

## SQL Server Loadfest R2

Lesson 1 - What is SQL Server – R2

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### Why we're here

- Hands-on install of SQL Server 2008
- Learn about managing SQL Server 2008 R2
  - Storage
  - Network
- Learn about SQL Server 2008 R2 security

## What is SQL Server?

### History of SQL Server

- Based on Sybase SQL Server 1980's
- First Microsoft edition was for OS/2
- Microsoft only versions 4.2 – 6.5
- SQL Server 7.0 was a 95% rewrite (1997)
- SQL Server 2000 – Now on SP 4\*
- SQL Server 2005 – Now on SP3
- SQL Server 2008 – August 2008
- SQL Server 2008 R2 – May 2010

### **Pieces and Parts**

- Database Engine
- SQL Server Agent
- Replication
- Full-Text Search
- Reporting Services
- Integration Services
- Analysis Services
- Client Connectivity / Client Tools

### **Database Engine**

- Service that is the interface to databases
- All database changes go through the engine
- Database size to 500 TB
- Multiple Databases/Instance

### **Instances**

- Instance is a “SQL Server”
- Multiple instances on each Windows Server
- May mix versions from 2000 – 2008 R2
- May mix Service Packs or Languages

### **SQL Server Agent**

- Scheduling Mechanism
- Runs
  - SQL Scripts
  - SSIS Packages
  - Analysis Service Cubes
  - Other Programs
  - Maintenance, Backups, etc.

### Replication

- Synchronizes data between databases
- Publish – Subscribe Model
- Multiple Types of Replication
  - Snapshot
  - Transactional
  - Merge
  - Peer-to-Peer
- Minimal Changes in 2008 R2

### SQL Server Full-Text Search Service

- Creates an index on text columns
- Runs as an external process
- Adds predicates to T-SQL
  - CONTAINS - CONTAINSTABLE
  - FREETEXT - FREETEXTABLE

### SQL Server Reporting Services

- Report Writer and Reporting Server
- Report Server Executes on the server
- Reports can be scheduled
- No longer depends on IIS
- Breakout this afternoon at 1:00 - MPR B

### SQL Server Integration Services

- **E**nter **T**est and **L**oad tool
- Programmed with Business Intelligence Studio (Visual Studio 2008)

### SQL Server Analysis Services

- On-Line Analysical Processing – OLAP  
(Cubes)
- Data Mining

### SQL Server Browser

- Directs connections to the correct instance
- Supports SQL Server 2000 – 2008 R2

### StreamInsight

- Drinking from a data firehose?
  - Financial data
  - Sensors
  - Click Stream
- Complex Event Processing (CEP)
- Identify the meaningful events or pattern of events

### Complex Event Processing



### **StreamInsight Applications**

- Input Filter
- LINQ queries in a .Net language
- Output Adaptor

### **Master Data Services**

- New component SQL Server 2008 R2
- Included in
  - Datacenter
  - Enterprise
- Consists of
  - Database
  - Web application

### **Master Data**

- The nouns of a business
  - People
    - Customers
    - Employees
  - Places
    - Stores
    - Warehouses
  - Things
    - Products
    - Parts

### **Why Master Data**

- Master Data is consumed by:
  - ERP
  - CRM
  - Bespoke Applications
  - Data Warehouses
- There are often multiple systems in each type
- Master Data is the single version of the truth

### **SQL Server Client 10.0**

- Connectivity components
  
- DB-Library
  
- Ole DB
  
- ODBC

### **Client Tools**

- SSMS SQL Server Management Studio
- SQL Server Configuration Manager
- Business Intelligence Development Studio
- SQL Server Installation Center
- SQL Server Profiler
- SQLCMD – command line execution

### **SQL Server Feature Packs**

- Additional Tools
  - OleDb Drivers
  - Database Publishing Wizard
  - SQLCLR libraries
  - PowerPivot Add-in for Excel 2010 – Breakout 2:30

### **SQL Server 2008 R2 - Editions**

- DataCenter – Developer – Trial
- Parallel Data Warehouse
- Enterprise
- Standard
- Workgroup
- Web
- Express
- Compact
- Azure

### **Datacenter Edition**

- 64 Processors and up to 256 Cores
- Unlimited Virtualization
- Utility Control Point for > 25 Servers
- StreamInsight – at maximum performance

### **Parallel Data Warehouse**

- Special Appliance Edition
- 10's to 100's of terabytes
- Available from integrators: HP, DELL, BULL
- Multiple Shared Multi-Processor Nodes
- Shared Nothing Configuration

<http://www.microsoft.com/sqlserver/2008/en/us/parallel-data-warehouse.aspx>

### **How does Parallel Data Warehouse Work?**

- Data distribution
  - Large tables (fact) are distributed
  - Small tables (dimension) are replicated
- Queries are distributed to the nodes
- Limited SQL functionality - Querying
  - No stored procedures, spatial, xml, blobs...

### **Fast Track Data Warehouse**

- Updated packaged Data Warehouse solution based on Enterprise Edition
- 4 to 48 Terabytes
- OEM's such as DELL, IBM, HP, BULL

### **Enterprise Edition**

- Limited to 8 processors – 256 cores!
- Limited to 4 VM's
- Utility Control point for up to 25 instances
- Master Data Services and limited StreamInsight

### **Developer Edition**

- Same features as DataCenter
- License limits:
  - 1 User
  - No production use

### **Trial Edition**

- Datacenter Edition Features
- 180 Days timeout
- For Evaluation only

### **Standard Edition**

- All the components.
- Some of the features not included
- 4 Core Limit

### More Editions

- Workgroup
- Web
- Express – 10 GB limit
- Compact
  
- SQL Azure – 1 to 50 GB Database in the Cloud

### 32-Bit vs. 64-Bit

- 32 Bit supported on all 32 bit OS
  
- 32 Bit supported on 64 bit Server
  
- 64 Bit supported on 64 bit OS

### What does SQL Server cost?

### Pricing Models

- Per Processor
  - Charge for each “Socket”, not core
  
- Server Plus CAL

<http://www.microsoft.com/sqlserver/2008/en/us/pricing.aspx>

# SQL Server Loadfest

## Lesson 1 – What is SQL Server

### Retail List Prices

Edition	Processor	Server + (CAL)
DataCenter/PDW	\$54,990	N/A
Enterprise	27,495	8,592(25)
Standard	\$7,171	\$898(5)
Workgroup	\$3743	\$730 (5)
Developer	\$50	N/A
Web/ISP	\$15/Proc/Month	N/A
Express/Compact/Trial	\$0	\$0

<http://www.microsoft.com/sqlserver/2008/en/us/pricing.aspx>

As of 9/24/2010

### Also Included In

- Small Business Server – Premium
- Essential Business Server – Premium
- Additional products

### What's new in SQL Server 2008 R2 and what does it mean to you

- SearchSQLServer.com
- [http://searchsqlserver.bitpipe.com/detail/RES/1280167437\\_471.html?psrc=MPL](http://searchsqlserver.bitpipe.com/detail/RES/1280167437_471.html?psrc=MPL)
- 24 Minute presentation on the new features in R2!

### Lesson 1 – Recap

- SQL Server has a long history
- SQL Server 2008 R2 - Multiple Editions
- Many Components
- You don't have to install all components

**What's Next in Lesson 2**

- Preparing for the install
- Operating Systems
- Storage/Disks
- Security