

Enterprise Reporting with SQL Reporting Services

- Management and Scalability –

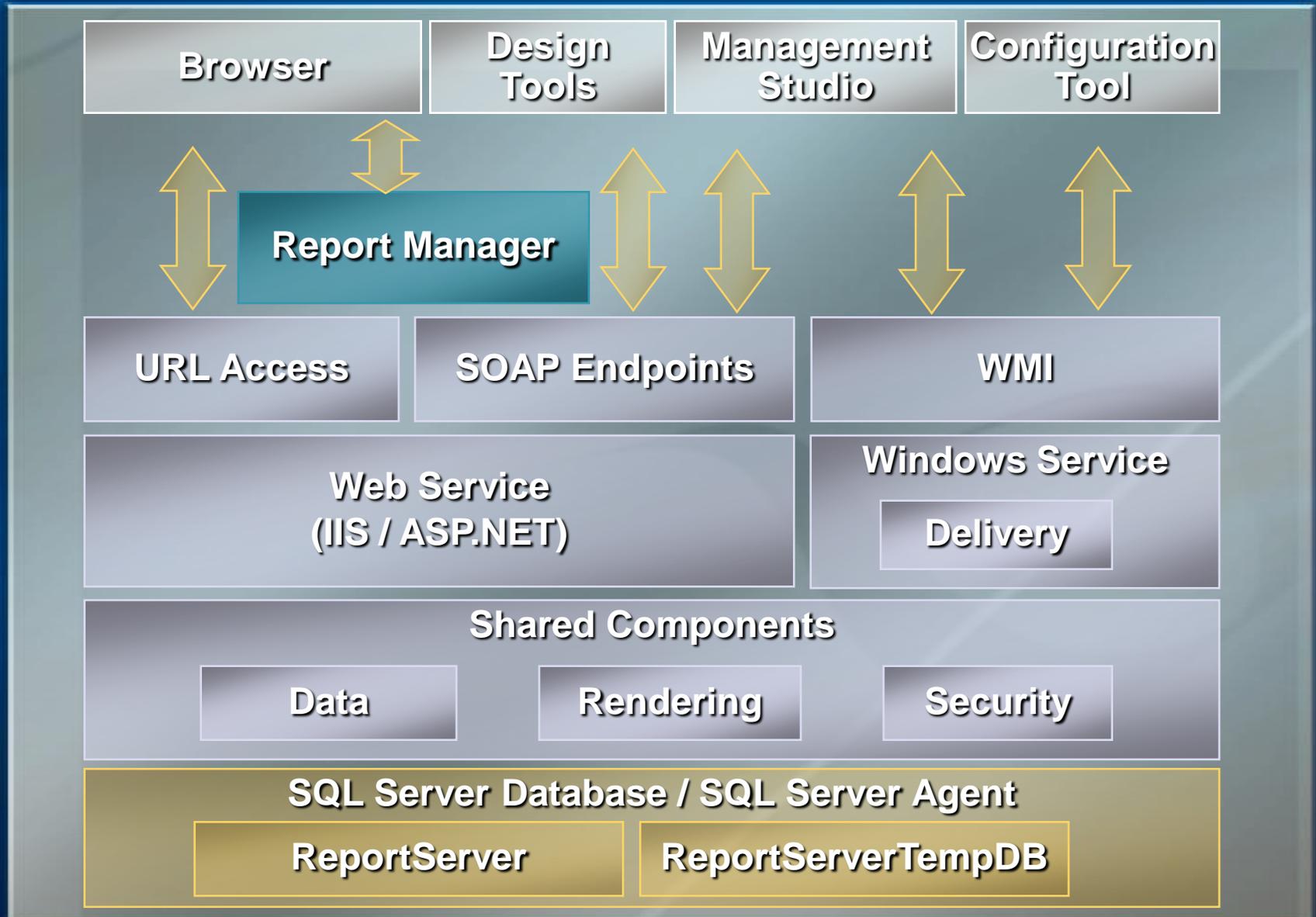
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Agenda

- Reporting Services Architecture
- SharePoint Integration with SP2
- Setup and configuration
- Securing your report server
- Report and model management
- Scheduling and subscriptions
- Scale out

Reporting Services Components

Reporting Services Native Mode



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- Reporting Services Architecture
- SharePoint Integration with SP2
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SharePoint Integration Before SP2

The screenshot shows a Microsoft Internet Explorer browser window displaying a SharePoint Web Part Page. The browser's address bar shows the page title "Web Part Page - Microsoft Internet Explorer". The page content is organized into several sections:

- Navigation Bar:** Home, Documents and Lists, Create, Site Settings, Help.
- Reports Web Part:** A section titled "Reports" with a "Modify Shared Page" link.
- Shared Documents:** A table listing documents with columns for Type, Name, and Modified By.
- Report Explorer:** A section titled "Report Explorer" with a "Report Builder" link. It contains a table of reports with columns for Type Name, Subscription, Description, and When Run.
- Report Viewer:** A section titled "Report Viewer" with navigation controls (back, forward, page 1 of 1), a zoom level of 100%, and options for Find, Next, Select a format, and Export.

The "Shared Documents" table contains the following data:

Type	Name	Modified By
PowerPoint	Sales Presentation NEW	PASSDEMO\administrator
Excel	Sales Commissions NEW	PASSDEMO\administrator
Word	Test Procedures NEW	PASSDEMO\administrator
Word	Reports	PASSDEMO\administrator

The "Report Explorer" table contains the following data:

Type Name	Subscription	Description	When Run
Company Sales	Company Sales	Adventure Works sales by quarter and product category. This report illustrates the use of a matrix data region that provides drilldown from summary data into detail data by showing and hiding rows. This report also illustrates the use of background images.	
Employee Sales Summary	Employee Sales Summary	Adventure Works sales for an individual employee. This report includes Sales Comparison and Current Month Sales Comparison charts in addition to a Current Month Order Summary table with drillthrough to individual orders. This report illustrates the use of multiple datasets, charts, tables, drillthrough, and dynamic parameters.	
Product Catalog	Product Catalog	Adventure Works full product catalog with pictures. This report illustrates the use of embedded images, database images, page breaks, page footers, tables, conditional formatting, and a document map.	
Product Line Sales	Product Line Sales	Adventure Works top five sales people and stores. This report illustrates a dataset with queries containing the TOP clause. It also illustrates the use of tables, charts, parameters, calculated fields, and drillthrough links.	

The "Report Viewer" section shows navigation controls for page 1 of 1, a zoom level of 100%, and options for Find, Next, Select a format, and Export.

The page footer displays the "ADVENTURE WORKS cycles" logo and the text "Local intranet".

SharePoint Integration Before SP2

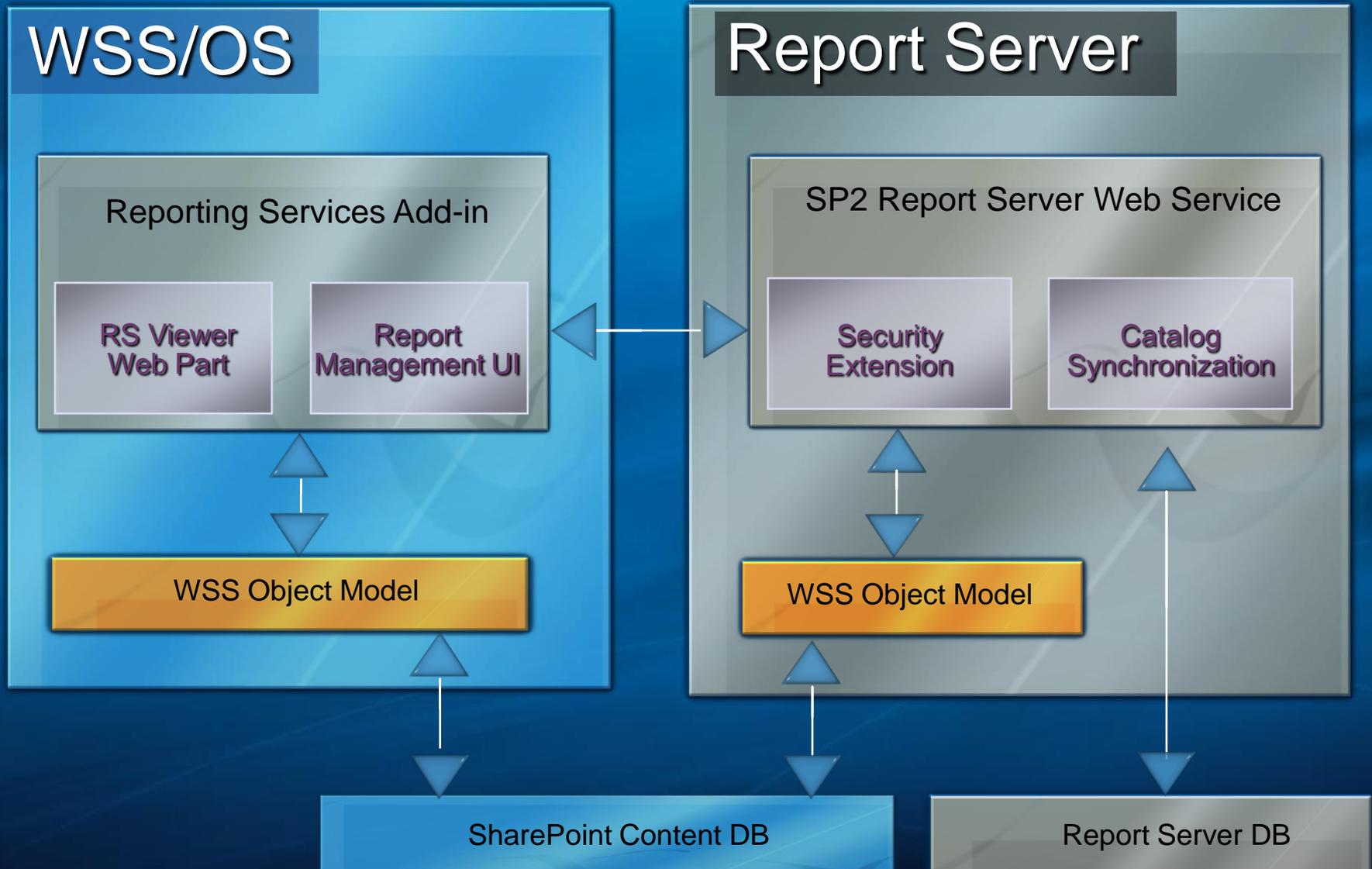
- SSRS Integration with SharePoint 'v2'
 - Report Explorer allows users to browse and subscribe to reports
 - Report Viewer allows for users to view and navigate reports
- Limitations
 - Separate content stores
 - Different security models
 - Different management UI
 - Not deployable outside of firewall
 - No filter web parts

SharePoint Integration with SP2

- SQL Server 2005 Reporting Services SP2 integrates with Windows SharePoint Services to enable publishing, viewing, and management of rich reports
- Office SharePoint Server 2007 “Lights Up”
 - Report library integration of Reporting Services functionality
 - Rich reports in Dashboards with filter Web Parts
- Integration Benefits
 - New services for WSS and Office SharePoint 2007 Servers
 - Integrated User Experience for Reporting Services users

SharePoint Integration Architecture

Reporting Services SharePoint Mode



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Reporting Services 2005 Setup

- Reporting Services setup in Microsoft SQL Server 2005 has two modes:
 - Default Configuration
 - Files Only Installation
- Default configuration assumes you want to:
 - Install on default web site
(will create new App Pool in Microsoft Windows 2003)
 - Install relational database in same instance
 - Use service accounts for database connection
- Configurations requiring files only setup:
 - Remote catalog database
 - Scale out deployment (a.k.a. Web farm) installation
 - SharePoint Integration mode
- Client Setup includes the Microsoft Visual Studio 2005 shell (Business Intelligence Development Studio)

Reporting Services 2005 Configuration Tool

Report Server Configuration Manager: KIBBLE\MSSQLSERVER

Configure Report Server

Connect Refresh

MSSQLSERVER

- Server Status
- Report Server Virtual Directory
- Report Manager Virtual Directory
- Windows Service Identity
- Web Service Identity
- Database Setup
- Encryption Keys
- Initialization
- Email Settings
- Execution Account

Report Server Status

Use the Reporting Services Configuration tool to configure a report server deployment. Click an item in the navigation pane to open a configuration page.

Use this page to start or stop the Report Server Windows service.

Instance Properties

Instance Name:	MSSQLSERVER
Instance ID:	MSSQL.3
Initialized:	Yes
Service Status:	Running

Start Stop

Legend

- Configured
- Not configured
- Optional configuration
- Recommended configuration

Help Apply Exit

Management and Configuration Tools

- Report Manager
 - Web-based viewing and management application
- SQL Server 2005 Management Studio
 - Superset of Report Manager functionality
- Reporting Services Configuration Tool
 - Windows-based tool for local or remote configuration of service
- Client utilities
 - Script Host
 - Encryption Key Management
- Custom applications
- Windows SharePoint Services / Microsoft Office SharePoint Server 2007
 - Enabled in SP2

Report Management

Reporting Services SharePoint Mode

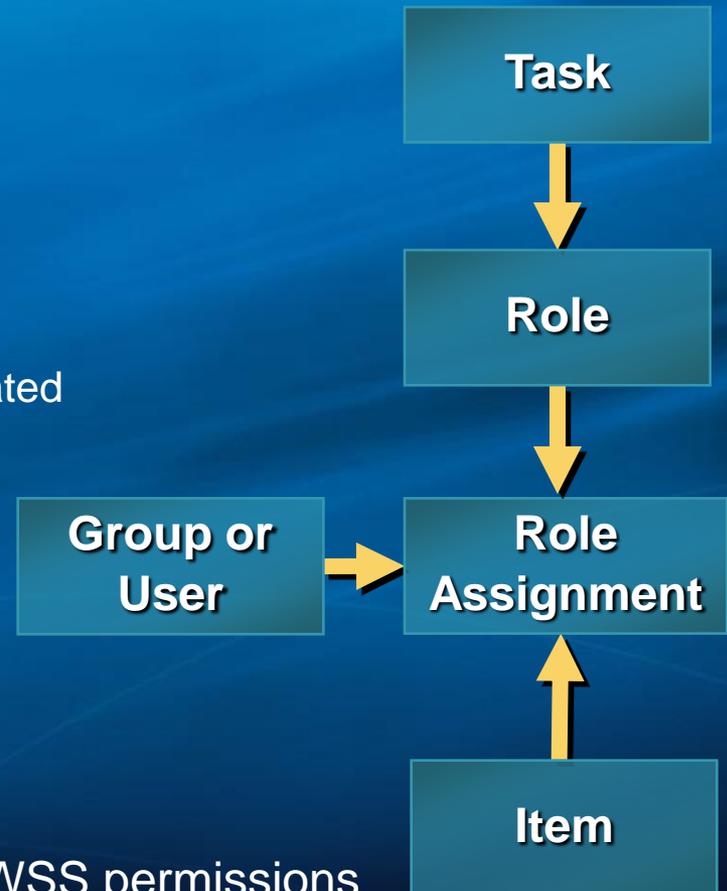
- Reports, data sources, and report models are published to SharePoint document libraries
 - When a report is selected in WSS, the report viewer Web Part calls the report server API to process and render the report
 - Users can manage properties and subscribe to reports through WSS UI (calls RS SOAP API)
 - UI includes ability to launch Report Builder to create / edit reports
- New report server delivery extension allows for rendered reports to be delivered to WSS document libraries (including Report Center)
- Design tools (Report Designer, Report Builder, Model Designer) are updated to work with WSS
- Report Manager is not supported in SharePoint Integration Mode

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Role-Based Security Model

- **Tasks**
 - Sets of low-level operations
 - Item-level (for example, create report) or system-level (for example, manage jobs)
 - Not customizable
- **Roles**
 - Sets of tasks
 - Default roles installed by default (browser, publisher)
 - Default roles can be customized, new ones created
 - Roles identified by name, localized
- **Groups/users**
 - Windows/Active Directory or custom authentication users
- **Role assignments**
 - Associates groups/users with Roles
 - Inherited from parent in namespace
- SharePoint Integrated Mode in SP2 maps to WSS permissions



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Report Management

- Report Metadata is extracted from report definition at publishing and maintained in the database
- Name
- Description
- Report Definition
- Parameters
 - Prompt vs. Hide
 - Prompt String
 - Default Values
- Data Source Information
(embedded or reference to shared data source)

Report Data Sources

- Administrator can set connection type and connection string after publishing
- Credential Options
 - Prompt for Windows or database credentials
 - Securely stored Windows or database credentials
 - Integrated Security
(Requires Kerberos delegation; can be disabled in “SQL Server Surface Area Configuration”)
 - None (uses report execution account; enabled in Configuration Tool)
- Shared Data Sources
 - Connection and credential information stored as a secured object in the namespace
 - Single point of management for multiple reports
 - SharePoint Integration Mode in SP2 can use .RSDS or .ODC files

Report Caching

- Execution sessions

- Automatically created for each report execution
- Keeps consistency between server round trips (images, paging, exporting)
- Session timeout set in server properties

- Cache snapshots

- On-demand reports can be cached between users
- Cache index is based on parameter values
- Cache valid for a specified time after execution or cleared on schedule
- Limitations – User-specific expressions (User ID, Language), stored credentials

- Tip: Use Null Delivery Provider to deliver reports to cache

Snapshots and History

- Execution snapshot
 - Report execution is scheduled, all users get same data
 - Single instance of processed report
 - Limitations: No query parameters or user-specific expressions, stored credentials
- History snapshots
 - Multiple instances of report snapshots for archiving, auditing purposes
 - Stored independently of data source, report definition
 - System and report-specific retention policy

Managing Report Execution

- Configure cache and snapshots via Report Manager or SQL Management Studio
- Set execution timeouts on a system-wide or per-report basis
- Long running reports can be stopped manually
- Report Execution Log enables analysis of server usage
 - Optionally, executions are logged to Report Server database
 - Includes report, format, user, start, end, cache hit, size
 - Setup includes SSIS package and sample reports

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Scheduling

- Management events can be scheduled on the report server
 - Caching, Subscriptions, History
- Schedules are stored in database and integrated with SQL Agent
 - When triggered, Agent adds entry to queue
- Scheduled events are queued in database and polled by Windows service

Subscriptions

- Subscription triggered by an event (schedule, snapshot creation, external)
- Delivery extension (e-mail, file share) specifies how report is delivered
 - E-mail delivery requires an SMTP server
 - Extensible delivery architecture
- Can specify output format (HTML, XLS)
 - Can deliver links as well as rendered reports
- Two types of subscriptions
 - Standard
 - Data Driven

Standard Subscriptions

- Single report sent to a fixed set of addresses
 - End user wants to customize his/her own report delivery
- How it works
 - Set up by a user with 'Manage Individual Subscriptions' permission
 - User creates a standing request to run a report at a specific time and delivered in a certain format
 - Can be triggered based on a schedule or snapshot generation
 - Specify report, execution conditions, parameters, rendering format, delivery location, etc.

Data Driven Subscriptions

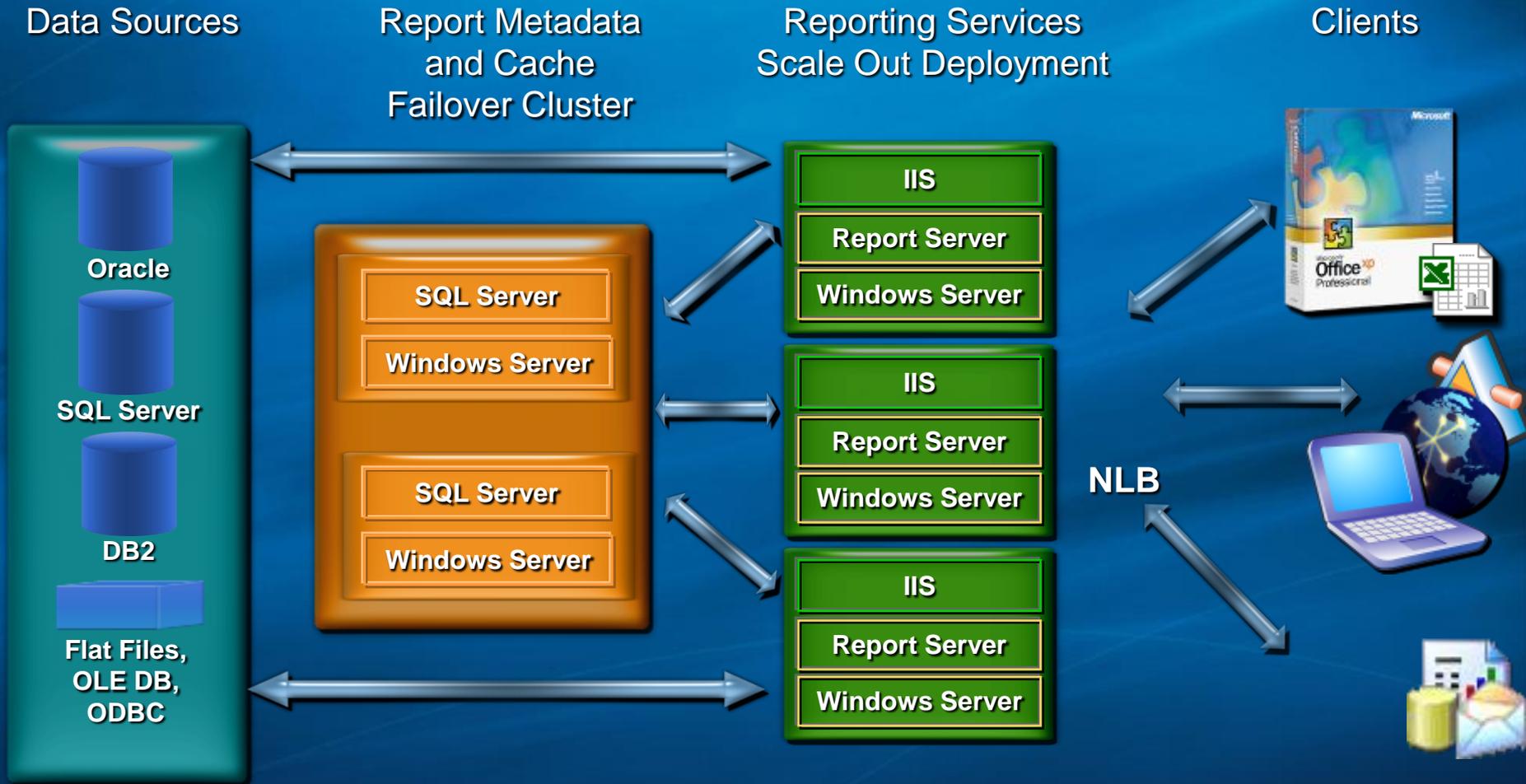
- When to use
 - Delivery of a report to a dynamic list of destinations with customized content for each destination
- How it works
 - Set up by a user with 'Manage any Subscriptions' permission
 - Define delivery query to return list of destinations and parameters
 - Specify delivery settings and parameter values as a static or field from delivery query
 - Set to run according to a defined schedule or trigger from snapshot

Data driven subscriptions require SQL Sever Enterprise Edition!

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Scale Out Deployment



Scale out requires SQL Sever Enterprise Edition!

Scale Out Setup

- Run setup (files only) to install first report server instance
- Run setup (files only) to install second report server instance
- Use configuration tool to create report server database and configure first report server instance
- Use configuration tool to configure second report server instance
- Install and configure load balancing functionality (NLB, switch)

Wrap Up

- General “Care and Feeding” of your Report Server is easy!
 - Once initial configuration has been finished, many users can manage content themselves
- Complex configurations will require planning
 - Network infrastructure
 - Security architecture
 - Deployment policies
 - Scalability requirements
- SharePoint integrated mode in SP2 requires understanding of WSS management as well

Resources

Reporting Services Product Site

<http://www.microsoft.com/sql/reporting>

Technical Chats and Webcasts

<http://www.microsoft.com/communities/chats/default.mspix>

<http://www.microsoft.com/usa/webcasts/default.asp>

MSDN & TechNet

<http://microsoft.com/msdn>

<http://microsoft.com/technet>

Virtual Labs

<http://www.microsoft.com/technet/traincert/virtuallab/rms.mspix>

Newsgroups

<http://communities2.microsoft.com/communities/newsgroups/en-us/default.aspx>

Technical Community Sites

<http://www.microsoft.com/communities/default.mspix>

User Groups

<http://www.microsoft.com/communities/usergroups/default.mspix>

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Logging and Monitoring

- Performance monitoring
 - Counters for performance
 - Report Execution for analysis
- Event log integration
 - Critical events and errors
- Trace events
 - Can trace all server activities, response times, security events
 - Detail level depends on configuration setting
- Server Watson support

Automating Repetitive Tasks

- Examples
 - Duplicate settings between servers
 - Migrate from test to production Environment
 - Change shared data sources
 - Cancel running jobs
- Automate web service tasks through Report Server Script Host (RS.EXE)
 - Visual Studio .NET not required for execution
 - Need to run as user with all permissions

Server Configuration Files

- Unique per Report Server – not transferable
 - Configuration (including extensions) should be same per machine in scale-out deployment
- Specific areas of interest
 - Report Server database connection
 - Report Execution account and password
 - Extension Configuration (including E-mail Delivery)
- Use Configuration Tool, text editor or command line utilities to modify
 - File monitoring updates server settings
- Code Access Security (CAS) for extensions stored in separate file