OLYMPUS
Your Vision, Our Future

Knowledge Exchange (KE)
IT Specifications

HARDWARE

A large server, small server, or standalone workstation must be prepared by the facility and must be dedicated for use with the KE system. A large server, small server, or standalone workstation must also have a DVD drive that can read DVD-R DL to install the KE software.

NOTE: To determine your server needs, refer to the *Maximum Connectable Devices* section at the back of this document. Also, server requirements (see 'large' or 'small' server below) must be met, whether the server is physical or a virtual server. For virtual machines, you can use a smaller hard drive (minimum 500 GB); see specifications for virtual server below.

Virtual Machine

Hardware requirements identical to large or small server memory, and processor. Hard drive capacities must have the ability to grow to the stated requirements.

For an initial build, **the KE installer needs the following free space at the minimum for each partition for successful installation.**

- **Windows System (Usually [C:]):** 0.6 GB besides Windows OS
- **System (Application):** 12 GB
- **Database (Data):** 34 GB
- **System (Data):** 100 GB
- **OS:** Windows Server 2012 R2 Standard Edition 64-bit
- **Ethernet (Wired Network Adapter):**

For details, refer to 'Data Registration Settings' in the *Connectivity Cabling, Ports, and Data Transfer* section of this document

NOTE: If allocating all partitions to [C:], requires 150GB of free hard drive space.

Large Server Hardware

- **Processor:** Intel Xeon ES-2609 2.40 GHz or greater
- **Memory:** 32 GB or greater
- **Hard Drive:** 3.0 TB 7200 RPM or greater
- **Display Resolution:** WXGA (1366 x 768) or greater
- **OS:** Windows Server 2012 R2 Standard Edition 64-bit
- **Ethernet:** 100 BASE-TX or greater

For details, refer to 'Data Registration Settings' in the *Connectivity Cabling, Ports, and Data Transfer* section of this document

HARDWARE

Small Server Hardware

- **Processor:** Intel Xeon ES-2407 2.20 GHz or greater
- **Memory:** 16 GB or greater
- **Hard Drive:** 1.5 TB 7200 RPM or greater
- **Display Resolution:** WXGA (1366 x 768) or greater
- **OS:** Windows Server 2012 R2 Standard Edition 64-bit
- **Ethernet:** 100 BASE-TX or greater

For details, refer to 'Data Registration Settings' in the *Connectivity Cabling, Ports, and Data Transfer* section of this document

Standalone Workstation Hardware

- **Processor:** Intel Core i5-2540 2.60 GHz or greater
- **Memory:** 4 GB or greater
- **Hard Drive:** 500 GB 7200 RPM or greater
- **Display Resolution:** WXGA (1366 x 768) or greater
- **OS:** Windows 7 Professional SP1 64-bit Windows 8.1 Pro 64-bit
- **Ethernet (Wired Network Adapter):**
  For details, refer to 'Data Registration Settings' in the *Connectivity Cabling, Ports, and Data Transfer* section of this document.

NOTE: Hardware that has been used for IN10A R1.0 can be reused for the KE system. However, the Lenovo T520 laptop will not support Windows OS 8.1

Client Hardware

- **Processor:** Meets system requirements for Windows 7 and/or Windows 8.1 to install, or greater
- **Memory:** Same as above
- **Hard Drive:** Same as above
- **Display Resolution:** WXGA (1366 x 768) or greater
- **OS:** Windows 7 Professional SP1 32-bit / 64-bit*
  Windows 8.1 Pro 32-bit / 64-bit
  (* A change of the theme to Windows Classic is not supported)
- **Ethernet (Wired or Wireless Network Adapter):**
  For details, refer to 'Data Registration Settings' in the *Connectivity Cabling, Ports, and Data Transfer* section of this document.

NOTE: Client hardware does not need to be a dedicated system.

PROTOCOL CONVERTER

- Moxa NPort 5400 Series
- RS-232 Ports: Four Male DB9 Ports
- RJ45: One 10/100 Mbps Ethernet Port

BARCODE SCANNER

You can enter a patient ID by connecting a barcode scanner to a standalone workstation or a client PC. The barcode scanner must meet the following requirements:

- Use a barcode scanner designated as 'plug and play', which does not require software installed on KE hardware.
- The connection interface with the PC is USB.

BACKUP SOLUTION

Options for Backup

1. Olympus-provided solution:
   - Schedule daily backup. Enable 'BackupFull' for 2:01am to a network share or NAS.
2. Customer-provided solution (customer selects 1 of the 3 options below that best fits their needs):
   - Customer backs up a 'backup' folder created by the Olympus daily backup job, 'OlympusBackupRecovery'.
   - Customer backup solution (i.e., third-party agent for Oracle database). Solution to back up folders as well as the database using imbedded RMAN utility features.
   - Customer does a complete server backup. Note that customer is responsible for recovering backed-up content.

INCLUDED SOFTWARE FOR KE SERVER

The following software is automatically installed in the KE server by installing the KE software.

- Adobe Acrobat Reader DC
- Java 7 Update 65
- Java SE Development Kit 7 Update 65
- Microsoft Visual C++ 2010 x64 Redistributable - 10.0.40219
- Microsoft Visual C++ 2010 x86 Redistributable - 10.0.40219
- Microsoft Visual C++ 2013 Redistributable (x86) - 12.0.30501
- Glassfish Server
- Microsoft .NET Framework 4.5
- Oracle Database 12c Enterprise Edition Release 12.1.0.2.0
- Oracle Client 12c Release 12.1.0.2.0

NOTE: If any of the following software is installed on your server, the KE software cannot be installed. Uninstall the following items prior to installation.

- Adobe Acrobat Reader DC
- Java
- Oracle Database
- Oracle Client
- Glassfish Server
- KB3045563 (Microsoft .NET Framework 4.6)
- KB3102467 (Microsoft .NET Framework 4.6.1)

Do not alter the 'PCname' of the KE server after installation. Otherwise, the KE system will not function properly. You can, however, change the PC name of the KE client (use only alphanumeric characters for the PC name).

SOFTWARE REQUIRED FOR THE KE CLIENT

The KE Client application can be used in the following web browsers.

- Internet Explorer 11.0.9600.17031 or subsequent versions
- Google Chrome 44.0.2403.107m or subsequent versions

NOTE: Either web browser is required to use the KE Client application. For information on versions supported by Olympus to operate, contact your Olympus representative.

CONNECTIVITY CABLING, PORTS, AND DATA TRANSFER

Connect the KE server hardware to the facility's network. If you use the KE server's backup function, connect the KE server to the external storage device.

IP Address Settings:

Do not use DHCP settings for the KE server. Otherwise, the KE server cannot communicate with external devices. Instead, use a fixed IP address. You can, however, change the IP address of the KE client (you can also use DHCP settings for the KE client).

NOTE: Internet Protocol Version 6 (TCP/IPv6) is not supported. The KE system does not allocate a network drive space.

Data Registration Settings:

Make sure the KE server and the KE client match each other on the following settings (see below). Otherwise, data registration may not work properly.

- Date and time settings
- Time zone settings
- Time synchronization with internet time server
- Wired LAN: Only 100 BASE-TX or 1000 BASE-T can be used as wired LAN standard. 1000 BASE-T is recommended to use for wired LAN. LAN cable must be Category 5 or greater (if you use 1000 BASE-T, must be Category 5e or greater).
- Wireless LAN: The KE client can be used by wireless LAN. Only IEEE802.11n, IEEE802.11a, or IEEE802.11g can be used as wireless LAN standard. Effective throughput of the wireless LAN (with browser cache) must be 6 Mbps or greater.

Remote Control:

- TCP Port 3389 for Remote Desktop Protocol

Port Settings:

Port must be dedicated for the use of the KE system. Do not use a well-known port, and a dynamic port. Open a port in the Windows Firewall after installing the KE software. Ports used for the KE system are as follows:

Protocol (TCP/UDP)	Send/Receive	Port Number	Details	Open a port in Windows Firewall (X = Port is pre-configured to be 'enabled' during KE installation)
TCP	Receive	104	CV Interface (Storage Service)	X
TCP	Receive	1158	Database Interface	
TCP	Receive	1521	Database Interface	X
TCP	Receive	2251	HL7 Communication (ORM, OMG, SIU)	X
TCP	Receive	3700	Application Server	

Protocol (TCP/UDP)	Send/Receive	Port Number	Details	Open a port in Windows Firewall (X = Port is pre-configured to be 'enabled' during KE installation)
TCP	Receive	3938	Database Interface	
TCP	Receive	4848	Application Server	
TCP	Receive	7676	Application Server	
TCP	Receive	8036	CV Interface (Internal Communication)	
TCP	Receive	8075	DICOM Communication (Internal Communication)	
TCP	Receive	8076	DICOM Communication (Internal Communication)	
TCP	Receive	8080	Application Server	X
TCP	Receive	8097	HL7 Communication (Internal Communication)	
TCP	Receive	8098	HL7 Communication (Internal Communication)	
TCP	Receive	8101	HL7 Communication (Internal Communication)	
TCP	Receive	8102	HL7 Communication (Internal Communication)	
TCP	Receive	8103	HL7 Communication (Internal Communication)	
TCP	Receive	8104	HL7 Communication (Internal Communication)	
TCP	Receive	8105	HL7 Communication (Internal Communication)	

Protocol (TCP/UDP)	Send/Receive	Port Number	Details	Open a port in Windows Firewall (X = Port is pre-configured to be 'enabled' during KE installation)
TCP	Receive	8106	HL7 Communication (Internal Communication)	
TCP	Receive	8107	HL7 Communication (Internal Communication)	
TCP	Receive	8108	HL7 Communication (Internal Communication)	
TCP	Receive	8109	HL7 Communication (Internal Communication)	
TCP	Receive	8110	HL7 Communication (Internal Communication)	
TCP	Receive	8111	HL7 Communication (Internal Communication)	
TCP	Receive	8181	Application Server	
TCP	Receive	8686	Application Server	
TCP	Receive	9994	CV Interface (MWM Service)	X
TCP	Receive	9995	CV Interface (ECHO Service)	X
TCP	Receive	9996	CV Interface (MPPS Service)	X
TCP	Receive	9998	CV Interface (COMMITMENT Service)	X
TCP	Receive	51900	CV Interface (Send/Receive with CPoE)	X
TCP	Receive	51901	CV Interface (Send/Receive with CPoE)	X
TCP	Send	104	CV Interface (N-EVENT-REPORT Service)	

Protocol (TCP/UDP)	Send/Receive	Port Number	Details	Open a port in Windows Firewall (X = Port is pre-configured to be 'enabled' during KE installation)
TCP	Send	2352	HL7 Communication (ORU)	
TCP	Send	3250	DICOM Communication (C_FIND Interface for MWM)	
TCP	Send	3350	DICOM Communication (C_STORE Interface for Image Transfer)	
TCP	Send	4001	OER Interface	
TCP	Send	4002	OER Interface	
TCP	Send	4003	OER Interface	
TCP	Send	4004	OER Interface	
TCP	Send	51900	OER Interface	

REMOTE SUPPORT SERVICE

Remote Support Service of the KE server is available via remote access.

- Remote Desktop control/sharing
- File transfer

NOTE: The standard port used for remote access is TCP/UPD 3389.

INTERFACES

- KE System supports HL7 (worklist import and exam image export)
- KE System supports DICOM (worklist import and exam image export)

You cannot have both HL7 Inbound and a DICOM Modality Worklist configured simultaneously.

UPDATES AND PATCHES

Automatic updates should be disabled so that non-Olympus-approved software/updates are not installed on the KE machine, which could interfere with normal KE operation.

NOTE: Olympus will verify updates and patches for the following products to be compatible with the KE system.

- Microsoft Windows and Internet Explorer
- Adobe Acrobat Reader DC
- Google Chrome

ANTIVIRUS EXCLUSIONS

Installing Antivirus Software:

It is the facility's responsibility to install antivirus software. The following directories must be excluded from virus scans on KE servers and standalones; otherwise, performance may be affected.

Large Server/Small Server/Standalone Workstation	Directory
Exclude	<*drive*>:\ **Olympus**

REQUIRED USER ACCOUNTS

The facility must create a Windows user account with administrative privileges to be used for installation, configuration, and backups.

DOMAIN

When connecting the KE server to a domain, it is the facility's responsibility to configure the domain security policy to not include automatic software pushes.

MAXIMUM CONNECTABLE DEVICES

Large Server

Connectible Device:	Maximum Connectable Devices:
▪ CV (CV-190/CV-290)	25
▪ OER-Pro	40
▪ Protocol Converter	16
▪ Concurrent Web Access	20
▪ PACS	3
▪ RIS	3
▪ EMR	1

Small Server

Connectible Device:	Maximum Connectable Devices:
▪ CV (CV-190/CV-290)	10
▪ OER-Pro	16
▪ Protocol Converter	6
▪ Concurrent Web Access	10
▪ PACS	2
▪ RIS	2
▪ EMR	1

Standalone Workstation	
Connectible Device:	**Maximum Connectable Devices:**
▪ CV (CV-190/CV-290)	4
▪ OER-Pro	4 *
▪ Protocol Converter	2
▪ Concurrent Web Access	1
▪ PACS	2
▪ RIS	2
▪ EMR	1

*If a CV is not connected to the KE server, then a maximum 8 devices are connectable.