

Welcome to SQL Saturday Denmark



2,4,8 & 16 – SQL Server

Upgrade your journey with SQL Server...

SQLSaturday #541 – Copenhagen

September 17th 2016



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D BI A Consulting



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SQL POWERHOUSE



COZYROC™
Go to the next level!



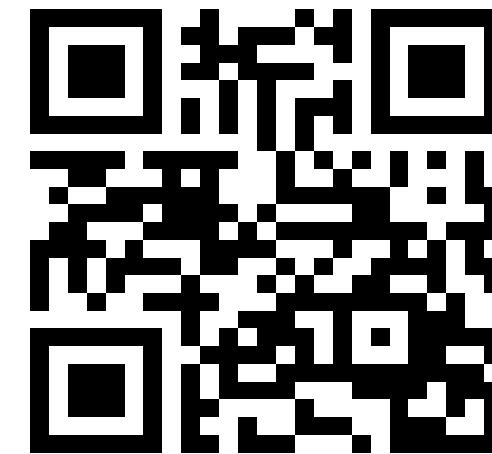
Please review the event and sessions

- EVENT



<http://speakerscore.com/ZGVX>

- SESSION



<http://speakerscore.com/219P>

ABOUT ME



Background

Born in India, living in UK & small world!
Using SQL Server since ver. 4.2!
Chief Architect – D BI A Consulting Limited
11+ years as Microsoft MVP (Data Platform)

IT Experience – 25 years



Satya Jayanty

Favorite Activities

Reading & Sharing Knowledge

Traveling



32

I've traveled to 32 countries.



82

Public speaking since 2005



3 - 11

Author -3 and Reviewed - 13



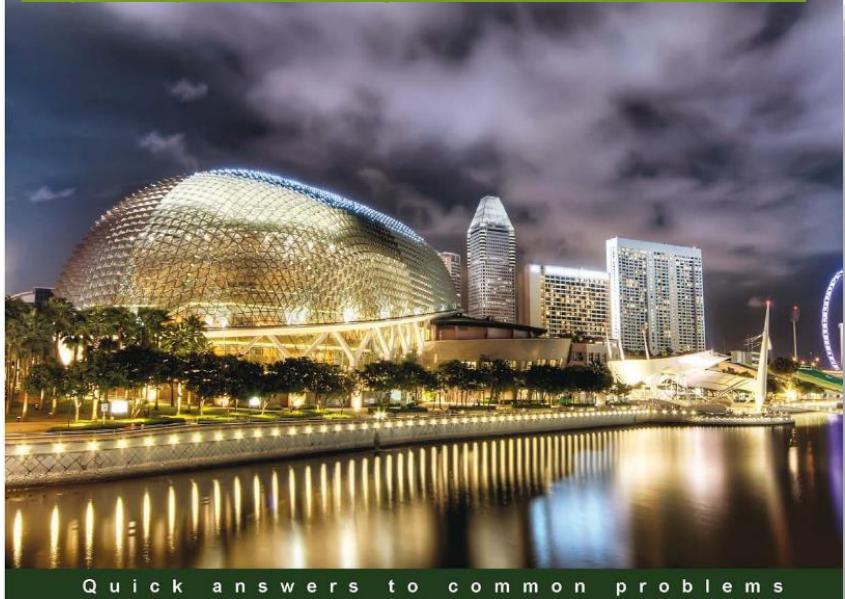
58

I've driven almost all super-cars, except Rolls Royce!

Building Lego & Gaming

Author'd

<http://tinyurl.com/sql2k8r2admincookbook>



Microsoft SQL Server 2008 R2 Administration Cookbook

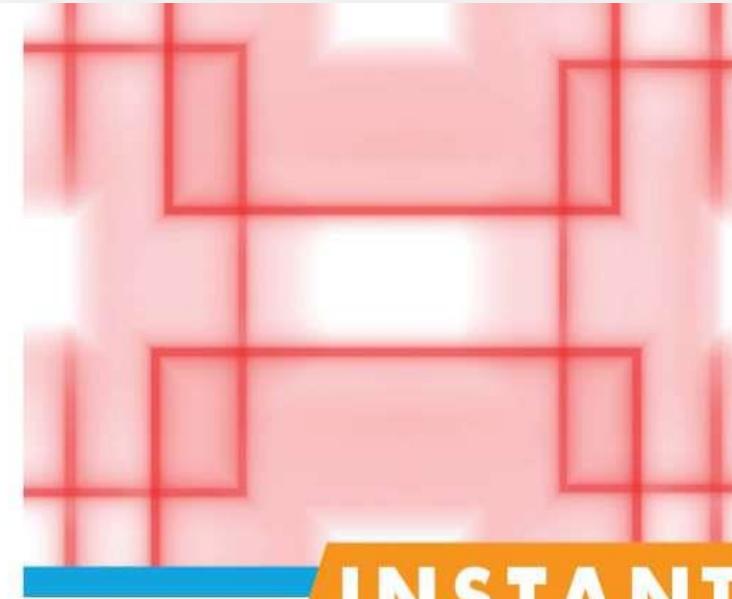
Over 70 practical recipes for administering a high-performance SQL Server 2008 R2 system

Foreword by Brad M McGehee, Microsoft SQL Server MVP and Director of DBA Education for Red Gate Software

Satya Shyam K Jayanty

[PACKT]
PUBLISHING
enterpriseSM

<http://tinyurl.com/sql2012InstantCubeSecurity>



SQL Server Analysis Services 2012 Cube Security

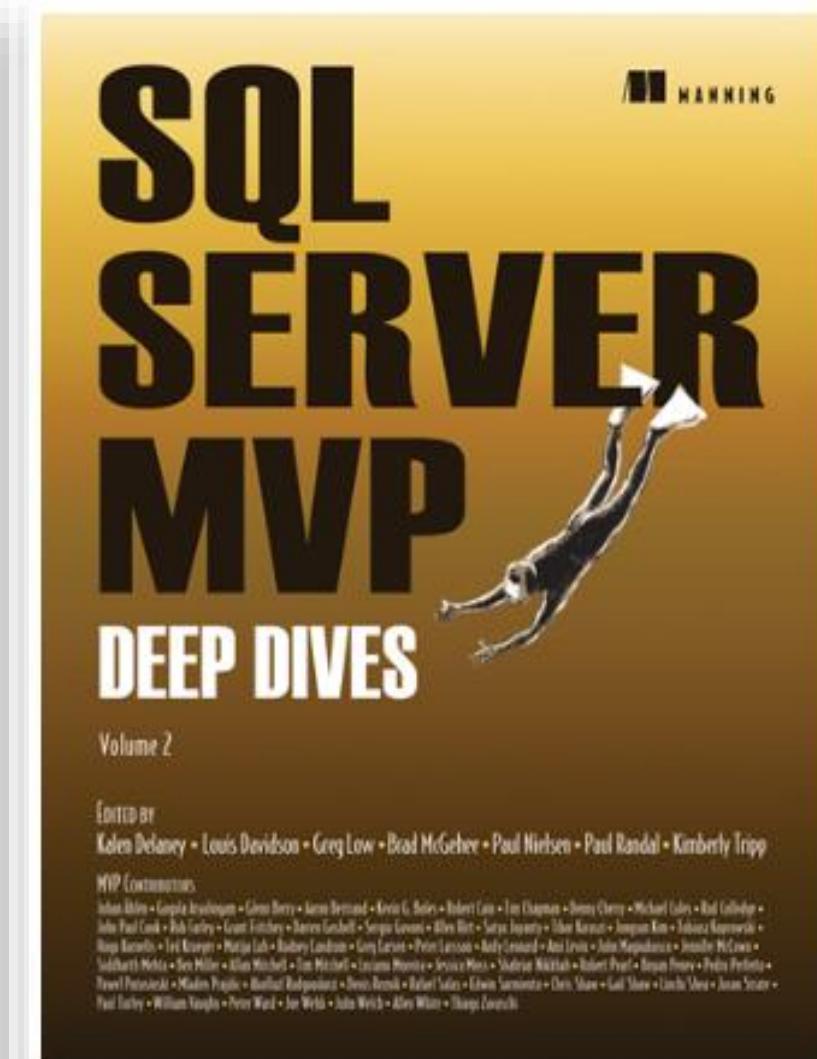
Analyze and secure cubes in the SQL Server 2012 environment in no time using this hands-on guide

Satya SK Jayanty

[PACKT]
PUBLISHING

<http://www.manning.com/delaney/>

Operation^{SMILE} Smile



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Agenda... what agenda?!?

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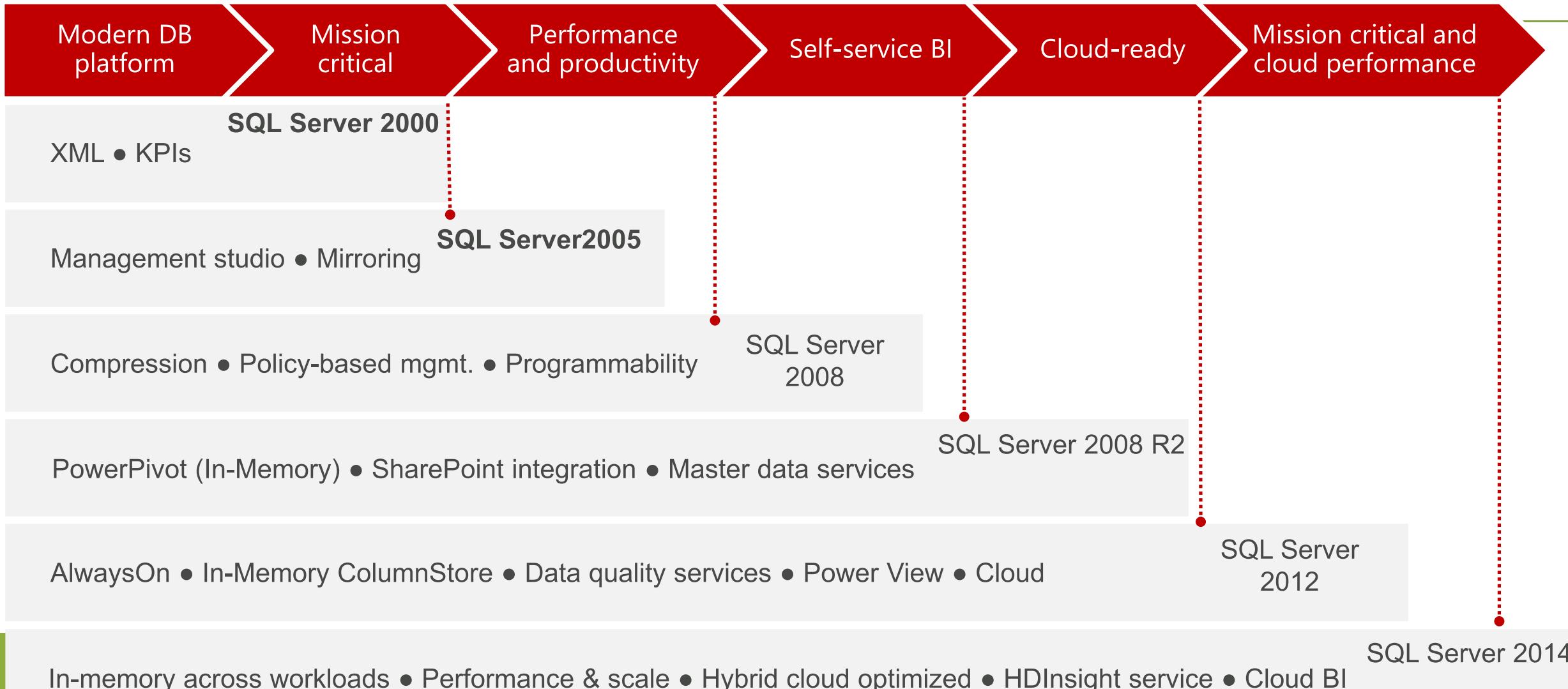


-well it's a Saturday, I'm in jolly mood today
- you like data... that's why you are here today

...journey so far: SQL Server 2008 R2 to 2016

AlwaysOn Online Operation Enhancements
Multi-site Clustering
SQL Server Express LocalDB
xVelocity Windows Server Core Support
PHP & Java Connectivity
PowerShell 2.0 Support
SQL Server Data Tools Multiple Secondaries
Database Recovery Advisor
Audit Filtering
Flexible Failover Policy
Full Globe Spatial
T-SQL Debugger Enhancements
Unstructured Data Performance
BI Semantic Model User-defined Audit
New SSIS Design Surface
Data Quality Services Master Data Management
Excel Add-in
Full-Text Search Performance Ad Hoc Reporting
Default Scheme for Windows Groups
SSMS to Windows Azure Platform
FTS Support for Czech and Greek
ODBC Driver for Linux PolyBase
SSIS Troubleshooting
SSIS Package Management
T-SQL Enhancements
Stretch Databases Support for 'R'
Reliable Secondaries Contained Database Authentication
Statistical Semantic Search
Unstructured Data Performance
Extended Events Enhancements
AlwaysOn Connection Director
Reporting Alerts PowerPivot Enhancements
Resource Governor Enhancements
Power View Audit Resilience
CDC Support for SSIS
Distributed Replay HA for StreamInsight
15k Partitions Availability Groups
Spatial 2D Support
SharePoint Active Directory Support
JSON Support
Query Store
Row Level Security Always Encrypted

The evolution of the Microsoft data platform



Why Upgrade?

Supportability

- SQL Server 2005 ended support in April 2016
- SQL Server 2008 & 2008 R2 (parts of 2012 as well) are now in the extended support portion of their lifecycle
- Extended Support phase – not possible for design changes
- Microsoft is planning on releasing a new version of SQL Server every 18-24 months
 - SQL Azure updated every 4 months
 - Industry is still managing SQL Server like they were in the 1990's
 - In a lot of cases even more risk averse
 - Need to be more agile

SQL Server Time Lines

- Microsoft is more aggressively releasing new version of SQL Server going forward

| SQL Server Version | RTM Date | Delta |
|--------------------|----------------|-------------|
| SQL Server 2016 | US Summer 2016 | < 24 months |
| SQL Server 2014 | April 2014 | 25 months |
| SQL Server 2012 | March 2012 | 23 months |
| SQL Server 2008 R2 | April 2010 | 20 months |
| SQL Server 2008 | August 2008 | 33 months |
| SQL Server 2005 | November 2005 | 120 months |
| SQL Server 2000 | November 2000 | 24 months |
| SQL Server 7.0 | November 1998 | - |

Why Upgrade?

Features

- Many new features or existing features are enhanced in the new product.

Scalability

- SQL Server 2014 Standard Edition can now address 128GB of RAM
- Increased number of partitions for partitioned tables
- Increased amount of compute that can be accessed with the different versions
- Larger more complex and reliable configurations

Check for changes

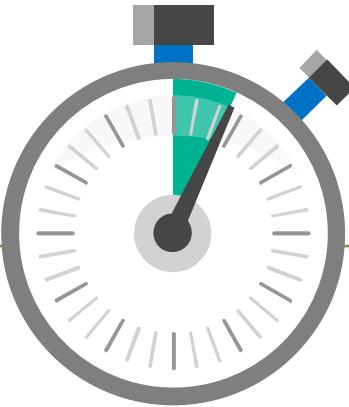
- SQL Server documentation covers features that are deprecated or discontinued
- Do not miss ‘Breaking changes’
- Backward Compatibility documented for each component



Upgrade Blockers

- Vendor
 - Software not supported on later SQL Server editions
 - Learn from “mistakes of past”
- Risk
 - Database / code will break after
 - Unknown dependencies
 - A lot of risk is “perceived risk”
- Lack of Resources
 - IT Pro / Developers
 - Domain level knowledge
 - There are plenty of tools out there than can help analyze your current state

What and How?



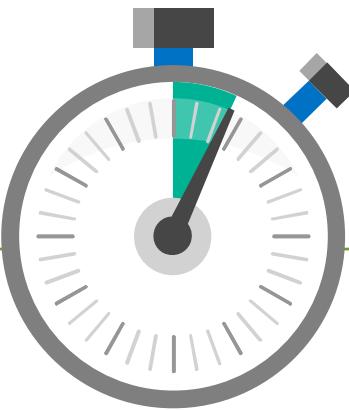
What to gather & analyze

- Configuration to Counters
- Work to the initial scope and catalogue the estate
- Application and Business information :: Baselines

How to Analyze

- Handful of tools available to use
- Data Capture - wide period of time, multiple samples for the same period
- Include notable events in capture, like month end processing etc.
- Database Maintenance and Application Releases

Why?



Why analyze?

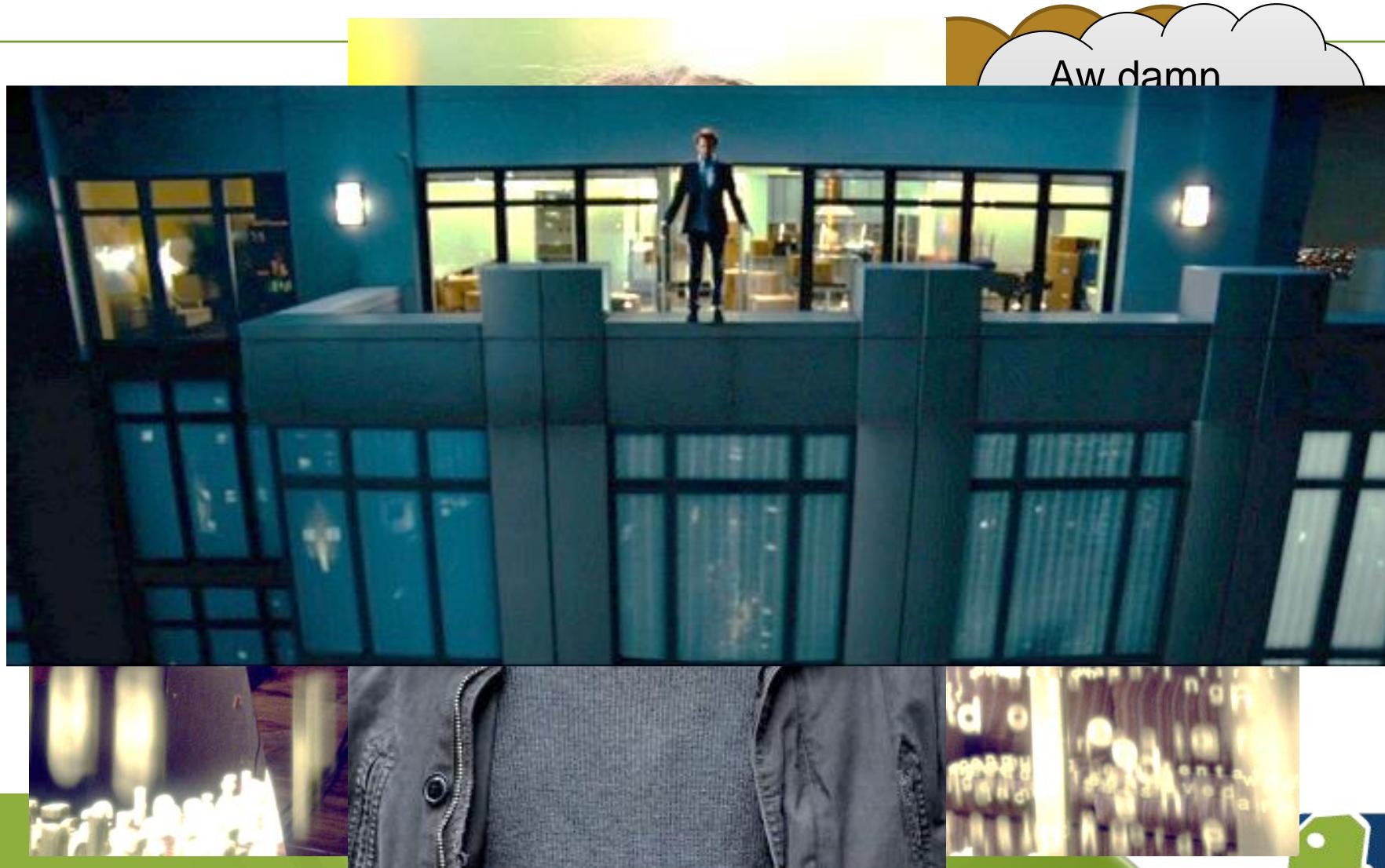
- There have been many changes in SQL Server since 2005/2008/2008R2
- Systems are more complex and do not develop at the same rate as the data platform
- Functionality vs Requirement :: Work smarter ...not... harder!

Areas to look at

- Operating System Environment performance metrics
- SQL Server Performance Metrics, configuration and feature use
- Application Tier Performance Metrics & workload capture
- Capacity planning and system lifecycle
- Application owner details and business usage

The Ask

...don't let this happen to you!



Planning

Use data from the Analysis stage

This will drive the sizing of the new system

Understand the needs of the business

Which teams will need to be involved in the cut-over

How long can they be without the system, this will help you decide on the actual migration approach



Planning –



CPU Sizing

- Parallelism
- Utilization
- Lower clock speed with more cache

10101
01010
00100

Memory Sizing

- PLE – Page Life Expectancy & Buffer pool
- Leave room for growth
- Technology features – In-Memory OLTP



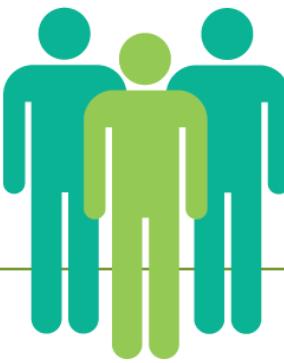
Storage Sizing

- ❖ Identify the IOPS requirements
- ❖ RAID vs SSD or PCI-e Flash
- ❖ Intelligent SAN or Dumb SAN?



Planning

- Preparing to Upgrade
 - Review upgrade documentation and resources
 - Document your resources and environment
 - Identify upgrade requirements
 - Decide on upgrade strategy
 - Upgrade High-Availability servers
 - Establish backup and rollback plans
 - Test the plan!!!



Communications

Users

- Communication plan is key and involve *affected users ahead of time*
- Notifications within the team
- Point of contact in the event of post-migration issues?

Who and when do key decisions get made as to whether to continue or rollback a migration on go-live day?

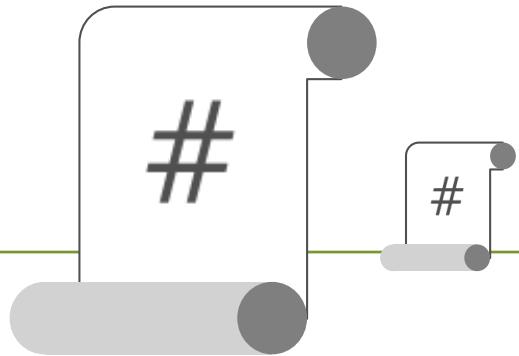
- Will all of the resources required be available and contactable
- Rollback plan - confidence to the business



Testing

What should I test?

- Old vs New
- Test the production hardware & pre-production systems
 - Create benchmark to test
 - Representative of queries in production system
 - Able to re-run after any configuration change
- Standardize on a deployment patch level
 - Document the suite of tests and automate
 - Each sub-system



Upgrade Strategy



Methods

Side-by-side

This involves building a new system alongside the existing one and moving databases to it.

In-Place upgrade

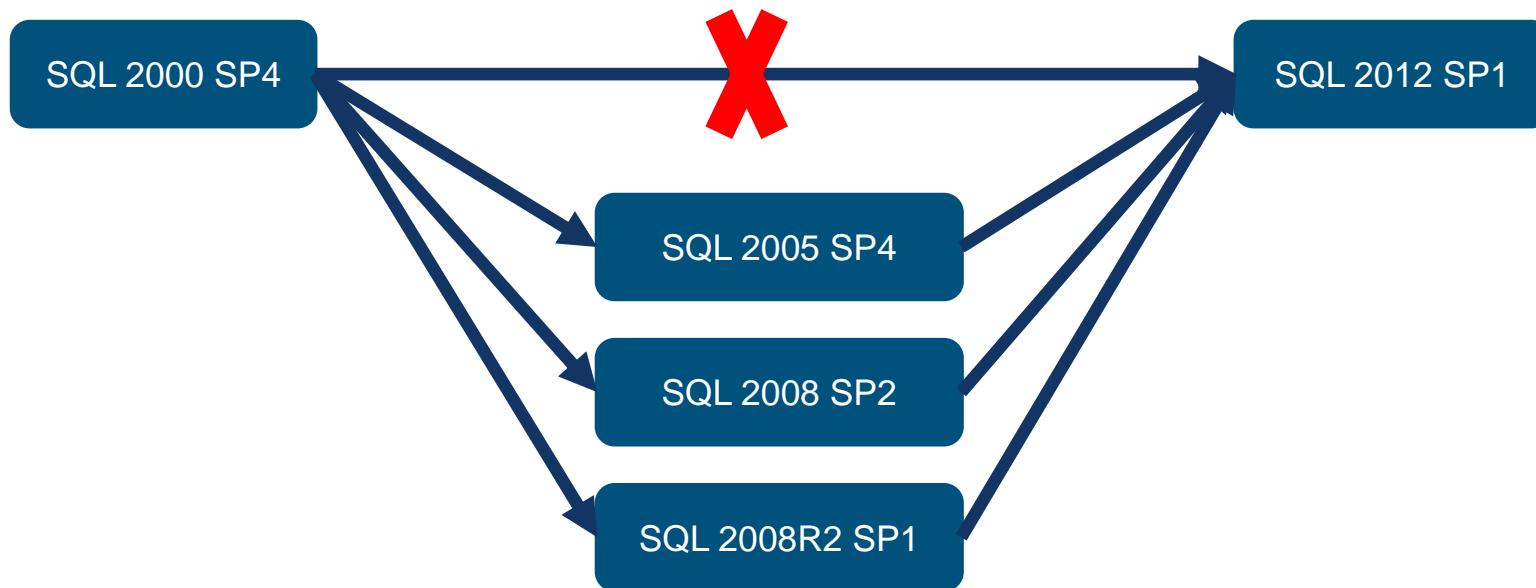
Upgrading the existing software to the new version, without the need to move the databases.

New Instance

Everything new from design to implementation stages.

The Path

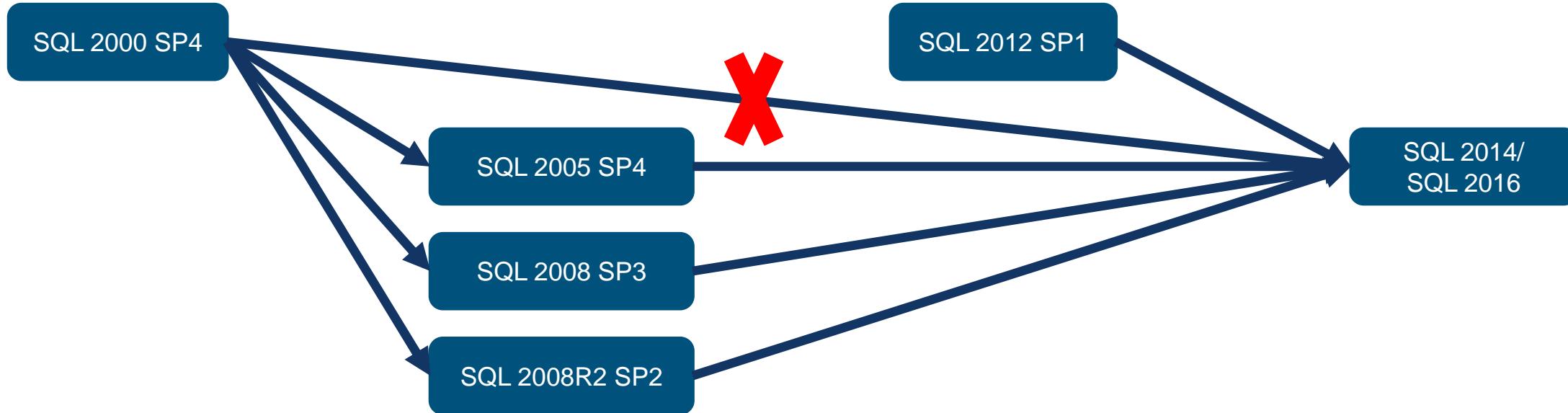
Upgrade Paths - 2012



The Path

Upgrade Paths

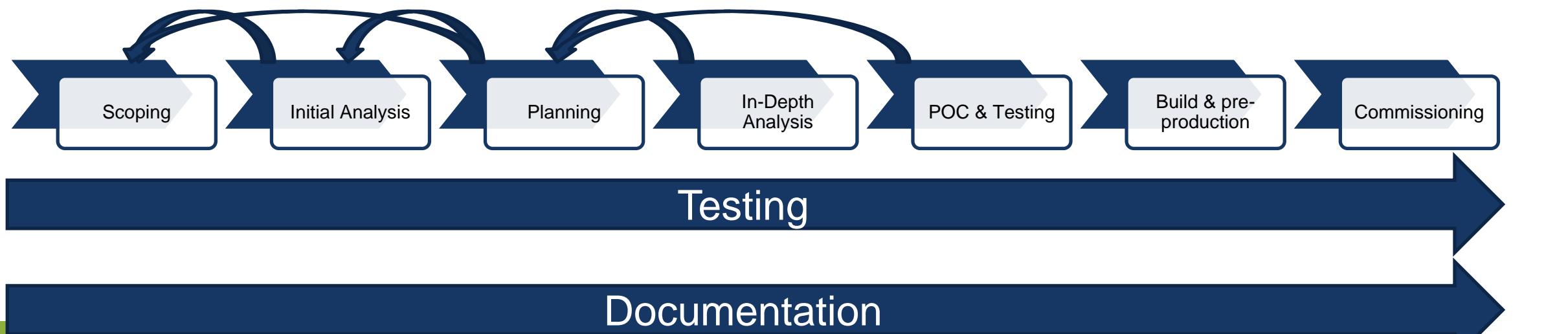
- Attach a SQL Server 2005 database (mdf/ldf files) to SQL Server 2016.
- Restore a SQL Server 2005 database to SQL Server 2016.
- Back up a SQL Server 2005 Analysis Services (SSAS) cube and restoring on SQL Server 2016.
- SQL Server 2005 → SQL Server 2016, the DB compatibility level will be changed from 90 to 100.



The Process

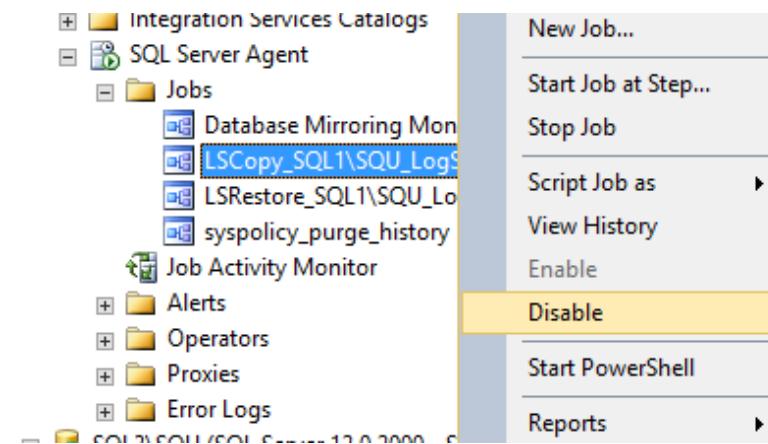
Upgrading SQL Server requires effort

It is a multi-stage process that should be tackled in iterations feeding back into the process, flexing with what is discovered.



Upgrade – Log Shipping

- Two methods – with or without a “role” change
- The steps are:
 - Disable log shipping jobs
 - Upgrade secondary server(s)
 - Upgrade monitor server if configured
 - Re-enable log shipping jobs
 - Catch up the secondary servers
 - Pause primary server traffic
 - Upgrade primary server



Upgrade – Mirroring

- Mirroring is deprecated as of SQL Server 2012
- Consider migrating to AlwaysOn Availability Groups

Upgrade – Failover Clustering - 1

- Failover clustering features interact significantly with the Operating System
- Windows Server 2012 R2 has major clustering improvements compared to Windows Server 2008
- Therefore, in place upgrades not recommended

Upgrade – Failover Clustering - 2

- However, it can be done
 - Upgrade the secondary server(s) first
 - Then, fail over to cause the database upgrades, and then upgrade the old primary node
 - Special considerations for multi-node clusters – see the upgrade whitepaper - <http://tinyurl.com/SQLUpgradeDoc>

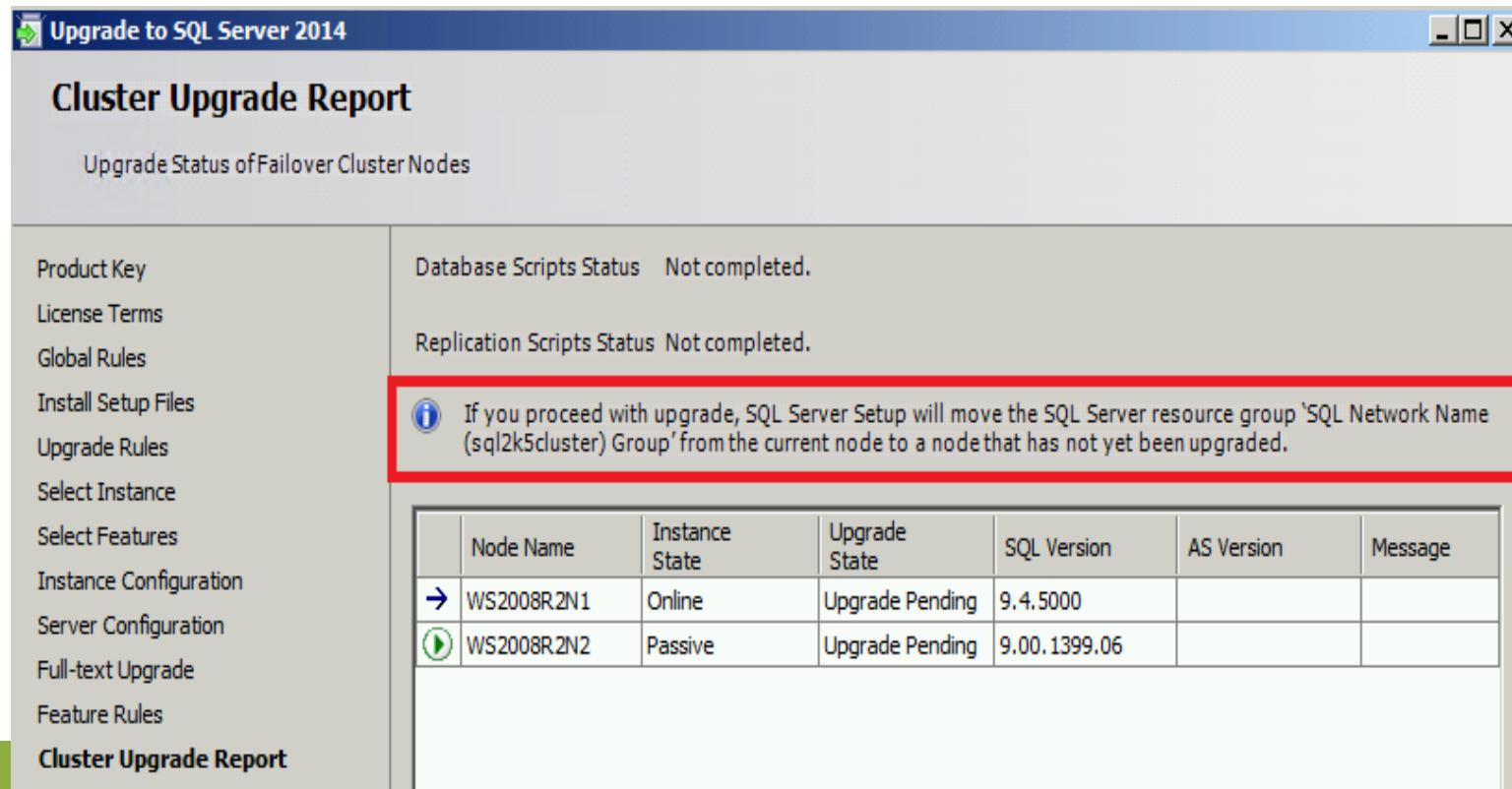
Upgrade – Failover Clustering - 3

- Each “cluster node” and instance is a separate upgrade
- Cluster upgrade will replace the resource DLL
 - This will cause other clustered SQL Servers hosted on the same computer to go offline
 - SQL Server Upgrade will detect and warn of this
- If 50% or more of your cluster nodes are upgraded, setup will automatically fail over your cluster to an upgraded node



Upgrade – Failover Clustering - 4

- Setup will warn you if you attempt to upgrade in the incorrect order



Upgrade - Replication

- Always upgrade the distributors first
- In-place upgrade generally recommended with replication to avoid re-sync costs
 - Pausing the publication and ensuring all changes are pushed to subscribers is required before upgrade starts
 - Disable replication-related SQL Server Agent jobs
 - Upgrade distributor(s) → publishers → subscribers
- Review upgrade paper and books online to validate your replication topologies are valid at every step



Upgrading your HA Solution

- Consider AlwaysOn Availability Groups
 - Replaces Database Mirroring (and some use cases for Log Shipping)
 - Allows one automatic failover partner
 - Allows 8 secondary copies, allowing read only and backups on secondaries
- Consider Windows Server 2012 R2
 - AlwaysOn heavily dependent upon Windows Clustering
 - Windows Server 2012 R2 has huge clustering improvements

SSIS Upgrade Scenarios

Choose In-Place or Side-by-Side Upgrade

You can upgrade:

- SSIS 2005
- SSIS 2008
- SSIS 2008 R2
- SSIS 2012

Pre-2005 DTS packages must first be upgraded to one of the above versions

In-Place Scenario

Assumes upgrading both Integration Services and the Database Engine to SQL Server 2014

SSIS Upgrade Scenarios

Once completed...

Package are moved from the old SSIS package store to the new location

MSDB stored package are moved to the new SQL Server 2014/2016 instance

File system packages remain in place

No packages are automatically migrated to SSIS 2014/2016 package format

Moves log data, and folder metadata into the new SSIS 2014/2016 system tables

The older SSIS service continues to be available

Does not alter any SQL agent jobs (will continue to reference earlier dtexec utility)

Side-by-Side Scenario

SSIS Upgrade Scenarios

Once completed...

- Multiple SSIS platforms are available
- Can use multiple editions of SSDT and BIDS
- SSIS 2014 'dtexec' can run earlier versions of SSIS packages
- Allows for extensive testing
- Recommended approach for refactoring earlier SSIS packages
- The uninstallation of the old version can be done once the 2014/2016 migration is complete

SSIS Backwards Compatibility

Deprecated features

- ⌚ Will be removed in a future release

Discontinued features

- Examples
 - ∅ DTS
 - ∅ ActiveX scripting

More help

See additional references at the end of this slide deck

Behavior changes

SSIS Version Specific

Examples:

- 👉 SSIS 2005 VSA to 2008 VSTA scripting
- 👉 Can persist the cached reference table in Lookup transformation in SSIS 2008

The older the packages, the more potential problems

Make best use of ETL Frameworks

May have custom ETL framework in current SSIS environment

SSIS 2014 (as introduced in SSIS 2012) includes many 'Framework' features

May consider 'refactoring' packages as a part of the SSIS upgrade

Often used for consistent package configurations, logging, error handling and deployments

May use to provide alternatives to an existing ETL framework

Can significantly increase the scope of an SSIS upgrade Project

Upgrading SSIS Projects

Project Conversion
Wizard



Package Conversion
Wizard



Project Model Conversion
Wizard

Converting to the
Project Model is Optional

Analysis Services Previous Versions (Multidimensional)

OLAP
Services 7.0

Codename Sphinx (1998)
Provided MOLAP, ROLAP, and HOLAP

SSAS 2000

Added distinct count measures
Parent/child dimensions
Improved aggregation design
Data mining capabilities

SSAS 2005

Introduced UDM
Increased scalability
Added KPIs
Improved data mining features

SSAS 2008

Improved wizards
Improved VS tools for attribute relationships and aggregations
Additional data mining models.

SSAS 2008 R2

No significant new features

SSAS 2014

Added Multidimensional Models to 'Power View'

SSAS Upgrade Scenarios

Choose In-Place Upgrade or Side-by-Side Upgrade

You can upgrade:

- SSAS 2005
- SSAS 2008
- SSAS 2008 R2
- SSAS 2012

To SSAS 2014 Multidimensional mode using either the in-place or side-by-side method

In-Place Scenario

Select the Upgrade option in Set-up

Select the targeted instance to upgrade

Review summary actions and click Upgrade

Once completed...

The older SSAS engine and associated tools are removed

The older SSAS databases are moved, and do not need to be reprocessed

Only the SSAS 2014 instance will remain

To roll back in the event of a failure

Uninstall SSAS 2014

Reinstall the older version of SSAS

Restore the SSAS databases.

Can back-out at any point before clicking Upgrade

Side-by-Side Scenario

Install a new instance of SSAS 2014

Copy the databases using one of the following methods

Once completed...

Both the previous version of SSAS, and SSAS 2014/2016 are available

Extended testing can be performed

The uninstallation of the old version can be done once the 2014 instance has been proven

Backup and Restore

Detach and Attach

Script in XML/A and Run

Deploy with Visual Studio

Troubleshooting a Failed Upgrade

Review the setup logs that were created by the Setup application

Summary.txt

Found in: %Program Files%\Microsoft SQL Server\120\Setup Bootstrap\Log

Summary_[ComputerName]_[date]_[time].log

Found in: %Program Files%\Microsoft SQL Server\120\Setup Bootstrap\Log\[date]_[time]

Post-Upgrade Tasks

Review
upgraded
databases

Expand the databases folder in SSMS



Browse the cubes



Verify database compatibility level



1050 – Multidimensional databases created in
SSAS 2005, 2008, 2008 R2

1100 - Multidimensional databases created in
SSAS 2012 or 2014

Summary

Upgrading to SSAS 2014 can be accomplished by using either an in-place upgrade or a side-by-side upgrade

Moving from earlier versions of SSAS provides performance and scalability improvements, along with a better set of developer tools

The in-place upgrade is more risky because it replaces the earlier version of SSAS

The side-by-side upgrade provides for two versions of SSAS run concurrently

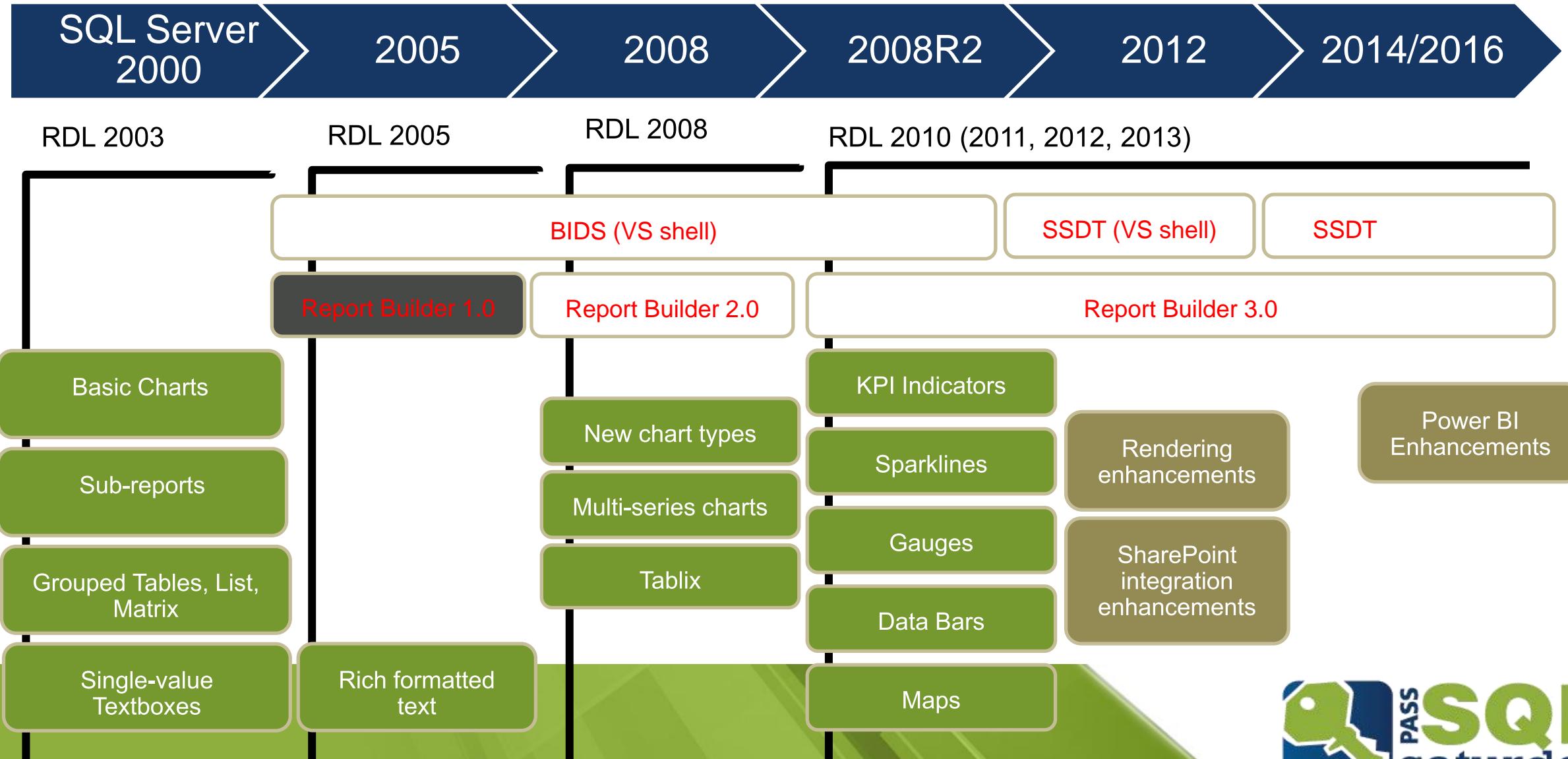
A redesign should not be needed unless you migrate one or more cubes to the tabular model

Before you do an in-place upgrade, backups of all SSAS databases

Upgrade to Tabular?

- No migration path from multidimensional
- Power Pivot (Excel) model can be migrated to tabular server model
- Versions: 2012 (1100), 2012 SP1 (1103)

SSRS Versions & Feature Snapshot



SSRS Upgrade Scenarios

Choose In-Place Upgrade or Side-by-Side Upgrade

You can upgrade:

- SSRS 2005 (SP 4)
- SSRS 2008
- SSRS 2008 R2
- SSRS 2012

...to SSRS 2014 in either native or SharePoint integrated mode using either the in-place or side-by-side method

Backup and Rollback Plan

Configuration Files

- Rsreportserver.config
- Rswebapplication.config
- Rssvrpolicy.config
- Rsmgrpolicy.config
- Reportingservicesservice.exe.config
- Web.config (for both the report server and Report Manager ASP.NET applications)
- Machine.config (for ASP.NET if you modified it for report server operations)

- Back up symmetric key
- Back up report server database(s):
ReportServer contains all server content
ReportServerTempDB contains no persistent objects & can be re-created



In-Place Upgrade

Select the targeted instance
to upgrade



(optionally)
Migrate the database
to 2008 R2+



Review summary actions and
click Upgrade

Once completed...

The older report server and associated tools are removed

The older ReportServer database, configuration files & services and are moved

Only the SSRS 2014 instance will remain

To roll back in the event of a failure

Uninstall SSRS 2014

Reinstall the older version of SSRS

Restore the SSRS database & configuration files

Side-By-Side Upgrade

Install a new instance
of SSRS 2014



Make copy of the SSRS
project & deploy
to the new
report server



Once completed...

Both the previous version of SSRS,
and SSRS 2014 are available

Extended testing can be performed

The uninstallation of the old version
can be done once the 2014 instance
has been proven

To roll back in the event of a failure

Uninstall SSRS 2014 server & database

Copy SSRS project

Open & convert to new version

Verify connectivity & formatting

Deploy with Visual Studio

Troubleshooting a Failed Upgrade

When looking for errors in the detail log,
search for the following phrases:

- “Watson bucket”
- “Error: Exception has been”

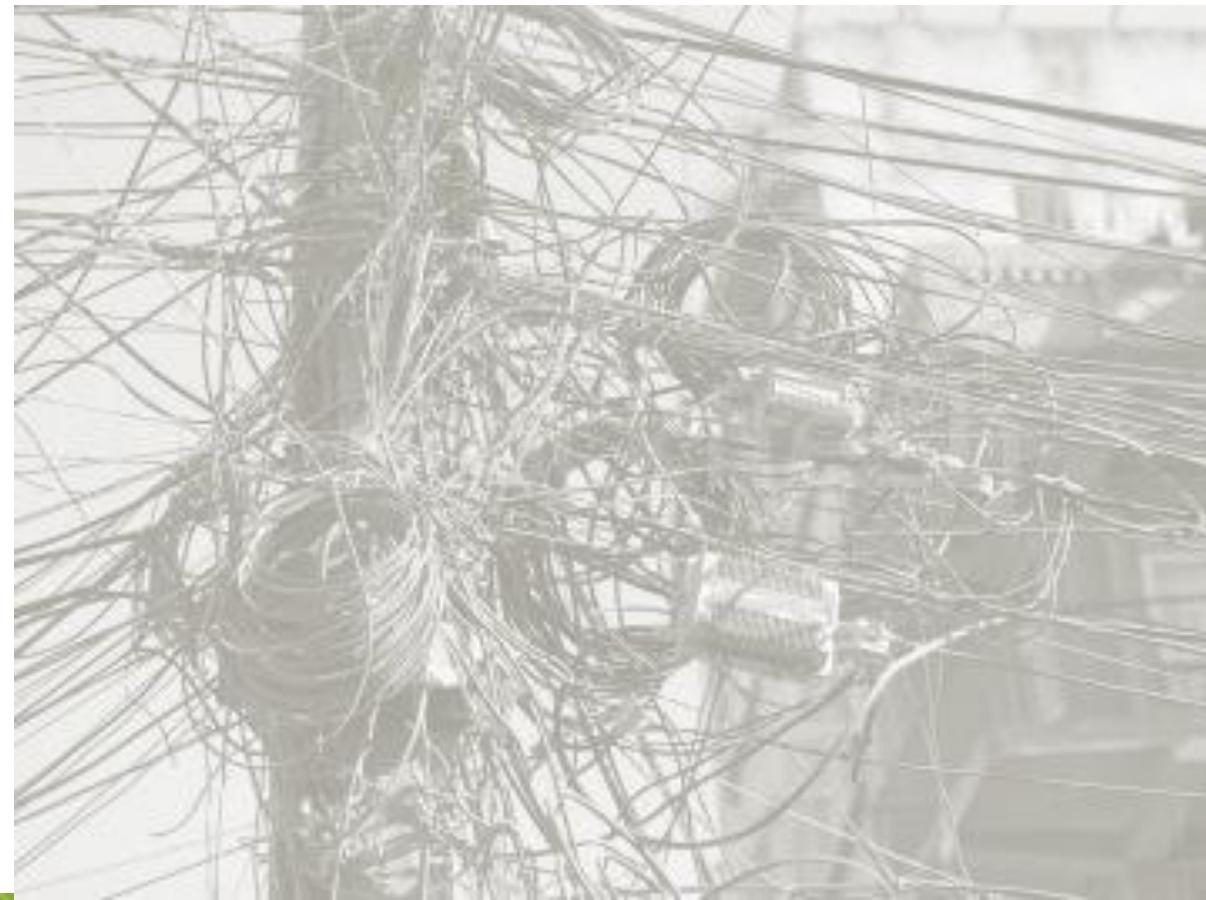
A typical Setup request goes through three execution phases:

- Global rules check
- Component update
- User-requested action

Setup is called at least three times per user-requested Setup action.

Typical log files generated are:

- ① Detail_GlobalRules.txt
- ① Detail_ComponentUpdate.txt
- ① Detail.txt



Summary

Upgrade from SSRS
2005 SP4+ to SSRS
2012 or 2014

In-place or side-by-side
upgrade option

Backup SSRS content
database, configuration
files & symmetric key

Run the SQL Server
Upgrade Advisor for
SQL Server 2014 for
potential issues

Upgrade SSRS project
using Visual Studio

Upgrade SSRS
instance using SQL
Server setup upgrade
option

Tooling

Many tools available

There are a large number of tools that are available for helping capture data and analyze it.

Two main areas that tools can help, analysis of existing infrastructure and benchmarking and testing new systems.

Tooling

Free tools

01 | SQL Trace

06 | Best Practice Analyzer

02 | RML Utilities

07 | Database Upgrade Advisor/Data Migration Assistant

03 | Distributed Replay

08 | MAP Toolkit

04 | SQL Nexus

09 | PSSDiag Manager

05 | Performance Analysis of Logs (PAL)

10 | Dynamic Management Views/Functions

SQL Server 2016: Everything built-in

Industry leader in
Mission Critical OLTP

built-in

Most secure
database

built-in

Highest performing
data warehouse

built-in

End-to-end mobile
BI on any device

built-in

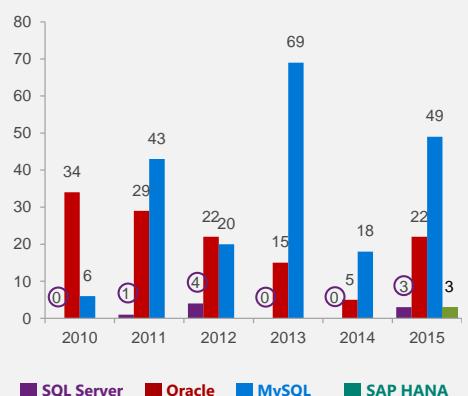
In-database
Advanced Analytics

built-in

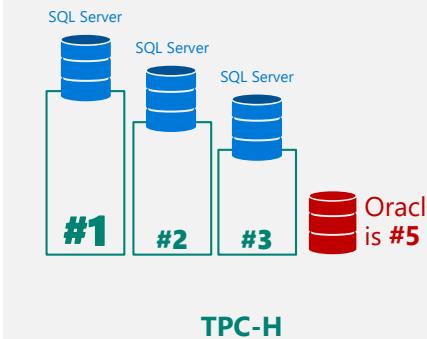
Industry leader



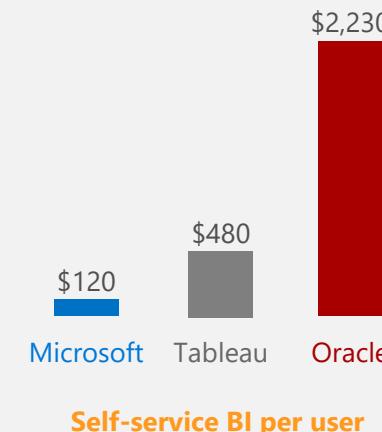
6 years in a row least vulnerable



#1 performance



A fraction of the cost



R + in-memory



at massive scale

In-memory across all workloads



Consistent experience from on-premises to cloud

End-to-end mobile BI on any device

Lightning fast queries & reports

- ➔ **In-memory** built-in
- ➔ **Reduce time to insight** with direct query
- ➔ **Powerful modeling** support for 50+ new DAX functions

Reports in **minutes** not days

PB scale DW in SQL Server

On all mobile devices

- ➔ **Mobile BI** built-in NEW*
- ➔ **Online & offline** access NEW*
- ➔ **Rich visualizations** using Power BI or enhanced Reporting Services NEW*



Windows



iOS



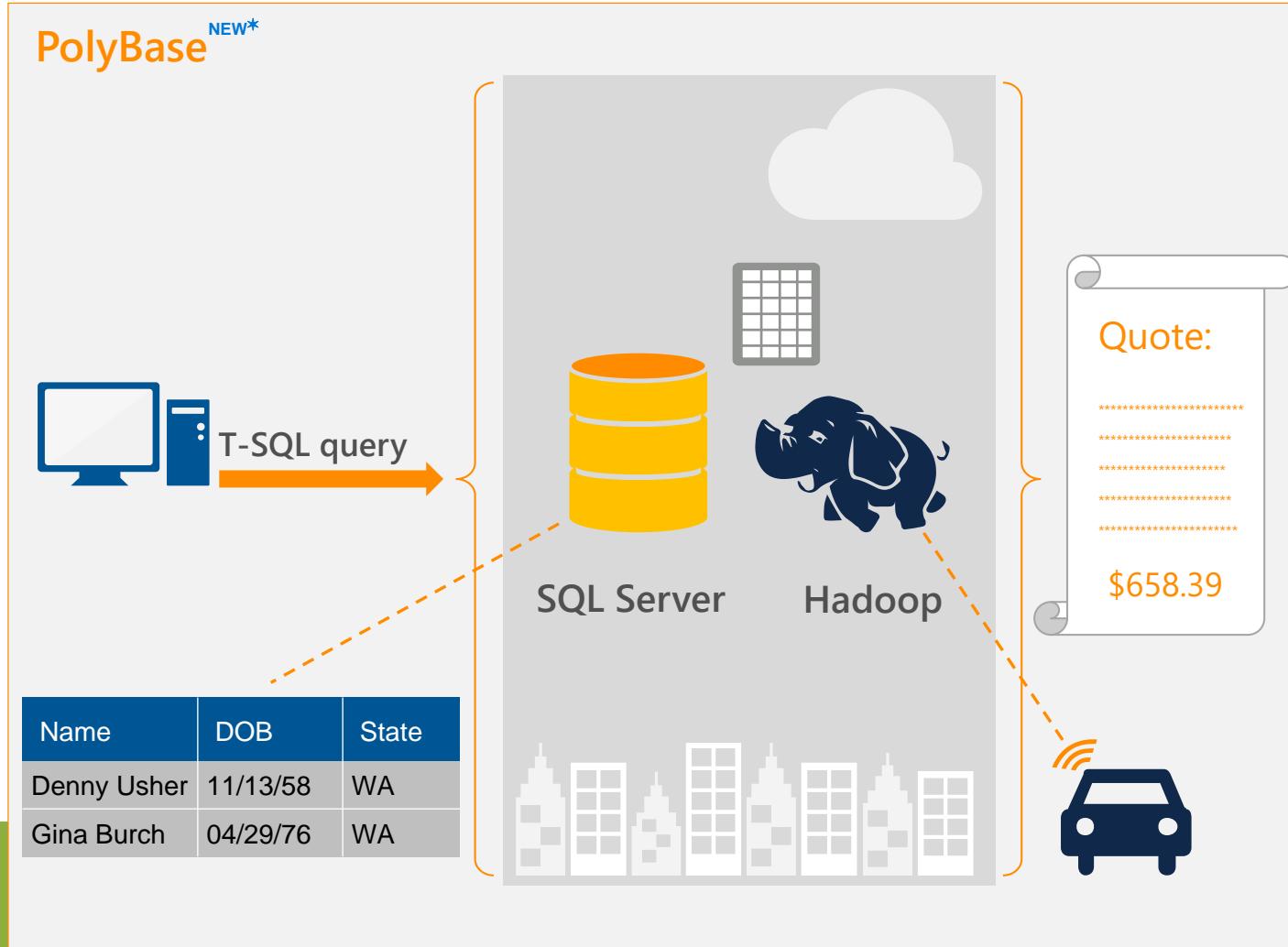
Android



HTML5

Remove the complexity of big data

T-SQL over Hadoop



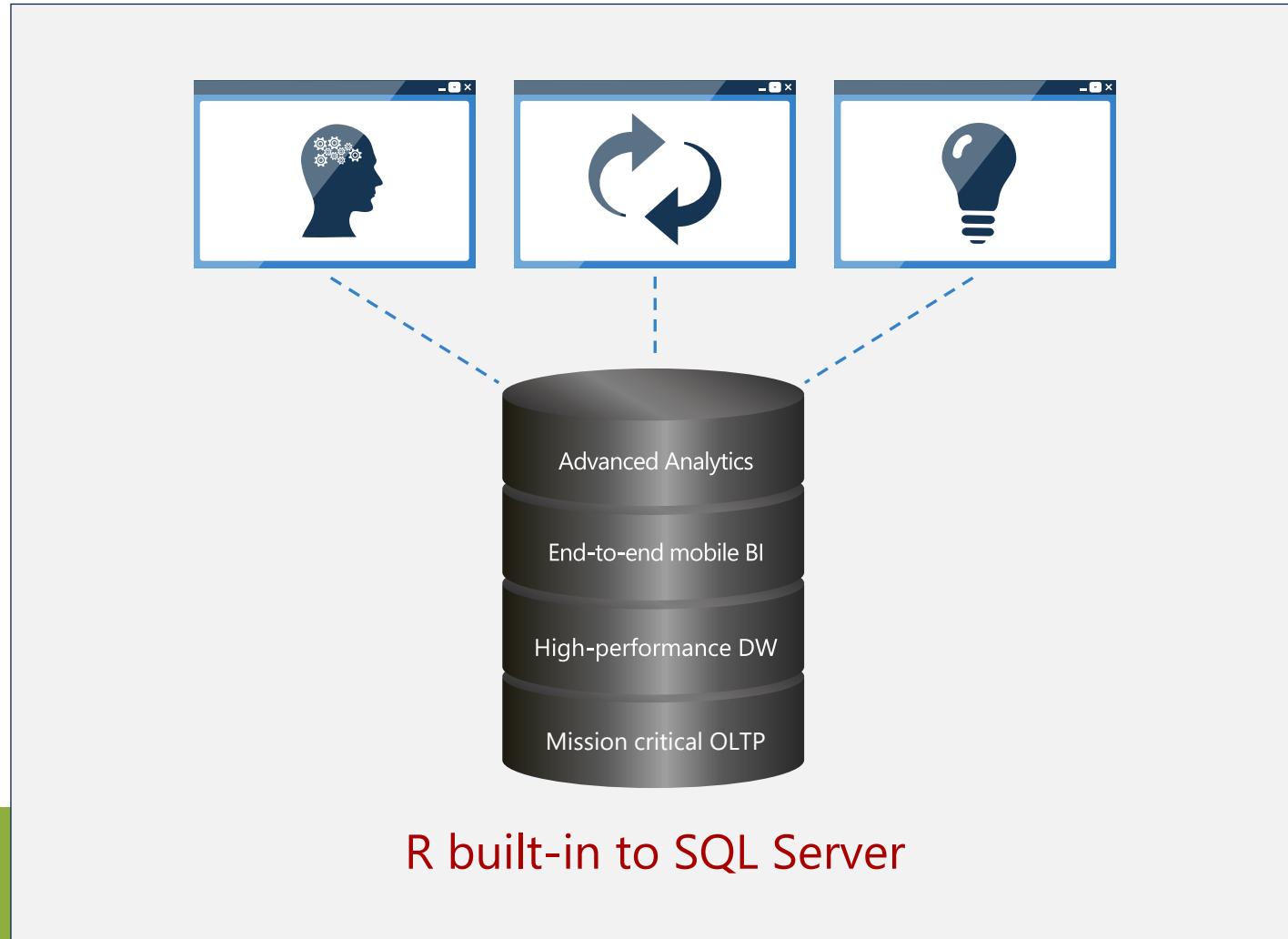
Manage structured & unstructured data

→ **Simple T-SQL^{NEW*}**
to query Hadoop data (HDFS)

→ **JSON support^{NEW*}**

In-database Advanced Analytics

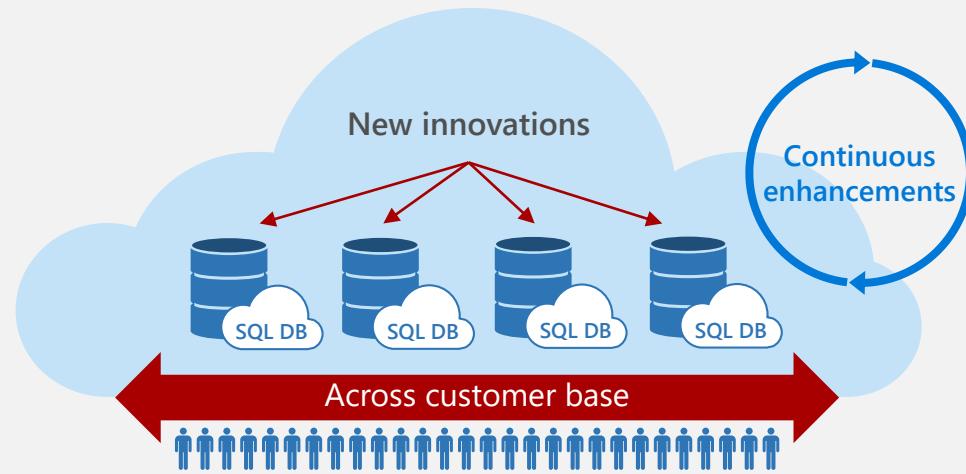
Build intelligent applications with SQL Server R Services



- ➡ **R built-in to your T-SQL** NEW*
- ➡ **Real-time operational analytics** NEW*
without moving the data
- ➡ **Open Source R with in-memory & massive scale** - multi-threading and massive parallel processing

Continuous Innovation

Cloud-First Approach



⚡ Speed

✓ Proven

↗️ Agility

📝 Feedback

SQL Server 2016



The best
SQL Server
release in history

Upgrade easily

Without breaking changes

New tools built-in to ease upgrades

SQL Server 2005



SQL Server 2014



Clone environment



Upgrade & compatibility testing

New upgrade advisors

→ **Accelerate upgrade cycle** with new tools built-in

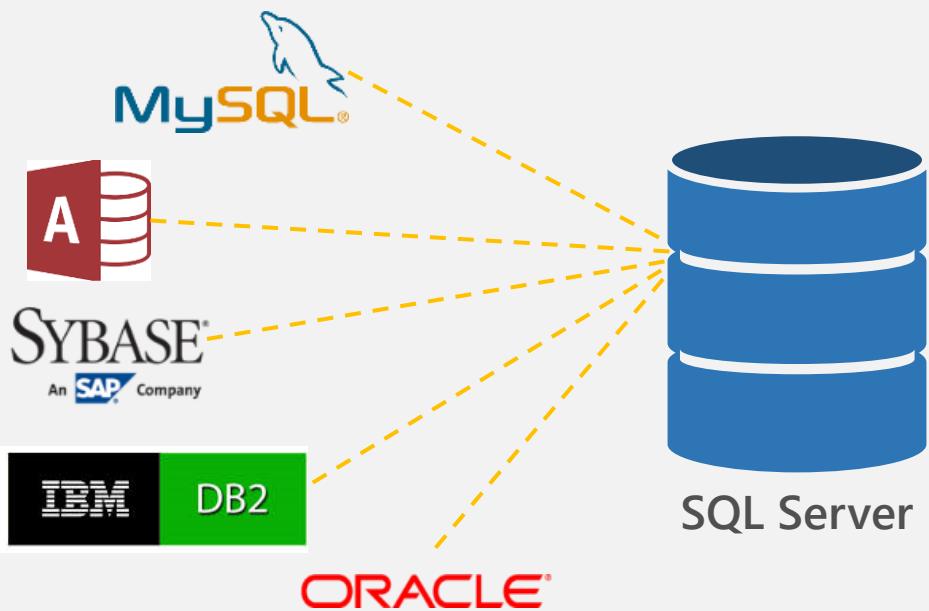
→ Upgrade and optimize existing query plans with new **Query Data Store**

NEW*

Migrate from other top databases

With free tools from Microsoft

SQL Server migration assistant



→ **Simplify migration** to SQL Server

→ **Saves you** time and money

Real-time Scenario & Solution....

Case 1:

- Re-Insurance data warehouse (OLTP & OLAP)
- Data sizes approx. 10 TB (35 databases)
- Upgrade path: SQL Server 2005 to 2012 EE (2016 soon)

- **8 + 1 weeks to complete**
 - 6 weeks of very-intensive preparation + 1 week focused on performance gains of the new platform & testing functionality.
- Problems & Solutions
 - Database compression (**sp_estimate_data_compression_savings**) and Sparse columns features used (tested).
 - Query & Table hints used
 - Filtered statistics & partitioned tables feature after the upgrade.
 - SQLCAT article: [Using Filtered Statistics with Partitioned Tables](#)



Real-time Scenario & Solution....

Case 2:

- Retail chain (highly OLTP) with Transactional Replication
- Data sizes approx. 1.5 TB (8 databases)
- Upgrade path: SQL Server 2000 to 2012
 - **3 months to complete (very intensive)**
 - 32-bit SQL Server 2000 Cluster with heavy use of transactional replication (110 subscribers, 67 articles)
 - Poor connectivity across subscribers caused upgrade without replication resynchronization.
- Upgrade to the 64-bit version of SQL Server 2008 made an in-place upgrade impossible.
 - SQLCAT article: [Upgrading Replication from SQL Server 2000 32-Bit to SQL Server 2008 64-Bit without re-initialization](#)



Real-time Scenario & Solution....

Case 3:

- Banking Sector (complex Biz logic)
- OLTP (Clustering/DB Mirroring/SSRS & DTS)
- Data sizes approx. 3 TB 25 databases)
- Upgrade path: Mixture (Production to 2012 & Archive to 2008 R2)
- **2 months to complete (+2 weeks performance tuning)**
 - Separate upgrade for 2000 databases and 2005 databases
 - DB mirroring instances to Availability Groups feature
 - Reporting Services upgrade, DTS migration – DTSXchange & SSIS migration
- Problems & Solutions
 - Complex Biz logic: Spent time fighting execution plans that changed after migration (reads):
 - Used SET STATISTICS IO ON / SET STATISTICS PROFILE ON / SET STATISTICS TIME ON
 - Most cases SELECTS involving 6 or more joins – new indexes on post-upgrade
 - Use of Availability groups HA feature in SQL Server 2012

Additional References

SSIS Backward Compatibility

[Integration Services Backward Compatibility](http://msdn.microsoft.com/en-us/library/ms143706(v=sql.110).aspx) ([http://msdn.microsoft.com/en-us/library/ms143706\(v=sql.110\).aspx](http://msdn.microsoft.com/en-us/library/ms143706(v=sql.110).aspx))

[Considerations for Upgrading Data Transformation Services](http://msdn.microsoft.com/en-us/library/ms143716(v=SQL.105).aspx) ([http://msdn.microsoft.com/en-us/library/ms143716\(v=SQL.105\).aspx](http://msdn.microsoft.com/en-us/library/ms143716(v=SQL.105).aspx)).

[Migrating Data Transformation Services Packages](http://msdn.microsoft.com/en-us/library/ms143501(v=SQL.105).aspx) ([http://msdn.microsoft.com/en-us/library/ms143501\(v=SQL.105\).aspx](http://msdn.microsoft.com/en-us/library/ms143501(v=SQL.105).aspx))

32 vs 64-bit considerations

[Importing Data from 64-bit Excel in SSIS](http://hrvoje.piasevoli.com/2010/09/01/importing-data-from-64-bit-excel-in-ssis) (<http://hrvoje.piasevoli.com/2010/09/01/importing-data-from-64-bit-excel-in-ssis>)

[Excel Error 64-bit version of SSIS](http://social.msdn.microsoft.com/Forums/br/sqlintegrationservices/thread/289e29ad-26dc-4f90-bad4-ffb86c76e5f9) (<http://social.msdn.microsoft.com/Forums/br/sqlintegrationservices/thread/289e29ad-26dc-4f90-bad4-ffb86c76e5f9>)

[Quick Reference: SSIS in 32- and 64-bits](http://toddmcdermid.blogspot.com/2009/10/quick-reference-ssis-in-32-and-64-bits.html) (<http://toddmcdermid.blogspot.com/2009/10/quick-reference-ssis-in-32-and-64-bits.html>)

[64-bit Considerations for Integration Services](http://msdn.microsoft.com/en-us/library/ms141766(v=sql.105).aspx) ([http://msdn.microsoft.com/en-us/library/ms141766\(v=sql.105\).aspx](http://msdn.microsoft.com/en-us/library/ms141766(v=sql.105).aspx))

Deployment

[Deployment Projects and Packages](http://msdn.microsoft.com/en-us/library/hh213290(v=sql.120).aspx) ([http://msdn.microsoft.com/en-us/library/hh213290\(v=sql.120\).aspx](http://msdn.microsoft.com/en-us/library/hh213290(v=sql.120).aspx))

[SSIS Junkie](http://sqlblog.com/blogs/jamie_thomson/default.aspx) (http://sqlblog.com/blogs/jamie_thomson/default.aspx)

[SQL Server Integration Services \(MSDN\)](http://msdn.microsoft.com/en-us/sqlserver/cc511477.aspx) (<http://msdn.microsoft.com/en-us/sqlserver/cc511477.aspx>)

[Install Integration Services](http://technet.microsoft.com/en-us/library/ms143731(v=sql.120).aspx) ([http://technet.microsoft.com/en-us/library/ms143731\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/ms143731(v=sql.120).aspx)).

[Upgrade Integration Services](http://technet.microsoft.com/en-us/library/cc879336(v=sql.120).aspx) ([http://technet.microsoft.com/en-us/library/cc879336\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/cc879336(v=sql.120).aspx)).

SSIS 2014 Upgrade Links

[What's New \(Integration Services\)](http://msdn.microsoft.com/en-us/library/bb522534(v=sql.110).aspx) ([http://msdn.microsoft.com/en-us/library/bb522534\(v=sql.110\).aspx](http://msdn.microsoft.com/en-us/library/bb522534(v=sql.110).aspx))

[SSIS MDSN web site](http://msdn.microsoft.com/en-us/sqlserver/cc511477.aspx) (<http://msdn.microsoft.com/en-us/sqlserver/cc511477.aspx>)

"[5 Tips for a Smooth SSIS Upgrade to SQL Server 2012](http://msdn.microsoft.com/en-us/library/hh667275.aspx)" (<http://msdn.microsoft.com/en-us/library/hh667275.aspx>), which is equally applicable to SSIS 2014.

For more information on side-by-side installations, see [Interoperability and Coexistence \(Integration Services\)](http://technet.microsoft.com/en-us/library/bb522577(v=sql.120).aspx) ([http://technet.microsoft.com/en-us/library/bb522577\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/bb522577(v=sql.120).aspx))

For more information on converting to VSTA, see [Migrate Scripts to VSTA](http://technet.microsoft.com/en-us/library/bb522527(v=sql.120).aspx) ([http://technet.microsoft.com/en-us/library/bb522527\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/bb522527(v=sql.120).aspx))

For more information on installing SSDT, see [Microsoft SQL Server Data Tools](http://msdn.microsoft.com/en-us/hh297027.aspx) (<http://msdn.microsoft.com/en-us/hh297027.aspx>)

Additional References

Upgrading Power Pivot

For information on how to upgrade PowerPivot, see: [Upgrade PowerPivot for SharePoint](http://msdn.microsoft.com/en-us/library/ee210646.aspx) (<http://msdn.microsoft.com/en-us/library/ee210646.aspx>)

[Upgrade Power Pivot Data Models to Excel 2013](http://office.microsoft.com/en-us/excel-help/upgrade-power-pivot-data-models-to-excel-2013-HA103356104.aspx)
(<http://office.microsoft.com/en-us/excel-help/upgrade-power-pivot-data-models-to-excel-2013-HA103356104.aspx>)

Determining and Evaluating Potential Upgrade Issues

For a complete list of backward-compatibility issues, breaking changes, and behavior changes when moving to SSAS 2014, see [Analysis Services Backward Compatibility](http://technet.microsoft.com/en-us/library/ms143479(v=sql.120).aspx) ([http://technet.microsoft.com/en-us/library/ms143479\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/ms143479(v=sql.120).aspx))

For a list of discontinued, deprecated, behavior, and breaking changes when upgrading from SSAS 2005, the reader can refer to Chapter 11, "Analysis Services," in the [SQL Server 2008 R2 Upgrade Technical Reference Guide](http://download.microsoft.com/download/3/0/D/30DB8D46-8ACF-442A-99A2-0F4CE74AE14D/SQL_Server_2008_R2_Upgrade_Technical_Reference_Guide.docx) (http://download.microsoft.com/download/3/0/D/30DB8D46-8ACF-442A-99A2-0F4CE74AE14D/SQL_Server_2008_R2_Upgrade_Technical_Reference_Guide.docx)

Deprecated Features

For more information about deprecated features in SSAS 2014, see [Deprecated Analysis Services Functionality in SQL Server 2014](http://technet.microsoft.com/en-us/library/ms143346.aspx) (<http://technet.microsoft.com/en-us/library/ms143346.aspx>)

Discontinued Features

Original connection string syntax for populating local cubes is replaced by the Create Global Cube statement. For more information, see [CREATE GLOBAL CUBE Statement \(MDX\)](http://technet.microsoft.com/en-us/library/ms145581.aspx) (<http://technet.microsoft.com/en-us/library/ms145581.aspx>)

For more information about how to create actions in recent versions of Analysis Services, see [Actions \(Analysis Services - Multidimensional Data\)](http://technet.microsoft.com/en-us/library/ms174515.aspx) (<http://technet.microsoft.com/en-us/library/ms174515.aspx>)

For more information about these discontinued features in SSAS 2014, see [Discontinued Analysis Services Functionality in SQL Server 2014](http://technet.microsoft.com/en-us/library/ms143229.aspx) (<http://technet.microsoft.com/en-us/library/ms143229.aspx>)

Breaking Changes

For more information about breaking changes when upgrading to SSAS 2014, see [Breaking Changes to Analysis Services Features in SQL Server 2014](http://technet.microsoft.com/en-us/library/ms143742.aspx) (<http://technet.microsoft.com/en-us/library/ms143742.aspx>)

Behavior changes

For more information about the behavior changes in SSAS 2012 and 2014, see [Behavior Changes to Analysis Services Features in SQL Server 2014](http://technet.microsoft.com/en-us/library/ms143682.aspx) (<http://technet.microsoft.com/en-us/library/ms143682.aspx>)

Database compatibility

Setting the database compatibility to a higher level is irreversible. See: [Set the Compatibility Level of a Multidimensional Database \(Analysis Services\)](http://msdn.microsoft.com/en-us/library/gg471593.aspx) (<http://msdn.microsoft.com/en-us/library/gg471593.aspx>)

SQL Server 2014 Upgrade Links

[Business intelligence](http://www.microsoft.com/sqlserver/en/us/solutions-technologies/business-intelligence/analysis-services.aspx)
(<http://www.microsoft.com/sqlserver/en/us/solutions-technologies/business-intelligence/analysis-services.aspx>)

[SQL Server 2012 Web Site](http://www.microsoft.com/sqlserver/en/us/default.aspx)
(<http://www.microsoft.com/sqlserver/en/us/default.aspx>)

[Books Online for SQL Server 2014](http://msdn.microsoft.com/en-us/library/ms130214(v=sql.110).aspx)
([http://msdn.microsoft.com/en-us/library/ms130214\(v=sql.110\).aspx](http://msdn.microsoft.com/en-us/library/ms130214(v=sql.110).aspx))

[SQL Server MSDN Resources](http://msdn.microsoft.com/en-us/sqlserver)
(<http://msdn.microsoft.com/en-us/sqlserver>)

[SQL Server 2014 \(TechNet\)](http://technet.microsoft.com/en-us/sqlserver)
(<http://technet.microsoft.com/en-us/sqlserver>)



Additional References

Planning a Deployment Topology (SSRS native mode)

[http://msdn.microsoft.com/en-us/library/ms157293\(v=sql.120\).aspx](http://msdn.microsoft.com/en-us/library/ms157293(v=sql.120).aspx)

Deployment Topologies for Reporting Services in SharePoint Integrated Mode

[http://msdn.microsoft.com/en-us/library/bb510781\(v=sql.120\).aspx](http://msdn.microsoft.com/en-us/library/bb510781(v=sql.120).aspx)

Features Supported by the Editions of SQL Server 2014

[http://technet.microsoft.com/en-us/library/cc645993\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/cc645993(v=sql.120).aspx)

How to: Detect Version Information (Reporting Services)

[http://msdn.microsoft.com/en-us/library/bb630446\(SQL.120\).aspx](http://msdn.microsoft.com/en-us/library/bb630446(SQL.120).aspx)

Features Supported by the Editions of SQL Server 2014

[http://msdn.microsoft.com/en-us/library/cc645993\(v=SQL.120\).aspx#reporting](http://msdn.microsoft.com/en-us/library/cc645993(v=SQL.120).aspx#reporting)

Supported Version and Edition Upgrades

[http://msdn.microsoft.com/en-us/library/ms143393\(v=SQL.120\).aspx](http://msdn.microsoft.com/en-us/library/ms143393(v=SQL.120).aspx)

Upgrade a SQL Server Failover Cluster Instance (Setup)

[http://technet.microsoft.com/en-us/library/ms191295\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/ms191295(v=sql.120).aspx)

Use the Copy Database Wizard

[http://technet.microsoft.com/en-us/library/ms188664\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/ms188664(v=sql.120).aspx)

Migrate a Reporting Services Native Mode Installation

[http://technet.microsoft.com/en-us/library/ms143724\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/ms143724(v=sql.120).aspx)

SQL Server 2008 R2 Upgrade Technical Reference Guide

<http://download.microsoft.com/download/3/0/D/30DB8D46-8ACF-442A-99A2-0F4CE74AE14D/SQL Server 2008 R2 Upgrade Technical Reference Gu>

Modify a Reporting Services Configuration File (RSreportserver.config)

[http://technet.microsoft.com/en-us/library/bb630448\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/bb630448(v=sql.120).aspx)

Deprecated Features in SQL Server Reporting Services in SQL Server 2014

[http://technet.microsoft.com/en-us/library/ms143509\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/ms143509(v=sql.120).aspx)

Report model projects are no longer available and supported

Discontinued Functionality to SQL Server Reporting Services in SQL Server 2014

[http://msdn.microsoft.com/en-us/library/ms144231\(v=sql.120\).aspx](http://msdn.microsoft.com/en-us/library/ms144231(v=sql.120).aspx)

Breaking Changes in SQL Server Reporting Services in SQL Server 2014

[http://technet.microsoft.com/en-us/library/ms143380\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/ms143380(v=sql.120).aspx)

Refer to the SQL Server 2014 Upgrade Guide, Chapter 1: "Upgrade Planning and Deployment," and Use Upgrade Advisor to Prepare for Upgrades

[http://msdn.microsoft.com/en-us/library/ms144256\(v=sql.120\).aspx](http://msdn.microsoft.com/en-us/library/ms144256(v=sql.120).aspx)

Behavior Changes in SQL Server Reporting Services in SQL Server 2014

[http://technet.microsoft.com/en-us/library/ms143200\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/ms143200(v=sql.120).aspx)

Reporting Services Backward Compatibility

[http://technet.microsoft.com/en-us/library/ms143251\(v=sql.120\).aspx](http://technet.microsoft.com/en-us/library/ms143251(v=sql.120).aspx)

Check Parameters for the System Configuration Checker

[http://msdn.microsoft.com/en-us/library/ms143753\(v=sql.120\).aspx](http://msdn.microsoft.com/en-us/library/ms143753(v=sql.120).aspx)

Back Up and Restore Reporting Services Encryption Keys (SSRS Native Mode)

[http://msdn.microsoft.com/en-us/library/ms157275\(v=sql.120\).aspx](http://msdn.microsoft.com/en-us/library/ms157275(v=sql.120).aspx)

Moving the Report Server Databases to Another Computer

[http://msdn.microsoft.com/en-us/library/ms156421\(v=sql.120\).aspx](http://msdn.microsoft.com/en-us/library/ms156421(v=sql.120).aspx)

Upgrade and Migrate Reporting Services

[http://msdn.microsoft.com/en-us/library/ms143747\(v=sql.120\).aspx](http://msdn.microsoft.com/en-us/library/ms143747(v=sql.120).aspx)

Upgrade Reports

[http://msdn.microsoft.com/en-us/library/ms143674\(v=sql.120\).aspx](http://msdn.microsoft.com/en-us/library/ms143674(v=sql.120).aspx)

Upgrade a Report Server Database

[http://msdn.microsoft.com/en-us/library/ms403392\(v=sql.120\).aspx](http://msdn.microsoft.com/en-us/library/ms403392(v=sql.120).aspx)

Deployment and Version Support in SQL Server Data Tools (SSRS)

[http://msdn.microsoft.com/en-us/library/ee635898\(v=sql.120\).aspx](http://msdn.microsoft.com/en-us/library/ee635898(v=sql.120).aspx)



Resources

- Knowledge sharing network
 - www.sqlserver-qa.net
- LinkedIn Publications - <http://tinyurl.com/SKJ-LinkedIn>



- Follow me

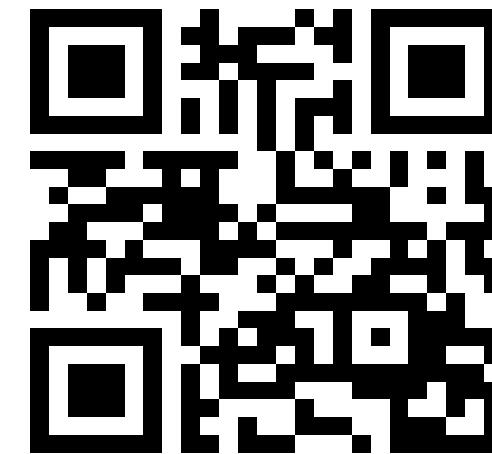
Please review the event and sessions

- EVENT



<http://speakerscore.com/ZGVX>

- SESSION



<http://speakerscore.com/219P>