AWIPS Flow Tag Record: Cluster Update Deployment

Prepared in Support of AWIPS Software Continuous Technology Refresh Re-Architecture

Build 12.2.1

Document No. AWP.FT.SWCTR.CLDUP-03.00
1 March 2012

Prepared Under

Contract DG133W-05-CQ-1067
Advanced Weather Interactive Processing System (AWIPS)
Operations and Maintenance

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Change History

Rev	Date	Pages Affected	Remarks
Initial	February 23, 2011	All	Initial Version
R1G3-10	March 14, 2011	All	Update for Round 1 Group 3, FIT 10, Build 11.3
R2G1-11	April 11, 2011	All	Update for Round 2 Group 1, FIT 11, Build 11.4
Build 11.6	June 9, 2011	All	Update for Build 11.6
Build 11.7	July 25, 2011	All	Update for Build 11.7
Build 11.7.2	--	All	Update for Build 11.7.2
Build 11.9	October 17, 2011	7, 9, 10, 16	Update for Build 11.9
Build 12.1.1	January 1, 2012	All	Update for Build 12.1.1
Build 12.1.2	January 19, 2012	All	Update for Build 12.1.2
Build 12.2.1	March 1, 2012	All	Update for Build 12.2.1

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Acronyms and Abbreviations Used in This Document

AMQP	Advanced Message Queuing Protocol
ADE	AWIPS Development Environment
AWIPS	Advance Weather Interactive Processing System
CAVE	Common AWIPS Visualization Environment
DB	Database
DR	Deficiency Report/Change Request
EDEX	Enterprise Data EXchange
FIT	Forecaster Integration Testing
FOSS	Free & Open Source Software
FSI	Four-Dimensional Stormcell Investigator
GFE	Graphical Forecast Editor
HDF5	Hierarchical Data Format 5-multi-object file format for the transfer of graphical and numerical data between computers
HTTP	Hypertext Transfer Protocol
IFPImage	Integrated Forecast Preparation Image
IHFS	Integrated Hydrologic Forecast System
IP Address	Internet Protocol Address
IzPack	FOSS package for creating installers.
JMS	Java Message Service
LDM	Local Data Manager (a collection of cooperating programs that select, capture, manage, and distribute arbitrary data products)
LX	Linux Workstation
NAS	Network Attached Storage
OAX	WFO Valley, NE (Omaha)
PID	Process ID
PostgreSQL	Postgres Structured Query Language-FOSS database software
PSQL	Postgres Structured Query Language-FOSS database software
PyPIES	Python Process Isolated Enhanced Storage
Qpid	Open Source AMQP Messaging
R1G1	Round 1 Group 1
RPM	Red Hat Package Manager
RUC	Rapid Update Cycle
SSH	Secure Shell
SU	Snap Up (Delivery after TO11 Slice 6)
TO	Task Order
TOPO	Topographical directory/files
Viz	Vizualization
XT	X-Terminal
YUM	Yellowdog Updater, Modified

1. Introduction

This Flow Tag document provides instructions for deploying AWIPS EDEX and CAVE to a cluster. The procedures are comprehensive, enabling an engineer to conduct the deployment with very little background.

This document is also intended to serve as a record of the deployment for a particular Task Order and Build.

2. Document Conventions

The flow tag steps are presented in outline format. All steps utilize the following typographic conventions:

A square box indicates a step to be accomplished. *Example:*

❑ ____ Stop All Services:

A circle indicates a checkpoint for the step. *Example:*

o Stop Camel:

Bold font indicates keystrokes, button clicks, notes of interest, etc. *Example:*

- **`service edex_camel stop`**

Bold italic blue font indicates something that needs to be updated to the current value (machine name, date, etc.). Example:

- `ssh root@`***`dx3`***

3. AWIPS Integration Deployment Instructions

To make things faster and more accessible for multiple deployments, you may want to copy the files from the delivery media to a network location.

Note: The default installation path is /awips2/${COMPONENT_NAME} where COMPONENT_NAME is one of java, python, psql, postgresql, native, etc.

Note: Certain RPMs do not support the prefix argument including: awips2-database, awips2-httpd-pypies

Note: These flow tags are written with the assumption that the previous installation used yum.

Note: These flow tags are written with the assumption that the server is connected to the nis. If it is not connected, verify user:awips and group:fxalpha exist with the following command:

- **`id awips`**

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Note: Do not make any changes to the configuration files from the default of OAX at this time. Once the install is complete, you will perform a localization to your site.

3.1 RPM Repository

3.1.1 Creating an AWIPS II RPM Repository (if none exists)

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- ❑ Note: Starting in 12.1.1, the software will be automatically staged via rsync in /data/fxa/INSTALL/awips2. No further action in this section is needed. <AWIPS_INSTALLATION_DIR> in this document now refers to /data/fxa/INSTALL/awips2. Logs will continue to go to /data/fxa/INSTALL/<build_id>. The following is only necessary if staging from a DVD.

- ❑ ____ Necessary files for installing the repository
  - awips2-12.2.1.repo.tar
  - awips2-12.2.1.scripts.tar
  - REHOST_CODE.tar
  - HA4CP.tar
  - LDM.tar
  - awips2.repo
  - deployAWIPS2.sh

    Note: <***AWIPS2_INSTALLATION_DIR***> represents the path where these archives will be copied to after this section has been completed. (i.e., /data/fxa/INSTALL/awips2).

- ❑ ____ Prepare the AWIPSII repository on dx1. Mount the supplied DVD and follow these steps:
  - **`cd /media/cdrecorder`**
  - **`./deployAWIPS2.sh`**

- ❑ ____ Verify that the following groups are listed at the end of the deployment script.
  - AWIPS II Backup Database Server
  - AWIPS II Database Server
  - AWIPS II LDM Server
  - AWIPS II Message Broker Server
  - AWIPS II Processing Server
  - AWIPS II Rehost Server
  - AWIPS II Standalone Devel
  - AWIPS II Visualize

3.2 Deploy EDEX

3.2.1 Update Rehost Servers and Visualization Applications

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- ❑ ____ Login as root on DX1 for the Visualization Applications deployment on LX and XT workstations.
  - **ssh root@dx1**
- ❑ ____ Run the Visualization Applications deployment script
  - **cd <*AWIPS2_INSTALLATION_DIR*>/scripts**
  - **./caveInstall.sh install**
- ❑ ____ Run the Rehost Server deployment script
  - **cd <*AWIPS2_INSTALLATION_DIR*>/scripts**
  - **./rehostInstall.sh install**
  - o Installation progress will be verified in step 3.3

1.2.2 Update the EDEX Client

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- ❑ ____ Stop All Services:
  - o Open a terminal window to the EDEX client.
    - **ssh root@*dx4***
- ❑ ____ Install AWIPS EDEX as a client.
  - o Update using YUM
    - **script -a -f /data/fxa/INSTALL/12.2.1/a2dx4update.out**
    - **cd /data/fxa/INSTALL/awips2/scripts**
    - **./edexInstall.sh update**
    - **exit** (exit from script)
- ❑ ____(Optional) To ensure there are no issues using the environment variables immediately after install, the following command will source the necessary profile scripts to allow for deployment and execution of the install programs from the install window.
  - o **source /etc/profile.d/*.sh**
- ❑ ____ Repeat for any other EDEX clients

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3.2.3 Update the EDEX Server

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- ❑ ____ Stop All Services:
  - o Open a terminal window to the EDEX server.
    - **ssh root@*dx3***

- ❑ ____ (Optional) Save Localization Files
  - **<*AWIPS2_INSTALLATION_DIR*>/scripts/localizationArchive.sh [XXX]**
    - ***Note:* /data/fxa/TEMP/localization.tar will be created with localized files available in */awips2*/edex/data/utility. XXX (site id in all caps) is optional if you only want to backup one site, otherwise all site level files will be backed up.**

- ❑ ____ Install AWIPS EDEX as a server
  - o Install using YUM
    - **script -a -f /data/fxa/INSTALL/12.2.1/a2dx3update.out**
    - **cd /data/fxa/INSTALL/awips2/scripts**
    - **./edexInstall.sh update**
    - **exit** (exit from script)

- ❑ ____ (Optional) To ensure there are no issues using the environment variables immediately after install, the following command will source the necessary profile scripts to allow for deployment and execution of the install programs from the install window.
  - **source /etc/profile.d/*.sh**

3.2.4 Update the EDEX Database Server (if already installed)

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- ❑ ____ Stop All Services:
  - o Open a terminal window to the EDEX database server:
    - **ssh root@*dx1***
  - o Stop the Radar Server:
    - **service edex_rcm stop**
  - o Back up the old Radar Server to preserve the config files (if installed):
    - Remove the previous backup (if one exists)
    - **rm –rf /*RadarServer-Bak***
    - **mkdir /RadarServer-Bak**
    - **cp -R /*awips2*/rcm/data/config/* /*RadarServer-Bak/***
  - o Stop Postgres:
    - **service edex_postgres stop**
  - o Stop httpd-pypies service:

- **service httpd-pypies stop**

❑ ____ Install update to AWIPS EDEX as a database server

- Update using YUM
  - **script -a -f /data/fxa/INSTALL/12.2.1/a2dx1update.out**
  - **yum groupupdate 'AWIPS II Database Server' –y**
  - **cd <AWIPSII_INSTALLATION_DIR>/scripts**
    - **./packGfeH5.sh**
  - **exit** (exit from script)

❑ _____ **Configure the Radar Server**

- Back up config files and copy from the old installation
  - **su *awips*** (switch to the *awips* user so all files will be owned by the correct user when copied)
  - **cd /*awips2*/rcm/data/config**
  -
  - **cp –R /*RadarServer-Bak*/drop-ins .**
  - **cp –R /*RadarServer-Bak*/persist .**
  - **exit**
  - **sed –i 's/external.dropbox/radarserver.dropbox/' /awips2/rcm/data/config/persist/config.xml**
  - **sed –i 's/${INSTALL_PATH}/\/awips2\/java/' /awips2/rcm/data/config/start-config**
  - **sed –i 's/$rs_home_dir/\/awips2/' /awips2/rcm/data/config/start-config**
  - **chown –R awips:fxalpha /awips2/rcm**

❑ ____ Start All Processes

- **Start Postgres**
  - **service edex_postgres start**
- **Start PyPIES**
  - **service httpd-pypies start**
- **Start the Radar Server**
  - **service edex_rcm start**

❑ _____ Run database update scripts

- **./msasGribUpdate.sh**

❑ _____ Install ldm package – **Skip in 12.2.1**

- On dx1 as root. Enter localization ID when prompted – this will only work for your A1 localization ID – and accept all other defaults from script
  - **script -a -f /data/fxa/INSTALL/12.2.1/a2dx1update.out**
  - **cd <AWIPSII_INSTALLATION_DIR>/scripts**

- **./ldmInstall.sh update**
- **`exit` (exit from script)**

❑ _____ Run SDC Automation Tool. – **Skip in 12.2.1**

- On dx1 as root – replace LLL with the localization ID – this will only work for your A1 localization ID – accept all defaults from script
  - **`cd /data/fxa/sdc`**
  - **`./config_awips2.sh ldm LLL`**

❑ ____ Update Backup Database Server ***dx2***

- Open a terminal window to the EDEX database server
  - **`ssh root@`*`dx2`***

❑ ____ Update AWIPS database

- **`script -a -f /data/fxa/INSTALL/12.2.1/a2dx2update.out`**
- **`yum groupupdate 'AWIPS II Backup Database Server' -y`**

❑ ____ Install ldm package – **Skip in 12.2.1**

- On dx2 as root. Enter localization ID when prompted – this will only work for your A1 localization ID – and accept all other defaults from script
  - **cd <AWIPSII_INSTALLATION_DIR>/scripts**
  - **./ldmInstall.sh update**
- **`exit` (exit from script)**

❑ ____ Copy the configuration from the primary Radar Server (***dx1***)

- **`cd /`*`awips2`*`/rcm/data/config`**
- **`scp -rq `*`dx1`*`:/`*`awips2`*`/rcm/data/config/persist .`**
- **`scp -rq `*`dx1`*`:/`*`awips2`*`/rcm/data/config/drop-ins .`**
- **`scp -q dx1:/awips2/rcm/data/config/start-config`**
- **`chown -R awips:fxalpha /`*`awips2`*`/rcm/data/config`**

3.2.5 Update the EDEX Qpid Server (if already installed)

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❑ ____ Install to the primary Qpid server:

- Open a terminal window to the Qpid server
  - **`ssh root@`*`cpsbn1`***
    - Note: If site with remote CPs, ssh to px1
- Stop Qpid – Skip in 12.2.1
  - **`service qpidd stop`**

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- Verify qpid volume mount
  - **`mount –l | grep qpid`**
  - Should show nas1:/qpid mounted to /awips2/qpid/messageStore

- Update Qpid
  - **`script -a -f /tmp/a2cp1update.out`**
  - **`yum groupupdate 'AWIPS II Message Broker Server' –y`**
  - **`exit`** (exit from script)
  - **`scp /tmp/a2cp1update.out dx1:`** **/data/fxa/INSTALL/12.2.1/**
  - **`rm –f /tmp/a2cp1update.out`**

- Start Qpid on the primary qpid server – Skip in 12.2.1
  - **`service qpidd start`**

☐ ____ Install to the secondary Qpid server

- Open a terminal window to the Qpid server
  - **`ssh root@`*`cpsbn2`***
    - Note: If site with remote CPs, ssh to px1

- Update Qpid
  - **`script -a -f /tmp/a2cp2update.out`**
  - **`yum groupupdate 'AWIPS II Message Broker Server' –y`**
  - **`exit`** (exit from script)
  - **`scp /tmp/a2cp2update.out dx1:`** **/data/fxa/INSTALL/12.2.1/**
  - **`rm –f /tmp/a2cp2update.out`**

3.2.6 Start the EDEX Server

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☐ ____ Log into the EDEX Server:

- **`ssh root@`*`dx3`***

☐ ____ To ensure there are no issues using the environment variables immediately after install, the following command will source the necessary profile scripts to allow for deployment and execution of the install programs from the install window.

- **`source /etc/profile.d/*.sh (for bash)`**

☐ ____ Verify mounts

- **`mount –l | egrep 'aiidata|data_store|GFESuite2'`**
- Should show **aiidata** mounted to **/awips2/edex/data.**
  - **If not mounted run "mount /awips2/edex/data", then rerun above command to verify.**
- Should show **dx2f:/data_store** mounted to **/data_store.**

- **If not mounted run "mount /data_store", then rerun above command to verify.**

- Should show **nas1:/GFESuite2** mounted to **/awips2/GFESuite.**
  - **If not mounted run "mount /awips2/GFESuite2", then rerun above command to verify.**

☐ ____ Run SDC Automation Tool.

- On dx3 as root – replace LLL with the localization ID – this will only work for your A1 localization ID – accept all defaults from script
  - **`cd /data/fxa/sdc`**
  - **`./config_awips2.sh edex LLL`**
    - **`Press Y when prompted to create setup.env`**
  - **`./config_awips2.sh cave LLL`**

☐ ____ Start EDEX
- **`service edex_camel start`**

☐ ____ Verify that EDEX started up correctly
- **`cd /awips2/edex/logs`**
- View the beginning of the log to make sure it started okay.
  - **`head -n 50 edex-ingest-20111219.log`** (use tab to get the file name, there should only be 1 log file right after you install)
- **`tail -f edex-ingest-20111219.log`** (use tab to get the file name, there should only be 1 log file right after you install) to make sure the log is moving and data is being ingested.
- Repeat for the ingestGrib log **`edex-ingestGrib-20111219.log`**
- Repeat for the request log **`edex-request-20111219.log`**

3.2.7 Start the EDEX Client

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☐ ____ Log in to EDEX Client
- **`ssh root@dx4`**

☐ ____ Verify mounts
- **`mount -l | egrep 'aiidata|data_store|GFESuite2'`**
- Should show **aiidata** mounted to **/awips2/edex/data.**
  - **If not mounted run "mount /awips2/edex/data", then rerun above command to verify.**
- Should show **dx2f:/data_store** mounted to **/data_store.**
  - **If not mounted run "mount /data_store", then rerun above command to verify.**

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- Should show **nas1:/GFESuite2** mounted to **/awips2/GFESuite.**
  - **If not mounted run "mount /awips2/GFESuite2", then rerun above command to verify.**

☐ ____ Start EDEX
- **`service edex_camel start`**

☐ ____ Verify that EDEX started up correctly
- **`cd /awips2/edex/logs`**
- View the beginning of the log to make sure it started okay.
  - **`head -n 50 edex-ingest-20111219.log`** (use tab to get the file name, there should only be 1 log file right after you install)
- **`tail -f edex-ingest-20111219.log`** (use tab to get the file name, there should only be 1 log file right after you install) to make sure the log is moving and data is being ingested.
- Repeat for the ingestGrib log ***edex-ingestGrib-20111219.log***

o Repeat for the request log ***edex-request-20111219.log***

☐ ___ Change manual permissions

- **`chmod 775 /awips2/edex/data/manual`**

3.3 Complete Rehost Server and Visualization Applications

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☐ ____ Login as root on DX1 **`ssh root@dx1`**

☐ ____ Run the Visualization Applications deployment monitoring script

- **`cd <AWIPS2_INSTALLATION_DIR>/scripts`**
- **`./caveMonitor.sh`**

☐ ____ Run the Visualization Applications deployment monitoring script

- **`cd <AWIPS2_INSTALLATION_DIR>/scripts`**
- **`./rehostMonitor.sh`**

o Script output will give status of the servers and workstations. All should read as completed. If not, you may rerun the script multiple times. You may view the parallel workstation installations log files at **/data/fxa/INSTALL/12.2.1.**

- _____ **Complete Step 3.6 to update** the rehosted AWIPS1 code.

3.4 (Optional) Smoke Test CAVE

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Note: CAVE, GFEClient, and AlertViz all use the same caveData directory for preferences (for the same user).

- (Optional) Rename or delete the caveData directory,
  - **`cd ~`**
  - **`rm –rf caveDataBak`**
  - **`mv cavaData caveDataBak`**

☐ ____ Change Localization Settings
- Localization is only set by the Viz Applications Installer for the current user; however, Viz Applications are generally installed by root but run by different users. Change:
  - **Localization Server**: `http://edexcluster:9581/services`
  - **Site**: ***OAX***
  - Click **Validate**. The **Localization Server** text box should change from red to white if AlertViz can connect to the server.
- Click **OK**.

☐ ____ Open CAVE and verify/configure your preferences
- ***`/awips2`*`/cave/cave.sh`** (from the **home** directory, or **`./cave.sh`** from the **cave** directory)
  - (If this command does not work try **`/bin/bash –l –c "`*`/awips2`*`/cave/cave.sh"`**)
- Localization is only set by the CAVE Installer for the current user; however, generally CAVE is installed by root but run by different users Change:
  - **Localization Server:** `http://edexcluster:9581/services`
  - **Site**: ***OAX***
  - Click **Validate**. The **Localization Server** text box should change from red to white if CAVE can connect to the server.
  - Click **OK**.
- Select **CAVE->Preferences**
- Select **Directory Paths**
  - Verify the **Server Data Directory** is set to /***data-dir*** (/*awips2*/edex/data/hdf5)
- Set **Hydro Apps**
  - Set the **Database Connection String** to `jdbc:postgresql://`***`dx1f:5432`***`/`***`hd_ob83oax`***`?user=`***`awips`***`&password=`***`awips`***

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- Select **Localization**
  - **Verify the Site** is set to your Site ***(OAX)***
  - **Verify the Localization Server** is set to `edexcluster:9581/services`
- Set **Radar Server**
  - Set the **RadarServer** to **tcp://*dx1f*:8813**
- Click **OK** to save your preferences. Restart CAVE to load the new preferences.
  - Close CAVE
  - ***/awips2***`/cave/cave.sh` (reopen cave to load the Preferences/Localization)
  - Recheck your Preferences to verify your changes (Localization) were saved correctly.

☐ ____ Run the Smoke Test (This assumes EDEX is running with a complete data flow.)

- Test D2D Radar
  - ***Note:*** This verifies that the Radar Server is running.
  - Select **koax->koax 4 Bit Products->Com Ref 4 bit (CZ)**
    - ***Note:*** If there is a number next to the menu item then data is available
  - Verify the Radar data loads without errors
  - Zoom in using the mouse
  - Click the Loop button
- Test D2D Satellite
  - Select **Satellite->IR Window**
    - ***Note:*** If there is a number next to the menu item then data is available
  - Verify the Satellite data loads without errors
- Test D2D TOPO
  - Select **Maps->Hires TOPO Image** (checkbox)
  - Verify the TOPO data loads without errors
- Verify you can open the GFE perspective
  - In the popup dialog, in the **Config** column, make sure **gfeConfig** is selected (or select your desired config file) and click the **OK** button.

3.5 (Optional) Smoke Test GFE Client

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The GFE Client can be used to run IFPImage, TextProductTest, and RunProcedure via the command line (headless).

MAKE SURE YOU ARE LOGGED IN AS A NORMAL AWIPS USER.

Note: CAVE, GFEClient, and AlertViz all use the same caveData directory for preferences (for the same user). However, the only preferences used by the GFE Client are the Localization Server and the Localization Site ID.

Note: Just like CAVE to run the GFE Client you must be logged in directly to the machine you are running it on (you cannot use ssh or su).

Note: The rpms are not yet fully configurable, you will need to open CAVE and set your Preferences for Localization, the DB Server, and the Radar Server. See the previous section for instructions.

- ❑ ____ Run the GFE Client
  - Before you can get any output from the GFE Client there must be some saved grids. Here is one way to populate and save some grids in GFE:
    - Open the **GFE** perspective in CAVE.
    - Select **Populate->Copy All Grids From …**
    - In the popup dialog select one (such as **RUC80**) and click **OK**.
    - Repeat to populate as many grids as you want.
    - Click the **Save Forecast** button (a disk icon).
    - In the popup dialog make sure all forecasts are selected/checked and click **Save Forecast**.
  - Example Command line
    /awips2/GFESuite/bin**/gfeclient.sh**
    /*awips2/cave*/etc/gfe/utility/PngWriter.py
    -o /home/*user*/PngDir
    -c imageTest1
    - first argument is the path under etc to the PngWriter.py for IFPImage
    - -o is the output directory of the images IFPImage will generate
    - -c is the IFPimage config file, the GFE Client comes with image Test1 as an example (image Test1.py).

3.6 Reapply AWIPS2 Rehosted Applications

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- **ssh root@dx1**
- **script -a -f <*AWIPS2_INSTALLATION_DIR*>/rehost.out**
- **cd <*AWIPS2_INSTALLATION_DIR*>/REHOST_CODE**
  - **./rehost_12.2.1.sh**
- **exit**

- **Skip rest of rehost app section in 12.2.1**
- **ssh root@px1**
- **cd <*AWIPS2_INSTALLATION_DIR*>/REHOST_CODE/gsdA2PX**
- **su fxa -c './installA2PX.csh |& tee <*AWIPS2_INSTALLATION_DIR*>/iA2PX1.log'**

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- Type **install** and press Enter when prompted

- **exit**

- **ssh root@px2**
- **cd <*AWIPS2_INSTALLATION_DIR*>/REHOST_CODE/gsdA2PX**
- **su fxa -c './installA2PX.csh |& tee <*AWIPS2_INSTALLATION_DIR*>/iA2PX2.log'**
  - Type **install** and press Enter when prompted
- **exit**

- **ssh root@dx3**
- **chmod 775 /awips2/edex/data/manual**
- **cd <*AWIPS2_INSTALLATION_DIR*>/REHOST_CODE/gsdA2DX3**
- **su awips -c 'csh -c "./installA2DX3.csh |& tee <*AWIPS2_INSTALLATION_DIR*>/iA2DX3.log"'**
  - Type **install** and press Enter when prompted
- **chmod 775 /awips2/edex/data/manual**
- **exit**

❑____ At this time, run through the a2_status_check document to verify everything is up and running properly.