

Merge CADstream[®]

For IT Professionals

Merge CADstream,
the standard in CAD,
automates the analysis of
breast, liver, and prostate
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 launched directly from PACS.

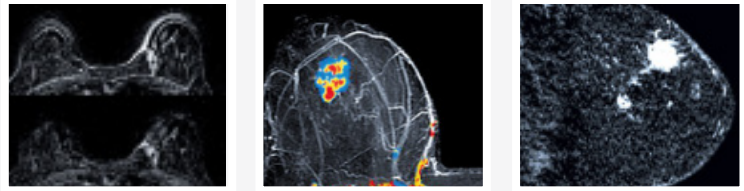
Merge CADstream automatically creates a Portfolio, an image-based report, during the interpretation, which may be sent to PACS.

Merge CADstream's study library, CADalog, is integrated, providing instant access to previously processed and reviewed studies for comparison of the quantitative and qualitative analysis.

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.

Merge CADstream Services

Services consist of:



MERGE CADSTREAM PROCESSES

Merge CADstream Data Manager

- Manages the studies on the system, including import, export and scheduling
- Manages administrative functions on the system such as users and site specific preferences
- Acts as a web server for accessing Merge CADstream via a URL
- Provides the DICOM StoreSCP service to allow external systems to send studies to Merge CADstream

Merge CADstream Processor

- Handles all study pre-processing, including registration, reformatting, MIPS and AngioMaps

Merge CADstream Compressor

- Handles all JPEG2000 compression. Compression saves time and space when studies are opened on a client or stored on CADalog

Merge CADstream Client Processor

- Handles all interactive processing

OTHER SERVICES

Apache James

- A mail server that can be configured to send notification emails from Merge CADstream

All services run in the background upon startup of the server regardless of the user who is logged in (or not logged in).

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 64 bit
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
Java Runtime Environment*	JRE 1.6, update 45; JRE 1.7, updates 61-80; JRE 1.8, update 71
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**

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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.

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.

Hardware/Software Specifications: Client-Server Configurations

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

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.

**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.

- 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**
- Windows 7 Professional® 64-bit or Windows Server 2008 R2 Standard, 64 bit
- Microsoft Internet Explorer® 9 or 11. Mozilla® Firefox® 24 or later
- A DVD drive; a read/write drive is required to burn disks
- A mouse and keyboard
- A monitor that supports 1280x1024 display resolution

Merge CADstream Enterprise-class (up to 10 concurrent users)

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

**Additional storage is required for the optional CADalog study database*

Model	Requirement	Specification	Requirement
Dell	Dell PowerEdge (Recommend R6x0)	CPU	(2) Intel Xeon processor six-core
HP	HP ProLiant DL (Recommend DL360)	CPU Clock Speed	2.10GHz, 15MB Cache, 7.20GT/s QPI (E5-2620v2)
IBM	IBM System x (Recommend x3550 Mx)	RAM	16GB, DDR3, 1600MHz RDIMMS
RAID Controller		Hard Drives	(6) 300GB SAS, 10k RPM (RAID 10) (4) 600GB SAS, 10k RPBM (RAID 5)
Dell	PERC H710/H730, 1 GB NV cache or greater	Network Ports	(2) GigE copper (in addition to management adapter port)
HP	P420i/P440ar, 1 GB NV cache or greater	Optical Drive	DVD ROM
IBM	ServeRAID-M5110, 1 GB NV cache or greater	Operating System	Windows Server 2012 R2, Standard
Remote Manager Adapter			
Dell	iDRAC Enterprise		
HP	iLO Advanced		
IBM	IMM Advanced		

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.

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.

Number of Annual Studies Processed by CADstream	Space Required for Annual Studies
1,000	800GB
3,000	2.4TB
10,000	8TB

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Merge CADstream

The following Merge Healthcare virtual machine settings, and minimum required resources.

CADstream							15K (RAID 10)	7.2K (RAID 6)	Total Storage (GB)	
							OS/App/DB	CADalog		
Roles	Concurrent Users	Sockets	Cores per Socket	Total Cores/ vCPUs	RAM (GB)	NIC	Disk 0	Disk 1		
Production	8	2	4	8	8	1	300	TBD	300	
Production	5	2	3	6	8	1	300	TBD	300	
Production	1	1	3	3	4	1	300	TBD	300	
Test	Test	1	2	2	4	1	300	TBD	300	

Additional Storage

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

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

Number of Annual Studies	Space Required for Annual Studies ^a
1,000	800GB
3,000	2.4TB
10,000	8TB

Supported Operating Systems:

- Windows Server 2012 R2 Standard
- Windows Server 2008 R2 Standard
- Windows 7 Professional 64-bit

Other:

- Total Video Memory: 8MB (1280 x 1024 pixels)
- Minimum of 300GB with an average of 100 Studies in the Database (working set) at 1.7GB/Study
- Optional CADalog drive for long term storage of compressed data.

See Additional Storage.

- The SAN volume should have RAID configuration equivalent to the hardware specification.
- 15K RPM drives for all applications and storage may be replaced by 10K RPM drives upon review by Merge.
- Internet Browsers: Microsoft IE9 or IE11, Mozilla Firefox 24 or later

NOTE: A physical DVD-RW is required to be attached to the physical host that will be hosting the virtual machine in order to burn studies to DVD. The virtual machine requires pass-through access to the DVD-RW.

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