



HMS TECHNICAL GUIDELINES


HMS Technical Guidelines

COMPUTER & PRINTER GUIDELINES


Computer inventory at the facilities need to conform to the specifications below.

Computers not meeting these specifications will need to be properly adjusted. All computers must be networked. These are not the only laser printers HMS utilizes. HMS works with many different laser printers, but these are ones that we strongly recommend. HMS also requires printers utilized by the system be networked.

SUPPORTED COMPUTER SPECIFICATIONS:

	Processor:	Single Core 2.0GHz (multi-core suggested)
	RAM:	2GB or Higher
	Operating System:	Windows XP Professional (32 bit only) Windows Vista Business or Higher (32 bit only) Windows 7 Professional or Higher (32 & 64 bit)
	Screen Resolution Capability:	1024 X 768
	Supported Browsers:	Internet Explorer 6, 7, and 8
	Office Suite	Microsoft Office 2003 & 2007 (If Applicable)
	Other:	Mouse, Keyboard, & 2.0 USB Ports

SUPPORTED PRINTER SPECIFICATIONS:

	Registration Laser Printing:	Three Tray HMS Supported Network Printer (First Tray will hold regular paper) (Second Tray will hold 30 label sheets) (Third Tray will hold 20 Labels/1 Wristband sheets)
	Nurse Station Laser Printing:	Dual Tray HMS Supported Network Printer (First Tray will hold regular paper) (Second Tray will hold 30 label sheets)
	Department Laser Printing:	Single Tray HMS Supported Network Printer (First Tray will hold regular paper)
	Label Printing:	Zebra S4M Printer (Direct Thermal or Thermal Transfer) Zebra GX420 Printer (Direct Thermal or Thermal Transfer)
	Common Supported UB04 Printers:	Lexmark E250n Lexmark T640n

BASIC NETWORK GUIDELINES

Basic Considerations

- Gigabit backbone – all modern switches support gigabit-Ethernet interconnection (connections between switches)
- Dedicated 100 MBit ports per end device and 1000MBit ports for IBM Power System, Linux server, and key HMS devices.
- Switches supporting Spanning-Tree Protocol (STP) to prevent network loops enabled by default.
- Switches supporting remote management and port monitoring/statistics should be installed.
- Large facilities should have category 5e UTP cable runs (up to 350 feet) or Multimode Fiber (over 350 feet) to interconnect switches to build a gigabit Ethernet network.
- Smaller facilities should install 24 or 48 port 100 MBit switches that can be interconnected with gigabit ports.
- Only use intelligent switches (HP, Cisco, Foundry, Juniper) that have the backplane switching fabric bandwidth to handle heavy data loads. Consumer grade devices do not have the bandwidth capacity and will result in data corruption.
- Avoid network hubs or consumer grade devices (netgear, D-link, linksys).
- Avoid interconnecting or cascading network hubs or devices often referred to as “daisy chaining.”
- Commercial firewalls with an available DMZ port at network edge connecting to internet provider devices.

Physical plant

- Category 5 or 6 UTP wiring to end user/device data jacks preferred
- Cabling terminated to a patch panel recommended
- Switching equipment in data closets should be connected to UPS devices to protect equipment and data integrity
- Network racks properly secured to walls and floors for safety recommended
- Proper grounding of all network racks and power outlets recommended
- Secure networking and server equipment behind locked doors recommended



COMMENTS

ADVANCED NETWORK GUIDELINES

Advanced Considerations

- System-I and Linux Servers should have their connections hardcoded to maximum line speed (prefer 1 GBit) and Full Duplex on both sides of the connection for each device.
- VLANs (Virtual Local Area Networks) should be used to separate users from network devices.
 - Examples:
 - VLAN for servers, System i, Lab Gear & Zebra printers, printers & plotters, internet access devices and remote access, WLAN, and PACS vendors
- Firewalls & VPN Devices
 - Configure for HMS remote support
 - Supports IPSEC
 - Supports hosts to LAN
 - Configurations for remote users & sites
 - Configuration considerations should include:
 - Who / What should access what VLAN / device
 - Timing & Duration of access – when and how long
 - Accounting and intrusion tracking – auditing of legal and tracking of illegal access
 - Usage of a DMZ for externally accessible resources



COMMENTS

FAX*STAR SERVER

Fax*Star Server is HMS provided solution for faxing rich text documents. Rich text documents may include letterhead type text, and logos; formatted text; signatures; etc. Fax400 can only send plain text documents. Documents, such as transcription documents, for which the client wants to take advantage of rich text must be faxed using Fax*Star. HMS prefers to access the server via a VPN tunnel using remote desktop or VNC software. However, if this is not possible, PCAnywhere and a phone line will need to be installed for HMS to have access via modem.

APPLICATIONS THAT UTILIZE THIS ITEM:

Transcription

Transcription documents can be faxed in rich text format utilizing the Fax*Star server.

Laboratory

Laboratory documents can be faxed in rich text format utilizing the Fax*Star server.

Material Management Point of Issue

Purchase Orders can be sent to vendors within this module utilizing the Fax*Star server.



COMMENTS

Fax*Star server requires Microsoft Word and Excel and customers are responsible for loading both applications once the server is delivered. Also, Print Monitor PC is required.

LINUX SERVER

Linux Server is provided for running HMS browser-based applications in order to offload work to a server outside the IBM Power System. This can increase performance as well as providing a better security solution by having the web server separated from the database server. This is especially important where the web server must sit outside of the firewall, or be otherwise exposed outside the LAN. It supports up to 300 users. It comes in either a Deskside or a Rack Mount option. HMS prefers to access the PC via a VPN tunnel using remote desktop or VNC software. However, if this is not possible, PCAnywhere and a phone line will need to be installed for HMS to have access via modem.



COMMENTS

Secured Socket Layer (SSL) is recommended for remote web-based users.

If needed, the hospital will need to obtain the license and HMS will install SSL certificate.

APPLICATIONS THAT UTILIZE THIS ITEM:

eMar, Patient Care, Clinical View, eArchive, Outreach Scheduling, and CPOE

All of these applications require the use of the Linux server.

PRINT MONITOR PC

Print Monitor PC is a client provided computer that is used as a part of Integrated Transcription to convert plain text to a rich text format. . Rich text documents may include letterhead type, text and logos; formatted text; signatures; etc. Documents, such as transcription documents, for which the client wants to take advantage of rich text, must use a Print Monitor PC. HMS prefers to access the PC via a VPN tunnel using remote desktop or VNC software. However, if this is not possible, PCAnywhere and a phone line will need to be installed for HMS to have access via modem.

APPLICATIONS THAT UTILIZE THIS ITEM:

Transcription

Transcription documents can be converted in rich text format utilizing the Print Monitor PC and printed off. If customer wants to faxed the newly converted rich text document, Fax*Star server is required.

Laboratory

Laboratory documents can be converted in rich text format utilizing the Print Monitor PC and printed off. If customer wants to faxed the newly converted rich text document, Fax*Star server is required.



COMMENTS

Requires Microsoft Word and installation fees.

IBM POWER SYSTEM i

HMS utilizes IBM System i 8202-E4B for its hardware platform. The minimum configuration comes with twenty-four external disk drives (139GB SAS), 1.5GB Cache Controller, 1 V6R1 Operating System license, and 32GB of memory. The system is supplied with an UPS, which communicates directly with the IBM System i and will perform an IPL after a specified time value has been reached during a power failure. The system has the ability to respond gracefully to an unexpected hardware or software failure. There are many levels of fault tolerance, the lowest being the ability to continue operation in the event of a power failure. The server comes with redundancy.

The DB2 Universal Database is a open relational database management system (RDBMS) that is fully integrated on the IBM System i and is, therefore, very easy to use and manage. Because HMS has developed the HMS system on this ODBC-compliant database in a single library, information is shared across all modules and can be viewed from one screen function. This single-library relationship also allows for updates of any data field from any module to auto-populate the same data fields of other modules in real-time. In addition, the DB2 UDB for the IBM System i supports a broad range of applications and development environments at a lower cost of ownership due to its unique autonomic computing (self-managing) features.



COMMENTS

Minimum Configuration:

5817 CPW, 32GB

Memory, Twenty-four

139GB external SAS

Disk Drive, and a 1.5GB

Cache Controller running

Raid 5

Requires Linux Server

when using browser-

based applications

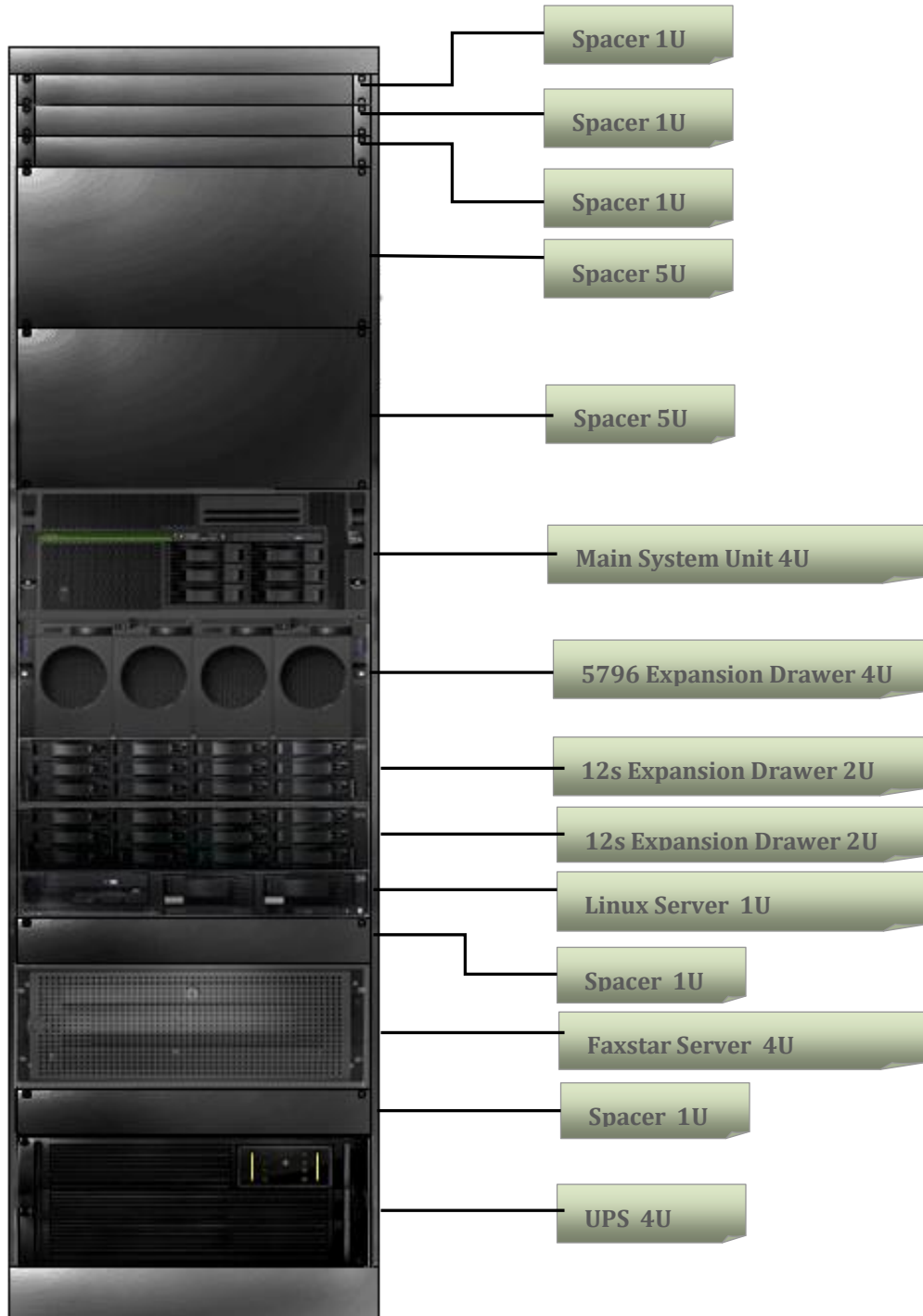
IBM RACK LAYOUT



COMMENTS

7014-T00 36U rack pictured
 Height: 1804 mm (71.0 in.)
 Capacity: 36 usable EIA units
 Height: 1926 mm (75.8 in.)
 Width: 644 mm (25.4 in.)
 Depth: 1098 mm (43.3 in.)

An IBM 42u rack can be ordered if requested.



LABORATORY INTERFACE COMPUTER

A customer provided computer that monitors all of the instruments that are interfaced through lab interface devices. This computer needs to meet HMS Computer Recommendations at a minimum. HMS requires access over VPN and PCAnywhere installed on the local machine.

APPLICATIONS THAT UTILIZE THIS ITEM:

Laboratory



COMMENTS

HMS GUI CLIENT UPDATE SERVER

A customer provided computer that is utilized to cut down the amount of bandwidth used for taking HMS GUI updates to remote locations via Frame Relay, MPLS or VPN. The GUI Server will take updates from the IBM System i and every computer at the facility will take updates from the GUI Server. Using a GUI server helps keep the majority of the bandwidth utilization local on the facility network. This computer does not have to meet HMS Computer Recommendations since it is only used for taking updates. Please contact HMS to see if a certain computer at your facility can be used.



APPLICATIONS THAT UTILIZE THIS ITEM:

All HMS Financial Applications

COMMENTS