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Introduction to HTML Publishing

The GENESIS32 **Web Publishing Wizard** enables you to "export" your GraphWorX32 (.gdf), TrendWorX32 (.t32), and AlarmWorX32 (.a32) displays to HTML files and/or publish the HTML files to a Web server (LAN or Internet). In publishing displays to a Web server, WebHMI uses HTML to reference the files in an Internet-enabled format. Once a display is "exported" to an HTML file and then published to a Web server, client machines can browse it through an Internet browser, such as Microsoft Internet Explorer. Each display can be viewed as a Web page.

Basic Steps in Publishing GraphWorX32 Displays

Publishing a GraphWorX32 display to HTML involves the following basic steps:

1. Create a GraphWorX32 display (.gdf) file on a developer workstation with GraphWorX32 installed.
2. Use the Web Publishing Wizard to generate an HTML file and publish the file to a Web server (URL) address.
3. On the Web server PC (with GENESIS32 installed), start GenBroker Server from MonitorWorX.
4. On a client PC, open a Web browser, such as Microsoft Internet Explorer, and browse to the URL address of the HTML file. The client PC downloads the HTML file from the Web server. The Web server delivers all the necessary components (e.g. ActiveX controls) to the client PC's Web browser, which then runs the GraphWorX32 display directly within the browser. This way you can view the GraphWorX32 display in real time as a Web page.

The source code of the published HTML file contains references to the required "plug-ins" that are needed to deliver the GraphWorX32 Viewer ActiveX control to the client. The GraphWorX32 Viewer ActiveX is needed to run the .gdf file over the network. The GraphWorX32 display itself is not really "converted" into HTML. Instead the display (.gdf) file is referenced in the HTML code by the ActiveX plug-in.

To expand on step 2 above, the following Microsoft Internet Explorer example shows the portion of the generated HTML source code that references the .gdf file. The **GWXview32.cab** file is referenced in the **codeBase** field to deliver the "plug-in" for the GraphWorX32 Viewer ActiveX. This in turn opens up the .gdf display. In the example below, the .gdf display file is called **Building1.gdf**, as shown below in the **DisplayName** parameter field.

```
<OBJECT classid=clsid:98A5DDE3-563B-11CF-A343-487C03C10000
codeBase="http://www.myserver.com/webhmi/cabs/GWXview32.cab"
id=GWXview321 style="HEIGHT: 420px; WIDTH: 620px" height=420 width=620>
<param name="_Version" value="65537">
<param name="_ExtentX" value="16404">
<param name="_ExtentY" value="11113">
<param name="_StockProps" value="160">
<param name="BorderStyle" value="1">
<param name="Appearance" value="1">
<param name="DisplayName"
value="http://www.myserver.com/webhmi/Building1.gdf">
```

```

<param name="UseAmbientBackColor" value="0">
<param name="AutoStartRuntime" value="-1">
<param name="OverrideScrollbarSettings" value="1">
<param name="VerticalScrollbar" value="0">
<param name="HorizontalScrollbar" value="0">
</OBJECT>

```

Exporting a .gdf file to an HTML file not only references the GWXview32.cab file, as shown in the example above, but also references any other "plug-in" .cab files required for other ActiveX components that may be embedded within the .gdf file (e.g., TrendWorX32 or AlarmWorX32 Viewer ActiveX controls).

However, before a .gdf file can communicate with live OPC data, the **IcoSetServer.cab** file "plug-in," which is necessary for security and licensing, as well as a **GenBroker configuration (.gbx) file**, which contains network configuration settings for OPC communications, must also be delivered to the client PC. The IcoSetServer.cab file and the .gbx file are referenced in the HTML source code. This way the security and licensing information are available whenever a component (such as an Alarm Viewer ActiveX) is downloaded. The sample HTML source code below shows how these files are referenced in the code.

```

<object id="SetServer" classid="clsid:57802C16-9A15-11D4-B2A8-0090272E599B"
codeBase=http://www.myserver.com/WebHMI/cabs/IcoSetServer.cab
height=28 width=17>
  <PARAM NAME="CfgName"
VALUE="http://www.myserver.com/WebHMI/Samples/Default.gbx">
</object>

```

The GENESIS32 Web Publishing Wizard in GraphWorX32 takes care of all the necessary HTML code references automatically. Microsoft Internet Explorer uses .cab files.

Note: If you are using multiple frames for your WebHMI pages (e.g. a main "navigation" frame for browsing between pages, and a "content" frame that contains the body of the pages), make sure that the IcoSetServer.cab file and the .gbx file are properly referenced in the HTML source code for the main frame. This way the security and licensing information are available whenever a component is downloaded.

Delivering the Necessary Web Components to the Client

WebHMI is designed to operate with **Zero Install** and **Thin Client** philosophy. This means the client PC has nothing but Windows and Internet Explorer loaded. Thus, all necessary Web components must be remotely delivered and seamlessly installed. The type and number of components required for delivery on the client PC are determined by the content of the GraphWorX32 displays. For instance, a display with an embedded Trend Viewer requires delivery of the corresponding TrendWorX32 Viewer ActiveX Web component, but not the AlarmWorX32 Viewer ActiveX. On the other hand, a display with an embedded Alarm Viewer requires the corresponding AlarmWorX32 Viewer ActiveX but not the TrendWorX32 Viewer ActiveX.

The delivery process can be very slow in terms of network speed. To avoid wasting time, the first requirement is to deliver only the required component. The delivery process is strictly connected to the HTML code. Inside the HTML code, there are references to .cab files, the basic ways to deliver components. As a result, the building of the HTML page is a critical step. The Web Publishing Wizard looks inside

the display to understand what components are needed on the client side and then builds the corresponding HTML code.

Client Station Requirement

In order to view a published GraphWorX32 display, a client PC must have Microsoft Internet Explorer installed.

Developer Station Requirement

The developer station requires GraphWorX32.

Web Server Station Requirement

The Web server PC must have the following installed:

- WebHMI
- GENESIS32 (with GenBroker)
- For Windows NT, Internet Information Server (IIS) or a Personal Web Server
- For Windows 2000, Windows XP and Windows Server 2003, Internet Information Server (IIS)

Note: Because publishing via Microsoft Posting Acceptor is no longer supported on Windows Server 2003, we were forced to find another way of transporting published files from a GENESIS32 development machine to a WebHMI server. It appeared that FTP would be the best choice. For more information, please see the "Publishing Channel" section below.

Multiple Display Support

Suppose that you have a main GraphWorX32 display (.gdf) file that is linked to other display files (e.g. each display contains pick actions, such as Load Display or Pop-up Window, that point to the other display files). When you publish the main display to an HTML file, you want all the links and references to the other dependent display files to be functional when the HTML file is downloaded to a client Web browser. The Web Publishing Wizard makes this possible by detecting all mutually linked display files, looping through all dynamic actions, and checking for pick actions in which a file name is specified as one of its parameters. The following pick actions are supported for multiple GraphWorX32 display Web publishing support:

- Load Display
- Embedded Window
- Popup Window
- Drag/Drop Load
- Set Aliases
- Alias Dialog (alias files specified through the **Set Aliases** dialog box in GraphWorX32).

The LoadTabs display property is also supported for publishing multiple GraphWorX32 displays.

Embedded ActiveX Control Support

In dealing with a main GraphWorX32 display (.gdf) file that is linked to other display files (as described in the "Multiple Display Support" section above), suppose you included an ActiveX Control (e.g. Alarm Viewer ActiveX or Trend Viewer ActiveX) into each of the dependent display files. Also suppose that you generated and published an HTML file only from the main display, but you want this single HTML file to trigger the simultaneous download and installation of all ActiveX Controls embedded within all interlinked GraphWorX32 display files. The Web Publishing Wizard's embedded ActiveX Control support makes this possible, allowing you to view the ActiveX Controls in all displays from a single client Web browser.

Using the Web Publishing Wizard

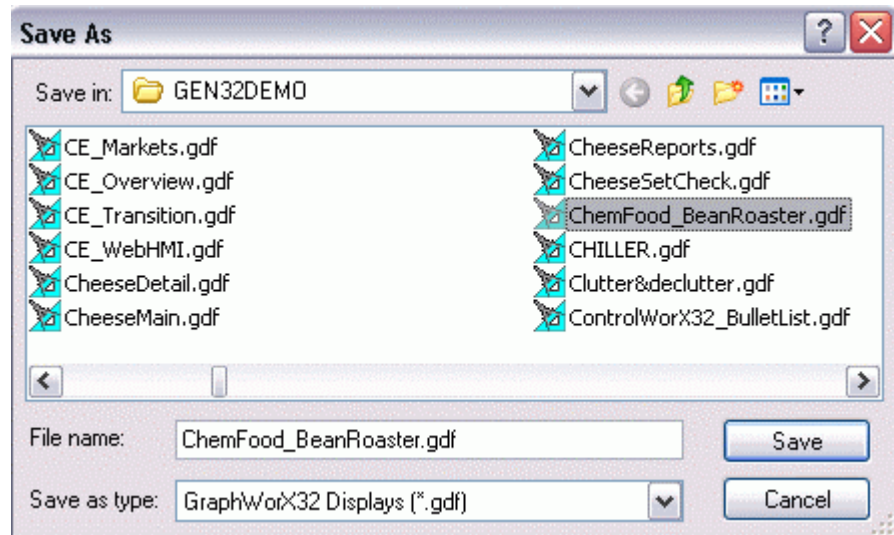
The Web Publishing Wizard performs two basic operations:

1. The Wizard creates an HTML file based on a user-specified GraphWorX32 display (.gdf) file, TrendWorX32 display (.t32) file, or AlarmWorX32 display (.a32 file).
2. The Wizard then either "exports" (saves) the HTML file to a user-specified directory on the local drive and/or "publishes" (uploads) the HTML file to a user-specified Web server URL address (i.e. over the Internet or an intranet).

Starting the Web Publishing Wizard

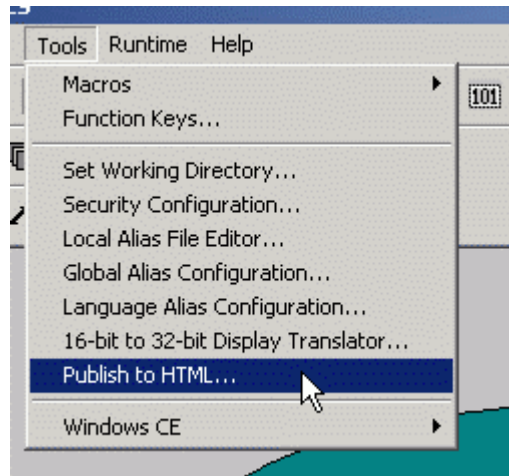
To launch the Web Publishing Wizard in GraphWorX32:

1. Load or create a GraphWorX32 display (.gdf) file.
2. After you have either created a new display file or opened an existing file, select **Save As** from the **File** menu. The **Save As** dialog box opens, allowing you to specify the name and location of the file you are about to save. Type a name for the new file in the **File Name** field. It is important that, when saving your file, you select "GraphWorX32 Displays without VBA (*.gdf)" in the **Save as Type** field, as shown in the figure below, because the Web Publishing Wizard does not support Microsoft Visual Basic for Applications (VBA). Click the **Save** button to save the current file.



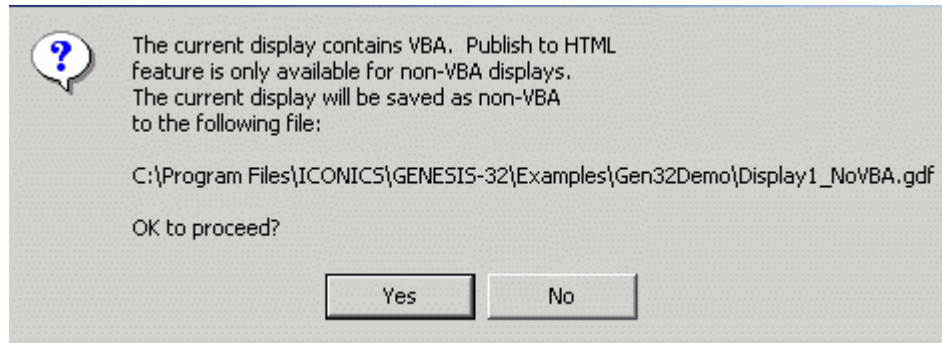
Saving the Display As a Non-VBA File

3. Select **Publish to HTML** from the **Tools** menu, as shown in the figure below.



Starting the Web Publishing Wizard in GraphWorX32

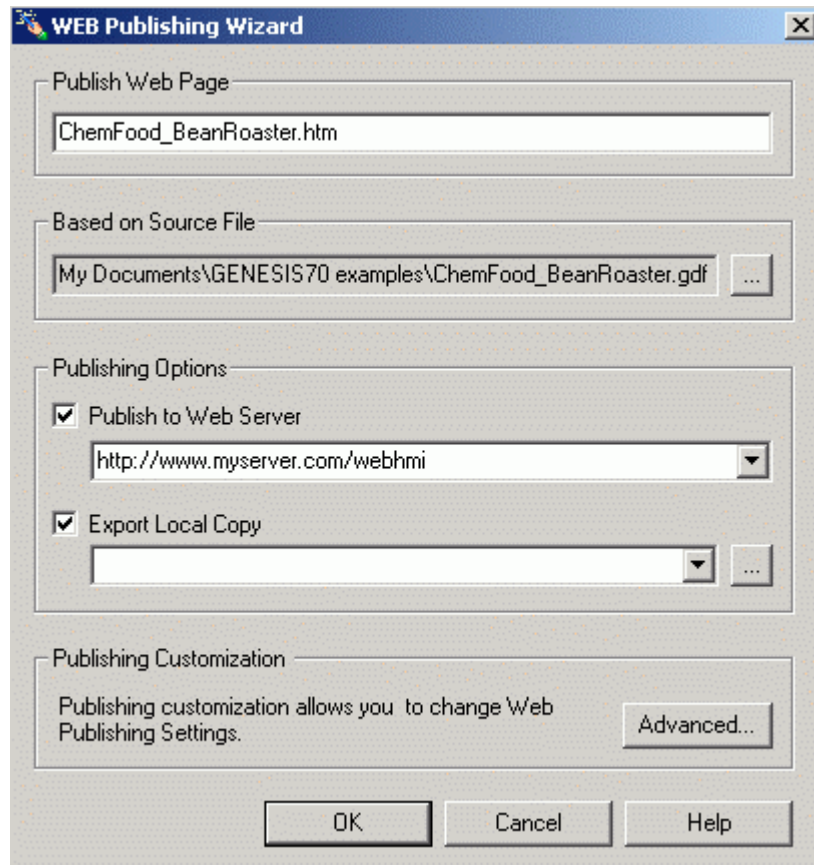
Note: If you try to run the Web Publishing Wizard with a GraphWorX32 display with VBA, you will get a warning message as shown in the figure below. If you click **Yes**, the Web Publishing Wizard automatically saves the display as a non-VBA file. If you click **No**, the publishing operation is cancelled.



Warning Message About Displays With VBA

4. This launches the **Web Publishing Wizard** configuration dialog box, as shown in the figure below. This dialog box serves as the interface through which you export/publish GraphWorX32 display files to the Web.

Note: Both the **Publish to Web Server** and **Export Local Copy** actions can be performed at the same time.

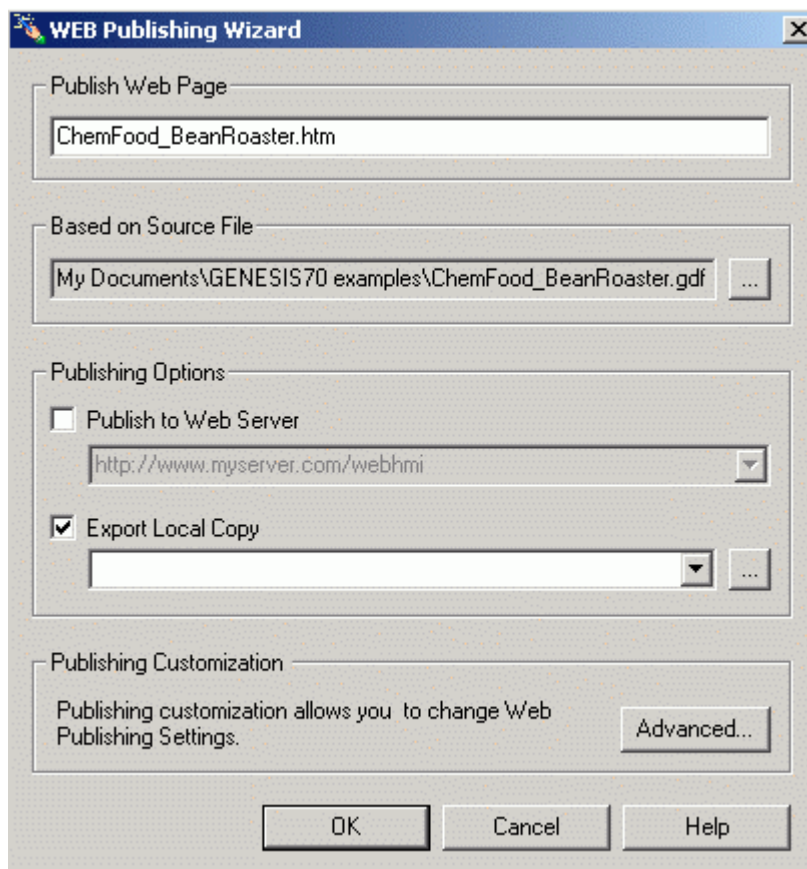


Web Publishing Wizard Dialog Box

Exporting a Display File Locally

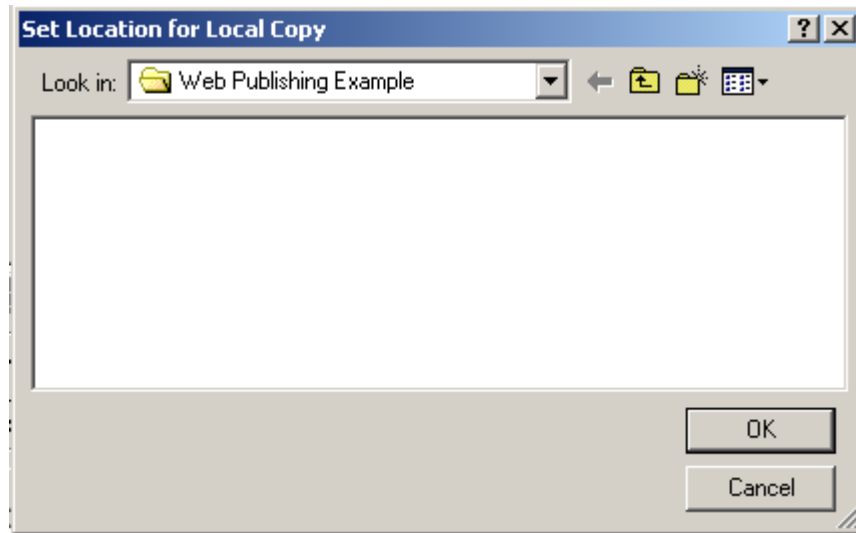
To export a GraphWorX32 display to a directory on the local drive:

1. In the **Based on Source File** field of the Web Publishing Wizard, you must specify the name of the GraphWorX32 display (.gdf) file to be exported, as shown in the figure below. To choose a different display, click the ... button to the right to browse for a file. Select a file and then click **Open**. The directory path and the file name are shown in the text field.



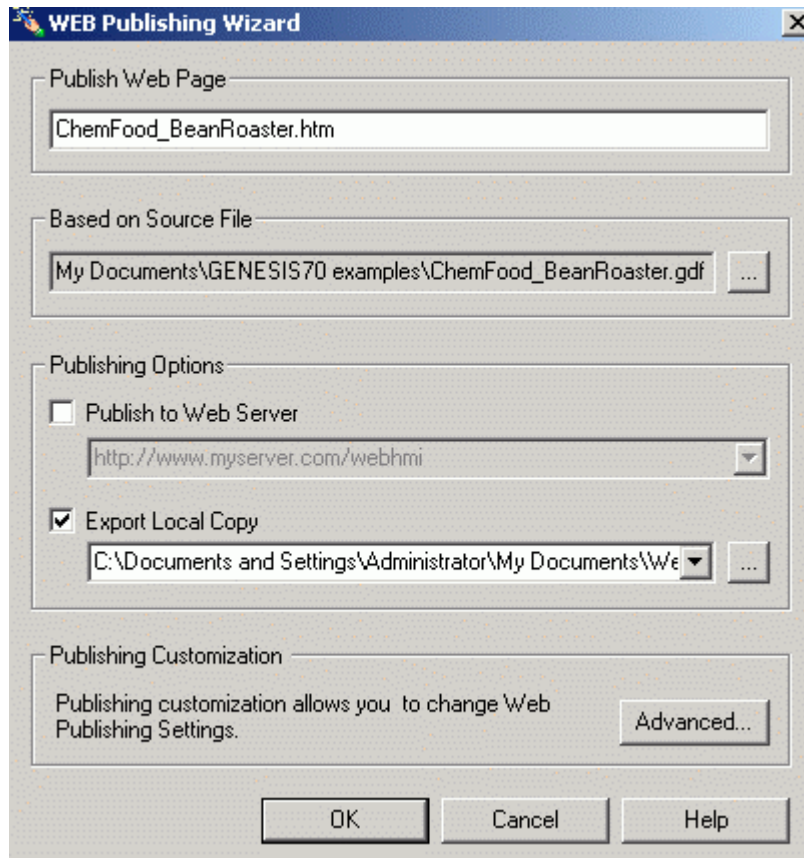
Specifying a GraphWorX32 Display File

2. In the **Publish Web Page** field of the Web Publishing Wizard, specify the name of the HTML file that will be created. The .gdf file name is filled in by default, but you can give the HTML file a different name.
3. In the **Publishing Options** field, check the **Export Local Copy** check box and specify the local directory path name to which you want to export the HTML file. You can select a recently used path from the drop-down list, or click the ... button to browse for a destination directory, as shown in the figure below. Select the directory and click **OK**.



Setting the Local Directory

- 4. The local directory pathway you selected appears in the **Export Local Copy** field of the Web Publishing Wizard, as shown in the figure below.



Export Local Copy Pathway Shown in the Wizard

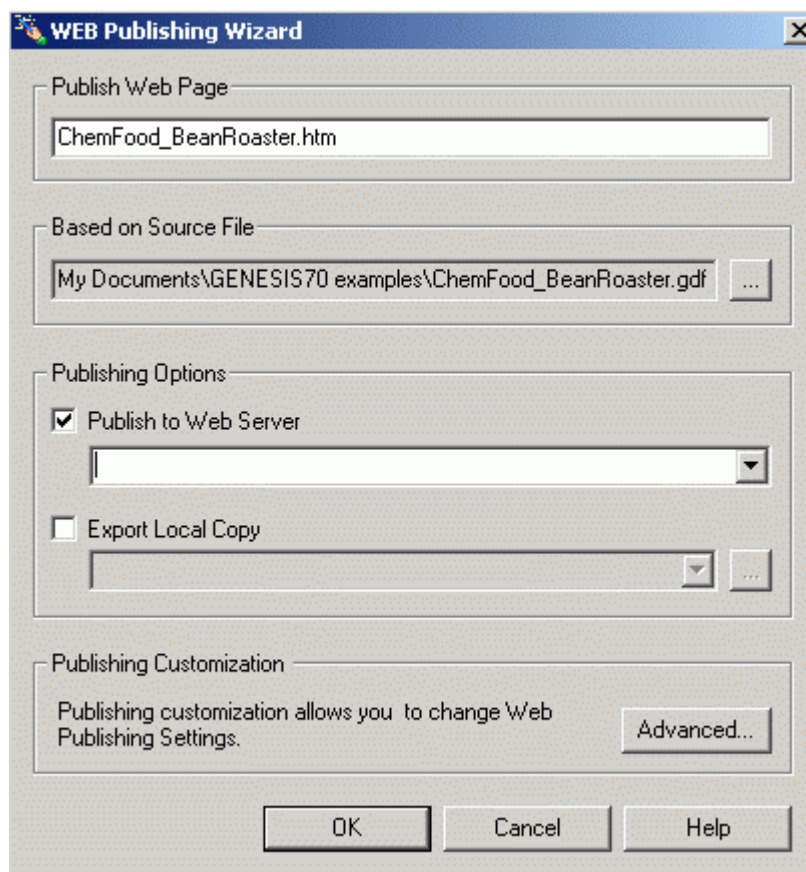
- Click the **OK** button to generate the HTML file. The new HTML file is saved to the local directory pathway specified in the **Export Local Copy** field.

Note: Both the **Publish to Web Server** and **Export Local Copy** actions can be performed at the same time.

Publishing a Display File to a Web Server

To publish the HTML file to a directory on a Web server (i.e. over the Internet or an intranet):

- In the **Based on Source File** field of the Web Publishing Wizard, you must specify the name of the GraphWorX32 display (.gdf) file to be published, as shown in the figure below. To choose a different display, click the ... button to the right to browse for a file. Select a file and then click **Open**. The directory path and the file name are shown in the text field.



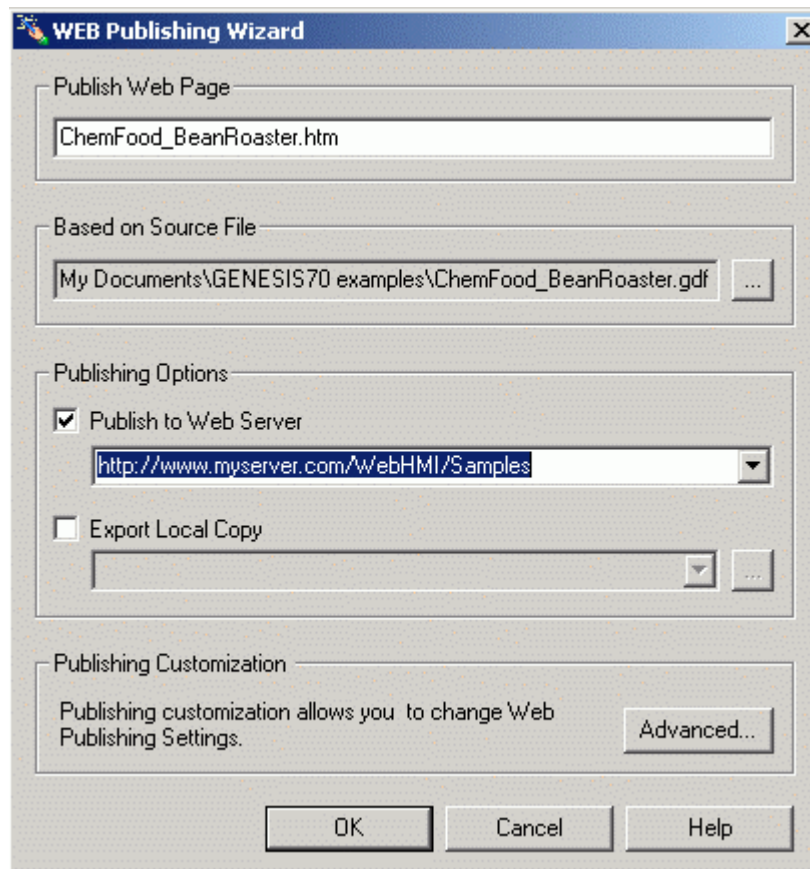
Specifying a GraphWorX32 Display File

- In the **Publish Web Page** field of the Web Publishing Wizard, specify the name of the HTML file that will be created. The .gdf file name is filled in by default, but you can give the HTML file a different name.
- In the **Publishing Options** field, check the **Publish to Web Server** check box and type in the URL address of your Web server with the complete directory

indicating where you want to publish the HTML file, as shown in the figure below. In the sample Web server URL address shown below

("http://www.myserver.com/WebHMI/Samples"), the various components are:

- **http://www.myserver.com:** IP address (server name) of the WebHMI Server
 - **WebHMI:** Name of the WebHMI server root directory
 - **Samples:** Name of the directory on the server to which the HTML file will be saved
4. The Web server URL address now appears in the Web Publishing Wizard dialog box in the **Publish to Web Server** field of the Web Publishing Wizard, as shown in the figure below.



Publish to Web Server Location Specified in Web Publishing Wizard

5. Click the **OK** button to generate the HTML file. The new HTML file is uploaded to the Web server and then saved to the URL address path specified in the **Publish to Web Server** field.

Note: Both the **Publish to Web Server** and **Export Local Copy** actions can be performed at the same time.

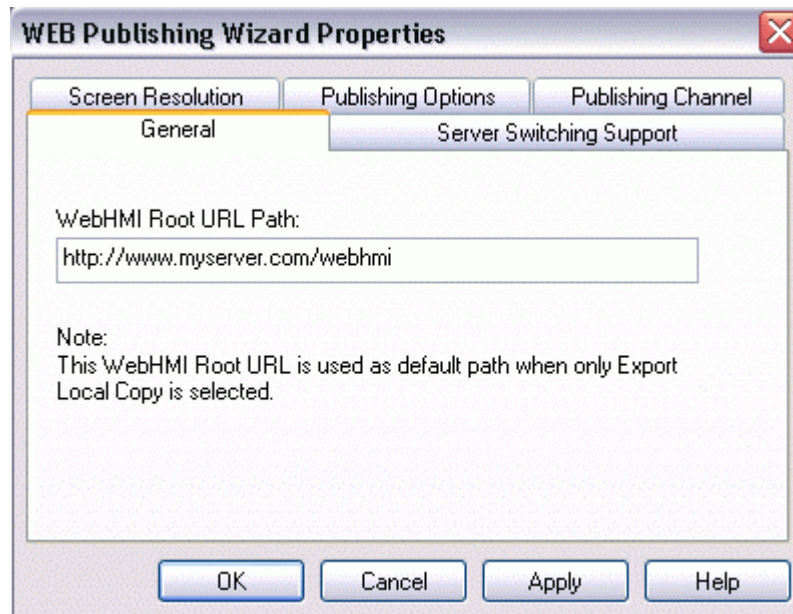
Publishing Customization Options

The Web Publishing Wizard contains some customization options for exporting/publishing HTML files. Clicking the **Advanced** button on the Web Publishing Wizard dialog opens the **Web Publishing Properties** dialog box, as shown in the figure below, which contains the following tabs:

- General
- Server Switching Support
- Screen Resolution Settings
- Publishing Options
- Publishing Channel

General Settings

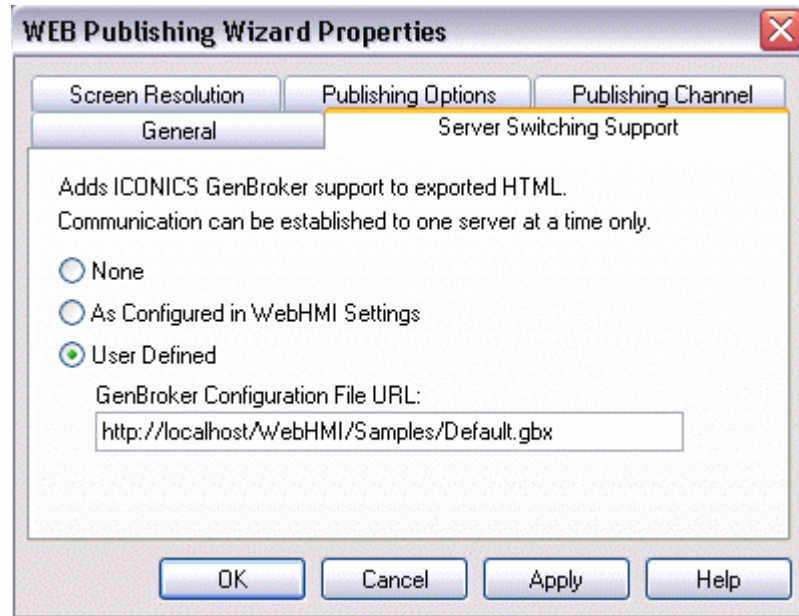
The **General** tab of the **Web Publishing Properties** dialog box, shown in the figure below, allows you to specify the default URL address for the WebHMI Server. The **General** tab is visible only when **Export Local Copy** is the sole option selected on the Web Publishing Wizard dialog box. If **Publish to Web Server** is selected on the Web Publishing Wizard dialog box, then the **General** tab is hidden and you won't need to configure it.



General Settings

Server Switching Support

The **Server Switching Support** tab of the **Web Publishing Properties** dialog box, shown in the figure below, allows you to enable or disable GenBroker support for the exported/published HTML file. Here you can specify which GenBroker configuration file (.gbx) will be activated. The GenBroker configuration file establishes the settings for OPC data communications between the clients and the Web server.



Server Switching Support Settings

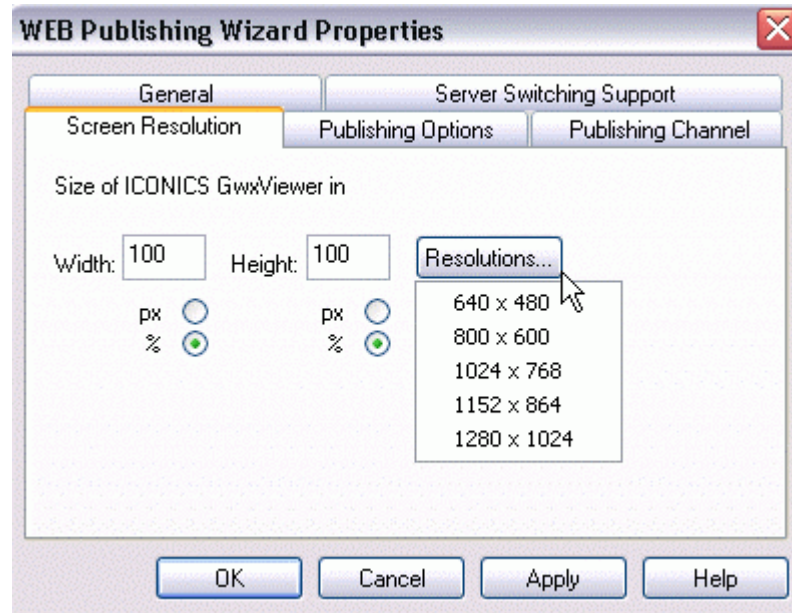
There are three available options for GenBroker support:

- **None:** GenBroker support is disabled. If this option is selected, all the communication will default to the local node. This option should be checked when the Web pages are meant to be used only from the local node. If this option is checked, Web pages may not work on a remote node, unless the remote node has GENESIS32 installed and GenBroker is properly configured to communicate with the WebHMI server.
- **As Configured in WebHMI Settings:** This setting uses the default URL address of the GenBroker configuration (.gbx) file as specified in the WebHMI installation. This is the recommended option for non-expert users.
- **User Defined:** When this option is selected, the **GenBroker Configuration File URL** field becomes available, allowing you to specify the URL address of the GenBroker configuration (.gbx) file. This option gives the maximum flexibility and should be used by expert users only.

Note: For information about configuring GenBroker settings, please see the GenBroker Configurator Help documentation.

Screen Resolution Settings

The **Screen Resolution** tab of the **Web Publishing Properties** dialog box, shown in the figure below, determines the screen resolution and size of the GraphWorX32 Viewer ActiveX control, which is referenced in the generated HTML file and then downloaded to a client PC when the HTML file is viewed in the client's Web browser. You can specify the screen size in the **Width** and **Height** fields in terms of pixels (px) or percentage (%). Click the **Resolutions** button to select from a pop-up menu of standard screen resolutions, as shown in the figure below.

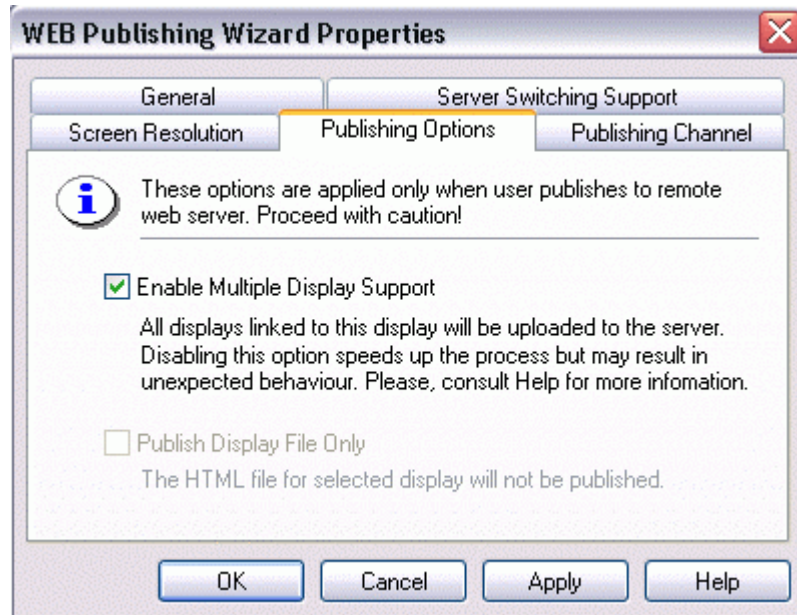


Screen Resolution Settings

Publishing Options

The **Publishing Options** tab of the **Web Publishing Properties** dialog box, shown in the figure below, enhances the publishing process. By default, the Web Publishing Wizard provides support for related files detection (for more details, see the **Multiple Display Support** section). The multiple display detection could be a rather lengthy process. You can speed up the process by disabling the **Enable Multiple Display Support** option. This is especially useful, if you have already published your project files to the Web server, and now you want to update display you have changed.

The multiple display detection mechanism ensures that the Web page will be published properly for the source file. Disabling the **Multiple Display Support** may cause publishing of an incomplete web page, which may result in unexpected behavior. Therefore, it is suggested to disallow publishing of the Web page. You can do so by enabling the **Publish Display File Only** option.



Publishing Options

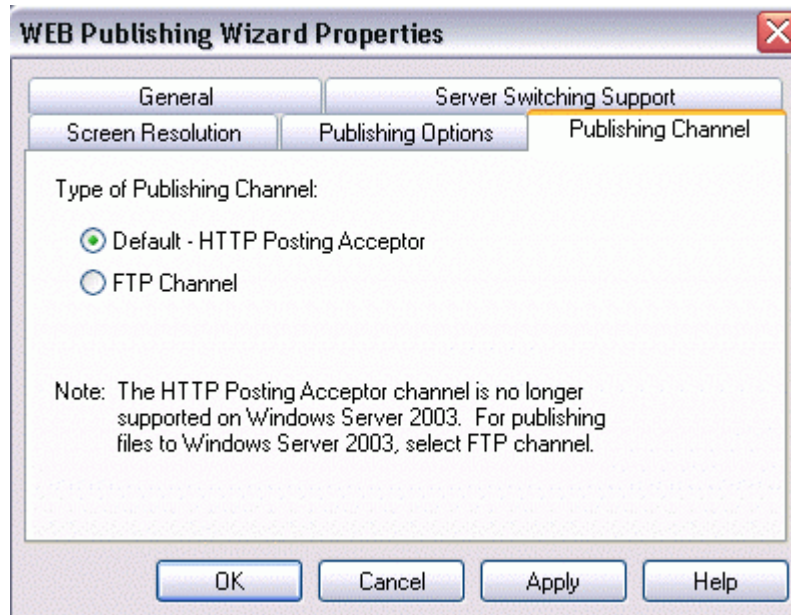
Publishing Channel

Because publishing via Microsoft Posting Acceptor is no longer supported on Windows Server 2003, we were forced to find another way of transporting published files from a GENESIS32 development machine to a WebHMI server. It appeared that FTP would be the best choice.

Changing the Communication Channel

By default, the method that uses Posting Acceptor services is used for publishing files to a Web server. The **Publishing Channel** tab of the **Web Publishing Properties** dialog box, shown in the figure below, enables you to change the way that files are uploaded to the Web server by selecting **FTP Channel**. This tells the Web Publishing Wizard to use FTP communications for uploading files instead of Posting Acceptor.

Note: Selecting **FTP Channel** does not affect the configuration of the main Web Publishing Wizard dialog; the settings are the same if you were publishing files using the default method (i.e. Posting Acceptor).

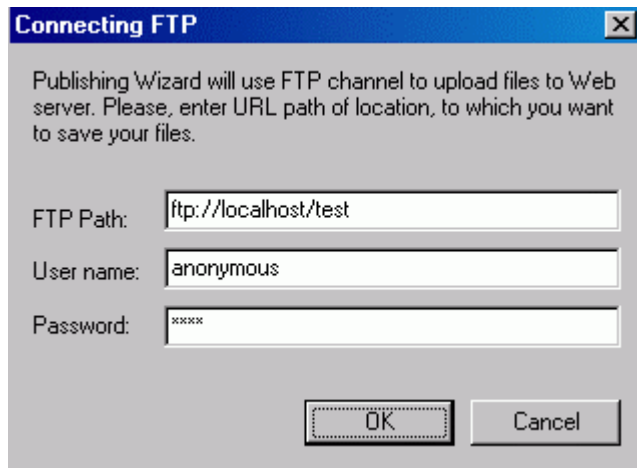


Publishing Channel

Configuring FTP Access

Just before uploading files to the Web server, you will be prompted to specify the FTP connection settings, as shown in the figure below. Enter the correct FTP path, user name and password.

Note: For information about FTP site configuration, please see the application note called "Publishing to Windows 2003 Server," which is located on the GENESIS32 CD.



Uploading Files Via FTP

Viewing Locally Exported HTML Files

To view an HTML file that was exported to a local directory, simply browse to the local directory pathway and click on the file to open it in your Web browser. You can also open your Web browser and copy the directory pathway of the file into the **Address** field of the Web browser, as shown in the figure below. A complete directory path is, for example, "C:\Documents and Settings\Administrator\My Documents\Web Publishing Example\ChemFood_BeanRoaster.htm." Be sure to include the name of the HTML file that you have exported and the file extension "htm."

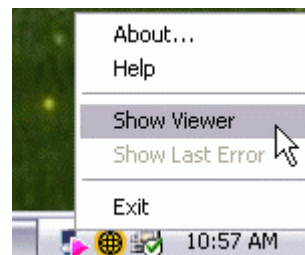


Viewing the Exported HTML File in a Web Browser

Viewing Published HTML Files

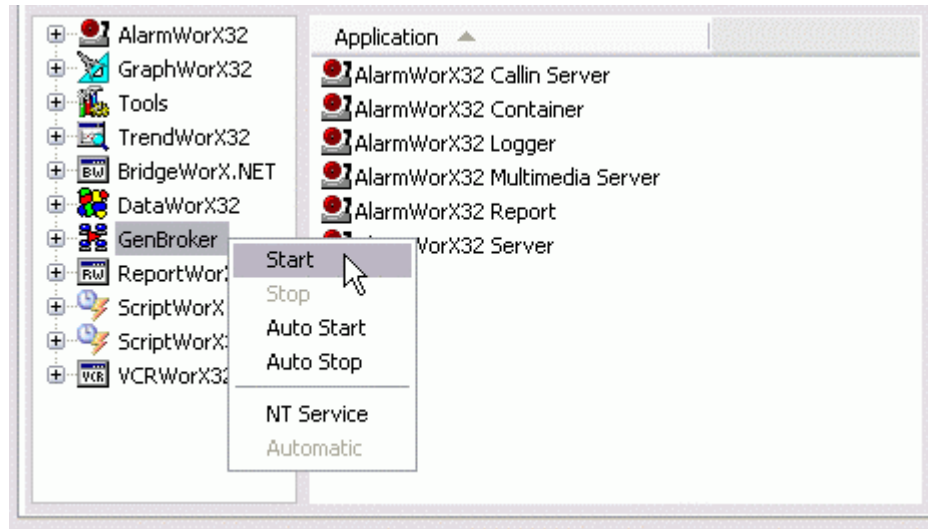
Before connecting a client machine to a WebHMI Server, you must start the GenBroker Server on the WebHMI Server using MonitorWorX. If the GenBroker Server is not started, then the client will not get proper licensing and security information. To start the GenBroker Server on the WebHMI Server:

1. Launch MonitorWorX from the Windows **Start** menu by selecting **Programs > ICONICS GENESIS32 > MonitorWorX**.
2. To display the MonitorWorX user interface, right-click on the MonitorWorX icon in the Windows taskbar and select **Show Viewer** from the pop-up menu, as shown in the figure below.



Displaying the MonitorWorX Viewer

3. In the tree control, right-click on **GenBroker** and select **Start** from the pop-up menu, as shown in the figure below. This activates the GenBroker Server.



Starting the GenBroker Server on the Server Node

- Once the GenBroker Server is running, you can view the HTML file that you have published to the Web server from any client PC's Web browser. To view the published HTML file, open your Web browser and copy the URL address of the file into the **Address** field of the Web browser, as shown in the figure below. A complete address is, for example, "http://www.myserver.com/webhmi/Samples/ChemFood_BeanRoaster.htm." Be sure to include the name of the HTML file that you have published and the ".htm" file extension.

The GraphWorX32 display file is referenced in the HTML code so the display can be viewed as a Web page. The client's Web browser simply downloads the HTML file in which the .gdf file is referenced. All the client needs is a Web browser; it is not necessary to have GENESIS32 installed on client. The Web page is downloaded from the Web server across the Internet/intranet and appears in the client's Web browser window. The display is in real-time, just as if you were viewing the runtime display in GraphWorX32 on the server machine; any live values (e.g. OPC tags) change dynamically in the display.



Viewing the Published HTML File in a Client Web Browser

Web Publishing in ProjectWorX32

The Web Publishing Wizard can be accessed through the ProjectWorX32 console, allowing you to easily export/publish one or more GraphWorX32 (.gdf), AlarmWorX32 container (.a32), and TrendWorX32 container (.t32) display files within a project to a Web server. For more information, please see the ProjectWorX32 help documentation.