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# Global System Requirements



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LUMEDX Corporation  
555 12th Street  
Suite 2060  
Oakland, California 94607

Tel 800.966.0699

[www.lumedx.com](http://www.lumedx.com)

Revision History		
Revision	Date	Description
103-00994-015	04/28/2017	Removed 32-bit option for Windows 7, added cross reference to the Pre-Installation Guide for anti-virus information, updated support for .NET to 4.6.1, Windows 10, and Office 2016, updated HealthView CardioPACS Migration server support to include Laurelbridge, added Third-Party PACS products server,
103-00994-014	01/20/2017	Removed support for DS4208 barcode scanner, added support for Visual Studio 2015.
103-00994-013	12/12/2016	Updated ComPACS (formerly CardioPACS 5) requirements, added migration server for ComPACS to HealthView CardioPACS upgrades, updated Citrix Server memory requirement.
103-00994-012	10/25/2016	Added Datamed Server requirements, added barcode scanner requirements, Adobe Reader is now only required on the workstations and the Citrix server, updated QlikView Server version, added Microsoft Office requirement to AutoDistribution, updated the system diagram.
103-00994-011	05/13/2016	Added Microsoft Office Professional 2013, removed Early Adopter limitations, clarified CardioPACS image storage using DAS, NAS, or SAN. Added CardioPACS 5 requirements for current LUMEDX customers only. Updates to show CardioPACS products are not supported in a Citrix environment.
103-00994-010	03/01/2016	Increased workstation memory requirement to 8 GB, removed Office 2007, added SQL Server Management Studio components to the Admin Workstation and removed peripheral devices

# Contents

- Hardware and Software General Requirements ..... 1
  - LUMEDX Client Workstation Requirements.....2
  - LUMEDX Server Requirements.....4
- Example HealthView Deployment.....10
- Example Server and Data Flow Diagram.....11
- ComPACS (formerly CardioPACS 5) Requirements .....12
  - ComPACS Servers Detail Information .....12
  - ComPACS and Laurelbridge to HealthView CardioPACS Migration Server Requirements.....13
- Third-Party PACS Products Server Requirements.....13

# Hardware and Software General Requirements

The following general requirements and instructions apply to all LUMEDX systems:

- The hardware specifications listed in this document are the minimum required to provide a three to five year hardware lifecycle for new system deployments. The requirements are based on running LUMEDX products and listed third-party products only. Installation and performance of any additional non-LUMEDX products have not been taken into consideration and may have negative impact if not properly planned and provided for. Running additional applications, or running applications in a particularly large or busy site, will require additional resources. If you have questions regarding any of the hardware and software requirements, contact your LUMEDX project manager.
- LUMEDX requires a dedicated Administration Workstation for each environment at a site, for example, Apollo\_Prod, Apollo\_Test, Apollo\_Dev, so that both LUMEDX and site teams have a workstation to do product upgrades, troubleshooting, configurations, etc. This reduces the risk of server corruption when doing administrative and customization tasks on highly configured and complex environments. LUMEDX recommends that this workstation be set up as a VMWare Guest OS.
- Microsoft, Citrix, VMware, VERITAS, Tivoli, Right Fax Enterprise Fax Solutions, and other third-party products listed in this document are not LUMEDX products. LUMEDX products will work in these environments if your site has qualified support teams to insure they are installed, configured, and maintained according to the manufacturer's installation and best practice procedures. Exception: CardioPACS products are not supported in a Citrix environment.
- LUMEDX recommends that all LUMEDX software be installed on the servers and workstations directly from the CD Image files. LUMEDX does not support workstation imaging or ghosting.
- Except where explicitly noted in the documentation, LUMEDX does not support custom work performed either by the client or by third parties not associated with LUMEDX.
- LUMEDX highly recommends using TCP/IP as the only network protocol for running ApolloLX Schedule over the network.
- LUMEDX cannot guarantee product latency and/or performance over a WAN due to variances in effective bandwidth and network topography.
- Unless otherwise specified in this document, all third-party software products must be maintained with the most recent Service Packs.
- Back-up processes must be scheduled during a lower usage time period.
- For information about pre-implementation setup and anti-virus software configuration for your network and LUMEDX system, refer to the *LUMEDX Pre-Installation Guide*.
- For the most up-to-date information about system configuration and installation, refer to the LUMEDX product guides and *Readme* files for the LUMEDX products that you want to install.
- LUMEDX uses WebEx or Mitel online meeting sessions for technical support and assistance. If your site does not support this method, then your site will need to supply LUMEDX with the relevant VPN information.
- Early Adopter support for other software on Client Workstations and Servers means that this software has received limited testing in-house at LUMEDX, but it has not been fully tested in all configurations in use at client sites. Use of this software in a production environment at client sites does not require a LUMEDX Pre-Installation Software Agreement. If any issues are discovered, please report them to LUMEDX Technical Support.

## LUMEDX Client Workstation Requirements

	Operating System	Other Software	Processor	Memory	Hard Drive / Storage Media	Peripheral Devices	#
<b>HealthView Workstation</b>	<p>Windows 10 64-bit Limited to specific versions of LUMEDX products. See the Readmes for product information.</p> <p>Windows 7 64-bit</p>	<ul style="list-style-type: none"> <li>• .NET Framework 4.6.1 and 4.0</li> <li>• Microsoft Office Professional: Access, Excel, Word, and Tools components.                             <ul style="list-style-type: none"> <li>○ 2016 32-bit, limited to specific versions of LUMEDX products. See the Readmes for product information.</li> <li>○ 2013 32-bit, limited to specific versions of LUMEDX products. See the product Readmes for support information.</li> <li>○ 2010 32-bit</li> </ul> </li> <li>• Internet Explorer 8 or 11, 32-bit</li> <li>• Adobe Reader</li> </ul> <p><b>LUMEDX Toolkit workstation additional requirements:</b></p> <ul style="list-style-type: none"> <li>• Microsoft Visual Studio 2010, 2012, or 2015: Standard, Professional, or Team Edition</li> <li>• .NET Framework 3.5</li> <li>• Microsoft Visual Basic 6.0</li> </ul> <p><b>ApolloLX Inventory Modules additional requirement:</b></p> <ul style="list-style-type: none"> <li>• Motorola DS4308 barcode scanner</li> </ul>	Dual Core	8 GB RAM	<p>140 GB</p> <p>20 GB partition for OS</p> <p>Diagnostic CardioPACS workstations: 200 GB temp cache free space</p>	<p>104 key enhanced keyboard</p> <p>Mouse</p> <p>CD/DVD RW</p> <p>LCD color monitor running at 1920x1080. Optimal usability: 20"-24" size.</p> <p><b>Diagnostic CardioPACS workstations:</b> Medical Device Grade Display 256MB Dual DVI Graphics Card, Dual DVI flat panel LCD color monitors with Resolution 1280x1024 @ 60Hz, Brightness 300cd/m2, Dot Pitch 0.27mm, Response Time 8 ms.</p>	

## LUMEDX Client Workstation Requirements

	Operating System	Other Software	Processor	Memory	Hard Drive / Storage Media	Peripheral Devices	#
<p style="text-align: center;"><b>Dedicated Administration Workstation</b></p>	<p>Windows 10 64-bit Limited to specific versions of LUMEDX products. See the Readmes for product information.</p> <p>Windows 7 64-bit</p>	<ul style="list-style-type: none"> <li>• LUMEDX Toolkit</li> <li>• .NET Framework 4.6.1, 4.0, and 3.5</li> <li>• SQL Server Management Studio: SQL Server Workstation Components with the same Service Pack as the SQL Database File Server</li> <li>• Microsoft Office Professional                             <ul style="list-style-type: none"> <li>○ 2016 32-bit, limited to specific versions of LUMEDX products. See the Readmes for product information.</li> <li>○ 2010 32-bit: Access, Excel, Word, and Tools components.</li> <li>○ 2013 32-bit, limited to specific versions of LUMEDX products. See the product Readmes for support information.</li> </ul> </li> <li>• Internet Explorer 8 or 11, 32-bit</li> <li>• Adobe Reader</li> <li>• Microsoft Visual Studio 2010, 2012 or 2015: Standard, Professional, or Team Edition</li> <li>• Microsoft Visual Basic 6.0</li> </ul>	Dual Core	8 GB RAM	140 GB  20 GB partition for OS	Access to this workstation is for LUMEDX personnel using the VPN and RDP	

## LUMEDX Server Requirements

Line Item	Server	Operating System and Components	LUMEDX Products	Other Software	Processor	Memory	Hard Drive Storage Media	#
1.	SQL Database File Server	Windows Server 2008 R2 x64  Windows Server 2012 R2	Apollo CDR  Analytics Manager Reporting Database	<ul style="list-style-type: none"> <li>SQL Server 2008 or 2012 R2 x64, Standard Edition: Database Engine, Integration Services, Workstation Components.</li> <li>Use of SQL Server 2008 requires the SQL Server 2005 Backward Compatibility package from Microsoft.</li> </ul>	Quad Core	16 GB RAM	300 GB dedicated partition for Apollo Shares and SQL databases.	
2.	Web Server	Windows Server 2008 R2 x64  Windows Server 2012 R2	HealthView  CardioPACS Web Service  ECG Manager Web Service and Website  Integration Manager  AutoDistribution Suite	<ul style="list-style-type: none"> <li>IIS 7.5 or later</li> <li>Adobe Reader</li> <li>.NET Framework 4.6.1</li> </ul> <p><b>AutoDistribution additional requirement:</b></p> <ul style="list-style-type: none"> <li>Microsoft Fax Services or Right Fax Enterprise Fax Solutions</li> <li>Microsoft Office 2010, 2013, or 2016 32-bit. 2016 32-bit is limited to specific versions of LUMEDX products. See the Readmes for product information.</li> </ul>	Quad Core	8GB RAM	100 GB dedicated partition for applications	

### LUMEDX Server Requirements

Line Item	Server	Operating System and Components	LUMEDX Products	Other Software	Processor	Memory	Hard Drive Storage Media	#
3.	Dashboard Server	Windows Server 2008 R2 x64  Windows Server 2012 R2	Analytics Dashboards	<ul style="list-style-type: none"> <li>QlikView Server 12.0</li> <li>IIS 7.5 or later</li> </ul>	Quad Core	16 GB RAM  This requirement is based on a loaded QVW data file size of less than 2 GB and less than 15 concurrent users. Larger data files and/or additional concurrent users may require additional RAM.	500 GB dedicated partition for applications	



## LUMEDX Server Requirements

Line Item	Server	Operating System and Components	LUMEDX Products	Other Software	Processor	Memory	Hard Drive Storage Media	#
4.	Interface Server(s)	Windows Server 2008 R2 x64  Windows Server 2012 R2	Interfaces and supporting utilities: 1 to 6 interfaces per server  Analytics Manager Transfer Service  ECG Manager Acquisition Service  Modality Worklist if Orders to carts are needed	<ul style="list-style-type: none"> <li>• Microsoft Office Professional                             <ul style="list-style-type: none"> <li>○ 2016 32-bit: Access, Excel, Word, and Tools components. Limited to specific versions of LUMEDX products. See the Readmes for product information.</li> <li>○ 2013 32-bit, limited to specific versions of LUMEDX products. See the product Readmes for support information.</li> <li>○ 2010 32-bit: Access, Excel, Word, and Tools components.</li> </ul> </li> <li>• SQL Server Workstation Components with the same Service Pack as the HealthView Database Server</li> <li>• Microsoft Distributed Transaction Coordinator Service must be disabled</li> </ul>	Quad Core	8 GB RAM	100 GB dedicated partition for applications	
5.	SQL Reporting Server	Windows Server 2008 R2 x64  Windows Server 2012 R2	HealthView Analytics  Analytics Manager	<ul style="list-style-type: none"> <li>• SQL Server 2008 or 2012 R2 x64 Standard Edition components: Database Engine, Integration Services, SQL Reporting Services and Workstation Components.</li> <li>• Use of SQL Server 2008 requires the SQL Server 2005 Backward Compatibility package from Microsoft. SQL Server 2008 is only supported for use with SQL Server 2008-compatible Reports modules.</li> </ul>	Quad Core	16 GB RAM	200 GB free space in a dedicated partition for applications and data	

## LUMEDX Server Requirements

Line Item	Server	Operating System and Components	LUMEDX Products	Other Software	Processor	Memory	Hard Drive Storage Media	#
6.	Hybrid SaaS Secure Transport Client	Windows Server 2008 R2 x64  Windows Server 2012 R2	None	N/A	Quad Core	4 GB RAM	20 GB partition for OS  100 GB free space in a separate partition for applications	
7.	Citrix Server	Windows Server 2008 R2	LUMEDX Workstation Clients for Apollo, ApolloLx, Analytics Manager, and ApolloLx Schedule  Exception: CardioPACS products are not supported in a Citrix environment	<ul style="list-style-type: none"> <li>• Terminal Server</li> <li>• Microsoft Office 2010 Enterprise 32-bit edition.</li> <li>• Citrix XenApp 6.5 with Web Interface, Presentation Server, Delivery Services Console, and Licensing Server.</li> <li>• Citrix Access Gateway on the Citrix Server or on the Netscaler in the DMZ.</li> <li>• Adobe Reader</li> </ul>	Quad Core	16 GB RAM	40 GB partition for OS  50 GB free space in a separate partition for applications	

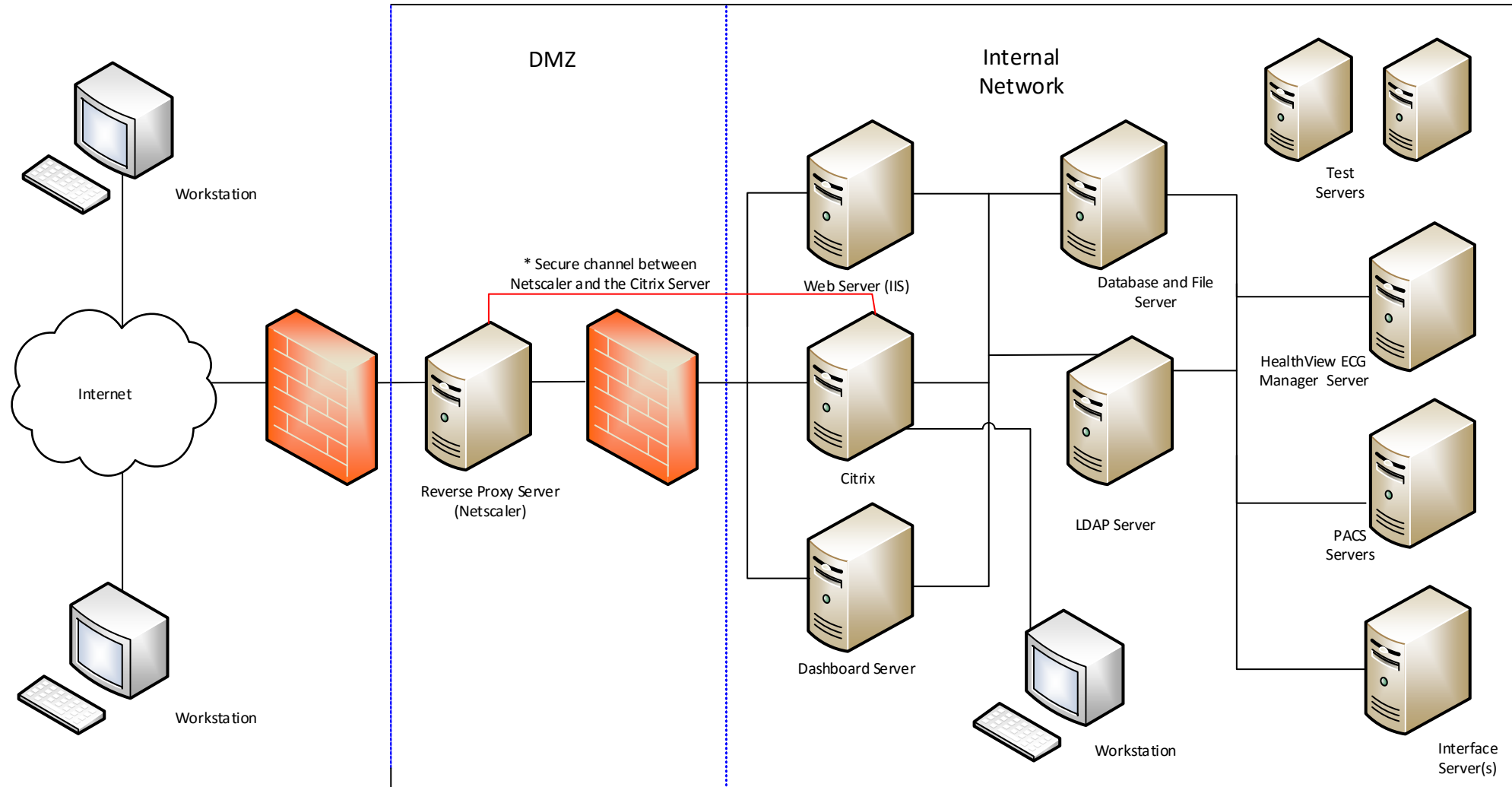
## LUMEDX Server Requirements

Line Item	Server	Operating System and Components	LUMEDX Products	Other Software	Processor	Memory	Hard Drive Storage Media	#
8.	HeathView CardioPACS Enterprise Server	Windows Server 2008 R2 x64  Windows Server 2012 R2	HealthView CardioPACS	<ul style="list-style-type: none"> <li>.NET Framework 4.0</li> </ul>	2x – 2.4 GHz Quad Core	8 GB RAM	50 GB partition for OS  250 GB partition for application and log files  2x - 1 Gb NIC (redundant)  CD/DVD ROM  Local: RAID 5 Or Attached: SAN, NAS or DAS. Must support SMB 2.1 or 3.0 shares with Windows NTFS permissions.  Redundant battery backup UPS recommended	

## LUMEDX Server Requirements

Line Item	Server	Operating System and Components	LUMEDX Products	Other Software	Processor	Memory	Hard Drive Storage Media	#
9.	HealthView ECG Manager Server	One of the following: Windows 7 x86 or x64, Windows Server 2008 x86 and x64, Windows Server 2008 R2, or Windows Server 2012 R2	N/A	<ul style="list-style-type: none"> <li>Microsoft .NET Framework 2.0, 3.0, or 3.5</li> <li>DatamedWL Service</li> <li>DatamedFT can be run inside a virtual machine that runs a compatible operating system. DatamedFT has been tested with VMWare Products: Server, ESX/ESXi Server, Workstation, and Fusion. The virtual machine must have access to the HASP USB security key, which typically resides on the host computer. For single-server installations, the key can be plugged into the host computer and assigned to the VM.</li> </ul>	Quad Core	1 GB	<p>40 GB for program operation.</p> <p>If EKGs will be archived they require approximately 50-200MB per 1000 EKGs, depending on format.</p> <p>NIC 10/100/1000. Two NICs are required if the server straddles two LANs.</p> <p>One USB port for the DatamedFT license key.</p> <p>For fault-tolerant configurations including vMotion, a USB-to-Ethernet adapter such as AnywhereUSB can be used.</p> <p>Video: 1024 x 768 or greater</p>	

# Example HealthView Deployment

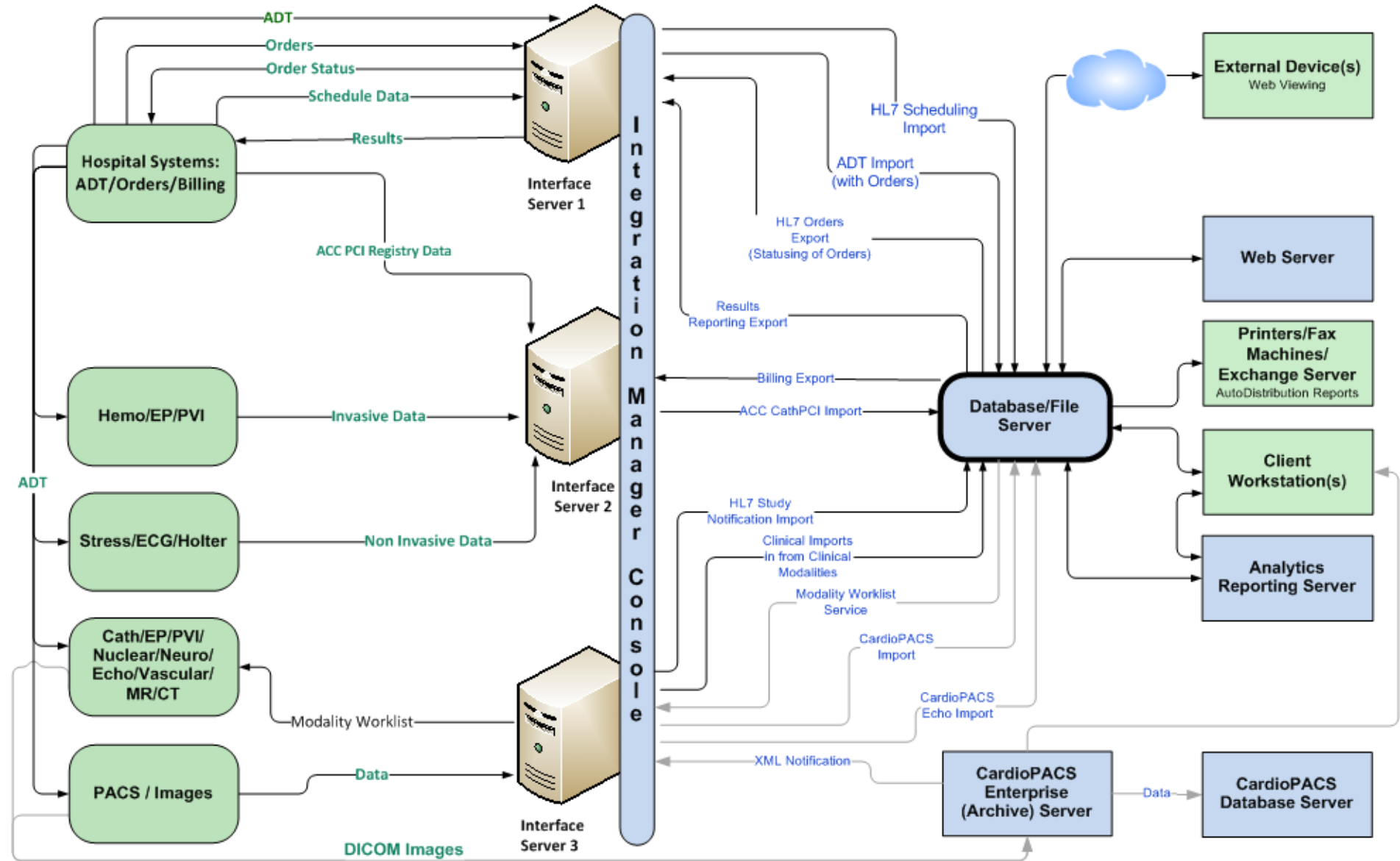


\* HealthView hands off the Citrix connection to the Citrix server which then creates the session based on communication with the Netscaler.

LDAP is only required for a Citrix Integration and/or a full CVIS implementation with HealthView

# Example Server and Data Flow Diagram

Legend: Blue-Apollo Green-Hospital Gray Connectors- Includes CardioPACS and Modality Worklist



## ComPACS (formerly CardioPACS 5) Requirements

Line Item	Server	Operating System and Components	LUMEDX Products	Other Software	Processor	Memory	Hard Drive Storage Media
1.	ComPACS Practice/Department/Enterprise Server	Windows Server 2008 R2 x64  Release 10.10.7 and later will support Windows Server 2012 R2.	None	.NET Framework 4.0 and later	Dual Quad Core	8 GB RAM or more	2*180GB HDD mirrored  Optional: RAID 1/5/6 storage space on a DAS or NAS  Dual Gigabit NIC (teamed)  Fiber Channel HBA for connectivity to SAN
2.	ComPACS Database Server	Windows Server 2008 R2 x64  Release 10.10.7 and later will support Windows Server 2012 R2.	None	SQL Server 2005 64 bit  Database: MS SQL 2012 R2 64-bit	Dual Quad Core	8 GB RAM or more	100 GB free disk space for data and log files  Dual Gigabit NIC (teamed)  Fiber Channel HBA for connectivity to SAN
3.	ComPACS Web Server	Windows Server 2008 R2 x64  Release 10.10.7 and later will support Windows Server 2012 R2.	None	.NET Framework 4.0 and later  IIS 5, 6, or 7	Dual Quad Core	8 GB RAM or more	Dual Gigabit NIC (teamed)

### ComPACS Servers Detail Information

- ComPACS must operate in a SQL instance independent of other databases. In a single SQL server configuration where multiple databases reside, CardioPACS must exclusively be installed in a separate SQL instance.
- Blade servers and virtual servers are supported.
- Permanent software licenses are provided exclusively on USB hardware protection keys. Periodically renewable software licenses are alternatively available in the absence of a USB port.
- Specifications for highly available solutions and special configurations are available from your LUMEDX project manager.
- These requirements also support INVIA Corridor 4DM.
- Image storage is separate (SAN/DAS) and depends on usage.
- Windows Clustering is not supported.

## ComPACS and Laurelbridge to HealthView CardioPACS Migration Server Requirements

Line Item	Server	Operating System and Components	LUMEDX Products	Other Software	Processor	Memory	Hard Drive Storage Media	#
1.	HealthView CardioPACS Migration Server	Windows Server 2008 R2 x64  Windows Server 2012 R2	To be used as a temporary repository only, not intended to be a permanent part of the CardioPACS system	.NET Framework 4.0	2x 2.4 GHz Dual Core	8 GB RAM	C: drive (OS) 25 GB D: drive (Application) 25 GB	

## Third-Party PACS Products Server Requirements

Line Item	Server	Operating System and Components	LUMEDX Products	Other Software	Processor	Memory	Hard Drive Storage Media	#
1.	PACS Third-Party Application Server	Windows Server 2008 R2 x64  Windows Server 2012 R2	Third-Party Integration products (INVIA, QLAB, etc.)	.NET Framework 4.0	2x 2.4 GHz Quad Core	8 GB RAM	100 GB partition for OS  100 GB partition for application and log files	