SSIS & SSRS Improvements in SQL Server 2008

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Agenda

- SQL Server Integration Services - 2008
  - What is new in SSIS 2008
  - Improved Scripting
  - Lookup Improvements
  - Data Profiling Task
- SQL Server Reporting Services - 2008
  - Describe the Report Server architecture changes in SQL 2008.
  - Discuss about the new features in data visualization.

What is new in SSIS 2008

- Improved Scripting – C# support in script task
- Cached Lookup
- Data Flow task improvements
- Data Profiling
- Improved Memory Dumps
- Merge
- Change Data Capture (CDC)

Improved Scripting

- Replacement of old VSA engine used for SQL Server 2005
- Introduction of new VSTA scripting engine
- Now more easy to reference .NET assemblies.

demo

Improved Scripting

Lookup Improvements

- Explicit control over sharing of data
  - Cache connection manager
  - Populate cache in one data flow task and use in other
  - Cache can be populated in any part of dataflow and can later be used for lookup
  - Cache can be persisted to a file and re-used
  - Similar lookup in package can share the cache

Lookup – Notable features

- A cache for misses. Don't keep querying for rows that doesn't exist
- A missed row output, not an error output

demo

Cache Lookup

Data Profiling

- Data Profiling task let you analyze SQL tables to maintain data quality
  - Analyze a set of columns/tables for
    - Candidate keys
    - Column length distribution
    - Null ratio
    - Pattern detection
    - Value distributions and stats
    - Functional dependencies
    - Value inclusion

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Data Profiling

Agenda

- SQL Server Integration Services - 2008
  - What is new in SSIS 2008
  - Lookup Improvements
  - Data Profiling Task
  - Debugging Enhanced – “Super Dump”
- SQL Server Reporting Services - 2008
  - Describe the Report Server architecture changes in SQL 2008.
  - Discuss about the new features in data visualization.

SSRS 2005 Architecture

Report Builder
Report Designer
Report Manager
SharePoint V3
Management Studio
Configuration Tool
3rd Party Applications

Web Service

IIS

ASP.NET

URL Interface
SOAP
Report Processing
Report Models
Extensions

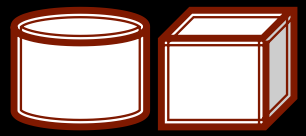
Windows Service

RPC

Scheduling
Report Processing
Subscriptions
Report Models
Delivery
Extensions
Database Maintenance

WMI Service
WMI
WMI Provider

Report Server Database
SharePoint V3 Databases
Configuration Files



Report Data Sources

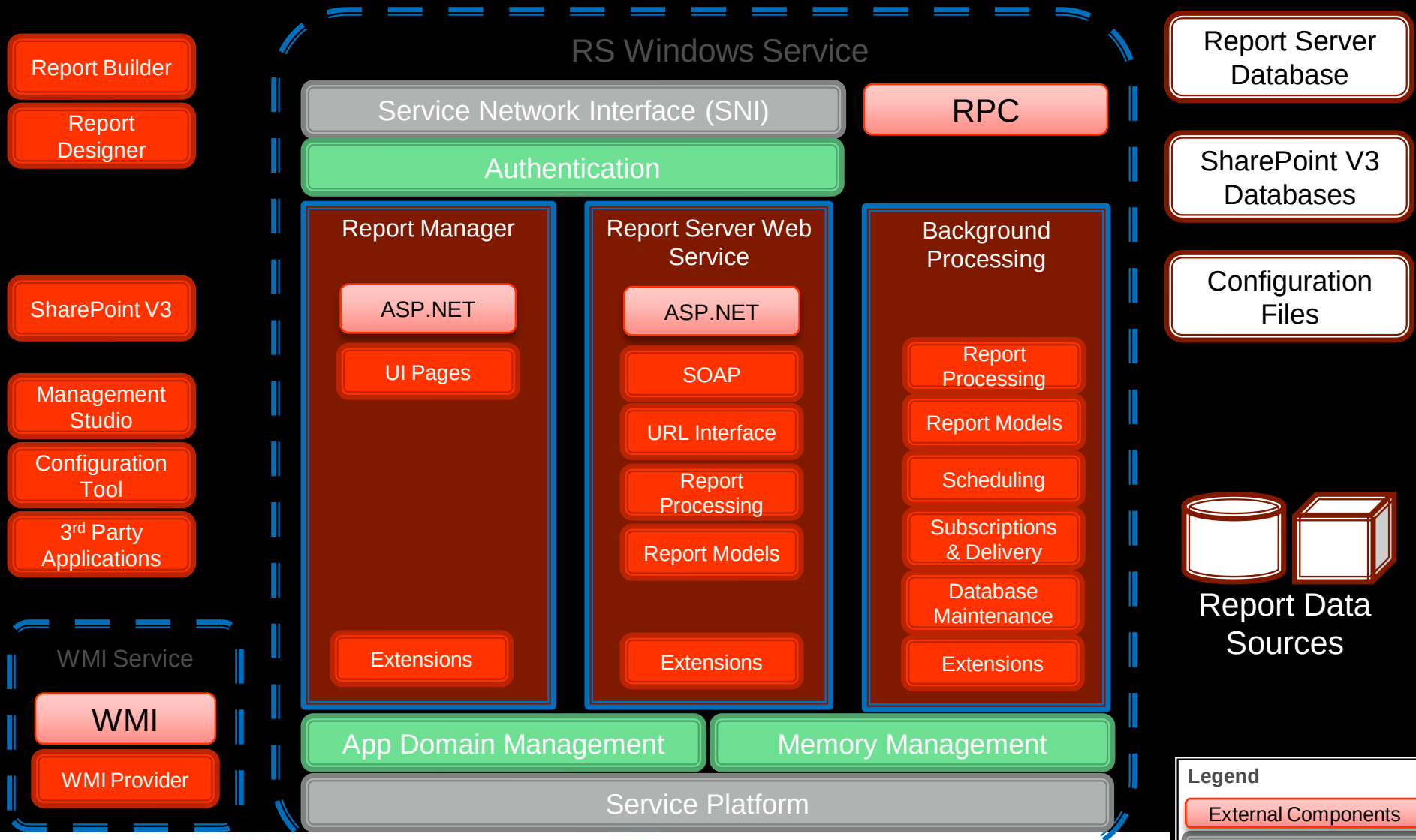
SSRS 2008 Architecture

- Report Server is not hosted in IIS
  - RS 2008 uses HTTP.SYS directly
  - Uses SQL Server's networking stack
- IIS is replace by SQL Server internal components
  - SQL OS
  - SQL CLR
  - SQL Network Interface
- Design Goal: Don't break "anything"!

Why Remove IIS ?

- IIS complexity increases support costs
  - Many IIS settings can impact RS
  - Other applications hosted in IIS impact RS
  - Requires a two service model
    - Hard to deliver features like resource governing
    - Communication between services causes problems
- Reusing SQL Server components has great future benefits
  - Can reuse SQL Server's enterprise features
  - Can focus on additional value in RS
- Sometimes blocks deploying RS in the enterprise

SSRS 2008 Architecture



IIS & SSRS Co-existence

- RS & IIS 6+ use the same network stack
  - RS & IIS do not conflict in most Operating Systems
    - Can share a single port
  - Windows XP 32bit (IIS 5.1) is the only exception
    - Must have different ports
- URL Reservations
  - RS & IIS create URL reservations in HTTP.SYS
    - IIS makes weak wildcard reservations
    - RS makes strong wildcard reservations by default
  - Report Server URL supersedes IIS Virtual Directory with same name, port

Memory Management

- Server infrastructure for process memory monitoring
  - Dynamic, self-managing with memory pressure
  - Reduces throughput in memory pressure situations
- Report Processing uses a file system cache to adapt to memory pressure
  - Receives memory events from server
- Administrator is able to set targets (Min, Max)
  - Minimum threshold defines the amount of memory the server thinks ‘belongs’ to it

Memory Management

- The memory is only used if a request needs it
- Maximum threshold defines the not to exceed value

- Adapts to other processes consuming memory

RS 2008 Report Engine Changes

- Report Processing
  - On-demand processing
  - Hierarchical cursor-based object model
- Rendering
  - New rendering architecture
  - Renderer rewrites

Why rewrite Report Engine

- Scalability
  - Reports in SQL 2005 are memory bound
    - Memory usage is proportional to data size
    - Large datasets can cause out of memory exceptions
    - Memory usage in problem renderers (PDF, Excel, CSV)
  - Very large reports can starve or fail many smaller reports

demo

Reporting Services 2008

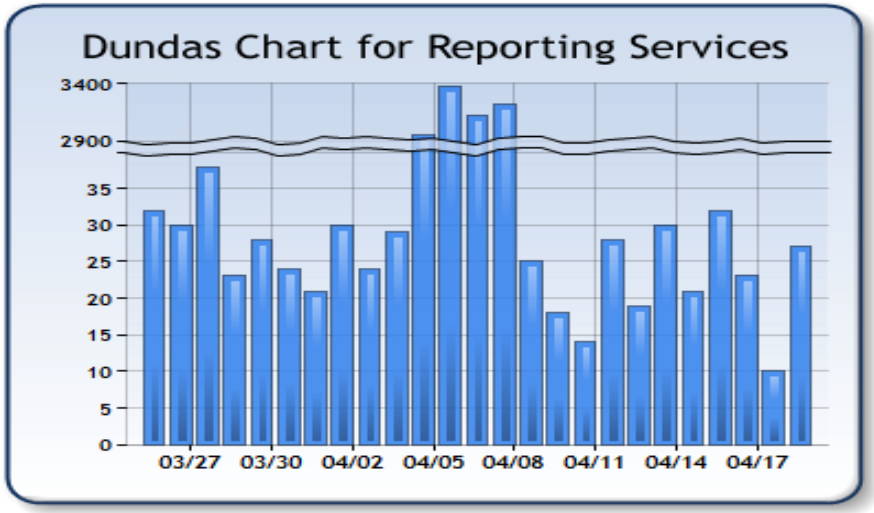
SSRS Data Visualization

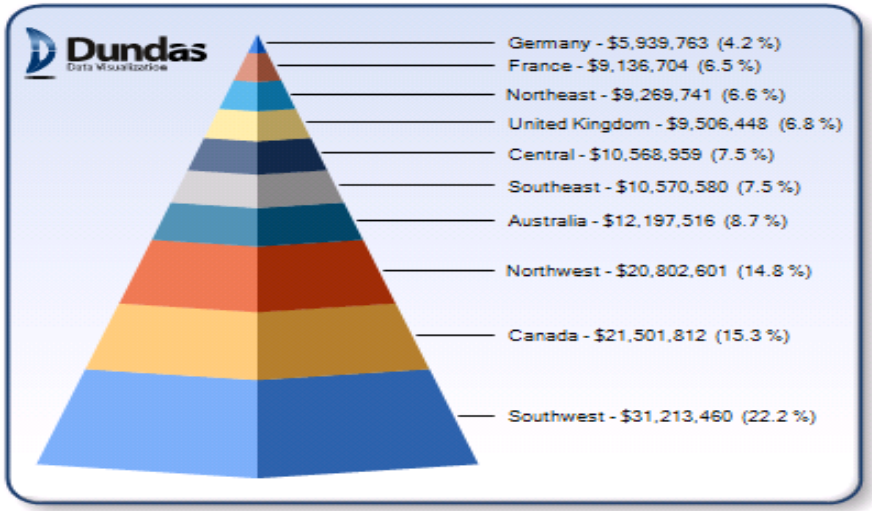
Windows Server 2008 Microsoft Visual Studio 2008 Microsoft SQL Server 2008

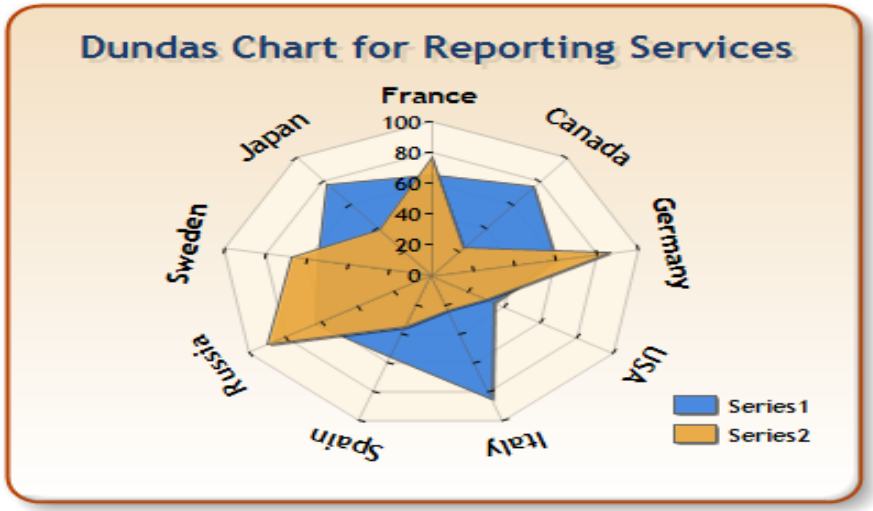
Dundas Acquisition

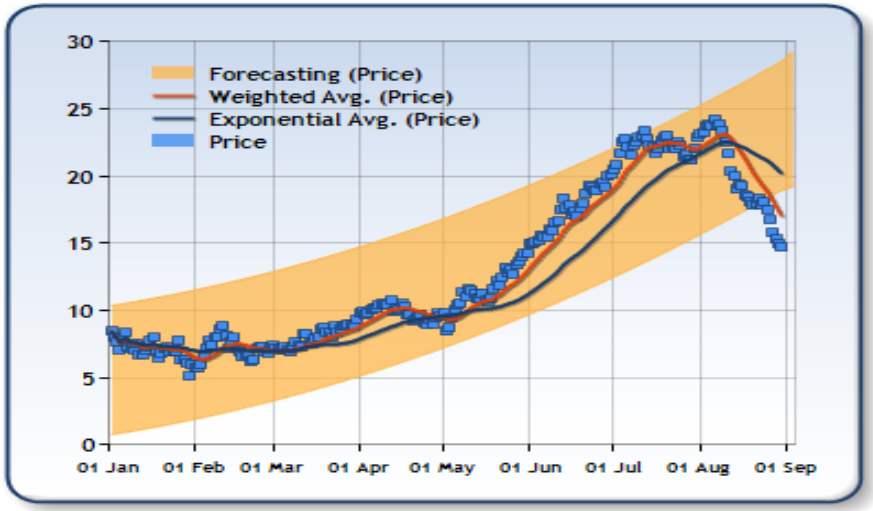
- The SQL Server Reporting Services team has acquired Dundas Software's Data Visualization products
  - Chart, Gauge, Map, Barcode, and Calendar for Reporting Services
  - Chart, Gauge for SharePoint
  - Chart Pro / Enterprise, Gauge, Map, OLAP Chart and Table Controls for Visual Studio (Windows and Web)

A Few Examples









Tablix - New Data Region

- Tablix provides a combination of the best features of table and matrix data regions
- Build Versatile Reports
- Allows a flexible layout with multiple row and column groups

demo

Report Designer, Visualization & Tablix

Summary

- SSIS 2008 Improvements
  - Improved Scripting
  - Cache Lookup
  - Data Profiling
- SSRS 2008 Improvements
  - Report Rendering Architecture
  - Data Visualizations (Dundas & Tablix)
  - Rich Memory Management

Resources

- http://www.microsoft.com/sqlserver/2008/en/us/overview.aspx
- http://www.microsoft.com/sqlserver/2008/en/us/trial-software.aspx
- http://www.microsoft.com/sqlserver/2008/en/us/white-papers.aspx
- http://www.microsoft.com/sqlserver/2008/en/us/events-webcasts.aspx
- http://msevents.microsoft.com/CUI/EventDetail.aspx?EventID=1032354775&Culture=en-US
- http://blogs.msdn.com/sqlrsteamblog/
- http://forums.microsoft.com/MSDN/ShowForum.aspx?ForumID=1624&SiteID=1
- http://www.dundas.com/

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Questions?

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