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Epics ILCTA Archiving

Vladimir Sirotenkov

Abstract

This document contains implementation details of Epics Channel Archiver for ILCTA control system at Fermilab.

1 Introduction

We are using Channel Archiver toolset to archive any variable which is a part of Experimental Physics and Industrial Control System (EPICS) widely used in ICLTA facility. Variables are accessed via channel access network protocol (CA). The toolset includes the following components: (i) the Archive Engine which collects data from a given list of channels; (ii) data which are stored in binary index and data files; (iii) retrieval tools which provides generic way for browsing the available channels and values; (iv) tools for archive maintenance and manipulation.

2 Configuration

The current version of the Channel Archiver is 2.9.2 and it was build under epics 3.14.7 on Fermi Scientific Linux 3.0.4. To use ArchiveViewer 1.0.4 one need JDK 1.4 or later and to use ArchiveViewer as Java Server pages, one need to install Apache's Tomcat 5.5 or higher on a web server. The Channel Archiver toolset is organized as a package *chan_archiver* in the local ups database on the Mesan Detector Building (MDB) Linux cluster.

There are currently 5 archive engines running: MDB (cryogenics), CTF (cryogenics), NML (cryogenics), A0 coupler and Proton Driver with total of more than a 1000 archived channels with average scan rate 10 seconds. All engines run on smtfs2.fnal.gov and store data into the local disk /mnt/smtfs2 with 216 Gb capacity.

The following directory structure is used:

/mnt/smtf2/archive/current - for current archives

/daemon

/a0coupler

/ctf

/mdb

/nml

/protondriver

/mnt/smtf2/archive/history - for previous, saved archives

The engine configuration is kept in the files *engineconfig.xml* which reside in the archivers subdirectories like /nml, /mdb and so on. The daemon configuration file has a name *ArchiveDaemon.xml* and can be found in the /daemon subdirectory.

3 Running the Archiver

The epics archiver is configured to start in one of two ways: through a daemon or through the command line.

3.1 Daemon

From the command line:

```
> setup chan_archiver
> cd $ARCHIVER_DAEMON
> ArchiveDaemon.pl -f ArchiveDaemon.xml
```

Configuration file ArchiveDaemon.xml describes all ArchiveEngines controlled by the ArchiveDaemon, so if new archive has to be added, one has to edit this configuration file and restart daemon. After being started ArchiveDaemon will be detached from the terminal and can be connected through the any web browser pointed to the following URL:

http://smtfs2.fnal.gov:4610

Here 4610 is the default daemon port which can be changed in configuration file. All ArchiveEngines controlled by this daemon can be accessed from that web site and can be enabled [disabled]. ArchiverDaemon can be stopped via web by setting

http://smtfs2.fnal.gov:4610/stop

3.2 Command line

Each archive engine can be started from command line:

```
> setup chan_archiver
> cd $ARCHIVE_CURRENT/<your archive directory>
> ArchiveEngine [-port <port>] <config file> <index file>
```

Default port is 4812, but you can use any other port number.
After that you can monitor/control archive engine from the web site

http://localhost:4812

To stop archiver, use

http://localhost:4812/stop

4 Viewing the Data

The Archiver Data Server is hosted by the web server, read data from many archives and serves them using XML-RPC protocol to various archive data viewer clients. The Data Server URL is defined as $URL environmental variable and its configuration file as $SERVERCONFIG (defined after command ‘setup chan_archiver’)
In out case

SERVERCONFIG=$CHAN_ARCHIVER_DIR/cgi/serverconfig.xml

```
URL=http://smtfs1.fnal.gov/cgi-bin/archive/ArchiveDataServer.cgi
```

To add or remove archive which will be served by Data Server, one has to edit server configuration file.
Two basic approaches are used to view data from the different archives through Data Server: running Archive Viewer as apps using JSNP/WebStart and running Archive Viewer as Java Server Pages (JSP) .

4.1 Archive Viewer as apps

On MDB Linux cluster after 'setup chan_archiver' just do

```
$CHAN_ARCHIVER_DIR/archiveviewer
```

On Windows machines we recommend to follow steps below to solve the problem of accessing Data Server which is behind the BD firewall and speed up X response

1. Copy folder *\\d0server6\projects\onl_apps\smtf\SmtfArchiverAccess* to your local disk and go to that folder
2. Create shortcut for ArchiveViewerFnal.jnlp to your desktop, rename it to "ArchiveViewer"
3. Create shortcut to SMTFS1-Run-SSH.CMD to your desktop, right click on it, choose Properties and in Target field after last " add the following:
   outback.fnal.gov <your user name>
   So Target field should look like that (example of my case):
   "C:\SmtfArchiveAccess\SMTFS1-Run-SSH.CMD" outback.fnal.gov sirotenk
   Look at the properties of the "Example of Shortcut to SMTFS1-RUN-SSH.CMD"
   Rename shortcut to "smtf-access"
4. Double click on that shortcut "smtf-access" and in command window type your kerberos password. You will be logged in to outback Linux node. Keep that command window during your following session, you can minimize it.
5. Double click on shortcut "ArchiveViewer", archiveviewer will start.

After the installation only steps 4 and 5 are necessary.

4.2 Archive Viewer as JSP

If web browser is running on the MDB Linux cluster, the following URL will access Archive Data Server:

http://smtfs1.fnal.gov:8080/archiveviewer

Again for Windows machines outside the BD firewall you should use steps 1-3 from the section 4.1 and after clicking on "smtf-access" and keeping that running, point your web browser to the following URL:

`http://localhost:8080/archiveviewer`

and then click “Connect” to access Data Server.