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Modified: April 13, 2007

Rev A. - The hyperlinks to Help files in this manual are now to demo.broadwin.com. Previously, they were to localhost. You can edit the host file on a PC to redirect demo.broadwin.com to 127.0.0.1 (i.e. localhost) if an Internet connection is not available or if the student has Project Node software installed on their PC. See the Appendix, for instructions on editing the host file.

Rev B. – Windows Vista, removed SMART Host.

Section 1 - Introduction

Objectives

This section introduces WebAccess HMI & SCADA software. At the end of the section, you will be familiar with:

1. Software Components
2. Capabilities of WebAccess Software
3. Terminology

Training Notes

Using this Training Manual

The following is recommended for the Student PC

- **Windows Vista Business, XP Professional or 2000 Professional** with **IIS** installed on the students PC. Vista Enterprise and Server 2003 will also work well.
- A **network card** and TCP IP service.
- A **Hub** or Switch to allow connection of client to a “Demo Web Sever”. This is used in Section 1 Task 1: Connect to WebAccess Demo Project with a web browser. Page 11.
- A connection to the Internet and demo.broadwin.com (Note – See the appendix for alternative configurations).
- Project & SCADA Node software. This will be done in Section 3 Task 1: Install Project and SCADA Node software page 55.
- A PLC or other controller with appropriate cables and connections. Alternatively, the **Modbus TCP Simulator** can be installed on student PC
- **EXCEL** installed on Student PC.

- Optionally, an OPC server installed on student PC (e.g. Kepware OPC simulator) if OPC section is to be covered.

For alternative configurations and workarounds, see the appendix.

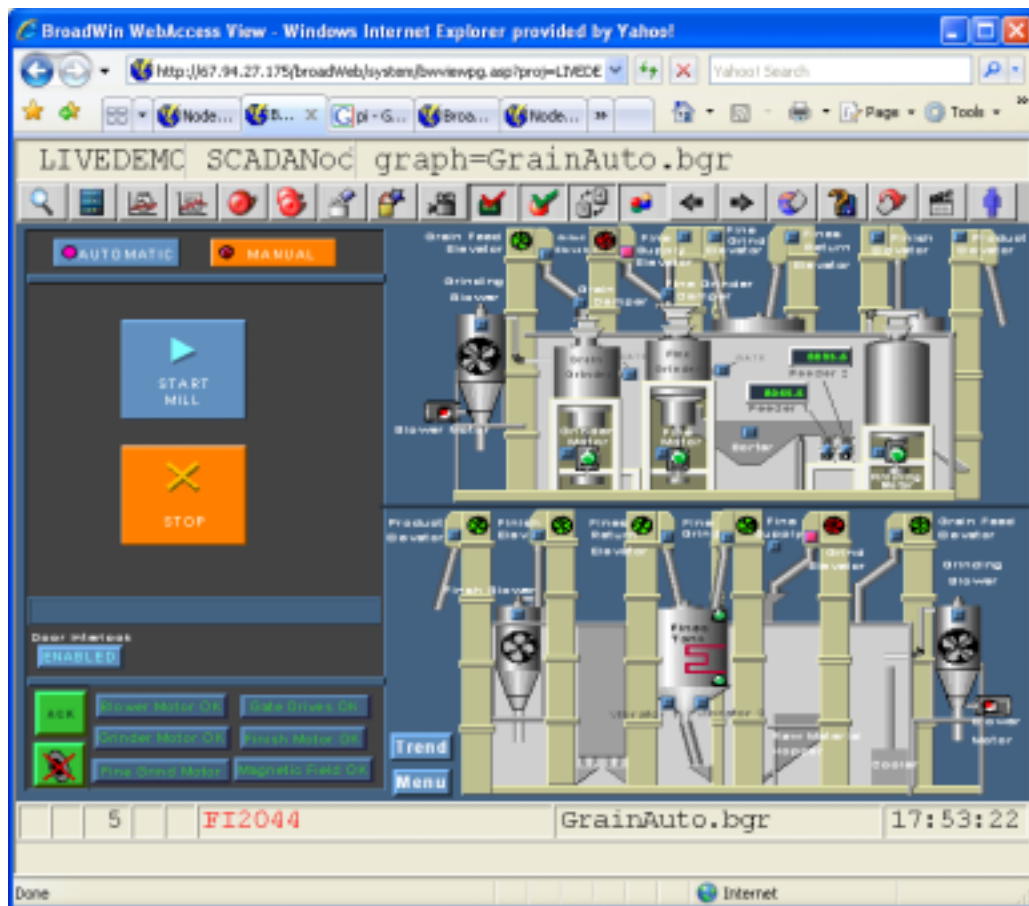
Note - The hyperlinks to help files in this manual are now to demo.broadwin.com. Previously, they were to localhost. You can edit the host file on a PC to redirect demo.broadwin.com to 127.0.0.1 (i.e. localhost) if an Internet connection is not available or if the student has Project Node software installed on their PC.

What is WebAccess?

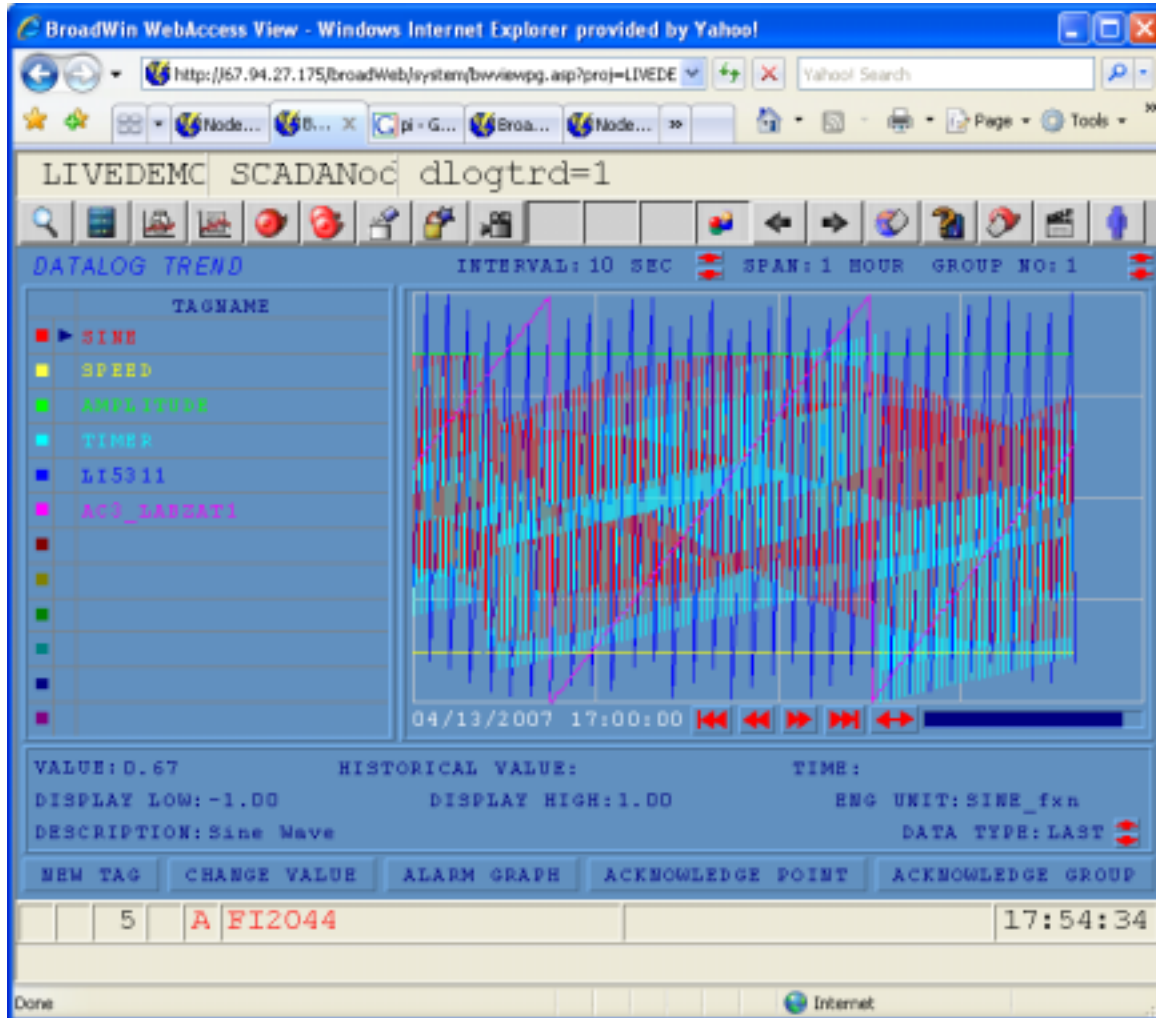
WebAccess is web browser based software for Human Machine Interface (HMI) and Supervisory Control and Data Acquisition. WebAccess communicates with automation equipment used in manufacturing facilities, industrial plants and building automation systems. The software acquires, displays and stores real-time data and allows operators to change setpoints, equipment status and other parameters in Programmable Logic Controllers (PLCs), Controllers, IO, RTUs, DCS and DDC systems.

Through a graphical user interface on a Personal Computer (PC), WebAccess

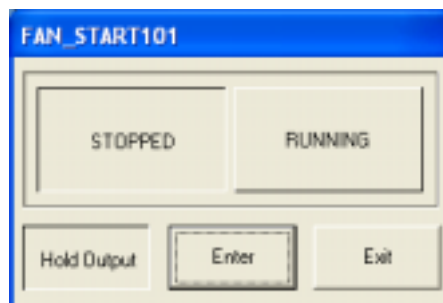
- Displays dynamic real-time data on graphic displays that are pictorial representations\of equipment and processes.



- Indicates alarm conditions, through beeping sound, flashing colors, email messages to users and pagers, text-to-speech annunciation and media files (e.g. wave, midi, mp3)
- Displays trends that mimic strip-chart recorders and archives historical data to hard drives and databases.



- Enables the operator to perform control actions (change setpoints, start/stop pumps, etc.)



- Provides tools to assist operators such as downloading recipes, jump to an Alarm display, browse tags, and find displays used by a tag.

- Tracks operator initiated changes.
- Executes scripts for animation, custom reports, emails, logic for real-time control and scheduling equipment.
- Exports historical data to html files and external databases.
- Generates scheduled reports and logs.
- Uses live Video mixed with animation and live data
- Does all this in an ordinary web browser (Internet Explorer 6.0 or 7.0 recommended)
- Provides a non-web browser version of all these functions also for dedicated control rooms and stand-alone computers.

WebAccess Benefits

- Add Internet technology to control and automation equipment
- Remotely engineer and support automation equipment using a Web Browser (this is probably unique to Broadwin WebAccess).
 - Reduce trips to the field
 - Provide timely access to real-time data to users through out the enterprise using ordinary web browsers (for example, accountants and managers).
- Provides a modularized system that allows you to expand with project needs.
- A database structure, which resembles that of a DCS, that enables database parameter, Block, and display templates to reduce the time in engineering and commission a system.
- Vector-based Graphic Builder that enables fast creation of displays with sophisticated animation capabilities and smaller file sizes for faster downloads. Also allows import of bitmap (JPEG, GIF, Bmp, DIB) and Vector-based DXF files from AutoCAD.
- Graphics that provide details from a plant-wide overview to individual control loops can be generated minimal effort (a built-in, drill-down, and display architecture.)
- Integration with enterprise databases via real-time ODBC data conversion including Microsoft Access (standard) and relational databases including Microsoft SQL Server, Oracle and MySQL.
- Built-in scheduled report module - no add-on option is required.
- Built-in networking capabilities allow data from remote sites to be readily available to the central control.
- Always have a compatible development tool (a Web Browser, IE 6.0 or 7.0) without having to match the version installed at the customer site.
- Provide all your staff with the Development Tool (the Project Manager) at no additional cost. (Just need Internet Information Server installed on your laptop or PC, a free option in Windows).

WebAccess Components

A complete WebAccess system consists of three basic areas, illustrated below.

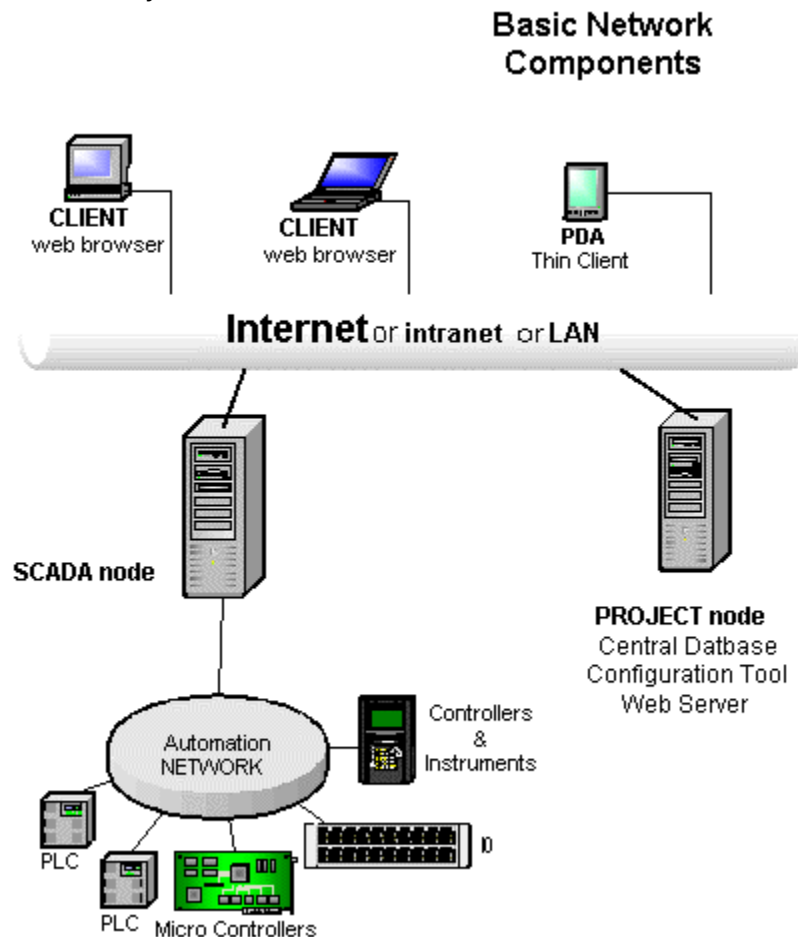


Figure 1.6 WebAccess Network Components

- **Client** (Web Browser VIEW of real-time Data) and an Active-X control called the Plug-in
- **SCADA Node** – a PC that communicates with automation devices and the Clients.
- **Project Node** - the Configuration Tool, Central Data base and Web Server. .
- **Network Service** – runs on the SCADA Node and Project node and provides file transfer and real-time data transfer to Clients and SCADA nodes (webvrpc.exe is the name of the network service that runs on SCADA nodes and Project Node).
- **Thin Clients** - which display snapshots of graphics and use a text based interface to change data, acknowledge alarms and control. No software installation required. Supports PDA and Pocket PCs

Stand-alone systems are implemented in one of two general ways:

- The SCADA Node software and Project Node software are on the same PC.
- The SCADA Node software is on the PC and the Project Node Software is on a mobile **laptop** or remote PC.

Stand-alone SCADA node

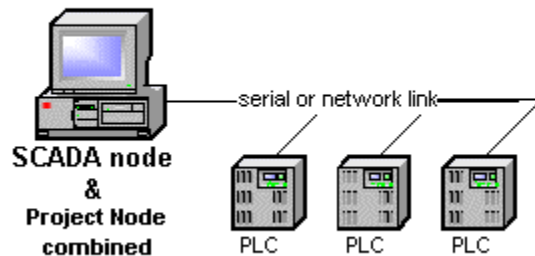


Figure 1.7 Stand-alone SCADA Node

Standalone PC with remote dial up access

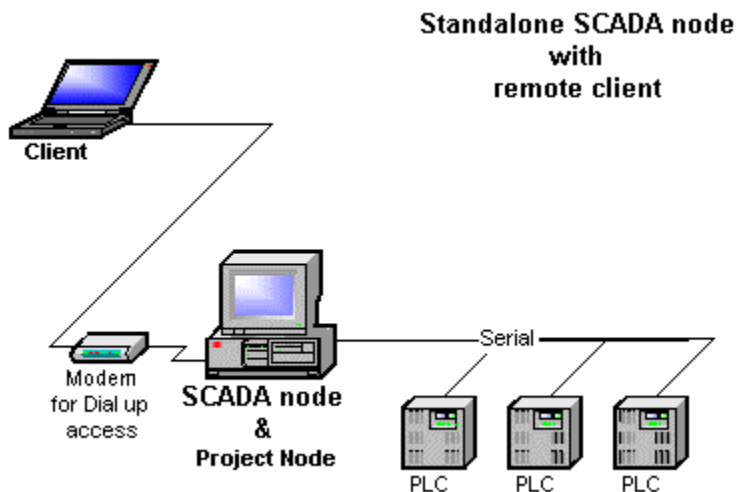


Figure 1.9 Single SCADA Node - remote access

Configuration (also called the Project Manager)

The configuration tools are:

- Project Manager - This module allows you to configure tags mapped to device addresses. Other functions, such as recipes, trending, networking and scripts, are also configured in this module. This is on the Web Sever / Project Node.
- Graphic Builder - This module is used to create graphics for run-time display. Tags configured in the database can be associated with graphical elements to enable animated display of process data. DRAW is the web browser version that runs on a Client web-browser when connected to Project Node. DrawDAQ runs locally on the Project Node (without a web browser).

Client

The Client consists of a Web-browser and the Client Plug-in. SCADA Nodes also have a non-web browser version of the Client called ViewDAQ.

Client Plug-in

The Client Plug-in is used by Web Browsers to VIEW real-time data and DRAW. It consists of two parts: 1) an Active-X control for Internet Explorer (an OCX) and 2) a Netscape Navigator Plug-in.

Internet Explorer 6.0 is recommended and supports all features of WebAccess (including Video).

Note – future support for Netscape is not guaranteed because of the ill-defined future AOL-Time Warner and Mozilla have announced for Netscape Navigator.

There are two functions performed by the Client Plug-in:

- VIEW - These are the real-time displays that form the operator interface. They include graphical displays with full motion animation, pre-built graphics, such as the Alarm Summary, Data Log Trends and Point Detail display and Video Multiple Clients can be running at the same time on the same PC or other PCs.
- DRAW –Graphics displays can be built using an ordinary web browser. The Client Plug-in allows engineers and technicians to build and animate graphic displays. OEMs, system integrators and engineers can modify and support systems remotely over the Internet or an intranet.

SCADA Node

The SCADA node runs independently of any node in the system.

- Kernel (datacore.exe)- This consists of a real-time kernel that handles all the communications with the external automation devices and Clients. It is also responsible for logging historical data, alarm functions, executing event programs, printing reports, etc.
- Device Driver(s) - This handles the communication protocol between WebAccess and the external device.
- Web Service (webvrpc.exe) – this provides the remote communication over the Internet or intranet. This is the icon that appears in the taskbar next to the clock
- ViewDAQ – this is a non-web browser version of VIEW. It runs on the SCADA node locally. It is used for stand-alone systems and control room applications. It also provides a type of redundancy allowing operators to view and control even if the network connection is down.

Project Node

The Project Node is a central database and the Web Server. The Project Node holds a copy of the database and graphics of all SCADA Nodes in the system. A user downloads these files from the Project Node to the SCADA node via a web browser.

- Project Manager - The Project Manager is the configuration tool. It consists of a collection ASP pages and databases to allow an ordinary web browser to configure

tags, alarms, reports, scheduled and perform all the engineering using fill-in-the-blanks configuration. The Project Node provides a number of utilities for project deployment and maintenance including EXCEL Import, EXCEL Export, the OPC Import tool and Import SCADA Node to import tags and graphics from another project or PC:

- DrawDAQ – this is a non-web browser version of DRAW. It runs on the Project node locally (or a combined Project Node / SCADA Node). It is used for stand-alone systems and control room applications. It allows engineers and technicians to build and animate graphic displays.
- OPCTool - These enable you to and import tags from an OPC Client into a WebAccess tag database from a third party application OPC Servers, such as Cimetrix Bacnet OPC Server, Kepware OPC Servers. Many automation hardware suppliers supply OPC Servers as the communications interface to their proprietary networks.

Basic Terminology

Tag

A tag can consist of a single I/O point, multiple I/O points, or an internal point. I/O tags are read and written to PLCs, controllers, DCS, DDC and IO hardware over a network (either serial or LAN). Internal Tags include Calculation Tags, Accumulation Tags (e.g. Totalizers), Constants and System information Tags and animation tags.

The term Tag comes from Industrial Plants, where each instrument had a metal or plastic Tag describing it, and from computer databases, where a tag is row of information in the WebAccess database that has a real-time value during run-time operation and other values, such as Engineering Units, Alarm Limits, and Description.

Block

A Block is a single Tag Name that has more than one real-time value associated with it. A PID controller or a VAV controller is an example of Blocks that consist of Measurement, Setpoint, Output, Auto/Manual Status and Tuning Parameters. A Block consists of multiple I/O points.

Parameter

A Block consists of Multiple Parameters. Each real-time IO value is a separate parameter. For example, the Measurement is one Parameter of a PID Block, the Setpoint is a second parameter, the Output is a third parameter, etc.

WebAccess also uses parameters as a template to guide novice users to create ordinary tags. For example, the Modbus Driver comes with parameters for Analog Inputs, Analog Outputs, Digital Inputs and Digital Outputs with preconfigured address, scaling and conversion information. A parameter can guide a novice user in creating communications to a device by modifying the parameters unique to each WebAccess device driver.

Parameters can also be used in large projects as a productivity tool to create “standards” for typical flow measurements, level measurements, pressure measurements, etc

Graph

“Graph” is an abbreviation for Graphic Display.

Broadwin WebAccess Documentation

WebAccess documentation is supplied with a set of technical manuals, as:

- o Web Help, on every Project Node viewable from any web browser.
- o HTML Help, on every SCADA node
- o on paper (a little out of date)
- o or CD-ROM and in the WebAccess Node setup from the ftp site.

Document	Information Provided
<i>Installation Manual</i>	Installing the software and updating from a previous version of WebAccess
<i>Quick Start Guide</i>	Tutorial to guide you through the first steps in using WebAccess
<i>Engineering Manual</i>	Reference information on configuring a project and utilities
<i>Operator Manual</i>	Reference information on run-time operation
<i>Device Driver Guides</i>	Device-specific information, such as communication requirements, wiring, address format and pre-built parameters and blocks.

Additional technical information in the form of Application Notes, Frequently Asked Questions (FAQ), and white papers are available from the Broadwin Technology Inc. Web Site at:

<http://www.broadwin.com>
<http://broadwin.com/Literature/> ,
<http://broadwin.com/Literature/#HelpFiles> ,
<http://broadwin.com/Literature/#UserGuides> ,
<http://broadwin.com/Manual/InstallGuide/InstallGuide.htm> ,
<http://localhost/broadWeb/EngMAN/EngMAN.htm> ,
<http://demo.broadwin.com/Manual/OpMan/OpMan.htm> ,
<http://broadwin.com/Manual/QuickStart/quickstart.htm>
<http://broadwin.com/broadweb/EngMan.EngMan.htm>

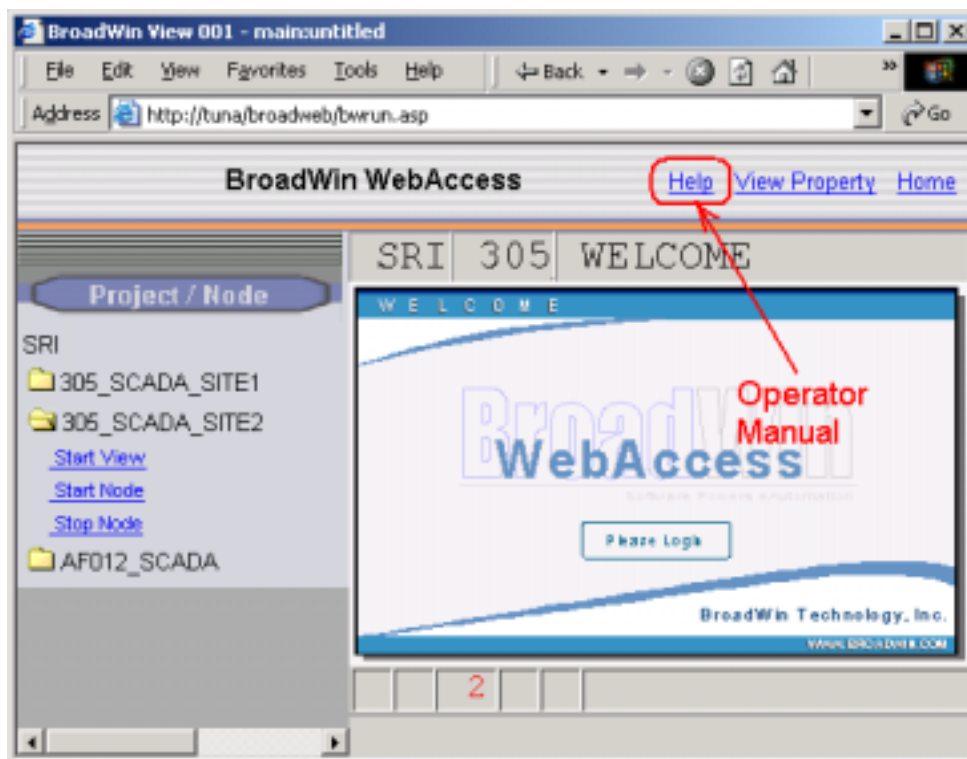


Figure 1.10 - Help opens the Operator Manual in VIEW

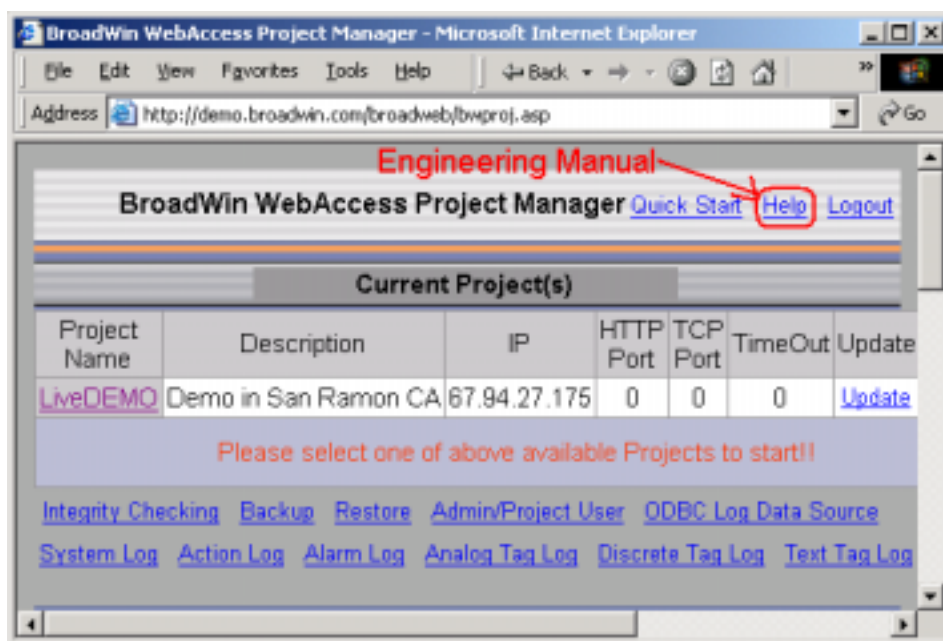


Figure 1.11 – Engineering Manual opens from HELP in Project Manager

Exercises

This goal of this exercise is to become acquainted with WebAccess VIEW. This shows what an ordinary user will encounter when first connecting to an established WebAccess system via a web browser.

Note – the address of the Demo Project maybe different than listed below. Use the IP Address the instructor gives you to connect for this exercise.

What you need to complete this exercise:

- a. Windows 98, 2000, XP, 2003, or Vista.
- b. Internet Explorer 6.0 or 7.0
- c. Network connection to <http://demo.broadwin.com> or <http://67.94.27.175> or to <http://localhost> or to a WebAccess Project Node in the **classroom** via a hub or switch or Project Node installed on your PC.

Task 1: Connect to WebAccess Demo Project with a web browser.

1. Start Internet Explorer.



- Double Click the Icon on your Desktop
- OR, Click Icon on your Taskbar
- OR, From the Start button select:
Start->Programs->Internet Explorer

2. Enter **IP Address, network address, computer name, host name** or **URL** of the WebAccess Project in Web Browser.

Enter the IP address or URL into the "Address Bar" (see figure 1.1) given by your instructor.

For the Live Demo enter <http://demo.broadwin.com/>



Figure 1.13 - Internet Explorer Web Browser - Address Bar

About Addresses

The first time you connect, you must enter the address of your WebAccess Project in the Address bar of your Web Browser. Later, you can add this address to your "Favorites". The address can take several forms:

- **URL** is the Universal Resource Locator, for example <http://www.broadwin.com/>. If your company has assigned a URL to your WebAccess Project, enter this in the Address Bar of Internet Explorer. URL also can have similar forms, for example the WebAccess Live Demo project node can be reached at <http://demo.broadwin.com/>
- **IP Address**, Internet Protocol Address. The IP address is a series of four numbers separated by periods (e.g. <http://67.94.27.175/> is the IP Address of demo.broadwin.com).
- **Computer Name** - If you are on an Intranet, you can enter the computer name of the WebAccess Project Node (for example "Server1"). This can be either a TCP/IP "host name" or the Microsoft Network name.
- **Host** name – This is like a computer name, but uses a name installed in the HOSTS file of the Client PC. The HOSTS file redefines the IP address and allows different users to use different IP Addresses to access the same SCADA and Project Nodes. This might be required if some users on an Intranet (using private IP address) and others are on the Internet (using Public IP Address) and the router or firewall does allow private users to use the Public IP address to connect to the SCADA node. The localhost name is an example of a HOST name. For example. "localhost" is the default host name for the local PC address. It is mapped to 127.0.0.1

Hint – The hyperlinks later in this Training Guide connect to "localhost". If you do not have IIS web server installed on your PC, you can modify the HOST file to redirect "localhost" to a PC on your network that does have IIS web server software and the Engineering Manual Installed (e.g. Project Node software installed). See the Appendix for a "How to".

- **Local PC** - If you are on a PC that has the Project Node software installed and a network card, you can use the default localhost address or url:
<http://localhost>

or

<http://127.0.0.1>

- **No Network** - If you are on a standalone PC without a network card, you must use the computer name: (for example "<http://mycomputername>").

3. Press the **Enter** key or Select **Go**.

4. WebAccess Home Page Opens (figure 1.14)

Congratulations! You have successfully connected to a WebAccess Project. It took no special software to connect. No software download was required.

There are two choices on the WebAccess Home Page (bwroot.asp).

- WebAccess Configuration
- WebAccess View

Note – so far you have used only TCP Port 80 that most all firewalls allow.



Figure 1.14 - WebAccess default HOME - Welcome Page

Task 2: Download and Install Client Plug-in.

1. Select the WebAccess View button (Figure 1.14).

WebAccess View

This is to view the run-time version of WebAccess HMI & SCADA that ordinary users will see.

Note - WebAccess Configuration is for engineers and integrators and will be explored over the next 3 days.

2. Download and Install Client Plug-in

WebAccess uses an ActiveX control to display animated Graphics. The first time you connect to WebAccess, you will need to download and install the client plug-in.

If you have not already installed the Client, you will see a message:
"Please Click [here to install WebAccess Client first](#)".

The first time you try to connect to VIEW or DRAW, you will be prompted to download and install the Client Plug-in.

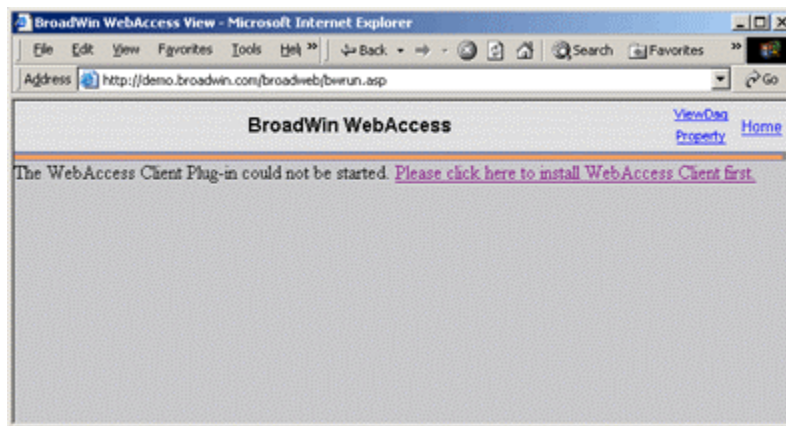


Figure 1.15 - Prompt to download and install WebAccess Client

If you get this message, just follow the steps to download and install the client.

Hint - If you need more information about downloading and installing the client plug-in, please refer to [Appendix](#) in the Engineering Manual section for a step-by- step instructions on [How to download and install the client plug-in](#).

The Hyperlinks in this note are to the Engineering Manual and do not work until Section 2, Task 1: Install Project and SCADA Node Software is complete. The above Hyperlinks assume that the Web Based Engineering Manual is installed on this Local PC. IIS is required for these links to <http://localhost/broadWeb/engman/EngMan.htm> to work.

3. Windows File Download Dialog Box appears (Figure 1.16).

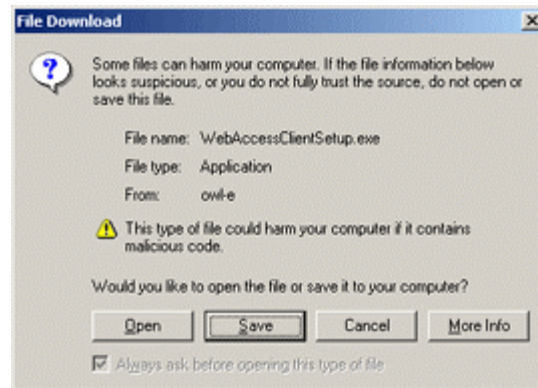


Figure 1.16 - Windows File Download dialog box

4. Select **Save** (Figure 1.16) to save Setup.exe to disk. (Desktop).

The Client Plug-in is about 4 megabytes and contains the ActiveX control for Internet Explorer (and a Navigator Plug-in). The setup file that you download is a self-extracting setup program named WebAccessClientSetup.exe. This is also available on the WebAccess CD-ROM for users with slow network connections.

We recommend that you save to Disk unless you have a very fast Internet Connection. We also recommend that you save to Desktop, so that you can find the Setup.exe program easily in order to run Install.

5. The Windows Save As Dialog Box appears (Figure 1.17)



Figure 1.17 - Windows 2000 Save As Dialog Box

6. Select the Desktop's location to Save the Setup file.
7. Select **Save** button (Figure 1.17).
8. Download Dialog Box Appears (Figure 1.18)



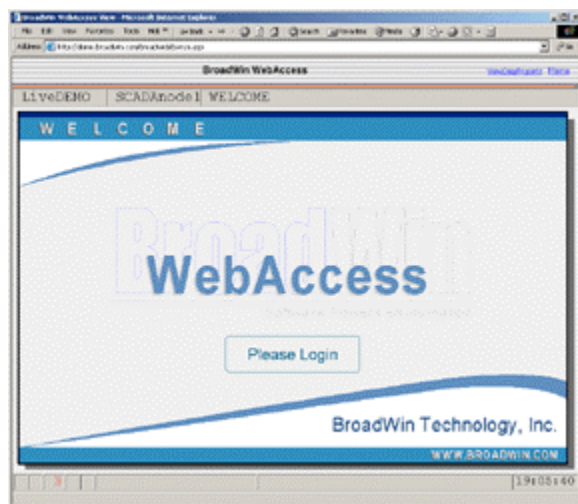
Figure 1.18 - Download Complete

How long it takes to download the Client Plug-in depends on your Internet connection. The file is approximately 4.9 Megabytes

9. Select the **Close** button to close the Download Dialog Box, if it did not close automatically (Figure 1.18).

Task 3: Start WebAccess VIEW in a web browser.

1. Re-Start Internet Explorer. (Repeat Task 1 above)
2. Enter **IP Address, network address, computer name, host name** or **URL** of the WebAccess Project in Web Browser. (Repeat Task 1, step 2 above).
3. Select the WebAccess View button (Figure 1.14). 
4. The WebAccess **View Login Page** appears (Figure 1.19).

*Figure 1.19 VIEW Login*

- 4a. If there are more than one Project or SCADA node, a Project Tree appears (Figure 1.20). Select **Start View** under the SCADA node from the Navigation Tree in the left frame.

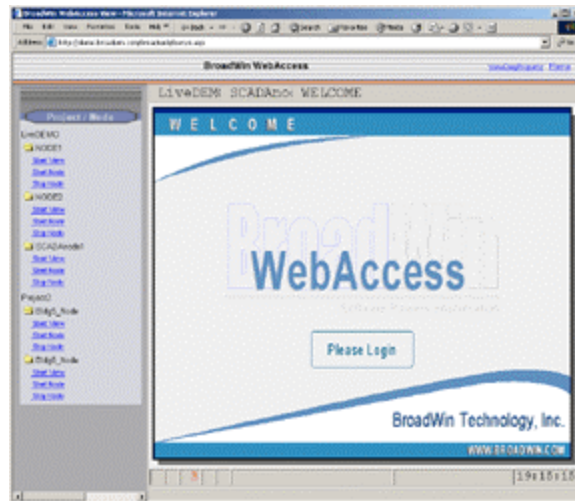


Figure 1.20 VIEW Login - multiple Nodes

Hint - Notice that Figure 1.19 does not show the Navigation Tree in the left frame. Yet, Figure 1.20 shows multiple Nodes each with Start Node, Start View and Stop Node. If there is only one SCADA Node in the project, the navigation tree is not shown.

5. Click on "**Please Login**" (Figure 1.19 or 1.20).



6. The **Login Dialog Box** appears (Figure 1.21).



Figure 1.21 - Login Dialog Box

7. Enter your "**User Name**" assigned by the engineer or technician who configured the system. Note that you can use either your **keyboard** or the **mouse** in the Login dialog box.
8. Enter your "**Password**".
4. **The Demo login and the Default login is,**
5. User Name: admin
6. Password: (i.e. a blank password)

Tip - if this is a newly installed system, use the default login username: admin with a blank password/

5. Press the **Enter** key.
6. The MAIN graphic display for your system appears. The default MAIN graphic supplied with WebAccess is shown below (Figure 1.22). Yours will probably look different

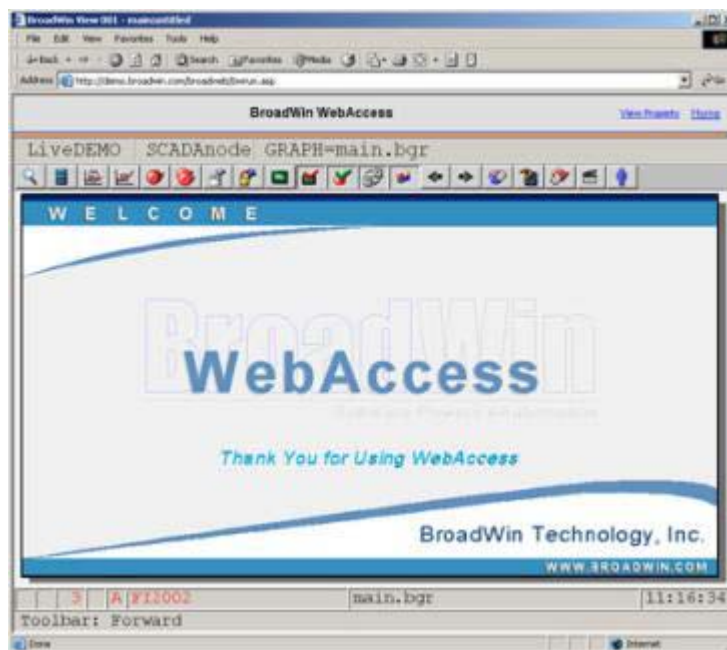


Figure 1.22 - default Main graphic display

The MAIN graphic display appears with navigation frame on the left if there are multiple SCADA Nodes or multiple Projects.

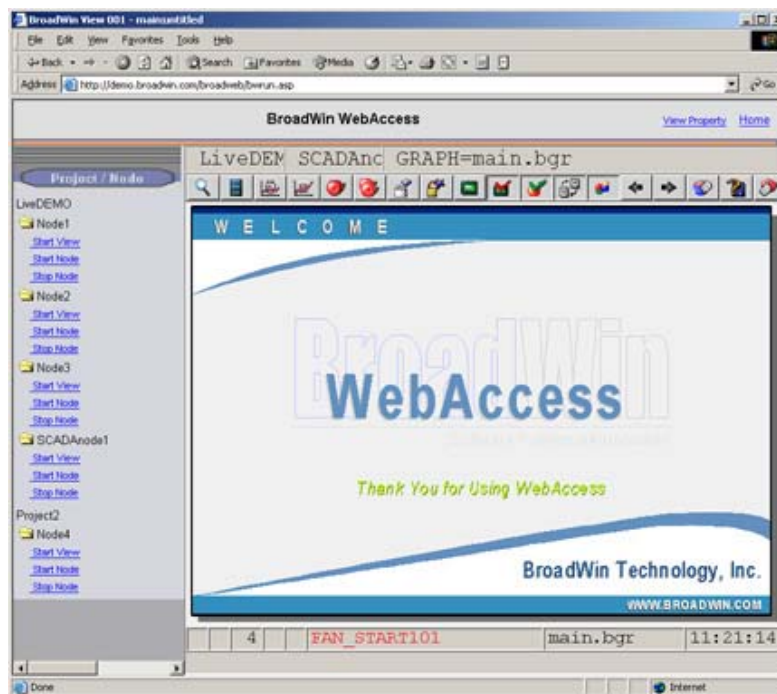


Figure 1.23- default Main graphic - multiple Nodes

Main Graphic is a user built display and yours may look different. The Main Graphic in the WebAccess Live Demo (<http://demo.broadwin.com>) or (<http://67.94.27.175>) is shown below.



Figure 1.24 - Main Graphic WebAccess Live Demo - Power User Login.

Congratulations! You are connected via the Internet to the first fully web-base HMI and SCADA system.

Other Ways to Start VIEW:

- a. A link on an HTML web page

This might be your corporate Web Page, created by your system administrator or web master. It will probably use the bwviewpg.asp with options that include automatic log in.

The Broadwin Technology web site has a link like this.

<http://demo.broadwin.com/broadWeb/system/bwviewpg.asp?proj=LIVEDEMO&node=SCADANode1&user=tom&pass=tom&tree=0&goto=graph=1welcome.bgr&tool=1&capt=1&stat=1>

The short hyperlink is [Click Here!](#)

If you remove the user and pass options, then you will be prompted to login.

- b. Favorites menu

You can create a link yourself by using the Add to Favorites feature in Internet Explorer. (Netscape users call this a Bookmark). You can use the Add to Favorites in Internet Explorer the first login described in Start View.

Favorites -> Add to Favorites

c. One Click Log-ins

Users can login directly to View without having to enter a password, if you create hyperlink in an HTML page, email or an ASP page with the user login, password and project information using the bwviewpg.asp with options. The Live Demo has several "One Click" logins that are hyperlinks:

[Power User LOG IN \(click here!\)](#) This link works only if connected to the Internet.

[Restricted User LOG IN \(click here!\)](#) This link works only if connected to the Internet.

You could email these (or your own) hyperlinks with all the information to log-on, then ask the user to connect using the hyperlink and then Add to Favorites. This would allow the user to login with one click on his favorites folder. Favorites -> Add to Favorites

Go to exercise 4 for step-by-step tour of display navigation.

Task 4: WebAccess Display Navigation

1. Start Internet Explorer.
2. Login to WebAccess VIEW.
3. **Right Click** the mouse inside the WebAccess Browser window.
4. Navigation Popup Menu appears (Figure 11.25).



Figure 1.25 - Right Click VIEW Menu

5. Drag the mouse down the Navigation Popup Menu to **GOTO** (Figure 11.26).

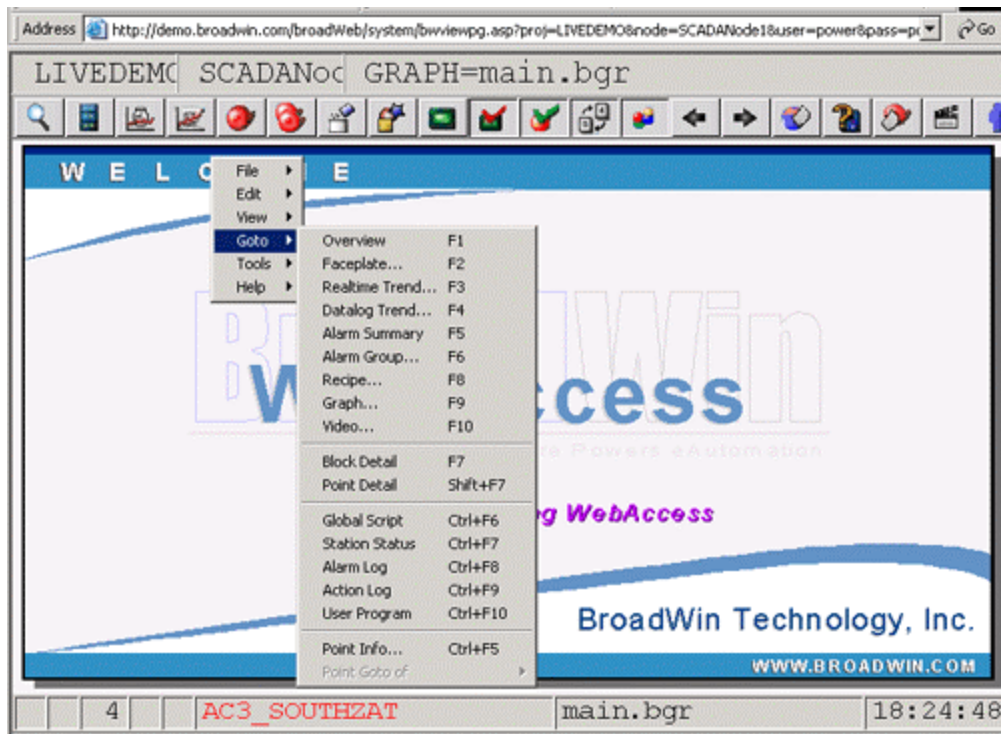


Figure 1.26- Navigation Popup Menu - GOTO menu selected

On any display, you can Right Click the Mouse to get a Navigation Popup Menu.

6. Select Alarm Summary to view current Alarms.

7. **Right Click -> Goto -> Graph** opens the Graph List Dialog Box.

The **Graph List Dialog Box** pops open (Figure 1.27).

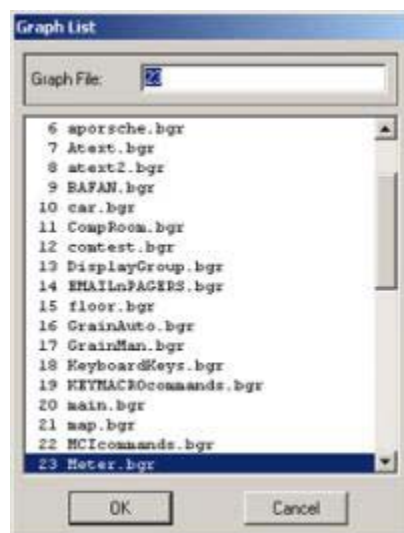


Figure 1.27- Graph List Dialog Box - in VIEW

8. **Double click** on the **Graphic name** in the Graph List Dialog Box.

For example, **double click** on **Meter.bgr**

OR

Single click on the Graphic name and press OK.

9. The graphic display you selected appears. (Figure 1.28 shows an example from the LiveDemo of the Meter display).

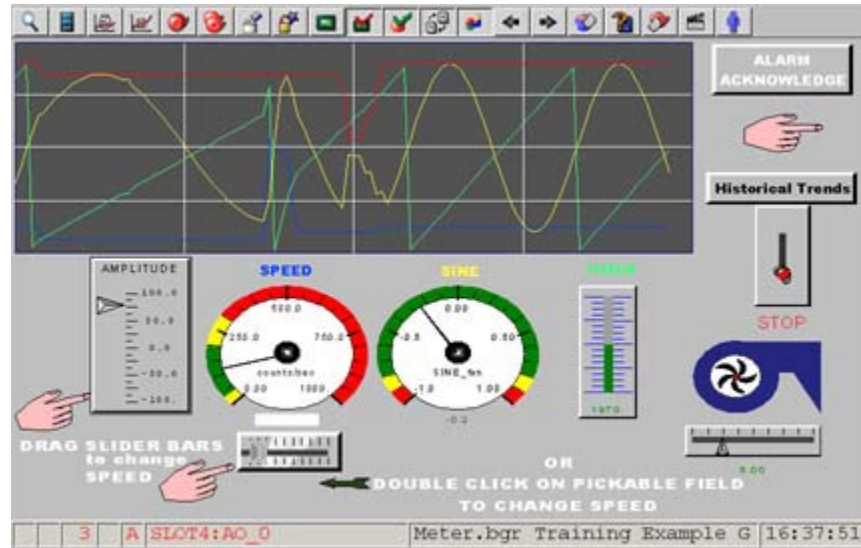


Figure 1.28 user-built Graphic Display from Demo (named Meter.bgr).

Only user-built Graphic Displays with the *.bgr extension are listed in the Graphic List ("Graph List"). Note that the word "Graphic" is abbreviated "Graph" in most menus and dialog boxes.

Toolbar



Figure 1.29 - standard Toolbar for graphic display

The Toolbar is a row of [pushbuttons](#) at the top of each graphic display window. The toolbar is used to call new displays, acknowledge alarms and open dialog boxes. Engineers can customize the appearance of the toolbar, by adding or deleting buttons and icons. The toolbar can change based on the display being viewed. Users can hide the toolbar using [View Property](#) link. Engineers can hide the toolbar by using the bwviewpg.asp options.

The [Status Bar](#) at the bottom of the display shows the description of each button on the Toolbar by moving the cursor over that button.



Figure 1.30 - Toolbar functions described by Status Bar

The [Right Click Menu](#) (in a web browser VIEW) is also another easy way to navigate. ViewDAQ users (i.e. the non-web browser version local to SCADA Node) have a [menu bar](#). [Keyboard Function Keys](#) provide an alternative to the Toolbar and Menus.

Standard Toolbar buttons



Figure 1.31 Standard Toolbar buttons

The buttons on the standard Toolbar for a graphic display are (listed left to right):

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

	Overview Groups	Opens first Overview Group Display. (Does nothing if no Faceplate Groups are configured).
	Faceplate Groups	Opens a Dialog Box listing the Faceplate Groups. (Does nothing if no Faceplate Groups are configured).
	Real Time Trend List	Opens a Dialog Box listing the "Real Time Only Trend" displays. (Does nothing if no RealTime Trend Groups are configured).
	Data Log Trend List	Opens a Dialog Box listing the "Real time and Historical Trend" displays. (Does nothing if no Datalog Trend Groups are configured).
	Alarm Summary	Opens the Alarm Summary of current alarms
	Alarm Group	Opens a Dialog Box listing the Alarm Group displays.
	Recipe	Opens a Dialog Box listing the Recipe files, Recipes and processing Units. (Does nothing if no Recipes are configured).
	Graphic List	Opens a Dialog Box listing user built graphic displays.
	Video	Opens a Dialog Box listing the Video cameras configured for the system. (Does nothing if no cameras are configured).
	Acknowledge Screen	Acknowledges all alarms displayed on this graphic display.
	Acknowledge Point	Acknowledges the selected Tag or Block Parameter.
	Change	Opens the Change Dialog box for the selected tag.
	Point Info	Opens the "tag browser" dialog box listing all tags in the system (based on user login). Restricted Users will only see tags from their assigned displays. General and Power Users will see all tags.
	Back	Back to previous graphic display.
	Forward	Move forward in display history queue.
	Global Script	Opens the global script monitor display (Power Users and Admin only using VIEW in a web browser).
	Station Status	Opens the communication status display (Power Users and Admin only using VIEW in a web browser).
	Alarm Log	Opens a record of the last 10,000 alarms on this SCADA Node (Power Users and Admin only using VIEW in a web browser). For a similar list,

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

		see the Alarm Log from Central Database Logs .
	Action Log	Opens a record of the last 10,000 operator actions. (Power Users and Admin only using VIEW in a web browser). For a similar list, see the Alarm Log from Central Database Logs .
	User Program	Opens the status display of any 3 rd Party programs started and monitored by WebAccess (Power Users and Admin only using VIEW in a web browser).

Toolbar, GOTO Menu and Keyboard have similar functions

The "**GOTO Menu**" (Figure 1.26), the "**Toolbar**" (Figure 1.29) and the **Function keys** on your keyboard all perform the same function.

For example, selecting "Alarm Summary" in the "GOTO Dialog Box", clicking on **F5** on the default toolbar or pressing the F5 key on your keyboard all do the same thing, they call up the Alarm Summary display. The default toolbar is usually replaced with buttons using icons, symbols or text. Yours might look different. For example, the **F5** button on the toolbar is usually replaced with the words "ALARM SUMMARY".

See [Keyboard Function Keys](#), for a description of all the Display Navigation available using the Keyboard Function Keys.

Keyboard Function Keys

These commands are the same as pressing the Function keys on the Keyboard of the PC (F1 through F10) and the Ctrl and the Shift keys.

Keyboard	Description	Equivalent Keypress
F1	Overview Display	<GOTO>OVERVIEW=1
F2	Faceplate Group List	<DIALOG>FPLGROUP
F3	Real Time Trend List	<DIALOG>REALTRD
F4	Data Log Trend List	<DIALOG>DLOGTRD
F5	Alarm Summary	<GOTO>ALMSUMMARY
F6	Alarm Group List	<DIALOG>ALMGROUP
F7	Block Detail Display	<GOTO>BLOCKDTL=@%TPICKTAG
F8	Recipe List	<DIALOG>RECIPE
F9	Graphic List	<DIALOG>GRAPH
F10	Video List	<DIALOG>VIDEO
Shift + F1	Download Recipe (Recipe Display Only)	

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Keyboard	Description	Equivalent Keymacro
Shift + F3	Scale Recipe (Recipe Display Only)	
Shift + F7	Point Detail Display	<GOTO>POINTDTL=@%TPICKTAG
Ctrl + F1	Acknowledge Screen	<ALMACK>
Ctrl + F2	Acknowledge Point	<ALMACKS>@%TPICKTAG 0 0
Ctrl + F3	Change Point	<DIALOG>TAGVALCHG=@%TPICKTAG
Ctrl + F5	Point Info List	<DIALOG>POINTINFO
Ctrl + F6	Global Script Status	<GOTO>GSCRIPT
Ctrl + F7	Station Status	<GOTO>STATION
Ctrl + F8	Alarm Log	<GOTO>ALARMLOG
Ctrl + F9	Action Log	<GOTO>ACTIONLOG
Ctrl + F10	User Programs	<GOTO>USRPRG
Alt + F4	Close Display Group Windows. Keyboard will close Web Browser.	<CLOSEDSP>@%TDAQDSPNAME
Page Down	Calls Down Link Graphic	
Page Up	Calls Up Link Graphic	
Esc	Calls Main graphic Display	<GOTO>Graph=Main.bgr

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Task 5: Browse Tags with the Point Info Dialog Box

1. **Right Click -> Goto -> Point Info** opens the Point Info Dialog Box (the Tag Browser of all tags in the system).

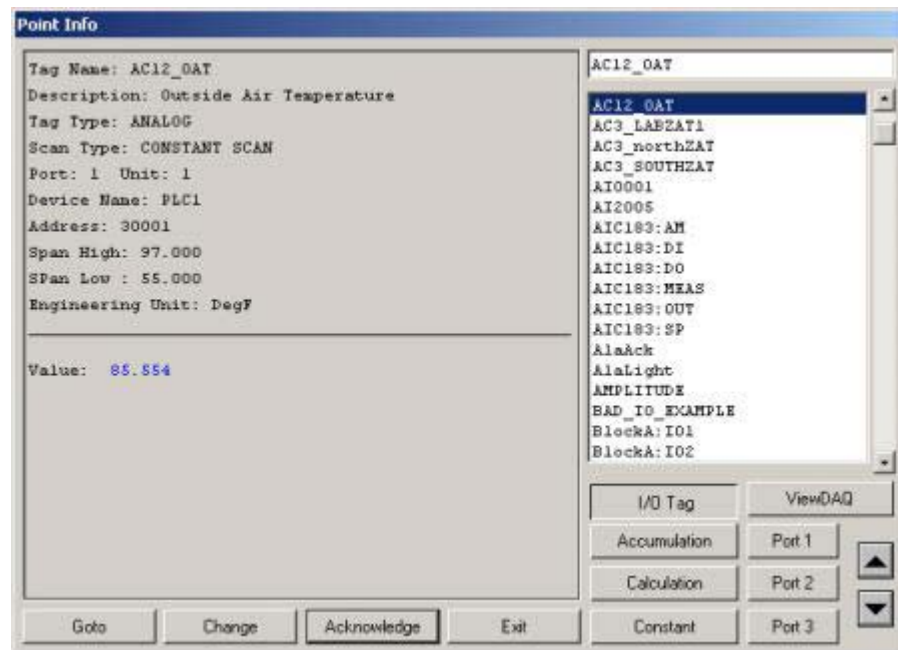


Figure 1.20 - Point Info Dialog Box

2. Select a point or Tag from the list on the left of the dialog box. (For example, pick AC12_OAT in Figure 1.20). You can also type the tag name using the keyboard.

The Point Info Dialog Box shows the current Value, Description, Point Type, High and Low Span and Engineering Units.

The Point Info Dialog Box is a menu of all Points (IO Tags, Blocks and system Tags) plus information about them, including current value, alarms, Displays they appear. The Point Info Dialog box also has the ability to change the value of tags based on user security and will open a login dialog box if user security is too low. The tags listed are based on user login. Restricted Users will only see tags from their assigned displays. General and Power Users will see all tags.

Value: **Flashing Red** means the tag is in Alarm and is Unacknowledged. **Steady Red** means the tag is in Alarm and is Acknowledged. Asterisks (*) or a number in brackets means a communications failure. **Blue** is Normal.

The **Acknowledge** button  will acknowledge the highest alarm associated with the tag (the tag should stop flashing). If there are multiple alarms, then the acknowledge button must be pressed multiple times. The Alarm Summary describes the alarm type associate with tag. Restricted Users can be prevented from acknowledging alarms, depending on the security assigned to them.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Tag Name

The Tag name (or Block and Parameter Name) is how WebAccess identifies this information on displays, logs, alarms, trends and reports. A typical tagname is FIC101 or AC3_OAT.

Description

Description: is the user assigned description for this tag used in displays and alarms. A typical description is Boiler #1 Feedwater Flow. The description is 25 alphanumeric characters.

Tag Type

Tag Type: is the Data Type of the tag or parameter. The types are Analog, Digital or Text.

Analog is a floating Point Number (e.g. 0, 101.234, 100, -999.1).

Discrete is a state between 0 and 7, usually with a Descriptor (e.g. RUN, STOP, ON, OFF). Digital is also called Discrete.

Text is ASCII data consisting of letters and numbers.

Scan Type

Scan Type defines the type of scanning performed by the Tag or Block Parameter.

Constant Scan means the Tag is always scanned as long as the SCADA node is running. Constant scanning must be used for all I/O points that require continuous update (alarms, trends, logs, batch, scripts, logic).

Display Scan is for infrequently accessed tags, like tuning parameters and setpoints. Display Scanning occurs only when a Display is being viewed with this tag on it. Display Scan is a means of optimizing or increasing communications throughput.

Some drivers provide other Scan options. Scan Type is chosen from a pull down menu showing valid scan types for this device.

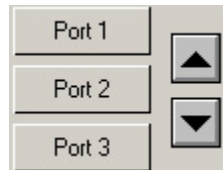
Port

This is also called the **Com Port**. This is the communications port the tag is using to read or write data from automation devices including PLCs, Controllers and IO. The [STATION STATUS](#) Display can be used to view the status of the comport. The %DAQ System Tag can also be used to monitor the Status of the comport using %DCOMST(tagname.COM). Comport numbers less than 1 represent Internal Tags (Accumulation, Constant, Calculation, System and Screen Tags). For IO Tags and Blocks, the COM Port is the physical comport configured in WebAccess Configuration Manager. For Network and Software Interfaces (like DDE, OPC and API), the COM port may be a virtual number. For Serial and some API interfaces, the comport is the physical communications port (i.e. COM1, COM2, COM3, etc.).

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

- 1 = Accumulation Tag (Internal Tag)
- 2 = Calculation Tag (Internal Tag)
- 3 = Constant Tag (Internal Tag)
- 0 = Local Screen Tag or %DAQ System Tag (Internal Tag)
- 1 to 255 = Physical Comport (Com1, Com2, etc) or Virtual Port

Range: -3 to 255



You can select the comport using the keys. Use the Up / Down arrow keys to see up to port 12.

Unit

The **Unit** Number describes the field device (e.g. PLC, RTU, Controller) this tag reads. Depending on the driver, this may be the physical address of the device. Technicians and engineers configure unit Number when they create the device in WebAccess Project Manager.

Device Name

Device Name is a description of the Automation device the tag connects in order read or write data. Automation devices include PLCs, Controllers and IO. Typical Device Names are PLC1, CTL202, and VAV300. Engineers and technicians assign the Device Name when they create the Device in the WebAccess Project Manager.

Address

Address of data in the field device to be read or written by this tag. Address is initially set when the Tag or Block was built. Address is very device dependent. Refer to the device driver manual for more details.

The **Goto** button  opens the [Goto Point Info](#) list of all the displays and trends the tag is used on.

The **Change** button  will open the [Change Dialog box](#) allowing an operator to change the value of the tag (with the appropriate [security](#)).

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

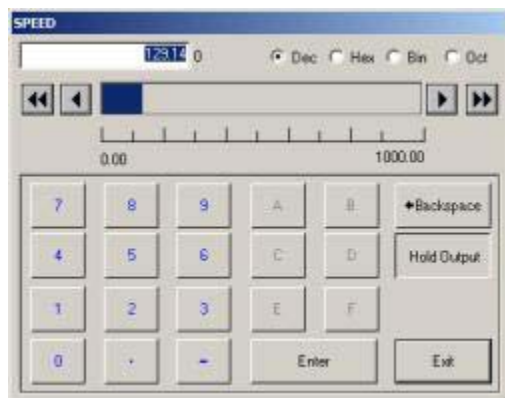


Figure 1.21 - Change dialog Box for **ANALOG** tag

"Analog" is any floating-point number (-99999999999 to 99999999999). The maximum size of an Analog Tag is 12 digits including sign and decimal point. You can use the keyboard, mouse, or touch-screen to enter values. The Keyboard keys are: F1 to Hold Output, ENTER, TAB select Exit.



Figure 1.22 - Change Dialog Box for a **DISCRETE** Tag

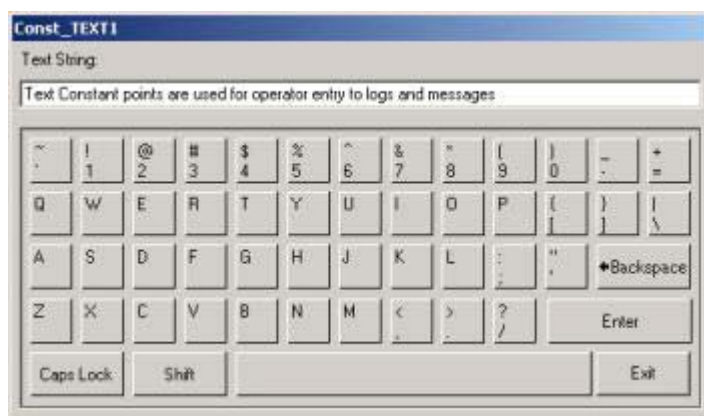


Figure 1.23 Change Dialog Box for **TEXT**-type tag.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Task 6: Use the Change Dialog Boxes

1. Open the Change Dialog Box, there are at least three methods:

- a. Select an Analog Tagname from the Point Info Dialog Box the pick the **Change button** (Figure 1.21). 

OR

- b. Double click on any pick-able dynamic number on a user built graphic (Figure 1.16).

OR

- c. Pick a Tag and use the Ctrl-F3 key or the  on the [Standard Toolbar](#) (Figure 1.19).

2. The Analog **Change Dialog Box** appears (Figure 1.24).

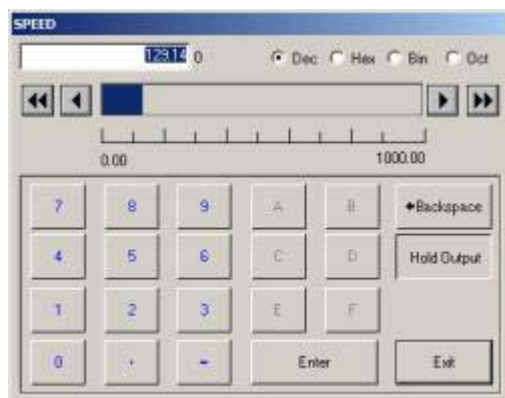


Figure 1.24 - CHANGE dialog Box for ANALOG tag

3. Click **Hold Output** to keep the dialog box open while making a change instantly effective (Figure 1.24).

4. Click the **Ramp Arrows** to change a value  (Figure 1.24).

- a. OR, Click the **number keys** in the Change Dialog Box  (Figure 1.24) to enter a value.

- b. The UP and Down (↓) keys on the keyboard can also be used to ramp the value of an Analog tag in the Change Dialog Box.

5. Click **Enter** to close the Change Dialog Box (Figure 1.24)



NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

6. Click **Exit** to close the Point Info Dialog Box (Figure 1.24)  without making a change. (If [Hold Output](#) is depressed).

Hold Output

If the **Hold Output** button is depressed (i.e. enabled) , then changes are not made until the **enter** key is pressed.

If the **Hold Output** button is depressed (i.e. enabled), then **Exit** will cancel any keystrokes and no change will be made.

If the **Hold Output** button is raised (i.e. disabled) , then any change to a State button is immediate.

The **F1** key on the keyboard will toggle Hold Output.

Dec

Dec displays the number read from the Field IO device as **Decimal** Number (i.e. base 10, 0 to 9).

Hex

Hex displays the number read from the Field IO device as a **Hexadecimal** Number (i.e. base 16, 0 to F where $F_{16} = 15_{10}$).

Bin

Bin displays the number read from the Field IO device as a **Binary** Number (i.e. base 2, 0 to 1 where $10_2 = 2_{10}$).

Oct

Oct displays the number read from the Field IO device as an **Octal** Number (i.e. base 8, 0 to 7 where $10_8 = 8_{10}$).

Change Dialog Box - Discrete Tags

"Discrete" is any integer number (from 0 to 7). That's 3-bits of data.

The most common discrete tag is a Digital Tag (On/Off, True/False) that is 1-bit of data.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.



Figure 1.25 - Change Dialog Box for 2-state Discrete Tag (i.e. Digital)

An example of 2-bit discrete is the On-Off, and Transition State of a Block Valve (0=open and should be open, 1=open, but should be closed, 2=closed but should be open and 3=closed and should to be closed).

WebAccess will automatically resize the Discrete Dialog Box to fit the number of 'bits' read by the tag from the IO device. (3-bits max bit length).



Figure 1.26 - Change Dialog Box for 8-state (7-bit) Discrete Tag

Keyboard Keys for Change Dialog Box

You can use the keyboard, mouse or touch-screen to enter values. The keyboard keys are:

- **F1** key to toggle Hold Output
- **Up Arrow** and **Down Arrow** keys to change

The UP and Down (↓) keys on the keyboard can also be used to:

- Select the State of a Discrete
- Ramp the value of an Analog.
- **TAB** will toggle between Enter and Exit buttons.
- **Enter** will execute based on the selected Enter or Exit button.

This is useful for membrane panels or if the mouse or touch screen fails.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Task 7: View the Thin Client

The THIN CLIENT is intended for use with Hand-held PCs running WINDOWS CE (for example, the iPAQ).

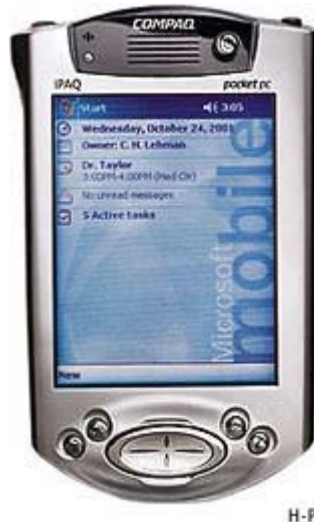


Figure – iPAQ 3900

WebAccess will test for the operating system and will direct Windows CE clients to the Thin Client interface path.

You can use any PC to connect to the THIN CLIENT by typing the full path to the Thin Client Interface.

1. Connect to the thin client by typing the address given by your instructor with broadweb/hd1/m.asp appended to the ip address.

`http://ipaddress/broadweb/hd1/m.asp`

OR

For the Demo type:

<http://demo.broadwin.com/broadweb/hd1/m.asp>

or

<http://67.94.27.175/broadweb/hd1/m.asp>

You can use any PC to view the Thin Client. Pocket PCs using Windows CE are automatically redirected to the thin client (i.e. Windows CE only needs to type IP address without the additional path).

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

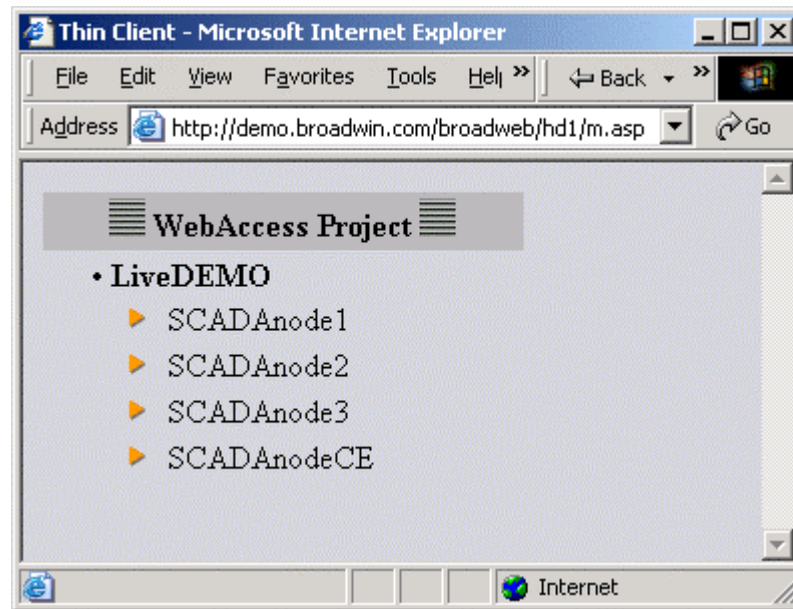


Figure 1.27 – THIN CLIENT

2. Select a SCADA Node by clicking on the yellow pointer .
3. Log in to the Thin Client

Login: admin
Password:

blank
(i.e. no password)

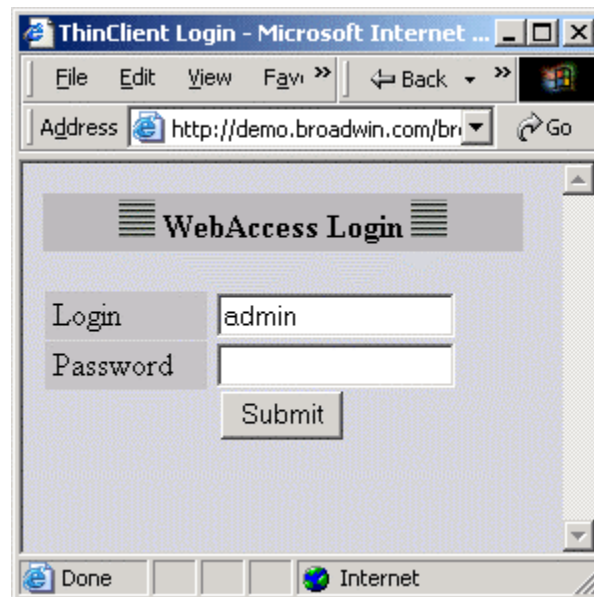


Figure 1.28 – THIN CLIENT – Log in

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.



Figure 1.29 – Thin Client Menu Display

4. Click the yellow pointers to expand ► and compress ▼ the list of displays, tags, alarms etc.
5. Click on any Graphic to enlarge it.



Figure 1.30 – typical THIN CLIENT Graphic Display with control tags (2ductAHU1.bgr).

6. Click on a Tag Name to change the Tag

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

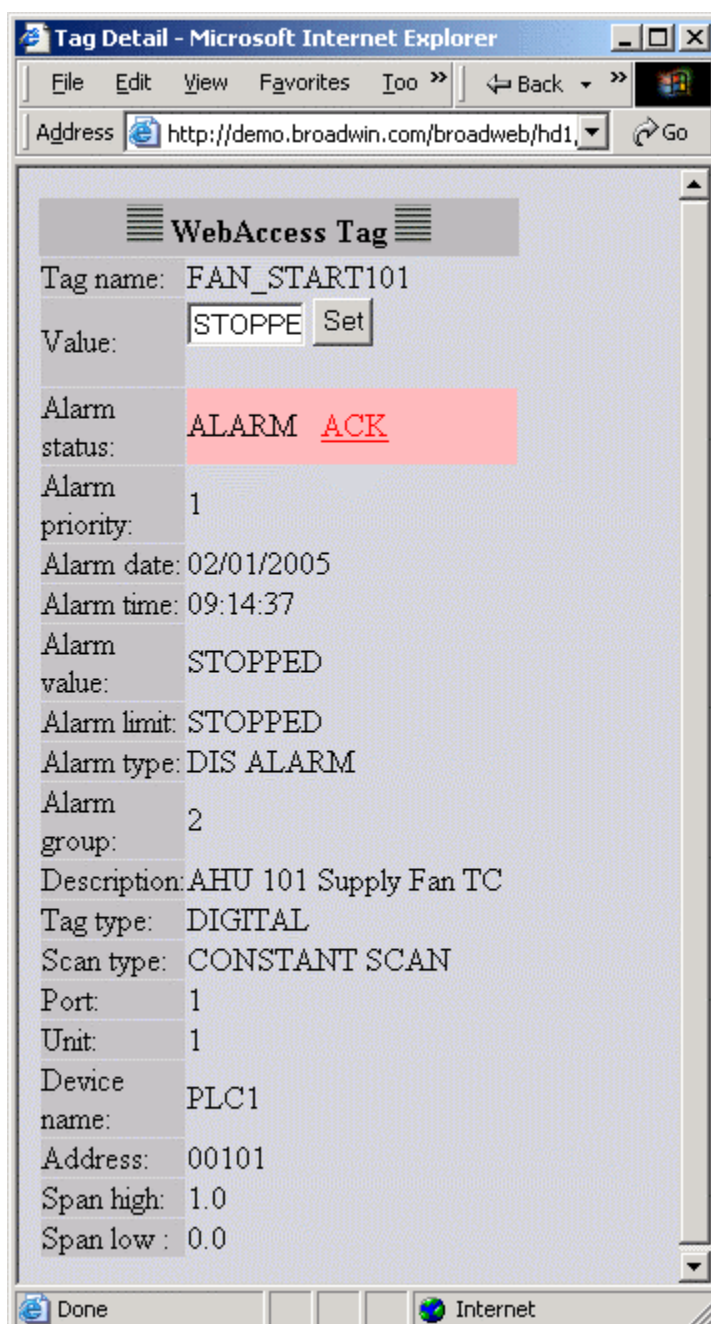


Figure 1.31 – Change Tag in THIN CLIENT (FAN_START101)

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Reference

The information in this introduction is also in the **WebAccess Operators Manual**.

The Operator Manual can be downloaded from the following locations:

<http://demo.broadwin.com/broadweb/OpMan/OpMan.htm>

<http://broadwin.com/downloads/winhelp/OpMan.CHM>

<http://localhost/broadweb/OpMAN/OpMan.htm>

The Operator Manual can be accessed from every WebAccess System using the HELP hyperlink in WebAccess VIEW.

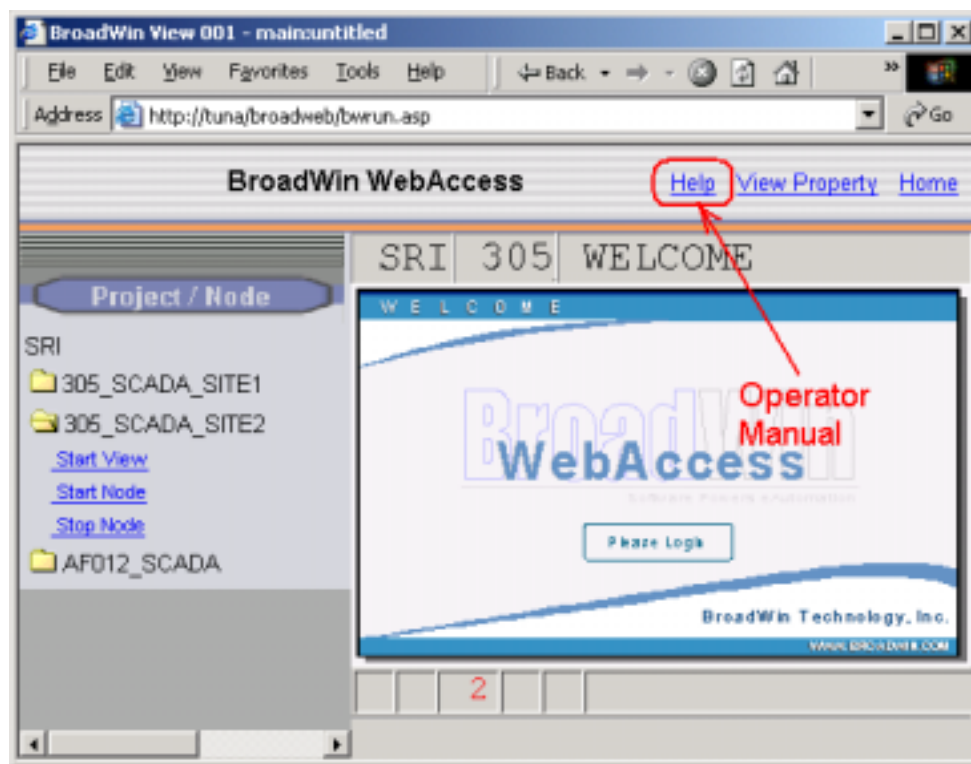


Figure - Help opens the Operator Manual in VIEW

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Section 2 - Node Software Installation

Objectives

- Install Project Node and SCADA Node software

Training Notes

Hardware and Operating System

This section is intended as a quick list of things to consider. This section does not list the detail here; instead, it is a reminder or checklist. Use this as a reminder and review the appropriate section in the manual for details.

1. Hardware

Pentium III, Pentium IV, or Athelon processors are recommended for the Project Node and SCADA nodes. The Clients should be Pentium or better.

A network card is needed for network applications.

Even for Standalone architecture nodes (Project and SCADA nodes combined, no network), the TCP/IP service is needed. The loop back service can be installed for a standalone system. Note that all configuration is through a Web Browser using IIS and the TCP/IP protocol. A Stand-alone node can benefit from some sort of network access to allow remote access and remote software administration. Windows provides a service called RAS that allows remote dial-up over a modem. A network card and a cross-link cable provide an easy method to copy data to or from a laptop

Data Logging Trend Files require a fast CPU and a Hard Drive with fast access times and sufficient disk capacity. Data Logging requirements will also affect the number of SCADA Nodes required. It is recommended to use a SCSI drive for data logging. It is further

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

recommended to use drive for data logging that is separate from your operating system and WebAccess program drive.

5. File System

NTFS file system recommended for Project Node and SCADA nodes. NTFS provides Security. FAT provides no security and is not appropriate for the Web Server (Project Node) or SCADA node.

File compression is not recommended for the WebAccess DATALOG subdirectories, since this will result in more overhead and slower performance.

6. Operating System

Project Node operating System: **Windows 2000** or **Windows XP Professional** or Server 2003 or **Vista Business** or **Vista Enterprise** with **IIS**. A Project Node separate from the SCADA node increases the security of your SCADA node. **Windows Vista** comes “locked-down” and requires you to take steps to enable IIS to work with WebAccess (and ASP). See the Windows Vista section that follows.

SCADA Node: Windows 2000 or **SERVER 2003** or **Windows XP Professional** or **Vista Business** or **Vista Enterprise**. SCADA nodes do not need web server software. If you have many SCADA Nodes using email alarms, emailed scheduled reports or MAIL commands, you should install IIS with the SMTP (simple Mail Transfer Protocol).

Client: Windows 98, 2000 (Professional & Server), **2003** Server or **XP** (Home, Professional and Server) or **Vista** (Home, Business or Enterprise).

XP home and Vista Home will not work for Project Node (there is no Web Server feature). XP Home is not supported for SCADA node.

XP Home, Windows 98, and ME do not support advanced graphic features. If your clients are to use Win 98, ME or XP Home, limit the graphics they can view to basic animation: vector rotation, color, motion. Bitmap rotation and Text rotation are not supported by 98, ME or XP Home.

7. Web Server

IIS (Internet Information Service) is required for the **Project Node**. If email notification of alarms and email of scheduled reports are to be used, then the SMTP (Simple Mail Transfer Protocol) service must be installed and running on both the Project Node and SCADA node. The Web Server (WWW Service) does not need to be installed on the SCADA Node.

Windows Vista comes “locked-down” and requires you to take steps to enable IIS to work with WebAccess (and ASP). See the Windows Vista section that follows.

SMTP Server (an option with IIS) is optional for Email Alarm Notification, emailed scheduled reports or MAIL commands. The Simple Mail Transfer Protocol option allows Project Node to forward email from SCADA Nodes to your corporate email server.

FTP Server is not recommended or needed. It is too much of a security risk.

8. Service Packs installed.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Service Pack 4 (SP4) is required for Windows 2000. SP2 is required for Windows XP and SP1 is required for Server 2003. The latest service packs are recommended to improve security of your project and SCADA nodes. REINSTALL SERVICE PACKS IF YOU ADD A WINDOWS COMPONENT (e.g. you add IIS)!

9. Professional or Server (or Business or Enterprise)?

The Number of simultaneous connections to Project Node will affect your decision to use 2000 Professional or Server, XP Professional or Server 2003 or Vista Business or Vista Enterprise for the project node. Professional is limited to 10 simultaneous connections. Database Configuration, DRAW and the Thin Client require continuous connections to project node (Web Server).

Connections to the SCADA node by Clients using VIEW are temporary and re-direct to the SCADA node after an initial connection to the Project Node (Web Server). Clients have a short-lived connection to the Project Node (Web Server) to get the address of the SCADA node and to get few ASP pages. The connection from Client to Web Server is then dropped until the Client either presses the refresh button (not done during normal use of Web Access) or reconnects to SCADA node.

If you are using the Thin Client feature and have more than 10 users that will connect simultaneously, you should consider using 2000 Server or Server 2003 or Vista Business.

Scheduled Reports, HTML Reports of central ODBC Logs, and online changes to the Scheduler from VIEW require a connection to the Project Node.

Many Operations in the Project Manager require multiple connections, for example every time a comport is created a new connection is opened while the comport asp runs.

Vista Business appears to support over 4 million simultaneously (by it's license). It would seem that Vista Enterprise is not really needed for most WebAccess Applications

10. Internet Explorer 6.0 or 7.0

WebAccess uses ASP for its configuration (Project Manager) and the initial page (VIEW). IE 6.0 or IE 7.0 must have ASP enabled.

Netscape and IE 5.0 can be used for evaluation purposes only. IE 5.0 appears to work, but does not process java scripts correctly and can potentially corrupt your Database. Never press the "submit" if using IE 5.0 to view configuration data. Netscape is slower than IE 5 and although it appears to work, it is not recommended

11. Internet Explorer Security Settings

IE 6.0 and 7.0 security settings must allow ActiveX control to run (Medium setting) this can be accomplished in two ways:

Medium for Internet Zone - This affects all Internet sites visited and is less secure than the adding Web Access as a Trusted Site.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Medium for Trusted Sites or Intranet- Instruct your users to add the WebAccess Project node as a Trusted site. This allows a more restricted setting for the Internet zone.

12. Web Server Security

Anonymous Access is most common. But to increase security you should consider Integrated Windows Authentication.

Integrated Windows Authentication for the Web Server is most secure. It will require users to login with a password. It requires that users be "recognized" Windows Users on the Project Node PC (local User) or the Domain of the project node (if a domain is used). If users are all part of a domain used by the Project Node, the login will be transparent for recognized users (i.e. no dialog box asking for password) much like connecting to a shared drive or printer on your company's intranet.

13. Network Addresses (IP or Computer Name)

The Project Node and SCADA nodes require some sort of Fixed Address. You can use either a fixed IP address (required if users outside your intranet are to connect) or Network name (if all your users are on a local network). If all your clients are on an intranet, the SCADA node and project node can be private IP.

SCADA node and Project node can use Network Names (computer names) instead of IP address if all clients are on same network.

IP addresses must be fixed IP for SCADA and Project Nodes. Clients can have dynamic IP addresses.

A Standalone PC without a network must use it's computer name.

14. Security to install Client Plug-in

Windows Vista, Server 2003, Windows 2000 and Windows XP users must have security to install the client. (I.e. they must be either administrator or Power Users for 2000, 2003 or XP).

All Windows 98 and ME users can install the client.

15. Communication Drivers:

Check that WebAccess has a driver that can communicate to your automation hardware. It is not enough that the manufacturer has one driver: check the specific model and Web Access Driver Guide for compatibility.

Native Drivers are faster and more reliable. They provide higher data rates. Modbus RTU, Modbus Ethernet,

Open Standard drivers, like OPC use third party software to provide communications between WebAccess and automation hardware. RSLinx is an example, providing communications to Allen-Bradley hardware via OPC. 3rd Party OPC servers are available from Kepware (www.kepware.com), the hardware manufacturers, and others.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

For serial drivers, you need to know the physical protocol, cable wiring (Rs232, RS422, null modem cable, etc), Baud rates, parity, stop bits, device address and the minimum scan time the device supports.

There can be 12 Communication ports per SCADA node with 255 DEVICES PER COM PORT and only one protocol per COM port.

Multiple IP addresses and Multiple Network cards can be used on a SCADA node. WebAccess will search all network cards for path to device. This allows automation equipment to be on one or more private networks and the SCADA node to communicate over a public network.

For the current list of drivers, see the Broadwin Technology, Inc. web site:

<http://broadwin.com/Drivers/WebAccessDrivers.htm>

16. Video

Video supports some web-enabled cameras. Confirm driver exists for camera. Camera must have an IP accessible by all clients, since the client connects directly to camera.

17. Disk Defragmenter Utility

Data Logging (i.e. recording real-time Data to the Hard drive via Data Log Trends) will fragment the hard drive and slow the system, eventually stopping it. Windows supplies a disk defragmenter utility that must be run manually and cannot be scheduled. It is recommended to purchase a Disk Defragmenter Utility for the SCADA Nodes, and schedule it to run Daily or Weekly.

18. Anti-Virus Software

It is recommended to install and update Anti-virus software on all SCADA Nodes, the Project Node and all Clients.

19. Windows Update

It is recommended to subscribe to Automatic Windows Update in order to get the latest security patches from Microsoft.

20. Firewall or Router with Port Mapping (NAT)

It is recommended to place your SCADA Nodes and Project Node behind a Firewall or Router and close any unnecessary TCP Ports. SCADA Nodes need only two TCP Ports (defaults are 4592 and 14592). Optionally the SMTP TCP port is needed for both SCADA Nodes and Project Nodes. The Project Node also needs an HTTP port (default 80), a Primary TCP Port (default 4592) and optionally the SMTP and POP3 TCP Ports. Windows remote Desktop or PC Anywhere may require additional TCP Ports. For more information, see the Engineering Manual.

WebAccess is compatible with the *Windows Firewall* supplied with Windows XP and Server 2003. WebAccess will configure the Windows Firewall in XP and 2003 to open configured TCP ports.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Data Log Trend recording

The hard drive disk controller will be the limiting factor on most systems depending on the number of tags [data logged](#).

The actual number of tags that can be Data Logged by a SCADA node is dependent on:

- Processor Speed (CPU Speed)
- Hard Disk Access Time
- Processor Load (due to other tasks like scripts, schedules, communications, calculation tags).
- Scan Rate of the Communication Port

A guideline is 500 tags/second for a 1.8 GHz Pentium IV processor. If your Scan rate is every 3 seconds, then you could data log about 1500 tags. Increasing the deadband to reduce the number of changes/second could increase this number of tags data logged. These assume the worse case scenario that there is no deadband or that the tags exceed the deadband every scan cycle.

500 tags/second scan rate

1000 tags / 2 second rate

2000 tags / 4 seconds rate

The use of a deadband will result in recording only significant changes, effectively reducing the number of value changes recorded per scan (and increasing the number of Tags that can be data logged).

If you are Data Logging more than 1500 tags on a SCADA node, you should consider using multiple SCADA nodes or using SAN, NAIS or other Disk Cache to speed up Disk Controller Access times by the SCADA node PC.

Hard Key

WebAccess software products use the Sentinel Hard Key from Rainbow Technologies, Inc. for copy protection. A hard key must be installed to the USB or parallel printer port LPT1. You can attach a printer cable to the end of the hard key installed at the parallel port, since any data sent to the printer port for printing will pass through the hard key unaffected.

However, some printers or parallel port device are not compatible with the hard key. Rainbow Technologies maintains and updates an incompatibility list. You can contact Rainbow Technologies for specific compatibility questions:

Rainbow Technologies
9292 Jeronimo Road
Irvine, CA 92718

TEL: (714) 454-2100
FAX: (714) 454-8557

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Parallel Hard Key



Figure 1-11 Hard Key – LPT1 parallel port

The Parallel port version of the hard key is installed on a 25-pin parallel port (D25) on the SCADA node that adheres to IBM standards: LPT1 is supported.

Installing the Parallel Hard Key

To install a Sentinel Pro key, attach it to the parallel printer port of an IBM PC/XT/AT, PS/2, or true IBM-compatible computer. The side to be attached to the port is labeled - COMPUTER. Screws are provided to connect the key securely to the port.

If the computer is close to a wall or another obstacle, you can attach an extension cable to the port, and then attach the Sentinel Pro to the cable. Use a straight-through, 25-pin, male to female cable such as Rainbow Part Number 103027-001.

Incompatible Parallel Connectors

Some computers have a 14-pin connector. In this case, you can attach a Sentinel Pro key using an appropriate adapter cable.

Using Other Hardware Keys

Unlike the Sentinel Pro, some hardware keys “sit between” the computer and the printer. Such keys do not pass all signals through to the printer. If the Sentinel Pro is installed behind other hardware keys, it may not be able to communicate properly. For this reason, always attach the Sentinel Pro directly to the printer port, and attach any other security devices to the Sentinel Pro.

USB Hard Key



NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Figure 1-12 USB Hard Key

The USB versions of the Hardkey key are inserted in a USB port **after installing WebAccess SCADA Node software**.

*Note -All **USB Sentinel SuperPro** keys need to be **removed before installing software**. Otherwise, the USB portion of the installation might fail. If you insert the USB key prior to installing SCADA Node software, you will be prompted to insert a CD with sentinel drivers. You should select **CANCEL** and install WebAccess SCADA Node Software before inserting a USB key.*

If a user fails to heed the above warning then you should have the user unplug the USB key and then remove the Sentinel USB key using **Add/Remove Hardware** applet in the **Control Panel** (Start -> Settings-> Control Panel -> Add/Remove Hardware). The User should then Install (or re-install) WebAccess SCADA Node software. This should repair the system and make the USB key operational.

All **USB Sentinel SuperPro hard keys** must be removed before installing software.

Install USB Key after software

If Plug and Play is enabled (and after WebAccess is installed), when you install the USB key, a dialog box will appear saying, "new hardware found". It will find the driver if you have installed WebAccess. If you move the USB key to another port, it will re-install the driver (and you will get the pop-up dialog box again) if you have Plug-n-Play enabled

Control File

In conjunction with a hard key, every installed WebAccess package, except the working, or live, demo version, requires a control file for proper operation. During WebAccess installation, this control file is installed to the WebAccess root directory. The serial number of the control file must match that of the hard key.

The control file contains information about the options enabled in the WebAccess package. To view this information, double-click the Function List icon in the WebAccess program group or folder.

This file is named bwkserv.exe and must match your hard key. It can be copied to a system manually to drive:\Webaccess\node. This file can be read using the %TSERIALNUM in the Point Info display (ctrl-F5) in VIEW or ViewDAQ.

Licensing

WebAccess only requires that the customer pay for the SCADA node License. The Client and Project nodes are licensed at no charge. Only the SCADA Node(s) requires a HARDKEY and CONTROL FILE. The Hardkey serial number must match the Control File serial number. The number of tags the SCADA node will run is limited by the Control File. You can build an unlimited number of Tags in the Project Node.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Remember, the Project Node does not need a license. This can allow you to equip many engineers with WebAccess on their laptops or PCs for development.

Firewalls

A firewall appliance is highly recommended if your WebAccess Project and SCADA nodes are exposed to the Internet (i.e. you are using Public IP Addresses). This will increase the security of your system.

A firewall appliance is preferable over firewall software installed on the SCADA or Project Node. A firewall appliance (like a Netgear FR114P) can be purchased for under \$100 and is more secure than firewall software. Firewall software or a Firewall that is poorly configured can interfere with the RPC service in Windows 2000, 2003, Vista and XP. (Note – WebAccess is compatible with the Windows Firewall in XP and 2003).

A Firewall restricts the flow of data onto a network; it is a method of network security. Many corporations use firewalls. The firewall is used to restrict View Clients from communicating with the SCADA node and from downloading files from the Project Node to the SCADA node.

If your connection is through a firewall, you will need to have your network administrator open two TCP ports for you to use the DRAW or VIEW features in WebAccess. WebAccess needs two TCP ports, one to download files and another to exchange live data. You will need to know these TCP ports to install software on each SCADA node. You will also have to enter these port numbers into the [Node Properties](#) in the [Project Manager](#). This will create a [deploy file](#) to inform clients outside the firewall of these two TCP/Ports for them to access your SCADA nodes.

If you are using a firewall (or multiple firewalls) and Public IP Address, then you will have to use [Address Mapping](#) to allow both Private Network users and Internet users to connect to the Clients, Project and SCADA Nodes behind the firewall.

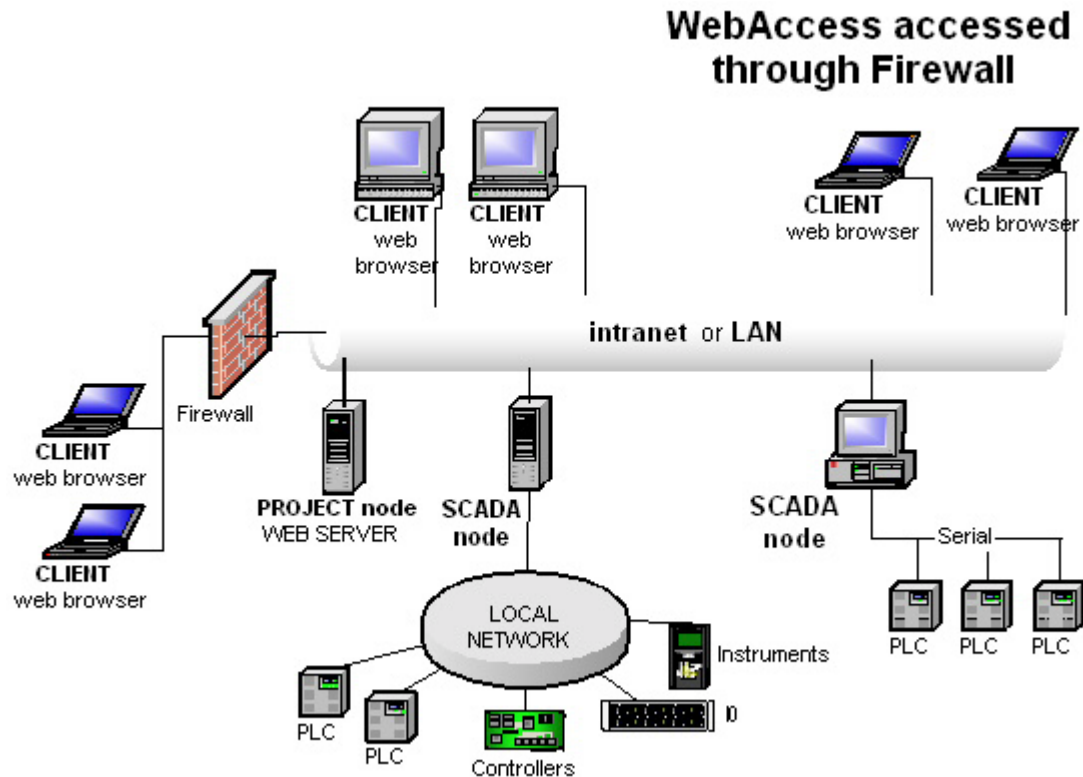
WebAccess will configure the Windows Firewall in Vista, XP and 2003 to open configured TCP ports.

Microsoft has a free PortQuery tool
(<http://support.microsoft.com/default.aspx?scid=kb;en-us:832919>)

that is described in the Broadwin WebAccess Engineering Manual
http://demo.broadwin.com/broadWeb/engman/22.1.7_Firewall_or_blocked_ports.htm

that you can install on clients to test the part to the project node and SCADA nodes if you receive “cannot connect to Project / SCADA node” or other errors.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.



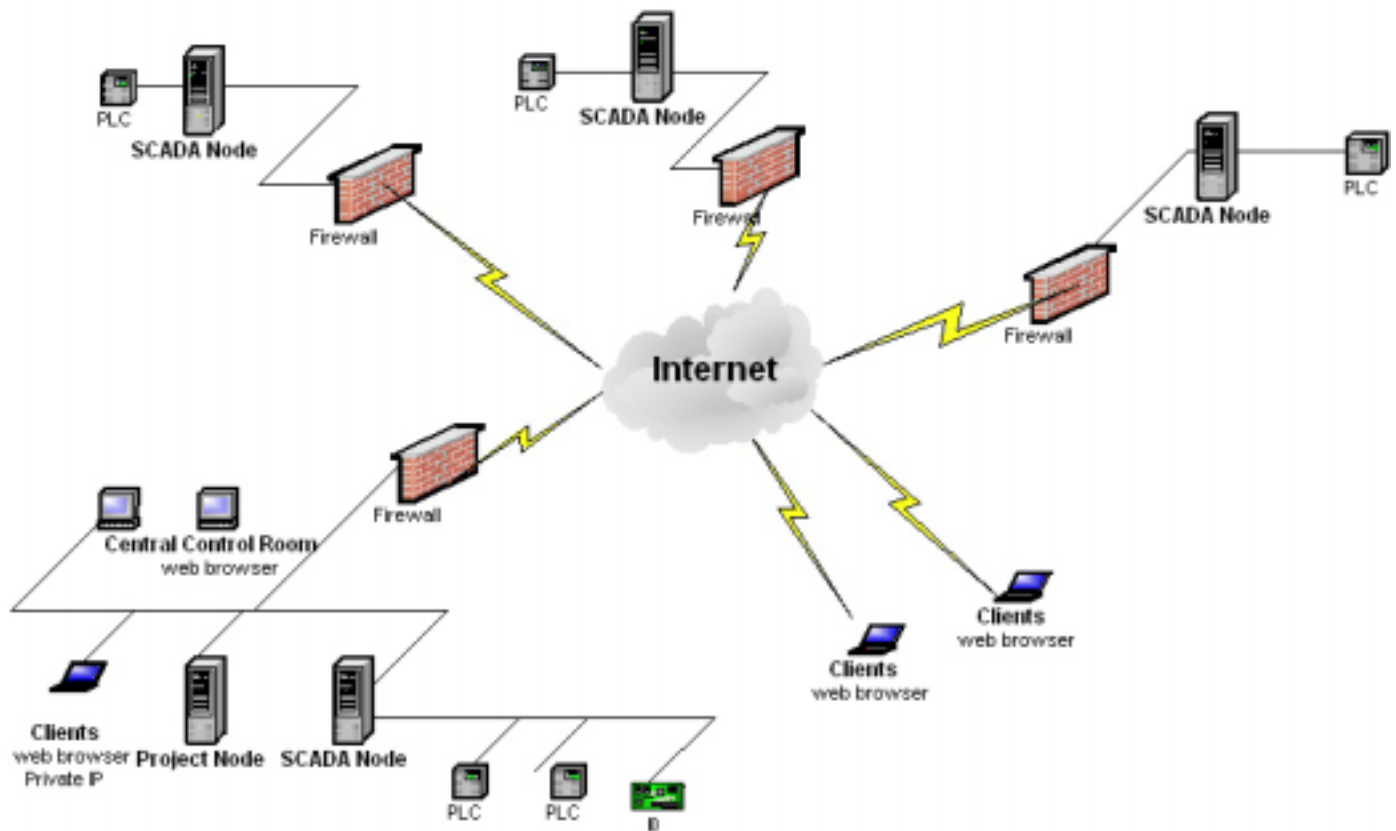
Firewall with access to SCADA Nodes using Public IP Address - use Address Mapping on Nodes and Private Clients

If you are using a dedicated firewall for a Project node and a Public IP Address, then you must use [Address Mapping](#) to allow the Project Node to connect to itself via a private address and to allow users to connect via the Public IP Address.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

WebAccess Network

Dedicated Firewall for each SCADA node



Firewall for Project Node requires Address Mapping - optionally use Address Mapping on SCADA Nodes

If you are using a dedicated firewall for each SCADA Node, you don't need to use Address Mapping if you use ViewDAQ on the SCADA node. If you want to use a web browser to view the local SCADA Node, then you will need to use [Address Mapping](#).

See [8.7.5 Address Mapping for Firewalls and mixed Private & Public Users](#) in the Engineering Manual for more information on Address Mapping by editing the bwclient.ini file on the SCADA and Project Nodes.

TCP Ports

Blocked TCP ports are the most common problem with WebAccess. If you can connect to the Project Manager, but see a blank screen in VIEW, a firewall or router is blocking one of the TCP Ports used by WebAccess.

WebAccess uses three TCP Ports; all three can be modified by the user to accommodate firewalls, routers, port mapping, etc.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Port 80 is the default Port used for the ASP page (the web page). This is the default web server port for all web servers. For security or other reasons, you can use another port. This port is changed in the Microsoft Operating System on the Project Node using Internet Services Manager.

WebAccess uses two additional TCP Ports for downloading files and real-time data:

Port 4592 is the WebAccess Primary Port used for File Downloads (e.g. graphics, symbols, etc).

Port 14592 is the WebAccess Secondary port is used for real-time data (e.g. setpoints, measurements, status, Trends).

WebAccess downloads a "deploy file" which describes the two additional TCP ports used by Web Access Project and SCADA Nodes to the Clients. You can read this deploy file remotely by entering the following into IE browser address

<http://ipaddress/broadweb/projectname.dpi>

For the demo: <http://67.94.27.175/broadweb/livedemo.dpi>

[location]

ip=67.94.27.175

port=4592

timeout=0

dir=.\config

porthttp=80

[nodeinfo]

SCADAnode1=67.94.27.175

[port]

SCADAnode1=4592

[timeout]

SCADAnode1=0

[port2]

SCADAnode1=14592

[odelist]

node1=SCADAnode1

Number of TCP Ports required when using a Firewall, Router or Private LAN

If using a firewall or router and the Project Node and SCADA Node are the SAME computer, three ports must be mapped to the Project / SCADA Node. If the Project Node is separate from the SCADA node, four ports would be needed. Each additional SCADA node would require an additional two ports.

The TCP ports are set on the SCADA node during software installation. When configuring your SCADA nodes in the Project Configuration Manager, you must enter the correct TCP Port numbers.

Note that 0 means the default ports numbers are used (4592 and 14592).

To change TCP Ports used by a **Project Node** through a firewall (HTTP Port and Primary TCP Port), go to the [Home](#) page in the [Project Manager](#). This affects all projects on this

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Project Node. The user must also either edit the [bwserver.ini](#) file or reinstall WebAccess software and specify the new TCP ports. Finally, the user must stop and restart either [WebAccess Network Service \(webvrpc\)](#) via the Windows Task Manager or restart the computer. The appropriate windows service must also be modified (e.g. www service) for the new port numbers.

To change TCP Ports used by a **SCADA Node** through a firewall (Primary TCP Port), go to the [Home](#) page in the [Project Manager](#), then select [Update](#) for the desired Project. To change the SMTP Port or POP3 email port, got to [SCADA Node Properties](#) and modify [SMTP Port](#) and/or [Email Port](#). The user must also either edit the [bwserver.ini](#) file or reinstall WebAccess software and specify the new TCP ports. Finally, the user must stop and restart either [WebAccess Network Service \(webvrpc\)](#) via the Windows Task Manager or restart the computer. The SMTP service, if used or modified, for the new port number.

Is IIS installed on your computer?

To see if IIS is installed on your computer, follow the instructions below for your version of Windows:

Windows 2000 Server or Professional:

1. On the taskbar, click **Start**, click **Settings**, and then click **Control Panel**.
2. Select **Add/Remove Programs**, and then choose **Add/Remove Windows Components**.
3. In the **Windows Component Wizard** dialog box, if **Internet Information Services (IIS)** is checked, IIS is installed on your computer.
4. If not listed, you could install IIS from here if you have the Windows 2000 Installation CD.
5. Click on **Internet Information Services (IIS)** and then click **Details**.
6. In the **Subcomponents of IIS** dialog box, if **SMTP Service** is checked, SMTP Email Server is installed on your computer.
7. Close **Add/Remove Windows Components**, and then close **Control Panel**.

Windows XP Professional:

1. On the taskbar, click **Start**, and then click **Control Panel**.
2. Select **Add or Remove Programs**, and then choose **Add/Remove Windows Components**.
3. In the **Windows Component Wizard** dialog box, if **Internet Information Services (IIS)** is checked, IIS is installed on your computer.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at [demo.broadwin.com](#). See the Appendix for details.

4. If not listed, you could install IIS from here if you have the Windows 2000 Installation CD.
5. Click on **Internet Information Services (IIS)** and then click **Details**.
6. In the **Subcomponents of IIS** dialog box, if **SMTP Service** is checked, the SMTP Email Server is installed on your computer.
7. Close **Add/Remove Windows Components**, and then close **Control Panel**.

Note - the FTP Service Option is not required in version 3.0 and later of WebAccess.

How to Install the IIS (Internet Information Services)

You will need the Installation CD to match your installation of Windows XP Professional, Windows 2000 or Windows 2003.

IMPORTANT - Re-install Service Packs after adding a Windows Component!

1. Log on to the computer as an administrator.
2. Click **Start**, and then click **Control Panel**.
3. Double-click **Add or Remove Programs**, and then click **Add/Remove Windows Components**.
4. In the Windows Components Wizard, under the **Components** list, click **Internet Information Services**.
5. In the Windows Components Wizard, click **Next**. The Windows Components Wizard displays the Configuring Components screen with a status bar that displays the progress of the configuration. If you are prompted, insert the Windows XP CD-ROM into the CD-ROM drive.
6. When Setup is complete, the Completing the Windows Components Wizard screen is displayed. Click **Finish** to close the wizard.
7. Download and install the latest service pack. Adding a Windows Component overwrites some service pack files and lacks files from the service pack update resulting in a potentially corrupt operating system or non-functional features.

RE-INSTALL SERVICE PACK AFTER ADDING A WINDOWS COMPONENT!

Software Installation

In brief, the steps to Installing Software are:

1. Insert **CD**.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

2. Review this Installation Guide (i.e. this manual).
3. Install **Node software** on **Project & SCADA Nodes**.
4. Insert **Diskette** for **SCADA Node License**.
5. **Reboot** the SCADA Node.
6. Install **Hard Key** on **SCADA Node**.

Avoid Electrostatic discharge when installing key.

*All **USB Sentinel SuperPro** hard keys must be **removed** before installing software.*

Node Installation refers to the **SCADA node** and **Project Node**. These nodes must be installed from the CD-ROM or from a network copy of the CD. You can also download the Node software from the ftp site (ftp://ftp.broadwin.com). You need to install Project and SCADA node software only if you are creating a new system.

Client Installation refers to the client plug-in: the Active-X control used with Internet Explorer Web-Browser. You do not need to install the Client from the CD. The **WebAccess Client Setup.exe** is normally downloaded from the Project Node when a Web-Browser Client connects the first-time they try VIEW or DRAW. The Client Installation software is provided separately on the CDROM for convenience. If your users have very slow network or dial-up connections, you may want to distribute the Client Installation software by CD-ROM.

Project and SCADA Node installation

The Installation of the Project Node and/or SCADA Node software must be done from the CD or a network copy of Node Setup from the ftp site. (The Client can be downloaded and installed from the Project Node using a web browser).

The **Project Node** must have Web Server software. Internet Information Server (IIS) is the web server in Windows 2000, XP Professional, 2003 Server, Vista Business or Vista Enterprise.

Note - XP Home and Vista Home do not have web server software and cannot be a Project Node or SCADA node. Please refer to the [System Requirements](#) in the previous section for more information

If a user wants to combine the SCADA node and Project Node on the same PC, choose this option during installation to install both SCADA node software and Project Node software. This option would be used most commonly for stand-alone systems that consist of only one PC.

A TCP/IP service is also required. Even if there is no network connection and no outside users will connect, you need at least a TCP/IP loop back service and IIS or Peer Web Services installed. WebAccess configuration is through an Internet Browser (IE 5.5 or later) and ASP (Active Server Pages).

Note 1 - XP Home does not have web server software and cannot be a Project Node or SCADA node.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Please refer to section [1.4.1 Project Node - System Requirements](#) and section [1.4.2 SCADA Nodes - System Requirements](#) in the Engineering Manual for more information.

NOTE – The Hyperlinks on this page to the Operator and Engineering Manuals at demo.broadwin.com. See the Appendix for details.

Exercises

Task 1: Install Project and SCADA Node software

To install WebAccess **Project** and **SCADA** node software:

1. Insert the WebAccess CD into your CD-ROM drive.

The installation program automatically starts up if autorun is enabled on the PC. If the Install program does not start automatically, open explore, browse to the CD and double click on setup.exe

Hint – Node software can also be downloaded from the ftp site at <ftp://ftp.broadwin.com>

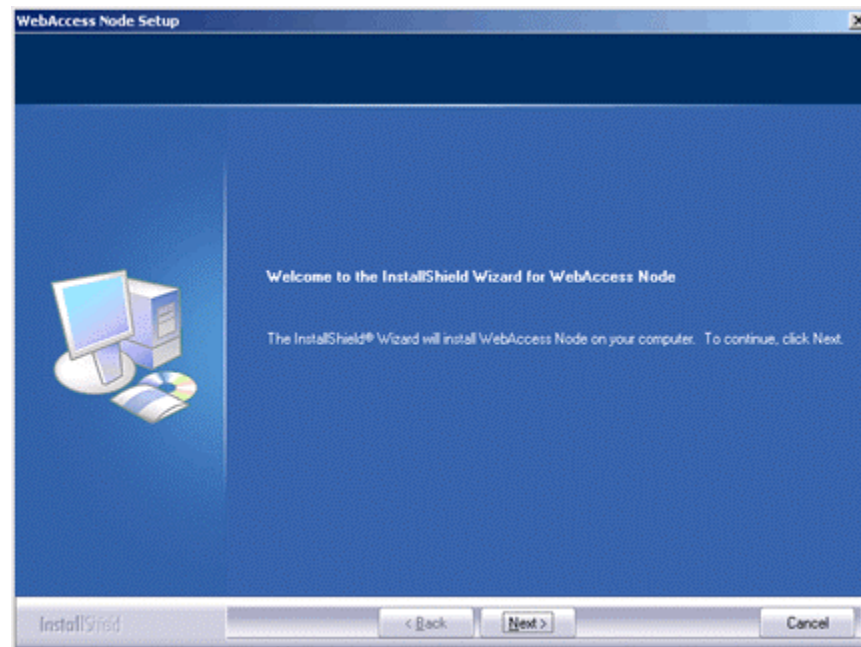
User Login: bwdownload

Passw: broadwin

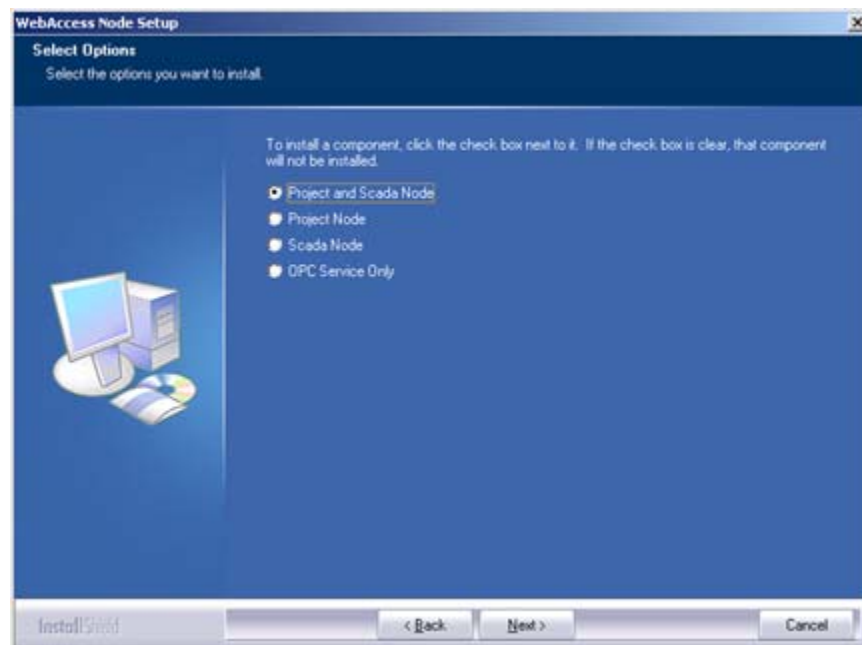
2. You will see the **Welcome to the Installation CD** html page.



3. Select - **Install Project and SCADA Node**.
4. The **Install Shield** Program starts.



5. A **Welcome to Install Shield for WebAccess Node** screen is displayed. To continue, click **Next**.
6. The WebAccess **License Agreement** displays. Please carefully read the License Agreement. Clicking No will end Setup. To accept the License Agreement and to continue with Setup, click **Yes**.
7. Enter your **Customer Information** (user name and company). To continue, click **Next**.
8. **Select Options** to install. Select **Project and SCADA node**.



This exercise assumes you want a **single PC** to have **both Project Node** and **SCADA node** software.

Choose **Project** and **SCADA Node**

and select **Next**.

The SCADA node and Project node are not "together" always. You can have many SCADA nodes in a project; but usually there is only one Project node (sometimes a backup project node is also used). To address these different software configurations, there are four installation options from the Node Installation Program (Setup.exe):

- a. Install the Project Node and SCADA node on the same computer.
- b. Install only Project node
- c. Install only SCADA node
- d. Install only OPC service

Installation Options b, c and d are intended to be on separate computers.

Install Project and SCADA Node Software. This is intended for a "standalone" system on a single PC. It is used to make a PC both the **Project Node** (Configuration Tool) and a **SCADA node** (connected to automation devices). Install Option 1 will install Project Node software (ASP files), the centralized database (bwCfg.mdb), SCADA Node Software, Communications Drivers, the OPC Service, ViewDAQ and DrawDAQ. The PC will be able to communicate with automation devices.

The PC must have a Windows Operating System that provides a Web Server: Windows 2000 Server or Professional, XP Professional, 2003 Server, Vista Business or Vista Enterprise with Internet Information Server (IIS). A Hardkey and License file is required for the SCADA node to run in communication mode.

Install Project node software. This will make this PC a Project Node ONLY. It is intended for network architectures where the Web Server (Project Node) is separate from any SCADA nodes. This might be done for security, administrative or cost reasons. It will convert a SCADA node to a Project Node even if SCADA software was previously installed.

Project Node software is a collection of ASP pages that are "served" by a web server to client web browsers. Install Option 2 will install Project Node software (ASP files), the centralized database (bwCfg.mdb), and DrawDAQ. The acts as a centralized database server and the configuration tool.

The PC must have a Windows Operating System that provides a Web Server: Windows 2000 Professional or Server, XP Professional, 2003 Server, Vista Business or Vista Enterprise with Internet Information Server (IIS). No Hardkey or License file is required for Project Only Node.

Note - option 2 (Install Project Node) will convert an existing SCADA or combined Project/SCADA node to be a Project Node Only.

Install SCADA node software. This will make this PC a SCADA Node ONLY. It's used for systems with multiple SCADA nodes in a project. SCADA nodes do not need to be a web server. SCADA nodes do not need the Project Node software installed on the same PC. Install Option 3 will install SCADA Node Software, Communications Drivers, the OPC Service, and ViewDAQ. The PC will be able to communicate with automation devices. The Hardkey and Software License Control File are required for the SCADA node to run in communications mode. The PC must have Windows 2000, XP Professional, 2003 Server, Vista Business or Vista Enterprise. No Web server is required. There must be a project node somewhere on the network to configure this SCADA node's database.

Note - option 3 (Install SCADA Node) will convert an existing Project or combined Project/SCADA node to be a SCADA Node Only.

Install OPC service software. Installation Option 4 is intended for a remote OPC server that is not on the same computer as a SCADA node. If a SCADA node is to access the OPC server of a remote computer, then the OPC Service must be installed on that remote OPC Server computer. No Hardkey or license is required for this option. This is not an OPC Server. This service allows the WebAccess OPC Tool to communicate to an OPC Server using a TCP/IP connection over the Internet.

9. **Choose Destination - Folder** where setup will install WebAccess SCADA Node program and Project Configuration files. To continue, click **NEXT**.

*Note - It is recommended to accept the default directory (**drive:\WebAccess\Node**) unless you are very experienced user and have a good reason. If you are changing the default location, type the entire path (DO NOT ENTER ONLY A DRIVE LETTER).*

10. Enter a **Remote Access Code**. This is HIGHLY RECOMMENDED. It will prevent unauthorized users from hijacking your Project Node (Web Server) or SCADA node. 32 characters maximum. You can only modify this Remote Access Code using the installation program. This code must match the code used in the Project Manager in order to create new projects to your Project node.

To continue, click **NEXT**.

11. If data must pass through a Firewall or mapped to a private IP via NAT, enter the **Primary TCP Port Number** (i.e. TCP Port).

Note - 0 = the default port number (4592)

If you are not using a firewall, accept the default (0).
To continue, click **Next**.

12. If data must pass through a Firewall or mapped to a private IP via NAT, enter the **Secondary TCP Port Number**. WebAccess needs the http port and two additional ports through a firewall; they cannot be the same port number.

Note - 0 = the default port number (14592)

If you are not using a firewall, accept the default (0).
To continue, click **Next**.

13. Confirm the WWWRoot directory to **Install ASP files** - This is the directory used by IIS (Internet Information Server) Web Server. WebAccess creates a subdirectory (\broadweb) and installs the ASP Files that are served by the Web Server to clients as the configuration tool (Project Manager).

Note - it is recommended not to change this unless you are an experienced user and there are more than one WWW server or more than one operating system image installed.

If the path **drive:\InetPub\wwwroot** does not appear, then Internet Information Server (IIS) is not installed on this PC. You should cancel installation

and install IIS (Internet Information Server) from your Windows Installation CD. To continue, click **Next**.

14. **Install Control File** - Check the box to install the Software License **Control File**. If you are updating an existing WebAccess node, leave this box un-checked to use your previously installed license file.

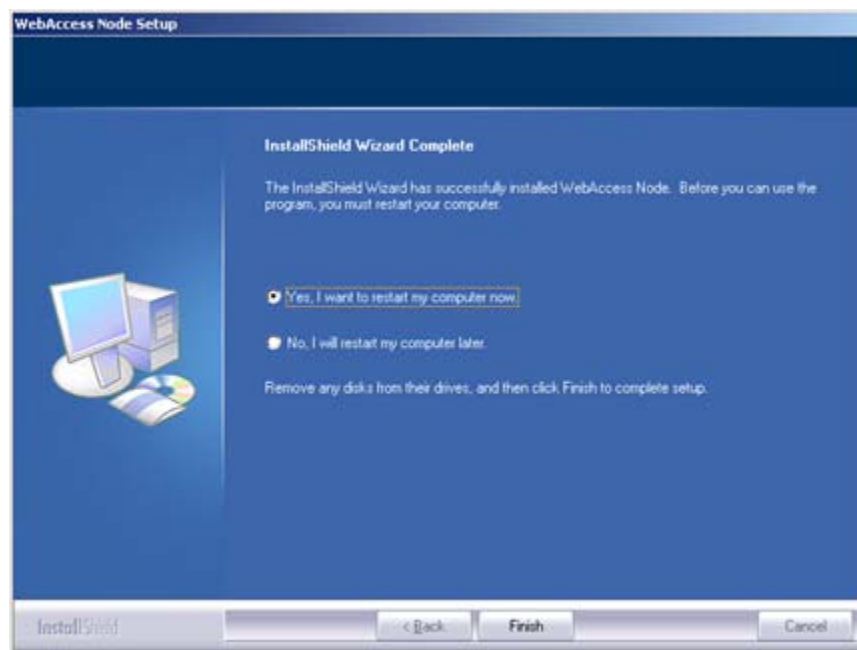
If you do not have a license and want to use the demo license (limited to 32 tags) leave this box un-checked.

If you have your license diskette or CD with the license file (named bwkserv.exe), **check the box**. To continue, click **Next**.

Note that it is common for the license file to be emailed. You can copy it to a memory stick, network drive or other method to get it to the SCADA Node. You can also copy it manually later to drive:\Webaccess\Node\bwkserv.exe on the SCADA Node.

Only the SCADA node needs a license

15. WebAccess will install files to the directories above. This can take a long time for the project node, mostly to install all the help files.
16. If you are installing the Software License Control File, Web Access will prompt you to insert the diskette.



17. **InstallShield Wizard Complete.**

Select, **Yes I want to restart my computer now.**

To continue, select **Finish**.

18. Install **Hardkey** on SCADA node after reboot. If you do not install a hardkey, the system will run in Simulation Mode.

Avoid Electrostatic discharge when installing key.

Note - All *USB Sentinel SuperPro* hard keys must be removed before installing software. See [USB Hardkey](#) section for more information.

After reboot, you should see the WebAccess Icon  in the taskbar next to the system clock.



Install **Project and SCADA Node** software also installs **DrawDAQ** and **ViewDAQ**. Right clicking the WebAccess icon accesses these options plus Start Kernel, Stop Kernel, and Download Graph.

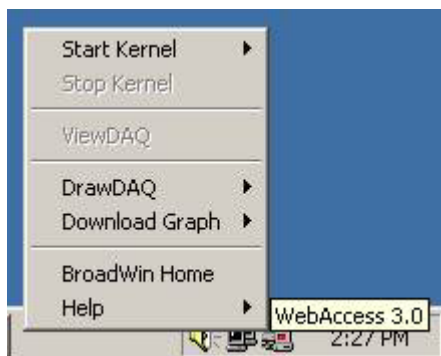


Figure – combined Project Node and SCADA Node Taskbar Menu

Project Node Taskbar Icon

If you install Project Node only, DrawDAQ and Download Graph appear in the Taskbar menu (but no Start Kernel).

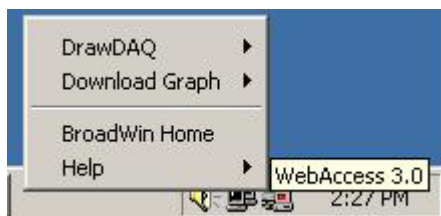
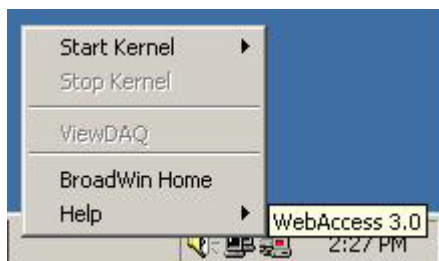


Figure –Project Node Taskbar Menu

SCADA Node Taskbar Icon

If you install SCADA Node only, Start Kernel appears in the Taskbar menu (but no DrawDAQ and Download Graph).



Use DataLog Folder Option to reduce Install Time

WebAccess Installation checks the security settings in drive:\inetpub\wwwroot\broadweb and drive:\WebAccess. It checks every file. If there are many DataLog Trend files (for example after a system has been running for months or years) the Install process will take an extremely long time, maybe hours to check all those files. It is recommended to use the Data Log Folder option in node properties to define a folder outside of drive:\WebAccess (for example use C:\WebAccessDATALOG) to avoid this. Before installing you should create this folder and move all the DATA Log folders in drive:\WebAccess\Log to the new folder (do this before re-installing WebAccess).

Task 2: Modify Printer Setup for printing Graphic Displays

The number of printers you might want to attach to a WebAccess system depends on the type of printouts required during operation. In general, you can enable the following to be sent to the default printer of the SCADA Node or Project Node:

- alarm log – SCADA Node
- action log – SCADA Node
- Scheduled reports – Project Node

Printing of graphics and trends can be directly to Printer or the Paintbrush program (Paint.exe). The default is to Paintbrush.

To print directly to printer, modify the *.INI files (and create them if they don't exist).

Printing from VIEW (Client) or ViewDAQ

1. On SCADA node, open Notepad. **Start -> Run -> Type Notepad**
2. Browse to WebAccess, typically located in C:\WebAccess\Client\bwclient.ini (for VIEW in a Web Browser)

```
BWCLIENT.INI (opens paint)
[[viewer]
bitmap=mspaint.exe
bitmap_width=
bitmap_height=
text=notepad.exe
actlog=notepad.exe
almlog=notepad.exe

[mapping]
67.94.27.177:0=127.0.0.1:0

[webvrpcs]
keep=0
```

```
BWCLIENT.INI (prints directly to printer)
[viewer]
bitmap=mspaint.exe /p
bitmap_width=600
bitmap_height=800
text=notepad.exe
actlog=notepad.exe
almlog=notepad.exe

[mapping]
67.94.27.177:0=127.0.0.1:0

[webvrpcs]
keep=0
```

Note that a similar file exists for ViewDAQ located typically at
C:\WebAccess\Client\bwclient.ini (for adjusting ViewDAQ on a SCADA node):

The options are:

Bitmap=mspaint.exe will open PAINT, the standard bitmap editor supplied with Windows Operating Systems. Users can then save, print or even email the image from PAINT. This is the default setting in the INI file.

Bitmap=mspaint.exe /p will print directly to the default printer. The default printer is the Windows Operating System default Printer set in
Start -> Settings -> Printers.

User must use the PRINT button on the WebAccess Toolbar (the <PRINT? keymacro) or Right Click -> File -> Print. *The Web Browser's print button will not print a graphic display.* The Print will be in "landscape" mode.

Bitmap_width=0 will use the actual pixels displayed on the screen to generate the bitmap and print. This can be adjusted to "fit" the page (160 to 3600 pixels).

The number specifies the number of pixels in the starting bitmap. The printer driver will fit this to the page based on the resolution of the printer and the peculiarity of the printer driver. For an HP LaserJet 1200 (1200 dpi) bitmap_width=800 works well.

Bitmap_height=0 will use the actual pixels displayed on the screen to generate the bitmap and print. This can be adjusted to “fit” the page (120 to 2700 pixels). For an HP LaserJet 1200 (1200 dpi) bitmap_width=400 works well.

Printing from VIEW or ViewDAQ on SCADA Node

1. On SCADA node, open Notepad. **Start -> Run -> Type Notepad**
2. Browse to WebAccess Typically located in C:\WebAccess\Node\bwview.ini

BWVIEW.INI

```
[viewer]
bitmap=mspaint.exe /p
bitmap_width=600
bitmap_height=800
text=notepad.exe
actlog=notepad.exe
almlog=notepad.exe
```

3. Save your changes
4. Open BWDRAW, INI
(C:\WebAccess\Node\bwdraw.ini)

BWDRAW.INI

```
[viewer]
bitmap=mspaint.exe /p
bitmap_width=600
bitmap_height=800
text=notepad.exe
actlog=notepad.exe
almlog=notepad.exe
text=notepad.exe
actlog=notepad.exe
almlog=notepad.exe
```

Task 3: Change Remote Access Code and TCP Ports

The Remote Access Code used during software installation on the Project Node and each SCADA Node must match the Remote Access Code entered in your Project Manager Database. The TCP Ports used by the Project Node and SCADA Nodes must match those used by your Firewall or Router, and, as entered in your Project Manager database: (Primary Port, Secondary Port, HTTP port and SMTP port). These are specified when you installed Node Software. You can change them by re-installing software on the nodes or by editing to BWSERVER .IN file

Change Remote Access Code or TCP Ports without reinstalling Software

Edit to BWSERVER .IN file to

1. Open Explorer. Go to *drive:\WebAccess\Node*
(typically C:\WebAccess\Node)

2. **Right Click** on **bwserver.ini**
3. Select **Open with...**
4. Select **Notepad**.
5. If you are using a firewall or port mapping and entered alternate TCP ports, try changing them to zero (the default).

```
[port]
web_rpc_port=0
web_socket_port=0
```

```
[nodetype]
type=0
```

```
[security]
code=remoteaccesscode
```

```
[language]
type=1
```

```
[www]
root=c:\inetpub\wwwroot
```

remember for ports, 0 = 4592 and 14592

6. If you accepted the defaults, try changing them to another number (like 5592 and 15592 or any two numbers above 2000 and less 65535).
7. You can add a remote access code or change it here (without having to reinstall software. Remember to run UPDATE in the Project manager so the database matched this code.
8. Save the bwserver.ini file
9. Login to Project Manager and use UPDATE to change the Ports in the Project Database for the SCADA node and Project Node.
10. Download.

Reference

WebAccess Installation Guide

On the CD ROM

<http://broadwin.com/Manual/InstallGuide/InstallGuide.htm>

<http://broadwin.com/downloads/winhelp/InstallGuide.CHM>

WebAccess Engineering Manual.

<http://demo.broadwin.com/broadweb/EngMan/EngMan.htm>

<http://broadwin.com/downloads/winhelp/EngMAN.CHM>

<http://localhost/broadweb/EngMan/EngMan.htm>

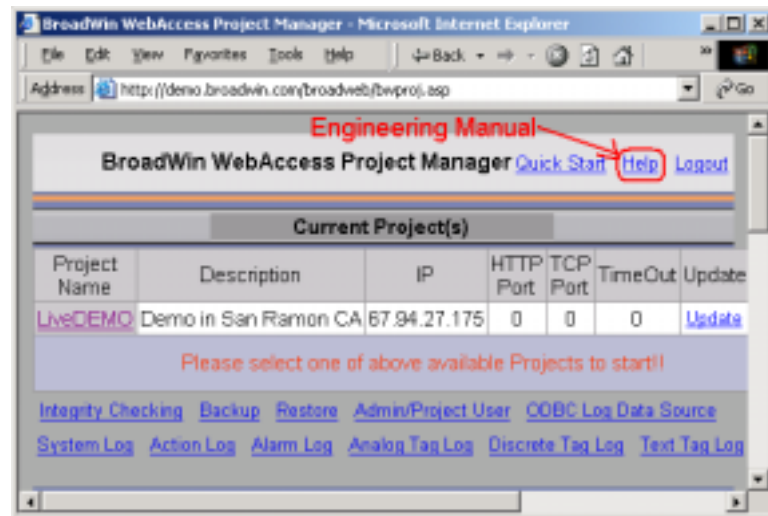


Figure – Engineering Manual opens from HELP in Project Manager

Section 3 - Project and SCADA Node Configuration

Objectives

This section provides details on the minimum settings to enable communication between WebAccess Project Node, SCADA Node and Clients via a web browser. This is a useful first step in “checking-out” your network. At the completion of this section, you will be able to create an Project, configure a SCADA Node and check communications. The following topics are covered:

- Create a Project.
- Configure a SCADA Node.
- Download SCADA Node configuration (from Project Node to SCADA node even if they are the same PC, it's different software modules).
- Start and Stop a SCADA node.
- Communicate with SCADA Node from a client Web browser.
- View default Graphic displays.

Training Notes

The minimum configurations required to establish communication with a controller device are:

- A Project Node to act as the “Development Tool” and download a “Runtime” Configuration to the SCADA node
- A SCADA Node – specifies data logging, trends, communications, reports, etc and acts as the “runtime” software module.
- Port configuration - specifies the communication port(s) to communicate with the controllers and field devices.
- Device configuration - specifies the device type and addresses.
- Tags – You need at least one tag to communicate to a controller or IO device.

To check that you can read and write data to a controller device, you need to create an I/O point, such as a Single Point tag. A single point tag is a tag that addresses a memory location in

the controller device. It constitutes a single I/O point. WebAccess also supports tags that consist of multiple I/O points, called Blocks. These are discussed in section 4.

To check communication with your SCADA node, begin by quickly configuring a Project with the minimum information needed to Download and Start your SCADA node. This will allow you to test out your newly installed software. This assumes you have installed Project Node and SCADA node Software.

To build a minimum configuration to download and Start WebAccess software:

- Connect to Project Node
- Start WebAccess Configuration
- Create a Project
- Open Project Manager
- Create a Node
- Download and Start SCADA node
- VIEW the SCADA node

WebAccess has pre-built system displays that allow you to quickly build and VIEW a run-time database without any graphics building. This should take an experienced user less than 5 minutes to build a basic project, download and start your SCADA node and confirm your software installation was successful.

Exercises

Task 1: Connect to project node

1. Start Internet Explorer.



- Double Click the Icon on your Desktop
- OR, Click Icon on your Taskbar
- OR, From the Start button select:
Start->Programs->Internet Explorer

2. Enter the [IP address or URL](#) into the "Address Bar" (Figure 3-1).

To connect to the Live Demo enter <http://demo.broadwin.com/> or <http://67.94.27.175>

To connect to your local PC enter <http://localhost/>

If you do not have a network card or it is not plugged in or it is otherwaise disabled, connect using your computer name. For example:
<http://mylaptopname>.

In Windows XP, You can determine your computer name from by **Right Clicking** on **My Computer**, selecting **Properties**, then selecting the **Computer Name** tab.

3. Press the **Enter** key or Select **Go**.

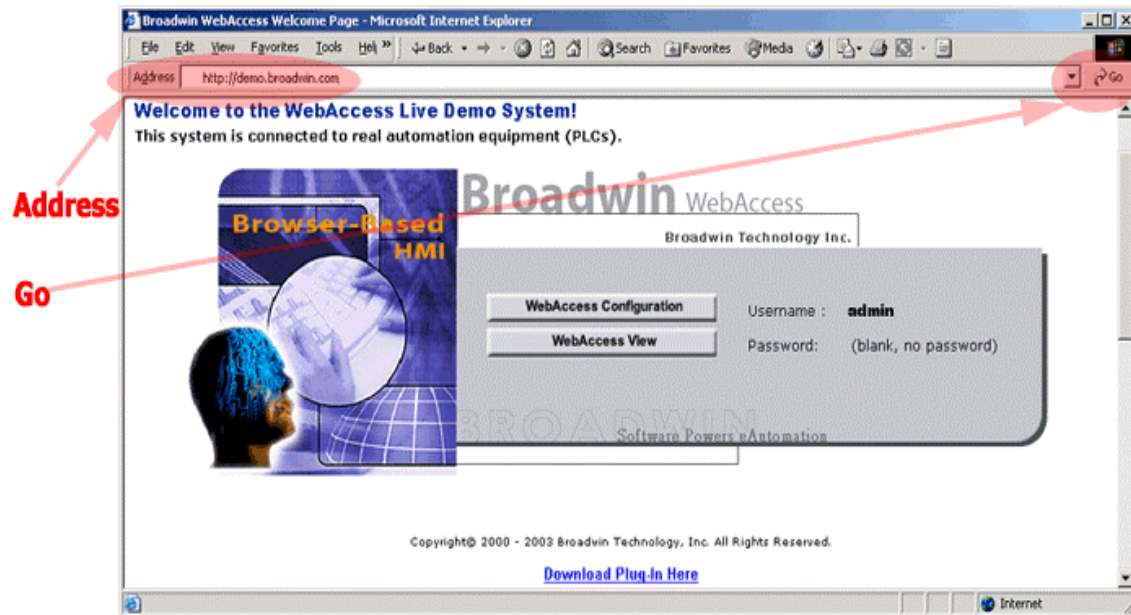


Figure 3-1 – Customized “Home” page for the DEMO showing Internet Explorer Web Browser - Address Bar

Congratulations! You have successfully connected to your WebAccess Project Node. It took no special software to connect.

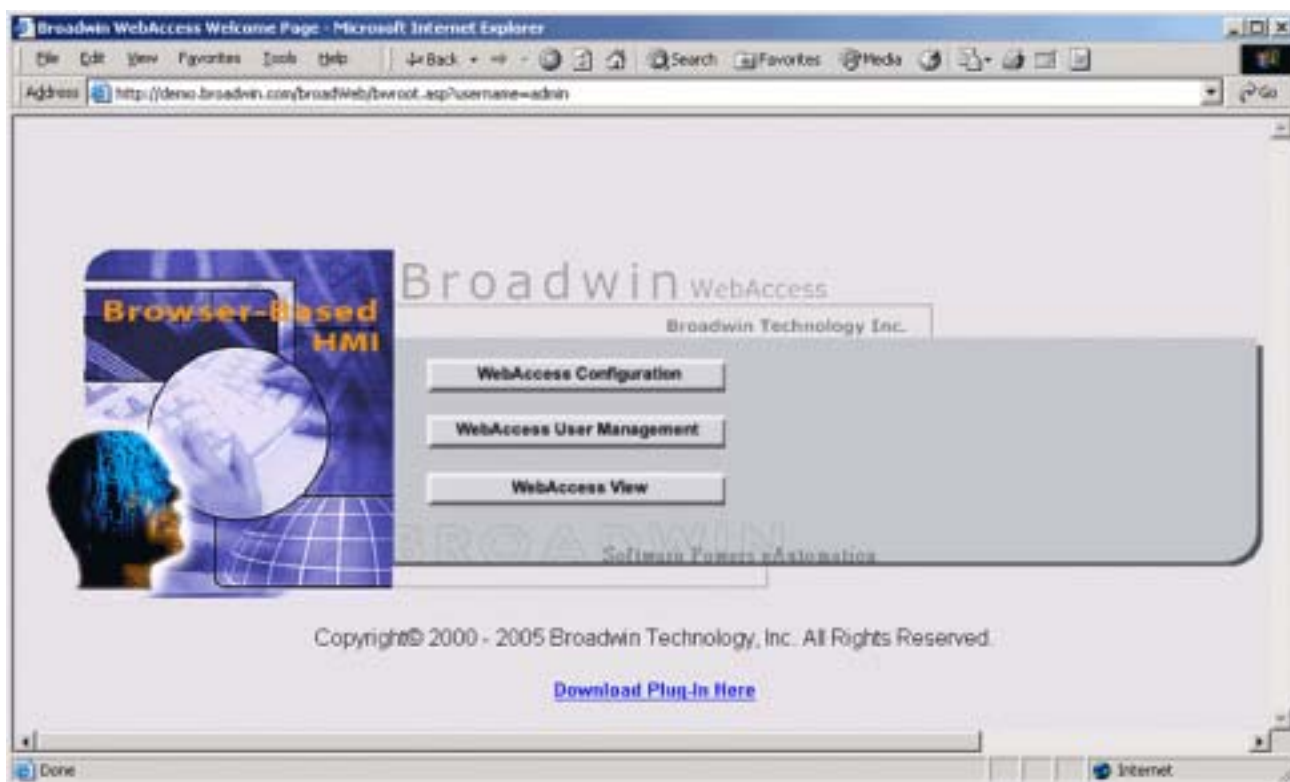


Figure 3-2 – WebAccess Welcome: “Home” or “Root” page – bwRoot.ASP

Your WebAccess probably looks like the above.

There are three choices on the HOME Page (bwroot.asp).

- **WebAccess Configuration** – This is to configure Nodes, ports, devices and tags. It is used by engineers and technicians: Admin and Project Users.
- **WebAccess User Management** – this is to configure users and passwords only by Admin and User Managers.
- **WebAccess View** – this is the ‘runtime’ version used by engineers, operators and ordinary users: Admin, Power Users, General Users and Restricted Users.

If this is a newly installed system, you must build a project, using WebAccess Configuration, and download it to a SCADA node, before you can use VIEW.

Let’s next go to WebAccess Configuration, to build a project.

Task 2: Start WebAccess Configuration

1. Select **WebAccess Configuration** button on the HOME Page (bwroot.asp), Figure 3-3.



Figure 3-3 - WebAccess bwRoot page (Root page)

2. Configuration Login Page appears, Figure 3-4 (bwconfig.asp)

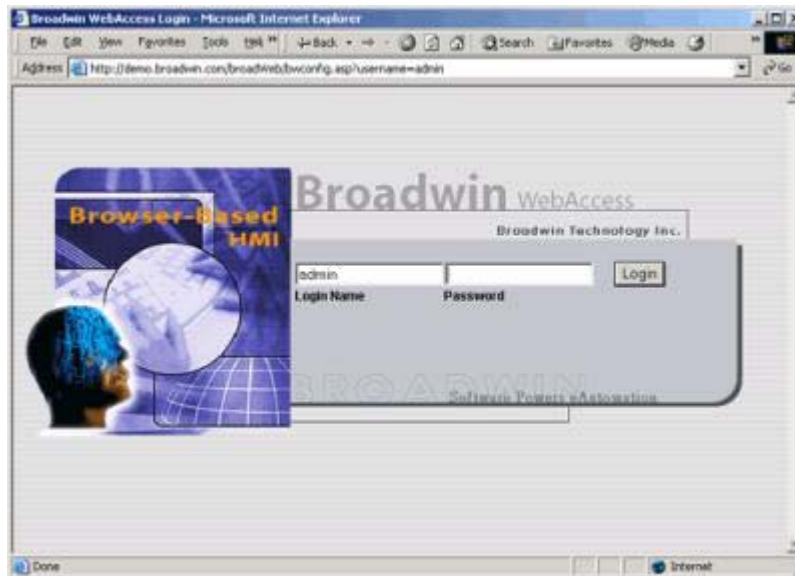
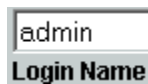


Figure 3-4 - Configuration Login (bwconfig.asp)

3. Login with Default username and password

If this is a new system or you are connecting to the Live Demo, use the "Default Login". Otherwise, use your Login Name and Password.

- a. In the **Login Name** field type: **admin**



- b. Leave **Password** field blank (i.e. no password)



- c. Click the **Login** Button



"WebAccess Project(s)" list appears (bwproj.asp). If this is a newly installed system, it will be empty (Figure 3-5). Otherwise, a list of projects previously configured appears (Figure 3-6).

Task 3: Create New Project

If you have not already done so, connect to the Project Node and Start WebAccess Configuration.

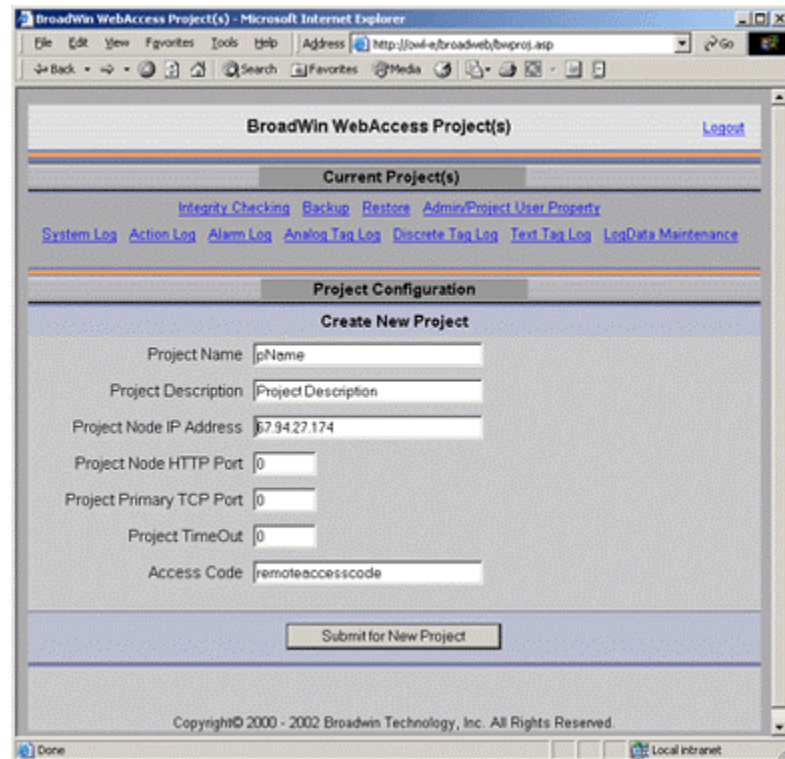


Figure 3-5 - WebAccess Project List empty - newly installed system (bwproj.asp)

1. Enter a **Project Name** for this project, in the **Create New Project** section in the WebAccess Project(s) List (Figure 2-27). This name can be any alphanumeric (but NO UNDERSCORES). This name will identify the project in the Project Manager. It also will appear on the caption bar in VIEW. Projects are typically named after the customer or facility.

Note - If you are using a standalone system, the Project Name with the SCADA node name appended to it will appear in ViewDAQ and DrawDAQ menu lists (ProjectName_NodeName)

2. Optionally, enter a **Project Description** to help identify your project. This will appear only in the Project Manager.
3. The **Project Node IP Address** should already appear by default. You can also use a URL or Computer Name.
4. If connecting through a Firewall, enter the **Primary Port Number** of a TCP port assigned by your system administrator.

If not using a Firewall, accept the default: 0. Note that 0 means the default primary port number (4592)

5. It is recommended to accept the default **Project Time Out**. 0 means the default value is used (15 seconds). Project Time out can range from 1 to 60

seconds. This is the time for normal communications between the Project Node and a SCADA node or the Project Node and the ASP Server.

6. The **Access Code** should appear by default. This is the **Remote Access Code** specified during the installation of the WebAccess Project Node Software. This Remote Access Code is to prevent unauthorized use of your project node.
7. Press **Submit for New Project**.

Task 4: Add SCADA Node

If you have not already done so, connect to the Project Node and Start WebAccess Configuration.

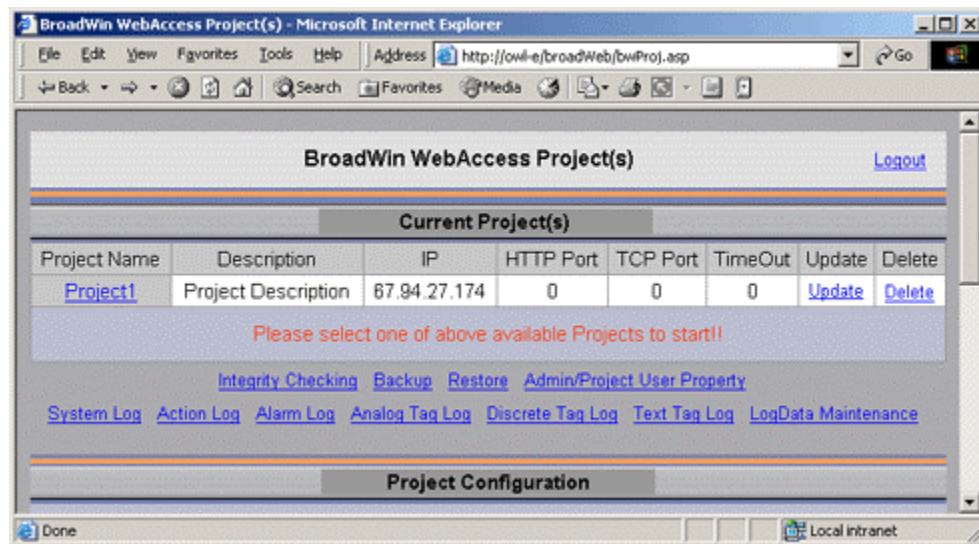


Figure 3-6 - Project List - a single project shown.

1. From **Current Projects** (Figure 3-6) select your Project Name.

If there are no projects listed, see the previous section: [Create New Project](#).

2. The WebAccess **Project Manager** opens (bwMain.asp).

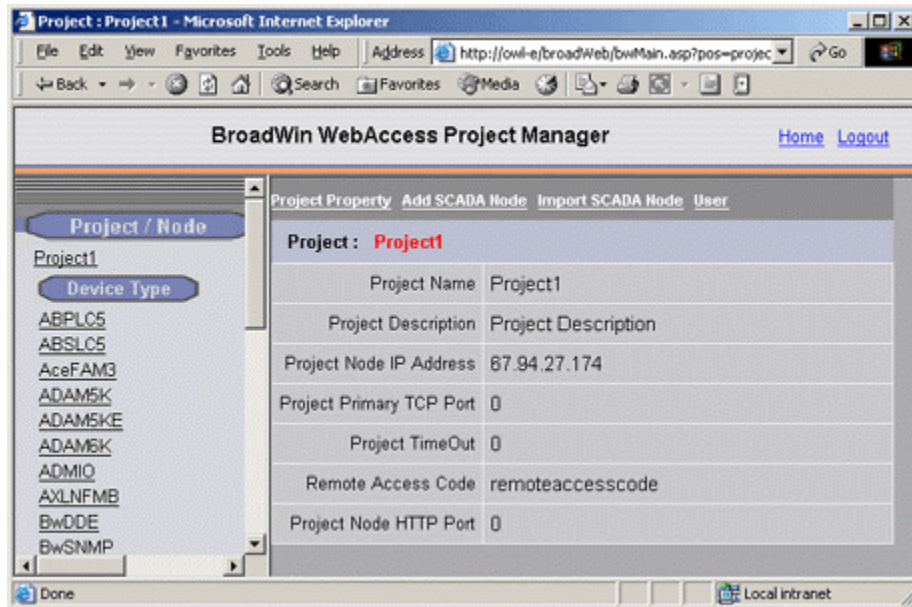


Figure 3-7 - Project Manager - Project page

3. Select **Add SCADA Node** from the Project Manager.
4. The **Create SCADA Node** ASP page opens (Figure 3-8).

The screenshot shows the "Create New SCADA Node" page. The left sidebar is the same as in Figure 3-7. The main content area has a title "Create New SCADA Node" with "Cancel" and "Submit" buttons. The form contains the following fields and options:

- Node Name: SCADANode1
- Node Description: (empty)
- SCADA Node IP Address: 67.94.27.174
- Primary TCP Port: 0
- Secondary TCP Port: 0
- Node time out: 0
- Remote Access Code: remoteaccesscode
- Email Server: 67.94.27.174
- Email Port: 0
- Email From: (empty)
- Report Email To: (empty)
- Report Email Cc: (empty)
- Alarm Email To: (empty)
- Alarm Email Cc: (empty)
- Alarm Voice: None
- Alarm Log To ODBC: ☐ Yes ☒ No
- Alarm Log To Printer: Disable
- Action Log To ODBC: ☐ Yes ☒ No
- Action Log To Printer: Disable
- Data Log To ODBC: ☐ Yes ☒ No
- Start Up Option: ☒ None ☐ Kernel ☐ Kernel with View
- Beep Interval: 10 Seconds
- Beep Frequency: 384 Hz
- Beep Duration: 500 Milliseconds
- Lines Per Log Page: 55 Lines
- Printer Control String: (empty)

At the bottom, there is a section titled "Backup SCADA Node" with a "Backup Node Name" field.

Figure 3-8 - Create SCADA Node

5. Enter a **Node Name** for this SCADA node. This is the name that users will see in the caption bar of VIEW and use to select this node from a list of nodes if you have multiple SCADA nodes.

Note - the Project Name with the SCADA node name appended to it will appear in ViewDAQ and DrawDAQ menu lists (ProjectName_NodeName). See [Start Kernel from Taskbar Icon](#) in section [2.1.5.1](#), of the Engineering Manual.

6. Optionally, enter a **Description**.
7. Enter the **IP address** of the SCADA node. The Project Node IP Address appears by default. Be sure to enter the IP Address of the SCADA node. You can also use a URL or Computer Name. For more information, see the Engineering Manual, section [2.3.1 About Addresses](#).
8. If connecting through a Firewall, enter the **Primary Port Number** of a TCP port assigned by your system administrator. This must also match the values entered in WebAccess Installation (and listed in the SERVER.INI file)

If not using a Firewall, accept the default: 0. Note that 0 means the default primary port number (4592)

9. If connecting through a Firewall, enter the **Secondary Port Number** of a TCP port assigned by your system administrator.

If not using a Firewall, accept the default: 0. Note that 0 means the default secondary port number (14592).

WebAccess uses the HTTP (port 80) plus these 2 additional TCP ports; do not use the same port number for both primary and secondary ports if you are connecting through a firewall.

Firewalls - Three (3) TCP ports are required. Typically port 80 is already open, this is the port for HTTP (web and ASP pages). WebAccess needs two additional ports:

Primary port (default 4592) for file transfer and

Secondary Port (default 14592) for real-time data.

Port Mapping and Network Address Translation (NAT). This is where Private IP addresses of a corporate intranet use a single public IP address. The same ports described for firewall must be mapped in NAT also. For more information, see [TCP Ports & Firewalls](#) and [Routers & NAT](#) in the Security Section of the Engineering Manual.

10. It is recommended to accept the default **Node Time Out**. 0 means the default value is used (15 seconds). SCADA Node Time out can range from 1 to 60 seconds. This is the time for normal communications between the SCADA Node and a VIEW Client, the Project Node and the ASP Server. If you have a very slow network connection between the Project and SCADA nodes, you may have to increase this value.
11. Enter the **Remote Access Code** for the SCADA node (this must match the remote access code entered during software installation of the SCADA node software) (This is also in the SERVER.INI file). The Project Node's Remote Access Code appears by default. The SCADA Node and Project Node do not

necessarily have the same Access Code. This Remote Access Code is to prevent unauthorized use of your SCADA node.

12. Leave the information about Alarm Log, Printers, Action Log, Alarm Beep, email and other fields blank for now.
13. Most users should leave the information under Redundant SCADA node blank. If you have a Redundant SCADA Node, enter its IP address, node name, firewall ports and remote access code. A separate license and control file is needed for the Redundant SCADA node. However, an offline standby can be created by using a Redundant SCADA node and manually moving the Hardkey to it in the event the Primary Fails. Redundant SCADA nodes work well only for network (i.e. TCP/IP) connection to field devices. Serial communications would requires some third party hardware switches to switch the serial connection between SCADA nodes.
14. Press **Submit**.

You have configured enough information to Download and Start a SCADA node.

This is just the minimum to create a SCADA Node. Please refer to section 3.2 on SCADA Node Properties in the Configuration Manual.

http://demo.broadwin.com/broadWeb/engman/3.2_SCADA_Node_Properties.htm

Task 5: Download and Start the SCADA Node

If you have not already done so, [connect to the Project Node](#) and [Start WebAccess Configuration](#). Select your Project.

1. Select the SCADA Node under your Project Name in the Project/Node list (Figure 3-9).

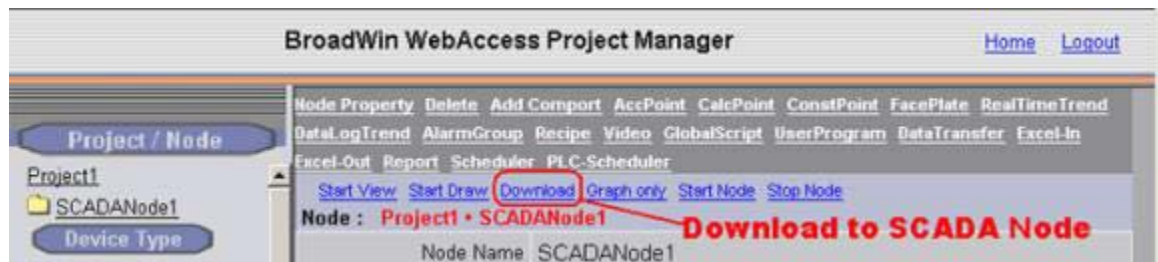


Figure 3-9 - SCADA Node Main page (Main.asp) - Download

2. Select [Download](#).
3. The Download Dialog Box pops open (Figure 3-10).



Figure 3-10 - Download SCADA Node

4. When download is finished, select **Close Window** (Figure 3-10).
5. From Project Manager select **Start node** (Figure 3-9).
6. The Start Node Dialog Box pops open (Figure 3-11).



Figure 3-11 - Start SCADA Node

7. When Node is started, select Close Window (Figure 3-11).

Download on a Running System.

If the SCADA node was already running, (like it might be now) Download to the SCADA Node will temporarily STOP the SCADA Node if it is running, then restart it. Users will see a blank screen. Trend and reports will stop collecting data. Communications to field devices will stop.

If you make changes to a Tag, you must download (which will stop and restart the SCADA Node).

Changes to Graphic Displays (and associated Screen Scripts, keymacro files) can be downloaded without stopping the SCADA Node by using [Graph Only](#) download link. Trends, Recipes and other features also have a Download feature in their configuration pages that allow a download without stopping the SCADA node.

Task 6: Start VIEW

Continuing from Step 7 in the previous section ([Download the SCADA Node](#)).

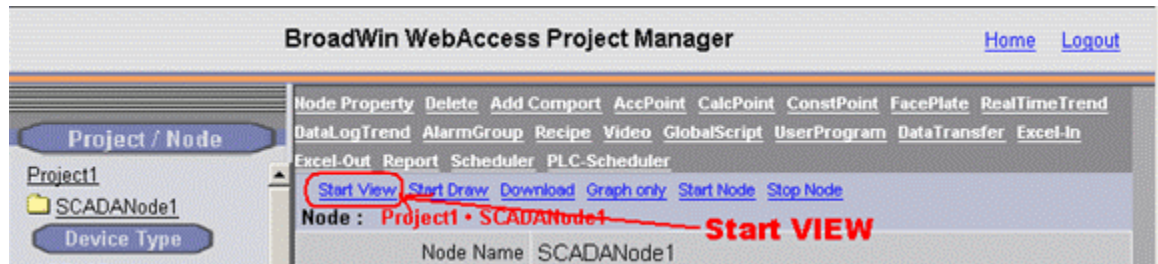


Figure 3-12 Start VIEW from Project Manager

8. Select [Start View](#) (Figure 3-12).

There are other ways to START VIEW described in [VIEW Client Options](#) and [Start WebAccess VIEW](#)

9. If you have not already installed the Client, you will see a message (fig 3-13):
"Please Click here to install WebAccess Client first".

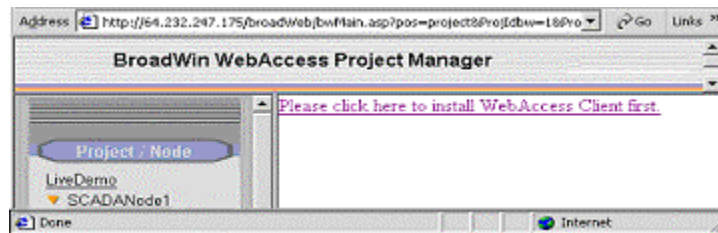


Figure 3-13 - Prompt to download and install WebAccess Client

If you get this message, just follow the steps to download and install the client. If you need more information about downloading and installing the client plug-in see the [QuickStart Manual](#) or http://demo.broadwin.com/broadWeb/QuickStart/Step_3_-_Download_and_Install_WebAccess_Client_Plug-In.htm.

Hint - After Downloading Client, close all Web browser windows before running the Client Setup program. If you close all web browser windows, you will not have to reboot your computer.

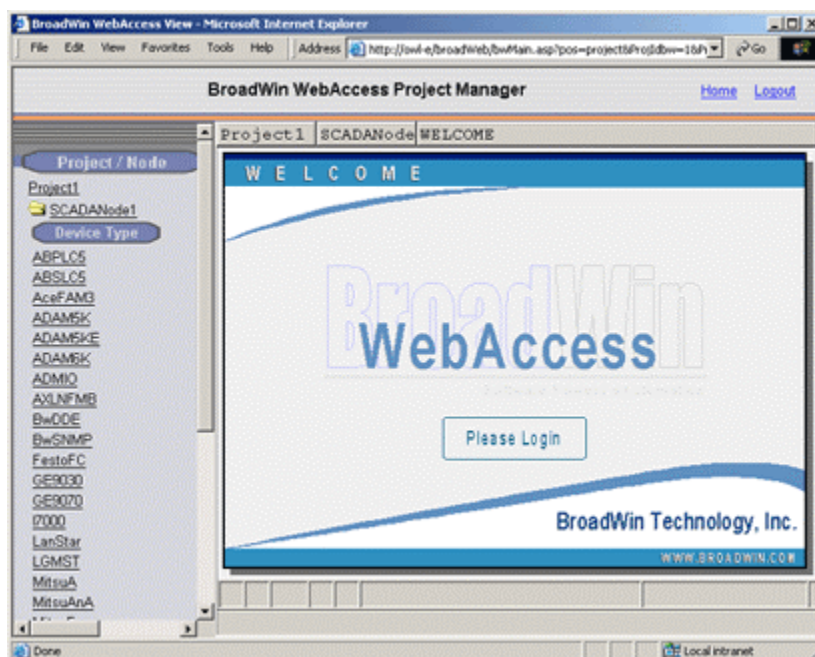


Figure 3-14 - Login page, start VIEW – from Project Manager

10. Welcome to WebAccess Login appears (Figure 3-14) if the Client is installed.
11. Select **Please Login**
12. The User Login Dialog Box Appears (Figure 3-15).



Figure 3-15 - Login Password Dialog Box

13. Enter Username: **admin**
and no Password:
14. **Right Click** with the mouse or press the **Enter** key.
15. The default Main Graphic Display appears (fig. 3-16). You can edit or create a new Main.bgr later.

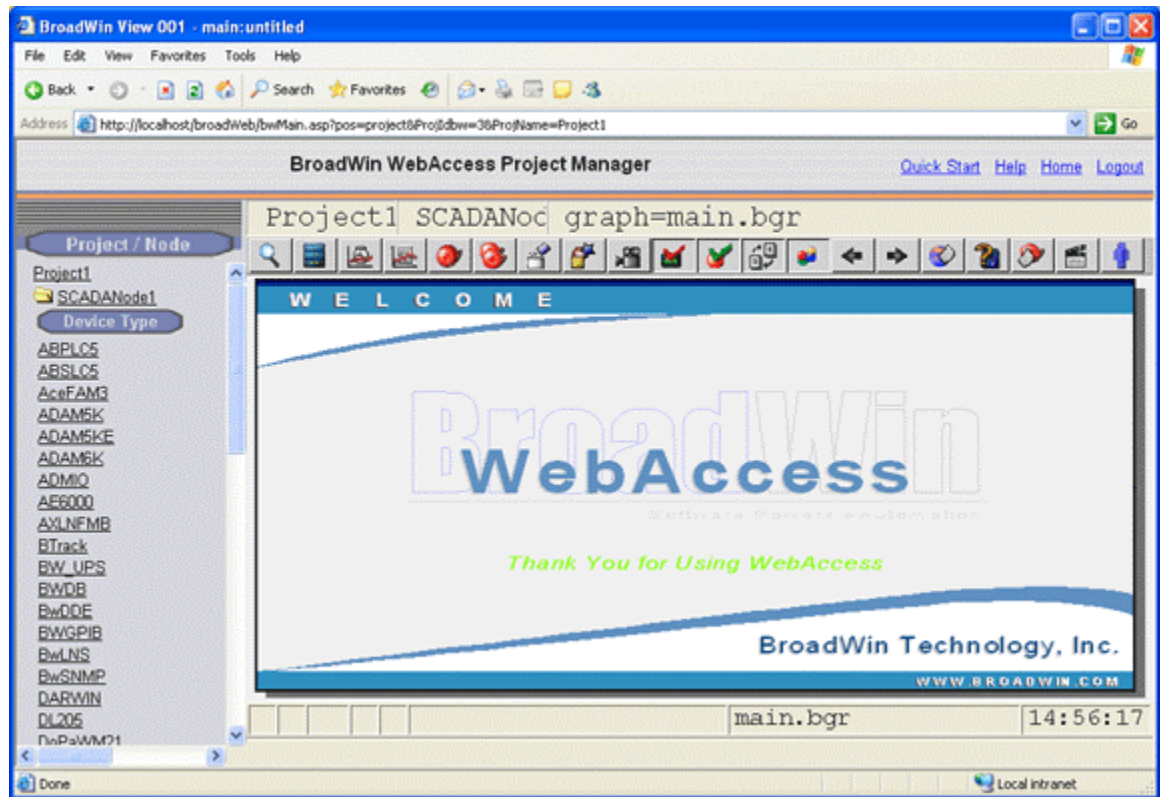


Figure 3-16 - default MAIN Graphic Display

CONGRATULATIONS! You have installed, created, configured, downloaded and started a WebAccess project.

The steps so far have been to test out your software installation, there are many steps not yet completed in building a real automation project: configuring Com Ports, Devices, Tags and building graphics are the next steps.

To rapidly build a demonstration or practice project with many graphics, you can Import a SCADA Node over the Internet from the Broadwin Live Demo (<http://demo.broadwin.com>). See [Import SCADA Node](#) in the section 2.4.2.2 of the Engineering manual. The remote access code for the demo is remoteaccesscode .

Reference

WebAccess Engineering Manual.

<http://demo.broadwin.com/broadweb/EngMAN/EngMAN.htm>

<http://broadwin.com/downloads/winhelp/EngMAN.CHM>

<http://localhost/broadWeb/engman/engman.htm>

WebAccess QuickStart Guide.

<http://localhost/broadWeb/QuickStart/QuickStart.htm>

<http://broadwin.com/downloads/winhelp/QuickStart.CHM>

<http://demo.broadwin.com/broadweb/QuickStart/QuickStart.htm>

Section 4 – Communications, IO Tags and Blocks

Objective

This section discusses the various point types (Analog Tags, Discrete Tags, Text-type Tags and Blocks, parameters, tag fields, internal tags, IO Tags etc.).

Training Notes

There are two different categories of point tags: I/O communication points and database points.

- I/O Tags - These include single points and multi-points. Communication points have device addresses that are mapped to some memory location in the controller device. I/O communication points are created from parameters and block types.
- Internal Tags - These include constant points, calculation points and accumulation points. They are not configured for communication; they do not have I/O addresses and are used solely in WebAccess.

IO Tags and Blocks

WebAccess uses two concepts of tags used in communication with plant floor devices: **Tags** and **Blocks**. Both **IO Tags** and **Blocks** describe real-time measurements and outputs (reads and writes) between the SCADA node and automation devices (PLCs, controllers, DDC systems, etc).

Tags are easiest to understand and are frequently used in small projects.

Blocks are a productivity tool that requires significant planning, but can dramatically reduce the time to implement a large automation project or repetitions of the same automation project.

Tags can represent **analog**, **discrete** or **text** type data. Discrete type data is also called **digital**. Text type data is also called string data. Analog data is a usually a floating point number. Discrete data is an Integer between 0 and 7, but is often only 0 or 1 (hence the term digital). Text type data is an ASCII string up to 72 characters.

Users reference the data in a tag by its tagname. For example, a temperature might be read by typing **ZoneTemp1**.

Parameters are like tags, but are grouped into a Block. Users reference the data in a block by appending the parameter to the block name: **Blockname:Parameter**. For example, to read the setpoint of flow controller, type FIC101:SP in the Point Info Dialog box.

IO Tags and Blocks are built from template type objects: **Parameter Types** and **Block Types**. Parameters and Blocks are associated the the Device Type.

Parameters also act as a Template for creating tags. They often have a default or typical address typical of the device and that can guide a novice user. For example an AI parameter in a Modbus might have an address template of **40001**. But the AI for a BACnet device would have an address template of **0.InstanceNo.85**. Not all device drivers, if they do not exist, you must create at least one for each tag type (analog, discrete and text) that you plan to create. New drivers or seldom used device drivers often lack parameters in the default database supplied with Webaccess.

Tag Fields

Tag Fields describe the multiple dimensions of a Tag including description, Alarm State, Alarm Limits, Output Limits, Engineering Units, Span Hi, and Span Lo. Tag fields are read by appending the Field name to the Tagname. The format is:

Tagname.FIELD or **Blockname:parameter.FIELD**

For example, to read the high output limit of the setpoint in the above example, type FIC101:SP.OUTPH in the Point Info Dialog box

To see or change the High Alarm Limit of the tag named SINE, type SINE.ALMHI in the point info dialog box

Many Tag Fields are Read/Write and can be used to adjust Alarm Limits, Descriptions, etc. during Run time.

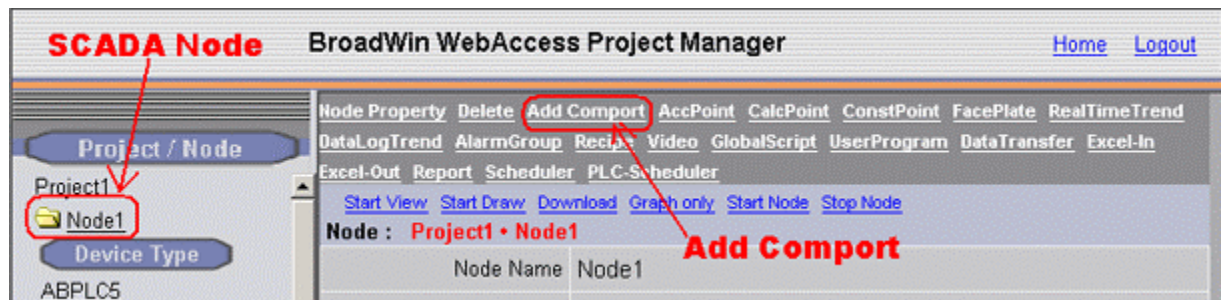
Exercises

For these training exercises, it is recommended to use a Modbus PLC with TCP/IP communications. If a PLC is not available, it is recommended to install the Modbus TCP Simulator software on the student's PC. See the Appendix for more information on the Modbus PLC simulator software.

Task 1: Configure a Communication Port

From the Project Manager (See [2.3.2 Connect to Project Node](#) of the Engineering Manual, if you need help connecting)

1. Select your SCADA node under the Project/Node list.



2. Select **Add Comport**

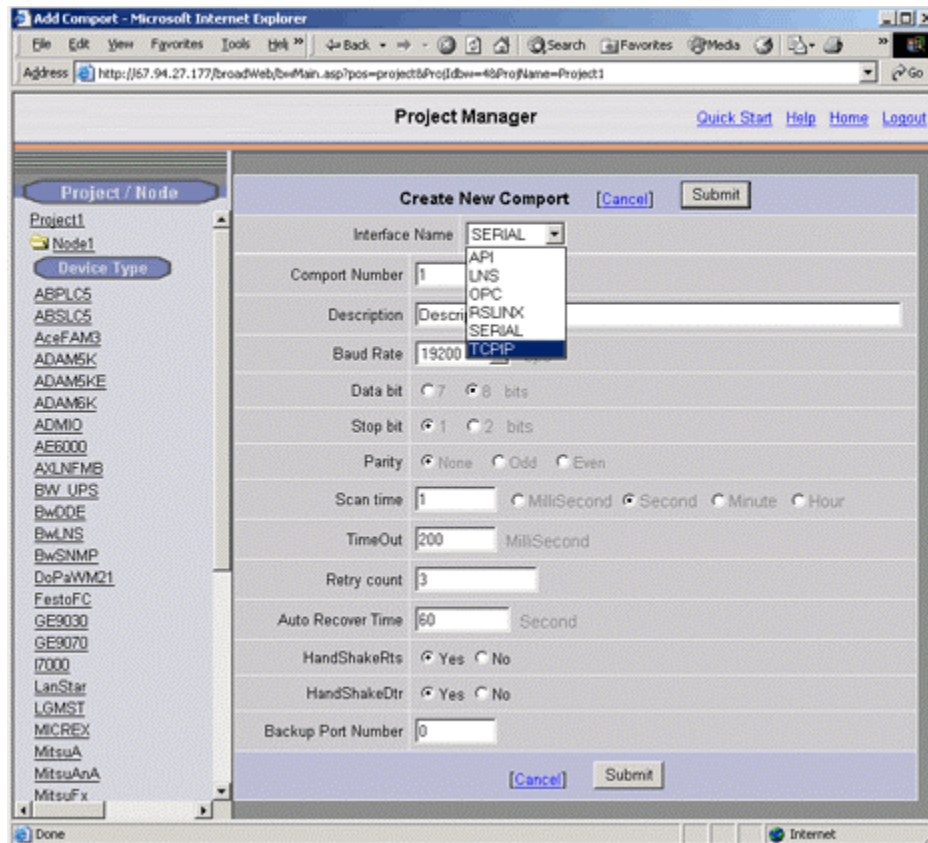
This can take a long time while tables are created in the database on the Project Node / Web Server.

Warning – if multiple students are using a single project node that is using a 10 client limit for IIS, pressing Add Comport will open a new connection each time it is pressed. Be patient if you are sharing a Project Node with other students and do not press Add Comport more than once, otherwise you will get the error:

The page cannot be displayed

There are too many people accessing the Web site at this time.

3. The **Create New Comport** page appears.



4. Select the **TCP / IP** as the **Interface Name** for this Comport. (Also called the Comport Type).

The fields change depending on the Comport Type.

5. The TCP/IP Comport Properties page appears.

Create New Comport [Cancel] Submit	
Interface Name	TCP/IP
Comport Number	3
Description	Description
Scan time	1 ☐ MilliSecond ☒ Second ☐ Minute ☐ Hour
TimeOut	200 MilliSecond
Retry count	3
Auto Recover Time	60 Second
Backup Port Number	0
[Cancel] Submit	

TCPIP - TCP/IP (transmission Control Protocol / Internet Protocol). Specifies a "Virtual Port" that uses the TCP/IP service installed. Does not correspond to specific IO card or comport number. Will access any IO card that uses the TCP/IP service installed on your PC. For a description of the data entry fields for a TCP/IP Network Interface see the Engineering Manual, section 3.3.4 [TCP/IP Com Port Properties](#).

6. Enter a **Comport Number**. It is recommended to use a number above 2 for TCP/IP ports, so you don't interfere with adding a serial comport. Most PCs have 2 serial comports, if you configured a TCP/IP comport as 1 or 2, you would not be able to use that serial comport in the future. It is not easy to change comport numbers.
7. Optionally, enter a Description. This is just for your own reference.
8. Accept the default values for the other fields, or modify them. For a description of the data entry fields for a TCP/IP Network Interface see, section 3.3.4 [TCP/IP Com Port Properties](#).
9. Click **Submit**.
11. The SCADA Node page appears. The Port should appear as a folder under the SCADA node. (In this example Port 3 under Node 1) in the menu tree at left.

Task 2: Add Device (a PLC)

12. Click on the Port hyperlink (Port3 in this example). The Com Port Properties page opens.

Comport Property Delete Add Device	
Comport : Project1 • Node1 • 3	
Interface Name	TCPIP
Comport Number	3 Add Device
Description	Description
Scan time	1 Second
TimeOut	200 MilliSecond
Retry count	3
Auto Recover Time	60 Second
Backup Port Number	0

13. Select **Add Device**.

14. The **Create Device** Page opens. This also can take some time while data tables are created in the database on the Project Node.

Create New Device [Cancel] Submit			
Device Name			
Description			
Unit Number	0		
Device Type	AceFAM3 LanStar MICREX MitsuA MitsuAnA MitsuQ Modicon MsysRX SiemS7 TOSHIBA TVTNet Wago750		
Primary			
Secondary			
Not Used			
Not Used		CPU No.	1
Not Used		Is Lon Gateway	0
[Cancel] Submit			

15. Select **Modicon** form the Device Type pull down list.

(Alternatively, you can select one of the other Modbus TCP/IP devices: ADAM 5000 Ethernet driver (ADAM5KE), ADAM 6000 (ADAM6K) or Wago 750.

16. Enter a **Device Name**. This will appear as a folder under the comport in the Project Manager. It will also appear in VIEW during runtime in the Point Detail Display for any tags created.

Delete Add Tag Add Block	
Device Property [Cancel] Submit	
Device Name	ModbusPLC
Description	Tuna
Unit Number	1
Device Type	Modicon
Primary	IP Address 67.94.27.177
	Port Number 5111
	Device Address 1 if other than Unit Number
Secondary	IP Address
	Port Number
	Device Address
Use UDP :	0
Digital block size :	512
Analog block size :	64

17. Optionally, enter a description.

18. Enter the **Unit Number**. This number will appear in VIEW during runtime on the Station Status display and will be the reference to Enable and Disable communications to the Device. It also will be the reference for communication alarms. (1 to 254)

Logically, this usually matched the actual device number, but it is possible to assign a unit number that does not match the actual Modbus Protocol Device Address. For example, each Modbus PLC has a unique IP Address and all PLCs have Modbus Device address 1 at these unique IP Addresses.

19. Enter an **IP Address** for the Device.

Important! – Use the IP Address and Port given by your Instructor for the PLC in your classroom. The Modbus TCP Simulator software can be installed locally on a SCADA node and use the SCADA nodes IP address.

If you installed the ModSim.exe simulator software on your PC, then enter the IP Address of your PC or 127.0.0.1

20. Enter the TCP or UDP **Port Number** for the Device. This is important. It has to match the TCP port used by the device.

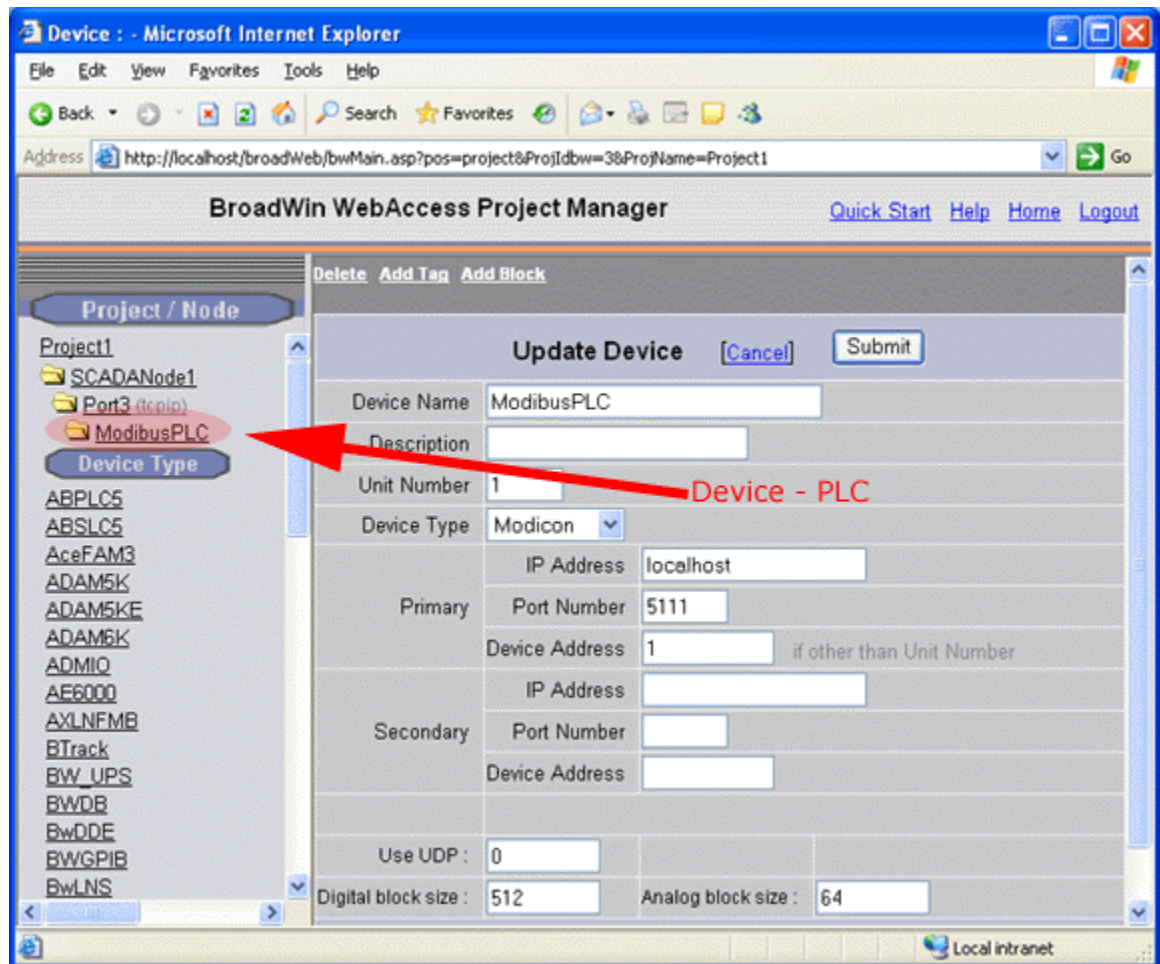
Important! – Use the TCP Port given by your Instructor for the PLC in your classroom. The Modbus TCP Simulator software uses port 5111. The FAS 2046 uses port 503 or 504 (504 out of the box, 503 if FPBuilder default used). Bacnet often uses 47808.

21. Enter a **Device Address** if different from the Unit Number.

Important! – Use the Device Address given by your Instructor for the PLC in your classroom. The Modbus TCP Simulator software uses Device Address 1.

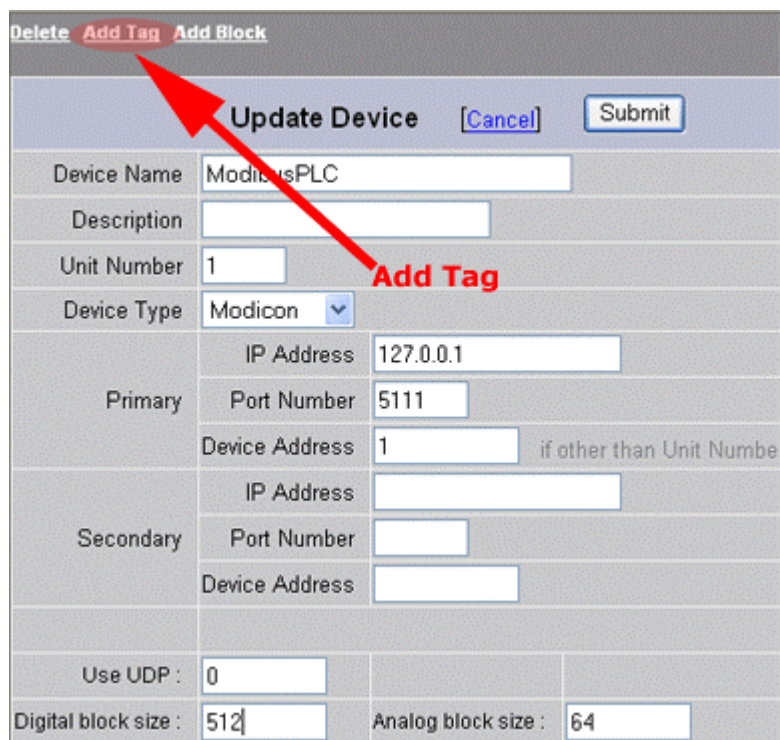
22. Optionally, add Address and Port information for a redundant communication path to the Device. For example, if the PLC has two Network Interface Cards (NICs).
23. If using TCP (the official Modbus Ethernet protocol) use **0** for **Use UDP**.
24. Press **Submit**. This can be a wait while data tables are created on the Project Node.

The PLC appears as a folder under the comport in Project Manager.



Task 3: Add an Analog Input Tag

25. The **Update Device** Page Appears.
26. Select **Add Tag**.



Delete **Add Tag** Add Block

Update Device [Cancel] [Submit]

Device Name	Modicon PLC		
Description			
Unit Number	1	Add Tag	
Device Type	Modicon ▼		
Primary	IP Address	127.0.0.1	
	Port Number	5111	
	Device Address	1 if other than Unit Number	
Secondary	IP Address		
	Port Number		
	Device Address		
Use UDP :	0		
Digital block size :	512	Analog block size :	64

Note – Use the IP Address the Instructor gives you for the PLC in the class

27. The **Create New Tag** page appears.

28. Use the **AI** Parameter from the **Parameter** pull down List

29. Enter a Tagname (**AI0002** in the example).

30. Modify the address (**30002** in the example).

Create New Tag		[Cancel]	Submit
Parameter	AI	Point (analog)	
Alarm	No Alarm		
Tag Name	AI0002		
Description	Analog Input #2		
Scan Type	Constant Scan		
Address	30002		
Conversion Code	Unsigned Integer		
Start bit	0		
Length	16		
Signal Reverse	☐ Yes ☒ No		
Scaling Type	No Scale		
Scaling factor 1	0		
Scaling factor 2	0		
Log Data	☐ Yes ☒ No		
Data log db	3 %		
Write Action Log	☒ Yes ☐ No		
Read Only	☒ Yes ☐ No		
Keep Previous Value	☐ Yes ☒ No		
Initial Value	0		
Security area	0		
Security level	0		
Span high	1000		
Span low	0		
Output High Limit	1000		
Output Low Limit	0		
Eng Unit			

Scan Types

By default, WebAccess reads data from the controller device continuously as long as the KERNEL Task is running. This is called constant scan. In addition to constant scan, you can specify some other scan type so that for the specific point WebAccess scans data only when a graphic associated with that point is open. For a large project, these other scan types can significantly reduce the communication burden and improve driver performance. The following scan types are available:

- **Constant** - the point is scanned continuously regardless of the current VIEW task.
- **Display** - the point is scanned only when it is displayed in a graphic.

Conversion Code.

This describes how to treat the number. Most devices report it as an unsigned integer which implies a number between 0 and 65,536 (if 16 bit). Most Modbus devices uses Unsigned Integer. However the FAS 2046 uses two registers (32 bit) to form a floating point number (e.g. 3.14159265) but in reverse word order (IEEE, Reversed Word).

Input Scaling

You can apply a scaling to the raw data from the controller devices. The following scaling methods (**Input Scaling**) are available for display of values:

- **No Scale** - for a value not requiring scaling or one that will be scaled prior to reaching the computer. The value read from the device is displayed exactly in WebAccess.
- **Scale to Span (for 0-100%) input** - for a percent value that needs to be converted to an engineering range specified by the SpanHi and SpanLo fields. The input value from the controller device must be in the range 0-100.
- **Square Root** - for a value that requires a square root function.
- **Linear function $MX+B$ $X=\text{input}$** - for a value that needs to be scaled to an engineering range with a slope and bias. The values for the multiplier (M) and the bias (B) are calculated using the following linear slope equation:

$$M * (\text{High Input Count}) + B = \text{Span High}$$

$$M * (\text{Low Input Count}) + B = \text{Span Low}$$
- **Scale to Span (for 12-bit input)** - for a 12-bit value that needs to be converted to an engineering range specified by the SpanHi and SpanLo fields. The input value from the controller device must be in the range 0-4095.

32. Accept the default values for the other fields . Press **Submit**.

Important! – Press SUBMIT before continuing to next step or you will loose your data.

For more information, see [Section 4.2 Analog Tag Properties](#) in the Engineering Manual.

Task 4: Add an Analog Output Tag

33. Continuing from add Analog Input, the **Create New Tag** page appears.

34. Select the **AO** Parameter from the **Parameter** Pull Down List.

Create New Tag		[Cancel]	Submit
Parameter	AI	Point (analog)	
Alarm	AI		
Tag Name	AO		
Description	I01		
Scan Type	I02		
Address	I03		
Conversion Code	I04	Scan	
Start bit	I05		
Length	I06		
Signal Reverse	I07	Integer	
Scaling Type	I08		
Scaling factor 1	I09		
Scaling factor 2			

35. The AO Parameter Page opens.

Create New Tag [Cancel] [Submit]

Parameter: AO Point (analog)

Alarm: No Alarm

Tag Name:

Description: Description

Scan Type: Constant Scan

Address: 40001

Conversion Code: Unsigned Integer

Start bit: 0

Length: 16

Signal Reverse: ☐ Yes ☒ No

Scaling Type: No Scale

Scaling factor 1: 0

Scaling factor 2: 0

Log Data: ☐ Yes ☒ No

Data log db: 3 %

Write Action Log: ☒ Yes ☐ No

Read Only: ☐ Yes ☒ No

Keep Previous Value: ☐ Yes ☒ No

Initial Value: 0

Security area: 0

Security level: 0

Span high: 1000

Span low: 0

Output High Limit: 1000

Output Low Limit: 0

Analog Parameter fields

Notice that the Address field changes from 30001 (for AI) to 40001 (for the AO Parameter).

36. Create a Tag name **AO005**

Tag name	Tag fields
AO005	Parameter: AO Description: Valve #5 Position Address: 40005 Scaling Type: Scale 0 –100% Input to Span Span Hi: 100 Span Lo: -100 Output High Limit: 100 Eng Units: %OPEN

Display Digits (Integer): 3
All other parameters: use default

Create New Tag		[Cancel]	Submit
Parameter	AO	Point (analog)	
Alarm	No Alarm		
Tag Name	AO0005		
Description	Valve #5 Position		
Scan Type	Constant Scan		
Address	40005		
Conversion Code	Unsigned Integer		
Start bit	0		
Length	16		
Signal Reverse	☐ Yes ☒ No		
Scaling Type	Scale 0-100% Input to Span		
Scaling factor 1	0		
Scaling factor 2	0		
Log Data	☐ Yes ☒ No		
Data log db	3 %		
Write Action Log	☒ Yes ☐ No		
Read Only	☐ Yes ☒ No		
Keep Previous Value	☐ Yes ☒ No		
Initial Value	0		
Security area	0		
Security level	0		
Span high	100		
Span low	0		
Output High Limit	95		
Output Low Limit	5		
Eng Unit	%OPEN		

37. Press **Submit** when finished to create the tag.

Important! – Press submit to save your data before continuing with the next step.

Task 5: Add a Discrete Output (also called Digital Output)

38. Select **DO** from the Parameter pull down list (you have to scroll down to the bottom of the list).

Create New Tag [Cancel] Submit

Parameter DO Point (discrete)

Alarm No Alarm

Tag Name

Description Description

Scan Type Constant Scan

Address 00001

Conversion Code Unsigned Integer

Start bit 0

Length 1

Signal Reverse ☐ Yes ☒ No

Log Data ☐ Yes ☒ No

Data log db 3 %

Write Action Log ☒ Yes ☐ No

Read Only ☐ Yes ☒ No

Keep Previous Value ☐ Yes ☒ No

Initial Value 0

Security area 0

Security level 0

State 0 0

State 1 1

State 2 NotUsed

State 3 NotUsed

State 4 NotUsed

State 5 NotUsed

State 6 NotUsed

Discrete Parameter fields

Notice that the Address field Changes to data type changes from analog to discrete. Also, the Data Fields change: State Descriptors appear. There is no Scaling, Span or Output Limits for a Discrete.

Also notice how any data entered is lost if you change the Parameter before pressing submit! It is best to select Parameter before entering tag name. You cannot change the parameter type of a tag once it is created.

39. Select **Alarm** from the Pulldown list.

Similar to changing the Parameter, selecting alarm changes the page and you will lose any data entered before pressing submit. You can add or remove alarming for a tag after you create.

The page refreshes and alarm fields appear at the top and bottom of the page.

The top screenshot shows the 'Create New Tag' form with the following fields:

- Parameter: DO (dropdown), Point (discrete)
- Alarm: Alarm (dropdown)
- Tag Name: [text input]
- Description: [text input]

The bottom screenshot shows the 'Alarm Data' section with the following fields:

- Associate Tag Name: [text input]
- Alarm Priority: 0 (dropdown)
- Log Only: ☐
- Send Email: ☐
- Play Voice: ☐
- Alarm State: 0 (text input)
- Alarm Graph: [text input] .bgr
- Email To: [text input]
- Email Cc: [text input]
- Alarm Delay Time: 0 (text input) with radio buttons for MilliSecond, Second (selected), Minute, and Hour

40. Enter a **Tag Name** of **PUMP_STATUS**

This will be how the information is referenced on Displays in VIEW. Typical Tag names are YS1001, SS4516, Pump_Start, B31_R11_STATUS. The end user usually has a Tag naming convention used at his facility. Tag name is 21 characters Maximum. For legal tag name characters, see the Engineering Manual section [4.11.1 Legal characters in a Tag Name](#).

41. Enter a **Description** of the tag: **Pump #1 Status**

This will appear in VIEW and helps operators identify the information. It will also appear in the Alarm Summary and will be read by the Text-to-Speech Alarm Annunciator. The Description can be changed during runtime by modifying the [DESCRP](#) field associated with the tag.

Create New Tag		[Cancel]	[Submit]
Parameter	D0	Point (discrete)	
Alarm	Alarm		
Tag Name	Pump_Status		
Description	Pump #1 Status		
Scan Type	Constant Scan		
Address	00001		
Conversion Code	Unsigned Integer		
Start bit	0		
Length	1		
Signal Reverse	☐ Yes ☒ No		
Log Data	☒ Yes ☐ No		
Data Log Dead Band	3 %		
Write Action Log	☒ Yes ☐ No		
Read Only	☐ Yes ☒ No		
Keep Previous Value	☐ Yes ☒ No		
Initial Value	0		
Security area	0		
Security level	0		
State 0	OFF		
State 1	ON		
State 2	Not Used		

42. Enter the actual **Address** for the tag: **00001**

The parameter provides an example of a typical address for the Data type (00001 for Discrete Outputs, 10001 for Discrete Inputs, 30001 for Discrete Outputs and 40001 for Analog Outputs).

43. For this example, leave the default settings for

Scan Type = Constant Scan
 Conversion Code = Unsigned Integer
 Start Bit = 0
 Length = 1
 Signal Reverse = No.

For more information on these fields, see the Engineering Manual [4.3 Discrete Tag Properties](#)

44. **Enable Data Logging** for the Tag by selecting the radio button next to **Log Data**.

45. Modify the State0 and State1 descriptors to read ON and OFF.

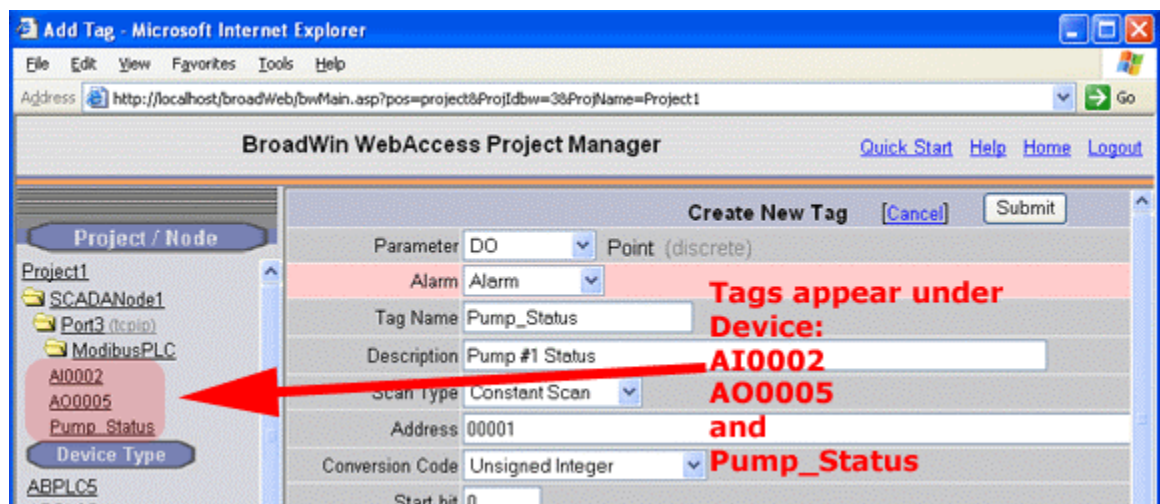
State 0	OFF
State 1	ON

46. Modify the **Alarm Priority** to 1 or higher. An alarm priority of 0 = no alarms.

The screenshot shows the 'Alarm Data' configuration form. It includes fields for 'Associate Tag Name', 'Alarm Priority' (set to 1), 'Log Only' (unchecked), 'Send Email' (checked), 'Play Voice' (checked), and 'Media File'. There are also fields for 'Alarm State' (set to 0), 'Alarm Graph' (set to 'bgr'), 'Email To' (set to 'tcarter@broadwin.com'), 'Email Cc', and 'Alarm Delay Time' (set to 0). At the bottom, there are radio buttons for 'MilliSecond', 'Second' (selected), 'Minute', and 'Hour'. 'Cancel' and 'Submit' buttons are at the bottom right.

47. Optionally, enable **Play Voice** to here a Text-to-Speech Alarm annunciation on the SCADA Node.
48. Optionally, enable **Send Email** and enter your email address in the **Email To** fields to receive an Alarm Email.
49. In this example, leave the other fields at their default values. For more information on these fields, see the Engineering Manual [4.3 Discrete Tag Properties](#).
50. Press **Submit**.

The Tag Name appears under the Device Name in the Project Manager (SCADNode1, Port3, ModbusPLC in this example.) You should see three tags AI0002, AO0005 and PUMP_STATUS.



Task 6: Download changes to the SCADA Node

If you have not already done so, [connect to the Project Node](#) and [Start WebAccess Configuration](#). Select your Project.

1. Select the SCADA Node under your Project Name in the Project/Node list (Figure 4-31).

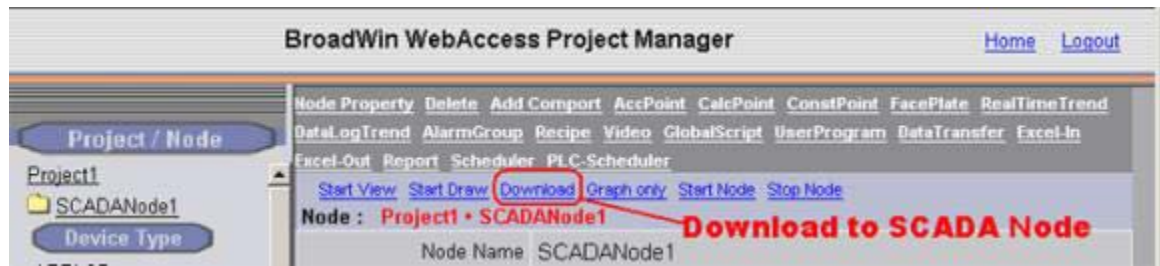


Figure 4-31 - SCADA Node Main page (Main.asp) - Download

2. Select [Download](#).
3. The Download Dialog Box pops open (Figure 4-32).



Figure 4-32 - Download SCADA Node

4. When download is finished, select **Close Window** (Figure 4-32).
5. If the Node was not already running, from the Project Manager Select [Start node](#) (Figure 4-31).
6. The Start Node Dialog Box pops open (Figure 4-33).



Figure 4-33 - Start SCADA Node

7. When Node is started, select Close Window (Figure 4-33).

Download to the SCADA Node will temporarily STOP the SCADA Node. Users will see a blank screen. Trend and reports will stop collecting data. Communications to field devices will stop. When the SCADA restarts, Alarms will be re-set to unacknowledged.

If you make changes to a Tag, you must download (which will stop and restart the SCADA Node).

Changes to Graphic Displays (and associated Screen Scripts, keymacro files) can be downloaded without stopping the SCADA Node by using [Graph Only](#) download link.

Task 7: Start VIEW to verify communications to PLC

Continuing from Step 7 in the previous section (or see [Download the SCADA Node](#) in the Engineering Manual).

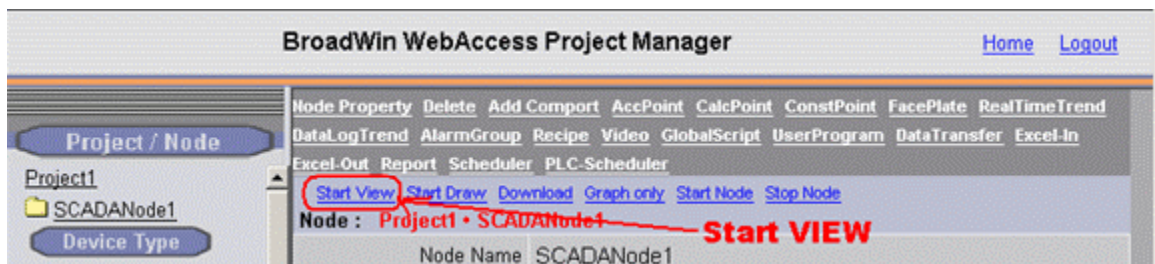


Figure 4.37- Start VIEW from Project Manger

8. Select [Start View](#) (Figure 4-37).

There are other ways to START VIEW described in [VIEW Client Options](#) and [Start WebAccess VIEW](#)

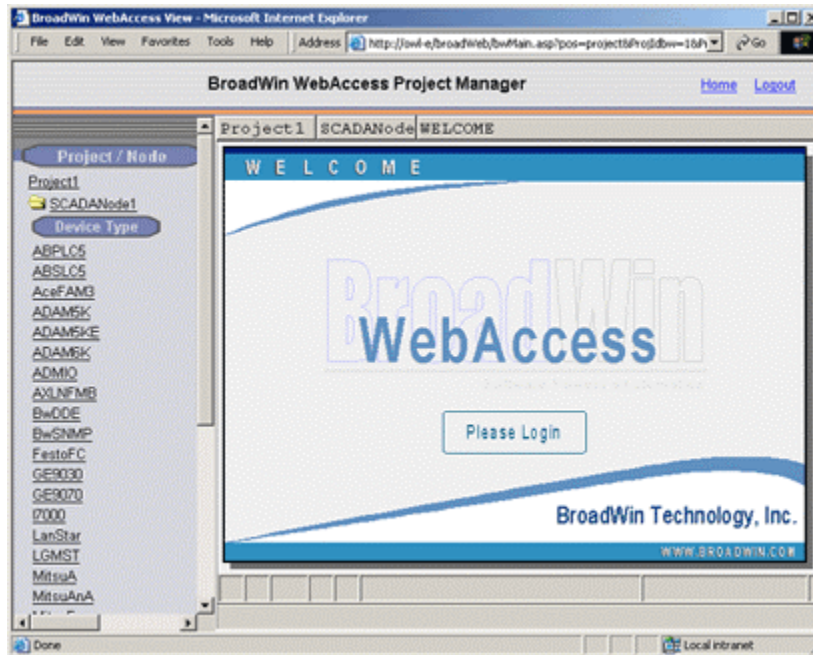


Figure 4-39 - Login page, start VIEW – from Project Manager

10. Welcome to WebAccess Login appears (Figure 4-39) if the Client is installed.
11. Select **Please Login**
12. The User Login Dialog Box Appears (Figure 4-40).



Figure 4-40- Login Password Dialog Box

13. Enter Username: **admin**
and no Password:
14. **Right Click** with the mouse or press the **Enter** key.
15. The default Main Graphic Display appears (you can edit or create a new Main.bgr later)

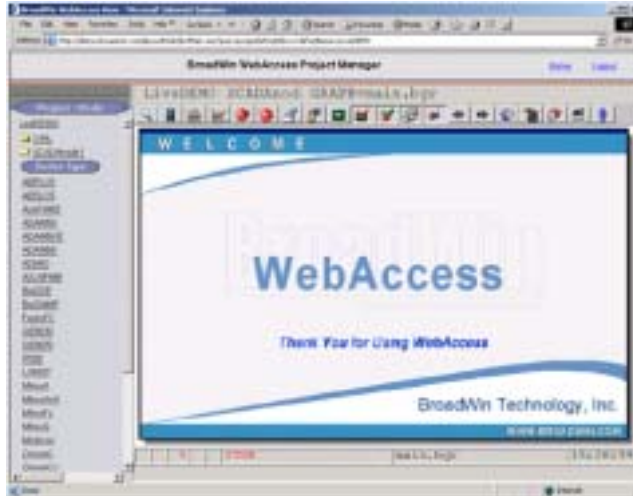


Figure 4-41 - default MAIN Graphic Display

Task 9: Use Point Info (Tag Browser) to verify new tag

The **Point Info Dialog Box** is opened using:

- Pressing the  icon on the Toolbar.
- Pressing **Ctrl + F5** on the Keyboard.
- Right Click -> Goto -> Point Info** (ViewDAQ users skip the right click)

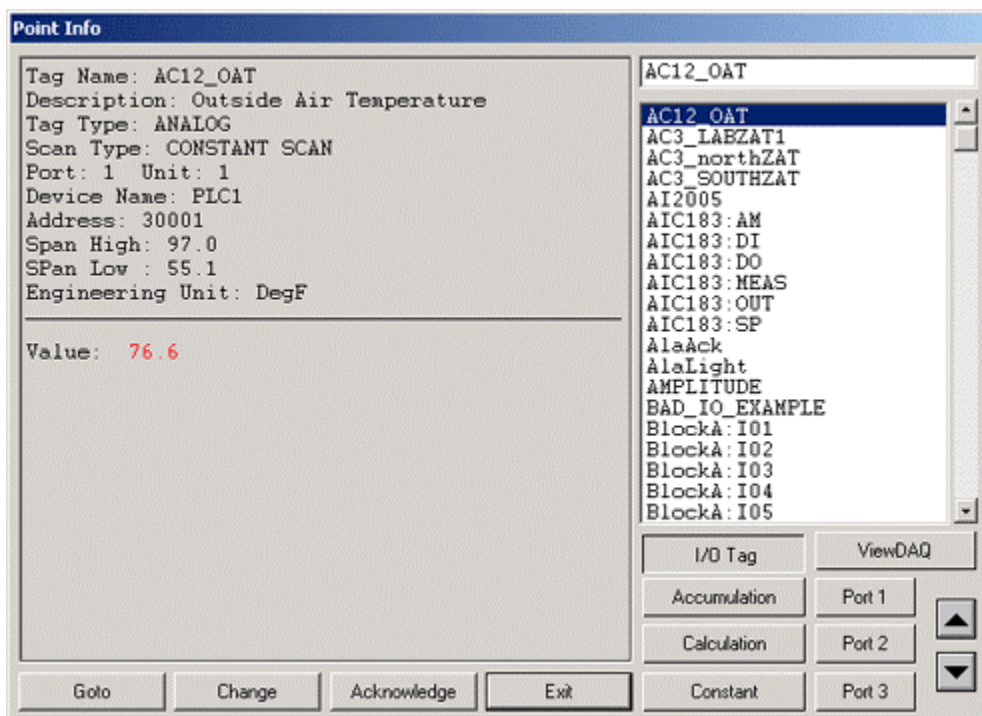
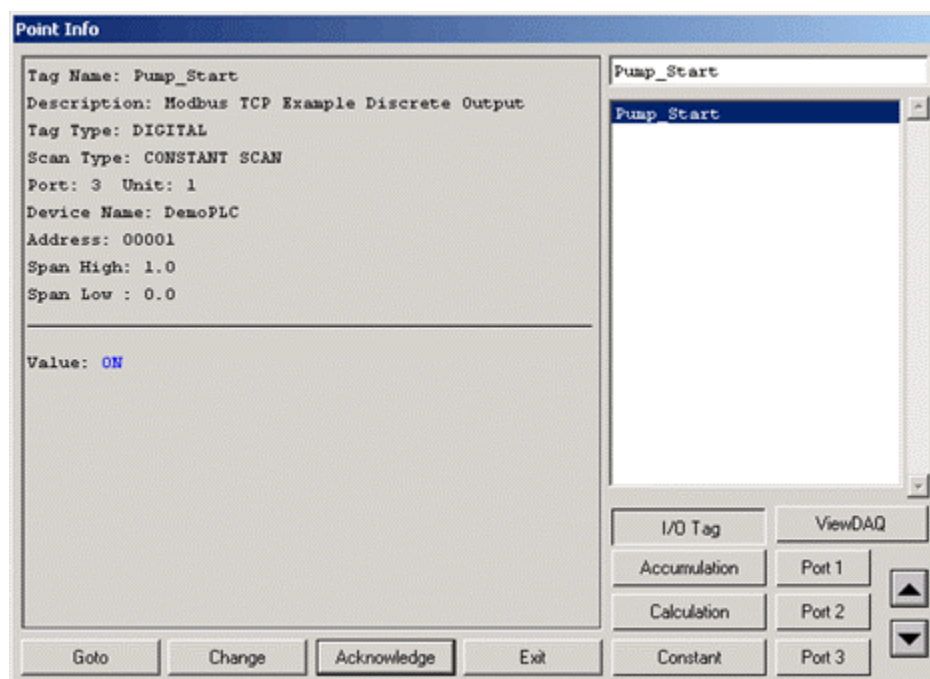


Figure - Point Info Dialog Box – red is Alarm

- 1 Scroll down (if necessary) to see the Tag.
- 2 Click on the Tag Name
- 3 You should see a ON or OFF as the value. It may be flashing Red if in Alarm.



Troubleshooting

45. If you see an asterisk (*) with a number (typically 8000 or 9000), communications has failed. You have the IP Address wrong, the port wrong, the address wrong or some other communication problem.

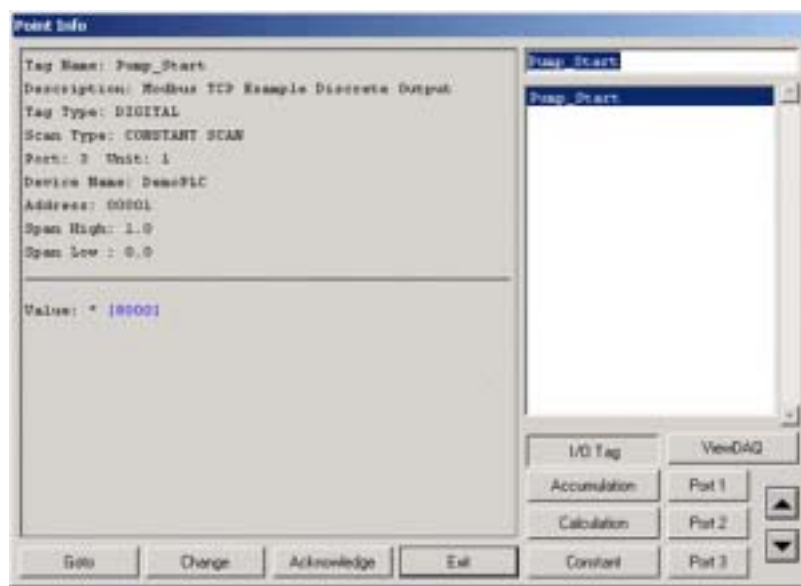


Figure - BAD communications

46. Go to the Station Status Display.

Task 10: Use Station Status (Communication Status) to diagnose problems

The Station Status Display can be viewed from the **Toolbar**  or **Ctrl+F7** function key or a pushbutton with the **<GOTO>STATION** keymacro. The **Right-Click Menu** can also call up the Action Log (**Right Click -> Goto -> Station Status**).

Only Power Users and the admin account can view the Station Status through a Web Browser. (General Users and Restricted users cannot view the Station Status through a Web Browser). All users can view the Station Status locally on the SCADA node using ViewDAQ.

The Station Status Display shows status of all communication Ports and automation devices (e.g. stations).

A Communications Alarm will appear in the Status Bar at the bottom of all displays (a Red letter **C**). See the Engineering Manual, section 7.10, for more information on the [Alarm Windows in the Status Bar](#).

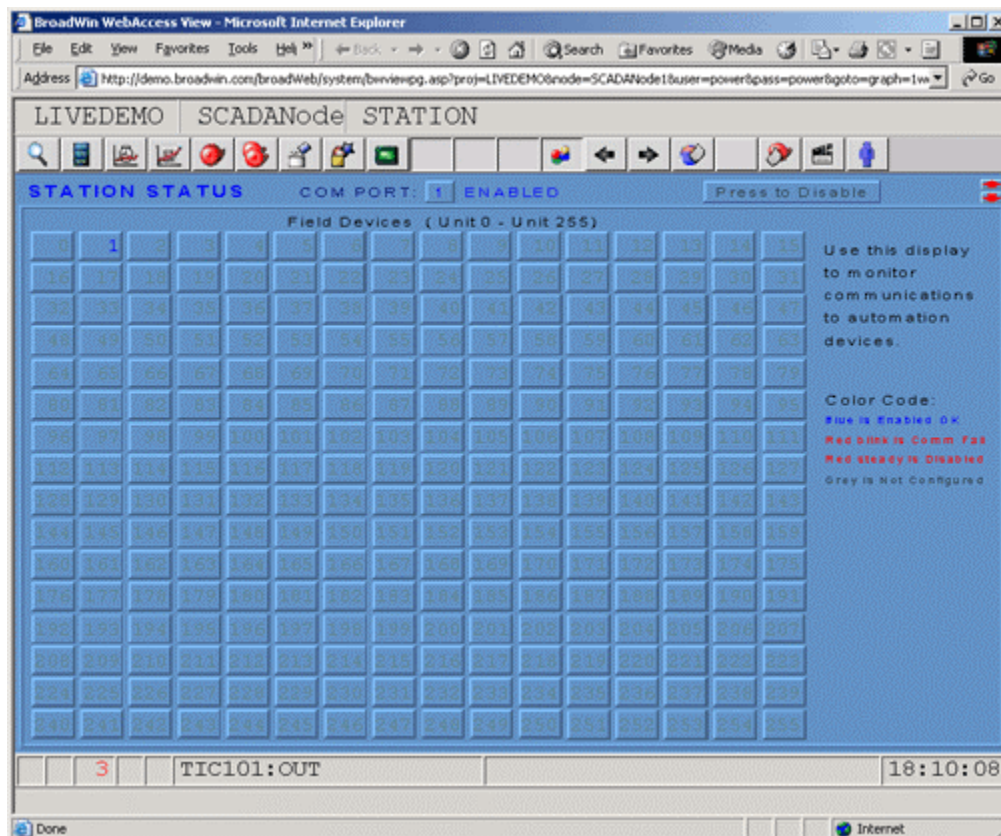


Figure 4-59 Station Status Display

Using the Ramp Keys , users can change the Comport viewed.

The Numbered pushbuttons (1 through 255) represent the Devices (e.g. Stations) connected to the Comport. These are typically the PLCs, Controllers and automation devices.

A **Grey** number is not configured (no device configured)

A **Blue** Number is OK or RETRYING

A Flashing **Red** is Communication Failure

A Steady **Red** is DISABLED (by user).

47. If the Device is Blue, this implies you have the Tags Address wrong (e.g. the Modbus Address, 00001, 00002, 00003, etc.)

48. If communication to the Device failed, it will be flashing RED. This implies you have the IP Address, TCP Port or Device Address wrong.

48.1 Try to ping the PLC Address from the Windows Command prompt.
(for more help, see Eng. Manual, [22.2.11 PING to test TCP/IP communications](#)).

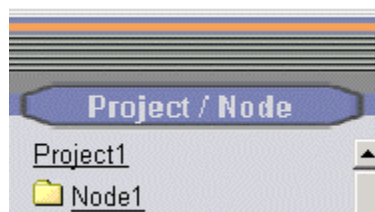
48.1 Confirm the TCP Port and Modbus Device Address from the PLC configurator or Jumper settings on its Network Card (NIC).

Task 11: Review the Port and Device List

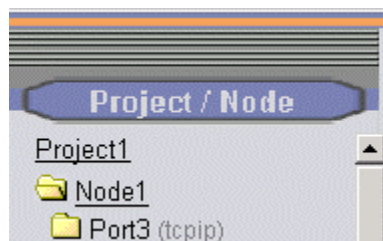
The SCADA Node, Ports, Device, Tags and Blocks are organized in a folder style list at the left of the Project Manger. You may have to open or close a folder to see the information you are looking for.

This section assumes you have started Internet Explorer 6 or later Web Browser and [connected to your Project Node](#).

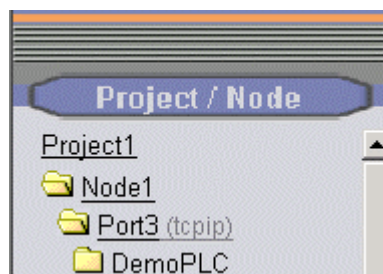
1. Start [WebAccess Configuration](#).
2. Login with User Name and Password.
3. Select your **Project Name**.
4. The **Project Manger** opens.
5. You may need to expand the Port List by clicking on the Folder icon  to the left of **SCADA Node** (Node 1 in the example).



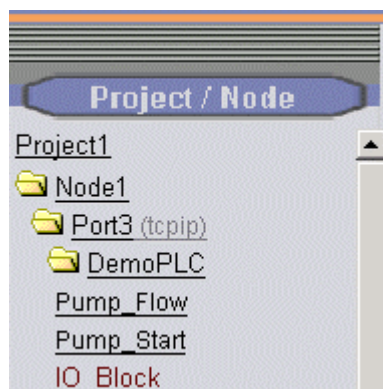
7. You may need to expand the list of **Devices** under your Comport by clicking on the Folder icon  to the left of the Comport.



8. Drag the slider bar on the left Frame down to reveal **Communication Port** (e.g. Port 3 in the example above).



9. You may need to expand the list of **Devices** by clicking on the Folder icon  to the left of the Port (in the example, pick Port3).
10. You may need to expand the list of **Tags** and **Blocks** by clicking on the Folder icon  to the left of the device (in the example, pick DemoPLC).



Tags are listed in Black.

Blocks are listed in Brown after all tags.

You may have to scroll down to see the Tag or Block associated with the device.

Reference

WebAccess Engineering Manual.

<http://localhost/broadWeb/EngMAN/EngMAN.htm>

<http://demo.broadwin.com/Manual/EngMAN/engman.htm>

<http://broadwin.com/downloads/winhelp/EngMAN.CHM>

Section 5 - Internal Tags

Training Notes

WebAccess provides **Internal Tags** that do not read IO directly: **Calculation Tags**, **Accumulation Tags**, and **Constant Tags**. These internal tags are used for calculations and for constants used by scripts or calculations. Internal Tags have all the alarm and security features of IO Tags. These Internal Tags are available to every other tag, script, display, and client in the system.

Local Screen Tags are temporary internal tags used by scripts and graphic displays. Typically, Local Screen Tags hold intermediate values or enhance display animation. Local Screen Tags disappear when the display they are assigned is closed.

%DAQ System Tags and **System Point** Tags are used to access system data. For example %DKRLMODE allows you to put the system in Simulation Mode. %TSERIALNUM reads the license file (the license number inside the software control file).

Constant Point

A constant point is a user defined point tag that is independent of any control system device. A constant point can be an analog or digital point, a single element or an array of values. A constant point can be set to an initial value on start-up and changed during run-time operation.

Constant Tags are a Global Internal Tags. All clients, scripts and other tags will see the same value when reading this tag. Changes to the tag will be seen globally by all other clients, scripts and other tags.

Constant Tags are most frequently used for operator entry of values to calculation tags, scripts and user programs.

The number of Internal tags is limited by the software license control file. The number of Internal Tags (Calculation + Accumulation + Constant) cannot exceed the number of IO tags in the license.

Accumulation Point

An Accumulation Tag consists of an Integration function from another tag or block, usually an IO Tag.

The most common use is to totalize the Flow from a flow device (e.g. calculate volume from flow rate). The value of the input tag is "Accumulated" into a total. The totalization function is executed within the software. Accumulation tags are ANALOG tags. They have all the properties of an Analog Tag including alarms, data logging, output limits and security. Accumulation Tags can be included in trends, displays, alarm summaries and reports.

Calculation Point

A Calculation Tags perform mathematical and logical operations on the values of other tags. The result is a single analog output that can be alarmed and data logged. Up to 20 inputs can be used in the calculation. Input tags can be Analog or Discrete.

Any tag can be an input to a calculation tag including IO Tags, Block parameters, Constant Tags, Accumulation Tags, and other Calculation Tags.

Calculation Tags are an Internal type Tag that are globally available to all graphics and other tags. Calculation Tags can be read and written to by scripts, User Programs, and DDE clients. Calculation Tags can be included in trends, displays, alarm summaries and reports. Calculation Tags have all the alarm and security features of IO Tags.

The calculation function is executed within the software, independent of any control system device.

A calculation Tag is globally accessible but executes locally on the SCADA node it is configured. It also provides alarming, security, description and other features. A calculation point needs to be configured once on one node and it will be available to all Clients. However, if communication to the SCADA node is lost or the node is taken off line, then the value of the calculation will be lost. All clients, scripts and other tags will see the same value when reading this tag. All other clients, scripts and other tags will see changes to the tag globally.

The software license control file limits the number of Internal tags. The number of Internal Tags (Calculation + Accumulation + Constant) cannot exceed the number of IO tags in the license.

The tags within the formula must be entered as their single-letter designations. The calculation formula is limited to 80 characters.

A typical formula is: $(A*.99+B)/C$.

Math Functions

Calculation Tag Math Functions

<u>Operators</u>	<u>Description</u>
+	Addition
-	Subtraction

*	Multiplication
/	Division
sin()	Sine function; format is sin(A) where A is in radians
cos()	Cosine function; format is cos(A) where A is in radians
sqrt()	Square root; format is sqrt(A) where A is in radians
pow(,)	Power; format is pow(A,B) for A to the power of B
log()	Natural logarithm; format is log(A)
log10()	Logarithm base 10; format is log10(A)
()	Precedence operator. Perform calculation inside parentheses before any operators outside parentheses

Math Functions can be nested. For example, **SIN(A*0.0175)** will multiply A by 0.0175 then calculate the Sine.

To convert degrees to radians, multiply by 0.0175

Logic Functions

Logic Functions

<u>Operators</u>	<u>Description</u>
>	Greater than
>=	Greater than or equal to
<	Less than
<=	Less than or equal to
=	Equal to
!=	Not equal to
!	NOT
&&	AND
 	OR
max(A,B)	Selects the higher value of A and B
min(A,B)	Selects the lower value of A and B
Exp1?Exp2:Exp3	Conditional expression where Exp 1, 2 and 3 are math and/or logic expressions. Exp 1 is evaluated first. If it is non-zero (true), the tag uses the value of Exp 2 as its output. Otherwise, Exp 3 is used for the tag output.

An example is **C>0?A*B/C:1** If C is greater than 0, the tags value will be A*B/C. If C is Not greater than 0, then output of the calculation is 1.

System Point Tags

System Point tags provide diagnostics and provide useful information for Alarms, Reports, Logs and global scripts. For example, there are system tags for Communication Port Status, Device Status, Simulation Mode, License Serial Number, and Tag Limit.

The System Point tags must be configured by the user and are based on a subset of the %DAQ tags although there are System Point Tags that do not have a corresponding %DAQ tag. System Points Tags alarm, show in the Alarm Summary, can be used in trends, global scripts, calculation tags, logs and reports.

Note - The %DAQ tags are created automatically and are similar to System Point Tags, however %DAQ tags can not be used in Calculation Tags and %DAQ tags do not appear in the Alarm Summary, trends, or reports. Only Local Screen Scripts, Graphic Displays and Pushbutton Keymacros can use %DAQ tags. Use System Point Tags for reports, alarms and calculation tags.

Reference

[Engineering Manual Section 4. Tags](#)

Exercise

Task 1: Create constant point tags.

1. Select your SCADA Node from the list on the left of the Project Manager.

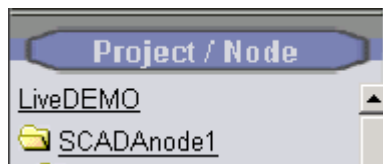


Figure 5.1 – SCADA Node hyperlink

2. Click the **ConstPoint** hyperlink in Project Manager to open the Constant Point List page.

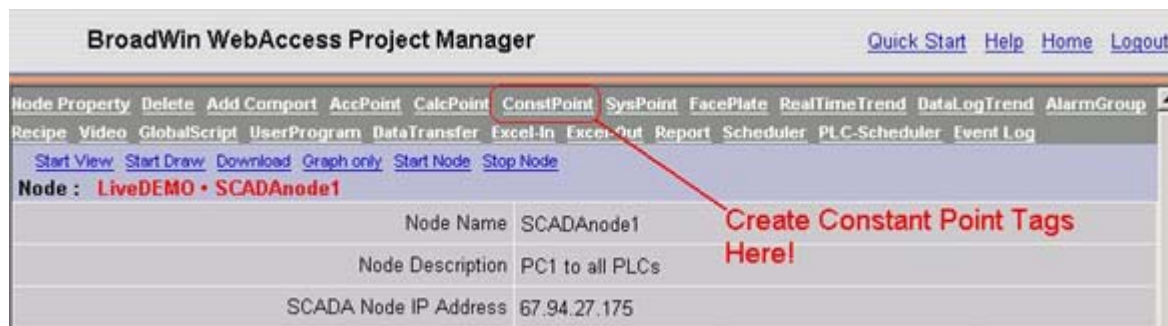


Figure 5.2 – ConstPoint hyperlink to create a Constant Point Tag

3. Click **Add Const Point** to open the Add New Tag page.

Add Const Point				
Node : TrainingProject • Node1				
Tagname	Tag Type	Description	Update	Delete
No Data				

Figure 5.3 – Empty Constant Point list

Create Analog Constant Point Tags

- ConstAna should be selected for the Parameter (if not, select ConstAna).
- Configure a constant point tag named **Amplitude** by entering the following data from the table. It should look like the picture below the table.

Tag name	Tag fields
Amplitude	Parameter: ConAna Description: Size of SINE wave Keep previous value: Yes Initial value: 70 Span Hi: 100 Span Lo: -100 Output High Limit: 100 Display Digits (Integer): 3 All other parameters: use default

Const Point List	
Create New Tag [Cancel] Submit	
Parameter	ConAna ▼ Constant (analog)
Alarm	No Alarm ▼
Tag Name	AMPLITUDE
Description	Size of SINE wave
Log Data	☐ Yes ☒ No
Data log db	3 %
Write Action Log	☒ Yes ☐ No
Read Only	☐ Yes ☒ No
Keep Previous Value	☐ Yes ☒ No
Initial Value	0
Security area	0
Security level	0
Span high	100
Span low	-100
Output High Limit	100
Output Low Limit	0
Eng Unit	
Display digits(integer)	3
Display digits(fraction)	2
Log To ODBC Frequency	0 ▼ Minutes
Array Size	0
[Cancel] Submit	

Figure 5.4 – Example Analog Constant Point Tag named AMPLITUDE

6. Press **Submit** when finished entering data.

Important! – Press Submit to save your data and create the AMPLITUDE tag before starting the next step.

7. Create a new Constant Point Tag named **SPEED** by entering the following data.

Const Point List	
Create New Tag [Cancel] Submit	
Parameter	ConAna v Constant (analog)
Alarm	No Alarm v
Tag Name	SPEED
Description	SINE oscillation rate
Log Data	☐ Yes ☒ No
Data log db	3 %
Write Action Log	☒ Yes ☐ No
Read Only	☐ Yes ☒ No
Keep Previous Value	☐ Yes ☒ No
Initial Value	0
Security area	0
Security level	0
Span high	1000
Span low	0
Output High Limit	1000
Output Low Limit	0
Eng Unit	counts/sec
Display digits(integer)	4
Display digits(fraction)	2
Log To ODBC Frequency	0 v Minutes
Array Size	0
[Cancel] Submit	

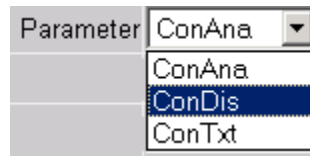
Figure 5.5 – Example Constant Point Tag named SPEED

Tag name	Tag fields
SPEED	Parameter: ConAna Description: SINE oscillation rate Initial value: 60 Span Hi: 1000 Span Lo: 0 Output High Limit: 1000 Display Digits (Integer): 4 Eng Units: counts/sec All other parameters: use default

8. Press **Submit** when finished.

Create a DISCRETE Constant Point Tag

9. Create a new **discrete** Constant point named **Valve1** by selecting **ConstDis** from the parameter pulldown list.



10. Enter the following data for a simulated control valve named **Valve1**.

Tag name	Tag fields
Valve1	Parameter: ConDis Description: Simulated Control Valve #1 Initial value: 0 State 0 descriptor: CLOSED State 1 descriptor: OPEN

Const Point List	
Create New Tag [Cancel] Submit	
Parameter	ConDis Constant (discrete)
Alarm	No Alarm
Tag Name	Valve1
Description	Simulated Control Valve #1
Scan Type	Constant Scan
Log Data	☐ Yes ☒ No
Data log db	3 %
Write Action Log	☒ Yes ☐ No
Read Only	☐ Yes ☒ No
Keep Previous Value	☐ Yes ☒ No
Initial Value	0
Security area	0
Security level	0
State 0	CLOSED
State 1	OPEN
State 2	NotUsed
State 3	NotUsed
State 4	NotUsed
State 5	NotUsed
State 6	NotUsed
State 7	NotUsed
Log To ODBC	☐ Yes ☒ No
Array Size	0
[Cancel] Submit	

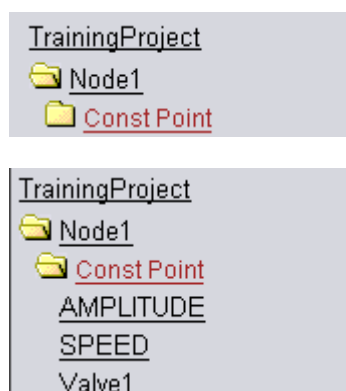
Figure 5.6 – Example Discrete constant point tag named VALVE1

11. Press Submit when finished entering data for **Valve1**.
12. To make changes to your Constant Point Tags, select Const Point List.
13. Select Update hyperlink for the Tag you want to Change.

Add Const Point				
Node : TrainingProject • Node1				
Tagname	Tag Type	Description	Update	Delete
AMPLITUDE	A	Size of SINE wave	Update	Delete
SPEED	A	SINE oscillation rate	Update	Delete
Valve1	D	Simulated Control Valve #1	Update	Delete
TagType: A - Analog; D - Discrete; T - Text				

Figure 5.7 Constant Point Tag list

14. Select the Folder next to Const Point to expand the List.



15. Select AMPLITUDE to review the Tag properties.

Tag Property	Delete
Tag : TrainingProject • Node1 • AMPLITUDE	
Tag Type	Constant (analog)
Tag Name	AMPLITUDE
Description	Size of SINE wave
Scan Type	Constant Scan
Log Data	No
Data log db	3 %
Write Action Log	Yes
Read Only	No
Keep Previous Value	No
Initial Value	0
Security area	0
Security level	0
Span high	100
Span low	-100
Output High Limit	100
Output Low Limit	0
Eng Unit	
Display digits(integer)	3
Display digits(fraction)	2
Log To ODBC Frequency	0 Minutes
Array Size	0

Figure 5.8 – Constant Point Tag Properties for example tag AMPLITUDE

16. Select **Tag Properties** to make changes.

Create Discrete Tag for a FAN to rotate later

17. Create a second Discrete Constant Point Tag named FAN101.

Parameter	ConDis	Constant (discrete)
Alarm	No Alarm	
Tag Name	Fan101	
Description	Fan Start 101	
Scan Type	Constant Scan	
Log Data	☐ Yes ☒ No	
Data Log Dead Band	3	%
Write Action Log	☒ Yes ☐ No	
Read Only	☐ Yes ☒ No	
Keep Previous Value	☐ Yes ☒ No	
Initial Value	0	
Security area	0	
Security level	0	
State 0	OFF	
State 1	ON	
State 2	NotUsed	

Figure – Create Discrete Constant Point Tag named FAN101

You should see four tags listed under ConstPoint:
AMPLITUDE, SPEEN, Valve1 and FAN101.

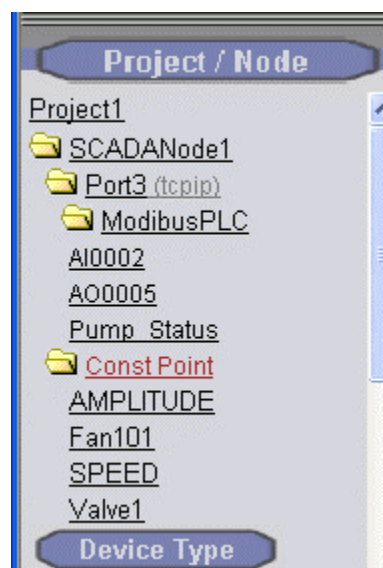
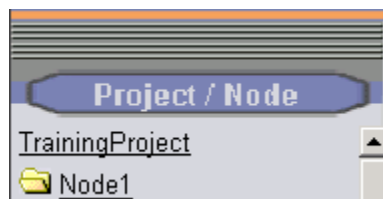


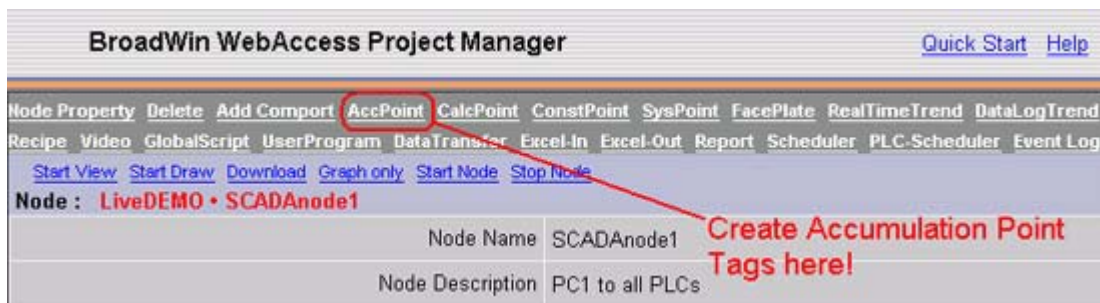
Figure – If you have completed the above correctly, these tags should appear in your project.

Task 2: Create accumulation point tag.

1. Select your SCADA Node from the list on the left of the Project Manager.

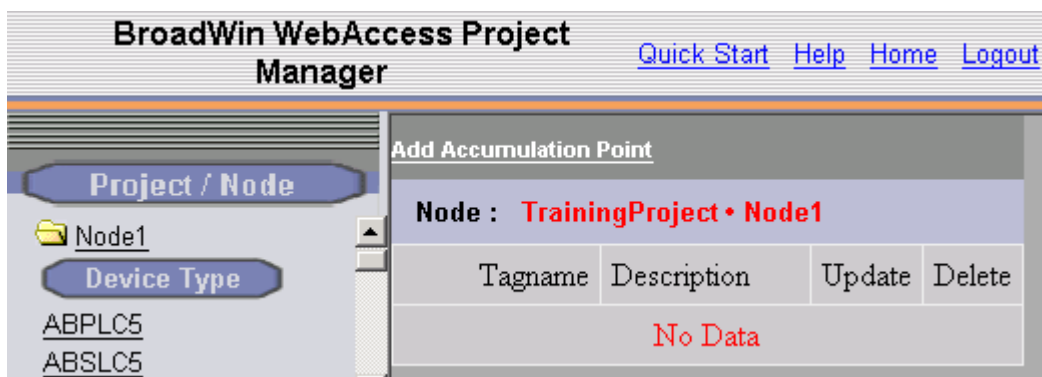


2. Click the **AccPoint** hyperlink in Project Manager.



18. Wait for the page to refresh.

19. Select the **Add Accumulation Point** hyperlink.

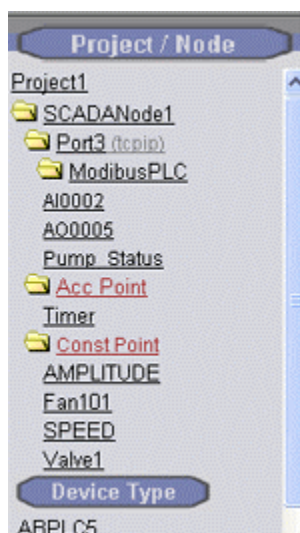


20. Configure the following accumulation point.

Tag name	Tag fields
TIMER	Accumulation point Description: Input to SINE Source tag name: SPEED Accumulate frequency: 1 once per second Divide factor: 1 Span Hi: 3600 Span Lo: 0 Value Limit: 3599 All other parameters: use default

Accumulation Point List	
Create New Tag [Cancel]	
Tag Type	Accumulation
Alarm	No Alarm ▼
Tag Name	Timer
Description	Input to Sine
Source tag name	SPEED
Accumulate frequency	1 Second
Divide factor	1
Log Data	☐ Yes ☒ No
Data Log Dead Band	3 %
Write Action Log	☒ Yes ☐ No
Read Only	☐ Yes ☒ No
Keep Previous Value	☐ Yes ☒ No
Initial Value	0
Security area	0
Security level	0
Span high	3600
Span low	0
Output High Limit	3600
Output Low Limit	0
Eng Unit	counts
Display digits(integer)	4
Display digits(fraction)	0
Value Limit	3599

21. Press **Submit** when finished.
22. Review your changes by selecting the **Acc Point** Folder.
23. Select **TIMER** from the list.



24. The tag properties page opens.

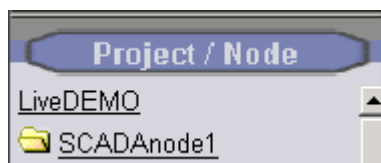
Tag Property Delete	
Tag : Project1 • SCADANode1 • Timer	
Tag Type	Accumulation
Tag Name	Timer
Description	Input to Sine
Source tag name	SPEED
Accumulate frequency	1 Second
Divide factor	1
Log Data	No
Data Log Dead Band	3 %
Write Action Log	Yes
Read Only	No
Keep Previous Value	No
Initial Value	0
Security area	0
Security level	0
Span high	3600
Span low	0
Output High Limit	3600
Output Low Limit	0
Eng Unit	counts
Display digits(integer)	4
Display digits(fraction)	0
Value Limit	3599

25. Select **Tag Property** to make changes to the **Timer** tag.

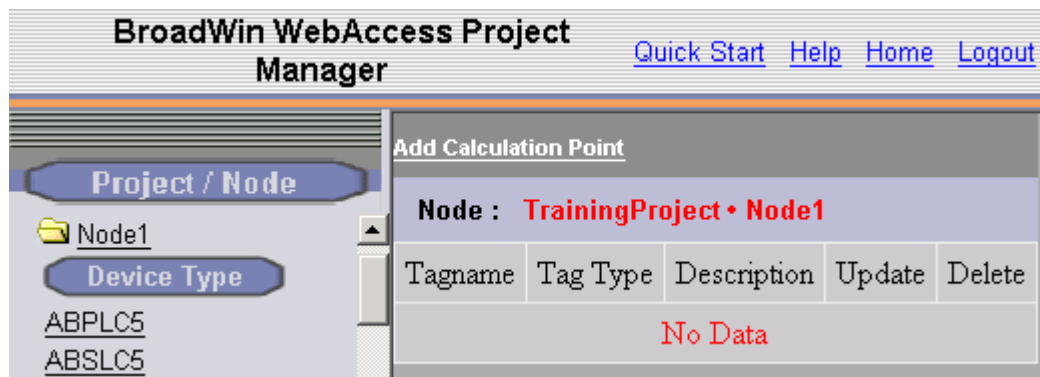
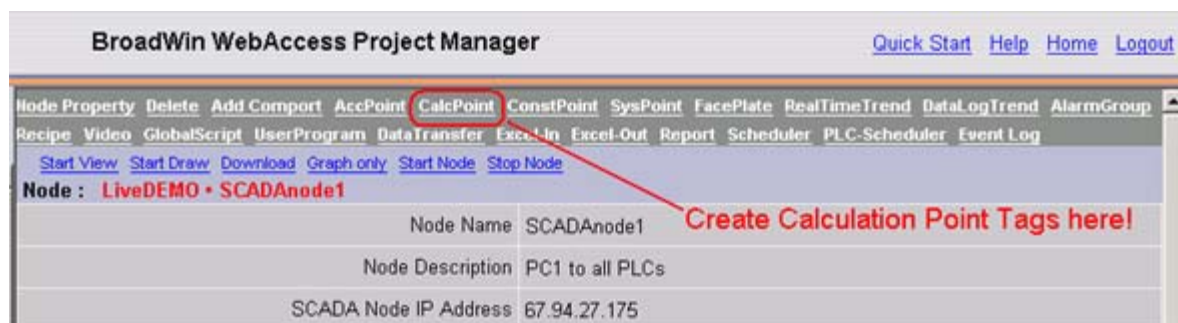
Task 3: Create calculation point tags.

Configure the following calculation points.

1. Select your SCADA Node from the list on the left of the Project Manager.



2. Click the CalcPoint hyperlink in Project Manager



3. Click the **Add Calculation Point** hyperlink.

4. Create New Tag page opens.

Calculation Point List	
Create New Tag [Cancel] Submit	
Parameter	CalcAna v Calculation (analog)
Alarm	Alarm v
Tag Name	SINE
Description	Sine Wave
Evaluate frequency	1 v Second
Log Data	☒ Yes ☐ No
Data log db	.2 v %
Write Action Log	☒ Yes ☐ No
Read Only	☐ Yes ☒ No
Keep Previous Value	☐ Yes ☒ No
Initial Value	0 v
Security area	0 v
Security level	0 v
Span high	1 v
Span low	-1 v
Output High Limit	1 v
Output Low Limit	-1 v
Eng Unit	v
Display digits(integer)	1 v
Display digits(fraction)	2 v
Log To ODBC Frequency	0 v ☐ Second ☒ Minute
Formula	SIN(A*0.00175)*(B/100)
A	TIMER v
B	AMPLITUDE v

4. Enter the values as shown above or in the table below for the SINE calculation Tag.

Tag name	Tag fields
SINE	Parameter: CalcAna Description: Sine Wave Evaluate Frequency: 1 second Write Action Log: No Log Data: Yes Data Log Db: 0.2% Span high: 1

Span low: -1
Output High Limit: 1
Output Low Limit: -1
Display Digits (integer): 1
Display Digits (fraction): 2
Calculation: $\text{SIN}(A * 0.00175) * (B / 100)$
A: Timer
B: AMPLITUDE

5. Press **Submit** when finished entering information for the SINE tag.

Important! – You must press Submit to save the data and create the SINE tag.

6. Select **CalcDis** from the Parameter Pulldown List.
7. The Create New Tag page refreshes displaying fields for a Discrete Type tag.

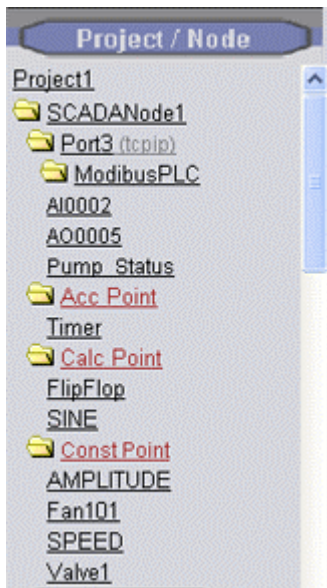
Calculation Point List	
Create New Tag [Cancel] Submit	
Parameter	CalcDis Calculation (discrete)
Alarm	No Alarm
Tag Name	FlipFlop
Description	Test if nonzero - flip from 0 to 1 to 0
Evaluate frequency	3 Second
Log Data	☐ Yes ☒ No
Data log db	3 %
Write Action Log	☒ Yes ☐ No
Read Only	☐ Yes ☒ No
Keep Previous Value	☐ Yes ☒ No
Initial Value	0
Security area	0
Security level	0
State 0	OFF
State 1	ON
State 2	NotUsed
State 3	NotUsed
State 4	NotUsed
State 5	NotUsed
State 6	NotUsed
State 7	NotUsed
Log To ODBC	☐ Yes ☒ No
Formula	A>0?0:1
A	FlipFlop
B	

8. Enter Values for the FlipFlop calculation point Tag.

Tag name	Tag fields
FlipFlop	Parameter: CalcDis Description: Test if nonzero - flip from 0 to 1 to 0 Evaluate Frequency: 3 seconds Initial Value: 0

State 0 OFF
 State 1 ON
 State 2 NotUsed
 Formula: A>0?0:1
 A: FlipFlop

9. Press **Submit** when finished entering information for the tag.
10. The **SINE** and **FlipFlop** tags should appear under Calc Point.



These tags should appear if you have followed the Exercises correctly up to now.

Task 4: Configure a System Point Tag

1. Select **SysPoint** hyperlink from SCADA Node Properties Page.



2. Select **ADD System Point**.

System Point List	
Create New Tag [Cancel] Submit	
Parameter	DevSTS Point (discrete)
Alarm	No Alarm
Tag Name	ModbusPLC
Description	Modbus Device Unit Status
Comport Number, Unit Number	3,1 (1-12,0-255)
Log Data	☒ Yes ☐ No
Data Log Dead Band	3 %
Write Action Log	☒ Yes ☐ No
Read Only	☒ Yes ☐ No
Keep Previous Value	☐ Yes ☒ No
Initial Value	0
Security area	0
Security level	0
State 0	OK
State 1	BAD

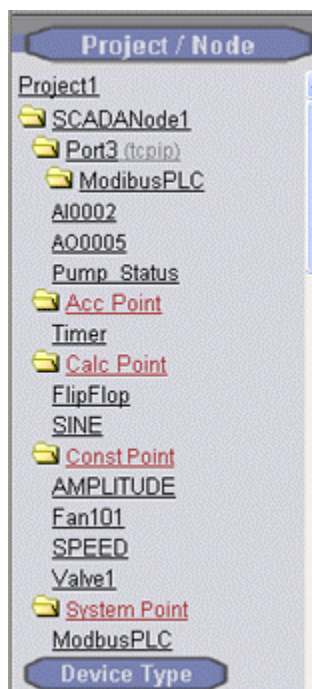
- From the Pull Down list Parameter, select a Parameter associated with the function you want to monitor. Select **DEVSTS**.

int - Parameter names for System Points are an abbreviation of the function. Pick a parameter, then read the Description that describes it's function better than the abbreviated parameter name.

- Select Alarm if you want the tag to generate an Alarm.
- Enter a Tag Name: **ModbusPLC**
- Optionally, modify the Description.
- Enter Comport Number and Unit Number: **3,1**

This assumes you created a Comport 3 and used Device Address 1 for the Modbus PLC.

- Modify Log Data, Log Deadband, Action Log, Previous Value, Security Area and Level, State Descriptors, Log to ODBC and Analog Alarm Limits and Discrete Alarms as per any IO tag.
- Press **Submit**.



If you created all the tags in the above exercises, the tag list should look like this.

9. Download the SCADA node to make changes take affect.

Task 5: Download to the SCADA Node

1. Select the SCADA Node under your Project Name in the Project/Node list.



(Figure 5-31).

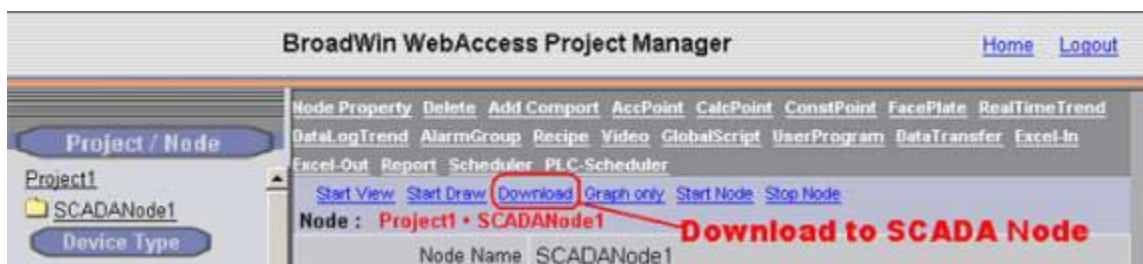


Figure 5-31 - SCADA Node Main page (Main.asp) - Download

2. Select **Download**
3. The Download Dialog Box pops open (Figure 5-32).



Figure 5-32 - Download and restart SCADA Node

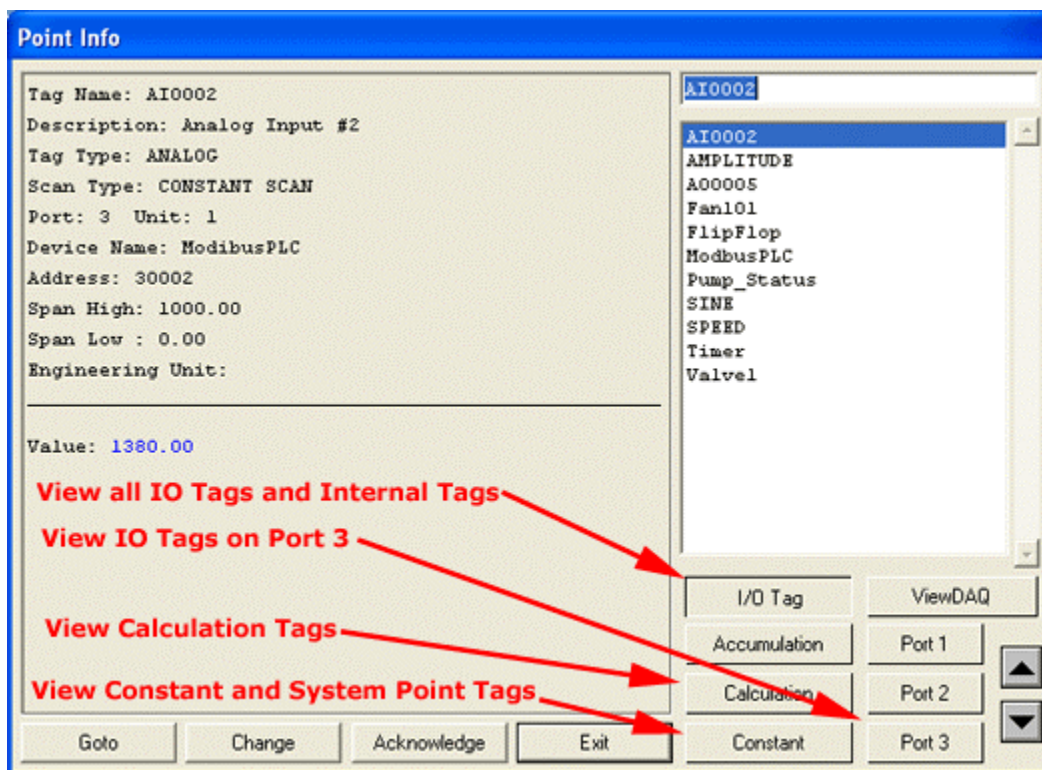
If you do not see download and RESTART Primary node, then the SCADA node was not running and you will need to start it manually using [Start Node](#).

4. When Node is started, select Close Window (Figure 5-33).

Download to the SCADA Node will temporarily STOP the SCADA Node. Users will see a blank screen. Trend and reports will stop collecting data. Communications to field devices will stop.

Task 6: Verify new Tag configurations in VIEW.

1. Download the SCADA Node.
2. Start the SCADA Node
3. Start VIEW.
4. Open the Point Info List and use the filter buttons to check the values of the points configured. The **Point Info Dialog Box** is opened using:
 - Pressing the  icon on the Toolbar.
 - Pressing **Ctrl + F5** on the Keyboard.
 - **Right Click -> Goto -> Point Info** (ViewDAQ users skip the right click)
5. View **Constant** Points



Constant Point Tags and System Tags appear as IO Tags in Point Info. Constant shows only Constant Tags and System Point Tags for the SCADA Node.

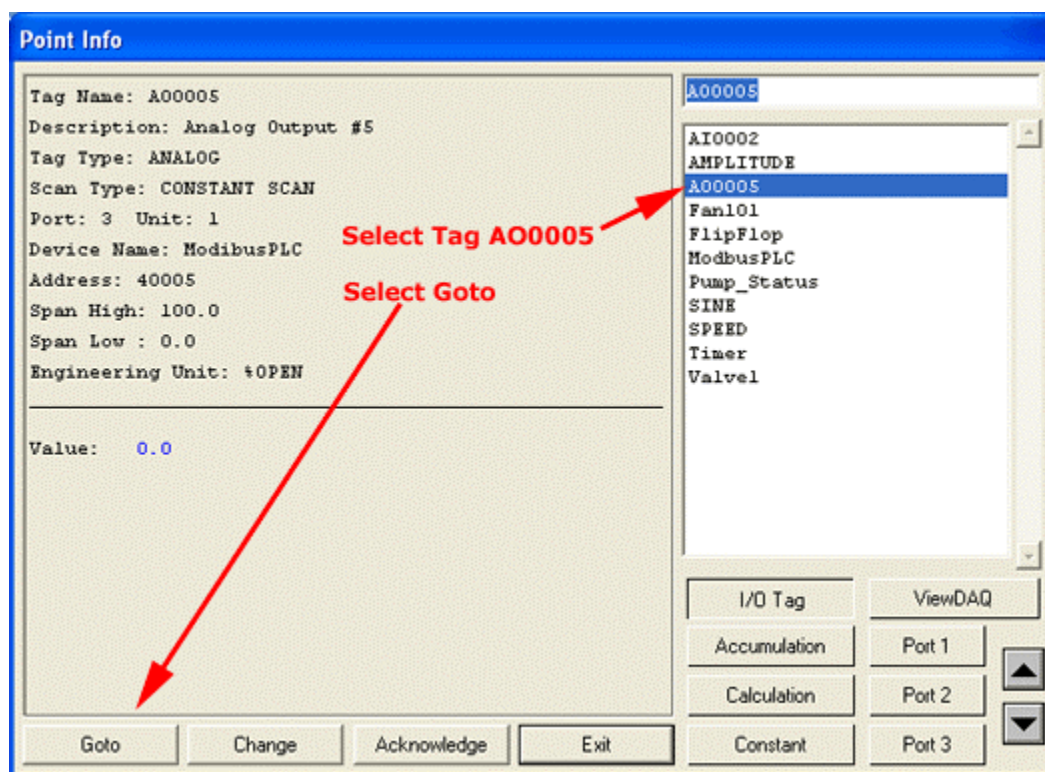
6. View **Accumulation** Tag

Accumulation Tags appear as I/O Tags from all SCADA nodes. Use the Accumulation button to view Acc Tags on this SCADA node.

7. View **Calculation** Tags.

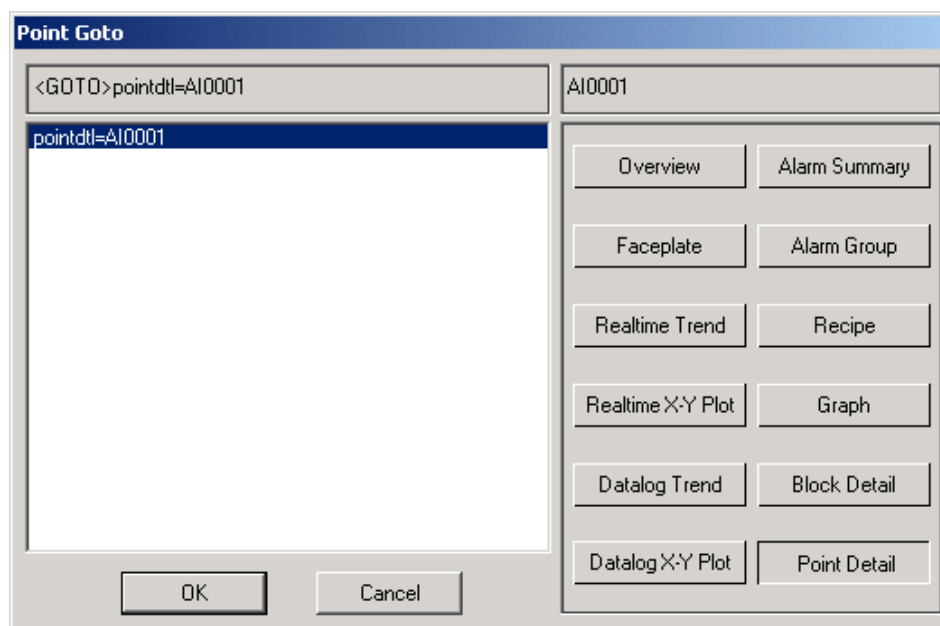
Calculation Point Tags appear as I/O Tags (from all SCADA Nodes) or using the Calculation Button to view Calc Tags on this SCADA node

8. In the Point List, select a point **A00005**.



9. Select the **Goto** button .

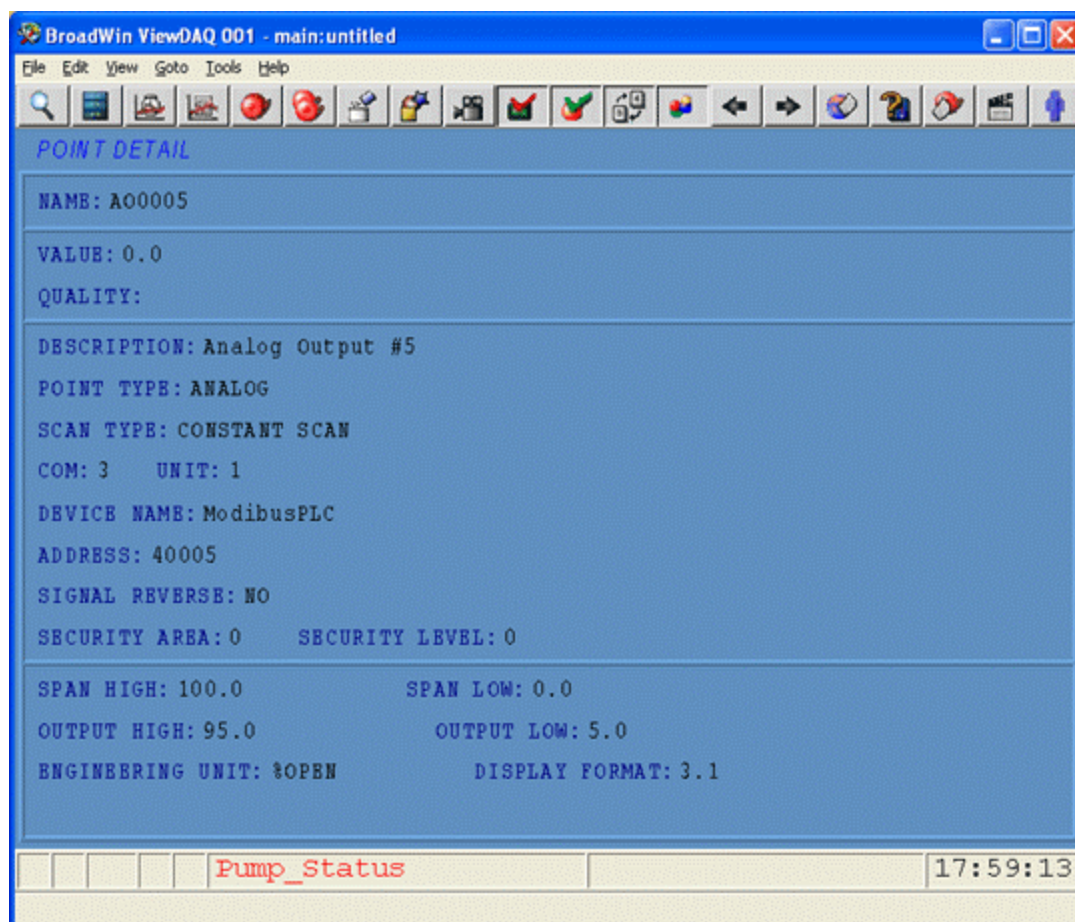
10. The **Point Goto** Dialog Box opens.



11. Select **Point Detail** button.

12. Select **OK**.

13. Check the tag fields in the point detail displays.



14. Open the Point Info List and use the filter buttons to check the values of the points configured. The **Point Info Dialog Box** is opened using:

- Pressing the  icon on the Toolbar.
- Pressing **Ctrl + F5** on the Keyboard.
- **Right Click -> Goto -> Point Info** (ViewDAQ users skip the right click)

15. Select **ViewDAQ** button

Note - %DAQ system tags are listed after any local screen tags.

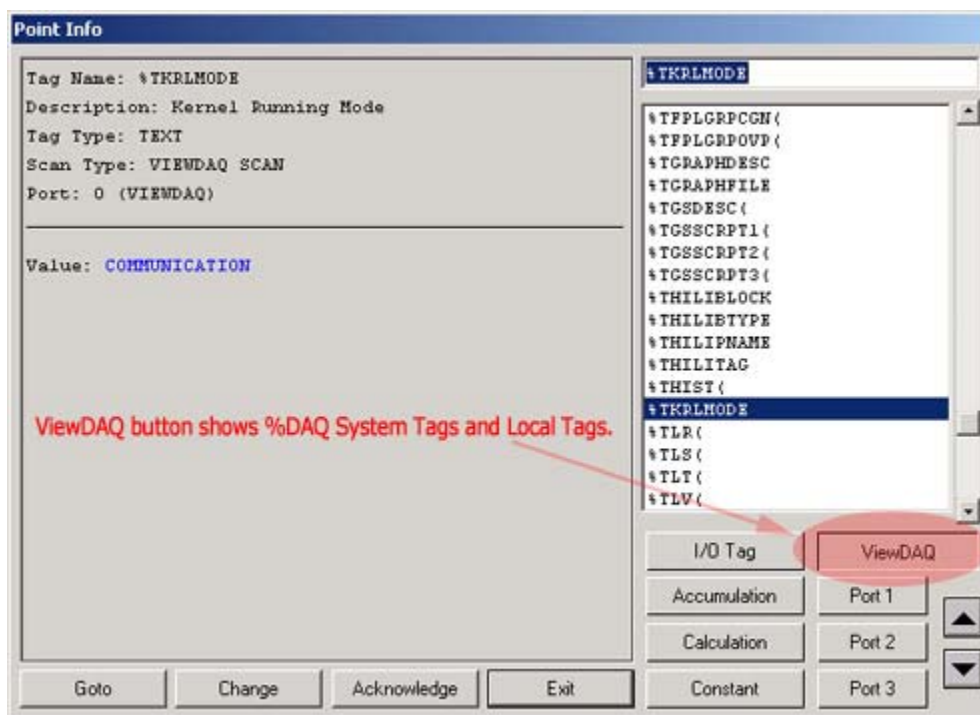


Figure - ViewDAQ button in Point Info Dialog Box to see %DAQ system Tags

16. Scroll down to %TKRLMODE. This shows the Simulation or Communication mode
17. Scroll Down to %DKRLMODE. This shows the mode and you can Change the mode here.
18. Scroll to %ACOMST(
19. Enter 3) to make it **%ACOMST(3)**. This shows the Status of Com Port 3. This is similar to the DEVSTS System point tag created earlier (ModbusPLC).

For more information about %DAQ tags, see section [4.9 System Tags](#) in the Engineering Manual.

Section 6 - Trending

Training Notes

Three types of trending are available in WebAccess:

- Real-time trends - display data acquired during in real-time. Once data scrolls off the screen, it is lost.
- Data Log Trends - display both real-time and historical data. Data is stored on the Hard Drive of the SCADA node for later retrieval.
- Log to ODBC databases on the Project Node. Access is the default. SQL Server, Oracle, and MySQL are also supported.

Real-time trends do not take Disk space and are often used for Tuning Parameters and other short term trending. Real-time trends are also useful for HMI and Touch Panels with limited disk space. Any Tag can be viewed using Real-time trend with no planning before hand.

Data Log Trends save the data indefinitely or until you schedule Data Log Maintenance to delete or archive the files after user-defined interval (Days, months, or years). An Engineer must enable Data Logging for each Tag in the Project Manger before tags can be viewed in Data Log Trends.

Historical data also can be recorded to ODBC databases or spreadsheet in real-time (Real-time ODBC option required) using Log to ODBC. This will be covered later in the Reports & Logs section.

Data Log and Real-Time trends can be converted to an HTML file, then "Copied and Pasted" to EXCEL or WORD. Use **Edit -> Export Data** to create the HTML report of the Trend. This creates an "on-the-fly" report. .

Each trend display can show data of up to 12 data points. Analog and Discrete tag types can be trended. Tags can be added without losing data from other tags. At least one Real-time Trend Group and at least one Historical Trend Group must be configured to see Trend Data. DataLog must be enabled for each Tag for Historical Trending. Seconds Data can be disabled to reduce Disk Space.

Data Logging

WebAccess collects each tags DATA in a separate file that allows remixing tags on a DATALOG trend without losing past data.

You must enable DATA LOGGING for each TAG in the Tag configuration using Tag Properties (see [Analog Tag Properties](#) or [Discrete Tag Properties](#)).

Log Data	☒ Yes ☐ No
Data Log DB	1

Log Data in Tag Properties is Data Logging enabled. A file will be created for this Tag and a record entered once a second, if the Dead Band is exceeded.

Data Log DB is the Dead Band used to reduce file size of the Data Log. The Tag's value must change more than the Dead Band in order for a record to be added to the Data Log File.

You can Data Log Analog and Discrete (e.g. Digital) Tags. You cannot Data Log text-type Tags.

To view Data Log Trends, you should create at least one **Data Log Trend Group**. A maximum of 12 tags can be viewed in one Trend Group simultaneously; but, you can add or replace Tags "on the fly" in any Trend Group without losing historical data. The Data Log Trend Group uses a pre-built template display. You need only enter the Tag names in a list to build a Trend Group.

You should also check that the Deadband for Data Logging is set appropriately. Too large of a Deadband will prevent any data from being logged. Too small a Deadband will result in unnecessary recording of values that have not changed and will waste disk space.

Use [Data Log Maintenance](#) to schedule File Management for Data Log Trend Files. Files can be Archived to another drive and/or deleted.

The log files are located on the SCADA node. Typically, the default path is

C:\WebAccess\Node\projectnameNodename\log

It is recommended to specify another path to reduce the time for re-installing software. This is done in SCADA Node Properties, [Data Log Folder](#). WebAccess modifies the security settings of all files in drive:\WebAccess during Node software installation. A large number of Data Log files will greatly increase software installation.

Data Log Trend recording

The actual number of tags that can be Data Logged by a SCADA node is dependent on:

- Processor Speed (CPU Speed)
- Hard Disk Access Time

- Processor Load (due to other tasks like scripts, schedules, communications, calculation tags).
- Scan Rate of the Communication Port

A guideline is 500 tags/second for a 1.8 GHz Pentium IV processor using an IDE disk controller. If your Scan rate is every 3 seconds, then you could data log about 1500 tags. Increasing the deadband to reduce the number of changes/second could increase this number of tags data logged. These assume the worse case scenario that there is no deadband or that the tags exceed the deadband every scan cycle.

500 tags/second scan rate

1000 tags / 2 second rate

2000 tags / 4 seconds rate

The use of a deadband will result in recording only significant changes, effectively reducing the number of value changes recorded per scan (and increasing the number of Tags that can be data logged).

It is recommended to use SCSI drives for data logging. A separate Data Log drive can be specified under SCADA node properties [Data Log Folder](#).

Data Log Trend Disk Space

Real time trends never store data on the hard drive.

Data Log Trends record Data to the Hard Drive of the SCADA Node.

Data Log Trend records 10 bytes per sample on the SCADA node. If you are sampling 1000 tags every 1-second and you are using NO deadband, then it will be:

$500 \text{ tags} * 10 \text{ bytes/sample} * 1 \text{ scan/sec} * 3600 \text{ samples/hour} * 24 \text{ hours/day} * 30 \text{ days/month} * 1/1024 * 1/1024 * 1/1024 = 12 \text{ Gigabytes in a month.}$

$500 \text{ tags} * 10 \text{ bytes/sample} * 1 \text{ scan/sec} * 3600 \text{ samples/hour} * 24 \text{ hours/day} * 365 \text{ days/year} * 1/1024 * 1/1024 * 1/1024 = 146.9 \text{ Gigabytes in a year.}$

$500 \text{ tags} * 10 \text{ bytes/sample} * 1 \text{ scan/sec} * 3600 \text{ samples/hour} * 24 \text{ hours/day} * 1/1024 * 1/1024 = 412 \text{ Megabytes in a day.}$

If a deadband is used, it will be less. If you assume the tags exceed deadband only 50 percent of the time (every 2 seconds), it will be

$12 * .5 = 6 \text{ Gigabytes / month / 500 tags}$

$146.9 * .5 = 73.5 \text{ Gigabytes / year / 500 tags}$

$412 * .5 = 206 \text{ Megabytes / day / 500 tags}$

If a 5 second scan time is used:

$500 \text{ tags} * 10 \text{ bytes/sample} * 1 \text{ scan/5 sec} * 3600 \text{ samples/hour} * 24 \text{ hours/day} * 365 \text{ days/year} * 1/1024 * 1/1024 * 1/1024 = 29.4 \text{ Gigabytes in a year.}$

The **Log Data Maintenance** feature in WebAccess will **archive** Data Log Trend files to a network folder or mass storage device AND will **ERASE** files that are older than a user-defined period on the local hard drive of the SCADA Node. Log Data Maintenance will also archive and delete expired (old) records from the ODBC Log databases on the Project Node. (See [Log Data Maintenance](#) for more information). The Log Data Maintenance will prevent your disk drive from filling up if used properly. In the above examples, if Log Data Maintenance were set for 30 Days would require only 9 Gigabytes of Disk space for data log trend files for 500 tags.

Reference

Engineering Manual , [Section 6. Data Logging & Trends](#)

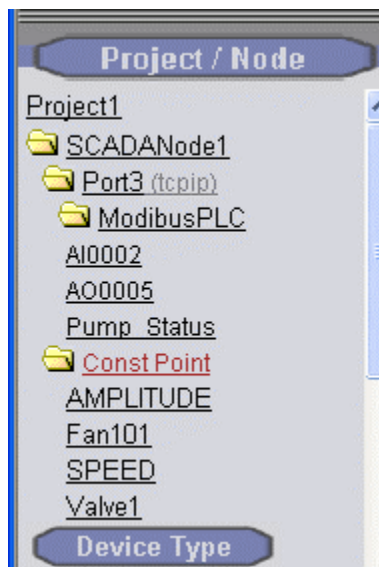
Operator Manual, [Section 5.5 Trends](#)

Exercise

In this exercise, you will practice creating real-time and historical trend groups, and using the various functions in the VIEW trend displays.

Task 1: Enable Data Logging for Tags.

1. Log in to Project Manager.
2. Select your Project.
3. Select your SCADA Node from the list on the left of the Project Manager.



4. Click the folder icon next to the Port (**Port 3** in the example) to expand the list of Devices.
5. Click the Folder icon next to the PLC to expand the List of Tags. (**ModbusPLC** in the example)

6. Select the Tag (**AI0002** in the example)
7. Select the **Tag Property** hyperlink.

Tag Property Delete	
Tag : TrainingProject • Node1 • 3 • DemoPLC • AI0002	
Tag Type	Point (analog)
Tag Name	AI0002
Description	Analog Input #2

8. The Update Tag page opens.

Update Tag [Cancel]	
Tag Type	Point (analog)
Alarm	No Alarm
Tag Name	AI0002
Description	Analog Input #2

9. Check **Yes** for **Log Data**.
10. Make **Data Log DB** (DeadBand) **1**%.

Log Data	☒ Yes ☐ No
Data log db	1 %

11. Press **Submit**.
12. Repeat for **AO005** and optionally other IO Tags on this PLC.
13. Expand the List of Accumulation Tags by clicking the **Acc Point** Folder ICON.

 Acc Point TIMER
--

14. Select **TIMER** tag.
15. Select **Tag Property**.
16. Check **Yes** for **Log Data**.
17. Press **Submit**.
18. Expand List of Calculation Tags by clicking the Folder icon next to **Calc Point**.

 Calc Point FlipFlop SINE

19. Select **SINE** tag.
20. Select **Tag Property**.
21. Check **Yes** for **Log Data**.
22. Make **Log DB** (deadband) = **0.2 %**
23. Press **Submit**.

Task 2: Add Data Log Trend Group

1. The **SCADA Node**. The SCADA Node Main Page opens.

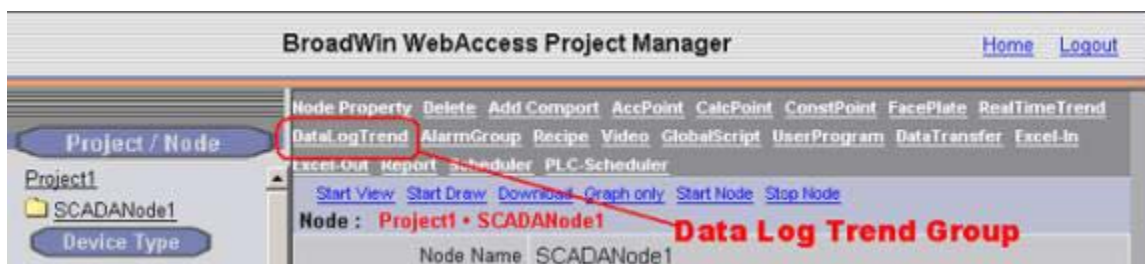


Figure - Data Log Trend Group - Project Manager

2. Select **DataLog Trend**.

The **Data Log Trend Display Group List** Page appears.

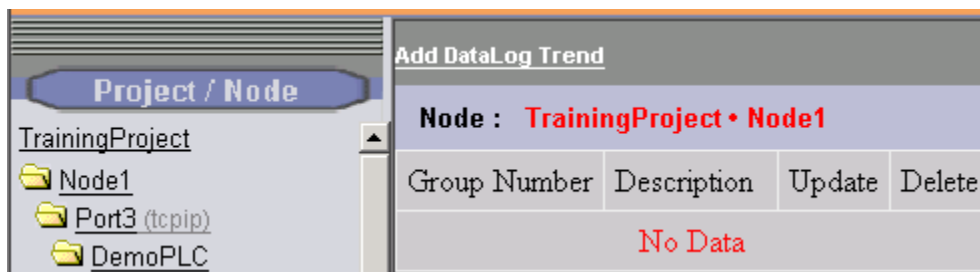


Figure - Add Data Log Trend Display group

3. Select **Add DataLog Trend**.
4. The **Create New DataLog Group** appears.

DataLog Trend List

Create New DataLog Trend Group [Cancel] [Submit]

Group Number	1		
Description		Tag List	
Time Span	6 minutes		
Tag Name 1	AI0002	Plot Type 1	0 0:L
Tag Name 2	Timer	Plot Type 2	0 0:L
Tag Name 3		Plot Type 3	0 0:L

Tag List dropdown content:

- ==Analog Tag==
- AI0002
- ==Discrete Tag==
- ModbusPLC
- Pump_Status
- ==Accumulation Tag==
- Timer
- ==Calculation (Analog) Tag==
- SINE

Figure 6-5 Create Data Log Trend Display Group

- Enter a Unique **Group Number** (between 1 and 1000). This is how the Group will be ordered in the Data Log Trend Group Dialog Box in VIEW and identified by Operators and Users.
 - Enter a **Description** for the group. This will appear in the Data Log Trend Group List Dialog Box seen by users and operators in VIEW.
 - Select a **Time Span** from the Pulldown menus. This is the default time span that appears when first opening the Trend Display. This feature allows the viewing of data at a sample frequency different than the recording frequency. The intent is to allow users to adjust the time span across the screen. This does not affect the actual data recording rate. See ([4.2.15 Log Data](#), [4.2.16 Data Log DB](#), and [3.2.23.1 Disable Data Log Seconds recording](#)).
- 6 min span across the display uses 1 second sample intervals.
 12 min span across the display uses 2 second samples intervals.
 30 min span across the display uses 5 second samples intervals.
 1 hour span across the display uses 10 second samples intervals.
 4 hour span across the display uses 40 second samples intervals.
 6 hour span across the display uses 1 minute samples intervals.
 12 hour span across the display uses 2 minute samples intervals.
 1 day span across the display uses 4 minute samples intervals.
 2 day span across the display uses 8 minute samples intervals.
 1 week span across the display uses 28 minute samples intervals.
 15 days span across the display uses 1 hour samples intervals.
 1 month span across the display uses 2 hour samples intervals.
 3 months span across the display uses 6 hour samples intervals.
 1 Year span across the display uses daily samples intervals.
- Select the empty field next to **Tag Name 1**.
 - Open the Pull down list by clicking on Tag List ([Figure 6-5](#)). This shows the names of all Analog Tags with [Log Data](#) and Discrete Tags with [Log Data](#) set to yes.

10. Scroll down the Tag List. Click the Tagname desired. The Tagname should appear on the Tag Name 1 field. For example, select **AI0002**.
11. Select the empty field next to **Tag Name 2**.
12. Repeat steps 9 to 12.
13. If you did not enable Data Log for a tag, you can enable data Log later and enter the tag name now. You can Type **Tag names** and **Blocks**. You can also **copy and paste** Tag Names and Block Names from the **Left Frame** of your browser.
14. Select the opening **Plot Type** that will appear for each tag.

Users can change this from VIEW in combination with the Time Period Chosen (Seconds, Minutes Hours, and Days)

- i. **LAST** shows the last recorded value of the Tag during the time period.
- ii. **Average** shows the average value.
- iii. **Minimum** will show the smallest value.
- iv. **Maximum** will show the largest value.

If seconds are the time period chosen by the user, the Last value is always shown. Seconds is the default period chosen. Your entry here will affect the Minutes, Hours and Day time periods.

15. Click **Submit** when you are finished.



Add DataLog Trend Download			
Node : Project1 • SCADANode1			
Group Number	Description	Update	Delete
1	Training	Update	Delete

Figure 6-6 – Data Log Trend Group List

Task 3: Add RealTime Trend Group

1. Select the **SCADA Node**.
2. The SCADA Node Main page opens.

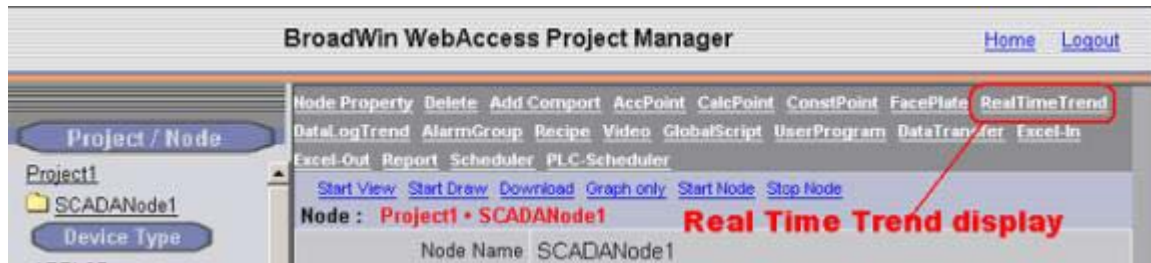


Figure 6-9 Real Time Trend display Group - Project Manager

3. Select **RealTime Trend**.

The **RealTime Trend List** Page appears.

Add RealTime Trend			
Node : LiveDEMO • SCADANode1			
Group Number	Description	Update	Delete
1	Temporary Data	Update	Delete

Figure 6-10 Real Time Trend List - Project Manager

4. Select **Add RealTime Trend**.
5. The **Create New RealTime Trend Group** appears.

RealTime Trend List

Create New Realtime Trend Group [Cancel] [Submit]

Group Number	2		
Description	Tuning Trends		Tag List
Sample Rate	5 Second		
Tag Name 1	SLOT4AO_0	Tag Name 2	
Tag Name 3		Tag Name 4	
Tag Name 5		Tag Name 6	
Tag Name 7		Tag Name 8	
Tag Name 9		Tag Name 10	
Tag Name 11		Tag Name 12	

Tag List: **Analog Tag**
 AC12_OAT
 AC3_LABZAT1
 AC3_northZAT
 AC3_SOUTHZAT
 AI2005
 AIC183MEAS
 AIC183OUT
 AIC183SP
 AMPLITUDE
 BAD_ID_EXAMPLE

Figure 6-11 Create Real Time Trend Display

6. Enter a Unique Group Number (between 1 and 1000). This is how the Group will be ordered in the RealTime Trend Dialog Box in VIEW and identified to Operators and Users.
7. Enter a **Description** for the group. This will appear in the RealTime Trend Group List Dialog Box seen by users and operators in VIEW.

8. Enter a **Sample Rate**. This is the frequency of updating the Trend Display with new Data. RealTime Trends are fixed at 240 samples. Sample Rate for Realtime Trends range from **1 to 180 seconds**.

If 1 second interval and 240 samples = $1 \times 240 = 240$ seconds (4 minutes)

If 180 second interval and 240 samples = $180 \times 240 = 43200$ seconds

9. Select the field next to Tag Name 1.
10. Open the Pull down list by clicking on Tag List ([Figure 6-11](#)). This shows the names of all Analog Tags and Discrete Tags.
11. Scroll down the Tag List. Click the Tagname desired. The Tagname should appear on the Tag Name 1 field.
12. Repeat for Tag Name 2 to 12.
13. You can Type Tag names and Blocks (BLOCK:PARAMETERs). You can also copy and paste Tag Names and Block Names from the Left Frame of your browser.
14. Click **Submit** when you are finished.

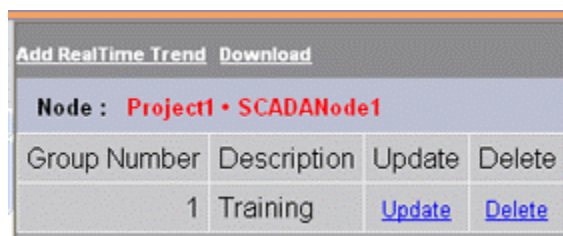
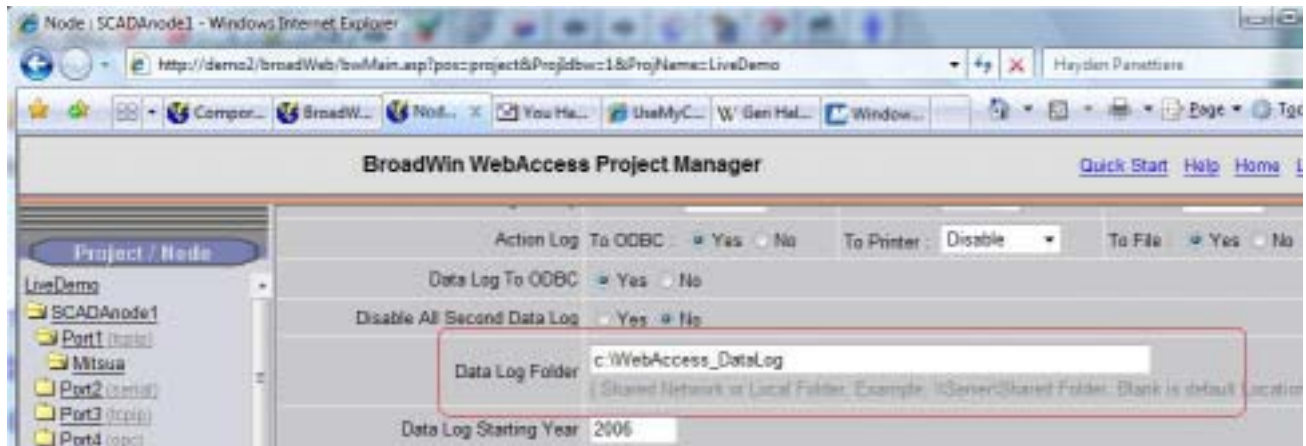


Figure 6-12 – Real Time Trend Group

Task 4: DATA Log Folder

Because Datalogging can create many files (one per day per tag). It is recommended to create a folder outside of c:\Webaccess to shorten the time to do software updates and possibly off the main Hard Drive to prevent filling the hard drive and corrupting your system

1. Go to Node Properties
2. Scroll down to DataLg Folder.



3. Enter a Directory outside of Webaccess. For example C:\WebDATALOG or D:\DATALOG
4. You may also want to Disable ALL Seconds Data. For Building Automation one second data can rapidly fill your hard drive. One minute will be the fastest if this option is enabled to Yes.
5. Press Submit.

Task 5: Download changes to the SCADA Node

Because we made changes to Tags (i.e. enabled Data Logging) we need to do a download and restart of the SCADA node.

Note that if we had only modified the Trend Groups, and not Tags, we could have downloaded from the Dlog Trend list (figure 6-10) and from the Real-Time Trend List (Figure 6-12). But because we changed the tags, we need to do a full download.

1. Select the SCADA Node under your Project Name in the Project/Node list (Figure 6-31).

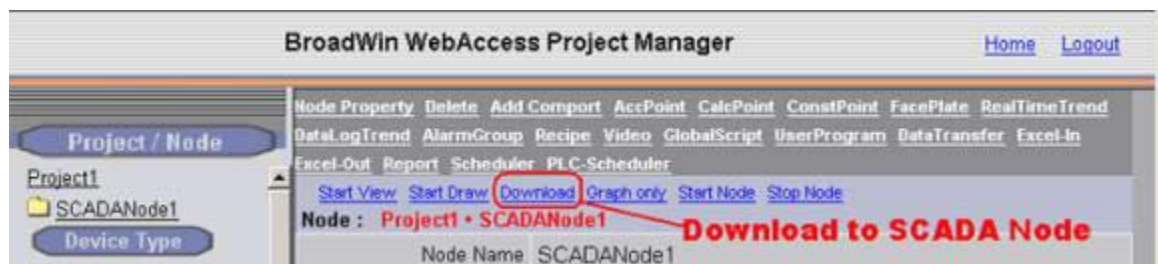


Figure 6-31 - SCADA Node Main page (Main.asp) - Download

2. Select **Download**
3. The Download Dialog Box pops open (Figure 6-32).
4. When download is finished, select **Close Window** (Figure 6-32).

7. When Node is started, select Close Window (Figure 6-33).

Download to the SCADA Node will temporarily STOP the SCADA Node. Users will see a blank screen. Trend and reports will stop collecting data. Communications to field devices will stop. When the SCADA restarts, Alarms will be re-set to unacknowledged.

Task 5: VIEW

Continuing from Step 7 in the previous section (or see Eng, Man., section 2.3.6 [Download the SCADA Node](#)) and assuming VIEW is still running from the previous section

8. The MAIN graphic display for your system appears. The default MAIN graphic supplied with WebAccess is shown below (Figure 6.38). Yours will probably look different

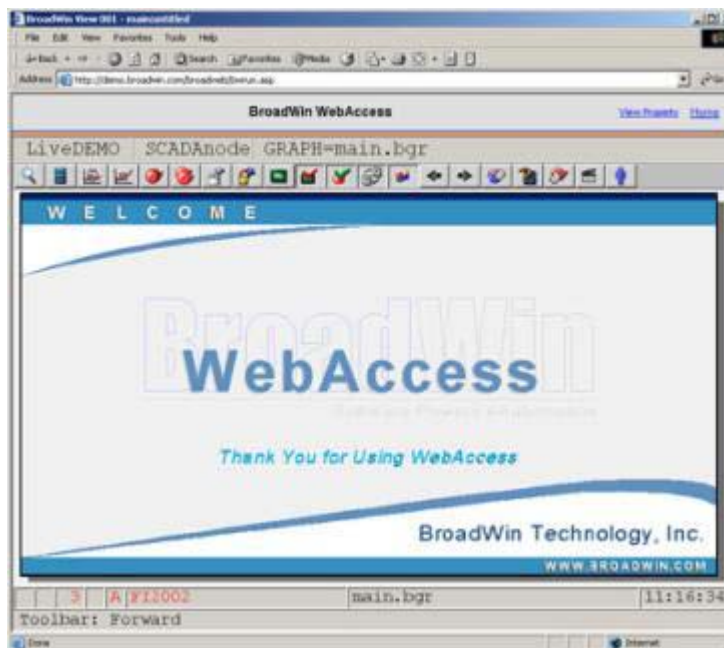


Figure 6.38 - default Main graphic display

The MAIN graphic display appears with navigation frame on the left if there are multiple SCADA Nodes or multiple Projects.

Main Graphic is a user built display and yours may look different. The Main Graphic in the WebAccess Live Demo (<http://demo.broadwin.com> or <http://67.94.27.175>) is shown below.

Task 6: View Data Log Trend Group

1. Open the **Data Log Trend Pop-up Dialog** Box with a list of all these Data Log Trend Groups.

Select the [Standard Toolbar button](#)



Or, Press the **F4** key on the keyboard

Or **Right Click -> Goto -> Data Log Trend** (in a [web browser VIEW](#))

Or on the ViewDAQ [menu bar](#), select **Goto -> Data Log Trend**

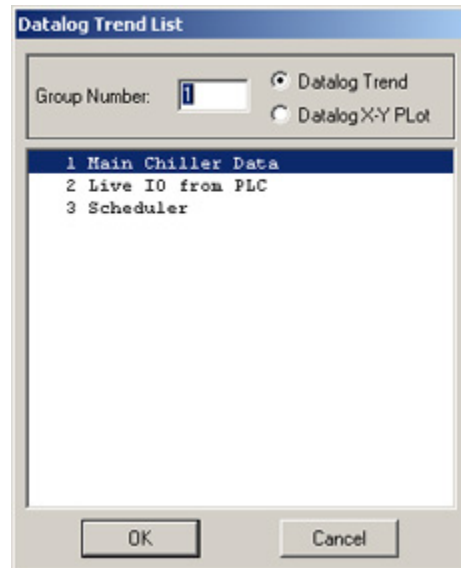


Figure 6.40 - Data Log Trend List Box

2. Select **Trend 1** from the List Box (figure 6.40).
3. Select **Datalog Trend**. Trends are plotted versus Time (the X-axis is Time), similar to a strip-chart recorder. (Figure 6.41)
4. Select **OK**.
5. Data Log Trend Display opens.

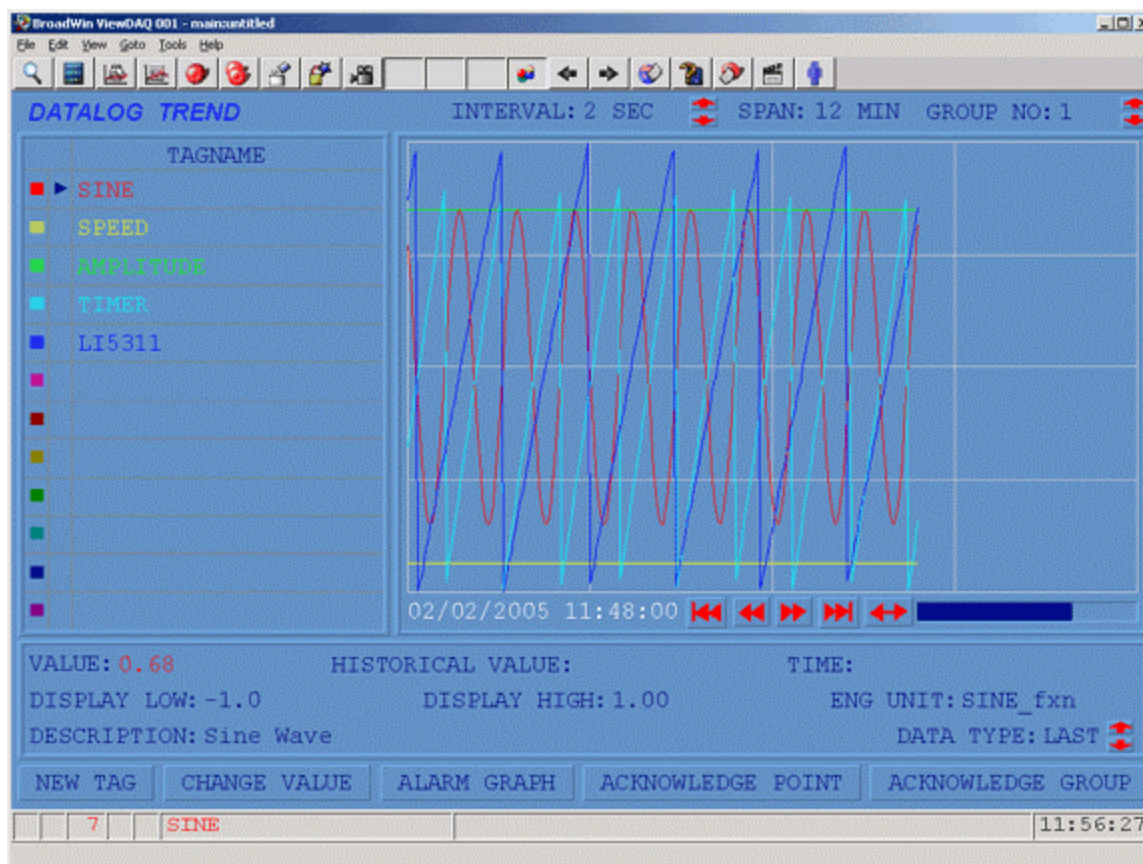


Figure 6.41 DataLog TREND

Note that no display building was required to view Trends.

6. Select the [Standard Toolbar button](#)



7. Select a Trend Group.
8. Select **Datalog X-Y Plot**.
9. An XY- Plot opens. Tags are plotted versus a selected Tag. (Figure 6.42) Any of the twelve tags can be selected as the X-axis; the other 11 tags are plotted on the Y-axis. Data Log Plots are commonly used to show a relationship between two tags).

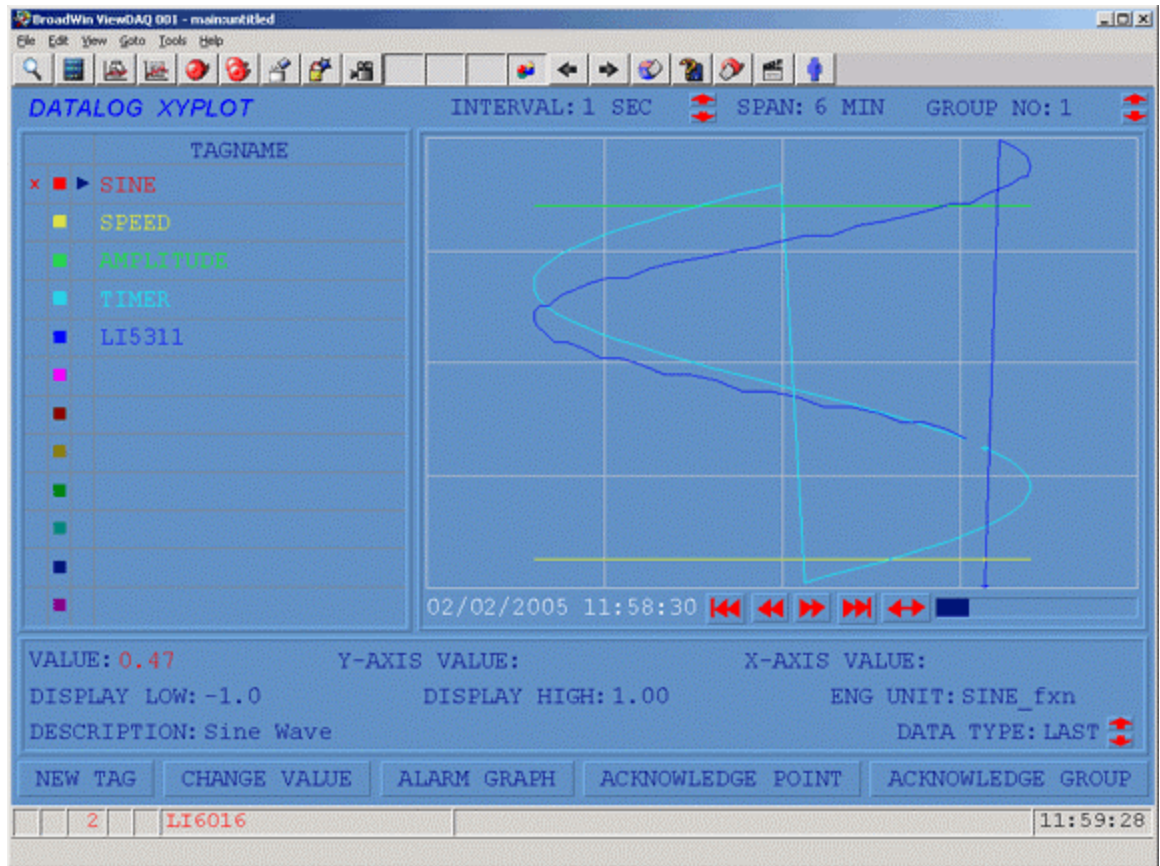


Figure 6.42 Data Log X-Y PLOT

Task 7: Data Log Trend Display controls

DATA log Trends use a single **Template Display** that is pre-built and supplied with WebAccess. There is no graphics building required. Up to 12 Tags can be viewed on a single Data Log Trend Display. There is no limit to the number of DataLog Trend Groups.

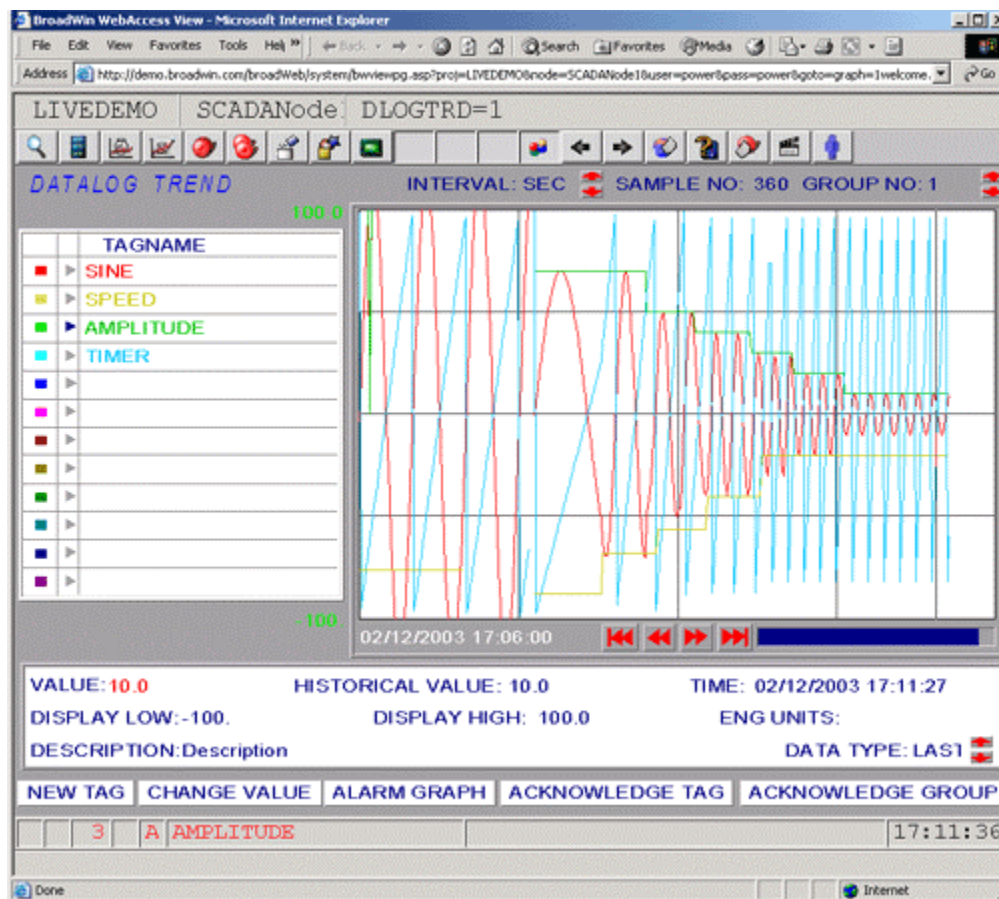


Figure 6-43 Customized Data Log Trend Display

Crosshair

Pick a spot on the Trend area. A crosshair line appears. The current **Value** of the tag, the **Historical Value** at the crosshair, and Time of the Crosshair appears.

To Change the Time Span of a Data Log Trend in View



Figure 6-44 2 Data Log Trend Interval: Seconds, Minutes, Hours, and Days

Use the UP/Down arrow keys next to **Interval** to change from Seconds, Minutes, Hour, and Day. This also changes the SPAN across the screen.

To Jump to a DATE using the Calendar the Time Span of a Data Log Trend in View



Figure 6-45 Data Log Trend: Change DATE

Use the Double-arrow button to open a Pop-up Dialog Box with a Calendar to jump to a new Date.

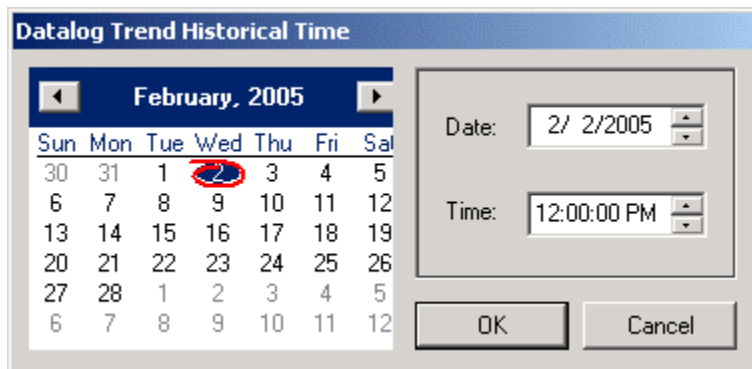


Figure 6-46 – Data Log Trend – Jump to a new Date

DataLog Trends allows users to shift trend data by specifying date and time from a popup menu dialog box. The time specified is not the new start time of the shifted trend data. Instead, the new start time will be calculated according the time specified and will be aligned automatically.

Note – The Data Log Trend Historical Time requires version 4.5 Candidate Build 4.5-2005.01.21 or later fro both SCADA Node and the Client Plug-in.

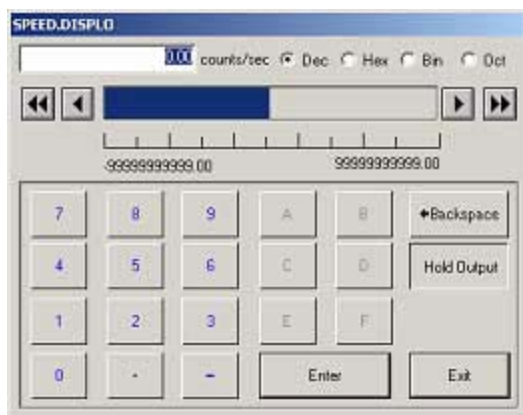
Data Type

Trends can display Average, Maximum, Minimum or Last value for the Minute, Hour and Day intervals.

Change the Display High and Low Span in View

By default, WebAccess uses the High Span and Low Span of the Tag. Users can change the Display High and Low Span to "zoom in" or "zoom out" of trend data.

1. Select a Tagname by clicking on the colored square.
2. Click **Display Low**
3. A Change Dialog Box opens



4. Type a new number for Display Low or use the ramp keys or slider.
5. Click Enter.
6. Repeat for Display High.

If you leave this Data Log Trend Group, the default Display Low and Display High will be used.

To Add a Tag (temporarily) to a Data Log Trend in VIEW

1. Select a field under Tagname by clicking on a colored square.
2. Click **New Tag**
3. A Dialog Box of Tags with Data Log enabled.
4. Select Tag Name.

If you leave this Data Log Trend Group, the Tag will disappear from the List.

If you select a field that already has a Tagname, the New Tag will temporarily replace that Tag until you leave, then return to this Data Log Trend Group.

To permanently add a Tag to a Data Log Trend Group, use the [Configuration Manager to Modify the Trend Group](#).

Change Sample Type to MAX, MIN, AVG or LAST

To change a Tag from LAST to MAX, you have to pick the tag from the left menu, then use the UP/down arrows at the bottom right to change to AVG or MAX or Min or LAST. This does one tag at a time so you can compare MAX of one tag to MIN of another. Also AVG, MAX, MIN only applies for time frames of 1 minute or 1 hour.

Change Value

The **Change Value** pushbutton at the bottom of Data Log Trend allows you to Change the Value of a Tag from the Trend Display.

1. Click a Tagname from the Trend

2. Click Change Value
3. The Change Value Dialog Box Opens.

If the user does not have the Area and Level Security required by the tag, a Login Dialog Box opens.

Alarm Graph

The Alarm Graph allows an operator to go directly to the Alarm Graphic assigned to the selected tag. The Tag must be in the unacknowledged alarm state and an Alarm Graphic must be configured for the tag. (we have not assigned any Alarm Graphics yet, so this button won't work).

Acknowledge Point

The Acknowledge Point Pushbutton acknowledges the Alarm for a selected Tag

Acknowledge Group

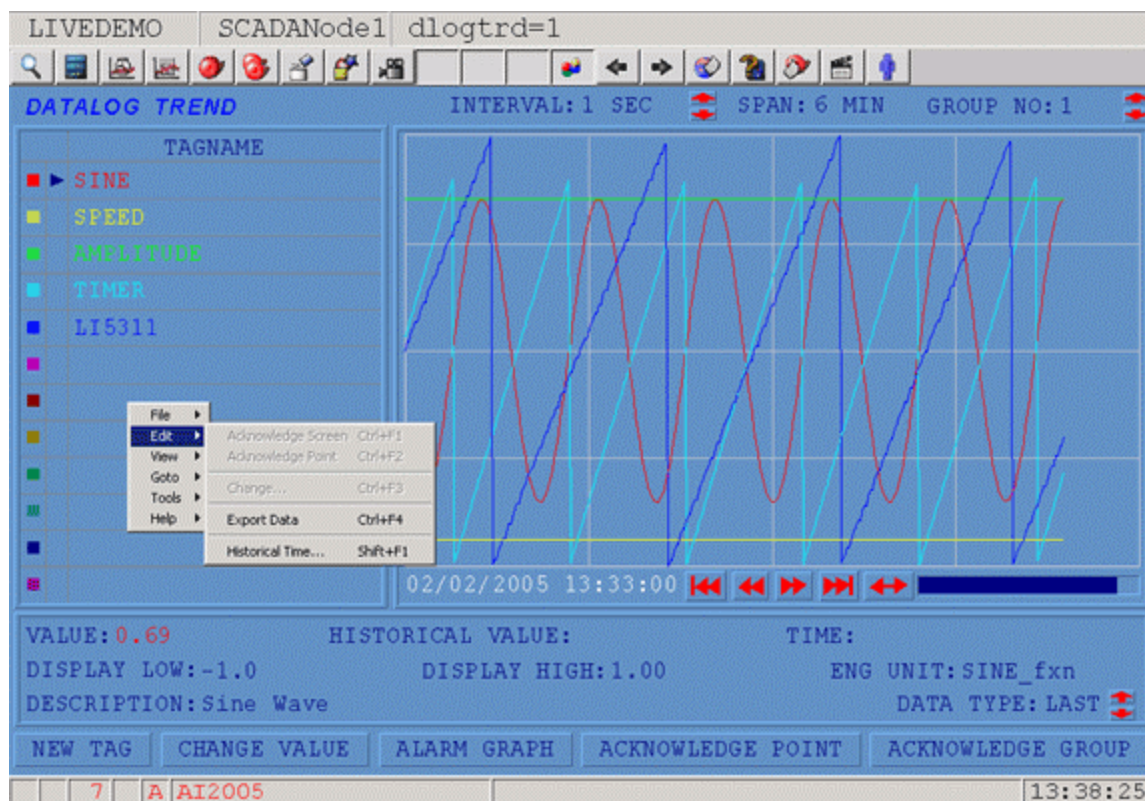
Acknowledge Group Pushbutton acknowledges all alarms for all Tags in this Trend Group.

Task 8: Export Data - Trend Display

DATA Log Trend data can be exported to EXCEL, email and other programs. Up to 12 Tags can be exported in a on a single Data Log Trend Display.

To export data in a Web Browser

1. Scroll to the time period you want.
2. Select SEC, MIN, HOUR or DAY as the interval.
3. Select LAST, AVG, MAX or MIN as the data type
4. **Right Click -> Edit -> Export Data**



5. A second Web Browser window pops up with the HTML formatted data. Copy and Paste the data or use File -> Save to save the HTML page.

The screenshot shows a Microsoft Internet Explorer browser window displaying the HTML formatted data from the SCADA software. The title bar shows the file path: D:\WebAccess\Client\LIVEDEMO_SCADANode1\view001.htm. The page content is titled "Datalog Trend Group 1: Main Chiller Data" and contains a table with columns for SINE, SPEED, AMPLITUDE, TIMER, and LI5311. The table lists data points for various times from 09/01/2003 00:00:00 to 09/01/2003 17:00:00.

Datalog Trend Group 1: Main Chiller Data					
	SINE	SPEED	AMPLITUDE	TIMER	LI5311
	AVG	LAST	LAST	LAST	LAST
09/01/2003 00:00:00	-0.0	120.00	80.0	1335.97	93.65
09/01/2003 01:00:00	-0.0	120.00	80.0	1335.97	18.75
09/01/2003 02:00:00	-0.0	120.00	80.0	1335.97	45.30
09/01/2003 03:00:00	-0.0	120.00	80.0	1335.97	70.33
09/01/2003 04:00:00	-0.0	120.00	80.0	1335.97	96.51
09/01/2003 05:00:00	-0.0	120.00	80.0	1335.97	21.66
09/01/2003 06:00:00	-0.0	120.00	80.0	1335.97	47.77
09/01/2003 07:00:00	-0.0	120.00	80.0	1395.97	72.87
09/01/2003 08:00:00	0.00	60.00	70.0	1455.97	99.05
09/01/2003 09:00:00	-0.0	120.00	80.0	1395.97	25.08
09/01/2003 10:00:00	0.00	60.00	70.0	1395.97	51.26
09/01/2003 11:00:00	-0.0	120.00	80.0	1455.97	76.58
09/01/2003 12:00:00	-0.0	60.00	70.0	1455.97	2.54
09/01/2003 13:00:00	0.00	120.00	80.0	1395.97	27.52
09/01/2003 14:00:00	-0.0	60.00	70.0	1455.97	53.26
09/01/2003 15:00:00	-0.0	120.00	80.0	1455.97	77.58
09/01/2003 16:00:00	-0.0	60.00	70.0	1455.97	3.57
09/01/2003 17:00:00	0.00	120.00	80.0	1395.97	28.72

Task 9: Add Tag to Real-time Trend

1. Open the **RealTime Trend Pop-up Dialog** Box will list all the RealTime Trend Groups, which can be viewed by:

The [Standard Toolbar button](#)



Or **F3** function key

Or a pushbutton with the **<GOTO>REALTRD=keymacro**.

Or the [Right-Click Menu](#) in a web browser VIEW

Right Click -> Goto -> Realtime Trend

Or from the [menu bar](#) in ViewDAQ **Goto -> Realtime Trend**

2. The Real-Time Trend List Box Opens.

Any Tag can be added to a Trend Group in VIEW (i.e. by operators and ordinary users in run-time).

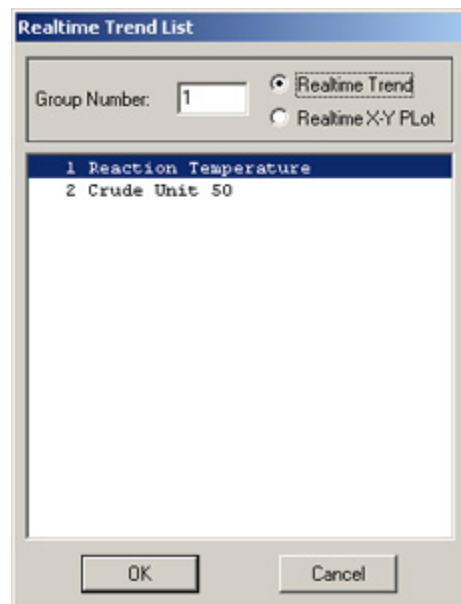
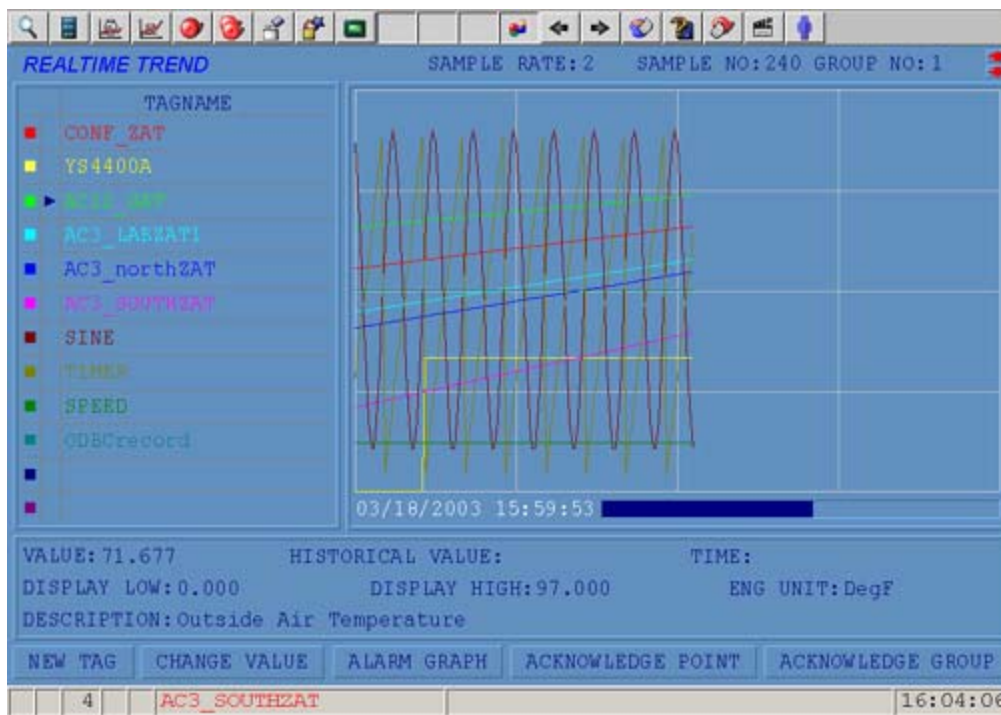


Figure 6.18 Real Time Trend List

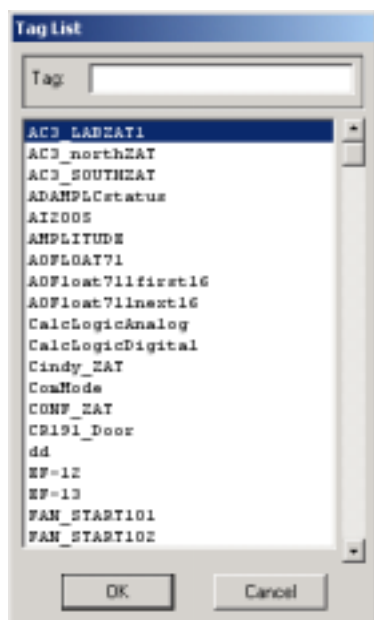
3. Select Trend 1.

4. Select OK.

5. The Realtime Trend opens.



6. Select a field under Tagname by clicking next to a colored square. (AC12_OAT in the example). A the pointer should appear there.
7. Click **New Tag**.
8. A Dialog Box of Tags all tags in the system opens.



9. Select Tag Name.
10. The Tag is added to the Trend.

If you leave this RealTime Trend Group, the Tag will disappear from the Trend.

If you select a field that already has a Tagname, the New Tag will temporarily replace that Tag until you leave this Trend Group.

To permanently add a Tag to a Realtime Trend Group, use the Project Manager to Modify the Trend Group.

Realtime Trends use a single **Template Display** that is pre-built and supplied with WebAccess. There is no graphics building required. Up to 12 Tags can be viewed on a single RealTime Trend Display.

Section 7 - Alarms

Training Notes

Alarm Management is built into WebAccess. Alarms provide a notification system to inform operators of process and equipment status.

WebAccess provides a full-feature Alarm handling package developed for use in traditional Distributed Control Systems (DCS). There are no special displays to build. There are no special points to build.

Alarm Handling Package Summary

WebAccess supplies pre-built alarm summary display, alarm groups, alarm log display, and audible alarm notification to the operator of new alarms.

1. **Analog-type Tag Alarms** providing High-High, High, Low, Low-Low, Rate-of-Change and Deviation Alarms for each Analog point tag in the system including IO Tags, each parameter of a Block, Calculation Points, Accumulation Points, and Constant Point Tags.
2. **Discrete Tag Alarms** and **Digital-type Tag Alarms** on the true or false state of the tag. This is for IO Tags, each parameter of a Block, Calculation Points, Accumulation Points, and Constant Point Tags.
3. **Alarm Summary Display** shows a dynamically updated display of all active alarms. This display is automatically generated. It displays all active unacknowledged alarms in flashing red and active acknowledged alarms in blue. (The colors can be changed by the user by editing the almsum.dxx file in DRAW). Once an alarm “clears” it is removed from the alarm summary display.
4. **Prioritizing Alarms** with 99 alarm priorities. Alarms can be sorted by rank of priority on the alarm summary page to enable operators to see the most important alarms first.
5. **Sorting Alarms** by Time, Priority, Group, Acknowledge State on alarm summary displays.

Alarms can also be sorted in the Project Alarm Log, which uses an ODBC Database (i.e. Access, SQL Server, Oracle or MySQL).

6. **Filtering Alarms** from other nodes or by Priority or Acknowledge state. The Alarm Summary provides filtering of alarms. By disabling Alarm priorities, these disabled alarms will not show in the alarm summary display.
7. **Alarm Log** generates a running display of all alarms in chronological order. The user can select to have this alarm log printed to a printer, to a file on the hard drive and written to a database. This is Local to the SCADA node.
8. **Alarm Groups** can be configured in any logical arrangement. These are user configurable. The user can display alarm groups using automatically generated alarm group displays. An alarm group is typically a process unit in a multi-process facility.
9. **Individual Alarm Suppression** of any tag. The user can disable alarms from being reported individually. This allows nuisance alarms to be removed when a unit or process is shutdown or out of service.
10. **Alarm Graphic** is configurable for each tag in the system. From the alarm summary display, the operator can call up this Alarm Graphic with a single mouse click. The Alarm Graphic can be any graphic display in the system. Typically, it is a process graphic giving the operator the most information on the cause or solution to the alarm condition.
11. **Flashing and Color** of Values on Displays. Operator graphics display alarms by changing the color of numeric, text and state values. The colors can change and flash based on alarm, acknowledge state, and priority of the alarm.
12. **Block Alarming** is provided when using Block-type tags. On process graphics, the displayed parameter can change color and flash indicating the alarm-state of another parameter in the same block. For example, measurement can flash read when there is a high output alarm, although the output is not indicated on the display.
13. **Pre-configured alarm indication in Widgets** and Faceplate supplied in the symbols library allows users to build graphic display elements with alarm display features already incorporated into them.
14. **Alarm indication on pre-built System Displays** and Dialog Boxes including Point List (i.e. Point Browser), Trends, Overview Display, Group Displays, Point Detail Displays and Block Detail Displays.
15. **Status Bar Alarms** -There are four (4) Alarm windows in Status Bar at the base of all displays.
16. **Alarm Limits Changeable On-line, in Runtime VIEW**, from Point Detail Display and Point Browser, protected by Security Level. Alarm limits can also be changed by scripts and programs. These property changes can take place from both the client and the SCADA nodes.
17. **Alarm Acknowledgment** is provided through the standard toolbar on every display, the Alarm Summary and Alarm Group displays, Point Info Dialog Box, and user-built displays, pushbuttons, key macros and scripts.

18. **Email notification of Alarms** is a standard feature in WebAccess. No third party software is required. Tags can be individually selected to generate an email, assigned recipient email address or use global email recipients.
19. **Schedule Alarm Email recipients** by Shift or Day. The scheduler can schedule different email recipients based on Time of day, shift, Day of Week, and Holiday schedules.
20. **Local Alarm Beep** is provided using the system speaker on the Personal Computer of all Clients (including Web Browser Clients). A sound card is not required. The tone and duration is configurable. This audible annunciator is coordinated with unacknowledged alarms.
21. **Text-to-Speech Alarm Annunciation** - Text-to-Speech technology Annunciates alarms locally on the SCADA node. A choice of male and female voices reads the Tag name, description, Alarm Type, Alarm Limit and Alarm Value. No recording is required by the user. A sound card and speaker is required.
22. **Alarm Suppression Tag** - The Associate Tag suppresses the alarms for a tag when the Associate Tag is in alarm. The Associate Tag is usually the "more important" alarm. The Associate Tag is used to suppress nuisance alarms and help operators identify the cause of upset conditions.
23. **Reply Email to Acknowledge Alarms.** If a POP3 Email account is configured in SCADA node properties, by replying to the Alarm Notification Email, the alarm will be acknowledged.
24. **Media Files (.wav, .mid, .mp3, etc.) played for Alarm Annunciation.** Pre-recorded Media files can announce alarms locally on the SCADA node and on Clients. Users must install media player software on the clients and SCADA node (it is not part of the client plug-in or SCADA node software). Recording is required by the user. A sound card and speaker is required.
25. **Centralized ODBC Database for all alarms on all nodes. Optionally,** Alarms can also be recorded in the Project Alarm Log, which uses an ODBC Database (i.e. Access, SQL Server, Oracle or MySQL). All alarms from all SCADA nodes are recorded in this centralized database on the Project Node.

Reference

WebAccess Engineering Manual [Section 7. Alarm Management.-](#)

[3.2.8 Outgoing Email Server - SMTP](#)

[3.2.9 Email From](#)

[3.2.12 Alarm Email To](#)

[3.2.14 Reply Alarm Email to Ack](#)

[3.2.16 Incoming Email \(POP3\) Server](#)

[3.2.17 Alarm Voice](#)

[3.2.18 Alarm Log to Printer](#)

[3.2.19 Alarm Log to ODBC](#)

[3.2.19.1 Alarm Log to File](#)

[3.2.19.2 Minimal Alarm Log Priority](#)

[3.2.25 Beep Interval](#)

[4.2.31 ALARM Properties - ANALOG TAGS](#)

[4.3.24 ALARM Properties - Discrete Tags](#)

WebAccess Operator manual, [Section 10.1 Status Bar Alarms](#)

WebAccess Operator manual, [Section 5.1 Alarm Summary](#)

WebAccess Operator manual, [5.2 Alarm Log](#)

WebAccess Operator manual, [5.3 Alarm Groups](#)

Exercise

Task 1: Alarm Configuration

Unlike other HMI and SCADA, you do not need to create additional alarm tags. Alarming can be enabled for every analog or discrete tag through the Project Manager.

Alarm configuration can be added to a Tag by simply changing the tag's configuration. An alarm is "configured" by selecting a non-zero Alarm Priority for the alarm type.

In a perfect world, the engineer "plans" what the alarm values of the tags in the system will be, then engineer or technician enters these values as the tag is configured.

Alarm Limits can be changed on-line without stopping or downloading the SCADA node, if the alarm is already configured with a non-zero Alarm Priority for the Tag. The change can be made by a Power User with [Tag Field Level of 127](#), by changing the [Alarm Field](#) for the Tag. If "[Online Change Tag Field To DataBase](#)" is enabled for the SCADA Node properties, then these changes are permanent; if not enabled, the next download will over-write these alarm changes.

Configure an Alarm for a Tag:

1. Open **Internet Explorer**
2. Connect to **WebAccess Configuration**
3. Login as admin or Project User.
4. Open **Project Manager** for Your Project
5. Select your **SCADA node**.
6. Expand the Comport and Device to see the list of Tags.
6. Select the **Tag** (AI002 in the example)
7. Select **Tag Property**.
8. The **Update Tag** page opens.

8. From the Alarm Pull Down List, select **Alarm**.
9. Wait for the page to Update. A Pink border should appear around Alarm.

10. Drag the slider bar down to the bottom to the Page into the Pick Section.

11. Select a non-zero Alarm Priority for the desired for **High Priority** (1 in the example).
12. Enter a **High Alarm Limit**. (90 in the example)
13. Analog Tags can have multiple Alarms. Enable other alarms for the tag by entering a non-zero Alarm Priority and Alarm Limit.
14. Press **Submit**.
15. Select tag **AO005** from the left.
16. Select **Tag Property**.
17. **Update Tag** page opens.
18. Select **Alarm**. Wait for Page to refresh.

Update Tag	
Tag Type	Point (analog)
Alarm	Alarm
Tag Name	AO0005
Description	Valve #5 Position
Scan Type	Constant Scan
Address	40005
Conversion Code	Unsigned Integer

19. Select a non-zero Alarm Priority for the desired for **High Priority** (1 in the example).
20. Enter a **High Alarm Limit**. (90 in the example)
21. Analog Tags can have multiple Alarms. Enable other alarms for the tag by entering a non-zero Alarm Priority and Alarm Limit.

Press **Submit**.

Repeat for the Accumulation Tag named **TIMER**.

Update Tag	
Tag Type	Accumulation
Alarm	Alarm
Tag Name	TIMER
Description	Input to SINE
Source tag name	SPEED
Accumulate frequency	1 Second
Divide factor	1
Log Data	☒ Yes ☐ No
Data Log Dead Band	1 %

Alarm Data	
Associate Tag Name	
HH Priority	1
HH Alarm Limit	3300
High Priority	0
High Alarm Limit	0

Repeat for the Accumulation Tag named **SPEED**.

Update Tag		[Cancel]	Submit
Tag Type	Constant (analog)		
Alarm	Alarm		
Tag Name	SPEED		
Description	SINE oscillation rate http://www.broadwin.com		
Scan Type	Constant Scan		
Log Data	☒ Yes ☐ No		
Data Log Dead Band	1 %		

Alarm Data	Log Only	Send Email	Play Voice	Media File (.wav, .m)
Associate Tag Name				
HH Priority	99	☐	☐	☐
HH Alarm Limit	900			
High Priority	1	☐	☒	☒
High Alarm Limit	800			
Low Priority	1	☐	☒	☒
Low Alarm Limit	200			
LL Priority	2	☐	☒	☒
LL Alarm Limit	100			
HL Db	1			
HL Db Percentage	☐ Yes ☒ No			
ROC Alarm Priority	0	☐	☐	☐

25. **Download** your SCADA node.

For Detail Description of [Analog Tag Properties](#) see the Engineering Manual, section 4.2.31 [ALARM Properties - ANALOG TAGS](#).

For Detail Description of [Discrete Tag Properties](#) see Engineering Manual, section 4.3.24 [ALARM Properties - Discrete Tags](#)

Note - Alarm Limits can be changed on-line without stopping or downloading the SCADA node, if the alarm is already configured with a non-zero Alarm Priority for the Tag, by changing the [Alarm Field](#) for the Tag.

To Configure Logging Alarms and Operator Actions to printers or ODBC Databases, please refer to the Engineering Manual, Section 3. [SCADA NODE properties](#). or the following Sections:

3.2.18 [Alarm Log To Printer](#)

3.2.19 [Alarm Log To ODBC](#)

3.2.8 [Outgoing Email Server - SMTP](#)

3.2.9 [Email From](#)

3.2.12 [Alarm Email To](#)

3.2.13 [Alarm Email CC](#)

3.2.14 [Reply Alarm Email to Ack](#)

3.2.16 [Incoming Email \(POP3\) Server](#)

To **Configure Alarm Horn or Text-to-Speech Alarm Annunciation** characteristics., please refer the Engineering Manual, section 3. [SCADA NODE properties](#) or the following Sections.

3.2.17 [Alarm Voice](#)

3.2.25 [Beep Interval](#)

3.2.26 [Beep Frequency](#)

3.2.27 [Beep Duration](#)

Task 2: View the Alarm Summary

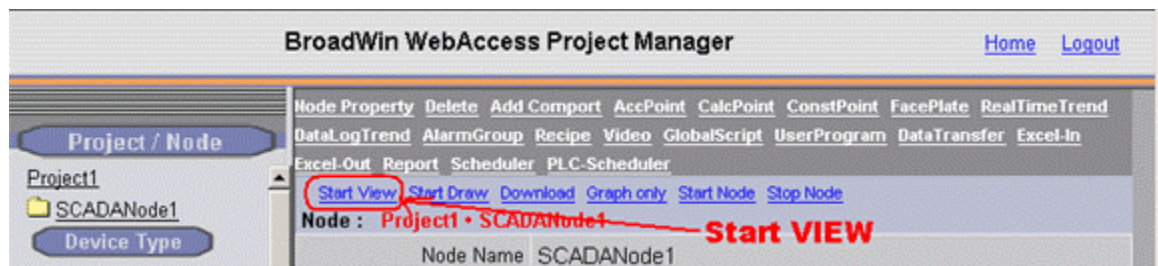
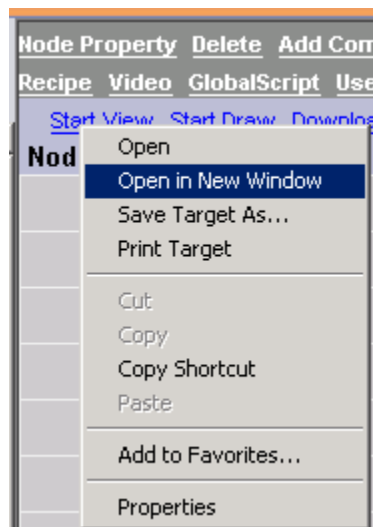


Figure 7-5 Start VIEW from Project Manger

2. Right Click [Start View](#) (Figure 7-5).
3. Select Open in a New Window



There are other ways to START VIEW described in [VIEW Client Options](#) and [Start WebAccess VIEW](#)

The WebAccess **View Login Page** appears (Figure 7.6).

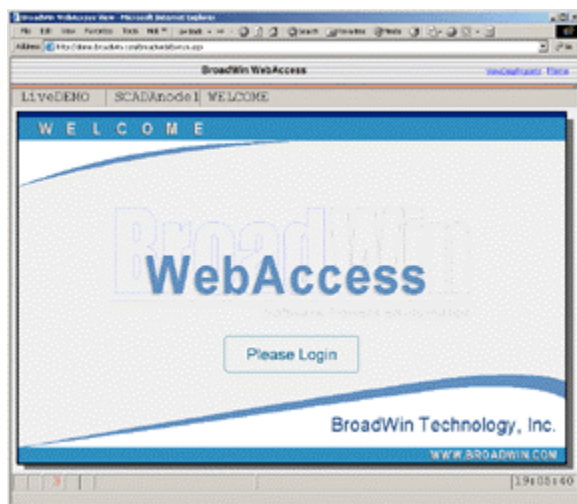


Figure 7.6 VIEW Login

3. Click on "**Please Login**" (Figure 7.6).



4. The **Login Dialog Box** appears (Figure 7.7).



Figure 7.7 - Login Dialog Box

5. Enter your "**User Name**" assigned by the engineer or technician who configured the system. Note that you can use either your **keyboard** or the **mouse** in the Login dialog box.

Tip - if this is a newly installed system, use the default login username: admin.

6. Enter your "**Password**".

Default login is,

User Name: admin

Password: (i.e. a blank password)

7. Press the **Enter** key.

8. The MAIN graphic display for your system appears. The default MAIN graphic supplied with WebAccess is shown below (Figure 7.8). Yours will probably look different,

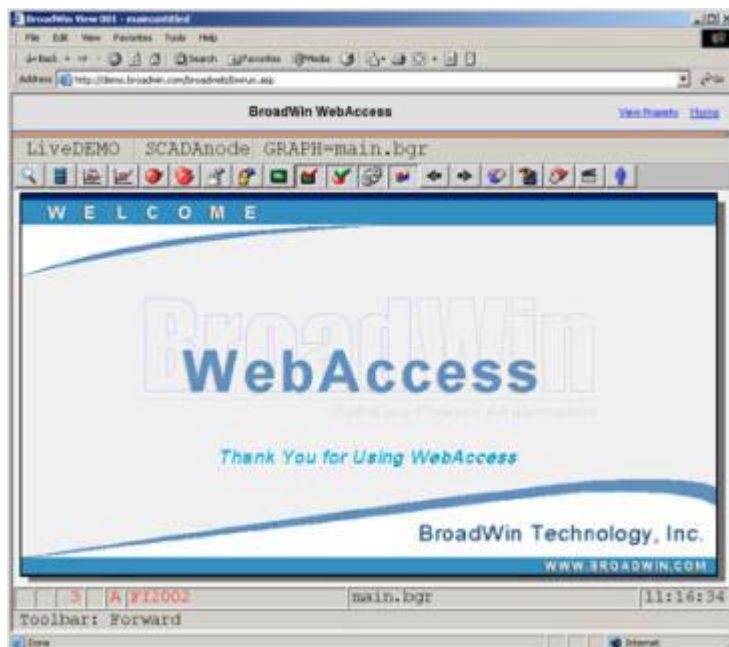


Figure 7.8 – default Main graphic display

9. View the Alarm Summary:

- Select the Alarm Summary button  from the [Standard Toolbar](#) (Figure 7.8)
- OR
- Use the Navigation [Popup Menu](#) in a web browser VIEW:
Right Click -> Goto -> Alarm Summary
- OR
- [Menu bar](#) in ViewDAQ: **Goto -> Alarm Summary**
- OR
- Press **F5** on your keyboard

10. The Alarm Summary Opens (Figure 7.9).

P	DATE	TIME	TAGNAME	ALARM VALUE	ALARM LIMIT	TP GP	NODENAME
5	03/18	14:37:32	Mainoff_ZAT	90.0	90.0 HH 1		SCADAnode1
99	03/18	14:37:11	DI0Cstat	FAILED	DI 0		SCADAnode1
99	03/18	14:37:55	FI2044	204.7	221.0 FO 0		SCADAnode1
7	03/18	14:37:55	AI2005	3.6	300.0 LO 0		SCADAnode1
99	03/18	14:37:55	FI2043	69.6	100.0 LO 0		SCADAnode1
99	03/18	14:37:55	FI2002	156.8	170.0 FO 0		SCADAnode1
99	03/18	14:37:55	FI2003	2.8	5.0 LL 0		SCADAnode1
99	03/18	14:37:55	FI2004	4.3	5.0 LL 0		SCADAnode1
2	03/18	14:37:45	LI6016	0.49	0.50 LL 0		SCADAnode1
3	03/18	14:35:04	Cindy_ZAT	80.0	80.0 HI 4		SCADAnode1
4	03/18	14:33:29	AC3_LABZAT1	75.0	75.0 HH 4		SCADAnode1
3	03/18	14:33:07	CONF_ZAT	80.0	80.0 HI 4		SCADAnode1
5	03/18	14:31:02	AC3_SOUTHZAT	90.0	90.0 HH 4		SCADAnode1
9	03/18	14:31:00	SLOT4:AQ_0	45.00	40.00 HI 0		SCADAnode1
1	03/18	14:30:01	FAN_START101	STOPPED	DI 2		SCADAnode1
1	03/18	14:30:01	IF-12	OFF	DI 3		SCADAnode1
5	03/18	14:29:30	AC3_northZAT	85.0	85.0 HH 4		SCADAnode1
5	03/18	13:34:23	Fans2	700.00	600.00 HI 1		SCADAnode1

DESCRIPTION: Office Temperature

SORTED BY: ☒ TIME ☐ NAME ☐ PRIORITY ☐ ACKNOWLEDGE ☐ GROUP ☐ NODE

Mainoff_ZAT 14:38:02

Figure 7.9 - Alarm Summary

The Alarm Summary shows all current alarms and all unacknowledged alarms. As alarms are "acknowledged" and "clear" they disappear from the Alarm Summary. An Alarm does leave the Alarm Summary until they are "Acknowledged" by an Operator. This is similar to Alarm Monitors in control rooms, commonly associated with Distributed Control Systems (DCS).

The Alarm Summary can be edited, so yours might look different (color, font, pushbuttons, etc.).

Power Users, General Users and the admin account can view the Alarm Summary through a Web Browser. Restricted users cannot view the Alarm Summary through a Web Browser. All users can view the Alarm Summary locally on the SCADA node using ViewDAQ.

The Alarm summary can scroll to show up to 3000 alarms (16 at a time). The Priority, Date, Time of the Alarm, Tag Name, Node, Alarm Type, Alarm Limit, Alarm Value and Alarm Group are shown in the Default Alarm Summary

The Alarm Summary is "Global" and shows all alarms from all SCADA Nodes in your system. If the Project Node is off-line, the Alarm Summary will be blank.

Some Abbreviations are:

P = Alarm Priority (0 is no alarm and 99 is highest priority)

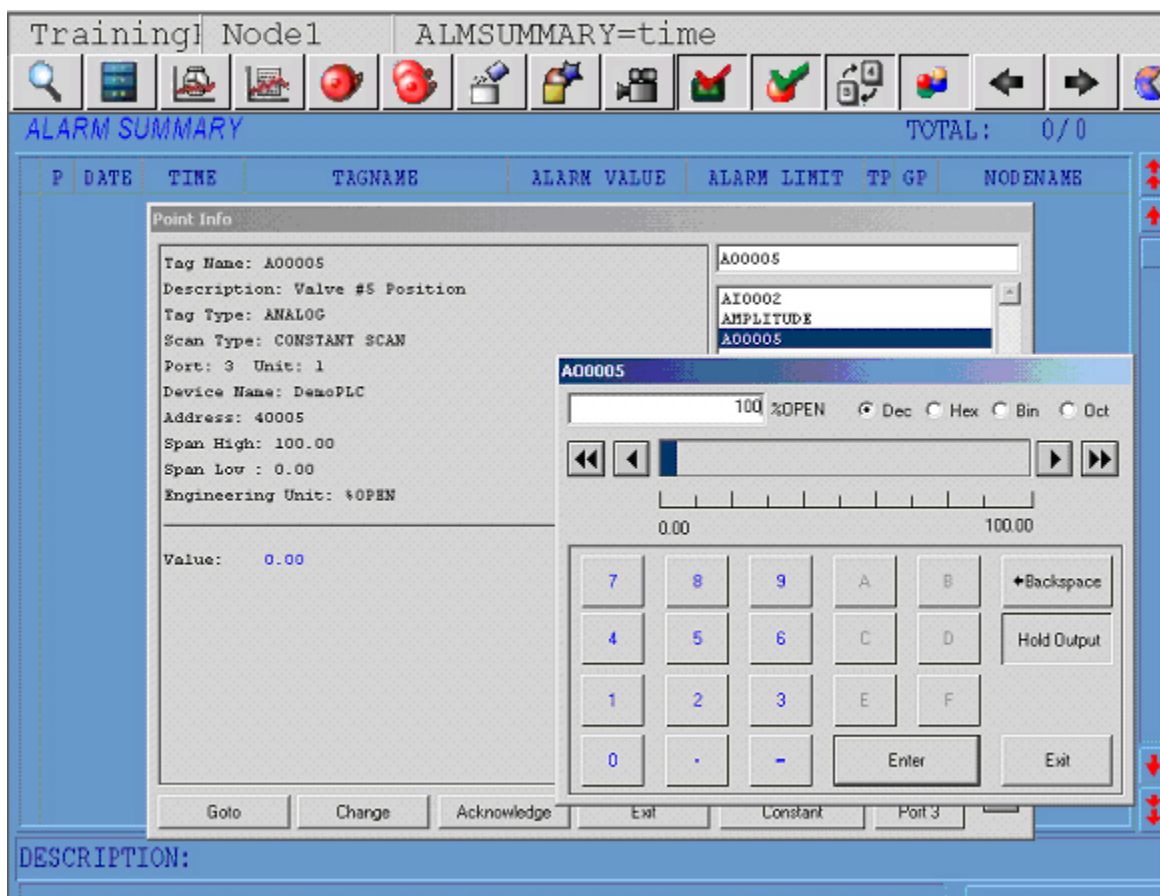
TP = Alarm Type (e.g. High-High, High, Low, Low-Low, High deviation, Low Deviation, Rate of Change or State)

GP = Alarm Group (0 is no group)

11. If there are no Alarms, force AO005 into alarm.

12. Open the Point Info List and use the filter buttons to check the values of the points configured. The **Point Info Dialog Box** is opened using:

- Pressing the  icon on the toolbar.
- Pressing **Ctrl + F5** on the Keyboard.
- **Right Click -> Goto -> Point Info** (ViewDAQ users skip the right click).



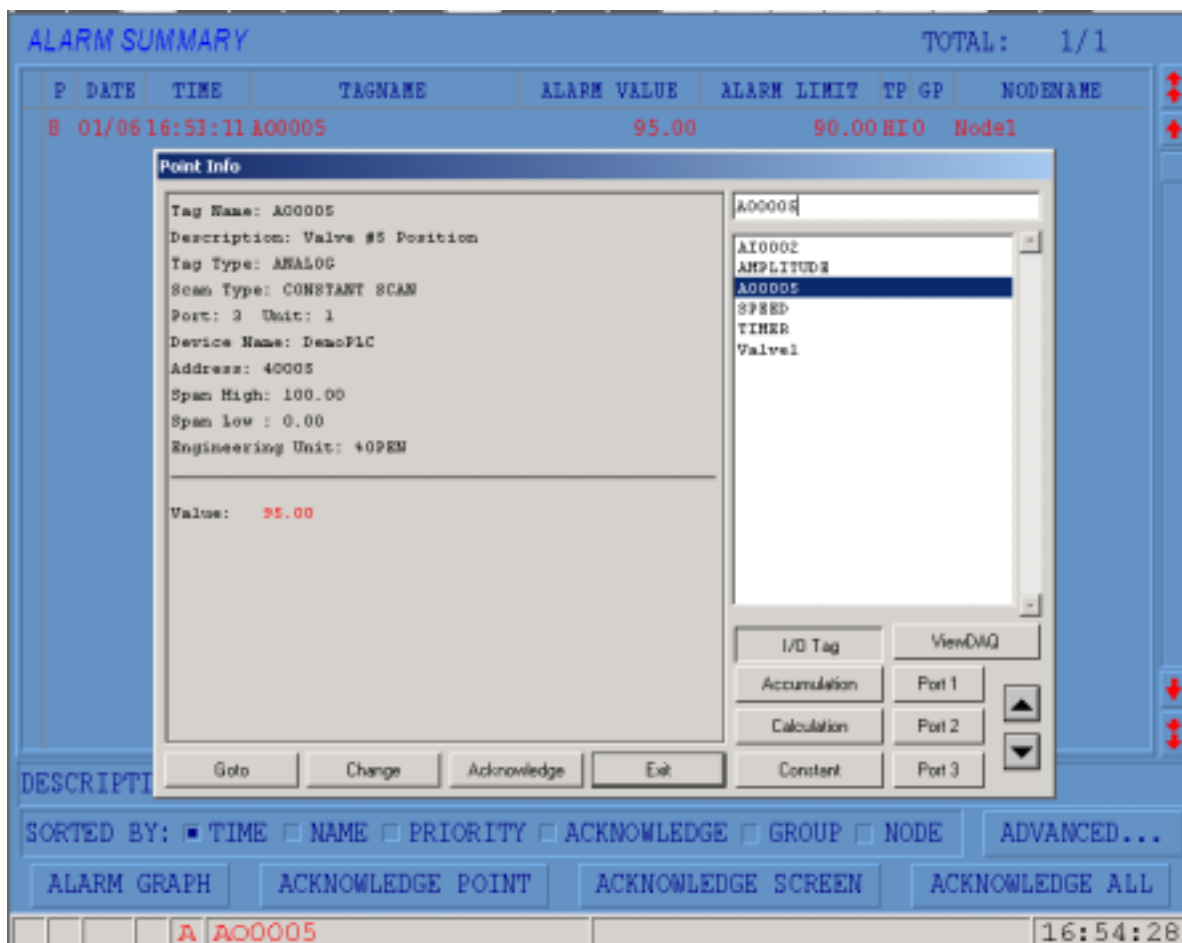
13. Select **AO005**.

14. Select **Change**.

15. Type **95** or use slider bar.

16. Click **Enter**.

17. AO005 should appear Red in both the Alarm Summary and the Point Info Dialog Box. It should also appear in the Status Bar at the bottom of the page. Your computer should beep. If Alarm Voice is enabled, the Alarm should be read to you.



18. Press the **Acknowledge** button in the Point Info. The Flashing red should stop. A0005 should change color in the Alarm Summary also.

Task 3: Alarm Summary controls

The **Alarm Summary** shows a list of Current Alarms and Unacknowledged Alarms. Each time an Alarm occurs, a line is entered in the Alarm Summary describing the alarm. Acknowledgement by the operator changes the color (or flashing color) to indicate Acknowledgement. As alarms return to Normal, they disappear from the Alarm Summary (if they have been acknowledged by an operator or user). This is similar to Alarm Monitors in control rooms commonly associated with Distributed Control Systems (DCS).

P	DATE	TIME	TAGNAME	ALARM VALUE	ALARM LIMIT	TP	GP
01/11	17:27:19	FI2044				0	
01/11	17:13:34	AC12_OAT				4	
01/11	17:27:19	FI2043				0	
01/11	17:27:19	FI2003				0	
01/11	17:27:19	AI2005				0	
01/11	17:27:19	FI2002				0	
01/11	17:27:19	FI2004				0	
01/11	17:28:33	LI6016				0	
01/11	17:28:04	ODBCstat				0	
01/11	17:09:33	Cindy_ZAT				4	
01/11	17:08:40	CONF_ZAT				4	
01/11	17:07:44	Mainoff_ZAT				1	
01/11	17:04:54	AlaAck				0	
	17:26:08	AC3_LABZAT1				4	
01/11	17:02:04	FAN_START103				2	
01/11	17:02:04	FY101					
01/11	17:02:04	SLOT4:AO_0				0	

Figure 7-10 Modified Alarm Summary

The Alarm Summary can be edited for colors and columns. Above is a modified Alarm Summary display.

Acknowledge All

Pressing the **Acknowledge All** button will acknowledge all active alarms on the SCADA node.

If a tag's current value has triggered multiple alarms (for example, low-low and low alarms) then the next lower priority alarm will appear.

Acknowledge Screen

Pressing the **Acknowledge Screen** button will acknowledge all active alarms Displayed on the screen.

If there are more than 17 alarms (i.e. the number that will fit in the Alarm Summary) only the first 17 alarms will be acknowledged. The user must use the Scroll Down (or Scroll UP) buttons to view additional Alarms, which will be unacknowledged.

Similarly, if the Alarm Filter is enabled, only the displayed alarms will be acknowledged.

Acknowledge Tag

Pressing the **Acknowledge Tag** button will acknowledge only the selected tag. To acknowledge only one tag on the Alarm Summary:

1. Click on the Tagname (or anywhere on that line)
2. Click Acknowledge Tag

Acknowledge Group

Pressing the Acknowledge **Group** pushbutton will acknowledge all active Alarms in the Alarm Group of the Selected Tag. See [Alarm Groups](#) for information about building Alarm Groups.

Filtered # of Alarms

Indicates the total number of alarms in the Alarm Summary display after the Alarm Filter has been applied.

For example, if Alarm Priority 5 alarms are filtered, and there are 10 Alarms with a priority of 5, then the

Total Number of Alarms = Filtered # of Alarms + 10

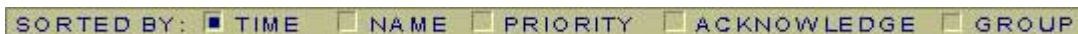
See also, [Alarm Filter](#).

Total Number of Alarms

Indicates the total number of alarms on the SCADA node, ignoring any Alarm Filter.

Alarm Sorting

From the Alarm Summary Display, the SORT alarm field indicates how alarms are sorted: by Time (default), Name, Priority, Acknowledge Status and Alarm Group.



SORTED BY: ☒ TIME ☐ NAME ☐ PRIORITY ☐ ACKNOWLEDGE ☐ GROUP

Figure 7-11 Alarms Sorted By

Clicking the square button next to each sort method will change the sort criteria.

This allows users and operators to quickly identify the Highest Priority Alarm, find an alarm by Tagname or other criteria. If the Alarm Filter is enabled, those tags will be hidden from this sorted list.

Leaving the Alarm Summary, then returning will result in the sort by Time (the default value).

Advanced Options (Alarm Filter)

From the Alarm Summary Display, the **Advanced Options** pushbutton allows users to hide alarms from view (i.e. filter-out unwanted alarms).

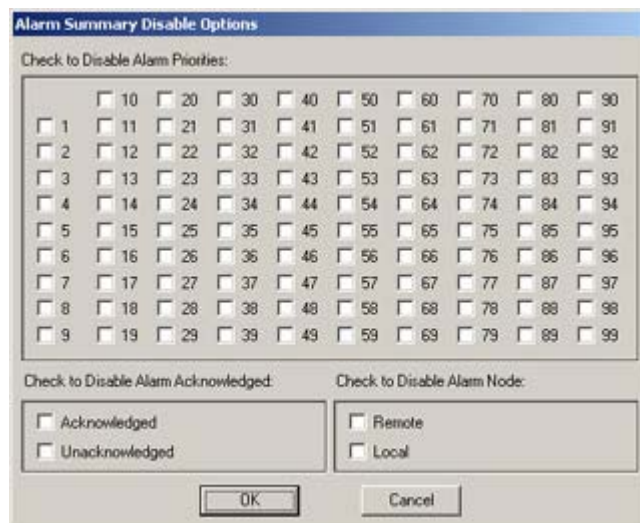


Figure 7-12 Disable Options: hide alarms on Alarm Summary

A dialog Box opens (Alarm Summary Disable Options). The user selects the Priority of the Alarms to be filtered-out (i.e. hidden). The user can also select to hide Unacknowledged or Acknowledged alarms be filtered (i.e. removed from the Alarm Summary Display) and alarms from other nodes (remote).

Note – This Disable Option/ Filter applies only to your Client and this Display. Other nodes are not affected. Other Windows on this same node are unaffected by this Filter function. If you open another foreground task on this same node, the alarm summary will show all alarms in the system. Using this function on the SCADA node will not suppress the alarms display on other nodes. If you leave the display and comeback, all priorities are listed on the Alarm Summary

To [disable an alarm](#) on all nodes, use the Tag field . ALMED (e.g. tagname.ALMED). This can be accessed from the Point Detail display for the Tag or an [Alarm Group](#).

Task 4: View the Alarm Log Display

1. The Alarm Log Display can be viewed from:

the **Toolbar** icon 

OR **Ctrl+F8** function key

OR. The Right-Click Menu can also call up the Action Log (**Right Click -> Goto -> Alarm Log**).

2. The Alarm Log opens.

LIVEDEMO

SCADANode

ALARMLOG

ALARM LOG

Total Entries in Log: 5000

P	DATE	TIME	EVENT
99	01/11/2003	17:39:04	ODBCstat - Discrete Alarm (FAILED)
99	01/11/2003	17:38:19	FI2043 - Low Alarm (9.2)
99	01/11/2003	17:38:19	FI2044 - RoC Alarm (196.6)
99	01/11/2003	17:38:19	FI2004 - Low-Low Alarm (0.2)
99	01/11/2003	17:38:19	FI2003 - Low-Low Alarm (0.1)
99	01/11/2003	17:38:19	FI2002 - RoC Alarm (150.0)
2	01/11/2003	17:38:11	LI6016 - Low-Low Alarm (0.24)
99	01/11/2003	17:38:04	ODBCstat - Discrete Alarm (FAILED)
99	01/11/2003	17:37:04	ODBCstat - Discrete Alarm (FAILED)
99	01/11/2003	17:36:56	FI2004 - Low-Low Alarm (0.2)
99	01/11/2003	17:36:56	FI2003 - Low-Low Alarm (0.1)
99	01/11/2003	17:36:56	FI2002 - RoC Alarm (150.0)
99	01/11/2003	17:36:56	FI2043 - Low Alarm (9.2)
99	01/11/2003	17:36:56	FI2044 - RoC Alarm (196.6)
10	01/11/2003	17:36:56	AI2005 - Low-Low Alarm (0.0)
2	01/11/2003	17:36:48	LI6016 - Low-Low Alarm (0.24)
99	01/11/2003	17:36:04	ODBCstat - Discrete Alarm (FAILED)

TAG DESCRIPTION:

BEGIN MARK

END MARK

CLEAR MARK

PRINT LOG MARKED

PRINT ENTIRE LOG

3

A FI2044

17:39:05

Figure 7-14 Alarm Log

The **Alarm Log** is a historical record of all alarms. In contrast, the [Alarm Summary](#) shows only Current Alarms and Unacknowledged Alarms. Each time an Alarm occurs, a line is entered in the Alarm Log describing the alarm. Three lines are printed for a Text Type tag in Alarm. Acknowledgement by the operator is also recorded. This is similar to Alarm Printers in control rooms, except alarms are written to a text file.

Only Power Users and the admin account can view the Alarm Log through a Web Browser. (General Users and Restricted users cannot view the Alarm Log through a Web Browser). All users can view the Alarm Log locally on the SCADA node using ViewDAQ.

Optionally, you can also Alarm Log to Printer. As each alarm occurs, a line is printed on the printer for each Analog and Discrete Alarm. Text-type tags do not alarm. Acknowledgement by the operator or user is also recorded. See [Alarm Log To Printer](#) for more information.

The last 10,000 alarms are shown on the Alarm Log Display. The last 5000 are written to the Text file on the hard drive of the SCADA node. When the 5001 alarm occurs, the oldest alarm entry is overwritten in the text file. Similarly, when the 10,001th alarm occurs, the oldest alarm in the Alarm Log Display is over-written. Restarting the SCADA node or a Client empties the Alarm Log, which is then refreshed with the last 5000 alarms logged to the Hard Drive.

If you need more than the last 10,000 alarms recorded to hard drive, optionally, you can record the Alarm Log to an ODBC Database. As part of software installation, WebAccess creates an Access Database on the Project Node. All Alarms can be recorded to the Database from all

SCADA nodes in your system to provide a centralized Alarm Log. See [Alarm Log To ODBC Database](#) for more information.

The Alarm Log is a pre-built template display supplied with Web Access. It can be customized by engineers and technicians using DRAW. How your Alarm Log appears (colors, Fonts, etc.) and behaves may vary based on how (or if) the Almlog.Bxx (and Almlog.dxx) on your system is modified.

Section 8 - DRAW

Objectives

In this section, you will learn to use DRAW, the Graphic Builder, to create custom graphics and controls. At the end of the section, you will be able to create animated objects that change state according to a point's values.

Training Notes

DRAW and DrawDAQ are versions of the same Graphics Building program with minor differences in the menus. Graphics built with either DRAW or DrawDAQ are identical. Both DRAW and DrawDAQ produce graphics that can be viewed remotely by users via a web browser. Both DRAW and DrawDAQ produce graphics that can be viewed locally using ViewDAQ. Graphics built in one can be edited by the other. The two programs edit the same files. The commands and tools are identical. This manual uses the terms DRAW and Graphics Builder interchangeably to refer to both versions.

DRAW

DRAW allows users to build and modify graphic displays remotely, using an ordinary web browser. DRAW runs in an ordinary Web Browser (Internet Explorer 6.0 or 7.0 are recommended). The WebAccess plug-in is required. To use DRAW in a web browser, the user must have some sort of network access, via an intranet or the Internet to a WebAccess Project node and SCADA node. Notice there is no menu bar in DRAW; it uses a Right Click Menu.

DrawDAQ

DrawDAQ is a local version of DRAW. DrawDAQ runs on the Project node. It is identical in function to DRAW, except that it is not run inside of a web browser and does not require network access. DrawDAQ only accesses graphics on the local Project node (i.e. the local hard drive of the Project Node PC). The biggest difference for most users is that the **Menu Bar** (File Edit View etc.) in **DrawDAQ** replaces the **Right-Click Menu** in web browser **DRAW**.

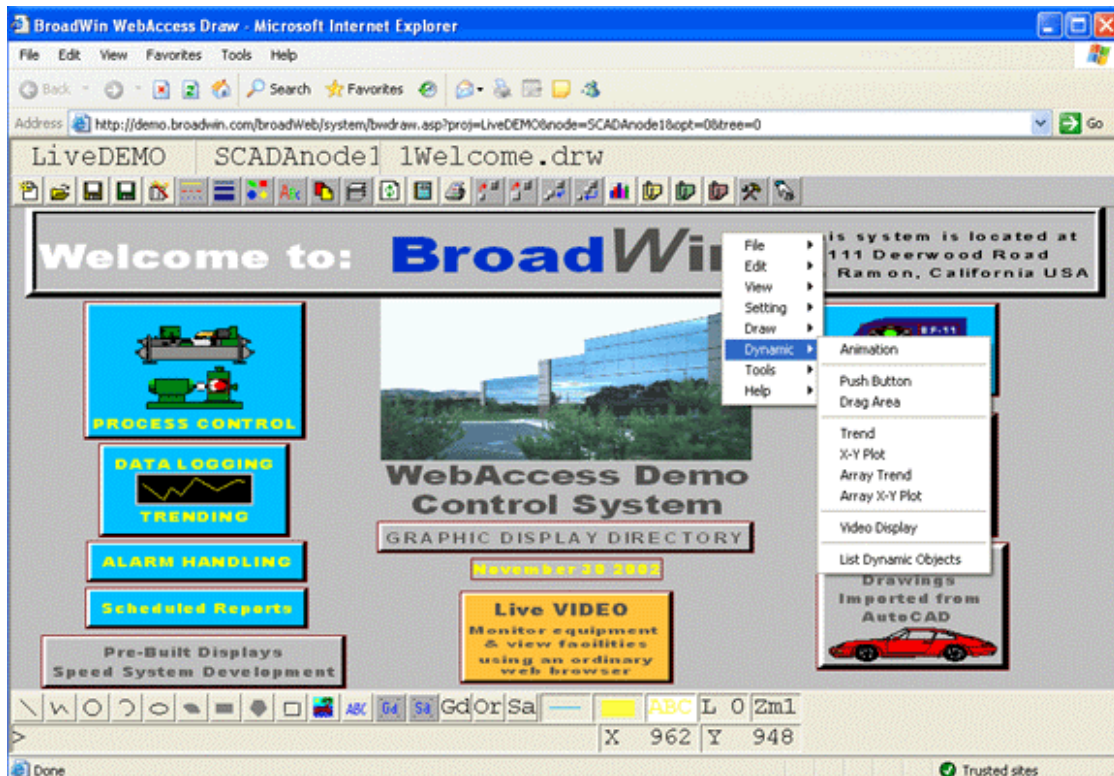


Figure 8-1 DRAW in web browser - Notice Right Click Menu.



Figure 8-2 DrawDAQ - local to Project Node (non-web browser version of DRAW) – notice menu bar: File, Edit, View, Setting, Draw, Dynamic, Tools, Help

Mouse Operation

The Graphic Builder program supports a mouse, trackball, or other pointing devices.

When using a mouse/trackball, it is important to be aware of the following conventions for the mouse buttons. The Graphic Builder program uses only two mouse buttons. If your mouse has three buttons, use only the left and right buttons.

Left Click

Click (with the left mouse button) to **select** a command on a pull-down menu, a toolbar button or an object in the drawing area. Left Click also place elements on the screen (Symbols and Widgets) or to draw segments of Lines. Polylines, Arcs, etc.

Right Click

Right-Click function varies between the Web Browser and the Local DrawDAQ. **Right-click** (click with the right mouse button) to:

- Open the **DRAW Menu** (in a Web Browser DRAW)
- Open the **Modify Menu** (in DrawDAQ Only)
- Terminate a command (equivalent of the **ENTER** key).

ENTER and ESC Key

The **ENTER** key can be used

- In place of clicking the **OK** button to close a dialog box.
- To enter a selection or function

The **ESC** key can be used to cancel a command.

Reference

WebAccess-[Engineering Manual, Section 10. DRAW](#)

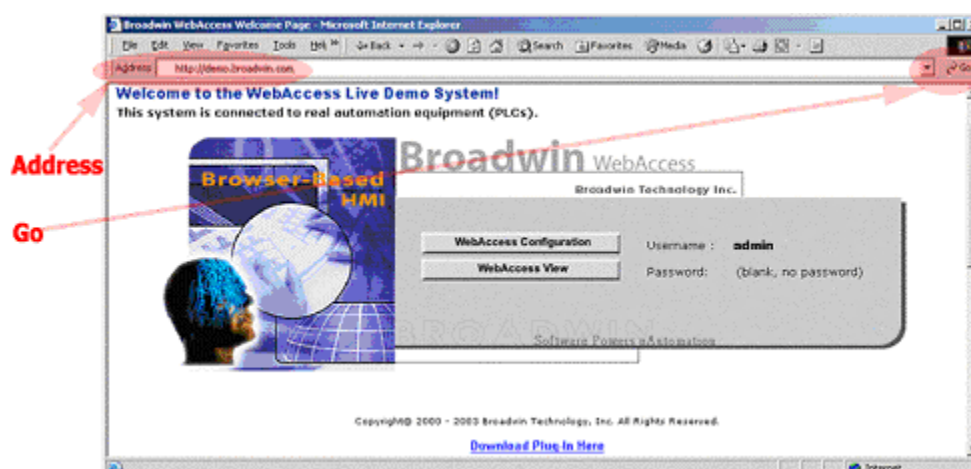
Exercise

Task 1: Start WebAccess DRAW



1. Start **Internet Explorer**
2. Enter IP **Address** of a WebAccess Project Node in Address Bar and press Go.

Hint - or select the Project node from "Favorites".



3. Select **WebAccess Configuration** button.
4. [Login](#) to the Project **Manager**
5. Select a **Project**.
6. Select a **SCADA Node**.



Figure 8-4 Start DRAW from Project Manager

7. **Right Click** the [Start Draw](#) link in the Project Configuration Manager.
8. Select **Open in New Window** from the menu.

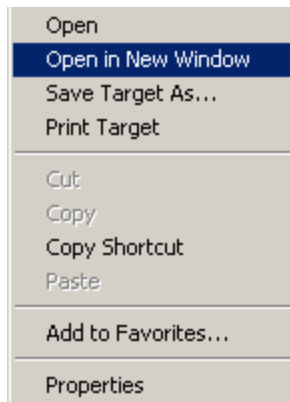


Figure 8-5 Open in New Window by Right Clicking Hyperlink

If you **Right Click** on [Start Draw](#), a menu appears allowing you to open Draw in a new browser window, full screen (Open in New Window).

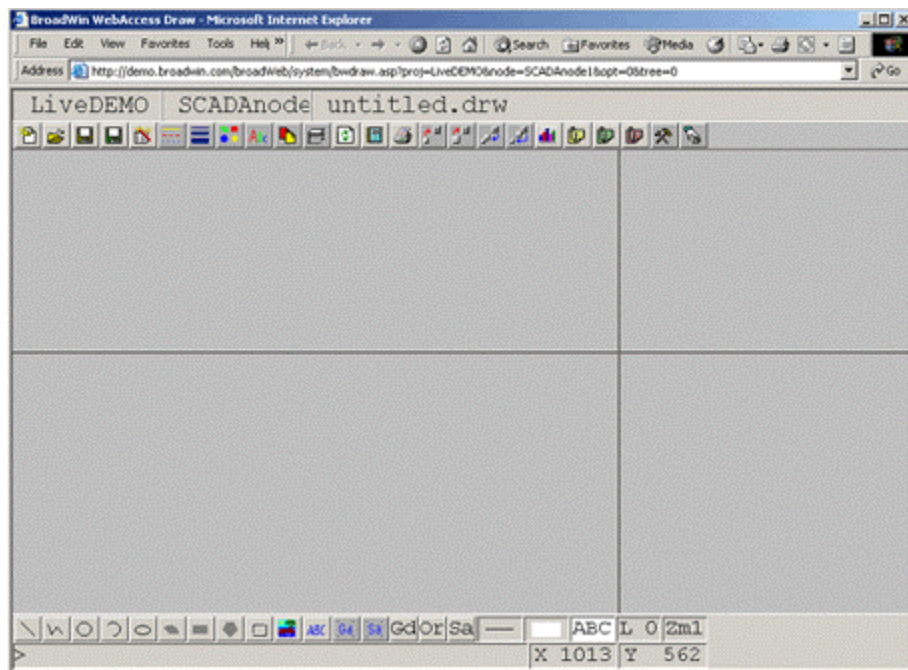


Figure 8-6 DRAW using Open in New Window

If you **click** on [Start Draw](#), without selecting Open in a New Window, the Draw program will open in the lower right frame of the WebAccess Project Manager.

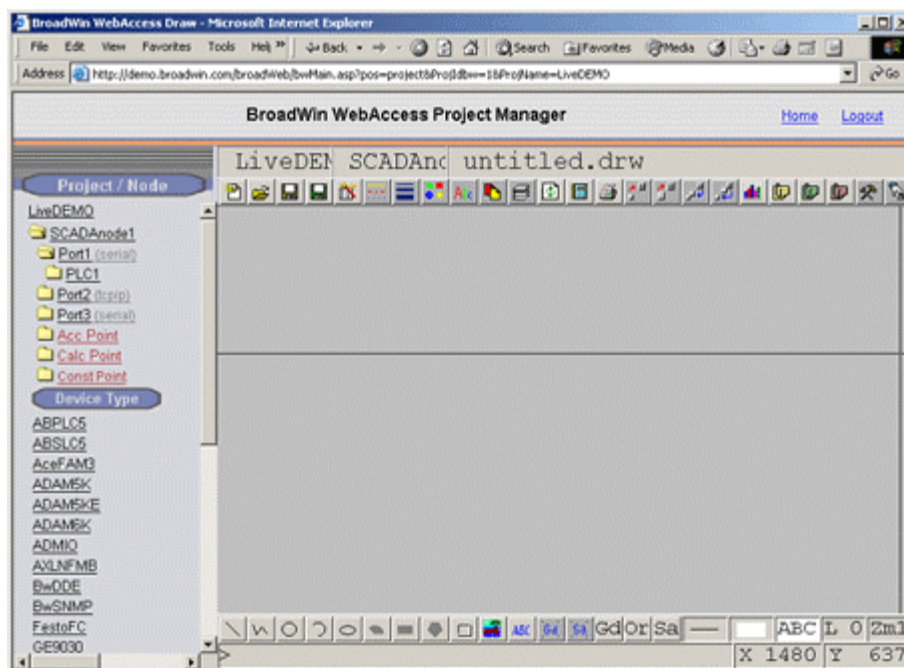


Figure 8-7 Start Draw (single click)

Task 2: Start local graphics builder - DrawDAQ

You have to be on the **Project Node** (or a combine Project/SCADA node) to use DrawDAQ. This is the Computer with the WebAccess Project Node software installed.

If you do not see the WebAccess icon on your taskbar (usually at lower right of screen next to the clock) or can not find DrawDAQ, then start your web browser and go to the previous section [Start Web Access – DRAW](#).



1. **Click** the WebAccess Service icon on the taskbar (usually located at lower right of screen, next to the clock).
2. Drag the mouse cursor over the popup menu to **DrawDAQ**.

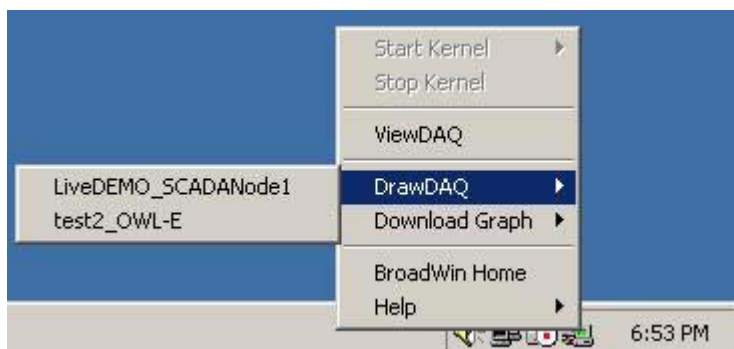


Figure 8-8 WebAccess Toolbar "right click" menu - DrawDAQ

Toolbar (DRAW) - Bottom

Figure 8-11 DRAW Toolbar - bottom

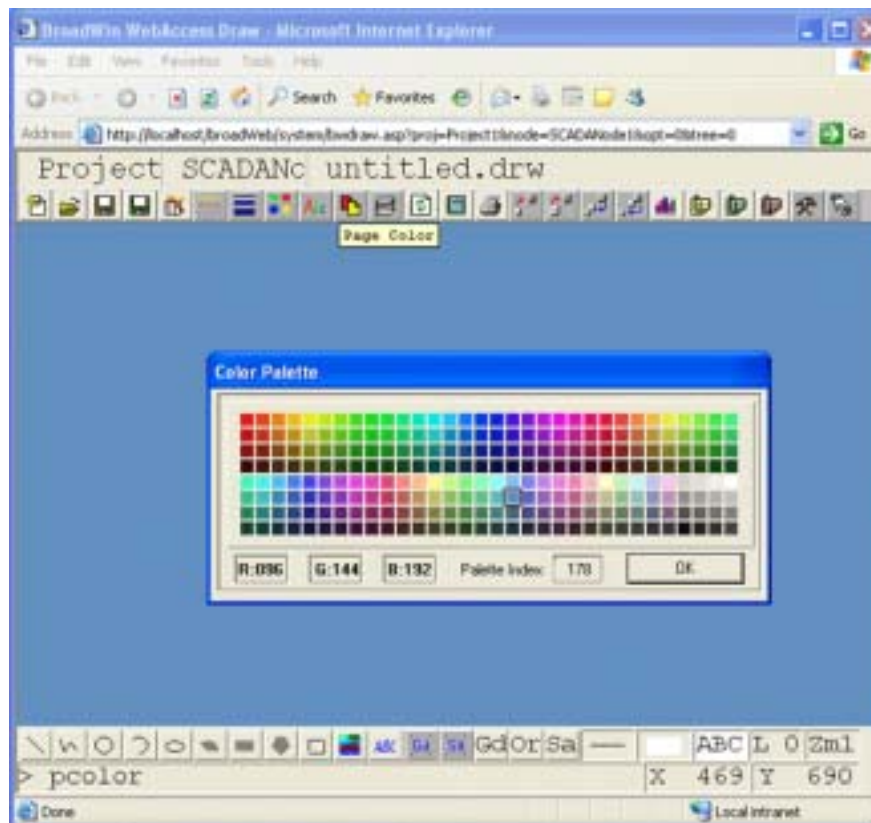
Moving the cursor over the Toolbar and pausing on an icon/button will show a **ToolTip** (black text in a yellow box).

Click the button to execute the command (e.g. draw circle) or open a Dialog Box associated with the command (e.g. draw widget).

The Toolbar Icons have matching Menu Items and Command Line entry.

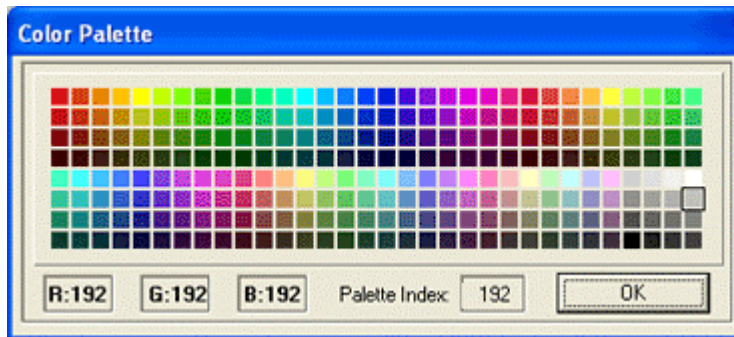
For example,

1. Select the  icon,
Or, Select **File-> New Draw** from the Right Click Menu (or Menu bar)
Or, Type "new" in the **command line** in the **status bar**  at the bottom left of the page.
2. Select the **Page Color** icon  from the Top Menu Bar.
3. A color Palette opens.

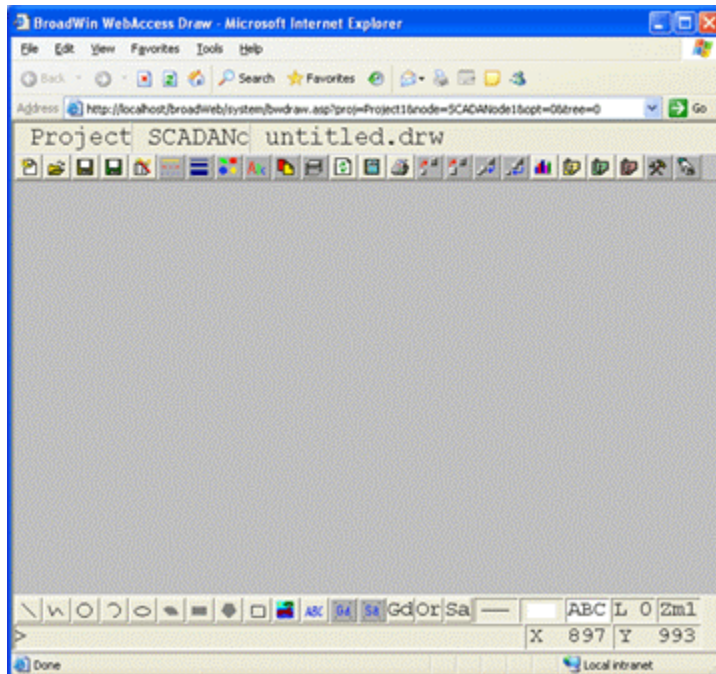


Notice the **pcolor** command in the command line at bottom left.

4. Select the Grey color from the Palette.



5. The Page Color changes to Grey.



For a Summary Description of the Icons associated DRAW functions see section 10.4.1 [Icons- Top Toolbar](#) and section 10.4.2 [Icons – Bottom Toolbar](#), in the Eng. Manual.

For Detail Descriptions also refer to [Status Bar](#), [Cursors](#), [Advanced Draw Commands](#) and [Draw Command Reference](#) (sections 10.4.3, 10.4.4, 10.5, and 10.11 respectively in the Eng. Man).

Additional Exercise 1: Build a simple graphic

Draw a graphic display with animation using the pre-animated widgets.

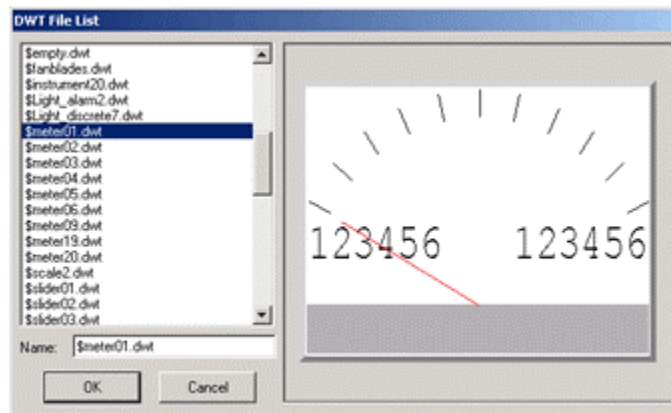
Task 4: Draw a Widget- Meter

1. **Click** the Widget icon  from the [upper toolbar](#).



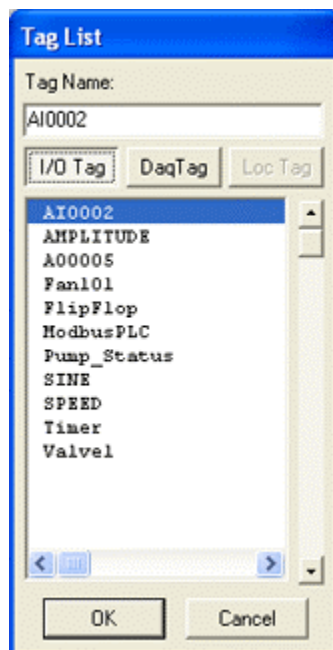
Hint - If you pause the pointer over the icon a tool tip opens describing the button

2. Use the scroll bar to \$meter01
3. Select **\$meter01** from the Draw Widget Dialog Box.



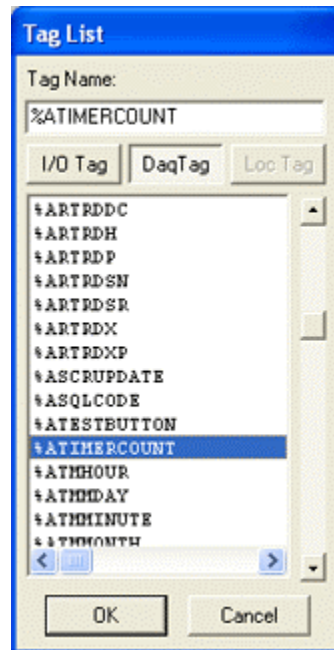
Draw Widget Dialog Box

4. Select OK. 
5. The **Tag List** appears.



I/O Tag list may be empty in a new system. Usually, you would use the I/O Tag list for animation, but in case you are on a new system without I/O Tags, we will use a pre-built System Tag for this example.

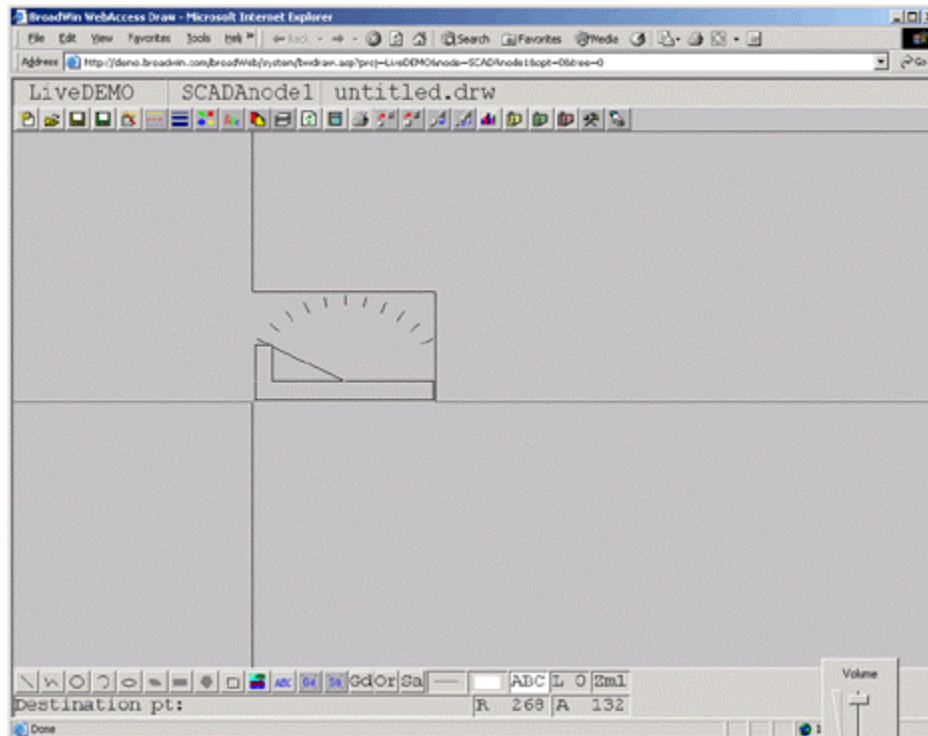
6. Click the **DaqTag** button  to see some system tags.



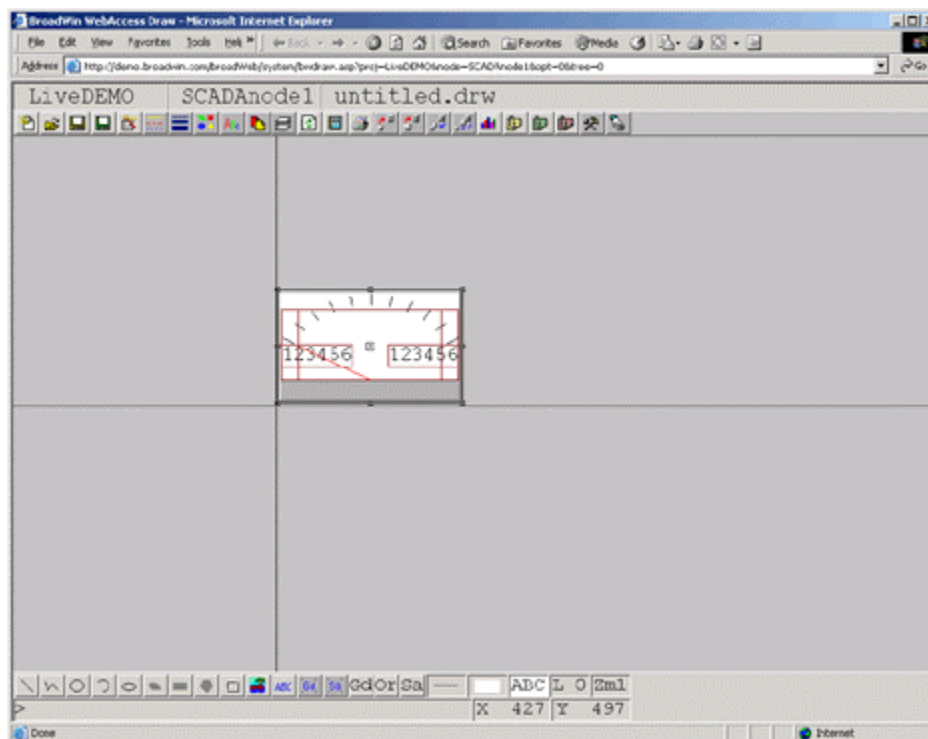
7. Scroll down to **%ATIMERCOUNT**.

8. Click on **%ATIMERCOUNT** and select **OK** .

9. The Widget appears in Outline form with a cursor. Position the Widget where you want it drawn.



10. **Click** the left mouse button to draw the widget.



Congratulations! You have just drawn and animated a meter that will indicate the value of your tag. The needle will move as the value changes. The High Scale and Low Scale of the Tag will be displayed.

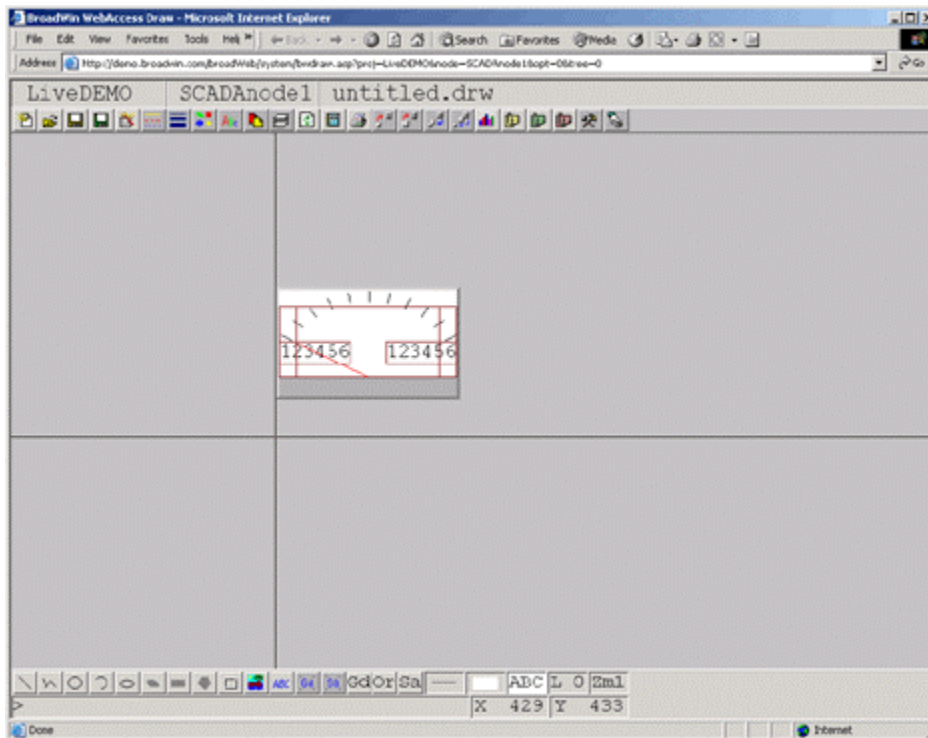
You can continue to draw some [text](#), [animate Text](#) and [draw some pushbuttons](#).

Or you can [save the graphic](#) and [download your graphic](#) to the SCADA node in order to [VIEW](#) it now.

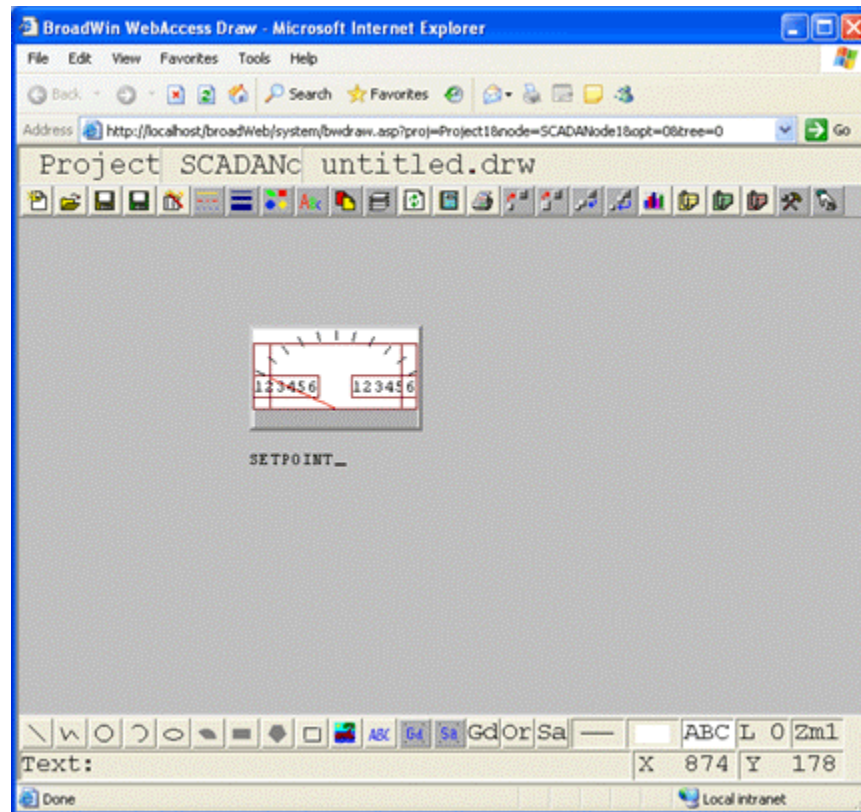
Task 5: Draw Text

To draw text on a graphic display:

1. Click the Text icon  from the [Bottom Toolbar](#).
2. Position the Text Starting Point with the Crosshair.



3. **Click once** to fix the Text Start Position.



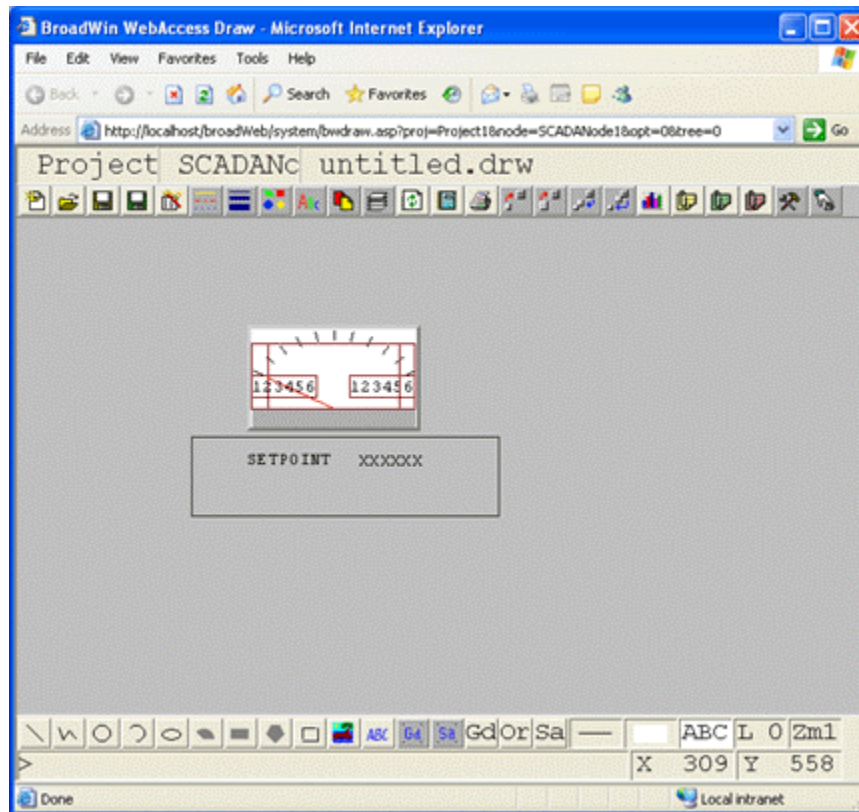
4. Type in your text using your keyboard. (For example, type "**SETPOINT**").

5. Press the **ENTER** key when done.

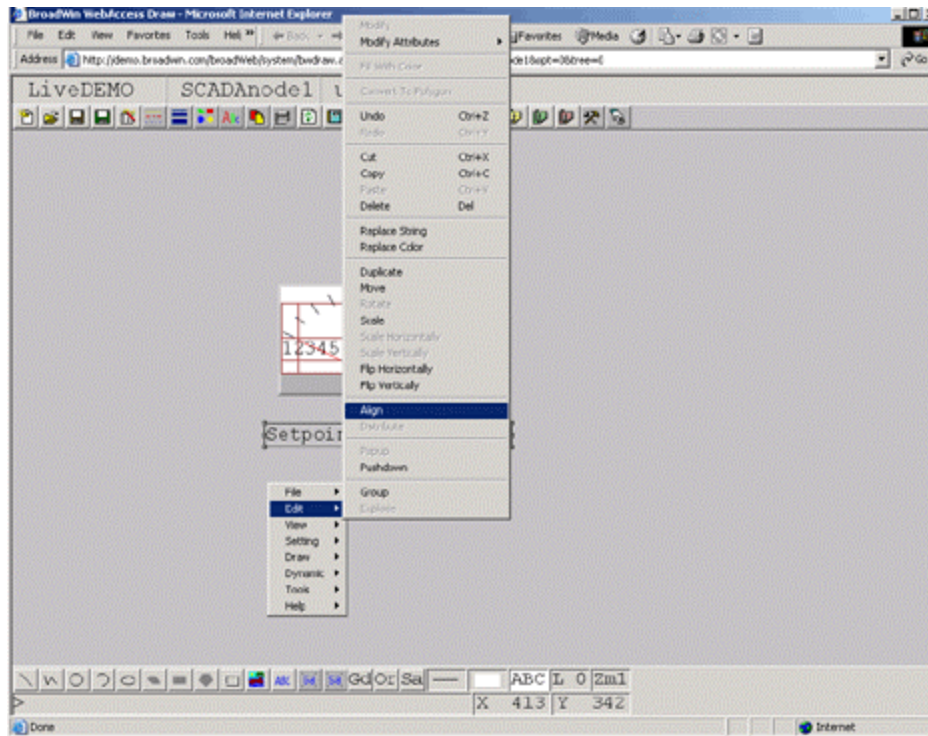
6. To Reposition the Text: **Hold the left mouse button down over the text**, while moving the mouse.

Repeat this for a second test field. Draw Text to act as placeholder for dynamic data (animated text).

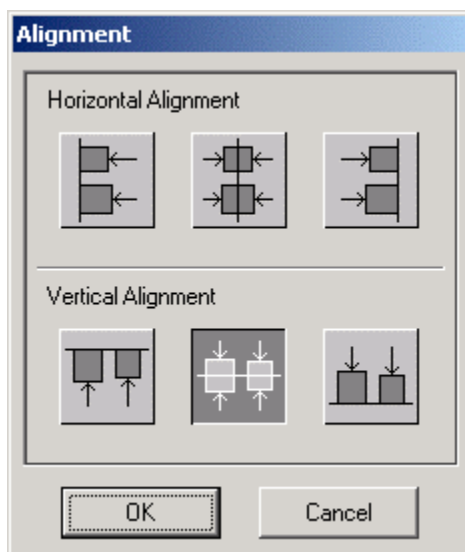
7. (Repeat Steps 1 to 6). Type six characters. For example, type "**XXXXXX**".



8. To select both Text fields (i.e. SETPOINT and XXXXXX). **Hold the left mouse button down** and **drag a rectangle** that covers both text fields.
9. **Right Click ->Edit -> Align.**



10. Select **Align Center** from Dialog Box



It is recommended to continue to the next section to [animate Text](#) and [draw some pushbuttons](#).

Task 6: Dynamic Text Animation

To animate text with real-time data:

1. Right Click -> Dynamic -> Animation

OR

Select the Dynamic icon  from the [upper toolbar](#).

2. The Animation Configuration Dialog Box appears.

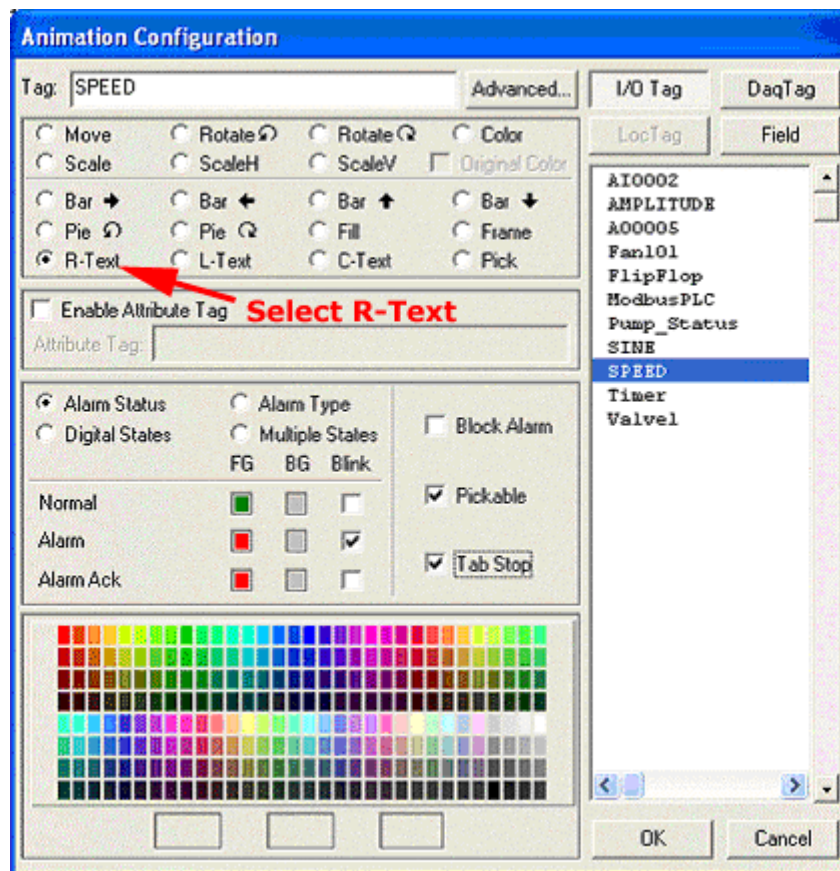


Figure 8- 21 Animation Configuration Dialog Bo- R-Text = Right Justified Text

3. Select **R-Text** radio button  (R-Text = Right Justified Text).
4. Select a TAG from the List (for example select **SPEED**).

*Hint - if the Tag List is blank Click the **DaqTag** button  to see some system tags. %ATIMERCOUNT is a useful tag to use for learning.*

5. **Click** on the TAG Name from the list and select **OK** .
6. **Click** once on the text to be animated(for example, click on the **XXXXX**).
7. A red box should appear around the text signifying that the text is Dynamic.

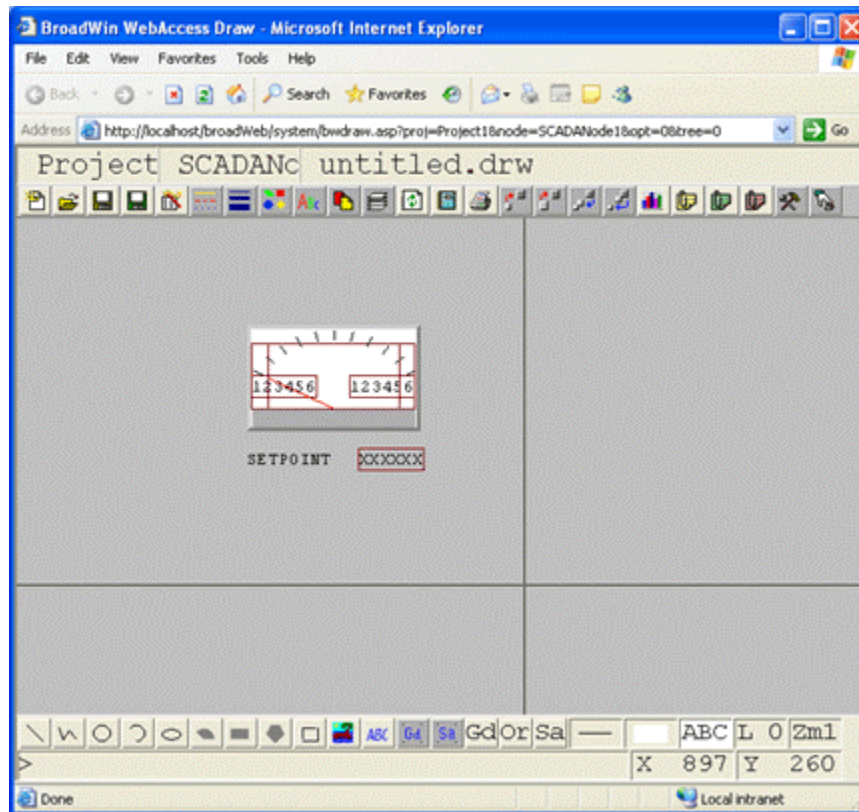


Figure – Your Drawing should look like this with Red box around the XXXX

You can continue to [draw some pushbuttons](#).

Or you can [save the graphic](#) and [download your graphic](#) to the SCADA node in order to [VIEW](#) it now.

Task 7: Draw a Pushbutton

Optionally, first draw Text that will be the label for the pushbutton. For example, type "ALARM SUMMARY". See [DRAW Text example](#) above to refresh your memory. If you draw the text label first, you can use the "Group Objects" feature to draw a perfectly positioned button. In addition, if grouped, you can edit the text and the button will automatically resize to fit the new text. You can also draw the text later and place it on top of the button.

1. Click the Text icon  from the [Bottom Toolbar](#).
2. Position the Text Starting Point with the Crosshair.
3. Type: **ALARM SUMMARY**.

4. Right Click -> Dynamic -> Pushbutton.

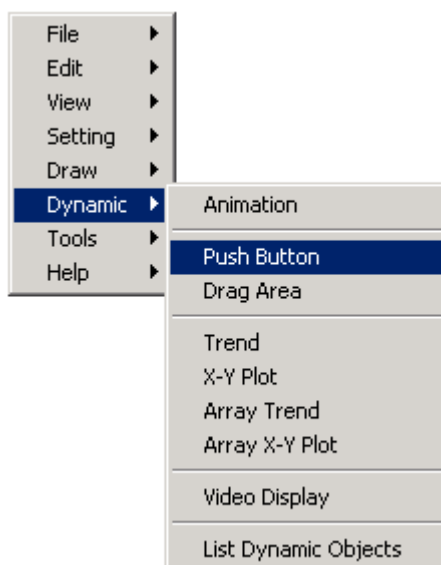


Figure - DRAW Right-Click Menu

5. Pushbutton Dialog Box appears.

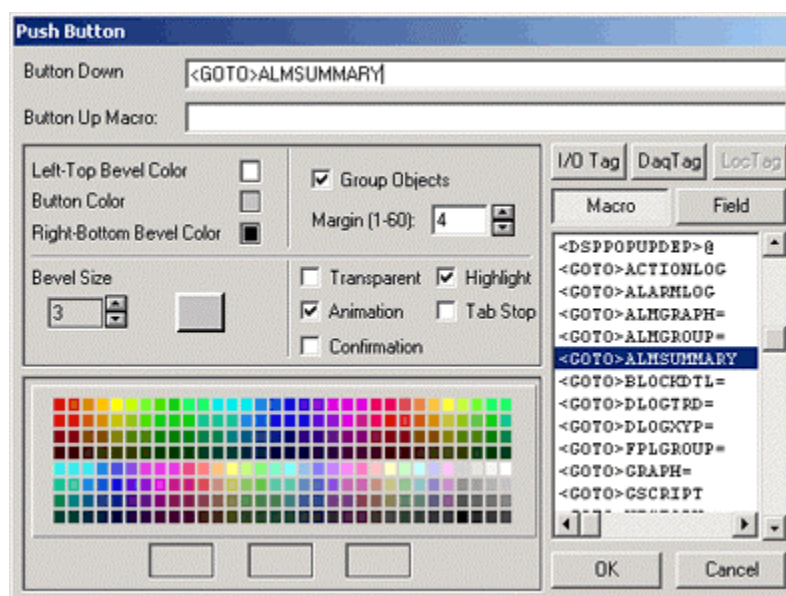
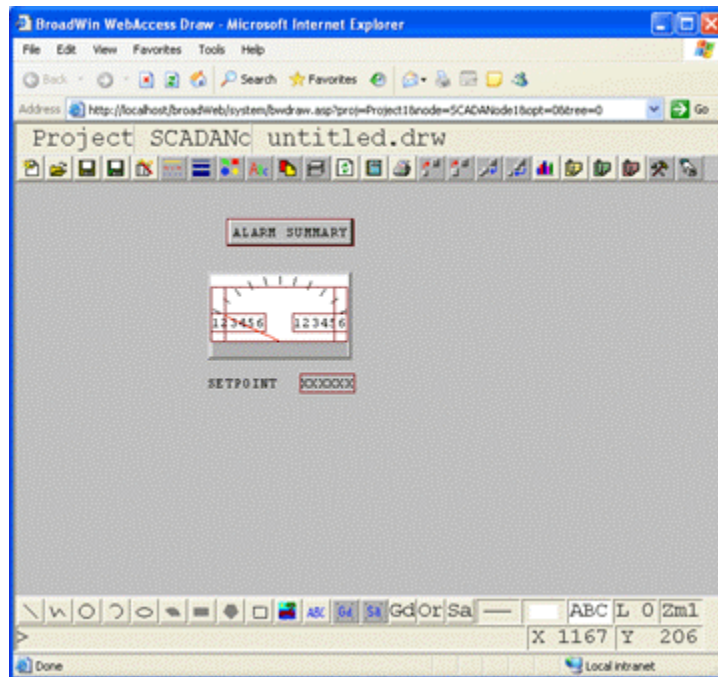


Figure - Pushbutton Dialog Box

6. Click the **Button Down** field once (the empty field to the left of the words)

7. Drag slider bar to scroll down the list of key Macros to find **<GOTO ALMSUMMARY>**

8. **Double Click** on <GOTO ALMSUMMARY>.
9. Check **GROUP Objects**.
10. Select **OK**.
11. If you followed all the steps exactly, the button is drawn around the object(s).



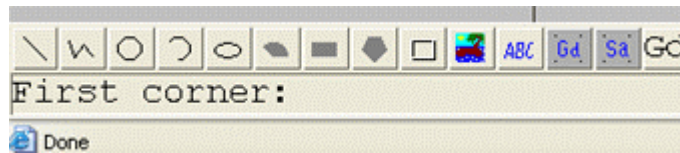
12. If you missed a step and did not have an object selected, but did have **Group Objects** selected, you are asked to “**Select Objects|Window|next**”.



- a. **Click once** on the Text. For example click on the text **ALARM SUMMARY**.
- b. **Right Click** once (or press the ENTER key) to end the select object command.

Hint - you can click multiple objects and they will all be grouped in one big button.

13. If you missed a step and did not have an object selected, but did NOT have **Group Objects** selected, you are asked to “**Select Objects|Window|next**”.



- a. **Click once** to start drawing the first corner of your button.
- b. **Click second** time to draw the other corner.

Hint - You can also draw the text later and place it on top of the button..

You should [save the graphic](#) ([Save bgr](#) or Save drw) and [download your graphic](#). The start [VIEW](#).

Task 8: SAVE Graphic

There are two Save Graphic commands, which correspond to the two file types:

- o SAVE DRW saves your work in a form that can be edited later.
- o SAVE BGR creates a runtime version of the file that can be viewed on clients. SAVE BGR also has an option to save the DRW with the same file name. Most people use SAVE BGR.

REMEMBER TO CHECK THE SAVE DRW OPTION!

To save a Graphic:

1. **Right Click -> File -> Save BGR.**

OR - Select the **Save BGR** Icon  from the [top toolbar](#).

2. The SAVE BGR File Dialog Box appears.

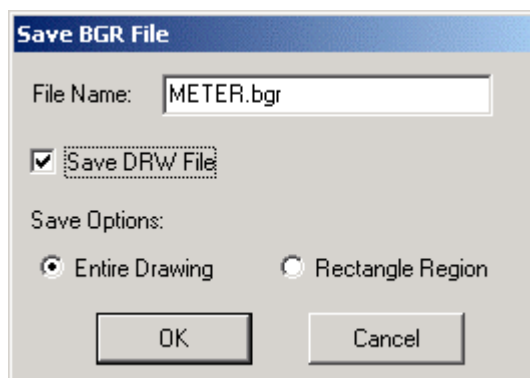


Figure - SAVE BGR File (Save Graphic)

3. Type a File name for the graphic with the .bgr extension. Don't use untitled.bgr!
For example, type METER.BGR

4. IMPORTANT! Check the **Save DRW** option

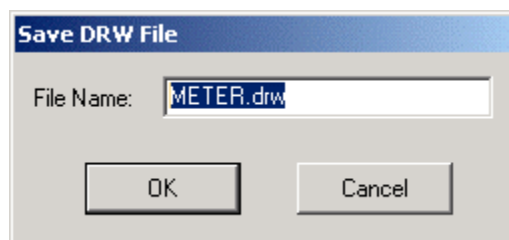


5. Select Entire Drawing radio button



6. Select **OK**.

7. The Save DRW dialog Box appears. Accept the default name, which is the same as the BGR.



8. Select **OK**.

The BGR file is a compiled Graphic suitable for Display by the WebAccess Client. You cannot edit a BGR file. The DRW file is the source file. You can Edit the DRW file and generate a new BGR file. If you loose the DRW, you can never edit the file again. Save the DRW.

Task 9: Download Graphic

DRAW creates files on the Project Node. The SCADA Node displays the files with live data. You need to download these files from the Project node to the SCADA node to see any changes you made in DRAW.

There are two ways to download graphics from the Project Node to the SCADA node:

- 1) Using a web browser
or
- 2) Task tray icon on the Project Node

To Download Graphics from any node or client:

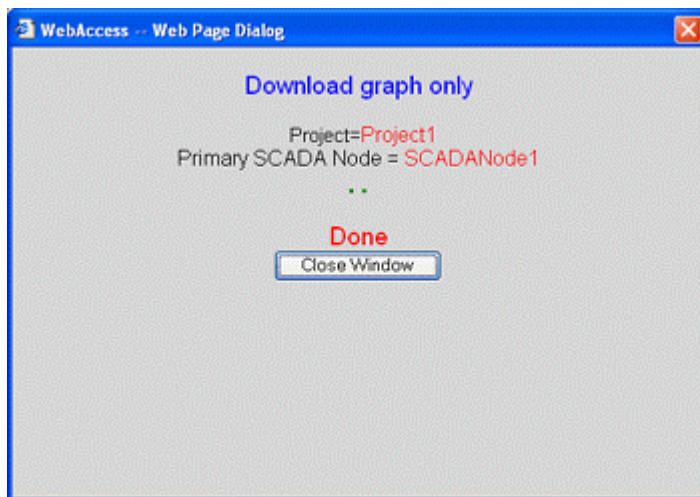
1. Connect to [Project Manager](#) with a web browser. There should be another Browser window opened to it already, if you followed this step by step (refer to Eng Man section [10.2.2](#) to refresh your memory).
2. Select the SCADA node to be downloaded.

3. Select **Graph Only**. The **Graph Only** link results in a download of only Graphic Files from the WebAccess Project Node to the SCADA node. Using **Graph Only** does not stop the SCADA node. **Graph Only** is recommended. Graph only will download bgr scripts, macros and all other draw related files.

Alternatively, you could also use **Download**.



4. The Download Progress Dialog Box opens.



6. When complete, the Download is confirmed.
7. Select **Close Window** to close the Dialog Box.

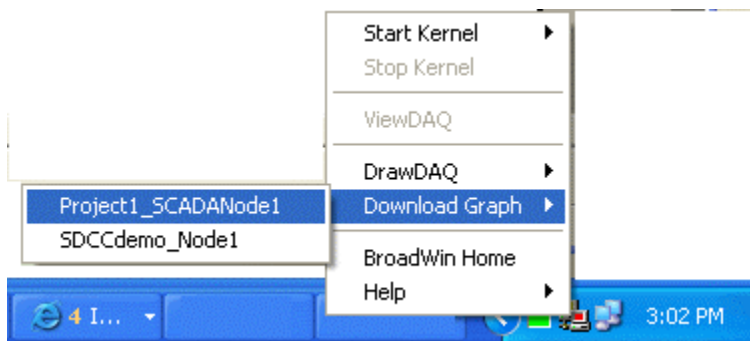
Task 10: Download Graphics from task tray

On the Project Node, there is a Download Graph menu item in task tray icon. This downloads only Graphic files (bgr, scr, mcr, et al). It does not download IO tags, recipes, schedules, etc. It does not stop the SCADA node



1. **Click** the WebAccess Service icon on the taskbar (usually located at lower right of screen, next to the clock).
2. Drag the mouse cursor over the popup menu to **Download Graph**

3. Drag the mouse cursor over the **Projectname_Nodename** of the SCADA node to download.



4. Click once with the mouse on the **ProjectNode_SCADANode** to be downloaded.

Task 11: Start WebAccess VIEW

1. Select the WebAccess View button 

For help see [Section 2.3.7 Start_VIEW](#) or [section 16.5 Start WebAccess_VIEW](#) in the Eng Manual.

2. The WebAccess **View Login Page** appears (Figure 8.24).

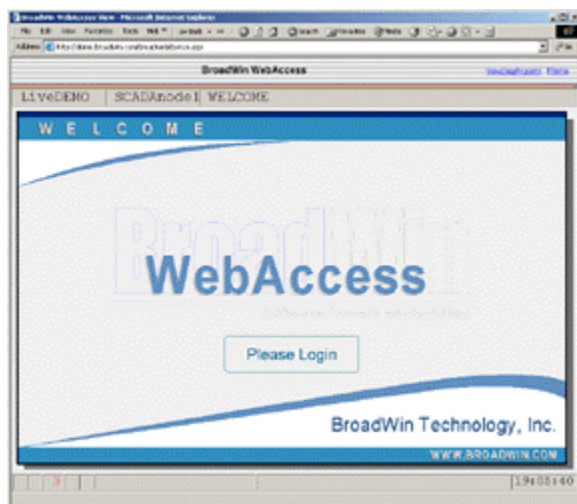


Figure 8.24 VIEW Login

Click on "**Please Login**" (Figure 8.24).



2. The **Login Dialog Box** appears (Figure 8.26).



Figure 8.26 - Login Dialog Box

3. Enter your "**User Name**" assigned by the engineer or technician who configured the system. Note that you can use either your **keyboard** or the **mouse** in the Login dialog box.

Tip - if this is a newly installed system, use the default login username: admin.

4. Enter your "**Password**".

Default login is,

User Name: admin

Password: (i.e. a blank password)

5. Press the **Enter** key.
6. The MAIN graphic display for your system appears. The default MAIN graphic supplied with WebAccess is shown below (Figure 8.27). Yours will probably look different

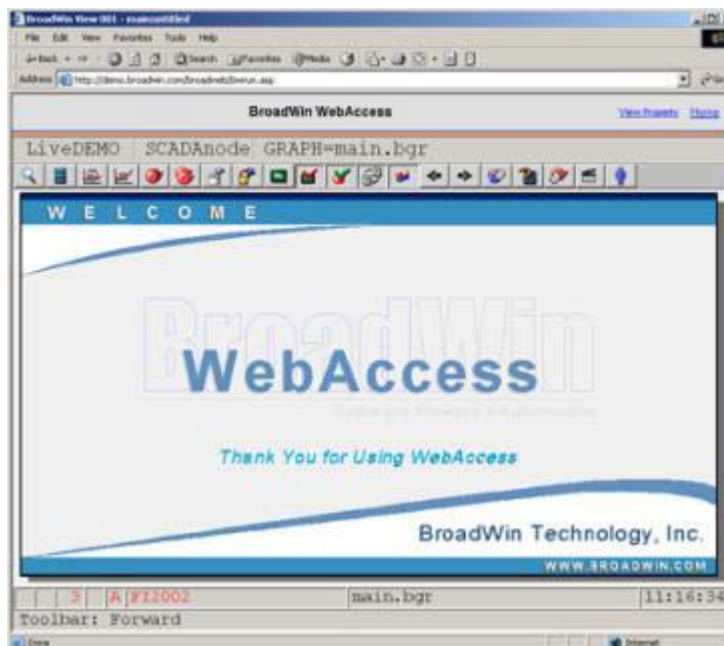


Figure 8.27 - default Main graphic display

Call up the **Point Info** tag browser by one of these methods:



- a. Select  on the [standard Toolbar](#) (Figure 8.27)

OR

- b. Use the [Popup Menu](#) in a web browser VIEW:

Right Click -> Goto -> Graph

OR

- c. From the ViewDAQ menu bar select: **Goto -> Graph**

OR

- d. Press **F9** on your keyboard

2. The **Graph List Dialog Box** pops open (Figure 8.28 or Figure 8.29).

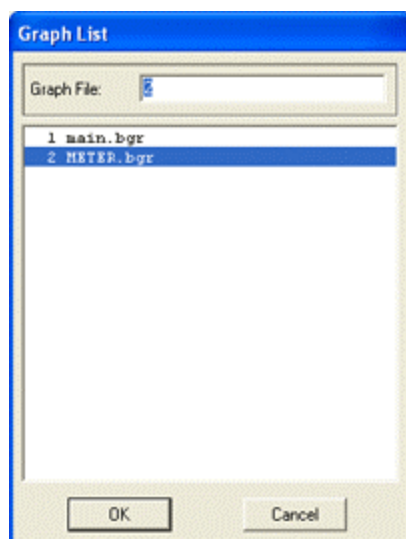


Figure 8.28 - Graph List Dialog Box - in VIEW

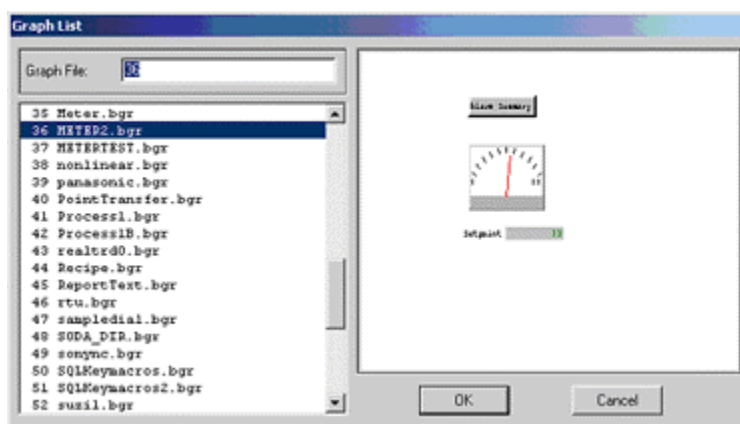


Figure 8.29 - Graph List with PREVIEW in ViewDAQ (non-web browser)

4. **Double click** on the **Graphic name** in the Graph List Dialog (Figure 8.28 or Figure 8.29). For example, double click on Meter2.bgr.

OR

Single click on the Graphic name and press OK.

4. The graphic display you selected appears. (Figure 8.30 shows an example from the LiveDemo of the Meter2 display).

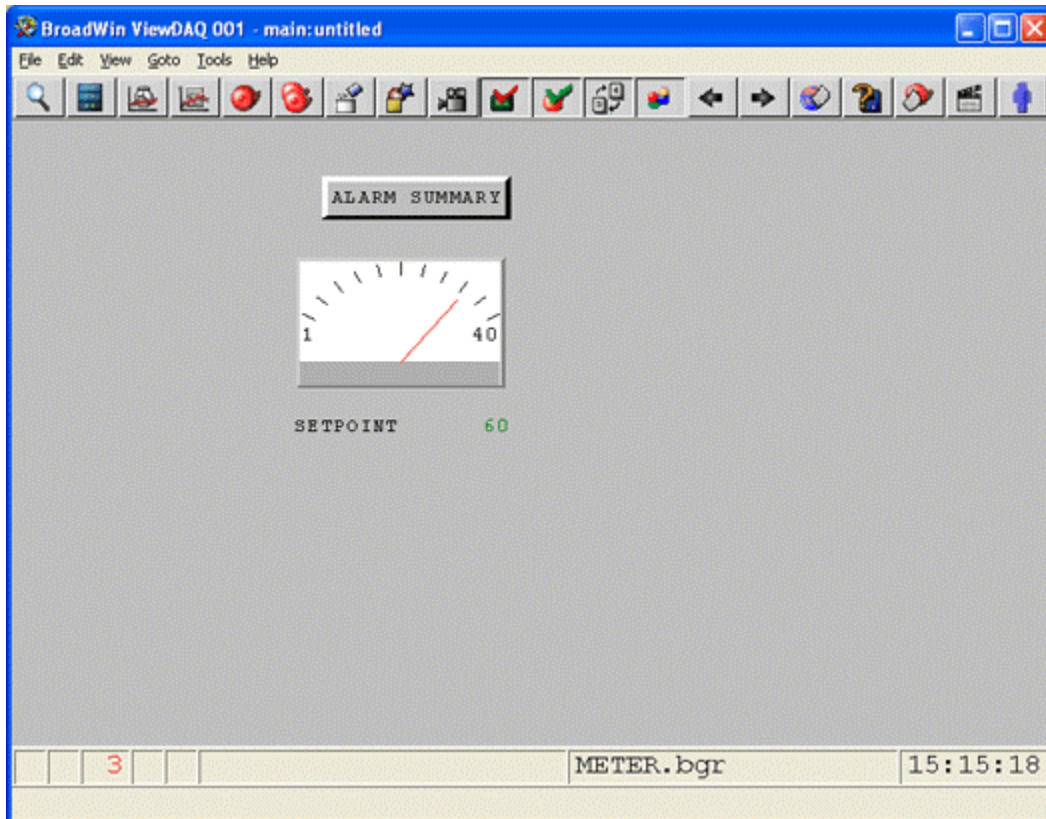
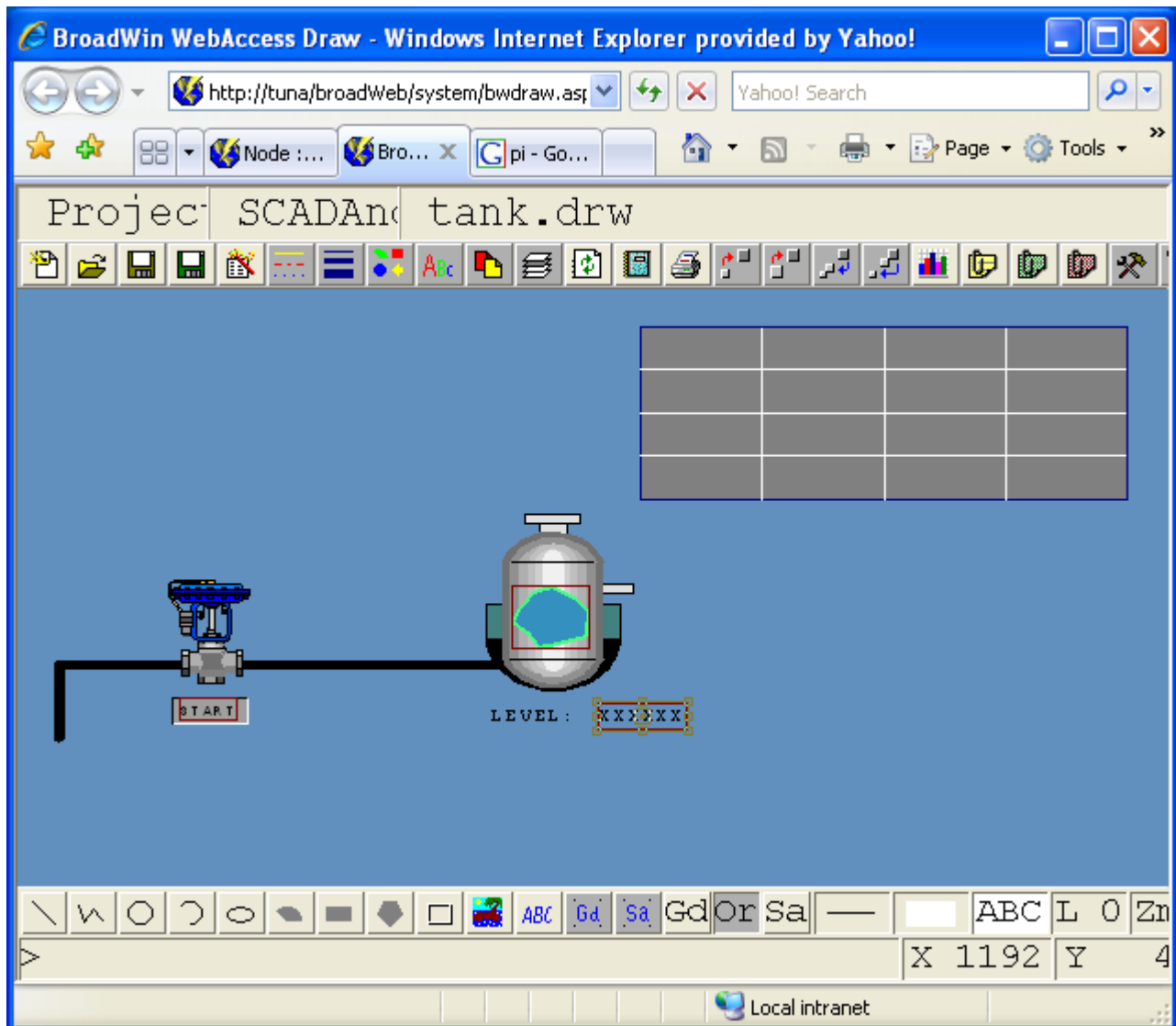


Figure 8.30 - Meter.bgr Graphic Display

Additional Exercise 2:

Task 12: Create a tank level graphic display.

Draw the Tank Graphic shown below



For a web browser DRAW, use the Right Click menu, then select the following commands.

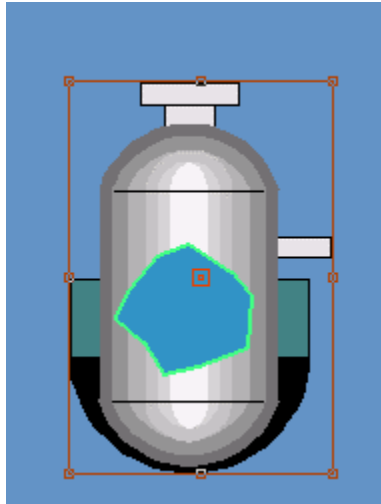
For the local DrawDAQ on the Project Node, use the menu bar.

Create a new tank level graphic display in DRAW using **File -> New**.

1. Insert the Tank symbol with **Draw -> Symbol**.

a. Select **\$tank10.dsm**.

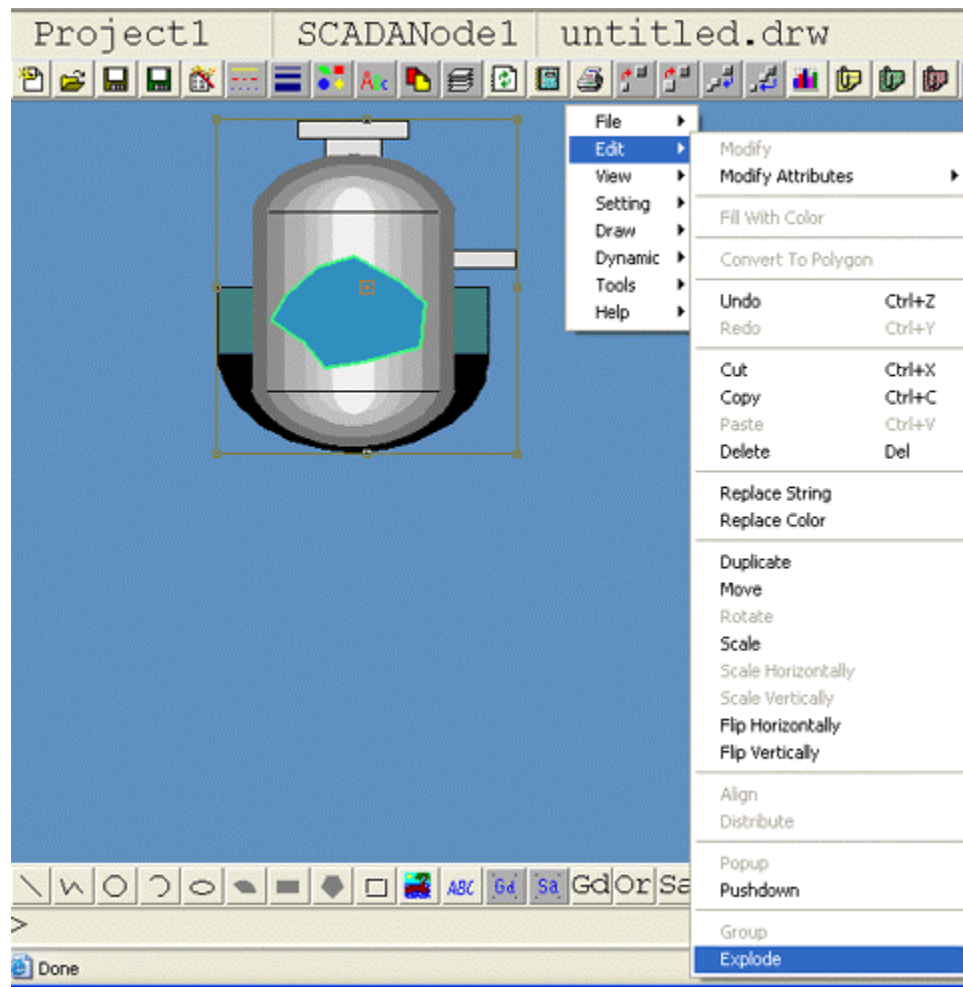
- b. Select OK.
 - c. Position the Symbol.
 - d. Right-Click to draw it.
2. Click the left mouse button to draw the tank.



5. On the Tank's center:

In DRAW select **Right Click -> Edit -> Explode**

*In DrawDAQ, **Right Click -> Explode.***)



6. Drag the Mouse around the “cut-away” of the Level
or
Click on the “cut-away” with the mouse to select it. There should be a red box drawn around the “cut-away window” (see figure 8-41).

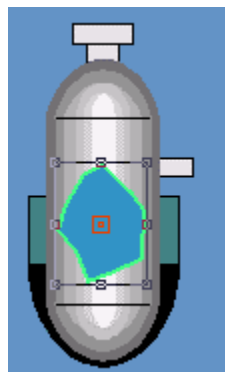
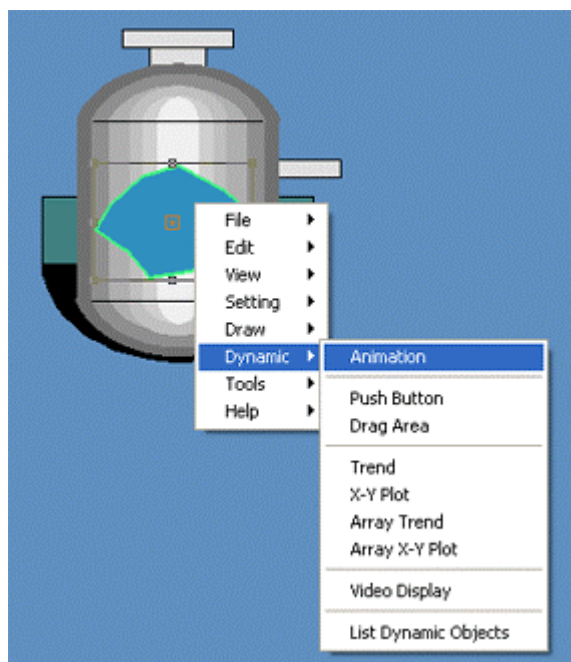


Figure 8-41- exploded Tank with “cut-away window selected”

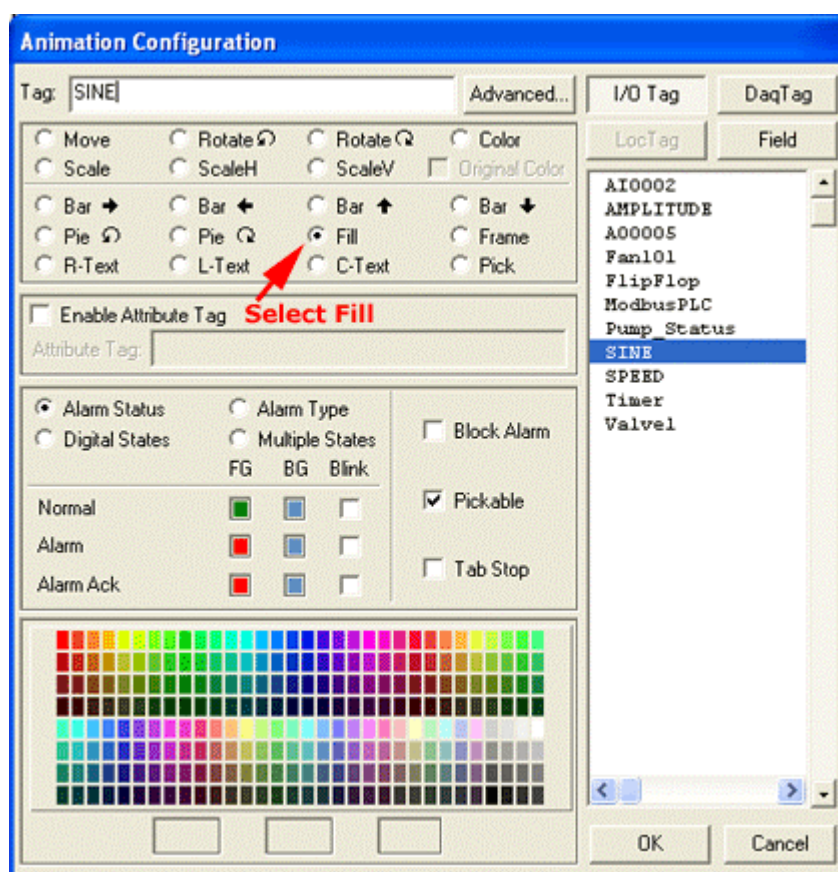
7. Use Dynamic Animation to fill the tank with a Fill animation.

In DRAW, **Right Click** on the Tank Level -> **Dynamic** -> **Animation**

In DrawDAQ, from the menu bar, select **Dynamic** -> **Animation**



8. The Dynamic Animation Dialog Box opens.



9. Select **Fill** radio button.
10. Select a TAG to fill the tank, for example select **SINE**.

Draw Text

11. Label the Tank with static text using **Draw -> Text** . Type "LEVEL:".
12. Create a placeholder for a Dynamic Animation active point for the Level tag "XXX.X" using **Draw -> Text**.

Animate TEXT field

13. Use **Dynamic -> Animation** to animate the text "XXX.X next to Level.
14. Select **R-Text**
15. Use TAG named **SINE** as the Level measurement tag.

Draw straight Lines (Poly Line)

16. Use the **Or** button  to force orthogonal 90 degree lines.
17. Use **Modify Attributes -> Pen Width** to change the thickness of the Line.
18. Use **Draw -> Polyline** to draw a 90 degree pipeline.

Draw Valve symbol

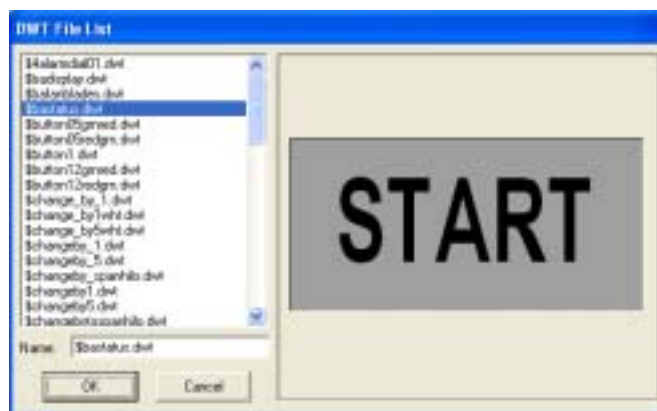
19. Insert a Valve using **Draw -> Symbol**
20. Select **\$valve01.dsm**.
21. Select OK.
22. Position the Valve, then Click to Draw it.

Draw STATUS widget

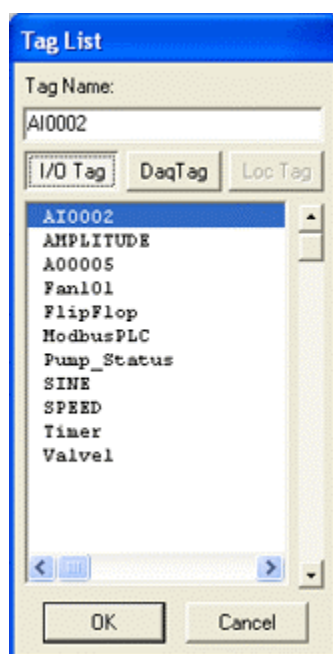
23. Insert a Widget using Draw -> Widget



OR select the Widget icon from the toolbar



24. Select the \$bastatus.wgt from the menu list (scroll down to it or type it).



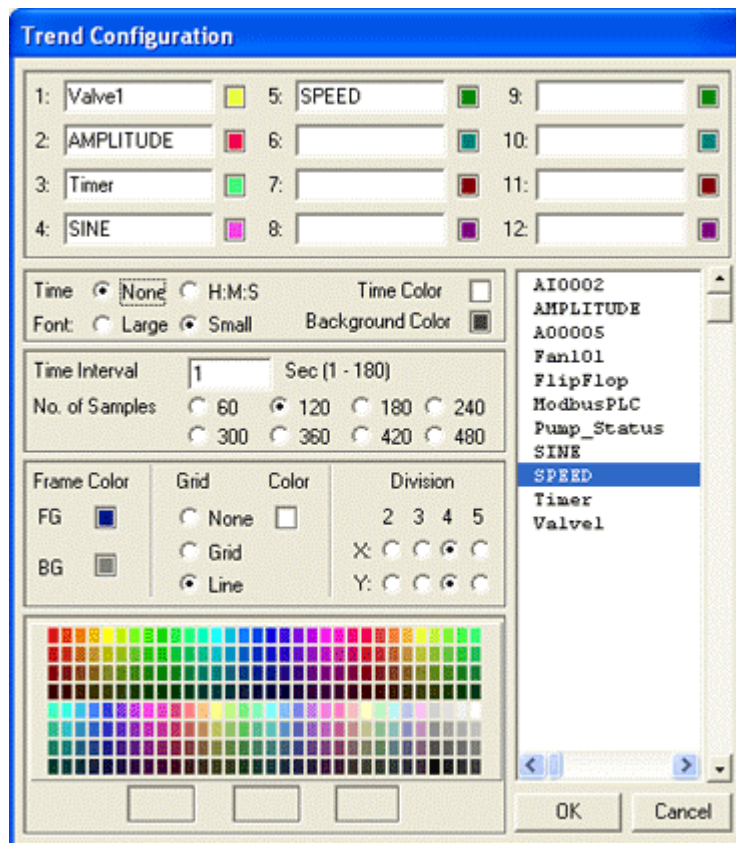
Select the tag **Valve1**.

Select OK

Position the widget under the valve and click the mouse to draw it.

Draw a Trend Window

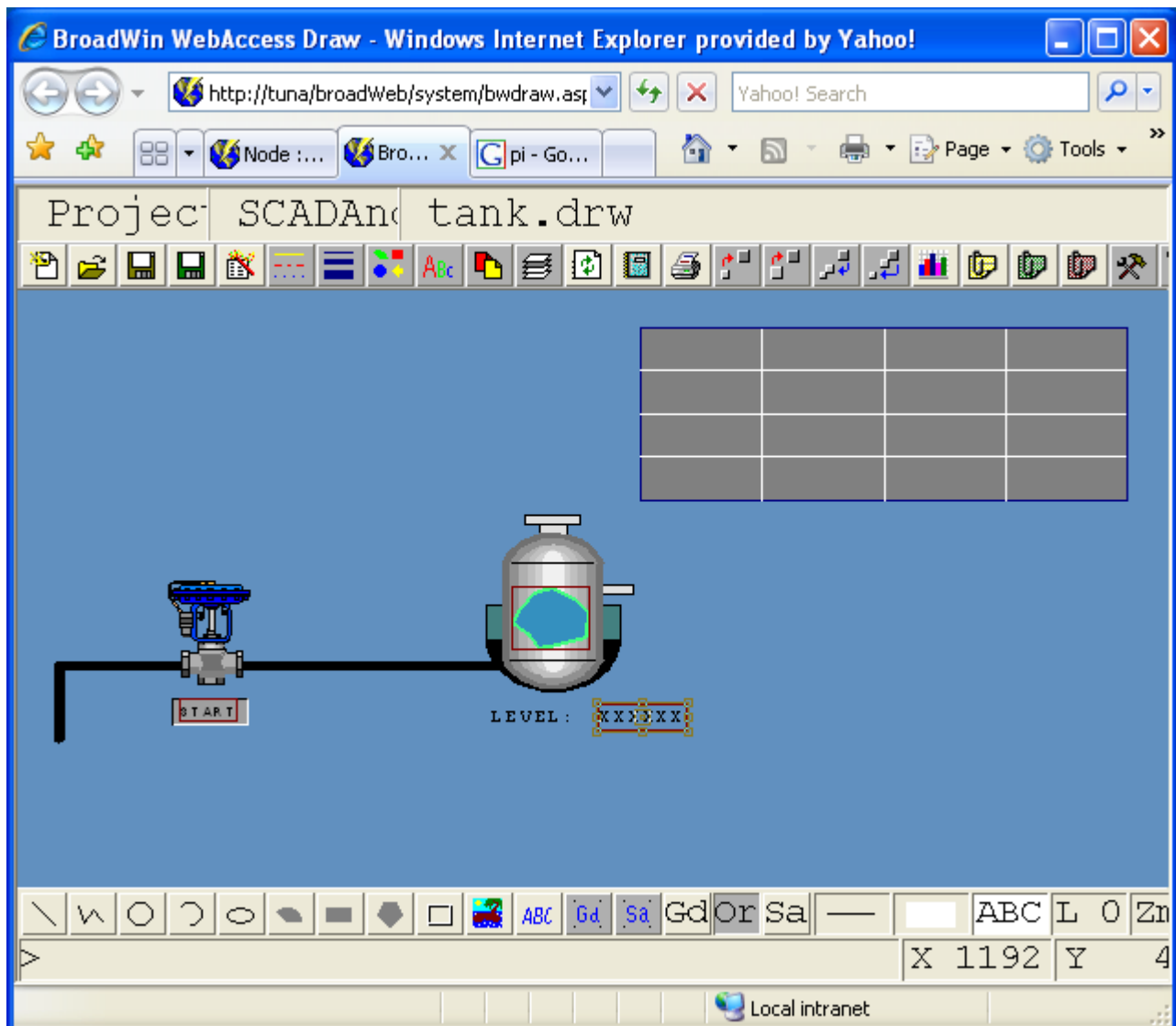
28. Create a trend window for the tags using **Dynamic -> Trend**.



- Enter the tag names: **Valve1, SINE, Timer, Amplitude and FlipFlop.**
- Select the Time radio buttons and COLORS.
- Select OK.
- Click the Upper Left corner of the trend window.
- Drag to the lower right window of the trend window and Click once.

Save the Graphic

- Save the graphic as Tank.bgr and Tank.drw.

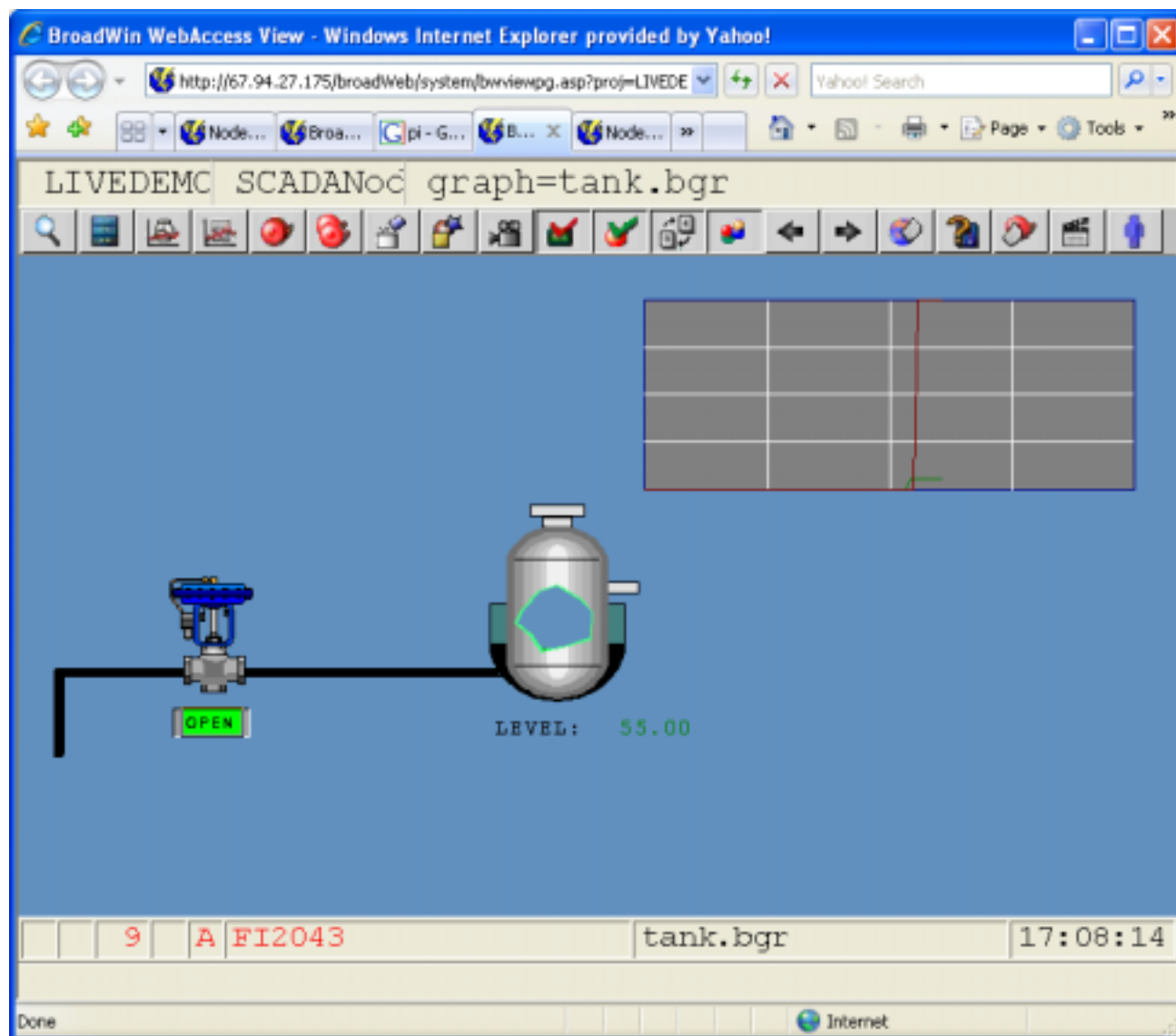


30. Download load to the SCADA Node.

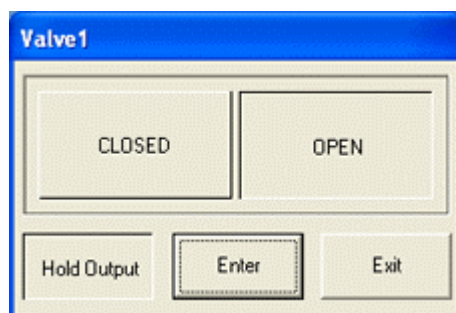
31. (Start SCADA Node if it is not already running).

View the graphic in VIEW

1. Start VIEW.
2. Open the graphic called **Tank.bgr** from Graph List.

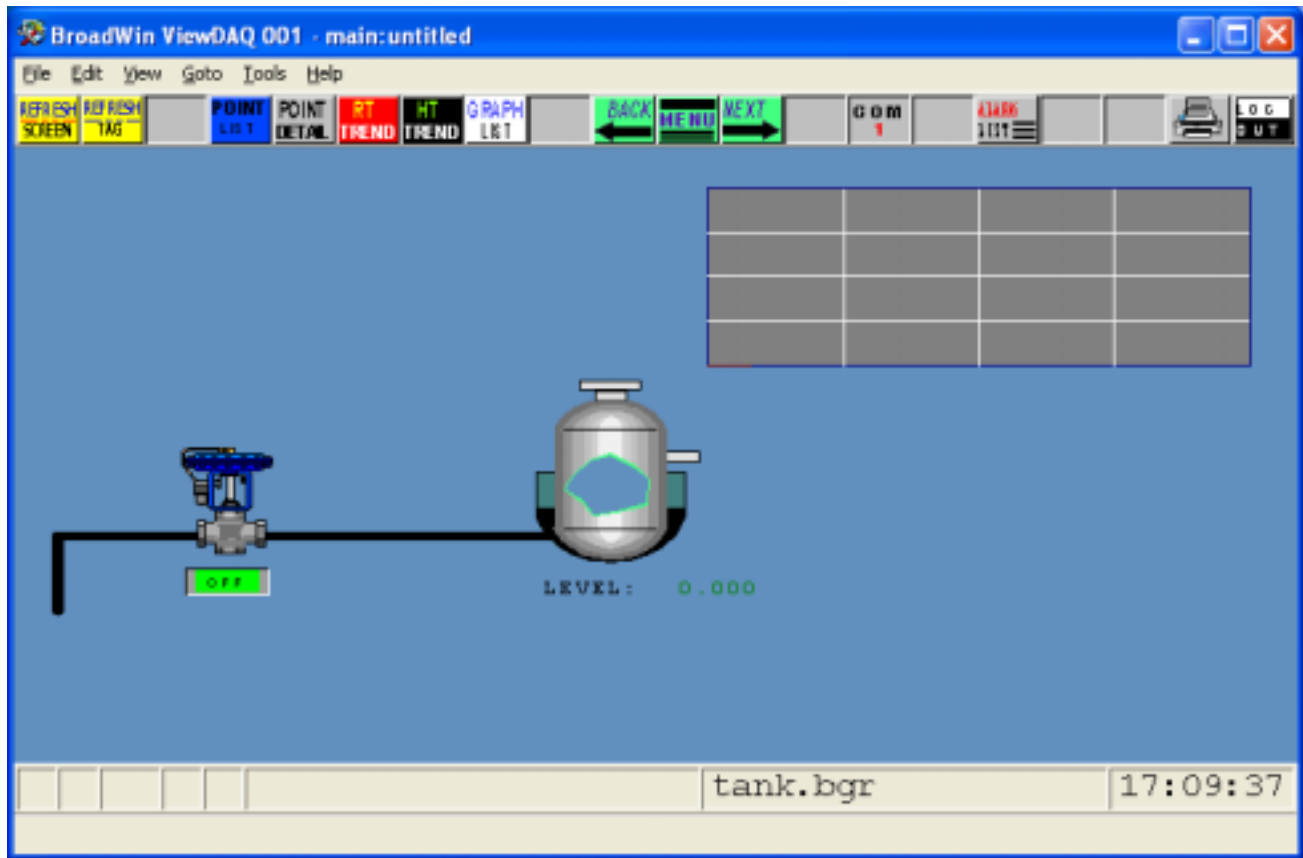


3. Observe the change in the tank level.
4. Change the value of "valve" to OPENED. The color of the valve text should change to red. Hint, double click on the CLOSED or OPENED text to open the Change Dialog Box.



5. Note the trend window.

Toolbar can be user modified. Here is Barrington with words replacing icons,



Also not this is ViewDAQ with menu bar above Toolbar.

Additional Exercise 3:

Task 13: Explore DRAW Toolbar Icons and Menus

Icons - Top Toolbar

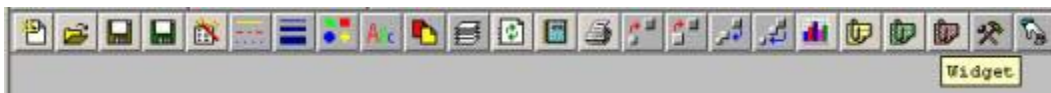


Figure - DRAW Top Toolbar

Icon	Menu Item	Command Line	Description - Top Toolbar in DRAW
	New DRW	new	Opens a New Drawing Source file. *.DRW are the source files for all WebAccess Drawings. DRAW can edit only DRW files. DRW files and elements can be save as different display types.
	Open DRW	open	Opens an existing Drawing Source file. Opens a Dialog Box

Icon	Menu Item	Command Line	Description - Top Toolbar in DRAW
			showing all *.DRW. Web Browser clients cannot browse subdirectories. *.DRW are the source files for all WebAccess Drawings. DRAW can edit only DRW files. DRW files and elements can be save as different display types.
	Save DRW	save	Saves current drawing as DRW type. Opens Dialog box to confirm name.
	Save BGR	bgr	Converts current drawing into a run-time version (*.BGR). This is the Display type used by most User built display and Found using the F9 function key in VIEW.
	Set Graph Parameters	bxxpara	IMPORTANT! - Sets Graphic Parameters including update interval, the names of scripts and local tag files. Opens Dialog Box used to access the Script Editor and Local Screen Tag Editor.
	Line Attributes	lineatr	Sets color and line type of next command to draw a line, polyline, circle, or arc.
	PolyLine Width	polylineatr	Sets line width of next command to draw a polyline.
	Brush Color	bcolor	Sets color of next command to draw a pie, rectangle, or polygon. Also sets the Fill Color for next Fill command.
	Text Setting	textatr	Sets text color and background color for next draw Text command.
	Page Color	pcolor	Sets the background color for the display.
	Layer	layer	Turns On or Off the display of up to 16 layers (0 - 15). Also sets current active layer.
	Redraw	redraw	Redraws the display.
	List Dynamic Objects	listdyn	Prints a report (in Notepad text editor) of all tags used for animation and dynamic updates. Any objects edited with the Dynamic menu item, Animation icon  or drawn using Faceplates or Widgets.
	Print	print	Prints to Paint.exe program by default. Modify the bwdraw.ini file settings to print directly to printer.
	Zoom	zoom	Zooms in or magnifies a selected portion of the display.

Icon	Menu Item	Command Line	Description - Top Toolbar in DRAW
	Pan	pan	Pans display through available 1000 x 1500 coordinate window. Allows graphic objects to be place off the screen for animation purposes. Also enables moving zoom window to see other portions of display
	Last View	lastview	Resets ZOOM and PAN to previous settings
	Original View	origview	Rests ZOOM and PAN to default settings (zoom 1, no pan)
	Animation	animation	Create a new Dynamic object or animation. Calls the Dynamic Animation Dialog Box used to animate Text and Objects. Contains about 30 commands and options including Dynamic Text, Move, Rotate, Alarm Color, Scale, Dynamic Bars, Dynamic Fill, and Frames. See Animation section for complete description.
	Symbol	symbol	Draw a pre-built drawing element from library. Symbols are normally not animated. See Widgets.
	Faceplate	faceplate	Draw a pre-built, animated, drawing element from library. Faceplates are connected to Block type tags only. Only the tagname of the block needs to be specified. The Block Type must match the parameter types used in building the faceplate. See Widgets for single point tags.
	Widget	widget	Draw a pre-built, animated, drawing element from library. Widgets work with any tag of the same type (analog, digital or text). Only the tagname of the tag needs to be specified; all dynamic connections in the Widget will be connected to that tag. This is useful for objects using multiple connections to same tag.
	Toolbar	toolbar	Create or edit a toolbar for use on displays used by operators in VIEW. Assign buttons (*.BBN) and keymacros to the toolbar for common or custom operator actions (e.g. change displays, acknowledge alarms).
	Macro File	mcr	Create a Key Macro file. Similar to a program, executing this file will execute the key macro commands in sequences. Used to animate operator actions assigned to a pushbutton. Key macros include alarm acknowledge, change value, change display, etc.

Icons - Bottom Toolbar

Figure - Bottom Toolbar - DRAW

Icon	Menu Item	Command Line	Description – Bottom Toolbar in DRAW
	Line	line	Draw a line. Can be multi-segmented. All segments are straight or curve. Each mouse click draws another segment. Right Click or press the ENTER key to finish. Press Esc to cancel. In the command line, select Undo to erase last segment. Close to draw final segment to starting point. Can also type coordinates for each segment.
	PolyLine	polyline	Draw a poly line. Variable line widths supported. Segments are Curved or straight. Each mouse click draws another segment. Right Click or press the ENTER key to finish. Press Esc to cancel. In the command line, select Undo to erase last segment. Close to draw final segment to starting point. Arc to draw curved segment. Tang to change radius of arc Line to draw straight segments. Can also type coordinates for each segment.
	Circle	circle	Draw a circle. Uses Line attributes for color and style. Can be filled with color. Each mouse click enters coordinates. Press Esc to cancel. In the command line, select Center (default) to specify center point and either radius or diameter. 3P to draw circle specifying 3 points on the circumference. 2P to draw curved segment specifying 2 points. Radius to specify radius of circle using Center. Diameter specify diameter of circle using Center. Can also type coordinates for each segment.
	Arc	arc	Draw an arc of circle. Uses Line attributes for color and style. Can be filled with color. Each mouse click enters coordinates. Press Esc to cancel. In the command line, select Start (default) to specify starting point. Center to specify center point, start point and either end point or angle.

			Can also type coordinates for each segment.
		ellipse	Draw Ellipse
		pie	Draw Pie (filled arc)
		rectangle	Draw filled Rectangle
		polygon	Draw filled Polygon
		panel	Draw Panel
		bitmap	Draw a Bitmap. Use the Menu Commands to draw a GIF or JPEG
		text	Draw Text. Click this button; click a starting point on the Graphic, Start Typing.
		grid	Allows Adjustment of Display Grid
		snap	Allows adjustment of Snap Grid
		grid	Gd turns the screen's grid display on and off.
		ortho	Or activates or deactivates the orthogonal function. Drawing lines and moving objects can occur only in straight lines.
		snap	Sa turns the snap action on and off. Any object moved or drawn will align with snap grid

STATUS BAR

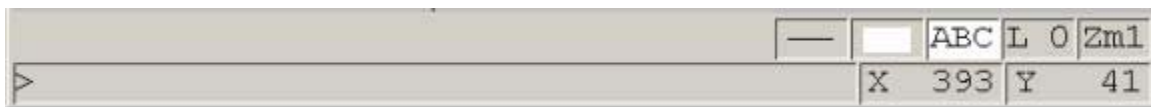
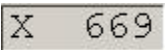
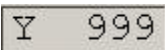
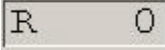
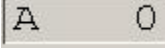


Figure - Status Bar - DRAW

The Status bar is at the bottom DRAW and DrawDAQ window. It shows the current position of the cursor or mouse (X and Y), the layer (L), zoom level (Zm), line style, and brush color. The Command Line (> _____) acts as both a user prompt or as a command line. The contents of the command line changes when draw commands are picked from toolbar or menu. User can also type commands directly (similar to AutoCAD).

Icon	Menu Item	Description
	Line Color setting	Shows color of next command to draw a line, polyline, circle, or arc. See Line Setting  .

Icon	Menu Item	Description
	Brush Color	Shows color of next command to draw a pie, rectangle, or polygon. Also sets the Fill Color for next Fill command. See Brush Color  .
	Text Color	Shows text color and background color for next draw Text command. See Text Setting  .
	Layer	Shows the current active Layer. The next items drawn will be on this layer. See Layer Setting  .
	Zoom Magnification	1 to 8. Shows current Zoom Level. 8 is 8x power or 800%. See Zoom  .
	X coordinate	Cross Hair X Coordinates of Mouse in the horizontal (left to right). Range is 0 - 1500 0 is far left of screen. 1500 is far right of display. Also used with scripts to specify position of moving objects. Replaced by R (Radius) during some draw commands.
	Y coordinate	Cross Hair Y Coordinates of Mouse in the vertical (up / down). Range is 0 - 1000 0 is far bottom of screen. 1000 is top of display. Also used with scripts to specify position of moving objects. Replaced by A (Angle) during some draw commands.
	Radius	Specifies radius or length from start point in same units used by X and Y coordinates. Range is 0 to 1500. Appears during some draw commands
	Angle	Specifies Angle in degrees. Range is 0 to 360. Appears during some draw commands
	Command Line	The Command Line acts as both a user prompt or as a command line. The contents of the command line changes when draw commands are picked from toolbar or menu. User can also type commands directly (similar to AutoCAD).

Command Line Prompts

The Command Line (> ____) acts as both a user prompt or as a command line. The contents of the command line changes when draw commands are picked from toolbar or menu. User can also type commands directly (similar to AutoCAD).

As user begins a DRAW command, options for that command appear in the command line. For example, Draw -> Text results in options for Outline and Fill. The First Option listed at the left of the command line is the default (for example in Draw -> Text, Text Position of Normal Text is chosen).

Hint - Do not select the Command Line Option on the Left or if there is only one option shown. This usually results in drawing an object or end point at the bottom left of the screen. Use UNDO to recover from such a mistake.

Command Line Prompts	Context or Draw command invoking the Prompt
Text pos Outline Fill:	Draw Text command line. Click with Mouse to position normal text. Select Outline to select Outline Text (outline with empty center) Select Fill to select Fill text (fill color, line color different)
From pt Curve:	Command line at the start of Draw Line commands. Click Curve to draw a curve line. Else Click the mouse on the screen for a starting Point or type X, Y coordinates. Press Esc to cancel.
Start pt:	Second Command line to start Curve Line.
Control pt1 Undo End:	Odd numbered Command to Draw Curve Line, Control Point (an intermediate point) or Undo Start or End Curve Line. Control points come in pairs. . Click mouse on desired end point in the display or type X, Y coordinates. Click on Undo to erase last line segment. Click on Close to draw a line to starting point. Press Esc to cancel.
Control pt2 Undo:	Even Command to Draw Curve Line, Control Point (an intermediate point) or Undo last control point 1. Control Points come in pairs
End pt Undo Close:	Command to Draw End point of Line, PolyLine, or Polygon Undo last or Close the Line or PolyLine on itself
	Second command line at for Line and Polyline commands
Center pt 3P 2P:	Command line at for Circle command. Click mouse on desired center point in display or type X, Y coordinates. Click on 3P to specify 3 points to define circle. Click on 2P to specify to Points to define circle. Press Esc to cancel.

Cursors

The cursor changes to indicate the editing action that is possible (move, stretch vertically, stretch horizontally, Control Points, etc). There are 10 cursors (plus the “crosshairs”) that are used in DRAW (the cursor is the icon that moves with the mouse).

Cursor	Name	Description and context
	Crosshairs	Normal cursor to select a position on the screen to draw line segment, start point, endpoints, etc. X,Y coordinates and Radius, Angle track the center of the crosshairs.
	Track4way	Cursor to move selected object in any of 4 ways (up, down, left right). 1. Select object by clicking once with mouse. 2. Move crosshair inside of selected object, but away from edge or center.

Cursor	Name	Description and context
		3. Track4way cursor appears indicating you can move object. 4. Hold Left Mouse button and move mouse to move object.
	TrackCopy	Cursor to copy the selected object. Used with the Shift key. 6. Select object by clicking once with mouse. 7. Hold Shift key and move crosshair to top-center-square or bottom-center-square of selected object. 8. TrackCopy cursor appears indicating you can copy object. 9. Hold Left Mouse button, move cursor to new location. 10. Release left mouse button to create a copy.

Cursor	Name	Description and context
	TrackFlip	Cursor to flip the selected object. Used with the Shift key. 8. Select object by clicking once with mouse. 9. Hold Shift key and move crosshair to corner square. 10. TrackFlip cursor appears indicating you can flip object. 11. Hold Left Mouse button, move cursor to new location. 12. Move cursor up-down to Flip Vertically. 13. Move cursor right-left to Flip Horizontally. 14. Release left mouse button to create a copy.
	TrackModify	Modify the selected object. Text for Text, Control Points for Curve Line Segments, etc. 1. Select object by clicking once with mouse. 2. Place crosshairs over very center of selected

		object (the center square). - TrackModify cursor appears indicating you can modify the object (text, control points, etc.) - Click once with the Mouse to Modify the object.
	TrackNone	No edit is available at current position of cursor.

Cursor	Name	Description and context
 	TrackNESW TrackNWSE	Edit object in Diagonal (NorthEast – SouthWest) or (Northwest Southeast) - Select object by clicking once with mouse. - Move crosshair to a corner of the object (over a corner square). TrackNESW or TRACKNWSE cursor appears indicating you can stretch the object diagonally. Hold Left Mouse button, move cursor to new location. Release left mouse button to redraw object.
	TrackNS	Edit object Vertically (North – South). - Select object by clicking once with mouse. - Move crosshair over a top-center-square or bottom-center-square on selected object. TrackNS cursor appears indicating you can stretch the object diagonally. Hold Left Mouse button, move cursor to new location. Release left mouse button to redraw object.
	TrackRotate	Cursor to rotate the selected object. Used with the Shift key. - Select object by clicking once with mouse. - Hold Shift key and move crosshair to a corner-square of selected object.

Cursor	Name	Description and context
		8. TrackRotate cursor appears indicating you can rotate object. 9. Hold Left Mouse button, move cursor to new location. Object rotates as you move mouse. 10. Release left mouse button to redraw object.
	TrackWE	Edit object Horizontally (East – West). 1. Select object by clicking once with mouse. 2. Move crosshair over a left-center-square or right-center-square. 3. TrackWE cursor appears indicating you can stretch the object horizontally. 4. Hold Left Mouse button, move cursor to new location. 5. Release left mouse button to redraw the object.

Task 14: Draw a Curve Line:

1. Select **Line** from the Draw Menu or Bottom Toolbar 

or Select PolyLine from the Draw Menu or Bottom Toolbar .

*Note - Each Segment of the Curve Line will become a separate object. Use **Polyline** if you want to draw a **single object** with multiple curved segments. Also, **Polylines do not “leak”** when you **fill** them. However, Curve and Straight lines can not be mixed in the same Polyline. Arc and Straight lines can be mixed in the same Polyline.*

2. Select CURVE from the Command Line

`From pt|Curve:`

3. The Start Point prompt appears in the Command Line,

`Start pt:`

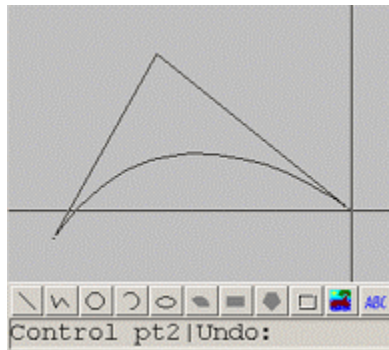
4. Specify the Start point, usually by clicking the mouse. You can type X-Y coordinates also.

5. Control Pt1 should appear in then Command Line.

`Control pt1|Undo|End:`

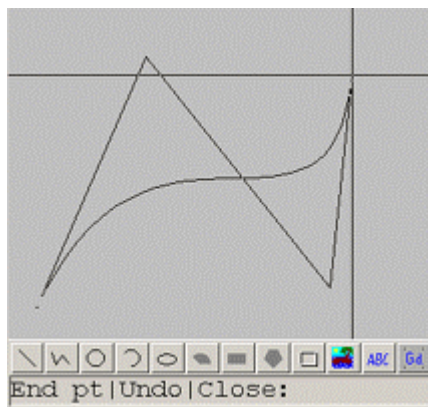
6. Click the Mouse at the desired position for the First Control Point of this pair or enter the X-Y coordinates.

(Do Not click on Control pt 1 in the command line)

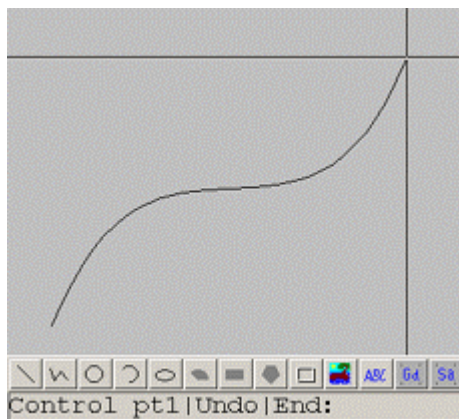


7. Control Pt2 should appear in the Command Line.
8. Click the Mouse on the screen at the desired position for the Second Control Point of this pair or enter the X-Y coordinates.

(Do Not click on Control pt 2 in the command line)



9. End Pt should appear in the Command Line.
10. Click to Mouse on the screen to specify the End Point to finish this line Segment of the Curve Line.



(Do not select End Pt in the Command Line)

11. Repeat steps 5 through 10 to draw the second (and multiple Curve Line Segments)
12. Click End in the Command Line to end Curve Line Draw.

Task 15: Draw Outline Text

1. Select **Text Settings** from Setting Menu or the **Text Settings** icon  from the top toolbar.
2. Select a color, font and text size. For example, select ARIAL BLACK font, red and text size 3.

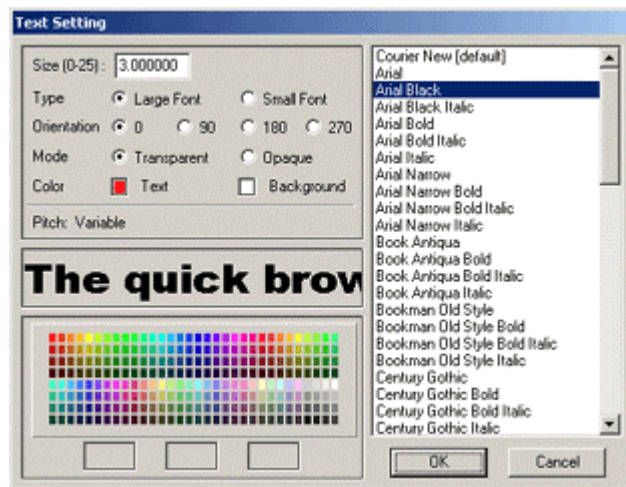


Figure - Text Settings

3. Select **OK**.
4. Select **Text** from the Draw menu or the **Text** icon  from the bottom Toolbar.
5. Select **Outline** from the command line.

Text pos|Outline|Fill:

6. Click with the mouse on the screen to select the start position for the text.
7. Type your Text.
8. **Right Click** with the mouse or press ENTER to finish.

Task 16: Draw Fill Text

1. Select **Text Settings** from Setting Menu or the **Text Settings** icon  from the top toolbar.
2. Select a font and text size. For example, select ARIAL BLACK font and text size 3.

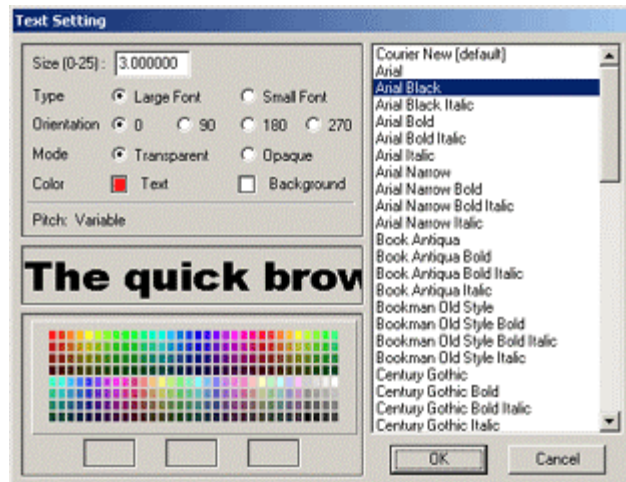


Figure - Text Settings

3. Select a **Color** for **Text**. This will be the Outline Color.
4. Select a Color for **Background**. The Background Color will be the **Fill Color** for Filled Text.
5. Select **OK**.
6. Select **Text** from the Draw menu or the **Text** icon  from the bottom Toolbar.
7. Select **Fill** from the command line.

```
Text pos|Outline|Fill:
```
8. Click with the mouse on the screen to select the start position for the text.
9. Type your Text.
10. **Right Click** with the mouse or press ENTER to finish.
11. Download load to the SCADA Node (Start SCADA Node if it is not already running).

View the graphic in VIEW

1. Start VIEW
2. Open the graphic from Graph List.

Section 9 – Pushbuttons, Key Macros & Scripts

Objectives

This section introduces key macros and scripts to automate user actions and control functions. At the end of the section, you will have knowledge about the various types of key macros and scripts and their syntax, and be able to configure simple examples.

Training Notes

Key Macros

Keymacro commands are normally assigned to "Pushbuttons" on user built graphic displays. Keymacro commands are used to change displays, call up dialog boxes, change setpoint, acknowledge alarms, etc.

These same keymacro commands are used on all standard displays in WebAccess (Alarm Summary, Alarm Log, Trends, Point Detail, et al) allowing users to modify the default displays also. Please see the Eng. Manual [Pushbutton KeyMacros](#), section 11, for more information on using Key Macros

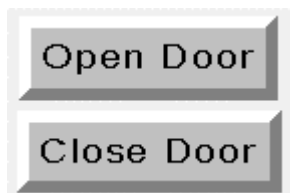


Figure 9-1 Pushbuttons in VIEW or DRAW

Pushbuttons are a Dynamic Animation in WebAccess. No Gifs or Bitmaps are required. The Animation shows reverse highlights for Button-Down and Button-up. Button Color, Highlight Colors (3-D effect) , Bevel Size are user configurable for each button.

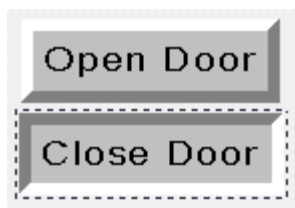


Figure 9-2 Pushbuttons in VIEW, with Down Animation

Push Buttons can contain Text, Graphic Objects and Animated Objects. The Welcome Display on the Live Demo consists mostly of Pushbuttons.

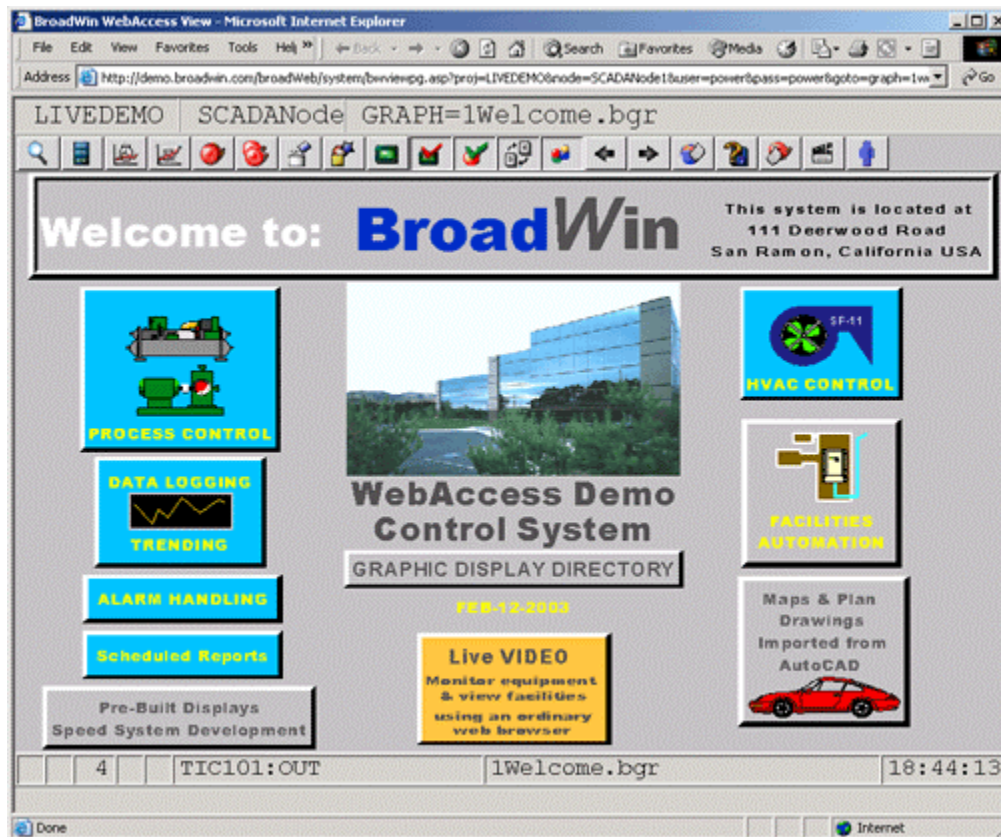


Figure 9-3 Pushbuttons with Text, Graphics and Animation

Pushbuttons can also appear flat (by making the bevel size = 0). The default login button is an example of a flat pushbutton with no bevel or animation. T



Figure 9-4 Pushbutton with no bevel or animation

Scripts

Scripts are simple programs used to customize your displays screens and SCADA system with user built calculations and logic. The most common use of scripts is advanced animation and

reformat data. Scripts in WebAccess are powerful enough to communicate with other programs and do control.

Scripts are programmed in one of three computer languages similar to BASIC:

1. Tcl (pronounced as 'tickle').
2. VB Script (Visual Basic Script)
3. Java Script

They are called scripts, because they are not compiled. Scripts are "interpreted": as soon as you save and download your source file, it is ready to run. The source file is in simple text format.

If you have any programming experience, you can be writing scripts in 30 minutes. Tcl, VB and Java Scripts are industry standards taught in many schools.

You can download Tcl programs and tutorials from the Internet. There are many examples in the WebAccess Engineering Manual describing Tcl. Tcl is also supported with better error message and debugging capabilities in WebAccess.

Similarly, you can download VB Script and Java Script tutorials and examples from the Internet or from most local bookstores.

There are two types of commands in a script:

- **Keywords** – these are the Tcl, VB or JAVA commands built-in to the official language.
- **Action Commands** – these are WebAccess Commands, similar to keymacro commands that allow Tcl, or Java or VB to interact with WebAccess.

There are two types of scripts:

- **Local Scripts** - also called Screen Scripts - run on a client and are associated with a graphic display.
- **Global Scripts** - run on the SCADA node.

Local Scripts (Screen Scripts)

Local Scripts – which run only run when the associated Screen is displayed or called by a Pushbutton on a Screen. Local Scripts are also referred to as Screen Scripts. Local Scripts run on the Client. Local scripts are downloaded to a web client when the display is called up. The script runs on the remote client. Local Scripts run at the frequency specified by the Graphic Parameters (**Set Graph Param**) as fast as every 25 milliseconds.

Run Once when display first opened

Run continuously while display is open by user

Run Once when display closed

Global Scripts (SCADA node Scripts)

Global System Scripts run on the SCADA Node, independent of any Display. Global Scripts can be configured to run in one of three modes:

Run **Continuously** at user specified frequency (as fast as 25 milliseconds).

Once at **Start-up** or Restart

Once at **Shutdown** (or restart).

Global scripts run a subset of ACTION commands. Most commands that interact with a display screen are ignored by SCADA scripts (for example, GOTO GRAPH, GOTO URL, POPUP a dialog box).

Global Scripts are usually written using the Script Editor in DRAW. The Global Script Configurator in SCADA Node properties, has a pull down list of files with the *.scr extension in the node's \bgr subdirectory.

Run a Script

There is no command line for executing a script command. To run a Script in WebAccess script, it must be created in the script editor and called

- Assigned to a [Pushbutton Keymacro](#) on a Display (a Local Script), or
- Assigned to a **Graphic Display** in **Set Graph Parameters** (a Local Script), or
- Configured in [GlobalScript](#) on the **SCADA Node Properties**, or
- Specified in the **SCADA script** initialization file (BWSCRRDT.INI), or
- Called by another Script.

For more information see:

- Keymacro commands [<SCREXEC>](#) and [<SCRLOOP>](#)
- the Set Graph Parameters in DRAW
- [12.11.1 Global Script Configuration](#) .

Local Scripts (Screen Scripts) can be downloaded from the project node to the SCADA node using the download [Graph Only](#) command that can be performed without stopping the SCADA node.

Local scripts are downloaded to the Client when the display using the script is called. The Client will have to refresh the screen that uses a new version of Local Screen Script.

Global Scripts must be downloaded using the [Download](#) command and will require stopping and restarting the SCADA node.

Reference

[WebAccess-Engineering Manual, Section 10.7.3 Draw Push Button](#)

[WebAccess-Engineering Manual, Section 10.9.1 Rotate a Widget with a Script](#)

[WebAccess-Engineering Manual, Section 11.PushButton KeyMacros](#)

[WebAccess-Engineering Manual, Section 12. Scripts](#)

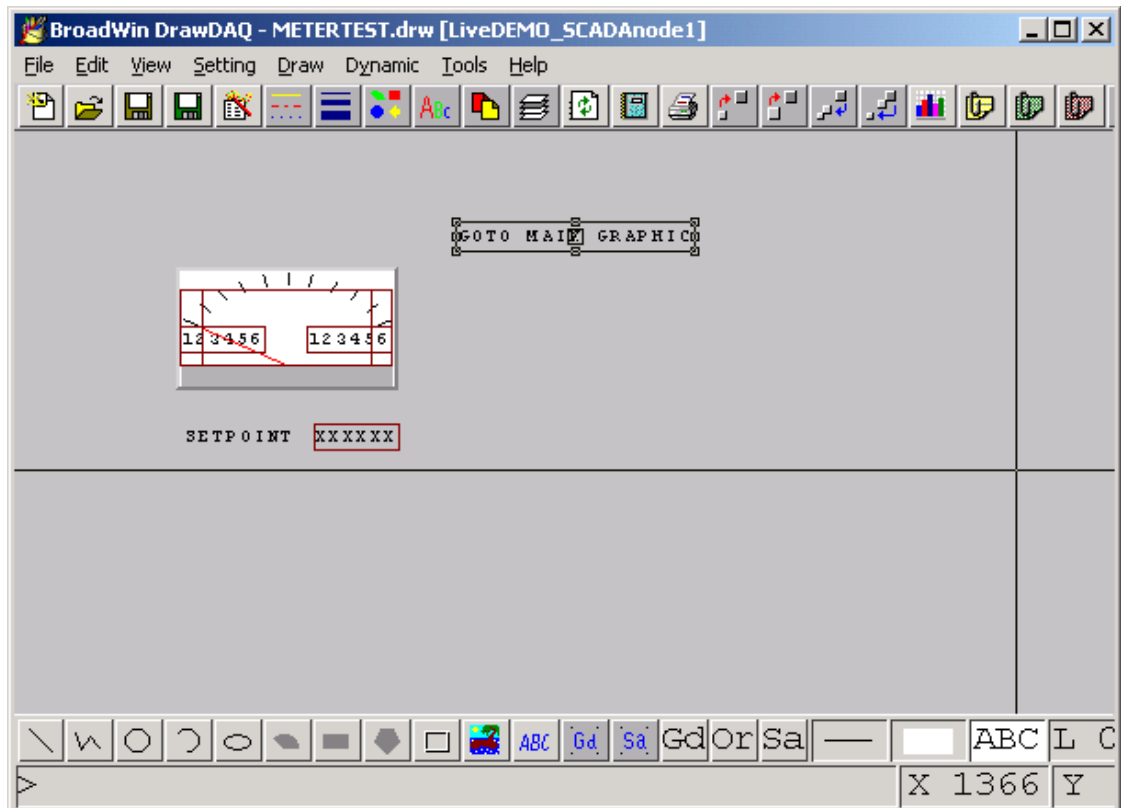
Exercise

In this exercise, you will configure a screen key macro and a screen script.

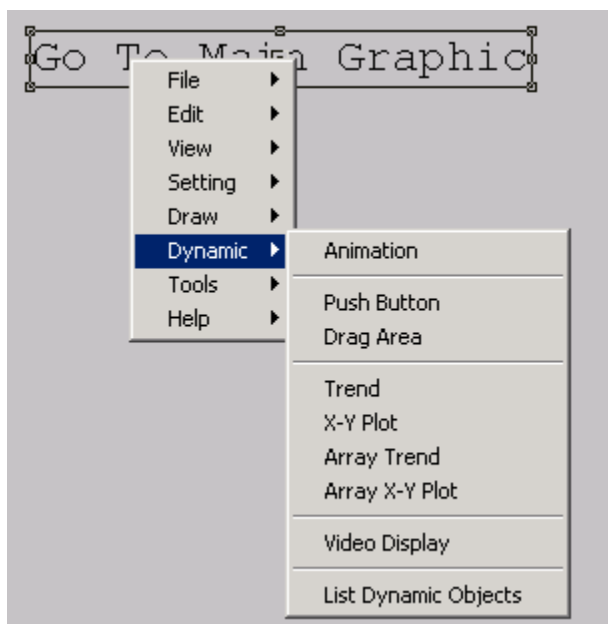
Task 1: DRAW Push buttons

To Create a Pushbutton on a Graphic Display

1. Start [DRAW](#).
2. [Open the DRW](#) for your graphic Display or start a New DRW.
3. Draw Text or a graphic Symbol.
For example, Draw Text and type: GOTO MAIN GRAPHIC



4. With the graphic object chosen in VIEW,
Right Click -> Draw -> Dynamic -> Pushbutton



5. The Push button Dialog Box opens.

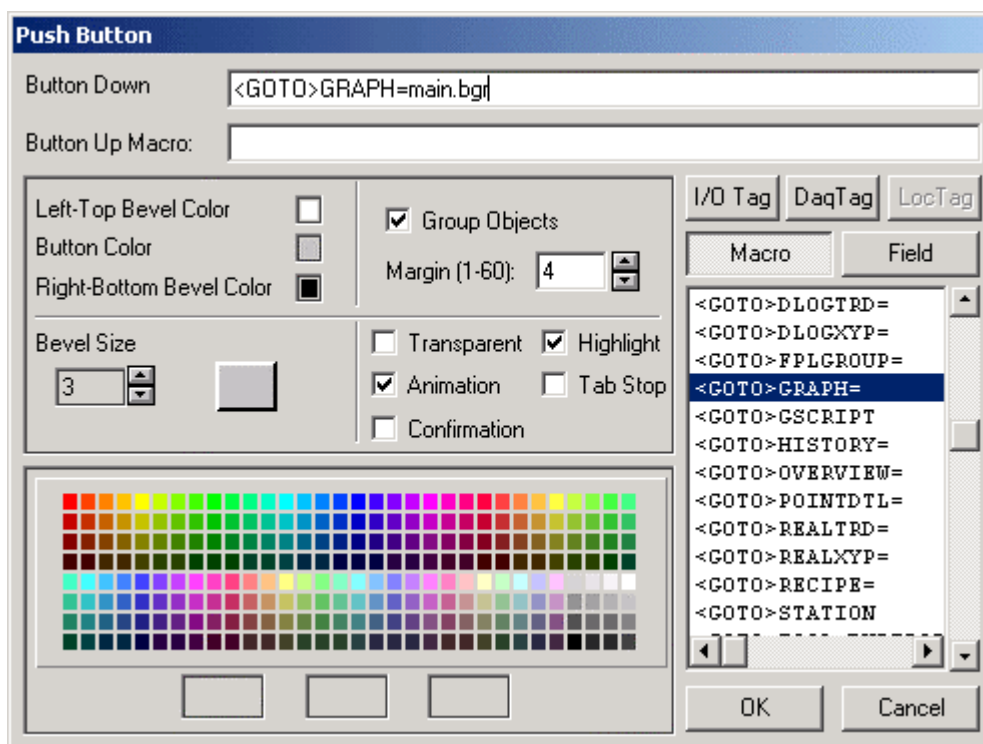


Figure - Draw Pushbutton

Hint – the most common keymacro is <GOTO>GRAPH=yougraphic.bgr which is used to go to another graphic display.

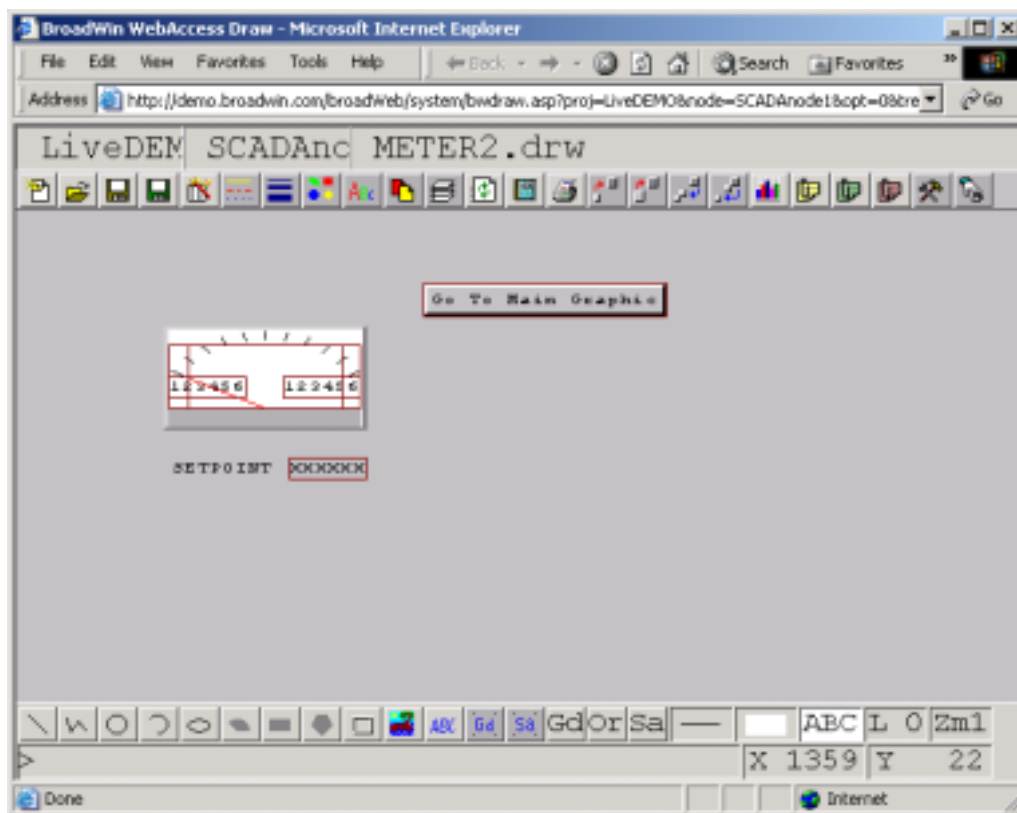
6. Select the keymacro from the list.

For the example, select **<GOTO>Graph=.**

7. For some keymacros, complete the keymacro with Graphic Display name (include file extension). Refer to [Keymacro Commands](#), Chapter 11 for a complete description of Keymacros.

For this example Finish the Keymacro with **<GOTO>Graph=main.bgr**

8. Select Group Object. This will draw the Pushbutton symmetrically around the object.
9. Change Colors by clicking once on the Button Color Field, then once on a color in the Palette.
10. Change Margin or Bevel Size as desired
11. Press OK.
12. The button is drawn symmetrically around the selected object, if you selected **group objects** and started with an object already selected.



13. Optionally
 - a. If you did not have an object selected and you picked group objects, then you are prompted to pick an object or group of objects (the command line will read Select Objects | Window | Next).

Select objects|Window|Next:

- i. Select an object

- ii. OR select WINDOW in the Command Line, then draw a window around a group of objects by clicking once with the mouse to start the window (First Corner) and a second time to end the window (Second Corner).
- b. If you did not select Group Objects, then you are prompted to Draw the diagonal corners of the pushbutton by clicking once with the mouse to start the window (First Corner) and a second time to end the window (Second Corner).

First corner:

Second corner:

Whether to Group Objects, or not, is your choice. Group Object draws the button perfectly around the object. To edit the Text object or Animation that is Grouped you must explode the button or use Replace String.

14. Download load to the SCADA Node (Start SCADA Node if it is not already running).

View the graphic in VIEW

1. Start VIEW
2. Open the graphic from Graph List.

Task 2: Edit Pushbuttons

Use Explode to edit Grouped Pushbutton

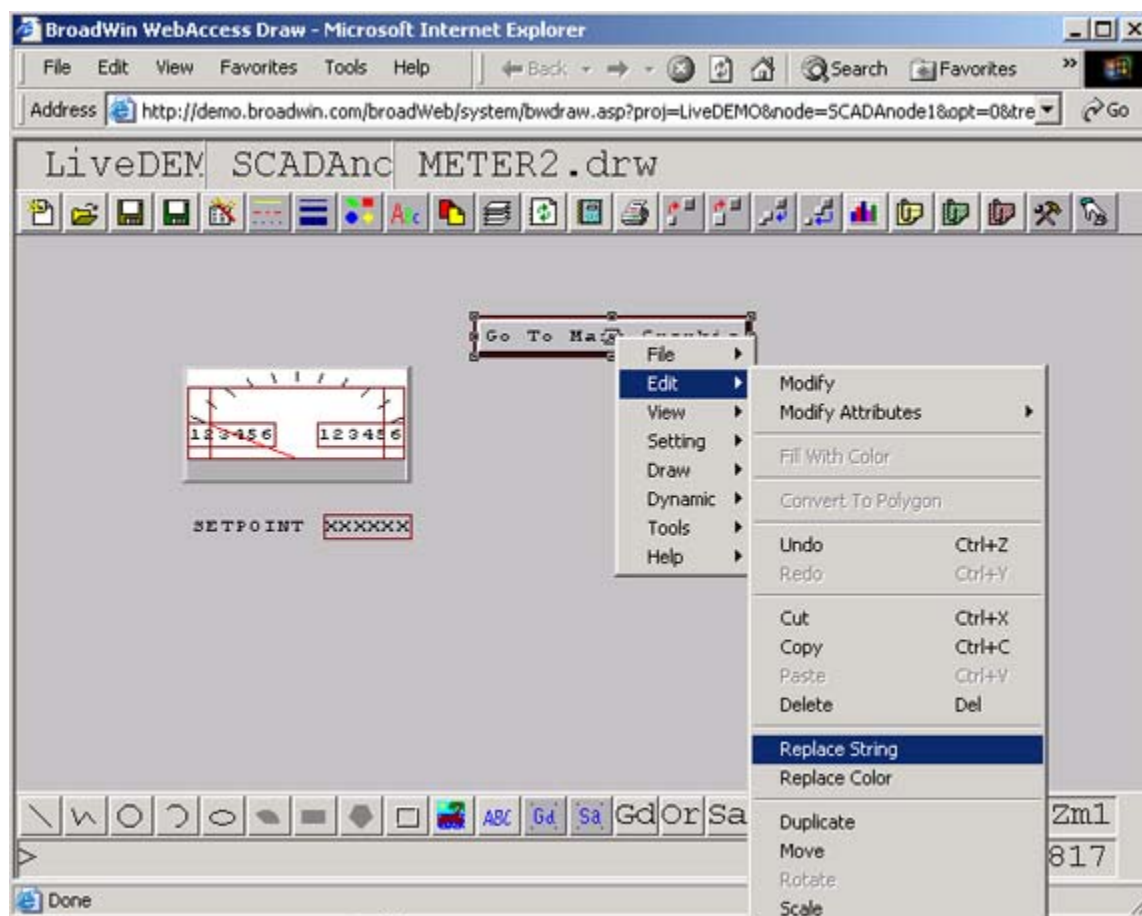
For simple text editing, the Pushbutton settings can be “remembered” by the Pushbutton Draw command by:

1. Select the Pushbutton
2. Open the Pushbutton Dialog Box with the Modify Command
Right Click -> Edit -> Modify
3. Press OK (to resave Pushbutton without modifications)
4. **Right Click -> Edit -> Explode**
5. Select the Text
6. **Right Click -> Edit -> Modify**
7. Type the modification to the Text.
8. Press **ENTER** or Right Click the mouse
9. **Right Click -> Dynamic -> Pushbutton**
10. The settings for the pushbutton from the last OK are remembered by the Push Button Dialog Box

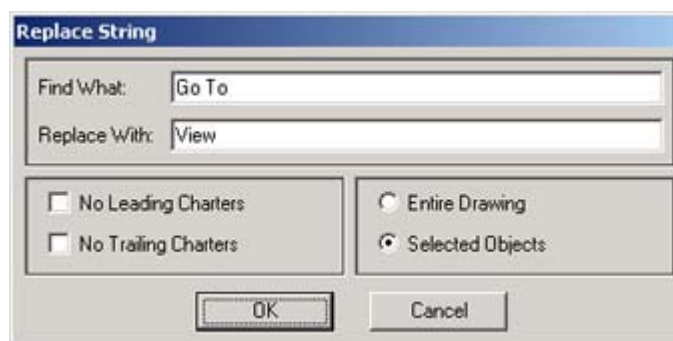
11. Select **Ok**
12. The button is redraw if the Text is still selected (else pick the text object).

Use Replace String to edit grouped Pushbutton

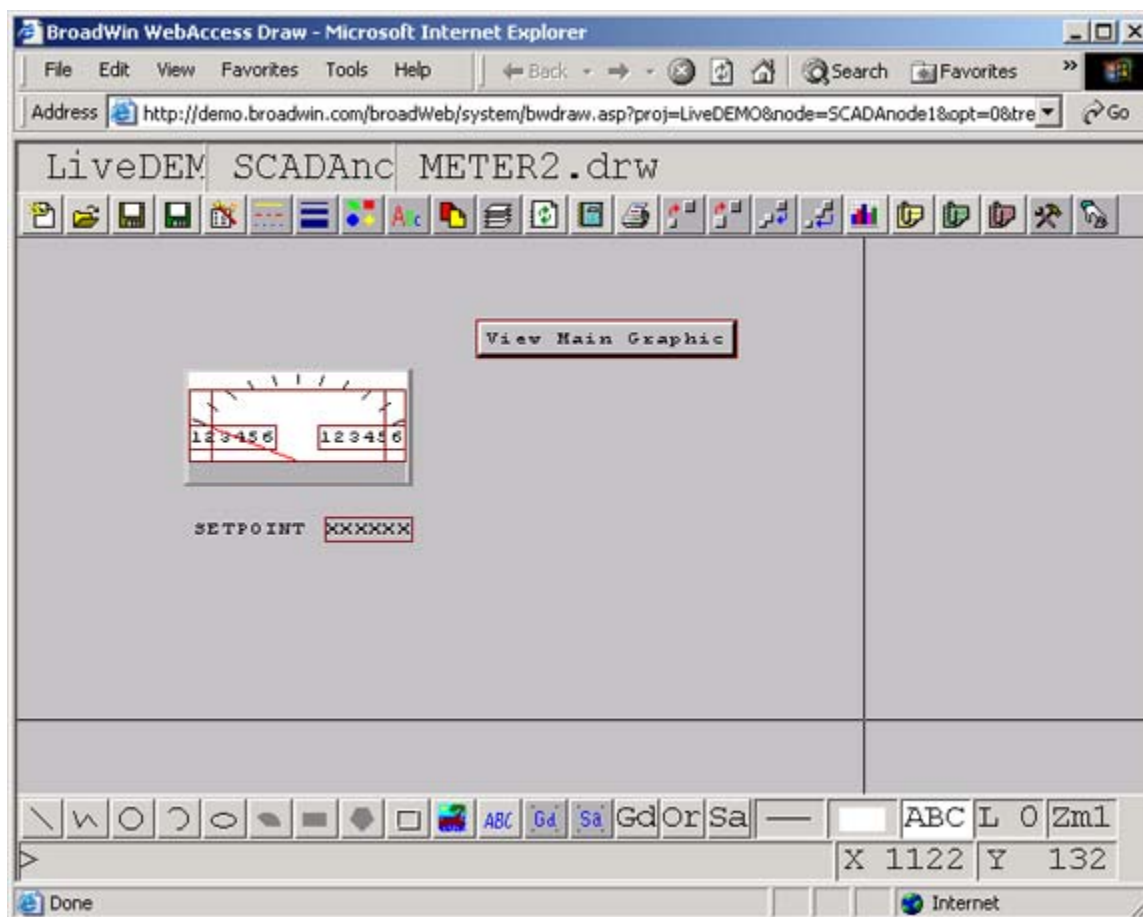
1. Select the Pushbutton
2. Open the Edit Dialog Box with the Modify Command
Right Click -> Edit -> Replace String.



3. The Replace String Dialog Box Opens.



4. Type the Find What (the Text to be Replaced)
5. Type Replace With (the new Text)
6. Press OK.
7. The Text in the Button is changed and the Button resizes automatically if Grouped.

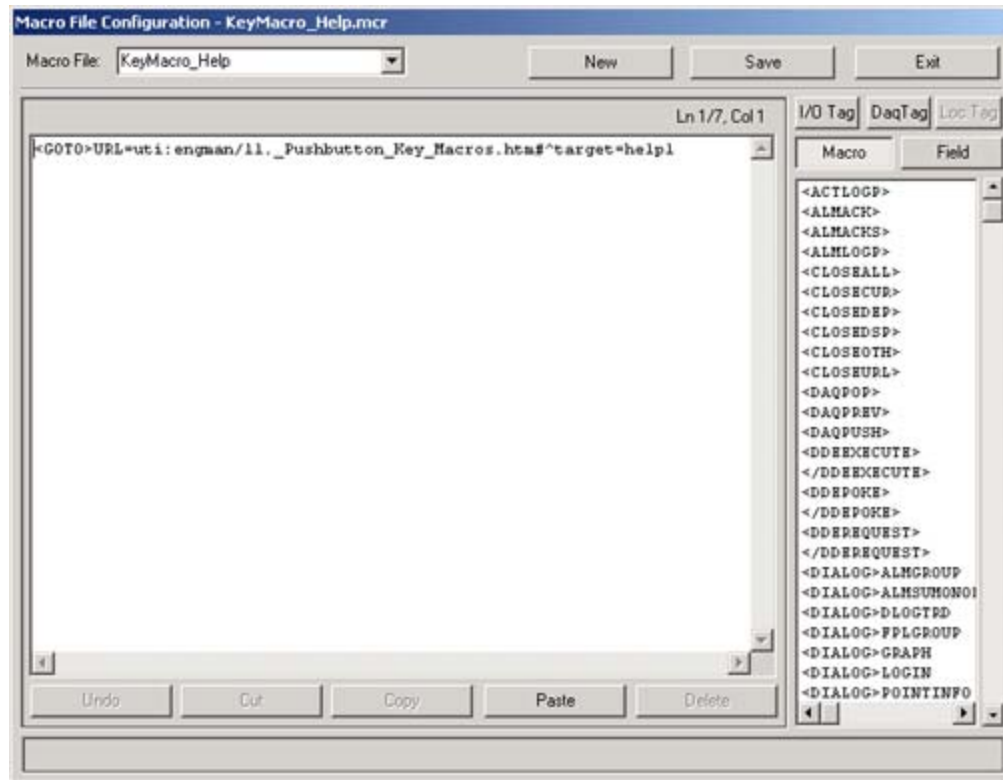


Task 3: Create a KeyMacro File

1. From [DRAW](#), **Click** the KeyMacro File icon  from the [upper toolbar](#).

Hint - If you pause the pointer over the icon a tool tip opens describing the button .

2. The Macro File Configuration editor dialog box opens.



3. Enter the following Key Macro command. This will pop-up a new web browser window with WebAccess Help file describing KeyMacros.

<GOTO>URL=uti:engman/11._Pushbutton_Key_Macros.htm#^target=help1

- 4 Enter a name for the Key Macro. For example, **KeyMacro_Help**.

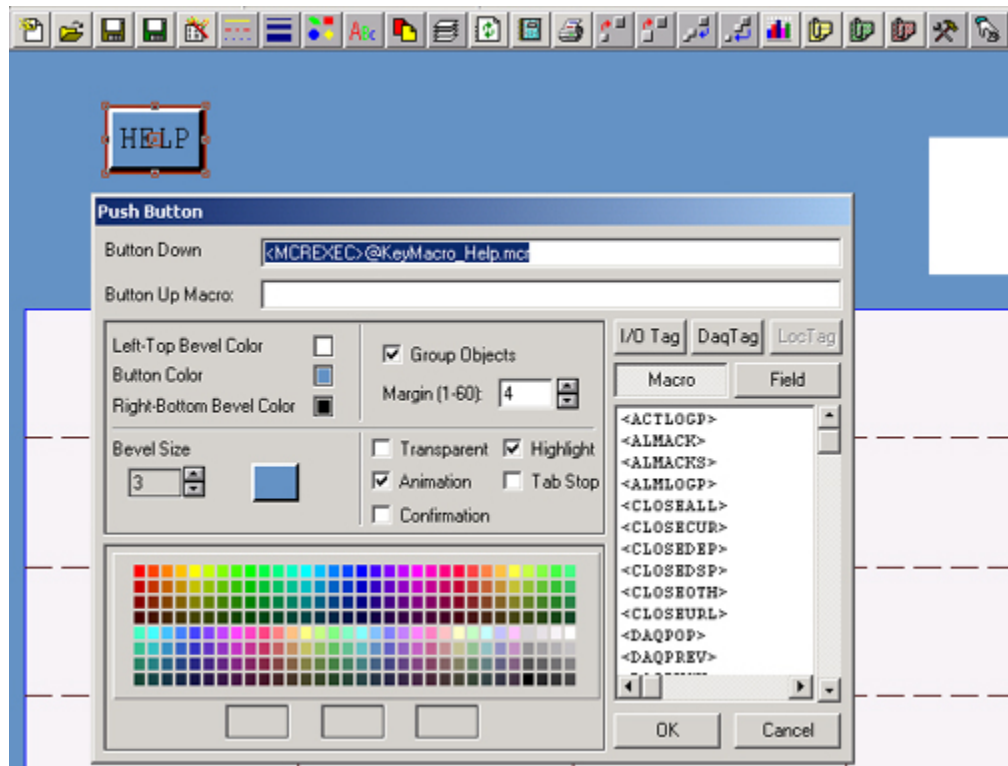
5. Press **Exit** when done (or Save and Exit).

6. [Draw Text](#) to act as a descriptor. For example, draw HELP.

7. [Draw a Pushbutton](#) with the keymacro:

<MCREXEC>@KeyMacro_Help.mcr

Important!- add the .mcr extension to the file name.



8. Save the Graphic (the bgr and drw).
9. Download the Graphic to the SCADA node.

Task 4: Rotate a Widget with a Script

The most common use of screen scripts is to provide enhanced animation. This example describes how to rotate a FAN based on the ON/OFF state of the fan. Please refer to the Engineering Manual, Chapter [12 Scripts](#) for detailed description of [Scripts](#) in WebAccess.

Tcl is used in these examples.

This example uses a "trick" widget that connects to two tags. Normally, a widget is built with only one tag. In this example, the first tag is the IO tag that describes the on off state of the Fan or Pump (the Discrete Tag). The second "trick" tag is an analog-type Local Screen Tag that will loop from 0 to 359 when the IO Tag is ON.

The "trick" to using this two-tag widget (\$FANBLADES.dwt) is to name the local screen tag after your IO tag by appending the word "rotate" to it. (if you are using long tag names, try using just the letter "r" instead of "rotate"). If your digital IO Tag is named FAN101 then you should create a screen tag named FAN101rotate.

Note - Local Screen tags are limited to 15 characters. If your IO tag is more than 9 characters in length, you can use any name for the Local Screen tag and then edit the Widget to use the actual Local Screen Tag name.

A summary of the steps are:

- Start **DRAW**.
- Edit your Graphic Display (**Open DRW**).
- Create a **Local Tag File** with an analog-type Screen Tag named after your digital IO Tag (with rotate appended to end)
- Create a **Script** that Loops **TAGrotate** if **TAG** is true
- Attach the Script and Tag file to your Graphic
- Draw the **Widget**.
- Edit the Widget to make sure the rotate animation is attached to the analog Local Screen Tag (TAGrotate).

Step by Step Guide to Rotate a Widget.

1. Start [DRAW](#)
2. **Open the DRW** file of the Graphic Display you want to add this Widget.
3. Create a **Local Tag File** with an Analog Tag.

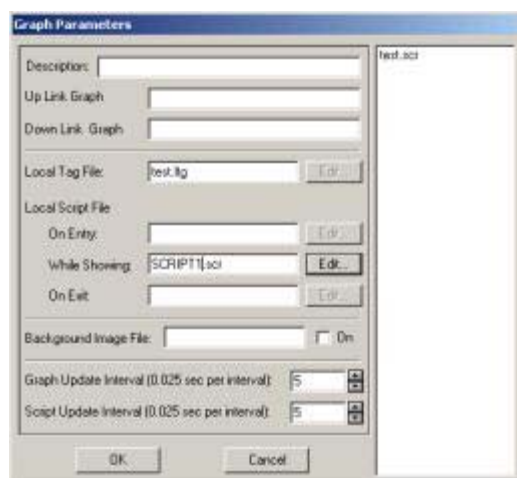


Figure 10-43Set Graph Parameters

- a. Select **File -> Set Graph Parameter**
- b. Select the field next to **Local Tag File**
- c. Select **Edit**

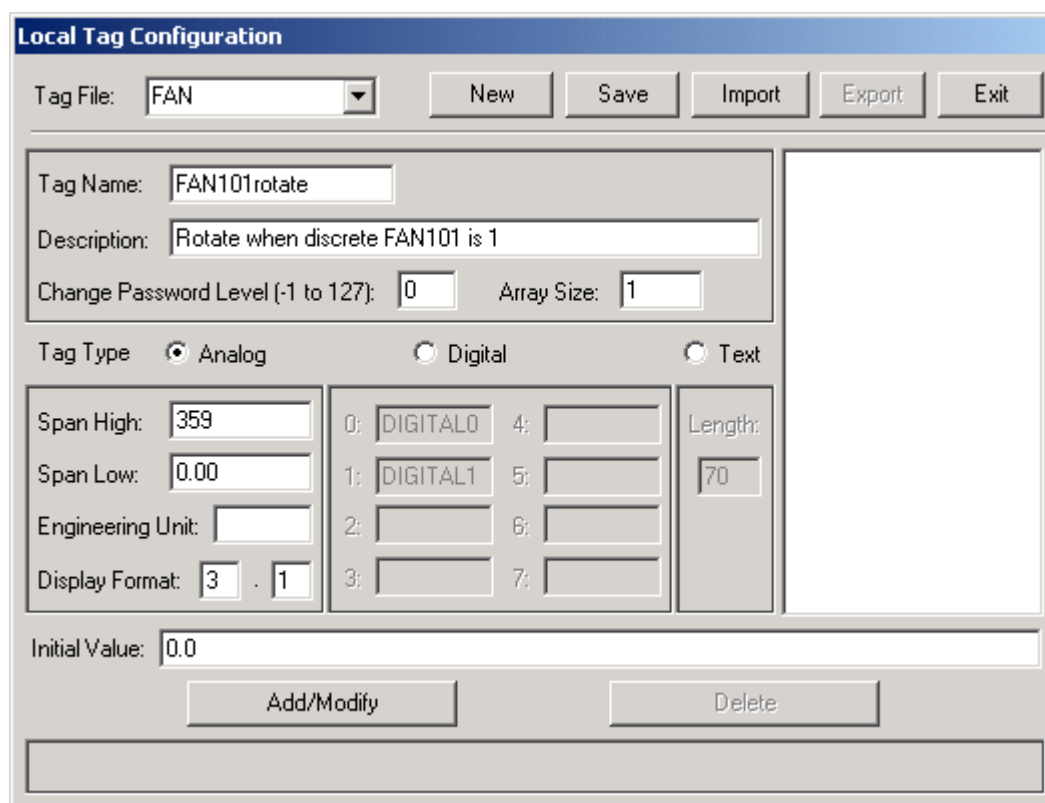


Figure 10-44Local Tag file (screen tags) - DRAW

- d. Enter a name for your **Tag File** (I name these after my graphic display).

- e. Enter the "trick" **Tag Name**

It should be named after your IO Tag by appending the word "rotate" to it. If your digital IO Tag is named FAN101 then you should create a screen tag named **FAN101rotate**.

- f. Check Point Type = **Analog**

- g. Enter **Span High = 359** (it can be any number but my example script was designed for this so it does not skip.)

- h. Select **Add / Modify**

- i. Select **OK**

- j. Select **Save**

- k. Select **OK**

- l. Select **Exit**

- m. Select your **Tag File** name to attach it to your Graphic as the **Local Tag File**.

4. Create a **script**

- a. Open **Set Graph Parameters** Dialog box (it should still be open).

- b. Select the field under Local Script File next to, **While Showing**:

- c. Select **Edit**

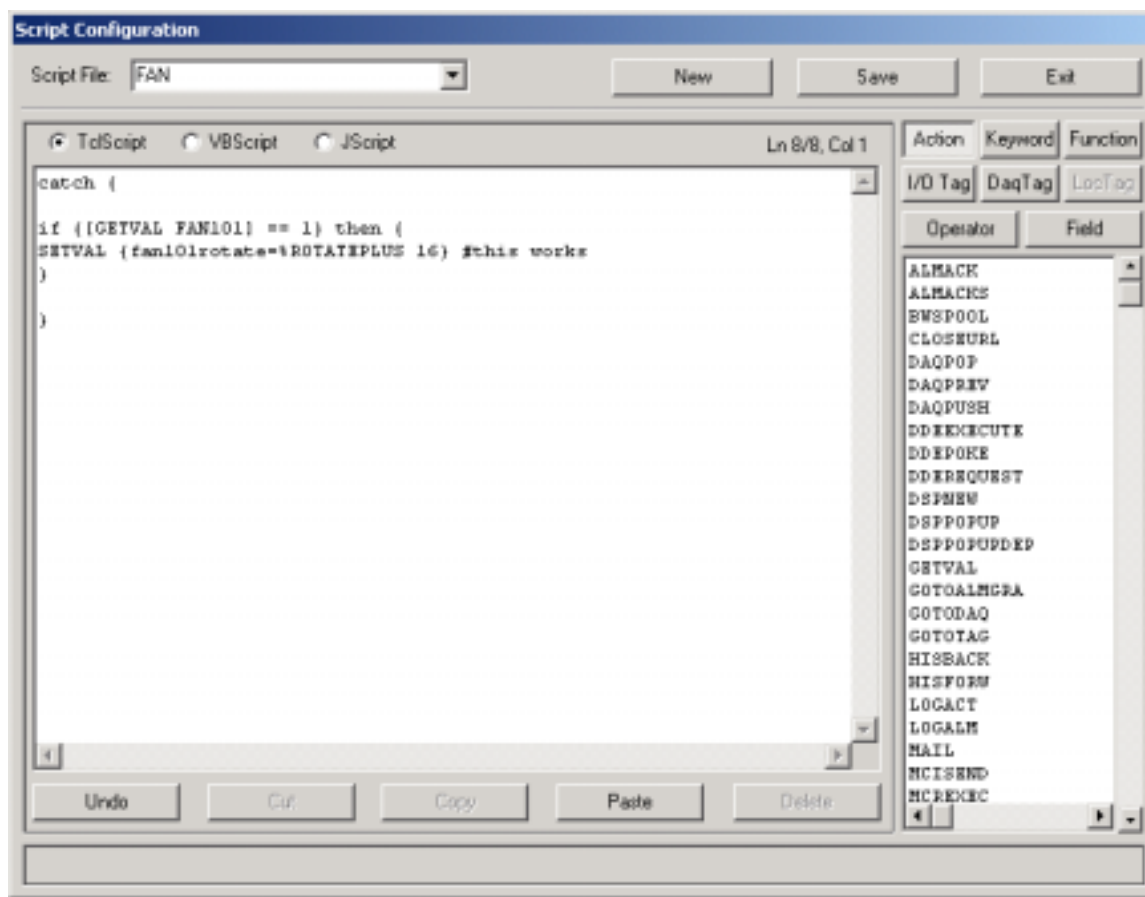


Figure - Script Editor - DRAW

- d. Copy and Paste the following Script into the Script Editor.

```
catch {
  if {[GETVAL FAN101] == 1} then {
    SETVAL {FAN101rotate=%ROTATEPLUS 32}
  }
}
```

- e. Edit the script to use your tag names. Replace FAN101 with your digital IO Tag.
- f. Replace FAN101rotate with your analog local screen tag (Step 3.e above).
- g. Enter a name for your **Script File** (I name mine after the graphic).
- h. Select **Save**
- i. Select **Exit**
- j. Click on your Script File Name to enter it in the **While Showing** field

5. Adjust the Screen Update and Script Update rate to get faster spin.

- a. (Use Set Graph Parameters Again. I use 5 = $5 * 0.025 \text{ sec} = 0.125 \text{ secs}$)

- b. Select OK to close the Set Graph Parameter dialog box

6. Draw -> Widget

7. Select \$FANBLADES.dwt

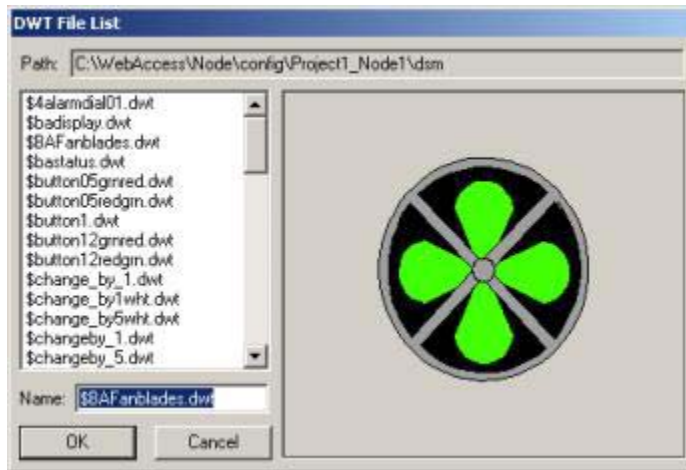


Figure - Draw Widget

When you draw the widget, it asks for a tagname. Enter your digital IO Tag (FAN101 in the example). The trick is that a partial tagname (rotate) is already inserted in the spot for the rotation animation. The Start/Stop animation takes the tagname you enter AND inserts your tagname in front of the partial tagname "rotate".

The FAN101 tag was created in Section 5 Task 1: Create constant point tags Create Discrete Tag for a FAN to rotate later page 119.

8. Save and download your Graphic.

Additional Exercises

Task 5: Multiple rotating fans

Multiple Rotating Widgets on Same Graphic

If you have multiple Fans on a graphic, you must add additional screen tags and edit the script by repeating the test.

```
catch {  
  if {[GETVAL FAN101] == 1} then {  
    SETVAL {FAN101rotate=%ROTATEPLUS 16}  
  }  
}
```

```
catch {  
  if {[GETVAL FAN102] == 1} then {  
    SETVAL {FAN102rotate=%ROTATEPLUS 16}  
  }  
}
```

Note – the “catch” allows part of the script to function normally if the other catch has an error.

Task 6: Write data into an Text file

Report1 is a Text File used for report data.

The script first runs a Test if Report1 files exists, . if not, create it with header lines then enters a row of time stamped data

```
if {[file exists "../Report1.txt"]} then {  
  set fileid [open "../Report1.txt" a+]  
  puts $fileid "[GETVAL %TTMDATE] [GETVAL %TTMTIME] [GETVAL AMPLITUDE] [GETVAL TIMER]"  
  close $fileid  
} else {  
  set fileid [open "../Report1.txt" a+]  
  seek $fileid 0 start  
  puts $fileid "----- Water Use Report-----\nPage 1"  
  #Insert data into table  
  puts $fileid "[GETVAL %TTMDATE] [GETVAL %TTMTIME] [GETVAL AMPLITUDE] [GETVAL TIMER]"  
  close $fileid  
}
```

Task 7: Global Script Configuration

A Global Script is like a Screen Script except it runs, no matter what display is showing. The Global Script runs on the SCADA node (not the client).

Global Scripts are built using the [Script Editor in DRAW](#). The Global script is then scheduled using the Global Script in Project Manager. There is a maximum of 8 global script groups, with a start script, stop script and while running script. Scripts can call other scripts (using [SCREXEC](#)), so you use these scheduled scripts to call other scripts to increase this to a number above 8.

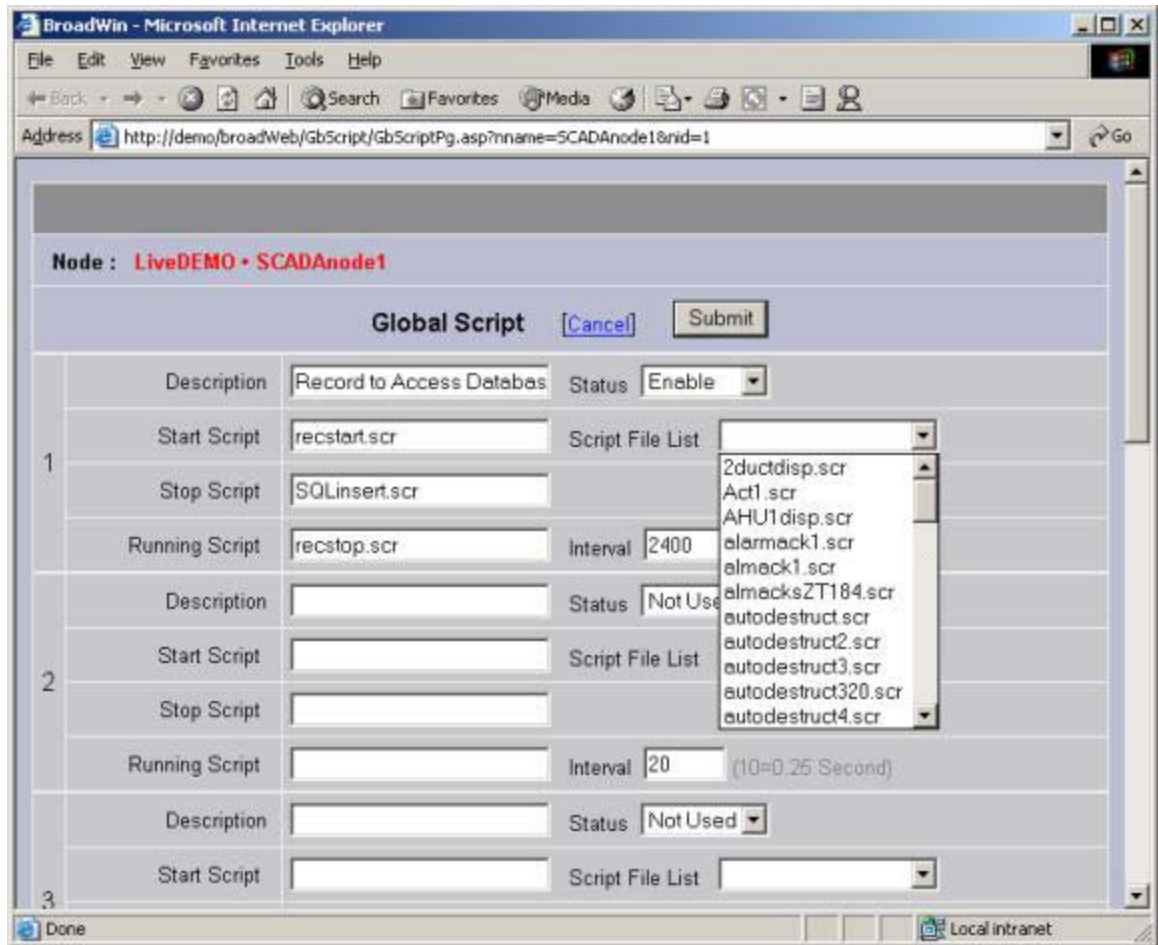


Figure 9.1.1 - Global Script configuration

Global Script Configuration:

1. Connect to WebAccess Project Node.
2. Start Configuration.
3. Select SCADA node.
4. Select Global Script hyperlink in Project Manager [Node Properties](#).
5. The Global Script configuration page appears (Figure 9.1.1 above).
6. **Description** is any user-defined description for this group of scripts.
7. Click **Start Script** if you want a script to run when the SCADA node starts. This script will run once when the SCADA node starts or restarts.

Use the pull down menu to the right of Script File List to select the name of the script. This file must be located in the project root directory, typically c:\WebAccess\node\config\projectname\bgr.

Scripts are built using the [Script Editor in DRAW](#).

8. Click **Stop Script** to specify a script to run when the SCADA node is stopped or stopped as part of a restart. This acts as a Shutdown Script. The Stop script runs when the SCADA Node is stopped using [bwkCTRL](#), the [task bar menu](#) or the [Project Manager](#).
9. Click **While Running Script** if you want a script to run repeatedly at specified Interval while the SCADA node is running. The While Running Script runs continuously on the SCADA Node (as long as the kernel is running).

Use the pull down menu to the right of Script File List to select the name of the script.

10. Type an **Interval** for the While Running Script. These are in 25 millisecond intervals. 10 = 0.25 sec = $\frac{1}{4}$ second
2400 = 60 sec = 1 minute
11. Select **ENABLE** for the STATUS.

Section 10 – Video

Objectives

This section introduces the features of Web Cameras, JPEG Cameras and other IP enabled Video. This allows users to view in real-time images on the WebAccess HMI & SCADA clients.

Training Notes

WebAccess supports the use of live Video camera that are IP enabled (i.e. use the Internet or intranet to send live video images) via an ActiveX control (an OCX). WebAccess will launch the Active-X control in an Internet Explorer 6.0 web browser. If using ViewDAQ, IE 5.5 or later must be installed on the PC in order to view live video.

WebAccess has a list of Video camera drivers with Active-X controls compatible with VIEW and ViewDAQ.

Two methods of implementing Video are provided.

1. **Full Screen** (using only a Fill-in-the Blanks form in **Project Manager**).
2. Drawn as **part of a Graphic Display** (using DRAW).

The Video Dialog Box shows a list of configured Cameras for the SCADA node.

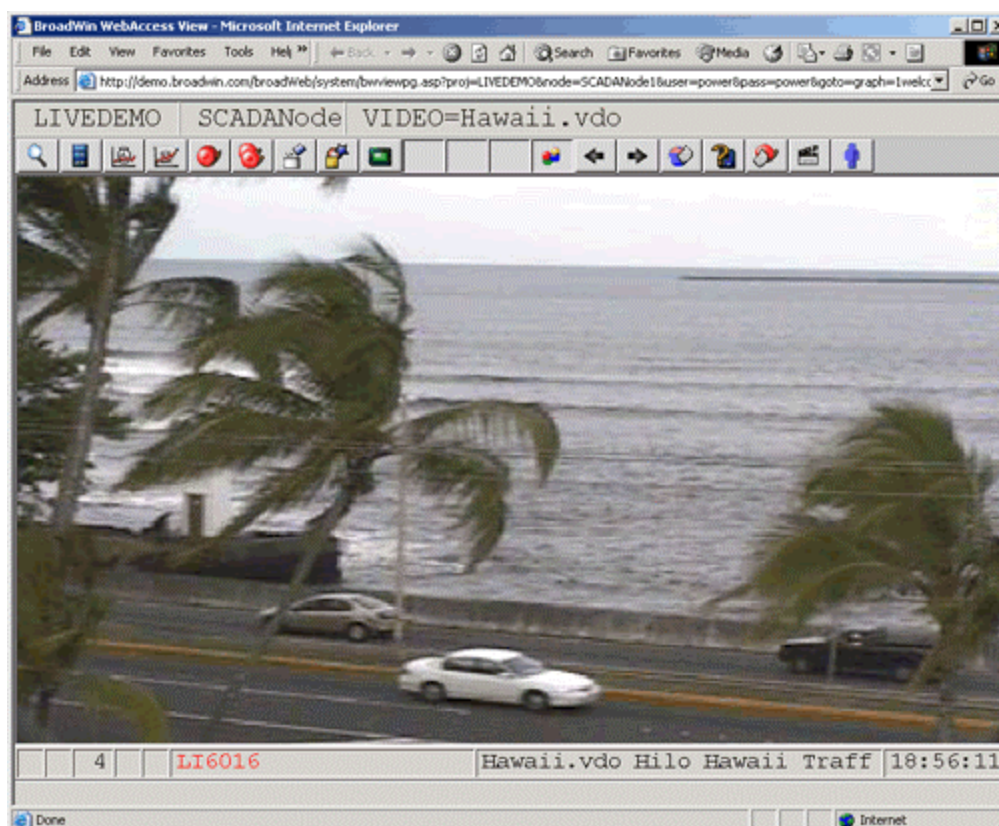


Figure 10.1 –1 Full Screen Video in Web Browser

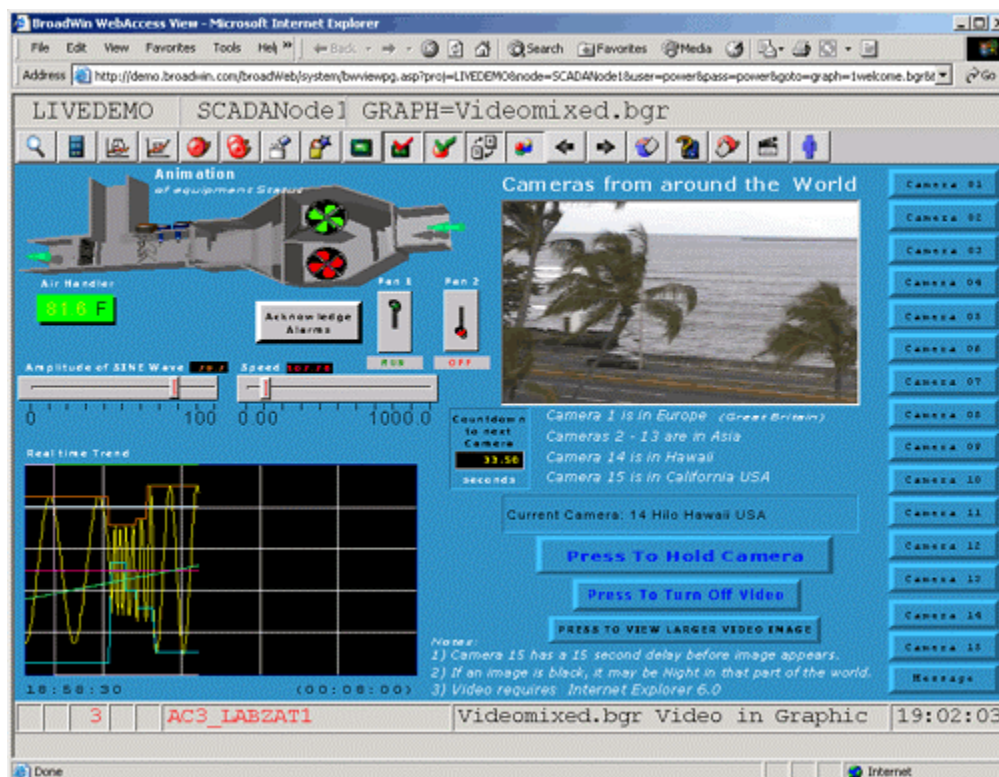


Figure 10-2 Live Video mixed with animated graphics, real-time data and trends

Multi-camera Displays, including live tag data and trends are user-built graphic displays. Scripts can rotate between cameras in the same window, pause or jump ahead to another camera with pushbuttons.

Reference

WebAccess Engineering Manual, [Section 17. Video](#)

Exercise

Task 1 Video configuration from Project Manager

This section assumes the camera is on-line and functioning. Please refer to the camera manufacturer's documentation on how to start the camera and assign an IP address to it. The WebAccess Clients communicate directly to the camera. The IP address of the camera must be available to all the WebAccess clients that are to view the camera.

1. From the Project Manager, Select your **Project** and the **SCADA Node**.
2. Click the **Video** hyperlink.
3. Select **Add Video** hyperlink.
4. The Add/Update Video page appears.

Update Video		[Cancel]	[Submit]
Video Name		Sony	
Description		Portland State University	
Local Tag File			Tag File List
Local Script File	On Entry		Script File List
	On Exit		
	While Showing		Interval 20 (10=0.25 Second)
Video Type		sonync (Sony Network Camera) flexwatch (FlexWatch Network Camera/Video Server) jvcvn (JVC Network Camera) mplayerurl (Windows Media Encoder) panasonic (Panasonic Network Camera) pixord (Pixord Network Camera/Video Server) serverpush (JPG Image Push) sitecam (SiteCam Server) snapshot (JPG Image Pull) sonync (Sony Network Camera) vivotek (Vivotek Network Camera/Video Server) webcam32 (Webcam32 Server Push)	
Video IP Address			
Camera			
User Name			
Password			
CGI File			
Sound CGI File			
Audio Parameter CGI File			
Image Source			
Refresh Rate		Second	
Trim		Left 0 % Right 0 % Top 0 % Bottom 0 %	
Video		sonync#p=159.121.28.8&port=80&cam=speed=0&lc=0&rc=0&tc=0&bc=0	

Figure 10-3 - Add / Update Video Camera

5. Select the **Video Type** from the Pull down list. The Video type matches the camera you are connecting to. These correspond to Active X controls supplied by the camera manufacturer. If your camera's manufacturer is not listed on the pull-down list, it is not supported by WebAccess.

Some are multi-purpose Video Types:
 snapshot (JPEG pull), server push (JPEG Image push)

Most are pre-configured to a demo camera on the Internet.

*Note - For this example, select **Sonync** or the camera your instructor has setup*

6. Accept the default Video name (use Sony).
7. Optionally, Enter a **Description** that will appear in the project manager.
8. Enter the IP address of the camera if your instructor tells you. Otherwise, accept the default IP address

9. Enter the TCP port assigned to the camera if your instructor tells you. Otherwise, accept the default IP address.
10. Press **submit**.
11. Download to the SCADA node.

Task 2: VIEW full screen Video Cameras

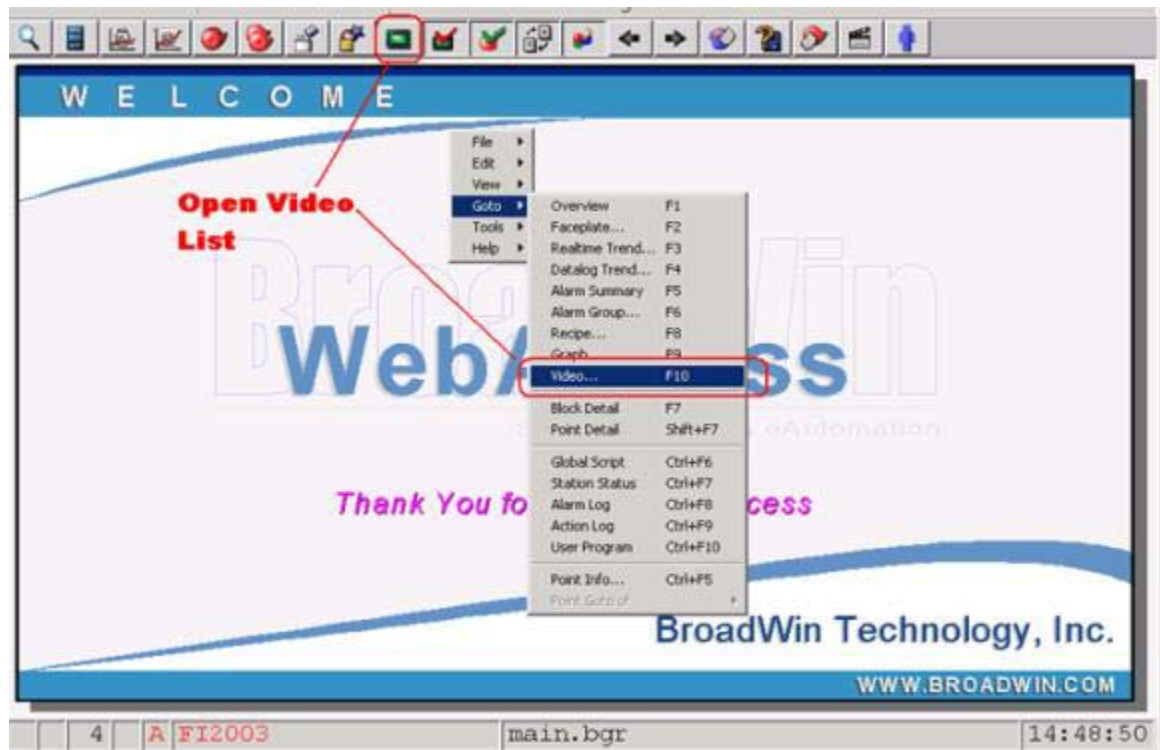


Figure 10-4 -Goto Video - VIEW

1. Start VIEW
2. There are at least three ways to open the Video List:
 - a. **F10** function key on keyboard.
 - b. The  Video icon on a toolbar.
 - c. **Right Click Menu -> Goto -> Video**

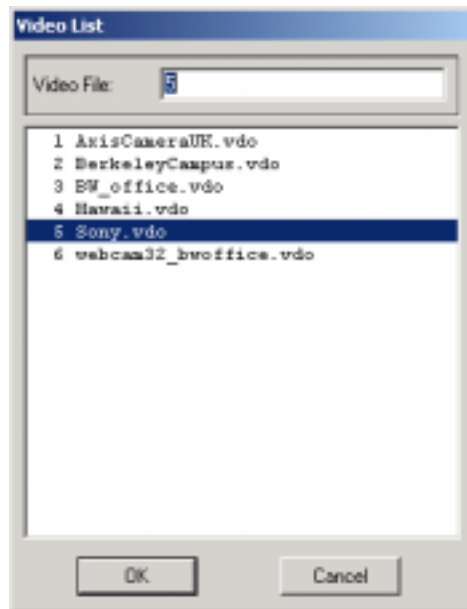


Figure 10-5 - Video List Dialog Box

3. The Video List Dialog Box will display the Camera in VIEW or VIEWDAQ window (i.e. full size).
4. Select a Camera (for example **Sony.vdo**).
5. Press OK.
6. Full Screen video opens.



Task 3: Draw Video in User Graphic Display

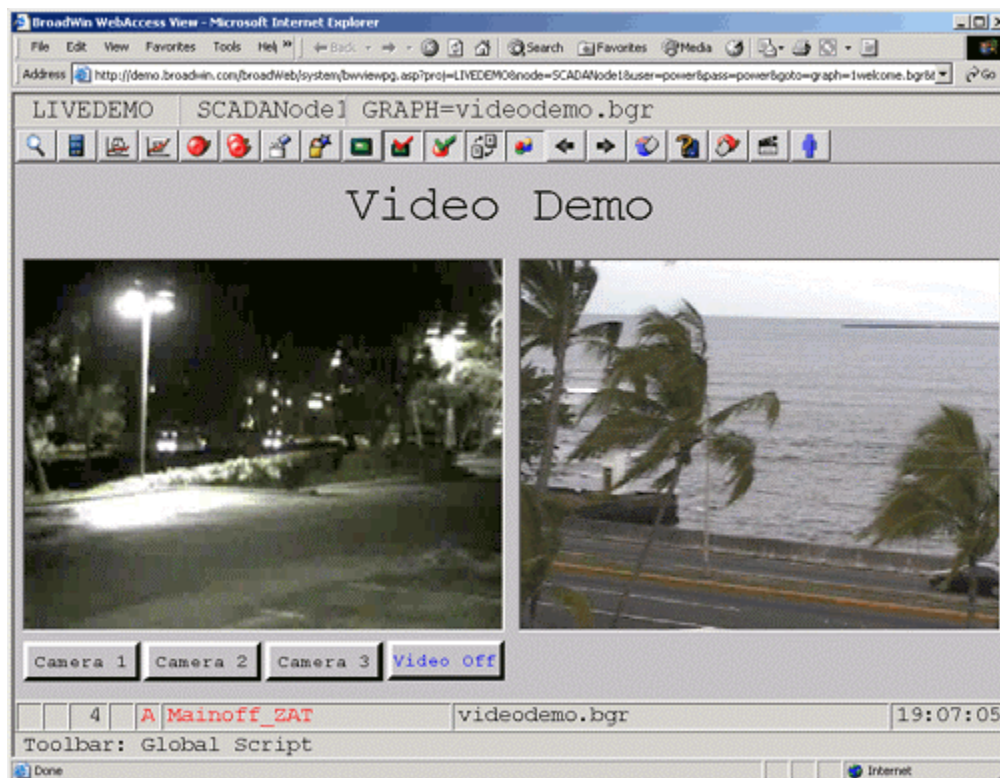
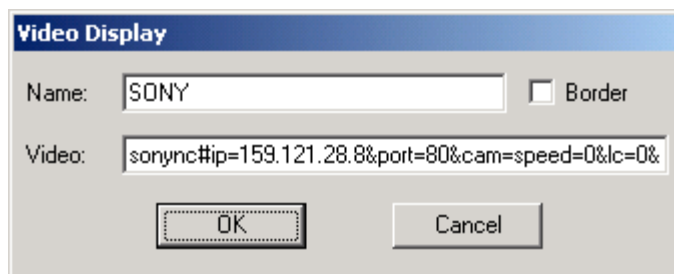


Figure 10-7 - Video in a user built graphic - VIEW

Multi-camera Displays, including live tag data and trends can be built in DRAW using the **Dynamic -> Video Display** from the toolbar

1. [Start DRAW](#).
2. Select New DRW .
3. **Right Click** the Mouse.
4. Select. **Dynamic -> Video Display**
5. The Video Display Dialog Box opens.



4. Enter a **Name** for this Video Window. This will allow scripts and animation to change which camera is displayed in this window. (If you previously edited or drew a Video Display, these fields will have the data from the last Video Display edited).
6. Enter the **Video type**, the pound sign (#) and the **IP address** of the Video Camera or PC with Media Player & plus any options.

For example, enter

sonync#ip=159.121.28.8&port=80&cam=speed=0&lc=0&rc=0&tc=0&bc=0

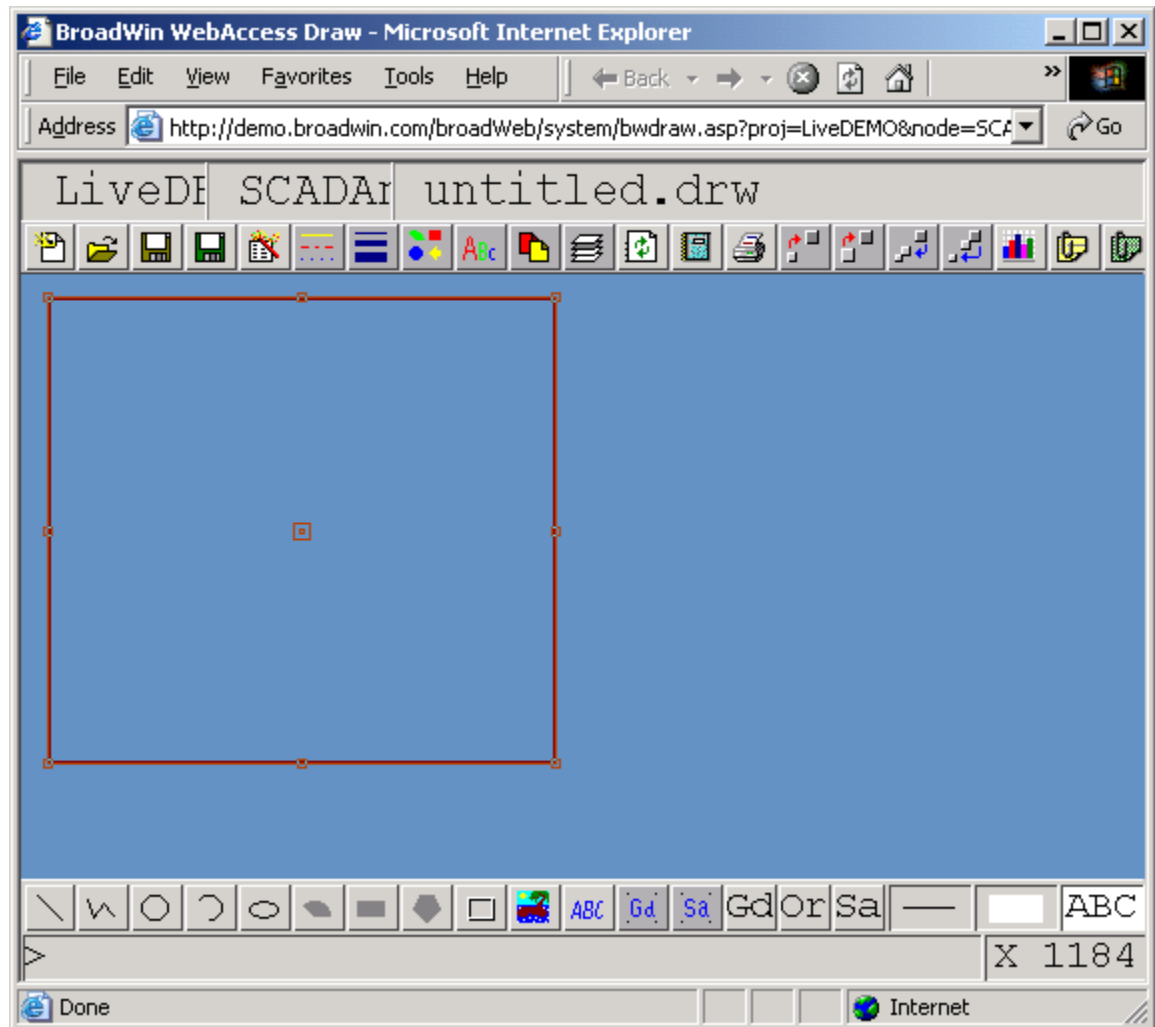
Update Video [Cancel] [Submit]

Video Name		Sony	
Description		Portland State University	
Local Tag File		Tag File List	
Local Script File	On Entry	Script File List	
	On Exit		
	While Showing	Interval	20 (10=0.25 Second)
Video Type		sonync (Sony Network Camera)	
Video IP Address		159.121.28.8	Port Number 80
Camera			
User Name			
Password			
CGI File			
Sound CGI File			
Audio Parameter CGI File			
Image Source			
Refresh Rate		Second	
Trim		Left 0 %	Right 0 % Top 0 % Bottom 0 %
Video		sonync#ip=159.121.28.8&port=80&cam=speed=0&lc=0&rc=0&tc=0&bc=0	

Copy this Line into DRAW VIDEO box

Hint – if you configured a Video Camera in Project Manager, copy the video information from the last line of the Dialog Box.

7. Select **OK** .
8. **Click once** to define the **start** of a **rectangle**



7. **Drag** with the mouse to define the size of the Video Window in the Graphic.
9. **Click a second time** to define the **end** of the rectangle.
10. Optionally add text, trends, pushbuttons and animation to the display.
11. [Download GRAPH ONLY](#) to the SCADA Node.

Section 11 – Users & Passwords

Objectives

This section introduces the concept Users, User Types, and Passwords.

Training Notes

Overview - Users & Passwords

Users must "Login" using a **Username** and **password** to VIEW. All Web Browser Clients must Login to see any graphic displays or data. User names are not case sensitive. Passwords are case-sensitive.

ViewDAQ - The local, non-web browser version, ViewDAQ will start without a user login. Any one with access to the Windows Operating System can use ViewDAQ. Admin, Power, General and Restricted Users can View all Displays and Tags in ViewDAQ. Security Area and Level restrict who can change data in VIEW. Use Windows security to "lock computer" for un-attended operation in ViewDAQ.

All users are assigned a [User Type](#). The user type determines which displays and types of displays a user can View. **User type** is used to restrict the ability to view data and displays.

The User Types are
admin (administrator),
user manager,
project user,
power user,
general user
and
restricted user.

Admin and **Project Users** can access the **Project Manager** (the configuration and engineering tool). Admin can access all SCADA Nodes using VIEW (and ViewDAQ). Project Users can not access runtime VIEW unless a second account, with the same name, is created as a Power, General or Restricted User.

Admin, power users, and general users can use VIEW to access all SCADA Nodes in the project and **view all displays** through a web browser.

Admin and **power users** can access the **Scheduler, Reports, System Log** and **ODBC Logs** through **VIEW** (the web browser).

Project Users can access the **Scheduler, Reports, System Log** and **ODBC Logs** through the **Project Manager**.

A **restricted user** can view only displays assigned to that user (this may be a single display) if the login is through a Web Browser. If the assigned default graphic display does not exist on that SCADA Node, or no graphic is assigned, then the restricted user can not login to that SCADA Node. The ability to Acknowledge alarms and Change Tags can be disabled or enabled on a per graphic basis (Area and Level Security still applies).

All users, except user managers, (Admin, power, general and restricted users) can use **ViewDAQ** (the non-web version, local to the SCADA node) to view all displays, all system displays, view all tags, acknowledge alarms and access the Scheduler, Reports, System Log and ODBC Logs through ViewDAQ.

User Managers can only add and modify new users via the User Management button.



Only Admin and User Managers can login to the WebAccess User Management.

Area and Level security

Security **Area** and security **Level** are used to restrict the ability to change data. In order to change the value of a tag, both the user and the tag must be assigned to the same **Area** and the user must have a security **Level** greater or equal to the security level assigned to the tag.

WebAccess uses the "**Area of Responsibility**" concept for control actions. This allows a user to have varying Levels of access in different Areas of the facility. For example, a user may be allowed to change Temperature Setpoints in one area of the facility, but not in another.

Each **tag** in the WebAccess database is assigned to one **Area** and given one security **Level**. If a Tag is assigned to Area 0 and Level 0, all users can change the Tag's value.

Each **User** is assigned a security **Level** for each **Area**. The default Level is 0 (the lowest).

In order to change the value of a tag, the User's Area and Level must match the Area and Level of the Tag. WebAccess compares the Tag's Area and Level to the user's Level for that Area. If the user is assigned a security Level greater than or equal to the Tag's Level in the same Area, then the change is permitted.

If the user's Level and Area do not match the tag's Area and Level, a Popup Dialog Box will appear prompting the user to Login as a new user. In a Web Browser, this new log in is temporary and applies only to changing the selected tag this one time.

WebAccess has 31 user defined **Areas** and 4 **special Areas**: [Local Tag](#), [View Tag](#), [Tag Field](#) and [Exit ViewDAQ](#). Level 127 is administrator level and is required to change Field

Tags (for example, change alarm limits from the point detail. All Field Tags require Level 127 in order to change them. Examples of Tag Fields include Alarm Limits, Description, SPANHI, SPAN LO, and ENG UNITS.

A tag assigned as READ ONLY can't be changed by an operator or administrator.

Reference

WebAccess-[Engineering Manual](#) , Sections 8 Users, Passwords & Security

For a more comprehensive overview of Security, see [Security Considerations.](#) in Section 1.6.

For a Table summarizing User Types in WebAccess, see [WebAccess User Accounts](#) in section 1.6.3.

Exercise

Task 1: Add or Update a User

A User can VIEW a SCADA Node using the Web Browser VIEW or ViewDAQ. The user types are [Power User](#), [General User](#) and [Restricted User](#).

To create or modify a User account to use VIEW a SCADA Node:

1. Log in to **Project Manager**
2. Select the **Project** the user will access.
3. Usually the SCADA Node Properties appears.
4. Select the Project Hyperlink to open Project Property Page.

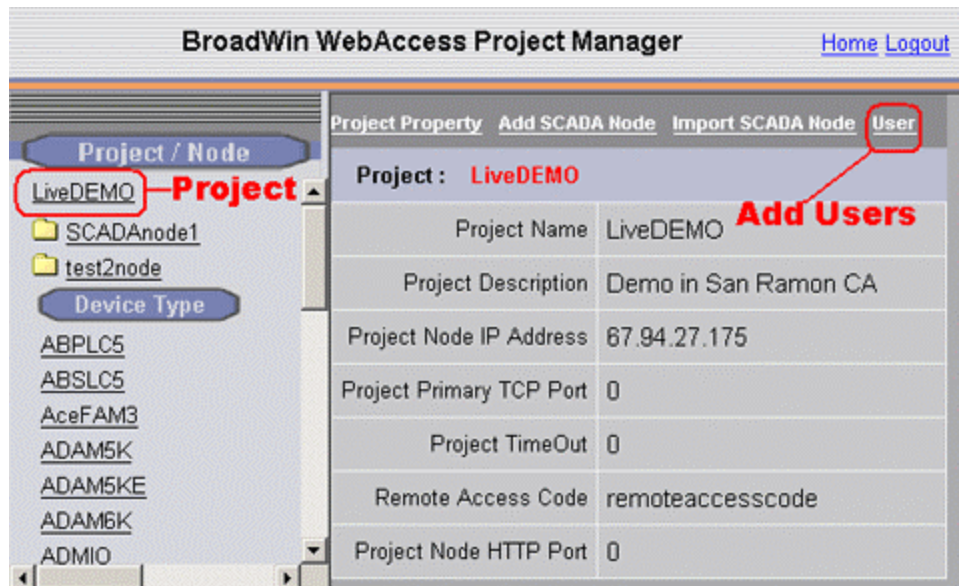


Figure – Add or Update User - Project Property

5. Select **User** hyperlink in Project Properties.
6. The **User List** appears.

Add User			
Project : LiveDEMO			
UserName	Description	Update	Delete
admin		Update	
antworker	User Description	Update	Delete
bill	bill Power User	Update	Delete
draft	Restricted floor & aporsche	Update	Delete
eight	User Description	Update	Delete
general	User Description	Update	Delete
INTEL	Restricted Floor Plan Only	Update	Delete
lab	Restricted to CompRoom (lab)	Update	Delete
make	Restricted User	Update	Delete

Figure - User List to Add or Update User account

7. Select **Add User** to create a new user or select [Update](#) to modify an existing user.
8. The **Create User** or **Update User page** appears (they look the same).

Figure 11-6 – Add or Update – Power User

9. Select a **User Type** from the pull down list (Figure 11-6).
The choices are: [Power User](#), [General User](#) and [Restricted User](#).
10. Enter a **User Name** if you are adding a new user. Changing the name of an existing user will change the name (not create a new user account).
11. The **Password** can be up to 8 characters and is case sensitive. There is no way to view an existing password. IF you have forgotten it, you have to enter a new password.
12. **Area** corresponds to the Security Area the tags are assigned a user may change. To change the value of a Tag, user must be assigned a [Security Level](#) greater or equal to the Level assign to the Tag in the same Area the Tag is assigned. A user may have a different **Level** for each **Area** of the project that

the user is to access. Security Level can be from 0 to 127. (127 = admin) How many Areas you divide your plant by your design. Many projects start with only one Area (Area 0). Area 0 is the default for tags. You can leave unused Areas unchanged and fill in Level only for Areas that apply. For an in-depth description, see [Area and Level](#) in the Engineering Manual.

13. **Local Tag, View Tag, Tag Field** and **ViewDAQ** enable a user to change non-IO tags, system tags and exit ViewDAQ. Enter a value of 127 (the admin level) for each applicable field if a user is to modify [local tags](#) (user built [screen tags](#) for displays and reports), [View Tags](#) ([%ViewDAQ system tags](#) including Simulation Mode [%DKRLMODE](#)) or [Tag Fields](#) (e.g. [alarm limits](#), [Span Hi](#), [Span Lo](#) and other online configuration changes).
14. Enter a value of 127 in **ViewDAQ** if the user is to be able to modify and Save Display Groups in ViewDAQ. A number less than 127 defines the Exit Password Level this user has when trying to close ViewDAQ windows on the SCADA Node in order to [exit ViewDAQ](#) and [stop the SCADA Node kernel locally](#).
15. **Node Access.** A user must be assigned to either ALL NODES or one or more nodes in the system. If the user is not assigned to a node, he/she will not be able to login to that node using VIEW or ViewDAQ.
16. **Graphic Page Access.** Power and General Users can be assigned a default Graphic that will appear when they log-in. Otherwise, the Main.bgr graphic will appear. Power Users can View all displays including the system displays (Action Log, Alarm Log, Station Status and Global Script Displays). General users can view all user built displays, trends, alarm summary and alarm group displays.

The [Default Graphic](#) is the display the user will see after Log in using VIEW (the web browser). A **Restricted User** must be assigned a Default Graphic to Login to a node using View.

The default graphic is optional for Power Users and General Users. If no Default Graphic is assigned to a Power or General User, then the Main.bgr will appear when using View.

ViewDAQ – ignores the Default Graphic and Restricted User display restrictions. Main.bgr or the graphic saved with the Display Group appears for all users when ViewDAQ or a Display Group is first opened.

17. To assign a Default Graphic, select the **Default Graphic** field with the mouse.
18. Click the **Graphic List** to view a list of all graphic displays (*.bgr)

Figure 11-7 - Select Graphic List

19. Select a graphic from the list by clicking on it. Alternatively, you can type the name of a Graphic Display that you plan to build in the future.
20. Select the menu pull down icon to assign graphics for this user on another SCADA Node (Figure 11-7).
21. If you are Adding or Updating a **General User** or **Power User**, you are done. Press **Submit**.

If you are adding a Restrict User, continue with the next section – [Graphic Page Access – Restricted Users](#).

Note – [Power](#) and [General Users](#) can view all user built (.bgr) graphic displays. Power Users can View all system displays.*

Task 2: Add or Update Project User or admin

1. Log in to Project Manager or if already connected, hit [HOME](#) link at the top right of most pages.

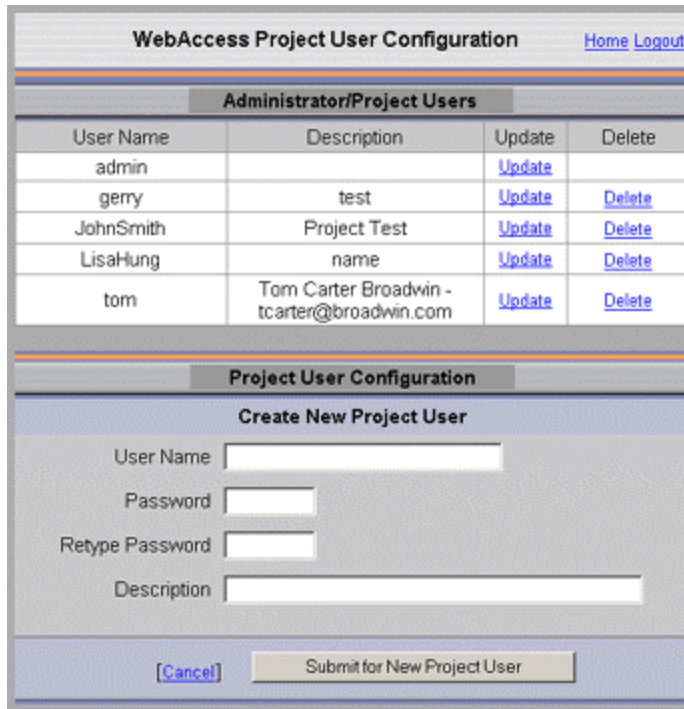
Current Project(s)						
Project Name	Description	IP	HTTP Port	TCP Port	TimeOut	Update
AdvantechDemo	Factory Access Control System	87.94.27.175	0	0	0	Update
LiveDEMO	Demo in San Ramon CA	87.94.27.175	0	0	0	Update

Please select one of above available Projects to start!! **Add Project User**

[Integrity Checking](#)
[Backup](#)
[Restore](#)
[Admin/Project User](#)
[ODBC Log Data Source](#)

[System Log](#)
[Action Log](#)
[Alarm Log](#)
[Analog Tag Log](#)
[Discrete Tag Log](#)
[Text Tag Log](#)
[Event Log](#)
[LogData Maintenance](#)

2. Select **Admin / Project User** on the Project Manager Home Page.
3. Project User list appears.



The screenshot shows the 'WebAccess Project User Configuration' interface. At the top, there are links for 'Home' and 'Logout'. Below this is a section titled 'Administrator/Project Users' which contains a table of users. The table has four columns: 'User Name', 'Description', 'Update', and 'Delete'. The users listed are 'admin', 'gerry', 'JohnSmith', 'LisaHung', and 'tom'. Each user has an 'Update' link and a 'Delete' link. Below the table is a section titled 'Project User Configuration' which contains a form to 'Create New Project User'. The form has four fields: 'User Name', 'Password', 'Retype Password', and 'Description'. At the bottom of the form are two buttons: '[Cancel]' and 'Submit for New Project User'.

User Name	Description	Update	Delete
admin		Update	
gerry	test	Update	Delete
JohnSmith	Project Test	Update	Delete
LisaHung	name	Update	Delete
tom	Tom Carter Broadwin - tcarter@broadwin.com	Update	Delete

Create New Project User

User Name

Password

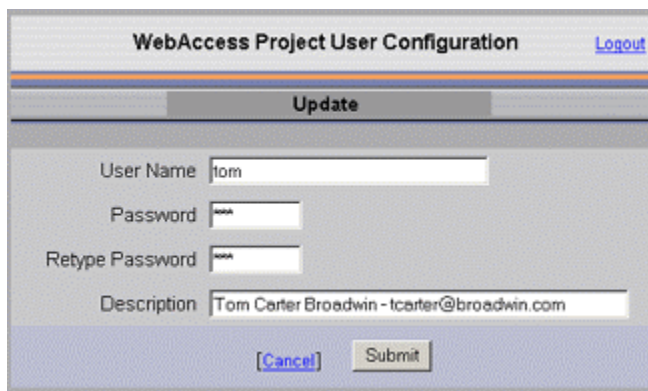
Retype Password

Description

[\[Cancel\]](#)

Figure 11-9- Project User List

4. Enter User name and password to create a new users account.
5. Enter the password twice to verify correct entry.
6. Press the Submit button
7. Select Update to modify an existing account.
8. The update Project Users page appears.



The screenshot shows the 'WebAccess Project User Configuration' interface with the 'Update' section selected. The form contains fields for 'User Name', 'Password', 'Retype Password', and 'Description'. The 'User Name' field is filled with 'tom', the 'Password' and 'Retype Password' fields are filled with masked characters, and the 'Description' field is filled with 'Tom Carter Broadwin - tcarter@broadwin.com'. At the bottom of the form are two buttons: '[Cancel]' and 'Submit'.

Update

User Name

Password

Retype Password

Description

[\[Cancel\]](#)

Figure 11-10 - Update Project User

9. Make you changes and press submit.

Note – change the user name renames the existing account (it does not create a copy).

10. Download the SCADA Node.
11. Login as the new Users.
12. You can create users with all the abilities of an admin by creating Project User account and a [User](#) Account with the same name. The user should be given Security level 127 (admin level) for all Areas, Local Tag, View Tag and Exit ViewDAQ.

Additional Exercise

In this exercise, you will configure tags with Area and Level security and users with passwords, and view the WebAccess alarm displays.

Task 3: Configure passwords.

1. Click the Password icon to open the Password dialog box.
2. Configure the following users:

User Name	Type	Areas	Level	Password
God	Power	0, 1, 2, 3, 4	127	God
King	Power	1,2	3	King
Queen	General	1,2	2	Queen
Jack	Restricted	0,1,2,3,4	1	Jack

Create New User [Cancel] [Submit]

User Name: User Type:

Password:

Retype Password:

Description:

Area 0	127	Area 1	127	Area 2	127	Area 3	127
Area 4	127	Area 5	0	Area 6	0	Area 7	0
Area 8	0	Area 9	0	Area 10	0	Area 11	0
Area 12	0	Area 13	0	Area 14	0	Area 15	0
Area 16	0	Area 17	0	Area 18	0	Area 19	0
Area 20	0	Area 21	0	Area 22	0	Area 23	0
Area 24	0	Area 25	0	Area 26	0	Area 27	0
Area 28	0	Area 29	0	Area 30	0	Area 31	0
Local Tag	127	View Tag	127	Tag Field	127	ViewDAQ	127

Node Access

Node Name:

Task 4: Configure tag security and alarms

1. Configure the alarms and change security level according to the following table.

2.

Tag Name	Type	Area	Level
blue	Constant Analog	2	3
red	Constant Analog	1	2
yellow	Constant Analog	1	1

Const Point List

Create New Tag [Cancel] [Submit]

Parameter: ConAna Constant (analog)

Alarm: No Alarm

Tag Name: Blue

Description: Area 2 Level 3 tag

Scan Type: Constant Scan

Log Data: ☐ Yes ☒ No

Data log db: 3 %

Write Action Log: ☒ Yes ☐ No

Read Only: ☐ Yes ☒ No

Keep Previous Value: ☐ Yes ☒ No

Initial Value: 0

Security area: 2

Security level: 3

Span high: 1000

Span low: 0

Output High Limit: 1000

Output Low Limit: 0

Task 5: Work with Users, Passwords, Area and Level Security in VIEW

1. Download the SCADA node
2. Start VIEW.
3. Log in as Jack
4. Open the Point Info List.
5. Locate the tag "yellow".
6. Change the value of the tag yellow.

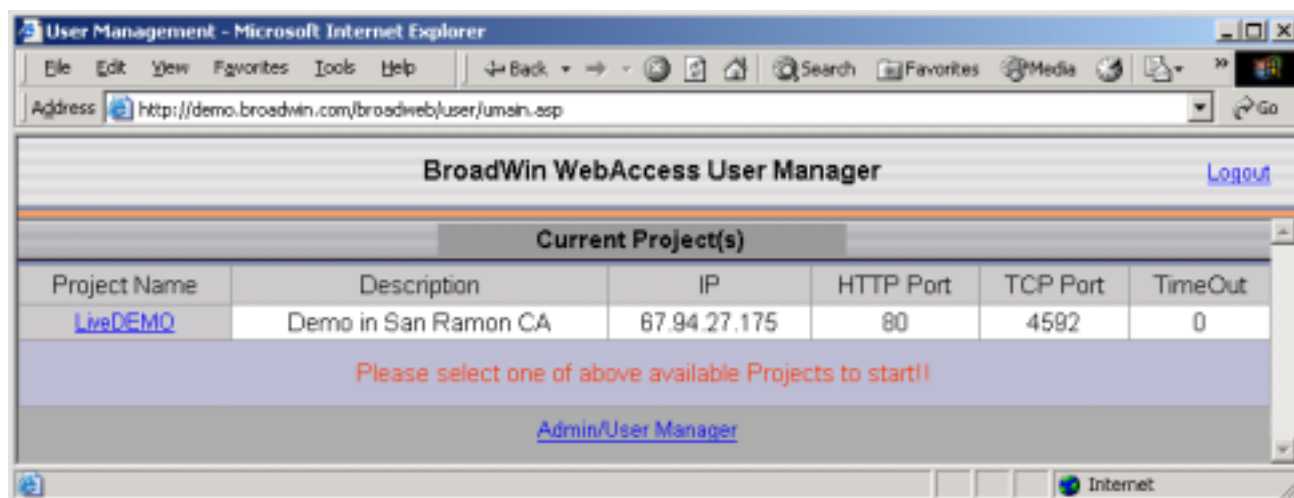
7. Open the Action Log and check the value changes you made on the tag “yellow”.
8. Open the Point Info List.
9. Locate the tag “blue”.
10. Change the value of the tag yellow.
11. Enter a level 3 (or higher) user and password when prompted (God or King).
12. Open the Action Log and check the value changes you made on the tag “yellow”.

Task 6: Create a User Manager

1. Connect to the Project Node.
2. Select User Management button.



3. Login as Admin.



4. Select [Admin / User Manager](#).

User Name	Description	Update	Delete
admin		Update	
tom	Also a Power User	Update	Delete
UserManager1	User Manager 1	Update	Delete

Create New User Manager	
User Name	
Password	
Retype Password	
Description	
Cancel	Submit for New User Manager

5. Enter a **User Name** for this new User manager (not, it can be the same name as a Project User in order to make a Project User as powerful as admin). For example use **King**.
6. Enter **Password**. (for example use **King**).
7. **Retype password**. (for example use **King**).
8. Press **Submit for New User**.
9. [Logout](#)
10. Login to User Management again, this time with you new user manager.

Section 12 - Scheduled Reports & ODBC Logs

Objectives

In this section, you will learn about Reports and Logs.

Training Notes

Scheduled Reports

Scheduled Reports are automatically generated from the Real-time data. Users & Operators can View the current and previous reports using a web browser. The output of the Scheduled Reports can be copied and pasted into EXCEL, WORD, and other general-purpose office applications as a formatted table or spreadsheet. Scheduled reports are most commonly emailed to users automatically. They can also be printed automatically on the Project Node.

Shift, Daily and **Monthly** reports that are generated from the Real-time data recorded to central, ODBC-compliant databases on the Project Node. [Log to ODBC frequency](#) must be greater than zero if a tag's data is to be recorded. Users & Operators can View the current and previous reports using their web browser clients. Reports are optionally emailed and printed automatically by the WebAccess SCADA node.

Only **Analog Tags** can be used in Scheduled Reports. Only **Power Users** and the **admin** account can access Scheduled Reports from **VIEW**. **Project Users** and admin can see Scheduled reports from the **Project Manager**. **All users** can view Scheduled reports in **ViewDAQ**. Scheduled reports can be **emailed** to anyone with an email account. The Scheduler can be used to change [email recipients](#) of Scheduled reports.

Scheduled Report

New Query

First Date Prev. Date (Date:100 / Total Days:100)

(Shift:1 / Total Shifts:3) Next Shift Last Shift

11/29/2002

Power and Utilities Report

Steam and Condensate Usage

South Campus

Tag Name	FI2002	FI2003	FI2004	FI2002	FI2003	FI2004	FI2002	FI2003	FI2004	FI2043
	HP Steam	Extraction	LP Steam	Maximum	Maximum	Maximum	Minimum	Minimum	Minimum	Condensate
	Boiler #1	Turbine #1	Turbine #3	HP Steam	Extraction	LP Steam	HP Steam	Extraction	LP Steam	Return
	700psig	100 psig	50 psig	Boiler #1	Turbine #1	Turbine #3	Boiler #1	Turbine #1	Turbine #3	
	KLbs	KLbs	KLbs	KLbs/Hr	KLbs/Hr	KLbs/Hr	KLbs/Hr	KLbs/Hr	KLbs/Hr	GALLONS
00:00-00:59	576	168	251	999.6	334.9	500.0	150.0	0.1	0.2	226,014
01:00-01:59	572	166	248	1,000.0	335.0	500.0	150.0	0.0	0.0	219,261
02:00-02:59	574	167	250	999.8	335.0	500.0	150.2	0.2	0.0	225,017
03:00-03:59	578	168	251	1,000.0	334.9	500.0	150.0	0.0	0.1	226,020
04:00-04:59	573	167	249	999.8	335.0	499.8	150.0	0.1	0.0	223,831
05:00-05:59	579	169	253	1,000.0	334.9	500.0	150.0	0.0	0.1	215,819
06:00-06:59	576	168	250	1,000.0	335.0	499.9	150.4	0.0	0.0	221,316
07:00-07:59	573	167	249	999.8	335.0	500.0	150.4	0.2	0.0	220,139
Summary										
Maximum	579	169	253	1,000.0	335.0	500.0	150.4	0.2	0.2	226,020
Minimum	572	166	248	999.6	334.9	499.8	150.0	0.0	0.0	215,819
Average	575	167	250	999.9	335.0	500.0	150.1	0.1	0.1	222,230
Total	4,601	1,340	2,001	7,999.0	2,679.7	3,999.7	1,201.0	0.6	0.4	1,777,417

Figure 12.1 - Shift Report of Energy Usage, central steam plant. - VIEW

Email Scheduled Reports

Shift Report (11/27/2002)											
Power and Utilities Report											
Steam and Condensate Usage											
South Campus											
Tag Name	FI2002	FI2003	FI2004	FI2002	FI2003	FI2004	FI2002	FI2003	FI2004	FI2043	FI2044
	HP Steam	Extraction	LP Steam	Maximum	Maximum	Maximum	Minimum	Minimum	Minimum	Condensate	Natural Gas
	Boiler #1	Turbine #1	Turbine #3	HP Steam	Extraction	LP Steam	HP Steam	Extraction	LP Steam	Return	Boiler #1
	700psig	100 psig	50 psig	Boiler #1	Turbine #1	Turbine #3	Boiler #1	Turbine #1	Turbine #3		
	KLbs	KLbs	KLbs	KLbs/Hr	KLbs/Hr	KLbs/Hr	KLbs/Hr	KLbs/Hr	KLbs/Hr	GALLONS	SCF
08:00-08:59	575	168	250	999.4	334.8	499.9	150.2	0.2	0.4	225,353	749.94
09:00-09:59	576	168	251	999.6	334.9	500.0	0.0	0.0	0.0	135,282	450.07
10:00-10:59	572	166	248	999.8	335.0	499.9	0.0	0.0	0.0	212,343	708.49
11:00-11:59	579	169	253	1,000.0	335.0	499.9	0.0	0.0	0.0	226,988	754.88
12:00-12:59	576	168	250	999.8	335.0	500.0	150.0	0.1	0.0	225,106	749.95
13:00-13:59	573	167	249	1,000.0	335.0	499.9	150.0	0.0	0.0	224,155	746.68
14:00-14:59	578	168	252	1,000.0	334.9	500.0	0.0	0.0	0.0	226,394	752.19
15:00-15:59	574	167	250	999.2	334.8	499.8	150.2	0.2	0.4	224,816	748.62
Summary											
Maximum	579	169	253	1,000.0	335.0	500.0	150.2	0.2	0.4	226,988	754.88
Minimum	572	166	248	999.2	334.8	499.8	0.0	0.0	0.0	135,282	450.07
Average	575	168	250	999.7	334.9	499.9	79.5	0.1	0.1	216,650	721.24
Total Value	4,603	1,341	2,003	7,997.8	2,679.4	3,999.4	600.4	0.5	0.8	1,700,437	5,660.82

Figure 12.2 - Email Scheduled Report - Shift Report

To enable email of scheduled reports, an [Outgoing Email Server \(SMTP\)](#) must be configured for the SCADA Node under [SCADA Node Properties](#). Usually the Project Node is configured as the SMTP server. In addition, usually the Project Node has IIS installed with the SMTP service and the Project Node is configured to use a [SMART HOST](#) to send email outside your domain.

The report emailed at the end of the Shift, Day or Month. For Shift reports, this is usually 1 minute after the end of the Shift. For Daily and Monthly reports, the email is sent 1 minute after midnight.

Project Logs

Data is extracted from the central ODBC Database (the default is Microsoft Access) on the Project Node. Tags must have Log to ODBC enabled in order to retrieve data from the Tag Log. No report building is required. This can be done “on-the-fly” by users to create mini-reports that can be copied and pasted to EXCEL, WORD and other programs.

The screenshot shows the 'Analog Tag Log' window in the 'Local View' application. The window has a menu bar (File, Edit, View, Goto, Tools, Help) and a toolbar. The main area contains a form with the following fields:

- Query Criteria: Custom Criteria (dropdown)
- Page Size: 25 (dropdown) Rows
- Project Name: LiveDEMO (dropdown)
- Node Name: SCADAnode1 (dropdown)
- Starting Date: 9/1/2003 (text box)
- Ending Date: 9/29/2003 (text box)
- Tag Name: A list box containing the following tags: All Tags, AI2005, AMPLITUDE, AO FLOAT71, CalcLogicAnalog, Falcon_Alarm_Summary, Falcon_Uptime2, Falcon_Temperature. Below the list box is the text: 'Select All tags (default) or hold the Ctrl key to select more than one tag.'
- Submit: A button at the bottom right of the form.

The status bar at the bottom of the window displays '2 A LI6016' and the time '16:39:29'.

Fig 12.3 - Analog Tag Log - QUERY form

Analog Tag Log									
New Query Print Quick Start Help									
Start Page (Page 410 / Total Pages 410)									
Date	Time	Tag Name	Maxmin	Maxmin	Average	Last Value	Alarm	Unit	
9/29/2003	4:46:00 PM	HE4001	0	0	0	0	-147483648	Live	
9/29/2003	4:46:00 PM	FLOAT4001	0	0	0	0	-147483648	Live	
9/29/2003	4:46:00 PM	FQ044	1299.19047619048	208.222222222222	764.41455026455	599.015873015873	64	Live	
9/29/2003	4:46:00 PM	FQ043	7436.1664881686	93.4005934365934	3668.46764346764	2474.35957435957	16	Live	
9/29/2003	4:46:00 PM	FQ004	499.5115966116	5.96080596080586	257.531542531543	164.590964590965	32	Live	
9/29/2003	4:46:00 PM	FQ003	334.630964590965	3.84493264493265	172.464326414326	110.194139194139	0	Live	
9/29/2003	4:46:00 PM	FQ002	998.754578754579	159.54822954823	567.368481888482	429.38949884989	0	Live	
9/29/2003	4:46:00 PM	AQ005	409.2	4.9	211.018333333333	134.9	32	Live	
9/29/2003	4:46:00 PM	HE4002	0	0	0	0	-147483648	Live	
9/29/2003	4:45:00 PM	FQ004	494.261294261294	0.610500610500611	192.794057794058	310.37851037851	32	Live	
9/29/2003	4:45:00 PM	AQ005	404.9	0.6	167.986333333333	254.3	32	Live	
9/29/2003	4:45:00 PM	AC/FLOAT71	0	0	0	0	0	Live	
9/29/2003	4:45:00 PM	CalcLogicAnalog	100	0	61.4066666666666	27	0	Live	
9/29/2003	4:45:00 PM	FQ003	331.07326007326	0.327228327228327	129.090211640212	207.871794871795	0	Live	
9/29/2003	4:45:00 PM	FQ043	7419.41391941392	14.6520146520147	2897.40537240537	4661.17218117218	16	Live	
9/29/2003	4:45:00 PM	FLOAT4001	0	0	0	0	-147483648	Live	
9/29/2003	4:45:00 PM	TOTALSANGRE	4989.08013219178	106.9104963094	2260.61819707453	1498.57522983649	0	Live	
9/29/2003	4:45:00 PM	HE4001	0	0	0	0	-147483648	Live	
9/29/2003	4:45:00 PM	HE4002	0	0	0	0	-147483648	Live	
9/29/2003	4:45:00 PM	SOIDA_C400_ARG	0	0	0	0	-147483648	Live	
9/29/2003	4:45:00 PM	SPEED	120	120	120	120	0	Live	
9/29/2003	4:45:00 PM	FQ044	1297.5873015873	196.619047619048	621.344708994709	381.206348206349	64	Live	
9/29/2003	4:45:00 PM	FQ002	989.82905962906	150.622710622711	477.334757834758	677.228327228327	0	Live	
9/29/2003	4:44:00 PM	FLOAT4001	0	0	0	0	-147483648	Live	
9/29/2003	4:44:00 PM	AQ005	371.3	83.9	227.776666666667	371.3	32	Live	

Figure 12.4 - Analog Tag Log

Reference

WebAccess-Engineering Manual Section 21. Reports & Logs

WebAccess Engineering Manual Section 4.2 Analog Tag Properties

Exercise

In this exercise, you will enable logging to ODBC for the Tags in your project

Task 1: Configure Log to ODBC for each Tag in a Report.

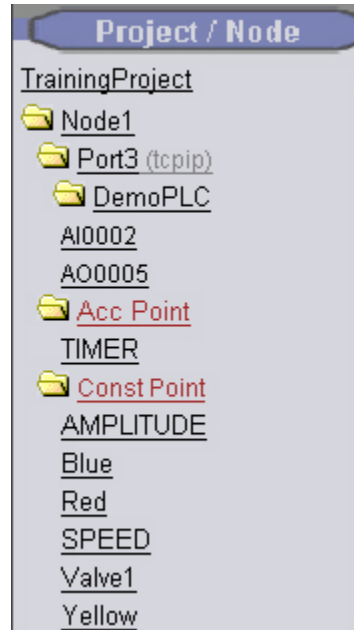
1. Start Project Manager.
2. Select you SCADA Node.
3. Expand the Port 3 folder and DemoPLC folder to see IO Tags.
4. Select AI002 tag the Password icon to open the Password dialog box.
5. Select **Tag Property**.
6. Scroll down to **Log To ODBC Frequency**

7. Enable Log to ODBC, by selecting non-zero minutes. For example, use 1 minute .



8. Press **Submit** .
9. Repeat for the other tags in your report

For the example, repeat this for tags: AMPLITUDE, TIMER, AO0005, Red, Yellow, Blue and Speed. Change the Log to ODBC Frequency = 1.



Task 2: Add Scheduled Report

1. Login to [Project Manager](#) and select your Project.
2. Select the SCADA Node that will produce the Scheduled Report.
3. Select **Report** from the header on the SCADA Node MAIN page (Figure 12-9).

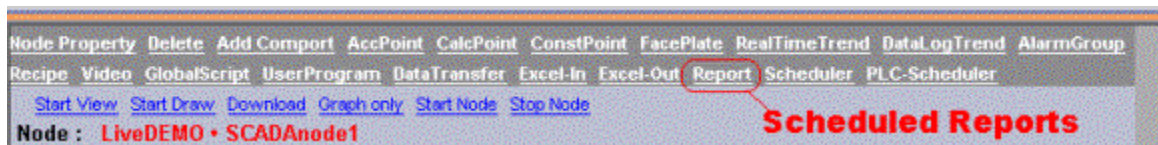


Figure 12-9 Report Configuration Link - SCADA Node MAIN page

4. The **Scheduled Report List** appears.

Add New Scheduled Report						
Report Name	Report Title	Shift Report	Daily Report	Monthly Report	Update	Delete
Electric Power	Power and Utilities Report	View	View	View	Update	Delete
Steam Usage	Power and Utilities Report	View	View	View	Update	Delete
Training Example	1st Line Report Title (optional)		View		Update	Delete

Figure 12-10 Schedule Report List

5. Select **Add New Scheduled Report** from the header in the Scheduled Report List.
6. The Add Scheduled Report page appears (identical to Update Report) (Figure 12-11).

Add Scheduled Report [Cancel] [Submit]

Report Name: Training Example

OverAll Title: 1st Line Report Title (optional)

Page Title: 2n Line (optional)

SubTitle: 3rd Line(optional)

Email Subject: date inserted - your subject

Tag Name	01	02	03	04	05	06	07	08	09	10	11	12
	tagname column 1	tagname colum 2	tagname column3									
	tagmane column 4	FI2043										

Tag List: ****Analog Tag****, AI2005, AMPLITUDE, **FI2002**, FI2003

report

Shift Report: Tag Property

Shift Count: Tag Property

Figure 12-11 Add Scheduled Report

7. Enter a **Report Name**. This is the name that will appear in the Scheduled Report List. This is a required field.
8. Optionally, fill in the **Title** for the Report. The Title consists of three (3) lines of text at the Top of the Report. See the [Daily Report](#) for an example (Figure 12-1).
9. Optionally, enter an **Email Subject**. This is the subject Line that will appear in [Emailed Scheduled Reports](#). The Date will be “pre-fixed” to this subject when sent (Figure 12-2).

The tags from for the twelve (12) columns the report are entered in the **Tag Name** area, number **01** to **12**.

10. Click on the **01** field.

11. Select the **pull down list** of tags at the right of **Tag List**.

Only Analog Tags with [Log to ODBC Frequency](#) > 0 appear in the list.

12. Scroll down to the Tag Name to add to column 1.

13. Click on the **Tagname** from the list. It should appear in the 01 field.

14. Repeat for fields **02** to **12** as desired.

15. **Enable** or **Disable** Shift Report, Daily Report and Monthly report by checking the radio button for each (Figure 12-12).

Figure 12.12 - Shift Report configuration

16. If you are using **Shift Report**,

- a. Enter the **Shift Count** (number of shifts per day).
- b. Enter the **Start Time** for the **first Shift** (usually 8 hrs 0 minutes in the USA, 8:00 am).
- c. Enter a **Shift Duration** (usually 8 hours if there are 3 shifts per day).
- d. Enter a **Recording Time Interval**. This applies to **Shift reports only**.

17. For **Shift**, **Daily** and **Monthly** Report:

- a. Enter **Email addresses** of recipients in **Email To**. This will be combined with the Global [Report Email TO](#) in SCADA Node Properties.
- b. Enter **Email CC** (carbon Copy line). This will be combined with the global [Report Email CC](#) in SCADA Node Properties.

Hint – Email To and CC fields can be a Text tag that contains the name(s) of email recipients (use @tagname) for use with the [Scheduler](#) to schedule who receives the reports by Time of Day, Day of Week, Holiday or calendar.

- c. Use the radio buttons (Yes or No) to enable **Print to Printer**. This will print the scheduled report on the **Default Printer** of the SCADA Node. The report will print at the end of the shift, day or month.
- d. Use the radio buttons (Portrait or Landscape) to enable **Orientation** of reports printed on a printer.
- e. Use the pull down menus to select **Font Size** (Larger, medium, smaller).
- f. Enter a value for the **Margins** (top, left, right and bottom) of printed reports.

If the report will not fit on a single page, WebAccess will print multiple pages with the Title, Time, and summary data on each page.

All three reports use the same Tags in the same columns. Different calculations (Average, Total, Min, Max, Last Value) can be performed in the Shift, Daily and Monthly Reports. These are specified under the Tag Property Button for each report. The Titles of the Columns for the Reports are specified in the Tag Property for each report (a column represents one Tag's data). The three reports can have different Titles for each column or share the Titles based on another report (e.g. import Shift Report Titles to Daily, or Daily into Monthly).

18. Enable printing to the default printer on the Project Node by checking the radio button under **Print to Printer** = Yes.

- a. Modify **Orientation** (Landscape or Portrait)
- b. Modify **Font Size** (uses fonts installed on the Project Node)
- c. Modify **Margins** for the printing to a printer using

19. Continue to Shift Tag Property or Daily Report Tag Property or Monthly Tag Property.

20. OR press **Submit**.

Hint - If you press submit without updating Tag Property for each report type, all values will be Averages and the Titles for each column will be blank.

Task 3: Shift Report Properties

Each Column in a Report represents the data from one Analog Tag recorded to the ODBC Analog Tag Log. Shift, Daily and Monthly versions of the report use the same Tags, columns and Data.

Different calculations (Average, Total, Min, Max, Last Value) can be performed in the Shift, Daily and Monthly Reports. These are specified under the Tag Property Button for each report.

The Titles of the Columns for the Reports are specified in the Tag Property for each report (a column represents one Tag's data). The three reports can have different Titles

for each column or share the Titles based on another report (e.g. import Shift Report Titles to Daily, or Daily into Monthly).

To Configure the Shift Report Tag Properties:

1. **Add a Scheduled Report** or select **Update** from the Scheduled Report List (Figure 12-10).
2. Click the **Tag Property** button listed under Shift Report (Figure 12-12).
3. The Shift Report Tag Property page opens (Figure 12-13).

Column	Tag Name	Title	Display Method	Factor	Decimal Places
1	tagname column 1	1. Top of Column 2. 2nd Row 3. 3rd Row 4. header Bottom	Total		0
2	tagname column 2	1. zzz 2. 3. zz 4.	Maximum	2.0	1
3	tagname column 3	1. zz 2. 3. 4.	Minimum	0.5	2
4	tagname column 4	1. 2. 3. 4.	Last Value		3
5	FI2043	1. HP Extraction Steam 2. Boiler #1 3. 700 PSIG 4. KLBS	Average	.001	9

Report Summary

Maximum ☒ Minimum ☒ Average ☒ Last Value ☐ Total ☒

Figure 12-13 Shift Report Tag Property

4. There can be up to 12 Columns per report (twelve tags).
5. You can **import Title information**, if another version of this report (Daily or Monthly) has already been configured with Tag Property.
 - a. From the **pull down** list next to **Title**, the choices are
 - i. **User Input** - Title information entered or edited manually here.
 - ii. **Import from Daily** – will import the Titles from the Daily Report version (if configured).
 - iii. **Import from Monthly** – will import the Titles from the Monthly Report version (if configured).
 - b. You can edit the Titles with Import from Daily or Import from Monthly selected; this will not change the Daily or Monthly reports.

- c. Selecting User Input will return to the Titles last saved using the Submit button. Once you press submit, the User Input version becomes the current titles displayed.
 - d. If you can't import, then manually enter the Header Title information for each Column of the Report. There are 4 text lines per header on each column. See [Shift Report](#) for an example of Column Headers.
6. Display Methods defines a calculation for the data collected the tag (Average, Minimum, Maximum, Last Value or Total). This defines how each "cell" in the report calculated from the records in the ODBC Log database.
- a. **Average** is the simple average of the values (Total / no. of records) for the recording interval this row represent.
 - b. **Maximum** and **Minimum** are for the recording interval this row represents.
 - c. **Total** is the simple sum of all records for the recording interval this row represents. You must consider the engineering units of the tag, the Log to ODBC Frequency, the deadband, the number of samples recorded because of the deadband, the Recording Interval for the Shift Report and the Factor for this report to make this a meaningful total.

Average is the easier way to calculate Total. The easiest way to make sure your Totals are meaning full is to use:

Average and a Recording Interval = the time units of Tag's Engineering Units.

This makes the Total independent of the Log To ODBC frequency, the Deadband for the Tag and the number of sample actually recorded in the ODBC Log.

For example, if the tag's engineering units are Gallons / Hour, a Recording Interval = 60 minutes results in a Total value if Average is used regardless of the Log to ODBC Frequency. (I.e. the Total Flow over 1 hour period is the same as the Average Flow Rate / Hour for the one hour period).

- d. **Last Value** is the last value recorded for the tag during this recording interval. This is typically used for closing inventory on Tanks or meters.

The calculation for each cell applies to all records found in the ODBC log for the **Recording Interval** this row represents (5 minutes to 60 minutes). The **Recording Interval** was defined on the first configuration page of this Shift report (See [Add Scheduled Report](#)). The user should ensure this period is greater or equal to the ODBC record frequency for the tag.

7. **Factor** is a multiplier used for units and time conversion. For example, if the tag engineering units are gallons / per minute and your total is for a one hour interval, you need a multiplier of 0.0167 (1/60). The result of the Average, Minimum, Maximum, Total or Last Value calculation is multiplied by this factor.

8. **Decimal Places** defines how many digits after the decimal point (e.g. tenths, hundredths, thousandths) will be displayed in the report.
9. **Report Summary** defines the rows at the bottom of each column. Summary Data at the bottom of each Column can be calculated: Maximum, Minimum, Average, Last Value and Total for the column.
10. Press **Submit** to save these entries. [Download to the SCADA Node](#) to make these changes effective.

To Configure the Daily Report Tag Properties:

1. **Add a Scheduled Report** or select **Update** from the Scheduled Report List (Figure 12-10).
2. Click the **Tag Property** button listed under Daily Report.
3. The Daily Report Tag Property page opens (Figure 12-14).

Column	Tag Name	Title	Display Method	Factor	Decimal Places
1	tagmane column 1	Derived From Shift Report User Input Derived From Shift Report	Average		3
2	tagmane column 2	3rd Row	Average		3
3	tagmane column 3	header Bottom	Average		3
4	tagmane column 4		Average		3
5	FI2043	HP Extraction Steam	Average		3

Report Summary

Maximum ☒ Minimum ☒ Average ☒ Last Value ☐ Total ☒

[Cancel] Submit

Figure 12-14 Shift Report Tag Property

4. There can be up to 12 Columns per report (twelve tags).
5. You can **import Title information**, if another version of this report (Shift or Monthly) has already been configured with Tag Property.
 - a. From the **pull down** list next to **Title**, the choices are
 - i. **User Input** - Title information entered or edited manually here.
 - ii. **Import from Shift** – will import the Titles from the Shift Report version (if configured).

- iii. **Import from Monthly** – will import the Titles from the Monthly Report version (if configured).
 - b. You can edit the Titles with Import from Shift or Import from Monthly selected; this will not change the Daily or Monthly reports.
 - c. Selecting User Input will return to the Titles last saved using the Submit button. Once you press submit, the User Input version becomes the current titles displayed.
 - d. If you can't import, then manually enter the Header Title information for each Column of the Report. There are 4 text lines per header on each column. See [Shift Report](#) for an example of Column Headers.
6. Display Methods defines a calculation for the data collected the tag (Average, Minimum, Maximum, Last Value or Total). This defines how each “cell” in the report calculated from the records in the ODBC Log database.
- e. **Average** is the simple average of the values (Total / no. of records) for the One (1) Hour interval this row represents.
 - f. **Maximum** and **Minimum** are for the One (1) Hour interval this row represents.
 - g. **Total** is the simple sum of all records for the One Hour (60 minute) interval this row represents. You must consider the engineering units of the tag, the Log to ODBC Frequency, the deadband, the number of samples recorded because of the deadband, and the Factor for this report to make this a meaningful total.

Average is the easier way to calculate Total. The easiest way to make sure your Totals are meaning full is to use:

Average and a **Factor** convert the time units of Tag's Engineering Units to one hour.

This makes the Total independent of the Log To ODBC frequency, the Deadband for the Tag and the number of sample actually recorded in the ODBC Log.

For example, if the tag's engineering units are Gallons / Minute, a Factor = 1/60 minutes (0.0167) results in a Total value if Average is used, regardless of the Log to ODBC Frequency. (I.e. the Total Flow over 1 hour period is the same as the Average Flow Rate / Hour for the one hour period).

- h. **Last Value** is the last value recorded for the tag during this recording interval. This is typically used for closing inventory on Tanks or meters.

The calculation for each cell applies to all records found in the ODBC log for the **One Hour Interval** (60 minutes) this row represents. Daily Reports are always a One Hour period for each row of the report. The user should ensure this period is greater or equal to the ODBC record frequency for the tag.

7. **Factor** is a multiplier used for units and time conversion. For example, if the tag engineering units are gallons / per minute and your total is for a one hour interval, you need a multiplier of 0.0167 (i.e. 1/60). The result of the Average, Minimum, Maximum, Total or Last Value calculation is multiplied by this factor.
8. **Decimal Places** defines how many digits after the decimal point (e.g. tenths, hundredths, thousandths) will be displayed in the report.
9. **Report Summary** defines the rows at the bottom of each column. Summary Data at the bottom of each Column can be calculated: Maximum, Minimum, Average, Last Value and Total for the column.
10. Press **Submit** to save these entries. [Download to the SCADA Node](#) to make these changes effective.

Task 4: View past or current report

You can View past reports as far back as there are online ODBC Database records. The [Data Log Maintenance](#) defines how long records are kept.

If the current Shift, Day or Month is incomplete, then you will see a partial report containing the hours and days so far, with Totals, Averages, Minimums and Maximums reflecting only the data recorded so far.

To see Scheduled Reports using the web browser VIEW,

Right Click -> Tools -> Reports

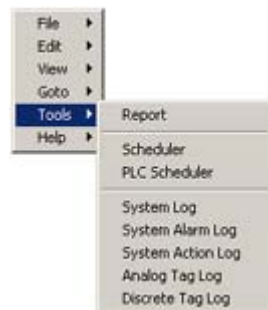


Figure 12-15 - **Right Click** -> Tools Menu - Reports, Power User or admin

In ViewDAQ, from the menu bar select Tools -> Reports.

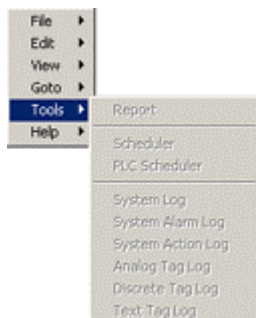


Figure 12-16 - Tools menu not available to General or Restricted Users

If the menu items are grayed-out, then you are not logged in as a Power User. You will have to login as a different user. You must close the Web Browser in order to log in as a different user.

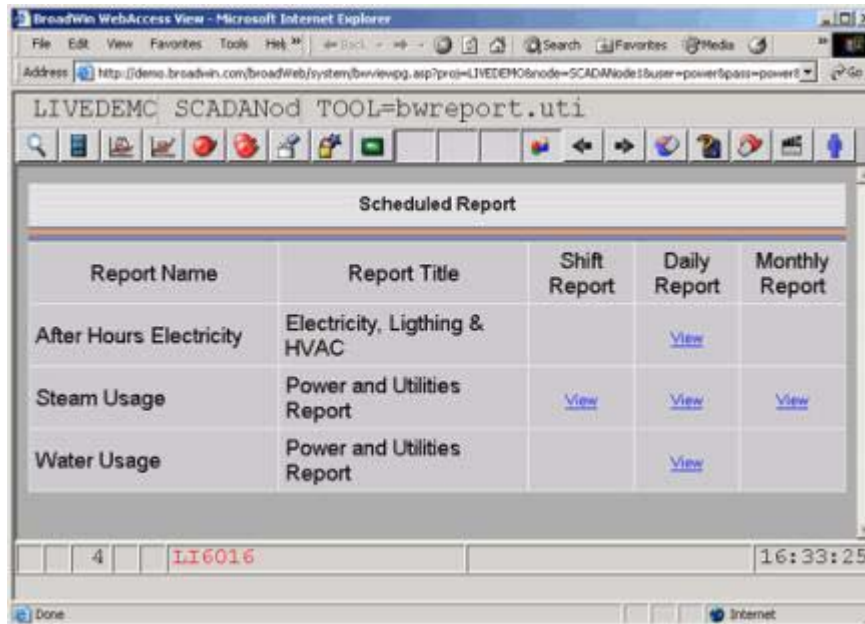


Figure 12-17- Scheduled Report List - Shift, Daily and Monthly Scheduled reports.

1. From the List of Scheduled reports, select [View](#) under the Column for the Report Type and in the Row for the Report Name for the Report desired.
2. Wait. It can take a while for the report to be generated, averages, totals, maximum and minimum values for all recorded data for the period of the report will be calculated. The more columns in the report (tags) and the more data records for each tag (how noisy it is) the longer it will take. Monthly reports can take 5 or 10 minutes to appear (a months worth of minute and hourly records must be read and calculated).

Tip – have your [reports emailed](#) to you or a common account. Save them in your email program or as HTML file. It is a faster way to look up past reports.

Tip – You can reduce the time to call up reports by increasing the [ODBC Log Frequency](#); this will reduce the number of records for each tag that must be used to calculate a report. You can also reduce the number of Columns in a report to speed the calculation time.

3. The report for the Current Day appears.

For [Shift Reports](#) - The first Shift Report of the current Day appears (Figure 12-1).

For [Daily Reports](#) – The current day's Daily Report appears .

For [Monthly Reports](#) – The Current Months Report appears.

Note -If the current Shift, Day or Month is incomplete, then you will see a partial report containing the hours and days so far, with Totals, Averages, Minimums and Maximums reflecting only the data recorded so far.

4. To navigate to past or future reports

Shift Reports - [First Date](#), [Prev Date](#), [Next Shift](#), [Prev Shift](#) and [Last Shift](#) (Figure 12-1).

Daily Reports - [First Date](#), [Prev Date](#), [Next Date](#), [Last Date](#)

Monthly Reports – [First Month](#), [Prev Month](#), [Next Month](#), [Last Month](#)

(Note – Last Month means most recent month on record, usually the current month).

First is always the earliest record in the online database (the oldest)

Last is always the most recent records (usually the current date).

5. To see another report, either:

a. Click [New Query](#) (at the upper left)

OR

b. Click a Toolbar Button to return to a Graphic and start at step 1.

Task 5: View Analog Tag Log

1. Login to VIEW as a Power user.
(In the example, log in as God or King).
2. Open the Tools menu in VIEW:
Right Click -> Tools -> Analog Tag Log.

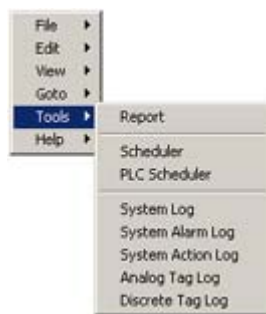


Figure 21-1 - **Right Click** -> Tools Menu - Power User or admin

Note - In ViewDAQ, all Users can also see these logs from the menu bar:
Tools -> Analog Tag Log.

3. The Analog Tag Log ASP page opens in VIEW

note – the Project Node must be running to View Project Logs

WebAccess Analog Tag Log

Query Criteria: Custom Criteria Page Size: 25 Rows

Project Name: LiveDEMO Node Name: SCADAnode1

Starting Date: 1/1/2004 Ending Date: 1/9/2004

Tag Name: All Tags

Select All tags (default) or hold the Ctrl key to select more than one tag.

Submit

4. Use the CTRL key to select multiple Tag Names.
5. Or, use SHIFT key to select a range of Tag Names.
6. Press **Submit**.
7. The Analog Tag Log opens.

Analog Tag Log New Query Print Quick Start Help

Start Time (Page 410 / Total Pages 410)

Date	Time	Tag Name	Minimum	Maximum	Average	Last Value	Alarm	Stop
9/29/2003	4:46:00 PM	HEX4001	0	0	0	0	-2147483648	LiveC
9/29/2003	4:46:00 PM	FLOAT4001	0	0	0	0	-2147483648	LiveC
9/29/2003	4:46:00 PM	FQ044	1299.19047619048	208.222222222222	764.41455026455	599.015873015873	64	LiveC
9/29/2003	4:46:00 PM	FQ043	7436.1664881685	83.4005934385934	3668.46764346764	2474.35897435897	16	LiveC
9/29/2003	4:46:00 PM	FQ004	499.5115865116	5.86060586060586	267.531542531543	164.590964590965	32	LiveC
9/29/2003	4:46:00 PM	FQ003	334.890964590965	3.84493284493285	172.464326414326	110.194139194139	0	LiveC
9/29/2003	4:46:00 PM	FQ002	998.754578754579	159.54822954823	587.368481888482	429.388498088499	0	LiveC
9/29/2003	4:46:00 PM	AQ005	409.2	4.9	211.018333333333	134.9	32	LiveC
9/29/2003	4:46:00 PM	HEX4002	0	0	0	0	-2147483648	LiveC
9/29/2003	4:45:00 PM	FQ004	494.261294261294	0.610500810500811	192.794057794058	310.37851037851	32	LiveC
9/29/2003	4:45:00 PM	AQ005	404.9	0.6	157.998333333333	254.3	32	LiveC
9/29/2003	4:45:00 PM	AOFLOAT71	0	0	0	0	0	LiveC
9/29/2003	4:45:00 PM	CalcLogicAnalog	100	0	61.4055555555556	27	0	LiveC
9/29/2003	4:45:00 PM	FQ003	331.07326007326	0.327226327226327	129.090211640212	207.871794871795	0	LiveC
9/29/2003	4:45:00 PM	FQ043	7419.41391941392	14.8520148520147	2897.40537240537	4661.17216117216	16	LiveC
9/29/2003	4:45:00 PM	FLOAT4001	0	0	0	0	-2147483648	LiveC
9/29/2003	4:45:00 PM	TOTALSANGRE	4989.09013219178	106.9104963094	2260.61819707453	1488.57522983849	0	LiveC
9/29/2003	4:45:00 PM	HEX4001	0	0	0	0	-2147483648	LiveC
9/29/2003	4:45:00 PM	HEX4002	0	0	0	0	-2147483648	LiveC
9/29/2003	4:45:00 PM	SODA_C400_ARS	0	0	0	0	-2147483648	LiveC
9/29/2003	4:45:00 PM	SPEED	120	120	120	120	0	LiveC
9/29/2003	4:45:00 PM	FQ044	1297.9873015873	196.618047619048	621.344708994709	881.206348206349	64	LiveC
9/29/2003	4:45:00 PM	FQ002	989.82905982906	150.622710622711	477.334757834758	677.228327228327	0	LiveC
9/29/2003	4:44:00 PM	FLOAT4001	0	0	0	0	-2147483648	LiveC
9/29/2003	4:44:00 PM	AQ005	371.3	83.9	227.776666666667	371.3	32	LiveC

5 CONF_ZAT 16:47:23

Figure - Analog Tag Log

Data log for Analog tag

- a. ProjNodeId : Unique ID for a SCADA node.
- b. TagName : Tag Name.
- c. LogDate : Date of the record was recorded.
- d. LogTime : Time of the record was recorded.
- e. MaxValue: Maximum value of the recording period.
- f. AvgValue: Average value of the recording period.
- g. MinValue: Minimum value of the recording period.
- h. LastValue: The Maximum value of the recording period.
- i. Alarm: If the tag is in alarm during the recording period.

-2147483648 (Decimal) or 0x80000000 (HEX) means there is no data during the minute of collection. Otherwise, the value of this field is a LOGICAL OR of all the Alarms that occurred during the interval. For More information see the [Engineering Manual Section 21.2.3 Analog Tag Log](#).

Section 13 - Scheduler

Objectives

In this section, you will learn about the Scheduler function. This works with Analog, Discrete and Text type tags in your system. This function allows you to schedule setpoint changes, equipment start / stop and email addresses to change automatically based on a time-of-day, day of week and calendar.

Training Notes

Scheduler Functions

The scheduler can provide both "On/Off" and Setpoint changes. For example, an "OFF" hours Temperature Setpoint may be "setback" during evening hours to save energy while the "ON" hours Temperature Setpoint may be set for occupant comfort. The **On Value** and **Off value** are specified for each Tag (or Circuit). These can be any two values (i.e. not just 0 and 1) to allow setpoint changes and other value changes (included text strings).

The On Values and Off Values are specified for each tag in the **Circuit Group**. A tag can be viewed as representing a single electrical circuit (for example on/off control of lights). Hence, groups of tags are called "Circuit Groups". A "Circuit Group" can be any group of tags (or even a single tag) that will always share the same schedule.

The **Time** specifies the **Start Time** and **Stop Time** for each day of the Week. Each day of a schedule consists of **Normal Hours**, two sets of **Extra Hours** and a **Default** time period. Separate Start and Stop Time can be defined for **Normal Hours**, **Extra Hours I** and **Extra Hours II**. The Default applies to any time outside of Normal or Extra Hours. The Normal Hours, and Extra Hours, combined with the "Default", allows 4 time periods per day (minimum) to be specified. Additional schedules can be defined if more "periods" per day are required.

A **Cycle Time**, in 1-minute intervals, can also be specified to allow On/OFF cycling of equipment during the schedule (for example, turn the Fans on for 10 minutes, then off for 20 minutes from 8:00 am to 5:00 pm). The **ON CYCLE TIME** and **OFF CYCLE TIME** can be defined for each Normal, Extra Hours and default period of the day. If both ON Cycle = 0 and OFF Cycle=0, then nothing happens, the tags remain unchanged during

the time period. If ON Cycle=1 and OFF Cycle=0, then no cycling happens and the tags are set to the ON values for the duration of the Start to Stop time.

Holiday defines calendar-based events. It allows "Holiday Schedules" to be set to account for non-occupancy or special events. The Holiday schedule can be used for any calendar event (based on Month, Day of Month and Year) up to 1 year in the future. Multiple holiday schedules can be configured and assigned to different groups of tags.

There is no limit to the number of Schedules that can be configured. Each schedule has a START TIME, STOP TIME, optional CYCLE time, ON and OFF values for each day of week plus the "Holiday schedule".

An **Equipment Group** associates a **Time** Schedule with one or more **Circuit Groups**. Multiple "Circuit Groups" can be linked to a single "Time Schedule" in an "Equipment Group". For example, the lights for each floor a building might be grouped into a Circuit group each (1stFloorCircuit, 2ndFloorCircuit, 3rdFloorCircuit, ... 40thFloorCircuit). Each "Occupied" floor might be assigned to the "Occupied Equipment Group" with the "Occupied Schedule". If a tenant moves, that floor would be reassigned to the "Unoccupied" Equipment group, which uses the "Unoccupied Schedule".

A **MANUAL ON** and **MANUAL OFF** feature allow a schedule to be "overridden" and forced to the ON or OFF values for a Circuit Group. MANUAL ON/OFF is typically used to enable occupancy (i.e. turn on the lights) for non-scheduled events. **AUTOMATIC** follows the defined schedule when specified in a Circuit Group.

New schedules and changes to schedules will **Download to the SCADA node** without stopping the SCADA Node.

Power Users can download and Modify Schedules from VIEW (and ViewDAQ) from the Tools menu. Web browser VIEW clients must log in as Power Users to Download or Modify a Schedule. Any ViewDAQ user can download a schedule.

To access Scheduler from **VIEW**:
Right Click -> Tools -> Scheduler

To access Scheduler from **ViewDAQ**:
From the Menu Bar, select **Tools -> Scheduler**

Reference

[WebAccess Engineering Manual Section 18. Scheduler](#)

Exercise

In this exercise, you will configure a Building Automation schedule.

Task 1: Create a Schedule

1. **Login** in to Project Manager
2. Select **Project** and **SCADA Node**

3. From SCADA Node main page, select **Scheduler**.

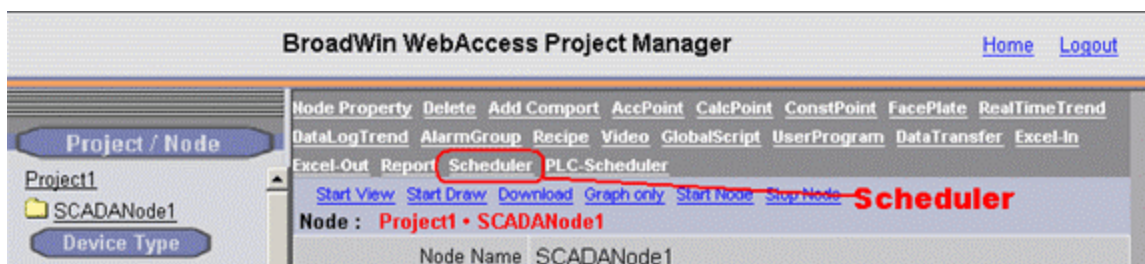


Figure 13-8 Scheduler - Project Manager

Create a Schedule

4. From the [Holiday](#) page, create at least one holiday schedule. It can be blank. The Holiday Schedule defines "exceptions" to the 7 day per week schedule. The "Holiday" is any unusual event or series of events. The Holiday Schedule can be defined, redefined and assigned at any time, but usually is defined first to allow easy assignment to the Time Schedules as the "exception" to the schedule.
 - a. Enter a **name** for the Holiday Schedule.
 - b. Enter a Group Number.
 - c. Press **submit**.

The typical use is to create "Holiday" schedules to account for non-occupancy of buildings in order to have an "exception" to the normal weekday schedule. A Holiday Schedule can be created for any calendar event, not just holidays, that are based on the Day, Month and Year.

Figure 13-4 Holiday configuration - Scheduler

5. Select [Time](#).
6. On the [Time Group](#) page, define the Time Schedules. These are the START TIME and STOP TIME for Normal and Extra Hours for a weekly schedule. A single "Holiday Schedule Group" is assigned to each Time Schedule.

Figure 18-11 Time Group Number, Name and Holiday

- a. Enter a **Time Group Number**.
- b. Enter a **name** the Time Group.
- c. From pull down list, select **Holiday** Schedule.

Time Period	Normal Hours			
Day	Start	Stop	Cycle On	Cycle Off
Monday	07:10	18:05	1	0
Tuesday	07:10	18:05	1	0
Wednesday	07:15	11:35	1	0
Thursday	07:15	18:00	1	0
Friday	07:15	18:00	1	0
Saturday	00:00	00:00	0	0
Sunday	00:00	00:00	0	0
Holiday	09:30	17:00	1	0

Figure 13-12 Time Group - Normal Hours

- d. Under **Normal Hours**, use the pull down list to select **Start and Stop** times (Monday through Sunday and Holiday).
- e. Enter 1 under Cycle ON and leave 0 as Cycle Off if value is continuously ON.
- f. Repeat for Extra Hours, Extra Hours II and default cycle if there are multiple scheduled per day. (See [Time](#) for more detailed information)
- g. Press **submit**.

7. Select [Equipment Group](#).

Equipment Groups associate one or multiple Circuit Groups with a Time Schedule. Equipment Groups allow a single Time Schedule to be assigned to multiple Circuit Groups quickly and reduces the need to re-create the same schedule.

Holiday	Time	Equipment	Circuit Group	Download to SCADA Node
Equipment Group Delete Save				
Group List		0001 : Lights	Sort By: Group Number	
Group Number		1		
Group Name		Lights		
Time Group		0001 : lightsSC100	Sort By: Group Number	
Circuit Group		Circuit Group Number	Circuit Group Name	
		1	FirstFloor100	
		2	2ndFloor200	
		6	MakeSureitsON	

Figure 13-7 Equipment Group - Link multiple circuit groups to same schedule

8. Define **Equipment Group** by:

- Enter **Group Number**
- Enter a **Name**
- Select a **Time Group** (a Schedule) from the pull down menu.
- Press **submit**.

9. Select [Circuit Group](#)

Tag Name	Tag List	Off Value
LightSC101	Zone_Temps:120	0
LightSC102	ZT-184	0
LightSC103	==Discrete Tag==	0
LightSC104	10_second_delay	0
LightSC155	AIC183:AM	0
	AIC183:DI	0
	AIC183:DO	0
	AlaAck	0
	AlaLight	0
	ComMode	0
	CR191_Door	0

Figure 13-6 Circuit Group - IO Tags for On/OFF and setpoints and text

10. Define [Circuit Groups](#). These are "Tags" that will always share the same Schedule.

- Enter a **Name** for the Circuit Group.
- Accept 0 or enter a **Circuit Group Number**.
- Select an Equipment Group from the pull down menu. The Equipment Group associates a Time Group (a Schedule) with this Circuit and, optionally, the same time group/schedule with other circuits.
- Select a field under **Tag Name**.
- Select the **Tag List**.

- f. Scroll down list to find desired Tag.
 - g. Click once on the Tag in Tag List.
 - h. Repeat for other Tag Names.
 - i. To increase the number of tags, modify the **Max Tags** field.
 - j. Press **submit**.
11. [Download the Schedules to the SCADA node.](#) You can download the SCHEDULER without stopping the SCADA node. The new schedule will take effect immediately. If a tag is supposed to be ON, it will be set to the ON value.

Task 2: Start Scheduler in View or ViewDAQ

Start Scheduler from VIEW:

1. Login as a Power User or Admin.
2. **Right Click -> Tools -> Scheduler**

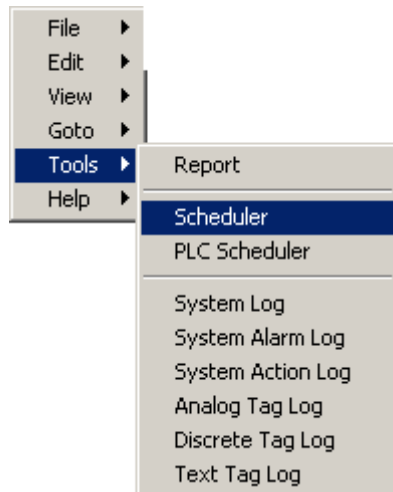


Figure 18-9 VIEW Scheduler (Right Click Menu)

Start Scheduler from ViewDAQ:

1. From the Menu Bar, select **Tools -> Scheduler**

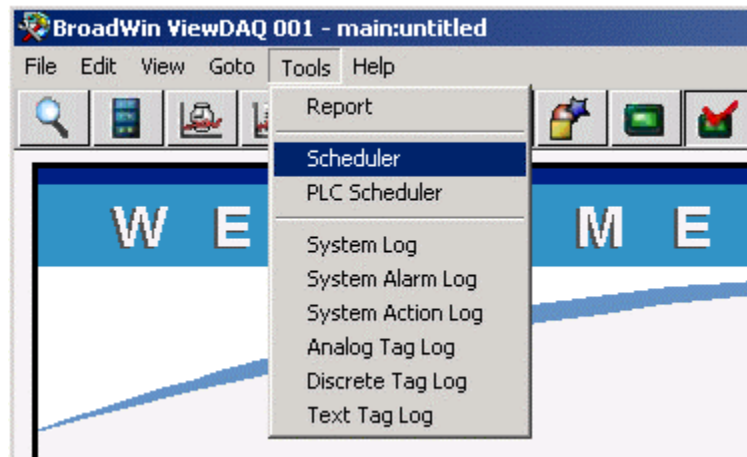


Figure 13-10 Scheduler - ViewDAQ

Section 14 - Recipes

Objectives

This section provides training on using WebAccess recipe management tools. At the end of the section, you would be able to:

- configure a recipe file
- View recipe displays and recipe dialog boxes
- download and upload recipe values in run-time

Training Notes

The WebAccess Recipe Handler function is a software module that supports recipe downloading, uploading, verifying, editing, and saving during run-time. Recipe configuration consists of two main steps:

1. Creating recipe files that define ingredients, units and their preset values.
2. Generating pre-formatted or custom recipe displays.

A Recipe allows an Operator or User to change the value of many tags with a single pushbutton.

The Recipe function is similar in concept to a "recipe" used in cooking food. A Recipe is a collection of pre-set values or setpoints for multiple ingredients. Engineers configure a recipe (like writing a cook book) in the Project Manager. During Run-time, Operators and Users can download the recipe using a single pushbutton. Dozens or hundreds of values can be changed with a single pushbutton.

Common uses for recipes include setting up machines and manufacturing tools for a "new run" or a different product. Recipes are also used to enable shutdown settings or startup settings.

A recipe is a collection of Setpoint or preset values for multiple items (ingredients). A given recipe can be used with several different "units", although each "unit" must have similar equipment lineups (e.g. tag types). A unit consists of a group of tagnames associated with an item (ingredient). For example, all Air Handling Units, (AHU's) have an Exhaust Fan, Supply Fan, Pre-Heat Controls, Cooling Controls and secondary fans. Air Handler 1 (AHU1) is shown below. The Exhaust Fan for Air Handler 1 is EF-12, the Supply Fan is FAN101. The Preset values for the Startup recipe are RUN, Auto and non-zero setpoints (see figure below).

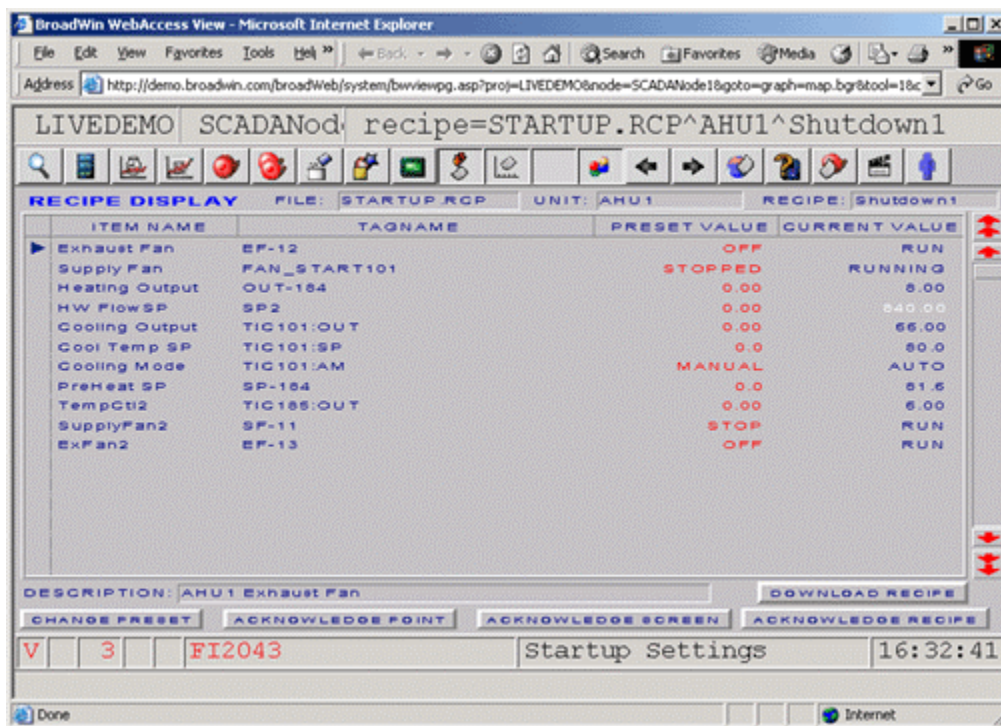


Figure 13-1 Recipe Display

A recipe file can consist of multiple processing Units (for example, continuing the Air Handler example above): Air Handler Unit 1, Air Handler Unit 2 and Air Handler Unit 3). Any recipe can be downloaded to any unit: startup, shutdown, and maintenance mode.

Operators select the Recipe File, Recipe and Unit from the **Recipe List** Dialog Box called from the toolbar icon  or from user-built pushbuttons.

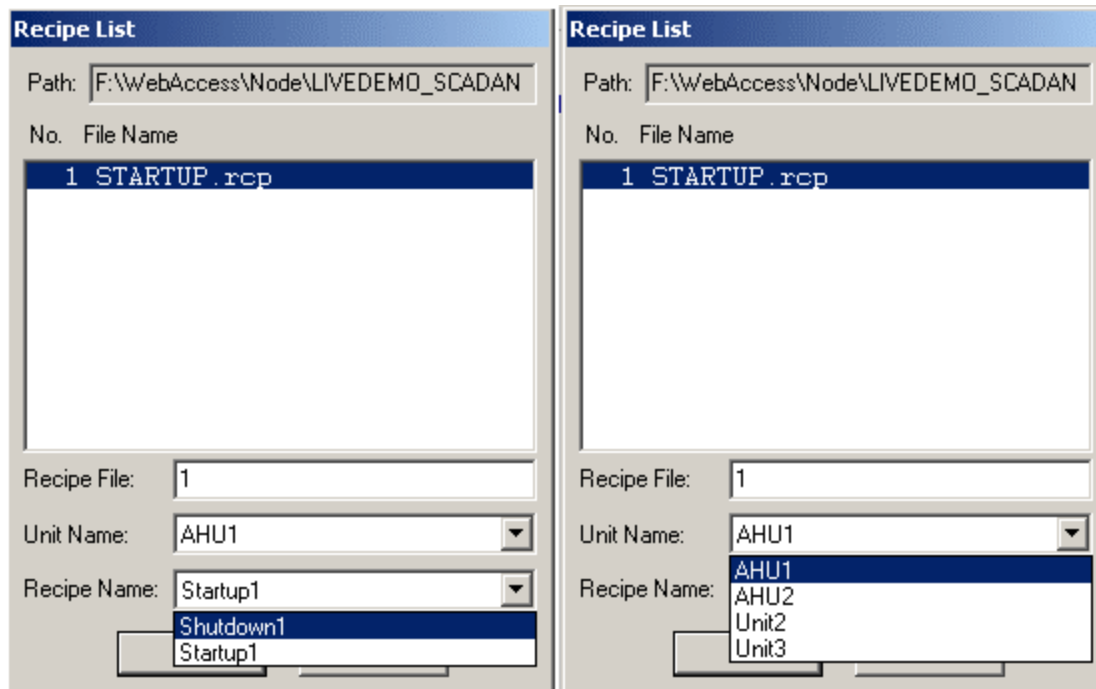


Figure 13-3 Recipe List to select Recipe Name and Unit Name

The concept of Recipes and Units comes from Gasoline Blending where there are multiple recipes for blending gasoline (regular gas, premium gas, summer grade regular, winter grade regular, etc). Any recipe can be downloaded to any blending unit. For example, the premium gas recipe can be downloaded to Blender1, while the regular gas recipe is downloaded to Blender 2.

Operators download the recipes from the Recipe Display using a single pushbutton or the Shift-F1 keys or the right Click Menu ->Edit ->Download Recipe.

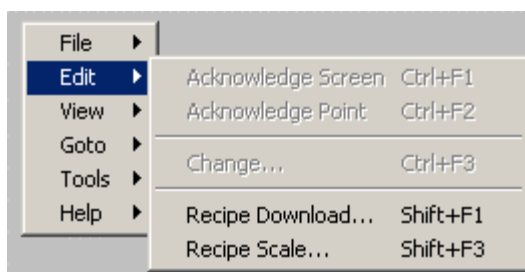


Figure 13-4 - Download Recipe

Recipe configuration consists of following steps:

1. Define a Recipe File. A recipe file contains a collection of multiple recipes and multiple process units.
2. Define a Unit (or multiple Units). A Unit is a collection of Tag names. Some people call this an Equipment Lineup or a Process Unit. The Unit can be any name, but usually corresponds to a physical device (for example Tank1, Tank2, Tank 3 etc.) The tagnames assigned to the "Unit" provides the link to the physical world.
3. Define a Recipe Name (or multiple recipes). Operators and users during run-time will select the desired recipe to download. A recipe contains the list or pre-set values

defined by an engineer that will be downloaded using a single button push. This allows dozens or hundreds of tags to be changed with a single button push.

4. Define Item Names. These are the ingredient names. They are a description and can be any user-defined text. They are to make it easier for Engineers and Operators understand the values.
5. Define Tag names. These physical IO tags are associated with the process Unit. For example, if the Unit were Tank1, then all the tags would be associated with Tank1.
6. Define Preset Values. These are the numbers and text to be downloaded. The preset values are associated with a given recipe within the recipe file.

WebAccess provides a pre-built recipe template display for run-time. All recipes can be viewed in runtime without any display building. WebAccess also provides a pop-up dialog box in runtime to allow Operators and Users to select the recipe file, Unit and recipe.

Only Admin, Power Users and General Users can access Recipe Displays and Recipe Dialog Boxes in VIEW. Restricted Users, using VIEW, can not access standard recipe displays or recipe dialog boxes.

Reference

[WebAccess-Engineering Manual, Section 13. Recipes](#)

Exercise

Task 1: Configure a recipe file.

From the Project Manager

1. Select your **Project** and the **SCADA Node**.

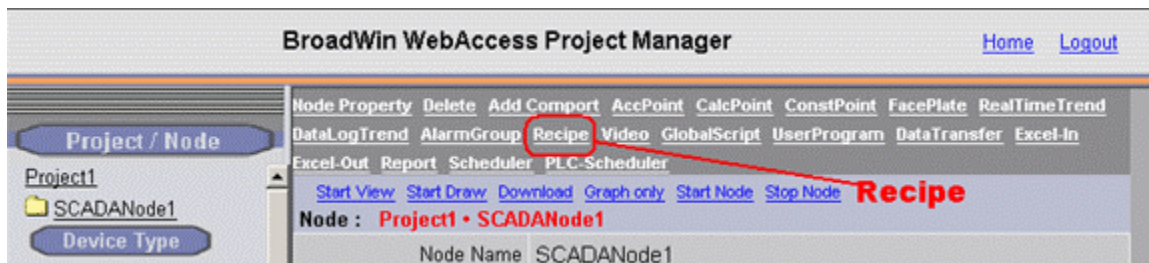


Figure 14-11 - Recipe configuration - SCADA Node main page

2. Click the **Recipe** hyperlink from the SCADA Node main page (bwMain.asp).
3. The **Recipe List** page opens.

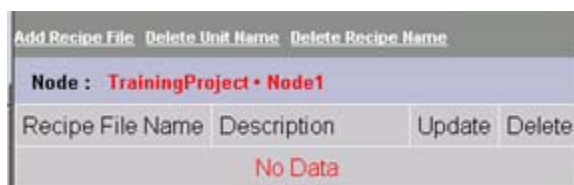


Figure 13-12 Recipe List - Project Manager

4. Select **Add Recipe File**.
5. The Add/Update Recipe page opens.

Recipe File List

Update Recipe File [Cancel] Submit

Recipe File Name	Color	Description	
Tolerance	5	%	
Edit Security	Area 1	Level 3	Read Only ☐
Download Security	Area 1	Level 2	
Unit Name	Mixer1	Mixer1	
Recipe Name	CanaryYellow	CanaryYellow	
Number of Items	3	Tag List	
Item Name	Tag Name	Preset Value	
Ingredient1	Yellow	88	
Ingredient2	Blue	12	
Ingredient3	Red	10	

[Cancel] Submit

7. Create the following recipe.

Ingredient	Unit	Recipe	
Names	Tank1	Canary yellow	Teal Green
%Yellow	Yellow	88	45
%Blue	Blue	12	36
%Red	red	10	15

Use a 5% deadband for all the pre-set values.

Indicate a Area 1 and Level 3 password for on-line editing and a level 2 password for downloading of recipe.

Save the recipe file using the file name color.rcp.

8. Press **Submit**.
9. **Download** the SCADA node.

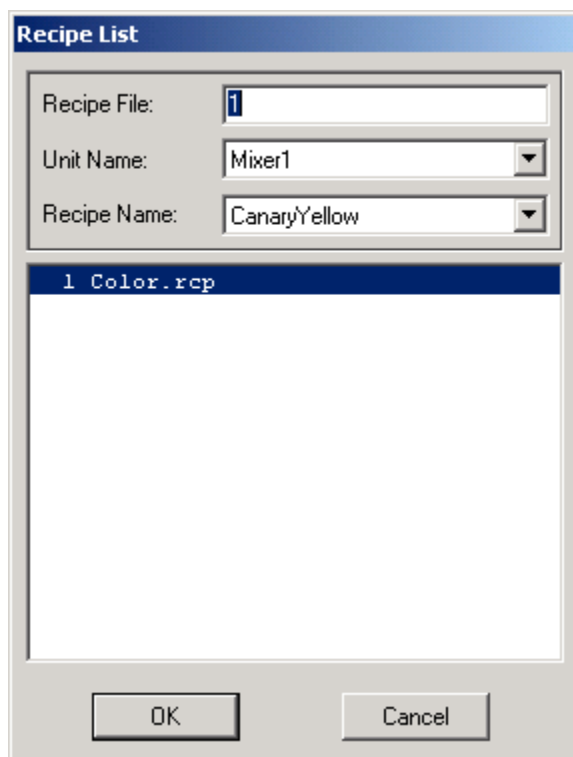
Task 2: Manage recipes in VIEW.

1. Start VIEW

2. From the Toolbar select the recipe icon

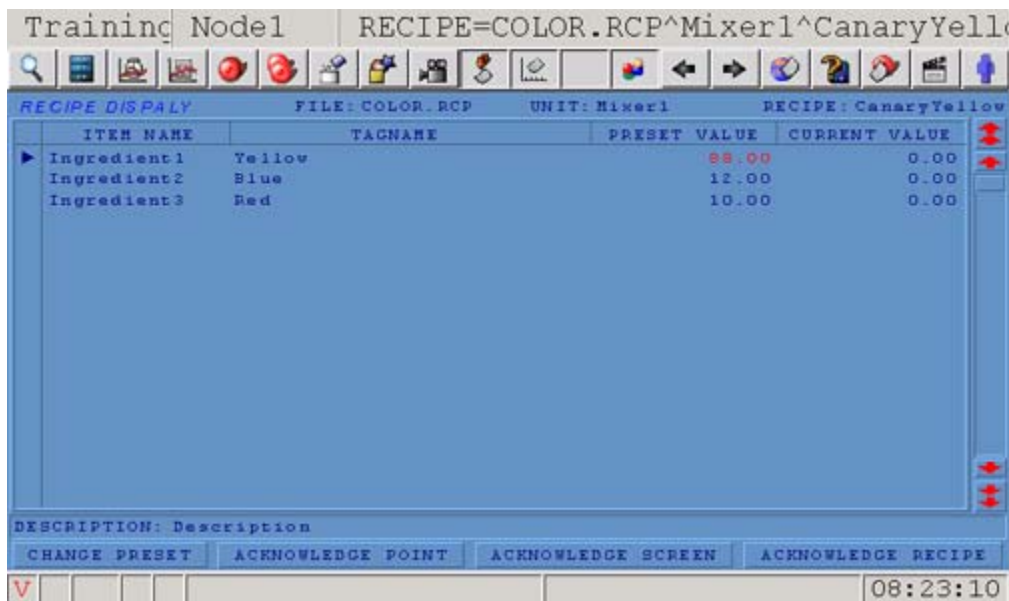


3. From the Recipe Dialog Box select the recipe file



(In the example, select **Color.rcp**).

4. Choose the unit and recipe
(In the example select **CanaryYellow** and **Mixer1**)
5. Select **OK** to open the recipe display.



6. Click the Download button  on the Toolbar. Note the change in the current values.

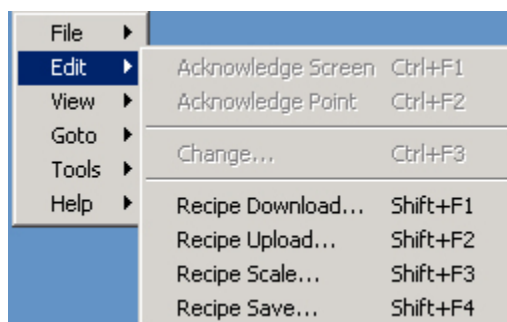
7. Note that the Current values should change.
8. Click the **Change Preset** button. Change values by more than 15 .

V - is a Verification Error associated with **Recipes**. This will appear only if you are viewing a Recipe Display and there is a mismatch between a recipe Preset Value and the corresponding Tag's value. If you are not viewing a Recipe Display, this window is Blank (no V).

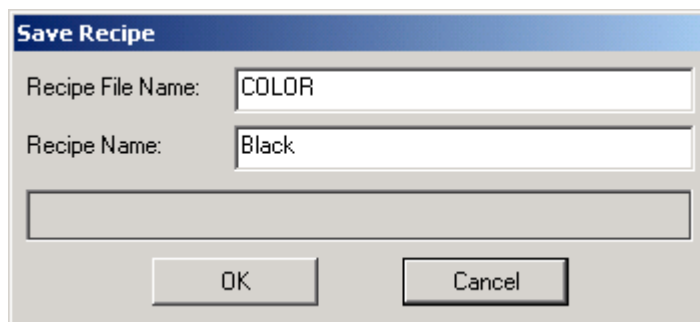
WHITE Text - White Number or Text for Current Value does not equal the recipe preset value after a download. It is outside the "Tolerance" specified for the recipe by the engineer.

Red Text is an Alarm - Alarms are shown, just like in an Alarm Group display or Alarm Summary.

9. Right Click -> Edit -> Recipe Download



10. Note that the Current values should change.
11. **Right Click -> Edit -> Recipe Upload.**
12. Click the **Upload** button so that the current values become the recipe preset values.
13. **Right Click -> Edit -> Recipe Upload**
14. Save a new recipe named **BLACK** (with the new pre-set values) by clicking the Save button. These will be create a new recipe values next time you open the recipe file again.



Section 15 - WebAccess Utilities

Objectives

This section discusses several utilities for project deployment. These include:

- Database Backup
- Database Restore
- Data Log Maintenance

Training Notes

WebAccess has Backup and Restore functions that will backup you database, graphics, scripts and other program files to webaccess\backup folder. This is a one click operation accessed from the first page of the project manager (the Project List). There is a corresponding Restore on the same page.

You can also copy or ZIP the WebAccess folder using ordinary Windows functions (like copy, WinZip,. etc). To backup, copy or move a project, copy the configuration database (bwCFG.mdb) and project subdirectories to the new Project Node PC. You can use the copy and paste feature in Windows Explorer or use WinZip or other utility. The database contains the information about tags. The subdirectories contain the graphics, scripts and other files.

The BACKUP of the project database and subdirectories on located on the Project Node at

Drive: \WebAccess\node\Backup\bwCFGbackup.mdb

The BACKUP project subdirectories are at

Drive: \WebAccess\node\Backup\projectname_nodename

Note – The actual project database and subdirectories on located on the Project Node at

Dve:\WebAccess\node\config\bwCFG.mdb

The actual project subdirectories are at

Drive:\WebAccess\node\config\projectname_nodename

If you have multiple SCADA nodes in your project, there will be a separate subdirectory for each SCADA node.

Log Data Maintenance

WebAccess will automatically archive the Data Log Trend Files and ODBC database records to another drive, network folder or other media (zip drive, tape drive, etc). This prevents the number of files from growing too numerous and consuming disk space.

WebAccess can also delete Data Log Files and records from the ODBC Logs (System, Analog, Discrete, Alarm and Action Logs) to prevent files from growing to large, slowing response of reports and consuming disk space.

Exercise

Task 1: Backup

The Backup function will create a backup of your Database and project subdirectories (graphics, scripts, etc.). The Backup files are created on the Project node. The Backup function is accessed from the Project Manager at the Project List page (bwproj.asp).

To Create a Backup of your project:

1. Start your Web Browser and connect to the Project Node
2. Login to Configuration. If already connected, press the [Home](#) link at the top right of most Project Manager pages.
3. The Project Manager Home page opens with the List of projects

Hint - If you are already in the Project Manager, you could hit the [Home](#) field found on most pages of the Project Manager.

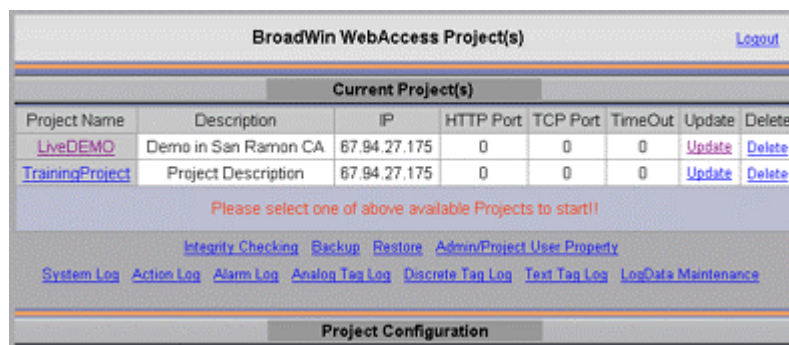


Figure 15-4 Project Manager Home Page

4. Select [Backup](#) hyperlink.
5. The Backup Dialog Box opens asking you to confirm Backup.



6. Select **OK**

Be prepared to wait. This can take several minutes for the integrity check to run.

7. If this is the first time you have done a backup, a Database integrity check page opens. It will start the Backup in 2 seconds. Or [Press Backup Now](#).

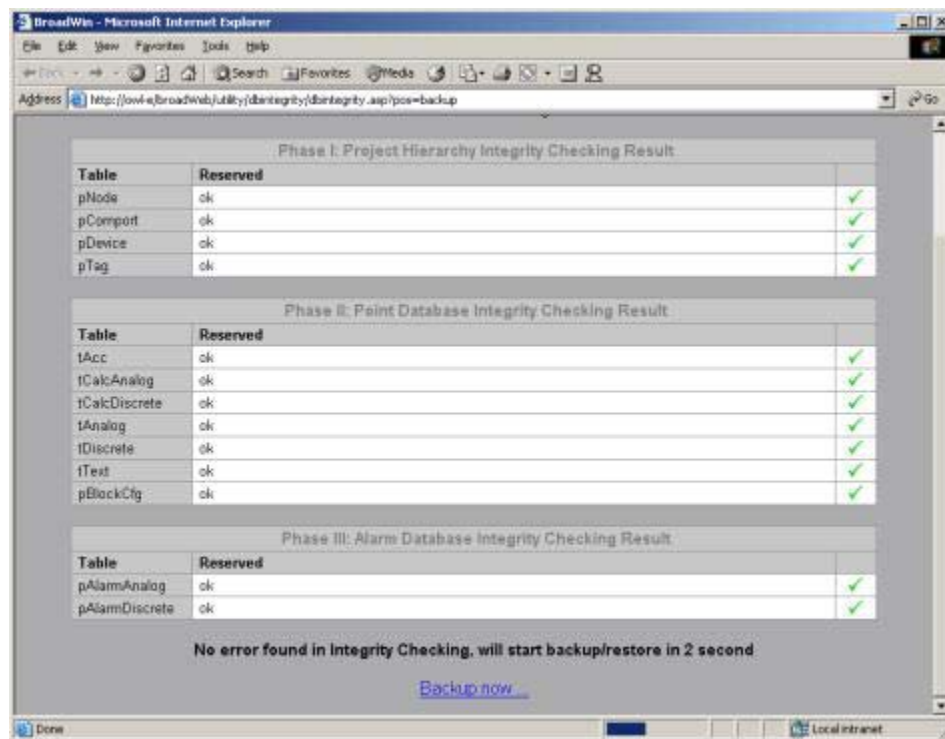


Figure 15-5 Backup Project database Integrity check

8. You will have a second waiting period, while the actual backup takes place. This can take several minutes for a large project. Very large databases may require increasing the [Script Time Out](#) on the Project Node (Web Server) in order for the Integrity Check to run to completion
9. A completion Message appears describing the full path to the backup, typically:
C:\WebAccess\Node\backup

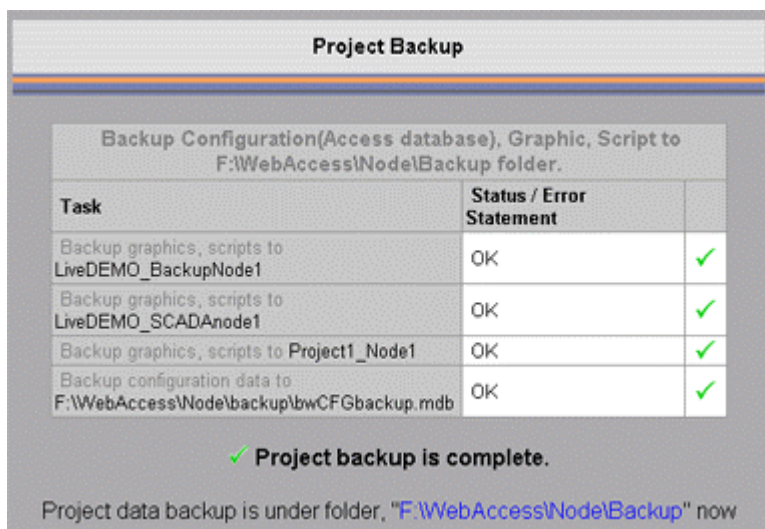


Figure 15-6 Backup Project confirmation

10. Close the Backup Browser Window

Task 2: Restore

Running restore will erase all changes to the Tags, Reports, Recipes Schedules, Trends, etc. since the last backup. Restore will also overwrite newer versions of Graphic Displays with the Backup version of these displays.

WARNING ! You should run restore only if you have done a backup. If you run restore before doing a Backup, you will erase all the work you have done on all your projects. You will an empty database if you run restore before doing a backup.

Restore is accessed from the Project Manager Home page. All projects will be restored if you have multiple projects in a single database (inside the same bwcfg.mdb file)

To Restore your Project(s)

1. Start your Web Browser and connect to the Project Node
2. Login to Configuration. If already connected, press the [Home](#) link at the top right of most Project Manager pages.
3. The Project Manager Home page opens with the List of projects

Hint - If you are already in the Project Manager, you could hit the [Home](#) field found on most pages of the Project Manager.

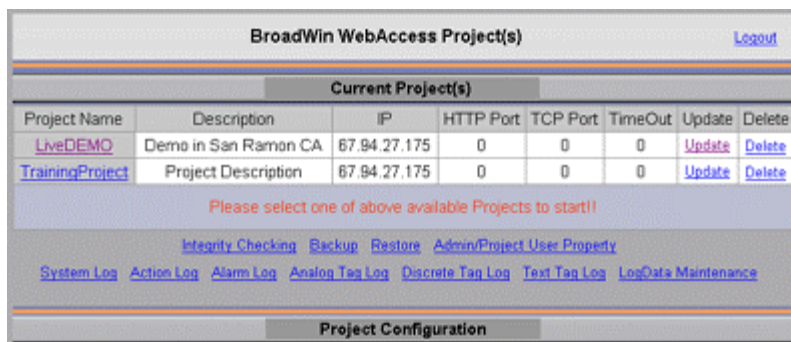


Figure 15-7 Project Manager Home Page

4. Select [Restore](#) hyperlink.
5. A warning appears reminding you that restore will delete all database modifications and overwrite all graphics since your last backup.

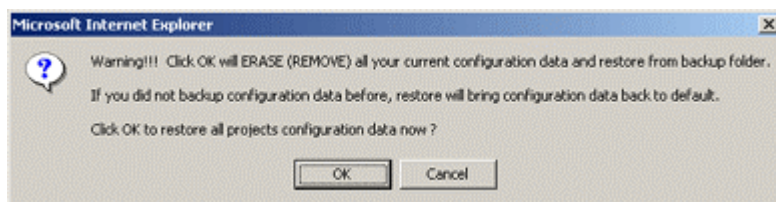


Figure 15-8 Warning before Restore

6. Select OK to continue with Restore or Cancel to abort.
7. The Restore Integrity Check opens in a new Web Browser Window. This can take several minutes for a large database. Very large databases may require increasing the [Script Time Out](#) on the Project Node (Web Server) in order for the Integrity Check to run to completion.

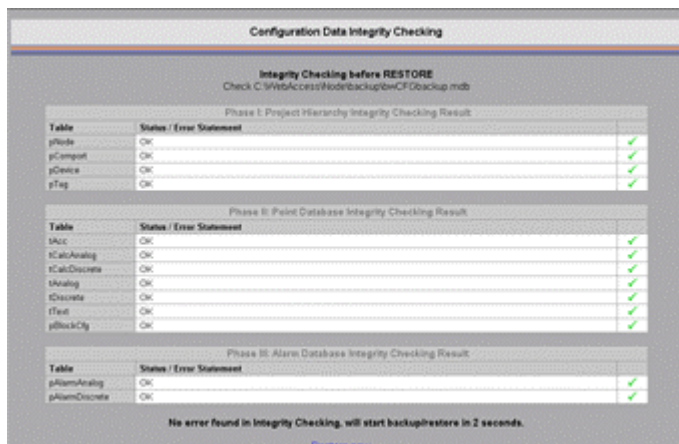


Figure 15-9 Integrity Check before Restore

8. The Confirmation appears confirming restore completion. This can take several minutes for a large database. Very large databases may require changing the script time out set in Project Properties in order for the Integrity Check to run to completion.

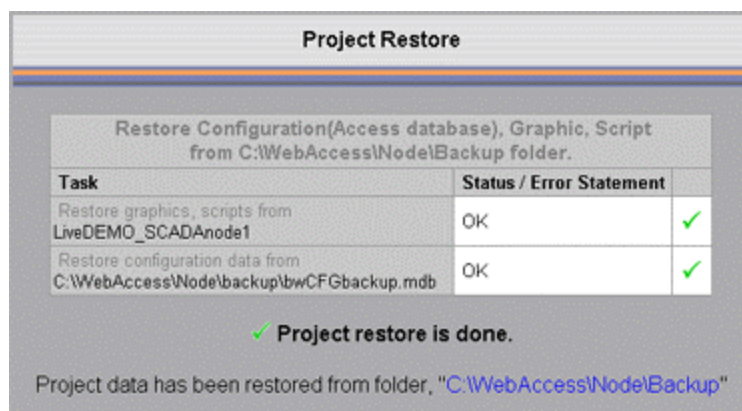


Figure 15-10 Restore confirmation

9. Close the Web Browser to return to Project Manager Home page.

Task 3: Log Data Maintenance

To enable the automatic archiving or deletion of older Trend and Log Data:

1. Login to your Project Node. (If you are already logged in, click [Home](#)).
2. Click [Log Data Maintenance](#).
3. The Log Data Maintenance page appears (Figure 15-15).

DataLog Trend

View Type	Archive Log Daily	Delete Expired Log	Expiration Time
Second	☒	☒	30 Day(s)
Minute	☒	☒	2 Month(s)
Hour	☒	☒	1 Month(s)
Day	☒	☒	1 Year(s)

Archive To (Folder): \\Server\\archive1
(Shared Network or Local Folder, Example: \\Server\\Shared Folder)

ODBC Log

Log Type	Archive Log Daily	Delete Expired Log	Expiration Time
System Log	☐	☒	1 Day(s) 0 Month(s)
Action Log	☒	☒	1 Day(s) 0 Month(s)
Alarm Log	☒	☒	1 Day(s) 0 Month(s)
Analog Tag Log	☒	☒	1 Day(s) 0 Month(s)
Discrete Tag Log	☒	☒	1 Day(s) 0 Month(s)
Text Tag Log	☐	☒	1 Day(s) 0 Month(s)

Archive To (Folder): \\Server\\archive1
(Shared Network or Local Folder, Example: \\Server\\Shared Folder)

Archive Time of Day: Hour 3 Minute 20

[Cancel] [Submit]

Figure 15-15 - Log Data Maintenance - automatic archiving and disk clean-up

4. Check **ARCHIVE** only if you have a fast network hard drive with sufficient capacity. A Zip drive is probably inadequate except for the smallest application (less than 0 tags).

If Archive is selected, but the Archive can not be completed due to an error (the drive is full or folder not available) the Data will not be deleted (if Delete Expired Log is selected).

Warning - Do not archive to the same drive or partition that WebAccess is installed on. There is no benefit and it more than doubles the ODBC Databases and file sizes. The Archive media should be a second hard drive on the SCADA Node or Project Node, or a network drive. Zip drives are usually too small. Tape Drives are too slow. If want to Archive to tape, it is recommended to Archive to a second drive or network drive, then manually archive to tape.

5. Check **Delete Expired Log** to prevent your disk space from being consumed.

You can select to delete files and data records without archiving.

DataLog Trend files are deleted as complete files (since a file is created for each daily, monthly and yearly for each tag).

Individual Records are deleted from the ODBC database.

Note -WebAccess does not compact the BwPdata.mdb database used for ODBC Data logging. The database file size should be monitored (and compacted) if it grows too large.

6. Specify an Expiration Time for data.
7. Specify a Time of Day to perform the Archive and/or Deletion.

[Real Time Trends](#) never store data on the hard drive. They are real-time ONLY, and data is lost once it scrolls off the screen.

[Data Log Trends](#) create a file a new file for each tag Daily (seconds data), two files Monthly (Minute and Hourly Data) and one file yearly. For Analog Tags, the size of these files is based on the [Data Log Deadband](#) (which must be exceeded before a new record is written). A new entry is made at least every minute for every tag. If a tag exceeds the deadband, then the frequency is greater than once/minute and as frequent as once/second. For an estimate of the Size of the Analog Data Log Trend files, see [Data Log Trend recording](#) in Section 1.4.5.1.

Reference

[WebAccess Engineering Manual , sections 20.2 Backup & Restore](#)

[WebAccess Engineering Manual , sections 20.6 Log Data Maintenance](#)

Section 16 - Database Utilities

Objectives

This section introduces the following database utilities:

- EXCEL Import/Export of Tag database
- Import SCADA Node

Training Notes

There are several Database Import and Export Utilities in Web Access:

EXCEL OUT - exports a Tag Database to an EXCEL workbook (Spreadsheet) in EXCEL 97 format. It creates worksheets with the correctly labeled fields and data types. It is most commonly used to export a database for editing. Only Tags are exported (no graphics, scripts, macros, recipes, schedules are exported).

EXCEL IN - imports a Tag Database from an EXCEL workbook (Spreadsheet) from EXCEL 97 or 2000 formats. The worksheet names and fields must be in the same format as the EXCEL OUT creates. It is suggested to create a project in WebAccess with tags of the various Devices, and Types to act as a template, then use EXCEL OUT as a starting Point for creating a spreadsheet for use with EXCEL IN. Only Tags are imported (no graphics, scripts, macros, recipes, schedules are exported).

Import SCADA Node

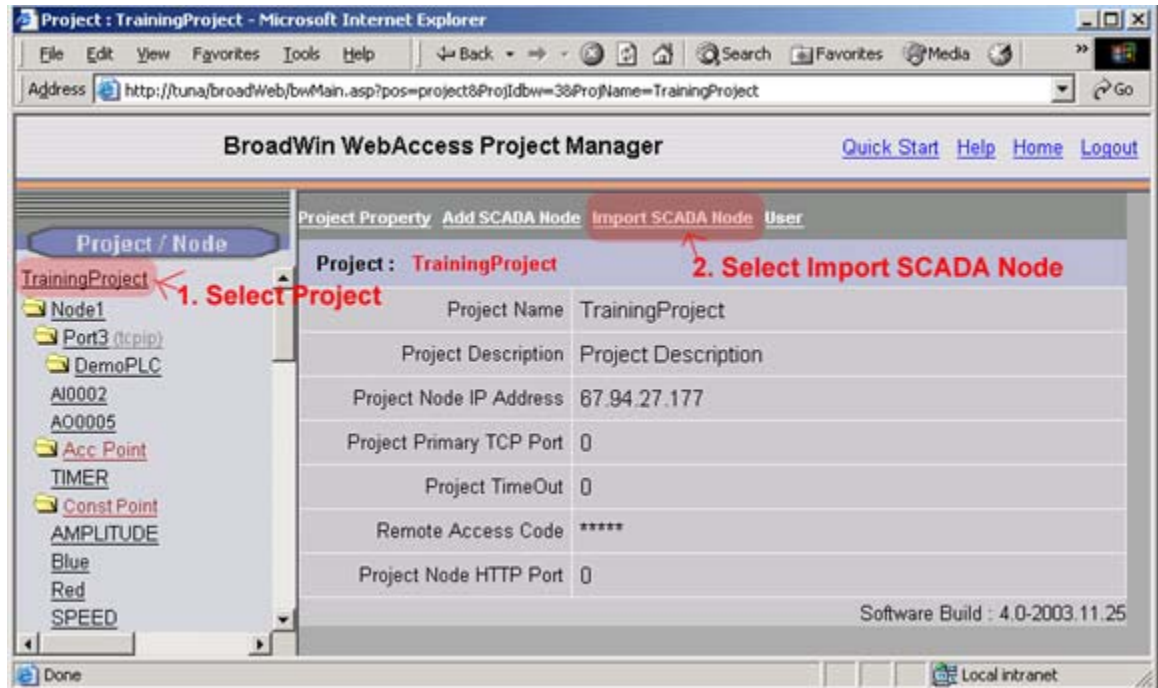
Import SCADA Node - imports a SCADA node from another Project. (All Tags, Blocks, Graphics, Scripts, Keymacro Files, Recipes, Schedules, etc.) Everything. Import SCADA Node allows you to both Merge Projects and Split projects up.

The Import SCADA Node allows you to copy the Tags, Graphics, Recipes, etc. from a project from one computer and install it at another computer. This is useful for deploying a project from the development station (e.g. a laptop) to the customer's system. This happens over the network or Internet and, also allows you to upload a customers SCADA node to do development work remotely

Exercise

Task 1: Import SCADA Node

. Import SCADA Node allows you to both Merge Projects and Split projects up.



1. Login to Project Manager
2. Select Project from the Project Tree at left
3. Select **Import SCADA Node**.

Import (Remote) SCADA Node		[Cancel]	Submit
Project Node IP Address	67.94.27.175		
Project Primary TCP Port	0		
Project TimeOut	0		
Remote Access Code	*****		
		[Cancel]	Submit

4. Enter **IP address** or URL of remote Project Node.

Note – Use the IP Address given by your Instructor.

5. Enter Project **Primary TCP Port** of remote project
6. Enter **Remote Access Code** of remote project.

Note - A Remote Access Code prevents others from copying your SCADA node

7. An ASP Page appears listing SCADA Nodes in the remote project.

Import (Remote) SCADA Node [Cancel] Submit				
Source Project Node IP Address		67.94.27.175		
Target Project Node IP Address		67.94.27.177		
Source Project Name	Source Node Name	Source Node Description	Target Node Name	Import ☐
LiveDEMO	SCADAnode1	PC1 to all PLCs	☒ SCADAnode1	☒
LiveDEMO	ScadaNode2	Second SCADA Node	☒ ScadaNode2	☐

8. Optionally, check the **Import** box to import all SCADA nodes.
9. Check the box for each SCADA node to be imported (if you are not importing all SCADA nodes).
10. Optionally, rename the new SCADA Nodes to be imported
11. Select **Submit**
12. An ASP will show progress of the import
 For example:
 Import SCADA Node.....
 Import Primary SCADA Node(SCADAnode1).
 Import Comport.....
 Import Device.....
 Import Tag.....
 Import Tag.....
 Import Device.....
 Import Tag.....
 Import Other Data.....

13. A success report should appear

Imported SCADA Node List			
Source Node Name	Target Node Name	Description	Status
SCADAnode1	SCADAnode1	Import Primary SCADA Node	✓
OK			

Figure 16-1 Import SCADA Node – confirmation status

Task 2: Export Tags to EXCEL (EXCEL OUT)

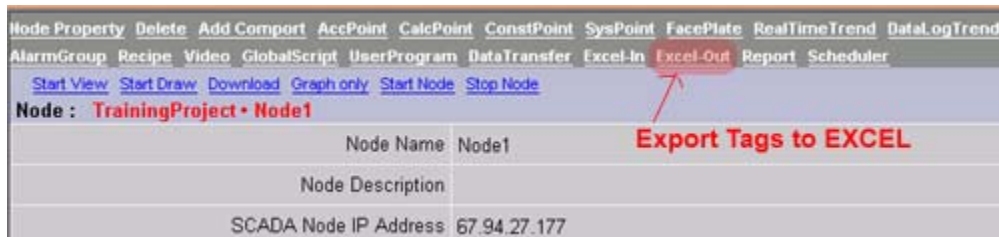
EXCEL OUT - exports the Tag Database of a SCADA node to an EXCEL Spreadsheet on the SCADA node, to allow editing of the tags and adding new tags by copying existing tags. EXCEL IN allows those changes to be imported into the Project or another project.

It is recommended to create tags only by copying tags already exported using EXCEL OUT.

EXCEL OUT creates a EXCEL Worksheet on the Project Node. You must be on the Project Node or have access to a Shared Drive or an FTP directory on the Project Node to edit this EXCEL Worksheet.

To export Tags to EXCEL

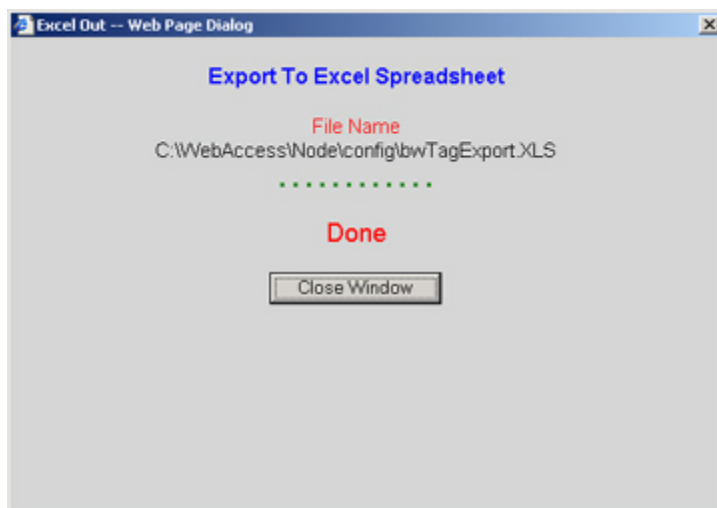
1. Login to Project Manager
2. Select SCADA Node from the Project Tree at left
3. Select **EXCEL OUT** hyperlink.



4. Optionally, modify the path and file name of the EXCEL Worksheet. (note - this will be located on the Project Node)



5. Press **Submit**.
6. A Progress Box opens. Press CLOSE to close the box.



7. An ASP Page appears listing Tags exported to Excel.

Export To Excel Spreadsheet (C:\WebAccess\Node\config\bwTagExport.XLS)			
No.	WebAccess Table	Excel SpreadSheet	Description
1	tAnalog	BwAnalog	Analog Tags Exported (2 tags)
2	tAnalog	BwAnalog	Const Analog Tags Exported
3	tDiscrete	BwDiscrete	No Data
4	tDiscrete	BwDiscrete	Const Discrete Tags Exported
5	tText	BwText	No Data
6	tText	BwText	No Data
7	tCalcAnalog	BwCalcAnalog	No Data
8	tCalcDiscrete	BwCalcDiscrete	No Data
9	tAcc	BwAcc	Accumulation Tags Exported
10	pAlarmAnalog	BwAlarmAnalog	Alarm Analog Tags Exported
11	pAlarmDiscrete	BwAlarmDiscrete	No Data

Print Current Page OK

8. Optionally, Print the list.
9. Press **OK** when finished.

Open EXCEL on the Project Node to edit the file named in step 4 above.

Task 3: Edit and Create Tags in EXCEL

It is recommended to create tags only by copying tags already exported using EXCEL OUT.

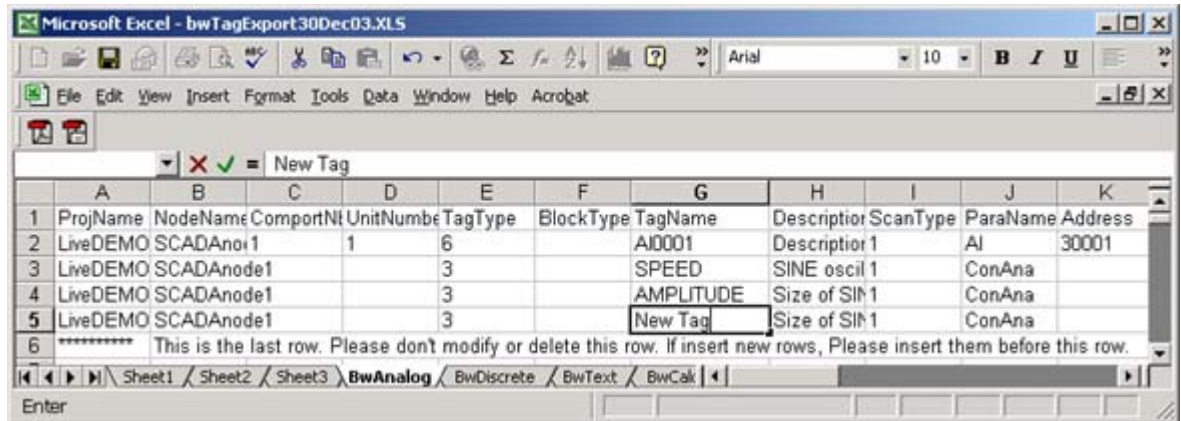
EXCEL OUT creates a EXCEL Worksheet on the **Project Node**. You must be on the Project Node or have access to a Shared Drive or an FTP directory on the Project Node to edit this EXCEL Worksheet.

1. Start EXCEL on the **Project Node**.

Important - EXCEL OUT creates a EXCEL Worksheet on the Project Node. You must be on the Project Node or have access to a Shared Drive or an FTP directory on the Project Node to edit this EXCEL Worksheet

3. Open the Worksheet you exported.

Typically, this is located at C:\WebAccess\Node\config\ bwTagExport.XLS.
On the Project Node!



4. The first three sheets are blank (Sheet1, Sheet2, and Sheet3 are blank and can be erased or used for notes)
5. Select **BwAnalog** sheet to edit Analog Tags.
6. Insert rows only above the last row.
7. Copy a row (for example copy the tag SPEED).
8. Past SPEED row to the blank row inserted in step 6.
9. Modify the tag name of the new row to **New Tag**.
10. Select **BwDiscrete** to modify Discrete Tags.
11. Select **BwAlarmAnalog** to modify Analog Alarms.
12. Select **BwAlarmDiscrete** to modify Discrete Alarms.
13. Select **BwText** to modify Text Tags.
14. Select **BwCalcAnalog** to modify Analog Calculation Tags
15. Select **BwCalcDiscrete** to modify Discrete Calculation Tags
16. Select **BwAcc** to modify Accumulation Tags.
17. Save the EXCEL Worksheet using a different name.

Important - BwTagExport will be overwritten the next time EXCEL Out is used and will erase your work.

Task 4: Import Tags from EXCEL (EXCEL IN)

EXCEL IN - imports Tags from EXCEL Spreadsheet. EXCEL IN allows tags to be imported into the Project or another project.

It is recommended to create tags only by copying tags already exported using EXCEL OUT.

EXCEL IN imports an EXCEL Worksheet on the Project Node. You must be on the Project Node or the Project Node must have access to a Shared Drive to import this EXCEL Worksheet.

The Project Name and SCADA Node name for the Tags you want to import from the Worksheet must match the Project and SCADA node you are importing.

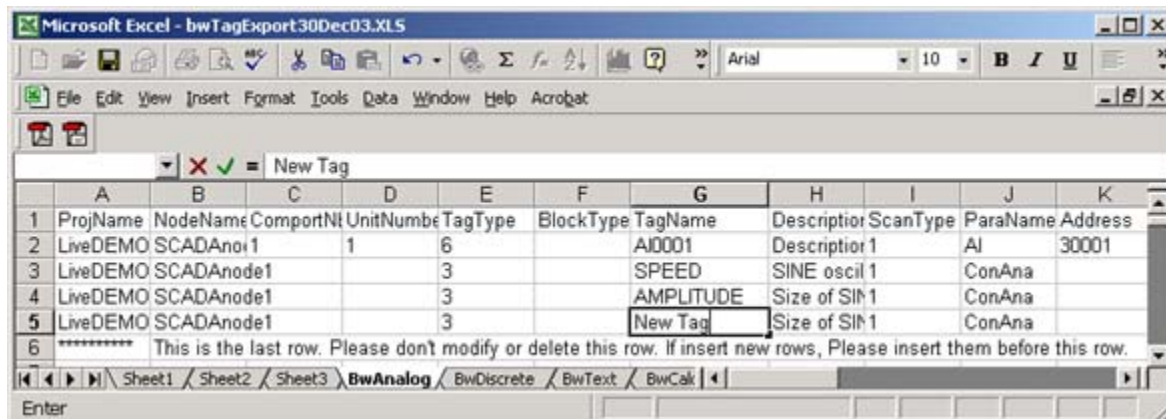
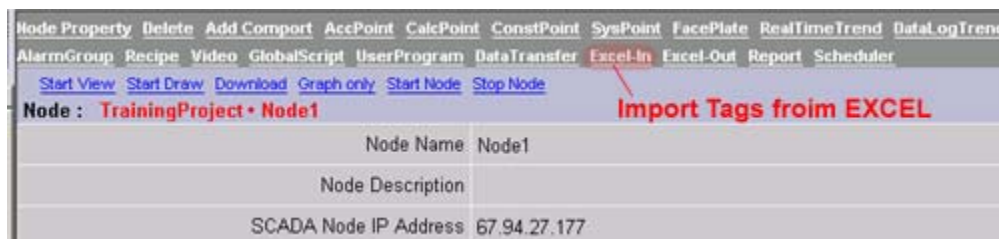


Figure - ProjName and NodeName must match the Project Name and SCADA node name for each tag you are importing to this SCADA node and project.

To import Tags from EXCEL

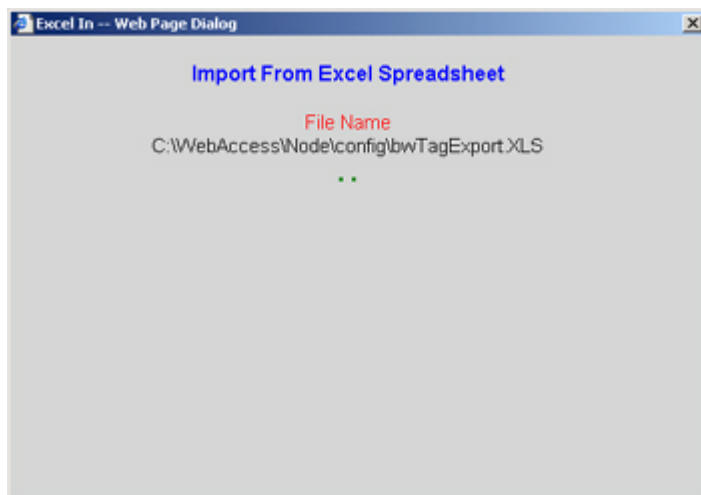
1. Login to Project Manager
2. Select SCADA Node from the Project Tree at left
3. Select **EXCEL IN** hyperlink.



4. Optionally, modify the path and file name of the EXCEL Worksheet. (note - this must be located on the Project Node).



5. Select **No** if you want only to insert new tags without overwriting existing tags.
6. Press **Submit**.
7. A Progress Box opens.



8. An ASP Page appears listing Tags exported to Excel.

Import From Excel Spreadsheet (C:\WebAccess\Node\config\bwTagExport.XLS)			
No.	Excel SpreadSheet	WebAccess Table	Description
1	BwAnalog	tAnalog	Analog Tags Imported (7 tags)
2	BwDiscrete	tDiscrete	Discrete Tags Imported (1 tags)
3	BwText	tText	No Data
4	BwCalcAnalog	tCalcAnalog	No Data
5	BwCalcDiscrete	tCalcDiscrete	No Data
6	BwAcc	tAcc	Accumulation Tags Imported (1 tags)
7	BwAlarmAnalog	pAlarmAnalog	Alarm Analog Tags Imported (1 tags)
8	BwAlarmDiscrete	pAlarmDiscrete	No Data

Print Current Page OK

9. Optionally, Print the list.

10. Press **OK** when finished.

The new tags should appear in the Project Under your SCADA node.

Common Errors

- A. An entire Column was pasted. This will create 65,535 rows of mostly empty data and will result in a very long time to import via EXCEL IN. The web server may timeout resulting in no imported tags.
- B. File name is not correct.
- C. The original EXCEL OUT saves as bwTagExport. It will be overwritten the next time EXCEL Out is used. This will erase any changes you made. Resave your changes to a new file name!
- D. The worksheet is on the Project Node. If you are on a remote client or remote SCADA node, you will not be able to see the exported worksheet. Contact your system administrator to Map a network drive or have an FTP service set up on the Project node that you can access.

- E. The Project or SCADA node name in the EXCEL spreadsheet does not match the Project or SCADA Node you are importing to

Reference

[WebAccess Engineering Manual, section 19 Database Utilities](#)

Section 17 – Display Groups

Objectives

This section describes the concept and provides practical training on using WebAccess Display Groups which allow multiple window displays, user defined pop-up windows and customization of WebAccess VIEW (e.g. hide toolbars and status bars). At the end of this section, you will be able to create dependent tasks and mosaics.

Training Notes

ViewDAQ is a local, non-web browser version on VIEW that runs on the SCADA Node. This provides a non-web version of WebAccess similar to traditional HMI & SCADA. ViewDAQ is intended for 'stand-alone' and control room applications.

Displays Groups allow multiple windows to 'pop-up' with a single button click. Both VIEW and ViewDAQ users can open Display Groups. Only ViewDAQ can create, modify and save Display Groups. Web browser users can only view Display Groups.

Display Groups also allow engineers to customize the 'look' of ViewDAQ by hiding toolbars and requiring passwords. Custom pop-ups and dialog boxes can also be created with Display Groups.

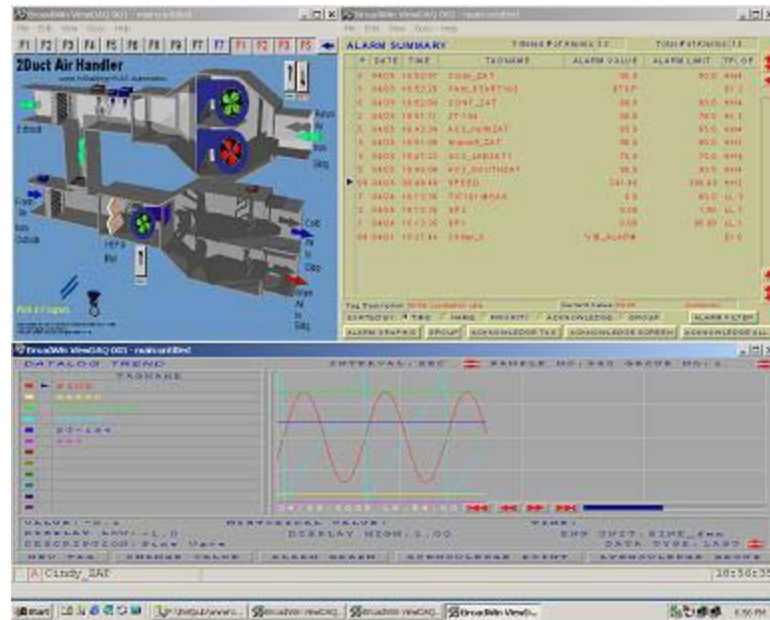


Figure 17 -1Display Group with multiple windows.

Reference

[WebAccess-Engineering Manual Section 15. Display Groups & ViewDAQ](#)

Exercise

Task 1: Start ViewDAQ

1. Start the SCADA Node kernel, if it is not already started.

2. **Click** the Green WebAccess Icon  in the Taskbar (System Tray) next to the clock to open the Taskbar Icon.

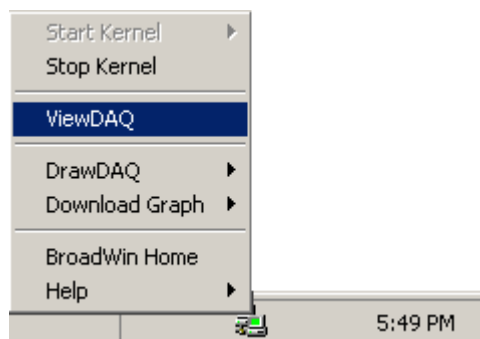


Figure 17-17 Start ViewDAQ from Taskbar Menu

3. Move the Mouse to the **ViewDAQ** menu item.
4. **Click once** on **ViewDAQ**.
5. Welcome to ViewDAQ opens without Toolbar (Figure 17-16).

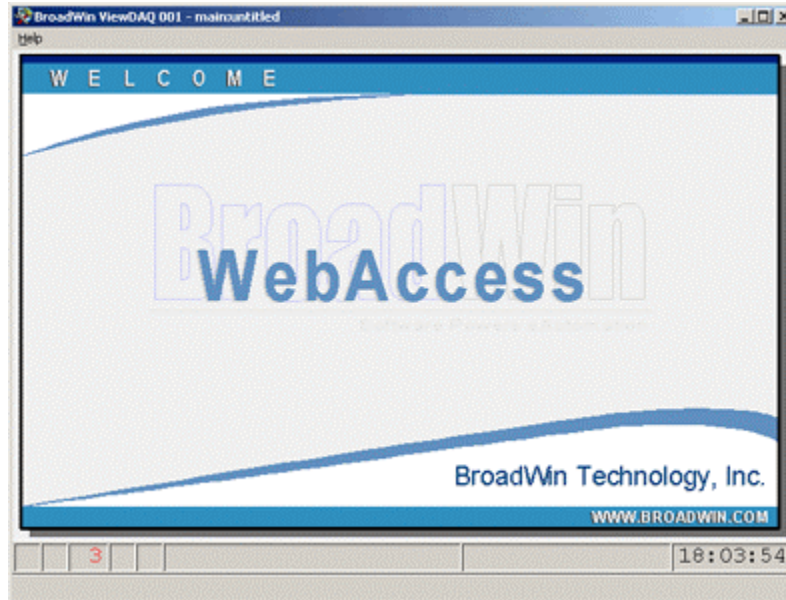


Figure 17-16 ViewDAQ Welcome - no toolbar - Press Enter to continue

6. **Right Click** or Press Enter to view the Toolbar and Main.bgr

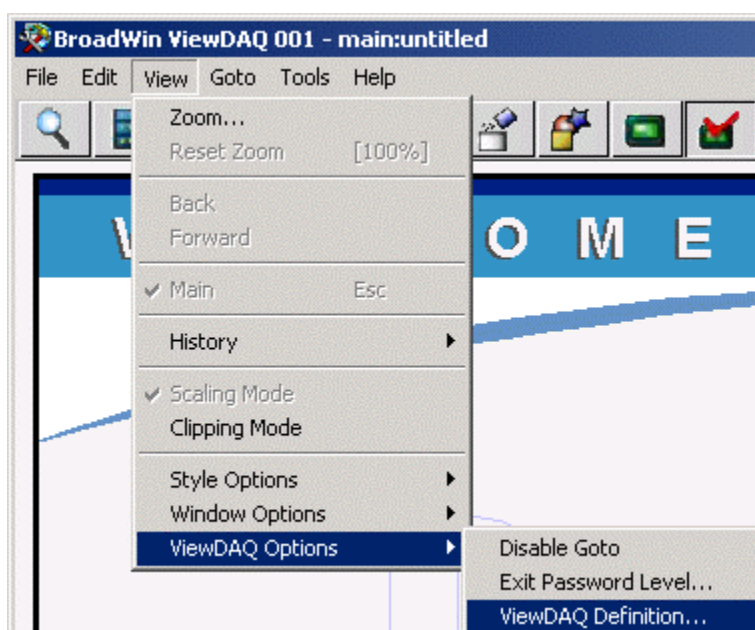
Note – if the Start-up Option in SCADA Node properties is Start Kernel and View, then ViewDAQ will start when the SCADA Node reboots.

Task 2: Create a new Display Group

1. Start ViewDAQ.
2. Login as a **Power User** or **admin**.
From the Menu bar select
File -> Login



3. Enter User name and password (For example, God God).
4. From **Menu bar** select

View -> ViewDAQ Options -> ViewDAQ Definition*Figure 17-25 View Menu - ViewDAQ Definition*

5. In the dialog Box, give it a new name. Main is the default, if you use main for your new name you will make all windows appear like this.

*Figure 17-26 ViewDAQ Definition*

The most common use of ViewDAQ Definition is to define a new Display Group Name in order to [Save a new Display Group](#).

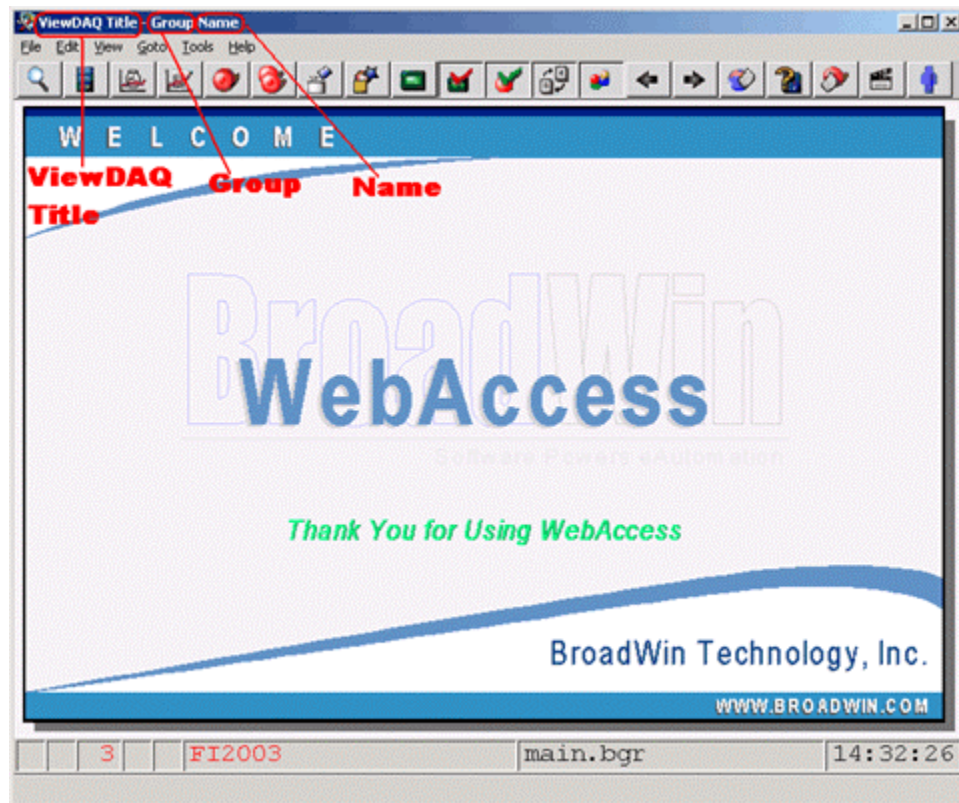
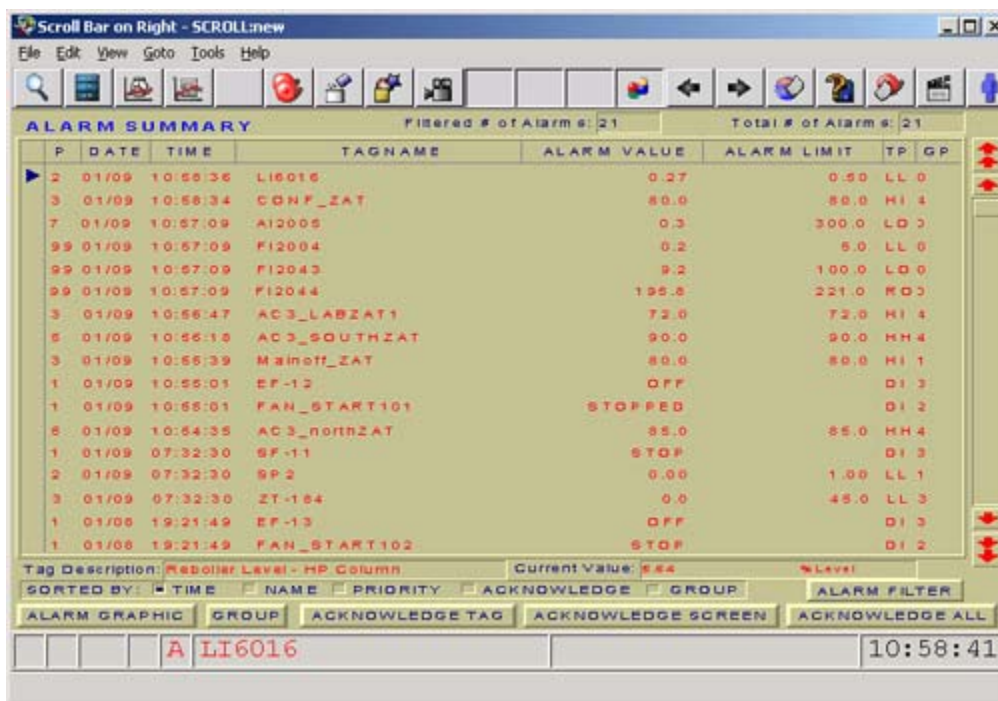
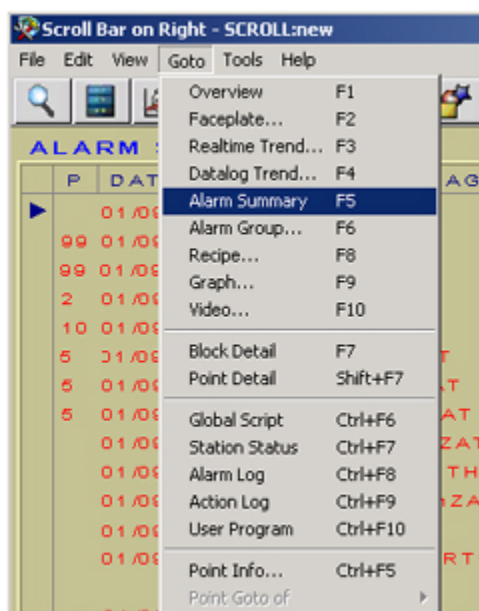
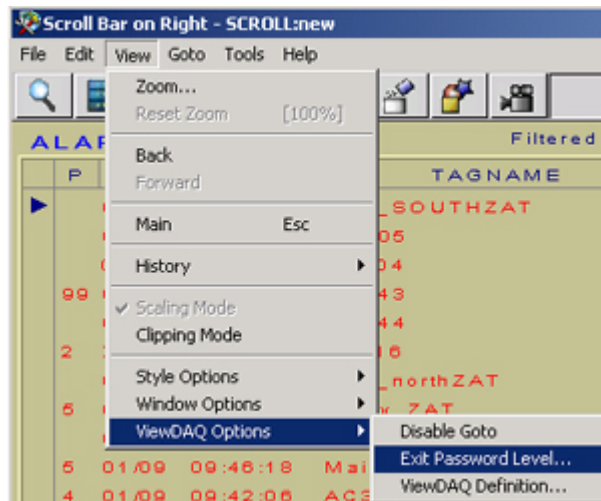


Figure 17-54 ViewDAQ Title

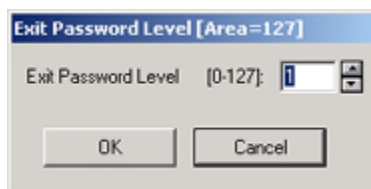
6. Enter a Display Group Name: **SCROLL**
7. Optionally Enter ViewDAQ Name: new
8. Enter a Title: **Scroll Bar on Right**. These will appear on the Title Bar.
9. Press **OK**.
10. Select another Graphic Display to use as the Opening Graphic.. For example, open the Alarm Summary or a Data Log Trend. (From Menu Bar select **Goto -> Alarm Summary**).



- Define an Exit Password Level (View -> ViewDAQ Options -> Exit Password Level).



10. Select a Password level.



11. Press OK.

12. Save this new Display Group with the Alarm Summary Open.

From **Menu bar**

File -> Save ViewDAQ -> Save ViewDAQ in Display Group

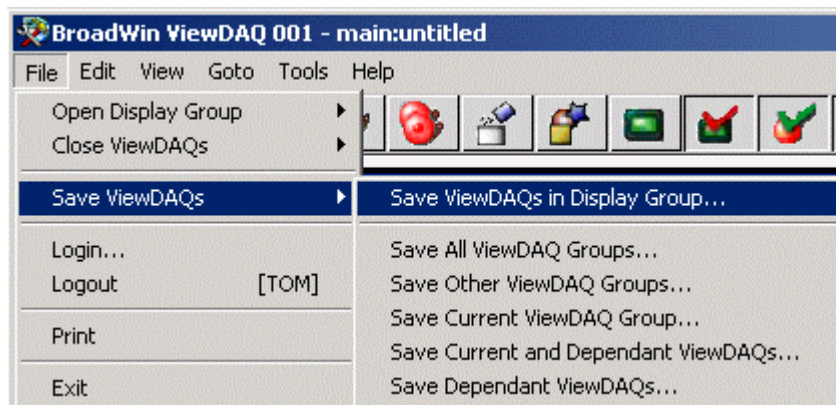


Figure 17-27 File Menu - Save ViewDAQs



Figure 17-28 Save Display Group to defined Name

10. Pick the name of the new display group you just defined. If there is more than one Display Group, the list will be larger.
11. Press OK.
12. Confirm the name of the DSP (SCROLL.DSP)
13. Press OK

Task 3: Open Display Group from Menu Bar

1. From Menu bar, select

File -> Open Display Group -> New Display Group

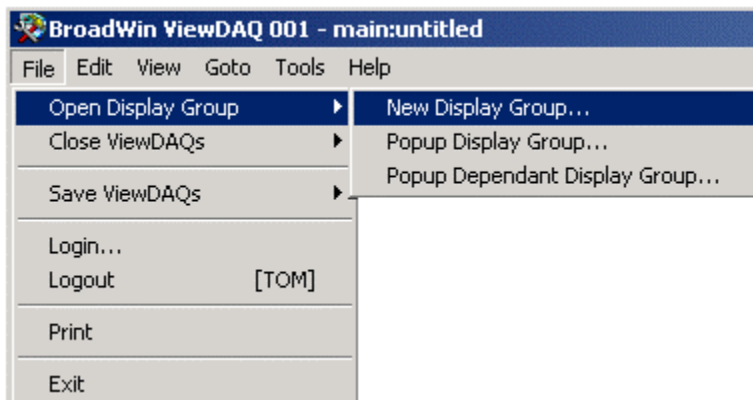


Figure 17-29 Open New Display Group

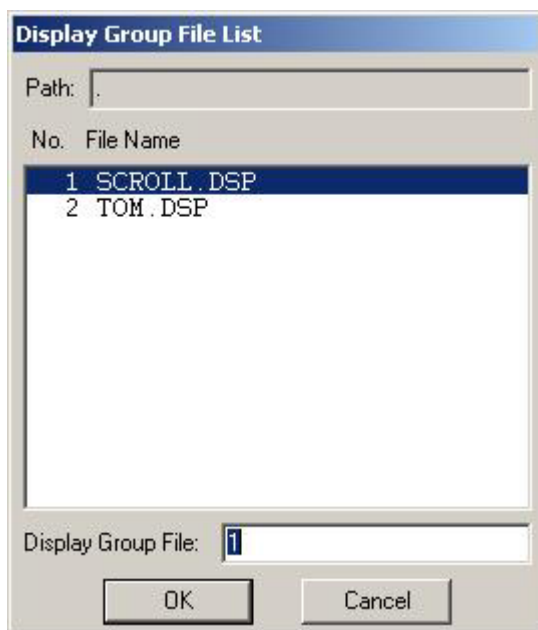


Figure 17-30 Open New Display Group List

2. Pick the display group from the List. This will Close your existing Window and open a new Window with the features saved. For the example above, SCROLL.DSP will have a scroll bar don the side.

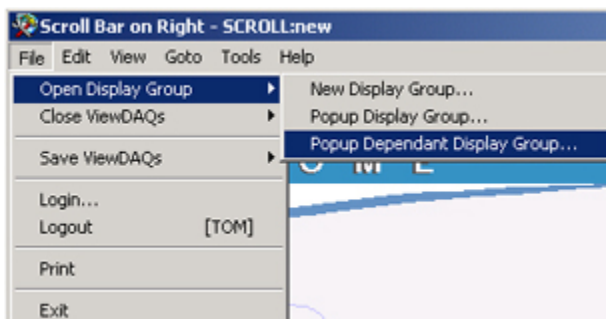
Note that the other ways to open a Display group is with a user built pushbutton or script or Right Click Menu.

Additional Exercise

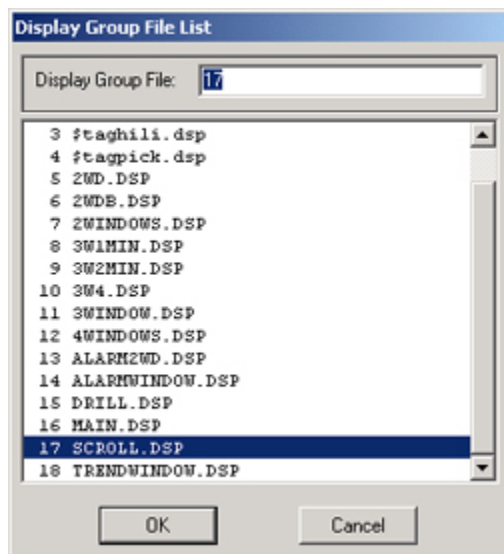
In this exercise, you will

Task 1: Create 3 Windows Display Group.

1. Start ViewDAQ
2. Login as a Power User or Admin (God, King or admin).
3. Position the graphic and scale to the smaller size. This will be the parent task
4. Open a Dependant Window. From menu bar select:
File -> Open Display Group -> Popup Dependant Display Group



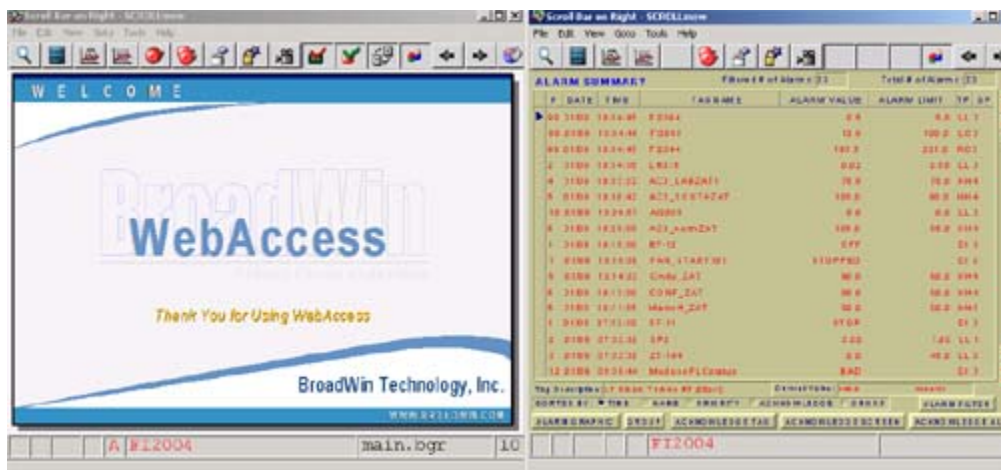
5. Display Group List Dialog Box opens.



6. Select **SCROLL.DSP**

7. Select OK.

8. Position the SCROLL Windows to the side of the first parent Window.



9. From Parent Window (on the Left), another Popup Dependent window

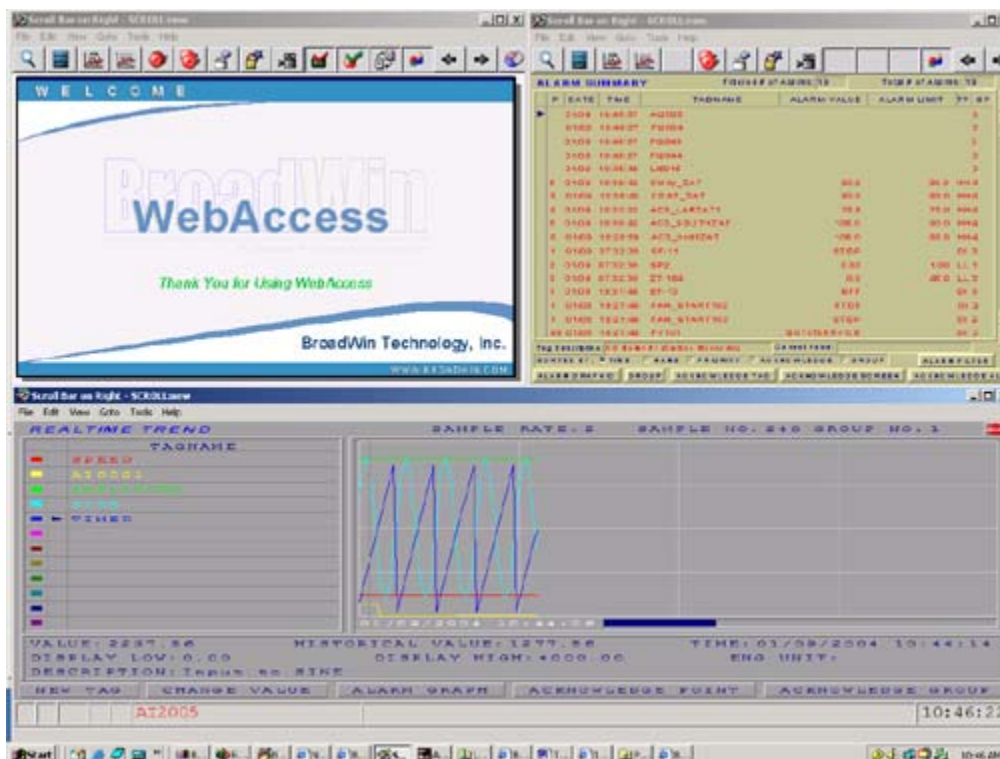
File -> Open Display Group -> Popup Dependant Display Group

10. Select SCROLL.DSP again.

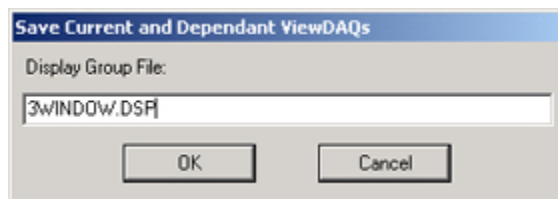
11. Position and resize this under the other two

12. Select a DataLog Trend.

13. From menu bar of Trend Window, select:
View -> Window Options -> Hide Toolbar



14. From Parent Window, save this as a new Display Group.
File -> Save ViewDAQs -> Save Current and Dependent ViewDAQs.

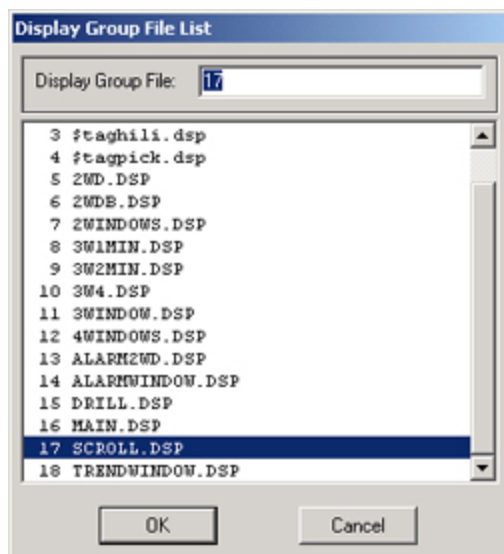


15. In the Save Box, enter a new name: **3WINDOWS.DSP**

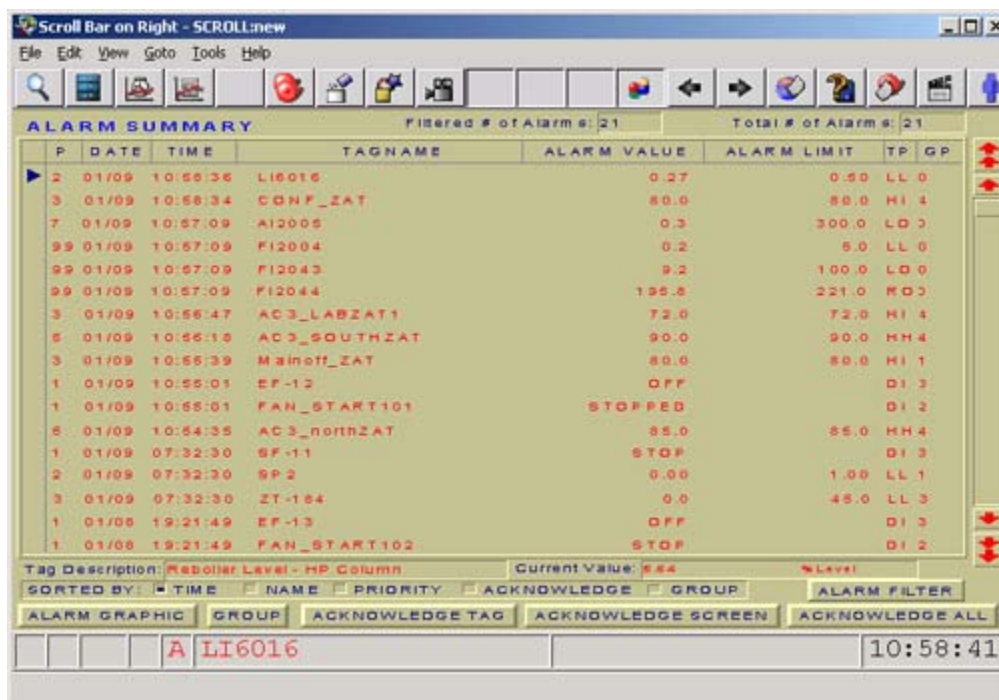
16. Press OK.

Task 2: Verify Display Group behavior.

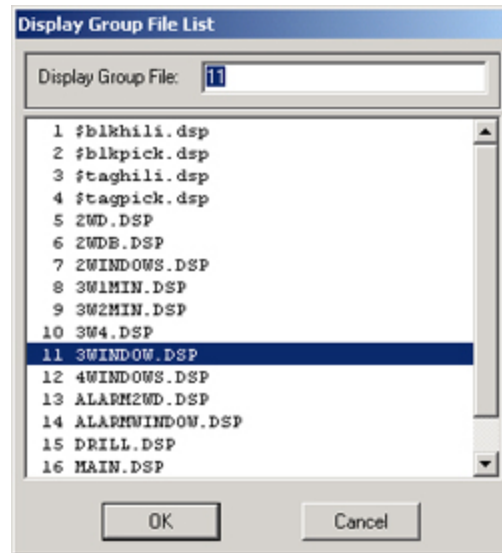
1. Login in as admin or a Power User (God or King).
2. Open a new ViewDAQ Group.
File -> Open Display Group -> New Display Group.
3. Display Group List Dialog Box opens.



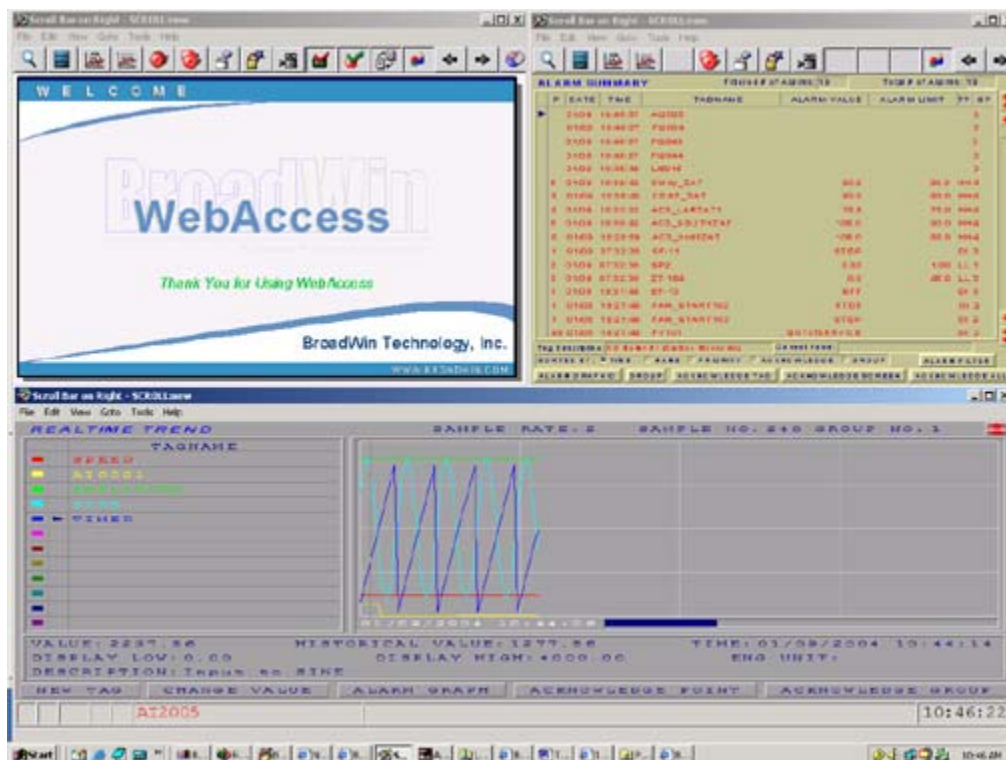
4. Pick **SCROLL.DSP** and press **OK**
5. You should see just one Window with the Alarm Summary.



6. Open a new ViewDAQ Group.
File -> Open Display Group -> New Display Group.
7. Display Group List Dialog Box opens.



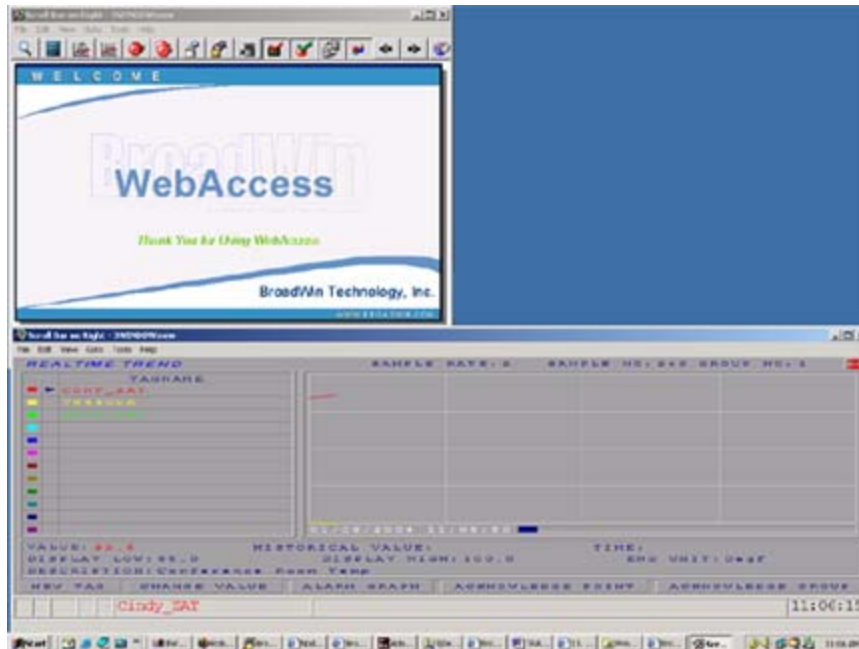
8. Pick **3WINDOW.DSP** and press **OK**
9. You should see 3 Windows.



10. Close the Alarm Summary window..

Note - You will have enter a admin or Power User name and password to close the SCROLL.DSP window.

11. The other two windows should remain open.



12. Close the Parent Window. (the top left window).
13. Both the Parent and the Trend Window should close.
14. Start ViewDAQ from the task bar

15. **Click** the Green WebAccess Icon  in the Taskbar (System Tray) next to the clock to open the Taskbar Icon.

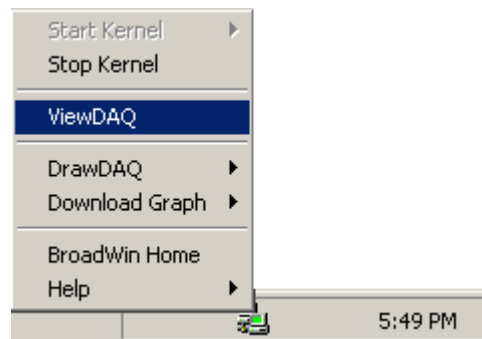


Figure 17-17 Start ViewDAQ from Taskbar Menu

16. Move the Mouse to the **ViewDAQ** menu item.
17. **Click once** on **ViewDAQ**.
18. Welcome to ViewDAQ opens without Toolbar (Figure 17-16).
19. **Right Click** or Press Enter to view the Toolbar and Main.bgr.

Section 18 - Advanced Features

Objective

This section introduces the advanced WebAccess features. These include:

- Data Transfer
- DDE
- OPC

Training Notes

Data Transfer

The DATA Transfer function used to transfer data from one PLC or automation device to another. This is especially useful in single-master protocols or to exchange data between devices that have different communication protocols and are unable to communicate with each other directly.

DDE

The EXCEL application must have access to the WebAccess SCADA node. EXCEL must be running on the SCADA Node PC or have a Network DDE connection (NetDDE) to the SCADA node.

In EXCEL, the formula has three parts: the name of the application (bwdde); the file name or topic always topic for WebAccess); and the cell range, value, field, or data that's referred to (the tagname). The following illustration shows the parts of a remote reference formula and the required separator characters.

A pipe character (|) separates the program name from the document or topic name. An exclamation point (!) separates the document or topic name from the cell range, value, field, or data referred to.

The general format of EXCEL formula to read data from WebAccess is:

=bwddex|topic!tagname

=bwddex|topic!tagname.field

=bwddex|topic!BLOCK:PARAMETER

=bwddex|topic!BLOCK:PARAMETER.field

OPC

OPC is an acronym for **O**LE for **P**rocess **C**ontrol. It is an industry standard introduced by Microsoft based on DCOM. If there is not a "Genuine WebAccess Driver" for your automation device, then you should see if the manufacturer (or a 3rd Party like Kepware) supplies an OPC Server for the device.

The WebAccess OPC Device driver is an OPC Client. Hardware manufactures typically supply an OPC Server to provide access to real-time data. Most OPC Servers allow tags to be "browsed" and "imported". WebAccess provides an OPCTool.exe that allows tags to be "imported" after you have configured an OPC Comport and at least one OPC Device.

The OPC Server software is usually installed on the SCADA node (a **Local** OPC Server).

The OPC Server software can also be installed on another PC (a **Remote** OPC Server) that is not the SCADA Node. A TCP/IP network connection (usually a LAN or Intranet) is used to communicate to the "**remote**" OPC Server from the SCADA Node. The **remote** OPC Server must have either WebAccess Project Node software or OPC Service installed. WebAccess provides a set of pre-built communication "drivers" that enable engineers and technicians to easily establish communications to automation devices including PLCs, controllers, DCS, DDC systems, other software packages, recorders, RTUs, IO, smart transmitters and other automation hardware.

There are drawbacks to using an OPC Server:

- You must maintain two (2) communications databases, the OPC tag configuration and the Web Access Tag configuration. If you change the Tag name in OPC Server, you must change the OPC Tag address in WebAccess to match the new name.
- Technicians must translate the OPC Tag name to the device address when troubleshooting or identifying IO.
- Most OPC Servers do not support remote configuration. Most OPC Servers require configuration to be performed locally on the OPC Server Node (usually the SCADA Node).
- In version 4.0, the WebAccess OPC Tool (the Import Tool) must be run locally on the Project Node.

Note – If you know the OPC Tag addressing, you can type it into the WebAccess Address field. This works well for small changes or additions.

- The OPC Software is a second set of software programs that must be maintained and monitored.

Generally, it is best to use a [WebAccess Driver](#) specific for your device when considering remote configuration.

Reference

[Engineering Manual, section 14.1 Data Transfer](#)

[Engineering Manual Section 14.2 DDE](#)

[Engineering Manual Section 14.3 OPC](#)

[Engineering Manual Section 5. Advanced Block, Parameter & Tag Configuration](#)

Exercise

Task 1: Configure Data Transfer

From the Project Manager

1. Select your Project and the SCADA Node.
2. Click the **Data Transfer** hyperlink.

This opens the Data Transfer page, shown in below

Add Data Transfer					
Node : LiveDEMO • SCADAnode1					
Source Tag	Target Tag	Check Time	Dead Band	Update	Delete
EF-13	EF-12	60000	0	Update	Delete
SP2	SP1	500	0.1	Update	Delete

3. Select either [Add Data Transfer](#) or [Update](#).

This opens the **Create Data Transfer** or **Update Data Transfer** page shown below.

Data Transfer List

Update Data Transfer Point [Cancel] Submit

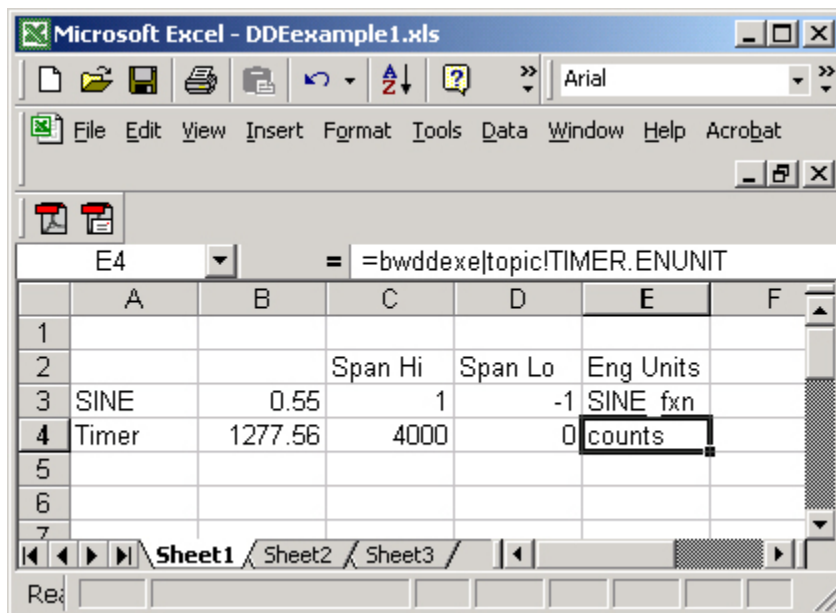
Source Tag	SP2	Tag List	==Analog Tag== AC12_OAT AC3_LABZAT1 AC3_northZAT AC3_SOUTHZAT AI0001 AI2005 AIC183:MEAS AIC183:OUT AIC183:SP AMPLITUDE
Target Tag	SP1		
Check Time	500	mSeconds	
Dead Band	0.1	%	

Figure 18-1 Data Transfer configuration

4. **Source Tag.** Enter the tagname that contains the value to be transferred.
5. **Target Tag.** Enter the tagname of the Destination Tag. This tag will receive the value from the source tag.
6. **Check Time.** This is the frequency of checking the two tags in milliseconds (500 to 60,000 milliseconds or ½ second to 1 hour).
7. **Dead Band (%)**. This is the difference in value (in percent of full scale) between the two tags that will result in a data transfer from the source to the target. A large deadband will minimize communications traffic. A smaller deadband will increase communications and accuracy.
8. **Press Submit** when you are finished entering data.
8. You can use update or delete to correct any errors later.

Task 2: EXCEL formula to read tags from WebAccess

1. Start EXCEL on the SCADA node.
2. Create a formula in a Cell to read the value of the tag named speed:
=bwddexe|topic!SPEED.NAME
3. Create a formula in a Cell to read the Hi Span of a tag name speed:
=bwddexe|topic!SPEED.SPANH
4. Create a formula in a Cell to read the engineering units of speed
: **=bwddexe|topic!SPEED.ENUNIT**
5. Repeat for the tag named TIMER.

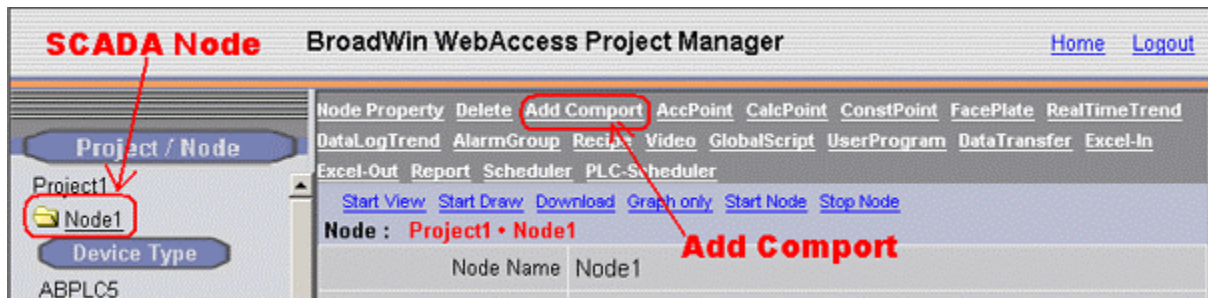


Additional Exercise 1

Task 1: Configure an OPC Communication Port

From the Project Manager (See section [2.3.2 Connect to Project Node](#) in the Engineering Manual if you need help connecting).

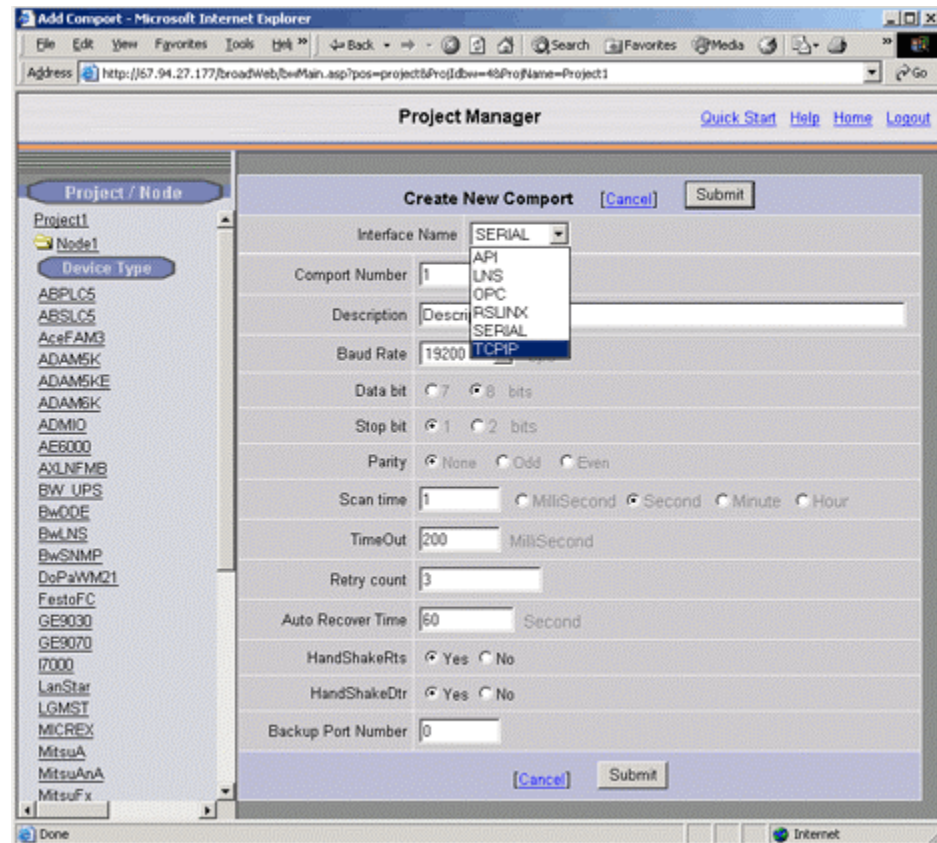
1. Select your SCADA node under the Project/Node list.



2. Select **Add Comport**

This can take a long time while tables are created in the database on the Project Node / Web Server.

3. The **Create New Comport** page appears.



4. Select the **OPC** as the **Interface Name** for this Comport.
5. The OPC Comport Properties page appears.

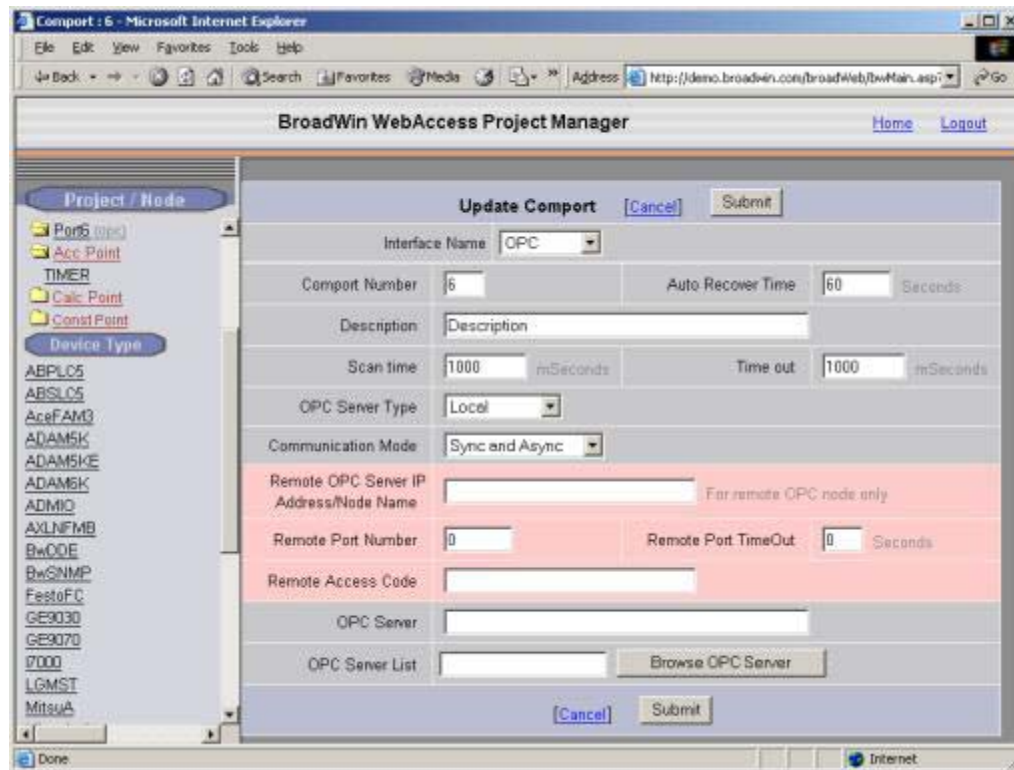


Figure 18-8 Comport Properties - OPC

6. Enter a **Comport Number**. It is recommended to use a number above 2 so you don't interfere with adding a serial comport. Most PCs have 2 serial comports, if you configured a TCP/IP comport as 1 or 2, you would not be able to use that serial comport in the future. It is not easy to change comport numbers. In the OPC port properties, this is a Virtual number used for reference. It can be any number. The only consideration might be to avoid conflicts with another device driver (i.e. a Serial Comport) which requires the comport number to match that of the physical interface.

The connection from the OPC Server to the PLC or automation device may be a Serial Port, TCP/IP or proprietary network card. Hence, it is possible to have a Serial connection to the device, but use the OPC Port type in WebAccess. KMC Control is an example.

If the OPC Server uses a Serial Comport, it is okay to use that same number as the OPC Comport number. This has the added advantage of reducing confusion.

7. Optionally, enter a Description. This is just for your own reference.
8. Enter a **Scan Time** and select the **radio button** for the units (Millisecond, Second, Minute or Hour).

All devices are scanned at the same frequency on a given comport. All [Constant Scan type](#) Tags are scanned at the same frequency on a comport. [Display Scan Tags](#) are scanned at this same frequency, but only when they appear on a Display.

9. Select the OPC Server Type:

The OPC Server software is usually installed on the SCADA node. In this case, select a **Local** OPC Server type.

The OPC Server software can also be installed on another PC. The select **Remote** OPC Server Type.

A TCP/IP network connection (usually a LAN or Intranet) is used to communicate to the "**remote**" OPC Server from the SCADA Node. The **remote** OPC Server must have either WebAccess Project Node software or OPC Service installed.

Accept the default values for the other fields, or modify them. For a description of the data entry fields for a TCP/IP Network Interface see the Eng. Manual, section 3.3.4 [TCP/IP Com Port Properties](#)

10. Click **Submit**.

11. The SCADA Node page appears. The Port should appear as a folder under the SCADA node. in the menu tree at left.

Task 2: Add OPC Device

11. Click on the Port hyperlink (Port3 in this example). The Comport Properties Page for an OPC Type Device appears.

12. Select ADD DEVICE. This will take a while, so wait and be patient.



The screenshot shows a web-based 'Device Property' dialog box. At the top, there are several links: 'Delete', 'Add Tag', 'Add Block', 'Browse OPC Items', 'Tag Import', and 'Block Import'. Below these links is a title bar with the text 'Device Property' and two buttons: '[Cancel]' and 'Submit'. The main area of the dialog contains four input fields: 'Device Name' with the value 'PLC31', 'Description' with the value 'OPC Device', 'Unit Number' with the value '0', and 'Device Type' with a dropdown menu showing 'OpcBw'.

Figure 18-11 - OPC device

13. Enter a **Device Name**. This is any user defined name. See [Device Name](#) for more information.

13. Optionally, Enter a **Description** is a user defined. See [Description](#) for more information.

14. Enter a **Unit Number**, for most OPC interfaces, this is a "virtual number" and does not correspond to the actual Unit Number used in the protocol addressing. See [Unit Number](#) for more information

15. Press **Submit**.

This can be a wait while data tables are created on the Project Node.

Task 3: Start the OPC Tool

The easiest way to run the OPC Tool is:

1. Go to the Project Node
2. Select the **START** button from the Task Bar
3. Select **Run**
4. Enter **OPCTool**
5. Select **OK**.
6. The **OPC Tool Client** opens.
It will be blank until you connect to a Server.

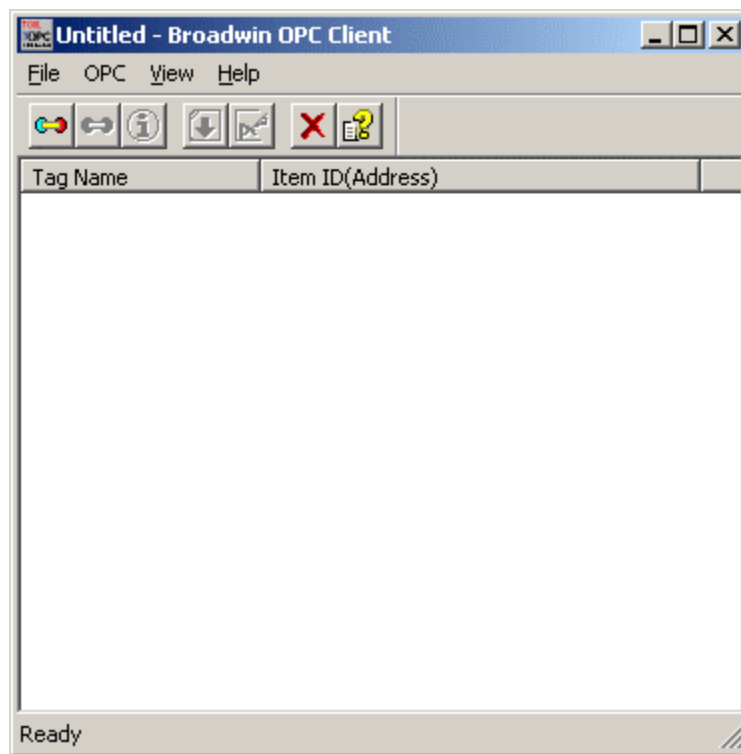


Figure 18-14 - OPC Tool

The OPC Tool is program located in the WebAccess Node directory (typically C:\WebAccess\Node\OPCTool.exe) on the Project Node. As an alternate to using the Start button and RUN, you can double click on the OPCTool.exe icon in Windows Explorer.

Before using the OPC Tool to import, you must configure an OPC Comport, at least one OPC Device. In case you forgot to configure an OPC Comport and Device in your WebAccess Database, you can do so without closing the OPC Tool.

Task 4: Connect to OPC Server with OPC Tool

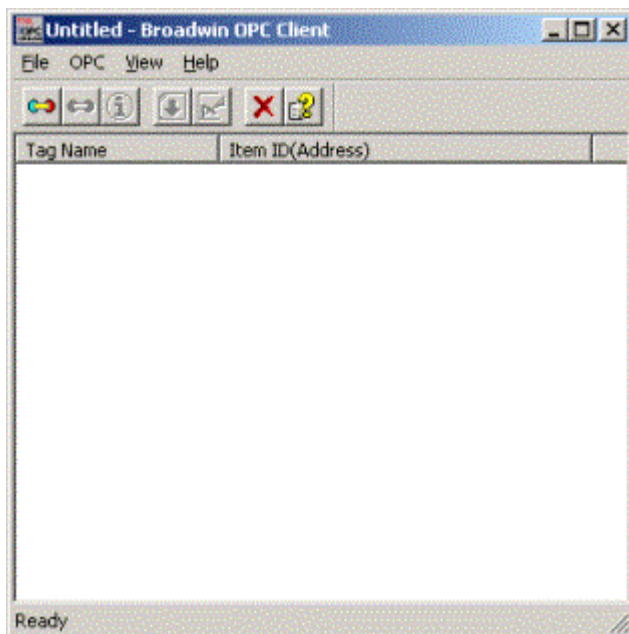


Figure 18-15 - OPCTool - start - no connection

1. To connect the OPC Tool to an OPC Server, select either the connect icon  or from the menu bar select **OPC - > Connect OPC Server** from the OPC Tool Client.
2. The WebAccess Connect OPC Server Dialog box opens.

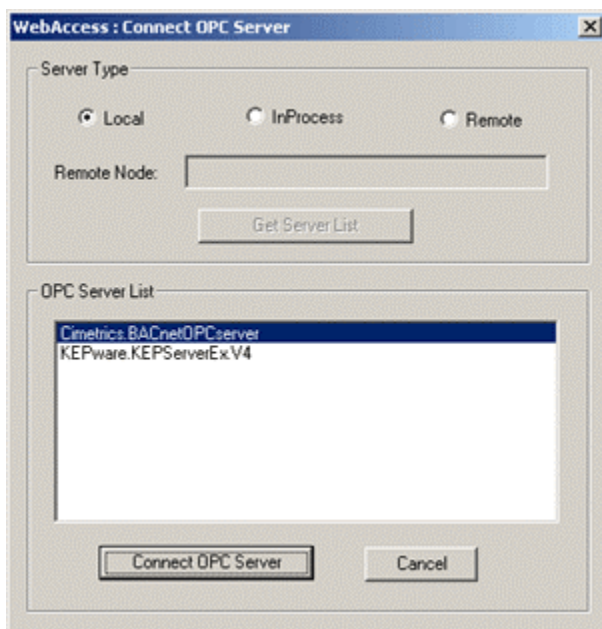


Figure 18-16 - OPC Toll - connect to OPC Server - local

3. Under Server Type, select either **Local** (i.e. this computer, the Project Node) or **Remote** (another computer).

3a. If you select **Local**, a list of all installed OPC Servers on this local computer appears. (I.e. the OPC Servers installed on the Project Node or Combined Project / SCADA node).

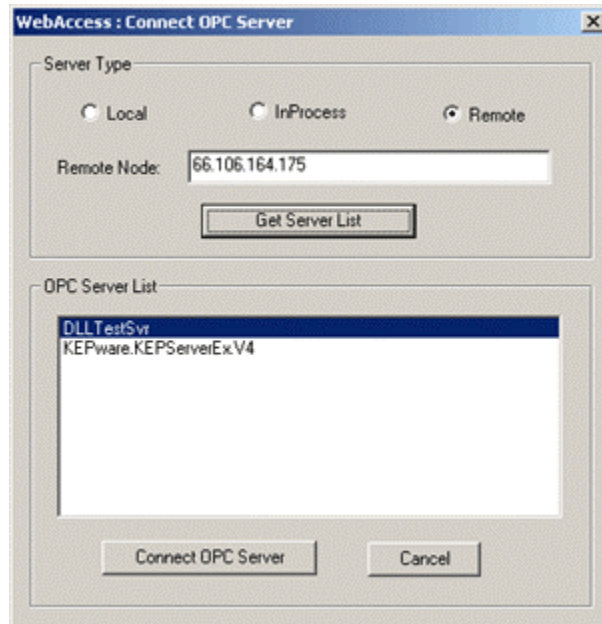


Figure 18–17 - OPC Tool - Connect to Remote Server

3b. If you select **Remote**:

3.b.1 Enter the **IP Address** or **Computer name** of the remote computer with the desired OPC Server.

3.b.2 Press the **Get Server List** button

3.b.3 A list of all OPC Servers on the Remote Computer appears.

4. Select the server from the **OPC Server List**

5. Select the **Connect OPC Server** button.

The OPC Tool will start the OPC Server if it is not running. However, it is recommended that you manually start the OPC Server and run through any procedure needed to connect to the automation devices (for example in the Kepware Modbus and Cimetrics Bacnet OPC Servers both start with no devices connected and require that you select a device or network to communicate).

6. The OPC Tool Client appears with the toolbar icons      enabled, including the following

Disconnect OPC Server 

OPC Status 

Import / Add Item 

7. Select the **Import/Add Item** icon 

Or, from the menu bar select **OPC -> Import/Add Items**

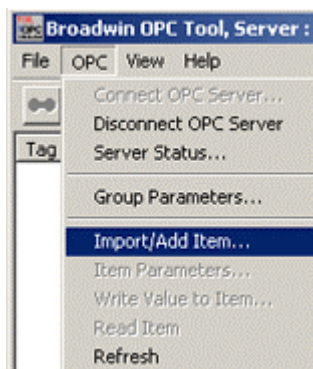


Figure 18-18 - OPC Tool Menu Bar

8. The **OPC Item Browse/Import** Dialog Panel appears.

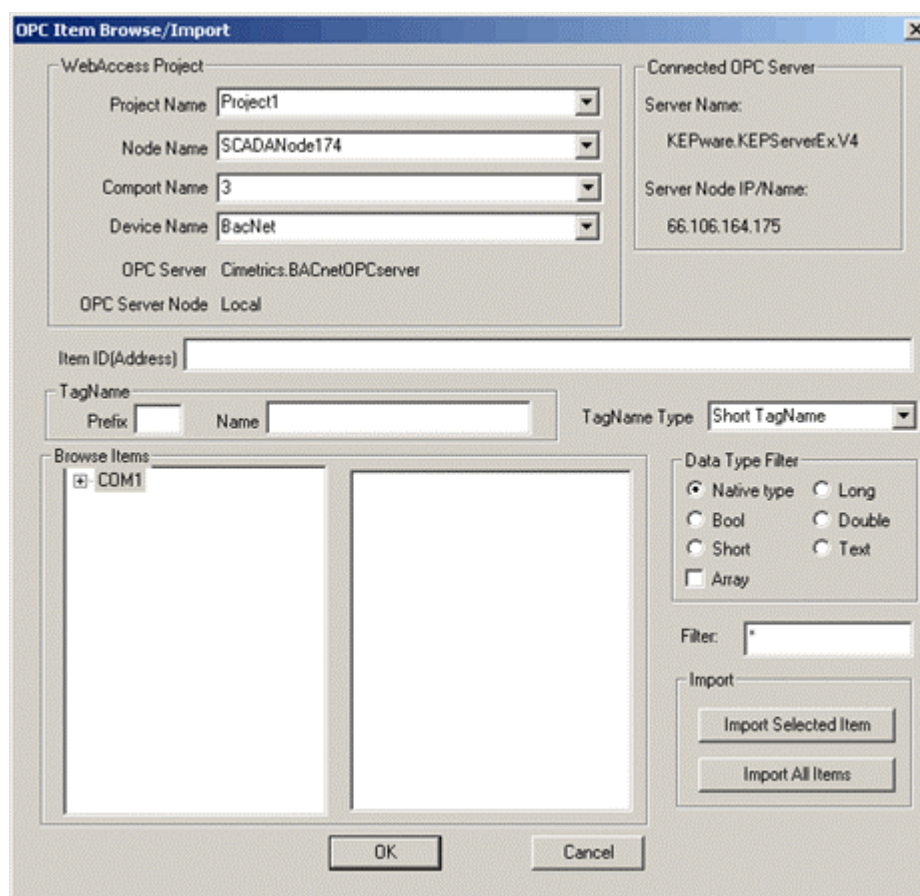


Figure 18-19 - OPC Tool - Browse and Import

Task 5: Connect to OPC Server with OPC Tool

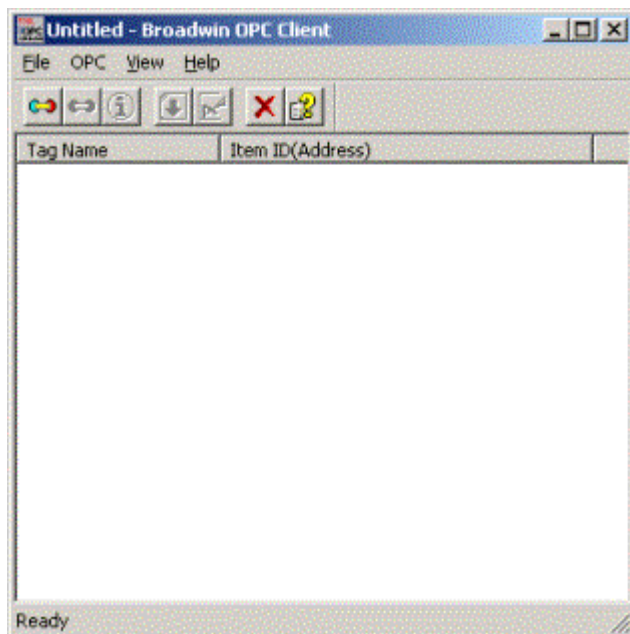


Figure 18-15 - OPCTool - start - no connection

1. To connect the OPC Tool to an OPC Server, select either the connect icon  or from the menu bar select **OPC - > Connect OPC Server** from the OPC Tool Client.
2. The WebAccess Connect OPC Server Dialog box opens.

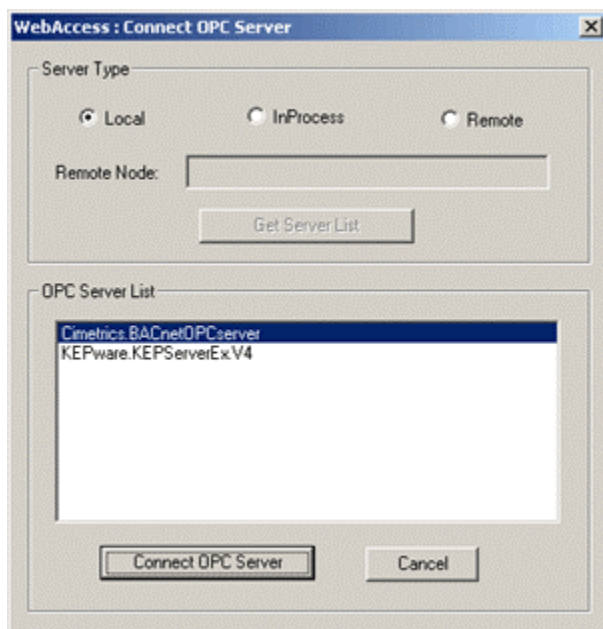


Figure 18-16 - OPC Toll - connect to OPC Server - local

3. Under Server Type, select either **Local** (i.e. this computer, the Project Node) or **Remote** (another computer).

3a. If you select **Local**, a list of all installed OPC Servers on this local computer appears. (I.e. the OPC Servers installed on the Project Node or Combined Project / SCADA node).

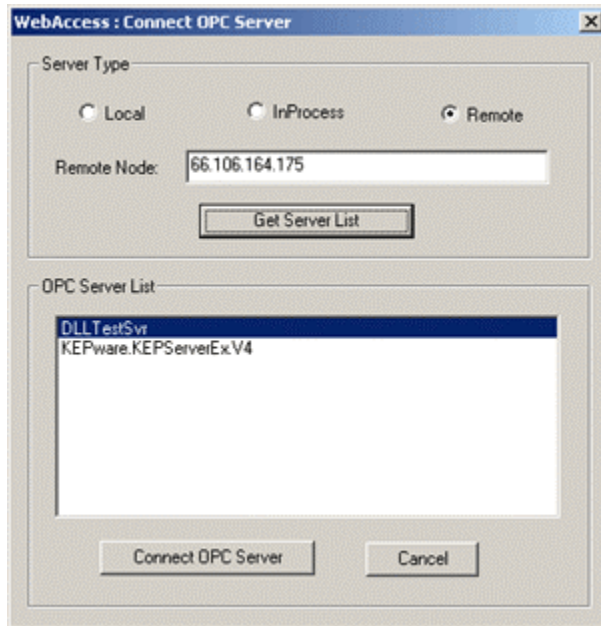


Figure 18-17 - OPC Tool - Connect to Remote Server

3b. If you select **Remote**:

3.b.1 Enter the **IP Address** or **Computer name** of the remote computer with the desired OPC Server.

3.b.2 Press the **Get Server List** button

3.b.3 A list of all OPC Servers on the Remote Computer appears.

4. Select the server from the **OPC Server List**

5. Select the **Connect OPC Server** button.

The OPC Tool will start the OPC Server if it is not running. However, it is recommended that you manually start the OPC Server and run through any procedure needed to connect to the automation devices (for example in the Kepware Modbus and Cimetrics Bacnet OPC Servers both start with no devices connected and require that you select a device or network to communicate).

6. The OPC Tool Client appears with the toolbar icons  enabled, including the following

Disconnect OPC Server 

OPC Status 

Import / Add Item 

7. Select the **Import/Add Item** icon 

Or, from the menu bar select **OPC -> Import/Add Items**

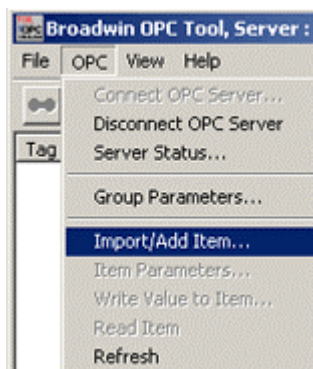


Figure 18-18 - OPC Tool Menu Bar

8. The **OPC Item Browse/Import** Dialog Panel appears.

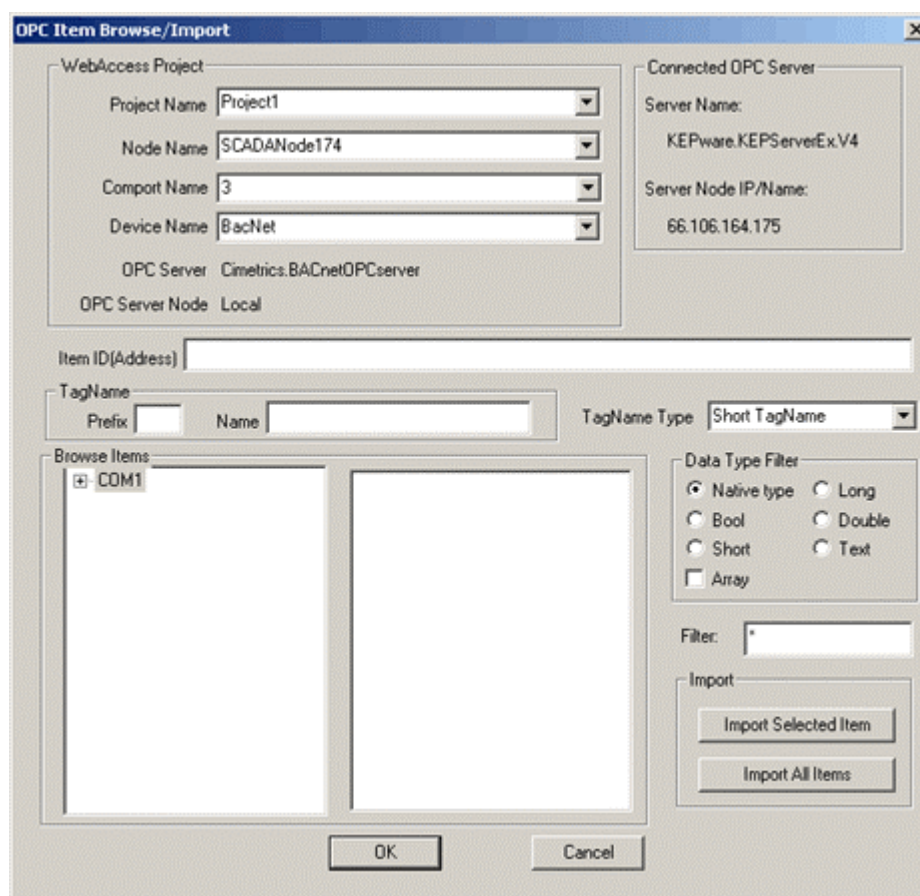


Figure 18 –19 - OPC Tool - Browse and Import

Task 6: OPC TOOL INI file of Conversion Rules

The **Convert Tagname** will convert OPC Item and Data Point names into WebAccess Tag names using conversion rules. The **Convert Tagname** will use the **Item Name** appended to **Data Point** Name plus the **conversion rules** in the OPCTol.ini file.

Users can modify this file to create new Name Conversion Rules.

The OPCTol.ini is located on the Project Node, typically at
C:\WebAccess\Node\OPCTol.ini

A sample of the Version 3.0 OPC Tool INI file for the Barrington OPC Server is listed below.

Each section must be preceded by the official OPC Name in square brackets []. For example, the Barrington OPC Server is named BarSys.OPCServer. The Section describing conversion rules for the Barrington OPC Server are in a section labeled [BarSys.OPCServer]

The rules are simple. Text String OPC = Text String in Tagname. For example, Digital Output.Channel=DO means convert the string "Digital Output.Channel" into a tag name with DO.

It may take an experimental or test database where you import OPC Items and DataPoints unchanged, then create rules to automatically shorten them.

```
[TAGNAME_TYPE]
//0: Leaf as TagName
//1: Custom Conversion
//2: Sequential
//3: TagName same as ItemID
BarSys.OPCServer=1
Matrikon.OPC.Simulation=1
ThinknDo.TnDOPC.1=0
RW.FASERVER.3=2
KEPware.KEPServerEx.V4=2
Cimetrics.BACnetOPCserver=1

[BarSys.OPCServer]
Digital Output.Channel=DO
Digital Input.Channel=DI
Analog Input=AI
Analog Output=AO
Channel=Ch
Communication=Comm
Extend_Service.Extend_Flag=ExHours
Flag_Schedule.Schedule=Z
Flag_Status.Flag=Occupancy
Sub_Schedule=SubSch
Start_Date=StrtD
Start_Time=Start
Stop_Date=StopD
Stop_Time=Stop
Holiday_Flag=HFlag
MF_Weekday_Flag=MF_WkFlag
Schedule_Serial=Sch_Serial
Schedule_Name=Sch_Name
```

```
Weekday_Flag=Wk_Flag  
Monday_Friday=Mon_Fri  
Weekday.Monday=Mon  
Weekday.Tuesday=Tue  
Weekday.Wednesday=Wed  
Weekday.Thursday=Thu  
Weekday.Friday=Fri  
Weekday.Saturday=Sat  
Weekday.Sunday=Sun
```

Appendix

Using this Training Manual

Windows 2000, XP Pro, Vista Business or Vista Enterprise with IIS is recommended

The following is recommended for the Student PC

- **Windows 2000, XP Professional, Server 2003, Vista Business or Vista Enterprise** with **IIS** installed on the students PC.
- A **network card** and TCP IP service.
- A **Hub** or Switch to allow connection of client to a “Demo Web Sever”. This is used in Section 1 Task 1: Connect to WebAccess Demo Project with a web browser. page11.
- A connection to the Internet and demo.broadwin.com in order to use the Hyperlinks to help files. (see later section modifying the host file to redefine demo.broadwin.com as localhost or another IP local to the class room).
- Project & SCADA Node software. This will be done in Section 3 Task 1: Install Project and SCADA Node software page 55.
- Modbus TCP PLC **or Modbus TCP Simulator** installed on student PC. This is used in Section 4 Communications & IO Tags on page 83.
- **EXCEL** installed on Student PC.
- Optionally, an OPC server installed on student PC (e.g. Kepware OPC simulator) if OPC section is to be covered.

Windows but no IIS - workaround

If the student does not have IIS, but does have Windows 2000, XP Professional, Server 2003, Vista Business or Vista Enterprise installed on his computer, a network card and a connection to the hub, then they can use the instructor's PC as the Project Node.

- Install SCADA Node only software on the student's PC is section 3.
- The instructor should have 2000 Server, Server 2003, Vista Business or Vista Enterprise if multiple students are using the instructor's PC as the Project Node. Other wise, students will easily exceed the 10 limit connection when adding Comports and Devices.

If there is not an Internet connection, the student should redirect demo.broadwin.com to the instructors IP address in order to use the hyperlinks to the Engineering Manual in this Training Guide (see the following section in this Appendix Host file

- Use the Host file to redirect demo.broadwin.com to another PC with Project Node software.

Windows 98 or XP Home - workaround

If the student has Windows 98, ME or XP Home, a network card and a connection to the hub, then they can use the instructor's PC as the Project Node and SCADA Node.

- Do not try to install Project Node and SCADA Node only software on the student's PC in section 3 if it is Win 98 or XP Home.
- The instructor should have 2000 Server, Server 2003, Vista Business or Vista Enterprise if multiple students are using the instructor's PC as the Project Node. Other wise, students will easily exceed the 10 limit connection when adding Comports and Devices. Also, the instructor's PC will only be able to run one SCADA node configuration at a time. All students using the instructor's PC as a Project and SCADA node should probably use the same Project but each with a different SCADA Node name (although the same SCADA Node IP Address). They will have to take turns running their SCADA node.

If there is not an Internet connection, the student should redirect demo.broadwin.com to the instructors IP address (or localhost if Project Node is installed on the students PC) in order to use the hyperlinks to the Engineering Manual in this Training Guide (see the following section in this Appendix Host file

- Use the Host file to redirect demo.broadwin.com to another PC with Project Node software.

Engineering Manual & Project Node software installed on student's PC

The hyperlinks in this Training Guide connect to "localhost" for connections to relevant sections of the Engineering Manual and Operator Manual. This assumes you have IIS web server installed on your PC and the Engineering Manual Installed (e.g. Project Node software installed).

Host file

Use the Host file to redirect demo.broadwin.com to another PC with Project Node software

The hyperlinks in this Training Guide connect to "demo.broadwin.com". If you do not have an Internet connection, you can modify the HOSTS file to redirect "demo.broadwin.com" to a PC on your network that does have IIS web server software and the Engineering Manual Installed (e.g. Project Node software installed).

In Windows 2000, the HOSTS file is located at:

Drive:\WINNT\system32\drivers\etc\

In Windows XP Professional, the HOSTS file is located at:

Drive:\Windows\system32\drivers\etc\

The HOSTS file can be edited with Notepad.exe.

The default HOSTS file is:

Copyright (c) 1993-1999 Microsoft Corp.

This is a sample HOSTS file used by Microsoft TCP/IP for Windows.

#

This file contains the mappings of IP addresses to host names. Each entry should be kept on an individual line. The IP address should be placed in the first column followed by the corresponding host name. The IP address and the host name should be separated by at least one space.

#

For example:

#

102.54.94.97 rhino.acme.com # source server

38.25.63.10 x.acme.com # x client host

127.0.0.1 localhost

127.0.0.1 demo.broadwin.com

The above modification allows demo.broadwin.com to be redirected to the Students PC. This assumes IIS and Project Node Software (with WebAccess Help) are installed on the Students PC. This will allow the hyperlinks to HELP in this manual to work.

If you do not have the Project Node software installed on the student PC, optionally, you can modify the IP Address (127.0.0.1) to the IP Address of a PC on the network that does have Project Node software. This will allow the hyperlinks to Help Files in this

training guide to work. Of course, the student PC must have a network connection to the Project Node PC.

Modbus TCP Simulator Software

For these training exercises, it is recommended to use a Modbus PLC with TCP/IP communications.

If a PLC is not available, it is recommended to install the ModbusTCP Simulator software on the student's PC. The software is ModTCP.exe available from the San Ramon, California Headquarters or download from the www.broadwin.com website as part of the ZIP file with the TrainBasic.ZIP.

This software just be run on the student PC. Installing a shortcut in the STARTUP folder of the students PC will ensure it restarts if the PC is rebooted. The default path is drive:\ModSimTCP (e.g. C:\ModSimTCP\Modsim.exe).

The sections using the Modbus TCP type PLC are:

- Section 4 Communications & IO Tags on page 83
 - o Task 1: Configure a Communication Port Task 2: Add Device (a PLC),
 - o Task 3: Add an Analog Input Tag, Task 4: Add an Analog Output Tag,
 - o Task 5: Add a Discrete Output (also called Digital Output) .

End of the Training Manual.