AE EHR Database Servers

Systems Maintenance

Embrace the new world of healthcare

Agenda

- **AE EHR Databases:**
  - Dynamic data
  - Static data
- **Third Party Databases**
- **Server Specifications**
- **SQL Services**
- **Connectivity**
- **Tools/Jobs**

AE EHR Databases: Dynamic data

- **Works**
  - Clinical data storage and processing
- **IDXwf**
  - Integrated IDX WebFramework
- **Impact**
  - Scan application Image Map

- ***Production instances of these databases should be set to Full Recovery***

AE EHR Databases: Static data

- **AHSDelta –** Delta processing

- **AHSLibrary –** TW Library Titles management

- **AHSCharge –** LMRP; Advance Beneficiary Notice

- **AHSMessage –** Clinical/Patient Messaging Content

- **AHSOCD –** Care Plan Information

Third Party Databases

- **chInfoscan:**
  - Formulary checking

- **chMedispan:**
  - Drug interactions

- **chMedcinSearch:**
  - Medcin templates; ICD9 Search

Server Specifications (as of v11.2.3)

- **Microsoft SQL Server 2005 x64-bit Edition with SQL SP3 (9.00.4035.00)**
- **or**
- **Microsoft SQL Server 2008 R2 x64-bit Edition with SQL CU1 (10.50.1702)**

Server Specifications (as of v11.2.3)

- **Windows 2003 Server Enterprise x64-bit Edition SP2**

- **or**

- **Windows 2008 Server Enterprise x64-bit Edition**

- **or**

- **Windows 2008 Server Enterprise R2 x64-bit Edition**

RAM based on annual Encounters

- **6 GB of RAM base configuration plus an additional 5 GB of RAM for every 500,000 encounters per year.**

CPU based on annual Encounters

- **Patient Encounters Per/Year = Processor**

- **<=500,000 4 Server Class Processor Cores**

- **<=1,000,000 6 Server Class Processor Cores**

- **<=2,000,000 8 Server Class Processor Cores**

- **<=3,000,000 10 Server Class Processor Cores**

- **<=4,000,000 12 Server Class Processor Cores**

- **<=5,000,000 16 Server Class Processor Cores**

- **<=6,000,000 20 Server Class Processor Cores**

- **<=7,000,000 24 Server Class Processor Cores**

- **<=8,000,000 28 Server Class Processor Cores**

- **<=9,000,000 30 Server Class Processor Cores**

CPU based on annual Encounters (Cont.)

- **Patient Encounters Per/Year = Processor**
- **<=12,000,000 40 Server Class Processor Cores**
- **<=14,000,000 48 Server Class Processor Cores**
- **<=15,000,000 50 Server Class Processor Cores**
- **<=18,000,000 60 Server Class Processor Cores**
- **<=19,000,000 64 Server Class Processor Cores**
- **<=21,000,000 70 Server Class Processor Cores**
- **<=24,000,000 80 Server Class Processor Cores**

CPU based on annual Encounters (Cont.)

- **Intel Xeon and AMD Opteron are examples of Server Class Processors**

- **Additional information is required to appropriately size a server for each specific customer environment.**

- **Custom database server configurations are necessary when implementing a MSO or multi-database configuration.**

Disk requirements driven by I/O characteristic

- The Allscripts Enterprise application falls under the category of being an Online Transaction Processing (OLTP) application. OLTP applications performance characteristics are highly dependent upon the disk subsystem that houses the application database. Having an insufficient disk subsystem for such applications results in excessive data access latencies which ultimately translates to poor application response times.

Disk requirements driven by I/O characteristic (Cont.)

- Allscripts Enterprise production database LUN's are required to have their disk latency statistics (Performance Monitor AvgDisk Second Read and AvgDisk Second Write) consistently below .010 (10 milliseconds) during peak production usage. This requirement is taken from Microsoft's recommendation for SQL Server disk subsystems running OLTP applications.

- (**http://www.microsoft.com/technet/prodtechnol/sql/bestpractice/pdpliobp.mspx**)

Disk requirements driven by I/O characteristic (Cont.)

- Although there are multiple ways to configure a Storage Area Network (SAN) disk RAID arrays our testing has shown that SAN LUNs configured to a RAID 5 or other parity based RAID configuration do not offer the random write capabilities needed to keep disk latencies consistently below the 10 millisecond range except within the smallest of implementations. Our testing has shown that RAID 1+0 drive arrays do have the throughput characteristics necessary to keep disk write latencies consistently below this 10 millisecond range.

Server Specifications - 11.4 (DRAFT)

- **Microsoft SQL Server 2008 R2 x64-bit Edition with SQL SP1**

- **Windows 2003 Server Enterprise x64-bit Edition SP2**
- **or**
- **Windows 2008 Server Enterprise x64-bit Edition**
- **or**
- **Windows 2008 Server Enterprise R2 x64-bit Edition**

SQL Services

- **SQL Server Service**
    - Application service for MS SQL Servers

- **SQL Agent Service**
    - Manages Scheduled SQL Jobs

Connectivity

- **Key SQL Logins**

- **Web Server Connectivity: ODBC/VOE**

- **Message Server Connectivity: Delta Process**

- **Scan Server Connectivity: Impact.cfg**

Key SQL Logins

- **Admin - Login for IDXwf**

- **CHVOE - Login for Works**

- **ImpactUser - Login for Impact**

- **ConnectR - Common Login for Interfaces connectivity**

Web Server Connectivity: ODBC/VOE

- **ODBC Standard Config:**
  - IDXwf
  - Works
  - TWIS

- **VOE Standard Config:**
  - AHSWeb
  - Touchworks
  - TWIS

Message Server Connectivity: Delta Process

- **Delta is the only Message Server process that truly connects directly to the Database Server**

Scan Server Connectivity: Impact.cfg

- **ConProps.exe**
  - Management Tool for core database connectivity
- **NotePad**
  - File can be adjusted manually as well, for more fine tuned configuration.

Interface Server Connectivity

- **ODBC**
- **VBScript**
- **SP Calls**

Connectivity Demo

Tools

- **SQL Management Studio:**
  - Administrative tasks
    - Databases settings
    - Backups
    - User management
  - Query databases
  - Manage jobs

Tools (cont.)

- **SQL Server Profiler**

  – Find underlying code when issues arise

  – Example: Filter for long running queries

- **PerfMon**

  – Can be run concurrently to tie into Profiler trace data in order to review resource issues associated with long running queries
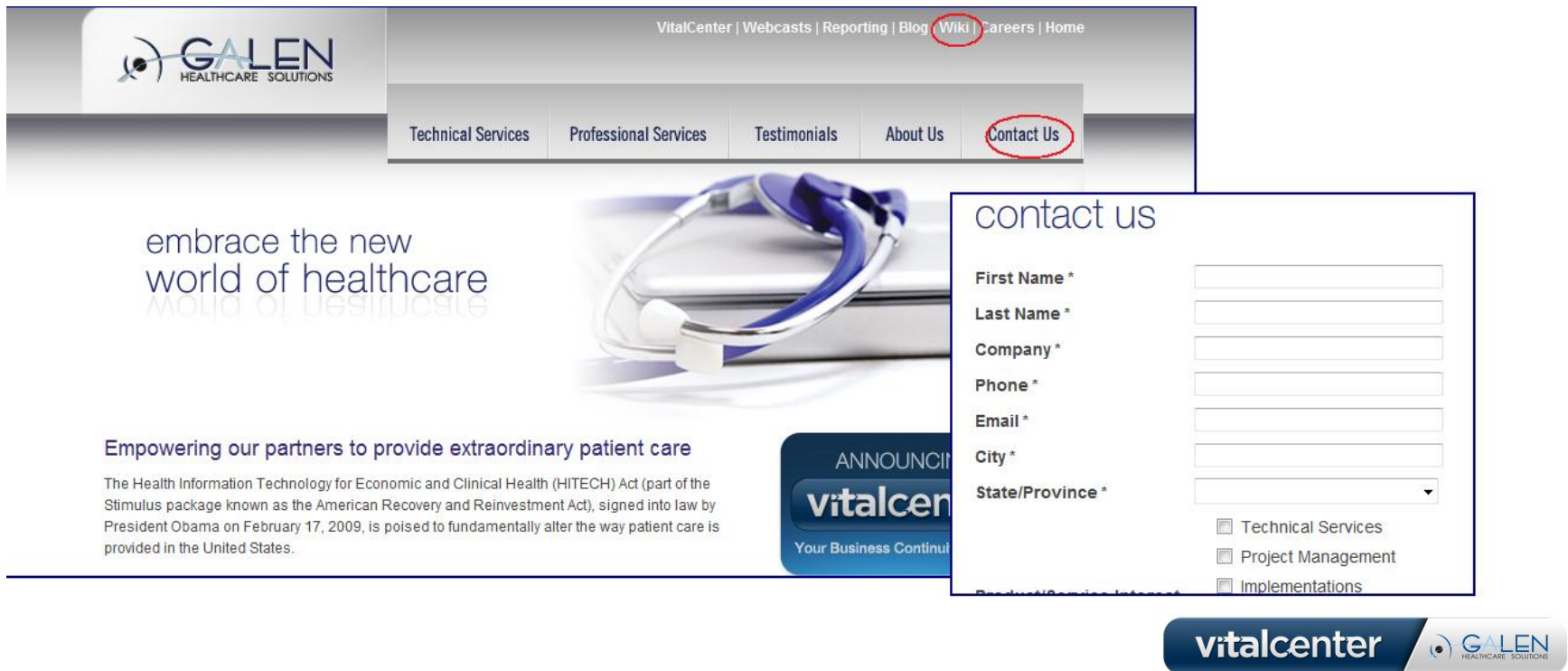
Jobs

- **Backup Jobs**
  - Full Backups
  - Log Backups

- **Re-indexer Job**
  - Scheduling concerns

Tools and Jobs Demo

Thank you for joining us today, for additional assistance….

You can contact us through our website at

www.galenhealthcare.com