

# Aprima™ PRM 2011 System Requirements

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# Introduction

This document defines the system requirements for Aprima™ PRM 2011.

Please be aware that Aprima always uses the latest technology available. For this reason, you are strongly advised to purchase software assurance to allow timely upgrades to new versions of software.

When purchasing hardware, you should always purchase the recommended hardware or better. Minimum hardware requirements are provided for those clients who are installing on existing hardware.

## ASP Hosting

An ASP hosting installation of Aprima PRM does not require an application or database server. Therefore, the Aprima Application and Database Server section of this document can be ignored when an ASP hosting installation is planned. The Bandwidth Requirements for ASP Hosting section contains specific information for ASP hosting installations. All other sections of this document apply to ASP hosting installations as well as regular client-server installations.

## Aprima Application and Database Server

Following are the recommended server requirements for the server or servers that will host Microsoft® SQL Server™ and the Aprima Application Server. The items on this server will be the operating system, the installation of Microsoft SQL Server, the Aprima databases, the backup files for the databases, and the installation of the Aprima Application Server. If you also plan on hosting Exchange Server, Terminal Server, or any other Microsoft (or other vendor's) server application, both Microsoft and Aprima recommend that you install those applications on a separate server. The baselines configurations described below support 250,000 patients and 1 million visits.

## One to Five Providers

The following are minimum server requirements for one to two providers and for three to five providers. The Aprima PRM Application Server and SQL database server are installed on one server.

<b>Number of Providers</b>	1 - 2	3 - 5
<b>Number of Total Users</b>	3 - 6	7 - 20
<b>CPU</b>	Xeon Dual Core or better	Xeon Dual Core or better
<b>Memory</b>	Recommended: 4 GB	Recommended: 4 GB 5 providers: 6 GB
<b>OS Drive</b>	2 x 80 GB RAID 1	2 x 80 GB RAID 1, minimum 7200 rpm
<b>Data Drive</b>	3 x 160 GB RAID 5 or 4 x 160 GB RAID 10 Recommended: 15k rpm Minimum 10k rpm	4 x 160 GB RAID 10 Recommended: 15k rpm Minimum 10k rpm
<b>NIC</b>	100/1000 Mbps Ethernet	100/1000 Mbps Ethernet
<b>Required Software</b>	<ul style="list-style-type: none"> <li>• Recommended: Windows Server™ 2008 R2 SP1 64 bit or Windows Server 2008 SP2 64 bit Minimum: Microsoft Windows Server 2003 with SP2</li> <li>• Microsoft SQL Server 2008 SP2 64 bit or 2008 R2 SP1 64 bit</li> <li>• Microsoft .NET Framework™ 3.5 with SP1</li> <li>• All Windows updates, including security updates, for the operating system, SQL Server, and .NET versions installed</li> </ul>	<ul style="list-style-type: none"> <li>• Recommended: Windows Server 2008 R2 SP1 64 bit or Windows Server 2008 SP2 64 bit Minimum: Microsoft Windows Server 2003 with SP2</li> <li>• Microsoft SQL Server 2008 SP2 64 bit or 2008 R2 SP1 64 bit</li> <li>• Microsoft .NET Framework 3.5 with SP1</li> <li>• All Windows updates, including security updates, for the operating system, SQL Server, and .NET versions installed</li> </ul>
<b>Required Free Space</b>	1 GB required for monthly code updates.	1 GB required for monthly code updates.

## Six to Fifteen Providers

The following is a recommendation for server hardware required to run Aprima PRM for 6 to 15 providers. The Aprima PRM application server and database server are installed on the same machine. If using Aprima PRM in a Citrix environment, additional hardware must be used according to Citrix specifications.

<b>Number of Providers</b>	6 - 15
<b>Number of Users</b>	20 - 60
<b>CPU</b>	2 Xeon Dual Core or 1 Quad Core (8 cores total or better)
<b>Memory</b>	Recommended: 8 GB
<b>OS Drive</b>	2 x 80 GB RAID 1, minimum 7200 rpm
<b>Data Drive</b>	6 x 250 GB RAID 10 Recommended: 15k rpm Minimum: 10k rpm
<b>NIC</b>	100/1000 Mbps Ethernet
<b>Required Software</b>	<ul style="list-style-type: none"><li>• Recommended: Windows Server 2008 R2 SP1 64 bit or Windows Server 2008 SP2 64 bit Minimum: Microsoft Windows Server 2003 with SP2</li><li>• Microsoft SQL Server 2008 SP2 64 bit or 2008 R2 SP1 64 bit</li><li>• Microsoft .NET Framework 3.5 with SP1</li><li>• All Windows updates, including security updates, for the operating system, SQL Server, and .NET versions installed</li></ul>
<b>Required Free Space</b>	1 GB required for monthly code updates.

## Sixteen or More Providers

The following is a recommendation for server hardware required to run Aprima PRM for 16 or more providers. The Aprima PRM application server and database server are installed on the same machine. If using Aprima PRM in a Citrix environment, additional hardware must be used according to Citrix specifications.

<b>Number of Providers</b>	16 or more
<b>Number of Users</b>	60 or more
<b>CPU</b>	Dual Quad Core. More cores will improve performance as more providers/users are added.
<b>Memory</b>	Recommended: 12 GB. More memory will improve performance as more providers/users are added.
<b>OS Drive</b>	2 x 80 GB RAID 1, minimum 7200 rpm
<b>Data Drive</b>	8 or more x 250 GB RAID 10. Recommended 15K or faster RPM or SAN drives. Discuss with your Implementation Representative to determine your specific needs.
<b>NIC</b>	100/1000 Mbps Ethernet
<b>Required Software</b>	<ul style="list-style-type: none"><li>• Recommended: Windows Server 2008 R2 SP1 64 bit or Windows Server 2008 SP2 64 bit</li><li>• Minimum: Microsoft Windows Server 2003 with SP2</li><li>• Microsoft SQL Server 2008 SP2 64 bit or 2008 R2 SP1 64 bit</li><li>• Microsoft .NET Framework 3.5 with SP1</li><li>• All Windows updates, including security updates, for the operating system, SQL Server, and .NET versions installed</li></ul>
<b>Required Free Space</b>	1 GB required for monthly code updates.

# Aprima PRM Client

## Desktop Client (Non Cache Client)

The following is a recommended specification when selecting a desktop computer.

<b>CPU</b>	Intel or AMD 2.0 GHz or better Recommended: dual core
<b>Memory</b>	Minimum: 1 GB Recommended: 3 GB
<b>Hard Drive</b>	80-120 G
<b>NIC</b>	100/1000 Mbps Ethernet
<b>Required Software</b>	<ul style="list-style-type: none"><li>• Recommended: Microsoft Windows™ 7 SP1 Professional, Ultimate or Enterprise (32 or 64 bit) (2 GB Memory required) Minimum: Microsoft Windows Vista™ SP2 Business (32 or 64 bit) (2 GB Memory required) or Windows XP Professional SP3</li><li>• Microsoft .NET Framework 3.5 with SP1</li><li>• All Windows updates, including security updates, for the operating system, .NET, and Office versions installed</li><li>• Adobe® Reader™ 8 or compatible PDF reader</li></ul>
<b>Optional Software</b>	<ul style="list-style-type: none"><li>• Microsoft Office 2003 or 2007</li></ul>
<b>Screen Resolution</b>	1024x768 or larger

Aprima PRM 2011 is compatible with Microsoft Internet Explorer™ 7, 8, and 9.

## Mobile Client (Cache and Non-Cache Client)

The following is a recommended specification when selecting a touch-screen mobile computer, which can be a laptop or tablet PC. Please note that “Netbook” style PCs (Intel Atom CPU) are not supported as client PCs.

<b>CPU</b>	Intel or AMD 2.0 GHz or better Recommended: dual core
<b>Memory</b>	Minimum: 1GB for non-cache, 3 GB for cache clients using replication Recommended: 3 GB
<b>Hard Drive</b>	100 GB Recommended : 7200 rpm drive or faster
<b>NIC</b>	100/1000 Mbps Ethernet
<b>Wi-Fi</b>	802.11g/n
<b>Required Software</b>	<ul style="list-style-type: none"> <li>• Recommended: Microsoft Windows 7 SP1 Professional, Ultimate or Enterprise (32 or 64 bit) (2 GB Memory required) Minimum: Microsoft Windows Vista SP2 Business (32 or 64 bit) (2 GB Memory required) or Windows XP Professional SP3</li> <li>• Microsoft .NET Framework 3.5 with SP1</li> <li>• All Windows updates, including security updates, for the operating system, .NET, and Office versions installed</li> <li>• Adobe Reader 8 or compatible PDF reader</li> </ul>
<b>Optional Software</b>	<ul style="list-style-type: none"> <li>• Microsoft Office 2003 or 2007</li> </ul>
<b>Additional Software for Cache Clients Only</b>	<ul style="list-style-type: none"> <li>• Microsoft SQL Express 2008 Advanced</li> </ul>
<b>Screen Resolution</b>	1024x768 or larger

Aprima PRM 2011 is compatible with Microsoft Internet Explorer™ 7, 8, and 9.

# Environment Recommendations

## Physical Environment

Aprima recommends that you refer to the documentation provided with your hardware or contact your hardware manufacturer regarding any expected or required physical environment (such as electrical and HVAC requirements) necessary for reliable operations.

## Uninterruptible Power Supply

All servers should be connected to an uninterruptible power supply (UPS). A UPS provides immediate emergency power to the server in the event of an electrical outage or disruption. A UPS can generally provide power for 5 to 15 minutes. Your servers should be configured to perform an orderly shutdown within minutes of detecting that the UPS has been invoked. This will ensure the integrity of the data written to the database.

## Virus and Malware Scanning

Virus scanning using a recognized and well regarded anti-virus/anti-malware application is highly recommended. Scanning should be performed on a frequent and regular schedule. Virus scanning will be scheduled through the anti-virus application or through the operating system, not through Aprima PRM.

## Remote Access Security

It is recommended that you utilize a third-party VPN (virtual private network), WPA2 (wi-fi protected access), or SSL (secure sockets layer) software to provide communication from remote sites to the main office or to the location of the server. The third-party vendor would then be responsible for providing data security and management to ensure that the quality of the communicated data was not degraded as a result of its wireless communication.

All internal communication is automatically encrypted using a process that is transparent to the user.

## Firewall for ASP Installations

A business class router, such as sold by Cisco or Sonicwall, is required for ASP installations in order to handle the increased load of network traffic that will occur when you are remotely connected.

# Wireless Recommendations

The following is a recommended specification for a Wireless LAN Access Point.

Standard	802.11g/n
Bandwidth (up to)	54 Mbps
WEP Encryption	Not recommended
Wi-Fi Protected Access (WPA or WPA2)	Yes
Block SSID Broadcast	Yes
MAC address filtering	Yes

## Network Connectivity

### ASP Hosting Recommendations

If you are using ASP hosting and also have an HL7 interface (for example, for a laboratory interface), then you will also need a hardware VPN solution to ensure that data sent through your HL7 interface is encrypted. For a VPN connection, Aprima recommends the Cisco ASA 5505 10 User or the Cisco ASA 5505 Unlimited depending on your needs. These devices will ensure the best compatibility with our hosting provider.

Bandwidth requirements for ASP hosting depend on the number of users, and the tasks they perform over the network. This bandwidth must be bi-directional. Asynchronous connections that have a high download speed but a low upload speed are not recommended. Most "home" DSL and cable connections are asynchronous, with a large download speed but smaller upload speed. Please select a "business connection", which typically will have equivalent upload and download speeds.

Please refer to the table in the Average Bandwidth Requirements section below for more information on the amount of bandwidth recommended for your users.

## Remote Offices Recommendations

Many customers will have a main office and one or more remote offices. For these customers, the decision on connectivity between the main and remote sites is critical. Trying to run too many users over too little bandwidth will result in poor performance and dissatisfied users. Aprima recommends the use of a VPN connection between the main and remote sites.<sup>1</sup> Then a choice needs to be made on how to balance the usage of the bandwidth over the VPN.

There are three methods for running the Aprima PRM client from remote sites. Any combination of these methods can be used to best utilize the available network bandwidth.

- Use direct connect, where the Aprima PRM client is installed on the remote PC, and a connection is made to the Aprima PRM application server running at the main site. This is the most bandwidth intensive method.
- Use the Aprima PRM cache client. A local copy of the provider's database is stored on the remote PC/laptop. There is still a direct connection to the Aprima PRM application server at the main site; however, the data transfer occurs in an offline mode, and the user is not as aware of the bandwidth usage.
- Use Microsoft Terminal Services or Citrix to run the Aprima PRM client on a server at the main site. This is the least bandwidth intensive method. (Note: Two functions of the EHR are not available over a Terminal Services connection. Ink strokes, such as for hand-drawn images, cannot be saved, and voice dictation cannot be used.)

Bandwidth requirements depend on the number of users, and the tasks they perform over the network. For example, copying scanned files from a remote site to the main site is a bandwidth intensive task.) This bandwidth must be bi-directional. Asynchronous connections that have a high download speed but a low upload speed are not recommended. Most "home" DSL and cable connections are asynchronous, with a large download speed but smaller upload speed. Please select a "business connection", which typically will have equivalent upload and download speeds.

Please refer to the table in the Average Bandwidth Requirements section below for more information on the amount of bandwidth recommended for your users.

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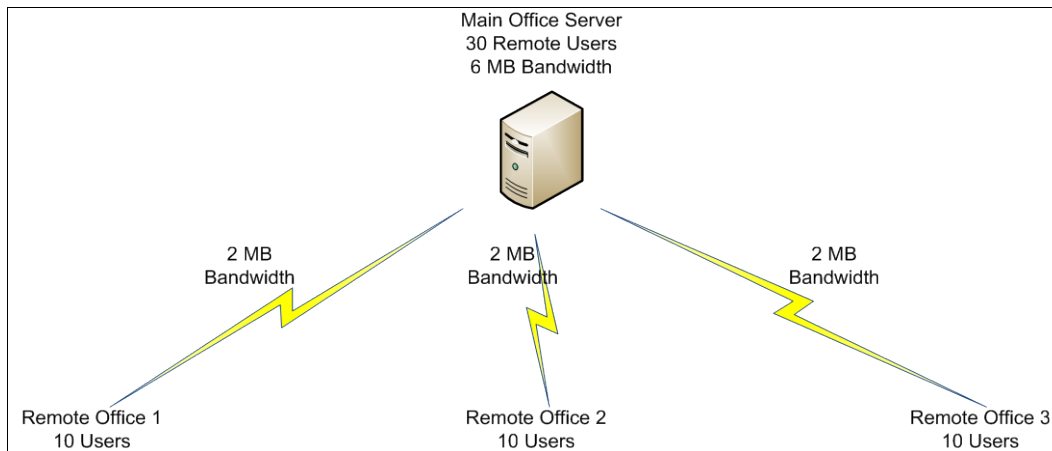
<sup>1</sup> Although a VPN connection is recommended, Aprima PRM can run over other network layouts. This is an advanced network setup which should be discussed with Aprima Support before the implementation decision is made.

## Average Bandwidth Requirements

Below is a table with the average requirements for network bandwidth at remote sites. Please note that these numbers are estimates based upon average product usage and a provider-to-user ratio of approximately 3 to 1. Extensive use of scanned documents or a provider-to-user ratio that is higher than 3 to 1 may require higher bandwidth speeds. Actual network usage is determined by the load on the network based upon the usage patterns in Aprima PRM and any other applications utilizing the network.

<b>Number of users per remote site:</b>	1 to 4	5 to 12	13+
<b>Bidirectional speed required:</b>	1MB	2MB	2MB plus 120KB per user over 12 users.

To determine your bandwidth needs, you must consider both the bandwidth needed at a remote site and the bandwidth needed at the main site. The bandwidth needed at a remote site is a function of the number of users at the site. The bandwidth needed at the main site is a function of the number of remote sites and the number of users at each site. You should determine the bandwidth needed at each remote site using the table above. Then total the bandwidth needed at each remote site to determine the bandwidth needed at the main site. This is illustrated in the graphic below.



Please note that the Aprima PRM client requires a consistent and reliable network connection. Any network outages that occur while the client is connected to the server will cause application issues.

# External Hardware Recommendations

The Aprima PRM application can be installed on both 32-bit and 64 bit systems, but it will run as a 32-bit application. Please verify that any external hardware drivers are compatible with the 32 bit .NET runtime.

## Digital Cameras

- USB 2.0
- Capable of saving .jpg, .gif, or .tiff format

## Scanners

- Any TWAIN-compatible scanner capable of saving .jpg, .gif, or .tiff format.
- Aprima PRM does not support scanning over Terminal Services or Citrix. While there may be third-party tools that enable scanning in these configurations, Aprima cannot support them.

## Printers

Aprima PRM is generally compatible with all printers designed to work with Microsoft® Windows™. An HP® Laserjet® compatible printer is recommended for standard document printing. A Dymo® LabelWriter® compatible printer is recommended for printing labels.

There are instances in which a particular driver for printer results in distorted documents printed from the application. This can usually be addressed by installing a different version of the print driver for the same printer or for a similar printer, or by installing a print driver from another manufacturer may resolve the problem. For example, the generic HP Laserjet 4 driver works with many laser printers.

## Card Scanning Requirements

The optional ICS card scanning application scans in an image and extracts certain data items from the image of a driver's license or insurance card.

**Note:** The card scanning application and scanner cannot be used in a Terminal Services or Citrix environment.

The scanning application and the card scanner are not network available. The scanning application and the scanner must both be installed on the same desktop or laptop machine on which the Aprima PRM client application is installed, and all scanning must done from that machine.

All users of the desktop or laptop on which the scanner is installed must be given local administrative rights in order to use the scanner.

<b>Software</b>	Innovative Card Scanning's (ICS) Express Service Application
<b>Hardware</b>	ICS DocketPort 687 Duplex Document and ID Scanner Scanner Calibration Sheet

## Patient Self-Service

### Server

The typical implementation will install the patient self-service functionality on the Aprima PRM database server. The server used for the patient self-service kiosk functionality must have IIS installed on it. There are no additional hardware requirements when installing IIS on an existing server.

If the patient self-service kiosk functionality is installed on a dedicated server, the hardware requirements are:

<b>CPU</b>	Xeon 3.2 GHz
<b>Memory</b>	2 GB
<b>OS Drive</b>	2 x 80 GB RAID 1
<b>Data Drive</b>	2 x 80 GB RAID 1
<b>NIC</b>	100/1000 Mbps Ethernet
<b>Required Software</b>	<ul style="list-style-type: none"> <li>• Recommended: Windows Server 2008 R2 SP1 64 bit or Windows Server 2008 SP2 64 bit</li> <li>• Minimum: Microsoft Windows Server 2003 with SP2</li> <li>• Microsoft SQL Server 2008 SP2 64 bit or 2008 R2 SP1 64 bit</li> <li>• Microsoft IIS 6 or 7</li> <li>• Microsoft .NET Framework 3.5 with SP1</li> <li>• All Windows updates, including security updates, for the operating system, SQL Server, and .NET versions installed</li> </ul>

### Network Configuration

Web access for the patient self-service kiosk is on port 80. This is typically enabled by default inside the local area network (LAN). Note that this is different from the Aprima PRM application server which uses port 2520.

## Patient Self-Service Kiosk

A desktop or laptop connected to the LAN is required for patient access to the patient self-service site. Refer to the Desktop Client requirements above for minimum specification for the kiosk computer.

## Learning Management System (LMS) Requirements

This section outlines the requirements and recommendations for using Aprima's learning management system (LMS) to view training videos.

### Internet Browser Requirements

#### Supported Browsers

- Internet Explorer 6, 7, or 8. Please note that Internet Explorer 9 is NOT supported. Using Internet Explorer 9 causes problems with looping and with questions.
- Google Chrome, non-beta versions

**Note:** Firefox is not supported.

#### Browser Settings

The browser's cookies and scripting must be enabled.

All pop-up blockers in the Internet browser must be disabled or set to allow pop-ups from the LMS website.

Third-party browser toolbars need to be temporarily disabled or uninstalled.

### Firewall Requirements

Firewall programs may need to be temporarily disabled

The LMS site (<https://gm1.geolearning.com/>) should be added as a trusted site.

### Network Bandwidth Requirements

A minimum network bandwidth of 1.5MB is required for the LMS. If the available network bandwidth is limited, then it may be necessary to reduce the number of users attempting to view training modules at the same time. Remember that the Aprima PRM application, other applications, IP phones, and using the Internet for videos or radio all use part of the available network bandwidth.

It is recommended that users view the training modules while on a wired network connection, rather than a wireless network connection. This can help avoid delays and other problems with streaming videos.

## Java Requirements

Make sure you have the latest version of Java available. You can download the latest version from [www.java.com](http://www.java.com).