

Workflow Solutions

Data Collection, Data Review and Data Management



Workflow

Finding more efficient ways to support patient needs begins with better workflow management. MGC Diagnostics has developed a complete workflow system which combines healthcare industry standards and best practices with flexibility and support. MGC Diagnostics makes it easy to build and customize powerful workflow solutions to save time and effort – allowing the focus to be on the patient. MGC Diagnostics flexible workflow solutions are separated into 3 categories: Data Collection, Data Review and Data Management.



Data Collection

[BreezeSuite™ Cardiorespiratory Diagnostic Software]

The heart of MGC Diagnostics' workflow solutions package is BreezeSuite cardiorespiratory diagnostic software. This versatile software combines gas exchange and pulmonary function testing into one powerful application that sets a new standard for ease of use. The easy to use Windows® based system contains extensive options for predicted values, customizable displays and reports and integrated software options.

BreezeSuite cardiorespiratory diagnostic software provides several technological advantages:

- Complete Microsoft Windows® operating system package allows for industry standard integration with Windows operating system compatible printers, fax machines, email systems and more.
- The utilization of Microsoft SQL Server® results in significant performance gains.
- Data storage capacity only limited by available drive space.
- Support for Wide Area Networks (WAN).

[Open SQL Database]

MGC Diagnostics believes that the data belongs to the facility and should not be controlled in any way by any manufacturer. An open SQL database architecture allows authorized individuals to develop and run queries. This truly open SQL Database assures data will always be accessible to the user. Data is not MGC Diagnostics encrypted or dependent in any way.

Data Review

[BreezeReview™ Physician Review Software]

BreezeReview physician review software combines workstations with review stations. All workstations and review stations share the same database. A physician can review, interpret, change review status, and electronically sign tests as the workflow dictates within the network. Results can be posted through BreezeConnect HL7 interface software to the EMR system. BreezeReview physician review software satisfies both HIPAA requirements and the HITECH Act and can be installed on a Citrix server (Citrix BreezeReview™ physician review software option required).



[Citrix BreezeReview™ Physician Review Software]

With Citrix BreezeReview physician review software, BreezeReview physician review software can be accessed so tests can be remotely reviewed, interpreted, electronically signed and review status changed from any Internet connection. Results can be posted through BreezeConnect HL7 interface software to the EMR system.

[BreezeSuite MultiUser™ Networking Software]

BreezeSuite MultiUser networking software connects cardiorespiratory diagnostic systems and review stations so data can be shared and stored in a central Microsoft SQL Server® database. This networking software allows all workstations to share one database from either a local area network (LAN) or a wide area network (WAN). Reports, reference values, and statements can be standardized from each site. With an enterprise friendly approach, IT/IS departments can use their approved hardware without separate vendor hardware. BreezeSuite MultiUser networking software provides the following benefits:

- Retrieve, interpret or trend data from any networked PC - minimizing the need to handle and manage paper reports.
- Review historical patient data without interrupting diagnostic assessments.
- Automated backup of electronic storage reduces the risk of lost or misplaced records and the added expense of retesting.
- Easy-to-use physician review workstations allow rapid turnaround of test interpretations on the network.
- Electronic environment improves workflow and productivity, which saves on transcription, filing and paper storage costs.

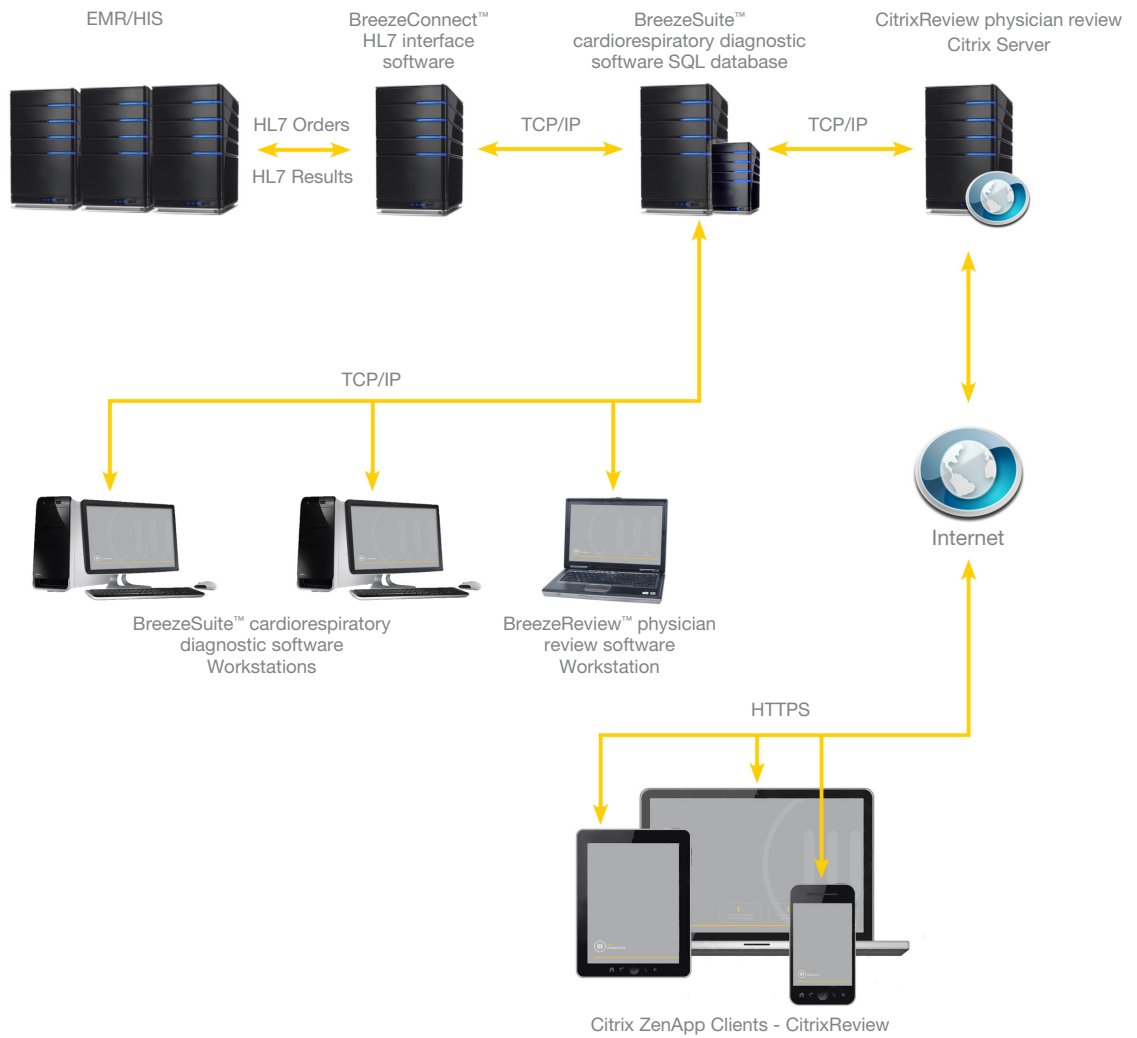
[BreezeConnect™ HL7 Interface Software]

BreezeConnect HL7 interface software allows any number of networked systems to send or receive data from the facility's electronic medical records (EMR) system. The interface software is compatible with most commercial and facility-developed hospital information systems (HIS), allowing access to patient information from any location tied to the facility's EMR system. Here's how it works. Patient orders and patient demographics (ADT) are received on a workstation. After the test is completed and interpreted, the test data, PDF report, text report or a combination of these is sent to the EMR system. BreezeConnect HL7 interface software also provides the following advantages:

- Automatic data transfer and entry is time-efficient and reduces the unnecessary expense of errors and misplaced test retrieval.
- Eliminates the need to configure or customize programming to covert HL7 data.
- Patient identification numbers, demographics (ADT) and physician orders (ORM) can be downloaded to the MGC Diagnostics BreezeSuite cardiorespiratory diagnostic software database. Patient test results (ORU) and interpreted reports can be uploaded to the EMR system.
- Utilizes HL7 2.x protocols as well as TCP/IP and MLLP (minimal lower layer protocol) for data transfer.

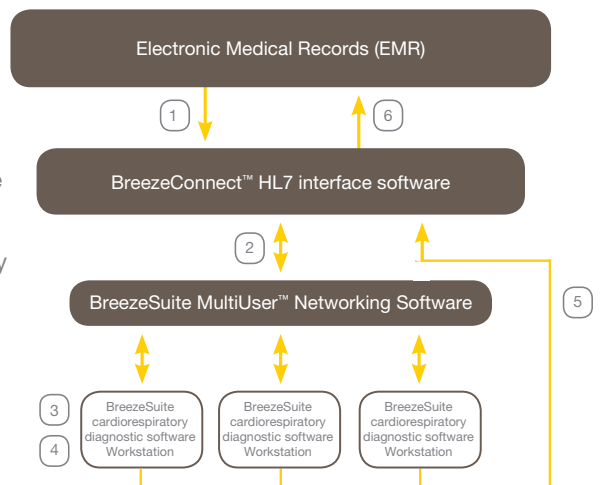


How it Works



Information Flow

1. Patient ADT (Demographics) or Orders are sent from the EMR to the BreezeConnect HL7 interface software.
2. The patient ADT or Orders are sent from the BreezeConnect HL7 interface software to BreezeSuite MultiUser SQL database.
3. The appropriate fields in BreezeSuite cardiorespiratory diagnostic software are populated with Patient Demographics and/or Orders.
4. Operator performs requested patient tests.
5. The preliminary or final test result is released by the operator or physician.
6. Results are converted to HL7 and sent to Electronic Medical Records (EMR). Additionally, reports containing graphics may be sent via PDF file in the HL7 message to the EMR.



Electronic
Physician
Order Entry

OrderID	VisitID	RequestDateTime	Status	Tests
ORDER007	953717	06/03/2013 4:51:55 PM	New	PULMONARY FUNCTION TEST
ORDER008	953717	06/03/2013 4:51:55 PM	New	BRONCHIAL PROVOCATION
ORDER009	953717	06/03/2013 4:51:55 PM	New	LUNG DIFFUSION

BreezeSuite™ cardiorespiratory diagnostic software displays patient tests ordered by the clinician.

Frequently
Asked
Questions
(FAQs)

Q. Can the MGC Diagnostics database and the BreezeConnect interface reside on a shared server?

A. Yes.

Q. If on a Virtual Machine server, can the database and interface still reside on the same OS?

A. Yes.

Q. Are there regular updates to the interface software? If yes, what is the notification process and the cost?

A. Customers under contract with the Annual Support Agreement will receive updates to the interface when available. For updates (does not include new services or applications), customer will be notified by email and letter and there will be no charge.

Q. What type of support is provided for the interface?

A. Customers with an Annual Support Agreement will receive no-charge 24/7/365 telephone support and remote support assistance where available. On-Site support is available for an additional fee.

Q. Is the interface compatible with various backup programs?

A. The interface has its own backup utility for its databases.

Q. What provisions are available for disaster recovery in the event of such an occurrence?

A. Critical files can be backed up to a remote server.

Q. Will it be necessary for the interface to connect to the vendor via the internet and will an internet browser be used to access or support any portion of the interface?

A. An internet connection is used for remote installation and service. It is not required for routine operation.

Q. Are there any concerns with Antivirus applications?

A. There are file exclusions that need to be in place for any scanning software.

Q. Who is going to install the interface software?

A. The BreezeConnect HL7 Interface software will be installed by MGC Diagnostics. The purchase includes remote installation, or for an additional charge, onsite installation.

Q. Who is responsible for the interface software?

A. Support for the interface is provided by MGC Diagnostics and Data Innovations with the purchase of the Annual Support and Maintenance Agreement.

Q. Is the interface designed to be used in a WAN environment?

A. It can be used in a WAN environment, but due to bandwidth and latency issues the refresh of data may be longer than over a LAN.

Q. Does the interface maintain an audit trail that provides documentary evidence of user transactions?

A. Yes, in the Event Log.

Q. Are all interfaces HL7 compatible and, if so, what version?

A. Data to the EMR can be in HL7 format, however this depends on the customer. Standard HL7 interfaces currently available are HL7 2.X.



Rapid Access to Patient Data
“We want to bring a patient into any testing room and pull up their historical test results or view spirometry data from the Pulmonary Lab when the patient arrives for a test in Cardiology.”



BreezeSuite MultiUser™ networking software Install networking software on MGC Diagnostics’ systems and connect to a centralized database located on a server. Patient data can now be retrieved and viewed on any testing system or department workstation connected to the network without interrupting workflow.

Faster Turnaround of Reviews and Interpretations “Our doctors want to review, interpret and save test data from their office or home.”



BreezeSuite MultiUser networking software
BreezeReview physician review software
Create a BreezeSuite MultiUser diagnostic system network and add BreezeReview physician review software to computers on the network. Physicians can now retrieve, interpret and trend patient results in their office, eliminating the need to manage paper reports. This accelerates completion of interpretations and makes the diagnosis available for rapid clinical follow up.

Wider Availability to Patient Test Results “We want to get our final reports into the EMR so it can be viewed from anywhere in the hospital.”



BreezeSuite MultiUser networking software with BreezeConnect HL7 interface software Using the BreezeConnect HL7 interface software, patient results can be sent from the BreezeSuite MultiUser network to the EMR for viewing on any EMR workstation.

Enhanced Workflow and Reduced Errors “We need to reduce entry errors and add the efficiency of entering new patient demographics by accessing the information electronically.”



BreezeSuite MultiUser networking software with BreezeConnect HL7 interface software
With BreezeConnect HL7 interface software, patient demographic records and physician orders can be sent to the BreezeSuite MultiUser central database for access at the diagnostic workstation.

[SPECIFICATIONS FOR BREEZECONNECT HL7 INTERFACE APPLICATION SERVER]

Operating System	<ul style="list-style-type: none"> ◦ Windows Server 2008 (R2) (Standard edition) (64-bit) ◦ Windows Server 2008 or Server 2008 (R2), Standard edition (64-bit) ◦ Windows Server 2012 (R2) (64-bit)
Processor	<ul style="list-style-type: none"> ◦ Dual Core or greater
Hard Disk	<ul style="list-style-type: none"> ◦ 80 GB <p><i>NOTE: Additional hard disk space is required based on the amount of data to retain and duration.</i></p>
Hard Disk Speed	<ul style="list-style-type: none"> ◦ 7200 RPM or higher <p><i>NOTE: Faster hard drive speeds correspond to improved performance</i></p>
Memory	<ul style="list-style-type: none"> ◦ 4+ GB recommended
EMR/HIS Connectivity	<ul style="list-style-type: none"> ◦ Options include: Client/Server connectivity via TCP/IP (Static IP address) or file exchange
Virtual Machine Support	<ul style="list-style-type: none"> ◦ Yes

[SPECIFICATIONS FOR BREEZESUITE DATABASE SERVER]

Operating System	<ul style="list-style-type: none"> ◦ Windows Server 2008/2008 (R2) ◦ Windows Server 2012/2012 (R2)
Processor	<ul style="list-style-type: none"> ◦ 2.0 GHz or faster recommended
Hard Disk	<ul style="list-style-type: none"> ◦ 80+ GB recommended
Memory	<ul style="list-style-type: none"> ◦ 4+ GB recommended
Network	<ul style="list-style-type: none"> ◦ Network Interface Card Installed ◦ TCP/IP networking installed ◦ DHCP or static IP Address
Virtual Machine Support	<ul style="list-style-type: none"> ◦ Yes
64-bit OS Support	<ul style="list-style-type: none"> ◦ Yes
SQL Server Versions Supported	<ul style="list-style-type: none"> ◦ SQL Server 2008 (Workgroup, Standard or Enterprise edition) ◦ SQL Server 2008 (R2) (Workgroup, Standard or Enterprise edition) ◦ SQL Server 2012 (Standard or Enterprise edition) ◦ SQL Server 2014 (Standard or Enterprise edition)
SQL Server Configuration	<ul style="list-style-type: none"> ◦ SQL Server is installed with SQL or Mixed Mode Authentication ◦ TCP/IP protocol enabled on Server Service and Native Client Service ◦ Named Pipes protocol enabled on Server Service and Native Client Service
BreezeSuite SQL Database	<ul style="list-style-type: none"> ◦ Software databases require approximately 50 MB disc space when empty ◦ Database size growth should be expected at approximately 1 GB per 5000 patient tests stored ◦ Total space requirements will depend on archived data size, testing volume and database maintenance ◦ MGC Diagnostics recommends allocating 40+ GB for software databases



[SPECIFICATIONS FOR BREEZESUITE WORKSTATION]

Operating System	<ul style="list-style-type: none"> ◦ Windows 7 (Professional, Ultimate or Enterprise edition) SP1 ◦ Windows 8.1 (Enterprise) ◦ Windows 10 (Professional or Enterprise edition)
Processor	<ul style="list-style-type: none"> ◦ Pentium IV 2.8 GHz or greater minimum ◦ Dual Core or greater recommended
Hard Disk	<ul style="list-style-type: none"> ◦ 80+ GB recommended
Memory	<ul style="list-style-type: none"> ◦ 3+ GB recommended
Windows Display Properties	<ul style="list-style-type: none"> ◦ 1024 x 768 minimum resolution
Other Hardware	<ul style="list-style-type: none"> ◦ 3+ USB ports ◦ 8+ USB ports for Ultima Series™ cardiorespiratory diagnostic systems
Network	<ul style="list-style-type: none"> ◦ Network Interface Card Installed ◦ TCP/IP networking installed ◦ DHCP or static IP Address
System Type	<ul style="list-style-type: none"> ◦ x86 (32-bit) and x64 (64-bit) PC hardware and operating systems are supported <p><i>NOTE: Ultima™ CardiO₂® gas exchange analysis systems DO NOT support x64 (64-bit) operating systems</i></p>

[SPECIFICATIONS FOR CITRIX SERVER HOSTING BREEZERVIEW PHYSICIAN REVIEW SOFTWARE]

Operating System	<ul style="list-style-type: none"> ◦ Windows Server 2008/2008 (R2) ◦ Windows Server 2012/2012 (R2)
Processor	<ul style="list-style-type: none"> ◦ 2.0 GHz or faster recommended
Hard Disk	<ul style="list-style-type: none"> ◦ 40+ GB recommended
Memory	<ul style="list-style-type: none"> ◦ 3+ GB recommended
Windows Display Properties	<ul style="list-style-type: none"> ◦ 1024 x 768 minimum resolution
Network	<ul style="list-style-type: none"> ◦ Network Interface Card Installed ◦ TCP/IP networking installed ◦ DHCP or static IP Address
Virtual Machine Support	<ul style="list-style-type: none"> ◦ Yes
64-bit OS Support	<ul style="list-style-type: none"> ◦ Yes
Virtual Machine Support	<ul style="list-style-type: none"> ◦ Yes
SQL Server Configuration	<ul style="list-style-type: none"> ◦ SQL Server is installed with SQL or Mixed Mode Authentication ◦ SQL Server named instance installed with instance name = "MGCSQLServer" ◦ TCP/IP protocol enabled on Server Service and Native Client Service ◦ Named Pipes protocol enabled on Server Service and Native Client Service

[PERFORMANCE SPECS FOR CITRIX SERVER HOSTING BREEZERVIEW PHYSICIAN REVIEW SOFTWARE]

BreezeReview Process CPU Usage	<ul style="list-style-type: none"> ◦ Minimum - 1.5 MHz ◦ Average - 450 MHz ◦ Maximum - 3500 MHz
BreezeReview Process Memory Usage	<ul style="list-style-type: none"> ◦ Minimum - 75 Kb ◦ Average - 140 Kb ◦ Maximum - 600 Kb
BreezeReview Process Disk I/O	<ul style="list-style-type: none"> ◦ Average - 50 B/sec Read ◦ Maximum - 500 B/sec Read
Hard Disk Speed	<ul style="list-style-type: none"> ◦ 7200 RPM

MGC DIAGNOSTICS CORPORATION, through its subsidiary Medical Graphics Corporation
350 Oak Grove Parkway St. Paul, Minnesota USA 55127-8599

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MGC Diagnostics and its affiliates are equal opportunity/affirmative action employers committed to cultural diversity in the workforce.

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