ECHELON®

i.LON Vision 2.2
User's Guide

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Preface

i.LON Vision 2.2 is a Web publishing tool that you can use to create custom Web pages for monitoring and controlling the data points on your SmartServer 2.2.

Purpose

This document describes how to create custom Web pages for monitoring and controlling LONWORKS networks and other control networks.

Audience

This guide is intended for system designers and integrators with an understanding of control networks.

Hardware Requirements

Requirements for the running the i.LON Vision 2.2 software are listed below:

- 64-bit and 32-bit Microsoft® Windows 8®, 64-bit and 32-bit Microsoft Windows 7®or 32-bit Microsoft Windows® XP.

- Intel® Pentium® III 1.3 GHz processor or faster, and meeting the minimum Windows requirements for the selected version of Windows (Pentium IV 1.5 GHz or faster if running Echelon Enterprise Services 2.2).

- 50 to 530 megabytes (MB) free hard-disk space, plus the minimum Windows requirements for the selected version of Windows.

  o The i.LON Vision 2.2 software requires 44 MB of free space.

  o If you install Echelon Enterprise Services 2.2 from the SmartServer 2.2 DVD, you need an additional 270 MB of free space. Echelon Enterprise Services 2.2 is required for monitoring and controlling the data points of external devices with custom SmartServer 2.2 Web pages.

  If you are running Echelon Enterprise Services 2.2, OpenLNS Server or LNS Turbo Editions (3.25) or later must be installed on the OpenLNS or LNS Server computer. See the *Echelon Enterprise Services 2.2 User's Guide* for more information on installing Echelon Enterprise Services 2.2 and LNS Server Service Pack 5 from the SmartServer 2.2 DVD.

  o If you install Adobe® Reader 9.1 from the SmartServer 2.2 DVD, you need an additional 204 MB of free space. You need Adobe Reader or another PDF viewer to view the i.LON Vision 2.2 documentation.

- DVD-ROM drive.

- 1024x768 or higher-resolution display with at least 256 colors.

- Mouse or compatible pointing device.

- If you are running Echelon Enterprise Services 2.2 on your computer, LNS Turbo Editions (3.25), OpenLNS, or later is required.

- Microsoft Internet Explorer 8 or higher, or Mozilla Firefox 18 or higher, Google Chrome 24 or higher or Apple Safari 6.0 or higher.

SmartServer 2.2 Documentation

The documentation for the SmartServer is provided as Adobe Acrobat PDF files and online help files. The PDF file for this document is installed in the **Echelon i.LON Vision SmartServer 2.2** program folder when you install the i.LON Vision 2.2 software. You can also download the latest SmartServer documentation, including the latest version of this guide, from Echelon's Website at *www.echelon.com/support/documentation/manuals/cis*.

This user's guide, the online help files, and the following documents comprise the SmartServer documentation suite:

- *SmartServer 2.2 User's Guide*. Describes how to configure the SmartServer and use its applications to manage control networks.

- *Echelon Enterprise Services 2.2 User's Guide*. Describes how to use the LNS Proxy Web service to manage LNS networks, and how to use the i.LON AdminServer to rapidly and automatically deploy and install LONWORKS networks.

- *SmartServer 2.2 Power Line Repeating Network Management Guide*. Describes how to install a PL-20 repeating network and how to use the SmartServer to prepare, maintain, monitor and control, and connect the network.

- *SmartServer 2.2 Programmer's Reference*. Describes how to configure the SmartServer using XML files and SOAP calls. This allows you to create your own applications that you can use to configure the i.LON.

- *SmartServer 2.2 Programming Tools User's Guide.* Describes how to write custom embedded apps and deploy them on the SmartServer. Custom apps let you implement custom functionality and tailor the SmartServer to meet your needs.

- *i.LON SmartServer 2.2 Hardware Guide*. Describes how to assemble, mount, and wire the SmartServer hardware.

- *SmartServer 2.2 Quick Start Guide*. Contains all the information you will need to connect the SmartServer hardware, install the SmartServer 2.2 software, and configure the SmartServer using the SmartServer configuration Web pages.

- *IP-852 Channel User's Guide*. Describes how to configure an IP-852 channel with the Echelon *IP-852 Configuration Server*. You will need this information if you plan to use the SmartServer as an IP-852 router.

Content

This guide includes the following content:

- *Introduction:* Introduces i.LON Vision 2.2, describes the compatibility of i.LON Vision 2.2 with i.LON Vision 1.0, and describes how to install the i.LON Vision 2.2 software.

- *Quick-Start Exercise*. Describes how to create a simple custom SmartServer 2.2 Web page that you can use to control and monitor a digital relay output on the SmartServer.

- *Creating Custom SmartServer 2.2 Web Pages*. Describes how to create simple custom SmartServer 2.2 Web pages and more complex Web designs that include a navigation system. It describes how to upgrade existing custom Web pages to SmartServer 2.2 Web pages, add i.LON Vision objects to your custom Web pages, and design a navigation system for your Web design.

- *Advanced SmartServer 2.2 Web Page Topics*. Describes how to use data point priorities, how to use data point substitution tags, translate custom SmartServer 2.2 Web pages into different languages, and open the SmartServer's built-in applications from custom SmartServer 2.2 Web pages. Describes how to secure and troubleshoot custom SmartServer 2.2 Web pages.

- *i.LON Vision 2.2 API*. Describes the programming interface for i.LON Vision objects so that you can use any Web publishing tool to edit custom SmartServer 2.2 Web pages.

For More Information and Technical Support

If you need help using i.LON Vision 2.2, you can use the online help files, view the i.LON Vision 2.2 ReadMe, or read the i.LON Vision 2.2 documentation. If none of these sources, answer your questions, you can contact technical support if you have purchased support services from Echelon or an Echelon support partner.

Using the i.LON Vision 2.2 Online Help Files

If you need more information on how to use a particular i.LON Vision 2.2 dialog, you can click **Help** in the bottom right-hand corner of the dialog to open a new window with context-sensitive help for that dialog.
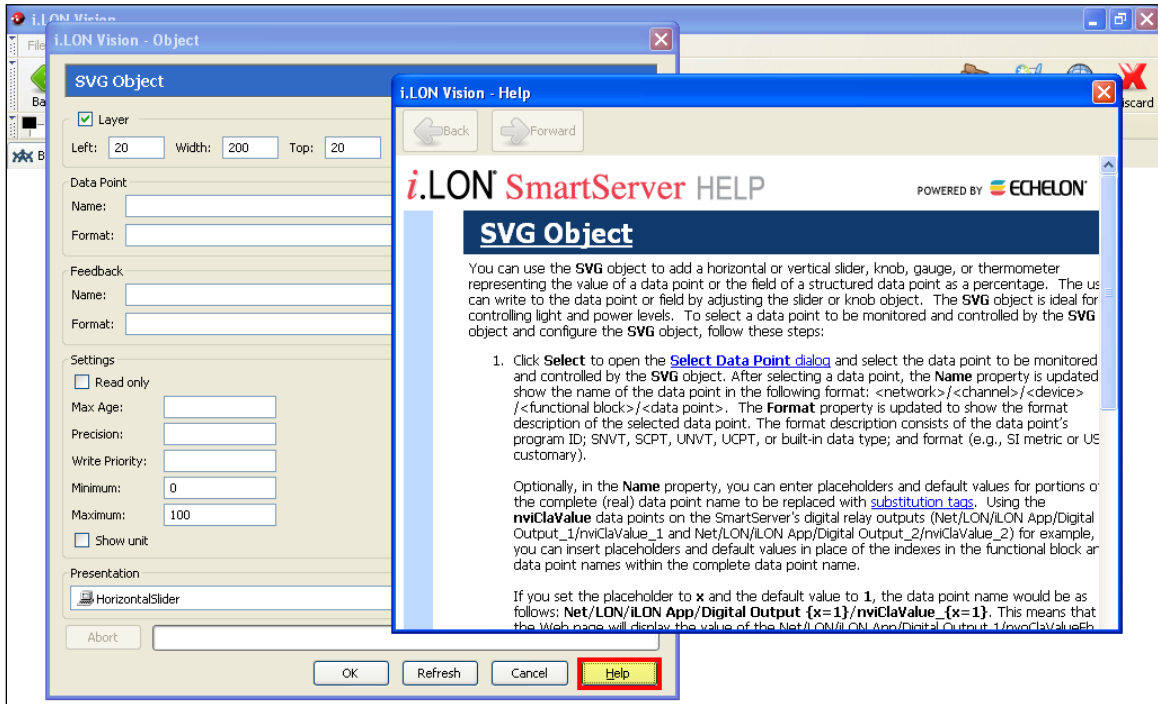
Viewing the i.LON Vision 2.2 ReadMe

The i.LON Vision 2.2 ReadMe provides descriptions of known problems, if any, and their workarounds. To view the **i.LON Vision 2.2 ReadMe**, click **Start**, point to **Programs**, point to **Echelon i.LON Vision SmartServer 2.2**, and then select **i.LON Vision SmartServer 2.2 ReadMe First**. You can also find additional information about the SmartServer 2.2 online at *www.echelon.com/smartserver*.

Using Technical Support

If you have technical questions that are not answered by this document, the i.LON Vision 2.2 online help, or the i.LON Vision 2.2 ReadMe document, you can contact technical support. Free e-mail support is available or you can purchase phone support from Echelon or an Echelon support partner.

You can also view free online training or enroll in training classes at Echelon or an Echelon training center to learn more about developing devices.

You can obtain technical support via phone, fax, or e-mail from your closest Echelon support center. The contact information is as follows (check *www.echelon.com/support* for updates to this information):

| Region	Languages Supported	Contact Information
The Americas	English Japanese	Echelon Corporation Attn. Customer Support 550 Meridian Avenue San Jose, CA 95126 Phone (toll-free): 1.800-258-4LON (258-4566) Phone: +1.408-938-5200 Fax: +1.408-790-3801 *lonsupport@echelon.com*
Europe	English German French Italian	Echelon Europe Ltd. Suite 12 Building 6 Croxley Green Business Park Hatters Lane Watford Hertfordshire WD18 8YH United Kingdom Phone: +44 (0)1923 430200 Fax: +44 (0)1923 430300 *lonsupport@echelon.co.uk*
Japan	Japanese	Echelon Japan Holland Hills Mori Tower, 18F 5-11.2 Toranomon, Minato-ku Tokyo 105-0001 Japan Phone: +81.3-5733-3320 Fax: +81.3-5733-3321 *lonsupport@echelon.co.jp*
China	Chinese English	Echelon Greater China Rm. 1007-1008, IBM Tower Pacific Century Place 2A Gong Ti Bei Lu Chaoyang District Beijing 100027, China Phone: +86-10-6539-3750 Fax: +86-10-6539-3754 *lonsupport@echelon.com.cn*
Other Regions	English Japanese	Phone: +1.408-938-5200 Fax: +1.408-328-3801 *lonsupport@echelon.com*

1

Introduction

This chapter introduces i.LON Vision 2.2, describes the compatibility of i.LON Vision 2.2 with i.LON Vision 1.0, and describes how to install the i.LON Vision 2.2 software.

Introduction

You can use i.LON Vision 2.2 to create custom Web pages for monitoring and controlling the data points on your SmartServer 2.2—without any knowledge of HTML, JavaScript, or Web programming. The i.LON Vision 2.2 toolkit provides many objects that you can use to read and write values to data points, including basic read/write objects; SVG objects (for example, sliders, gauges, and thermometers); application objects that expose some of the SmartServer's built-in applications to your end users; and a custom JavaScript object for implementing your own custom objects.

You can use i.LON Vision 2.2 to create new custom Web pages, and edit existing custom Web pages previously built with i.LON Vision 1.0. Custom Web pages created with i.LON Vision 2.2 support Microsoft Internet Explorer 8 or higher, Mozilla Firefox 18 or higher, Google Chrome 24 or higher, and Apple Safari 6.0 or higher.

i.LON Vision 2.2 features quicker Web page creation as you can switch between the edit and publish views of your Web pages without long delays. This means that you can create or edit a custom Web page and instantly see the results when you publish it. You create or edit a custom Web page, insert objects and edit their properties, design the custom Web page, and then publish it.

i.LON Vision 2.2 Compatibility with i.LON Vision 1.0

The following summarizes i.LON Vision 2.2 compatibility with i.LON Vision 1.0.

- You can install both i.LON Vision 2.2 and i.LON Vision 1.0 on the same computer. In this case, you use i.LON Vision 2.2 to create custom SmartServer 2.2 Web pages, and you use i.LON Vision 1.0 with Contribute CS3/CS4 to create custom Web pages for the SmartServer 1.0 and i.LON *e*3 Internet Server. The tools remain independent, so installing i.LON Vision 2.2 does not add any of the new features described in this section to i.LON Vision 1.0.

- You can use i.LON Vision 2.2 to automatically upgrade all existing custom Web pages to the SmartServer 2.2 format. This includes all custom SmartServer 1.0 Web pages previously built with i.LON Vision 1.0 and Contribute CS3/CS4, and custom i.LON e3 Internet Server Web pages previously built with i.LON Vision 1.0 and Contribute 3.0/3.1/CS3/CS4. See *Upgrading Custom Web Pages to SmartServer 2.2 Pages* in Chapter 3 for more information.

- You can use i.LON Vision 2.2 to create or edit custom SmartServer 2.2 Web pages stored on a SmartServer 2.2. You cannot use i.LON Vision 2.2 to create or edit custom SmartServer 1.0 Web pages stored on a SmartServer 1.0. Conversely, you cannot use the i.LON Vision 1.0 tool to create or edit custom SmartServer 2.2 Web pages stored on a SmartServer 2.2.

- You can use Adobe Dreamweaver CS4, Contribute CS3 or CS4 (without i.LON Vision 1.0), or any other Web publishing tool to manually create and edit custom SmartServer 2.2 Web pages. Chapter 5 includes the API for the i.LON Vision objects so that you can use any Web publishing tool to create and edit SmartServer 2.2 Web pages.

  Note: A SmartServer 2.2 refers to a SmartServer running the Release 4.06 firmware (or higher). SmartServer 1.0 refers to a SmartServer running the Release 4, 4.01, or 4.02 firmware. You can use the **Setup – System Info** Web page to view the version of the current firmware on your SmartServer. To open this Web page, right-click the **SmartServer** icon in the navigation pane on the left side of the SmartServer Web interface, point to **Setup**, and then click **System Info** on the shortcut menu.

Installing Echelon i.LON Vision 2.2 Software

To install the i.LON Vision 2.2 software, follow these steps:

1. Insert the SmartServer 2.2 DVD into your DVD-ROM drive. If your computer does not have a DVD-ROM, insert the SmartServer 2.2 DVD on a network-accessible computer that has a DVD-ROM and copy the files on the DVD to a shared network drive. You can then copy the

SmartServer 2.2 files from the shared drive to your computer and install the various SmartServer 2.2 products.

2. If the SmartServer 2.2 setup application does not launch immediately, click **Start** on the taskbar and then and click **Run**. Browse to the **setup.exe** file in the root directory of the SmartServer 2.2 DVD and click **Open**. The **Echelon i.LON SmartServer 2.2** main menu opens.

3. Click **Install Products**. The **Install Products** dialog opens.
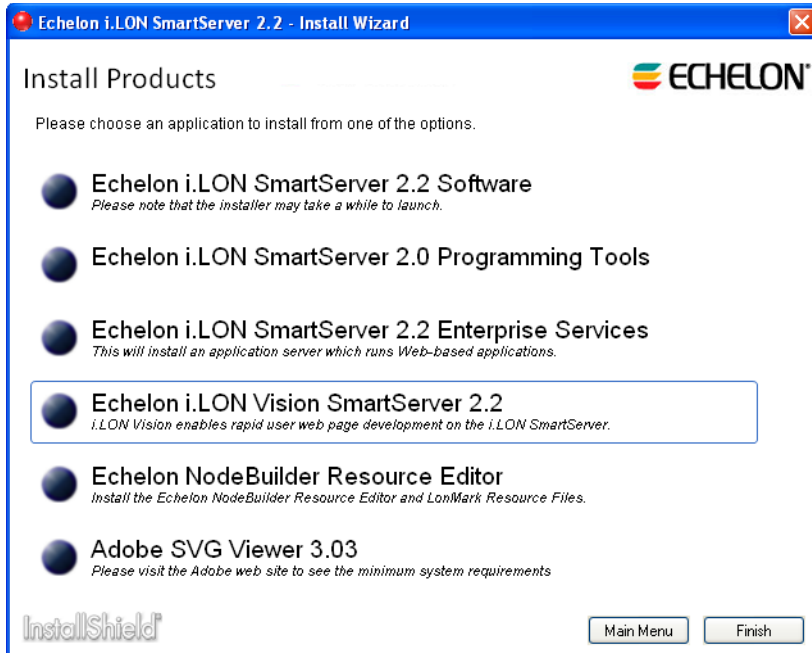
4. Click **Echelon i.LON Vision SmartServer 2.2**. The i.LON Vision 2.2 Software installer opens.
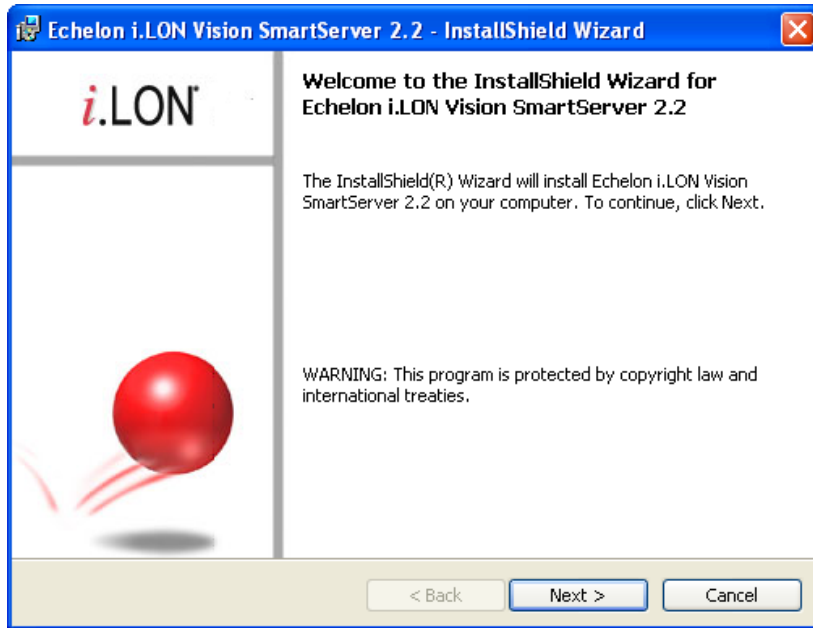
5. Read the information on the Welcome window and click **Next**. The License Agreement window appears.

6. Read the license agreement (you can read a printed version of the license agreement in Appendix E of the *SmartServer 2.2 User's Guide*). If you agree with the terms, click **Accept the Terms** and then click **Next**. The Customer Information window appears.
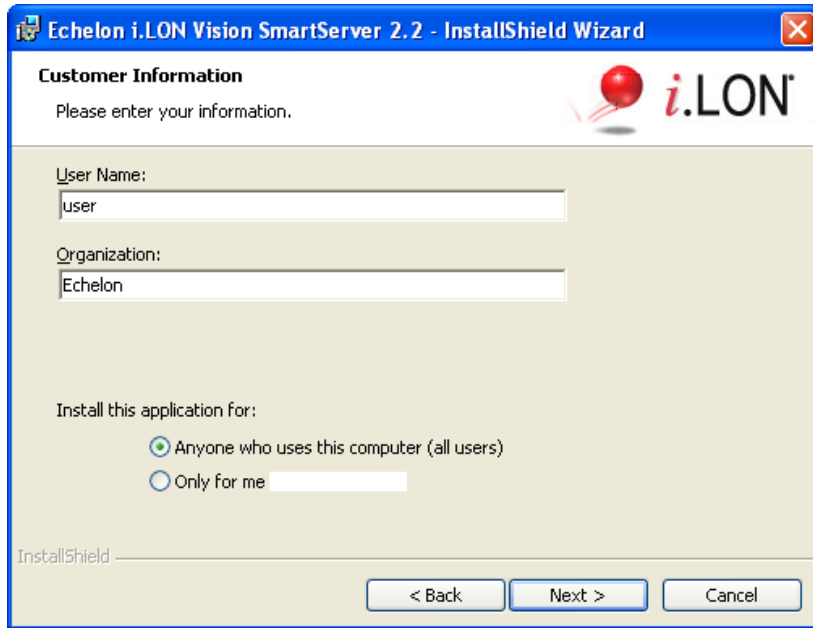
7. Enter your name and company name in the appropriate fields. The name and company may be entered automatically based on the user currently logged on and whether other Echelon products are installed on your computer. Click **Next**. The Destination Folder window opens.
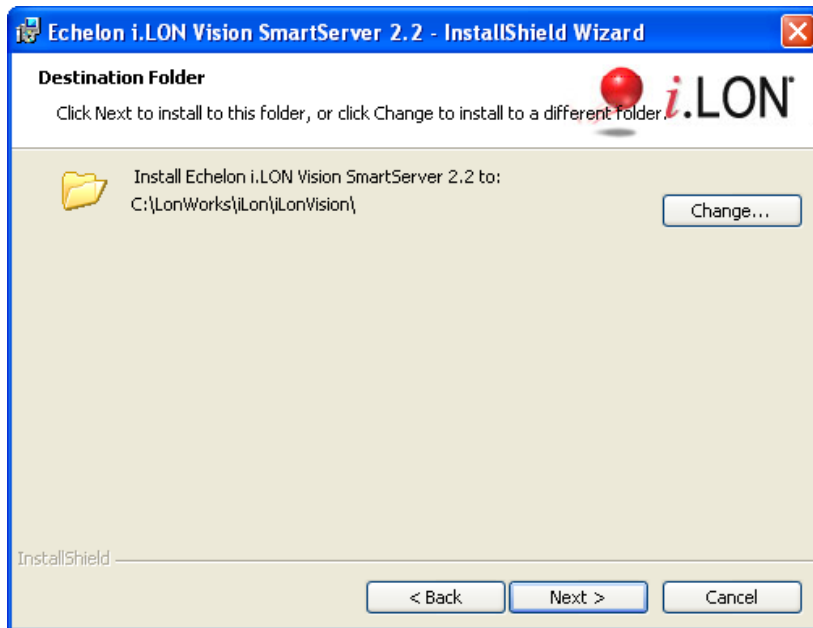
8. By default, the i.LON Vision 2.2 software will be installed in the **C:\LonWorks\iLON\iLonVision** directory, or it will be installed in the **C:\Program Files\LonWorks\iLON\iLonVision** directory if you have not previously installed any Echelon or LONMARK products. You can click **Change** to select a different destination folder. Click **Next**. The Ready to Install window opens.
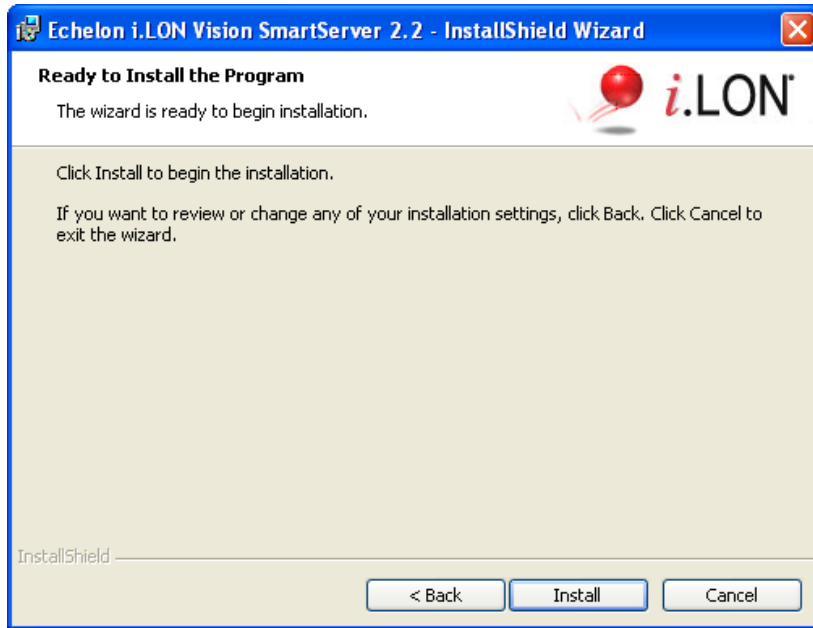
9. Click **Install** to begin the i.LON Vision 2.2 software installation.

10. After the i.LON Vision 2.2 software has been installed, a window appears stating that the installation has been completed successfully.
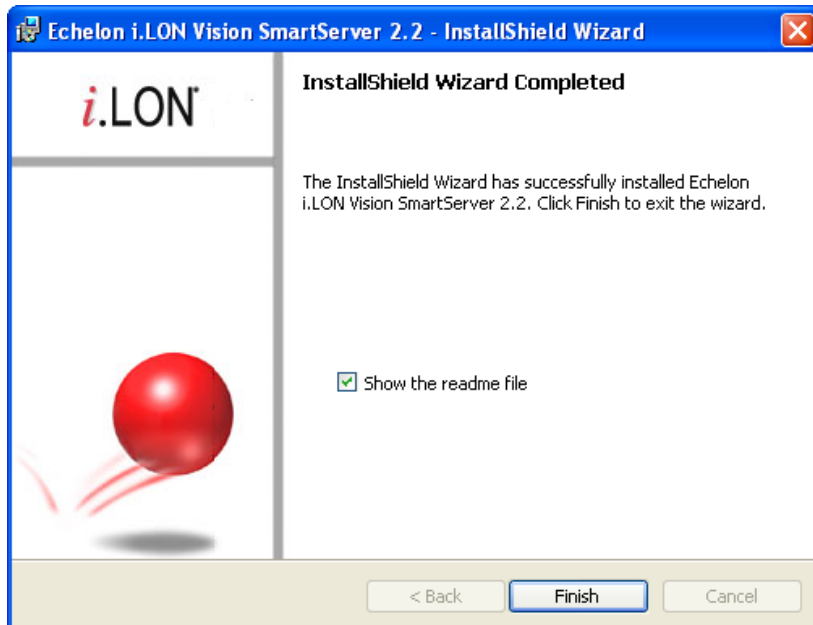
11. Click **Finish**, and then read the i.LON Vision 2.2 ReadMe document.

2

Quick-Start Exercise

This chapter describes how to create a simple custom SmartServer 2.2
Web page that you can use to control and monitor a digital relay
output on the SmartServer.

Introduction

This chapter provides a quick-start exercise that shows you how to create a simple custom SmartServer 2.2 Web page. In this quick-start exercise, you will create a Web page that controls and monitors the first digital relay output on the SmartServer (**Digital Output 1**). The Web page will include two objects: an image swapper switch object that you can click to enable or disable **Digital Output 1** by writing to its **nviClaValue_1** input data point, and an image swapper lamp object that indicates whether **Digital Output 1** is ON or OFF by reading its **nvoClaValueFB_1** data point.

After you have completed this quick-start exercise, read Chapter 3, *Creating Custom SmartServer 2.2 Web Pages*, to learn how to create more complex Web designs. For example, you can create multiple custom Web pages that are linked via a menu or a navigation pane, and you can use a number of different objects to monitor and control your data points.

To create the simple custom SmartServer 2.2 Web page, you perform the following steps:

1. Create a Website connection between i.LON Vision 2.2 and your SmartServer.
2. Create a new custom SmartServer 2.2 Web page.
3. Add i.LON Vision objects to your custom SmartServer 2.2 Web page.
4. Link your custom SmartServer 2.2 Web page to your SmartServer home page.

Step 1: Creating a Web Site Connection

To create a Web site connection between i.LON Vision 2.2 and your SmartServer, follow these steps:

1. Start i.LON Vision 2.2. To do this, click **Start**, point to **Programs**, point to Echelon **i.LON Vision SmartServer 2.2**, and then click **i.LON Vision SmartServer 2.2**. i.LON Vision 2.2 opens.
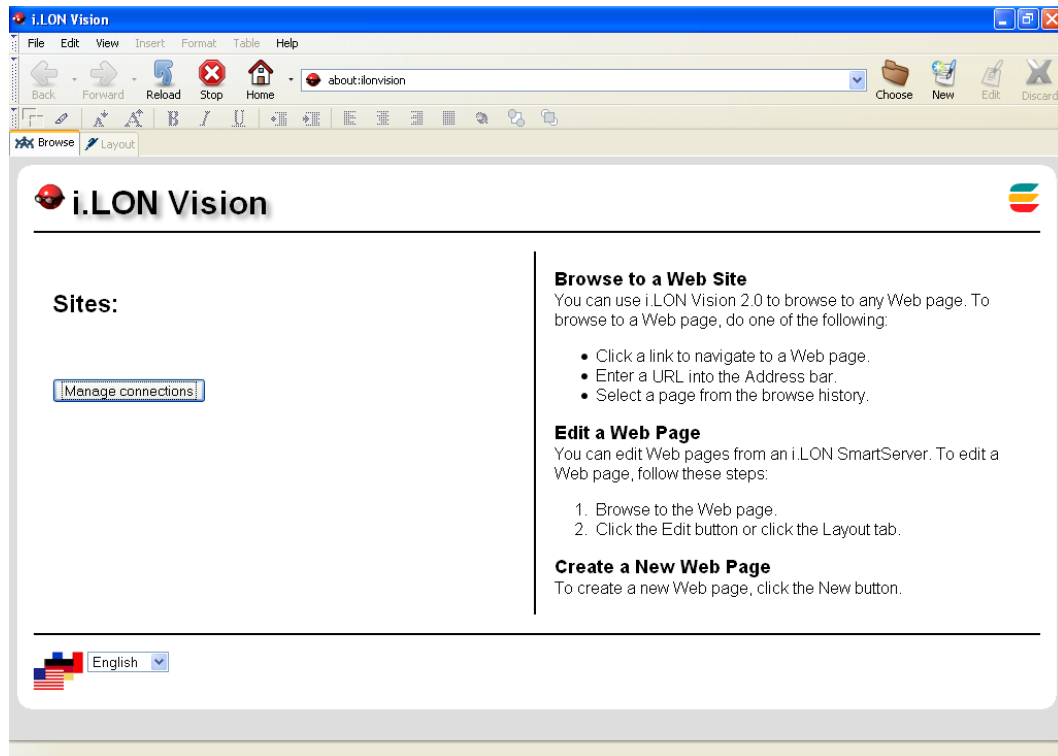
2. In the language box at the bottom left-hand corner, select the language to be used for the SmartServer Web interface. You can use i.LON Vision 2.2 in English (the default), German, and French.

3. Click **Manage Connections** in the Sites pane on the left side, or click **File** and then click **Site Manager**. The **Site Manager** dialog opens.
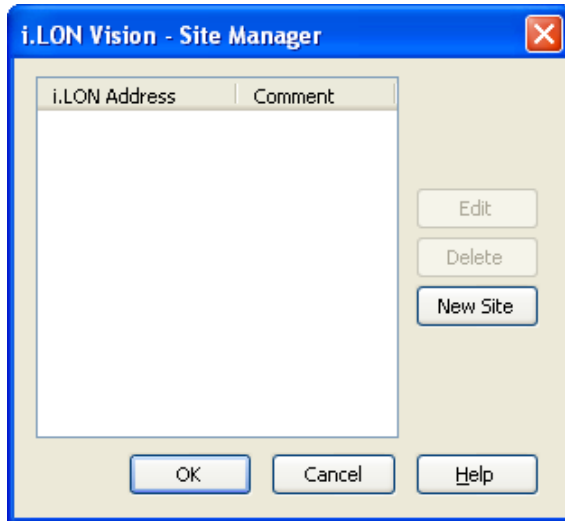
4. Click **New Site**. The **Edit Site** dialog opens.
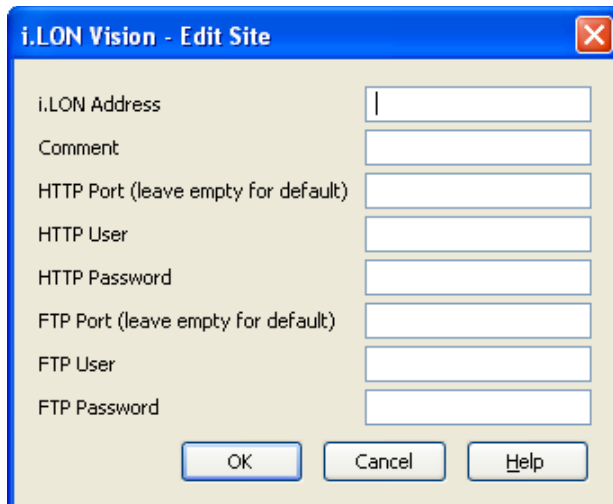
5. Enter the following information:

i.LON *Address*	Enter the IPv4 address of your SmartServer.
Comment	Optionally, enter a description of the SmartServer, or any other text.
HTTP Port	If you are using an HTTP port on the SmartServer for serving SOAP and WebDAV requests other than the default (port 80), enter the port.
HTTP User	Enter the user name for logging in to your SmartServer via HTTP. The default user name is **ilon**.
HTTP Password	Enter the password for logging in to your SmartServer via HTTP. The default user name is **ilon**.

FTP Port	If you are using an FTP port on the SmartServer other than the default (port 21), enter the port.
FTP User	Enter the user name for logging in to your SmartServer via FTP. The default user name is **ilon**.
FTP Password	Enter the password for logging in to your SmartServer via FTP. The default user name is **ilon**.
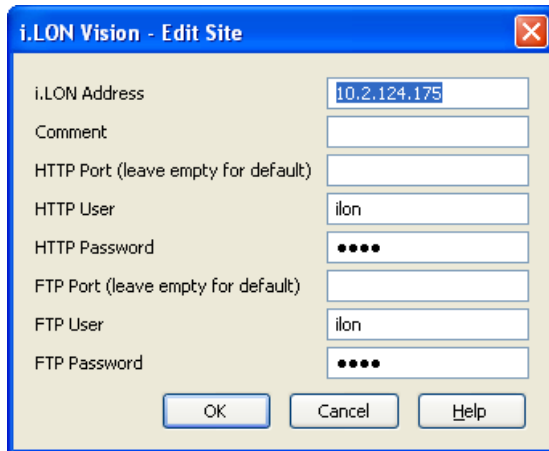
6. Click **OK** twice. A link with the IP address of your SmartServer is added to the Sites pane.

7.
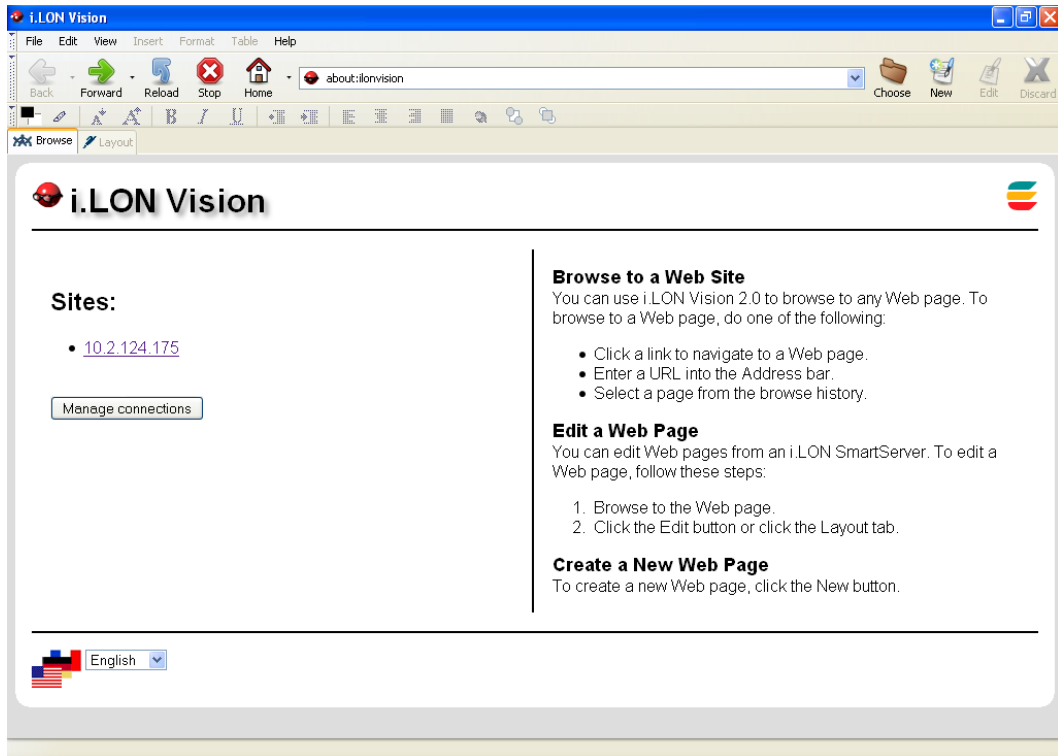
Step 2: Creating a Custom SmartServer Web Page

To create a new custom SmartServer 2.2 Web page, follow these steps:

1. Click the **New** button on the Editor toolbar ( ), or click **File** and then click **New Page**.   The **Select Folder** dialog opens.
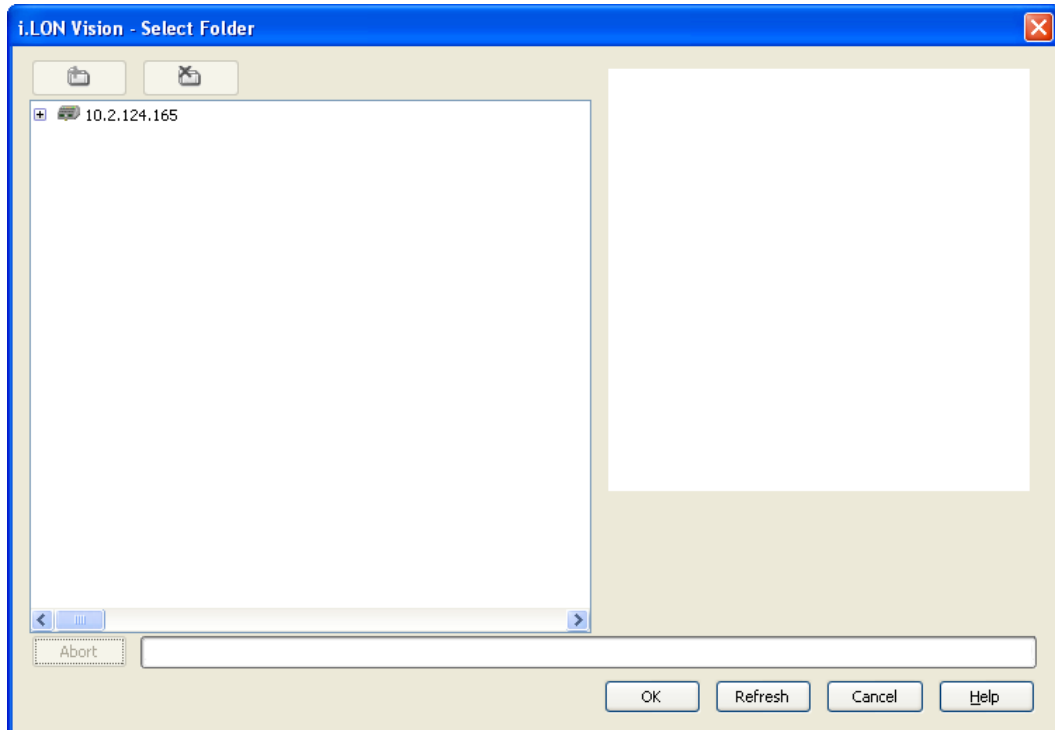
2. Expand the SmartServer icon, expand and click the **user** folder (you must create the new folder in the **/web/user directory** on the SmartServer flash disk), and then click the New Folder icon to create the directory for your custom SmartServer 2.2 Web page.
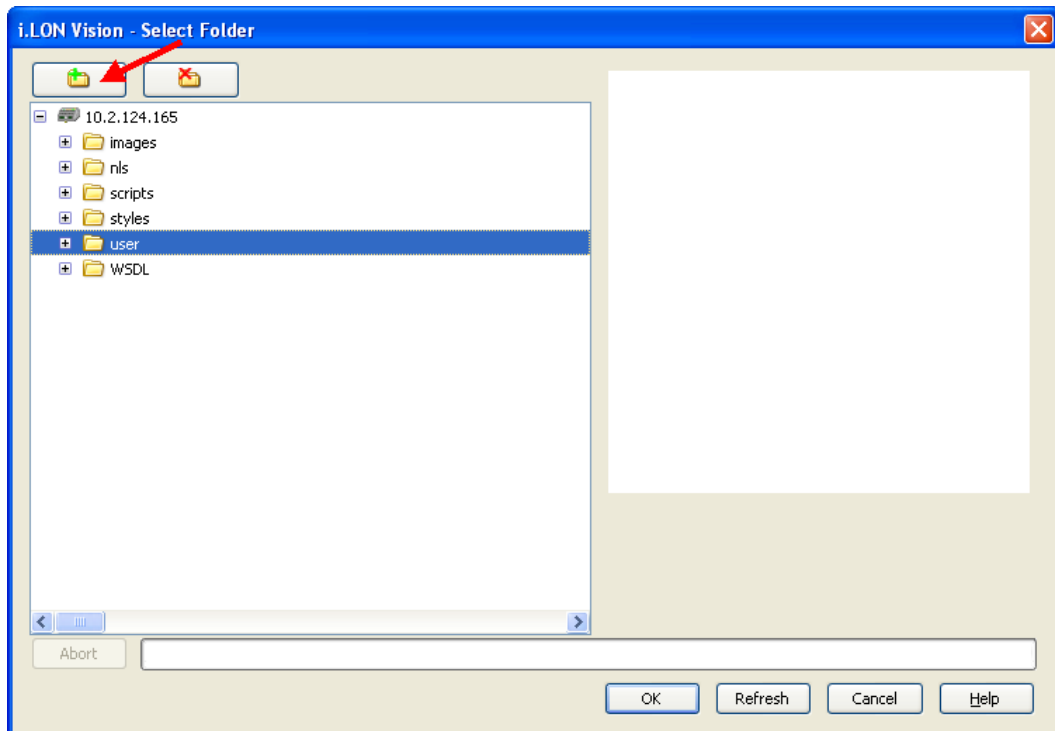
3. The **New Folder** dialog opens. Enter the name for the folder where all the custom SmartServer 2.2 Web pages for a given Web design will be stored. For this example, enter **Custom**. Click **OK**.
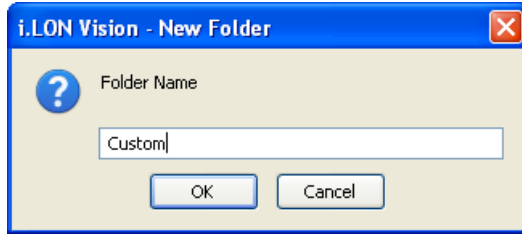
4. Click the custom SmartServer 2.2 Web page folder you created in step 3, and then click **OK**.

5. Click **Publish** on the Editor toolbar ( ), click the **Browse** tab, or click **File** and then click **Publish**. The **Publish As** dialog opens.

6. In the **File Name** property, enter the name of the **.htm** file (one word with no spaces). For this example, enter **CustomWebPage**. Click **OK**.
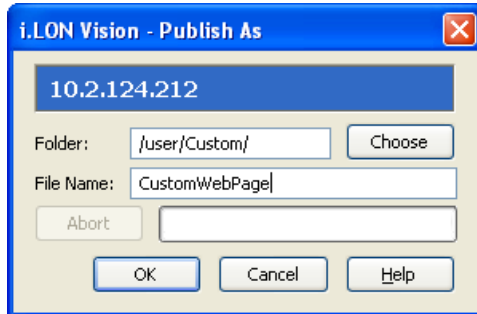
7. Optionally, you change the title of your custom SmartServer 2.2 Web page and the poll rate of the objects in your custom Web page following these steps:

    a. Click **Format** and then click **Page Title Properties**. The **Page Properties** dialog opens.
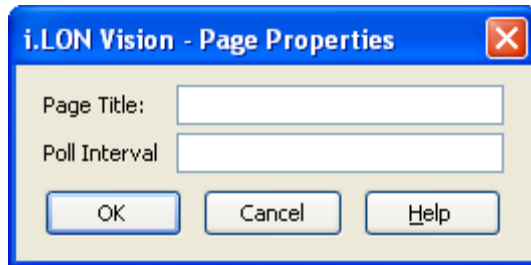
    b. In the **Page Title** box, enter a descriptive page title and then click **OK**.

    c. In the **Poll Interval** box, set how frequently (in seconds) that all the i.LON Vision objects in your custom Web page poll the SmartServer's internal data server for data point updates. If you do not specify a poll rate, the default poll rate is **1** second.

       Note: You can set the frequency in which individual i.LON Vision objects poll their specified data points by setting the **Max Age** property in the object's respective properties dialog.

    d. Click **OK**.

8. You can begin editing your custom SmartServer 2.2 Web page by adding i.LON Vision objects to it, as described in the next section.

Step 3: Adding i.LON Vision Objects

To add i.LON Vision objects to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar (Edit) or click the **Layout** tab.

2. Click **Insert** and then select **Image Swapper**.

3. The **Image Swapper** dialog opens.

i.LON Vision - Object

Image Swapper

☑ Layer

Left: 20   Width: 200   Top: 20   Height: 300   Z-Index: 1

Data Point

Name: [   ]   ⦿ Real   ○ Alias   ○ Prog

Format: [   ]   [Const Fields]   [Select]

Feedback

Name: [   ]   ⦿ Real   ○ Alias   ○ Prog

Format: [   ]   [Select]

Settings

Max Age: [   ]   Default Click: [▼]

Write Priority: [   ]   ☐ Use local presets   [Edit]

☑ Switchable   ☐ Force round to preset

Images

Preset | Value | Image

[Select]
[Delete]
[Move Up]
[Move Down]

[Abort]   [   ]

[OK]   [Refresh]   [Cancel]   [Help]
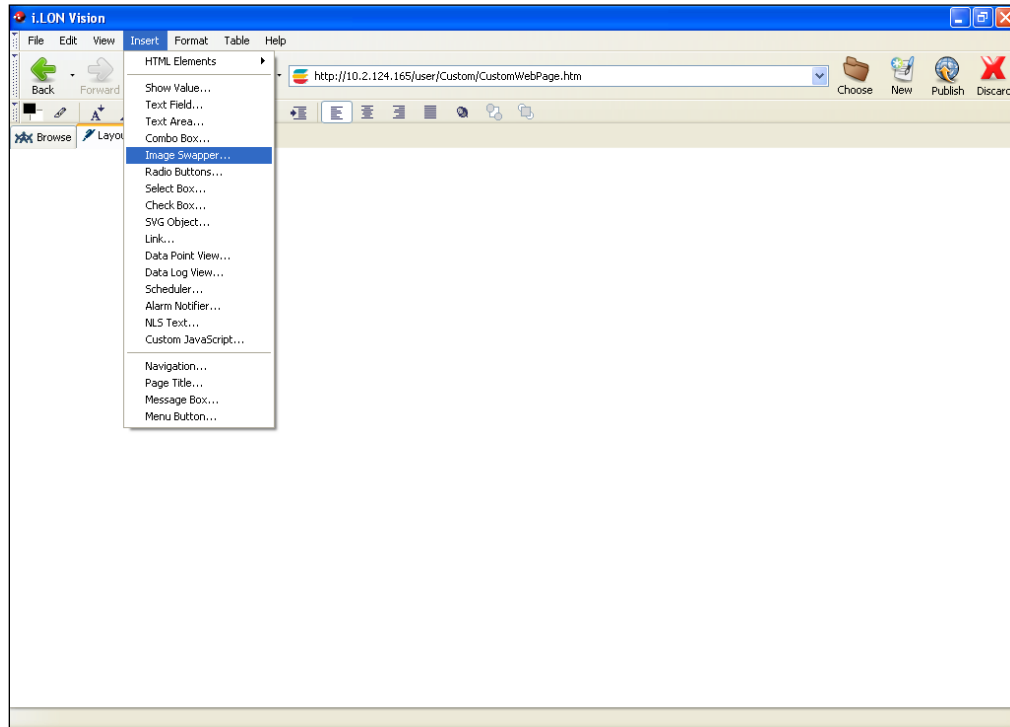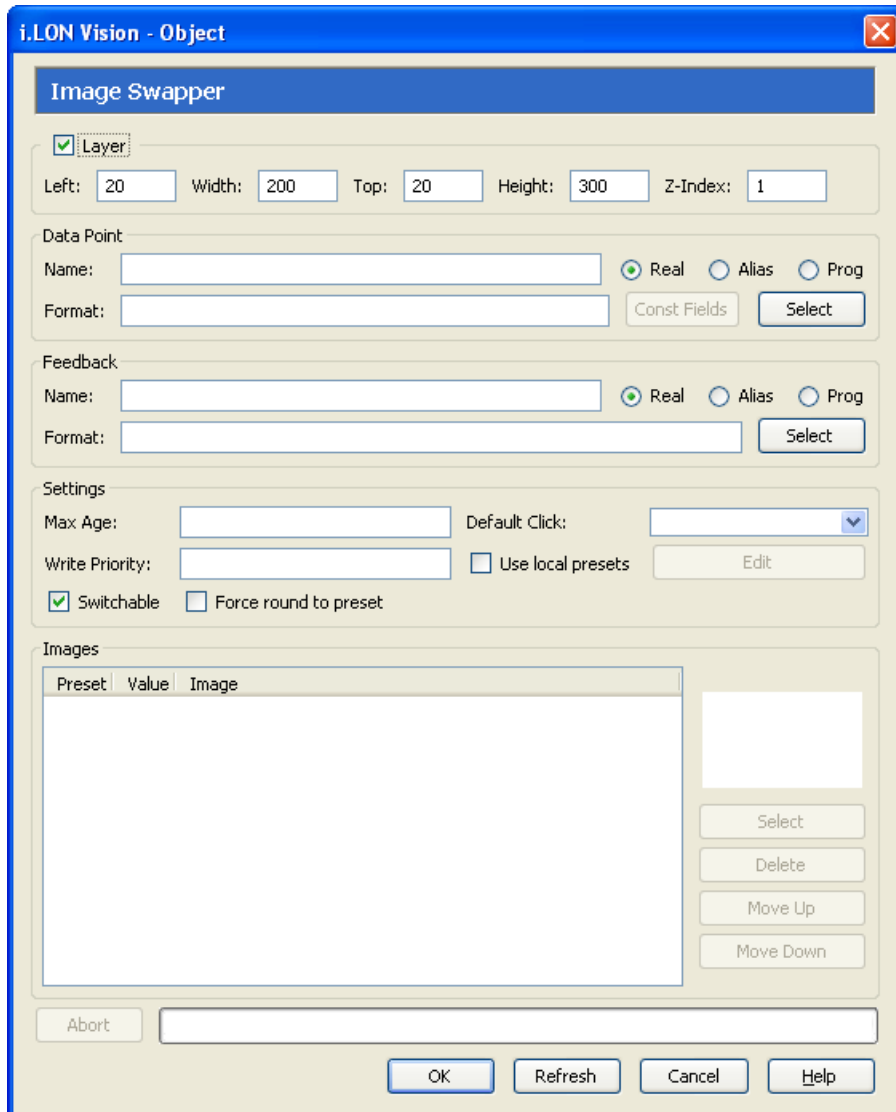
4. Select the **nviClaValue_1** data point of the first relay output on the SmartServer (**Digital Output 1**) following these steps:

    a. In the **Data Point** property, click **Select**. The **Select Data Points** dialog opens.

    b. Verify that **Show Hidden Items** is selected. By default, all of the SmartServer's functional blocks are hidden in the SmartServer tree.

    c. Expand the network, expand the channel on which SmartServer is attached, expand the SmartServer internal automated systems device, expand the **Digital Output 1** functional block, expand the **nviClaValue_1** data point, and then select the **state** field (**Net/LON/iLON App/Digital Output 1/nviClaValue_1.state** by default). Click **OK**.

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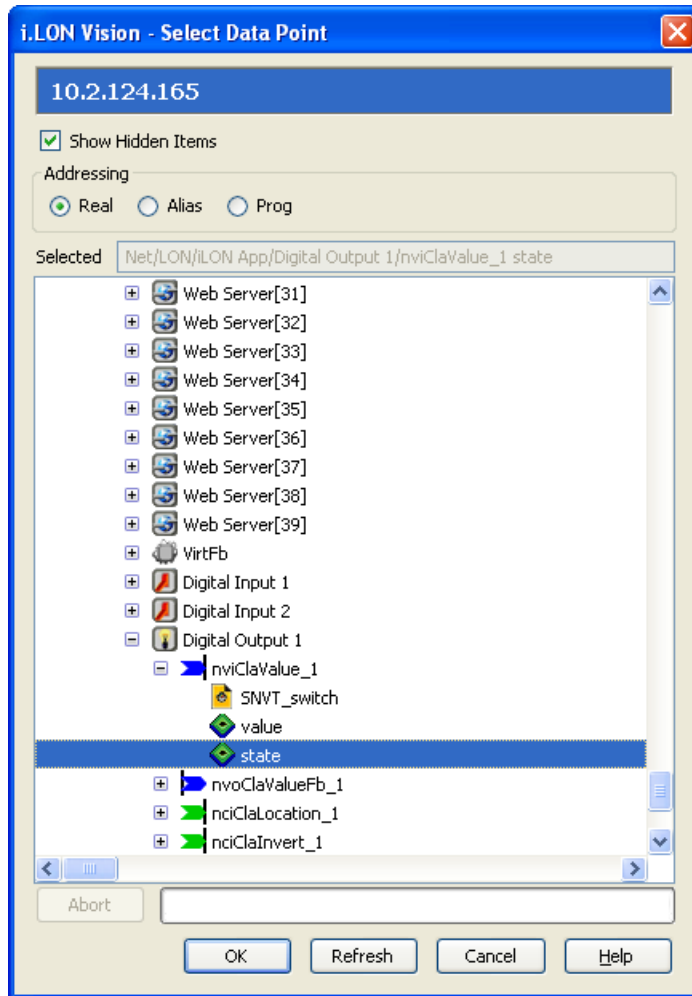
d. The **Name** and **Format** boxes of the **Data Point** property in the **Image Swapper** dialog are updated to reflect the selected data point.

i.LON Vision - Object

Image Swapper

☑ Layer

Left: `20`   Width: `200`   Top: `20`   Height: `300`   Z-Index: `1`

Data Point

Name: `Net/LON/iLON App/Digital Output 1/nviClaValue_1`   ⦿ Real   ○ Alias   ○ Prog

Format: `#0000000000000000[0].SNVT_switch.state`   [Const Fields] [Select]

Feedback

Name: `                    `   ⦿ Real   ○ Alias   ○ Prog

Format: `                    `   [Select]

Settings

Max Age: `          `   Default Click: `ON ▼`

Write Priority: `          `   ☐ Use local presets   [Edit]

☑ Switchable   ☐ Force round to preset

Images

Preset	Value	Image
<default>		
OFF	0.0 0	
ON	100.0 1	

[Select] [Delete] [Move Up] [Move Down]

[Abort] `                    `

[OK] [Refresh] [Cancel] [Help]

5. Verify that **Switchable** selected. This enables the switch graphic to be changed when clicked. Clicking the switch writes an updated value to the data point, and it changes the switch graphic displayed based on the new data point value.

6. Create local presets to be used by the image swapper object for the **Net/LON/iLON App/Digital Output 1/nviClaValue_1.state** data point.   To do this, follow these steps:

   a. Select **Use Local Presets**, and then click **Edit**. The **Local Presets** dialog opens.

   b. Create local ON and OFF presets for the data point.

   - In the **Preset** box, enter "ON", in the **Value** box enter "1", and then click **Save**.
   - In the **Preset** box, enter "OFF", in the **Value** box enter "0", and then click **Save**.

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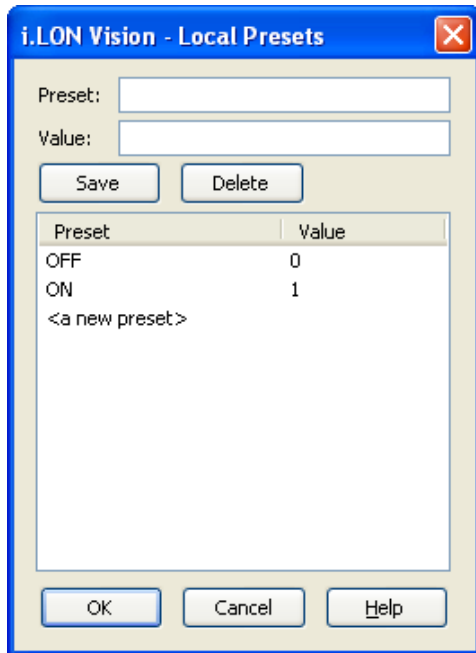
c. Click **OK** to return to the **Image Swapper** dialog.

7. Select the image to represent the **nviClaValue_1.state** data point when it is OFF following these steps:

   a. In the **Images** list in the lower part of the **Image Swapper** dialog, select **OFF** and then click **Select**. The **Select File** dialog opens.

   b. Browse to the **Desktop\C:\LonWorks\iLON\iLonVision\graphics\switch** folder, click a graphic of a switch in the OFF position, and then click **OK**.   This graphic will be displayed when the data point is set to OFF and the Digital Output is disabled. Because the **Switchable** check box is selected, you can click the graphic to enable the Digital Output from your custom SmartServer 2.2 Web page. This example uses the **switchDownOff.gif** graphic.

i.LON Vision - Object

Image Swapper

☑ Layer

Left: 20   Width: 200   Top: 20   Height: 300   Z-Index: 1

Data Point

Name: Net/LON/iLON App/Digital Output 1/nviClaValue_1   ◉ Real ○ Alias ○ Prog

Format: #0000000000000000[0].SNVT_switch.state   [Const Fields] [Select]

Feedback

Name: [   ]   ◉ Real ○ Alias ○ Prog

Format: [   ]   [Select]

Settings

Max Age: [   ]   Default Click: [▼]

Write Priority: [   ]   ☑ Use local presets   [Edit]

☑ Switchable   ☐ Force round to preset

Images

Preset	Value	Image
\<default\>		
ON	1	
OFF	0	C:\LonWorks\iLonVision\graphics\switch\switchDownOff.gif

[Select]
[Delete]
[Move Up]
[Move Down]

[Abort] [   ]

[OK] [Refresh] [Cancel] [Help]

Note: i.LON Vision 2.2 includes switch graphics that are based on both European and American switches.

8. Select the image to represent the **nviClaValue_1.state** data point when it is ON following these steps:

   a. In the **Images** list, select **ON** and then click **Select**. The **Select File** dialog opens.

   b. Browse to the **Desktop\C:\LonWorks\iLON\iLonVision\graphics\switch** folder, click a graphic of a switch in the ON position, and then click **OK**.   This graphic will be displayed on the Web page when the data point is set to ON and the Digital Output is enabled. Because the **Switchable** check box is selected, you can click the graphic to enable the Digital Output from your custom SmartServer 2.2 Web page.   This example uses the **switchUpOn.gif** graphic.

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9. Click **OK** to return to your custom Web page. The switch image you selected appears in the upper left-hand corner of the Web page.
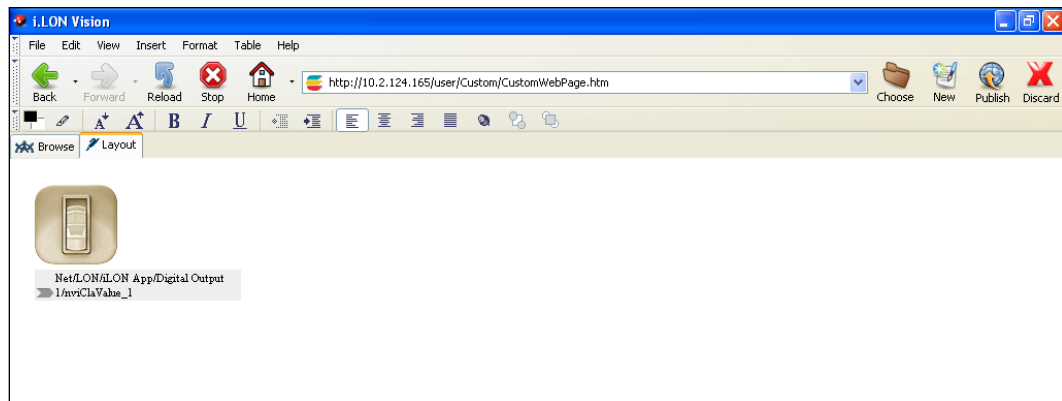
10. Click the image so that a move icon and a solid black box appear on top and around the image, respectively.
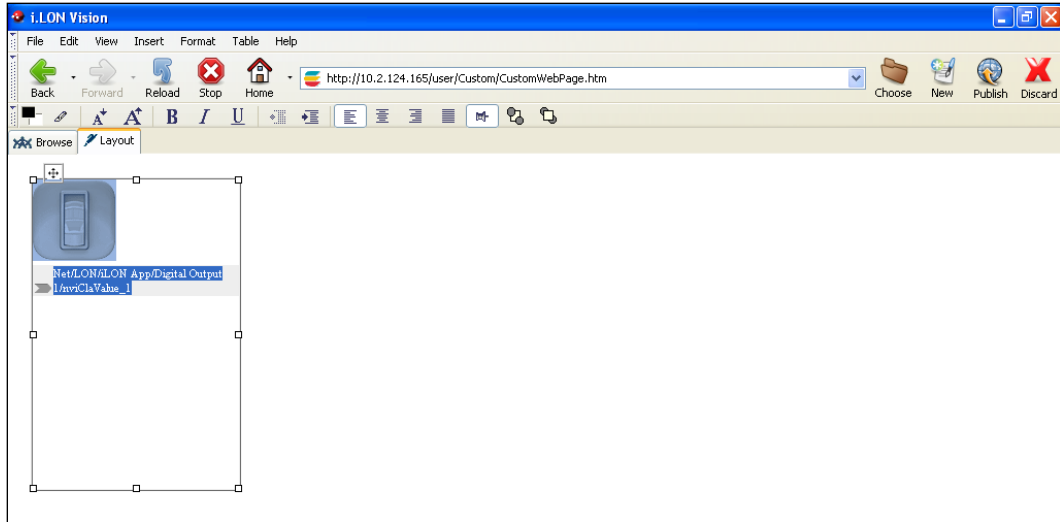
11. Move the mouse pointer over the move icon on the upper-left side of the object's layer so that the mouse pointer becomes a move tool (⊕). Click the move icon so that the box becomes red, which indicates that the layer has been selected.
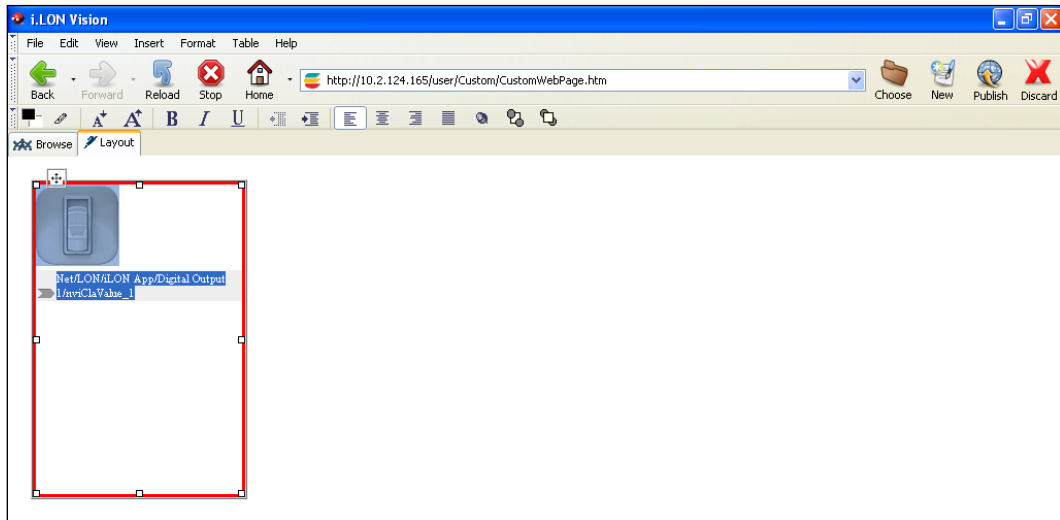
12. Drag the layer to the middle of the window.
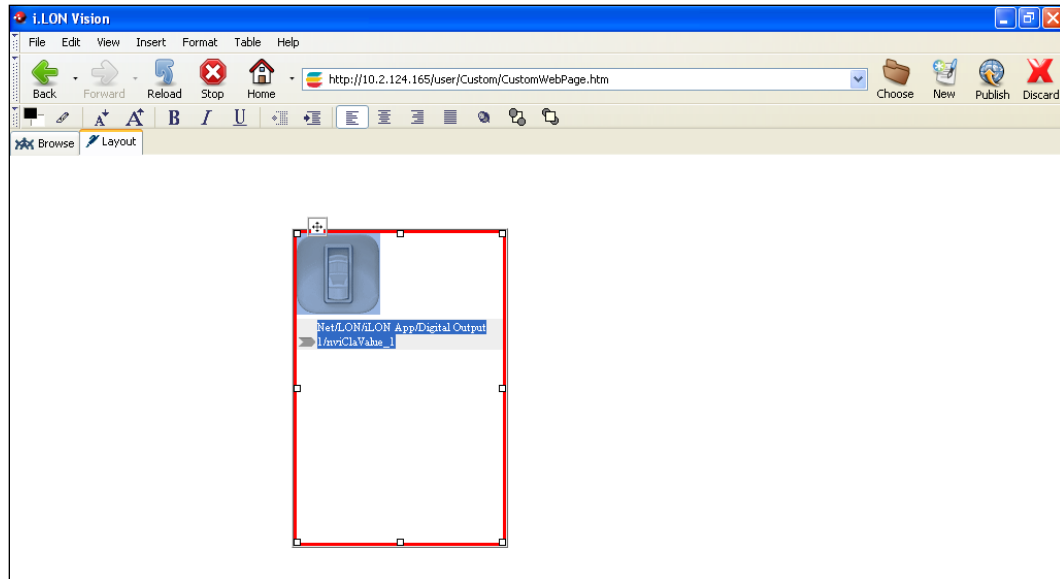
13. Add a lamp graphic to your custom Web page following these steps:

   a. Click **Insert** and then select **Image Swapper**.

   b. In the **Data Point** property, click **Select**. The **Select Data Points** dialog opens.

   c. Select the **Net/LON/i.LON App/Digital Output 1/nvoClaValueFB_1.state** data point.

   d. Click **OK** to return to the **Image Swapper** dialog.

   e. Clear the **Switchable** check box. This is because the lamp graphic is not used to write values to the **nvoClaValueFB_1.state** data point, instead it is reading the value of the data point.

   f. Select **Use Local Presets**, and then click **Edit**. The **Local Presets** dialog opens.

   g. Create local ON and OFF presets for the **Net/LON/i.LON App/Digital Output 1/nvoClaValueFB_1.state** data point.

   - In the **Preset** box, enter "ON", in the **Value** box enter "1", and then click **Save**.
   - In the **Preset** box, enter "OFF", in the **Value** box enter "0", and then click **Save**.
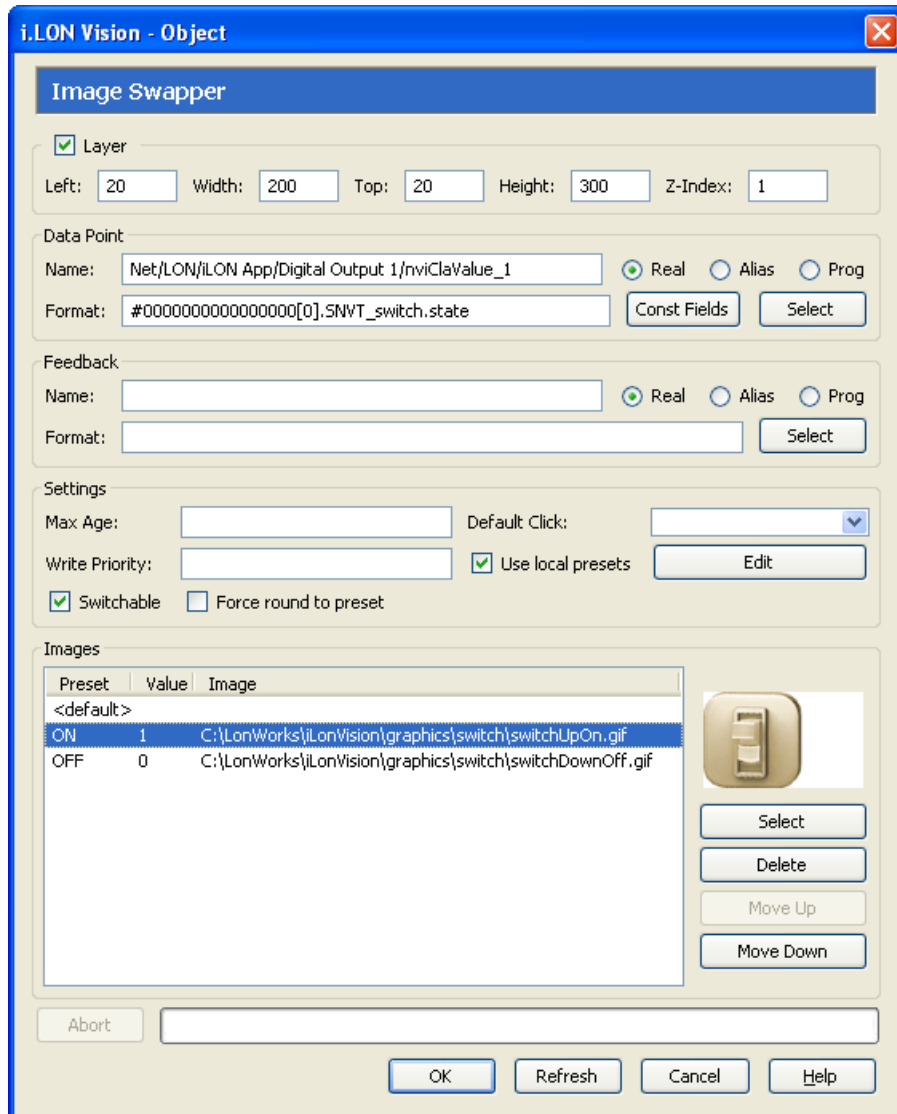   - Click **OK** to return to the **Image Swapper** dialog.

   h. In the **Images** list, select **OFF** and then click **Select**. The **Select File** dialog opens.

   i. Browse to the **Desktop\C:\LonWorks\iLON\iLonVision\graphics\lamp** folder on your computer, choose a graphic of a lamp in the OFF state, and then click **Select**. This graphic will be displayed when the Digital Output is disabled.

   j. In the **Images** list, select **ON** and then click **Select**. The **Select File** dialog opens.

   k. Browse to the **Desktop\C:\LonWorks\iLON\iLonVision\graphics\lamp** folder on your computer, choose a graphic of a lamp in the ON state, and then click **Select**. This graphic will be displayed when the Digital Output is enabled.

14. Click **OK** to return to your custom Web page. The lamp image you selected appears in the upper left-hand corner of the Web page.

15. Click the image so that a move icon and a solid black box appear on top and around the image, respectively. Click the move icon so that the box becomes red, which indicates that the layer has been selected, and then drag the layer to the middle of the window.
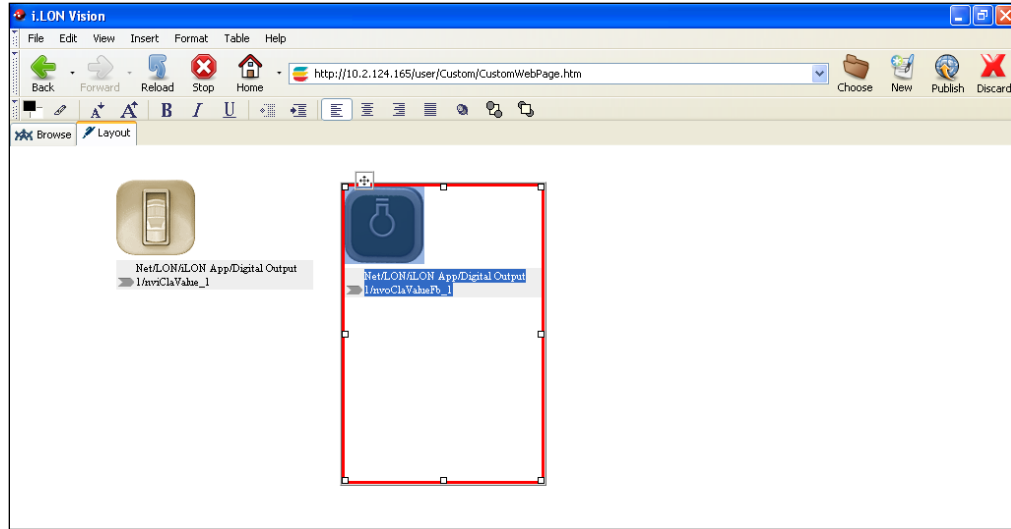
16. Click **Publish** on the Editor toolbar ( ), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page.   A dialog appears prompting you to confirm that you want to publish the changes you have made to your custom Web page.
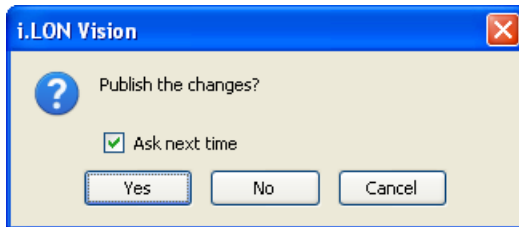
17. Clear the **Ask Next Time** check box to prevent this dialog from appearing each time you try to publish a custom Web page. Click **Yes** to publish your custom Web page.

Step 4: Linking a Custom Web Page to the SmartServer Home Page

You can link your custom SmartServer 2.2 Web page to your SmartServer's home page. To do this, follow these steps:

1. Click the Choose button ( ) on the Editor toolbar. The **Select File** dialog opens.

2. Click the **index.htm** file on the SmartServer flash disk.

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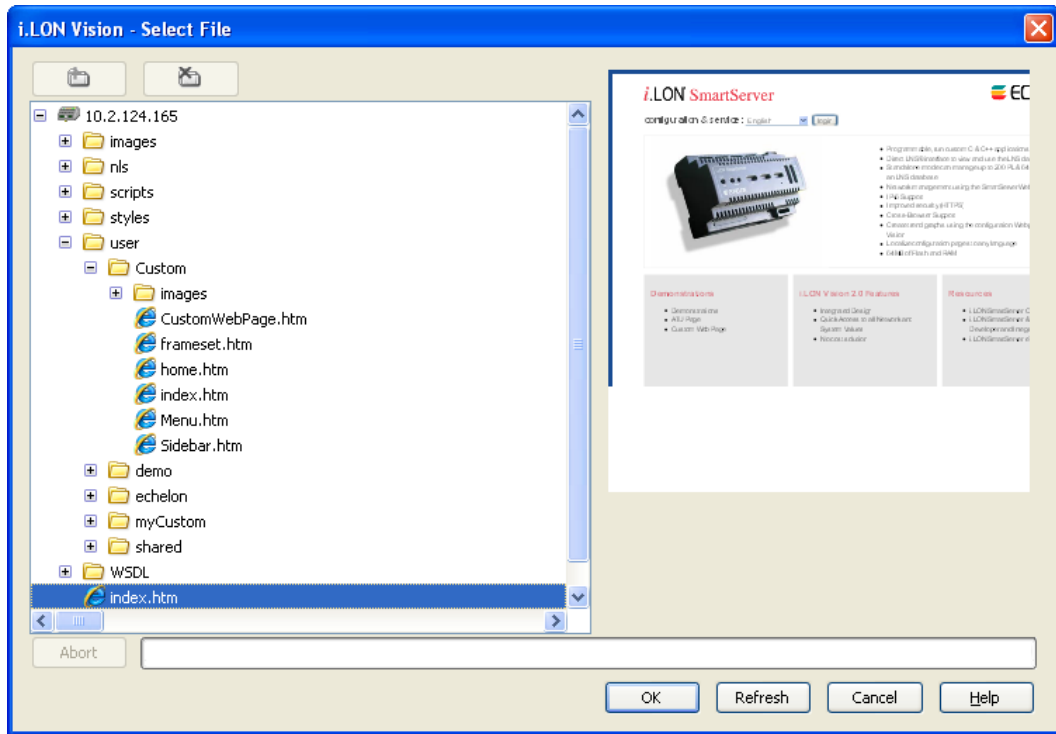
3. Click **OK**. Your SmartServer's home page appears in the browser.

4. Enter the user name and password for logging in to your SmartServer, if prompted. The default user name and password are **ilon**.

5. Click **Edit** on the Editor toolbar ([Edit]) or click the **Layout** tab to begin editing your SmartServer's home page.

6. Create a button that will the link to your custom SmartServer 2.2 Web page following these steps:

    a. Click the **ATU Page** button after the 'e' in "Page" and then press **ENTER**. A new button is added directly below the **ATU Page** button.

b. Click **Insert**, point to **HTML Elements**, and then select **Link**. The **Link Properties** dialog opens.

c. In the **Enter Text box to Display for the Link** box, enter "Custom Web Page".

d. In the **Link Location** box, enter **user/Custom/CustomWebPage.htm**, or click **Choose** and then browse to the file in the **Select File** dialog.
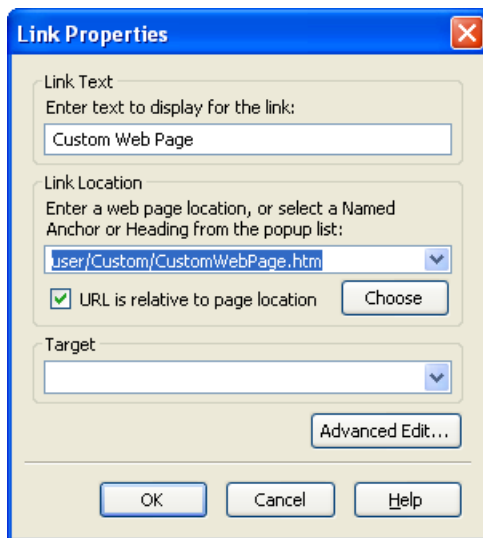
e. Click **OK**. A "Custom Web Page" link appears on the new button.

7. Click **Publish** on the Editor toolbar ( ), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page.

8. Test the link to your custom Web page by clicking the **Custom Web Page** button. Your custom Web page opens in the i.LON Vision 2.2 browser.
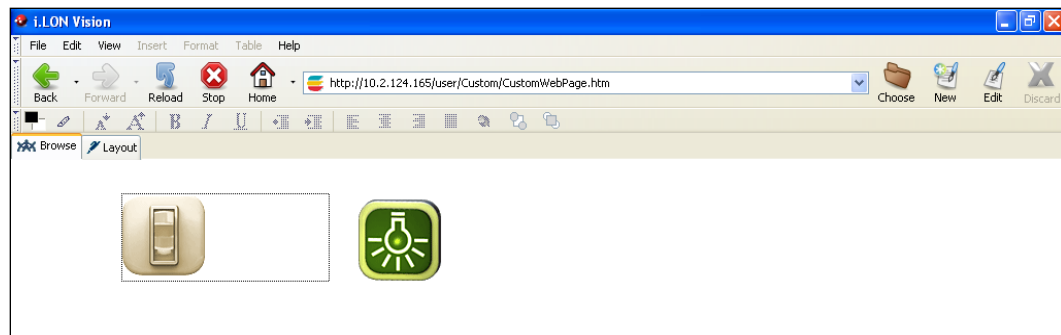
9. Click the switch icon to enable and disable **Digital Output 1**. When you click the switch icon, the lamp icon turns on and off, indicating the current state of **Digital Output 1**. In addition, the **Output 1** LED on the SmartServer hardware lights and turns off when you click the switch icon.

Note: You can modify the SmartServer's factory home page, including adding your own buttons that link to your custom Web pages, by editing the **index.htm** file in the **/web** folder. If you modify the SmartServer home page, you must preserve the **Configuration & Service** and **Login** buttons at the top of the page.

3

Creating Custom SmartServer 2.2 Web Pages

This chapter describes how to create simple custom SmartServer 2.2 Web pages and more complex Web designs that include a navigation system. It describes how to upgrade existing custom Web pages to SmartServer 2.2 Web pages. It describes how to add i.LON Vision objects to your custom Web pages, and design a navigation system for your Web design.

Introduction

You can create simple custom SmartServer 2.2 Web pages, as demonstrated in the quick-start exercise in the previous chapter. You can also create more complex Web designs featuring more intricate i.LON Vision objects for monitoring and controlling the data points on your SmartServer such as Custom JavaScript objects, schedulers, data loggers, data point graphs, and alarm notifiers. In addition, you can implement a navigation system in your Web design by adding menus and navigation panes to your Web pages.

To create custom SmartServer 2.2 Web pages, follow these steps:

1. Create a Website connection between i.LON Vision 2.2 and your SmartServer. For more information on how to do this, see *Step 1: Creating a Web Site Connection* in the quick-start exercise in the previous chapter.

2. Configure i.LON Vision 2.2 preferences. You can set the language for user interface, select whether the data point names and layers are displayed in the **Layout** view, select whether all network objects are displayed in the data point selection dialog, and select the default Web browser.

3. If you plan on using existing custom SmartServer 1.0 or i.LON *e3* Server Web pages on your SmartServer 2.2, upgrade them to the SmartServer 2.2 format.

4. Create one or more custom SmartServer 2.2 Web pages. For more information on how to do this, see *Step 2: Creating a Custom SmartServer Web Page* in the quick-start exercise in the previous chapter. All of your custom SmartServer 2.2 Web pages for a given Web design must be stored in the same folder under the **/web/user** directory on the SmartServer flash disk.

5. Add i.LON Vision objects to your custom SmartServer 2.2 Web pages. You can add read/write objects such as a combo box, image swapper, and Custom JavaScript, and you can application objects such as a scheduler, data point graph, and data logger.

6. Add a navigation system to your Web design. You do this by creating a home page, adding the i.LON Vision frameset to your home page, and then designing the menu, sidebar, and copyright frames. This step is optional.

7. Link your Web design to your SmartServer home page. For more information on how to do this, see *Step 4: Linking a Custom Web Page to the SmartServer Home Page* in the quick-start exercise in the previous chapter.

The following sections describe how to perform steps 2, 3, 5, and 6.

Configuring i.LON Vision 2.2 Preferences

Before you begin creating your custom SmartServer 2.2 Web pages, configure your Web page development environment. You can set the language for the user interface, select whether the names of data points are displayed below i.LON Vision objects in the **Layout** view by default, select whether the layer boxes surrounding i.LON Vision objects are displayed in the **Layout** view by default, select whether all the network objects in the SmartServer tree are displayed within the data point selection dialog by default, and select the default Web browser for previewing your custom SmartServer 2.2 Web pages.

To configure i.LON Vision 2.2, follow these steps:

1. Click **File** and then click **Preferences**.
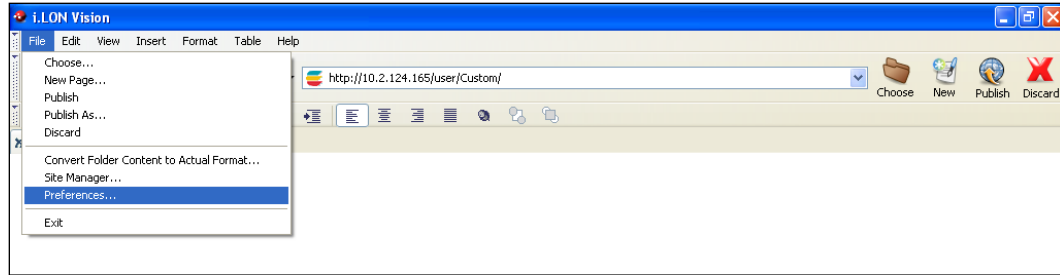
2. The **Preferences** dialog opens.
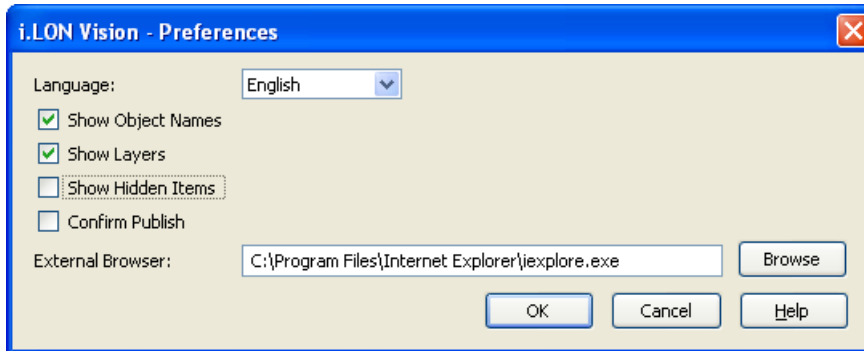
3. Set the following i.LON Vision 2.2 properties:

Language

Set the language used for the i.LON Vision 2.2 user interface, including all menus, property dialogs, and error and warning messages.

i.LON Vision 2.2 includes English (the default), German, French, Chinese, Japanese, and Korean languages, but you can work with i.LON Vision 2.2 in any one-byte or two-byte character language by translating the .properties file in the **LonWorks\iLON\iLonVision\extensions\{53D26F30-C12B-11DD-9FAE-D50A1A6F0FEF}\chrome\content\nls** folder on your computer.

You can perform this language localization using either the demo version of the SmartServer 2.2 Programming Tools included on SmartServer 2.2 DVD or using the full version on the SmartServer 2.2 Programming Tools included on the SmartServer 2.2 Programming Tools DVD. For more information on ordering the SmartServer 2.2 Programming Tools DVD, contact your Echelon sales representative.

See the *SmartServer 2.2 Programming Tools User's Guide* for more information on localizing the language of the SmartServer products.

Show Object Names	Displays the names of data points directly below i.LON Vision objects in the **Layout** views of your custom SmartServer 2.2 Web pages. This is useful for identifying the data point associated with a given i.LON Vision object. Object names are displayed in the following format: *network/device/functional block/data point*.
	This option is selected by default. You can clear this option to hide the name of the data point name in the **Browse** view. This may be useful if you are creating complex layouts where data point names interfere with the page layout editor.
	You can also set these global options by clicking **View** and then enabling or disabling them.
	Note: The data point name does not appear below the i.LON Vision object in the **Browse** view for your published custom SmartServer 2.2 Web page.
Show Layers	Displays the green layer boxes surrounding i.LON Vision objects in the **Layout** views of your custom SmartServer 2.2 Web pages. This option is selected by default.
	You can move a layer by clicking the moving icon for the layer, and then using the arrow keys move the selected layer.
Show Hidden Items	Displays all the network objects in the SmartServer tree within the i.LON Vision object property dialogs, including those objects that are currently hidden in the navigation pane on the built-in SmartServer Web interface.
	This option is cleared by default, meaning that you can only select those objects that are currently shown in the navigation pane on the built-in SmartServer Web interface.
Confirm Publish	Opens a dialog each time you attempt to publish a custom SmartServer 2.2 Web page asking you to confirm that the changes made to your custom SmartServer 2.2 Web pages are to be published.
	This option is cleared by default, meaning that you can publish your custom SmartServer 2.2 Web pages without having to confirm changes.
External Browser	Displays the current external Web browser used for previewing your custom SmartServer Web Pages. The default external Web browser is Internet Explorer.
	To select a different Web browser, click **Browse** and then browse to and select the desired Web browser. For example, browse to and select **C:\Program Files\Mozilla Firefox\firefox.exe** to set Firefox as your external Web browser.
	To preview your custom SmartServer Web Pages in an external Web browser, click **View** and then click **Open in External Browser**.

4. Click **OK** to save your changes.

Upgrading Custom Web Pages to SmartServer 2.2 Pages

You can use i.LON Vision 2.2 to automatically upgrade all existing custom Web pages within a folder on your SmartServer flash disk to the SmartServer 2.2 custom Web page format. This includes all custom SmartServer 1.0 Web pages previously built with i.LON Vision 1.0 and Contribute CS3/CS4, and custom i.LON e3 Internet Server Web pages previously built with i.LON Vision 1.0 and Contribute 3.0/3.1/CS3/CS4.

Upgrading SmartServer 1.0 Web Pages to SmartServer 2.2 Pages

To automatically upgrade all existing custom SmartServer 1.0 Web pages within a folder on your SmartServer flash disk to the SmartServer 2.2 format, follow these steps:

1. Click **File** and then click **Convert Folder to Actual Format**.

2. The **Select Folder** dialog opens.

3. Select the folder on your SmartServer containing the custom SmartServer 1.0 Web pages to be upgraded, and then click **OK**.

4. The **Converting** dialog opens and the custom Web pages in the selected folder are upgraded to the SmartServer 2.2 Web page format.

5. When all the files have been converted, click **OK** to close the **Converting** dialog.

Upgrading e3 Web Pages to SmartServer 2.2 Pages

To automatically upgrade all existing custom i.LON e3 Internet Server Web pages within a folder on your SmartServer flash disk to the SmartServer 2.2 format, follow these steps:

1. Follow the steps described in *Migrating an e3 Network Configuration to the SmartServer* in Chapter 3 of the *SmartServer 2.2 User's Guide* to perform the following tasks:

    a. Copy the **/config** and **/ltConfig** folders on the flash disk of your i.LON 100 e3 server to the SmartServer flash disk.

    b. Logically replace the i.LON server in your LNS application with the SmartServer (if operating the SmartServer in LNS mode [**LNS Auto** or **LNS Manual**]). Make sure to select the **ILON100_FTT_V12.XIF** or the **ILON100_PLC_V12.XIF** when specifying the device interface definition to be loaded.

    c. Synchronize the internal SmartServer database to an OpenLNS or LNS network database (if operating the SmartServer in LNS mode [**LNS Auto** or **LNS Manual**]).

2. Copy all your custom e3 Web pages in the **/web/user/**<*Custom*> folder on the flash disk of your i.LON 100 e3 server to the local drive of your computer, a USB drive, a floppy disk, another removable media, or a shared network drive with read/write permissions.

    Note: Do not copy any of the factory e3 Web pages in the **/web/user/echelon** folder. Do not copy any other folder under the **/web** directory.

3. Use FTP to copy your custom e3 Web pages to the **/web/user** folder on your SmartServer flash disk.

4. Start i.LON Vision 2.2. To do this, click **Start**, point to **Programs**, point to Echelon **i.LON Vision SmartServer 2.2**, and then click **i.LON Vision SmartServer 2.2**. i.LON Vision 2.2 opens.

5. Click **File** and then click **Convert Folder to Actual Format**.

6. The **Select Folder** dialog opens.

7. Select the folder on your SmartServer containing the custom e3 Web pages to be upgraded, and then click **OK**.

8. The **Converting** dialog opens and the custom Web pages in the selected folder are upgraded to the SmartServer 2.2 Web page format.

9. When all the files have been converted, click **OK** to close the **Converting** dialog.

10. Verify that all data point names, functional block indexes, links, and other objects are accurate.

    Note: You can manually upgrade custom e3 Web pages to the SmartServer 2.2 format one-by-one by simply opening, editing, and then publishing them instead of using the **Convert Folder to Actual**

Format option. If you are manually upgrading custom e3 Web pages, you also need to manually convert the **index.htm** and **start.htm** files. To do this, open the **Menu.htm** file in your *<Custom e3>* directory, click **Format** and then click **Frameset**. The **Frameset** dialog opens and the settings in the **Start.htm** file are loaded. Click **OK**. The data in the **Start.htm** file is converted to the SmartServer 2.2 format. The converted data is then transferred to the **frameset.htm** file and the **Start.htm** page is deleted. The **index.htm** file is also converted into the SmartServer format.

Adding i.LON Vision Objects to your Custom Web Pages

You can add i.LON Vision objects to your custom Web pages for monitoring and controlling the data points on your SmartServer. Following is a summary of the i.LON Vision objects:

- **Data Point Read/Write objects**. You can use data point read/write objects to control and monitor data points. Controlling data points with these objects typically entails one click or a simple text entry. You can also use these objects to monitor data points as they indicate the current value stored in the data point. Data point read/write objects include the Show Value, Text Field, Text Area, Combo Box, Image Swapper, Radio Buttons, Select Box, Check Box, Slider, and Custom JavaScript objects.

- **Application objects**. Application objects represent the embedded applications on the SmartServer that you can expose through your custom Web pages. Application objects include the Scheduler, Data Point View, Data Log View, and Alarm Notifier.

- **Link Object**. A link object is an icon, button, or text that has hyperlink that the user can click to access another Web page, including a custom SmartServer Web on your local SmartServer or on another SmartServer.

Adding Data Points of External Devices: If you plan on monitoring and controlling the data points of external devices that are managed with the OpenLNS CT, OpenLNS tree, or another OpenLNS application, you must first copy the data points from the OpenLNS tree to the local SmartServer tree. Once you add the data points to the SmartServer tree, you can create i.LON Vision objects that to monitor and control them. To copy data points from the OpenLNS tree to the SmartServer tree, follow these steps:
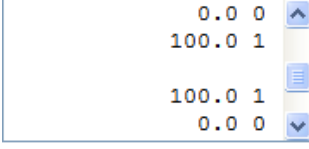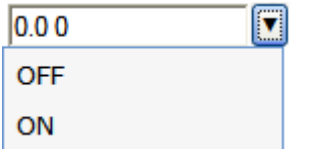
1. Install the Echelon Enterprise Services from the SmartServer 2.2 DVD. See Chapter 1 of the *Echelon Enterprise Services 2.2 User's Guide* for more information.

2. Add an OpenLNS Server to the LAN that contains the OpenLNS network database in which the device is stored. See *Adding an OpenLNS Server to the LAN* of the *SmartServer 2.2 User's Guide* in Chapter 3 for more information.

3. Expand the LNS Server icon, and then enter the **User Name** and **Password** for logging in to the OpenLNS Server via the Echelon Enterprise Services. You initially specified the user name and password in the Echelon Enterprise Services 2.2 installer. If you forgot the user name and password, you can right-click the Echelon Enterprise Services tray icon in the Notification Area of your computer, and then click **Options** on the shortcut menu...

4. In the OpenLNS tree, expand the OpenLNS network database, channel, device, and functional block containing the network variable to be copied to the local SmartServer, right-click the network variable, and then select **Create External NV** on the shortcut menu. To copy multiple network variables, click one, and then either hold down CTRL and click all others to be copied or hold down SHIFT and select another to select the entire range, right-click one of the selected network variables, and then click **Create External NV** on the shortcut menu.
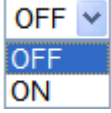
    Note: If you have one or more remote SmartServers on the LAN, the **Create External NV** option is not available in the shortcut menu of the network variable in the OpenLNS tree. Instead, right-click the network variable in the OpenLNS tree, select **Copy External NV** on the shortcut menu, right-click any object in the network tree of the target SmartServer, and then click **Paste External** on the shortcut menu.

Adding Data Point Read/Write Objects

You can use data point read/write objects to monitor and control SmartServer data points. Controlling data points with these objects typically entails one click or a simple text entry. You can also use these objects to monitor data points as they indicate the current value stored in the data point.

The following table lists, summarizes, and demonstrates the data point read and write objects that you can add to your custom Web pages. The right column shows how each object will appear on your published Web page when it is monitoring and controlling a **SNVT_switch** data point. Each object appears slightly different when you are editing the Web page. For example, the data point name will be displayed below the object when you edit the Web page, but not after the Web page has been published.

i.LON Vision Read/Write Object	Description	Graphic
Show Value	Text that displays the value of a data point or a field within a structured data point. This object is read-only.	0.0 0
Text Field	Text box for reading and writing to a data point or a field within a structured data point. The user can write to the data point or a field by entering a value or a preset.	0.0 0
Text Area	Scrolling text box that logs the values assigned to a data point or to a field within a structured data point. By default, the user can read and write to data points with this object, but you can make this object read-only.	0.0 0 100.0 1 100.0 1 0.0 0
Combo Box	Combo box that displays the current value of a data point or a field within a structured data point. The user can write to the data point or field by entering a value or selecting a preset from the list.	0.0 0 OFF ON
Image Swapper	Dynamic images representing data point presets. By default, the user can read and write to data points with this object, but you can make this object read-only.	
Radio Buttons	Radio buttons for reading and writing to a data point, or an enumerated field within a structured data point. The user can write to the data point or enumerated field by selecting a button representing a data point preset or enumeration.	⊙ OFF ○ ON

i.LON Vision Read/Write Object	Description	Graphic
Select Box	Drop-down combo box that displays the current value of a data point or an enumerated field within a structured data point. The user can write to the data point or enumerated field by selecting a preset or enumeration from the list.	OFF ▾ OFF ON
Check Box	Check box representing the first preset defined for the data point when checked, and representing the second preset defined for the data point when cleared. The user can write to the data point by selecting or clearing the check box.	☑ ON
SVG Object	Slider, gauge, knob, or thermometer representing the value of a data point or a field within a structured data point as a percentage. The user can write to the data point or field by adjusting the slider or knob object.	0 10 20 30 40 50 60 70 80 90 100 %
Custom JavaScript	Custom JavaScript code that can be used to implement specialized dynamic objects that get and set data point properties, including the name, value, unit string, format description, status, and priority of a data point.	Data Point Name = Net/LON/iLON App/VirtFb/temp_f Value = 85°F Status = AL_ALM_CONDITION Priority = 220

Show Value

You can use the **Show Value** object (0.0 0) to display the value of a data point, the value of an enumerated data point, or a field within a structured data point. You can use the **Show Value** object to create a simple monitoring application. For example, you could use it to monitor a building with multiple floors. You can create a Web page containing a table with rows for each floor on the building. In each row, you can display the values of the data points used to monitor the conditions on that floor, including the temperature, occupancy state, and any other desired settings. To add a **Show Valu**e object to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar (Edit) or click the **Layout** tab.

2. Click **Insert** and then select **Show Value**.
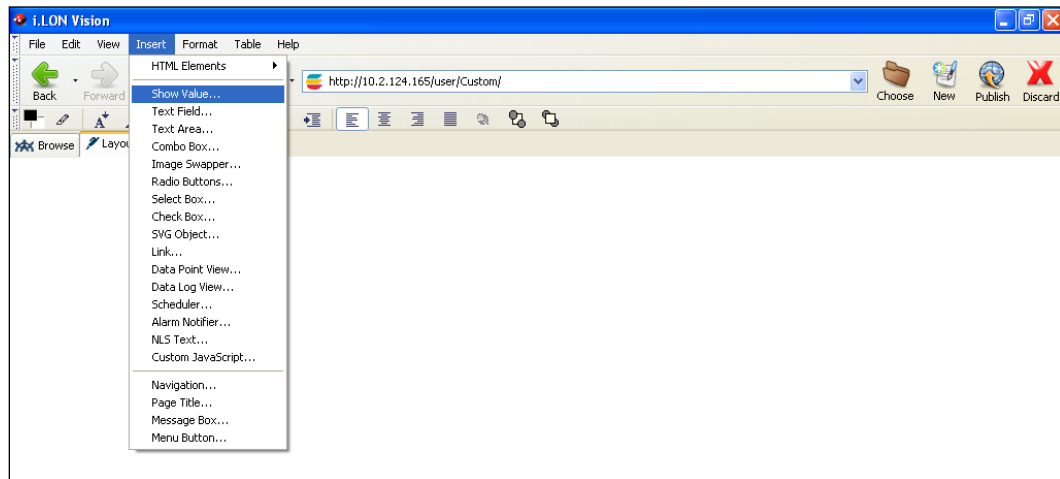
3. The **Show Value** dialog opens.
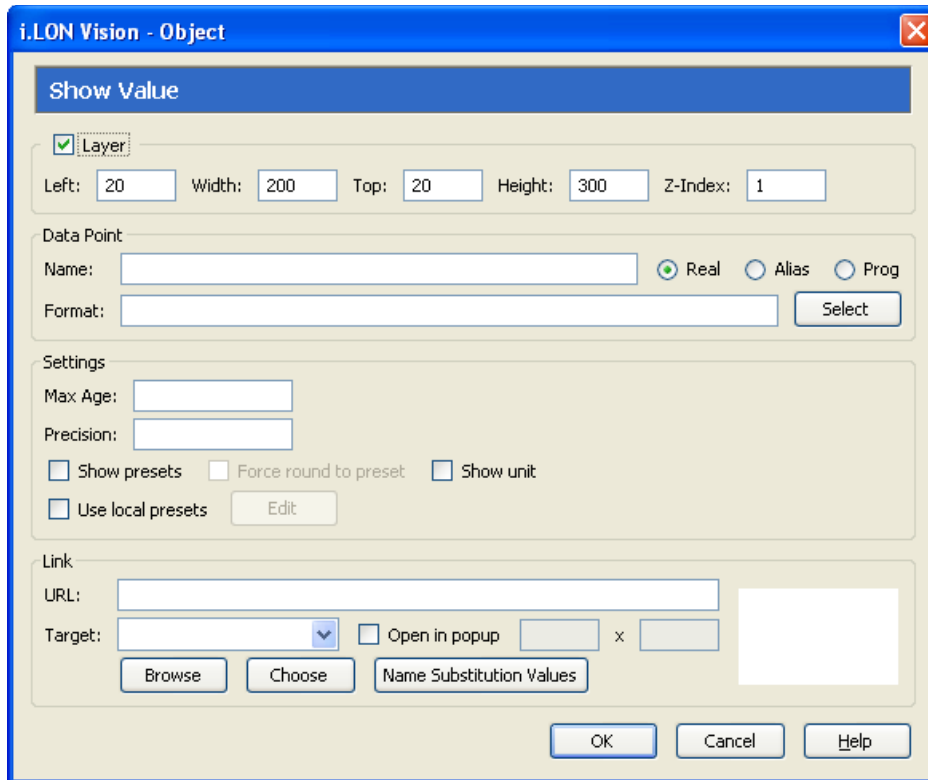
4. Select the data point to be monitored by the **Show Value** object following these steps:

   a. In the **Data Point** property, click **Select**. The **Select Data Points** dialog opens.
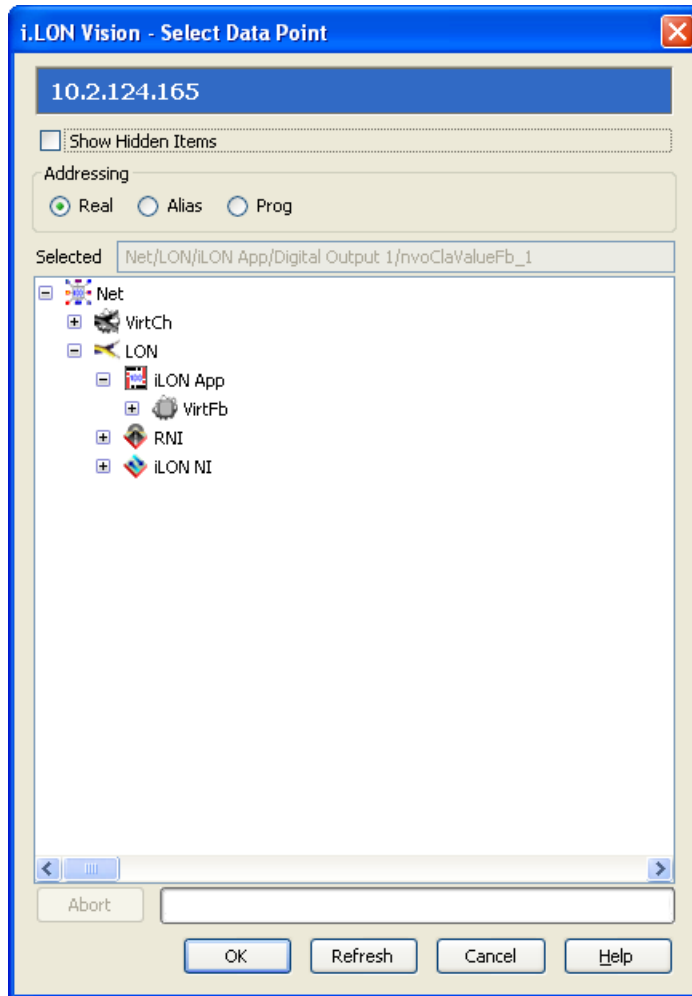
b. To view all the network objects on the SmartServer, including those that are currently hidden in the navigation pane, select the **Show Hidden Items** check box. By default, this check box is cleared, meaning that you can only select those objects that are currently shown on the navigation pane.

c. Select the method for searching for the data point to be monitored. You have two choices:

- **Real Name**. The data points are organized in the SmartServer tree by their parent objects using the following network hierarchy: <network>/<channel>/<device>/<functional block>/<data point>. This is the default.

- **Alias Name**. Data points are alphabetized by their alias names, which correspond to their locations in the navigation pane. You can add, edit, and enable/disable alias names for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane, and then click the data point in the navigation pane. The **Alias Name** property is located near the top of the Web page. If you select this option, the data points are listed in the SmartServer tree as follows:

  o The data points of the external devices connected to the SmartServer that do not have default alias names are listed under the **[no alias]** icon.

  o The data points on the **i.LON App (Internal)** device under the **LON** channel are listed in the tree with the "**NVL**" prefix.

o The virtual data points on the **i.LON App (System)** device are listed in the tree with the "**iLON System**" prefix.

Note: Only select the **Prog** button if you are creating a custom app configuration Web page.

d. Expand the network, channel, device, and then the functional block of the data point to be monitored, and then click the desired data point. If the data point has a structured type, you can expand the data point and select a field within the structure.

e. Click **OK** to return to the **Show Value** dialog. The **Name** property is updated to show the name of the data point in the following format: *<network>/<channel>/<device>/<functional block>/<data point>*.

The **Format** property is updated to show the format description of the selected data point. The format description consists of the data point's program ID; SNVT, SCPT, UNVT, UCPT, or built-in data type; and format (for example, SI metric or US customary). If the data point supports multiple formats, you can manually change the format used for the data point. Using a **SNVT_temp_f** data point for example, you can change the format to **#US**, **#SI**, or **#US_Diff** or append one of these formats to the data point name if no format is specified.

5. Optionally, configure the following properties of the **Show Value** object:

Layer By default, the **Layer** option is selected. This means that the **Show Value** object is embedded in a Layer object, which lets you freely move the **Show Value** object in your custom Web page. To move a Layer, click its moving icon, and then use the arrow keys to move it.

Clearing this option means that you must position the **Show Value** object as you would any other HTML object. This may be useful if you want to place the **Show Value** object in a table.

You can set the following properties to position and size the object:

- The **Left** and **Top** properties determine the object's position from the upper left-hand corner of the Web page (in pixels). You can set these properties to position the object instead of dragging the Layer object containing it.

- The **Width** and the **Height** properties determine the size of the object (in pixels). You can set these properties to size the object instead of expanding and collapsing the Layer object containing it.

- The **Z-Index** property determines the object's background depth compared to objects it overlaps with, with **1** (the default) being in the back and higher values being in front.

When positioning the **Show Value** object, leave space for menu, page title, or sidebar objects that you may want to add to your Web page. This will help prevent you from accidentally overlapping objects.

Max Age	Set the maximum period of time (in seconds) that the value of the data point is cached before the **Show Value** object receives updated values. This enables you to control the amount of traffic that is generated on a specific channel by the object.
	The SmartServer compares the **Max Age** value of the **Show Value** object to the amount of time the data point value has been cached in its internal data server, and then does the following:

- If **Max Age** is less than the period of time the data point value has been cached, the SmartServer's internal data server polls the data point and returns the updated value to the object.

- If **Max Age** is greater than the period of time the data point value has been cached, the SmartServer's internal data server returns the cached value to the object.

- If **Max Age** is disabled, the SmartServer's internal data server returns a cached value to the object regardless how old the data point is. This is the default.

- If **Max Age** is set to **0**, the SmartServer's internal data server polls the data point and returns the updated value to the object regardless how current the data point is.

Precision	Enter the number of significant decimal digits with which a data point value is expressed.
	For example, a data point value of 32.568 is rounded to 32.6 (rounded to the tenth digit) if the precision is **1**, and it is rounded to 32.57 (rounded to the hundredth digit) if the precision is **2**.
	The default and maximum precision are both 3, meaning the decimal values are rounded to the thousandth digit.
Show Presets	Select this option to display the data point's global presets (if defined) instead of its raw value. This option is cleared by default meaning that the raw value of the data point is displayed.
	A preset is a string that represents a specific raw value for a data point. A global preset is a preset that is defined in the data point's configuration. Global presets are available in all instances of all applicable i.LON Vision objects.
	You can add, edit, and delete global presets for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane, and then click the data point in the navigation pane. The options for presets are located at the bottom of the Web page.
	Notes: To use a preset for a field within a structured data point, select the **Use Local Presets** check box, click **Edit**, and create presets for the field. The **Show Presets** option is incompatible with the fields of structured data points. If you selected a data point field in step 4, selecting this option resets the data point to the entire structure.

Force Round to Preset	Rounds the raw value of the data point to the raw value of the nearest preset defined for the data point so that the preset is displayed on your custom Web page. This property is only available if the **Show Presets** check box is selected.
	Consider a **SNVT_temp_p** data point, which has the following presets defined for it:
	OCCUPIED 69.8 UNOCCUPIED 60.8 STANDBY 19.994
	If the raw value of the **SNVT_temp_p** data point is 30, STANDBY is displayed on your custom Web page. If the raw value of the data point is 45, UNOCCUPIED is displayed.
Show Unit	Select this check box to display the data point's unit string (if enabled and defined). This check box is cleared by default meaning that the unit string is not displayed.
	You can enable/disable and edit the unit string defined for a data point on its **Configure - Data Points** Web page on the SmartServer. You can access this Web page from the built-in SmartServer Web interface by clicking **General**, and then clicking the data point in the SmartServer tree.
	By default, the **Unit String** check box in the **Configure - Data Points** Web page is selected, meaning that the unit string can be displayed on your custom Web pages. You can edit the unit string and the revised unit string will appear in your custom Web pages. You can clear the **Unit String** check box to disable the appearance of the unit string on your custom Web pages.
Use Local Presets	Select this option and click **Edit** to open the **Local Presets** dialog, and create presets for this individual **Show Value** object. This option is cleared by default meaning that local presets are not used.
	A local preset is a preset that applies to a specific instance of an i.LON Vision object. Local presets are especially useful if you selected a field within a structured data point and you want to represent the current value of the field using a simple, meaningful string instead of a raw value. You cannot select **Show Presets** to use global presets for a field within a structured data point.
Link	You can link this object to another Web page by doing one of the following:

- In the **URL** box, enter the URL of the Web page to be linked to.

- Click **Choose** to open the **Select File** dialog, select the Web page, and then click **OK**.

- Click **Browse** and then browse to the Web page.

Select **Open in Popup** to open the Web page in a pop-up dialog, and then select the dimensions of the pop-up dialog. This option is cleared by default.

6. Click **OK**. The **Show Value** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** option, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page.

7. Click **Publish** on the Editor toolbar ( ), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page.

Text Field

The **Text Field** object ( ) is a text box that displays the current value of a scalar data point, an enumerated data point, or a field within a structured data point. The user can write to the data point or field by entering a new value in the text box. To add a **Text Field** object to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar ( ) or click the **Layout** tab.

2. Click **Insert** and then select **Text Field**.
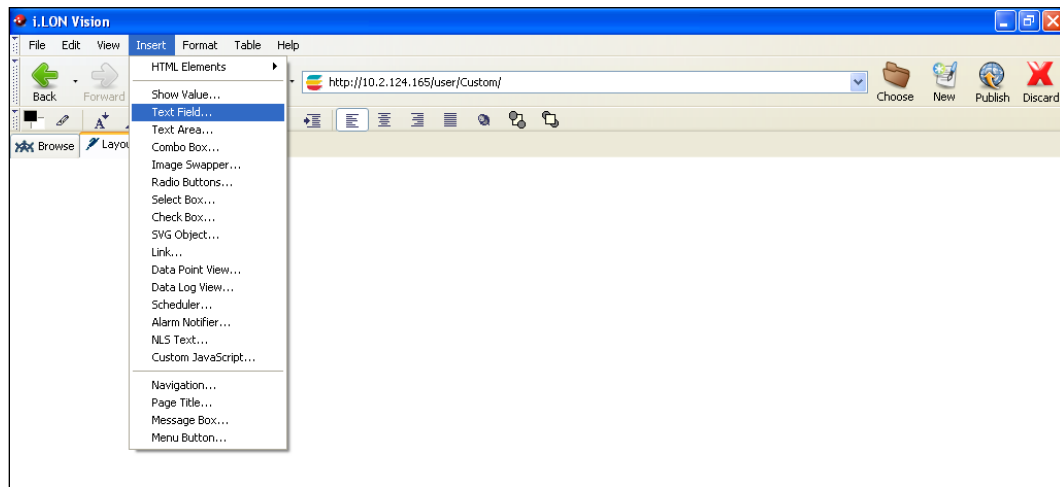
3. The **Text Field** dialog opens.
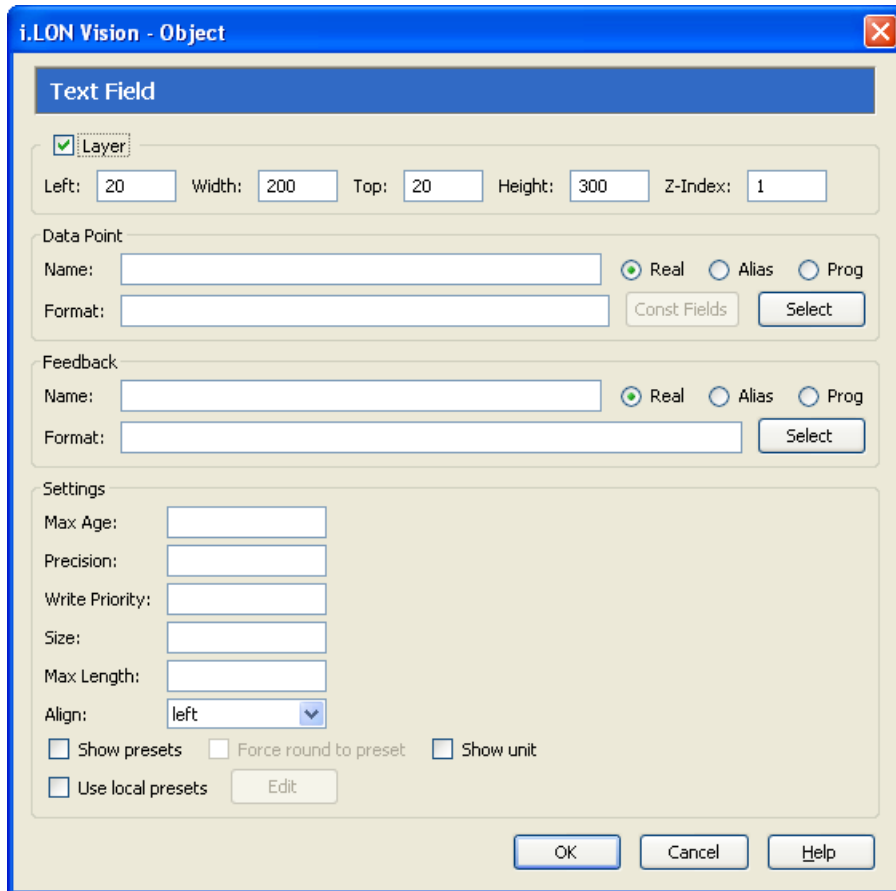
4. Select the data point to be monitored by the **Text Field** object following these steps:

    a. In the **Data Point** property, click **Select**. The **Select Data Points** dialog opens.

    b. To view all the network objects on the SmartServer, including those that are currently hidden in the navigation pane on the built-in SmartServer Web interface, select **Show Hidden Items**. By default, this option is cleared, meaning that you can only select those objects that are currently shown on the navigation pane.

    c. Select the method for searching for the data point to be monitored. You have two choices:

       • **Real Name**. The data points are organized in the SmartServer tree by their parent objects using the following network hierarchy: <network>/<channel>/<device>/<functional block>/<data point>. This is the default.

       • **Alias Name**. Data points are alphabetized by their alias names, which correspond to their locations in the navigation pane. You can add, edit, and enable/disable alias names for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane on the left side of the SmartServer Web interface, and then click the data point in the navigation pane. The **Alias Name** property is located near the top of the Web page. If you select this option, the data points are listed in the SmartServer tree as follows:

          o The data points of the external devices connected to the SmartServer that do not have default alias names are listed under the **[no alias]** icon.

          o The data points on the **i.LON App (Internal)** device under the **LON** channel are listed in the tree with the "**NVL**" prefix.

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o The virtual data points on the **i.LON App (System)** device are listed in the tree with the "**iLON System**" prefix.

Note: Only select the **Prog** button if you are creating a custom app configuration Web page.

d. Expand the network, channel, device, and then the functional block of the data point to be monitored, and then click the desired data point. If the data point has a structured type, you can expand the data point and select a field within the structure.

e. Click **OK** to return to the **Text Field** dialog. The **Name** property is updated to show the name of the data point in the following format: *<network>/<channel>/<device>/<functional block>/<data point>*.

The **Format** property is updated to show the format description of the selected data point. The format description consists of the data point's program ID; SNVT, SCPT, UNVT, UCPT, or built-in data type; and format (for example, SI metric or US customary). If the data point supports multiple formats, you can manually change the format used for the data point. Using a **SNVT_temp_f** data point for example, you can change the format to **#US**, **#SI**, or **#US_Diff** or append one of these formats to the data point name if no format is specified.

5. Optionally, if you selected a field within a structured data point, you can set constant values to be written to one to all of the other fields in the data point automatically when a value is written to the selected field. This ensures that the other field or fields in the structured data point are set to specific values whenever the **Text Field** object is used on the selected field.

Using a **SNVT_switch** data point for example, you can have **SNVT_switch.state** be set to **1** each time a value is written to **SNVT_switch.value**.

To set constant values for the other fields in a structured data point, follow these steps:

a. Click **Const Fields**. The **Constant Fields** dialog opens.

b. The data point field you selected in step 4 is marked as "[dynamic]".

c. Click the data point field to be set to a constant value.

d. In the **Value** field, set the constant value to be written to the data point field selected in step d.

e. Click **Save**.

f. Repeat steps c–e for any other fields in the structured data point to be set to constant values.
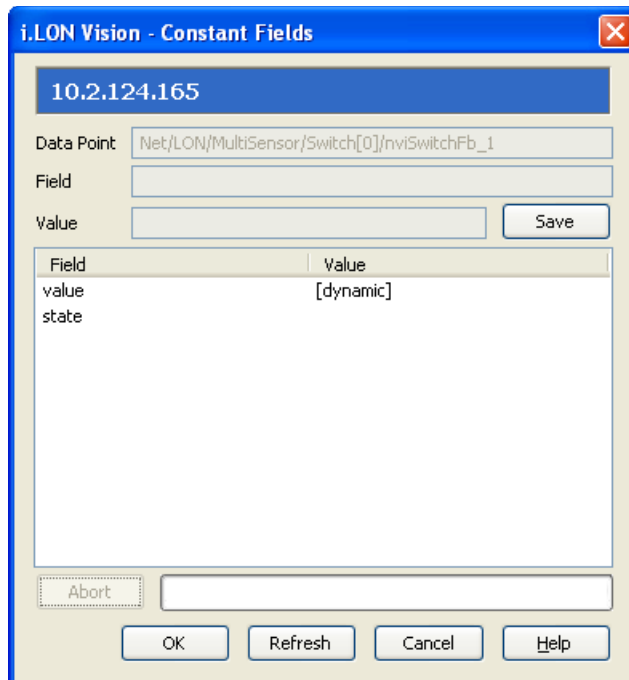
g. Click **OK** to return to the **Text Field** dialog.

6. Optionally, you can specify a feedback data point. To do this, click **Select** in the **Feedback** property, and select the feedback data point in the **Data Points** dialog following step 4.

The **Text Field** object will display the value of the specified **Feedback** data point, as updated values are being written to the data point specified in the **Data Point** field (the data point you selected in step 4). If you use the **Text Field** object to write a value to the **Data Point**, the object will be disabled temporarily until the specified **Feedback** data point receives the data point update.

Note: You can bind the **Feedback** data point you selected to the **Data Point** via device hardware, a LONWORKS connection, or a Web connection.

7. Optionally, configure the following properties of the **Text Field** object:

Layer   By default, the **Layer** option is selected. This means that the **Text Field** object is embedded in a Layer object, which lets you freely move the **Text Field** object in your custom Web page. To move a Layer, click its moving icon, and then use the arrow keys to move it.

Clearing this option means that you must position the **Text Field** object as you would any other HTML object. This may be useful if you want to place the **Text Field** object in a table.

You can set the following properties to position and size the object:

- The **Left** and **Top** properties determine the object's position from the upper left-hand corner of the Web page (in pixels). You can set these properties to position the object instead of dragging the Layer object containing it.

- The **Width** and the **Height** properties determine the size of the object (in pixels). You can set these properties to size the object instead of expanding and collapsing the Layer object containing it.

- The **Z-Index** property determines the object's background depth compared to objects it overlaps with, with **1** (the default) being in the back and higher values being in front.

When positioning the **Text Field** object, leave space for menu, page title, or sidebar objects that you may want to add to your Web page. This will help prevent you from accidentally overlapping objects.

Max Age	Set the maximum period of time (in seconds) that the value of the data point is cached before the **Text Field** object receives updated values. This enables you to control the amount of traffic that is generated on a specific channel by the object.
	The SmartServer compares the **Max Age** value of the **Text Field** object to the amount of time the data point value has been cached in its internal data server, and then does the following:

- If **Max Age** is less than the period of time the data point value has been cached, the SmartServer's internal data server polls the data point and returns the updated value to the object.

- If **Max Age** is greater than the period of time the data point value has been cached, the SmartServer's internal data server returns the cached value to the object.

- If **Max Age** is disabled, the SmartServer's internal data server returns a cached value to the object regardless how old the data point is. This is the default.

- If **Max Age** is set to **0**, the SmartServer's internal data server polls the data point and returns the updated value to the object regardless how current the data point is.

Precision	Enter the number of significant decimal digits with which a data point value is expressed.
	For example, a data point value of 32.568 is rounded to 32.6 (rounded to the tenth digit) if the precision is **1**, and it is rounded to 32.57 (rounded to the hundredth digit) if the precision is **2**.
	The default and maximum precision are both 3, meaning the decimal values are rounded to the thousandth digit.
Write Priority	Assign the priority the **Text Field** object has for writing updated values to the data point. This value may range from 0 to 255 (highest to lowest priority).
	The priority you specify must be equal to or higher than the priority used by the last application that updated the data point. If you set a priority that is less than priority used by the last application that updated the data point, a red hand icon ( ) appears to the left of the data point when you publish your custom Web page. You will need to edit the page and enter a higher priority in this dialog to be able to write to the data point.
	If you set a priority that is equal to or higher than that assigned to the last application or object that updated the data point, a green hand icon ( ) appears to the left of the data point. Lower priority applications or objects can write to the data point when one of the following events occurs:

- The user clicks the green hand icon to unlock the data point (temporarily reset the **Text Field** object's priority to 255) so that lower priority applications or objects can write to the data point. When the user enters an updated value in the text field, the **Text Field** object will have the data point locked again (the priority returns to the value you specified).

- The lower priority application or object specifies a priority that is equal to or higher than the one you specified for the **Text Field** object.

For more information on using priorities, see *Using Data Point Priorities* in Chapter 4.

Size	Enter the size of the text field (in pixels).
Max Length	Enter the maximum number of characters that the text field can display. You should make sure that the text field is large enough to display the potential values that could be assigned to the selected data point.
Align	Select whether the data point value is aligned to the **Left** or **Right** side of the text field.
Show Presets	Select this option to display the data point's global presets (if defined) instead of its raw value. This option is cleared by default meaning that the raw value of the data point is displayed.

A preset is a string that represents a specific raw value for a data point. A global preset is a preset that is defined in the data point's configuration. Global presets are available in all instances of all applicable i.LON Vision objects.

You can add, edit, and delete global presets for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane on the left side of the SmartServer Web interface, and then click the data point in the navigation pane. The options for presets are located at the bottom of the Web page.

Notes: To use a preset for a field within a structured data point, select **Use Local Presets**, click **Edit**, and create presets for the field. The **Show Presets** option is incompatible with the fields of structured data points. If you selected a data point field in step 4, selecting this option resets the data point to the entire structure.

Force Round to Preset	Rounds the raw value of the data point to the raw value of the nearest preset defined for the data point so that the preset is displayed on your custom Web page. This property is only available if the **Show Presets** check box is selected.

Consider a **SNVT_temp_p** data point, which has the following presets defined for it:

OCCUPIED   69.8
UNOCCUPIED 60.8
STANDBY   19.994

If the raw value of the **SNVT_temp_p** data point is 30, STANDBY is displayed on your custom Web page. If the raw value of the data point is 45, UNOCCUPIED is displayed.

Show Unit	Select this option to display the data point's unit string (if enabled and defined). This option is cleared by default meaning that the unit string is not displayed.
	You can enable/disable and edit the unit string defined for a data point on its **Configure - Data Points** Web page on the SmartServer. You can access this Web page from the built-in SmartServer Web interface by clicking **General**, and then clicking the data point in the SmartServer tree.
	By default, the **Unit String** option in the **Configure - Data Points** Web page is selected, meaning that the unit string can be displayed on your custom Web pages. You can edit the unit string and the revised unit string will appear in your custom Web pages. You can clear **Unit String** to disable the appearance of the unit string on your custom Web pages.
Use Local Presets	Select this option and click **Edit** to open the **Local Presets** dialog, and create presets for this individual **Text Field** object. This option is cleared by default meaning that local presets are not used.
	A local preset is a preset that applies to a specific instance of an i.LON Vision object. Local presets are especially useful if you selected a field within a structured data point and you want to represent the current value of the field using a simple, meaningful string instead of a raw value. You cannot select the Show Presets check box to use "global" presets for a field within a structured data point.

8. Click **OK**. The **Text Field** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** option, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page.

9. Click **Publish** on the Editor toolbar ( ), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page.

Text Area

The **Text Area** object ( ) is a text box that lists the most recent values assigned to a scalar data point, an enumerated data point, or a field within a structured data point. Optionally, you can configure this object to allow a user to write to the data point or field by entering a new value in the text area. To add a **Text Area** object to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar ( ) or click the **Layout** tab.

2. Click **Insert** and then select **Text Area**.
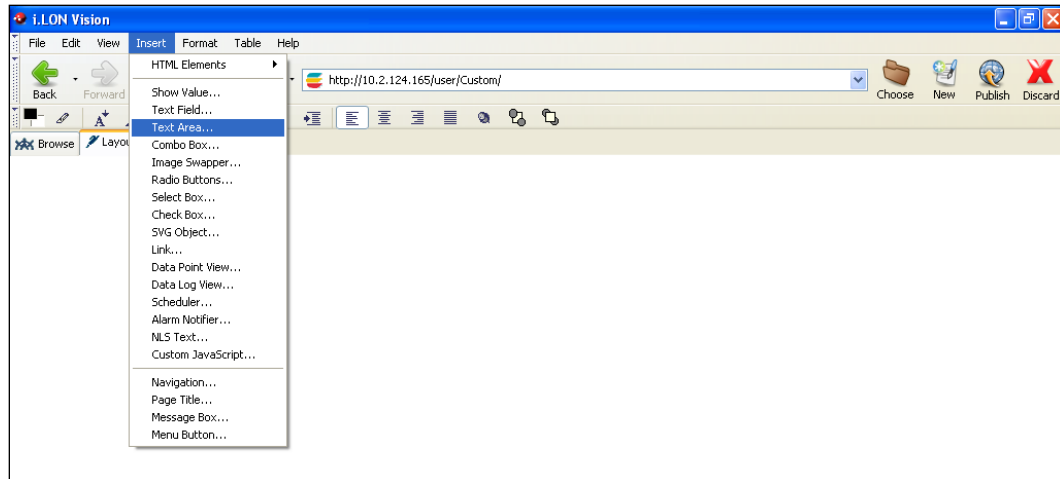
3. The **Text Area** dialog opens.
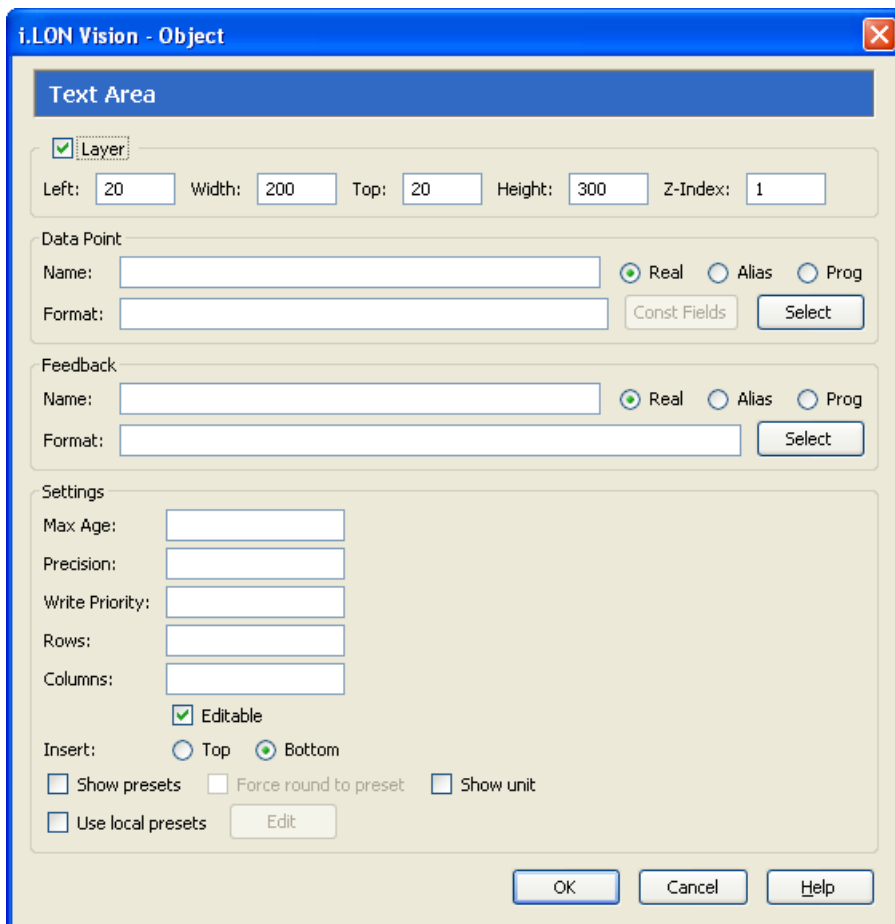
4. Select the data point to be monitored by the **Text Area** object following these steps:

   a. In the **Data Point** property, click **Select**. The **Select Data Points** dialog opens.

   b. To view all the network objects on the SmartServer, including those that are currently hidden in the navigation pane, select **Show Hidden Items**. By default, this option is cleared, meaning that you can only select those objects that are currently shown on the navigation pane.

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c. Select the method for searching for the data point to be monitored. You have two choices:

- **Real Name**. The data points are organized in the SmartServer tree by their parent objects using the following network hierarchy: <network>/<channel>/<device>/<functional block>/<data point>. This is the default.

- **Alias Name**. Data points are alphabetized by their alias names, which correspond to their locations in the navigation pane. You can add, edit, and enable/disable alias names for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane, and then click the data point in the navigation pane. The **Alias Name** property is located near the top of the Web page. If you select this option, the data points are listed in the SmartServer tree as follows:

  o The data points of the external devices connected to the SmartServer that do not have default alias names are listed under the **[no alias]** icon.

  o The data points on the **i.LON App (Internal)** device under the **LON** channel are listed in the tree with the "**NVL**" prefix.

  o The virtual data points on the **i.LON App (System)** device are listed in the tree with the "**iLON System**" prefix.

  Note: Only select the **Prog** button if you are creating a custom app configuration Web page.

d. Expand the network, channel, device, and then the functional block of the data point to be monitored, and then click the desired data point. If the data point has a structured type, you can expand the data point and select a field within the structure.

e. Click **OK** to return to the **Text Area** dialog. The **Name** property is updated to show the name of the data point in the following format: *<network>/<channel>/<device>/<functional block>/<data point>*.

   The **Format** property is updated to show the format description of the selected data point. The format description consists of the data point's program ID; SNVT, SCPT, UNVT, UCPT, or built-in data type; and format (for example, SI metric or US customary). If the data point supports multiple formats, you can manually change the format used for the data point. Using a **SNVT_temp_f** data point for example, you can change the format to **#US**, **#SI**, or **#US_Diff** or append one of these formats to the data point name if no format is specified.

5. Optionally, if you selected a field within a structured data point, you can set constant values to be written to one to all of the other fields in the data point automatically when a value is written to the selected field. This ensures that the other field or fields in the structured data point are set to specific values whenever the **Text Area** object is used on the selected field.

   Using a **SNVT_switch** data point for example, you can have **SNVT_switch.state** be set to **1** each time a value is written to **SNVT_switch.value**.

   To set constant values for the other fields in a structured data point, follow these steps:

   a. Click **Const Fields**. The **Constant Fields** dialog opens.

   b. The data point field you selected in step 4 is marked as "[dynamic]".

   c. Click the data point field to be set to a constant value.

   d. In the **Value** field, set the constant value to be written to the data point field selected in step d.

   e. Click **Save**.

   f. Repeat steps c–e for any other fields in the structured data point to be set to constant values.

   g. Click **OK** to return to the **Text Area** dialog.

6. Optionally, you can specify a feedback data point. To do this, click **Select** in the **Feedback** property, and select the feedback data point in the **Data Points** dialog following steps 4b–4d.

The **Text Area** object will display the value of the specified **Feedback** data point, as updated values are being written to the data point specified in the **Data Point** field (the data point you selected in step 4). If you use the **Text Area** object to write a value to the **Data Point**, the object will be disabled temporarily until the specified **Feedback** data point receives the data point update.

Note: You can bind the **Feedback** data point you selected to the **Data Point** via device hardware, a LONWORKS connection, or a Web connection.

7. Optionally, configure the following properties of the **Text Area** object:

Layer	By default, the **Layer** option is selected. This means that the **Text Area** object is embedded in a Layer object, which lets you freely move the **Text Area** object in your custom Web page. To move a Layer, click its moving icon, and then use the arrow keys to move it.

Clearing this option means that you must position the **Text Area** object as you would any other HTML object. This may be useful if you want to place the **Text Area** object in a table.

You can set the following properties to position and size the object:

- The **Left** and **Top** properties determine the object's position from the upper left-hand corner of the Web page (in pixels). You can set these properties to position the object instead of dragging the Layer object containing it.

- The **Width** and the **Height** properties determine the size of the object (in pixels). You can set these properties to size the object instead of expanding and collapsing the Layer object containing it.

- The **Z-Index** property determines the object's background depth compared to objects it overlaps with, with **1** (the default) being in the back and higher values being in front.

When positioning the **Text Area** object, leave space for menu, page title, or sidebar objects that you may want to add to your Web page. This will help prevent you from accidentally overlapping objects.

Max Age	Set the maximum period of time (in seconds) that the value of the data point is cached before the **Text Area** object receives updated values. This enables you to control the amount of traffic that is generated on a specific channel by the object.
	The SmartServer compares the **Max Age** value of the **Text Area** object to the amount of time the data point value has been cached in its internal data server, and then does the following:

- If **Max Age** is less than the period of time the data point value has been cached, the SmartServer's internal data server polls the data point and returns the updated value to the object.

- If **Max Age** is greater than the period of time the data point value has been cached, the SmartServer's internal data server returns the cached value to the object.

- If **Max Age** is disabled, the SmartServer's internal data server returns a cached value to the object regardless how old the data point is. This is the default.

- If **Max Age** is set to **0**, the SmartServer's internal data server polls the data point and returns the updated value to the object regardless how current the data point is.

Precision	Enter the number of significant decimal digits with which a data point value is expressed.
	For example, a data point value of 32.568 is rounded to 32.6 (rounded to the tenth digit) if the precision is **1**, and it is rounded to 32.57 (rounded to the hundredth digit) if the precision is **2**.
	The default and maximum precision are both 3, meaning the decimal values are rounded to the thousandth digit.
Write Priority	Assign the priority the **Text Area** object has for writing updated values to the data point. This value may range from 0 to 255 (highest to lowest priority).
	The priority you specify must be equal to or higher than the priority used by the last application that updated the data point. If you set a priority that is less than priority used by the last application that updated the data point, a red hand icon ( ) appears to the left of the data point when you publish your custom Web page. You will need to edit the page and enter a higher priority in this dialog to be able to write to the data point.
	If you set a priority that is equal to or higher than that assigned to the last application or object that updated the data point, a green hand icon ( ) appears to the left of the data point. Lower priority applications or objects can write to the data point when one of the following events occurs:

- The user clicks the green hand icon to unlock the data point (temporarily reset the **Text Area** object's priority to 255) so that lower priority applications or objects can write to the data point. When the user enters an updated value in the text field, the **Text Area** object will have the data point locked again (the priority returns to the value you specified).

	• The lower priority application or object specifies a priority equal to or higher than the one you specified for the **Text Area** object.
	For more information on using priorities, see *Using Data Point Priorities* later in this chapter.
Rows	Enter the number of rows in the text area. Each row will display the value of the data point after an update. For example, if you enter **10**, the text area will display the last 10 values assigned to the data point. Once the text area has received an amount of updates matching the number of rows you specified, older values are deleted to enable newer values to be logged. The default number of rows is **5**.
Cols	Enter the number of characters to be displayed in each row. You should enter enough characters to fit the values that may be assigned to the data point. If you do not enter enough characters, the text area will include a scroll bar the user can use to see the whole value. The default number of columns is **10**.
Editable	Select this option to enable users to write values to the data point in the text area. If the check box is selected, the user can write a value with the text area by changing the most recently displayed value, and then clicking outside the text area.
	Once the user enters a value in the text box, the entered value is placed in a separate group apart from the logged values and a scroll bar is added to the text area. The user can use this scroll bar to view logged and entered values.
Insert	Specify whether the most recent data point updates are listed at the **Top** or **Bottom** of the text area. The default is **Bottom**.
Show Presets	Select this option to display the data point's global presets (if defined) instead of its raw value. This option is cleared by default meaning that the raw value of the data point is displayed.
	A preset is a string that represents a specific raw value for a data point. A global preset is a preset that is defined in the data point's configuration. Global presets are available in all instances of all applicable i.LON Vision objects.
	You can add, edit, and delete global presets for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane, and then click the data point in the navigation pane. The options for presets are located at the bottom of the Web page.
	Notes: To use a preset for a field within a structured data point, select **Use Local Presets**, click **Edit**, and create presets for the field. The **Show Presets** option is incompatible with the fields of structured data points. If you selected a data point field in step 4, selecting this option resets the data point to the entire structure.

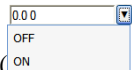|	
Force Round to Preset	Rounds the raw value of the data point to the raw value of the nearest preset defined for the data point so that the preset is displayed on your custom Web page. This property is only available if the **Show Presets** option is selected.
	Consider a **SNVT_temp_p** data point, which has the following presets defined for it:
	OCCUPIED 69.8 UNOCCUPIED 60.8 STANDBY 19.994
	If the raw value of the **SNVT_temp_p** data point is 30, STANDBY is displayed on your custom Web page. If the raw value of the data point is 45, UNOCCUPIED is displayed.
Show Unit	Select this option to display the data point's unit string (if enabled and defined). This option is cleared by default meaning that the unit string is not displayed.
	You can enable/disable and edit the unit string defined for a data point on its **Configure - Data Points** Web page on the SmartServer. You can access this Web page from the built-in SmartServer Web interface by clicking **General**, and then clicking the data point in the SmartServer tree.
	By default, the **Unit String** check box in the **Configure - Data Points** Web page is selected, meaning that the unit string can be displayed on your custom Web pages. You can edit the unit string and the revised unit string will appear in your custom Web pages. You can clear the **Unit String** option to disable the appearance of the unit string on your custom Web pages.
Use Local Presets	Select this option and click **Edit** to open the **Local Presets** dialog, and create presets for this individual **Text Field** object. This option is cleared by default meaning that local presets are not used.
	A local preset is a preset that applies to a specific instance of an i.LON Vision object. Local presets are especially useful if you selected a field within a structured data point and you want to represent the current value of the field using a simple, meaningful string instead of a raw value. You cannot select **Show Presets** to use global presets for a field within a structured data point.

8. Click **OK**. The **Text Area** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** option, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page.

9. Click **Publish** on the Editor toolbar (Publish), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page.

Combo Box

The **Combo Box** object ( ) is a combo box that displays the current value of a scalar data point, an enumerated data point, or a field within a structured data point. The user can write to the data point or field by entering a value in the text box or selecting one of the presets defined for the data

point from the attached list box. To add a **Combo Box** object to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar ( ) or click the **Layout** tab.

2. Click **Insert** and then select **Combo Box**.
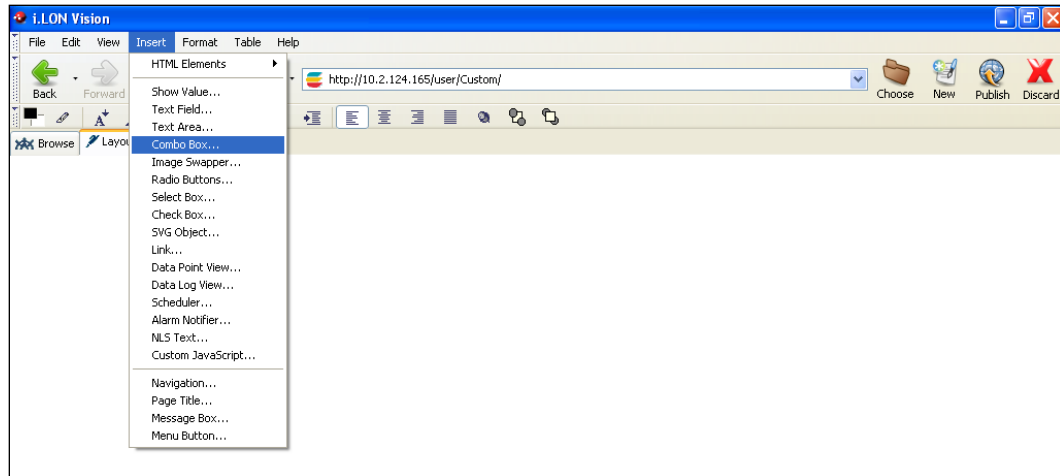
3. The **Combo Box** dialog opens.
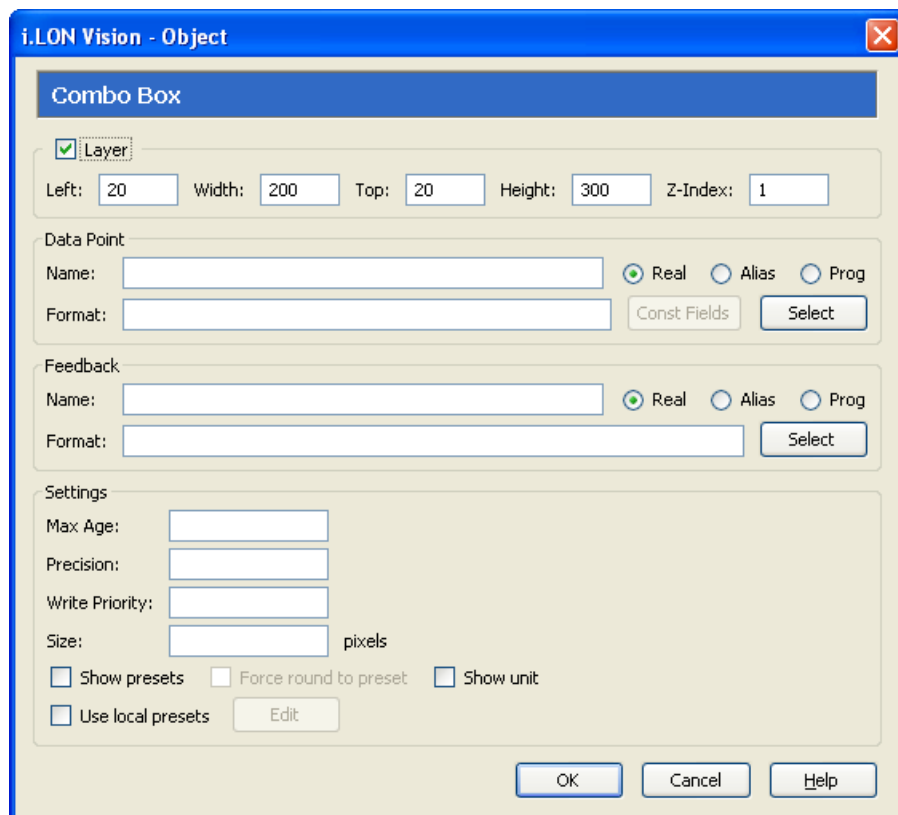
4. Select the data point to be monitored and controlled by the **Combo Box** object following these steps:

    a. In the **Data Point** box, click **Select**. The **Select Data Points** dialog opens.

b. To view all the network objects on the SmartServer, including those that are currently hidden in the navigation pane on the built-in SmartServer Web interface, select **Show Hidden Items**. By default, this option is cleared, meaning that you can only select those objects that are currently shown on the navigation pane.

c. Select the method for searching for the data point to be monitored. You have two choices:

- **Real Name**. The data points are organized in the SmartServer tree by their parent objects using the following network hierarchy: <network>/<channel>/<device>/<functional block>/<data point>. This is the default.

- **Alias Name**. Data points are alphabetized by their alias names, which correspond to their locations in the navigation pane. You can add, edit, and enable/disable alias names for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane, and then click the data point in the navigation pane. The **Alias Name** property is located near the top of the Web page. If you select this option, the data points are listed in the SmartServer tree as follows:

  o The data points of the external devices connected to the SmartServer that do not have default alias names are listed under the **[no alias]** icon.

  o The data points on the **i.LON App (Internal)** device under the **LON** channel are listed in the tree with the "**NVL**" prefix.

  o The virtual data points on the **i.LON App (System)** device are listed in the tree with the "**iLON System**" prefix.

  Note: Only select the **Prog** button if you are creating a custom app configuration Web page.

d. Expand the network, channel, device, and then the functional block of the data point to be monitored, and then click the desired data point. If the data point has a structured type, you can expand the data point and select a field within the structure.

e. Click **OK** to return to the **Combo Box** dialog. The **Name** property is updated to show the name of the data point in the following format: *<network>/<channel>/<device>/<functional block>/<data point>*.

   The **Format** property is updated to show the format description of the selected data point. The format description consists of the data point's program ID; SNVT, SCPT, UNVT, UCPT, or built-in data type; and format (for example, SI metric or US customary). If the data point supports multiple formats, you can manually change the format used for the data point. Using a **SNVT_temp_f** data point for example, you can change the format to **#US**, **#SI**, or **#US_Diff** or append one of these formats to the data point name if no format is specified.

5. Optionally, if you selected a field within a structured data point, you can set constant values to be written to one to all of the other fields in the data point automatically when a value is written to the selected field. This ensures that the other field or fields in the structured data point are set to specific values whenever the **Combo Box** object is used on the selected field.

   Using a **SNVT_switch** data point for example, you can have **SNVT_switch.state** be set to **1** each time a value is written to **SNVT_switch.value**.

   To set constant values for the other fields in a structured data point, follow these steps:

   a. Click **Const Fields**. The **Constant Fields** dialog opens.

   b. The data point field you selected in step 4 is marked as "[dynamic]".

   c. Click the data point field to be set to a constant value.

   d. In the **Value** field, set the constant value to be written to the data point field selected in step d.

e. Click **Save**.

f. Repeat steps c–e for any other fields in the structured data point to be set to constant values.

Click **OK** to return to the **Combo Box** dialog.

6. Optionally, you can specify a feedback data point. To do this, click **Select** in the **Feedback** property, and select the feedback data point in the **Data Points** dialog following steps 4b–4d.

The **Combo Box** object will display the value of the specified **Feedback** data point, as updated values are being written to the data point specified in the **Data Point** field (the data point you selected in step 4). If you use the **Combo Box** object to write a value to the **Data Point**, the object will be disabled temporarily until the specified **Feedback** data point receives the data point update.

Note: You can bind the **Feedback** data point you selected to the **Data Point** via device hardware, a LONWORKS connection, or a Web connection.

7. Optionally, configure the following properties of the **Combo Box** object:

Layer

By default, the **Layer** optiopn is selected. This means that the **Combo Box** object is embedded in a Layer object, which lets you freely move the **Combo Box** object in your custom Web page. To move a Layer, click its moving icon, and then use the arrow keys to move it.

Clearing this option means that you must position the **Combo Box** object as you would any other HTML object. This may be useful if you want to place the **Combo Box** object in a table.

You can set the following properties to position and size the object:

- The **Left** and **Top** properties determine the object's position from the upper left-hand corner of the Web page (in pixels). You can set these properties to position the object instead of dragging the Layer object containing it.

- The **Width** and the **Height** properties determine the size of the object (in pixels). You can set these properties to size the object instead of expanding and collapsing the Layer object containing it.

- The **Z-Index** property determines the object's background depth compared to objects it overlaps with, with **1** (the default) being in the back and higher values being in front.

When positioning the **Combo Box** object, leave space for menu, page title, or sidebar objects that you may want to add to your Web page. This will help prevent you from accidentally overlapping objects.

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Max Age	Set the maximum period of time (in seconds) that the value of the data point is cached before the **Combo Box** object receives updated values. This enables you to control the amount of traffic that is generated on a specific channel by the object.

The SmartServer compares the **Max Age** value of the **Combo Box** object to the amount of time the data point value has been cached in its internal data server, and then does the following:

- If **Max Age** is less than the period of time the data point value has been cached, the SmartServer's internal data server polls the data point and returns the updated value to the object.

- If **Max Age** is greater than the period of time the data point value has been cached, the SmartServer's internal data server returns the cached value to the object.

- If **Max Age** is disabled, the SmartServer's internal data server returns a cached value to the object regardless how old the data point is. This is the default.

- If **Max Age** is set to **0**, the SmartServer's internal data server polls the data point and returns the updated value to the object regardless how current the data point is.

Precision	Enter the number of significant decimal digits with which a data point value is expressed.

For example, a data point value of 32.568 is rounded to 32.6 (rounded to the tenth digit) if the precision is **1**, and it is rounded to 32.57 (rounded to the hundredth digit) if the precision is **2**.

The default and maximum precision are both 3, meaning the decimal values are rounded to the thousandth digit.

Write Priority	Assign the priority the **Combo Box** object has for writing updated values to the data point. This value may range from 0 to 255 (highest to lowest priority).
	The priority you specify must be equal to or higher than the priority used by the last application that updated the data point. If you set a priority that is less than priority used by the last application that updated the data point, a red hand icon (⬟) appears to the left of the data point when you publish your custom Web page. You will need to edit the page and enter a higher priority in this dialog to be able to write to the data point.
	If you set a priority that is equal to or higher than that assigned to the last application or object that updated the data point, a green hand icon (⬟) appears to the left of the data point. Other applications or objects can write to the data point when one of the following events occurs:

- The user clicks the green hand icon to unlock the data point (temporarily reset the **Combo Box** object's priority to 255) so that lower priority applications or objects can write to the data point. When the user enters an updated value in the text field, the **Combo Box** object will have the data point locked again (the priority returns to the value you specified).

- The lower priority application or object specifies a priority that is equal to or higher than the one you specified for the **Combo Box** object.

For more information on using priorities, see *Using Data Point Priorities* in Chapter 4.

Size	Enter the width of the combo box (in pixels). By default, the width of the **Combo Box** object is set to fit the preset or enumerated value with the longest name.
Show Presets	Select this option to display the data point's global presets (if defined) instead of its raw value. This option is cleared by default meaning that the raw value of the data point is displayed.
	A preset is a string that represents a specific raw value for a data point. A global preset is a preset that is defined in the data point's configuration. Global presets are available in all instances of all applicable i.LON Vision objects.
	You can add, edit, and delete global presets for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane on the left side of the SmartServer Web interface, and then click the data point in the navigation pane. The options for presets are located at the bottom of the Web page.
	Notes: To use a preset for a field within a structured data point, select the **Use Local Presets** check box, click **Edit**, and create presets for the field. The **Show Presets** option is incompatible with the fields of structured data points. If you selected a data point field in step 4, selecting this option resets the data point to the entire structure.

Force Round to Preset	Rounds the raw value of the data point to the raw value of the nearest preset defined for the data point so that the preset is displayed on your custom Web page. This property is only available if **Show Presets** is selected.
	Consider a **SNVT_temp_p** data point, which has the following presets defined for it:
	OCCUPIED 69.8 UNOCCUPIED 60.8 STANDBY 19.994
	If the raw value of the **SNVT_temp_p** data point is 30, STANDBY is displayed on your custom Web page. If the raw value of the data point is 45, UNOCCUPIED is displayed.
Show Unit	Select this option to display the data point's unit string (if enabled and defined). This option is cleared by default meaning that the unit string is not displayed.
	You can enable/disable and edit the unit string defined for a data point on its **Configure - Data Points** Web page on the SmartServer. You can access this Web page from the built-in SmartServer Web interface by clicking **General**, and then clicking the data point in the SmartServer tree.
	By default, **Unit String** in the **Configure - Data Points** Web page is selected, meaning that the unit string can be displayed on your custom Web pages. You can edit the unit string and the revised unit string will appear in your custom Web pages. You can clear the **Unit String** option to disable the appearance of the unit string on your custom Web pages.
Use Local Presets	Select this option and click **Edit** to open the **Local Presets** dialog, and create presets for this individual **Combo Box** object. This option is cleared by default meaning that local presets are not used.
	A local preset is a preset that applies to a specific instance of an i.LON Vision object. Local presets are especially useful if you selected a field within a structured data point and you want to represent the current value of the field using a simple, meaningful string instead of a raw value. You cannot select **Show Presets** to use global presets for a field within a structured data point.

8. Click **OK**. The **Combo Box** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** check box, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page.

9. Click **Publish** on the Editor toolbar (Publish), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page.
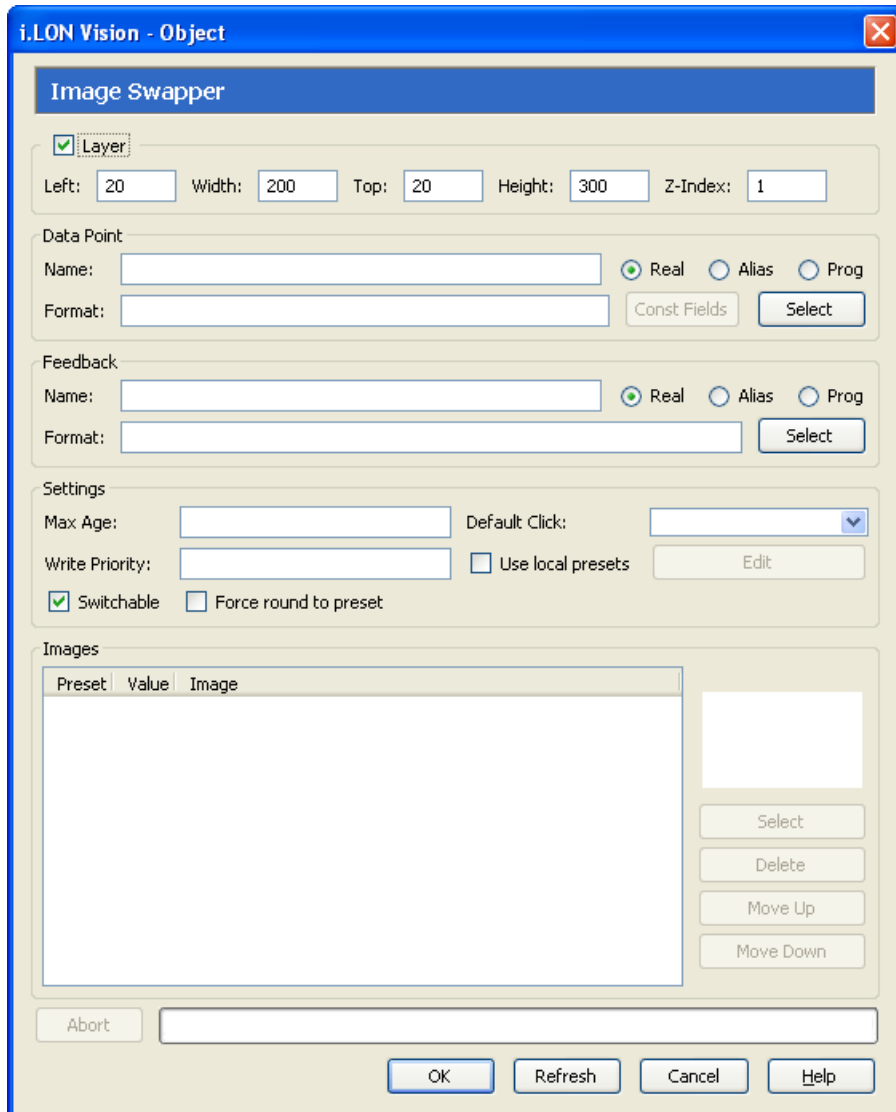
Image Swapper

You can use the **Image Swapper** object to add dynamic images representing the presets defined for the data point. When the data point is set to the value defined for the preset name, the image specified for that data point preset appears on the Web page. Optionally, you can configure the **Image Swapper** object so that the user can write to the data point by clicking the image on the Web page. To add an **Image Swapper** object ( ) to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar () or click the **Layout** tab.

2. Click **Insert** and then select **Image Swapper**.
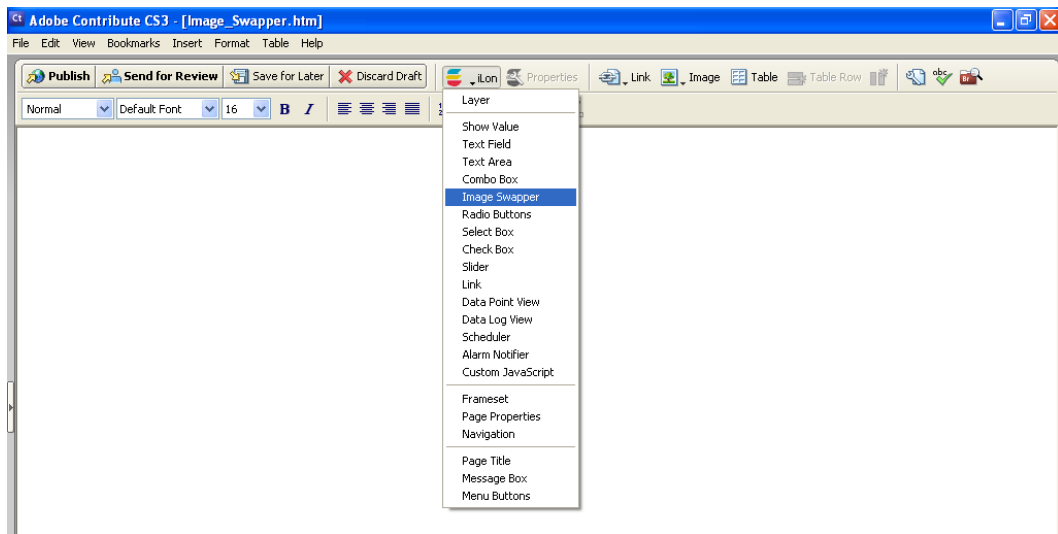
3. The **Image Swapper** dialog opens.

4. Select the data point to be monitored by the **Image Swapper** object following these steps:

   a. In the **Data Point** box, click **Select**. The **Select Data Points** dialog opens.

   b. To view all the network objects on the SmartServer, including those that are currently hidden in the navigation pane on the built-in SmartServer Web interface, select **Show Hidden Items**. By default, this option is cleared, meaning that you can only select those objects that are currently shown on the navigation pane.

   c. Select the method for searching for the data point to be monitored. You have two choices:

   - **Real Name**. The data points are organized in the SmartServer tree by their parent objects using the following network hierarchy: <network>/<channel>/<device>/<functional block>/<data point>. This is the default.

   - **Alias Name**. Data points are alphabetized by their alias names, which correspond to their locations in the navigation pane. You can add, edit, and enable/disable alias names for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane, and then click the data point in the navigation pane. The **Alias Name** property is located near the top of the

Web page. If you select this option, the data points are listed in the SmartServer tree as follows:

- o The data points of the external devices connected to the SmartServer that do not have default alias names are listed under the **[no alias]** icon.

- o The data points on the **i.LON App (Internal)** device under the **LON** channel are listed in the tree with the "**NVL**" prefix.

- o The virtual data points on the **i.LON App (System)** device are listed in the tree with the "**iLON System**" prefix.

Note: Only select the **Prog** button if you are creating a custom app configuration Web page.

d. Expand the network, channel, device, and then the functional block of the data point to be monitored, and then click the desired data point. If the data point has a structured type, you can expand the data point and select a field within the structure.

e. Click **OK** to return to the **Image Swapper** dialog. The **Name** property is updated to show the name of the data point in the following format: *<network>/<channel>/<device>/<functional block>/<data point>*.

The **Format** property is updated to show the format description of the selected data point. The format description consists of the data point's program ID; SNVT, SCPT, UNVT, UCPT, or built-in data type; and format (for example, SI metric or US customary). If the data point supports multiple formats, you can manually change the format used for the data point. Using a **SNVT_temp_f** data point for example, you can change the format to **#US**, **#SI**, or **#US_Diff** or append one of these formats to the data point name if no format is specified.

5. Optionally, you can specify a feedback data point. To do this, you click **Select** in the **Feedback** property, and select the feedback data point in the **Data Points** dialog following steps 4.

The **Image Swapper** object will display the value of the specified **Feedback** data point, as updated values are being written to the data point specified in the **Data Point** field (the data point you selected in step 4). If you use the **Image Swapper** object to write a value to the **Data Point**, the object will be disabled temporarily until the specified **Feedback** data point receives the data point update.

Note: You can bind the **Feedback** data point you selected to the **Data Point** via device hardware, a LONWORKS connection, or a Web connection.

6. If the data point does not have any presets defined for it or you selected a field within a structured data point, click **Use Local Presets** and then click **Edit** to open the **Local Presets** dialog, and create presets for this individual Image Swapper object. This option is cleared by default meaning that local presets are not used.

A local preset is a preset that applies to a specific instance of an i.LON Vision object. Local presets are especially useful if you selected a field within a structured data point and you want to represent the current value of the field using a simple, meaningful string instead of a raw value.

Note: You can add, edit, and delete global presets for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane, and then click the data point in the navigation pane. The options for presets are located at the bottom of the Web page. If you create global presets while the Image Swapper dialog is open, you can click **Refresh** to make them available in the in the **Images** box.

If you select **Use Local Presets**, the global presets defined for the data point (if any) are cleared from the **Images** box. To re-display the global presets, click **Refresh**.

7. Specify the image to be displayed for each preset defined for the data point. To do this, follow these steps:

a. Click the preset name in the **Images** box.

b. Click **Select** to open the **Select File** dialog, browse to the Lᴏɴᴡᴏʀᴋs
iLON\iLonVision\graphics\<*category***>** folder on your computer or the **/web/images** and
/web/user/demo/images folders on your SmartServer flash disk, click the desired image, and
then click **OK**. The selected image appears in the **Images** box.
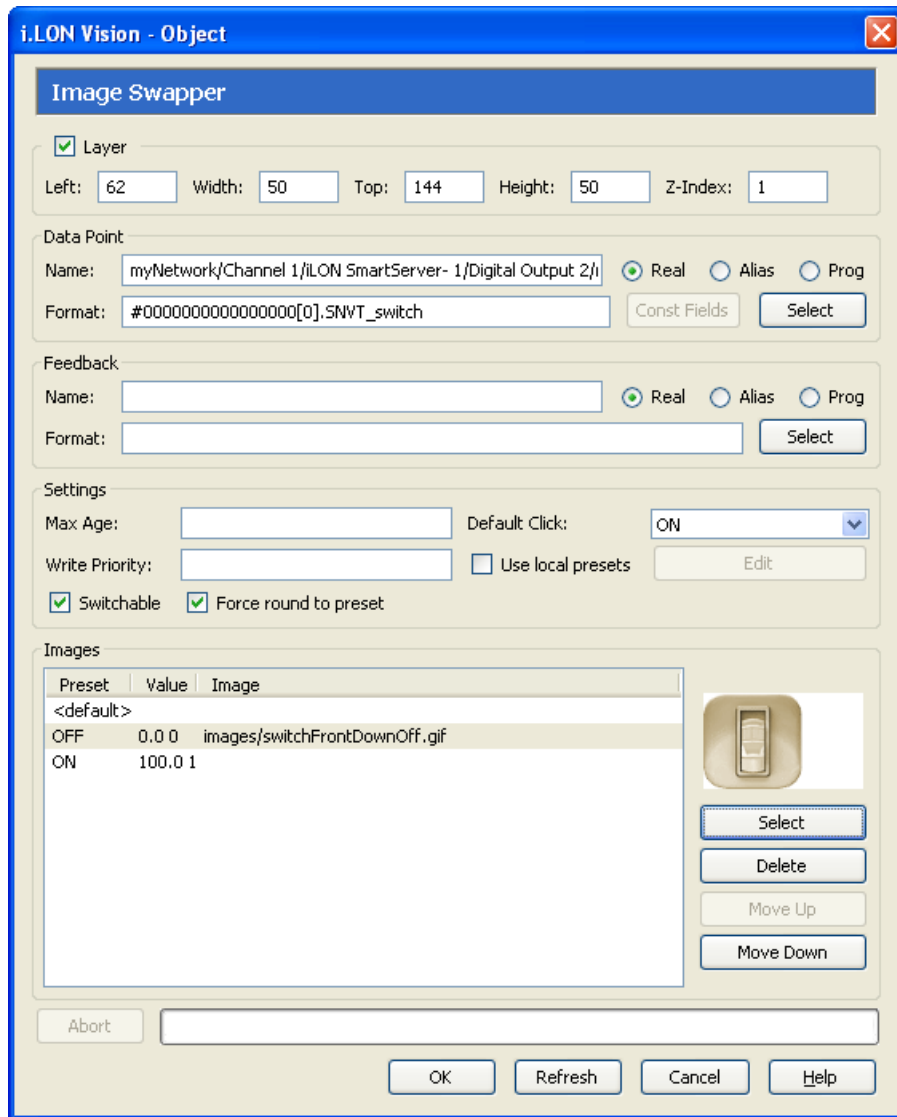
c. Optionally, you can define a default image to be displayed when the value stored in the data
point does not correspond to any of the presets defined for it. To do this, click **<default>:** in
the **Images** box, and follow step b to select a default image.

d. To change the image assigned to a preset, select the preset from the **Images** box and click
Select to associate a new image with the preset. To remove an image from a preset so that it
has no graphics associated with it, select the preset from the **Images** box and click **Delete**. To
change the order of the presets, click **Up** or **Down**. To refresh the list of presets displayed,
click **Refresh**.

Note: You can add, edit, and delete presets for a data point from its **Configure - Data Points**
Web Page in the built-in SmartServer Web pages. To do this, click the **General** button above
the navigation pane on the left side of the SmartServer Web interface, and then click the data
point in the navigation pane. The options for presets are located at the bottom of the Web
page.

8.   Optionally, configure the following properties of the **Image Swapper** object:

Layer

By default, the **Layer** option is selected. This means that the **Image Swapper** object is embedded in a Layer object, which lets you freely move the **Image Swapper** object in your custom Web page. To move a Layer, click its moving icon, and then use the arrow keys to move it.

Clearing this option means that you must position the **Image Swapper** object as you would any other HTML object. This may be useful if you want to place the **Image Swapper** object in a table.

You can set the following properties to position and size the object:

- The **Left** and **Top** properties determine the object's position from the upper left-hand corner of the Web page (in pixels). You can set these properties to position the object instead of dragging the Layer object containing it.

- The **Width** and the **Height** properties determine the size of the object (in pixels). You can set these properties to size the object instead of expanding and collapsing the Layer object containing it.

- The **Z-Index** property determines the object's background depth compared to objects it overlaps with, with **1** (the default) being in the back and higher values being in front.

When positioning the **Image Swapper** object, leave space for menu, page title, or sidebar objects that you may want to add to your Web page. This will help prevent you from accidentally overlapping objects.

Max Age

Set the maximum period of time (in seconds) that the value of the data point is cached before the **Image Swapper** object receives updated values. This enables you to control the amount of traffic that is generated on a specific channel by the object.

The SmartServer compares the **Max Age** value of the **Image Swapper** object to the amount of time the data point value has been cached in its internal data server, and then does the following:

- If **Max Age** is less than the period of time the data point value has been cached, the SmartServer's internal data server polls the data point and returns the updated value to the object.

- If **Max Age** is greater than the period of time the data point value has been cached, the SmartServer's internal data server returns the cached value to the object.

- If **Max Age** is disabled, the SmartServer's internal data server returns a cached value to the object regardless how old the data point is. This is the default.

- If **Max Age** is set to **0**, the SmartServer's internal data server polls the data point and returns the updated value to the object regardless how current the data point is.

Write Priority	Assign the priority the **Image Swapper** object has for writing updated values to the data point. This value may range from 0 to 255 (highest to lowest priority).

The priority you specify must be equal to or higher than the priority used by the last application that updated the data point. If you set a priority that is less than priority used by the last application that updated the data point, a red hand icon ( ) appears to the left of the data point when you publish your custom Web page. You will need to edit the page and enter a higher priority in this dialog to be able to write to the data point.

If you set a priority that is equal to or higher than that assigned to the last application or object that updated the data point, a green hand icon ( ) appears to the left of the data point. Other applications or objects can write to the data point when one of the following events occurs:

- The user clicks the green hand icon to unlock the data point (temporarily reset the **Image Swapper** object's priority to 255) so that lower priority applications or objects can write to the data point. When the user enters an updated value in the text field, the **Image Swapper** object will have the data point locked again (the priority returns to the value you specified).

- The lower priority application or object specifies a priority that is equal to or higher than the one you specified for the **Image Swapper** object.

For more information on using priorities, see *Using Data Point Priorities* later in this chapter.

Switchable	By default, a user can click the image to change the data point's value. You can clear this option if the value of the selected data point is to be monitored only.

The value written to the data point when the image is clicked depends on the order that the presets are listed in the Images List box. The SmartServer will proceed through the list from top to bottom each time the image is clicked.

Consider a data point that has the following five presets (listed in order): OFF, ON, HOLIDAY, WEEKEND, CLOSED. If the data point is set to OFF and a user clicks the image, it will be set to ON, which is the next value in the list. If the user clicks it again, it will be set to HOLIDAY. If the user clicks it again, it will be set to WEKEND, and then CLOSED, and so on. When it reaches the bottom of the list, the SmartServer will start over from the top.

|	
Force Round to Preset	Rounds the raw value of the data point to the value of the nearest preset defined for the data point so that the preset is displayed on your custom Web page.
	Consider a **SNVT_temp_p** data point, which has the following presets defined for it:
	OCCUPIED 69.8 UNOCCUPIED 60.8 STANDBY 19.994
	If the raw value of the **SNVT_temp_p** data point is 30, STANDBY is displayed on your custom Web page. If the raw value of the data point is 45, UNOCCUPIED is displayed.
	You can use this property to create a Range Image Swapper. For example, you can show five states for a damper [closed (0%), 1–33 %, 34–66%, 67–99%, and full-open (100%)] using five graphics and seven presets. You would use a close graphic for 0%, a low-volume graphic for 1% and 17%, a medium-volume graphic for 50%, a high-volume graphic for 83% and 99%, and a full-open graphic for 100%.
	You can add, edit, and delete presets for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** button above the navigation pane, and then click the data point in the navigation pane. The options for presets are located at the bottom of the Web page.
Default Click	Specifies the value to be written to the data point and corresponding graphic to be displayed when the user clicks the default image. The default image is displayed when the current value stored in the data point does not correspond to any of the presets defined it.

9. Click **OK**. The **Image Swapper** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** option, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page.

10. Click **Publish** on the Editor toolbar (Publish), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page.
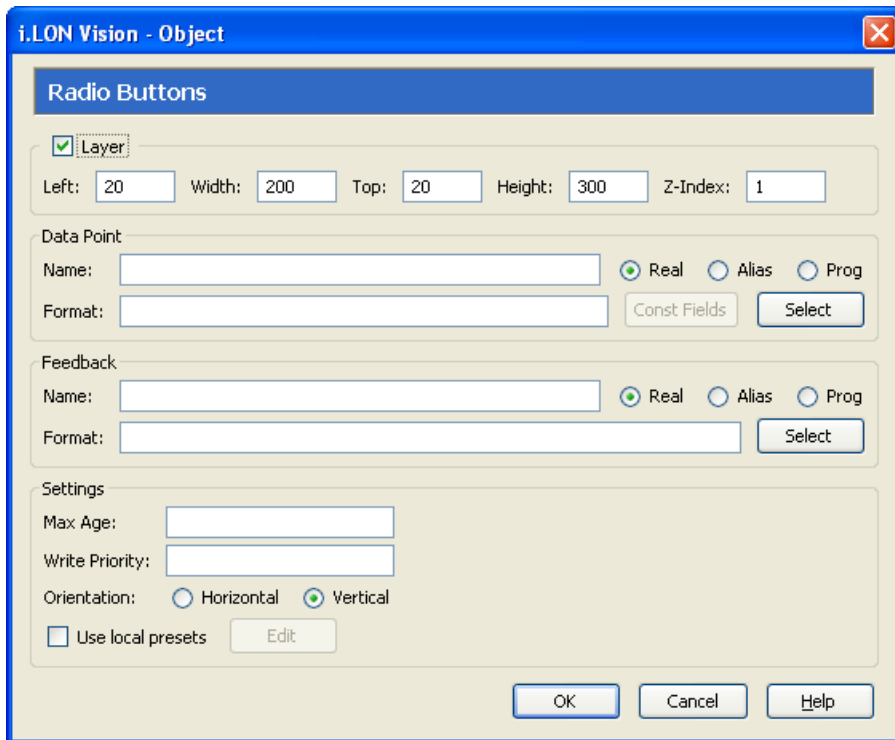
Radio Buttons

The Radio Buttons object provides radio buttons for each preset or enumerated value defined for a scalar data point, or each enumerated value defined for a field within a structured data point. The current value stored in the data point is indicated by the button that is selected. The user can write to the data point by selecting one of the buttons. To add a **Radio Buttons** object to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar (Edit) or click the **Layout** tab.

2. Click **Insert** and then select **Radio Buttons**.
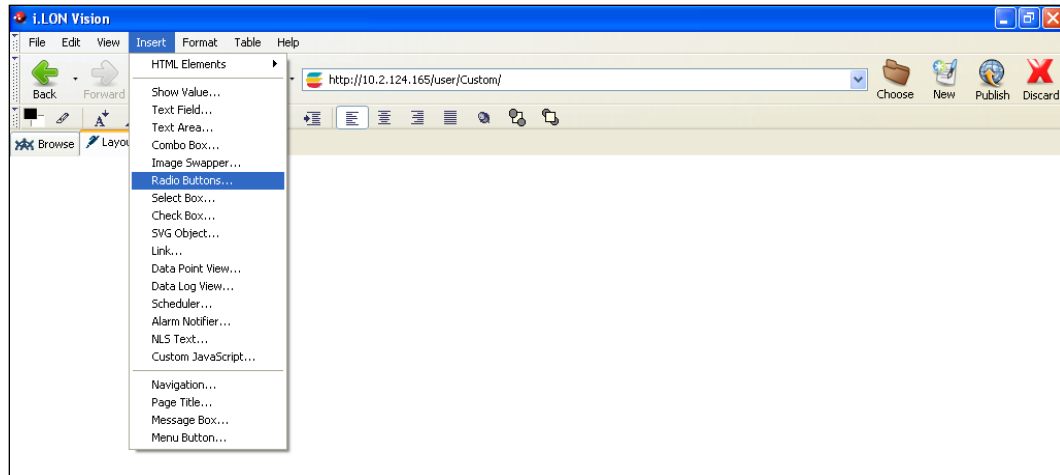
3. The **Radio Buttons** dialog opens.

4. Select the data point to be monitored by the **Radio Buttons** object following these steps:

   a. In the **Data Point** property, click **Select**. The **Select Data Points** dialog opens.

   b. To view all the network objects on the SmartServer, including those that are currently hidden in the navigation pane on the built-in SmartServer Web interface, select **Show Hidden Items**. By default, this option is cleared, meaning that you can only select those objects that are currently shown on the navigation pane.

   c. Select the method for searching for the data point to be monitored. You have two choices:

      - **Real Name**. The data points are organized in the SmartServer tree by their parent objects using the following network hierarchy: *<network>/<channel>/<device>/<functional block>/<data point>*. This is the default.

- **Alias Name**. Data points are alphabetized by their alias names, which correspond to their locations in the navigation pane. You can add, edit, and enable/disable alias names for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane, and then click the data point in the navigation pane. The **Alias Name** property is located near the top of the Web page. If you select this option, the data points are listed in the SmartServer tree as follows:

  o The data points of the external devices connected to the SmartServer that do not have default alias names are listed under the **[no alias]** icon.

  o The data points on the **i.LON App (Internal)** device under the **LON** channel are listed in the tree with the "**NVL**" prefix.

  o The virtual data points on the **i.LON App (System)** device are listed in the tree with the "**iLON System**" prefix.

  Note: Only select the **Prog** button if you are creating a custom app configuration Web page.

d. Expand the network, channel, device, and then the functional block of the data point to be monitored, and then click the desired data point. If the data point has a structured type, you can expand the data point and select a field within the structure.

e. Click **OK** to return to the **Radio Buttons** dialog. The **Name** property is updated to show the name of the data point in the following format: *<network>/<channel>/<device>/<functional block>/<data point>*.

   The **Format** property is updated to show the format description of the selected data point. The format description consists of the data point's program ID; SNVT, SCPT, UNVT, UCPT, or built-in data type; and format (for example, SI metric or US customary). If the data point supports multiple formats, you can manually change the format used for the data point. Using a **SNVT_temp_f** data point for example, you can change the format to **#US**, **#SI**, or **#US_Diff** or append one of these formats to the data point name if no format is specified.

5. Optionally, if you selected a field within a structured data point, you can set constant values to be written to one to all of the other fields in the data point automatically when a value is written to the selected field. This ensures that the other field or fields in the structured data point are set to specific values whenever the **Radio Buttons** object is used on the selected field.

   Using a **SNVT_switch** data point for example, you can have **SNVT_switch.state** be set to **1** each time a value is written to **SNVT_switch.value**.

   To set constant values for the other fields in a structured data point, follow these steps:

a. Click **Const Fields**. The **Constant Fields** dialog opens.

b. The data point field you selected in step 4 is marked as "[dynamic]".

c. Click the data point field to be set to a constant value.

d. In the **Value** box, set the constant value to be written to the data point field.

e. Click **Save**.

f. Repeat steps c–e for any other fields in the structured data point to be set to constant values.

g. Click **OK** to return to the **Radio Buttons** dialog.

6. Optionally, you can specify a feedback data point. To do this, click **Select** in the **Feedback** property, and select the feedback data point in the **Data Points** dialog following step 4.

   The **Radio Buttons** object will display the value of the specified **Feedback** data point, as updated values are being written to the data point specified in the **Data Point** field (the data point you selected in step 4). If you use the **Radio Buttons** object to write a value to the **Data Point**, the

object will be disabled temporarily until the specified **Feedback** data point receives the data point update.

Note: You can bind the **Feedback** data point you selected to the **Data Point** via device hardware, a LONWORKS connection, or a Web connection.

7. Optionally, configure the following properties of the **Radio Buttons** object:

Layer   By default, the **Layer** option is selected. This means that the **Radio Buttons** object is embedded in a Layer object, which lets you freely move the **Radio Buttons** object in your custom Web page. To move a Layer, click its moving icon, and then use the arrow keys to move it.

Clearing this option means that you must position the **Radio Buttons** object as you would any other HTML object. This may be useful if you want to place the **Radio Buttons** object in a table.

You can set the following properties to position and size the object:

- The **Left** and **Top** properties determine the object's position from the upper left-hand corner of the Web page (in pixels). You can set these properties to position the object instead of dragging the Layer object containing it.

- The **Width** and the **Height** properties determine the size of the object (in pixels). You can set these properties to size the object instead of expanding and collapsing the Layer object containing it.

- The **Z-Index** property determines the object's background depth compared to objects it overlaps with, with **1** (the default) being in the back and higher values being in front.

When positioning the **Radio Buttons** object, leave space for menu, page title, or sidebar objects that you may want to add to your Web page. This will help prevent you from accidentally overlapping objects.

Max Age   Set the maximum period of time (in seconds) that the value of the data point is cached before the **Radio Buttons** object receives updated values. This enables you to control the amount of traffic that is generated on a specific channel by the object.

The SmartServer compares the **Max Age** value of the **Radio Buttons** object to the amount of time the data point value has been cached in its internal data server, and then does the following:

- If **Max Age** is less than the period of time the data point value has been cached, the SmartServer's internal data server polls the data point and returns the updated value to the object.

- If **Max Age** is greater than the period of time the data point value has been cached, the SmartServer's internal data server returns the cached value to the object.

- If **Max Age** is disabled, the SmartServer's internal data server returns a cached value to the object regardless how old the data point is. This is the default.

- If **Max Age** is set to **0**, the SmartServer's internal data server polls the data point and returns the updated value to the object regardless how current the data point is.

Write Priority	Assign the priority the **Radio Buttons** object has for writing updated values to the data point. This value may range from 0 to 255 (highest to lowest priority).
	The priority you specify must be equal to or higher than the priority used by the last application that updated the data point. If you set a priority that is less than priority used by the last application that updated the data point, a red hand icon (⚠) appears to the left of the data point when you publish your custom Web page. You will need to edit the page and enter a higher priority in this dialog to be able to write to the data point.
	If you set a priority that is equal to or higher than that assigned to the last application or object that updated the data point, a green hand icon (⚠) appears to the left of the data point. Other applications or objects can write to the data point when one of the following events occurs:

- The user clicks the green hand icon to unlock the data point (temporarily reset the **Radio Buttons** object's priority to 255) so that lower priority applications or objects can write to the data point. When the user enters an updated value in the text field, the **Radio Buttons** object will have the data point locked again (the priority returns to the value you specified).

- The lower priority application or object specifies a priority that is equal to or higher than the one you specified for the **Radio Buttons** object.

For more information on using priorities, see *Using Data Point Priorities* in Chapter 4.

Orientation	Select how the radio buttons are aligned. You have the following two choices:

- **Horizontal**. The radio buttons are aligned horizontally in a single row. Note that you must widen the Layer object to fit all the radio buttons that will be displayed in the row.

- **Vertical**. The radio buttons are aligned vertically in a single column.

|	
Use Local Presets	Select this option and click **Edit** to open the **Local Presets** dialog, and create presets for this individual **Radio Buttons** object. This option is cleared by default meaning that local presets are not used.
	A local preset is a preset that applies to a specific instance of an i.LON Vision object. Local presets are especially useful if you selected a field within a structured data point and you want to represent the current value of the field using a simple, meaningful string instead of a raw value.

Note: You can add, edit, and delete presets for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** button above the navigation pane, and then click the data point in the navigation pane. The options for presets are located at the bottom of the Web page.

8. Click **OK**. The **Radio Buttons** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** check box, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page.

9. Click **Publish** on the Editor toolbar ( ), click **File** and then click **Publish**, or click the
   **Browse** tab to publish your custom Web page.

Select Box

The **Select Box** object is a drop-down combo box that displays the current value of a scalar data point,
enumerated data point, or a field within a structured data point. The user can write to the data point or
field by selecting a preset or enumeration from the attached list box. To add a **Select Box** object to
your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar ( ) or click the **Layout** tab.

2. Click **Insert** and then select **Select Box**.
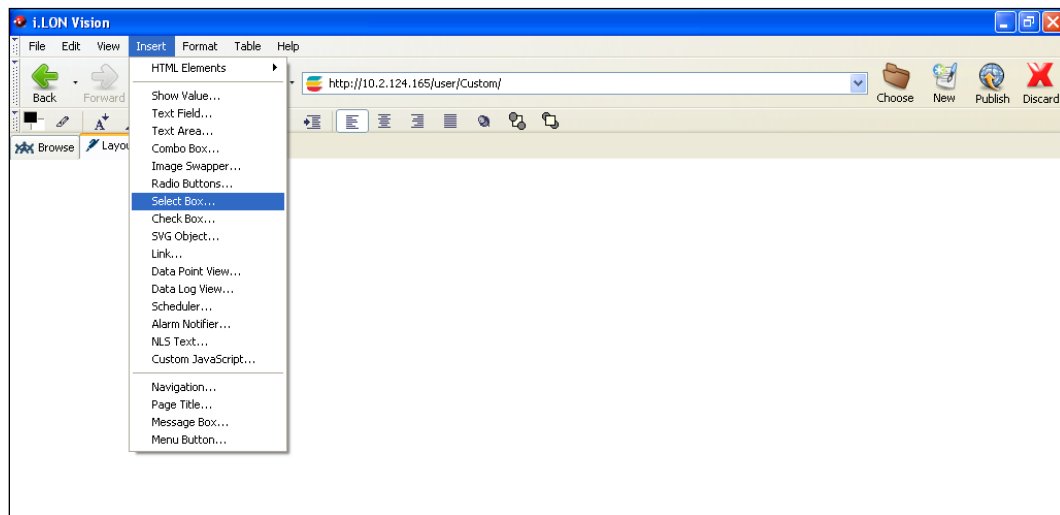
3. The **Select Box** dialog opens.
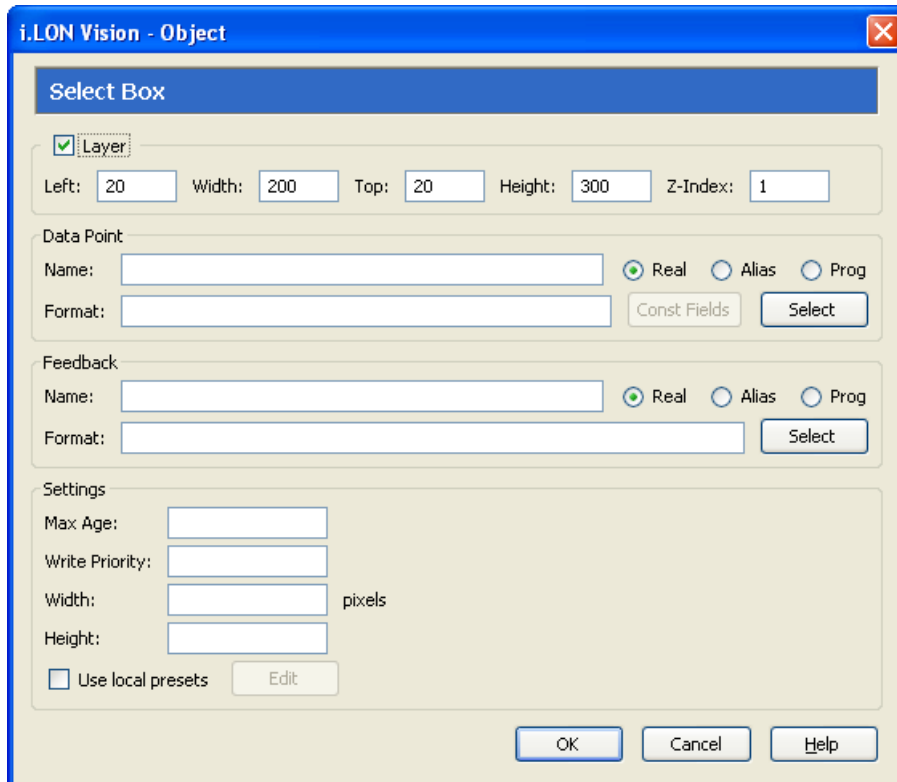
4. Select the data point to be monitored by the **Select Box** object following these steps:

   a. In the **Data Point** property, click **Select**. The **Select Data Points** dialog opens.

   b. To view all the network objects on the SmartServer, including those that are currently hidden in the navigation pane on the built-in SmartServer Web interface, select **Show Hidden Items**. By default, this option is cleared, meaning that you can only select those objects that are currently shown on the navigation pane.

   c. Select the method for searching for the data point to be monitored. You have two choices:

      • **Real Name**. The data points are organized in the SmartServer tree by their parent objects using the following network hierarchy: *<network>/<channel>/<device>/<functional block>/<data point>*. This is the default.

      • **Alias Name**. Data points are alphabetized by their alias names, which correspond to their locations in the navigation pane. You can add, edit, and enable/disable alias names for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane, and then click the data point in the navigation pane. The **Alias Name** property is located near the top of the Web page. If you select this option, the data points are listed in the SmartServer tree as follows:

         o The data points of the external devices connected to the SmartServer that do not have default alias names are listed under the **[no alias]** icon.

         o The data points on the **i.LON App (Internal)** device under the **LON** channel are listed in the tree with the "**NVL**" prefix.

         o The virtual data points on the **i.LON App (System)** device are listed in the tree with the "**iLON System**" prefix.

      Note: Only select the **Prog** button if you are creating a custom app configuration Web page.

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d. Expand the network, channel, device, and then the functional block of the data point to be monitored, and then click the desired data point. If the data point has a structured type, you can expand the data point and select a field within the structure.

e. Click **OK** to return to the **Select Box** dialog. The **Name** property is updated to show the name of the data point in the following format: *<network>/<channel>/<device>/<functional block>/<data point>*.

   The **Format** property is updated to show the format description of the selected data point. The format description consists of the data point's program ID; SNVT, SCPT, UNVT, UCPT, or built-in data type; and format (for example, SI metric or US customary). If the data point supports multiple formats, you can manually change the format used for the data point. Using a **SNVT_temp_f** data point for example, you can change the format to **#US**, **#SI**, or **#US_Diff** or append one of these formats to the data point name if no format is specified.

5. Optionally, if you selected a field within a structured data point, you can set constant values to be written to one to all of the other fields in the data point automatically when a value is written to the selected field. This ensures that the other field or fields in the structured data point are set to specific values whenever the **Select Box** object is used on the selected field.

   Using a **SNVT_switch** data point for example, you can have **SNVT_switch.state** be set to **1** each time a value is written to **SNVT_switch.value**.

   To set constant values for the other fields in a structured data point, follow these steps:

   a. Click **Const Fields**. The **Constant Fields** dialog opens.

   b. The data point field you selected in step 4 is marked as "[dynamic]".

   c. Click the data point field to be set to a constant value.

   d. In the **Value** field, set the constant value to be written to the data point field.

   e. Click **Save**.

   f. Repeat steps c–e for any other fields in the structured data point to be set to constant values.

   g. Click **OK** to return to the **Select Box** dialog.

6. Optionally, you can specify a feedback data point. To do this, you click **Select** in the **Feedback** property, and select the feedback data point in the **Data Points** dialog following step 4.

   The **Select Box** object will display the value of the specified **Feedback** data point, as updated values are being written to the data point specified in the **Data Point** field (the data point you selected in step 4). If you use the **Select Box** object to write a value to the **Data Point**, the object will be disabled temporarily until the specified **Feedback** data point receives the data point update.

   Note: You can bind the **Feedback** data point you selected to the **Data Point** via device hardware, a LONWORKS connection, or a Web connection.

7. Optionally, configure the following properties of the **Select Box** object:

Layer	By default, the **Layer** option is selected. This means that the **Select Box** object is embedded in a Layer object, which lets you freely move the Select Box object in your custom Web page. To move a Layer, click its moving icon, and then use the arrow keys to move it.

Clearing this option means that you must position the **Select Box** object as you would any other HTML object. This may be useful if you want to place the **Select Box** object in a table.

You can set the following properties to position and size the object:

- The **Left** and **Top** properties determine the object's position from the upper left-hand corner of the Web page (in pixels). You can set these properties to position the object instead of dragging the Layer object containing it.

- The **Width** and the **Height** properties determine the size of the object (in pixels). You can set these properties to size the object instead of expanding and collapsing the Layer object containing it.

- The **Z-Index** property determines the object's background depth compared to objects it overlaps with, with **1** (the default) being in the back and higher values being in front.

When positioning the **Select Box** object, leave space for menu, page title, or sidebar objects that you may want to add to your Web page. This will help prevent you from accidentally overlapping objects.

Max Age	Set the maximum period of time (in seconds) that the value of the data point is cached before the **Select Box** object receives updated values. This enables you to control the amount of traffic that is generated on a specific channel by the object.

- The SmartServer compares the **Max Age** value of the **Select Box** object to the amount of time the data point value has been cached in its internal data server, and then does the following:

- If **Max Age** is less than the period of time the data point value has been cached, the SmartServer's internal data server polls the data point and returns the updated value to the object.

- If **Max Age** is greater than the period of time the data point value has been cached, the SmartServer's internal data server returns the cached value to the object.

- If **Max Age** is disabled, the SmartServer's internal data server returns a cached value to the object regardless how old the data point is. This is the default.

- If **Max Age** is set to **0**, the SmartServer's internal data server polls the data point and returns the updated value to the object regardless how current the data point is.

Write Priority	Assign the priority the **Select Box** object has for writing updated values to the data point. This value may range from 0 to 255 (highest to lowest priority).
	The priority you specify must be equal to or higher than the priority used by the last application that updated the data point. If you set a priority that is less than priority used by the last application that updated the data point, a red hand icon (🖐) appears to the left of the data point when you publish your custom Web page. You will need to edit the page and enter a higher priority in this dialog to be able to write to the data point.
	If you set a priority that is equal to or higher than that assigned to the last application or object that updated the data point, a green hand icon (🖐) appears to the left of the data point. Other applications or objects can write to the data point when one of the following events occurs:
	• The user clicks the green hand icon to unlock the data point (temporarily reset the **Select Box** object's priority to 255) so that lower priority applications or objects can write to the data point. When the user enters an updated value in the text field, the **Select Box** object will have the data point locked again (the priority returns to the value you specified).
	• The lower priority application or object specifies a priority that is equal to or higher than the one you specified for the **Select Box** object.
	For more information on using priorities, see *Using Data Point Priorities* in Chapter 4.
Width	Optionally, you can enter the width of the select box (in pixels). By default, the width of the **Select Box** object is set to fit the preset or enumerated value with the longest name.
Height	Enter the height of the **Select Box** object (in pixels). The default height is **1**.
Use Local Presets	Select this option and click **Edit** to open the **Local Presets** dialog, and create presets for this individual **Select Box** object. This option is cleared by default meaning that local presets are not used.
	A local preset is a preset that applies to a specific instance of an i.LON Vision object. Local presets are especially useful if you selected a field within a structured data point and you want to represent the current value of the field using a simple, meaningful string instead of a raw value.

8. Click **OK**. The **Select Box** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** option, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page.

9. Click **Publish** on the Editor toolbar ( ), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page.

Check Box

The **Check Box** object is a check box that represents the first preset defined for the data point when checked, and representing the second preset defined for the data point when cleared. The user can

write to the data point by selecting or clearing the check box. To add a **Check Box** object to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar ( ) or click the **Layout** tab.

2. Click **Insert** and then select **Check Box**.
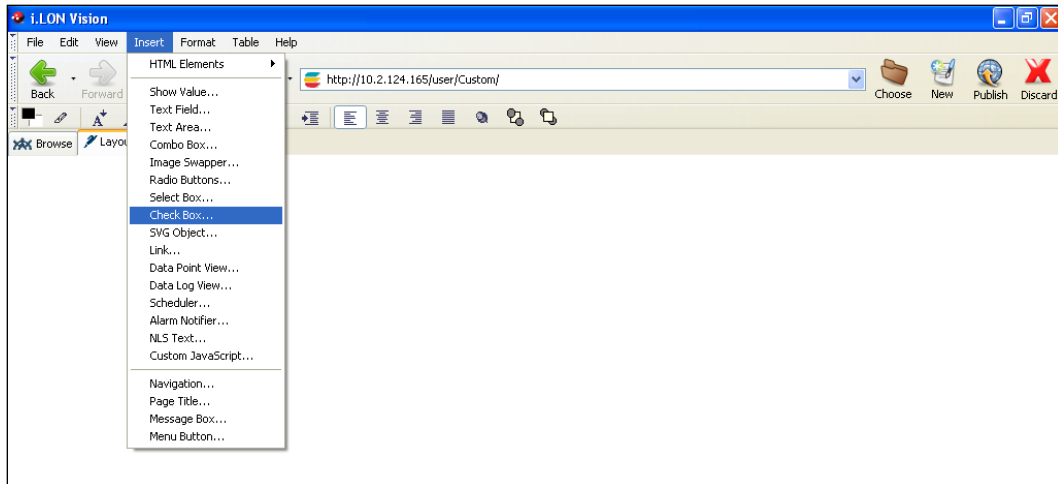
3. The **Check Box** dialog opens.
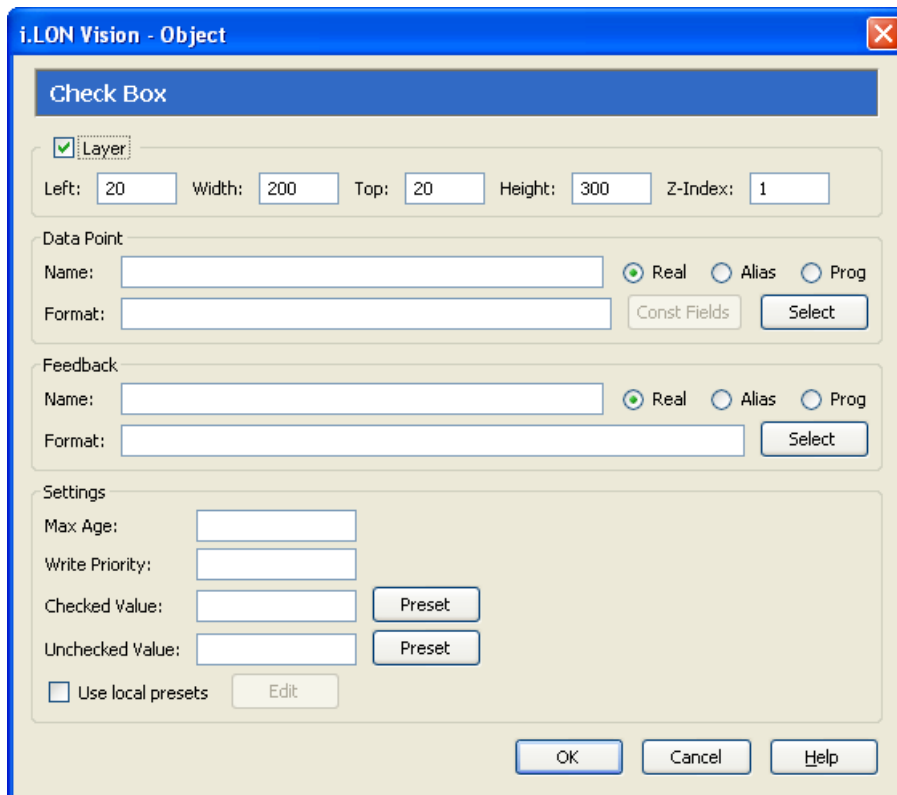
4. Select the data point to be monitored by the **Check Box** object following these steps:

    a. In the **Data Point** property, click **Select**. The **Select Data Points** dialog opens.

    b. To view all the network objects on the SmartServer, including those that are currently hidden in the navigation pane on the built-in SmartServer Web interface, select **Show Hidden Items**.

By default, this option is cleared, meaning that you can only select those objects that are currently shown on the navigation pane.

c. Select the method for searching for the data point to be monitored. You have two choices:

- **Real Name**. The data points are organized in the SmartServer tree by their parent objects using the following network hierarchy: *<network>/<channel>/<device>/<functional block>/<data point>*. This is the default.

- **Alias Name**. Data points are alphabetized by their alias names, which correspond to their locations in the navigation pane. You can add, edit, and enable/disable alias names for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane, and then click the data point in the navigation pane. The **Alias Name** property is located near the top of the Web page. If you select this option, the data points are listed in the SmartServer tree as follows:

  o The data points of the external devices connected to the SmartServer that do not have default alias names are listed under the **[no alias]** icon.

  o The data points on the **i.LON App (Internal)** device under the **LON** channel are listed in the tree with the "**NVL**" prefix.

  o The virtual data points on the **i.LON App (System)** device are listed in the tree with the "**iLON System**" prefix.

  Note: Only select the **Prog** button if you are creating a custom app configuration Web page.

d. Expand the network, channel, device, and then the functional block of the data point to be monitored, and then click the desired data point. If the data point has a structured type, you can expand the data point and select a field within the structure.

e. Click **OK** to return to the **Check Box** dialog. The **Name** property is updated to show the name of the data point in the following format: *<network>/<channel>/<device>/<functional block>/<data point>*.

The **Format** property is updated to show the format description of the selected data point. The format description consists of the data point's program ID; SNVT, SCPT, UNVT, UCPT, or built-in data type; and format (for example, SI metric or US customary). If the data point supports multiple formats, you can manually change the format used for the data point. Using a **SNVT_temp_f** data point for example, you can change the format to **#US**, **#SI**, or **#US_Diff** or append one of these formats to the data point name if no format is specified.

5. Optionally, you can specify a feedback data point. To do this, click **Select** in the **Feedback** property, and select the feedback data point in the **Data Points** dialog following step 4.

The **Check Box** object will display the value of the specified **Feedback** data point, as updated values are being written to the data point specified in the **Data Point** field (the data point you selected in step 4). If you use the **Check Box** object to write a value to the **Data Point**, the object will be disabled temporarily until the specified **Feedback** data point receives the data point update.

Note: You can bind the **Feedback** data point you selected to the **Data Point** via device hardware, a LONWORKS connection, or a Web connection.

6. Specify the presets to be written to the data point when the user selects and clears the check box. If the data point has pre-defined ON and OFF presets such as a **SNVT_switch** data point, you can skip this step. To specify the presets for the data point, follow these steps:

a. In the **Checked Value** and **Unchecked Value** properties, click **Preset**. The **Select Preset** dialog opens.
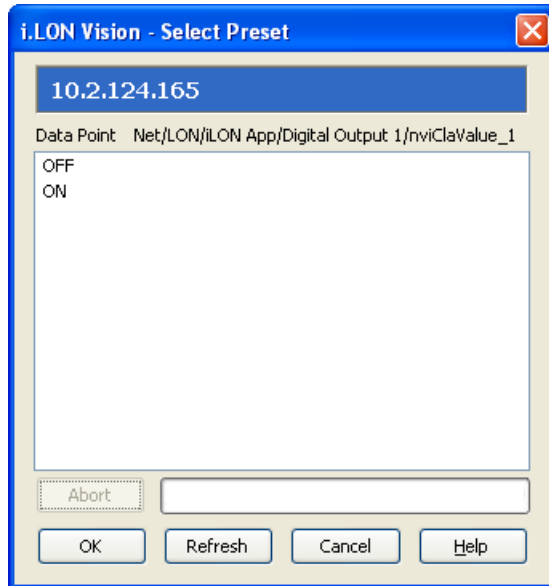
b. Select the preset to be written to the data point when the user selects the check box and then click **OK** to return to the **Check Box** dialog. To update the list of available presets, click **Refresh**.

Note: You can add, edit, and delete presets for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** button above the navigation pane, and then click the data point in the navigation pane. The options for presets are located at the bottom of the Web page.

7. Optionally, configure the following properties of the **Check Box** object:

Layer By default, the **Layer** option is selected. This means that the **Check Box** object is embedded in a Layer object, which lets you freely move the **Check Box** object in your custom Web page. To move a Layer, click its moving icon, and then use the arrow keys to move it.

Clearing this option means that you must position the **Check Box** object as you would any other HTML object. This may be useful if you want to place the **Check Box** object in a table.

You can set the following properties to position and size the object:

- The **Left** and **Top** properties determine the object's position from the upper left-hand corner of the Web page (in pixels). You can set these properties to position the object instead of dragging the Layer object containing it.

- The **Width** and the **Height** properties determine the size of the object (in pixels). You can set these properties to size the object instead of expanding and collapsing the Layer object containing it.

- The **Z-Index** property determines the object's background depth compared to objects it overlaps with, with **1** (the default) being in the back and higher values being in front.

When positioning the **Check Box** object, leave space for menu, page title, or sidebar objects that you may want to add to your Web page. This will help prevent you from accidentally overlapping objects.

Max Age	Set the maximum period of time (in seconds) that the value of the data point is cached before the **Check Box** object receives updated values. This enables you to control the amount of traffic that is generated on a specific channel by the object.

The SmartServer compares the **Max Age** value of the **Check Box** object to the amount of time the data point value has been cached in its internal data server, and then does the following:

- If **Max Age** is less than the period of time the data point value has been cached, the SmartServer's internal data server polls the data point and returns the updated value to the object.

- If **Max Age** is greater than the period of time the data point value has been cached, the SmartServer's internal data server returns the cached value to the object.

- If **Max Age** is disabled, the SmartServer's internal data server returns a cached value to the object regardless how old the data point is. This is the default.

- If **Max Age** is set to **0**, the SmartServer's internal data server polls the data point and returns the updated value to the object regardless how current the data point is.

Write Priority	Assign the priority the **Check Box** object has for writing updated values to the data point. This value may range from 0 to 255 (highest to lowest priority).

The priority you specify must be equal to or higher than the priority used by the last application that updated the data point. If you set a priority that is less than priority used by the last application that updated the data point, a red hand icon (🖑) appears to the left of the data point when you publish your custom Web page. You will need to edit the page and enter a higher priority in this dialog to be able to write to the data point.

If you set a priority that is equal to or higher than that assigned to the last application or object that updated the data point, a green hand icon (🖑) appears to the left of the data point. Other applications or objects can write to the data point when one of the following events occurs:

- The user clicks the green hand icon to unlock the data point (temporarily reset the **Check Box** object's priority to 255) so that lower priority applications or objects can write to the data point. When the user enters an updated value in the text field, the **Check Box** object will have the data point locked again (the priority returns to the value you specified).

- The lower priority application or object specifies a priority that is equal to or higher than the one you specified for the **Check Box** object.

For more information on using priorities, see *Using Data Point Priorities* in Chapter 4.

Use Local Presets Select this option and click **Edit** to open the **Local Presets** dialog, and create presets for this individual **Check Box** object. This option is cleared by default meaning that local presets are not used.

A local preset is a preset that applies to a specific instance of an i.LON Vision object. Local presets are especially useful if you selected a field within a structured data point and you want to represent the current value of the field using a simple, meaningful string instead of a raw value.

8. Click **OK**. The **Check Box** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** option, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page.

9. Click **Publish** on the Editor toolbar ( ), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page.

SVG Object

You can use the **SVG Object** to add a horizontal or vertical slider, gauge, knob, meter, or thermometer representing the value of a data point or the field of a structured data point as a percentage. The user can write to the data point or field by adjusting the object. The **SVG Object** is ideal for controlling light and power levels. The following graphic illustrates the SVG object that you insert in your custom Web pages.
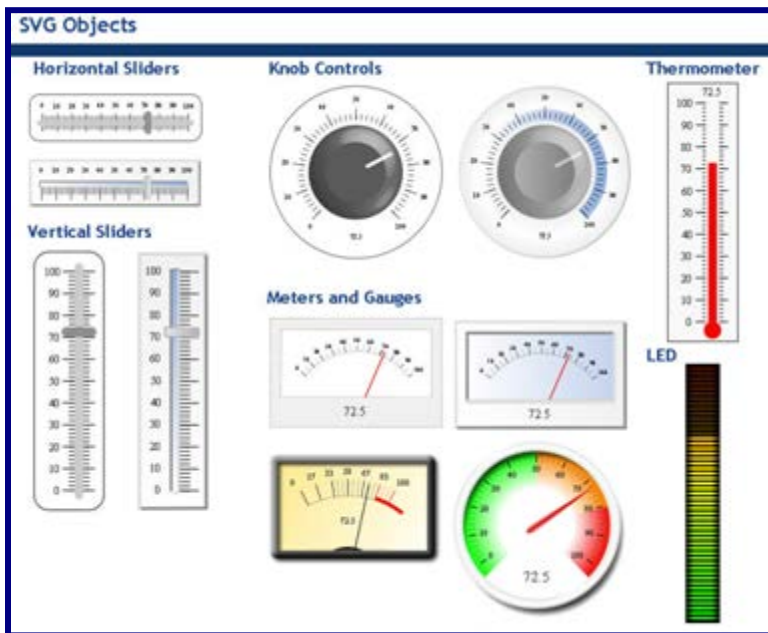
To add a **SVG Object** to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar ( ) or click the **Layout** tab.

2. Click **Insert** and then select **SVG Object**.
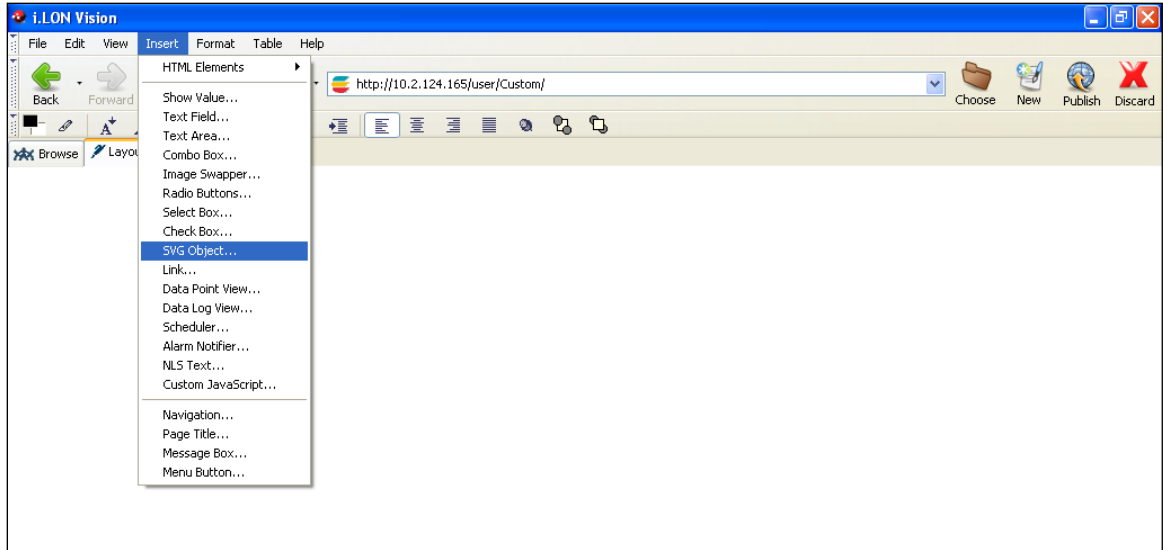
3. The **SVG Object** dialog opens.
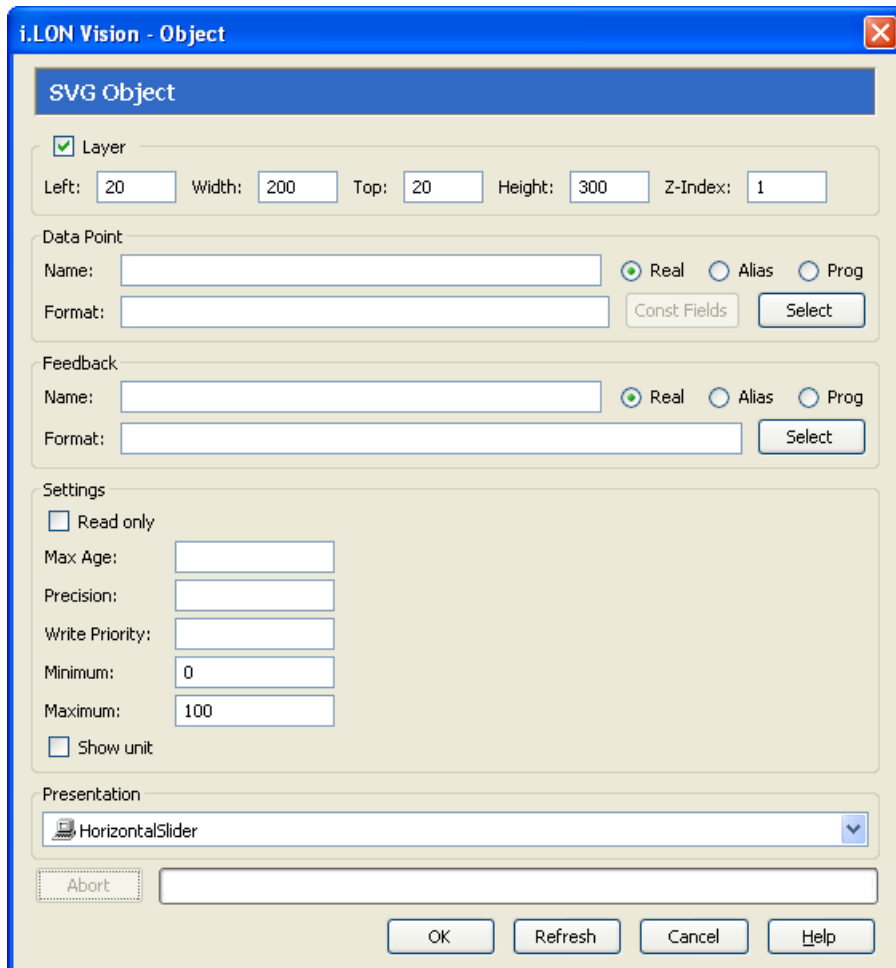
4. Select the data point to be monitored by the **SVG Object** following these steps:

   a. In the **Data Point** property, click **Select**. The **Select Data Points** dialog opens.

b. To view all the network objects on the SmartServer, including those that are currently hidden in the navigation pane on the built-in SmartServer Web interface, select **Show Hidden Items**. By default, this option is cleared, meaning that you can only select those objects that are currently shown on the navigation pane.

c. Select the method for searching for the data point to be monitored. You have two choices:

- **Real Name**. The data points are organized in the SmartServer tree by their parent objects using the following network hierarchy: *<network>/<channel>/<device>/<functional block>/<data point>*. This is the default.

- **Alias Name**. Data points are alphabetized by their alias names, which correspond to their locations in the navigation pane. You can add, edit, and enable/disable alias names for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane, and then click the data point in the navigation pane. The **Alias Name** property is located near the top of the Web page. If you select this option, the data points are listed in the SmartServer tree as follows:

    o The data points of the external devices connected to the SmartServer that do not have default alias names are listed under the **[no alias]** icon.

    o The data points on the **i.LON App (Internal)** device under the **LON** channel are listed in the tree with the "**NVL**" prefix.

    o The virtual data points on the **i.LON App (System)** device are listed in the tree with the "**iLON System**" prefix.

    Note: Only select the **Prog** button if you are creating a custom app configuration Web page.

d. Expand the network, channel, device, and then the functional block of the data point to be monitored, and then click the desired data point. If the data point has a structured type, you can expand the data point and select a field within the structure.

e. Click **OK** to return to the **SVG Object** dialog. The **Name** property is updated to show the name of the data point in the following format: *<network>/<channel>/<device>/<functional block>/<data point>*.

The **Format** property is updated to show the format description of the selected data point. The format description consists of the data point's program ID; SNVT, SCPT, UNVT, UCPT, or built-in data type; and format (for example, SI metric or US customary). If the data point supports multiple formats, you can manually change the format used for the data point. Using a **SNVT_temp_f** data point for example, you can change the format to **#US**, **#SI**, or **#US_Diff** or append one of these formats to the data point name if no format is specified.

5. Optionally, if you selected a field within a structured data point, you can set constant values to be written to one to all of the other fields in the data point automatically when a value is written to the selected field. This ensures that the other field or fields in the structured data point are set to specific values whenever the **SVG Object** is used on the selected field.

Using a **SNVT_switch** data point for example, you can have **SNVT_switch.state** be set to **1** each time a value is written to **SNVT_switch.value**.

To set constant values for the other fields in a structured data point, follow these steps:

a. Click **Const Fields**. The **Constant Fields** dialog opens.

b. The data point field you selected in step 4 is marked as "[dynamic]".

c. Click the data point field to be set to a constant value.

d. In the **Value** field, set the constant value to be written to the data point field.

e. Click **Save**.

f. Repeat steps c–e for any other fields in the structured data point to be set to constant values.

g. Click **OK** to return to the **SVG Object** dialog.

6. Optionally, you can specify a feedback data point. To do this, click **Select** in the **Feedback** property, and select the feedback data point in the **Data Points** dialog following step 4.

   The **SVG Object** will display the value of the specified **Feedback** data point, as updated values are being written to the data point specified in the **Data Point** field (the data point you selected in step 4). If you use the **SVG Object** to write a value to the **Data Point**, the object will be disabled temporarily until the specified **Feedback** data point receives the data point update.

   Note: You can bind the **Feedback** data point you selected to the **Data Point** via device hardware, a LONWORKS connection, or a Web connection.

7. Set the **Minimum** and **Maximum** values on a continuous range of possible values that the **SVG Object** can represent. To write to data points without scaling their raw values, you can set the minimum to **0** and the maximum to **100**. This is useful for data points or fields within a structured data point that have valid ranges between 0–100, such as the value field in a **SNVT_switch** data point.

8. In the **Presentation** property, select the type of slider to be used: **Horizontal Slider** (the default), **Horizontal Slider 3D**, **Knob**, **Knob 3D**, **Vertical Slider**, **Vertical Slider 3D**, **Gauge**, **vuMeter**. The horizontal and vertical sliders are ideal for controlling lighting levels; the knobs and vuMeter are ideal for controlling power levels; the thermometer is ideal for controlling temperature setpoints and monitoring temperatures. An image of the selected SVG Object appears in the **Presentation** box.

9. Optionally, configure the following properties of the **SVG Object**:

Layer   By default, the **Layer** option is selected. This means that the **SVG Object** is embedded in a Layer object, which lets you freely move the **SVG Object** in your custom Web page. which lets you freely move the **Select Box** object in your custom Web page. To move a Layer, click its moving icon, and then use the arrow keys to move it.

Clearing this option means that you must position the **SVG Object** as you would any other HTML object. This may be useful if you want to place the **SVG Object** in a table.

You can set the following properties to position and size the object:

- The **Left** and **Top** properties determine the object's position from the upper left-hand corner of the Web page (in pixels). You can set these properties to position the object instead of dragging the Layer object containing it.

- The **Width** and the **Height** properties determine the size of the object (in pixels). You can set these properties to size the object instead of expanding and collapsing the Layer object containing it.

- The **Z-Index** property determines the object's background depth compared to objects it overlaps with, with **1** (the default) being in the back and higher values being in front.

When positioning the **SVG Object**, leave space for menu, page title, or sidebar objects that you may want to add to your Web page. This will help prevent you from accidentally overlapping objects.

Max Age   Set the maximum period of time (in seconds) that the value of the data point is cached before the **SVG Object** receives updated values. This enables you to control the amount of traffic that is generated on a specific channel by the object.

The SmartServer compares the **Max Age** value of the **SVG Object** to the amount of time the data point value has been cached in its internal data server, and then does the following:

- If **Max Age** is less than the period of time the data point value has been cached, the SmartServer's internal data server polls the data point and returns the updated value to the object.

- If **Max Age** is greater than the period of time the data point value has been cached, the SmartServer's internal data server returns the cached value to the object.

- If **Max Age** is disabled, the SmartServer's internal data server returns a cached value to the object regardless how old the data point is. This is the default.

- If **Max Age** is set to **0**, the SmartServer's internal data server polls the data point and returns the updated value to the object regardless how current the data point is.

Write Priority	Assign the priority the **SVG Object** has for writing updated values to the data point. This value may range from 0 to 255 (highest to lowest priority).

The priority you specify must be equal to or higher than the priority used by the last application that updated the data point. If you set a priority that is less than priority used by the last application that updated the data point, a red hand icon (🖐) appears to the left of the data point when you publish your custom Web page. You will need to edit the page and enter a higher priority in this dialog to be able to write to the data point.

If you set a priority that is equal to or higher than that assigned to the last application or object that updated the data point, a green hand icon (🖐) appears to the left of the data point. Other applications or objects can write to the data point when one of the following events occurs:

- The user clicks the green hand icon to unlock the data point (temporarily reset the **SVG Object**'s priority to 255) so that lower priority applications or objects can write to the data point. When the user enters an updated value in the text field, the **SVG Object** will have the data point locked again (the priority returns to the value you specified).

- The lower priority application or object specifies a priority that is equal to or higher than the one you specified for the **SVG Object**.

For more information on using priorities, see *Using Data Point Priorities* later in this chapter.

Show Unit	Select this option to display the data point's unit string (if enabled and defined). This option is cleared by default meaning that the unit string is not displayed.

You can enable/disable and edit the unit string defined for a data point on its **Configure - Data Points** Web page on the SmartServer. You can access this Web page from the built-in SmartServer Web interface by clicking **General**, and then clicking the data point in the SmartServer tree.

By default, the **Unit String** option in the **Configure - Data Points** Web page is selected, meaning that the unit string can be displayed on your custom Web pages. You can edit the unit string and the revised unit string will appear in your custom Web pages. You can clear **Unit String** to disable the appearance of the unit string on your custom Web pages.

10. Click **OK**. The **SVG Object** is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** option, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page.

Notes:

- When you publish a custom SmartServer Web page that includes an **SVG** object, the **SVG** object and its image (**.svg** and **.gif** files) are copied from the LONWORKS **iLON/iLonVision/extensions/{53D26F30-C12B-11DD-9FAE-D50A1A6F0FEF}/chrome/content/custom/svgcontrol** folder on your computer to the **/web/images/iLonVisionExtensions/** folder on the SmartServer flash disk.

- If you want to implement an updated SVG object in an existing custom SmartServer Web page, you need to delete the SVG object's **.svg** and **.gif** files from the **/web/images/iLonVisionExtensions** folder on the SmartServer flash disk, open the Web pages containing the existing SVG object, double-click the **SVG** object, select the updated SVG object in the **Presentation** property in the **SVG** dialog, and then publish your Web page.

11. Click **Publish** on the Editor toolbar ( ), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page.

Custom JavaScript Object

You can write JavaScript code to implement specialized dynamic objects that can read and write to data point properties. The properties that you can get and set include the value, state, name, priority, format description, and unit string of a data point. You can use the **Custom JavaScript** object to create objects ranging from simple read/write objects to intricate flash presentations. To create a Custom JavaScript object, you do the following:

1. Write your HTML and JavaScript code. In your code, you must implement the following JavaScript class, which enables updates to the specified data point property to be passed your custom object:

```
// the string (ClassName)must be the same as the file name

Echelon.CustomJavascript[<ClassName>] = function(argObj)
{
    // public method that handles SOAP objects
    this.update =
    {
        if (type=="Dp_Data")
        {
            //get DP property
            m_domObj.innerHTML = item.UCPT<DP property>.get();

            /* you can get and set these DP properties from 'item'
               UCPTname
               UCPTvalue[index]
               UCPTvalue[index].LonFormat
               UCPTvalue[index].Unit
               UCPTpriority
               UCPTpointStatus*/
        }
    };

    this.modify  =
    {
        //handle modify
    };


    // constructor that instantiates your JavaScript class and
    // specifies the DOM object to which it belongs
    var m_domObj = argObj.domObj;
};
```

Note: You must set the **UCPTvalue[***index***].LonFormat** property to the appropriate SNVT, UNVT, SCPT, or UCPT if you are writing formatted values to certain data point types. In addition, the formatted values must be written as strings to those data point types. If you are using presets to write to the data points, you do not need to set this property.

The data point types requiring the LonFormat property are as follows:

- Structured data points (for example, **SNVT_switch**). For example, if you are writing 100.0 1 to a **SNVT_switch** data point, you must set this property.

```
m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_switch");
m_myDp.UCPTvalue[0].set("0.0 0");
```

- Enumerated data points (for example,**SNVT_hvac_mode**) and enumerated fields within structured data points (for example, **SNVT_scene.function**).

```
m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_hvac_mode");
m_myDp.UCPTvalue[0].set("HVAC_COOL");
```

```
m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_scene.function");
m_myDp.UCPTvalue[0].set("SC_RECALL");
```

- Fields within structured data points that are not of a floating-point or integral type (for example,**SNVT_switch.state**).

```
m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_switch.state");
m_myDp.UCPTvalue[0].set("0");
```

The subsections after these steps provide simple JavaScript code examples that demonstrate how to set the **UCPTvalue[*index*].LonFormat** property and write values to these data point types.

2. If you plan on writing to data point properties, implement the following code in your JavaScript class:

```
// Custom "Soap Server Object" required to write to DPs
argObj.sso.Write(Item);
```

Tip: The subsections after these steps provide simple JavaScript code examples that you can use to help familiarize yourself with the process of creating custom JavaScript objects. You can also look at the examples in the **web/scripts/iLonVisionExtensions** folder on your SmartServer flash disk.

3. Store this class in a file named <*Class Name*>**.js**.

4. Copy the <*Class Name*>**.js** file to the **web/scripts/iLonVisionExtensions** folder on the SmartServer flash disk or to a subfolder in that directory.

5. Click **Edit** on the Editor toolbar ([Edit]) or click the **Layout** tab.

6. Click **Insert** and then select **Custom JavaScript**.
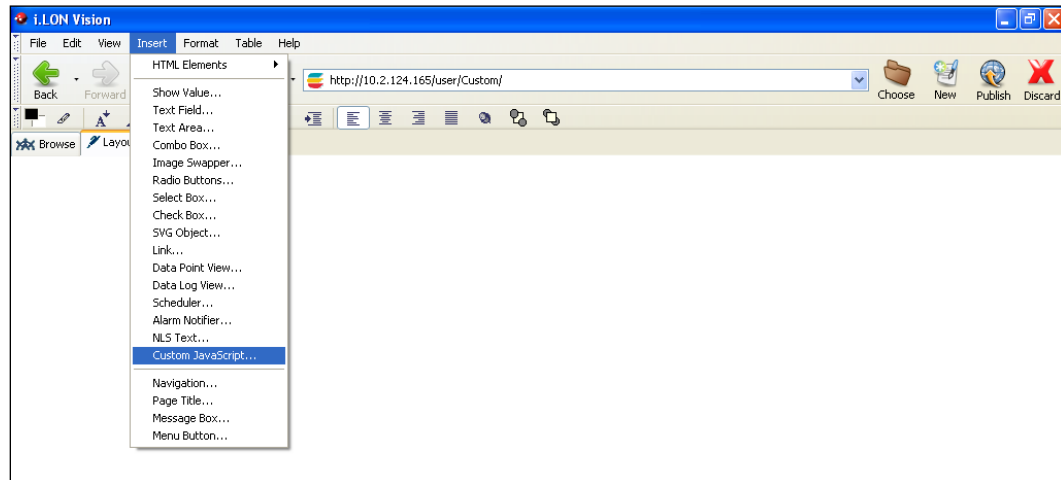
7. The **Custom JavaScript** dialog opens.
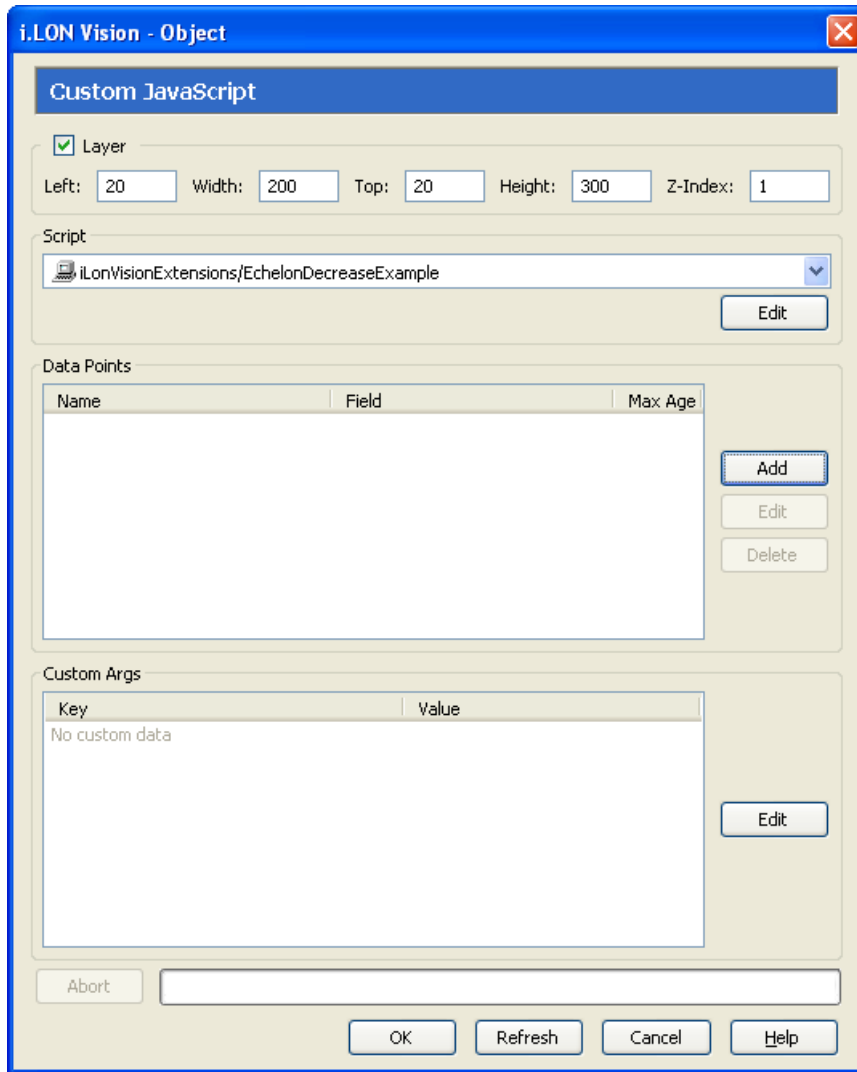
8. In the **Script** property, select your <*Class Name*>**.js** file.

9. Select the data points to be monitored and controlled by the **Custom JavaScript** object following these steps:

    a. Click **Add**. The **Data Point Properties** dialog opens.

    b. Click **Select**. The **Select Data Point** dialog opens.

    c. To view all the network objects on the SmartServer, including those that are currently hidden in the navigation pane on the built-in SmartServer Web interface, select **Show Hidden Items**.

By default, this option is cleared, meaning that you can only select those objects that are currently shown on the navigation pane.

d. Select the method for searching for the data point to be monitored. You have two choices:

- **Real Name**. The data points are organized in the SmartServer tree by their parent objects using the following network hierarchy:*<network>/<channel>/<device>/<functional block>/<data point>*. This is the default.

- **Alias Name**. Data points are alphabetized by their alias names, which correspond to their locations in the navigation pane. You can add, edit, and enable/disable alias names for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane, and then click the data point in the navigation pane. The **Alias Name** property is located near the top of the Web page. If you select this option, the data points are listed in the SmartServer tree as follows:

  o The data points of the external devices connected to the SmartServer that do not have default alias names are listed under the **[no alias]** icon.

  o The data points on the **i.LON App (Internal)** device under the **LON** channel are listed in the tree with the "**NVL**" prefix.

  o The virtual data points on the **i.LON App (System)** device are listed in the tree with the "**iLON System**" prefix.

  Note: Only select the **Prog** button if you are creating a custom app configuration Web page.

e. Expand the network, channel, device, and then the functional block of the data point to be monitored, and then click the desired data point. If the data point has a structured type, you can expand the data point and select a field within the structure.

f. Click **OK** to return to the **Data Point Properties** dialog. The **Name** property is updated to show the name of the data point in the following format:
<network>/<channel>/<device>/<functional block>/<data point>.

The **Format** property is updated to show the format description of the selected data point. The format description consists of the data point's program ID; SNVT, SCPT, UNVT, UCPT, or built-in data type; and format (for example, SI metric or US customary). If the data point supports multiple formats, you can manually change the format used for the data point. Using a **SNVT_temp_f** data point for example, you can change the format to **#US**, **#SI**, or **#US_Diff** or append one of these formats to the data point name if no format is specified.

g. Optionally, if you selected a field within a structured data point, you can set constant values to be written to one to all of the other fields in the data point automatically when a value is written to the selected field. This ensures that the other field or fields in the structured data point are set to specific values whenever the **SVG Box** object is used on the selected field.

Using a **SNVT_switch** data point for example, you can have **SNVT_switch.state** be set to **1** each time a value is written to **SNVT_switch.value**.

To set constant values for the other fields in a structured data point, follow these steps:

i. Click **Const Fields**. The **Constant Fields** dialog opens.

ii. The data point field you selected in step 4 is marked as "[dynamic]".

iii. Click the data point field to be set to a constant value.

iv. In the **Value** field, set the constant value to be written to the data point field.

v. Click **Save**.

vi. Repeat steps iii–v for any other fields in the structured data point to be set to constant values.

vii. Click **OK** to return to the **Select Box** dialog.

h. Optionally, in the **Max Age** property, you can set the maximum period of time (in seconds) that the value of the data point is cached before the **Data Point View** object receives updated values. This enables you to control the amount of traffic that is generated on a specific channel by the object.

The SmartServer compares the **Max Age** value of the **Data Point View** object to the amount of time the data point value has been cached in its internal data server, and then does the following:

- If **Max Age** is less than the period of time the data point value has been cached, the SmartServer's internal data server polls the data point and returns the updated value to the object.

- If **Max Age** is greater than the period of time the data point value has been cached, the SmartServer's internal data server returns the cached value to the object.

- If **Max Age** is disabled, the SmartServer's internal data server returns a cached value to the object regardless how old the data point is. This is the default.

- If **Max Age** is set to **0**, the SmartServer's internal data server polls the data point and returns the updated value to the object regardless how current the data point is.

i. Click **OK** to return to the **Custom JavaScript** dialog. The name of the selected data point, field (if selected for a structured data point), and the **Max Age** property (if set) is listed in the **Data Points** box.

i.LON Vision - Object

Custom JavaScript

☑ Layer

Left: 20   Width: 200   Top: 20   Height: 300   Z-Index: 1

Script

🖳 iLonVisionExtensions/EchelonDecreaseExample   ⌄

[Edit]

Data Points

Name	Field	Max Age
Net/LON/iLON App/Digital Output 1/nviClaValue_1	value	10

[Add]
[Edit]
[Delete]

Custom Args

Key	Value
No custom data	

[Edit]

[Abort] [   ]

[OK] [Refresh] [Cancel] [Help]
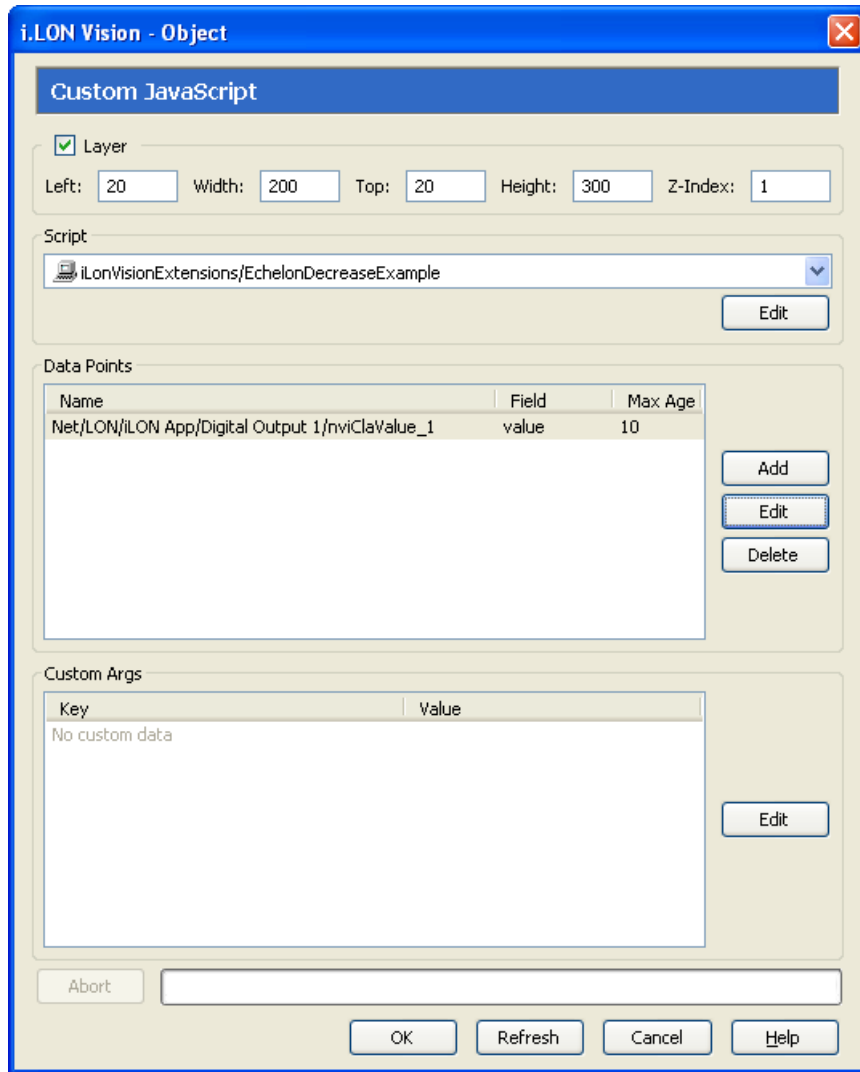
j. Repeat steps a–h for each data point to be monitored and controlled with the **Custom JavaScript** dialog object.

Click **Edit** to edit the maximum age property of a data point, change the selected field of a structured data point, or change the selected data point altogether. Click **Delete** to remove the data point from the **Data Points** box.

10. If you created custom arguments in your JavaScript code, click **Edit** in the **Custom Args** box to enter values for them in the **Custom Argument Values** dialog. See *Using Custom Arguments* later in this section for more information.

11. Click **OK**. The **Custom JavaScript** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** option, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page.

12. Click **Publish** on the Editor toolbar ([🌐 Publish]), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page. The i.LON Vision library starts polling the selected data points and passes them to the update method in your Custom JavaScript object if any of their properties change.

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Custom JavaScript Example: Reading Data Points

The following JavaScript class demonstrates how to read data point properties in a custom JavaScript object. This JavaScript class creates four text objects that display the name, value and unit string, status, and priority of the data point, respectively.

Note: You can use this object on any data point type.

Data Point Name = Net/LON/iLON App/VirtFb/temp_f
Value = 85°F
Status = AL_ALM_CONDITION
Priority = 220

```javascript
Echelon.CustomJavascript[Show_DataPoint_Properties_Example] =
function(argObj)
{
    this.update =
    {
        if (type=="Dp_Data")
        {
            m_text0.innerHTML = item.UCPTname.get();
            m_text1.innerHTML = item.UCPTvalue[0].get();
            m_text1_format.innerHTML = item.UCPTvalue[0].Unit.get();
            m_text2.innerHTML = item.UCPTpointStatus.get();
            m_text3.innerHTML = item.UCPTpriority.get();
        }
    };

    var m_domObj = argObj.domObj;

    //read DP Name

    var DP_name_text =
    m_domObj.appendChild(document.createTextNode("Data Point Name =
"));

    var m_text0 =
    m_domObj.appendChild(document.createElement("text"));

    var break0 = m_domObj.appendChild(document.createElement("br"));

    //read DP value and unit string

    var DP_value_text =
    m_domObj.appendChild(document.createTextNode("Value = "));

    var m_text1 =
    m_domObj.appendChild(document.createElement("text"));

    var m_text1_format =
    m_domObj.appendChild(document.createElement("text"));
    var break1 = m_domObj.appendChild(document.createElement("br"));

    //read DP status

    var DP_status_text =
    m_domObj.appendChild(document.createTextNode("Status = "));
```

```
   var m_text2 =
   m_domObj.appendChild(document.createElement("text"));

   var break2 = m_domObj.appendChild(document.createElement("br"));

   //read DP priority

   var DP_value_text =
   m_domObj.appendChild(document.createTextNode("Priority = "));

   var m_text3 =
   m_domObj.appendChild(document.createElement("text"));

   var break3 = m_domObj.appendChild(document.createElement("br"));
};
```

Custom JavaScript Example: Reading and Writing Data Points

The following JavaScript class demonstrates how to read and write data point values in a custom JavaScript object. This JavaScript class creates two buttons that you can use to increment and decrement the value stored in a data point.   It also creates a text area that displays the current value stored in the data points and a span that displays the name of the data point.

Note: You can use this object on any scalar data point or field within a structured data point that is of an integral or floating-point type.

Net/LON/iLON App/VirtFb/temp_f
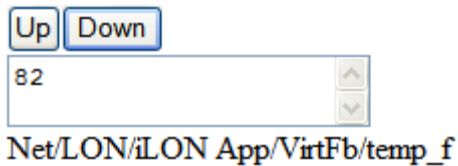
```
Echelon.CustomJavascript[Simple_Add_Subtract_Example] =
function(argObj)
{
   this.update =
   {
         if (type=="Dp_Data")
         {
            m_textarea.innerHTML = item.UCPTvalue[0].get();
            m_span.innerHTML = item.UCPTname.get();
            m_myDp = item;
         }
   };

   var handleIncrement = function(evt)
   {
         value = m_myDp.UCPTvalue[0].get();
         value++;
         m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
         m_myDp.UCPTvalue[0].set(value);
         m_sso.Write(m_myDp);
   }

   var handleDecrement = function(evt)
   {
         value = m_myDp.UCPTvalue[0].get();
```

```
        value--;
        m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
        m_myDp.UCPTvalue[0].set(value);
        m_sso.Write(m_myDp);
    }

    var m_myDp;
    var m_sso = argObj.sso;
    var m_domObj = argObj.domObj;

    //create buttons to write to DP value

    var m_incrementButton =
    m_domObj.appendChild(document.createElement("button"));

    var m_decrementButton =
    m_domObj.appendChild(document.createElement("button"));

    var break1 = m_domObj.appendChild(document.createElement("br"));

        //add text and click events to buttons

    m_incrementButton.innerHTML = "Up";
    m_decrementButton.innerHTML="Down";
    m_incrementButton.attachEvent("onclick", handleIncrement);
    m_decrementButton.attachEvent("onclick", handleDecrement);

    //create text area reading DP value

    var m_textarea =
    m_domObj.appendChild(document.createElement("textarea"));

    var break2 = m_domObj.appendChild(document.createElement("br"));

    //create span reading DP name

    var m_span = m_domObj.appendChild(document.createElement("span"));

};
```

Custom JavaScript Example: Writing Structured Data Points (with Presets)

The following JavaScript class demonstrates how to write formatted and preset values to a structured data point as whole in a custom JavaScript object. This JavaScript class creates five buttons that you can use to set the value of a **SNVT_switch** data point, and a span that displays the name of the data point and the current value stored in it.   The **UCPTvalue[***index***].LonFormat** property is set to "#0000000000000000[0].SNVT_switch" in order to write to the **SNVT_switch** point as a single entity. The structured values to be written to the data point are written as strings.
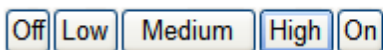
Net/LON/iLON App/Digital Output 1/nviClaValue_1 = 75.0 1

```
Echelon.CustomJavascript[SetValues_struct] = function(argObj)
{
    this.update =
    {
```

```
            if (type=="Dp_Data")
            {
                m_spanValue.innerHTML = item.UCPTvalue[0].get();
                m_spanName.innerHTML = item.UCPTname.get();
                m_myDp = item;
            }
       };

    var handleOff = function(setOff)
    {
            m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
            //use preset to write to DP
            m_myDp.UCPTvalue[0].set("OFF");
            m_sso.Write(m_myDp);
    }

    var handleLow = function(setLow)
    {
            m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
            m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_switch");
            m_myDp.UCPTvalue[0].set("25.0 1");
            m_sso.Write(m_myDp);
    }

    var handleMedium = function(setMedium)
    {
            m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
            m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_switch");
            m_myDp.UCPTvalue[0].set("50.0 1");
            m_sso.Write(m_myDp);
    }

    var handleHigh = function(setHigh)
    {
            m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
            m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_switch");
            m_myDp.UCPTvalue[0].set("75.0 1");
            m_sso.Write(m_myDp);
    }

    var handleOn = function(setOn)
    {
            m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
            //use preset to write to DP
            m_myDp.UCPTvalue[0].set("ON");
            m_sso.Write(m_myDp);
    }

    var m_myDp;
    var m_sso = argObj.sso;
    var m_domObj = argObj.domObj;

//create buttons to write to DP value

var m_OffButton = m_domObj.appendChild(document.createElement("button"));
var m_LowButton = m_domObj.appendChild(document.createElement("button"));
var m_MediumButton  = m_domObj.appendChild(document.createElement("button"));
```

```
var m_HighButton = m_domObj.appendChild(document.createElement("button"));
var m_OnButton = m_domObj.appendChild(document.createElement("button"));

//add break

var break1 = m_domObj.appendChild(document.createElement("br"));

//add text and click events to buttons

m_OffButton.innerHTML = "Off";
m_LowButton.innerHTML = "Low";
m_MediumButton.innerHTML = "Medium";
m_HighButton.innerHTML = "High";
m_OnButton.innerHTML = "On";

m_OffButton.attachEvent("onclick", handleOff);
m_LowButton.attachEvent("onclick", handleLow);
m_MediumButton.attachEvent("onclick", handleMedium);
m_HighButton.attachEvent("onclick", handleHigh);
m_OnButton.attachEvent("onclick", handleOn);

//create span reading DP name

var m_spanName =
m_domObj.appendChild(document.createElement("span"));
var DP_value_text = m_domObj.appendChild(document.createTextNode(" = "));

//create span reading DP value

var m_spanValue =
m_domObj.appendChild(document.createElement("span"));

};
```

Custom JavaScript Example: Writing Enumerated Data Points

The following JavaScript class demonstrates how to write formatted values to an enumerated data point in a custom JavaScript object. This JavaScript class creates two buttons that you can use to set the value of a **SNVT_hvac_mode** data point, and a span that displays the name of the data point and the current value stored in it.   The **UCPTvalue[*index*].LonFormat** property is set to "#0000000000000000[0].SNVT_hvac_mode" in order to write to the enumerated **SNVT_hvac_mode** data point. Enumerated values to be written to the data point are written as strings.
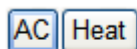
AC Heat
Net/LON/iLON App/VirtFb/hvac_mode = HVAC_COOL

```
Echelon.CustomJavascript[SetValues_enumeration] = function(argObj)

{
    this.update =
    {
            if (type=="Dp_Data")
            {
                m_spanValue.innerHTML = item.UCPTvalue[0].get();
                m_spanName.innerHTML = item.UCPTname.get();
                m_myDp = item;
            }
```

```
    };

    var handleHeat = function(setHeat)
    {

            m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
            m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_hvac_mode");
            m_myDp.UCPTvalue[0].set("HVAC_HEAT");
            m_sso.Write(m_myDp);

    }

    var handleCool = function(setAC)
    {

            m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
            m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_hvac_mode");
            m_myDp.UCPTvalue[0].set("HVAC_COOL");
            m_sso.Write(m_myDp);

    }

    var m_myDp;
    var m_sso = argObj.sso;
    var m_domObj = argObj.domObj;

//create buttons to write to DP value

var m_ACButton = m_domObj.appendChild(document.createElement("button"));
var m_HeatButton = m_domObj.appendChild(document.createElement("button"));

//add break

var break1 = m_domObj.appendChild(document.createElement("br"));

//add text and click events to buttons

m_ACButton.innerHTML = "AC";
m_HeatButton.innerHTML = "Heat";

m_ACButton.attachEvent("onclick", handleCool);
m_HeatButton.attachEvent("onclick", handleHeat);

//create span reading DP name

var m_spanName =
m_domObj.appendChild(document.createElement("span"));
var DP_value_text = m_domObj.appendChild(document.createTextNode(" = "));

//create span reading DP value

var m_spanValue =
m_domObj.appendChild(document.createElement("span"));

    };
```

Custom JavaScript Example: Writing Data Point Fields (Not Integer or Float)

The following JavaScript class demonstrates how to write formatted values to a data point field that is not of an integral or floating-point type in a custom JavaScript object. This JavaScript class creates two buttons that you can use to set the value of a **SNVT_switch.state** data point, and a span that displays the name of the data point and the current value stored in it.   The **UCPTvalue[**_index_**].LonFormat** property is set to "#0000000000000000[0].SNVT_switch.state" in order to write to the **state** field of the **SNVT_switch** data point. Values to be written to the data point are written as strings.

Off On
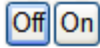
Net/LON/iLON App/Digital Output 1/nviClaValue_1 = 0

```
Echelon.CustomJavascript[SetValues_field] = function(argObj)
{
    this.update =
    {
            if (type=="Dp_Data")
            {
                m_spanValue.innerHTML = item.UCPTvalue[0].get();
                m_spanName.innerHTML = item.UCPTname.get();
                m_myDp = item;
            }
    };

    var handleOff = function(setOff)
    {
            m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
            m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_switch.state");
            m_myDp.UCPTvalue[0].set("0");
            m_sso.Write(m_myDp);

    }

    var handleOn = function(setOn)
    {
            m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
            m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_switch.state");
            m_myDp.UCPTvalue[0].set("1");
            m_sso.Write(m_myDp);

    }

    var m_myDp;
    var m_sso = argObj.sso;
    var m_domObj = argObj.domObj;

//create buttons to write to DP value

var m_OffButton = m_domObj.appendChild(document.createElement("button"));
var m_OnButton = m_domObj.appendChild(document.createElement("button"));

//add break

var break1 = m_domObj.appendChild(document.createElement("br"));
```

```
//add text and click events to buttons

m_OffButton.innerHTML = "Off";
m_OnButton.innerHTML = "On";

m_OffButton.attachEvent("onclick", handleOff);
m_OnButton.attachEvent("onclick", handleOn);

//create span reading DP name

var m_spanName =
m_domObj.appendChild(document.createElement("span"));
var DP_value_text = m_domObj.appendChild(document.createTextNode(" = "));

//create span reading DP value

var m_spanValue =
m_domObj.appendChild(document.createElement("span"));

};
```

Using Custom Arguments

You can define custom arguments in your JavaScript code and then specify values for them with the **Custom JavaScript** object. This feature lets you create reusable **Custom JavaScript** objects.   For example, you can define upper and lower limit arguments in your JavaScript code and then define values for those limits with the **Custom JavaScript** object. When the data point value reaches one of the limits, you could, for example, change the color of the text in the **Custom JavaScript** object.   The upper and lower limits may depend on the data point type, a specific network condition, or other scenario.

To use custom arguments in your JavaScript code, follow these steps:

1.   In your JavaScript code, create a reference to argObj.customArgs in the constructor, and define some descriptive placeholder for the customArgs property of the reference.

The following code sample demonstrates how to use custom arguments in your JavaScript code. In this example, the value and format of the data point are colored differently based on whether the data point value has exceeded the upper and lower limits specified by the custom arguments.

```
function CustomArgsExample(argObj)
{
    this.update = function
    {
            if (type=="Dp_Data")
            {
                m_span.innerHTML = item.UCPTname.get();
                m_text.innerHTML = item.UCPTvalue[0].get();
                m_text1_format.innerHTML = item.UCPTvalue[0].Unit.get();
                m_myDp = item;

                if (m_text.innerHTML>m_myArgs.UPPER_LIMIT)
                {
                    m_text.style.color = "red";
                    m_text1_format.style.color = "red";
                }

                else if (m_text.innerHTML<m_myArgs.LOWER_LIMIT)
                {
```

```
                    m_text.style.color = "blue";
                    m_text1_format.style.color = "blue";
                }

                else
                {
                    m_text.style.color = "green";
                    m_text1_format.style.color = "green";
                }
        };
    }
var m_myArgs = argObj.customArgs;

)
```

2. Create a new custom JavaScript object and select the data point to be monitored and controlled by it following steps 5–9 in the previous *Custom JavaScript Object* section.

3. Click **Edit** in the **Custom Args** box.

4. The **Custom Argument Values** dialog opens.
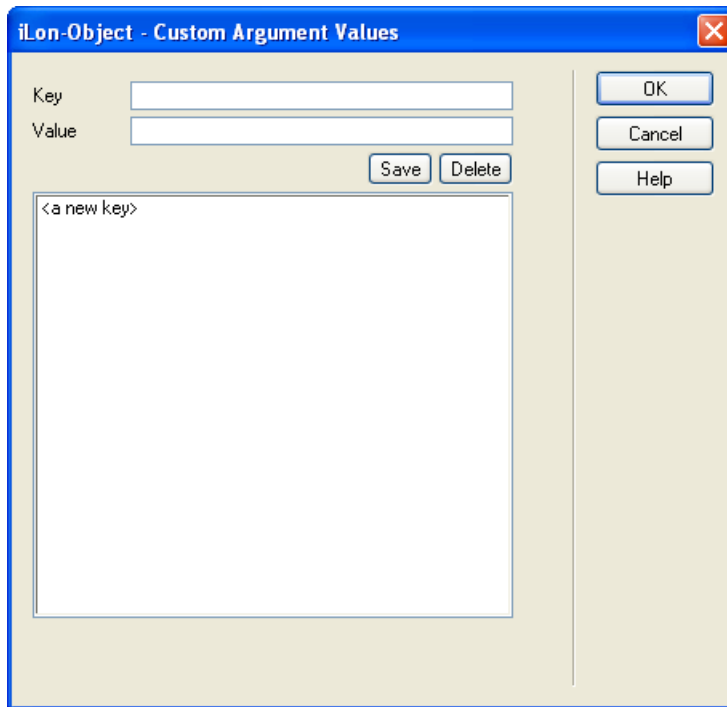
5. Create values for the custom arguments following these steps:

    a. In the **Key** field, enter the name of the custom argument. This case-sensitive name must match the name you specified for the custom argument in your custom JavaScript class (**.js** file).

    b. In the **Value** field, set a valid value to be associated with the specified key.

    c. Click **Save**. The key-value pair is added to the box.
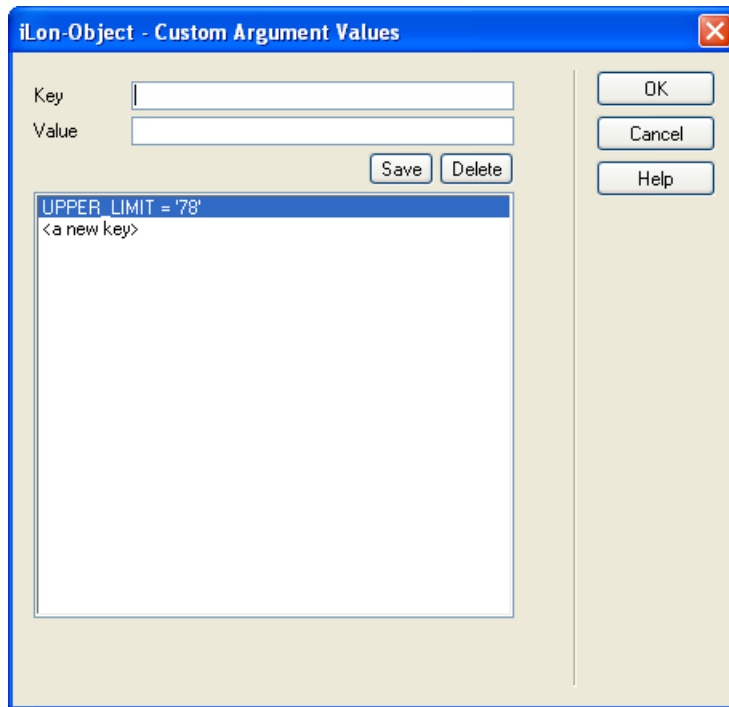
d. To create additional key-value pairs for the remaining custom arguments in your JavaScript code, click **<a new key>** and then repeat steps a–c. Using the previous example, you would create values for the **UPPER_LIMIT** and **LOWER_LIMIT** custom arguments.
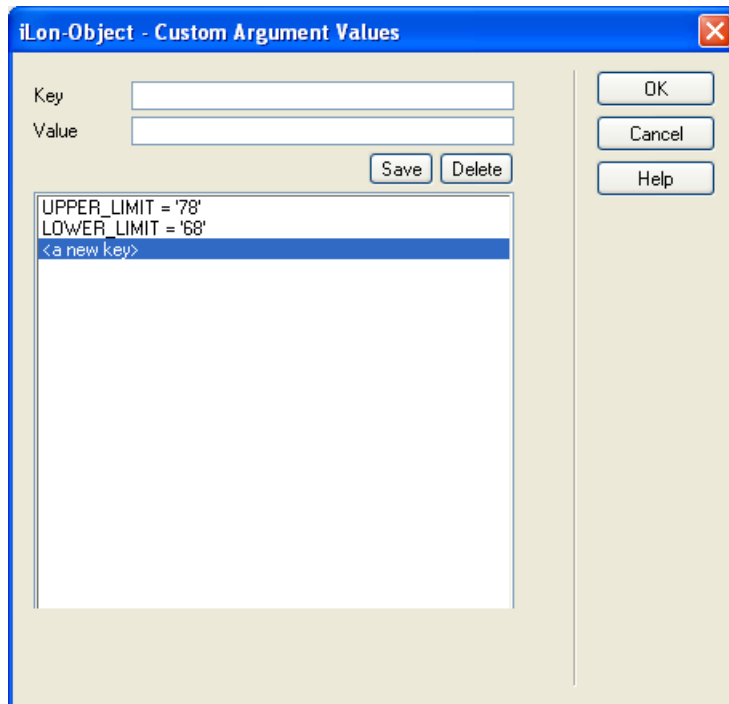
e. Click **OK** to return to the **Custom JavaScript** dialog.

The complete custom argument example creates two buttons that you can use to increment and decrement the value stored in a data point. It creates text that displays the current value stored in the data point, text that displays the data point format, and a span that displays the name of the data point.

The value and format of the data point are colored differently based on whether the data point has exceeded the upper or lower limits specified by the custom arguments. For a **SNVT_temp_f#US** data point, the UPPPER_LIMIT custom argument has been defined as 78°F, and the LOWER_LIMIT custom argument has been defined as 68°F in the **Custom Argument Values** dialog.

Up Down
Data Point Name = Net/LON/iLON App/VirtFb/temp_f_US
Value = 79°F

Up Down
Data Point Name = Net/LON/iLON App/VirtFb/temp_f_US
Value = 72°F

Up Down
Data Point Name = Net/LON/iLON App/VirtFb/temp_f_US
Value = 67°F

```
function CustomArgExample(argObj)
{
     this.update =
     {
       if (type=="Dp_Data")
       {
          m_span.innerHTML = item.UCPTname.get();
          m_text.innerHTML = item.UCPTvalue[0].get();
          m_text1_format.innerHTML = item.UCPTvalue[0].Unit.get();
          m_myDp = item;


          //create upper limit arg and set text to red
          if (m_text.innerHTML>m_myArgs.UPPER_LIMIT)
          {
             m_text.style.color = "red";
             m_text1_format.style.color = "red";
          }

          //create lower limit arg and set text to yellow
          else if (m_text.innerHTML<m_myArgs.LOWER_LIMIT)
          {
             m_text.style.color = "orange";
             m_text1_format.style.color = "orange";
          }

          else
          {
             m_text.style.color = "green";
             m_text1_format.style.color = "green";
          }


       };

     }

     var handleIncrement = function(evt)
     {
       value = m_myDp.UCPTvalue[0].get();
```

```
        value++;
        m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
        m_myDp.UCPTvalue[0].set(value);
        m_sso.Write(m_myDp);
    }

    var handleDecrement = function(evt)
    {
        value = m_myDp.UCPTvalue[0].get();
        value--;
        m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
        m_myDp.UCPTvalue[0].set(value);
        m_sso.Write(m_myDp);
    }

    var m_myArgs = argObj.customArgs;
    var m_myDp;
    var m_sso = argObj.sso;
    var m_domObj = argObj.domObj;

//create buttons to write to DP value

var m_incrementButton =
m_domObj.appendChild(document.createElement("button"));

var m_decrementButton =
m_domObj.appendChild(document.createElement("button"));

var break1 = m_domObj.appendChild(document.createElement("br"));

//add text and click events to buttons

m_incrementButton.innerHTML = "Up";
m_decrementButton.innerHTML="Down";

m_incrementButton.attachEvent("onclick", handleIncrement);
m_decrementButton.attachEvent("onclick", handleDecrement);

//create span reading DP name

var DP_name_text =
 m_domObj.appendChild(document.createTextNode("Data Point Name = "));

var m_span = m_domObj.appendChild(document.createElement("span"));

var break2 = m_domObj.appendChild(document.createElement("br"));

//create text reading DP value and format

var DP_value_text =
  m_domObj.appendChild(document.createTextNode("Value = "));

var m_text = m_domObj.appendChild(document.createElement("text"));
```

```
var m_text1_format =
  m_domObj.appendChild(document.createElement("text"));

};
```

Adding Application Objects

Application objects represent the embedded scheduling, alarming, and data logging applications on the SmartServer. Application objects include the Data Point View, Data Log View, Scheduler, and Alarm Notifier. You can expose these objects to provide users limited access to the SmartServer's view and configuration Web pages.

i.LON Vision Application Object	SmartServer Embedded Application(s)	Description
Data Point View	**View – Data Points** Web page.	This object includes a log that displays the current values and states of the selected data points, a trend graph that charts the data point values over a specified interval, and combo boxes for writing values to the data points. The user can use this object to monitor, chart, and control specified data points.
Data Log View	**Data Logger: View** Web page.	A log that lists the data point updates recorded by a specific data logger on the SmartServer.
Alarm Notifier	1. **Alarm Notifier: Summary** Web page. 2. **Alarm Notifier: History** Web page. 3. **Configure E-mail** dialog.	This object can be one of the following: 1. A log that that lists all currently active alarms reported by the SmartServer. The user can use this object to acknowledge and clear active alarms. 2. A log that lists all active and cleared alarms recorded by the SmartServer. The user can use this object to view a historical list of alarms. 3. An e-mail that the user can send to a recipient (for example, a technician or maintenance company) notifying them of an alarm condition.

i.LON Vision Application Object	SmartServer Embedded Application(s)	Description
Scheduler	1. **Scheduler: Daily Schedules** Web page, and **Edit/View Daily Schedules** dialog. 2. **Scheduler: Exception Schedules** Web page, and **Edit/View <***Exception Date***>** dialog.	This object can be one of the following: 1. A weekly calendar listing the events to be executed normally (without exceptions) each day of the week. The user can view and configure the daily schedule. You can disable the configuration functionality so that the user can only view the daily schedule. 2. A yearly calendar highlighting the dates in which exceptions to the daily schedule are to be executed. The user can view and configure the schedule for any date. You can disable the configuration functionality so that the user can only view the schedule for a given date.

Data Point View

The **Data Point View** object includes a log that displays the current values and states of the selected data points, a trend graph that charts the data point values over a specified interval, and combo boxes for writing values to the data points. The user can use this object to monitor, chart, and control selected data points. To add a **Data Point View** object to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar () or click the **Layout** tab.

2. Click **Insert** and then select **Data Point View**.
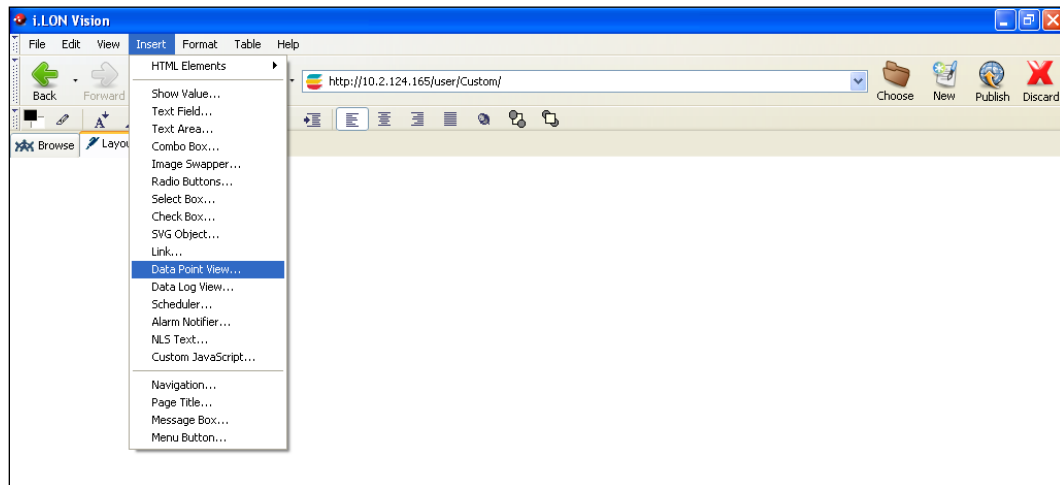
3. The **Data Point View** dialog opens.
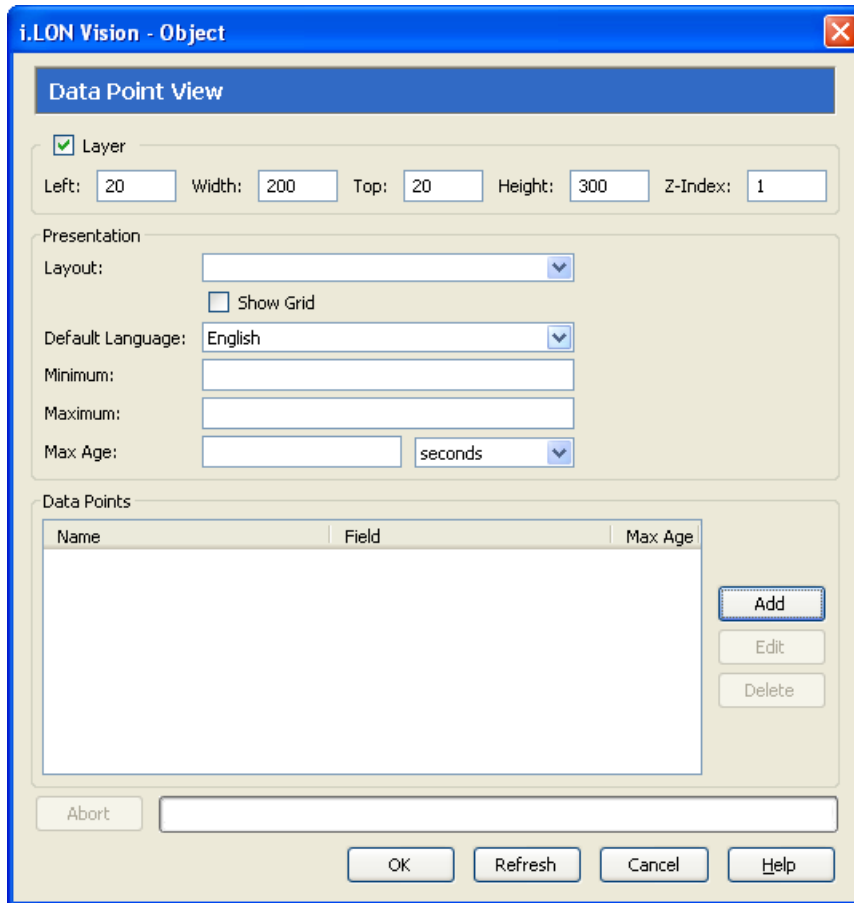
4. In the **Layout** property under **Presentation**, select the elements of the **View – Data Points** Web page to be added to your custom Web page. You have the following three choices:

    - **Graph**. A trend graph that plots selected data points over a user-specified interval.

    - **Table**. A log that lists the format, current value, and status of the selected data points. With the combo box included in this element, the user can write to a data point or a field within the data point by entering a value or selecting one of the presets or enumerations defined for the data point.

    - **Graph and Table**. Displays the data point trend graph and the log. The trend graph is displayed on top of the log. The user can point to one of the data points listed in the log or click its line on the trend graph to highlight the updates recorded for that data point on the trend graph and show its corresponding scaling on the y-axis of the graph.

      Note: For multiple data points to be scaled accurately on the trend graph at the same time, they must have the same **Unit String** property. You can add a unit string to a data point or edit the one defined for it in the **Configure - Data Points** Web page on the SmartServer. You can access this Web page from the built-in SmartServer Web interface by clicking **General**, and then clicking the data point in the SmartServer tree on the left side of the Web interface.

5. If you selected **Graph** or **Graph and Table** in step 4, you can add grid lines to the chart by selecting the **Show Grid** check box. This check box is cleared by default.

6. In the **Default Language** property, select the language in which the property headers on the **Data Point View** object are displayed. The default language is **English**, and you can select **Deutsch** (German) or **Français** (French).

You can localize this object and all the SmartServer 2.2 Web pages into any one-byte or two-byte character language using either the demo version of the SmartServer 2.2 Programming Tools included on the SmartServer 2.2 DVD or using the full version on the SmartServer 2.2 Programming Tools included on the SmartServer 2.2 Programming Tools DVD. For more information on ordering the SmartServer 2.2 Programming Tools DVD, contact your Echelon sales representative.

For more information on localizing the language of the SmartServer Web pages, see the *SmartServer 2.2 Programming Tools User's Guide*.

7. In the **Minimum** and **Maximum** properties, set the minimum and maximum values displayed on the y-axis of the trend graph, if you selected **Graph** or **Graph and Table** in step 4.

8. Select the data point to be monitored by the **Data Point View** object following these steps:

   a. Click **Add**. The **Data Point Properties** dialog opens.

   b. Click **Select**. The **Select Data Point** dialog opens.

   c. To view all the network objects on the SmartServer, including those that are currently hidden in the navigation pane on the built-in SmartServer Web interface, select **Show Hidden Items**. By default, this option is cleared, meaning that you can only select those objects that are currently shown on the navigation pane.

   d. Select the method for searching for the data point to be monitored. You have two choices:

   - **Real Name**. The data points are organized in the SmartServer tree by their parent objects using the following network hierarchy: *<network>/<channel>/<device>/<functional block>/<data point>*. This is the default.

   - **Alias Name**. Data points are alphabetized by their alias names, which correspond to their locations in the navigation pane. You can add, edit, and enable/disable alias names for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane, and then click the data point in the navigation pane. The **Alias Name** property is located near the top of the Web page. If you select this option, the data points are listed in the SmartServer tree as follows:

     o The data points of the external devices connected to the SmartServer that do not have default alias names are listed under the **[no alias]** icon.

     o The data points on the **i.LON App (Internal)** device under the **LON** channel are listed in the tree with the "**NVL**" prefix.

     o The virtual data points on the **i.LON App (System)** device are listed in the tree with the "**iLON System**" prefix.

   Note: Only select the **Prog** button if you are creating a custom app configuration Web page.

e. Expand the network, channel, device, and then the functional block of the data point to be monitored, and then click the desired data point. If the data point has a structured type, you can expand the data point and select a field within the structure.

f. Click **OK** to return to the **Data Point Properties** dialog. The **Name** property is updated to show the name of the data point in the following format: *<network>/<channel>/<device>/<functional block>/<data point>*.

The **Format** property is updated to show the format description of the selected data point. The format description consists of the data point's program ID; SNVT, SCPT, UNVT, UCPT, or built-in data type; and format (for example, SI metric or US customary). If the data point supports multiple formats, you can manually change the format used for the data point. Using a **SNVT_temp_f** data point for example, you can change the format to **#US**, **#SI**, or **#US_Diff** or append one of these formats to the data point name if no format is specified.

g. Optionally, if you selected a field within a structured data point, you can set constant values to be written to one to all of the other fields in the data point automatically when a value is written to the selected field. This ensures that the other field or fields in the structured data point are set to specific values whenever the **SVG Box** object is used on the selected field.

Using a **SNVT_switch** data point for example, you can have **SNVT_switch.state** be set to **1** each time a value is written to **SNVT_switch.value**.

To set constant values for the other fields in a structured data point, follow these steps:

i. Click **Const Fields**. The **Constant Fields** dialog opens.

ii. The data point field you selected in step 4 is marked as "[dynamic]".

iii. Click the data point field to be set to a constant value.

iv. In the **Value** field, set the constant value to be written to the data point field.

v. Click **Save**.

vi. Repeat steps iii–v for any other fields in the structured data point to be set to constant values.

vii. Click **OK** to return to the **Select Box** dialog.

h. Optionally, in the **Max Age** property, you can set the maximum period of time (in seconds) that the value of the data point is cached before the **Data Point View** object receives updated values. This enables you to control the amount of traffic that is generated on a specific channel by the object.

The SmartServer compares the **Max Age** value of the **Data Point View** object to the amount of time the data point value has been cached in its internal data server, and then does the following:

- If **Max Age** is less than the period of time the data point value has been cached, the SmartServer's internal data server polls the data point and returns the updated value to the object.

- If **Max Age** is greater than the period of time the data point value has been cached, the SmartServer's internal data server returns the cached value to the object.

- If **Max Age** is disabled, the SmartServer's internal data server returns a cached value to the object regardless how old the data point is. This is the default.

- If **Max Age** is set to **0**, the SmartServer's internal data server polls the data point and returns the updated value to the object regardless how current the data point is.

i. Click **OK** to return to the **Data Point View** dialog. The name of the selected data point, field (if selected for a structured data point), and the **Max Age** property (if set) is listed in the **Data Points** box.
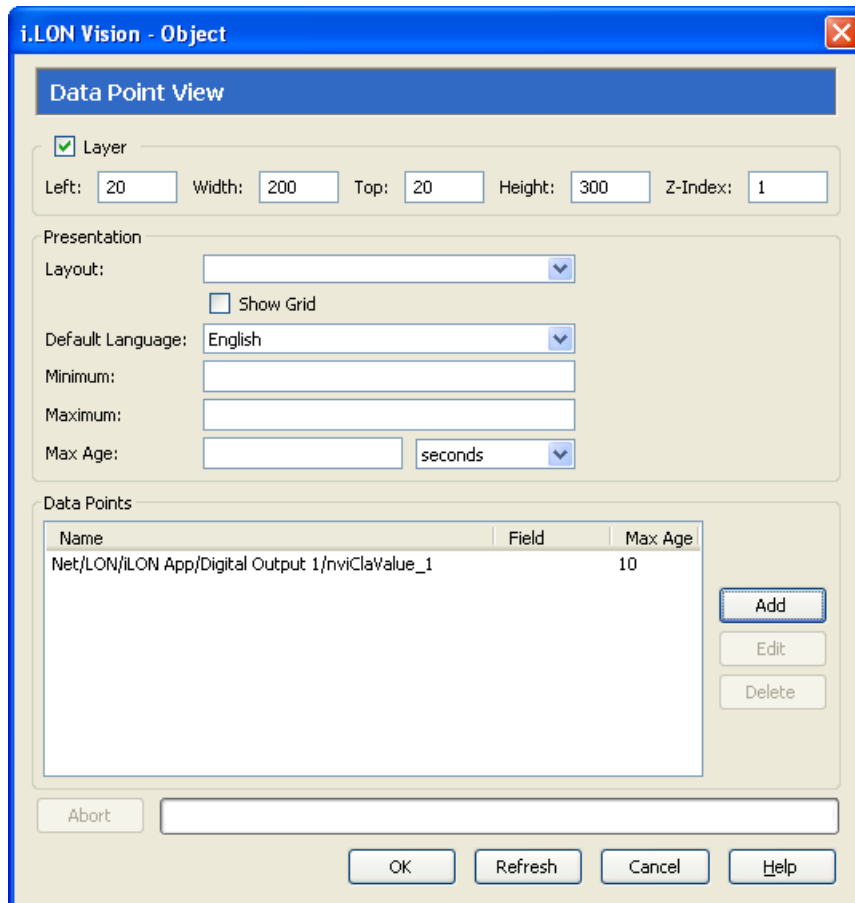
j. Repeat steps a–i for each data point to be monitored and controlled with the **Data Point View** object.

Click **Edit** to put a placeholder in the data point name; edit the maximum age property of the data point; change the selected field of the data point (if a structured data point); or change the selected data point altogether. Click **Delete** to remove the data point from the **Data Points** box.

9. Click **OK**. The **Data Point View** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). Move the layer containing the object to

the desired position on your custom SmartServer 2.2 Web page. To move a layer, click its moving icon, and then use the arrow keys to move it.

10. Click **Publish** on the Editor toolbar ([Publish]), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page.   For information on using the graph and table in the **Data Point View** object, see the *Viewing Data Points* section in Chapter 8, *Data Logging*.

Data Log View

The **Data Log View** object is a log that lists the data point updates recorded by a specific Data Logger on the SmartServer. To use this object, there must be one or more configured Data Loggers on your SmartServer. See Chapter 7 of the *SmartServer 2.2 User's Guide* for more information on adding and configuring a Data Logger using the SmartServer's built-in Web pages.

To add a **Data Log View** object to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar ([Edit]) or click the **Layout** tab.

2. Click **Insert** and then select **Data Log View**.
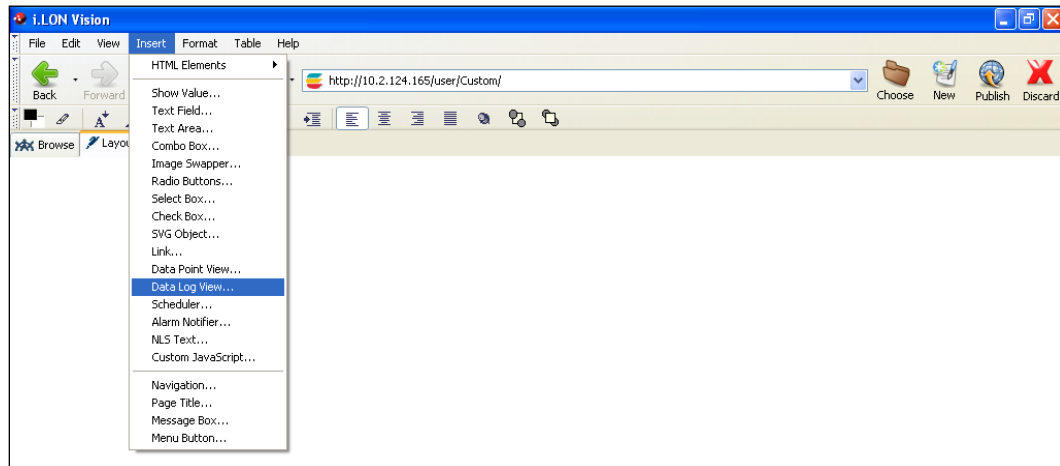
3. The **Data Log View** dialog opens.
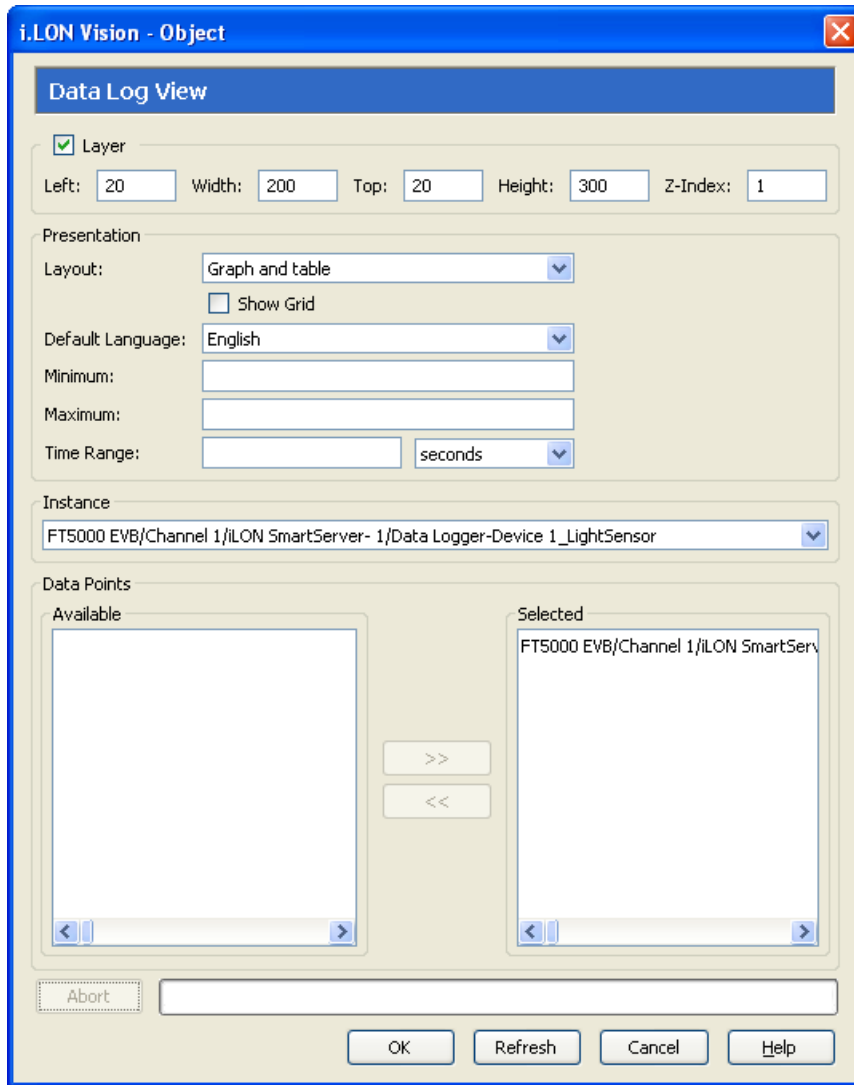
4. In the **Layout** property under **Presentation**, select the elements of the **Data Logger: View** Web page to be added to your custom Web page. You have the following three choices:

    *   **Graph**. A trend graph that plots selected data points over a user-specified interval.

    *   **Table**. A log that lists in descending chronological order the data point updates recorded by the selected data logger. For each data point update recorded, the log displays the time of the update, the data point value at the time of the update, the unit string of the data point, and the status of the data point at the time of the update.

    *   **Graph and Table**. Displays the data point trend graph and the log. The trend graph is displayed on top of the log.

        Note: For multiple data points to be scaled accurately on the trend graph at the same time, they must have the same **Unit String** property. You can add a unit string to a data point or edit the one defined for it in the **Configure - Data Points** Web page on the SmartServer. You can access this Web page from the built-in SmartServer Web interface by clicking **General**, and then clicking the data point in the SmartServer tree on the left side of the Web interface.

5. If you selected **Graph** or **Graph and Table** in step 4, you can add grid lines to the chart by selecting **Show Grid**. This option is cleared by default.

6. In the **Default Language** property, select the language in which the property headers on the **Data Log View** object are displayed. The default language is **English**, and you can select **Deutsch** (German) or **Français** (French).

You can localize this object and all the SmartServer Web pages into any one-byte or two-byte character language using either the demo version of the SmartServer 2.2 Programming Tools included on the SmartServer 2.2 DVD or using the full version on the SmartServer 2.2 Programming Tools included on the *SmartServer 2.2 Programming Tools* DVD. For more information on ordering the SmartServer 2.2 Programming Tools DVD, contact your Echelon sales representative.

For more information on localizing the language of the SmartServer Web pages, see the *SmartServer 2.2 Programming Tools User's Guide*.

7. In the **Minimum** and **Maximum** properties, set the minimum and maximum values displayed on the y-axis of the trend graph, if you selected **Graph** or **Graph and Table** in step 4.

8. In the **Time Range** property, you can set the time range that is displayed on the trend graph, if you selected **Graph** or **Graph and Table** in step 4. For example, if you specify 10 minutes, the trend graph will always display the data point updates recorded over the last 10 minutes. If you do not specify a time range, the trend graph will include a slider and a selection box that the user can use to display the data recorded over a specific time range.

9. In the **Instance** box, select the Data Logger functional block on the SmartServer to be used for the **Data Log View** object. By default, the first Data Logger instance created on the SmartServer is selected. Once you select a Data Logger functional block, all the data points added to that data logger are listed in the **Selected** box under **Data Points**. To update the list of available Data Loggers, click **Refresh**.

10. Optionally, you can hide data points that you do not want charted and/or listed in the **Data Log View** object. To do this, click the data point in the **Selected** box and then click the left arrow to move the data point into the **Available** box. You can show hidden data points by clicking them in the **Available** box and then clicking the right arrow to move them back to the **Selected** box.

11. Click **OK**. The **Data Log View** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). Move the layer containing the object to the desired position on your custom SmartServer 2.2 Web page. To move a layer, click its moving icon, and then use the arrow keys to move it.

12. Click **Publish** on the Editor toolbar ( ), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page. For information on using the graph and table in the **Data Log View** object, see the *Viewing Data Logs* section in Chapter 8, *Data Logging*.

Scheduler

You can use the **Scheduler** object to create a weekly calendar that lists the events to be executed regularly each day the week, or a yearly calendar highlighting the days in which exceptions to the daily schedule are to be executed. The user can click the weekly calendar to view and configure the events regularly scheduled for that day, and they can click a date in the yearly calendar to view and configure all the events scheduled for that day, including exceptions to the daily schedule. You can disable the configuration functionality so that the user can only view the weekly or yearly calendar.

To use this object, there must be one or more configured Schedulers on your SmartServer. See Chapter 8 of the *SmartServer 2.2 User's Guide* for more information on adding and configuring a Scheduler using the SmartServer's built-in Web pages.

To add a **Scheduler** object to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar ( ) or click the **Layout** tab.

2. Click **Insert** and then select **Scheduler**.
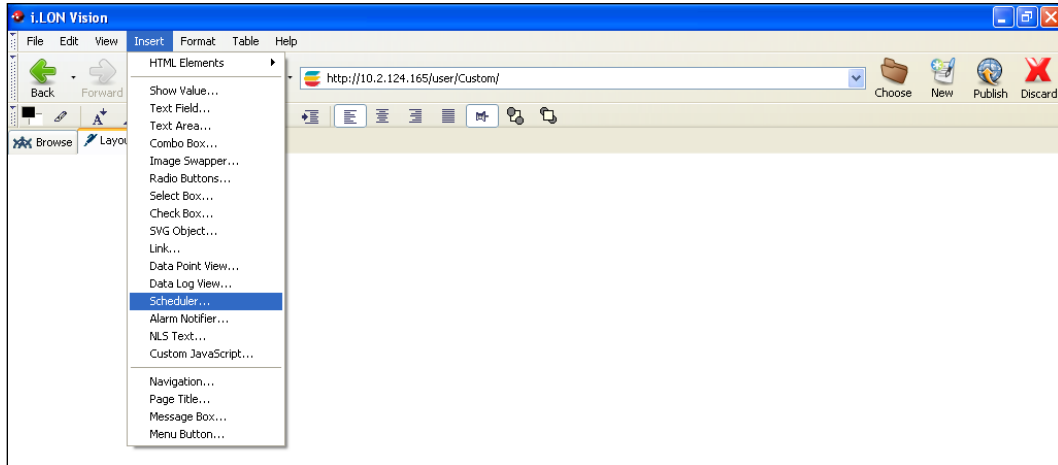
3. The **Scheduler** dialog opens.
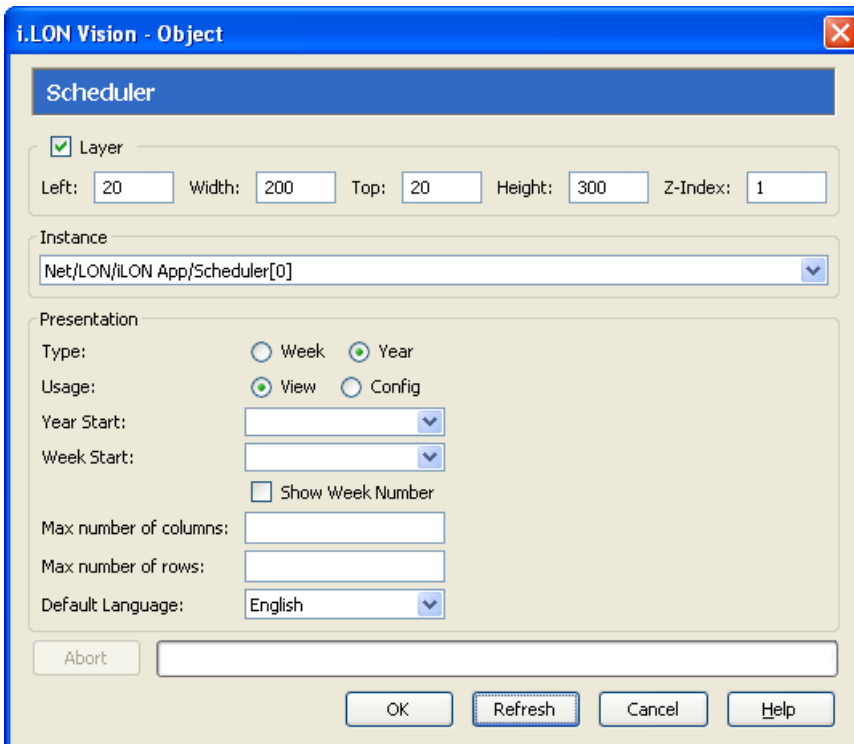
4. In the **Instance** property under **Scheduler**, select the Scheduler functional block on the SmartServer to be used for the **Scheduler** object. To update the list of available Schedulers, click **Refresh**.

5. In the **Type** property, select the type of calendar to be added to your custom Web page. You have the following two choices:

- **Week**. A weekly calendar listing the events to be executed normally (without exceptions) each day. The user can click a day to view or configure the daily schedule. This option provides the functionality of the **Scheduler: Daily Schedules** Web page.

- **Year**. A yearly calendar highlighting the dates in which exceptions to the daily schedule are to be executed. The user can view and configure the schedule for any date. This option provides the functionality of the **Scheduler: Exceptions Schedules** Web page.

6. In the **Usage** property, select the functionality provided by the **Scheduler** object. You have the following two choices:

- **View**. If you selected **Week** in step 5, the user can click a day in the weekly calendar to open the **View: Daily Schedules** dialog. The user can then view the regular schedule for that day (without exceptions), which includes only the events in the daily schedule.

    If you selected **Year** in step 5, the user can click a date in the yearly calendar to open the **View: <*yyyy-mm-dd*>** dialog. The user can then view the schedule for that date, which lists the events in both the daily and exception schedules as they are programmed to be executed. Dates in which the regular daily schedule is to be executed without any exceptions are highlighted grey in the calendar; dates in which there are exceptions to the daily schedule are highlighted light blue.

- **Config**. If you selected **Week** in step 5, the user can create separate schedules for individual days and change the days for which a daily schedule is applicable. The user can also click a day in the weekly schedule to open the **Configure: Daily Schedules** dialog. The user can use this dialog to add, edit, and delete the events planned for a given set of days (weekdays, weekend days, or other alignment). For more information on defining the daily schedule and creating events for it, see the *Creating Daily Schedules* section in Chapter 7, *Scheduling*.

    If you selected **Year** in step 5, the user can right-click anywhere in the yearly calendar to create, edit, and delete exceptions to the daily schedule; create separate schedules for individual days and change the days for which a daily schedule is applicable; and create and edit exception groups. In addition, the user can click a date in the yearly calendar to open the **Configure: <*yyyy-mm-dd*>** dialog. The user can then add, edit, and delete the events scheduled for that date. For more information on using exception schedules and creating events for them, see the *Creating the Exception Schedule* section in Chapter 7, *Scheduling*.

7. If you selected **Year** in step 5, select the method used to determine which week in January is labeled week **1** under the **Wk** column. You have the following three options:

- **ISO**. Week 1 is based on ISO 8601. This is the default.
- **Week of Jan 1st**. The week containing January 1st is labeled Week 1.
- **First Full Week**. The first week in January containing seven dates that all fall in the month is labeled Week 1.

8. In the **Week Start** box, select the first day to be shown in the weekly or yearly calendar. The default first day of the week is **Sunday**.

9. If you selected **Year** in step 5 and you do want week numbers to be shown on the yearly calendar, clear **Show Week Number**.   This option is selected by default.

10. If you selected **Year** in step 5, select the maximum number of months displayed on the calendar at one time by adjusting the **Max Number of Columns** and **Max Number of Rows** values. By default, the calendar displays 12 months, using **3** columns and **4** rows. Months are displayed contiguously over the specified number of columns. The maximum number of columns that can be displayed in the yearly calendar is **3**.

11. In the **Default Language** box, select the language in which the property headers on the Scheduler object are displayed. The default language is **English**, and you can select **Deutsch** (German) or **Français** (French).

You can localize this object and all the SmartServer Web pages into any one-byte or two-byte character language using either the demo version of the SmartServer 2.2 Programming Tools included on the SmartServer 2.2 DVD or using the full version on the SmartServer 2.2 Programming Tools included on the *SmartServer 2.2 Programming Tools* DVD. For more information on ordering the SmartServer 2.2 Programming Tools DVD, contact your Echelon sales representative.

For more information on localizing the language of the SmartServer Web pages, see the *SmartServer 2.2 Programming Tools User's Guide*.

12. Click **OK**. The **Scheduler** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). Move the layer containing the object to the desired position on your custom SmartServer 2.2 Web page. To move a layer, click its moving icon, and then use the arrow keys to move it.

13. Click **Publish** on the Editor toolbar (Publish), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page.

Alarm Notifier

You can use the **Alarm Notifier** object to create the following items: a log that that lists all currently active alarms reported by the SmartServer, a log that lists all active and cleared alarms recorded by the SmartServer, or an e-mail message to be sent to a technician, maintenance company, or other personnel notifying them of an alarm condition.

To use this object, there must be one or more configured Alarm Notifiers on your SmartServer. See Chapter 6 of the *SmartServer 2.2 User's Guide* for more information on adding and configuring an Alarm Notifier using the SmartServer's built-in Web pages.

To add an **Alarm Notifier** object to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar (Edit) or click the **Layout** tab.

2. Click **Insert** and then select **Alarm Notifier**.
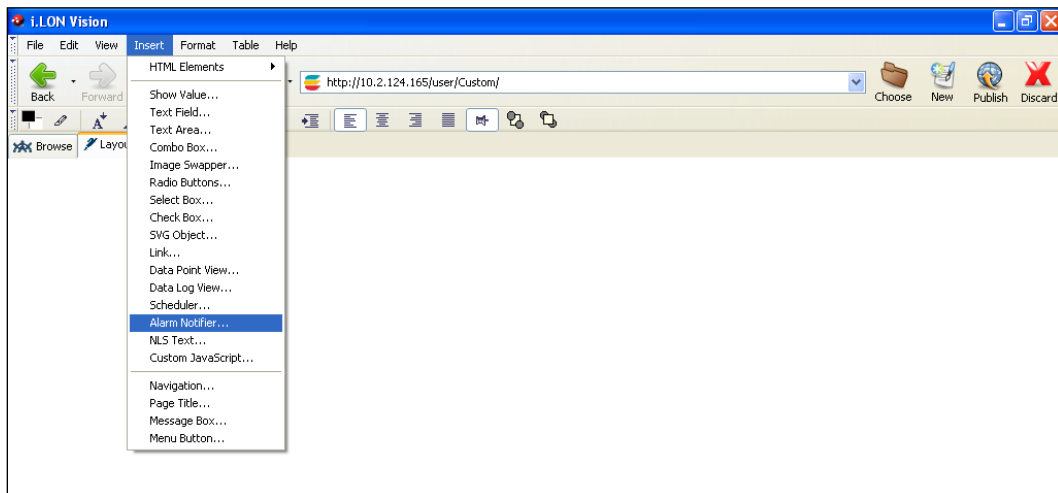
3. The **Alarm Notifier** dialog opens.
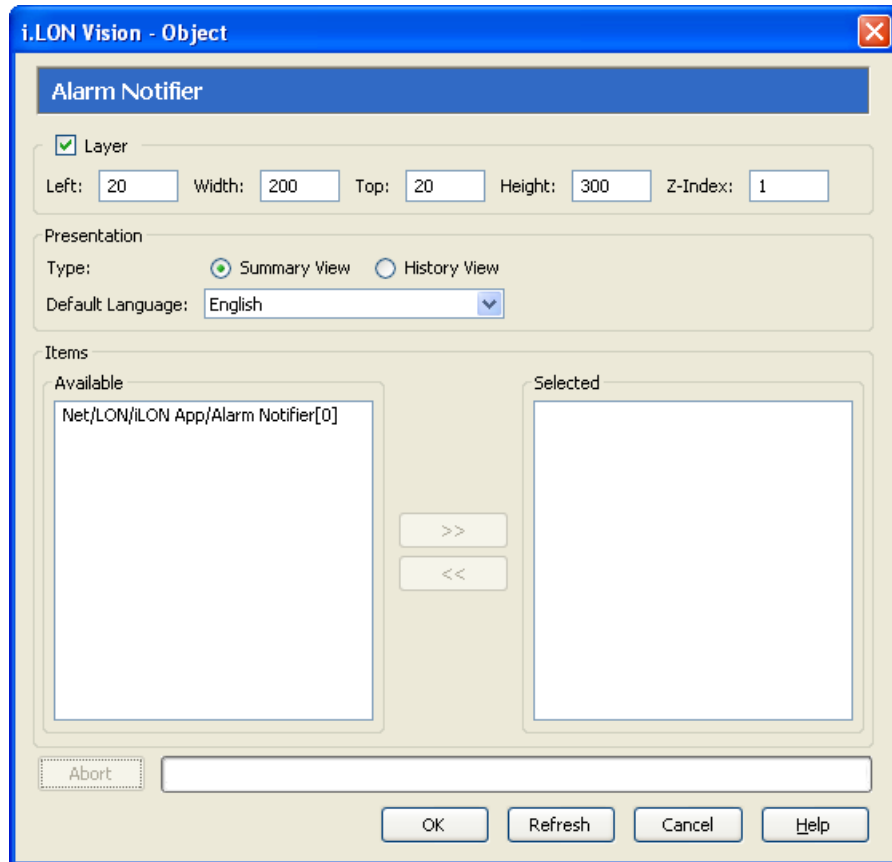
4. In the **Type** property under **Presentation**, select the item to be added to your custom Web page. You have the following two choices:

- **Summary View**. A log that that lists all currently active alarms reported by the SmartServer. The user can use this log to acknowledge and clear active alarms. This option provides the functionality of the **Alarm Notifier: Summary** Web page.

- **History View**. A log that lists all active and cleared alarms recorded by the SmartServer. The user can use this object to view a historical list of alarms. This option provides the functionality of the **Alarm Notifier: History** Web page.

For information on using the **Alarm Notifier: Summary** Web page and the **Alarm Notifier: History** Web page, see Chapter 6, *Alarming*.

5. In the **Default Language** property, select the language in which the property headers on the Alarm Notifier object are displayed. The default language is **English**, and you can select **Deutsch** (German) or **Français** (French).

You can localize this object and all the SmartServer Web pages into any one-byte or two-byte character language using either the demo version of the SmartServer 2.2 Programming Tools included on the SmartServer 2.2 DVD or using the full version on the SmartServer 2.2 Programming Tools included on the *SmartServer 2.2 Programming Tools* DVD. For more information on ordering the SmartServer 2.2 Programming Tools DVD, contact your Echelon sales representative.

For more information on localizing the language of the SmartServer Web pages, see the *SmartServer 2.2 Programming Tools User's Guide*.

6. Select one or more Alarm Notifier functional blocks to be used for the for the **Alarm Notifier** object.

- To select one Alarm Notifier functional block, click that Alarm Notifier functional block in the **Available** box under **Items**, and then click the left arrow to move it into the **Selected** box.

- To select multiple Alarm Notifier functional blocks, you can individually move Alarm Notifier functional blocks from the **Available** box to the **Selected** box using the left arrow; you can click one Alarm Notifier functional block, hold down CTRL, click all other Alarm Notifier functional blocks to be used, and then click the left arrow; or you can click one Alarm Notifier functional block, hold down SHIFT, click another Alarm Notifier functional block to select the entire range of Alarm Notifier functional blocks, and then click the left arrow.

    To update the list of available Alarm Notifiers, click **Refresh**.

7. Click **OK**. The **Alarm Notifier** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). Move the layer containing the object to the desired position on your custom SmartServer 2.2 Web page. To move a Layer, click its moving icon, and then use the arrow keys to move it.

14. Click **Publish** on the Editor toolbar ( ), click **File** and then click **Publish**, or click the **Browse** tab to publish your custom Web page.

Changing the Page Title

By default, the page title on a custom SmartServer 2.2 Web page is named after the **.htm** file specified when you originally created the Web page. You change the page title of your custom SmartServer 2.2 Web page. To do this, follow these steps:

1. Click **Format** and then click **Page Title Properties**. The **Page Properties** dialog opens.
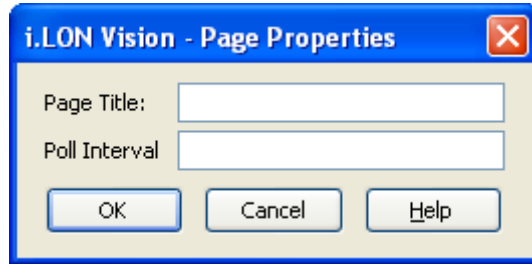
2. In the **Page Title** box, enter a descriptive page title and then click **OK**.

3. Click **OK**.

4. If you are using a navigation system that includes a menu frame, you can the display page title in all your custom Web pages by adding the **Page Title** object to the menu frame. See *Adding a Page Title to the Menu Frame* later in this chapter for how to do this.

Setting the Poll Rate

The i.LON Vision objects in your custom SmartServer 2.2 Web pages poll the SmartServer's internal data server for data point updates every 1 second by default. You can change the poll rate used for all the   i.LON Vision objects in a given custom SmartServer 2.2 Web page to adjust the amount of LAN/WAN traffic that is generated by the custom SmartServer 2.2 Web page.

To change the poll rate used by a custom SmartServer 2.2 Web page, follow these steps:

1. Click **Format** and then click **Page Title Properties**. The **Page Properties** dialog opens.
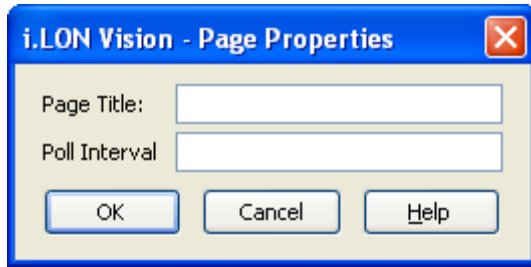
2. In the **Poll Interval** box, set how frequently (in seconds) that all the i.LON Vision objects in your custom Web page poll the SmartServer's internal data server for data point updates. If you do not specify a poll rate, the default poll rate is **1** second.

   Note: You can set the frequency in which individual i.LON Vision objects poll their specified data points by setting the **Max Age** property in the object's respective properties dialog.

3. Click **OK**.

Adding Link Objects

You can use the **Link** object to create an icon, button, or text that the user can click to access another Web page, including a custom SmartServer Web on your local SmartServer or on another SmartServer. To add a **Link** object to your custom SmartServer 2.2 Web page, follow these steps:

1. Click **Edit** on the Editor toolbar ( ) or click the **Layout** tab.

2. Click **Insert** and then select **Link**.
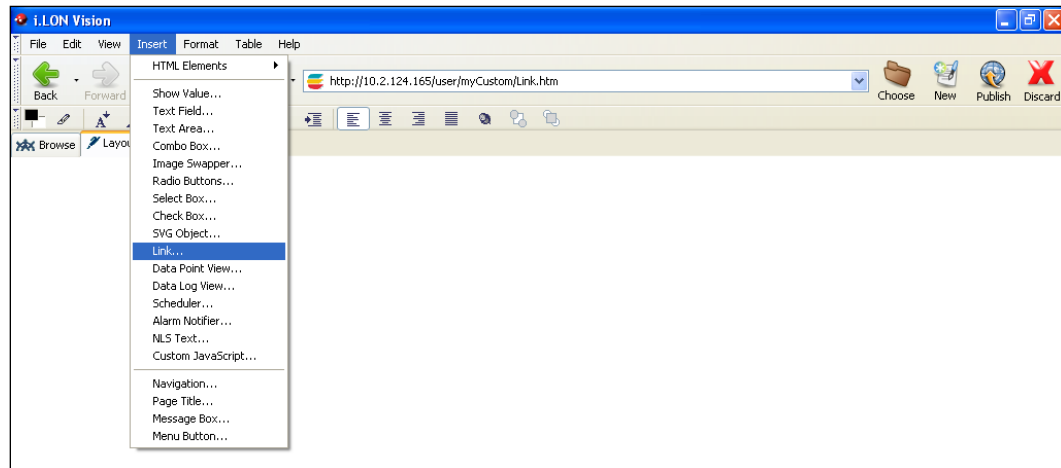
3. The **Link** dialog opens.
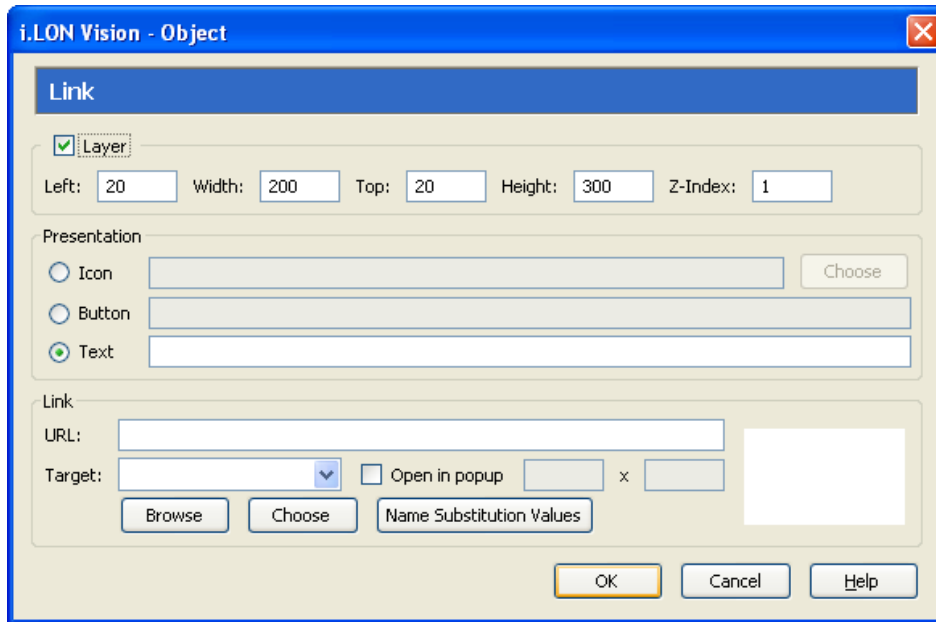
4. Configure the following properties of the **Link** object:

Layer

By default, the **Layer** option is selected. This means that the **Link** object is embedded in a Layer object, which lets you freely move the **Link** object in your custom Web page.

Clearing this option means that you must position the **Link** object as you would any other HTML object. This may be useful if you want to place the **Link** object in a table.

You can set the following properties to position and size the object:

- The **Left** and **Top** properties determine the object's position from the upper left-hand corner of the Web page (in pixels). You can set these properties to position the object instead of dragging the Layer object containing it.

- The **Width** and the **Height** properties determine the size of the object (in pixels). You can set these properties to size the object instead of expanding and collapsing the Layer object containing it.

- The **Z-Index** property determines the object's background depth compared to objects it overlaps with, with **1** (the default) being in the back and higher values being in front.

When positioning the **Link** object, consider the space required for menu, page title, or sidebar objects that you may want to add to your Web page. This will help prevent you from accidentally overlapping objects.

Presentation	Select the type of **Link** object that the user will click to open the Web page you specify in the **Destination** property. You have the following three choices:

- **Icon**. Select a graphic from your computer or your SmartServer. To select a graphic, click **Choose** to open the **Select File** dialog, browse to and select the desired image, and then click **OK** to return to the **Link** dialog

- **Button**. Enter the text to be displayed in a button that has the following appearance: [Button]

- **Text**. Enter text to be displayed in a hyperlink (Text).

Link	Select the Web page to be opened when the user clicks the **Link** object by doing the following:

1. In the **URL** box, enter the URL of the destination Web page, or click **Choose** to open the **Select File** dialog, browse to the **.htm** file of the destination Web page, click the **.htm** file, and then click **OK**.

2. In the **Target** box, you can select how the destination Web page is opened. If you are adding the **Link** object to a page in the frameset, the destination Web page is opened in the application frame (**appFrame**), with the frameset preserved, by default. Otherwise, the destination Web page is opened in a new window. You can select one of the other following options:

   - Select **menuFrame** to open the destination Web page in the menu frame, with the frameset preserved. This option is only available if you are adding the **Link** object to a page in the frameset.

   - Select **sidebarFrame** to open the destination Web page in the sidebar frame, with the frameset preserved.

   - Select **copyrightFrame** to open the destination Web page in the copyright frame, with the frameset preserved.

   - Select **_blank** from the pull-down list to open the destination Web page in a new window.

   - Select **_top** from the pull-down list to open the destination Web page in the current window, but replace the frameset (if used).

   - Select the **Open in Popup** check box to open the Web page in a pop-up dialog. If you select this check box, specify the dimensions of the pop-up dialog. This check box is cleared by default

5. Optionally, you can click **Name Substitution Values** to open the **Data Point Name Substitution Values** dialog. In this dialog, you can specify the data points to be displayed when the Web page specified by the **Link** object opens. To do this, you enter the substitution tags to replace the placeholder values in the data point name. See *Using Data Point Substitution Tags* later in this chapter for more information.

6. Click **OK**. The **Link** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its

position with the **Left** and **Top** properties). If you selected the **Layer** check box, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page.

7. Click **Publish** on the Editor toolbar (Publish), click the **Browse** tab, or click **File** and then click **Publish** to save the current draft of your custom SmartServer 2.2 Web page.

Adding a Navigation System to your Web Design

You can add a navigation system to your Web design so that users can easily move through your custom Web pages. To add a navigation system, follow these steps:

1. Create a home page for your Web design and format the **Frameset** object in it. You can do this manually, or you can create a new Web page that uses an Echelon frameset template. The Echelon frameset templates include the **Frameset** object, and they have editable regions in the menu, sidebar, and copyright frames that show you where to insert your company's text and images.

2. Create a menu frame. This entails adding one or all of the following navigation objects to the menu frame: menu bar, page title, message box, menu buttons, and graphics.

3. Create a sidebar frame. This entails adding a navigation pane to the sidebar frame.

4. Create a copyright frame. This entails modifying the copyright notice in the copyright frame.

Note: To create a navigation system with just a menu bar in the menu frame, you can skip step 3. Conversely, to create a navigation system with just a navigation pane in the sidebar frame, you can skip step 2; however, you can still add other objects to the menu frame such a page title, error message box, submit and back menu buttons, and graphics.

Creating a Home Page

You can create a custom home page for your Web design that users will see when they initially access your custom Web pages.   You can create your home page in two ways. The first method is to create a new Web page that will be your home page, design it, and then format the **Frameset** object in it. The second method is to create a new Web page that uses an Echelon frameset template, which already includes the **Frameset** object, and then insert your company's images and logos in the appropriate placeholders in the template.

The **Frameset** object lets you apply a single menu and/or a single navigation pane to all your custom SmartServer 2.2 Web pages.   Once you format the **Frameset** object in your home page, your home page will appear in the application frame in the center of the **index.htm** Web page that is automatically created by the **Frameset** object.

Manually Creating the Home Page

To create your home page manually, follow these steps:

1. Click the **New** button on the Editor toolbar (New), or click **File** and then click **New Page**.   The **Select Folder** dialog opens.
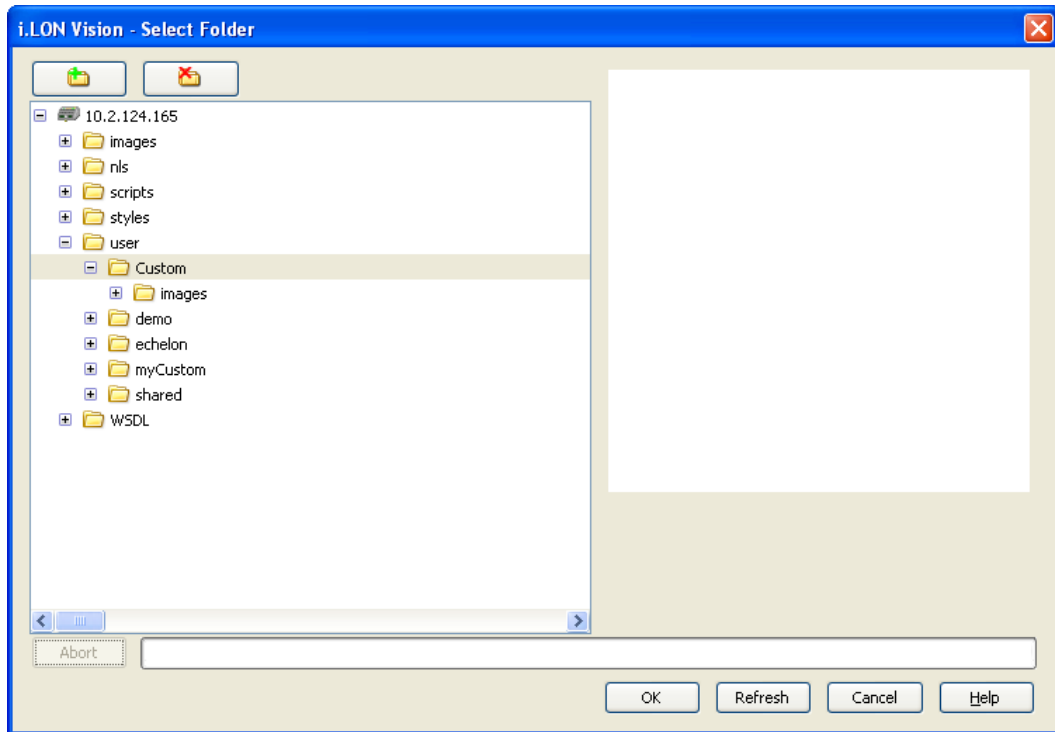
2. Select the folder where your home page will be stored, and then click **OK**.

3. Click **Publish** on the Editor toolbar ( ), click the **Browse** tab, or click **File** and then click **Publish**. The **Publish As** dialog opens.

4. In the **File Name** property, enter the name of your home page's **.htm** file (one word with no spaces), and then click **OK**. For this example, the file name is **home**.
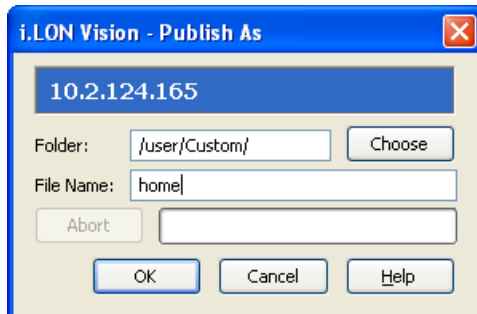
    Note: The default page title is based on this file name. You can edit the page title for the Web page as described in *Changing the Page Title* earlier in this chapter.

5. Click **Edit** on the Editor toolbar ( ) or click the **Layout** tab.

6. Click **Format** and then select **Frameset**.
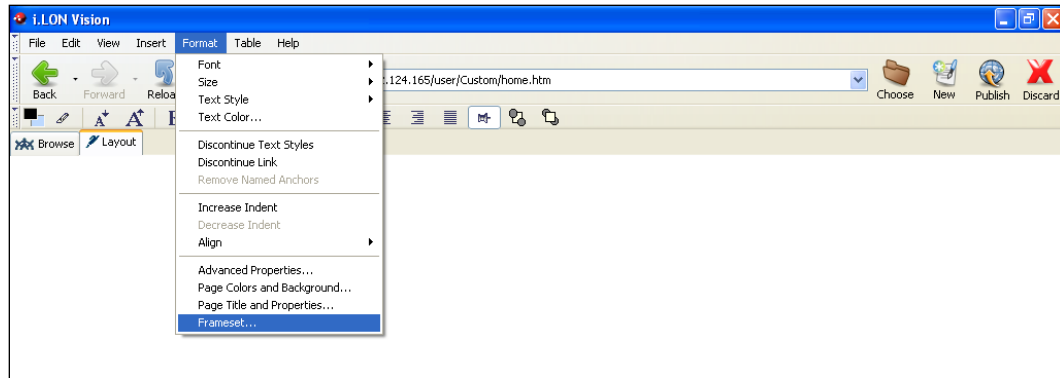
7. The **Frameset** dialog opens.
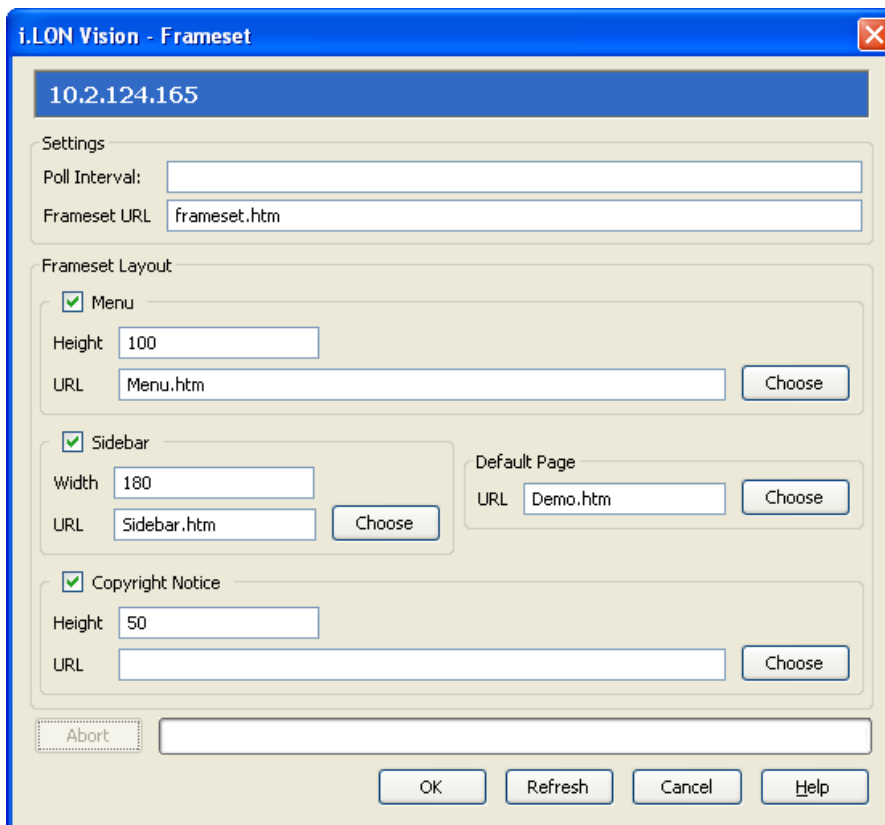
8. In the **Poll Interval** box, set how frequently (in seconds) that the i.LON Vision objects in the custom SmartServer 2.2 Web pages within the frameset poll the SmartServer's internal data server for data point updates. If you do not specify a poll rate, the default poll rate is 1 second. You can use this property to adjust the amount of LAN/WAN traffic that is generated by your custom SmartServer 2.2 Web pages.

9. In the **Default Page** property, enter the URL of your home page, or click **Choose**, select your home page in the **Select File** dialog, and then click **OK**.
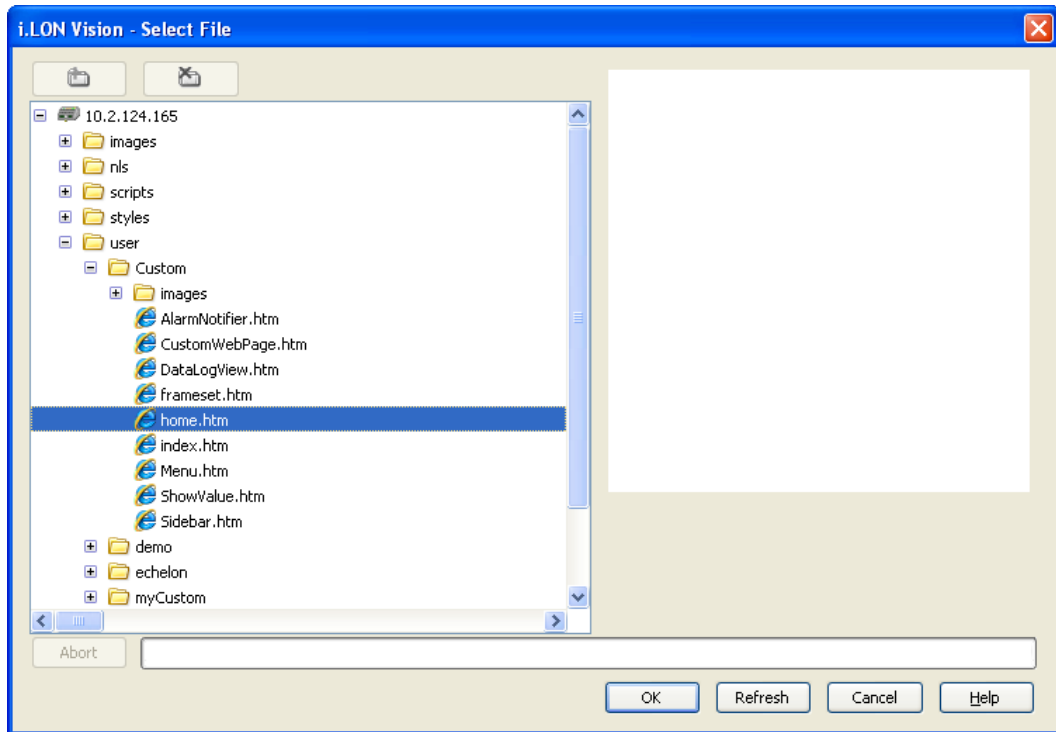
10. By default, frames for a menu, sidebar, copyright notice, and application (custom Web page) will be added to all your custom Web pages.
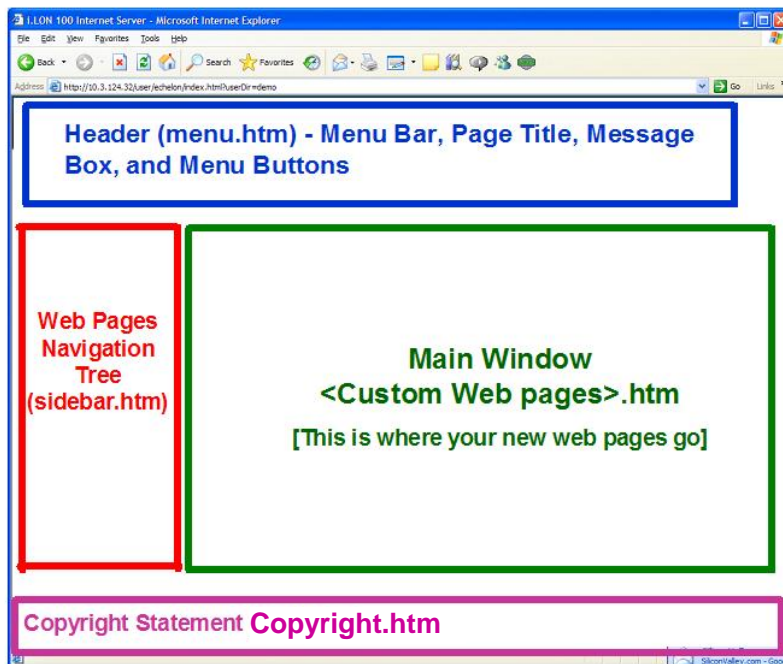
11. Clear the check boxes for any of the frames you do not want to use for your custom Web pages. For example, if you plan on only using a menu bar for your navigation system, you can clear the **Sidebar** check box.

Note: The settings in the **Frameset** dialog will not be saved if the folder to which you are adding the home page does not already exist.

12. Optionally, you can adjust the height of the menu and copyright frames and the width of the sidebar frame using their respective **Height** and **Width** properties.

13. Click **OK** to return to return to your home page.

14. Optionally, add any images or text to your home page. The images and text you add will be placed in the application frame in the center of the initial Web page (**index.htm**) that users will see they open your Web design.

   For example, you can add the **building.gif** image in the**/web/images** folder on your SmartServer flash disk and text summarizing the functionality provided by your custom Web pages.
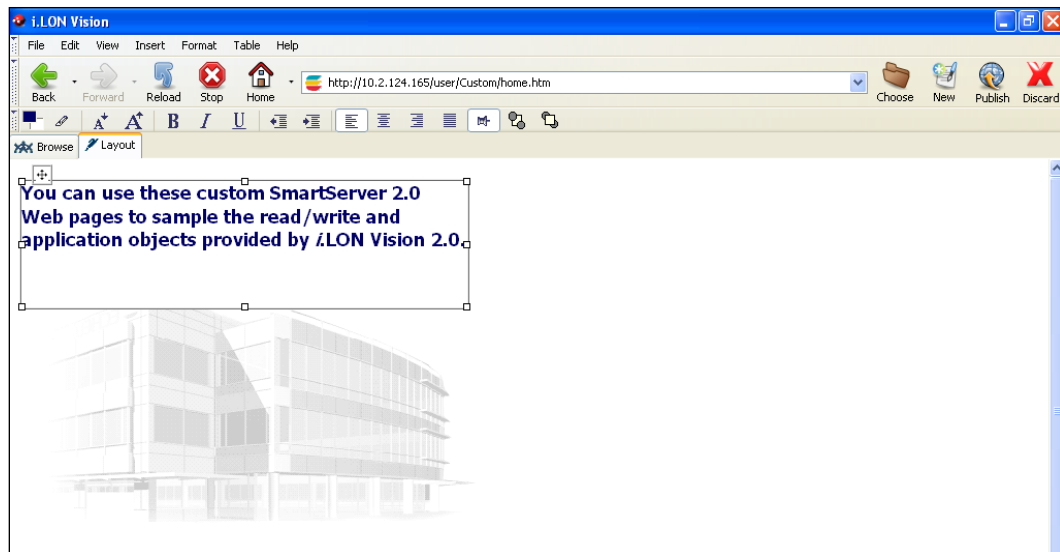
15. Click **Publish** on the Editor toolbar ( ), click the **Browse** tab, or click **File** and then click **Publish**. This publishes your home page and additionally creates the following files (provided that you did not clear the check box for the respective frame in step 11):

   - **index.htm**. This is the Web page users will initially see when they enter your Web design. Your home page will appear in the application frame in the center of this Web page. You do not need to modify this Web page.

   - **Menu.htm**. You can add a menu bar, page title, message box, menu buttons, images, and graphics to this frame. This frame will appear at the top of all your custom Web pages.

   - **Sidebar.htm**. You can add a navigation pane to this frame. This frame will appear in the left side of all your custom Web pages.

   - **Copyright.htm**. You can add a copyright notice to this frame. This frame will appear at the bottom of all your custom Web pages.

Using an Echelon Frameset Template to Create the Home Page

You can create your home page using an Echelon frameset template. The template includes a **Home.htm** file, as well as the frameset files (**index.htm**, **Menu.htm**, **Sidebar.htm**, and **Copyright.htm**). To use an Echelon frameset template, copy a template folder in the **LonWorks\iLon100\unsupported\iLonVision\Templates** directory on your computer to the **/web/user** folder on the SmartServer flash disk. You can then customize the Web pages in the template to fit your needs.

Designing the Menu Frame

Once you have created your home page and formatted the **Frameset** object, you can open the **Menu.htm** file and then design the menu frame by adding navigation objects to it. You will typically add a **Navigation** (menu) object, and you may add the **Page Title**, **Message Box**, and **Menu Buttons** objects and graphics (for example, background images and company logos). The following describes each of the navigation objects you can add to the menu frame:

- **Navigation** (Menu). Displays a menu bar with menu and submenu items that the user can click to open custom Web pages.

- **Page Title**. Displays a page title based on the file name of the custom Web page.

- **Message box**. Displays error and warning messages related to your custom Web pages.

- **Menu buttons**. Displays a **Submit** button that the user can click to save changes made to a custom Web page, and/or a **Back** button that the user can click to return to the previous Web page

- Graphics such as a background images and company logos.

The objects you add to the menu frame will automatically be applied to all your custom Web pages. This means that you do not have to add and configure separate navigation objects in the menu frame for each of your custom Web pages.

Opening the Menu.htm File

To open the **Menu.htm** file that was created when you formatted the **Frameset** object on your home page and published your home page, follow these steps:

1. Click **Choose** on the Editor toolbar (Choose). The **Select File** dialog opens.

2. Browse to the **/web/**<*Custom*> directory on the SmartServer flash disk.

3. Select the **Menu.htm** file, and then click **OK** to return to the **Browse** tab.

4. Click **Edit** on the Editor toolbar (Edit) or click the **Layout** tab.

Alternatively, you can open the **Menu.htm** file from the **index.htm** file that was created when you formatted the **Frameset** object on your home page and published your home page. To do this, follow these steps:

1. Click **Choose** on the Editor toolbar (Choose). The **Select File** dialog opens.

2. Browse to the **/web/**<*Custom*> directory on the SmartServer flash disk.

3. Select the **index.htm** file, and then click **OK** to return to the **Browse** tab.

4. Click **Edit** on the Editor toolbar (Edit) or click the **Layout** tab. The **Select a Frame** dialog opens.

5. Click **menuFrame**, which highlights the menu frame, and then click **OK**.
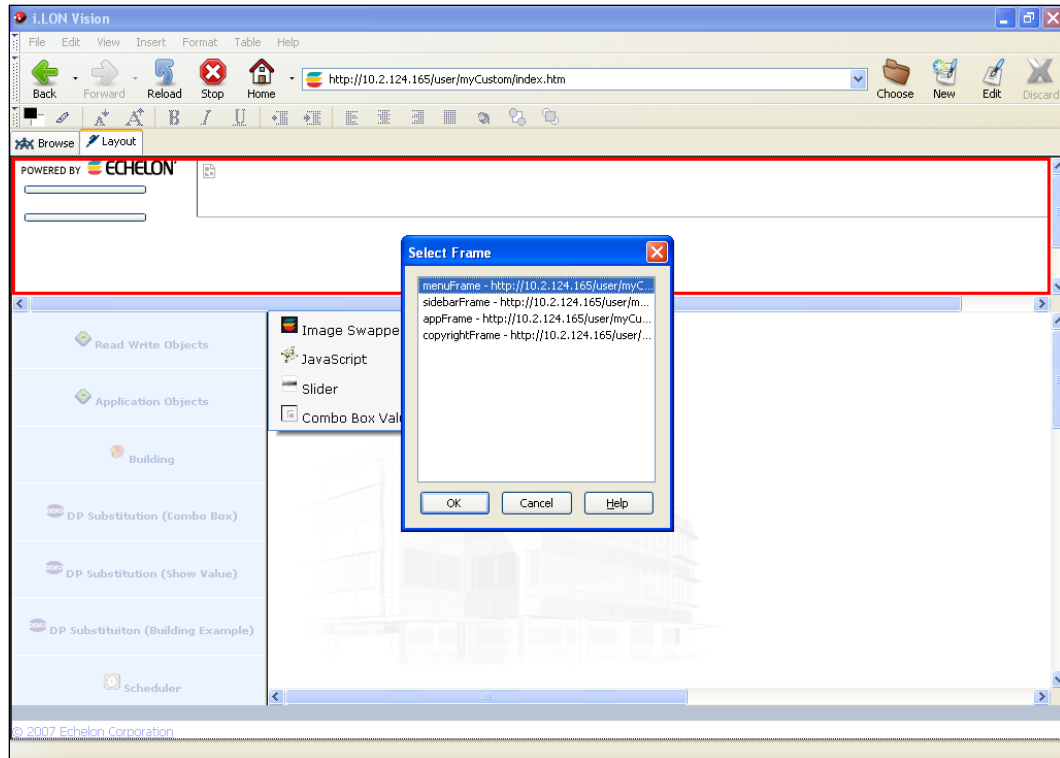
Adding a Menu Bar to the Menu Frame

You can add a menu bar to all your custom Web pages by adding the **Navigation** (menu) object to the menu frame. The user can then click the menu and submenu items in the menu bar to open your custom Web pages. To add a menu bar to your custom Web pages, follow these steps:

1. Click **Insert** and then select **Navigation**.
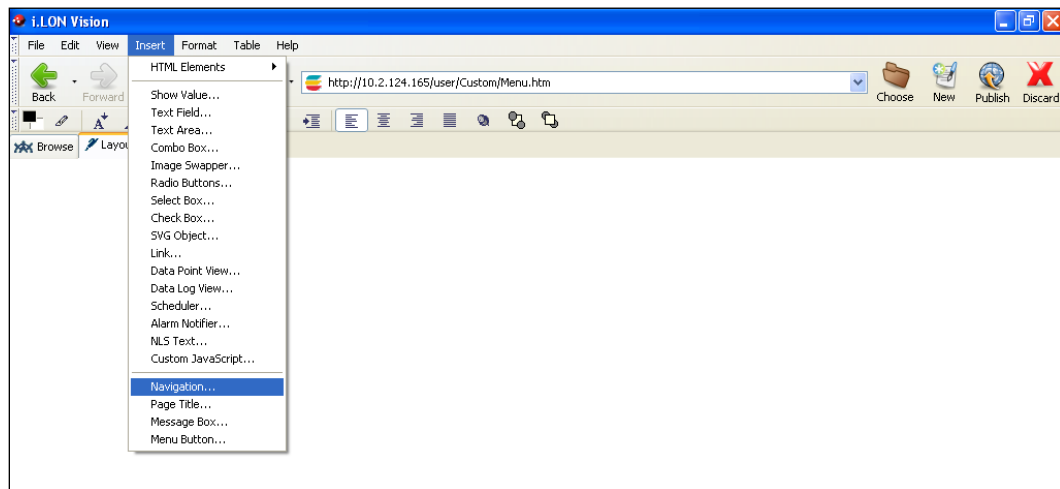
2. The **Navigation** dialog opens.

3. Select the **Menu** option, and then select the **Horizontal** option.
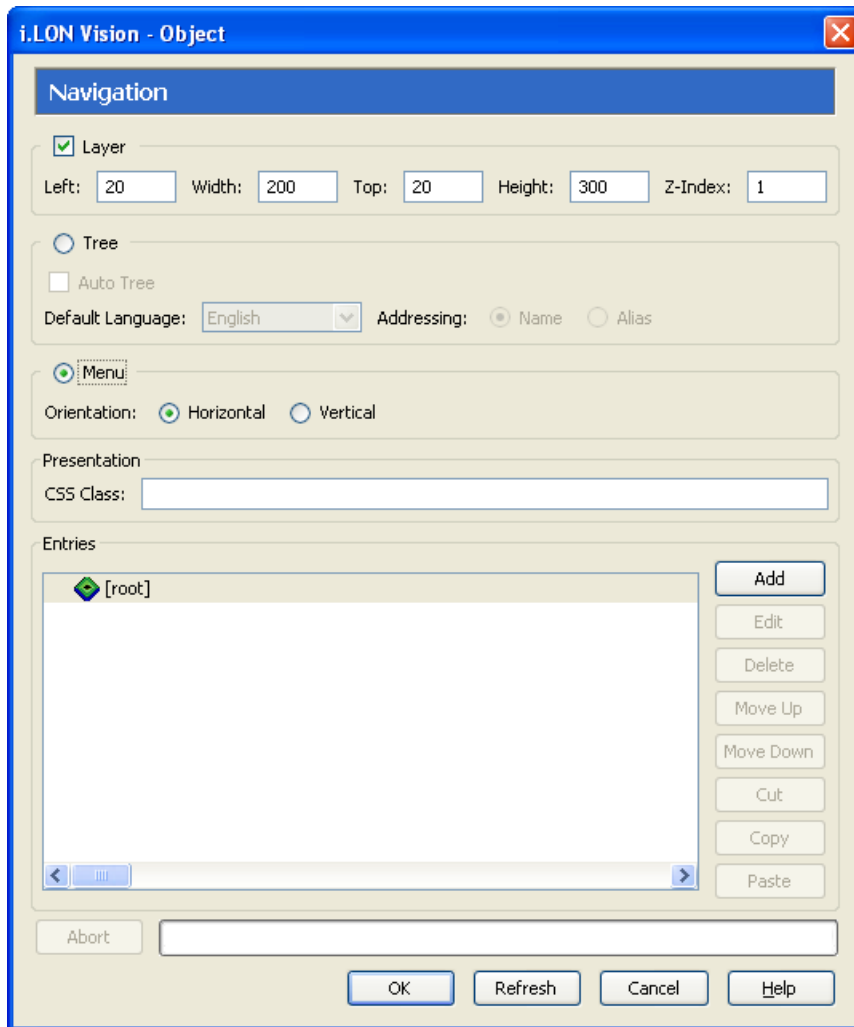
4. Click the [root] icon, and then click **Add** for each menu item to be added to the menu bar. A **New Item** menu item is underneath the [root] icon for each menu item you create. For example, to create a menu bar with two menu items, click the [root] icon and then click **Add** twice.
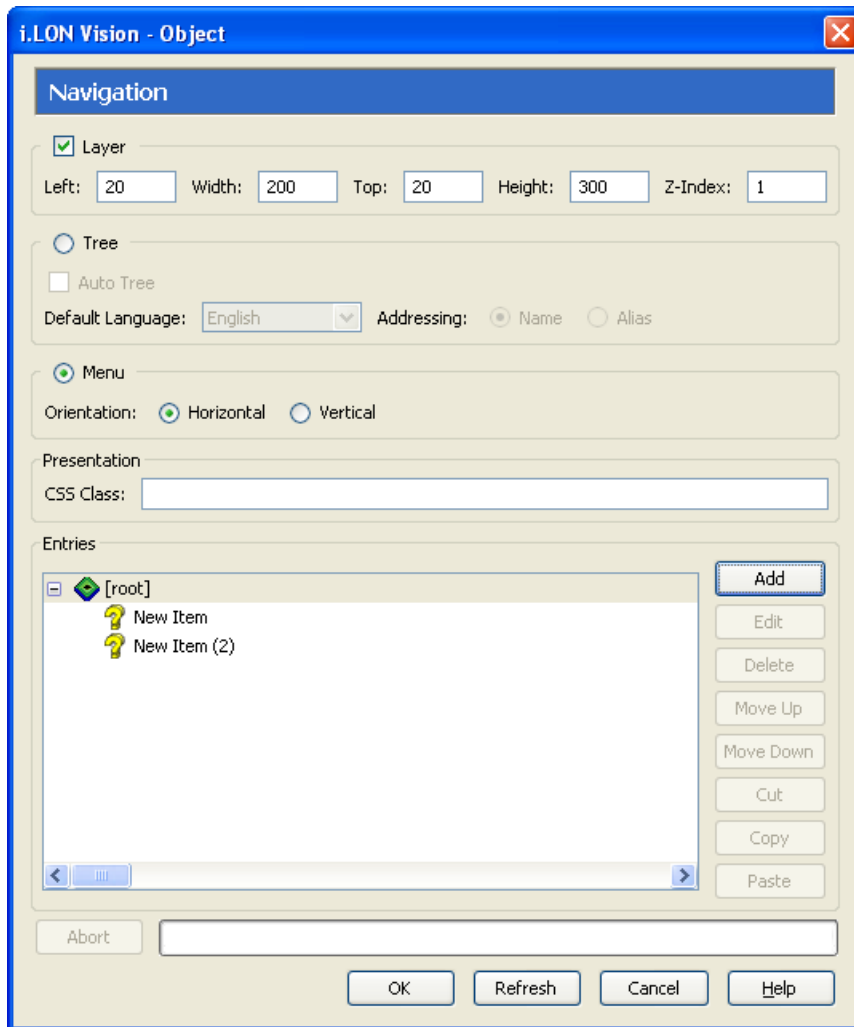
5. Configure each menu item following these steps:

    a. Click the **New Item** menu item and then click **Edit**. The **Navigation Link** dialog opens.
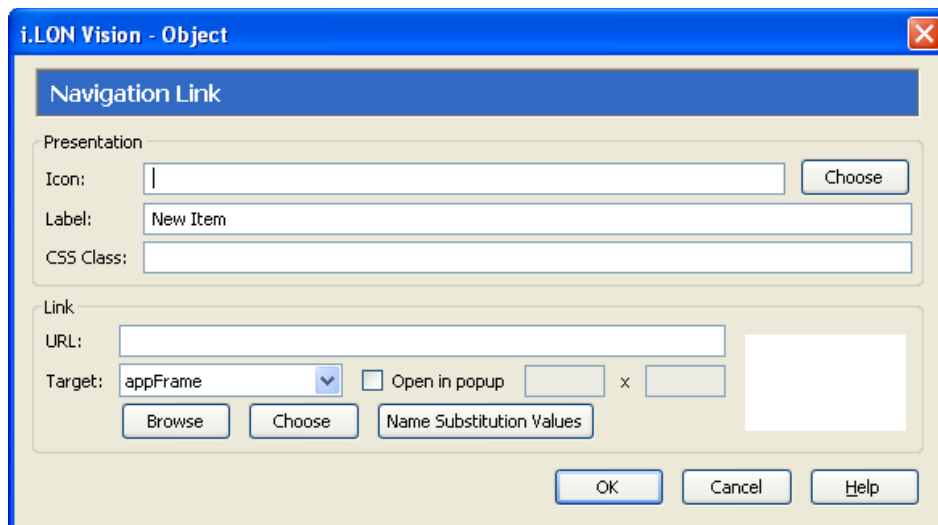
b. In the **Icon** property under **Presentation**, you can add an icon that will appear to the left of the item. To do this, click **Choose** to open the **Select File** dialog, browse to the **C:\LonWorks\iLON\iLonVision\graphics\<*category*>** folder on your computer, or the **/web/images** or **/web/user/demo/images** folders on your SmartServer flash disk, click the desired image, and then click **OK**.

c. In the **Label**, property, enter the name for the menu item.

d. If you do not plan on adding any submenu items or branches to the current item, select the Web page to be opened when the user clicks the item. This can be a built-in SmartServer configuration Web page, or a custom SmartServer Web page on your local SmartServer or on another SmartServer. To set the destination, follow these steps:

   i. In the URL box under **Destination**, enter the URL of the destination Web page, or click **Choose** to open the **Select File** dialog, browse to the **.htm** file of the destination Web page, click the **.htm** file, and then click **OK**.

   ii. In the **Target** box, you can select how the destination Web page is opened. By default, the destination Web page is opened in the application frame (**appFrame**), with the frameset preserved. This enables your custom Web pages to appear in the application frame in the center of the frameset. You can select one of the other following options:

   - Select **menuFrame** to open the destination Web page in the menu frame, with the frameset preserved.

   - Select **sidebarFrame** to open the destination Web page in the sidebar frame, with the frameset preserved.

   - Select **copyrightFrame** to open the destination Web page in the copyright frame, with the frameset preserved.

   - Select **_blank** from the pull-down list to open the destination Web page in a new window.

   - Select **_top** from the pull-down list to open the destination Web page in the current window, but replace the frameset (if used).

   - Select **Open in Popup** to open the Web page in a pop-up dialog. If you select this option, specify the dimensions of the pop-up dialog. This option is cleared by default.

e. If you are using data point substitution tags to re-use a single Web page for monitoring and controlling multiple data points, click **Name Substitution Values**. In the **Substitutions** dialog click a placeholder, enter a value for the placeholder in the **Value** box, click **Save**, and then click to return to the **Navigation Link** dialog. See *Using Data Point Substitution Tags* later in this chapter for more information.

f. Click **OK** to return to the **Navigation** dialog.

g. Repeat steps a–f for each **New Item** menu item listed under the **Level 1**column. The following graphic demonstrates a menu bar with two menu items that have been configured.
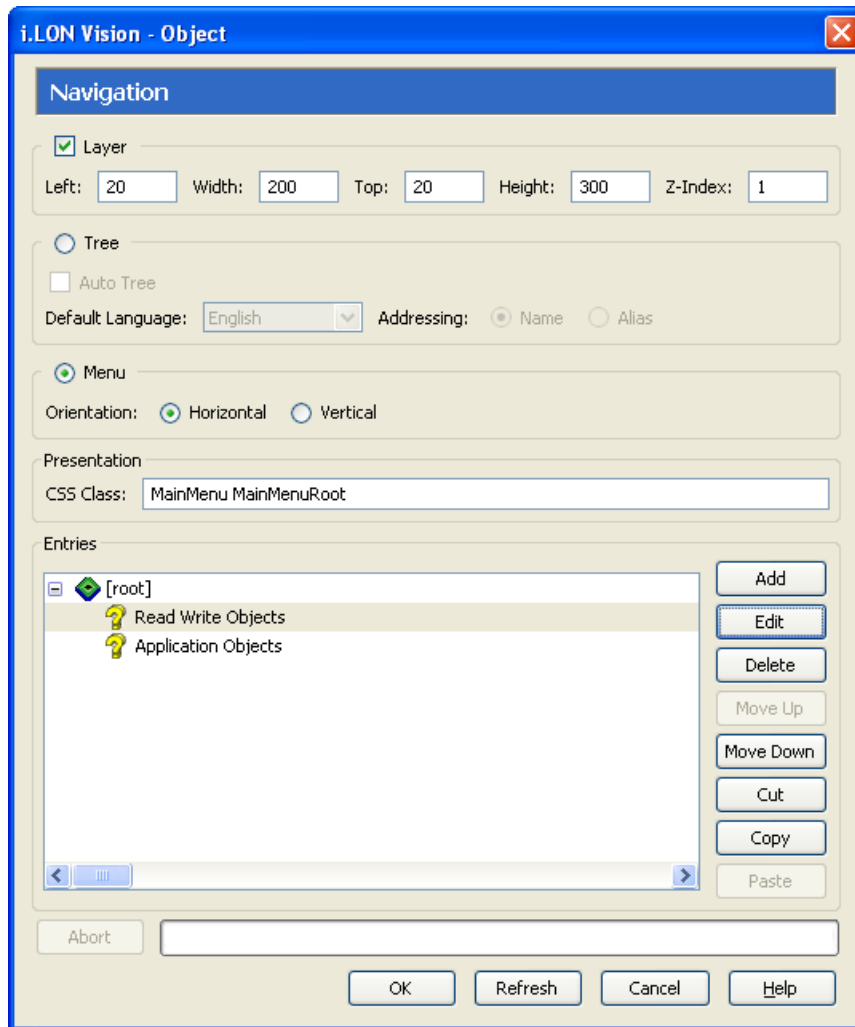
6. To create submenu items for a menu item, click a menu item then click **Add**. A **New Item** submenu item is added underneath the menu item. For example, to create a menu item with three submenu items, click the menu item and then click **Add** three times.
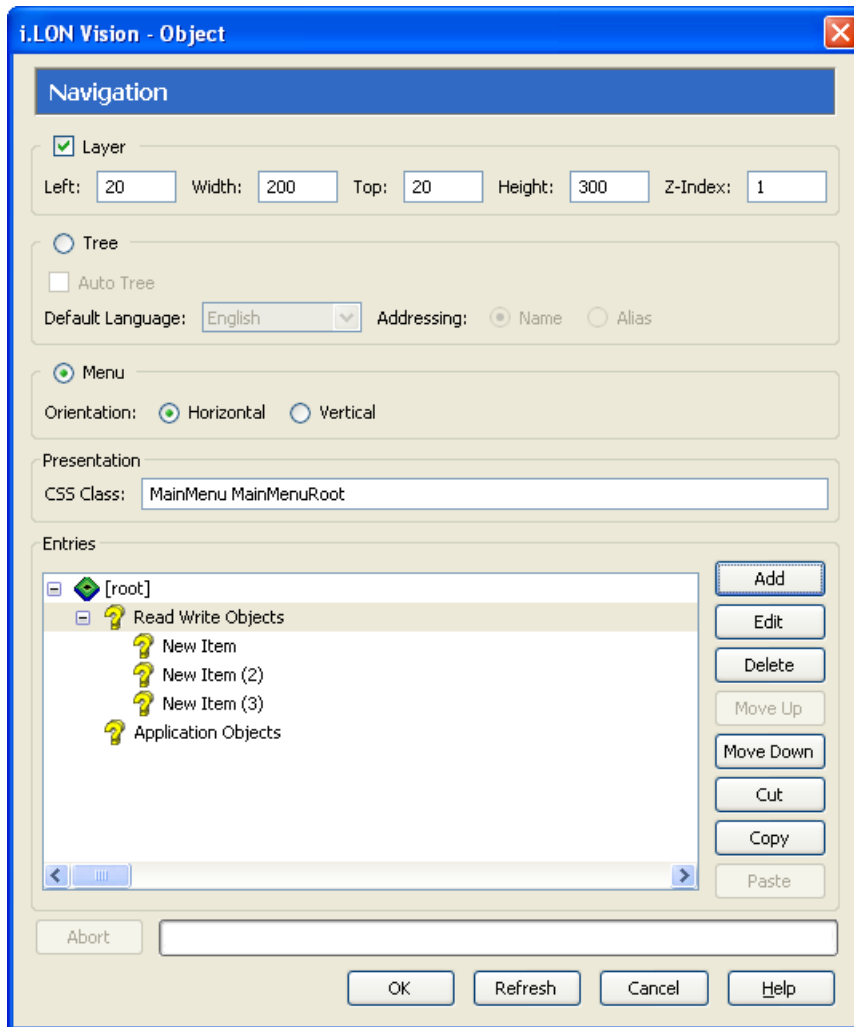
7. Configure each submenu item as described in step 5.
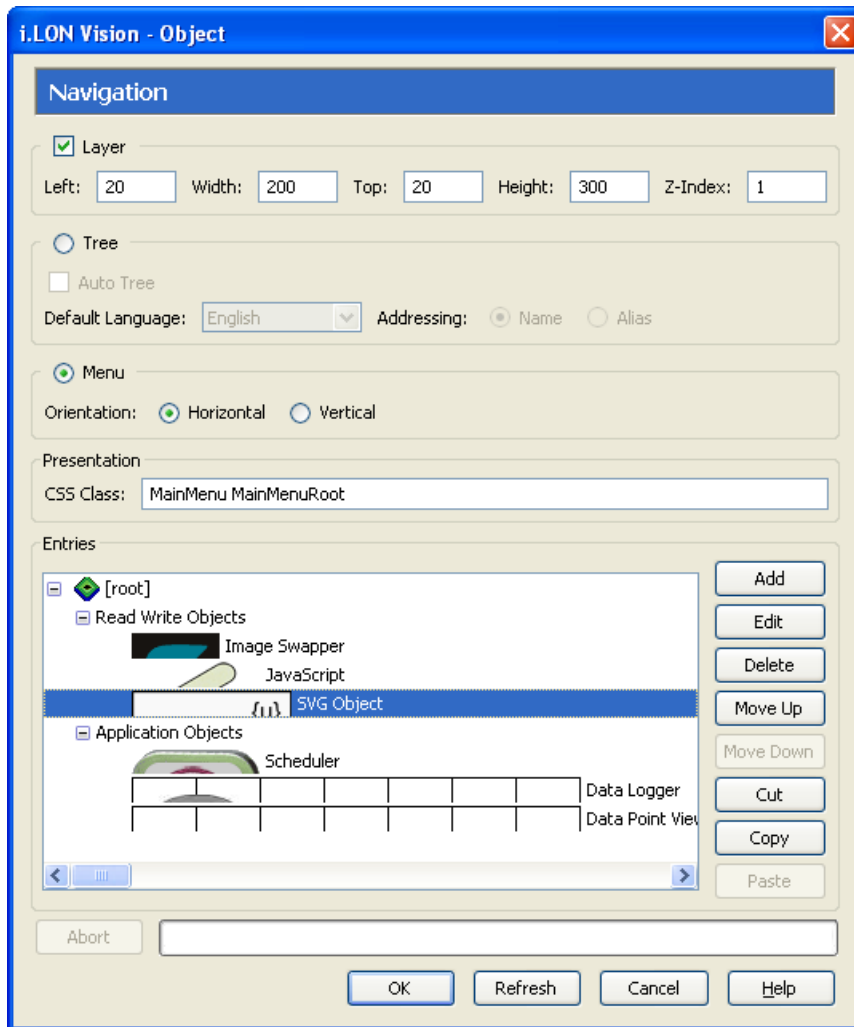
8. To create third to fifth level submenus, repeat steps 5–7. In this process, you click a submenu item, click **Add** to add a menu item below it, click the third-level submenu item, click **Edit** to edit the third level submenu item, and repeat the process for each new submenu level to be created in the menu hierarchy.

   Note: You can select a menu item in the list and click **Move Up** or **Move Down** to change the order the menu items in each menu are listed. To remove a menu item and its submenus, click the menu item and then click **Delete**.

9. Click **OK**. The menu bar is added to the top of the menu frame.

10. Click **Publish** on the Editor toolbar ( ), click the **Browse** tab, or click **File** and then click **Publish** to save the current draft of your menu frame.

11. You can test your menu bar by clicking a menu item or clicking a menu item and then clicking one of the submenu items, and verifying that correct destination Web page opens.

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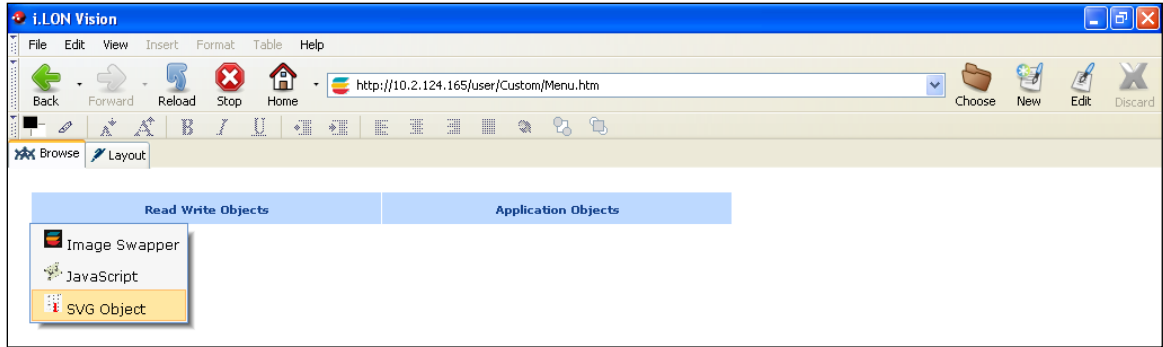
You can read the following subsections to add a page title, message box, menu buttons, and images to the menu frame in which your menu bar resides.

Adding a Page Title to the Menu Frame

You can display page titles in all your custom Web pages by adding the **Page Title** object to the menu frame. To add the **Page Title** object to the menu frame, follow these steps:

1. Name the page title as described in *Changing the Page Title* earlier in this chapter.

2. In the **Menu.htm** page, Click **Edit** on the Editor toolbar ( ) or click the **Layout** tab.

3. Click **Insert** and then select **Page Title**.
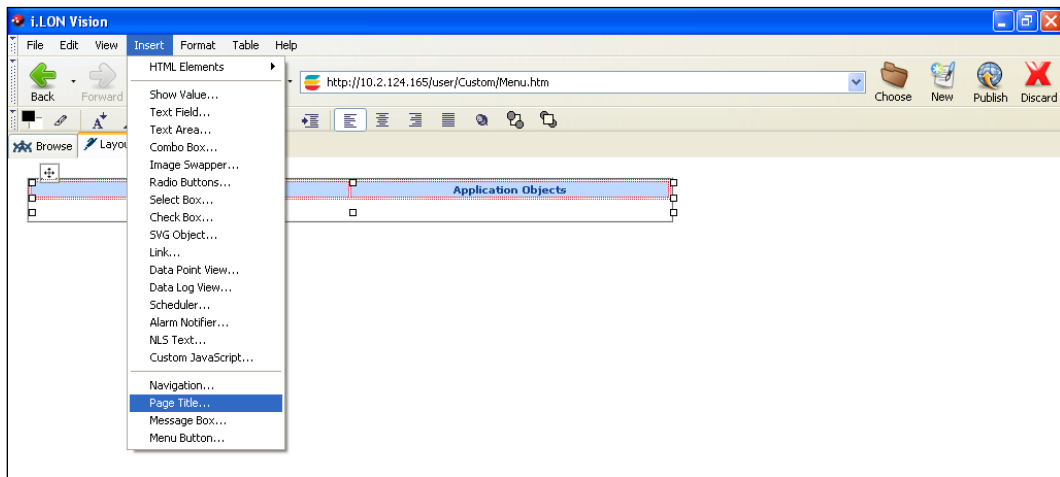
4. The **Page Title** dialog opens.
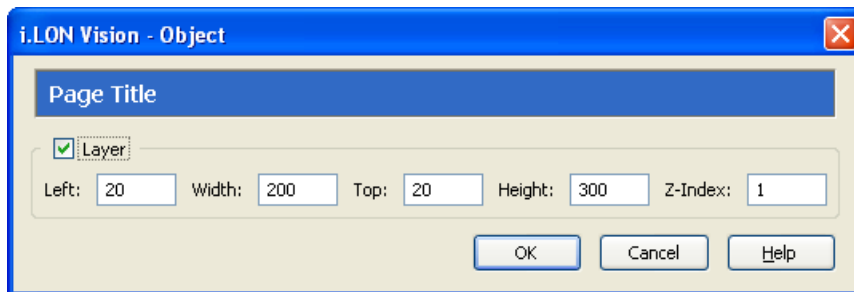
5. Optionally, you can modify the size and position of the **Page Title** object by setting the **Layer** properties.

6. Click **OK**. By default, a **Page Title** object with the name "Welcome to *e*4" is positioned in the upper left-hand corner of the menu frame (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** option, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page. You can place the **Page Title** object below the menu bar for a typical layout.
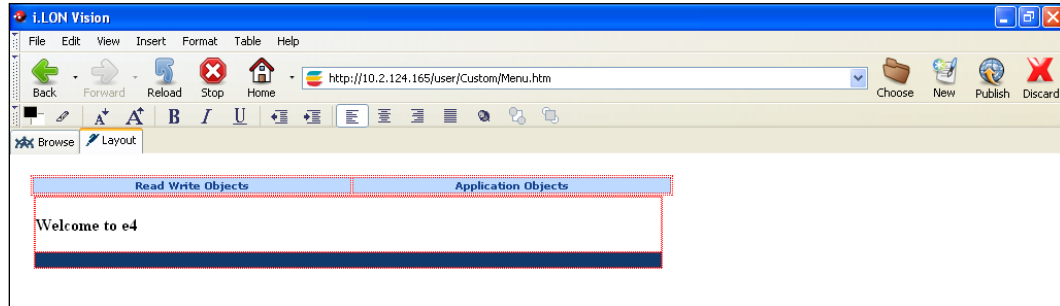
7. Click **Publish** on the Editor toolbar ( ), click the **Browse** tab, or click **File** and then click **Publish**. A page title named **Menu** appears on the menu frame.
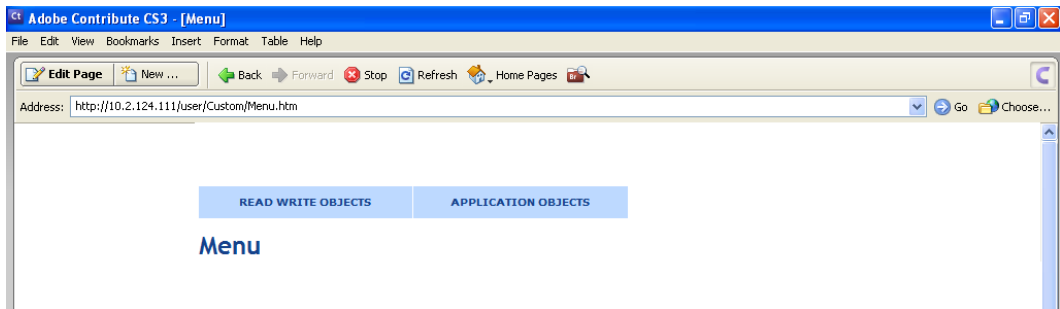
Adding a Message Box to the Menu Frame

You can add message boxes to all your custom Web pages by adding the **Message Box** object to the menu frame. The message box displays error and warning messages related to the custom Web page. The error or warning is signified by an alarm bell and an informative message describing the error or warning. For errors, the alarm bell and message text are red; for warnings, they are orange. The user can click the alarm bell to display an error log. This log lists all the errors and warning that have occurred since the user opened the custom Web page or refreshed the browser.

To add the **Message Box** object to the menu frame, follow these steps:

1. In the **Menu.htm** page, click **Edit** on the Editor toolbar ( ) or click the **Layout** tab.

2. Click **Insert** and then select **Message Box**.

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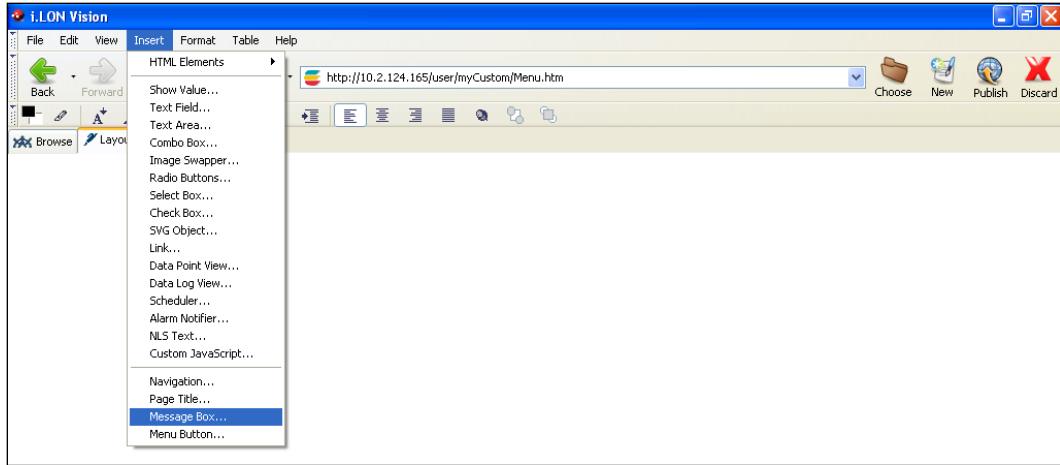
3. The **Message Box Edit** dialog opens.
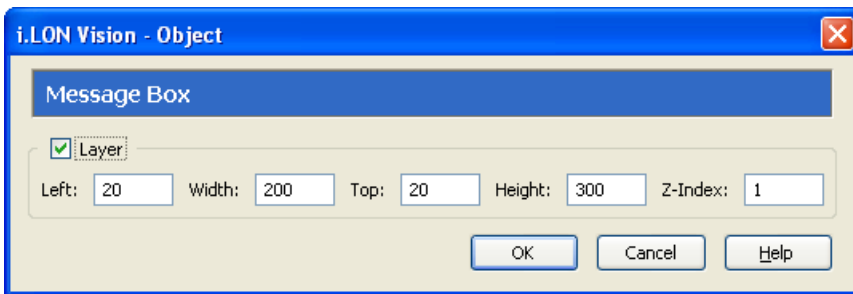
4. Optionally, you can modify the size and position of the **Message Box** object by setting the corresponding properties.

5. Click **OK**. By default, a **Message Box** object with the name "Loading Page…" is positioned in the menu frame directly below the **Page Title** object (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** check box, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page. You can place the **Message Box Edit** object below the menu bar and the **Page Title** object (if added) for a typical layout.
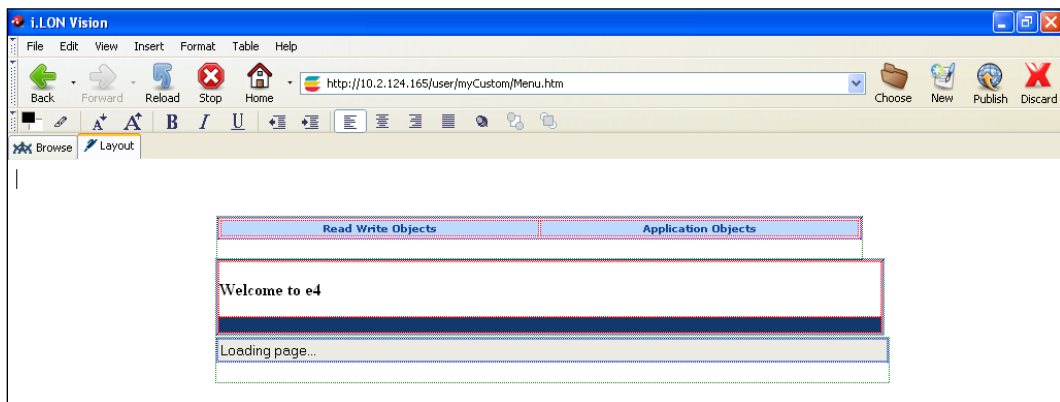
6. Click **Publish** on the Editor toolbar ( ), click the **Browse** tab, or click **File** and then click **Publish** to save the current draft of your menu frame.

Adding Menu Buttons to the Menu Frame

You can add submit and back menu buttons to all your custom Web pages by adding the **Menu Buttons** object to the menu frame. The user can use the **Submit** button to save changes made to a custom Web page, and they can click the **Back** button to return to the previous Web page.

To add the **Menu Buttons** object to the menu frame, follow these steps:

1. In the **Menu.htm** page, click **Edit** on the Editor toolbar ( ) or click the **Layout** tab.

2. Click **Insert** and then select **Message Buttons**.
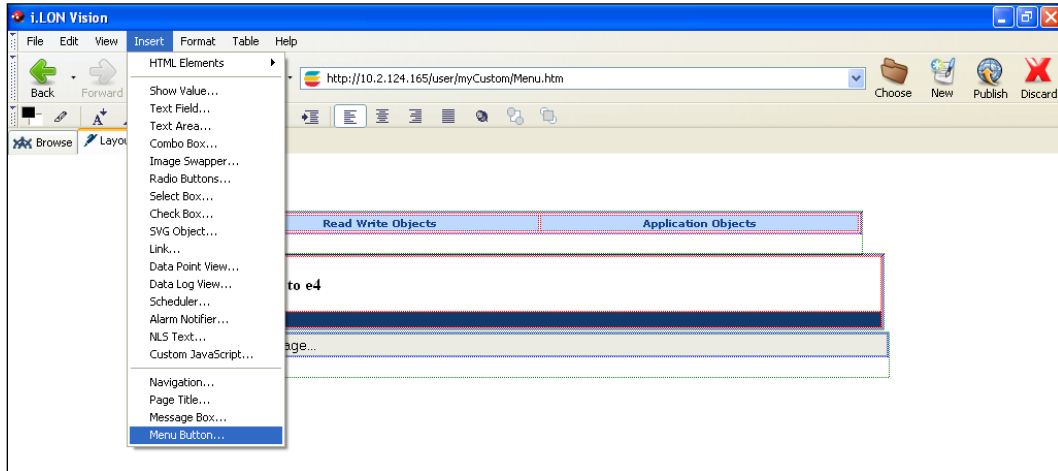
3. The **Menu Buttons Edit** dialog opens.
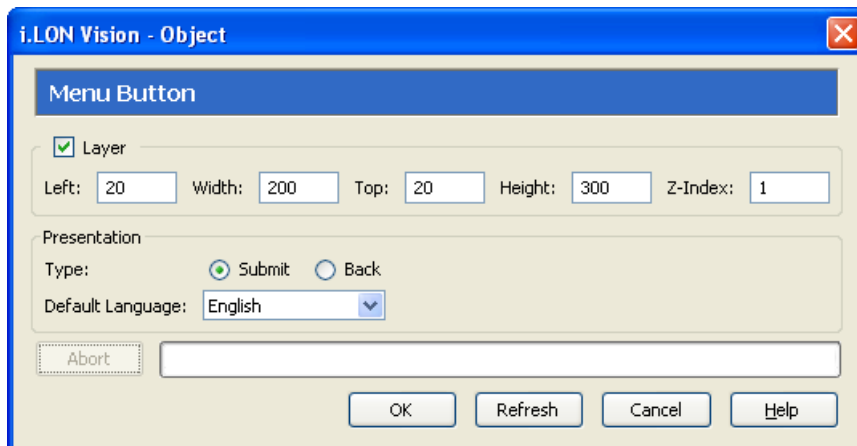
4. Optionally, you can modify the size and position of the **Menu Buttons** object by setting the **Layer** properties.

5. Under **Presentation**, select the type of button to create. You have two choices: **Submit** and **Back**. The **Submit** button is used to save changes made to a custom Web page. The **Back** button is used to return to the previous Web page.

6. In the **Default Language** property, select the language in which the menu button is displayed. The default language is **English**, and you can select **Deutsch** (German) or **Français** (French).

   You can localize this object and all the SmartServer Web pages into any one-byte or two-byte character language using either the demo version of the SmartServer 2.2 Programming Tools included on the SmartServer 2.2 DVD or using the full version on the SmartServer 2.2 Programming Tools included on the *SmartServer 2.2 Programming Tools* DVD. For more

information on ordering the SmartServer 2.2 Programming Tools DVD, contact your Echelon sales representative.

For more information on localizing the language of the SmartServer Web pages, see the *SmartServer 2.2 Programming Tools User's Guide*.

7. Click **OK**. A **Menu Button** object is added to the left side of the menu frame (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** option, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page.

8. Repeat steps 2–7 to add the other button type (**Submit** or **Back**) to your menu frame. Vertically align the buttons.
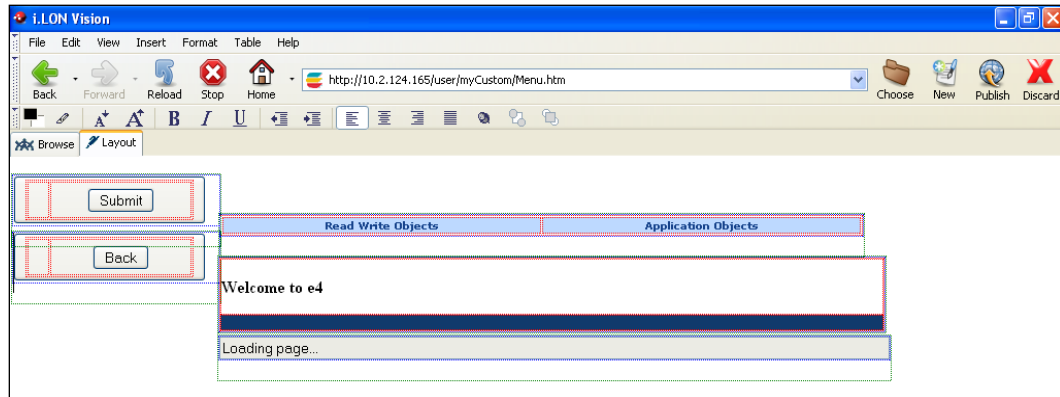
9. Click **Publish** on the Editor toolbar ( ), click the **Browse** tab, or click **File** and then click **Publish** to save the current draft of your menu frame. The **Submit** and/or **Back** buttons appear in your menu frame.
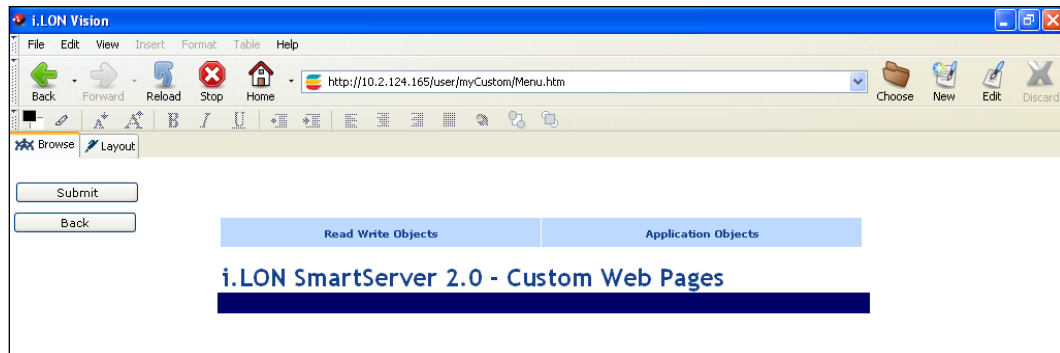
Adding Graphics to the Menu Frame

You can customize the appearance of the menu frame by adding graphics to it. You can add a company logo, background images representing your industry, and other images, and they will appear in the menu frame of all your custom Web pages. Before you add an image to your menu frame, you can add a **Layer** object and insert the image into the **Layer** object so that you easily move the image to the desired position within the menu frame.

To add images to the menu frame, follow these steps:

1. Click **Insert**, point to **HTML Elements**, and then select **Layer**. A Layer object is added to the upper left-hand corner of **Layout** tab.

2. Move the **Layer** object to an empty space in the **Layout** tab to simplify your Web design. To do this, click the Layer, and then move the mouse pointer over the move icon on the upper-left side of

the object's layer so that the mouse pointer becomes a move tool (⊕). Click the move icon so that the Layer becomes red, and then drag the Layer to the desired location.

3. Once you have moved the Layer, click anywhere in the Layer so that the solid black box appears around the Layer.

4. Click **Insert**, point to **HTML Elements**, and then select **Image**. The **Image Properties** dialog opens.

5. Click **Choose** to open the **Select File** dialog, browse to and select the desired image and then click **OK** to return to the **Image Properties** dialog. This example uses the **Standard.jpg** image in the **web/user/demo/images** folder on your SmartServer flash disk.
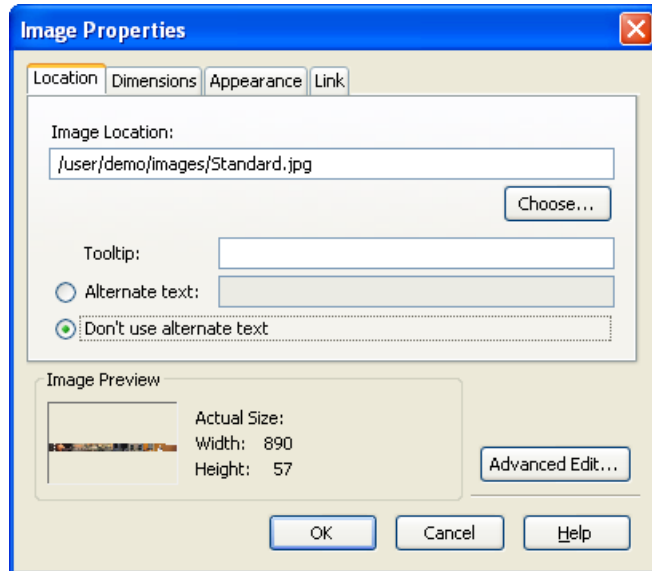
6. Click **OK** to return to the **Layout** view. The selected image appears in the Layer.
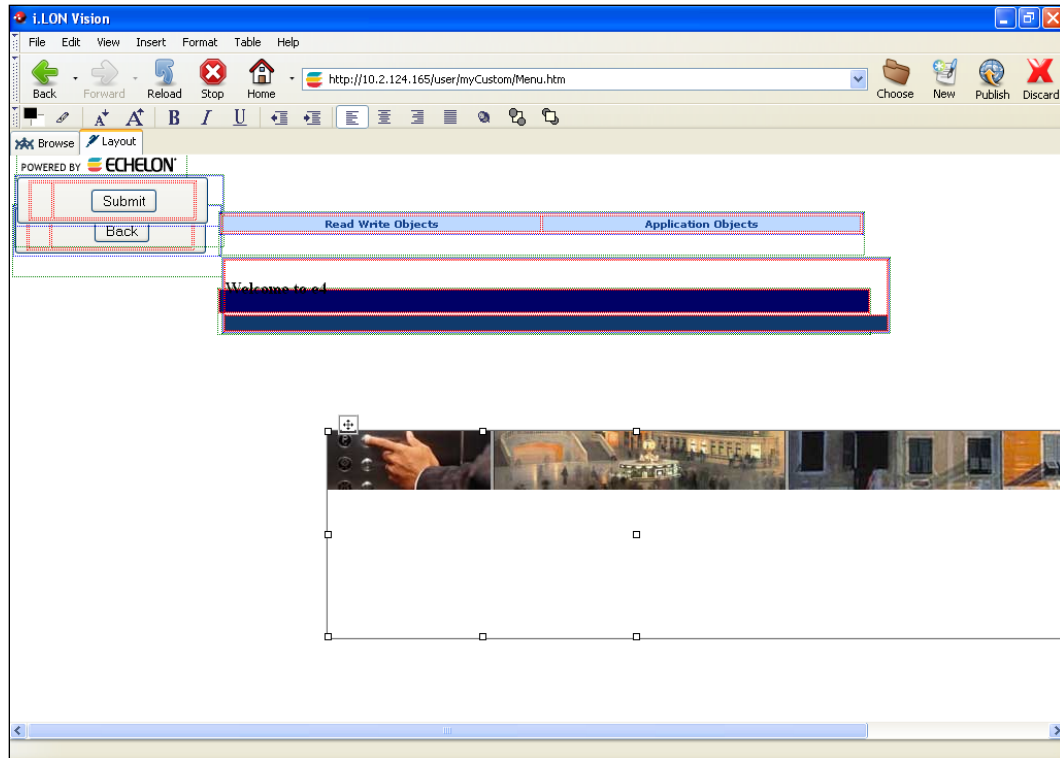
7. Optionally, you can resize the Layer to fit the image.

8. Click the move icon so that the box becomes red, and then drag the Layer to the desired location within the Menu frame.
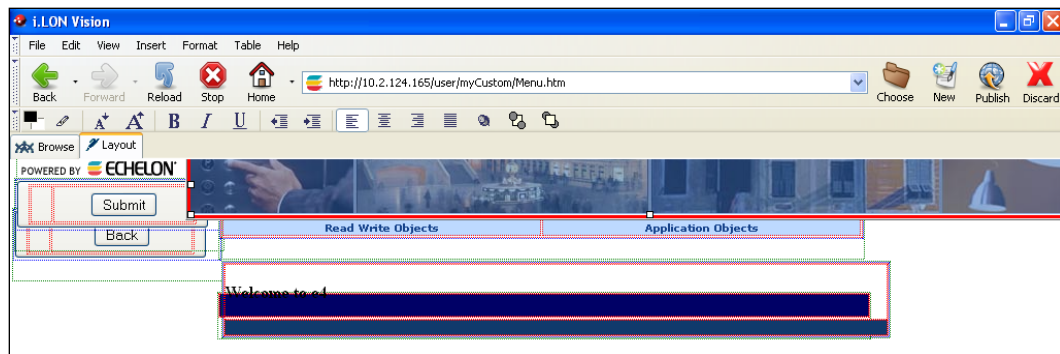
9. Repeat steps 1–8 to add additional images to the menu frame.

10. Click **Publish** on the Editor toolbar ( ), click the **Browse** tab, or click **File** and then click **Publish** to save the current draft of your menu frame. The images you added appear in the menu frame.

Designing the Sidebar Frame

Once you have created your home page and formatted the **Frameset** object, you can open the **Sidebar.htm** file and then design the sidebar frame by adding the **Navigation** object (tree or vertical menu) to it. The tree object provides a hierarchal list of items and subitems that the user can click to open custom Web pages. The vertical menu provides one or more buttons that the user can click to open custom Web pages.

Opening the Sidebar.htm File

To open the **Sidebar.htm** file that was created when you added the **Frameset** object to your home page and published your home page, follow these steps:

1. Click **Choose** on the Editor toolbar (Choose). The **Select File** dialog opens.

2. Browse to the **/web/**<*Custom*> directory on the SmartServer flash disk.

3. Select the **Sidebar.htm** file, and then click **OK** to return to the **Browse** tab.

4. Click **Edit** on the Editor toolbar (Edit) or click the **Layout** tab.

Alternatively, you can open the **Sidebar.htm** file from the **index.htm** file that was created when you added the **Frameset** object to your home page and published your home page. To do this, follow these steps:

1. Click **Choose** on the Editor toolbar (Choose). The **Select File** dialog opens.

2. Browse to the **/web/**<*Custom*> directory on the SmartServer flash disk.

3. Select the **index.htm** file, and then click **OK** to return to the **Browse** tab.

4. Click **Edit** on the Editor toolbar (Edit) or click the **Layout** tab. The **Select a Frame** dialog opens.

5. Click **sidebarFrame**, which highlights the sidebar frame, and then click **OK**.
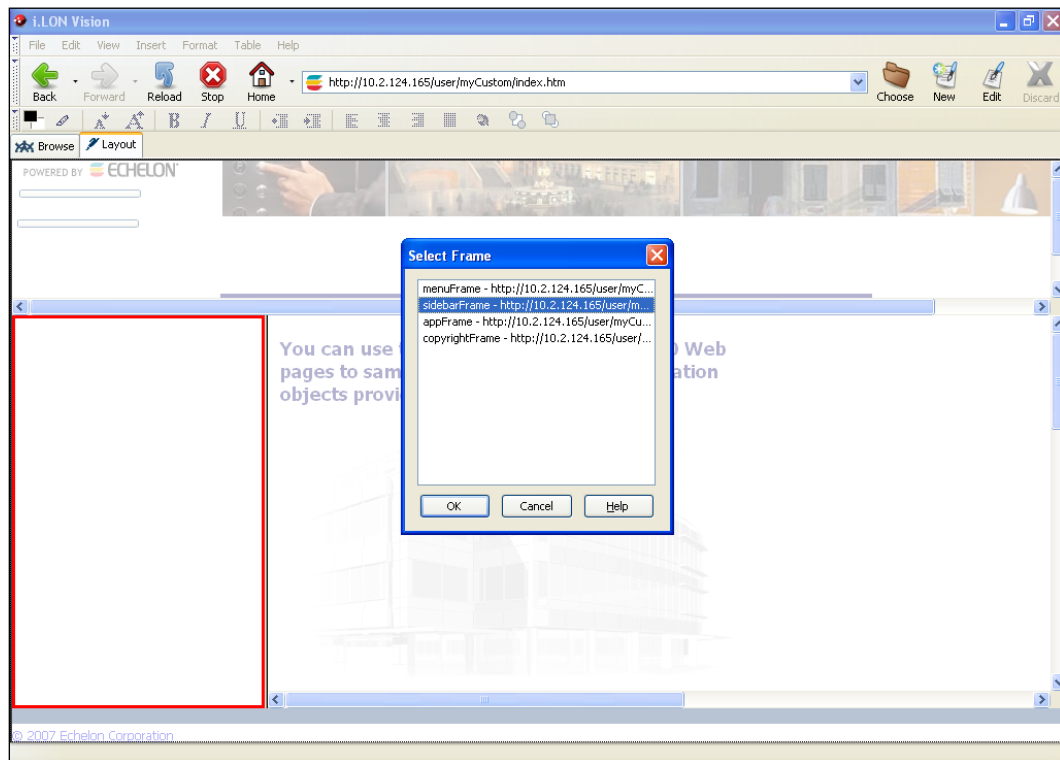
Adding a Tree to the Sidebar Frame

You can add a navigation pane to all your custom Web pages by adding the **Navigation** (tree) object to the sidebar frame. The user can then click the items in the navigation pane to open your custom Web pages. To add a navigation pane to your custom Web pages, follow these steps:

1. Click **Insert** and then select **Navigation**.
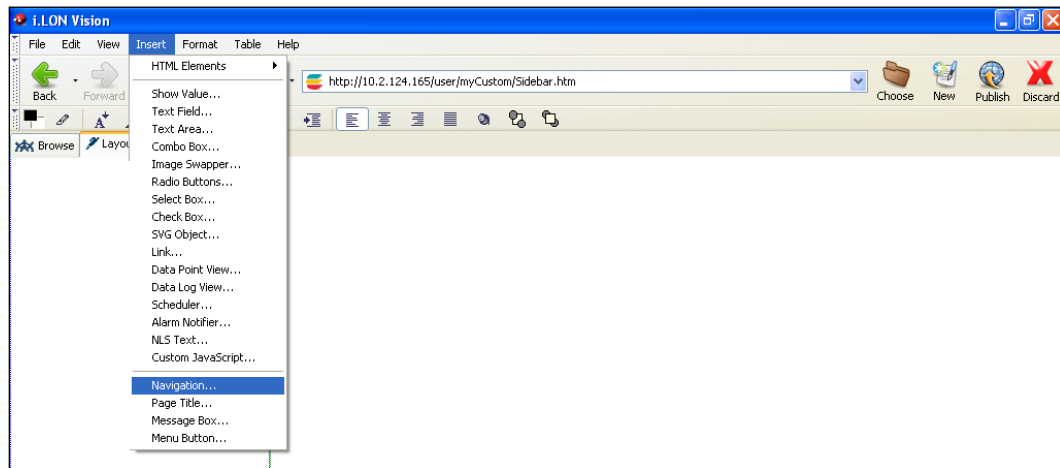
2. The **Navigation** dialog opens.
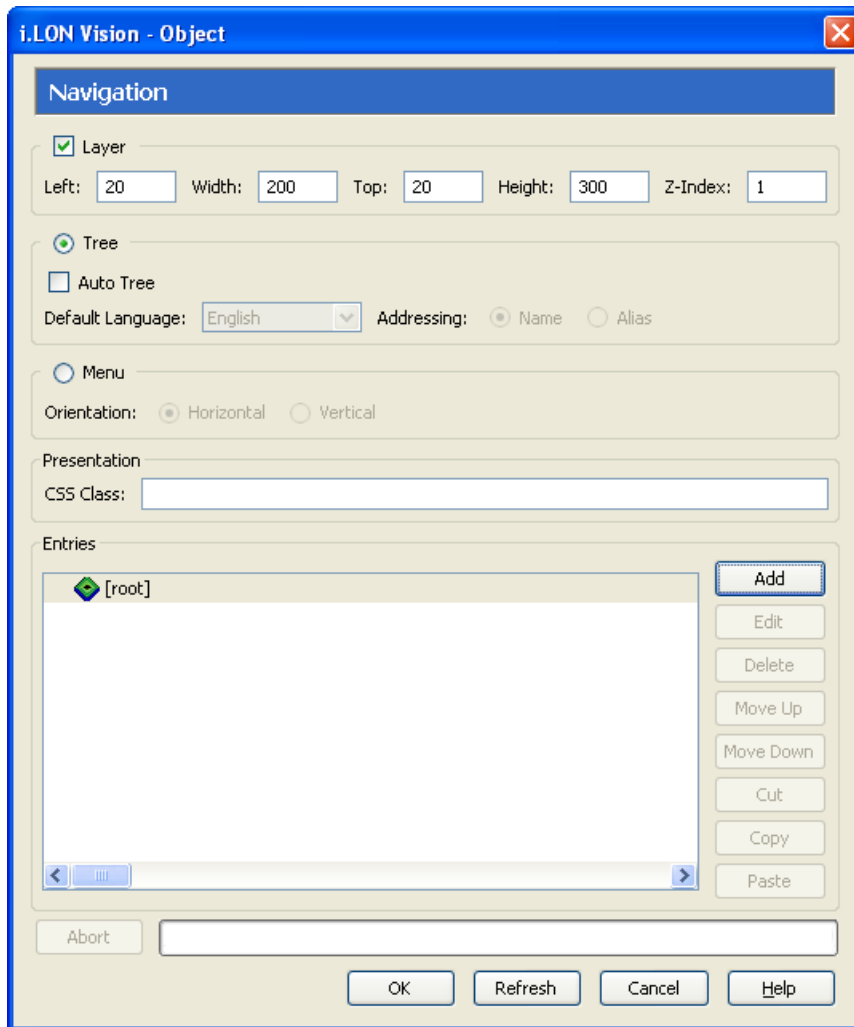
3. Under **Settings**, you can select the **Auto Tree** option to append the factory navigation pane below your custom tree. By default, you will be able to right-click the **LAN** icon and add host devices to the LAN such as remote SmartServers, OpenLNS Servers, LNS Servers, WebBinder Target Servers, e-mail (SMTP) servers, and time (SNTP) servers; right-click the **SmartServer** icon to access all of the SmartServer setup Web pages; and create remote connections. This check box is cleared by default.

4. If you selected **Auto Tree** in step 3, select the language from the **Default Language** list in which the following objects are displayed: the SmartServer's setup, configuration, and driver Web pages; the **General** and **Driver** buttons directly above the navigation pane; the message box directly above the **General** and **Driver** buttons; the shortcut menus that you can access by right-clicking an item in the tree; and pop-up dialogs. The default language is **English**, and you can select **Deutsch** (German) or **Français** (French).

    You can localize this object and all the SmartServer Web pages into any one-byte or two-byte character language using either the demo version of the SmartServer 2.2 Programming Tools included on the SmartServer 2.2 DVD or using the full version on the SmartServer 2.2 Programming Tools included on the SmartServer *2.2 Programming Tools* DVD. For more information on ordering the SmartServer 2.2 Programming Tools DVD, contact your Echelon sales representative.

    For more information on localizing the language of the SmartServer Web pages, see the *SmartServer 2.2 Programming Tools User's Guide*.

5. If you selected **Auto Tree** in step 3, select how data points are organized in the factory navigation pane. You have two choices:

- **Name**. The data points are organized in the navigation pane by their parent objects using the following network hierarchy: *<network>/<channel>/<device>/<functional block>/<data point>*. This is the default.

- **Alias**. Data points are alphabetized by their alias names, which correspond to their locations in the navigation pane.

6. Click the [root] icon, and then click **Add** for each subtree to be added to the navigation pane. A **New Item** menu item is underneath the [root] icon for each subtree you create. For example, to create a navigation pane with two subtrees, click the [root] icon and then click **Add** twice.
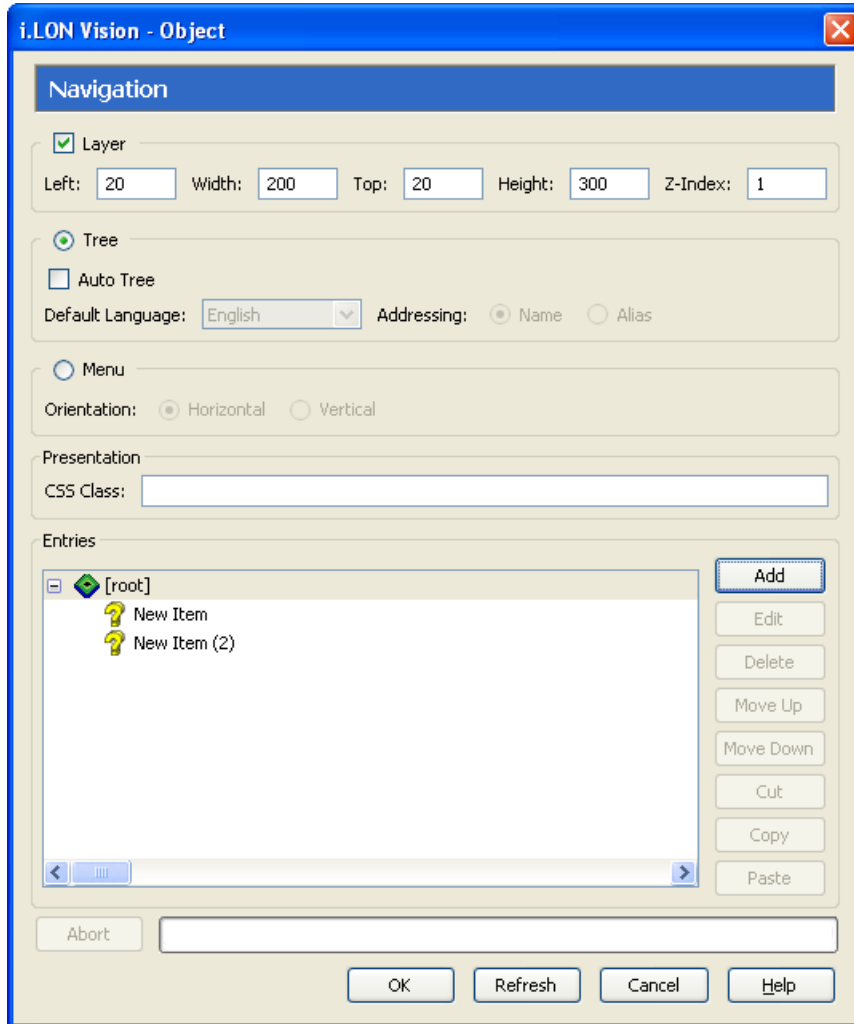
7. Configure each subtree following these steps:

a. Click the **New Item** subtree and then click **Edit**. The **Navigation Link** dialog opens.
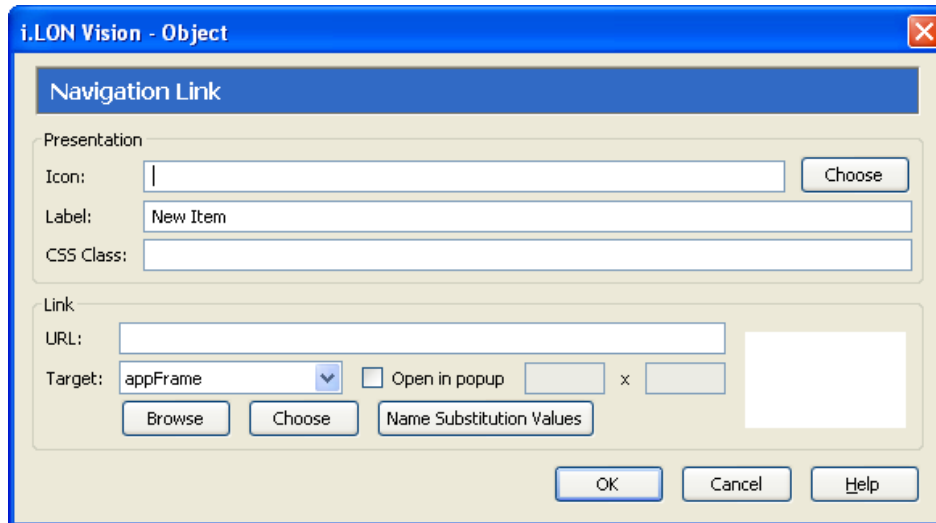
b. In the **Icon** property under **Presentation**, you can add an icon that will replace the default icon () that appears to the left of the item in the navigation pane. To do this, click **Choose** to open the **Select File** dialog, browse to the LONWORKS **\iLON\iLonVision\graphics**<*category*> folder on your computer, or the **/web/images** or **/web/user/demo/images** folders on your SmartServer flash disk, click the desired image, and then click **OK**.

c. In the **Label**, property, enter the name for the menu item.

d. If you do not plan on adding any branches to the current subtree, select the Web page to be opened when the user clicks the item. This can be a built-in SmartServer configuration Web page, or a custom SmartServer Web page on your local SmartServer or on another SmartServer. To set the destination, follow these steps:

   i. In the URL box under Destination, enter the URL of the destination Web page, or click **Choose** to open the **Select File** dialog, browse to the **.htm** file of the destination Web page, click the **.htm** file, and then click **OK**.

   ii. In the **Target** box, you can select how the destination Web page is opened. By default, the destination Web page is opened in the application frame (**appFrame**), with the frameset preserved. This enables your custom Web pages to appear in the application frame in the center of the frameset. You can select one of the other following options:

   - Select **menuFrame** to open the destination Web page in the menu frame, with the frameset preserved.

   - Select **sidebarFrame** to open the destination Web page in the sidebar frame, with the frameset preserved.

   - Select **copyrightFrame** to open the destination Web page in the copyright frame, with the frameset preserved.

   - Select **_blank** from the pull-down list to open the destination Web page in a new window.

   - Select **_top** from the pull-down list to open the destination Web page in the current window, but replace the frameset (if used).

   - Select the **Open in Popup** check box to open the Web page in a pop-up dialog. If you select this check box, specify the dimensions of the pop-up dialog. This check box is cleared by default.

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e. If you are using data point substitution tags to re-use a single Web page for monitoring and controlling multiple data points, click **Name Substitution Values**. In the **Substitutions** dialog click a placeholder, enter a value for the placeholder in the **Value** box, click **Save**, and then click to return to the **Navigation Link** dialog. See *Using Data Point Substitution Tags* in chapter 4 for more information.

f. Click **OK** to return to the **Navigation** dialog.

g. Repeat steps a–f for each subtree. The following graphic demonstrates a navigation pane with two subtrees that have been configured.
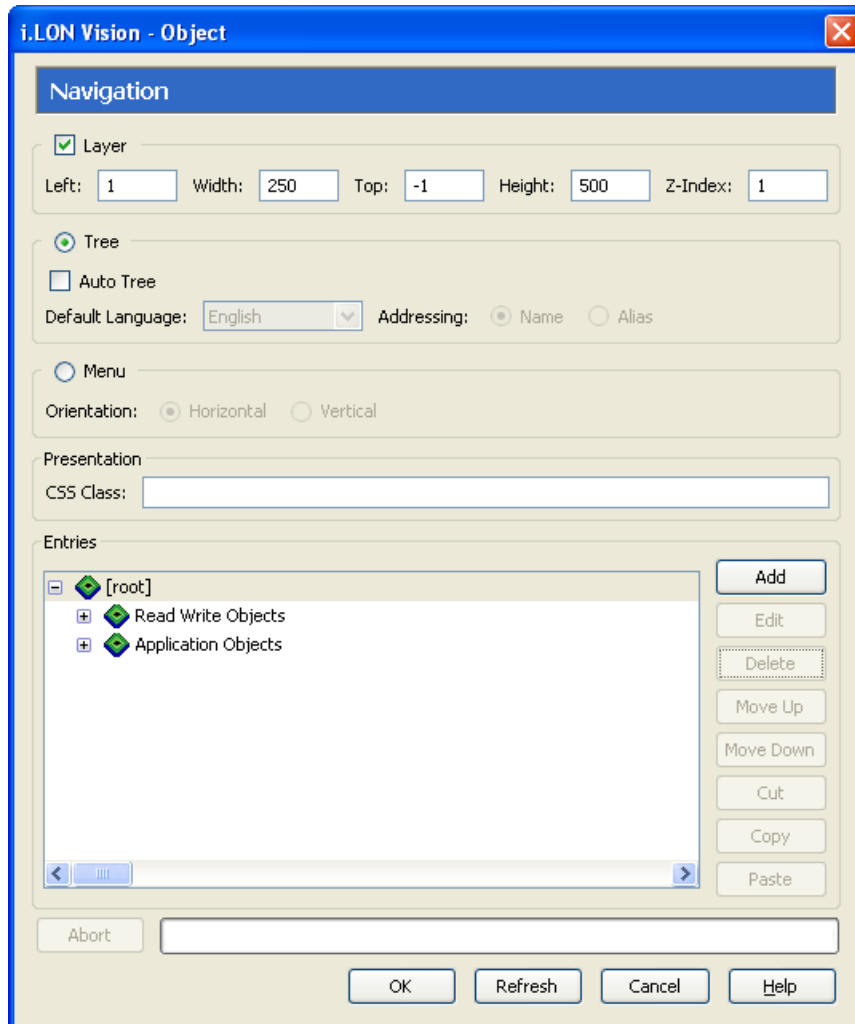
8. To create branches for a subtree, click the subtree and then click **Add**. A **New Item** is added underneath the subtree. For example, to create a subtree with three branches, click the subtree and then click **Add** three times.
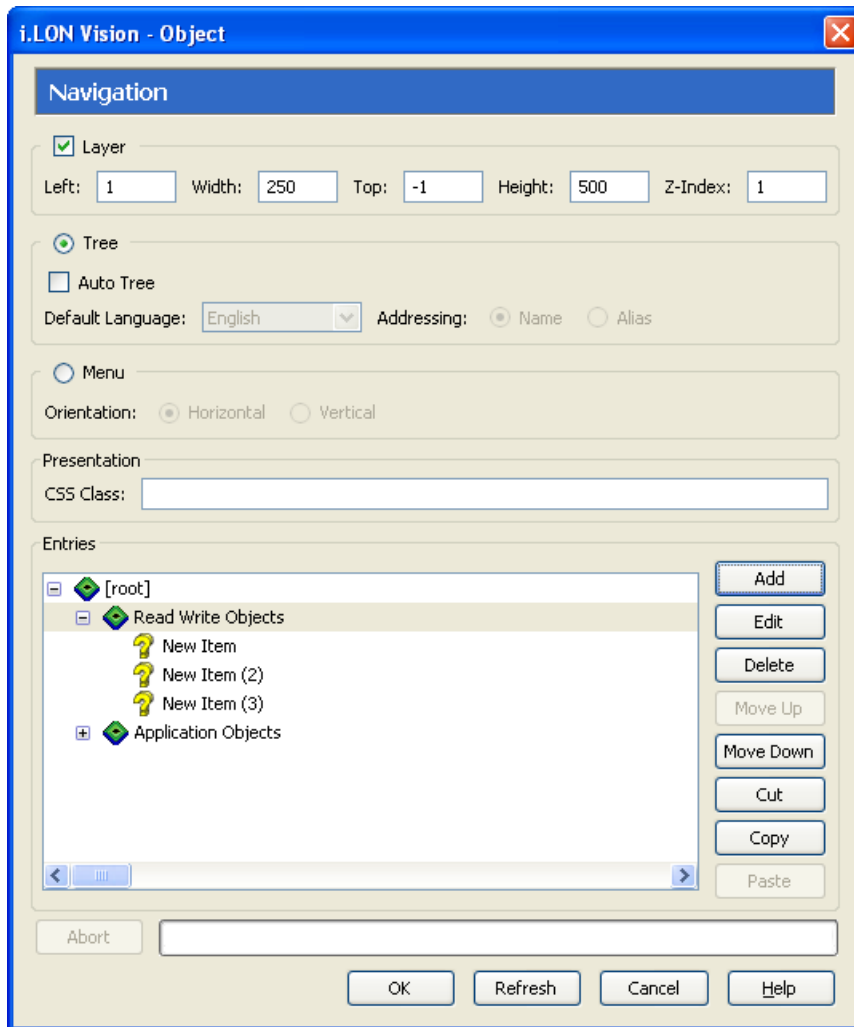
9. Configure each branch as described in step 7.

10. To create third to fifth level branches, repeat steps 6–8. In this process, you click a branch, click **Add** to add a third-level branch below it, click the third-level branch, click **Edit** to edit the third-level branch, and repeat the process for each new branch level to be created in the tree hierarchy.

    Note: You can select an item in the list and click **Move Up** or **Move Down** to change the order in which the subtrees and branches are listed. To remove a subtree and its branches, click the subtree and then click **Delete**.

11. Click **OK**. The navigation pane is added to the left side of the sidebar frame.
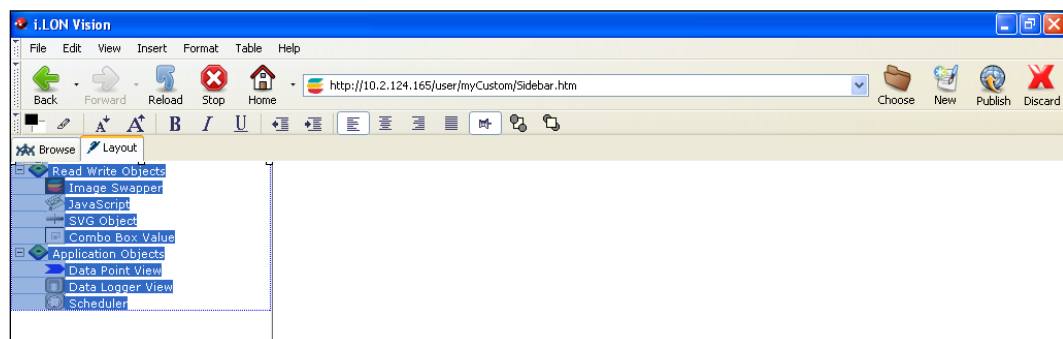
12. Click **Publish** on the Editor toolbar (Publish), click the **Browse** tab, or click **File** and then click **Publish** to save the current draft of your sidebar frame.
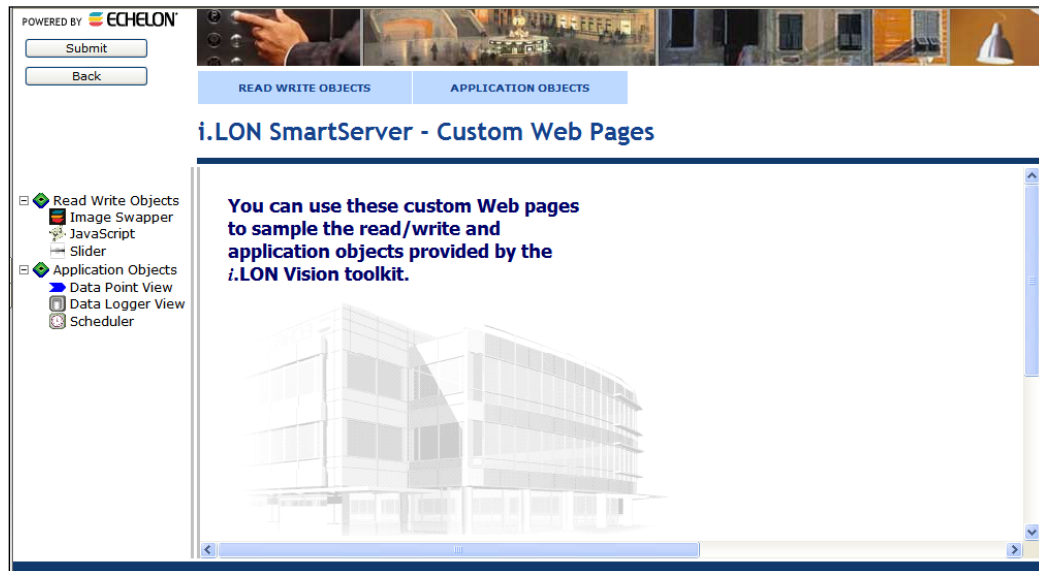
13. You can test your navigation pane by clicking an item in the tree or expanding an item and then clicking one of the submenu items, and verifying that correct destination Web page opens.
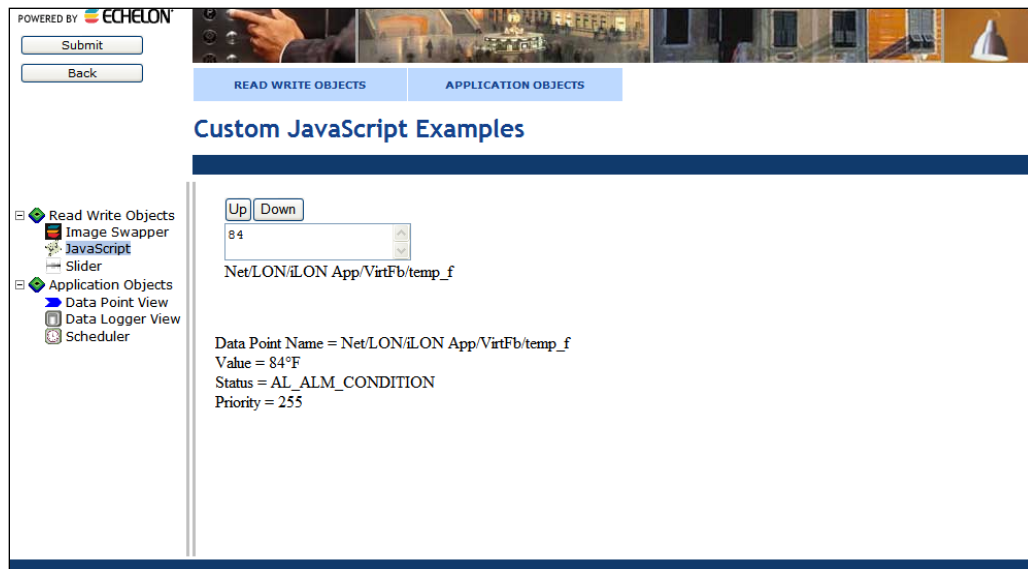
Adding a Vertical Menu to the Sidebar Frame

You can add a vertical menu to all your custom Web pages by adding the **Navigation** (menu) object to the sidebar frame. The user can then click the items in the vertical menu to open your custom Web pages. To add a vertical menu to your custom Web pages, follow these steps:

1. Click **Insert** and then select **Navigation**.

2. The **Navigation** dialog opens.

3. Click the **Menu** option.

4. In the **Orientation** property under **Menu**, select **Vertical**.
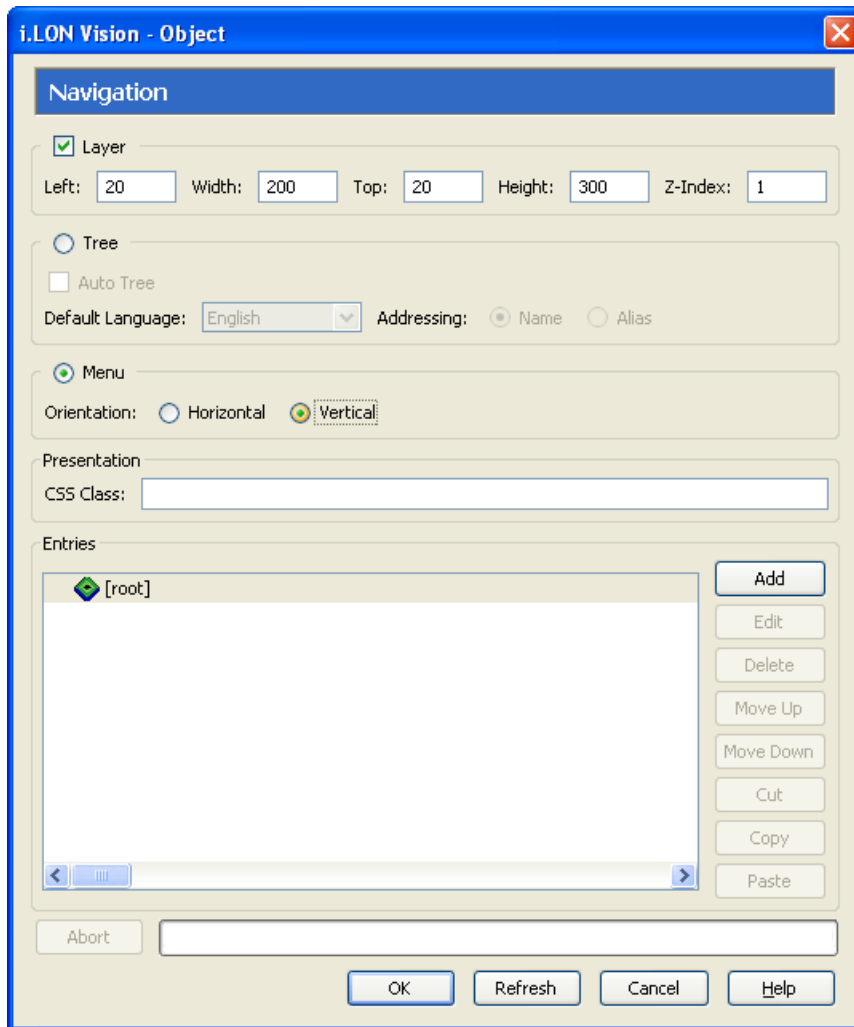
5. Optionally, you can modify the **Width** and **Height** properties to adjust the size of the individual items in the vertical menu. For example, the **Width** property is set to **250** and the **Height** property is set to **500** for the vertical menu displayed in step 7.

6. Add menu and submenu items following steps 6–10 in the previous section, *Adding a Tree to the Sidebar Frame*.

   Note: If you add submenu items to a vertical frame, you need to verify that the width of the Sidebar frame is equal to or greater than the **Width** property of the vertical menu. To change the width of the sidebar frame, browse to your home page, Click **Edit** on the Editor toolbar or click the **Layout** tab, click **Format**, select **Frameset**, set the appropriate width of the **Sidebar** frame in the **Frameset** dialog, click **OK**, and then click the **Publish** button or click the **Browse** tab.

   For example, the **Sidebar** frame in the **Frameset** object is set to **250** (equal to the width of the vertical menu) for the vertical menu displayed in step 9.

7. Click **OK**. The vertical menu is added to the left side of the sidebar frame.
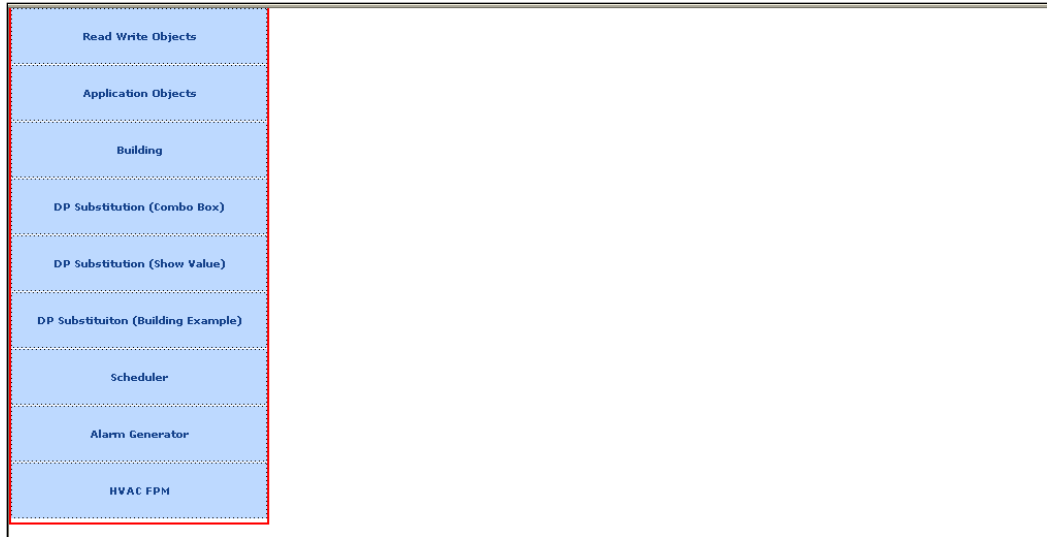
8. Click **Publish** on the Editor toolbar (Publish), click the **Browse** tab, or click **File** and then click **Publish** to save the current draft of your sidebar frame.

9. You can test your vertical menu by clicking an item in the menu or expanding an item and then clicking one of the submenu items, and verifying that correct destination Web page opens.
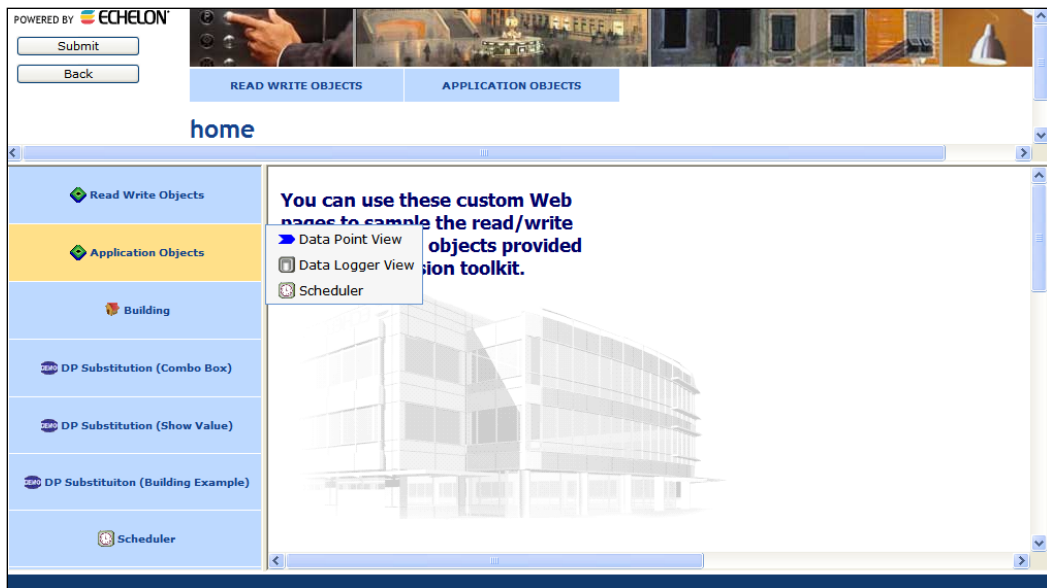
Designing the Copyright Frame

Once you have created your home page and formatted the **Frameset** object, you can open the **Copyright.htm** file and modify the default copyright notice in the frame.

Opening the Copyright.htm File

To open the **Copyright.htm** file that was created when you added the **Frameset** object to your home page and published your home page, follow these steps:

1. Click **Choose** on the Editor toolbar (Choose). The **Select File** dialog opens.

2. Browse to the **/web/**<Custom> directory on the SmartServer flash disk.

3. Select the **Copyright.htm** file, and then click **OK** to return to the **Browse** tab.

4. Click **Edit** on the Editor toolbar (⟦Edit⟧) or click the **Layout** tab.

Alternatively, you can open the **Copyright.htm** file from the **index.htm** file that was created when you formatted the **Frameset** object on your home page and published your home page. To do this, follow these steps:

1. Click **Choose** on the Editor toolbar (⟦Choose⟧). The **Select File** dialog opens.

2. Browse to the **/web/**<Custom> directory on the SmartServer flash disk.

3. Select the **index.htm** file, and then click **OK** to return to the **Browse** tab.

4. Click **Edit** on the Editor toolbar (⟦Edit⟧) or click the **Layout** tab. The **Select a Frame** dialog opens.

5. Click **copyrightFrame**, which highlights the copyright frame, and then click **OK**.
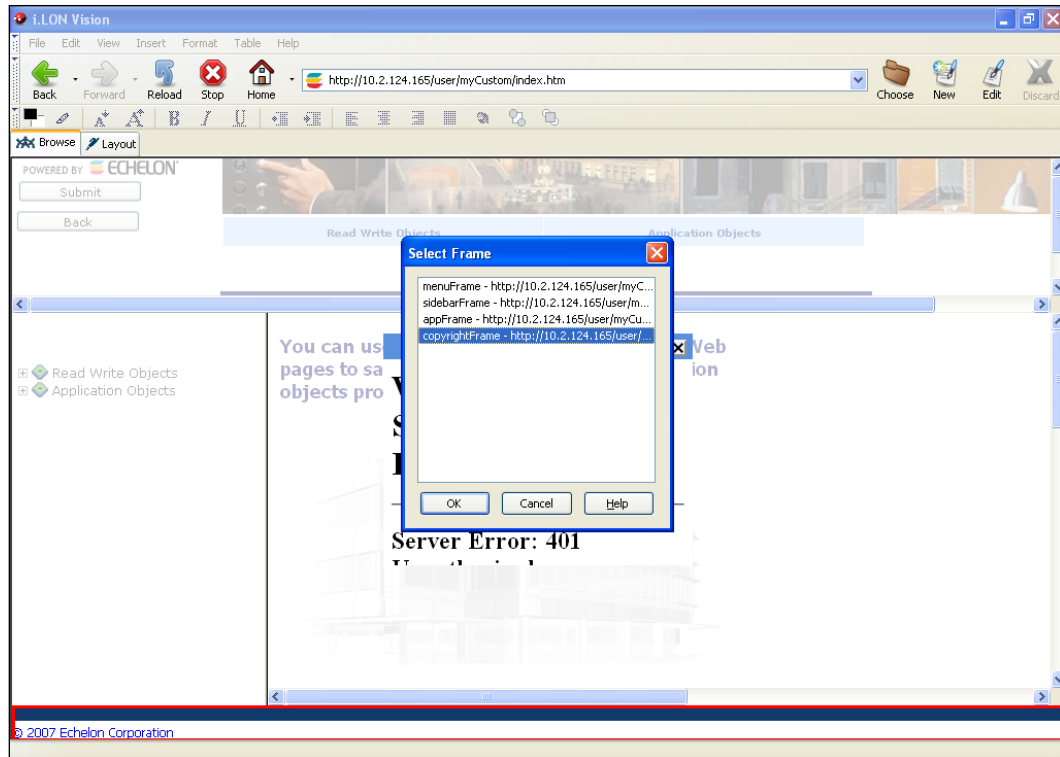
Changing the Copyright Message

The default copyright message in the copyright frame is "Powered by i.LON Vision". You can change the copyright message, following these steps:

1. Point to the "Powered by i.LON Vision" text in the center of the **Layout** tab.

Powered by i.LON Vision

2. Delete the default "Powered by i.LON Vision" text and then enter your company's copyright.
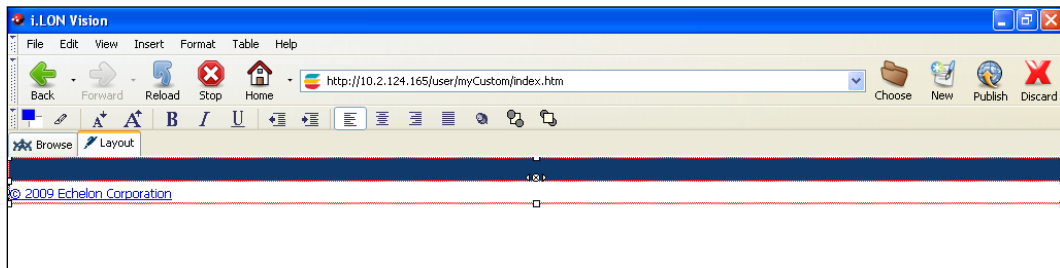
3. Click **Publish** on the Editor toolbar ( ), click the **Browse** tab, or click **File** and then click **Publish** to save the current draft of the copyright frame.

4. Optionally, you can link a legal notice to your copyright. To do this, create a new Web page for your legal notice. In the copyright frame, highlight your copyright text, click **Insert**, point to **HTML Elements**, and then click **Link**.

5. In the **Link Location** property, click **Choose** to open the **Select File** dialog. Browse to and select the Web page containing your legal notice Web page, and then click OK.
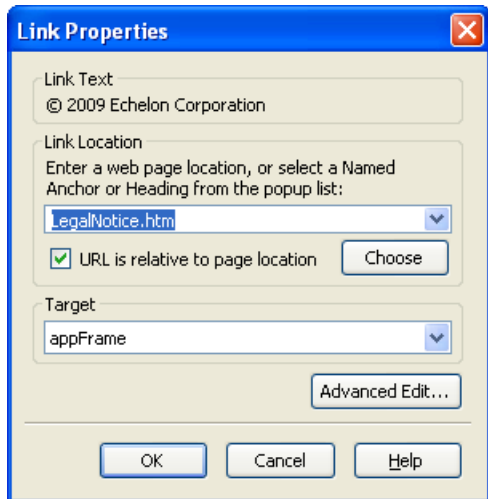
6. Click **Publish** on the Editor toolbar ( ), click the **Browse** tab, or click **File** and then click **Publish**.

7. Click your copyright in the copyright frame at the bottom of the **index.htm** Web page to verify that your legal notice appears in the application frame.

4

Advanced SmartServer 2.2 Web Page Topics

This chapter describes how to use data point priorities, how to use data point substitution tags, translate custom SmartServer 2.2 Web pages into different languages, and open the SmartServer's built-in applications from custom SmartServer 2.2 Web pages.

Data Point Status and Priority Icons

The i.LON Vision read/write and application objects described in Chapter 3 have status and priority icons that appear when the data point is in a specific state.   A status icon appears when the data point is offline, in a warning or alarm condition, or has a configuration error. A priority icon appears when the data point is manual override mode or is locked.   The following table describes each of these icons and the status they indicate:

Icon	Status	Description
⚠️	Configuration Error	The data point has an error. For example, the data point has an invalid value or its name no longer exists.
🔌	Offline	The object cannot communicate with the data point. This may occur if the following happens: • The object fails to read or write to the data point. • The heartbeat defined for the data point elapses before the value of the data point is propagated over the network. • A Web connection in which the data point is a member fails.
🔔	Warning	The data point is in a warning or alarm condition. These icons only appear if the data point is being monitored by an Alarm Generator.
🔔	Alarm	You do not need to define a **SNVT_alarm** or **SNVT_alarm_2** output data point in an Alarm Generator for these icons to work. If an alarm is triggered, the Alarm Generator automatically sets the status of the data point to the respective alarm condition, and the status will be displayed via one of these icons. See Chapter 6, *Alarming*, in the *SmartServer 2.2 User's Guide* for more information on setting the alarm conditions for a data point.
✋	Manual Override	The object is blocking other applications from writing values to the data point. The user must click the icon to enable other objects and applications to write to the data point. See the next section for more information on using data point priorities.

Icon	Status	Description
🔒	Locked	The object is locked out from writing values to the data point because another object or application has a higher priority.
		In order for the object to write values to the data point either you must provide the object a revised priority that is equal to or higher than the one currently assigned to the data point, or the user must reset the priority of the higher-priority object or application by clicking the Manual Override icon.
		See the next section for more information on using data point priorities.

Using Data Point Priorities

Every i.LON Vision object and SmartServer application that writes values to a data point must specify a priority. The priority is a value between 0 (highest priority) and 255 (lowest priority; the default) that determines whether the object or application can write values to the data point.

- If an object or application has a priority that is equal or higher than the one currently assigned to the data point, it can write values to the data point.

- If an object or application has a priority that is lower than the one currently assigned to the data point, the object is locked out. The object cannot write to the data point until either (1) you give it a revised priority that is equal to or higher than the current data point priority; or (2) the user resets the priority of the higher-priority object or application by clicking the Manual Override icon (🔒) next to the object/application.

The priority currently assigned to a data point is the one used by the last object or application that updated the data point. This means that when an object or application writes a value to a data point, it also updates the priority assigned to the data point. For example, if a **Data Point View** object with a priority of 240 writes to the data point, the data point's priority becomes 240. If a **Combo Box** object with a priority of 230 then writes to the data point, the data point's priority becomes 230.

In this case, a Manual Override icon (🔒) will appear to the left of the **Combo Box** object, indicating that the object currently has the highest priority for writing values to the data point. Only objects or applications with a priority of 230 or higher may write values to that data point. In addition, a Locked icon will appear (🔒) to the left of the data point value in the **Data Point View** object and the object is disabled. This means that **Data Point View** object—and all other objects and applications with a priority lower than 230—cannot write to the data point until the **Combo Box** object's lock on the data point is released.

The user can release the lock an i.LON Vision object or application has on a data point, by clicking the Manual Override icon (🔒). This temporarily resets the object's priority to 255 (the default value), and it causes the SmartServer to notify all other objects and applications in which the subject data point is registered. The next highest priority application or object will then assume the priority for writing values to the data point.

Priority Level Example

The following example demonstrates how priorities can be used to control write access to a data point. In the following scenario, three users are controlling the lighting in a conference room using three separate Web interfaces. The Web interfaces all use a **Combo Box** object to read and write to a data point in the lighting system that turns the lights on and off. The three users are as follows:

- A conference room user that has a Web page to control the lighting in the conference room where they are. The **Combo Box** object in the user's Web page has a priority of 240.

- A caretaker that has a Web interface for centrally controlling the lighting in all the conference rooms in the building. The **Combo Box** object in the caretaker's Web page has a priority of 240.

- A technician that has a Web interface for turning the lights on and off in the conference rooms. The **Combo Box** object in the technician's Web page has a priority of 230. It has the highest priority because the technician needs to make sure that the electricity is not switched on when working on the lights.

Initially, the lights are turned on in the conference room, all the **Combo Box** objects on the users' respective Web pages have write access to the data point, and the priority assigned to the data point is 255 (the default).

User Page Object Priority = 240	100.0 1 ▼	Data Point Name = Net/LON/iLON App/Digital Output 1/nviClaValue_1 Priority = 255
Caretaker Page Object Priority = 240	100.0 1 ▼	Data Point Name = Net/LON/iLON App/Digital Output 1/nviClaValue_1 Priority = 255
Technician Page Object Priority = 230	100.0 1 ▼	Data Point Name = Net/LON/iLON App/Digital Output 1/nviClaValue_1 Priority = 255

The technician turns the lights off in the conference room using the **Combo Box** object on their Web page. As a result, a Manual Override icon appears next to the **Combo Box** object in the technician's Web page, indicating it has write priority to the data point. Locked icons appear next to the objects in the user and caretaker Web pages and the objects are disabled. This means that the conference room user and the caretaker no longer have write access to the lighting. The priority currently assigned to the data point is 230.

User Page Object Priority = 240	0.0 0 ▼	Data Point Name = Net/LON/iLON App/Digital Output 1/nviClaValue_1 Priority = 230
Caretaker Page Object Priority = 240	0.0 0 ▼	Data Point Name = Net/LON/iLON App/Digital Output 1/nviClaValue_1 Priority = 230
Technician Page Object Priority = 230	0.0 0 ▼	Data Point Name = Net/LON/iLON App/Digital Output 1/nviClaValue_1 Priority = 230

The technician clicks the Manual Override icon (⚏) next to the **Combo Box** object on their Web page to release its lock on the data point. The **Combo Box** objects in the Web pages of the conference room user and the caretaker are enabled and the Lock icons no longer appear next to them. This means that the conference room user and the caretaker once again have write access to the lighting. The priority assigned to the data point is reset to 255 (the default).

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| User Page Object Priority = 240	[0.0 0] ▼	Data Point Name = Net/LON/iLON App/Digital Output 1/nviClaValue_1 Priority = 255
Caretaker Page Object Priority = 240	[0.0 0] ▼	Data Point Name = Net/LON/iLON App/Digital Output 1/nviClaValue_1 Priority = 255
Technician Page Object Priority = 230	[0.0 0] ▼	Data Point Name = Net/LON/iLON App/Digital Output 1/nviClaValue_1 Priority = 255

When To Use Priority Levels

This section describes three scenarios involving custom SmartServer 2.2 Web pages. The first is an example where it is not necessary to use priority levels, and the second and third provide examples where using priorities would be useful.

Scenario 1: No Priorities Used with Internal Devices and i.LON Vision Objects

In this scenario, a Scheduler with only one priority level and no schedule exceptions controls a light in a garden. There is also a hardware switch outside the house that is connected to one of the Digital Inputs on the SmartServer, and there is an image swapper object on a custom SmartServer 2.2 Web page. The switch and the image swapper can both be used to control the light.

This scenario does not require priorities because all three objects are connected to the same data point on the garden light. The Scheduler and the hardware switch are directly bound to the **Digital** input data point of the garden light device. The image swapper controls the **nvoClsValue** data point on the Digital Input to which the hardware switch is connected, and as previously described, the **nvoClsValue** data point is bound to the **Digital** input data point on the garden light.

If a more complex Scheduler that has priorities is used, it should use a data point other than the **Digital** input data point on the garden light. Because priorities are not implemented in the external light device, a fan-in connection from different data points ensures that user requests are not blocked by higher priority scheduler requests. The Scheduler, hardware switch, and custom Web page all have equal write access to the light, and all three can update the data point at any time.
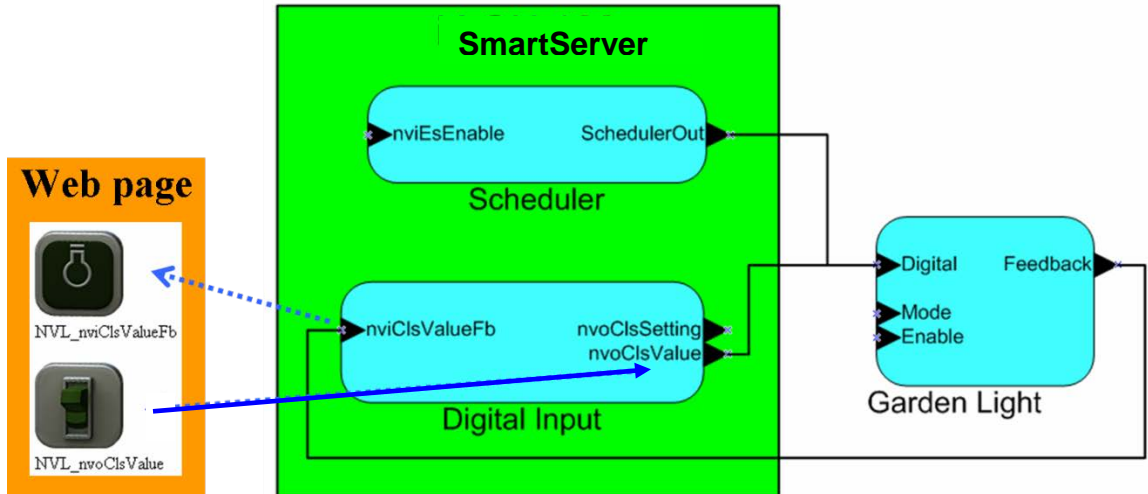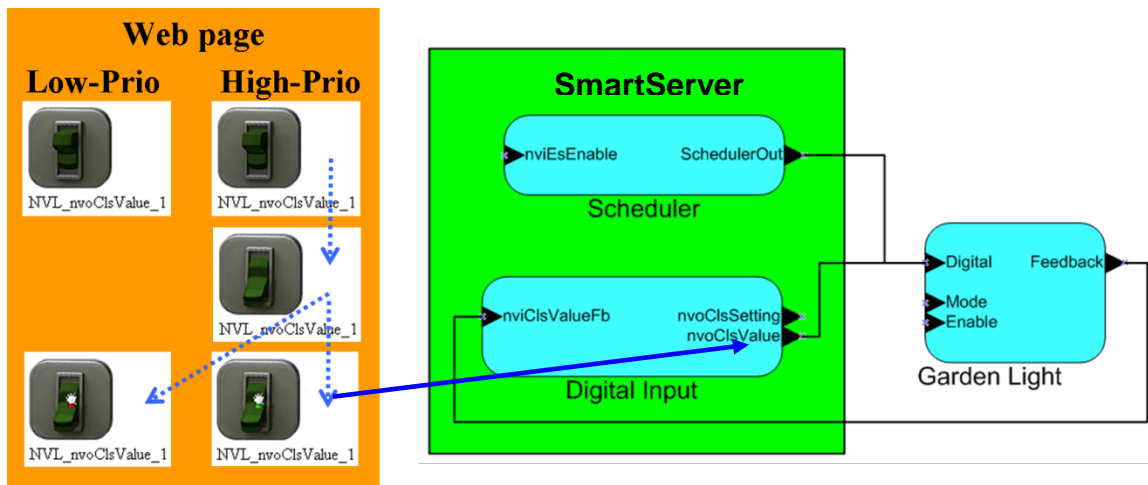
Scenario 2: Priorities Used with Internal Devices and i.LON *Vision Objects*

If you want an image swapper switch object that can override the hardware switch, you can implement priorities. With a high-priority image swapper switch object, you could turn on the light and the light will stay on regardless if the hardware switch or the low-priority image swapper object turns the light off.

The high-priority image swapper switch object has an identical user interface to the low-priority one used in the previous section, but it is assigned a higher priority. When you toggle the high-priority switch object and turn the light on, the Manual Override icon (🔆) appears next to the object on the Web page. This means that the low-priority switch object and the hardware switch are disabled until you release the high-priority switch object's lock on the data point.

The Scheduler could still overwrite the high priority switch object if it is either bound to a different data point on the garden light, or it has a higher priority than the high-priority image swapper switch object for writing to the **nvoClsValue** data point.

Scenario 3: Priorities Used with Internal Devices, i.LON *Vision Objects, and External Devices*

To connect an external switch device to the garden light and implement priorities on it, you would need to bind the data points of the external switch to the **nvoClsValue** data point on the SmartServer. If the external switch was directly connected to the garden light, it could toggle the light regardless of

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prior any high-priority objects or applications. This is also true if you want the Scheduler to subordinate the high-priority image swapper switch object. In this case, the Scheduler must use the same data point (the **nvoClsValue** data point on the SmartServer's Digital Input) to access the data point on the garden light. In addition, the Scheduler must have a lower priority than the high-priority image swapper switch object in this scenario.
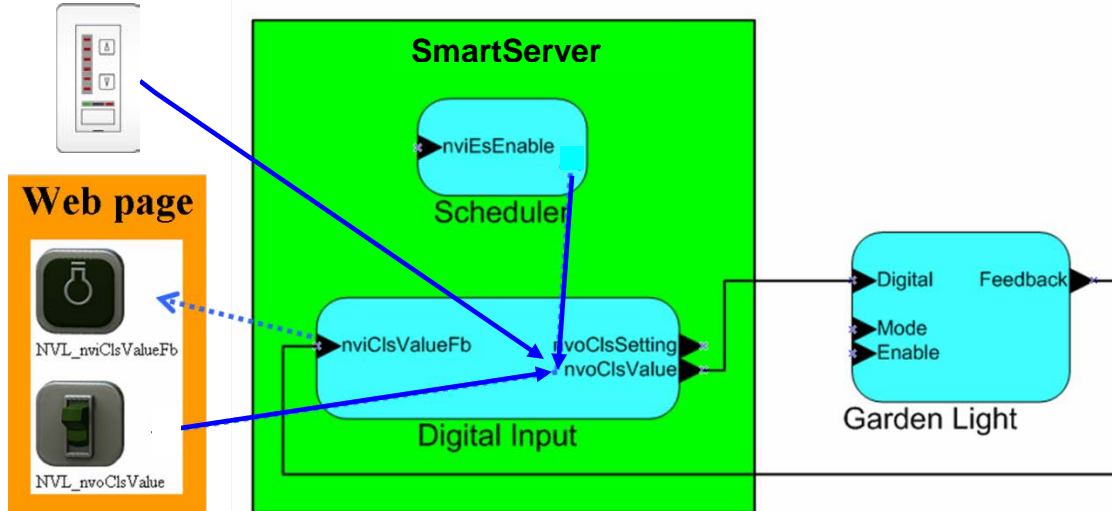
Using Data Point Substitution Tags

You can use data point substitution tags to create i.LON Vision read/write objects that can be used to monitor and control multiple data points. This gives you the ability to create a single Web page that can be re-used, for example, to monitor and controls several floors in a building. In this scenario, information for the data points on a different floor could be displayed each time the Web page is opened based on the link used to access the Web page.

To use data point substitution tags, the names of your data points in your system must share a common naming convention. For example, if you have a set of switches and lamps for all four rooms on each floor of a two-story building , the naming convention for the data points of the switch and lamp devices could be as follows: **Switch**_*<floor>*_*<room>* and **Lamp**_*<floor>*_*<room>*. Using this scenario as an example, the real names of the switches and lamps in each floor would be as follows:

Floor 1	Floor 2
Room 1: Net/LON/Switch_1_1/Digital Control/Digital Net/LON/Lamp_1_1/Digital Output/Digital	**Room 1:** Net/LON/Switch_2_1/Digital Control/Digital Net/LON/Lamp_2_1/Digital Output/Digital
Room 2: Net/LON/Switch_1_2/Digital Control/Digital Net/LON/Lamp_1_2/Digital Output/Digital	**Room 2:** Net/LON/Switch_2_2/Digital Control/Digital Net/LON/Lamp_2_2/Digital Output/Digital
Room 3: Net/LON/Switch_1_3/Digital Control/Digital Net/LON/Lamp_1_3/Digital Output/Digital	**Room 3:** Net/LON/Switch_2_3/Digital Control/Digital Net/LON/Lamp_2_3/Digital Output/Digital
Room 4: Net/LON/Switch_1_4/Digital Control/Digital Net/LON/Lamp_1_4/Digital Output/Digital	**Room 4:** Net/LON/Switch_2_4/Digital Control/Digital Net/LON/Lamp_2_4/Digital Output/Digital

To implement substitution tags in this scenario, you could create a new Web page and add two i.LON Vision read/write objects representing the switch and lamp devices. After you select the data point to

be represented by the i.LON Vision read/write object, you modify the name of the selected data point by adding placeholders to it. Placeholders represent portions of the data point name that are to be specified by a substitution tag.

For example, in the above example, you could select the data point for the switch device in Room 1 on the first floor, which would be **Net/LON/Switch_1_1/Digital Control/Digital**. You could use placeholders to change the data point name to **Net/LON/Switch_{floor = 1}_{room = 1}/Digital Control/Digital**. In this example, a default value has been specified in the placeholder. You must specify the default value in the placeholder or an error will occur and you will not be able to add the read/write object to your custom Web page.   The placeholder name must start with a letter, and it can be any length consisting of letters, numbers, or the underscore character.

You could then add submenu items to the navigation pane in the sidebar frame representing the floors and rooms in the building. When you add the submenu items for the rooms, you create links to your new Web page, and you specify the value (substitution tag) to be used to replace the {**floor**} and {**room**} placeholders when the Web page is opened.   For example, when you create the menu item for Floor 2, Room 3, you would enter **2** for the {**floor**} placeholder and **3** for the {**room**} placeholder. When the user clicks the menu item for Floor 2, Room 3, your new Web page will open and it will display the current switch and lamp values for Floor 2, Room 3.

Using data point substitution tags to create a Web page that can be re-used to monitor and control multiple data points entails doing the following:

1. Adding placeholder values to the names of the data points to be monitored and controlled by the read/write objects on a custom Web page.

2. Specifying substitution tags for the placeholder values on a navigation object (menu or tree) in the menu or sidebar frame.

## Adding Placeholder Values to a Data Point Name

To add placeholder values to a data point name, follow these steps:

1. Create a new custom SmartServer 2.2 Web page. See *Step 2: Creating a Custom SmartServer Web Page* in the quick-start exercise in Chapter 2 for more information on how to do this.

2. Click **Edit** on the Editor toolbar ([Edit]) or click the **Layout** tab, click **Insert**, and then select an i.LON Vision read/write object to represent a data point that exists in specific areas within a given system. See *Adding Data Point Read/Write Objects* in Chapter 3 for more information on the configuring the object how to do this.

    Note: This example uses four objects: two image swapper objects that represent a light and a switch, and two custom JavaScript objects that display the names, values, statuses, and priorities of the switch and the lamp. These objects are used to monitor and control the **nviClaValue** and **nvoClaValueFb** data points of the Digital Output 1 and Digital Output 2 relays on the SmartServer device.
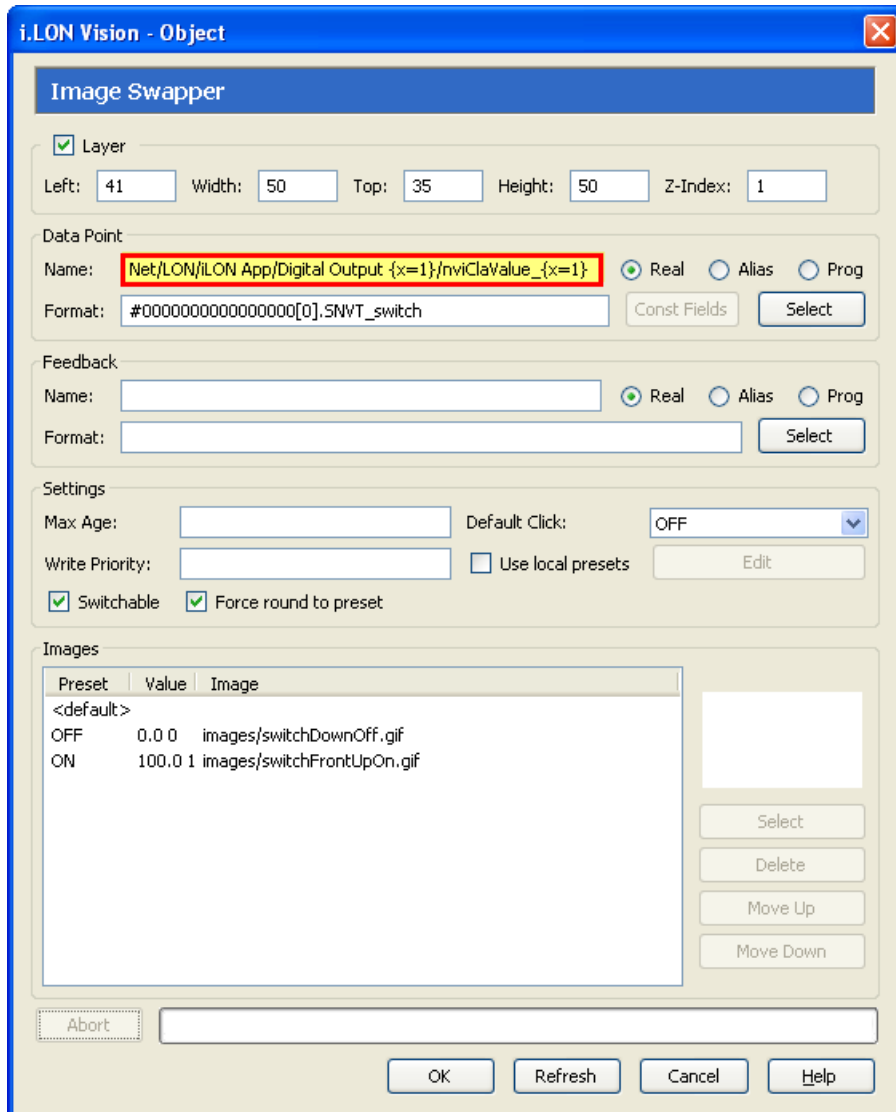
    In this example, placeholders and substitution tags are used on the names of the functional blocks and data points within the complete data point names (*network/device/functional block/data point*). In the previous two-story, four-room example, the placeholders and substitution tags were used on the names of the devices within the complete data point names.

3. Select a data point to be monitored and controlled by the object.   To do this, click **Select**, select a data point in the **Select Data Point** dialog, and then click **OK** to return the object's dialog.   The **Name** property is updated with the real or alias name of the selected data point.
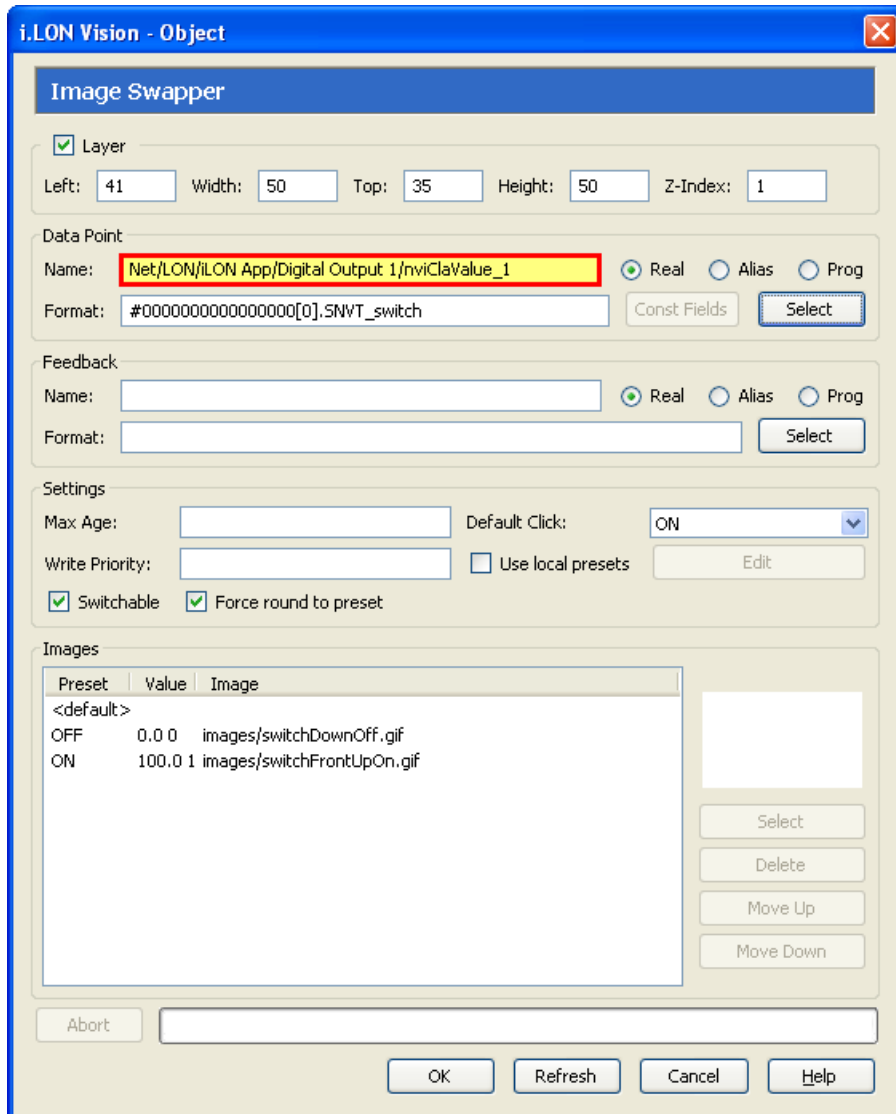
4. In the **Name** property, enter placeholders and default values for portions of the real or alias data point name to be replaced with substitution tags. In this example, placeholders are used to replace the indexes in the names of the functional block and data point within the complete data point name. The specified default values are **1**. This means that the Web page will display the value of the **Net/LON/iLON App/Digital Output 1/nvoClaValueFb_1** data point when opened from a link not using substitution tags.

Note: The placeholder name must start with a letter, and it can be any length consisting of letters, numbers, or the underscore character.

i.LON Vision - Object

Image Swapper

☑ Layer

Left: 41   Width: 50   Top: 35   Height: 50   Z-Index: 1

Data Point

Name: Net/LON/iLON App/Digital Output {x=1}/nviClaValue_{x=1}   ⦿ Real   ○ Alias   ○ Prog

Format: #0000000000000000[0].SNVT_switch   Const Fields   Select

Feedback

Name: ⦿ Real   ○ Alias   ○ Prog

Format: Select

Settings

Max Age: Default Click: OFF

Write Priority: ☐ Use local presets   Edit

☑ Switchable   ☑ Force round to preset

Images

Preset	Value	Image
<default>		
OFF	0.0 0	images/switchDownOff.gif
ON	100.0 1	images/switchFrontUpOn.gif

Select
Delete
Move Up
Move Down

Abort

OK   Refresh   Cancel   Help

5. Click **OK** to return to the **Layout** tab. Repeat steps 2–4 to add objects for other data points to be represented in your custom SmartServer 2.2 Web page or to add different objects for the same data point.

6. Click **Publish** on the Editor toolbar ([Publish]), click the **Browse** tab, click the **Browse** tab, or click **File** and then click **Publish** to save the current draft of your custom SmartServer 2.2 Web page.

Specifying Substitution Tags

Once you have added placeholder values to the data points of the read/write objects on a custom Web page, you can specify the data points to be displayed when the Web page opens. To do this, you create links to the custom Web page from a menu in the menu frame and/or a navigation pane in the sidebar frame, and you specify the substitution tags to replace the placeholder values in the data point name. To create the links and specify the substitution tags, follow these steps:

1. If you have not already implemented the i.LON Vision frameset in your Web design, add the **Frameset** object to your new custom SmartServer 2.2 Web page. Make sure you select the **Sidebar** and/or **Menu** check boxes. See *Adding a Navigation System to your Web Design* in Chapter 3 for more information on how to do this.

2. Open the **Sidebar.htm** file or **Menu.htm** file that was created when you added the **Frameset** object to your home page. See *Adding a Navigation System to your Web Design* in Chapter 3 for more information on how to do this.

   Note: This example uses a navigation pane in the sidebar frame to list the rooms represented by the new custom SmartServer 2.2 Web page.

3. Click **Edit** on the Editor toolbar ([Edit]) or click the **Layout** tab. If you have not added a **Navigation** object (menu or tree) to the frame you opened, click **Insert**, select **Navigation**, and select the appropriate object for the frame you opened (**Menu** for the menu frame; **Tree** for the sidebar frame) in the **Navigation** dialog.

4. Create an item in the menu or tree representing a building or a floor and two submenu items that represent rooms in the building or on the floor. To do this, click the [root] icon, and then click **Add**, and then click the **New Item** and click **Add** twice.
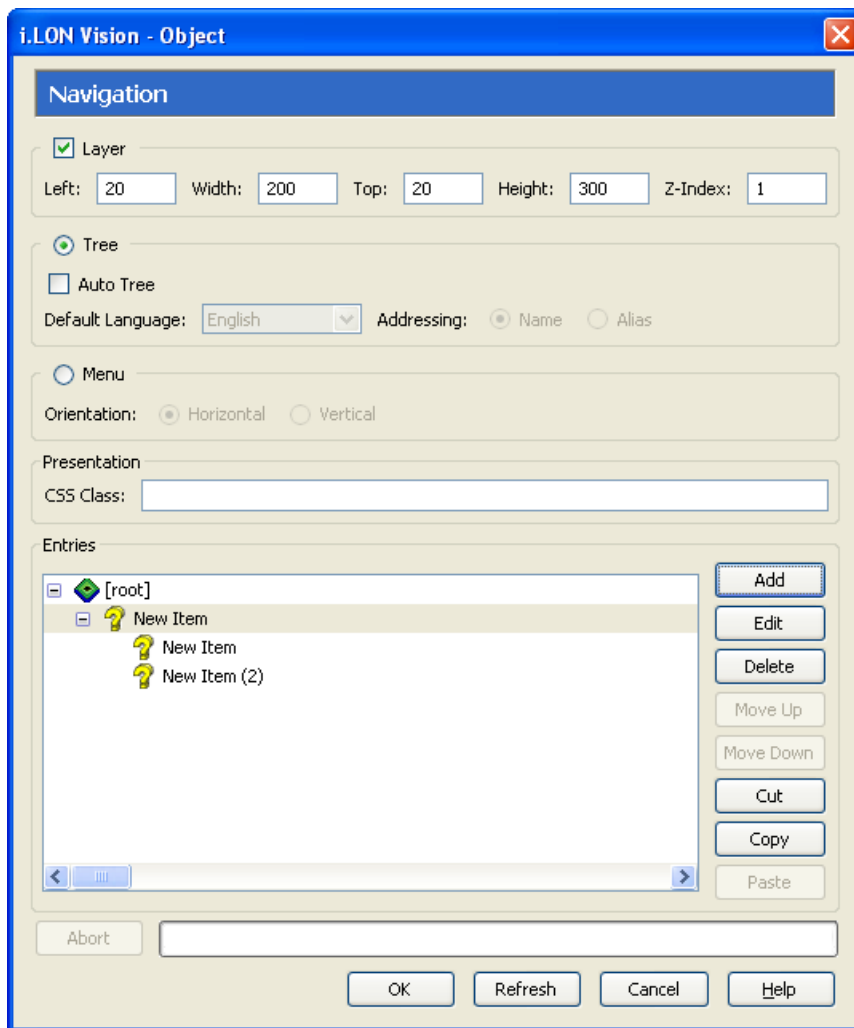
5. Configure the **New Item** subtree. To do this, click the **New Item** subtree and then click **Edit**. The **Navigation Subtree** dialog opens.

   a. In then **Icon** property, select an image to represent the building or floor. This example uses the **House.gif** image in the web/user/demo/images folder.

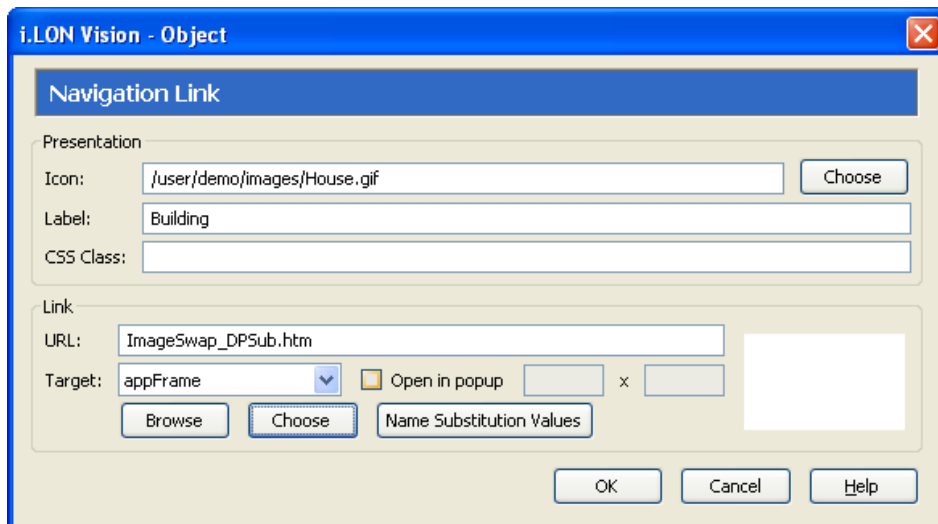   b. In the **Label** property, enter a descriptive name such as "Building" or "Floor".
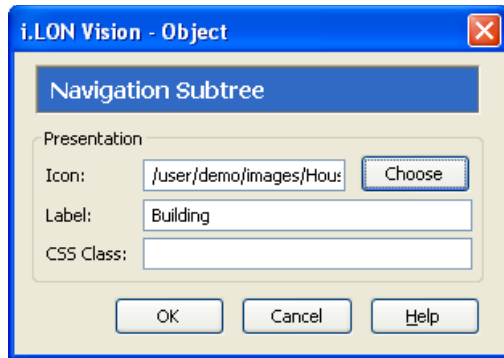
c. Click **OK** to return the **Navigation** dialog.

6. Configure the submenu items. For each submenu item, click the item and then click **Edit**. The **Navigation Link** dialog opens.
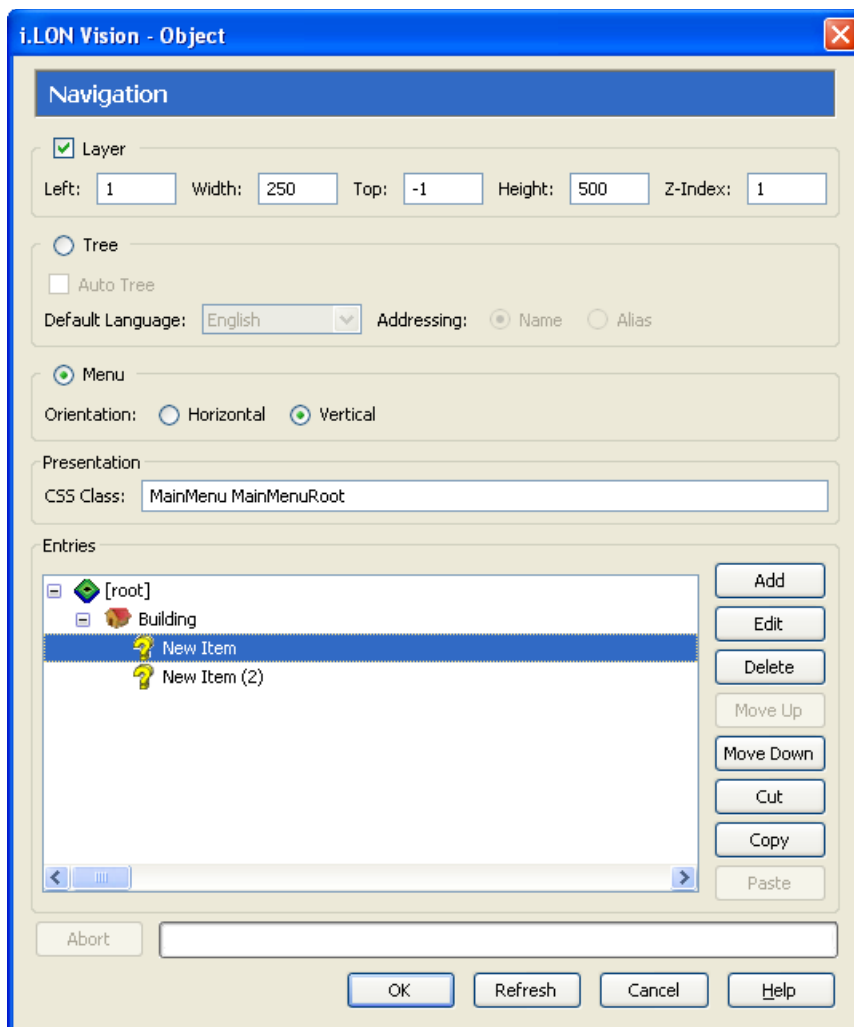

a. In then **Icon** property, click **Choose** to open the **Select File** dialog, select an image to represent the room, and then click **OK**. This example uses the **House.gif** image in the web/user/demo/images folder.

b. In the **Label** property, enter a descriptive location. For this example, enter "Room 1" for the first submenu item, and enter "Room 2" for the second submenu item.

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c. Under **Link**, select the custom SmartServer 2.2 Web page to be opened when the user clicks the submenu item. To do this, do one of the following:

   i. In the URL box under Destination, enter the URL of the destination Web page, or click **Choose** to open the **Select File** dialog, browse to the **.htm** file of the destination Web page, click the **.htm** file, and then click **OK**.

   ii. In the **Target** box, you can select how the destination Web page is opened. By default, the destination Web page is opened in the application frame (**appFrame**), with the frameset preserved. This enables your custom Web pages to appear in the application frame in the center of the frameset. You can select one of the other following options:

   • Select **menuFrame** to open the destination Web page in the menu frame, with the frameset preserved.

   • Select **sidebarFrame** to open the destination Web page in the sidebar frame, with the frameset preserved.

   • Select **copyrightFrame** to open the destination Web page in the copyright frame, with the frameset preserved.

   • Select **_blank** from the pull-down list to open the destination Web page in a new window.

   • Select **_top** from the pull-down list to open the destination Web page in the current window, but replace the frameset (if used).

   • Select **Open in Popup** to open the Web page in a pop-up dialog. If you select this option, specify the dimensions of the pop-up dialog. This option is cleared by default.


d. Click **Name Substitution Values**. The **Substitutions** dialog opens.

   i. Click the placeholder you specified in step 4 of the previous section.

   ii. In the **Value** box, enter the value to replace the placeholder. For this example, enter **1** for the first submenu item (Room 1), and enter **2** for the second submenu item (Room 2).

   iii. Click **Save**.

   • When the Room 1link is clicked, the **Net/LON/iLON App/Digital Output {*x*}/nviClaValue_{*x*}** data point in the switch image swapper object points to the **Net/LON/iLON App/Digital Output 1/nviClaValue_1** data point, and the **Net/LON/iLON App/Digital Output {*x*}/nvoClaValueFb_{*x*}** in the lamp image

swapper object points to the **Net/LON/iLON App/Digital Output 1/nvoClaValueFb_1** data point.
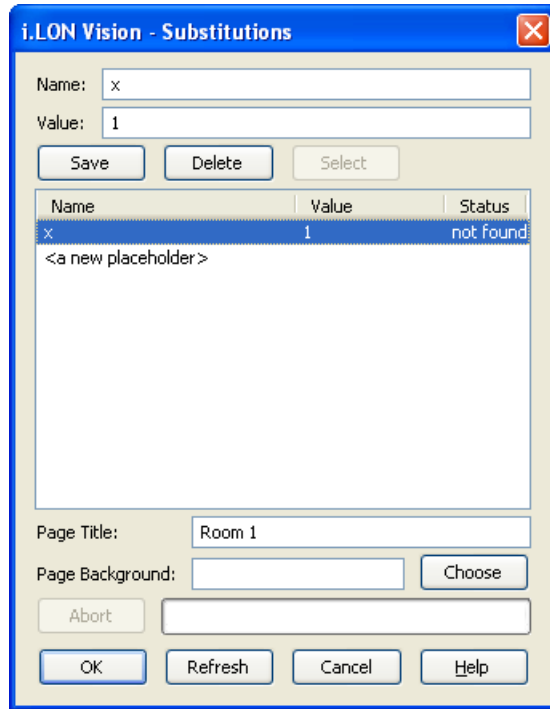
- When the Room 2 link is clicked, the **Net/LON/iLON App/Digital Output** {*x*}**/nviClaValue_**{*x*} data point in the switch image swapper object points to the **Net/LON/iLON App/Digital Output 2/nviClaValue_2** data point, and the **Net/LON/iLON App/Digital Output** {*x*}**/nvoClaValueFb_**{*x*} in the lamp image swapper object points to the **Net/LON/iLON App/Digital Output 2/nvoClaValueFb_2** data point.
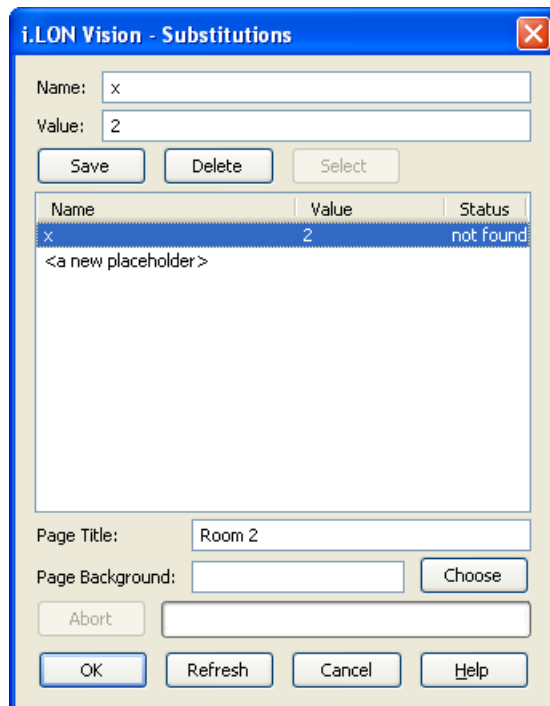
iv. Optionally, in the **Page Background** property, click **From PC** or **From iLON** to add a background image to the Web page that appears when the link to the room is clicked.

v. Click **OK** to return to the **Navigation Link** dialog.

e. Click **OK** to return to the **Navigation** dialog.

7. Click **OK** to return to the **Layout** tab.

8. Click **Publish** on the Editor toolbar ([Publish]), click the **Browse** tab, click the **Browse** tab, or click **File** and then click **Publish** to save the current draft of your custom SmartServer 2.2 Web page.
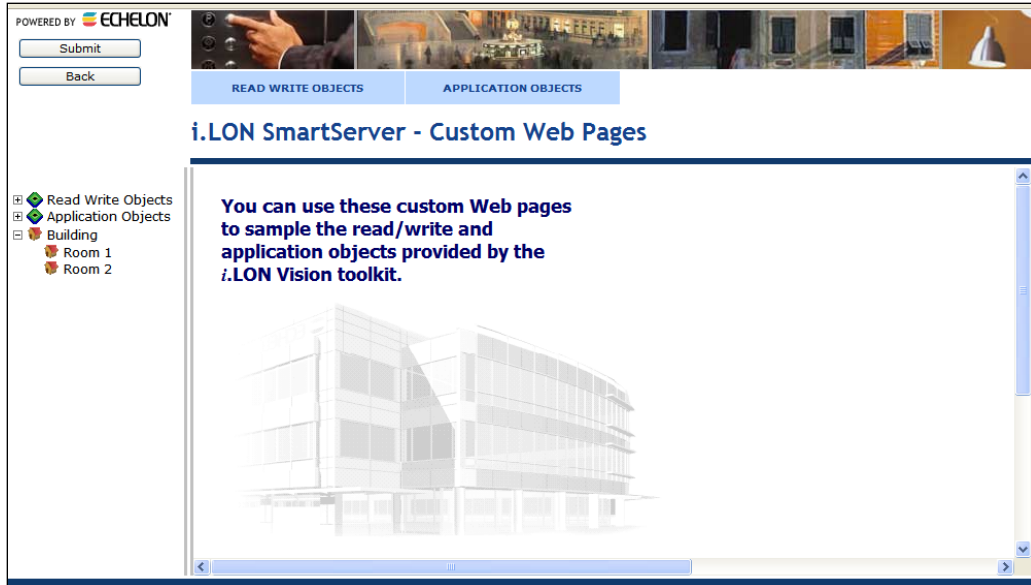
9. Test your data point substitution tags. To do this, click or expand the Building or Floor menu item and then click the Room 1 and Room 2 submenu items. Clicking the switch graphic in Room 1 toggles the Digital Output 1 relay and lights and turns off the Digital Output 1 LED, and that clicking the switch graphic in Room 2 toggles the Digital Output 2 relay and lights and turns off the Digital Output 2 LED.
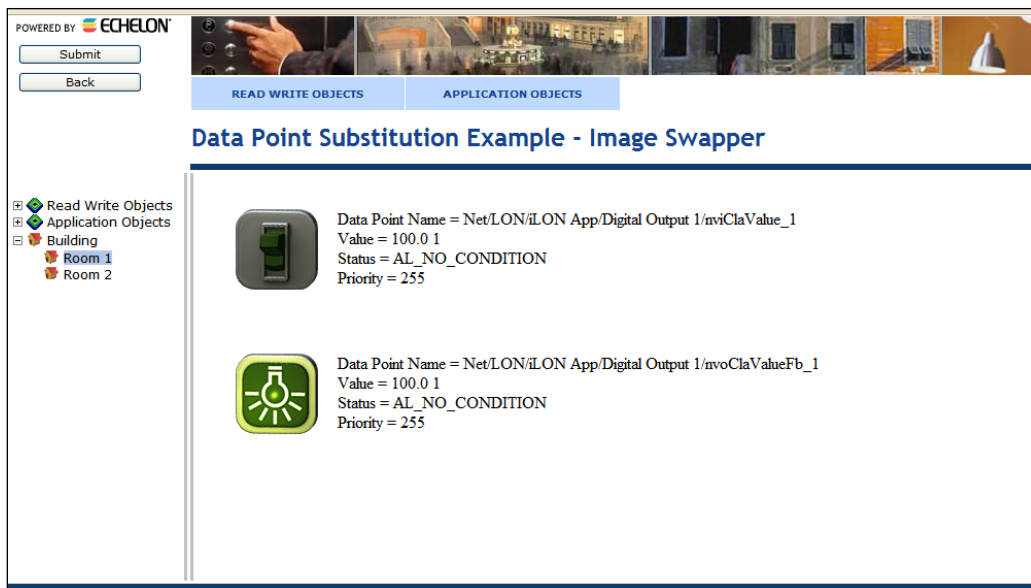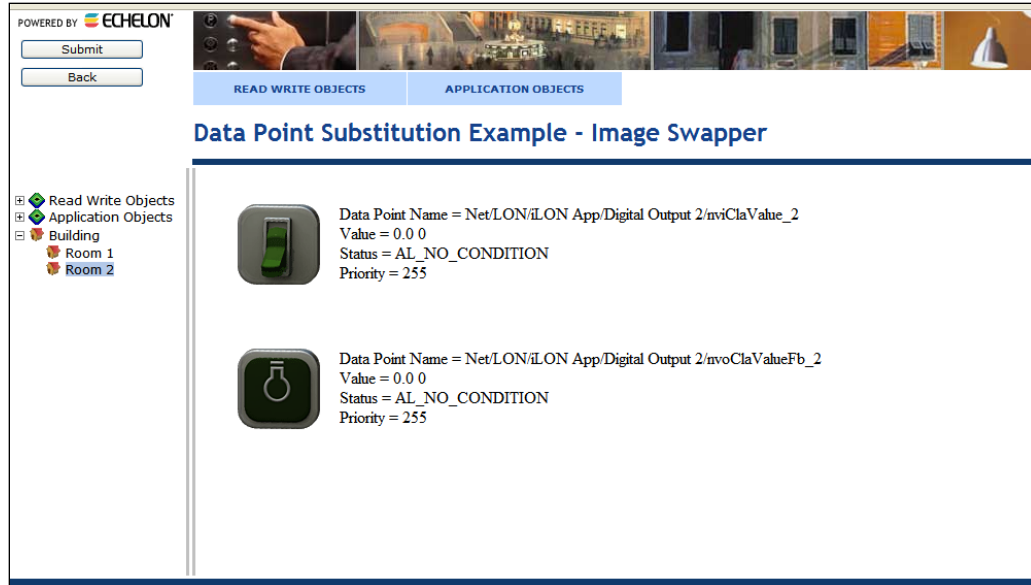
In general, to test your data point substitution tags, follow these steps:

1. Write unique values to the data points using the **View – Data Points** Web page in the built-in SmartServer Web pages.

2. Browse to your **/web/**<*Custom*>**/index.htm** file.

3. Click the menu items or submenu items in your menu or tree that link to your custom SmartServer 2.2 Web page using data point substitution tags.

4. Verify that the values displayed correspond to those specified in step a.

Using the NLS Text Object

You can use the **NLS Text** object and the SmartServer 2.2 Programming Tools to translate a custom SmartServer 2.2 Web page into multiple languages. The **NLS Text** object provides a single user-defined key that you can associate with multiple text strings in different languages. These text strings are saved in **.properties** files corresponding to the custom Web page and their respective languages (for example, page.properties, page_de.properties, and page_es.properties). The **.properties** files must be stored in an **nls** folder in the same directory as the custom SmartServer 2.2 Web page.

You can create the **.properties** files using either the demo version of the SmartServer 2.2 Programming Tools included on the SmartServer 2.2 DVD or using the full version on the SmartServer 2.2 Programming Tools included on the SmartServer *2.2 Programming Tools* DVD. For more information on ordering the SmartServer 2.2 Programming Tools DVD, contact your Echelon sales representative.

To use the **NLS Text** object and create a custom SmartServer 2.2 Web page in multiple languages, follow these steps:

1. Click **Edit** on the Editor toolbar (![Edit]) or click the **Layout** tab.

2. Click **Insert** and then select **NLS Text**.
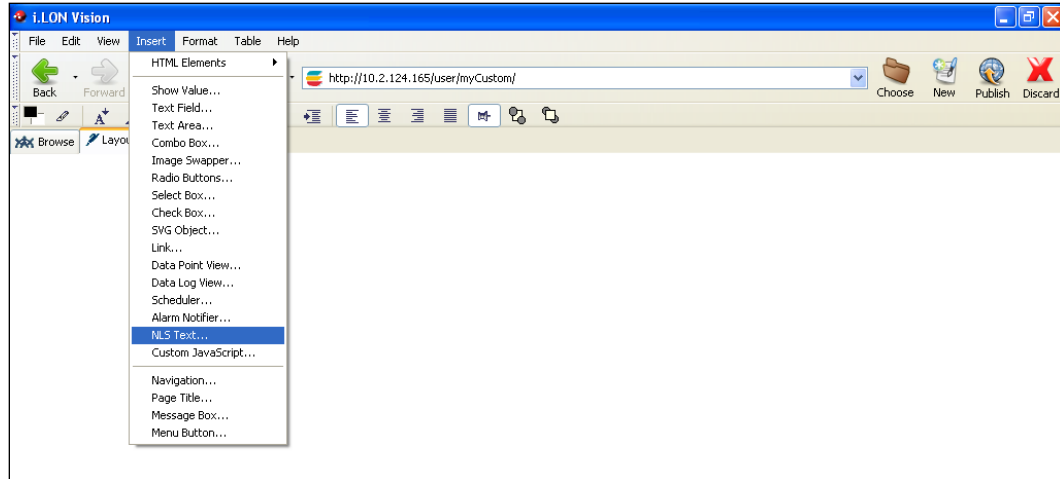
3. The **NLS Text** dialog opens.
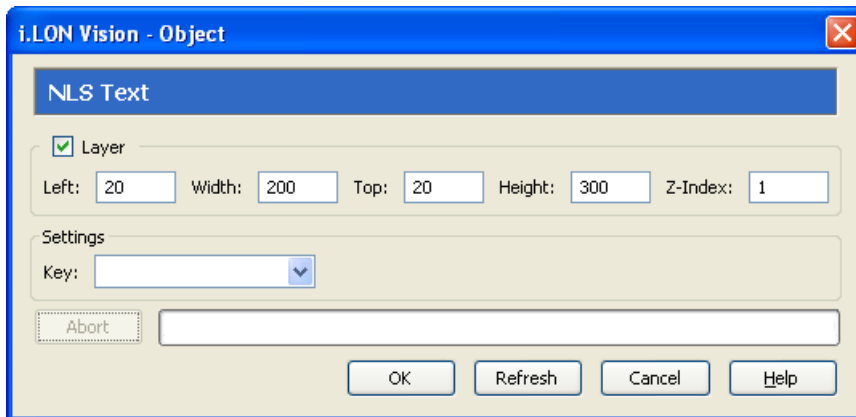
4. Optionally, configure the **Layer** properties of the **NLS Text** object. By default, the **Layer** check box is selected. This means that the **NLS Text** object is embedded in a Layer object, which lets you freely move the **NLS Text** object in your custom Web page.

   Clearing this option means that you must position the **NLS Text** object as you would any other HTML object. This may be useful if you want to place the **NLS Text** object in a table. You can set the following properties to position and size the object:

   • The **Left** and **Top** properties determine the object's position from the upper left-hand corner of the Web page (in pixels). You can set these properties to position the object instead of dragging the Layer object containing it.

   • The **Width** and the **Height** properties determine the size of the object (in pixels). You can set these properties to size the object instead of expanding and collapsing the Layer object containing it.

   • The **Z-Index** property determines the object's background depth compared to objects it overlaps with, with **1** (the default) being in the back and higher values being in front.

   When positioning the **NLS Text** object, leave space for menu, page title, or sidebar objects that you may want to add to your Web page. This will help prevent you from accidentally overlapping objects.

5. In the **Key** property, enter a descriptive placeholder that identifies the type of text string to be provided. This placeholder will be replaced with the text string that you provide for it in the **.properties** file.
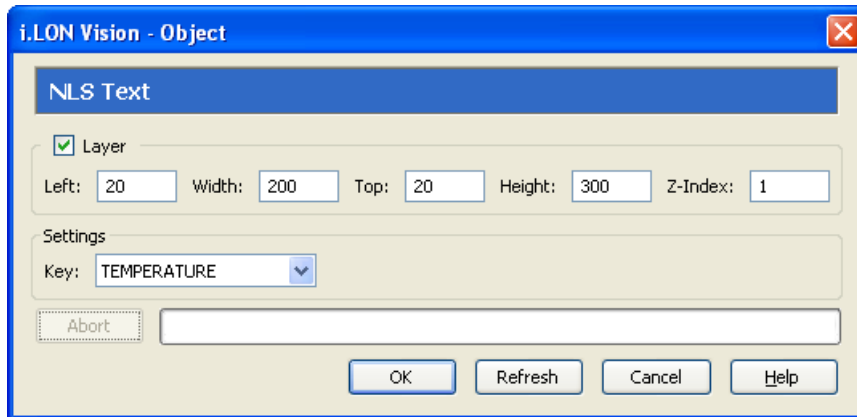
6. Click **OK**. The **NLS Text** object is added to your custom SmartServer 2.2 Web page. By default, the object is positioned in the upper-left hand corner of your Web page (unless you specified its position with the **Left** and **Top** properties). If you selected the **Layer** option, drag the layer containing the object to the desired position on your custom SmartServer 2.2 Web page.

7. Repeat steps 2–6 to create additional **NLS Text** objects.
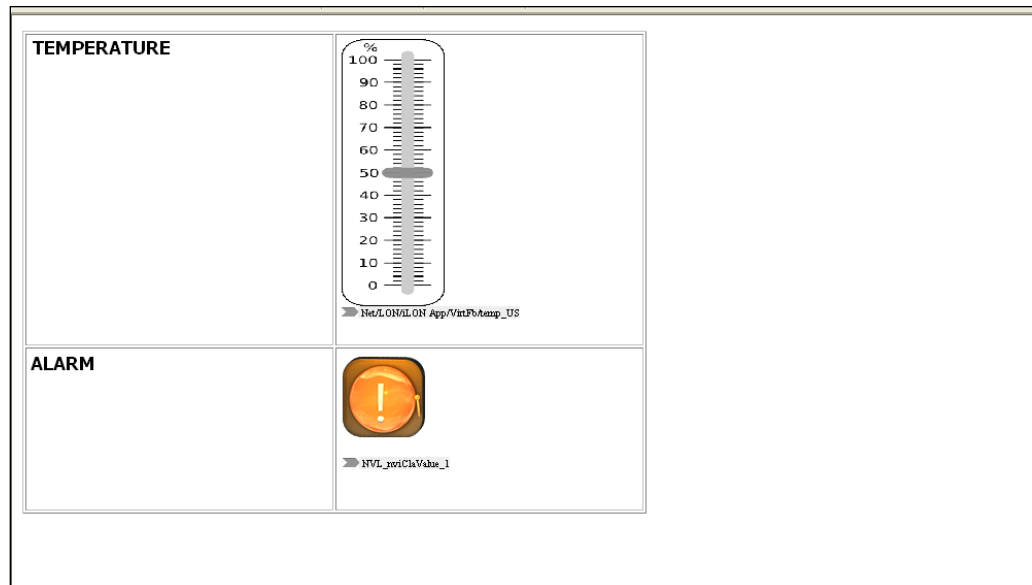
8. Click **Publish** on the Editor toolbar ( ), click the **Browse** tab, or click **File** and then click **Publish**.

   Note: Your custom SmartServer 2.2 Web page will not function until the text string for the **NLS Text** object is in the appropriate **.properties** files in the **web/user/**<*Custom*>**/nls** folder on the SmartServer flash disk. You will create the **nls** folder and the **.properties** file and in the next step.
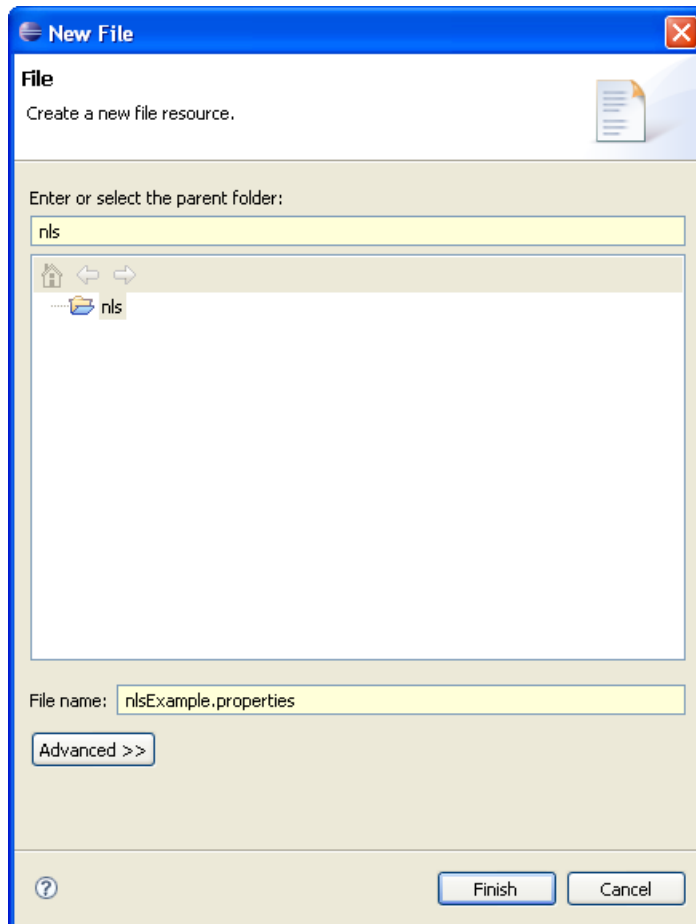
9. Create the **nls** folder and the **.properties** files for your custom SmartServer 2.2 Web page with the SmartServer 2.2 Programming Tools. To do this, follow these steps:

   a. Install the demo version of the SmartServer 2.2 Programming Tools on the SmartServer 2.2 DVD or the full version on the SmartServer 2.2 Programming Tools DVD. See the *SmartServer 2.2 User's Guide* for more information on installing the demo version. See the *SmartServer 2.2 Programming Tools User's Guide* for more information on installing the full version.

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b. Start the SmartServer 2.2 Programming Tool. To do this, click **Start**, point to **Programs**, point to **Echelon SmartServer 2.2 Programming Tools**, and then click SmartServer 2.2 Programming Tools. The SmartServer 2.2 Programming Tool opens.

c. Create a new nls project. To do this, click **File**, point to **New**, and then click **Project**. The **New Project** dialog opens. Click **Next**. In the **Project Name** box, enter **nls**, and then click **Finish**.
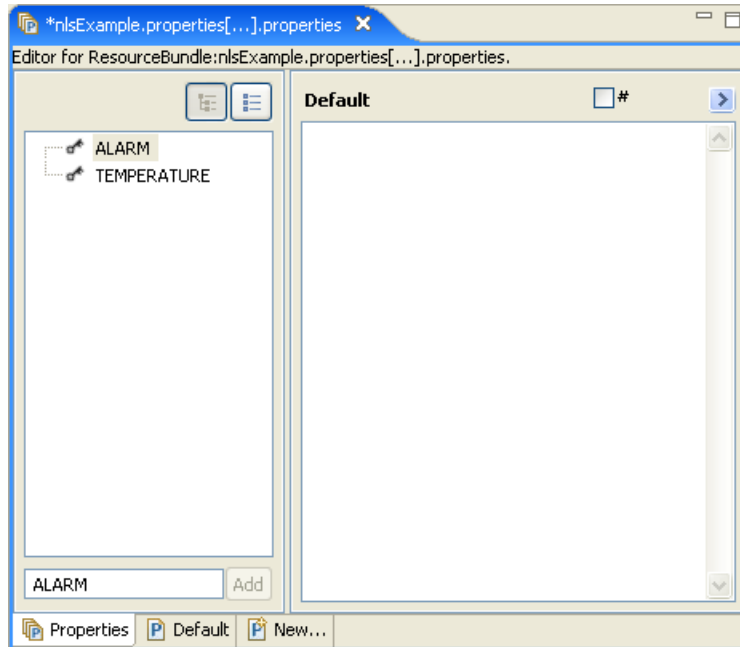
An **nls** folder is added to the **C/C++ Projects** view. This means that an **nls** folder has been created in the LONWORKS **iLON\Development\eclipse\workspace.fpm** folder on your computer. This is where the **.properties** files that you will create will be stored.
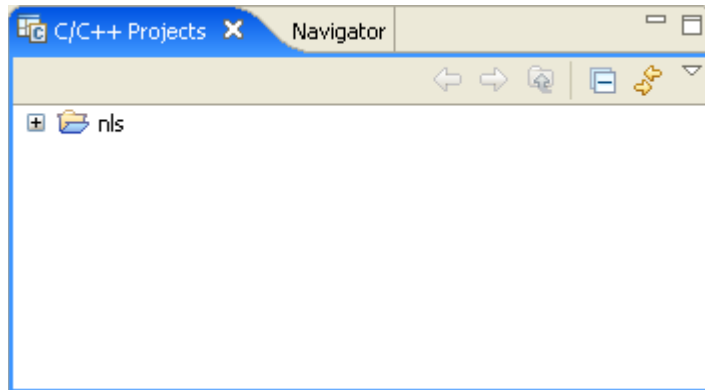

d. Create a **.properties** file for your custom SmartServer 2.2 Web page. To do this, right-click the **nls** folder, point to **New**, and then click **File**. The **New File** dialog opens. In the **File name** box, enter the file name of your custom SmartServer 2.2 Web page (for example, nlsExample) and then append the **.properties** extension to the name (for example, nlsExample.properties). Click **Finish**.

e. A **.properties** file is added under the **nls** folder in the **C/C++ Projects** view and the **ResourceBundle Editor** view opens. This means that a **.properties** file has been added to the LONWORKS **iLON\Development\eclipse\workspace.fpm\nls** folder on your computer.

f.   In the bottom left-hand corner of the **ResourceBundle Editor** view, enter the key you created for the NLS Text object in step 5 and then click **Add**. Repeat this step for all NLS Text objects you created in your custom SmartServer 2.2 Web page.


g.   The keys are added to the list of keys.

h. In the **Default** frame on the right side, you can enter text strings for the keys in the default language, which is **English**.
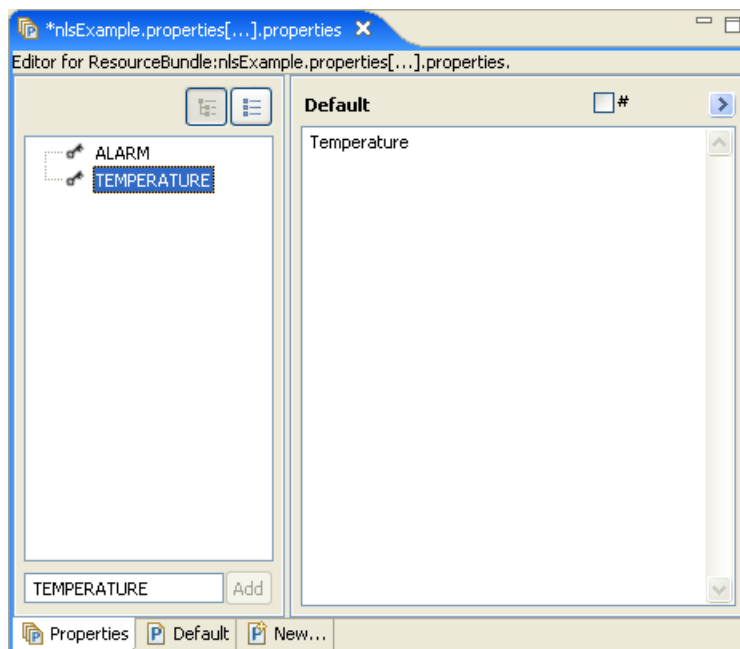

i. Click the **New** tab at the bottom of the **ResourceBundle Editor** view to create the .properties file and translate the keys in a different language. The **New Properties File:** dialog opens.

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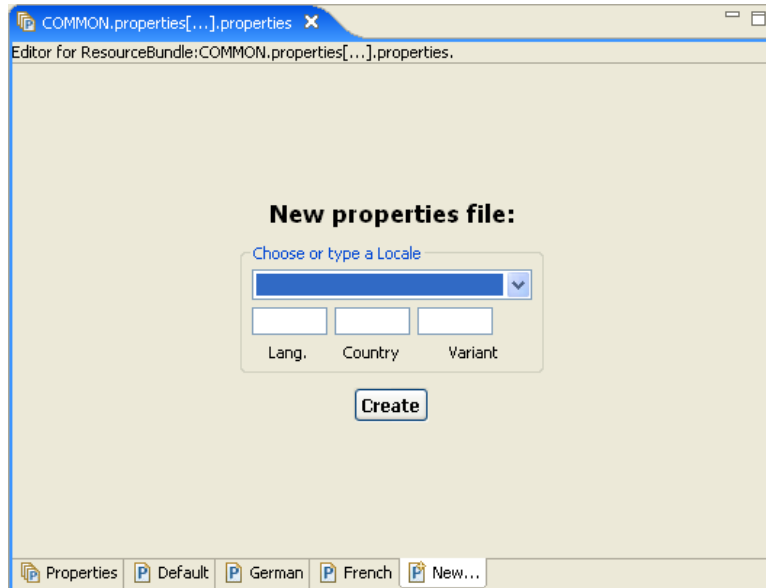
j. In the **Choose or Type Locale** box, select the language and desired version (if different regional varieties are available for the language) to which your custom SmartServer 2.2 Web page is to be translated.
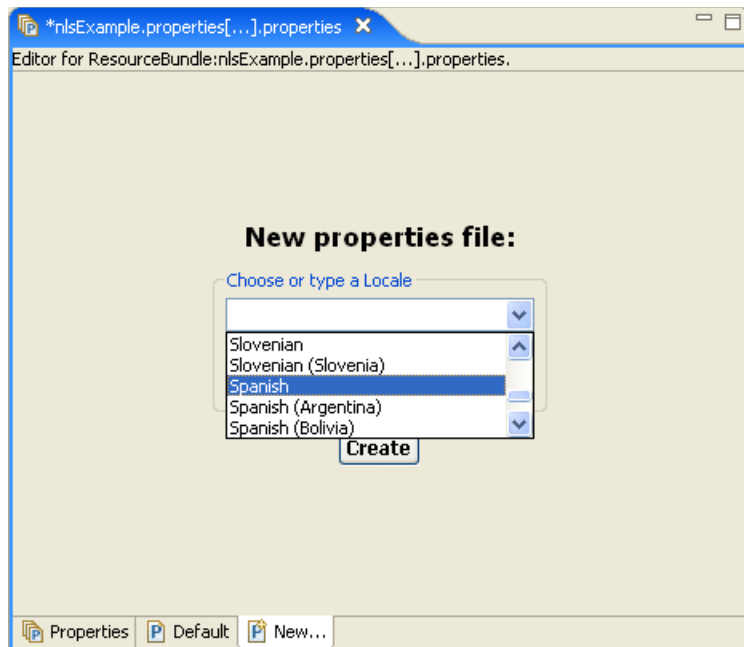
k. The **Lang.** and **Country** (if used) properties are filled in. Optionally, you can enter a **Variant** to further categorize the selected language. This is useful if you want to create different translations of the same language with the same regional version.
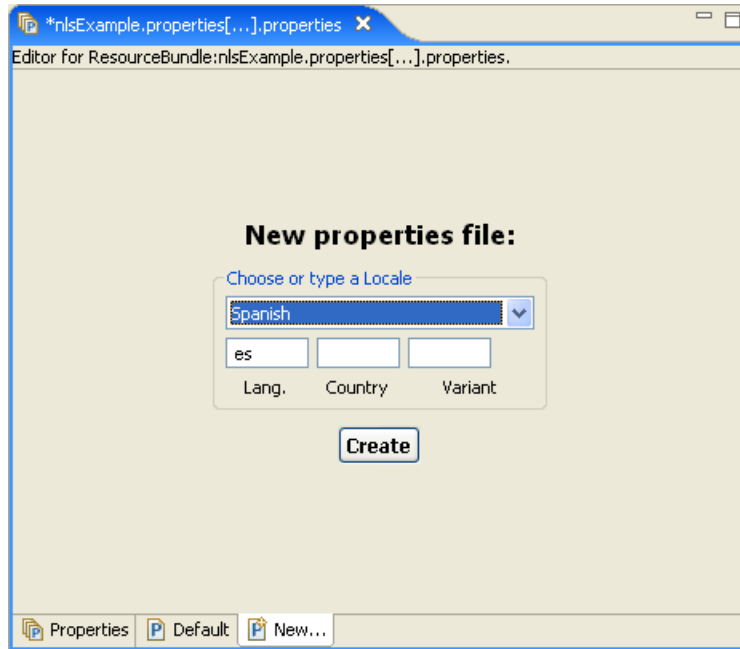
l.   Click **Create**.
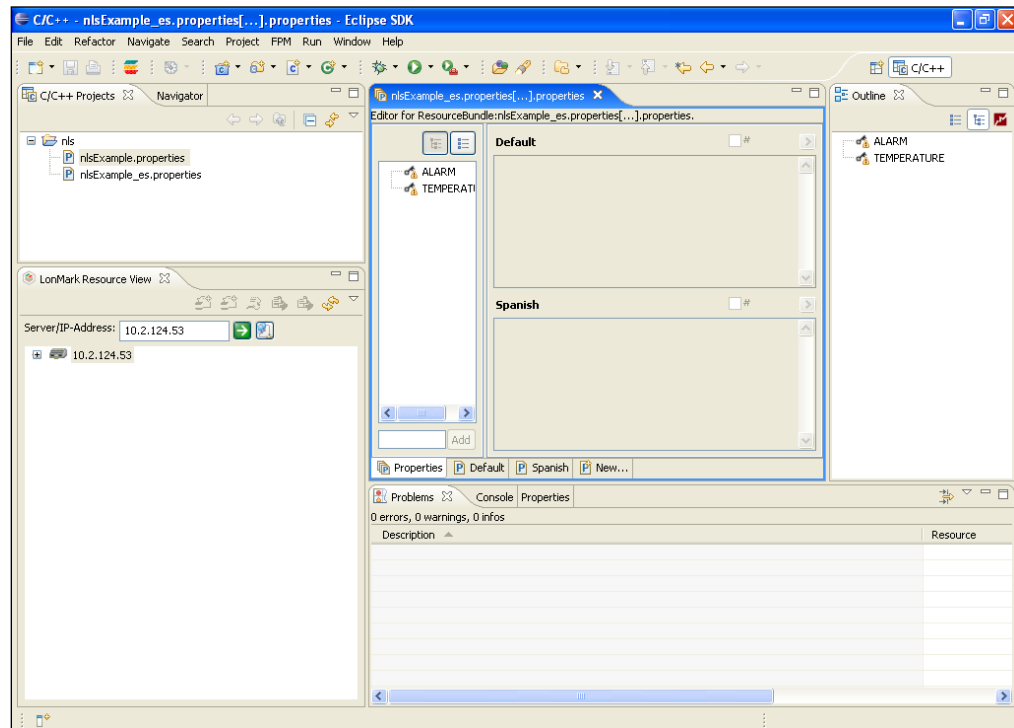
m. A new *<Page>_<_language*[*_REGION*] [*_variant*]>**.properties** file is added to the **C/C++ Projects** view and this file appears in the **ResourceBundle Editor** view. In addition, a box marked with the language you selected is added to the bottom of the right frame of the **ResourceBundle Editor** view. All the properties listed in the left frame are marked with warning symbols, indicating that the property has not yet been translated. Once you enter a translation for a property, the warning symbol is removed.

n.   Translate each key listed in the left frame. You can do the translation from the **Properties** tab (recommended) or from your language's tab.

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- To translate the properties from the **Properties** tab, click each property listed in the left frame and enter a translation in your language box in the right-pane one-by-one.
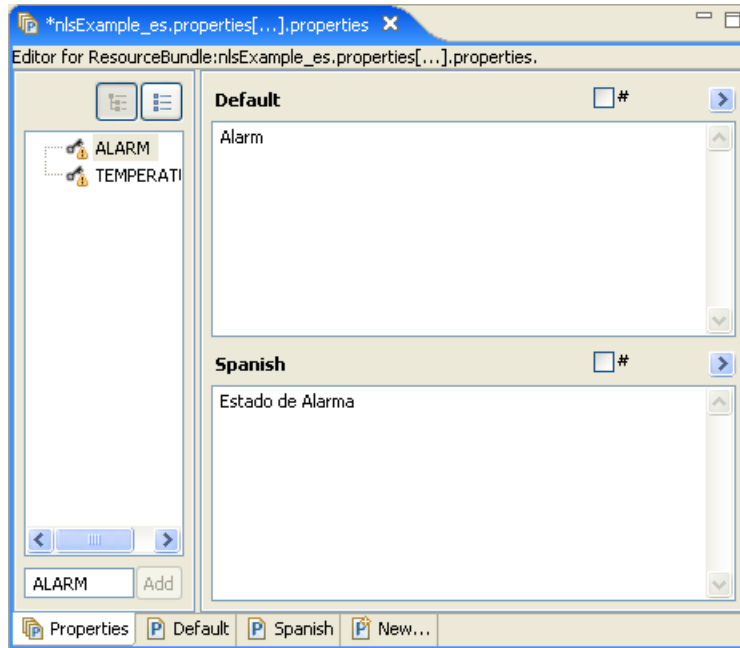
You can comment out the text in a translation by selecting the checkbox (☐**#**) in the upper right-side of the language box. You can switch to your language's property tab by clicking the arrow (>) on the upper right-hand corner of your language box.

- To translate the properties from your language's tab, first copy the **Default** (**English**) translation and paste it into your language's tab. You can begin translating the properties listed in your language's tab.
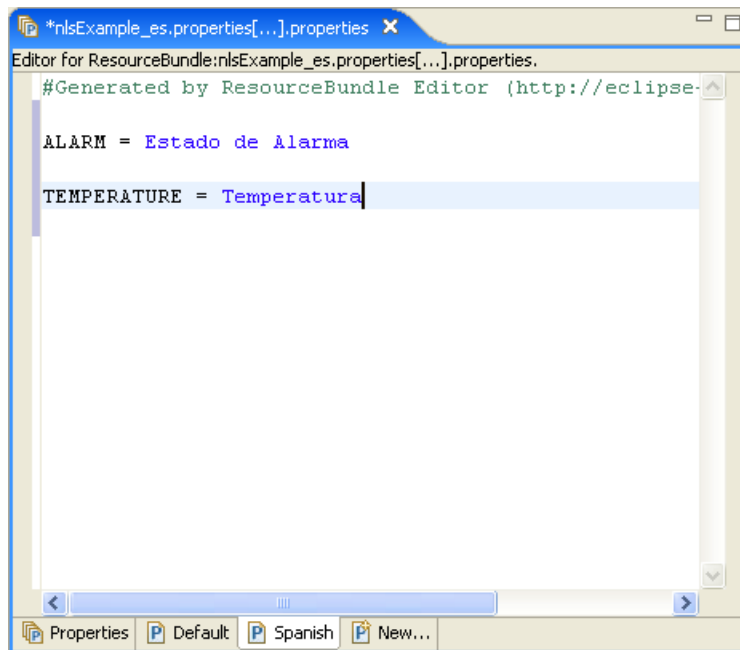
Tip: Save your language localization project frequently to safeguard your data from a power outage or other failure. To save your language localization project, click **File** and then click **Save**.

10. Copy the **nls** folder, which contains the **.properties** file you created in step 9, to the SmartServer. To do this, follow these steps:

   a. Browse to the LONWORKS **iLON\Development\eclipse\workspace.fpm** folder on your computer.

   b. Use FTP to access the **/web/user/echelon/**<*Custom*> folder on the flash disk of your SmartServer.

   c. Copy the **nls** folder in the LONWORKS **iLON\Development\eclipse\workspace.fpm** folder on your computer to the **/web/user/echelon/**<*Custom*> folder on the SmartServer flash disk.

   Note: The **nls** folder must be copied to the same directory on the SmartServer in which the target custom SmartServer 2.2 Web page is stored.

11. If your localized SmartServer custom Web page will be accessed via a **Navigation** object (sidebar or menu), follow steps 2–9 and steps 11–17 in *Linking to a Configuration Web Page from a Navigation Object*.   In step 8, browse to the **/web/user/echelon/**<*Custom*> folder on the SmartServer flash disk, and then select the **.htm** file representing your custom SmartServer 2.2 Web page.

   If your localized SmartServer custom Web page will be accessed via a **Link** object, follow the steps described in *Linking to a Configuration Web Page from a Link Object*.

12. If your default and localized SmartServer custom Web pages will not be accessed via a link (from the **Navigation** or **Link** object), they can be opened using the following addresses:

   • Default custom Web page—**http://**<*SmartServer IP address*>**/user/**<*Custom*>**/**<*Page*>**.htm**.
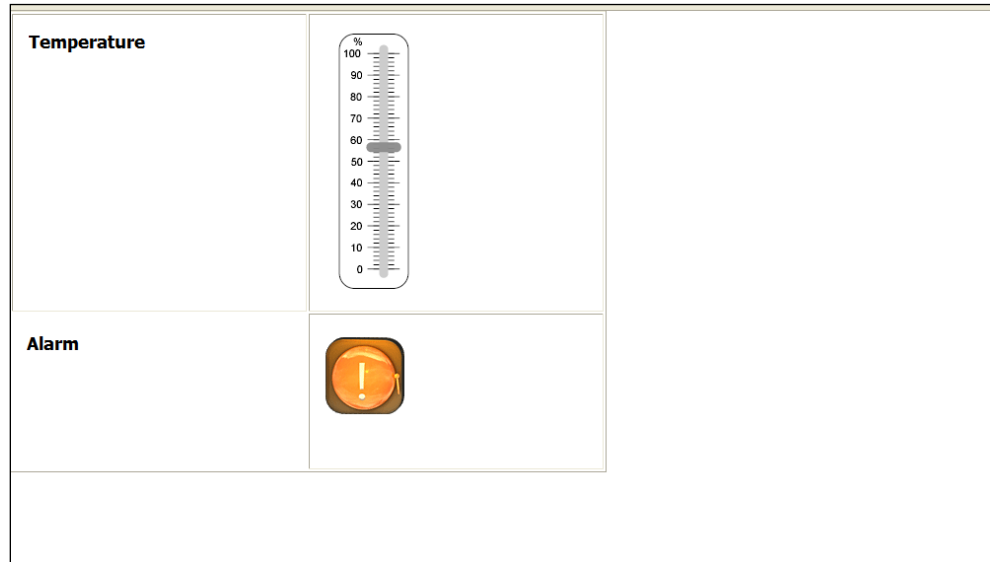
   • Localized custom Web page—**http://**<*SmartServer IP address*>**/user/**<*Custom*>**/**<*Page*>**.htm?elon_lang=**<*_language*[*_REGION*] [*_variant*]>.
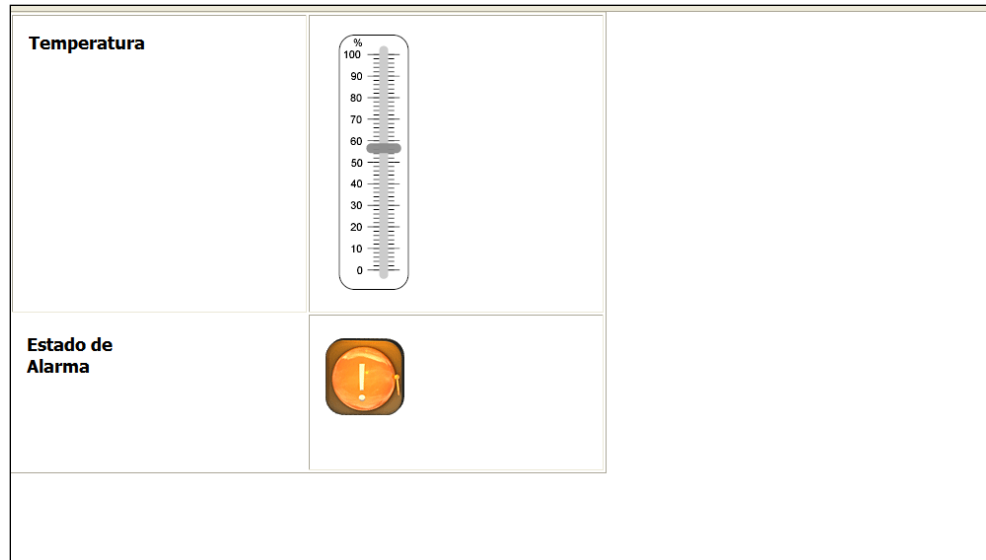
Opening SmartServer Applications from Custom Web Pages

You can open the configuration Web pages of the SmartServer's built-in applications (for example, Alarm Notifier, Digital Input, Scheduler, Type Translator) from your custom SmartServer 2.2 Web pages.

To do this, you add a new item to a **Navigation** object (tree or menu), or you create a **Link** object. You then link the item or **Link** object to the application's **.htm** file in the **/web/user/echelon** folder on your SmartServer's flash disk, select an application instance to be opened when the link is clicked, and specify the language (English, German, French, or other language) used by the configuration Web page.

If your Web design uses a frameset, you will typically add the link to an item in a **Navigation** object. Navigation objects include the tree view in the **Sidebar.htm** frame or the menu in the **Menu.htm** frame. If your Web design does not use a frameset, typically you will add the link to a **Link** object; however, you can add it to an item in a **Navigation** object, which should be located on your home page.

Linking to a Configuration Web Page from a Navigation Object

You can link an item in a **Navigation** object to a built-in SmartServer configuration Web page. To add the link, follow these steps:

1. Verify that you have instantiated the application to which you are linking. This means that if you want to link to a Scheduler's Configuration Web page, you must have already added a Scheduler functional block to the SmartServer's internal automated system device (i.LON App, iLON SmartServer 2.2- 1, or other user-defined name).

2. If your Web design includes the **Frameset** object, browse to the **index.htm** Web page, and then Click **Edit** on the Editor toolbar or click the **Layout** tab. The **Select Frame** dialog opens. Select the frame containing the desired Navigation object or the frame in which you want to add a new Navigation object (the **sidebar.htm** frame or the **menu.htm** frame).
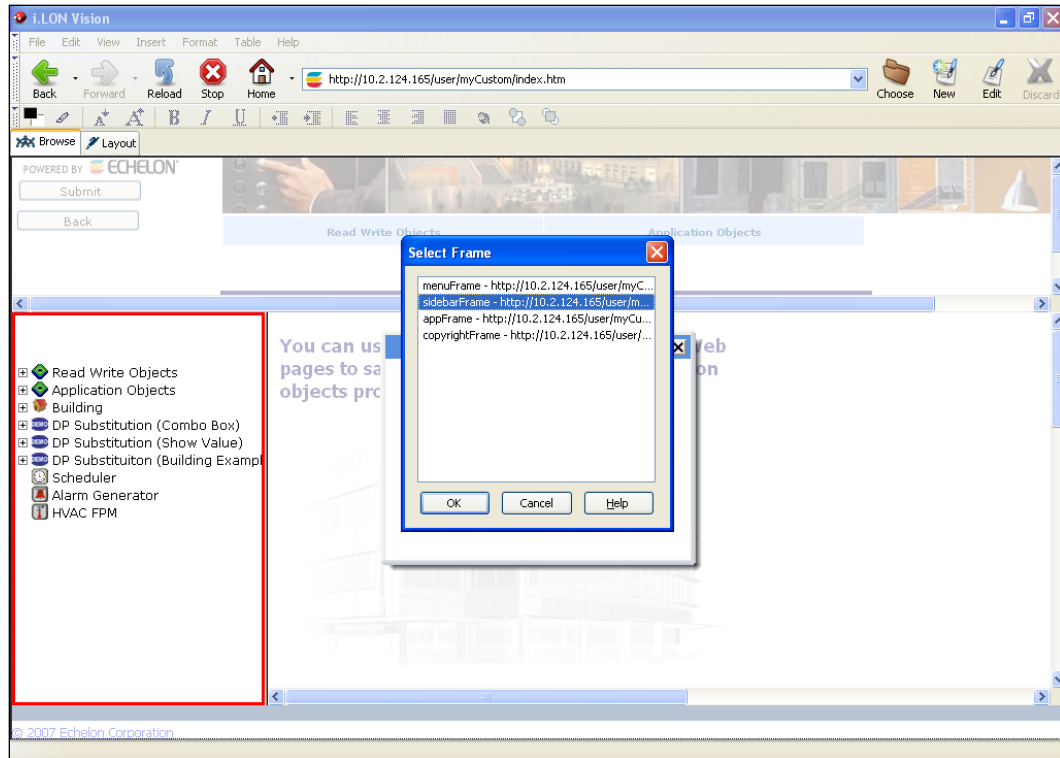
If your Web design does not use a frameset, you can browse to the Web page containing the desired Navigation object or the frame in which you want to add a new Navigation object (typically your home page), and then click Edit on the Editor toolbar or click the **Layout** tab.

3. If the frame or Web page already has the desired Navigation object, either double-click the Navigation object; right-click the object and then click **Object Properties** on the shortcut menu; or click the Navigation object, click **Edit**, and then click **Object Properties**.

    If the Web page does not have the Navigation object, click **Insert** and then select **Navigation**. In the **Navigation** dialog, select the type of Navigation object you are creating: **Tree** (the default) or **Menu**.

4. In the **Navigation** dialog, click the [root] icon, and then click **Add**. A **New Item** is added below the [root] icon.

5. Click the **New Item** and then click **Edit**. The **Navigation Link** dialog opens.

6. In the **Icon** property under **Presentation**, add an icon corresponding to the built-in application to which the item links. To do this, click **Choose** to open the **Select File** dialog, browse to the root/images/tree folder on the SmartServer flash disk, and then select the appropriate image.

    Note: All of the images for the SmartServer's built-in applications use the following naming convention: 8000010128000000[4].UFPT<*application*>.gif

7.   In the **Label**, property, enter the name for the item (for example, Scheduler or Alarm Generator).

8. In the **Link** box, click **Choose** to open the **Select File** dialog, browse to the **/web/user/Echelon** folder on the SmartServer flash disk, and then select the **.htm** file representing the configuration Web page of the desired built-in application.

    Note: All of the .htm files for the SmartServer's built-in applications use the following naming convention: 8000010128000000[4].UFPT<*application*>_Cfg.htm

    Do not modify the **appFrame** text listed in the **URL** property. This enables the configuration Web page to appear in the application frame in the center of the **Frameset** object.
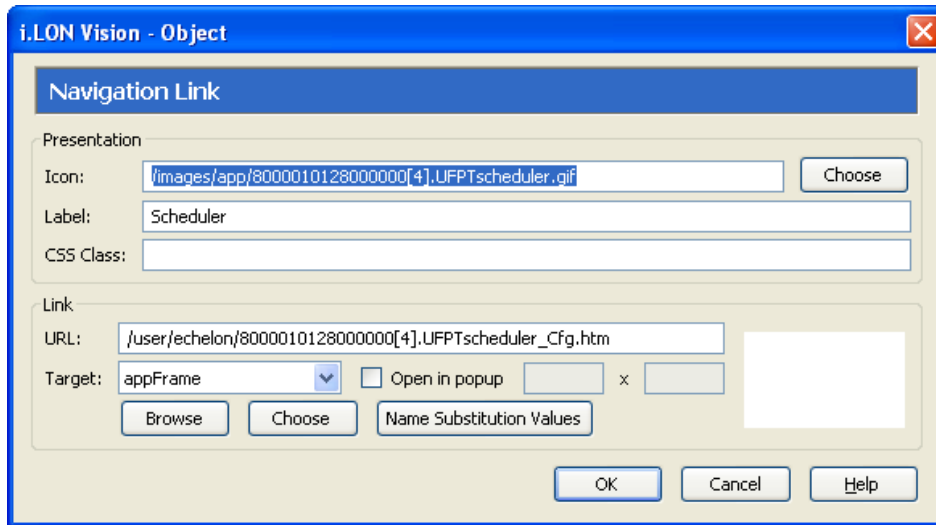
9. Click **Name Substitution Values**. The **Substitutions** dialog opens.
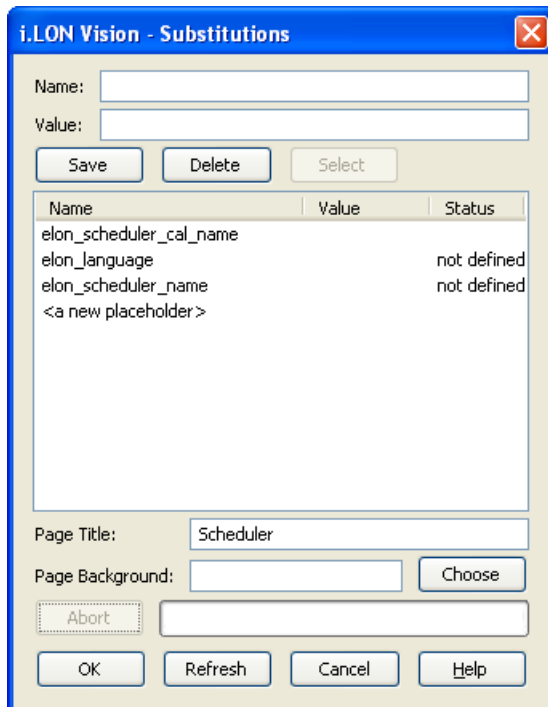
10. Click the **elon_<*application*>_name**: placeholder, enter the full name (network path) of the desired application instance, and then click **Save**. For example, to open Scheduler [0] on the iLON App device, which is located on the LON channel in a network named Net, enter "Net/LON/iLONApp/Scheduler [0]".

Tip: To enter the application's name quickly, go to the SmartServer Web interface, click the application's functional block in the SmartServer tree, copy the name listed in the **Name** property at the top of the Web page, paste it in the **Value** box, and then click **Save**.
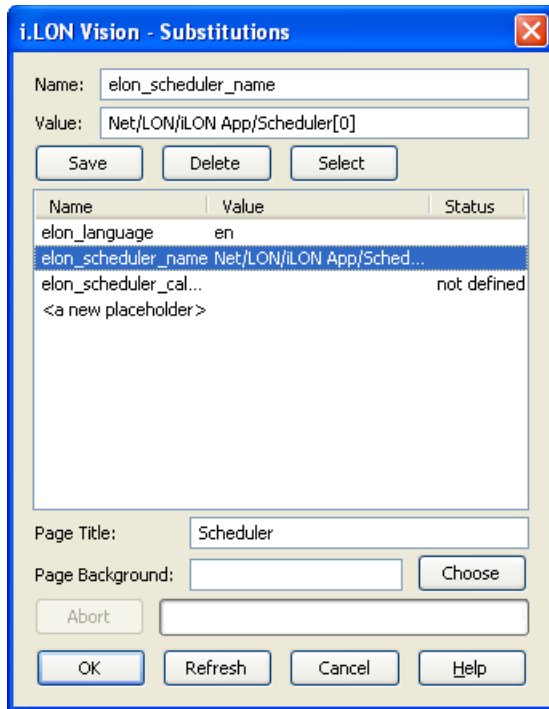
11. By default, the application's configuration Web page will appear in English (en). To select German (de), French (fr), or another language, click **elon_language**, enter that language's country code (*language*[*_REGION*] [*_variant*]), and then click **Save**. For example, to specify German, enter **de**. If you translated the application's configuration Web page into Spanish, enter **es**.

You can localize the SmartServer's built-in configuration Web pages into any one-byte or two-byte character language. To do this, you translate the **.properties** file in the **/web/nls/echelon** folder on the SmartServer flash disk using either the demo version of the SmartServer 2.2 Programming Tools included on the SmartServer 2.2 DVD or using the full version on the SmartServer 2.2 Programming Tools included on the SmartServer *2.2 Programming Tools* DVD. For more information on ordering the SmartServer 2.2 Programming Tools DVD, contact your Echelon sales representative.

For more information on localizing the language of the SmartServer Web pages, see the *SmartServer 2.2 Programming Tools User's Guide*.

Note: You can create multiple links to the same application instance, and have each link point to a configuration Web page that uses a different language.

For example, you could create one item in the Navigation object, link it the Scheduler configuration Web page, specify an instance of the Scheduler application, and specify that the configuration Web page use English.

You could then create a second item in the Navigation object, link it the Scheduler configuration Web page, specify the same instance of the Scheduler application as the previous item, and specify that the configuration Web page use German.

12. Optionally, you can overwrite the **Page Title** that will be added to the URL of the configuration Web page, and you can overwrite the **Page Background** of the configuration Web page.

13. Click **OK** to return to the **Navigation Link** dialog, click **OK** to return to the **Navigation** dialog.

14. Repeat steps 4–13 to create additional items that link to the SmartServer's built-in applications.

15. Click **OK** to return to your frame (**Sidebar.htm** or **Menu.htm**) or custom Web page.
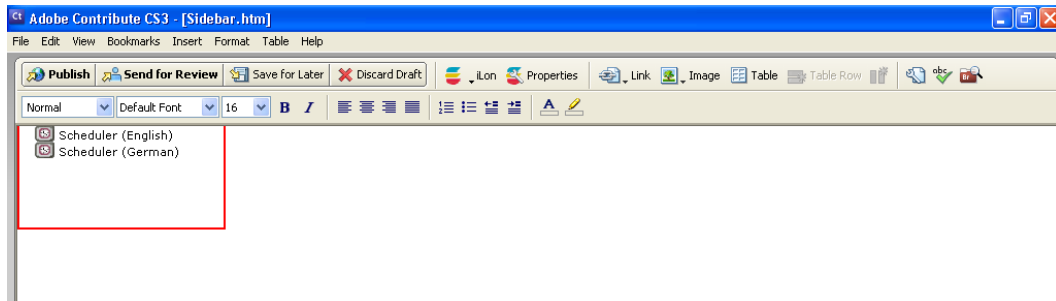
16. Click **Publish** on the Editor toolbar ( ), click the **Browse** tab, or click **File** and then click **Publish** to publish your frame or custom Web page.

17. Click the links in the navigation object to verify the SmartServer configuration Web page opens in the application frame or destination Web page and appears in the specified language.
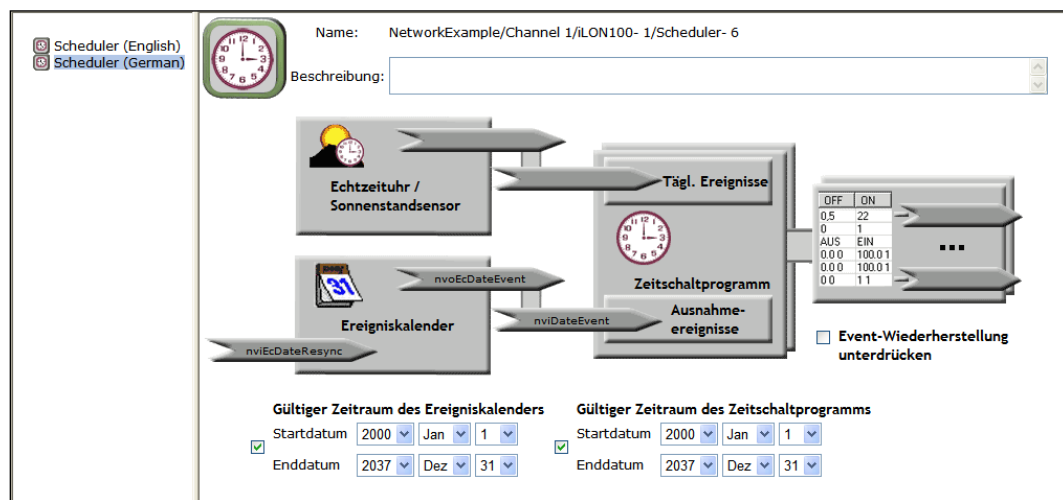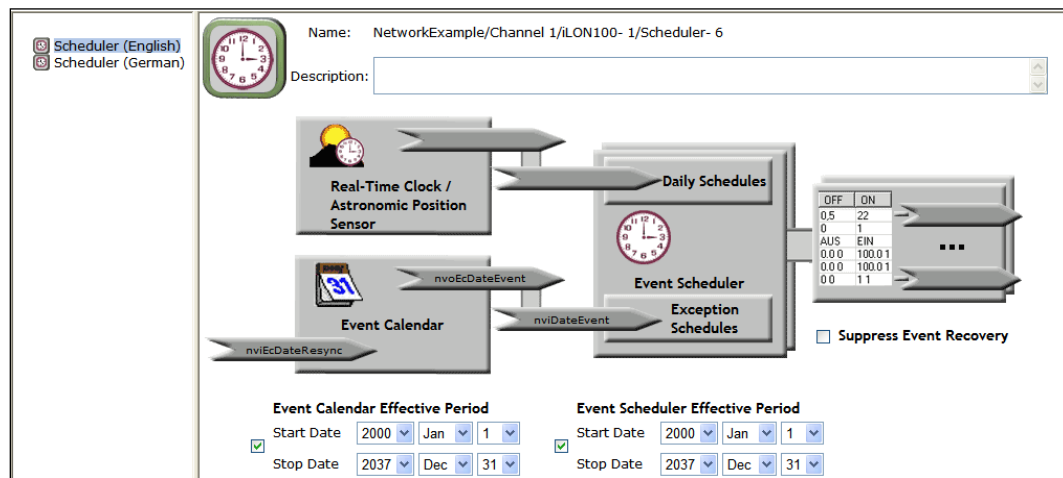

Linking to a Configuration Web Page from a Link Object

You can use an i.LON Vision Link object to link to a built-in SmartServer configuration Web page. To add the link, follow these steps:

1. Verify that you have instantiated the application to which you are linking. This means that if you want to link to a Scheduler's Configuration Web page, you must have already added a Scheduler

functional block to the SmartServer's internal automated system device (i.LON App, iLON SmartServer 2.2- 1, or other user-defined name).

2. Click **Insert** and then select **Link**.
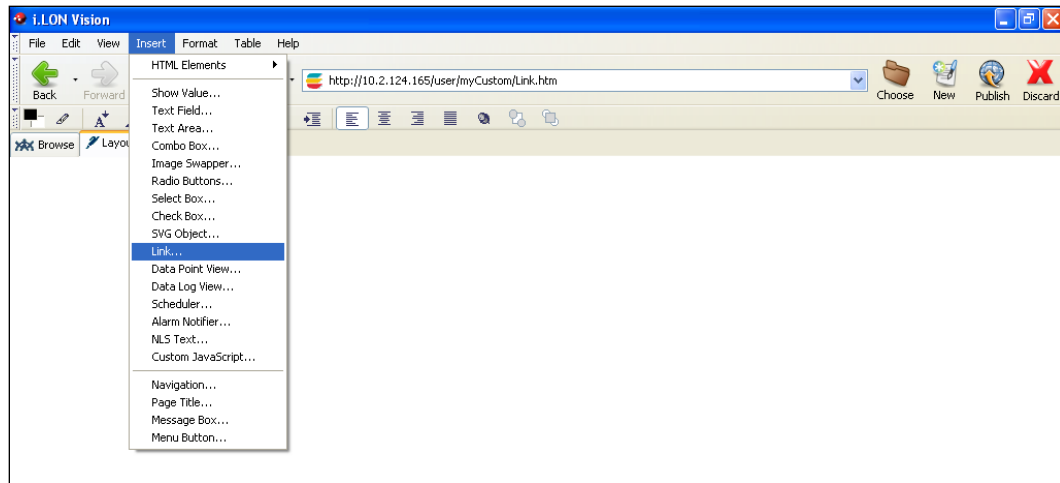
3. The **Link** dialog opens.
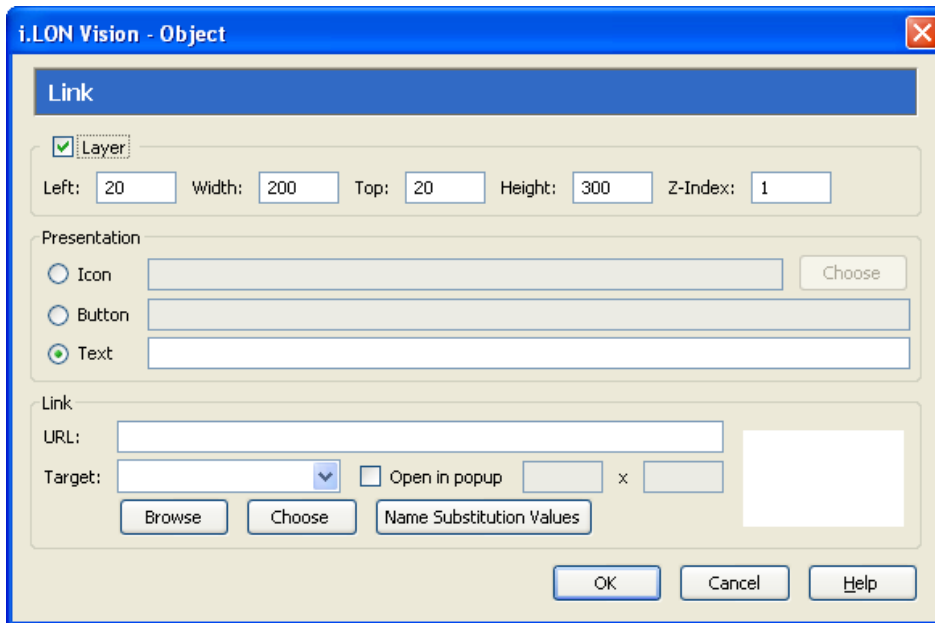
4. In the **Presentation** box, select the type of **Link** object that the user will click to open the Web page you specify in the **Destination** property. You have the following three choices:

   - **Icon**. Click **Choose** to open the **Select File** dialog, browse to the **web/images/app** folder on the SmartServer flash disk, and then select an image corresponding with the configuration Web page to be opened from the link.

     Note: All of the images for the SmartServer's built-in applications use the following naming convention: 8000010128000000[4].UFPT<*application*>.gif

   - **Button**. Enter the text to be displayed in a button that has the following appearance: [Button]

   - **Text**. Enter text to be displayed in a hyperlink (Text).

5. Follow steps 8–12 in the previous section, *Linking to a Configuration Web Page from a Navigation Object*, to select the **.htm** file representing the desired configuration Web to be opened from the link, select the application instance to be used, and select the language (English, German, French, or other language) used by the configuration Web page.

6. Click **OK** to return to the **Link** dialog, and then click **OK** to return to your custom Web page.
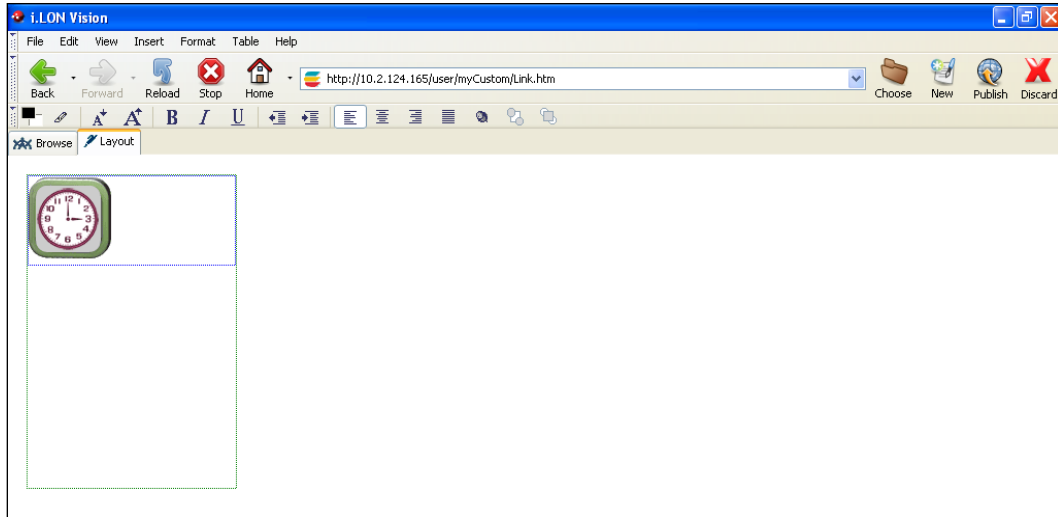
7. Click **Publish** on the Editor toolbar ( ), click the **Browse** tab, or click **File** and then click **Publish** to publish your custom Web page.

8. Click the link in the your custom Web page to verify the SmartServer configuration Web page opens in the destination Web page and appears in the specified language.

Copying and Pasting Objects in i.LON Vision

You can create new i.LON Vision objects by copying and pasting an existing object. This speeds up the process of creating multiple copies of a particular object. You can also remove an i.LON Vision object from its current layer and paste it to another layer or to a table. You can also cut and paste an image to a Layer and cut and paste into You may also find these techniques useful when moving objects on your Web page.

Copying i.LON Vision Objects

You can create new i.LON Vision objects by copying an existing object. To do this, follow these steps:

1. Click the i.LON Vision object to be copied, and then click the move icon on the upper-left side of the object's layer so that a red box appears around the object, indicating that you have selected the object's Layer.   If the box surrounding in the object is black, you have selected the object instead of the Layer.
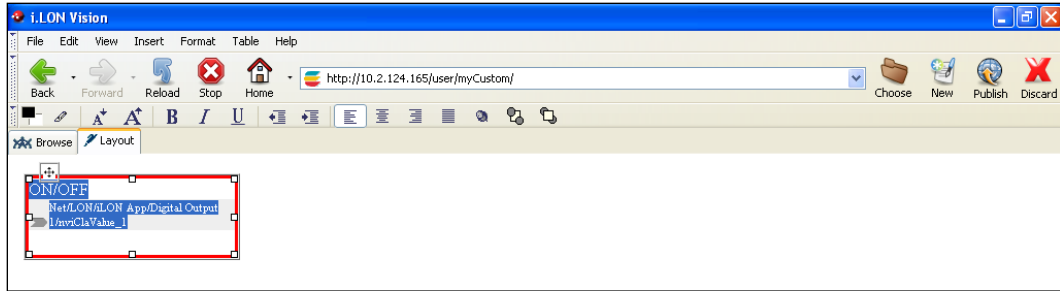
2. Click **Edit** and then click **Copy** (or press CTRL+C).

3. Click an empty space in the **Layout** tab.

4. Click **Edit** and then click **Paste** (or press CTRL+V). The copy of the object is created, and it appears diagonally to the lower left of the source object.
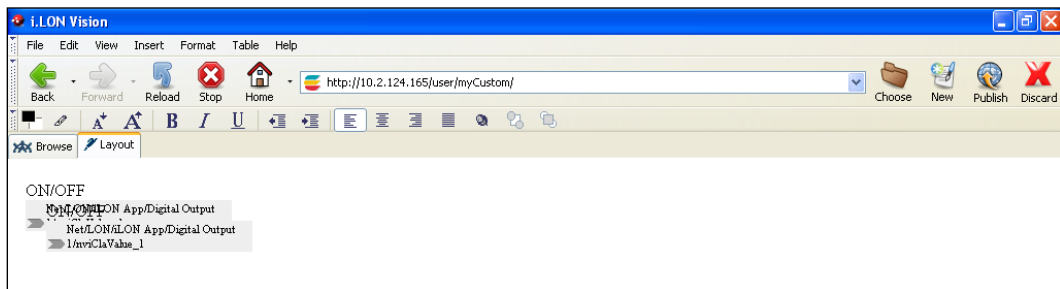
5. Click the copy, and then click the move icon on the object's layer and drag the layer containing the copied object to an empty space in the **Layout** tab.
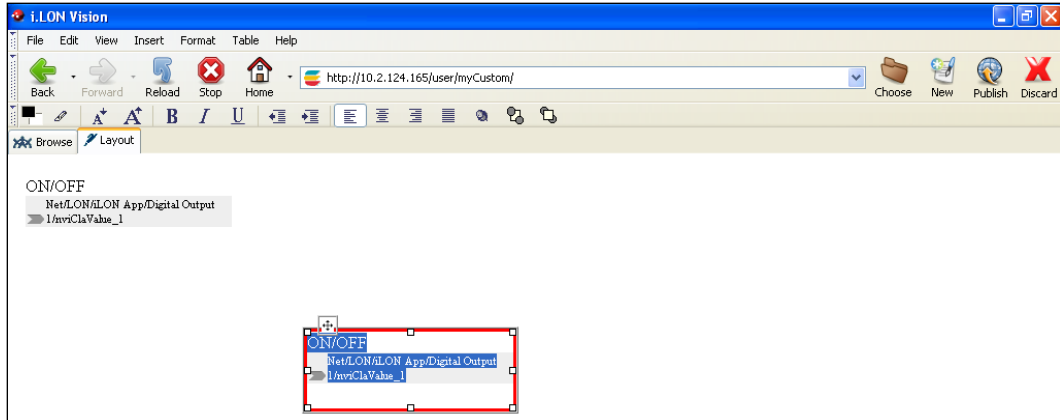
6. Edit the copy to change the selected data point and configure the object properties. To do this, either double-click the object; right-click the object and then click **Object Properties** on the shortcut menu; or click the object, click **Edit**, and then click **Object Properties**

Adding i.LON Vision Objects to a Layer

You can move an i.LON Vision objects to a different Layer. This may be useful if you want to place and align multiple objects in the same Layer. To do this, follow these steps:

1. Click the i.LON Vision object to be moved so that the object is highlighted blue.

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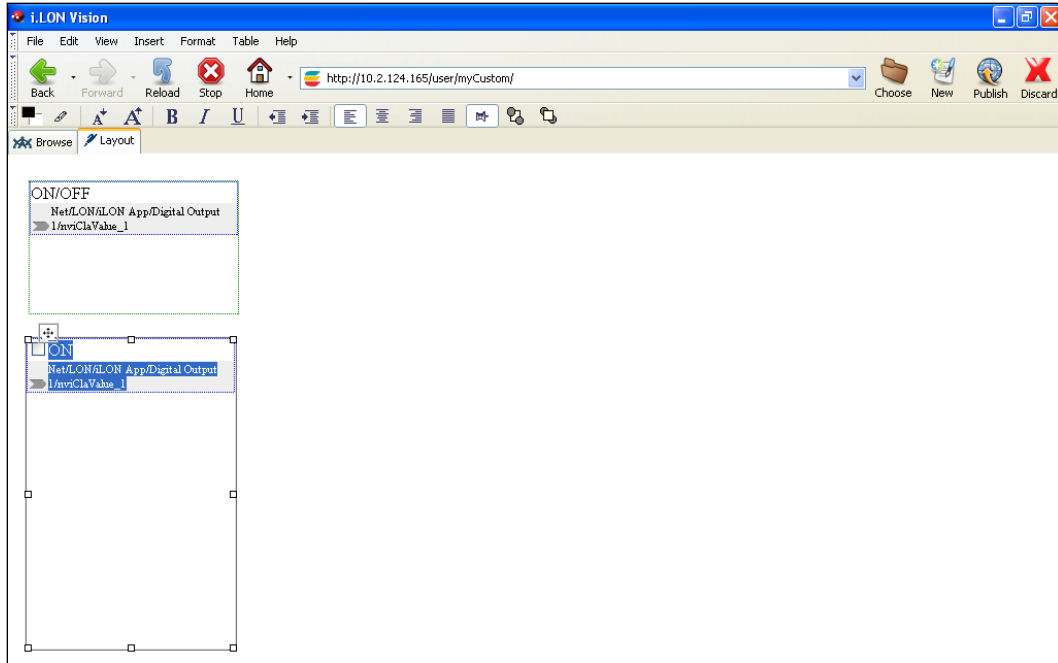
2. Click **Edit** and then click **Cut** (or press CTRL+X).

3. Delete the Layer previously containing the object being moved.

4. Click the destination object and then click any space inside the Layer (green box if layers are displayed) below the object (blue box if layers are selected).
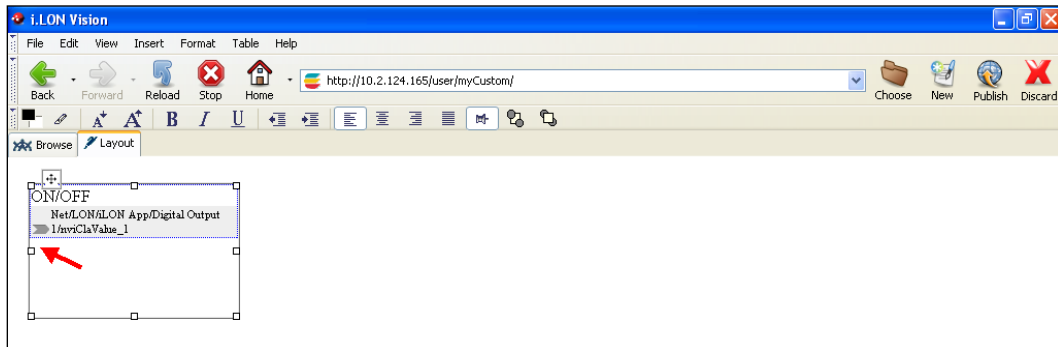
Note: To display layers in the **Layout** tab, click **File** and then click **Preferences**. In the **Preferences** dialog, select the **Show Layers** check box, and then click **OK**.

5. Prepare to place the cut object above or below the current object in the destination Layer.

   - To place the object being moved above the current object in the destination Layer, press ENTER multiple times to provide sufficient space for all the objects in the Layer, and then click the current object and drag it downwards within the Layer. Click anywhere above the current object.

   - To place the object being moved below the current object in the destination Layer, press ENTER multiple times to provide sufficient space for all the objects in the Layer.

6. Click **Edit** and then click **Paste** (or press CTRL+V). The object is pasted to the destination Layer.

7. Click **Publish** on the Editor toolbar ([Publish]), click the **Browse** tab, or click **File** and then click **Publish** to verify that the objects are positioned as desired in the Layer.
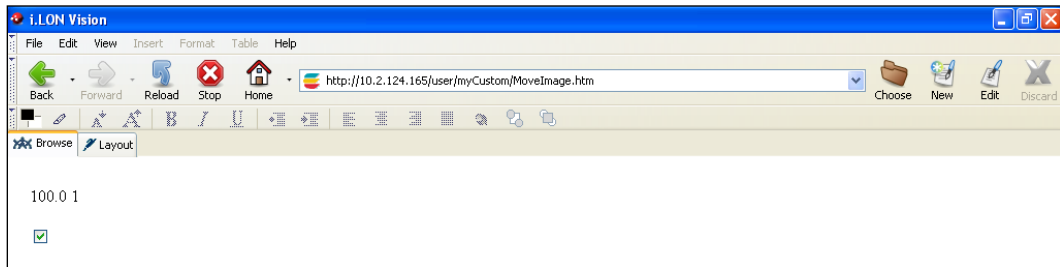
Adding i.LON Vision Objects to a Table

You can cut an i.LON Vision object and paste into a table. This may be useful if the layers containing the i.LON Vision objects are affecting the desired Web page design. To add an i.LON Vision object to a table, follow these steps:

1. Click the i.LON Vision object to be moved so that the object is highlighted blue
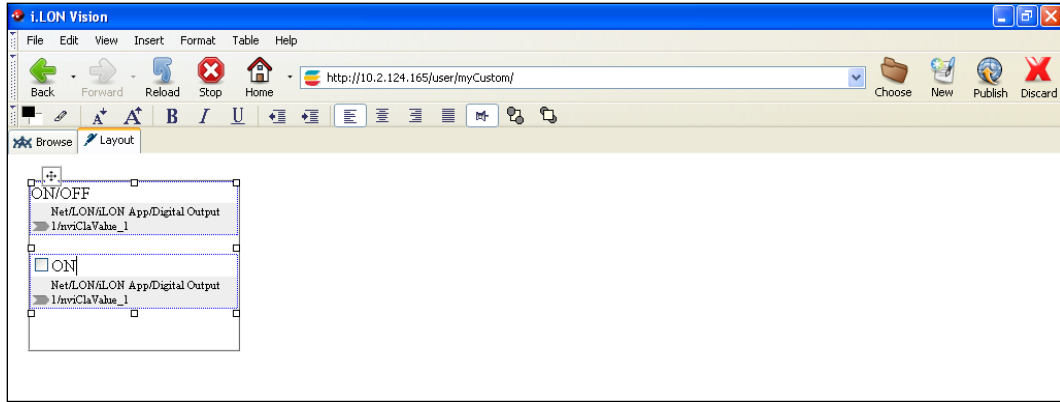
2. Click **Edit** and then click **Cut** (or press CTRL+X).

3. Delete the Layer previously containing the object being moved.

4. Click the destination table row.

5. Click **Edit** and then click **Paste** (or press CTRL+V). The object is pasted to the destination table row.

6. Repeat steps 1–6 for additional i.LON Vision objects to be placed in the table.

7. Click **Publish** on the Editor toolbar ([Publish]), click the **Browse** tab, or click **File** and then click **Publish** to verify that the objects are positioned as desired in the table.

Adding Images to a Layer

You can freely move the images added to your custom Web pages by placing them in i.LON Vision **Layer** objects. This may be useful because when you add images to your custom Web pages, they are added to the main layer of the Web pages and thus are difficult to move.

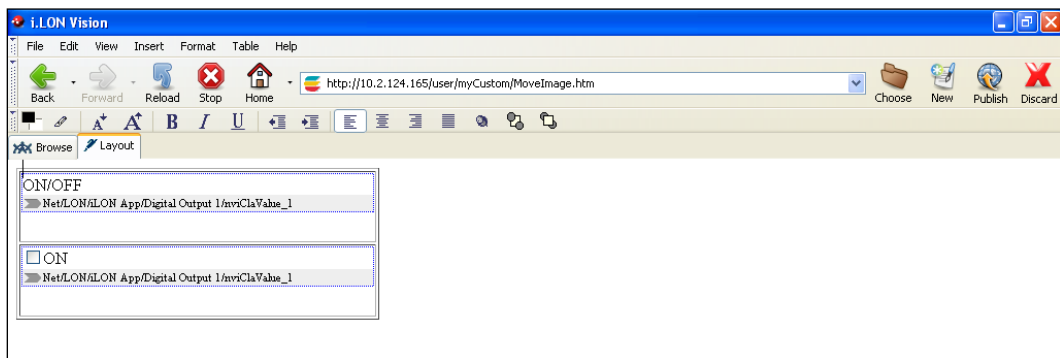You can create a new **Layer** object and add a new image to it, or you can move an existing image to a **Layer** object by cutting and pasting the image into the Layer. The following sections describe how to add an image to a Layer using both of these methods.

Adding a New Image to a Layer Object

To add an image to a Layer object, follow these steps:

1. Click **Insert**, point to **HTML Elements**, and then select **Layer**. A Layer object is added to the upper left-hand corner of **Layout** tab.

2. Move the **Layer** object to an empty space in the **Layout** tab to simplify your Web design. To do this, click the Layer, and then move the mouse pointer over the move icon on the upper-left side of the object's layer so that the mouse pointer becomes a move tool (⊕). Click the move icon so that the Layer becomes red, and then drag the Layer to the desired location.

3. Once you have moved the Layer, click anywhere in the Layer so that the solid black box appears around the Layer.

4. Click **Insert**, point to **HTML Elements**, and then select **Image**. The **Image Properties** dialog opens.

5. Click **Choose** to open the **Select File** dialog, browse to and select the desired image and then click **OK** to return to the **Image Properties** dialog.

6. Click **OK** to return to the **Layout** view. The selected image appears in the Layer.
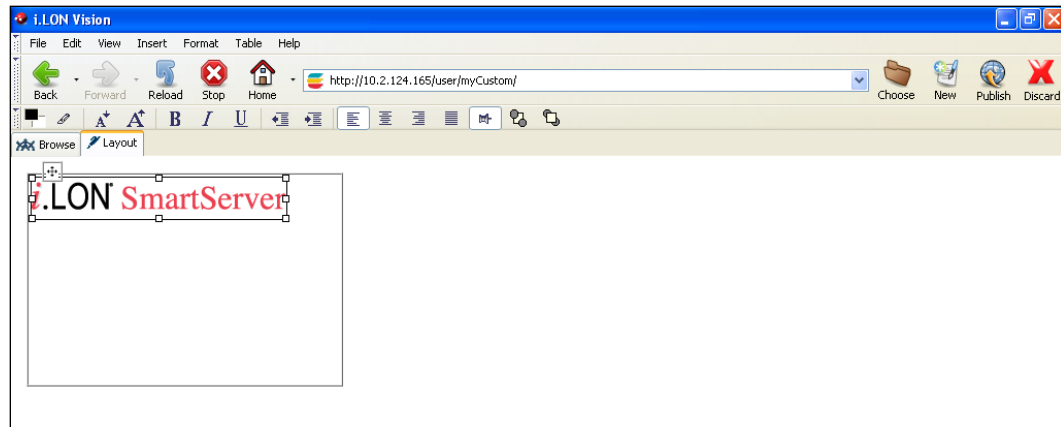
7. Re-size the **Layer** object containing the image and then move the Layer to the desired position within the custom Web page.

8. To overlap the Layer containing the image with other Layers, click the Layer so that a black box and move icon appear on the Layer box, click the move icon so that a red box appears around the Layer, and then right-click the Layer and select **Advanced Properties** on the shortcut menu. In the **Advanced Property Editor** dialog, click the **Inline** tab, click the **Z-index** property, modify the **Z-index** property, and then click **OK**.

- Increase the **Z-index** to place the selected Layer above other Layers (for example, set the **Z-index** to 2).

- Decrease the **Z-index** to place the selected Layer below other Layers (for example, set the **Z-index** to -1).

9. Click **Publish** on the Editor toolbar ([Publish]), click the **Browse** tab, or click **File** and then click **Publish** to verify that the images appear as desired in your custom Web page.
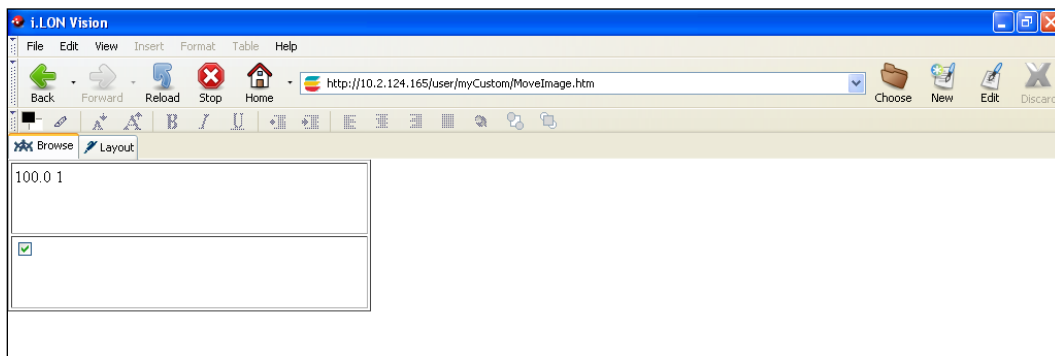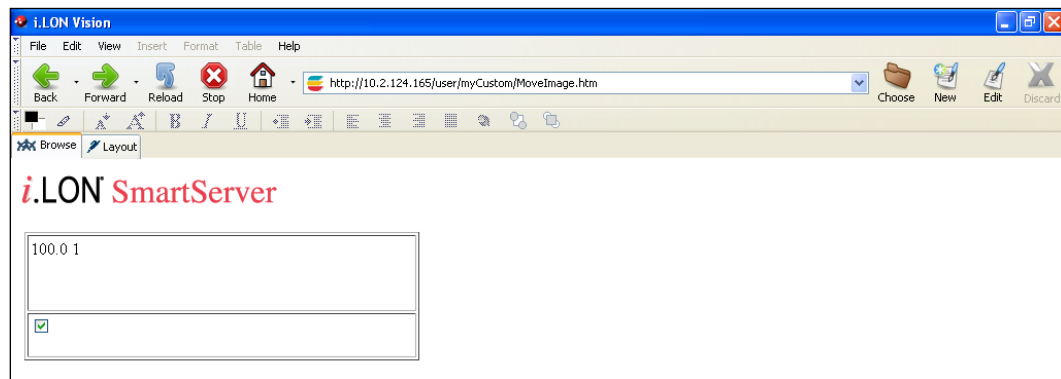

Moving an Existing Image to a Layer Object

If you need to move an existing image on your custom Web page to a layer, you can cut and paste the image into a Layer object. To do this, follow these steps:

1. Click **Insert**, point to **HTML Elements**, and then select **Layer**. A Layer object is added to the upper left-hand corner of **Layout** tab.
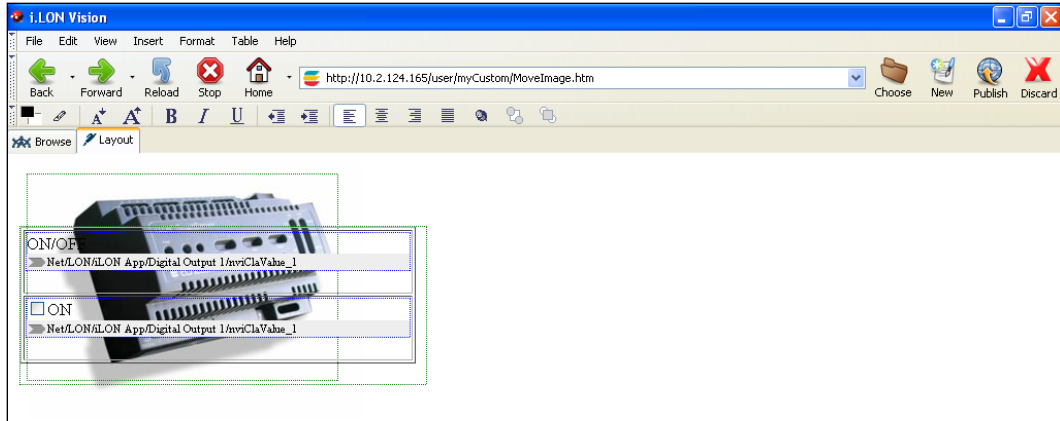
2. A Layer object is added to the upper-left hand corner of the menu frame.

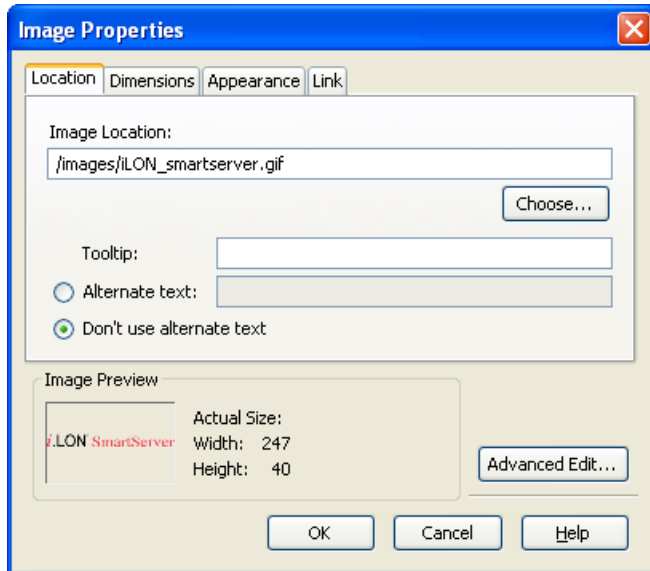3. Move the Layer object to an empty space in the Layout tab to simplify your Web design. To do this, click the Layer, and then move the mouse pointer over the move icon on the upper-left side of the object's layer so that the mouse pointer becomes a move tool (⊕). Click the move icon so that the Layer becomes red, and then drag the Layer to the desired location.
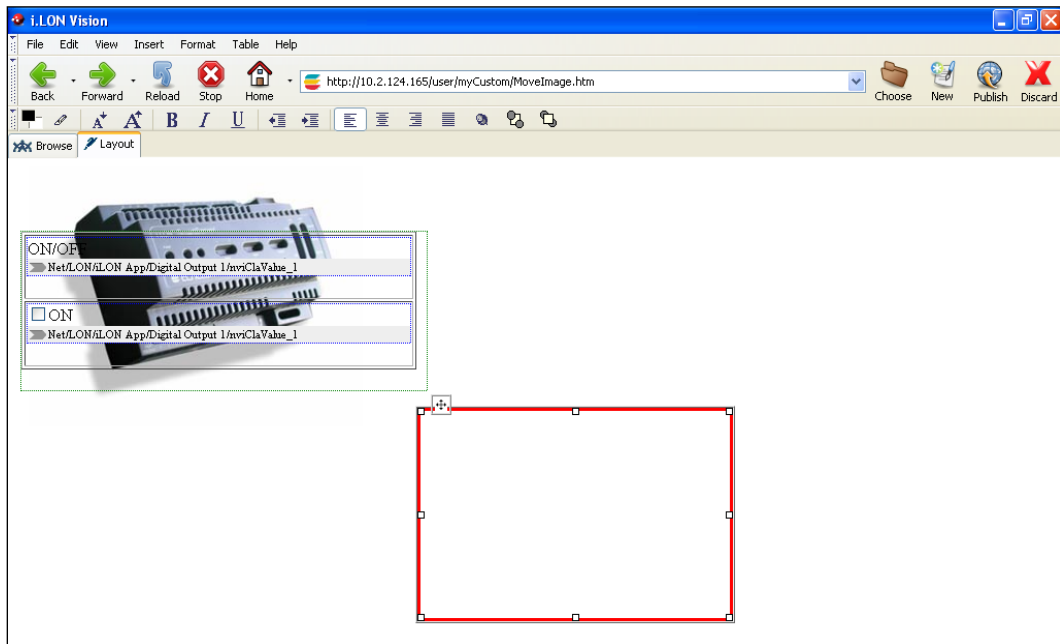
4. Cut and paste the image into the **Layer** object. To do this, right-click the image, select **Cut** on the shortcut menu, right-click anywhere in the Layer, and then click **CTRL +V** on the shortcut menu. The image appears in the **Layer** object.
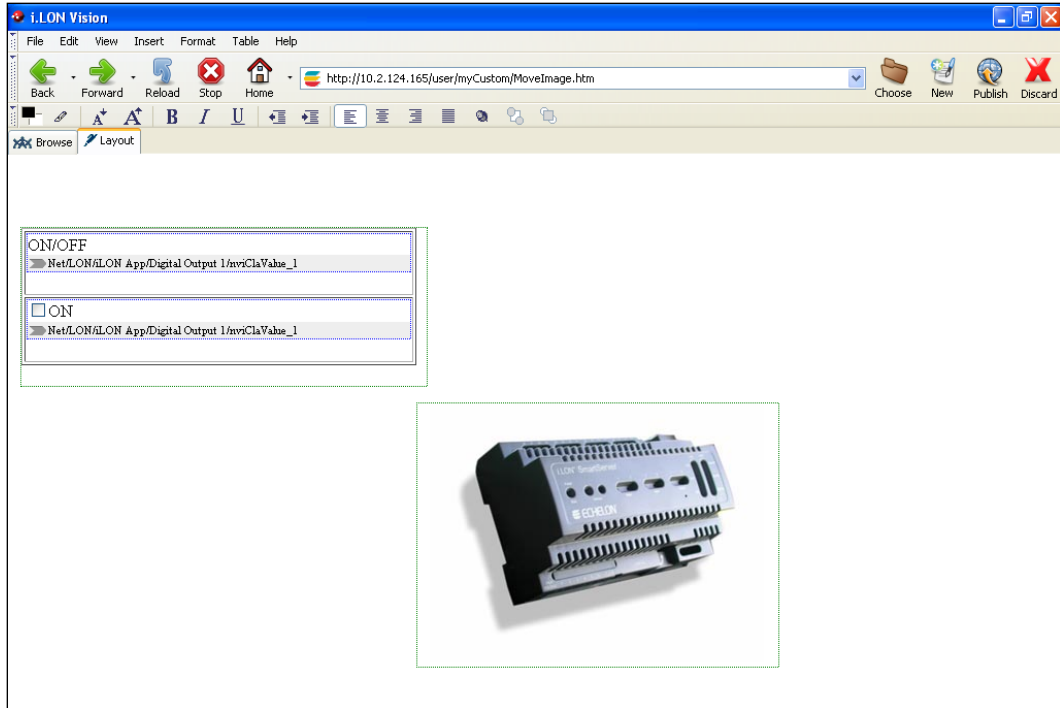
5. Re-size the **Layer** object containing the image and then move the Layer to the desired position within the custom Web page.

6. To overlap the Layer containing the image with other Layers, click the Layer so that a black box and move icon appear on the Layer box, click the move icon so that a red box appears around the Layer, and then right-click the Layer and select **Advanced Properties** on the shortcut menu. In the **Advanced Property Editor** dialog, click the **Inline** tab, click the **Z-index** property, modify the **Z-index** property, and then click **OK**.

- Increase the **Z-index** to place the selected Layer above other Layers (for example, set the **Z-index** to 2).

- Decrease the **Z-index** to place the selected Layer below other Layers (for example, set the **Z-index** to -1).
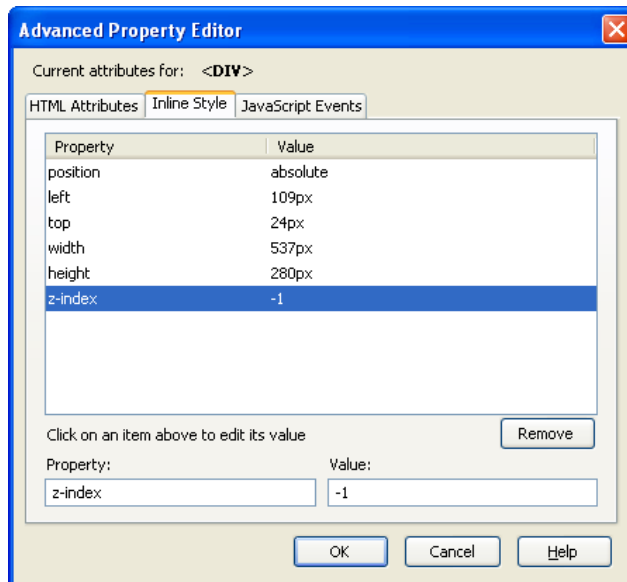
7. If you overlapped the Layer containing the image, it appears above or below the other Layers on your Web page.
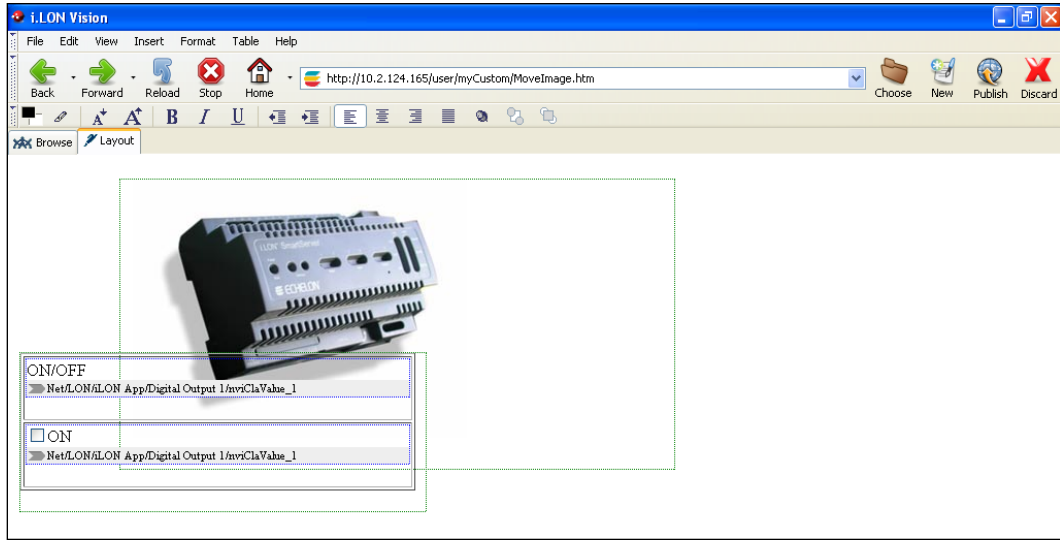
8. Click **Publish** on the Editor toolbar (![Publish]), click the **Browse** tab, or click **File** and then click **Publish** to verify that the images appear as desired in your custom Web page.
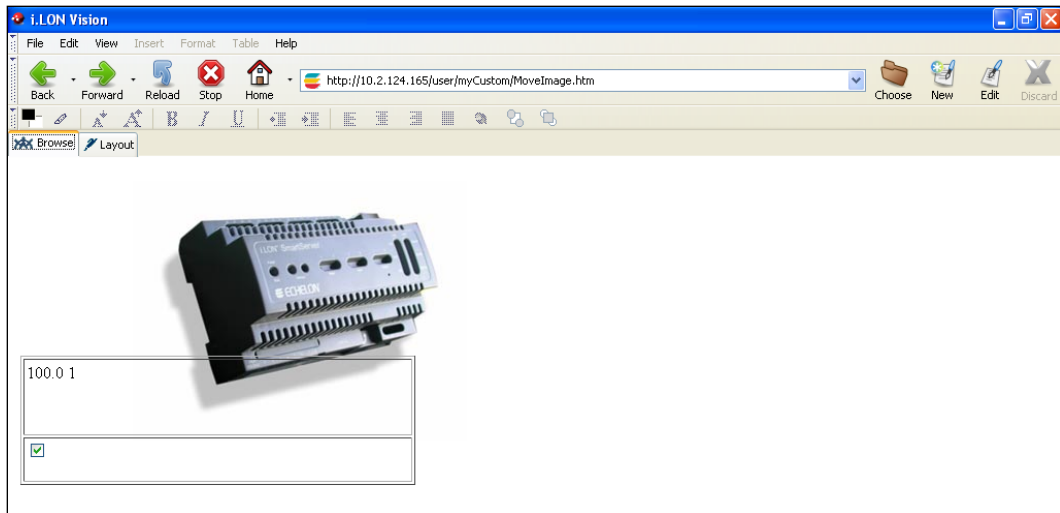
Securing Custom SmartServer Web Pages

You can use the **i.LON Server Web Server Parameters** utility to create security settings that will requires users to provide a user name and password each time they access the files stored in the custom directory you created for your custom SmartServer 2.2 Web pages. For more information on the **i.LON Server Web Server Parameters** utility, see Appendix C.

Using an External Web Publishing Tool

You can use a third-party Web design tool to enhance your Web design layout, perform ad-hoc editing, implement cascading style sheets, and insert Flash objects into your Web pages. Echelon has tested the following tools on Web pages designed with i.LON Vision 2.2: Adobe Dreamweaver, UltraEdit, and CuteFTP.

All of these tools let you directly access the custom Web pages on your SmartServer's flash disk via FTP and edit them in a text view—you do not need to manually download your Web pages to your computer, edit them, and the upload them back to your SmartServer when you use these tools. The API for the i.LON Vision objects is provided in Chapter 5, i.LON Vision 2.2 *API*, to help you edit your Web pages with an external tool such as these. In addition to a text view, Adobe Dreamweaver includes a similar layout view as i.LON Vision 2.2 that lets you implement advanced layout techniques.

Note: If you are editing your custom Web pages with an external editor and i.LON Vision 2.2 concurrently, you must reload your custom Web pages in i.LON Vision 2.2 after editing and saving them with an external Web design tool. After you reload your custom Web pages, you can edit them with i.LON Vision 2.2.

Troubleshooting Custom Web Page Designs

This section describes some of the problems that you could encounter when creating your custom Web pages.

I modified my Web page, but I don't see the changes when I open it with my Web browser.

This could be due to cached pages being displayed by Internet Explorer. To correct this with Internet Explorer, select Internet Options from Internet Explorer's Tools menu. The Internet Options window appears. Click the Delete Files buttons. Then, click the refresh button on the Internet Explorer tool bar to refresh the screen.

I linked all of my Web pages from the SmartServer's home page, but I can't get to my custom Web pages.

If you added the frameset object to your Web pages, you need to link to the **index.htm** file in your **/web/user/**<*Custom*> folder, and not to any of your custom Web pages.

After I've accessed my custom Web pages, I cannot use Internet Explorer's Back button to go back to my SmartServer's home page.

You can get back to your SmartServer's home page by using the Back button pull down and selecting i.LON from the list. You can avoid this problem completely by using a Frameset Properties object on the main Web page, or by have your custom Web page start in a new Web browser window.

I do not see anything on my first custom Web page.

Look at the properties of the Frameset object from the Sidebar.htm, Menu.htm, or Copyright.htm pages, and make sure that you have selected a default Web page.

I copied my custom Web page directory into a new directory with FTP but I cannot see any of my new changes.

You copied the files but all the links are for the old directory. You need to change any link that that has your custom Web page directory included in the path. Also, check your Sidebar.htm and Menu.htm links.

I added an image to my Web page but I cannot move it around.

This image is not an i.LON Vision object, so it was added to the Web page main layer. You need to move the image from the main layer to an i.LON Vision layer object. You can do this by adding an i.LON Vision Layer object, selecting the image and cutting it (CTL-X), and then selecting the new Layer and pasting the image (CTL-V).

5

i.LON Vision 2.2 API

This chapter describes the programming interface used by i.LON Vision objects.

Introduction

This chapter provides the programming interface for the i.LON Vision objects. You can use this API to edit custom SmartServer 2.2 Web pages with any third-party Web publishing tool. This chapter provides the requirements for SmartServer 2.2 Web pages, general properties required by all of the i.LON Vision objects, and specific properties required by the various i.LON Vision objects.

Custom Web Page Requirements

All HTML pages including i.LON Vision objects require the following code snippet embedded in a SCRIPT element:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html;charset=utf-8">
        <title>Examples</title>
        <script type="text/javascript"
         src="/scripts/echelon/EchelonInit.js"></script>
    </head>
</html>
```

General Object Requirements

The following table lists the parameters required by all i.LON Vision objects.

elon_type   The type of i.LON Vision object (for example, textfield, image, or radio). The following table lists the **elon_type** for each i.LON Vision object.

Object Type	elon_type
Show Value	showvalue
Text Field	textfield
Text Area	textarea
Combo Box	combo
Image Swapper	image
Radio Buttons	radio
Select Box	select
Check Box	checkbox
SVG Object	svgcontrol
Custom JavaScript	generic
Data Point View	ViewDataPoints
Data Log View	UFPTdataLogger_View
Scheduler	SCHEDULER_YEAR or SCHEDULER_WEEK
Alarm Notifier	UFPTalarmNotifier_Summary_View or UFPTalarmNotifier_History_View

elon_name *elon_alias_name*	The key to a specific data point or application instance.
	For data points, you can provide **elon_name** and specify the data point's UCPTname property (*network/channel/device/functional block/data point*), or you can provide **elon_alias_name** and provide the data point's alias name. You can add, edit, and enable/disable alias names for a data point from its **Configure - Data Points** Web Page in the built-in SmartServer Web pages. To do this, click the **General** option above the navigation pane on the left side of the SmartServer Web interface, and then click the data point in the navigation pane. The **Alias Name** property is located near the top of the Web page.
	For application instances (Scheduler, Data Logger, or Alarm Notifier), you can provide **elon_name** and specify the functional block's UCPTname property (*network/channel/device/functional block*).
elon_name_arr	If the object is able to display multiple data points, the data points are defined inside an **elon_name_arr** array. This array contains either an array of strings or an array of objects (if parameters are required for each data point).
elon_feedback_name *elon_feedback_alias_name*	All objects providing a user interface to a single data point (or one of its fields) offer the optional parameter **elon_feedback_name** (or **elon_feedback_alias_name**, respectively). If you provide this parameter, the object displays data from the data point specified as a feedback, while changes are written to the data point given in **elon_name** (or **elon_alias_name**, respectively).
	Only specify a feedback data point if it is bound to the data point specified in **elon_name** (or **elon_alias_name**) via device hardware, a LONWORKS connection, or a Web connection. After you write to the data point, the object is disabled until its feedback data point reports a change.
elon_lang [string]	For all application objects (Data Point View, Data Logger View, Scheduler, or Alarm Notifier), specify the language in which the object is displayed. The default language is English (**en**), and you can enter German (**de**), French (**fr**), or the language code corresponding to the one-byte or two-byte character language to which you have translated the application object.
	You can perform language localization for the application objects using either the demo version of the SmartServer 2.2 Programming Tools included on the SmartServer 2.2 DVD or using the full version on the SmartServer 2.2 Programming Tools included on the SmartServer 2.2 Programming Tools DVD. For more information on ordering the SmartServer 2.2 Programming Tools DVD, contact your Echelon sales representative.
	For more information on localizing the language of the SmartServer Web pages, see the *SmartServer 2.2 Programming Tools User's Guide*.

Object-Specific Properties

The following sections provide the proprieties required by the various i.LON Vision objects.

Show Value Properties

The **Show Value** object is a simple read-only control that displays the current data point value either as a preset (if defined for the data point) or as a raw value.

The following table lists the properties of the **Show Value** object:

Link	A **Show Value** object may serve as a clickable link if you define **href** and **target** HTML attributes. You can open the link in a pop-up dialog by setting **target** to "popup" and setting the **popup_width** and **popup_height** properties.

Text Field Properties

The **Text Field** object is a simple read/write text box that displays the current data point value either as a preset (if defined for the data point) or as a raw value. You can update the data point by typing a valid value and pressing ENTER.

The following table lists the properties of the **Text Field** object:

elon_size [int]	The number of characters to display in the control. If you not specify this property, the size is set to number of characters in the largest preset name.
elon_max_length [int]	The maximum number of characters the text field can display. Make this large enough to display the values that could be assigned to the data point you have selected
elon_align [string]	Specify **Left** or **Right** to align the data point value in the text field.

Text Area Properties

The **Text Area** is the same as the **Text Field** object, but it allows multiple lines.

The following table lists the properties of the **Text Area** object:

rows (HTML attribute)	The number of rows of in the text area. Each row displays the value of the data point after a recent update. For example, if you specify 5, the text area displays the last five values written to the data point.
cols (HTML attribute)	The maximum number of characters the text field can display. You should make sure this is large enough to display the values that could be assigned to the data point you have selected
elon_prepend [boolean] *elon_append [boolean]*	Specify whether the most recent data point updates are listed at the top (elon_prepend = "TRUE") or the bottom (elon_append = "TRUE") of the text area. The default is bottom.

Combo Box Properties

The **Combo Box** displays the current data point value either as a preset (if defined for the data point) or as a raw value in the text box, and it lists the presets defined for the data point in the attached list box. You can write to the data point or field by entering a value in the text box or selecting one of the presets defined for the data point from the list box

The following table lists the properties of the **Combo Box** object:

elon_size [int]	The width of the box in pixels.

Image Swapper Properties

The **Image Swapper** includes an array of images that are linked to the presets defined for the data point based on the order of the images. For example, the first preset is mapped to the first image, the second preset is mapped to the second image, and so on. When you click an image, the value defined by the next preset in the list is written to the data point, and the image is toggled to the next in the list after the value has been read back.

The following table lists the properties of the **Combo Box** object:

elon_img_arr [string]	A JavaScript-like array (["XXX","xxx","yyy"]) of links to GIFs, JPGs, PNGs, and other image files to be linked to presets defined for the data point.
elon_default_img [string]:	The name of image to be displayed if the data point value is unknown or cannot be found in the preset list.
elon_default_next [string]	The preset to be written to the data point if the default image is clicked.

Radio Buttons Properties

The **Radio Buttons** object builds radio buttons for each preset or enumerated value defined for a data point and displays the name of the preset or enumeration to the right of the buttons. The current data point value is indicated by which button is selected (if the data point is not currently set to one of the presets or enumerations, no button is selected). The user can write to the data point by selecting one of the buttons. The radio buttons are aligned vertically by default so that the first preset is on the top, and each subsequent preset is lined up underneath, but you can also align the buttons horizontally.

The following table lists the properties of the **Radio Buttons** object:

elon_max_length [int]	The maximum number of radio buttons. If you omit this property, or the value specified is larger than the total number of presets or enumerations, a single radio button with text label is built for each preset or enumeration.
elon_inline [boolean]	Specifies whether the buttons are aligned vertically (TRUE) or horizontally (FALSE).

Select Box Properties

The **Select Box** object displays the current data point value as a preset in a read-only text box if one is defined for the value. If no preset is defined for the value, the text box is blank. The user can write to the data point or field by selecting a preset or enumeration from the attached list box.

The **Select Box** has no object-specific properties.

Check Box Properties

The **Check Box** object displays a check box that represents the first preset defined for the data point when checked, and the second preset defined for the data point when cleared. The user can write to the data point by selecting or clearing the check box. If the data point is set to a value not defined by a preset, the check box is cleared.

The following table lists the properties of the **Check Box** object:

value_def_name_checked [string]	The preset specified for the checked state.
value_def_name_unchecked [string]	The preset specified for the cleared state.

Custom JavaScript Properties

The **Custom JavaScript** object is a specialized dynamic C++ object that can read and write to a data point's value, state, name, priority, format description, and unit string. You can use the **Custom JavaScript** object to create objects ranging from simple HTML objects to intricate flash presentations. When your **Custom JavaScript** object is initialized, the Echelon library starts polling the selected data point and passes the data point to the update method in your Custom JavaScript object if any of the data point properties change. See *Custom JavaScript Object* in Chapter 3 for how to create a **Custom JavaScript** object.

The following table lists the properties of the **Custom JavaScript** object:

elon_javascript_class [string]	The name of the JavaScript class implementing your custom JavaScript object, relative to the **/web/scripts** folder on the SmartServer flash disk (do not include the **.js** extension).

To create a **Custom JavaScript** object, follow these steps:

1. Write your HTML/JavaScript code. In your code, you must implement the following JavaScript class, which enables updates to the specified data point property to be passed your custom object :

```
//Simplified class declaration replaces the previous
//function <CustomJavascriptClass>(argObj) declaration

Echelon.CustomJavascript["CustomJavascriptClass"] = function(argObj)
{
    // Public method that handles SOAP objects
    this.update = function(type, item)
    {
        if (type=="Dp_Data")
        {
            //Get DP property
            m_domObj.innerHTML = item.UCPT<DP property>.get();

            /* You can get and set these DP properties from 'item'
              UCPTname
              UCPTvalue[index]
              UCPTvalue[index].LonFormat
              UCPTvalue[index].Unit
              UCPTpriority
              UCPTpointStatus*/
        }
    }

    // Constructor that instantiates your JavaScript class and
    // specifies the DOM object to which it belongs

    var m_domObj = argObj.domObj;

    };
```

Note: You must set the **UCPTvalue[*index*].LonFormat** property to the appropriate SNVT, UNVT, SCPT, or UCPT if you are writing formatted values to certain data point types. In

addition, the formatted values must be written as strings to those data point types. If you are using presets to write to the data points, you do not need to set this property.

The data point types requiring the LonFormat property are as follows:

- Structured data points (for example, **SNVT_switch**). For example, if you are writing 100.0 1 to a **SNVT_switch** data point, you must set this property.

```
m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_switch");
m_myDp.UCPTvalue[0].set("0.0 0");
```

- Enumerated data points (for example,**SNVT_hvac_mode**) and enumerated fields within structured data points (for example, **SNVT_scene.function**).

```
m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_hvac_mode");
        m_myDp.UCPTvalue[0].set("HVAC_COOL");
m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_scene.function");
m_myDp.UCPTvalue[0].set("SC_RECALL");
```

- Fields within structured data points that are not of a floating-point or integral type (for example,**SNVT_switch.state**).

```
m_myDp.UCPTvalue[0].LonFormat.set("#0000000000000000[0].SNVT_switch.state");
m_myDp.UCPTvalue[0].set("0");
```

2. If you plan on writing to data point properties, implement the following code in your JavaScript class:

```
// Custom "Soap Server Object" required to write to DPs
argObj.sso.Write(Item);
```

CUSTOM JAVASCRIPT CLASS EXAMPLE

The following JavaScript class demonstrates how to read and write data point values in a custom JavaScript object. This JavaScript class creates two buttons that you can use to increment and decrement the value stored in a data point. It also creates a text area that displays the current value stored in the data points and a span that displays the name of the data point.

Note: You can use this object on any scalar data point or field within a structured data point that is of an integral or floating-point type.
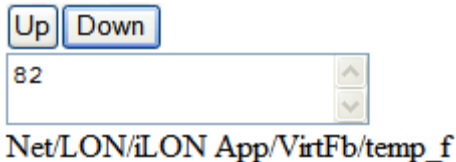

```
Echelon.CustomJavascript[Simple_Add_Subtract] = function(argObj)
{
        this.update = function(type, item)
        {
                if (type=="Dp_Data")
                {
                    m_textarea.innerHTML = item.UCPTvalue[0].get();
                    m_span.innerHTML = item.UCPTname.get();
                    m_myDp = item;
                }
        }

        var handleIncrement = function(evt)
        {
                value = m_myDp.UCPTvalue[0].get();
                value++;
                m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
                m_myDp.UCPTvalue[0].set(value);
                m_sso.Write(m_myDp);
        }
```

```
        var handleDecrement = function(evt)
        {
                value = m_myDp.UCPTvalue[0].get();
                value--;
                m_myDp.UCPTvalue.splice(0, m_myDp.UCPTvalue.length-1);
                m_myDp.UCPTvalue[0].set(value);
                m_sso.Write(m_myDp);
        }

        var m_myDp;
        var m_sso = argObj.sso;
        var m_domObj = argObj.domObj;

   //create buttons to write to DP value

   var m_incrementButton =
   m_domObj.appendChild(document.createElement("button"));

   var m_decrementButton =
   m_domObj.appendChild(document.createElement("button"));

   var break1 = m_domObj.appendChild(document.createElement("br"));

       //add text and click events to buttons

   m_incrementButton.innerHTML = "Up";
       m_decrementButton.innerHTML="Down";
       m_incrementButton.attachEvent("onclick", handleIncrement);
       m_decrementButton.attachEvent("onclick", handleDecrement);

       //create text area reading DP value

   var m_textarea = m_domObj.appendChild(document.createElement("textarea"));

   var break2 = m_domObj.appendChild(document.createElement("br"));

   //create span reading DP name

   var m_span = m_
```

3. Optionally, you can define custom arguments in your JavaScript code and then specify values for them with the **Custom JavaScript** object. This feature lets you create reusable **Custom JavaScript** objects. For example, you can define upper and lower limit arguments in your JavaScript code and then define values for those limits with the **Custom JavaScript** object. When the data point value reaches one of the limits, you could, for example, change the color of the text in the **Custom JavaScript** object. The upper and lower limits may depend on the data point type, a specific network condition, or other scenario.

    To use custom arguments in your JavaScript code, follow these steps:

    a. In your JavaScript code, create a reference to **argObj.customArgs** in the constructor, and define some descriptive placeholder for the customArgs property of the reference. For example, do the following:

    ```
    var m_myArgs = argObj.customArgs;
    ```

    b. Reference your custom arguments using the following format:

    ```
    customArgReference["customArg"]
    ```

    The following code sample demonstrates how to create custom argument references:

    ```
    m_text_value.style.color = m_myArgs["HIGH_COLOR"];
    m_text_value.style.color = m_myArgs["LOW_COLOR"];
    ```

    c. Insert an enumeration in the constructor that includes all your custom arguments using the following format:

    ```
    ELON_CUSTOM_ARGS = ["<argName>", "<argName>", …]
    ```

The following code sample demonstrates how to create the custom arguments enumeration:

```
this.ELON_CUSTOM_ARGS =["HIGH_COLOR", LOW_COLOR"];
```

CUSTOM ARGUMENT EXAMPLE

The following code sample demonstrates how to create keys in your JavaScript file and assign data points to them, as well as how to use custom arguments in your JavaScript code. This example expands the previous single data point custom argument example in that the state of a **SNVT_switch** data point determines whether the value and format of another data point are highlighted yellow or grey. In addition, this example provides custom arguments for informative messages related to the current data point value. This message could be tailored based on the type of data point being monitored and controlled by the Custom JavaScript object.

```
Data Point Name = Net/LON/iLON App/Digital Output 1/nviClaValue_1
Value = 25.0 1
```

```
Data Point Name = Net/LON/iLON App/Digital Output 1/nviClaValue_1
Value = 0.0 0
```

```
Echelon.CustomJavascript["CustomArgsExample_MultDp"] = function(argObj)
{
    this.update =
    {
      // Create data point key for background color
      "ELON_DP_KEY:Background": function(type, item)
      {
       m_span_string.style.fontWeight = 700;

          //Create custom argument references

      if(item.UCPTvalue[0].get() >= m_myArgs["BKGRD_ON_COND"])
      {
          m_span_value.style.background = m_myArgs["BKGRD_COLOR_ON"];
          m_span_string.innerHTML  = m_myArgs["BKGRD_TEXT_ON"];
      }

       else if(item.UCPTvalue[0].get() <= m_myArgs["BKGRD_OFF_COND"])
          {
              m_span_value.style.background = m_myArgs["BKGRD_COLOR_OFF"];
              m_span_string.innerHTML = m_myArgs["BKGRD_TEXT_OFF"];
      }
      },

       // Create data point key for displaying dp name, value, and format
      "ELON_DP_KEY:Value": function(type, item)
      {
          //Create custom argument references
        m_span_name.innerHTML = item.UCPTname.get();
        m_span_value.innerHTML = item.UCPTvalue[0].get();
        m_span_format.innerHTML = item.UCPTvalue[0].Unit.get();

        if (m_span_value.innerHTML>m_myArgs["HIGH_VALUE"])
        {
          m_span_value.style.color = m_myArgs["HIGH_COLOR"];
          m_span_format.style.color = m_myArgs["HIGH_COLOR"];
        }

         else if (m_span_value.innerHTML<m_myArgs["LOW_VALUE"])
        {
              m_span_value.style.color = m_myArgs["LOW_COLOR"];
          m_span_format.style.color = m_myArgs["LOW_COLOR"];
          }

        else
        {
          m_span_value.style.color = m_myArgs["NORMAL_COLOR"];
```

```
                m_span_format.style.color = m_myArgs["NORMAL_COLOR"];
            }
        }
    }

    //Create reference to argObj.customArgs
    var m_myArgs = argObj.customArgs;

        //Create custom arguments enumeration
        this.ELON_CUSTOM_ARGS=["HIGH_VALUE", "HIGH_COLOR",
            "LOW_VALUE","LOW_COLOR","NORMAL_COLOR", "BKGRD_COLOR_ON",
            "BKGRD_COLOR_OFF", "BKGRD_OFF_COND", "BKGRD_ON_COND",
            "BKGRD_TEXT_ON", "BKGRD_TEXT_OFF"];

    var m_domObj = argObj.domObj;

    var DP_name_text =
        m_domObj.appendChild(document.createTextNode("Data Point Name = "));
    var m_span_name = m_domObj.appendChild(document.createElement("span"));
    var break0 = m_domObj.appendChild(document.createElement("br"));

    var DP_value_text = m_domObj.appendChild(document.createTextNode("Value = "))
    var m_span_value = m_domObj.appendChild(document.createElement("span"));
    var space_text = m_domObj.appendChild(document.createTextNode(" "));
    var m_span_format = m_domObj.appendChild(document.createElement("text"));
    var break1 = m_domObj.appendChild(document.createElement("br"));
    var break1 = m_domObj.appendChild(document.createElement("br"));

    var m_span_note = m_domObj.appendChild(document.createElement("span"));
    m_span_note.innerHTML = "Message: ";
    m_span_note.style.fontWeight = 700;

    var m_span_string = m_domObj.appendChild(document.createElement("span"));
};
```

Data Point View Properties

The **Data Point View** object includes a log that displays the current values and states of the selected data points, a trend graph that charts the data point values over a specified interval, and combo boxes for writing values to the data points. You can use the **Data Point View** object to monitor, chart, and control selected data points.

The following table lists the properties of the **Data Point View** object:

elon_layout [string]	Set this property to either **graph** (trend graph), **table** (log), or **graphtable** (for both the log and trend graph).
elon_show_grid [boolean]	If you set *elon_layout [string]* to **graph** or **graphtable**, specify whether the trend graph displays a grid in the background.

Data Log View Properties

The **Data Log View** object is a log that lists the data point updates recorded by a specific Data Logger on the SmartServer.

The following table lists the properties of the **Data Log View** object:

elon_name	The key to a specific Data Logger instance. Specify the UCPTname property of the data logger's functional block in the following format: *network/channel/device/functional block*.
elon_layout [string]	Set this property to either **graph** (trend graph), **table** (log), or **graphtable** (for both the log and trend graph).

| *elon_show_grid [boolean]* | If you set *elon_layout [string]* to **graph** or **graphtable**, specify whether the trend graph displays a grid in the background. |

Scheduler Properties

The **Scheduler** object is a weekly calendar that lists the events to be executed regularly each day the week, or a yearly calendar highlighting the days in which exceptions to the daily schedule are to be executed.

The following table lists the properties of the **Scheduler** object:

elon_name	The key to a specific Scheduler instance. Specify the UCPTname property of the scheduler's functional block in the following format: *network/channel/device/functional block*.
elon_type	Set this property to one of the following values: • **SCHEDULER_YEAR**. A yearly calendar highlighting the days in which exceptions to the daily schedule are to be executed. • **SCHEDULER_WEEK**. A weekly calendar that lists the events to be executed regularly each day the week.
elon_usage	Set this property to one of the following values: • **view**. The user can click a date in the yearly calendar to open the **View: <***yyyy*-*mm*-*dd***>** dialog. The user can then view the schedule for that date, which lists the events in both the daily and exception schedules as they are programmed to be executed. • **config**. The user can create separate schedules for individual days and change the days for which a daily schedule is applicable. The user can also click a day in the weekly schedule to open the **Configure: Daily Schedules** dialog. The user can use this dialog to add, edit, and delete the events planned for a given set of days (weekdays, weekend days, or other alignment).
elon_year_start	If you set *elon_type* to **SCHEDULER_YEAR**, select the method used to determine which week in January is labeled week **1** under the **Wk** column. Set this property to one of the following values: • **0** (ISO). Week 1 is based on ISO 8601. This is the default. • **1** (Week of Jan 1st). The week containing January 1st is labeled Week 1. • **2** (First Full Week). The first week in January containing seven dates that all fall in the month is labeled Week 1.

elon_week_start [0–6]	Specify the first day to be shown in the weekly or yearly calendar. Set this property to one of the following values:

> **0** Sunday. This is the default.
> **1** Monday
> **2** Tuesday
> **3** Wednesday
> **4** Thursday
> **5** Friday
> **6** Saturday

elon_show_week [boolean]	If you set *elon_type* to **SCHEDULER_YEAR**, specify whether week numbers are shown on the yearly calendar (TRUE) or hidden (FALSE).
elon_max_cols [integer]	If you set *elon_type* to **SCHEDULER_YEAR**, select the maximum number of months displayed on the calendar at one time (1–3). The months are displayed contiguously over the specified number of columns. The default is 3 columns, which is also the maximum.
elon_max_rows [integer]	If you set *elon_type* to **SCHEDULER_YEAR**, select the maximum number of rows displayed on the calendar at one time. The default is 4 rows.

Alarm Notifier Properties

The **Alarm Notifier** object is either a log that that lists all currently active alarms reported by the SmartServer, a log that lists all active and cleared alarms recorded by the SmartServer, or an e-mail message to be sent to a technician, maintenance company, or other personnel notifying them of an alarm condition.

The following table lists the properties of the **Alarm Notifier** object:

elon_name	The key to a specific Alarm Notifier instance. Specify the UCPTname property of the alarm notifier's functional block in the following format: *network/channel/device/functional block*.
elon_type	Set this property to one of the following values:

- **UFPTalarmNotifier_Summary_View**. A log that that lists all currently active alarms reported by the SmartServer. The user can use this log to acknowledge and clear active alarms. This option provides the functionality of the **Alarm Notifier: Summary** factory Web page.

- **UFPTalarmNotifier_History_View**. A log that lists all active and cleared alarms recorded by the SmartServer. The user can use this object to view a historical list of alarms. This option provides the functionality of the **Alarm Notifier: History** factory Web page.