System Requirements

Aprima™ v18.3
July 21, 2020

Contents

Introduction

This document defines the system requirements for Aprima v18.

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. Also, Aprima does not support the use of the application on or with software or software versions that are no longer supported by its manufacturer. Aprima may not work with or on software that is no longer supported or does not meet the minimum requirements.

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 does not require an application or database server at the customer's office. 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.

Virtualization

Aprima can be used with virtual servers and clients hosting the application server and client application. The installation of Microsoft® SQL Server™ can be virtualized as well. Please follow Microsoft recommendations for virtualization when installing the OS and SQL Server. Note that the virtualized hardware and software still needs to meet the specifications outlined in this document. Aprima will support the application in the virtualized environment, but any issues that are specific to the virtualization software and hardware will have to be escalated by the customer to the vendor of that hardware and/or software.

User Authentication System

Aprima relies on the Active Directory functionality of Windows Server to provide the user authentication and password management functionality required for the secure operation of the software. There are no passwords stored in the Aprima database. Users are authenticated or identified by the logon credentials queried from the Windows OS. Therefore, all users must be defined in Active Directory before you can add them as users of Aprima.

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.

\<\<Revised\>\> Software

The following software is required for the server on which the database is installed.

- Recommended: Windows Server™ 2019 or 2016 or 2012 R2 with Desktop Experience installed. Windows Server without the GUI interface is not supported.

  Minimum: Windows Server 2012 with Desktop Experience installed. Windows Server without the GUI interface is not supported.

  Note: Aprima will not work nor will it be supported on versions of the Windows® operating system that are older than the minimum requirements[1].

- Microsoft SQL Server® 2017, 2016 SP1, 2014 SP2, 2012 SP4

  Note:

  - SQL Express is not supported on the server for a production installation.

  - SQL Server on Linux is not supported for a production installation.

  - If the database is to be restored on another server, the SQL version must be the same or newer than the version on the original server.

- Microsoft .NET Framework™ 3.5 with SP1 for all Aprima versions.

- .NET Framework 4.8 or later

- All Windows updates, including security updates, for the operating system, SQL Server, and .NET versions installed

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[1] Windows lifecycle fact sheet - https://support.microsoft.com/en-us/help/13853/windows-lifecycle-fact-sheet

Ref: 3064.07

Hardware

Controller

When purchasing a controller for your server, ensure that the controller has cache.

One to Fifteen Providers

The following are minimum and recommended server specifications for 1 to 5 providers and for 6 to 15 providers when the Aprima application server and SQL database server are installed on one server. If you are using Aprima in a Citrix environment, additional hardware must be used according to Citrix specifications.

Number of Providers	1 — 5	6 — 15
Number of Total Users	3 — 20	20 — 60
CPU	Xeon 2.0 GHz or better	Dual Xeon 2.0 GHz (8 cores total or better)
Memory	Recommended: 16 GB 5 providers: 32 GB	64 GB
OS Drive	2 x 300 GB RAID 1, minimum 15k rpm	2 x 300 GB RAID 1, minimum 15k rpm
Data Drive	Recommended: 5 SSD RAID 5 Minimum: 4 x 600 GB RAID 10 dedicated for SQL data only, 15k rpm SSD for temp DB	Recommended: 6 SSD RAID 5 Minimum: 8 x 600 GB RAID 10 dedicated for SQL data only, 15k rpm SSD for temp DB
NIC	1000 Mbps Ethernet	1000 Mbps Ethernet
Required Free Space	3 GB required on the C: drive for monthly code updates	3 GB required on the C: drive for monthly code updates

Sixteen to Twenty-Five Providers

The following are the recommended server specifications for 16 to 25 providers when the Aprima application server and SQL database server are installed on one server. If using Aprima in a Citrix environment, additional hardware must be used according to Citrix specifications.

Number of Providers	16 — 25
Number of Total Users	60 or more
CPU	Xeon 2.0 GHz (12 cores total or better. More cores will improve performance as more providers/users are added.)
Memory	Recommended: 64 GB. More memory will improve performance as more providers/users are added.
OS Drive	2 x 300 GB RAID 1, minimum 15k rpm
Data Drive	Optimal Performance Recommendation • 1 TB SSD SAN or Flash Memory SAN Secondary Recommendation • 8 SSD RAID 5 • SSD for temp DB
NIC	1000 Mbps Ethernet
Required Free Space	3 GB required on the C: drive for monthly code updates

Twenty-Six or More Providers

Please call Aprima Support to discuss the server hardware required to use Aprima for 26 or more providers.

Aprima Client

Software

Required Software

The following software is required on all client PCs.

- Microsoft Windows[2]
    - Recommended: Microsoft Windows 10 version 1607 or later - Pro or Enterprise (32 or 64 bit)
    - Minimum: Microsoft Windows 8.1 Pro or Enterprise (32 or 64 bit)

    Note: Aprima will not work nor will it be supported on versions of the Windows® operating system that are older than the minimum requirement. Windows 7 support ends in January 2020, and at that time it will no longer be HIPAA compliant.[3]

- Microsoft .NET Framework™ 3.5 with SP1 for all Aprima versions.
- Microsoft .NET Framework 4.8 or later
- All Windows updates, including security updates, for the operating system, .NET, and Office versions installed
- Adobe® Reader™ 8 or greater
- Microsoft Excel 2010 or higher
- Microsoft Internet Explorer™ 11 or greater

Additional Required Software for Replication Clients Only

- Microsoft SQL Express 2017 or SQL Express 2016 SP1 or Microsoft SQL Server 2016, 2014, 2012

    Note: SQL Express has a database size limitation of 10 GB.

- Microsoft BitLocker® or a comparable hard drive encryption application
- IMO 2.0 for ICD-10 diagnosis codes (Instructions for installing this software are in the *Aprima Installation and Configuration Guide for Replication*.)

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[2] Windows lifecycle fact sheet - https://support.microsoft.com/en-us/help/13853/windows-lifecycle-fact-sheet

[3] Windows 7 End of Support - https://support.microsoft.com/en-us/help/4057281

Optional Software

- Microsoft Office™ 2010 or higher

- Nuance® Dragon® Medical version 2 or higher

Security Requirements for Replication

Laptop PCs that will use the replication functionality require an operating system that enables encryption to comply with HIPAA regulations. You must install Microsoft BitLocker or a comparable application to encrypt the hard drive. When you use replication, electronic protected health information (EHPI) is present on the PC and must be protected per HIPAA laws.

Required Hardware

Note: If you are installing other software, such as Nuance Dragon Medical, on the same client PC as Aprima, then you must purchase hardware that will meet the highest recommended specifications of any products you plan to run on a machine.

Desktop Client

The following is a recommended specification when selecting a desktop computer. When a card or document scanner will be attached to the desktop client PC, then additional requirements apply as noted.

CPU	Intel® Core™ i3/i5/i7 2.0 GHz or newer or AMD 2.0 GHz or newer Recommended: dual core or better
Memory	Minimum: 4 GB Recommended: 8 GB
Hard Drive	128 GB or larger Recommended: 7200 rpm drive or faster
NIC	100/1000 Mbps Ethernet
Screen Resolution	1024x768 or larger
USB Port (if scanner attached)	1 available for scanner connection
Internet Connection (if scanner attached)	100/1000 Mbps Ethernet (for product activation and software updates)

Laptop Client

The following is a recommended specification when selecting a laptop or touch-screen mobile computer. Please note that the ARM CPU architecture, and "Netbook" style PCs (Intel Atom CPU) are not supported as client PCs.

CPU	Minimum: Intel® Core™ i3/i5/i7 2.0 GHz or newer or AMD 2.0 GHz or newer Recommended: dual core or better
Memory	Minimum: 4 GB Recommended: 8 GB
Hard Drive	Minimum: 128 GB or larger Recommended: 7200 rpm drive or SSD
NIC	100/1000 Mbps Ethernet
WIFI	802.11n
Screen Resolution	1024x768 or larger

Replication Client

The following is a recommended specification when selecting a computer that will be used with the Aprima replication feature. This hardware is required to support IMO 2.0 for ICD-10 diagnosis codes.

CPU	Minimum: Intel® Core™ i3/i5/i7 2.5 GHz or newer or AMD 2.5 GHz or newer Recommended: quad core
Memory	16 GB
Hard Drive	Minimum: 250 GB or larger Recommended: SSD
NIC	100/1000 Mbps Ethernet
WIFI	802.11n
Screen Resolution	1024x768 or larger

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.

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 Dell 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. Asymmetric connections that have a high download speed but a low upload speed are not recommended. Most "home" DSL and cable connections are asymmetric, with a large download speed but smaller upload speed. Please select a "business connection", which typically will have equivalent upload and download speeds.

Due to variability in network infrastructure, Citrix may be required to address performance issues. Citrix will be an additional cost.

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.[4] 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 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 client is installed on the remote PC, and a connection is made to the Aprima application server running at the main site. This is the most bandwidth intensive method.

- Use the Aprima replication 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 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 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.
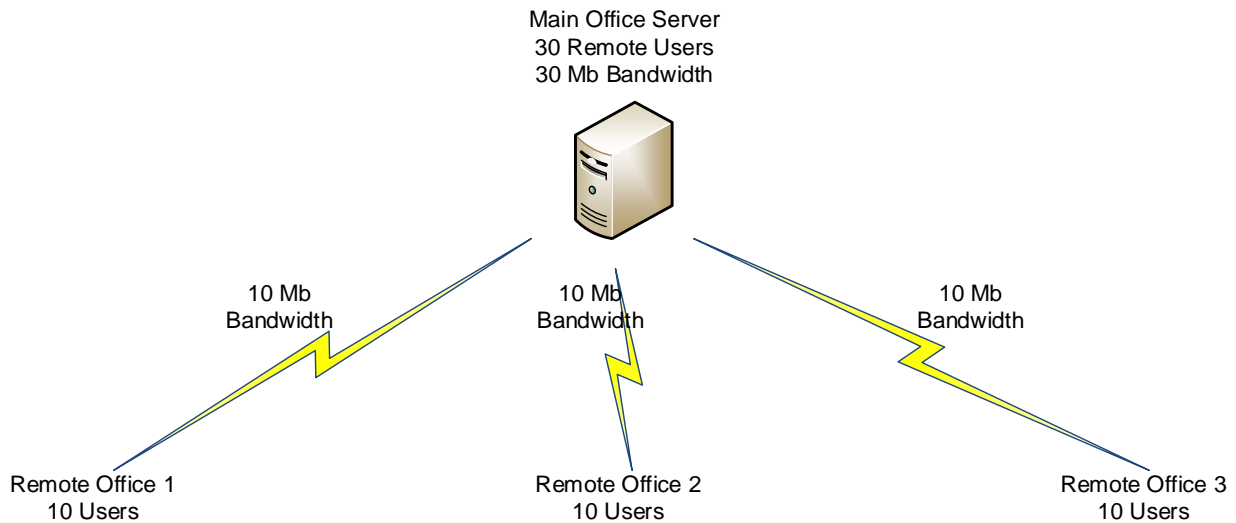
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[4] Although a VPN connection is recommended, Aprima can run over other network layouts. This is an advanced network setup which should be discussed with Aprima Support before the implementation decision is made.

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 and any other applications utilizing the network.

Number of users per remote site:	1 to 4	5 to 12	13+
Bidirectional speed required:	5 Mb	10 Mb	15 Mb plus 250 Kbps 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.

Main Office Server
30 Remote Users
30 Mb Bandwidth

10 Mb Bandwidth   10 Mb Bandwidth   10 Mb Bandwidth

Remote Office 1   Remote Office 2   Remote Office 3
10 Users   10 Users   10 Users

Please note that the Aprima 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 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. The compatibility of external hardware and the hardware's drivers with your operating system is the responsibility of the hardware vendor.

Digital Cameras

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

Scanners

- TWAIN-compatible scanner capable of saving .jpg, .gif, or .tiff format. Due to the number of scanner manufacturers and models, Aprima cannot warranty support for any particular scanner.
- Aprima 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.

Card Scanners

The optional 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 client application is installed, and all scanning must be 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.

Software	Accuant (formerly CSSN) scanning software
Hardware	- ScanShell 800DX, ScanShell3100D, ScanShell3000D, Echo Scan i6D, Echo Scan i4D, or Docketport 687 (other card scanners are not supported) - Scanner calibration sheet - Scanner cleaning sheet

Barcode Scanner

Aprima supports barcode scanning for capturing vaccine information. The application is compatible the following matrix code (2D barcode) scanner.

* Kercan KR-230-EIO Automatic Wired USB 2D QR PDF417 Data Matrix Barcode Scanner

Please note that cameras in laptop PCs are not compatible with 2D barcode scanner applications, and they cannot be used as a barcode scanner with Aprima.

Printers

Aprima 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 a 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.

Due to the number of printer manufacturers and models, Aprima cannot warranty support for any particular printer.

Signature Pads

The application supports Topaz signature pads for capturing patient and responsible party signatures in generated documents. The signature pad models supported are:

* Topaz T-LBK766 (BHSB-R)
* Topaz T-S460 (HSB-R)

Other signature pads may be used with desktop or laptop computers that do not include a stylus. These signature pads are supported using the Windows standard tablet inking style. Due to the number of signature pad manufacturers and models, Aprima cannot warranty support for any other particular signature pads.

Replication IT Support Requirement

You must be able to provide your replication users with remote IT support for the desktop client application if they are working remotely most or all of the time. You must be able to provide full-time remote IT support if you have 6 or more replication users working remotely most or all of the time.

Aprima NOW

Android Device

- Phone or tablet with Android 4.4 or higher
- Internet connectivity to access the Aprima service (GPRS, 3G, 4G, Wi-Fi, etc.)

iPhone Device

- iPad 2 or higher with iOS 7.1 or higher
- iPhone 4 or higher with iOS 7.1 or higher
- Internet connectivity to access the Aprima service (GPRS, 3G, 4G, Wi-Fi, etc.)

Aprima NOW Data Security

The communication between your server and the Aprima NOW server is encrypted and HIPAA compliant. The Aprima NOW server has an Authentication Certificate to verify credentials. SSL in the protocol prevents eavesdropping by any intermediate actors. The application also sends a tag for disabling local cache of the pages, which prevents the browser from writing the data out to files on the local disk.

Aprima Patient and Facility Portal Data Security

The communication between your server and the Aprima Patient and Facility Portal server is encrypted using 256-bit AES. The Aprima Patient and Facility Portal server has an Authentication Certificate to verify credentials. SSL in the protocol prevents eavesdropping by any intermediate actors. The application also sends a tag for disabling local cache of the pages, which prevents the browser from writing the data out to files on the local disk.