Microsoft SQL Server 2012

Cass Walker
TLG Learning

SQL Server 2012

- Query Window Zoom
- Query Window Outlining
- T-SQL Language Enhancements
- Integration Services Catalogs
- Default Location for Backup Files
- MS Help Viewer
- FileTable
- AlwaysOn
- PowerPivot Excel Addin
- Power View
- Dashboards and Scorecards
- ColumnStore Index
- SQL Azure – Cloud Databases
- Managed Self-Service BI
- Edition Changes
- Sequence Generators
- Distributed Replay
- Enhanced Partition Wizard
- Table Partitioning Enhcanements
- Spatial Data Improvements
- SQL Server Data Tools – formerly BIDS
- StreamInsight 1.2
- SSIS Package Design Enhanced and Management Simplified
- Master Data Services Improvements
- BI-Semantic Model
- SSAS Tabular Modeling
- Master Data Services Add-In for Excel
- Fast Track Data Warehouse Enhancements

Seminar Topics

Mission Critical Confidence

- Performance and Availability
- AlwaysOn
- AlwaysOn Availability Groups Drilldown

Breakthrough Insight

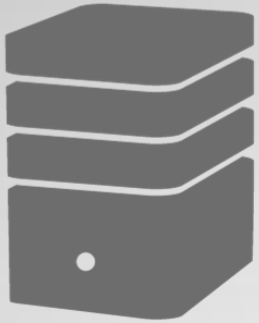
- PowerPivot and PowerView
- Dashboards and Scorecards
- DataWarehouse Performance using ColumnStore Index
- Data Quality Services

Cloud on Your Terms

- Create business solutions fast, on your terms across server and private or public cloud

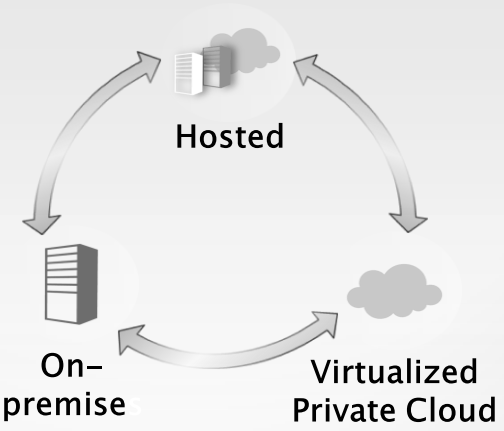
Industry Trends

DATA EXPLOSION



CONSUMERIZATION OF IT

PRIVATE AND PUBLIC CLOUD



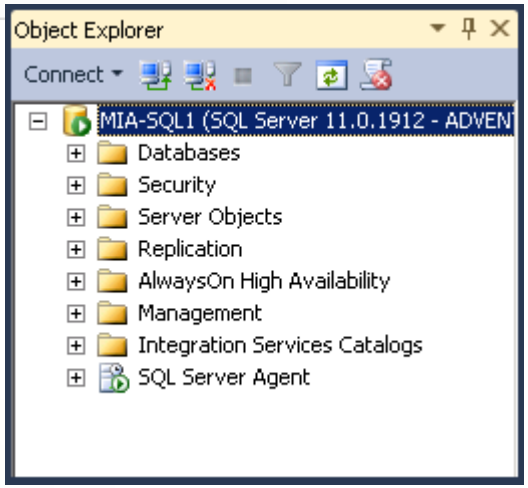
The volume of digitized data in the workplace is exploding.

Consumers expect fast, easy and friendly access to enterprise information.

Cloud computing is changing the way data is accessed and processed.

Mission Critical Confidence

Real-world value delivered, today



Greater High Availability
NEW SQL Server AlwaysOn

Combination of Windows Clustering and SQL Server Mirroring for instance level or Mirroring and Log Shipping for database level

- AlwaysOn supports 24x7x365 ship tracking
- Improved application failover & uptime by 2x
- Complete redundancy & protection in a few clicks

"Our business has to be on-line all the time….we were able to install SQL Server 2012 and enable AlwaysOn in a matter of minutes."

Mission Critical Confidence

Delivering the 9's

Greater High Availability
NEW SQL Server AlwaysOn

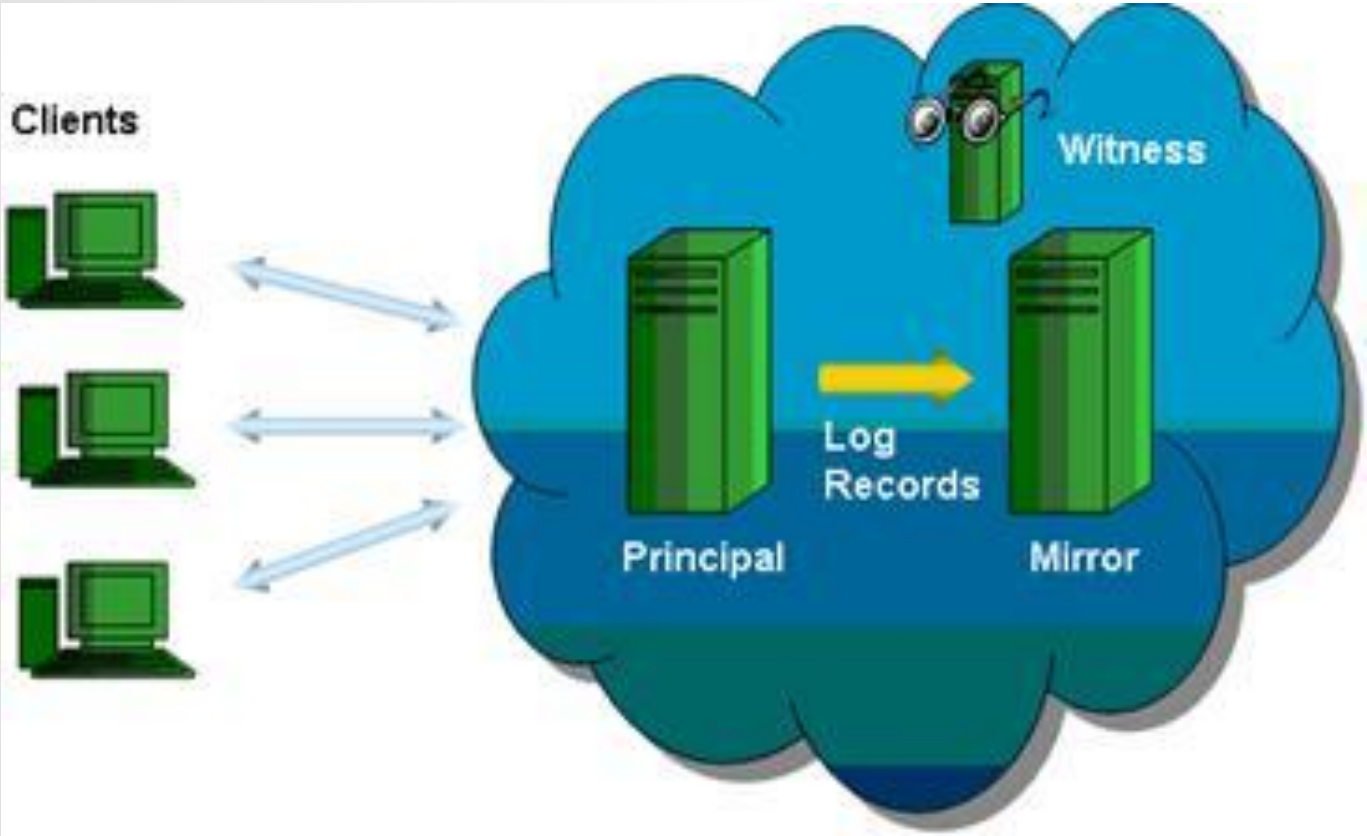
$$\frac{\text{Actual uptime}}{\text{Expected uptime}} \times 100\%$$

Number of 9's	Availability %	Total Annual Downtime
2	99%	3 days, 15 hours
3	99.9%	8 hours, 45 minutes
4	99.99%	52 minutes, 34 seconds
5	99.999%	5 minutes, 15 seconds

Clustering Overview

http://blogs.technet.com/blogfiles/vikasma/WindowsLiveWriter/HyperVHostclusterRC1_13F07/image_2.png

Mirroring Overview



Mission Critical Confidence

AlwaysOn

AlwaysOn Failover Cluster Instances (FCI)
for instance level protection

- Multi-subnet Clustering
- Flexible Failover Policy
- Improved Diagnostics
- Predictable Recovery Time
- Built for Consolidation Scenarios

AlwaysOn Availability Groups (AG)
for database level protection

- Multi-Database Failover
- Multiple Secondaries
- Active Secondaries
- Integrated HA Management

Mission Critical Confidence

AlwaysOn Availability Groups

Flexible

- Multi-database failover
- Multiple secondaries
- Synchronous and asynchronous data movement
- Built-in compression and encryption
- Automatic and manual failover
- Flexible failover policy
- Automatic Page Repair

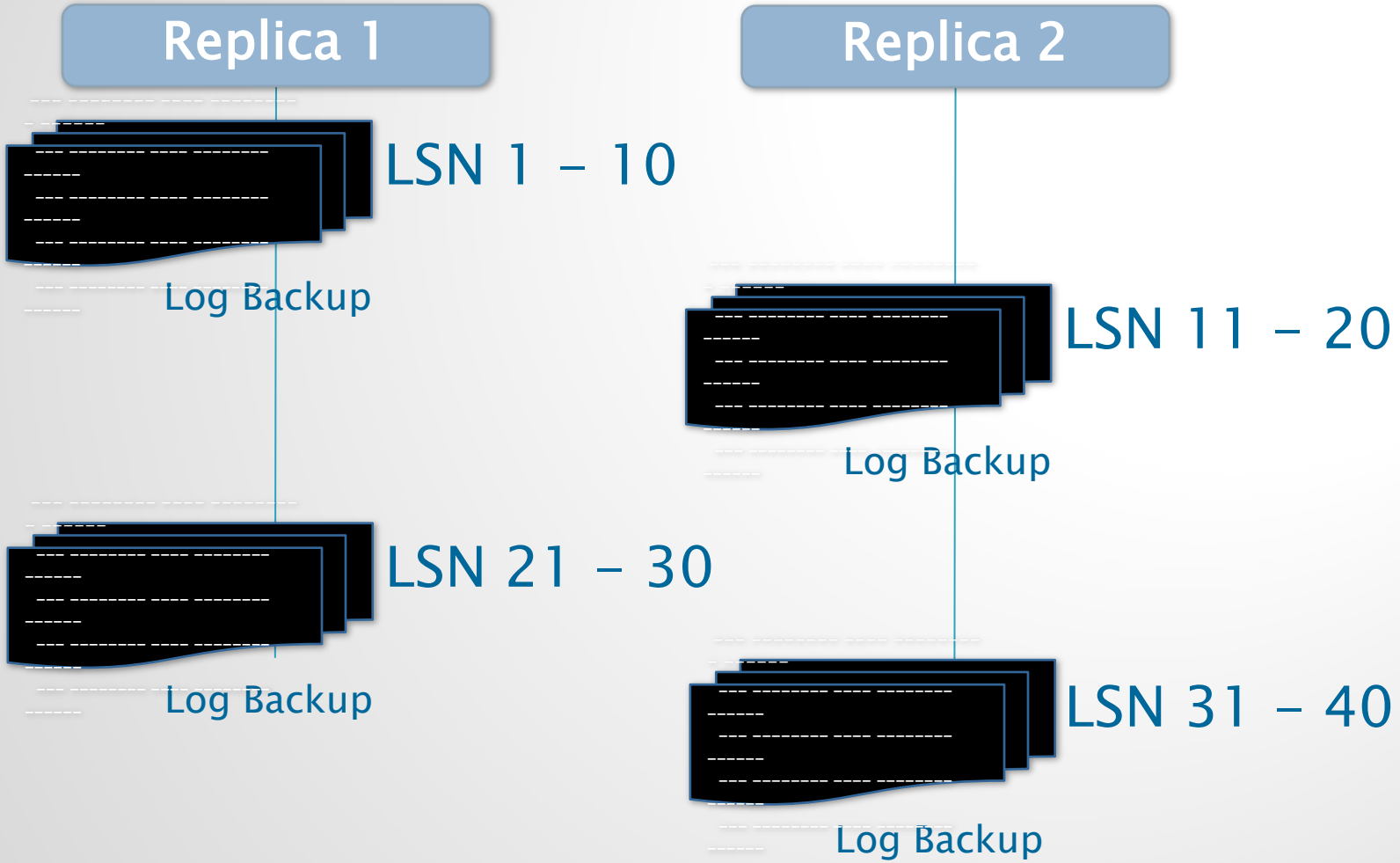
Integrated

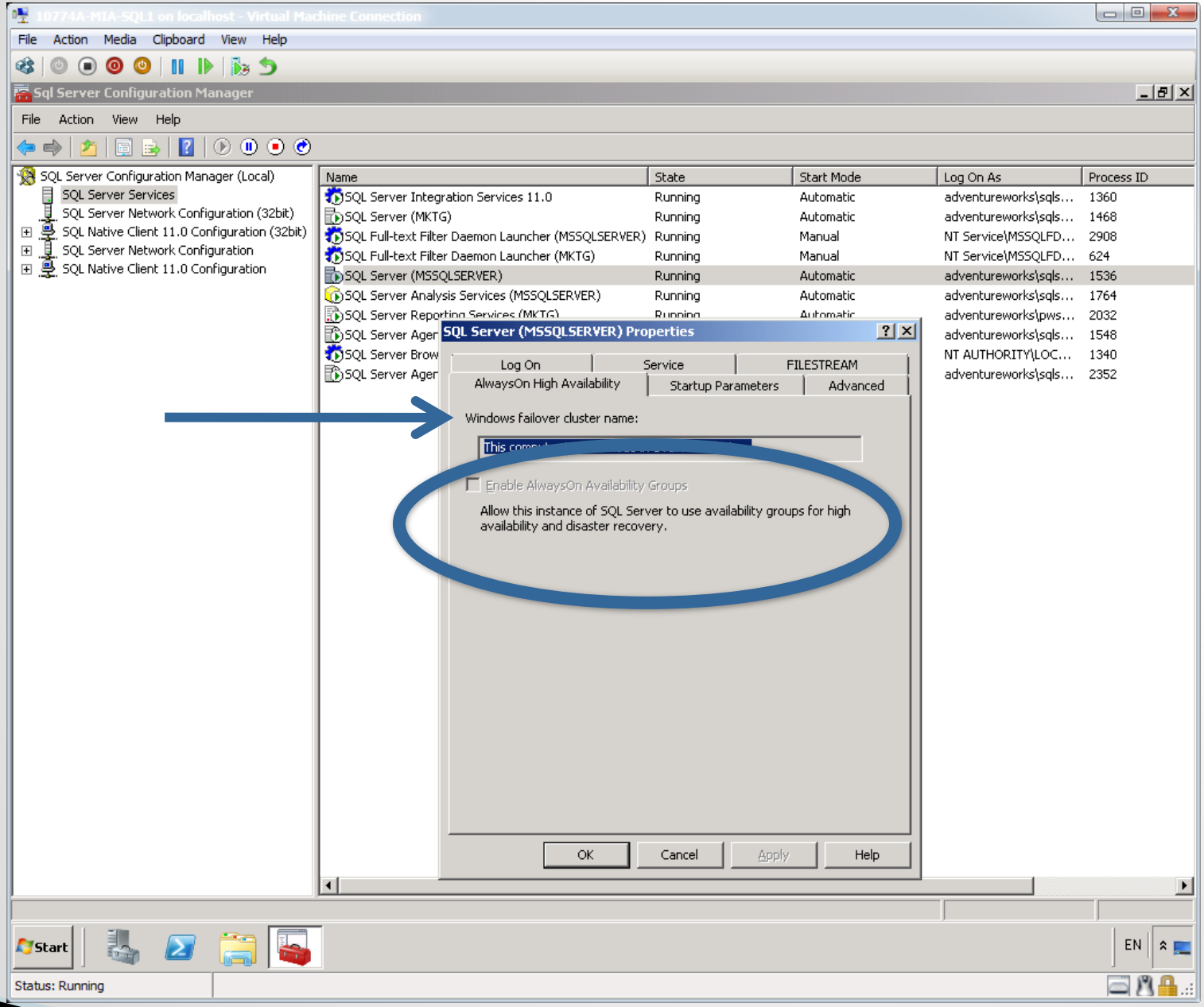
- Application failover using virtual name
- Configuration Wizard
- Dashboard
- System Center Integration
- Rich diagnostic infrastructure
- Replication publisher failover

Efficient

- Active Secondary
  - Readable
  - Offload Backup

Secondary Log Backups




10774A-MIA-SQL1 on localhost - Virtual Machine Connection
File Action Media Clipboard View Help
Sql Server Configuration Manager
File Action View Help
SQL Server Configuration Manager (Local)
SQL Server Services
SQL Server Network Configuration (32bit)
SQL Native Client 11.0 Configuration (32bit)
SQL Server Network Configuration
SQL Native Client 11.0 Configuration
Name
State
Start Mode
Log On As
Process ID
SQL Server Integration Services 11.0 Running Automatic adventureworks\sqls... 1360
SQL Server (MKTG) Running Automatic adventureworks\sqls... 1468
SQL Full-text Filter Daemon Launcher (MSSQLSERVER) Running Manual NT Service\MSSQLFD... 2908
SQL Full-text Filter Daemon Launcher (MKTG) Running Manual NT Service\MSSQLFD... 624
SQL Server (MSSQLSERVER) Running Automatic adventureworks\sqls... 1536
SQL Server Analysis Services (MSSQLSERVER) Running Automatic adventureworks\sqls... 1764
SQL Server Reporting Services (MKTG) Running Automatic adventureworks\pws... 2032
SQL Server Ager Automatic adventureworks\sqls... 1548
SQL Server Brow NT AUTHORITY\LOC... 1340
SQL Server Ager adventureworks\sqls... 2352
SQL Server (MSSQLSERVER) Properties
Log On
Service
FILESTREAM
AlwaysOn High Availability
Startup Parameters
Advanced
Windows failover cluster name:
Enable AlwaysOn Availability Groups
Allow this instance of SQL Server to use availability groups for high availability and disaster recovery.
OK
Cancel
Apply
Help
Start
EN
Status: Running

Breakthrough Insight

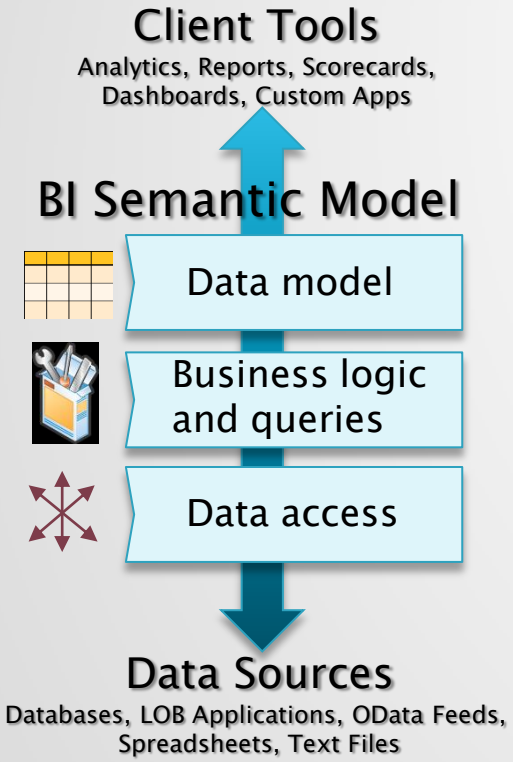
Customers Want

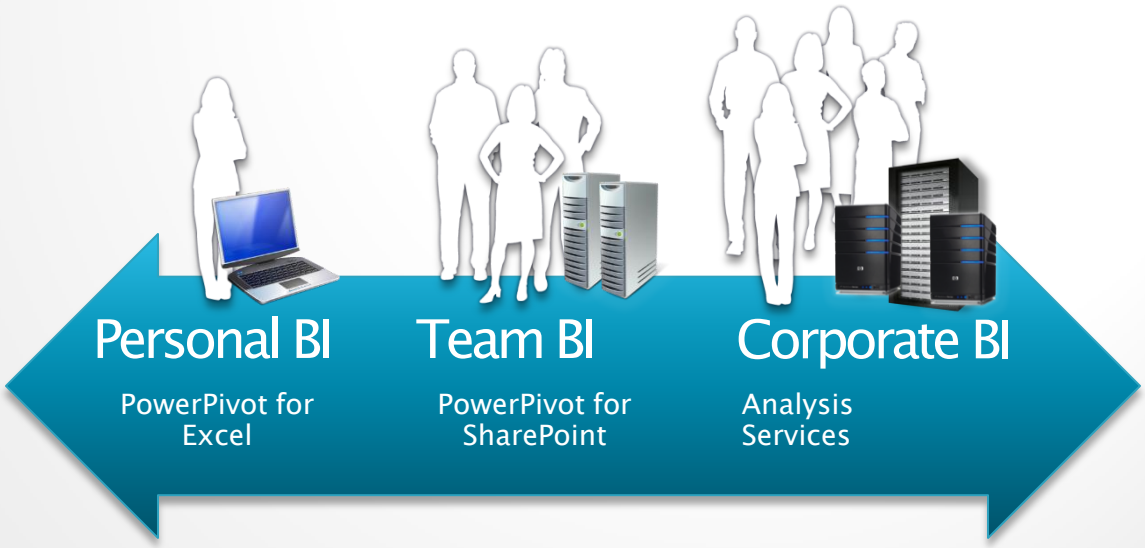
Rapid data exploration	**PowerPivot** built on Excel and Power View for stunning data visualizations & broad adoption
Managed self-service BI	End user agility through **self-service BI** balanced with enterprise security & governance via **SharePoint**
Credible, consistent data	**Data Quality Services & BI Semantic Model** for increased productivity and data accuracy, built-in
Scalable analytics & DW	Proven analytics for **24+TB cubes, and 15K partitions** delivering Tier 1 scalability for large sliding windows

[1]*Microsoft Evidence: Yahoo*

BI Semantic Model

One Model for all End User Experiences, Multiple ways to Build it





Breakthrough Insight

PowerPivot
Business Intelligence

- Excel add-in utility
- Rich data analysis models in Excel
- Large Data Sets
- Easy to “mash up” data from heterogeneous sources
- Refreshes data from all sources
- Rich visualizations
- Publish results to SharePoint
- Uses Data Analysis Expression (DAX) Language
  - Uses datetime instead of Excel’s sequential serial numbers
  - Time intelligence functions

Breakthrough Insight

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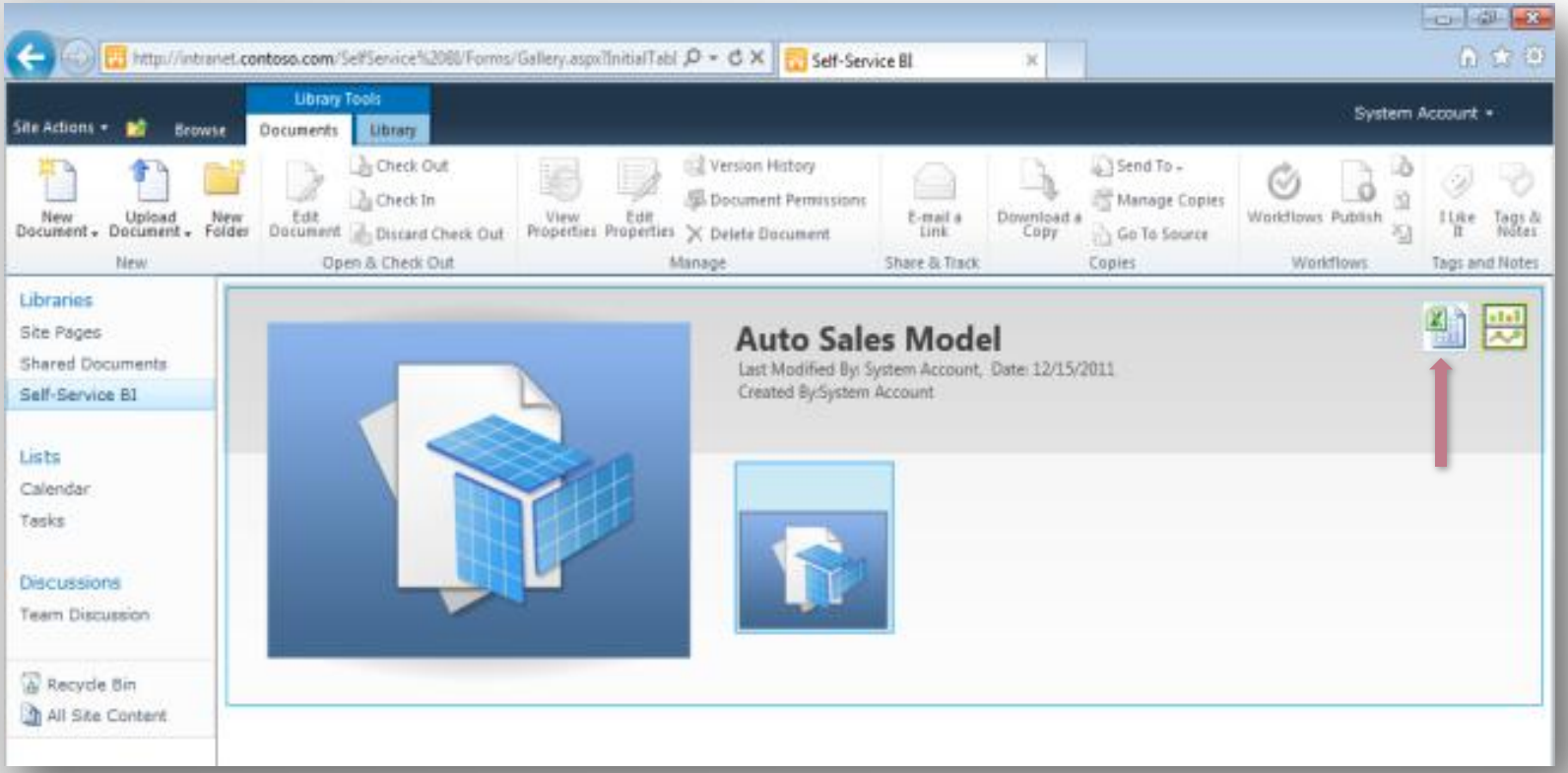
Breakthrough Insight

Power View
Business Intelligence



ColumnStore Indexes

- Faster query response time from **Data Warehouses**
  - Easier data exploration
  - Better decisions
- Reduced physical DB design effort
  - Fewer indexes (can replace your clustered)
  - Fewer summary aggregates and indexed views
  - May eliminate need for OLAP cubes
  - Transparent to applications
- Less hardware needed for given workload
- “Typical” performance improvement from 10x to 100x

```
CREATE NONCLUSTERED COLUMNSTORE INDEX ncci
ON myTable (OrderDate, ProductID, SaleAmount)
```

Manageability Features

Customers Want

Easier management of SSIS packages	**Integration Services Catalogs** – Manage everything about SSIS in one place
Default Location for Backup files	Ablity to set default locations for Backups, in addition to Data and Log default file locations
Smaller help installation	Import just the help topics you need using **MS Help Viewer**
Ability to store files and documents in a database	**FileTable** – Builds on top of FILESTREAM – store files and docs in special tables but access them from Windows applications as if they were stored in file system
Create Server Roles	User-Defined Server Roles – you are no longer limited to the built-in Server Roles

Language Enhancements

- Sequence Generators
  - SEQUENCE DDL
  - NEXT VALUE FOR
  - sp_sequence_get_range
  - sys.sequences

```
CREATE SEQUENCE SQ1 AS INT
START WITH
INCREMENT BY
MINVALUE
MAXVALUE
CYCLE
CACHE
GO

SELECT    FROM sys.sequences
SELECT NEXT VALUE FOR SQ1
```

- Query Paging
  - OFFSET
  - FETCH NEXT
  - Requires ORDER BY

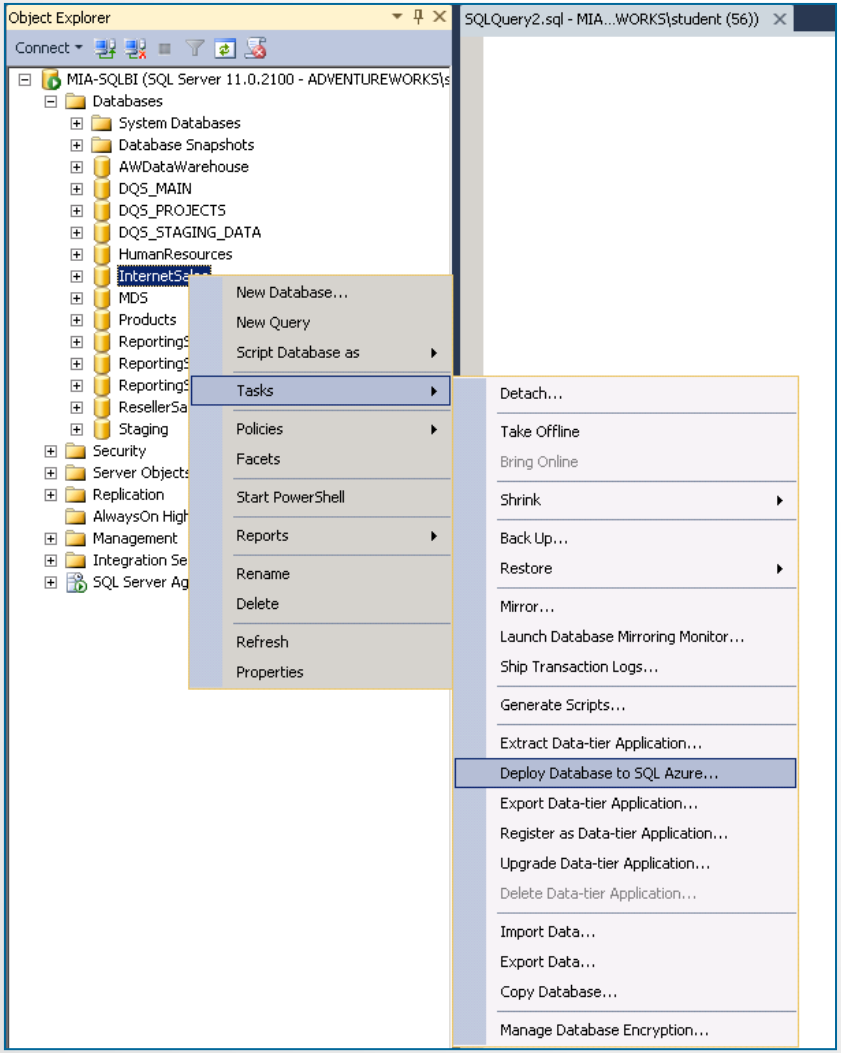
```
SELECT    FROM Product
ORDER BY StandardCost
OFFSET    ROWS
FETCH NEXT      ROWS ONLY
```

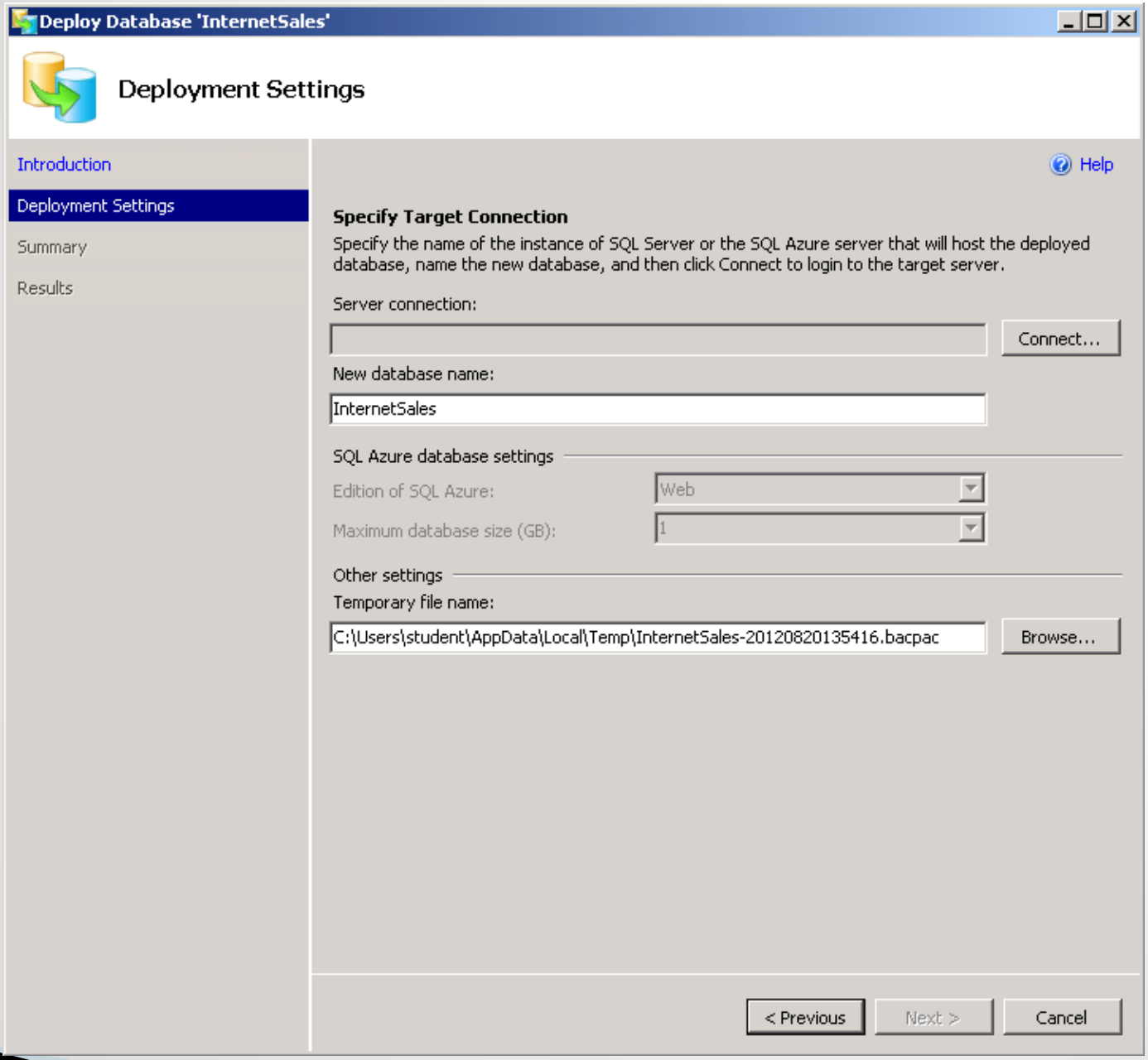
Cloud On Your Terms

Customers Want

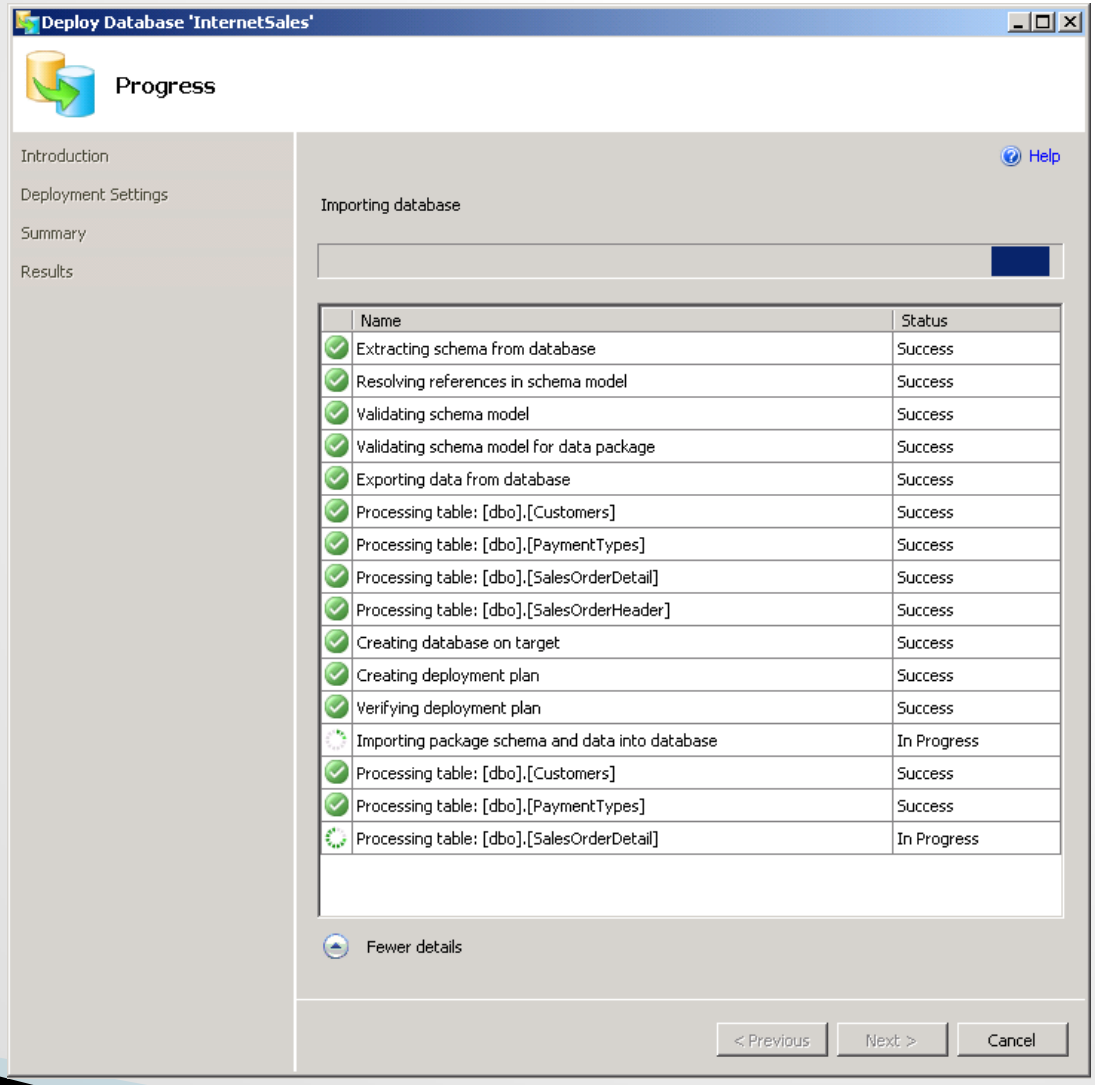
Scale on demand	**Easily move applications** across on-premises and cloud with unlimited virtualization and license mobility
Fast time to market	**Enable Hybrid IT to offer** flexibility and choice across on-premises and cloud
Optimized productivity	**Common management & development tools**: SQL Server Data Tools, T-SQL & SSMS
Extend any data, anywhere	**Extend to cloud** with Windows Azure Marketplace and Data Sync; Support for unstructured data & interop with PHP & Java

Windows Azure SQL Database




Deploy Database 'InternetSales'
Deployment Settings
Introduction
Deployment Settings
Summary
Results
Help
Specify Target Connection
Specify the name of the instance of SQL Server or the SQL Azure server that will host the deployed database, name the new database, and then click Connect to login to the target server.
Server connection:
Connect...
New database name:
InternetSales
SQL Azure database settings
Edition of SQL Azure:
Web
Maximum database size (GB):
1
Other settings
Temporary file name:
C:\Users\student\AppData\Local\Temp\InternetSales-20120820135416.bacpac
Browse...
< Previous
Next >
Cancel

Windows Azure SQL Database



SQL Server 2012 Licensing

Leading TCO

- SQL Server continues as the high-value leader
- Investments protected for customers with Software Assurance including migrations to new licensing

Pay as you Grow

- For datacenter scenarios, licensing better aligned to hardware capacity
- For business intelligence, licensing aligned to user-based access

Cloud Optimized

- Flexible Virtualization licensing
- License mobility enables hybrid scenarios that span on-premises and cloud

Better Edition Alignment

ENTERPRISE EDITION

(Inclusive of Business Intelligence edition)

- Mission critical and Tier 1 applications
- Data Warehousing
- Private cloud and highly virtualized environments
- Large , centralized or external facing BI

Microsoft SQL Server 2012 Enterprise

BUSINESS INTELLIGENCE EDITION

(Inclusive of Standard edition)

- Corporate and scalable reporting & analytics
- Power View and Power Pivot enable self-service analytics

NEW!

Microsoft SQL Server 2012 Business Intelligence

STANDARD EDITION

- Departmental databases
- Limited business intelligence projects

Microsoft SQL Server 2012 Standard

Datacenter Edition is being retired — all capabilities now available in Enterprise Edition.

Workgroup & Small Business Editions are being retired.

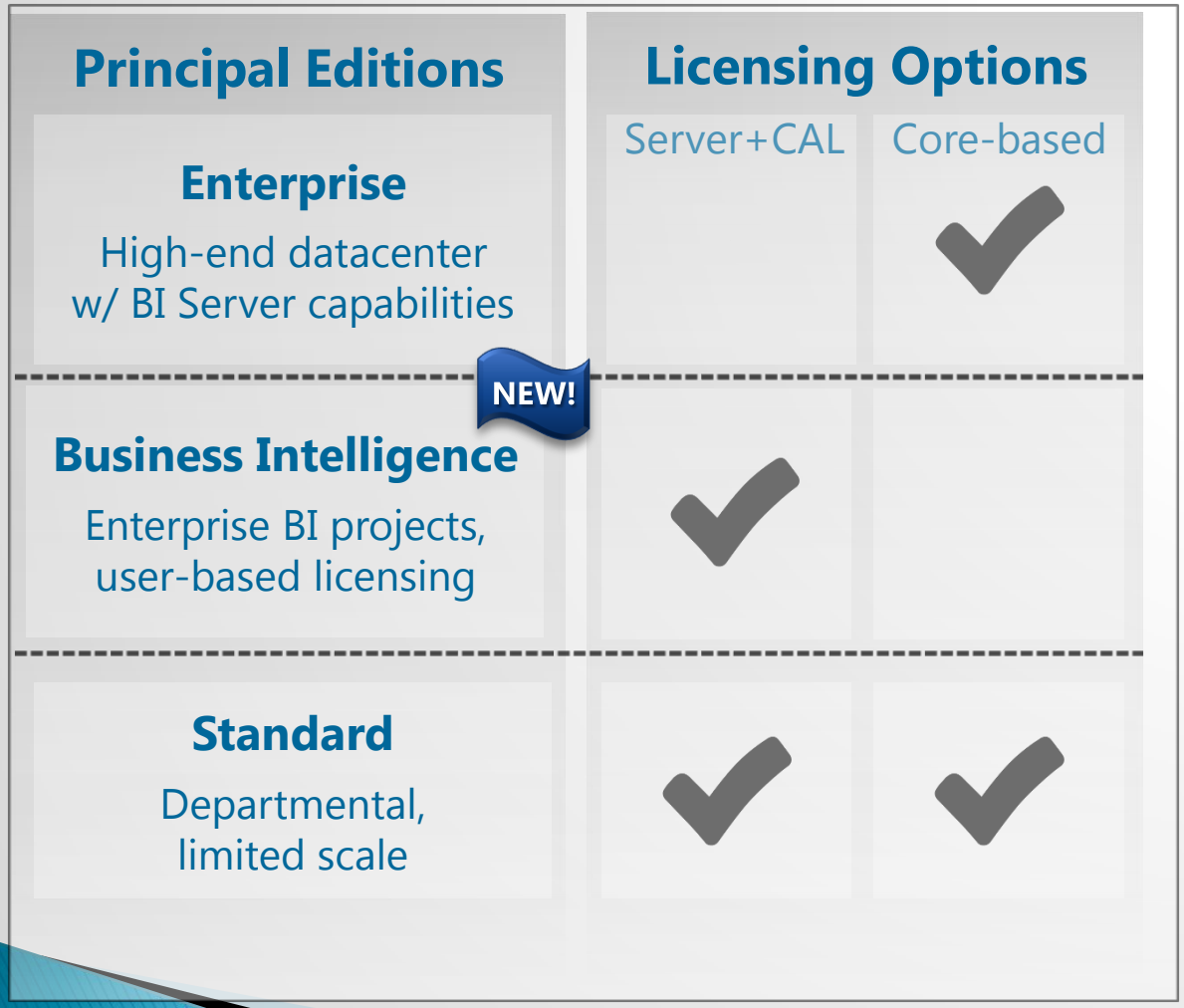
Web Edition will only be available via SPLA.

SQL Server 2012 Editions

SQL Server Capabilities	SQL Server Editions		
	Standard	Business Intelligence	Enterprise
Maximum Number of Cores	16 cores	16 cores – DB OS Max – BI	OS Max*
Windows Server Core Edition Support	●	●	●
Basic OLTP	●	●	●
Basic Reporting & Analytics	●	●	●
Programmability & Developer Tools (T-SQL, CLR, data types, FileTable)	●	●	●
Manageability (Management studio, policy based management)	●	●	●
Enterprise Data Management (Data quality, master data services)		●	●
Self-service Business Intelligence (Power View, PowerPivot for SPS)		●	●
Corporate Business Intelligence (Semantic model, advanced analytics)		●	●
Advanced Security (Advanced auditing, transparent data encryption)			●
Data Warehousing (Column store index, compression, partitioning)			●
StreamInsight	Basic	Basic	Advanced
AlwaysOn High Availability**	Basic	Basic	Advanced

SQL Server 2012 SKUs & Licensing

Aligned with how businesses consume DB and business intelligence software



Customers pay for the **power** they need

Customers pay for the **users** they need

Choice of model for **basic** needs

Next Steps
Microsoft SQL Server 2012 Courses

10774: **Querying** MS SQL Server 2012 – Five-day course. Write basic Transact-SQL queries.

10775: **Administering** MS SQL Server 2012 Databases – Five-day course. Install, configure and maintain MS SQL Server 2012.

10776: **Developing** MS SQL Server 2012 Databases – Five-day course. Design and implement an MS SQL Server database.

10777: Implementing a **Data Warehouse** with MS SQL Server 2012 – Five day course. Build a data warehouse and validate and cleanse data.

10778: Implementing **Data Models** and **Reports** with MS SQL Server 2012 – Five-day course. Build multi-dimensional data models, use PowerPivot, create rich data visualizations, and perform data mining.

Excel 2010 PowerPivot – 1 Day Desktop Course