ECHELON®

Echelon Enterprise Services 2.0 User's Guide

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Preface

Echelon Enterprise Services 2.0 includes the *i*.LON AdminServer and the LNS Proxy Web service. The i.LON AdminServer is a Web application that you can use to manage and deploy SmartServers. The LNS Proxy is a Web service enables the SmartServer to directly communicate with LNS Server computers.

Purpose

This document describes how to use the *i*.LON AdminServer and LNS Proxy Web service included in Echelon Enterprise Services 2.0 (EES 2.0).

Audience

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

Hardware Requirements

Requirements for the running the Echelon Enterprise Services 2.0 software are listed below:

- Microsoft® Windows Vista® or Microsoft Windows® XP. Echelon recommends that you install the latest service pack available from Microsoft for your version of Windows.
- Intel® Pentium® IV 1.5 GHz processor or faster, and meeting the minimum Windows requirements for the selected version of Windows.
- 1 GB RAM minimum.

  Note: Windows Vista testing for all *i*.LON SmartServer 2.0 products has been performed on computers that have a minimum of 2 GB of RAM. For complete Windows Vista requirements, refer to *www.microsoft.com/windows/windows-vista/get/system-requirements.aspx*. You can use Microsoft's Vista Upgrade Advisor to determine upgrade requirements for a particular computer. To download this tool, go to the Microsoft Web site at *www.microsoft.com/windows/windows-vista/get/upgrade-advisor.aspx*.
- Up to 640 megabytes (MB) free hard-disk space, plus the minimum Windows requirements for the selected version of Windows.
  - The *i*.LON SmartServer 2.0 software requires 105 MB of free space. If you plan on using the *i*.LON AdminServer included with EES 2.0 to upgrade SmartServers, you must install the *i*.LON SmartServer 2.0 software on your computer.
  - Echelon Enterprise Services 2.0 requires 270 MB of free space. If you are running Echelon Enterprise Services 2.0 with a SmartServer operating in LNS mode, EES 2.0 must be installed on the LNS Server computer, and it may be installed on remote LNS clients.
  - LNS Turbo Editions 3.25 (or newer) requires 45 MB of free space. If you are running Echelon Enterprise Services 2.0 with a SmartServer operating in LNS mode, LNS Turbo Editions 3.25 (or newer) must be installed on the LNS Server computer and any remote LNS clients running EES 2.0. The LNS Server included with the *i*.LON LNS Server Editions is LNS Turbo Edition Release 3.25.
  - If you install Adobe® Reader 9.1 from the *i*.LON SmartServer 2.0 DVD, you need an additional 204 MB of free space. You need Adobe Reader or another PDF viewer to view the EES 2.0 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 2.0 with a SmartServer operating in LNS mode, LNS Turbo Editions (3.25) or newer is required.
- Microsoft Internet Explorer 7 or higher, or Mozilla Firefox 3.0 or higher.

SmartServer 2.0 Upgrade Requirements

You must have a SmartServer 2.0 license for each SmartServer 1.0 (a SmartServer running the Release 4, 4.01, or 4.02 firmware) or *i*.LON *e*3 plus Server to be upgraded to SmartServer 2.0 (a SmartServer running the Release 4.03 firmware).

You can the use the new *i*.LON AdminServer Web application included with Echelon Enterprise Services 2.0 to automatically upgrade your SmartServers. For more information on using the *i*.LON AdminServer to upgrade your SmartServers, see *Upgrading the SmartServer Firmware* in Chapter 2.

Note: To upgrade *i*.LON *e*3 plus Servers or SmartServers that have previously been downgraded to the *i*.LON 100 *e*3 version firmware to the SmartServer 2.0 (Release 4.03) firmware, you must first manually upgrade them to the SmartServer 1.0 (Release 4.02) firmware via FTP as described in Chapter 3 of the *i.LON SmartServer 2.0 User's Guide*.

i.LON SmartServer 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 SmartServer 2.0 Enterprise Services** program folder when you install the EES 2.0 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:

- *i.LON SmartServer 2.0 User's Guide*. Describes how to configure the SmartServer and use its applications to manage control networks.
- *Rapid Deployment Example for EES*. Describes how to assemble and install a demo board that you can use to test the new automatic network installation feature.
- *i.LON Vision 2.0 User's Guide*. Describes how to create custom Web pages for monitoring and controlling LONWORKS networks and other control networks.
- *i.LON SmartServer 2.0 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.
- *i.LON SmartServer 2.0 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.
- *i.LON SmartServer 2.0 Programming Tools User's Guide*. Describes how to write custom embedded applications called Freely Programmable Modules (FPMs) and deploy them on the SmartServer. FPMs let you implement custom functionality and tailor the SmartServer to meet your needs.
- *i.LON SmartServer 2.0 Hardware Guide*. Describes how to assemble, mount, and wire the SmartServer hardware.
- *i.LON SmartServer 2.0 Quick Start Guide*. Contains all the information you will need to connect the SmartServer hardware, install the i.LON SmartServer 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 *LONWORKS®/IP Configuration Server*. You will need this information if you plan to use the *i*.LON as an IP-852 router.

Content

This guide includes the following content:

- *Introduction*. Introduces EES 2.0, describes the *i*.LON AdminServer and LNS Proxy Web Service included with EES 2.0, and describes how to install the EES 2.0 software.
- *Using the i.LON AdminServer*. Describes how to use the *i*.LON AdminServer to create an *i*.LON project, create and deploy *i*.LON templates, upgrade *i*.LON images, backup and restore *i*.LON images and LNS network databases, and export and import *i*.LON projects, templates, and backups. Describes how to use the *i*.LON AdminServer to automatically install single-channel LNS managed or standalone networks containing up to approximately 20 devices.
- *Using the LNS Proxy Web Service*. Introduces the LNS Proxy Web service that is used for communication between the SmartServer and LNS network databases. Explains how to use the EES tray tool to start and stop the Tomcat 6 Server used with the LNS Proxy Web service, close LNS network databases opened by the LNS Proxy Web service, and modify access to the LNS Proxy Web service on your EES 2.0 computer. Describes how to use the LNS Proxy Web service as a standalone LNS network management tool, and how to integrate the LNS Proxy Web service with LNS network tools by synchronizing the SmartServer to an LNS network database and copying external data points in LNS network databases to the SmartServer. Describes how to troubleshoot the LNS Proxy Web service if a firewall is blocking access to it.

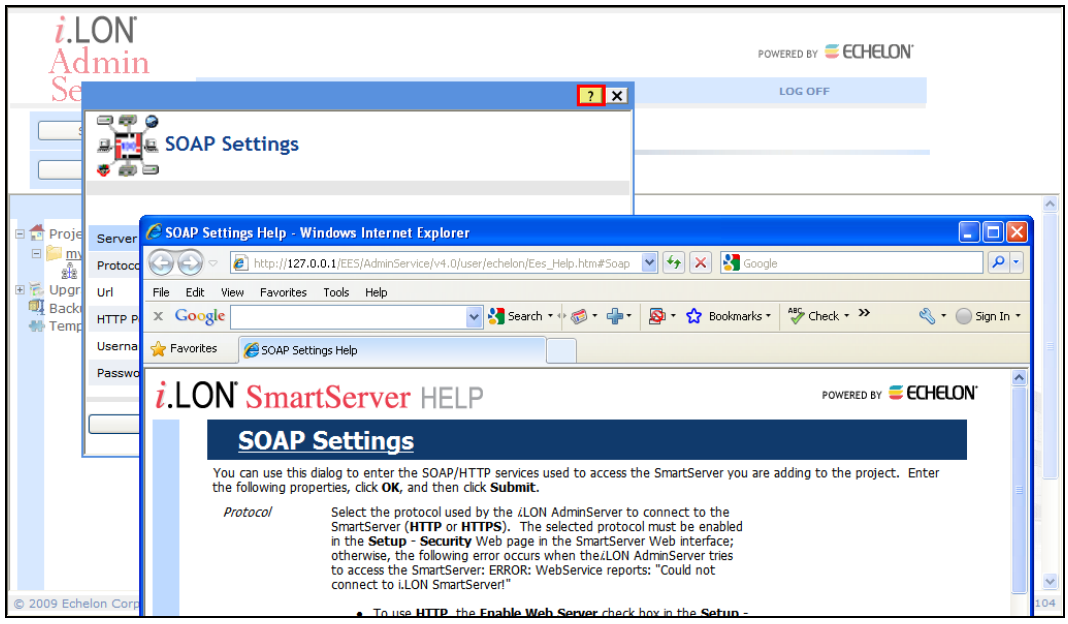
For More Information and Technical Support

If you need help using EES 2.0, you can use the online help files, view the EES 2.0 ReadMe, or read the EES 2.0 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 EES 2.0 Help Files

If you need more information on how to use a particular Web page in the *i*.LON AdminServer or SmartServer Web interface, you can click **Help** to open a new window with context-sensitive help for that Web page.

If you need more information on how to use a particular dialog in the *i*.LON AdminServer or SmartServer Web interface, you can click the question mark icon (**?**) in the upper right-hand corner of the dialog to open a new window with context-sensitive help for that dialog.



Viewing the EES 2.0 ReadMe

The EES 2.0 ReadMe provides descriptions of known problems, if any, and their workarounds. To view the EES 2.0 ReadMe, click **Start**, point to **Programs**, point to **Echelon i.LON SmartServer 2.0 Enterprise Services**, and then select **i.LON SmartServer 2.0 Enterprise Services ReadMe**. You can also find additional information about the *i*.LON SmartServer online at *www.echelon.com/ilon*.

Using Technical Support

If you have technical questions that are not answered by this document, the EES 2.0 online help, or the EES 2.0 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. See *www.echelon.com/support* for more information on Echelon support and training services.

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 find additional information about device development training at *www.echelon.com/training*.

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*

Region	Languages Supported	Contact Information
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*

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Introduction

This chapter introduces EES 2.0, describes the *i*.LON AdminServer and LNS Proxy Web Service included with EES 2.0, and describes how to install and activate the EES 2.0 software.

Introduction

Echelon Enterprise Services 2.0 includes the new *i*.LON AdminServer and the LNS Proxy Web service.

The *i*.LON AdminServer is a new Web application that you can use to manage and deploy SmartServers. You can use the *i*.LON AdminServer to perform batch operations on your SmartServers. For example, you can backup or upgrade multiple SmartServers at the same time, or you can create a template of one SmartServer and deploy that template on multiple SmartServers simultaneously. In addition, when you deploy a template, you can have the SmartServer automatically or semi-automatically install the devices in the SmartServer or LNS network database included in the template. This automatic network installation feature is supported for single-channel networks containing up to approximately 20 devices.

The LNS Proxy is a Web service enables the SmartServer to directly communicate with LNS Server computers running LNS Turbo Server (version 3.25). This means that you can use the SmartServer as a powerful standalone LNS network management tool to design, install, monitor/control, and maintain LONWORKS networks, or you can integrate the SmartServer with the LonMaker tool or other LNS network tools and use the SmartServer to monitor and control the network.

What's New in EES 2.0

In addition to the new *i*.LON AdminServer, EES 2.0 features the following new features for managing your SmartServers and LONWORKS networks:

- *Rapid Deployment*. Automatically install single-channel LNS managed or standalone networks containing up to approximately 20 devices.
- *Fast Data Log Transfer*. Automatically download data logger data to your computer.
- *LNS Device Templates*. Create device templates in the LNS tree.
- *Improved LNS Proxy Synchronization*. Clear the cache of the LNS Proxy Web service if the LNS objects in your network tools lose synchronization with the LNS Proxy Web service.

Rapid Deployment

You can use *i*.LON SmartServer 2.0 to automatically install single-channel LNS managed or standalone networks containing up to approximately 20 devices. *i*.LON SmartServer 2.0 features a new device discovery method for acquiring the Neuron IDs of the devices on the network. With the device discovery method, the SmartServer searches the physical network for uncommissioned devices and matches them based on program ID to pre-configured devices stored in a SmartServer or LNS network database. The SmartServer then automatically installs the discovered devices.

Automatic network installation eliminates the cumbersome manual tasks associated with network installation such as matching up device configurations in a network tool with the physical devices on the network, and pressing service pins on the devices to commission them.

See *Using Rapid Deployment* in Chapter 2 for more information.

Fast Data Log Transfer

You can use *i*.LON SmartServer 2.0 to automatically transfer binary or CSV format alarm and data logs to a computer running the LNS Proxy Web service included in EES 2.0 and automatically extract selected data to a .csv or XML file. To use the fast data log transfer feature, you create a Web connection between the SmartServer and LNS Proxy Web service (in LNS mode) or between the SmartServer and a WebBinder target that is set to the IP address of the LNS Proxy Web service (in Standalone mode), and add then attach the desired data log file to the Web connection.

Each time the source data point in the Web connection is updated, the data log file is downloaded to the **LonWorks\iLON\EnterpriseServices\repository\ees-lnsproxy\ReceivedFiles** folder on your computer. You can manually update the source data point using the **Show Value** dialog, the **Data Points: View** Web page, a custom SmartServer Web page, or other method. You can also program updates to the source data point using the SmartServer's built-in applications (Scheduler, Type Translator, and so on), a custom embedded application (freely programmable module [FPM]), or a SOAP application.

To use fast data log transfer, you do the following:

1. Verify that the device resource files for the subject data points are installed on the EES 2.0 computer. You can install the standard LONMARK resource files 3.14.02 on your EES 2.0 computer by installing the Echelon NodeBuilder Resource Editor from the *i*.LON SmartServer 2.0 DVD (see *Installing Echelon NodeBuilder Resource Editor* in Chapter 2 for how to do this). You can manually copy any user-defined resource files to the **LonWorks\types\user**\<*company*> folder on your EES 2.0 computer.
2. Create a Web connection between the SmartServer and the LNS Proxy Web service running on your EES 2.0 computer.
3. Add a Data Logger to your SmartServer and configure it.
4. Attach a data log file to the Web connection.
5. Configure a method for triggering updates to the source data point in the Web connection to which the data log file is attached.
6. View the extracted data log files.

See Chapter 8, *Data Logging*, in the *i.LON SmartServer 2.0 User's Guide* for details on these steps.

LNS Device Templates

You can now create device templates in the LNS tree of the SmartServer Web interface. With LNS device templates, you can configure a device in an LNS network, save it to a template (.XML file) that is stored on your computer, and then use the device template to create new devices in any LNS network in the LNS tree that have a specific pre-defined configuration. You can also configure the LNS device templates so that devices created from the templates are automatically installed by the LNS Proxy Web service after they are instantiated. For more information on using device templates, see Chapter 4 of the *i.LON SmartServer 2.0 User's Guide*.

To create an LNS device template and then create a new device from the template, follow these steps:

1. To automatically install devices created from the device template, follow these steps:
    a. Erase the Neuron ID of the source device. To do this, right-click the source device, point to **Manage**, and then click **Release Neuron ID** in the shortcut menu. This decommissions the source device.
    b. Logically detach the network interface from the network. To do this, click **Driver**, click the network in the navigation pane, clear the **Use Network Interface** check box in the **Setup – LON Network Driver** Web page, and then click **Submit**. This prevents the SmartServer from associating a Neuron ID with the device template when you complete step d.
    c. Open the source device's **Setup – LON Device Driver** Web page. To do this, click **Driver** and then click the source device in the navigation pane.
    d. Select the **Neuron ID** check box. This enables the SmartServer to automatically acquire the Neuron ID of devices created from the device template using device discovery.
    e. Select the **Smart Network Management** check box at the top of the Web page. This sets the network management commands required to commission the device and set it online.
    f. Click **Submit**.

Note: When you save your device as a template, clear the **Clear from Template** check box in the **Network Management** property as described in step 6. This saves the network management commands you set in steps c-d in the device template. These network management commands will be executed when new devices created from the device template are instantiated.

2. In the LNS tree within the navigation pane on the left side of the SmartServer Web interface, configure the general (config) and driver properties of the device's data points. For example, you can set the data points' default values, persistent flags unit strings, and presets in the general properties, and you can set their poll rates in the driver properties. See *Configuring LONWORKS Data Points* in Chapter 5 of the *i.LON SmartServer 2.0 User's Guide* for more information on setting these properties. The data points of the subsequent devices you add to the SmartServer using the device template will have the same property values by default

3. In the LNS tree, right-click the device to be saved to a template and then click **Save as Template** on the shortcut menu. The **Save As Template** dialog opens.

4. In the **Name** property, enter a meaningful name for the template.

5. In the **Select Path or File** property, expand the **Templates** folder to show all the folders in the **LonWorks\iLON\EnterpriseServices\repository\ees-lnsproxy\config\template\lonworks** folder on your computer. Select the folder to which the template is to be saved (the **lonworks** folder is selected by default) or expand the folder and select an existing template file to be overwritten. You can also select a folder and then enter a sub-directory. For example, if you are creating a template for a LONWORKS lamp device, you can select the **root/config/template/lonworks** directory and then enter **lamp/**<*template name*> in the **Name** property to save the lamp template to its own **root/config/template/lonworks/lamp** sub-directory. The **Name** property will be updated with the specified full path of the template.

6. To enable devices created from the device template to be installed automatically clear the **Clear from Template** check box in the **Network Management** property. This saves any network management commands currently issued for the source device (for example, commission, set online, reset, and so on) in the device template. These network management commands are executed when new devices created from the device template are instantiated. See step 1 for configuring your device template for automatic installation.

   This check box is selected by default, meaning that network management commands are not saved in the template and therefore not executed on new devices when they are created from the device template.

7. Click **OK**. An .XML file documenting the driver properties of the device and its functional blocks, and the general (config) and driver properties of the device's data points is created. The XML file is saved to the **LonWorks\iLON\EnterpriseServices\repository\ees-lnsproxy\config\template** folder on your computer. Note that it takes a few minutes for the SmartServer to create the device template.

   Note: The device's current configuration property values are saved in the **Default Value** property on the configuration property's **Configure – Data Point** Web page.

8. When the template has been created, a message appears above the application frame informing you that the template is ready.

9. Click **Submit**. You can now create new devices from the template you created. To do this, follow these steps:

   a. If you completed step 1 to automatically install devices created from the device template, logically attach the network interface to the network. To do this, click **Driver**, click the network in the navigation pane, select the **Use Network Interface** check box in the **Setup – LON Network Driver** Web page, and then click **Submit**

   b. In the LNS tree, right-click the channel in any LNS network on which the new device is to be attached and then click **Add Device** in the shortcut menu. The **Add Device** dialog opens

c. In the **Name** property, enter a descriptive name for the device.

d. Expand the **Template** folder to show all the folders in the **LonWorks\iLON\EnterpriseServices\repository\ees-lnsproxy\config\template** folder on your computer. Expand the folder containing the template to be used to create the device and then click that template.

e. Click **OK** to return to the SmartServer Web interface.

f. Click **Submit**. The new device and the functional blocks and data points included in the device template are added below the device's parent channel. The default driver properties of the device and its functional blocks match those of the selected template, and the default general (config) and driver properties of the device's data points and configuration properties match those of the selected template. You can use these default settings or modify them as necessary.

Note: When you create a device from an LNS device template (**.XML** file), the configuration property values are set to the values saved in the template. This differs from creating a device from a XIF file, which sets the configuration property values to their defaults.

Improved LNS Proxy Web Service Synchronization

If the properties of LNS objects in your network tool lose synchronization with the LNS Proxy Web service, you can clear the cache of the LNS Proxy Web service. To clear the cache of the LNS Proxy Web service, follow these steps:

Right-click the EES tray tool icon and then select **Options**.

1. Click the **Options** tab.
2. Click **Clear Cache**.
3. Click **OK**.

Installing and Activating EES 2.0 Software

The following sections describe how to install and activate the EES 2.0 software. You can install Echelon Enterprise Services 2.0 (EES 2.0) over previous versions of the Echelon Enterprise Services provided in releases 4, 4.01, and 4.02 (EES 1.0). For the 4.03 release, EES 2.0 requires activation.

To install and activate the EES 2.0 software, follow these steps:

1. Install the *i*.LON SmartServer 2.0 software.
2. Install LNS Turbo Edition (3.25) if you are installing an *i*.LON Server Edition.
3. Install EES 2.0.
4. Install LNS Server Service Pack 5 (3.25) if LNS Turbo Edition 3.24 or earlier is installed on your LNS Server computer.
5. Install Echelon NodeBuilder Resource Editor if it is not already installed on your EES 2.0 computer or you have an earlier version and you plan on using the fast data log transfer feature.
6. Activate EES 2.0.

Installing i.LON SmartServer 2.0 Software

If you have not installed the i.LON SmartServer 2.0 software, install it as described in the *i.LON SmartServer 2.0 User's Guide*, and then click the Echelon *i*.LON SmartServer 2.0 button in the taskbar to return to the *i*.LON SmartServer 2.0 installer. The *i*.LON SmartServer 2.0 software is required for upgrading SmartServers with the *i*.LON AdminServer.

Installing LNS Turbo Edition

To install LNS Turbo Edition (3.25) on a computer, insert the LNS Server CD into your computer and follow the on-screen instructions. If the installation program fails to start, navigate to your CD-ROM drive and run **iLonLnsServer325.exe**.

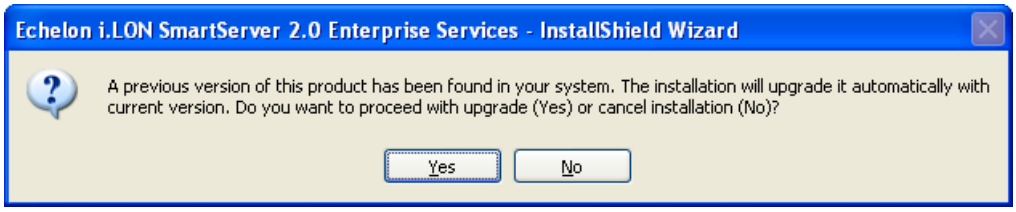
Installing EES 2.0

To install EES 2.0, follow these steps:

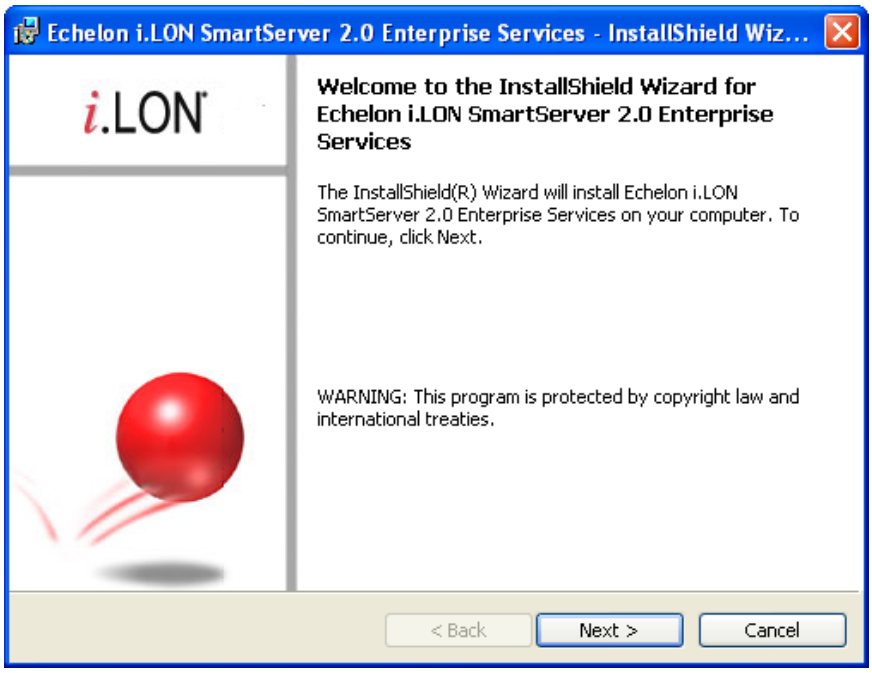
1. Insert the *i*.LON SmartServer 2.0 DVD into your DVD-ROM drive. If your computer does not have a DVD-ROM, insert the *i*.LON SmartServer 2.0 DVD on a network-accessible computer that has a DVD-ROM and copy the files on the DVD to a shared network drive. You can then copy the *i*.LON SmartServer files from the shared drive to your computer and install the various *i*.LON SmartServer products.
2. If the *i*.LON SmartServer 2.0 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 i.LON SmartServer 2.0 DVD and click **Open**. The **Echelon *i*.LON SmartServer 2.0** main menu opens.

3. Click **Install Products**. The **Install Products** dialog opens.

4. Click **Echelon i.LON SmartServer 2.0 Enterprise Services**. If EES 1.0 is installed on your computer, the following dialog opens prompting you to confirm that you want to upgrade to EES 2.0. Click **Yes** to upgrade.

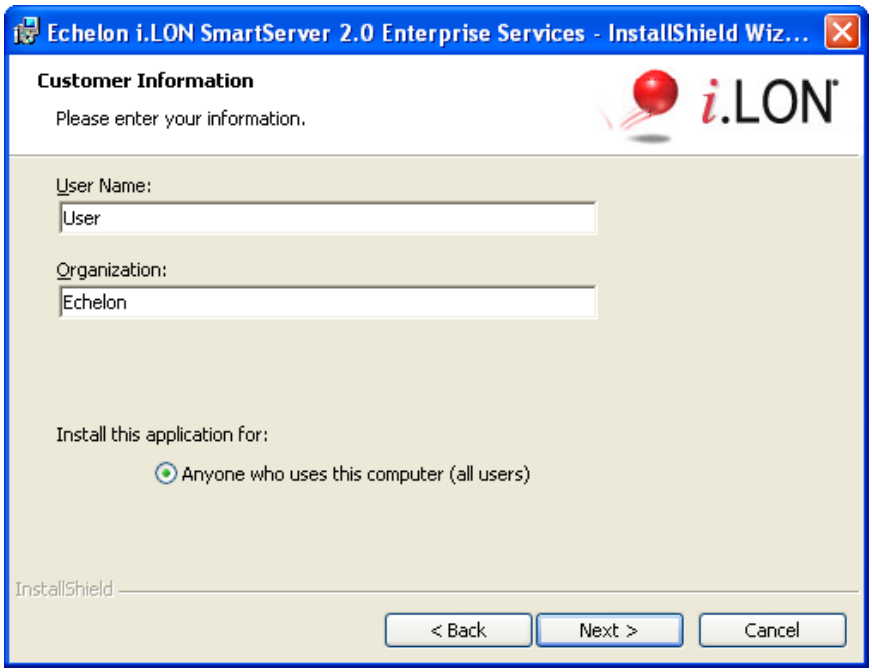


5. The EES 2.0 software installer opens.

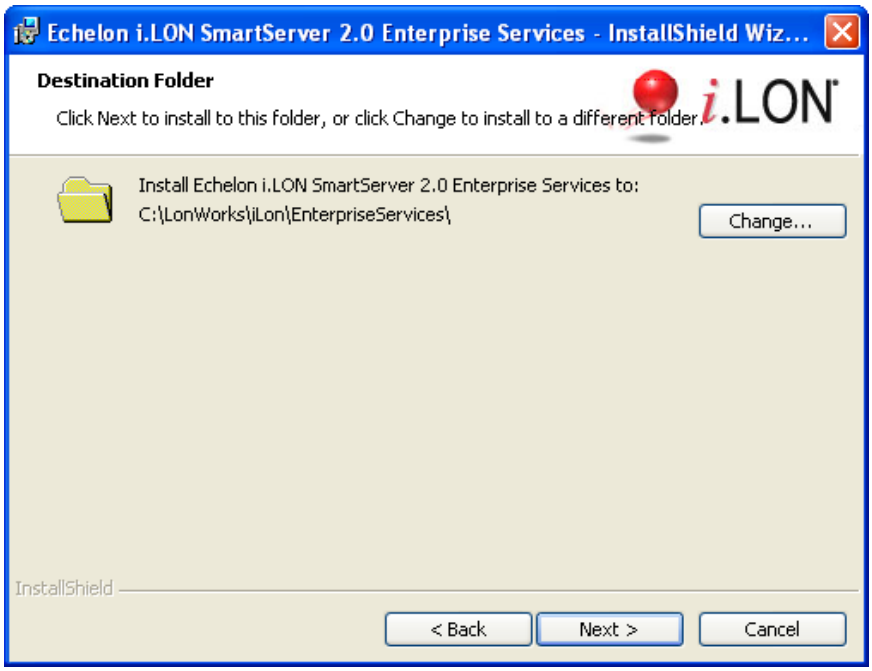


6. Read the information on the Welcome window and click **Next**. The License Agreement window appears.

7. Read the license agreement (you can read a printed version of the license agreement in Appendix E of the *i.LON SmartServer 2.0 User's Guide*). If you agree with the terms, click **Accept the Terms** and then click **Next**. The Customer Information window appears.

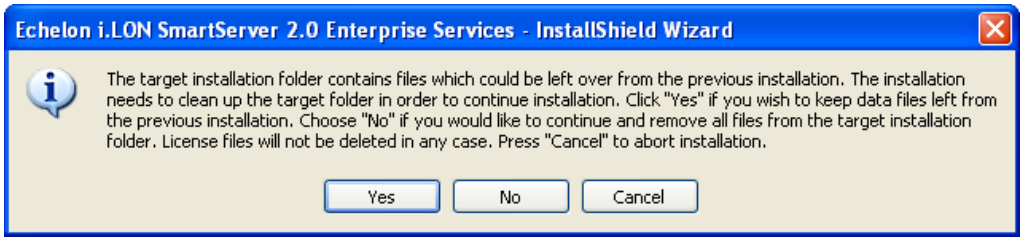


8. Enter your name and company name in the appropriate fields. The name and company may be entered automatically based on the user currently logged on and whether other Echelon products are installed on your computer. Click **Next**. The Destination Window folder opens.

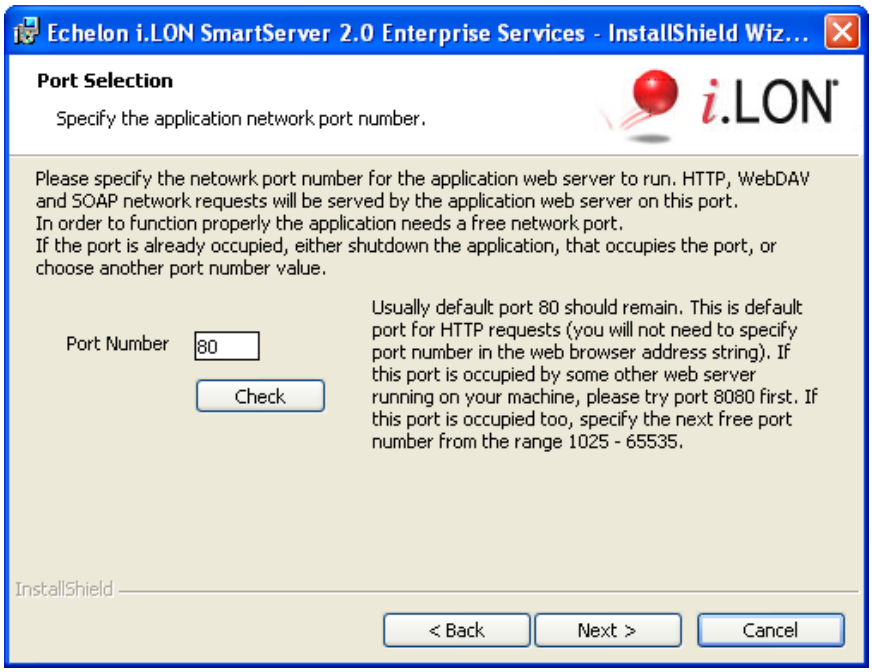


9. By default, the EES 2.0 software will be installed in the **C:\LonWorks\iLON\EnterpriseServices** folder, or it will be installed in the **C:\LonWorks\iLON\EnterpriseServices** folder if you have not previously installed any Echelon or LONMARK products. You can click **Change** to select a different destination folder. Click **Next**.

10. A dialog opens prompting you to select whether existing EES 1.0 data files in the **LonWorks\iLON\EnterpriseServices** folder are to be preserved or deleted. Select **Yes** to preserve the EES 1.0 data files, or select **No** to remove all the EES 1.0 data files.



11. The Port Selection window opens.

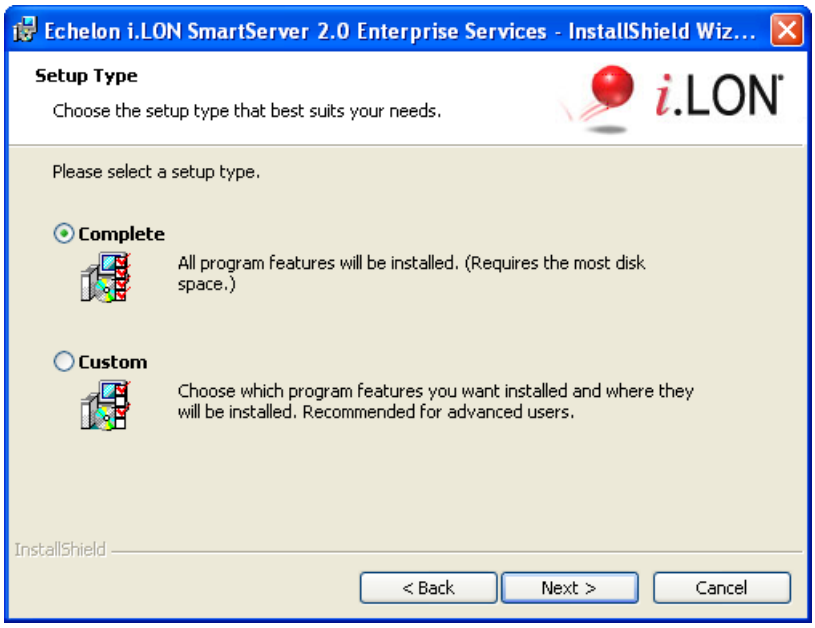


12. Enter the port used by the LNS Proxy Web service to transmit and receive SOAP/HTTP requests. The default port is **80**. You can verify that the selected port is available by clicking **Check**.

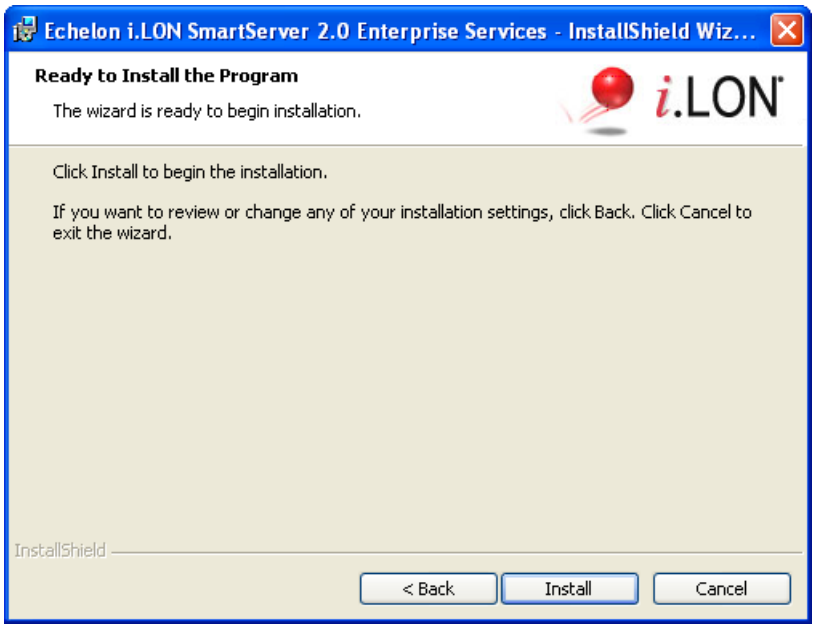
    Note: If you use the default port **80** for the Echelon Enterprise Services and you later install or begin running another Web server such as Microsoft Internet Information Services (IIS) that uses the same port on the same computer, the LNS Proxy Web service may fail because of a port conflict. You can later change the port used by the LNS Proxy Web service in the EES tray tool icon that is installed on your computer by the Echelon Enterprise Services installer. See *Checking LNS Proxy Web Service User Access* in Chapter 3 for more information on changing the port used by the LNS Proxy Web service.

13. After you have entered an available port, click **Next**. The Logon Information window opens.

14. Enter a user name and password to be used for accessing the LNS Proxy Web service. The default user name and password are both **ilon**. You should change the default user name and password to protect your LNS network databases. You can do this in the EES tray tool icon that is installed on your computer by the Echelon Enterprise Services installer. See *Checking LNS Proxy Web Service Access* in Chapter 3 for more information on changing the user name and password. Click **Next**. The Setup Type window appears.



15. Select the type of installation to be performed. It is recommended that you select **Complete**. Click **Next**. The Ready to Install window appears.



16. Click **Install** to begin the Echelon Enterprise Services installation.
17. After the Echelon Enterprise Services has been installed, the Tomcat 6 Server starts and an EES tray tool ( ) is added to the notification area of your desktop (see *Using the Echelon Enterprise Services Tray Tool* in Chapter 3 for more information). The LNS Proxy Web service is enabled and ready for setup on your SmartServer (see *Setting Up the LNS Proxy Web Service* in Chapter 3 for more information). A window appears stating that the installation has been completed successfully.

18. This window informs you that an **Echelon ES Admins** user group has been added to your computer. Members of this group have access to EES 2.0. You can open **User Accounts** in the Control Panel to add and remove users to and from this group in order to control access to EES 2.0 on your computer.

19. Click **Finish**. The Echelon Enterprise Services ReadMe file appears. When you finish reading the ReadMe file, close the window.

20. A dialog opens prompting you to reboot your computer now or later. Click **No** to reboot your computer later. You will reboot after installing LNS Server Service Pack 5 as described in the next section.

Installing LNS Server Service Pack 5

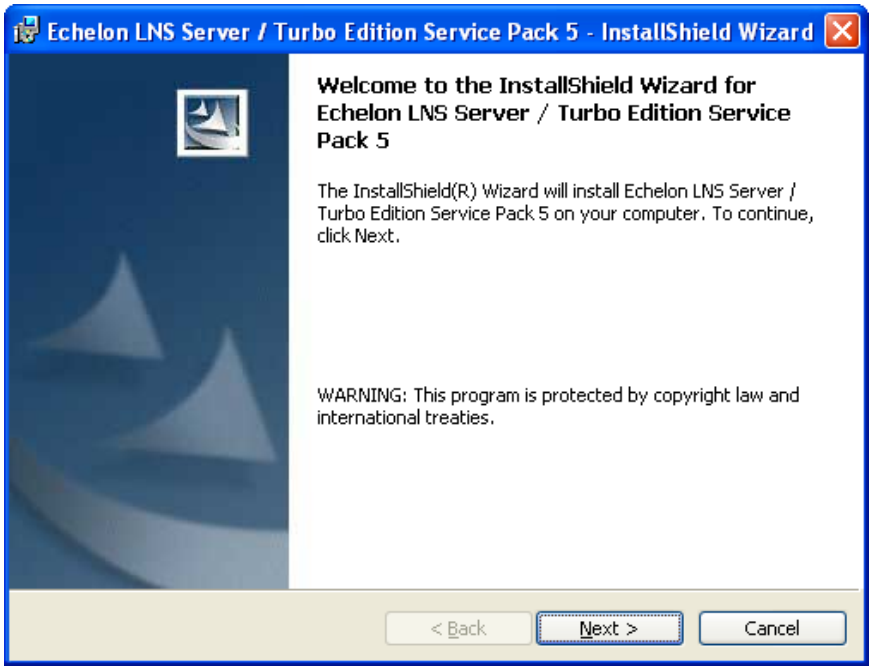
You must install LNS Server Service Pack 5 on your LNS Server computer. LNS Server Service Pack 5 is required by EES 2.0 and the SmartServer software for correct interoperation with LNS network databases.

If you are running the LonMaker tool Release 3.1 on your computer, you can also install LNS Server Service Pack 5 by installing LonMaker 3.1 SP3 Update 2 from the *i*.LON SmartServer 2.0 DVD as *Installing Echelon LonMaker 3.1 Service Pack 3 Update 2* in Chapter 2 of the *i.LON SmartServer 2.0 User's Guide*.

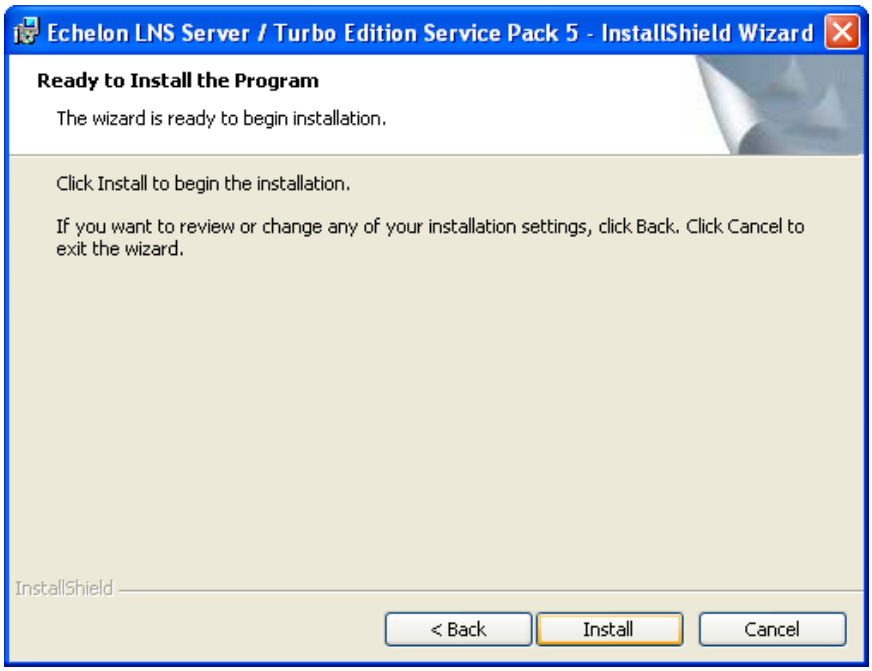
If LNS Server Service Pack 5 is not installed on a LNS Server computer running EES 2.0, the LNS Proxy Web service may corrupt the LNS network databases on that LNS Server computer.

To install LNS Server Service Pack 5, follow these steps:

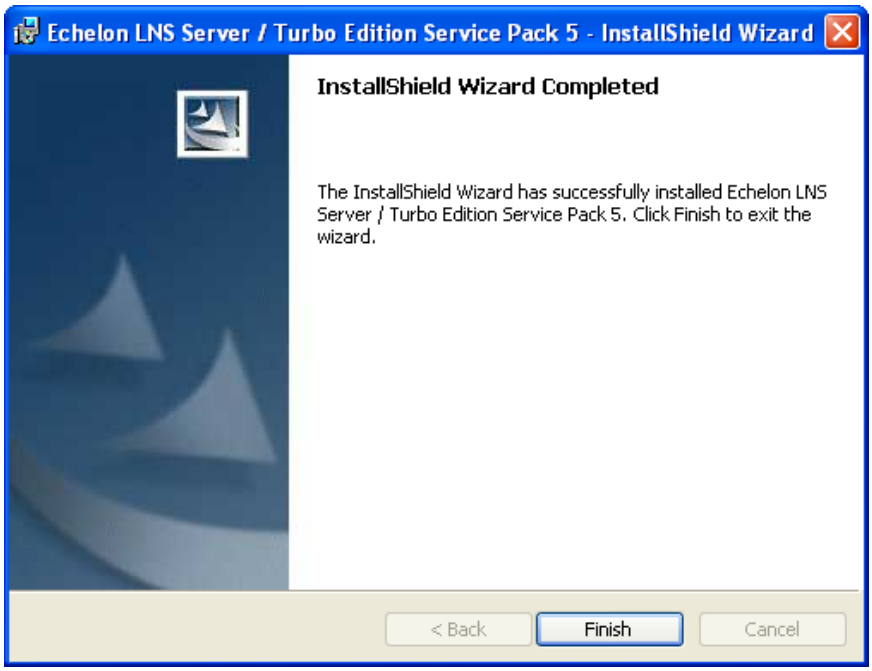
1. Backup the LNS network databases on your LNS Server computer.
2. Verify that the *i*.LON SmartServer 2.0 software has been installed on your computer.
3. Click the Echelon *i*.LON SmartServer 2.0 button in the taskbar to return to the *i*.LON SmartServer 2.0 installer, click **Echelon LNS Server Service Pack 5** in the **Install Products** dialog. The LNS Server Service Pack 5 installer opens.



4. Click **Next**. The Ready to Install window appears.



5. Click **Install** to begin the LNS Server Service Pack 5 installation.
6. After LNS Server Service Pack 5 has been installed, a window appears stating that the installation has been completed successfully.



7. Click **Finish**.

Installing NodeBuilder Resource Editor

To use the new fast data log transfer feature, the device resource files for the subject data points must be installed on your LNS Server computer running EES 2.0. You can install standard device resource files by installing the NodeBuilder Resource Editor on your EES 2.0 computer. You can manually copy any user-defined device resource files to the **LonWorks\types\user**\<*company*> folder on your

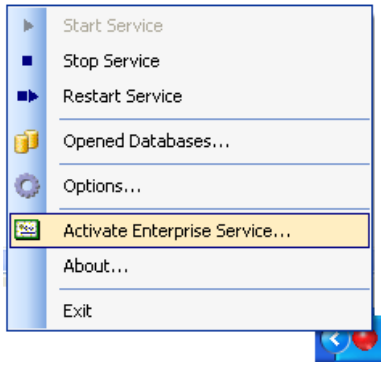
LNS Server computer. If you send binary data logs from your SmartServer to be converted to .**CSV** format and the device resource files for the subject data points are not present, the conversion will fail.

To install NodeBuilder Resource Editor 3.14.02 and LonMark Resource Files 3.13, click the Echelon *i*.LON SmartServer 2.0 button in the taskbar to return to the *i*.LON SmartServer 2.0 installer, click **Echelon NodeBuilder Resource Editor** in the **Install Products** dialog, and then follow the on-screen instructions.

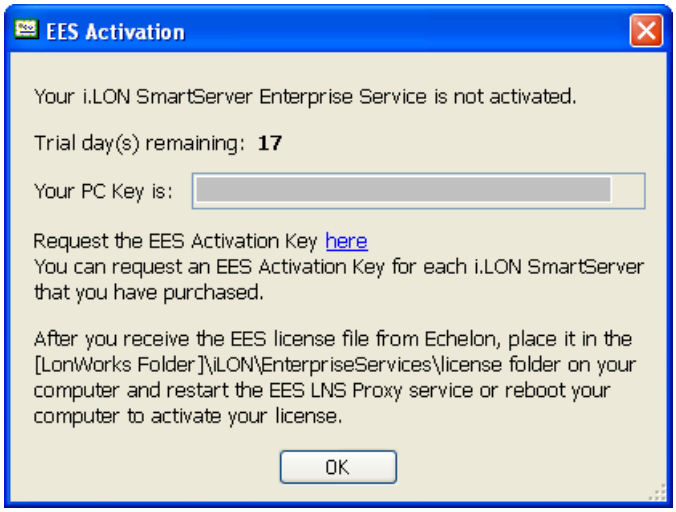
Activating EES 2.0

To activate EES 2.0, follow these steps:

1. Right-click the EES tray tool icon in the notification area of your desktop and then select **Activate Enterprise Service**.

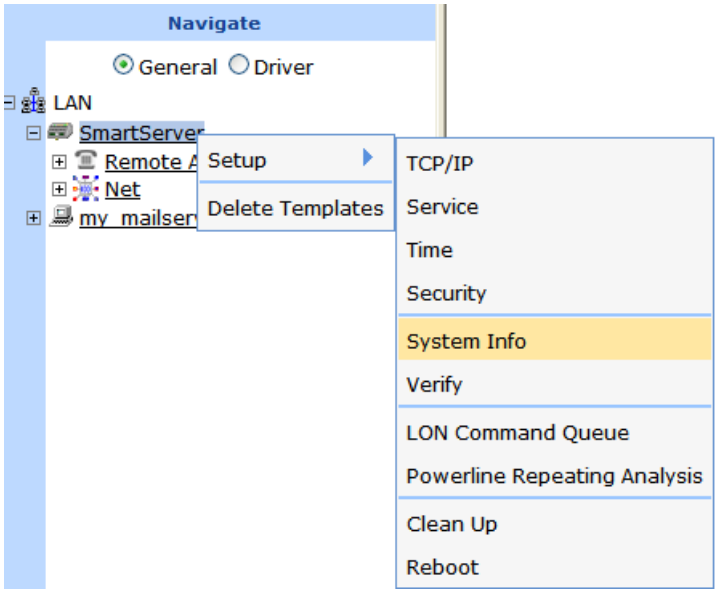


2. The **EES Activation** dialog opens.

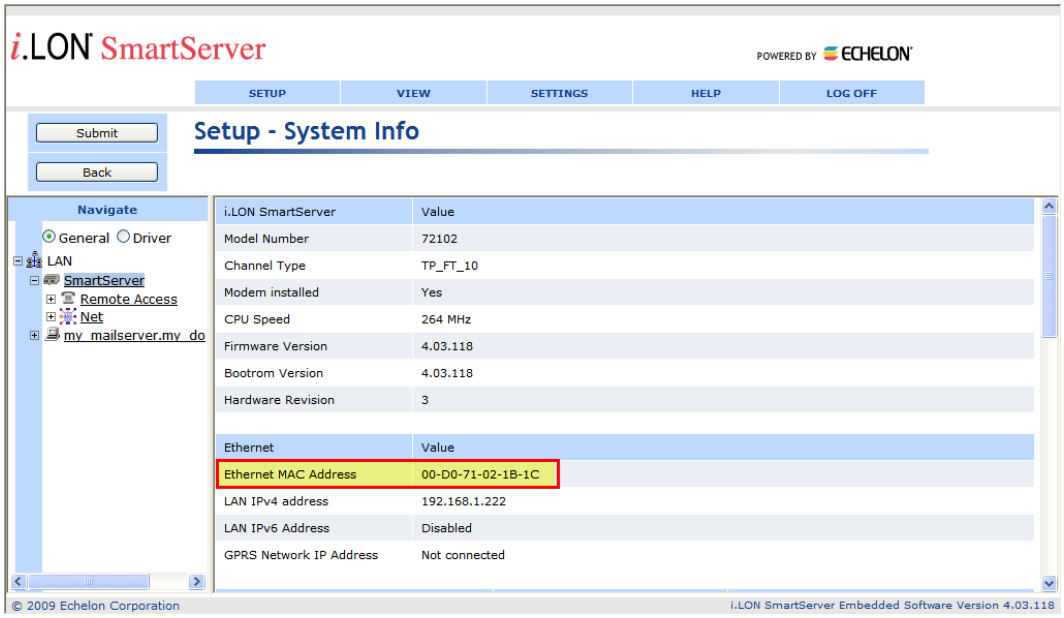


3. Click the link in the dialog (or go to the SmartServer activation Web page at *www.echelon.com/products/cis/activate*), and then enter your SmartServer's MACID. The MACID is located on the bottom of your SmartServer hardware device.

   If you do not have access to have to the SmartServer hardware, you can find the MAC ID using the SmartServer's Web pages. To do this, right-click the local SmartServer at the top of the navigation pane on the left side of the SmartServer Web interface, point to **Setup**, and then click **System Info** (alternatively, you can click **Setup** and then click **System Info**).

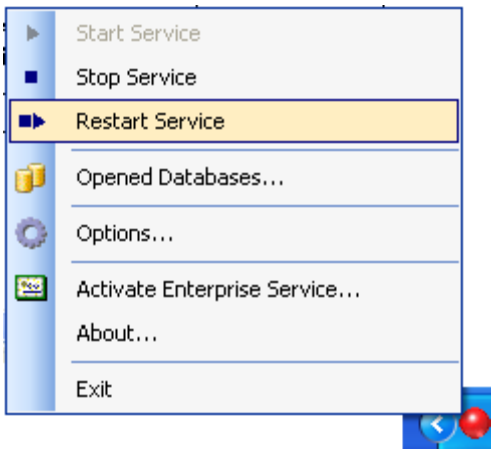


The **Setup – System Info** Web page opens. The **Ethernet MAC Address** is the first property listed under the **Ethernet** header.



4. When you receive your EES Activation Key (an XML file named **Echelon1EES.xml**), browse to the LONWORKS\iLON\EnterpriseServices folder on your computer, create a new folder named **license**, and then copy the EES Activation Key to the **license** folder.

5. Restart EES 2.0. To do this, right-click the EES tray tool icon and then select **Restart Service**. Alternatively, you can reboot your computer. After you restart EES 2.0 or reboot your computer, EES 2.0 is activated on your computer.


Start Service
Stop Service
Restart Service
Opened Databases...
Options...
Activate Enterprise Service...
About...
Exit

2

Using the i.LON AdminServer

This chapter describes how to use the i.LON AdminServer to manage and deploy SmartServers. It describes how to automatically install single-channel LNS managed or standalone networks containing up to approximately 20 devices.

Introduction to the i.LON AdminServer

You can use the *i*.LON AdminServer to create *i*.LON projects, export and import *i*.LON projects, create and deploy *i*.LON templates, upgrade *i*.LON images, or backup and restore *i*.LON images and LNS network databases. You can open the *i*.LON AdminServer on a local EES 2.0 client (an LNS Server computer running EES 2.0), or you can access the *i*.LON AdminServer from a remote EES 2.0 client (a computer that is different than your LNS Server/EES 2.0 computer). You must open the *i*.LON AdminServer over an IPv4 connection; you cannot use a PPP or IPv6 connection.

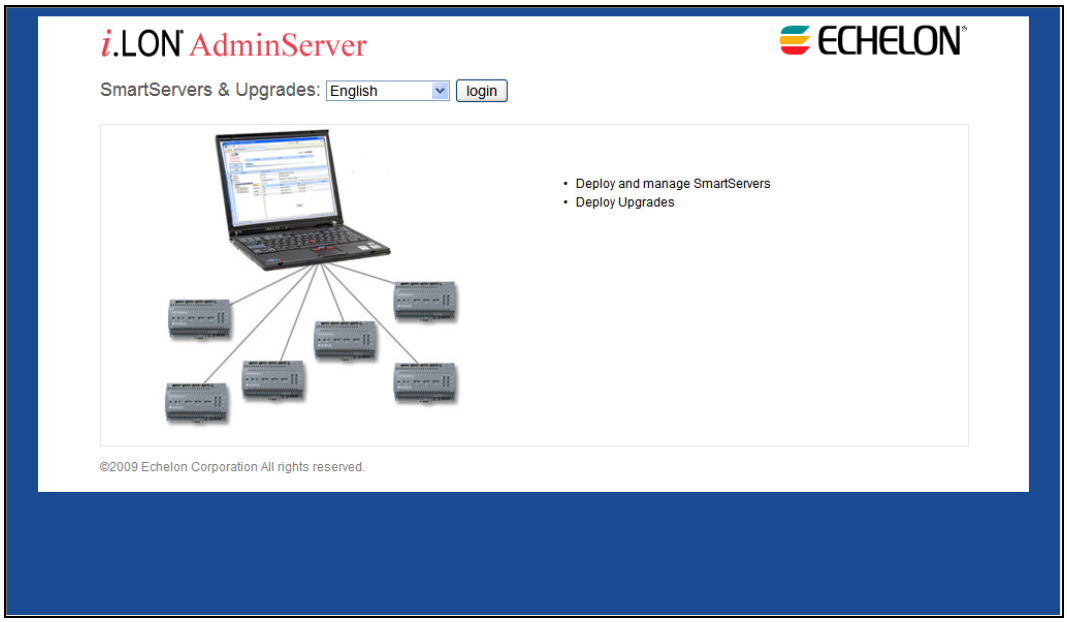
- An *i.LON project* is a collection of one or more SmartServers on which you can perform administrative tasks. Creating an *i*.LON project with multiple SmartServers enables you to perform batch operations on all the SmartServers in the *i*.LON project.
- An *i.LON template* is a file containing the definition of a SmartServer 2.0 configuration, including the external device definitions, external data point definitions, SmartServer's application configuration, FPM configuration, and custom SmartServer Web pages. You can deploy an *i*.LON template on one or more SmartServers at the same time.
- An *i.LON image* is a file containing the SmartServer's internal database and the LNS network database to which the SmartServer is synchronized (if you are using LNS mode), the SmartServer's built-in applications, IP-852 routing and programming licenses, device resource files, application image files, XIF files, and your custom SmartServer Web pages. You can upgrade an *i*.LON image to update your SmartServer's firmware with new features and fixes, and you can backup and restore an *i*.LON image to protect your SmartServer's network configuration and your development work.

Note: When the *i*.LON AdminServer Web interface is performing administrative tasks on the SmartServers in a given project such as creating a backup or template, the Web interface becomes unavailable. You can open another instance of the *i*.LON AdminServer to perform administrative tasks on other SmartServers in different projects while the current tasks are being completed.

Using the i.LON AdminServer

To start the *i*.LON AdminServer, follow these steps:

1. Verify that the EES 2.0 is running on the local EES 2.0 client. The EES icon in the notification area of your desktop should be red. If the EES tray tool icon is gray, right-click it and then select **Start Service**.
2. Open the *i*.LON AdminServer.
   - On a local EES 2.0 client, click **Start**, point to **Programs**, point to **Echelon i.LON SmartServer 2.0 Enterprise Services**, and then select **i.LON SmartServer 2.0 Enterprise Administration Service**.
   - On a remote EES 2.0 client, open a Web browser and enter the following IPv4 address: **http://**< *LNS Server*/*EES 2.0 Computer IP Address*>**/EES/AdminService/v4.0/index.htm**. See *Using the i.LON AdminServer Remotely* for more information on accessing the *i*.LON AdminServer from a remote EES 2.0 client.
3. The *i*.LON AdminServer home page opens.



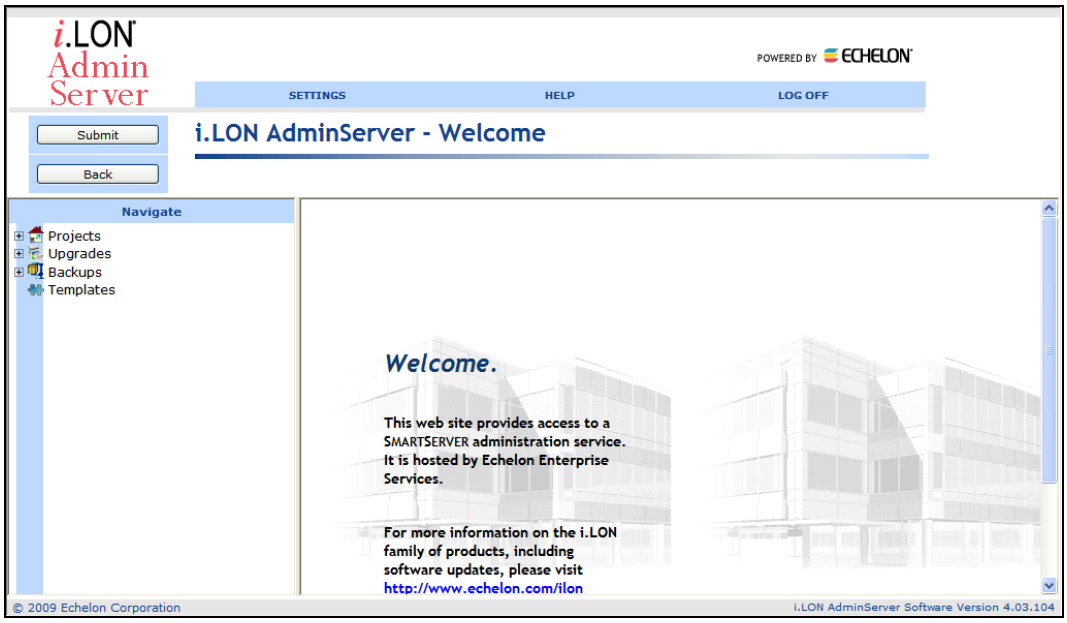
4. Select the language to be used for the *i*.LON AdminServer. The *i*.LON AdminServer includes English (the default), German, and French languages, but you can work with the *i*.LON AdminServer in any one-byte or two-byte character language by translating the **.properties** file in the LONWORKS\iLON\EnterpriseServices\Appserver\webapps\EES\AdminService\v4.0\nls\echelon folder on your computer.

   See the *i.LON SmartServer 2.0 Programming Tools User's Guide* for more information on how to localize the language of the SmartServer and *i*.LON AdminServer Web interface.

5. Click **Login**. A Login dialog opens.

6. Enter the **User name** and **Password** for logging into the LNS Proxy Web service, which are both `ilon` by default, and then click **OK**. You may have initially set the user name and password in the EES 2.0 installer. If you cannot log into the *i*.LON AdminServer, use the EES tray tool icon on your EES 2.0 computer to view the current user name and password used for accessing the LNS Proxy Web service. See *Checking LNS Proxy Web Service Access* in Chapter 3 for more information on how to do this.

7. The **i.LON AdminServer – Welcome** Web page opens. It may take 1–2 minutes for the *i*.LON AdminServer Web page to appear.



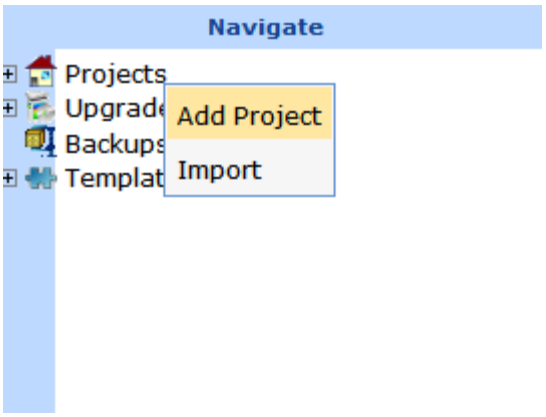
8. You can now create *i*.LON projects, upgrade SmartServers, create and deploy *i*.LON templates, back up and restore SmartServers, and copy *i*.LON projects, *i*.LON templates, and backups from one computer to another. This section describe how to perform the following tasks with the *i*.LON AdminServer:

   - Create an *i*.LON project.
   - Upgrade the SmartServer firmware.
   - Create an *i*.LON template.
   - Deploy an *i*.LON template.
   - Back up a SmartServer.
   - Restore a SmartServer.
   - Export *i*.LON projects, *i*.LON templates, and backups.
   - Import *i*.LON projects, *i*.LON templates, and backups.

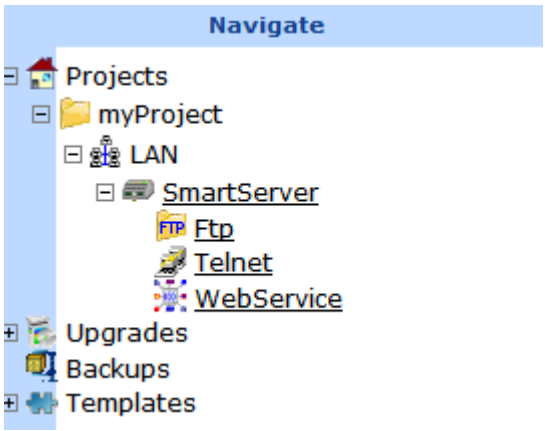
Creating an i.LON Project

An *i*.LON project is a collection of one or more SmartServers on which you can perform administrative tasks. Creating an *i*.LON project with multiple SmartServers enables you to perform batch operations on all the SmartServers in the project. For example, you can create back ups and templates of multiple SmartServers at the same time. To manage your SmartServers individually, create one project per SmartServer. To create a project, follow these steps:

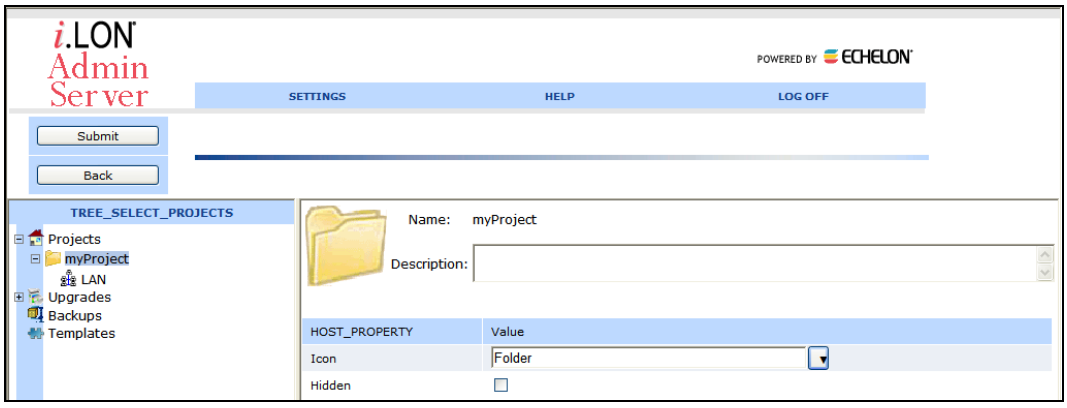
1. Right-click the **Projects** folder and select **Add Project**.



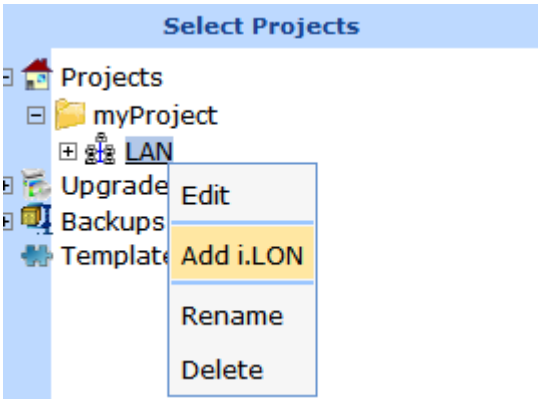
2. The **Add Project** dialog opens. Enter the name for your project. A project name can include up to 256 alphanumeric characters. It may not contain the *, ‘, “, /, <, or > characters. Click **OK**.
3. Click **Submit**.
4. Expand the **Projects** folder to display your new project.



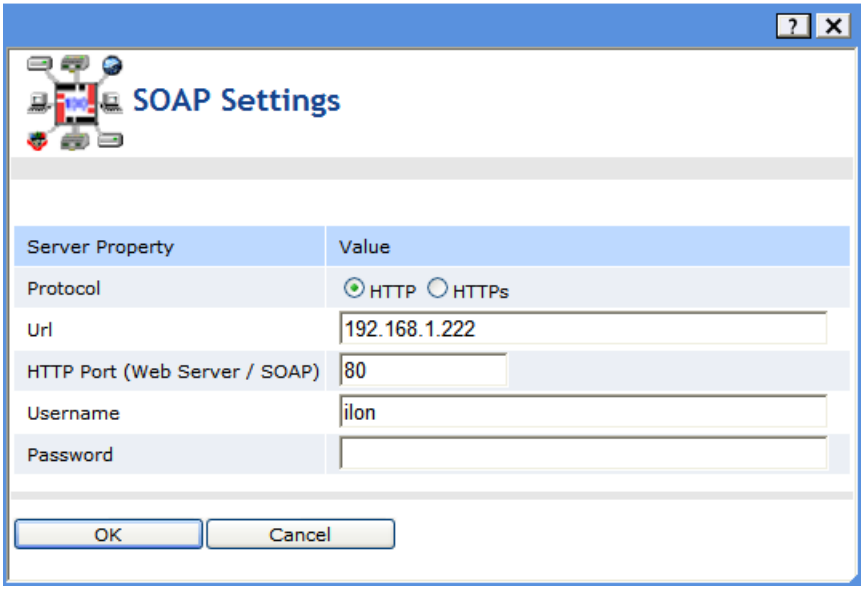
5. Optionally, you can click your project to open the **Project** Web page. You can use this Web page to add a description for the project and change its icon in the navigation pane.



6. The new project is associated with the default IP channel, which is named **LAN**. To rename the IP channel, right-click the channel and select **Rename**. To change the description for the IP channel, right-click the IP channel and select **Edit**.
7. Add one or more SmartServers to an IP channel. To do this, follow these steps:
   a. Right-click the **LAN** icon, and then select **Add i.LON** on the shortcut menu.



b. The **SOAP Settings** dialog opens.



c. Enter the following properties:

Protocol — Select the protocol used by the *i*.LON AdminServer to connect to the SmartServer (**HTTP** or **HTTPS**). The selected protocol must be enabled in the **Setup - Security** Web page in the SmartServer Web interface; otherwise, the following error occurs when the *i*.LON AdminServer tries to access the SmartServer: ERROR: WebService reports: "Could not connect to i.LON SmartServer!"

- To use **HTTP**, the **Enable Web Server** check box in the **Setup - Security** Web page must be selected.
- To use **HTTPs**, the **Enable SSL Web Server** check box in the **Setup - Security** Web page must be selected.

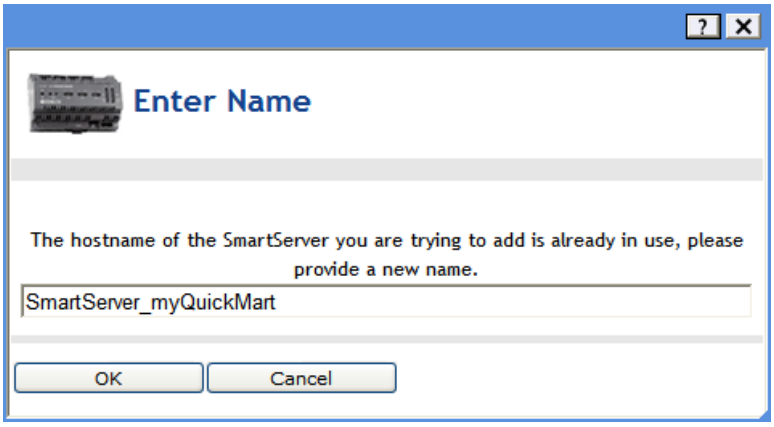
Url — Enter the IP address or hostname for the SmartServer to be added to the IP channel

HTTP Port (Web Server/SOAP) — Enter the port the SmartServer uses to serve HTTP or HTTPs requests (SOAP and WebDAV). If you are using HTTP, the default value is **80**. If you are using HTTPs, the default value is **443**. You may change the port to any valid port number. Contact your IS department to ensure your firewall is configured to allow access to the server on this port.

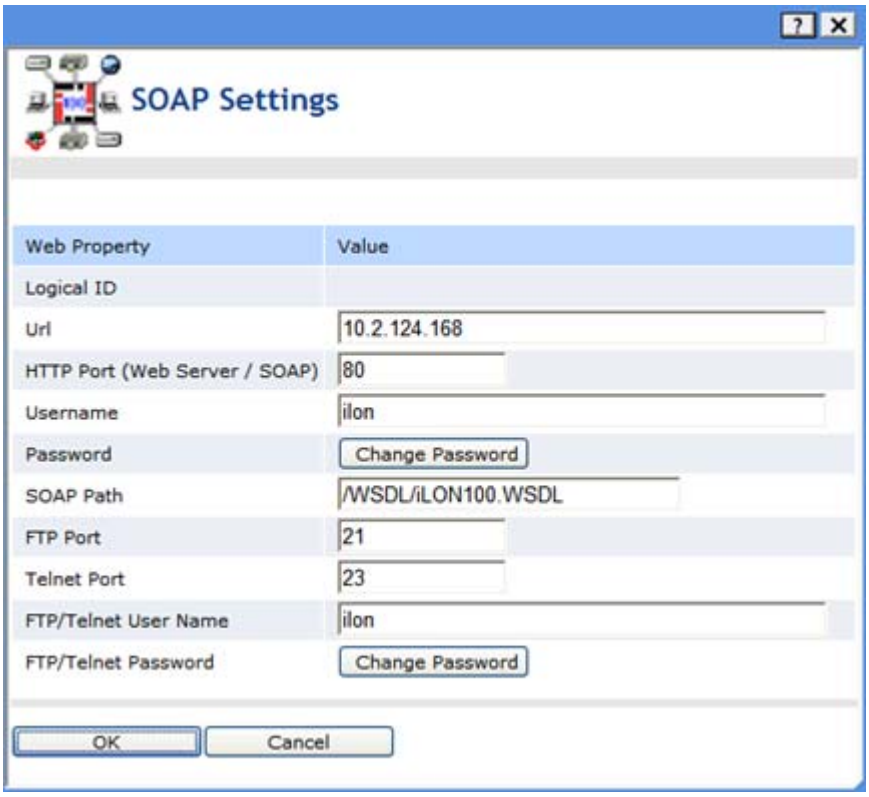
Username	Enter the user name for logging in to your SmartServer via HTTP. The default user name is **ilon**.
Password	Enter the password for logging in to your SmartServer via HTTP. The default password is **ilon**.

d. Click **OK** to add the SmartServer to the IP channel.

e. If the hostname of the SmartServer you are adding is the same as one already in the project (the default hostname is "SmartServer"), the **Enter Name** dialog opens. Enter a different hostname such as "SmartServer 2", or append the location of the SmartServer to the default hostname such as "SmartServer_myQuickMart", and then click **OK**. This does not change the configured hostname of the SmartServer.



f. If the i.LON AdminServer cannot access the SmartServer you are adding, the **SOAP Settings** dialog re-opens. Follow these steps:



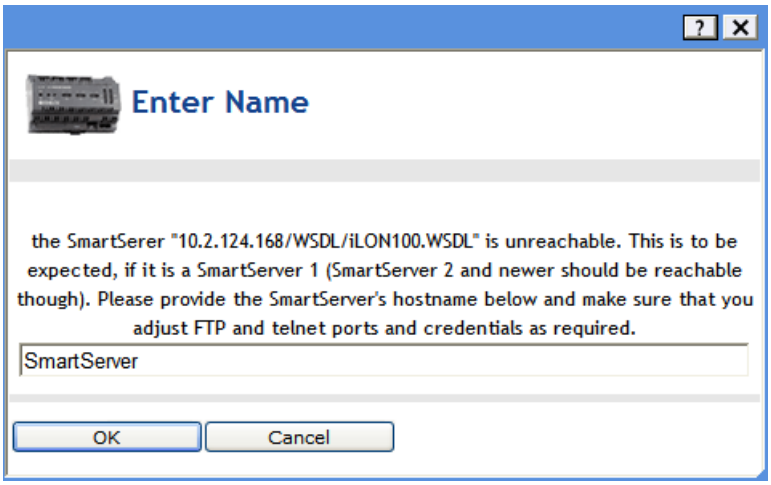
i. Enter the following information:

SOAP Path	Enter the path on the SmartServer to which SOAP messages should be transmitted. This is typically the location of the WSDL or ASMX file on the server where it receives SOAP messages. The default path is **/WSDL/iLON100.WSDL** (the default location of this file on a SmartServer).
FTP Port	Enter the port the SmartServer uses for FTP communication. The default value is **21**.
Telnet Port	Enter the port the SmartServer uses for Telnet communication. The default value is **23**.
FTP/Telnet User Name	Enter the user name for logging in to your SmartServer via FTP or Telnet. The default user name is **ilon**.
FTP/Telnet User Password	Enter the password for logging in to your SmartServer via FTP or Telnet. The default password is **ilon**.

ii. Click **OK**.

iii. If the *i*.LON AdminServer still cannot access the SmartServer you are adding, the **Change Password** dialog opens prompting you to enter and re-enter the password used for logging in to your SmartServer via FTP (the default FTP password is **ilon**). Enter and re-enter the FTP password and then click **OK**.

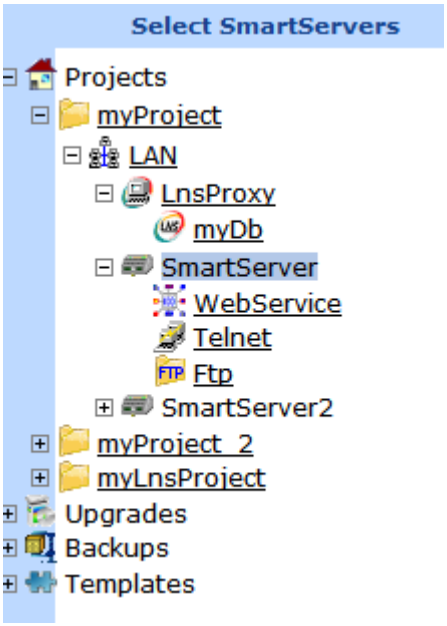
iv. The **Enter Name** dialog then opens. Enter the hostname of your SmartServer and then click **OK**. The default hostname is **SmartServer**.



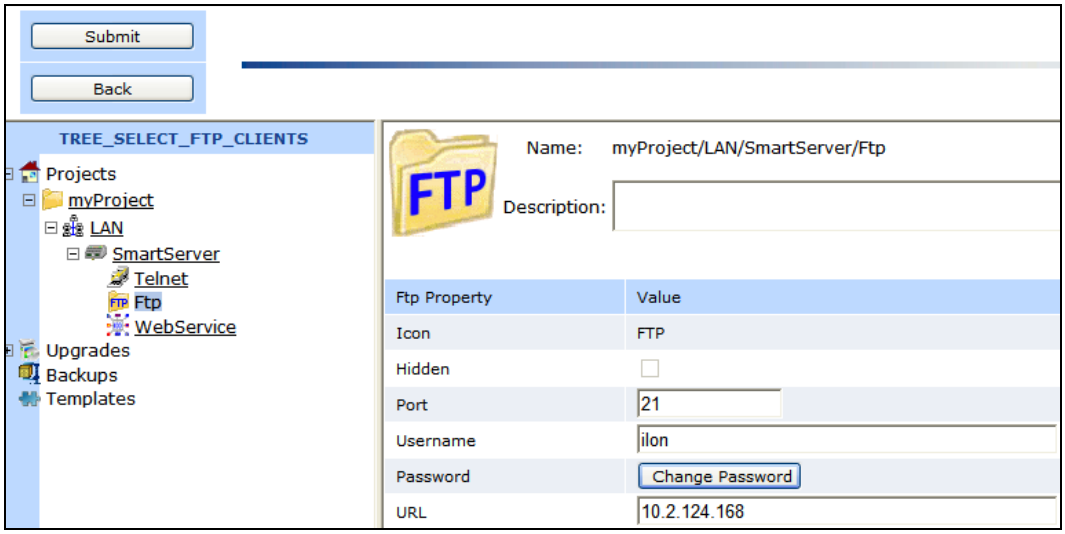
g. Click **Submit**.

h. The SmartServer is displayed in the navigation pane directly under the LAN icon to which you added it. The *i*.LON AdminServer queries the information stored in the SmartServer and displays the services that it supports, such as FTP, Telnet, and Web services.

If the SmartServer is synchronized to an LNS network database, an **LNSProxy** icon is also added to the navigation pane. You can expand the **LNSProxy** icon to display the LNS network database to which the SmartServer is synchronized.

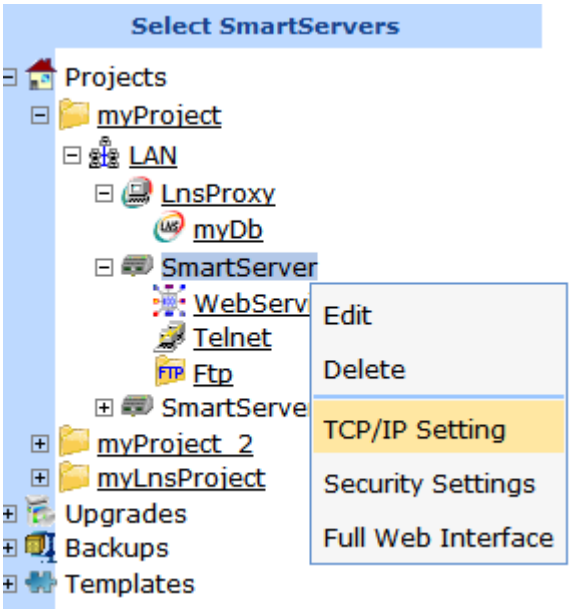


i. Optionally, you can click a service (or right-click one and click **Edit** on the shortcut menu) to display additional information, such as the port and user name used by the service.



8. Optionally, you can right-click the SmartServer and select the following options:

- **TCP/IP Settings**. Opens the **Setup - Local i.LON SmartServer** Web page, where you can modify the SmartServer's TCP/IP Settings.
- **Security Settings**. Opens the SmartServer's **Setup - Security** Web page, where you can configure the SmartServer's security settings, including the protocol and ports used to connect to the SmartServer (HTTP and/or HTTPs); RNI access and port; and FTP and Telnet user names, passwords, access, and ports.
- **Full Web Interface**. Opens the SmartServer's factory Web pages, where you can configure the network attached to the SmartServer.


Select SmartServers
Projects
myProject
LAN
LnsProxy
myDb
SmartServer
WebServ
Telnet
Ftp
SmartServe
myProject_2
myLnsProject
Upgrades
Backups
Templates
Edit
Delete
TCP/IP Setting
Security Settings
Full Web Interface

Upgrading the SmartServer Firmware

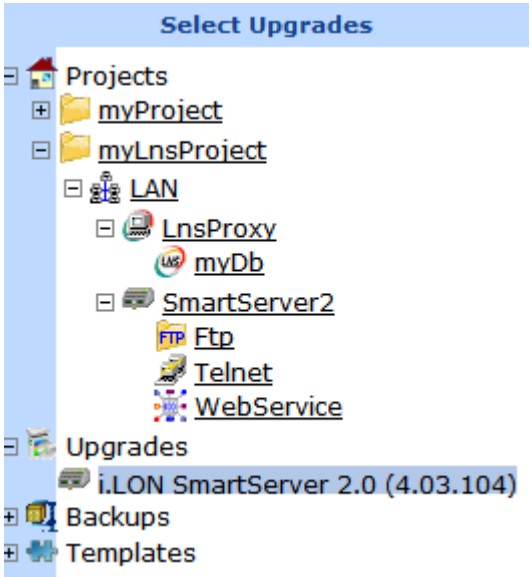
You can use the *i*.LON AdminServer to upgrade the firmware on SmartServers running the Release 4, 4.01, or 4.02 firmware (SmartServer 1.0) and *i*.LON *e*3 plus Servers to the Release 4.03 firmware (SmartServer 2.0). You can also use the *i*.LON AdminServer to upgrade your SmartServers later as SmartServer 2.0 service packs are made available.

Notes:

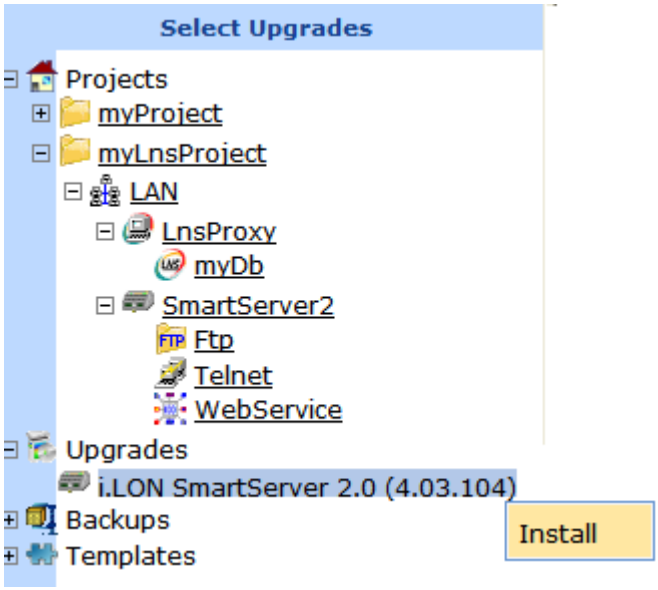
- To upgrade *i*.LON *e*3 plus Servers or SmartServers that have previously been downgraded to the *i*.LON 100 *e*3 version firmware to the SmartServer 2.0 (Release 4.03) firmware, you must first manually upgrade them to the SmartServer 1.0 (Release 4.02) firmware via FTP as described in Chapter 3 of the *i.LON SmartServer 2.0 User's Guide*.
- You can upgrade a SmartServer that is set to its default IPv4 address, which is 192.168.1.222.
- The upgrade process preserves all IP-852 routing and programming licenses on your *i*.LON servers.
- The *i*.LON AdminServer does not upgrade the bootrom on the SmartServer. You need to manually upgrade the bootrom following the steps described in *Updating the Bootrom* in Appendix B of the *i.LON SmartServer 2.0 User's Guide*.

To upgrade the firmware on your SmartServer to the latest version, follow these steps:

1. Verify that you have installed the latest *i*.LON SmartServer software. This installs the current SmartServer image on your EES 2.0 computer. See Chapter 2 of the *i.LON SmartServer 2.0 User's Guide* for more information on installing the SmartServer products.
2. Expand the **Upgrades** folder to display the SmartServer image installed in the **LonWorks\iLON\EnterpriseServices\repository\com\echelon\ilon\ilon_image\4.03.**<*minor version number*> folder on your computer.

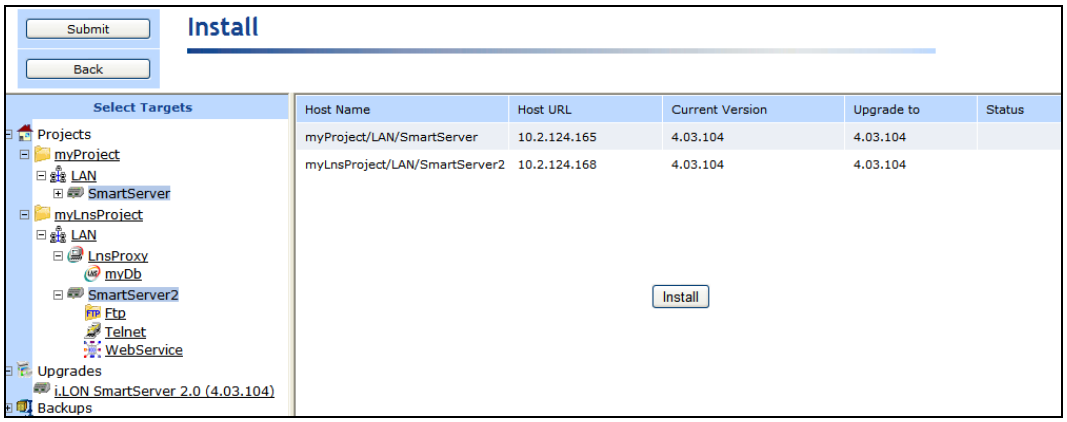


3. Right-click the SmartServer image and then click **Install** on the shortcut menu.

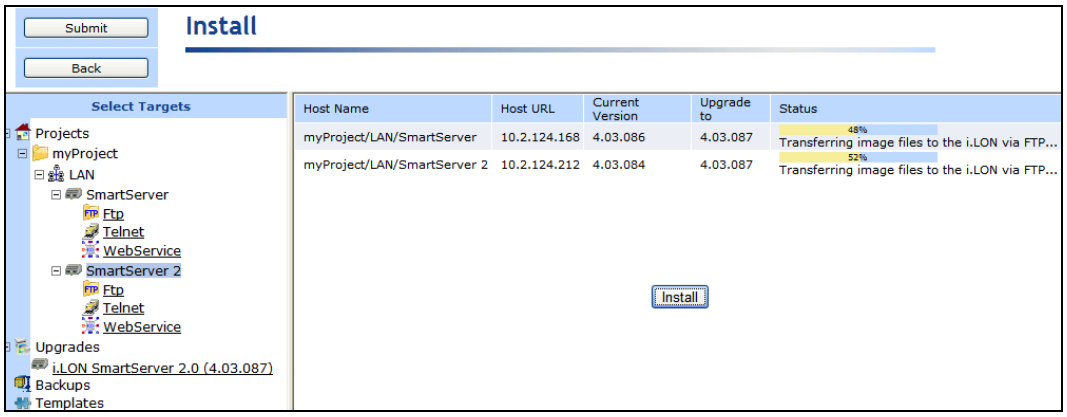


Alternatively, you can click the SmartServer image under the **Upgrades** icon and then click **Install**.

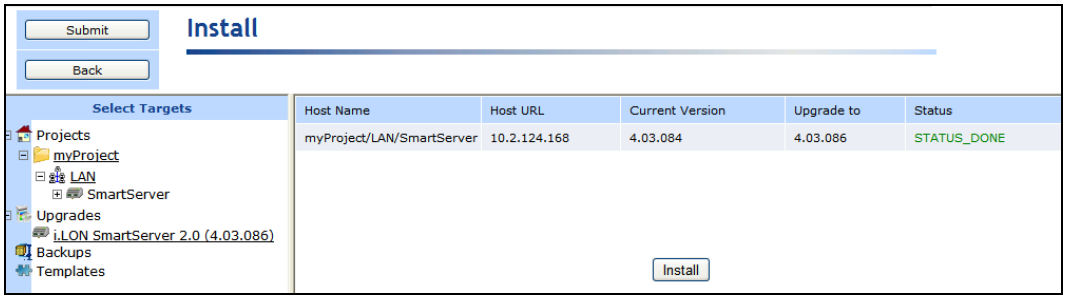
4. The **Install** Web page opens. Click a SmartServer within any project in the navigation pane to add it to the list of SmartServers to be upgraded.



5. The **Install** Web page displays the hostnames and IP addresses of the SmartServers to be upgraded, their current firmware version, and the firmware version to which they are to be upgraded.
6. Click **Install** to begin the upgrade process.
7. The **Status** box displays the status of the upgrade process.



8. After the SmartServers have been upgraded, they are automatically rebooted. When a SmartServer reboot has finished, STATUS_DONE is displayed in the **Status** box.



The total time of the upgrade and reboot is approximately 15–25 minutes depending on the complexity of your network configuration.

Creating an i.LON Template

You can configure a network on a single SmartServer operating in LNS mode or Standalone mode, make a template of that SmartServer's configuration, and then deploy that template on multiple SmartServers. This lets you create a "golden image" of one site and then replicate that image multiple times on identical sites. For example, if you have several buildings that have the same physical network, you can create an *i*.LON template for one building, and then deploy the template to automatically configure and install the other buildings. If your site uses LNS network management services, the *i*.LON template also includes an image of the LNS network database to which the SmartServer is synchronized. When you deploy the *i*.LON template, an identical LNS network database is created for each deployment site.

Specifically, you can logically add external devices and their data points to the development SmartServer, configure the development SmartServer's embedded applications (Alarm Generator, Alarm Notifier, Data Logger, Scheduler, and so on), configure your custom FPM applications, and create custom SmartServer Web pages. After you have finished configuring your development SmartServer, you can create a template of it.

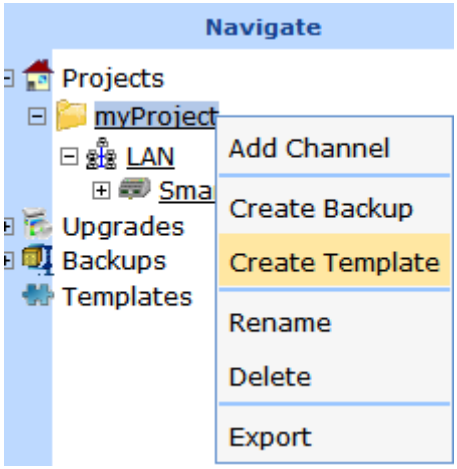
You can then deploy the template. When you deploy a template, the networks attached to the deployment SmartServers will have the same configuration as the development network. This means that the deployment SmartServers will have the same external devices, external data points, SmartServer applications, FPM configuration, and custom SmartServer Web pages as the development SmartServer.

You can also use templates to pre-configure the built-in applications on a single development SmartServer and then deploy the template. A common use-case scenario is the configuration of multiple SmartServers at one site. For example, on one development SmartServer, you can configure one or more schedulers, data loggers, type translators, or other applications on the SmartServer's

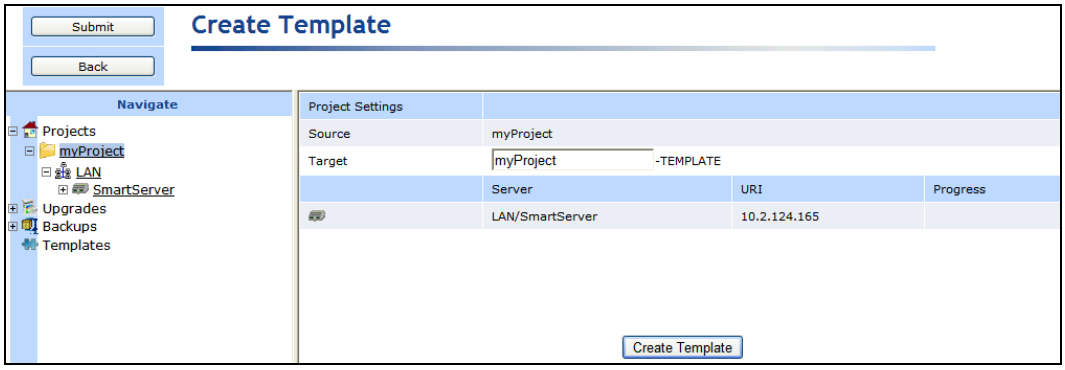
internal App device, create the template, and then copy the template to one or more development SmartServers that have been set to the factory default settings. After you reboot the deployment SmartServers, the embedded applications on the on the deployment SmartServers will have the same configuration (data points, presets, and so on) as those on the development SmartServer.

To create a template, perform the following steps:

1. If there is a LonMaker drawing associated with an LNS network database in the project, verify that the LonMaker drawing is closed.
2. Right-click your project and click **Create Template** on the shortcut menu.



3. The **Create Template** Web page opens.



If your SmartServer is synchronized to an LNS network database, and you are accessing the *i*.LON AdminServer on an LNS Server/EES 2.0 computer that is different than the one that contains the LNS network database, the template creation will fail. To create the template, access the *i*.LON AdminServer on the LNS Server/EES 2.0 computer that contains the LNS network database. See *Using the i.LON AdminServer Remotely* for more information.

4. Click **Create Template**. The time required to create the template depends on the size of the project. The SmartServer and LNS network database templates will be stored in the LonWorks\iLON\EnterpriseServices\repository\com\echelon\templates folder on your computer.

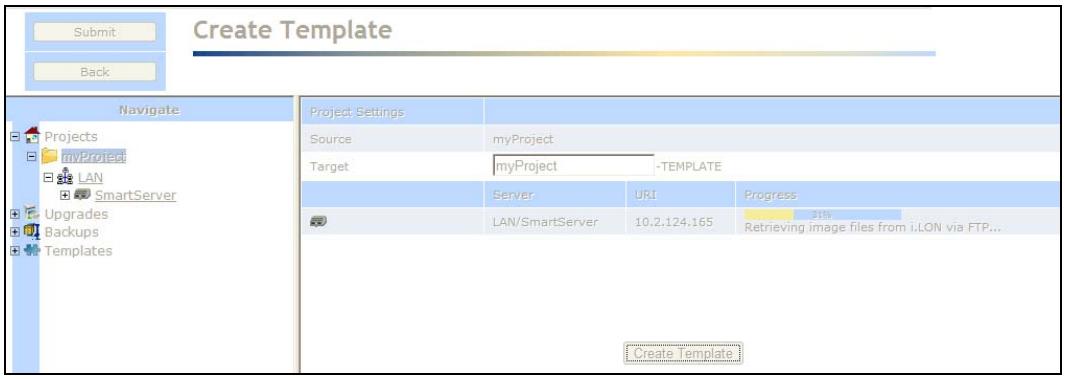
   - The SmartServer template is saved to a **.zip** file that is stored in the **LonWorks\iLON\EnterpriseServices\repository\com\echelon\templates\ilon\ilon_image** *<SmartServer host name>-<yyyy-mm-dd>-<template ID>* folder, and is named **ilon_image***<*SmartServer host name*>-<*yyyy-mm-dd*>-<*template ID*>.
   - The LNS network database template is saved to a **.zip** file that is stored in the **LonWorks\iLON\EnterpriseServices\repository\com\echelon\backups\lns\lns_db***<*LNS*

network database>-<*yyyy-mm-dd*>-<*template ID*> folder, and is named **lns_db**<*LNS network database*>-<*yyyy-mm-dd*>-<*template ID*>.

If any other administrative task for a SmartServer in the selected project has not been completed or has failed, a dialog opens prompting to confirm that you want to create the template.

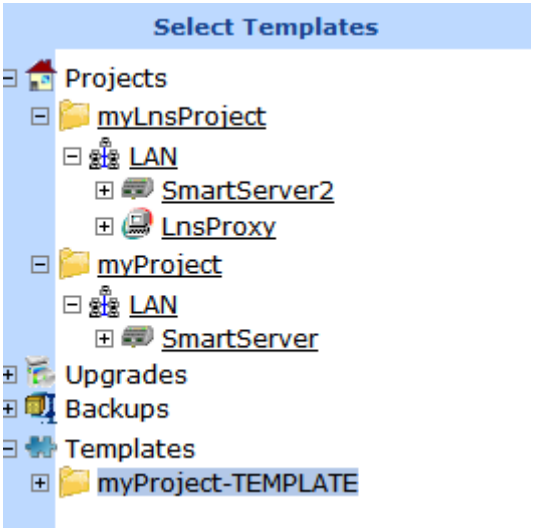
Note: If the *i*.LON AdminServer reports "Backup/Restore Failed. Compression Failed -8" when backing up an LNS network database that is associated with a LonMaker drawing, reboot your computer and try to create the *i*.LON template again.

5. The **Progress** box displays the status of the template creation.



6. After the SmartServer templates have been created, the SmartServers are automatically rebooted. When a SmartServer reboot has finished, STATUS_DONE is displayed in the **Status** box for that SmartServer.

7. A template folder is added underneath the **Templates** icon. To view this folder, expand the **Templates** icon. The name of the template is the name of the source project with "-TEMPLATE" appended to it.

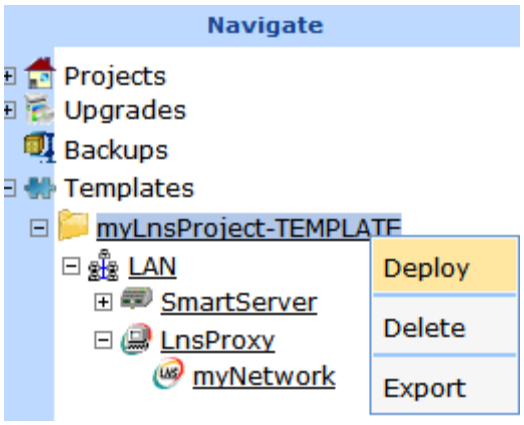


Deploying an i.LON Template

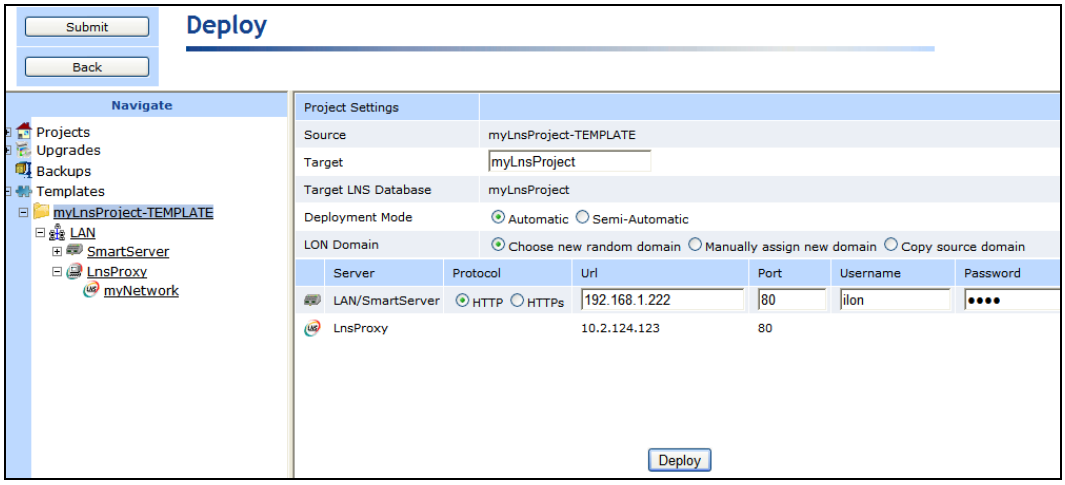
To deploy an *i*.LON template, perform the following steps:

1. If there is a LonMaker drawing associated with an LNS network database in the *i*.LON template, verify that the LonMaker drawing is closed.

2. Right-click your template (for example, **myDeployProject-TEMPLATE**) and then select **Deploy** on the shortcut menu.



3. The **Deploy** Web page opens.



4. In the **Target** property, enter the name of the target. If you do not specify a name, the *i*.LON AdminServer appends an index to the project name. For example, if the project is named "myProject", the default name of the **Target** is "myProject1".

   If the *i*.LON template includes an LNS network database, the **Target LNS Database** property displays the name of the LNS network database that will be created when the *i*.LON template is deployed. This name is the same as the one specified in the **Target** property.

   Note: If the template includes an LNS network database, the name of the **Target** must not exceed 10 to 12 characters, and it may not contain the forward slash (/), back slash (\), period (.), and colon (:) characters. The *i*.LON AdminServer will automatically truncate the **Target LNS Database** name if the name entered in the **Target** box is too long.

   This limit is imposed because the full path of the LNS network database may be a maximum of 23 characters, and the new LNS network databases created by the deployment are stored in the c:\ilon\db\ folder, which consumes 11 characters, which leaves 12 characters for the name of the Target project. If you are deploying a template that includes an LNS network database on two to nine SmartServers, a one-digit index number is appended to the name of the LNS network database, which consumes 1 additional character. If you are deploying a template that includes an LNS network database on 10 to 99 SmartServers, a two-digit index number is appended to the name of the LNS network database, which consumes 2 additional characters.

5. In the **Deployment Mode** property, select **Automatic** or **Semi-Automatic**.

   - Select **Automatic** if you are deploying an engineered network and each device has a unique device interface (XIF) file. Selecting this option installs the devices in the network

automatically, with no further user-interaction required. After the template is deployed and the target SmartServer is rebooted, the target SmartServer will automatically discover the physical devices on the network, match the devices with the devices in the SmartServer or LNS network database, and the commission the devices. This is the default.

- Select **Semi-Automatic** if you are deploying an engineered network that has multiple devices associated with any given XIF file (for example, you have three fryer devices that use the same fryer XIF file), or you are installing an ad-hoc network (a network that has no devices defined in the SmartServer or LNS network database).

  After the template is deployed and the deployment SmartServer is rebooted, open the deployment SmartServer's Web page (open your Web browser and enter the IP address of the deployment SmartServer, and then enter your log in information), and then open the **Overview – Devices** Web page. To open this Web page, right-click the parent network or channel of the devices being installed in the navigation pane, point to **Overview**, and then click **Devices** on the shortcut menu.

  Select the **Auto-Assign Devices to Placeholders** check box, and then click **Scan**. The target SmartServer will automatically discover the physical devices on the network and match them with the pre-configured devices (called "placeholders") in the SmartServer or LNS network database. After devices have been assigned to the placeholders, you can install the devices using Smart Network Management.

  See Chapter 5 of the *i.LON SmartServer 2.0 User's Guide* or the online help for more information on using the **Overview – Devices** Web page.

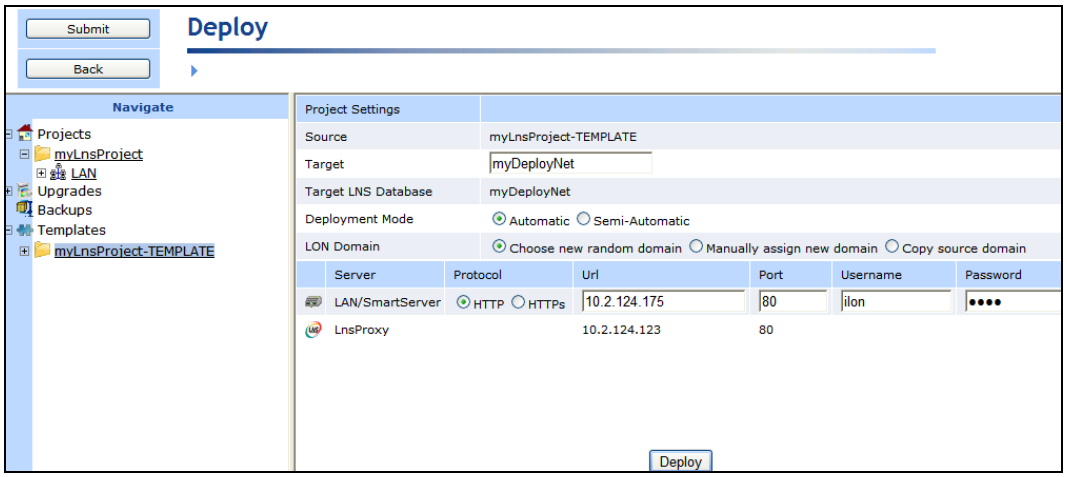
6. In the **Domain** property, select a method for assigning the network's domain (the domain is the top level of the LonTalk domain/subnet/node addressing hierarchy): **Random Domain**, **Manually Assigned Domain**, or **Copied Domain**.

   - Select **Random Domain** to use a random domain ID. This is the default.
   - Select **Manually Assigned Domain** to enter the domain ID. If you enter an ID that has fewer bytes than that specified in the **Domain Length** box, the domain ID will be padded with leading zeroes.
   - Select **Copy Source Domain** to use the domain used by the network in the template.

7. Enter the following SOAP/HTTP settings for each deployment SmartSever:

Protocol	Select the protocol used by the *i*.LON AdminServer to connect to the SmartServer (**HTTP** or **HTTPS**). The selected protocol must be enabled in the **Setup - Security** Web page in the SmartServer Web interface; otherwise, the following error occurs when the *i*.LON AdminServer tries to access the SmartServer: ERROR: WebService reports: "Could not connect to i.LON SmartServer!" • To use **HTTP**, the **Enable Web Server** check box in the **Setup - Security** Web page must be selected. • To use **HTTPs**, the **Enable SSL Web Server** check box in the **Setup - Security** Web page must be selected.
Url	Enter the IP address or hostname for the SmartServer to be added to the IP channel
Port (Web Server/SOAP)	Enter the port the SmartServer uses to serve HTTP or HTTPs requests (SOAP and WebDAV). If you are using HTTP, the default value is **80**. If you are using HTTPs, the default value is **443**. You may change the port to any valid port number.

Username	Enter the user name for logging in to your SmartServer via HTTP. The default user name is **ilon**.
Password	Enter the password for logging in to your SmartServer via HTTP. The default password is **ilon**.



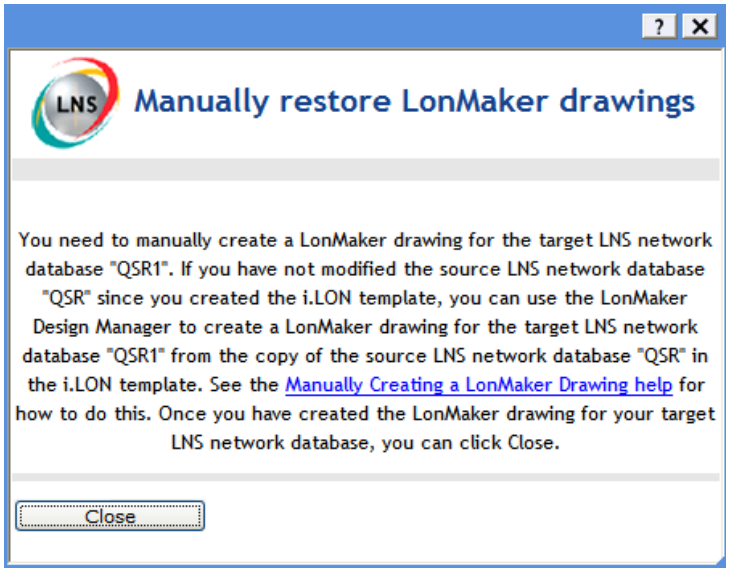
8. Click **Deploy** to deploy the template. The time required to deploy the template may range between 20 to 30 minutes, depending on the size of the template.

   Note: You can view the status of the current deployment by entering the `trace 2` command in the target SmartServer's console application. For more information on the SmartServer console application, see Appendix B of the *i.LON SmartServer 2.0 User's Guide*.

9. If a login dialog for the LNS Proxy Web service opens, enter the **User name** and **Password** for logging into the LNS Proxy Web service on the target LNS Server, which are both `ilon` by default, and then click **OK**. You may have initially set the user name and password in the EES 2.0 installer. If you cannot log into the *i*.LON AdminServer, use the EES tray tool icon on your EES 2.0 computer to view the current user name and password used for accessing the LNS Proxy Web service. See *Checking LNS Proxy Web Service Access* in Chapter 3 for more information on how to do this.

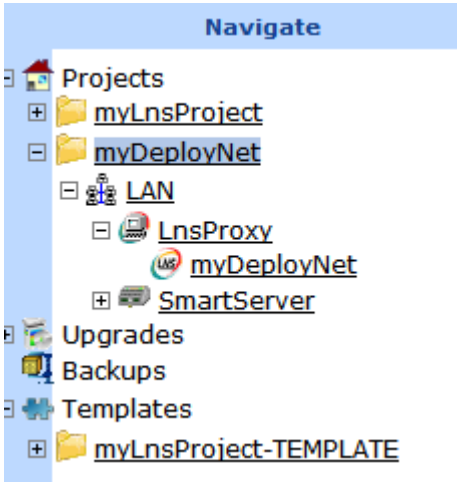
10. After the *i*.LON template has been deployed on the target SmartServers, the target SmartServers are automatically rebooted.

11. If the *i*.LON template includes an LNS network database, there is a LonMaker drawing associated with LNS network database, and you are deploying the *i*.LON template on the same LNS Server computer that includes the source LNS network database, the **Manually Restore LonMaker Drawings** dialog opens.



Manually create the LonMaker drawing for the target LNS network database following the next section, *Manually Copying a LonMaker Drawing*, and then click **Close**. This step is required because the LonMaker drawing cannot be created automatically. In this step, you use the LonMaker Design Manager to create the LonMaker drawing for the target LNS network database from a copy of the source LNS network database in the *i*.LON template

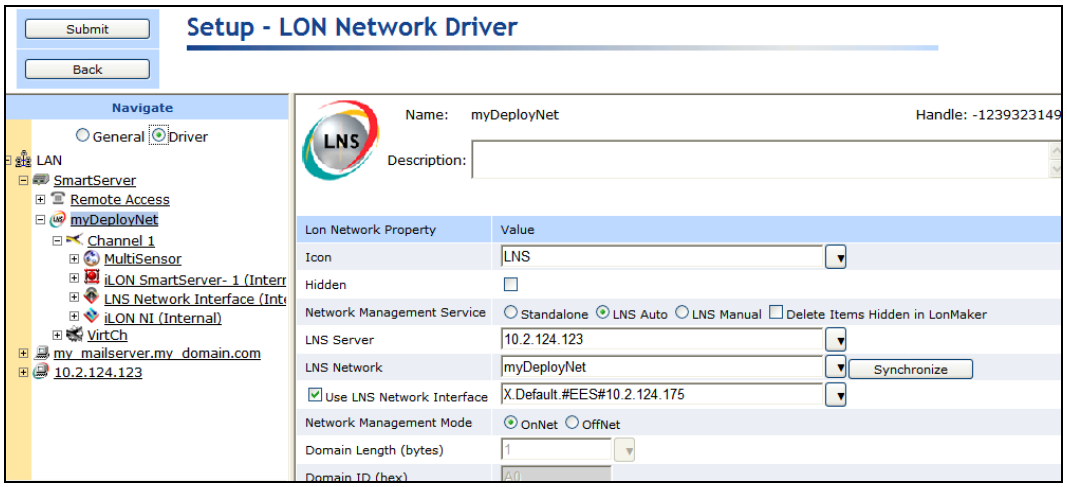
12. A new project for each deployment SmartServer is added to the navigation pane of the *i*.LON AdminServer. The new project contains the deployment SmartServer and a copy of the source LNS network database (if the *i*.LON template included an LNS network database). The name of the new project and the LNS network database in the project are based on the name specified in the **Target** property in step 4.



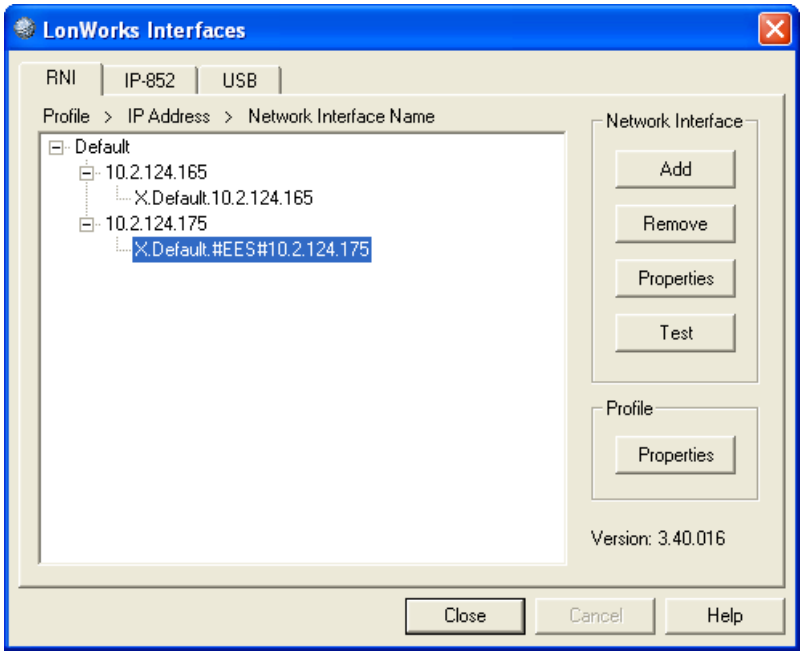
13. The deployment SmartServer is synchronized to the target LNS network database if the *i*.LON template included an LNS network database.

    Note: You can view the status of the synchronization by entering the `trace 2` command in the target SmartServer's console application. For more information on the SmartServer console application, see Appendix B of the *i.LON SmartServer 2.0 User's Guide*.

14. You can open the deployment SmartServer's Web pages and observe that the devices in the *i*.LON template have been replicated and installed on the SmartServer, and observe that the network has been synchronized to the target LNS network database (if the *i*.LON template included an LNS network database).



15. A remote network interface (RNI) for each deployment SmartServer is automatically created in the **LonWorks Interfaces** Control Panel application if the *i*.LON template included an LNS network database. The name of the RNI is **#EES#**<*deployment SmartServer IP address*>.



16. If you are a deploying an *i*.LON template that includes an LNS network database and was imported from a different LNS Server computer, and your LNS Server computer does not include the source LNS network database, you can create a LonMaker drawing from the deployed LNS network database as described in *Manually Creating a LonMaker Drawing* later in this section.

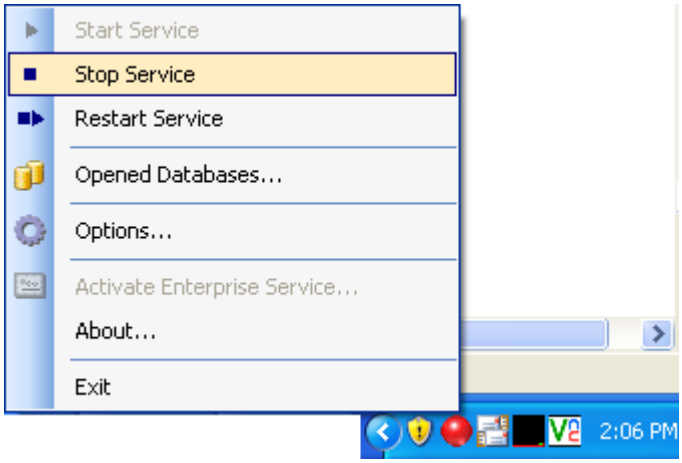
Manually Copying a LonMaker Drawing

If you are deploying an *i*.LON template that includes an LNS network database, there is a LonMaker drawing associated with LNS network database, and you are deploying the *i*.LON template on the same LNS Server computer that includes the source LNS network database, you need to manually create the LonMaker drawing for the target LNS network database because it cannot be created automatically.

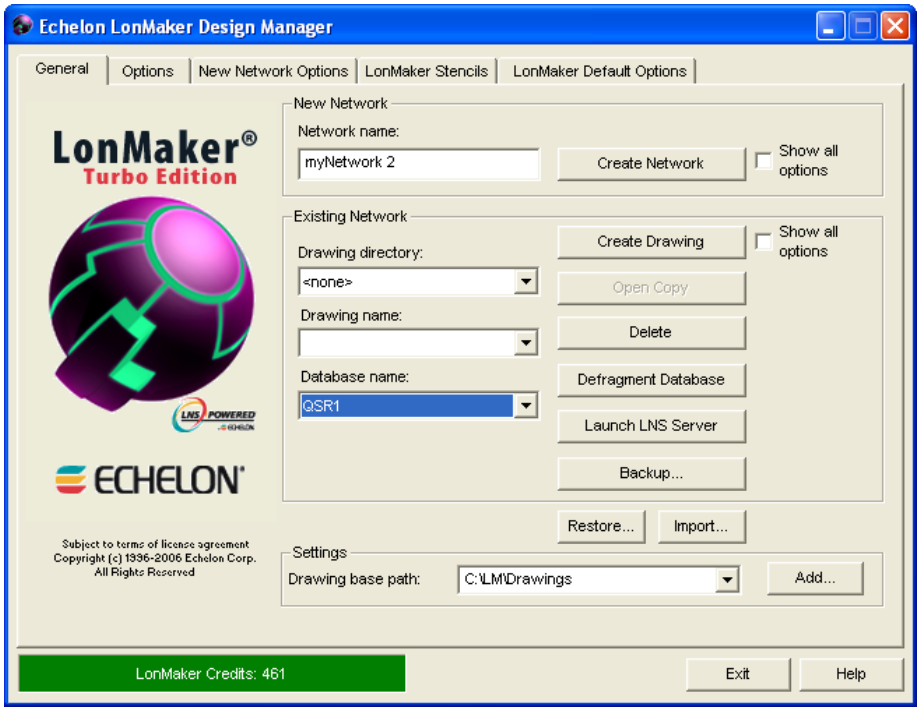
You can use the LonMaker Design Manager to create the LonMaker drawing for the target LNS network database from a copy of the source LNS network database in the *i*.LON template. For example, if the *i*.LON template includes an LNS network database named **QSR** and the target LNS

network database is named **QSR1**, you would create the LonMaker drawing for the **QSR1** database following these steps:

1. Stop the LNS Proxy Web service because it is currently accessing the target LNS network database. To do this, right-click the EES tray icon in the notification area, and then click **Stop Service** on the shortcut menu.

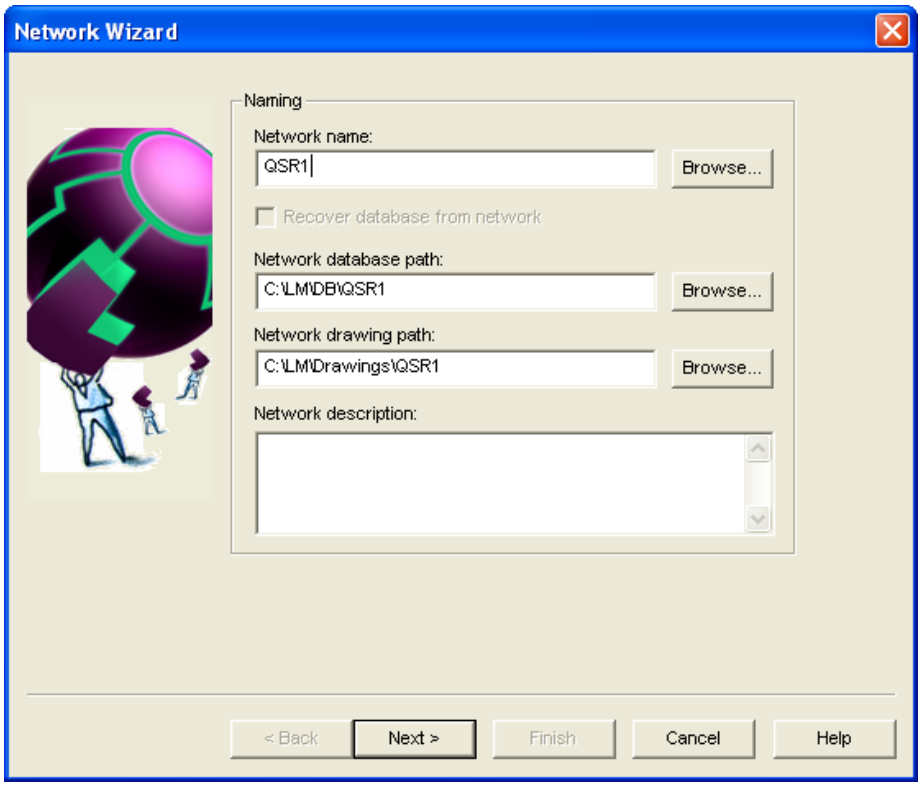


2. Open the LonMaker Design Manager.
3. In the **Database Name** property under **Existing Network**, select the deployed LNS network database. In this example, you would select **QSR1**.

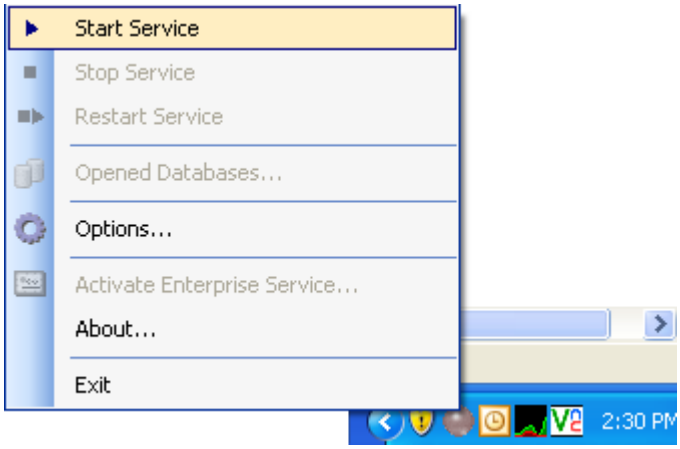


4. Click **Delete** and then click **Yes** to confirm the deletion of the deployed LNS network database.
5. In the **Database Name** property under **Existing Network**, select the LNS network database in the *i*.LON template. In this example, you would select **QSR**.
6. Click **Open Copy** under **Existing Network**. When the LonMaker drawing opens, click **Yes** to confirm the copying of the LNS network database in the *i*.LON template and its associated LonMaker drawing.

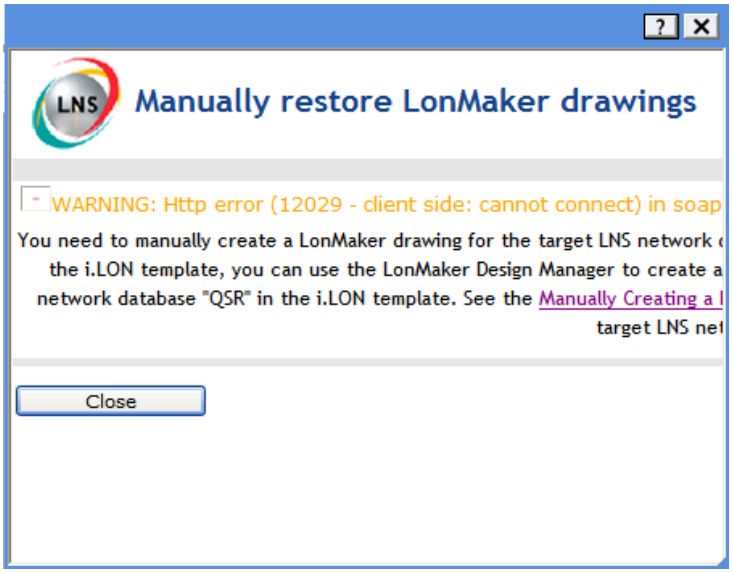
7. The Network Wizard opens. In the **Network Name** property, enter the name of the deployed LNS network database. In this example, you would enter **QSR1**.



8. Click **Next** in the subsequent pages in the Network Wizard to accept the default settings and then click **Finish** in the Domain Definition window.
9. After the LonMaker drawing for the target LNS network database has been created, close it.
10. Repeat steps 3–9 for each SmartServer to which you are deploying the *i*.LON template.
11. Restart the LNS Proxy Web service. To do this, right-click the EES tray icon in the notification area, and then click **Start Service** on the shortcut menu.



12. In the i.LON AdminServer Web interface, click **Close**. Note that you can ignore the HTTP error message resulting from the intentional stopping of the LNS Proxy Web service.



13. The deployment SmartServer is synchronized to the target LNS network.

    Notes:

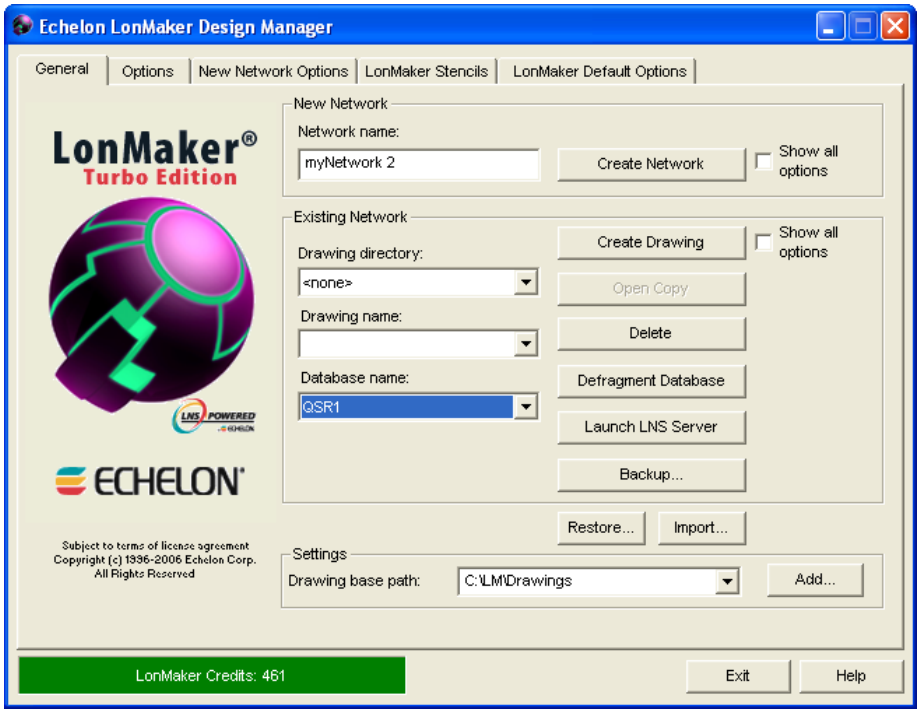
    - You can view the status of the synchronization by entering the trace 2 command in the target SmartServer's console application. For more information on the SmartServer console application, see Appendix B of the *i.LON SmartServer 2.0 User's Guide*.
    - If you have modified the source LNS network database since you deployed the *i*.LON template, your LonMaker drawing will be created based on the updated LNS network database. Furthermore, when the deployment SmartServer is synchronized to the target LNS network database, it will be updated to match the LNS network database. If you want your deployment SmartServers to be synchronized to the LNS network database in the *i*.LON template—not to the modified LNS network database—do not modify the source LNS network database until after you deploy the *i*.LON template.

14. You can open the LonMaker drawing you created for the target LNS network database.

Manually Creating a LonMaker Drawing

If you deployed an *i*.LON template that includes an LNS network database and was imported from a different LNS Server computer, and your LNS Server computer does not include the source LNS network database, you can create a LonMaker drawing from the deployed LNS network database. To do this, follow these steps:

1. Open the LonMaker Design Manager.
2. In the **Database Name** property under **Existing Network**, select the deployed LNS network database. In this example, you would select **QSR1**.



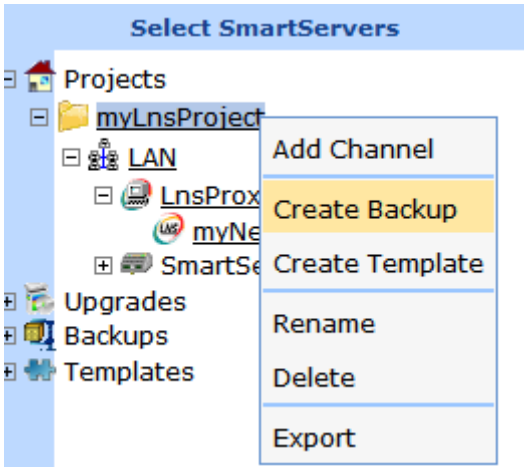
3. Click **Create Drawing**.
4. When you open the LonMaker drawing, a prompt may open informing that there is a NSS device (LNS server network service device) conflict. Click **OK**, and then follow the instructions in the Network Wizard to open the drawing. Make sure you select the **#EES#***<deployment SmartServer IP address>* as the network interface. After the drawing is opened, a prompt opens asking if you want to resynchronize the network. You only need to resynchronize the network if you made changes to the network with the SmartServer before opening the LonMaker drawing.

Backing Up a SmartServer

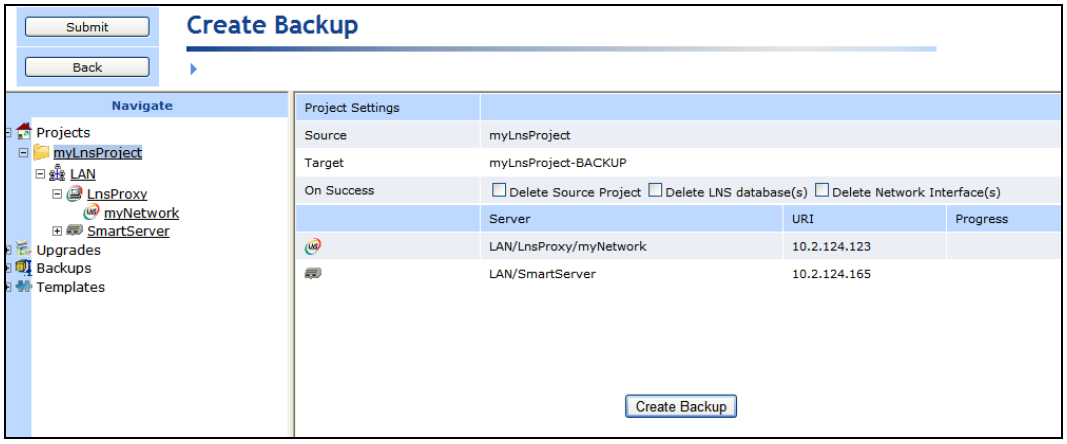
You can use the *i*.LON AdminServer to back up an *i*.LON image, which includes the SmartServer's internal database, IP-852 routing and programming licenses, custom Web pages, device resource files, application image files, XIF files. In addition, the *i*.LON AdminServer backs up the LNS network database to which the SmartServer is synchronized (if you are using LNS mode). Regularly back up your SmartServer to protect your network configuration and your custom SmartServer Web pages. The SmartServer and LNS network database backups are stored in the LONWORKS**iLON\EnterpriseServices\repository\system\com\echelon\backups** folder on your computer.

To create a backup of your SmartServer, follow these steps:

1. Right-click your project and click **Create Backup** on the shortcut menu.



2. The **Create Backup** Web page opens. All the SmartServers in the selected project are listed and will be backed up.



If your SmartServer is synchronized with an LNS network database, that LNS network database is also listed and will be backed up. If you are accessing the *i*.LON AdminServer on an LNS Server/EES 2.0 computer that is different than the one that contains the LNS network database, the back up will fail. To create the backup, access the i.LON AdminServer on the LNS Server/EES 2.0 computer that contains the LNS network database. See *Using the i.LON AdminServer Remotely* for more information.

The SmartServer and LNS network database backups will be stored in the LonWorks\iLON\EnterpriseServices\repository\com\echelon\backups folder on your computer.

- The SmartServer backup is saved to a .zip file that is stored in the **LonWorks\iLON\EnterpriseServices\repository\com\echelon\backups\ilon\ilon_image**<*SmartServer host name*>-<*yyyy-mm-dd*>-<*backup ID*>folder, and is named <*SmartServer host name*>-<*yyyy-mm-dd*>-<*backup ID*>.
- The LNS network database backup is saved to a .zip file that is stored in the **LonWorks\iLON\EnterpriseServices\repository\com\echelon\backups\lns\lns_db**<*LNS network database*>-<*yyyy-mm-dd*>-<backup ID> folder, and is named **lns_db**<*LNS network database*>-<*yyyy-mm-dd*>-<*backup ID*>.

3. In the **On Success** property, you can select the following options to delete the *i*.LON project, LNS network database, and temporary network interface used by the i.LON AdminServer after the backup has successfully been created:

- **Delete Source Project**. Deletes the selected *i*.LON projects from the navigation pane on the left side of the *i*.LON AdminServer Web interface.
- **Delete LNS Network Database(s)**. Permanently deletes the LNS network databases in the selected *i*.LON projects from the LNS Server. This option is useful if you are managing many LNS networks.

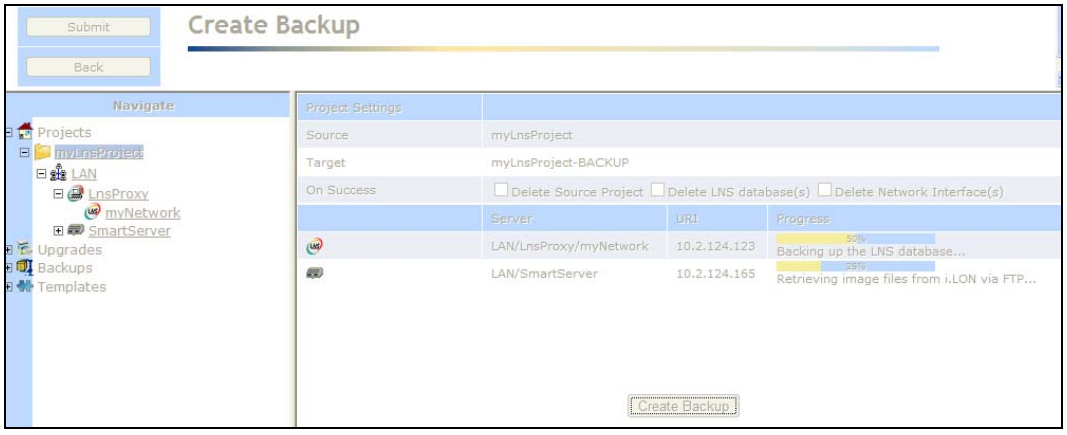
  Delete Network Interface(s). Deletes the temporary network interface used by the *i*.LON AdminServer to communicate the SmartServer and LNS Proxy Web service from the *i*.LON project.

4. Click **Create Backup**. The time required to create the backup depends on the size of the project.

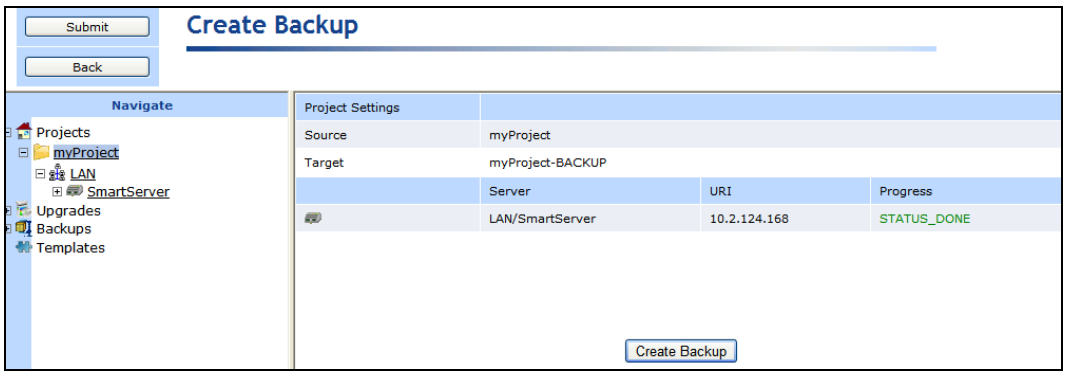
   If any other administrative task for a SmartServer in the selected project has not been completed or has failed, a dialog opens prompting to confirm that you want to create the backup. Click **OK**.

   Note: If the *i*.LON AdminServer reports "Backup/Restore Failed. Compression Failed -8" when backing up an LNS network database that is associated with a LonMaker drawing, reboot your computer and try to create the backup again.

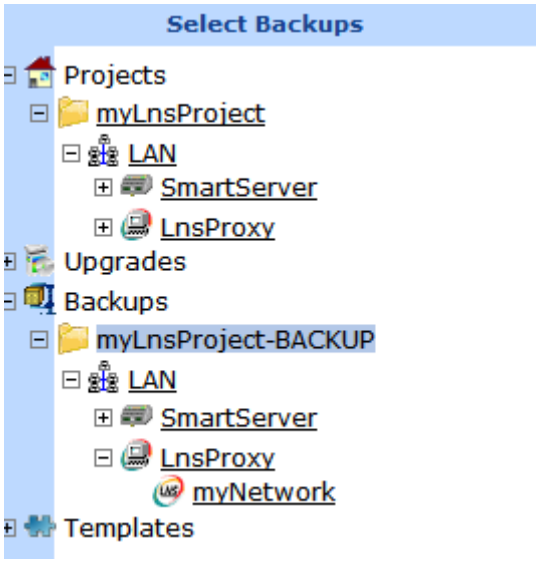
5. The **Progress** box displays the status of the backup.



6. After a SmartServer has been backed up, it is automatically rebooted. When a SmartServer reboot has finished, STATUS_DONE is displayed in its **Status** box.



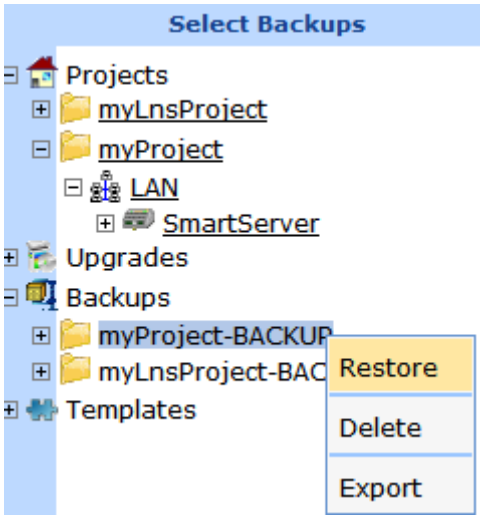
7. A backup folder is added underneath the **Backups** icon. The name of the backup is the name of the source project with "-BACKUP" appended to it.



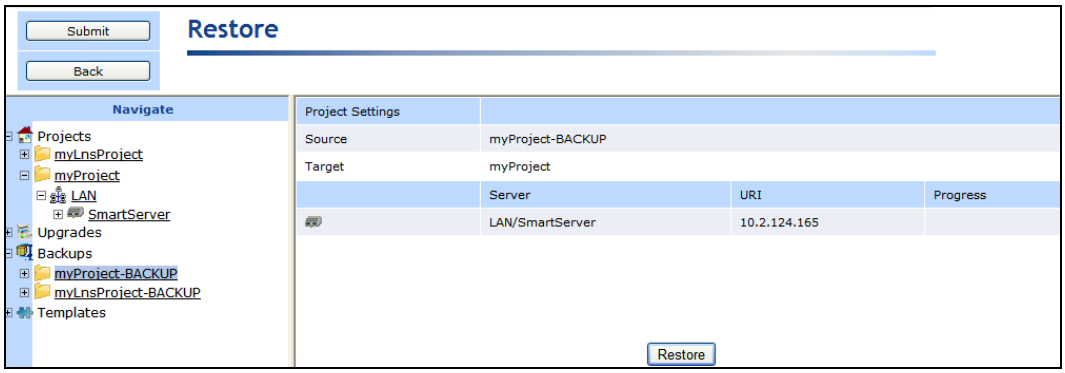
Restoring a SmartServer

You can use the *i*.LON AdminServer to restore a backup of a SmartServer image, and to restore the LNS network database to which the SmartServer is synchronized (if you are using LNS mode). To restore a SmartServer from a backup, follow these steps:

1. Under the **Backups** icon, right-click the appropriate backup folder and then click **Restore** on the shortcut menu.



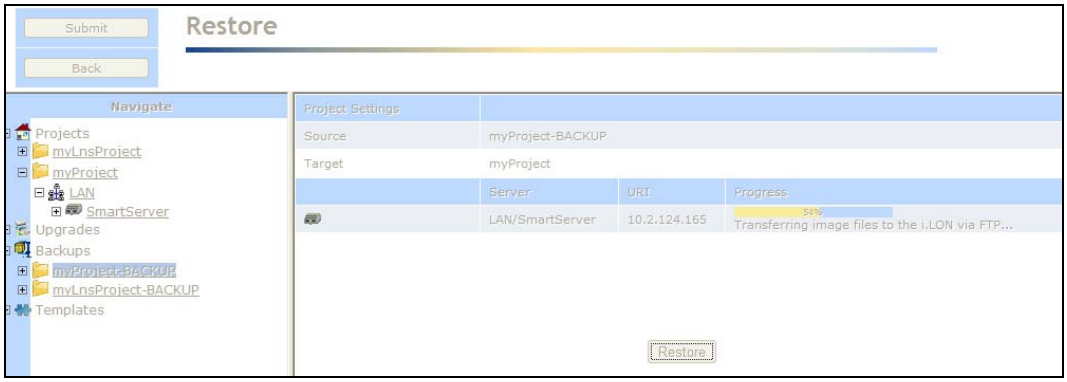
2. The **Restore** dialog opens.



3. Click **Restore**. The time required to restore the backup depends on the size of the backup image.

   If any other administrative task for a SmartServer in the selected project has not been completed or has failed, a dialog opens prompting to confirm that you want to create the backup. Click **OK**.

4. The **Progress** box displays the status of the restore.



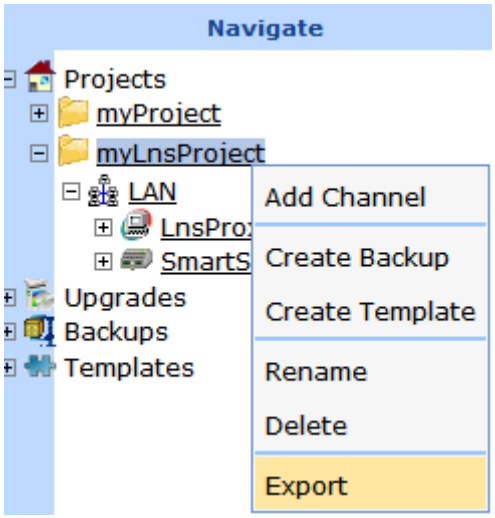
5. After a SmartServer has been restored, it is automatically rebooted. When a SmartServer reboot has finished, STATUS_DONE is displayed in its **Status** box.

Exporting i.LON Projects, Templates, and Backups

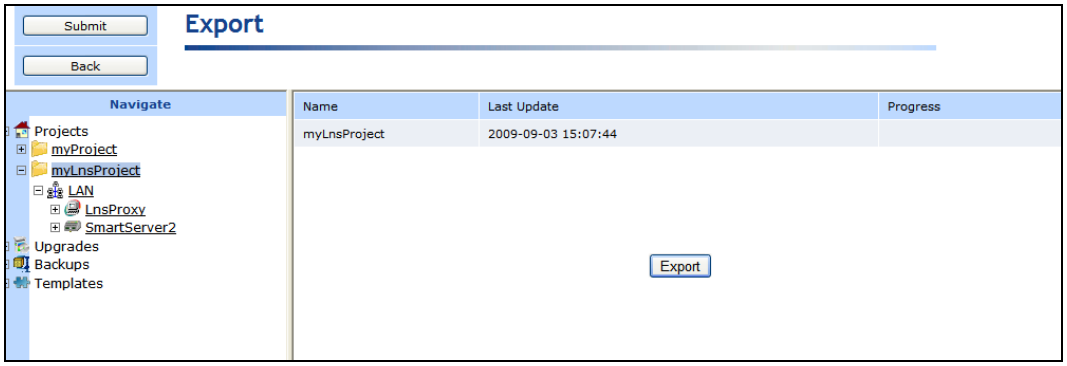
You can export an *i*.LON project, template, or backup so that you can manually copy it from one computer to another. An exported *i*.LON project includes everything associated with the *i*.LON project, including LNS network databases (if a SmartServer in the project is synchronized to an LNS network database) to your computer. An exported *i*.LON template is especially useful for deploying networks where you cannot access the deployment SmartServer via SOAP/HTTP (for example, the LNS Server or the deployment SmartServer is behind a firewall).

To export an *i*.LON project, template, or backup, perform the following steps:

1. Right-click the *i*.LON project, template, or backup folder and then click **Export** on the shortcut menu.



2. The **Export** Web page opens.



3. Click **Export** to begin the export. The time required for the export depends on the size of the *i*.LON project, template, or backup.

4. The *i*.LON project, template, or backup is copied to an export file (**.zip**) that is named **EXPORT-**<*project name*>-<*yyyy-mm-dd*>-<*export ID*> and is stored in an ees-export folder with same name. The following table lists where the ees-export files are stored on your computer.

Export File	Export Folder in LONWORKS Directory
Project	LONWORKS\iLON\EnterpriseServices\repository\ees-export\projects
Template	LONWORKS\iLON\EnterpriseServices\repository\ees-export\templates
Backup	LONWORKS\iLON\EnterpriseServices\repository\ees-export\backups

For example, an exported *i*.LON project could have the following full path:

LONWORKS\iLON\EnterpriseServices\repository\ees-export\projects\EXPORT-MyProject-2009-08-04-181914414\EXPORT-MyProject-2009-08-04-181914414.zip.

Importing i.LON Projects, Templates, and Backups

To import an *i*.LON project, template, or backup, perform the following steps:

1. Copy the ees-export file (**.zip**) in the folder containing the *i*.LON project, template, or backup to be imported to the corresponding ees-import folder on your computer. The following table lists the import folders where you need to copy the export file.

Export File	Import Folder in LONWORKS Directory
Project	LONWORKS\iLON\EnterpriseServices\repository\ees-import\projects
Template	LONWORKS\iLON\EnterpriseServices\repository\ees-import\templates
Backup	LONWORKS\iLON\EnterpriseServices\repository\ees-import\backups

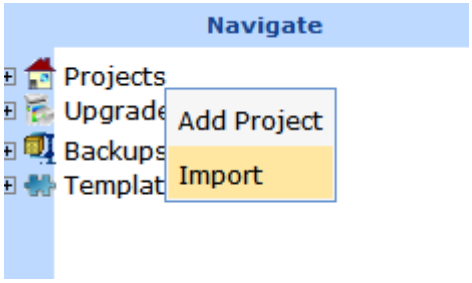
For example, to import the example project exported in the previous section, you would copy the following ees-export file for the project:

LONWORKS\iLON\EnterpriseServices\repository\ees-export\projects\EXPORT-MyProject-2009-08-04-181914414\EXPORT-MyProject-2009-08-04-181914414.zip

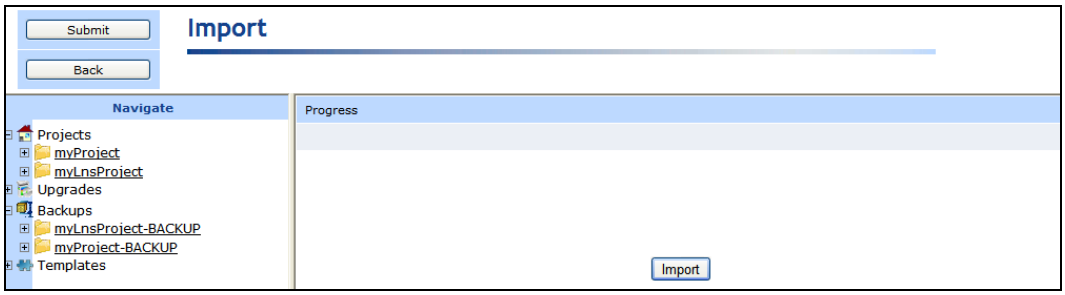
to the following ees-import folder on your computer:

LONWORKS\iLON\EnterpriseServices\repository\ees-import\projects.

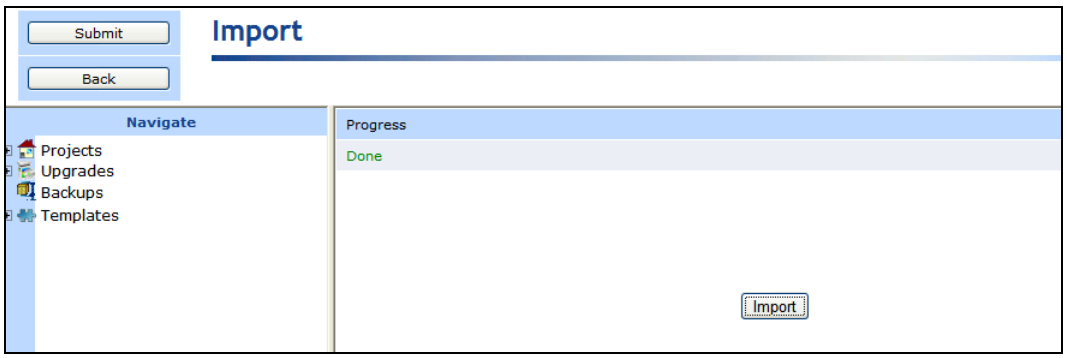
2. Delete any other ees-export file currently stored in the ees-import folder (the import folder to where you copied the backup in step 1). If you do not perform this step, the import will fail.
3. Right-click the **Projects**, **Backups**, or **Templates** folder and then click **Import** on the shortcut menu.



4. The **Import** Web page opens.



5. Click **Import**. It takes approximately 1-2 minutes to complete the import. When the import is done, **DONE** is displayed under the **Progress** column.



6. You can expand the **Projects**, **Backups**, or **Templates** folder to see the imported file.

Note: If you import a project that has the same name as an existing project on your computer, the import will fail.

Using the i.LON AdminServer Remotely

You can access the *i*.LON AdminServer from a remote EES 2.0 client (a computer that is different than your LNS Server/EES 2.0 computer), and perform administrative tasks on the SmartServers in an *i*.LON project just as if you were working on your local LNS Server/EES 2.0 computer.

To access the *i*.LON AdminServer from a remote EES 2.0 client, open a Web browser and enter the following IPv4 address:

http://*<LNS Server/EES 2.0 Computer IP Address>***/EES/AdminService/v4.0/index.htm**.

If your SmartServer is synchronized to an LNS network database, you must access the *i*.LON AdminServer from the same LNS Server/EES 2.0 computer that contains the LNS network database. If you access the i.LON AdminServer on a different LNS Server/EES 2.0 computer that does not contain the LNS network database, the administrative tasks performed on the *i*.LON project that contains the LNS network database will fail (for example, creating and deploying an i.LON template, backing up and restoring an *i*.LON image, and so on). This is because the i.LON AdminServer will not be able to locate the LNS network database.

Using Rapid Deployment

You can use *i*.LON AdminServer to automatically install single-channel LNS managed or standalone networks containing up to approximately 20 devices. *i*.LON SmartServer 2.0 features a new device discovery method for acquiring the Neuron IDs of the devices on the network. With the device discovery method, the SmartServer searches the physical network for uncommissioned devices and matches them based on program ID to the devices stored in a SmartServer or LNS network database. The SmartServer then automatically installs the discovered devices.

Automatic network installation eliminates the cumbersome manual tasks associated with network installation such as matching up device configurations in a network tool with the physical devices on the network, and pressing service pins on the devices to commission them.

To install devices automatically, follow these steps:

1. Prepare the development computer and SmartServer for the network design and installation. To do this, follow these steps:

   a. Upload the resource files provided by the device manufacturer for the devices being installed to the **root/LONWORKS/types/user** folder on the flash disk of the development SmartServer.

   b. Upload the XIF files provided by the device manufacturer for the devices being installed to the **root/LONWORKS/import** folder on the flash disk of the development SmartServer.

   c. If you are using LNS network management services and you plan on using the development as the network interface, configure the development SmartServer as an RNI on your development computers using the **LONWORKS Interfaces** Control Panel application. See *Configuring the SmartServer as a Remote Network Interface* in Chapter 3 of the *i.LON SmartServer 2.0 User's Guide* for more information on how to do this.

   d. If you are using LNS network management services, add an LNS Server to the LAN in the SmartServer Web interface. To do this, right-click **LAN** icon at top of navigation pane, point to **Add Host**, click **Server**. Click **LNS Proxy** option, and then enter IP address of system computer running LNS Turbo Server 3.25 (or newer). See *Using the LNS Proxy Web Service* in Chapter 3 of this document for more information on adding an LNS Server to the LAN.

2. If you are using LNS network management services, design the network using the LNS tree, the LonMaker tool, or another LNS network tool following these steps (see step 3 if you are using standalone network management).

   These steps have been designed for newer SmartServer users, who may need instructions on creating an LNS managed network with the SmartServer. You can design your network without following these steps if you are a more experienced user.

   Tip: Design the network with the same LNS network tool you plan on using to manage and maintain the deployment networks.

   a. Create a new network and LNS network database. If you are using the LNS tree, right click the **LNS Server** icon, and then click **Create Network**. In the **Create Network** dialog, enter the network name, specify the domain length and ID, and then click **OK**. See *Creating LONWORKS Networks from the LNS Tree* in Chapter 5 of the *i.LON SmartServer 2.0 User's Guide* for more information.

   b. Create the devices to be installed, including the SmartServer's internal automated systems device (referred to as **i.LON App**). If you are using the LNS tree, right-click **Channel 1**, and then select **Add Device** on the shortcut menu. In the **Add Device** dialog, select the XIF file for the device, enter the device name, and then click **OK**. See *Creating LONWORKS Devices* in Chapter 5 of the *i.LON SmartServer 2.0 User's Guide* for more information.

   c. Add functional blocks to the i.LON App device for the SmartServer applications to be used for monitoring and controlling the external data points (network variables) of the devices. If you are using the LNS tree, right-click the *i*.LON App device, and then select **Add Functional Block** on the shortcut menu. In the **Add Functional Block** dialog, select the desired functional blocks, and then click **OK**. See *Creating Functional Blocks* in Chapter 5 of the *i.LON SmartServer 2.0 User's Guide* for more information.

   d. Synchronize the SmartServer to the LNS network database you created in step b. See *Synchronizing the SmartServer* in Chapter 3 of this document for how to do this.

   e. Use bound monitoring or polling to monitor and control the external data points.

      - To use bound monitoring, create LONWORKS connections between the external devices and the SmartServer using the LNS tree, LonMaker tool, or other network tool. Connect the dynamic network variables in the SmartServer functional blocks to the network variables of the devices. For more information on using the LNS tree to create network variable connections, see *Connecting LONWORKS Data Points with LONWORKS Connections* in Chapter 5 of the *i.LON SmartServer 2.0 User's Guide.* For more information on using bound monitoring with the LonMaker tool in SmartServer networks, see *Binding External Network Variables* in Chapter 12 of the *i.LON SmartServer 2.0 User's Guide.*

      - To use polling, expand the LNS network database in the LNS tree, channel, device, and functional block containing the network variable to be to monitored and control led, 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. For more information on using polling with the LonMaker tool in SmartServer networks, see *Polling External Network Variables* in Chapter 12 of the *i.LON SmartServer 2.0 User's Guide.*

   f. In the SmartServer tree in the SmartServer Web interface, configure the SmartServer's built-in applications. If you are using bound monitoring, add the dynamic network variables in the SmartServer functional blocks you connected in step d to the applications. If you are polling data points, add the data points you created in step d to the applications. See Chapters 6–11 in the *i.LON SmartServer 2.0 User's Guide* for more information on how to do this.

If you are using the LonMaker tool, you can use the *i*.LON SmartServer Configuration Utility to open the SmartServer's applications from the LonMaker drawing. To do this, right-click the functional block shape in the LonMaker drawing representing the SmartServer application to be configured, and then click **Configure** on the shortcut menu. For more information on opening SmartServer applications from a LonMaker drawing, see *Opening SmartServer Applications with the LonMaker Tool* in Chapter 12 of the *i.LON SmartServer 2.0 User's Guide.*

3. If you are using standalone network management, design the network following these steps. These steps are ideal for newer SmartServer users, who may need instructions on creating a standalone network with the SmartServer. You can design your network without following these steps if you are a more experienced user.

   a. Set the SmartServer to standalone mode. To do this, click the **Driver** option at the top of the navigation pane on the left side of the SmartServer Web interface, and then click the **Net** network in the SmartServer tree. In the **Setup - LON Network Driver** Web page, click the **Standalone** option in the **Network Management Service** property, and then click **Submit**. See *Using Standalone Mode* in Chapter 5 of the *i.LON SmartServer 2.0 User's Guide* for more information.

   b. Create the external devices to be installed. In the SmartServer tree, right-click the **LON** channel, and then select **Add Device** on the shortcut menu. In the **Add Device** dialog, select the XIF file for the device, enter the device name, and then click **OK**. See *Creating LONWORKS Devices* in Chapter 5 of the *i.LON SmartServer 2.0 User's Guide* for more information.

   c. Add functional blocks for the SmartServer applications to be used for monitoring and controlling the external data points of the devices. In the SmartServer tree, right-click the **i.LON App** device, and then select **Add Functional Block** on the shortcut menu. In the **Add Functional Block** dialog, select the desired functional blocks, and then click **OK**. See *Creating Functional Blocks* in Chapter 5 of the *i.LON SmartServer 2.0 User's Guide* for more information.

   d. Configure the SmartServer's built-in applications in the SmartServer tree. Add the data points under the external devices that you created in step b to the applications. See Chapters 6–11 in the *i.LON SmartServer 2.0 User's Guide* for more information on how to do this.

4. Use *i*.LON Vision 2.0 to create a Web interface for your sites. See the *i.LON Vision 2.0 User's Guide* for more information on creating custom Web pages for your SmartServer.

   Tip: If your source SmartServer is synchronized to an LNS network database and you plan on deploying a custom Web interface on your target SmartServers, define alias names for the external data points and internal dynamic data points to be used in your custom Web pages on your source SmartServer, and use alias names for all the *i*.LON Vision objects in the custom Web pages. Otherwise, you will need to manually open all Web pages on all your deployment SmartServers and update the names of the selected data points. This is because the network names of the source and deployment SmartServers will be different, breaking the links between the *i*.LON Vision objects and their selected data points.

   An alias name is a user-defined string that uniquely describes the data point. You can define an alias name for a data point in its **Configure - Data Point** Web page in the factory SmartServer Web interface. To open the **Configure - Data Point** Web page for a data point, click **General** and then click the external data point in the network branch of the SmartServer tree.

   The static data points on the SmartServer's internal App and Virtual devices [**iLON App (Internal)** and **iLON System (Internal)**] have default alias names, with **NVL_** and **iLON System** prefixes, respectively.

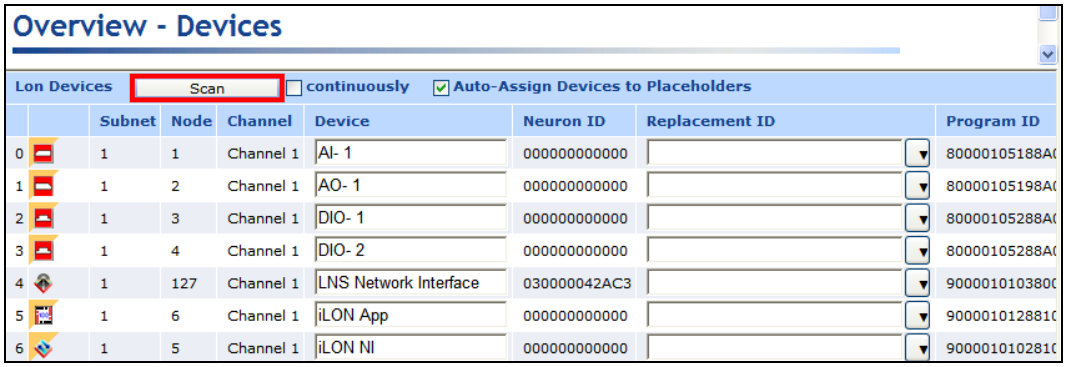
5. Use the *i*.LON AdminServer to create an *i*.LON template ("the golden image") of your development SmartServer. See *Creating an i.LON Template* earlier in this chapter for more information on how to do this.

6. Verify that the devices on the onsite network are uncommissioned.
7. Use the *i*.LON AdminServer to deploy the SmartServer template you created in step 6 on the deployment SmartServer attached to the onsite network. See *Deploying an i.LON Template* earlier in this chapter for more information on how to do this.

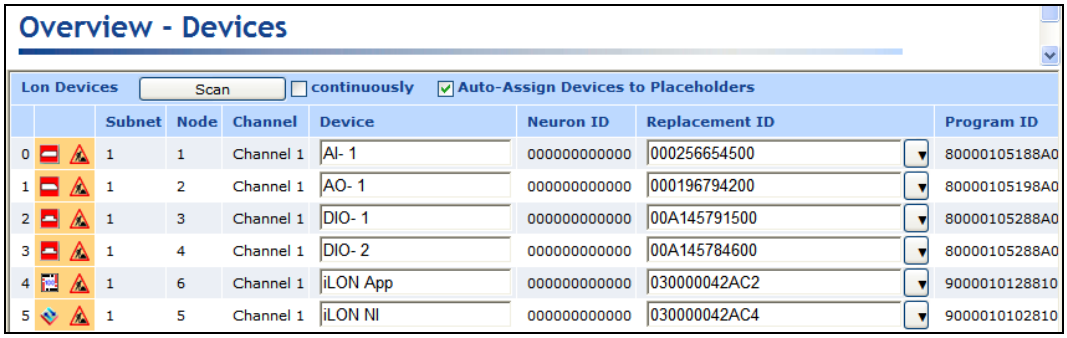
   - If you are installing a network that has one device per XIF file, select **Automatic** in the **Deployment Mode** property. After the *i*.LON template is deployed, the SmartServer will automatically discover and install the devices with no user interaction. You can use the **Lon Command Queue** Web page in the SmartServer Web pages to check the status of the network installation. To do this, right-click the SmartServer icon, point to **Setup**, and then click **LON Command Queue** on the shortcut menu. Alternatively, you can open the **Setup** menu and then click **LON Command Queue**.
   - If you are installing a network that has multiple devices associated with any given XIF file (for example, you have three fryer devices that use the same fryer XIF file) select **Semi-Automatic** in the **Deployment Mode** property.

     After the *i*.LON template is deployed, and the deployment SmartServer is rebooted, open the deployment SmartServer's Web page (open your Web browser and enter the IP address of the deployment SmartServer, and then enter your log in information), and then open the **Overview – Devices** Web page. To open this Web page, right-click the parent network or channel of the devices being installed in the navigation pane, point to **Overview**, and then click **Devices** on the shortcut menu.

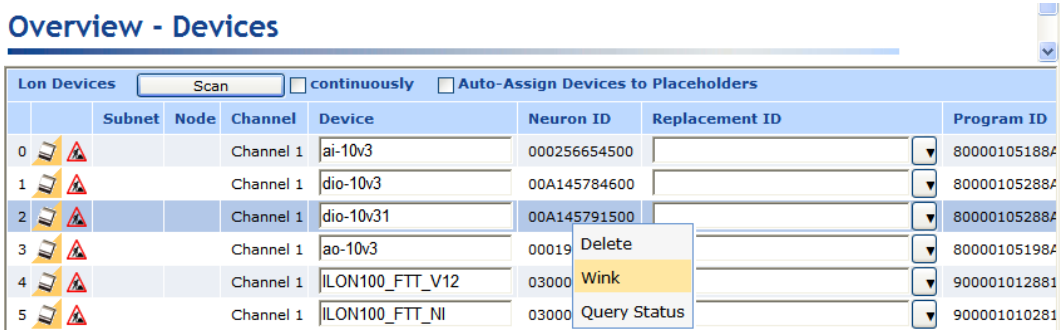
     Follow steps 8–13 to discover the physical devices, and match them to the pre-configured devices in the SmartServer or LNS network database you created.
8. Click **Scan** to discover all uncommissioned devices on the network if they are already attached to the network, or click the **Continuously** check box if you are incrementally attaching the devices to the network. A message is broadcast to the devices on the network that triggers the devices to identify themselves by their Neuron IDs. Click **Cancel Scan** to stop device discovery.



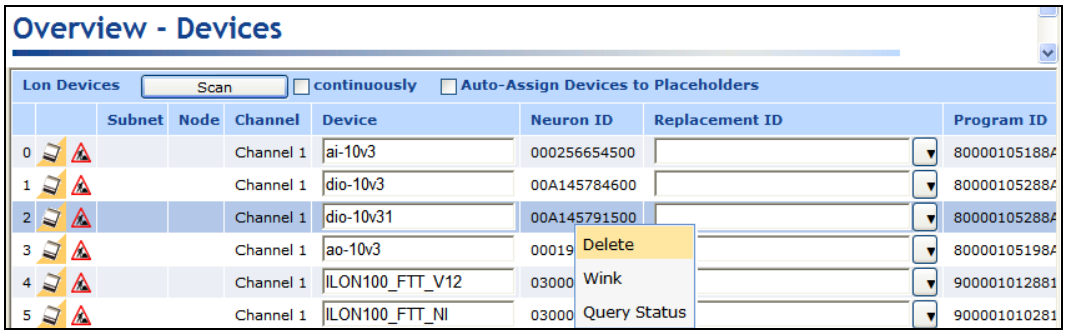
9. The Neuron IDs of the discovered devices appear in the **Replacement ID** property, and the under construction triangle appears to the right of the device icon.



10. Optionally, you can wink or test discovered devices. To do this, right-click anywhere in the device's row and then click **Wink** or **Query Status** on the shortcut menu. For more information on using the SmartServer to wink and test devices, see Chapter 5 of the *i.LON SmartServer 2.0 User's Guide*.



11. Optionally, you can remove devices that you do not want to be assigned Neuron IDs or you do want to be created. To do this, right-click anywhere in the device's row and then click **Delete** on the shortcut menu.



12. Click **Submit**. The Neuron IDs acquired by device discovery are assigned to the placeholders and the SmartServer's internal database (standalone mode) or the LNS network database is updated with the Neuron IDs.

13. The devices are automatically downloaded, commissioned, set online, updated with the configuration and driver properties of the data points and configuration properties of the original device, and then reset, which starts the device application.

    You can use the **Lon Command Queue** Web page to check the status of the network installation. To do this, right-click the SmartServer icon, point to **Setup**, and then click **LON Command Queue** on the shortcut menu. Alternatively, you can open the **Setup** menu and then click **LON Command Queue**.

> You can assemble a demonstration network that includes a SmartServer, and use the SmartServer to automatically deploy the network. You can then observe how the SmartServer manages and conserves the network's energy. For more information on assembling and running the demonstration network, see the *Rapid Deployment Example for EES*. This guide is available in the **RapidDeploymentExample** folder on the root directory of the *i.LON SmartServer 2.0 DVD*.
>
> This guide specifies devices to be used to assemble the demonstration network, includes wiring instructions for the specified devices, describes how to import and deploy the provided *i*.LON template for your demonstration network, and explains how to use the provided custom Web interface to monitor and control the demonstration network.

3

Using the LNS Proxy Web Service

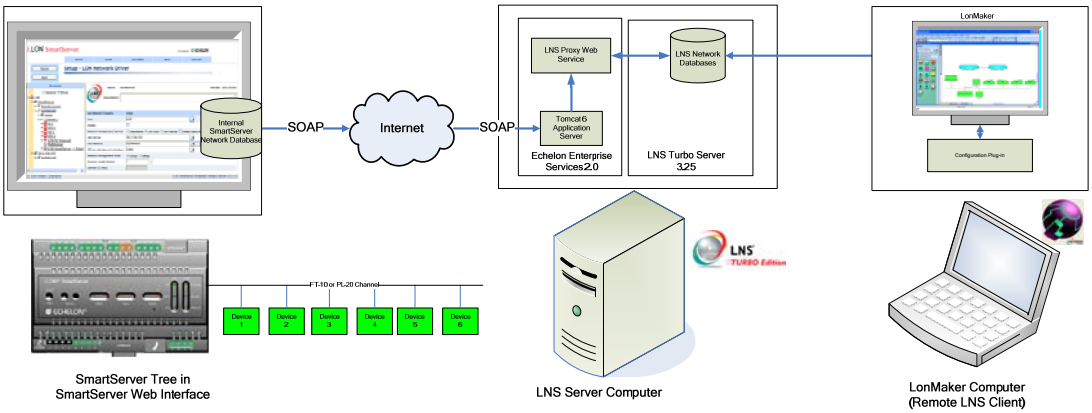
This chapter introduces the LNS Proxy Web service that is used for communication between the SmartServer and LNS network databases. It explains how to use the EES tray tool. It describes how to use the LNS Proxy Web service as an LNS network tool, and how to use LNS Proxy Web service to integrate the SmartServer with LNS network tools. It describes how to troubleshoot the LNS Proxy Web service if a firewall is blocking access to it.

Introduction

The LNS Proxy Web service enables the SmartServer to directly communicate with LNS network databases on LNS Server computers running LNS Turbo Server (version 3.25). This means that you can use the SmartServer as a powerful standalone LNS network management tool to design, install, monitor/control, and maintain LONWORKS networks, or you can integrate the SmartServer with the LonMaker tool or other LNS network tools and use the SmartServer to monitor and control the network.

To communicate with the LNS network database, the SmartServer sends SOAP/XML requests over a TCP/IP network to the Tomcat 6 Server on the LNS Server computer. The Tomcat 6 Server then handles the SOAP request and sends it to the LNS Proxy Web service on the LNS Server. Finally, the LNS Proxy Web service communicates with the LNS network database via the LCA object server OCX control.

The following diagram illustrates how the SmartServer uses the LNS Proxy Web service to communicate with the LNS network database. Note that this diagram demonstrates how the SmartServer communicates with the LNS Server computer with the SmartServer running in **LNS Auto** mode (the SmartServer automatically synchronizes its internal database with an LNS network database in this mode). This process is similar with the SmartServer in **LNS Manual** mode, except that the SmartServer does not directly communicate with the LNS Proxy Web service. Instead, the SmartServer Web interface serves as a proxy between the SmartServer and the LNS Proxy Web service. This enables the SmartServer and the LNS Proxy Web service to communicate when the LNS Server computer is located behind a firewall.



Observe that the communication path between the SmartServer tree and the LNS network database is one-way (from the SmartServer to the LNS network database). This means that in the **LNS Auto** synchronization mode, network configuration changes made with the SmartServer tree are automatically propagated to the LNS network database, but changes made with the LonMaker tool or other LNS applications are NOT transmitted to the SmartServer. You need to manually synchronize the SmartServer to the LNS network database to update the SmartServer tree with network configuration changes made with the LonMaker tool or other LNS applications. See *Synchronizing the SmartServer* later in this chapter for how to do this.

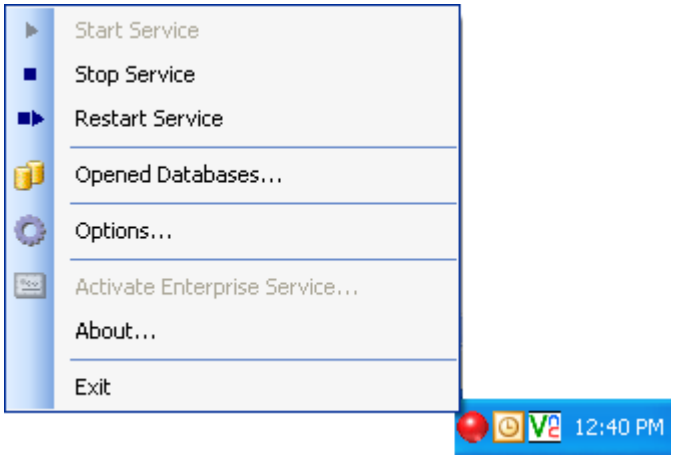
Also observe that the communication path between the LNS Proxy Web service and the LNS network database is bi-directional. This means that the LNS tree in the SmartServer Web interface, which provides graphical representations of the LNS network databases on a given LNS Server computer, remains in sync with a LonMaker drawing or other LNS tool in most cases. For example, you can add a device in the LNS tree and it will appear automatically in a LonMaker drawing once the external interface has been instantiated. This is because the LonMaker tool tracks LNS events such as the one that is generated when a device is created in an LNS network database. You can then commission the device in the LonMaker tool, and the device will no longer be marked as uncommissioned (highlighted beige) in the LNS tree, once you clear the browser cache.

Overall, you can add, delete, rename, and modify channels, devices, functional blocks, network variables, and LONWORKS connections in the LNS tree and see the changes in the LonMaker drawing—and vice-versa—without performing any additional steps.

Using the Echelon Enterprise Services Tray Tool

You can use the EES tray tool to configure and help troubleshoot the LNS Proxy Web service. An icon representing this tool is added to the notification area of your desktop when you install EES 2.0 on your computer. The icon is red if the Tomcat 6 Server is running, and it is grey if the Tomcat 6 Server is stopped.

You can right-click the tray icon to open a shortcut menu that includes commands for can starting, stopping, and re-starting the Tomcat 6 Server; viewing and closing LNS network databases that the LNS Proxy Web service has opened; and checking the port, user name, and password used to access the LNS Proxy Web service.



Starting and Stopping the Tomcat 6 Server

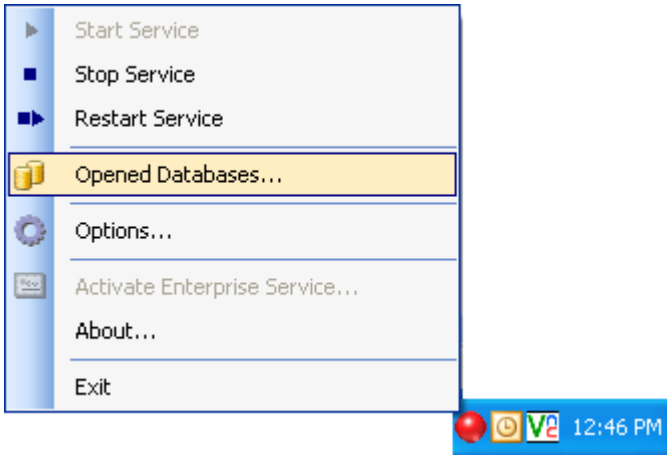
You can use the EES tray tool icon to start and stop the Tomcat 6 Server. If you stop the Tomcat 6 Server, you cannot use the *i*.LON AdminServer or the LNS Proxy Web service.

- If the Tomcat 6 Server is not running, right-click the tray icon, and click **Start Service** on the shortcut menu to start the service.
- To stop the Tomcat 6 Server, right-click the tray icon, and click **Stop Service** on the shortcut menu.
- To restart the Tomcat 6 Server, right-click the tray icon, and click **Restart Service** on the shortcut menu.

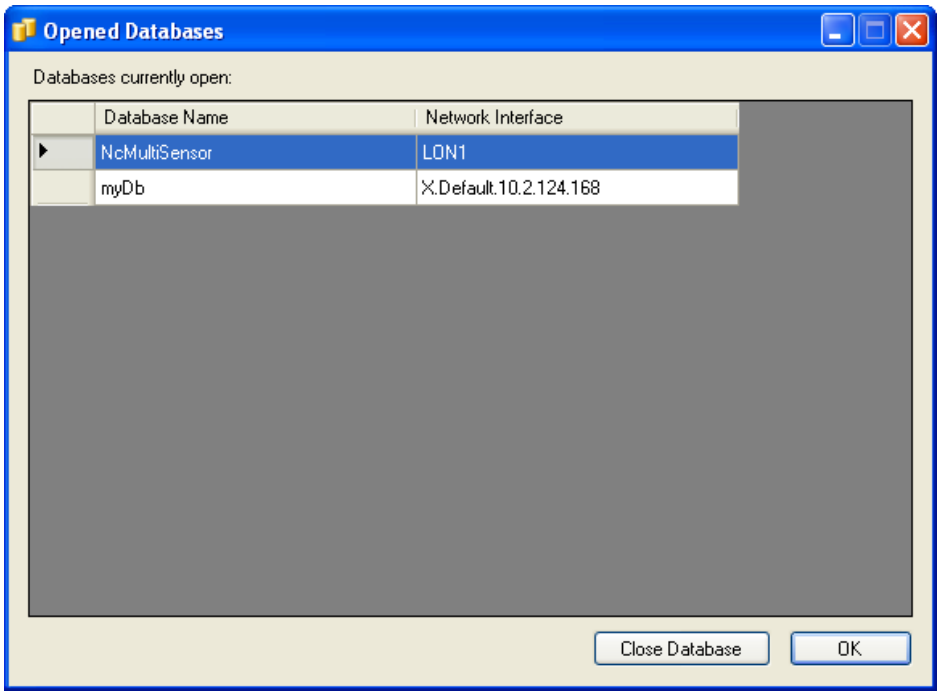
Viewing and Closing Open LNS Databases

You can use the EES tray tool icon to view and close the LNS network databases that the LNS Proxy Web service currently has open. This may be useful if you want to access an LNS network database with the LonMaker tool or other LNS application using the non-sharable network interface (for example, RNI) currently being used by the LNS Proxy Web service. To view and close the LNS network database currently opened by the LNS Proxy Web service, follow these steps:

1. Right-click the tray icon, and then click **Opened Databases** on the shortcut menu.



2. The **Opened Databases** dialog opens. This dialog lists the name and network interface used (if any) for each LNS network database opened by the LNS Proxy Web service.



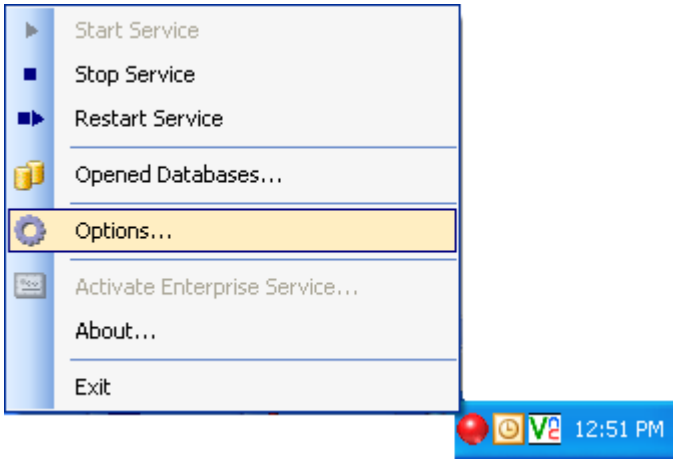
3. To close an LNS network database, click the database, and the click **Close Database**.
4. Click **OK** when you are done viewing and closing LNS network databases.

Checking LNS Proxy Web Service Access

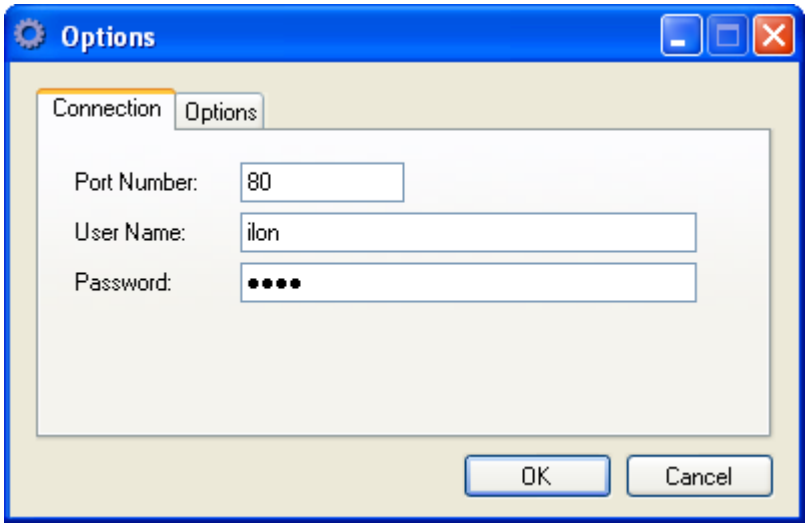
You can use the EES tray tool icon to view and change the port used by the LNS Proxy Web service to transmit and receive SOAP/HTTP requests, and the user name and password used for accessing the LNS Proxy Web service.

To check user access to the LNS Proxy Web service, follow these steps:

1. Right-click the tray icon, and then click **Options** on the shortcut menu.



2. The **Options** dialog opens with the **Connection** tab selected. This dialog lists the **Port Number** on the LNS Server computer that the LNS Proxy Web service uses to transmit and receive SOAP/HTTP requests, and it lists the **User Name** and **Password** required to access the LNS Proxy Web service. These values are initially set in the Echelon Enterprises Services installer.

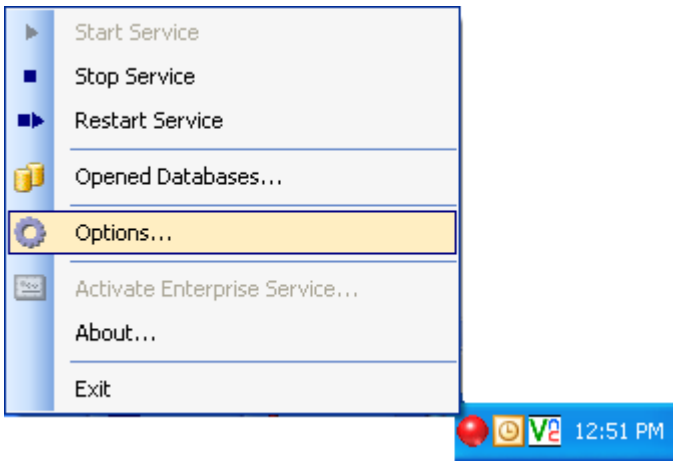


3. Click **OK** when you are done viewing and modifying the LNS Proxy Web service access properties.
4. If you change any of the properties, the LNS Proxy Web service is automatically restarted to implement the changes.

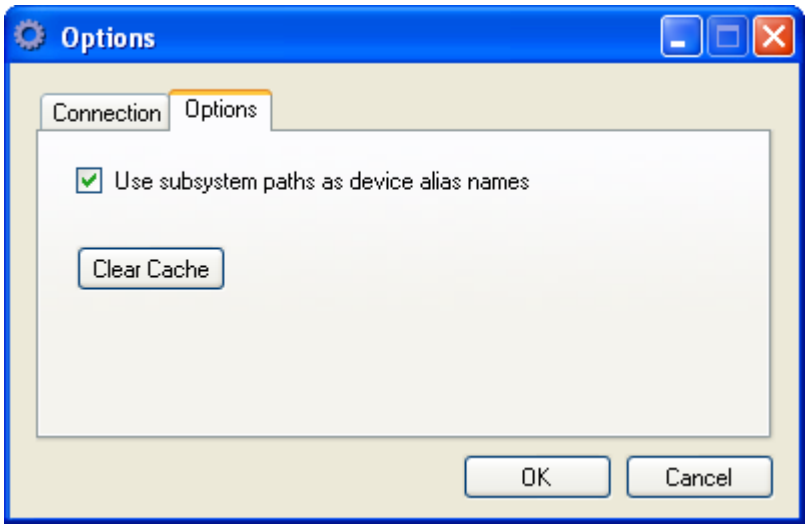
Synchronizing the LNS Proxy Web Service

If the properties of LNS objects in your network tool lose synchronization with the LNS Proxy Web service, you can clear the cache of the LNS Proxy Web service. To clear the cache of the LNS Proxy Web service, follow these steps:

1. Right-click the EES tray tool icon and then select **Options**.



2. Click the **Options** tab.



3. Click **Clear Cache**.
4. Click **OK**.

Using the LNS Proxy Web Service

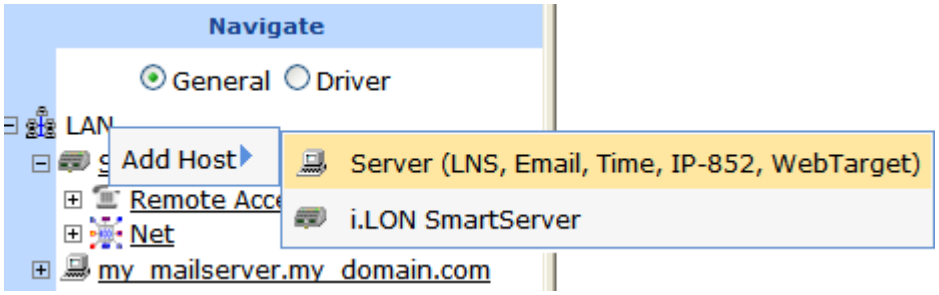
You can use the LNS Proxy Web service as a standalone LNS network management tool to design, install, and maintain LONWORKS networks. In this case, you use the LNS tree in the SmartServer Web interface to create, configure, bind, commission, and test the devices in your network. You can also use the LNS Proxy Web service to integrate the SmartServer with the LNS network tools such as the LonMaker tool, the LNS tree in the SmartServer Web interface, or another LNS network tool so that you can monitor and control the network and keep the SmartServer synchronized with the LNS network database.

Setting Up the LNS Proxy Web Service

To use the LNS Proxy Web service, you first need to add an LNS Server (running LNS Turbo Server [version 3.25] or newer) to the LAN in the SmartServer Web interface. To do this, follow these steps:

1. Verify that EES 2.0 and LNS Server Service Pack 5 have been installed on your computer. See *Installing EES 2.0* and *Installing LNS Server Service Pack 5* in Chapter 1 for how to perform these installations.

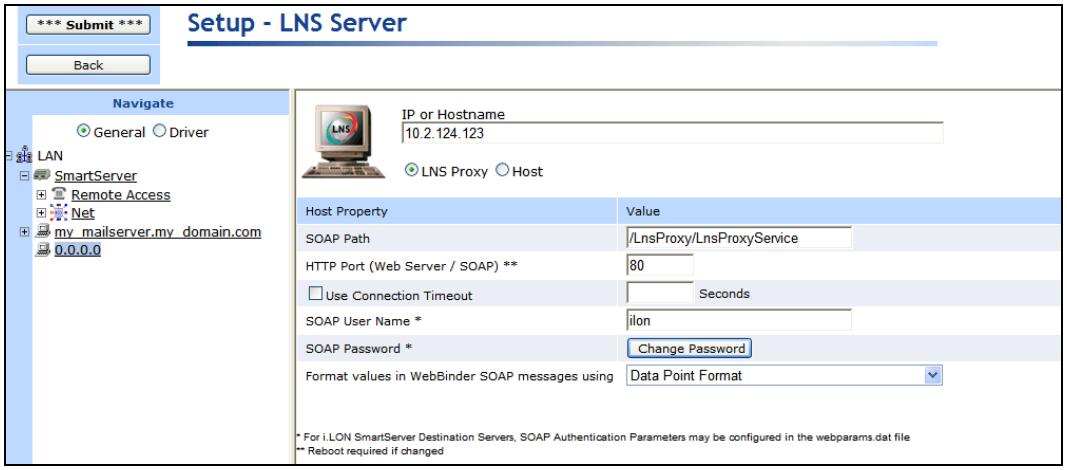
2. Right-click the **LAN** icon or a dial-out connection icon, point to **Add Host**, and then click **Server (LNS, Email, Time, IP-852, WebTarget)** on the shortcut menu.



Note: If IP-852 routing is licensed and enabled on the SmartServer and the IP-852 Configuration Server is installed on the LNS Server computer, click the IP-852 Configuration Server icon (), click **LNS Proxy**, and then skip to step 5 in order to configure the properties of the LNS Server.

3. The **Setup – Host** Web page opens, and a server icon is added one level below the LAN icon at the bottom of the navigation pane or one level below the dial-out connection icon.

4. Enter the IP address or hostname of the LNS Server and then click **LNS Proxy**. The **Setup – LNS Server** Web page opens.



5. Configure the following LNS Server properties:

Host Property

SOAP Path
Enter the path on the LNS Server to which SOAP messages are transmitted via the LNS Proxy Web service. The default path is **/LnsProxy/LnsProxyService**.

HTTP Port (Web Server/SOAP)
Enter the port on the SmartServer used for accessing the LNS Proxy Web service. The default port is **80**. Contact your IS department to ensure your firewall is configured to allow access to the server on this port.

Note: If you modify this property, you need to reboot the SmartServer to implement the change.

Use Connection Timeout
Set the maximum period of time (in seconds) that the LNS Proxy Web service waits for a response to a SOAP request from the local SmartServer's Web server before the transaction is canceled and a timeout error is thrown.

By default, the connection timeout is **2** seconds—even if this check box is cleared. If you select this check box, the default timeout is **120** seconds.

User Name	Optionally, enter a user name to be used by the SmartServer for accessing the LNS Proxy Web service. The default user name is **ilon**.
SOAP Password	Optionally, you can click **Change Password** to change the password used by the SmartServer for accessing the LNS Proxy Web service. The default password is **ilon**.
Format Values in WebBinder SOAP Messages Using	Select how data point values are formatted in SOAP messages sent to this LNS Server via Web connections. You have two choices: • **Data Point Format**. Data point values are formatted based on the SNVT, UNVT, SCPT, or UCPT defined for the data point. • **Raw HEX**. Data point values are transmitted in raw hexadecimal format.

6. Click **Submit** to save the changes. An LNS Server icon with the specified IP address or hostname is added to the LAN or dial-out connection. Click **Back** to leave all fields unchanged.
7. If you are using Internet Explorer 7, enable your Web browser to access the LNS Proxy Web service on the LNS Server computer. To do this, follow these steps:
   a. Add the locations of your local SmartServer and the LNS Server on which the LNS Proxy Web service is installed as trusted sites. To do this, click **Tools**, click **Internet Options**, click the **Security** tab, click Trusted Sites, and then click **Sites**. Clear the **Require Service Verification** check box.

      By default, the IP address of your local SmartServer appears in the **Add this Website** to the **Zone** box. Click **Add** to add the IP address of your local SmartServer. Enter the IP address of the LNS Proxy Web service in the **Add this Website to the Zone** box, click **Add**, click **Close**, and then click **OK**.

   b. Enable your Web browser to access sites over other domains. To do this with Internet Explorer 7, click **Tools**, click **Internet Options**, click the **Security** tab, and then click **Custom**. Under the **Miscellaneous** category, select **Enable or Prompt for the Access data** sources across domains property.

      Note: If you are using Internet Explorer 7 and you do not complete step 7, the **Cannot Access Remote Host** dialog appears when you try to expand the LNS server icon or synchronize the SmartServer to an LNS network database. If you are using Internet Explorer 8 or Firefox, you do not need to complete this step.
8. You can now expand the LNS Server icon to show the networks, channels, devices, functional blocks, and data points on your LNS Server. Note that it may take a minute to show the networks on an LNS Server after you initially expand the LNS Server icon.

Using the LNS Proxy as a Network Management Tool

You can use the LNS tree in the SmartServer Web interface as a complete LNS network management tool for designing, installing, and maintaining your network.

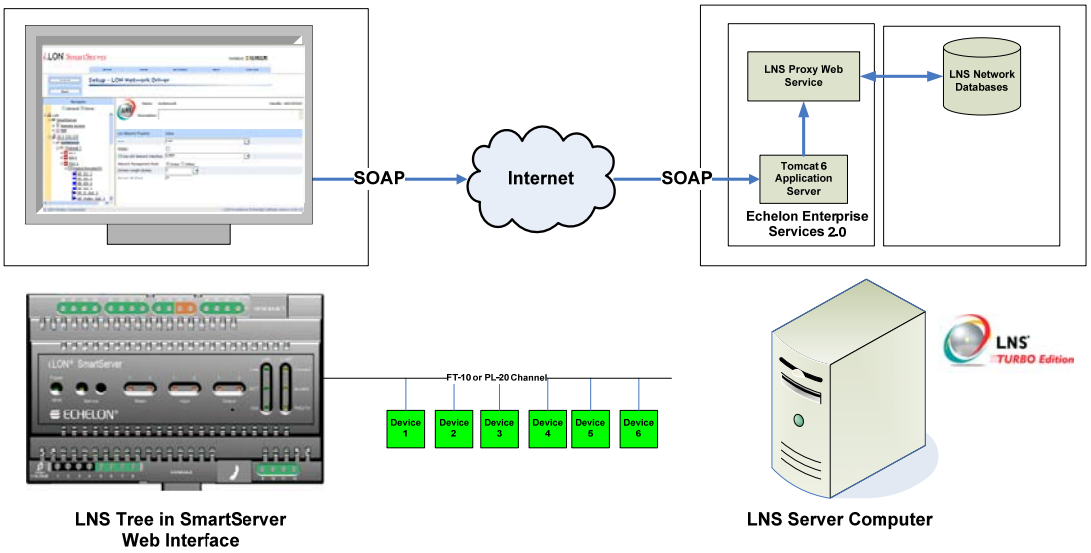
Using the LNS tree as a network design tool is comparable to using the LonMaker tool: you can create new networks, add devices and functional blocks to the network, configure the devices and functional blocks with LNS plug-ins, and then create network variable connections. The LNS tree, however, does not provide the same graphical representation of your network and its data flow as does the LonMaker tool. See *Designing LONWORKS* networks Chapter 5 of the *i.LON SmartServer 2.0 User's Guide* for more information on using the LNS tree to design a LONWORKS network.

After you design the network, you can automatically install the network using device discovery, or you can manually install the network by pressing the service pins on the devices, or by entering or scanning the Neuron IDs of the devices. See *Installing LONWORKS* networks in Chapter 5 of the *i.LON SmartServer 2.0 User's Guide* for how to do this. In addition, you can automatically install multiple

networks at the same time by creating a template of your LNS network database and deploying it on multiple SmartServers as described in *Using Rapid Deployment* in Chapter 2.

After you install the network, you can maintain it by upgrading, replacing, decommissioning, and testing devices. See *Maintaining LONWORKS networks* in Chapter 5 of the *i.LON SmartServer 2.0 User's Guide* for how to do this.

When you configure a network in the LNS tree, the LNS Proxy Web service directly propagates the network configuration changes to the LNS network database. The following graphic demonstrates the SmartServer operating as a LNS network management tool:



Using the LNS Proxy to Integrate the SmartServer with LNS Tools

You can use the LNS Proxy Web service to integrate the SmartServer with the LNS network tools such as the LonMaker tool, the LNS tree in the SmartServer Web interface, or another LNS network tool so that you can keep the SmartServer synchronized with the LNS network database and monitor and control the network.

The following sections describe how to synchronize the SmartServer to an LNS network database, and how to monitor and control the network by adding the data points of external devices to the SmartServer's built-in applications and to your custom SmartServer 2.0 Web pages.

Synchronizing the SmartServer

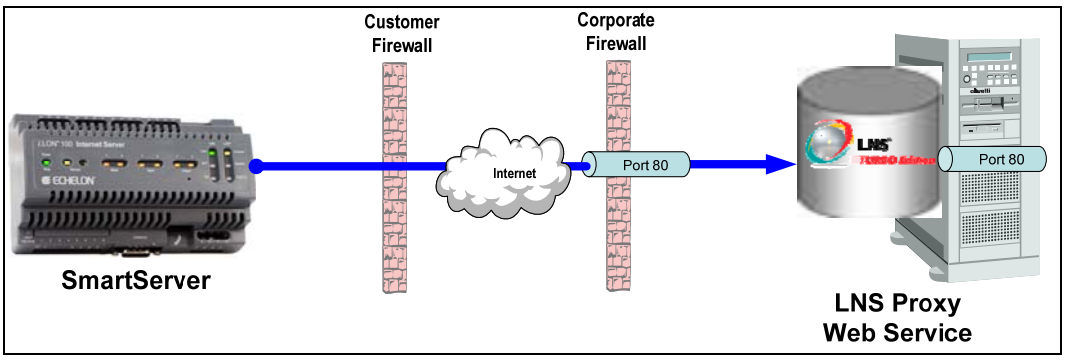
You can synchronize the SmartServer to an LNS network database so that you can configure an LNS managed network with the SmartServer Web interface and propagate the changes to the LNS network database. Synchronizing also enables you to update the SmartServer's internal database with network configuration changes made with other LNS network tools.

In addition, you must synchronize the SmartServer to an LNS network database before copying the network variables of the external devices to the SmartServer's internal database so that you can add the data points to the SmartServer's built-in applications and to your custom Web pages.

You can synchronize the SmartServer to an LNS network database using **LNS Auto** or **LNS Manual** mode. The following sections describe how to synchronize the SmartServer using these modes.

Automatically Synchronizing the SmartServer to an LNS Network Database

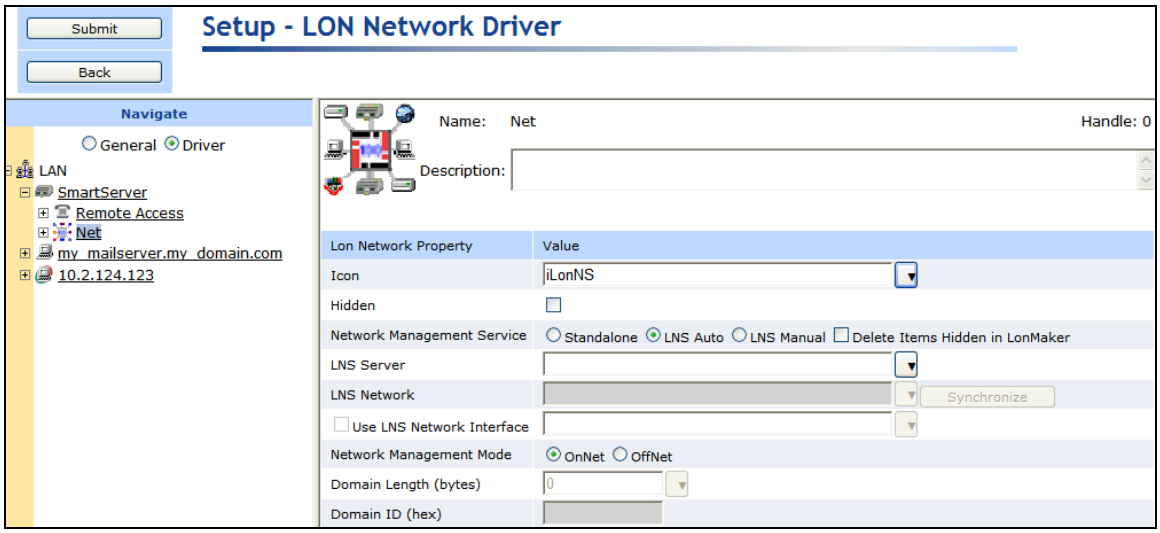
You can synchronize the SmartServer to an LNS network database using **LNS Auto** mode. In **LNS Auto** mode, the SmartServer independently initiates communication with an LNS network database via the LNS Proxy Web service, and automatically sends network configuration changes made in the SmartServer tree to the LNS network database. This mode requires the port on the LNS Server computer selected for the LNS Proxy Web service (port 80 by default) to also be opened on any firewalls blocking the SmartServer's access to the LNS Server computer. The following graphic illustrates how the SmartServer communicates with the LNS network databases in **LNS Auto** mode.



If you are using **LNS Auto** mode and other LNS clients make changes to the LNS network database that are not propagated to the SmartServer over the LonTalk channel, network objects in the SmartServer tree may lose synchronization with the LNS network database. In this case, you need to manually synchronize the SmartServer as described in the next section, *Manually Synchronizing the SmartServer to an LNS Network Database*.

To use **LNS Auto** mode to automatically synchronize the SmartServer to an LNS network database, follow these steps:

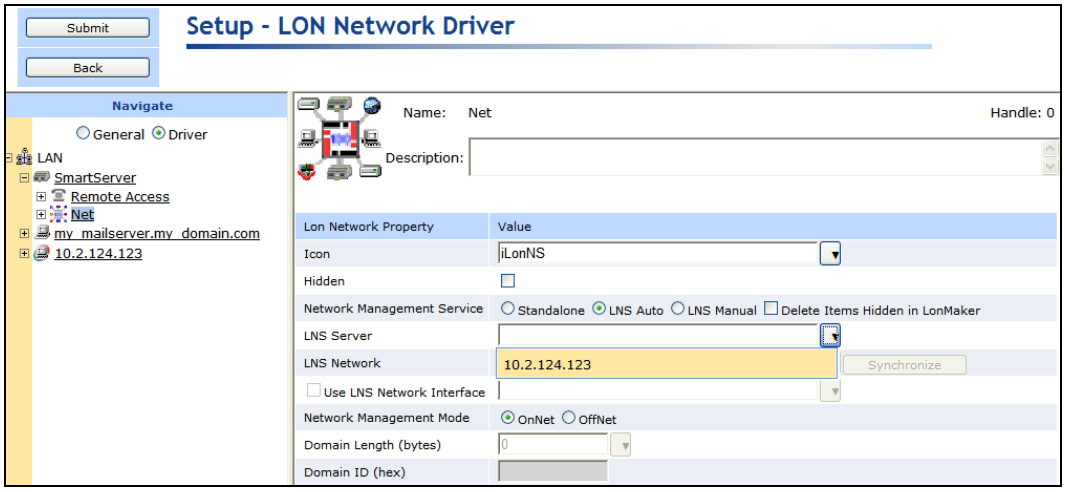
1. Verify that the SmartServer is connected to both the TCP/IP network and the LONWORKS network.
2. Commission the SmartServer with the LonMaker tool, LNS tree, or another LNS application. For more information on installing the SmartServer, see *Installing the SmartServer with the LonMaker Tool* in Chapter 12 of the *i.LON SmartServer 2.0 User's Guide*.
    a. Verify that EES 2.0 and LNS Server Service Pack 5 have been installed on your computer. See *Installing EES 2.0* and *Installing LNS Server Service Pack 5* in Chapter 2 for how to perform these installations.
    b. Verify that you have added an LNS Server (running LNS Turbo Server [version 3.25] or newer) to the LAN that contains the LNS network database in which the network variable or configuration property is stored. See *Using the LNS Proxy Web Service* earlier in this chapter for how to do this.
3. Click **Driver** at the top of the navigation pane on the left side of the SmartServer Web interface, and then click the **Net** network near the top of the SmartServer tree.
4. The **Setup - LON Network Driver** Web page opens.



5. In the **Network Management Service** property, accept the default **LNS Auto** option. In this mode, the SmartServer independently initiates communication with the LNS Proxy Web service, and automatically sends network configuration changes made in the SmartServer tree to the LNS network database.

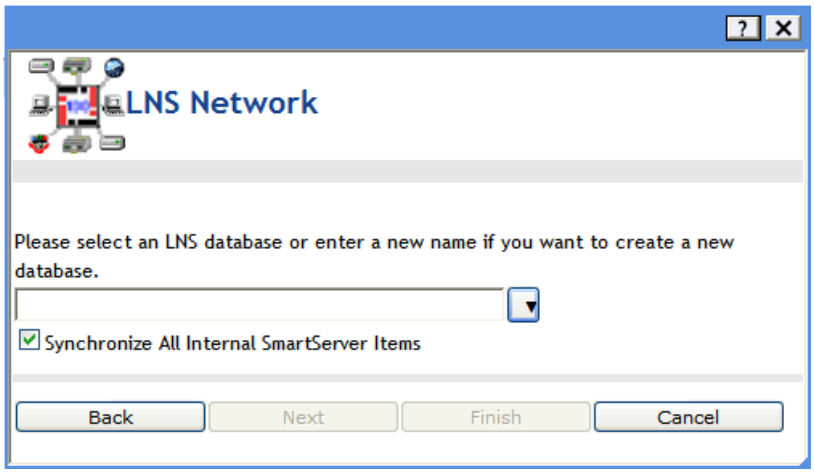
   You should select this mode as long as a firewall is not blocking the SmartServer's access to the port on the LNS Server computer selected for the LNS Proxy Web service (port 80 by default). If a firewall is blocking access to the LNS Proxy Web service, select the **LNS Manual** option. For more information on using **LNS Manual** mode, see *Manually Synchronizing the SmartServer to an LNS Network Database*.

6. In the **LNS Server** property, select the IP address of the LNS Server you added to the LAN in the *Using the LNS Proxy Web Service* section earlier in this chapter.

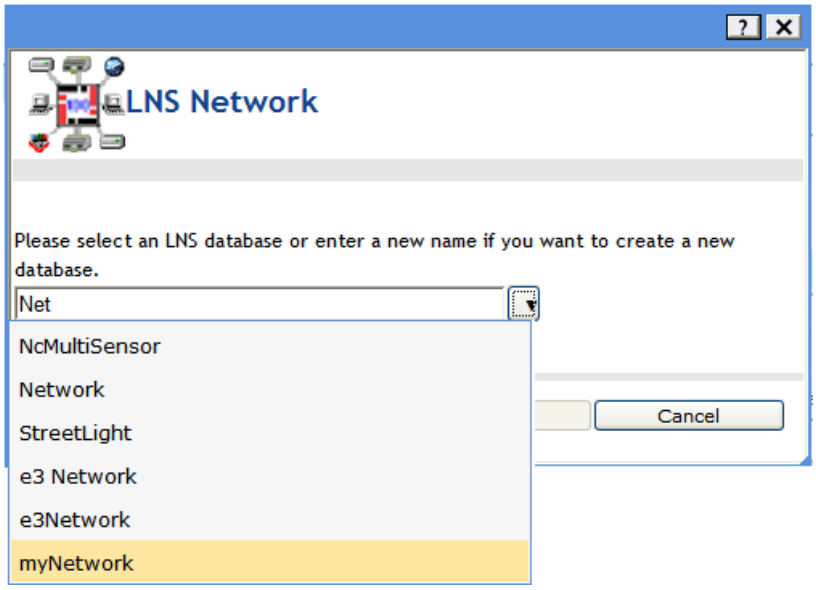


7. If a dialog for logging in to the LNS Proxy Web service opens, enter the **User Name** and **Password** used by the SmartServer for logging in to the LNS Proxy Web service and then click **OK**. You initially specified the user name and password in the Echelon Enterprise Services installer. If you 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.

8. The **LNS Network** dialog opens.

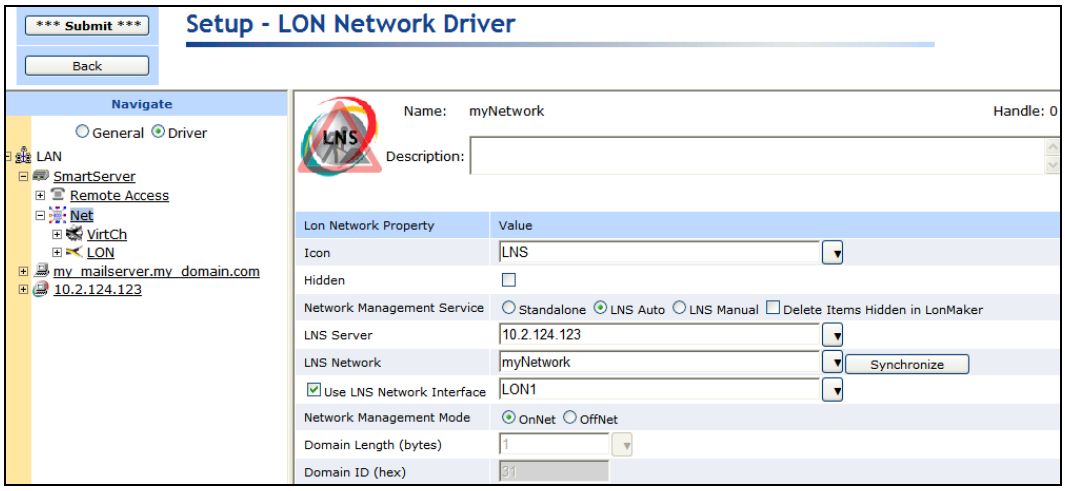


9. In the **LNS Network** dialog, select the LNS network database to which the SmartServer is to be synchronized and then click **Finish**.

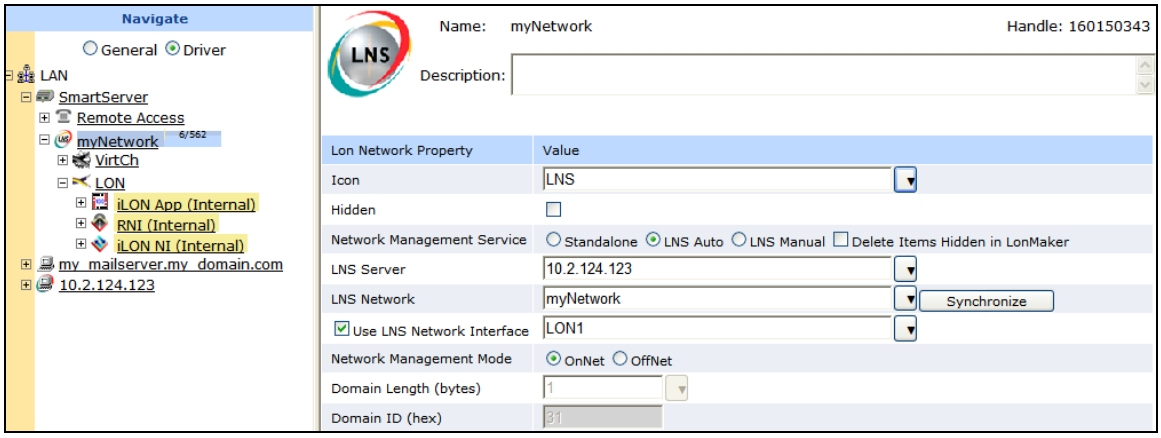


10. The **Use LNS Network Interface** property check box is selected and the network interface used for communication between the LNS Server and the network is specified automatically. Accept these defaults if the LNS Server is attached to the physical network and you want the SmartServer to communicate with the devices on the network through the selected network interface.

11. If the **Use LNS Network Interface** property check box is selected, the **Network Management Mode** property is set to **OnNet** automatically. This means that network changes are propagated to the network immediately. Click **OffNet** to store network changes in the selected LNS network database and propagate them to the network when you place the SmartServer **OnNet**.



12. Click **Submit**. If you selected **LNS Auto** in the **Network Management Service** property, the name of the network changes to the name of the LNS network database specified in step 11, the network icon changes to an LNS server icon, and the synchronization automatically begins. During the synchronization process, items in the SmartServer tree that are out of sync with the LNS network database are highlighted yellow. When all the items in the SmartServer tree are synchronized (not highlighted yellow), the synchronization is complete. Note that you can continue to use the SmartServer Web interface during the synchronization.



Notes:

- You can view the progress of the synchronization in the navigation pane. To do this, click **Settings** to open the **Global Settings** dialog, and then select the **Show Synchronization Progress in Tree** check box. This adds a synchronization status bar to the right of the network icon in the SmartServer tree that displays the current ratio of items that have already been synchronized to the total number of items being synchronized. The image is step 15 demonstrates the synchronization status bar.
- You can view a log of the current synchronization in the SmartServer's console application. To view the sync log, enter the **trace 2** command. For more information on the SmartServer console application, see Appendix B of the *i.LON SmartServer 2.0 User's Guide*.

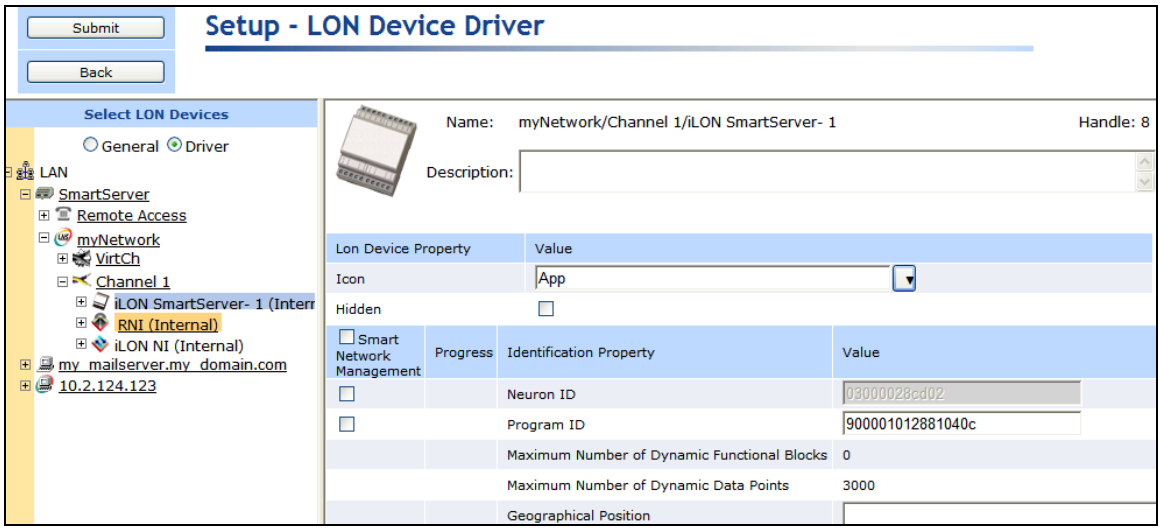
13. If you selected **LNS Manual** in the **Network Management Service** property, all the items in the SmartServer tree are highlighted yellow meaning that they are out of sync with the LNS network database. Manually synchronize the SmartServer to the LNS network database following these steps:

a. Click **Synchronize** in the **LNS Network** property. The **SmartServer Resync** dialog opens. The **Items to be Synced** property lists the number of objects in the SmartServer tree that need to be synchronized with the LNS network database.

b. In the **SmartServer Resync** dialog, click **Start**. The **Items to be Synced** counts down as the synchronization operation progresses. When the synchronization operation has been completed, this number should be 0. During the synchronization, this dialog displays any errors that occur.

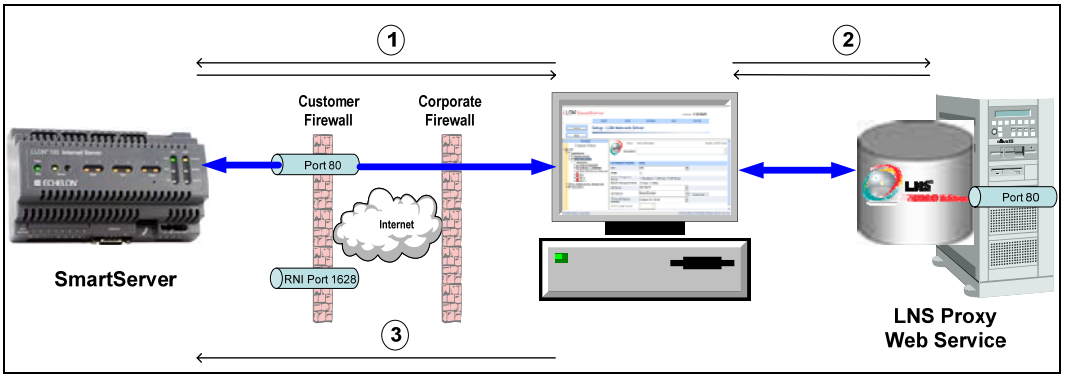
c. You can click **Close** to return to the SmartServer Web interface and continue using it during the synchronization.

c. After the synchronization, observe the following changes to the SmartServer's App device in the SmartServer tree: the SmartServer's App device is moved to the channel to which it was added in the LonMaker drawing (for example, Channel 1); the name of the SmartServer's App device changes to the name of the SmartServer shape in your LonMaker drawing (for example, iLON SmartServer – 1); and the SmartServer's App device icon changes to the generic App icon.



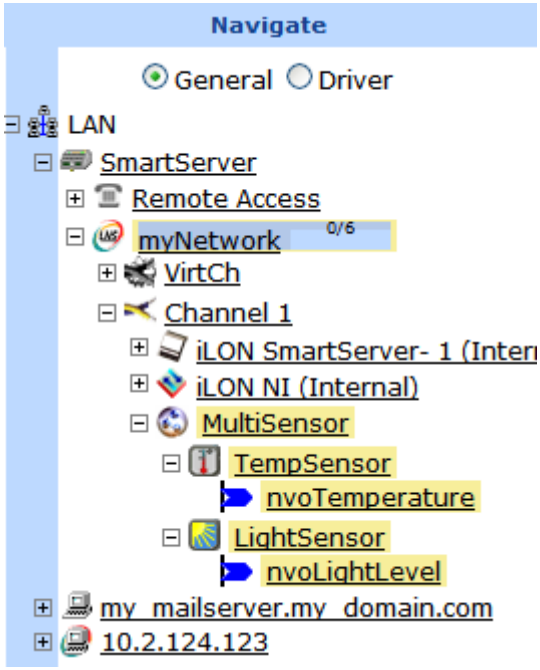
Manually Synchronizing the SmartServer to an LNS Network Database

You can synchronize the SmartServer to an LNS network database using **LNS Manual** mode. In **LNS Manual** mode, you use the SmartServer Web interface to manually initiate synchronization between the SmartServer and an LNS network database via the LNS Proxy Web service. In this mode, the SmartServer Web interface serves as a proxy between the SmartServer and an LNS Server that is behind a firewall. Use this mode only if a firewall is blocking the SmartServer's access to the LNS Proxy Web service port on the LNS Server computer (port 80 by default). The following graphic illustrates how the SmartServer communicates with the LNS network databases in **LNS Manual** mode.



When you manually synchronize the SmartServer to an LNS network database, the SmartServer Web interface requests a list of objects to be synced from the SmartServer via SOAP and forwards the objects returned by the SmartServer to the LNS Proxy Web service. The LNS Proxy Web service returns a set of synced objects to the SmartServer Web interface, which forwards these objects back to the SmartServer. This mode does not require the opening of any ports on firewalls blocking the SmartServer's access to the LNS Server computer.

If you are using the **LNS Manual** mode, or if you are using **LNS Auto** mode and another LNS client such as the LonMaker tool or LNS tree makes changes to the LNS network database that are not propagated to the SmartServer over the LonTalk channel, network objects in the SmartServer tree may lose synchronization with the LNS network database. When this occurs, the objects that are not in sync with the LNS network database are highlighted yellow in the SmartServer tree.

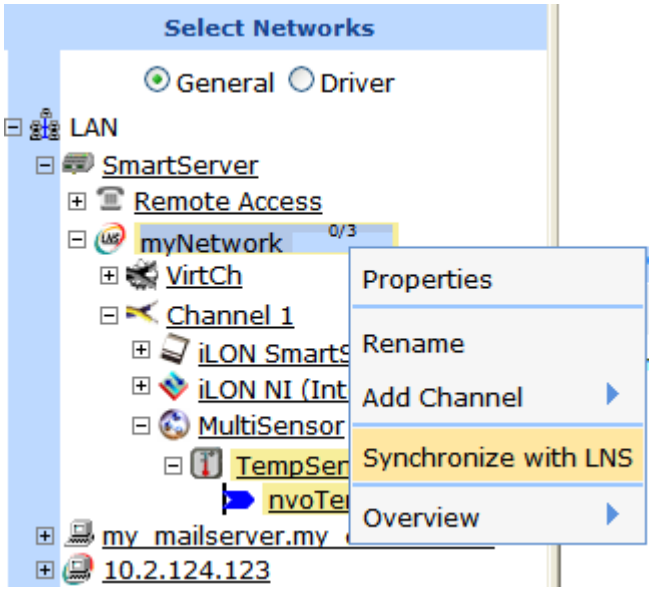


You can manually synchronize all items in the SmartServer tree that are out of sync at one time, or you can select individual items to be synchronized.

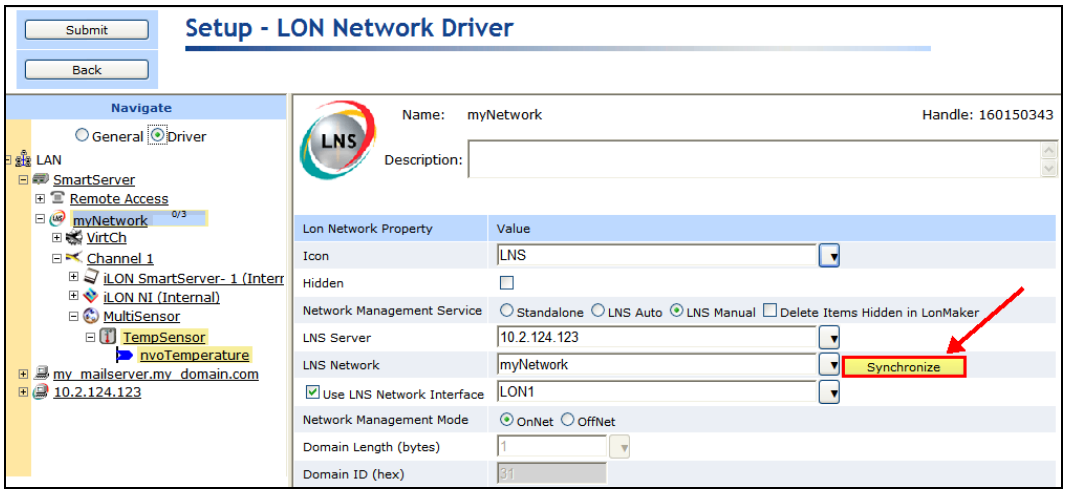
Manually Synchronizing All Items

If items in the SmartServer tree lose synchronization with the LNS network database, you can manually synchronize all of them to the LNS network database at one time following these steps:

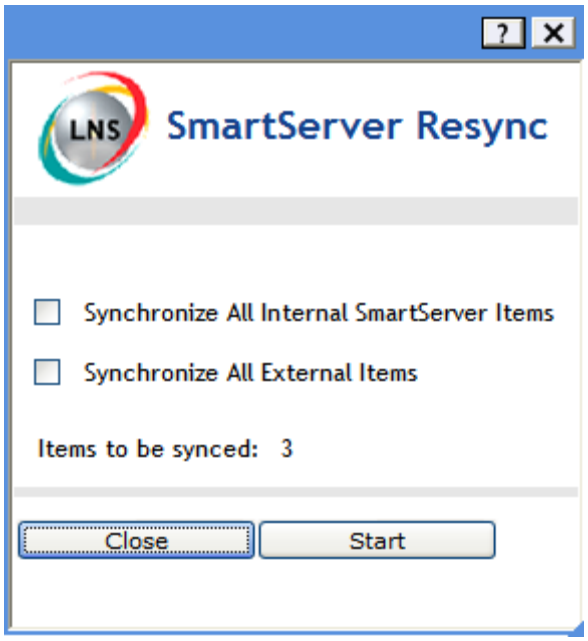
1. Right-click the network item in the target SmartServer tree, and then click **Synchronize with LNS** in the shortcut menu.



Alternatively, you can click **Driver**, click the network icon in the SmartServer tree to open the **Setup – LON Network Driver** Web page, and then click the **Synchronize** button in the **LNS Network** property.



2. The **SmartServer Resync** dialog opens.



3. Set the following synchronization options:

Synchronize All Internal SmartServer Items

Synchronizes all internal items in the SmartServer's internal database, including hidden items, with the LNS network database.

Internal items include the following:

- LONWORKS channels.
- The SmartServer's internal App device and its child functional blocks and data points.
- The SmartServer's internal IP-852 router.
- FPM devices and their child functional blocks and data points.

Selecting this option also transmits changes made to the LON driver properties of the internal items in the SmartServer tree to the LNS network database, and it updates the SmartServer's internal database with changes made to the LON driver properties of the internal items with the LonMaker tool, LNS tree, or other LNS application.

This option is cleared by default, which means that the SmartServer sends only changes made to the internal items in the SmartServer tree to the LNS network database. In addition, the SmartServer's internal database is updated only with the following changes made to internal items with the LonMaker tool:

- Renaming of devices or functional blocks.
- Addition of functional blocks to the SmartServer's internal App device that have stencils with no dynamic network variables on them.
- Deletion of the SmartServer App device's

functional blocks.

- Addition or deletion of dynamic network variables on the SmartServer's internal App device while it is uncommissioned.

Note: Selecting this option may significantly increase the time required for the manual synchronization as all hidden internal items are synced.

Synchronize All External Items

Synchronizes all external items in the SmartServer's internal database with the LNS network database.

External items include the following:

- LONWORKS channels.
- External devices and their child functional blocks and data points.
- Routers.

Selecting this option also transmits any changes made to the LON driver properties of the external items in the SmartServer tree to the LNS network database, and it updates the SmartServer's internal database with any changes made to the LON driver properties of the external items with the LonMaker tool, LNS tree, or other LNS application.

This option is cleared by default, which means that the SmartServer sends only changes made to the external items in the SmartServer tree to the LNS network database. In addition, the SmartServer's internal database is updated only with any changes made to the names of external devices or functional blocks with the LonMaker tool.

4. Click **Start**.
5. The **Items to be Synced** property lists the number of items in the SmartServer tree to be updated. This number counts down as the Synchronization operations progresses. When the synchronization operation has been completed, this number is 0. You can click **Close** anytime to return to the SmartServer Web interface and continue using the SmartServer during the synchronization.

   Notes:

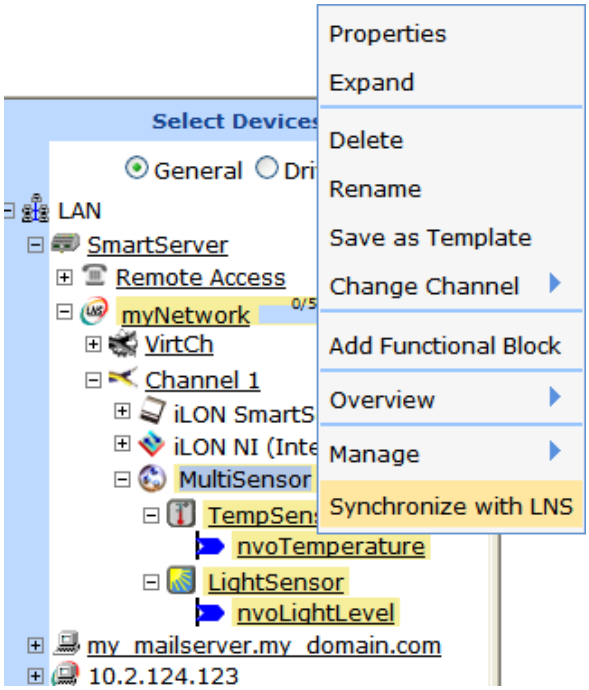
   - You can view the progress of the synchronization in the navigation pane. To do this, click **Settings** to open the **Global Settings** dialog, and then select the **Show Synchronization Progress in Tree** check box. This adds a synchronization status bar to the right of the network icon in the SmartServer tree that displays the current ratio of items that have already been synchronized to the total number of items being synchronized. The image is step 15 demonstrates the synchronization status bar.
   - You can view a log of the current synchronization in the SmartServer's console application. To view the sync log, enter the **trace 2** command. For more information on the SmartServer console application, see Appendix B of the *i.LON SmartServer 2.0 User's Guide*.

Manually Synchronizing Individual Items

If one or more items in the SmartServer tree lose synchronization with the LNS network database, you can manually synchronize them to the LNS network database. Note that this synchronization operation

automatically updates the LON driver properties of the selected items (for example, timing parameters of a channel, commission and application statuses of a device, format description of a data point) in the SmartServer's internal database.

To synchronize one item, right-click the item (channel, device, functional block, or data point) in the target SmartServer tree, and then click **Synchronize with LNS** in the shortcut menu to synchronize the item.



To synchronize multiple items at one time, click one item, either hold down CTRL and click all other items to be synchronized or hold down SHIFT and select another item to synchronize the entire range of items, and then click the **Synchronize with LNS** option in the shortcut menu.

Notes: Selecting the **Synchronize with LNS** option on a network item opens the **SmartServer Resync** dialog, where you can synchronize the entire network at one time.

Copying External Data Points to the SmartServer

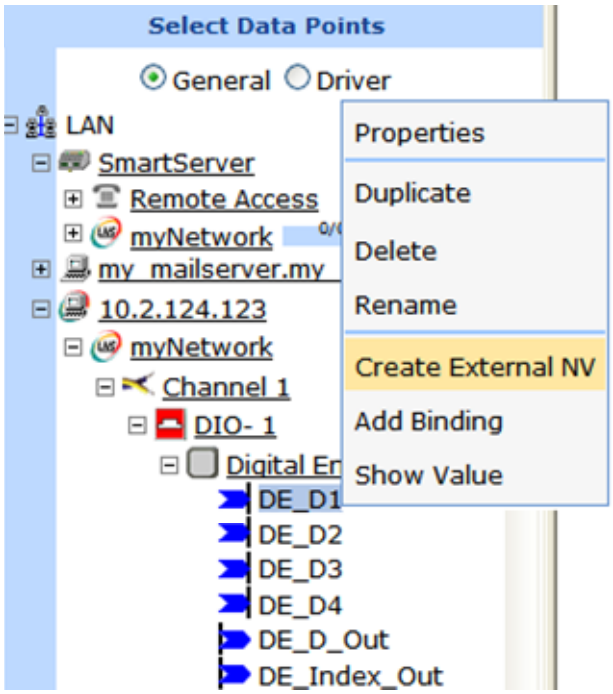
To monitor and control an LNS managed network, you can copy the data points of the external devices on the network to the SmartServer's internal database and then add them to the SmartServer's built-in applications (for example, Alarm Generator, Alarm Notifier, Scheduler, Data Logger) and to your custom SmartServer 2.0 Web pages. In this case, the SmartServer periodically polls the network variables of the external devices.

Note: Instead of using polling, you can use event-driven update connections between the external devices and the SmartServer to monitor and control a LONWORKS network. To do this, you bind the network variables of the SmartServer's App device to the network variables on the external devices and then add the data points of the SmartServer's App device to the SmartServer's built-in applications and to your custom SmartServer 2.0 Web pages. See Chapter 12 of the *i.LON SmartServer 2.0 User's Guide* for more information on how to do this.

To copy data points to the SmartServer's internal database and then add them to the SmartServer's built-in applications, you do the following:

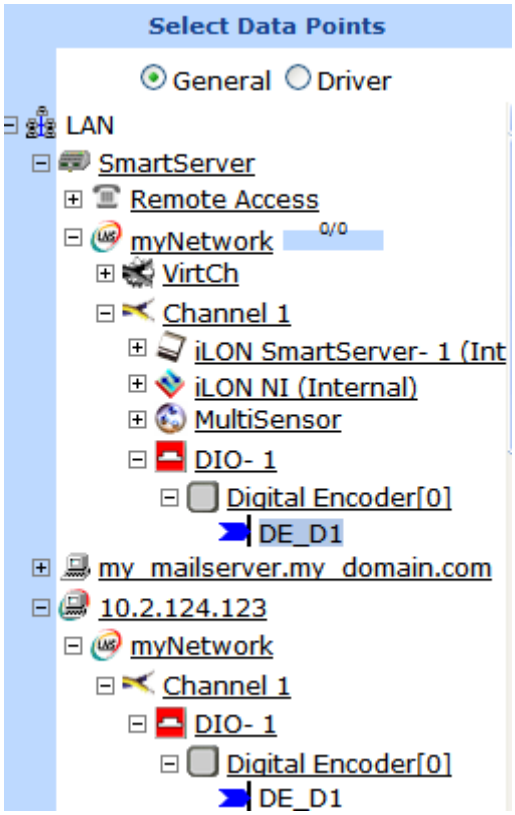
1. Verify that EES 2.0 and LNS Server Service Pack 5 have been installed on your computer. See *Installing EES 2.0* and *Installing LNS Server Service Pack 5* in Chapter 2 for how to perform these installations.

2. Verify that you have added an LNS Server (running LNS Turbo Server [version 3.25] or newer) to the LAN that contains the LNS network database in which the network variable or configuration property is stored. See *Using the LNS Proxy Web Service* earlier in this chapter for how to do this.
3. Verify that you have synchronized the target SmartServer with the LNS network database containing the external network variables or configuration property you are copying. See *Synchronizing the SmartServer* earlier in this chapter for how to do this.
4. Expand the LNS Server icon, and then enter the **User Name** and **Password** for logging in to the LNS Server via the Echelon Enterprise Services. You initially specified the user name and password in the Echelon Enterprise Services installer. If you forgot the user name and password, you can right-click the EES tray icon in the notification area of your computer, and then click **Options** on the shortcut menu.
5. In the LNS tree, expand the LNS 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 LNS tree. Instead, right-click the network variable in the LNS 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.

6. The data points and their parent channel, device, and functional block are added to the network tree of the target SmartServer.



7. Click **Submit**.

8. You can now add the external data points to the SmartServer's built-in application and to your custom SmartServer 2.0 Web pages. The following steps describe how to add external data points to the SmartServer's built-in applications (see the *i.LON Vision 2.0 User's Guide* for adding data points to your custom SmartServer 2.0 Web pages):

   a. Verify that you have created an instance of the functional block that represents the application to which data points are to be added.

   b. Click **General** at the top of the navigation pane in the left frame of the SmartServer Web interface.

   c. From the navigation pane, click the functional block representing the application to which data points are to be added. The application opens in the frame to the right.

   d. If you are adding the data point to an Alarm Notifier, Data Logger, Scheduler, Analog Functional Block, or Type Translator, open the **Data Points** Web page where you add references to the external data points.

      From the SmartServer tree, click the data point to be added to the application. The data point is added to the application, a reference to the data point ( ) is added to the bottom of the application's functional block tree, and you can begin monitoring and controlling the data point with the application.

Troubleshooting the LNS Proxy Web Service

If you cannot synchronize the SmartServer to an LNS network database, Echelon Enterprise Services 2.0 (EES 2.0) may not have been installed or configured correctly, or a firewall may be blocking access. Follow these steps to correct the problem:

1. Verify that the SmartServer and the LNS Proxy Web service are using the same HTTP port on the LNS Server computer for SOAP communication. To do this follow these steps:

   a. Open the **Setup – LNS Server** Web page. To do this, click the LNS server icon in the tree view on the left side of the SmartServer Web interface.

   a. The port used by the SmartServer to communicate with the LNS Proxy Web service is specified in the **HTTP Port (Web Server / SOAP)** property. The default port is **80**.

   b. Right-click the Enterprise Services tray icon in the notification area on the desktop of the LNS Server computer, and then click **Options** on the shortcut menu.

   c. The port used by the LNS Proxy Web service on the LNS Server computer is listed in the **Port Number** property in the **Connection** tab. The default port is **80**.

2. Verify that the EES tray tool icon is red, meaning that EES 2.0 is running. If the icon is gray and the ToolTip states "i.LON SmartServer Enterprise Services OFF", EES 2.0 is not running. To start EES 2.0, right-click the Enterprise Services tray icon and click Start Service on the shortcut menu.

3. If you selected the **LNS Auto** network management service in the **Setup – LON Network Driver** Web page and a firewall is blocking access to the LNS Proxy Web Services, do the following on both your LNS Server computer and your remote LNS client (if being used):

   a. Open the HTTP port to be used for the LNS Proxy Web Services. To do this, open the Control Panel, click **Security Center**, click **Services**, click **Windows Firewall**, click the **Exceptions** tab, and then click **Add Port**. Enter LNS Proxy (or some other meaningful name) in the **Name** box, enter the selected HTTP port in the **Port** box, and then click **OK**.

   b. If you are using a third-party firewall, add the Tomcat 6 executable as an exception. The full path of the Tomcat 6 executable is **LonWorks\iLON\EnterpriseServices\Appserver\bin\tomcat6.exe** by default.

   c. Try to expand the LNS server icon in the navigation pane on the left side of the SmartServer Web interface. If you cannot expand the LNS server, either proceed to step 4, or open the **Setup – LON Network Driver Web** page and change the **Network Management Service** property to **LNS Manual**.

4. Browse to **http://***<LNS Server Computer IP Address>***/EES/AdminService/v4.0/index.htm**, which is the IP address of the i.LON AdminServer tool that is installed on your LNS Server computer by EES 2.0. For example, if the IP address of your LNS Server computer is 10.2.124.30, enter **http://10.2.124.30/EES/AdminService/v4.0/index.htm**.

   Note: You should browse from a computer that is on the same side of the firewall as the SmartServer and the computer used to access the SmartServer Web pages.

   - If the *i*.LON AdminServer tool opens, the SmartServer should be able to communicate with the LNS Proxy Web Service. Use the Add or Remove Programs Control Panel application to verify that the version of EES 2.0 matches the SmartServer firmware version. The SmartServer firmware version is displayed at the bottom right side of the SmartServer Web pages. You can also view this information by clicking **Setup** and then clicking **System Info** in the SmartServer Web pages, or right-clicking the local SmartServer and clicking **System Info** on the shortcut menu.

   - If the *i*.LON AdminServer tool does not open, un-install and then re-install EES 2.0. In addition, verify that there are no port conflicts with any other applications.

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