Patriot Hardware and Systems Software Requirements

Patriot is designed and written for Microsoft Windows in native C# and .NET. As a result, it is a stable and consistent Windows application.

Patriot is suitable for deployment in any monitoring environment from the smallest start up or in house organization to very large enterprise level central stations.

Patriot will run on:

- ✓ Stand-alone PCs
- ✓ Peer to Peer networks of Windows workstations
- ✓ Microsoft Windows Server based networks

Patriot comes in 3 packages: Patriot Lite is single user. Patriot Professional and Enterprise are both multi user and both include at least one client workstation license in the base price.

The Patriot package selected will be determined by the size and requirements (or projected size and requirements) of the monitoring station. This is usually measured by the number of alarm client records monitored, anticipated signal traffic and the number of concurrent operators workstations required.

The Patriot Environment

The main components to a Patriot System:

- ➡ **Patriot Server:** This computer runs the Patriot Data Service and usually the Patriot Task Service.
- ➡ **Patriot Client (or Workstation):** This runs the Patriot Client application. It may also run the Task Service in some configurations.
- ➡ **SQL Server:** This runs Microsoft SQL Server, the Patriot Database Engine.
- ➡ **Web Server:** This runs Microsoft IIS server. (this is only required if the monitoring station is hosting their own Internet Client Access)

In a Patriot Lite configuration, the three main components will usually run on one computer.

In Patriot Professional or Enterprise installations, the components may be spread over several servers.
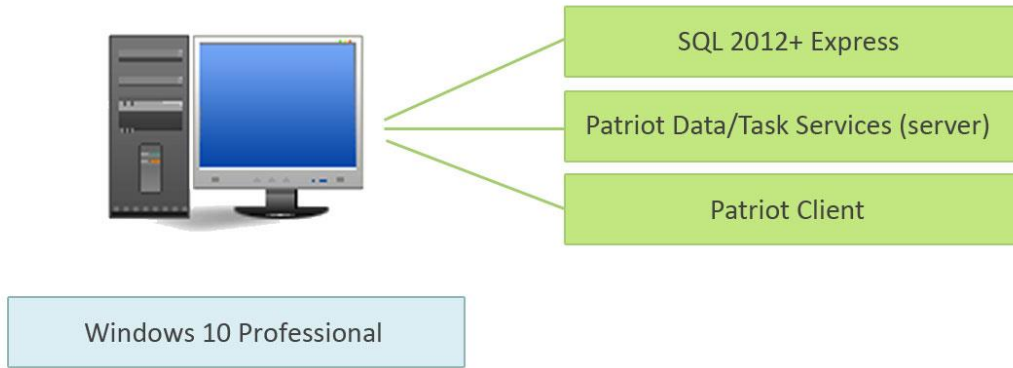
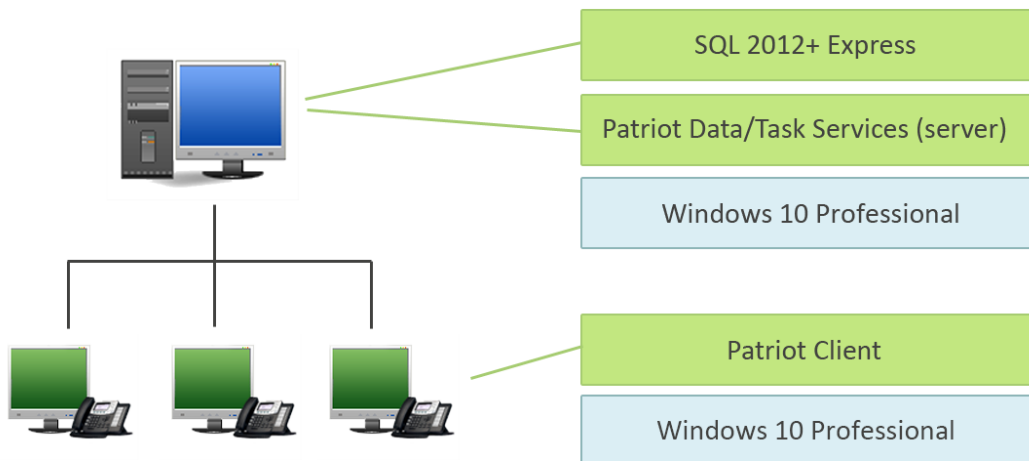# Patriot Systems - Architecture Diagram
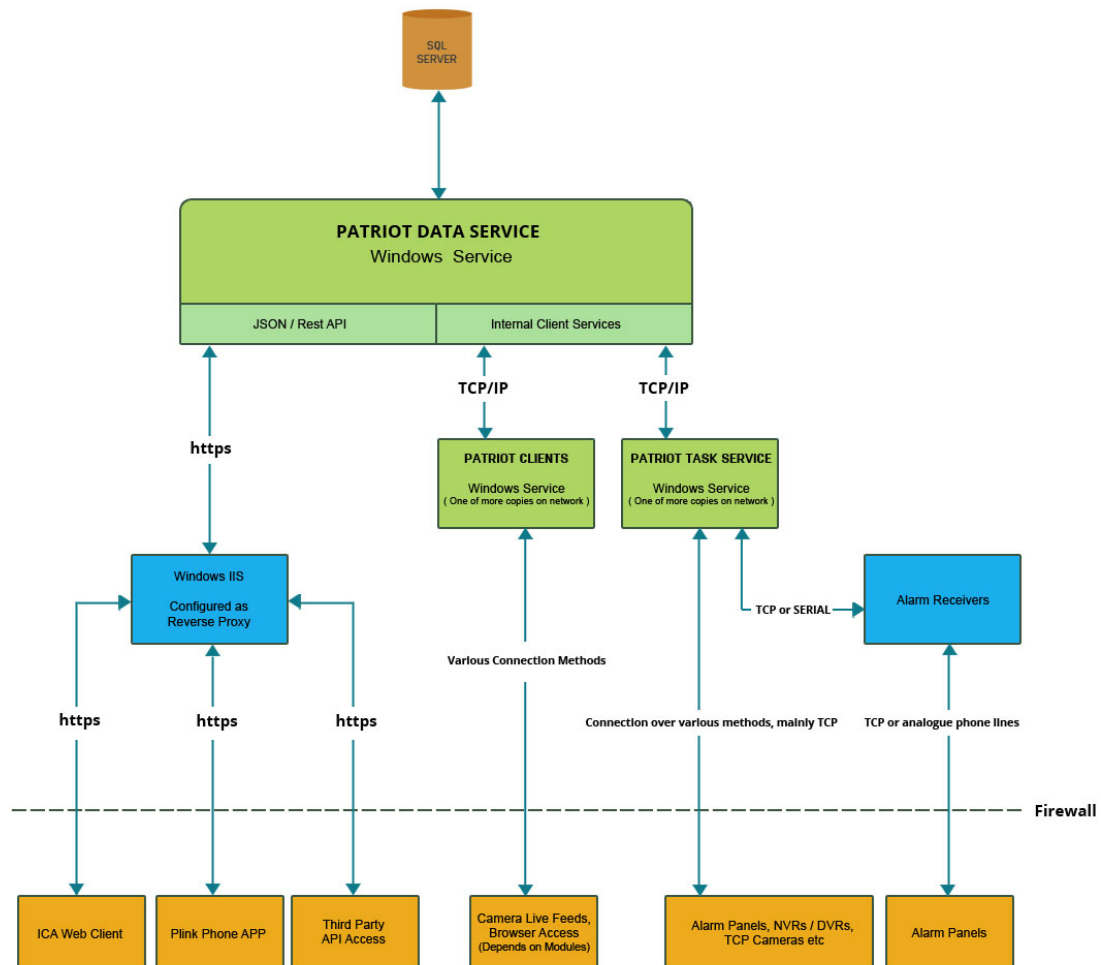
The SQL Server software is run on one or sometimes two computers. The Patriot Server is installed on another but it is common practice to have the Patriot and SQL Servers running on the same server in smaller installations.

The Patriot client application will run on one or more workstations.

Patriot Lite

	SQL 2012+ Express
	Patriot Data/Task Services (server)
	Patriot Client

Windows 10 Professional

Patriot Professional: Small - Medium (> 2k clients)

SQL 2012+ Express
Patriot Data/Task Services (server)
Windows 10 Professional

Patriot Client
Windows 10 Professional

Patriot Professional: Large (10k - 30k clients)

SQL 2012+		Patriot Data/Task Services (server)
Server 2012+		Server 2012+

Patriot Client
Windows 10 Professional
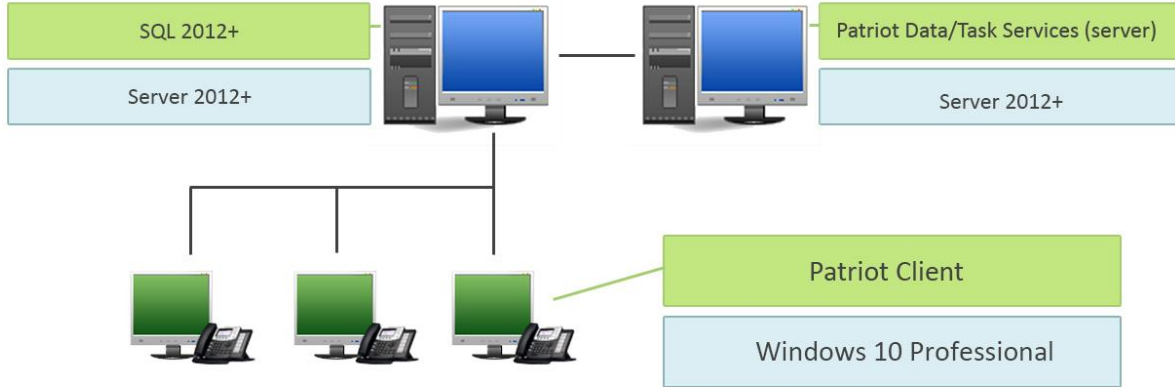
Patriot Enterprise: Large (30k - 100k clients)

SQL 2012+ Standard		Mirror SQL 2012+ Standard
Server 2012+		Server 2012+

Patriot Data/Task Services (server)
Server 2012+

Patriot Client
Windows 10 Professional

Patriot Enterprise: Data Center 100k+ clients

SQL 2012+ Enterprise		Mirror SQL 2012+ Enterprise
Server 2012+		Server 2012+

Patriot Data/Task Services (server)		Backup Data/Task Service
Server 2012+		Server 2012+

10gb iSCSI

Patriot Client		Optional SAN Seperate Area Network
Windows 10 Professional		SAN
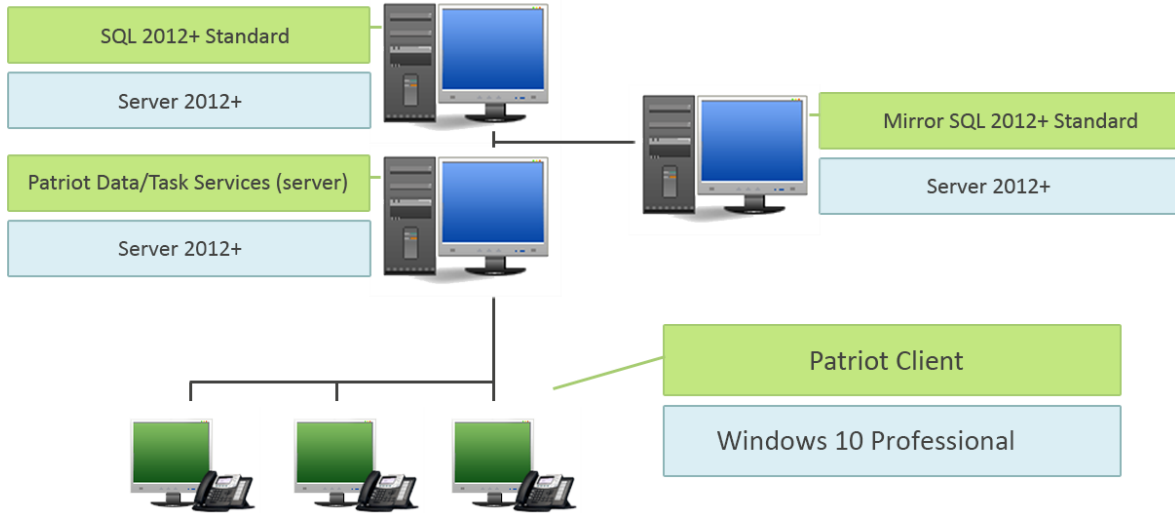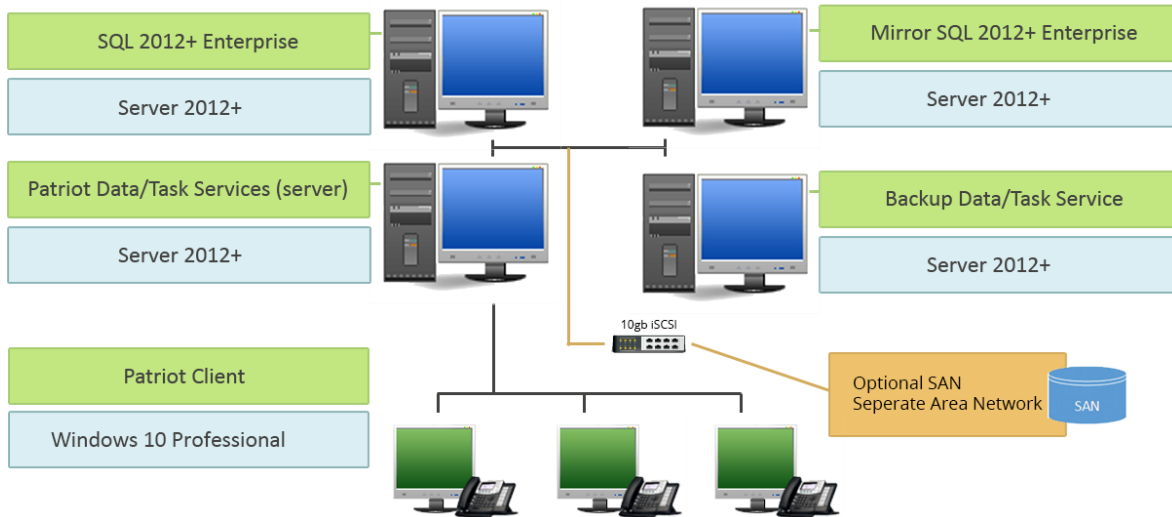
The SQL Server

➡ **SQL Software**

Patriot uses industry standard Microsoft SQL Server. This ensures reliable and consistent database performance for the smallest to very largest Patriot systems. Patriot is used with SQL 2012+.

✓ Note that Microsoft SQL Server is not included in the Patriot package pricing and should be sourced from a preferred Microsoft supplier.

Small monitoring stations can use Microsoft SQL Server Express. Distributed free of charge by Microsoft, it is an ideal package for small monitoring start-ups and can be downloaded from the Patriot web site. SQL Server Express has some performance and database size constraints and is recommended for smaller monitoring stations only. (2000 alarm client records or less.)

Larger monitoring stations will deploy licensed versions of SQL Server and will also require client access licenses. If Patriot Internet Client Access is to be installed, a Processor License for Microsoft SQL Server may be required.

Patriot Enterprise supports mirrored SQL Servers to deliver enhanced data security. Two SQL Server licenses will be required for this configuration.

Patriot Lite/Professional < 2k clients	SQL Express
Patriot Professional/Enterprise > 10k clients	SQL Server Standard
Patriot Enterprise 10k -100k clients	SQL Server Standard / Enterprise (Enterprise is generally not required)
Patriot Enterprise/Data Center > 100k clients	SQL Server Enterprise

✓ **SQL Server: Hardware and Operating System**

SQL Server may be installed on its own stand-alone platform or it may be installed in conjunction with the Patriot Data and Task Services on a single machine.

In a Patriot installation, the SQL server will be consistently handling significant numbers of transactions. The server hardware specification should be optimized for fast data access and should include adequate RAM, SSD, SAS or SCSI hard disks and fast processor(s). A gigabit network adaptor is standard on most computers. SQL can be deployed on virtual servers.

RAID arrays with disk mirroring are strongly recommended for all SQL Server installations.

Please see additional details in the Patriot SQL server system setup recommendations:
http://www.patriotsystems.com/p64library/SQLServerSystemSetup.html

Smaller monitoring stations can operate SQL Server under Windows 10 Professional. Larger monitoring stations will use Microsoft Server 2012+.

Patriot Enterprise supports SQL Mirroring. With mirroring, data is written to the primary and secondary servers. Where mirroring is deployed, both SQL server platforms will usually have the same hardware specification. SQL mirroring cannot be configured with SQL Express.

Clustering and Virtual Environments:

Patriot supports clustered SQL environments. Patriot will operate on virtual server hosts and has been tested on Microsoft VMware and KVM hypervisors.

The Patriot Server

The Patriot server runs the Patriot Data Service and usually the Patriot Task Service. As its name suggests the Data Service handles all data transactions between Patriot and the SQL Server. The Task Service supports and communicates with alarm receivers, communications devices and other hardware components.

In small to medium CMS operations, the Patriot Server services are usually deployed on the same computer as the SQL Server. In larger enterprise configurations, the Patriot Server may be installed on a separate platform.

A stand-alone Patriot Server should have adequate RAM (at least 8 GB, with larger stations requiring more), fast hard disks (SSD will give the best results but not required) and a fast processor. A gigabit network connection to the SQL Server is recommended.

The Patriot server will run on Windows Workstation or Server platforms. For a stand-alone server, Windows 10 Professional - 64 bit is suitable but Patriot Server services can also be run on Windows Server 2012+ 64 bit platforms.

Earlier versions of Windows operating systems are not supported. Windows Home editions are not recommended.

- ✓ Most legacy alarm receivers interface to Patriot via RS232 serial. The server should have enough serial ports for these devices. Most USB to serial devices are compatible with Patriot and may be used where no serial ports are available. Patriot also supports a number of IP connected alarm receivers.

The Patriot 6 Client

The Patriot 6 client provides the user interface for alarm processing and database management.

Patriot 6 client software may be deployed to workstation or server platforms but is usually installed to computers running Windows 8 or 10 Professional. The workstations are networked back to the Patriot server.
Additional Patriot client workstation licenses may be purchased and added as required.

Patriot client workstations should have adequate RAM (8.0GB minimum) and fast processors. SATA hard disks are suitable for client machines.

Recommended Screen Resolution

Patriot Lite/Professional: 1600x 900 min
Patriot Enterprise: 1680x1050 min
Note: These resolutions assume a standard DPI setting. If you are using a custom DPI setting or magnifying the screen text and items, then you will need to use a higher resolution.

Typical Hardware Specifications

The hardware configurations below are a guide only. CMS/ARC managers should consult with IT equipment providers and the Patriot technical team to establish hardware/software combinations best suited to the requirements of the proposed monitoring station.

All Patriot packages include a backup server license. The Patriot backup server platform should be a duplicate of the primary server.

➡ **Patriot Client computer – all Monitoring Stations.**

Processor	Intel Pentium or AMD Equivalent. Multi core recommended.
RAM	8GB Minimum
Hard Disk	SATA/SSD 80GB or greater
Network Adaptor	Fast Ethernet 100 MBPS (Gigabit recommended)
Video Adaptor	Minimum Screen Resolution 1600 x 900. 16x9 Display
Operating System	Windows 10 Professional 32/64 Bit

➡ **Patriot Server computers (no SQL installed) - all monitoring stations**

Processor	Intel Pentium or AMD Equivalent. Multi core recommended.
RAM	8GB minimum
Hard Disk	SATA/SSD 80GB or greater
Network Adaptor	Fast Ethernet 100 MBPS (Gigabit recommended)
Video Adaptor	Minimum Screen Resolution 1600 x 900. 16x9 Display
Operating System	Windows 10 Professional 64 bit recommended (Windows Server 2012, 2012 R2, 2016, or 2019 supported)
USB	USB 3.0 / USB-C

➡ **Patriot Server computer – with SQL Express installed – less than 2000 Client-Sites**

Processor	Intel Pentium or AMD Equivalent. Multi core recommended.

RAM	8 GB minimum
Hard Disk	SATA/SSD 160GB or greater
Network Adaptor	Fast Ethernet 100 MBPS (Gigabit recommended)
Video Adaptor	Minimum Screen Resolution 1600 x 900. 16x9 Display
Operating System	Windows 10 Professional 64 bit (Windows Server 2012, 2012 R2, 2016, or 2019 supported)
USB	USB 3.0 / USB-C

➡ **Patriot Server Computer – SQL Standard – up to 10,000 Client-Sites**

Processor	Intel Xeon or AMD Equivalent. Multi core.
RAM	16 GB minimum
Hard Disk	SATA/SSD/SAS. See SQL Server system setup document for more details.
Network Adaptor	Fast Ethernet 100 MBPS (Gigabit recommended)
Video Adaptor	Minimum Screen Resolution 1600 x 900. 16x9 Display
Operating System	Windows Server 2012, 2012 R2, 2016, or 2019 64 bit
USB	USB 3.0 / USB-C

➡ **SQL Server Stand Alone – SQL Standard – 10,000 to 100,000 large Client-Sites enterprise monitoring stations**

Processor(s)	One or more Intel Xeon or AMD Equivalent. Multi core.
RAM	32 GB minimum
Hard Disk	SATA/SSD/SAS. See SQL Server system setup document for more details.
Network Adaptors	Fast Ethernet 1 - 10GB (separate 10Gigabit recommended for iSCSI)
Video Adaptor	Minimum Screen Resolution 1680 x 1050. 16x9 Display
Operating System	Windows Server 2012, 2012 R2, 2016, or 2019 64 bit
USB	USB 3.0 / USB-C
SAN	SAN storage with separate iSCSI 10GB network

➡ **SQL Server Stand Alone - SQL Enterprise – 100,000+ Client-Sites Data Center enterprise monitoring stations**

Multi Processors	More than one Intel Xeon or AMD Equivalent. Multi core.
RAM	128 GB minimum
Hard Disk	SATA/SSD/SAS. See SQL Server system setup document for more details.
Network Adaptors	Fast Ethernet 1 - 10GB (10Gigabit recommended for iSCSI) Fiber Channel network adapter
Video Adaptor	Minimum Screen Resolution 1680 x 1050. 16x9 Display
Operating System	Windows Server 2012, 2012 R2, 2016, or 2019 64 bit
USB	USB 3.0 / USB-C
SAN	SAN storage with fiber channel (FC)

Other Hardware

Patriot CMS configurations will require additional hardware

Backup device and Media:
The can range from USB data sticks in small monitoring stations, DVD writers, NAS storage devices or tape libraries. Suitable solutions should be determined by CMS management and IT equipment providers.

MOXA:
MOXA's are recommend when RS232 / RS485 serial devices are required in virtual environments.

Network:
Minimum of Gigabit Network infrastructure is recommended although 100 MBPS fast Ethernet should be adequate for small to medium monitoring stations.

Broadband:
Fast internet access is required for e-mail, IP signaling, Camera and other IP devices.   Patriot support is usually delivered via fast internet connection. A secure router firewall should be provided.

Alarm receivers, GSM senders and other signaling hardware are components of most monitoring stations.

Other Software

Anti-virus software is strongly recommended. Antivirus packages which have minimal impact on server and workstation performance should be selected.

Backup Automation software may be required to automate off site backups to selected media.