athenahealth

Configuring Environments for athenaPractice™ v25

July 2025

Document Version 1

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Version history

The document version number is located at the bottom of the cover sheet.

Version	Update
1	Initial release

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This document contains hardware and software configuration information for athenaPractice.

Important
Only the software and configurations specified in this document have been tested with this release. If you use other software or configurations, ensure that you thoroughly test your configuration in a non-production environment.

The configuration recommendations in this document may change at any time without notice.

Check the Success Community regularly for updates to this document.

Hardware and software planning considerations

To prepare for installation or upgrade, you must define, order, set up, and test all required hardware, software, and networks.

To determine your hardware requirements, you must consider how your organization will implement this product, including the scope of your application database requirements. Refer to the *athenaPractice v25 Hardware Calculator* (Microsoft Excel spreadsheet on the Success Community) for details.

Consider the following when planning:

- **Plan for productivity and growth.** Your hardware budget should realistically support your organization's goals. If you plan to use older equipment, confirm that they meet the minimum requirements for the application. Regularly review and update your hardware to meet changing needs.
- **Set up at least one workstation for testing.** Not all workstations need be in place for the server to be installed and software loaded. However, you'll need at least one client workstation to test network connectivity and software.

Tip
Use Services consultants when planning system hardware.

Contact Services for help understanding and planning your equipment needs. Also plan to work closely with your clinic teams as they develop new workflows.

Upgrade options

Supported upgrade paths:

- athenaPractice v23, v23.1, v23.2, or v24 (with or without hotfixes applied) can upgrade directly to v25.
- If you have a version earlier than v23, you must run the athenaPractice database upgrade portion of the upgrade to v23 before upgrading to v25. However, you can run the upgrades back-to-back without separate downtimes.

  If you have a version earlier than v23 AND you plan to implement Medication Management, you must activate Medication Management on v20.1, upgrade to v22.x, upgrade to v23, and then upgrade to v25.

If you are upgrading from an earlier version, contact Sales for information about upgrade services and support options. If you self-upgrade and encounter problems, limited troubleshooting support and, if necessary, help rolling back to the previous version are available.

Implementation scenarios by clinic size

The following sample scenarios are based on common implementations of hardware configurations anticipated for different numbers of concurrent users.

The **Server Configurator** utility simplifies this planning and setup. Launch Server Configurator from Server Setup to plan and implement your configuration.

Note
These scenarios are not intended to be a comprehensive list of all products you might include in your implementation.

Important
Follow industry standard IT configurations for security and reliability that install database and application components on separate servers. Application servers host the JBoss EAP application server, which in turn handles client web services, the Service Layer, and FHIR API server components.

Up to 100 concurrent users

Recommended configuration: The client runs on separate workstations and other application components are hosted on servers.

- *Database server*
  athenaPractice database, MIK (Millbrook Interface Kit), and athenaPractice Analytics. MIK can also be installed with Data Transfer Station.
  All servers that support athenaPractice must have their own dedicated and non-shared server/VM except as noted in the Hardware Calculator for small practices (fewer than 25 concurrent users).
- *Application/JBoss GUI + Interop server (single server role)*
  Single server provides client application processing, application web sites, client web services, and interoperability functions such as FHIR R4 API calls and DSTU2 API calls, CCDA generation, and subscription processing.
- *eCRNow Server*
  This server handles electronic case reporting to public health agencies through the eCRNow app. Sites with less than 100 concurrent users are unlikely to need a separate eCRNow server. However, your specific server requirements will depend on the work load of your practice. See the *athenaPractice v25 Hardware Calculator* spreadsheet for further details on assessing server requirements.
- *Data Exchange server*
  Optional dedicated server for clinical data exchange with Data Transfer Station (DTS) and optionally MIK and QIE.
- *Qvera interface engine (QIE)*
  Optional dedicated server. If you have fewer than 75 providers, MIK and QIE may be installed together with DTS on the Data Exchange server.
- *Client workstations*

101 to 200 concurrent users

Recommended configuration: Separate servers host main application components.

- *Database server*
  One or more athenaPractice databases on a dedicated server with MIK (Millbrook Interface Kit), and athenaPractice Analytics. MIK can also be installed to a separate machine.
- *Application/JBoss GUI server*
  Client application processing, application web sites, and client web services.
- *Application/JBoss Interop Server with CEM and R4 (CEM with Interop R4 server role)*
  Processes FHIR R4 API calls, CCDA generation, and subscriptions for quality reporting, synchronizing on-premises data with Medication Management cloud-secured databases, and exchanging data with immunization registries, public health agencies, patient portal accounts, and other practices.

  athenaPractice v25 uses R4 APIs by default. If your practice needs to process third-party DSTU2 API calls, a dedicated DSTU2 Interop server is required in addition to a CEM with Interop R4 server.

- *eCRNow Server*
  This server handles electronic case reporting to public health agencies through the eCRNow app. This server is required for sites with over 100 concurrent users that want to use electronic case reporting. See the *athenaPractice v25 Hardware Calculator* spreadsheet for further details on assessing server requirements.
- *Data Exchange server*
  Optional dedicated server for clinical data exchange with Data Transfer Station (DTS) and optionally MIK.
- *Qvera interface engine (QIE)*
  Optional dedicated server for interfaces and subscriptions handled by QIE.
- *Client workstations*

201 to 500 concurrent users

Recommended configuration: Separate servers host main application components.

- *Database server*
  One or more athenaPractice databases on a dedicated server with MIK (Millbrook Interface Kit), and athenaPractice Analytics. MIK can also be installed to a separate machine.

  ☑ **Tip**
  Larger environments may require multiple athenaPractice database instances to maintain separate patient charts among different groups of physicians. This means that multiple application web sites run under the Service Layer, each connected to a separate database.

- *Multiple Application JBoss GUI servers, Interop servers, and CEM with Interop R4 server:*
  - *GUI server* – Client application processing, application web sites, and client web services.

    ★ One additional application/JBoss GUI server is recommended for every 200 concurrent users. For example, 500 concurrent users requires 3 GUI servers (in addition to 1 Interop Server and 1 load balancer).

  - *CEM with Interop R4 server* – Processes data for FHIR R4 API calls and CCDA generation. Also processes subscriptions for quality reporting, synchronizing on-premises data with Medication Management cloud-secured databases, and exchanging data with immunization registries, public health agencies, patient portal accounts, and other practices.

    athenaPractice v25 uses R4 APIs by default. If your practice needs to process

DSTU2 API calls, a dedicated DSTU2 Interop server is required in addition to a CEM with Interop R4 server.

- *Interop server(s)* – Used for serving Fast Healthcare Interoperability Resources (FHIR) API calls and CCDA generation. Depending on your API workload, multiple Interop servers may be required. See the *athenaPractice v25 Hardware Calculator* spreadsheet for details.

  Each Interop server must be designated as either R4 or DSTU2 in Server Configurator, depending on the type of FHIR API calls that need to be handled. Each Interop server will handle only one of the two FHIR versions.

- *Load Balancer* – One server supports multiple GUI and Interop servers.

- *eCRNow Server*
  This server handles electronic case reporting to public health agencies through the eCRNow app. This server is required for sites with over 100 concurrent users that want to use electronic case reporting. See the *athenaPractice v25 Hardware Calculator* spreadsheet for further details on assessing server requirements.
- *Data Exchange server*
  Optional dedicated server for clinical data exchange with Data Transfer Station (DTS) and optionally MIK.
- *Qvera interface engine (QIE)*
  Optional dedicated server for interfaces and subscriptions handled by QIE.
- *Client workstations*

More than 500 concurrent users

This is often an ASP or thin client environment running under Citrix or Windows Terminal Server with multiple Database servers and multiple Web sites.

Recommended configuration: Separate servers host main application components.

- *Database server(s):* One or more athenaPractice databases on one or more dedicated servers, MIK (Millbrook Interface Kit), and athenaPractice Analytics. MIK can also be installed to a separate machine.

  > ☑ **Tip**
  > Larger environments may require multiple separate athenaPractice databases to maintain separate patient charts among different groups of physicians. This means that multiple application web sites run under the Service Layer, each connected to a separate database.

- *Multiple Application JBoss GUI servers, Interop servers, and CEM with Interop R4 server*

- *GUI server(s)* - Client application processing, application web sites, client web services.

  Best Practice
  One additional application/JBoss GUI server is recommended for every 200 concurrent users. For example, 600 concurrent users requires 4 GUI servers (in addition to 1 Interop Server and 1 load balancer).

- *Application/JBoss Interop Server with CEM and R4 (CEM with Interop R4 server role)*
  Processes FHIR R4 API calls, CCDA generation, and subscriptions for quality reporting, synchronizing on-premises data with Medication Management cloud-secured databases, and exchanging data with immunization registries, public health agencies, patient portal accounts, and other practices.

  athenaPractice v25 uses R4 APIs by default. If your practice needs access to DSTU2 APIs, a dedicated DSTU2 Interop server is required in addition to a CEM with Interop R4 server.

- *Interop server(s)*– Used for serving Fast Healthcare Interoperability Resources (FHIR) API calls and CCDA generation. Depending on your API workload, multiple Interop servers may be required. See the *athenaPractice v25 Hardware Calculator* spreadsheet for details.

  Each Interop server must be designated as either R4 or DSTU2 in Server Configurator, depending on the type of FHIR API calls that need to be handled. Each Interop server will handle only one of the two FHIR versions.

- *Load Balancer* – One server supports multiple GUI and Interop servers.

- *eCRNow Server*
  This server handles electronic case reporting to public health agencies through the eCRNow app. This server is required for sites with over 100 concurrent users that want to use electronic case reporting. See the *athenaPractice v25 Hardware Calculator* spreadsheet for further details on assessing server requirements.
- *Data Exchange server*
  Optional dedicated server for clinical data exchange with Data Transfer Station (DTS) and optionally MIK.
- *Qvera interface engine (QIE)*
  Optional dedicated server for interfaces and subscriptions handled by QIE.
- *Client workstations*

Virtual environments

In *server virtualization* or *virtual environments*, a physical *host* operating system supports one or more *guest* operating systems or *virtual machines (VM)*.

Use server virtualization with your hypervisor software. This version of athenaPractice was tested with the following at the time of initial release:

- VMware
- Microsoft Hyper-V Server

Server virtualization

When evaluating performance in a virtualized environment, measure performance of host systems as well as VM systems.

A key component in configuring a VM system is the number of allocated virtual processors (vCPUs). The number of vCPUs available to VMs is determined from the host hardware. To calculate this precisely in your environment, refer to the *athenaPractice v25 Hardware Calculator* spreadsheet.

Best Practice
Allocate vCPUs per VM as specified on the virtualization servers. Performance can be degraded by oversubscribing vCPUs or RAM on the host.

Reserve VCPU and RAM for DB server, JBoss GUI and Interop servers, and load balancer under your VM infrastructure as recommended in *athenaPractice v25 Hardware Calculator* spreadsheet for optimal performance. Contact your IT administrator for hardware reservation details.

Hosts and guests

Host refers to the physical operating system supporting one or more VM operating systems. *Guest* VM systems support the database, application servers, and third-party integration products. Refer to the following sections on physical servers for software requirements.

Every implementation requires a different combination of VM operating systems. Allocate VM operating systems across the host operating systems. Balancing how VMs use CPU, memory, disk, and network across the available hosts will improve the performance of the product.

Database server

Database server refers to the dedicated Windows server or VM hosting the product and SQL Server software, where all clinical and practice management data is stored.

Tip
A demonstration (training) database can be installed on a supported

☑ Windows Server system and a full version of Microsoft SQL Server for testing and user training. See Database server software.

Review the following information and refer to the *athenaPractice v25 Hardware Calculator* spreadsheet before purchasing and configuring equipment. The requirements for satisfactory performance of other software may be higher. Equipment performance depends on processor speed and memory configuration. It is not advisable to run other applications or programs on this server since this may cause performance degradation.

Database server software

This version of athenaPractice was tested with the following at the time of initial release.

Software	Validated versions
Microsoft Windows Server OS	• Windows Server 2016 Standard/Datacenter 64-bit • Windows Server 2019 Standard/Datacenter 64-bit • Windows Server 2022 Standard/Datacenter 64-bit
Microsoft .NET Framework	• .NET 4.8 (installed with the product)
Microsoft SQL Server database (Standard or Enterprise)	• SQL Server 2016 SP3 • SQL Server 2017 • SQL Server 2019 • SQL Server 2022 **Note:** SQL Server 2012 R2 and 2014 are NOT supported
PostgreSQL	• PostgreSQL 16 : Windows Server 2019, 2022 • PostgreSQL 15 : Windows Server 2016, 2019

*If you use SQL Server 2022, note that the Legacy Cardinality Estimation value is OFF by default. To ensure optimal performance with SQL Server 2022, change the Legacy Cardinality Estimation value to ON by running the following SQL script on your database machines:

```
IF EXISTS (SELECT 1 FROM sys.database_scoped_configurations WHERE name =
'LEGACY_CARDINALITY_ESTIMATION' AND value = 0)

exec ('ALTER DATABASE SCOPED CONFIGURATION SET LEGACY_ CARDINALITY_
ESTIMATION = ON');

GO
```

athenaPractice Analytics

athenaPractice Analytics 2025 on SQL Server 2016 SP2*, 2017, 2019**, or 2022

*If you are using athenaPractice Analytics on a server running SQL Server 2016 SP2, use SQL Server Management Studio (SSMS) 16.5.3. Do not install SSMS v17 or later.

**SQL Server 2019 requires Windows Server 2016 or greater.

Network protocol

TCP/IP Only

Other database/Web server software

The following applications are required on your database server or web server to support the athenaPractice website:

- Microsoft SQL Server 2012 Native Client

  This is required to run Server Setup. If it is not already installed on the database server, you can install it from <*drive*>:\CentricityStaging\CPS_Client\ISSetupPrerequisites.

- SQL Server Utilities

  Starting with SQL Server Management Studio (SSMS) 18.*x*, Microsoft no longer bundles the command line utilities with SSMS. To use SSMS version 18.*x* or higher, you will also need to install the ODBC Driver and the Command Line Utilities:

  - ODBC Driver 17 for SQL server

    https://learn.microsoft.com/en-us/sql/connect/odbc/download-odbc-driver-for-sql-server?view=sql-server-ver16#version-17

  - Microsoft Command Line Utilities 15 for SQL server

    https://go.microsoft.com/fwlink/?linkid=2142258

- MSXML 6.0

Software interfaces

If you plan to exchange clinical data with external systems or applications, Data Transfer Station (for LinkLogic clinical data exchange), LinkLogic folders, and Qvera interface engine are installed on separate servers. See Data Exchange server.

Note
MIK is typically installed on the database server. If you run MIK on the database server, Microsoft SQL Server 2012 Native Client must also be installed. MIK can also be installed on the Data Exchange server.

Database server hardware

The hardware recommendations are based on user loads with only athenaPractice and Clinical Content (CC) forms installed.

Database hardware requirements vary considerably depending on the size and complexity of your implementation. To determine the requirements for your dedicated database server, refer to the *athenaPractice v25 Hardware Calculator* spreadsheet.

Processor, RAM, and disk space

Choose the fastest processor within your budget that is not less than the recommended value. CPU selection is based on number of concurrent users. The system must support the required number of CPUs.

Disk setup is also based on number of concurrent users, number of patients (Chart), and high-frequency disk access.

> **Note**
> Clinical items such as Medi-Span (20 GB) increase disk space requirements. Use the hardware calculator to make sure you have sufficient disk space.

Dedicated database server required

At least one database server dedicated to Microsoft SQL Server is required to run the database. This server cannot be a domain controller or Remote Desktop Services/Citrix XenApp server.

While a small amount of file and print server activity can occur on the database server, Services recommends you use a separate server for other networked applications. Maintain at least 200 GB of free space on the database server for optimal performance.

Disk setup for performance and reliability

Disk arrays

SAS or Fibre Channel RAID 1+0 disk arrays (Disk Mirroring with Striping) increase database disk performance and reliability and lower CPU utilization. Storage area networks (SANs) provide flexibility, but still require dedicated disks and heads/filers/controllers. Striping RAID groups vertically across heads scales better than dedicating one or more entire disk arrays to a single head. SATA drives are not recommended.

Page file space

Ensure that page file space equals the greater of these values:

- # of concurrent users * 1 MB RAM
- 2X Total RAM

Locate page file space on different physical disk drive(s) from those containing the athenaPractice database.

Optimize server memory usage

Windows Server operating systems have a setting for maximizing throughput. Refer to *Client workstation software* on page 16. Windows Server includes a setting for optimizing how Remote Desktop Services utilizes server memory and maximizes throughput for applications. This is set as part of the installation/upgrade process.

Network interface cards/switches

Systems and network cabling should be installed and configured by trained computer professionals. Plan to engage a network support specialist for installation and ongoing support.

> **Important**
> Do not use Network Hub devices for network connectivity.

Switches

For maximum throughput, use 1000Base-T or greater switches.

Network card

Dual-port 1 GB Ethernet (1000Base-T) network card. For optimal performance, configure network bandwidth between 1Gbps to 10Gbps.

Wiring

Ethernet twisted pair CAT-5e or CAT-6 compliant wiring or better.

RDS/XenApp

While the ICA/RDP protocol is highly compressed, make sure your network has sufficient bandwidth to carry the traffic your environment requires.

Windows

Gigabit (1000Base-T) preferred.

Network protocol

TCP/IP only.

Application server

An *application server* is a Windows server or VM running JBoss that handles:

- Application logic and tasks between the client workstation user interface and the database server
- Application web sites and client web services
- FHIR R4 APIs
- FHIR DSTU2 APIs
- Common Event Model (CEM) subscription processing for quality reporting, synchronizing on-premises data with Medication Management cloud-secured databases, and exchanging data with immunization registries, public health agencies, patient portal accounts, and other practices

Depending on the number of concurrent users, separate servers can be configured to support each type of request to ensure optimal performance. Multiple servers with the same role can also be configured for load distribution in larger implementations.

Server roles

Application servers can have the following roles.

- **Single server:** Used for application logic and processing (GUI), client web services, application web sites, FHIR R4 and DSTU2 APIs, CCDA generation, and CEM subscription processing. This configuration is only recommended for sites with up to 100 licensed users.
- **GUI server:** Used for application logic, client application processing, client web services, and application web sites. This server is used with a CEM with Interop R4 server for sites with over 100 concurrent users.
- **CEM with Interop R4 server:** Processes data for FHIR R4 API calls and CCDA generation. Also processes subscriptions for quality reporting, synchronizing on-premises data with Medication Management cloud-secured databases, and exchanging data with immunization registries, public health agencies, patient portal accounts, and other practices.

  This server is required along with one or more GUI servers and possible additional Interop server(s) for sites with over 100 concurrent users.

  If you need to process third-party DSTU2 API calls, a dedicated DSTU2 Interop Server is required in addition to the CEM with Interop R4 server.
- **Interop server:** Processes data for FHIR API calls and CCDA generation. Used in conjunction with one or more GUI servers and a CEM with Interop R4 server for sites with more than 100 concurrent users.

  Each Interop server must be designated as either R4 or DSTU2 in Server Configurator, depending on the type of FHIR API calls that need to be handled. Each Interop server will handle only one of the two FHIR versions. You may need multiple Interop servers to handle higher numbers of API calls and CCDA generation requests. See the *athenaPractice v25 Hardware Calculator* spreadsheet for details.

  If you have a low number of R4 API calls and CCDA generation workload, you may not need an Interop R4 server. However, if you need to process third-party DSTU2 API calls, you must have an Interop DSTU2 server.
- **eCRNow Server:** Handles electronic case reporting to public health agencies through the eCRNow app. This server is required for sites with over 100 concurrent users that want to use electronic case reporting. See the *Electronic Case Reporting Setup Guide* (available after LA) for details. Sites with less than 100 concurrent users are unlikely to need a separate eCRNow server. However, your specific server requirements will depend on the work load of your practice. See the *athenaPractice v25 Hardware Calculator* spreadsheet for further details on assessing server requirements.

- **Apache load balancer (optional):** Required when two or more GUI servers are installed to distribute the requests between the GUI servers and Interop server(s). This is recommended for larger systems with over 200 concurrent users.

		Server Roles						
		Single Server	GUI Server	CEM with Interop R4 Server	Interop (R4) Server	Interop (DTSTU2) Server	Apache Load Balancer	eCR Now Server*
Number of concurrent users	0 - 100	1	N/A	N/A	N/A	N/A	N/A	0 or 1
	101 - 200	N/A	1	1	0 +	0 +	N/A	1
	> 200	N/A	2 +	1	0 +	0 +	1	1

*If using electronic case reporting

Application server software

This version of athenaPractice was tested with the following at the time of initial release.

Software	Validated versions
Microsoft Windows Server OS	• Windows Server 2016 Standard/Datacenter 64-bit • Windows Server 2019 Standard/Datacenter 64-bit • Windows Server 2022 Standard/Datacenter 64-bit
Microsoft .NET Framework	• .NET 4.8 (installed with the product)
JBoss Service Layer (installed with the product)	• JBoss 7.4.17 GA with 64-bit OpenJDK 17.0.14 • JBoss Core Services Apache HTTP Server 2.4.62 (load balancer) **Note:** JBoss and the Load Balancer support only TLS 1.2 and above.

Application server hardware

Refer to the *athenaPractice v25 Hardware Calculator* spreadsheet to determine the RAM, IOPS, Network, CPUs/vCPUs, disk space, number of hosts and VMs needed to support these configurations.

Data Exchange server

A Data Exchange server hosts Data Transfer Station (DTS) and optionally other applications including Qvera Interface Engine (QIE) or Millbrook Interface Kit (MIK). A qualified workstation can host the client with LinkLogic enabled for monitoring purposes.

> **Note**
> QIE can run on the same server or VM with DTS in small environments (75 concurrent providers or less). Otherwise, QIE requires a dedicated server. See Qvera documentation for server hardware/software requirements.

Data Exchange server software

This version of athenaPractice was tested with the following at the time of initial release:

Software	Validated versions
Microsoft Windows Server OS	• Windows Server 2016 Standard/Datacenter 64-bit • Windows Server 2019 Standard/Datacenter 64-bit • Windows Server 2022 Standard/Datacenter 64-bit
Microsoft Windows OS for DTS or LinkLogic dedicated workstation	• Windows 10 Versions 22H2 and later
Qvera Interface Engine (QIE)	v24.*x*

Network connection limits for LinkLogic workstations

Windows workstation operating systems can be limited to support a maximum of 10 network resource connections into the workstation. Each interface / LinkLogic station deployed consumes one resource connection. (Socket interfaces are exempt.)

If you plan to use multiple interfaces without sockets or more than six LinkLogic stations, Services recommends a Windows Server operating system.

About QIE

QIE is required for Quality Reporting with CQR and other product integrations. It can run with DTS on a Data Exchange server in small environments or on its own dedicated server.

About LinkLogic and Data Transfer Station (DTS)

LinkLogic's HL7 interfaces work with Data Transfer Station to exchange data exchange with other systems. A client workstation with LinkLogic enabled can be used to monitor and manage the message flow. Ideally, Data Transfer Station is installed on one or more separate machines, and the LLOGIC folder (incoming and outgoing HL7 messages) is shared on the network to be accessible to multiple Data Transfer Stations.

Data Transfer Station (DTS) works with LinkLogic to automate data exchange with other systems through files and TCP/IP socket connections. One or more DTS can be used by clinics to automate data transfer operations and balance the transfer load. For

best results, when multiple DTS are required, install each instance to a separate qualified workstation or server.

See *Managing Interfaces with athenaPractice* for HL7 interface specifications and implementation details.

Data Exchange server hardware requirements

Refer to the *athenaPractice v25 Hardware Calculator* spreadsheet to determine the disk space, RAM, and CPU requirements for your implementation.

Network:

Gigabit (1000Base-T) preferred.

Network Protocol

TCP/IP only

Internet

High-speed connection recommended.

High data transfer rate considerations for DTS

The Data Transfer Station message transaction rate (TPH) is influenced by the size of the database server DTS communicates with. For a data exchange transfer rate exceeding 1800 message transactions per hour, a Quad processor-based or higher server with proper disk configuration is recommended to maximize DTS performance.

Transactions per hour (TPH) measures patient-related messages processed per hour. Tests were performed with one patient-related message per import file. This is the preferred method of data import. TPH rate is also influenced by other factors:

- Number and speed of database server processors
- Memory on the DTS and database server
- Network speed
- DTS hard disk drive speed and throughput
- Server disk drive speed and configuration (stripe or hardware RAID)
- Data Exchange (DTS) server throughput speed

Client workstation

Individual workstations can be deployed to run the client application. A client running on an individual workstation is also known as a *thick* client as a opposed to a *thin* client running via client virtualization (see Remote Desktop Services/Citrix server/client).

Client workstation software

This version of athenaPractice was tested with the following at the time of initial release.

Software	Validated versions
Microsoft Windows OS	• Windows 10 Version 22H2 • Windows 11 Versions 22H2 and later
Web browser	• Microsoft Edge must be installed as your default web browser.
Microsoft Office	• Desktop version of Office 365
PDF reader	Adobe Acrobat Reader is required to open PDF attachments. Reader can be downloaded from the Adobe site.

Reports

By default, v25 will continue using Crystal® Reports (CR) XI R2 for chart and Practice Management (PM) reports. For PM-only or joint PM customers, we suggest you install CR .NET SDK v13 SP30. See *athenaPractice v22 Release Notes* for details on upgrading from CR XI R2 to CR .NET SDK V13.

Note
When Crystal Reports is uplifted to CR .NET SDK v13, the embedded designer is not supported, so you will need to purchase a Crystal Reports 2020 Designer license to customize the reports.

Customized factory reports created in or converted to Crystal Reports v10.0 should open without issues in CR Professional XI R2 or CR .NET SDK V13. Custom reports created in earlier versions may require additional steps to convert.

For more information about Crystal Reports and help with migrating older reports, go to http://crystalreports.com/resources/

Important
Do not install CR Professional XI R2 or CR .NET SDK V13 to a workstation where the client is installed. The client application supports an optional integrated version of Crystal Reports for custom business reporting. If you run a separate instance of Crystal Reports on the workstation, you will see an error each time you open the application.

Faxing

Biscom Faxcom® v6.5.7 is the verified fax solution for Integrated Faxing. See also Integrated Faxing.

For the latest detailed fax server requirements and configuration information, go to http://www.biscom.com.

Incompatible products

- Google Chrome is not compatible with the product.
- Optical Character Recognition is not supported. However, you can scan documents and store the acquired images directly to a patient chart. You can also annotate the scanned images.

Client workstation hardware

Refer to the *athenaPractice v25 Hardware Calculator* spreadsheet to determine the disk space, RAM, and CPU requirements for your implementation.

Video card

Scheduling workstations only. A video graphics card is required for workstations running the Scheduling module. The amount of video memory required depends on a combination of factors that varies considerably from site to site:

- Resource (provider) columns displayed - this includes columns for canceled or overbooked appointments.
- Time slots per day - shorter appointments mean more slots.
- Concurrent open instances of the schedule module - having multiple provider schedules open at the same time multiplies total columns/slots.
- Running other third-party applications concurrently with this product on the workstation.

Here are some estimates of video RAM required in different environments:

Simple configuration, moderate usage...	Requires this RAM...
Fewer than 8 resource columns, typically viewing one instance at a time.	128 MB
Fewer than 8 resource columns, typically viewing several instances at a time.	256 MB (with 4 GB system RAM)
High-usage configurations require more RAM. Example: 50+ resource columns, 48 10-min appointments per 8-hr day, displaying multiple schedule template instances.	
4 concurrent instances (maximum)	512 MB
5 concurrent instances	1 GB
7 concurrent instances	2 GB

> **Best Practice**
> A separate video graphics card is required. On workstations with "integrated" or "built-in" video graphics support, performance may suffer because RAM available for video/graphics processing is shared with the operating system.

Network

Gigabit (1000Base-T) preferred

Protocol

TCP/IP only

Internet connection

High-speed connection recommended for accessing Web-based Problem and Medication reference and downloading product updates and documentation.

Modem

DSL/cable or other high-speed fax/modem

Modems may be needed for faxing or remote access by providers and other users not directly connected to the server.

Other hardware

For printers, monitors, UPS, scanners, and other hardware options and requirements, see Server/workstation hardware for other software.

Remote Desktop Services/Citrix server/client

Terminal servers are deployed to serve multiple (thin) clients to terminals or workstations.

Thin client connectivity software

Use a client compatible with your backend system. Use the client software recommended/required for your virtualization environment.

Validated versions:

- Citrix Workspace app 2405
- Microsoft RDP on Windows 10 Versions 22H2 and later

Impact of network infrastructure

The Remote Desktop Services/Citrix XenApp environment is sensitive to network traffic. Your network infrastructure also influences how many concurrent users your implementation can support. When insufficient network bandwidth is available for the server to handle requests by users, the server slows and becomes unstable. The more resources the server spends on re-transmission of user tasks, the fewer resources the server has for new application processing.

Remote Desktop Services/Citrix server software

This version of athenaPractice was tested with the following software at the time of initial release.

Citrix

Validated versions:

- Citrix Virtual Apps and Desktops 2203 LTSR

On the following operating systems:

- Windows Server 2016 Standard/Datacenter 64-bit
- Windows Server 2019 Standard/Datacenter 64-bit
- Windows Server 2022 Standard/Datacenter 64-bit

Microsoft Windows Remote Desktop Services environment

- Windows Server 2016 Standard/Datacenter 64-bit
- Windows Server 2019 Standard/Datacenter 64-bit
- Windows Server 2022 Standard/Datacenter 64-bit

Connection load balancing

Connection load balancing is only available in Citrix; it is not available in Windows Remote Desktop Services running RDP, where connection load balancing is handled outside Remote Desktop Services.

Remote Desktop Services/Citrix server hardware

Refer to the *athenaPractice v25 Hardware Calculator* spreadsheet to determine hardware requirements in a Remote Desktop Services/Citrix XenApp environment.

Processor

Choose the fastest processor within your budget that is not less than the recommended value. CPU selection is based on the number of concurrent users.

Optimize server memory usage

Server memory usage is optimized as part of the installation.

Page file size

Application Server RAM size X 2

Network

Gigabit (1000Base-T) preferred.

Improve performance and reliability

Disk arrays: SAS, ISCSI, or Fibre Channel RAID 1 disk arrays increase disk performance and reliability and lower CPU utilization.

Hardware level RAID 1 (disk mirroring): RAID 1 provides fault tolerance and performance. If a hard drive fails, the server keeps running. The drive can be replaced without having to rebuild the server.

Reduce overhead

A software RAID configuration requires the operating system to keep track of the raid configuration, creating overhead. Using a hardware RAID configuration, the operating system sees drives in the array as one drive. All the RAID processing is independent of the Remote Desktop Services/Citrix XenApp operating system.

Unsupported configurations/features in RDS/Citrix

The following configurations and application features are either not supported in a Remote Desktop Services/Citrix environment or require additional steps or workarounds to use

- Hosting the application via Terminal Services/Citrix on the dedicated Database server.
- Installing and running the demo (training) database of athenaPractice on the Remote Desktop Services/Citrix server. Instead, install and run on a supported thick client or server class workstation. See Client workstation software.
- Data Transfer Station (DTS), Encounter Form Editor, Formulary Editor. Run these applications on a server or a thick client.
- Running multiple versions of athenaPractice on a single server.

C-Now web browsers

C-Now is a cloud-based application that allows providers to log in using a web browser on any device and access appointments and patient data from your athenaPractice solution. For more information, see the C-Now User Guide.

Validated web browsers

- Chrome
- Edge
- Firefox

Limited functionality is available on Safari and Internet Explorer.

Third-party integration server hardware and software

ezAccess Patient Portal

ezAccess 4.0.328.215 or higher is supported for this version of athenaPractice.

For details, go to https://www.ezaccessmot.com

Document Management

InDxLogic Server Version 10.8.2408.02+ and Client Version 10.8.0.8382+ are supported for this version of athenaPractice.

Qvera Interface Engine (QIE)

This version of athenaPractice was tested with QIE v24.*x* at the time of initial release.

Hospital Connect

Hospital Connect 2.21 or higher is supported for this version of athenaPractice.

Server/workstation hardware for third-party software

A separate server is required for applications other than athenaPractice, such as email, workgroup applications, and unrelated file and print services.

> **Important**
> Do not use the dedicated database server for third-party software activity.

Monitors

Color SVGA Display: Minimum resolution 1024 x 768 - Small Fonts, High Color (16-bit, 65536 colors) or greater.

Higher resolution is required for image capture, viewing, and annotation.

If you are using high resolution monitors, review and find appropriate settings that best suit your display. For more information, see: https://support.microsoft.com/en-us/help/4026956/windows-10-change-screen-resolution.

Uninterruptible power supply (UPS)

To avoid data corruption during power brownouts, connect the Application server, the Data Exchange server, and the Database Server, and concentrators to a UPS with at least 15 minutes of full load backup power.

Set the UPS to shut down the server automatically after a specified period. During an extended power outage, this gives users time to log out before the server shuts down.

- Servers: Minimum 15 minutes emergency full load backup power
- Workstations: Recommended 5 minutes emergency full load backup power
- Data Exchange server/DTS: Power management software recommended to shut down the DTS safely in the case of an extended power failure.

Printers

Recommended	Required
Mid-range laser printers. Some reports require laser printers. The application has been tested on mid-range laser printers. Some low-end printers do not have a large enough printable	Microsoft Windows Server-based printing

Recommended	Required
area.	
Dot-matrix printers. For printing forms with carbons.	Additional printers will be required depending on the size and requirements of the clinic/enterprise. Printer locations should support workflow plans.

Application printable area limits

Printing functions are supported on any printer capable of handling a printable area of 8 inches by 10.6 inches on letter-sized paper.

Crystal Reports printable area limits

The Crystal Reports driver used in the product supports page margins of 0.17 inches top, 0.25 inches left / right sides, and 0.23 inches bottom for letter paper size by default.

Photo ID and image capture

Any TWAIN-compliant digital video device, digital camera, or scanner that plugs into a USB port is supported. The application captures still images directly from the device in .BMP or .JPG formats. Images can also be acquired from file system image files, or by copying and pasting from another application.

See also Storing images.

Best Practice
For best results, test image capture solutions with the application prior to purchase. Webcam devices must be compatible with your operating system. And, depending on your device, additional setup is required to use a webcam.

Media Drive

16x-speed or faster DVD drive

Required on the Remote Desktop Services/Citrix server to install the server operating system.

Modem

Modem DSL/cable or other high-speed fax/modem

Modems may be needed for faxing or remote access by providers and other users not directly connected to the server.

Backup system

Tape drive for backups or backup system from another server with access to the Database server, Remote Desktop Services/Citrix server, Application server, or Data Exchange server.

Backups are recommended after installing or upgrading to facilitate quick recovery if hardware problems occur or disk drive data is lost.

Important
If for any reason you require Services assistance in restoring your database from backup, you must have a SQL .bak file. If you do not have a SQL .bak file, we will not be able to assist you in restoring your database.

Surge protection

Power surge protector for each machine to protect against voltage variations.

Other

AC power, network, keyboard, and display extension cables may be required for optimal workstation placement.

Integrated Faxing (Chart)

Biscom's FAXCOM® fax solution is verified with athenaPractice. Integrated Faxing permits users to fax prescriptions and other information directly from charts.

Note
When Medication Management is activated, prescriptions are faxed via Medication Management functionality instead of FAXCOM. Other chart documents, such as chart summaries, can still be faxed through FAXCOM when Medication Management is activated.

For more information about FAXCOM, go to https://www.biscom.com/fax-for-ge-centricity-ehr/.

For detailed installation instructions, contact your Biscom representative. To configure Integrated Faxing, see information in the online help (press **F1** on the **Administration** > **System** > **Faxing** screen).

Operating system

Integrated Faxing runs in Citrix/Remote Desktop Services environments.

Tested software version

- FAXCOM CV 6.5.7.0

To use Integrated Faxing, install at least one Biscom FAXCOM® fax server on your network in a secure environment.

Hardware requirements

For detailed hardware requirements, contact your Biscom representative.

If your clinics are geographically distant or located in more than one state, consider a least-cost routing configuration, which will require more than one fax server. For more

information about least-cost routing and fax server configurations, go to the Fax Solution page at https://www.biscom.com/whitepapers-datasheets/.

Important features and system settings

The following features and system settings impact memory requirements and system performance.

Enabling Chart clinical auditing features

Enabling all available auditing features significantly increases database storage and growth requirements, possibly by a factor of 2 or greater. Consult Services or your Value-Added Reseller when enabling auditing features.

Storing images

Avoid storing images in the product database. Add image attachments to a chart document and store them in the Document Management server database, including still images from a digital camera or video camera or scanned documents images.

Disk space for images varies considerably. Refer to the *athenaPractice v25 Hardware Calculator* spreadsheet to calculate your organization's requirements.

Getting technical support

If you require help, contact your Value Added Reseller or Services at 888-436-8491 or online via the Success Community **Cases** page under the Support menu.