

IT SPECIFICATIONS

OLYMPUS SUPPLIED

All computer equipment, including the server and clients, should be used as dedicated terminals for EndoWorks. If other than Olympus QA tested and approved EndoWorks software is installed and run on an Olympus-supplied or customer-supplied server or workstation, malfunction of EndoWorks or destruction of EndoWorks data may result.

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- Network Server
 - IBM xSeries 3400 M3 server, model number 737954U
 - Windows 2003 Server R2 SP2
 - Intel Quad Core E5620 2.40 GHz processor
 - 4 GB RAM
 - 10-user package with (4) 300 GB hard drives (3 utilizing RAID Level 5 plus a hot swap) 600 GB total
 - 25-user package with (6) 300 GB hard drives (5 utilizing RAID Level 5 plus a hot swap) 1200 GB total
 - DVD ROM drive
 - LTO3 400/800 GB internal tape backup drive
 - Tapes, cleaning cartridge
 - 19" LCD flat panel monitor
 - Dual 10/100/1000Base-T NIC
 - Redundant power supplies and external power backup (UPS 1000 Watts)
 - Warranty – 3 yrs, IBM parts warranty
 - Additional Specs: H17.3" x D27.5" x W8.7", 80 lbs
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IMAGE CAPTURE WORKSTATION

- Lenovo M58, model number 6138
 - Windows XP Professional SP3
 - Intel Core 2 Duo E8400, 3.0 GHz processor
 - 2 GB RAM
 - 160 GB or 500 GB hard drive (Serial ATA)
 - DVD-RW/CD-RW drive
 - 19" LCD flat panel monitor
 - 10/100/1000Base-T NIC
 - Matrox VIO image capture/video card
 - Warranty – 3 yrs, Lenovo parts warranty
 - Additional Specs: H15.7" x D17" x W6.9", 23 lbs
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NON-IMAGE CAPTURE WORKSTATION (REGISTRATION & SCHEDULING)

- Lenovo M58, model number 6138
 - Windows XP Professional SP3
 - Intel Core 2 Duo E8400, 3.0 GHz processor
 - 2 GB RAM
 - 160 GB or 500 GB hard drive (Serial ATA)
 - DVD-RW/CD-RW drive
 - 19" LCD flat panel monitor
 - 10/100/1000Base-T NIC
 - Warranty – 3 yrs, Lenovo parts warranty
 - Additional Specs: H15.7" x D17" x W6.9", 22.5 lbs
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STANDALONE / PEER-TO-PEER SERVER

- Lenovo M58, model number 6138
 - Windows XP Professional SP3
 - Intel Core 2 Duo E8400, 3.0 GHz processor
 - 2 GB RAM
 - 500 GB hard drive (Serial ATA)
 - DVD-RW/CD-RW drive
 - AIT390 150/390 GB internal tape backup drive
 - Tapes, cleaning cartridge
 - 19" LCD flat panel monitor
 - 10/100/1000Base-T NIC
 - Matrox VIO image capture/video card
 - Warranty – 3 yrs, Lenovo parts warranty
 - Additional Specs: H15.7" x D17" x W6.9", 25 lbs
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INTERFACE WORKSTATION

- Lenovo M58, model number 6138
 - Windows XP Professional SP3
 - Intel Core 2 Duo E8400, 3.0 GHz processor
 - 2 GB RAM
 - 160 GB or 500 GB hard drive (Serial ATA)
 - DVD-RW/CD-RW drive
 - 19" LCD flat panel monitor
 - 10/100/1000Base-T NIC
 - Secondary NIC 10/100/1000 Base-T
 - Warranty – 3 yrs, Lenovo parts warranty
 - Additional Specs: H17.1" x D17.5" x W7", 25 lbs
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ADDITIONAL HARDWARE

- HP ProCurve 24-port 10/100/1000 Switch
 - HP ProCurve 8-Port 10/100/1000 Switch
 - 56 kbps Modem – external USB
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Contact your local Field Service Engineer to discuss your individual requirements as specifications are subject to change.

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CUSTOMER SUPPLIED MINIMUM (MIN)*

All computer equipment, including the server and clients, should be used as dedicated terminals for EndoWorks. If other than Olympus QA tested and approved EndoWorks software is installed and run on an Olympus-supplied or customer-supplied server or workstation, malfunction of EndoWorks or destruction of EndoWorks data may result.

NETWORK SERVER (Dedicated Server)

- Windows 2003 Server R2 32 bit SP2
- Intel Pentium IV with dual processors 2.4 GHz (*Min*)
- 3 GB RAM (*Min*)
- 600 GB hard drive (NTFS) (*Min*)
- DVD-RW drive
- Backup system
- VGA monitor-15" (1024x768 resolution)
- NIC 1000Base-T
- Power backup (UPS)

Note: See the Data Storage section for average image/video file size.

Note: Operating system and environment built by customer; Olympus to install application and prerequisites.

IMAGE CAPTURE WORKSTATION

(Olympus Supplied Hardware Only)

NON-IMAGE CAPTURE WORKSTATION (REGISTRATION & SCHEDULING)

Customer-supplied non-image capture workstations must have hyper threading and dual core processing features disabled. Refer to the manufacturer instructions for BIOS configuration.

- Windows XP Professional SP3 or Windows Vista (32-bit) Business
- Pentium IV (3.00 GHz)
- 1 GB RAM (*Min*)
- 80 GB hard drive (*Min*)
- CD-ROM drive/CD R/W (to transfer images)
- VGA monitor-15" (1024x768 resolution) / 19" (*Recommended*)
- 100Base-T NIC (*Min*)
- Wireless not supported

STANDALONE / PEER-TO-PEER SERVER

(Olympus Supplied Hardware Only)

INTERFACE WORKSTATION

- Windows XP Professional SP3
- Pentium IV (3.00 GHz)
- 2 GB RAM (*Min*)
- 40 GB available hard drive space (*Min*)
- DVD-ROM drive
- VGA monitor-15" (1024x768 resolution)
- 100Base-T NIC (*Min*) / 1000Base-T (*Recommended*) (2 NICs, if not on backbone)

- or -

- Window 2003 Server R2 32 bit SP2
- Intel Pentium IV with dual processors 3.0 GHz (*Min*)
- 2 GB RAM (*Min*)
- 500 GB hard drive (NTFS) (*Min*)
- DVD-ROM drive
- VGA monitor-15" (1024x768 resolution)
- 100Base-T NIC (*Min*) / 1000Base-T (*Recommended*) (2 NICs, if not on backbone)

ADDITIONAL HARDWARE

- Switch 100Base-T (*Min*) / 1000Base-T (*Recommended*)
- 56 kbps modem (for fax capability)

* Minimum specifications should be carefully considered based on facility size and procedure volume.

Contact your local Field Service Engineer to discuss your individual requirements as specifications are subject to change.

ADDITIONAL REQUIRED SOFTWARE

EndoWorks utilizes the following:

- Java JRE 1.6.0_03[†]
- Java JAI 1.1.1_01
- Ingres Version 3 database (a facility DBA is not necessary)
- Apache Tomcat 5.5 web server
- Clever Path Reports for analysis reports
- BrightStor for tape backups
- Media Player Version 9
- Adobe Reader Version 7
- Windows Internet Explorer 6 (SP1 or higher with SP version depending on OS version)
- Windows Internet Explorer 7 (for registration nodes only)

Note: It is not recommended to install EndoWorks on a machine running Windows 2003 Web edition or Windows 2003 Datacenter Edition.

[†] Other versions of Java will interfere with the operation of EndoWorks, if not managed properly.

KNOWN SOFTWARE COMPATIBILITY ISSUES

The applications listed have known issues with EndoWorks. If you have questions regarding compatibility of any additional applications, please contact your Olympus field representative.

- Windows Active Directory – If you intend to connect your EndoWorks machine(s) to a domain, please consult your field service representative for implementation guidelines and for information about EndoWorks Advanced Security module
- “GoToMyPC” (not compatible)
- PCAnywhere (not compatible)
- Any version of Java, other than Olympus supplied version (not compatible)
- Microsoft Systems Management Server
- Microsoft Operations Manager (not compatible)
- Microsoft System Center Operations Manager (not compatible)
- ASP.NET (not compatible)
- SAI. Server (not compatible)
- Windows SharePoint (not compatible)
- Internet Information Services (IIS) (not compatible)
- Microsoft Remote Desktop Client (Versions prior to RSS-R6 only)

Note: EndoWorks is a medical device. Olympus recommends that non-Olympus supplied software not be installed on the system.

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CONNECTIVITY/DATA TRANSFER

- Olympus recommends:
 - When connecting EndoWorks server to a domain that domain security policy and automatic software pushes are not applied.
 - The use of VLANs for the EndoWorks machines, to better help manage this environment.
 - Static/Reserved IP needed for: server, remote support, HL7, printer. IP address and name may be changed, but should conform to Olympus Security recommendations.
 - EndoWorks is a browser-based application using Java applets.
 - EndoWorks utilizes TCP/IP and HTTP for communication.
 - DHCP may be utilized for non-server hardware (not applicable for server, gateway, and printers).
 - EndoWorks images transmit across the network upon capture and can be as large as 4 MB each, if compression is off.
 - EndoWorks video clips transmit across the network upon saving exam and can be as large as 2 GB each, if limits are not set.
 - EndoWorks supports faxing of reports.
 - EndoWorks requires a minimum 100 Mbps network interface; however, it is recommended that a 1000 Mbps network interface be employed throughout the EndoWorks environment. This includes hubs and switches where EndoWorks data travels. These devices should be configured to AUTO or FULL Duplex. Note some switches will only provide 1000 Mbps speed when set to Auto.
 - Data cables should be terminated correctly and show no obvious signs of abuse or wear. Olympus recommends shielded CAT5E or CAT6 cabling be used.
 - If the MAC address of the network component of an EndoWorks server changes, this can impact Licensing and HL7 implementations, consult your Olympus Field Representative if this situation arises.
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DATA STORAGE

The values listed below are an approximation and are dependent on your scope model and mask settings.

Still-Image File Size

Vio (Digital)	Compression*				
	none	lossless	low	medium	high
HD-Scope	4 MB	2 MB	985KB	560 KB	336 KB
SD-Scope	611 KB	378 KB	175 KB	90 KB	62 KB
File Type	TIF	PNG	JPG	JPG	JPG

*Compression default setting is "none".

Video Clip File Size

Vio (Digital)	Video Clip (60 seconds)*		
	30 frames/sec.	20 frames/sec.	15 frames/sec.
HD-Scope	150 MB	110 MB	76 MB
SD-Scope	35 MB	23 MB	18 MB
File Type	AVI	AVI	AVI

*Default Video Clip setting is 20-frames/sec.

*Maximum video clip time can be set by administrator (up to 30 minutes); clips automatically end at 2 GB.

BACKUP

- List of Olympus recommended files to back up are provided in the EndoWorks 7.4 Service Manual.
- Customer-supplied server can use its own network storage backup solution.

PRINTING

- EndoWorks workstations utilize direct IP printing for a network environment or a USB connection for single computer systems.

Note: Only printers sold by Olympus are tested for compatibility with EndoWorks.*

* Olympus tested the Dymo® LabelWriter 400 Turbo for compatibility with EndoWorks.

UPGRADES AND PATCHES

- EndoWorks typically has one point release, periodic patches, and two clinical content upgrades per year.
- EndoWorks major releases are typically every 3-5 years.
- Install only the approved Microsoft patches published on www.endoworks.com. It is recommended that you turn off Microsoft Upgrade Service or Windows Server Upgrade Service, if present.

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ENDOWORKS PORT REQUIREMENTS

The following is a breakdown of known ports the EndoWorks application requires (taken from endoworks.ini):

- HL7SocketListenerPort=1599 (TCP Port). Configurable
 - DicomSocketListenerPort=1598 (TCP Port). Configurable
 - SocketServerPort=0. Any port between 1025 – 65535. Configuration to a specific port in that range.
 - If Active Directory is used, LDAP – TCP Port 389
 - Tomcat 5.5 – TCP Port 80
 - UDP Ports 137, 138
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INTERFACES

- EndoWorks supports HL7 (ADT, Scheduling, Orders, Results, Billing Codes, PDF).
 - EndoWorks supports DICOM (Modality work list, Images outbound).
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SECURITY

- EndoWorks has the ability to store data covered under HIPAA. The facility controls what data they put in EndoWorks.
 - EndoWorks Advanced Security is implemented by CA[®] Inc.'s eTrust[®] Embedded Identity and Access Management application.
 - EndoWorks supports Lightweight Directory Access Protocol (LDAP) and Active Directory interfaces.
 - EndoWorks supports strong password rules (e.g., min length, numeric characters, max repeating characters, password re-use prevention, password expiration with warnings, and lockout after 'X' failed logins — according to eTrust Toolkit).
 - EndoWorks supports automatic logoffs.
 - EndoWorks logs user access to all sections of application and stores in database (with admin access to information).
 - The local EndoWorks administrator can change EndoWorks application security based on user's role.
 - EndoWorks is not Clinical Context Object Workgroup (CCOW) compliant.
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NETWORK SERVER

- EndoWorks application starts as a service.
 - Olympus supplied UPS – If power is lost to the server, the UPS keeps the server running for 5 minutes. If power is not restored in that interval, clean shutdown is initialized.
 - Customer-supplied server uses its own network storage backup solution.
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REQUIRED RIGHTS AND PERMISSIONS FOR INSTALLATION AND SERVICE OF ENDOWORKS

The Olympus Field Employee requires the following rights and/or permissions to install and service EndoWorks:

- Administrator rights on the local and client machines with the ability to create and configure new Windows users.
 - Full Control permissions to the following folders:
 - EWClient
 - EWServer
 - Tomcat 5.5
 - Rights to install and configure the following files and programs:
 - Java JDK 1.6
 - Internet Explorer 6
 - Internet Explorer 7
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REMOTE SUPPORT SERVICES (RSS)

The following services are provided with EndoWorks.

- Remote Desktop control/sharing, when necessary for faster support/training/customization
- Preemptive support of EndoWorks server by monitoring basic system health
- File transfer, when necessary for troubleshooting
- Two options for an RSS connection:
 - Site-to-site (LAN-to-LAN) Secure VPN tunnel
 - Extended Network Connection (ENC) using the internet, using port 443 (non-persistent SSL VPN – see the Extended Network Connection section below for more details).

RSS Port Requirements

Option 1 Site-to-Site VPN (Tables A and B, required for full functionality.)

Table A (Table A is required)

Port	Description
ICMP	Preferred to be enabled
UDP 6665/1691	Monitoring
UDP 4104 / TCP 4105	Internal CA Technology Communication/File Transfer
TCP 4728	Remote Control
TCP 161/162	SNMP (Monitoring – Also require service to be installed)

Table B (Table B is required for complete monitoring)

Port	Description
TCP 7774	Monitoring
TCP 4721/4722	Monitoring
TCP 445	MS-DirectoryServices
TCP 137/139	NetBios

Option 2 ENC

Port	Description
TCP 443	Remote Control / Monitoring

Olympus recommends you do not use the Windows firewall; however, if you require a software firewall (Windows or otherwise), please ensure that all ports listed in Remote Support Port Requirements and EndoWorks Port Requirements are open to ensure the correct operation of EndoWorks.

Extended Network Connection (ENC)

Olympus Remote Support Services now offers an alternative way to connect to EndoWorks systems via non-persistent SSL type connection over the internet. All RSS services are provided via a single TCP port, which is commonly an open port. This connection type requires that each system has an internet connection.

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ANTIVIRUS EXCLUSIONS

The following is a list of directories/files to be excluded from Virus Scan.

Note: These are recommendations only. Olympus has not performed any testing with different antivirus applications to determine their impact on EndoWorks.

Server / Standalone	HL7	Client / Node	Directory / File
Exclude	Exclude	Exclude	<drive>:\Tomcat 5.5
Exclude	Exclude	-	<drive>:\EWServer
Exclude	Exclude	Exclude	<drive>:\IngresII or <drive>:\Ingres [II]
Exclude	Exclude	Exclude	<drive>:\Program Files\CA
Exclude	Exclude	Exclude	<drive>:\Program Files\JAVA
Exclude	Exclude	Exclude	<drive>:\Endoworks (where exists)
-	-	Exclude	%SystemRoot%\system\endonode.ini
Exclude	Exclude	Exclude	<drive>:\EWClient
Exclude	Exclude	Exclude	<drive>:\AIS
Exclude	Exclude	Exclude	<drive>:\Cleverpath Reporter

Note: It is assumed that all subdirectories are also excluded.

AUTOMATIC UPDATES

Automatic updates should be disabled so that non-Olympus approved software/updates are not installed on the EndoWorks machine, which could interfere with normal EndoWorks operation. Disabling automatic updates specifically applies to Microsoft Windows Update or Microsoft Windows Update Server 2.0/3.0. We approve patches from Microsoft periodically and post the approved patches on www.endoworks.com. In addition, Java updates should not be enabled.

REQUIRED USER ACCOUNTS

During the install process a local administrator account is required named 'Administrator'. This account needs sufficient permissions to update all EndoWorks user accounts. Post install - this account can be renamed or disabled but should remain on the system.

UPDATES AND POLICIES

Please visit www.endoworks.com and click on the Updates & Policies link to view the latest updates and policies (i.e., Microsoft Critical Updates, Microsoft Patches and Antivirus Policy, etc.).

Contact your local Field Service Engineer to discuss your individual requirements as specifications are subject to change.

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