

An IBM Proof of Technology 


WebSphere. software

Proof of Technology

Discovering the value of IBM Integration Bus V9 for your ESB and SOA




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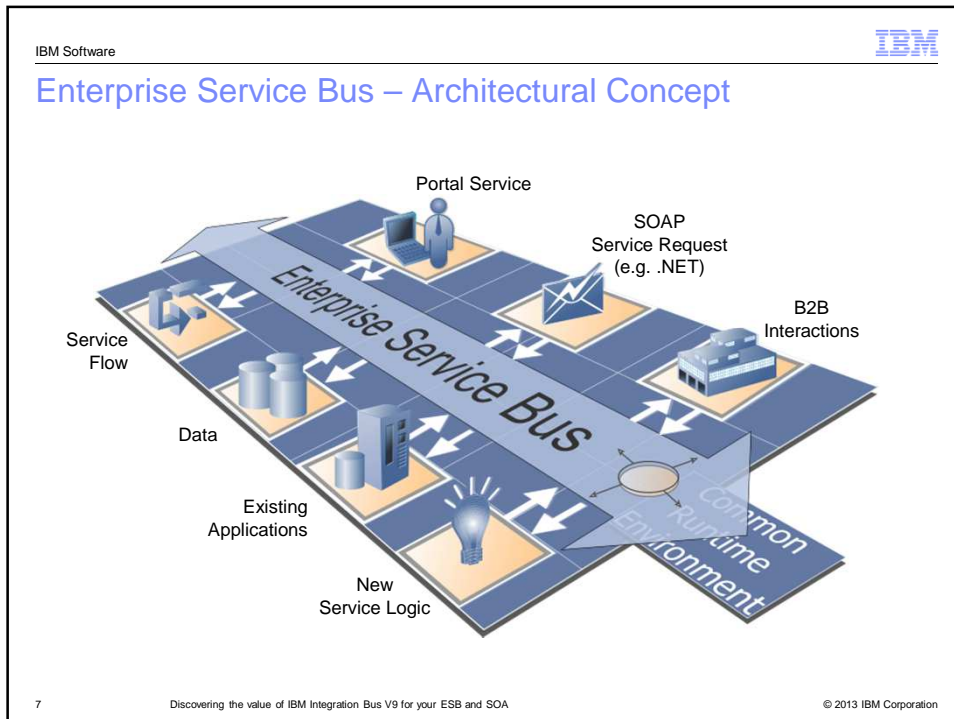
IBM Software 

Introduction to IBM Integration Bus

- Objectives of an ESB
- Components and Configuration
- Development
 - Eclipse design
 - Components
 - Message Models
 - Message Flows
 - Nodes
 - Assistance
 - Bar Files & Deployment
- What's New in V9



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What do we mean by Integration?

- Enterprise systems consist of many logical **endpoints**
 - Off-the-shelf applications, services, web apps, devices, appliances, custom built software...
- Endpoints expose a set of inputs and outputs, which comprise
 - Protocols - e.g. MQ, TCP/IP, HTTP, File system, FTP, SMTP, POP3 etc.
 - Message Formats - e.g. Binary (C/COBOL), XML, Industry (SWIFT, EDI, HL7), User-defined
- Integration is about connecting these endpoints together in meaningful ways
 - Route, Transform, Enrich, Filter, Monitor, Distribute, Decompose, Correlate, Fire and Forget, Request/Reply, Publish/Subscribe, Aggregation, Fan-in, Complex Event Processing...

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IBM Integration Bus has Everything You Need

- ✓ Transformation
- ✓ Multi-Protocols
- ✓ Content Based Routing
- ✓ Database Management System (DBMS) Integration
- ✓ Fully Transactional
- ✓ Effective, Powerful Tooling
- ✓ Simple
- ✓ Extensible
- ✓ Standards based
- ✓ Non-Invasive

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IBM Integration Bus - Integration Solutions Made Easy

Transaction Systems

Deposits/Receipts Spot Fixed Income Equities Payroll Manual TX Fixed Assets

Loans Accts Payable

FX Option Funds Manager

Swaps Futures

Management Systems

Cash Flow System G/L IRS

Transaction Systems

Deposits/Receipts Spot Fixed Income Equities Payroll Manual TX Fixed Assets

Loans Accts Payable

FX Option Funds Manager

Swaps Futures

IBM Integration Bus

Management Systems

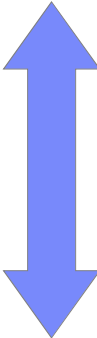
Cash Flow System G/L IRS

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Common Issues that IBM Integration Bus Solves

- Some common Integration Usage Patterns
 - Adding **logging** to existing service
 - **Extend Reach** of Existing Applications
 - Distribute **Database** information to where it's needed
 - **File Hub** to connect batch and online
 - Integrate **Packaged Applications**
 - Take advantage of **.NET applications**
 - Policy Enforcement Point for **Secure Connectivity**
 - Extend Enterprise to **Devices and Mobile**
 - **Monitor** business activity and act intelligently
 - Detect / Act Upon **Business Events and Rules**
 - Connectivity and Integration for **Business Processes**
 - Enable **Policy based management**
- New usage patterns continually emerging!



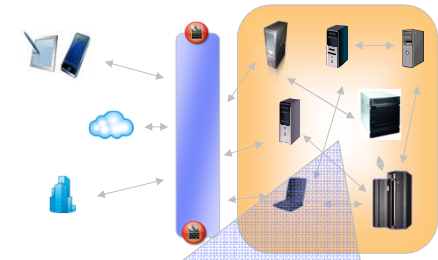
Common usage patterns


Emerging usage patterns

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A Complete Solution






Advanced

Standard


Express



Hypervisor

IBM Integration Bus

- Simply connect FROM anywhere TO anywhere
- Unparalleled range of protocols, routing, message formats and transformation options
- Easy to install, learn, develop, deploy and manage, including patterns to simplify solution creation
- High performing and scalable, with built-in failover support
- Connectivity Packs for Industry specific content (e.g. Healthcare)




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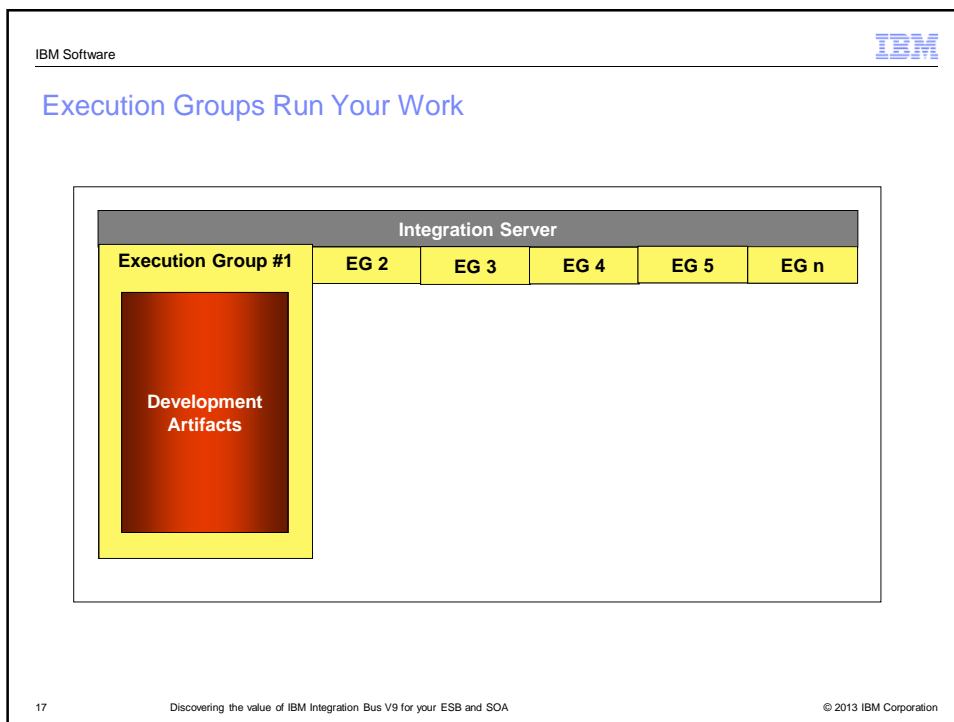
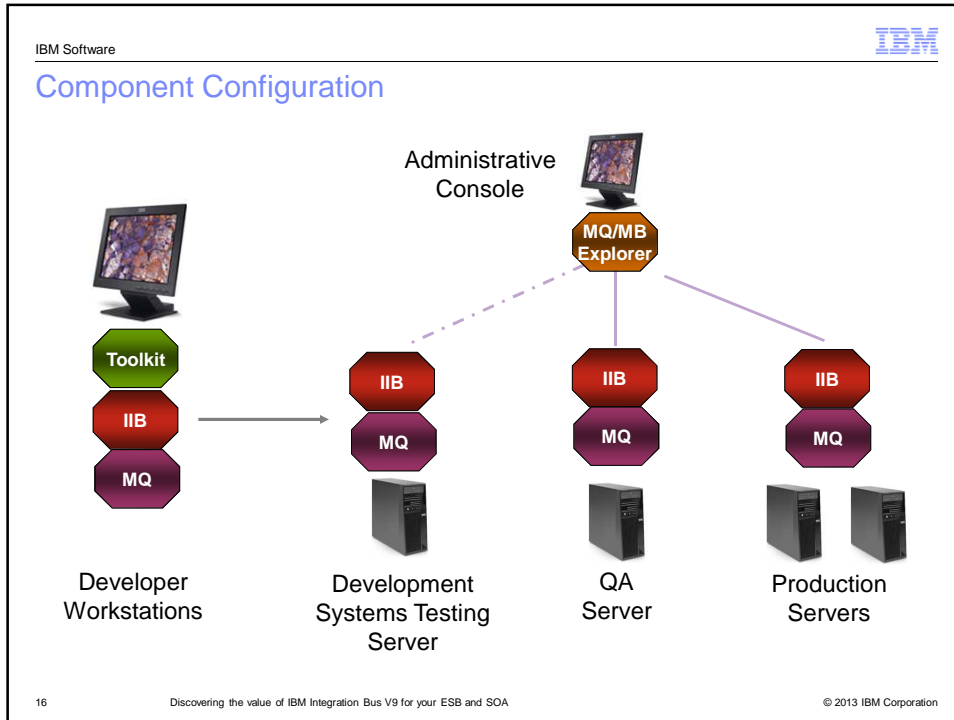
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Components – What you get

	Developer Workstation	Central Development, QA, Production
▪ Toolkit – graphical development tool, Eclipse based; Windows, Linux (Intel)	X	
▪ Integration Server – runtime engine; various platforms	X	X
▪ WebSphere MQ – interaction with MQ and administration; various platforms	X	X
▪ WebSphere MQ/MB Explorer – administration; Windows, Linux (Intel)	X	X

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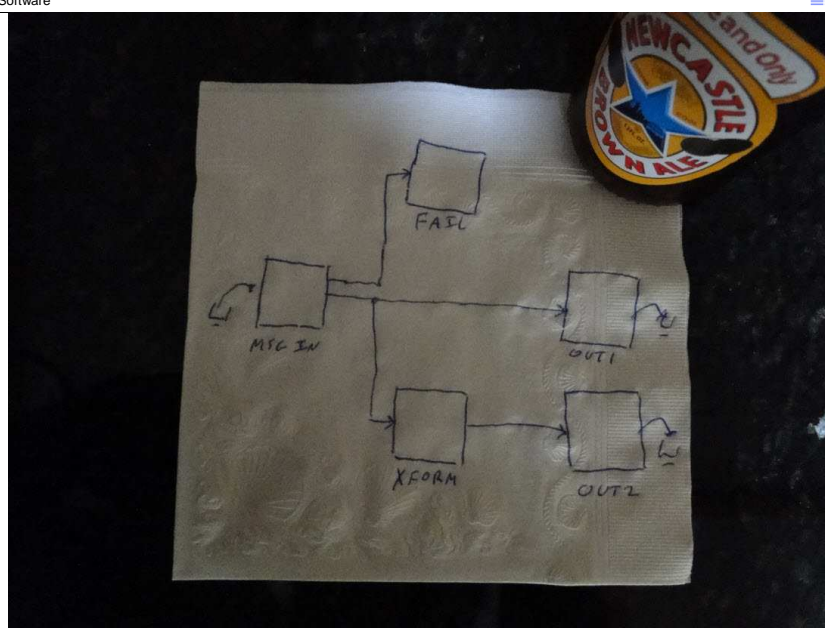
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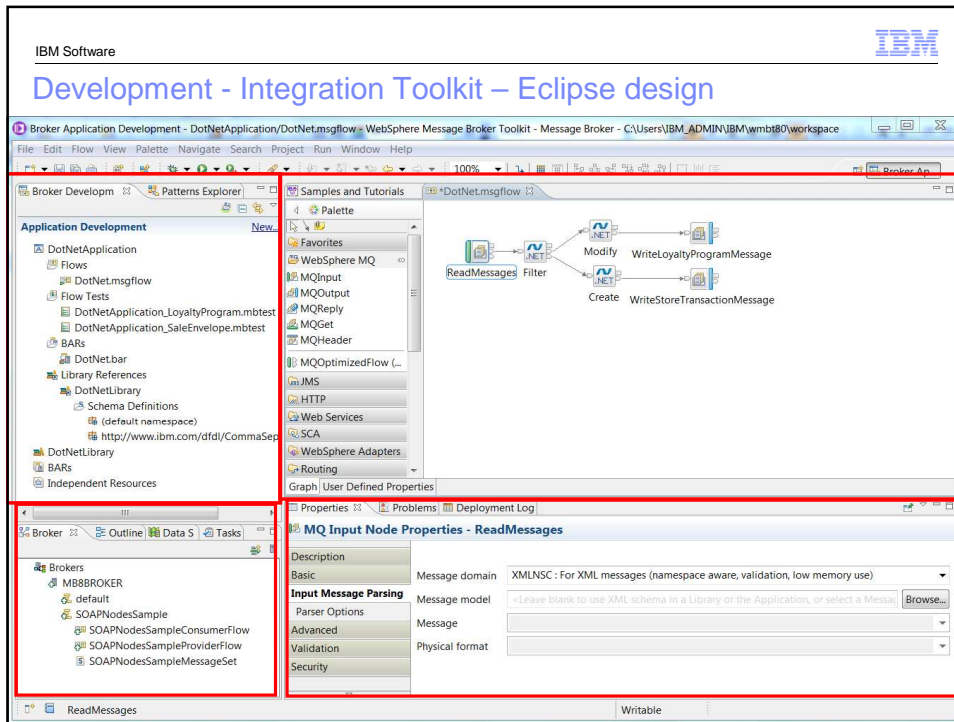


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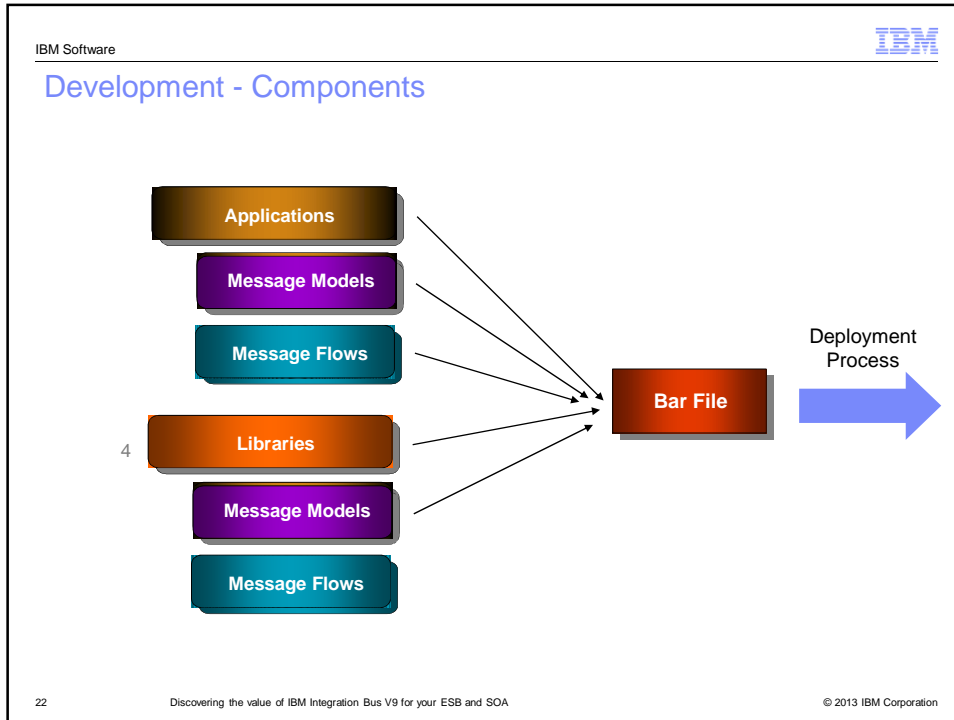


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Applications and Libraries Organize Resources

- Deployable containers of resources
 - Message flows, subflows, message definitions (DFDL, XSDs), ESQ, JARs, XSL, Adapter files, etc

- ▶ Applications promote encapsulation and isolation
 - ▶ "Main" message flows and required components
 - ▶ Deploy multiple applications to an execution group
 - ▶ Visibility of resource restricted to containing application


- ▶ Libraries facilitate re-use
 - ▶ Resources shared across applications
 - ▶ Message definitions, common subflows, etc
 - ▶ Multiple libraries to group related resources
 - ▶ e.g. by type or function

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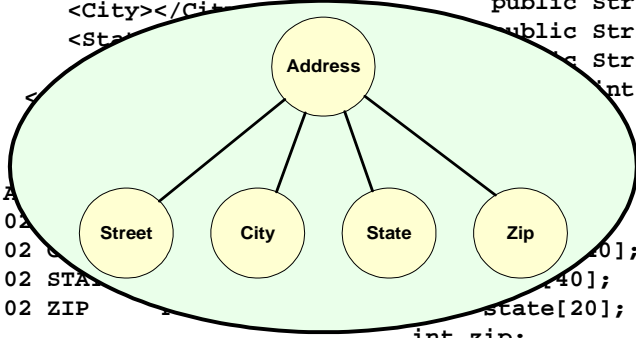
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Message Models Define your Data

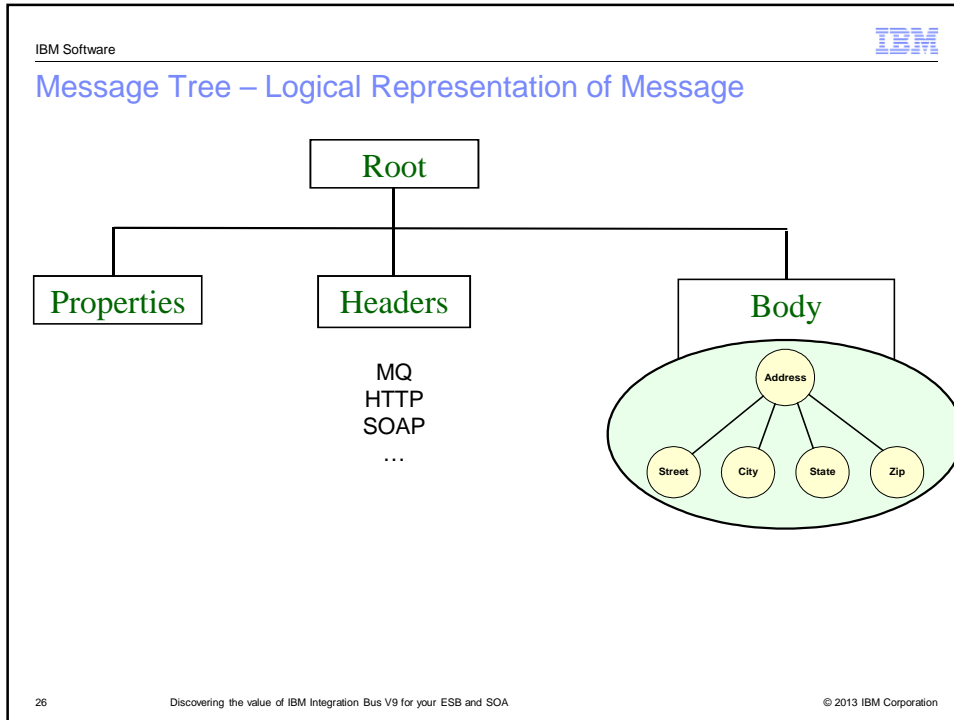
```
<Address>
  <Street></Street>
  <City></City>
  <State></State>
  <Zip></Zip>
</Address>
```

```
class Address
{
  public String street;
  public String city;
  public String state;
  public int zip;
}
```



01 A
02 C
02 S
02 ZIP

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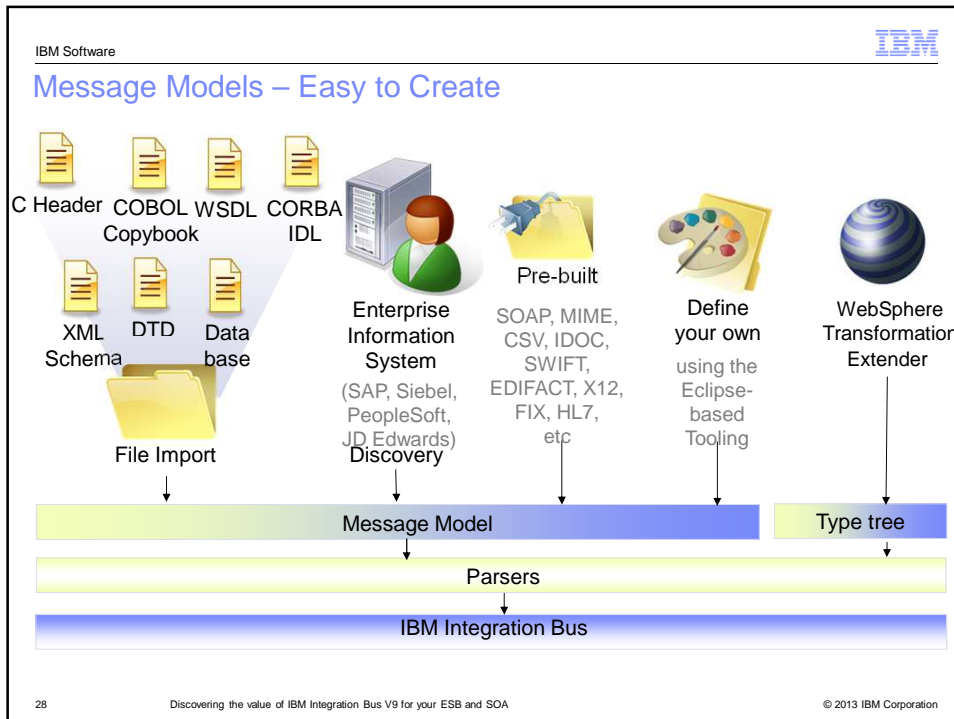
Parsers Do the Work

- Raw data into logical view and vice versa
- **Body Parsers:**
 - Handle Classes of Data
 - **XML** – Generic or Schema Based
 - **DFDL** – Binary data (Fixed length, Tagged / Delimited)
 - **Standards** - SOAP, MIME, JSON
 - **Model** – DFDL, MRM
 - **DataObject** - EIS systems (Adapters)
 - **JMS** – JMSMap, JMSStream
 - **BLOB** - No structure, just a sequence of bits
 - **Other** - WTX, User plugin parsers
 - Select based on Input/Response message parsing tabs
 - Override by header information such as MQRFH2
 - Or using SQL / Java plugin Interface calls.
- **Transport header parsers:**
 - Specific for transport nodes
 - **WMQ** - MQMD, MQRFH2, MQWIH, MQCICS, MQRMH
 - **HTTP** - HttpInputHeader, HttpRequestHeader, HttpReplyHeader,....
 - **JMS** - JMSTransport ...

```

graph TD
    Order[Order] --- Name[Name]
    Order --- Item[Item]
    Order --- Qty[Qty]
    Order --- Price[Price]
    Order --- Date[Date]
    Name --- First[First]
    Name --- Last[Last]
    
```

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Visual Programming is Faster and Easier

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Visual Programming - How You Think


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Go to 'View > Header and Footer' to change this to match the event title

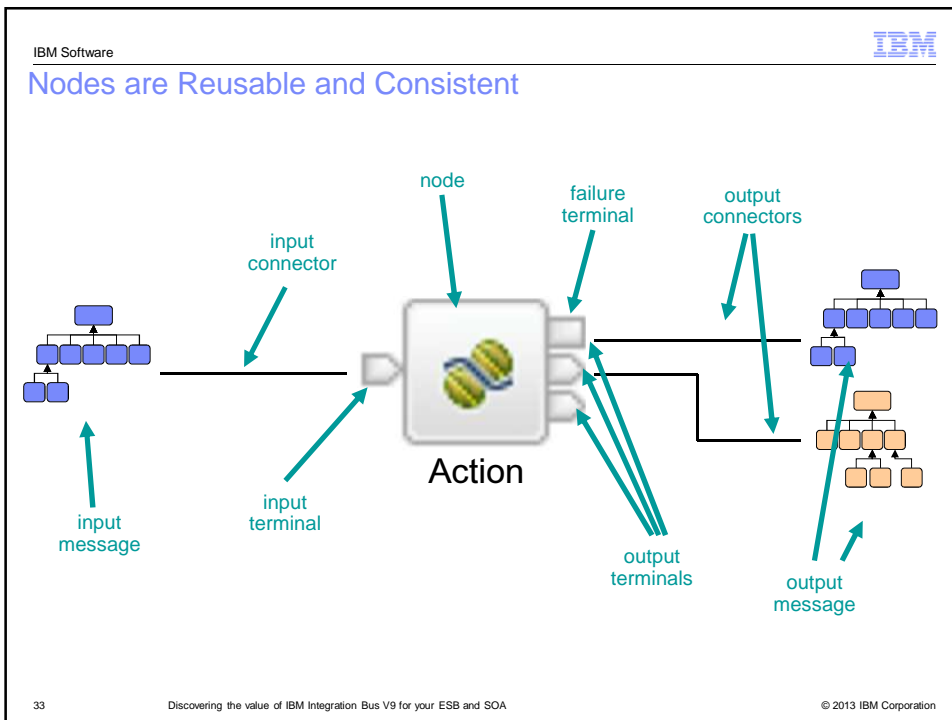
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Many Standard Nodes

Protocols

<p>WebSphere MQ</p> <ul style="list-style-type: none"> MQInput MQOutput MQReply MQGet MQHeader <p>MQOptimizedFlow (Depre...</p> <p>TCPIP</p> <ul style="list-style-type: none"> TCPIPClientInput TCPIPClientOutput TCPIPClientReceive TCPIPServerInput TCPIPServerOutput TCPIPServerReceive 	<p>JMS</p> <ul style="list-style-type: none"> JMSInput JMSOutput JMSReply JMSReceive JMSHeader JMSMQTransform MQJMSTransform <p>SCA</p> <ul style="list-style-type: none"> SCAInput SCAReply SCARequest SCAAsyncRequest SCAAsyncResponse 	<p>HTTP</p> <ul style="list-style-type: none"> HTTPInput HTTPReply HTTPRequest HTTPHeader <p>File</p> <ul style="list-style-type: none"> FileInput FileOutput FileRead FTEInput FTEOutput CDInput CDOOutput <p>CORBA</p> <ul style="list-style-type: none"> CORBARequest 	<p>Web Services</p> <ul style="list-style-type: none"> SOAPInput SOAPReply SOAPRequest SOAPAsyncRequest SOAPAsyncResponse SOAPEnvelope SOAPExtract RegistryLookup EndpointLookup <p>Email</p> <ul style="list-style-type: none"> EmailInput EmailOutput
---	--	---	--

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Many Standard Nodes

Adapters


<p>WebSphere Adapters</p> <ul style="list-style-type: none"> PeopleSoftInput PeopleSoftRequest <p>SAP</p> <ul style="list-style-type: none"> SAPInput SAPRequest SAPReply <p>Siebel</p> <ul style="list-style-type: none"> SiebelInput SiebelRequest <p>JDE</p> <ul style="list-style-type: none"> JDEdwardsInput JDEdwardsRequest <p>TwineBall</p> <ul style="list-style-type: none"> TwineBallInput TwineBallRequest <p>CICS</p> <ul style="list-style-type: none"> CICSRequest <p>IMS</p> <ul style="list-style-type: none"> IMSRequest 	<p>Routing</p> <ul style="list-style-type: none"> Filter Label Publication RouteToLabel Route AggregateControl AggregateReply AggregateRequest Collector Resequence Sequence <p>Security</p> <ul style="list-style-type: none"> SecurityPEP 	<p>Transformation</p> <ul style="list-style-type: none"> .NETCompute Mapping XSLTransform Compute JavaCompute PHPCompute <p>Database</p> <ul style="list-style-type: none"> DatabaseInput Database DatabaseRetrieve DatabaseRoute <p>Validation</p> <ul style="list-style-type: none"> Validate Check (Deprecated) 	<p>Construction</p> <ul style="list-style-type: none"> Input Output Throw Trace TryCatch FlowOrder Passthrough ResetContentDescriptor Timer TimeoutControl TimeoutNotification <p>Support Pacs</p> <p> MyCustomNode</p>
--	---	---	---

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Many Transformation Options

Scripting/Programming




Compute :

- Describe powerful transformations quickly
- Use SQL or other languages (e.g. SQL)




JavaCompute

- Uses Java programming language
- Ability to use XPath



PHPCompute


- Transform using PHP scripts
- PHP 5.2 compliant



.NETCompute


- Build transformations in: C#, VB, F#, C++/CLI, Jscript, etc., supports any Common Language Runtime (CLR) language
- Call .NET programs directly via CLR V4

Graphical




Mapping

- Graphical, easy to use
- Drag and Drop fields, apply functions



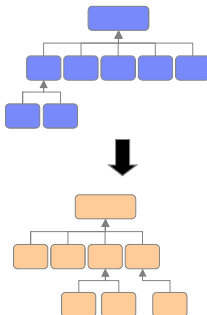
XSL Transform

- Convert XML to XML
- Uses standard XSL Style sheets



WTX Map

- Run a WebSphere Transformation Extender map



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The Environment: Your scratch pad

Root

- Properties
- Headers
- Body

Environment

- ...
- Variables
 - System Stuff
 - Your Stuff

Local Environment

- ...
- Variables
 - System Stuff
 - Your Stuff


Passed through the nodes

Put `${Environment}/${LocalEnvironment}` in your Trace node to see it
You can also see it your debug session

Setting it is easy:
e.g., `SET OutputLocalEnvironment.Variables.CheckAmount = 23.50;`


Using it is easy:
e.g., `SET OutputRoot.MRM.CustomerMessage.CheckAmount = InputLocalEnvironment.Variables.CheckAmount;`

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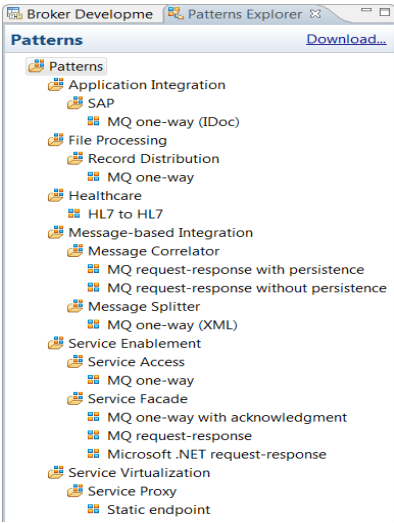
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Patterns – Making Reuse Easy



- Many built-in patterns
- Organized into categories
 - Groups similar solutions together
 - Message-based integration
 - Service enablement
 - Service virtualization
 - ...
- Or create your own patterns
 - Pattern Authoring
- Extensive help provided
 - Selection / implementation guidance

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QuickStarts Simplify Common Tasks

- QuickStarts available for application / library creation
- Application or library can reference
 - Project created by QuickStart
 - Existing projects

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Samples Show You How


More samples

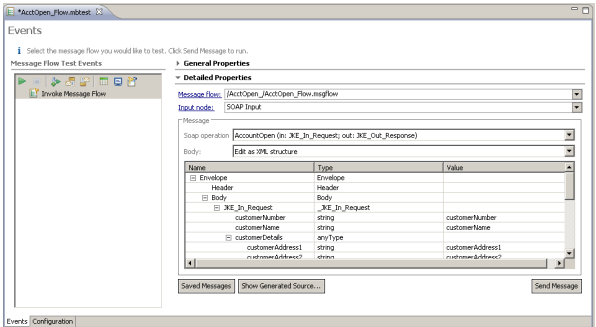
- Retrievel... Update... Remove...
- Application Samples**
The Application samples are small end-to-end WebSphere Message Broker applications that were created using the Message Broker Toolkit. The Application samples demonstrate how to transform and route messages through message flows.
- Control and Routing**
The Control and Routing samples demonstrate how to use WebSphere Message Broker to control and route messages.
- File Processing**
The File Processing samples demonstrate how to process files using WebSphere Message Broker.
- Industry**
The Industry samples provide WebSphere Message Broker assets to help developers working in specific industries.
- Message Formats**
The Message Formats samples demonstrate how to process messages with different formats using WebSphere Message Broker.
- Message Transformation**
The Message Transformation samples demonstrate alternative ways to develop WebSphere Message Broker applications to transform messages.
- Monitoring**
The Monitoring samples demonstrate how to monitor your WebSphere Message Broker flows, including how to use WebSphere Business Monitor.
- Security**
The Security samples demonstrate how to use Identity Security features in WebSphere Message Broker.
- Transports and Connectivity**
The Transports and Connectivity samples demonstrate the many alternative ways of connecting WebSphere Message Broker to other applications, including EIS systems.
- Web Service**
The Web Service samples demonstrate how you can use WebSphere Message Broker as both a consumer and provider of Web services.

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Simplified Testing using the Integrated Test Client

- **Toolkit includes Integrated Test Client**
 - Also Interactive Debugger (explore in later lab)
- **Test message flows containing following input nodes:**
 - WebSphere® MQ, JMS, SOAP, HTTP and SCA
- **Monitors output nodes**
 - Execution path
 - Errors generated by flow
- **Test scripts saved**
 - Create repeatable test suites






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Interactive Flow Debugger

- Convenient, easy to use graphical interface for flow testing
- Breakpoints between nodes or within node logic
 - Stop execution at any point
 - Current content of message trees examined and modified
- Step into node and debug at the source level
 - Compute (SQL)
 - JavaCompute (Java)
 - .NETCompute (requires Microsoft® Visual Studio Professional or higher)
 - PHP




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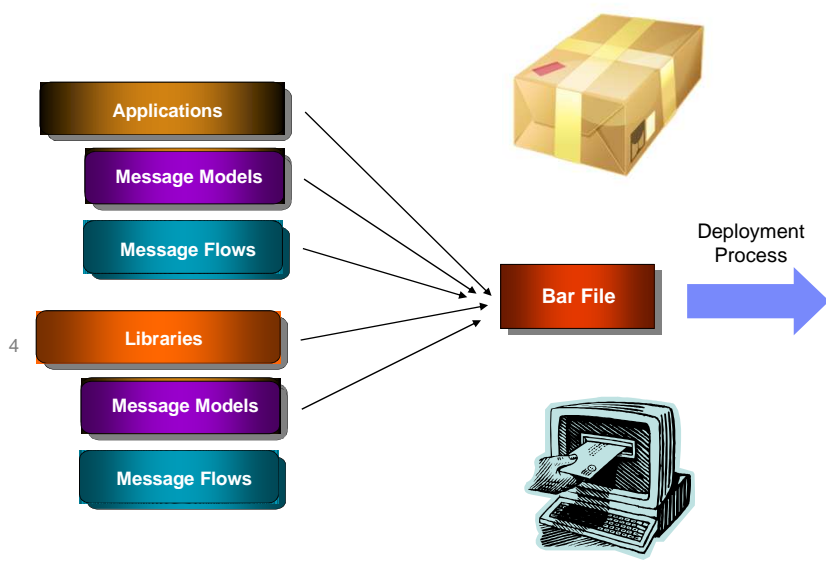
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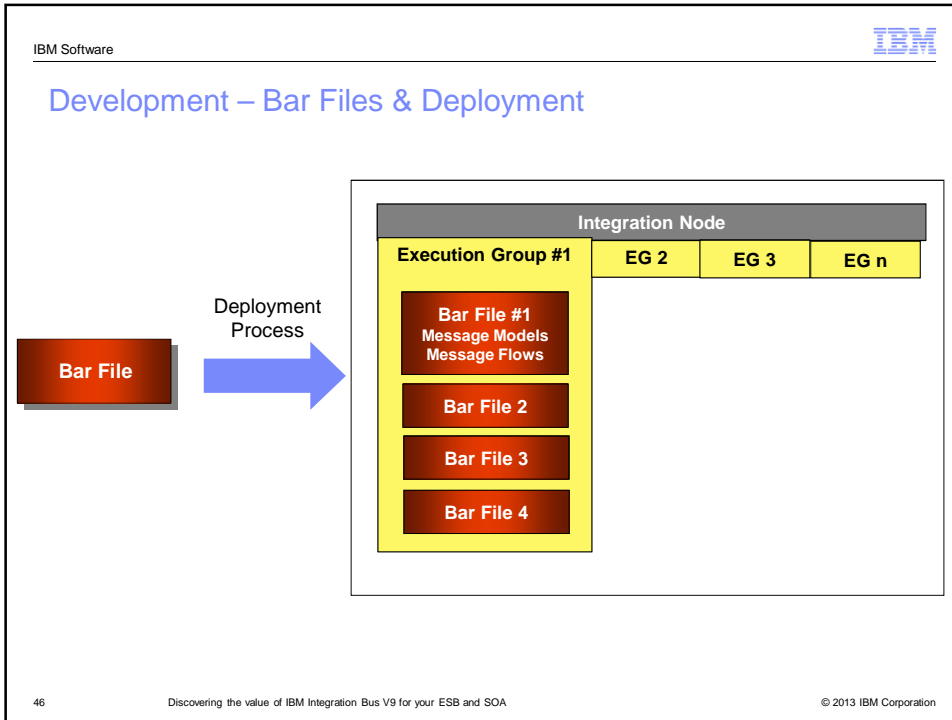
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Development – Bar Files & Deployment



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Time to Explore

- **Lab 1 - Create a new Application**
 - Construct a simple **Message Flow** in the Application
 - **MQInput** node gets messages from a queue
 - **MQOutput** node puts messages to a queue
 - **Trace** node renders message structure into a readable format
 - Test your Application
 - Use the **Integrated Test Client** to deploy and test
 - XML Message In/Out, No Transformation
 - Use the **Message Broker Explorer** to create MQ queues
- **Lab 2 - Extend your flow to do message parsing and validation**
- **Lab 3 - Modify your message flow to perform content-based routing**
 - Use the Interactive debugger to test your flow
 - Set breakpoints within the flow
 - Examine message tree
 - Modify message tree


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It's Time For Labs 1-2-3!

- **Introductory Labs (approx. 45 – 60 mins)**
 - **Building and Executing a Simple Message Flow**
 - **Extending the Message Flow for Parsing and Validation**
 - **Extending the Message Flow for Content-Based Routing**
- **Tools You Will Use:**
 - **MB Explorer**
 - **Integrated Test Client**
 - **XPath Expression Builder**
 - **Integrated Flow Debugger**


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Advanced Features





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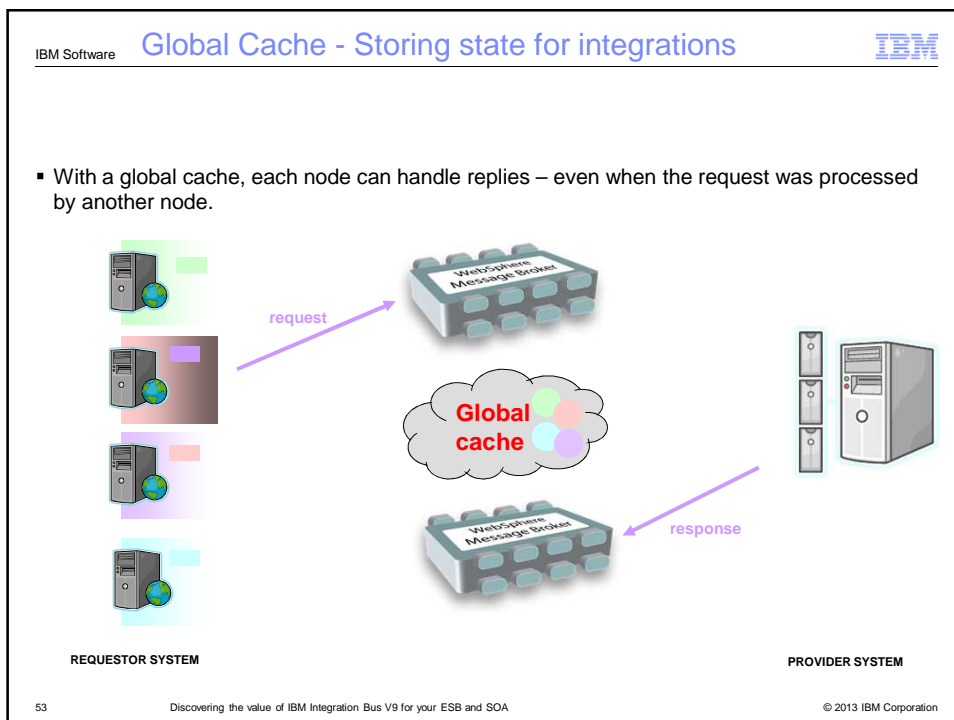
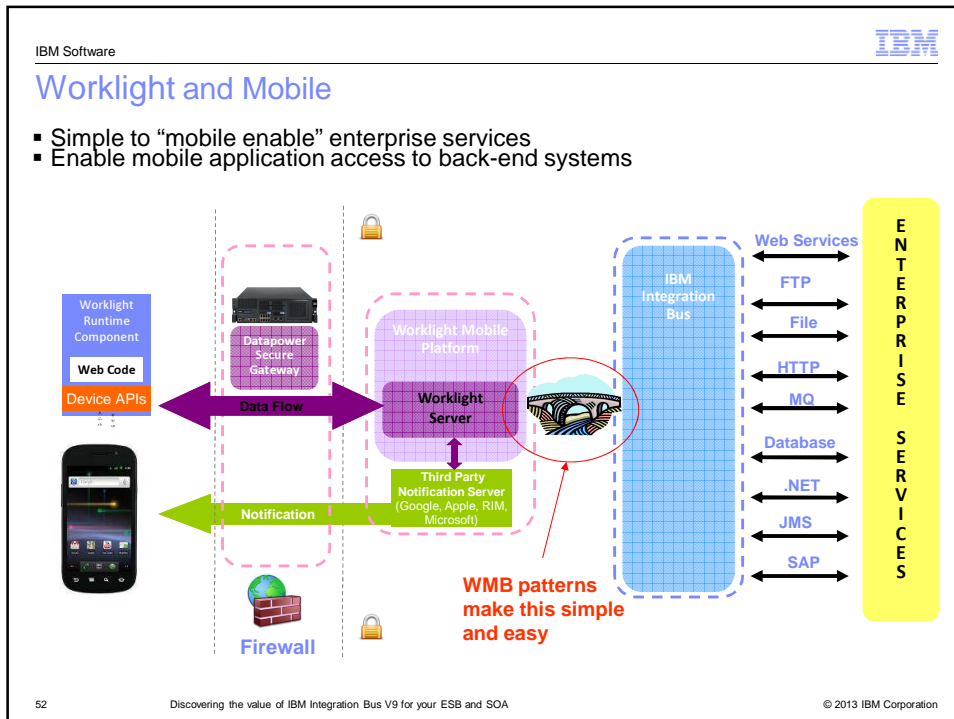
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IBM Software **Global Cache - Caching infrequently changing data** 

- Number of clients can increase
 - Maintain predictable response time



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IBM Software **Data Format Description Language (DFDL)**  


- New open standard
 - Open Grid Forum (OGF)
 - <http://www.ogf.org/>
 - Version 1.0
 - ‘Proposed Recommendation’ status
- Way of *describing* data...
 - NOT a data format itself!
- Describe any data format ...
 - Textual and binary
 - Commercial record-oriented
 - Scientific and numeric
 - Modern and legacy
 - Industry standards
- High performance ...
 - Right data format for the job
- Leverages XML technology and concepts
 - W3C XML Schema subset & type system
 - Annotations within the XSD
 - Physical representation of data
 - XPath to reference fields within data
- Round-tripping
 - Read / write data in described format
 - From same description
- Keep simple cases simple
 - Simple descriptions human readable
- Generality
 - Think “Type Tree + MRM” & more

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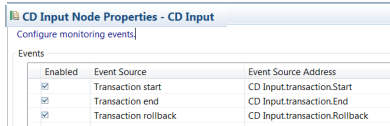
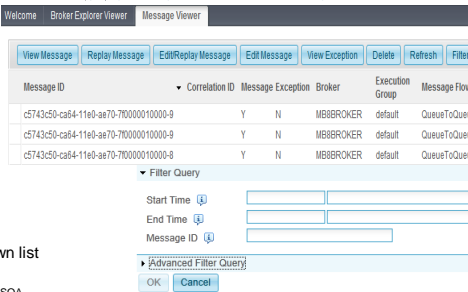
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Record & Replay




- Enable Record and Replay of In-flight Data
 - Comprehensive audit of messages, web, ERP, file & other data
 - Flexible topology: single or multiple nodes for recording, capture & replay
- Data Recording, Capture & Store
 - Graphically configure binary, text, XML payload capture, including whole, partial & multi-field data
 - Source data is currently limited to MB flows, including MB6.1, MB7 & MB8
- Monitor tab or monitoring profiles identify captured events
 - Capture events on "any node", local or remote
 - Any node EG can be configured as capture agent
 - Configurable service identifies topic, target database
 - Agent stores data in a database
- Web Tooling to View, Query data
 - Friendly editors to view and query payloads
 - Key data fields, including application data
 - Independent web admin & capture for scalability
 - Configure multiple EG listeners for web
- Replay for redelivery or flow reprocessing
 - Replay selected data to flows or applications
 - MB admin configures logical destinations
 - Maps to physical protocol, e.g. MQ: {Qmgr, Q}
 - User selects destinations from auto-populated drop-down list

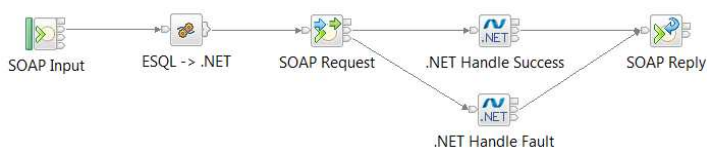
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Integrating .NET with IBM Integration Bus



- Extremely tight language agnostic integration**
 - Integrates any CLR language at a very low level
- Create your own .NET Compute Nodes using Visual Studio**
 - Integrate new or existing .NET applications directly with your Message Flow
 - Write nodes in C#, VB, F#, C++/CLI, and many more
- Tightly integrated with Visual Studio**
 - Integration toolkit can launch Visual Studio
 - Visual studio plugin to simplify node development
- Call .NET code directly from ESQL**
 - Jump straight from ESQL into .NET code
- Integrate with existing COM applications**

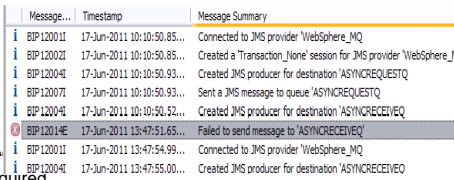


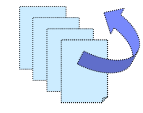
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Understanding Runtime Behaviour

- Activity Logging Allows users to understand what a message flow is doing
 - Complements current extensive product trace by providing end-user oriented trace
 - Can be used by developers, but target is operators and administrators
 - Doesn't require detailed product knowledge to understand behaviour
 - Provides qualitative measure of behaviour
- End-user oriented with external resource lifecycle
 - Focus on easily understood actions & resources
 - "GET message queue X", "Update DB table Z"...
 - Complements quantitative resource statistics
- Flow & resource logging
 - User can observe all events for a given flow
 - e.g. "GET MQ message", "Send IDOC to SAP"
 - Users can focus on individual resource manager if required
 - e.g. SAP connectivity lost, SAP IDOC processed
 - Use event filters to create custom activity log
 - e.g. capture all activity on JMS queue REQ1 and C:D node CDN1
 - Progressive implementation as with resource statistics, starting with JMS, C:D and SAP resources
- Comprehensive Reporting Options
 - Reporting via MB Explorer, log files and programmable management (CMP API)
 - Extensive filtering & search options, also includes save data to CSV file for later analysis
- Log Rotation facilities
 - Rotate resource log file when reaches using size or time interval



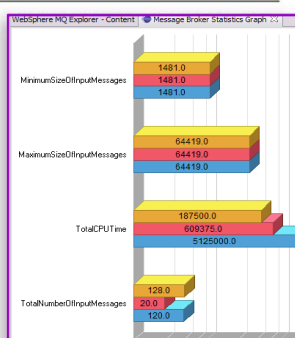


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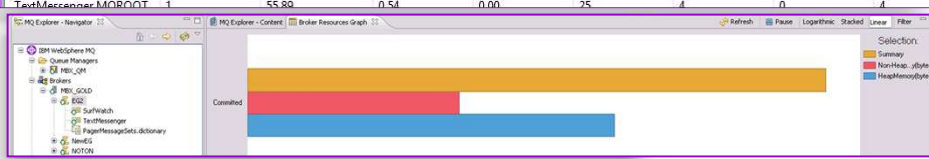
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Graphical Performance Monitor

- Detailed Statistics and Reporting
 - Understand behaviour of deployed solutions
 - Comprehensive resource usage
- Reporting Mechanisms
 - Graphically reported through MB Explorer
 - Sort, filter and chart performance characteristics
 - View CPU, IO and other metrics
 - Log data to file in CSV/Excel readable format for post processing
 - User Configurable Reporting Interval
 - XML report messages consumed by any end user application



CICS	CORBA	FTEAgent	FTP	File	JDBCConnectionPools	JVM	ODBC	Parsers	SOAPInput	Security	Sockets	TCPIPClientNodes	TCPIPServerNodes
name													
summary		1		111.78	0.54	0.43		93			24	0	16
TextMessenger.MQMD		1		15.97	0.36	0.43		2			8	0	4
TextMessenger.MOROOT		1		55.80	0.54	0.00		75			4	0	4



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Browser Administration for Universal Access

- **Web Administration Console**
 - Objective is to provide comprehensive web management interface
 - Focus on non-administrators to understand nodes & resources
 - Supports all major browsers Firefox, IE, Opera, Safari, Chrome
 - Designed as a complement to MB Explorer
 - MB Administrators can continue to use MB Explorer
- **Easy to configure**
 - No extra moving parts - uses internal HTTP server to serve data
 - Just start a port for web admin, and go!
 - Can reconfigure to listen on user port or disable
 - SSL connector configured via `mqsichangeproperties`
 - View resources only for V8 GA
 - Design allows for future role based access to modify resources
- **Using Web Admin**
 - Intuitive tree view shows hierarchy of MB resources
 - View resource details with click or button
 - Includes full suite of resources
 - Apps, Libs, Flows, Configurable services etc
- **Web Admin & MB Explorer**
 - MBX & web admin designed for concurrent use

Name	Value
Bar File Name	20110818_0407_20
Deploy Time	Thu Aug 18 16:08:43 BST 2011
Long Description	
Modification Time	Thu Aug 18 16:07:20 BST 2011
Name	App1
Running	true
Short Description	

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Hypervisor Edition

- **Easy and Faster to Instantiate**
 - Simplify provisioning MB on x/Linux & AIX
 - Initial system deploy resulting in quicker time to solution value
 - Private Clouds
 - Test and/or Production
- **Hyper Visor Edition Packages**
 - Pre-built installed VM image for OS+HW combination
 - RHEL 5.5 for VMWare ESX x86-64 & IWD images
 - AIX 6.1 TL7 mksysb & IWD images
 - Package includes all MQ & MB components
 - Updated when new fix pack levels released
 - Fix pack deploy reduces recurring maintenance cost
 - Download to customer site from IBM web
 - Uploaded to IWD using CLI scripts or Image Loader tool
- **Configuration Patterns and Scripts**
 - HVE Scenario Configuration Information
 - Base Pattern with configuration script packages
 - Base Pattern for most popular MQ and MB topology configurations
 - *Basic Configuration, Advanced Configuration, <User Pattern>*
 - Script Packages configure base pattern
 - *Create Exec Group, Deploy BAR, Run MQSC, <User Script>*
 - Emergency Fix also possible: iFix binary + script package to drive installer
- **Full Function Deployed Configuration**
 - Interaction with deployed MQ, IIB components as per regular deployment

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Making File Processing Simple

- **Native File Processing Support**
 - Local Files
 - Including FTP/S
- **WebSphere MQ File Transfer Edition (FTE)**
 - End-to-end transactional file processing
 - Receive and send FTE transfers
 - Typical scenarios
 - Reliable file to queue
 - Database to file
 - File to file
- **IBM Sterling Connect:Direct (C:D)**
 - Greatly simplifies using Connect:Direct
 - No need to understand process scripts
 - Use the CD network without
 - Creating intermediate files
 - Using CD Server interface

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More than just File Nodes

- Process large files without large memories
 - Process record at a time
 - Parsing on demand
 - Build tree as needed
 - Delete input and output trees
- Advanced record detection
- No artificial constraints
 - 64-bit runtime

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File Support - Overview

- File processing examples
 - **Split** batch of records to set of messages
 - **Combine** messages to produce batch of records in file
 - **Transforming** data formats
 - **Routing** based on file content
 - **Connecting** and sending to different protocols:
 - MQ, JMS, HTTP, Raw TCPIP, SAP, Siebel, WebServices, IMS, CICS, Databases ...
- Local files
 - **FileInput** and **FileRead** nodes read files from local file system
 - **FileOutput** node writes files to local file system
- Options for remote files:
 - FTP/SFTP
 - **FileInput** and **FileOutput** nodes
 - Managed File Transfer Options:
 - WebSphere MQ Managed File Transfer nodes
 - IBM Sterling Connect:Direct
 - Additional Z/OS specific nodes (VSAM, QSAM)

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Record detection – One record at a time

- Split file into separate records
 - Single record
 - Whole file treated as single record
 - Fixed-length records
 - Delimited Records
 - Specify delimiter
 - Parsed Record Sequence
 - Records recognized by specified parser
- One record in memory at a time
 - Very large files streamed efficiently
 - DFDL, MRM (CWF and TDS), and XMLNSC parsers

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Managed File Transfer (MFT) nodes – *Move Data Reliably*

FTE Input
FTE Output



- **End-to-End Transactional File Processing**
 - Receive / send FTE transfers
 - Consistent with FileInput/FileOutput nodes but make full use of the power of FTE
 - Sophisticated file processing includes timely inbound and outbound transfers & intelligent metadata
 - Typical scenarios are reliable file-to-queue, database-to-file, file-to-file
- **Input node**
 - Message flow starts processing file when FTE agent notifies of complete file transfer
 - FTE Metadata provided in `LocalEnvironment`
 - Allows intelligent processing of transfers & scripting
 - Whole file or record-at-a-time (same as file nodes)
- **Output node**
 - Creates file output records and requests FTE transfer with appropriate metadata
 - `LocalEnvironment` allows transfer overrides and customizable metadata
- **Agents automatically Installed, Configured and Managed**
 - Installed seamlessly as part of regular install, auto configured client name, transfer directories etc.
 - Agents started when message flows are started or stopped
 - Configurable service allows overrides



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Connect:Direct (C:D) Nodes - *Common standard for file transfer*

CD Input
CD Output

- **Extend File Processing Capabilities**
 - Receive / send Connect:Direct transfers
 - Uses standard CD client API
 - Consistent with FileInput/FileOutput nodes but make full use of the power of Connect:Direct
 - Simplifies using Connect:Direct (no need to understand process scripts)
- **Input node**
 - Monitors C:D servers stats for completed transfers
 - Processes files immediately.
 - Can leave file unchanged after processing (just delete notification message)
 - C:D Metadata available to flow
- **Output node**
 - Destination C:D server, directory etc are defined on node
 - Wild card file names
 - Sequential and partitioned datasets
 - Properties overridden using local environment
 - Including any C:D options
 - C:D Metadata in local environment





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IBM Integration Bus –Summary

- **Powerful, flexible, extensible, production strength product**
- **Key Concepts**
 - **Message flows** represent application connectivities
 - **Message nodes** modularize integration operations
 - **Message Tree** and **Logical Message Model** provides focus on business data
 - **Patterns** enable rapid, top-down development of Connectivity solutions
- **Rich, simple message and database processing using Graphical Mapping**
 - Java, ESQL, .NET, PHP can also be used
- **Support for Web Services, Enterprise Messaging, and a variety of transports**
- **Scalable architecture for high capacity**
- **IBM Integration Bus is a key IBM connectivity technology**
 - Unparalleled range of connectivity options and capabilities
 - Supports users' range of experience and needs
 - Industry leading performance in a broad range of scenarios



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Questions?



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An IBM Proof of Technology

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Backup Slides

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