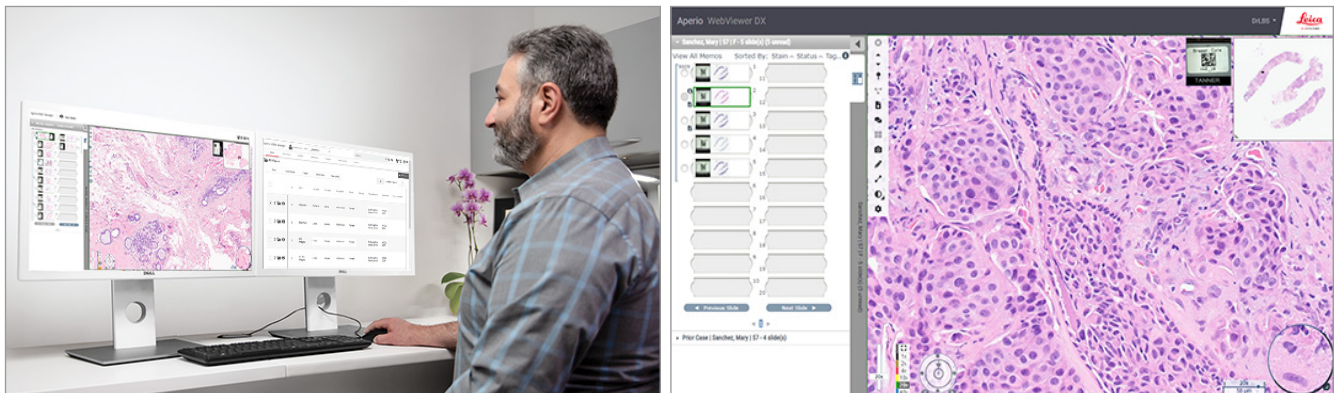


# Aperio WebViewer DX

## IT Administrator's Guide



## Aperio WebViewer DX IT Administrator's Guide

This document applies to Aperio WebViewer DX 1.0 and later.

### Copyright Notice


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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](http://www.LeicaBiosystems.com/Aperio).


### Contact Information – Leica Biosystems Imaging, Inc.

Headquarters		Customer Support	General Information
	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	Contact your local support representative with any query and service request. <a href="https://www.leicabiosystems.com/service-support/technical-support/">https://www.leicabiosystems.com/service-support/technical-support/</a>	US/Canada Tel: +1 (866) 478-4111 (toll free) Direct International Tel: +1 (760) 539-1100 Email: <a href="mailto:ePathology@LeicaBiosystems.com">ePathology@LeicaBiosystems.com</a>

European Union Authorized Representative		United Kingdom Responsible Person
	CEpartner4U Esdoornlaan 13 3951 DB Maarn The Netherlands	Leica Microsystems (UK) Limited Larch House, Woodlands Business Park Milton Keynes, England, United Kingdom, MK14 6FG

Importers		
	Leica Biosystems Deutschland GmbH Heidelberger Straße 17-19 69226 Nussloch, Germany	Leica Microsystems (UK) Limited Larch House, Woodlands Business Park Milton Keynes, England, United Kingdom, MK14 6FG

 0815477020280(8012) 1.0

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# Notices

## Revision Record

Rev.	Issued	Sections Affected	Detail
A	April 2022	All	New manual for Aperio WebViewer DX 1.0 and later.

## Intended Purpose

Aperio WebViewer DX is a viewing software application intended to enable the pathologist with the qualitative review and interpretation of digital images of surgical pathology glass slides prepared from formalin-fixed paraffin-embedded (FFPE) tissue. Aperio WebViewer DX is intended for use with digital images from compatible scanners on local and remote networks.

Aperio WebViewer DX is not intended for use with a frozen section, cytology or non-FFPE specimens. It is the responsibility of a qualified pathologist to employ appropriate procedures and safeguards to assure the validity of the interpretation of images obtained using Aperio WebViewer DX.

## Cautions and Notes

- ▶ **Aperio WebViewer DX is for professional use only.**
- ▶ **Serious Incidents Reporting** - Any serious incident that has occurred in relation to the Aperio WebViewer DX shall be reported to the manufacturer and the competent authority of the member state in which the user and/or the patient is established.
- ▶ **Specifications and Performance** - For information on the requirements for monitors, see *"Monitors and Viewing Workstations"* on page 12.
- ▶ **Installation** - Aperio WebViewer DX must be installed by a trained Leica Biosystems Technical Services representative.
- ▶ **Accessories** - For information on using Aperio WebViewer DX with third-party accessories such as a Laboratory Information System (LIS) not provided by Leica Biosystems, contact your Leica Biosystems Technical Services representative.
- ▶ **Quality Control** - For information on quality control procedures for Pathologist and Histotechnicians, refer to the *Aperio WebViewer DX User's Guide*.
- ▶ **Maintenance and Troubleshooting** - For information on maintenance and troubleshooting, refer to the *Aperio WebViewer DX User's Guide*.
- ▶ **Cybersecurity** - Be aware that workstations are susceptible to malware, viruses, data corruption, and privacy breaches. Use caution when inserting USB drives and other removable devices. Consider disabling USB ports that are not in use. If you plug in a USB drive or other removable device, you should scan the devices with an anti-malware utility. Work with your IT administrators to protect your workstation by following your institution's password and security policies.

IT staff: See the *Aperio eSlide Manager Administrator's Guide* for further cybersecurity recommendations, including:

- ▶ Protecting workstations and servers
- ▶ Setting passwords
- ▶ Monitoring and restricting login attempts
- ▶ **Sensitive Data Protection** - This Leica Biosystems product is capable of input, storage, and handling of sensitive data, including personal identifier information (PII) and/or possibly protected health information (PHI). In addition to personal data such as name, address, and other obvious personal identifiers, sensitive data include barcodes, accession numbers, diagnostic information, and scan images, such as microscope slide labels and other labels or annotations embedded in image files. Please take appropriate precautions to protect from sensitive data exposure and theft. Handling of sensitive data is subject to local laws. Many countries have a data protection authority to ensure that data protection law is followed. For more information about your privacy rights, or if you are not able to resolve a problem directly with us and wish to make a complaint, contact your local authority.
- ▶ **Private Health Information Protection** - Due to limitations of the operating system, Private Health Information (PHI) data cannot be protected in transit. Leica Biosystems recommends protecting data in transit by using SSL with strong security protocols, such as Transport Layer Security (TLS), or network-level encryption, such as IPsec or SSH tunnelling.
- ▶ **Off-the-Shelf Software** - Potential impacts to cybersecurity in response to off-the-shelf (OTS) software are managed by Leica Biosystems, Inc. A list of all OTS software is maintained by Leica Biosystems, Inc. For more information on OTS, contact your Leica Biosystems Sales Representative and ask for a copy of the Aperio WebViewer DX Software Bill of Materials (SBOM). OTS failures can cause errors when viewing or loading images in the viewer, including inaccurate color representation or other visual anomalies. If you experience issues with loading or viewing images, contact Leica Biosystems Technical Services.
- ▶ **Aperio SSL Certificates** - For information on internally-generated Aperio SSL certificates and recommendations for procuring additional SSL certificates, 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.












**CAUTIONS:** When viewing digital slides:

- ▶ Do not use the Image Enhancement tools to correct a suboptimal scanned image for diagnostic review. In this case, you should request a re-scan of the slide.
  - ▶ Your monitor must meet the specifications detailed in "*Monitor Specifications*" on page 12.
  - ▶ Your monitor's Display Mode must be set to sRGB.
  - ▶ Your viewing station must use the supported browser and operating system, as described in, "*Supported Operating System and Browsers*" on page 10.
-

## Symbols

The following symbols appear in device labeling:

Symbol	Standard / Regulation	Description
	ISO 15223-1 – 5.1.1	Manufacturer
	ISO 15223-1 – 5.1.2	European Union Authorized Representative
	ISO 15223-1 – 5.7.10	Unique Device Identifier
	ISO 15223-1 – 5.1.6	Catalog number
	ISO 15223-1 – 5.5.1	In Vitro Diagnostic medical device
	EU 2017/746 Article 18	Device carries the CE (Conformité Européenne) Mark and fulfills the requirements of EU Regulation 2017/746.
	Medical Devices Regulations 2002	Device is in compliance with UK Conformity Assessment requirements.
	ISO 15223-1 – 5.1.8	Importer
	ISO 7010 – W001	The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions.

# Customer Service Contacts

Please contact the office for your country for technical assistance.

## **Australia:**

96 Ricketts Road  
Mount Waverly, VIC 3149  
AUSTRALIA  
Tel: 1800 625 286 (toll free)  
Between 8:30 AM-5 PM, Monday-Friday, AEST  
Email: lbs-anz-service@leicabiosystems.com

## **Austria:**

Leica Biosystems Nussloch GmbH  
Technical Assistance Center  
Heidelberger Strasse 17  
Nussloch 69226  
GERMANY  
Tel: 0080052700527 (toll free)  
In-country Tel: +43 1 486 80 50 50  
Email: support.at@leicabiosystems.com

## **België/Belgique:**

Tel: 0080052700527 (toll free)  
In-country Tel: +32 2 790 98 50  
Email: support.be@leicabiosystems.com

## **Canada:**

Tel: +1 844 534 2262 (toll free)  
Direct International Tel: +1 760 539 1150  
Email: TechServices@leicabiosystems.com

## **China:**

17F, SML Center No. 610 Xu Jia Hui Road, Huangpu District  
Shanghai, PRC PC:200025  
CHINA  
Tel: +86 4008208932  
Fax: +86 21 6384 1389  
Email: service.cn@leica-microsystems.com  
Remote Care email: tac.cn@leica-microsystems.com

## **Danmark:**

Tel: 0080052700527 (toll free)  
In-country Tel: +45 44 54 01 01  
Email: support.dk@leicabiosystems.com

## **Deutschland:**

Leica Biosystems Nussloch GmbH  
Technical Assistance Center  
Heidelberger Strasse 17  
Nussloch 69226  
GERMANY  
Tel: 0080052700527 (toll free)  
In-country Tel: +49 6441 29 4555  
Email: support.de@leicabiosystems.com

## **Eire:**

Tel: 0080052700527 (toll free)  
In-country Tel: +44 1908 577 650  
Email: support.ie@leicabiosystems.com

## **España:**

Tel: 0080052700527 (toll free)  
In-country Tel: +34 902 119 094  
Email: support.spain@leicabiosystems.com

## **France:**

Tel: 0080052700527 (toll free)  
In-country Tel: +33 811 000 664  
Email: support.fr@leicabiosystems.com

## **Italia:**

Tel: 0080052700527 (toll free)  
In-country Tel: +39 0257 486 509  
Email: support.italy@leicabiosystems.com

## **Japan:**

1-29-9 Takadanobaba, Shinjuku-ku  
Tokyo 169-0075  
JAPAN

## **Nederland:**

Tel: 0080052700527 (toll free)  
In-country Tel: +31 70 413 21 00  
Email: support.nl@leicabiosystems.com

**New Zealand:**

96 Ricketts Road  
Mount Waverly, VIC 3149  
AUSTRALIA  
Tel: 0800 400 589 (toll free)  
Between 8:30 AM-5 PM, Monday-Friday, AEST  
Email: lbs-anz-service@leicabiosystems.com

**Portugal:**

Tel: 0080052700527 (toll free)  
In-country Tel: +35 1 21 388 9112  
Email: support.pt@leicabiosystems.com

**The Russian Federation**

BioLine LLC  
Pinsky lane 3 letter A  
Saint Petersburg 197101  
THE RUSSIAN FEDERATION  
Tel: 8-800-555-49-40 (toll free)  
In-country Tel: +7 812 320 49 49  
Email: main@bioline.ru

**Sweden:**

Tel: 0080052700527 (toll free)  
In-country Tel: +46 8 625 45 45  
Email: support.se@leicabiosystems.com

**Switzerland:**

Tel: 0080052700527 (toll free)  
In-country Tel: +41 71 726 3434  
Email: support.ch@leicabiosystems.com

**United Kingdom:**

Tel: 0080052700527 (toll free)  
In-country Tel: +44 1908 577 650  
Email: support.uk@leicabiosystems.com

**USA:**

Tel: +1 844 534 2262 (toll free)  
Direct International Tel: +1 760 539 1150  
Email: TechServices@leicabiosystems.com

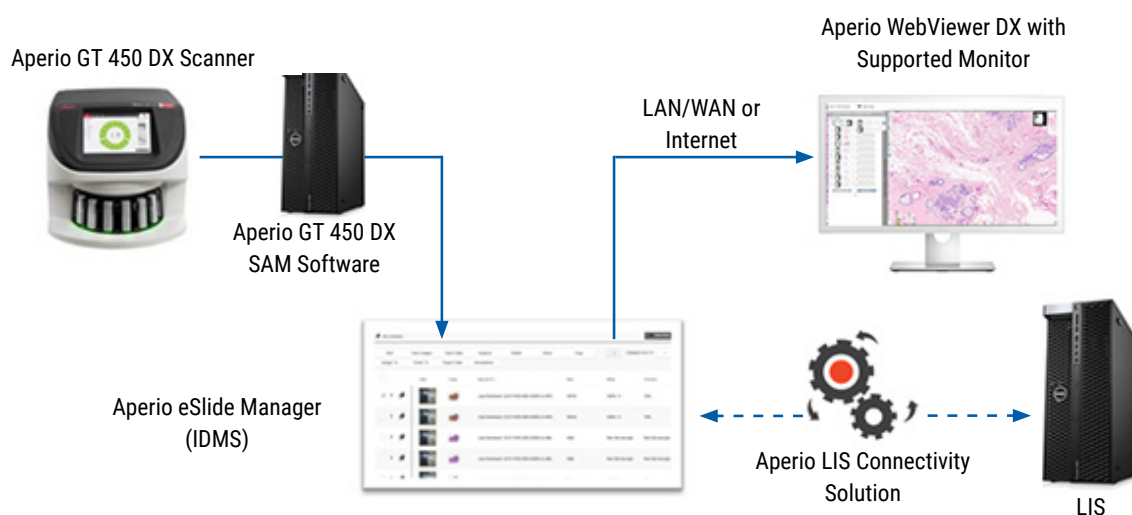


# 1 Introduction

## Aperio WebViewer DX Overview

Aperio WebViewer DX is a web-based digital slide viewing software product that enables you to navigate through whole slide images for a patient case in an organized manner for the purpose of on-screen primary diagnosis. You can open whole slide images in Aperio WebViewer DX from an image and data management system (IDMS), such as Aperio eSlide Manager, or from your Laboratory Information System (LIS).

The Aperio WebViewer DX is part of an overall clinical workflow solution, which also includes the Aperio GT 450 DX scanner, Aperio eSlide Manager, and a LIS connectivity solution.



## Supporting System Compatibility

Aperio WebViewer DX is compatible with the following Leica Biosystems systems and offerings.

Component	Supported Versions
Aperio eSlide Manager	12.5 and later
Aperio LIS Connectivity	2.1 and later
Aperio GT 450 DX	1.1 and later

## Supported Image Types

Aperio WebViewer DX supports SVS images created from the Aperio GT 450 DX for use in your clinical workflow.

## Nonclinical Use Images

You can open and view SVS images from an Aperio scanner other than the Aperio GT 450 DX; however, they are for nonclinical use only. When you open such an image, a banner appears at the bottom of the viewer indicating the image is for nonclinical use only.

## Installation

Installation and setup of Aperio WebViewer DX and Aperio eSlide Manager should only be performed by a trained Leica Biosystems Service representative.

## Environment

Aperio WebViewer DX is intended for use in Histology and Pathology labs as well as within a pathologist's office for quality control tasks, routine diagnosis, and digital slide reviews. The pathologist's office may be at their home or place of work.

## Supported Operating System and Browsers

Component	Supported Versions
Viewing Workstation Operating System	<ul style="list-style-type: none"><li>• Microsoft Windows 10 Professional / Enterprise</li></ul>
Viewing Workstation Server	<ul style="list-style-type: none"><li>• Microsoft Windows Server 2019</li><li>• Microsoft Windows Server 2016</li></ul>
Web Browser	<ul style="list-style-type: none"><li>• Mozilla Firefox: 88.0 or later</li><li>• Google Chrome: 90.0 or later</li><li>• Microsoft Edge: 90.0 or later</li></ul>

## Required Viewing Settings


### Monitor Settings

Ensure your monitor's Display Mode is set to **sRGB**.

## Browser and Operating System Settings

To display your digital slides with optimal image quality, you must use the following browser and operating system settings:

Component	Setting
Web Browser	Zoom level is set to a multiple of 100% (100%, 200%, etc.).
Operating System	Display settings "scale" value is a multiple of 100% (100%, 200%, etc.).

If your settings are outside of the specified range, the  icon appears on the image to alert you that the image quality is reduced.

# 2

## Specifications and Requirements

This chapter contains specifications and requirements for monitors, viewing workstations, servers, and the network environment on which you are using Aperio WebViewer.

### Monitors and Viewing Workstations



**WARNING:** Your monitor and viewing workstation must meet the required specifications provided in this section to ensure proper image rendering and display. Using a monitor that does not meet the required specifications can enable the use of incorrect color profiles.

Work with the IT professionals in your organization to ensure your viewing workstation and monitors meet or exceed the recommended specifications. The workstation and monitor requirements are specified below.

### Monitor Specifications

Viewing workstation monitors must meet the specifications described below in order to ensure the viewer accurately renders the pixel color and sharpness (that is, resolution and contrast).

**i** When searching for a monitor to purchase, we recommend using the Color Gamut specification listed in the table below as a search criteria. This often results in monitors that meet the other required specifications.

Feature (Other names for feature)	Specification
Size (Active screen size (diagonal))	≥ 24-inch diagonal
Resolution	Min: 1920 (horizontal) x 1200 (vertical) Max: 3840 (horizontal) x 2160 (vertical)
Display technology (Screen technology)	IPS (in-plane switching) LCD with LED backlight
Connectivity (Video input signals, Input Connectors, Display Connectors)	Digital Interface (such as HDMI, Display Port, USB-C)
Temporal Response (Response time)	≤ 15ms

Feature (Other names for feature)	Specification
Maximum Luminance (Brightness)	≥ 170 cd/m <sup>2</sup> (Calibrated)
Color Space (Color mode)	sRGB
Non-Reflective coating (Screen surface treatment)	Anti-glare or non-reflective coating
Color Gamut	≥ 99% sRGB

## Recommended Monitor Display Image Validation

Aperio WebViewer DX includes a Monitor Display Image Validation feature, which uses a test image (TG18-QC) to ensure your monitor displays digital slide images correctly. Leica Biosystems recommends performing the manual Monitor Display Image Validation for an initial inspection and subsequent periodic inspections of the display and viewer functions, including brightness, sharpness, artifacts, and perceptual uniformity.

For more information and instructions on performing the manual Monitor Display Image Validation, see the *Aperio WebViewer DX User's Guide*.

## Viewing Workstation Specifications

The table below provides recommended specifications and settings for your viewing workstation. If the workstation exceeds the recommended specifications, the viewer's performance can increase. If the workstation does not meet the recommended specifications, the viewer's performance can decrease.

Feature	Specification
CPU speed	Comparable to: Intel® Core™ i7-10850H
Hard disk space	10 Gigabytes free hard disk space minimum
Memory (RAM)	16 Gigabytes minimum
Network card (NIC)	Meets or exceeds 1Gigabit per second (Gb/s)
Video card (GPU)	Comparable to: NVIDIA Quadro T2000
Browser	<ul style="list-style-type: none"> <li>• Mozilla Firefox: 88.0 or later</li> <li>• Google Chrome: 90.0 or later</li> <li>• Microsoft Edge: 90.0 or later</li> </ul>
Operating System (OS)	Windows 10 Professional/Enterprise required
Connectivity (Video input signals, Input Connectors, Display Connectors)	Digital Interface (such as HDMI, Display Port, USB-C)

## Server Specifications

You can operate Aperio WebViewer DX from servers that meet the minimum requirements described below. However, to achieve the maximum performance, your servers should meet or exceed the recommended requirements. The viewer achieves optimal viewing performance when there are less than 30 users viewing cases simultaneously. In this environment, it takes about three seconds to open a digital slide. The viewer can support up to 60 users viewing cases simultaneously; however, its responsiveness may be reduced by 50%.

Feature	Server Minimum Specifications	Server Recommended Specifications
CPU Speed	Meets or exceeds Intel Xeon Gold 5118	Meets or exceeds Intel Xeon Gold 5118
Hard drive	SSD hard drive for OS and applications	SSD hard drive for OS and applications
Memory (RAM)	4GB Gigabytes	Meets or exceeds 16 Gigabytes
Network card (NIC)	1 Gigabit per second (Gb/s)	Meets or exceeds 10 Gigabits per second (Gb/s)
Operating System (OS)	Windows Server 2016	Windows Server 2019

### 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 recommended requirements shown in the tables above and has dedicated resource allocation on the virtual host.

## Localization

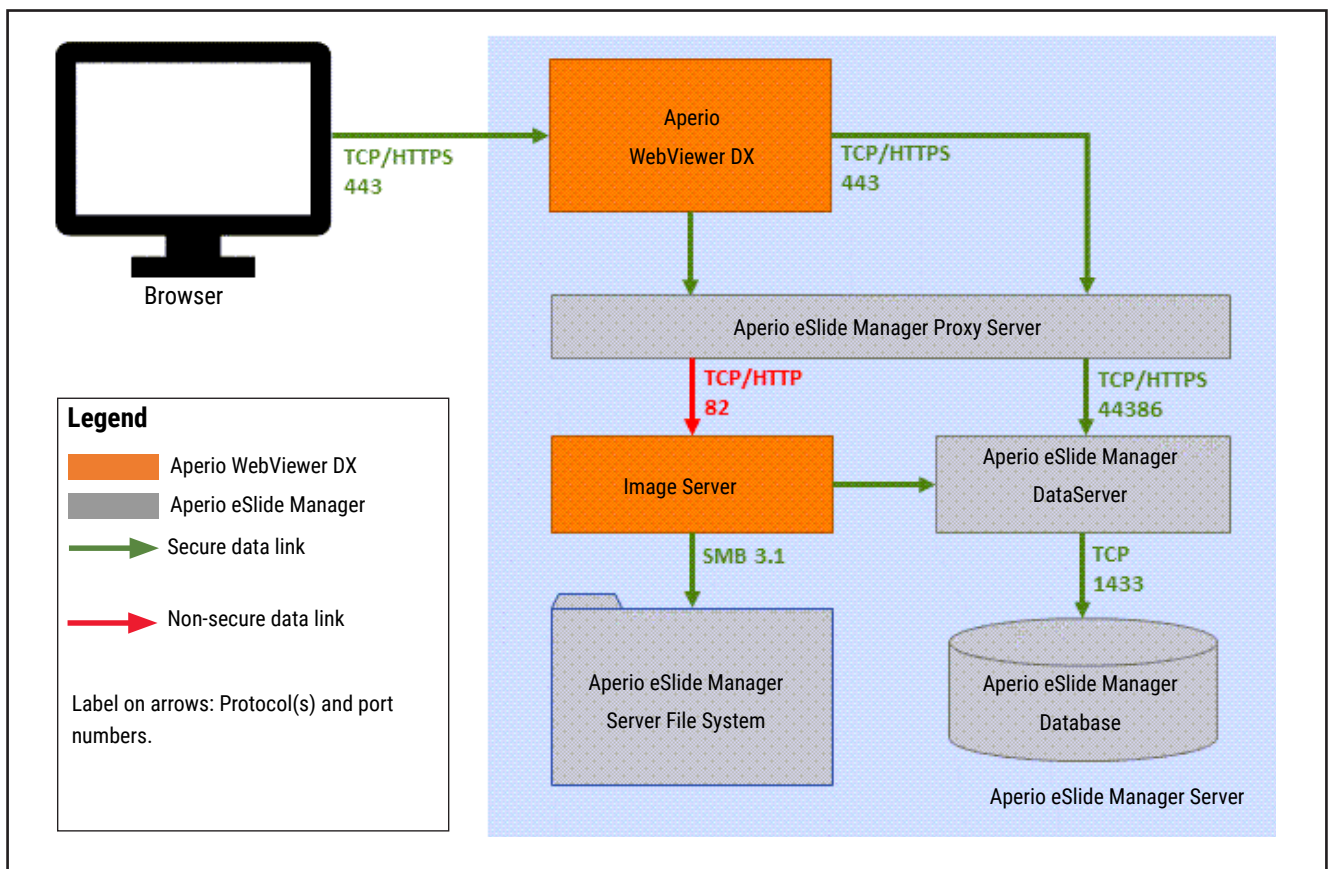
We do not support localization of our software. To ensure proper operation, the region settings of servers, client workstations, and browsers should be English (United States), set in the Windows Regional and Language Options windows available from the Windows Control panel. In addition, the English language Windows pack should be installed on the DSR (Digital Slide Repository), which is the server on which your images are stored.

# 3

## Network Configuration and Performance

### Network Configuration

The following diagram shows the required network configuration for Aperio WebViewer DX, and how Aperio WebViewer DX interconnects with Aperio eSlide Manager.

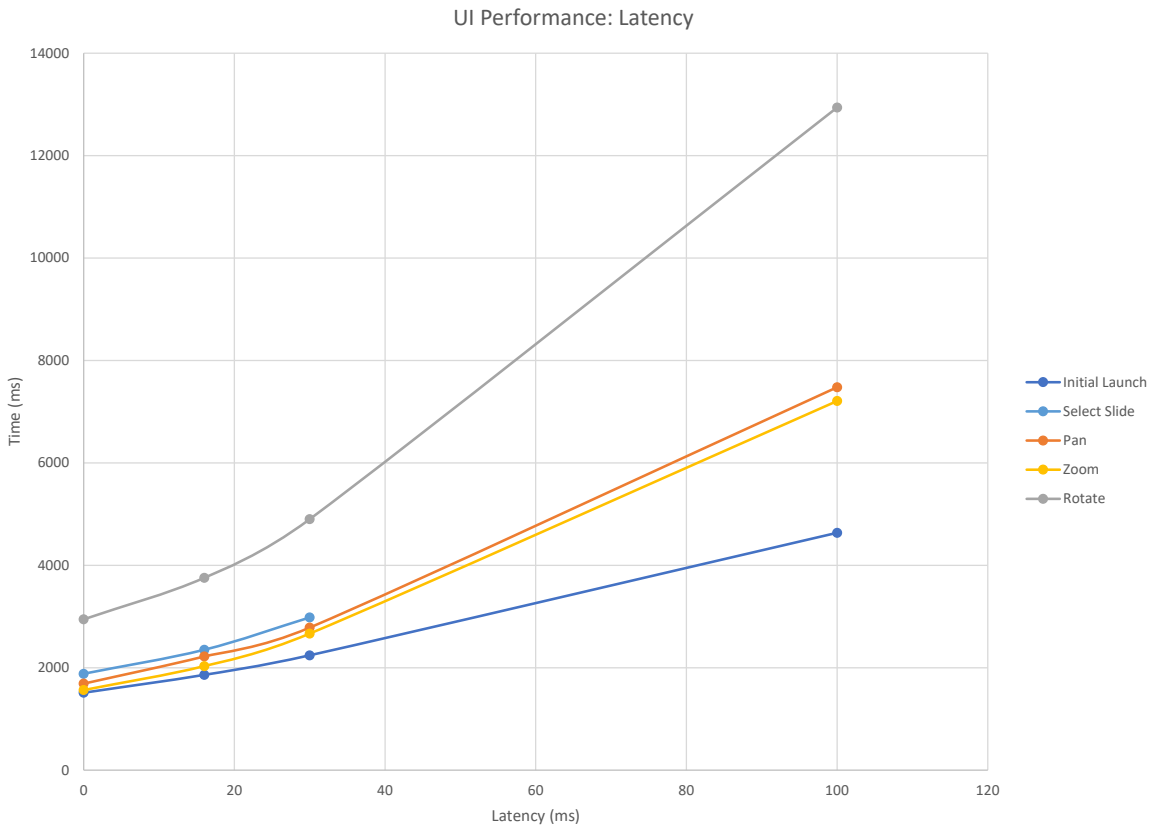


## Network Performance Considerations

This section contains information on how network latency and bandwidth impact user interface performance of Aperio WebViewer DX. This information is provided to assist in planning your network environment.

### User Interface Performance and Network Latency

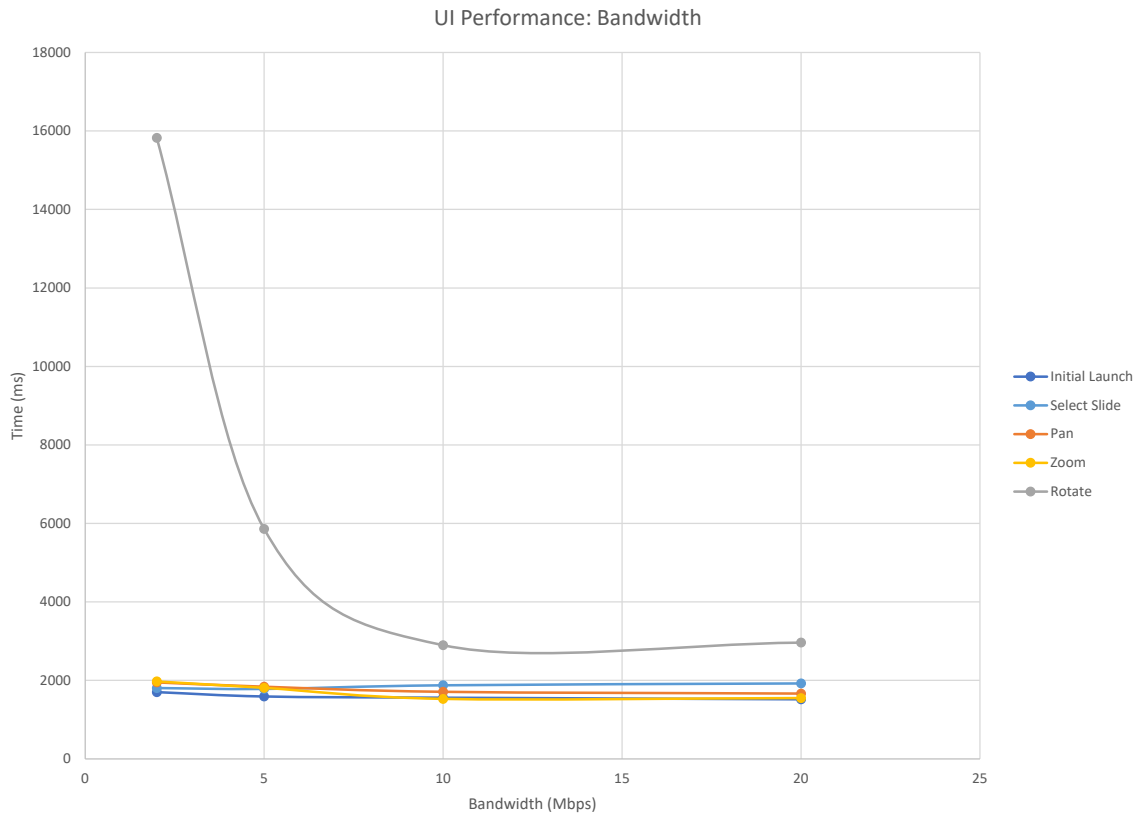
The table and graph in this section provide details on how network latency impacts user interface performance of the viewer. As the data demonstrates, an increase in network latency causes a decrease in the viewer’s performance. To provide the best user experience, the connection between the users and the software should be low latency.





## User Interface Performance and Network Bandwidth

The graph in this section provides details on how network bandwidth impacts user interface performance of the viewer. As the data demonstrates, an increase to 10Mbps in network bandwidth provides an increase in the viewer's performance.



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