

# Installation and Maintenance of Health IT Systems

## Unit 8b

Troubleshooting; Maintenance and Upgrades; and Interaction with Vendors, Developers, and Users

Component&Unit8b

Health IT Workforce Curriculum  
Version 1.0 Fall 2010

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## Creating a Performance Baseline

- What is a “performance baseline”?
  - Generated after completion of performance baseline testing
  - Shows the normal operating parameters of your system under normal load conditions
  - Used to gauge the overall health of the system and to assist with isolating performance problems

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2

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## Creating a Performance Baseline

- What is a performance baseline testing?
  - Comparing the performance of a new server or system to a known standard of reference, like existing measurements or software specifications
- What should be tested (at minimum)?
  - System resources (server and system hardware)
  - Network architecture
  - Operating system
  - Database applications
  - Client applications

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3

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## Creating a Performance Baseline

- At a minimum, use baseline measurements to determine:
  - Peak and off-peak hours of operation.
  - Production-query or batch-command response times.
  - Database backup and restore completion times.

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## Creating a Performance Baseline

- What next?
  - Compare the baseline statistics to current server or system performance.
  - Numbers far above or below your baseline warrant further investigation.
- Available tools:
  - Many third party utilities
  - Windows built-in utilities
  - Specialized database utilities

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## Performing EHR Application Upgrades

- Upgrading system components is crucial for extending EHR functionality and overall system lifespan.
- Improperly planned or managed upgrade procedures can severely damage the system, reducing performance.
- Upgrading any major critical production system should take a highly structured approach.

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## Performing EHR Application Upgrades

- The upgrade team works with the vendor, reads over the upgrade documentation, and analyzes functional enhancements. They then work with the vendor to answer any unknown variables in documentation or due to system customization.
- The technical team develops an alternative testing environment.
- The upgrade team compiles pre-installation and installation checklists.
- After the first testing is completed on the test bed, logs are reviewed and any errors or discrepancies are reported to the vendor.

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## Performing EHR Application Upgrades

- After the vendor resolves any testing issues, the upgrade process is retested, ensuring that data integrity is maintained.
- Once testing has been completed and the upgrade process approved, final documentation is prepared, and training is scheduled. The installation team is also finalized and assigned various roles.
- Upgrade windows is scheduled during off-peak times.
- A shadow copy of the EHR (read-only, without real-time interfaced results) is available for access during the upgrade window.

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## Performing EHR Application Upgrades

- Testing of the upgrade begins immediately after completion. Once testing is complete, the helpdesk is notified and systems are brought back online.
- After the upgrade has been completed, a dedicated team is available over the next few business days to resolve any issues the upgrade could've created.
- Similar processes should be followed for server OS, workstation OS, and database upgrades.

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## Maintaining the Client - Vendor Relationship

- Building and maintaining a relationship with your EHR vendor is essential not only for a successful implantation, but also for the continued success of the product throughout its life cycle.
  - Issues will arise that are beyond the scope of your IT workforce.
  - Upgrades will need to be routinely applied.
  - Your vendor will play a pivotal role in these and many more facets of your EHR management scheme.
- Successful business partnerships are built on mutual goals, trust, and the knowledge that:
  - both entities are “in this together”
  - the success of the vendor goes hand in hand with the success of their product

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## Maintaining the Client - Vendor Relationship

- Purchasing an EHR system brings about a long time commitment between your organization and the vendor.
  - These relationships become quite complex once the EHR system becomes fully embedded into the organization, which then becomes completely dependent on its capabilities.
- Understand the company and its culture.
  - Visit the company headquarters and talk with as many folks as you can, including the development and support teams.

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## Maintaining the Client - Vendor Relationship

- Follow the money.
  - What drives the revenue stream for the company?
  - Are they dependent more on support fees?
  - Do you fully understand the support fee structure they are modeling for your company?
  - Are they financially solvent enough to provide support for the life cycle of the product?
- If you are planning to purchase a hosted solution, do you fully understand their upgrade strategy?
  - Will their upgrade strategy conflict with your business practices?
- Have your development staff interface with theirs, since they will be spending a great deal of time together.
  - Does your staff feel like they are competent and enthusiastic about supporting their product?

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## Summary

- A dedicated helpdesk is crucial, particularly for large-scale EHR implementations. The helpdesk:
  - Becomes the first point of contact for most troubleshooting incidents.
  - Assists with answering user inquiries and troubleshooting more common issues.
  - Is responsible for “triaging” issues beyond their scope to the appropriate production support group.

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## Summary

- A tiered approach can maximize productivity, especially in large IT shops.
- Maintenance teams should:
  - Be customer-focused.
  - Consist of staff with a high degree of application and business process knowledge.
  - Be staffed with specialists capable of providing helpdesk, OS and application-level, hardware, and network support.

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## Summary

- The performance baseline:
  - Is generated after completion of performance baseline testing.
  - Shows the normal operating parameters of your system under normal load conditions.
  - Is used to gauge the overall health of the system and to assist with isolating performance problems.

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## Summary

- Upgrading any major critical production system should take a highly structured approach, including:
  - Maintaining a test bed for testing upgrades prior to rollout.
  - Working with the vendor to resolve issues and inconsistencies prior to rollout.
  - Rolling out during non-peak hours.

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## Summary

- Purchasing an EHR system brings about a long time commitment between your organization and the vendor.
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