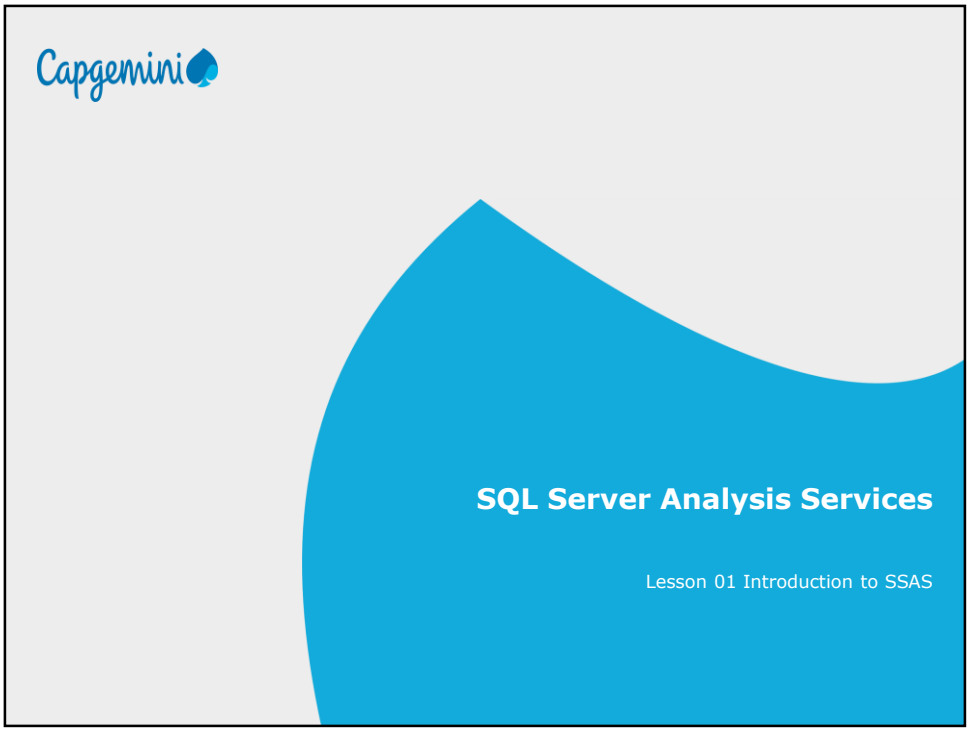
Instructor Notes:



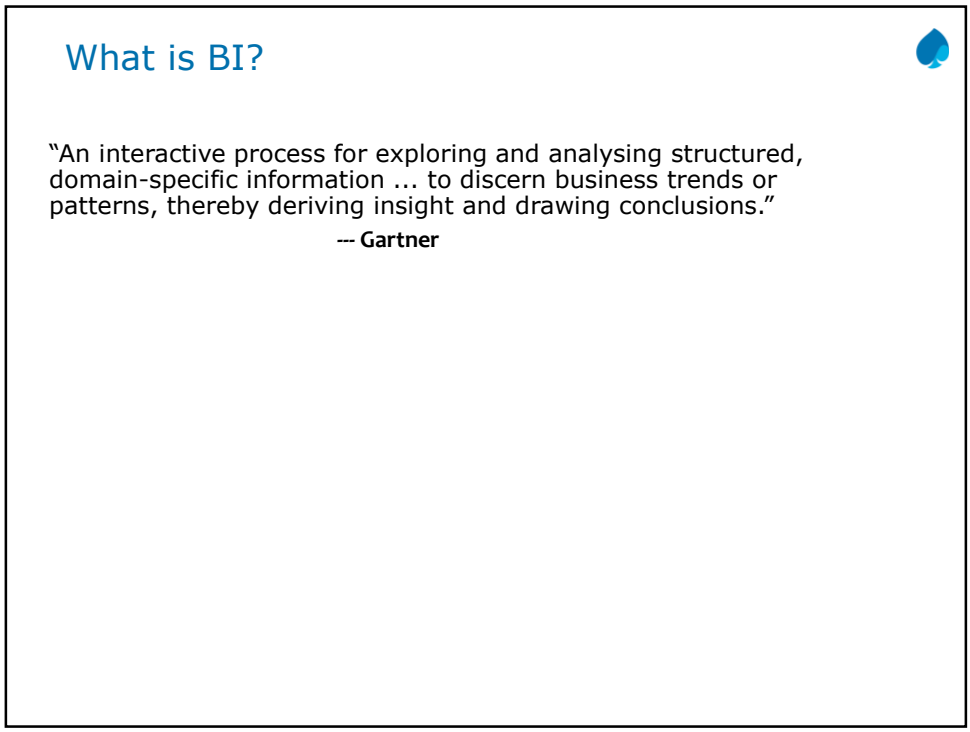
Instructor Notes:

Lesson Objectives

After completing this module you will be able to:

- What is BI?
- The Microsoft BI Solution Stack
- What is SSAS?
- Components of SSAS

Instructor Notes:

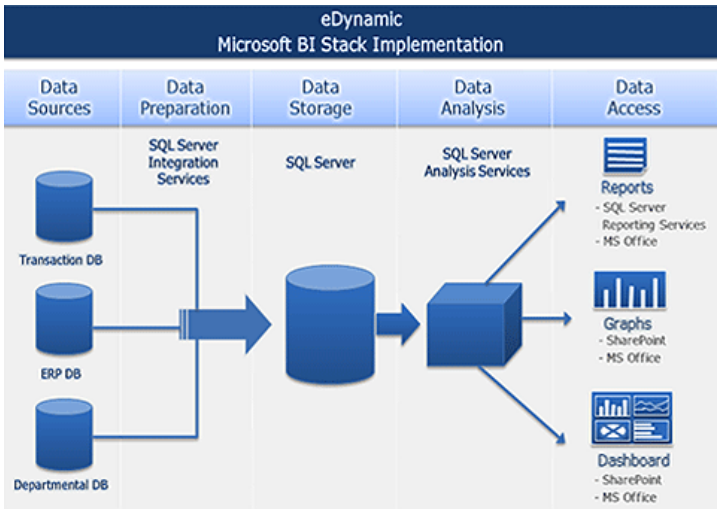


Given the broad definition of BI, you're using BI even when you're jotting down bits of information or creating lists to help you make decisions throughout the day. Introducing technology into some or all of the business processes you use to gather, analyze and share information can make these processes more efficient. Organizations tend to start small when adopting BI technology, often using it at first to solve specific problems. Over time, the use of BI technology grows incrementally as the emphasis shifts to disseminating information efficiently across the organization. As its BI strategy continues to mature, the organization usually acquires more sophisticated tools to enable greater interaction with and exploration of data.

As a business process, BI is a series of activities you perform to gather and analyze data so that you can make better decisions and improve your business by sharing the results of your analysis with others. Whether you need information to decide how to make your daily routine more efficient or to support long-range planning, such as next year's budget, the steps you take to find, transfer, format and study the data are all part of BI. In addition, BI includes the processes you use to make your results available for later reference so you and others can measure the impact of the decisions you made after studying the data. Typically, BI is an iterative process. You analyze the data to see what has happened, you take action to ensure good things keep happening and bad things stop, and you then analyze the data at a later point to determine whether your actions made things better or worse and whether external factors helped or hindered your efforts.

Instructor Notes:

Microsoft BI solution Stack



The Microsoft BI Stack

Now let's take a closer look at the technology architecture of BI. The Microsoft BI stack provides all the tools you need to build, manage and use a BI solution. SQL Server 2008 is the foundation of the stack as the data platform hosting the data mart or data warehouse. A data mart is a subject-specific data store. A data warehouse is an enterprise-wide collection of data containing multiple subjects. The line between data marts and data warehouses is blurry,

SQL Server 2008 includes three BI components: Integration Services (SSIS), Analysis Services (SSAS), and Reporting Services (SSRS). These components extend the data platform with data integration functionality, multidimensional database support and a data presentation layer.

In addition Performance Point Server, SharePoint, MS Excel, ProClarity are also used as part of MS BI Solution Stack.

Performance Point Server and SharePoint is used to publish OLAP related reports and Dashboards.

Excel is used as one of the primary OLAP client to view and browse the OLAP Cube Details and analyze.

ProClarity is a ready made Desktop OLAP client which has more extended functionality.

In SSAS 2012, Vertipaq Engine and BISM engine has been added for storing relational as well Multidimensional data in SSAS server as well locally into Excel.

After you design the physical structures of your data mart, you use SSIS to populate it with the data you extract from other data sources. SSIS provides the tools necessary to automate the processes for cleansing data, consolidating data from multiple sources and transforming the data into a structure well suited for analysis. You can schedule the periodic execution of these processes using SQL Server Agent.

Adding an SSAS database to your BI solution allows you to support more sophisticated, high-performing interactive queries. You use SSAS to copy your relational data into a multidimensional database structure called a cube. A well-designed cube optimizes data for ad hoc queries by adding indexes and the functional equivalent of summary tables (known as aggregations) to return query results that can be exponentially faster than a comparable query to a relational database. You can also embed complex calculation logic in the cube to simplify queries that would otherwise require hundreds of lines of Transact-SQL code to replicate when using a relational data source. Many front-end tools (called cube browsers) let you query a cube without writing a single line of code.

You can add SSRS to your solution architecture to make the data available to users. SSRS is a reporting platform that includes tools to develop reports, to secure and manage published reports using a centralized administrative infrastructure and to support user access to reports. You can use an SSRS Web application or Microsoft Office SharePoint Server 2007 (MOSS) to view reports, use the subscription feature to receive reports via e-mail, or call the SSRS Web service in your own application to display your reports. The default view of a report displays in HTML format, but you can also export a report to other file types, such as PDF or Excel. Microsoft BI stack also includes several Microsoft Office technologies that expand your options for the data presentation layer. Excel 2007 is a popular choice for supporting data analysis in BI solution

Instructor Notes:

What is SSAS?

Microsoft SQL Server Analysis Services allows you to design, create, and manage multidimensional structures that contain detail and aggregated data from multiple data sources, such as relational databases, in a single unified logical model supported by built-in calculations.

SSAS is a OLAP server which is used in developing a BI Solution under Microsoft Platform.

Analysis Services multidimensional Data provides fast, intuitive, top-down analysis of large quantities of data built on this unified data model, which can be delivered to users in multiple languages and currencies.
Analysis Services Multidimensional Data works with data warehouses, data marts, production databases and operational data stores, supporting analysis of both historical and real time data.

Why Use OLAP?

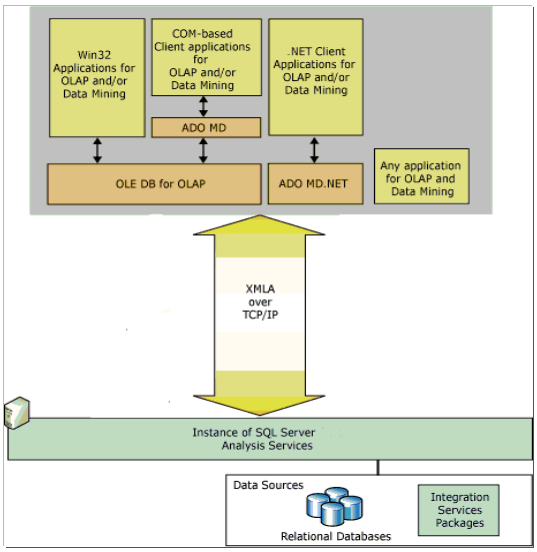
OLAP is useful because it provides fast and interactive access to aggregated data and the ability to drill down to detail. OLAP lets users view and interrogate large volumes of data (often millions of rows) by pre-aggregating the information. It puts the data needed to make strategic decisions directly into the hands of the decision makers, not only through pre-defined queries and reports, but also because it gives end users the ability to perform their own ad hoc queries, minimizing users' dependence on database developers.

What's the Secret?

OLAP leverages existing data from a relational schema or data warehouse (data source) by placing key performance indicators (measures) into context (dimensions). Once processed into a multidimensional database (cube), all of the measures are pre-aggregated, which makes data retrieval significantly faster. The processed cube can then be made available to business users who can browse the data using a variety of tools, making ad hoc analysis an interactive and analytical process

Instructor Notes:

Components of SSAS



Instructor Notes:

Components of SSAS

The server component of Analysis Services is implemented as a Microsoft Windows service. SQL Server Analysis Services supports multiple instances on the same computer, with each instance of Analysis Services implemented as a separate instance of the Windows service

An instance of Analysis Services can contain multiple databases, and a database can have OLAP objects and data mining objects at the same time.

Applications connect to a specified instance of Analysis Services and a specified database.

Instructor Notes:

Components of SSAS

SSAS Clients communicate with Analysis Services using the public standard XML for Analysis (XMLA), a SOAP-based protocol for issuing commands and receiving responses, exposed as a Web service. Client object models are also provided over XMLA, and can be accessed either by using a managed provider, such as ADOMD.NET, or a native OLE DB provider.

Instructor Notes:

Explain the lesson coverage

Summary

In this lesson, you learnt:

- What is BI?
- The Microsoft BI Solution Stack
- What is SSAS?
- Components of SSAS

Instructor Notes:

Question	Answer
1	2
2	XMLA
3	Arpanet

Review Question

Question 1: What is BI?

- Option 1: An Active process of firing Complex queries against databases.
- Option 2 An interactive process for exploring and analysing structured, domain-specific information ... to discern business trends or patterns.

Question 2: _____ is the Protocol used by OLAP clients to communicate with SSAS Server.