.

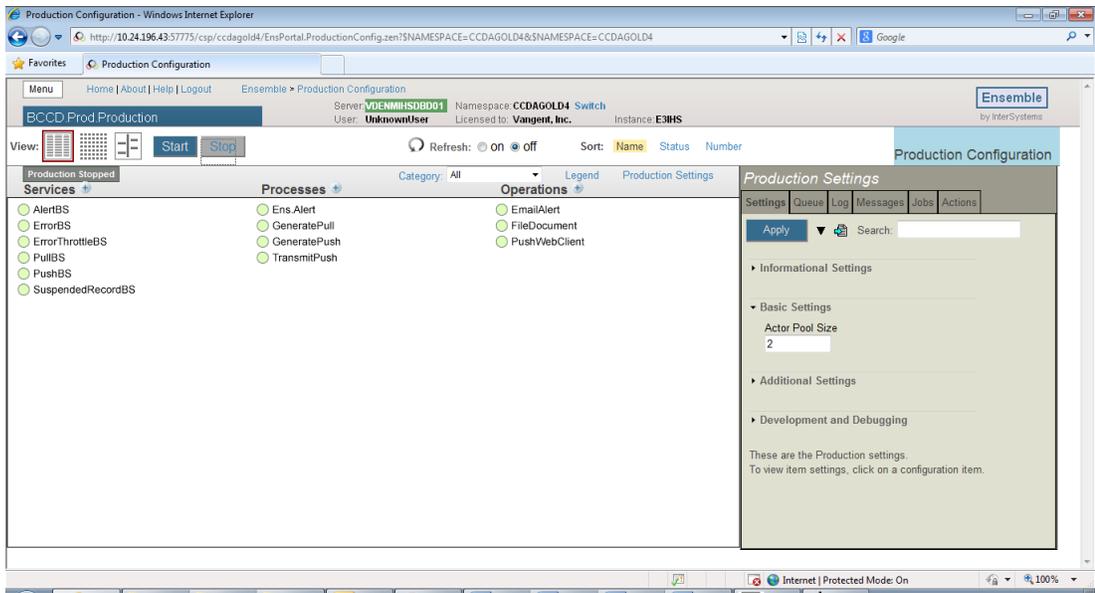


Figure 6-33: Ensemble production in a stopped state

- Click **Start**. A dialog will display and ask **Do you wish to start this Production?** Click **OK**. The lines in Figure 6-34 should appear 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.

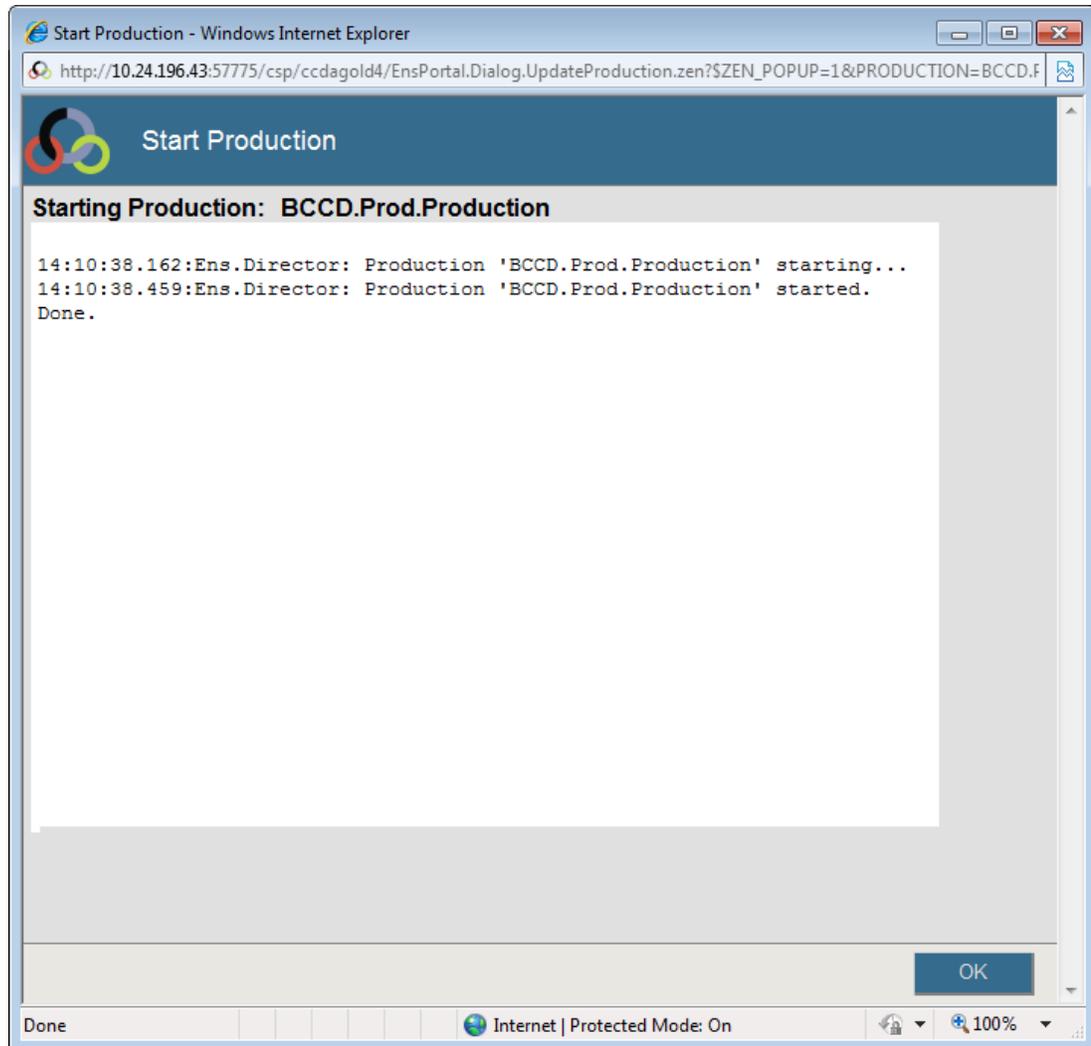


Figure 6-34: Starting the Ensemble production

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

6.9 Hospital Course Information

BCCD v2.0 added a new section to inpatient CCDA documents called Hospital Course. The information for the Hospital Course section comes from the Discharge Summary TIU note associated with the Inpatient stay. However, the Discharge Summary note may include additional information not related to the Hospital Course.

To extract only the Hospital Course information only in the CCDA from the Discharge Summary note, it is recommended that any Discharge Summary template have a Hospital Course header and footer. The header should be 50 hyphens on their own line followed by the text "HOSPITAL COURSE" (without quotes) on its own line. The footer should follow the Hospital Course information and be 50 hyphens on its own line.

Later, when the provider creates the Discharge Summary note for the patient, the Hospital Course information must be entered by the provider between the header and footer; otherwise the CCDA will include all the information entered in the Discharge Summary note. To make it easier for the provider to identify what is the header and footer, you may want to consider entering some blank lines between the header and footer.

Please work with your Clinical Informaticists on entering the Hospital Course header and footer. An example of how to add the Hospital Course header and footer to a Discharge Summary template is shown in the figure below.

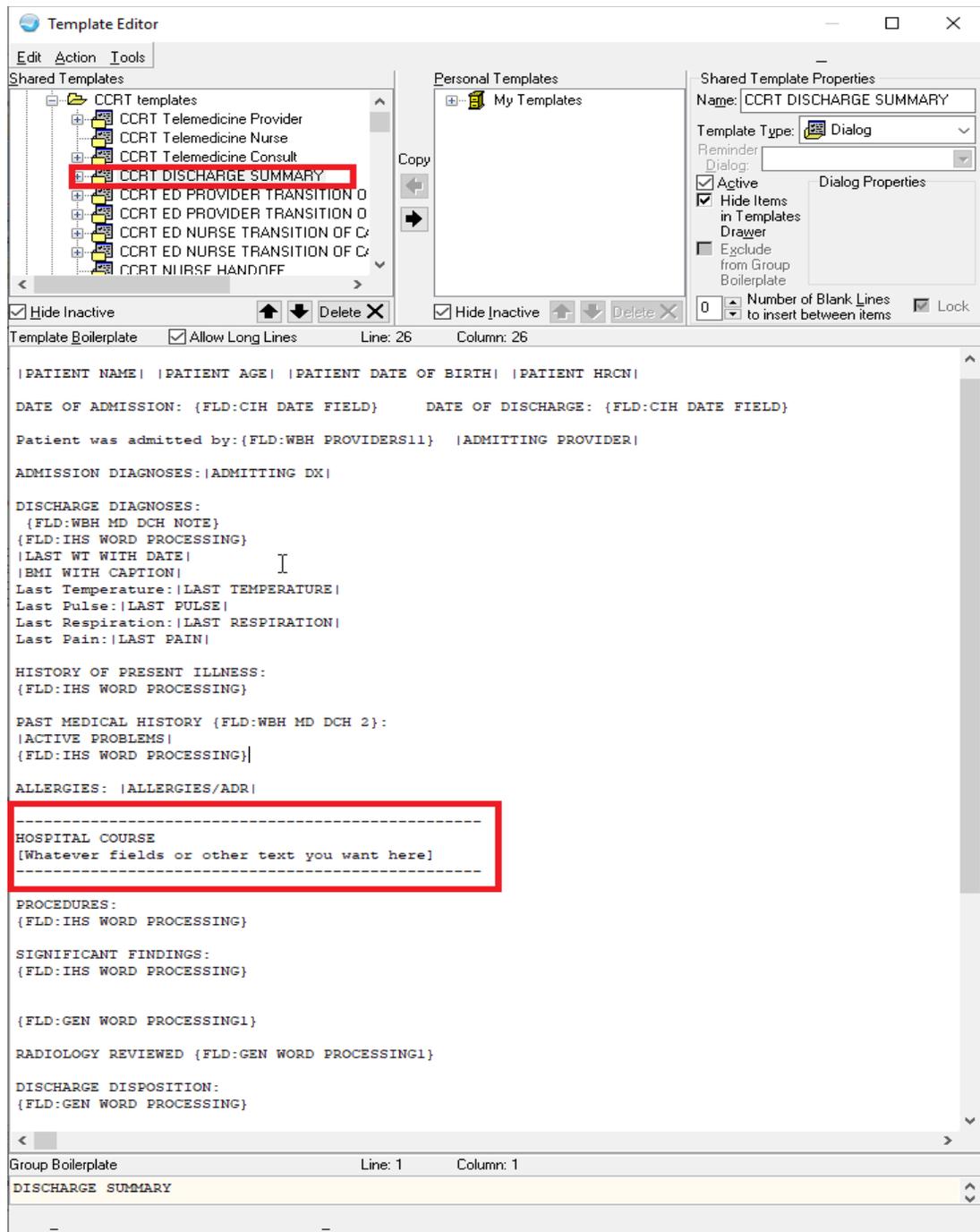


Figure 6-35: Adding Hospital Course header and footer to a Discharge Summary template

6.10 Installation Complete

At this point, the CCDA application has been installed and started. Further information about using and maintaining the application can be found in the *Consolidated Clinical Document Architecture (BCCD) User Manual*.

Appendix A Routine Checksums

PACKAGE: CCDA 2.0		Aug 05, 2020 3:30 pm	PAGE 1
BCCD2E00	Calculated	11800212	
BCCD2P00	Calculated	127159025	
BCCDCLAS	Calculated	17947583	
BCCDDPT	Calculated	205848464	
BCCDDPT1	Calculated	196384299	
BCCDEDIT	Calculated	20674313	
BCCDHIE	Calculated	32263175	
BCCDMON	Calculated	8602149	
BCCDPAT	Calculated	74215133	
BCCDPUSH	Calculated	3932704	
BCCDSTAT	Calculated	7822109	
BCCDTSK	Calculated	12613577	
BCCDTX	Calculated	81208	
BCCDTXA	Calculated	44219545	
BCCDTXAB	Calculated	31015445	
BCCDTXAC	Calculated	31408318	
BCCDTXAD	Calculated	5493737	
BCCDUTIL	Calculated	153719818	
BCCDUTL1	Calculated	158009686	
19 Routines checked, 0 failed.			

Figure A-1: Checksums for CCDA routines

Appendix B Manual Pre-Installation Steps

This appendix contains pre-installation steps that are normally performed automatically by the installation process. In certain circumstances, it is not possible for the installation process to perform these steps automatically. If this situation occurs, the installation process will direct the user to perform these steps manually. If such a message during installation is not received, then do not perform these steps.

This section describes activities to be performed on an existing Ensemble production. If the software is being installed for the first time, there will not be an existing Ensemble production, so these steps do not need to be performed. However, it will still be necessary to perform certain post-installation steps (in Appendix C) if prompted to by the installation process.

B.1 Stop the Ensemble Production

This step describes stopping the Ensemble production if it is running.

1. Sign on to HealthShare's Management Portal as the administrator.
2. Switch to the CCDA namespace. Instructions for switching namespaces can be found in Section 4.6.2. The namespace will consist of "CCDA" concatenated with the name of the RPMS namespace.
3. On the main **Management Portal** page, select **Ensemble** in the left column, then select **Configure >> | Production**. When the **View, Edit, Start, or Stop a Production** option appears, click **Go** to display the **Production Configuration** page.

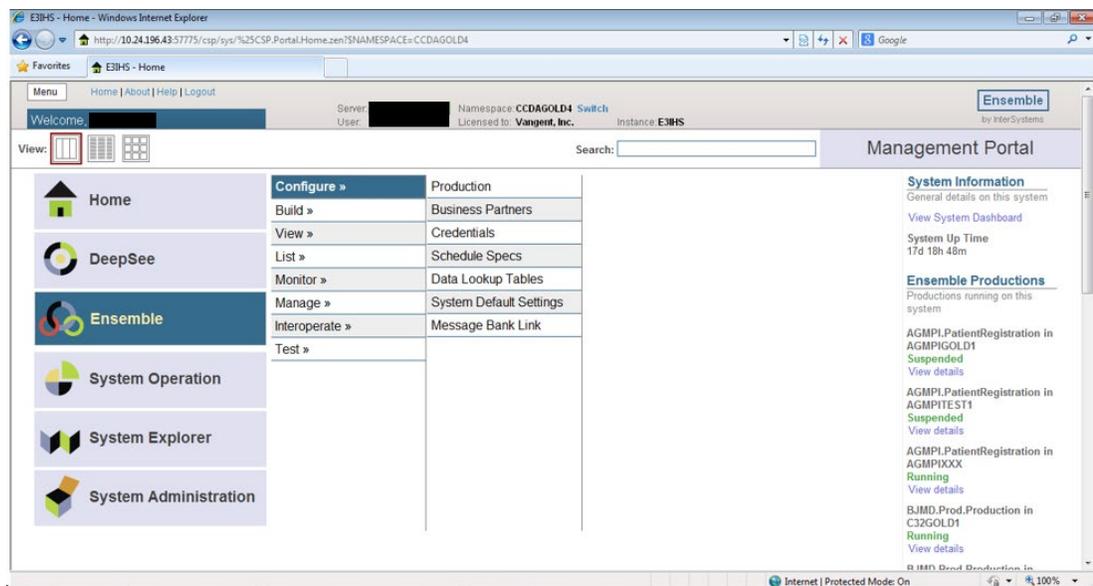


Figure B-1: Management Portal, Production option

- 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, so skip to Section B.2.

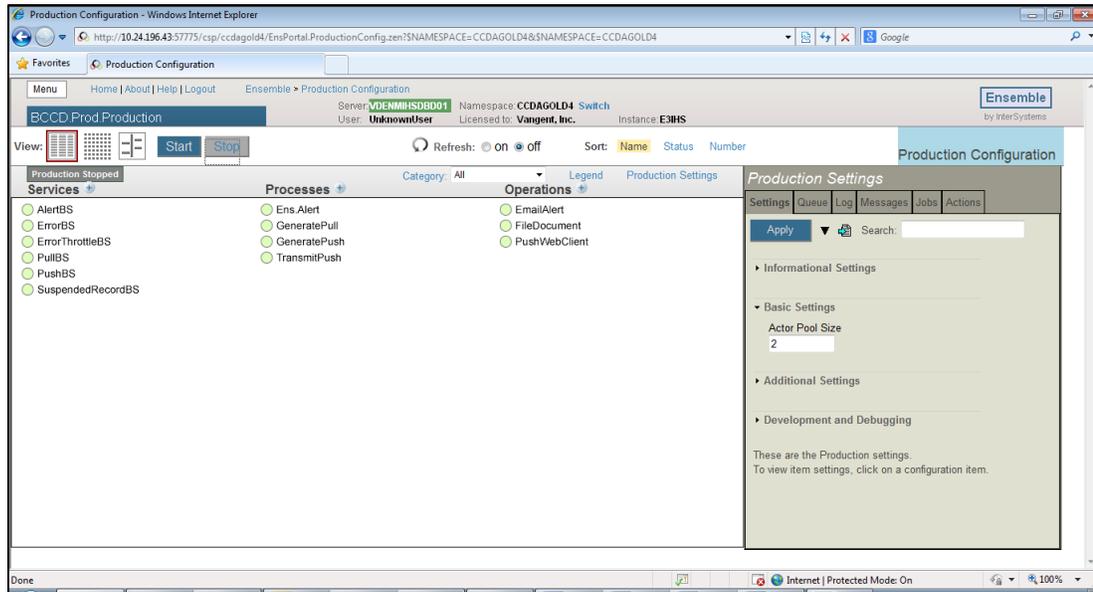


Figure B-2: Ensemble production in a stopped state

- Click **Stop**. It might take the production a few seconds to stop. When it stops, the text in Figure B-3 displays 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.

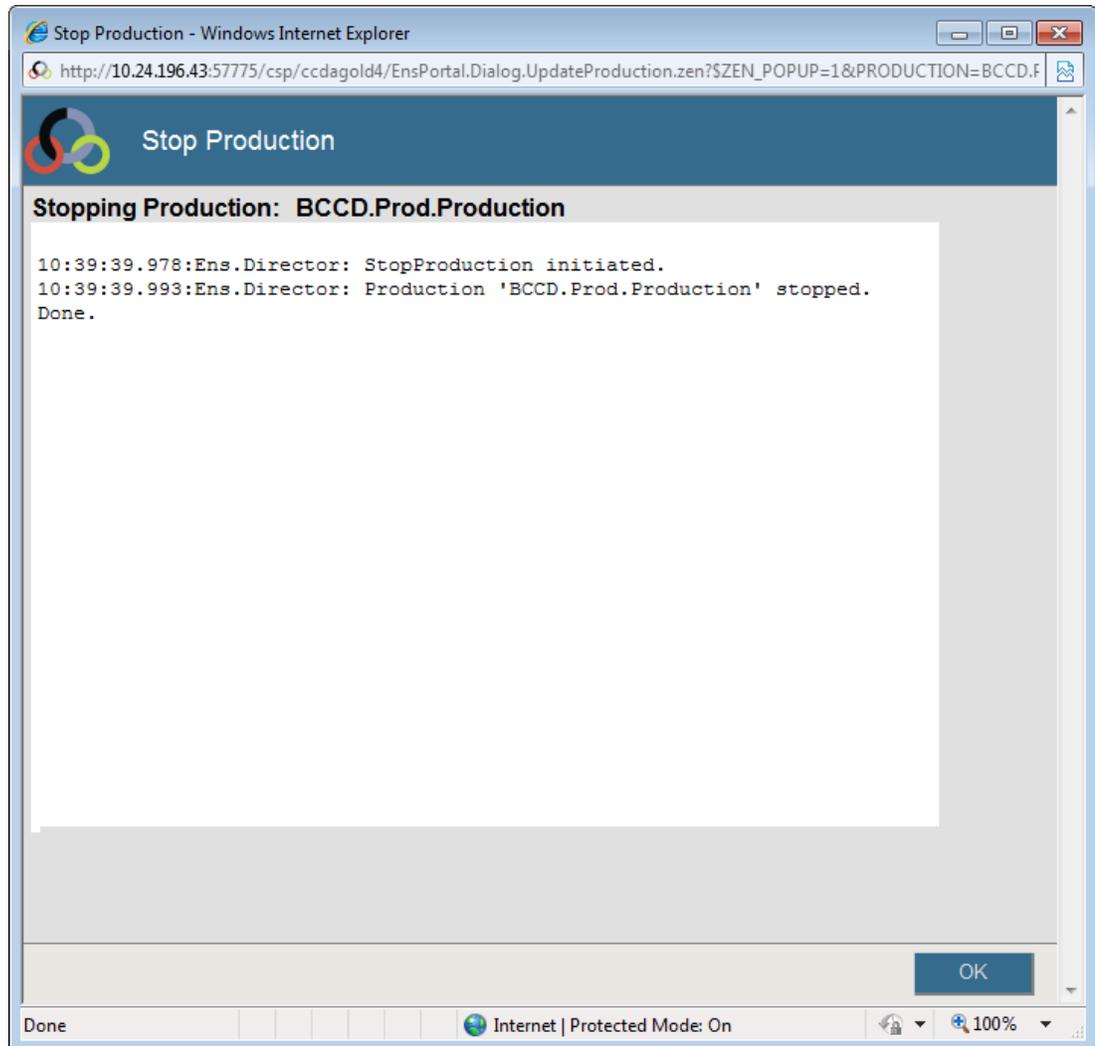


Figure B-3: Stopping the Ensemble production

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

B.2 Record Custom Production Settings

This step describes recording any custom settings that have been applied to the site's Ensemble production so they may be reapplied after installation.

1. If not already there, follow the steps in the previous section to get to the **Production Configuration** screen.
2. For each item that has had custom settings applied, click that item in the middle of the screen and make a note of the settings in the box on the right side of the screen. It may be necessary to expand the sections to see the setting values. In a typical installation, only the email settings in the EmailAlert item are customized.

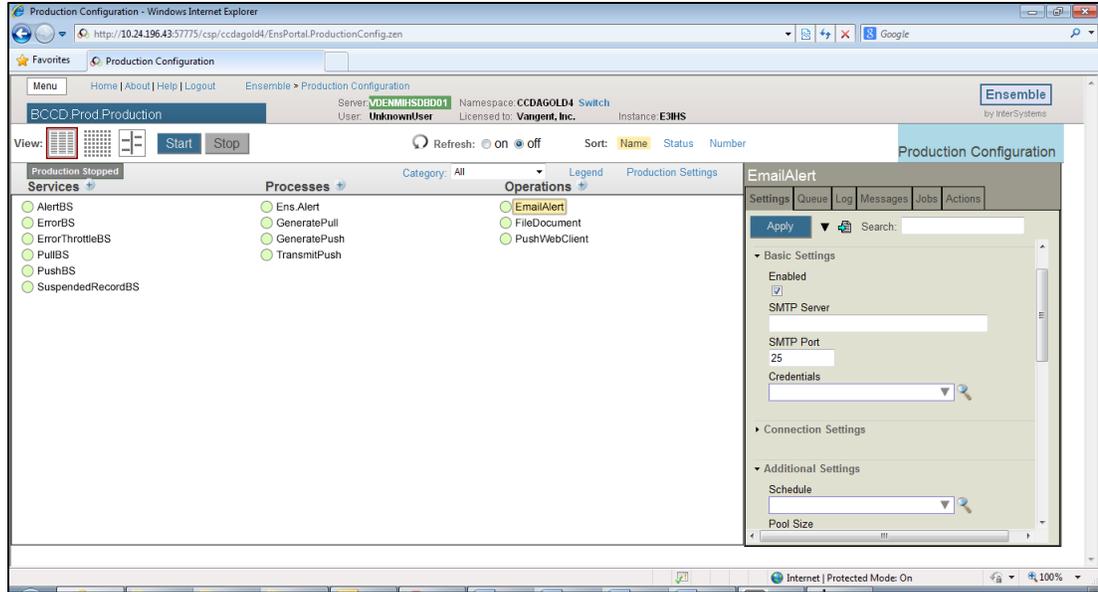


Figure B-4: Reviewing production settings

Appendix C Manual Post-Installation Steps

This appendix contains post-installation steps that are normally performed by the installation process automatically. In certain circumstances, it is not possible for the installation process to perform these steps automatically. If such a situation occurs, the installation process will direct the user to perform these steps manually. If such a message during installation is not received, then do not perform these steps.

C.1 Verify That the Ensemble Production Is Stopped

1. Sign on to HealthShare's Management Portal as the administrator.
2. Switch to the CCDA namespace. Instructions for switching namespaces can be found in Section 4.6.2. The namespace will consist of "CCDA" concatenated with the name of the RPMS namespace.
3. On the main **Management Portal** page, select **Ensemble** in the left column, then select **Configure >> | Production**.

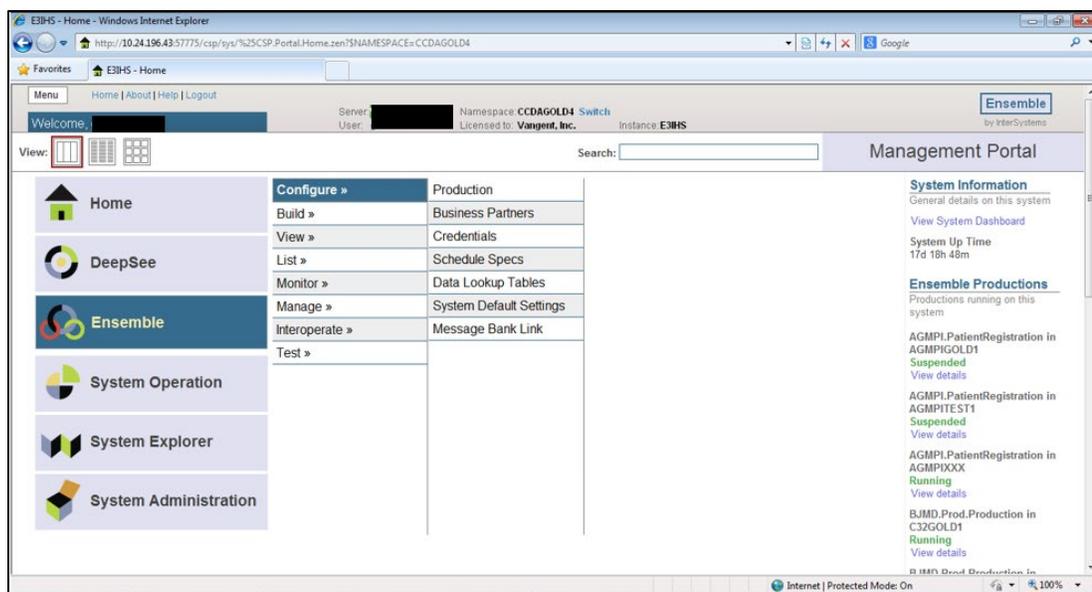


Figure C-1: **Management Portal, Production** option

4. Verify that the words **Production Stopped** are displayed above the **Services** column on the left. If the words **Production Running** are displayed, then follow the instructions for stopping the Ensemble production in Section B.1.

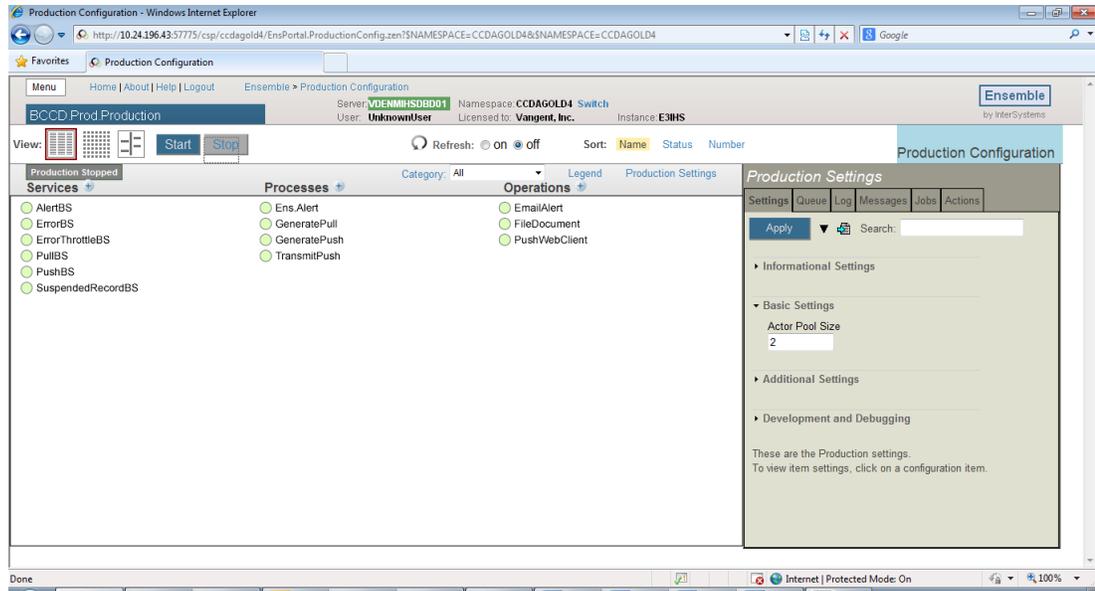


Figure C-2: Ensemble production in a stopped state

C.2 Recompile the Production

1. Navigate to an RPMS programmer prompt.
2. Switch to the CCDA namespace by entering the following command at the programmer prompt:

```
ZN "CCDAXXX"
```

where **CCDAXXX** is the name of the CCDA namespace. The prompt will change to reflect the new namespace.

3. Recompile the Ensemble production by entering the following command at the programmer prompt:

```
do $System.OBJ.Compile("BCCD.Prod.Production", "ck/lock=0/journal=0")
```

Note: The command is case sensitive, so it must be typed exactly as shown. There is a single space between **do** and **\$System**, but no other spaces.

C.3 Reapply Custom Production Settings

This step describes how to reapply the custom settings that were recorded in Section B.2. If no custom settings were recorded, skip this step.

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

- For each item that had custom settings, click that item in the middle of the screen and enter the correct settings in the box on the right side of the screen. After changing the value of each item, click **Apply** at the top left of the settings box to save the settings.

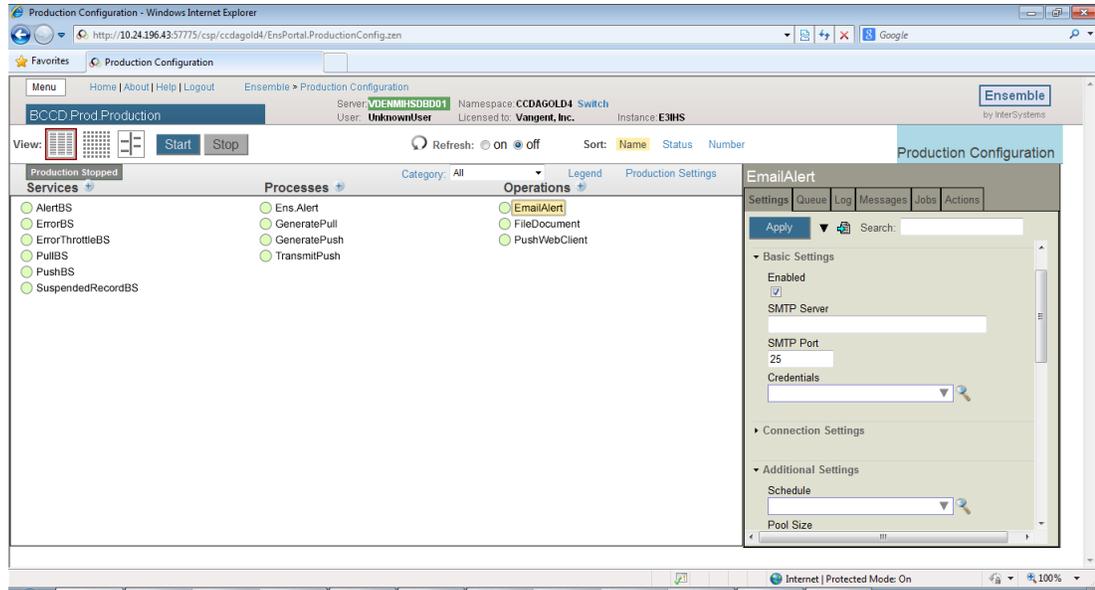


Figure C-3: Applying production settings

C.4 Schedule the CCDA Purge Task

- 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.
- Check whether the purge task is already scheduled by clicking **System Operation**, then clicking **Task Manager >> | Task Schedule**. 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.

The following is a list of task scheduled for execution: Last update: 2013-11-19 14:34:12.684 Auto

Task Name	Task Type	Namespace	Description	ID	Suspended	Last Finished	Next Scheduled			
AGMPGOLD1 Message Purge	User	AGMPGOLD1	Purge Old AGMPR Message	1032		2013-11-16 00:00	2013-11-23 00:00	Details	History	Run
AGMPGOLD2 Message Purge	User	AGMPGOLD2	Purge Old AGMPR Message	1033		2013-11-16 00:00	2013-11-23 00:00	Details	History	Run
AGMPROOX Message Purge	User	AGMPROOX	Purge Old AGMPR Message	1031		2013-11-16 00:00	2013-11-23 00:00	Details	History	Run
Auto-Purge C32 in C32GOLD1	User	C32GOLD1	Automatically purge messages	1001		2013-11-17 00:00	2013-11-24 00:00	Details	History	Run
Auto-Purge C32 in C32GOLD2	User	C32GOLD2	Automatically purge messages	1035		2013-11-17 00:00	2013-11-24 00:00	Details	History	Run
Auto-Purge C32 in C32TEST1	User	C32TEST1	Automatically purge messages	1072		2013-11-17 00:00	2013-11-24 00:00	Details	History	Run
Auto-Purge C32 in C32TEST4	User	C32TEST4	Automatically purge messages	1070		2013-11-17 00:00	2013-11-24 00:00	Details	History	Run
Auto-Purge CCDA in CCDAGOLD4	User	CCDAGOLD4		1109		2013-10-28 11:28		Details	History	Run
Auto-Purge CCDA in CCDATEST4	User	CCDATEST4	Automatically purge messages	1041		2013-11-17 00:00	2013-11-24 00:00	Details	History	Run
Check Logging activity	System	%SYS	Check active application logging at 1:00 am	10		2013-11-19 01:00	2013-11-20 01:00	Details	History	Run
Diagnostic Report	System	%SYS	Send system diagnostic reports to WRC On Demand, and/or on a schedule	6				Details	History	Run
Integrity Check	System	%SYS	Integrity check for databases at 2:00 am every Monday	4	Suspend Reschedule		2013-11-25 02:00	Details	History	Run
Inventory Scan	System	%SYS	Run a scan of the system inventory on install or upgrade and on demand thereafter	8		2013-08-17 13:19		Details	History	Run
PostinstallTask	User	CCDATEST4	Performs installation steps in Ensemble namespace	1058	Suspend Leave	2013-07-19 09:26	2013-07-19 00:01	Details	History	Run
PostinstallTask	User	CCDATEST4	Performs installation steps in Ensemble namespace	1060	Suspend Leave	2013-07-29 14:27	2013-07-29 00:01	Details	History	Run
PostinstallTask	User	CCDATEST4	Performs installation steps in Ensemble namespace	1064	Suspend Leave	2013-08-05 16:30	2013-08-05 00:01	Details	History	Run
PostinstallTask	User	CCDATEST4	Performs installation steps in Ensemble namespace	1074	Suspend Leave	2013-08-20 13:34	2013-08-20 00:01	Details	History	Run
PostinstallTask	User	CCDATEST4	Performs installation steps in Ensemble namespace	1080	Suspend Leave	2013-08-20 13:44	2013-08-20 00:01	Details	History	Run
PostinstallTask	User	CCDATEST4	Performs installation steps in Ensemble namespace	1083	Suspend Leave	2013-08-23 13:56	2013-08-23 00:01	Details	History	Run
PostinstallTask	User	CCDATEST4	Performs installation steps in Ensemble namespace	1085	Suspend Leave	2013-08-27 11:19	2013-08-27 00:01	Details	History	Run

Figure C-4: 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 Ensemble**
 - Open output file when task is running: **No**
 - Output file: **(blank)**
 - Reschedule task after system restart: **Yes**

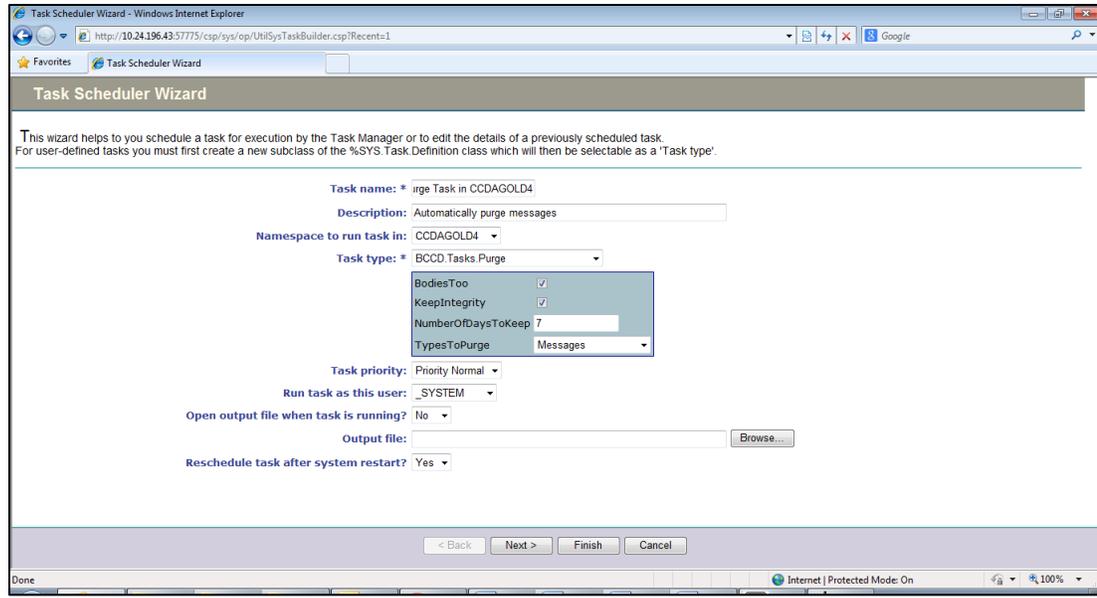


Figure C-5: First screen of the **Task Scheduler Wizard**

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**

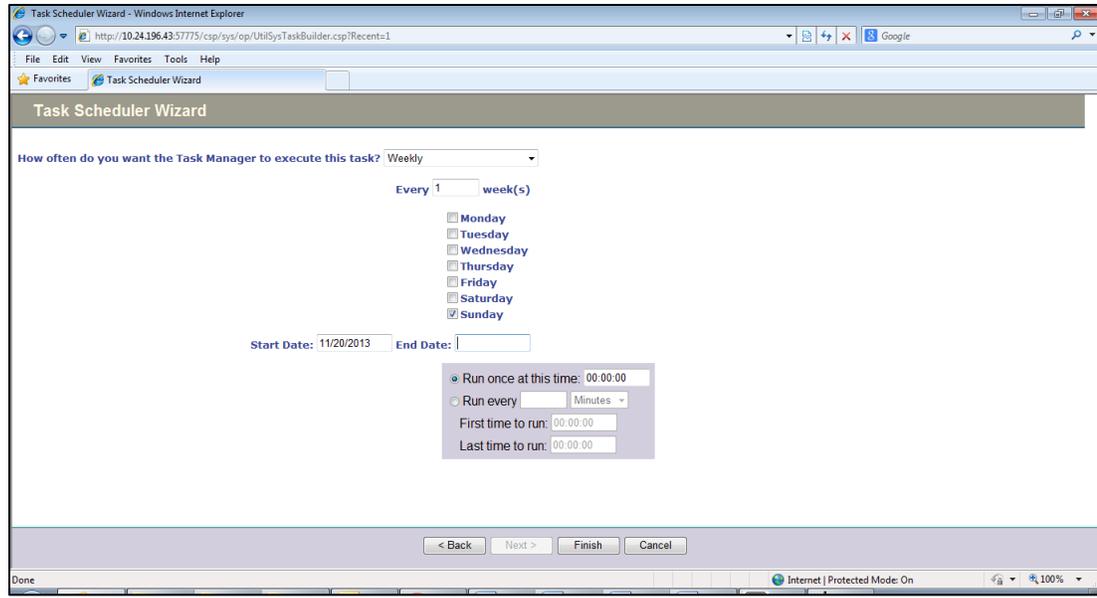


Figure C-6: Second screen of the **Task Scheduler Wizard**

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

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.

BMW

Namespace for classes generated from FileMan files.

Web service

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

Acronym List

Acronym	Term Definition
API	Application Programming Interface
CCD	Continuity of Care Document
CCDA	Consolidated Clinical Document Architecture
CHIT	Certified Health Information Technology
DSTU	Drafted Standard for Trial Use
EHR	Electronic Health Record
HIE	Health Information Exchange
HL7	Health Level 7
IHS	Indian Health Service
KIDS	Kernel Installation and Distribution System
OIT	Office of Information Technology
OS	Operating System
RPMS	Resource and Patient Management System
XML	Extensible Markup Language

Contact Information

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