SHM Communications

Applications Note AN027   Rev 1 Date 18/03/09

Using XLeMs to export data to another application via CSV files.

Revision	Date	Change

Introduction

This note describes how to use XLeMs as a data collector for SHM Loggers and use the Scheduled Report facility to export this data in the form of CSV files, which can subsequently be imported into another application for processing and analysis.

This method requires XLeMs version 1.1.0 or later.

It is assumed that the reader has installed XLeMs and is reasonably familiar with its operation.

Configuring the System

Before starting, you must first configure the system (Connections, Loggers, Channels) as described in the XLeMs manual, to correspond with your installation of Loggers and Meters.

Next, using the XLeMs Scheduler, create a new Daily Action to collect all logger data at some convenient time (eg. 01:00 assuming the Scheduler is running all the time) :-
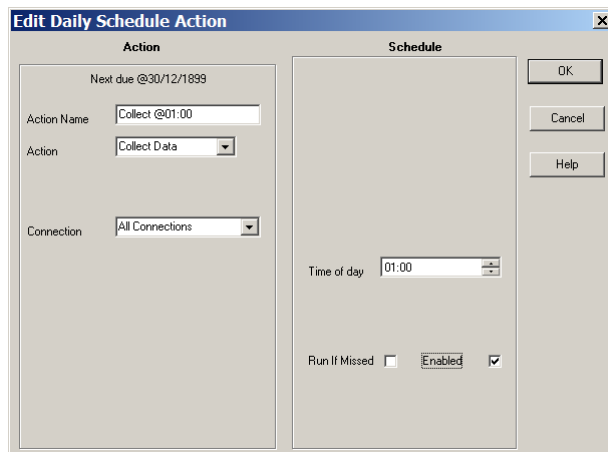
Try running the Action now (right-click and select **Run Now**) and check that data is collected from all the logger channels.

You have now configured the system to collect half-hour data from all your loggers and store it in the XLeMs database.

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Preparing CSV Templates

To generate the reports, you will need to create one or more Templates. You cannot have more than 250 channels in a Template (an Excel limitation), and you may want to limit the number of channels further to make things more manageable.

A sample Template that generates daily half-hour data in CSV format is supplied with XLeMs, and serves as the starting point for generating your new Templates.

**NB.**   Do not modify the sample Templates, always create new Templates based on the samples.

From the XLeMs Control Centre, use the menu command "Template | New from Existing" and select the file **Xamp-CSV.xls**. The following dialog should appear :-
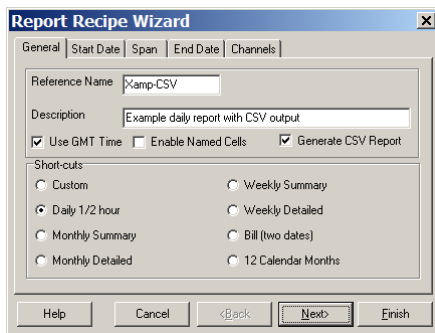
The first thing to do is change the **Reference Name** to something else. The new name will become the Template filename and form the root name of the CSV reports it produces. For example, change it to CSV-01 :-
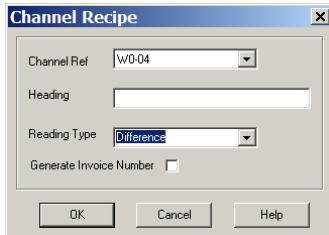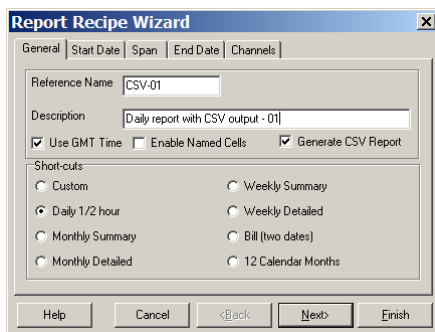

Click [Next] until you reach the Channels page. It will look something like this :-

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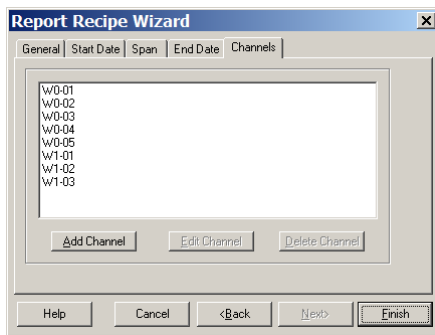
The Channel References above (W0-01 etc) will be replaced by Channel References from your own system. You should review these channels and Edit them if necessary. The sample Template contains 8 channels, but you can Add or Delete channels as required.

Adding or Editing a Channel will bring up a dialog box like this :-

First, select the appropriate **Channel Ref**.

Leave the **Heading** field blank. This will result in the Channel Ref being used in the Heading Row of the CSV Report.

You will probably want to set the **Reading Type** field to **Difference**. This is appropriate if the Channel's data is an incrementing meter register. The numbers written to the CSV file for each half-hour period will be the advance in reading for that period.
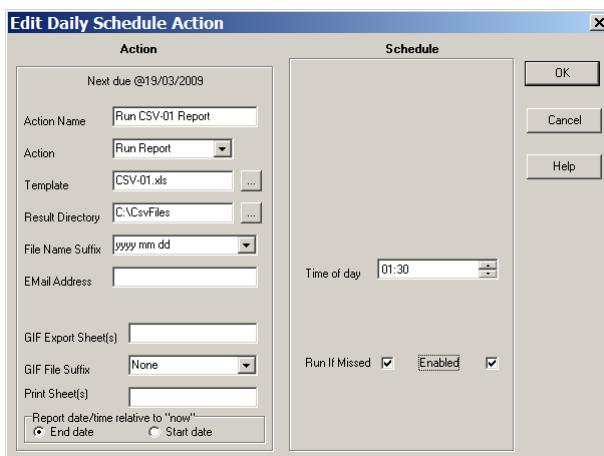
However, if the channel is monitoring an analog quantity (eg. Temperature), then you would set the **Reading Type** field to **Absolute**.

Finally, click the [Finish] button, save the Template and select [No] when asked if you want to view it now.

Generating CSV Reports

You can run Reports manually from the Control Centre, but for this exercise, you will want to run Reports regularly from the Scheduler.

Using the XLeMs Scheduler, create a new Daily Action to run a CSV Report every day at some time after the previous day's data has been collected :-

Set the **Action** to **Run Report**, set the **Template** to be the Template file created above, set the **Result Directory** to the directory where you want the CSV files to be

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written (if it does not exist, it will be created), and set the **File Name Suffix** to **yyyy mm dd** to make each CSV file have a unique name, based on the start time.

Check **Run If Missed** to ensure that the Scheduler will generate missing CSV files when it is restarted, if it was not running when the Reports were due.

Try running the Action now (right-click and select **Run Now**) and check that a CSV report is generated. Typical CSV file contents are shown below :-

```
Date/Time,W0-01,W0-02,W0-03,W0-04,W0-05,W1-01,W1-02,W0-03
16/03/2009 00:00,0,0,10,0,0,10,100,40
16/03/2009 00:30,0,0,10,0,0,10,100,40
16/03/2009 01:00,0,0,20,1,0,20,100,40
16/03/2009 01:30,0,0,10,0,0,10,100,40
16/03/2009 02:00,0,0,10,0,0,10,100,40
16/03/2009 02:30,0,0,10,0,0,10,100,30
Etc....
```

The name of the above file would be `CSV-01-2009-03-16.csv` , consisting of the Template Reference Name (CSV-01) followed by the yyyy-mm-dd suffix.

Database Maintenance

If you have a large number of channels, you may want to delete obsolete records in the database to improve performance. This can be done automatically by the Scheduler.

Using the XLeMs Scheduler, create a new Monthly Action to prune the database at the start of every month :-
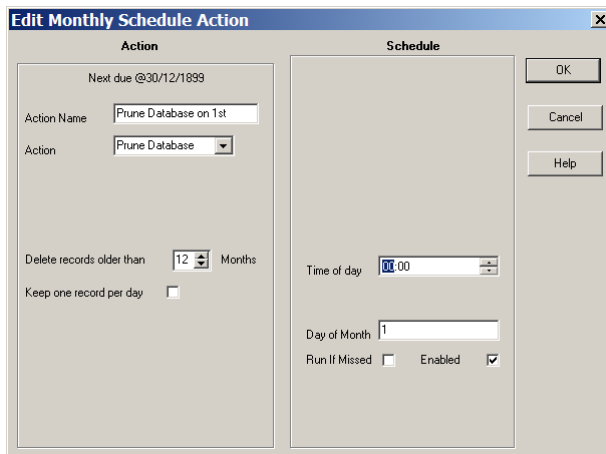
Set the **Action** to **Prune Database**. If you check the **Keep one record per day** box then any readings at 00:00 are kept, so older data is maintained, but with reduced resolution.

It is also useful to keep backup copies of the Database, which can be done automatically by the Scheduler.

Using the XLeMs Scheduler, create a new Weekly Action to back up the database every Monday at 09:00 :-

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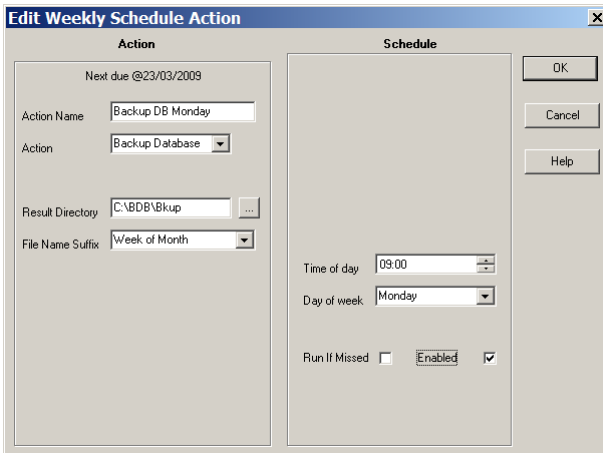
Set the **Action** to **Backup Database**, set the **Result Directory** to the directory where you want the backup to be written, and set the **File Name Suffix** to **Week of Month** to give up to 5 backup files (suffix will be -1, -2, -3, -4, or –5).

The Scheduler tree should now look something like this :-
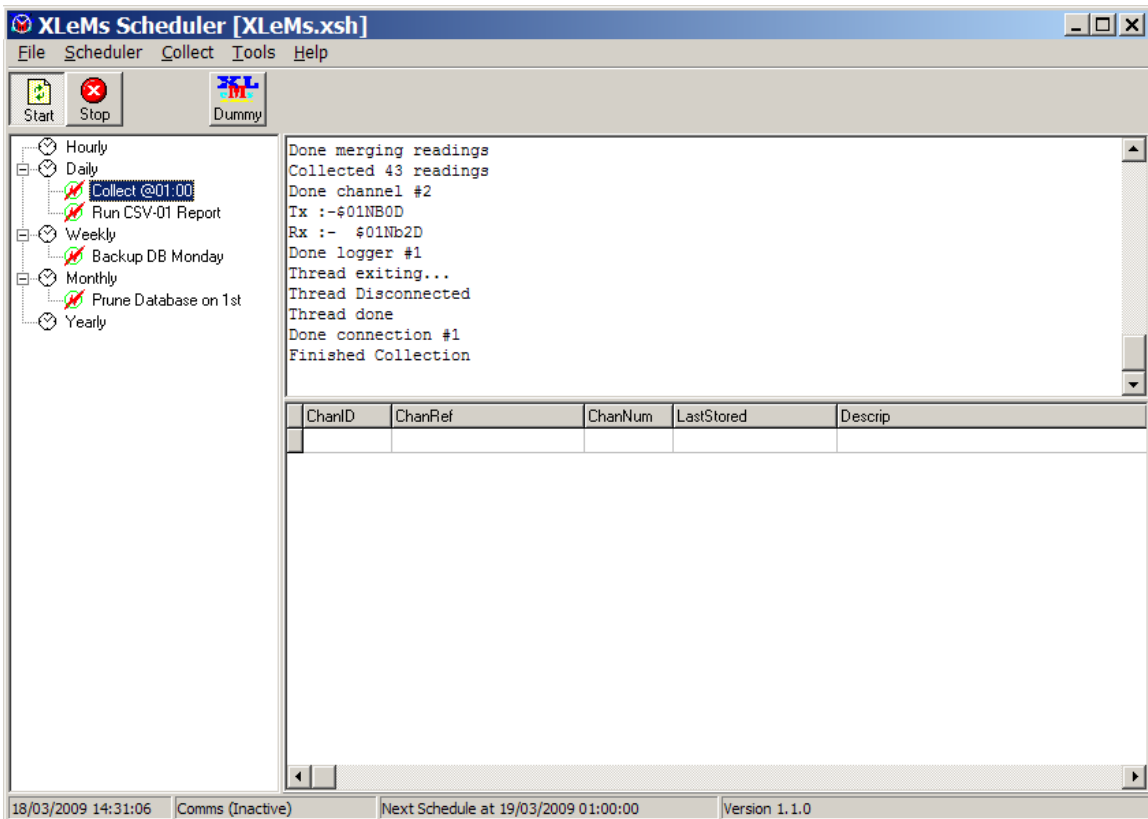
If you have more than one CSV Template, you will need to add extra Daily Actions to run them after CSV-01.

The XLeMs Scheduler will now collect data daily, export it as CSV-format half-hour data, maintain database backups every Monday and prune the database on the 1st of each month.