TECHNICAL SPEC – MUSE SYSTEM AND HL7 INTERFACE

For the MUSE System and HL7 Interface, Ge Healthcare needs 2 separate servers.

Both Muse and HL7 interface Server can be:

VIRTUAL MACHINE (VM)

Server Muse V9:

- **Virtual CPU:** Minimum 1 allocated (2,6 GHz) – **recommended 2**
- **Virtual RAM :** 8 GB
- **Virtual HD:** 2 virtual disks type SCSI or one virtual disk divided in two portitions
  - first disk (system partition) bootable (C:\ (SCSI 0:0)) with 80 GB, file system NTFS
  - second disk (data partition) not bootable with minimum 300 GB, file system NTFS
- 1 CD-ROM drive
- **Virtual Network Interface Card (NIC):** connected to 1 Gb switch - Gigabit Ethernet adapter

- **Operating System:**
  Microsoft Windows 2008 Server Standard Edition o Enterprise , SP2, 32 BIT 64 BIT
  Microsoft Windows 2008 Server Standard Edition o Enterprise, SP1, R2, 64 BIT
  or
  Microsoft Windows 2012 Server Standard Edition only 64 bit
  Microsoft Windows 2012 Server Standard Edition only, R2, 64 bit

- **Database IN ENGLISH:**
  Microsoft SQL Server 2008 SP4 Standard or Enterprise (32 bit or 64 bit)
  Microsoft SQL Server 2008 R2 SP3 Standard or Enterprise (32 bit or 64 bit)
  Microsoft SQL Server 2012 SP2 Standard or Enterprise (64 bit)
  Microsoft SQL Server 2014 Standard or Enterprise (64 bit)

- ***You must install the following SQL Server components***
  SQL Server components:
  - Database Services: Data Files, Shared tools

  Clients components:
  - Management Tools

- **Server privileges:**
  The MUSE requires that the MUSE Service account (MUSEAdmin and MUSEBkgnd) have SQL sysadmin privileges to MUSE Database. The customer is responsible to ensure this accounts are set up as follows, prior to the MUSE System installation.
  1. Add MUSEAdmin and MUSEBkgnd to the local Administrators Group on the Server.
  2. Set up both accounts as sysadmin to the default local instance of the SQL Server where the MUSE Database is being installed.

HL7 Interface Server:

- **Virtual CPU:** Minimum 2 allocated (2.8 Ghz)
- **Virtual RAM :** 4 GB reserved

- **Virtual HD:** 1 virtual disks type SCSI divided in two partitions
  - first partition (system partition) bootable (C:\ (SCSI 0:0)) with 60 GB, file system NTFS
  - second partition (storage partition) not bootable with minimum 50GB, file system NTFS
- 1 CD-ROM drive
- **Virtual Network Interface Card** (NIC): connected to 1 Gb switch

- **Operating System:**
- Microsoft Windows 2008 Server Standard Edition o Enterprise , SP2, 32 BIT 64 BIT
  Microsoft Windows 2008 Server Standard Edition o Enterprise, SP1, R2, 64 BIT

- Licensing: the SW used to run HL7 Interface is licensed using the MAC address of the Server. Any change to the MAC address within the VM causes the interfaces to fail.

SERVER HW

Server Muse V9: MINIMUM REQUIREMENTS

Model: Customer preferences
Form Factor: Customer preferences
CPU: 1- Intel Xeon 2GHz with 512K L2 Cache or performance equivalent
RAM: 8 GB
Hard disk:
RAID Level 5+1drive hot spare configurations are recommended for fault tolerance.
- first partition (system partition) bootable C:\ (SCSI 0:0) with 80 GB, file system NTFS
- second partition (data partition) not bootable with minimum 300GB, file system NTFS
Additional Drives
Optical Drive: 8 or 16 x CD/DVD-ROM
Network port: 1 – 1Gb Gigabit Ethernet adapter
Serial ports: 1
Parallel Port: Customer Preference
USB 2.0 Port: 2
Video Port: 1
Keyboard Port: 1
Mouse Port: 1
Graphics Resolution: Super VGA (1280 x 1024) or higher-resolution
Power supplies: Customer preference
FAN: Customer Preference

Operating System:
Microsoft Windows 2008 Server Standard Edition o Enterprise , SP2, 32 BIT 64 BIT
Microsoft Windows 2008 Server Standard Edition o Enterprise, SP1, R2, 64 BIT
or
Microsoft Windows 2012 Server Standard Edition only 64 bit
Microsoft Windows 2012 Server Standard Edition only, R2, 64 bit

Database IN ENGLISH:
Microsoft SQL Server 2008 SP4 Standard or Enterprise (32 bit or 64 bit)
Microsoft SQL Server 2008 R2 SP3 Standard or Enterprise (32 bit or 64 bit)
Microsoft SQL Server 2012 SP2 Standard or Enterprise (64 bit)
Microsoft SQL Server 2014 Standard or Enterprise (64 bit)

Server privileges:
The MUSE requires that the MUSE Service account (MUSEAdmin and MUSEBkgnd) have SQL sysadmin privileges to MUSE Database. The customer is responsible to ensure this accounts are set up as follows, prior to the MUSE System installation.
1. Add MUSEAdmin and MUSEBkgnd to the local Administrators Group on the Server.
2. Set up both accounts as sysadmin to the default local instance of the SQL Server where the MUSE Database is being installed.

HL7 Interface Server:

Model: Customer preferences
Form Factor: Customer preferences
CPU: 2- Intel Xeon Single 2.8 GHz
RAM: 4 GB
Hard disk:
RAID Level as Customer preference ------- advised 1+0.
- first partition (system partition) bootable C:\ (SCSI 0:0) with 60GB, file system NTFS
- second partition (storage partition) not bootable with minimum 50GB, file system NTFS

Additional Drives

Diskette Drive: Customer Preference

Optical Drive: 8 or 16 x CD/DVD-ROM

Tape drive: Customer Preference

Network port: 1 – 1Gb Gigabit Ethernet adapter
Serial ports : 1
Parallel Port: Customer Preference
USB 2.0 Port: 2
Video Port: 1
Keyboard Port: 1
Mouse Port: 1
Graphics Resolution: Super VGA (1280 x 1024) or higher-resolution
Power supplies: Customer preference
FAN: Customer Preference
Operating System:
Microsoft Windows 2008 Server Standard Edition o Enterprise , SP2, 32 BIT 64 BIT
Microsoft Windows 2008 Server Standard Edition o Enterprise, SP1, R2, 64 BIT

ANTIVIRUS SW:

Customer are advised to use Antivirus protection. Although AntiVirus SW is not provided by GE Healthcare, the System wastested with ***Norton Antivirus Corporate Edition*** and ***McAfee NetShields.***

Note: it is possible to use Antivirus from other vendors, as long as they are qualified for the operating system. Ge Healthcare may request that Antivirus SW be turned off during installation of the MUSE System and Database.

The following are Antivirus exclusions for the HL7 System located inside the: CCG_INSTALL_DIR folder.

BACKUP SW/SYSTEM:

Customer providing their own HW are required to supply their own Backup/Disaster Recovery process.

Customer may load SW for that purpose.

MUSE WORKSTATION (CLIENT):

MINIMUM HW and SW REQUIREMENTS:

Model: Customer preferences
Form Factor: Customer preferences
CPU: Intel Pentium 4 3GHz or performance equivalent
RAM: 1 GB for 32–bit OS, 2 GB for 64–bit OS
Hard disk:
- 1 disk (system partition) bootable with 20 GB
Additional Drives
Optical Drive: 8 x CD/DVD-ROM
Network port: 1 – 100/1000 Mbps
Serial ports : 1
Parallel Port: Customer Preference
USB 2.0 Port: 2
Video Port: 1 – 17" or larger monitor
Keyboard Port: 1
Mouse Port: 1
Graphics Resolution: Super VGA (1280 x 1024) or higher-resolution
Power supplies: Customer preference
Operating System:
The workstation/Client can support WIN 7 – 32 or 64 Bit (PRO , ENT , ULTIMATE)
Windows 8.1 Professional or Enterprise (32 or 64 bit)

MUSE MONITORING GATEWAY (INTERFACE WITH MONITORING SYSTEM):

MINIMUM HW and SW REQUIREMENTS:

Model: Customer preferences
Form Factor: Customer preferences
CPU: Intel Pentium 4 - 2GHz or performance equivalent
RAM: 1GB (Win 7 - 32 Bit)
Hard disk:
- 1 disk (system partition) bootable with 20 GB
Additional Drives
Optical Drive: CD-ROM
Network port: 2 – 10/100/1000 Mbps
Serial ports : 1
Parallel Port: Customer Preference
USB 2.0 Port: 2
Video Port: 1
Keyboard Port: 1
Mouse Port: 1
Graphics Resolution: Super VGA (1280 x 1024) or higher-resolution
Power supplies: Customer preference
Operating System:
The workstation/Client can support WIN 7 – 32 (PRO , ENT , ULTIMATE) ----- **ONLY IN ENGLISH**

REQUIRED NETWORK PORTS:

The following port information for the MUSE System is provided as a guideline to help the customer understand the System's networking requirements and to assist in situations where the customer may need to consider either SW or HW Firewall configurations.
Not all Systems use each connection. The ports listed are default values and in some cases can be changed.

Purpose	Port	Type	Notes
General Acquisition	137	UDP	Required to exchange data via a network share or with external sources, such as a MARS system or Monitoring Gateway. If ***NetBIOS over TCP/IP*** is disabled, only port 445 is required.
	139	UDP	
	139	TCP	
	445	TCP	
SQL Server	1433	TCP	Listens for incoming connections. Can be changed
	1434	UDP	Allows administrators to check the status of SQL databases. These ports must be open to the MUSE server.
MUSE Application	8001	TCP	Default port used by MUSE user interface applications (Editor, Setup, Status, Database Search). You can change this port , but it must be the same on both the MUSE servers and clients.
MUSE Web	80	TCP	Port 80 is the default port for HTTP traffic. You may change this in the Web Site properties.
CSI Network	3001-3xxx	TCP	The MAC carts use when transmitting data to the MUSE system over LAN or wireless. This port can be changed.
Remote Support	443	TCP	InSite ExC uses this to communicate with GE Healthcare support.

Remote System Support Access:

The MUSE system is supported remotely using InSite ExC. InSite allows GE Healthcare to deploy remote services securely over the Internet to equipment behind the customer firewall. It allows GE Healthcare Service to view and remotely control the MUSE desktop over an encrypted tunnel to enable real-time device configuration and troubleshooting.
InSite supports 128–bit Secure Socket Layer (SSL) encryption. Authorized users at GE Healthcare log in with username and password authentication to ensure only qualified and trained engineers are working on your system. All user and system interactions are logged.
Access to this data is limited to GE Healthcare authorized personnel only. GE complies with all patient privacy regulations as defined by applicable government regulations.
InSite utilizes your existing outbound broadband Internet connection. It uses SSL and complies with your existing firewall rules and Web proxies. To set up the InSite connection and configuration, Proxy Server information such as IP Address and port, and any authentication information are required.

Remote System Access on Windows 2008

Windows 2008 includes a group policy setting to disable or enable ***Secure Attention Sequences (SAS)***. This policy allows the system to recognize a remote **CTRL+ALT+DEL** command. You must enable this policy and set it to ***Services*** to ensure GE Healthcare Technical Support has remote logon capability to the MUSE server.