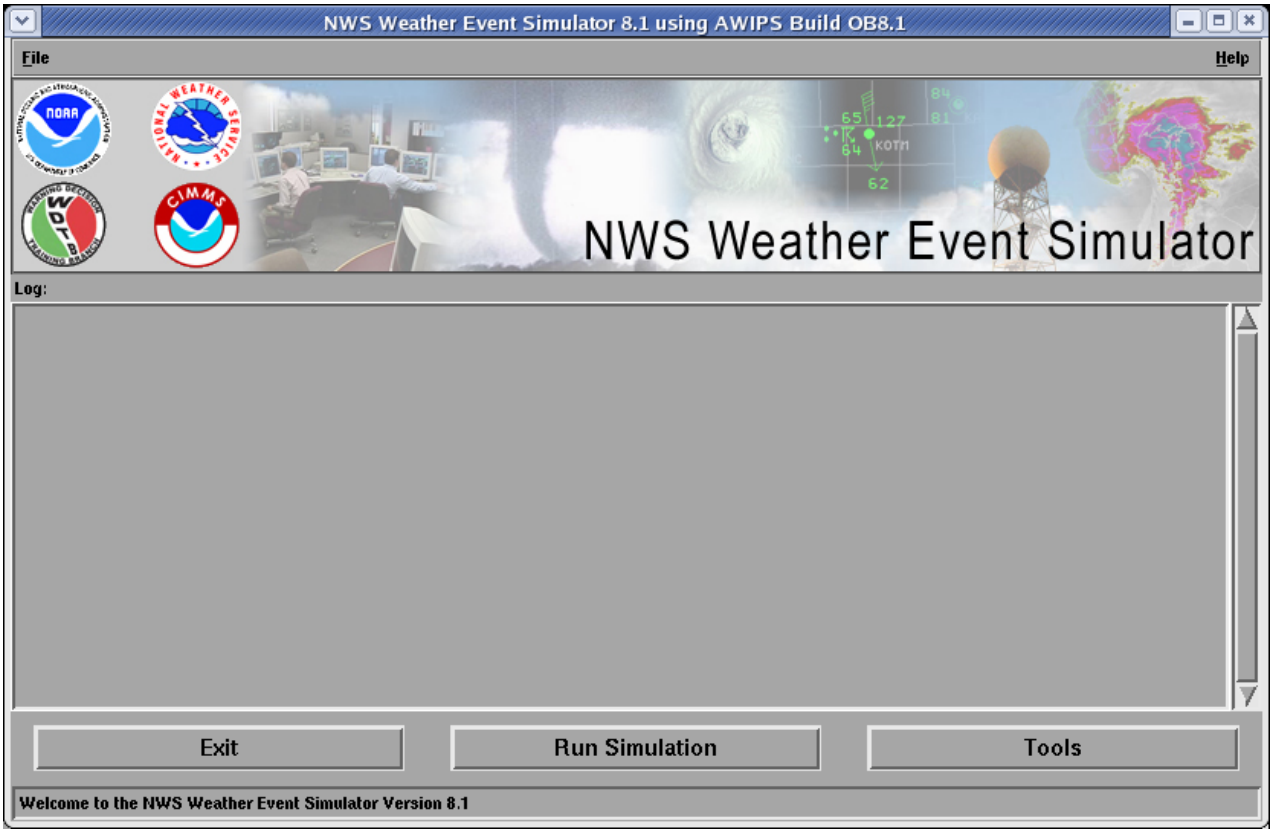
NWS Weather Event Simulator 8.1 Installation Instructions and User Guide



NOAA NWS Warning Decision Training Branch

Norman, OK

Contents

1 WES8.1 Release Notes

1.1 What's New in WES8.1

1. Updated with AWIPS OB8.1

- Storm Based Warnings capabilities in WarnGen.

2. WES8.1 Overview Training is available in the LMS for NOAA users

- All NOAA WES installation focal points and WES training focal points (see http://www.wdtb.noaa.gov/tools/wes/admin/WES-IOP-Final.pdf) should take this short training in the LMS (see http://doc.learn.com/noaa/nws). To take the module, search for "WES8.1" in the LMS catalog.

3. WES8.1 updated with AvnFPS 3.4

- WES8.1 includes AvnFPS functionality and AvnFPS data processing during simulations. AvnFPS is driven on a minute-by-minute basis by the hourly METAR files in a standard AWIPS archive, and it also requires a set of TAFs to initialize correctly. For background information on how AvnFPS works with WES, see Section 19.

- WES8.1 test case has been updated with AvnFPS data.

4. Changes to point data processing in WES

- Prior to this release, WES revealed the hourly point files (e.g. METAR, lightning, etc) at the top of the hour. This would at times reveal future point data. In the current WES, you will no longer see future point data. The current processing model makes point data visible closer to the end of the hour, at the time of the last data in the file.

- As in previous WES builds, the display and updating of point data in D2D is problematic. Enhanced point processing is planned for future builds. METAR and Maritime point observations are now processed on a five minute basis, but the data will not consistently display and update at these sub-hourly resolutions.

- There are a few configuration files that can be manually modified to change the default delay of the METAR/Maritime data and the number of hours of AvnFPS METARs (See Section 16). In general, users should not modify these files. The default delay for individual METAR/Maritime observations is two minutes.

5. National Files Updated

- The shapefiles used for Interstates and Cities have been updated.

- All RAOB configuration files have been updated.

6. Flash Update

- To support Storm Based Warnings training, WES8.1 contains an updated version (version 9) of the Adobe Flash player for Linux. This update will need to be manually installed per the installation instructions.

1.2 Know Issues for WES8.1

- OB8.1 requires Redhat Enterprise 4. The OB8.1 AWIPS will not work with Redhat Enterprise 3.

- The surface observation monitors from MDL (SNOW, SAFESEAS, Fog Monitor) have not yet been integrated into WES.

- SPC watch polygons under the NCEP/Hydro menu do not display from SAW products (they use WOU products). To view watch polygons from archived SAW products see section 11.

- A small feature in GUARDIAN designed to allow the user to move the GUARDIAN status bar to different screens does not function correctly.

- As in all prior WES release back to WES5.0, any pre OB5 SCAN and FFMP data need to be recreated.

1.3 WES8.1 Post Install

1. As with all major WES releases, new localizations must be built for older cases to display properly with the OB8.1 in WES8.1. (For more information, see Section 7 of the WES8.1 installation instructions.)

2. Update existing cases for new point processing in simulations

- All existing cases in DRT format will need to be updated to support the new point processing in WES. If WES detects an old DRT format, it will offer to update the point data for you.

- For existing cases in original format, you do not need to do anything different to prepare your case for the new point processing and running AvnFPS.

- We recommend updating all DRT format cases in **`/data/awips`** overnight by using the new “Batch Mode Point Data Conversion” tool under the WES Tools button.

1.4 WES Development Timeline

The next WES release is planned to immediately precede the release of AWIPS OB8.2. Currently OB8.2 is planned for release in January 2008.

2 Requirements and Overview

The WES8.1 baseline operating system is Linux Redhat Enterprise 4 (RHEL4), which is the same as the AWIPS baseline operating system. Neither AWIPS OB8.1 nor WES8.1 will not work with RHEL3 or earlier distributions of Redhat. For general WES hardware requirements, please see the WES Implementation and Operations Plan (IOP) at the following web address.

http://www.wdtb.noaa.gov/tools/wes/admin/WES-IOP-Final.pdf

If you experience problems under the KDE desktop with windows freezing after the WES software sets the hardware clock, then we recommended using the Gnome desktop. We have included a program called kde-reset in the fxa user's path to unfreeze windows if you encounter this problem and you still choose to use KDE. The kde-reset restarts the window manager. This command can be run from a shell prompt by typing "**`kde-reset`**". In addition, if you create an icon on the desktop for the start_simulator script, you will need to select "**`Run in Terminal`**" to prevent spontaneous logouts upon exiting the simulator.

The WES8.1 install DVD is entirely self-contained and therefore does not require any previous WES versions to be installed. If a previous version of WES was installed, the installation script will replace: 1) the WES software with WES8.1, 2) the Linux version of AWIPS with OB8.1, and 3) the AWIPS "freeware" software.

Starting in OB7.1, AWIPS migrated to an RPM-based installation of its freeware. The WES uses the same RPM-based installation. Most of the freeware software is installed in the **`/usr/local`** directory as in previous builds. The two exceptions (AWIPS-provided postgres and perl RPM's provided by AWIPS) will update elsewhere on your machine.

With the default installation procedure, the WES install scripts uninstall postgres and perl. If dependency problems in uninstalling these two applications occur, uninstall them manually using the **`rpm`** command (see Section 23) and re-run the WES installation scripts. If you have any local files saved in your local versions of postgres and perl, you should back them up before installing WES8.1.

If you prefer to manually install the RPMs, we have provided a "**`-norpm`**" flag in the install script (see Section 4). The "**`-norpm`**" flag will not install the RPMs, and OB8.1 will not work until you manually install the RPMs following the instructions in Section 23.

If you have not previously installed WES on the machine being used for the current installation and plan on storing AWIPS data locally on your machine, then you will have to identify a large disk partition to store the files. Each case study generally occupies between 5 and 10 GB of disk space, so it is suggested that you have a MINIMUM 15GB of available space for both data and the WES8.1 distribution. Ideally, you will have

50GB+ set aside to handle multiple large datasets. The general convention for housing WES and WES data is to have **`/data`** and **`/awips`** be symbolic links that point to the install directory. The install script will guide you through this process. The freeware located in **`/usr/local`** is ~ 840 MB in size.

If you have not successfully installed WES before, then you will need to configure your Linux display to support AWIPS D2D. In order to run D2D, your display should be in 24-bit Truecolor mode with a resolution of 1280x1024. You can check your current display with the **`xdpyinfo`** command. If you find that you need to change your display settings, run **`Xconfigurator`**. If you try to run D2D in 8-bit Pseudocolor mode the process will die a horrible death.

The WES8.1 package contains both NWS AWIPS software and WES© software. The WES© software was written by CIMMS personnel at the University of Oklahoma in collaboration with the Warning Decision Training Branch and others. Limitations exist on the distribution of this package; however, NWS collaborators may obtain WES8.1 at no cost by requesting a copy from the WES distribution focal point and by agreeing to the conditions of the WES© software license agreement in the install script. To submit requests for WES8.1 please contact Timm Decker at the Warning Decision Training Branch (timothy.b.decker@noaa.gov) for details.

3 Back Up Any Pre-existing WES Installation

1. Log in as root.
2. **`cd /awips`**
3. Back up the fxa directory as root:

   e.g. **`cp -Rp fxa fxa.wes7.2`**

Note: If you desire to restore the previous version, you will need to move the old version back as root. Root user is important here because the **`/awips/fxa/DRT/bin/date`** executable has to be owned by root with special privileges, and the default empty postgres database in **`/awips/fxa/DRT/pgdata.tar.gz`** has to be owned by user postgres.

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4 Install WES8.1

1. Print out pages 9 - 27 of this document before starting if possible.
2. Log in as root.
3. Identify an install directory (e.g. **`/usr1`**) on a file system with 15GB+ of free disk space.

Note: If you already identified an install directory for a previous WES installation, then use this same directory. The install script will notify you of the correct directory to use if you do not enter the same directory as in the previous WES installation.

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4. Load and mount the Weather Event Simulator 8.1 install DVD.:

   e.g. **`mount /media/cdrecorder`** if the DVD doesn't automatically mount

5. cd to the WES directory and **`script`** your shell session to a log file:

   e.g. **`cd /awips`**

   e.g. **`script wes8.1.log.070716`**

6. cd to your cdrom device:

   e.g. **`cd /media/cdrecorder`**

7. Run the WES install script. As of OB7.1, AWIPS freeware comes bundled in RPM's. If you want the WES install script to install these RPM's, run the install script as normal:

   e.g. **`./install-wes81.sh <your_install_directory>`**

   If you do not want the WES install script to install these RPM's, then run the install script with the **`–norpm`** flag:

   e.g. **`./install-wes81.sh <your_install_directory> -norpm`**

   With the "**`–norpm`**" option, you will need to manually install the freeware RPM's. For instructions on installing RPM's manually, refer to Section 23.

Note: The script will inform you about the files and directories that are going to be deleted. The installation will also prompt you to install Xine for video support, which you can do manually or let the installation script do it for you.

Note: After agreeing to continue with the installation, wait for **`install-wes81.sh`** to return "**install-wes81.sh finished"** (~5-10 minutes).

8. End your scripting log by typing **`Ctrl-D`**. Now review the log file using **`more`** or your favorite text editor, and look for any problems in the install. In particular, you need to watch for "**error: Failed dependencies:**" messages in the freeware installation. If you find any of these messages, you will need to manually install or uninstall the appropriate RPM's. For guidance on how to do this see "Section 23, Manual Installation of AWIPS Freeware".

9. This version of WES contains an updated version of the Adobe Flash player for Linux. Install the Flash plug-ins in the "**`plugins`**" directory of your browser (e.g. in **`/usr/lib/mozilla/plugins`** for Mozilla or **`/usr/lib/firefox-1.5.0.7/plugins`** for Firefox). The necessary Linux Flash files were copied from the WES8.1 install DVD into the **`awips/fxa/install_flash_player_9_linux`** directory. An installation for Firefox would be the following:

e.g. **`cd /awips/fxa/install_flash_player_9_linux`**

e.g. **`cp libflashplayer.so /usr/lib/firefox-1.5.0.7/plugins`**

e.g. **`cp flashplayer.xpt /usr/lib/firefox-1.5.0.7/plugins`**

Note: For more information on the plugin installation, view **`/awips/fxa/install_flash_player_9_linux/Readme.txt`**.

10. Log out and log back in as user fxa (if no fxa account previously existed, a new account was created by the install scripts with the password fxapass). If no postgres account previously existed, a new postgres account was also created with the password postgres.

5 Verify Successful DVD Installation

5.1 Verify Flash and Xine Install

1. Login as user fxa.

2. Verify the Flash plugin installation by viewing the WES8.1 Flash verification presentation:

e.g. **`firefox file:///awips/fxa/DRT/wessl/source/articulate/flash_verification/player.html`**

Note: Following a successful installation, there should be a "**yes**" in the browser under the "**Enabled**" column found by clicking "**Help**" and then "**About Plug-ins**". If the presentation fails to load, then review the manual Flash plugin installation in Section 21.

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3. Verify the Xine installation by viewing an mpeg:

e.g. **`xine /awips/fxa/DRT/wessl/source/video/9jun05.mpg`**

Note: If Xine fails to load, then review the manual Xine installation in Section 22.

5.2 Install WES Test Case

1. In order to verify a successful installation, install the test case in **`/data/awips`** from the WES8.1 install DVD. After successfully viewing the test case data, move on to Section 5.4 to run a simulation. If you experience problems viewing the test case, contact WES support before attempting to run a simulation.

Note: You will eventually need to create new localizations for all your old cases (see Sections 7 - 9) before you can fully display them in D2D with the OB8.1 AWIPS in WES8.1.

Note: FFMP, SCAN, and DMD data that worked in WES6.0, WES7.1 and WES7.2 should continue to work in WES8.1. Any pre-OB5.0 FFMP, SCAN, and DMD data from your archived cases that does not display will need to be recreated by following the instructions in Section 13.

2. As user fxa, load and mount the Weather Event Simulator 8.1 install DVD:

e.g. **`mount /media/cdrecorder`** if the DVD doesn't automatically mount

3. To install the test case, change directory to the DVD device and run the **`wes81_testcase_install`** program:

e.g. **`cd /media/cdrecorder`**

e.g. **`./wes81_testcase_install`**

Note: If you have previously installed a WES test case, you may see the message "**A case already exists in /data/awips/2006Aug24test**". Remove or move that case as directed.

4. After the case has been installed, some archived watch and warning text products included in the test case will need to be inserted into a new Postgres database while the case is in "original format":

- Run **`start_simulator`**
- Click the "**Tools**" button
- Click the "**Write Archived Text to Database**" button
- Use the Select button to choose the **2006Aug24test** case for FXA_DATA and **ABR** as FXA_LOCAL_SITE
- Click "**OK**"
- The simulator will display "**Write to postgres database complete**" when finished
- Click "**Exit**"

Note: This tool will write all text products stored in **`<data_case>/archived_text/<awips_pil>/YYYYMMDD_HHmmss`** to a postgres database stored in **`<data_case>/pgdata`**. For more information on archiving text and writing the text to a Postgres database, see Section 11.

5.3 Versify the Test Case in Enhanced Case Review Mode

1. Start D2D on the 2006Aug24test test case by typing **`enhanced_case_review`** at a shell prompt, hitting return, and:

- Select **2006Aug24test** as the case and **ABR** as the FXA_LOCAL_SITE
- Click the "**OK**" button
- Select the "**Start AWIPS Text Workstation Control**" checkbox
- Click "**Start**" on the D2D launcher

Note: The **`enhanced_case_review`** application starts up D2D and a few other AWIPS processes for text database access for FFMP and SCAN to work fully in static case review mode outside of a simulation. The **`enhanced_case_review`** script works with both "original" or "DRT" format cases, though the program cannot be run alongside the simulator (**`start_simulator`**) due to interference with the AWIPS processes. The **`/awips/fxa/DRT/start_awips`** program starts D2D during a simulation. For more on **`enhanced_case_review`** see Section 17.

Note: WarnGen, GFE and AvnFPS applications do not work in **`enhanced_case_review.`** Run a simulation to use these applications.

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2. Ensure the Guardian application is running correctly and generate a test pop-up:

- After D2D starts up, there should be a bar below D2D containing several icons and two status bars
- Press the Guardian icon 
- The Guardian Configuration GUI should appear
- Close the Guardian Configuration GUI by pressing the "**x**" or the "**Close**" button
- In D2D, select **CONUS** scale and load **13u** under the **Satellite** menu
- A red Guardian pop-up should appear with a "**No Data Inventory**" message
- Close the pop-up by pressing the "**Close**" button or "**Acknowledge Last**"

3. Ensure the radar data for the first test case were loaded correctly by viewing the **All Tilts kabr Z/SRM8** radar data in D2D:

- Select **64** in the **Frames** menu
- Select **WFO** as the scale
- Under the **kabr** menu, select **All Tilts Z/SRM8**
- Step through a time loop of a single elevation angle by using the left/right arrow keys. Step through a volume scan vertically at a fixed time by using the up/down arrow keys.

Note: The data in this case contains a couple of hours of radar and satellite data, and some limited Grid and point data.

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4. Use D2D to display polygons contained in the archived text data. This step assumes the archived watch and warning text products in the 2006Aug24test case were written to the Postgres database (step 4 of Section 5.2)

- While on CONUS scale, select **SPC Watches** from under the **NCEP/Hydro** menu, and step through the loop.
- Some sample SPC watches should display (note the last frame comes up empty)
- Clear the pane, select **12** in the **Frames** menu, select **WFO** scale, load a **0.5 Z/SRM8** from the **kabr** menu, and load **Local CWA Warnings** from under the **NCEP/Hydro** menu
- A warning polygon should display when stepping through the loop
- Clear the pane
- In the Text Workstation window click on "**Text 1**" on the Text Workstation Control (outside D2D), enter **FSDSAW1** in AFOS Cmd and hit return
- The text of an SPC watch SAW text product should appear

Note: The data used for displaying SPC polygons changed in OB7.2. See section 11 for more information.

- In the same text editor type in **FSDTORABR**
- The text of an archived warning should appear

5. Display the FFMP data for kabr while in enhanced case review.

- In D2D, choose **WFO** scale and clear the pane

- Under the **SCAN** menu in D2D select **FFMP Image / Basin Table** under the **FFMP:kabr** submenu

- Select **1.00** under the **Durations** menu, and select **Worst Case Display**. Then click "**Refresh D2D**"

- A colored county map should be visible in D2D

- Select **SD, POTTER** in the FFMP table to zoom into the basin in the ABR CWA with the most precipitation. Now click the "**Ratio**" column heading to rank by ratio. Select **2264** in the basins list under the **Area_Id** column

- The screen should now be centered on basin 2264 with an "**X**"

- Return to the WFO scale display by selecting the **Group:SD, POTTER** button

- Under the **Thresh Type** menu select **ratio** followed by **Refresh D2D** to update the county map in D2D for the ratio product

- Click the "**Link to Frame**" button, and step through the loop using the  button in D2D

- Return to the last frame in the loop by selecting the  button in D2D

- Clear the D2D pane.

Note: The table will display "**NO DATA Retrieved**" when no accumulations exist for the selected duration period.

Note: Because FFMP data are stored differently than most AWIPS data (i.e. latest 6 hour accumulations in files without timestamps in the filenames), archived FFMP data won't work directly with WES. Instead, a tool exists within WES to create FFMP data from basin files and archived datasets containing Digital Hybrid Reflectivity (DHR) files and AWIPS format flash flood guidance (FFG) (see Section 12).

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6. Display the SCAN storm cells table for kabr:

- Under the **SCAN** menu in D2D select **Storm Cells / Site Storm Threat** under the **SCAN:kabr** submenu. The KABR Cell Table should launch

- To remove the SCAN table, hit the **Clear** button in D2D

7. Display the SCAN DMD for kabr:

- Under the **SCAN** menu in D2D select **Storm DMD Icons & Table** under the **SCAN:kabr** submenu

- Right click on "**llVr**" for the DMD identifier 342 to launch a time-height display of DMD data

- Toggle the graphical display overlays by clicking on the "**Diam Overlay**" along with "**Legend**", "**Elev Angles**", and "**Vol Scan Poles**"

- Click "**Close**"

- In the DMD Table, select "**Link to Frame**" and navigate back and forth through time using the left and right arrow keys to view the DMD icons

- Left click and hover over a meso circle in D2D for a cursor readout of the data

- To unload the SCAN DMD table and D2D icon display, click the **Clear** button in D2D

8. Under the **kabr** menu, select **kabr Graphics**, and **Digital Mesocyclone (DMD)** to display the DMD data using the D2D DMD display option.

- Left click and hover over a meso circle in D2D for a cursor readout of the data.

- Navigate back and forth through time using the arrow keys to view the DMD icons

> **Note**: For information on enabling SCAN functionality for your own case data please refer to Section 13.

9. Shutdown D2D and the Text Workstation Control by selecting **Exit** under the **File** menus of D2D and the Text Workstation Control.

5.4 Verify AWIPS/WES in Simulation Mode

If you had problems viewing the test case in Section 5.3, please contact WES support (wes@infolist.nws.noaa.gov) before attempting to run a simulation in this section. In this section you will run a simulation using the test case. A simulation start time for this case (2205 UTC on August 24, 2006) has been set as the default along with a WESSL file setting and an ffmp tar file setting.

Note: If you have not run a simulation before, click on the "**Help**" menu (upper right portion of the WES main window) and "**Instructions**" submenu, and follow the instructions under "Convert Case to DRT Format" and "Run Simulation".

1. Run **`start_simulator`**

2. Convert the 2006Aug24test case to "DRT format":

   e.g. click the "**Tools**" button, click the "**Convert Case Data to DRT Format**" button, select **2006Aug24test** as the FXA_DATA case location, click "**OK**" and click "**Convert**"

3. Load the **wes81_test_case_ABR** macro to run a simulation:

   e.g. click the "**Run Simulation**" button and the "**OK**" button in the D2D warning popup

   e.g. click the "**Load Saved Settings**" button, and select **wes81_test_case_ABR**, then click the "**OK**" button in the "**Load**" window followed by the "**OK**" button in the **Simulation Entry** window

4. Click the "**Run Simulation**" button when the Entry Verification window appears.

5. When the simulator prompts you to restart any D2D sessions, run **`start_awips`** in a new terminal. In the start_awips GUI select **2006Aug24test** as the case, and click the "**Start AWIPS Text Workstation Control**" checkbox.

6. Ensure the Guardian application is running correctly and generate a test pop-up:

- After D2D starts up, there should be a horizontal toolbar below the D2D window containing several icons and two status bars

- Press the Guardian icon 

- The Guardian Configuration GUI should appear

- Close the Guardian Configuration GUI by pressing "**x** "or the "**Close**" button

- Select **CONUS** scale and load **13u** under the **Satellite** menu.

- A red Guardian pop-up should appear with a "**No Data Inventory**" message

- Close the pop-up by pressing the "**Close**" button or "**Acknowledge Last**"

7. Select **WFO** scale, **64** frames, and **All Tilts Z/SRM8** from the **kabr** menu, and verify the display updates with new data (usually once per minute).

Note: Every 15 seconds the main WES window updates with data being processed, D2D displays should refresh shortly after the WES window lists the processed files.

- Toggle to the **SRM 8** product by selecting the "**.**" key on the numeric keypad.
- Under the **Tools** menu load **Radar Display Controls**
- Enter **280** degrees at **26** kts as the **SRM Custom Storm Motion**
- Trigger the display to update the new storm motion in the upper left of the main pane by zooming in on the storm or moving the center of the display

8. Verify that WESSL pop-up windows appear. Once the WESSL pop-ups appear, you can use the forward and backward buttons on the **WESSL Station Log** window to review previous WESSL windows.

9. Test create a warning with WarnGen in D2D:

- Clear the D2D pane and select a **WFO** scale map
- With no product loaded click on the "**WarnGen"** button in the upper right part of D2D
- Select **Tornado** for **Product Type** in the WarnGen popup window
- Move the "**Drag me to storm**" icon to somewhere in the center of the map
- Click on the "**Create Text**" button on WarnGen popup window
- A text window should appear if the text monitor was started with D2D
- Click "**Enter**" to modify the warning
- Replace the line at the bottom containing "**!**NAME/INITIALS**!**" with your initials
- Click the "**Send**" button
- In a new pane on WFO scale load **Local CWA Warnings** from the **NCEP/Hydr**o menu in D2D

Note: If you load a new warning polygon over old product data you need to wait about a minute for the polygon to be displayed or you may need to select **Forced** for the time matching in the upper left part of D2D for the time matching to work.

10. After verifying the install was successful, shutdown D2D and the Text Workstation Control by selecting **Exit** under the **File** menus of D2D and the Text Workstation Control. Exit the simulator by clicking the **Exit** button on the main WES interface.

11. You may consider putting icons on the desktop to start the **`start_simulator`**, **`start_awips`**, and **`enhanced_case_review`** scripts. For **`start_simulator`**, you need to select "**Run in Terminal**" for the desktop icon to prevent spontaneous logouts when exiting the simulator.

Note: FFMP, SCAN and DMD data are unique for each simulation. These products are created every volume scan from their input files. Thus, these input files must exist in the case for FFMP, SCAN and DMD to work successfully during a simulation.

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12. Verify the test warning text was saved. In the process of creating warnings, AWIPS writes the text to a file in the **`<data_case>/textWSwork/$DISPLAY`** directory where **`$DISPLAY`** is the DISPLAY variable that identifies the monitor where Text Workstation Control Monitor runs.

    After each simulation, WES copies the **`textWSwork`** directory is copied to the **`<data_case>/saved_textWSwork/textWSwork.<date>`** directory (where **`<date>`** is the current actual time when the simulation ends.

    e.g. **`cd /data/awips/2006Aug24test/saved_textWSwork`**

    e.g. **`ls`** (to look for the latest directory)

    e.g. **`cd textWSwork.022606223456`** (for example)

    e.g. **`ll –R *`** (to look for a display directory like :0.1 with a KABR warning file)

    e.g. **`cd :0.0/saved`** (for example)

    e.g. **`more KABRTORABR.wan20060824_220726`** (for example)

5.5 Verify GFE / WES in Simulation Mode

1. Run a simulation using **`start_simulator, with`** the **wes81_GFE_test_case_ABR** macro. This enables GFE functionality with the2006Aug24test data (note the "**GFE**" in the macro name):

    e.g. run **`start_simulator`**

e.g. click the "**Run Simulation**" button and the "**OK**" button in the D2D warning popup

e.g. click the "**Load Saved Settings**" button, and select **wes81_GFE_test_case_ABR**, then click the "**OK**" button in the **Load** window followed by the "**OK**" button in the **Simulation Entry** window.

e.g. click the "**Run Simulation**" button

Note: When a **GFE Directory** is selected in the simulation entry window, the IFPServer is launched with other AWIPS decoders. The IFPServer is required for GFE to work and can only be invoked during a simulation. When the simulation begins, GFE is purged of any new data files. The IFPServer takes a minute or two to start up, and requires a significant amount of resources to initialize, so your machine may temporarily slowed down.

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2. After starting a simulation, start GFE in "**PRACTICE**" mode by running **`start_GFE`** in a new terminal.

Note: The "**`start_GFE`**" program, which is in your **`$PATH`**, launches GFE in practice mode (see **`/awips/fxa/DRT/start_GFE`** for more information). GFE only launches after the IFPServer is operational during a WES simulation. Once a simulation has been detected with a valid GFE directory, GFE may take a minute or two to start up as it waits for the IFPServer to initialize.

---

3. Set-up GFE and begin:

- When the GFE Startup popup appears, select **fxa** as the **User**, **gfeConfig** as the **Config**, and **practice** as the **Mode**, then click the "**Start**" button.

4. Populate your grids with the **RUC80**:

- Under the **Populate** menu, select **Copy All Grids From…**
- Select **RUC80 2421 (ABR)**, and click the "**OK**" button.
- Switch to the vertical mode by selecting the top left button with the vertical line in the box 
- Click on "**T SFC**" grid, and step through the images using the right arrow key

5. Test creating warning hazard grids:

- Under the **Hazards** menu, select **MakeHazard**
- Click and drag to select some counties in the county display and **"IP.W – SLEET WARNING**" as the hazard
- Adjust the **Hazard End Time** to **12z** on **Aug 25**, and click the "**Run**" button
- Click the "**Clear All**" button to clear the counties
- Select some other counties, and "**IS.W – ICE STORM WARNING**" as the hazard
- Adjust the **Hazard End Time** to **12z** on **Aug 25**, and click the "**Run/Dismiss**" button
- Under the **Hazards** menu, select **MergeHazards**
- Drag the vertical scroll bar down, select the **Hazards SFC** grid, and use the right arrow key to view the hazards
- Save the forecast grids by clicking on the **diskette** button  on the GFE interface, followed by clicking on the "**Save Weather Element(s)**" button

---

Note: Forecast grids must be saved for GFE to generate the hazard text

---

6. Test creating the warning hazard text:

- Under the **Products** menu, select **Formatter Launcher**
- Under the next **Products** menu, select the **Hazard** pullout menu, and the **Hazard_WSW (Winter Wx Product)**
- Click on the "**Run Formatter**" gear box button  , and your warning text will appear after a few seconds
- Modify or delete all the "**|***" placeholders in the warning text
- Click on the "**Transmit**" button, and then the "**Simulated Transmit**" button

---

Note: The GFE product text is saved in the **`<data_case>/GFESuite-case/<your_case_GFE_DIR>/products/PRACTICE`** directory. When the simulation exits, WES copies the text directory to **`<data_case>/saved_GFE_PRACTICE`** directory, with a time stamp based on the actual time.

---

7. Exit out of GFE, and shut down the simulation.

5.6 Test Creating New GFE Grids

Background: A tool exists within WES to use the AWIPS IFPServer to create a set of GFE default grids for incorporation into a WES simulation. Any such GFE datasets are selected from the WES main simulation entry window. When a GFE dataset is selected, starts the IFPServer in a simulation to allow the GFE to function. For more information on GFE in WES, please see Section 18.

1. Under the "**Tools**" button in start_simulator, click "**Create GFE Dataset**".

2. Select **2006Aug24test** as the FXA_DATA, **ABR** as the FXA_LOCAL_SITE, and **200608241505** (1505z on Aug 24, 2006) as the time to create the grids for, and click "**OK**".

> **Note**: The IFPServer usually takes a couple of minutes to start up before it launches the ifpInit process to create the actual grids. If ifpInit fails to launch, the WES times out after five minutes. Once the ifpInit starts, the WES Log window will read "**Monitoring ifpInit for completion**", and the status bar will read "**Creating Data**".

3. Wait for ifpInit to complete. For this small case, ifpInit will only take a minute or two, since it only creates a RUC80 set of grids. Normally it can take an hour or two for a full case. You may also choose to monitor the processes by running a **`top`** command in another shell window. The WES log window will read "**Finished creating GFE data**" when complete.

4. Once the GFE data is created, you can run a simulation to view the grids with GFE and create warnings.

- After selecting the "**Run Simulation**" button in **`start_simulator`**, click "**OK**" on the first popup, and then select the simulation details, including using the "**Select**" button next to **GFE Directory** to select the GFE data just created (note the **1505 UTC** simulation start time should match the GFE Directory data time)

- Click the "**OK**" button, and then the "**Run Simulation**" button on the popup Entry Verification Window to start the simulation

- In a shell window, type **`start_GFE`**, and follow Section 5.5 Steps 3-7 using the 15Z RUC80. When done, exit the Simulator by pressing the **Exit** button.

5.7 Verify AvnFPS in Simulation Mode

1. Run **`start_simulator`**

> **Note:** Like GFE, AvnFPS is only available during a simulation.

2. Load the **wes81_AvnFPS_test_case_ABR** macro to run a simulation:

   e.g. click the "**Run Simulation**" button and the "**OK**" button in the D2D warning popup

   e.g. click the "**Load Saved Settings**" button, and select **wes81_AvnFPS_test_case_ABR**, then click the "**OK**" button in the Load window followed by the "**OK**" button in the Simulation Entry window

> **Note**: Notice the entry section labeled "TAFs Directory". This entry specifies a directory containing the TAFs used to initialize the simulation. AvnFPS processes only run in simulation mode and only when the TAF directory is specified.

3. Click the "**Run Simulation**" button when the Entry Verification window appears.

4. When the simulator prompts you to restart any D2D sessions, run **`start_awips`**. In the start_awips GUI select **2006Aug24test** as the case.

5. After the simulation begins processing data, start the AvnFPS menu. The AvnFPS GUI launches after the AvnFPS decoders successfully start and after TAF data is ingested into AvnFPS:

   e.g. run **`start_avnfps`** in a separate terminal window.

6. Once the AvnFPS menu has loaded select **Default** and click the **"TAFs"** button to load the AvnFPS monitor GUI.

> **Note:** In this example there are 4 TAF sites being monitored: KABR, KATY, KPIR, KMBG.

7. Load a TAF for KABR.

e.g. click the "**KABR**" button (which should be orange in color) on the AvnFPS monitor

8. Edit the TAF.

e.g. click the "**Text Editor**" button

Make the following modifications to the TAF:

- On the first line, change the wind speed and direction from **16013KT** to **20020KT**
- Remove the entire second line
- On the third line, change the valid time from **FM2200** to **FM2300**
- On the fourth line, change the wind speed and direction from **18015KT** to **36030KT**

9. Send the TAF.

e.g. click the "**Syntax**" button on the top of the editor

e.g. click the "**Send**" button on the top of the editor

e.g. click "**OK**" in the transmit time GUI

e.g. close only the AvnFPS TAF editor window (not the monitor window)

10. Verify the edited TAF was sent and ingested into AvnFPS.

In the AvnFPS monitor window, check the following:

- The KABR button should no longer be orange in color
- The TAF time next to the KABR button should not be 2141. It should be a time after 2200.
- Click on the "**KABR**" button and verify the TAF shows all the edits made in step 8

11. After verifying the install was successful, shut down D2D, all AvnFPS windows, and exit the simulator. You may consider putting icons on the desktop to run the **`start_avnfps`** script. If you launch from an icon, it is important to select the run in terminal option, so you can see the status while starting.

12. Verify your edited TAF was saved.

- To simulate the process of sending TAFs, WES writes the TAF to a text file in the **`<data_case>/avnfps/archived_TAFs/previous_simulation`** directory

- After each simulation, WES copies the **`previous_simulation`** directory to a **`<data_case>/saved_tafs/<date>`** directory, where **`<date>`** is the actual time when the simulation ends:

  e.g. **`cd /data/awips/2006Aug24test/saved_tafs`**

  e.g. **`ls`** (to look for the latest directory)

  e.g. **`cd 200707042200`** (for example, if you ran the simulation July 4, 2007 at 2200)

  e.g. **`ls`** (to look at all the saved TAFs)

  e.g. **`more ABRTAFABR`** (for example)

Note: The latest TAF is always stored as **CCCTAFXXX** (e.g. **ABRTAFABR**). The TAF used to initialize the simulation is always stored as **CCCTAFXXX.init** (e.g. **ABRTAFABR.init**). The long filenames in the saved_tafs directory are the TAFs generated during the simulation (see Section 19.6).

Note: The TAF you just wrote will be used in the next section, so do not delete this file.

5.8 Verify AvnFPS in Simulation Mode using Previous TAFs

In the last section we started by using a TAF supplied in the WES test case. In this section, we will start a new simulation using the TAF you created in the previous simulation. This functionality can be useful when running a sequence of simulations.

1. Run **`start_simulator`**

2. Load the **wes81_AvnFPS_test_case_ABR** macro and then change the TAF entry to use the TAF from the previous simulation.

   e.g. click the "**Run Simulation**" button and the "**OK**" button in the D2D warning popup

   e.g. click the "**Load Saved Settings**" button, and select "**wes81_AvnFPS_test_case_ABR**", then click the "**OK**" button in the Load window

e.g. click the **"Select"** button next to the "**Case Start Time**" entry section and change the minutes from **05** to **15** and then click **"OK"**

e.g. click the **"Select"** button next to the **TAFs_Directory** entry section and select **previous_simulation** and then **"OK"**

e.g. click the "**OK**" button in the **Simulation Entry** window

---

Note: Selecting **previous_simulation** in the TAFs directory entry window initializes the current simulation with the TAFs issued during the last simulation.

---

3. Click the "**Run Simulation**" button when the Entry Verification window appears.

4. When the simulator prompts you to restart any D2D sessions, run **`start_awips`**. In the start_awips GUI select **2006Aug24test** as the case.

5. After the simulation begins processing data, start the AvnFPS menu:

e.g. run **`start_avnfps`**

6. Once the AvnFPS menu had loaded, select **Default** and click the **"TAFs"** button

7. Load the TAF for KABR:

e.g. click the "**KABR**" button on the AvnFPS monitor

8. Verify the initial TAF is the same as the latest TAF version in Section 5.7:

e.g. click the "**Text Editor**" button

Verify the following:

- On the first line, the wind speed and direction is **20020KT**
- On the second line, the valid time is **FM2300**
- On the third line, the wind speed and direction is **36030KT**

9. After verifying the TAF is the same, shut down D2D, all AvnFPS windows, and exit the simulator.

5.9 Verification Completion

The next four sections cover customizing WES from a live AWIPS system. If you are not going to do these sections and you are a NOAA affiliate, please complete the WES8.1 post installation survey at the following address (there is another reminder at the end of Section 9):

https://apps.weather.gov/survey/survey.php?sid=43

We will use the information from this survey to improve future WES installation instructions.

The remainder of this document contains reference information including:

- Setting up cases
- The WES Scripting Language (WESSL)
- Using WES in a networked environment
- Manual installation of AWIPS freeware
- Manual installation of helper applications
- Configuration files

6 Customize AWIPS OB8.1 in WES8.1

6.1 Migrate Local AWIPS Customizations to the WEScustomization Directory in WES8.1

1. These customization instructions were designed to transfer AWIPS customization files from a real-time AWIPS with Build OB8.1 to WES8.1. If you don't have access to AWIPS customizations, then skip to Section 9.

2. The concept of migrating customizations to WES8.1 is to transfer all your important customization files from your local AWIPS to a central location on WES (WEScustomization directory) that will not be removed by future WES installations. Section 6 needs to be completed with help from the local AWIPS focal point who understands how the local AWIPS has been customized. To illustrate the following commands we will use the Chicago office, LOT, as the local CWA.

3. Log in to your WES machine as user fxa.

4. Identify a method to transfer files from your real-time AWIPS to your WES machine (floppy, cd, ftp, etc).

5. If you have previously customized your WES using previous WES customization instructions, you will need to back up the **customFiles**, **userPrefs**, **global-LLL-files**, **storagefiles**, **mainConfig**, and the **XXX** directory (e.g. **LOT**) in the **`/awips/fxa/WEScustomizations`** directory before you update WES8.1 with your new OB8.1 customizations.

e.g. **`cd /awips/fxa/WEScustomization/`**

e.g. **`mv customFiles customFiles.ob72`**

e.g. **`mv userPrefs userPrefs.ob72`**

e.g. **`mv global-LLL-files global-LLL-files.ob72`**

e.g. **`mv storagefiles storagefiles.ob72`**

e.g. **`mv mainConfig mainConfig.ob72`**

e.g. **`mv LOT LOT.ob72`**

Note: Be sure to perform all following copy commands as user fxa, not root

6. Copy the **/data/fxa/customFiles** directory on your DS into the **/awips/fxa/WEScustomization** directory on the WES.

   e.g. **cp -R customFiles /awips/fxa/WEScustomization** from dvd

7. On your DS, from the **/data/fxa/userPrefs/$user** directory, copy the **customColorMaps.nc** file to the **/data/fxa/userPrefs/fxa/colorTables** directory.

   e.g. **cp -R userPrefs/$user/customColorMaps.nc /awips/fxa/WEScustomization**

8. Copy the **/data/fxa/userPrefs** directory on your DS into the **/awips/fxa/WEScustomization** directory on the WES machine.

   e.g. **cp -R userPrefs /awips/fxa/WEScustomization** from dvd

9. Copy the **/awips/fxa/data/localization/XXX** directory (where XXX is your localization ID) on your LX1 workstation to the **/awips/fxa/WEScustomization** directory on your WES machine. The directory on the LX1 machine should contain the most up to date localization files which were used for the installation of OB8.1

   e.g. **cp -R LOT /awips/fxa/WEScustomization** from dvd

10. Copy the following files from your DS to the **/awips/fxa/WEScustomization/storagefiles** directory:

/awips/fxa/data/localization/nationalData/virtualFieldTable.txt
/awips/fxa/data/localization/nationalData/gridPlaneTable.txt
/awips/fxa/data/colorMaps.nc
/awips/fxa/data/fxa-users
/data/fxa/workFiles/customColorMaps.nc

11. Change the permissions on the **colorMaps.nc** file to "**-rw-rw-rw**" if they aren't set this way:

    e.g. **chmod 666 /awips/fxa/WEScustomization/storagefiles/colorMaps.nc**

12. Copy the following files from your WS to the **/awips/fxa/WEScustomization/storagefiles** directory:

/awips/fxa/data/vb/browser*.txt (not needed if browser*.txt files are already in the customFiles directory).

Note: There is no need to copy these files into the **`/awips/fxa/data/localization/nationalData`** directory.

13. Copy a LINUX VERSION of any specialized map files **`(*.bcx`** found in the **`/awips/fxa/data/localizationDataSets/XXX`** directory) into the **`/awips/fxa/WEScustomization/storagefiles`** directory.

14. Copy any other relevant local customized files to the **`/awips/fxa/WEScustomization/storagefiles`** directory.

6.2 Migrate the Local AWIPS OB8.1 Customizations to the New OB8.1 with WES8.1

1. The following instructions assume you have copied over your AWIPS customizations to the WEScustomization directory as instructed in section 6.1

2. Identify a local case in **`/data/awips`** to localize with your CWA. To illustrate the following commands, we will use a 2002Jun12 case from the LOT CWA as an example.

3. If you have already applied steps 4, 5, 6, and 7 (below) in a previous WES customization using WES customization instructions, you can skip steps 4, 5, 6, and 7.

4. As user fxa, backup your customFiles and userPrefs directories in your case:

e.g. **`cd /data/awips/2002Jun12`**

e.g. **`mv customFiles customFiles.orig`**

e.g. **`mv userPrefs userPrefs.orig`**

5. Make a customFiles symbolic link in your data case that points to the customFiles directory in WEScustomization:

e.g. **`ln -s /awips/fxa/WEScustomization/customFiles /data/awips/2002Jun12/customFiles`**

6. Make a userPrefs symbolic link in your data case that points to the userPrefs directory in WEScustomization:

e.g. **`ln -s /awips/fxa/WEScustomization/userPrefs /data/awips/2002Jun12/userPrefs`**

7. Cd to the data case and list out the contents of the links to ensure the links resolve the appropriate directories and files in **`/awips/fxa/WEScustomization`**.

   e.g. **`cd /data/awips/2002Jun12`**

   e.g. **`ls -l customFiles`**

   e.g. **`ls –l userPrefs`**

8. **`cd /awips/fxa/data/localization`** and backup your local CWA XXX directory:

   e.g. **`mv LOT LOT.orig`**

9. While in the same directory as step 8 (**`/awips/fxa/data/localization`**), make an XXX symbolic link (where XXX is your local CWA) that points to the pre-localization directory in WEScustomization:

   e.g. **`ln -s /awips/fxa/WEScustomization/LOT LOT`**

10. List out the contents of the XXX link in **`/awips/fxa/data/localization/`** created in the previous step to ensure the link resolves the appropriate directories and files in /awips/fxa/WEScustomization.

    e.g. **`ls /awips/fxa/data/localization/LOT`**

11. Before copying any of the following files into the WES AWIPS, make a backup version of the file you are copying over.

    e.g. **`cd /awips/fxa/WEScustomization/storagefiles`** and copy:

File	To Location
`virtualFieldTable.txt`	**`/awips/fxa/data/localization/nationalData`**
`gridPlaneTable.txt`	**`/awips/fxa/data/localization/nationalData`**
`browser*.txt`	**`/awips/fxa/data/vb (not needed if in customFiles)`**
`fxa-users`	**`/awips/fxa/data`**
`customColorMaps.nc`	**`<data_case>/workFiles`**

where **`<data_case>`** refers to your case (e.g. 2002Jun12).

12. Copy any other relevant files in the **`storagefiles`** directory to the appropriate AWIPS directory.

13. Now you are ready to create a localization for your local case.

7 Create a New Localization for Your Local Case

1. A new AWIPS localization usually needs to be created for every major AWIPS build upgrade, or when you create a case from scratch. If you have not customized your WES (Section 6), the localization you create will contain all the AWIPS default settings for color tables, templates, etc.

   Note: If you try to use an old localization on a newer version of AWIPS associated with a new WES install, D2D will sometimes hang on the startup and some products may not be displayable.

2. Cd to your localizationDataSets directory in your local case.

   e.g. **`cd /data/awips/2002Jun12/localizationDataSets`**

3. Move any old localization you are going to recreate.

   e.g. **`mv LOT LOT.ob72`**

4. **`cd /awips/fxa/data/localization/scripts`** and run **`mainScript.csh`** with your localization ID:

   e.g. **`mainScript.csh LOT LOT`**

   Note: You will be prompted to enter your case name and verify it is correct.

5. When **`mainScript.csh`** is done, **`cd /awips/fxa/WEScustomization/storagefiles`**

6. Copy any **`colorMaps.nc`** and **`*.bcx`** files from the **`/awips/fxa/WEScustomization/storagefiles`** directory to your new localization in **`<data_case>/localizationDataSets/XXX`**, where **`<data_case>`** is your local case (e.g. 2002Jun12) and **`XXX`** is your localization (e.g. LOT).

7. Start D2D with the new localization, and verify your localization was successful and any customizations took effect. Once you have verified your localization was successful, then try running a simulation to test creating a warning with WarnGen.

8. To update other local cases with the new customizations, first create the links in the new case that point to the WEScustomization subdirectories (i.e. steps 4 - 7 in

Section 6.2) if they haven't been created. Then, back up the **customColorMaps.nc** file and **XXX** localization in the new case (we will now use 2002Jun12 as the old local case and 2003Feb01 as the new local case from LOT in the following command examples):

e.g. **cd /data/awips/2003Feb01/workFiles**

e.g. **mv customColorMaps.nc customColorMaps.nc.ob72**

e.g. **cd /data/awips/2003Feb01/localizationDataSets**

e.g. **mv LOT LOT.ob72**

9. Then copy the **customColorMaps.nc** and new XXX localization into the new local case:

e.g. **cp /data/awips/2002Jun12/workFiles/customColorMaps.nc /data/awips/2003Feb01/workFiles**

e.g. **cp -R /data/awips/2002Jun12/localizationDataSets/LOT /data/awips/2003Feb01/localizationDataSets**

10. If you would like to be able to create localizations for other CWA's that contain your WarnGen templates, color tables, etc, then complete Section 9.

8 Link Local CWA Customizations to all Other CWA's

1. This section provides instructions on how to create localizations for other CWA's that will contain your local WarnGen templates, color tables, etc, but applied to cases outside your CWA. In the following example we will customize the BMX localization for the 1998Apr08 Birmingham, AL case in **`/data/awips/1998Apr08`** using preferences for LOT CWA.

2. The approach to making customized localizations other than your CWA involves linking all relevant local customization files to all the other CWA's before running **`mainScript.csh`**.

3. Log in as user fxa, and choose a case (e.g. 1998Apr08) to localize for (e.g. BMX) a non-local CWA.

4. If you have already made a customFiles symbolic link and a userPrefs symbolic link in this data case (steps 4, 5, 6, and 7 from Section 6.2) that point to the appropriate directories in WEScustomization, then skip steps 5, 6, and 7.

5. Backup your customFiles, procs, and userPrefs directory in your case:

   e.g. **`cd /data/awips/1998Apr08`**

   e.g. **`mv customFiles customFiles.orig`**

   e.g. **`mv userPrefs userPrefs.orig`**

6. Make a customFiles symbolic link in your data case that points to the customFiles directory in WEScustomization; make a userPrefs symbolic link in your data case that points to the userPrefs directory in WEScustomization:

   e.g. **`ln -s /awips/fxa/WEScustomization/customFiles /data/awips/1998Apr08/customFiles`**

   e.g. **`ln -s /awips/fxa/WEScustomization/userPrefs /data/awips/1998Apr08/userPrefs`**

7. cd to the data case, and list out the contents of the links to ensure the links resolve the appropriate directories and files in **`/awips/fxa/WEScustomization`**.

   e.g. **`cd /data/awips/1998Apr08`**

   e.g. **`ls customFiles`**

e.g. **`ls userPrefs`**

8. Copy the **`XXX-*`** files (e.g. LOT-*) in your customFiles directory that do not contain local geographic information to the **`global-LLL-files`** directory:

   e.g. **`cd /awips/fxa/WEScustomization/customFiles`**

   e.g. **`cp LOT-wwaConfig.template /awips/fxa/WEScustomization/global-LLL-files`**

Note: Do not copy files to this directory that have geographic information unique to your CWA like **`XXX-radarsInUse.txt`**, **`XXX-radarsOnMenu.txt`**, **`XXX-mainConfig.txt`**, **`XXXdialRadars.txt`**, and **`XXX-mosaicInfo.txt`**. Try doing a more command on each **`XXX-*`** file and watch for local radar information or local/surrounding CWA information to check for files not to copy. See Appendix A for an example of the file list in global-LLL-files.

Note: Any files in customFiles without the XXX- prefix will be utilized in the new localization directly from the customFiles directory.

---

9. Check the customFiles directory for files without an XXX- prefix that contain local geographic information unique to your CWA like **`radarsInUse.txt`**, **`radarsOnMenu.txt`**, **`mainConfig.txt`**, **`dialRadars.txt`**, and **`mosaicInfo.txt`**. If you find such files in this directory, then rename them to make sure they don't get seen in the localization. This can be done by naming the files with an XXX- prefix for your local CWA (e.g. **`mv dialRadars.txt LOT-dialRadars.txt`** if you are creating a BMX localization). See Appendix A for an example of the file list in customFiles.

10. **`cd /awips/fxa/WEScustomization/XXX`** where XXX is your localization ID (e.g. LOT).

11. Copy any **`XXX-*`** files and generic files (no XXX- prefix) that do not contain local geographic information to your **`/awips/fxa/WEScustomization/global-LLL-files`** directory.

    e.g. **`cp LOT-wwaConfig.template /awips/fxa/WEScustomization/global-LLL-files`**

Note: Do not copy files to this directory that have geographic information unique to your CWA like **`dialRadars.txt, XXX-dialRadars.txt, XXX-radarsInUse.txt, XXXradarsOnMenu.txt, XXX-mainConfig.txt, XXX-mosaicInfo.txt`**, etc. Try doing a **`more`** command on each XXX-* file

and watch for local radar information or local/surrounding CWA information to check for files not to copy. See Appendix A for an example of the file list in global-LLL-files and in the **`/awips/fxa/WEScustomization/XXX`** directory.

---

12. Run **`/awips/fxa/WEScustomization/scripts/linkLLLfiles.csh`** to put symbolic links in every **`/awips/fxa/data/localization/LLL`** directory that point to each file in **`/awips/fxa/WEScustomizations/global-LLL-files`**.

Note: When you want to make changes to **`global-LLL-files`**, modify the files in the **`global-LLL-files`** directory, and run the **`unlinkLLLfiles.csh`** script followed by **`linkLLLfiles.csh`**.

---

13. If you have generic directives (e.g. @@@RADAR_Z 1000) in your XXX-**`mainConfig.txt`** file you will need to create a new file in step 15 that will be accessed for localizing other CWA's (this is not a bad thing).

14. Copy your XXX-mainConfig.txt file from /awips/fxa/WEScustomization/XXX to the file /awips/fxa/WEScustomization/mainConfig/genericmainConfig.txt.

e.g. **`cp /awips/fxa/WEScustomization/LOT/LOT-mainConfig.txt /awips/fxa/WEScustomization/mainConfig/genericmainConfig.txt`**

15. Remove any local geographic directives from the **`genericmainConfig.txt`** file, leaving only generic directives (e.g. leave only entries like "@@@RADAR_Z 1000" in the genericmainConfig.txt file). Do not add entries if they do not exist in your original files. See Appendix A for an example of the **`genericmainConfig.txt`** file.

16. Run **`/awips/fxa/WEScustomization/scripts/modifymainConfig.csh`** to create a new **`XXX-mainConfig.txt`** file in each pre-localization directory in **`/awips/fxa/data/localization`**.

Note: If in the future you want to return the XXX-mainConfig.txt files to the original in each of the pre-localization directories, run the **`unmodifymainConfig.csh`** program in the same directory.

---

17. Section 9 will cover how to make the customizations in Section 8 take effect.

9 Create a New Localization for a Non-Local Case

1. A new AWIPS localization usually needs to be created for every major AWIPS build, or when you create a case from scratch. If you have not customized your WES (Section 6 and Section 8), the localization you create will contain all the AWIPS default settings for color tables, templates, etc.

   Note: If you try to use an old localization on a newer version of AWIPS associated with a new WES install, D2D might hang on startup and some products might not be displayable

2. Before running mainScript.csh, back up the localization if it exists:

   e.g. **`cd /data/awips/1998Apr08/localizationDataSets`**

   e.g. **`mv BMX BMX.ob72`**

3. **`cd /awips/fxa/data/localization/scripts`** and run mainScript.csh on the new localization you are about to create.

   e.g. **`mainScript.csh BMX BMX`**

   Note: You will be prompted to enter your case name and verify it is correct.

4. If you are customizing your WES from your AWIPS, then backup the customColorMaps.nc file in your case, and copy the **`customColorMaps.nc`** file from the **`storagefiles`** directory into the **`workFiles`** directory in your case. If you are not customizing your WES from your AWIPS, then skip to step 7.

   e.g. **`cd /data/awips/1998Apr08/workFiles`**

   e.g. **`mv customColorMaps.nc customColorMaps.nc.orig`**

   e.g. **`cp /awips/fxa/WEScustomization/storagefiles/customColorMaps.nc customColorMaps`**

5. After **`mainScript.csh`** is done, **`cd /awips/fxa/WEScustomization/storagefiles`**

6. Copy any **colorMaps.nc** and ***.bcx** files from the /awips/fxa/WEScustomization/storagefiles directory to your new localization in **<data_case>/localizationDataSets/XXX**, where **<data_case>** is the new case (e.g. 1998Apr08) and XXX is the new localization (e.g. BMX).

7. Start D2D with the new localization to verify your localization works and any customizations were successfully applied. If your localization was successful then try running a simulation to test creating a warning with WarnGen.

8. Once you have verified all your customizations took effect, you can easily create a new localization for any CWA in this case (e.g. FFC) by running **mainScript.csh** (step 3 with FFC for example) and following steps 5 and 6 (using FFC for example).

   e.g. **mainScript.csh FFC FFC**

9. To create a new localization with no customization changes (i.e. you skipped Sections 6 and 8) on any new case (e.g. **/data/awips/1998May31** Albany, NY event at ALY), all you need to do is back up the old localization (step 2 using ALY) and run **mainScript.csh** (step 3 using ALY).

10. To create a new localization with customization changes (i.e. you completed Sections 6 and 8) on another case outside your CWA (e.g. **/data/awips/1998May31** Albany, NY event at ALY), perform the following:

- Back up the customization directories in the case (step 5 in Section 8 using **/data/awips/1998May31**),

- Make symbolic links in the data case that point to the appropriate directories in WEScustomization (step 6 in Section 8 using **/data/awips/1998May31**),

- Verify the links (step 7 in Section 8 using **/data/awips/1998May31**),

- Back up the old localization (step 2 in Section 9 using ALY),

- Run **mainScript.csh** (step 3 in Section 9 using ALY),

- Copy files into the new localization (steps 4, 5 and 6 in Section 9).

11. If you have completed all sections to this point, you are done with the WES8.1installation. If you are from a NOAA affiliate and haven't completed the WES8.1 installation survey, please do so now at the following address:

    https://apps.weather.gov/survey/survey.php?sid=43

    We will use the information from this survey to improve future WES installation instructions.

10 Archiving and Setting up a New Case

Background: WES uses archived AWIPS datasets for case playback and simulation. In AWIPS, cron jobs on the AWIPS archive machine, AX, copy AWIPS data from **`/data/fxa`** on DX1 to the AX. Each day is typically stored as a separate directory containing all the AWIPS data for that day (for the last seven days). TSeveral utilities exist to archive data from the seven day archive. One of the more common data archive programs that is available from the AWIPS Local Applications Development (LAD) is the HNX_Archive.tcl application. Another useful program for archiving text products is the Product Archiver, which is also available from the AWIPS LAD. The archive applications typically compress the data to fit on storage media such as DVD.

Once archived, the data must be copied and uncompressed onto a WES machine. The data must be put into a case directory (e.g. 2004Jun09) in **`/data/awips`** where WES stores all cases. After copying the data, a few directories need to be created and an AWIPS localization needs to be created or copied into the case. Any archived text data will need to be added to the Postgres database (see Section 11), and FFMP data will need to be created if desired (see Section 12). After completing these steps, the case is ready for static review of all archived data and text. To run a simulation, the user must convert the data to "DRT format", and then enter the simulation start time.

1. Obtain archive data (e.g. from the 7 day rollover or from a DVD).

2. As user fxa, prepare the archived dataset by making the critical base directory tree. First cd to the main WES case storage area:

   e.g. **`cd /data/awips`**

3. Make the case name (typically named according to a yyyymmmdd convention), also create the **`userPrefs`**, **`localizationDataSets`**, **`workFiles`**, **`customFiles`** subdirectories:

   e.g. **`mkdir 2004Jun09`**

   e.g. **`cd 2004Jun09`**

   e.g. **`mkdir userPrefs localizationDataSets workFiles customFiles tstorm`**

   Note: Pay special attention for typos.

4. Uncompress the data into the case. If you don't have a case install program from your archiver, the follow the instructions below. For example, a 2004Jun09 case

stored on DVD with tar files containing case-relative paths such as **`2004Jun09/radar/kddc`**:

e.g. **`mount /media/cdrecorder`**

e.g. **`cd /data/awips`**

e.g. **`foreach fil (`ls /media/cdrecorder/*.gz`)`** (note the back tick key is usually located above the Tab key)

e.g. **`tar xvfz $fil`**

e.g. **`end`**

5. Create a localization for the case using **`mainScript.csh`** (see Sections 6 - 9). If you already have created a localization with this version of AWIPS, you can copy or link the localization into the **`<data_case>/localizationDataSets`** directory. If you don't have a localization already built, you have essentially three options for creating a localization (see Sections 6 - 9).

- Create a localization with the AWIPS defaults (no customization).
- Create a localization with your customizations for your local CWA.
- Create a localization for a non-local CWA.

6. Verify the data was loaded correctly and the localization was created correctly by checking all your data with **`enhanced_case_review`**. It is important to check the data before running a simulation to isolate any errors in setting up the case.

7. If you need to add text products to the case. Then see Section 11.

8. If you are running SCAN or FFMP, then see Sections 12 and 13.

Note: If you would like to run a simulation, then you need to convert to DRT format before running a simulation.

---

11 Adding Archived Text Data to Postgres

Since WES6.0, released in 2006, WES uses Postgres for database operations, replacing the flat files used previously. The primary function of Postgres in WES8.1 is to support WarnGen in creating warnings (more AWIPS database functionality is anticipated in future WES builds). Standard NWS text data can also be copied into the Postgres database for access during static review or simulations. The following instructions detail how to add archived text data into the Postgres database for use with WES.

11.1 Obtain Archived Text Files

1. The text files must be the exact format as is stored in the Postgres text database on AWIPS (likely the standard product format). This archiving can be done in a variety of ways. A WFO can access all the text products issued from an office in a tar file located in **`/data/fxa/archive/OUP/archive`** on their baseline AWIPS. There is also a program on the AWIPS LAD that archives text data called "**Archived_text AWIPS Build 6 version**".

11.2 Copy the Text Files into the Case Directory as User fxa

1. The WES convention for Postgres file manipulation is to store the files in the **`<data_case>/archived_text/<$PILNAME>`** directory with AWIPS timestamps as their name (e.g. YYYYMMDD_hhmmss).

   as user fxa:

   e.g. **`mkdir /data/awips/2006Aug24test/archived_text`**

   e.g. **`mkdir /data/awips/2006Aug24test/archived_text/FSDSAW1`**

   e.g. **`cp mySAW1-1810.txt /data/awips/2006Aug24test/archived_text/FSDSAW1/20060824_181005`**

Note: Beginning in OB7.2, SPC watch polygons display from the WOU files in D2D (see NCEP/Hydro menu) rather than SAW prouducts. If you want to display archived SAW products and you don't have WOU files, then you will need to replace the "WOU" entries with "SAW" in your **`localizationDataSets/XXX/textDataKeys.txt`** file.

11.3 Write the Files to the Postgres Database in Your Case

1. Run the **`start_simulator`** script, and click the "**Tools**" button.

2. Click on "**Restore Case to Original Format**" if the case is in DRT format. Note the WES requires that any new data be added to a case while the case is in original format.

3. Click on the "**Write Archived Text to Database**" button.

4. Select your case and localization ID, and click "**OK"**.

Description of what happens: The WES untars an empty database into a **`<data_case>/pgdata`** directory as user postgres if it does not already exist. If a **`pgdata`** in your case is not owned by user postgres, WES moves it to **`<data_case>/badpgdata/pgdata.$date`**. If you someday accidentally change the ownership of the **`pgdata`** directory, say from copying a case as user fxa, you can manually change the ownership to user postgres and move the **`pgdata`** back to continue to use the database. The WES8.1 installation modifies the **`/etc/sudoers`** file to allow the fxa account to untar a blank database and start/stop the postmaster as user postgres.

Once the database is in place, the WES starts the postmaster as user postgres, and it will start the TextDB_Server Read and Write processes as user fxa. WES writes each file in the **`archived_text/$PILNAME`** directory to the database using the "**`textdb –w`**" command. The time stamp of each file in the database is initially given the current time, so after each file is written, the time of the product in the database is corrected using the time of the filename. This permits database access and purging.

After WES completes writing all files to the database, the postmaster is stopped, and the TextDB_Servers are killed. The database is available for static review and simulations.

11.4 Verify the Files Were Written Correctly

1. After the "**Write to postgres database complete**" displays in start_simulator, exit out of the **`start_simulator`** application.

2. Start **`enhanced_case_review`**, and select your case, localization ID, and check the "**Start AWIPS Text Workstation Control**" checkbox to be able to access the database. The **`enhanced_case_review`** script also accesses the Postgres database.

3. Bring up a text window (e.g. Text1 in the Text Workstation Control window), and enter a product PIL in the "**AFOS Cmd:**" entry box (e.g. **FSDSAW1** if you copied in this product), and hit return. The text products should be retrieved from the database. Note that some text products can display in D2D; use D2D to test the

product availability (e.g. SPC Watches under the **NCEP/Hydro** menu for the SAW text product).

Note :Because D2D will sometimes display a blank frame when loading a polygon from the NCEP/Hydro menu, it is helpful to first load a separate product that will match the time of the polygon.

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4. Check to make sure all versions are available. If you only see two versions available and the **`<data_case>/archived_text/$your_PILname`** directory has more than two valid files in it, then your database probably doesn't have the PIL defined. For a list of defined PILs see **`/awips/fxa/postgres/versionsTable.txt`**.

5. If your PIL isn't covered by the wildcards in **`/awips/fxa/postgres/versionsTable.txt`**, then you will need to manually adjust the database. To do this:

- Start **`enhanced_case_review`**

- In a shell window type **`psql fxatext`**

- "**`SELECT * FROM textProductInfo;`**"

- Find your PIL with the versionstokeep set at the incorrect value (e.g. SEA | WRK | W3 | 2 | 2)

- Delete the PIL using the appropriate id value (e.g. "**`DELETE FROM textProductInfo WHERE cccid = 'SEA';`** "). Note that the ' is the mark next to the Enter key on the keyboard.

- Verify the delete using "**SELECT * FROM textProductInfo**;"

- Add the PIL wildcard to the versionsTable (e.g. "**`INSERT INTO versionsTable VALUES ('CCCWRKXXX', '999');`** ". Note that the single quote key is the mark next to the Enter key on the keyboard.

- Verify the change exists by using "**`SELECT * FROM versionsTable;`** "

- Type in **`\q`** and return to exit postgres (very important)

- If this doesn't work, then email the wes@infolist.nws.noaa.gov list.

11.5 Running a Simulation with Text Products

1. Once a) the text products have been copied to the archived_text directory, b) they have been written to the database, and c) queries have been verified to work correctly, then the text products are ready to be used in a simulation.

2. Convert the case to DRT format using the "**Tools**" button in start_simulator. Since the text data was added to the case before the conversion to DRT format, the WES indexes the files in the archived_text directory along with other data files.

3. Run a simulation.

Description of what happens: In the first part of the simulation preparation, WES starts some of the AWIPS decoders, including the postmaster (as user postgres) and the TextDB_Server Read and Write processes. Then the AWIPS data links are created and deleted to set the start time. Every time a link is made for the archived_text file, the file is written to the database using "**textdb -w**", and the write time is modified based on the filename. After the links have been modified, the Postgres database is purged of future products using the simulation start time. Each time a text file is processed in a simulation, the file gets written to the database. When the simulation is over, the decoders are killed.

12 Preparing Cases for FFMP and Creating FFMP Data

12.1 Preparing a Case for FFMP

1. Because FFMP data are stored differently than most AWIPS data (i.e. files contain latest 6 hour accumulations time stamped in the filenames), archived FFMP data won't work directly with WES. Instead, a tool exists within WES to create FFMP data from archived datasets. Before WES can be used to create FFMP data, the case needs to be prepared for FFMP. These instructions should work for local cases or cases from other CWA's.

2. Creation of FFMP data from an archived case requires the following:

- Basin files for each radar running FFMP (stored in **`/awips/fxa/data/localization/nationalData`**)

- HRAP grid digital RFC flash flood guidance (stored in **`<data_case>/img/SBN/netCDF/HRAP/FFG/XXRFC/Yhr`** (where **`XXRFC`** is the RFC for your area and **`Yhr`** is 1hr, 3hr, and 6hr)

- DHR files for each radar running FFMP stored in **`<data_case>/radar/xxxx/DHR/layer0/res1/level256`** (where **`xxxx`** is the radar name)

- Directories: **`<data_case>/tstorm, <data_case>/radar/xxxx/tstorm, <data_case>/radar/xxxx/ffmp`** (where **`xxxx`** is the radar name), and **`<data_case>/radar/xxxx/ffmp/lookupFiles`**

- A localization run with the "**`-scan`**" switch

> **Note**: Failure to include all of the above elements will result in incomplete or bad FFMP data.

3. The first step in preparing your case for FFMP is to copy the basin files for each radar onto your WES. For your local cases, you should already have basin files on your AWIPS. Basin files from other radars will have to be retrieved from other NWS offices or the AWIPS NOAA1 server.

4. On your LX workstation copy the basin files to the WES (e.g. copy files to a tmp directory and burn a cd):

   e.g. **`cd /awips/fxa/data/localization/nationalData`**

   e.g. **`cp kabr_* /data/fxalocal/tmp`** and burn a cd S

5. On the WES, copy these files to the **`/awips/fxa/WEScustomization/storagefiles`** directory to preserve the files on the machine after any future WES upgrades as outlined in Section 6:

   e.g. **`cp /media/cdrecorder/kabr_* /awips/fxa/WEScustomization/storagefiles`**

6. Copy the basin files to the **`/awips/fxa/data/localization/nationalData`** directory:

   e.g. **`cp /awips/fxa/WEScustomization/storagefiles/kabr_* /awips/fxa/data/localization/nationalData`**

7. After copying the basin files to the WES machine, you need to ensure the FFG data exists in the case.

   e.g. **`ls <data_case>/img/SBN/netCDF/HRAP/FFG/XXRFC/Yhr`** where **`XXRFC`** is the RFC for your area and **`Yhr`** is 1hr, 3hr, and 6hr)

8. Ideally you should include FFG data in your regular local archive, since there is no easy-to-access archive source for the digital FFG data (netCDF format). If you are trying to recreate old FFG files, you can check with the COMET case study group to see if they have access to the data (note that digital FFG data in general is not available prior to 1999 because that is when it was first distributed via the SBN). If you can access some digital FFG data that is somewhat representative for your case, this data may be configured for FFMP (see Section 12.3), though not having the exact FFG data for a specific case can significantly change the way FFMP characterizes events.

9. After ensuring FFG data exists in your case, ensure DHR data exists for each radar that will run FFMP.

   e.g. **`ls <data_case>/radar/xxxx/DHR/layer0/res1/level256`** (where **`xxxx`** is the radar name)

10. After ensuring DHR files exist in the case, ensure the required directories exist.

    e.g. **`ls <data_case>/tstorm`**

    e.g. **`ls <data_case>/radar/xxxx/tstorm`** (where **`xxxx`** is the radar name)

e.g. **`ls <data_case>/radar/xxxx/ffmp`** (where **`xxxx`** is the radar name)

e.g. **`ls <data_case>/radar/xxxx/ffmp/lookupFiles`** (where **`xxxx`** is the radar name)

11. If the directories do not exist in your case, copy a version of these directories over from either a case that has them, or your local AWIPS (create them manually as a last resort). Recreating a localization (steps 12 and 13) should update all the files needed for the particular case.

12. After ensuring the case structure is ready for FFMP, create a new localization for your case running **`mainScript.csh`**.

e.g. **`mainScript.csh ABR ABR`**

13. Once the localization is done, relocalize with the "**`-scan`**" switch to create all the needed FFMP configuration files.

e.g. **`mainScript.csh –scan ABR ABR`**

14. Start up D2D and check the SCAN menu to verify the FFMP menus exist for the radars that should run FFMP. If the radar isn't listed, include the desired radar in **`XXX-radarsInUse.txt`** and **`XXX-radarsOnMenu.txt`** files in the **`customFiles`** directory in the case (where **`XXX`** is your localization id for the case).

Note: These steps are for evaluating the configuration, and not for testing data. You will need to create new FFMP data in section 12.2 to be ready to look at data.

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15. On the main Guardian GUI, select the "**FF**" button and ensure a reasonable "FFG Expiration Time" exists (e.g. 96 hours), and click "**Save**". If the "FFG Expiration Time" is blank, FFMP will not be able to access the FFG data needed to create FFMP data.

16. Under the "**Maps**" and "**FFMP Basins**" submenu on the D2D, select the "**kxxx Small Stream Basins**" map, where **kxxx** is the radar name. Note the scale must be "State" or "Local" to display this map. If all the needed basin files were included in nationalData, and the localization was rerun, the high resolution basin maps should display.

17. Now the case should be ready to create FFMP data.

12.2 Creating an FFMP Tar File for WES

The FFMP data format changed in OB5, therefore all FFMP data created in WES 4.0 or earlier versions will need to be recreated once. FFMP data that worked in OB5.0 or later should continue to work with no further modification.

Once the case is configured for FFMP data creation (Section 12.1), WES can create FFMP data. The case can be in original format or DRT format when creating the data. The FFMP data is stored as tar files that are subsequently selected in the simulation entry window (e.g. **19970507_2346.tar.gz**).

The time of the FFMP tar file represents the end of the FFMP accumulations. For example, a 19970507_2346.tar.gz file contains data up to 2346Z. During a simulation the FFMPprocessor will create new data each volume scan to add to the existing accumulations.

Note: To browse FFMP data in a static mode, you can create an FFMP tar file for the end of the time period of interest and review the last 32 frames of data. The D2D "**Freeze time at this position**" tool (selected after double clicking the clock on the bottom right of the D2D) will not work with FFMP data.

Note: To use FFMP data in a simulation you will want to create data up to the start time of the simulation. The FFMPprocessor will add to the accumulations each volume scan during the simulation.

1. Start up WES8.1

e.g. **`start_simulator`**

2. Click the "**Tools**" button

3. Click the "**Create FFMP Dataset**" button.

4. Enter the information for your planned simulation

- Select the case name (**FXA_DATA**)
- Select the localization (**FXA_LOCAL_SITE**)
- Select the start time (**FFMP start time**)
- Click the "**OK**" button.

While you are waiting for FFMP data to be created, you may watch the progress of the FFMP processor in the shell window used to launch the simulator.

FFMP data will be created for the most recent 96 DHR files at the start of the simulation (size of the FFMP storage). It does this by feeding a subset of the DHR files to the FFMPprocessor and other decoders started during the data generation. If you have multiple radars and many DHR files, the process can take 5-10 minutes. The WES will warn the user if some of the requirements in Section 12 are not met.

Note: It is very important not to kill the simulator while it is creating FFMP data. If you kill the simulator while the FFMP data is being created, the ……**`DHR/layer0/res1/level256.saved`** directory will need to be renamed to "**`level256`**" after removing "**`level256`**" and "**`level256ffmp`**". Be careful not to delete your original data directory.

---

5. Following successful FFMP data creation, exit the simulator.

- Click the "**Exit"** button on the WES interface

Note: A tar file is created for each radars **`ffmp`** directory with the time stamp entered as the FFMP start time. The tar files are subsequently selected from the WES main simulation entry window, and they reside in **`<data_case>/radar/xxxx/ffmptars`** (where **`xxxx`** is the radar).

---

6. Start enhanced_case_review.

e.g. **`enhanced_case_review`**

7. Verify the FFMP data was created correctly

- Load the FFMP table for one of the valid radars.

- If there is no FFMP data in your case, then review any error messages and contact WES support.

8. Exit the **`enhanced_case_review`** session by closing D2D

9. Start up WES8.1

e.g. **`start_simulator`**

10. Make sure your case is in DRT format before going on to the next step

11. After the data have been verified to exist, select the FFMP tar file in the main simulation entry window.

- In the main WES interface, click "**Run Simulation**"

- Next to the "FFMP File and Radars" entry window, click on the "**Select**" button, and select a radar to be used.

- A list of tar files should pop up. Select the desired tar file time, and click "**OK**".

- The tar file selected should appear in the main simulation entry window along with a list of radars that have tar files at that time. Selecting one tar file from one radar will grab all the available tar files from other radars. Click "**OK**" to proceed with the simulation startup.

12. After the links are created for the simulation start time, each radars **`ffmp`** directory is deleted, and a new directory is untarred into its place with the data valid up to the start time.

13. Note that most of the AWIPS decoders are also started in this step.

14. Before clicking on "**Run Simulation**" in the Verification Entry window, you may start D2D and view the new FFMP datasets with full FFMP table functionality.

15. If you wish to run a simulation, you may click "**Run Simulation**", and you will need to start a new D2D session. The FFMPprocessor is then started for simulation use, and each time the DHR files are processed by WES, a notification is sent to the FFMPprocessor and other AWIPS processes to create new FFMP data and update the table as in real time.

12.3 Creating FFG Data for an Old Case From Recent FFG Data

Background: Some of your old archived data sets may not have netCDF flash flood guidance needed for use with FFMP. If you have some digital FFG data from another event that is reasonably close to the FFG for the case, you may modify the files to serve as substitute FFG.

1. Copy the FFG files into your case as outlined in Section 12.1.

2. For each file you will need to create a new FFG netCDF file with the modified time.

3. Use "**`ncdump`**" to create a text version of the file to modify. The following examples will illustrate creating a **`19910426_1200.multi`** file from a **`19970501_1200.multi`** file.

e.g. **`ncdump 19970501_1200.multi > tmp.txt`**

4. Determine the time of the new FFG data you wish to create (e.g. 19910426_1200).

5. Create a file, newtime.txt, with the time entered in the following format: **`ss mm hh dd MM YYYY`** where **`ss`** is the seconds, **`mm`** is minutes, **`hh`** is hour, **`dd`** is day, **`MM`** is month, and **`YYYY`** is year (e.g. **`00 00 12 26 04 1991`**).

6. Obtain the Julian seconds from 1970 for this time by running **`/awips/fxa/DRT/calJulSecFrom1970.linux < newtime.txt`**

7. Edit the text version of the FFG data (e.g. "**`vi tmp.txt`**") and replace the integer following "**`validTime =`**" with the new Julian seconds from 1970 time calculated in step 6, and save the file.

8. Create a new netCDF file from your modified text file using **`ncgen`**.

   e.g. **`ncgen –o 19910426_1200.multi tmp.txt`**

9. Remove all the old files just leaving the updated FFG file.

10. Start D2D, and verify the FFG data is visible, and that it loads the appropriate time.

11. Repeat the process for each FFG file in the 1hr, 3hr, and 6hr directories.

12. If the data displays correctly, try creating new FFMP data with Section 12.1.

Note: If the integer seconds time is incorrect, the data will still display correctly, but the FFMPprocessor will fail to time match the FFG data when new data is created with WES.

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13 Preparing Cases for SCAN and Fixing Pre-OB5 SCAN Data

Background: Section 13.1 contains information on how to set up a case to work with SCAN in OB8.1/WES8.1. Section 13.2 contains information on fixing a pre-OB5 SCAN dataset.

Note: OB5 SCAN data or later will continue to work in OB8.1/WES8.1 with no modifications necessary. If you have OB4 SCAN data or earlier, you will need to fix the data by following Section 13.2.

13.1 Preparing Cases for SCAN

1. The **`/data/awips/<data_case>/tstorm`** directory must be copied from **`/data/fxa/tstorm`** on your real-time AWIPS or from another case from the same AWIPS build in the WES. This **`tstorm`** directory contains general information for both SCAN and FFMP. Note the data contained in this **`tstorm`** directory is much different than that in the **`tstorm`** subdirectory under each individual radar directory.

2. The SCAN SCIT data and the VIL density products are archived in numerous subdirectories under each radar's **`tstorm`** directory (e.g. **`/data/fxa/radar/kabr/tstorm`**). This data can be archived from a real-time AWIPS and played back in WES.

3. The data used in the SCAN DMD display is archived from each radar's DMD directory (e.g. **`/data/fxa/radar/DMD`**...including both the elev* and netcdf subdirectories). The files under elev* are the raw files, which are used in a simulation, and the netCDF files are the files used for display in D2D and SCAN.

4. After the tstorm directories and data are copied over, the localization needs to be rerun using the "-scan" switch (e.g. **`mainScript.csh -scan ABR ABR`**). Now you can view SCAN data for case review and simulations.

5. If the SCAN SCIT data were not archived for an event, but all the SCAN SCIT inputs exist (1km CZ, 1km 0.5 degree Z, STI, VIL, TVS, and M), WES creates the create SCAN SCIT data during a regular simulation.

Note: During a simulation, SCAN SCIT files, DMD data and FFMP data are created from the raw input files for each volume scan.

6. If the raw DMD files do not exist, (**`/data/awips/2006Aug24test/radar/kabr/DMD/elev*`** directories), then DMD will not work in simulation mode. The DMD netCDF files are created from the raw files during a simulation.

7. If the SCAN VIL density data were not archived for an event, but the inputs (VIL, DVIL, ET, EET) exist, then WES creates the products during a regular WES simulation.

Note: The SCAN display filters do not work when using the D2D "**Freeze time at this position**" tool (selected after double clicking the clock on the bottom right of the D2D).

13.2 Fixing pre-OB5 SCAN and DMD Data Sets for Use with OB8.1

In OB5.0, both SCAN and DMD data changed format. In a case with pre-OB5 SCAN or DMD data that hasn't been recreated, the SCAN storm cells table will not load, and D2D will not display the DMD data (the radar Graphics submenu).

Note: OB5, OB6, OB7.1 and OB7.2 data will work in OB8.1 without any modification

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The following steps detail how to convert pre-OB5.0 SCAN and DMD data for later versions:

1. Convert the case containing the SCAN and/or DMD data to DRT format if it is not already in DRT format.

2. Verify the existence of the contents of "**`<data_case>/tstorm`**", and "**`<data_case>/radar/kxxx/tstorm`**", where **`kxxx`** is your radar

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Note: These tstorm directories have much different contents. If you don't have these, then copy both of them from your real-time AWIPS.

---

3. Create an OB8.1 localization using **`mainScript.csh`** in WES8.1

4. Run **`mainScript.csh`** with the "**`-scan`**" switch (e.g. **`mainScript.csh -scan ABR ABR`**)

5. Run a simulation for the time period of interest using WES8.1

6. Verify the new data is being created during the simulation

7. After the simulation is over, verify the new data is visible

8. Run **`cpscandmd2a.csh /data/awips/<data_case>`** to permanently copy the data into the DRT format "a" files

9. Now your case contains current SCAN and DMD data, and you do not need to do these steps again unless you want a different time period.

14 Configuring AvnFPS for a Simulation

In Section 5.7 we started with pre-packaged AvnFPS data. In Section 14 you will learn how to configure AvnFPS and your case for a simulation.

For the following examples, we will step through configuring AvnFPS and the WES test case to work with downloaded OUN data. This example uses TAF data from 2000 to 2100 on 2007Mar21 for the Oklahoma City airport (KOKC). To become familiar with the process we recommend downloading the OUN data as outlined below. When you create AvnFPS data for your own archived case, you will need to apply these steps to your case.

14.1 Download TAFs

To begin a simulation with archived TAFs, this section will show you how to obtain historical TAFs from the National Climatic Data Center (NCDC) for ingest into AvnFPS during a simulation. You may use other sources for historical TAFs, provided the format is the version AvnFPS uses.

1. Go to the following website: http://has.ncdc.noaa.gov/

2. Click **"SRRS Text"** in the Surface & Marine category

3. Request your desired TAFs using the interface to select the time, type and location. Here is the OUN input for this example:

- Station: **KOKC – OKLAHOMA CITY(AWOS) , OK**
- Bulletin Id: **FTUS - Terminal Aerodrome Forecast**
- Start Date/Time: **2006082412**
- End Date/Time: **2006082420**
- Email Address: Enter your own e-mail address

Click the **"Continue with Selections"** button

4. You should receive a message in your web browser saying your selection has been submitted for processing. At some point you will receive an e-mail with **"Your SRRS Request....."** in the subject. This message will contain a link to a webpage with all available TAFs from the requested time frame. Open this webpage in a web browser.

The example request in step 3 above should return three identical TAFs, issued at 1739Z and valid between 18Z on August 24 to 18Z August 25. Copy **one** of the TAFs (not all three!) from the website into a text file with a name of the form **CCCTAFXXX** where **CCC** is the AFOS node site and **XXX** is the TAF site identifier. **The file name must have exactly nine characters with no extension!**

e.g. Make a file named **`OUNTAFOKC`** and copy / paste one TAF into this file

---

Note: The line before the TAF ID (e.g. **KOKC 241739**…) must contain a valid WMO header or AWIPS PIL like "**FTUS31**…" or "**TAFOKC**". Otherwise the AvnFPS initialization will fail, and the AvnFPS GUI will fail to start.

---

5. Copy the TAF over to your WES machine.

e.g. **`cp /media/cdrecorder/OUNTAFOKC /awips/fxa/WEScustomization`**

6. In the **`<data_case>/avnfps/archived_TAFs`** directory, create a new directory where the downloaded TAF is to be stored.

e.g. **`mkdir <data_case>/avnfps/archived_TAFs/test`**

Note: This directory will eventually be selected from the run simulation entry window when running a simulation.

---

7. Copy the TAF created in step 4 into this directory

e.g. **`cp /awips/fxa/WEScustomization/OUNTAFOKC <data_case>/avnfps/archived_TAFs/test`**

14.2 Configure /awips/adapt/avnfps/etc/ids.cfg

The file **`ids.cfg`** should contain the list of TAF sites for your current simulation. We suggest backing up the **`ids.cfg`** for each simulation that you run so that it can be used again.

1. If you are using your own case (not the OUN example), then copy the **`/awips/adapt/avnfps/etc/ids.cfg`** file from your real-time AWIPS into the **`/awips/fxa/WEScustomization`** directory for temporary storage:

e.g. **`cp /media/cdrecorder/ids.config /awips/fxa/WEScustomization`**

2. Examine the current **ids.cfg** used by AvnFPS on the WES:

   e.g. **cd /awips/adapt/avnfps/etc/**

   e.g. **more ids.cfg**

   Climate data for AvnFPS are only available for TAF sites specified in this file

3. Backup **ids.cfg** in the current case:

   e.g. **cp ids.cfg idsABR-backup.cfg**

4. Copy the new **ids.cfg** to be used for the simulation (from the WEScustomization directory in step 1 above if you are modifying your own case and are not testing the OUN example). We have provided **idsOUN.cfg** in the **/awips/adapt/avnfps/etc/** directory for you to use in the OUN example:

   e.g. **cp idsOUN.cfg ids.cfg**

5. Identify the TAF sites for which we will copy in climate data in Section 14.4 (the climate files are listed in the ids.cfg file):

   e.g. **cd /awips/adapt/avnfps/etc/**

   e.g. **more ids.cfg**

14.3 Modify .cfg files in /awips/adapt/avnfps/etc/tafs

There are several files and subdirectories in the **/awips/adapt/avnfps/etc/tafs** directory that configure AvnFPS for your WFO. Steps 1-3 below detail how to copy the files from a local machine. For the OUN example, then we have provided the files.

1. For your own case (not the OUN example), copy the AvnFPS config file(s) in **/awips/adapt/avnfps/etc/tafs** from your real-time AWIPS into the **/awips/fxa/WEScustomization** directory for temporary storage. This file just lists the TAF sites (see **/awips/adapt/avnfps/etc/tafs/Norman.cfg** for an example):

   e.g. **cp /media/cdrecorder/Norman.cfg /awips/fxa/WEScustomization**

2. For your own case (not the OUN example), also copy the TAF site subdirectories in **/awips/adapt/avnfps/etc/tafs** from your real-time AWIPS into the **/awips/fxa/WEScustomization** directory for temporary storage. These

directories (e.g. **KOKC** for the KOKC TAF site) have ***.template** files and an **info.cfg** file inside (see **/awips/adapt/avnfps/etc/tafs/KOKC** for an example).

e.g. **cp –R /media/cdrecorder/KOKC /awips/fxa/WEScustomization**

3. For your own case (not the OUN example), copy the AvnFPS config file from the **/awips/fxa/WEScustomization** directory (from step 1 above) to the **/awips/adapt/avnfps/etc/tafs** directory.

   e.g. **cp /awips/fxa/WEScustomization/Norman.cfg /awips/adapt/avnfps/etc/tafs**

4. For the OUN example, view the AvnFPS config file in **/awips/adapt/avnfps/etc/tafs/Norman.cfg** that will be used by AvnFPS. The file should have a list of TAF sites.

   e.g. **more Norman.cfg**

5. Change the entry in the file, "**DEFAULT**", to contain the filename of the AvnFPS config file without the "**.cfg**" extension.

   e.g. Open the "**DEFAULT**" file in a text editor, and change the entry to be **Norman**

6. Make sure a subdirectory exists for each TAF site (e.g. **KOKC**) specified in the **/awips/adapt/avnfps/etc/ids.config** file (see step 5 of Section 14.2). Also make sure each subdirectory contains the following files:

- **00.template**
- **06.template**
- **12.template**
- **18.template**
- **info.cfg**

There should also be an "**XXXX**" subdirectory in addition to the sites listed in the **ids.config** file.

Note: Be selective and careful about copying over any other AvnFPS files from your local AWIPS. You should be able to copy any forecaster specific display customizations in the /**awips/adapt/avnfps/etc/app-resources**

directory with no problems. **Do not** overwrite or replace the WES versions of the **`server.cfg`** and **`localhostinit.cfg`** files.

14.4 Insert Climate Data into AvnFPS

In this section we will copy the climate data for the case into AvnFPS. For the OUN example, we have provided these files for you. For a local case, you can download the climate files from your local AWIPS. If you do not have access to the climate files you need, you may download the files from the MDL website as illustrated below.

1. For your own case (not the OUN example), copy the **`/awips/adapt/avnfps/data/climate`** directory from your real-time AWIPS to the WES as user **`fxa`**.

   e.g. as user fxa, **`cp /media/cdrecorder/climate/* /awips/adapt/avnfps/data/climate`**

2. If you are following the OUN example, then view the contents of the climate directory. There will be netCDF files for each TAF site.

   e.g. **`cd /awips/adapt/avnfps/data/climate`**

   e.g. **`ls`**

3. If you do not have access to climate files, obtain them from a WFO, or follow steps 4-**Error! Reference source not found.** below. Otherwise skip steps 4-**Error! Reference source not found.**.

4. Download the HDF5 climate files for each TAF station name in **`ids.cfg`**

- Go to the following website: http://www.mdl.nws.noaa.gov/~avnfps/data/hdf5/
- Click on the TAF station name and save the **`KXXX.hd5`** file to **`/awips/adapt/avnfps/data/climate`**
- Repeat for every TAF station in **`ids.cfg`**

Note: Make sure that the station id in each file name is in upper-case. For instance you want **`KOUN.hd5`** not **`koun.hd5.`** If any of your filenames are lower-case, rename them before continuing. Also be sure all extensions are lower-case:

e.g. **`mv koun.hd5 KOUN.hdf`**

14.5 Prepare the case to run a simulation

1. Once your AvnFPS configuration files are in place (Section 14.3) you need to **Convert case to DRT format** using the WES **Tools** button. If your case is already in DRT format prior to WES 8.1, you need to restore to original format, then re-convert to DRT format. In the conversion to DRT format, all files with a "**`.cfg`**" extension in **`/awips/adapt/avnfps/etc/tafs`** will be used to generate METAR text files for the TAF sites from the hourly netCDF files.

e.g. in **`start_simulator`** run **`"Convert to DRT Format"`** under the **`"Tools"`** button

2. After the case has been converted to DRT format, run a simulation to test the TAFs and the data. When configuring the simulation, you need to select the "**TAFs Directory**" to be the directory name containing the TAFs you created in Section 14.1. Make sure to set your start time after the time of the TAFs created in Section 14.1.

e.g. for the OUN example, load the **WES72dlac_AvnFPS_test_case_ABR** macro

e.g. select **`"test"`** for the **`"TAFs Directory"`**, and click **`"OK"`**

3. After the simulation has started, run "**`start_avnfps`**" to check the TAFs and METAR data in AvnFPS as in Section 5.7.

e.g. **`"start_avnfps"`**

4. If your data looks good, you are free to set a new start time. Make sure the issuance time of your TAFs in the **`<data_case>/avnfps/archived_TAFs`** directory is consistent with your simulation start time (i.e. don't make future TAFs visible by setting your start time before your TAF's valid times.

5. To set up a new simulation in another case from the same CWA (i.e. the same AvnFPS configuration), you only need to do Section 14.1 and Section 14.5.

6. To switch between running already-prepared simulations on cases with different AvnFPS customizations, modify the following appropriate files:

- **`/awips/adapt/avnfps/etc/ids.config`**
- **`/awips/adapt/avnfps/etc/tafs/DEFAULT`**
- **`/awips/adapt/avnfps/etc/tafs/*.cfg`**

7. To switch between running already-prepared simulations on cases with the same AvnFPS customization, there is no need to modify the files in step 6.

15 WESSL Tutorial

Background: WES Scripting Language (WESSL) provides the ability to time-release non-AWIPS data within a simulation using a scripting language. The simulation developer can create a new script either from scratch or by modifying an existing wessl file. WESSL 8.1 was installed in **`/awips/fxa/DRT/wessl`**, and instructions/reference materials can be found through browsing the **`/awips/fxa/DRT/wessl/docs/index.htm`** file or online at:

http://www.wdtb.noaa.gov/tools/wes/wessl.htm

There are two parts of this tutorial. Section 15.1 illustrates some of the functionality of WESSL through using the 2006Aug24test test case. Section 15.2 illustrates how to create a WESSL file for a new case from an existing wessl file.

15.1 Create a New WESSL Script for the 2006Aug24 Test Case from Existing Script

1. Run **`/awips/fxa/DRT/wessl/wessl/builder.tcl`**
2. Under the "**File**" menu select "**Open**".
3. Use the directory navigator to navigate to the **`/data/awips/2006Aug24test/wessl`** directory, and click on "**abr_8-24-06.wessl**". Then click the "**Open**" button.
4. Under the "**File**" menu select "**Save As**". Then type in a new filename for the new WESSL script (e.g. **`newtest.wessl`**), and click on "**Save**".

> **Note**: Files must be saved with the **`.wessl`** extension for them to be used in WES.

5. In the new WESSL script, try modifying the 22:05:10 line "**Simulation Has Started…**" text. With the blinking cursor on the modified line, click on the "**Run**" button in the upper right part of the interface to preview the command.
6. In the 22:12 line change the video file from the **vid2.mpg** to **9jun05.mpg** (with the same full path), and click on the "**Run**" button. Some tornado footage should appear..

7. Now try modifying the 22:06 line by changing the map latitude from "**44.80**" to "**34.80**", and delete "**ABR**". With the blinking cursor on the modified line, click on the "**Run**" button in the upper right part of the builder to preview the command. If you made both modifications, a new map will appear over the OUN CWA.

8. Remove the two lines for the 22:07 entry (including line with –map line and the line with –sound). Put a new pause in the wessl file here by entering "**22:07 –pause –text {simulation paused.}**". Click "**Run**", and the text should popup (the pause only works during a simulation).

9. In **`builder.tcl`** move the blinking cursor over the command line containing "22:05". Click on the "**Run**" button in the upper right to step through each WESSL command until you reach the last command entry with the stop time of the simulation.

10. Once you have stepped through the wessl commands, select "**Save**" under the "**File**" menu. Notice that saving the script also builds the script by generating and saving all necessary files in the **`<data_case>/wessl`** directory.

11. When the builder is done building and saving the script, list the new files created in your "wessl" directory (e.g. **`ls /data/awips/2006Aug24test/wessl`**).

12. Start a simulation in WES using the 2006Aug24test case, and select the new WESSL file to run (e.g. **`newtest.wessl`**) next to the "**WESSL Script (Optional)**" label in the entry box.

Note: You do not need to select any WESSL Case Flags in the WES GUI unless you want to run only parts of the WESSL script.

---

13. WESSL will launch the commands at the specified times during the simulation. The WESSL Station Log will allow the user to page through the WESSL pop ups. Building a new wessl script in a new case will be covered in the next section.

15.2 Create a WESSL Script for a New Case

1. This section focuses on using the test case WESSL file as a template to build a new WESSL file for a new case. This section assumes a new localization has already been built in Section 7 or Section 9 to be able to run a simulation with WESSL.

2. Make a "**`wessl`**" directory for your new WESSL source files in your data case if it doesn't exist (e.g. mkdir **`/data/awips/1998Apr08/wessl`**). The "**`wessl`**" directory must be all lowercase letters.

3. Run **`/awips/fxa/DRT/wessl/wessl/builder.tcl.`**

4. Under the "**File**" menu select "**Open**".

5. Use the directory navigator to navigate to the **`/data/awips/2006Aug24test/wessl`** directory, and click on "**abr_8-24-06.wessl**". Then click the "**Open**" button.

6. Under the "**File**" menu select "**Save As**". Then navigate to the new "**wessl**" source file directory created in step 2 above (**`i.e. /data/awips/1998Apr08/wessl`**). Now type in a new filename for the new WESSL script (e.g. **`bmx_4-8-98.wessl`**), and click on "**Save**".

Note: Files must be saved with the **`.wessl`** extension for them to eventually be selected in WES.

---

7. Modify the lines with your new times and commands.

8. Once you have stepped through the wessl commands, select "**Save**" under the "**File**" menu.

9. Look at the new files created in your "**`wessl`**" directory (e.g. ls **`/data/awips/1998Apr08/wessl`**).
   Start a simulation in WES, and select the new WESSL file to run (e.g. **bmx_4-8-98.wessl**) next to the "**WESSL Script (Optional)**" label in the entry box.

Note: that you do not need to select any WESSL Case Flags unless you want to run only parts of the WESSL script.

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16 User Adaptable Configuration Files

16.1 gridconfigfile

Located in the **`/awips/fxa/DRT`** directory, **`gridconfigfile`** allows the user to set a specific delay time that controls the visibility for each grid product (e.g. 0z NAM can be set to be visible at 0130z after setting the start time in DRT format). The delay time attempts to account for the processing and transmission time for a given model run.

`gridconfigfile` consists of the case-relative path of each grid product followed by a number. This number represents the time in minutes that you want the specific grid product to be delayed.

> **Note**: Changes to gridconfigfile **MUST BE MADE** while the case is in original format for the changes to take effect. If you make changes while in DRT format, then convert your case to original format and back to DRT for the changes to take place.

To see the current delay times for a particular case, type **`more <data_case>/drt/gridconfigfile`**

Example of Changing Grid Delay Time using gridconfigfile

Below is an example in which we change the delay time of LAPS and MSAS grid products to a delay time of 30 minutes from a default delay time of 20.

1. Convert your case to original format

2. Go to the DRT directory and open **`gridconfigfile`** for editing.

   e.g. **`cd /awips/fxa/DRT`**

   e.g. **`vi gridconfigfile`**

3. Change the delay times for the first two lines from 20's to 30's. Once completed, the first two lines should read as follows:

   Grid/FSL/netCDF/LAPS_Grid/LAPS 30

   Grid/FSL/netCDF/MSAS 30

4. Save the changes and then convert your case back to DRT format. In a simulation of this case, your LAPS and MSAS products will now process 30 minutes after valid time.

16.2 pointconfigfile

The **`/awips/fxa/DRT/pointconfigfile`** allows the user to set a specific delay time that controls the visibility for each point product in both D2D and AVNFPS (e.g. in the default file, METAR text products are assigned a two minute delay to simulate normal transmission delays). This file will likely not need to be modified, and **we recommend not doing so unless there is a strong need**. Correctly modifying the file requires understanding of the data times stored in the files. Currently METAR and maritime obs are the only point products processed on sub-hourly time scales with WES.

`pointconfigfile` consists of the case-relative path of each point product followed by a number. This number represents the time in minutes that you want the specific point product to be delayed.

Note: Changes to pointconfigfile **MUST BE MADE** while the case is in original format for the changes to take effect. If you make changes while in DRT format, convert your case to original format and back to DRT for the changes to occur.

Note: If you decide to change the point product delays, it is important to make the hourly netCDF file delay consistent with the individual files. For example, the original netCDF METAR files have data until 45 minutes past the hour. With a two minute delay for AvnFPS METAR files (current default setting), the delay for netCDF METAR files needs to be 47 minutes. If these values are inconsistent, problems with data synchronization will result.

Example of Changing Point Delay Time using pointconfigfile

Below is an example in which we change the delay time of METAR fed to AvnFPS to a delay time of 4 minutes.

1. Convert your case to original format

2. Go to the DRT directory and open **`pointconfigfile`** for editing.

   e.g. **`cd /awips/fxa/DRT`**

   e.g. **`vi pointconfigfile`**

3. Change the delay times for the AvnFPS METAR lines to 4's and hourly METAR files to 49 (45 min + AvnFPS offset). Once completed, the lines should read as follows:

avnfps/point/metar/text 4
avnfps/point/metar/netcdf 4
point/metar/netcdf 49

4. Save the changes and then convert your case back to DRT format. In a simulation prepared with these values, METAR data is fed to AvnFPS at four minutes after the valid time.

16.3 runPointFlag

The **`/awips/fxa/DRT/runPointFlag`** file allows the user to turn on/off the five minute point METAR/maritime data processing. The default setting has the five minute point data processing turned on. You may wish to turn off the five minute point data processing slower performance occurs on a non-baseline WES machine when starting a simulation or during a simulation near the end of the hour's observation (usually around 45 minutes after the hour).

The file **`runPointFlag`** contains the text "**YES**" or "**NO**".

- If the file contains "**YES**" the METAR/maritime point data will be processed on a five minute basis
    - Point data will be made visible at their respective valid times using the delay specified in the **`pointconfigfile`** (see section 16.2)
- If the file contains "**NO**" the METAR/maritime point data will be processed hourly. Don't select this option if you plan on running AvnFPS.
    - All point data will be made visible at the top of the hour regardless of the valid time

Note: Changes to **`runPointFlag`** **MUST BE MADE** while the case is in original format for the changes to take effect. If you make changes while in DRT format, you must then convert your case to original format and back to DRT for the changes to take place.

16.4 avnfpsMetarHours.txt

The **`/awips/fxa/DRT/avnfpsMetarHours.txt`** file specifies the number of hours of METAR observations AvnFPS can access prior to the simulation start time. The default setting is 12; this file probably need not be changed.

For example if you set:

- **Simulation Start Time**: 1800Z
- **avnfpsMetarHours.txt**: 12

AvnFPS will have access to METAR data from 0600Z to 1800Z upon initialization.

To change, simply open **`avnfpsMetarHours.txt`** in a text editor, alter the number and save.

17 WES Main Program Files: enhanced_case_review, start_simulator, start_awips, start_GFE and start_avnfps

Background: There are three main programs used in running WES. The **`enhanced_case_review`** application was designed for static review of cases with D2D. The **`start_simulator`** application prepares cases and runs simulations. The **`start_awips`** application launches D2D in a simulation. To gain more experience with these applications, read the sections below step through the 2006Aug24test WES test case installation verification (Section 5).

Two additional programs (**`start_GFE`** and **`start_avnfps`**) start the graphical user interfaces of the Graphical Forecast Editor and the Aviation Forecast Preparation System, respectively. These two programs can only be used in simulation mode (e.g., only after running **`start_simulator`**).

17.1 enhanced_case_review

The **`enhanced_case_review`** application is the primary way to launch D2D to review case data when not running a simulation. The **`enhanced_case_review`** application permits full functionality of FFMP and SCAN data along with text database queries outside of a simulation (i.e. in static case review). For example, you can step through FFMP data, and if you change the FFMP table "Thresh Type" from "precip" to "ratio" and select "Refresh D2D", the D2D will update. **WarnGen, however, will not work when using enhanced_case_review. `enhanced_case_review`** works on both original and DRT format data. This script starts the AWIPS CommsRouter, notificationServer, TextDB_Server Write and Read, and the Postgres postmaster, along with the D2D.

1. To launch enhanced_case_review, run **`/awips/fxa/DRT/enhanced_case_review`**, or type **`enhanced_case_review`** as user **`fxa`** (it is in the path).

2. Next, select the case from the listing of **`/data/awips`**, and select the localization (if only one localization exists, it will fill in the value automatically).

3. Click the **OK** button to launch the AWIPS D2D. If more than one localization exists in this case, a pull-down menu may appear to select the localization.

4. Click the **Start** button to launch D2D.

5. The **enhanced_case_review** application will not work during a simulation because of conflicts in the AWIPS decoders. There are popup warning messages if you try to do this. Use **start_awips** to launch a D2D during a simulation.

6. For additional D2D sessions, simply run another **enhanced_case_review** after the first **enhanced_case_review** has started loading D2D. The subsequent **enhanced_case_review** will only start D2D without starting more AWIPS decoders. A warning popup message occurs when trying to launch multiple versions before one has started the AWIPS decoders (to prevent AWIPS decoder conflicts).

7. When **enhanced_case_review** is shut down, the decoders are killed to prevent impacting subsequent D2D sessions or simulations. In the event that **enhanced_case_review** was shut down uncleanly with leftover processes, both the **enhanced_case_review** and **start_simulator** programs will notify the user of this bad condition, and recommend the processes be killed.

17.2 start_simulator

The **start_simulator** application prepares case data for simulations and runs simulations. To launch the simulation, just type "**start_simulator**" as user fxa at a shell prompt and hit return. The main simulator interface contains these features:

- **Log window**: Processing information is provided in the center of the main window.
- **Help menu**: Pull-down menu with background on WES and simulation instructions.
- **Exit button**: Exits start_simulator.
- **Run Simulation button**: Select a case and run a simulation.
- **Simulation Entry window**:
    - **FXA_DATA**: case inside **/data/awips**,
    - **FXA_INGEST_SITE**: localization id,
    - **Case Start Time**: simulation start time,
    - **Case End Time**: simulation end time,
    - **WESSL Script (optional)**: wessl file inside **<data_case>/wessl**
    - **WESSL Case Flags (optional)**: any desired wessl case flags

- **FFMP File and Radars**: FFMP tar file created with WES

- **GFE Directory**: GFE dataset created with WES. Selecting this directory turns on GFE processing in a simulation.

- **TAFs Directory**: Directory containing TAFs to initial initialize a simulation. (stored in **`<data_case>/avnfps/archived_TAFs`**). Selecting this directory turns on AvnFPS processing in a simulation.

- **Save Current Settings button**: Saves the current Simulation Entry to a user specified filename (Macro)

- **Load Saved Settings button**: loads a saved Simulation Entry (Macro) to allow easy starting of different simulations

- **OK button**: Starts the AWIPS decoders and prepares data relative to the case start time. This can take a few minutes on a large case.

- **Cancel button**: Cancels the Simulation Entry window

- **Entry Verification and Simulation Control window**: Summarizes the simulation settings once the case is prepared.

    - **Run Simulation**: Sets the clock back, starts the remaining AWIPS decoders, starts the selected WESSL file, and starts checking for data to process every 15 seconds. After the simulation is started the following buttons are available:

    - **Stop Simulation button**: Stops the simulation, kills the AWIPS decoders, and copies the simulation's newly created text and AvnFPS products to the appropriate directory in the **`<data_case>`** directory.

    - **Pause Simulation button**: Pauses the simulation, temporarily kills the notificationServer, and colors a crimson border around D2D and the simulation control window. When the simulation is paused, this button changes to "**Resume Simulation**".

    - **Resume Simulation button**: resets the clock based on the paused time, restarts the notificationServer, and restores the crimson border color to gray. Note that when you resume a simulation, the D2D time will wait for the simulation time to catch up to the time the simulation was resumed. To reset this cosmetic issue, just double click on the D2D clock on the lower-right part of D2D, and select "**Use Current Real Time**".

    - **Cancel button**: Cancels the Simulation Entry window.

- **Tools button**: Launches a window with WES data manipulation functions.

- **Convert Case Data to DRT Format button**: Hides data through renaming files, and builds inventories for use in a simulation. Typically, run this function only once before running a simulation. This can take 30-60+ minutes to run depending on the machine and the case.

- **Restore Case Data to Original Format button**: Restores files to their original names, and removes inventories used in a simulation. In most cases, only use this tool to add data to a simulation. This process is relatively fast (a few minutes)

- **Create FFMP DataSet button**: Creates tarred FFMP datasets for later selection in the simulation entry window. Typically this tool only takes a minute to create a full dataset.

- **Write Archived Text to Database**: Writes archived text products into a Postgres database. This process is fairly quick (less than a minute).

- **Create GFE Dataset Button**: Creates a set of default GFE grids for later selection as the "**GFE Directory**" entry.

- **Batch Mode Point Data Conversion**: Converts all DRT format data cases located in **`/data/awips`** to support five minute point data processing

- **Cancel button**: Cancels the Tools window.

17.3 start_awips

The **`start_awips`** application launches D2D after a simulation has been started.

1. To launch start_awips, run **`/awips/fxa/DRT/start_awips`**, or type **`start_awips`** as user **`fxa`**.

2. Next, select the case from the listing of **`/data/awips`**, and select the localization (if only one localization exists, WES will fill in the value automatically).

3. Click the **OK** button to start the AWIPS D2D. If more than one localization exists in this case, a pull-down menu may appear with the localization.

4. Click the **Start** button to launch D2D.

17.4 start_GFE

The **`start_GFE`** program uses the WES simulation information from a live simulation **`(/awips/fxa/DRT/simustatus_history`** temporary file) to start GFE. This program starts GFE using the standard "runGFE" program installed in the case. The IFPServer

must be running prior to starting GFE. The IFPServer requires the clock to be reset to the simulation date and the AWIPS "Grid" data to be synchronized with the time. Therefore, you can only run **start_GFE** during a simulation.

By default **start_GFE** runs the "runGFE" with the practice mode flag so the VTEC line appears correctly. This mode also turns the background color to the official orange practice mode background.

1. To launch **start_GFE**, run **/awips/fxa/DRT/start_GFE**, or just type **start_GFE** as user **fxa** while a simulation is running. The IFPServer initialization may take a minute or two.

2. When the GFE Startup popup appears, select "**fxa**" as the "**User**", "**gfeConfig**" as the "**Config**", and "**practice**" as the "**Mode**", then click the "**Start**" button.

17.5 start_avnfps

The **start_avnfps** program uses WES simulation information **(/awips/fxa/DRT/simustatus_history** temporary file) to start AvnFPS on a particular case. Also, to work correctly, the AvnFPS decoders started only during a simulation must be running to ingest time-dependant data. Thusly, AvnFPS can only be started during a simulation. The start_avnfps program uses an **avnstart.sh** script in **/awips/adapt/avnfps/bin** to launch AvnFPS.

1. To launch start_avnfps, run **/awips/fxa/DRT/start_avnfps**, or just type **start_avnfps** as user **fxa** while a simulation is running.

2. When the AvnFPS Menu appears, select your user then click the "**TAFs**" button.

18 Background Information on GFE

18.1 GFE Installation Background

The WES installation script initially installs GFE in **`/awips/GFESuite/install`**. Because GFE comes directly from the AWIPS OB8.1 release DVD, it should work with RHEL4. If you have a non-baseline OS with an associated GFE version, then you may investigate replacing the appropriate files in **`/awips/GFESuite/install`**. The files in the install directory come from the **`OB8.1_GFESuite_CORE.tgz`** file with the addition of **`stdMAPS.tgz`**, **`stdTOPO.tgz`**, and **`stdCLIMO.tgz`** files. The **`/awips/GFESuite/install`** directory uses the "Create GFE Dataset" tool to install GFE into each case.

18.2 GFE Data Creation Background

The "Create GFE Dataset" tool within WES uses the AWIPS IFPServer to create a set of GFE default grids from standard AWIPS model grids to use in a simulation. So to create GFE grids for your local case, you just need a WES case with AWIPS Grid data. Future development will investigate ways to archive GFE grids directly from AWIPS for replay in a simulation. The GFE datasets created by this tool are later selected from the WES main simulation entry window (like the FFMP data). When the GFE grids are created, the AWIPS processes store the hostname in the gridded dataset. To share grids with other machines not on your network, set the hostname to "localhost" in the shell window prior to launching start_simulator:

1. e.g. **`setenv HOSTNAME localhost`**,

2. e.g. **`start_simulator`**

3. Create GFE dataset.

After the case is converted to DRT format, the "**Create GFE Dataset**" tool creates the default grids based on the case, CWA, and time entered. First, WES installs GFE into the case for the given machine and CWA, using the standard **`/awips/GFESuite/install/installGFE`** program. WES installs GFE into the **`<data_case>/GFESuite-case`** directory.

Second, WES links **`/data/fxa`** to the data case so IFPServer can find the data grids.

Third, WES makes the appropriate AWIPS data links visible, sets the system clock to the simulation start time, and starts the IFPServer.

Fourth, WES waits for the IFPServer to completely initialize (the ifpInit process appears and disappears) before completing the grid creation. The default “Fcst” grids are saved into the **<data_case>/GFESuite-case/<your_case_GFE_DIR>/Fcst.tar.gz** file for later access in multiple simulations. Finally after the tool saves the “Fcst” grids, WES resets the clock and kills the IFPServer.

A case with full AWIPS grids can take hours to run due to the inherent slowness of the ifpInit process. Once they are created, they are brought into the simulation without having to be processed again.

18.3 GFE Customization Background

Once a GFE dataset is created for a simulation (see Section 5.6 or 18.2), you can customize GFE with files from a local AWIPS. The GFE installation for each case resides in:

<data_case>/GFESuite-case/<your_case_GFE_DIR>

Keep in mind that the grids likely come from previous AWIPS builds, so the models may have changed, and inconsistencies may result.

18.4 Simulation Background

Once the GFE data is created, the data can be selected from the WES Simulation Entry window which turns on GFE processing within the WES. In this process, WES restores the “Fcst” grids to the original state by deleting the Fcst directory and untarring the **Fcst.tar.gz** file. WES also purges the **<data_case>/GFESuite-case/<your_case_GFE_DIR>/data/databases/BASE/GRID** directory. Finally the WES simulation starts the IFPServer to allow the GFE to function. The IFPServer usually takes a couple of minutes and a significant amount of CPU resources to start. If a GFE dataset is not selected, WES does not start the IFPServer thus saving resources.

After the simulation has started, launch the GFE GUI using the **start_GFE** script. GFE launches with a simulation running because requires an operational IFPServer along with the system clock synchronized to the appropriate grids. The **start_GFE** program uses information from a live simulation (**/awips/fxa/DRT/simustatus_history** temporary file) to find and launch the appropriate “runGFE” program installed in the case.

The default configuration of **start_GFE** uses “runGFE” with the practice mode flag, so VTEC lines to appear correctly coded in statements created with the Product Formatter. The background color is the official Practice Mode orange background.

When the simulation ends, WES shuts down the IFPServer along with other AWIPS processes. WES also copies any warnings/advisories to the

<data_case>/saved_GFE_PRACTICE directory with a current date/time stamp to allow later access to products.

19 Background Information on AvnFPS

19.1 AvnFPS Installation

The WES installation software installs AvnFPS into **`/awips/adapt/avnfps`** and **`/data/adapt/avnfps`**. Because AvnFPS comes directly from the AWIPS release DVD, it should work with RHEL4.

19.2 Simulation Background

For AvnFPS functionality to be useful, data must be fed into AvnFPS system on a minute by minute cycle. Yet, point data typically are archived in hourly chunks. Thus, WES utilizes new methods to access point data when the runPointFlag is set to "YES" (see section 16.3). This allows WES to feed input METAR text data into AvnFPS on a minute-by-minute basis. WES also feeds METAR and maritime data into other AWIPS processes on a five minute basis for display in D2D. In the current version, the D2D display of the point data is inconsistent and will be addressed in future WES builds. Higher temporal resolution for METAR /maritime observations in D2D isn't warranted, since AWIPS only allows notification updates in D2D every 15 minutes for hourly displays and 5 minutes for the 15 minute METAR displays.

19.3 Conversion to DRT Format

During the conversion process, the original hourly netCDF files for METAR and maritime observations (located in the directory hierarchy at **`<data_case>/point/…`**) are split into five-minute netCDF files. Additionally, individual one minute METAR observations are extracted in text format from the original netCDF files for each TAF forecast point listed in the configuration files in **`/awips/adapt/avnfps/etc/tafs.`** These files are stored in these locations:

- **`<data_case>/avnfps/point/metar/netcdf`** – 5 minute netCDF files
- **`<data_case>/avnfps/point/metar/text`** – individual 1 minute METAR obs (text)
- **`<data_case>/avnfps/point/maritime/netcdf`** – 5 minute netCDF files

Additionally, the data inventory system for WES creates "b-links" for each of these files so the simulator knows when to reveal data.

19.4 Simulation Initialization

When a simulation is prepared based on a given start time, the hourly point files are made visible, and the first hour's point data are built up to the start time of the simulation. The current hour's METAR and maritime point files are linked to a "**current_file**" located at:

- **<data_case>/point/metar/netcdf/current_file**
- **<data_case>/point/maritime/current_file**

AvnFPS requires an initial set of default TAFs (see Section 14.1). The input directory containing the default TAFs for a simulation is specified in the Simulation Entry Window in the "TAFs directory" entry. The input TAF directories are stored for later access in **<data_case>/avnfps/archived_TAFs**.

After starting the simulation ingest WES feeds all the TAFs in the specified "TAFs directory" into AvnFPS ingest.

The METAR text data are also fed to AvnFPS. The value listed in the **avnfpsMetarHours.txt** specifies the number of hours of METAR observations prior to the simulation start time used to initialize AvnFPS (default is 12).

19.5 Ongoing Simulation

During a simulation, the five-minute METAR/maritime netCDF data are appended to each **current_file** on a five minute basis to support D2D display. The current file is removed at the end of each hourly file's time span, and the link target is pointed to the original a-file (hourly netCDF file). To process the next hourly file's data, WES creates a new **current_file**, and repeats the process. The display of point data is inconsistent in the current WES and will be improved in future builds.

At the appropriate times, the individual METAR text bulletins are fed into AvnFPS; the AvnFPS monitor display should update immediately when they are fed in.

After the forecaster issues a new TAF, WES feeds the TAF to AvnFPS and copies the TAF into the **<data_case>/avnfps/previous_simulation** directory for archiving. The "**previous_simulation**" directory can be used to start a new simulation based on the previous simulation's TAFs.

19.6 Stopping a Simulation

Once a simulation is stopped, WES copies the TAFs for the current simulation to the **<data_case>/saved_tafs directory** with the current date as the directory name. The archived directory contains the TAFs written during a simulation as well as the TAFs

used to initialize the simulation (*.init). The TAFs written by AvnFPS have a long filename, including the user id, nine character TAF PIL, WMO id, and more.

20 Using Multiple Machines with WES

These instructions describe a way to run a WES simulation on one "server" machine and connect other machines as clients to the simulation. This can be useful for pairing up forecasters during simulation training. In this configuration, one machine runs the simulation (**`start_simulator`** and **`start_awips`**), and the clients just run D2D using **`start_awips`**. While the following "manual" instructions work, they are intended for users that are relatively comfortable with a basic WES understanding and running simulations. Future versions of WES will have improved plug and play support for running simulations on multiple machines and synchronizing clocks, etc. If you are interested in running WES in a classroom or laboratory environment, contact wes@infolist.nws.noaa.gov for more information.

To configure multiple machines to work during a simulation, one machine is a server which runs the simulation and AWIPS decoders. All machines have D2D clients fed from that server. Every machine must have the same WES version installed from the WES install DVD (e.g. WES8.1).

20.1 Setup

1. Choose a machine to be a server, and install WES8.1 if it isn't already installed.

e.g. "bobcat" will be the server (your server name will likely be different)

e.g. **`install-wes81.sh /usr1`** on bobcat (if it isn't already installed)

Note: If you installed WES in the **`/usr1`** directory, and you do not have **`/data`** as a directory, then the client data case would be stored in **`/usr1/data/awips`**.

---

2. Determine the location of the case to mount from the server. One suggestion is to start with the WES test case to make sure everything is set up correctly.

e.g. **`cd /data/awips`** on bobcat

e.g. **`pwd`**

Note: In this example the pwd yields **`/usr1/data/awips`**.

---

3. Choose other machines as client machines, and install WES8.1 on them from the release DVD (do not copy from the server machine). These machines must have different names.

e.g. "wolf" will be a client machine

e.g. **`install-wes81.sh /usr1/client`** on wolf

Note: If you installed WES in the **`/usr1/client`** directory, and you do not have **`/data`** as a directory, then **`/data`** is a link that points to **`/usr1/client/data`**. This means your client data cases would be stored in **`/usr1/client/data/awips`**.

---

4. After installing WES8.1 on the client machine, change the **`FXA_WARNGEN_PRODUCT_ID`** variable on the client machine in **`/awips/fxa/.environs.<$machinename>`** to make it different from the server machine and any of the other client machines.

e.g. on wolf change **`${FXA_LOCAL_SITE}WRKW4`** to **`${FXA_LOCAL_SITE}WRKW5`** in **`/awips/fxa/.environs.wolf`**

Note: If you do not have a **`/awips/fxa/.environs. <$machinename>`** file, then you can "**`cp /awips/fxa/.environs.localhost /awips/fxa/.environs. <$machinename>`**" where **`<$machinename>`** is the result of "**`hostname | cut –d . –f 1`**"

---

5. Create the server target directory from step 2 on the client machine in preparation for exporting the case storage directory from the server.

e.g. **`mkdir /usr1/data/awips`** on wolf (from target in step 2)

Note: If this directory already exists on the client machine and has contents in it, move any files and directories out of the way (e.g. **`mv /usr1/data/awips /usr1/client/cases`**) before making the directory. If these contents are WES data cases, these cases can be visible on the client machine by creating links inside **`/data/awips`** that point to the new case locations (e.g. **`ln –s /usr1/client/cases/2002Feb10 /data/awips/2002Feb10`**).

Note: If **`/data`** is a directory (not a link) on the server machine, consider creating a new and different directory in this step (e.g. **`mkdir /usr1/servermount`**) used to mount the server's data to the client machine in the following steps.

6. The system administrator must export the server's directory to all client machines. The clients should auto-mount the exported data directory on system start-up. In the following example, **`/usr1/data/awips`** on the server, bobcat, is exported to wolf. The mounting instructions below are based on an example from Ken Cook at the ICT WFO

Note: **Be careful**…if you haven't done this before, please have your IT do this or you could seriously mess up your machine

On the Server Machine

- From the KDE Desktop Menu choose, **System Settings, Server Settings, Services**. Make sure the **NFS** box is checked.
- As **`root`**, edit **`/etc/exports`** and add the following entry:
    - your_export_dir ip.address.of.client(rw,no_root_squash,no_all_squash)
    - e.g. **`/usr1/data/awips 129.15.59.61`**(rw,no_root_squash,no_all_squash) where **`129.15.59.61`** is the client's (e.g. wolf's) ip address.
- As **`root`** edit **`/etc/hosts.allow`** and add the following entry:
    - ALL: ip.address.of.client
    - e.g. **`ALL: 129.15.59.61`** where **`129.15.59.61`** is the client's (e.g. wolf's) ip address.
- As **`root`**, run **`exportfs –a`** to export the file system
- As **`root`**, run **`exportfs`** to check if the file system is listed (i.e. exported correctly)
- As **`root`**, stop and start the NFS server:
    - **`/etc/rc.d/init.d/nfs stop`**
    - **`/etc/rc.d/init.d/nfs start`**

On the Client Machine

- As **root**, edit **/etc/fstab** and add the following entry:
    - Server_name:your_export_dir client_dir nfs rw,auto,soft 0 0
    - e.g. **bobcat:/usr1/data/awips /usr1/data/awips nfs rw,auto,soft 0 0** where **your_export_dir** is the same exported directory as in the "On the Server Machine" section above, and **client_dir** is the mounted directory on the client machine.

Note: If **/data** is a directory (not a link) on the server machine, and **/data/awips** is exported to the client machine, then the **your_export_dir** would be **/data/awips** and the **client_dir** would be something like **/usr1/servermount** (see step 5).

- As **root**, mount the server: **mount -a**

7. Create a symbolic link for the case under **/data/awips** on all machines if it doesn't exist.

e.g. **ln –s /usr1/data/awips/2006Aug24test /data/awips/2006Aug24test** on wolf

---

Note: In this example the link already existed on bobcat so nothing was required on bobcat. If the link didn't exist on bobcat, the command is required on bobcat, too.

Note: If **/data/awips** was linked to **/usr1/servermount** (Notes in steps 5 and 6), then link **/usr1/servermount/2006Aug24test** to **/data/awips/2006Aug24test** on wolf.

---

8. Copy an **/awips/fxa/data/localization/nationalData/ipc.config** file from the server machine into the **localizationDataSets/XXX** directory for the case.

e.g. on bobcat **cp /awips/fxa/data/localization/nationalData/ipc.config /data/awips/2006Aug24test/localizationDataSets/ABR**

Note: Use the nationalData version of the **`ipc.config`** file. There are multiple versions of these files in AWIPS, change from build to build. If this file changes in future AWIPS builds, update the **`ipc.config`** file when creating a new localization.

9. Edit the **`ipc.config`** in the case's **`localizationDataSets/XXX`** directory, and replace all "localhost" entries with the server name (or ip address). Then save the file.

e.g. replace "localhost" with "bobcat" in **`/data/awips/2006Aug24test/localizationDataSets/ABR/ipc.config`** file and save

Note: In vi this can be done using "**`:g/localhost/s/localhost/bobcat/`**" followed by "**`:wq!`**".

Note: Once the **`ipc.config`** file in the case has been hardwired for the server, neither the **`start_simulator`** nor the **`enhanced_case_review`** applications will work for this case on the client machine. After deleting this file in the **`localizationDataSets/XXX`** directory, the client can run **`start_simulator`** or **`enhanced_case_review`** because AWIPS defaults to the localhost version in the **`awips`** directories.

Note: Always try to run your simulations on the machine physically containing the data, or the increased disk I/O across machines will significantly slow case preparation down.

20.2 Testing

10. Verify the data for the case is visible from all machines. Don't run **`start_simulato`**r to run a simulation yet.

e.g. **`start_awips`**, select **2006Aug24test**, and view 0.5 Z/SRM8 radar product

11. Run a simulation on the server machine.

e.g. **`start_simulator`** on bobcat

12. Verify that the simulation runs correctly on the server machine

e.g. **`start_awips`** with the Text Workstation Control box checked on bobcat, verify that an all-tilts radar display updates, create a test warning

13. If the server machine works correctly, verify that the all-tilts display updates on the client machine. Do not create a warning on the client machine yet.

e.g. "**`start_awips`**" on wolf, check the all-tilts display for updates

---

Note: At this point, the clock on the client machine isn't set back to the simulation time, so the D2D time is the current date and time, rather than the simulation time. This situation causes WarnGen on the client machine to create "future warnings" situations and prevents the server from correctly generating warnings. The following steps illustrate how to adjust the clock on the client machine.

---

14. Shut down D2D on the client machine.

e.g. exit D2D on wolf

15. Determine the current time on the server machine.

e.g. the **`date –u`** command on bobcat should yield something like Thu May 01 23:46:14 UTC 1997

16. Set the clock back on the client machine to be relatively close to the server (the date format is MMDDHHmmYY).

e.g. **`/awips/fxa/DRT/bin/date –u 0501234697`**

17. Start D2D on the client machine, and verify data displays update correctly and WarnGen works.

e.g. on wolf, **`start_awips`** and check the Text Workstation Control box, verify the all-tilts display refreshes and create a test warning in a separate D2D pane.

18. Exit the test simulation and manually set the clock back to the current time on the client machine

e.g. "**`date –u`**" on bobcat, yields something like Thu Jan 05 15:32:47 UTC 2006

e.g. "**`/awips/fxa/DRT/bin/date –u 0105153206`**" on wolf

This case is now ready for running a simulation.

20.3 Starting a Simulation with D2D Clients on Multiple Machines

Running a simulation with multiple clients requires first completing the “Setup” and “Testing” above. This example shows how to start and stop a simulation after successfully exporting and mounting the case data.

In this example the server (bobcat) holds the case data and runs a simulation using the 2006Aug24test case located in **`/usr1/data/awips`**. D2D runs on the server machine, “bobcat”. D2D also runs on the client machine, “wolf”.

1. Start the simulation on the server machine.

   e.g. **`start_simulator`** on bobcat

2. After the simulation has been started on the server machine, manually set the clock on the client machine to match the server machine.

   e.g. on bobcat **`date –u`** to find the current simulation time

   e.g. on wolf **`/awips/fxa/DRT/bin/date –u 0501234697`** to synchronize the clock back

3. Start up D2D on the server machine.

   e.g. **`start_awips`** with the Text Workstation Control box checked on bobcat

4. Start D2D on the client machine.

   e.g. **`start_awips`** with the Text Workstation Control box checked on wolf

5. If the simulation is paused and resumed on the server machine, the clock must be manually resynchronized (see step 2) on the client machine

6. When the simulation ends, set the clock back to the current time on the client machine.

   e.g. on bobcat **`date –u`** to find the current time

   e.g. on wolf **`/awips/fxa/DRT/bin/date –u 0105153206`** restores wolf to the current real time

21 Installing Flash Plug-In for Linux Supported Web Browsers

In order to view Articulate presentations or other Flash-based products in Linux, the web browsers must have the required plug-ins. To verify the browser has the appropriate plug-ins, follow step 4 below. All necessary files for Flash installation are included on the WES8.1 install DVD (**`install_flash_player_9_linux.tar.gz)`**. The **`Readme.txt`** document in this tar file also contains further documentation for the plug-in installation.

The installation is simple; copy the necessary plug-in files into the plug-ins directory of your browser (i.e. **`/usr/lib/mozilla/plugins,`** and or **`/usr/lib/firefox-1.5.0.7/plugins`**). The following is an example of the installation process for the Mozilla web browser:

21.1 Example of Flash Plug-in Installation for Mozilla Browser

1. Untar the plugins file from the WES8.1 install DVD into **`/awips/fxa/install_flash_player_9_linux`**:

   e.g. **`cp /media/cdrecorder/install_flash_player_9_linux.tar.gz /awips/fxa`**

   e.g. **`tar xvfz /awips/fxa /install_flash_player_9_linux.tar.gz`**

2. Navigate to the **`install_flash_player_9_linux`** directory:

   e.g. **`cd /awips/fxa/install_flash_player_9_linux`**

3. Copy **`libflashplayer.so`** and **`flashplayer.xpt`** to the Firefox plug-in folder (i.e. **`/usr/lib/firefox-1.5.0.7/plugins`**):

   e.g. **`cp libflashplayer.so /usr/lib/firefox-1.5.0.7/plugins`**

   e.g. **`cp flashplayer.xpt /usr/lib/firefox-1.5.0.7/plugins`**

4. Once the installation is complete the plug-in will be installed in your browser.

5. If the installation fails, then review the **`/awips/fxa/install_flash_player_9_linux/Readme.txt`** documentation, and contact WES support for help (wes@infolist.nws.noaa.gov).

22 Installing Xine Video Viewing Application

WES 8.1 includes the files necessary for viewing AVI files with the Xine video viewing application for RHEL4. Xine can be installed during WES 8.1 installation. However to manually install Xine, follow the instructions below.

In order for Xine to work, several directories must be placed into the **/usr/local** directory. There are two ways to go about this. Download a Xine tar ball and install instructions from a Xine website. The other option is to manually untar the Xine tar files located on the WES 8.1 Installation DVD .Examples for both are below:

22.1 Manually untar the Xine files located on the WES 8.1 Install DVD

1. Mount the WES 8.1 Install DVD and copy the necessary files to **/usr/local**

e.g. **mount /media/cdrecorder/**

e.g. **cp /media/cdrecorder/xine4include.tar.gz /usr/local**

e.g. **cp /media/cdrecorder/xine4lib.tar.gz /usr/local**

e.g. **cp /media/cdrecorder/xine4man.tar.gz /usr/local**

e.g. **cp /media/cdrecorder/xine4share.tar.gz /usr/local**

e.g. **cp /media/cdrecorder/xine4bin.tar.gz /usr/local/bin**

2. Untar each of these files

e.g. **tar xvfz xine4bin.tar.gz**

e.g. **tar xvfz xine4include.tar.gz**

e.g. **tar xvfz xine4lib.tar.gz**

e.g. **tar xvfz xine4man.tar.gz**

e.g. **tar xvfz xine4share.tar.gz**

- Create Links

e.g. **`ln –s /usr/local/lib/libxine.so.1.13.0 /usr/local/lib/libxine.so`**

e.g. **`ln –s /usr/local/lib/libxine.so.1.13.0 /usr/local/lib/libxine.so.1`**

3. Add line **`/usr/local/lib`** in the file **`/etc/ld.so.conf`**

4. Run **`ldconfig`** to complete install

   e.g. **`ldconfig`**

22.2 Download from Website and Compile

1. Download and untar the Xine lib tar file from your favorite site. The official site is: http://xinehq.de/index.php/releases

   e.g. **`tar xvfz Xine-lib-1.1.0.tar.gz`**

2. Go to the new directory and run the compilation commands

   e.g. **`cd Xine-lib-1.1.0`**

   e.g. **`./configure`**

   e.g. **`make`**

   e.g. **`make install`**

   e.g. **`make clean`**

3. Add line **`/usr/local/lib`** in the file **`/etc/ld.so.conf`**

4. Run **`ldconfig`**

   e.g. **`ldconfig`**

5. Download and untar the Xine **`ui`** tar file

   e.g. **`tar xvfz Xine-ui-0.99.4.tar.gz`**

6. Go to the new directory and run the compilation commands to complete install

   e.g. **`cd Xine-ui-0.99.4`**

   e.g. **`./configure`**

e.g. **make**

e.g. **make install**

e.g. **make clean**

23 Manual Installation of AWIPS Freeware

If necessary, follow the steps below as user **root**, to manually install the AWIPS freeware using RPM's. The first step uninstalls Postgres and Perl using "**rpm**". The subsequent steps use "**rpm**" to update all the AWIPS-provided freeware

1. Log in as **root**.
2. Uninstall Postgres. Change directory to **/usr/local/postgres**, and run the following commands in order to uninstall each Postgres file:

   # rpm –e <filename> (where <filename> is one of the following)

- postgresql-contrib
- postgresql-devel
- postgresql-docs
- postgresql-jdbc
- postgresql-pl
- postgresql-python
- postgresql-tcl
- postgresql-test
- postgresql-server
- postgresql
- postgresql-libs

Note: If you happen to encounter failed dependencies in uninstalling Postgres, uninstall the failed dependencies first, then try to uninstall Postgres again.

3. Uninstall Perl. Change directory to **/usr/local/perl**, and run the following commands in order to uninstall for each Perl file:

   # rpm –e <filename> (where <filename> is one of the following)

- perl-AppConfig

- perl-ChartDirector
- perl-DBD-Pg
- perl-DBI
- perl-netcdf
- perl-SignalHandler
- perl-tk
- perl-XML-Generator
- perl-XML-Simple

Note: If you happen to encounter failed dependencies in uninstalling Perl, uninstall the failed dependencies first, then try to uninstall Perl again.

---

4. The next step will be to update the freeware using "**rpm**". Run the commands below (steps 5-7) for each RPM file separately so that you know why the RPM fails to install for that file and what dependent RPM it needs. If you try to run as **rpm –Uhv *.rpm** for all the RPM files in the directory, then if one RPM file fails to install because of dependencies, it will exit out of the command without installing the subsequent RPM's.

5. Change directory to **/usr/local/usr-local** and run the following command for each RPM file in the **/usr/local/usr-local** directory:

e.g. **rpm –Uhv <filename>.rpm**

6. Change directory to **/usr/local/postgres** and run the following command for each postgres RPM file in the **/usr/local/postgres** directory:

e.g. **rpm –Uhv <filename>.rpm**

7. Change directory to **/usr/local/perl** and run the following command for each perl RPM file in the **/usr/local/perl** directory:

e.g. **rpm –Uhv <filename>.rpm**

24 Appendix A

Example of files in WEScustomization subdirectories for a localization with the id XXX are given below. Note that your file list will vary due to local differences in customization practices.

24.1 /awips/fxa/WEScustomization/global-LLL-files

XXX-acqPatternAddOns.txt

XXX-backgroundMenus.txt

XXX-commonLdadMenus.txt

XXX-localDataKeys.txt

XXX-localDepictKeys.txt

XXX-localProductButtons.txt

XXX-radarDataMenus.template

XXX-sls_county_block.preTemplate

XXX-wwaConfig.template

XXX-wwaDefaults.txt

XXX-wwa_ffw.preWWA

XXX-wwa_flflood_sta.preWWA

XXX-wwa_svr2.preWWA

XXX-wwa_svr.preWWA

XXX-wwa_svrwx_sta.preWWA

XXX-wwa_tor.preWWA

XXX-wwa_wrksls.preWWA

XXX-wwa_wrksls.wwaProd

Note: You should not have files in this directory (with or without XXX- prefixes) that have local geographic information in them like **`XXX-radarsInUse.txt, radarsInUse.txt, XXXradarsOnMenu.txt, XXX-mainConfig.txt, XXX-dialRadars.txt, XXX-mosaicInfo.txt,`** etc.

24.2 /awips/fxa/WEScustomization/XXX

dialRadars.txt

XXX-acqPatternAddOns.txt

XXX-commonLdadMenus.txt

XXX-commonLdadMenus.txt.bad

XXX-dialRadars.txt

XXX-eta12.sup

XXX-hydroSiteConfig.txt

XXX-mainConfig.txt

XXX-portInfo.txt

XXX-pupId.txt

XXX-radarDataMenus.template

XXX-radarsInUse.txt

XXX-radarsOnMenu.txt

XXX-spotters.goodness

XXX-wwaConfig.template

XXX-wwaConfig.txt

XXX-wwa_counties.master

XXX-wwa_counties.patch

XXX-wwa_zones.master

XXX-wwa_zones.patch

Note: Because this directory is for your local CWA (XXX in this example), and it is not shared with other localizations, you may have files in this XXX directory that have local geographic information with or without the XXX- prefix like **`radarsInUse.txt, XXX-radarsInUse.txt, radarsOnMenu.txt, mainConfig.txt, dialRadars.txt, mosaicInfo.txt,`** etc.

24.3 /awips/fxa/WEScustomization/customFiles

activeGridSources.txt

arrowStyle.rules

browserFieldMenu.txt

contourStyle.rules

eta12.cdl

eta12.sup

gridImageStyle.rules

gridPlaneTable.txt

iconStyle.rules

LocalCitiesInfo.txt

localGridSourceTable.txt

MTR.goodness

MTR.primary

XXX-backgroundMenus.txt

XXX-dialRadars.txt

XXX-localDataKeys.txt

XXX-localDepictKeys.txt

XXX-localProductButtons.txt

XXX-mainConfig.txt

XXX-mosaicInfo.txt

XXX-radarsInUse.txt

XXX-radarsOnMenu.txt

XXX-sls_county_block.preTemplate

XXX-wwa_cem.preWWA

XXX-wwa_dam_break.preWWA

XXX-wwaDefaults.txt

XXX-wwa_ffw.preWWA

XXX-wwa_flflood_sta.preWWA

XXX-wwa_svr2.preWWA

XXX-wwa_svr.preWWA

XXX-wwa_svrwx_sta.preWWA

XXX-wwa_tor.preWWA

XXX-wwa_wrksls.preWWA

XXX-wwa_wrksls.wwaProd

radarDataMenus.template

radarDepictKeys.template

radarProductButtonInfo.template

SiteChangesLog

virtualFieldTable.txt

WWA_aircraft.preWWA

WWA_alert1.preWWA

WWA_alert2.preWWA

WWA_blizzard_wrn.preWWA

WWA_blodust_adv.preWWA

WWA_blodust_wrn.preWWA

WWA_blosnow_adv.preWWA

WWA_coast_fld_stmt.preWWA

WWA_coast_fld_wat.preWWA

WWA_coast_fld_wrn.preWWA

WWA_esf.preWWA

WWA_excheat_wrn.preWWA

WWA_extheat_wat.preWWA

WWA_extheat_wrn.preWWA

WWA_ffld_wat.preWWA

WWA_ffld_wrn.preWWA

WWA_ffs.preWWA

WWA_flood_wat.preWWA

WWA_flood_wrn.preWWA

WWA_fog_adv.preWWA

WWA_freeze_adv.preWWA

WWA_freeze_wrn.preWWA

WWA_frost_adv.preWWA

WWA_frost_wrn.preWWA

WWA_frzdrzl_adv.preWWA

WWA_frzrain_adv.preWWA

WWA_frzrain_wrn.preWWA

WWA_hazard_outlk.preWWA

WWA_heat_adv.preWWA

WWA_heat_outlook.preWWA

WWA_hiwind_wat.preWWA

WWA_hiwind_wrn.preWWA

WWA_hurricane_wat.preWWA

WWA_hurricane_wrn.preWWA

WWA_hvysnow_wrn.preWWA

WWA_icestrm_adv.preWWA

WWA_icestrm_wrn.preWWA

WWA_mws.preWWA

WWA_now.preWWA

WWA_npw.preWWA

WWA_pns.preWWA

WWA_pub_info.preWWA

WWA_rec_evt.preWWA

WWA_redflag_wat.preWWA

WWA_redflag_wrn.preWWA

WWA_severe_outlook.preWWA

WWA_short.preWWA
WWA_slt_adv.preWWA

WWA_slt_wrn.preWWA

WWA_smoke_adv.preWWA

WWA_snow_adv.preWWA

WWA_specialstmt.preWWA

WWA_svrstmt.preWWA

WWA_svrt_wat_sls.preWWA

WWA_svrt_wat_wcn.preWWA

WWA_tor_wat_sls.preWWA

WWA_tor_wat_wcn.preWWA

WWA_tropstorm_wat.preWWA

WWA_tropstorm_wrn.preWWA

wwa_urbssflood_adv.preWWA

WWA_volash_adv.preWWA

WWA_volash_wrn.preWWA

WWA_wcn.preWWA

WWA_wind_adv.preWWA

WWA_wintstrm_wat.preWWA

WWA_wintstrm_wrn.preWWA

WWA_winwea_adv.preWWA

WWA_wndchil_adv.preWWA

WWA_wndchil_wrn.preWWA

WWA_wsr88d.preWWA

WWA_wsw.preWWA

WWA_ww_outlk.preWWA

Note: For files in the customFiles directory without the XXX- prefix you should not have files that contain local geographic information in them like **`radarsInUse.txt, radarsOnMenu.txt, mainConfig.txt, dialRadars.txt, mosaicInfo.tx`**t, etc.

24.4 /awips/fxa/WEScustomization/mainConfig

genericmainConfig.txt (with the following entries inside the genericmainConfig.txt file):

@@@RADAR_Z 1000

@@@RADAR_V 1002

@@@RADAR_8 1018