

#### **Component 8** Installation and Maintenance of Health IT Systems Unit 8b Troubleshooting; Maintenance and Upgrades; Interaction with Vendors, Developers, and Users

This material was developed by Duke University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000024.

# **Performance Baseline**

- · Generated after completion of performance baseline testing.
- Shows normal operating parameters of your system under normal load conditions.
- · Used to gauge overall system health & assist with isolating performance problems.

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#### Performance Baseline: Testing · "Benchmark testing" · Compare performance of new server/system against standard (e.g., existing measurements or software specs). • Test at regular intervals, when problem-free: - System resources (server & hardware) - Network architecture - Operating system - Database applications - Client applications nt 8/Unit 8b

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#### Performance Baseline: Utilities Available · Databases often require

- Work with vendor to determine best method for your EHR. Many third-party utilities available.
- Windows built-in utilities:
   System Monitor (collect & view real-time data on usage of memory, disk, processor)
- Performance logs & alerts \_
- Performance logs & alerts Task Manager Event Tracing for Windows (ETW; trace & log events raised by user-mode applications & kernel-mode drivers; export most SQL Server events.)

special utilities.

- SQL Server built-in utilities: SQL Trace SQL Server Profiler
- SQL Server Management Studio Activity Monitor
   SQL Server Management Studio Graphical Showplan
- Stored procedures
- \_ Database Console Commands (DBCC)

Built-in functions Trace flags

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#### Performance Baseline: Measurements & Next Steps · Measurements - Peak vs. off-peak hours - Production-query, batch-command response times

- Database backup and restore completion times
- Next steps

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- Compare baseline statistics to current
- server/system performance.
- Investigate if numbers far above or below baseline.

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## EHR Maintenance & Upgrades

- · Upgrades crucial for extending EHR functionality & overall system lifespan.
- · Improperly planned/managed upgrade procedures can severely damage system, reducing performance.
- Use highly structured approach in upgrading any major, critical production system.

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After first testing, logs reviewed & errors/discrepancies reported to vendor.

## EHR Maintenance & Upgrades: Structured Approach (cont'd)

- After vendor resolves issues, upgrade process retested, ensuring data integrity.
- Consider software to simulate workflow & users; track data for performance analysis.
- Unified spreadsheet to track issues.
- Once testing complete & upgrade approved, final documentation prepared & training scheduled. Installation team finalized & assigned roles.
- · Upgrade scheduled during off-peak times.
- EHR "shadow copy" (read-only, without real-time interfaced results) accessible during upgrade.

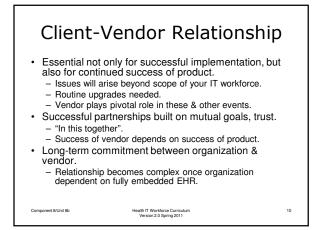
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### EHR Maintenance & Upgrades: Structured Approach (cont'd)

- · Upgraded system tested immediately after completion.
- · Once testing complete, help desk notified & systems brought back online.
- Dedicated team available for several business days to resolve issues.
- (Follow similar processes for upgrades to server OS, workstation OS, databases.)

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# Client-Vendor Relationship: Before Purchase

- · Understand vendor company & culture.
  - Visit headquarters, talk with as many as you can (including development & support).
  - Follow the money. What drives revenue stream?
  - Dependent on support fees? Understand support-fee structure.
  - Financially solvent enough to provide long-term support?
- Hosted solutions: understand vendor's upgrade strategy.
- Will it conflict with your business practices?
- · Impressions of vendor's support staff

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# Summary Performance baseline Helps gauge system health & isolate problems. Structured approach for upgrades

- Separate environment for testing upgrades prior to rollout. Work closely with vendor to resolve issues. Rollout during non-peak hours.
- Client-vendor relationship
  - EHR purchase brings long-term commitment. Complexity once dependent on EHR. Understand vendor & culture before purchase.

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References
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<ul> <li>"Benchmarking Techniques Using T-SQL Part 1 - System Statistical Functions", by Bill Wunder.</li> <li><u>http://64.29.220.154/articles/viewarticle.aspx?id=</u> 17797</li> </ul>
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