More Bql Query Examples

Two column result

This query returns data from the OaTemp history in two columns. The first column contains the timestamp and the second column contains the value. The syntax "as 'time stamp'" and "as 'temperature'" configures the text to be displayed at the top of each column. This is useful when the name of the property is not intuitive, such as 'toString'.

```
 history:|bql:select timestamp as 'time stamp',value as 'temperature' from /
myStation/myOaTempLog
```

If the property names are acceptable for column headers, then simply leave the "as 'name'" out of the query, as in this example.

```
 history:|bql:select timestamp, value from /myStation/myOaTempLog
```

The base defines what the root of the query will be; you can be more specific like this example. Although you would then drop the 'from' portion in the above example. `history:/myStation/myOaTempLog|bql:select timestamp, value`

where statement

A 'where' statement when used with the query will narrow down the results. This example would only display values that fell between 60 and 70 degrees inclusive in the OaTemp history.

```
history:|bql:select timestamp, value, status from /myStation/myOaTempLog
where value > 60 and value <70
```

Below is a list of common items that may be helpful to use when filtering with a 'where' statement.

- timestamp.day (int 1-31)
- timestamp.dayOfYear (int representing day of year)
- timestamp.hour (int 0-23)
- timestamp.minute (int 0-59)
- timestamp.second (int 0-59)
- timestamp.month (string january, february, etc)
- timestamp.month.monthOfYear (int 1-12)
- timestamp.year (int ex 2006)
- trendflags (start, OutofOrder, Hidden, Interpolated)
- status (disabled, fault, down, alarm, overriden etc of the source point)
- value (the value of the source point)

Example syntax for 'where' statements.

```
history:|bql:select timestamp, value, status from /myStation/myOaTempLog
where status.alarm
```

```
history:|bql:select timestamp, value, status from /myStation/myOaTempLog
where timestamp.hour = 23
```

```
history:|bql:select timestamp, value, status from /myStation/myOaTempLog
where timestamp.year = 2006<pre>
```

```
<pre>history:|bql:select timestamp, value, status from /myStation/myOaTempLog
where timestamp.day>=1 and timestamp.day<=31 and
timestamp.month.monthOfYear=6
```

like operator

In some cases the data that is returned is in a text format. This will be true with properties like 'toString' or 'timestamp.toDateString'. When filtering with a 'where' statement, it is necessary to use the 'like' operator. `history:/myStation/myHistoryLog|bql:select timestamp,value where timestamp.month like '*september*'`

The '*' or '%' symbols are used as wildcard characters to represent zero or more characters.

period modifiers

It is also possible to filter the return of a history query by including 'period' modifiers in the query. The available periods are listed below.

- period=last7Days
- period=last24Hours
- period=yesterday
- period=today
- period=weekToDate
- period=lastWeek
- period=monthToDate
- period=lastMonth
- period=yearToDate
- period=lastYear
- period=timeRange;start=2006-09-15T08:00:00.000-04:00;end=2006-09-20T08:00:00.000-04:00

  timeRange format is <YYYY-MM-DD><THH:MM:SS.miliseconds><timezone offset>

The 'period' syntax is added to the beginning of the query like this: `history:/myStation/myHistoryLog?period=last7Days|bql:select timestamp, value`

delta values

There are situations where it is necessary to look at the difference in logged values as opposed to the actual values at each collection interval. This query will return the timestamp and delta values from myHistory for the current month to date. `history:/myStation/myHistory?period=monthToDate;delta=true|bql:select *`

rollup values (minimum, maximum, average, sum)

At times it is necessary to evaluate the collected values to determine minimum, maximum, average, and the sum of values. This can be accomplished through program objects by performing bql queries and then cursor through the BITable results to perform the math functions. Alternatively, there is a special function of the bql query which does this; it is the same functionality that is provided in the history chart interface for data rollups. When this function is used, it will return all of the columns. There is no mechanism to filter the return down to specific columns. `history:/myStation/myHistory|bql:historyFunc:HistoryRollup.rollup((select *),baja:RelTime <timeInMiliSeconds>')`

The rollup syntax returns a table with the following columns: Start Timestamp, End Timestamp, count, min, max, average, sum. It is also possible to use the delta feature and/or the period features in conjunction with the rollup function. `history:/myStation/myHistory?period=monthToDate;delta=true|bql:historyFunc:HistoryRollup.rollup((select *),baja:RelTime '86400000')`

This query returns the delta values rolled up to 1 day for the current month to date.

Space character handling in web (Excel) queries

When using bql to perform a web query (ie in an Excel spreadsheet) space characters to the right of <|bql:select> are represented by '%20' while space characters to the left of <|bql:select> are represented by '$20'. See Sample_Excel_Web_Query.

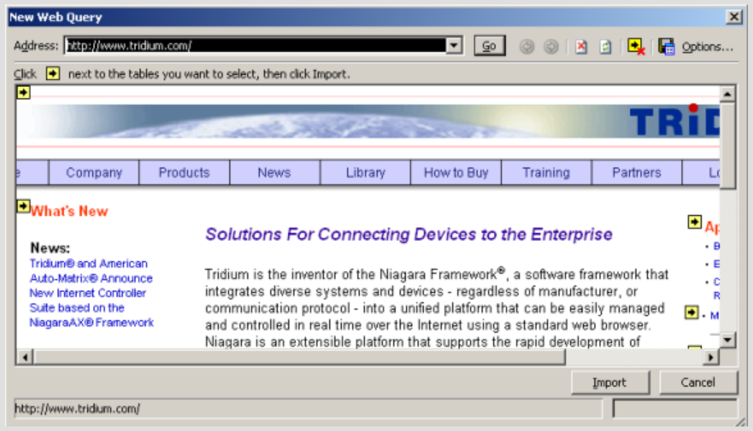
Sample Excel Web Query

When performing web queries utilizing applications such as Excel, it may be necessary to change the station authentication from the default 'digest' to 'basic'. In digest authentication mode, the password is encrypted and Excel may not be able to send the password via the web query.

1. Create a user with a default Hx profile and assign admin read and write privileges to the necessary components in the station.

2. In an Excel worksheet select the cell where the queried data is to be inserted. On the menu select '**Data > Import External Data > New Web Query**'.

New Web Query in MS Excel



Address: http://www.tridium.com/

Click next to the tables you want to select, then click Import.

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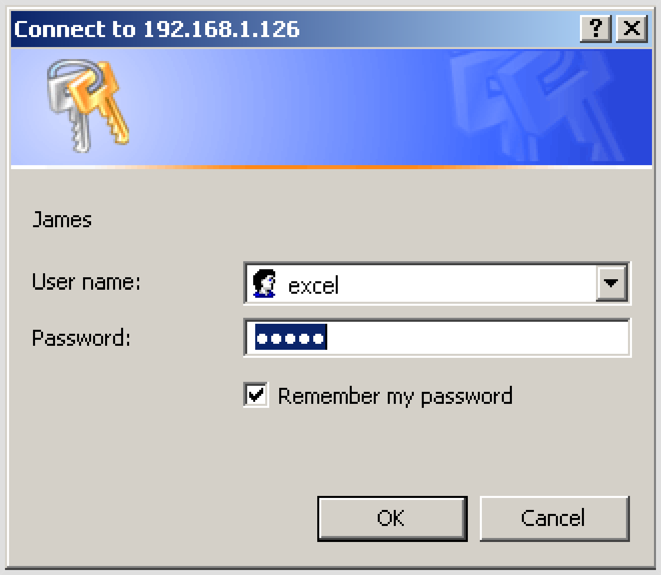
Tridium is the inventor of the Niagara Framework®, a software framework that integrates diverse systems and devices - regardless of manufacturer, or communication protocol - into a unified platform that can be easily managed and controlled in real time over the Internet using a standard web browser. Niagara is an extensible platform that supports the rapid development of

News:
Tridium® and American Auto-Matrix® Announce New Internet Controller Suite based on the NiagaraAX® Framework

http://www.tridium.com/

3. Enter the bql query in the url address field of the pop up window. The syntax is `http://<ipAddress>/ord?<bql query>` After entering the query, click the '**Go**' button. A station Hx signon dialog appears.

Station Hx Signon Dialog



Connect to 192.168.1.126

James

User name: excel

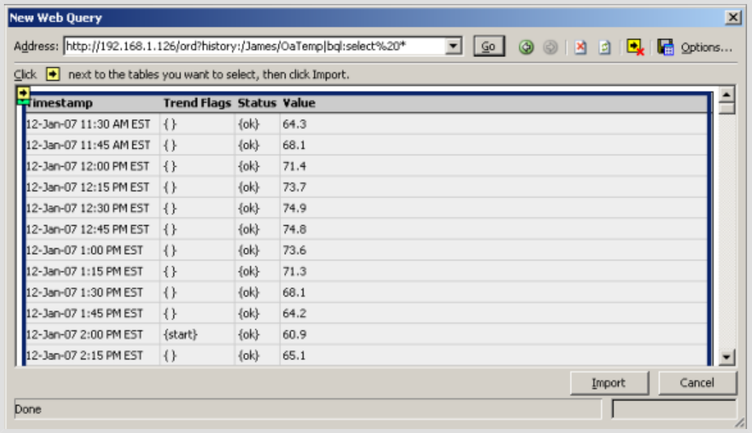
Password: •••••

☑ Remember my password

4. Enter the user name and password for the Hx user that was created. Be sure to check the 'Remember my password' box. Excel will process and display the query as below.

   Click the yellow box containing a black arrow to select the data table. The box color will change from yellow to green when it has been selected.

   Select Table in Excel by Clicking Yellow Box



Address: http://192.168.1.126/ord?history:/James/OaTemp|bql:select%20*

Click ➡ next to the tables you want to select, then click Import.

Timestamp	Trend Flags	Status	Value
12-Jan-07 11:30 AM EST	{ }	{ok}	64.3
12-Jan-07 11:45 AM EST	{ }	{ok}	68.1
12-Jan-07 12:00 PM EST	{ }	{ok}	71.4
12-Jan-07 12:15 PM EST	{ }	{ok}	73.7
12-Jan-07 12:30 PM EST	{ }	{ok}	74.9
12-Jan-07 12:45 PM EST	{ }	{ok}	74.8
12-Jan-07 1:00 PM EST	{ }	{ok}	73.6
12-Jan-07 1:15 PM EST	{ }	{ok}	71.3
12-Jan-07 1:30 PM EST	{ }	{ok}	68.1
12-Jan-07 1:45 PM EST	{ }	{ok}	64.2
12-Jan-07 2:00 PM EST	{start}	{ok}	60.9
12-Jan-07 2:15 PM EST	{ }	{ok}	65.1

Note

We have found that due to issues with the Excel UI you may only see one yellow box instead of two. The one you see is for the whole page, while the one for the data table is directly underneath. In order to focus on the table underneath you will need to follow these additional steps:

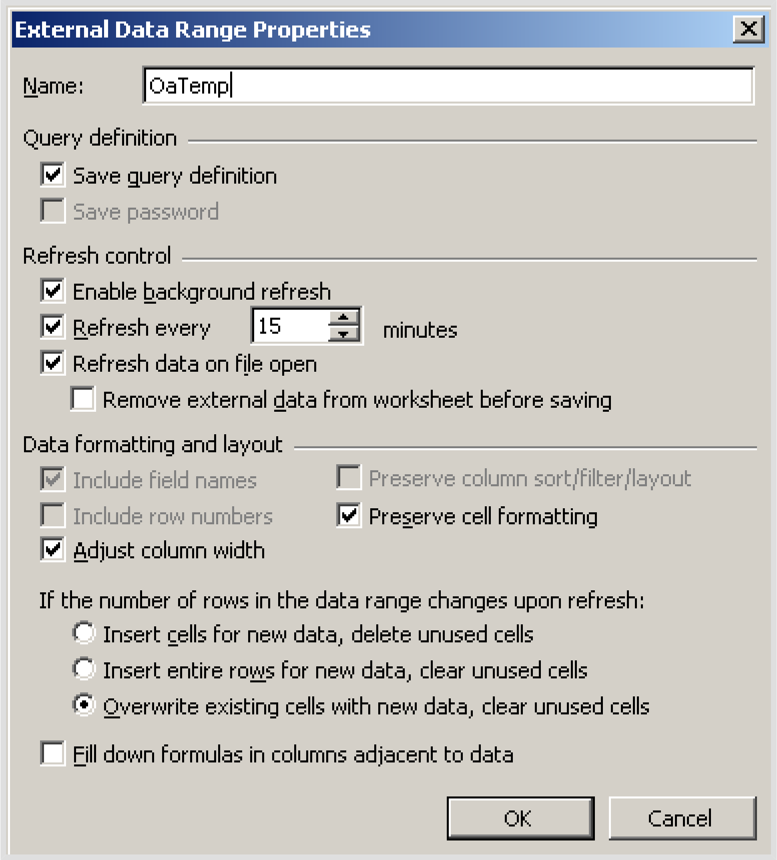
- Hit [tab] once and it should highlight the page checkbox in green
- Hit [tab] again to give focus to the table underneath
- Hit [enter] to check the checkbox for the table that cannot be seen
- Click [Import] and the data should import properly.

Failure to have the correct box checked will cause Excel to throw an error about the XML Schema.

5. Click the '**Import**' button. The 'Import Data' dialog appears.

6. In the Import Data dialog, click the '**Properties**' button. The 'External Data Range Properties' dialog appears.

External Data Range Properties dialog in Excel



External Data Range Properties

Name: OaTemp

Query definition

☑ Save query definition

□ Save password

Refresh control

☑ Enable background refresh

☑ Refresh every 15 minutes

☑ Refresh data on file open

□ Remove external data from worksheet before saving

Data formatting and layout

☑ Include field names

□ Preserve column sort/filter/layout

□ Include row numbers

☑ Preserve cell formatting

☑ Adjust column width

If the number of rows in the data range changes upon refresh:

○ Insert cells for new data, delete unused cells

○ Insert entire rows for new data, clear unused cells

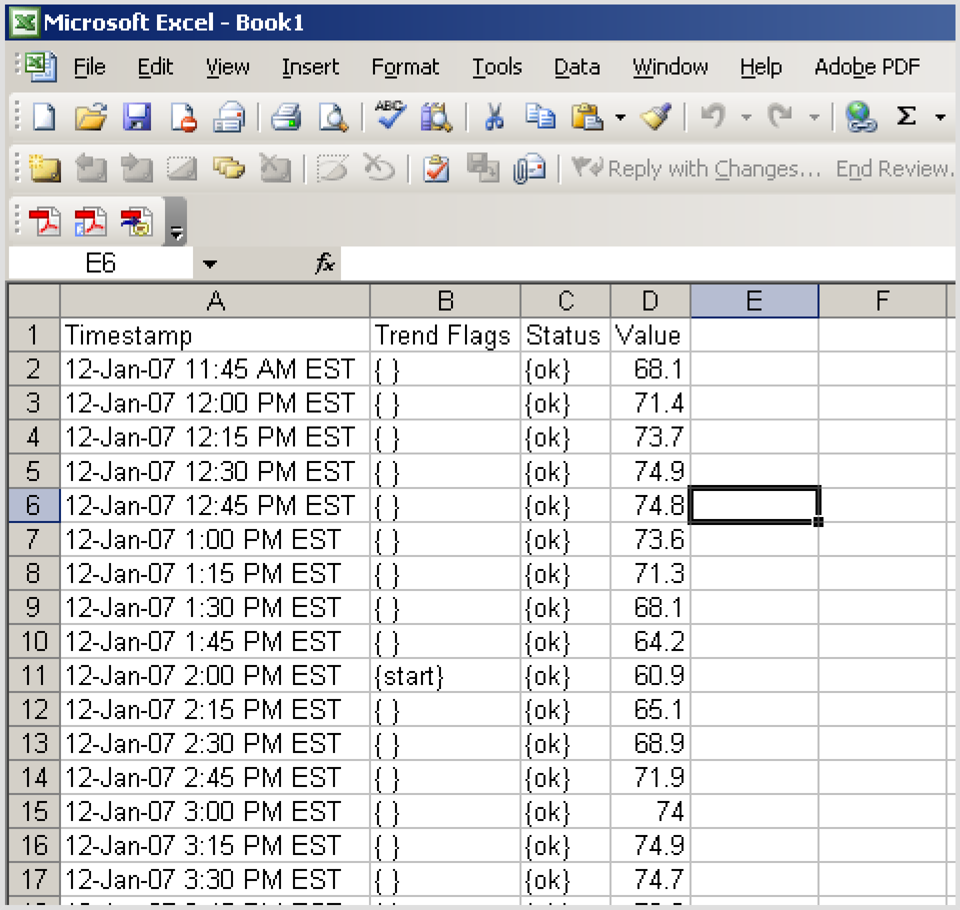
● Overwrite existing cells with new data, clear unused cells

□ Fill down formulas in columns adjacent to data

7. Type a descriptive name for this query in the '**Name**' field. Under 'Refresh Control' check the '**Refresh ever**' box and set the time for automatic refreshes to occur while the spreadsheet is open. Also select the '**Refresh data on file open**' box. Make any other changes to the properties that are necessary and click the '**OK**' button. The Import Data dialog appears again.

8. Click the '**OK**' button to insert the query into the spreadsheet.

Excel Spreadsheet with Data from BQL Query



	A	B	C	D	E	F
1	Timestamp	Trend Flags	Status	Value		
2	12-Jan-07 11:45 AM EST	{ }	{ok}	68.1		
3	12-Jan-07 12:00 PM EST	{ }	{ok}	71.4		
4	12-Jan-07 12:15 PM EST	{ }	{ok}	73.7		
5	12-Jan-07 12:30 PM EST	{ }	{ok}	74.9		
6	12-Jan-07 12:45 PM EST	{ }	{ok}	74.8		
7	12-Jan-07 1:00 PM EST	{ }	{ok}	73.6		
8	12-Jan-07 1:15 PM EST	{ }	{ok}	71.3		
9	12-Jan-07 1:30 PM EST	{ }	{ok}	68.1		
10	12-Jan-07 1:45 PM EST	{ }	{ok}	64.2		
11	12-Jan-07 2:00 PM EST	{start}	{ok}	60.9		
12	12-Jan-07 2:15 PM EST	{ }	{ok}	65.1		
13	12-Jan-07 2:30 PM EST	{ }	{ok}	68.9		
14	12-Jan-07 2:45 PM EST	{ }	{ok}	71.9		
15	12-Jan-07 3:00 PM EST	{ }	{ok}	74		
16	12-Jan-07 3:15 PM EST	{ }	{ok}	74.9		
17	12-Jan-07 3:30 PM EST	{ }	{ok}	74.7		

In this example the query used 'select *' which returns all available data columns. The return could be limited by using 'select timestamp,value' if the trend flags and status are not required. Because the refresh options were selected, this data table will refresh automatically every 15 minutes while the spreadsheet is open.

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