

EndoWorks 7.4.43 IT SPECIFICATIONS

SYSTEM SPECIFICATIONS

All computer equipment, including the servers and clients, should be used as dedicated terminals for the EndoWorks® application. If other than Olympus® approved software/hardware is installed on the EndoWorks system, malfunction of the application or corruption of EndoWorks data may occur.

FILE SERVER		
	Olympus-Supplied Specifications IBM® XSeries 3400 M3 Server, Model Number 7379AC1 or Equivalent	Customer-Supplied Minimum Specifications
Operating System	Windows® 2008 Server R2 SP1 64-bit	Windows 2008 Server R2 SP1 64-bit
Processor	Intel® Xeon Quad Core E5620 2.4 GHz	Intel Xeon Quad Core E5620 2.4 GHz or equivalent
RAM	8 GB	8 GB
DVD Drive	DVD ROM drive	Recommended
Backup Device	iSCSI capable backup device, minimum 4 TB (must be purchased separately)	iSCSI capable backup device, minimum 4 TB
Network	Dual 10/100/1000Base-T NIC	NIC 1000Base-T
Redundant Power Supplies	Redundant power supplies	Recommended
Monitor	19" LCD flat panel monitor (optional)	15" VGA monitor (1024x768 resolution)
External Power Backup	External power backup (UPS 1000 Watts) (optional)	Recommended
HDD	One of the following HDD configurations* <ul style="list-style-type: none"> • (4) 300 GB hard drives (3 utilizing RAID Level 5 plus a hot swap) 600 GB total • (6) 300 GB hard drives (5 utilizing RAID Level 5 plus a hot swap) 1.2 TB total • (8) 300 GB hard drives (7 utilizing RAID Level 5 plus a hot swap) 1.8 TB total 	<ul style="list-style-type: none"> • 600 GB hard drive (NTFS) min with the following minimums per volume:† <ul style="list-style-type: none"> • Volume 1 (C:\) – 100 GB‡ • Volume 2 (E:\) – 50 GB • Volume 3 (F:\) – 300+ GB
Warranty	Warranty – 3 yrs, Lenovo parts warranty	Not Applicable
Dimensions	H17.3" x D27.5" x W8.7", 88 lbs	Not Applicable
License Packages	5 and 25 user license packages available. For sites requiring additional user licenses, please work with your Olympus Sales Representative.	5 and 25 user license packages available. For sites requiring additional user licenses, please work with your Olympus Sales Representative.

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

* Olympus offers a minimum configuration with 4 hard drives, although 6 or 8 hard drives are recommended. Work with your Olympus representative to discuss the best fit for your facility.

† May support a customer for the life of the hardware. If your facility is a large institution, is capturing video, and/or is migrating data from a legacy system, see the Data Storage section for calculating additional storage needs.

‡ Volume 1 must be the drive where the Operating system is installed.

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

EndoWorks Version 7.4.43 IT SPECIFICATIONS

SYSTEM SPECIFICATIONS (CONT'D)

MINI SERVER (MAXIMUM 3 IMAGE CAPTURE NODES AND 3 OTHER NODES*)		
	Olympus-Supplied Specifications Lenovo® E31 Model Number 2552CS4 or Equivalent	Customer-Supplied Minimum Specifications
Operating System	Windows® 2008 Server R2 SP1 64-bit	Windows 2008 Server R2 SP1 64-bit
Processor	Intel Core i5-3550 3.30 GHz	Intel Core i5-3550 3.30 GHz or equivalent
RAM	8 GB	8 GB
DVD Drive	DVD ROM drive	Recommended
Backup Device	Quantum RDX® Internal Dock, SATA or iSCSI capable backup device, minimum 4 TB (must be purchased separately)	iSCSI capable backup device, minimum 4 TB
Network	NIC 1000Base-T	NIC 1000Base-T
Monitor	19" LCD flat panel monitor (optional)	15" VGA monitor (1024x768 resolution)
External Power Backup	External power backup (UPS 1000 Watts) (optional)	Optional
HDD	<ul style="list-style-type: none"> • 500 GB hard drive (NTFS) with the following minimums per volume:† <ul style="list-style-type: none"> • Volume 1 (C:\) – 100 GB • Volume 2 (E:\) – 50 GB • Volume 3 (F:\) – 300+ GB 	<ul style="list-style-type: none"> • 500 GB hard drive (NTFS) min with the following minimums per volume:‡ <ul style="list-style-type: none"> • Volume 1 (C:\) – 100 GB§ • Volume 2 (E:\) – 50 GB • Volume 3 (F:\) – 300+ GB
Warranty	Warranty – 3 yrs, Lenovo parts warranty	Not Applicable
Dimensions	H16.74" x D16.96" x W6.89", 27.56 lbs	Not Applicable
Keyboard and Mouse	Lenovo USB Keyboard and Lenovo Optical USB Mouse	Not Applicable
Optional Equipment	Washable Keyboard with integrated touchpad	Not Applicable
Node Support	Supports up to 3 image capture nodes and up to 3 other nodes (combination of registration, dictation, HL7 gateway, and fax client)	Supports up to 3 image capture nodes and up to 3 other nodes (combination of registration, dictation, HL7 gateway, and fax client)

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

* Other nodes include registration, dictation, HL7 gateway, and fax client.

† Olympus offers a minimum configuration with 4 hard drives, although 6 or 8 hard drives are recommended. Work with your Olympus representative to discuss the best fit for your facility.

‡ May support a customer for the life of the hardware. If your facility is a large institution, is capturing video, and/or is migrating data from a legacy system, see the Data Storage section for calculating additional storage needs.

§ Volume 1 must be the drive where the Operating system is installed.

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

SYSTEM SPECIFICATIONS (CONT'D)

STANDALONE	
	Olympus-Supplied Specifications Lenovo E31 Model Number 2552CS4
Operating System	Windows 7 Professional SP1 64-bit
Processor	Intel Core i5-3550 3.30 GHz
RAM	8 GB
DVD Drive	DVD ROM drive
Backup Device	Quantum RDX Internal Dock, SATA
Network	NIC 1000Base-T
Monitor	19" LCD flat panel monitor (optional)
External Power Backup	External power backup (UPS 1000 Watts) (optional)
HDD	<ul style="list-style-type: none"> • 500 GB hard drive (NTFS) with the following minimums per volume: <ul style="list-style-type: none"> • Volume 1 (C:\) – 100 GB • Volume 2 (E:\) – 50 GB • Volume 3 (F:\) – 300+ GB
Warranty	Warranty – 3 yrs, Lenovo parts warranty
Dimensions	H16.74" x D16.96" x W6.89", 27.56 lbs
Video Capture Card	Matrox® VIO image capture/video card
Keyboard and Mouse	Lenovo USB Keyboard and Lenovo Optical USB Mouse
Optional Equipment	Washable Keyboard with integrated touchpad

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

EndoWorks Version 7.4.43

IT SPECIFICATIONS

SYSTEM SPECIFICATIONS (CONT'D)

IMAGE CAPTURE WORKSTATION	
	Olympus-Supplied Specifications Lenovo E31 Model Number 2552CS4 or Equivalent (currently shipping) Lenovo E30 Model Number 7783-AH9 or Equivalent (legacy)
Operating System	Windows 7 Professional 64-bit
Processor	Intel Core i5-3550 3.30 GHz (E31) Intel Core i3-2120 3.30 GHz (E30)
RAM	4 GB*
DVD Drive	16X DVD-RW/CD-RW drive
Network	10/100/1000Base-T NIC
Monitor	19" LCD flat panel monitor (optional)
HDD	500 GB hard drive (Serial ATA)
Browser	Windows Internet Explorer® 10 in compatibility mode
Video Capture Card	Matrox® VIO image capture/video card
Keyboard and Mouse	Lenovo USB Keyboard and Lenovo Optical USB Mouse Washable keyboard with integrated touchpad (optional)
Warranty	Warranty – 3 yrs, Lenovo parts warranty
Dimensions	H16.74" x D16.96" x W6.89", 27.56 lbs

* E30 workstations originally shipped with 2 GB RAM. If your system only has 2GB, you must order an update kit to meet the minimum specifications listed.

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

SYSTEM SPECIFICATIONS (CONT'D)

NON-IMAGE CAPTURE WORKSTATION FOR REGISTRATION & SCHEDULING		
	Olympus-Supplied Specifications Lenovo E31 Model Number 2552CS4 or Equivalent (currently shipping) Lenovo E30 Model Number 7783-AH9 or Equivalent (legacy)	Customer-Supplied Minimum Specifications
Operating System	Windows 7 Professional 64-bit	Windows 7 Professional 32-bit or 64-bit
Processor	Intel Core i5-3550 3.30 GHz (E31) Intel Core i3-2120 3.30 GHz (E30)	Intel Core i5-3550 3.30 GHz (recommended) or equivalent Intel Core i3-2120 3.30 GHz (minimum) or equivalent
RAM	4 GB*	4 GB
DVD Drive	16X DVD-RW/CD-RW drive (for image transfer)	Optional
Network	10/100/1000Base-T NIC	10/100/1000Base-T NIC
Monitor	19" LCD flat panel monitor (optional)	15" VGA monitor (1024x768 resolution)
HDD	500 GB hard drive (Serial ATA)	500 GB hard drive (Serial ATA) (Recommended) 160 GB hard drive (minimum)
Browser	Windows Internet Explorer 9 32-bit	Windows Internet Explorer 9 32-bit
Keyboard and Mouse	Lenovo USB Keyboard and Lenovo Optical USB Mouse Washable keyboard with integrated touchpad (optional)	Windows Compatible
Warranty	Warranty – 3 yrs, Lenovo parts warranty	Not Applicable
Dimensions	H16.74" x D16.96" x W6.89", 27.56 lbs	Not Applicable

Note: Any non-image capture computer can be virtual or physical, as long as all system requirements are met and software is used within only one virtual (or otherwise simulated) hardware system on the licensed computer. Olympus technicians cannot support the virtual environment, only the EndoWorks applications running on it.

NON-IMAGE CAPTURE WORKSTATION FOR FAX	
	Minimum Specifications Refer to Non-Image Capture Workstation for Registration and Scheduling for all specifications in addition to the following:
Modem	56 kbps, external USB – sold separately

* E30 workstations originally shipped with 2 GB RAM. If your system only has 2GB, you must order an update kit to meet the minimum specifications listed.

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

EndoWorks Version 7.4.43

IT SPECIFICATIONS

SYSTEM SPECIFICATIONS (CONT'D)

HL7 INTERFACE WORKSTATION			
	Olympus-Supplied Specifications	Customer-Supplied Minimum Specifications – Windows 7 OS	Customer-Supplied Minimum Specifications – Windows 2008 R2 64-bit OS
Operating System	Windows 7 Professional 64-bit	Windows 7 Professional 64-bit	Windows 2008 R2 64-bit
Processor	Intel Core i5-3550 3.3 GHz (E31) Intel Core i3-2120 3.3 GHz (E30)	Intel Core i3-2120 3.3 GHz or equivalent	Intel Xeon Quad Core E5620 2.4 GHz or equivalent
RAM	4 GB*	4 GB	4 GB
DVD Drive	16X DVD-RW/CD-RW drive	Optional	Optional
Network	10/100/1000Base-T NIC	100Base-T NIC (minimum) / 1000Base-T (recommended)	100Base-T NIC (minimum) / 1000Base-T (recommended)
Monitor	19" LCD flat panel monitor	15" VGA monitor (1024x768)	15" VGA monitor (1024x768)
HDD	500 GB hard drive (Serial ATA)	500 GB hard drive	150 GB hard drive (NTFS)
Browser	Windows Internet Explorer 9 64-bit	Windows Internet Explorer 9 64-bit	Windows Internet Explorer 9 64-bit
Keyboard and Mouse	Lenovo USB Keyboard and Lenovo Optical USB Mouse Washable keyboard with integrated touchpad (optional)	Windows Compatible	Windows Compatible
Warranty	Warranty – 3 yrs, Lenovo parts warranty	Not Applicable	Not Applicable
Dimensions	H16.74" x D16.96" x W6.89", 27.56 lbs	Not Applicable	Not Applicable

* E30 workstations originally shipped with 2 GB RAM. If your system only has 2GB, you must order an update kit to meet the minimum specifications listed.

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

SYSTEM SPECIFICATIONS (CONT'D)

ENDOINTELLIGENCE® REPORTING SERVER	
Customer-Supplied Minimum Specifications	
Operating System	Windows 2008 Server R2 SP1 64-bit
Processor	Intel Quad Core 2.4 GHz
RAM	16 GB
HDD	Minimum recommended sizing for hard drive/storage volume 200 GB
Network	NIC 1000Base-T

EndoIntelligence is an analytical tool for the GI and pulmonary industries, available exclusively through EndoWorks. EndoIntelligence, powered by a proprietary QlikView connection, is the new interactive business intelligence tool for EndoWorks that delivers enhanced reporting functionality. This tool lets you mine your EndoWorks data to create customizable reports using associative search via a graphical interface.

EndoIntelligence Report Viewer is included in EndoWorks and provides analysis reporting functionality. Expanded licenses are available for purchase featuring Analysis Tools, Report Builder, and Image Query. The installed software and hardware requirements for the default and expanded licenses are the same.

In an EndoWorks network environment, there are two supported environments:

- EndoIntelligence on a shared server
- EndoIntelligence a separate server.

Olympus recommends a separate server for better performance.

If you still have questions about the right option for your facility, work with your Olympus representative to determine your site's server requirements.

- In an EndoWorks network environment, for a facility wanting to install EndoIntelligence on the same server as EndoWorks.
- In an EndoWorks Network environment, for a facility wanting to install EndoIntelligence on their own server, separate from EndoWorks; server specifications are listed in the minimum hardware specifications section.
- EndoIntelligence must be run on Windows 7 non-image capture nodes.

Note: The EndoWorks and/or EndoIntelligence server can be physical or virtual. For assistance in deciding whether installing EndoIntelligence on the same server as EndoWorks or a second server, contact Olympus to discuss your facility's usage requirements.

EndoWorks Version 7.4.43 IT SPECIFICATIONS

EndoIntelligence (EI) is available for network environments. In a network environment, EI can be installed on either the same server as EndoWorks (EW) or a separate server with a connection to the EW server. There are two points to consider when determining if a separate server is recommended.

The first point is the size of the EW database; consider the number of procedures performed by the facility(ies).

- 1a. What is the average number of procedures performed annually?

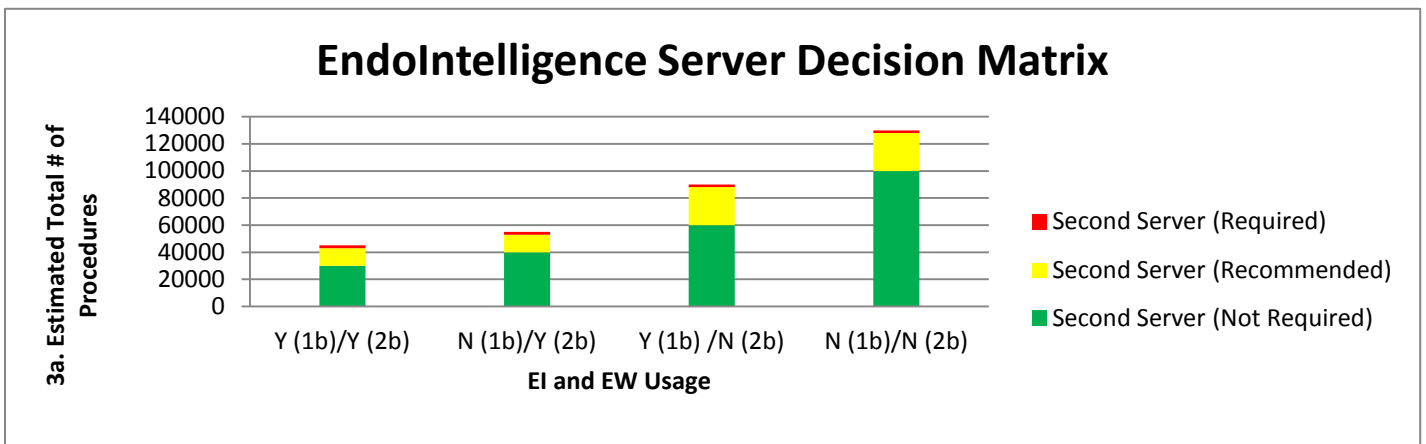
- 2a. How many years has EW (including EW6) been installed at the facility?

- 3a. What is the estimated total number of procedures to date (multiply 1a by 2a)?

The second point is based on how the EW and EI software will be utilized, including the amount of detail within the EW procedure notes and the expected number of consecutive users that will be connected to EI. Consider the following:

- 1b. Would most procedure notes be more than a page if printed?
Yes No
- 2b. Does the facility expect to have multiple EI users performing analysis on a regular basis?
Yes No

The chart below illustrates how the decision was reached as to whether a separate server is recommended. Based on the estimated total amount of data in the database (in this case number of procedures and the EI and EW usage), a facility with less detailed procedure notes or only one regular concurrent EI user requires less system resources to perform analysis.



Note: Many customers use virtual servers and may be willing to add the second server even if their current EW utilization does not warrant it, due to the low cost as compared to improved customer experience.

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

GENERAL INFORMATION

CLINICAL CODES

EndoWorks supports the use of the following clinical code sets:

- ICD-9
- ICD-10
- Ambulatory Surgery Center Measure G Codes (Quality Data Codes)
- Third-party procedure codes

Each code set may be individually activated according to the customer's needs by configuring procedure report and document templates. When activated, codes generated from each procedure report can be uploaded to the HIS via an HL7 outbound message, where codes are individually labeled by type.

ICD codes are generated based on the keyword selections made by the physician when creating a procedure report. EndoWorks cannot generate clinical codes from user-specified data (free text) created by the physician in the report.

ARRA

EndoWorks version 7.4.43 has attained 2014 Edition EHR Modular Certification from the ICSC Labs, ONC Health IT Certification Program. EndoWorks has been certified as EHR module in accordance with both the Hospital and Eligible Provider certification criteria. EndoWorks meets the following certification criteria: Authentication, Access Control, and Authorization; Automatic Log-off; Emergency Access; and Integrity.

ADDITIONAL REQUIRED SOFTWARE

EndoWorks utilizes the following:

- Java® JRE 1.7* update 21
- Java JAI 1.1.2_01 (for HL7 interface and fax only)
- Java JAI 1.1.3
- Oracle 12C 64-bit
- Apache Tomcat 7.0.42 web server
- QlikView 11.0_SR2
- IIS 7.0
- Windows Media Player Version 9 or 10
- Adobe Reader Version 11.X

Note: It is not recommended to install EndoWorks on a machine running Windows 2008 Web edition or Windows 2008 Datacenter Edition.

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

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

EndoWorks Version 7.4.43

IT SPECIFICATIONS

GENERAL INFORMATION (CONT'D)

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.

- Microsoft 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)
- SAI Server (not compatible)
- Windows SharePoint® (not compatible)
- Microsoft Remote Desktop Client (versions prior to RSS-R6 only)
- Trend Micro® Antivirus
- Email client software on image capture nodes
- Windows Remote Management (WinRM)

ADDITIONAL OPTIONAL HARDWARE

- HP ProCurve™ 24-port 10/100/1000 Switch
- HP ProCurve 8-Port 10/100/1000 Switch
- Isolation Transformer

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

GENERAL INFORMATION (CONT'D)

CONNECTIVITY/DATA TRANSFER

- Olympus recommends:
 - **Important:** When connecting to an EndoWorks server or a client to a domain, connect to an Organizational Unit (OU) that does not contain group policy. Applying policies from a domain can impact functionality.
 - The use of VLANs for the EndoWorks machines, to better help manage this environment.
- Static/Reserved IP needed for: server, remote support, HL7, and 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 6 MB each, if compression is set to None.
- EndoWorks video clips transmit across the network upon saving an exam and can be very large, 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 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 occurs.

EndoWorks Version 7.4.43 IT SPECIFICATIONS

GENERAL INFORMATION (CONT'D)

DATA STORAGE

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

Note: Olympus recommends using the 'Lossless' compression setting.

Still-Image File Size

VIO (Digital)	Compression				
	None	Lossless	High	Medium	Low
HD Image	4-mb	2-mb	336-kb	560-kb	985-kb
SD Image	611-kb	378-kb	62-kb	90-kb	175-kb
CV-190 Full Resolution	6-mb	2-mb	400-kb	600-kb	1-mb
File Type	TIF	PNG	JPG	JPG	JPG

Compression default setting is 'None'.

VIO (Analog)	Compression				
	None	Lossless	High	Medium	Low
SD Image	613-kb	345-kb	70-kb	105-kb	190-kb
File Type	TIF	PNG	JPG	JPG	JPG

Compression default setting is 'None'.

Video Clip File Size

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

Note: When the compression setting value is 'None' or 'Lossless' the EndoWorks application also creates a reduced size image (PNG 400KB) which will be used when printing the image.

BACKUP

- Olympus recommends backing up Volume 3 (drive specified in environment variable OLY_ENDO).
- The server requires a customer-supplied iSCSI capable backup solution.

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

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

GENERAL INFORMATION (CONT'D)

PRINTING

- EndoWorks workstations utilize direct IP printing for a network environment or a USB connection for single computer systems.
- When selecting a printer, refer to the following recommended specifications to avoid incompatibility or performance concerns with EndoWorks:
 - Color laser printer
 - Note:** Specifications are based on the HP LaserJet 4525 (not sold by Olympus but tested for compatibility with EndoWorks).
 - Connectivity: Hi-Speed USB 2.0, Gigabit Ethernet 10/100/1000T
 - Memory: 512 MB
 - Print quality: 4800 x 1200 dpi (best model)
 - Print speed: 42 ppm
 - Print languages: PCL6
 - Driver compatibility: Windows 7 x64
 - Deskjet/Officejet/Inkjet printer
 - Note:** Specifications are based on the HP OfficeJet 6230 (sold by Olympus).
 - Connectivity: Hi-Speed USB 2.0, Ethernet, and Wireless 802.11 b/g/n
 - Size and weight: (W x D x H) 18.27 x 15.16 x 5.73 in. 11.22 lbs.
 - Print quality: 600 x 1200 dpi
 - Print speed: 18 ppm black, 10 ppm color
 - Driver compatibility: Windows 7 x64
 - Labelwriter
 - Note:** Specifications are based on the Dymo LabelWriter 450 (not sold by Olympus, but tested for compatibility with EndoWorks).
 - Connectivity: USB
 - Print Quality: 600 x 300 dpi
 - Print Speed: 51 labels per minute
 - Driver compatibility: Windows 7 x64

Note: When preparing to purchase a new printer, consider the location and ensure that the new printer is compatible with the available space and required cabling.

UPGRADES AND PATCHES

- EndoWorks updates are provided to customers with Support and Maintenance Agreements (SMA).
- Install only the approved Microsoft patches, BIOS, and driver files published on <http://medical.olympusamerica.com/technology/software-system-integration/electronic-medical-records/updates-policies>. It is recommended that you turn off Microsoft Upgrade Service or Windows Server Upgrade Service, if present.

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

EndoWorks Version 7.4.43 IT SPECIFICATIONS

GENERAL INFORMATION (CONT'D)

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 7.0.42 – TCP Port 80, 8005, and 8009
- UDP Ports 137, 138
- TCP Ports 1521, 1600, 1601, 1602, and 4780

INTERFACES

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

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® Embedded Entitlements Manager (EEM) Version 12.5.0.7 64-bit 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 EEM 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.

* EndoIntelligence displays screens containing Patient Health Information (PHI).

† When EndoIntelligence times out, it only drops access to the licensing; it does not automatically log off.

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

GENERAL INFORMATION (CONT'D)

NETWORK SERVER

- EndoWorks application starts as a service.
- Olympus-supplied Uninterruptible Power Supply (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.

Note: If deploying an EndoWorks workstation or any associated peripherals in the vicinity of a patient, an isolation/separation transformer is required. Typically, an isolation/separation transformer is included as a component of the mobile workstation. Please refer to the mobile workstation instructions for proper use.

The optional UPS, sold for use with EndoWorks network servers, is not classified as medical grade and will not work in conjunction with the isolation/separation transformer. The UPS should not be deployed in the vicinity of a patient. If the customer wishes to use a UPS within the vicinity of a patient, that customer must purchase a medical grade UPS that meets their facility's Biomedical or Clinical Engineering department electrical leakage test requirements.

- Customer-supplied server uses its own network storage backup solution.

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 7.0.42
 - Inetpub
- Rights to install and configure the following files and programs:
 - Java JDK 1.7
 - Internet Explorer 9
 - Internet Explorer 10
 - QlikView 11.0_SR2*
 - IIS 7.0*

REQUIRED USER ACCOUNTS

During the install process, a user account named Administrator, with local administrator rights, is necessary. 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. The install process creates an account endoworksadmin, which is used by EndoWorks for maintenance and support purposes. Post install, the customer can log in with a user account with a different name, but this account also requires local administrator rights.

* Required when using EndoIntelligence

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

EndoWorks Version 7.4.43 IT SPECIFICATIONS

GENERAL INFORMATION (CONT'D)

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)

The following third-party products are used for RSS:

- CA Technology IT Client Automation 12.8
- CA Technology Spectrum 9.2.3 (CA Technology SystemEdge 5.8)

RSS Port Requirements

Option 1 Site-to-Site VPN

Port	Description
ICMP / RDP 3389	Preferred to be enabled
UDP 6665/1691	Monitoring
UDP 4104 / TCP 4105	Internal CA Technology Communication/File Transfer
TCP 4728	Remote Control
TCP 161	SNMP (Monitoring – Also require service to be installed)

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.

* ENC connected machines must have public IP Addresses for monitoring.

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

GENERAL INFORMATION (CONT'D)

ANTIVIRUS EXCLUSIONS (WINDOWS 2008 AND WINDOWS 7)

The following is a list of directories/files to be excluded from the virus scan for Windows 2008 and Windows 7.

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	<vol3>:\EndoWorks
Exclude	Exclude	-	<vol3>:\EWServer
Exclude	Exclude	Exclude	<vol1>:\Program Files\CA
Exclude	Exclude	Exclude	<vol1>:\Program Files\JAVA
Exclude	Exclude	Exclude	<vol1>:\Program Files (x86)\JAVA
Exclude	Exclude	Exclude	<vol1>:\app
Exclude	Exclude	Exclude	<vol2>:\app
-	-	Exclude	%SystemRoot%\endonode.ini
Exclude	Exclude	Exclude	<drive>:\EWClient (where exists)

Note: Environment variables, vol1, vol2, and vol3 represent the drives, where the operating system is located, where the database is located, and where EndoWorks is located respectively. 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 3.0. We approve patches from Microsoft periodically and post the approved patches on <http://medical.olympusamerica.com/technology/software-system-integration/electronic-medical-records/updates-policies>. In addition, Java updates should not be enabled.

UPDATES AND POLICIES

Please visit <http://medical.olympusamerica.com/technology/software-system-integration/electronic-medical-records/updates-policies> to view the latest policies and approved updates (i.e., Microsoft Critical Updates, Microsoft Patches and Antivirus Policy, etc.).

Warning: When ancillary electrical equipment is used (computer, monitor, printer, etc.), always connect the equipment to a wall mains outlet via an isolation transformer to decrease the possibility of electric shock due to potentially high leakage currents.

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

EndoWorks is a registered trademark of Olympus America Inc. in the United States and/or other countries. All other product and company names mentioned herein may be the property of their respective owners.

