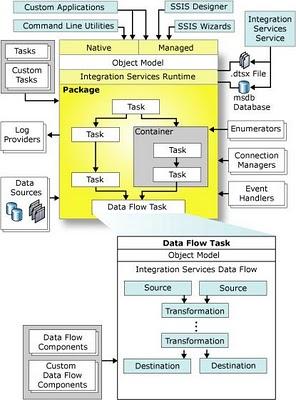
### [SSIS Interview Questions](http://sqlserversolutions.blogspot.com/2009/02/ssis-interview-questions.html)

Common search for new SSIS programmer looking for change is what questions to expect on SSIS. Based on the interviews I take on SSIS, I will list down my favorites and expected questions on SSIS.  
  
**Q1 Explain architecture of SSIS?**  
SSIS architecture consists of four key parts:  
a) **Integration Services service:** monitors running Integration Services packages and manages the storage of packages.

b) **Integration Services object model:** includes managed API for accessing Integration Services tools, command-line utilities, and custom applications.

c) **Integration Services runtime and run-time executables:** it saves the layout of packages, runs packages, and provides support for logging, breakpoints, configuration, connections, and transactions. The Integration Services run-time executables are the package, containers, tasks, and event handlers that Integration Services includes, and custom tasks.

d) **Data flow engine:** provides the in-memory buffers that move data from source to destination.

  
  
  
**Q2 How would you do Logging in SSIS?**  
Logging Configuration provides an inbuilt feature which can log the detail of various events like onError, onWarning etc to the various options say a flat file, SqlServer table, XML or SQL Profiler.  
  
**Q3 How would you do Error Handling?**  
A SSIS package could mainly have two types of errors  
a) Procedure Error: Can be handled in Control flow through the precedence control and redirecting the execution flow.  
b) Data Error: is handled in DATA FLOW TASK buy redirecting the data flow using Error Output of a component.  
  
**Q4 How to pass property value at Run time? How do you implement Package Configuration?**  
A property value like connection string for a Connection Manager can be passed to the pkg using package configurations.Package Configuration provides different options like XML File, Environment Variables, SQL Server Table, Registry Value or Parent package variable.  
  
**Q5 How would you deploy a SSIS Package on production?**1. Create deployment utility by setting its propery as true .  
2. It will be created in the bin folder of the solution as soon as package is build.  
3. Copy all the files in the utility and use manifest file to deply it on the Prod.  
  
**Q6 Difference between DTS and SSIS?**  
Every thing except both are product of Microsoft :-).  
  
**Q7 What are new features in SSIS 2008?**  
explained in other post  
<http://sqlserversolutions.blogspot.com/2009/01/new-improvementfeatures-in-ssis-2008.html>  
  
**Q8 How would you pass a variable value to Child Package?**  
too big to fit here so had a write other post  
<http://sqlserversolutions.blogspot.com/2009/02/passing-variable-to-child-package-from.html>  
  
  
**Q9 What is Execution Tree?**  
Execution trees demonstrate how package uses buffers and threads. At run time, the data flow engine breaks down Data Flow task operations into execution trees. These execution trees specify how buffers and threads are allocated in the package. Each tree creates a new buffer and may execute on a different thread. When a new buffer is created such as when a partially blocking or blocking transformation is added to the pipeline, additional memory is required to handle the data transformation and each new tree may also give you an additional worker thread.  
  
**Q10 What are the points to keep in mind for performance improvement of the package?**  
http://technet.microsoft.com/en-us/library/cc966529.aspx  
 **Q11 You may get a question stating a scenario and then asking you how would you create a package for that e.g. How would you configure a data flow task so that it can transfer data to different table based on the city name in a source table column?**  
  
**Q13 Difference between Unionall and Merge Join?**  
a) Merge transformation can accept only two inputs whereas Union all can take more than two inputs  
  
b) Data has to be sorted before Merge Transformation whereas Union all doesn't have any condition like that.  
  
**Q14 May get question regarding what X transformation do?Lookup, fuzzy lookup, fuzzy grouping transformation are my favorites.**  
For you.  
  
**Q15 How would you restart package from previous failure point?What are Checkpoints and how can we implement in SSIS?**  
When a package is configured to use checkpoints, information about package execution is written to a checkpoint file. When the failed package is rerun, the checkpoint file is used to restart the package from the point of failure. If the package runs successfully, the checkpoint file is deleted, and then re-created the next time that the package is run.  
  
**Q16 Where are SSIS package stored in the SQL Server?**  
MSDB.sysdtspackages90 stores the actual content and ssydtscategories, sysdtslog90, sysdtspackagefolders90, sysdtspackagelog, sysdtssteplog, and sysdtstasklog do the supporting roles.  
  
**Q17 How would you schedule a SSIS packages?**  
Using SQL Server Agent. Read about Scheduling a job on Sql server Agent  
  
**Q18 Difference between asynchronous and synchronous transformations?**   
Asynchronous transformation have different Input and Output buffers and it is up to the component designer in an Async component to provide a column structure to the output buffer and hook up the data from the input.  
  
**Q19 How to achieve parallelism in SSIS?**

Parallelism is achieved using MaxConcurrentExecutable property of the package. Its default is -1 and is calculated as number of processors + 2.

**SSIS interview questions**

1) What is the control flow  
2) what is a data flow  
3) how do you do error handling in SSIS  
4) how do you do logging in ssis  
5) how do you deploy ssis packages.  
6) how do you schedule ssis packages to run on the fly  
7) how do you run stored procedure and get data  
8) A scenario: Want to insert a tect file into database table, but during the upload want to change a column called as months – January, Feb, etc to a code, – 1,2,3.. .This code can be read from another database table called months. After the conversion of the data , upload the file. If there are any errors, write to error table. Then for all errors, read errors from database, create a file, and mail it to the supervisor.  
How would you accomplish this task in SSIS?  
9)what are variables and what is variable scope ?

**For Q 1 and 2:**

In SSIS a workflow is called a control-flow. A control-flow links together our modular data-flows as a series of operations in order to achieve a desired result.

**A control flow** consists of one or more tasks and containers that execute when the package runs. To control order or define the conditions for running the next task or container in the package control flow, you use precedence constraints to connect the tasks and containers in a package. A subset of tasks and containers can also be grouped and run repeatedly as a unit within the package control flow.  
SQL Server 2005 Integration Services (SSIS) provides three different types of control flow elements: containers that provide structures in packages, tasks that provide functionality, and precedence constraints that connect the executables, containers, and tasks into an ordered control flow.  
**A data flow** consists of the sources and destinations that extract and load data, the transformations that modify and extend data, and the paths that link sources, transformations, and destinations. Before you can add a data flow to a package, the package control flow must include a Data Flow task. The Data Flow task is the executable within the SSIS package that creates, orders, and runs the data flow. A separate instance of the data flow engine is opened for each Data Flow task in a package.  
SQL Server 2005 Integration Services (SSIS) provides three different types of data flow components: sources, transformations, and destinations. Sources extract data from data stores such as tables and views in relational databases, files, and Analysis Services databases. Transformations modify, summarize, and clean data. Destinations load data into data stores or create in-memory datasets.

**Q3:**

When a data flow component applies a transformation to column data, extracts data from sources, or loads data into destinations, errors can occur. Errors frequently occur because of unexpected data values.

For example, a data conversion fails because a column contains a string instead of a number, an insertion into a database column fails because the data is a date and the column has a numeric data type, or an expression fails to evaluate because a column value is zero, resulting in a mathematical operation that is not valid.

Errors typically fall into one the following categories:

-Data conversion errors, which occur if a conversion results in loss of significant digits, the loss of insignificant digits, and the truncation of strings. Data conversion errors also occur if the requested conversion is not supported.

-Expression evaluation errors, which occur if expressions that are evaluated at run time perform invalid operations or become syntactically incorrect because of missing or incorrect data values.

-Lookup errors, which occur if a lookup operation fails to locate a match in the lookup table.

Many data flow components support error outputs, which let you control how the component handles row-level errors in both incoming and outgoing data. You specify how the component behaves when truncation or an error occurs by setting options on individual columns in the input or output.

For example, you can specify that the component should fail if customer name data is truncated, but ignore errors on another column that contains less important data.

**Q 4:**

SSIS includes logging features that write log entries when run-time events occur and can also write custom messages.

Integration Services supports a diverse set of log providers, and gives you the ability to create custom log providers. The Integration Services log providers can write log entries to text files, SQL Server Profiler, SQL Server, Windows Event Log, or XML files.

Logs are associated with packages and are configured at the package level. Each task or container in a package can log information to any package log. The tasks and containers in a package can be enabled for logging even if the package itself is not.

To customize the logging of an event or custom message, Integration Services provides a schema of commonly logged information to include in log entries. The Integration Services log schema defines the information that you can log. You can select elements from the log schema for each log entry.  
To enable logging in a package  
1. In Business Intelligence Development Studio, open the Integration Services project that contains the package you want.  
2. On the SSIS menu, click Logging.

3. Select a log provider in the Provider type list, and then click Add.

**Q 5 :**

SQL Server 2005 Integration Services (SSIS) makes it simple to deploy packages to any computer.

There are two steps in the package deployment process:

-The first step is to build the Integration Services project to create a package deployment utility.

-The second step is to copy the deployment folder that was created when you built the Integration Services project to the target computer, and then run the Package Installation Wizard to install the packages.

**Q 9 :**

Variables store values that a SSIS package and its containers, tasks, and event handlers can use at run time. The scripts in the Script task and the Script component can also use variables. The precedence constraints that sequence tasks and containers into a workflow can use variables when their constraint definitions include expressions.

Integration Services supports two types of variables: user-defined variables and system variables. User-defined variables are defined by package developers, and system variables are defined by Integration Services. You can create as many user-defined variables as a package requires, but you cannot create additional system variables.

Scope :

A variable is created within the scope of a package or within the scope of a container, task, or event handler in the package. Because the package container is at the top of the container hierarchy, variables with package scope function like global variables and can be used by all containers in the package. Similarly, variables defined within the scope of a container such as a For Loop container can be used by all tasks or containers within the For Loop container.

Question 1 – True or False – Using a checkpoint file in SSIS is just like issuing the CHECKPOINT command against the relational engine. It commits all of the data to the database.  
False. SSIS provides a Checkpoint capability which allows a package to restart at the point of failure.

Question 2 – Can you explain the what the Import\Export tool does and the basic steps in the wizard?  
The Import\Export tool is accessible via BIDS or executing the dtswizard command.  
The tool identifies a data source and a destination to move data either within 1 database, between instances or even from a database to a file (or vice versa).

Question 3 – What are the command line tools to execute SQL Server Integration Services packages?  
DTSEXECUI – When this command line tool is run a user interface is loaded in order to configure each of the applicable parameters to execute an SSIS package.  
DTEXEC – This is a pure command line tool where all of the needed switches must be passed into the command for successful execution of the SSIS package.

Question 4 – Can you explain the SQL Server Integration Services functionality in Management Studio?  
You have the ability to do the following:  
Login to the SQL Server Integration Services instance  
View the SSIS log  
View the packages that are currently running on that instance  
Browse the packages stored in MSDB or the file system  
Import or export packages  
Delete packages  
Run packages

Question 5 – Can you name some of the core SSIS components in the Business Intelligence Development Studio you work with on a regular basis when building an SSIS package?  
Connection Managers  
Control Flow  
Data Flow  
Event Handlers  
Variables window  
Toolbox window  
Output window  
Logging  
Package Configurations

Question Difficulty = Moderate

Question 1 – True or False: SSIS has a default means to log all records updated, deleted or inserted on a per table basis.  
False, but a custom solution can be built to meet these needs.

Question 2 – What is a breakpoint in SSIS? How is it setup? How do you disable it?  
A breakpoint is a stopping point in the code. The breakpoint can give the Developer\DBA an opportunity to review the status of the data, variables and the overall status of the SSIS package.  
10 unique conditions exist for each breakpoint.  
Breakpoints are setup in BIDS. In BIDS, navigate to the control flow interface. Right click on the object where you want to set the breakpoint and select the ‘Edit Breakpoints…’ option.

Question 3 – Can you name 5 or more of the native SSIS connection managers?  
OLEDB connection – Used to connect to any data source requiring an OLEDB connection (i.e., SQL Server 2000)  
Flat file connection – Used to make a connection to a single file in the File System. Required for reading information from a File System flat file  
ADO.Net connection – Uses the .Net Provider to make a connection to SQL Server 2005 or other connection exposed through managed code (like C#) in a custom task  
Analysis Services connection – Used to make a connection to an Analysis Services database or project. Required for the Analysis Services DDL Task and Analysis Services Processing Task  
File connection – Used to reference a file or folder. The options are to either use or create a file or folder  
Excel  
FTP  
HTTP  
MSMQ  
SMO  
SMTP  
SQLMobile  
WMI

Question 4 – How do you eliminate quotes from being uploaded from a flat file to SQL Server?  
In the SSIS package on the Flat File Connection Manager Editor, enter quotes into the Text qualifier field then preview the data to ensure the quotes are not included.  
Additional information: How to strip out double quotes from an import file in SQL Server Integration Services  
Question 5 – Can you name 5 or more of the main SSIS tool box widgets and their functionality?  
For Loop Container  
Foreach Loop Container  
Sequence Container  
ActiveX Script Task  
Analysis Services Execute DDL Task  
Analysis Services Processing Task  
Bulk Insert Task  
Data Flow Task  
Data Mining Query Task  
Execute DTS 2000 Package Task  
Execute Package Task  
Execute Process Task  
Execute SQL Task  
etc.

Question Difficulty = Difficult

Question 1 – Can you explain one approach to deploy an SSIS package?  
One option is to build a deployment manifest file in BIDS, then copy the directory to the applicable SQL Server then work through the steps of the package installation wizard  
A second option is using the dtutil utility to copy, paste, rename, delete an SSIS Package  
A third option is to login to SQL Server Integration Services via SQL Server Management Studio then navigate to the ‘Stored Packages’ folder then right click on the one of the children folders or an SSIS package to access the ‘Import Packages…’ or ‘Export Packages…’option.  
A fourth option in BIDS is to navigate to File | Save Copy of Package and complete the interface.

Question 2 – Can you explain how to setup a checkpoint file in SSIS?  
The following items need to be configured on the properties tab for SSIS package:  
CheckpointFileName – Specify the full path to the Checkpoint file that the package uses to save the value of package variables and log completed tasks. Rather than using a hard-coded path as shown above, it’s a good idea to use an expression that concatenates a path defined in a package variable and the package name.  
CheckpointUsage – Determines if/how checkpoints are used. Choose from these options: Never (default), IfExists, or Always. Never indicates that you are not using Checkpoints. IfExists is the typical setting and implements the restart at the point of failure behavior. If a Checkpoint file is found it is used to restore package variable values and restart at the point of failure. If a Checkpoint file is not found the package starts execution with the first task. The Always choice raises an error if the Checkpoint file does not exist.  
SaveCheckpoints – Choose from these options: True or False (default). You must select True to implement the Checkpoint behavior.

Question 3 – Can you explain different options for dynamic configurations in SSIS?  
Use an XML file  
Use custom variables  
Use a database per environment with the variables  
Use a centralized database with all variables

Question 4 – How do you upgrade an SSIS Package?  
Depending on the complexity of the package, one or two techniques are typically used:  
Recode the package based on the functionality in SQL Server DTS  
Use the Migrate DTS 2000 Package wizard in BIDS then recode any portion of the package that is not accurate

Question 5 – Can you name five of the Perfmon counters for SSIS and the value they provide?  
SQLServer:SSIS Service  
SSIS Package Instances – Total number of simultaneous SSIS Packages running  
SQLServer:SSIS Pipeline  
BLOB bytes read – Total bytes read from binary large objects during the monitoring period.  
BLOB bytes written – Total bytes written to binary large objects during the monitoring period.  
BLOB files in use – Number of binary large objects files used during the data flow task during the monitoring period.  
Buffer memory – The amount of physical or virtual memory used by the data flow task during the monitoring period.  
Buffers in use – The number of buffers in use during the data flow task during the monitoring period.  
Buffers spooled – The number of buffers written to disk during the data flow task during the monitoring period.  
Flat buffer memory – The total number of blocks of memory in use by the data flow task during the monitoring period.  
Flat buffers in use – The number of blocks of memory in use by the data flow task at a point in time.  
Private buffer memory – The total amount of physical or virtual memory used by data transformation tasks in the data flow engine during the monitoring period.  
Private buffers in use – The number of blocks of memory in use by the transformations in the data flow task at a point in time.  
Rows read – Total number of input rows in use by the data flow task at a point in time.  
Rows written – Total number of output rows in use by the data flow task at a point in time.

**1.    What does integration of .NET Framework mean for SQL Server 2005?**

This feature enables us to execute C# or VB.NET code in the DBMS to take advantage of the .NET functionality. This feature gives more flexibility in writing complex stored procedures, functions, and triggers that can be written in .net compatible language.

**2.    What is SSIS?**

According to Microsoft SQL Server Integration Services, “(SSIS) is an effective set of tools for both the traditional demands of ETL operations, as well as for the evolving needs of general purpose data integration.” In short, it is the next version of DTS (Data Transformation Services). ETL stands for Extract, Transform and Loading. In short it is a data migration tool that is flexible, fast, and has scalable architecture that enables effective data integration in current business environments.

**3.    What is MARS?**

In previous versions of SQL Server, applications had to process or cancel all result sets from one batch before it could execute any other batch on that connection. SQL Server 2005 introduces a new connection attribute that allows applications to have more than one pending request per connection, and in particular, to have more than one active default result set per connection. Multiple Active Result Sets (MARS) is the ability to have more than one pending request under a given SQL Server connection. MARS is a programming model enhancement that allows multiple requests to interleave in the server. We need to note that it is not a parallel execution in the server. However, it may benefit us with some performance benefits if used correctly. By default, this feature is not set in SQL Server 2005.

**4.    What are the Security Enhancements in SQL Server 2005?**

SQL Server 2005 enables administrators to manage permissions at a granular level.

·         In the new SQL Server 2005, we can specify a context under which statements in a module can execute.

·         SQL Server 2005 clustering supports Kerberos authentication against a SQL Server 2005 virtual server.

·         Administrators can specify Microsoft Windows-style policies on standard logins so that a consistent policy is applied across all accounts in the domain.

·         SQL Server 2005 supports encryption capabilities within the database itself, fully integrated with a key management infrastructure. By default, client-server communications are encrypted.

**5.    What is new with the Reporting services in SQL server 2005?**

SQL Server 2005 Reporting Services is a key component of SQL Server 2005 that provides customers with an enterprise-capable reporting platform. This comprehensive environment is used for authoring, managing, and delivering reports to the entire organization. SQL Server 2005 reporting services have some major changes when compared with the previous version.

·         Changes to the core functionality of the Reporting services in the design of the report, processing, and interactivity

·         Better Integration with other components – Enhanced integration with other components within SQL Server 2005 like SSIS, SSAS and SQL Server Management studio

·         Report Builder – A new reporting tool that enables business users to create their own reports

**6.    What is OLAP?**

Online Analytical Processing (OLAP) allows us to access aggregated and organized data from business data sources, such as data warehouses, in a multidimensional structure called a cube. The arrangement of data into cubes avoids a limitation of relational databases which are not well suited for near instantaneous analysis of large amounts of data. OLAP cubes can be thought of as extensions to the two-dimensional array of a spreadsheet.

**7.    What is Data Mining?**

According to MSDN Data, mining is “the process of extracting valid, authentic, and actionable information from large databases.” Microsoft data mining tools are different from traditional data mining applications in significant ways. Data Mining is a platform for developing intelligent applications, not a stand-alone application. You can build custom applications that are intelligent because the data mining models are easily accessible to the outside world. Further, the model is extensible so that third parties can add custom algorithms to support particular mining needs.

**8.    What is new with the Analysis Services (SSAS) in SQL Server 2005?**

SQL Server 2005 Analysis Services (SSAS) delivers online analytical processing (OLAP) and data mining functionality through a combination of server and client technologies, further reinforced through the use of a specialized development and management environment coupled with a well-defined object model for designing, creating, deploying, and maintaining business intelligence applications. The server component of Analysis Services is implemented as a Microsoft Windows service. Clients communicate with Analysis Services using the public standard XML for Analysis (XMLA), a SOAP-based protocol. Let us see the enhancements of made to SSAS.

·         Supports up to 16 instances of Analysis Services Service.

·         As discussed above, the Analysis Services service fully implements the XML for Analysis (XMLA) 1.1 specification. All communication with an instance of Analysis Services is handled through XMLA commands in SOAP messages.

·         Uses the Proactive caching.

**9.    What is Information Schema in SQL Sever 2005?**

Information Schema is the part of the SQL- 92 standard which exposes the metadata of the database. In SQL server, a set of views are created in each of the databases which exposes the metadata of the database. The information schema is kept in a separate schema – information schema – which exists in all databases, but which is not included in the search path by default. For more information regarding Information schema please read this article.

**10. What is Full Text Search? How does it get implemented in SQL server 2005?**

Full-text search allows fast and flexible indexing for keyword-based query of text data stored in a Microsoft SQL Server database. In contrast to the LIKE predicate which only works on character patterns, full-text queries perform linguistic searches against this data, by operating on words and phrases based on rules of a particular language.

**11. What is integration of Microsoft Office System mean?**

The integration with Microsoft Office system means the following.

·         Table Analysis Tools for Excel: Provides an easy-to-use add-in that leverages SQL Server 2005 Data Mining behind the scenes to perform powerful end user analysis on spreadsheet data.

·         Data Mining Client for Excel: Offers a full data mining model development lifecycle directly within Excel 2007.

·         Data Mining Templates for Visio: Enables powerful rendering and sharing of mining models as annotatable Visio 2007 drawings.

**12. What is the support of Web Services in SQL Server 2005?**

With this feature the database engine can be directly exposed as a web service without a middle tier or even an IIS. This will enable the user to directly call a stored procedure by calling a web method. This feature is designed with well-known standards such as SOAP 1.2, WSDL 1.1, and HTTP. With this new feature we can now connect to SQL Server not only with TDS- Tabular data stream (a binary protocol for connecting to SQL Server 2005) but also over SOAP/ HTTP.

**13. What is OLTP?**

Online Transaction Processing (OLTP) relational databases are optimal for managing changing data. When several users are performing transactions at the same time, OLTP databases are designed to let transactional applications write only the data needed to handle a single transaction as quickly as possible.

**14. What is Snapshot in SQL Server 2005?**

A database snapshot is a read-only, static view of a database, the source database. Each database snapshot is transaction-consistent with the source database as it existed at the time of the snapshot’s creation.

**15. What is snapshot isolation in SQL Server 2005?**

SQL Server 2005 introduces a new “snapshot” isolation level that is intended to enhance concurrency for online transaction processing (OLTP) applications. In prior versions of SQL Server, concurrency was based solely on locking, which can cause blocking and deadlocking problems for some applications. Snapshot isolation depends on enhancements to row versioning and is intended to improve performance by avoiding reader-writer blocking scenarios.

**16. What is Database Partitioning in SQL Server 2005?**

SQL Server 2005 provides a new capability for the partitioning of tables across file groups in a database. Partitioning a database improves performance and simplifies maintenance. By splitting a large table into smaller, individual tables, queries accessing only a fraction of the data can run faster because there is less data to scan.

**17. What is SQL Server Agent?**

SQL Server Agent is a Microsoft Windows service that executes scheduled administrative tasks called jobs. SQL Server Agent uses SQL Server to store job information. Jobs contain one or more job steps. We generally schedule the backups on the production databases using the SQL server agent. In SQL Server 2005 we have roles created for using SQL Server agents.

·         SQLAgentUserRole

·         SQLAgentReaderRole

·         SQLAgentOperatorRole

SQL Server Agent for SQL Server 2005 provides a more robust security design than earlier versions of SQL Server. This improved design gives system administrators the flexibility they need to manage their Agent service.

**18. What is Replication? What is the need to have the replication? What are the enhancements made to SQL Server 2005 related to the replication?**

“Replication is a set of technologies for copying and distributing data and database objects from one database to another and then synchronizing between databases to maintain consistency.” In short, replication is all about having multiple copies of the same database. We need replication when we need to distribute data to and from different locations. Generally we have a master copy of data. There will be multiple slaves (Clients) located at various locations which need to be replicated. We use replication for a variety of reasons. Load balancing is sharing the data among a number of servers and distributing the query load. Offline processing is one of the main reasons. In this scenario we need to modify the data on the database that is not connected to the network. The last reason may be to have a back-up to the database in case of failure to the existing database. Let us see the enhancements of SQL server 2005 database related to replication.

·         Database Mirroring – Database Mirroring is moving the transactions of database from one SQL Server database to another SQL server database on a different SQL Server.

·         Replication Management topology (RMO) – RMO is a new construct in SQL Server 2005. It is a .NET Framework library that provides a set of common language runtime classes for configuring, managing, and scripting replication, and for synchronizing Subscribers.

**19. What are Business Logic Handlers?**

Business logic handlers are written in managed code and allow us to execute custom business logic during the merge synchronization. We can invoke the business logic handler in case of non-conflicting data changes. Business logic handler can perform one of the following three actions.

·         Reject Data

·         Accept Data

·         Apply Custom Data

**20. What are different variants of SQL Server 2005?**

There are different variants of SQL Server 2005 commercially available.

·         Express – Free and only for one user

·         Enterprise – 5 users apart from server

·         Workgroup – 10 users apart from server

·         Standard – 25 users apart from server

**21. What are Various Service packs available for SQL Server 2005?**

As of now there are two service packs available for the SQL Server 2005.

·         Service Pack 1 – Has major changes or enhancements to SQL Server 2005 in Analysis Services, Data Programmability, SSIS, and reporting services.

·         Service Pack 2 – Unlike Service Pack 2, this service pack enables SQL Server 2005 customers to take advantage of the enhancements within Windows Vista and the 2007 Office system.

**22. What are the New Data types introduced in SQL Server 2005?**

SQL Server 2005 has added some new data types to its existing data types.

XML Data type

·         VARCHAR (MAX)

·         NVARCHAR (MAX)

·         VARBINARY (MAX)

As we can see, the new term MAX has been introduced in SQL Server 2005. This new specifier expands the storage capabilities of the varchar, nvarchar, and varbinary data types. Varchar(max), nvarchar(max), and varbinary(max) are collectively called large-value data types.

**23. Does SQL Server 2005 support SMTP?**

SQL Server 2005 now supports sending E-mail from the database. It is called as database mail and it uses DatabaseMail90.exe. Gone are the days when we were using a third party component for this. Receiving an e-mail was not supported in the previous versions of SQL Server.

**24. What is SQL Management Object is SQL Server 2005?**

These are collection of objects that are made for programming all aspects of managing Microsoft SQL Server 2005. SMO is a .NET based object model. It comes with SQL Server 2005 as a .Net assembly named Microsoft.SqlServer.Smo.dll. We can use these objects for connecting to a database, calling methods of the database that returns a table, using transactions, transferring data, scheduling administrative tasks, etc. The best part about SMO is that most of it can also be used with SQL server 2000.

**25. What is SQL Service Broker in SQL Server 2005?**

SQL Service broker is a new technology introduced in SQL Server 2005 for building database-intensive distributed applications. Basically, service broker has been built for developing applications that consist of individual components which are loosely coupled. Service broker supports asynchronous yet reliable messages that are passed between the components. These messages are called conversations.

SQL Server Integration Services (SSIS) is a component of Microsoft SQL Server 2005. It replaces Data Transformation Services, which has been a feature of SQL Server since Version 7.0. Unlike DTS, which was included in all versions, SSIS is available in the “Standard”, “Professional” and “Enterprise” editions.

Integration Services provides a platform to build data integration and workflow applications. The primary use for SSIS is data warehousing, as the product features a fast and flexible tool for data extraction, transformation, and loading (ETL). The tool may also be used to automate maintenance of SQL Server databases, update multidimensional cube data, and perform other functions.

FEATURES

SSIS features a wizard that lets the user readily create a package which moves data from a single data source to a destination with no transformations. This tool is called the Import/Export Wizard. The Wizard is appropriate for use to quickly move data into or out of SQL Server from or to a variety of sources, including text files and other SQL Server instances.

Developers tasked with creating or maintaining SSIS packages utilize a visual development tool based on Microsoft Visual Studio called the SQL Server Business Intelligence Studio. It allows users to edit SSIS packages using a drag-and-drop user interface. A scripting environment in which to write programming code is also available in the tool. The package holds a variety of elements that define the workflow for the package. Upon package execution, the tool provides color-coded, real-time monitoring.

Connections  
A connection includes the information necessary to connect to a particular data source. Tasks can reference the connection by its name, allowing the details of the connection to be changed or configured at runtime.  
Tasks  
A task is an atomic work unit that performs some action. There are a couple of dozen tasks that ship in the box, ranging from the file system task (which can copy or move files) to the data transformation task. The data transformation task actually copies data; it implements the ETL features of the product.  
Precedence Constraints  
Tasks are linked by precedence constraints. The precedence constraint preceding a particular task must be met before that task executes. The runtime supports executing tasks in parallel if their precedence constraints so allow. Constraints may otherwise allow different paths of execution depending on the success or failure of other tasks. Together with the tasks, precedence constraints comprise the workflow of the package.  
Event Handlers  
A workflow can be designed for a number of events in the different scopes where they might occur. In this way, tasks may be executed in response to happenings within the package —such as cleaning up after errors.  
Variables  
Tasks may reference variables to store results, make decisions, or affect their configuration.

A package may be saved to a file or to a store with a hierarchical namespace within a SQL Server instance. In either case, the package contents is persisted in XML.

Once completed, the designer also allows the user to start the package’s execution. Once started, the package may be readily debugged or monitored.

[edit] Features of the data flow task

The Data Flow task, arguably the most important task in the product, features a different design surface than that of the workflow. Data flows are edited within the same design tool, of course. The user can draw data sources, transforms, and data destinations connecting them together in order to achieve the transfer and transforms they desire.

Data sources can connect to any number of source types using OLEDB or ADO. They generally execute a SQL statement (including a stored procedure) to retrieve rows, though there are exceptions. Most notably, a flat file data source allows reading from text files, and an XML adapter can source data from XML files. Similarly, data destinations write data to their target by executing a statement on its connection, or writing to a file.

Various transforms exist in the product, including a sort, aggregation, and lookup. A derived column transform evaluates an expression to compute the value for a new column. A script transform is available which allows more complicated transforms to be written in VB.NET.

SSIS can have more than one transform in its operation. Transforms, data sources, and data destinations can have multiple inputs and outputs. Most have error outputs so that rows which would cause the transform to fail can be optionally redirected for further or alternate processing.

Any number of sources or destinations are supported in a data flow.

Transformations supported

SSIS provides the following built-in transformations:

\* Conditional Split  
\* Multicast  
\* Union-All, Merge, and Merge Join  
\* Sort  
\* Fuzzy Grouping  
\* Lookup and Fuzzy Lookup  
\* Percentage Sampling and Row Sampling  
\* Copy/Map, Data Conversion, and Derived Column  
\* Aggregation  
\* Data Mining Model Training, Data Mining Query, Partition Processing, and Dimension Processing  
\* Pivot and UnPivot

[edit] Other included tools

Aside from the Import/Export Wizard and the designer, the product includes a few other notable tools.

DTEXEC executes a package from the command line wherever it may be stored. Before running the package, the tool may be instructed to apply configuration information, which will allow the same package to be reused with slightly different parameters, including different connection strings for its endpoints.

DTUTIL provides the ability to manage packages, again from the command prompt. The tool can copy or move a package from a file into the server store, or back out again. Among a few other sundry functions, it can be used to delete, rename, encrypt, or decrypt packages.

[edit] Extensibility and Programmability

Users may write code to define their own connection objects, log providers, transforms, and tasks.

SSIS features a programmable object model that allows developers to write their own hosts for package execution. Such a host can respond to events, start and stop packages, and so on. The object model also allows developers to create, store, and load packages, as well as create, destroy, and modify any of the contained objects.

It can be used on all versions of SQL Server 2005 except Express.

**What are the features of sqlserver???**

Clustering services are used in SQL Server to allow you to recover instantly from one system to another.

In SQL Server 2005, Database Mirroring is also included for another level of redundancy.

Replication Services are used to keep data in synchronization between SQL Server databases and other systems such as Oracle, Microsoft Access, handheld devices, and more.

You can use replication to send data to multiple systems as data changes, on a scheduled basis, Extensible Markup Language (XML) documents can enable data transfer between heterogeneous programs or data sources. SQL Server 2000 provides basic XML capabilities, and SQL Server 2005 provides native storage and processing, and support for the XQuery language.

Notification Services is a (free) add-on to SQL Server 2000 (it’s built in to SQL Server 2005) that can expose your data in even more ways.

If you’ve ever used Microsoft’s MSN Messenger to alert your cell phone of traffic problems in your area or access stock information from it on your mobile device, then you’ve used Notification Services.

In SQL Server 2000 only, Natural Language Processing (English Query) is the engine that allows you to tie English phrases to be automatically converted to Transact-SQL (T-SQL) statements. That way, your users don’t need to know the table structures or how to program in Structured Query Language (SQL) to get the data. They can type (or say) the words “How many sales did my group make today?” and the server will provide the right data. Full Text Services allow you to search for large and inexact text strings within text columns and any binary-ready system your server has installed, such as Microsoft Word. The Service Broker in SQL Server 2005 is a tool you can use to create a Service Oriented Architecture (SOA) that enables disconnected, disparate systems in your entire organization.

Data Transformation Services (DTS) provide import and export capabilities to SQL Server. Not only can DTS import data from another SQL Server, but also from Microsoft Access, text files, Microsoft Excel, Oracle, FoxPro, and any other data source that has Open Database Connectivity (ODBC) drivers. DTS imports and exports data, but it can also change the data along the way. Not only that, but DTS is also fully programmable — and the transformations and data transfers can be stored in packages that can be reused, edited, and copied. Here’s the kicker — you can use DTS to transfer data between any data source and any data destination. For instance, you could transfer data from an Oracle database to a text file — and change every third field to uppercase if you wanted to. This whole process can be scheduled to happen at any time. SQL Server Integration Services (SSIS) is the replacement for DTS in SQL Server 2005.

Although you can still run DTS packages in Integration Services, you have a completely new programming model that you can use to automate much more than just import and export operations in Integration Services. Both DTS and SSIS are often used as the Extract, Transform and Load (ETL) system for Business Intelligence systems, such as those included with SQL Server 2000 and 2005.

Analysis Services provides a full set of Business Intelligence capabilities in SQL Server 2000, and in version 2005 this service provides a robust set of tools to truly be considered a full part of a Business Intelligence landscape. Analysis Services provides data cube functionality and more, and also has its own query language so that you can access that data from a programming language such as C# or Visual Basic, or even a web page. Reporting Services allows users to see and work with SQL Server data directly in their browsers. It’s an add-on to SQL Server 2000, and comes built in to SQL Server 2005. It’s often used as the visual representation of Business Intelligence data, making SQL Server a platform that can extract data from various systems, transform and cleanse it, process it into multi-dimensional analysis, and present it to users to work with. You literally don’t have to buy anything else.

### [New improvements / features in SSIS 2008](http://sqlserversolutions.blogspot.com/2009/01/new-improvementfeatures-in-ssis-2008.html)

With the release of SQL SERVER 2008 comes improved SSIS 2008. I will try to list down the improved and new features in SSIS 2008  
  
**1) Improved Parallelism of Execution Trees**:  
  
The biggest performance improvement in the SSIS 2008 is incorporation of parallelism in the processing of execution tree. In SSIS 2005, each execution tree used a single thread whereas in SSIS 2008 , the Data flow engine is redesigned to utilize multiple threads and take advantage of dynamic scheduling to execute multiple components in parallel, including components within the same execution tree  
  
**2) Any .NET language for Scripting:**  
  
SSIS 2008 is incorporated with new Visual Studio Tool for Application(VSTA) scripting engine. Advantage of VSTA is it enables user to use any .NET language for scripting.  
  
**3) New ADO.NET Source and Destination Component**:  
  
SSIS 2008 gets a new Source and Destination Component for ADO.NET Record sets.  
  
**4) Improved Lookup Transformation:**   
  
In SSIS 2008, the Lookuo Transformation has faster cache loading and lookup operations. It has new caching options, including the ability for the reference dataset to use a cache file(.caw) accessed by the Cache Connectin Manager. In addition same cache can be shared between multiple Lookup Transformations.  
  
**5) New Data Profiling Task**:  
  
SSIS 2008 has a new debugging aid Data Profiling Task that can help user analyze the data flows occurring in the package.In many cases, execution errors are caused by unexpected variations in the data that is being transferred. The Data Profiling Task can help users to discover the cource of these errors by giving better visibility into the data flow.  
  
**6) New Connections Project Wizard:**  
  
One of the main usability enhancement to SSIS 2008 is the new Connections Project Wizard. The Connections Project Wizard guides user through the steps required to create source and destinations.

Interview questions

### [Difference between Merge and Union all transformation](http://sqlserversolutions.blogspot.com/2009/01/difference-between-merge-and-union-all.html)

Well both of them essentially takes outputs from more than one sources and combines them into a single result set but there are couple of differences between two:  
  
**a) Merge transformation can accept only two inputs whereas Union all can take more than two inputs**  
  
**b) Data has to be sorted before Merge Transformation whereas Union all doesn't have any condition like that.**