

## AWIPS SOFTWARE INSTALLATION NOTE 79, REVISION B

Operations Division

W/OPS12: KS

**SUBJECT:** **AWIPS Release OB9.1**

**PURPOSE:** To provide installation instructions and related information for the operating system release.

**SITES AFFECTED:** All Weather Forecast Offices (WFO), River Forecast Centers (RFC), regional headquarters and National Centers for Environmental Prediction (NCEP).

**AUTHORIZATION:** The authority for this note is Request for Change (RC) 11946.

**VERIFICATION STATEMENT:** This procedure was tested and verified on test platforms at the National Headquarters in Silver Spring, MD (NMTW and NHOR), training platforms in Kansas City, MO (NTCB and NTCB); and the following operational platforms: Central Region Headquarters in Kansas City, MO (BCQ); Southern Region Headquarters in Ft. Worth, TX (EHU); Eastern Region Headquarters in Bohemia, NY (VUY); Pacific Region Headquarters in Honolulu, HI (PBP), Western Region Headquarters in Salt Lake City, UT; WFO La Crosse, WI (ARX); WFO Billings, MT (BYZ); WFO Sioux Falls, SD (FSD); WFO Reno, NV (REV); WFO Great Falls, MT (TFX); WFO Indianapolis, IN (IND); WFO Blacksburg, VA (RNK); WFI San Angelo, TX (SJT); WFO Melbourne, FL (MLB); and Northwest Region RFC Portland, OR (PTR).

**ESTIMATED COMPLETION DATE:** All sites should complete installation by November 5, 2009. The installation date must be scheduled on the NWS Oracle AWIPS schedule calendar.

**TIME REQUIRED:** Pre-installation procedures take from 2 to 12 hours, depending on the amount of data to be backed up.  
Main installation procedures take approximately 5.5 hours.

**ACCOMPLISHED BY:** Electronic Systems Analysts (ESA) or their designee.

**EQUIPMENT AFFECTED:** AWIPS

**PARTS/MATERIALS REQUIRED:** Two AWIPS OB9.1 Software Installation DVDs, six CDs and an unencrypted blank USB flash drive of 25MB or greater. A monitor/keyboard is required in order to connect to servers to make sure the Linux installation proceeds.

**SOURCE OF PARTS/MATERIALS:** DVDs and CDs from Raytheon. Sites provide the unencrypted USB flash drive.

**DISPOSITION OF REMOVED PARTS/MATERIALS:** Not Applicable

**TOOLS AND TEST EQUIPMENT REQUIRED:** Monitor and keyboard

DOCUMENTS AFFECTED:	<p>AWIPS Software Installation Note 79, Revision B supersedes previously released AWIPS Software Installation Note 79, Revision A.</p> <p>File this note in EHB-13, Section 3.1. Discard all previous software installation instructions prior to Build OB8.3 (AWIPS Software Installation Instruction Note 75) in Section 3.1.</p>
PROCEDURE:	<p>These instructions are written for both RFC and WFO systems. As a result, some instructions may only be applicable to RFC systems, WFO systems or individual sites. Each step or section is clearly marked. <b>All steps are required unless otherwise directed in the instructions.</b></p>
TECHNICAL ASSISTANCE:	<p>For questions or problems pertaining to this note, contact the Network Control Facility (NCF) at (301) 713-9344 and ask for OB9.1 installation support.</p>
REPORTING INSTRUCTIONS:	<p>Report the completed modification using the Engineering Management Reporting System (EMRS) according to the instructions in EHB-4, Maintenance Documentation, Part 4, and Appendix F. Include the following information on the EMRS report:</p> <p>Maintenance Description (block 5): <b>Install AWIPS Release OB9.1</b></p> <p>Equipment Code (block 7): <b>AWIPS</b></p> <p>Serial Number (block 8): <b>001</b></p> <p>Maintenance Comments (block 15): <b>Installed Release OB9 I.A.W. AWIPS Software Installation Note 79, Revision B.</b></p> <p>Mod No. (block 17a): <b>S79B</b></p> <p>A sample EMRS report is provided as attachment I.</p>

Dominic Bosco (Acting)  
Director, Operations Division

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## ATTACHMENT A - Pre-Installation Instructions

The identity of the system can be determined by checking the `$SITE_TYPE` variable. Each AWIPS also has a unique site name, determined by checking the `$SITE_IDENTIFIER` variable.

### A.1 General Information

The OB9.1 installation includes new software at all sites. Pre-installation activities include the following:

- **Rebooting the AWIPS Devices (Section A.2):** This should be done one or two weeks before the main installation.
- **Staging the AWIPS OB9.1 Software (Section A.2.3):** This should be done no more than one or two days before the main installation.
- **RFCs Stopping Decoders on the AX Server (Section A.2.4):** This should generally be run within 24 hours before the scheduled installation because the decoders remain stopped until after installation.
- **Backing Up System files (Section A.2.6):** The backup will create tar files for each box in the `/data/fixa/backup_root` directory and should be done within one to three days before the scheduled installation because changes made after the backup will not be preserved.

#### A.1.1 Prerequisites

AWIPS PX replacement (as per AWIPS System Modification Note 48) must be completed before proceeding with installation of OB9.1.

#### A.1.2 Installation Strategy

The installation strategy for the Operating System (OS) upgrade is to divide the Linux devices into two groups, even-numbered devices and odd-numbered devices with the AX. The OS upgrade is performed on the even-numbered devices first and the odd-numbered devices with AX second. This strategy allows for easier recovery if unexpected problems develop with devices during the upgrade.

Group 1 consists of all devices at the site with host names containing even numbers:

DX2, DX4, PX2, PX4, RP2, LX2, XT2, LX4, XT4...etc.

Group 2 consists of all devices at the site with host names containing odd numbers:

DX1, DX3, PX1, PX3, AX, RP1, LX1, XT1, LX3, AX, XT3 ...etc.

Typical WFO sites have four DX servers, five LX Linux workstations, five XT Linux text workstations, two PX servers, two CPSBN servers, and one AX. Typical RFC sites have four DX servers, nine LX Linux workstations, nine XT Linux workstations, two PX servers, two CPSBN servers, and two RP servers.

For sites with LDADs, LS2 will be done separately when Group 1 is installed, and LS3 will be done separately when Group 2 is installed.

### A.1.3 Backup Information

All AWIPS hard drives will be formatted as part of the RedHat5 (RH5) upgrade. It is important for sites to verify that all of their local data or software will be backed up as part of the baseline process, otherwise local files will need to be backed up manually. Data or software under the top level directory `/awips` will not be backed up. However, those under `/awips/fxa` will be saved. The `/usr/lib` is updated in OB9.1. Sites with non-baseline libraries should consider backing these files up.

All necessary AWIPS files will be backed up and restored. This includes crontabs and AWIPS specific configuration files.

**NOTE:** The list of files backed up on each machine is included in `/data/fxa/install_root/awipsConfig/machineSpecificFilesToArchive`.

Existing files on the Network Attached Storage (NAS; such as `/home`, `/data/local`, and `/data/fxa`) will not need to be backed up. Most local directories will be backed up, but may not catch site variations. Sites will need to manually back up these variations prior to installation and place those backups on the NAS where they will be safe during installations. Offices may especially need to be aware of where FXC was installed and/or secondary GFE installation supporting web page creation. Any non-AWIPS boxes will need to be backed up manually.

If files from LDAD are exported via NFS, keep in mind that the `/etc/exports` file is not backed up. For sites that use samba via the active directory, `/etc/krb5.conf` and `/etc/nsswitch.conf` are not backed up.

### A.1.4 Known Pre-Installation Issues

The following known issues may have to be dealt with after installation:

1. A new desktop image will be applied to all user accounts. This will allow AWIPS functionality to work in the RH5 environment. Any site or user customizations will have to be reapplied after installation. Keep in mind that changes are made after OB9.1 is installed to the way hydro applications are launched from the right-click AWIPS menu. For local changes, make sure to merge them with the existing configuration.
2. RedHat5 installs its own Java 1.4 executable in `/usr/bin`. It will no longer be a link to the AWIPS version in `/usr/local`. Any local applications that point to `/usr/bin/java`, may need to change to `/usr/local/java/bin/java` if users need to take advantage of Java 1.5 functionality.

The sites will also have to check other local applications to ensure they work after installation.

3. After installing RH5, check for local changes to `/awips/hydroapps/whfs/local/bin/whfs_editor`. The RH editor sites are using might not be there or may have moved. This will cause errors in Riverpro and Hydroview when attempting to view products in the editor. The default script uses `/usr/bin/kwrite`, which continues to work as is in RH5.
4. Heartbeat in RH5 requires that the package be brought up successfully, or it might not load at all, especially on the LSs, where the applications are loaded separately. If one of the

applications does not load successfully, fix it or remove it from the list, or none of the packages might load.

5. One of the major changes that will take place during installation of OB9.1 is the change made to the `/etc/fstab` file on the systems. The `/etc/fstab` that exists on systems with RedHat Enterprise 4 installed will be removed from the system(s) and not backed up during the RedHat5.2 upgrade. This is because a change will be implemented that addresses the NAS mount options that relate to performance issues with RH5/LAN switch interactions. Therefore, sites are instructed not to restore their old RedHat Enterprise 4 `/etc/fstab` file as they could encounter performance issues using the old NAS mounts. If sites do have additional entries in their RedHat Enterprise 4 `/etc/fstab` file, it will need to be backed up before the installation of OB9.1 begins. After the `/etc/fstab` file is backed up, the installer will need to have access to it for reference during the post-installation process.
6. Baseline crons (such as the `px1cron`) will be delivered during installation. The original crons will be backed up in `/data/fixa/backup_root`. After installation, sites will need to verify crons, such as `climate`, are set to the proper run time.
7. RFC Only: Certain profile settings are known to cause issues in shell environments in RH5.2. We have modified the baseline hydro profile settings in `/awips/hydroapps/lx/public/bin/awips.profile` to remove these erroneous settings: "set -o vi-esccomplete" and "set -o vi-tabcomplete". Some sites might have local profiles set up, or users might have their own profile settings. Look at these and make sure those two "set" commands are not used, or remove them. Otherwise, users may find that their shell environment is incorrect and certain hydro shortcuts may not be available.
8. The OB9.1 release turns off standard ftp functionality on the LDADs. Offices need to be aware that they need to convert legacy applications that utilize ftp to sftp (or scp).
9. For users of the Statistical Water Supply (SWS) program (CNRFC, CBRFC, NWRFC, MBRFC, ABRFC, and WGRFC): During the OB9.1 upgrade, the `/usr/lib` directory will be rebuilt and local libraries eliminated. Ensure to backup all local COTS programs.

## A.2 Pre-Installation Procedures

Complete Sections A.2.1 through A.2.6 prior to beginning the core installation in Attachment B. Some steps, such as rebooting, should be completed about one week in advance. The staging of DVD software can be done one to two days prior to the main installation.

### A.2.1 Coordinate Installation Date

Coordinate the installation with backup sites, uplink sites, hub site pairs, and Center Weather Service Units (CWSU), as applicable.

1. AWIPS will be unavailable for operational use during installation. Coordinate with backup sites to arrange for service backup, as applicable.
2. Weather Wire uplink sites must ensure that the backup Weather Wire site(s) are not upgrading to this release concurrently. Contact the AWIPS Regional Focal Point to request assistance with this coordination.
3. Wide area network (WAN) hub sites must ensure that the corresponding hub site pair is not concurrently performing similar upgrades. Hub site pairs are BOX/CTP, EAX/TSA, MPX/ILN,

FFC/LIX, STO/PQR and SLC/FWD. Contact the AWIPS Regional Focal Point to request assistance with this coordination.

4. Sites with connections to CWSUs must coordinate the installation of this release with those sites because there will be a disconnection during the release installation.

### A.2.2 Reboot Devices

In order to mitigate any potential issues with the OS installation, reboot all AWIPS Linux servers, devices, and workstations. The reboot reinitializes the memory and removes hung or persistent processes that may interfere with the OS upgrade. This will also avoid kernel or memory hang-ups on shutdown or startup.

Rebooting of the devices can take several hours to complete.

**NOTE:** If there are problems while performing the following reboots, please call the NCF at (301) 713-9344.

#### A.2.2.1 DX Servers

Reboot the DX servers.

1. On the **KVM** console, select button **#1** to connect to **DX1**, and log on as `root`.
2. At the prompt, type **reboot**. The `dx1apps` package will halt and restart on **DX2**. Continue after **DX1** finishes booting and the logon prompt is displayed.
3. Select button **#2** to connect to **DX2**, and log on as `root`.
4. At the prompt, type **reboot**. The `dx1apps` and `dx2apps` packages will halt and restart on **DX1**. Continue after **DX2** finishes booting and the logon prompt is displayed.
5. Log on to **DX2** as `root`.
6. At the prompt, type **ssh dx2 hb\_swap dx2apps** to move `dx2apps` from **DX1** to **DX2**.
7. Type the following:  

```
su - fxa
ssh dx1 stopORPGCommsMgr
startORPGCommsMgr
exit
```
8. Type **ssh dx2 hb\_stat** to monitor the package swapping progress and verify `dx1apps` is running on **DX1** and `dx2apps` is running on **DX2**.
9. Select button **#3** to connect to **DX3**, and log on as `root`.
10. At the prompt, type **reboot**. The `dx3apps` package will halt and restart on **DX4**. Continue after **DX3** finishes booting and the logon prompt displays.

**NOTE:** Before proceeding with reboot of DX4 in the next steps, coordinate with the operational staff to ensure that the time is acceptable, from a forecaster perspective, to perform this reboot.

11. Select button **#4** to connect to **DX4**, and log on as `root`.
12. At the prompt, type **reboot**. The `dx3apps` and `dx4apps` packages will halt and restart on **DX3**. Continue after **DX4** finishes booting and the logon prompt is displayed.
13. Log on to **DX4** as `root`.
14. At the prompt, type **ssh dx4 hb\_swap dx4apps** to move `dx4apps` from **DX3** to **DX4**.
15. Type **ssh dx4 hb\_stat** to monitor the package swapping progress and verify `dx3apps` is running on **DX3** and `dx4apps` is running on **DX4**.

#### A.2.2.2 RP Servers (RFC Systems Only)

Reboot the River Ensemble Processors at all applicable RFC sites.

1. On the **RP KVM** console, select button **#1** to connect to **RP1**, and log on as `root`.
2. At the prompt, type **reboot**. The `rp1apps` package will halt and restart on **RP2**. Continue after **RP1** finishes booting and the logon prompt is displayed.
3. Select button **#2** to connect to **RP2**, and log on as `root`.
4. At the prompt, type **reboot**. The `rp1apps` and `rp2apps` packages will halt and restart on **RP1**. Continue after **RP2** finishes booting and the logon prompt is displayed.
5. Log on to **RP2** as `root`.
6. At the prompt, type **ssh rp2 hb\_swap rp2apps** to move `rp2apps` from **RP1** to **RP2**.
7. Type **ssh rp2 hb\_stat** to monitor the package swapping progress and verify `rp1apps` is running on **RP1** and `rp2apps` is running on **RP2**.

#### A.2.2.3 PX1 and PX2 Servers

Reboot the PX servers. These steps can be run from the system console or from a workstation terminal window.

1. Log on to **PX1** as `root`.
2. At the prompt, type **reboot**. The `px1apps` package will halt and restart on **PX2**. Continue after **PX1** finishes booting.
3. Log on to **PX2** as `root`.
4. At the prompt, type **reboot**. The `px1apps` and `px2apps` packages will halt and restart on **PX1**. Continue after **PX2** finishes booting.
5. Log on to **PX2** as `root`.

6. At the prompt, type **hb\_swap px2apps** to move `px2apps` from **PX1** to **PX2**.
7. Type **hb\_stat** to monitor the package swapping progress and verify `px1apps` is running on **PX1** and `px2apps` is running on **PX2**.

#### A.2.2.4 PX3 and PX4 Servers (VRH and AFC Only)

Reboot the PX servers. These steps can be run from the system console or from a workstation terminal window.

1. Log on to **PX3** as `root`.
2. At the prompt, type **reboot**. The `px3apps` package will halt and restart on **PX4**. Continue after **PX3** finishes booting.
3. Log on to **PX4** as `root`.
4. At the prompt, type **reboot**. The `px3apps` and `px4apps` packages will halt and restart on **PX3**. Continue after **PX4** finishes booting.
5. Log on to **PX4** as `root`.
6. At the prompt, type **hb\_swap px4apps** to move `px4apps` from **PX3** to **PX4**.
7. Type **hb\_stat** to monitor the package swapping progress and verify `px3apps` is running on **PX3** and `px4apps` is running on **PX4**.

#### A.2.2.5 WFO Archive Server (WFO Systems Only)

Reboot the WFO Archive Server. Perform these steps from the system console or from a workstation terminal window.

1. Log on to the **AX** as `root`.
2. At the prompt, type **reboot**. Continue after the **AX** has finished booting.

#### A.2.2.6 RFC Archive Server (RFC Systems Only)

Reboot the RFC Archive Server. Perform these steps from the system console or from a workstation terminal window.

1. Log on to the **AX** as `root`.
2. Stop the decoders. Verify the decoders have stopped before proceeding. As user `root` from **AX**, type the following commands:

```
su - oper
```

```
/rfc_arc/scripts/decoders/stop_raw_decoder
```

```
/rfc_arc/scripts/decoders/stop_processed_decoder
```

Wait approximately 5 minutes and use the following command to check the status:

```
/rfc_arc/scripts/decoders/status_decoders
```

Repeat the command in 5-minute intervals if the decoders have not stopped. Verify the decoders have stopped before proceeding.

3. Type the following commands to stop postgres and reboot the server:

```
/etc/init.d/postgresql stop  
reboot
```

4. After the server reboots, verify postgres and the decoders have started, and type:

```
ps -wef |grep postgres      (to verify postgres is running)  
ps -wef |grep shef          (to verify shef_decode_raw and shef_decode_pro are  
                             running)
```

#### A.2.2.7 LDAD Servers

Reboot the LDAD servers. Perform the following steps from the system console or from a workstation terminal window.

1. Log on to **LS2** as `root`.
2. At the prompt, type **reboot**. The LDAD processes will start on **LS3**. If the reboot fails, try **shutdown -r now**. Continue after **LS2** finishes booting.
3. Log on to **LS3** as `root` and type:  

```
hb_stat      (to verify the packages are running on LS3 and LS2 is rebooting)  
hb_stat      (do this periodically until LS2 is shown as owning the apps again)
```
4. At the prompt, type **reboot**. The LDAD processes will start on **LS2**. Continue after **LS3** finishes booting.
5. Type **hb\_stat** to verify the packages are running on **LS2**.

#### A.2.2.8 CPSBN Servers

When rebooting the CPs, file system checks are often run automatically, causing the server to appear to hang. If this occurs, connect a monitor and keyboard to the device to see the boot messages. If the CPSBN have not been rebooted in a long time, it could take 15 minutes per CP.

1. Log on to **CPSBN1** as `root`.
2. Using the output from the following command, take note of each of the channels that show **ON** in the **rd\_enable** column for both CPSBN1 and CPSBN2. Typically, the NMC and NMC2 channels are set to **ON** for CPSBN1 and the GOES and NOAAOPT\_OPT channels are set to **ON** for CPSBN2, but there are variations. Type the following command:

```
config_dvb -ha
```

3. Move CPSBN1 DVB channels to CPSBN2. CHANNEL in the command is the name of each of the channels set to **ON** for CPSBN1. Also, there is no space between the c and CHANNEL. An example is `config_dvb -s -cNMC -cNMC2`. Type the following:

```
ssh cpsbn2
config_dvb -s -cCHANNEL -cCHANNEL
exit (returns to CPSBN1)
reboot
```

4. After the CPSBN1 reboots, log back on to CPSBN1 as `root`.
5. Move CPSBN1 and CPSBN2 DVB channels to CPSBN1. CHANNEL in the command is the name of each of the channels set to **ON** for CPSBN1 and CPSBN2. Also, there is no space between the c and CHANNEL. An example is `config_dvb -s -cNMC -cNMC2 -cGOES -cNOAAPORT_OPT`. Type the following:

```
config_dvb -s -cCHANNEL -cCHANNEL -cCHANNEL -cCHANNEL
ssh cpsbn2
reboot
```

6. After the CPSBN2 reboots, log back on to CPSBN2 as `root`.
7. Move CPSBN2 DVB channels to CPSBN2. CHANNEL in the command is the name of each of the channels set to **ON** for CPSBN2. Also, there is no space between the c and CHANNEL. An example is `config_dvb -s -cGOES -cNOAAPORT_OPT`. Type the following:

```
config_dvb -s -cCHANNEL -cCHANNEL
exit (returns to CPSBN1)
config_dvb -ha
```

Verify that the channels are set as they were in Step 2.

#### A.2.2.9 LX and XT Workstations

As operations permit, reboot each LX and XT workstation either by typing **reboot** in a terminal or by restarting from the logon screen.

<p><b>NOTE:</b> Staging the AWIPS OB9.1 software (Section A.2.3) should be done no more than one or two days before the main installation.</p>
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#### A.2.3 Download Software from Installation DVDs

Download the software from the DVDs. If any errors are encountered mounting the DVDs or reading files using the commands, contact the NCF at (301) 713-9344 and request OB9.1 installation support.

1. Insert AWIPS OB9.1 Software DVD **#1** into the DX1 DVD-ROM drive.

2. As user `root` from **DX1**, type the following commands to mount the DVD and extract the data. This will take approximately five minutes.

```
mount /media/cdrecorder
cd /data/fxa
tar zxPf /media/cdrecorder/rhel5u2install.tar.gz
```

3. Once the procedure has successfully completed, eject the DVD. As user `root` from **DX1**, type the following commands:

```
cd /
eject /media/cdrecorder
```

4. Insert AWIPS OB9.1 Software DVD #2 into the DX1 DVD-ROM drive.

5. As user `root` from **DX1**, type the following commands to mount the DVD and extract the data. This will take approximately 15 minutes.

```
mount /media/cdrecorder
cd /data/fxa/install_root/scripts
source env.sh
./installFromDvd.pl
```

Ignore error messages when this script tries to mount the DVD drive again. This script will create and populate several additional directories under `/data/fxa/install_root`.

Directory `redhatFiles` contains a RHEL5.2 iso file, and iso Linux files are in a separate sub directory. Directory `ob9freeware` has the COTS.

<p><b>NOTE:</b> If the terminal is lost, or other commands need to be run in a separate window, always rerun the <code>source env.sh</code> command.</p>
--

6. RHEL5u2 install scripts create log files in the `/data/fxa/install_root/logs` directory. These files can be used to track progress of the installation. The main install log is `dx1-xxx_install.log`, where `xxx` is the local `$SITE_IDENTIFIER`. From a separate terminal window, log on as `root` to tail the log files:

```
tail -f /data/fxa/install_root/logs/dx1-xxx_install.log
```

7. Once the procedure has successfully completed, eject the DVD. As user `root` from **DX1**, type the following commands:

```
cd /
eject /media/cdrecorder
```

- Mount `/data/fxa` to all machines and create the install directory. As user `root` from **DX1**, type the following commands:

```
cd /data/fxa/install_root/scripts
```

```
./mntdatafxa.pl          (mounts /data/fxa to all machines)
```

**NOTE:** Remove any non-baseline workstations from the `$LX_WORKSTATIONS` variable. This is necessary since any non-baseline workstations (e.g., `na`, `nasr`, etc.) in the `$LX_WORKSTATIONS` variable prevent the following `makeInstance.pl` script from working properly, which prevents backups from running on some devices.

```
./makeInstance.pl      (creates a directory under /data/fxa/install_root)
```

**NOTE:** Section A.2.4 for RFC systems should generally be run within 24 hours before the scheduled installation as the decoders will be stopped until after installation.

#### A.2.4 Stop Decoders on AX Server (RFC Systems Only)

- Log on to the **AX** as `root`.
- Stop decoders and verify the decoders have stopped before proceeding. As user `root` from **AX**, type the following commands:

```
su - oper
```

```
/rfc_arc/scripts/decoders/stop_raw_decoder
```

```
/rfc_arc/scripts/decoders/stop_processed_decoder
```

Wait about 5 minutes and use the next command to check the status.

```
/rfc_arc/scripts/decoders/status_decoders
```

Repeat the command in 5-minute intervals if the decoders have not stopped. Verify the decoders have stopped before proceeding. Next, stop `postgresql`. Type the following:

```
exit
```

```
service postgresql stop
```

#### A.2.5 Modify the `named.conf` File

Edit the `named.conf` file on **DX1** and **DX2**. Use the editor of choice on **DX1**, then **DX2**, as `root` to edit `/var/named/chroot/etc/named.conf` and remove the following section:

```
zone "localhost" in {
    type master;
    file "db.localhost";
}
```

If this is not done, the `named` service will not start after RH5.2 installation.

**NOTE:** Section A.2.6 should be done within one to three days before the scheduled installation as changes made after the system backup will not be preserved.

### A.2.6 Backup AWIPS System

This section provides instructions for backing up system files. See prior NOTE before proceeding. The backup creates tar files for each box in the `/data/fxa/backup_root` directory. These scripts can be run multiple times, as needed.

Unmount non-baseline NFS mounts prior to running the backup, as it may lead to the backup of a large amount of unneeded data. Also, the site may want to delete data within directory `/data/ldad/Processed` to speed up LDAD backup up.

If not previously done, read Section A.1.3 before continuing.

1. As user `root` from **DX1**, type the following commands:

```
cd /data/fxa/install_root/scripts
```

```
./backUpSystems.pl (backs up all systems but LS2 and LS3 and will  
take approximately 15 minutes to run)
```

2. LDAD sites: As user `root` from **DX1**, type the following commands:

```
cd /data/fxa/install_root/scripts
```

```
./backUpFilesLS.pl ls2-xxx (xxx is site ID, will take 30 minutes or a couple  
of hours depending on the amount of data)
```

```
./backUpFilesLS.pl ls3-xxx (xxx is site ID, will take 30 minutes or a couple  
of hours depending on the amount of data)
```

In order to watch the script as it runs, type the following:

```
watch "ps -ef | grep -i backupfiles | grep -v grep"
```

Notice that `backUpFilesLS.pl` will run on `ls2-xxx` or `ls3-xxx` as the case may be.

The `watch` command will continue checking for `backUpFilesLS.pl` every two seconds by default. Once `backUpFilesLS.pl` finishes running, the `watch` command window will show no output.

Check `/data/fxa/install_root/logs/dx1-SITE_install.log` for a message similar to the following (*SITE* is the site ID):

```
Normal exit for script process nnn started with ./backUpFiles.pl ls2-  
xxx (or ls3-xxx where nnn is a PID# and xxx is the site ID)
```

### A.2.6.1 Verify Writing of Backup files

The `chbk.sh` command checks for successful completion of the backup processes. The `bkpstat.pl` command checks successful backup of all required files. As user `root` from **DX1**, type the following commands:

```
./ckbk.sh lx2 xt2 px2 ls2 dx2 dx4 cpsbn2
```

(Ensure to include the list of all even-numbered AWIPS boxes that have been backed up.)

```
./ckbk.sh lx1 xt1 px1 ls3 dx1 dx3 cpsbn1 ax
```

(Ensure to include the list of all odd-numbered AWIPS boxes and the AX that have been backed up.)

```
./bkpstat.pl
```

Ignore messages about no archive file listed for `dhcpd.conf` and `/opt/freeway` on **DX3** and **DX4**, and also warnings from `hylafax rpm` installs.

Ignore messages about no archive file listed for `/etc/logrotate.d/st5320` on **DX3** and **DX4**.

Ensure there are no backup failures. Contact the NCF if errors are observed.

### A.2.6.2 (LDAD Sites) Verify Writing of LDAD Backup Files

1. Log on to box **LS2** or **LS3** (as the case may be) and look for tar process still running by issuing the following command:

```
ps -ef | grep -i tar
```

Ignore `ldad` process `DServer` in the output.

If no tar process is there, backups on **LS2** or **LS3** (as the case may be) have been completed.

2. Run the following check script to see if all necessary files for LSx have been backed up. On any **DX** box as `root`, type:

```
cd /data/fxa/install_root/scripts
```

```
./chkLSbkups.sh ls2
```

(Substitute `ls2` with `ls3` as the case may be. It is also possible to use both `ls2` and `ls3` to check backed-up files for both boxes.)

3. Check `/data/fxa/install_root/logs/dx1-SITE_install.log` for errors from backups for **LS2** or **LS3** (as the case may be). `SITE` is the site ID.

If no errors, backups for **LS2 / LS3** (as the case may be) have been successful.

Contact the NCF if there are any problems.

This completes the pre-installation steps. On the scheduled installation day, proceed to Attachment B for main installation instructions.

## ATTACHMENT B - Main Installation Instructions

### B.1 Preparation Instructions for the OB9.1 Operating System Upgrade

#### B.1.1 Time to Complete Installation

The OB9.1 main installation will take approximately 5½ hours to complete.

#### B.1.2 Notify the NCF

Before starting installation, open a trouble ticket with the NCF by calling (301) 713-9344. If problems are encountered during the install, contact the NCF and ask for OB9.1 installation support.

#### B.1.3 Remove Test Software

As a general rule, sites testing software via ATAN should remove that software before continuing the installation.

#### B.1.4 Prepare AWIPS for Software Upgrade

1. Initiate service backup as needed.
2. Terminate all D2D sessions and log off of the **LX** workstations.
3. Log off of all text workstations, and terminate any open local and AWIPS applications.
4. Log on to any workstation as `root`, open a terminal window, and log on to **DX1** (as `root`).

### B.2 Installation Procedures

This section first upgrades the even-numbered workstations, followed by the odd-numbered workstations.

#### B.2.1 Installation on Even-Numbered Boxes

1. (**LDAD Sites Only**) Complete the steps in Attachment C to upgrade the **LS2** server.

**NOTE:** For the following steps, include all applicable even-numbered boxes in the following list: DX2, DX4, PX2, PX4, RP2, CPSBN2, LX2, XT2, LX4, XT4, LX6, XT6, LX8, XT8, LXa, XTa.

Do not include CPSBN2 if the CP is located in a remote location as is the case at some OCONUS sites. Separate instructions are included in Attachment E.

2. Initiate the installation on the even-numbered boxes (review note above before proceeding). These commands will be run from the KVM monitor or an odd-numbered LX workstation. Verify all applicable even-numbered boxes are listed as arguments in the kickMany script.

As user `root` on **DX1**, type:

```
cd /data/fxa/install_root/scripts
```

```
source env.sh
```

```
./kickMany.pl dx2 dx4 px2 cpsbn2 lx2 xt2 lx4 xt4
```

 (Enter additional boxes, except the AX, as applicable. This will take approximately 30 minutes.)

Connect an external monitor to each server device and verify the installation is proceeding. If a message indicates the system cannot find the kickstart file, tab over to **ok** and select **Enter**.

3. RHEL5u2 install scripts create log files in the `/data/fxa/install_root/logs` directory. These files can be used to track the progress of the installation. The main install log is `dx1-xxx_install.log`, where `xxx` is the local `$SITE_IDENTIFIER`.

From a separate terminal window, log on as `root` to tail the log files:

```
tail -f /data/fxa/install_root/logs/dx1-xxx_install.log
```

Also, tail the log files for individual boxes, such as **LX1**, to see messages appearing as shown following.

```
tail -f /data/fxa/install_root/logs/lx1-xxx_install.log
```

Ignore `chown ldm:ldm invalid user` errors. Sites with LDAD servers may proceed to the next step as the installation progresses.

4. (**LDAD Sites Only**) If not already done, ensure that the `restoreMyselfLS` script completed without problems. It is acceptable to ignore errors from the `hylafax rpm` installation and any `cd/var/lib/heartbeat` messages.

Ensure **LS2** is functioning normally before proceeding to the next step. If there are problems, call the NCF for installation support.

### B.2.2 Verify Installation Has Completed on Even-Numbered Boxes

1. For LX and XT boxes, verify the logon screen has a blue background and security banner. The NWS banner will not display in RedHat5.2.
2. For the other boxes, review the master log `dx1-xxx` in the `/data/fxa/install_root/logs` directory. Look for a message indicating the machine has rebooted after restoration of application data.

As user `root` on **DX1**, type:

```
cd /data/fxa/install_root/logs
```

```
grep -i "normal exit" *.log |grep -i restoremyself
```

Check `Normal exit` message for `restoreMyself.pl` for all even-numbered boxes.

**NOTE:** If the restore process fails to run on any box, it has to be run manually. To do this, see Attachment F for instructions.

3. Once all even boxes are complete, run the check script.

As user `root` on **DX1**, type:

```
cd /data/fxa/install_root/scripts
./mntdatafxa.pl
./checkMany.sh dx2 dx4 px2 cpsbn2 lx2 xt2 lx4 xt4
(Enter additional boxes as applicable.)
```

If issues are encountered, contact the NCF for support.

### B.2.3 Installation on Odd-Numbered Boxes and AX

**NOTE:** For the following step, include all applicable odd-numbered boxes and the AX in the following list: DX1, DX3, PX1, PX3, RP1, CPSBN1, LX1, XT1, LX3, XT3, LX5, XT5, LX7, XT7, LX9, XT9, AX.

Do not include CPSBN1 if the CP is located in a remote location as is the case at some OCONUS sites. Separate instructions are included in Attachment F.

1. Prepare for the installation of the odd-numbered boxes and AX (see list in the note above).

As user `root` on **DX2**, type:

```
ssh dx1 "service heartbeat stop"
hb_stat (Run this command multiple times, if necessary, until the output shows
dx1apps down or running on dx2.)
```

**DX2** may reboot at this point. Wait for it to come back up before proceeding to the next step.

2. (**LDAD Sites Only**) Complete the steps in Attachment D to upgrade the **LS3** server. When done, go to the next step.
3. Initiate the installation on the odd-numbered boxes. These commands should be run from the KVM monitor or an even-numbered LX workstation. Verify all applicable odd-numbered boxes are listed as arguments in the `kickMany` script.

As user `root` on **DX2**, type:

```
cd /data/fxa/install_root/scripts
source env.sh
./mntdatafxa.pl
./kickMany.pl dx1 dx3 px1 cpsbn1 lx1 xt1 lx3 xt3 ax
(Enter additional boxes as applicable.)
```

Connect an external monitor to each server device and verify the installation is proceeding. If a message indicates the system cannot find the kickstart file, tab over to **ok** and select **Enter**.

4. RHEL5u2 install scripts create log files in the `/data/fxa/install_root/logs` directory. These files can be used to track the progress of the installation. The main install log is `dx1-xxx_install.log`, where `xxx` is the local `$SITE_IDENTIFIER`.

From a separate terminal window, log on as `root` to tail the log files:

```
tail -f /data/fxa/install_root/logs/dx2-xxx_install.log
```

Ignore any `chown ldm:ldm invalid user` errors. Sites with LDAD servers may proceed to the next step as the installation progresses.

5. (**LDAD Sites Only**) If not already done, ensure that the `restoreMyselfLS` script completed without problems. Remember that it is acceptable to ignore errors from the `hylafax rpm` installation and to ignore the `cd /var/lib/heartbeat` message.

Ensure **LS3** is functioning normally before proceeding to the next step. If there are any problems, call the NCF for installation support.

#### B.2.4 Verify Installation Has Completed on Odd-Numbered Boxes and the AX

1. For LX and XT boxes, verify the logon screen has a blue background and NWS banner.
2. For the other boxes, review the master log `dx2-xxx` in the `/data/fxa/install_root/logs` directory. Look for a message indicating the machine has rebooted after restoration of application data.

As user `root` on **DX2**, type:

```
cd /data/fxa/install_root/logs  
grep -i "normal exit" *.log |grep -i restoremyself
```

Check `Normal exit` message for `restoreMyself.pl` for all odd-numbered boxes.

**NOTE:** If the restore process fails to run on any box, it has to be run manually. To do this, see Attachment F for instructions.

**RFC systems:** RFC Archive Server (AX) will take several hours to restore. Once the odd-numbered devices have finished restoring, proceed to Step 4.

3. At **WFO** sites only, once all odd boxes are complete, run the check script.

As user `root` on **DX2**, type:

```
cd /data/fxa/install_root/scripts  
source env.sh  
./mntdatafxa.pl  
./checkMany.sh dx1 dx3 px1 cpsbn1 lx1 xt1 lx3 xt3 ax  
(Enter additional boxes as applicable.)
```

- At **RFC** sites only, once all odd boxes are complete, run the check script.

As user `root` on **DX2**, type:

```
cd /data/fxa/install_root/scripts
source env.sh
./mmtdatafxa.pl
./checkMany.sh dx1 dx3 px1 cpsbn1 lx1 xt1 lx3 xt3
(Enter additional boxes, except AX, as applicable.)
```

The RFC AX restore will take several hours to complete. Proceed with the remainder of the modification note while periodically checking the progress of the restore as follows:

```
grep -i "normal exit" *.log | grep -i restoremyself | grep ax
```

When the normal exit message for the AX appears, run the check script from **DX2** as `root`:

```
cd /data/fxa/install_root/scripts
source env.sh
./checkMany.sh ax
```

If issues are encountered, contact the NCF for support.

### B.2.5 Return Software Packages to Appropriate Servers

In this section, the software packages need to be set back to normal.

- Log on to **DX1** as `root` and issue the following:

```
hb_stat Both packages should be running on DX2, as in the following example:
```

```
Heartbeat Status Monitor Jul 23 17:44:51
```

```
===== Member Status =====
```

Member	Status	IP address
dx1-wncf	Up	165.92.25.1
dx2-wncf	Up	165.92.25.2

-----

```
===== Service Status =====
```

Service	IPaddr	Cronfile	Owner	Start Time
dx1apps	165.92.25.65	dx1cron,SITEdx1	dx2-wncf	2009-07-23 17:44:53
dx2apps	165.92.25.66	dx2cron,SITEdx2	dx2-wncf	2009-07-05 17:20:14

-----

- If the dx2apps package Start Time, above, shows starting, use the following workaround, otherwise go to Step 3:

On **DX1**, as root type:

**hb\_swap dx2apps** (The dx2apps package will halt and restart on **DX1**.)

Then, on **DX2**, as root type:

**hb\_swap dx2apps** (The dx2apps package will halt and restart on **DX2**.)

- Swap dx1apps to **DX1** by issuing the following on **DX1** as user root:

**hb\_swap dx1apps** (The dx1apps package will stop on **DX2** and restart on **DX1**.)

- Issue hb\_stat again and verify that dx1apps is running on **DX1** and that dx2apps is running on **DX2**. To do this type:

**hb\_stat** Sees results in the following example:

Heartbeat Status Monitor Jul 23 17:51:07

===== Member Status =====

Member	Status	IP address
dx1-wncf	Up	165.92.25.1
dx2-wncf	Up	165.92.25.2

-----

===== Service Status =====

Service	IPaddr	Cronfile	Owner	Start Time
dx1apps	165.92.25.65	dx1cron,SITEdx1	dx1-wncf	2009-07-21 23:15:13
dx2apps	165.92.25.66	dx2cron,SITEdx2	dx2-wncf	2009-07-23 12:15:56

-----

- Repeat Steps 1 through 4 again, but on **DX3**, **PX1**, **PX3** and **RP1**, where applicable.

### B.3 Post-Installation Activities

The following are some post-installation steps that need to be done.

- Permit users to log on to AWIPS.
- Contact the NCF and close the trouble ticket that was opened for the installation.
- Appropriate sites need to reinstall ATAN 974 (New Hurricane Local Statement). Now that the OB9.1 installation is complete, the ATAN must be reinstalled, at the designated sites, to get the GFE version back to what is needed for the tropical season. The ATAN can be accessed at [https://sec.noaa3a.awips.noaa.gov/ATAN/ATAN\\_Files/PDF/ATAN\\_974.pdf](https://sec.noaa3a.awips.noaa.gov/ATAN/ATAN_Files/PDF/ATAN_974.pdf). Follow the instructions for loading the GFE build.

After the ATAN is reinstalled, install the updated version of the formatter. This can be accessed on NOAA1 in the pub directory via the `974Update.tgz` file which should be downloaded and installed. This is important as several fixes have been implemented to the original ATAN version of the formatter.

4. A new desktop image was applied to all user accounts. This will allow AWIPS functionality to work in the RH5.2 environment. Any site or user customizations will have to be reapplied after the installation. Keep in mind, changes were made to the way hydro applications are launched from the right-click AWIPS menu. If there are changes, make sure to merge them with the existing configuration.
5. RedHat5.2 installs its own Java 1.4 executable in `/usr/bin`. It will no longer be a link to the AWIPS version in `/usr/local`. Any local applications that point to `/usr/bin/java`, may need to change to `/usr/local/java/bin/java`, if users need to take advantage of Java1.5 functionality.

The sites will also have to check other local applications to ensure they work after installation.

6. After installing RH5.2, check for local changes to `/awips/hydroapps/whfs/local/bin/whfs_editor`. The RH editor being used might not be there or might have moved, and this would cause errors in Riverpro and Hyrdoview when attempting to view products in the editor. The default script uses `/usr/bin/kwrite`, which continues to work as is in RH5.2.
7. Heartbeat in RH5.2 requires the package be brought up successfully. Otherwise, it might not load at all, especially on the LSs, where the applications are loaded separately. If even one of the applications does not load successfully, fix it or remove it from the list, otherwise none of the packages might load.
8. One of the major changes that takes place during the installation of OB9.1 is the change made to the `/etc/fstab` file on the systems. The `/etc/fstab` that exists on systems that have RedHat Enterprise 4 installed is removed from the system(s) and not backed up during the RedHat5.2 upgrade. This is because a change has been implemented that addresses the NAS mount options that relate to performance issues with RH5/LAN switch interactions. Therefore, sites are instructed to not restore their old RedHat Enterprise 4 `/etc/fstab` file as they could encounter performance issues using the old NAS mounts. If sites have additional entries in their RedHat Enterprise 4 `/etc/fstab` file, the file should be reviewed for additions. If additions are noted, the installer should then, at this point, make additional entries to the `/etc/fstab`.
9. Baseline crons (such as the `px1cron`) are delivered during the installation. The sites original crons are backed up in `/data/fixa/backup_root`. After the installation, the site must verify crons such as `climate` are set to the proper run time.
10. RFC Only: Certain profile settings are known to cause issues in shell environments in RH5.2. We have modified the baseline hydro profile settings in `/awips/hydroapps/lx/public/bin/awips.profile` to remove the erroneous settings: "set -o vi-esccomplete" and "set -o vi-tabcomplete". Some sites might have local profiles set up, or users might have their own profile settings. Look at these to ensure those two "set" commands are not used, or remove them. Otherwise, users may find their shell environment is incorrect and certain hydrology shortcuts may not be available.

11. Verify that Samba runs properly if used at the site.
12. As needed, convert remaining legacy applications that utilize ftp to sftp (or scp).
13. Some NFS mount points may need to be configured. Examples are to re-edit `/etc/exports` and turn on services.
14. For users of the Statistical Water Supply (SWS) program (CNRFC, CBRFC, NWRFC, MBRFC, ABRFC, and WGRFC): During the OB9.1 upgrade, the `/usr/lib` directory will be rebuilt and local libraries eliminated. Check the SWS program.

## ATTACHMENT C - RHEL5.2 Procedures for LS2

This attachment provides instructions for formatting the USB flash drive, copying the files to the drive and upgrading the **LS2** server.

### C.1 Format USB Flash Drive

Formatting of the flash drive will erase all existing data on the drive.

1. Insert the USB flash drive in the USB port on **LS2**.
2. From **LS2** as `root`, type **tail /var/log/messages**. Look in the messages for the device name of the flash drive. The device name is used for the remaining commands. Example: added mount point `/media/usbdisk` for `/dev/sdb1`. In this case, the device name is `/dev/sdb1`.
3. Type **fdisk /dev/sdb** and select **p** to print the partition table.
4. Type **m** to go back to the menu and then select **d** to delete a partition. Repeat for remaining partitions.
5. Enter **n** to add a new partition table.
6. Select **P** for primary partition then type **1** for first partition.
7. Press **Enter** when prompted for first cylinder.
8. Press **Enter** when prompted for last cylinder.
9. Select **w** to write the changes.
10. At the shell prompt, type:  
**mkfs -t vfat /dev/sdb1**
11. Remove the flash drive from the USB port. It will be used in Section C.2.

### C.2 Copy Files to USB Drive

Load and copy files from **DX1** or **DX2** to the flash drive by performing the following:

1. From the KVM console, log on to **DX1** or **DX2** as `root`.
2. Connect the USB flash drive to one of the USB ports at the top left front panel of the **DX1** or **DX2** server.  
Wait a few seconds. The server will detect the USB flash drive and messages will appear on the screen.
3. Press the **Enter** key. One of the lines at the bottom will display something similar to:  
`Attached scsi removable disk sdc at .....`  
This signifies the flash drive has been detected as `/dev/sdc1`.

4. Once the drive has been detected, mount and copy the files:

```
mount /dev/sdc1 /mnt
cd /mnt
rm -rf * .ssh
sh /data/fxa/install_root/scripts/preRestoreLS.sh ls2-xxx
(xxx is the site ID)
ls -al
```

Verify the content is as follows:

```
.ssh (directory)
ifcfg-eth0-1.tgz
ifcfg-eth0.tgz
ifcfg-eth1.tgz
ks.ls2-xxx.cfg      (where xxx is $SITE_IDENTIFIER)
preRestore2-LS.sh
ssh (directory)
```

5. Unmount and remove the flash drive:

```
cd /
umount /mnt
```

Remove the flash drive from the USB port on the front panel of **DX1**.

### C.3 Install the Operating System

1. Attach a terminal to the back of **LS2**.
2. Insert the USB flash drive into **LS2**.
3. Insert the RHEL5.2 CD #1 in the CDROM drive into **LS2**.
4. From the terminal, log on as `root` and reboot the server by typing **shutdown -r now**.  
It may take some time to reboot.
5. During the boot-up, interrupt the **HP Embedded SATA Setup** RAID utility by pressing the **F8** key when prompted. If F8 is selected too early, it will enter the Integrated Lights-Out (ILO) section. Exit from this and resume the boot. The RAID utility will be immediately after the ILO section of the boot.
6. Select **Array Configuration Utility**.
7. Select **Manage Arrays**.
8. Delete the array by pressing the **Delete** key, select **Delete**, type **Y**, and select **Both** members.
9. Press **ESC** until prompted to exit the RAID utility. Choose **YES**.

**LS2** will continue to boot from the CD and will come to the installation screen as shown in Figure C-1.

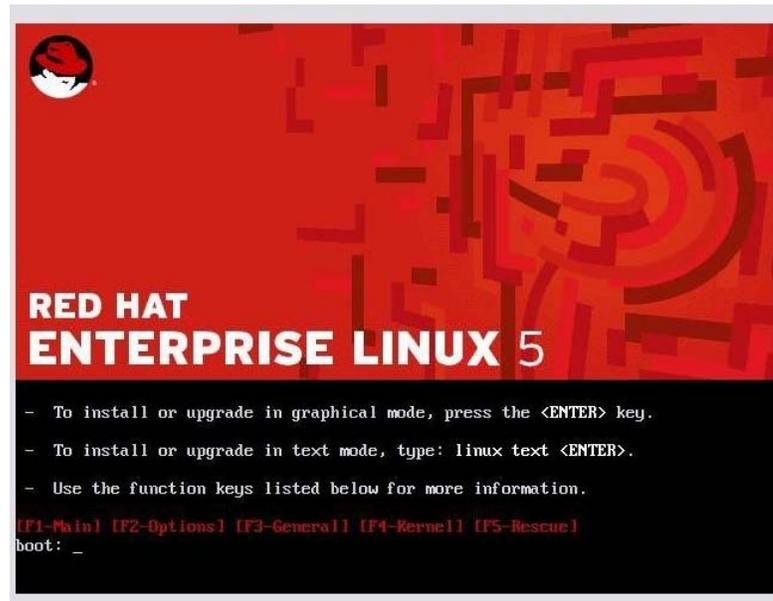


Figure C-1

10. At the boot prompt, type `linux ks=hd:sdcl/ks.ls2-xxx.cfg` (xxx is the site ID).

If a message indicates that the system cannot find the kickstart file, tab over to **ok** and select **Enter**.

Installation will proceed using the kickstart file on the USB flash drive. Step 10 will take 70 minutes to run.

11. When the installation has run 5 to 10 minutes or so, remove the USB flash drive.
12. The system will reboot after the RHEL5.2 installation completes. Remove the RHEL5.2 CD #6 from the drive before the reboot completes.
13. Once **LS2** is up, log on as `root`.
14. Insert the flash drive in to one of the USB ports on the front panel of **LS2**.
15. Type in the following commands:  

```
mount /dev/sdcl /mnt
cd /mnt
sh preRestore2-LS.sh
```

16. Once the system prompt returns, unmount the USB flash drive:

```
cd ..
```

```
umount /mnt
```

Remove the flash drive from the USB port on the front panel of **LS2**.

17. From **DX1**, as user `root`, type the following commands:

```
ssh ls2      (should be accessible without a password)
```

```
exit
```

```
cd /data/fxa/install_root/scripts
```

```
source env.sh
```

```
./restoreMyselfLS.pl ls2-xxx $INSTALL_ROOT $BACKUP_ROOT
```

Ignore errors from hylafax rpm installation. Also ignore `cd /var/lib/heartbeat` messages. This command will take 20 to 40 minutes.

18. To save time, while the `restoreMyselfLS` script runs, return to Section B.2.1 and continue with Step 2.

## ATTACHMENT D - RHEL5.2 Procedures for LS3

This attachment provides instructions for copying the files to the drive and upgrading the **LS3** server.

### D.1 Copy Files to USB Drive

Load and copy files from **DX1** or **DX2** to the flash drive.

1. From the KVM console, log on to **DX1** or **DX2** as `root`.
2. Connect the USB flash drive to one of the USB ports at the top left front panel of the **DX1** server.

Wait a few seconds. The server will detect the USB flash drive and messages will appear on the screen.

3. Press the **Enter** key. One of the lines at the bottom will display something similar to:

```
Attached scsi removable disk sdc at .....
```

This signifies the flash drive has been detected as `/dev/sdc1`.

4. Once the drive has been detected, mount and copy the files:

```
mount /dev/sdc1 /mnt
```

```
cd /mnt
```

```
rm -rf * .ssh
```

```
sh /data/fxa/install_root/scripts/preRestoreLS.sh ls3-xxx
```

(xxx is the site ID)

```
ls -al
```

Verify the content is as follows:

```
.ssh (directory)
```

```
ifcfg-eth0-1.tgz
```

```
ifcfg-eth0.tgz
```

```
ifcfg-eth1.tgz
```

```
ks.ls3-XXX.cfg (xxx is $SITE_IDENTIFIER)
```

```
preRestore2-LS.sh
```

```
ssh (directory)
```

5. Unmount and remove the flash drive:

```
cd /
```

```
umount /mnt
```

Remove the flash drive from the USB port on the front panel of **DX1**.

## D.2 Install the Operating System

1. Attach a terminal to the back of **LS3**.
2. Insert the USB flash drive into **LS3**.
3. Insert the RHEL5.2 CD #1 in the CDROM drive into **LS3**.
4. From the terminal, log on as `root` and reboot the server by typing `shutdown -r now`.
5. During the boot-up, interrupt the **HP Embedded SATA Setup** RAID utility by pressing the **F8** key when prompted. If F8 is selected too early, it will enter the Integrated Lights-Out (ILO) section. Exit from this and resume the boot. The RAID utility will be immediately after the ILO section of the boot.
6. Select **Array Configuration Utility**.
7. Select **Manage Arrays**.
8. Delete the array by pressing the **Delete** key, select **Delete**, type **Y**, and select **Both** members.
9. Press **ESC** until prompted to exit the RAID utility. Choose **YES**.

**LS3** will continue to boot from the CD and will come to the installation screen as shown in Figure D-1.



Figure D-1

10. At the boot prompt, type **linux ks=hd:sdcl/ks.ls3-xxx.cfg** (xxx is the site ID).

If a message indicates that the system cannot find the kickstart file, tab over to **ok** and select **Enter**.

Installation will proceed using the kickstart file on the USB flash drive. (The installation in Step 10 will take approximately 70 minutes to complete.)

11. When the installation has run for 5 to 10 minutes or so, remove the USB flash drive.
12. The system will reboot after the RHEL5.2 installation completes. Remove the RHEL5.2 CD #6 from the drive before the reboot completes.
13. Once **LS3** is up, log on as `root`.
14. Insert the flash drive into one of the USB ports on the front panel of **LS3**.
15. Type in the following commands:

```
mount /dev/sdcl /mnt
cd /mnt
sh preRestore2-LS.sh
```

16. Once the system prompt returns, unmount and remove the USB flash drive:

```
cd ..
umount /mnt
```

Remove the flash drive from the USB port on the front panel of **LS3**.

17. From **DX2**, as user `root`, type the following commands:

```
ssh ls3 (should be accessible without a password)
exit
cd /data/fxa/install_root/scripts
source env.sh
./restoreMyselfLS.pl ls3-xxx $INSTALL_ROOT $BACKUP_ROOT
```

Ignore errors from hylafax rpm installation. Also ignore `cd /var/lib/heartbeat` messages. This command will take approximately 40 minutes.

18. To save time, while the `restoreMyselfLS.pl` script runs, go back to Section B.2.3 and perform Step 3 and beyond.

## ATTACHMENT E - Installation Procedures for Sites with Remote CPs

### E.1 Format USB Flash Drive

Formatting of the flash drive will erase all existing data on the drive.

1. Insert the USB flash drive in the USB port on **DX1**.
2. From **DX1** as `root`, type **tail /var/log/messages**. Look in the messages for the device name of the flash drive. The device name is used for the remaining commands. For example: added mount point `/media/usbdisk` for `/dev/sdb1`. In this case, the device name is `/dev/sdb1`.
3. Type **fdisk /dev/sdb1** and select **p** to print the partition table.
4. Type **m** to go back to the menu and select **d** to delete a partition. Repeat for remaining partitions.
5. Enter **n** to add a new partition table.
6. Select **1** for primary partition.
7. Press **Enter** when prompted for first cylinder.
8. Press **Enter** when prompted for last cylinder.
9. Select **w** to write the changes.
10. At the shell prompt, type:  
**mkfs -t vfat /dev/sdb1**  
**mount /dev/sdb1**

### E.2 Copy Files to USB Drive

Load and copy files from **DX1** to the flash drive by performing the following:

1. From the KVM console, log on to **DX1** as `root`.
2. Connect the USB flash drive to one of the USB ports at the top left front panel of the **DX1** server.  
Wait a few seconds. The server will detect the USB flash drive and messages will appear on the screen.
3. Press the **Enter** key. One of the lines at the bottom will display something similar to:  
`Attached scsi removable disk sdc at .....`  
This signifies the flash drive has been detected as `/dev/sdc1`.

4. Once the drive has been detected, mount and copy the files:

```
mount /dev/sdc1 /mnt
```

```
cd /mnt
```

```
rm -rf * .ssh*
```

```
scp /data/fxa/install_root/xxx-instance/cpsbn1-  
xxx/ks.cfg.cpsbn1-xxx
```

(xxx is the site ID)

```
scp /data/fxa/install_root/xxx-instance/cpsbn2-  
xxx/ks.cfg.cpsbn2-xxx
```

(xxx is the site ID)

```
ls -l          (Verify the ks files are copied to the USB flash drive.)
```

5. Modify the kickstart files using a text editor. Make the changes listed to both `ks.cfg.cpsbn1-xxx` and `ks.cfg.cpsbn2-xxx` files on the USB drive.

Comment out the line as shown below (located below the 'install' directive at the beginning of the kickstart file):

```
# nfs -server=xxx.xxx.xxx.xxx -dir=dataFXA/install_root/redHatFiles
```

Insert the following command right below this now commented line:

```
cdrom
```

6. Unmount and remove the USB flash drive to be carried to the remote CPSBN location.

```
cd ..
```

```
umount /mnt
```

Remove the flash drive from the USB port on the front of the panel of **DX1**.

7. Proceed to the remote location where `cpsbn` systems are located. Take the 6 RHEL5.2 CDs and the USB flash drive (which has copied kickstart files on them).
8. Load RHEL5.2 CD #1 in **CPSBN1**. Also insert the USB flash drive into the USB port.
9. Reboot **CPSBN1** by issuing the following command (as `root`):

```
shutdown -r now
```

10. The system will boot from RHEL5.2 CD and will come to the boot prompt. Issue the following command:

```
linux ks=hd:sdc1/ks.cfg.cpsbn1-xxx
```

(`sdc1` is the USB drive and `xxx` is the site ID).

If a message indicates that the system cannot find the kickstart file, tab over to **ok** and select **Enter**.

The CP will reboot twice before RHEL5.2 installation is fully complete.

11. Once the installation of RHEL5.2 completes, prepare the system for restore by typing:

```
cd /data/fxa/install_root/scripts
```

(If unable to `cd` to this directory, contact the NCF.)

```
source env.sh
```

```
./restoreMyself.pl ws#-xxx $INSTALL_ROOT $BACKUP_ROOT
```

Once the restore process completes successfully, the system will reboot.

12. Run the following `checkMe` script as shown:

```
/data/fxa/install_root/scripts/checkMe.pl
```

(If errors are reported by the `checkMe.pl` script, contact the NCF.)

13. Once everything is verified, follow the same steps for **CPSBN2**. (Substitute **CPSBN2** for **CPSBN1** wherever needed.)

**ATTACHMENT F - Running Restore Process Manually (All Boxes Except LSs)**

1. Check if the restore process failed. The following given command will not show `Normal exit` for `restoreMyself.pl` for the box in question.

On **DX1** or **DX2** as `root` type the following:

```
cd /data/fxa/install_root/logs
grep -i "normal exit" *.log |grep -i restoremyself
```

Log on to the failed box as `root` and run the following:

```
cat /awips/Release_ID      (OB9.1 as output appears.)
rpm -qa | grep -i awips    (AWIPS rpms installed will not be seen.)
```

2. To run the restore process manually, as `root`, log on to the box to be restored on and issue the following commands:

```
mount nas1:dataFXA /data/fxa
cd /data/fxa/install_root/scripts
source env.sh
./restoreMyself.pl ws#-xxx $INSTALL_ROOT $BACKUP_ROOT
```

(`ws#` is the box (e.g., `xt1`, `lx1`, `dx2`, etc.) and `xxx` is the site ID (e.g. `bcq`, `eax`, etc.)

The AWIPS box will reboot once `restoreMyself.pl` finishes running.

3. Once the `restoreMyself.pl` completes, run the `checkMe.pl` script on the box.

As `root`, on the failed box after it reboots type:

```
cd /data/fxa/install_root/scripts
source env.sh
./checkMe.pl
```

## ATTACHMENT G - Operating System Rescue Procedures and Troubleshooting Support

If the system fails to boot even before the RedHat picture appears, (for example, if there is only the word `grub` or a `grub` prompt on a black screen and nothing else, or just a black screen with blinking cursor) use the following procedures to get a usable shell on the system.

1. Put RHEL5.2 CD #1 into the CD drive of the failed machine and reboot. By default the machine should boot from the CD and a RedHat logo and `boot` prompt will display on the screen. If the system still tries to boot from the hard drive, contact the NCF and ask for assistance with how to boot from the CD.
2. When the `boot` prompt displays, type **linux rescue** and press **Enter**. This boots the system into rescue mode instead of installation mode.
3. Once inside rescue mode, the rescue process will ask which language to use during the process. By default, `English` should be chosen. Press **Enter** to continue.
4. The rescue process will then ask for the type of keyboard being used. By default, `US` should be selected. Press **Enter** to continue.
5. The prompt, `Do you want to start the network interface on this system?` will display. By default, `Yes` is highlighted. However, choosing `Yes` may crash the system. Press the **right arrow key** (`→`) to highlight **No**, and press **Enter** to continue.
6. The prompt, `The rescue environment will now attempt to find your Linux installation and mount it under the directory /mnt/sysimage ... will display and asks if the user wants to continue, mount the file system as read-only, or skip this step.` By default **Continue** should be highlighted. Press **Enter** to continue.
7. The rescue process will try to find partitions and mount them properly. Once successful, the message, `Your system has been mounted under /mnt/sysimage` will display. Press **Enter** to get a shell. If it cannot find the proper partitions containing RedHat Enterprise Linux, it is usually due to disk failure. Contact NCF for assistance if this occurs.
8. A running shell should appear on the machine. Type the following:  

```
chroot /mnt/sysimage
grub-install hd0
exit
exit (reboots the device)
```

**NOTE:** `hd0` is `hd(zero)`, not the letter `O`.

Reboot the device. If this method does not resolve the problem, contact the NCF for further assistance.

9. Once the fixes are complete, type **exit** and press **Enter**.

## ATTACHMENT H - Supplemental Information

### H.1 Supplemental Installation Notes

1. The following message will be seen upon reboot (such as when kickMany is run) and can be ignored.

```
Ignore memory for crash kernel (0x0 to 0x0) not within permissible range during system boot-up sequence.
```

2. The following message will be seen upon reboot (such as when kickMany is run) and can be ignored:

```
Ignore PCI: Not running MMCONFIG message during system boot-up sequence.
```

3. The following message will be seen during the beginning of the restorMyselfLS.pl execution and can be ignored:

```
cd /var/lib/heartbeat
```

### H.2 Additional User Information

1. If the purge process is started manually, there will be `find` warning messages. Please ignore these.
2. After RHEL5.2 completes and the first time users log on to the LX workstations, the workstation will reboot and KDE will take longer to load. This delay should not occur in subsequent logons.
3. When dragging windows in RH5, the mouse will be able to scroll out of the screen. The window being dragged will travel over to the other screen. This is a bug in KDE.
4. At the screen, if a username or password is entered incorrectly, the error message will be partially cut off. This is a bug in KDE.
5. If an LX is shut down and powered back up after upgrading to RH5, the right monitor will not be detected and won't be usable for the session. Workarounds include rebooting the box instead of completely powering it down, logging on and back off immediately to reset the display, or pressing **Ctrl-Alt-Backspace** to reset the display without having to log on.

ATTACHMENT I - Sample EMRS Report

[New A26](#) [Commit A26](#) [Place on Hold](#) [Copy A26](#) [Delete A26](#) [Detail Report](#) [Document Summary](#) [Create USOS](#) [Help](#)

---

**GENERAL INFORMATION**

WFO\*   Document No.\*

1. Open Date   Open Time  
 2. Op Initials 
 3. Response Priority  Immediate  Low  Routine  Not Applicable

4. Close Date   Close Time

5. [Maintenance Description](#)  characters left AWIPS

---

**EQUIPMENT INFORMATION**

6. Station ID\*  
 7. Equipment Code\*  
 8. Serial Number  
 9. TM  
 10. AT  
 11. How Mal

Alert: Time Remaining:  
(For Block 12 use only)

---

**13. PARTS USAGE and CONFIGURATION MANAGEMENT REPORTING**

ASN	Vendor Part No. (New Part)	Serial Number (Old Part)	Serial Number (New Part)	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="New Row"/>
				<input type="button" value="Delete Row"/>

---

**14. WORKLOAD INFORMATION**

a. Routine	b. Non-Routine	c. Travel	d. Misc	e. Overtime	
Hours	Minutes	Hours	Minutes	Hours	Minutes
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="15"/> <input type="text" value="30"/>	<input type="text"/>	<input type="text"/>

---

**MISCELLANEOUS INFORMATION**

15. [Maintenance Comments](#)  characters left [View Status History](#) [Attachments](#)

Contract Maintenance Disclaimer

16. Tech Initials

---

**17. SPECIAL PURPOSE REPORTING INFORMATION**

a. [Mod No.](#) 
 b. Mod Act/Deact Date  
 c. Block C 
 d. Trouble Ticket No. 
 e. USOS Outage Doc No.

---

**18. Work Order Information:**

Work Accomplished by  
 Region Headquarters  Electronics  WFO/Office  Facilities  
 Maintenance Contractor

Est. Cost or Bid \$  
 Req. Completion Date

Contractor Maintenance Time  
 Hours  Minutes

Internet 100%