Control System Studio Training - Archive System

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Archive System Interactions

- **End user**
  - Look at PVs in Data Browser

- **Administrator, ..**
  - Setup Data Store
  - Create Configuration
  - Run Archive Engine(s)

*See additional slides or guidebook*
Archive System Overview

- IOC
  - Channel Access
  - ArchiveEngine
    - Config.
    - Samples
  - RDB (Oracle, MySQL, PostgreSQL)
  - Archive Config Tool
    - config.xml
  - Other tools for config & samples
- CSS-based OPI
CSS Data Browser Configuration

- Can be done via preference GUI

- Better: plugin_customization.ini of CSS product:

```
# Read-only(!) archive access
org.csstudio.archive.rdb/url=jdbc:mysql://localhost/archive
org.csstudio.archive.rdb/user=report
org.csstudio.archive.rdb/password=${report}
org.csstudio.archive.rdb/schema=

# URLs for archive search
org.csstudio.trends.databrowser2/urls=jdbc:mysql://localhost/archive

# Default data sources for newly added channels
# Format: <name>|<key>|<url>
org.csstudio.trends.databrowser2/archives=RDB|1|jdbc:mysql://localhost/archive
```
View Archive Data in CSS Data Browser

- Open Data Browser Plot
- Add PV
  - If default archive setup lists data source with historic data for the PV, it will be displayed
Searching for PVs in Archive

- **Open Archive Search View**
  - Data Browser Perspective, or Plot’s context menu

- **Search for channels via pattern**

- **Send to new Data Browser**
  - Via context menu

- **Send to existing Plot**
  - Via drag & drop
That’s it!

- Look at data in Data Browser, no matter if “live” or “archived” data

Steps to setup and maintain the infrastructure is a different topic, needs more time.
Setup Steps

- Prepare RDB
- Create & Import initial configuration
- Run Archive Engine
Prepare RDB

Plugin org.csstudio.archive.rdb, folder dbd/:

Copy/paste the commands for the following from mysql_schema.txt into a mysql shell:

1. Create “archive” user with password “$archive”
2. Create “report” user with password “$report”
3. Create “archive” data base
4. Create tables, insert some demo data
Create & import initial configuration

a) Directly manipulate tables in RDB?

b) Use ArchiveConfigTool to import XML file

Same format as Channel Archiver:

```xml
<engineconfig>
    <group>
        <name>Cooling</name>
        <channel><name>demo:tank</name>
            <period>1.0</period><monitor/>
        </channel>
    </group>
</engineconfig>
```

Import:

```
ArchiveConfigTool -pluginCustomization /path/to/settings.ini \ 
    -import -engine demo -config demo.xml
```
settings.ini

Prepare file settings.ini, starting like this:

```
# Archive RDB (Config Tool, Archive Engine)
org.csstudio.archive.rdb/url=jdbc:mysql://localhost/archive
org.csstudio.archive.rdb/user=archive
org.csstudio.archive.rdb/password=$archive
org.csstudio.archive.rdb/schema=

# Channel Access (Archive Engine)
org.csstudio.platform.libs.epics/addr_list=127.0.0.1
org.csstudio.platform.libs.epics/use_pure_java=true
```
Online Configuration Editor

In the process of making the SNS-specific tool useful to other sites…

- Add `web.archive.war` to Tomcat
- Add to `conf/catalina.properties`:
  ```
  web.archive.settings= /path/to/archive.properties
  ```
- Example `archive.properties`:
  ```
  # Database server URL
  rdb_url=jdbc:mysql://localhost/archive

  # Schema prefix to use. Must include trailing ".".
  schema=

  # User for read-only access
  anonymous_user=reports

  # Password for read-only access
  anonymous_password=secret
  ```
Run Archive Engine

Start:

ArchiveEngine -pluginCustomization /path/to/settings.ini \
- engine demo

Monitor:

http://localhost:4812/main

– Check start time, number of channels
– Look at groups, individual channels
– Values received and written for each channel

Stop:

http://localhost:4812/stop
Multiple Archive Engines

On each host, need unique port numbers (default: 4812)

EngineConfigImport ... -port 4813
ArchiveEngine ... -port 4813

Web access via http://localhost:4813/main

• Consistency check: Engine compares its port with the number in the configuration.

• RDB configuration for engine also contains host:

  EngineConfigImport ... -host some_host

In principle, one could create a tool that automatically starts archive engines on a host based on RDB info. Not implemented.