Merge CADstream®, the standard in CAD, automates the analysis of MRI studies and improves interpretation, reporting and interventional planning workflow. It’s available as software-only or in a client-server configuration.

Once a magnetic resonance imaging study is acquired, the DICOM data is sent to Merge CADstream, where it is automatically processed according to the customer’s preferences. Merge CADstream corrects for patient motion and creates subtractions, multiplanar reformats and MIPs, provides kinetic and morphology analysis tools, a Portfolio for reporting and SureLoc® for interventional planning. The Merge CADstream-processed study is ready to read from any client PC or the server itself (on client-server configurations).

Merge CADstream automatically creates a Portfolio, an image-based report during the interpretation, which may be sent to Merge PACS™.

Merge CADstream’s study library, CADalog, is integrated, providing instant access to previously processed and reviewed studies for comparison.

**CADalog and Merge PACS customers:** Merge recommends you archive the original MRI study on Merge PACS according to normal study retention procedures. The use of CADalog does not replace an archiving device.
Access from Client PCs

Merge CADstream users and administrators may interact with Merge CADstream servers using a web-based interface. When studies are opened using the web interface, a Java study viewer application is run on the client computer. A client may be any Windows computer that has network access to the Merge CADstream server. When the viewer software is installed, Java version 1.6.0_45 or 1.7.0_51 and the study viewer Java application are installed on the PC.

Operating System
- Windows 7 Professional
- Windows 8.1 Pro

Processor
- Intel® Core™ 2 @ 3.0 GHz, or equivalent

Min. Display Resolution
- 1280 x 1024

Minimum System Memory
- 4GB RAM

Internet Browsers
- Microsoft IE 9 or IE 11, Mozilla Firefox 24 or later, JRE 1.6.0_45 or later

Java Runtime Environment*
- JRE 1.6 or later, update 45

Available Disk Space
- 50GB (includes 20 GB data cache)

Network Recommended
- 100 Mbps minimum, 1 Gbps recommended

*The Merge CADstream application (server and client) uses a bundled installation of Java. The JREs identified are used by Web-based Java applets in the Merge CADstream web interface.

For additional information, contact Merge Technical Support at 877.741.5369 or support@merge.com
**Networking**

Merge recommends 100Mbps or greater for bandwidth from the server to the client. Merge CADstream provides three levels of compression: raw, lossless JPEG 2000 and lossy JPEG 2000. Lossless compression is the best option (and the default) for 100Mbps or faster networks. Users should expect pre-fetch times of about 1-4 minutes per study. On slower networks, users may choose lossy compression and could expect 4-6 minutes per study pre-fetch times.

*Note: File transfer times quoted are highly dependent upon network hardware and software configuration as well as network bandwidth usage during the day.*

**Remote Diagnostics and Support**

Merge is dedicated to delivering prompt, exceptional service. Through a secure, high-speed broadband connection, Merge Technical Support can remotely access Merge CADstream and quickly resolve common issues. This program enhances performance, increases productivity and reduces costs.

Following are access methods for remote diagnostics and support.

**NetSupport Gateway Access**

NetSupport Gateway Access is highly secure and may be provided by simply allowing outbound connections from the Merge CADstream Server through port 443 using HTTPS to the Merge Healthcare NetSupport Gateway server. Once this port is open, Merge CADstream will appear on the NetSupport Gateway and support technicians can access the system at any time. Please contact Merge for detailed white papers on NetSupport security.

**Client/Server VPN**

Most client/server VPN software is supported. While not an exhaustive list, common client/server VPN software includes Cisco, Nortel, SonicWALL and NetScreen. Client/server VPN services are secure, using your local IT security policies.

**WebEx Support Center**

Merge uses WebEx Support Center to access client PCs on their networks, if necessary. This requires that the PC be open to the Internet and the user be able to install applications. It uses the HTTPS protocols across port 443 for a secure connection.

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**Security Recommendations**

*(for customers using Merge CADstream version 5.5 and beyond)*

Merge strongly recommends that customers add security software to the Merge CADstream system.

**Backup Strategies**

Merge CADstream is not to be used as archive storage for studies. Merge Healthcare highly recommends archival storage of MRI studies within your PACS or other long-time storage system.

The following backup strategies are recommended for Merge CADstream systems:

- Site configuration data is backed up by automatic tasks configured upon installation. These are verified during maintenance activities.
- Study data in Merge CADstream (not CADalog) is readily available from site archival storage so backup of this data is not recommended.
- Study data on CADalog should be backed up according to site backup policies. Please contact Merge Support to help set this up.
- Operating system and application data does not require backup as Merge can replace any server (purchased through Merge) that has a hardware or operating system failure that cannot be repaired remotely.

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877.446.3743 x3  •  merge.com

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Hardware/Software Specifications: Client-Server Configurations

Customers purchasing software-only Merge CADstream also may use these specifications for purchasing their own hardware.

**CADapult-class (single user only)**

The CADapult system is a desktop all-in-one workstation designed for sites with low to medium volumes and one user. Please call Merge Technical Support or visit [http://www.merge.com/Solutions/Radiology/Merge-CADstream.asp](http://www.merge.com/Solutions/Radiology/Merge-CADstream.asp) for updated specifications for this configuration.

**Merge CADstream Distributed-class (up to 5 concurrent users)**

Merge CADstream Distributed is comprised of a server/client system and is designed for sites with medium volumes and up to five concurrent users. The system includes a Merge CADstream server, with CADalog built in, and is scalable for future growth.

- Two Quad-Core Processors (>3 GHz, 10MB Cache), e.g. Intel Xeon E5
- 8GB, DDR3-1600 MHz RAM
- 300GB of hard drive storage (OS, Application, DB) allowing for an average of 100 Studies in the Database (working set) at 1.7GB/Study
- One Ethernet connector running at 100 MBps or greater**

*Additional storage is required for the optional CADalog study database
**1GBps highly recommended
Note: The customer's hardware choice will decide whether Windows 7 or 2008 is better to use.

**Merge CADstream Enterprise-class (up to 8 concurrent users)**

Merge CADstream Enterprise is comprised of server class hardware and software designed for sites with high volumes and up to eight concurrent users. The system includes a Merge CADstream server, with CADalog built in, and is scalable for future growth.

- Two Six-Core Processor (>2.1 GHz, 15MB Cache), e.g. Intel Xeon E5
- 16GB ECC or RDIMM 1600MT/s RAM
- 300GB of hard drive storage (OS, Application, DB) allowing for an average of 100 Studies in the Database (working set) at 1.7GB/Study
- One Ethernet connector running at 1GBps

*Additional storage is required for the optional CADalog study database

**CADalog**

CADalog software is integrated into Merge CADstream and an initial CADalog storage space is included on new Merge CADstream servers. Additional storage, if needed, must be supplied and configured as a network share. The network share information is then entered into Merge CADstream.

The following table is a guideline to determine additional storage that may be required to support annual growth for the number of labs and studies. Value is estimated per site and year assuming 800MB per compressed study.

<table>
<thead>
<tr>
<th>Number of Annual Studies</th>
<th>Space Required for Annual Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000</td>
<td>800GB</td>
</tr>
<tr>
<td>3,000</td>
<td>2.4TB</td>
</tr>
<tr>
<td>10,000</td>
<td>8TB</td>
</tr>
</tbody>
</table>

*Note: Merge does not support the use of external USB or FireWire storage attached to the Merge CADstream server for the use of CADalog. These storage solutions do not provide the stability necessary for the use of CADalog with Merge CADstream.*
Virtualization Requirements (Software Only)
The following are Merge virtual machine settings, and required resources. For customers providing a virtual environment to host the Merge CADstream server, there is an additional document titled Merge Healthcare Virtualization — Customer Guide which includes VMware infrastructure design, product installation instructions, VMware benchmarking, and End-user performance tests. This document can be found online at: http://www.merge.com/Solutions/Radiology/Merge-CADstream.aspx under the “Resources” tab.

CADapult-class (single user only)
The CADapult system is designed for sites with low to medium volumes and one user. Please call Merge Technical Support or visit http://www.merge.com/Solutions/Radiology/Merge-CADstream.aspx for updated VM requirements for this configuration.

Merge CADstream Distributed-class (up to 5 concurrent users)
Merge CADstream Distributed is designed for sites with medium volumes and up to five concurrent users. The system supports a Merge CADstream server. Additional storage for CADalog would need to be provided. Please call Merge Technical Support or visit http://www.merge.com/Solutions/Radiology/Merge-CADstream.aspx for updated VM requirements for this configuration.

Merge CADstream Enterprise-class (up to 8 concurrent users)
Merge CADstream Enterprise is designed for sites with high volumes and up to eight concurrent users. Additional storage for CADalog would need to be provided, and is scalable for future growth. Please use the following VM specifications for this configuration:

<table>
<thead>
<tr>
<th>Virtual Hardware</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Windows Server 2008 R2 Standard</td>
</tr>
<tr>
<td></td>
<td>Windows 7 Professional 64-bit</td>
</tr>
<tr>
<td>vCPUs (vSockets * vCores)</td>
<td>Minimum: 8(2*4)</td>
</tr>
<tr>
<td>Memory</td>
<td>Minimum: 16GB</td>
</tr>
<tr>
<td>Disk Controller</td>
<td>LSI Logic SAS</td>
</tr>
<tr>
<td>Network Card</td>
<td>Minimum: E1000</td>
</tr>
<tr>
<td></td>
<td>Recommended: VMXNET 3</td>
</tr>
<tr>
<td>Total Video Memory</td>
<td>8MB (1280 x 1024 pixels)</td>
</tr>
<tr>
<td>Virtual Disk 0</td>
<td>Minimum: 300GB (OS, Application, DB)</td>
</tr>
<tr>
<td></td>
<td>Average of 100 Studies in the Database (working set) at 1.7GB/Study</td>
</tr>
<tr>
<td>Virtual Disk 1</td>
<td>Optional CADalog drive for long term storage of compressed data. See “Additional Storage” below.</td>
</tr>
</tbody>
</table>

Note: A physical DVD-RW is required to be attached to the physical host that will be hosting the virtual machine. The virtual machine requires pass-through access to the DVD-RW. This is only required if DVD burning is planned (from Merge CADstream client or server).

Additional Storage
The following table is a guideline to determine additional storage that may be required to support annual growth for the number of labs and studies.

<table>
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<th>Number of Annual Studies</th>
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</tr>
</tbody>
</table>

* Value is estimated per site and year:
  - CADalog (compressed): 800MB per study