

ATTACHMENT A - AWIPS II TO8 Software Installation Procedure

Overview

The AWIPS II TO8 Software consists of the following deliverables Environmental Data Exchange (EDEX), Common AWIPS Visualization Environment (CAVE) and AWIPS Development Environment (ADE). The EDEX server and CAVE client software subsystem can be installed on the same workstation or on computers on a local area network. The attached procedures provide instructions for both cases and for those experienced with AWIPS II a quick start guide for TO8 (Attachment H). The final AWIPS II release will run across a network environment as a cluster of EDEX servers, but the TO8 release has limited functionality. The focus on the system level performance and operation are scheduled for TO11. The test installation of TO8 should use a single instance of the EDEX server, so the runtime environment has to be scaled back from a full AWIPS deployment. Before we jump into the installation procedures, a brief overview of AWIPS II Software subsystems may be helpful. For a more detailed system description refer to the "AWIPS II ADE and CAVE Introduction" on the AWIPS Evolution web site at the following URL:

http://www.nws.noaa.gov/ost/SEC/AE/SA_Training/AWP.TRG.SWCTRTO8.ADE-CAVE_All.pdf

The following overview is intended to provide a quick orientation of AWIPS II to help with the software installation. The AWIPS II system consists of the EDEX server and CAVE runtime subsystems, and includes the ADE subsystem for application development.

The EDEX server ingests, processes, and stores weather data. The data ingest processes retrieves data from the {install path}/edex/opt/data/sbn directory, processes the data and stores the weather products. The binary products are stored in the HDF5 repository and the text products are stored in the Postgres database. The Postgres database also includes metadata for the binary products. The EDEX server processes lookup all product metadata and data URI's in the database. The data URI's are used to retrieve data from the database or hdf5 repository, so the information can be displayed in CAVE. The EDEX server runtime requires a network connection, since the Mule Enterprise Service Bus (ESB) messaging layer uses socket connections. The EDEX subsystem can only be installed on a Linux system, so do not attempt to install the TO8 software release on Windows. This was supported in previous releases, but the system is not configured to run EDEX on Windows.

The CAVE subsystem can be run on the same workstation as the EDEX server or on another computer on the local network. CAVE uses the data URI's stored in the Postgres metadata tables to access the data in the hdf5 repository. The access to these binary files is either on the local filesystem or nfs filesystem, so the easiest and preferred installation for testing and development is to install the EDEX and CAVE software subsystems on the same workstation. The text products are accessed in the Postgres database and returned to CAVE, so text products are retrieved through a service (productSrv) on the EDEX server. The CAVE installation requires the setting of the path to the hdf5 repository, so the binary products can be retrieved. CAVE should be installed as a local user in their home directory. The CAVE software subsystem can be installed on either a Linux or Windows system, but CAVE needs to access the file system on a Linux system to retrieve binary data in the hdf5 repository.

The ADE software subsystem is only required for application development. The ADE software subsystem only needs to be installed when the site plans to work on AWIPS II local applications development or training. The ADE provides the Eclipse development environment to create new Data and CAVE Plugins for any local data requirements. These Plugins are Java classes allowing new data types, new data visualization and functionality to be added to the system without affecting other parts of the system. The system uses an interface to provide this extensibility to add new modules into the operational system without rebuilding the system. The Eclipse integrated development environment can be used to look at the EDEX and CAVE source code and configuration files. The ADE software subsystem should be installed as a local user in the user's home directory. The ADE software can be installed on either Linux or Windows platforms. Developers can change and build the source code on either platforms, but users can only run and test the software changes in the EDEX server running on Linux.

The AWIPS II TO8 software installation requires the above deliverables and it may require a patch file for the EDEX server. The patch file is required to fix memory leaks in the data ingest area of EDEX. Also, the test data and the script to load the test data into the system are useful for testing and evaluation of the TO8 software release. The test data is localized to KOAX, since Omaha is the localization configured in TO8. Localization is implemented in a latter TO release, so we have to work around this for testing and training. Before moving on, the installing site has to obtain the necessary files, see the URL "[https://bestpractices.nws.noaa.gov/contents/awips/dev/docs/AWIPS-II%20software distribution guidance and procedures.pdf](https://bestpractices.nws.noaa.gov/contents/awips/dev/docs/AWIPS-II%20software%20distribution%20guidance%20and%20procedures.pdf)" for instructions on how to get the software. The Software distribution to the field is being handled separately from the installation instructions.

After obtaining the installer and install files, and the data files, the files can either be burned on a DVD or copied to the system that the software is being installed on. The procedures assume that a DVD is being used for the software installation.

Since the hardware is site provided, the instructions are general. So the procedure for the local environment needs to be adjusted for the available system. A few things to consider are as follows:

- Who needs access to the AWIPS II TO8 runtime or development environment? (Testers, Developers and Administrators)
- Are system resources available (disks/memory) to install an instance for all these users or is one shared instance of the EDEX server necessary?
- Do Testers or Developers really need a Client / Server configuration across the LAN to meet the requirements for TO8?

The source and configuration files and Eclipse IDE provide an environment to learn about AWIPS II without connecting to the EDEX server, so a possible scenario to consider is installing CAVE and ADE subsystems on a workstation for Application Developers training. Local applications can be developed in the ADE without interacting with the EDEX server. Then the code can be deployed to the system running the EDEX subsystem for testing.

Installation Procedure Overview

The preferred installation procedure for TO8 testing is as follows:

NOTE: The TO8 EDEX Software installation procedure assumes that the installer is experienced with software installation and administration in Linux. The software is installed as root, but it gives root the option of specifying a non-root user as owner of the edex software and processes. Requires at least 9 GB disk space for cave, edex and data. SELinux should be disabled as in AWIPS for EDEX and CAVE to run.

- 1 The instructions to obtain the software for the installation are at the following URL:
[https://bestpractices.nws.noaa.gov/contents/awips/dev/docs/AWIPS-II software distribution guidance and procedures.pdf](https://bestpractices.nws.noaa.gov/contents/awips/dev/docs/AWIPS-II%20software%20distribution%20guidance%20and%20procedures.pdf)
- 2 Install the EDEX subsystem as the root user on a Linux Workstation having a user "awips" and a group "awips". The user "awips" is the default Postgres configuration, so using "awips" simplifies the installation. The awips user is not created by the installation program. (See Attachment B)
 - 2.1 During the EDEX installation enter the directory path to the desired software installation directory {install path}.
 - 2.2 Choose to install the EDEX service's start/stop scripts. (choose the Server Installation checkbox option)
 - 2.3 Set the Postges/Services user and group to "awips"
- 3 Install CAVE on the same Linux Workstation as EDEX (See Attachment F)
 - 3.1 Install CAVE as a non-root user (awips) in the user's home directory
 - 3.2 Set the path to the TOPO files
 - 3.3 Set the path to the hdf5 data files
- 4 Install the Test Data and load test data script (See Attachment D)
- 5 Install the memory patch (See Attachment E) **(Not recommend / required for UFE testing)**
- 6 Install ADE (See Attachment H) **(Not required for UFE testing)**

NOTE: The TO8 EDEX Software installation procedure has been tested on the following 32 bit Linux releases: Red Hat 4, Fedora 7 and 8, and centos 5. Do not install the TO8 release on x86_64 bit Linux platform.

The installation procedure contains the following sections:

NOTE: The preferred AWIPS II TO8 Software installation procedure is to install EDEX, CAVE, ADE and test data on the same computer. So follow the below steps 1, 3, 5 and 7 to install all the subsystems on the same computer. After installing the EDEX server, the TO9_Memory patch may be installed in step 4. This patch fixes problems with memory leaks during data ingest. Also, the EDEX runtime requires an active network connection, since it uses sockets in the messaging layer. SELinux should be disabled!

1. Installing EDEX Subsystem for Test, Evaluation and Development (Attachment B)

NOTE: The AWIPS II TO8 EDEX Software installation procedure assumes that the installer is experienced with Linux software installation and administration.

The EDEX software installation as delivered by Raytheon installs the services as root with one instance of the Postgres and EDEX servers, and one copy of the test data. The installation script creates edex_activemq, edex_mule, edex_postgres, and edex_tomcat services to start and stop the required processes. These service scripts are placed in /etc/init.d by the installer. The EDEX software can only be installed on Linux systems.

2. Installing EDEX Subsystem for Development in a single user configuration (Attachment C) **TODO**

The EDEX software installation is performed by a non-root user with their own copy of Postgres and EDEX servers, and copy of the data. This requires from 10 to 20 GB of disk space in the users home directory. The user starts and stops the services using scripts in their user area. This configuration can be used for local applications developers. Who require their own test and runtime environment. The EDEX software can only be installed on Linux systems. **(TODO, not required at this time)**

3. Installing Test Data (Attachment D)

This procedure describes installing and loading test data. A script is provided to copy data into the EDEX data ingest directories to process the test data. After loading the test data into the *{install path}/edex/opt/data/sbn* directory, make sure the file permissions are correct for EDEX to read the files.

4. Installing Memory patch (Attachment E) **(Not recommended nor required for UFE testing)**

This procedure describes running the TO9 memory patch script to update the EDEX server. During TO8 acceptance testing an issue with memory usage was discovered, so a patch file is provided to correct these issues.

5. Installing CAVE on the same computer with the EDEX server (Attachment F)

This procedure describes installing CAVE on the same system as the EDEX server, so the HDF5 data access is on the same computer. This configuration does not require network file access. Install and run CAVE as a non-root user. SELinux should be disabled!

6. Installing CAVE to access data on another system (Attachment G) TODO

This procedure describes installing CAVE on a different system from the EDEX server, so the HDF5 data access is on another computer. This configuration requires network file access over the local network. CAVE can be installed on either Linux or Windows systems. (TODO, not complete at this time)

7. Installing AWIPS II Development Environment (ADE) (Attachment I)

This procedure describes installing the TO8 source code and development tools. The ADE subsystem can be installed on either Linux or Windows systems, but EDEX only runs on Linux systems.

8. AWIPS II TO8 Quick Start Guide (Attachment H)

This procedure describes verifying the TO8 EDEX and CAVE subsystems operation after following the installation procedures described in other attachments to this document.

9. AWIPS II TO8 Quick Start Admin Guide (Attachment L)

This guide provides a few quick steps to help in system check out after following the installation procedures in attachments B, D and F.

10. AWIPS II TO8 Quick Start Developers Guide (Attachment ?) TODO

This guide describes a few quick steps to get started with local applications development. (TODO, not complete at this time)

NOTE: The AWIPS II TO8 EDEX Software can be installed at the system level with one instance of the Postgres and EDEX servers, or at the user level where each user has an instance of the EDEX server. The second configuration, which does not require root access, can be used by local applications developers who need their own test and runtime environment. If the system is installed at the system level, then use the procedure in attachment B, otherwise use the procedure in attachment C for user installed services.