

# Network Architectures

## Typical Deployment scenarios

**FactoryStudio** modules (Scripts, Device, Historian, or Database) can be placed in different computers in a distributed system. The same concept applies to client visualization tools that can either run remotely or run locally on the server computer.

Large applications can use a combination of **FactoryStudio**'s deployment scenarios, interconnect remote sites, or use the EdgeHMI and IIoT Gateway products to publish data to the main server.

Therefore, there are many possible deployment configurations. The basic ones are listed below:

- Stand-alone System
- Distributed Data Acquisition System
- Client and Server System
- Redundant Server
- Control System
- Distributed and Redundant Control System

## Multiple Layer Applications

**FactoryStudio** was built to be used in different scenarios and topologies, from a local interface on an embedded panel to fault-tolerant servers that serve multiple projects and clients. **FactoryStudio**'s development tools and project components are scalable, reusable, and consistent.

## Operational Stability

**FactoryStudio**'s 100% managed code implementation provides unmatched operational stability because of its intrinsically safe software architecture that includes: execution threads isolation, exception control, failure recovery, modular implementation, hardware abstractions, and operating system independence.



### Highly flexible, scalable, and simple to use

You can access a remote machine's data from anywhere and at anytime.

## From IT to Factory-Floor

In order to provide the best possible return of investment on each application scenario, **Tatsoft** provides a flexible and simple licensing model which generates solutions that correspond to the size of your project. Product families and models enable you to deploy high quality and cost-effective systems, ranging from local HMI, touch-panels, embedded systems, supervisory stations, SCADA and distributed systems, as well as control room and operation centers.

## Redundancy and High Availability

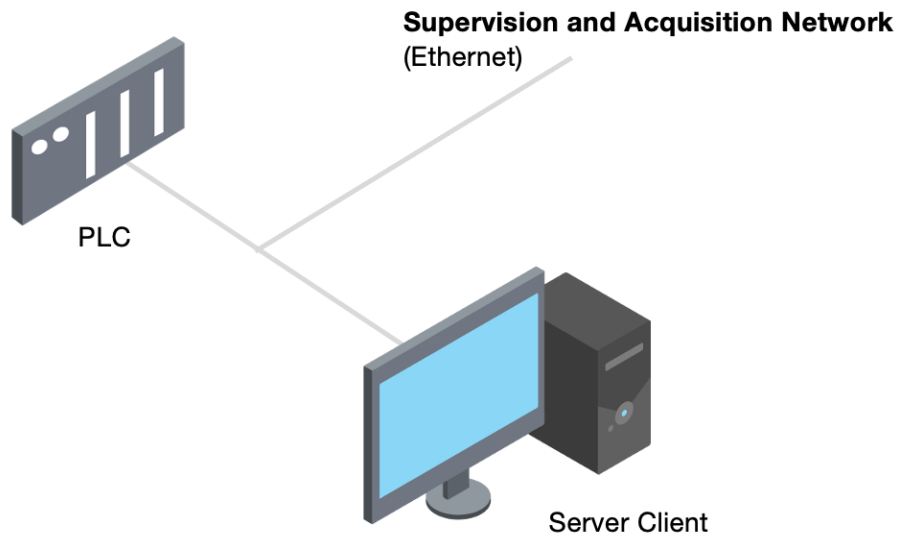
For high availability systems, **FactoryStudio** has the capability to have a real-time database, Alarm and Historian servers, and data-acquisition deployed as a redundant hot-standby system, with no project changes required.

The hot-standby redundancy is field-proven with hundreds of devices in the network and multiple clients.

## Stand-Alone System

In a Stand-alone System, the server-side components (Data acquisition, Alarms, and data logging) and the client side components (displays and client-side scripts) run on the same computer.

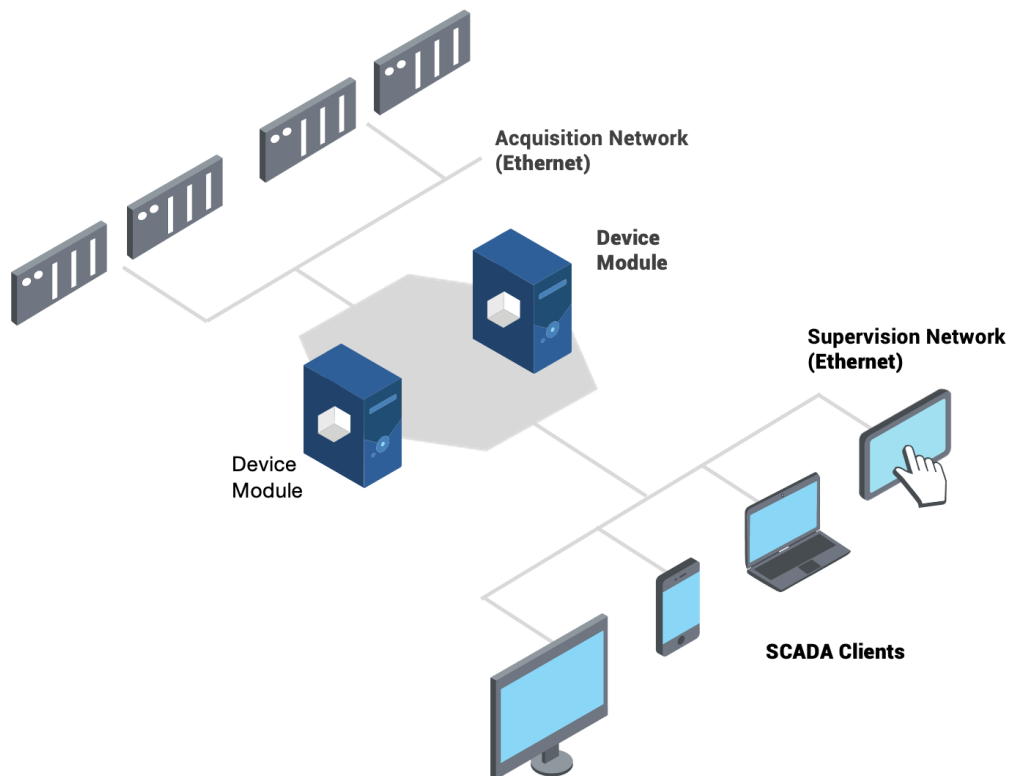
The computer can be a Windows desktop, Panel PC, industrial PC, Linux device, or an embedded system. The stand-alone system can act as a data publisher for remote **FactoryStudio** servers that act as Edge data collectors.



## Distributed Data Acquisition System

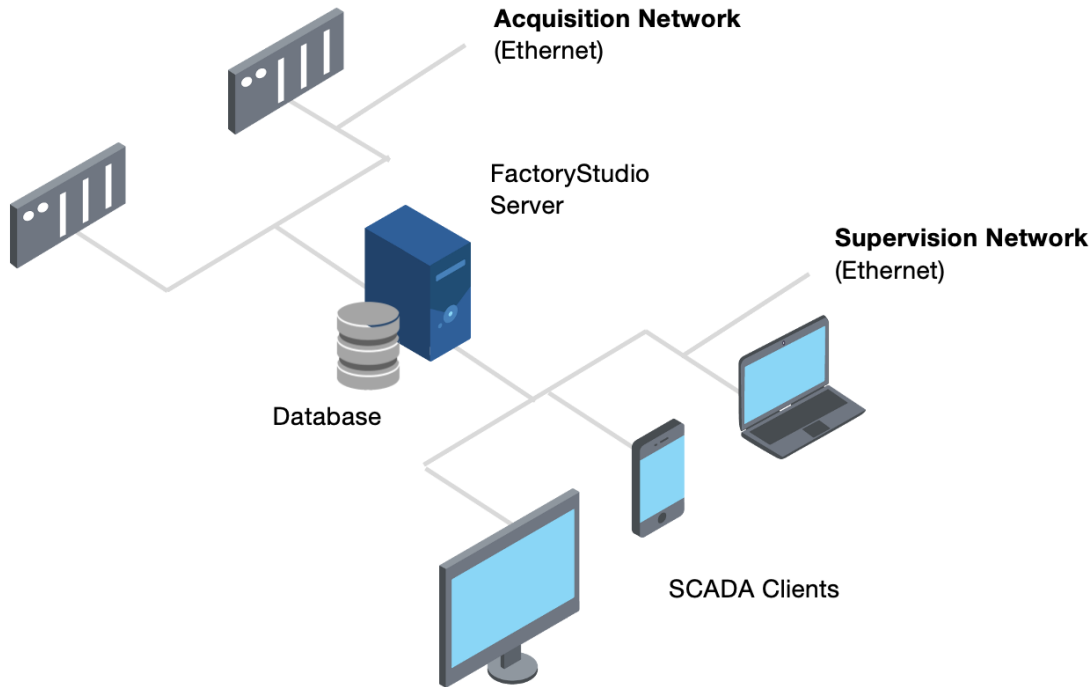
A Distributed Data Acquisition System is characterized by having a server machine and device modules that run on computers dedicated to communication with PLC's or historians on remote networks that are not able to be reached from the server computer. In the example image below, the SCADA client can be placed in the same computer that is running the server computer or in remote one.

This model is useful in plants that have devices with serial ports or limited communication capability. In these plants, communication on slow or low bandwidth networks is optimized and better global performance is achieved by adding I/O servers that interact with the devices.



## Client and Server System

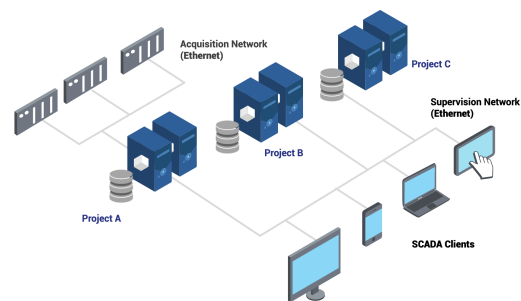
In a Client and Server System, a **FactoryStudio** server runs the server-side modules (alarm, historian, data acquisition). Operator client stations are executed in other network computers or in remote computers connected by a WAN or Cloud interface.



## Control System

A Control System can have multiple servers configured in a distributed architecture in different plants and for different projects. This configuration allows specific clients to have access to a control room for any of these plants or projects. Since the plant's clients will not be integrated in a single machine, it is necessary to specify which plant the users want to watch.

In this scenario, the system is organized in discrete locations controlled by local operators who are supported by local redundant servers. At the same time, a management level in a central control room can be configured to monitor all sites simultaneously. Each site is represented in the project as a separate cluster, grouping their primary and standby servers.



## Redundant Server System

The Redundant Server System presents two different computers running **FactoryStudio** Servers, and the redundancy is done automatically by the supervisory system itself. Thus, it is only necessary to specify the IP addresses of the primary and secondary stations. There are a few typical deployment scenarios for redundant servers:

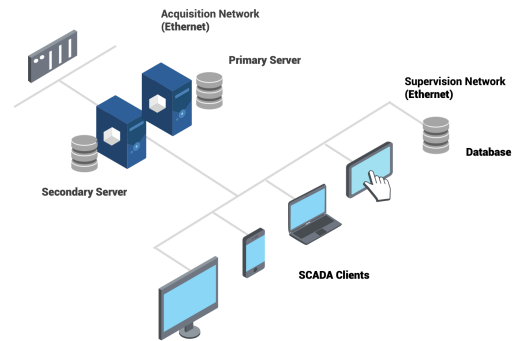
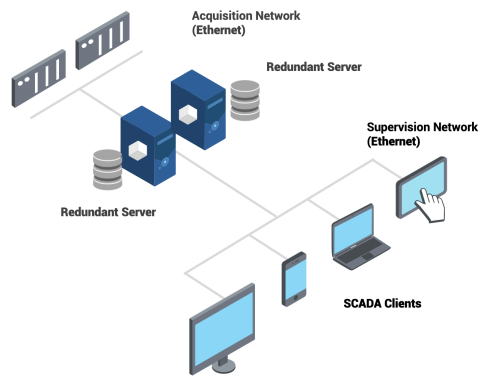
- The Alarm and/or Historian database is running on a third machine dedicated to historical data.
- The databases in the primary and secondary servers are used to store the historical data of the Alarm and/or Historian modules, with automatic data synchronization between them.
- The device module (PLC communication) is also made redundant.

### Redundant Server System

Devices Redundancy

### Redundant Server System

3rd Machine



## Distributed and Redundant Control System

A Distributed and Redundant Control System includes a server machine with the Alarm modules, a Historian, a Database, and SCADA Clients located in different computers on the network.

