PACS

PACS stands for Picture Archiving and Communication System. It is a means by which medical images and text are stored, retrieved and viewed in a health care setting.

PACS

The fundamental elements of a PACS include a server, a workstation, and the network that connects them.
PACS
A server is a specialized computer that stores and retrieves data and information.

PACS
A workstation enables viewers to retrieve images (and text) for viewing. The terminal that serves as the workstation is called a client.

PACS
The simplest form of PACS includes a modality such as CT or MRI, a workstation and a network connection (called a mini-PACS).
PACS

An entire network of mini-PACS can be designed with the use of additional servers. Each computer or server in the network is called a node. All of the nodes are connected by a bus (a network consisting of a cable or fiberoptic backbone with many branches).

PACS

Information other than images can be combined with images with the use of another server called a HIS/RIS gateway.

PACS

In order to make images and information available to physicians outside of a medical facility, another computer is used called a Web Services Distribution Server.
PACS

For any two computers on a network to communicate, each has to have a unique address. The address is assigned by a network administrator and must conform to a standard called TCP/IP. It stands for Transfer Control Protocol/Internet Protocol.

TCP/IP ADDRESS

Each computer must have a unique address. This is made up of 4 sets of numbers, separated by 3 periods, each set ranging in value from 0 to 255 (a total of 256 possible numbers per set).

TCP/IP ADDRESS

This addressing system is also used on the internet. If you were to type www.mccc.edu into your Internet browser, a specialized computer called a domain name server (DNS) would translate Mercer's web address into its IP address. However, you could enter 198.133.170.150 and still find the web site.
TCP/IP UPDATE

The current system, called IPv4, is running out of addresses. The system was originally designed to handle $2^{32}$ (or 4.3 x $10^9$) addresses. The latest standard, IPv6 has $2^{128}$ (or 3.4 x $10^{38}$) addresses. They are not interoperable, so rolling out IPv6 will take time.

DICOM

Stands for Digital Image and Communication in Medicine. It is an agreement worked out between the American College of Radiology (ACR) and the National Electrical Manufacturers Association (NEMA). The agreement standardizes image formats used by various kinds of imaging equipment regardless of manufacturer.

DICOM

This “open architecture” ensures interoperability regardless of the equipment adopted by an imaging department.
OTHER STANDARDS

• HL7 (HEALTH LEVEL 7)
• IHE (INTEGRATING the HEALTHCARE ENTERPRISE)

HL7 & IHE

THESE ARE COMPLEMENTARY STANDARDS INTENDED TO MAKE NON-IMAGE INFORMATION ACCESSIBLE ACROSS A NETWORK IN A MANNER THAT IS EASY TO USE AND ULTIMATELY INTEGRATES WITH PACS. AS WITH PACS, HL7 AND IHE STEM FROM COLLABORATION WITH INDUSTRY AND THE MEDICAL COMMUNITY.

WHEN YOU PUT IT ALL TOGETHER
A CAREER PATHWAY FOR IMAGING TECHNOLOGISTS?

The ideal PACS administrator will is one who can combine medical imaging expertise with computer skills and an understanding of networking concepts.

A PARTIAL LISTING OF DUTIES ASSOCIATED WITH PACS ADMINISTRATION:

- PACS management, maintenance and troubleshooting
- End-user training
- Workflow management and redesign
- Physician relations
- Administration and integration
- Development of PACS policies and guidelines
- Vendor management
- Expanding the system to new customers and modalities
- Reading room design

Source: http://www.healthimaging.com/topics/defining-pacs-administrators-role-changing-environment/

FOR THE INDIVIDUAL CHARGED WITH PACS IMPLEMENTATION:

- The development of a strategic vision for the PACS
- Vendor selection, negotiation and management
- PACS steering committee development and participation
- Financial assessments and cost estimates
- Management of the project installation
- Integration of employee training on the system

Source: http://www.healthimaging.com/topics/defining-pacs-administrators-role-changing-environment/
EDUCATION

Many sources of education and training exist, from vendor-specific and proprietary schools to degree programs. On-the-job training is an integrating feature. There is no strict entry-level requirement. However, all sources of training share common elements.

COMMON ELEMENTS

- BASIC COMPUTER CONCEPTS
- OPERATING SYSTEMS
- PACS BASICS
- PACS NETWORK ARCHITECTURE
- DICOM, HL7, IHE
- SYSTEMS ANALYSIS
- NETWORK SECURITY
- QUALITY CONTROL
- END-USER TRAINING

PROFESSIONALIZING THE PACS ADMINISTRATOR

ALTHOUGH PACS AND PACS ADMINISTRATION HAS BEEN AROUND FOR MANY YEARS, THE ROLE OF THE ADMINISTRATOR CONTINUES TO EVOLVE. ONCE THOUGHT OF AS A FORM OF TECHNOLOGY MAINTENANCE, INDIVIDUALS CHARGED WITH ADMINISTRATION MUST BE PROACTIVE AND VISIONARY.
PROFESSIONALIZING THE PACS ADMINISTRATOR

PROFESSIONAL ORGANIZATIONS HAVE SPRUNG UP IN AN EFFORT TO DEFINE PACS ADMINISTRATION IN OPERATIONAL AND EDUCATIONAL TERMS. EXPERIENCE IN PACS ADMINISTRATION IS A GOOD STARTING POINT, BUT QUALIFYING KNOWLEDGE AND EXPERTISE IS ALSO REQUIRED.

PROFESSIONALIZING THE PACS ADMINISTRATOR

VALIDATING THE ADMINISTRATORS EXPERIENCE, KNOWLEDGE AND EXPERTISE IS ACHIEVED THROUGH CERTIFYING EXAMINATION TWO. TWO ORGANIZATIONS CURRENTLY ADMINISTER CERTIFYING EXAMINATIONS.

ABIi

THE SOCIETY OF IMAGING INFORMATICS IN MEDICINE (SIIM) & THE AMERICAN REGISTRY OF RADIOLOGIC TECHNOLOGISTS (ARRT) FORMED AN ORGANIZATION CALLED THE AMERICAN BOARD OF IMAGING INFORMATICS (ABIi), AN INDEPENDENT CERTIFYING AGENCY
THE ABII EXAMINATION

THOSE WITH THE REQUISITE MINIMUM EXPERIENCE & EDUCATION AND CAN CHALLENGE A 150 ITEM EXAMINATION COVERING 10 KNOWLEDGE AREAS CONSIDERED CRITICAL TO COMPETENT JOB PERFORMANCE. CERTIFICATION IS TIME-LIMITED (5 YEARS). THE AWARD IS THE CERTIFIED IMAGING INFORMATICS PROFESSIONAL (CIIP) CREDENTIAL.

Source: https://www.abii.org/

PARCA

ANOTHER CREDENTIALING ORGANIZATION, THE PACS ADMINISTRATORS REGISTRY AND CERTIFICATION ASSOCIATION (PARCA). THEY CLAIM TO EXCLUSIVELY REPRESENT PACS ADMINISTRATORS AND OFFER CREDENTIALING ON SEVERAL LEVELS.

PARCA CERTIFICATION

- Certified PACS Associate - Technical
- Certified PACS Associate – Clinical
- Certified PACS Interface Analyst (CPIA)
- Certified PACS System Analyst (CPSA)
- Certified Professional EMR Specialist (CPEMS)
- Certified Healthcare Enterprise Architect (CHEA)

Source: http://pacsadmin.org/