

IBM Integration Bus Development – I

WebSphere MQ

- Overview of MQ
- Various Objects - Queues, channels
- Different types of queues and channels
- Creation of Queue Manager, Queues and channels
- Message queue interface (MQI) call
- Describe the Java interface and Java Message Service (JMS)
- Message Handling in MQ, Segmentation of Messages, Distribution.
- Security
- Unit of Work, XA transaction support

IBM Integration Bus Overview and Architecture

- Need for Integration (EAI)
- SOA Architecture Overview
- Universal Connectivity for SOA
- Routes and Transforms Messages from anywhere to anywhere
- Overview and Architecture of Integration Bus
- Installation Overview w/t Software pre requisites
- Components of Integration Bus
- Installation Demo

Message flows

- Introduction to Message flows
- Built-in nodes and configuring their properties
- Input and Output nodes
- Message Manipulation and transformation nodes
- Collating requests nodes
- Decision making nodes
- Sub flow identification nodes
- Design Message Flows & Sub Flows
- Promote properties
- Runtime versioning with ESQL and node properties
- User defined properties

Debugging

- Logs
- Event / System Log
- Error Log
- Trace
- User Trace
- Service Trace
- Dealing with Installation and Configuration problems
- Flow Debugging.
- ESQL Debugging
- Java Debugging

Introduction to ESQL

- Programming Structure
- Data Types, Variables, Field references
- Operators, Statements
- Functions, Procedures & Modules
- Configuring ESQL within Nodes
- Correlation Names
- Logical Tree Structure
- Message tree
- Environment tree
- Local Environment tree
- Exception List tree
- Content validation
- Variable scope, life time and sharing

Message sets / DFDL

- Introduction to Message sets
- Domains & Parsers
- Properties folder significance
- Message Modeling
- Message Set Projects
- Message Sets
- Message Definition Files
- Category files
- Physical formats in the MRM domain
- Mapping (Overview, types of mapping 'n' Database with mapping).
- DFDL Usage

Database and Maps

- DB modeling

Error Handling

- Connecting to local DB from message flow jdbc/odbc
- Connecting to remote DB from message flow
- Promoting DB names as properties
- ESQL PASSTHROUGH, ITEM, THE statements
- Mapping MRM and DBs
- Error Handling Flow Design
- Error Handling Mechanism
- Exception List, try / catch, throw nodes significance
- Message flow error behavior
- Generic error handling sub-flow

Java

- Understanding and using Java compute node
- Understanding Java API for WMB
- Navigating message trees to determine element types, names and values
- Tree access using XPATH
- ESQL calling Java procedures
- Java to ESQL mapping

JMS

- JMS architecture
- Administering JMS objects
- Creating and maintaining JMS objects in WMQ
- JMS nodes and JMS message tree
- MQRFH2 header significance
- Transformation between JMS and MQ

Web Services

- Overview of Web Services
- WSDL (Web Service Description Language)
- SOAP (Simple Object Access Protocol)
- UDDI(Universal Description Discovery Integration)
- Publishing Message Flow as Web Service
- Interacting with Web Services through Message Flow
- Testing and validating web services
- Using HTTP / SOAP nodes w.r.t Web Services

Patterns

- Interaction patterns
- Transformation pattern(transform, enrich / augment, log / monitor)
- Routing patterns (route, correlate)
- Composite patterns
- Developing patterns using pattern explorer

The training covers the following built-in nodes

Websphere MQ Nodes

- 1) MQInput
- 2) MQOutput
- 3) MQReply
- 4) MQHeader

JMS Nodes

- 1) JMSInput
- 2) JMSOutput
- 3) JMSMQTransform
- 4) MQJMSTransform
- 5) JMSReply

Construction Nodes

- 1) Input
- 2) Output
- 3) Throw & Try Catch
- 4) Trace
- 5) FlowOrder
- 6) Passthrough
- 7) ResetContentDescriptor / Validate

Routing Nodes

- 1) Filter
- 2) Label
- 3) RouteToLabel
- 4) AggregateControl
- 5) AggregateReply
- 6) AggregateRequest

Transformation Nodes

- 1) Mapping
- 2) XSLTransform
- 3) Compute
- 4) JavaCompute

SOAP Nodes

- 1) SOAPInput
- 2) SOAPReply
- 3) SOAPRequest
- 4) SOAPExtract

HTTP Nodes

- 1) HTTPInput
- 2) HTTPReply
- 3) HTTPRequest

Database Nodes

- 1) Database
- 2) DatabaseRetrieve

File Nodes

- 1) FileInput
- 2) FileOutput

Control Nodes

- 1) TimeoutControl
- 2) TimeoutNotification
- 3) Sequence / Resequence

Course Contents

Pre-requisites : WMQ Basics, Java, XML, SQL, WebServices

Duration : 30 Hrs

Execution Modes : One hour per day for 30 days, on-line training

<i>Course Contents : The following are the course contents</i>		
S.No	Content	Coverage description
Unit - 1	WMQ Intro to messages and MQMD detailed	Introduction as why WMQ and fields of MQMD detailed.
Unit - 2	WMQ Transactions	Understanding transactionality in WMQ.
Unit - 3	IIB V10 Installation, configuration - Architecture overview	IIB component architecture overview
Unit - 4	Problem determination techniques	Trace node, co-relation names, user trace, file logging, debugger
Unit - 5	Controlling flow order	Flow order node usage
Unit - 6	Transformation with ESQL / Java	Overview of ESQL and three basic exercises, Filter, Compute, Label, Cardinality, ESQL functions, local environment, propagate, User Defined Properties, Promote properties
Unit - 7	DFDL overview and exercises	Overview, CSV, TDS, XML, Mapping
Unit - 8	Using Databases	Database usage using three nodes (compute, databasenode and retrieve node) ODBC and JDBC driver usage
Unit - 9	Error handling in WMB / IIB	Detailed default exceptional handling
Unit - 10	Java nodes in WMB	Three lab exercises
Unit - 11	Message aggregation	Aggregation nodes usage
Unit - 12	Controlling message sequence	Sequence nodes usage
Unit - 13	XSL Transformation	Three ways of usage exercises
Unit - 14	Patters	Using existing pattern and creating a new pattern
Unit - 15	Timer node , File node	One example for each
Unit - 16	Versioning and subflows	Theory
Unit - 17	Web Services (HTTP nodes)	Creating service provider and consumer
Unit - 18	Web Services (SOAP nodes)	One service consumer flow and another service producer flow
Unit - 19	Web Services (REST API)	How to use Swagger and build REST APIs
Unit - 20	Publish / Subscribe	Using WMQ concepts
Unit - 21	JMS	Basic JMS administration and JMS nodes usage