



RESOURCE AND PATIENT MANAGEMENT SYSTEM

C32/CCD Clinical Summary

(BJMD)

Installation Guide & Release Notes

Version 1.0 Patch 1
June 2011

Office of Information Technology (OIT)
Division of Information Resource Management
Albuquerque, New Mexico

Table of Contents

1.0	Release Notes	1
2.0	Installation Notes	2
2.1	Contents of Distribution	2
2.2	Required Resources	2
2.2.1	RPMS	2
2.2.2	Required Installation Parameters	2
2.3	Before You Begin.....	3
3.0	Installation Issues	4
3.1	Architectural Issues	4
3.1.1	Overview of Installation Steps	4
3.2	Disk Space	5
3.2.1	Disk Space During Installation.....	5
3.2.2	Additional Disk Space within the main RPMS Database	5
3.2.3	Disk Space for the New C32 Database	6
3.2.4	Disk Space for Sites within the IHS HIE	6
3.2.5	Disk Space for the C32 Audit Log.....	8
3.3	Journaling	9
3.3.1	Impact of C32 installation on Journaling.....	9
3.3.2	Impact of Regular C32 Operations on Journaling.....	9
3.3.3	Impact on Journaling at Sites within the IHS HIE	10
3.3.4	Impact on Journaling at RPMS Sites not in the IHS HIE	10
4.0	Installation Instructions	11
4.1	Pre-Installation.....	11
4.2	Enable Long Strings	11
4.3	Verify Access to Configuration File.....	12
4.3.1	Windows	13
4.3.2	UNIX/AIX	17
4.4	Create a Directory for the C32 Database.....	18
4.5	Install the BFMC KIDS Build.....	18
4.6	Confirm that BFMC installed successfully.....	20
4.7	Install the BJMD KIDS Build	21
4.8	Sample Installation of the BJMD KIDS build.....	26
5.0	Post-Installation Configuration Instructions	31
5.1	Configuring Email Notifications.....	31
5.2	Turning Off Journaling in the C32 Database.....	34
5.3	Configuring the C32 CSP Application	36
5.4	Setting up Site-Specific C32 Parameters.....	43
5.5	Starting C Messaging	45

6.0 Appendix A.....47
6.1 Routine Checksums.....47
7.0 Contact Information48

Table of Figures

Figure 4.1:	Checking the Status of the BFMC Post-Installation Job	21
Figure 4.2:	Selecting installation option for BFMC.....	24
Figure 4.3:	Running the Environment Check Routine for BFMC	24
Figure 4.4:	Verifying Checksums in the Transport Global for BFMC	25
Figure 4.5:	Installing the BFMC KIDS build	26
Figure 4.6:	Selecting installation option for BJMD	26
Figure 4.7:	Running the Environment Check Routine for BJMD	27
Figure 4.8:	Verifying Checksums in the Transport Global for BJMD	27
Figure 4.9:	Installing the BJMD KIDS build	30
Figure 5.1:	C Messaging Menu	44
Figure 5.2:	Setting up C32 Site Parameters.....	45
Figure 5.3:	Starting C Messaging	46
Figure 6.1:	C32 Checksums for BFMC*1.0*1	47
Figure 6.1:	C32 Checksums for BJMD*1.0*1	47

1.0 Release Notes

Version 1.0 Patch 1 is the first release of this application. It doesn't require Version 1.0 to be installed first. If your site participated in beta testing and Version 1.0 was previously installed, then Version 1.0 Patch 1 will supersede it.

Warning: Your RPMS server's operating system (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.

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 C32/Continuity of Care Document (CCD) Clinical Summary Technical Document v1.0 (bjmd010t.pdf) for additional information.

The C32/CCD Clinical Summary is an RPMS-based application which generates industry standard Continuity of Care Documents in HITSP (Healthcare Information Technology Standards Panel) C32 format. These documents will be referred to as "C32 documents" from here on.

Note that although only C32 clinical summary documents are implemented in this release, there is a number of other HITSP-standard "C" documents that may be implemented within RPMS in the future. For this reason the new C32 management menu is called "C Messaging" and may be extended to support other C documents at a later point.

A C32 document is an XML document summarizing information about an individual patient's health care record at a given facility. It 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.

The C32 installation process will create new C32 namespaces within Ensemble, one for each production RPMS namespace. C32 documents are created by a Taskman job running within the RPMS namespace. They are converted to XML and transmitted by the C32 Ensemble production running in the C32 namespace.

C32 documents can be generated either in response to outside queries from the Electronic health record (EHR) Graphical User Interface (GUI) or during regular nightly processing. In both cases, Ensemble delivers generated C32 documents using Web services. Subsequent processing and routing of C32 documents by the EHR GUI and the IHS Health Information Exchange (HIE) repositories is outside of the scope of this installation guide.

2.0 Installation Notes

Prefix:	BJMD
Current Version:	1.0 Patch 1

Warning: Read entire notes file (if included) prior to attempting any installation.

2.1 Contents of Distribution

File	Description
bfmc0100.01k	Version 1.0 Patch 1 KIDS installation file (BFMC part)
bjmd0100.01k	Version 1.0 Patch 1 KIDS installation file (BJMD part)
bfmc010i.pdf	Version 1.0 Patch 1 Installation Manual in PDF format (BFMC part)
bjmd010i.pdf	Version 1.0 Patch 1 Installation Manual in PDF format (BJMD part)
bfmc010t.pdf	Version 1.0 Patch 1 Technical Manual in PDF format (BFMC part)
bjmd010t.pdf	Version 1.0 Patch 1 Technical Manual in PDF format (BJMD part)
bfmc010u.pdf	Version 1.0 Patch 1 User Manual in PDF format (BFMC part)
bjmd010u.pdf	Version 1.0 Patch 1 User Manual in PDF format (BJMD part)
bjmd010o.pdf	Version 1.0 Patch 1 Database Encryption SOP

2.2 Required Resources

2.2.1 RPMS

The C32/CCD Clinical Summary application requires Ensemble 2009.1.6 or 2010.2.3. Please note that Ensemble versions 2009.1.3, 2009.1.4, 2010.1, 2011.1 and higher are not supported at this time. The C32 software doesn't require a specific version of the operating system (OS). Your site must have a valid station number in the 8000-9000 range assigned to it. The C32 software will not be installed if there is no valid station number. If your site is a multi-facility site, each active facility must have a valid station number assigned to it.

Warning: Your RPMS server's operating system (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

Required RPMS software:

Module	Minimum Version
VA FileMan (DI)	v22.0 Patch 1002
VA Kernel (XU)	v8.0 Patch 1015
IHS/VA Utilities (XB)	v3.0 through Patch 11
Taxonomy (ATX)	v5.1 through Patch 10
IHS Pharmacy Modifications (APSP)	V7.0 through Patch 1007

2.3 Before You Begin

1. You should have been provided with a document explaining how to patch your operating system and Ensemble prior to C32 installation. Make sure to follow the instructions in that document before starting C32 installation.
2. Make a copy of this 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 at which you are performing the software installation. This will ensure a printed audit trail should any problems arise.

3.0 Installation Issues

3.1 Architectural Issues

The exact C32 disk space and journaling requirements depend on whether your site participates in the IHS Health Information Exchange (HIE).

If your site is not a part of the IHS HIE at this time, then the only time C32 documents are generated is when a user requests C32 documents via the EHR GUI. For this functionality to be available to EHR users, you must have EHR version 1.1 Patch 8 installed.

If your site is a part of the IHS HIE, then C32 documents will also be generated nightly and sent to the designated off-site repository. When your site becomes a part of the IHS HIE, an upload process is initiated which creates C32 documents for all patients in the database and sends them to the repository. After this initial burst of activity, 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.

3.1.1 Overview of Installation Steps

Warning: Your RPMS server's operating system (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.

Installation of the C32/CCD Clinical Summary application consists of the following activities:

1. Calculate the additional disk space required for the CCD/C32 Clinical Summary application and allocate disk space.
2. Designate a directory where the new C32 database will reside (one per each RPMS database that you have.)
3. Install the first provided Kernel Installation and Distribution System (KIDS) build, bfmc0100.01k, and schedule the post-installation background job. The post-installation job will map your Fileman definitions to Cache classes. It will also analyze the data in your RPMS database and optimize the performance of the newly created Cache classes. The optimization part of the job may take over 24 hours depending on the size of your database and the speed of your system.

4. Once the post-installation job described immediately above finishes, install the second KIDS build, bjmd0100.01k. This KIDS build will install the C32 software and the new C32 Ensemble production.
5. Perform post-install steps, including setting up optional e-mail notifications, disabling journaling in the C32 database, configuring the C32 CSP Application and setting up site-specific C32 parameters.
6. Start C Messaging.

3.2 Disk Space

Before installing the C32/CCD Clinical Summary application, be sure that you have sufficient disk space to store the new globals and software. To estimate the amount of space needed, first determine whether your site will be participating in the IHS HIE as described above.

The global with the greatest growth potential is ^BJMD.Xfer.QueueD, which stores the patient data extracted from RPMS before it is formatted as C32 documents. You can control the size of this global by changing the value of the field DAYS KEEP TRANSMISSION ENTRIES in menu option "Edit C Messaging Site Parameters", which is described in the post-installation section of this guide. Keep in mind that the data in ^BJMD.Xfer.QueueD is not directly accessible by end users and is only useful for debugging purposes.

Note that the calculations in this section need to be performed for every RPMS database running within the Ensemble instance, so if you have three RPMS databases, you will need to come up with three separate estimates and then add up the three numbers to derive the total.

3.2.1 Disk Space During Installation

You will need to have enough free disk space in the directory which will hold the two KIDS builds with the C32 software. The zipped up versions of the KIDS builds are 12.5 Mb and the unzipped versions are 22Mb in size.

3.2.2 Additional Disk Space within the main RPMS Database

As described earlier, the first KIDS build, BFMC, will install the BFMC software which maps all RPMS Fileman files to Cache classes. These classes will be created in the RPMS database and add about 5Gb to its size. This additional disk space will be required in each RPMS database that your site has, so if you have 2 RPMS databases, you will need "2 times 5Gb = 10Gb" of additional disk space.

3.2.3 Disk Space for the New C32 Database

For each RPMS namespace in your Ensemble instance, a new “C32” namespace and an associated "C32" database will be created automatically when you first install the BJMD KIDS build. If this is the first time you are installing the BJMD KIDS build, you need to plan on allocating at least 500MB of disk space for the C32 software.

The C32 database is also used to store two potentially large globals. First, it contains the global `^Ens.MessageBodyD`, which stores up XML-formatted C32 documents before they are transmitted. C32 documents can be quite large, sometimes in excess of 5MB. The C32 software will pause if the number of untransmitted C32 documents reaches 500, thus ensuring ensures that they do not consume too much disk space. It is estimated that this global can contribute up to 1GB to the size of the C32 database if Ensemble is generating C32 documents faster than they can be transmitted. Once transmitted, the data in this global is purged.

Second, the C32 database contains the global `^BJMD.Xfer.QueueD`, which contains intermediate compile data extracted from RPMS during C32 compilation. This data is not XML-formatted, so it doesn't take as much space. It is estimated that on average each processed patient record contributes 35 KB to the size of this global.

Finally, the C32 database contains the global `^Ens.MessageBodyS`, which is used to store the C32 audit log. Only C32 documents requested by and sent to the EHR GUI are audited, so the size of this global will depend on how often C32 documents are viewed within the EHR GUI.

The detailed instructions for calculating the amount of disk space which will be needed to store the C32 data are provided below.

3.2.4 Disk Space for Sites within the IHS HIE

If your site is a part of the IHS HIE, then you will need to allocate additional disk space to accommodate the original upload of C32 documents to the outside repository and for nightly C32 uploads as described below. If you site is not a part of the IHS HIE at this time, skip this section and continue on to the "Disk Space for the C32 Audit Log" section. However, if your site becomes a part of the IHS HIE later, you will need to add additional disk space to the C32 database at that time.

3.2.4.1 Calculate the Disk Space Required for a Complete Re-Upload

When the C32 software is installed at an RPMS site which participates in the IHS HIE, it initiates an "original upload" of C32 documents for all patients in the RPMS database. Subsequent C32 patches may require complete re-uploads of C32 documents.

In order to determine how much disk space will be used during an upload of C32 documents for all patient records, perform the following calculations:

1. Multiply the number of patients in your database by 35 kilobytes
2. Take the number that you came up with in step 1 and divide it by 1024 (i.e., the number of kilobytes per megabyte) to get the minimum storage size needed for ^BJMD.Xfer.QueueD for the initial data upload. For example, if you have 131584 patients in the RPMS database:

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

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

```
>W (35*131584)/1024
```

```
4497.5 MB or 4.5 GB needed
```

This number will indicate how much disk space will be used by the global ^BJMD.Xfer.QueueD once the C32/CCD Clinical Summary application has generated and uploaded C32 documents for all patients in the RPMS database. Make sure to add 1GB (1000 MB) for the global ^Ens.MessageBodyD as described above for a total of 5.5 GB.

Note that the data in ^BJMD.Xfer.QueueD is purged after a site-specific number of days, so the size of this global will decrease soon after the original upload.

3.2.4.2 Calculate Disk Space Required for Nightly Uploads

1. Estimate the average number of patient records that are modified in the database on a daily basis.
2. Include patients with changes to any of the following areas: patient demographics, visits, insurance coverage, problems, immunizations, allergies, prescriptions, test results, procedures.
3. Take this number and multiply it by 35K. For example, if you estimate that the RPMS data for 1,000 patients is changed on a daily basis:

```
>W (35*1000)/102434.2 MB needed
```

This will determine the average amount of disk space used by the global ^BJMD.Xfer.QueueD on a daily basis.

4. Determine how long you want to keep this 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 C32 documents. Record this number since you will later use it to populate the field “DAYS KEEP TRANSMISSION ENTRIES” in the “Edit C32 Site Parameters” menu option.

5. Multiply this number of days by the number of megabytes calculated in the previous steps. For example, if you want to keep the intermediate data for 30 days and expect 1,000 patient records to be modified every day, you will need:

>W 34.2*301,026 MB or 1 GB needed

If you ever decide to change how long you want to keep the ^BJMD.Xfer.QueueD data, your disk space needs will change accordingly.

3.2.4.3 Calculate Total Disk Space

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

> W ((35*131584)/1024)+1000+((35*1000)/1024*30)

5,523 MB or 5.5 GB needed

This is the maximum amount of additional disk space that you will need. Once the data compiled for the original upload of C32 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 “Calculate Disk Space Required for Nightly Uploads.” However, if the number of patients whose data changes on a daily basis increases in the future, it can affect your disk space requirements.

3.2.5 Disk Space for the C32 Audit Log

For audit purposes, the C32 database keeps a compressed copy of each C32 document sent to the EHR GUI. This data is stored in the global ^Ens.MessageBodyS and is accessible via the Audit Log option described in the C32 Technical Manual.

Note that this audit data is not kept when C32 documents are uploaded to the outside repository, which has auditing facilities of its own.

To calculate how much disk space will be required to store copies of C32 documents in the C32 Audit Log, estimate how often C32 documents will be viewed within the EHR GUI on a daily basis. If there is no way of predicting how often this will be happening, you can make an assumption and re-evaluate its accuracy once your users

start viewing C32s in the EHR GUI. You will be able to examine the utilization pattern by checking the C32 Audit Log, which lets you search by request date.

Although the average full C32 document is around 250KB in size, the average compressed C32 document occupies only about 20KB in the database. Assuming that there are 100 requests for C32 per day, the daily disk space requirements will be:

>W 100*20

2,000 Kb or 2MB per day

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

>W 2000*250

500,000 Kb or 500 MB or 0.5 GB per year

This information is stored in the global ^BJMD.Audit.AuditLogD in the new C32 database, which is described below. This information is expected to be kept on file indefinitely until further notice due to government data retention requirements.

3.3 Journaling

3.3.1 Impact of C32 installation on Journaling

The C32 software is installed as two KIDS builds, BFMC and BJMD. The BFMC KIDS build has a lengthy post-install job, which can generate about 1Gb worth of journal data. The process of installing the second KIDS build, BJMD, doesn't result in a noticeable amount of journaling.

Note that the calculations in this section need to be performed for every RPMS database running within the Ensemble instance, so if you have three RPMS databases and plan to install C32 at about the same time, you will need to come up with three separate estimates and then add up the three numbers to derive the total.

3.3.2 Impact of Regular C32 Operations on Journaling

The globals used by the C32/CCD Clinical Summary application should not be journaled. This will be accomplished by disabling journaling in the new C32 database at post-install time as described later in this document. Nonetheless, the C32 Ensemble production will do a limited amount of journaling even when the C32 database is set up not to be journaled. This additional journaling is estimated to contribute 2-3Kb per processed C32 document. Depending on whether your site participates in the IHS HIE, see the appropriate section below to determine the estimated impact of the C32 application on journaling at your site.

3.3.3 Impact on Journaling at Sites within the IHS HIE

If your site is a part of the IHS HIE, then there will be a spike in journaling activity immediately after you activate the C32 application due to the initial generation and upload of C32 documents to the outside repository. You can calculate the additional disk space which will be consumed by taking the number of patient record in your RPMS database and multiplying it by 3Kb:

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

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

```
>W 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 your site's journal purging settings, the impact of the C32 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 C32 documents are requested within the EHR GUI during the day. For example, if you expect 3,000 patient records to be updated daily and another 200 C32s requested by the EHR GUI, the additional disk space consumed by journaling will be:

```
>W 3200*3/1024
```

9.375Mb needed daily

3.3.4 Impact on Journaling at RPMS Sites not in the IHS HIE

If your site is not a part of the IHS HIE at this time, then the impact of the C32 application on journaling will be limited to the requests coming from the EHR GUI. This impact will be determined by the number of times C32 documents are requested within the EHR GUI during the day.

You can calculate the additional disk space which will be consumed by taking the expected daily number of C32 lookups within the EHR GUI and multiplying it by 3Kb. For example, if you expect 200 C32 lookup within the EHR GUI, the additional disk space consumed by journaling will be:

```
>W 200*3/1024
```

0.58 Mb daily

4.0 Installation Instructions

4.1 Pre-Installation

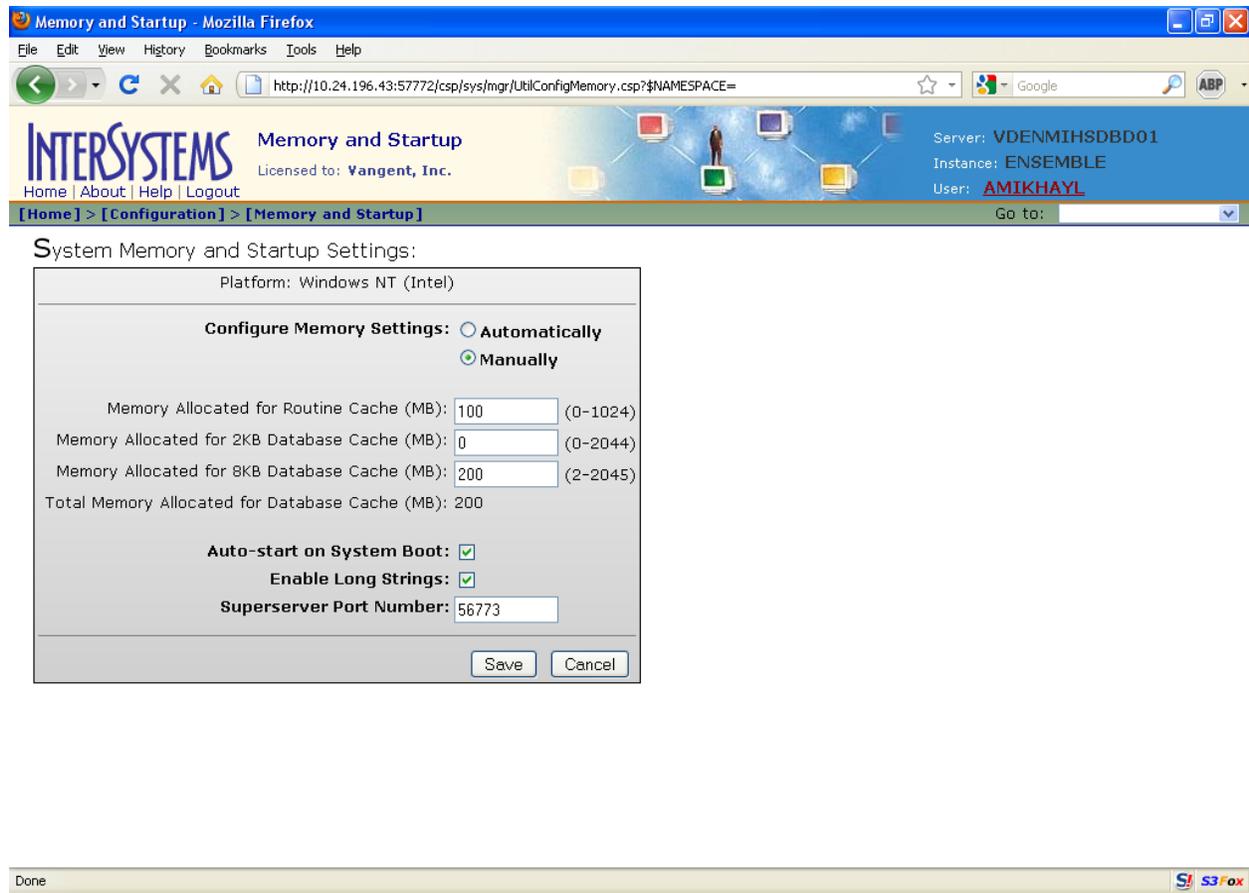
1. Refer to the Installation Steps and the Sample Installation sections below for the applicable prompts and user responses. User responses appear in bold type.
2. Download files bfmc0100.01k and bjmd0100.01k from the anonymous FTP directory.
3. Review all test and "demo" patients in your RPMS database and make sure that their social security numbers start with five zeroes. This will ensure that C32 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, C32 will not run whenever Taskman is restarted manually.

4.2 Enable Long Strings

The C32 software requires that Long Strings be enabled in Ensemble. If Long Strings are not enabled, you will not be able to install the C32 KIDS builds.

You can check the current status of the Long Strings setting and, if necessary, change it as follows:

1. Sign on to the Ensemble System Management Portal.
2. Select "Configuration" under "System Administration" in the left column. The "Configuration" page will be displayed.
3. Select "Memory and Startup" in the left column.
4. If the "Enable Long Strings" checkbox at the bottom of the screen is not checked, check it and click on the "Save" button:



- Note that if you had to enable Long Strings in step 4 above, then the new settings won't take effect for Taskman processes until after you restart Taskman. In that case you will not be able to install C32 until you restart Taskman. If Long Strings were already enabled, you can proceed with the next step immediately.

4.3 Verify Access to Configuration File

The C32 installation process will modify the Ensemble configuration file and add new database and mapping definitions for the C32 application. This will require "write" access to the Ensemble configuration file at installation time.

If your site is running Windows, follow the instructions in section 4.3.1 below. If your site is running AIX, skip 4.3.1 and follow the instructions in section 4.3.2 further down.

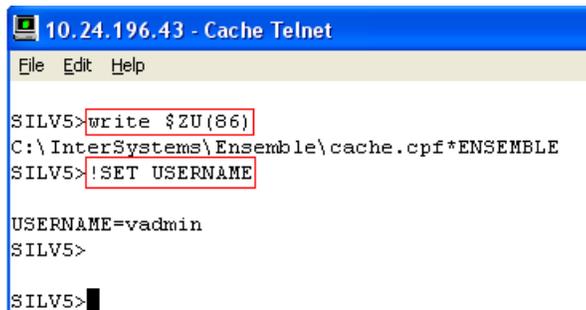
4.3.1 Windows

1. Access the Ensemble prompt in any Ensemble namespace using the user account which you plan to use to perform the C32 installation. Type the following two commands and record their output for future reference:

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

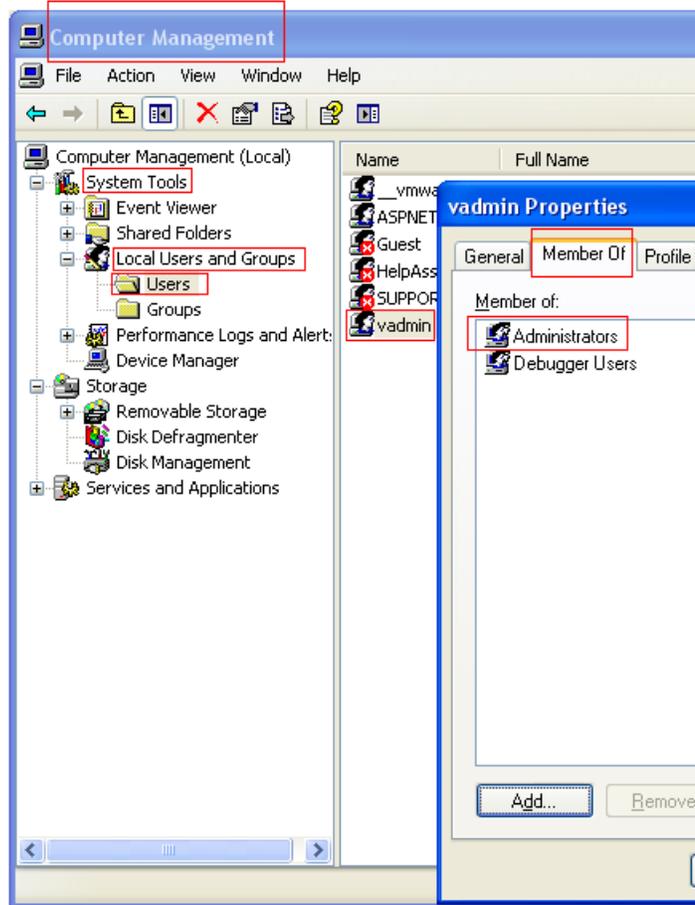
```
TST> !SET USERNAME
```

Below is an example of what you will see:

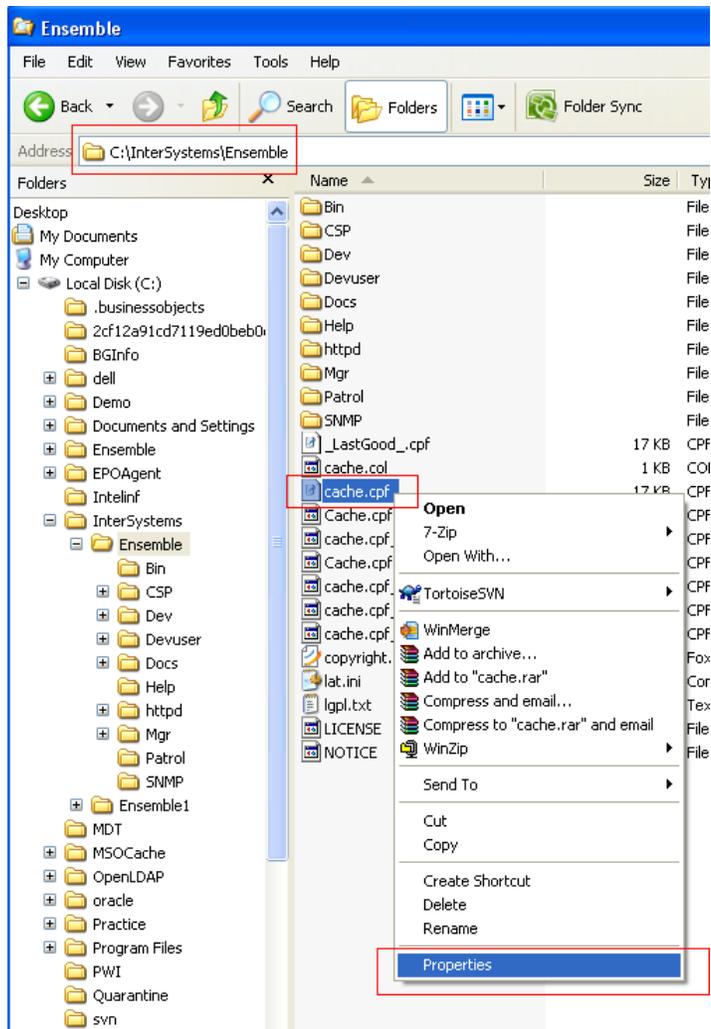
A screenshot of a Telnet window titled "10.24.196.43 - Cache Telnet". The window has a menu bar with "File", "Edit", and "Help". The terminal shows a user prompt "SILV5>" followed by the command "write \$ZU(86)", which is highlighted with a red box. The next line shows the path "C:\InterSystems\Ensemble\cache.cpf*ENSEMBLE".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

```
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>
```

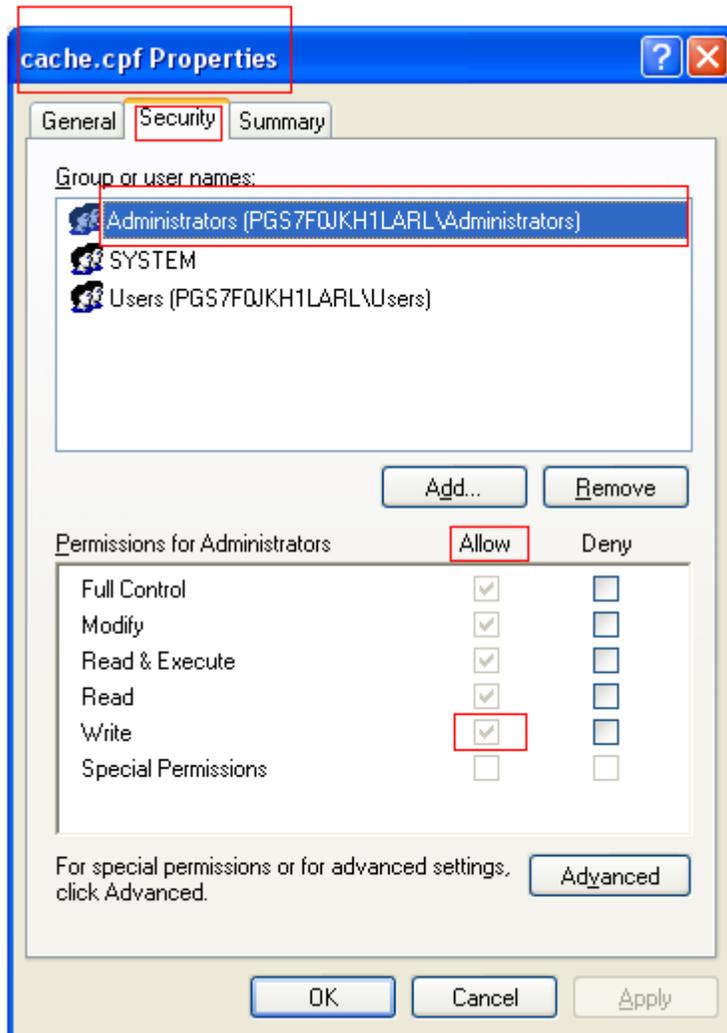
2. Sign on directly onto the RPMS server in order to determine which groups the selected user is a member of. Right click on “My Computer”, usually located on the desktop or on the “Start” menu, then select “Manage”. This will bring up the “Computer Management” screen. On the “Computer Management” screen, go to “System Tools” -> “Local Users and Groups” ->”Users” -> right-click on the user name (in the example shown above it was “vadmin”) -> select “Properties” -> “Member Of” tab. Record the list of user groups that this user belongs to.



3. In Windows Explorer, navigate to the folder which was 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”. Right click on it and select “Properties”.



4. 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 it.



In the example shown above, user "vadmin" does not appear on the user list. However, since "vadmin" is a member of the "Administrators" group and the "Administrators" group appears on the list and has "write" permissions, "vadmin" also has "write" permissions to the file.

5. If the selected user account doesn't 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 you attempt to install the C32 software using a user account that can't write to this file, the installation process won't let you proceed and will display an error message.

4.3.2 UNIX/AIX

1. Access the Ensemble prompt in any Ensemble namespace using the user account which you plan to use to perform the C32 installation. Type the following two commands and record their output for future reference:
2. TST> write \$ZU(86)
3. /opt/cache.cpf*ENSEMBLE
4. TST> !whoami
5. vadmin
6. Log onto the AIX server hosting RPMS as the superuser ("root"). Run the following command and substitute the user name that you 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 that the UIDs and GIDs are specific to the server and will be different on different servers.

7. 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

You can 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. Note that in this case 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.

8. If vadmin does not belong to the group that has read/write permissions, then add vadmin user to the group cacheusr. Consult your AIX management guide for instructions on how to perform this operation.
9. 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 C32 Database

See the “Disk Space” section of this installation guide for instructions on estimating how much disk space will be needed to accommodate the new C32 database(s). Note that the C32 pre-installation environment check will make sure that the directory has at least 500Mb of free space.

Based on the estimated disk space requirements and on how much disk space you have available on your storage subsystem, select the disk drive (if running Windows) or file system (if running Unix/AIX) where each new C32 database will be installed. Select the directory path and name that you will be using on that drive/file system. If the directory doesn't exist, create it and make sure that Ensemble can read/write from/to it.

Record the name of the newly created directory since you will be asked to specify it at KIDS installation time. After the installation process creates the C32 database in the specified directory, make sure to add the newly added database to the list of backed up databases.

Note that you will need to perform this step once for every RPMS namespace that you have.

4.5 Install the BFMC KIDS Build

Note that if you have multiple RPMS namespaces, you will need to perform this step in all of them, one at a time.

Warning: Note that if the C32 software was previously installed and C Messaging is running, you must stop both C Messaging and the C32 Ensemble production before you can proceed with the installation. Refer to the C32 User Manual for instructions on how to stop C Messaging and the C32 Ensemble production.

1. Sign on to RPMS in your RPMS namespace. Make sure that you are signed on as an Ensemble administrator and that your Ensemble account has the "%All" role. If your account doesn't have "%All", you will not be able 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 **bfmc0100.01k** at the "Enter a Host File" prompt. You might need 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 the ENTER key to accept the default) at the "Want to Continue with Load? YES//'" prompt.
7. 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, you will not be able to proceed with the installation. If this happens, correct the problem or contact the Help Desk.
8. From the Installation menu, select Option 2: Verify Checksums in Transport Global. This option provides a mechanism for ensuring the integrity of your routines. It verifies checksums for the components of the Transport global, and reports any errors uncovered.

Type **BFMC*1.0*1** as the install name.
9. Optional—At this time, you can elect to exercise one of the following installation options. Please note that these are optional. If you elect to use one of these, use **BFMC*1.0*1** as the install name.
 - a. Back Up a Transport Global—this option creates a MailMan message that will back up all current routines on your 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 allows you to view all changes that will result from the installation of this patch and compares them with the values currently loaded on your system (routines, data dictionaries, templates, etc.).
 - c. Back Up a Transport Global—this option creates a MailMan message that will back up all current routines on your system that would be replaced by this release. (Because this is a new release, no files will be replaced.)
 - d. Compare Transport Global—this option allows you to view all changes that will result from the installation of this patch and compares them with the values currently loaded on your system (routines, data dictionaries, templates, etc.).
10. From the Installation menu, select the Install Package(s) option.
 11. At the “Select Install Name” prompt, type BPMC*1.0*1
 12. 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 “Enter date/time you want to schedule the task:” prompt, enter a date/time after regular business hours. (The date/time should be in the standard Fileman date/time format, e.g. “MAY 28,2011@15:34” or “15:34” or “03:34PM”.) The post-installation process can take over 24 hours depending on the size of your database, so you may want to schedule it to run on a weekend when it won’t affect system performance for RPMS users.
 - c. At the “Want KIDS to INHIBIT LOGONs during the install?//YES” prompt, type NO.
 - d. At the “Want to DISABLE Scheduled Options, Menu Options and Protocols?// YES” prompt, type NO.
 13. When prompted for “DEVICE”, accept the default if you want the output to be displayed on your screen or enter the name of the printer/file that you want the installation output to be redirected to. The installation will take a few seconds.
 14. Exit the Installation menu.

4.6 Confirm that BPMC installed successfully

One of the steps during the KIDS installation process described above was scheduling the BPMC post-installation job to run. Depending on the size of your database and your server capacity, this job can take over 24 hours to complete. As indicated above, it’s best to schedule it to run after regular business hours to avoid affecting system performance for RPMS users.

The BFMC post-installation job runs as a regular Taskman task, so you can see whether it has completed by checking its status in “Running tasks.” To access this option, access the “Task management” menu while the task is running and use the following steps:

```

Select IHS Kernel Option: TM Taskman Management

Schedule/Unschedule Options
One-time Option Queue
Taskman Management Utilities ...
List Tasks
Dequeue Tasks
Requeue Tasks
Delete Tasks
Print Options that are Scheduled to run
Cleanup Task List
Print Options Recommended for Queueing

Select Taskman Management Option: List Tasks
List Tasks Option

All your tasks.
Your future tasks.
Every task.
List of tasks.
Unsuccessful tasks.
Running tasks.

Select Type Of Listing: Running tasks

Running tasks...

646721: BKGRND^BJMDPOST, PostProcessing of the KIDS install. No device.
GOLD1,LIVE. From Today at 19:07, By you.
Started running Today at 19:10. Job #: 3056 [BF0]

End of listing. Press RETURN to continue:

```

Figure 4.1: Checking the Status of the BFMC Post-Installation Job

where 646721 is the number of the post-installation task. Note “BKGRND^BJMDPOST”, the name of the task, which uniquely identifies the BFMC post-installation job. Once it finishes, the task status will change to “Completed” and it will no longer appear in the list of running jobs.

Note that you will not be able to install the second C32 KIDS build, BJMD*1.0*1, until this post-installation process completes.

4.7 Install the BJMD KIDS Build

Note that if you have multiple RPMS namespaces, you will need to perform this step in all of them, one at a time.

1. Sign on to RPMS in your RPMS namespace. Make sure that you are signed on as an Ensemble administrator and that your Ensemble account has the "%All" role. If your account doesn't have "%All", you will not be able 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 **bjmd0100.01k** at the "Enter a Host File" prompt. You might need to precede the file name with the appropriate host path. This file was retrieved from the anonymous directory as part of pre-installation. If your site participated in beta testing, you may be asked "This Patch is for Version 1, you are running Version 1.1. Want to continue installing this build? NO//" Answer **Yes** to this question.
6. Type **Yes** (or press the ENTER key to accept the default) at the "Want to Continue with Load? YES//" prompt.
7. 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, you will not be able to proceed with the installation. If this happens, correct the problem or contact the Help Desk.
8. From the Installation menu, select Option 2: Verify Checksums in Transport Global. This option provides a mechanism for ensuring the integrity of your routines. It verifies checksums for the components of the Transport global, and reports any errors uncovered.

Type **BJMD*1.0*1** as the install name.

9. Optional—At this time, you can elect to exercise one of the following installation options. Please note that these are *optional*. If you elect to use one of these, use **BJMD*1.0*1** as the install name.
 - a. Back Up a Transport Global—this option creates a MailMan message that will back up all current routines on your 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 allows you to view all changes that will result from the installation of this patch and compares them with the values currently loaded on your system (routines, data dictionaries, templates, etc.).

10. From the Installation menu, select the Install Package(s) option.
11. At the “Select Install Name” prompt, type **BJMD*1.0*1**. If your site participated in beta testing, you may be asked "This Patch is for Version 1, you are running Version 1.1. Want to continue installing this build? NO//” Answer **Yes** to this question.
12. When prompted to "Specify Full Directory path for the database for new namespace C32PRD" (where "PRD" stands for the name of your RPMS namespace), enter the name of the directory that you created in step 4.3 of this guide. Once you enter the directory name, 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. Note that if you are reinstalling this KIDS build and the C32 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 if you want the output to be displayed on your screen or enter the name of the printer/file that you want installation output to be redirected to.

Note that the output from this installation will generate about 75-80 pages worth of messages. Consider this when selecting which device to send the messages to. The installation process will take a few minutes.

15. Exit the Installation menu.

Proceed to Section 5.0 for further information and setup instructions.

Sample Installation of the BFMC KIDS build

Note: User responses appear in **bold** type.

```

Select OPTION NAME: XPB MAIN   Kernel Installation & Distribution System

    Edits and Distribution ...
    Utilities ...
    Installation ...

Select Kernel Installation & Distribution System 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 Option: Load a Distribution

```

Figure 4.2: Selecting installation option for BFMC

Other prompts are shown below:

```

Enter a Host File: d:\rpms_tst\bfmc0100.01k <Enter> (Note: Type the appropriate
path for your system.)

KIDS Distribution saved on May 27, 2011@18:46:22
Comment: C32 Version 1.0 Patch 1

This Distribution contains Transport Globals for the following Package(s):
  Build BFMC*1.0*1
Distribution OK!

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

Build BFMC*1.0*1 has an Environmental Check Routine
Want to RUN the Environment Check Routine? YES//<Enter>
  BFMC*1.0*1
Will first run the Environment Check Routine, BJMDECKF

Use INSTALL NAME: BFMC*1.0*1 to install this Distribution.
Figure 4.3: Running the Environment Check Routine for BFMC

```

Note: User responses appear in bold type.

```

Select Installation Option: 2 Verify Checksums in Transport Global
Select INSTALL NAME: BFMC*1.0*1           Loaded from Distribution   Loaded from
Distribution 05/28/11@18:30:11
=> C32 Version 1.0 Patch 1 ;Created on May 27, 2011@18:46:22

This Distribution was loaded on May 28, 2011@18:55:36 with header of
  C32 Version 1.0 Patch 1 ;Created on May 27, 2011@18:46:22
It consisted of the following Install(s):
  BFMC*1.0*1
Checking Install for Package BFMC*1.0*1
DEVICE: HOME//   VT

```

```

PACKAGE: BFMC*1.0*1      May 28, 2011 6:57 pm      PAGE 1
-----
3 Routine checked, 0 failed.

```

Figure 4.4: Verifying Checksums in the Transport Global for BFMC

Other prompts are shown below:

```

Select Installation Option: 6 Install Package(s)
Select INSTALL NAME: BFMC*1.0*1      Loaded from Distribution      Loaded from
Distribution 5/26/11@18:55:36
=> BFMC*1.0*1 ; Created on May 27, 2011@18:46:22

This Distribution was loaded on May 28, 2011@18:55:36 with header of
BFMC*1.0*1 ; Created on May 27, 2011@18:46:22
It consisted of the following Install(s):
BFMC*1.0*1
Checking Install for Package BFMC*1.0*1
Will first run the Environment Check Routine, BJMDECKF

Install Questions for BFMC*1.0*1

Incoming Files:

90606 C MESSAGING MESSAGE TYPE (including data)
Note: You already have the 'C MESSAGING MESSAGE TYPE' File.
I will OVERWRITE your data with mine.

90607 C MESSAGING SITE PARAMETERS (including data)
Note: You already have the 'C MESSAGING SITE PARAMETERS' File.
Data will NOT be added.

90608 CACHE CLASS TRANSPORT (including data)
Note: You already have the 'CACHE CLASS TRANSPORT' File.
I will OVERWRITE your data with mine.

Enter date/time you want to schedule the task: 07:30PM

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

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

BFMC*1.0*1

```

```

-----
Installing Routines:
      May 28, 2011@19:03:26

Installing Data Dictionaries:
      May 28, 2011@19:03:26

Installing Data:
      May 28, 2011@19:03:28

Installing PACKAGE COMPONENTS:

Installing OPTION
      May 28, 2011@19:03:28

Running Post-Install Routine: ^BJMDPOST
Updating [BJMD NO LIMIT LOINC CODES] taxonomy...

Updating Routine file...

Updating KIDS files...

BFMC*1.0*1 Installed.
      May 28, 2011@19:07:35

Not a VA primary domain

NO Install Message sent

```

Figure 4.5: Installing the BFMC KIDS build

4.8 Sample Installation of the BJMD KIDS build

Note: User responses appear in bold type.

```

Select OPTION NAME: XPD MAIN   Kernel Installation & Distribution System

Edits and Distribution ...
Utilities ...
Installation ...

Select Kernel Installation & Distribution System 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 Option: Load a Distribution

```

Figure 4.6: Selecting installation option for BJMD

Other prompts are shown below:

```

Enter a Host File: d:\rpms_tst\bjmd0100.01k <Enter> (Note: Type the appropriate
path for your system.)

This Distribution contains Transport Globals for the following Package(s):
  Build BJMD*1.0*1
Distribution OK!

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

Build BJMD*1.0*1 has an Environmental Check Routine
Want to RUN the Environment Check Routine? YES//<Enter>
  BJMD*1.0*1
Will first run the Environment Check Routine, BJMDECK

Use INSTALL NAME: BJMD*1.0*1 to install this Distribution.

```

Figure 4.7: Running the Environment Check Routine for BJMD

Note: User responses appear in **bold type**.

```

Select Installation Option: 2 Verify Checksums in Transport Global
Select INSTALL NAME: BJMD*1.0*1          Loaded from Distribution   Loaded from
Distribution 5/28/11@18:55:36
=> BJMD*1.0*1 ; Created on May 27, 2011@23:43:36

This Distribution was loaded on May 28, 2011@23:43:36 with header of
  BJMD*1.0*1 ; Created on May 27, 2011@23:43:36
It consisted of the following Install(s):
  BJMD*1.0*1
DEVICE: HOME// VT

PACKAGE: BJMD*1.0*1      May 27, 2011 11:57 pm                PAGE 1
-----

12 Routine checked, 0 failed.

```

Figure 4.8: Verifying Checksums in the Transport Global for BJMD

Other prompts are shown below:

```

Select Installation Option: 6 Install Package(s)
Select INSTALL NAME: BJMD*1.0*1          Loaded from Distribution   Loaded from
Distribution 05/28/11@18:55:36
=> BJMD*1.0*1 ; Created on May 27, 2011@23:43:36

This Distribution was loaded on May 28, 2011@18:55:36 with header of
  BJMD*1.0.1 ; Created on May 27, 2011@23:43:36
It consisted of the following Install(s):
  BJMD*1.0*1
Checking Install for Package BJMD*1.0*1
Will first run the Environment Check Routine, BJMDECK

```

```

Specify Full Directory path for the database for new namespace C32SFH: c:\C32SFH\
Creating C32SFH namespace

2011-05-29 22:33:29 0 BFMC.BJMD.Installer: Installation starting at 2011-05-29
22:33:29, LogLevel=1
2011-05-29 22:33:29 1 CreateDatabase: Creating database C32SFH in C:\C32SFH\ with
resource %DB_DEFAULT
2011-05-29 22:33:31 1 CreateDatabase: Creating database SFH in
C:\InterSystems\Ensemble\mgr\ with resource %DB_DEFAULT
2011-05-29 22:33:32 1 CreateNamespace: Creating namespace C32SFH using C32SFH/C32SFH
2011-05-29 22:33:33 1 ActivateConfiguration: Activating Configuration
2011-05-29 22:33:34 1 GlobalMapping: Adding globalmapping BJMDS to C32SFH from SFH
2011-05-29 22:33:34 1 ClassMapping: Adding classmapping BFMC to C32SFH from SFH
2011-05-29 22:33:34 1 EnableEnsemble: Enabling C32SFH
2011-05-29 22:33:44 1 ActivateConfiguration: Activating Configuration
2011-05-29 22:33:44 1 SystemSetting: Setting Config.Miscellaneous.EnableLongStrings
to 1
2011-05-29 22:33:44 1 CreateDatabase: Creating database SFH in
C:\InterSystems\Ensemble\mgr\ with resource %DB_DEFAULT
2011-05-29 22:33:45 1 CreateNamespace: Creating namespace SFH using SFH/SFH
2011-05-29 22:33:45 1 ActivateConfiguration: Activating Configuration
2011-05-29 22:33:46 1 GlobalMapping: Adding globalmapping BJMD.Xfer.* to SFH from
C32SFH
2011-05-29 22:33:46 1 ClassMapping: Adding classmapping BJMD to SFH from C32SFH
2011-05-29 22:33:46 1 EnableEnsemble: Enabling SFH
2011-05-29 22:34:10 1 ActivateConfiguration: Activating Configuration
2011-05-29 22:34:11 0 BFMC.BJMD.Installer: Installation succeeded at 2011-05-29
22:34:11
2011-05-29 22:34:11 0 %Installer: Elapsed time 42.525026s

Install Questions for BJMD*1.0*1

Incoming Files:

    90606      C MESSAGING MESSAGE TYPE (including data)
Note: You already have the 'C MESSAGING MESSAGE TYPE' File.
I will OVERWRITE your data with mine.

    90607      C MESSAGING SITE PARAMETERS (including data)
Note: You already have the 'C MESSAGING SITE PARAMETERS' File.
Data will NOT be added.

    90608      CACHE CLASS TRANSPORT (including data)
Note: You already have the 'CACHE CLASS TRANSPORT' File.
I will OVERWRITE your data with mine.

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

Want KIDS to INHIBIT LOGONS during the install? YES// NO NO
Want to DISABLE Scheduled Options, Menu Options, and Protocols? YES// NO 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>
                                     BJMD*1.0*1
-----
Install Started for BJMD*1.0*1 :
      May 29, 2011@19:03:25

Build Distribution Date: May 27, 2011

Installing Routines:
      May 29, 2011@19:03:26

Installing Data Dictionaries:
      May 29, 2011@19:03:26

Installing Data:
      May 29, 2011@19:03:28

Installing PACKAGE COMPONENTS:

Installing OPTION
      May 29, 2011@19:03:28

Running Post-Install Routine: BJMD^BJMDPOST
Updating [BJMD NO LIMIT LOINC CODES] taxonomy...

Load started on 2011-05-29 19:06:33
Loading file H:\InterSystems\Ensemble\mgr\Temp\BYANAe83.xml as xml
Load finished successfully.

Load started on 2011-05-29 19:06:34
Loading file H:\InterSystems\Ensemble\mgr\Temp\BYANafA3.xml as xml
Imported class: BJMD.Audit.Application
Imported class: BJMD.Audit.AuditLog
[more classes imported]

Compiling class BJMD.Audit.Application
Compiling class BJMD.Audit.AuditLog
[more classes compiled]

Compiling table BJMD_Audit.AuditLog
Compiling table BJMD_C32Doc_CDA.AD
[more tables compiled]

Compiling routine BJMD.Audit.Application.1
Compiling routine BJMD.Audit.AuditLog.1s
[more routines compiled]

Load finished successfully.

Updating 90608 Record

Updating Routine file...

Updating KIDS files...

BJMD*1.0*1 Installed.
      May 29, 2011@19:07:35

Not a VA primary domain
```



Figure 4.9: Installing the BJMD KIDS build

5.0 Post-Installation Configuration Instructions

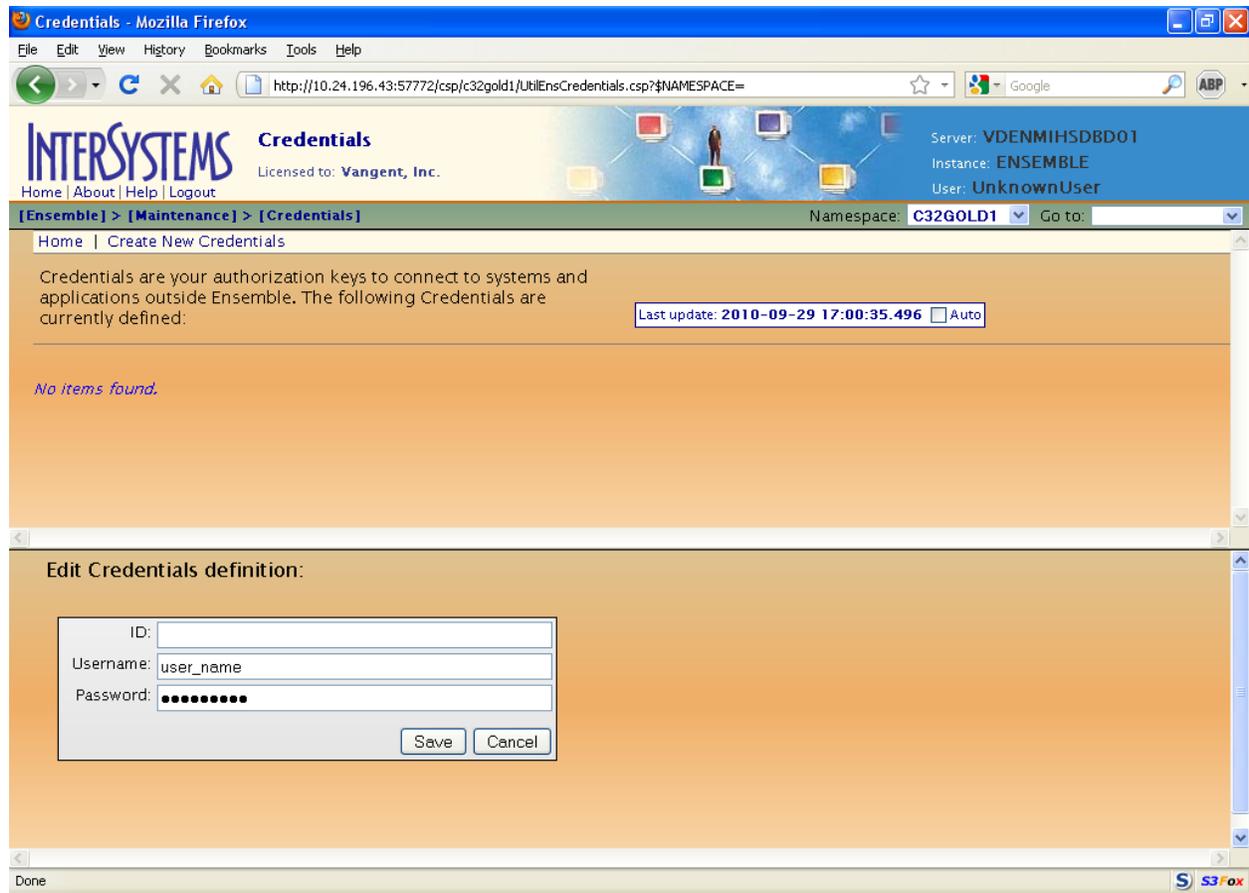
After successfully installing the two C32 KIDS builds, there are five post-installation steps: optionally configure e-mail notifications, turn off journaling in the newly created C32 database, configure C32 CSP application, set up site-specific C32 parameters, and start C Messaging.

5.1 Configuring Email Notifications

This step allows you to configure the C32 Ensemble production to automatically send e-mail notifications about new errors to selected users. A notification is typically sent as soon as a new error occurs, but the number of e-mails 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 you can skip it if you don't want to be notified about C32 errors by email. For requests coming from the EHR GUI, you will be able to view errors in the C32 Audit Log, which is described in the C32 User Manual, even if you do not set up e-mail notifications.

First, check if your e-mail server requires you to sign on. If it does, you will need to set up credentials first. To do that, sign on to the Ensemble SMP as an administrator and follow the following instructions:

1. On the main SMP page, select "Ensemble Management Portal" at the bottom of the leftmost column.
2. Select the appropriate C32 namespace from the drop-down list at the top of the page. It will consist of "C32" concatenated with the name of your RPMS namespace. For example, if your RPMS namespace is called "TEST5", then the associated C32 namespace will be called "C32TEST5".
3. Click on "Maintenance" in the list of options on the left side.
4. Click on "Credentials" in the list of options on the left side.
5. Click on "Create New Credentials" at the top of the screen. A new frame will appear at the bottom of the screen and you will be prompted to "Edit Credentials definition". See below for a sample screenshot:



6. In the "ID" field enter an arbitrary ID that will identify your e-mail server, e.g., "mail-server". You will later use this ID in the "Credentials" field of the e-mail notification screen.
7. In the "Username" field, your Ensemble user name will be defaulted. Change it to a valid user name on the e-mail server that will allow you to sign on to the server and send e-mails.
8. In the "Password" field, enter the password for the user name that you entered in the previous step.
9. Click on the "Save" button. The screen will be re-displayed and you will see your newly entered user ID in the top portion of the screen.

Once you have configured credentials or confirmed that your e-mail server doesn't require them, sign on to the Ensemble SMP as the administrator. Make sure that you are using Internet Explorer (IE) and not another Web browser since subsequent steps require IE.

1. On the main SMP page, select “Ensemble Management Portal” at the bottom of the leftmost column.
2. Select the appropriate C32 namespace from the drop-down list at the top of the page. The page will refresh and the words “Ensemble Running” should appear.
3. Click on the “more” link next to the name of the running production (“BJMD.Prod.Production.”) The “Ensemble Productions” page will be displayed.
4. Click on the “Configure” link on the right-hand side. The “Ensemble Configuration” page will come up and, after a brief delay, a graphical representation of the C32 production will be displayed. The top block on the right, under “Business Operations,” should read “AlertEmailBO.”
5. Single-click on AlertEmailBO” and the details of this process will be displayed at the bottom of the page.
6. In the “Specific Settings” column on the right-hand side, enter values in the following fields:

Field Name	Value
SMTP Server	IP address or name of the email server at your site
SMTP Port	Port number used by your 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
From	The email address that the alerts will appear as coming from, e.g. c32@ihs.gov

If you have a functional email server, but do not have some of this information, contact the Help Desk. Do not modify any other values on this screen since it can invalidate the Ensemble production. Once you have entered all required data, click the “Apply” button at the top of the lower frame.

Below is a sample screenshot which shows what the page will look like during the configuration process:

The screenshot displays the Ensemble Configuration Editor interface. The top navigation bar includes the Ensemble logo and navigation links. The main workspace shows a workflow diagram with four columns: Business Services, Business Processes, Business Operations, and Business Operations. The workflow includes components like 'BJMD.Prod.Service SOAPIn', 'BJMD.Prod.CompiledRecordInbound', 'BJMD.NIST.ValidateC32FileBS', 'BJMD.Prod.GenerateC32DocBP', 'Ens.Alert', 'BJMD.NIST.ValidateC32BP', 'BJMD.Prod.PushC32DocBP', 'AlertEmailBO', 'BJMD.Prod.C32FileBO', and 'BJMD.NIST.ValidateC32FileBO'. Below the diagram, the configuration for the 'AlertEmailBO' operation is shown, including a description, enabled status, and SMTP settings.

Description: Simple Email Alert Operation. To handle Alert messages by sending an EMail, configure an Operation in your Production named Ens.Alert using this class. Ensemble sends all AlertRequest messages to whatever Production Item is named Ens.Alert. (If there is no item named Ens.Alert then all AlertRequest messages are merely recorded in the Ensemble Event Log.)

Configuration:

- Alert On Error: False
- Archive IO: False
- SMTP Server: email.ihs.gov
- SMTP Port: 25
- Credentials: john.smith@ihs.gov
- Recipient: [Redacted]

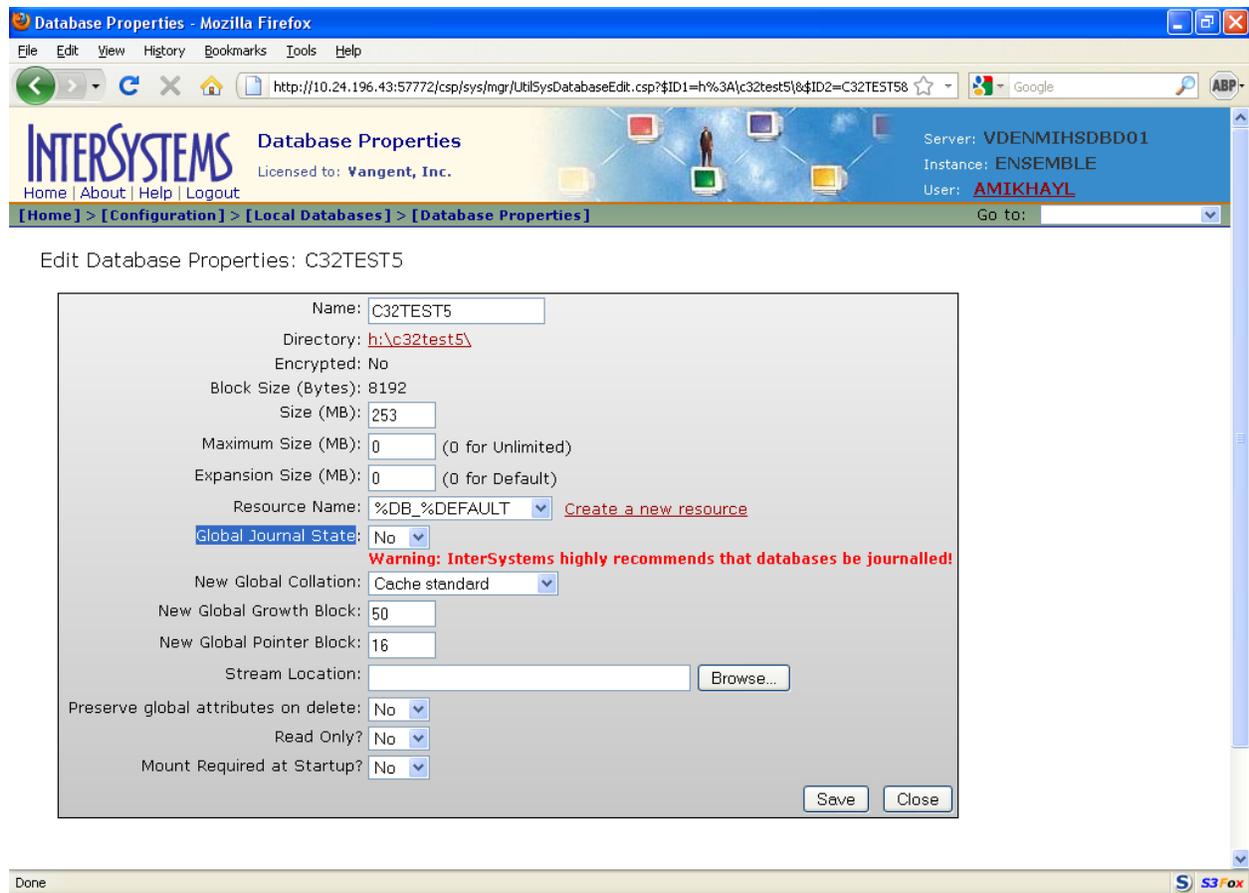
5.2 Turning Off Journaling in the C32 Database

The newly created C32 database will have journaling turned on by default. It's important to disable it before you start C32. If you don't, C32 processing will generate a high volume of journaling activity, which may fill up your journaling area.

In order to turn off journaling for C32, follow these instructions:

1. Access the Ensemble System Management Portal (SMP) and sign on as an administrator.
2. Select "Configuration" in the leftmost column.
3. When the Configuration page comes up, select "Local Databases" in the leftmost column.

4. When the "Local Databases" page comes up, find the row with the name of the newly created C32 database. It will consist of "C32" concatenated with the name of your RPMS database. For example, if your RPMS database is called "TEST5", then the associated C32 database will be called "C32TEST5". Note that the "Journal" column in this row will say "Yes".
5. Click on the word "Edit" in the identified row. This will bring up the "Database Properties" page. Find the line which says "Global Journal State" and change the value from "Yes" to "No". Ignore the warning that will appear on the page:



6. After making the change, click on "Save" at the bottom of the screen.
7. If your Ensemble instance hosts multiple RPMS namespaces, make sure to repeat steps 1-6 for all new C32 databases.
8. As mentioned earlier, make sure that you add the newly created C32 database(s) to the list of backed up databases.

5.3 Configuring the C32 CSP Application

Next you need to configure security settings for the C32 CSP application which was automatically created by the installation process. If you don't complete this step, your EHR GUI application will not be able to display C32 documents.

The steps are as follows:

1. Sign on to the Ensemble System Management Portal
2. Select "Security Management" under "System Administration" in the left column. The "Security Management" page will be displayed.
3. Select "System Security Settings" under "Security Definitions" in the left column. The "Security Setting Options" page will appear.
4. Select "Authentication Options" in the left column. The following screen will appear:



Edit Security Authentication Options:

Allow Unauthenticated access:	<input checked="" type="checkbox"/>
Allow Operating System authentication:	<input checked="" type="checkbox"/>
Allow Password authentication:	<input checked="" type="checkbox"/>
Allow Delegated authentication:	<input type="checkbox"/>
Allow Kerberos authentication:	<input type="checkbox"/>
Allow LDAP authentication:	<input type="checkbox"/>
Allow LDAP cache credentials authentication:	<input type="checkbox"/>
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	



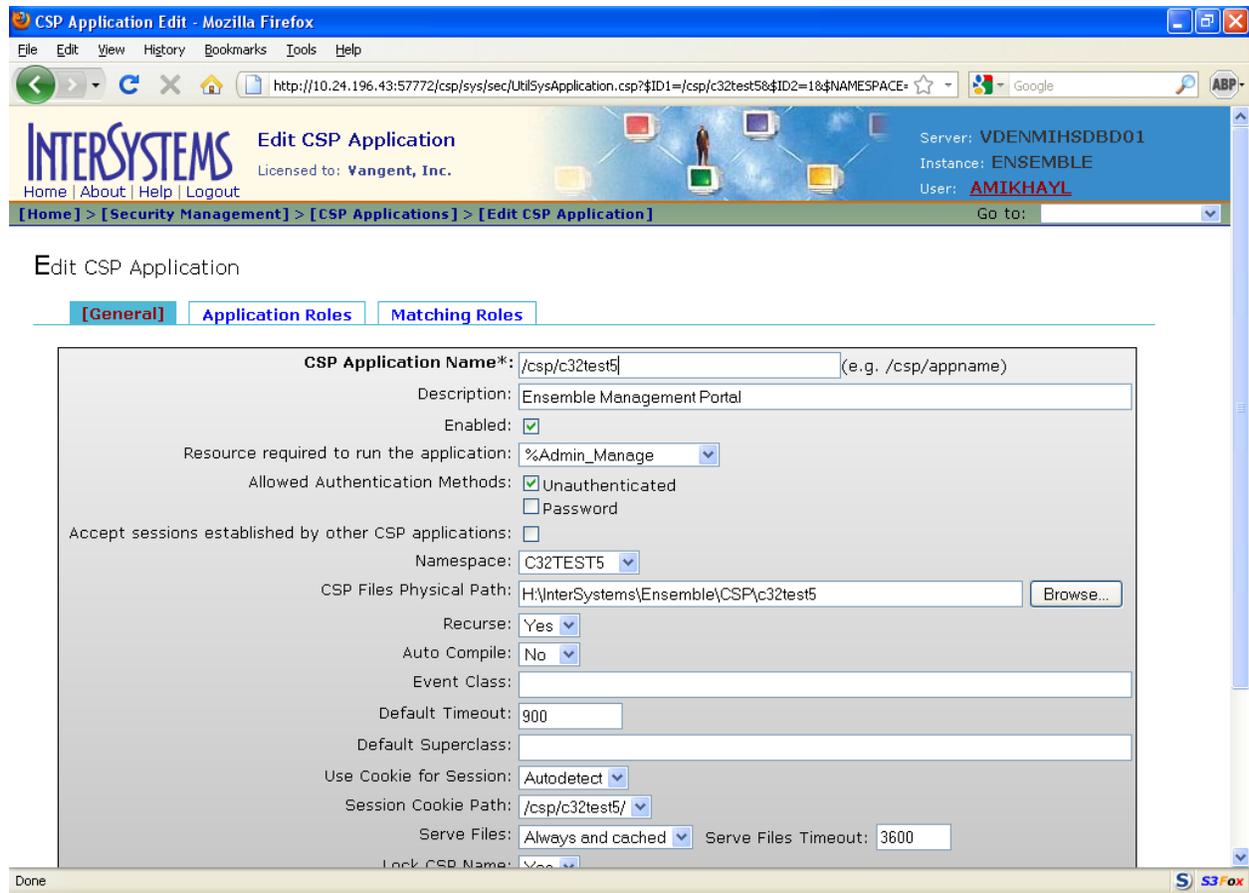
5. Make sure that the "Allow Unauthenticated access" box is checked. If it is not checked, check the box and click on "Save". The change will take effect immediately.
6. Return to the main Ensemble Management Portal page. Select "Security Management" under "System Administration" in the left column. The "Security Management" page will be displayed.
7. Select "CSP Applications" in the right column under "Application Definitions". A page similar to the one below will appear:

The following is a list of CSP applications that are currently defined: Last update: 2011-01-07 17:07:45.671 Auto

Filter: Page size: 20 Items found: 33 Page 1 of 2

Name	Enabled	Type	Resource	Authentication Methods		
/csp/c32-quick-test	Yes	CSP	%Admin_Manage	Unauthenticated	Edit	Delete
/csp/c32gold1	Yes	CSP	%Admin_Manage	Unauthenticated	Edit	Delete
/csp/c32gold5	Yes	CSP	%Admin_Manage	Unauthenticated	Edit	Delete
/csp/c32silv5	Yes	CSP	%Admin_Manage	Unauthenticated	Edit	Delete
/csp/c32silvu	Yes	CSP	%Admin_Manage	Unauthenticated	Edit	Delete
/csp/c32test5	Yes	CSP	%Admin_Manage	Unauthenticated	Edit	Delete
/csp/c32tst	Yes	CSP	%Admin_Manage	Unauthenticated	Edit	Delete
/csp/edrsilv5	Yes	CSP	%Admin_Manage	Unauthenticated	Edit	Delete
/csp/emsg	Yes	CSP	%Admin_Manage	Unauthenticated	Edit	Delete
/csp/ensc32	Yes	CSP	%Admin_Manage	Password,Unauthenticated	Edit	Delete
/csp/ensdemo	Yes	CSP	%Admin_Manage	Password,Unauthenticated	Edit	Delete
/csp/ensemble	Yes	CSP	%Admin_Manage	Password,Unauthenticated	Edit	Delete
/csp/gold1	Yes	CSP	%Admin_Manage	Unauthenticated	Edit	Delete
/csp/gold5	Yes	CSP	%Admin_Manage	Password,Unauthenticated	Edit	Delete
/csp/samples	Yes	CSP		Unauthenticated	Edit	Delete
/csp/silv5	Yes	CSP	%Admin_Manage	Unauthenticated	Edit	Delete

8. Identify the newly created C32 CSP application in the "Name" column. The name will start with "/csp/" and will be followed by "c32" and then the name of your production namespace. For example, if your production namespace is "PRD", the new C32 application will be called "/csp/c32prd".
9. Check that the "Authentication Methods" column for this CSP application contains the word "Unauthenticated" and **no** other words. If it contains anything else, click on the "Edit" link in the same row and you will see the following page:



10. Find the words "Allowed Authentication Methods" on the left hand side. Check the "Unauthenticated" box next to it. Uncheck the "Password" box immediately below it. Scroll down to the bottom of the screen and click on "Save". The changes will take effect immediately.
11. Return to the main Ensemble Management Portal page. Select "Security Management" under "System Administration" in the left column. The "Security Management" page will be displayed. Select "Users" in the left column and you will see the following page:

Users - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://10.24.196.43:57773/csp/sys/sec/UtilSqlUsers.csp?ID1=amikhayl

Google

INTERSYSTEMS Users
Licensed to: Vangent, Inc.

Server: VDENMIHSDDBD01
Instance: E2IHS
User: **UnknownUser**

[Home] > [Security Management] > [Users] Go to: [v]

[Create New User](#)

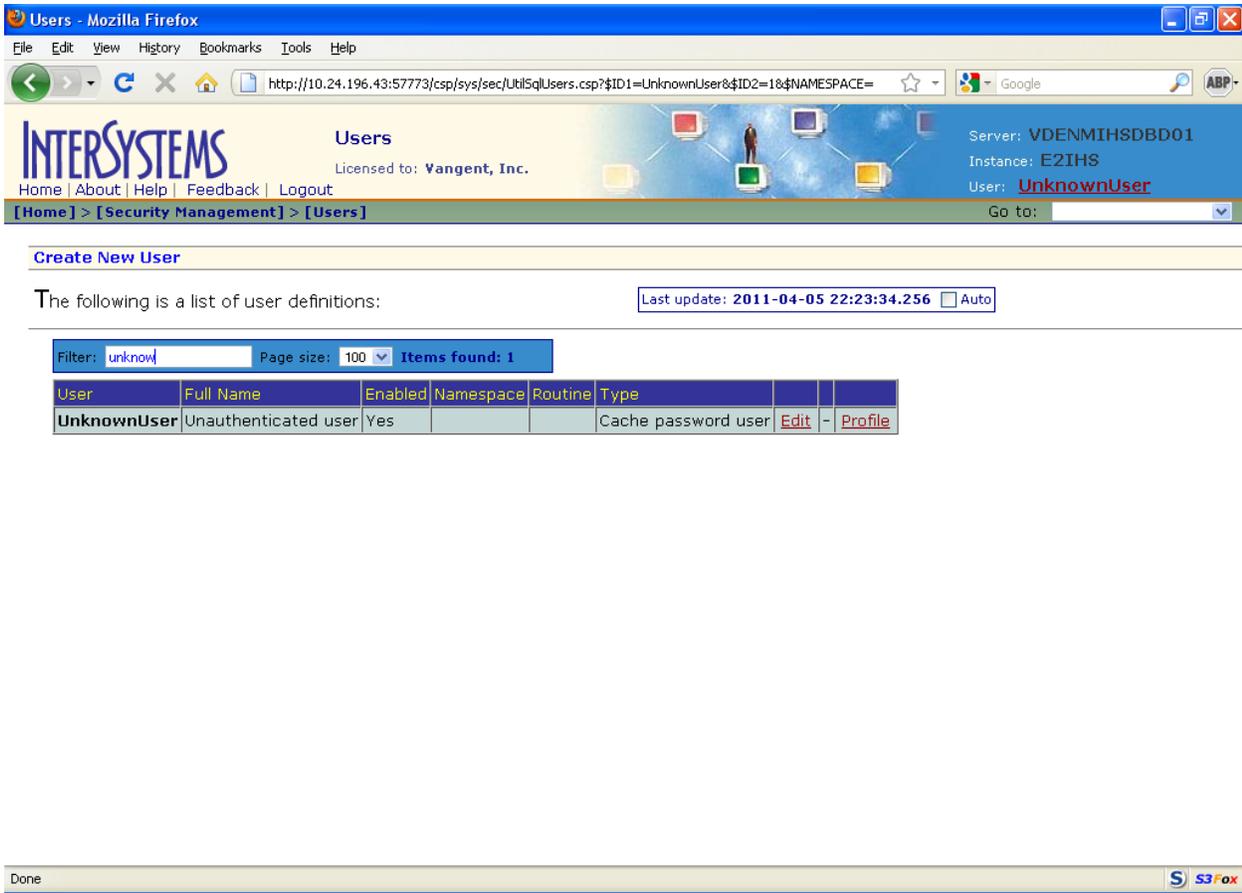
The following is a list of user definitions: Last update: 2011-04-05 21:59:27.503 Auto

Filter: [] Page size: 100 Items found: 8

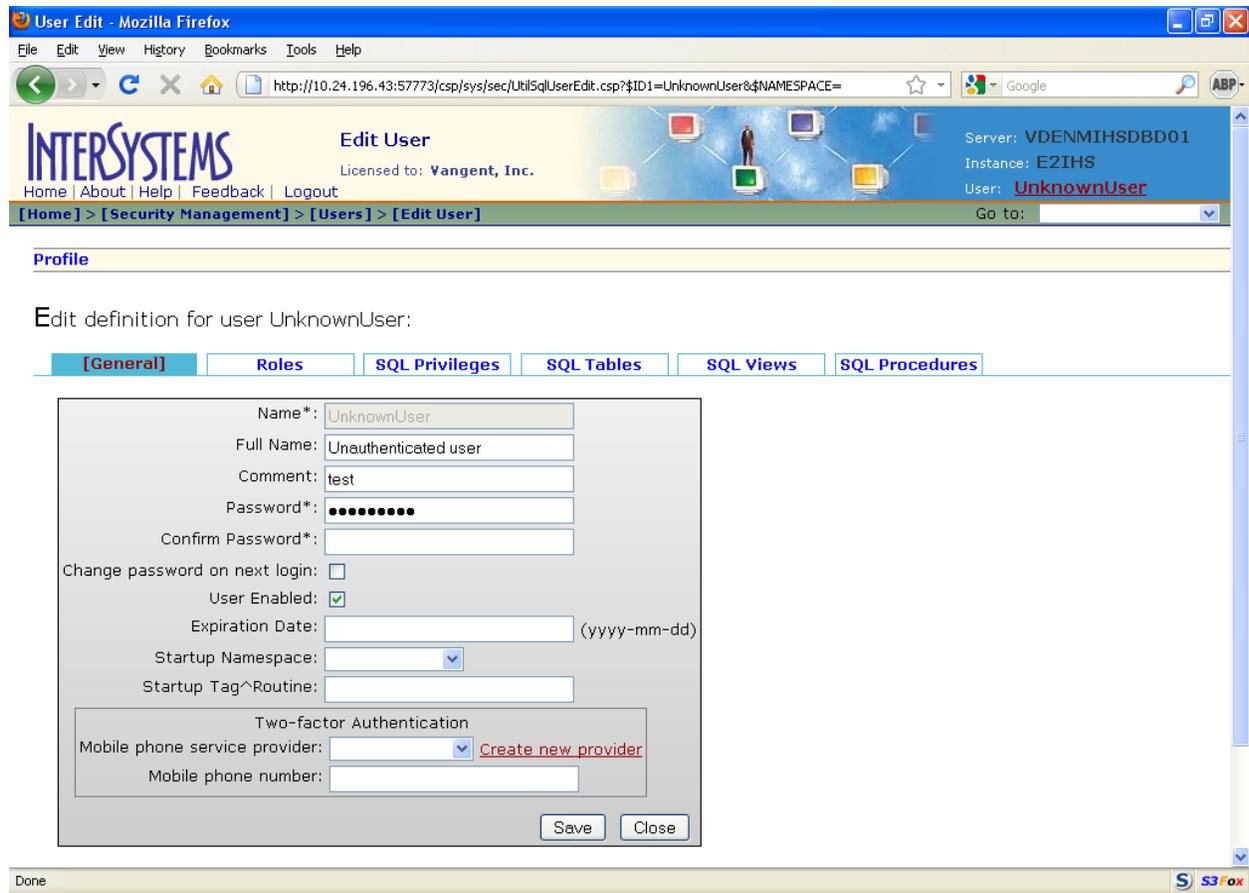
User	Full Name	Enabled	Namespace	Routine	Type	Edit	Delete	Profile
_Ensemble	Ensemble Manager	Yes			Cache password user	Edit	Delete	Profile
_PUBLIC	(Internal use - not for login)	No			Cache password user	Edit	-	Profile
_SYSTEM	SQL System Manager	Yes			Cache password user	Edit	-	Profile
Admin	System Administrator	Yes			Cache password user	Edit	Delete	Profile
amikhayl	Test	Yes			Cache password user	Edit	Delete	Profile
CSPSystem	CSP Gateway user	Yes			Cache password user	Edit	Delete	Profile
SuperUser	System Super user	Yes			Cache password user	Edit	Delete	Profile
UnknownUser	Unauthenticated user	Yes			Cache password user	Edit	-	Profile

Done S3fox

Find the user called "UnknownUser" on this page. Note that if you have 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 it will display all users whose names include the word "Unknown", for example:



Once you find "UnknownUser", click on the "Edit" link. You will see the following page:



Make sure that the "User Enabled" box is checked. If it isn't, check it and click "Save" at the bottom of the screen.

Next, click on the word "Roles" immediately under "Edit definition for user UnknownUser" and you will see the following page:

Profile

Edit definition for user UnknownUser

General Roles SQL Privileges SQL Tables SQL Views SQL Procedures

UnknownUser is Assigned to the Following Roles	Grant Option
None.	

Assign user **UnknownUser** to one or more roles:

Available	Selected
— Select One or More — %All %DB_%DEFAULT %DB_CACHE %DB_CACHEAUDIT %DB_CACHELIB %DB_CACHESYS %DB_CACHETEMP %DB_DEFAULT %DB_DOCBOOK %DB_ENSDemo	— Items Selected — Assign Assign with Grant Option

Hold the [Shift] or [Ctrl] key while clicking to select multiple.

Done

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 you don't need to do anything else. If not, then select "%All" in the list of "Available" roles on the left hand side of the page and click the top arrow located between the "Available" and "Selected" columns. Once "%All" appears in the "Selected" column, click on the "Assign" button and "%All" will appear under "UnknownUser is Assigned to the Following Roles" as follows:

Done

At this point your C32 CSP application is set up and ready to be accessed from the EHR GUI.

Note that 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 C32s. Contact your firewall administrator or Area Support if you can't resolve firewall issues.

5.4 Setting up Site-Specific C32 Parameters

Access the RPMS menu "C Messaging Menu" and configure your site-specific C32 parameters. Note that this menu is locked by security key XUMGR, which you should have as a site manager. If you can't access this menu from the regular OPTION NAME prompt in RPMS, you will need to add it to your user settings.

The "C Messaging Menu" consists of the following four menu options:

```
Select OPTION NAME: C MESSAGING MENU BJMD C MESSAGING C Messaging Menu
```

```
EDIT  Edit C Messaging Site Parameters
ONE   Generate C32 for a single patient
ALL   Generate C32 documents for all patients in RPMS
MANG  Manage C Messaging transmissions
```

Figure 5.1: C Messaging Menu

Access option "Edit C Messaging Site Parameters". You will be asked 6 questions, which will determine how C32 processing is performed at your site.

The first prompt is **BACKGROUND JOB DELAY**. You can enter a number between 0.1 and 2 seconds. This number controls how long the C32 generator will be idle when there are no outstanding requests for C32 documents in the C32 queue. The default value is 1 second. The smaller this value, the faster the system will respond to incoming requests for C32 documents from the EHR GUI. On the other hand, checking the C32 request queue every 0.1 second can add an extra load to the server, so you will have to maintain a balance between EHR GUI performance and the impact on other RPMS activities. If you are not sure what to enter here, accept the default value of 1 second.

The second prompt is **RECORD GLOBAL REFERENCES**. This value is set to "Do not capture global references" by default and you should leave it that way. This value should only be changed if OIT Support asks you to do so to help analyze performance issues. Setting this value to "Capture global references" can affect your disk space utilization and system performance.

The third prompt is **TIME TO RUN NIGHTLY TASK** and there is no default value. If your site is not a part of the IHS HIE at this time, then skip this prompt. If your site is a part of the IHS HIE and you have been provided with the location of the off-site C32 repository, then enter the time when you want C32 documents to be generated and transmitted on a nightly basis. It is recommended that you enter a time outside of the regular business hours to minimize impact on the end users. This prompt accepts time values in all valid Fileman formats, e.g. "15:34" or "03:34PM".

The fourth prompt is **DAYS KEEP TRANSMISSION ENTRIES** and it is set to 30 days by default. You can change it to any value between 7 and 9999 days. The higher the number, the more disk space the intermediate compile structures created by the C32 application will consume as described in section "Disk Space" of this installation guide. On the other hand, if you set this number too low, the compile data may be purged too soon and will not be available to facilitate debugging should any problems arise. If you are not sure what to enter here, accept the default value of 30 days.

The fifth prompt is REPOSITORY LOCATION and there is no default value. If your site is not a part of the IHS HIE at this time, then skip this prompt. If your site is a part of the IHS HIE and you have been provided with the location of the off-site C32 repository, then enter that location in this field. Make sure to enter the value in this field exactly as it was provided to you. Note that when you enter this value, the system will check whether the C32 database has enough disk space to accommodate the process of generating C32 documents for all patients in the system. If you don't, then it will display an error message when you try to enter the value. If this happens, allocate more disk space and try again.

The sixth and final prompt is ENABLED and the default value is NO. This value controls whether C32 documents are generated when C Messaging is running. Change it to "YES".

Below is a screen capture of a typical setup session:

```
Select C Messaging Menu Option: edit  Edit C Messaging Site Parameters
Now editing C Messaging parameters:

BACKGROUND JOB DELAY: 1//<Enter>
RECORD GLOBAL REFERENCES: Do not capture global references
    //<Enter>
TIME TO RUN NIGHTLY TASK: 01:00AM

Now editing C32 (Patient Summary)-specific parameters:

DAYS KEEP TRANSMISSION ENTRIES: 30// 15
REPOSITORY LOCATION:
http://sample.ihs.gov:19090/PatientRecordReceiverService/PatientRecordReceiverService
Checking free space...OK
ENABLED?: NO// YES
```

Figure 5.2: Setting up C32 Site Parameters

5.5 Starting C Messaging

Once you have set up all site-specific C32 parameters, you can start C Messaging.

Sign on to the system as an Ensemble administrator using an account with the %All role. (If you use a non-privileged account, you will not be able to start C Messaging.) Access the "Manage C Messaging transmissions" option in the "C Messaging Menu". The option will first check that all site-specific C32 parameters were set up properly and then ask you if you want to start C Messaging. Answer "YES" and C Messaging will be started on your behalf. Below is a typical screen capture:

```
Select C Messaging Menu Option: MAN  Manage C Messaging transmissions
C Messaging status:
No configuration problems found

C Messaging processing task is not running

Start C Messaging? No// YES  (Yes)
```

Figure 5.3: Starting C Messaging

Once you start C Messaging, C32 documents will be available via the EHR GUI in about 2 minutes. If your site is a part of the IHS HIE and you have specified the location of the off-site repository, the system won't start generating C32 documents until "TIME TO RUN NIGHTLY TASK", which you entered while setting up C32 site parameters. Note that the first time the nightly job runs, it can take over 2 days to generate C32 documents for all patients in the database.

6.0 Appendix A

6.1 Routine Checksums

C32 CHECKSUMS FOR BFMC*1.0*1			
Routine	Checksum		Patch List
	Old	New	
BJMDCLAS	n/a	6297177	**1**
BJMDECKF	n/a	6718942	**1**
BJMDPOST	n/a	8849551	**1**

Figure 6.1: C32 Checksums for BFMC*1.0*1

C32 CHECKSUMS FOR BJMD*1.0*1			
Routine	Checksum		Patch List
	Old	New	
BJMDCLAS	n/a	6297177	**1**
BJMDECK	n/a	18982728	**1**
BJMDEDIT	n/a	4209662	**1**
BJMDPAT	n/a	20058474	**1**
BJMDPOST	n/a	8849551	**1**
BJMDPUSH	n/a	1482046	**1**
BJMDTSK	n/a	3530053	**1**
BJMDTX	n/a	59797	**1**
BJMDTXA	n/a	2605828	**1**
BJMDTXAB	n/a	4242449	**1**
BJMDTXAC	n/a	4221473	**1**
BJMDTXAD	n/a	1793383	**1**

Figure 6-1: C32 Checksums for BJMD*1.0*1

7.0 Contact Information

If you have any questions or comments regarding this distribution, please contact the OIT Help Desk (IHS).

Phone: (505) 248-4371 or (888) 830-7280 (toll free)

Fax: (505) 248-4363

Web: <http://www.ihs.gov/GeneralWeb/HelpCenter/Helpdesk/index.cfm>

Email: support@ihs.gov