



Control Server

Advanced optimizing control

Designed for Real-world Demands

The Control Server, part of GE's Industrial Internet Control System, is an integrated computing platform designed to optimize plant and asset performance, enhance control system security, and simplify the maintenance of traditional SCADA computers. Utilizing a centralized server-based architecture, the Control Server integrates multiple functions traditionally provided by discrete workstations into a server-based platform using virtualization technologies. Customers can securely design, deploy, and maintain their entire plant control system from one central location.

The Control Server's modular design includes a **Thin Client HMI Module** for Engineering & Operator Workstations, Historians, and Communication Gateways, a **Domain Services Module** providing services for user authentication and certificate management, and **Virtual Field Agent*** which enables complex model based optimization and control applications using GE's Predix* engine.

Scalable

Several configurations of Simplex (single server) and High Availability (redundant servers) fit your application specific needs, offering easy expansion by adding client terminals or server hardware as needed. Server-based architecture and small footprint of the client hardware allows for easy installation and maintenance. The platform hardware uses rack mounted

servers with high performance solid state drives (SSD). The Control Server can be supplied in a rack-based cabinet with redundant power feeds and roof mounted cooling fans with ample space for network switches, patch panels, and other equipment.

Industrial Internet Enabled

The Control Server includes GE's Virtual Field Agent, our highest capacity edge-computing platform with IIoT capabilities from GE's Predix analytics platform. Virtual Field Agent technology allows for Big Data analytics to occur at the edge or to be securely pushed to the Predix cloud. Using VFA, the Control Server has the capability to run many large and complex applications focused on optimizing plant asset operations. Quickly apply GE's OEM asset optimizing applications or build your own applications to improve operations, and thus profitability, of your plant.

Built with Security in Mind

Domain Services, delivered with the Control Server, implement policies to harden the control server, minimizing the attack surface against cyber threats. Primary and secondary domain VM controllers provide role based access control to all aspects of the Control Server platform, thin client terminals, and other thick client PCs on the control network. Certificate Authority provides security certificates for placing controllers into secure mode.

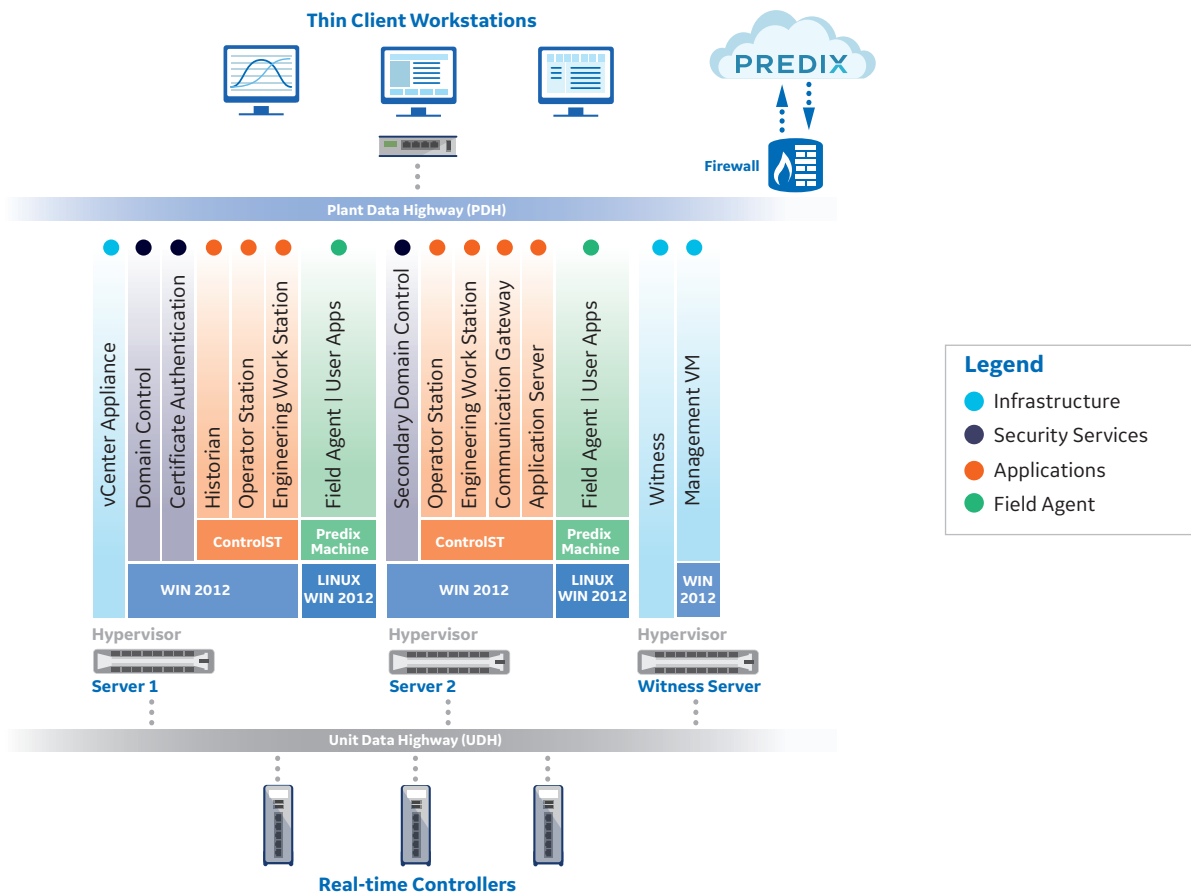


Key Benefits

Optimized Business Outcomes. Virtual Field Agent technology handles your Big Data or Big Analytics, either at the edge or pushed securely to the cloud, providing insight into assets and system operations. Optimizing controls with decisions based on business data advise how to run assets.

Secure. A reduced attack surface with fewer network connections and machines reduces the risk of cyber threat due to the Control Server's centralized architecture. The same centralized architecture allows for security and antivirus protection to be easily implemented. Primary and secondary domain VM controllers provide better user and password management of the system.

Improved Lifecycle Management. GE provides a validated system that assures hardware and software work seamlessly together in the control network. Virtualization and thin client technologies replace traditional PC based Workstations with a server class machine, extending lifecycles, simplifying maintenance, making upgrades easier, and improving security. The high availability option assures reliable uptime for all functions.



The base system elements use commercial off the shelf (COTS) parts and are available in both Simplex, as a single server, and High Availability with redundant server configurations.

Available hardware configurations

	Simplex				High Availability		
	S.1	S.2	S.3	S.4	HA.1	HA.2	HA.3
Capacity	Very Low	Low	Medium	High	Low	Medium	High
Number of Servers	Single	Single	Single	Single	Two	Two	Two
Witness Machine	No	No	No	No	Yes	Yes	Yes
Processors (per server):	Intel Xeon 4C/8T	Intel Xeon 20C/40T	Intel Xeon 32C/64T	Intel Xeon 36C/72T	Intel Xeon 20C/40T	Intel Xeon 32C/64T	Intel Xeon 36C/72T
RAM (per server):	32GB	64GB	128 GB	256 GB	64GB	128 GB	256GB
Usable Hard Drive	400 GB SSD	1600 GB SSD	2400 GB SSD	3200 GB SSD	1600 GB SSD	3200 GB SSD	3200 GB SSD
Power Supplies	Single	Dual	Dual	Dual	Dual	Dual	Dual
Form Factor	19" Rack - Shallow	19" Rack - Deep	19" Rack - Deep	19" Rack - Deep	19" Rack - Deep	19" Rack - Deep	19" Rack - Deep

The following functions are available based on site specific application needs:

● Domain Controllers	Manages user profiles for system wide access control
● Certificate Authority	Security certificates enabling secure communications with controllers
● Virtual Field Agent	Cloud connect services, advanced analytics, and optimizing control based on Predix
● Engineering Workstation	Configuration tools and services for maintaining your MarkVIe system
● Operator Workstation	Access through thin client terminals to operator screens
● Communication Gateway	Communication to 3rd party devices through various protocols
● Historian	Store and view of historical data
● Application Server	Dedicated server for Configuration Management (CMS), Alarm Server, or Device Management
● Maintenance VM	Default tools necessary to manage and troubleshoot the Control Server

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