

Deploying Applications

When you are finished developing and testing your project, you can deploy the runtime application for use by end-user clients. Projects can be deployed to run locally on a stand-alone computer or embedded device, as well as in a client-server distributed architecture or on the cloud. This chapter discusses the various methods for deploying these applications.

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Local and Distributed Systems

FactoryStudio supports many deployment scenarios such as:

- Embedded devices with no local user interface.
- Stand-alone panels or computers with local user interface.
- Distributed systems with many client stations accessing a server.
- Redundant servers with multiple users connected.

The setup procedures for each scenario have many common steps. For all the systems, even the stand-alone installations, FactoryStudio makes use of a client-server architecture.

The server components are the project file and the modules that run the server side tasks, such as data-acquisition, alarms and data logging. The client components are the graphical user interfaces and related scripts.

When you have a local or stand-alone project the server and the client components run on the same machine.

The client technologies used by FactoryStudio simplify deployment, since you have to install the project only on the server computer. All the client stations will use the project from the server.

In order to setup the server components or stand-alone configurations refer to the following sections: "Product Installation on the Target Computer", "License and Project Settings Verification", and "Installing the Project File".

The client setup can be slightly different according to its type. FactoryStudio supports the following client technologies:

- Windows rich clients
- Windows smart clients
- Windows web-based clients
- HTML5 clients
- iOS clients

For more on these client types see "Remote Client Users Setup" below.

If you need to use Active-X, COM, and JavaScript, you can access the runtime application using the DataAccess API, which is a COM interface to provide integration with Active-X, JavaScript on web pages, or legacy programming languages such as VBScript. Contact support for assistance.

For redundant scenarios see "Deploying Redundant Systems" below.

Product Installation on the Target Computer

The server computer on distributed systems, or the standalone computer if used, must have FactoryStudio installed and licensed. The section "Installing FactoryStudio" in the "Getting Started" guide describes the standard way to install and license FactoryStudio. All servers and clients require the .NET framework, version 4.0 or higher.

When you are not using components that require the setup of the Windows Registry, such as the OPC components, you also just copy the product files without running any installation. This is especially useful for embedding the software on devices. If needed, you may remove project examples or engineering components and add custom protocols.

License and Project Settings Verification

A FactoryStudio project is created targeting one specific Product Family and Product Model, as defined on the **Info > Project > Settings** page.

It is necessary to ensure that the license on the server computer is greater than or equal to the requirements of the project, by reviewing the following checklist:

- The **Family** defined in the license must be the same as the family in the project or a higher hierarchy family.
- **Enterprise** licenses can run all projects (Enterprise, HMI and OPCServer)
- **HMI** licenses can run HMI and OPC Server projects
- **OPCServer** licenses can run only OPC server projects

On distributed systems, the client computers don't require a license, they just need to be allowed to connect with the server based on number of runtime users enabled on the server. For more information on the client setup, see "Remote Client Users Setup", below.

If the system will have remote users, a web server, either TWebServer or IIS, must be installed and running on the server computer.

- **Express** licenses or projects are not authorized for production environments.
- The **Model** in the license must support a number of communication points equal to or greater than the requirements of the project that will run on the server computer.
- The **License Type** on the target computer must be **Engineering** or **Runtime**. Licenses of type DEV (Development) are only for the internal work of System Integrators and may not be used in production environments.
- If the project requires any additional interfaces, such as the OSIsoft™ PI System, or IEC protocols, the license on the target computer must be enabled for those interfaces.
- The number of remote clients enabled must meet the project requirements.

For more Information about product and license models refer to Chapter "[Versions and Licenses](#)".

Installing the Project File

A project is installed as a single file, either the main configuration file (with extension "tproj") or a read-only file (with extension "trun") if you have created one.

The Project Management utility allows you to connect with remote servers and download the project file to remote computers.

Although that one file contains the entire project configuration, you should use the following checklist to ensure that any external dependencies are also taken care of.

- If the folder structure on the production computer is not the same as on the computer you used for development, make sure that all the places you have file paths in your project are mapped correctly to the production computer. FactoryStudio has many features and macros to define paths relative to the project location, product installation or execution path; whenever possible avoid using fixed path locations in your projects.
- Any external WPF controls should also be copied to the target computer. For remote web access those files should be located in the folder WpfControl and the utility to update the web manifest must be executed.
- If the application references external DLL or .NET assemblies, ensure they are available and at the correct paths on the target computer.
- If the project uses Retentive values, you must decide if the target computer will create a new Retentive database or if you will copy one with some predefined values.
- Enable the firewall to allow remote clients. Ports 3101 for startup (optionally port 3201 to Test Mode). For web and iOS clients, data web services are enabled on port 80.
- If the application uses external DLLs, WpfControls, configuration files or embedded databases, make sure you copy those files to the target machine and double check if the PATHNAMES you used in the project configuration are compatible.

Deploying Redundant Systems

You can configure application redundancy by configuring two computers as servers. One computer will be the primary, and the other will be the secondary or hot standby. If the primary computer or connection to the computer fails, the system automatically fails over to the secondary computer.

If you selected HMI as the Product Family, the redundancy configuration is not available.

To configure redundancy:

- Go to **Info >Project > Redundancy**.
- Enter or select the information, as needed.

Field	Description
Enable Configuration	Select to enable the redundancy configuration.
Primary Server IP and Port	Enter the IP address and port of the primary server.
Secondary Server IP and Port	Enter the IP address and port of the secondary server.
On Primary Startup	Select the option you want.
Historian Replication	Select how to handle historian replication.
Connection Timeout	Connection timeout time, in seconds, to switch to secondary server.
Server Command Line	

	Read-only field populated based on the fields above. Click Copy to Clipboard to copy the command for use.
Rich Client Command	Read-only field populated based on the fields above. Click Copy to copy the command for use.
Smart Client URL	Read-only field populated based on the fields above. Click Copy to copy the command for use.
Web Client URL	Read-only field populated based on the fields above. Click Copy to copy the command for use.

To automatically start the application on a Windows client:

- Go to **Info > Project > Redundancy**.
- Enter or select the information, as needed.

Field	Description
Enable Configuration	Select to enable the configuration.
Primary Server IP and Port	Enter the IP address and port of the primary server.
Secondary Server IP and Port	Enter the IP address and port of the secondary server, if any.
On Primary Startup	Select the option you want.
Historian Replication	Select how to handle historian replication.
Connection Timeout	Connection timeout time, in seconds, to switch to secondary server.
Rich Client Command	Read-only field populated based on the fields above. Click Copy to copy the command for use.
Smart Client URL	Read-only field populated based on the fields above. Click Copy to copy the command for use.
Web Client URL	Read-only field populated based on the fields above. Click Copy to copy the command for use.

- Click the **Copy** button next to the type of client you want to start automatically.