



# System Release 2.8.2/3.8.2/4.3.2 CD Upgrade Installation Guide



# Please Read

## Important

Please read this entire guide. If this guide provides installation or operation instructions, give particular attention to all safety statements included in this guide.

# Notices

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# About This Guide

## Purpose

This guide provides step-by-step instructions for upgrading a Digital Broadband Delivery System (DBDS) to System Release (SR) 2.8.2/3.8.2/4.3.2. Sites that use this guide to upgrade must currently support DNCS version 4.3.0.14 later software.

## SR 2.8.2/3.8.2/4.3.2 Features CDs

This upgrade to SR 2.8.2/3.8.2/4.3.2 is accomplished through the following set of CDs:

- DNCS 4.3.2.x
- DNCS WUI/GUI 4.3.2.x
- Application Server 3.6.2.x

## How Long to Complete the Upgrade?

The upgrade to SR 2.8.2/3.8.2/4.3.2 is to be completed from within a maintenance window that usually begins at midnight. Upgrade engineers have determined that a typical site can be upgraded within one maintenance window. The maintenance window should begin when you stop system components in Chapter 2.

## System Performance Impact

Interactive services will not be available during the maintenance window.

## Audience

This guide is written for field service engineers and system operators who are responsible for upgrading an existing DBDS to SR 2.8.2/3.8.2/4.3.2.

## Read the Entire Guide

Please review this entire guide before beginning the installation. If you are uncomfortable with any of the procedures, contact Cisco Services at 1-866-787-3866.

**Important:** Complete all of the procedures in this guide in the order in which they are presented. Failure to follow all of the instructions may lead to undesirable results.

## Required Skills and Expertise

System operators or engineers who upgrade DNCS software need the following skills:

- Advanced knowledge of UNIX
  - Experience with the UNIX vi editor. Several times throughout the system upgrade process system files are edited using the UNIX vi editor. The UNIX vi editor is not intuitive. The instructions provided in this guide are no substitute for an advanced working knowledge of vi.
  - The ability to review and edit cron files
- Extensive DBDS system expertise
  - The ability to identify keyfiles that are unique to the site being upgraded
  - The ability to add and remove user accounts

## Requirements

Before beginning the upgrade to SR 2.8.2/3.8.2/4.3.2, be sure that the site you are upgrading meets these requirements:

- DNCS 4.3.0.14 or later is currently installed on your system.
- You have the CD labeled DBDS Maintenance CD 3.3.8 in order to complete the required backups of the database and the filesystem.
- Sites that are using the RNCS component of the DBDS need the DVD labeled similarly to **RNCS Install DVD**.  
**Note:** Note that this is a DVD and not a CD. This DVD will only be provided to sites that have an active RNCS system.
- Sites that are using the OCAP component of the DBDS need the DVD labeled similarly to **OCAP Install DVD**.  
**Note:** Note that this is a DVD and not a CD. This DVD will only be provided to sites that have an active OCAP system.
- The latest version of DBDS Utilities is installed on your system.

## Non-SA Application Server and/or Third-Party Application

If the site you are upgrading supports a non-SA Application Server, contact the vendor of that Application Server in order to obtain upgrade requirements, as well as upgrade and rollback procedures.

If the site you are upgrading runs a third-party software application, contact the supplier of that application in order to obtain any upgrade requirements.

**Important:** Be certain that all third-party vendors are aware that this upgrade is built upon a Solaris 10 software platform.

## Supported Server Platforms

The following DNCS server and Application Server hardware platforms are supported by the SR 2.8.2/3.8.2/4.3.2 release:

### DNCS Server

Platform	Hard Drives	Memory
Sun Fire V890	■ 6 X 146 GB	■ 8 GB minimum
	■ 12 X 146 GB	■ 16 GB minimum
Sun Fire V880	■ 6 X 73 GB	■ 4 GB minimum
	■ 12 X 73 GB	■ 8 GB minimum
Sun Fire V445	■ 4 X 73 GB	512 MB minimum
	■ 8 X 73 GB	

### Application Server

Platform	Hard Drives	Memory
Sun Fire V245	■ 2 X 36 GB	512 MB minimum
	■ 2 X 73 GB	
Sun Fire V240	2 X 36 GB	512 MB minimum
Sun Blade 150	■ 1 X 40 GB	512 MB minimum
	■ 1 X 80 GB	

## Document Version

This is the first formal release of this document.



# 1

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## SR 2.8.2/3.8.2/4.3.2 Pre-Upgrade Procedures

### Introduction

This chapter contains procedures that must be completed before you begin the actual upgrade to SR 2.8.2/3.8.2/4.3.2. These pre-upgrade procedures consist mainly of system checks, backups, and recording various system configuration parameters.

The actual upgrade to SR 2.8.2/3.8.2/4.3.2, including some of the procedures in this chapter, must be completed while within a maintenance window. Some of the procedures of this chapter, however, can be completed before the maintenance window begins. See *When to Complete These Procedures* (on page 3), for a list of those procedures that can be completed before the start of the maintenance window.

**Important:** Do not remove any third-party applications files from the DNCS or change any of their settings before performing the SR 2.8.2/3.8.2/4.3.2 upgrade.

### Before You Begin

Before you begin the upgrade, attend to these two matters:

- Call Cisco Services and open an Upgrade Tracking Case.
- Verify that you have easy access to the Maintenance CD containing your current version of DNCS server software. You may need this CD if you ever have to roll back to the previous system release.

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# When to Complete These Procedures

## Upgrade Process

As you are planning the upgrade, be sure to contact your billing vendor to make arrangements to suspend the billing interface on the night of the upgrade. This is an important step. Your system must not try to access the database during the upgrade process. In addition, contact the provider(s) of any third-party applications that your system supports. Follow their guidance in determining whether these third-party interfaces should be stopped and if the application needs to be updated during the upgrade.

All procedures in this chapter should be completed before entering the maintenance window. Installation CDs should be verified as soon as possible after they are received. This allows time to identify and ship replacement CDs, if necessary. File system backups should be started the morning of the upgrade to ensure that they complete prior to the maintenance window.

## Complete These Procedures

### Pre-Maintenance Window

To save valuable time, complete the following procedures in this chapter prior to the beginning of the maintenance window. Depending upon the size of the system you are upgrading, it should take about 3 or 4 hours to complete these procedures.

- *Plan Which Optional Features will be Supported* (on page 5)
- *Verify the Integrity of the CDs* (on page 8)
- *Verify the Integrity of the Maintenance CD* (on page 10)
- *Check Available Disk Space* (on page 11)
- *Back Up Modulator Control Files* (on page 12)
- *Run the Doctor Report* (on page 13)
- *Examine Mirrored Devices* (on page 14)
- *Verify DBDS Stability* (on page 15)
- *Obtain DNCS System Configuration* (on page 16)
- *Obtain Application Server System Configuration* (on page 17)
- *Collect Network Information* (on page 18)
- *Check SAM Timers* (on page 20)

## Chapter 1 SR 2.8.2/3.8.2/4.3.2 Pre-Upgrade Procedures

- *Check CableCARD Server* (on page 21)
- *Verify the .profile Entries* (on page 22)
- *Check and Record Sessions* (on page 26)
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- *Back Up Various Data Files* (on page 32)
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# Plan Which Optional Features Will Be Supported

## Optional Features

This software includes several optional features that system operators can elect to enable on their systems. Some of these features require that the system operator obtain a license for the feature to be activated; others can simply be activated by engineers at Cisco Services without a license.

**Important:** Any features that are currently enabled or licensed do not have to be re-enabled.

Determine which optional features (licensed or unlicensed) need to be enabled as a result of this upgrade. You will activate these optional features while the system processes are down.

If any licensed features are to be enabled as a result of this upgrade, contact your account representative to purchase the required license.

## Licensed Features

The following list briefly describes the licensed features available with SR 2.8.2/3.8.2/4.3.2:

- EAS FIPS Code Filtering – Support for the use of Federal Information Processing Standards (FIPS) codes to filter EAS message traffic
- DOCSIS DHCT Support – Support for DOCSIS® Digital Home Communication Terminals (DHCTs)
- Enhanced VOD Session Throughput – Support for session performance greater than two sessions per second
- VOD Session Encryption – Support for session-based encryption for video-on-demand (VOD) sessions
- Distributed DNCS – Support for operating the DNCS through a Regional Control System (RCS)
- OpenCable Application Platform (OCAP™) – Support for the Open Cable Access Platform

## Enabled Features

The following list contains some of the optional features that can be enabled by engineers at Cisco Services without a special license. Not all of these features necessarily pertain to the software you are installing in this guide. Check with your North American marketing representative or Cisco Services if you are unsure about which optional features this software supports.

- Conditional Access Mode – Indicates whether the DNCS provides PowerKEY conditional access or non-SA conditional access, such as NDS
- DBDS Network Overlay – Enables DNCS support for "Overlay" of a third-party system within an SA system
- SI Type to Use – Specifies the type of system/service information (SI) that the given system will use
- PID Mapping Mode – Specifies whether the transport stream ID (TSID) the system will use is "Dynamic Unique" or "Static non-Unique"
- PreAllocated Session Management – Support for the pre-allocation of sessions by the shared resource manager (SRM) process of the DNCS
- Direct ASI – Enables the system to eliminate the need for the Broadband Integrated Gateway (BIG) to transmit Broadcast File System (BFS) data to modulators
- Third-Party Source – Support for third-party SI sources  
**Note:** For additional information, refer to the technical bulletin *Program and System Information Protocol Configuration for System Releases 2.5, 2.7, 3.5, 3.7, 4.0, 4.2, and CV 3.4* (part number 4011319).
- Split Channels – Support for split channels in defined channel maps
- Multiflow Multicast – Support for the Multiflow Multicast feature to work with the DOCSIS Settop Gateway (DSG) in the DBDS
- SSP 2.4 Compliant – Support for a Server Interactive Session Request and a Server Interactive Session Release
- OOB Staging Bridge – Support for the use of a subset of the out-of-band (OOB) bridge population within the DBDS to be dedicated to the staging of DHCTs
- Switched Digital Video – Support for the Switched Digital Video (SDV) feature
- Trusted Domain – Support for the MSO Trusted Domain feature, which includes "Home Account" support
- Fixed Key Encryption – Support for the use of the "Fixed Key" algorithm to be used in encryption tasks
- DNO Encrypted VOD – Support for encrypted VOD in an Overlay environment

## Plan Which Optional Features Will Be Supported

- OpenCAS PowerKEY Interface – Support for an OpenCAS interface for applying PowerKEY encryption to an established "in the clear" session
- Overlay Netcrypt Bulk Encryptor – Support for the Netcrypt Bulk Encryptor feature
- Generic QAM Support – Support for third-party QAMs, allowing the DNCS to manage broadcast, SVD, and VOD sessions
- Downloadable CAS – Support for downloadable conditional access subsystem
- Open Cable MP3 Audio Support – Support for the encoding of EAS audio messages to MP3 format for distribution over the TS Broadcaster
- SRM CAS PowerKEY Interface – Support for RPC-based Open Conditional Access Interface (OCAI) such as USRM, GSRM, or any external session and resource manager that is RPC OCAI-compliant.
- iGuide IPG Support – Enables the DREDD proxy on the DNCS to provide support for Macrovision iGuide IPG data

## Verify the Integrity of the CDs

Complete the following steps for each CD, except the Maintenance DVD, contained in the software binder.

**Note:** You will verify the Maintenance DVD in a separate procedure.

- 1 If necessary, open an xterm window on the DNCS.
- 2 Complete the following steps to log on to the xterm window as **root** user.
  - a Type **su -** and press **Enter**. The password prompt appears.
  - b Type the root password and press **Enter**.
- 3 Insert an upgrade CD into the CD drive on the DNCS.

**Note:** If a File Manager window opens after you insert the DVD, close the window.
- 4 Type the following command and press **Enter**. The /cdrom/cdrom0 directory becomes the working directory.

```
cd /cdrom/cdrom0
```

- 5 Type the following command and press **Enter**. The system lists the contents of the CD.

```
ls -la
```

- 6 Did the system list the contents of the CD as expected?
  - If **yes**, go to step 7.
  - If **no**, the CD might be defective. Call Cisco Services for assistance.
- 7 Type the following command and press **Enter**. The system lists the contents of the CD.

```
pkgchk -d . SAI*
```

**Important:** Be sure to type the dot between the **-d** and **SAI\***.

### Results:

- The system checks each package on the CD that starts with SAI.
- The system performs a checksum on each package and ensures that the checksum matches what is contained on the package map.
- The system lists the results of a package check.

**Note:** The system may list some warnings, which are normal and can be ignored. The system clearly lists any errors found during the package check.

## Verify the Integrity of the CDs

- 8 Did the package check reveal any errors?
  - If **yes**, contact Cisco Services for assistance.  
**Important:** Do *not* proceed with the upgrade if the CD contains errors.
  - If **no**, follow these instructions.
    - a Type **cd /** and then press **Enter**.
    - b Type **eject cdrom** and then press **Enter**.
- 9 Repeat steps 3 through 8 for each CD received in the software binder.

## Verify the Integrity of the Maintenance CD

Complete the following steps to verify the integrity of the Maintenance DVD.

- 1 Insert the Maintenance DVD into the DVD drive of the DNCS.

**Note:** If a File Manager window opens after you insert the DVD, close the window.

- 2 Type the following command and press **Enter**. The /cdrom/cdrom0 directory becomes the working directory.

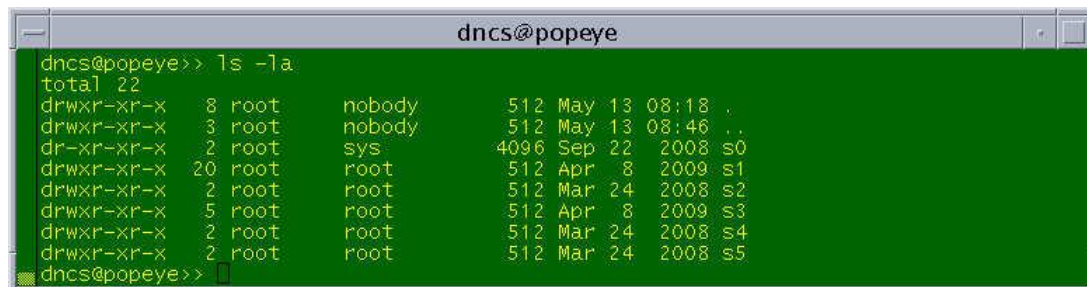
```
cd /cdrom/cdrom0
```

- 3 Type the following command and press **Enter**.

```
ls -la
```

**Result:** The system displays the contents of the DVD, which should be similar to the following example.

**Example:**



```

dncs@popeye
dncs@popeye>> ls -la
total 22
drwxr-xr-x  8 root  nobody   512 May 13 08:18 .
drwxr-xr-x  3 root  nobody   512 May 13 08:46 ..
dr-xr-xr-x  2 root  sys     4096 Sep 22 2008 s0
drwxr-xr-x 20 root  root     512 Apr  8 2009 s1
drwxr-xr-x  2 root  root     512 Mar 24 2008 s2
drwxr-xr-x  5 root  root     512 Apr  8 2009 s3
drwxr-xr-x  2 root  root     512 Mar 24 2008 s4
drwxr-xr-x  2 root  root     512 Mar 24 2008 s5
dncs@popeye>>

```

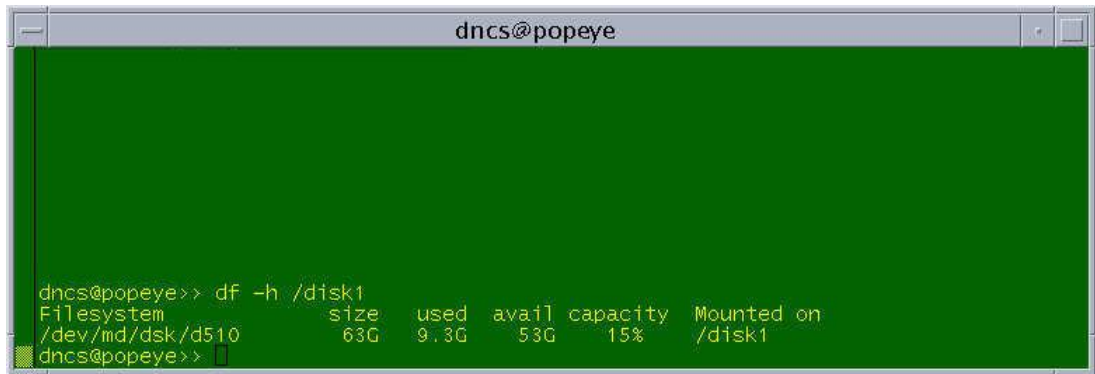
- 4 Were the results from step 3 similar to the example?
  - If **yes**, complete the following steps.
    - a Type the following command and then press **Enter**.  
`cd /`
    - b Type the following command and then press **Enter**.  
`eject cdrom`
  - If **no**, call Cisco Services.

## Check Available Disk Space

We recommend that you have at least 700 MB of free space on the /disk1 filesystem to install the upgrade. This procedure provides instructions to check available disk space on your DNCS.

- 1 From an xterm window on the DNCS, type the following command and press **Enter**. The system displays the amount of used and available (**avail**) space on the /disk1 filesystem.

```
df -h /disk1
```



The screenshot shows a terminal window titled 'dncs@popeye'. The command 'df -h /disk1' has been executed, resulting in the following output:

Filesystem	size	used	avail	capacity	Mounted on
/dev/md/dsk/d510	63G	9.3G	53G	15%	/disk1

- 2 Does the **avail** column show that at least 700 MB of disk space is available?
  - If **yes**, go to the next procedure in this chapter. You have sufficient space in which to perform the upgrade.
  - If **no**, call Cisco Services. Engineers at Cisco Services can advise you regarding disk clean-up procedures.

## Back Up Modulator Control Files

In the event that you ever need to access the pre-upgrade configuration files of the QAM-family and QPSK modulators, follow these instructions to make a backup copy.

**Note:** In the following commands, substitute the DNCS version that you are backing up for [DNCS version]

- 1 From a root xterm window on the DNCS, type the following command and press **Enter**:

```
mkdir /tftpboot/backup.[DNCS version]
```

- 2 Type the following command and press **Enter**. The system copies all \*.config files to the /tftpboot/backup directory.

```
cp -p /tftpboot/*.config /tftpboot/backup.[DNCS version]
```

- 3 Type the following command and press **Enter** to verify that the configuration files were successfully copied to this directory.

```
ls /tftpboot/backup.[DNCS version]
```

- 4 Add the /tftpboot/backup.[DNCS version] directory to your list of key files to be backed up.

## Run the Doctor Report

Before upgrading the DNCS to SR 2.8.2/3.8.2/4.3.2, run the Doctor Report as **dncs** user. Use the instructions provided in *DBDS Utilities Version 6.3 Installation Instructions and User Guide* (part number 4031374). The Doctor Report provides key system configuration data that might be useful before you begin the upgrade process.

**Note:** On a typical system, the Doctor Report takes about 10 minutes to run.

## Analyze the Doctor Report

When you analyze the output of the Doctor report, be certain that no disk partition is at over 85 percent capacity. Call Cisco Services if the Doctor report reveals that a disk partition is over 85 percent capacity.

Also analyze the output of the Doctor report to verify that the inband SI\_INSERT\_RATE is *not* greater than 0 (zero). If the inband SI\_INSERT\_RATE is greater than 0 (zero), refer to *Recommendation for Setting System Information to Out-of-Band* (part number 738143), and follow the procedures provided to disable inband SI.

**Note:** If the inband SI is disabled, then the SI\_INSERT\_RATE is 0.

**Important:** Do *not* go to the next procedure until you have completed running and analyzing the Doctor report and correcting any problems it reports.

## Examine Mirrored Devices

Before you disable the disk mirroring functions in preparation of an upgrade, you should examine the status of the mirrored drives on your system. All the disk mirroring functions must be working normally before proceeding with the upgrade.



**CAUTION:**

If the disk mirroring functions of the DNCS are not working properly before the upgrade, you may not be able to easily recover from a failed upgrade.

### Examining the Mirrored Devices

Complete the following steps to examine the status of the mirrored drives on your DNCS.

- 1 If necessary, open an xterm window on the DNCS.
- 2 Type the following command and press **Enter**. The system displays the status of all of the metadevices on the DNCS.

```
metastat -c
```

**Note:** Press the **Spacebar**, if necessary, to page through all of the output.

- 3 Check for any devices that the system reports that need maintenance.
- 4 Do any devices need maintenance?
  - If **yes**, call Cisco Services for help in resolving these issues with the metadevices.
  - If **no**, go to the next procedure in this chapter.

## Verify DBDS Stability

- 1 Complete the following steps to perform a slow and fast boot on a test DHCT with a working return path (2-way mode).
  - a Boot a DHCT.

**Note:** Do *not* press the Power button.
  - b Access the Power On Self Test and Boot Status diagnostic screen on the DHCT and verify that all parameters, except UNcfg, display **Ready**. UNcfg displays **Broadcast**.

**Note:** The fields on this screen may take up to 2 minutes to completely populate with data.
  - c Press the **Power** button on the DHCT to turn on the power and establish a two-way network connection.
  - d Access the Power On Self Test and Boot Status diagnostic screen on the DHCT and verify that all parameters, including UNcfg, display **Ready**.
- 2 Verify that you can ping the test DHCT.
- 3 Stage at least one new DHCT. After staging the DHCT, verify the following:
  - The DHCT loaded the current client release software.
  - The DHCT received at least 33 EMMs (Entitlement Management Messages).
  - The DHCT successfully received its Entitlement Agent.
- 4 Verify that the Interactive Program Guide (IPG) displays 7 days of valid and accurate data.
- 5 Verify the pay-per-view (PPV) barkers appear on the PPV channels correctly.
- 6 Verify that all third-party applications have loaded and operate properly.
- 7 Verify that you can purchase a VOD and/or xOD program.
- 8 Verify that SDV channels are available.

## Obtain DNCS System Configuration

Complete the following steps to obtain basic system configuration data for *both* the DNCS and the Application Server. You may need some of this information later during the upgrade.

- 1 From an xterm window on the DNCS, type the following command and press **Enter**. A list of IP (Internet Protocol) addresses and hostnames appears.  
**more /etc/hosts**
- 2 On a sheet of paper, write down the IP addresses of the hosts that appear in the /etc/hosts file.

**Important:** At a minimum, write down the IP addresses for the following hosts:

- appservatm \_\_\_\_\_
- dnccsatm \_\_\_\_\_
- dnccseth \_\_\_\_\_
- dnccsted \_\_\_\_\_

- 3 Type the following command and press **Enter**. The hostname for the DNCS appears.

**uname -n**

**Important:** Call Cisco Services if the hostname contains a period (.). Cisco Services engineers will help you change it to a valid hostname.

- 4 Write down the hostname for the DNCS, as displayed in step 3: \_\_\_\_\_
- 5 Type the following command and press **Enter** to verify that the network interfaces have been plumbed and configured correctly. Output should look similar to the following example:

**ifconfig -a**

```

dnccs@popeye>> ifconfig -a
lo0: flags=2001000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4,VIRTUAL> mtu 8232 index 1
    inet 127.0.0.1 netmask ffffffff
ce0: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 2
    inet 10.253.0.1 netmask ffff0000 broadcast 10.253.63.255
ce1: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 3
    inet 10.90.176.230 netmask fffffe00 broadcast 10.90.177.255
eri0: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 4
    inet 192.168.1.1 netmask fffffff0 broadcast 192.168.1.255
ge0: flags=1000842<BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 5
    inet 0.0.0.0 netmask 0
  
```

## Obtain Application Server System Configuration

- 1 From an xterm window on the Application Server, type the following command and press **Enter**. A list of IP addresses and hostnames appears.

```
more /etc/hosts
```

- 2 Write down the IP addresses and hostnames for the following hosts:

- dnscatm \_\_\_\_\_
- appservatm (if appservatm is not 10.253.0.10) \_\_\_\_\_

- 3 At the Application Server, type the following command and press **Enter**. The hostname for the Application Server appears.

```
uname -n
```

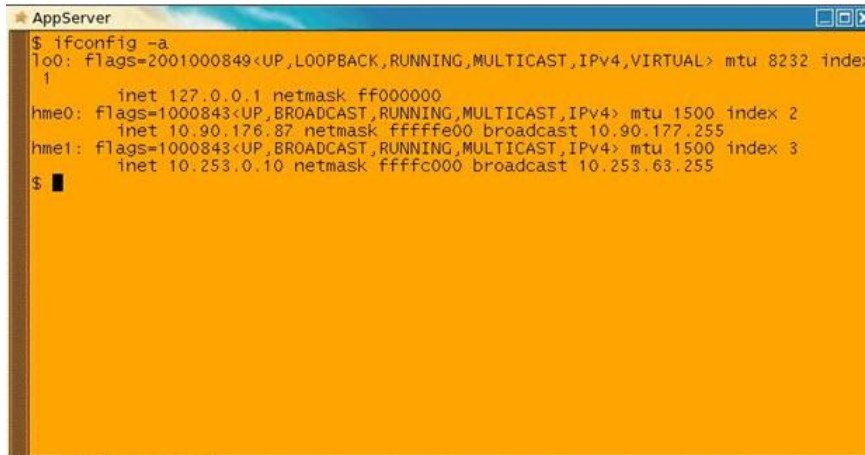
- 4 Write down the hostname for the Application Server, as displayed in step 3:

\_\_\_\_\_

- 5 Type the following command and press **Enter** to verify that the network interfaces have been plumbed and configured correctly.

```
ifconfig -a
```

**Example:** Output should look similar to the following example:



```

AppServer
$ ifconfig -a
lo0: flags=2001000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4,VIRTUAL> mtu 8232 index
1
    inet 127.0.0.1 netmask ff000000
hme0: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 2
    inet 10.90.176.87 netmask fffffe00 broadcast 10.90.177.255
hme1: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 3
    inet 10.253.0.10 netmask ffffc000 broadcast 10.253.63.255
$

```

## Collect Network Information

In this section, you are collecting network information required to reconstruct the system should the upgrade fail.

- 1 If necessary, open an xterm window on the DNCS.
- 2 Complete the following steps to log on to the xterm window as **root** user.
  - a Type **su -** and press **Enter**. The password prompt appears.
  - b Type the root password and press **Enter**.
- 3 Type the following command and press **Enter**. The `/export/home/dncs` directory becomes the working directory.
 

```
cd /export/home/dncs
```
- 4 Type the following command and press **Enter**. The system creates a directory called `network.pre441`.
 

```
mkdir network.pre441
```
- 5 Type the following command and press **Enter**. The `/export/home/dncs/network.pre441` directory becomes the working directory.
 

```
cd network.pre441
```
- 6 Type the following commands to copy the necessary files to this newly created directory.

### Important:

- Press **Enter** after typing each command.
- Note that several of these commands require a space, followed by a period, after the body of the command.

- a `cp -p /etc/hosts .`
- b `cp -p /etc/hostname.* .`
- c `cp -p /etc/inet/hosts inet.hosts`
- d `cp -p /etc/netmasks .`
- e `cp -p /etc/defaultrouter .`

**Note:** If this file is not present, you will receive the **cp: cannot access /etc/defaultrouter** message. In this case, continue with the next command.

- f `cp -p /etc/defaultdomain .`

**Note:** If this file is not present, you will receive the **cp: cannot access /etc/defaultrouter** message. In this case, continue with the next command.

- g `cp -p /etc/vfstab .`
- h `cp -p /etc/nsswitch.conf .`
- i `cp -p /etc/rc2.d/S82atminit .`
- j `cp -p /etc/rc2.d/S85SAspecial .`
- k `cp -p /etc/inet/ipnodes .`

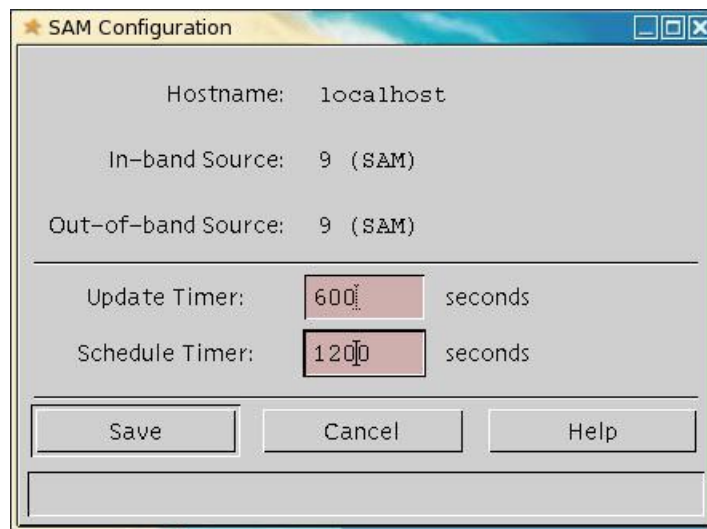
- ```
l netstat -nrw > netstat.out
m ifconfig -a > ifconfig.out
n df -k > df.out
o eeprom nvramrc > nvramrc.out
```
- 7 Type the following command and press **Enter**.  
`cd /var/spool/cron`
  - 8 Type the following command and press **Enter**.  
`tar cvf crontabs.< date >.tar crontabs`  
**Note:** Replace < date > with the current date.  
**Example:** `tar cvf crontabs.051510.tar crontabs`
  - 9 Type the following command and press **Enter**.  
`mv crontabs.[date].tar /export/home/dnscs/network.pre441`
  - 10 Type **exit** and then press **Enter** to log out as root user.
  - 11 Type the following command and press **Enter**.  
`cd /export/home/dnscs/network.pre441`
  - 12 Type `ls -ltr` and then press **Enter** to verify that each file copied successfully to the /export/home/dnscs/network.pre441 directory and that no file has a size of 0 (zero).  
**Note:** The "l" in `ls` and `-ltr` is a lowercase letter L.

## Check SAM Timers

Follow these instructions to check the **Update Timer** and **Schedule Timer** fields on the SAM Configuration window.

**Important:** The Cisco-recommended value for **Update Timer** is 600. The recommended value for **Schedule Timer** is 1200. The values currently set on the DNCS may differ. Do not make any change without first verifying the change with the system operator.

- 1 From the DNCS Administrative Console, select the **Application Interface Modules** tab and then click **SAM Config**. The SAM Configuration window opens.



- 2 Record the current **Update Timer** value here: \_\_\_\_\_  
**Note:** If you change the value, record the new value here: \_\_\_\_\_
- 3 Record the current **Schedule Timer** value here: \_\_\_\_\_  
**Note:** If you change the value, record the new value here: \_\_\_\_\_
- 4 Save any changes that you made.

## Check CableCARD Server

Complete the following steps to record the minimum **Authorization Time-Out Period** and **DeAuthorization Time-Out Period** fields on the Configure CableCARD Server window.

- 1 From the DNCS Administrative Console, select the **DNCS** tab.
  - 2 Select the **Home Element Provisioning** tab and then click **CableCARD**. The CableCARD Summary screen opens.
  - 3 Click **Server Configuration**. The Server Configuration portion of the screen appears.
  - 4 Follow these instructions to record specific CableCARD parameters.
    - a In the space provided, record the **Authorization Time-Out Period**.  
\_\_\_\_\_
    - b In the space provided, record the **DeAuthorization Time-Out Period**.  
\_\_\_\_\_
- Note:** In a later procedure, *Configure the CableCARD Server* (on page 79), you will ensure that these values are present after the upgrade.
- 5 Click **Exit all CableCARD Screens**.

## Verify the .profile Entries

### Verify the EAS Variable

Complete the following steps to add the LOCAL\_EAS\_IP variable to the .profile file.

- 1 If necessary, open an xterm window on the DNCS.
- 2 Type the following command and press **Enter**. The system searches for LOCAL\_EAS\_IP in the /export/home/dncls/.profile file.

```
grep -i LOCAL_EAS_IP /export/home/dncls/.profile
```

**Note:** Be sure to type a space between grep -i LOCAL\_EAS\_IP and /export/home/dncls/.profile.

- 3 Do the results from step 2 reveal that there is already an entry for LOCAL\_EAS\_IP in the /export/home/dncls/.profile?
  - If **yes**, go to the next procedure in this chapter.
  - If **no**, go to step 4.
- 4 Type the following command and press **Enter**. The system displays the value of the dncseth variable in the /etc/hosts file.

```
cat /etc/hosts | grep dncseth
```

- 5 Type the following command and press **Enter**. The system displays the value of the eac variable in the /etc/hosts file.

```
cat /etc/hosts | grep eac
```

- 6 Evaluate the results from steps 4 and 5 to determine whether the eac is on the same network as the DNCS or if it is on a different network. Refer to the following example for guidance in making this determination:

| Same Network        | Different Network   |
|---------------------|---------------------|
| dncseth=192.168.2.1 | dncseth=192.168.2.1 |
| eac=192.168.2.5     | eac=192.168.4.5     |

**Note:** When the DNCS and the eac are on the same network, the first three octets of the IP address are identical. They are on different networks when the first three octets of the IP address are different.

- 7 Are the DNCS and the eac on the same network?
  - If **yes**, go to the next procedure in this chapter.
  - If **no** (they are on different networks), go to step 8.
- 8 Using a text editor, append the following line to the .profile file:
 

```
export LOCAL_EAS_IP=[Ethernet address of the DNCS]
```

**Note:** Substitute the Ethernet address of the DNCS for [Ethernet address of the DNCS], displayed in step 4.

**Example:** LOCAL\_EAS\_IP=192.168.2.1
- 9 Save and close the file.

## Verify the PSIP and SI\_REGENERATION\_TIME Variables

The following procedure checks the PSIP\_INSERT\_RATE and SI\_REGENERATION\_TIME variables for their recommended values. A brief explanation of why you are checking these variables follows.

### PSIP\_INSERT\_RATE

If the site you are upgrading does *not* use the DNCS for PSIP and inband EAS messages that are targeted to hosts, such as QAM tuner TVs, you can disable delivery of these messages from the DNCS by setting the **PSIP\_INSERT\_RATE** variable to 0 in the .profile file. If you are not using the DNCS to provide these messages, you should make provisions to provide these signals by other PSIP aggregation/EAS equipment in your system.

#### Important:

- Be aware that there are FCC regulatory requirements to provide PSIP and EAS to these devices.
- If the DNCS is used for PSIP and inband EAS messages that are targeted to hosts, such as QAM tuner TVs, the **PSIP\_INSERT\_RATE** variable should not be present in the .profile. If it is present in the .profile file, it should not be set to 0.

### SI\_REGENERATION\_TIME

The **SI\_REGENERATION\_TIME** variable in the .profile file needs to be set to **1200** (20 minutes) so that SI updates happen, at most, once every 20 minutes.

Complete the following steps to check the **PSIP\_INSERT\_RATE** and **SI\_REGENERATION\_TIME** variables in the .profile file.

- 1 If necessary, open an xterm window on the DNCS.
- 2 Type the following command and press **Enter**:  

```
grep PSIP_INSERT_RATE /export/home/dncs/.profile
```
- 3 Do the results from step 2 reveal that the PSIP variable already exists in the .profile file?
  - If **yes**, and if the DNCS is NOT used for PSIP and inband EAS targeted to hosts, continue with step 4.
  - If **no**, and if the DNCS is NOT used for PSIP and inband EAS targeted to hosts, skip to step 5.
  - If **no**, and if the DNCS is used for PSIP and inband EAS targeted to hosts, go to step 8; no .profile changes for the PSIP\_INSERT\_RATE are required.

- 4 Is the **PSIP\_INSERT\_RATE** variable already set to **0**?
  - If **yes**, go to step 8; no `.profile` changes for the **PSIP\_INSERT\_RATE** are required.
  - If **no**, continue with step 5.
- 5 Open the `.profile` file with a text editor.
- 6 Is the **PSIP\_INSERT\_RATE** variable already in the file?
  - If **yes**, set the value of this variable to **0**.
  - If **no**, add the following entries to the bottom of the file:

```
PSIP_INSERT_RATE=0
export PSIP_INSERT_RATE
```
- 7 Save and close the file.
- 8 From the xterm window on the DNCS, type the following command and press **Enter**:

```
grep SI_REGENERATION_TIME /export/home/dncs/.profile
```
- 9 Does your output from step 8 show that the **SI\_REGENERATION\_TIME** variable exists *and* is set to **1200**?
  - If **yes** (to both requirements), go to the next procedure in this chapter.
  - If **no**, go to step 10.
- 10 Open the `.profile` file with a text editor.
- 11 Choose one of the following options:
  - If the **SI\_REGENERATION\_TIME** variable is not yet present in the `.profile` file, append the variable to the file and set it to **1200**.
  - If the **SI\_REGENERATION\_TIME** variable is present in the `.profile` file but is set incorrectly, change it to **1200**.

**Example:** When you are finished, your entry should be:  
`SI_REGENERATION_TIME=1200`
- 12 Save and close the file.

## Bounce the siManager Process

If you made any edits to the .profile file for the **PSIP\_INSERT\_RATE** or the **SI\_REGENERATION\_TIME** variables, you need to bounce the siManager process of the DNCS in order for the system to recognize those changes.

- 1 When completing the *Verify the PSIP and SI\_REGENERATION\_TIME Variables* (on page 23) procedure, did you make any changes to the .profile file?
  - If **yes**, continue with step 2.
  - If **no**, skip to the next procedure in this chapter. You have no need to bounce the siManager process.
- 2 Log out of the DNCS.
- 3 Log back onto the DNCS as dncs user. The changes you made to the .profile file are now available to the siManager process.
- 4 Follow these instructions to stop the siManager process.
  - a Select **siManager** in the DNCS Control window.
  - b Click **Process**.
  - c Select **Stop Process**.
  - d Wait for the indicator of the siManager process to become red.
- 5 Follow these instructions to restart the siManager process.
  - a Select **siManager** in the DNCS Control window.
  - b Click **Process**.
  - c Select **Start Process**.
  - d Wait for the indicator of the siManager process to become green.

## Check and Record Sessions

### Checking the BFS Sessions on the BFS QAM or GQAM

Complete the following steps to check and record the number of pre-upgrade BFS sessions.

- 1 Follow these instructions to check the number of active sessions on the BFS QAM and/or GQAM.
  - a Press the **Options** button on the front panel of the modulator until the **Session Count** total appears. Record the **Session Count** here. \_\_\_\_\_
  - b Press the **Options** button again and record the **Program Count** here.  
\_\_\_\_\_

**Note:** If all sessions are encrypted, the **Session Count** and **Program Count** should be equal.

- 2 In an xterm window on the DNCS, type the following command and press **Enter**:  
`auditQam -query [BFS QAM IP address] [output port number]`
- 3 Record the output from step 2 here: \_\_\_\_\_
- 4 Type the following command and press **Enter**.  
`/opt/solHmux64/vpStatus -d /dev/Hmux0 -P 0`
- 5 Record the **Active Streams Count** here. \_\_\_\_\_
- 6 Do the results of steps 1, 2, and 4 all show the same number of sessions?
  - If **yes**, continue with the next procedure in this chapter.
  - If **no**, contact Cisco Services for help in resolving this issue.

## Back Up the DNCS and Application Server File Systems

Perform a complete backup of the database and file systems of the DNCS and Application Server. Procedures for backing up the database and file systems are contained in *DBDS Backup and Restore Procedures For SR 2.2 Through 4.3 User Guide* (part number 4013779). If necessary, call Cisco Services to obtain a copy of these backup and restore procedures.

## Stop the dhctStatus, signonCount, and cmd2000 Processes

When sites are being upgraded, the dhctStatus utility may occasionally be in the process of polling DHCTs. Additionally, the signonCount utility may be active in system memory. Our engineers have discovered that upgrades proceed more smoothly when the dhctStatus utility is not actively polling DHCTs and when the signonCount and cmd2000 processes are not active in system memory. The instructions in this chapter guide you through the steps required to stop these processes.

### Terminating the dhctStatus Utility Polling Operation

Complete the following steps to determine whether the dhctStatus utility is actively polling DHCTs, and then terminate the polling operation, if necessary.

- 1 If necessary, open an xterm window on the DNCS.
- 2 Type the following command and press **Enter** to determine if the dhctStatus utility is running.

```
ps -ef | grep dhctStatus
```

**Example:** (if it is running)

```
dncs 12514 12449 0 13:50:27 pts/3 0:00 /bin/ksh
/dvs/dnscs/bin/dhctStatus

dncs 12556 12514 0 13:50:28 pts/3 0:01 /usr/local/bin/perl
/dvs/dnscs/bin/DhctStatus/dhctStatus.pl

dncs 12681 12632 0 13:50:54 pts/10 0:00 grep dhct
```

- 3 Do the results from step 2 show that the dhctStatus utility is running?
  - If **yes**, type **dhctStatus** and press **Enter** to display the dhctStatus menu.
  - If **no**, skip the rest of this procedure.
- 4 To terminate the polling operation, follow these instructions.
  - a Type **p** and then press **Enter**. The system displays a polling menu.
  - b Type **t** and then press **Enter**. The system terminates the polling operation.
  - c Press **Enter** to return to the main menu.
  - d Press **q** and then press **Enter** to exit the menu.

## Stop the dhctStatus, signonCount, and cmd2000 Processes

- 5 Type the following command and press **Enter** to determine if all of the processes are terminated.

```
ps -ef | grep dhctStatus
```

**Example:**

```
dncs 12514 12449 0 13:50:27 pts/3 0:00 /bin/ksh
/dvs/dncs/bin/dhctStatus
dncs 12556 12514 0 13:50:28 pts/3 0:01 /usr/local/bin/perl
/dvs/dncs/bin/DhctStatus/dhctStatus.pl
dncs 12681 12632 0 13:50:54 pts/10 0:00 grep dhct
```

- 6 To kill any remaining processes, type the following command and press **Enter**.

```
pkill dhcsStatus
```

## Removing the signonCount Utility from System Memory

- 1 Type the following command and press **Enter**. A list of DNCS processes and process IDs display on the screen.

```
ps -ef | grep signonCount
```

- 2 Do the results from step 1 show that the signonCount utility is running?
  - If **yes**, continue with step 3.
  - If **no**, you can skip the rest of this procedure.

- 3 From a dncs xterm window, type the following command and press **Enter**.

```
signonCount uninstall
```

**Note:** The utility is not permanently uninstalled; it is placed back into system memory the next time you run the signonCount utility.

- 4 Type the following command and press **Enter**. A list of DNCS processes and process IDs display on the screen.

```
ps -ef | grep signonCount
```

- 5 To kill any remaining processes, type the following command and press **Enter**.

```
pkill signonCount
```

- 6 Type the following command and press **Enter** to ensure all the processes are terminated.

```
ps -ef | grep signonCount
```

- 7 Repeat steps 5 and 6 for any process that continues to be displayed. The system should only display the grep process.

## Terminating the cmd2000 Processes

In this section you will check and terminate, if necessary, the cmd2000 processes. Beginning with SR4.3.2.x, the cmd2000 utility became a service. To start and stop the cmd2000 utility you must use the svcadm command as root user to disable these processes.

- 1 Type the following command and press **Enter** to determine if any cmd2000 processes are running.
 

```
ps -ef |grep cmd2000
```
- 2 Are any cmd2000 processes running?
  - If **yes**, go to step 3.
  - If **no**, go to the next procedure in this chapter.
- 3 Determine the SAIdncs version by typing the following command and pressing **Enter**. The system displays the SAIdncs version.
 

```
pkginfo -l SAIdncs | grep VER
```
- 4 Follow these instructions based upon the version of SAIdncs installed on the system.
  - If the SAIdncs version is 4.3.0.x, follow these instructions.
    - a Type the following command and press **Enter** for each running cmd2000 process.
 

```
kill -9 [process ID]
```
    - b Type the following command and press **Enter** to verify that all cmd2000 processes have been terminated.
 

```
ps -ef | grep cmd2000
```

**Note:** Repeat steps a and b for any cmd2000 processes that remain active.
  - If the SAIdncs version is 4.3.2.x, follow these instructions.
    - a Type the following command and press **Enter** to verify that the cmd2000 SMF services are running. The system displays a list of cmd2000 services that are online.
 

```
svcs | grep cmd2000
```
    - b Type the following command and press **Enter** to switch to the root user.
 

```
su -
```
    - c When prompted, type the root password and press **Enter**.
    - d For each online service, type the following commands and press **Enter**.
      - ```
svcadm -v disable -s svc:/application/cmd2000:default
```
      - ```
svcadm - v disable -s  
svc:/application/cmd2000_listener:default
```

### Stop the dhctStatus, signonCount, and cmd2000 Processes

- e Type the following command and press **Enter** to verify that the cmd2000 services are no longer online. If all cmd2000 services have been disabled, the command should return to the prompt with no output.  
`svcs | grep cmd2000`
- f Repeat steps d and e, if necessary, until all cmd2000 services are terminated.

## Back Up Various Data Files

Our engineers recommend that you back up to tape the data in the `signonCount.out` and `signonCount.fxrpt` files, as well as the data in the `dhctStatus2` directory. You can then use this data as a reference and troubleshooting tool in the event that there are problems with the system after the upgrade. The instructions in this section guide you through the steps of backing up these files.

### Backing Up Various Data Directories

Follow these instructions to back up the `signonCount.out` and `signonCount.fxrpt` files, as well as the data in the `dhctStatus2` directory.

- 1 Label a tape with the date and the following title:  
**signonCount / dhctStatus2 Backups**
- 2 Insert the tape into the tape drive of the DNCS.
- 3 From an xterm window on the DNCS, type the following command and press **Enter**. The system backs up the specified files.

```
tar cvf [device name] /dvs/dncc/tmp/signonCount.out  
/dvs/dncc/tmp/signonCount.fxrpt /dvs/dncc/tmp/dhctStatus2
```

**Note:** Substitute the device name of the DNCS tape drive for [device name].

**Example:** `tar cvf /dev/rmt/0h /dvs/dncc/tmp/signonCount.out  
/dvs/dncc/tmp/signonCount.fxrpt /dvs/dncc/tmp/dhctStatus2`

- 4 When the backup is complete, eject the tape and store it in a safe place.

## Back Up and Delete the copyControlParams File

Complete these steps to back up and delete the copyControlParams.inf file from the DNCS. During the upgrade, the system recreates the copyControlParams.inf file with appropriate default values. You can add customized entries back to the file after the upgrade.

- 1 If necessary, open an xterm window on the DNCS.
- 2 Type the following command and press **Enter**. The /export/home/dnCS directory becomes the working directory.

```
cd /export/home/dnCS
```

- 3 Does the copyControlParams.inf file have any customized entries?
  - If **yes**, type the following command and press **Enter**. The system makes a backup copy of the copyControlParams.inf file.

```
cp copyControlParams.inf copyControlParams.inf.bak
```

- If **no**, go to step 4.

- 4 Type the following command and press **Enter**. The system deletes the copyControlParams.inf file.

```
rm copyControlParams.inf
```

**Note:** When you restart the DNCS after the upgrade, the system will note the absence of the copyControlParams.inf file and will create a new one.

**Important:** After the upgrade, use the backup copy of the copyControlParams.inf file, as a reference, to add any customized entries to the new file.



# 2

---

## SR 2.8.2/3.8.2/4.3.2 Upgrade Procedures

### Introduction

In this chapter, you will install the SR 2.8.2/3.8.2/4.3.2 software. The SR 2.8.2/3.8.2/4.3.2 software includes new software for the DNCS, as well as for the graphical and Web user interfaces (GUI and WUI) of the DNCS.

**Important:** Do not attempt to perform the procedures in this chapter more than once. If you encounter any problems while upgrading the DNCS or Application Server to SR 2.8.2/3.8.2/4.3.2, contact Cisco Services at 1-866-787-3866.

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# Suspend Billing and Third-Party Interfaces

## Important Note About the Maintenance Window



**CAUTION:**

Be sure that you are within a maintenance window as you begin this procedure. You will remain in the maintenance window as you continue to complete the installation process. The post-upgrade procedures can be completed the day after the installation is complete.

## Suspending Billing and Third-Party Interfaces

Before installing this software, contact your billing vendor in order to suspend the billing interface. In addition, follow third-party application instructions to stop applications during the installation process which also includes any real-time monitoring tools.

## Stopping the ippvReceiver Process

Follow these instructions to stop the ippvReceiver process.

- 1 On the DNCS Control window, select **ippvReceiver**.
- 2 Click **Process**.
- 3 Click **Stop Processes**. The indicator for the ippvReceiver processes changes from green to red.

## Stop the cron Jobs

Stop any cron jobs that are currently running on the DNCS and the Application Server. This ensures that no applications or programs initialize during the installation process. Follow the instructions in this section to stop all cron jobs.

**Note:** Take note of what time you stop the cron jobs. You may need to manually run these applications or programs after the installation is complete.

### Stopping the cron Jobs on the DNCS

Complete the following steps to stop cron jobs on the DNCS.

**Note:** You need to be logged on to an xterm window on the DNCS as root user.

- 1 Type the following command and press **Enter**. The system lists running processes that include the word "cron".

```
ps -ef |grep cron
```

- 2 Did the results from step 1 include `/usr/sbin/cron`?

- If **yes**, type the following command and press **Enter**.

```
svcadm -v disable -s cron
```

- If **no**, go to **Stopping the cron Jobs on the Application Server**; the cron jobs are already stopped on the DNCS.

- 3 Confirm that the cron jobs have stopped by typing the following command again and pressing **Enter**. The system should list only the grep process.

```
ps -ef |grep cron
```

## Stopping the cron Jobs on the Application Server

Complete the following steps to stop cron jobs on the Application Server.

**Note:** You should be logged on to an xterm window on the Application Server as root user.

- 1 Type the following command and press **Enter**. The system lists running processes that include the word "cron."

```
ps -ef |grep cron
```

- 2 Did the results from step 1 include `/usr/sbin/cron`?

- If **yes**, type the following command and press **Enter**.

```
svcadm -v disable -s cron
```

- If **no**, the cron jobs are already stopped on the Application Server; go to the next procedure in this chapter.

- 3 Confirm that the cron jobs have stopped by typing the following command again and pressing **Enter**. The system should list only the grep process.

```
ps -ef |grep cron
```

## Back Up the Informix Database

This procedure should be completed as close to the maintenance window as possible, thereby allowing sufficient time to complete the backup before entering the maintenance window. Use these procedures to back up the DNCS and Application Server databases.

### Notes:

- The system components can be running while you back up the Informix database.
- It may take up to 30 minutes to back up a typical database with approximately 100,000 DHCTs.
- If you are using an external DVD drive, substitute *cdrom1* for *cdrom0*.

- 1 From a root xterm window, type **df -n** and then press **Enter**. A list of the mounted filesystems appears.

**Note:** The presence of */cdrom* in the output confirms that the system correctly mounted the DVD.

- 2 Label your backup tape with the following information:

**[DNCS or Application Server] Database Backup [Day of the Week]**

**[Site Name]**

**[Software Version]**

**SR 2.8.2/3.8.2/4.3.2 DVD [version]**

**[Tape #]**

### Notes:

- Customize the label with the day of the week, site name, and software version for the site you are backing up.
  - If your database backup requires more than one tape, be sure to note the tape number on the label.
- 3 Insert the tape into the tape drive of the DNCS and wait until the green light stops flashing.
- Important:** Be sure that you are using different tapes for each day of the week.
- 4 Type the following command and press **Enter**. The system establishes the root user environment.

```
. /dvs/dncs/bin/dncsSetup
```

**Important:** Be sure to type the dot, followed by a space, prior to typing */dvs*.

- 5 Choose one of the following options.
  - If you are using the standard tape drive configuration, follow these instructions.
    - a Type the following command and press **Enter**.  
`/cdrom/cdrom0/s3/backup_restore/backupDatabase -v`  
**Result:** The system displays the following message:  
**Please mount tape 1 on /dev/rmt/0h and then press Return to continue.**
    - b Go to step 6.
  - If you are using a custom tape drive configuration, go to step 6.
- 6 If you are using a custom tape drive configuration, type the following command and press **Enter**.  
`/cdrom/cdrom0/s3/backup_restore/backupDatabase -v -b 256 -s 13212058`  
**Result:** The system displays the following message:  
**Please mount tape 1 on /dev/rmt/0h and then press Return to continue.**
- 7 Press **Enter**. The system backs up your Informix database.  
**Notes:**
  - The system will prompt you to insert additional tapes if your backup requires more than one tape.
  - The message **Successfully completed the database backup** appears when the backup has completed successfully.
  - If the database backup was not successful, the system displays an error message. Call Cisco Services at 1-866-787-3866 for assistance in resolving the error message.
- 8 Remove the tape(s) and store it/ them in a safe place.

## Stop Basic Backup or Auto Backup Servers

If the site you are upgrading uses the Auto Backup or Basic Backup server and if this server is configured to start a backup during the maintenance window, disable that backup or reschedule the backup for after the maintenance window.

## Stop System Components

Before continuing with the installation of SR 2.8.2/3.8.2/4.3.2, follow the instructions in this section to stop the Application Server and the DNCS.

**Important:** You must be within a maintenance window when you complete this and the remaining procedures in this chapter.



### CAUTION:

**Do not proceed if you are NOT in the maintenance window. These procedures that stop the system components disrupt services.**

## Stop Third-Party Servers

Some sites use devices that mount drives on the DNCS or the Application Server. These devices are usually used to register files with the BFS or to send BOSS transactions. Be sure to stop these devices. Also, be sure to stop any third-party applications.

## Stopping the Application Server

This section provides procedures for stopping either a SARA Server or a third-party server. Choose the procedure that pertains to your system.

- 1 Press the middle mouse button on the Application Server and select **App Serv Stop**.
- 2 From an xterm window on the Application Server, type **appControl** and then press **Enter**. The Applications Control window appears.
- 3 Type **2** (for Startup/Shutdown Single Element Group), and then press **Enter**. The system displays all Application Server processes.  
**Note:** The system updates the display periodically, or you can press **Enter** to force an update.
- 4 When the **Curr Stt** (Current State) field of the Applications Control window indicates that all of the Application Server processes have stopped, follow the on-screen instructions to close the Applications Control window.
- 5 Type **appKill** and then press Enter.

### Preparing the Rovi Application Server

Refer to **Aptiv Technical Note Number 41**. Complete steps 1 through 3 to prepare the Rovi Application Server for the service pack upgrade.

**Note:** Contact the Rovi Corporation for the latest copy of the technical note.

## Stop the RNCS

You only need to perform this procedure if you have the Distributed DNCS license enabled. If you do not have the Distributed DNCS license enabled, skip this section and go to *Stopping the DNCS* (on page 44).

This section provides procedures for stopping the processes on the RNCS.

- 1 From a dncs xterm on the DNCS, type the following command and press **Enter**. The **Are you sure you want to stop the LIONN (Y/N)** message appears.  

```
siteCmd <RNCS hostname> lionnStop
```

**Note:** Replace <RNCS hostname> with the hostname of the RNCS.
- 2 Type **y** and press **Enter**. The RNCS processes stop.
- 3 Type the following command and press **Enter** to verify the RNCS processes have stopped.  

```
siteCmd <RNCS hostname> pgrep -fl dvs
```

**Note:** Only the /dvs/lionn/bin/lionnInitd process should be displayed. If other processes are still running, wait a few minutes and type the command again.
- 4 Type the following command and press **Enter** to kill the lionnInitd process.  

```
siteCmd <RNCS hostname> lionnKill
```

## Stopping the DNCS

- 1 Press the middle mouse button on the DNCS and select **DNCS Stop**. A confirmation message appears.
- 2 Click **Yes**.
- 3 From an xterm window on the DNCS, type the following command and then press **Enter**. The DnCS Control utility window opens.  

```
dncsControl
```
- 4 Type **2** (for Startup/Shutdown Single Element Group), and then press **Enter**. The system displays all DNCS processes.  

**Note:** The system updates the display periodically, or you can press **Enter** to force an update.
- 5 When the **Curr Stt** (Current State) field of the utility window indicates that all of the DNCS processes have stopped, follow the on-screen instructions to close the DnCS Control window.
- 6 Close all GUIs and WUIs.
- 7 Type the following command and press **Enter**.  

```
dncsKill
```

- 8 Wait a few moments and then type the following command and press **Enter**. The system reports whether the `dncsInitd` process is still running.

```
ps -ef | grep dncsInitd
```

- 9 Is the `dncsInitd` process still running?
  - If **yes**, repeat steps 7 through 9.
  - If **no**, go to the next procedure in this chapter.

### Ensuring No Active Database Sessions on the DNCS

Follow these instructions to ensure that there are no active database sessions running on the DNCS.

#### Notes:

- You need to be **root** user to run some of the commands in this procedure.
  - If you have followed the instructions so far, you should still have a xterm window open and be logged into it as **root** user.
- 1 Are you already logged on to an xterm window as **root** user?
    - If **yes**, go to step 2.
    - If **no**, log on to the xterm window as **root** user.
  - 2 Type the following command and press **Enter**. The system establishes the **root** user environment.

```
. /dvs/dnCS/bin/dnCSSetup
```

**Important:** Be sure to type the dot followed by a space prior to typing `/dvs`.
  - 3 Type the following command and press **Enter**.

```
showActiveSessions
```

**Results:** One of the following messages appears:

    - A message indicating that the INFORMIXSERVER is idle
    - A message listing active sessions
  - 4 Did the message in step 3 indicate that there are active sessions?
    - If **yes**, go to step 5.
    - If **no**, go to step 6.

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- 5 Follow these instructions to kill active sessions.
  - a Type the following command and press **Enter**. The system removes all active sessions from the database.  
**killActiveSessions**
  - b Type the following command again and press **Enter**.  
**showActiveSessions**
  - c Did a message appear indicating that there are active sessions?
    - If **yes**, call Cisco Services.
    - If **no**, go to step 6.
- 6 Close all GUIs and WUIs.
- 7 Type the following commands and press **Enter** after each command to clear database sessions.  
**clearDbSessions**  
**clearDbSessions -c**  
**clearDbSessions -o**

## Detach Disk Mirrors on the DNCS

In *Examine Mirrored Devices* (on page 14), sites confirm the disk mirroring function is working correctly before beginning the upgrade process. In this procedure you now disable the mirroring functions on the DNCS to ensure that the contents of the mirrored disk reflects the data and configuration of the DNCS prior to an upgrade. If the upgrade fails for any reason, you can then swap the positions of the mirrored disks to restore your system to its condition prior to the upgrade attempt.

**Note:** Disabling disk mirroring is sometimes referred to as detaching disk mirroring.

### Detaching Disk Mirrors on the DNCS

Follow these instructions to detach the disk mirroring function of the Enterprise 450 or Sun Fire V445, V880, or V890 DNCS.

**Note:** You should still be logged in as **root** user to an xterm window on the DNCS.

- 1 Insert the CD labeled **Maintenance CD** into the CD drive of the DNCS.
- 2 Type the following command and press **Enter**. A list of the mounted filesystems appears.

```
df -n
```

**Note:** The presence of `/cdrom` in the output confirms that the system correctly mounted the CD.

- 3 Type the following command and press **Enter** to verify whether or not the mirrors are attached. Each device should be mirrored and should have two submirrors listed under each mirror device.

```
metastat -c
```

**Important:** If any metadvice is followed by an indicator listed in parentheses, then the metadvice is not **Okay**. Call Cisco Services.

- 4 Are all of the mirrors attached?
  - If **yes**, go to step 6.
  - If **no**, type the following command and press **Enter**. A confirmation message appears.

```
/cdrom/cdrom0/s3/backup_restore/mirrState -a
```

- 5 Type **y** and press **Enter**. The system enables the disk mirroring functions.

**Note:** Attaching the mirrors may take an hour or longer.

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- 6 Type the following command and press **Enter**.  
`/cdrom/cdrom0/s3/backup_restore/mirrState -d`  
**Result:** The system displays the following message:  
**WARNING!!**  
**Proceeding beyond this point will DETACH all d7xx submirrors.**  
**Are you certain you want to proceed?**
- 7 Type **y** and then press **Enter**. The system disables the disk mirroring functions on the DNCS.
- 8 Type **eject cdrom** and then press **Enter**. The system ejects the CD.

## Install the DNCS Software

Complete these steps to install the SR 2.8.2/3.8.2/4.3.2 DNCS software.

### Notes:

- You should still be logged in as root user to the xterm window on the DNCS.
  - It may take as long as 1 hour to install the DNCS software.
- 1 Insert the CD labeled similar to **DNCS Application** into the CD drive of the DNCS. The system automatically mounts the CD to /cdrom within 30 seconds.
  - 2 Type the following command and press **Enter**. A list of the mounted filesystems appears.
 

```
df -n
```

**Note:** The presence of /cdrom in the output confirms that the system correctly mounted the CD.
  - 3 Type the following command and press **Enter**. The /cdrom/cdrom0 directory becomes the working directory.
 

```
cd /cdrom/cdrom0
```
  - 4 Type the following command and press **Enter**. The system displays DNCS package information and the **Are you SURE you want to continue?** message appears.
 

```
install_pkg
```
  - 5 Type **y** and then press **Enter**. The system displays the package and software versions that will be installed and displays a message prompting you to press **Enter** to continue.
  - 6 Press **Enter**. The system displays a message that asks whether you have backed up the DNCS and host database.
  - 7 Type **y** and then press **Enter**. The system displays a message that asks you to define the number of days until EMMs are deleted from the system.
 

**Note:** To see the current value used by the system, type the following in an xterm window and then press **Enter**.

```
less /dvs/dnCS/bin/CEd.in
```

- 8 Type **d** (for default of 90 days), or enter a valid integer representing the number of days, and then press **Enter**. A confirmation message appears and the system displays installation configuration information.

```

brutus
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Hit <CR> to continue...
Although errors during system upgrade are unlikely, you
should have a backup of your current system and DNCS database.
Have you backed up your DNCS host and DNCS database? (yes/no) ? y
***** Installation Configuration *****
**
**      0) INFORMIXSERVER      =          brutusDbServer      **
**      1) DNCS_HOST          =          brutus              **
**      2) BFS_HOST           =          brutus              **
**      3) DNCSATM_IP         =          10.253.0.1           **
**      4) APPSERVATM_IP      =          10.253.0.10          **
**      5) DNCSTED_IP         =          192.168.1.2          **
**
*****
Number to change ("0", "1", ...), "c" to continue, or "q" to quit:

```

- 9 Press **c** to continue.
- 10 After the upgrade has completed, follow these instructions to eject the CD.
- Type **cd /** and then press **Enter**.
  - Type **eject cdrom** and then press **Enter**.
- 11 Check the log file for errors. Go to the next procedure in this chapter if the log file indicates that the DNCS software installed without error.

**Notes:**

- The installation log file is in the `/var/sadm/system/logs` directory of the DNCS.
- The log file for the DNCS software is called **SAIdncs\_[version #]\_install.log**.
- Call Cisco Services for assistance if the log file reveals errors.

## Install the DNCS GUIs and WUIs

Complete these steps to install the SR 2.8.2/3.8.2/4.3.2 DNCS GUI and WUI software.

**Note:** It should take no more than 15 minutes to install the DNCS GUI and WUI software.

- 1 Insert the CD labeled similar to **DNCS GUI/WUI** into the CD drive of the DNCS. The system automatically mounts the CD to /cdrom within 30 seconds.
- 2 Type the following command and press **Enter**. A list of the mounted filesystems appears.

```
df -n
```

**Note:** The presence of /cdrom in the output confirms that the system correctly mounted the CD.

- 3 Type the following command and press **Enter**. The /cdrom/cdrom0 directory becomes the working directory.

```
cd /cdrom/cdrom0
```

- 4 Type the following command and press **Enter**. The system displays DNCS GUI and WUI package information and the **Are you SURE you want to continue?** message.

```
install_pkg
```

- 5 Type **y** and then press **Enter**. The software installs on the DNCS.
- 6 After the upgrade has completed, follow these instructions to eject the CD.
  - a Type **cd /** and then press **Enter**.
  - b Type **eject cdrom** and then press **Enter**.
- 7 Check the log file for errors. Go to Install Additional Software if the log file indicates that the DNCS GUI and WUI software installed without error.

**Notes:**

- The installation log file is in the /var/sadm/system/logs directory of the DNCS.
- The log file for the DNCS GUI is called **SAIgui\_[version #]\_install.log**.
- The log file for the DNCS WUI is called **SAIwebui\_[version #]\_install.log**.
- Call Cisco Services for assistance if the log files reveal any errors.

## Install the Application Server Software

Complete these steps to install the SR 2.8.2/3.8.2/4.3.2 Application Server software.

- 1 Log on to the Application Server as **root** user.
- 2 Insert the Maintenance CD into the CD drive of the Application Server. The system automatically mounts the CD to /cdrom within 30 seconds.
- 3 Is the Application Server a Sun Fire V240 or V245?
  - If **yes**, go to step 4.
  - If **no**, skip to step 7.
- 4 Type the following command and press **Enter** to verify whether or not the mirrors are attached. Each device should be mirrored and should have two submirrors listed under each mirror device.  
**metastat -c**  
**Important:** If any metadvice is followed by an indicator listed in parentheses, then the metadvice is not **Okay**. Call Cisco Services.
- 5 Are all of the mirrors attached?
  - If **yes**, go to step 7.
  - If **no**, type the following command and press **Enter**. A confirmation message appears.  
`/cdrom/cdrom0/s3/backup_restore/mirrState -a`
- 6 Type **y** and press **Enter**. The system enables the disk mirroring functions.  
**Note:** Attaching the mirrors may take an hour or longer.
- 7 Type the following command and press **Enter**. A confirmation message appears.  
`/cdrom/cdrom/s3/backup_restore/mirrState -d`
- 8 Type **y** and press **Enter**. The system detaches all d7xx devices.
- 9 Type the following command and press **Enter**. The system ejects the Maintenance CD.  
**eject cdrom**
- 10 Insert the CD labeled similarly to **AS3.6.2.0** into the CD drive of the Application Server. The system automatically mounts the CD to /cdrom within 30 seconds.
- 11 Type the following command and press **Enter**. A list of mounted filesystems appears.  
**df -n**  
**Note:** The presence of /cdrom in the output confirms the system correctly mounted the CD.
- 12 Type the following command and press **Enter** to make /cdrom/cdrom0 the working directory.  
**cd /cdrom/cdrom0**

- 13 Type the following command and press **Enter**. A confirmation message appears.  
`install_pkg`
- 14 Type **y** and press **Enter**. The system lists some configuration parameters of system components and asks that you confirm their accuracy
- 15 Refer to *Obtain Application Server System Configuration* (on page 17) and verify that the configuration parameters are listed correctly. Then, press **c** to continue. The system installs the Application Server software.  
**Note:** If you have to change any parameters, follow the on-screen instructions to do so. Only in rare cases will you have to modify a parameter.
- 16 After the upgrade has completed, follow these instructions to eject the CD.
  - a Type the following command and press **Enter**.  
`cd /`
  - b Type the following command and press **Enter**.  
`eject cdrom`
- 17 Check the log file for errors. Go to the next procedure in this chapter if the log file indicates that the Application Server software installed without error.

**Notes:**

- The installation log file is in the `/var/sadm/system/logs` directory of the Application Server.
- The log file for the Application Server software is `SAIaprv_[version #]_install.log`.
- Call Cisco Services for assistance if the log file reveals errors.

## Install Patch Software

If you received any patches, or emergency patches (EP), install them now. Any patch or EP CD should have a README file explaining how to install it. Follow the instructions in the README file.

## Check the SR 2.8.2/3.8.2/4.3.2 Installed Components Version

Use *pkginfo*, a Solaris software management tool, to verify installed software versions on the DNCS and the Application Server. Use the **Version** field and the **Status** field of the output produced by *pkginfo* to obtain the information you need. If the Status field indicates that the software is not completely installed, contact Cisco Services at 1-866-787-3866 for help.

**Note:** Running the Doctor Report with the `-g` option also displays installed software versions. Feel free to obtain this information from the Doctor Report if you prefer.

### Verifying DNCS Versions

Follow these instructions to verify the installed software versions on the DNCS.

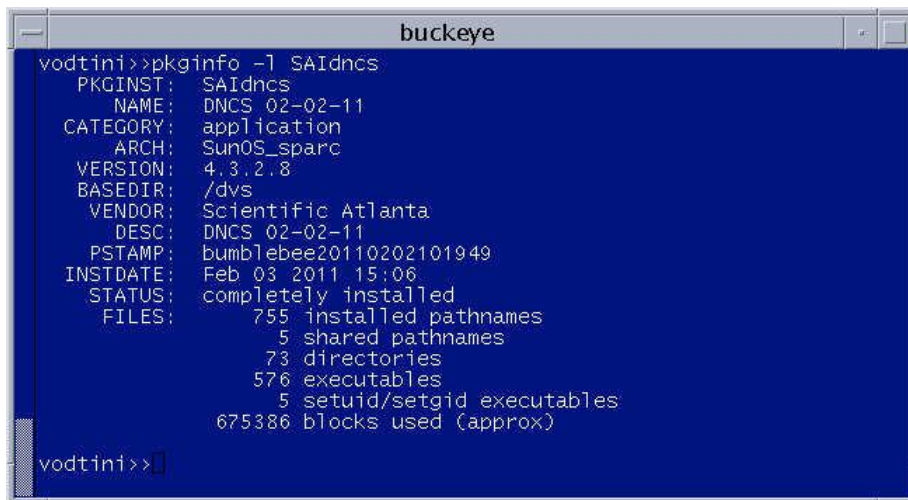
- 1 From an xterm window on the DNCS, type the following command and then press **Enter**.

```
pkginfo -l [Package Name]
```

**Notes:**

- The `-l` is a lowercase L.
- Substitute the software component you are verifying for `[Package Name]`.
- Use `SAIdnsc` for Package Name the first time you run this procedure.

**Example:** `pkginfo -l SAIdnsc`



```

buckeye
voldtini>>pkginfo -l SAIdnsc
  PKGINST: SAIdnsc
    NAME:  DNCS 02-02-11
  CATEGORY: application
    ARCH:  SunOS_sparc
  VERSION:  4.3.2.8
  BASEDIR:  /dvs
  VENDOR:   Scientific Atlanta
    DESC:   DNCS 02-02-11
  PSTAMP:   bumblebee20110202101949
  INSTDATE: Feb 03 2011 15:06
  STATUS:   completely installed
  FILES:    755 installed pathnames
           5  shared pathnames
           73  directories
           576 executables
           5  setuid/setgid executables
           675386 blocks used (approx)

voldtini>>

```

**Example:** Notice that the **Version** field, in this example, indicates that DNCS version 4.3.2.x is installed on the DNCS and the **Status** field indicates that the software is completely installed. For the SR 4.3.2 upgrade, the Version field should indicate that DNCS version 4.3.2.x is installed.

- Record the version number in the Actual Results column of the accompanying table for each Package Name you check.

| Component        | Pkg Name | Expected Results | Actual Results |
|------------------|----------|------------------|----------------|
| DNCS Application | SAIdncs  | 4.3.2.x          |                |
| DNCS GUI         | SAIgui   | 4.3.2.x          |                |
| DNCS WUI         | SAIwebui | 4.3.2.x          |                |

- Repeat steps 1 and 2 for each Package Name in the table in step 2.
- Do the first three digits of the **Actual Results** match the first three digits of the **Expected Results** for each component in the table in step 2?
  - If **yes**, go to the next procedure in this chapter.
  - If **no**, call Cisco Services and inform them of the discrepancy.

**Note:** The build number (the fourth digit of the version number) may differ.

## Verifying the Application Server Version

Follow these instructions to verify the installed software versions on the Application Server.

- From an xterm window on the Application Server, type the following command and then press **Enter**.

```
pkginfo -l [Package Name]
```

**Note:** The -l is a lowercase L.

```

AppServer
# pkginfo -l SAIapsrv
  PKGINST: SAIapsrv
  NAME:    DNCS Application Server 05-27-10
  CATEGORY: application
  ARCH:    sparc
  VERSION: 3.6.2.0
  BASEDIR: /dvs
  VENDOR:  Scientific Atlanta
  DESC:    DNCS Application Server 05-27-10
  PSTAMP:  indcm20100527224056
  INSTDATE: Jun 22 2010 10:23
  STATUS:  completely installed
  FILES:   265 installed pathnames
           9 shared pathnames
           36 directories
           199 executables
           435928 blocks used (approx)
#
  
```

**Example:** Notice that the **Version** field indicates that Application Server version 3.6.2.0 is installed and the **Status** field indicates that the software is completely installed.

**Check the SR 2.8.2/3.8.2/4.3.2 Installed Components Version**

- 2 Record the version number in the **Actual Results** column of the accompanying table.

| <b>Component</b>   | <b>Pkg Name</b> | <b>Expected Results</b> | <b>Actual Results</b> |
|--------------------|-----------------|-------------------------|-----------------------|
| Application Server | SAIapshr        | 3.6.2.x                 |                       |

- 3 Do the first three digits of the **Actual Results** match the first three digits of the **Expected Results** for the SAIapshr package?
- If **yes**, go to the next procedure in this chapter.
  - If **no**, call Cisco Services and inform them of the discrepancy.

**Note:** The build number (the fourth digit of the version number) may differ.

## Enable Optional and Licensed Features

If you have properly followed all of the instructions so far, the system components should be stopped. Now is the time to enable any optional or licensed features that pertain to this install. Contact Cisco Services to enable any optional or licensed features.

## Verify the .profile Entries

### Verify the EAS Variable

Complete the following steps to add the LOCAL\_EAS\_IP variable to the .profile file.

- 1 If necessary, open an xterm window on the DNCS.
- 2 Type the following command and press **Enter**. The system searches for LOCAL\_EAS\_IP in the /export/home/dncls/.profile file.

```
grep -i LOCAL_EAS_IP /export/home/dncls/.profile
```

**Note:** Be sure to type a space between `grep -i LOCAL_EAS_IP` and `/export/home/dncls/.profile`.

- 3 Do the results from step 2 reveal that there is already an entry for LOCAL\_EAS\_IP in the /export/home/dncls/.profile?
  - If **yes**, go to the next procedure in this chapter.
  - If **no**, go to step 4.

- 4 Type the following command and press **Enter**. The system displays the value of the dncseth variable in the /etc/hosts file.

```
cat /etc/hosts | grep dncseth
```

- 5 Type the following command and press **Enter**. The system displays the value of the eac variable in the /etc/hosts file.

```
cat /etc/hosts | grep eac
```

- 6 Evaluate the results from steps 4 and 5 to determine whether the eac is on the same network as the DNCS or if it is on a different network. Refer to the following example for guidance in making this determination:

| Same Network        | Different Network   |
|---------------------|---------------------|
| dncseth=192.168.2.1 | dncseth=192.168.2.1 |
| eac=192.168.2.5     | eac=192.168.4.5     |

**Note:** When the DNCS and the eac are on the same network, the first three octets of the IP address are identical. They are on different networks when the first three octets of the IP address are different.

- 7 Are the DNCS and the eac on the same network?
  - If **yes**, go to the next procedure in this chapter.
  - If **no** (they are on different networks), go to step 8.

- 8 Using a text editor, append the following line to the .profile file:  
`export LOCAL_EAS_IP=[Ethernet address of the DNCS]`  
**Note:** Substitute the Ethernet address of the DNCS for [Ethernet address of the DNCS], displayed in step 4.  
**Example:** `LOCAL_EAS_IP=192.168.2.1`
- 9 Save and close the file.

## Verify the PSIP and SI\_REGENERATION\_TIME Variables

The following procedure checks the PSIP\_INSERT\_RATE and SI\_REGENERATION\_TIME variables for their recommended values. A brief explanation of why you are checking these variables follows.

### PSIP\_INSERT\_RATE

If the site you are upgrading does *not* use the DNCS for PSIP and inband EAS messages that are targeted to hosts, such as QAM tuner TVs, you can disable delivery of these messages from the DNCS by setting the **PSIP\_INSERT\_RATE** variable to 0 in the .profile file. If you are not using the DNCS to provide these messages, you should make provisions to provide these signals by other PSIP aggregation/EAS equipment in your system.

#### Important:

- Be aware that there are FCC regulatory requirements to provide PSIP and EAS to these devices.
- If the DNCS is used for PSIP and inband EAS messages that are targeted to hosts, such as QAM tuner TVs, the **PSIP\_INSERT\_RATE** variable should not be present in the .profile. If it is present in the .profile file, it should not be set to 0.

### SI\_REGENERATION\_TIME

The **SI\_REGENERATION\_TIME** variable in the .profile file needs to be set to **1200** (20 minutes) so that SI updates happen, at most, once every 20 minutes.

Complete the following steps to check the **PSIP\_INSERT\_RATE** and **SI\_REGENERATION\_TIME** variables in the .profile file.

- 1 If necessary, open an xterm window on the DNCS.
- 2 Type the following command and press **Enter**:  
`grep PSIP_INSERT_RATE /export/home/dncs/.profile`

- 3 Do the results from step 2 reveal that the PSIP variable already exists in the .profile file?
  - If **yes**, and if the DNCS is NOT used for PSIP and inband EAS targeted to hosts, continue with step 4.
  - If **no**, and if the DNCS is NOT used for PSIP and inband EAS targeted to hosts, skip to step 5.
  - If **no**, and if the DNCS is used for PSIP and inband EAS targeted to hosts, go to step 8; no .profile changes for the PSIP\_INSERT\_RATE are required.
- 4 Is the **PSIP\_INSERT\_RATE** variable already set to 0?
  - If **yes**, go to step 8; no .profile changes for the PSIP\_INSERT\_RATE are required.
  - If **no**, continue with step 5.
- 5 Open the .profile file with a text editor.
- 6 Is the **PSIP\_INSERT\_RATE** variable already in the file?
  - If **yes**, set the value of this variable to 0.
  - If **no**, add the following entries to the bottom of the file:
 

```
PSIP_INSERT_RATE=0
export PSIP_INSERT_RATE
```
- 7 Save and close the file.
- 8 From the xterm window on the DNCS, type the following command and press **Enter**:
 

```
grep SI_REGENERATION_TIME /export/home/dncs/.profile
```
- 9 Does your output from step 8 show that the **SI\_REGENERATION\_TIME** variable exists *and* is set to **1200**?
  - If **yes** (to both requirements), go to the next procedure in this chapter.
  - If **no**, go to step 10.
- 10 Open the .profile file with a text editor.
- 11 Choose one of the following options:
  - If the **SI\_REGENERATION\_TIME** variable is not yet present in the .profile file, append the variable to the file and set it to **1200**.
  - If the **SI\_REGENERATION\_TIME** variable is present in the .profile file but is set incorrectly, change it to **1200**.
 

**Example:** When you are finished, your entry should be:

```
SI_REGENERATION_TIME=1200
```
- 12 Save and close the file.

## Remove Scripts That Bounce the Pass-Through Process

In order to correct some issues associated with the Pass-Through process on the DNCS, some sites have been regularly bouncing this process through scripts that reside in the crontab file. SR 2.8.2/3.8.2/4.3.2 contains software that corrects issues associated with the Pass-Through process. Therefore, after the upgrade, you should remove any entries in the crontab file that reference scripts that bounce the Pass-Through process. The instructions in this section guide you through the process of removing these references.

### Notes:

- Bouncing a process refers to stopping and then restarting that process.
- The scripts that Cisco wrote to bounce the Pass-Through process are called **elop.sh** and **bouncePassThru**.

### Removing Scripts That Bounce the Pass-Through Process

- 1 If necessary, open an xterm window on the DNCS.
- 2 Follow these instructions to check on the presence of scripts in the crontab file that bounce the Pass-Through process.
  - a Type the following command and press **Enter**. The system lists the line(s) within the crontab file that contain elop.ksh.
 

```
crontab -l | grep -i elop.sh
```
  - b Type the following command and press **Enter**. The system lists the line(s) within the crontab file that contain bouncePassThru.
 

```
crontab -l | grep -i bouncePassThru
```
- 3 Did the output of step 2 contain any references to the elop.sh or the bouncePassThru scripts?
  - If **yes**, go to step 4 to remove those references.
  - If **no**, go to the next procedure in this chapter.
 

**Note:** You do not have to remove any references to the scripts from the crontab file.
- 4 Type the following command and press **Enter**. The system redirects the contents of the crontab into dncs.crontab.
 

```
crontab -l > /tmp/dncs.crontab
```

**Note:** While you can edit the crontab directly, we recommend that you first redirect the contents of the crontab to dncs.crontab so you can recover the original crontab if necessary.

## Remove Scripts That Bounce the Pass-Through Process

- 5 Type the following command and press **Enter**. The `dncs.crontab` file opens for editing using the vi text editor.

```
vi /tmp/dncs.crontab
```

- 6 Remove all lines from the `dncs.crontab` file that reference the `elop.ksh` or `bouncePassThru` scripts.
- 7 Save the `dncs.crontab` file and close the vi text editor.
- 8 Type the following command and press **Enter**. The just-edited `dncs.crontab` file becomes the crontab file.

```
crontab /tmp/dncs.crontab
```

## Reboot the DNCS and Application Server

After installing the software onto the DNCS, complete the following steps to reboot the DNCS and Application Server.

- 1 Choose one of the following options:
  - If you are using a Cisco Application Server, open an xterm window (if necessary) on the Application Server.
  - If you are using a Rovi Corporation Application Server, skip to step 4.
- 2 Complete the following steps to log on to the xterm window as **root** user.
  - a Type **su -** and press **Enter**. The password prompt appears.
  - b Type the root password and press **Enter**.
- 3 From the xterm window on the Application Server, type the following command and press **Enter**. The Application Server shuts down.
 

```
shutdown -g0 -y -i0
```
- 4 If necessary, open an xterm window on the DNCS.
- 5 Complete the following steps to log on to the xterm window as **root** user.
  - a Type **su -** and press **Enter**. The password prompt appears.
  - b Type the root password and press **Enter**.
- 6 From the xterm window on the DNCS, type the following command and press **Enter**. The DNCS reboots and the CDE Login window appears.
 

```
shutdown -g0 -y -i6
```
- 7 Log on to the DNCS as **dncs** user.
- 8 At the **ok** prompt on the Cisco Application Server, type **boot** and then press **Enter**. The Application Server reboots.
- 9 Log on to the Application Server as **dncs** user.
- 10 As root user on the DNCS, type the following command and press **Enter**.
 

```
onstat -
```
- 11 Does the output from step 10 show that Informix is online?
  - If **yes**, you have completed this procedure. Go to the next procedure in this chapter.
  - If **no**, type the following command and press **Enter**. Then, repeat steps 10 and 11.
 

```
/etc/rc2.d/S98informix start
```

**Note:** If Informix does not come online, contact Cisco Services for assistance.

## Disable the SAM Process on Rovi and MDN/ODN Systems

If the site you are upgrading uses the Rovi Corporation application server, you need to disable the SAM process before you restart the system components. Complete the following steps to disable the SAM process.

### Notes:

- If the site you are upgrading does not use the Rovi Corporation application server, skip this procedure and go to the next procedure in this chapter.
  - You should be logged on to the DNCS as **dncs** user.
- 1 In the DNCS section of the DNCS Administrative Console Status window, click **Control**. The DNCS Monitor window opens.
  - 2 From an xterm window on the DNCS, type **dncsControl** and then press **Enter**. The DNCS Control window opens.
  - 3 Type **4** (for Define/Update Grouped Elements) and then press **Enter**. The window updates to list a series of element groups.
  - 4 Type **14** (for saManager) and then press **Enter**. The window updates to list the elements in the group.
  - 5 Type **1** (for /dvs/dnCS/bin/saManager) and then press **Enter**. The first in a series of confirmation messages appears.
  - 6 Press **Enter** at each confirmation message to accept the default setting until a message about **cpElmtExecCtrlStatus** appears. In total, you should see about six confirmation messages.
  - 7 At the cpElmtExecCtrlStatus message, type **2** (for Disabled) and then press **Enter**. A confirmation message appears.
  - 8 Type **y** (for yes) and then press **Enter**. The message **Element Definition was Modified** appears.
  - 9 Follow the on-screen instructions to exit from the DNCS Control window.

## Restart the System Components

After installing the SR 2.8.2/3.8.2/4.3.2 software, follow these instructions to restart the system components.

### Restarting the DNCS

- 1 Click the middle mouse button on the DNCS and select **DNCS Start**. The DNCS processes start.
- 2 Click the middle mouse button on the DNCS and select **Administrative Console**. The DNCS Administrative Console opens.
- 3 From the DNCS Administrative Console Status window, click **DNCS Control**.

#### Results:

- The DNCS Control window opens.
  - Green indicators begin to replace red indicators on the DNCS Control window.
- 4 From an xterm window on the DNCS, type **dncsControl** and then press **Enter**. The DnCS Control utility window opens.
  - 5 Type **2** (for Startup / Shutdown Single Element Group) and then press **Enter**. The DnCS Control window updates to list the status of all of the processes and servers running on the DNCS.
  - 6 Wait for the DnCS Control window to list the current status (Curr Stt) of all the processes and servers as **running**.

#### Notes:

- The DnCS Control window updates automatically every few seconds, or you can press **Enter** to force an update.
- The indicators on the DNCS Control window all become green when the processes and servers have restarted.

### Restarting the SARA Application Server

**Important:** If the site you are upgrading uses the Rovi Corporation Application Server, skip this procedure and go to *Restart the Application Server at Rovi Sites* (on page 70).

- 1 In an xterm window on the Application Server, type the following command and then press **Enter**. The Applications Control window opens.  
**appControl**
- 2 Select option **2** on the Applications Control window. The system displays a list of Application Server processes and their current status.

## Restart the System Components

- 3 Does the word **running** appear next to the current state field (Curr Stt) of each process?
  - If **yes**, skip the rest of this procedure and go to the next procedure in this chapter.
  - If **no**, go to step 4.
- 4 Press the middle mouse button, and then select **App Serv Start**.
- 5 When the Application Control window indicates that the current state (Curr Stt) of each process is **running**, go to step 6.

**Note:** On some systems, the BFS Remote process may remain at **Stopped**; this is normal.
- 6 Follow the on-screen instructions to close the Applications Control window.

## Add Customized Entries to the copyControlParams.inf File

Complete this procedure only if your copyControlParams.inf file contained customized entries before the upgrade. If it did not contain any customized entries, skip this procedure and go to the next procedure in this chapter.

- 1 Did your copyControlParams.inf file contain any customized entries prior to the upgrade?
  - If **yes**, continue with step 2.
  - If **no**, skip to the next procedure in this chapter.
- 2 Open two xterm windows on the DNCS.
  - a In the first xterm window, type the following command and press **Enter**.  
`more copyControlParams.inf.bak`
  - b In the second xterm window, open the copyControlParams.inf file using a text editor, such as vi.
- 3 Edit the file opened in the text editor so that it contains any customized entries.
- 4 Save and close the edited file.

## Restart the RNCS

### Restarting the RNCS Processes

If the Distributed DNCS licensed feature is enabled on your system, complete the following steps to restart the RNCS processes.

- 1 From a dncs xterm window on the DNCS, type the following command and press **Enter**.

```
siteCmd <RNCS hostname> lionnStart
```

**Note:** Replace <RNCS hostname> with the hostname of the RNCS.

- 2 Wait a few moments and then type the following command and press **Enter** to verify that all of the RNCS processes have started.

```
siteCmd <RNCS hostname> pgrep -fl dvs
```

## Restart the Application Server at Rovi Sites

Follow this procedure *only* if the site you are upgrading supports the Rovi Corporation Application Server. If the site you are upgrading supports the SARA Server, skip this section and go to the next procedure in this chapter.

### Restarting the Application Server at a Rovi Site

Complete the following steps to check if the Rovi application has started on the Application Server, and then to start it, if necessary.

- 1 If necessary, open an xterm window on the Application Server.
- 2 Type **CheckServices** and then press **Enter**. A list of drivers appears.  
**Note:** Each driver is associated with an Application Server process.
- 3 Does the word **Yes** appear next to each driver?
  - If **yes**, skip the rest of this procedure and go to the next procedure in this chapter.
  - If **no**, go to step 4.
- 4 Press the middle mouse button, and then select **Passport Start**.
- 5 When the word **Yes** appears next to each driver, go to step 6.
- 6 Follow the on-screen instructions to close the window containing the list of Rovi drivers.

**Note:** The AppServer Control window on the DNCS Administrative Console Status window may display an inactive status. This is normal for a Rovi site.

## Restart the Billing and Third-Party Interfaces

### Restart the Billing and Third-Party Interfaces

Contact your billing vendor to restart the billing interface. If you stopped any third-party interfaces prior to installing the SR 2.8.2/3.8.2/4.3.2 software, restart those interfaces, as well.

### Restarting the Time Warner Mystro Application Server

If necessary, refer to the documents supplied by Mystro to restart the MDN.

## Restart the cron Jobs

### Restarting the cron Jobs on the DNCS

- 1 If necessary, open an xterm window on the DNCS.
- 2 Type the following command and then press **Enter**. The system should list /usr/sbin/cron. Have the cron jobs restarted on the DNCS?  

```
ps -ef | grep cron
```

  - a If **yes**, go to *Restarting the cron Jobs on the Application Server* (on page 72).
  - b If **no**, go to step 3.
- 3 Follow these instructions to log in to the xterm window as root user.
  - a Type **su -** and then press **Enter**. The password prompt appears.
  - b Type the root password and then press **Enter**.
- 4 Type the following command and press **Enter** to restart all cron jobs:  

```
svcadm -v enable -rs cron
```
- 5 Confirm that the cron jobs have restarted by typing **ps -ef | grep cron** and then press **Enter**. The system should list /usr/sbin/cron.
- 6 Type **exit** and press **Enter** to log out the root user.
- 7 Go to *Restarting the cron Jobs on the Application Server* (on page 72).

### Restarting the cron Jobs on the Application Server

If necessary, follow these instructions to restart the cron jobs on the Application Server. The cron jobs on the Application Server may have restarted on their own when you booted the Application Server, earlier in this chapter.

**Important:** This procedure pertains to the SARA Server, only. If the site you are upgrading supports the Rovi Application Server, check with Rovi for the appropriate procedure.

- 1 If necessary, open an xterm window on the Application Server.
- 2 Type the following command and press **Enter**. The system should list /usr/sbin/cron. Have the cron jobs restarted on the Application Server?  

```
ps -ef | grep cron
```

  - a If **yes**, go to the next procedure in this chapter.
  - b If **no**, go to step 3.
- 3 Follow these instructions to log in to the xterm window as **root** user.
  - a Type **su -** and then press **Enter**. The password prompt appears.
  - b Type the **root** password and then press **Enter**.

## Restart the cron Jobs

- 4 Type the following command and press **Enter** to restart all cron jobs:  
`svcadm -v enable -rs cron`
- 5 Confirm that the cron jobs have restarted by typing the following command and then pressing **Enter**. The system should list `/usr/sbin/cron`.  
`ps -ef |grep cron`
- 6 Type **exit** and then press **Enter** to log out the **root** user.

## Check cron Jobs

After restarting the billing and third-party interfaces, examine the root and dnscs crontab entries for any cron jobs that may not have run, such as the IPG Collector, during the maintenance window while cron jobs were stopped. If necessary, run these cron jobs manually.

Follow these instructions to check the crontab files.

- 1 From an xterm window on the DNCS, type the following command and press **Enter**.  
`cd /export/home/dnscs/network`
- 2 Type the following command and press **Enter**.  
`tar xvf crontabs.tar`
- 3 Type `cd crontabs` and press **Enter**.
- 4 Follow these instructions to compare the dnscs crontab file to the actual post-upgrade entries.
  - a Type `less dnscs` and press **Enter**.
  - b Type `crontab -l dnscs` and press **Enter**.
  - c Compare the output from steps a and b. Verify that customer-specific cron entries in step a are included in step b.
  - d Add any missing entries from step a to the dnscs crontab file.
- 5 Repeat step 4 for the root crontab file.

## Restart Utilities

### Restart the dhctStatus Utility

The dhctStatus Utility usually runs from cron and will start at its scheduled time.

### Restarting the signonCount Utility

If the signonCount utility was running prior to the upgrade, follow these steps to restart the utility. If you do not want to start the signonCount utility at this time, skip this procedure and go to the next procedure in this chapter.

- 1 Type the following command and press **Enter**. The signonCount process starts and begins displaying the set-top sign-on status.  

```
signonCount
```
- 2 Press the **Ctrl** and **C** keys simultaneously to stop the terminal output.
- 3 Type the following command and press **Enter** to monitor the signonCount utility status. The terminal displays the last 10 lines in the output file, as well as any new entries made to the output file.  

```
tail -f /dvs/dnacs/tmp/signonCount.out
```
- 4 Press the **Ctrl** and **C** keys simultaneously to terminate the *tail* process.

### Restart the cmd2000 Utility

- 1 To restart the cmd2000 utility, type the following commands and press **Enter** after each command.
  - ```
svcadm -v enable -rs svc:/application/cmd2000:default
```
  - ```
svcadm -v enable -rs  
svc:/application/cmd2000_listener:default
```
- 2 Type the following command and press **Enter** to verify that the cmd2000 services have been enabled. The system displays both cmd2000 services as **online**.  

```
svcs | grep cmd2000
```

**Note:** If the cmd2000 services show a status of **Maintenance**, or if they are not online, call Cisco Services for assistance.



# 3

## SR 2.8.2/3.8.2/4.3.2 Post-Upgrade Procedures

### Introduction

After installing the SR 2.8.2/3.8.2/4.3.2 software, follow the procedures in this chapter to complete the upgrade process.

### In This Chapter

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## Verify SAM Timers

After you upgrade your system to SR 2.8.2/3.8.2/4.3.2, the **Update Timer** and **Schedule Timer** fields on the SAM Configuration window should be set to the values they held prior to the upgrade. These values ensure that channel maps and the database have sufficient time to update. You recorded these values in *Check SAM Timers* (on page 20). Follow the instructions in this section to set the **Update Timer** and **Schedule Timer** fields to their appropriate values.

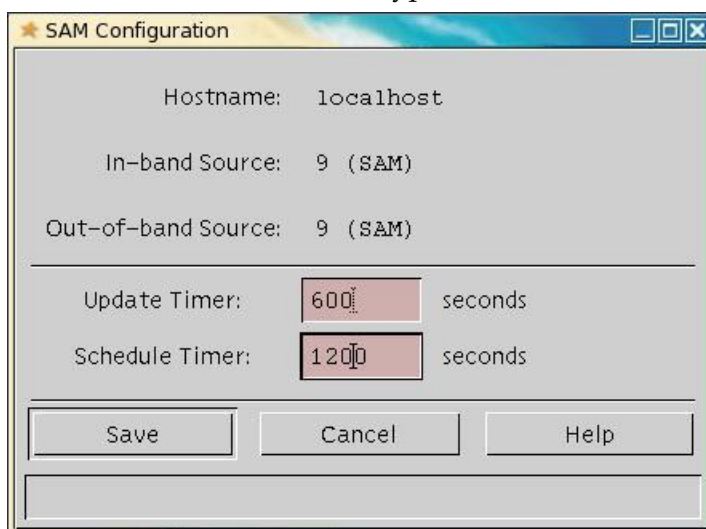
**Note:** This procedure pertains only to sites that support SARA. Skip this procedure if the site you have upgraded does not support SARA.

### Verifying the SAM Timers

Follow these instructions to set the **Update Timer** and **Schedule Timer** fields on the SAM Configuration window, if required.

**Note:** These examples show values of **600** and **1200** for the **Update Timer** and **Schedule Timer** fields, respectively, which are the Cisco-recommended values. You should actually set these fields to the values required by your system.

- 1 From the DNCS Administrative Console, select the **Application Interface Modules** tab and then click **SAM Config**. The SAM Configuration window opens.
- 2 Follow these instructions to configure the SAM Configuration window.
  - a In the **Update Timer** field, type **600** or the value required by your system.
  - b In the **Schedule Timer** field, type **1200** or the value required by your system.



- 3 Click **Save**.

## Configure the CableCARD Server

After you upgrade your system to SR 2.8.2/3.8.2/4.3.2, the **Set Authorization Time-Out Period** and **Set DeAuthorization Time-Out Period** fields on the Configure CableCARD Server window need to be set at specific values. These values instruct the CableCARD server when to stop adding authorization and deauthorization records to the BFS file, which keeps the BFS file from growing too large. The instructions in this section guide you through the necessary steps.

**Note:** Beginning with the upgrade to SR 4.2, the value stored in the Max Key Session Period is multiplied by a factor of 10. This does not change the value received by the CableCARD, however. See **CR 46084** for additional information.

### Configuring the CableCARD Server

Complete the following steps to ensure that the minimum **Set Authorization Time-Out Period** and **Set DeAuthorization Time-Out Period** fields on the Configure CableCARD Server window are configured correctly. Reference the numbers you recorded when you completed *Check CableCARD Server* (on page 21).

- 1 From the DNCS Administrative Console, select the **DNCS** tab.
- 2 Select the **Home Element Provisioning** tab and then click **CableCARD**. The CableCARD Data Summary screen opens.
- 3 Click **Server Configuration**. The CableCARD Data Summary screen updates to display the Server Configuration portion of the screen.
- 4 Examine the **Authorization Time-Out Period** field. Make sure its value is identical to what you recorded in *Check CableCARD Server* (on page 21).
- 5 Examine the **DeAuthorization Time-Out Period** field. Make sure its value is identical to what you recorded in *Check CableCARD Server* (on page 21).
- 6 Are the time-out values the same as they were before the upgrade?
  - If **yes**, go to step 7.
  - If **no**, edit the values as needed and then go to step 7.
- 7 Click **Save**.
- 8 Click **Exit**.

## Check the EAS Configuration—Post Upgrade

### Checking the EAS Configuration

After installing the SR 2.8.2/3.8.2/4.3.2 software, verify that your EAS equipment is working correctly by testing the system's ability to transmit EAS messages. Complete all of the procedures in Chapter 5, **Testing the EAS**, of *Configuring and Troubleshooting the Digital Emergency Alert System* (part number 4004455).

After completing the procedures in Chapter 5, **Testing the EAS**, of the *Configuring and Troubleshooting the Digital Emergency Alert System, For Use With All System Releases* guide, verify that you can generate an EAS message for the Emergency Alert Controller (EAC), itself.

## Check BFS QAM Sessions

The number of BFS sessions after the upgrade needs to be the same as the number of BFS sessions before the upgrade. The procedures in this section guide you through the steps that are required in validating the number of BFS sessions.

### Verifying the Number of Recovered BFS Sessions

Complete the following steps to check the number of post-upgrade BFS sessions.

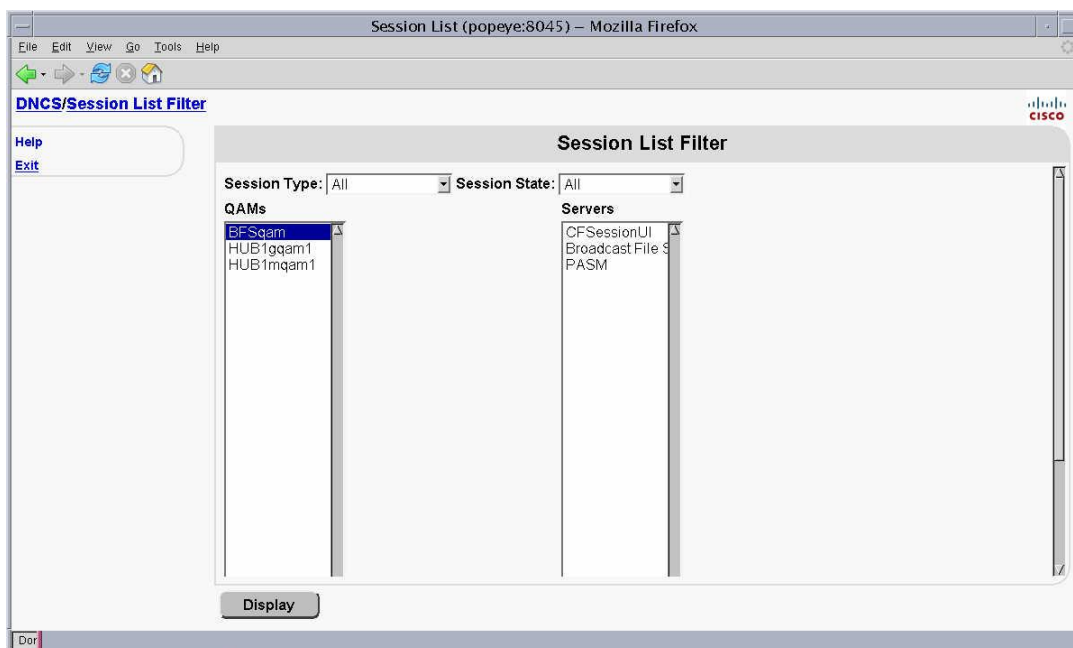
- 1 Press the **Options** button on the front panel of the BFS QAM until the **Session Count** total appears.
- 2 Type the following command and press **Enter**.  
`/dvs/dnscs/bin/auditQam -query [IPAddr] 2`  
**Note:** [IPAddr] is the IP address of the data QAM.
- 3 Type the following command and press **Enter**.  
`/opt/solHmux64/vpStatus -d /dev/Hmux0 -P 0`
- 4 Does the **Session Count** total equal the number of sessions you recorded in *Check and Record Sessions* (on page 26)?
  - If **yes**, skip the remainder of this section, and go to *Authorize the BRF as a BFS Server (Optional)* (on page 85). The system recovered all of the BFS sessions.
  - If **no**, go to *Tear Down BFS and OSM Processes* (on page 81).

### Tear Down BFS and OSM Processes

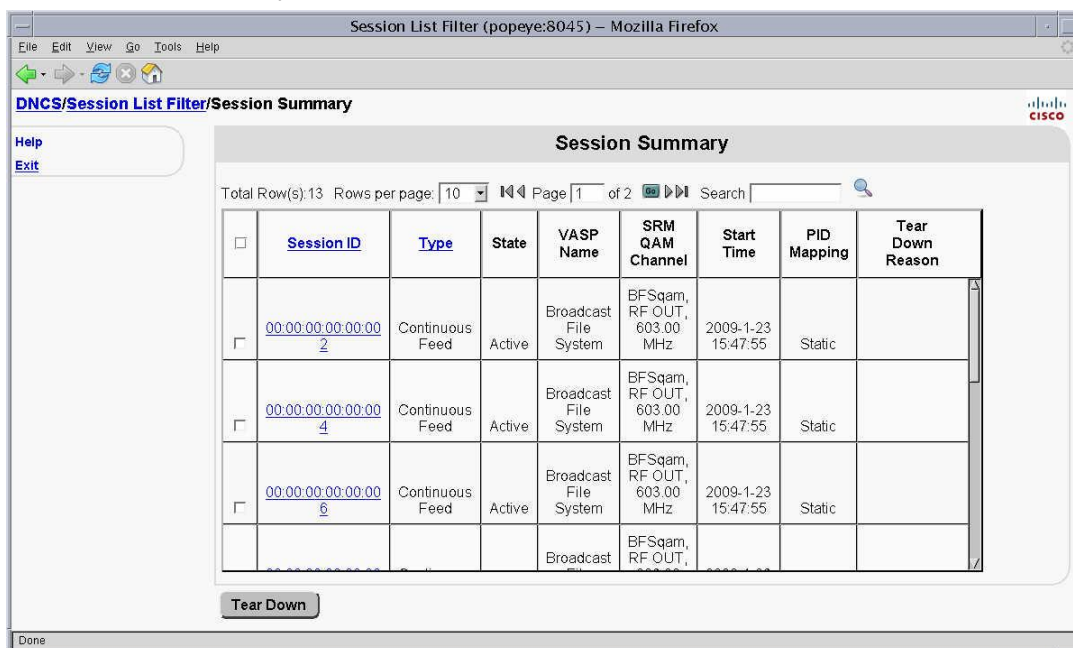
Complete the following steps to tear down the BFS and OSM processes in order to return the BFS session count to the expected number of sessions.

- 1 On the DNCS Control window, highlight the **osm** process.
- 2 Click **Process** and then select **Stop Process**. In a few minutes, the indicator for the osm process changes from green to red.
- 3 Highlight the **bfsServer** process.
- 4 Click **Process** and then select **Stop Process**. In a few minutes, the indicator for the bfsServer process changes from green to red.
- 5 On the DNCS Administrative Console, select the **DNCS** tab and go to **Utilities**.

- Click **Session List**. The Session List Filter window opens.



- Select the BFS QAM from the Session List Filter window and then click **Display**. The Session Summary window opens.



- Check the first box in the table to select all BFS/OSM sessions.
- Click **Teardown**. The system tears down the BFS and OSM sessions.
- On the DNCS Control window, highlight the **bfsServer** process.
- Click **Process** and then select **Start Process**. In a few minutes, the indicator for the bfsServer process changes from red to green.

- 12 After the indicator for the bfsServer process has turned green, highlight the **osm** process.
- 13 Click **Process** and then select **Start Process**. In a few minutes, the indicator for the osm process changes from red to green.
- 14 Press the **Options** button on the front panel of the BFS QAM until the **Session Count** total appears.
- 15 Wait about 10 minutes for the system to rebuild the sessions.
- 16 Does the **Session Count** total now equal the number of sessions you recorded in *Check and Record Sessions* (on page 26)?
  - If **yes**, go to the next procedure in this chapter. The system recovered all of the BFS sessions.
  - If **no**, call Cisco Services for assistance.

## Verify That BFS Sessions Rebuild

- 1 From the **DNCS** tab of the DNCS Administrative Console, click **Utilities**.
- 2 Click **Session List**. The Session List window opens.
- 3 Highlight BFS QAM and click **Display**. The BFS QAM Session Summary window opens.
 

**Note:** Click **Rows per page** and select a number of rows that will display all BFS sessions.
- 4 Click into the top box on the left side of the BFS QAM Session Summary window. A check mark appears next to each session.
- 5 Click **Tear Down**. A confirmation message appears.
- 6 Click **OK**. The system tears down the BFS sessions.
- 7 As the sessions tear down, verify the following:
  - Session count on the BFS QAM goes to **0**
  - Session **State** on the UI indicates **Complete**

**Note:** You can clear completed sessions with the **clearDbSessions -c** command.
  - Session count rebuilds on the BFS as the sessions are rebuilt
- 8 Type the following commands and press **Enter** to verify the BFS QAM session count.
  - a `auditQam -query <BFS QAM IP address> <port #>`

**Notes:** Replace <port #> with the following port numbers on the BFS QAM:

    - CAQAM – 2
    - MQAM – can be 1 through 4
    - GQAM – can be 1 through 16
  - b `/opt/solHmux64/vpStatus -d /dev/Hmux0 -P 0`

### Chapter 3 SR 2.8.2/3.8.2/4.3.2 Post-Upgrade Procedures

- 9 Press the **Option** button on the front of the BFS QAM to verify the number of sessions on the QAM
- 10 Do the outputs from steps 8 and 9 all show the same number of sessions?
  - If **yes**, go to the next procedure in this chapter.
  - If **no**, call Cisco Services for assistance.

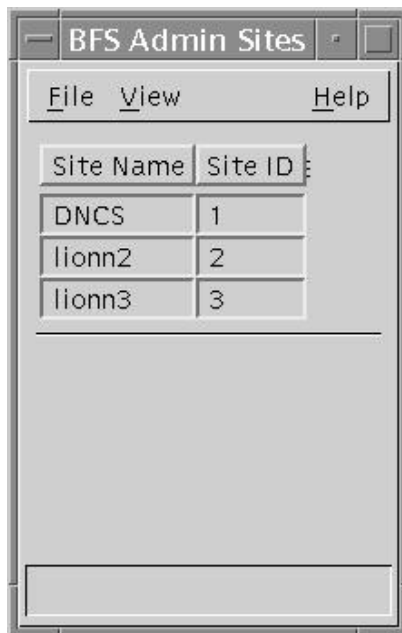
## Authorize the BRF as a BFS Server (Optional)

In systems that use a DOCSIS return path for DHCT communications, there is no support in the cable modem termination system (CMTS) for the downstream channel descriptor (DCD). These systems need a Bridge Resolution File (BRF) to use as a BFS server in order to enable DHCTs to discover their hub ID and MAC layer multicast address. After an upgrade, the system does not automatically authorize the creation of the BRF as a BFS server; you must authorize the file creation manually. Follow these instructions to inspect the BFS GUIs for the presence of the BRF and then to authorize the file, if necessary.

### Authorizing the BRF

Follow these instructions to check for the BRF and then to authorize the file, if necessary.

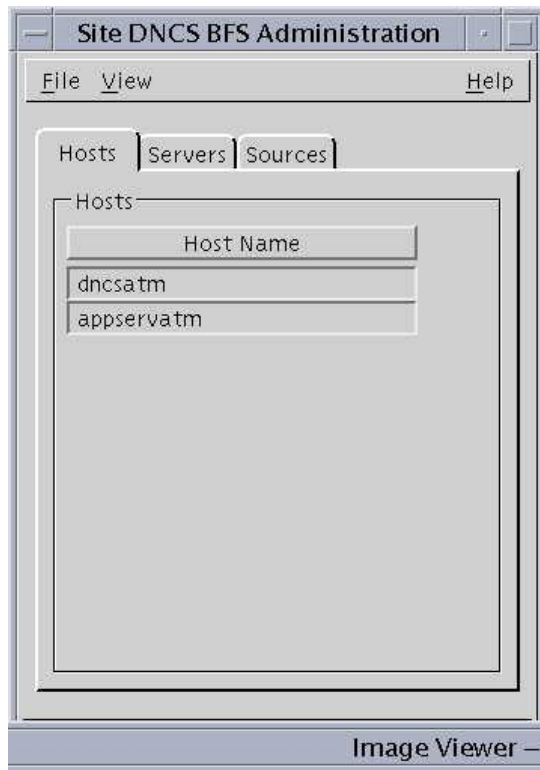
- 1 From the DNCS Administrative Console, select the **Application Interface Modules** tab.
- 2 Is your site running Regional Network Control System (RNCS)?
  - a If **yes**, click **BFS Admin**. The BFS Admin Sites window opens.



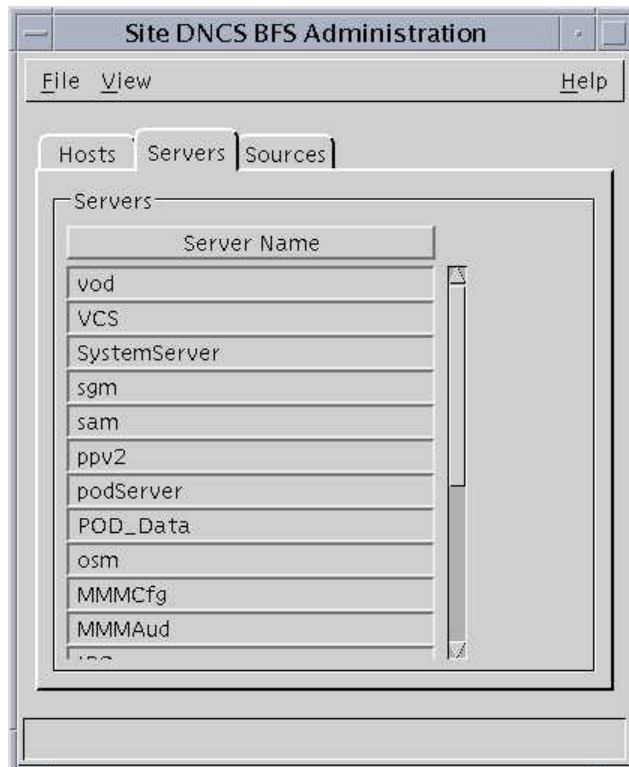
- b If **no**, go to step 3.

3 Double-click **DNCS**.

**Note:** This procedure does not apply to remote sites. The Site DNCS BFS Administration window appears.



4 Click the **Servers** tab. A list of servers appears.



## Authorize the BRF as a BFS Server (Optional)

- 5 Does **brf** appear in the **Server Name** column?

**Note:** Use the scroll bar to see the entire list.

- If **yes**, click **File** and then select **Close** to close the Site DNCS BFS Administration window. You have completed this procedure; go to the next procedure in this chapter.

**Note:** The BRF is already authorized as a BFS server.

- If **no**, go to step 6.

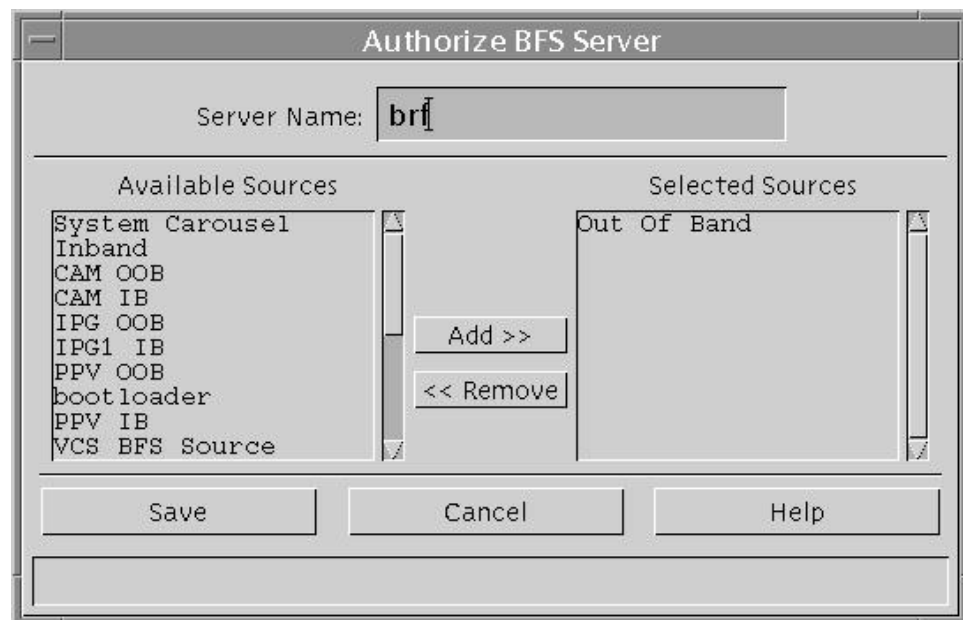
- 6 Click **File** and then select **New**. The Authorize BFS Server window appears.

- 7 Follow these instructions to configure the Authorize BFS Server window.

a Type **brf** in the **Server Name** text box.

b In the **Available Sources** column, highlight **Out of Band** and then click **Add**. The Out of Band source moves to the **Selected Sources** column.

**Example:** The Authorize BFS Server window should look similar to the following example when you are finished.



- 8 Click **Save**. The system saves the newly authorized BRF.
- 9 Click **File** and then select **Close** to close the Authorize BFS Server window.
- 10 Go to the next procedure in this chapter.

## Restart Basic Backup or Auto Backup Servers

If the site you are upgrading uses the Basic Backup or Auto Backup server and if these server backups were disabled or rescheduled for the upgrade, re-enable the backups now, or change them back to the original schedule.

# Final System Validation Tests

## Verifying a Successful Installation of SR 2.8.2/3.8.2/4.3.2

Follow these instructions to verify a successful installation of the SR 2.8.2/3.8.2/4.3.2 software. The DHCT(s) that you use for these tests should comply with the following specifications:

- Unauthorized to view a PPV event without specifically buying the PPV event
- Authorized for all third-party applications

**Important:** If any of these tests are unsuccessful, contact Cisco Services before rolling back from this upgrade.

- 1 Complete these steps to perform a slow boot and a fast boot on a DHCT with a working return path (2-way mode).
  - a Boot a DHCT.

**Note:** Do *not* press the **Power** button.
  - b Wait 5 minutes.
  - c Press the **Power** button on the DHCT. Power to the DHCT is turned on.
- 2 Stage at least one new DHCT to the system operator's specifications.
- 3 After staging, did the DHCT successfully load the current client release software?
  - If **yes**, go to step 4.
  - If **no**, call Cisco Services for assistance.
- 4 Did the DHCT receive at least 32 EMMs (Entitlement Management Messages) and successfully receive its Entitlement Agent?
  - If **yes**, go to step 5.
  - If **no**, call Cisco Services for assistance.
- 5 Does the IPG display 7 days of valid and accurate data?
  - If **yes**, go to step 6.
  - If **no**, call Cisco Services for assistance.
- 6 Do the PPV barkers appear on the PPV channels correctly?
  - If **yes**, go to step 7.
  - If **no**, call Cisco Services for assistance.

### Chapter 3 SR 2.8.2/3.8.2/4.3.2 Post-Upgrade Procedures

- 7 Do third-party applications load and run properly?
  - If **yes**, go to step 8.
  - If **no**, call Cisco Services for assistance.
- 8 Can test DHCTs buy a video-on-demand and/or an xOD program?
  - If **yes**, you have successfully completed the upgrade.
  - If **no**, call Cisco Services for assistance.
- 9 If applicable, are the SDV channels available?
  - If **yes**, the BRF is successfully authorized.
  - If **no**, call Cisco Services for assistance.

## Re-Enable the Disk Mirroring Function

In *Detach Disk Mirrors on the DNCS* (on page 47), you detached the mirroring function of the DNCS. If your system upgrade appears successful, wait a day to verify that the DNCS functions properly with the new software. Then, re-enable the disk mirroring function so that the DNCS can continue storing identical information across several sets of hard drives.

**Important:** If your upgrade is unsuccessful, refer to Appendix A, *SR 2.8.2/3.8.2/4.3.2 Rollback Procedures* (on page 93).

### Re-Enabling the Disk Mirroring Function

Follow these instructions to re-enable the disk mirroring function of the Enterprise 450 or Sun Fire V880 DNCS.

**Important:** Before following these instructions, wait at least 24 hours after the upgrade to verify that your DNCS operates properly with the new software.

- 1 Complete the following steps to log on to the xterm window as **root** user.
  - a Type **su -** and press **Enter**. The password prompt appears.
  - b Type the root password and press **Enter**.
- 2 Insert the **DBDS Maintenance CD** into the cdrom drive of the DNCS.
- 3 Type the following command and press **Enter**.

```
/cdrom/cdrom0/s3/backup_restore/mirrState -a
```

**Result:** The system displays the following message:

```
WARNING!!
```

```
Proceeding beyond this point will ATTACH all Controller 2
submirrors.
```

```
Are you certain you want to proceed?
```

- 4 Type **y** and then press **Enter**. The system enables the disk mirroring functions on the DNCS.

**Note:** Depending upon your system configuration, it may take up to an hour to mirror all of the data on the mirrored disks.

## Monitoring the Disk-Mirroring Process

The syncwait utility allows engineers to monitor the progress of the disk mirroring process. Follow these instructions to run the syncwait utility.

- 1 Open another xterm window on the DNCS.
- 2 Type the following command and press **Enter**. The system displays a message stating the percentage of the mirror-synchronization process that is complete.  
`/dvs/dnCS/Utilities/syncwait.ksh`
- 3 When the system displays the following message, the disk mirroring process is complete; type **n** (for no) and then press **Enter**. The syncwait utility exits.  
**No Resync in progress ...**  
**Continue monitoring status? (n,y, or q)**
- 4 Type **q** and then press **Enter** to exit from the monitoring process.
- 5 Type the following command and press **Enter**. The system displays the status of all of the metadevices on the DNCS.  
`metastat|more`  
**Note:** Press the **Spacebar**, if necessary, to page through all of the output.
- 6 Examine the output from the metastat command for the following two conditions, and then go to step 7:
  - The designation **ok** appears in the **State** column next to each metadevice.
  - **No Hot Spare** indicates **In Use**.
- 7 Are *both* of the conditions described in step 6 true?
  - If **yes** (to both conditions), go to step 8; disk mirroring was successfully enabled.
  - If **no** (to either or both conditions), call Cisco Services for help in resolving the issues with disk mirroring.
- 8 In the xterm window from which you ran the mirrstate -a command, type **eject cdrom** and then press **Enter**. The system ejects the DBDS Maintenance CD.
- 9 Type **exit** and then press **Enter** to close the xterm window.

# A

## SR 2.8.2/3.8.2/4.3.2 Rollback Procedures

### Introduction

This appendix is intended for field service engineers who encounter problems while upgrading an existing digital system to SR 2.8.2/3.8.2/4.3.2. Prior to executing these rollback procedures, contact Cisco Services at 1-866-787-3866.

This appendix contains procedures for rolling back to the SR that was in place prior to the upgrade.

### In This Appendix

- Roll Back the DNCS..... 94
- Roll Back the Application Server..... 97
- Restart the System Components..... 99

## Roll Back the DNCS

If your upgrade is unsuccessful, you may need to use the procedures in this section to restore your system to its condition prior to the upgrade and then to reattach disk mirroring on the DNCS.

**Important:** Be sure to notify Cisco Services before concluding that an upgrade has failed and before following any of the procedures in this section. In many cases, Cisco Services can help you easily resolve the problems related to the failed upgrade. In addition, the procedures in this section apply only if you have not yet completed the *Re-Enable the Disk Mirroring Function* (on page 91) procedure. If you have already enabled disk-mirroring on the DNCS, you will have to restore your system using your latest file system and database backup tapes.

### Rolling Back the DNCS

Follow these instructions to roll back the DNCS from an unsuccessful upgrade to SR 2.8.2/3.8.2/4.3.2.

**Note:** You need to be at the CDE Login window to begin this procedure. If you are unable to get to the CDE Login window, call Cisco Services for assistance.

- 1 In the *Stop System Components* (on page 43) section of Chapter 1, follow the *Stopping the Application Server* (on page 43) and *Stopping the DNCS* (on page 44) procedures, if necessary.
- 2 From an xterm window on the Application Server, type **shutdown -g0 -y -i0** and then press **Enter**. The system halts all processes on the Application Server and an **ok** prompt appears.
- 3 Insert the CD labeled **DBDS Maintenance CD** into the CD drive of the DNCS.
- 4 Log in to the DNCS as **root** user.
- 5 Open an xterm window on the DNCS.

**Note:** You will have root permissions in the xterm window.

- 6 Has the system been rebooted since the upgrade?
  - If **yes**, go to step 7.
  - If **no**, type the following command and press **Enter**. Log on as **root** user and go to step 7.  
**shutdown -g0 -y -i6**
- 7 Type the following command and press **Enter**. A message appears that seeks confirmation to make bootable the disk device that contains the old software.  
**/cdrom/cdrom0/s3/backup\_restore/make\_d700\_bootable**

- 8 Type **y** and then press **Enter**. A message appears that seeks permission to reboot the server.
- 9 Type **y** and then press **Enter**. The DNCS reboots.
- 10 Log in to the DNCS as **root** user.
- 11 Open an xterm window on the DNCS.
- 12 Type the following command and press **Enter**. The system displays the version of software now running on the DNCS.  
`pkginfo -l SAIdnCS`
- 13 Is the pre-upgrade version of software now running on the DNCS?
  - If **yes**, continue the rollback by going to step 14; the DNCS successfully rebooted with the old software in place.
  - If **no**, call Cisco Services for help in determining why the DNCS failed to reboot with the old software in place.
- 14 Type the following command and press **Enter**. A message appears that seeks confirmation to make bootable the disk device that contains the old software.  
`/cdrom/cdrom0/s3/backup_restore/make_d500_bootable`
- 15 Type **y** and then press **Enter**.  
**Results:**
  - The `make_d500_bootable` script reconfigures the mirrored disks on the DNCS.
  - A message appears that seeks permission to reboot the server
- 16 Type **y** and then press **Enter**. The DNCS reboots.
- 17 Log in to the DNCS as **root** user.
- 18 Type the following command and press **Enter** to reboot the server again.  
`shutdown -y -g0 -i6`
- 19 Log on to the DNCS as **root** user.
- 20 Open an xterm window on the DNCS.  
**Note:** You will have root permissions in the xterm window.
- 21 Type the following command and press **Enter**.  
`/cdrom/cdrom0/s3/backup_restore/mirrState -a`  
**Result:** The system displays the following message:  
**WARNING!**  
**Proceeding beyond this point will ATTACH all d7xx submirrors.**  
**Are you certain you want to proceed?**
- 22 Type **y** and then press **Enter**. The system enables the disk mirroring functions on the DNCS.  
**Note:** Depending upon your system configuration, it may take up to an hour for all of the data to become mirrored.

**Appendix A**  
**SR 2.8.2/3.8.2/4.3.2 Rollback Procedures**

- 23 Type **eject cdrom** and then press **Enter**. The system ejects the CD.
- 24 Type **exit** and then press **Enter**. The xterm window closes.
- 25 Click **EXIT** on the toolbar to log out of the DNCS.
- 26 Log in to the DNCS as **dncs** user.

## Roll Back the Application Server

If you have upgraded your V240 or V245 Application Server as part of this upgrade, and have already rolled back the DNCS, follow these instructions to roll back the Application Server.

### Notes:

- To roll back an Ultra 5 or Sun Blade 150 Application Server, you will have to restore the file system from tape.
  - If you have properly followed the instructions so far, the Application Server should be at an **ok** prompt.
- 1 Type **boot** and press **Enter** to boot the Application Server.
  - 2 Insert the CD labeled **DBDS Maintenance CD** into the CD drive of the Application Server.
  - 3 Log onto the Application Server as **root** user.
  - 4 Open an xterm window on the Application Server.
  - 5 Type the following command and press **Enter**. A confirmation message appears.  
`/cdrom/cdrom0/s3/backup_restore/make_d700_bootable`
  - 6 Type **y** and press **Enter**. The system displays a message about rebooting the system.
  - 7 Type **y** and press **Enter**. The Application Server reboots.
  - 8 When the CDE login window appears, log onto the Application Server as **root** user.
  - 9 Open an xterm window on the Application Server.
  - 10 Type the following command and press **Enter** to verify that the old Application Server package is installed.  
`pkginfo -l SAIaprv`
  - 11 Is the software version correct?
    - If **yes**, continue with the rollback by going to step 12.
    - If **no**, call Cisco Services for assistance.
  - 12 Type the following command and press **Enter** to run a script that creates metadevices for disk mirroring.  
`/cdrom/cdrom0/s3/backup_restore/make_d500_bootable`
  - 13 At the confirmation message, type **y** and press **Enter**. The script reconfigures the mirrored devices and displays a message about rebooting the system.

**Appendix A**  
**SR 2.8.2/3.8.2/4.3.2 Rollback Procedures**

- 14 Type **y** and press **Enter**. The Application Server reboots.
- 15 At the CDE login screen, log on as **root** user.
- 16 Open an xterm window on the Application Server.
- 17 Type the following command and press **Enter** to reboot the Application Server.  
`shutdown -y -g0 -i6`
- 18 At the CDE login screen, log on as **dncs** user.
- 19 Open an xterm window on the Application Server.
- 20 Complete the following steps to log on to the xterm window as **root** user.
  - a Type **su -** and press **Enter**. The password prompt appears.
  - b Type the root password and press **Enter**.
- 21 Type the following command and press **Enter** to run the mirrState script. A confirmation message appears.  
`/cdrom/cdrom0/s3/backup_restore/mirrState -a`
- 22 Type **y** and press **Enter**. Depending upon the disk size, it may take up to an hour to completely mirror the disks.
- 23 At the conclusion of the script, type **eject** and press **Enter** to eject the CD.
- 24 Type **exit** and then press **Enter** to log out the root user.

## Restart the System Components

Refer to the procedures in *Restart the System Components* (on page 66) to restart the DNCS and the Application Server.



# B

---

## How to Determine the Tape Drive Device Name

### Introduction

Chapter 2 of this guide requires that you back up the DNCS file system and database before upgrading the system. The procedure to back up these files requires that you know the device name of the tape drive of the DNCS.

If you are unsure of the device name of the tape drive in the DNCS or simply wish to confirm the device name, the procedure in this appendix will help you determine the device name.

### In This Appendix

- Determine the Tape Drive Device Name ..... 102

## Determine the Tape Drive Device Name

Use this procedure if you need to determine the device name of the tape drive used by your DNCS.

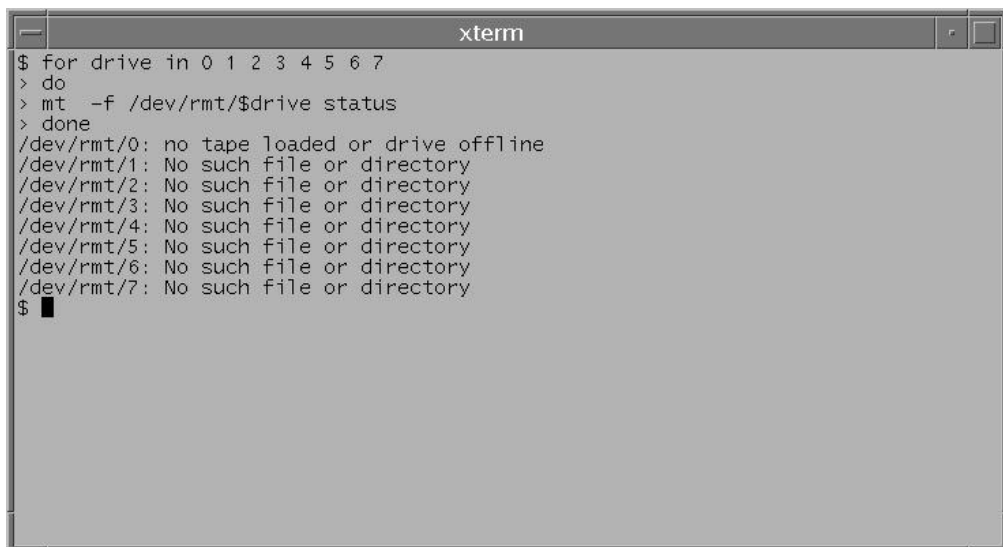
**Notes:**

- You will only have to complete this procedure once. The device name of your tape drive will not change unless you specifically change the tape drive configuration.
  - Do not have a tape in the tape drive when you complete this procedure.
- 1 If necessary, open an xterm window on the DNCS.
  - 2 Ensure that no tape is currently in your tape drive.
  - 3 Type the following UNIX routine. The system checks the status of eight possible tape drive configurations and displays the results.

**Important:** Type the routine just as shown by pressing **Enter** at the end of each line.

```
For drive in 0 1 2 3 4 5 6 7
do
mt -f /dev/rmt/$drive status
done
```

**Note:** Your system will display results similar to the following example.



```
xterm
$ for drive in 0 1 2 3 4 5 6 7
> do
> mt -f /dev/rmt/$drive status
> done
/dev/rmt/0: no tape loaded or drive offline
/dev/rmt/1: No such file or directory
/dev/rmt/2: No such file or directory
/dev/rmt/3: No such file or directory
/dev/rmt/4: No such file or directory
/dev/rmt/5: No such file or directory
/dev/rmt/6: No such file or directory
/dev/rmt/7: No such file or directory
$ █
```

## Determine the Tape Drive Device Name

- 4 Examine your results and use the following observations, based upon the example used in step 3, to determine the device name of your tape drive:
  - In the example in step 3, no tape drives are detected in /dev/rmt/1 through /dev/rmt/7 (as indicated by **No such file or directory**). Therefore, you can conclude that /dev/rmt/1 through /dev/rmt/7 are not valid device names for tape drives on the system queried in step 3.
  - In the example in step 3, a tape drive is detected in /dev/rmt/0 and the system accurately notes that no tape is loaded. Therefore, you can conclude that the device name of the tape drive on the system queried in step 3 is /dev/rmt/0.
  - If /dev/rmt/1 is the device name of your tape drive, then **no tape loaded or drive offline** would appear next to /dev/rmt/1.
- 5 Write the device name of your tape drive in the space provided.  

---



# C

## SSL Configuration for the LoadPIMS Web Service

### Introduction

The LoadPIMS web service provides a web service interface to the customer's automation services to programmatically load PIMS files on the DNCS for STB activation. To secure this service on the DNCS, the following two configuration changes have to be performed:

- Enable SSL on the Apache web server
- Setup basic authentication configuration on loadDhctService

The SSL configuration requires server key and certificates. The certificate can be generated using the openssl utilities or the customer can choose to provide these certificates for SSL configuration. These configuration changes are applicable to DNCS SR 4.3.1 with Apache server release 2.0.53.

**Note:** We also suggest that the same certificate key pair be utilized on each DNCS because of the possibility of the client having to access multiple DNCSs and the maintainability of certificate usage.

### In This Appendix

- Install the Certificates on the DNCS ..... 106
- Configure Apache to Allow the Client Connection ..... 109
- Enable the Secure Socket Layer (SSL) with Apache2 ..... 114
- Enable Client Certificate Authentication ..... 118
- Set Up the loadDhctService for Basic Authentication ..... 119
- Troubleshooting SSL ..... 121
- Good to Know ..... 122

## Install the Certificates on the DNCS

The following steps are required to install the SSL certificate on the DNCS:

- A Certificate Signing Request (CSR) is generated on the DNCS and sent to a trusted Certificate Authority (CA).
- The Certificate Authority issues a corresponding digital certificate to be installed on the DNCS. (The root certificate of the CA will probably need to be installed as well.)
- The certificate (along with its corresponding public and private keys) must be manually copied to any other DNCS.

## Install the Digital Certificate from the CA

At this point, the following certificate and key files should reside on your system:

- `server.crt`: The CA-signed server certificate  
**Note:** See *Creating a Self-Signed Server Key Certificate* (on page 122) for creating self-signed certificates.
- `server.key`: The private server key; this does not require a password when starting Apache
- `server.key.secure`: The private passphrase protected key

**Note:** If you do not have the digital certificate files and the server's private key and need to generate one, see *Generate the CSR* (on page 125) to create the `server.key` private file and the procedure to request the Certificate Authority for the digital certificates.

- 1 Upload the signed `server.crt` received from the CA on the DNCS server into the `/etc/opt/certs/` directory.
- 2 Type the following command and then press **Enter** to copy the `server.crt` file to `cacert.crt`.

```
cp /etc/opt/certs/server.crt /etc/opt/certs/cacert.crt
```

## Install the Root Certificate of the Trusted Root Authority

If the client certificate authentication is required, then the CA root authority's certificate, which signs the client certificate, should be installed in the `/etc/opt/certs/cacert.pem` file. We recommended that the CA root certificate be added to this file, but it is not required.

Type the following commands and then press **Enter** to install the root certificate of the trusted root authority.

```
cp /etc/opt/certs/cacert.pem /etc/opt/certs/cacert.pem.`date +%m%d%y`
```

```
cat CA_NSO.crt.txt >> /etc/opt/certs/cacert.pem
```

The following table displays the relevant files and permissions:

| File       | Permission | Owner:<br>Group         | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------|------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| server.key | 400        | -r-----<br>root:root    | <p>This is the private key generated on the DNCS (first step in the <i>Generate the CSR</i> (on page 125) process).</p> <p>If you want to skip the Generate the CSR process and use the same <code>dncs_server.csr.crt</code> received from the NSO on all DNCSs, you need to copy the <code>server.key</code> file to all other DNCS controllers. Please note that this file does not contain the passphrase, and consequently should be guarded appropriately.</p> <p>One way to copy this file from a configured DNCS controller to another DNCS being configured would be to copy the <code>server.key.secure</code> file instead. However you will need the passphrase that was used when extracting the <code>server.key</code> file (<i>Generate the CSR</i> (on page 125) first step) from the <code>server.key.secure</code> file.</p> |
| server.crt | 444        | -r--r--r--<br>root:root | This is the <code>dncs_server.csr.crt</code> file renamed as <code>server.crt</code> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

Appendix C  
SSL Configuration for the LoadPIMS Web Service

| File              | Permission | Owner:<br>Group         | Comments                                                                                                                                                                                                                                                                                                         |
|-------------------|------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| server.key.secure | 400        | -r-----<br>root:root    | <p>This file is a passphrase-protected server key, suitable for copying/backup etc.</p> <p>The following command extracts the server.key file if you choose to copy server.key.secure from another DNCS (and did not copy the server.key file):</p> <pre>openssl rsa -in server.key.secure -out server.key</pre> |
| cachain.crt       | 444        | -r--r--r--<br>root:root | <p>This can be the same as server.crt so you can copy server.crt onto cachain.crt.</p>                                                                                                                                                                                                                           |
| cacert.pem        | 444        | -r--r--r--<br>root:root | <p>The CA_NSO.crt file is concatenated into this file by this command:</p> <pre>cp /etc/opt/certs/cacert.pem /etc/opt/certs/cacert.pem. `date +%m%d%y` cat CA_NSO.crt.txt &gt;&gt; /etc/opt/certs/cacert.pem</pre>                                                                                               |

## Configure Apache to Allow the Client Connection

### Create the Directive for the loadPIMS Service

- 1 Use a text editor to create the `/etc/apache2/conf/loadPIMS.https` file with the following directives.

**Note:** If this file already exists, see *Configure Client IP Addresses for the loadPIMS Service* (on page 111) to allow a connection to the loadPIMS web service.

**Example:** The file should look similar to the following example:

```
<Location /dncs/soap/loadPIMS>
    # SSLVerifyClient none
    # SSLCipherSuite +ADH-RC4-MD5
    ProxyPass
    http://localhost:18284/dncs/soap/loadPIMS
    ProxyPassReverse
    http://localhost:18284/dncs/soap/loadPIMS
    Order Deny,Allow
    Allow from localhost
    Allow from dncs
    Allow from appservatm
    #Allow from client_ip
    Deny from all
</Location>
```

**Note:** Port number 18284, used in the example, should match with the value of the `SERVER_PORT` variable in the `/dvs/dncs/etc/LoadDhctServerSOAPCfg.cfg` file.

- 2 Comment out, if applicable, the following lines in `rpcserver.conf` file:

```
#ProxyPass          /dncs/soap/loadPIMS
http://localhost:18284/dncs/soap/loadPIMS
#ProxyPassReverse  /dncs/soap/loadPIMS
http://localhost:18284/dncs/soap/loadPIMS
```

## Configure the WS-BOSS Directives

This configuration step is optional and is only required if access to the WS-BOSS interface is desired. The WS-BOSS configuration is performed through the `/etc/apache2/conf/boss.http` file. Note that in systems older than SR 4.5, the WS-BOSS configuration is maintained in the `rpcserver.conf` file. If your system has the `rpcserver.conf` file, follow these steps.

- 1 Comment out the following lines in `rpcserver.conf` file:

```
#ProxyPass          /dncs/soap/bossreq
http://localhost:18084/dncs/soap/bossreq

#ProxyPassReverse   /dncs/soap/bossreq
http://localhost:18084/dncs/soap/bossreq
```

- 2 Use a text editor to create the `/etc/apache2/conf/boss.http` file with the following directives:

```
<Location /dncs/soap/bossreq>
    # The SSL configuration is not supported prior to 4.5
    #SSLVerifyClient    require
    #SSLVerifyDepth    5
    ProxyPass          http://localhost:18084/dncs/soap/bossreq
    ProxyPassReverse   http://localhost:18084/dncs/soap/bossreq

    # The following directives will not be present after 4.5 as
    client-cert
    # authentication will be used. This should be present if
    client access to WS-BOSS
    # over HTTP is required.
    Order Deny,Allow
    Allow from localhost
    Allow from dncs
    Allow from appservatm
    #Allow from client_ip
    Deny from all
</Location>
```

**Note:** Requests to these relative URLs will be defined unless an *allow* is specifically added to allow a client to connect to the Apache server. The following procedure, **Configure Client IP Addresses for the loadPIMS Service**, details how to add a client's IP address to the list of IP addresses allowed to connect to the DNCS web services.

## Configure Client IP Addresses for the loadPIMS Service

- 1 Obtain a list of client IP addresses that will be connecting to the DNCS server.
- 2 Open the `/etc/apache2/conf/loadPIMS.https` file and find the section with the `<Location /dncs/soap/loadPIMS>` directive. Add those client IP addresses there, according to the following example:

```
<Location /dncs/soap/loadPIMS>
    #SSLVerifyClient none
    #SSLCipherSuite +ADH-RC4-MD5
        Order Deny, Allow
        Allow from localhost
        Allow from dncs
        Allow from appservatm
    #Allow from client_ip
        Allow from client_ip1
        Allow from client_ip2
        Deny from all
</Location>
```

**Note:** This example shows the addition of `client_ip1` and `client_ip2` to the list of clients that are allowed to access the server.

## Configure the Client IP Addresses for the WS-BOSS

The SSL is currently not supported for the WS-BOSS interface. If no WS-BOSS support is required, ignore this section. Otherwise, the file `/etc/apache2/conf/boss.http` needs to be edited to add the client IP addresses, according to the following example:

```
<Location /dncs/soap/bossreq>
    # The SSL configuration is currently not supported

    #SSLVerifyClient      require

    #SSLVerifyDepth      5

    ProxyPass
    http://localhost:18084/dncs/soap/bossreq

    ProxyPassReverse
    http://localhost:18084/dncs/soap/bossreq

    # The following directives will not be present after 4.5 as
    client-cert

    # authentication will be used. This should be present if
    client access to WS-BOSS

    # over HTTP is required.

    Order Deny,Allow

        Allow from localhost

        Allow from dncs

        Allow from appservatm

    #Allow from client_ip

        Allow from client_ip1

        Allow from client_ip2

    Deny from all
</Location>
```

**Note:** This example shows the addition of `client_ip1` and `client_ip2` to the list of clients that are allowed to access the WS-BOSS service.

## Required Changes to the `/etc/apache2/httpd.conf` File

Add a new `Import` directive within the `<VirtualHost *:80 *:8045>` directive, just before the `</VirtualHost>` line. Use the following example as a guide:

```
<VirtualHost *:80 *:8045>
    #
    # "/var/apache2/cgi-bin" should be changed to whatever your
    ScriptAliased
    # CGI directory exists, if you have that configured.
    #
    # Allow cgi-bin access only on local box or if authenticated
    <Directory "/var/apache2/cgi-bin">
        AllowOverride None
        Options None
        Order Allow,Deny
        Allow from all
    </Directory>
    <Location />
        Order Allow,Deny
        Allow from localhost
        Allow from dncs
        Allow from appservatm
        ErrorDocument 403 "<html><head><title>Error
403</title></head><body><h2>SECURITY WARNING</h2>Web connections
are only allowed from localhost.</body></html>"
    </Location>
    Include /etc/apache2/conf/*.http
</VirtualHost>
```

## Enable the Secure Socket Layer (SSL) with Apache2

### Required Changes to the `/etc/apache2/ssl.conf` File

The following table shows the SSL configuration properties that are modified in the `ssl.conf` file:

#### SSL Configuration Parameters

ssl.conf variables		
SSLCipherSuite		Need to add ADH-RC4-MD5
SSLCertificateFile	<code>/etc/opt/certs/server.crt</code>	
SSLCertificateKeyFile	<code>/etc/opt/certs/server.key</code>	
SSLCertificateChainFile	<code>/etc/opt/certs/cachain.crt</code>	The server certificate CA certificate chain. This file must contain the entire CA certificate chain used to sign the server certificate. The NSO CA certificate should be added to this file.
SSLCACertificateFile	<code>/etc/opt/certs/cacert.pem</code>	The certificate authority's certificates should be placed in here, if certificate-authentication for the client is required. This may be required for the billing interface (SR 4.5).

The following steps outline the changes required to enable SSL on the DNCS server. Be sure that you are root user.

- 1 Follow these instructions to disable the Apache2 service on a Solaris 10 system.
  - a Type the following command and then press **Enter**.

```
svcs -a | grep apache
```
  - b Do the results from step a show that the Apache2 service is running (online)?  
**Example: online 0:45:44 svc:/network/http:apache2**
    - If **yes**, type the following command and then press **Enter**.

```
svcadm disable apache2
```
    - If **no**, go to step 2.

- 2 Type the following commands and then press **Enter** to enable SSL using svccfg.

```
svccfg
svc:> select apache2
svc:/network/http:apache2> listprop httpd/ssl
httpd/ssl boolean false
svc:/network/http:apache2> setprop httpd/ssl = true
svc:/network/http:apache2> exit
```

- 3 Edit the /etc/apache2/ssl.conf file and modify the "SSLCipherSuite" property to add "ADH-RC4-MD5". This enables the CipherSuite ADH-RC4-MD5 on the Apache service. The updated line should look like this example:

```
SSLCipherSuite ALL:!EXPORT56:-AES256-SHA:-DHE-RSA-AES256-SHA:-
DHE-DSS-AES256-SHA:RC4+RSA:+ADH-RC4-
MD5:+HIGH:+MEDIUM:+LOW:+SSLv2:+EXP:+eNULL
```

**Note:** The default attribute of the SSLCipherSuite is

```
'ALL:!ADH:RC4+RSA:+HIGH:+MEDIUM:+LOW:+SSLv2:+EXP' .
```

This is being changed to allow Anonymous Diff-Hellman key exchange, RC4 encoding, and the MD5 digest algorithm as per the loadPIMS ICD. The ADH-RC4-MD5 digest algorithm should be preserved for all future versions of the DNCS. The default '!ADH' does not allow ADH to be added again and should be removed.

- 4 Follow these instructions to edit the ssl.conf file.

**Note:** A bug in the Apache 2.0.53 code requires that this edit be made.

- a Type the following command and then press **Enter**.

```
cp ssl.conf ssl.conf.`date +%m%d%y`
```

- b Open the ssl.conf file in a text editor.

- c Search for the following entry:

```
%s/VirtualHost _default_/VirtualHost */
```

- d Change the entry to <VirtualHost \*:443>.

- e Search now for **ServerName acme:443** or **ServerName %%%localhost%%:443**.

- f Change the entry to **ServerName <hostname>:443**.

- g Save and close the file.

## Appendix C SSL Configuration for the LoadPIMS Web Service

- 5 Add a new Location and Import directive within the <VirtualHost \*:443> directive, just before the </VirtualHost> line. The changes should look like the following example:

```
<VirtualHost *:443>
    # contents omitted below
    .
    .
    <Location />
        Order Deny,Allow
        Allow from localhost
        Allow from dncs
        Deny from all
        ErrorDocument 403 "<html><head><title>Error
403</title></head><body><h2>SECURITY WARNING</h2>Web
connections are only allowed from localhost.</body></html>"
    </Location>
    Include /etc/apache2/conf/*.https
</VirtualHost>
```

- 6 Test the configuration changes, before the Apache service is refreshed, by typing the following command and then pressing **Enter**.

**Important:** The message **Syntax OK** should then appear.

```
/usr/apache2/bin/httpd -t
```

- 7 Follow these instructions to restart the Apache2 service.

- a Type the following command and then press **Enter**.

```
svcadm refresh apache2
```

- b Type the following command and then press **Enter**.

```
svcadm clear apache2
```

**Note:** If the Apache service is not in an error state, you will see the following message:

```
svcadm: Instance "svc:/network/http:apache2" is not in a
maintenance or degraded state.
```

- c Type the following command and then press **Enter**.

```
svcadm enable apache2
```

- 8 Type the following command and then press **Enter**.

```
cd /etc/opt/certs
```

- 9 Type the following command and then press **Enter** to create the necessary link.

```
ln -s /etc/opt/certs/server.crt cachain.crt
```

10 Is client authentication required on this system?

- If **yes**, type the following command and then press **Enter**.

```
cp server.crt cacert.pem
```

- If **no**, comment out in the `ssl.conf` file the line that includes `SSL VerifyClient`.

11 Type the following command and then press **Enter** to verify the Apache2 process is running with SSL.

```
ps -ef | grep apache2
```

**Example:** A message similar to the following should appear:

```
dncs 18058 18054 0 00:45:45 ? 0:00 /usr/apache2/bin/httpd -k start -DSSL
root 18054 1 0 00:45:44 ? 0:03 /usr/apache2/bin/httpd -k start -DSSL
```

12 Type the following command and then press **Enter** to verify that SSL processing is active.

```
openssl s_client -cipher ADH-RC4-MD5 -connect localhost:443 -state -debug
```

**Example:** Output similar to the following should appear:

```
CONNECTED(00000004)
SSL_connect:before/connect initialization
write to 0008E7D8 [0008EDE8] (46 bytes => 46 (0x2E))
0000 - 80 2c 01 03 01 00 03 00-00 00 20 00 00 18 23 98 .,..... #.
0010 - 3d 9f 16 9f 4c 09 90 92-fe 94 36 81 09 6d e0 b4 =...L....6..m..
0020 - e1 92 03 52 48 df 2c 57-42 9a 48 f3 98 a1 ...RH.,WB.H...
SSL_connect:SSLv2/v3 write client hello A
read from 0008E7D8 [00094348] (7 bytes => 7 (0x7))
0000 - 16 03 01 00 4a 02 ....J.
0007 - <SPACES/NULS>
read from 0008E7D8 [0009434F] (72 bytes => 72 (0x48))
0000 - 00 46 03 01 4b 7c 7b a6-99 60 bb 97 1a a6 63 3c .F..K|{...`....c<
0010 - 86 b0 11 13 a3 8d 53 72-24 aa 68 62 e5 f5 ae 91 .....Sr$.hb....
0020 - 80 aa 06 c3 20 49 36 a9-0e fb cf 7a aa 96 c1 21 .... I6....z...!
0030 - d1 55 75 3a 22 2e 57 cb-1b 4b 2d 88 88 11 43 de .Uu:".W..K-...C.
0040 - 31 6c 71 84 5d 00 18 11q.]..
0048 - <SPACES/NULS>
SSL_connect:SSLv3 read server hello A
read from 0008E7D8 [00094348] (5 bytes => 5 (0x5))
```

**Note:** If this command generates an error, refer to *Troubleshooting SSL* (on page 121).

13 Open a browser from a client that is allowed to connect to the DNCS server and type in the IP address of the DNCS. Verify the server certificate.

## Enable Client Certificate Authentication

This is an optional step in the SSL configuration and is only required if a client-certificate authentication is needed.

- 1 Log in to the DNCS as **root** user.
- 2 Type the following command and then press **Enter**.  
`cd /etc/opt/certs`
- 3 Type the following command and then press **Enter** to copy the server.crt file to cacert.pem.  
`cp server.crt cacert.pem`

## Set Up the loadDhctService for Basic Authentication

Complete these instructions as dncs user.

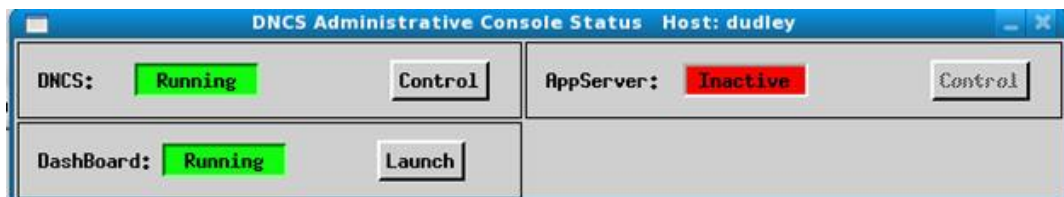
The configuration file for the loadDhctService process is located at: /dvs/dncs/etc/LoadDhctServerSOAPCfg.cfg. A sample portion of the file follows:

```
# Port on which server listens for incoming requests
SOAP_PORT = 18284
# Enable/Disable SOAP SSL
SSL_MODE = DISABLE
# Enable or Disable basic authentication (parameters:
DISABLE/ENABLE)
BASIC_AUTH = ENABLE
# Server User Name
SERVER_USER_NAME = dncs
# Server Password
SERVER_PASSWD = dncs123
```

The following list contains a description of the parameters:

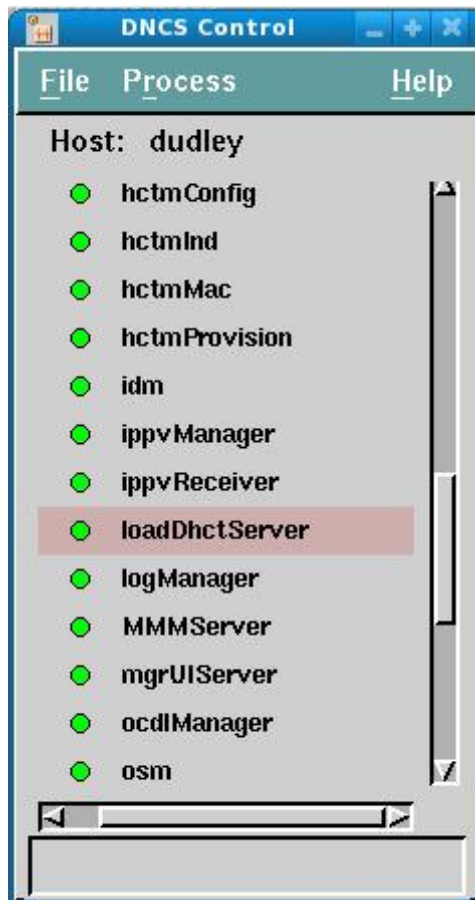
- **Server\_Port (SOAP\_PORT)** – This is the port on which the loadDhctServer listens. This is the proxy port in the loadPIMS.https Apache configuration file.
- **SSL\_MODE** – This should always be set to **DISABLE**. The SSL is enabled at the Apache server layer.
- **BASIC\_AUTH** – Set it to **ENABLE**.
- **SERVER\_USER\_NAME** – This configuration parameter defines the user name used by the loadDhctService web service client to perform basic authentication.
- **SERVER\_PASSWD** – This configuration parameter defines the password to be used by the client for basic authentication.

- 1 Launch the DNCS Control processes by clicking **Control** from the DNCS Administrative Console Status window.



Appendix C  
SSL Configuration for the LoadPIMS Web Service

- 2 Highlight the **loadDhctServer** process from the DNCS Control window.



- 3 Click **Process** and then select **Start Process** to start the loadDhctServer process.

**Note:** When this procedure is complete, configure the client to use basic authentication over SSL with the user-id and password specified in the `/dvs/dnCS/etc/LoadDhctServerSOAPCfg.cfg` file.

## Troubleshooting SSL

- **svcs -a | grep apache2**

If the output of this command does not list the Apache2 server as being online, the httpd process needs to be killed. Follow these instructions to kill the httpd process.

- a Type the following command and then press **Enter**.

```
ps -ef | grep httpd
```

- b Type the following command and then press **Enter**, where [PID] is the process ID returned by the previous command.

```
kill [PID] a
```

- **openssl: not found error**

If the **openssl** command is not available in the PATH variable, then the path to openssl has to be explicitly specified. The openssl tool is located in the following directory: /usr/sfw/bin/openssl

- If the CSR generation with the aes256 option fails with an error about SUNWcry, then generate the 3DES key by typing the following command and then pressing **Enter**.

```
openssl genrsa -des3 -out server.key 1024
```

- If the **openssl s\_client** command (step 12 of *Required Changes to the /etc/apache2/ssl.conf File* (on page 114)) generates an error, try this command instead.

```
openssl s_client -connect localhost:443 -state -debug
```

If this command is successful, it probably is because the SSLCipherSuite is not configured correctly. Retry the command in bullet 3 and refresh the Apache server.

## Good to Know

### Creating a Self-Signed Server Key Certificate

Complete the following steps to generate a self-signed certificate. Alternatively, an existing SSL key and certificate can be used.

**Note:** Execute all commands as root user in an xterm window on the DNCS.

- 1 Follow these instructions to add the path for the openssl command.

- a Type the following command and then press **Enter**.

```
PATH=$PATH:/usr/sfw/bin
```

- b Type the following command and then press **Enter**.

```
export PATH
```

- 2 Type the following command and then press **Enter**.

```
cd /etc/apache2
```

- 3 Type the following command and then press **Enter** to create the server key and certificate.

```
openssl genrsa -out /etc/opt/certs/server.key 1024
```

**Note:** Additionally, the key encryption format and number of bits in the key can be specified. The following are possible key encryption types:

- **des** – encrypt the generated key with DES in cbc mode
- **des3** – encrypt the generated key with DES in ede cbc mode (168 bit key)
- **aes128, aes192, aes256** – encrypt PEM output with cbc aes

Typical values for the number of bits in the key are 1024, 2048, and 4096.

- 4 Type the following command and then press **Enter** to generate a Certificate Signing Request:

```
openssl req -new -key /etc/opt/certs/server.key -out /etc/opt/certs/server.csr
```

- 5 If you want to sign the certificate yourself, (this will generate a certificate that will not expire), type the following command and then press **Enter**.

```
openssl x509 -req -in /etc/opt/certs/server.csr -signkey /etc/opt/certs/server.key -out /etc/opt/certs/server.crt
```

- 6 Type the following command and press **Enter** to copy the server.crt file to cacert.crt:

```
cp /etc/opt/certs/server.crt /etc/opt/certs/cacert.crt
```

- 7 Is client authentication required?

- If **yes**, follow the steps outlined in *Enable Client Certificate Authentication* (on page 118).
- If **no**, you are finished with this procedure.

## Example of Basic Authentication

The following is an example with `ResetStagingState`:

```
GET /dncs/loadPIMS HTTPS/1.0
Host: localhost
Authorization: Basic QWxhZGRpbjpwVGVuIHNlc2FtZQ==
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:loadPIMS="urn:loadPIMS.xsd">
  <SOAP-ENV:Body>
    <loadPIMS:ResetStagingState>
      <loadPIMS:resetStagingStateRequest>
        <loadPIMS:dhctMacAddress></loadPIMS:dhctMacAddress>
      </loadPIMS:resetStagingStateRequest>
    </loadPIMS:ResetStagingState>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

In this example, the userid and password (Aladdin:open sesame) is encoded as a base64 string. Refer to the **Order Management ICD** for further details about the authentication mechanisms.

## Trust Management on the Client

If you want to disable the validation of certificates for testing purposes, you need to override the default trust manager with one that trusts all certificates. Use this as an example.

```
// Create a trust manager that does not validate certificate chains
TrustManager[] trustAllCerts = new TrustManager[]{
    new X509TrustManager() {
        public java.security.cert.X509Certificate[] getAcceptedIssuers() {
            return null;
        }
        public void checkClientTrusted(
            java.security.cert.X509Certificate[] certs, String authType) {
        }
        public void checkServerTrusted(
            java.security.cert.X509Certificate[] certs, String authType) {
        }
    }
};

// Install the all-trusting trust manager
try {
    SSLContext sc = SSLContext.getInstance("SSL");
    sc.init(null, trustAllCerts, new java.security.SecureRandom());
    HttpURLConnection.setDefaultSSLSocketFactory(sc.getSocketFactory());
} catch (Exception e) {
}

// Now you can access an https URL without having the certificate in the
truststore
try {
    URL url = new URL("https://hostname/index.html");
} catch (MalformedURLException e) {
}
```

## Generate the CSR

- 1 Type the following command and then press **Enter** to create the request with an aes256 certificate. (You will be asked to create a passphrase.)

```
openssl genrsa -aes256 -out server.key 1024
```

**Note:** On the SR 4.3.1 DNCS system, you may receive an error about SUNWcry. In this case you can alternatively create a request with a 3DES key (you will be asked to create a passphrase). See *Troubleshooting SSL* (on page 121) (third bullet) for more details.

- 2 Type the following command and then press **Enter** to generate the CSR using the server.key.

```
openssl req -new -key server.key -out server.csr
```

**Note:** You will be asked to provide subject fields for the CSR, which include the following:

- **Country Name:** US
- **State:** Pennsylvania
- **Locality Name:** Philadelphia
- **Organization Name:** Comcast Cable Communications Management LLC
- **Organizational Unit Name:** CET
- **Common Name:** [FQDN such as: service.comcast.net]
- **Email Address:** admin@cable.comcast.net
- **A challenge password:** [input a period "." to leave blank and not use the default]
- **An optional company name:** [input a period "." to leave blank and not use the default]

- 3 Type the following commands and then press **Enter** to examine the server.key and the certificate request. (You will be asked to enter the passphrase for server.key)

```
openssl rsa -text -in server.key
```

```
openssl req -text -in server.csr
```

## Appendix C

### SSL Configuration for the LoadPIMS Web Service

- 4 Email the server.csr to the Certificate Authority. Some CAs provide a website to paste the content of the CSR on their website. Then email yourself the signed certificate.
- 5 Type the following commands and then press **Enter** to create a server key which doesn't cause Apache to prompt for a password.

```
openssl rsa -in server.key -out server.key.insecure  
mv server.key server.key.secure  
mv server.key.insecure server.key
```

**Important:** Although this means that you don't have to type in a password when restarting the Apache server, it does mean that anyone obtaining this insecure key will be able to decrypt your transmissions. Guard it for permissions very carefully.





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