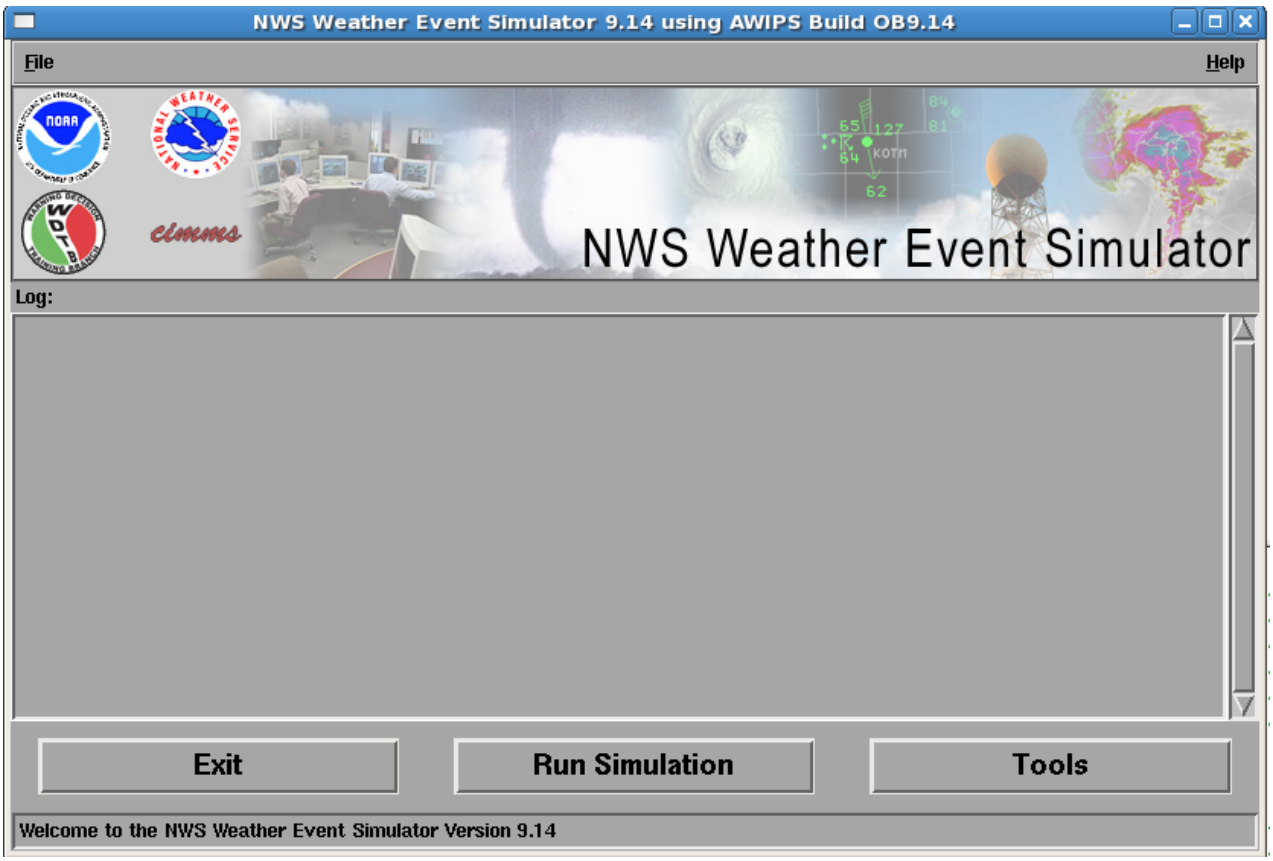
NWS Weather Event Simulator 9.14 Installation Instructions and User Guide



NOAA NWS Warning Decision Training Branch
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1 WES 9.14 Release Notes

WES 9.14 Installation Package

This release contains 2 DVDs for NWS offices to accomplish the following objectives:

1) Install the WES 9.14 Software
    a. Refer to the **INSTALL_WES914.pdf** document on the "**WES 9.14**" install DVD for instructions on completing this process.
2) Install OB 9.14 localizations for all WDTB training cases located in /data/awips
    a. Refer to Instructions.txt document on the "**OB9.14 Localizations Update DVD**" for guidance on completing this process.

What's New in WES 9.14

1. Updated with AWIPS Software Builds from OB9.11 - OB9.14

- The new WES 9.14 release includes updates for OB9.11-OB9.14 software builds.

2. WES compatible with SAILS data

- Supplemental Adaptive Intra-Volume Low-Level Scan (SAILS) is now compatible with the WES. SAILS will add an extra 0.5 degree tilt into the "middle" of a volume scan (dependent on AVSET) for VCPs 212 and 12. FSI does not display the extra SAILS tilt operationally or in WES. For more information see http://www.roc.noaa.gov/wsr88d/PublicDocs/NewTechnology/SAILS_FAQs.pdf

3. Changes to WarnGen Templates

- With the release of AWIPS OB9.13, the WarnGen templates were updated to include Tornado and Flash Flood Emergency text. When the WarnGen GUI is launched, the emergency text options will be the top bullet under "Optional bullets:".

4. WES documentation INSTALL_WES914.pdf updated

- Updates include: importing forecast grids to GFE (section 18.3), forcing flash flood guidance (section 12.4), and configuring desktop shortcuts (Appendix B).

5. WES 9.14 Overview Training in the LMS for NOAA users

- All NOAA WES installation focal points and WES training focal points should take the short WES 9.14 training in the LMS (search for "WES 9.14" in http://doc.learn.com/noaa/nws).

Known Issues in WES 9.14

- You need to relocalize your cases after installing WES9.14.
- Relocalizing with the "-ffmp" switch deletes FFMP data (AWIPS convention), so data needs to be recreated after using the "-ffmp" switch (see section 12).
- start_simulator sometimes erroneously detects an existing simulation. Disregard this message if another start_simulator is not running.

WES Development Timeline

The current plan is for WES-1 to be updated at the beginning of each calendar year and supported until all sites have migrated to AWIPS-2 and WDTB's AWIPS-2 WES capability, WES-2 Bridge. The initial release of the WES-2 Bridge development to early AWIPS-2 Activation Groups is planned to occur a couple of months after the WES-2 Bridge Discrepancy Reports (DRs) are fixed in the AWIPS baseline, perhaps in early to mid-2014. As more capability is added to WES-2 Bridge (e.g. AWIPS-1 to AWIPS-2 case conversion capabilities, OS support for 64bit AWIPS-2, etc), a more widespread release is planned for all sites. Current AWIPS schedules have AWIPS-2 completely fielded in 2015, so the WES-1 to WES-2 Bridge transition will likely extend into 2015. The long-term development of training capability in the AWIPS baseline has been delayed more years due to budget cutbacks.

The WES-2 Bridge platform will utilize the HP Z600 machines deployed to NOAA offices in December 2010. Upon transition to AWIPS-2/WES-2 Bridge, the existing HP xw6200 WES-1 will become a "WES-2 Bridge Lite" to provide multiple forecasters access a second AWIPS-2 machine for case processing and playback. While some sites have had to use the Z600 WES-2 Bridge machine for WES-1 due to hardware failures, sites need to know that the WES-2 Bridge software will come with a disk image that will overwrite anything put on the WES-2 Bridge Z600 workstation. The ideal strategy for hardware failures (e.g. graphics card, hard drives) is to find spare parts (contact Regional HQ). As NWS budgets improve, hardware parts replacement may return.

Questions

Questions regarding WES 9.14 installation or support should be sent to the WES info list at wes@infolist.nws.noaa.gov. Questions regarding shipping or obtaining WES for non-NOAA use should be sent to the Warning Decision Training Branch.

2 Requirements and Overview

The WES 9.14 baseline operating system is the 32-bit Linux Redhat Enterprise 5 (RHEL5) operating system, which is the same as the AWIPS baseline operating system. 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. If you still choose to use KDE, we have included a program called kde-reset in the fxa user's path to unfreeze windows if you encounter this problem. 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 WES 9.14 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 WES 9.14, 2) the Linux version of AWIPS with OB9.14, 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 24) 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 WES 9.14.

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 OB9.14 will not work until you manually install the RPMs following the instructions in Section 24.

AWIPS requires /bin/compress and /bin/uncompress in order to successfully create map files. If you are installing WES on a non standard machine and you do not have these, you can link compress to gzip and uncompress to gunzip in the /bin directory as root.

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 10 and 30 GB of disk space, so it is suggested that you have a MINIMUM 20GB

of available space for both data and the WES 9.14 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 ~ 850 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 minimum resolution of 1280x1024. You can check your current display with the **`xdpyinfo`** command. If you try to run D2D in 8-bit Pseudocolor mode the process will die a horrible death.

The WES 9.14 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 WES 9.14 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 WES 9.14 please contact the Warning Decision Training Branch for details.

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3 Back Up Any Pre-existing WES Installation

1. Log in as root.
2. **`cd /awips`**
3. Back up the fxa directory as root (in the example below, we assume the previous build was WES 9.10):

   e.g. **`cp -Rp fxa fxa.wes9.10`**

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 WES 9.14

1. Print out pages 9 - 28 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.

4. Load and mount the WES 9.14 install DVD:

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

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

   e.g. **`cd /tmp`**

   e.g. **`script wes9.14.log.012214`**

6. cd to your dvdrom device:

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

7. Run the WES install script. 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. **`/bin/csh install-wes914.csh <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. **`/bin/csh install-wes914.csh <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 24.

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-wes914.csh`** to return "**install-wes914.csh finished"** (~5-10 minutes).

Note: If the installation script stops short or has an I/O error, be sure to check your available disk space on your WES machine. Ideally, you want at least 10GB of free disk space on your machine.

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 24, Manual Installation of AWIPS Freeware".

9. Logout of your machine 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`**. You will need to change the postgres password as root after the installation.

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 WES 9.14 Flash verification presentation in a web browser:

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

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

   Note: Following a successful installation, the flash plugin for firefox should be enabled. This can be checked by clicking on: "**Tools**" → "**Add-ons**" → "**Plugins**" and looking for the Shockwave Flash section. If it is not enabled, click the "**Enable**" button and re-launch firefox using the above command. If the presentation fails to load, then review the manual Flash plugin installation in Section 22.

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, review the manual Xine installation in Section 23.

5.2 Install WES Test Case

1. In order to verify a successful installation, install the test case in **`/data/awips`** from the WES 9.14 install DVD. After successfully viewing the test case data in Section 5.3, 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 need to create new localizations for all your old cases with WES 9.14. You can fully display them in D2D with AWIPS OB9.14 in WES 9.14.

2. As the fxa user, load and mount the WES9.14 install DVD:

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

3. To install the test case, change directory to the DVD device and run the **`wes914_testcase_install`** program:

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

   e.g. **`/bin/csh wes914_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 as the root user.

4. Once complete, change directories out of the DVD device. Running WES tools from the DVD device location will cause errors, especially with Postgres processing.

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

5. After the case has been installed, some archived 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":

6. Run **`start_simulator`**

7. Click the "**Tools**" button

8. Click the "**Write Archived Text to Database**" button

9. Use the Select button to choose the **2006Aug24test** case for FXA_DATA and **ABR** as FXA_LOCAL_SITE

10. Click "**OK**"

11. The simulator will display "**Write to postgres database complete**" when finished

12. 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 Verify 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:
2. Select **2006Aug24test** as the FXA_DATA and **ABR** as the FXA_LOCAL_SITE
3. Select the "**Start AWIPS Text Workstation Control**" checkbox
4. Click the "**OK**" button
5. 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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6. Ensure the Guardian application is running correctly and generate a test pop-up:
7. After D2D starts up, there should be a bar below D2D containing several icons and two status bars
8. Click the Guardian icon
9. The Guardian Configuration GUI should appear
10. Close the Guardian Configuration GUI by pressing the "**x**" or the "**Close**" button
11. In D2D, select **CONUS** scale and load **13u** under the **Satellite** menu
12. A red Guardian pop-up should appear with a "**No Data Inventory**" message
13. Close the pop-up by pressing the "**Close**" button or "**Acknowledge Last**"
14. Ensure the radar data for the first test case were loaded correctly by viewing the **All Tilts kabr Z/SRM8** radar data in D2D:
15. Select **64** in the **Frames** menu

16. Select **WFO** as the scale

17. Under the **kabr** menu, select **All Tilts Z/SRM8**

18. 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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19. Under the **Volume** menu find the **Std Env Data Package** section, and select **LAPS**. As you sample the radar data in time and space in D2D with the left mouse button, the environmental information (e.g. Wind, RH, T) should show up in the cursor readout. If you right click on the **Temperature** text in the legend and select a **Density** of **1**, you should see isotherms interpolated to the radar tilts.

20. Under the **Volume** menu select **Popup SkewT**, and then right click on the main D2D pane and select **Laps** under the **Sample Cloud Heights/Radar Skew T** pullout menu. As you **sample** the radar data in time and space using the left mouse button, the popup SkewT should update with the height of the radar observation.

21. Clear the D2D pane and close the Popup SkewT window

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

23. 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 **Obs** menu

24. A warning polygon should display in the first few frames when stepping through the loop

25. Clear the pane

26. In the Text Workstation window click on "**Text 1**" on the Text Workstation Control (outside D2D), enter **FSDTORABR** in AFOS Cmd and hit return

27. The text of an archived warning should appear

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

29. In D2D, choose **WFO** scale and clear the pane

30. Under the **SCAN** menu in D2D, navigate to the **FFMP** and **kabr** submenus, and select **FFMP kabr Display**

31. Select **ABR** under the **CWA** menu in the **FFMP Basin Table** window. Then click "**Refresh D2D**"

32. A colored county map should be visible in D2D, and the table contents should change.

33. In the FFMP table select **All & Only Small Basins** from the **Layer** button, and select **ratio** from the **D2D** button. Then click **Refresh D2D**. D2D should update with the ratio product (see text legend in upper left part of D2D) drawn for the basin scale.

34. While in the basin Layer, left mouse click on any cell under the **NAME** column to zoom in on a basin.

35. Right mouse click on any cell under the **NAME** column to open up the FFMP Basin Trend Graph. Step through all the time buttons (All hr., 1 hr, 3 hr., etc.) to view the rainfall rate for each respective time period.

36. Clear the D2D pane.

37. Display the SCAN DMD for kabr:

38. Select **12** in the **Frames** menu

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

40. Right click on "**llVr**" for one of the DMD identifiers (ex: **208)** to launch a time-height display of DMD data

41. Click "**Close**"

42. 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

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

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

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

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

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

48. Clear the main pane, and while on **WFO** scale select **All Tilts Z/SRM8** under the **kabr** menu. Step through the data, and zoom in on a storm to load FSI on (next step).

Note: You should always load FSI on a radar product to ensure FSI will launch correctly.

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49. Under the **Tools** menu, select **4-D Storm Investigator (FSI)**

50. Right click anywhere on the main pane. The test case will contain 2 radars, kabr and kfsd, select **kabr** and click "**Ok**". Then click "**Continue**" in the FSI Time Entry Window (As explained below, this window may take a few seconds to appear). The FSI time entry window will come up in case review and contain a useful default based on the time entered in D2D or the beginning/end time of the available data. You can use this entry to specify the time to view using FSI.

Note: If you have more than one dedicated radar in your case, FSI will prompt you to select which radar to load. There is one dedicated radar in the WES test case.

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51. Wait while WES creates an inventory of files and an FSI linear buffer. The first time FSI is launched on a selected radar in a case, this process can take up to several minutes. After that, FSI will load much more quickly each time it is launched.

52. Once FSI is loaded, navigate through time by using the arrow keys on the numeric keypad (make sure Num Lock is turned on). WES creates a four hour FSI linear buffer while in case review (for cases with greater than four hours of data).

53. Turn cursor sampling on by clicking on the **magnifying glass button** in FSI. Move your mouse over the data to sample data in FSI.

54. Click the **1** through **4** buttons on the upper left part of the keyboard to toggle between Z, V, SRM, and SW.

55. Move the cross section bar in the PPI (upper-left pane) by clicking the left mouse button on the **middle circle** and moving the mouse. The vertical cross section should dynamically update. FSI should respond quickly. If FSI appears sluggish, you should test your machine to see if you need to recompile your graphics driver (see http://www.wdtb.noaa.gov/tools/wes/docs/Nvidia_drivers_install.pdf).

56. Move the height of the CAPPI (upper-right pane) by selecting the **blue bar** on the right, and dragging it up and down. Note the data down samples to degraded resolution when it is moved.

57. Pan the display in the “3D Flier” window (lower-right pane) holding down the left mouse button and dragging the mouse toward and away from you.

58. Pitch and yaw the display in the “3D Flier” window (lower-right pane) by holding the shift key with one hand, holding down the left mouse button, and moving the mouse.

59. Zoom in the “3D Flier” window by holding the middle mouse button and dragging the mouse toward and away from you.

60. Exit FSI under the **File** menu

61. 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.

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**”

   Conversion to DRT format can take several minutes to complete

3. Load the **wes914_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 **wes914_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:

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

8. Click the Guardian icon

9. The Guardian Configuration GUI should appear

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

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

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

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

14. 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.

15. Toggle to the **SRM 8** product by selecting the "**.**" key on the numeric keypad.

16. Under the **Tools** menu load **Radar Display Controls**

17. Enter **250** degrees at **20** kts as the **SRM Custom Storm Motion**

18. 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

19. 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.

20. Clear the main pane, and while on **WFO** scale select **All Tilts Z/SRM8** under the **kabr** menu

21. Under the **Tools** menu, select **4-D Storm Investigator (FSI)**

22. Right click on a storm anywhere on the main pane and select **KABR** as the radar for FSI to use

23. Wait while FSI launches (it can take 5-10 seconds)

Note: During a simulation, the FSI time entry window does not appear. The FSI time entry window is only for case review.

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24. Once FSI is loaded, navigate through time by using the arrow keys on the number pad (make sure Num Lock is turned on). At the start of the simulation a two hour FSI linear buffer is created to allow viewing of the latest two hours of radar data in FSI, just like in a real time AWIPS.

25. While viewing the reflectivity product, click on the **magnifying glass button** to turn on cursor sampling. Move the pointer over the data to verify sampling is working.

26. Watch the product legend in the upper right part of the FSI display for when the tilts are processed in FSI each minute.

27. Exit FSI under the **File** menu

28. Test creating a warning with WarnGen in D2D:

29. Clear the D2D pane and select a **WFO** scale map

30. With no product loaded click on the "**WarnGen"** button in the upper right part of D2D

31. Select **Tornado** for **Product Type** in the WarnGen popup window

32. Move the "**Drag me to storm**" icon to somewhere in the center of the map

33. Click on the "**Create Text**" button on WarnGen popup window

34. A text window should appear if the text monitor was started with D2D

35. Click "**Enter**" to modify the warning

36. Replace the line at the bottom containing "**!**NAME/INITIALS**!**" with your initials

37. Click the "**Send**" button

38. In a new pane on WFO scale load **Local CWA Warnings** from the **Obs** 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.

---

39. 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. Stop the simulation by pressing the **Stop Simulation** button on the WES control interface. Exit the simulator by clicking the **Exit** button on the main WES interface.

40. 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.

---

41. 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.200902062234`** (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 **wes914_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 **wes914_GFE_test_case_ABR**, then click the "**OK**" button in the **Load** window

   e.g. Verify the **abr_watchautomater_test.wessl** file is loaded in the **WESSL Script (optional)**" box. If it is not there, press the "**Select**" button next to the "**WESSL Script (optional)**" text box, and select **abr_watchautomater_test.wessl**, followed by the "**OK**" button in the **Select WESSL** window.

   Note: Users of previous WES builds may notice that a WESSL script has been added to the GFE verification macro. This WESSL script tests the GFE Watch Automater script, "watch_wes.py," which is new with WES 9.14.

   e.g. Click **"OK"** in the **Simulation Entry** window.

   e.g. click the "**Run Simulation**" button in the **Entry Verification & Simulation Control** window.

   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.

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:
4. 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.
5. Populate your grids with the **RUC80**:
6. Under the **Populate** menu, select **Copy All Grids From…**
7. Select **RUC80 2421 (ABR)**, and click the "**OK**" button.
8. Switch to the vertical mode by selecting the top left button with the vertical line in the box
9. Click on "**T SFC**" grid, and step through the images using the right arrow key
10. Test creating warning hazard grids:
11. Under the **Hazards** menu, select **MakeHazard**
12. Select the **Winter Weather** icon from the hazard list
13. Click and drag to select some counties in the county display and **"WS.W - WINTER STORM WARNING**" as the hazard
14. Adjust the **Hazard End Time** to **12z** on **Aug 25**, and click the "**Run**" button
15. Click the "**Clear All**" button to clear the counties
16. Select some other counties, and "**IS.W - ICE STORM WARNING**" as the hazard
17. Adjust the **Hazard End Time** to **12z** on **Aug 25**, and click the "**Run/Dismiss**" button
18. Under the **Hazards** menu, select **MergeHazards**
19. Drag the vertical scroll bar down, select the **Hazards SFC** grid, and use the right arrow key to view the hazards
20. 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

21. At 22:11 in the simulation, WESSL will send a WCL to GFE by calling the watch_wes.py script. A yellow popup should appear in GFE a few seconds later with instructions on how to view the WCL.

22. Click the **Hazards** menu and select **View WCL**

23. Cick **Run/Dismiss** in the resulting popup. The WCL should plot in GFE, with included counties in red. You should see the "ProposedWatches SFC WCL" in the grid manager.

24. At 22:13 in the simulation, WESSL will send a WOU to GFE by calling the watch_wes.py script. A yellow popup should appear in GFE a few seconds later with instructions on how to view the WOU.

25. Cick the **Hazards** menu and select **PlotSPCWatches**, then click **Yes** in the resulting popup

26. Select the **Hazards SFC** grid, and use the right arrow key to view the hazards. You should see the SPC watch as well as the winter weather hazards created earlier (what a shift!).

27. Test creating the warning hazard text:

28. Under the **Products** menu, select **Formatter Launcher**

29. After opening the **Formatter Launcher**, click on the **Products** menu, select the **Hazard** pullout menu, and select **Hazard_WSW (Winter Wx Product)**

30. Click on the "**Run Formatter**" gear box button , and your warning text will appear after a few seconds

31. Modify or delete all the "**|***" placeholders in the warning text

32. 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.

---

33. Exit out of GFE and click on the **"No"** button in the **Save Weather Element(s)** window when prompted.

34. 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, WES 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 Unmodified GFE Grids**".

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 unmodified GFE Grids**" when complete.

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

5. After selecting the "**Run Simulation**" button in **`start_simulator`**, click "**OK**" on the first popup, and then select the simulation details:

   - Set the **Case Start Time** to **1505**, the line will read **200608241505** when completed

   - Using the "**Select**" button next to the GFE Directory entry, choose the **ABR-20060824_1505** entry with a single left-click and hit the "**OK**" button to close out of the "**Select GFE_DIR**" window.

   - Using the "**Select**" button next to the GFE Grid entry, choose the **default** entry with a single left-click and hit the "**OK**" button to close out of the "**Select GFE grid**" window.

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

7. In a shell window, type **`start_GFE`**, and follow Section 5.5 Steps 3-5 and step 8 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 **wes914_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 **wes914_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. 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.

5. 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.

6. Load a TAF for KABR.

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

7. 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 **13013KT** to **20020KT**
- Remove the entire second line
- On the *new* second line, change the valid time from **FM242230** to **FM242300**
- On the last line, change the wind speed and direction from **18015KT** to **36030KT**

8. 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)

9. 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 7

10. After verifying the install was successful, shut down all AvnFPS windows, and exit the simulator. You may consider putting icons on the desktop to run the **`start_avnfps`** script.

Note: If you launch start_avnfps from an icon, you **must** de-select the "Run in Terminal" option or AvnFPS will crash on startup. A popup window will provide feedback as AvnFPS is starting up.

---

11. Verify your edited TAF was saved.

12. 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

13. 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 200902052200`** (for example, if you ran the simulation February 5th, 2009 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 **wes914_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 "**wes914_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. After the simulation begins processing data, start the AvnFPS menu:

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

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

6. Load the TAF for KABR:

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

7. 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 **FM242300**
   - On the third line, the wind speed and direction is **36030KT**

8. 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.

The remainder of this document contains reference information including:

1. Setting up cases

2. The WES Scripting Language (WESSL)
3. Using WES in a networked environment
4. Manual installation of AWIPS freeware
5. Manual installation of helper applications
6. Configuration files

6 Customize AWIPS OB9.14 in WES 9.14

6.1 Migrate Local AWIPS Customizations to the WEScustomization Directory in WES 9.14

1. These customization instructions were designed to transfer AWIPS customization files from a real-time AWIPS with Build OB9.14 to WES 9.14. If you don't have access to AWIPS customizations, then skip to Section 9.

2. The concept of migrating customizations to WES 9.14 is to transfer all your important customization files from your local AWIPS to a central location on WES (`/awips/fxa/WEScustomization`) that will not be removed by future WES installations. Once your customizations have been brought over to the WES they will be copied to the AWIPS on WES in Section 6.2. 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 temporary storage directory on your local AWIPS to transfer AWIPS customization files to. You may find it helpful to use an NFS mounted partition like `/data/fxa` to collect files from different machines. In this example we will create `/data/fxa/localfiles` and `/data/fxa/localfiles/gfeFiles` to collect AWIPS customization files.

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

   e.g. **`mkdir localfiles localfiles/gfeFiles`**

5. On your DX1, copy **`/data/fxa/customFiles, /data/fxa/userPrefs, /data/fxa/tstorm, /data/fxa/ffmp, /awips/GFESuite/primary/data/databases`** `directories and the` **`/awips/GFESuite/Primary/etc/SITE/localConfig.py`** file into the temporary storage directories:

   e.g. **`cp -R /data/fxa/customFiles /data/fxa/localfiles`**

   e.g. **`cp -R /data/fxa/userPrefs /data/fxa/localfiles`**

   e.g. **`cp -R /data/fxa/tstorm /data/fxa/localfiles`**

   e.g. **`cp -R /data/fxa/ffmp /data/fxa/localfiles`**

e.g. **`cp /awips/GFESuite/primary/etc/SITE/localConfig.py /data/fxa/localfiles/gfeFiles`**

e.g. **`cp -R /awips/GFESuite/primary/data/databases /data/fxa/localfiles/gfeFiles`**

This will also copy the **BASE** directory, which you will not use, so you can delete the **localfiles**/data/databases/BASE directory.

e.g. **`rm -R /data/fxa/localfiles/gfeFiles/databases/BASE`**

6. On your LX1, copy the following directories over to the temporary storage directory directory:

- `/awips/fxa/data/localization/XXX` directory (where XXX is your localization ID) **,**
- `/awips/fxa/data/colorMaps.nc`**,**
- `/awips/fxa/data/fxa-users`**,**
- `/data/fxa/workFiles/customColorMaps.nc`:

e.g. **`cp -R /awips/fxa/data/localization/LOT /data/fxa/localfiles`**

e.g. **`cp /awips/fxa/data/colorMaps.nc /data/fxa/localfiles`**

e.g. **`cp /awips/fxa/data/fxa-users /data/fxa/localfiles`**

e.g. **`cp /data/fxa/workFiles/customColorMaps.nc /data/fxa/localfiles`**

7. If you have browser*.txt volume browser files in your customFiles directory (step 5), then skip this step. If you do not have browser*.txt files in customFiles and you have customized these files on your AWIPS, then you will need to copy `/awips/fxa/data/vb/browser*.txt` files from your LX1 to the temporary storage directory**:**

e.g. **`cp /awips/fxa/data/vb/browser*.txt /data/fxa/localfiles`**

8. On your LX1 workstation copy the FFMP* and ffmp* files in `/awips/fxa/data/localization/nationalData` to the temporary storage directory**:**

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

e.g. **`cp FFMP* /data/fxa/localfiles`**

e.g. **`cp ffmp* /data/fxa/localfiles`**

9. Copy any specialized map files **`(*.bcx`** found in the **`/awips/fxa/data/localizationDataSets/XXX`** directory) into the the temporary storage directory.

10. Transfer the temporary storage directory to the WES via CD, scp, ftp, etc.

11. 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, gfeFiles**, and the **XXX** directory (e.g. **LOT**) in the **`/awips/fxa/WEScustomization`** directory on the WES machine before you update WES 9.14 with your new OB9.14 customizations.

    e.g. **`cd /awips/fxa/WEScustomization/ (on WES machine)`**

    e.g. **`mv customFiles customFiles.ob910`**

    e.g. **`mv userPrefs userPrefs.ob910`**

    e.g. **`mv global-LLL-files global-LLL-files.ob910`**

    e.g. **`mv storagefiles storagefiles.ob910`**

    e.g. **`mv mainConfig mainConfig.ob910`**

    e.g. **`mv gfeFiles gfeFiles.ob910`**

    e.g. **`mv LOT LOT.ob910`**

Note: One backup version is probably enough, so you can delete previous backups.

---

12. Change directory to the temporary storage directory you copied over to the WES to prepare for copying files to `/awips/fxa/WEScustomization`.

    e.g. **`cd /media/CDROM/localfiles`**

13. As user **fxa**, copy the following directories to **`/awips/fxa/WEScustomization`**: **customFiles**, **userPrefs, ffmp, tstorm,** and the **XXX** directory (where XXX is your localization ID) from step 6

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

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

e.g. **`cp -R ffmp /awips/fxa/WEScustomization`**

e.g. **`cp -R tstorm /awips/fxa/WEScustomization`**

e.g. **`cp -R gfeFiles /awips/fxa/WEScustomization`**

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

Note: The XXX directory is the relatively small site-specific customization directory, /awips/fxa/data/localization/XXX, and **not** the big /awips/fxa/data/localizationDataSets/XXX directory.

---

14. Create a storagefiles directory in **`/awips/fxa/WEScustomization/`**

e.g. **`mkdir /awips/fxa/WEScustomization/storagefiles`**

15. Copy the following files to the **`/awips/fxa/WEScustomization/storagefiles`** directory: **`colorMaps.nc, fxa-users, customColorMaps.nc, browser*.txt, *.bcx, FFMP*, ffmp*`**.

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

e.g. **`cp fxa-users /awips/fxa/WEScustomization/storagefiles`**

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

e.g. **`cp browser*.txt /awips/fxa/WEScustomization/storagefiles`**

e.g. **`cp *.bcx /awips/fxa/WEScustomization/storagefiles`**

e.g. **`cp FFMP* /awips/fxa/WEScustomization/storagefiles`**

e.g. **`cp ffmp* /awips/fxa/WEScustomization/storagefiles`**

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

17. 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`**

18. Copy the `/awips/fxa/WEScustomization/userPrefs/$user` directory (where $user is your favorite user's preferences) into the `/awips/fxa/WEScustomization/userPrefs/fxa` directory. This set of user preferences will be applied to everyone logged in as user fxa.

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

    e.g. **`mv fxa fxa.backup`**

    e.g. **`ls`**

    e.g. **`cp -R jhays fxa`**

6.2 Migrate the Local AWIPS OB9.14 Customizations to the New OB9.14 with WES 9.14

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 customFiles`**

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

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

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

   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 the localization ID) 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. Copy the **tstorm** and **ffmp** directories from `/awips/fxa/WEScustomization` into your data case:

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

    e.g. **`cp -R tstorm /data/awips/2002Jun12`**

    e.g. **`cp -R ffmp /data/awips/2002Jun12`**

Note: These directories and their contents must be copied to your case. Do not link these between multiple cases or you will have lots of problems.

Note: If you are assembling a data case for a non-local CWA you will need to modify the **`/data/fxa/tstorm/FFMPradartoCWA.txt`** file to be consistent with your radar data before localizing.

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12. Make an XXX directory in **/awips/fxa/data/localization/nationalData/WES-FFMP** (where XXX is the localization ID) to prepare for customizing FFMP on WES.

    e.g. **mkdir /awips/fxa/data/localization/nationalData/WES-FFMP/LOT**

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

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

File	To Location
browser*.txt	**/awips/fxa/data/vb (only if browser* is not in customFiles)**
fxa-users	**/awips/fxa/data**
customColorMaps.nc	**<data_case>/workFiles**
FFMP*	**/awips/fxa/data/localization/nationalData/WES-FFMP/XXX**
ffmp*	**/awips/fxa/data/localization/nationalData/WES-FFMP/XXX**

where **<data_case>** refers to your case (e.g. 2002Jun12), and **XXX** is your localization ID.

14. Copy any other relevant files in the **storagefiles** directory except the *.bcx files and the colorMaps.nc files to the appropriate AWIPS directory. These files will be put into the localization after running mainScript.csh in Section 7.

15. 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.

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.ob910`**

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. Now run mainScript.csh with the "-scan" switch, "-ffmp" switch, and "-fsi" switch.

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

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

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

6. Next, cd to `/awips/fxa/WEScustomization/storagefiles` and 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 ID (e.g. LOT).

7. Start D2D with the new localization. Verify your localization was successful and that 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.ob910**

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

e.g. **mv LOT LOT.ob910**

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 Sections 8 and 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. You need to create a new localization for a non-local case if you are building one from scratch, or if you are updating an existing non-local case that has an older localization. WDTB will provide localization updates for all its courses, but if you want your non-local cases customized with your local customization, then you will still need to complete this section. 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.

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

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

   e.g. **`mv BMX BMX.ob910`**

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 .`**

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:

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

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

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

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

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

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

17. If you have completed all sections to this point, you are done with customizing the WES 9.14 installation.

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 five days). If you are missing something from your archive, check the AX first to see if the data is being copied. If it is not, then you will need to identify the appropriate cron job that copies the files, and you will need add the data types to the cron job.

Several utilities exist to archive data from the five 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.

Special care needs to be taken on managing disk space with the archiver, particularly with the problems identified in the OB9.7 beta tests. Some often overlooked files that you should consider adding to your archive to support FFMP include:

- HRAP grid digital RFC flash flood guidance (stored in **`/data/fxa/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/fxa/radar/xxxx/DHR/layer0/res1/level256`** (where **`xxxx`** is the radar name)

- **`/data/fxa/Grid/LOCAL/netCDF/HPE`**

- **`/data/fxa/Grid/LOCAL/netCDF/BHPE`**

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.

The following steps outline how to create the data case:

1. Obtain archive data (e.g. from the 5 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.

Note: In general it is not a good idea to use an old case as a template for building a new one. If the "drt" directory is inherited from another case, this will confuse the WES inventories, and it will create significant problems.

Note: If you are going to work with FFMP and you don't have a version of tstorm from the CWA you are localizing for, then you will need to copy a **`/<your_case>/tstorm/FFMPradartoCWA.txt`** file from another case, and update the radar and CWA inside to be consistent with your radar data before localizing.

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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/CDROM`**

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

   e.g. **`foreach fil (`ls /media/CDROM/*.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).

6. Create a localization with the AWIPS defaults (no customization).

7. Create a localization with your customizations for your local CWA.

8. Create a localization for a non-local CWA.

9. 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.

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

10. If you need to add text products to the case, see Section 11.

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

12. If you are running AVNFPS, see Section 14.

11 Adding Archived Text Data to Postgres

Background: WES uses Postgres for AWIPS database operations just like a configuration managed AWIPS. The primary function of Postgres in WES 9.14 is to support WarnGen in creating warnings. Standard NWS text data can also be copied into the Postgres database for access during static review or simulations.

In WES 8.3 the Postgres database changed in AWIPS, requiring new pgdata databases with new tables. WES will move any old pgdata directories from a pre-WES 8.3 case to a "badpgdata" directory in the case, and it will untar a new blank database that will work with the current WES. Archived text files can be written to the new database as with the previous WES releases. 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 products. 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 **`<data_case>/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 or if it is from prior to WES 9.14, 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 WES 9.14 installation modifies the **`/etc/sudoers`** file to allow the fxa account to untar a blank database, start/stop postgres, and move the pgdata all as user postgres.

Once the database is in place, the WES starts postgres 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, postgres 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 :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:

6. Start **`enhanced_case_review`**

7. In a shell window type **`psql fxatext`**

8. "**`SELECT * FROM textProductInfo;`**"

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

10. 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.

11. Verify the delete using "**SELECT * FROM textProductInfo**;"

12. 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.

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

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

15. 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 postgres (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

Background: FFMP data fundamentally changed in OB8.3 with the release of FFMP Advanced (FFMPA), and WES was modified significantly to support it. Below is some background on the latest changes in FFMP on WES that you should familiarize yourself with.

- FFMP data is stored in the `<your_case>/ffmp` directory (`/data/fxa/ffmp` on real-time AWIPS) instead of in each radar's "ffmp" subdirectory.
- FFMP data are stored as hourly binary files under each source's subdirectory under the "ffmp" directory (see `ffmp/FFMPsourceConfig.dat` for sources).
- The D2D "**Freeze time at this position**" tool (selected after double clicking the clock on the bottom right of the D2D) used to not work with FFMP data, but now it does.
- WES no longer uses FFMP tar files to manage FFMP data, and there is no longer any need to specify FFMP setting in the simulation entry window.
- FFMP basin files on your live AWIPS are now stored as FFMP* and ffmp* files in `/awips/fxa/data/localization/nationalData` as opposed to the previous convention of having file names represent their contents (like ktlx*). This creates problems in switching basin files for localization and keeping track of the contents of these files. To get around this, FFMP customization on WES will be a little different (see next bullet).
- **When you customize the AWIPS on WES, all FFMP* and ffmp* customization files *must* be placed in a `/awips/fxa/data/localization/nationalData/WES-FFMP/$CWA` directory, where $CWA is the CWA (e.g. ABR).** The AWIPS `mainScript.csh` in WES has been modified to link to the appropriate CWA directory when the "-ffmp" switch is used, so you won't trip yourself up switching between CWAs or cases when localizing on WES.
- The AWIPS localization process will also *create* some new FFMP* files *in* `/awips/fxa/data/localization/nationalData` on your real-time AWIPS or WES. These include the menu items for D2D. To insure these files are kept consistent with your other customization files, we modified mainScript.csh to copy

the new files to your …/`nationalData/WES-FFMP/$CWA` directory after localization with the "-ffmp" switch is complete.

- The FFMP* and ffmp* in nationalData must also be kept consistent with the *data* being displayed. To insure this happens, mainscript.csh has also been modified to copy a version of the FFMP customization files to the data case in the `<your_case>/saved_FFMP_customization_files/$CWA` directory. The WES's `/awips/fxa/bin/awips5x*` D2D startup files have been modified to dynamically link the FFMP files in nationalData to the `<your_case>/saved_FFMP_customization_files/$CWA` directory. If you want to share FFMP data with others, you will need to package the `saved_FFMP_customization_files` directory with your case.

- Localization in `mainScript.csh` with the "-ffmp" switch will delete all ffmp accumulation data on your real-time AWIPS or in your WES case when it is run. If this happens, you can use the FFMP data creation tool to recreate FFMP data accumulations. This tool will work on cases containing the inputs to FFMP (typically DHR files and RFC FFG files).

- A tool button exists in WES to create FFMPA data for use with the AWIPS in WES. Use this tool when your accumulation data is deleted during localization or when you want to create FFMPA data from archived cases with DHR files and RFC FFG files. The FFMP_DRT AWIPS code used in this batch mode has shown sensitivities to large full day cases with lots of radars. If you have any problems with case generation don't hesitate in contacting WES support.

1. Customization of FFMP on WES requires many steps. These were covered in Sections 6 and 7. Ensure you have the following:

   - FFMP* and ffmp* files from **`/awips/fxa/data/localization/nationalData`** stored in **`/awips/fxa/data/localization/nationalData/WES-FFMP/$CWA`** on WES where $CWA is your CWA (e.g. ABR)

   - The **`/data/fxa/tstorm`** and **`/data/fxa/ffmp`** directories with all their contents from your local AWIPS copied to **`<data_case>/tstorm`** and **`<data_case>/ffmp`**

Note: If you are assembling a data case for a non-local CWA you will need to modify the **`/data/fxa/tstorm/FFMPradartoCWA.txt`** file to be consistent with your radar data before localizing.

Note: If you are assembling a case from scratch, and you are not starting with a **`/data/fxa/tstorm`** directory from an AWIPS running FFMP for that CWA, you may encounter a problem with the FFMP table flashing and not starting up correctly. If this happens, check the <$case>/tstorm/$CWA_BasinAttribute.table file. Working files usually have "0 | PFAF_ID | PFAF_ORIG" as the first entry.

- 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)

  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 missing FFG files you can email the wes@infolist.nws.noaa.gov to leverage other regional and national archives. If you are unable to locate any archived FFMP data, you can use FFG from a similar archived case (see Section 12.3).

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

- SCAN QPF files in **`<data_case>/radar/xxxx/tstorm/QPF/rain_cat`** (where **`xxxx`** is the radar name; note this is optional)

- Any other locally specified input sources listed in **`<data_case>/ffmp/FFMPSourceConfig.dat`**

  - Note if you have configured FFMPA to use HPE and BHPE sources on your realtime AWIPS, these are located in **`<data_case>/Grid/LOCAL/netCDF/HPE and <data_case>/Grid/LOCAL/netCDF/BHPE`**

- Have run a localization with the "**`-ffmp`**" switch

2. Start 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, your customization and relocalization needs to be redone (see Sections 6 and 7). Don't try to load the FFMP sources yet, since the data needs to be created first in Section 12.2.

3. 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.

4. Now the case should be ready to create FFMP data. If you can't see your basin maps or you don't have FFG data, then email wes support before going any farther.

12.2 Creating FFMP Data on WES

Follow this section to create FFMP data on WES after you have complete Section 12.1. You will need to create FFMP data for a case after every time an "-ffmp" switch is run on the case with mainScript.csh or if you want to generate new data for other reasons. The case can be in original format or DRT format when creating the data.

1. Start up WES

   e.g. **`start_simulator`**

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

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

4. Enter the information for your planned simulation

5. Select the case name (**FXA_DATA**)

6. Select the localization (**FXA_LOCAL_SITE**)

7. Click the "**OK**" button, and wait for the data to be created. WES is running the FFMP_DRT application to create a batch mode of data. For cases with no HPE/BHPE data the processing can take less than a minute (runs in fast mode). For case with HPE/BHPE data, this can take much longer, sometimes ten minutes (runs with a 1 second pause between each file to prevent errors in processing). While you are waiting for FFMP data to be created, a window will pop up with a clock counter and a message asking you to wait.

   Note: It is very important not to kill the simulator while it is creating FFMP data.

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

9. Click the "**Exit"** button on the WES interface

10. Start enhanced_case_review.

    e.g. **`enhanced_case_review`**

11. Verify the FFMP data was created correctly

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

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

Note: The D2D "**Freeze time at this position**" tool (selected after double clicking the clock on the bottom right of the D2D) now works with FFMP.

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

15. Start up WES

    e.g. **`start_simulator`**

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

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

18. 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.

19. 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 FFMP input files (e.g. DHR or HPE 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 an appropriate validTime for the FFG, which is typically 24 hours after the filename time (e.g. 12z on Apr 27th for a filename with 12z on Apr 26th). 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 27 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 (e.g. RFC 1hr FFG Mosaic (in) 26.12 24HR Fri 12:00Z 27-Apr-91).

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 12.2.

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.

12.4 Forcing FFG for FFMP data

For certain WES cases, you may want to change the FFG values of various basins or counties. The Forced FFG GUI will allow you to pick and choose which basins and/or counties you want to edit, and easily adjust the FFG levels for them.

1. Before creating FFG for your case, you will need to create your FFMP data first. The FFG changes will automatically be applied to the data for you in later steps. See sections 12.2 for directions on how to create FFMP data.

2. After creating your FFMP data, environmental variables will need to be set before launching the Forced FFG GUI. If your case is not in the `/data/awips/` directory, be sure to symbolically link it before proceeding to the steps below.

   In a terminal window, type the following commands:

   e.g. **`setenv FXA_DATA /data/awips/<case_name>/`**

   e.g. **`setenv FXA_LOCALIZATION_ROOT: /data/awips/<case_name>/localizationDataSets/`**

e.g. **`setenv FXA_LOCAL_SITE <CWA>`**

e.g. **`setenv FXA_INGEST_SITE <CWA>`**

Where **<case_name>** is the name of the case (ex: 2006Aug24test), and **<CWA>** is the CWA that the case is localized to (ex: ABR). Please note that the backslash (***/***) at the end of the first two lines needs to be there in order for the GUI to launch.

3. Now that the environmental conditions are ready, the next step is to open the FFG GUI.

   e.g. **`cd ~/bin`**

   e.g. **`./ForcedFFG.tcl`**

4. In the top-right part of the column, hit the "**+**" button twice. This will create two extra columns. Change the duration of all three columns so that **1**, **3**, and **6** are selected.

5. Select the column you wish to modify and press the **Select** button. For example, if you want to change 1-hour FFG, select the column with the Duration = 1.

6. In the top-left portion of the GUI, enter the FFG value (in inches) you wish to force. In the line below, set the expiration time to "**0**". This will mean that the forced guidance will never expire.

7. In the next row, **left-click** on which count the basin(s) you want to modify are in. This will list all of the sub-basins below. (Note: **Right-clicking** on the county will force the flash flood guidance for the selected duration for the *entire* county.)

8. Find the basin(s) you wish to edit by **Basin ID**. Right-click on the **Basin ID** to force the guidance.

9. Save the file with the **.ffg** extension in **<case_name>/tstorm** .

10. In the lower-left part of the GUI, click "**Apply All**" to push the guidance to the case. If you have the case open in D2D, unload and reload the guidance to view the changes.

12.5 Customizing FFMP to Use Different Source Labels

Background: There are a limited number source labels in the `/data/awips/<case>/ffmp/FFMPsourceConfig.dat` file that WES can use to build FFMP data. Besides the standard Digital Hybrid Reflectivity (DHR) radar products specified by `[KTP]XXX` (e.g. KTLX), the Dual-Polarization Digital Precipitation Rate (DPR) products specified by [ktp]xxxDPR (e.g. kpbzDPR), and the RFC flash-flood

guidance (FFG) products specified by `XXRFC` (e.g. ABRFC), WES can process the following labels:

```
HPE, HPE1, QPFHPE, QPFHPE1, BiasHPE, BiasHPE1, BHPE, BHPE1,
QPFBiasHPE, QPFBiasHPE1, QPFBHPE, QPFBHPE1, SCANQPF_XXXX
```

Some AWIPS systems use different source labels for similar data. For example: the High-Resolution Precipitation Estimator source label on an operational AWIPS could be labeled HPE24. If this `FFMPsourceConfig.dat` was ported over to WES, data would not be created because HPE1 would be an unrecognized source name. In WES 9.14, a user can create a `FFMPuserConfig.dat` file in `/data/awips/<case>/ffmp` with these other source names for FFMP data creation by following the steps below:

1. Identify any source names in `/data/awips/<case>/ffmp/FFMPsourceConfig.dat` that do not match the source name list above. An example `FFMPsourceConfig.dat` file is below:

```
+|OHX
HPE24|||0,2,0,3|3338985578|3338985576|2:mm/hr:35.10210:-88.92715:360:268:0.25:0.25:pr|7|
BiasHPE|||0,2,0,3|3347374186|3347374184|2:mm/hr:35.10210:-88.92715:360:268:0.25:0.25:pr|7|
kohx|||0,0,0,0|1081198240|1081198240|0:byte:36.2472:-86.5625:360:230:1:1:,rng|11|
OHRFC1||1|1,2,1,1|25100|25100|2:byte:44.8619:-86.5123:195:235:1:1:image,row|1080|RFCFFG
OHRFC3||3|1,2,1,1|25101|25101|2:byte:44.8619:-86.5123:195:235:1:1:image,row|1080|RFCFFG
OHRFC6||6|1,2,1,1|25102|25102|2:byte:44.8619:-86.5123:195:235:1:1:image,row|1080|RFCFFG
RFCFFG|1|1,3,6|1,2,1,1|0|0|57480376::0:0:0:0:0:0:|0|
```

2. We see from the FFMPsourceConfig.dat example above that there is a source name of HPE24. This is not a source label that WES can process so we will create a FFMPuserConfig.dat file.

   e.g. **`vi /data/awips/<case>/ffmp/FFMPuserConfig.dat`**

3. Inside this file we will create an entry for the HPE24 source name. The syntax for these entries are: `<source name> <source path within the case>` (with a space between these 2 inputs)

   e.g. **`HPE24 Grid/LOCAL/netCDF/HPE`**

Note: Multiple instances of different source names would all go in the same FFMPuserConfig.dat file for the case. **Each case** with locally defined FFMP source names that deviate from the WES standard list of sources (see Background) will require this file.

---

4. Save this file (e.g. in vi you would type **`:wq`**).

5. Relocalize the case with the -ffmp switch (where XXX is the CWA ID for the localization)

   e.g. **`./mainScript.csh -ffmp XXX XXX`**

6. Create a new FFMP dataset by following the instructions in Section 12.2.

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. Section 13.2 contains information on fixing a pre-OB5 SCAN dataset.

Note: OB5 SCAN data or later will continue to work in WES 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 OB9.14

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).

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

> **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 OB9.14 localization using **`mainScript.csh`** in WES 9.14

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 WES 9.14

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 **`./awips/fxa/DRT/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:

4. Station: **KOKC - OKLAHOMA CITY(AWOS) , OK**

5. Bulletin Id: **FTUS - Terminal Aerodrome Forecast**

6. Start Date/Time: **2006082412**

7. End Date/Time: **2006082420**

8. Email Address: Enter your own e-mail address

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

9. 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.

---

10. Copy the TAF over to your WES machine.

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

11. 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.

---

12. 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/CDROM/ids.config /awips/fxa/WEScustomization`**

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

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

3. e.g. **`more ids.cfg`** (it should be a symbolic link)

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

4. Create the <data_case>/drt/avnfps subdirectory if it doesn't already exist

   e.g. **`mkdir <data_case>/drt/avnfps`**

5. 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) into <data_case>/drt/avnfps :

   e.g. **`cp /awips/fxa/WEScustomization/ids.cfg <data_case>/drt/avnfps/ids.cfg`**

6. 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. **`more <data_case>/drt/avnfps/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/CDROM/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/CDROM/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. Create the file **<data_case>/drt/avnfps/DEFAULT**, to contain the filename of the AvnFPS config file without the "**.cfg**" extension.

   e.g. Open **<data_case>/drt/avnfps/DEFAULT** in a text editor, and type **Norman** then save and close the file. When running **start_avnfps**, WES will automatically change the symbolic link within **/awips/adapt/avnfps/etc/tafs** to point to this file if it exists in the case.

6. Make sure a subdirectory exists for each TAF site (e.g. **KOKC**) specified in the **<data_case>/drt/avnfps/ids.cfg** file (see step 6 of Section 14.2). Also make sure each subdirectory contains the following files:

7. **00.template**

8. **06.template**

9. **12.template**

10. **18.template**

11. **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/CDROM/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 step 4 below. Otherwise skip step 4.

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

5. Go to the following website: http://www.mdl.nws.noaa.gov/~avnfps/data/hdf5/

6. Click on the TAF station name and save the **`KXXX.hd5`** file to **`/awips/adapt/avnfps/data/climate`**

7. 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 9.14, 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 **wes914_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 AvnFPS simulations on different cases, modify the following files as appropriate:

7. **`<data_case>/drt/avnfps/ids.cfg`**

8. **`<data_case>/drt/avnfps/DEFAULT`**

9. **`/awips/adapt/avnfps/etc/tafs/*.cfg`**

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 9.14 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.

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**".

5. 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)

6. 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:

7. **Simulation Start Time**: 1800Z
8. **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 and 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 postgres, 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:

8. **Log window**: Processing information is provided in the center of the main window.

9. **Help menu**: Pull-down menu with background on WES and simulation instructions.

10. **Exit button**: Exits start_simulator.

11. **Run Simulation button**: Select a case and run a simulation.

12. **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
    - **GFE Directory**: GFE dataset created with WES. Selecting this directory turns on GFE processing in a simulation.

- **GFE Grid**: Select the default unmodified grid created by WES, or a modified grid created with the “Save Modified GFE Grids” tool.

- **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

13. **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.

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

    - **Convert Case Data to DRT Format**: 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**: 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**: Creates FFMP datasets. This can take less than one minute if there is no HPE/BHPE data. This can take 10 minutes if you have HPE/BHPE data and a full case.

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

- **Batch Mode Point Data Conversion**: Converts all DRT format data cases located in **`/data/awips`** to support five minute point data processing. This button is now rarely used if at all (this was primarily needed for WES8.1 when there were lots of pre-existing cases to fix; this is only needed if you have many old pre-WES8.1 cases that have not been fixed).

- **Create Unmodified GFE Grids**: Creates a set of default GFE grids for later selection as the "**GFE Grid**" entry.

- **Save Modified GFE Grids**: Saves the most recently used GFE grids in the case including any modifications made by the user so they can be used again by selecting them as the "**GFE Grid**" in the Simulation Entry window.

- **Cancel**: Closes 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`**. The files in the install directory come from the **`OB9.14_RHE4-32_GFESuite_CORE.tgz`** file with the addition of **`stdMAPS.tgz`**, **`stdTOPO.tgz`**, and **`stdCLIMO.tgz`** files. The "Create GFE Dataset" tool, accessed from the start_simulator Tools button, is used to install GFE into each case (along with the watchautomater and tcvautomater scripts) and create a default set of grids from the case's archived Grid data. GFE customizations involving the creation of default grids must be done in the **`awips/GFESuite/install`** folder while other customizations, like adding local smart tools, can be done on the version of GFE installed in the **`<data_case>/GFESuite-case`** directory after the default grids have been created.

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. The GFE datasets created by this tool are later selected from the WES main simulation entry window. 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, the hostname should be set 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 Unmodified GFE Grids**" 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>/default/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 Importing Fcst GFE Grids from an Operational AWIPS-1

There is now a method to import published forecast (Fcst) GFE grids (with a .cdf extension) from an operational AWIPS into your WES box for a simulation. These grids can then be modified and saved by forecasters after the simulation is complete.

1. Establish a location where you will temporarily keep the operational forecast AWIPS GFE grids with the .cdf extension. They can be anywhere on your machine. For this example, the path to the forecast GFE grid .cdf files will be refered to as <path_to_cdf_files>.

2. If you haven’t already, create a set of unmodified GFE grids by launching the simulator.

   e.g. **`start_simulator`** (when simulator is started, click **Tools**)

   After selecting **Tools**, click **Create Unmodified GFE Grids**. Fill in the information needed to create the GFE grid. For more explanation on the background of creating GFE grids, see section 18.2.

3. After the umodified GFE grids are created, launch the simulator again, but this time, click **Run Simulation**. Fill in the fields of the simulation entry window, and make sure your GFE directory is pointing to the unmodified GFE grids you have created. Select **default** for the GFE grid. Once the simulation is launched, start up GFE. For more information on how to run GFE in a simulation, see section 5.5.

4. After GFE is up, in another terminal window, we can import the forecast GFE grids from the operational AWIPS by running iscMosaic in the bin directory of our GFE grids directory.

   e.g. **`cd <path_to_case>/<data_case>/GFESuitecase/<your_GFE_grid>/bin`**

   e.g. **`./iscMosaic -d <CWA>_GRID_Fcst_00000000_0000 -f <path_to_cdf_files>/<.cdf_file>`**

Where <data_case> is the WES case you are wanting to run GFE (ex: 2006Aug24test), <your_GFE_grid> is the unmodified GFE grid you created, <CWA> is the CWA of the unmodified GFE grid you created, <path_to_cdf_files> are where your operational AWIPS-1 GFE .cdf grids are located, and <.cdf_file> is the grid file you want to import.

After iscMosaic finishes running, you might notice a message in the terminal window stating "Failure to process input file: <path_to_cdf_files>/<.cdf_file>". This message can be ignored as it will display even when the forecast GFE grids are successfully imported.

5. Verify that all of the grids were imported correctly. In GFE, under the **Populate** menu, select **Copy All Grids From**, and select the **Fcst grids**. You should see the forecast grids that you imported pop up in GFE. Exit out of GFE, and click **Yes** when asked if you want to save the weather elements that had been modified. Stop the simulation as well.

6. We now want to save the forecast GFE grids we imported. In the simulation GUI, click on **Tools**, and then **Save Modified GFE Grids**. Be sure that you are pointing to the right GFE directory, and name the grids how you want.

   After saving the grids, you can now pull them up for a simulation to be used and edited by other forecasters.

18.4 GFE Configuration

The GFE configuration instructions below were based off of Phil Schumacher's GFE WES configuration instructions. 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. After creating GFE grids, the GFE installation and GFE data for each case resides in:

<data_case>/GFESuite-case/<your_case_GFE_DIR>

Keep in mind that the grids likely were derived from older model data from previous AWIPS builds, so the models may have changed and inconsistencies may result.

The key GFE configuration folder and file from a live AWIPS that is used to configure GFE include:

Folder - /awips/GFESuite/primary/data/databases (minus the BASE directory inside the databases folder)

File - /awips/GFESuite/Primary/etc/SITE/localConfig.py

If you followed the WES customization instruction in Chapter 6, these were brought over to your WES from your AWIPS.

The new GFE dataset can be configured for individual forecasters within a WFO. For this particular example, the case will be configured to FSD and the data will be 20051127_0500.

1. Change into the directory where the GFE configuration files are stored

   e.g. **`cd /data/awips/2005Nov28/GFESuite-case/FSD-20051127_0500`**

2. Change into the **etc** directory and create a directory for **SITE**. This **SITE** directory will contain forecaster(s) customizations to GFE.

   e.g. **`cd etc`**

   e.g. **`mkdir SITE`**

3. Once you have created your **SITE** directory, change directory into that location and copy in your **localConfig.py** file which contains any customized information on GFE grids.

   e.g. **`cd SITE`**

   e.g. **`cp /awips/fxa/WEScustomization/storagefiles/gfeFiles/localConfig.py .`**

4. Change directory to the **databases** directory within the FSD case.

   e.g. **`cd /data/awips/2005Nov28/GFESuite-case/FSD-20051127_0500/data/databases`**

5. Now copy your **SITE** directory (which contains your forecaster(s) customizations) from the **WEScustomization** directory into the **databases** directory within the case.

   e.g. **`cp -R /awips/fxa/WEScustomization/gfeFiles/databases/SITE .`**

6. Change directory back into the main database directory and copy over your forecaster(s) customizations. You will need to copy a directory over for each forecaster.

   e.g. **`cp -R /awips/fxa/WEScustomization/storagefiles/gfeFiles/databases/<fcst1_name> .`**

7. Repeat the above steps for each forecaster you want to add.

18.5 Changing Available Models in GFE

If you need to configure the models used to create default GFE grids, you can modify serverConfig.py in **`/awips/GFESuite/install/stdOTH.tgz`** before creating the GFE data set. These instructions were provided by George Phillips from the TOP WFO.

1. Change into the **install** directory for GFE.

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

2. Review the contents of this directory. There should be files labeled: installGFE, stdCLIMO.tgz, stdGFE.tgz, stdISC.tgz, stdMAPS.tgz, stdOTH.tgz, and stdTOPO.tgz.

3. Create a directory to extract the contents of stdOTH.tgz.

   e.g. **`mkdir placeholder`**

   e.g. **`cd placeholder`**

   e.g. **`tar xvfz ../stdOTH.tgz`**

4. After extracting the tar file, you can see that it created a **bin**, **data**, and **etc** directory. Change into the **BASE** directory in **etc** and edit the **serverConfig.py** file using your favorite text editor (in this case, vi will be used).

   e.g. **`cd etc/BASE`**

   e.g. **`vi serverConfig.py`**

5. The **serverConfig.py** has a section of code that tells GFE what models to display when it is pulled up. If this file has not been edited before, the section of code can be found on line **1302**. Alternatively, the area that needs to be modified can be found if searching for the following line: “Initialization module to model mappings”. The list of default NWP models that are available in GFE are the RUC13, RUC80, NAM12, GFS40, and GFS80. A model can be added by typing the following code after the “INITMODULES = { “ statement:

   e.g. **`“Your_Model” : [“Your_Model”],`**

   If, for example, the model you wanted to add was the NAM80, you would type:

   e.g. **`“NAM80” : [“NAM80”],`**

6. After adding the model(s), exit out of the text editor program. Change directories back up to the **placeholder** directory (contains bin, data, and etc) and create a new tar file with the edited serverConfig.py file.

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

e.g. **pwd** (result should be **/awips/GFESuite/install/placeholder**)

e.g. **tar cfvz stdOTH.tgz** * (this specific tar syntax is important, so don't change it!)

7. Copy over the new tar file and delete the **placeholder** directory.

   e.g. **cp stdOTH.tgz /awips/GFESuite/install**

   e.g. **cd ..**

   e.g. **rm -rf placeholder**

8. Start a simulation and create GFE grids

   e.g. **start_simulator**

   e.g. Click **Tools**

   e.g. Click **Create Unmodified GFE Grids**

Once that finishes running, you can proceed to start a simulation and run GFE. The new model grids should be available.

18.6 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 from the user-selected GFE Grid directory. WES also purges the **<data_case>/GFESuite-case/<your_case_GFE_DIR>/data/databases/BASE/GRID** directory. WES also deletes the PRACTICE.tbl and localConfig.py* files. 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 GFE using the **start_GFE** script. GFE only launches with a simulation running because it requires an operational IFPServer 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 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.

18.7 Saving and Using Modified GFE Grids

After running a simulation in GFE, you may want to save your modified grids so you can initialize a simulation with them instead of the default grids. After shutting down a GFE simulation, click on the Tools button in the main WES window. Click “Save Modified GFE Grids” and give the grids a name. To initialize a simulation using your modified grids, simply select them in the Simulation Entry window in the GFE Grid field (after selecting the GFE Directory).

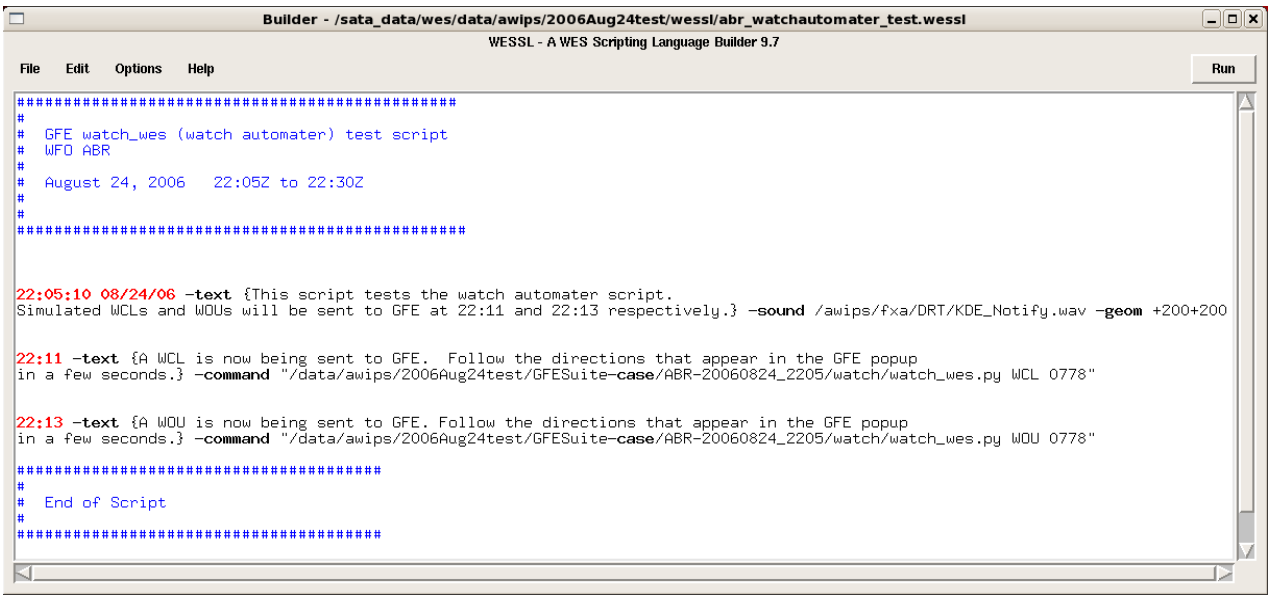
18.8 GFE watch and tcv automater scripts

WES 9.14 includes modified versions of the watch automater and tcv automater scripts for GFE. These simulate products from SPC and NHC respectively in GFE. When you create GFE data in WES, the directories **`<data_case>/GFESuite-case/<your_case_GFE_DIR>/watch`** and **`<data_case>/GFESuite-case/<your_case_GFE_DIR>/tcv`** are created and partially configured. You will need to finish configuring watchdata.py or tcvdata.py manually to display the correct product(s) and counties.

Watch Automater:

To configure the watch automater, open **`<data_case>/GFESuite-case/<your_case_GFE_DIR>/watch/watchdata.py`** with a text editor. You only need to configure the SPC_Data section at the bottom. Detailed directions and an example are provided within the watchdata.py file itself. Do not modify the format of the file other than as specified, or the script will not function correctly.

Once you have configured watchdata.py, you can call the watch_wes.py script from WESSL:



e.g. **-command "<data_case>/GFESuite-case/<your_case_GFE_DIR>/watch/watch_wes.py WCL 0778"**

Be sure to use the correct data case, GFE directory, product (WCL or WOU) and 4 digit product number (0778 in the example above) in your WESSL script.

Once everything is configured correctly, start a simulation. Select the data case, GFE Directory, and WESSL Script corresponding to the watch automater you configured above, and when the simulation has initialized run start_GFE. At the time specified in your WESSL script, a popup window should appear in GFE (after a few seconds delay) with instructions on how to view the WCL or WOU.

TCV Automater:

Open **<data_case>/GFESuite-case/<your_case_GFE_DIR>/tcv/tcvdata.py** with a text editor. You only need to configure the TCV_Data section at the bottom. Detailed directions and an example are provided within the tcvdata.py file itself. Do not modify the format of the file other than as specified, or the script will not function correctly.

Once you have configured tcvdata.py, you can call the tcv_wes.py script from WESSL:

e.g. **-command "<data_case>/GFESuite-case/<your_case_GFE_DIR>/tcv/tcv_wes.py NEW 1004"**

Be sure to use the correct data case, GFE directory, VTEC action (CAN, NEW, or CON) and 4 digit watch number (1004 in the example above) in your WESSL script.

Once everything is configured correctly, start a simulation. Select the data case, GFE Directory, and WESSL Script corresponding to the tcv automater you configured above, and when the simulation has initialized run start_GFE. At the time specified in your WESSL script, a popup window should appear in GFE (after a few seconds delay) with instructions on how to view the product.

19 Background Information on AvnFPS

19.1 AvnFPS Installation

The WES installation software installs AvnFPS into **`/awips/adapt/avnfps`** and **`/data/adapt/avnfps`**.

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:

9. **`<data_case>/avnfps/point/metar/netcdf`** - 5 minute netCDF files
10. **`<data_case>/avnfps/point/metar/text`** - individual 1 minute METAR obs (text)
11. **`<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:

12. **<data_case>/point/metar/netcdf/current_file**

13. **<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 Background Information on FSI

20.1 FSI Installation

The WES installation software installs the Four-dimensional Stormcell Investigator (FSI) into **`/awips/fxa/fsi,`** and other AWIPS FSI-related files are included in **`/awips/fxa/bin`** and **`/awips/fxa/data`**.

20.2 FSI Background

FSI is essentially a preconfigured display of the National Severe Storm Laboratory's Warning Decision Support System 2 (WDSS2). Most of the WDSS2 functionality has been removed except for the display. Those who are WDSS2 savvy may wish to investigate the hidden navigation panel by clicking "Ctrl n" after loading FSI (not recommended for most).

When FSI displays radar data it uses base products stored in the **`<data_case>/radar/kxxx`** directory as well as an inventory stored in a linear buffer file (Section 20.5). FSI was designed for real time use in AWIPS, but WDTB was able to develop "plug and play" case review and simulation capability on archived cases. However, there are several steps which must be completed in order for FSI to function with WES.

14. The **`<data_case>/tstorm`** directory must exist

15. An OB9.7 or later localization (full and with the -scan and -fsi switches) must be created

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

    e.g. **`mainScript.csh XXX XXX`**

    e.g. **`mainScript.csh -scan XXX XXX`**

    e.g. **`mainScript.csh -fsi XXX XXX`**

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

Where **XXX** is the three letter ID of your CWA.

Note: If you are using multiple machines to run simulations (Section 21), FSI will update on the server automatically, but it will not update automatically on the client machines. FSI uses “rssd” to update FSI, and we have been unable to get this to work on a network of WES machines.

20.3 Running FSI

If the tstorm directory is created and an OB9.7 (or later) localization is run (steps above), the WES will initialize the case for FSI when FSI is launched by taking the following steps:

16. FSI is selected from the kxxx or Tools menu

17. WES creates a radar index file (Section 20.4) if one does not already exist. This step will only occur the first time FSI is launched on a specific radar. This file is also created during the conversion to DRT format for all dedicated radars. Note creating the radar index file can take a while for large cases.

18. An RPS list is created to support viewing Super Res data if necessary.

19. If the case contains more than one dedicated radar (Section 20.7), a radar selection pop-up will appear and the user must select which radar data are viewable in FSI

20. For **`start_awips`** or **`enhanced_case_review`** use only, an FSI Time Entry tool will appear with a useful default time. If the D2D clock was set to a “frozen” time, the default will be the frozen time. If no time was “frozen” in D2D, then the default will be the last visible appropriate base radar file. The time specified in the FSI Time Entry tool specifies the mid-point of a 4-hour range of data to be viewable in FSI.

21. WES creates an FSI linear buffer (Section 20.5) based on the start time in a simulation or the user-selected time (FSI Time Entry tool) for **`start_awips`** or **`enhanced_case_review`**.

22. FSI is launched, displaying the data listed in the FSI linear buffer.

20.4 Radar Index File

This WES radar index files contain all the information needed to create an FSI linear buffer for a particular radar, so radar data can be viewed in FSI:

23. **`<data_case>/drt/fsi/FSIindex$radar.txt`** (i.e. FSIindexklvx.txt)

The information in this file comes from the base data available in the case as well as the FSI products specified in the FSI’s **`/awips/fxa/data/FSIproducts.txt`** (Section 20.6) file. The radar index file is also used to determine the start and end time of the radar data, and it is used as a reference when creating the FSI linear buffer file discussed next.

Note: The radar index file is only created if a previous index file does not exist, or if the case is converted to DRT format.

20.5 FSI Linear Buffer (LB)

FSI uses this file to determine which radar products need to be displayed and where to find them. On a live AWIPS system, the LB contains only the latest 2-hours worth of data. When using FSI on the WES, The LB contains information about the latest 2-hours worth of data in simulation mode. In case review mode, the LB will contains 4-hours worth of data ending on a user specified mid-point time. When FSI is launched, FSI will display the last volume scan based on the user input time. The LB file is stored in the following location.

24. **`<data_case>/tstorm/FSIradarLB_$radar`** (i.e. FSIradarLB_klvx)

Note: In case review mode, the linear buffer file is recreated each time a new FSI session is launched. When running a simulation, the linear buffer is created when the start time is set, and it is continuously updated throughout the simulation.

20.6 Changing Products Viewable in FSI

FSI can be configured to display different resolutions of base data files (e.g. 8bit Z versus 4bit Z). *For most recently archived cases with high resolution data you should not be changing this file, even if you have cases with Super Res and cases without Super Res (FSI & WES will take care of that)*. If you have an old archived case with only 4 bit data, you may want to temporarily configure FSI to display on this data set. To do this you need to alter the products specified in the following file:

25. **`/awips/fxa/data/FSIproducts.txt`**

For example, to change from viewing 8-bit reflectivity data to viewing 4-bit reflectivity data, edit the line in the file from:

```
94      Z       Reflectivity       1   256
```

to

```
19      Z       Reflectivity       1   16
```

Note: The FSIproducts.txt version on WES has changed the product back to product 30 for Spectrum Width, since that product is more useful than product 28 due to its longer range. Dual Pol products have also been added to FSIproducts.txt.

Note: The FSIproducts.txt file format also changed from OB8.2 to OB8.3 to include Super Res entries in addition to the traditional Z, V, and SW entries. If the Super Res entries exist in the file and the Super Res products are on the RPS list, the FSIProcessor will only write Super Res file entries to the linear buffer.

WES uses the FSIproducts.txt file to create FSI linear buffers, and the file is also used by the FSIprocessor in a simulation to update the FSI linear buffers. If you change this file for temporary use on a particular case, you will need to delete any existing WES radar index files in that case thus allowing the inventories to update in the FSI linear buffers.:

e.g. rm -rf /data/awips/1991Apr26/drt/fsi

New radar index files and FSI linear buffer files will be created the next time FSI is launched or a simulation is started. An RPS list is also created for the radar depending on whether it has Super Res data or not. During a simulation, the FSI linear buffer will update with the radar base data specified in the modified FSIproducts.txt file. When you want to return to the standard FSI product configuration to look at your regular archived cases, you need to restore the settings in the FSIproducts.txt configuration and remove the **fsi** directory in the case before viewing FSI or running a simulation.

20.7 Configuring Radars Viewable in FSI

FSI can only be run on dedicated radars as defined in the following file:

26.<your_case>/tstorm/fsiRadarList.txt

This file is created when the localization is run with the **-fsi** switch. In this file, dedicated radars have a “1” in the third column. If there is more than one dedicated radar in this file, there will be a pop-up a radar select tool when starting FSI. FSI will only display data for the radar selected in the pop-up.

If for some reason the **<your_case>/tstorm/fsiRadarList.txt** file does not exist, WES will create a **<your_case>/tstorm/fsiRadarList.txt** file from the **<your_case>/localizationDataSets/XXX/radarsInUse.txt** file in the localization.

If you would like to add a radar to those viewable in FSI, you can also edit **<your_case>/tstorm/fsiRadarList.txt** and change the 0 to a 1 in the third column next to the radar you wish to add. In general we recommend modifying your radarsInUse.txt file in your AWIPS customization along with running a localization update with the “-scan” switch (Section 6 and 7).

20.8 TDWR in FSI - netcdf File Creation

In WES 9.14, TDWR data from cases are viewable in FSI. In order to run FSI with TDWR data, gzipped netcdf files will need to exist. The netcdf files are stored in all txxx elevation angle directories with valid data.

For example: a 20080730_194229.gz file in /data/awips/2008Jul30/radar/tbwi/Z/elev0_5/res0_15/level256/netcdf/Reflectivity

There is a check in WES 9.14 that will verify whether or not data exists in these netcdf directories when FSI is launched. If the case does not have netcdf files, the following actions will need to be taken:

27. You will need to run a simulation for the entire case dataset. If you have data from 12z to 23z then those two values will be your start and end times for the simulation. This will create the netcdf files necessary for FSI viewing.

28. After the simulation is run, restore the case to original format by clicking the **Tools** button on the WES main menu and clicking the **Restore Case Data to Original Format** button. This will merge the new netcdf files with the other WES data.

29. Once the case is restored to original format, you will need to convert the case data back to DRT format. This is accomplished by clicking the **Tools** button in the WES main menu and clicking the **Convert Case Data to DRT format** button. This will create the WES inventories for all data, including FSI netcdf data.

With these steps completed, you will have a case with netcdf files in DRT format, and you will be ready to view TDWR data with FSI in a simulation.

20.9 FSI Map / Shapefile Background

FSI in WES has been configured to provide the appropriate map background based on the specific CWA being viewed. Inside the directory **`/awips/fxa/fsi/cwa_shapefiles`** you will find directories containing the shapefiles used to generate maps for each CWA.

When FSI is launched, WES determines the CWA in use and creates a link **`/awips/fxa/fsi/shapefiles`** which points to the appropriate CWA within **`/awips/fxa/fsi/cwa_shapefiles`**.

For example, a case viewed in the LMK CWA would show the link **`/awips/fxa/fsi/shapefiles`** pointing to **`/awips/fxa/fsi/cwa_shapefiles/lmk`**.

Note: Keep in mind that if you plan on altering / adding maps for a specific CWA, you must make the changes in the CWA directory within **`/awips/fxa/fsi/cwa_shapefiles.`**

To make changes apply to the whole country, all additions / alterations will need to be included in each CWA directory within **`/awips/fxa/fsi/cwa_shapefiles.`**

21 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. The current version allows many parts of D2D to run on the client machine (e.g. radar updating, WarnGen, FSI, 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. WES 9.14).

21.1 Setup

1. Choose a machine to be a server, and install WES 9.14 if it isn't already installed.

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

   e.g. `csh` **`install-wes914.csh`** **`/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. You will likely need to have your firewall configured to have rules to allow trusted connections to client machines. This will be covered in the next few steps.

3. **Login as root**. Verify your IP schema by typing /sbin/ifconfig in a terminal window. Specifically you need to know your ip address, "inet addr:", and subnet mask, "Mask:".

   e.g. **`/sbin/ifconfig`**

   This yields the following "inet addr:" and "Mask":
   inet addr:192.168.1.25 Bcast:192.168.1.255 Mask:255.255.255.0.

Note: The last number after the third period in the ip address (aka “inet addr:”) will need to be changed to 0 in the next step.

4. Create a rule to allow all computers on the specified subnet to access the server computer:

e.g. iptables -A INPUT -s **your_client_inet_addr.0/your_inet_Mask** -j ACCEPT
e.g. iptables -A OUTPUT -d **your_client_inet_addr.0/your_inet_Mask** -j ACCEPT

on the machine listed in step 3, this would be:

e.g. iptables -A INPUT -s 192.168.1.0/255.255.255.0 -j ACCEPT
e.g. iptables -A OUTPUT -d 192.168.1.0/255.255.255.0 -j ACCEPT

5. 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`**.

6. Choose other machines as client machines, and install WES 9.14 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. **`csh install-wes914.csh /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`**.

7. After installing WES 9.14 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`**"

8. 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.

9. 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

10. From the KDE Desktop Menu choose, **System Settings, Server Settings, Services**. Make sure the **NFS** box is checked.

11. 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.

12. 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.

13. As **`root`**, run **`exportfs -a`** to export the file system

14. As **`root`**, run **`exportfs`** to check if the file system is listed (i.e. exported correctly)

15. As **`root`**, stop and start the NFS server:

- e.g. **`/etc/rc.d/init.d/nfs stop`**
- e.g. **`/etc/rc.d/init.d/nfs start`**

On the Client Machine

16. 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 8).

---

17. As **`root`**, mount the server: **`mount -a`**

18. 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 8 and 9), then link **`/usr1/servermount/2006Aug24test`** to **`/data/awips/2006Aug24test`** on wolf.

19. 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.

20. 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.

FSI Configuration Steps

21. In order for FSI to work, you will need to replace “localhost” with the server name (or ip address) in the **`/awips/fxa/bin/FSI_GUI`** file and save on **both** client and server.

This is how the line will look before modification:

<url name=’source’ value=’orpg://**localhost**$env(FXA_DATA)/tstorm/FSIradarLB_$whichradar.lb?protocol=xmllb’ />

This is how the line will look after modification (with “bobcat” as the server name):

<url name=’source’ value=’orpg://**bobcat**$env(FXA_DATA)/tstorm/FSIradarLB_$whichradar.lb?protocol=xmllb’ />

22. With this modification to the **`/awips/fxa/bin/FSI_GUI`** file, you will need to remove the **`/awips/fxa/data/FSIcontrol.lb`** linear buffer. This linear buffer will be re-created when FSI is launched in D2D and reflect the changes made in the FSI_GUI file.

23. You will also need to create a **`.rssd.conf`** file, which must be placed in the **`/awips/fxa`** directory on the server. Inside you will specify the ip address(es) of the client machine(s) as well as the direct path to the case’s tstorm directory. You can place the ip addresses of however many clients will be participating in this setup. Having the direct path to the case’s tstorm directory is important as rssd processing does not function through symbolic links.

Here’s an example of what the .rssd.conf file should contain:

Syntax:	**Example: 2 clients**

`Client: <IP_Address_Of_Client#1>`
`Client: <IP_Address_Of_Client#2>`
`Client: <IP_Address_Of_Client#3>`
 	
`Path: <Path_To_Case_tstorm_directory>`
	`Client: 192.168.1.4`
	`Client: 192.168.1.5`
	
	`Path: /data/awips/2006Aug24test/tstorm`

POSTGRES Configuration Steps

The following steps (16 & 17) will need to be performed on the client machine(s):

24. You will need to change the **`PGHOST`** variable within the **`postgresenv.csh`** file in the **`/awips/fxa/postgres`** directory from ‘localhost’ to the IP address of the server.

This is how the line will look before modification:

setenv PGHOST localhost

This is how the line will look after modification (assuming the server IP address is 192.168.1.23):

setenv PGHOST 192.168.1.23

25. You will also need to change the **PGHOST** variable within the **postgresenv.sh** file in the **/awips/fxa/postgres** directory from 'localhost' to the IP address of the server.

This is how the line will look before modification:

PGHOST=localhost; export PGHOST

This is how the line will look after modification (assuming the server IP address is 192.168.1.23):

PGHOST=192.168.1.23; export PGHOST

The following steps (18 & 19) will need to be performed on the mounted case under the postgres user account:

26. You will need to add an entry for the server IP address within the **pg_hba.conf** file located in the **<data_case>/pgdata** directory. The entry should go within the "IPv4-style local connections" section of the script.

This is an example entry (assuming the server IP address is 192.168.1.23 and the server subnet mask is 255.255.255.0):

SYNTAX:

host all all <Server_IP_Address> <Server_Subnet_Mask> trust

EXAMPLE:

host all all 192.168.1.23 255.255.255.0 trust

27. You will need to create/modify the `listen_addresses` entry within the **postgresql.conf** file located in the **<data_case>/pgdata** directory. This variable is located in the CONNECTIONS AND AUTHENTICATION section and may be commented out. If commented out, then uncomment and modify. If it does not exist than create the variable with the syntax below.

This is how the line may look before modification:

listen_addresses = 'localhost'

This is how the line should look after modification:

```
listen_addresses = '*'
```

21.2 Testing

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

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

29. Run a simulation on the server machine.

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

30. 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

31. Copy the **`simustatus_history`** file from **`/awips/fxa/DRT`** directory on the server to the **`/awips/fxa/DRT`** directory on the client machine(s). This will allow FSI to function and update during the simulation on the client machine(s).

32. 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.

---

33. Shut down D2D on the client machine.

e.g. exit D2D on wolf

34. 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

35. 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`**

36. 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.

37. 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.

21.3 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

21.4 Returning the Client and Server Machines to Standalone Environments

After running a client/server environment, a few steps are necessary in order to return the machines to their original state so they can run with full functionality, independent of other machines

RESTORING FSI CONFIGURATION

1. You will need to replace the server name (or ip address) with "localhost" in the **`/awips/fxa/bin/FSI_GUI`** file on **both** client and server.

   This is how the line will look before modification (with the server name "bobcat"):

   <url name='source' value='orpg://**bobcat**$env(FXA_DATA)/tstorm/FSIradarLB_$whichradar.lb?protocol=xmllb' />

   This is how the line will look after modification:

   <url name='source' value='orpg://**localhost**$env(FXA_DATA)/tstorm/FSIradarLB_$whichradar.lb?protocol=xmllb' />

2. Remove the **`/awips/fxa/data/FSIcontrol.lb`** linear buffer file after modifying **`FSI_GUI`** on **both** client and server. It will be re-created when you launch FSI in D2D.

RESTORING POSTGRES CONFIGURATION

The following steps (3 & 4) will need to be performed on the client machine(s):

3. You will need to change the **`PGHOST`** variable within the **`postgresenv.csh`** file in the **`/awips/fxa/postgres`** directory from the IP address of the server to 'localhost'.

   This is how the line will look before modification (assuming the server IP address is 192.168.1.23):

   ```
   setenv PGHOST 192.168.1.23
   ```

This is how the line will look after modification:

```
setenv PGHOST localhost
```

4. You will also need to change the **PGHOST** variable within the **postgresenv.sh** file in the **/awips/fxa/postgres** directory from the IP address of the server to 'localhost'.

   This is how the line will look before modification (assuming the server IP address is 192.168.1.23):

   ```
   PGHOST=192.168.1.23; export PGHOST
   ```

   This is how the line will look after modification:

   ```
   PGHOST=localhost; export PGHOST
   ```

   The following steps (5 & 6) will need to be performed on the data case(s) used in the setup under the postgres account:

5. You will need to remove the server IP address entry within the **pg_hba.conf** file located in the **<data_case>/pgdata** directory. The entry should have been located within the "IPv4-style local connections" section of the script. Please see Step 18 of Section 21.1 for information on how this entry was created.

   This is an example entry of what should be removed (assuming the server IP address is 192.168.1.23 and the subnet mask is 255.255.255.0):

   EXAMPLE:

   ```
   host  all  all  192.168.1.23   255.255.255.0  trust
   ```

6. You will need to remove the **listen_addresses** entry within the **postgresql.conf** file located in the **<data_case>/pgdata** directory. Please see Step 18 of Section 21.1 for information of how this entry was created.

   This is the line that should be removed:

   ```
   listen_addresses = '*'
   ```

   OTHER CASE MODIFICATIONS:

7. The ipc.config file in the case's **localizationDataSets/XXX** directory will need to be removed.

22 Installing Flash-Plugin RPM 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 2 in Section 5.1. All necessary files for Flash installation are included on the WES 9.14 install DVD (**`freeware.tar.gz).`**With

The Flash 10 installation is simple; just install the flash-plugin rpm.

22.1 Example of Flash Plug-in Installation for Mozilla Browser

1. Check if you have a flash-plugin rpm installed on your machine.

   e.g. **`rpm -qa | grep flash-plugin`**

2. If the above command yields no results, we will manually install this rpm. The flash-plugin rpm is located in the `/usr/local/freeware` directory. Check if there is an rpm there.

   e.g. **`ls /usr/local/freeware/flash-plugin*rpm`**

3. If this yields no results (or else proceed to step 4), then we will restore the `/usr/local/freeware` directory back to its post-install state. Remove the /usr/local/freeware directory (if it exists).

   e.g. **`rm -Rf /usr/local/freeware`**

   Insert the WES 9.14 Install DVD into your WES box and untar the `freeware.tar.gz` file into `/usr/local`.

   e.g. **`tar xjf freeware.tar.bz2 -C /usr/local`**

4. Install the flash-plugin rpm using the rpm command.

   e.g. **`cd /usr/local/freeware`**

   e.g. **`rpm -Uhv flash-plugin*rpm`**

5. Check to make sure the plugin is installed using the `rpm -qa` command.

   e.g. **`rpm -qa | grep flash-plugin`**

6. If this returns a result then flash is installed on your system.

7. If the installation fails then contact WES support for help (wes@infolist.nws.noaa.gov).

23 Installing Xine Video Viewing Application

WES 9.14 includes the files necessary for viewing AVI files with the Xine video viewing application for RHEL5. Xine can be installed during WES 9.14 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 9.14 Installation DVD .Examples for both are below:

23.1 Manually untar the Xine files located on the WES 9.14 Install DVD

1. Mount the WES 9.14 Install DVD and copy the necessary files to **`/usr/local`**

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

   e.g. **`cp /media/CDROM/xine4include.tar.gz /usr/local`**

   e.g. **`cp /media/CDROM/xine4lib.tar.gz /usr/local`**

   e.g. **`cp /media/CDROM/xine4man.tar.gz /usr/local`**

   e.g. **`cp /media/CDROM/xine4share.tar.gz /usr/local`**

   e.g. **`cp /media/CDROM/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`**

3. 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`**

4. Add line **`/usr/local/lib`** in the file **`/etc/ld.so.conf`**

5. Run **`ldconfig`** to complete install

   e.g. **`ldconfig`**

23.2 Download from Website and Compile

1. Download and untar the Xine lib tar file from your favorite site. The official site is: http://xine-project.org

   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`**

24 Manual Installation of AWIPS Freeware

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`**" and the file list from the previous WES installation. 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/freeware`**, and run the following commands in order to uninstall each Postgres file:

   `# rpm -e <filename>` (where <filename> is one of the following)

3. postgresql

> **Note**: If you happen to encounter failed dependencies in uninstalling Postgres, uninstall the failed dependencies first, then try to uninstall Postgres again.

4. Uninstall Perl. Run the following commands in order to uninstall for each Perl file:

   `# rpm -e <filename>` (where <filename> is one of the following)

5. perl-AppConfig
6. perl-ChartDirector
7. perl-DBD-Pg
8. perl-DBI
9. perl-netcdf
10. perl-SignalHandler
11. perl-tk
12. perl-XML-Generator
13. 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.

14. The next step will be to update the freeware using "**rpm**". Run the commands below (steps 5-6) 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: **rpm -Uhv *.rpm**, if one RPM file fails to install because of dependencies, it will exit out of the command without installing the subsequent RPM's.

15. Run the following command for the postgres RPM file(s) in the **/usr/local/freeware** directory, starting with the OB91 file first:

e.g. **rpm -Uhv postgresql-8.2.6-1.AWIPS.OB91.i686.rpm**

16. Run the following command for each remaining RPM file in the **/usr/local/freeware** directory:

e.g. **rpm -Uhv <filename>.rpm**

25 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.

25.1 /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.

25.2 /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.

25.3 /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.

25.4 /awips/fxa/WEScustomization/mainConfig

genericmainConfig.txt (with the following entries inside the genericmainConfig.txt file):

@@@RADAR_Z 1000

@@@RADAR_V 1002

@@@RADAR_8 1018

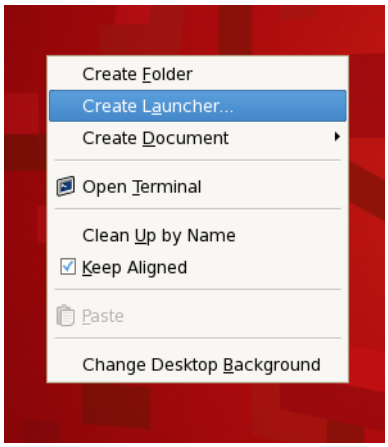
26 Appendix B

While the WES and its associated components can be started up by typing commands in the terminal window, it has the ability to be started through a desktop icon. These shortcuts allow the WES user to easily launch a simulation without the hassle of having to remember the commands that would need to be entered in the terminal window. If you do set up a desktop icon for WES, please pay very close attention to the setup instructions below as WES will not properly function if set up incorrectly. Users have reported faulty behavior with postgres and WarnGen as well as being logged out of the machine after a simulation completes when the desktop icon was incorrectly set up.

The WES user has the option of building the WES desktop shortcuts through GNOME or KDE sessions, and the instructions for both have been included below. All instructions were written by Darrel Kingfield.

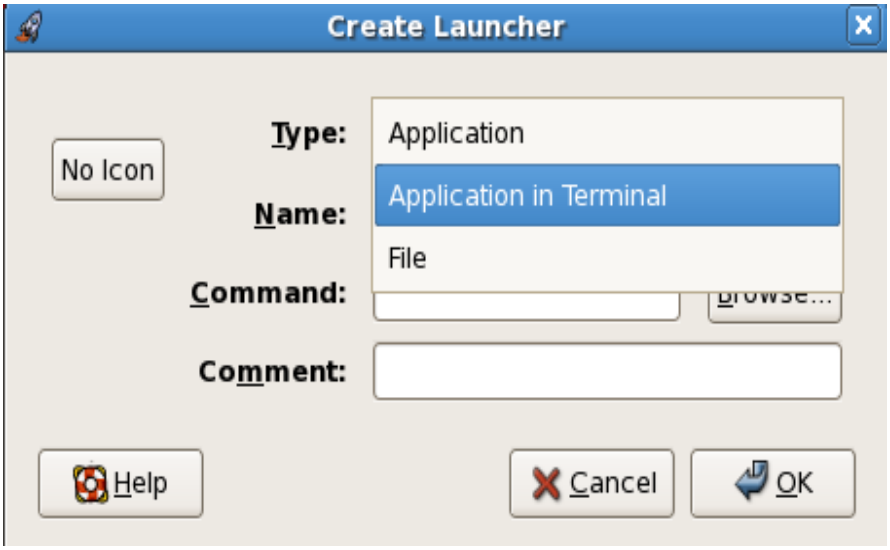
26.1 Building WES Desktop Shortcuts in a GNOME Session

1. In the GNOME environment on the WES box, right-click on the desktop and left-click on the **Create Launcher…** menu item. This will open the **Create Launcher** window.



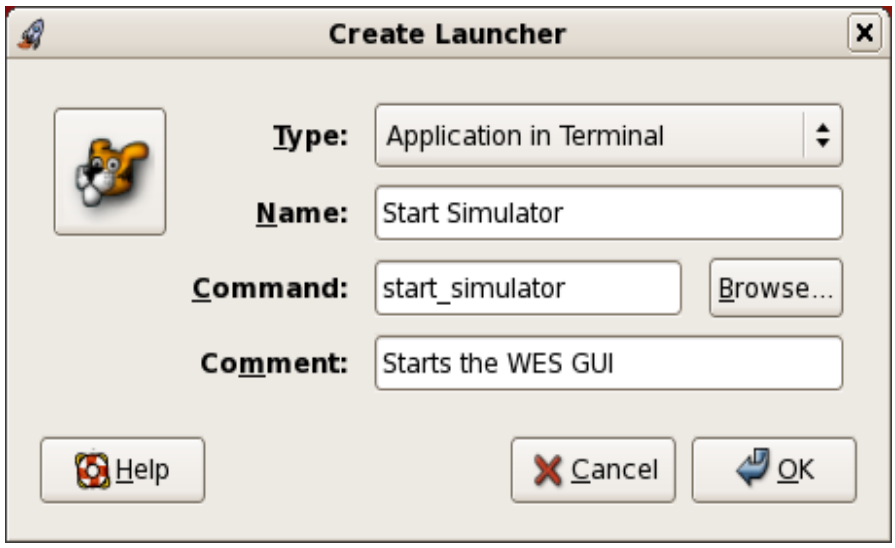
A standard GNOME right-click desktop menu

2. In the **Create Launcher** window, look for the **Type** dropdown menu box. Be sure that all WES shortcuts are built with **Applications in Terminal** set as the **Type**. By not doing so, the WES may not function properly during a simulation.



The default setup of the Create Launcher window with the Type dropdown window expanded.

Add an entry for **Name** (this will be the name that is visible on the desktop), **Command** (the WES command that would have been typed into the terminal), and a **Comment** (this is optional, but can be used to describe the shortcut). You can also change the icon by selecting the **No Icon** button. Figure 3 below shows some example inputs for the start_simulator command.



A sample shortcut to the start_simulator command

3. Once you have finished filling in the **Type**, **Name**, **Command**, and **Comment** fields, click **OK** and the shortcut will appear on the WES desktop.

The shortcut built from the above example

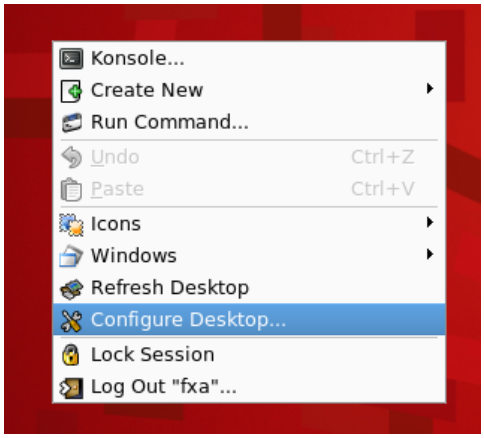
Repeat these steps for all the other WES shortcuts (start_awips, start_GFE, start_avnfps, etc.). Again, make sure these shortcuts are built with **Application in Terminal** as the **Type**, otherwise your WES may not function properly during a simulation.

4. Check to ensure all of the shortcuts built will launch correctly. In Figure 5 below, the start_simulator shortcut was selected.

Launching start_simulator

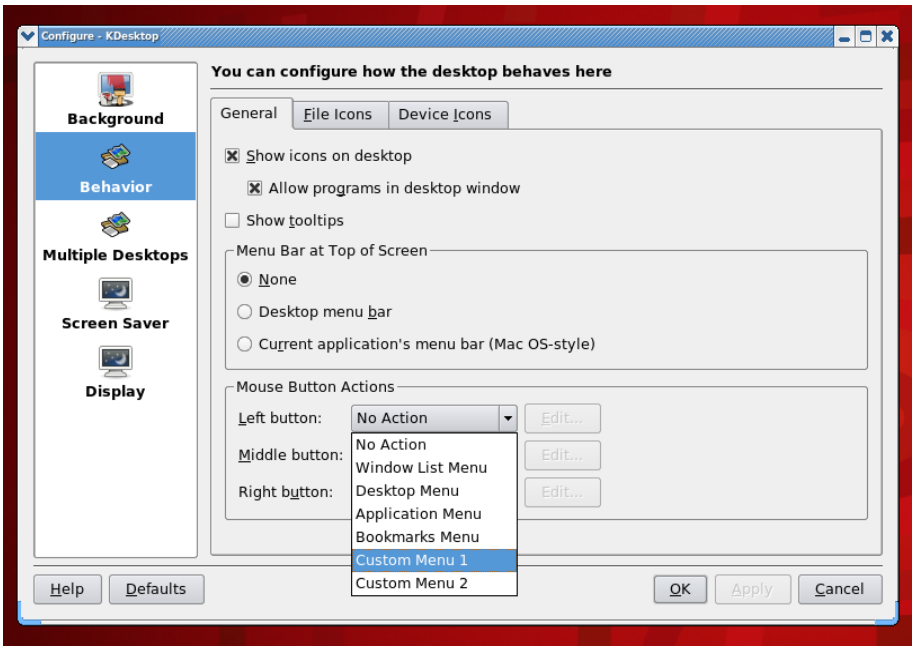
26.2 Building WES Desktop Shortcuts in a KDE Session

1. In a KDE environment on the WES box, right-click on the desktop and left-click on the **Configure Desktop…** menu item. This will open the **Configure - Kdesktop** window.



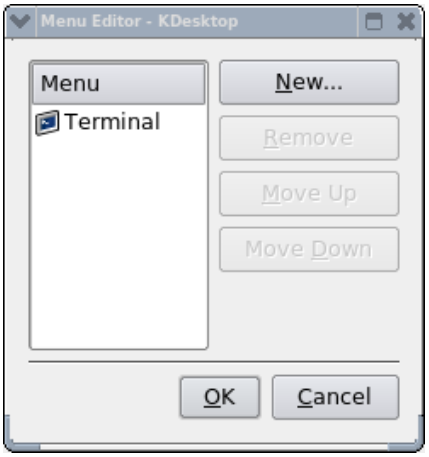
A standard KDE right-click desktop menu

2. Once the **Configure - Kdesktop** window is open, select the **Behavior** menu on the left side of the window. There will be a **Mouse Button Actions** section in the **General** tab where we will specify a new menu. Click on the dropdown menu for the **Left button:** and select **Custom Menu 1**.



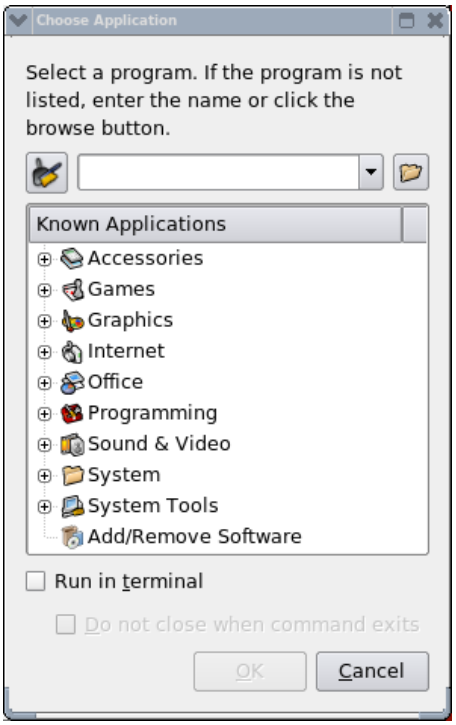
The Configure - Kdesktop menu

Once selected, click the **Edit…** button to the right of the dropdown menu. A **Menu Editor** window will appear.



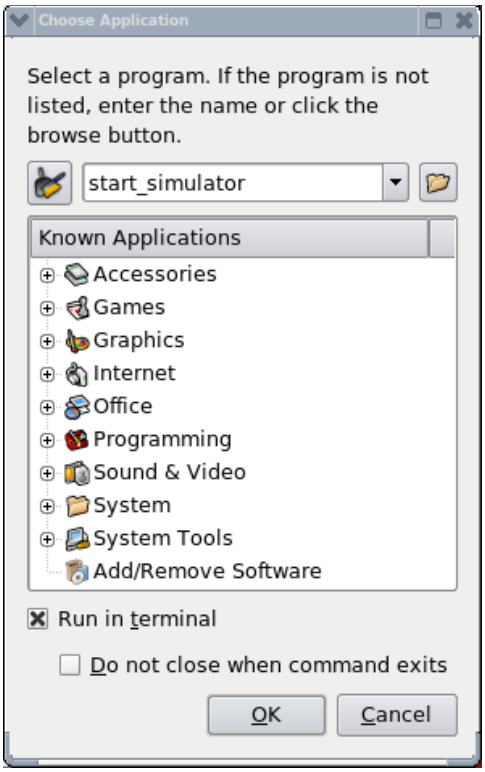
The Menu Editor window

3. We will now create a new task shortcut through the **Menu Editor**. Click on the **New…** button in the **Menu Editor** window. This will launch the **Choose Application** window.



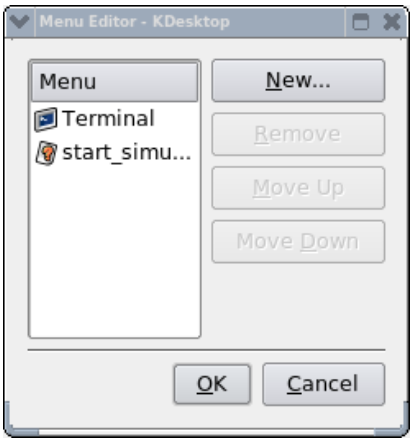
The Choose Application window

Type the WES terminal command in the top text box and select the **Run in terminal** checkbox (i.e., start_simulator). By not selecting it, the WES may not function properly during a simulation.



Example of entry for start_simulator

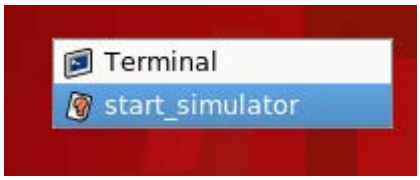
Click on the **OK** button to add this shortcut to the **Menu Editor** window. The figure below shows our start_simulator example in the **Menu Editor** window. Be sure to also click OK in the **Configure - Kdesktop** window to save your menu preferences and connect them to the left mouse button.



New start_simulator entry in the Menu Editor window

4. Repeat the previous steps for all the other WES shortcuts (start_awips, enhanced_case_review, start_GFE, ect). Make sure you select the **Run in terminal** checkbox for each of these other shortcuts. By not doing so, the WES may not function properly during a simulation.

5. Check to ensure all of your desktop shortcuts launch properly. Left-click anywhere on the desktop and your custom menu will appear. In our case, the start_simulator appears as seen in Figure 7 below.



An example menu launched from the desktop

Select your shortcut by clicking on it. In this example, we selected the start_simulator.

Launching start_simulator