

PACS Engineers & Administrators Certification (Phase 2)



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Introduction

The PACS Engineers & Administrators Certification Phase 2 course will teach the in-depth technical interface and integration skills necessary to troubleshoot and solve any of today's toughest system administrative problems. Students will learn the in-depth troubleshooting techniques of digital imaging systems, modalities, and information management systems such as HIS, RIS, PACS and tele-radiology. Students will be able to analyze problems with non-invasive DICOM sniffing software to pinpoint the source of digital imaging problems and determine the appropriate corrective action.

Prerequisites

The seasoned service professional must have a basic understanding of computer fundamentals and navigating windows operation systems and completion of PACS Engineers & Administrators Certification Phase 1. Students are required to bring their own laptop.

Objectives

Upon completion of the course participants will be able to:

- Understand PACS system administration
- Understand and implement security policies and procedures required to protect and maintain critical medical records, including information systems and images
- Understand and troubleshoot image-quality- related DICOM problems
- Develop and implement the QA/QC program requirements of the filmless imaging department
- Pinpoint image transmission problems regardless of the manufacturer
- Perform necessary corrective action

Course Outline

Day 1

- PACS Technologies
 - Workflow
 - Analysis
 - Tools
 - Issues
 - CR/DR Workflow
 - Administrator Workflow Mapping
- PACS System Administration
 - Project Management
 - System Maintenance
 - Image and Information Management (IIM)
- Security and HIPAA Requirements for PACS
- HIPAA Requirements for PACS
 - Codes
 - Identifiers
 - HIPAA Implementation Zones
 - HIPAA Administration
- Lab activity
 - Build open source PAC's system

Day 2

- Advanced DICOM
 - DICOM Storage and Image Management
 - Storage Service Class
 - Single frame
 - Multi-frame
 - Storage Commitment
 - MPPS: Modality Performed Procedure Step
 - MPPS Manager
 - RIS
 - PACS
 - MWL
 - DICOM Print
 - Film Sessions
 - Film Box
 - Annotation Box
 - Print Job
 - Presentations
 - LUT's
 - Query/Retrieve

- Query/Retrieve
 - Query/Retrieve - FIND
 - Query/Retrieve - MOVE - GET
 - Query/Retrieve - CANCEL
- SR (Structured Reporting)
 - Simple Reporting (Basic)
 - Intermediate Reporting (Enhanced)
 - Complex Reporting (Comprehensive)
 - Key Object Note

Day 3

- DICOM Image Quality
 - Pixel Representation
 - Allocated/Stored/High Bit
 - Monochrome/RGB
 - Signed/Unsigned
- Image Pixel Pipeline
 - LUT (Look Up Tables)
 - Modality LUT
 - Masks
 - VOI LUT
 - Presentation LUT
- Workstation Configuration to Radiologist Preferences
 - Customization
 - Toolbars
 - Hanging Protocols
 - Grayscale Standard Display Function (GSDF)
 - Calibration Methods
 - Presentation State
 - Overlays
 - Pixel Data
 - Overlay Plane
- Compression
 - Lossy/Lossless
 - JPEG
 - MPEG
 - RLE

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- Wavelet
- DICOM Media
 - Media Specifications
 - Physical Media
 - File Structure
 - DICOMDIR
 - Application Profiles
 - CD Interchange Issues
- Configure & Troubleshoot Using DICOM Emulators
 - Passive Test Tools
 - Configure & Troubleshoot Using Non-invasive DICOM Sniffers
- Interpret DICOM Logs
- Evaluate DICOM Dumps
- Course Review
- PACS Engineer & Administrator Phase 2 Exam
- Course Evaluation

Day 4

- DICOM Networking
 - PDU's (Protocol Data Units)
 - DICOM AE's
 - IP/Port/Subnet Mask/Default Gateway
 - DICOM Messages
 - DIMSE Commands
 - Command Sets
 - Data Sets
 - Tag-Length
 - VR/VM (Value Representation/Value Multiplicity)
 - Explicit/Implicit VR's
 - Decoding VR's
 - Specialization and Privatization
 - Proprietary DICOM
- DICOM Networking
 - DICOM Devices
 - SCU/SCP (Service Class User/Service Class Provider)
 - FSR/FDC/FSU
 - Device Negotiation
 - ID
 - Abstract Syntax
 - Transfer Syntax
 - Presentation Context
 - DICOM Association

Labs:

- Windows PACS Server:
 - Assemble Server with RAID Array
 - Configure & Format RAID Array
 - Install Windows OS
 - Install MySQL Database
 - Configure MySQL Database
 - Install Open-Source PACS software
 - Configure Open-Source PACS software
 - Test Open-Source PACS install using various modalities & laptop troubleshooting tools
- Linux PACS Server
 - Assemble Server with RAID Array
 - Configure & Format RAID Array
 - Install Linux OS
 - Install MySQL Database
 - Configure MySQL Database
 - Install Open-Source PACS software
 - Configure Open-Source PACS software
 - Test Open-Source PACS install using various modalities & laptop troubleshooting tools

Day 5

- DICOM Troubleshooting
 - Sniffers and Testing Software
 - Active Test Tools