

Aperio eSlide Manager System Requirements

This document provides hardware and bandwidth requirements for the Aperio eSlide Manager system.

Because Aperio digital slides are by design high resolution and information rich, for best results you need sufficiently powerful processing and viewing hardware as well as adequate network bandwidth capacity.

Server minimum requirements

Aperio eSlide Manager must be installed on a Windows server.

Note on the Service Account

The service account is used by Aperio applications that run as services on the server and scanner.

Make sure that the service account:

- ▶ Is excluded from all password expiration policies.
- ▶ Is given local administrator permissions on the server running the Aperio services as well as the scanner.
- ▶ Is given "Full Control" access to any network location where image data is being stored (the file share).
- ▶ Is given DBO (database owner) permissions to the Aperio eSlide Manager SQL database.

Prepare for Windows updates

Microsoft occasionally issues critical updates that you may want to install on your servers. It is your responsibility to perform regular backups of your servers. Before installing an update, be sure you have a full backup of the server that you could use to restore the server in case the update causes issues.

Cloud/remote storage

If you are planning to move Aperio eSlide Manager or image storage to a remote cloud storage service, please contact Leica Biosystems Technical Service for advice.

Server prerequisites

Verify these items have been installed on your Windows server (if your server is up to date, these may already have been installed):

- ▶ .NET framework 3.5 and 4.5.
- ▶ C++ 2015 Redistributables.
- ▶ All Microsoft patches for your version of Windows Server (contact Leica Biosystems Technical Services for a list of the latest Windows updates for your Windows server).
- ▶ In order to secure data transmissions, customers should procure trusted certificates for each server (hub and spokes), either through their IT department or by purchasing them through a trusted issuer such as DigiCert or Sectigo.

Server minimum requirements

The following table details the specifications for the server you are using to host Aperio eSlide Manager.

Feature	Minimum specification
CPU speed	Two dual-core or one Quad-core Intel 2.4GHz or faster
Hard disk space	1TB DAS, NAS, or SAN Storage (recommended) RAID for redundancy
Available C: or OS drive space	100GB
Memory	8GB RAM
Network card	1GB network card
Power supply	Redundant power supplies (recommended)
Operating system	Microsoft Windows Server 2022*
<p><i>* Leica Biosystems tests and confirms compatibility between Aperio eSlide Manager 12.5 and Microsoft Windows Server 2016 and 2019; however, to better secure your server Leica Biosystems strongly recommends upgrading to Microsoft Windows Server 2022.</i></p>	

Note that installation procedures may require temporary active Internet connection and access to a Windows update service.

Using a virtual machine as your Aperio eSlide Manager server

If you are using a virtual machine (VM) as the server, you will see better performance in a virtual environment if your VM meets the minimum requirements shown in the tables above and have dedicated resource allocation on the virtual host.

Supported server operating systems and languages for Aperio eSlide Manager

64-bit support refers to using installers built from 32-bit compilers and installed on 64-bit OS.

We do not support the localization of our software.

To ensure proper operation of Aperio software, the region setting of your server, the scanner control workstation, and client workstations should be English (United States), set in the Windows Regional and Language Options window available from the Windows control panel. In addition, the English language Windows pack should be installed on your server.

Supported database software for Aperio eSlide Manager

Aperio eSlide Manager includes Microsoft SQL Server Express Edition. If you prefer, you can use your own Standard or Enterprise Edition so long as it is a supported version.

Database	Aperio eSlide Manager release
Microsoft SQL Server 2022*	Rel 12.5 or later

** Leica Biosystems tests and confirms compatibility between Aperio eSlide Manager 12.5 and Microsoft SQL Server 2019; however, to better secure your server Leica Biosystems strongly recommends upgrading to Microsoft SQL Server 2022.*

Aperio LDAP interface requirements

If your organization uses an LDAP server to centralize user authentication and user information, you can configure the Aperio LDAP interface so that Aperio eSlide Manager uses your LDAP server for user authentication user information.

Note that the Aperio LDAP interface supports only AD (Active Directory) LDAP solutions; it does not support all LDAP solutions.

For detailed information on configuring the Aperio LDAP Interface, see *Configuring the Aperio LDAP Interface*.

Client workstation supported browsers

Other browsers and browser versions may work, but they have not been exhaustively tested by Leica Biosystems Imaging. Note that Mozilla Firefox ESR (Extended Support Release) is not supported for use with Aperio eSlide Manager.

Web Browser	Versions	Aperio eSlide Manager release
Mozilla Firefox	125 and later	Release 12.5 and later
Google Chrome	123 and later	Release 12.5 and later
Microsoft Edge	123 and later	Release 12.5 and later

Anti-Virus exclusions for servers and workstations

We highly encourage the use of antivirus software on the Aperio system. We recommend that .SVS, .SCN, .TIF, JPG file types as well as the file storage be excluded from "on access scanning" as these files can be very large and are accessed continually as they are being scanned and users are viewing the digital slides. You should also exclude the database files (.mdf and .ldf) from virus scans. Virus scans should be configured to run during non peak hours as they are very CPU intensive and interfere with scanning or analysis.

Possible third-party application conflicts

In rare circumstances, third-party applications such as virus or security software may prevent Aperio software from connecting to servers or devices. If you are having this problem, contact Leica Biosystems Technical Services for assistance.

Cybersecurity and network recommendations

For information on requirements and recommendations for ensuring the Aperio eSlide Manager server on your network and the users who use it are protected from security threats, refer to *Aperio eSlide Manager Administrator's Guide*. For specific cybersecurity recommendations for user workstations, see the user guide for the Aperio product you are using.

Aperio SSL certificates

An internally-generated SSL certificate is used to secure communication between Aperio services. This certificate expires 3 years after installation. When this happens, the Aperio eSlide Manager system will no longer be usable. Contact Leica Biosystems Technical Services to regenerate and install certificates for Aperio services.

In addition to the internally-generated SSL certificate, it is recommended the Aperio WebServer be secured using an SSL certificate that is valid for the hostname it will be accessed from and be recognized by your intranet browsers. Your IT department can procure an SSL certificate for this purpose. Contact Leica Biosystems Technical Services to install this certificate.

As with the internally-generated SSL certificate, the SSL certificate provided by your IT department will also expire after a period of time (typically 1-3 years). Contact Leica Biosystems Technical Services to install the replacement Aperio WebServer certificate.

Digital slide minimum bandwidth requirements for Aperio eSlide Manager

The bandwidth required for different applications varies, as discussed below.

Digital slide viewing for SVS and third-party digital slides

The minimum network bandwidth required for a good user experience when viewing SVS digital slides is 2 Mbps per user. When it's available, our software will make use of additional available bandwidth to provide the users a better viewing experience.

Actual bandwidth usage when viewing digital slides varies with the type of slide, viewing habits of the Pathologist, tissue area, nature of each case, the client application and performance options in the viewer application. However, based on experience, Aperio has found that a typical viewing session requires about 25MB of data to be transferred to the end user with a variable rate of 2 Mbps to 4 Mbps.

Digital slide viewing for SCN digital slides

The minimum network bandwidth required for a good user experience when viewing SCN digital slides is 24 Mbps per user. When it's available, our software will make use of additional available bandwidth to provide the users a better viewing experience.

Actual bandwidth usage when viewing digital slides varies with the type of slide, viewing habits of the Pathologist, tissue area, nature of each case, the client application and performance options in the viewer application.

Digital slide capture on Aperio scanners

We recommend that the connection between the scanner and the server be low latency and dedicated to scanning activities. If the connection is not dedicated, scanning performance may be impacted or may impact other applications on your network.

The amount of bandwidth required for scanning digital slides to a network is 1Gb/s for optimal scanning time in environments where the connection cannot be dedicated or is shared. In instances where multiple scanners are writing to the same network share, these connections may need to be scaled up appropriately.

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This document applies to Aperio eSlide Manager Release 12.5 and later

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- ▶ This product is protected by registered patents. For a list of patents, contact Leica Biosystems.

Customer Resources

- ▶ For the latest information on Leica Biosystems Aperio products and services, please visit www.LeicaBiosystems.com/Aperio.

Contact Information – Leica Biosystems Imaging, Inc.

Headquarters	Customer Support
 <p>Leica Biosystems Imaging, Inc. 1360 Park Center Drive Vista, CA 92081 USA Tel: +1 (866) 478-4111 (toll free) Direct International Tel: +1 (760) 539-1100</p>	<p>Contact your local support representative with any query or service request.</p> <p>https://www.leicabiosystems.com/contact-us/</p>



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23ESMHUB, 23ESMCAP, 23ESMSPOKE, 23SPOKEHUB

Notices

Revision record

Rev.	Issued	Sections Affected	Detail
C	May 2024	“Server minimum requirements” “Client workstation supported browsers”	<ul style="list-style-type: none"> Removed references to Aperio eSlide Manager versions earlier than 12.5 Removed references to Aperio ImageScope and Aperio Image Analysis Workstation Removed recommended server specifications. Removed viewing station requirements.
B	April 2023	Copyright page	Replaced REF numbers
A	January 2022	All	New document for Aperio eSlide Manager 12.5. Based on existing <i>Aperio System Requirements</i> , MAN-0052, Revision P.

Cautions and notes

- ▶ **Specifications and Performance** - For information on the requirements for client workstations and monitors, and Aperio eSlide Manager performance characteristics, refer to “*Client workstation supported browsers*” on page 3.
- ▶ **Installation** - Aperio eSlide Manager must be installed by a trained Leica Biosystems Technical Services representative.
- ▶ **Accessories** - For information on using Aperio eSlide Manager with third-party accessories such as a Laboratory Information System (LIS) or image analysis algorithms not provided by Leica Biosystems, contact your Leica Biosystems Technical Services representative.
- ▶ **Quality Control** - When viewing digital slides, the operator must confirm that the digital slide labels match the digital slide data for quality assurance.
- ▶ **Maintenance** - To ensure optimal viewing of digital slides, periodic maintenance is required for the monitors connected to viewing stations. For information on monitor calibration, contact your Leica Biosystems Technical Services representative. Some viewers include a test image that is used to verify the monitor display. For those viewers, refer to their user guides for information.
- ▶ **Cybersecurity** - Be aware that workstations are susceptible to malware, viruses, data corruption, and privacy breaches. Work with your IT administrators to protect workstations by following your institution’s password and security policies. For Aperio recommendations on protecting your workstations and servers, see the *Aperio eSlide Manager Administrator’s Guide*.
- ▶ **Training** - This manual is not a substitute for the detailed operator training provided by Leica Biosystems or for other advanced instruction. Leica Biosystems Technical Services should be contacted immediately for assistance in the event of any malfunction.



CAUTION: Use normal care in maintaining and using Aperio servers. Interrupting network connections or turning off servers while they are processing data (such as when they are analyzing digital slides or generating an audit report) can result in data loss.