



# Application Note 0007 Using ReportBuilder™ with Schneider Electric ClearSCADA

## Introduction

ReportBuilder™ can access Schneider Electric ClearSCADA Data via the ReportBuilder™ **ClearSCADA History Functions** FunctionPack. This document describes the steps for configuring this FunctionPack.

## Overview

The **ClearSCADA History Functions** FunctionPack allows ReportBuilder™ to access data logged by one or more ClearSCADA systems. This FunctionPack connects with the ClearSCADA CDBHistoric Table and user configured ClearSCADA Historic Views via the Schneider Electric ClearSCADA ODBC driver (provided by Control Microsystems). By default, this ODBC driver is installed when you install ClearSCADA. You can also install the ODBC driver separately on a different machine that is not running ClearSCADA components that you wish to report from.

The FunctionPack supports reporting data only from the ClearSCADA **CDBHistoric** Table and custom ClearSCADA **Historic Views**. The CDBHistoric table contains raw data logged by ClearSCADA whereas Historic Views contain a summary of data based on evenly spaced time intervals. For example, a Historic View can summarize the min, max, and average value for each hour of the day or for each day of the month. Historic Views can greatly increase report performance because the data is summarized at the server level and can simply be listed in a report by ReportBuilder™ without having to compute the data at the report level.

## Steps

The following steps will be performed to setup ReportBuilder™ to report ClearSCADA History data. Once completed, you will be ready to build reports in Microsoft Excel and should refer to the ReportBuilder™ Client online help for building reports.

1. Install components.
2. Add an ODBC Connection to your ClearSCADA database.
3. Create a new ReportBuilder™ Server Project.
4. Point the ReportBuilder™ Client to your new ReportBuilder™ Project.

## Step 1, Install Components

You will be installing any combination of the following components:

1. Control Systems ClearSCADA ODBC Driver (provided with the ClearSCADA installation CD). This component enables ReportBuilder™ to connect and query the ClearSCADA database.
2. WorkSmart Automation ReportBuilder™ Server (provided with the ReportBuilder™ installation CD). This component provides a means to configure the tags you will be reporting with ReportBuilder™

3. WorkSmart Automation ReportBuilder™ Client (also provided with the ReportBuilder™ installation CD). This component is a Microsoft Excel Add-in that provides additional functions for querying data from the ClearSCADA database and presenting it inside a Microsoft Excel Workbook.

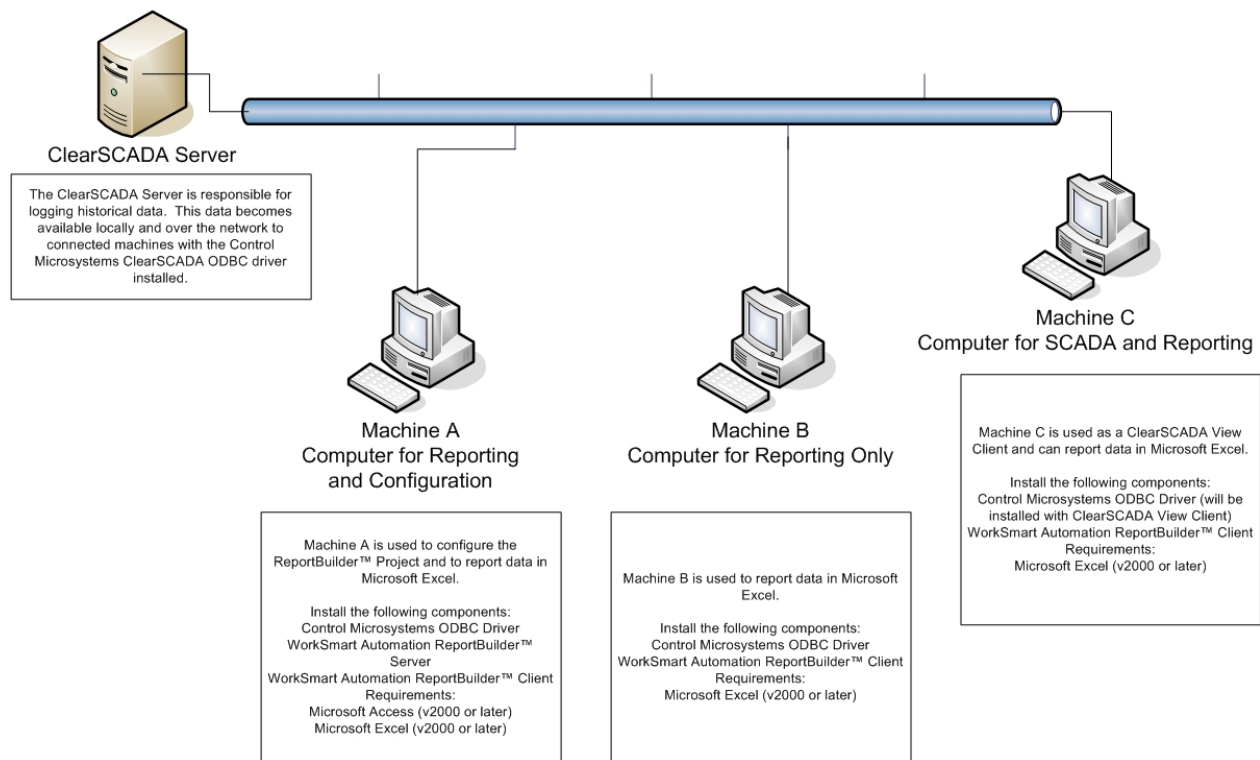
### ReportBuilder™ Server and ReportBuilder™ Client Location

The ReportBuilder™ Server application can exist anywhere on the network and can be installed on the same machine as a ReportBuilder™ Client. ReportBuilder™ Server only needs to be installed on a single machine. Install the ReportBuilder™ Client Excel Add-in on every machine that you want to build and run reports from.

### Control Systems ODBC Driver Location

Install the Control Systems ODBC driver (provided with ClearSCADA) on each machine that you install a ReportBuilder™ Client and ReportBuilder™ Server.

## Example ClearSCADA Network



The Example ClearSCADA Network diagram above is meant to help you determine which components to install and on which machines to install them. Your network will be different or you may have a single stand alone machine.

Note: The requirements have changed from the graphic above:

- Microsoft Excel 2010 or later is required for ReportBuilder™ Version 6.
- Microsoft Access is no longer required.

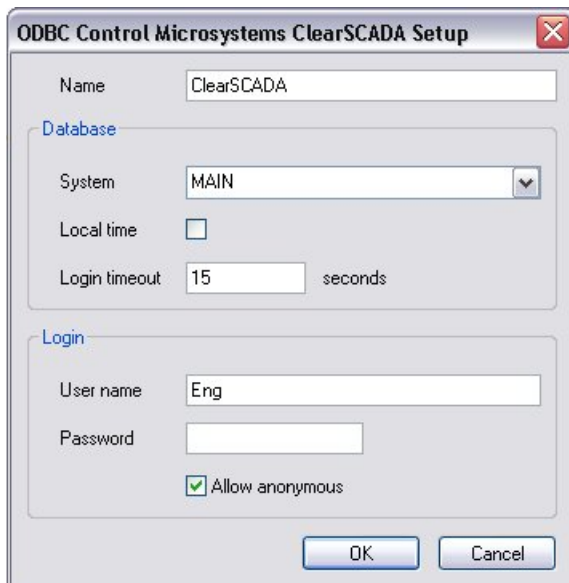
## Step 2, Add an ODBC Connection

In order for third party applications (including ReportBuilder™) to access the ClearSCADA server using the ODBC interface, a new Data Source (ODBC) needs to be configured.

- Open the Data Sources (ODBC) dialog from the Administrative Tools menu.
- Select the System DSN tab.
- Select the Add... button.
- Select the Control Microsystems ClearSCADA Driver and select finish.



- Configure the connection as shown in the diagram below (this assumes that a user exists in ClearSCADA called Eng with a blank password, as installed as part of the example projects).



- Click on OK to complete the setup.

### Step 3, Create a new ReportBuilder™ Server Project

Before proceeding, verify the following:

- You have successfully installed the Control Microsystems ClearSCADA ODBC Driver (supplied by Schneider Electric). The ODBC driver allows third-party applications like ReportBuilder™ to access ClearSCADA historical data.
- You have successfully added an ODBC Connection to your ClearSCADA database.
- You have successfully installed the WorkSmart Automation ReportBuilder™ Server and ReportBuilder™ Client components.

#### Create a new ReportBuilder™ Server Project

To create a new ReportBuilder™ Project, perform these steps:

1. Start the ReportBuilder™ Server application.
2. From the File menu, Click **New**.
3. From the **Save As** Dialog, enter a valid path and filename for the project XML file and Click **Save**. A new ReportBuilder™ Server application XML file will be created. (This should be saved in a folder that is shared out over your network to allow other ReportBuilder™ Client installations to connect to it.)

#### Configure a ReportBuilder™ Server Database Definition

To configure a ReportBuilder™ Database, perform these steps:

1. In the left-hand pane, select Databases then right-click in the right-hand pane. Click **New**.

##### **Step 1: Enter a Database Name:**

Enter a Name for this database, e.g. **ClearSCADA\_db** (*this is an arbitrary name chosen by you.*)

##### **Step 2: Enter a Description (optional):**

Enter a description for this database, e.g. **ClearSCADA Historical Data**

##### **Step 3: Build a Connection String:**

Click **Build**. The Microsoft Data Link Properties window appears.

- a. From the **Provider** tab, highlight **Microsoft OLE DB Provider for ODBC Drivers** then click the **Next** button.
  - b. From the **Connection** tab, select the **Use data source name** radio button, then select the data source name from the drop down list box (select **ClearSCADA** as in the previous Add ODBC Connection example).
  - c. Click **OK** when finished; you will return to the ReportBuilder™ Database Dictionary window.
2. Click **Save and Close** to save this database definition.

## Configure a ReportBuilder™ Server Table Definition

If your ClearSCADA application has Historic Views configured that you want to report from, then you will configure only one ReportBuilder™ table with the same name as one of your Historic Views. It doesn't matter which Historic view you configure so long as you configure one. There are a set of eight different functions dedicated to reporting data only from ClearSCADA Historic Views. When building reports in Microsoft Excel, you can report data from any Historic View by passing the name of the Historic View into Table Parameter of the ReportBuilder™ function. (See the ReportBuilder™ Client online help for more information.)

If your ClearSCADA application doesn't make use of Historic Views, then you will configure only one ReportBuilder™ table with the name of **CDBHistoric**. The CDBHistoric table stores raw data logged by a ClearSCADA Server. There are a set of eight different functions dedicated to reporting data only from the CDBHistoric Table.

To configure a ReportBuilder™ Table, perform these steps:

1. In the left-hand pane, select Tables then right-click in the right-hand pane. Click **New**.

### **Step 1: Select the Database for this Table:**

Select the **ClearSCADA\_db** Name from the drop down list.

### **Step 2: Select or Enter a Table Name:**

Select from the drop down list or enter the name of a ClearSCADA Historic View. (In this example select **HisDailyMinMaxAverage**. This assumes that a Historic View exists in ClearSCADA called HisDailyMinMaxAverage, as installed as part of the example projects).

If your application will not be reporting from a ClearSCADA Historic View, then enter **CDBHistoric** as the table name.

### **Step 3: Select a FunctionPack for this Table:**

Select **ClearSCADA History Functions** from the drop down list.

### **Step 4: Enter Columns required for this FunctionPack:**

From the Date/Time Column tab, select or enter the name of the column where the date and time stamp is logged for this table. Enter or select the column name **RecordTime** for this field.

- a) Click ... to see a list of available columns.
- b) Select the **RecordTime** column for this field then click **OK**.

From the Format Time tab, assign the **ClearSCADA ODBC Time Format** to the table.

- a) Click **Select...** to see a list of available SQL Time Formats.
- b) Select **ClearSCADA ODBC Time Format** and then click **Close**.

Note: If the ClearSCADA ODBC Time Format is not configured on your system, build a new one that will format the time as: **{ ts 'yyyy/mm/dd hh:mm:ss ' }**. The SQL Time Format Result should look like this: **{ ts '2010-09-21 12:42:46' }**  
Note the entire date is surrounded with single quotes.

From the Summary Column and List tab, select or enter the name of the column where the summary values are logged for this table. Enter or select the column name **Summary** for this field.

- a) Click ... to see a list of available columns.
- b) Select **Summary** for this field then click **OK**.

Click the **Summary Value Lists ...** button to see available lists. Select the **ClearSCADA Historic View Aggregates** and then click **Close**.

Note: If the ClearSCADA Historic View Aggregates Summary List is not configured on your system, build a new one with the following entries:

DISPLAY NAME	COLUMN VALUE
Avg	Average
Max	Max
Min	Min

*(You may add more aggregate summaries as desired, following the format shown above. However, only Aggregate names configured in your ClearSCADA Historic Views are valid here. Refer to the ClearSCADA Historic View documentation for more detail.)*

**Step 5: Assign a Column List to this Table (optional):**

Click the **Column Lists ...** button to see available lists. Select the **ClearSCADA CDBHistoric Table Column List** and then click **Close**.

Note: If the ClearSCADA CDBHistoric Table Column List is not configured on your system, build a new one with the following entries:

DISPLAY NAME	COLUMN NAME
Quality	Quality
QualityDesc	QualityDesc
ValueAsReal	ValueAsReal
Value	Value
ValueAsInteger	ValueAsInteger

2. Click **Save and Close** to save this table definition.

Configure a ReportBuilder™ Server Tag Group Definition

To configure a ReportBuilder™ Tag Group, perform these steps:

1. In the left-hand pane, select Tag Groups then right-click in the right-hand pane. Click **New**.

**Step 1: Enter a Group Name:**

Enter a Name for the new Tag Group *(This is an arbitrary name chosen by you.)*

**Step 2: Enter a Description (optional):**

Enter a Description for the new Tag Group.

**Step 3: Enter a Menu Order (0-Top):**

Enter a numeric value for the Menu Sort Order (*0=Top of the List*)

2. Click **Save and Close** to save this Tag Group definition.

Configure a ReportBuilder™ Server Tag Definition

*You should skip this step if you have multiple tags in your ClearSCADA application and move ahead to the next section titled Importing Tags with Tag Import Wizard.*

To configure a single ReportBuilder™ Tag, perform these steps:

1. In the left-hand pane, select Tags then right-click in the right-hand pane. Click **New**.

**Step 1: Enter a Tag Name:**

Enter the name of the tag exactly as it appears in the ClearSCADA application. (Only the full name of the tag is entered here. e.g., **Presentation.Maintain.NTMon.CPU2** This assumes that a tag exists in ClearSCADA called Presentation.Maintain.NTMon.CPU2 as installed as part of the ClearSCADA example projects.)

**Step 2: Enter a Description (optional):**

Enter a Description for the new Tag.

**Step 3: Enter the Eng Units (optional):**

Enter the engineering units for the new Tag.

**Step 4: Select a Group Name:**

Select the desired Tag Group from the drop down list.

**Step 5: Select a Database:Table:**

Select the Database and Table to which the tag belongs. (e.g., ClearSCADA\_db: HisDailyMinMaxAverage)

**Step 6: Select or Enter the Column:**

Select or enter the name of the column where the data values are logged in this table for this tag. Enter the column name **Value** in this field.

- a) Click ... to see a list of available columns.
- b) Select **Value** for this field then click **OK**.

**STEP 7: Enter a Data Type (optional):**

For sorting purposes only. You may enter anything you wish here.

2. Click **Save and Close** to save this Tag definition.

Note: You must add a tag definition to the ReportBuilder™ Tagname Dictionary for each tag that you wish to report on.

## Importing Tags with Tag Import Wizard

To import tags from ClearSCADA to a ReportBuilder™ Project, perform these steps:

1. From ReportBuilder™ Server, perform the following configuration as a minimum:
  - a. ReportBuilder™ Database definition.
  - b. ReportBuilder™ Table definition for any Historic View or the **CDBHistoric** table.
  - c. ReportBuilder™ Tag Group definition.
2. From the Tools menu, Click **Import / Export - Import Tags from SCADA Data Source...**  
The Tag Import Wizard appears.
3. Follow the steps as requested by the Tag Import Wizard by clicking **Next** until finished:
  - a. For the ReportBuilder Database Connection step, select the name you called your ReportBuilder™ Server Database definition that connects to your ClearSCADA database. *(In this example **ClearSCADA\_db**.)*
  - b. For Data Source Table step, select or enter **CDBPoint**. *(The CDBPoint table contains information about each tag being logged by ClearSCADA.)*
  - c. For the Matching Fields step, select or enter the following in each field:
    - i. Tagname: **FullName**  
  
Note: The following fields require that you place a check mark in the checkbox next to the field. Un-checked fields are not imported.
    - ii. Description (optional): **Name**
    - iii. Eng Units: Leave blank (no corresponding engineering unit field exists in the CDBPoint table.)
    - iv. Column: Enter '**Value**' *(Text inside of single quotes is imported implicitly, type the word **Value** surrounded by single quotes.)*
    - v. Data Type (optional): **TypeDesc**
4. For the ReportBuilder™ Database and Table step, select the name of the ClearSCADA database followed by the name of the table e.g., ClearSCADA\_db: CDBPoint.
5. For the ReportBuilder™ Tag Group step, select the name of the group that you would like these tags to be imported to. *(This can be changed later using the ReportBuilder™ Import/Export via Excel feature.)*
6. For the Existing Tags step, choose whether to overwrite or skip existing tags in your ReportBuilder™ Project. Check the **Overwrite existing tags** checkbox to overwrite tags. Un-check to skip existing tags.
7. Click **Finish** to begin the import.



#### **Step 4, Connect the ReportBuilder™ Client Add-In to your new ReportBuilder™ Project**

Now that you have completed building your ReportBuilder™ Server Project, you will need to point the ReportBuilder™ Client to use it when reporting data.

##### **Connecting to a ReportBuilder™ Server Application XML file**

1. From the Excel ReportBuilder™ ribbon, click **ReportBuilder** then **Connect to ReportBuilder Project**. The Windows Explorer Browse dialog appears.
2. Browse to the location of your ReportBuilder™ Server Application XML file and select it then click **Open**.
3. Next, refresh the project to use the new file. From the Excel ReportBuilder™ ribbon, click **ReportBuilder** then **Refresh ReportBuilder Project Database**. The current project is now ready to be used.

You are now ready to begin building reports in Microsoft Excel!