AWIPS II Site Data Configuration & Localization: Step-By-Step Guide

Build 11.9

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Acronyms and Abbreviations Used in This Document

ACARS	Aircraft Communications Addressing and Reporting System
ADAM	AWIPS Data and Application Migration
AFOS	Automation of Field Operations and Services
ASR	Airport Surveillance Radar
AvnFPS	Aviation Forecast Preparation System
AWIPS	Advanced Weather Interactive Processing System
CAVE	Common AWIPS Visualization Environment
CONUS	Continental United States; Contiguous United States
CPSBN	Communications Processor Satellite Broadcast Network
CWA	County Warning Area
CWSU	Center Weather Service Unit
D2D	Display 2-Dimensional
DR	Discrepancy Report
DVB	Digital Video Broadcaster
DX	Data Server
EAV	Estimated Actual Velocity
EDEX	Enterprise Data EXchange
FFMP	Flash Flood Monitoring and Prediction
FNMOC	Fleet Numerical Meteorology and Oceanography Center
GFE	Graphical Forecast Editor
GMS	Geostationary Meteorological Satellite
GOES	Geostationary Operational Environmental Satellite
GUI	Graphical User Interface
ICAO	International Civil Aviation Organization
ID	Identifier; Identification
IHFS	Integrated Hydrologic Forecast System
IP	Internet Protocol
km	kilometer
LAN	Local Area Network
LDM	Local Data Manager
LWX	WFO Sterling, Virginia
MPE	Multi-sensor Precipitation Estimates
NCDC	National Climatic Data Center
NCEP	National Centers for Environmental Prediction
NEXRAD	Next Generation Weather Radar
NIDS	NEXRAD Information Dissemination Service
NOAA	National Oceanic and Atmospheric Administration
NOGAPS	Navy Operational Global Atmospheric Prediction System
NWS	National Weather Service

OAX	WFO Omaha, Nebraska
OCONUS	Outside Continental United States; Outside Contiguous United States
POI	Point-of-Interest
PostgreSQL	Postgres Structured Query Language
PX	Linux Preprocessor
RAOB	RAwinsonde OBservation
RFC	River Forecast Center
SBN	Satellite Broadcast Network
SCAT	Standard Configuration for AWIPS II Testing
SQL	Structured Query Language
TAF	Terminal Aerodrome Forecast
TCP	Transmission Control Protocol
UGC	Universal Geographic Code
VTEC	Valid Time Event Code
VTL	Velocity Template Language
WAN	Wide Area Network
WFO	Weather Forecast Office
WMO	World Meteorological Organization
XML	EXtensible Markup Language

1.0 Introduction

Localization adapts (i.e., configures) the AWIPS national baseline software to the unique data and display requirements of the site. AWIPS II performs localization dynamically at system startup using data from the localization data environment.

This document is designed as a guide to changing specific files in the localization environment to configure an EDEX installation to a specific site, and as a guide to adding localization files needed for launching and running client applications such as CAVE and AlertViz. It supersedes Raytheon document AWP.DOC.TOSCAT.LOC-05.00, dated 25 July 2011, and all previous versions of this document.

This document focuses on a SERVER-CLIENT localization paradigm, much like that which exists on AWIPS I. The steps taken should be sufficient to guide a person familiar with AWIPS I systems through the creation of a usable AWIPS II localization for an EDEX and CAVE instance.

Localization in AWIPS II is done by the EDEX process itself, as opposed to a script (mainScript.csh) from AWIPS I. Based on specific configuration files, the EDEX process produces output files, which are then transferred, or downloaded, to the CAVE client when CAVE starts and then whenever a change to a file has been detected. Figure 1-1 attempts to describe the flow of configuration on the left, the localization engine (EDEX) in yellow (center), the output of that localization in orange (top right), and the usage of those localization files via download to a user's caveData directory on a workstation in red (bottom right).

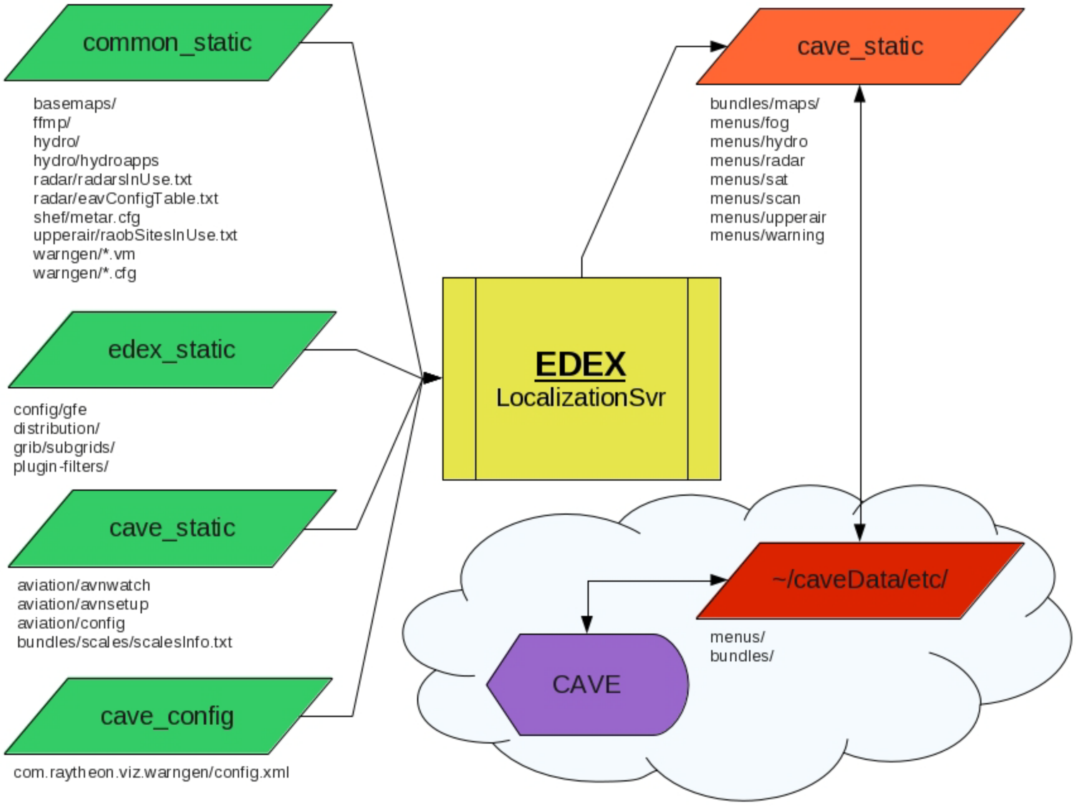


Figure 1-1. Localization in AWIPS II

This document focuses on creating the configuration files necessary for EDEX to correctly create the output files needed for proper baseline operations.

General Note: *You should never edit files that are in a base directory tree. Although there are a few exceptions as of the date of this document's creation, anything beneath a directory named base in the configuration tree should never be edited. This is analogous to the nationalData directory in AWIPS I.*

Assistance Note: *A tool developed under Task Order 0013 is available for all sites that have installed an ADAM (AWIPS II Data and Application Migration) platform to help collect the files referenced in this document for moving to a platform which normally may not have access to those files. The script is collect_files.sh and would be located in the /data/fxa/INSTALL/ADAM directory. For more information on this script, please see the document titled "AWIPS II Site Data Configuration Automation Tool" (AWP.DOC.TOSCAT.AUTO-04.00).*

This document has been verified to work for AWIPS II Releases Build 11.5 - Build 11.7.

1.1 Document Conventions

When specific commands to be typed are being displayed, the following will be used as the convention. The user should type on the screen everything following the **#** symbol. For example:

```
# ssh dx1
```

This indicates that the user should secure shell into dx1 (*ssh dx1*)

At points in the document, it is necessary to reference a command that could be used for multiple iterations to achieve the same effect. The double bracket will enclose a description of what the user is to input in place of the notated reference. For example:

```
[[ database name ]]
```

This indicates that the user should run the command for as many iterations of the database name as needed to complete the desired configuration.

When a substitution needs to be made in a command that is to be interpreted by the user, the following syntax will be used:

```
<< Site ID >>
```

This indicates that the user should interpret the correct site identifier to put into the command.

When specific paths are shown, they will be given a background shade, as shown in the following example:

/awips2/edex

1.2 Document Variable Conventions

Table 1.2-1 defines a list of variables referenced in this document, provides a description of each variable, and identifies the current location of each variable as of the date of this document. Wherever a variable occurs in this document, the actual value should be substituted when typing the commands on an AWIPS system. *These are not environment variables at this point in time,* *so manual substitution should be made when typing commands that contain references to these variables.*

Note: As of the creation of this document there is no plan to have these be system environment variables on an AWIPS or ADAM system. The location should be known to the user following the steps in the document. Normally the value under the expected location is that which an AWIPS site or ADAM platform would adhere with the exception of the server and cave platforms. Those, for an ADAM platform only, would all be adam1.

Table 1.2-1. Document Variable Conventions

Environment Variable	Description	Expected Location
$CAVE	The hostname of a CAVE workstation	lx1, lx2, lx3, etc....
$DB_SERVER	The hostname of the server running the Postgres database engine	dx1f
$EDEX1	The primary EDEX servers	dx3
$EDEX_CONFIG	The location in which the configuration files on the EDEX servers reside	/awips2/edex/data/utility
$EDEX_DB_HOME	The location in which the database files reside that control the functionality of the PostgreSQL engine, as well as the physical storage for the data held within the tables	/awips2/data [DX1/DX2]
$EDEX_HOME	The home location for the EDEX JVM	/awips2/edex
$LDM_DOWNSTREAM	The hostname of the server running the downstream LDM client	dx2f
$LDM_HOST	The hostname of the server running the upstream/feeder LDM host	cpsbn1/cpsbn2
$RCM_INSTALL_DIR	The location in which the AWIPS II RadarServer is installed	/awips2/rcm
$RCM_SERVER	The hostname of the server running the AWIPS II RadarServer	dx1f

1.3 CAVE-Only Configuration

The instructions in this document are designed to configure an AWIPS II installation to a site other than OAX. If only CAVE configuration is desired, follow the instructions in these sections:

- Section 3
- Section 4 [Do all except most of section 4.4. The steps in section 4.4.1 need to be followed in this section without exception.]
- Section 8
- Section 9
- Section 10
- Section 11
- Section 12.

1.4 Notes About Use on ADAM Platform

When using this document to localize an AWIPS II installation on the ADAM platform, it is important to note that all references to a server, workstation, or other host instances via the document conventions defined in this section will be adam1. This is due to the fact that not only do the AWIPS II server instances run on the ADAM platform, but also the visualization software.

2.0 Database Configuration

An integral part of each system setup is the database, which continues to be housed within a PostgreSQL Database Engine (www.postgresql.org). **Table 2-1** lists the functional database table and indicates whether they are WFO centric, RFC centric, or both. It also identifies the method to be used to create each table.

Table 2-1. AWIPS II Baseline Database Listing

Database Name	WFO / RFC / Both	Creation Method
dc_ob7xxx*	Both	Post installation from backup
fxatext	Both	On first start of EDEX
hd_ob92xxx*	Both	Post installation from backup
hmdb	WFO	Post installation from backup
lsrdata	WFO	Post installation from backup
maps	Both	During installation
metadata	Both	On first start of EDEX
ob7_histdata	RFC	Post installation from backup
postgres	Both	N/A (Systems Database)
template0	Both	N/A (Systems Database)
template1	Both	N/A (Systems Database)

** Sites will not see xxx in their output; "xxx" shown in this table will be replaced by the 3-letter AWIPS Site ID.*

Those databases not created or populated during software installation or during software startup should be restored from the latest backup file.

Note: The need to import databases exists if configuration is being performed in order for EDEX to run as a site other than OAX. If configuration is being done merely to run CAVE in order to back up an adjacent WFO, there is no need to acquire and import the databases for that site.

In order to proceed, the EDEX server must not be running.

- Stop the EDEX server, first by logging into all EDEX servers issuing the stop command.

```
# ssh $EDEX1
# service edex_camel stop
```

- Repeat the previous step for all EDEX client machines.

2.1 Configuring the PostgreSQL Database Engine

Due to the dynamic names of the hydrology (hd_) and damcrest (dc_) databases, and due to the ability of RFCs to create local databases in the dblocalrfc tablespace, the PostgreSQL database engine needs to be configured to allow access to these tables. The file that controls access is $EDEX_DB_HOME/pg_hba.conf. For each database, two lines must be present in this file: one for local access and one for remote access through tcp protocol. The lines resemble the following example:

```
local   fxatext    all        trust
host    fxatext    all        165.92.XXX.0/24      trust
```

In the preceding example, XXX would be substituted for the site's AWIPS LAN third octet. To configure the database to allow access from all of a site's CAVE clients, a line for each database matching the above should be entered.

Note: If a CWSU is hooked to your system, and has an IP outside the local site's LAN, additional entries will be necessary to allow connections from these workstations.

Follow these steps to configure the PostgreSQL access for an AWIPS site:

- Log into the database server as user *root* and change to the $EDEX_DB_HOME directory:

  ```
  # cd $EDEX_DB_HOME
  ```

- Use a text editor (suggested: vi) to edit the pg_hba.conf file and input the lines that will allow clients on the AWIPS site to access the databases:

  ```
  # vi pg_hba.conf
  ```

- Using table 2.1 to determine which databases you will have installed, insert the lines, or modify the existing lines to reflect your site's subnet of the AWIPS WAN, in the pg_hba.conf file. See the following example, which includes all necessary edits for configuring site LWX:

  ```
  local   hd_ob92lwx     all                          trust
  local   dc_ob7lwx      all                          trust
  local   lsrdata        all                          trust
  host    hd_ob92lwx     all       165.92.52.0/24     trust
  host    dc_ob7lwx      all       165.92.52.0/24     trust
  host    lsrdata        all       165.92.52.0/24     trust
  ```

  RFC Note: Because a River Forecast Center has the capability now to create local databases, you will need to reflect each of these local databases in the AWIPS II pg_hba.conf file as well, following the example above.

- Once you are finished, save and quit:

  ```
  # :wq!
  ```

- If the database was not currently running while these changes were being made, it should be restarted at this point. If the engine was running, then a control command can be sent to the postmaster process to force it to reload its configuration files.

  ```
  # ps aux | grep postgres
  ```

  If a postmaster process returns, then reload the configuration data:

  ```
  # su awips –lc “pg_ctl reload –D $EDEX_DB_HOME”
  ```

  Otherwise, start the database server:

  ```
  # service edex_postgres start
  ```

2.2 Create and Import Database Files

Once the database has been configured to allow connections from your site's AWIPS LAN, any databases that are not delivered should be created and populated (if they have not been already). Find a list of databases currently loaded on the AWIPS system by logging into an AWIPS machine with the AWIPS II software and environment successfully installed, and following these steps:

- Open a terminal window, if one is not already open.
- Issue the following command to get a list of currently loaded databases:

  ```
  # psql –U awips –h $DB_SERVER –l
  ```

  Note: If prompted for a password, the database user password is 'awips'

- Compare this list to Table 2-1. AWIPS II Baseline Database Listing.
- Log into the AWIPS II Database Server:

  ```
  # ssh –l root $DB_SERVER
  Logs into the database server as user root
  ```

2.2.1 hmdb Database [WFO Only]

- Drop and then re-create the hmdb database by issuing the following commands:

  Note: Because the database already exists, it must first be dropped before it can be imported from a backup with the following command:

  ```
  # dropdb –h $DB_SERVER –U awips hmdb

        ** Only run this if the database already exists **
  ```

  Note: If prompted for a password, the database user password is 'awips'

  ```
  # createdb –h $DB_SERVER –U awips hmdb
             Runs the createdb command giving ownership to database
             user awips for each database needed.
  ```

  Note: If prompted for a password, the database user password is 'awips'

- Import the most current backups for the databases. AWIPS backup_pgdb cron runs daily at 0522 GMT and puts a backup for each database into /data/fxa/DAILY_BACKUP/postgres/<day_of_week>. These files can be used to import into the newly created databases:

  ```
  # pg_restore –h $DB_SERVER –U awips –d hmdb –Fc
  /data/fxa/DAILY_BACKUP/postgres/<< Day Of Week>>/hmdb
  ```

  Note: The previous command is all on one line, and not two lines.

2.2.2 IHFS Database

- Create the hd_ob92xxx database by issuing the following commands:

  Note: Substitute the AWIPS Site ID of the desired site, in lowercase letters, for xxx in the database name:

```
# createdb –h $DB_SERVER –E SQL_ASCII –U awips hd_ob92xxx
```

Runs the createdb command giving ownership to database user awips for each database needed.

Note: If prompted for a password, the database user password is 'awips'

- Import the most current backups for the databases. AWIPS backup_pgdb cron runs daily at 0522 GMT and puts a backup for each database into /data/fxa/DAILY_BACKUP/postgres/<day_of_week>. These files can be used to import into the newly created databases:

```
# pg_restore –h $DB_SERVER –U awips –d hd_ob92xxx –Fc
/data/fxa/DAILY_BACKUP/postgres/<< Day Of Week>>/hd_ob92xxx
```

Note: The previous command is all on one line, and not two lines.

2.2.3 DamCrest Database

- Create the dc_ob7xxx database by issuing the following commands:

Note: Substitute the AWIPS Site ID of the desired site, in lowercase letters, for xxx in the database name:

```
# createdb –h $DB_SERVER –U awips dc_ob7xxx
```

Runs the createdb command giving ownership to database user awips for each database needed.

Note: If prompted for a password, the database user password is 'awips'

- Import the most current backups for the databases. AWIPS backup_pgdb cron runs daily at 0522 GMT and puts a backup for each database into /data/fxa/DAILY_BACKUP/postgres/<day_of_week>. These files can be used to import into the newly created databases:

```
# pg_restore –h $DB_SERVER –U awips –d dc_ob7xxx –Fc
/data/fxa/DAILY_BACKUP/postgres/<< Day Of Week>>/dc_ob7xxx
```

Note: The previous command is all on one line, and not two lines.

2.2.4 lsrdata Database [WFO Only]

- Create the lsrdata database by issuing the following commands:

```
# createdb –h $DB_SERVER –U awips lsrdata
```

Runs the createdb command giving ownership to database user awips for each database needed.

Note: If prompted for a password, the database user password is 'awips'

- Import the most current backups for the databases. AWIPS backup_pgdb cron runs daily at 0522 GMT and puts a backup for each database into /data/fxa/DAILY_BACKUP/postgres/<day_of_week>. These files can be used to import into the newly created databases:

```
# pg_restore –h $DB_SERVER –U awips –d lsrdata –Fc
/data/fxa/DAILY_BACKUP/postgres/<< Day Of Week>>/lsrdata
```

Note: The previous command is all on one line, and not two lines.

2.2.5 Additional Databases [RFC Only]

River Forecast Centers have the ability to create local databases for use with RFC applications. These databases will need to be imported into the AWIPS II database engine. To retrieve the names of these databases, on the AWIPS I database server (dx1f) issue the following command:

```
# psql –l | grep –vE
“(fxatext|dc_ob7|hd_ob|hmdb|ob7_his|postgres|template)”
```

If the AWIPS I database engine has already been shut down, issue this command on dx1 in order to find those files that were backed up by the nightly cron (all on one line):

```
# find /data/fxa/DAILY_BACKUP/postgres/ -regextype posix-egrep -
mtime -1 -type f ! -regex
'/.*(fxatext|dc_ob7...|hd_ob.....|hmdb|ob7_histdata|postgres|temp
late[01])'
```

The following example shows one possible output:

```
[root@dx1-krf ~]# find /data/fxa/DAILY_BACKUP/postgres/ -regextype
posix-egrep -mtime -1 -type f ! -regex
'/.*(fxatext|dc_ob7...|hd_ob.....|hmdb|ob7_histdata|postgres|globals
|template[01])'
/data/fxa/DAILY_BACKUP/postgres/Thursday/fastetc
/data/fxa/DAILY_BACKUP/postgres/Thursday/gisrs
/data/fxa/DAILY_BACKUP/postgres/Thursday/hdkrf_testdb
```

Note the databases below:

____

For each database returned, run the createdb and pg_restore commands when the AWIPS II database engine is installed and running:

```
# createdb –h $DB_SERVER –U awips [[ dbname ]]

# pg_restore –h $DB_SERVER –U awips –d [[ dbname ]] –Fc
/data/fxa/DAILY_BACKUP/postgres/<< Day Of Week>>/[[ dbname ]]
```

2.3 Update Shape Files

In AWIPS II, a number of shape files reside within the PostgreSQL database named *maps*. A utility named importShapeFiles.sh is provided to help import the files into the database. **Table 2.3-1** (taken from mapdata.map_version) lists those shape files imported into the database on installation and their AWIPS I equivalent file names. Use this table when updating shape files.

Table 2.3-1. AWIPS II Shape File-To-Table Mapping

Table Name	File Name	Table Name	File Name
basins	ba23de09.shp	highway	rd30ap08.shp
cwa	w_15jl09.shp	canada	province.shp
offshore	oz02jn09.shp	specialuse	sua.shp
zone	z_11my10.shp	lowaltitude	vAirways.shp
timezones	tz04nv07.shp	navaid	navaid.shp
firewxaor	cf17jl07.shp	artcc	artcc.shp
latlon10	LatLon10_Ocean.shp	airport	airport.shp
majorrivers	rs14fe02.shp	highaltitude	jAirways.shp
allrivers	rv14fe02.shp	fix	fix.shp
lake	lk24ap09.shp	rfc	rf12ja05.shp
world	world_adm0.shp	isc	cm28fe06.shp
states	s_01au07.shp	marinezones	mz01jn10.shp
customlocations	customlocations.shp	mexico	st_mx.shp
highsea	hz30mr09.shp	firewxzones	fz01my10.shp
interstate	in30ap08.shp	city	ci16ap10.shp
railroad	railrdl020.shp	marinesites	MarineInfo_OB9.2.txt
county	c_15jl09.shp	ffmp_basins	FFMP_aggr_basins.shp
hsa	hs07my09.shp	ffmp_streams	FFMP_ref_sl.shp

The FFMP streams and basins shape files specifically must be localized at a WFO for each site using the created shapefiles in /data/fxa/nationalData. WFOs only update these files as follows:

- Log into the server hosting the AWIPS II database (DX1 in normal operations) as user root

```
# ssh –q $DB_SERVER –l root
```

- Unzip the gzipped versions of the FFMP shape files

```
# cd /data/fxa/nationalData
# gunzip FFMP_*.shp.gz
```

- Switch system users to user *awips*

```
# su - awips
```

- Change directories to the directory containing the importShapeFile.sh script

```
# cd /awips2/static/database.maps     (For OB11.4 & OB11.5)
# cd /awips2/database/sqlScripts/share/sql/maps/   (For OB11.6 &
OB11.7)
```

- Update the ffmp_basins shape files using the site-specific version

```
# ./importShapeFile.sh
/data/fxa/nationalData/FFMP_aggr_basins.shp mapdata ffmp_basins
0.064,0.016,0.004,0.001 awips
```

  Note: If prompted for a password, the database user password is ‘awips’

Example 2.3-1 shows typical output from this script:

Example 2.3-1

```
Importing FFMP_aggr_basins.shp into mapdata.ffmp_basins ...
Shapefile type: Polygon
Postgis type: MULTIPOLYGON[2]
psql:<stdin>:29: NOTICE:  CREATE TABLE will create implicit sequence
"ffmp_basins_gid_seq" for serial column "ffmp_basins.gid"
psql:<stdin>:29: NOTICE:  CREATE TABLE / PRIMARY KEY will create implicit
index "ffmp_basins_pkey" for table "ffmp_basins"
        addgeometrycolumn
        -----------------------------------------------------------------
        mapdata.ffmp_basins.the_geom SRID:4326 TYPE:MULTIPOLYGON DIMS:2

        (1 row)

        Creating simplification levels 0.064,0.016,0.004,0.001...
        Creating simplified geometry level 0.064 ...
        Creating simplified geometry level 0.016 ...
        Creating simplified geometry level 0.004 ...
        Creating simplified geometry level 0.001 ...
```

- Update the ffmp_streams shape files using the site-specific version

  `# ./importShapeFile.sh /data/fxa/nationalData/FFMP_ref_sl.shp mapdata ffmp_streams 0.064,0.016,0.004,0.001 awips`

  Note: If prompted for a password, the database user password is ‘awips’

Example 2.3-2 shows typical output from this script:

Example 2.3-2

```
        Importing FFMP_ref_sl.shp into mapdata.ffmp_streams ...
Shapefile type: Arc
Postgis type: MULTILINESTRING[2]
psql:<stdin>:27: NOTICE:  CREATE TABLE will create implicit sequence
"ffmp_streams_gid_seq" for serial column "ffmp_streams.gid"
psql:<stdin>:27: NOTICE:  CREATE TABLE / PRIMARY KEY will create implicit index
"ffmp_streams_pkey" for table "ffmp_streams"
        addgeometrycolumn
        ---------------------------------------------------------------------
        mapdata.ffmp_streams.the_geom SRID:4326 TYPE:MULTILINESTRING DIMS:2

        (1 row)

        Creating simplification levels 0.064,0.016,0.004,0.001...
        Creating simplified geometry level 0.064 ...
        Creating simplified geometry level 0.016 ...
        Creating simplified geometry level 0.004 ...
        Creating simplified geometry level 0.001 ...
```

- Exit the user *awips* shell back to root.

  `# exit`

- GZIP the FFMP Shape files that were unzipped before

```
# cd /data/fxa/nationalData

# gzip FFMP_*.shp
```

2.4 Update afos2awips With Local Changes

If local changes have been made to the site's afos2awips.txt file, they should be imported into the AWIPS II system. The functionality of this file has now been moved into the fxatext database (into a table named afos_to_awips). To make it easy to import a site's localized version of this file easily, the site should make edits to the same file it maintained in AWIPS I . When completed, the file is placed in a national data management directory within the EDEX installation tree. From there EDEX uses the file to update its database automatically when there are changes. These steps should be completed for all sites performing an initial site data configuration.

- Log into the server hosting an AWIPS II EDEX (DX3 in normal operations) as user root:

```
# ssh –q $EDEX1 –l root
```

- Switch users to system user *awips:*

```
# su – awips
```

- Copy the file into the ndm directory of the EDEX installation tree:

```
# cp /awips/fxa/data/afos2awips.txt $EDEX_HOME/data/ndm/
```

- Ensure the proper ownership and permission:

```
# chown awips:fxalpha $EDEX_HOME/data/ndm/afos2awips.txt
```

- Exit from the system user *awips* shell, and from the ssh connection:

```
# exit

# exit
```

3.0 SBN Ingest Configuration

AWIPS II introduces the Unisys Local Data Manager (LDM) as the ingest tool for SBN data. It replaces the legacy acq_send / acqServer processes from AWIPS I.

The upstream LDM host runs on the CPSBN machines, and listens directly to the SBN stream from the DVB receivers.

The downstream LDM host runs in conjunction with the DX2F package, and requests products from the upstream host. Based on a filtering file, only certain products will be sent for ingest into the system. This is where the ingest filtering takes place now.

3.1 Ingest Filter Configuration

Ingest filtering is controlled through the pqact.conf file, which resides in the /usr/local/ldm/etc directory. The general syntax of an entry in the file is as follows:

```
feedtype TAB Regex Pattern
   TAB action TAB [arg]
```

Where TAB is an actual TAB. Lines can, and are, split between new lines at a TAB.

Table 3.1-1 is a list of feedtypes that can be used (reference http://www.unidata.ucar.edu/software/ldm/ldm-6.7.1/basics/feedtypes/index.html).

Table 3.1-1. LDM Feedtypes

Primary Name	Alternate Names	Description
PPS	FT0	Public Products Service
DDS	FT1, DOMESTIC	Domestic Data Service
HDS	FT2, HRS	High resolution Data Service
IDS	FT3, INTNL	International Data Service
SPARE	FT4	Reserved for IDD use
UNIWISC	FT5, MCIDAS	Satellite imagery and derived products from the Unidata/Wisconsin Broadcast
PCWS	FT6, ACARS	ACARS data from commercial aircraft
FSL2	FT7, PROFILER	Wind profiler data
FSL3	FT8	Reserved for NOAA/GSD use
FSL4	FT9	Reserved for NOAA/GSD use
FSL5	FT10	Reserved for NOAA/GSD use
GPSSRC	FT11, NMC1, AFOS	SuomiNet GPS data gathering
CONDUIT	FT12, NMC2, NCEPH	NCEP high-resolution model output
FNEXRAD	FT13, NMC3	NEXRAD Level-III composites
LIGHTNING	FT14,NLDN	Lightning data
WSI	FT15	NEXRAD Level-III (NIDS) radar products and composites from WSI Corporation
DIFAX	FT16	Unidata community-generated replacement for defunct DIFAX feed

Primary Name	Alternate Names	Description
FAA604	FT17, FAA, 604	FAA604 products for NWS use (private network), but available for IDD use
GPS	FT18	SuomiNet GPS data
FNMOC	FT19, SEISMIC, NOGAPS	NOGAPS and COAMP model output from FNMOC
GEM	FT20, CMC	Canadian Meteorological Center GEM model output
NIMAGE	FT21, IMAGE	NOAAport satellite imagery
NTEXT	FT22, TEXT	NOAAport textual products (for future use)
NGRID	FT23, GRID	NOAAport high-resolution model output
NPOINT	FT24, POINT, NBUFR, BUFR	NOAAport point products (for future use)
NGRAPH	FT25, GRAPH	NOAAport Redbook Graphics (for future use)
NOTHER	FT26, OTHER	NOAAport miscellaneous products (for future use)
NEXRAD3	FT27, NNEXRAD, NEXRAD	NEXRAD Level-III products
NEXRAD2	FT28, CRAFT, NEXRD2	NEXRAD Level-II radar data
NXRDSRC	FT29	NCDC NEXRAD Level-II data archiving
EXP	FT30	For experiments, testing, etc.
ANY	FT0 | FT1 | FT2 | ... | FT31	Predefined feed set name for *any* feed type
NONE	--	Predefined feed set name for *no* feed types (will not match anything)
DDPLUS	FT0 | FT1	Predefined feed set name for PPS or DDS
WMO	FT0 | FT1 | FT2 | FT3	Predefined feed set name for PPS, DDS, HDS, or IDS
UNIDATA	FT0 | FT1 | FT2 | FT3 | FT5	Predefined feed set name for PPS, DDS, HDS, IDS, or UNIWISC
FSL	FT6 | FT7 | FT8 | FT9 | FT10	Predefined feed set name for PCWS, FSL2, FSL3, FSL4, or FSL5
NMC	FT11 | FT12 | FT13	Predefined feed set name for AFOS, NMC2, or NMC3
NPORT	FT22 | FT23 | FT24 | FT25 | FT26	Predefined feed set name for NTEXT, NGRID, NPOINT, NGRAPH, or NOTHER

Regex Pattern is a regular expression used in pattern matching the LDM stream for ingest.

Action is the action to take on the product once it arrives. **Table 3.1-2** describes the possibilities for action and can be found on LDM's Web page here: http://www.unidata.ucar.edu/software/ldm/ldm-current/basics/pqact.conf.html

Table 3.1-2. LDM Action Options

Action	Description
NOOP	Don’t do anything with the product.
FILE	Write the data product to a file using the write() function.
STDIOFILE	Write the data product to a file using the fwrite() function.
DBFILE	Write the data product to a database.
EXEC	Execute a program.
PIPE	Write the product to a program’s standard input.

Arg is any optional arguments for the *Action* and is generally one of the following:

In general, the syntax for the ARG portion of the line in the pqact.conf file is as seen below:

```
–overwrite –close –log –edex    <tab>      /store/path

Where:
<tab> indicates hitting the tab key on the keyboard
/store/path is the path the file should be written to disk.
-overwrite indicates overwrite the file (if exists)
-close indicates to close the file after fwrite() function
-log indicates log the product to the ldmd.log
-edex indicates the sending of data over edexBridge for processing
```

In order to determine the correct FEEDTYPE above, the following command can be run from a downstream LDM host.

```
# ./notifyme –h $LDM_HOST –v –l- -p ‘$REGEX’
```

Where $REGEX is a regular expression that will match against the type of data which is of interest. Once a match is found, it is displayed on the screen as seen in **Example 3.1-1.**

Example 3.1-1

```
 Dec 21 15:52:21 notifyme[32196] INFO:     1522 20101221155220.618 IDS|DDPLUS 11247393  SOAK45
KWBC 211549
Dec 21 15:52:21 notifyme[32196] INFO:      408 20101221155220.618     HDS 11247394  SFUS41 KWBC
211545
```

The example shows the FEEDTYPE in bold type.

AWIPS I customizes only specific patterns based on the localized site. **Tables 3.1-3** and **3.1-4** depict information on each, and where to find the corresponding information.

Table 3.1-3. Hydrology Patterns

AWIPS I Pattern	Information Location	AWIPS II LDM Pattern
^SRU[EMSW][1-9]..(Wxxx)	Wxxx from XXX-hydroSiteConfig.txt file in /awips/fxa/data/localization/XXX	IDS|DDPLUS ^(SRU[EMSW][1-9].) (Wxxx)
SRUSRegCode.KWBC	RegCode from XXX-hydroSiteConfig.txt file in /awips/fxa/data/localization/XXX	IDS|DDPLUS ^(SRUSRegCode) (KWBC)
FOUS...(Rxxx)	Rxxx from XXX-hydroSiteConfig.txt file in /awips/fxa/data/localization/XXX	IDS|DDPLUS ^(FOUS..) (Rxxx)
FGUS[57]..(Rxxx)	Rxxx from XXX-hydroSiteConfig.txt file in /awips/fxa/data/localization/XXX	IDS|DDPLUS ^(FGUS[567].) (Rxxx)
[AF][BS]US...(Wxxx)	Wxxx from XXX-hydroSiteConfig.txt file in /awips/fxa/data/localization/XXX	IDS|DDPLUS ^([AF][BS]US..) (Wxxx)
AGUS5..(Rxxx)	Rxxx from XXX-hydroSiteConfig.txt file in /awips/fxa/data/localization/XXX	IDS|DDPLUS ^(AGUS5.) (Rxxx)
AGUS4..(Wxxx)	Wxxx from XXX-hydroSiteConfig.txt file in /awips/fxa/data/localization/XXX	IDS|DDPLUS ^(AGUS4.) (Wxxx)
[YZ]EI.98.(Rxxx)	Rxxx from XXX-hydroSiteConfig.txt file in /awips/fxa/data/localization/XXX	ANY ^([YZ]EI.98) (Rxxx)

Note: An example of the first row in the pqact.conf would look like this:

```
IDS|DDPLUS	^(SRU[EMSW][1-9].) (Wxxx) (..)(..)(..)
	FILE	-overwrite -log -close -edex	/data_store/shef/\4/\1_\2_\3\4\5_(seq).txt
```

Remember that there are TABs between the different sections of the entry and that Wxxx would be substituted based on the rules above.

Table 3.1-4. Radar Patterns

AWIPS I Pattern	Information Reference
CODE 17 INCLUDE SDUS2??KZZZ	Substitute KZZZ for the reporting site for each radar listed in: /awips/fxa/data/localizationDataSets/XXX/dialRadars.txt Reporting sites can be found by issuing the following command: grep –i xxxy /awips/fxa/data/wmoSiteInfo.txt Where xxx is the radar ID without the preceding K, P or T. The following file on DX1 also contains the information needed: /awips/fxa/data/localizationDataSets/XXX/acq_wmo_parms.sbn.radar
CODE 17 INCLUDE SDUS3??KZZZ	
CODE 17 INCLUDE SDUS4??KZZZ	
CODE 17 INCLUDE SDUS5??KZZZ	
CODE 17 INCLUDE SDUS7??KZZZ	
CODE 17 INCLUDE SDUS8??KZZZ	
CODE 17 INCLUDE NXUS6??KZZZ	

AWIPS II has only one pattern in the pqact.conf file, which lists all KXXX:
NNEXRAD ^(SDUS[234578].|NXUS6.) (K|P|T)(XXX|XXX|XXX|XXX|XXX)

Change the XXX to match each of the reporting sites for the radars listed in dialRadars.txt file. An example of a full NNEXRAD localized line for site LWX follows. Please note there are only two lines, so word wrap applies (see Appendix A for more detailed information on LDM acquisition patterns):

```
NNEXRAD    ^(SDUS[234578].|NXUS6.)
(K|P|T)(LWX|BGM|CHS|RLX|ILN|CLE|AKQ|JKL|CTP|MHX|MRX|OKX|PHI)
(..)(..)(..) /p(...)(...)
      FILE    -overwrite –close –log –edex
/data_store/radar/\2\8/\7/\5\6_\2\8_\7_(seq).rad
```

Additional patterns can also be found in the acqPatternsAddOn.txt file, which can reside in /awips/fxa/data/localization/XXX or /data/fxa/customFiles. These patterns should also be added to the pqact.conf.xxx file in the proper syntax (where xxx is your site ID).

Delivered with the AWIPS II LDM rpm is a baselined pqact.conf.template file which should be used as a basis for the active pqact.conf file. It should not be edited; rather, it should be copied into the active pqact.conf file. From there, custom patterns can be concatenated onto the active file.

Note: ADAM platform's active file is adam-pqact.conf

To manually edit or add a new filter rule, follow these steps. Utilize Appendix A, LDM Ingest Checklist, as a tool to help ensure all the correct information is known before proceeding:

- Log into the downstream LDM client host (normally PX2) as user *root:*

  ```
  # ssh root@$LDM_DOWNSTREAM
  ```

- Change directories to the pqact.conf location on the server:

  ```
  # cd /usr/local/ldm/etc
  ```

- Edit the pqact.conf using a text editor (shown here is vi):

  ```
  # vi pqact.conf.xxx
  ```

- Once you are finished making changes, save the file and exit the editor:

  ```
  # :wq!
  ```

- Check to ensure that the edited file still has the proper syntax using the *ldmadmin* command:

  ```
  # su ldm –lc “ldmadmin pqactcheck –f
  /usr/local/ldm/etc/pqact.conf.xxx”
  ```

  ```
  Expect the phrase “syntactically correct” for each file you have
  configured in ldmadmin-pl.conf
  ```

- Concatenate this file with the pqact.conf.template file to create the active pqact.conf file:

  ```
  # cat pqact.conf.template pqact.conf.xxx > pqact.conf
  ```

- Ensure the proper ownership and permissions:

  ```
  # chown ldm:fxalpha /usr/local/ldm/etc/pqact.conf
  ```

- Signal the LDM server to re-read the configuration files:

  ```
  # su ldm –lc “ldmadmin pqactHUP”
  ```

3.2 Plugin Ingest Filters

The purpose of plugin filters is to provide a data filtering capability that is base or site configurable without recompiling baseline code. This allows a subset of a national data set to be filtered based upon an area of interest, for example, filtering out the products that are put through shef decoding to only those in the local CWA of interest.

Plugin filters may be used to filter output from a process, as shown in **Figure 3.2-1**. They may also be used to filter the input of a process, as shown in **Figure 3.2-2**.

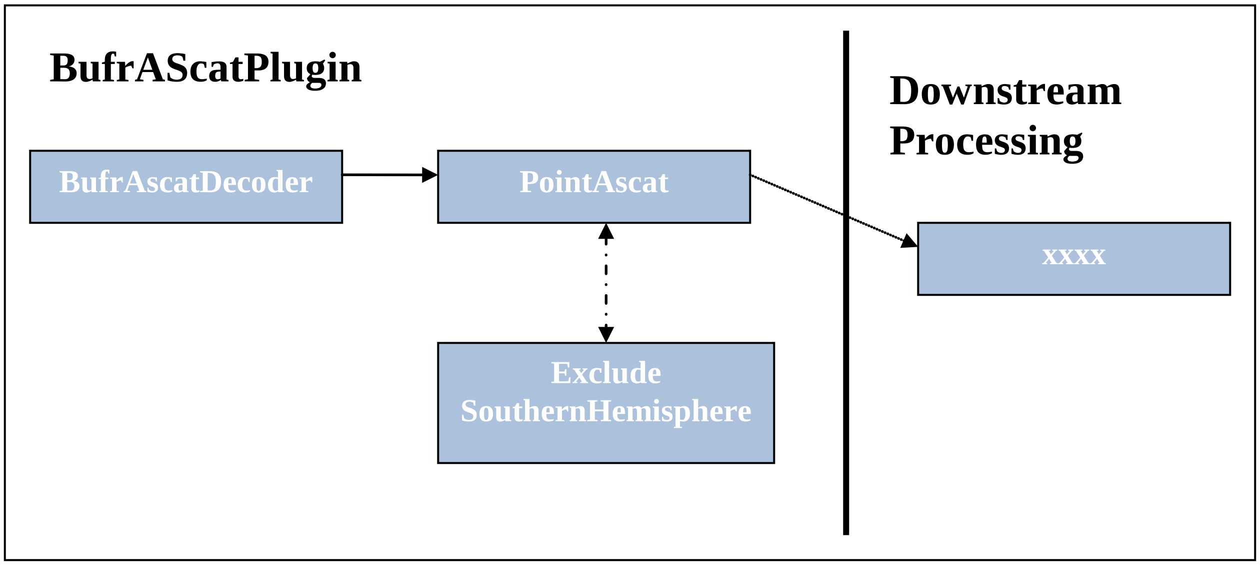


Figure 3.2-1. Plugin Filter, When Used to Filter Output from a Process

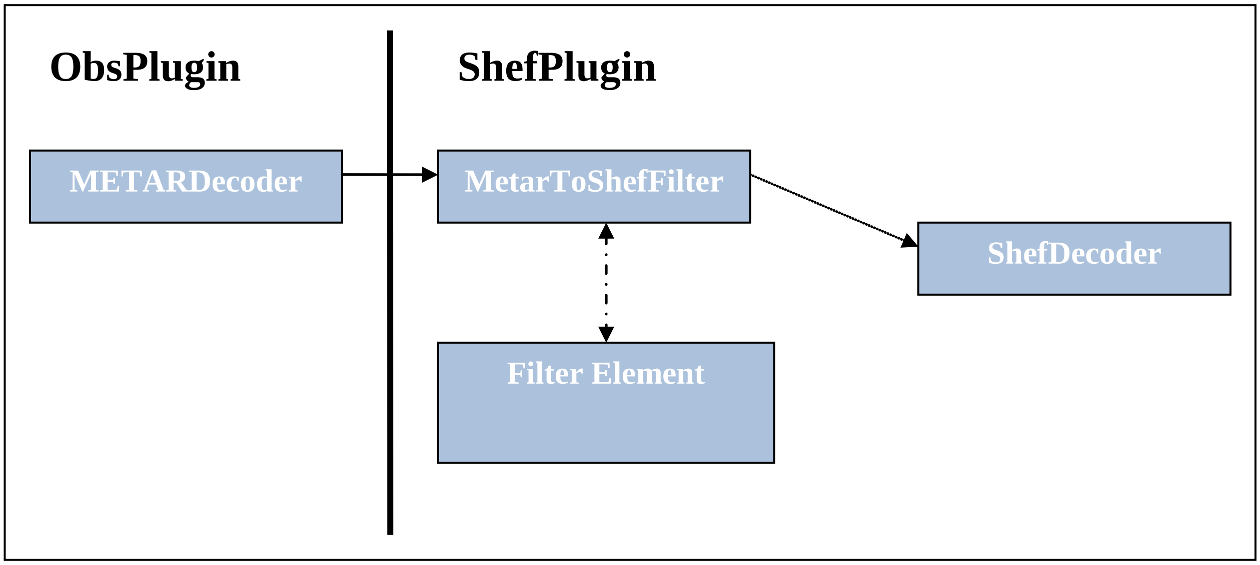


Figure 3.2-2. Plugin Filter, When Used to Filter the Input of a Process

Filtering can be done through EXCLUSION of data, INCLUSION of data, or a combination of both.

When using INCLUSIVE filtering, the output of the filtering operation returns those records that match the filtering criteria. The following shows an INCLUSIVE filter that will pass only those observations within a geographical rectangle which encompasses the OAX CWA.

```
<pluginDataObjectFilter>
   <filterElements xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xsi:type="rectFilterElement">
        <filterElementName>OAX.WFO</filterElementName>
        <!-- Filter that includes all observations within the Omaha
Valley WFO -->
        <filterType>INCLUDE</filterType>
        <upperLeftLat>44</upperLeftLat>
        <upperLeftLon>-100</upperLeftLon>
        <lowerRightLat>40.0</lowerRightLat>
        <lowerRightLon>-94.90</lowerRightLon>
    </filterElements>
    <filterName>OAX.MetarToShef</filterName>
</pluginDataObjectFilter>
```

When using EXCLUSIVE filtering, the output of the filtering operation returns those records that are not matched by the filtering criteria. The following example shows an EXCLUSIVE filter that will stop all Southern Hemisphere data from being processed by the QuikScat plugin:

```
<pluginDataObjectFilter>
    <filterElements xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xsi:type="rectFilterElement">
        <!-- Exclude all southern hemisphere data. -->
        <filterElementName>Exclude
SouthernHemisphere</filterElementName>
        <filterType>EXCLUDE</filterType>
        <upperLeftLat>-0.1</upperLeftLat>
        <upperLeftLon>-180.0</upperLeftLon>
        <lowerRightLat>-90.0</lowerRightLat>
        <lowerRightLon>180.0</lowerRightLon>
    </filterElements>
    <filterName>Point.QuikScat</filterName>
</pluginDataObjectFilter>
```

Table 3.2-1 describes filtering elements that can be used as of the date on this document (the xsi: type=).

Table 3.2-1. Plugin Filter Filtering Elements

Filter Element	Description
RectFilterElement	Select based upon reports contained within a rectangular bounding.
RadiusFilterElement	Select based upon reports within a specified distance from a given latitude/longitude.
StationIdFilterElement	Select based upon reports matching a specified station identifier. Regular expressions may be used.

Table 3.2-2 describes a list of present files in the ***base*** plugin-filters directory that filter out all Southern Hemisphere data. Finer-grain filtering may be done within a site-specific plugin-filters directory.

Table 3.2-2. List of Base Plugin Filters

File Name	Description
ascat_filters.xml	Allows only northern hemisphere ASCAT data to be stored.
modelsounding_filters.xml	Allows only northern hemisphere model sounding data to be stored.
pointssmi_filters.xml	Allows only northern hemisphere SSMI data to be stored.
quikscat_filters.xml	Allows only northern hemisphere QUIKSCAT data to be stored.

Table 3.2-3 describes a list of plugins which, as of the date on this document, support plugin filtering.

Table 3.2-3. Plugins That Support Filtering

Plugin Filter File Name	Description
mesowest_filters.xml	As delivered in the OAX localization, this filters out all data except that within the site's CWA for the mesowest plugin by latitude / longitude.
metarToShefFilter.xml	As delivered in the OAX localization, filters out all data except that within the site's CWA by latitude/longitude.
modelSounding_filters.xml	--
synopticMetarToShef.xml	As delivered in the OAX localization, filters out all data except that within the site's CWA by latitude/longitude.

Table 3.2-4 describes a list of fields that can be used within a plugin filter xml file.

Table 3.2-4. Fields for Use Within a Plugin Filter XML File

Filter Tag	Tag Effect	Description
filterElementName	Global	For information purposes only. Appears in EDEX log for tracing loading and functionality of filters.
filterName	Global	For information purposes only. Appears in EDEX log for tracing loading and functionality of filters.
filterType	Global	INCLUDE or EXCLUDE
upperLeftLat	RectFilterElement	Latitude measure for upper left corner point for filter area.
upperLeftLon	RectFilterElement	Longitude measure for upper left corner point for filter area.
lowerRightLat	RectFilterElement	Latitude measure for lower right corner point for filter area.
lowerRightLon	RectFilterElement	Longitude measure for lower right corner point for filter area.
pointLat	RadiusFilterElement	Latitude of center point for radius filtering
pointLon	RadiusFilterElement	Longitude of center point for radius filtering
radius	RadiusFilterElement	Radius around center point to either include or exclude data.
patterns	StationIdFilterElement	Station ID or regular expression to glob multiple station IDs into station ID filtering element.

Note: Latitude values may range from -90 degrees (south) to 90 degrees (north); longitude values may range from -180 degrees (west) to 180 degrees (east). If a box must cross the date line (180), two filter boxes must be created to handle the filtering.

To create, or edit, a plugin filter xml, follow these steps utilizing the delivered filters in the OAX subdirectory as a guide:

- Log into an EDEX server, if not already logged in:

```
# ssh root@${EDEX1}
```

- If the directory does not exist, create the site level plugin-filters edex static configuration directory and change into the directory:

```
# mkdir –p ${EDEX_CONFIG}/edex_static/site/<XXX>/plugin-filters
# cd ${EDEX_CONFIG}/edex_static/site/<XXX>/plugin-filters
```

- Copy the file from the OAX directory and edit using the vi editor:

  ```
  # cp –a ../../OAX/plugin-filters/[[ filter file ]].xml .
  ```

  ```
  # vi [[ filter file ]].xml
  ```

  Note: The name of the file should be one listed in Table 3-2.3.

- Enter / edit the fields, ensuring the file looks like the example shown earlier in this section. A general rule of thumb is to define the area of responsibility for the desired site starting with its center point. To retrieve a site's center point, issue the following command:

  For WFO sites:

  ```
  # psql –h $DB_SERVER –U awips –d maps –c "select lat,lon from
  mapdata.cwa where wfo='$SITEID';"
  ```

  RFC sites should issue the same command, using their co-located WFO to substitute for $SITEID

  Use the center point, and add and subtract 3 degrees from the latitude to get the upper and lower latitude. Add and subtract 4 degrees to get the west and east longitude. Adjust as necessary.

- When finished editing, save and quit:

  ```
  # :wq!
  ```

- Repeat the previous steps for all plugin filter files.

- Ensure proper ownership and permissions:

  ```
  # chown –R awips:awips
  ${EDEX_CONFIG}/edex_static/site/<XXX>/plugin-filters
  ```

  ```
  # chmod –R 755 ${EDEX_CONFIG}/edex_static/site/<XXX>/plugin-
  filters
  ```

3.3 Distribution Filters

AWIPS II introduces another layer of ingest filtering. Before processing a piece of data, EDEX will determine by its WMO header passed via JMS from QPID which decoder plugins it should awaken to process the data. It uses XML files full of regular expressions to match the patterns against the WMO header or file name of the raw data. A piece of data might awaken zero, one or more plugins which are interested in decoding the data.

Base distribution XML Location:	$EDEX_CONFIG/edex_static/distribution/
Site distribution XML Location:	$EDEX_CONFIG/edex_static/site/XXX/distribution

Note: Base distribution files should never be edited.

To localize as any site, a distribution xml must be created in the site localization for the following:

shef.xml

Follow these steps to copy the base file into a site directory, and then edit to match the LDM pqact pattern for hydro data set up earlier:

- Log into an EDEX server, if not already logged in:

  ```
  # ssh root@$EDEX1
  ```

- If the directory does not exist, create the site-level plugin-filters edex static configuration directory:

  ```
  # mkdir –p ${EDEX_CONFIG}/edex_static/site/<XXX>/distribution
  ```

- Change directories into the edex_static localization tree and copy the base file into the site-level directory:

  ```
  # cd $EDEX_CONFIG/edex_static

  # cp –a base/distribution/shef.xml site/XXX/distribution
  ```

- Edit/create a file using vi:

  ```
  # vi shef.xml
  ```

- Change the patterns to match the changes you made based on the hydro patterns in section 2.1; then save the file and quit the editor:

  ```
  # :wq!
  ```

- Ensure proper ownership and permissions:

  ```
  # chown –R awips:awips
  ${EDEX_CONFIG}/edex_static/site/<XXX>/distribution

  # chmod –R 755 ${EDEX_CONFIG}/edex_static/site/<XXX>/distribution
  ```

4.0 Common Utility Configuration Files

Files configured in this section are common to EDEX and VIZ applications.

4.1 Create the Directory Structure

Create the directory, replacing XXX with the site ID selected for localization (e.g., LWX) using a command similar to the following on the EDEX server:

```
# ssh root@${EDEX1}
# cd ${EDEX_CONFIG}/common_static/site
# mkdir <XXX>
```

Create, also, the list of subdirectories needed for subsequent steps:

```
# cd XXX
# mkdir ffmp
# mkdir goessndg
# mkdir hydro
# mkdir modelsndg
# mkdir poessndg
# mkdir radar
# mkdir shef
# mkdir upperair
# mkdir warngen
```

4.2 Create FFMP Run Configuration File

FFMP user and server side processes depend on a configuration file that defines which data is to be used for FFMP product creation. The file that controls this setup is the ffmp/FFMPRunConfig.xml file. **Table 4.2-1** addresses the fields and what properties the entries in this file control.

Table 4.2-1. FFMP Run Configuration Fields

XML Tag	Description
<rfc>	Defines an RFC whose flash flood guidance is to be used in the operation of FFMP.
<product> *Note:* At least one product minimum is necessary for proper FFMP functionality.	Defines a product and source to be used in the operational of FFMP. *Required fields inside the tag (see example 4.2-1):* name: Corresponds to the primary source of one of the products listed in the FFMPSourceConfig.xml. key: Corresponds to the site template for this product. Generally the ICAO of the radar sites in the case of DHR data, and either “hpe” or “bhpe” for HPN/E. *Note:* Be as descriptive as possible with the key, as this will be the name of the template created by FFMP.

XML Tag	Description
<domain>	Creates a domain to define the area of interest for FFMP. *Required fields inside the tag (see example 4.2-1):* primary: Sets as primary domain. Valid values are true or false. Only one true value per file. cwa: The three-letter AWIPS ID of the CWA of interest.

Example 4.2-1 shows an example file for site OAX. Use this example as a base template for creating an FFMPRunConfig.xml file for a new site.

Example 4.2-1

```
<?xml version="1.0" encoding="UTF-8" standalone="yes">
<FFMPRunConfig xmlns:ns2="group">
     <runner>
          <rfc>KKRF</rfc>
          <rfc>KMSR</rfc>
          <product name="DHR" key="koax"/>
          <product name="DHR" key="kuex"/>
          <product name="DHR" key="kdmx"/>
          <product name="DHRMOSAIC" key="hpe"/>
          <product name="BDHRMOSAIC" key="hpe"/>
          <domain primary="true" cwa="OAX"/>
          <domain primary="false" cwa="GID"/>
          <domain primary="false" cwa="DMX"/>
     </runner>
</FFMPRunConfig>
```

Note: If no FFMPRunConfig.xml is generated manually, EDEX will attempt to create a minimal configuration automatically. This feature is not fully operational, so it is recommended that a manual setup be created.

To create an FFMP Configuration file for a new site, follow these steps:

- If not already logged in, log into an EDEX server and change to the site-level common utility configuration directory.:# ssh root@${EDEX1}:

  ```
  # cd ${EDEX_CONFIG}/common_static/site/XXX
  ```

- Copy the OAX version of the FFMPRunConfig.xml into the new site's directory:

  ```
  # cp –a ../OAX/ffmp/FFMPRunConfig.xml ffmp/
  ```

- Using the *vi* editor, enter editing mode for the file FFMPRunConfig.xml:

  ```
  # vi ffmp/FFMPRunConfig.xml
  ```

- Change the values for each XML tag to be specific to the new site. At least one <rfc>, <product> and <domain> field is necessary. Delete any multiple tags that are not necessary.
- Save and exit the *vi* text editor:

  ```
  # :wq!
  ```

4.3 Progressive Disclosure Files

The use of pre-created AWIPS I progressive disclosure files is necessary for certain portions of the AWIPS II software. However, AWIPS II Build 11.4 introduced the /awips2/edex/data/ndm directory, which is used as an input for placing files that create certain spi files. Use Table 4.3-1 to identify which files are necessary to create certain spi files.

Table 4.3-1. SPI File Inputs

Input File	Created spi File
/awips/fxa/data/modelBufrStationInfo.txt	modelBufr.spi
/awips/fxa/data/MTR.goodness /awips/fxa/data/MTR.primary	MTR.spi
/awips/fxa/data/maritimeStationInfo.txt	BUOY.spi
/awips/fxa/data/goesBufrStationInfo.txt	goesBufr.spi
/awips/fxa/data/poesBufrStationInfo.txt	poesBufr.spi
/data/fxa/nationalData/raob.goodness /data/fxa/nationalData/raob.primary	raob.spi

All spi files are created in the following location:

${EDEX_CONFIG}/common_static/site/XXX/basemaps

Where XXX is the AWIPS site ID as configured by the setup.env file (see Section 7.0)

Any other spi file not listed above as being created will have to be put into the basemaps directory pre-created.

To put all of these files in place, firs, log into an EDEX server and change directories into the ndm directory

```
# ssh root@${EDEX1}
# cd ${EDEX_HOME}/data/ndm
```

Next, copy the proper files into place from their original locations:

```
# scp /awips/fxa/data/modelBufrStationInfo.txt .
# scp /awips/fxa/data/MTR.goodness .
# scp /awips/fxa/data/MTR.primary .
# scp /awips/fxa/data/maritimeStationInfo.txt .
# scp /awips/fxa/data/goesBufrStationInfo.txt .
# scp /awips/fxa/data/poesBufrStationInfo.txt .
# scp /data/fxa/nationalData/raob.primary .
# scp /data/fxa/nationalData/raob.goodness .
```

4.4 Create / Copy Common Hydrology Files Into Place

The use of previously created hydrology files is necessary for certain parts of the AWIPS II software. Copy these files from their respective AWIPS I locations:

- First, log into an EDEX server and change to the common utility configuration directory for the desired site:

  ```
  # ssh root@${EDEX1}
  # cd ${EDEX_CONFIG}/common_static/site/<XXX>
  ```

  Where XXX is the AWIPS ID for the site for which configuration is being performed.

- Save and exit the vi editor

  ```
  # :wq!
  ```

- Create the directory structure necessary for, and then copy the AWIPS I host ascii and binary file(s) into the new directory with the new file name syntax:

  If configuring for a WFO, use these commands:

  ```
  # mkdir –p hydro/hydroapps/geo_data/host
  #cp –r /awips/hydroapps/geo_data/host/ascii
  hydro/hydroapps/geo_data/host/
  # cp –r /awips/hydroapps/geo_data/host/binary
  hydro/hydroapps/geo_data/host/
  ```

  If configuring for an RFC, use this command:

  ```
  # mkdir –p hydro/hydroapps/geo_data/xxxxx
  # cp –r /awips/hydroapps/geo_data/xxxxx/ascii
  hydro/hydroapps/geo_data/xxxxx/
  # cp –r /awips/hydroapps/geo_data/host/binary
  hydro/hydroapps/geo_data/xxxxx/
  ```

  Where xxxxx is your 5-letter RFC identifier. For example, RHA is “marfc”

- If the directory does not exist, create the site-level hydro common configuration directory for geo data:

  ```
  # mkdir –p hydro/hydroapps/whfs/local/data/geo
  ```

- Copy the AWIPS I local geo data into the new directory with the new file name syntax:

  ```
  # cp –ar /awips/hydroapps/whfs/local/data/geo/*
  hydro/hydroapps/local/data/geo/
  ```

- Copy the AWIPS I local MPE-related files into the new directory with the new file name syntax:

  ```
  # mkdir –p hydro/hydroapps/precip_proc/local/data/app/mpe
  ```

```
# cp –r /awips/hydroapps/precip_proc/local/data/app/mpe/prism
hydro/hydroapps/precip_proc/local/data/app/mpe/

# cp –r /awips/hydroapps/precip_proc/local/data/app/mpe/misbin
hydro/hydroapps/precip_proc/local/data/app/mpe/

# cp –r
/awips/hydroapps/precip_proc/local/data/app/mpe/utiltriangles
hydro/hydroapps/precip_proc/local/data/app/mpe/
```

- Copy in XDAT related files [RFC Only]:

```
#  mkdir -p hydro/hydroapps/rfc/xdat/parameters/groups

#  cp –r /awips/hydroapps/rfc/xdat/parameters/groups/*
hydro/hydroapps/rfc/xdat/parameters/groups
```

- Copy the AWIPS I group_definition.cfg file into place for the Time Series application:

```
# cp
/awips/hydroapps/whfs/local/data/app/timeseries/group_definition.
cfg hydro/
```

- Ensure proper ownership and permission of the common hydro configuration directory tree:

```
# chown –R awips:fxalpha hydro

# chmod –R 775 hydro
```

- Copy the AWIPS I metar.cfg file into the new directory with the new file name syntax:

```
# cp /awips/hydroapps/whfs/local/data/app/metar2shef/metar.cfg
shef/
```

- Ensure proper ownership and permission of the common shef configuration directory tree:

```
# chown –R awips:fxalpha shef

# chmod –R 775 shef
```

4.4.1 Create / Edit Site Apps_defaults File

A site can use its existing AWIPS I .Apps_defaults_site file for use in the AWIPS II environment. However, not all of the tokens from the AWIPS I file are necessary for AWIPS II. As of the date on this document, the following tokens are required for AWIPS II to operate. This token list will be dynamic in nature and change as more tokens are discovered.

- Copy the AWIPS I .Apps_defaults_site file into the new directory with the new file name syntax:

```
# cp /awips/hydroapps/.Apps_defaults_site hydro/Apps_defaults
```

- Verify that the following tokens ARE NOT defined in the Apps_defaults file, as they need to remain their AWIPS II baseline definition. If these tokens are present, use the vi editor to edit the file and remove them.:

```
apps_dir
mpe_dir
pproc_dir
```

- Verify that the following tokens ARE defined in the Apps_defaults file for proper EDEX Hydro functionality. If they are not defined the edit the file to add these tokens in:

  ```
  # vi hydro/Apps_defaults
  ```

  If configuring for a WFO:

  ```
  mpe_site_id  :  xxx
  (where xxx is the lower-case 3 letter identifier of your WFO)

  mpe_center_lat   :    ##.###
  (where ##.### is the latitude coordinate of your site’s center
  point)

  mpe_center_lon   :    ##.###
  (where ##.### is the longitude coordinate of your site’s center
  point)

  fxa_local_site  :  XXX
  (where XXX is the upper-case 3 letter identifier of your WFO)
  ```

  If configuring for an RFC:

  ```
  mpe_site_id  :  xxx
  (where xxx is the lower-case 3 letter identifier of your RFC)

  mpe_center_lat   :    ##.###
  (where ##.### is the latitude coordinate of your site’s center
  point)

  mpe_center_lon   :    ##.###
  (where ##.### is the longitude coordinate of your site’s center
  point)

  fxa_local_site  :  XXX
  (where XXX is the upper-case 3 letter identifier of your RFC)

  rfctb_site_id  :  xxx
  (where xxx is the lower-case 3 letter identifier of your RFC)

  st3_rfc  :  xxxxx
  (where xxxxx is the lower-case 5 letter identifier of your RFC)

  ifp_rfc  :  xxxxx
  (where xxxxx is the lower-case 5 letter identifier of your RFC)

  rfcw_rfcname  :  xxxxx
  (where xxxxx is the lower-case 5 letter identifier of your RFC)
  ```

- Ensure proper ownership and permission of the common hydro configuration directory tree:

  ```
  # chown –R awips:fxalpha hydro/Apps_defaults
  ```

```
# chmod –R 775 hydro/Apps_defaults
```

4.5 Create Radar, NCEP/Hydro and UpperAir Menu Files

EDEX dynamically creates the files necessary for the CAVE Radar, NCEP/Hydro and UpperAir menus based on specific input files in the common utility configuration directory tree. Create these files, using those delivered with the OAX localization as guides:

4.5.1 Create/Edit radarsInUse.txt File

Section Note: *As of the date on this document, there is a DR created against the software's ability to successfully create the radar menus in CAVE when a site has no ASR or ARSR radars listed in the radarsInUse.txt configuration file. For this reason, if the desired site does not ingest an ASR or ARSR radar, please leave the default entries from the OAX version of this file.*

Radar menu configuration is done dynamically by the EDEX server when launched based on a single input file: $EDEX_CONFIG/common_static/site/<XXX>/radar/radarsInUse.txt

The file is split into six main sections which are used by the software to build the menus on the main CAVE toolbar, and under the Radar menu. To configure the radar menus in CAVE, do the following:

- If not already logged in, log into an EDEX server and change to the common utility configuration directory for the desired site:

```
# ssh root@${EDEX1}

# cd ${EDEX_CONFIG}/common_static/site/<XXX>
```

- Copy the base version of radarsInUse.txt into the desired site's directory:

```
# cp ../../base/radar/radarsInUse.txt radar/
```

- Change directories to the local site's common radar configuration directory:

```
# cd radar
```

- Edit the *radarsInUse.txt* file to configure radar menus:

```
# vi radarsInUse.txt
```

Table 4.5-1 describes the five main sections used for radar menu configuration. It includes the title for each section (which is a necessary line in the radarsInUse.txt file) and a description of what should follow the title line in the file.

Table 4.5-1. radarsInUse.txt title Lines and Descriptions

radarsInUse.txt Title	Description of What Follows
# LOCAL_RADARS (including terminal) - MUST HAVE THIS LINE	Includes a list of four-letter radar IDs to list in the main tool bar of CAVE. Each entry will be a full menu of dedicated radar products and will be created between the Satellite and Radar menus. Each ID is separated by a new line character. In AWIPS I, this is every radar ID listed with a + sign in one of the following files: /data/fxa/customFiles/radarsOnMenu.txt OR /data/fxa/customFiles/XXX-radarsOnMenu.txt OR /awips/fxa/data/localization/XXX/XXX-radarsOnMenu.txt
# DIAL_RADARS - MUST HAVE THIS LINE	Includes a list of four-letter radar IDs to list under the Dial Radars submenu of the Radars menu in CAVE. Each ID is separated by a new line character. In AWIPS I, this is every radar ID not listed with a + sign in one of the following files: /data/fxa/customFiles/radarsOnMenu.txt OR /data/fxa/customFiles/XXX-radarsOnMenu.txt OR /awips/fxa/data/localization/XXX/XXX-radarsOnMenu.txt
# ASR_RADARS - MUST HAVE THIS LINE	Includes a list of four-letter ASR radar (e.g., eeri) IDs to list in the main tool bar of CAVE. Each entry will get its own menu created and should be separated by a new line character. DR 8004 workaround requires you add a radar ID here. Use eeri.
# ARSR_RADARS - MUST HAVE THIS LINE	Includes a list of four-letter ARSR radar (e.g., fqwa) IDs to list in the main tool bar of CAVE. Each entry will get its own menu created and should be separated by a new line character. DR 8004 workaround requires you add a radar ID here. Use fqwa.
# MOSAIC_RADARS - MUST HAVE THIS LINE	Includes a list of four-letter radar IDs to load when selecting the default Mosaic products under the Radar menu. Each ID is separated by a new line character. In AWIPS I you can find a list of radars in the mosaicRadarList.txt file located in the /awips/fxa/data/localizationDataSets/XXX directory.

An example of a localized radarsInUse.txt file follows.

```
# DO NOT EDIT LINES BEGINNING WITH '#'
# LOCAL_RADARS (including terminal) - MUST HAVE THIS LINE
koax
tmsp
ktlx

# DIAL_RADARS - MUST HAVE THIS LINE
kabr
kcys
kdmx
kgld
kuex
keax
karx
kmpx
klnx
kdvn
kudx
kfsd
ktwx
tmsp

# ASR_RADARS - MUST HAVE THIS LINE
eeri

# ARSR_RADARS - MUST HAVE THIS LINE
fqwa

# MOSAIC_RADARS - MUST HAVE THIS LINE
koax
kabr
kcys
kdmx
kgld
kuex
keax
karx
kmpx
klnx
kdvn
kudx
kfsd
ktwx
```

- Save and quit the text editor

```
    # :wq!
```

Note: The # CWA entry in the OAX version of this file is no longer used by the software, so a newly created file for another site does not need to include the line.

4.5.2 Create/Edit the eavConfigTable.txt

The EAV display and sample strings are done through the same file as in AWIPS I, the eavConfigTable.txt. Configure this file by doing the following:

- If not already logged in, log into an EDEX server and change to the common utility configuration directory for the desired site:

```
# ssh root@${EDEX1}
# cd ${EDEX_CONFIG}/common_static/site/<XXX>
```

- Copy the AWIPS I version of eavConfigTable.txt into the desired site’s directory:

```
# cp /data/fxa/nationalData/eavConfigTable.txt radar/
```

4.5.3 Create/Edit raobSitesInUse.txt File For Upper Air Menus

The Upper Air RAOB menus are created dynamically with the input of a single common utility configuration file through the EDEX menu builder.

File Location:		${EDEX_CONFIG}/common_static/site/<XXX>/upperair

The file has two necessary menu lines:
# UPPER_AIR menu
# LOCAL_UPPER_AIR submenu

The EDEX menu builder will look for these lines, and parse the entries that follow to create the RAOBs that sit on the Upper Air Menu itself, and in the Local submenu of the Upper Air CAVE dropdown.

Each entry under the template line consists of three pieces of information:

- **RAOB icao.** This is the four-letter identifier for which the RAOB is best known.
- **WMO ID.** The WMO ID can be found as the stationed returned from the SQL statement below, or within the existing AWIPS file /awips/fxa/data/station_table.dat.
- **Location Description.** The Location Description should match the RAOB icao. This can be found with the following command on a device that has access to the database server. (Please note that PostgreSQL must be running for this to work:

```
# psql –h $DB_SERVER –U awips –d metadata –c “select name,stationid
from common_obs_spatial where catalogtype=22 and icao=’XXXX’;”
```

  Note: Substitute the RAOB icao for XXXX in the above command.

  Note: This information can also be found in the AWIPS I files /data/fxa/nationalData/raobProductButtons.txt, /awips/fxa/data/ICAODICT.TBL, or /awips/fxa/data/raobStationInfo.txt

An example of the file configured for site OAX follows.

```
# DO NOT EDIT LINES BEGINNING WITH '#'
# FULLY DEFINES ALL SITES USED FOR THE LOCALIZED UPPER AIR MENU IN
CAVE
# Format is as follows :
# icao city name, state
# KXXX SiteID Anywhere, US

# UPPER_AIR menu
KOAX 72558 Omaha, NE

# LOCAL_UPPER_AIR submenu
KABR 72659 Aberdeen, SD
KBIS 72764 Bismarck, ND
KLBF 72562 North Platte, NE
KMPX 72649 Minneapolis, MN
KOAX 72558 Omaha, NE
KUNR 72662 Rapid City, SD
KTOP 72456 Topeka, KS
```

To configure the Upper Air Menu, follow these steps:

- Collect the needed RAOB icaos, WMO IDs, and Descriptions from an AWIPS I D2D or the AWIPS I localization file /awips/fxa/data/localizationDataSets/<XXX>/raobLocalMenus.txt
- If not already logged in, log into an EDEX server and change to the common utility configuration directory for the desired site:

  ```
  # ssh root@${EDEX1}
  # cd ${EDEX_CONFIG}/common_static/site/<XXX>
  ```

- Copy the base version of hydroSitesInUse.txt into the desired site's directory:

  ```
  # cp ../../base/upperair/raobSitesInUse.txt upperair/
  ```

- Edit the hydroSitesInUse.txt file and, using the example above, change the entries to the correct entries for the desired site:

  ```
  # vi upperair/raobSitesInUse.txt
  ```

- If not already present, create a line containing this exact text (including the '#' symbol):

  ```
  # UPPER_AIR menu
  ```

- Type in the RAOB icao, WMOID and Description – all separated by a space for each RAOB desired to be seen under the Upper Air menu of CAVE.
- If not already present, create a line containing this exact text (including the '#' symbol):

  ```
  # LOCAL_UPPER_AIR submenu
  ```

- Type in the RAOB icao, WMOID, and Description – all separated by a space for each RAOB desired to be seen under the Local submenu of the Upper Air menu of CAVE.
- Save the file and exit the text editor:

  ```
  # :wq!
  ```

4.6 Copy / Edit WarnGen Templates [WFO Only]

WarnGen templates are common to both EDEX and VIZ applications.

For more information on editing the templates, please see Appendix B.

4.7 Disable Fog Monitor [RFC Only]

River Forecast Centers do not need to run the fog monitor plugin within EDEX. Sites configuring EDEX to run as an RFC should disable this plugin by following these steps:

- If not already logged in, log into an EDEX server and change to the ***base*** level common utility configuration directory for monitoring plugins:

```
# ssh root@${EDEX1}
# cd ${EDEX_CONFIG}/common_static/base/monitoring
```

- Change the token for the fog monitor plugin from true, to false:

```
# sed –i '/fog/s/true/false/1' MonitorPluginState.xml
```

4.8 Correct Permissions and Ownership

After making the correct files with proper entries, ownership must be set on the files in the directory tree.

- If not already logged in, log into an EDEX server and change to the site-level common utility configuration directory”

```
# ssh root@${EDEX1}
# cd ${EDEX_CONFIG}/common_static/site/
```

- Recursively change the ownership and permissions of the site directory created in the previous steps:

```
# chown –R awips:fxalpha <XXX>
# chmod –R 755 <XXX>
```

5.0 EDEX Utility Configuration Files

Files configured in this section are specific to EDEX functionality.

5.1 Create the Directory Structure

Create the directory, replacing XXX with the site ID selected for localization (e.g., LWX) using a command similar to the following on the EDEX server:

```
# ssh root@${EDEX1}
# cd ${EDEX_CONFIG}/edex_static/site
# mkdir <XXX>
```

Create, also, the list of subdirectories needed for subsequent steps:

```
# cd XXX
# mkdir –p config/gfe
# mkdir –p grib/subgrids
# mkdir smartinit
```

5.2 Create/Edit GFE Configuration Files

GFE’s siteConfig.py and localConfig.py files are placed within the config/gfe directory for use by EDEX in its GFE functions.

5.2.1 Copy / Edit siteConfig.py

Copy the siteConfig.py from the delivered OAX localization and use it as a template for creating the siteConfig.py for the desired site:

- If not already logged in, log into an EDEX server and change to the site-level edex utility configuration directory:

  ```
  # ssh root@${EDEX1}
  # cd ${EDEX_CONFIG}/edex_static/site/
  ```

- Copy the delivered OAX siteConfig.py into the desired site’s directory:

  ```
  # cp –a OAX/config/gfe/siteConfig.py <XXX>/config/gfe
  ```

- Edit the file using a text editor such as vi and replace instances of OAX with the desired site’s ID. **Example 5.2-1** shows the OAX siteConfig.py with the needed changes highlighted in red::

  ```
  # vi <XXX>/config/gfe/siteConfig.py
  ```

Example 5.2-1: Text of AWIPS II OAX siteConfig.py

```
import os, socket


GFESUITE_HOME = os.environ['EDEX_HOME']+"/../GFESuite"
GFESUITE_SERVER = "localhost"
GFESUITE_PORT   = '98000000'
GFESUITE_SITEID = 'OAX'
GFESUITE_PRDDIR = GFESUITE_HOME+"/products"
GFESUITE_MHSID  = 'OAX'
```

Note: For non-operational sites, the GFESUITE_MHSID should match the ID of your system. For example, Southern Region Headquarters would put EHU instead of whichever site is being configured by following this document's procedures. The GFESUITE_SITEID must match the AWIPS ID of the site for which the software is being configured.

- Save and exit the text editor:

```
# :wq!
```

5.2.2 Copy/Edit localConfig.py

Copy the localConfig.py file from the AWIPS I instance of the file. Certain tokens must be changed in order to use the file successfully in an AWIPS II environment. **Table 5.2.2-1** lists all known changes needed.

Table 5.2.2-1. Necessary localConfig.py Changes From AWIPS I to AWIPS II

AWIPS I Token	AWIPS II Equivalent	Description

serverConfig.D2DDIRS	serverConfig.D2DMODELS	Change all instances of D2DDIRS to D2DMODELS and change the arguments passed from the AWIPS I netCDF directory to the AWIPS II dataURI model name.
		Example:
		CHANGE
		serverConfig.D2DDIRS.append(('/data/fxa/Grid/netCDF/CONUS212/SREF/','SREF'));
		TO
		serverConfig.D2DMODELS.append(('SREF212', 'SREF'));
		You can retrieve the model name from the grib_models table in the metadata database with the following SQL statement:
		select distinct(modelname) from grib_models; or from the AWIPS II file /awips2/edex/data/utility/common_static/base/grid/gribModels.xml

Any local model coming into AWIPS I	Model name may change based on addition of product into AWIPS II	If any local model is sent into GFE in AWIPS I, this model will have to first be added into AWIPS II in order to utilize in GFE's localConfig.py. Immediately after copying this file, comment out any entries pertaining to local model data until these data sets are added into the system. See Table 5.3-1 for baseline model name reference.

- If not already logged in, log into an EDEX server and change to the site level edex utility configuration directory:

```
# ssh root@${EDEX1}
# cd ${EDEX_CONFIG}/edex_static/site/
```

- Copy the AWIPS I GFE localConfig.py into the correct location in the AWIPS II directory structure:

```
# cp /awips/GFESuite/primary/etc/SITE/localConfig.py
<XXX>/config/gfe
```

- Edit the file, making necessary changes to allow for successful AWIPS II EDEX start:

```
# vi <XXX>/config/gfe/localConfig.py
```

Example 5.2.2-1 shows an example of converting a line from AWIPS I to AWIPS II syntax.

Example 5.2.2-1

```
1.  AWIPS I Entry:

##############################
###  Add RUC40 database   ###
serverConfig.D2DDIRS.append(('/data/fxa/Grid/SBN/netCDF/Grid236/RUC2/',
'RUC40'))

serverConfig.INITMODULES["myRUC40"] = ["RUC40"]

RUC40 = ('RUC40', GRID, '', NO, NO, 2, 0)

RUC40_Parms = [([QPF, SnowAmt], LT6NG),
                ([Haines], LT3NG),
                ([Temp, Td, Wind, MixHgt, TransWind, FzLevel, RH, Sky], TC1),
                ([MaxT], MaxTTC), ([MinT], MinTTC),
                ([MaxRH],MaxRHTC),([MinRH],MinRHTC)]
```

```
2.  Information Gathering For AWIPS-II:

# grep -B1 RUC236 $EDEX_CONFIG/common_static/base/grid/gribModels.xml

                  <title>RUC40</title>
                  <name>RUC236</name>
```

```
3.  AWIPS II Entry:

##############################
###  Add RUC40 database   ###
serverConfig.D2DMODELS.append(('RUC236','RUC40'))

serverConfig.INITMODULES["myRUC40"] = ["RUC40"]

RUC40 = ('RUC40', GRID, '', NO, NO, 2, 0)

RUC40_Parms = [([QPF, SnowAmt], LT6NG),
                ([Haines], LT3NG),
                ([Temp, Td, Wind, MixHgt, TransWind, FzLevel, RH, Sky], TC1),
                ([MaxT], MaxTTC), ([MinT], MinTTC),
                ([MaxRH],MaxRHTC),([MinRH],MinRHTC)]
```

Note: If EDEX is having problems starting after making all the previous changes, just rename the file to something other than localConfig.py. This file is not necessary for proper functionality. A restart of EDEX is necessary after renaming.

- When finished, save the file and exit the text editor:

```
# :wq!
```

5.2.3 Copy / Edit SmartInit Files

Copy the local SmartInit files from the AWIPS I store location to the AWIPS II location for use within EDEX.

- If not already logged in, log into an EDEX server and change to the site-level edex utility configuration directory:

```
# ssh root@${EDEX1}
# cd ${EDEX_CONFIG}/edex_static/site/
```

- Copy the AWIPS I GFE smartInit scripts into the correct location in the AWIPS II directory structure:

```
# scp /awips/GFESuite/primary/etc/SITE/<script>.py
<XXX>/smartinit/
```

  Repeat this step for every smartInit script.

- As of the creation of this document, **Table 5.2.3-1** describes changes that must be made to allow the smartInit compatible with AWIPS II software. Edit the appropriate scripts and make the correct changes:

```
# vi <XXX>/smartinit/<script>.py
```

Table 5.2.3-1. Smartinit Changes

SmartInit Tool	Changes
Numpy to Numeric	Want to continue to use Numeric? Try: import numpy.oldnumeric as Numeric Numeric's typecode() -> numpy's dtype awips1: rval = zeros(a.shape, a.typecode()) awips2: rval = zeros(a.shape, a.dtype) Numeric's Float, Float32, etc in numpy becomes float, float32, etc awips1: vals = self.fncValue[rec].astype(Float)/10. awips2: vals = self.fncValue[rec].astype(float)/10. Numeric's Int, Int32, etc in numpy becomes int, int32, etc awips1: self.fncValue = self.fncData.createVariable('pop', Int16, ('record','ypts','xpts')) awips2: self.fncValue = self.fncData.createVariable('pop', int16, ('record','ypts','xpts'))

SmartInit Tool	Changes

Multiple Models	Smart inits are capable of using more than one model when calculating a database. The following code examples (from the NAM40 init) show the differences in using multiple models in AWIPS II versus AWIPS I.
	AWIPS II
	`class NAM40Forecaster(Forecaster):`
	`    def __init__(self):`
	`        Forecaster.__init__(self, "NAM40", "NAM40")`
	`        # this model is found in two different files, just to be interesting`
	`        self.addSources(["NAM20"])`
	AWIPS I
	`##--------------------------------------------------------------------------`
	`class NAM40Forecaster(Forecaster):`
	`    def __init__(self):`
	`        Forecaster.__init__(self, None, "dummy")`
	`        # this model is found in two different files, just to be interesting`
	`        me1, newdb = self._getLatest(self._client, "NAM40", "NAM40")`
	`        me2, newdb = self._getLatest(self._client, "NAM20", "NAM40")`
	`        if me1 is None or me2 is None or me1.modelTime != me2.modelTime:`
	`            self._srcme = None`
	`        else:`
	`            self._srcme = MDB([me1, me2])`
	`        self._newme = newdb`
	`##----------------------------------------------------------`
	`## Internal function that returns the source database`
	`##----------------------------------------------------------`
	`    def srcdb(self):`
	`        return self._srcme`
	`##----------------------------------------------------------`
	`## Internal function that returns the new database`
	`##----------------------------------------------------------`
	`    def newdb(self):`
	`        return self._newme`

- When complete, save and exit the vi text editor:

  # :wq!

Note: If EDEX will not start after copying these files into place, it is recommended that the scripts be copied in one at a time to narrow down the cause of the problem.

5.3 Create / Edit Subgridding Files

***Section Note:** Subgridding is done automatically by EDEX based on the AWIPS I rules put into place for each model. The following instructions need only be followed if changes to the subgridding for specific models is desired. Otherwise, this section may be skipped.*

Due to the size of higher-resolution model data, both AWIPS I and AWIPS II clip the grids around a specific geographic area to improve display performance.

Subgridding in AWIPS II is done by a combination model name and degrees of latitude and longitude around the configured WFO or RFC's center point. Note that the site on which EDEX runs is configured in the setup.env file (reference Section 7.0).

The subgridding files are baselined in the ${EDEX_CONFIG}/edex_static/base/grib/subgrids directory.

To override one of these files, a site must create a site-level subgrids directory, copy the file into that directory and change the appropriate lines.

The following is the syntax for the xml file.

```
<subGridDef>
   <modelNames></modelNames>
   <referenceModel></referenceModel>
   <nx></nx>
   <ny></ny>
</subGridDef>
```

The <modelNames> tag is a space delimited list of the models that use this subgridding definition. The model names are consistent with the model <name> tag used in gribModels.xml file which resites in ${EDEX_CONFIG}/common_static/base/grid.

The <referenceModel> is the model coverage to use to generate the subgrid. For example, if the string RUC130 was between the xml tag, it would then grab the coverage used by the RUC130 model (grid 130).

The nx and ny values are used to generate the box centered around the localized site for the subgrid. The nx/ny values are the number of grid points to include in the subgridding.

Table 5.3-1 lists and describes all known model names as of the date of this document.

Table 5-3-1. Base Model Names and Descriptions

Model Name (Name)	Description (Title)	Model Name (Name)	Description (Title)
LAPS	LAPS	HI-RTMA	HI-RTMA
MPE	MPE, rfcMPE	PR-RTMA	PR-RTMA
GFSLAMP	GFSLAMP-stn	SREF212	SREF
ETA	NAM80	SREF216	AK-SREF
RUC	RUC80	SREF243	PR-SREF
AVN	GFS180	RTGSSTHR	RTG-SST-HR-Analysis

Model Name (Name)	Description (Title)	Model Name (Name)	Description (Title)
NGM	NGM80	GFSLAMPTstorm	GFSLAMP-Grid
MRF	gfsLR	ECMWF-HiRes	ECMWF-HiRes
GFS201	GFS360	ECMF-NorthernHemisphere	ECMWF-LowRes
mrfNH	gfsLR	ECMF1	ECMWF-LowRes
GFS213	GFS90	ECMF2	ECMWF-LowRes
NGM213	NGM90	ECMF3	ECMWF-LowRes
NGM202	NGM180	ECMF4	ECMWF-LowRes
AVN211	GFS80	ECMF5	ECMWF-LowRes
mesoEta212	NAM40	ECMF6	ECMWF-LowRes
mesoEta215	NAM20	ECMF7	ECMWF-LowRes
WAFS	WAFS	ECMF8	ECMWF-LowRes
ENSEMBLE	GFSensemble	ECMF9	ECMWF-LowRes
ENSEMBLE37	GFSensemble	ECMF10	ECMWF-LowRes
ENSEMBLE38	GFSensemble	ECMF11	ECMWF-LowRes
ENSEMBLE39	GFSensemble	ECMF12	ECMWF-LowRes
ENSEMBLE40	GFSensemble	HPCqpfNDFD	HPC
ENSEMBLE41	GFSensemble	NamDNG5	NamDNG5
ENSEMBLE42	GFSensemble	HPE	HPE
ENSEMBLE43	GFSensemble	BHPE	BiasHPE
ENSEMBLE44	GFSensemble	RaobOA	RaobOA
ETA212	NAMWX	MetarOA	MetarOA
AVN203	GFS190	GlobalWave	GlobalWave
MRF203	gfs190	AKwave10	AKwave10
MRF204	GFS150	AKwave4	AKwave4
MRF205	GFS150	EPwave10	EPwave10
NGM207	NGM95	WCwave10	WCwave10
ETA207	NAM95	WCwave4	WCwave4
UKMET-NorthernHemisphere	UKMET	WNAwave10	WNAwave10
UKMET37	UKMET	WNAwave4	WNAwave4
UKMET38	UKMET	TPCSurgeProb	TPCSurgeProb
UKMET39	UKMET	Aviation	Aviation
UKMET40	UKMET	MOSGuide-AK	AK-GriddedMOS
UKMET41	UKMET	AK-NamDNG5	AK-NamDNG5
UKMET42	UKMET	HI-NamDNG5	HI-NamDNG5
UKMET43	UKMET	PR-NamDNG5	PR-NamDNG5
UKMET44	UKMET	HiResW-ARW-East	HiResW-ARW-East
AVN-NorthernHemisphere	GFSGbl	HiResW-ARW-West	HiResW-ARW-West
AVN37	GFSGbl	HiResW-ARW-AK	HiResW-ARW-AK

Model Name (Name)	Description (Title)	Model Name (Name)	Description (Title)
AVN38	GFSGbl	HiResW-ARW-PR	HiResW-ARW-PR
AVN39	GFSGbl	HiResW-ARW-HI	HiResW-ARW-HI
AVN40	GFSGbl	HiResW-NMM-East	HiResW-NMM-East
AVN41	GFSGbl	HiResW-NMM-West	HiResW-NMM-West
AVN42	GFSGbl	HiResW-NMM-AK	HiResW-NMM-AK
AVN43	GFSGbl	HiResW-NMM-PR	HiResW-NMM-PR
AVN44	GFSGbl	HiResW-NMM-HI	HiResW-NMM-HI
GWW233	GWW	GLRKwave	GLRKwave
SeaIce	SeaIce	CPCoutlook-Short	CPCoutlook-Short
RFCqpf	RFCqpf	CPCoutlook-Medium	CPCoutlook-Medium
RUC236	RUC40	CPCoutlook-Short-AK	CPCoutlook-Short-AK
AVN225	GFS75	CPCoutlook-Medium-AK	CPCoutlook-Medium-AK
AKWAVE239	AKWAVE	SPCGuide	SPCGuide
WNAWAVE238	WNAwave	MSAS	MSAS
mesoEta216	AK-NAM40	GfsBufr	GFSBufr
mesoEta217	NAM20	GFSSouthernHemisphere	GFSSouthernHemisphere
ETA218	NAM12	GoesBufr	GoesBufr
ETA242	AK-NAM12	Metar	Metar
GLERL	GLERL	Ldad	Ldad
HPCqpf	HPCqpf	DMD	DMD
ENPWAVE253	ENPwave	MDCRS	MDCRS
		EtaBufr	NAM Bufr
HurWind175	GuamHurWind	PoesBufr	PoesBufr
HurWind250	HawHurWind	Profiler	Profiler
CPCoutlook211	CPCoutlook-Long	Raob	Raob
RTGSST	RTG-SST-Analysis	VWP	VWP
NICICE	NICICE	mesoEta237	PR-NAM12
AK-NICICE	AK-NICICE	FFG-TUA	FFG-TUA
DGEX185	DGEX	FFG-ACR	FFG-ACR
DGEX186	DGEX	FFG-STR	FFG-STR
HPCGuide	HPCGuide	FFG-RSA	FFG-RSA
GFSGuide	GFSGuide	FFG-ORN	FFG-ORN
GFS212	GFS40	FFG-RHA	FFG-RHA
GFS160	AK-GFS	FFG-KRF	FFG-KRF
GFS254	PR-GFS	FFG-MSR	FFG-MSR
GFS161	SJU-GFS	FFG-TAR	FFG-TAR
TPCWindProb	TPCWindProb	FFG-PTR	FFG-PTR
MOSGuide	MOSGuide	FFG-TIR	FFG-TIR

Model Name (Name)	Description (Title)	Model Name (Name)	Description (Title)
OPCWave-W-ATL	OPCWave180	FFG-ALR	FFG-ALR
OPCWave181	OPCWave-NE-PAC	FFG-FWR	FFG-FWR
OPCWave182	OPCWave-TE-PAC	AUTOSPE	SPE
RUC130	RUC13	MANSPE	SPE
RUCIcing	RUCIcing	QPE	QPE
RTMA	RTMA	RCM	RCM
AK-RTMA	AK-RTMA	NCWF	NCWF
NOGAPS	NOGAPS		

Create the subgridding file(s) in the ${EDEX_CONFIG}/edex_static/site/<XXX>/grib/subgrids directory as follows:

- Log into an EDEX server if not already logged in:

```
# ssh root@${EDEX1}
```

- Change into the desired site’s subgrids configuration directory:

```
# cd ${EDEX_CONFIG}/edex_static/site/<XXX>/grib/subgrids
```

- Using a text editor, like vi, create the subgrid file following the syntax shown above and using the latitude and longitude coordinates:

```
# vi subGrid.xml
```

  Note: The file name is arbitrary as long as it ends in .xml. **Example 5-3.1** shows four models being clipped within a specific latitude/longitude box.

  ***Example** 5.3-1*

```
<subGridDef>
   <modelNames>ETA218 mesoEta212</modelNames>
   <referenceModel>ETA218</referenceModel>
   <nx>150</nx>
   <ny>150</ny>
</subGridDef>
```

- Once the file is set up, save and exit the text editor:

```
# :wq!
```

5.4 Create MPE.xml and DHR-MOSAIC.xml Localized Grid Identification File

In order for EDEX to recognize the grids for MPE, it is important to set up a site-level grid definition file for the local MPE grids to be ingested into the system. Otherwise, EDEX will not recognize them and they will be stored as an UnknownModel.

The definition file will be stored in the following directory:

${EDEX_CONFIG}/edex_static/site/<XXX>/grib/grids

The file name should be MPE.xml for MPE and DHR-MOSAIC.xml for HPE girds, and it should contain the following information:

```
<polarStereoGridCoverage>
     <name>304</name>
     <description>MPE produced grid</description>
     <la1>31.79</la1>
     <lo1>-121.12</lo1>
     <firstGridPointCorner>LowerLeft</firstGridPointCorner>
     <nx>112</nx>
     <ny>111</ny>
     <dx>4.762</dx>
     <dy>4.762</dy>
     <spacingUnit>km</spacingUnit>
     <minorAxis>6356775.0</minorAxis>
     <majorAxis>6378160.0</majorAxis>
     <lov>-105.0</lov>
</polarStereoGridCoverage
```

The important fields to localize are in bold above, but also listed below:

<la1>

<lo1>

<nx>

<ny>

<description>

Gather the information you need from the following existing AWIPS I files for use in creation of the MPE.xml file.

On any AWIPS server, change directories into /awips/fxa/data/localizationDataSets/<XXX> and look at the file localMPE.txt for MPE, and localHPE.txt for DHR-MOSAIC.xml. Take the values for **Southwest Corner** and **Columns** and **Rows**. These will be your values above according to the following table:

localMPE.txt and localHPE.txt value	xml value	Example
Columns: ##	<nx>##</nx>	<nx>77</nx>
Rows: ##	<ny>##</ny>	<ny>71></ny>
Southwest Corner: ##.#### xx.xxxx	<la1>##.####</la1>	<la1>34.751</la1>
Southwest Corner: xx.xxxx ##.####	<lo1>##.####</lo1>	<lo1>-79.082</lo1>

- If not already logged in, log into an EDEX server (e.g., dx3) and then change to your site's localizationDataSets directory and look at the contents of the localMPE.txt file.

```
# cd /awips/fxa/data/localizationDataSets/<XXX>
# cat localMPE.txt
```

- Write the information obtained from that file in the spaces provided below for use in the rest of the MPE.xml creation:

  Columns: ____________________

  Rows: ____________________

  Southwest Corner (first number): ____________________

  Southwest Corner (second number): ____________________

- Change into the edex_static localization tree, and create the necessary directory structure if it does not already exist:

```
# cd ${EDEX_CONFIG}/edex_static/site/<XXX>

# mkdir –p grib/grids
```

- Copy the base MPE.xml file into the site level directory:

```
# cp –a ../../base/grib/grids/MPE.xml grib/grids/

# cp –a ../../base/grib/grids/DHR-MOSAIC.xml grib/grids/
```

- Edit the site-level MPE.xml file, making the following substitutions:

```
# vi grib/grids/MPE.xml
```

  - ✓ Change the value in the <la1></la1> tag to match the value recorded above for Southwest Corner (first number).
  - ✓ Change the value in <lo1></lo1> tag to match the value recorded above for Southwest Corner (second number).
  - ✓ Change the value in <nx></nx> tag to match the value recorded above for Columns.
  - ✓ Change the value in <ny></ny> tag to match the value recorded above for Rows.

- If not already logged in, log into an EDEX server (e.g., dx3) and then change to your site’s localizationDataSets directory and look at the contents of the localMPE.txt file.

```
# cd /awips/fxa/data/localizationDataSets/<XXX>

# cat localHPE.txt
```

- Write the information obtained from that file in the spaces provided below for use in the rest of the DHR-MOSAIC.xml creation:

  Columns: ____________________
  Rows: ________________
  Southwest Corner (first number): ___________________
  Southwest Corner (second number): ________________

- Edit the site-level DHR-MOSAIC.xml file, making the following substitutions:

  ```
  # vi grib/grids/DHR-MOSAIC.xml
  ```

  - ✓ Change the value in the <la1></la1> tag to match the value recorded above for Southwest Corner (first number).
  - ✓ Change the value in <lo1></lo1> tag to match the value recorded above for Southwest Corner (second number).
  - ✓ Change the value in <nx></nx> tag to match the value recorded above for Columns.
  - ✓ Change the value in <ny></ny> tag to match the value recorded above for Rows.

- Save and exit the *vi* text editor:

  ```
  # :wq!
  ```

5.5 Fix Ownership and Permissions

After making the correct files with proper entries, ownership must be set on the files in the directory tree.

- If not already logged in, log into an EDEX server and change to the site-level common utility configuration directory:

  ```
  # ssh root@${EDEX1}
  # cd ${EDEX_CONFIG}/edex_static/site/
  ```

- Recursively change the ownership and permissions of the site directory created in the previous steps:

  ```
  # chown –R awips:fxalpha <XXX>
  # chmod –R 755 <XXX>
  ```

6.0 Correct set_hydro_env

The set_hydro_env is delivered with a reference to site OAX. This needs to be corrected in order to function completely as a different site.

- Log into an EDEX server if not already logged in:

```
# ssh root@${EDEX1}
```

- Change into the hdf5/hydroapps directory:

```
# cd ${EDEX_HOME}/data/share/hydroapps
```

- Change all instances of the string OAX to the desired site's AWIPS ID:

```
# sed –i 's/OAX/<XXX>/g' set_hydro_env
```

- Check for the AW_SITE_IDENTIFIER variable, and if it is set to another site's ID then manually change it:

```
# grep ^AW_SITE_IDENTIFIER set_hydro_env
```

  If the site ID is different from your site, issue the following:

```
# sed –i "s/LLL/<XXX>/g" set_hydro_env
```

  Where **LLL** = the current site ID and **<XXX>** = your site ID.

  If the variable AW_SITE_IDENTIFIER didn't even exist in the set_hydro_env, issue the following to add it:

```
# sed –i "/^#AWIPS_MODIFICATION_BLOCK/aAW_SITE_IDENTIFIER=<XXX>"
set_hydro_env
```

  Note: The above is all on one line and <XXX> = your site ID.

7.0 Edit setup.env

The master file that controls to which databases EDEX connects and which site EDEX runs is named setup.env. This file contains environment variables necessary for proper EDEX function. Carefully edit this file to configure for the desired site's databases and site identifier.

- Log into an EDEX server if not already logged in:

  ```
  # ssh root@${EDEX1}
  ```

- Change into the EDEX bin directory:

  ```
  # cd ${EDEX_HOME}/bin
  ```

- Using a text editor, such as vi, edit the file:

  ```
  # vi setup.env
  ```

- Change the following tokens to match the desired site's ID:

  ```
  export AW_SITE_IDENTIFIER=OAX
  export DC_DB_NAME=dc_ob7oax
  export HD_DB_NAME=hd_ob83oax
  ```

- Save and exit the vi text editor:

  ```
  # :wq!
  ```

- Copy the file to any other servers that are to run the EDEX camel servers:

  ```
  # scp –p setup.env $EDEX:$(pwd)
  ```

  Note: Repeat the previous step for each server running the EDEX camel servers, substituting the proper hostnames for $EDEX above.

8.0 Create / Edit WarnGen GUI Setup [WFO Only]

The WarnGen GUI from CAVE is set up through xml files that reside on the EDEX server. These files control some variables that are passed to the WarnGen velocity templates as well as dropdown selections and default radio button selections when WarnGen is launched.

Table 8-1 describes the XML tags used in this file. with a brief description:

Table 8-1. WarnGen UI config.xml XML Tag Descriptions

XML Tag	Description
warngenOfficeShort	The office description included in the heading of the warning.
warngenOfficeLoc	The short office description included in the heading of the warning.
backupCWAs	A comma-separated list of sites that appear in the Backup pull-down menu in the Warngen GUI, including a description of the site to be included in the template. Format: XXX/DESCRIPTION Each entry for a site must include both the XXX and the DESCRIPTION, where XXX is the AWIPS Site ID.
defaultTemplate	The WarnGen template identifier of the template whose radio button is selected by default when the WarnGen GUI is launched.
mainWarngenProducts	A comma-separated list of templates that appear under “Product Type” on the Warngen GUI and are selectable via radio buttons. Format: <warngen template id>/<template description>
otherWarngenProducts	A comma-separated list of templates that appear under the Other dropdown selector in the Warngen GUI within the “Product Type” section. Format: <warngen template id>/<template description>
followupRefreshDelay	Timer delay in milliseconds to update the start and stop time in the WarnGen GUI.
siteNode	Provides a default site node if one cannot be found in the afos2awips table within the metadata database. This field is unused if an entry is found in the table.

Configure this xml by using the delivered version in the OAX configuration tree.

- Log into an EDEX server if not already logged in:

```
# ssh root@$EDEX1
```

- Change into the CAVE utility configuration site-level directory tree:

```
# cd ${EDEX_CONFIG}/cave_config/site
```

- Create the necessary directory structure if it doesn’t already exist:

```
# mkdir –p <XXX>/com.raytheon.viz.warngen
```

- Copy the OAX version of the needed XML file into the desired site’s directory:

```
# cp OAX/com.raytheon.viz.warngen/config.xml
<XXX>/com.raytheon.viz.warngen/
```

- Edit the file using the vi text editor:

  ```
  # vi <XXX>/com.raytheon.viz.warngen/config.xml
  ```

- Replace the <warngenOfficeShort> tag value (OMAHA/VALLEY NE) with the value found in the AWIPS I input file /awips/fxa/data/localization/XXX/XXX-wwaConfig.txt, /data/fxa/customFiles/wwaConfig.txt or /data/fxa/customFiles/XXX-wwaConfig.txt on the line starting with @@@OFFH .
- Replace the <warngenOfficeLoc> tag value (OMAHA) with the value found in the AWIPS I input file /awips/fxa/data/localization/XXX/XXX-wwaConfig.txt, /data/fxa/customFiles/wwaConfig.txt or /data/fxa/customFiles/XXX-wwaConfig.txt on the line starting with @@@OFFT. ***Note:*** Omit the word "IN" at the beginning of the string taken from the wwaConfig.txt.
- Replace the <backupCWAs> tag value(s) with the value(s) found in the AWIPS I input file input file /awips/fxa/data/localization/XXX/XXX-wwaConfig.txt, /data/fxa/customFiles/wwaConfig.txt or /data/fxa/customFiles/XXX-wwaConfig.txt on the line starting with @@@SBID .
- Replace the <siteNode> tag value (OMA) with the value of the desired site's CCC node commonly found in the AWIPS I input file /awips/fxa/data/localization/XXX/XXX-mainConfig.txt on the line starting with @@@CCC .
- Save and exit the text editor:

  ```
  # :wq!
  ```

- Recursively change the ownership and permissions of the site directory created in the previous steps:

  ```
  # chown –R awips:fxalpha <XXX>
  # chmod –R 755 <XXX>
  ```

9.0 Create/Edit CAVE Map Displays

CAVE maps and map selector pulldown are configured through XML bundle files that reside on the EDEX server. The AWIPS II software delivers baseline XML bundle files that can be used as part of a new site's configuration. **Table 9-1** describes these files.

Table 9-1. Delivered AWIPS-II Base Scale XML Files

XML File Name	Description
NHemisphere.xml	Default Northern Hemisphere view for a CONUS WFO or RFC
NorthAmerican.xml	Default North American view for a CONUS WFO or RFC
CONUS.xml	Default view of Continental U.S.

Map bundle files can be localized on a site or user level, and are placed in the CAVE utility static configuration directory tree.

Create the map files by doing the following:

- Log into an EDEX server if not already logged in:

```
# ssh root@${EDEX1}
```

- Change into the CAVE utility static configuration site-level directory tree:

```
# cd ${EDEX_CONFIG}/cave_static/site
```

- Create the necessary directory structure if it doesn't already exist:

```
# mkdir –p <XXX>
```

- Unpack the delivered map bundle XMLs from the provided tarball. The tarball can be found within the AWIPSII_AUTOMATION_TOOL.tgz (current version found at https://collaborate.nws.noaa.gov/trac/siteconfig/wiki/ADAM):

```
# tar –xzvf /data/fxa/INSTALL/ADAM/cave_static_site.tar.gz
./<XXX>/bundles/scales/*
```

- Remove any files that are listed in Table 9-1.
- If additional scales are needed / desired, refer to Appendix C to create new scales.
- Set up the desired site's scalesInfo.xml file, which described the default order inside CAVE that the maps will display. Use the delivered OAX version as a template:

```
# cp OAX/bundles/scales/scalesInfo.xml <XXX>/bundles/scales

# vi <XXX>/bundles/scales/scalesInfo.xml
```

- For most CONUS WFO sites, the entries in the scalesInfo.xml will not change. After changes are made, if needed, save and exit the XML file.

```
# :wq!
```

9.1 Create / Edit CAVE Station/Location Plot Information File(s)

The station plot information (.spi) and location plot information (.lpi) files used in AWIPS can be re-used within CAVE for local display.

Stage the files by following these steps:

- Log into an EDEX server if not already logged in:

```
# ssh root@${EDEX1}
```

- Change into the CAVE utility static configuration site-level directory tree:

```
# cd ${EDEX_CONFIG}/cave_static/site
```

- Create the necessary directory structure if it doesn’t already exist:

```
# mkdir –p <XXX>/basemaps
```

- Copy the cities.lpi, and ldad*.spi file(s) into place:

```
# scp /awips/fxa/data/localizationDataSets/XXX/cities.lpi
<XXX>/basemaps/

# scp /awips/fxa/data/localizationDataSets/XXX/ldad*.spi
<XXX>/basemaps
```

10.0 Create / Edit Other CAVE Menus

10.1 Create / Edit Satellite Menu

Note: *Most sites will not need to follow the steps outlined in this section, but reading through the section will provide information for making that determination.*

The satellite menu in CAVE may need to be configured for OCONUS sites based on the desired site’s location. EDEX will attempt to create a version of a localized menu based on the configured AW_SITE_IDENTIFIERS center point. If changes have to be made, using the delivered base index.xml as a template in configuring the menu for the desired site.

An example of the file is listed in **Example 10.1-1**.

Example 10.1-1

```
<menuContributionFile>
        <include installTo="menu:satellite?after=GROUP1"
             fileName="menus/satellite/baseSatellite.xml">
        <substitute key="sector0" value="West CONUS"/>
        <substitute key="sector1" value="East CONUS"/>
        <substitute key="sector2" value="Supernational"/>
        <substitute key="sector3" value="Northern Hemisphere
Composite"/>
        <substitute key="entity" value="GOES%"/>
    </include>
    <include installTo="menu:satellite?after=GROUP2"
             fileName="menus/satellite/basePOESImagery.xml">
    </include>
</menuContributionFile>
```

Changing the values of each sector affects which satellite image is rendered on each scale. Each sector has its own resolution. The East and West CONUS images are highly preferable for CONUS sites because they provide the images with the highest resolution, whereas the Supernational sector provides less resolution and will only be loaded if the first two are not available, which generally happens on a larger scale.

Images can be combined when their reach does not cover the full extent of a scale. For example, on a CONUS scale sector0 and sector1 (East and West CONUS) images are combined to provide full CONUS coverage of satellite images.

In general, the higher-resolution products should be listed first. For configuring the software for a site which necessitates a change (OCONUS, for example), follow these steps to configure the file:

- Log into an EDEX server if not already logged in:

  ```
  # ssh root@${EDEX1}
  ```

- Change into the CAVE utility static configuration site level directory tree:

  ```
  # cd ${EDEX_CONFIG}/cave_static/site
  ```

- Create the necessary directory structure if it doesn't already exist:
```
# mkdir –p <XXX>/menus/satellite
```

- Copy the OAX version of index.xml into the desired site's sat directory:
```
# cp ../base/menus/satellite/index.xml <XXX>/menus/satellite/
```

- Use a text editor, like vi, to edit the file and insert the proper values into the values for sector0 through sector4. Utilize **Table 10.1-1**, which describes the different sectors available (as provided by the satellite_sector_ids table of the metadata database).

Table 10.1-1. Satellite Sector Names

Sector Name
Northern Hemisphere Composite
East CONUS
West CONUS
Alaska Regional
Alaska National
Hawaii Regional
Hawaii National
Puerto Rico Regional
Puerto Rico National
Supernational
NH Composite – Meteosat-GOES E-GOES W-GMS

- Save and exit the text editor:
```
# :wq!
```

10.2 Configure Local and Regional Warnings Display Menu

The Local and Regional Warnings Display menu is configured through an XML configuration file that resides in the CAVE utility static configuration directory tree.

File Name: ${EDEX_CONFIG}/cave_static/site/<XXX>/warnings/index.xml

Configure the desired site's Local and Regional Warnings Display by using the delivered OAX version as a template:

- Log into an EDEX server if not already logged in:
```
# ssh root@${EDEX1}
```

- Change into the CAVE utility static configuration site level directory tree:
```
# cd ${EDEX_CONFIG}/cave_static/site
```

- Create the necessary directory structure if it doesn't already exist:
```
# mkdir –p <XXX>/menus/warnings
```

- Copy the OAX version of index.xml into the desired site's sat directory:
```
# cp OAX/menus/warnings/index.xml <XXX>/menus/warnings/
```

- Using a text editor, such as vi, edit the index.xml to configure the file for the desired site:

  ```
  # vi <XXX>/menus/warnings/index.xml
  ```

- Change the value of the following xml line so that value= the AWIPS identifier of the desired site:

  ```
  <substitute  key=”site” value=”KOAX”
  ```

- Change the value of the following xml line so that value= the surrounding site’s identifiers desired to be shown when regional warnings is selected:

  ```
  <substitute key=”sites” value=”KABR, KFSD, KUNR, KBIS, KFGF, KBOU,
  KGJT, KPUB, KCYS, KRIW, KGID, KLBF, KOAX, KDDC, KGLD, KICT, KTOP,
  KEAX, KLSX, KSGF, KDMX, KDVN, KDLH, KMPX, KARX, KGRB, KMKX, KILX,
  KLOT, KJKL, KLMK, KPAH, KIND, KIWX, KAPX, KDTX, KGRR, KMQT”
  ```

  Note: If it is not known which sites to input in the beginning, a good starting point is to issue the following command and use this as a starting point:

  ```
  # grep ^<XXX> /data/fxa/nationalData/allAdjacentWFOs.txt | cut –
  f2 –d’|’ | cut –c5-
  ```

  Remember to put “K” or “P” in front of each site ID and to separate them by commas when editing the index.xml file.

- Save and exit the XML file:

  ```
  # :wq!
  ```

- Recursively change the ownership and permissions of the site directory created in the previous steps:

  ```
  # chown –R awips:fxalpha <XXX>
  # chmod –R 755 <XXX>
  ```

11.0 Configure AvnFPS [WFO Only]

The AvnFPS application is run from the CAVE environment, and is configured within the CAVE utility static configuration tree.

11.1 Configure AvnFPS GUI and Product Files

Configure AvnFPS by using some of the delivered files from the OAX configuration as templates.

- Log into an EDEX server if not already logged in:

```
# ssh root@${EDEX1}
```

- Change into the CAVE utility static configuration site-level directory tree:

```
# cd ${EDEX_CONFIG}/cave_static/site
```

- Create the necessary directory structure if it doesn't already exist:

```
# mkdir –p <XXX>/aviation/avnsetup <XXX>/aviation/avnwatch
<XXX>/aviation/config
```

- Copy the TAF configuration directories from the AWIPS I setup location, /awips/adapt/avnfps/etc/tafs:

```
# cp –r /awips/adapt/avnfps/etc/tafs <XXX>/aviation/config
```

Note: If there is no DEFAULT file listing, then the default AvnFPS template, AvnFPS, will not work. If this file does not exist for the site data configuration from AWIPS I, please create it. It should contain the name of the default cfg file without .cfg. For example, if the default cfg file was LLL_Tafs.cfg, the entry in DEFAULT should be LLL_Tafs.

- Current DR #7926 (fixed in build 11.3 so this step may be SKIPPED if configuring an 11.3 or newer release), opened against the use of AWIPS I AvnFPS cfg files in AWIPS II, requires the following step to be run for proper functionality of AvnFPS:

```
# sed –i '/idents/s/, /,/g' <XXX>/aviation/config/tafs/*.cfg
```

- Copy the current ids.cfg file into the config directory:

```
# cp –r /awips/adapt/avnfps/etc/ids.cfg <XXX>/aviation/config/

# sed –i '/^file/d ' <XXX>/aviation/config/ids.cfg
```

- Remove the XXXX tafs directory if it exists:

```
# rm –rf <XXX>/aviation/config/tafs/XXXX
```

Note: In this case, the XXXX is a literal XXXX. The directory that is being removed is actually named XXXX and this does not insinuate any substitution. However, the <XXX> is still an indication to substitute that string with the site ID of the site for which configuration is being performed.

- Copy the OAX-configured version of aviationForecasterConfig.xml to the desired site's avnwatch directory:

```
# cp OAX/aviation/avnwatch/aviationForecasterConfig.xml
<XXX>/aviation/avnwatch/
```

- Edit the aviationForecasterConfig.xml file and localize for the desired site. Utilize the AWIPS I file /awips/adapt/avnfps/etc/forecasters as a reference. The forecaster user names **must match their workstation login names** for transmission to be enabled. Be sure to doublecheck this:

  ```
  # vi <XXX>/aviation/avnwatch/aviationForecasterConfig.xml
  ```

- When finished, save the file and exit the vi session:

  ```
  # :wq!
  ```

- Ensure proper ownership and permissions:

  ```
  # chown –R awips:fxalpha <XXX>
  # chmod –R 755 <XXX>
  ```

11.2 Copy AvnFPS Climate Files

Copy the desired site's AvnFPS climate files into the proper AWIPS II directory for use with AWIPS II AvnFPS.

- Log into an EDEX server if not already logged in:

  ```
  # ssh root@${EDEX1}
  ```

- Change into the HDF5 data repository tree:

  ```
  # cd ${EDEX_HOME}/data/share
  ```

- Create the necessary directory structure if it doesn't already exist:

  ```
  # mkdir –p aviation
  ```

- Copy all the files from the AWIPS I data location into the newly created directory:

  ```
  # cp /data/adapt/avnfps/climate/* aviation/
  # cp /awips/adapt/avnfps/etc/ish-* aviation/
  ```

- Ensure proper ownerships and permissions:

  ```
  # chown -R awips:fxalpha aviation
  # chmod –R 775 aviation
  ```

12.0 Restart EDEX and Activate MPE Scripts

At this point EDEX can be restarted on all machines running an EDEX instance.

- Start the EDEX server, first by logging into all EDEX servers issuing the start command.

```
# ssh $EDEX1
# service edex_camel start
```

- Repeat the previous step for all EDEX client machines.
- On DX3 or DX4 (not both), issue the following commands to activate MPE.

```
# su - awips
# export EDEX_HOME=/awips2/edex
# export apps_dir=/awips2/edex/data/share/hydroapps
# . $apps_dir/set_hydro_env
# cd $apps_dir/precip_proc/bin
# ./run_create_mpe_gage_file
```

Note: Answer Y when prompted

```
# ./run_create_mpe_station_lists
# ./run_create_freezing_station_list
# ./run_create_mpe_climo_lists
# ./run_create_triangles
# ./run_create_mpe_beam_height_file
# ./run_mpe_fieldgen 3
# rm -f
/awips2/edex/data/share/hydroapps/precip_proc/local/data/app/mpe/
grid_masks/*
# ./run_dqc_preprocessor
```

13.0 Add Text Triggers

Once EDEX is running, it is possible to add text triggers. Text triggers are added through a command line interface tool, **textdb**. This command is located in **/awips2/fxa/bin** but should be in the path of all users on all machines.

In order to load a text trigger into the database, the following command can be used:

```
textdb –pil –a CCCNNNXXX /path/to/myScript.sh
```

It is possible to put arguments to the script that is desired to be run on text product storage by using quotation marks. An example is:

```
textdb –pil –a CCCNNNXXX “/path/to/myScript.sh -f “
```

It is very important to keep these rules in mind when loading triggers:

- Triggers are run by the EDEX engine on either DX3 or DX4.
- Triggers are run by system user ***awips,*** which means that this user must have execute permissions on the trigger script.
- Triggers should be stored in, and executed from, the location /localapps/runtime/scripts, which is an NFS volume accessible from both DX3 and DX4.

In AWIPS I, triggers were loaded in by mainScript.csh after compiling baseline scripts and adding on those in the /data/fxa/siteConfig/textApps/siteTrigger.template file.

In AWIPS II this function will be completed by the AWIPS II Automation Tool config_awips2.sh. It will read the same files as in AWIPS I, so you will need only to continue and maintain the siteTrigger.template file.

Appendix A. LDM Ingest Checklist

In order to add a line to the pqact.conf or pqact.local file for LDM ingest, certain information is necessary. The following is a general checklist of information that can be used when adding new data from the SBN into the system.

□ Note the WMO header or pattern for desired product: ____________________

□ Note the LDM FEEDTYPE for the desired product: ____________________

□ Note the raw archive location for the desired product: ____________________

□ Create entry in the pqact.conf or pqact.local file: ____________________

□ Restart or send HUP to ldmd process.

To find this information the following steps might prove useful.

1. **Find the WMO header or pattern for the desired product.**

   If the product is being ingested into an AWIPS I system, look at the /data/fxa/customFiles/acqPatternAddOns.txt file. It is possible that you will discover the WMO pattern needed for ingesting. A listing of WMO header bulletins can also be found starting at the following URL: http://www.nws.noaa.gov/tg/table.html

2. **Find the LDM FEEDTYPE for the desired product.**

   In all cases, the FEEDTYPE “ALL” will match all the FEEDTYPES listed in Table 3-1.1 of this Localization Guide. However, tools are available that may help identify the proper FEEDTYPE, if that is of interest. As user *ldm* the following commands might be useful:

   ```
   # ldmadmin watch
   ```

   This command will show all data coming from the upstream LDM server. This should be every product that the upstream is ingesting. Watching can identify specific feedtypes of the products being ingested. A sample output of the command follows.

```
-bash-3.2$ ldmadmin watch
(Type ^D when finished)
Jan 21 14:44:44 pqutil INFO:     5219 20110121144443.333 NEXRAD3 56308488  SDUS26 KSGX 211440
/pN1QNKX !nids/
Jan 21 14:44:44 pqutil INFO:    36388 20110121144443.334     HDS 56308489  YAWD74 KWBG 211400
/mRUC2 !grib/ncep/RUC2/#236/201101211400/F003/DIST/cld base/
Jan 21 14:44:44 pqutil INFO:     7621 20110121144443.345 NEXRAD3 56308490  SDUS51 KLWX 211443
/pN0VLWX
Jan 21 14:44:44 pqutil INFO:     3846 20110121144443.348 NEXRAD3 56308491  SDUS31 KOKX 211439
/pN1POKX
Jan 21 14:44:44 pqutil INFO:   119137 20110121144444.274   NGRID 12387336  MTAZ98 KWBE 211200
!grib2/ncep/NMM_89/#255/201101211200F081/TMXK03/0 - NONE
```

   ```
   # notifyme –l- -h $LDM_HOST -v –p ‘<WMO ID Pattern>’
   ```

   This command will print to the screen every product available from <LDM Upstream IP/Hostname> that matches <WMO ID Pattern>. For example, the following would print all products starting T available from CPSBN2:

   ```
   notifyme –l- -h cpsbn2 –v –p ‘^T.*’
   ```

Note: The pattern passed to notifyme, and put into the pqact.conf file, must be a valid regular expression.

A sample output of the command follows.

```
-bash-3.2$ notifyme -l- -v -h adam1 -p '^sat.*TI.*'
Jan 21 15:17:37 notifyme[6887] NOTE: Starting Up: adam1: 20110121151737.886
TS_ENDT {{ANY,  "^sat.*TI.*"}}
Jan 21 15:17:37 notifyme[6887] NOTE: LDM-5 desired product-class:
20110121151737.886 TS_ENDT {{ANY,  "^sat.*TI.*"}}
Jan 21 15:17:37 notifyme[6887] INFO: Resolving adam1 to 165.92.24.36 took 0.000398
seconds
Jan 21 15:17:37 notifyme[6887] NOTE: NOTIFYME(adam1): OK
Jan 21 15:19:33 notifyme[6887] INFO:    26096 20110121151933.179  NIMAGE 47222
satz/ch1/GOES-13/SOUND-14.06/20110121 1446/EAST-CONUS/10km/ TIGE43 KNES 211446
Jan 21 15:19:34 notifyme[6887] INFO:    72646 20110121151934.390  NIMAGE 47223
satz/ch1/GOES-13/SOUND-11.03/20110121 1446/EAST-CONUS/10km/ TIGE48 KNES 211446
Jan 21 15:19:38 notifyme[6887] INFO:    58914 20110121151938.479  NIMAGE 47224
satz/ch1/GOES-13/SOUND-7.43/20110121 1446/EAST-CONUS/10km/ TIGE50 KNES 211446
Jan 21 15:19:40 notifyme[6887] INFO:    51259 20110121151940.513  NIMAGE 47225
satz/ch1/GOES-13/SOUND-7.02/20110121 1446/EAST-CONUS/10km/ TIGE51 KNES 211446
Jan 21 15:19:44 notifyme[6887] INFO:    45947 20110121151944.599  NIMAGE 47226
satz/ch1/GOES-13/SOUND-6.51/20110121 1446/EAST-CONUS/10km/ TIGE52 KNES 211446
```

Both of these commands will give other information that can be used in writing the data to disk in the raw archive in a more useful format.

3. **Note the raw archive location for the product.**

   In general, the raw archive used is /data_store/<product type>. For example, radar products are put into a subtree of /data_store/radar based on the information. It is good practice to continue to follow this paradigm. However, as long as the –edex argument is used in the pqact.conf entry, the product should be decoded no matter where the physical storage location ends up as long as the EDEX server has access to that location.

4. **Create the pqact.conf entry.**

   Following the format described in Section 3.1 of this Localization Guide, add the entry into the pqact.conf file. See deciphering a pqact.conf entry below for more information on syntax.

5. **Restart or send HUP signal to LDM server.**

   Following the steps listed in Section 3.1, restart or send a HUP signal to the LDM server.

A.1 Deciphering a pqact.conf Entry

Use the following reference to help decipher a pqact.conf entry.

```
NNEXRAD         ^(SDUS[2-8].|NXUS6.)
(K|P|T)(LWX|BGM|CHS|RLX|ILN|CLE|AKQ|JKL|CTP|MHX|MRX|OKX|PHI) (..)(..)(..) /p(...)(...)
        FILE    -overwrite -log -close -edex
/data_store/radar/\2\8/\7/\5\6_\2\8_\7_(seq).rad
```

The first part, NNEXRAD is the FEEDTYPE as described in Table 3-1.1 of this Localization Guide.

The Regular Expression describes any product starting with SDUS and follows with any number between 2 and 8 OR starting with NXUS6.

The () store that string into the variable \1 which can be used when storing to physical disk.

(K|P|T) matches either a K, P or T and stores that to the variable \2 .

(LWX|BGM|CHS|RLX|ILN|CLE|AKQ|JKL|CTP|MHX|MRX|OKX|PHI) matches any of those site IDs and stores it to variable \3 .

(..)(..)(..) matches the next 6 characters of any type and stores them in pairs to \4, \5 and \6 respectively.

/p matches the exact string /p

(...)(...) matches the next 6 characters of any type and stores them in trios to \7 and \8 .

So the following line would match this entry in pqact and store in the following location:

Product:

```
NEXRAD3 56424268  SDUS51 KLWX 211529 /pTZLDCA !nids/
```

Storage Location:

```
/data_store/radar/KDCA/TZL/1529_KDCA_TZL_56424268.rad
```

Appendix B. WarnGen Templates

WarnGen templates can be used on a user, site, or base level. Base templates should never be edited, and are stored on the EDEX localization server in the following directory:

```
$EDEX_HOME/data/utility/common_static/base/warngen
```

In order to localize a baseline template, the .cfg and .vm files should be copied to the site-specific directory and edited there. To copy the files, the following commands can be used:

- Log into an EDEX server as user *root:*
  ```
  # ssh –q –l root $EDEX1
  ```

- Change directories to the site-specific WarnGen template directory:
  ```
  # cd $EDEX_CONFIG/common_static/site/XXX/warngen
  ```

- Using **Table B-1** as a reference, use the localization perspective of CAVE to create SITE level versions of the desired templates (Right Click, Copy To --> SITE), or copy the desired .xml and .vm files into place:
  ```
  # cp –a ../../../base/warngen/template.(xml|vm) .
  ```

  Note: Replace the word TEMPLATE above with one of the file names in **Table B-1.** Note the case of the file name and copy appropriately.

- Use the localization perspective to make the necessary or desired changes.

Table B-1. Baseline WarnGen Templates

File Name	Description
dambreak.cfg	Flash Flood Warning configuration
dambreakffs.cfg	Flash Flood Warning configuration
eww.cfg	Extreme Wind Warning configuration
ewws.cfg	Extreme Wind Warning followup configuration
ffs.cfg	Flash Flood Statement configuration
ffw.cfg	Flash Flood Warning configuration
fla.cfg	Areal Flood Advisory configuration
flas.cfg	Areal Flood Advisory configuration
fls.cfg	Flood Statement configuration
flw.cfg	Flood Warning configuration
marinestatement.cfg	Areal Flood Advisory configuration
severethunderstorm.cfg	Severe Thunderstorm Warning configuration
shortterm.cfg	Short Term Forecast configuration
smw.cfg	Special Marine Warning configuration
smws.cfg	Marine Wx Statement - follow SMW configuration
SVS.cfg	Severe Weather Statement configuration
sws.cfg	Special Weather Statement configuration
tornado.cfg	Tornado Warning configuration

WarnGen templates are created using velocity template language (VTL) with supporting configurations in an xml formatted file with an .xml extension. More information on this can be found at:

http://svn.apache.org/repos/asf/velocity/engine/tags/V_1_0_1/docs/vtl-reference-guide.html

http://click.sourceforge.net/docs/velocity/vtl-reference-guide.html

Site-level templates and product configuration files will be stored in the following location on the EDEX localization server:

$EDEX_HOME/data/utility/common_static/site/XXX/warngen

Where XXX is a site's localization ID. Site-specific templates should also be named in the following manner, substituting the site ID for XXX:

```
<templateName>_XXX
```

For example: dambreak_OAX

Each warning velocity template will have a corresponding configuration xml file. This configuration will set different variables that can dynamically change how WarnGen acts depending on the warning type. It is important to note that each configuration must start and end with a <warngenConfig> and </warngenConfig> tag. Also, comments can be maintained with <!-- comment -->. **Table B-2** describes fields that can be used in velocity template .xml files.

Table B-2. Velocity .xml Template Configuration Values

Value	Description
<maps>	Maps contained within <map></map> will get loaded with this template. Refer to 'Maps' menu in CAVE. The various menu items are also the different maps that can be loaded with each template.
<follow-ups>	Each associated follow-up should be contained within <followup></followup>. Each follow-up will become available when the appropriate time range permits.
<pehnsigs>	Each associated phen sig should be contained within <phensig></phensig>.
<enableRestart>	Enables/disables user from selecting the Restart button on the GUI. This is usually set to false for follow-up configuration files. Because this variable is usually set to false for follow-ups, this also controls if the 'Drag me to storm' text will become available.
<enableDamBreakThreat>	Enables/disables the 'Dam Break Threat Area' button. This is mainly used for dam break templates.
<autoLockText>	Enables/disables the system to lock text based on various patterns. Refer to Locking Text section of this appendix for more information.
<includeWatches>	Each watch to be included should be contained within <includedWatch></incluedWatch>. The only two possible values are 'torWatches' and 'svrWatches'. Refer to includeWatchAreaBuffer in the Area Configuration for more information.
<durations>	Each available duration should be contained with <duration></duration>. The default duration should be contained with <defaultDuration></defaultDuration>. However, default duration should not be included within <durations></durations>.

Value	Description
<bulletActionGroups>	The bullet action group maintains all bulletActionGroups and should be contained with <bulletActionGroups></bulletActionGroups>. Within the bulletActionGroup is a <bulletActionGroup></bulletActionGroup> which contains all the available bullets for the associated action, phen, and sig. Example: <bulletActionGroups> <bulletActionGroup action=”NEW” phen=”TO” sig=”W”> <bullets> <!-- List of bullets for a NEW, Tornado Warning --> </bullets> </bulletActionGroup> <bulletActionGroup action=”COR” phen=”TO” sig=”W”> <bullets> <!-- List of bullets for a COR, Tornado Warning --> </bullets> </bulletActionGroup> </bulletActionGroups>
<bullets>	The bullets populate the selection list in the WarnGen dialog. Each bullet should be contained in a <bullet> tag. The following are the different parameters available to a bullet: • bulletName: An id that is passed to the template when a bullet is selected. This name should be unique as it can be used as an identifier with the velocity files. However, 'siteimminent' and 'sitefailed' are reserved bullet names for dam breaks. • bulletText: The text presented to the user in the selection list. • bulletGroup: Only one bullet can be selected per bulletGroup. • bulletType: 'title' is unselectable. • parseString: If this string MATCHES a phrase in the follow-up warning, then the associated bullet will automatically be highlighted in the selection list for a follow-up. If there are multiple strings that need to be tested, the escape character '&quot;' needs to be placed before and after the phrase to be matched. For example, parseString=”&quot;LINE OF SEVERE THUNDERSTORMS&quot;&quot;SQUALL&quot;”. If the warning text contains “LINE OF SEVERE THUNDERSTORMS” and “SQUALL”, then the associated bullet will be highlighted. Furthermore, if a phrase begins with '-' and is not in the warning text, then the associated bullet will always be highlighted. For example, parseString=”&quot;-SQUALL&quot;”. • loadMap: Refer to ‘Maps’ menu in CAVE. The various menu items are also the different maps that can be load with each template. • floodSeverity: Used to highlight the correct severity on a correction.

Value	Description
<damInfoBullets>	The bullets populate the selection list in the WarnGen dialog. Each bullet should be contained in a <damInfoBullet> tag. The following are the different parameters available to a bullet: • bulletName: An id that is passed to the template when a bullet is selected. This name should be unique as it can be used an an identifier with the velocity files. • bulletText: The text presented to the user in the selection list. • bulletGroup: Shoud use either ‘dam’ or ‘scenario’. • bulletType: ‘title’ is unselectable. • Cords: The lat/lon coordinates in the format usually found at the bottom of the warnings (i.e., LAT … LON 3981 7868 3980 7861 3972 7862 3972 7874) **Include:** <include file=”filename.txt”/> The include allows an external file to be inserted in the configuration file. This functionality is useful when a user wants to list dam info bullets in a separate file. The format of the include tag is **<include file=”filename.txt”/>** where filename is the name of the file including the extension of the file (i.e., .txt). The file to be included will follow the rules of localization: user, site, then base.
<areaConfig>	Specifies how the area portion of the warning is generated. This configuration is mainly used for determining the impacted counties in the 1st bullet. The following are the different parameters available to the areaConfig: • inclusionPercent: If an area greater than this percentage of area is covered, include it in the warning. • inclusionAndOr: AND – both inclusionPercent and inclusionArea must pass in order to be included. OR – either inclusionPercent or inclusionArea can pass to be included. • inclusionArea: If an area greater than this is covered, include it in the warning (square kilometers). • areaField: The column name of the areaSource that contains the name of the area (i.e., COUNTYNAME, NAME). • parentAreaField: The column name of the parentSource that contains the name of the parent (i.e., NAME). • areaNotationField: The column in the areaSource that contains the key used to map to the correct area notation. Look at countTypes.txt. • areaNotationTranslationFile:Translation file to look up an area notation. File located in /edex/data/utility/common_static/base/warngen. • fipsField:The name of the attribute that retrieves the fips. • pointField:The column name in the pointSource that contatins the name of the point. • sortBy: Can sort by 'name', 'parent','size',partOfArea,partOfParent,areaNotation, fips. • pointFilter: Controls that point to include based on the WARNGENLEV of the point. WARNGENLEV is a value from 1 to 3 where 1 is the highest priority: o key WARNGENLEV (column name in the pointSource) o value 1, 2, or 3 (can only be a single value), 0 does nothing o type: INCLUSIVE – include only points that match the value

Value	Description
	EXCLUSIVE-exclude only points that match the value For example, INCLUSIVE 1, will only include points that are WARNGENLEV 1, EXCLUSIVE 3, will only include points that are WARNGENLEV 1 and 2. • includeWatchAreaBuffer: The number of MILES the warning polygon will be increased to include nearby watches • otherPoints: o maxCount: The max number of points to be returned o includeAreaPoints: true/false, don't add name if already available for the 1st bullet o includeClosestPoints: true/false, don't add name if already avaialbe for 3rd bullet o sortBy: Can sort by 'distance', 'name', 'warngenlev, 'population', 'lat','lon','area','parentArea' Example: <areaConfig> <inclusionPercent>0.00</inclusionPercent> <inclusionAndOr>AND</inclusionAndOr> <inclusionArea>10</inclusionArea> <maxCount>20</maxCount> <areaField>COUNTYNAME</areaField> <parentAreaField>NAME</parentAreaField> <areaNotationField>STATE</areaNotationField> <areaNotationTranslationFile>countyTypes.txt</areaNotationTranslationFile> <fipsField>FIPS</fipsField> <pointField>NAME</pointField> <sortBy> <sort>parent</sort> </sortBy> <pointFilter> <key>WARNGENLEV</key> <value>1</value> <type>INCLUSIVE</type> </pointFilter> <includedWatchAreaBuffer>25</includedWatchAreaBuffer> <otherPoints> <maxCount>50</maxCount> <includeAreaPoints>false</includeAreaPoints> <includeClosestPoints>false</includeClosestPoints> <sortBy> <sort>warngenlev</sort> <sort>population</sort> </sortBy> </otherPoints> </areaConfig>

Value	Description

<closestPointsConfig>	This configuration determines how the closest points to the storms are generated. This configuration is usually applied to the 3rd bullet. The following are the different parameters:
	• numberOfPoints: Number of the closestPoints to generate
	• unitDistance: The output unit. Refer to the API javax.measure.unit.NonSI and javax.measure.unit.SI for Length notations
	• unitSpeed: The output speed. Refer to the API javax.measure.unit.NonSI and javax.measure.unit.SI for Velocity notations
	• pointField: The field out of the pointSource that is used for naming the point
	• pointFilter: Controls which point to include based on the WARNGENLEV of the point. WARNGENLEV is a value from 1 to 3 where 1 is the highest priority.
	o key WARNGENLEV (column name in the pointSource)
	o value 1, 2, or 3 (can only be a single value), 0 does nothing
	o type: INCLUSIVE – include only points that match the value
	EXCLUSIVE-exclude only points that match the value
	For example, INCLUSIVE 1, will only include points that are WARNGENLEV 1, EXCLUSIVE 3, will only include points that are WARNGENLEV 1 and 2
	• sortBy: Can sort by 'distance', 'name', 'warngenlev, 'population', 'lat','lon','area','parentArea'
	Example:
	`<closestPointsConfig>`
	`  <numberOfPoints>2</numberOfPoints>`
	`  <unitDistance>mi</unitDistance>`
	`  <unitSpeed>mph</unitSpeed>`
	`  <pointField>NAME</pointField>`
	`  <pointFilter>`
	`      <key>WARNGENLEV</key>`
	`      <value>0</value>`
	`      <type>EXCLUSIVE</type>`
	`  </pointFilter>`
	`  <sortBy>`
	`      <sort>warngenlev</sort>`
	`  </sortBy>`
	`</closestPointsConfig>`

<pathcastConfig>	This configuration indicates that a track product is generated to determine the areas the storm will pass under. This is mainly for the 4th bullet and used if type 1 is selected. Refer to the macros contained in the VM_global_library.vm. The following are the different parameters: • enabled: 0 to disable path cast, 1 to enable path cast. • defaultSpeedKt: Default speed in knots to generate the storm track if a recent track was not issued or if there is not STI data. • defaultDirection: Default direction (0 degrees is South) to generate the storm track if a recent track was not issued or if there is not STI data. • nearThreshold: Specifies a distance in miles that indicates how close a storm can be to a location to be included in the path cast.

Value	Description

	• interval: The interval to round the time of each path cast to.
	• maxCount: The max number of points to include in each path cast.
	• pointFilter: Controls which point to include based on the WARNGENLEV of the point. WARNGENLEV is a value from 1 to 3 where 1 is the highest priority.
	o key WARNGENLEV (column name in the pointSource)
	o value 1, 2, or 3 (can only be a single value), 0 does nothing
	o type: INCLUSIVE – include only points that match the value
	EXCLUSIVE-exclude only points that match the value
	For example, INCLUSIVE 1, will only include points that are WARNGENLEV 1, EXCLUSIVE 3, will only include points that are WARNGENLEV 1 and 2
	• areaField: The column name in the areaSource table that contains the name of the area.
	• parentAreaField: The column name in the areaSource that contains the parent of the area (i.e., State).
	• areaNotationField: The column name in the areaSource that contains the key used to map to the correct areaNotation. Look at countyTypes.txt.
	• areaNotationTranslationFile: Translation file to look up an area notation. File located in /edex/data/utility/common_static/base/warngen.
	• sortBy: Can sort EACH path cast by 'distance', 'name', 'warngenlev, 'population', 'lat','lon','area','parentArea'.
	Example:
	`<pathcastConfig>`
	`  <enabled>1</enabled>`
	`  <defaultSpeedKt>20</defaultSpeedKt>`
	`  <defaultDirection>45</defaultDirection>`
	`  <nearThreshold>8.0</nearThreshold>`
	`  <interval>5</interval>`
	`  <maxCount>4</maxCount>`
	`  <pointField>Name</pointField>`
	`  <pointFilter>`
	`      <key>WARNGENLEV</key>`
	`      <value>0</value>`
	`      <type>EXCLUSIVE</type>`
	`  </pointFilter>`
	`  <areaField>COUNTYNAME</areaField>`
	`  <parentAreaField>STATE</parentAreaField>`
	`  <areaNotationField>STATE</areaNotationField>`
	
	`<areaNotationTranslationFile>countyTypes.txt</areaNotationTranslationFile>`
	`  <sortBy>`
	`      <sort>distance</sort>`
	`  </sortBy>`
	` </pathcastConfig>`

Value	Description

<geospatialConfig>	This configuration maintains global variables (i.e., pointSource, areaSource, parentAreaSource) used by area configuration, closest points configuration, and path cast configuration. This configuration also initializes WarnGen to gather all the areas within the CWA. The following are the different parameters:
	• pointSource: The name of the table that reads the points from (i.e. City, MarineSites).
	• areaSource: The name of the table that reads the areas from (i.e County, MarineZones).
	• parentAreaSource: The name of the table that reads the parent areas from (i.e., States).
	• timezoneSource: The name of the time zone table (i.e., TIMEZONES)
	• timezoneField: The name of the column in the timezoneSource that contains the time zones.
	• maskSource: The name of the table that will determine if the warning area should be hatched (i.e. CWA, MarineZones).
	• maskFilter : Upon initialization this will gather all the areas that have a WFO that matches that CAVE is localized to:
	o key WFO
	o value $warngenCWaFilter
	o type: INCLUSIVE/EXCLUSIVE
	Example:
	`<geospatialConfig>`
	`  <pointSource>City</pointSource>`
	`  <areaSource>County</areaSource>`
	`  <parentAreaSource>States</parentAreaSource>`
	`  <timezoneSource>TIMEZONES</timezoneSource>`
	`  <timezoneField>TIME_ZONE</timezoneField>`
	`  <maskSource>CWA</maskSource>`
	`  <maskFilter>`
	`      <key>WFO</key>`
	`      <value>$warngenCWAFilter</value>`
	`      <type>INCLUSIVE</type>`
	`  </maskFilter>`
	`</geospatialConfig>`

Value	Description

<localConfigs>	This configuration is to be used if a user wants to add extra points that are not available in the City table. Each local config should be contained within <localConfig></localConfig>. Refer to importMarkersInfo.sh and/or importPointsInfo.sh on how to import local points. The following are the different parameters:
	• pointSource:
	• pointField:
	• variable:
	• pointFilter:
	• maxCount
	• sortBy:
	Example:
	`<localConfigs>`
	`<localConfig>`
	`<pointSource>i180mm</pointSource>`
	`<pointField>Name</pointField>`
	`<variable>i180mm</variable>`
	`<pointFilter>`
	`<key>WARNGENLEV</key>`
	`<value>0</value>`
	`<type>EXCLUSIVE</type>`
	`</pointFilter>`
	`<maxCount>50</maxCount>`
	`<sortBy>`
	`<sort>Name</sort>`
	`</sortBy>`
	`</localConfig>`
	`</localConfigs>`

<riverBasinConfig>	This configuration will make available the basinSource to allow basin names to be retrieved if they intersect the warning polygon.
	Example:
	`<riverBasinConfig>`
	`<basinSource>basins</basinSource>`
	`<nameField>name</nameField>`
	`<maskFilter>`
	`<key>cwa</key>`
	`<value>$warngenCWAFilter</value>`
	`<type>INCLUSIVE</type>`
	`</maskFilter>`
	`</riverBasinConfig>`

WarnGen passes various Java objects to the velocity templates that can contain various information or be a utility object that can be used in generating a warning. Some Java objects have their API available on the internet, which can provide more information on the available methods the objects provide. It is important to understand that some objects derive information for tables that are set in the associated configuration file**.**

Header

It is **very important** that the first two lines of your template is the WMO Header and the PIL information as this information will be parsed by the text workstation and placed in the header block of a text editor.

${WMOId} ${vtecOffice} 000000 ${BBBId}

TOR${siteId}

VM_global_library.vm

VM_global_library.vm contains various macros that can be referenced by all templates. Therefore, it is **highly recommended** that this file NOT be modified. Each macro performs common functions that can be used in calculating and generating text. However, a user does not necessarily have to use the macros to produce text (i.e., fourthbullet), but can develop his or her own printing algorithm. The function name is referenced by the first parameter of the macro while the following parameters are the required parameters. For example, the macro#macro(direction $d) is called by direction(90). The appropriate macro will be recognized and produce the appropriate text based on the parameters.

#parse

The #parse macro is function Velocity supported function that can be used to import a file into a .vm file. The important thing to note is that imported files have to be saved in the ***base*** directory.

Table B-3 describes variables from the Java WarnGen plug-in code that are passed to the velocity templates for WarnGen products

Table B-3. Variables Passed to WarnGen Templates

Value	Description
vtecOffice	The 4-letter id that generated the warning (i.e. KOAX); Usually used in the VTEC
siteId	A String: The 3-letter WFO set in Localization used for creating the PIL.
officeShort	String set in site localization config.xml by "*warngenOfficeShort*".
officeLoc	String set in site localization config.xml by "*warngenLocation*"
backupSite	The backup site selected in the 'Backup' selection area.
BBBid	A string that keeps track of the number of corrections performed on a warning. (i.e., CCA)
localtimezone	Time zone derived when calculating the areas. Commonly used when using the secondBullet macro. This is a required field. Refer to the secondBullet macro for more info.
secondtimezone	If the Warning spans multiple time zones, the second Time Zone is stored here. Will only become available if the path cast has an additional timezone.
stormType	Used to indicate if the warning is for a single storm or a line of storms. If the value is "line" then it is a line of storms or "single" if it is a single storm.
now	Date object of the current time.

Value	Description
start	Date value representing the start time of the warning.
expire	Date value representing the expiration time of the warning.
event	Date value representing the time of occurance of the warning.
ugcline	A list of the ugc or zones of each affected area. This variable depends on the affected areas (i.e. county or marine zones).
ugclinecan	A list of the ugc or zonesof each county or zone that was canceled.
areaPoly	An array of Coordinates of the warning polygon.
movementSpeed	Double representing the speed of the storm based on the track. The speed units can defined in the closestPointsConfig.unitSpeed configuration..
movementDirectionRounded	Double representing the rounded direction of the storm track in degree where 0 is south. The possible values are 0, 90, 135, 180, 225, 270, 315. This variable is commonly used with the macro direction to give a general description if the storm is moving NORTH, NORTHEAST, WEST, etc.
movementDirection	Double representing direction of the storm track in degrees where 0 is South.
movementInKnots	Double representing the movement speed in Knots. This is mainly used when generating the TML line of the warning.
action	The action the warning is performing: NEW, COR, EXT, CON, CAN, and EXP. CANCON is an action indicating there were canceled areas and continued areas. This action is mainly used to help rendering both.
etn	Event Tracking Number
phenomena	String representing the two letter VTEC pp field.
WMOid	WarnGen automatically sets this variable to TTAAii. When the text is sent to text workstation, text workstation replaces it with the appropriate WMO header retrieved from the afos_to_awips table.
bullets	An array of Strings that contain all the bullets that were selected.
eventLocation	The coordinate of the event. This is commonly used in the 3rd bullet Array of Point2D values (java.awt.geom.Point2D):
otherPoints	Array of ClosestPoint objects. This array is used when type 2 or 3 is passed to the fourthBullet. Refer to areaConfig.otherPoints to sort the array. A ClosestPoint object has the following members: name population warngenlev distance

Value	Description
pathCast	An array of PathCast objects. Each PathCast object is grouped by 'time' in ascending order. This array is only used when type 1 is passed to fourthBullet. The following are members: • points: All the points (i.e. Cities) that are listed for the path cast in the form of an array of ClosestPoint objects. • Area: Refer to pathCastConfg.areaField. • areaNotation: Can be either COUNTY, PARISH, ZONE. Refer to countyTypes.txt. • parentArea: Refer to pathCastConfig.parentAreaField. • timeZone. • time: Time of the path cast.
closestPoints	An array of ClosestPoint objects closest to the event. A ClosestPoint object has the following members: • Name: Name of the point, such as the city name or marine site name • Area: The name of the area, such as the county name. • parentArea: The name of the parent area, such as the state. • point: Coordinate of the point. • distance: Distance from point to the event. • roundedDistance: Distance as a rounded integer without any decimals. • azimuth: The angle of point from the event. In other words, the point is relative to the event. Because the event is the reference, the azimuth needs 180 subtracted in order for the city to become the reference for the event. • roundedAzimuth: Azimuth to the closest 45 degree intervals. • oppositeAzimuth: 180 degrees from the azimuth. • oppositeRoundedAzimuth: 180 degrees from the roundedAzimuth. • population: Population in the city. This variable is not available for marine sites or locally added cities or markers. • Warngenlev: Priority level where 1 is the highest.
areas	An array of AffectedAreas object. This object is usually used in the 1st bullet. An AffectedAreas object has the following members: • Name: The name of the area affected. Refer to areaConfig.areaField. • partOfArea: NORTH, NORTHEAST, EAST, etc. • areaNotation: The notation of the area affected (COUNTY, PARISH, etc.). Refer to countyTypes.txt. • partOfParentRegion: NORTH, NORTHEAST, EAST, etc. • parentRegion: The name of the parent region that is affected. Refer to areaConfig.parentAreaSource. • fips: fips county number. • stateabbr: State abbreviation (i.e., NE for Nebraska). • points: If applicable, a list of the points that are affected. • timezone. • size: Size of the area.
cancelareas	An ArrayList of AffectedAreas objects that are canceled from the original warning. This is commonly used in follow up velocity files.

<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>pointComparator</td><td>Allows two closest point array objects to be combined and sorted. The key method to use is combine. The first two parameters are the two closest point object arrays to be combined. The following parameters can be an N number of Strings that the newly combined array will be sorted by ('distance', 'name', 'warngenlev, 'population', 'lat','lon','area','parentArea').
For example,:
${pointComparator.combine(${otherPoints},${i80mm},”warngenlev”)}.</td></tr>
<tr><td>TimeFormat</td><td>Used along with the dateUtil object. The following are all the possible variables. Refer to the Java API SimpleDateFormat for more information.
<table>
<tr><th>Hashtable Key</th><th>Hashtable Value</th></tr>
<tr><td>header</td><td>hmm a z EEE MM d yyyy</td></tr>
<tr><td>plain</td><td>hmm a z EEEE</td></tr>
<tr><td>clock</td><td>hmm a z EEEE</td></tr>
<tr><td>ymdthmz</td><td>yyMMdd'T'HHmm'Z'</td></tr>
<tr><td>ddhhmm</td><td>ddHHmm</td></tr>
<tr><td>Time</td><td>HHmm</td></tr>
</table>
</td></tr>
<tr><td>list</td><td>ListTool object.
Refer to API for org.apache.velocity.tools.generic.ListTool for more information.
Method use examples:
$primes is an array of integers containing {2, 3, 5, 7}
$lists.size($primes) -> 4
$lists.get($primes, 2) -> 5
$lists.set($primes, 2, 1) -> (primes[2] becomes 1)
$lists.get($primes, 2) -> 1
$lists.isEmpty($primes) -> false
$lists.contains($primes, 7) -> true</td></tr>
</table>

Value	Description

mathUtil	WarnGenMathTool
	(extends org.apache.velocity.tools.generic.MathTool).
	Used for rounding to the nearest 5 or 10, for example, of a specific value.
	For instance, wind speeds in the third bullet should be rounded to the nearest 5 MPH so they should call this method with the arguments (windSpeed, 5). There are two available methods for this object aside from the methods in MathTools:
	`roundToInt(value, multiple) -`
	`roundTo5(value) – calls roundToInt(value,5)`
	Methods:
	(http://velocity.apache.org/tools/devel/javadoc/org/apache/velocity/tools/generic/MathTool.html)
	`$mathUtil.roundTo5(num)`
	`$mathUtil.roundToInt(num, multiple)`
	`$mathUtil.abs(num)`
	`$mathUtil.add(num1, num2)`
	`$mathUtil.ceil(num1)`
	`$mathUtil.div(num1, num2)`
	`$mathUtil.floor(num1)`
	`$mathUtil.getAverage(nums)`
	`$mathUtil.getRandom()`
	`$mathUtil.Total(nums)`
	`$mathUtil.matchType(num1, num2)`
	`$mathUtil.max(num1, num2)`
	`$mathUtil.min(num1, num2)`
	`$mathUtil.mod(num1, num2)`
	`$mathUtil.mul(num1, num2)`
	`$mathUtil.pow(num1, num2)`
	`$mathUtil.random(num1, num2)`
	`$mathUtil.round(num1)`
	`$mathUtil.roundTo(decimals, num2)`
	`$mathUtil.sub(num1, num2)`
	`$mathUtil.toDouble(num1)`
	`$mathUtil.toInteger(num1)`
	`$mathUtil.toNumber(num1)`

Value	Description

dateUtil	A DateUtil object can format a Date object (i.e. start) into a particular display string based on the passed timeFormat. Refer to timeFormat to see the all the possible types. The most useful method to use is format(date, timeFormat, interval, timezone).
	dateUtil (com.raytheon.viz.warngen.util.DateUtil).
	Methods:
	`$dateUtil.format(Date,`
	`$dateUtil.format(Date,`
	`$dateUtil.format(Date,TimeZone)`
	`$dateUtil.format(Date,DateFormat)`
	`DateFormat, Interval)`
	`DateFormat, Interval,`
	`DateFormat, TimeZone)`

productClass	The single letter indicating if the warning is in operational mode (O) or test mode (T).
floodseverity	This is usually used in follow up hydro products. The value is derived from the HTEC of the initial warning. The flood severity is set in the velocity template using conditional logic based on the bullets selected in the dialog. Minor flood = 1, moderate flood = 2, major flood = 3.
floodic	The immediate cause from the initial warning. This is commonly used in follow ups.
ic	The immediate cause used in the HTEC. Common values are ER, DR, GO, IJ, RS, SM, DM.
includedWatches	An array of the included watches mentioned in the config.
riverdrainages	An array of the names of the basins that are included in the warning polygon. Refer to River Basin Configuarion for more info
specialCorText	The raw message of the record to be corrected without the WMO header line and the the PIL line. The VTEC in the raw message is updated to have a COR action. This variable is made available if there is no change in the storm track
stationary	True or false if there are no time points (i.e. only a single frame)
user	Username
watches	A WatchUtil object that can gather tornado and/or severe thunderstorm watches within the watch area. The areaConfig.includedWatchAreaBuffer is used to determine whether to include the watch or not. The WatchUtil has two useful methods: • `getTorWatches` • `getSvrWatches` These methods return an array list of WeatherAdvisoryWatch objects that have the available variables: phensig, endTime, parentRegion, partOfParentRegion. It is important to note that the endTime is set to the latest time in the array list.
zoneslist	Similar to ugcline but contains the zones instead of counties.

B.1 How to Access the Data Contained in a Value Inside a Template

In general, any String, primitive type method, or attribute can be accessed directly within the WarnGen template using the following syntax:

```
String or primitive type: ${myStringValue}
```

In the above context, myStringValue was a String passed directly into the template:

```
String method: ${dateUtil.format(${pc.time}, ${timeFormat.clock},
${localtimezone})}
```

In the above context:

dateUtil is a com.raytheon.viz.warngen.util.DateUtil Object that contains the method format, which accepts 3 arguments.

${pc.time} (a date value from the pathCast) is replaced by the time attribute of the pc object.

${timeFormat.clock} is replaced by the SimpleDateFormat addressed in the timeFormat Hashtable by "clock"; ${localtimezone} is replaced by the localtimezone object.

B.2 Modifying / Editing Templates

WarnGen templates should be accessed and modified through the Localization perspective within CAVE.

***Note**:* Any line that begins with a pound (#) symbol or any variable surrounded by $ {} could potentially be dangerous to alter.

B.2.1 Time Ranges

Table B.2.1-1 defines the time ranges in which actions will become available. 'Start Time' and 'End Time' are defined as the start time and the end time of the warning, respectivley.

Table B.2.1-1. Start and End Times for Actions

Action	Start	End
NEW (Reissue)	End Time – 20 minutes	End Time + 30 minutes
CON	Start Time	End Time – 5 minutes
CAN	Start Time	End Time – 10 minutes
EXP	End Time – 10 minutes	End Time + 10 minutes
EXT	Start Time	End Time – 5 minutes
COR	Start Time	Start Time + 10 minutes

B.2.2 Locking Text

Lock texts appear as blue text in the text workstation and cannot be modified. Locked text are defaulted to certain strings. However, additional lines in the template can also be locked by surrounding it with the tags <L> and </L>. If the pattern used to auto lock the text does not satisfy the user, auto lock can be turned off in the .cfg files. A list of strings that automatically get locked follows:

- UGC LIST (NEC053-021-177-212215-)
- VTEC (/O.NEW.KOAX.TO.W.0001.110221T2143Z-110221T2215Z/)
- HTEC
- Bulletin (BULLETIN – EAS ACTIVATION REQUESTED)
- Warning Type (TORNADO WARNING)
- Site (NATIONAL WEATHER SERVICE OMAHA/VALLEY NE)
- Date (343 PM CST MON FEB 21 2011)
- First Bullet Header (* TORNADO WARNING FOR...)
- County Names (DODGE COUNTY)
- Second Bullet (* UNTIL 415 PM CST)
- Cancel/Expire line
- CTA Start Marker (PRECAUTIONARY/PREPAREDNESS ACTIONS...)
- CTA End Marker (&&)
- Polygon Coordinates (LAT...LON 4144 9663 4155 9677 4174 9657 4174 9655
- 4182 9649 4163 9624 4144 9657)
- Time Motion Location (TIME...MOT...LOC 2143Z 225DEG 20KT 4153 9662)
- Segment Terminator ($$)

B.2.3 Suppress Counties

If a user wants to suppress the part of areas description for an area, such as (NORTH SARPY), the user can create a file named 'counties.suppress'. The file should be placed in the localized WarnGen directory (i.e., the same directory where localized template files are placed). Each line in the file will correspond to a particular county. For example, 'NEC177' is for the Nebraska county 177. However, if the user only wants to suppress the part of areas NORTH and SOUTH, the user can add ':ns' to end of the line. The same will hold true if only the user wants to suppress EAST and WEST with ':ew'.

B.2.4 Wrapping Text

WarnGen has an internal algorithm that will wrap the text. However, the process will also indent bullet sub-lines (i.e., not the first line of the bullet). A bullet is indicated by the asterisks (*). There may be a time when a path cast may be too long, and that it will wrap. However, in a follow-up there are no asterisks. Therefore, a path cast lines, if too long, will not indent.

B.2.5 Adding Bullets

Bullets can be added to WarnGen by editing or creating a site- or user-level .xml configuration file.

Look at the <bullets> tag in an existing template. Note that it contains several existing bullets, and that additional bullets can be added by following the basic pattern <bullet bulletName=”x” bulletText=”y”> in the proper order.

After the bullet has been successfully added to .cfg file, the associated .vm file must be modified to take that bullet into account.

B.2.6 Adding “Call To Actions”

When adding a Call To Action statement, Example #4 in this appendix should be followed.

First, check to see if the list containing the bulletName is using an if statement. Insert the text for the Call To Action on the following line, followed by an empty line. Finally, finish the if statement with a #end.

B.2.7 Examples

The following VTL examples are taken directly from the severethunderstorm.vm template:

Example #1

```
#if(${mode}==”test” || ${mode}==”practice”)

TEST...SEVERE THUNDERSTORM WARNING...TEST

#else

SEVERE THUNDERSTORM WARNING

#end
```

Example #1 is a typical if statement. If the mode is set to test or practice, then “TEST...SEVERE THUNDERSTORM WARNING...TEST” is printed to the SVR product; otherwise, “SEVERE THUNDERSTORM WARNING” is printed.

Example #2

```
${officeLong} HAS ISSUED A
```

Example #2 will output “THE NATIONAL WEATHER SERVICE IN OMAHA HAS ISSUED A” if officeLong is set correctly in the com.raytheon.viz.warngen/config.xml.

Example #3

```
#if(${list.contains($bullets, "doppler")})

   #if(${stormType} == "line")

     #set ($report = "NATIONAL WEATHER SERVICE DOPPLER RADAR
INDICATED A LINE OF SEVERE THUNDERSTORMS")

   #else

     #set ($report = "NATIONAL WEATHER SERVICE DOPPLER RADAR
INDICATED A SEVERETHUNDERSTORM")

   #end
```

```
#end
```

Example #3 shows a compound control structure.

If the bullets list sent from WarnGen contains the “doppler” bullet (as indicated by the bulletName in severethunderstorm.cfg), the inner if statement is reached.

At that point, if the stormType is equal to line, then the report text is set to a message indicating a line of storms. Otherwise, the report text is set to a message indicating a single storm. Finally, the first #end completes the stormType if statement, and the second #end completes the list.contains if statement.

Example #4

```
#if(${list.contains($bullets, "torWatchRemainsInEffect")})

${testMessage}A TORNADO WATCH REMAINS IN EFFECT FOR THE WARNED AREA.
IF A TORNADO IS SPOTTED... ACT QUICKLY AND MOVE TO A PLACE OF SAFETY
IN A STURDY STRUCTURE...SUCH AS A BASEMENT OR SMALL INTERIOR ROOM.

#end
```

This example is a typical Call To Action line and should be replicated for any additional Call To Action lines.

The line beginning with #if determines if the torWatchRemainsInEffect bullet is highlighted in WarnGen. If it is, the contents of the testMessage variable are printed, followed by the next three lines of text. The #if statement ends at the #end line.

Example #5

```
#foreach (${city} in ${pc.points})

#if(${city.roundedDistance} < 3)

## close enough to not need azran, considered OVER the area
${city.name}##

#else

## needs azran information

${city.roundedDistance} MILES #direction(${city.roundedAzimuth}) OF
${city.name}##

#end

#end
```

This example shows a “foreach” loop.

pc.points is an array of cities affected by the pathcast of the storm. These objects should not be modified, but they can be used and displayed.

The loop covers the first line until the fine line of the example for each item in the array pc.points. Each item in this array is temporarily renamed to city when it goes through the rest of the template. The #if statement checks if the roundedDistance of the city (which determines how far the city is from the pathcast) is less than 3 miles. If this is true, the city's name is printed. Otherwise, the roundedDistance is printed to indicate in the warning that the storm is roundedDistance miles in roundedAzimuth direction of the city.

Appendix C. Creating Custom Map Scales

Adding new scales to CAVE can be done without the use of localization scripts. New map projects are created through the CAVE menu, saved as a CAVE bundle and then copied to the EDEX server for use. These steps can be used to create a custom map scale, and add it to the scale dropdown in the D2D perspective of CAVE.

Generally, the following information is needed to create a new map. Use the following as an information collection guide before continuing. Utilize the Lat/Lon sampling feature on a blank map to find values for each of the following:

Central Meridian (°) ____________________ (East/West)

Latitude Of Origin (°) ____________________ (North/South)

Lower Left Corner Latitude (°) ____________________

Lower Left Corner Longitude(°) ____________________

Upper Right Corner Latitude (°) ____________________

Upper Right Corner Longitude (°) ____________________

Note: This information can be retrieved from AWIPS I files with the tool maksuparg. Find the scale file for the customized AWIPS I scale in the /awips/fxa/data/localizationDataSets/XXX directory. From there, run the command **maksuparg FILENAME.sup** where FILENAME is the name of the scale. An example of the expected output follows.

```
maksuparg regionalScale.sup
maksuparg 3 25.000000 -95.000000 25.000000
     l 34.343422 -86.801041 49.222343 -58.918396
     l 52.075909 -85.166916 31.691475 -64.714157
     x 0.046138 0.173107 -0.761975 -0.635005
     o 42.471703 -73.894989 998.277192 998.277192 998.276958 998.276958
     o 25.000000 -95.000000 -762.554509 2861.088761 -1066.558964 3165.092723
```

The key to decoding this is as follows:

- The number after the word maksuparg on the second line dictates the scale. Use the following table to associate a number to a scale:

Scale Number	Scale Name
1	Stereographic
2	Othrographic
3	Lambert Conformal (around 1 SP)
4	Azimuthal Equal Area
5	Gnomonic

- The numbers following the scale number are Latitude of Origin and Central Meridian respectively.

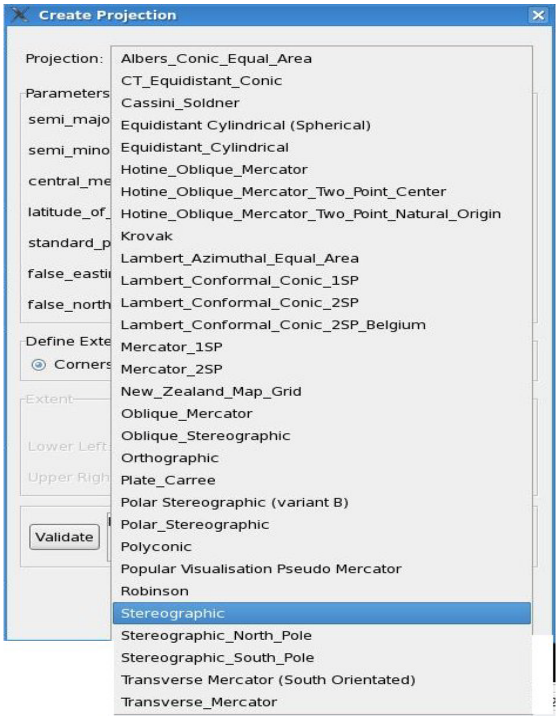
- The numbers on the second line, following the string l, are the coordinates of the lower lefthand corner (lat lon) and upper righthand corner (lat lon) respectively.

1. With CAVE launched, follow this guide to open the Map Projection GUI:\

   CAVE → New → Map Projection…

2. Select the projection type appropriate for the desired map scale from the drop-down selector as shown in **Example C-1.**

   Example C-1. Projection Drop Down List



3. Fill in the appropriate information as collected above; then select the Validate button. If successfully validated, hit the OK button.

   Note: If the input boxes for the Lower Left and Upper Right extents are grayed out, or not editable, try clicking on the radio button for Corners, or pressing the Validate button.

4. If the map is not as desired, repeat steps 1 through 3, changing the input values as necessary to project the desired map.

5. Once the desired map is projected, save as a CAVE bundle by following these menu selections:

   CAVE → Load/Save Displays → Save Editor Display…

6. Save the file into a temporary location (e.g., /tmp) with a unique file name.

7. Copy the file to an EDEX server into the ${EDEX_CONFIG}/cave_static/site/<XXX>/bundles/scales directory and ensure the proper permissions:

```
# scp /tmp/NewMap.xml
$EDEX:${EDEX_CONFIG}/cave_static/site/<XXX>/bundles/scales
```

```
# ssh root@$EDEX
```

```
# chown –R awips:fxalpha
${EDEX_CONFIG}/cave_static/site/<XXX>/bundles/scales
```

```
# chmod –R 775 ${EDEX_CONFIG}/cave_static/site/<XXX>/bundles/scales
```

8. While logged into the EDEX server from previous step, edit the scalesInfo.xml using *vi*. Follow the syntax of a file to add a new <mapScale> tag just below the </mapScales> final tag as seen below:

```
# vi
${EDEX_CONFIG}/cave_static/site/<XXX>/bundles/scales/scaleInfo.xml
```

```
<mapScales>
          <mapScale displayName=”N. Hemisphere” fileName=”NHemisphere.xml”>
                 <partId id=”com.raytheon.uf.viz.d2d.ui.map.SideView:sideView1”/>
          </mapScale>
          <mapScale displayName=”North American” fileName=”NorthAmerican.xml”>
                 <partId id=”com.raytheon.uf.viz.d2d.ui.map.SideView:sideView2”/>
          </mapScale>
          <mapScale displayName=”CONUS” fileName=”CONUS.xml”>
                 <partId id=”com.raytheon.uf.viz.d2d.ui.map.glmap.GLMapEditor”/>
          </mapScale>
          <mapScale displayName=”Regional” fileName=”Regional.xml”>
                 <partId id=”com.raytheon.uf.viz.d2d.ui.map.SideView:sideView3”/>
          </mapScale>
          <mapScale displayName=”State(s)” fileName=”States.xml”>
                 <partId id=”com.raytheon.uf.viz.d2d.ui.map.SideView:sideView4”/>
          </mapScale>
          <mapScale displayName=”WFO” fileName=”WFO.xml”>
          </mapScale>
          <mapScale displayName=”NewMap” fileName=”NewMap.xml”>
          </mapScale>
</mapScales>
```

9. Save and exit when finished editing the file:

```
# :wq!
```

10. Restarting CAVE is necessary to see the new map projection in the map selector dropdown.

Appendix D. Adding Grid Information

Part 1. Grid Parameter Definition

AWIPS II attempts to organize grid parameter definitions in the following way:

Grib 1 Format:

1. Center
2. Subcenter
3. Parameter Table Version
4. Parameter number

Grib 2 Format:

1. Center
2. Subcenter
3. Meteorological Discipline
4. Category (varies by discipline)
5. Parameter number (varies by category)

AWIPS II attempts to have as many parameters defined as possible. This step can be skipped at first to test just getting the model into the system.

The grib 2 parameters are stored in the localization hierarchy of **`/awips2/edex/data/utility/edex_static/base/grib/tables`**

The hierarchy is laid out according to center and subcenter. So, the path would be **`/awips2/edex/data/utility/edex_static/base/grib/tables/center/subcenter/parameter.table`**

According to the Grib 2 specification, parameter numbers below 192 are standard parameters. Parameter numbers above 192 are reserved for local use, meaning the center/subcenter may define these to be whatever they wish them to be.

The -1 center om the tables directory contains the standard parameters.

Upon startup, these tables are read and cached for quick access by the grib decoder. The grib 2 decoder keys directly into these tables and determines the parameter information directly. The grib 1 decoder requires several intermediate steps for transforming the grib 1 table version and parameter number into the corresponding grib 2 discipline, category, and number. Sometimes, centers may reuse other centers' parameter lookup tables. For example, center 74 actually uses center 7's parameter lookup table. A file called grib1ParamTableMap provides a mapping for centers that reuse other centers' lookup tables. After the appropriate center/subcenter/table version is determined, the corresponding discipline, category, and parameter number are retrieved from another mapping file. The conversions are listed in a file called grib1ParameterConvTable.xml. These mappings correspond to the grib1->grib2 parameter mappings found here: http://www.nco.ncep.noaa.gov/pmb/docs/grib2/GRIB2_parmeter_conversion_table.html. Several mappings were also added to this core set to accommodate additional data from other centers and subcenters. The file, in AWIPS II, is located in /awips2/edex/data/utility/common_static/base/grid

Additionally, AWIPS I overrides some abbreviations for several parameters. If an AWIPS parameter abbreviation is provided, that abbreviation will be used instead of the abbreviation provided by the center/subcenter. AWIPS I also goes a step further in renaming some parameters. Two files, master_grib1_lookup.txt and master_grib2_lookup.txt, use the center, subcenter, generating process, and spatial information to transform the parameters further.

Part 2. Geospatial Information

Both grib 1 and grib 2 provide geospatial information in the GDS section of the raw grib file. This information defines the projection of the data and where it is located on a map. A series of XML files define the known projections and geospatial information for the grib information which the AWIPS II system ingests. The following is the location for the baseline definition files:

```
/awips2/edex/data/utility/edex_static/base/grib/grids
```

Check here to see if the grid you are ingesting already has geospatial information defined. For example, if you are ingesting the ETA/NAM past 60 hours, the geospatial information has already been defined.

Site specific files will need to be created in:

```
/awips2/edex/data/utility/edex_static/site/LLL/grib/grids
```

How do I get my geospatial information?

There are two ways you can get this information. Either through the wgrib program, which is not covered in this guide, or by dropping one piece of the raw grib file into /awips2/edex/data/manual.

Here is some of the information you will need to get and record for creating a geospatial xml file:

PROJECTION (lamber conformal, polar stereographic, etc)

LA1

LO1

FIRST GRID POINT CENTER

NX

NY

DX

DY

SPACING UNITS

LOV

LATIN1

LATIN2

Part 3. Grid Definition

The final step is to define the model information. This information is contained with the gribModels.xml file which resides in the following location:

`/awips2/edex/data/utility/common_static/base/grid/`

This file is analogous to the gridSourceTable.template in AWIPS I. An example of one of the entries in this file follows.

```
<model>
        <title>RUC40</title>
        <name>RUC236</name>
        <center>7</center>
        <subcenter>0</subcenter>
        <grid>236</grid>
        <process>
                <id>105</id>
        </process>
        <paramInfo>ruc236</paramInfo>
        <dt>1</dt>
</model>
```

Note that the **<*grid*>** tag in this file references back to the **<*name*>** tag in the geospatial definition file.

Table D-1 provides descriptions of the fields from the gribModels.xml file.

Table D-1. Important XML Definitions in a grib model definition .xml

XML Tag	Description
<model>	Beginning of grid information section
<title>	Title of model - does NOT have to be unique
<name>	Name of model - must be UNIQUE
<center>	
<subcenter>	
<grid>	Grid - specified by the <name> tag of a grid definition file
<process>	List of generating process
<id>	ID of generating process
<dt>	The time step of the model in hours

To create this file, follow these steps:

1. Navigate to the directory in which these files are housed. This should be a site level directory, in the following location:

   `/awips2/edex/data/utility/common_static/site/LLL/grid/`

2. Create the file, and add in the appropriate information. The following is an example which comes from the above HRRR example. Remember to choose a name of the file that is representative of the model:

   vi HRRR.xml

   ```
   <?xml version="1.0" encoding="UTF-8"?>
   <gribModelSet>
       <model>
               <title>HRRR</title>
               <name>HRRR</name>
               <center>59</center>
               <subcenter>0</subcenter>
               <grid>9001</grid>
               <process>
                       <id>125</id>
               </process>
               <dt>1</dt>
       </model>
   </gribModelSet>
   ```

   NOTE: The <grid> MUST match the <name> field in the geospatial information xml. The rest of the information comes from the steps gathered above. <dt> is the time step of the model in hours. For example, the normal ETA is in 6-hr steps. RUC is 1 hr.

3. Ensure the proper ownership and permissions.