

# Lytec MD 2011 Technical Requirements

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## Glossary

### **Thin Client Workstation**

A thin client workstation refers to a device whose purpose is to connect to a thin client server. This can be a workstation, tablet or a purpose-built thin client device such as a Wyse Terminal. The Lytec MD application software is installed on a thin client server. Information that passes across the network from the end-user is keystrokes, mouse movements, and screen images.

### **Application Server**

All customers will have an application server. This server is where the Lytec MD application folder and Lytec MD SQL databases reside. The Lytec MD network services are also installed on this server.

### **Thin Client Server**

A thin client server is a shared resource that runs applications, as opposed to having the software installed locally on PCs. It provides advantages in ease of management and potentially cost savings in software licenses and client hardware. For large organizations, there may be several thin client servers in the network. Thin client servers can use Terminal Services by itself or also run the Citrix software. Use of Terminal Servers and/or Citrix is referred to as thin client server technology. Thin client servers are used when users are connecting from remote locations (through a WAN or broadband) or through a wireless connection. Thin client servers can also be used on a LAN to simplify administration. Please make note of the thin client server limitations at the end of this document.

### **Standard Workstation**

A standard workstation may also be referred to as a fat client, or thick client. The Lytec MD software is installed on the computer itself. Standard Workstations must be on a LAN to the application server.

### **Application Folder**

Every Lytec MD installation has an application folder. This folder contains (but is not limited to): configuration files, client software installation files, interface files, temporary files, and unless specifically configured otherwise, image files.

## Recommended Configurations

Below are the Lytec MD infrastructure recommendations. These recommendations are based on a mix of industry standard technologies and proven experience of our customers. These recommendations are also based on the minimum requirements listed in this document. Adding additional resources to some equipment may change the recommended configuration.

These recommendations are for production environments only. Additional infrastructure requirements may be necessary for reporting, failover, testing or training environments.

Please note that recommendations are based on a maximum of 5 concurrent Lytec MD sessions per provider. For customers with multiple databases, the number of providers is calculated per database instance.

Also note that these requirements are specific to Lytec MD 2011. Although we try to anticipate future hardware and software needs and compatibilities, recommended/required configurations may change with future versions so please be sure to consult the documentation appropriate to the version you are installing or upgrading to.

### Required Servers

- An application server is required.
- Thin client server technology is required for users connecting remotely (from home, over a WAN, through a VPN, etc.) or through wireless devices.
- A separate thin client server is required if the total number of thin client users exceeds 10.

### Optional Servers

#### Fax Server

For smaller customers, the fax board may be installed on one of the existing servers in the environment, typically the application server. For larger customers doing significant volume of faxing, a separate fax server may be required. This server cannot be virtualized.

#### Web View Server

If you are using the Web View product, you must also have a separate server to run the web services. This must be its own server and cannot have patient data on it as the server must be configured to reside in the network's DMZ or have an encrypted tunnel to the internet to facilitate web traffic.

## Operating Systems

- Microsoft Small Business Server products are not supported
- Microsoft Home operating systems are not supported
- Operating systems not listed are not supported

### Recommended

Below are the recommended operating systems for use with Lytec MD 2011.

#### Application Server

- Windows Server 2003 R2 SP2 (32-bit)
- Windows Server 2008 R2

#### Database Software

- Microsoft SQL Server 2008 R2
  - Microsoft SQL Server 2008 R2 will be installed/upgraded as part of the implementation

#### Thin Client Server

- Windows Server 2003 R2 SP2 (32-bit)
- Windows Server 2008 R2
  - RemoteApp feature is not supported
- Citrix MetaFrame 6.0

#### Web View Server

- Windows Server 2003 R2

#### Fax Server

- Windows Server 2003 R2

#### Standard Workstation/Laptop/Tablet

- Windows XP Professional SP3
- Windows 7 Professional or Ultimate (32 or 64-bit)
  - EKG and Spirometry devices are not supported on Windows 7 64-bit

#### Thin Client Workstation/Laptop/Tablet

Since thin client workstations, laptops and tablets do not run any Lytec MD software, any operating system capable of running the appropriate thin client software is acceptable.

Some thin client devices come with a limited amount of on-device storage. Lytec MD has not been tested to run in this configuration and there will very likely be problems. Thin client devices that will be accessing Lytec MD must do so through a thin client server.

## Supported

Below are additional supported operating systems for use with Lytec MD 2011.

### Application Server

- Windows Server 2003 SP2 (32-bit)
- Windows Server 2008 (32 or 64-bit)

### Thin Client Server

- Windows Server 2003 SP2 (32-bit)
- Windows Server 2008 (32 or 64-bit)
  - RemoteApp feature is not supported
- Citrix MetaFrame 4.5

### Web View Server

- Windows Server 2003 SP2

### Fax Server

- Windows Server 2003 SP2

### Standard Workstation/Laptop/Tablet

- Windows Vista Business

## Third-Party Software Compatibility

Lytec MD sells several third-party software solutions that integrate with the Lytec MD software. Customers may already own this software or can purchase it through other vendors. To ensure proper operation, below is a list of the specific software versions that are compatible with Lytec MD 2011.

- Dragon Naturally Speaking 9.5 and 10.0
  - 10.1 is required for Windows 7
- ZetaFax 2009
- Midmark ECG 8.1
- Midmark Spirometer 8.1
- ExitCare 7.4.2 (required for Windows 7)

## Hardware Requirements

The hardware requirements listed below are designed to allow customers flexibility in their deployment of Lytec MD. For specific formulas in determining how much hard drive space you need, please see the “Disk Storage Requirements” section.

The below minimum requirements are for the Lytec MD software only. If you decide to run additional services (for example, DNS or Active Directory on your application server, or Microsoft Office on your thin client server) you will need to add additional CPUs and/or RAM.

### Standard Workstation/Laptop/Tablet

Component	Minimum Requirement
CPU (Processor)	Intel Core 2 Duo 1.6GHz
RAM (Memory)	2GB for Windows XP, 4GB for Windows Vista and Windows 7
Network Card (NIC)	100 Mbps
Video Resolution	1024x768 (1200x800 for widescreen displays)

For smaller customers, the above specifications will support up to 10 thin client users and the Lytec MD application folder.

### Application Server

Component	Minimum Requirement
CPU (Processor)	Intel Quad Core Xeon 1.6GHz
RAM (Memory)	8GB
Storage Array Type	RAID-1
Optical Drive	DVD-ROM
Network Card (NIC)	1Gbps

### Thin Client Server

Component	Minimum Requirement
CPU (Processor)	Intel Dual Core Xeon 2.5GHz
RAM (Memory)	4GB
Optical Drive	DVD-ROM
Network Card (NIC)	1Gbps

Thin client servers are designed to support 25 sessions of Lytec MD only. For each additional 25 sessions of Lytec MD, add 4GB of RAM and 2 more CPU cores.

### Web View Server

Component	Minimum Requirement
CPU (Processor)	Intel Dual Core 1.6GHz
RAM (Memory)	2GB
Optical Drive	DVD-ROM
Network Card (NIC)	1Gbps

### Thin Client Workstation/Laptop/Tablet

Component	Minimum Requirement
CPU (Processor)	Intel Dual Core 1.6GHz (1.0 for Tablets)
RAM (Memory)	2GB
Network Card (NIC)	100Mbps (or 802.11g for wireless)
Video Resolution	1024x768 (1200x800 for widescreen displays)

### Disk Storage Requirements

Disk Component	Recommended Storage
Base Lytec MD installation	10GB
ePrescribing (formulary files)	150GB*
Black and white imaging	2GB per provider per year
Color imaging	5GB per provider per year
Database growth	2GB per provider per year

#### Notes

- For large multi-provider/specialty single-database installations, more and more data becomes shared between providers so the total amount of space is not linear. For 50+ providers in a single database, please allocate 1GB per provider per year for black and white imaging and 1GB per provider per year for database growth.
- ePrescribing formulary files can be relocated to a less expensive drive configuration. Please contact your implementation technician or McKesson PPS support for information regarding this configuration option.
- No single formula can account for every circumstance. If you will be doing an extraordinary amount of scanning (for example, full patient charts for every patient in your clinic), please discuss your storage needs with our support team.

## Peripherals

### Printers

McKesson recommends TCP/IP-enabled, PCL5-compatible printers.

For customers using thin client technology, use of the Uniprint software is recommended. More information can be found at <http://www.uniprint.net>.

Recommended Models

- HP P2035N (for light duty work, such as prescriptions)
- HP P4515N (for medium to heavy duty work, such as charts and reporting)

### Scanners

McKesson requires TWAIN-compatible scanners. Please ensure any scanner that you purchase includes the necessary TWAIN driver software for use with the scanner.

For customers using thin client technology, use of the Remote Scan software is recommended. More information can be found at <http://www.remote-scan.com>.

Recommended Models

- HP ScanJet 5000/7000
- Fujitsu 6130

### Fax Board

For small clinics, the fax board can be installed on the application server or a thin client server. For customers that do a larger amount of faxing, a dedicated fax server is recommended.

Recommended Models

- Brooktrout TR1034 Series
- Brooktrout TruFax Series

## Lytec MD Best Practices

### Required

- The Lytec MD application folder must be on its own logical partition.
  - The logical drive on your application server must be a drive letter that is not reserved by any workstation (P: is the recommended drive letter).
  - The drive letter where the application folder resides on the application server must be available to be mapped on each and every Lytec MD computer.
- Backups are not optional, they are required. A tape rotation with periodic offsite backups is recommended.
  - McKesson does not install, support or maintain backup solutions. This is completely the responsibility of the customer.
  - McKesson can not be held responsible for data loss incurred due to incomplete or corrupt backups.
- Anti-virus must be installed with the McKesson recommended configurations.
  - The application folder, client folder and SQL database folders must be excluded from real-time/on-access scanning. Scheduled scans when users are not in the system are recommended.
  - Trend Micro and CA eTrust are unapproved anti-virus solutions that may cause instability in the Lytec MD application.
- The use of teamed network interface cards (NICs) is not supported at this time.
- Lytec MD requires a domain/Active Directory infrastructure
- Thin client server technology is required for wireless users, remote users (including remote clinics and home users) and any other non-locally networked workstation

### Recommended

- The Windows pagefile should be on its own disk controller and should be two times the amount of RAM in the server.
- DNS should be on the same subnet as the Lytec MD computers.
- Hardware from experienced and trusted vendors (HP, Dell, IBM) is highly recommended. White-box servers are strongly discouraged.
- Provision enough space on your operating system partition for growth. McKesson recommends 32GB+ for your operating system partition.
- Customers should have a hardware-level firewall protecting their network.
- For customers utilizing thin client technology, a separate Active Directory Organization Unit is recommended.
- McKesson recommends serial attached SCSI (SAS) hard drives in application servers for best performance.

## Special Considerations

### Clustering

Lytec MD currently does not support clustering. The application server cannot be clustered.

### Virtual Machines

McKesson supports the use of virtual servers to run the Lytec MD application. Virtual servers should only be implemented by IT staff familiar in their implementation, configuration and administration. Hardware resources allocated to virtual servers should be equal to the resources required for physical hardware. McKesson recommends VMWare vSphere 4.0 (or higher) or Microsoft Hyper-V for hypervisors.

Workstation virtualization (such as VMWare View) is currently being evaluated and is not currently supported with Lytec MD.

### Thin Client Server Limitations

Use of a thin client server has certain limitations. These limitations are discussed below. If you have any questions about these limitations, please contact our support team.

### *Midmark ECG*

The Midmark ECG is supported in a stand-alone environment meaning that you create and save results using Midmark's software. You can then export the results from Midmark and import them into Lytec MD's database. By assigning the Patient IDs in the Midmark software, Lytec MD will automatically import the report into the appropriate patient chart. In order for this configuration to function, the workstations must have a serial port; some tablet PCs do not have a serial port and therefore would not work. If the computer doesn't have a serial port you can purchase a Midmark Serial to USB adaptor.

### *Midmark Spirometer*

The Midmark Spirometer is supported and can be used in real time. To use the Spirometer in real time you must have the serial version of the Spirometer and the workstations must have a serial port; some tablet PCs do not have a serial port and therefore would not work. If the computer doesn't have a serial port you can purchase a Midmark Serial to USB adaptor.

### *Dragon NaturallySpeaking*

You can use the Dragon speech recognition product in a thin client environment. You must install Dragon locally. Using the "show dictation box" feature in Dragon, you can dictate directly into Lytec MD running on the thin client server. Note that certain integration features are not compatible and do not function, but this method does allow for speech recognition capabilities within Lytec MD.

Workstations running Dragon NaturallySpeaking must have a minimum of 4GB of RAM.



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