First Steps with IBM Integration Bus: Application Integration in the new world

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IBM

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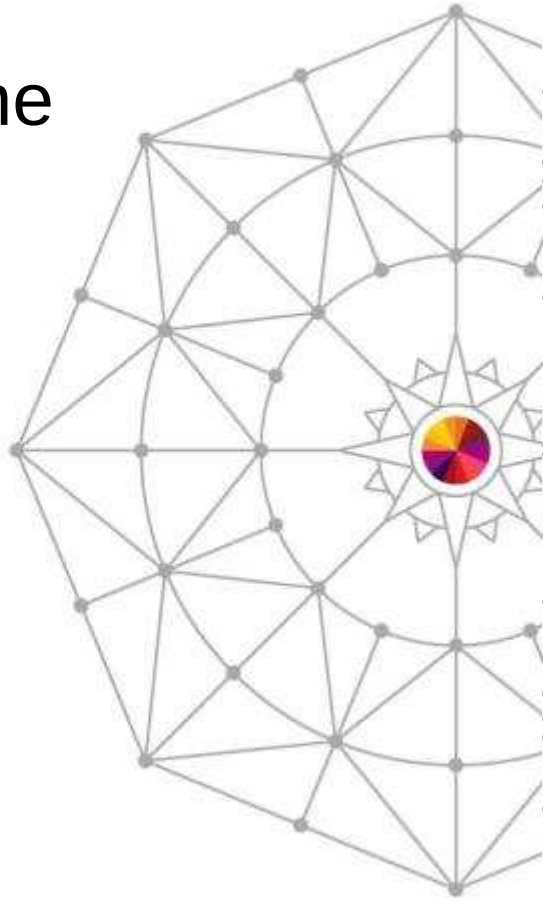
15020



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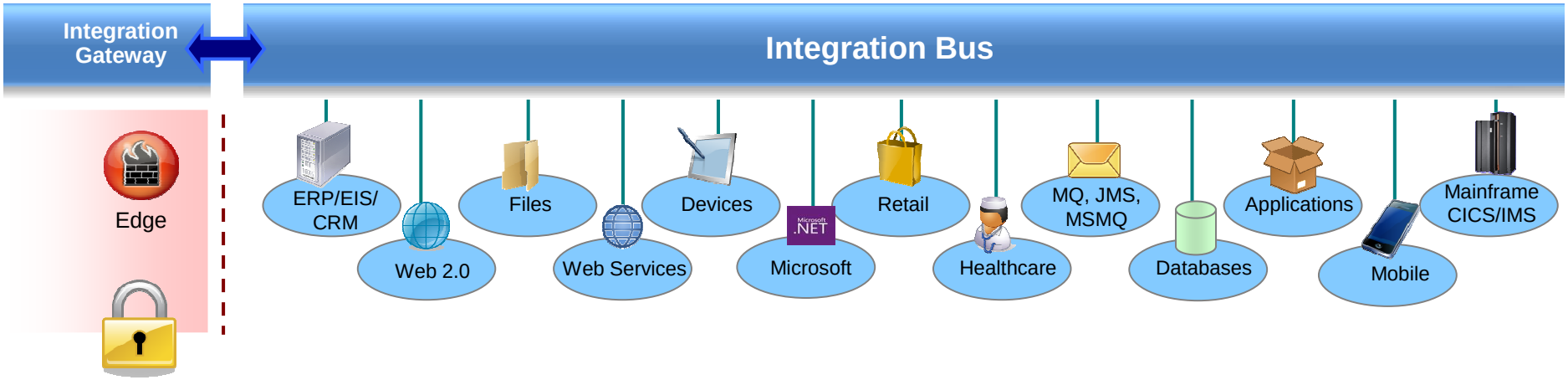
Agenda

- Introduction to IIB
- Key Usage Scenarios
- Development First Steps
  - Getting Started Wizard
  - Quick Start
  - Samples
  - Nodes
  - Patterns
  - Services
- Administration
  - WebUI
  - Accounting and Stats
  - IIB Explorer
  - Activity Log
- Developer Edition

Introduction

Introducing IBM Integration Bus

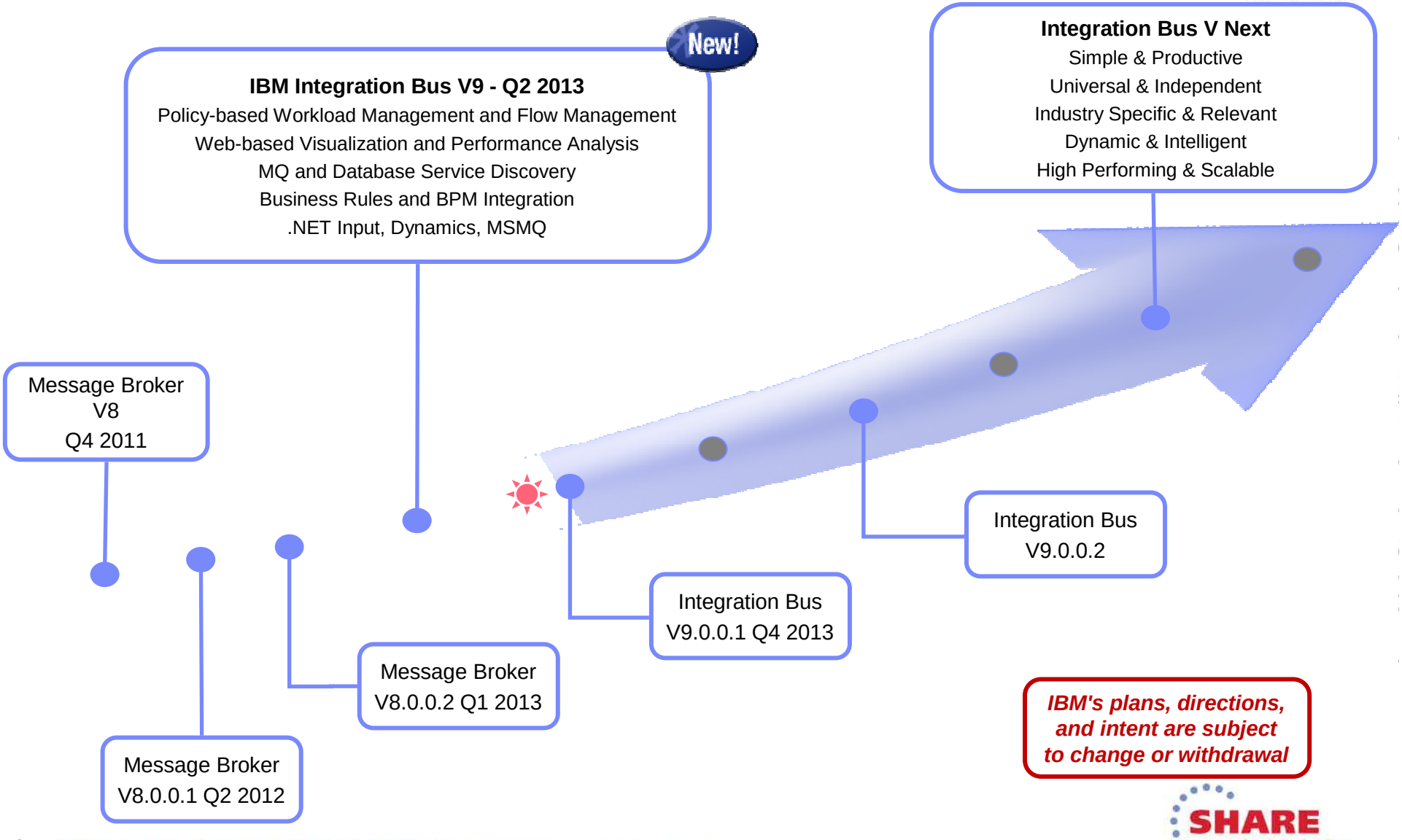
- **IBM's Strategic Integration Technology**
  - Single engineered product for .NET, Java and fully heterogeneous integration scenarios
  - DataPower continues to evolve as IBM's integration gateway



- **A Natural Evolution for WebSphere Message Broker users**
  - Significant innovation and evolution of WMB technology base
  - New features for Policy-based WLM, BPM integration, Business rules and .NET

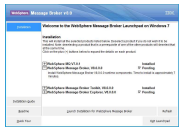
- **Designed to incorporate WebSphere Enterprise Service Bus use cases**
  - Capabilities for WESB are folded in to IBM Integration Bus over time
  - Conversion tools for initial use cases built in to IIB from day one
  - WESB technology remains in market, supported. Migrate to Integration Bus when ready

IBM Integration Bus - Product Roadmap



A Broad Range of Supported Platforms and Environments

- **Broad range of operating system and hardware platforms supported**
  - AIX, Windows, z/OS, HP-UX, Linux on xSeries, pSeries, zSeries, Solaris (x86-64 & SPARC), Ubuntu
  - Optimized 64-bit support on all platforms; 32-bit option available for Windows and x/Linux
  - New support for Windows 8 and Windows Server 2012; .NET CLR V4.5 included on Windows
  - Express, Standard and Advanced editions make IIB applicable for all solutions and budgets
    - All new V9 features available in all editions unless otherwise stated



Traditional OS

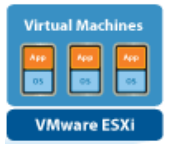
- **Virtual images for efficient utilization & simple provisioning**
  - Extensive support for virtualized environments, e.g. VMWare, AIX Hypervisor… any!
  - Support for public and private clouds: Softlayer, Pure, non-IBM, RYO etc.
  - Chef scripts for automated building of flexible IIB images (see Github)
  - Pre-built images (Hypervisor editions) available on xLinux and AIX

IBM Workload Deployer

- **Includes access to full range of industry standard databases and ERP systems**
  - DB2, Oracle, Sybase, SQL Server, Informix, solidDB
  - Open Driver Manager support enables new ODBC databases to be accessed
  - JDBC Type 4 for popular databases
  - SAP, Siebel, Peoplesoft, JDEdwards at no additional cost

SOFTLAYER
Public Cloud

IBM Pure



Private Cloud

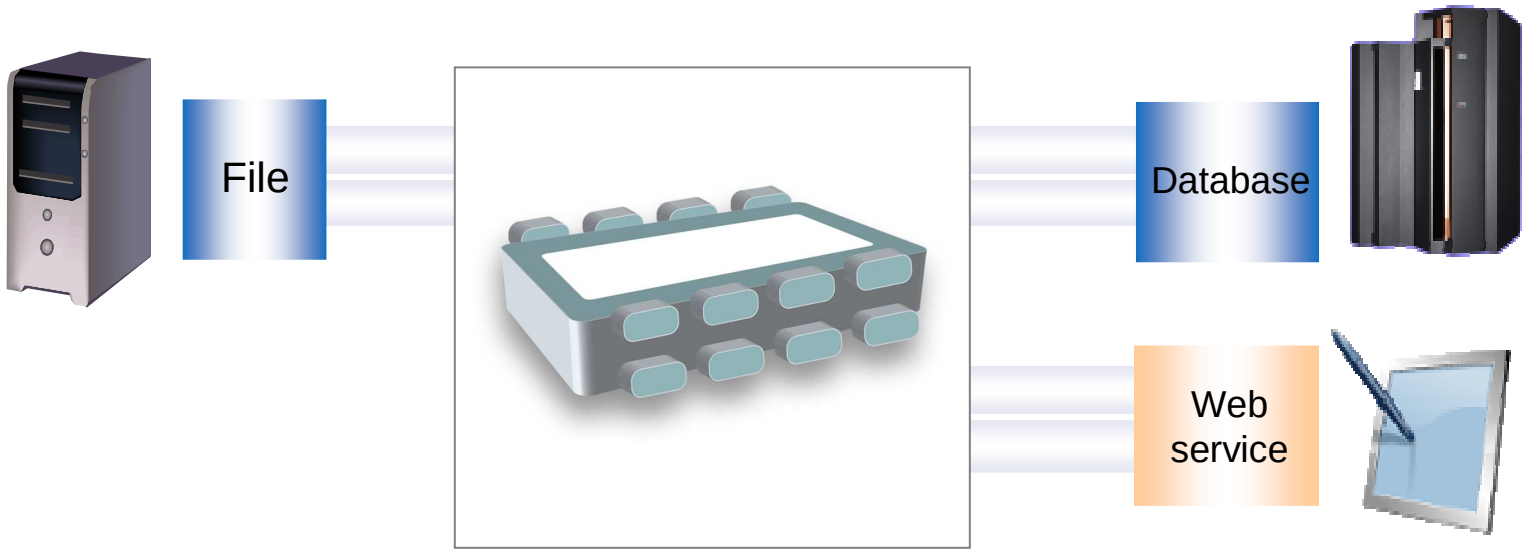
- **Technology components and pre-requisites**
  - Java 7 on all platforms
  - MQ 7.5 prerequisite (7.1 on z/OS)

- **Focus areas for performance Improvements**
  - Significant gains include HTTP, TCP/IP, DFDL and graphical mapping

What do we mean by Integration?

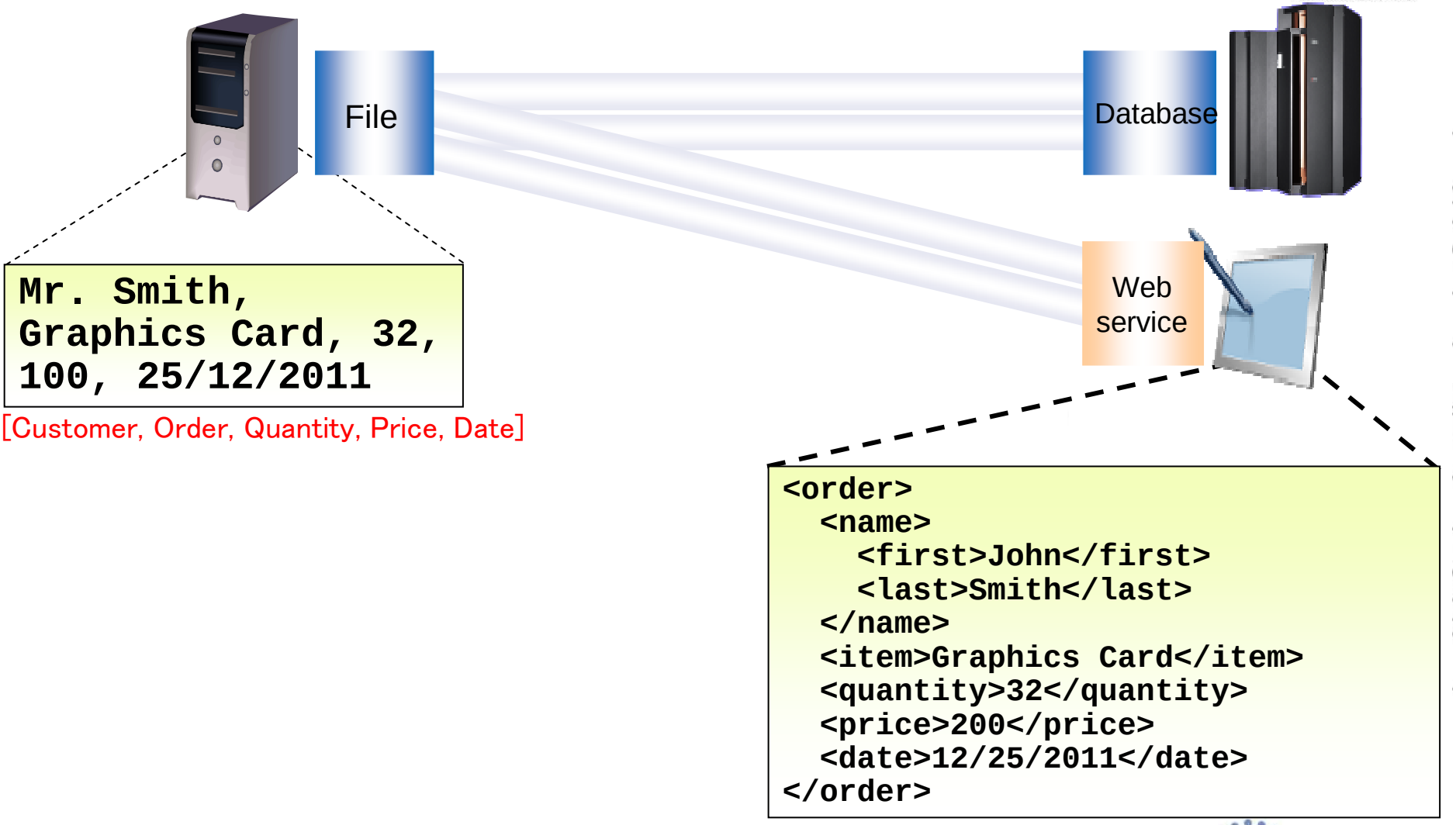
- Enterprise systems consist of many logical ***endpoints***
  - Off-the-shelf applications, services, web apps, devices, appliances, custom built software…
- Endpoints expose a set of inputs and outputs, which comprise
  - Protocols - e.g. MQ, TCP/IP, HTTP, File system, FTP, SMTP, POP3 etc.
  - Message 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…

Integration solutions are about reducing cost!

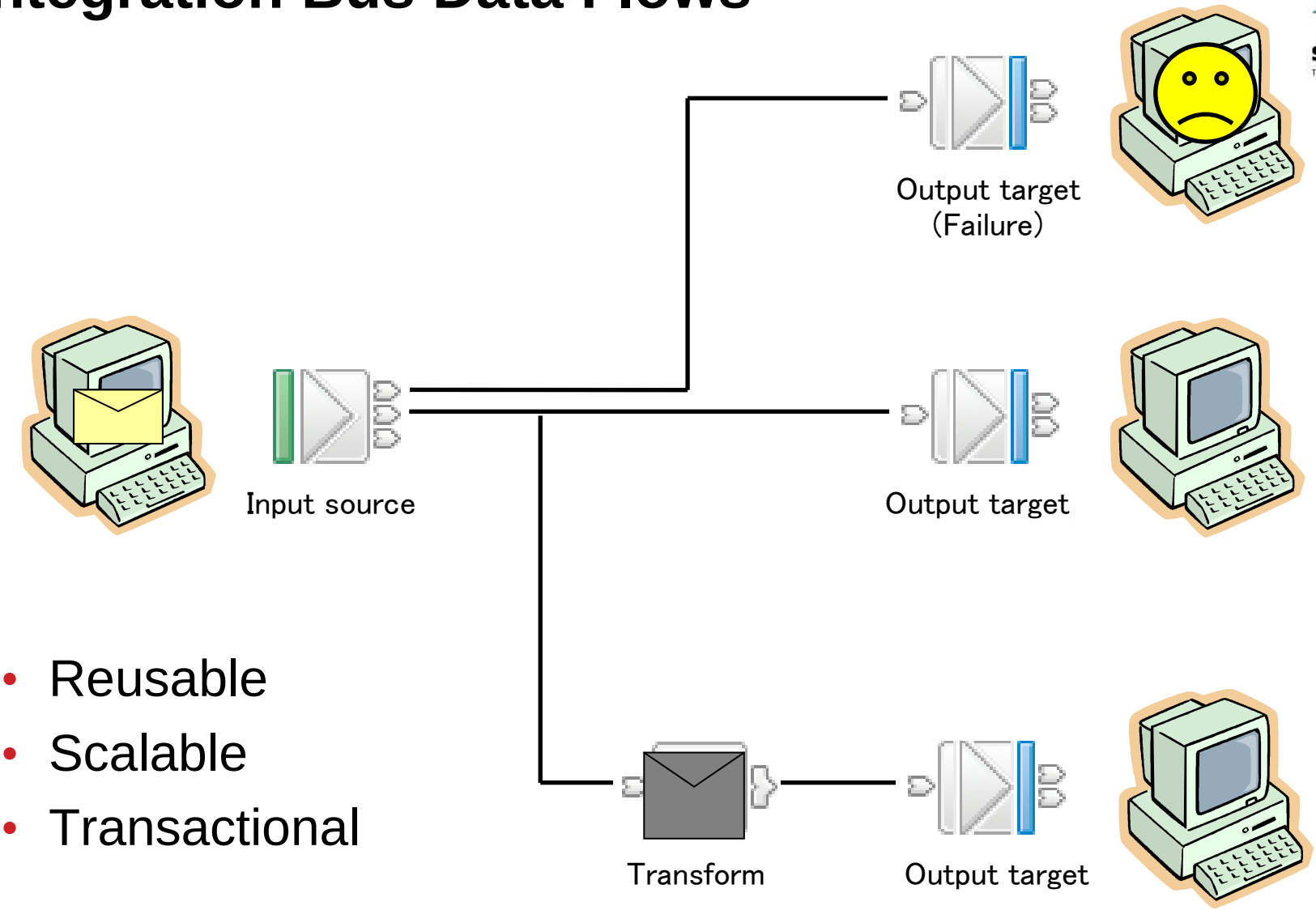


- Integration solutions simplify integration!
  - Avoids rewrites in response to new integration requirements
  - Simplifies maintenance by reducing expensive coupling
  - Flexibility adding anonymity between producers and consumers of data
  - Adds insight into applications and business value they bring

Example integration



Integration Bus Data Flows



- Reusable
- Scalable
- Transactional

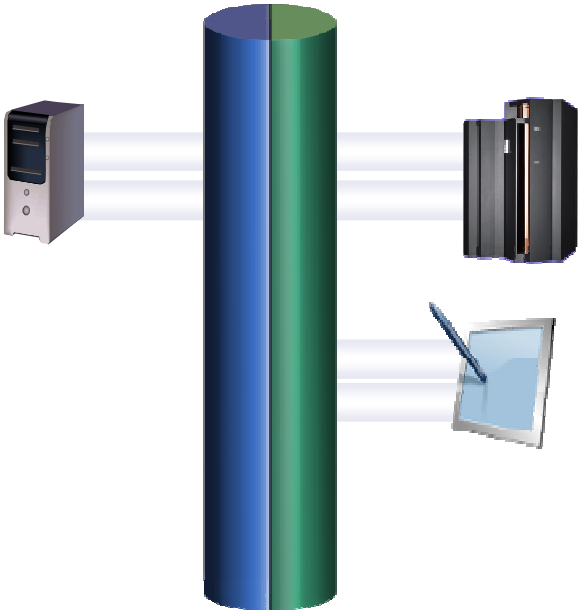
Some examples of integration topologies

Bridges

- Often used for single point-to-point connections
- Usually cheap and quick to configure
- More difficult to scale to larger numbers of endpoints

Gateways

- Provides connectivity to third parties or to a specific class of endpoint
- For example, internet, cloud, security, DMZ, B2B
- Combines simplicity of configuration and a commonly on-ramp to back-end ESB



Enterprise Service Bus (ESB)

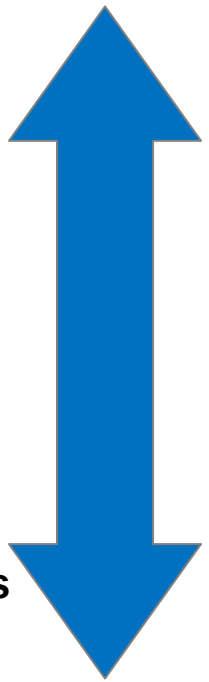
- Logical construct that combines messaging and enrichment
- Scales very well; can integrate small and large numbers of endpoints, and can be easily distributed
- Often applied as a backbone for a Service Oriented Architecture (SOA)
- Solutions can usually also be applied to hub and spoke style architectures

Key Usage Scenarios

Top Integration Usage Patterns

- What are the top issues that people want to solve with integration solutions?

  - **Extend the Reach** of Existing Applications
  - Distribute **Database** information to where it's needed
  - Create a **File Hub** to connect batch and online applications
  - Get the most from **Packaged Applications**
  - Take advantage of **.NET applications**
  - Provide a Policy Enforcement Point for **Secure Connectivity**
  - Extend Enterprise to **Devices and Mobile**
  - **Monitor** your business activity and act intelligently
  - Detect and Act Upon **Business Events and Rules**
  - Provide Connectivity and Integration for **Business Processes**
  - Make an inventory and enable **Policy based management**



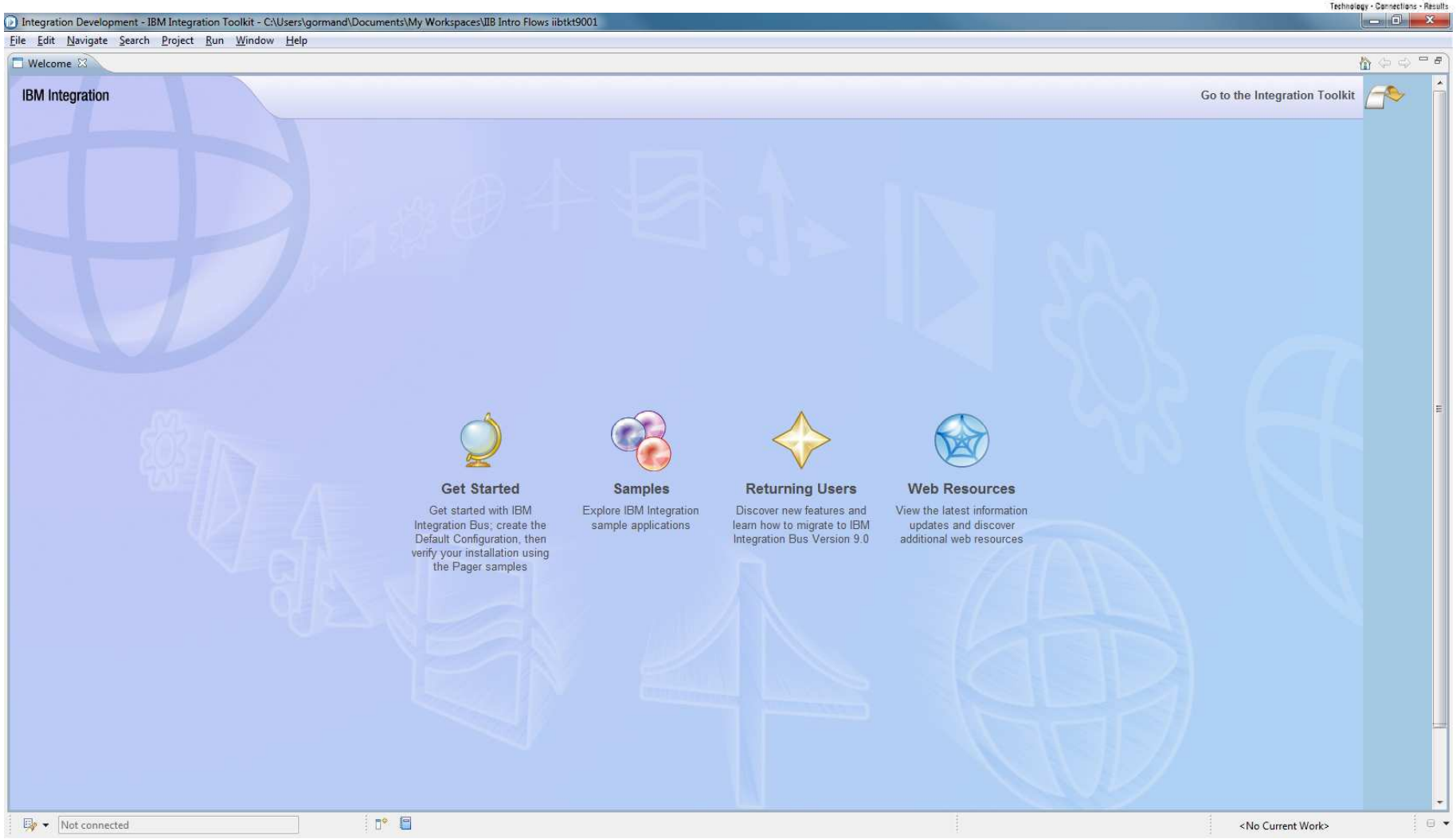
Common usage patterns

Emerging usage patterns

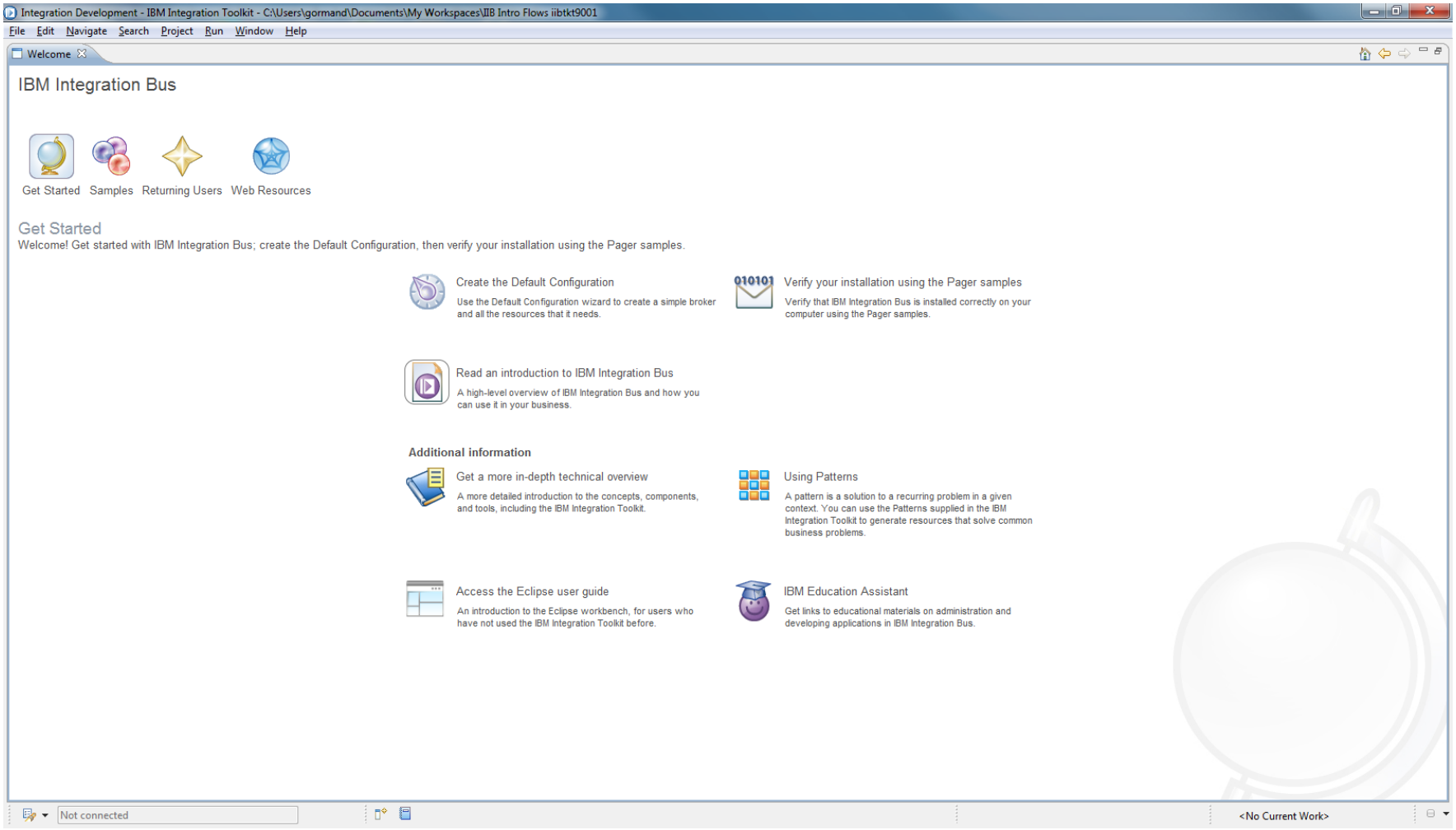
- New usage patterns are continually emerging as business needs evolve!

Development

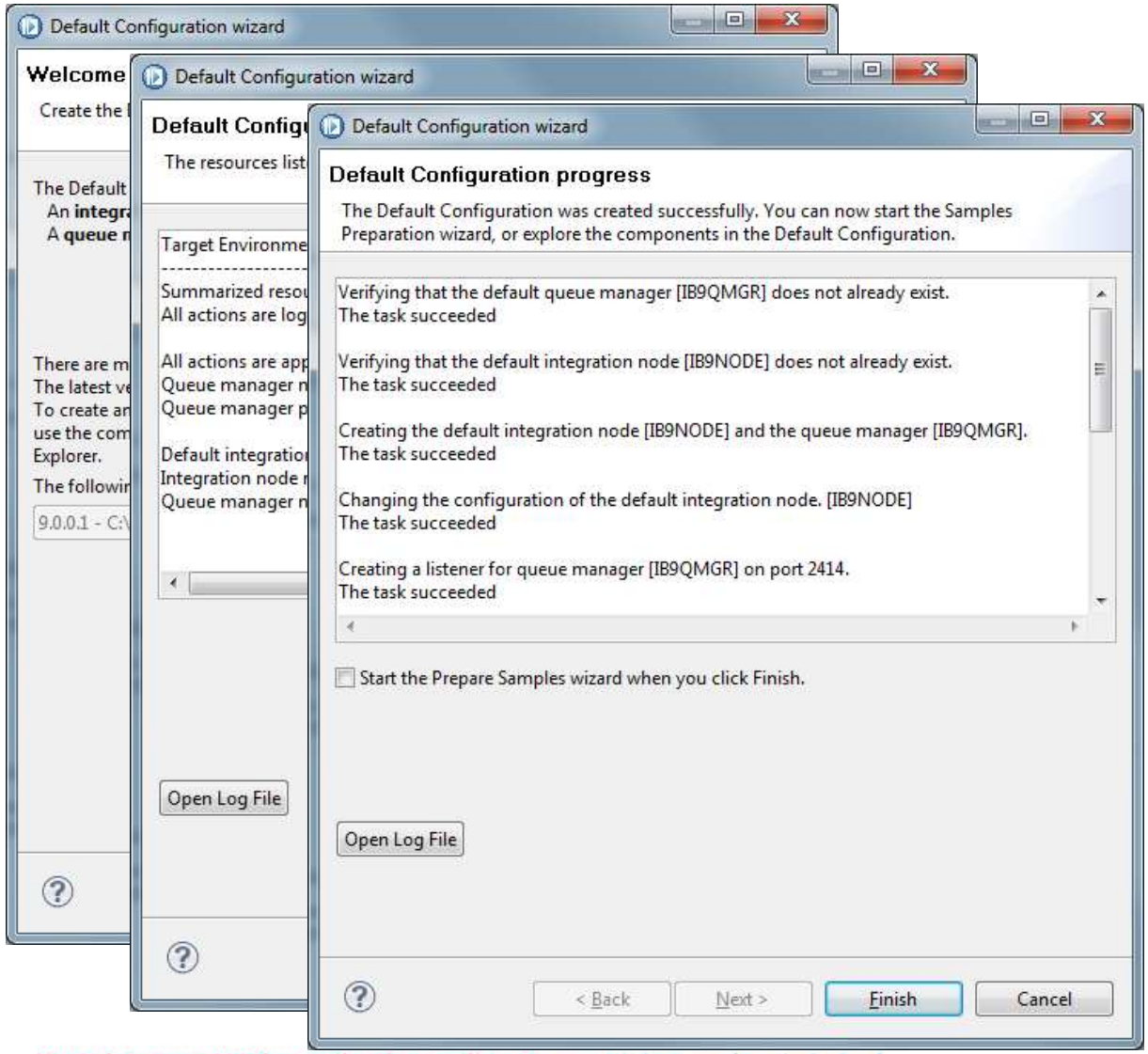
Eclipse-based IDE to Develop Integration Flows



Integration Bus – Getting Started

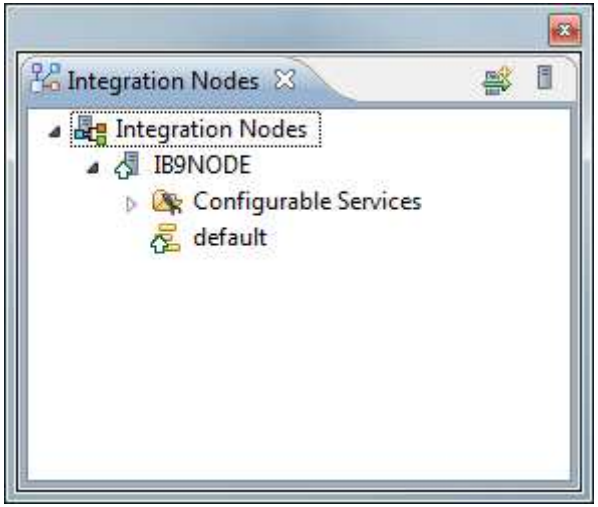


Default Configuration Wizard



Use the DCW to easily create:

- Default Queue Manager
- Default Integration Node
- Default Integration Server



Quick Starts

Start building your application with one of the following tasks.

Start by creating an application

An **Application** is a container for all the resources that are required to create a solution. More...

Start by creating an integration service

An **Integration Service** is an application with a well-defined interface and structure. More...

Start by creating a library

A **Library** is a logical grouping of related code, data, or both. More...

Start from WSDL and/or XSD files

Use this task to create an **Integration Service**, **Application** or **Library** which includes your WSDL and/or XSD files.

Start by discovering a service

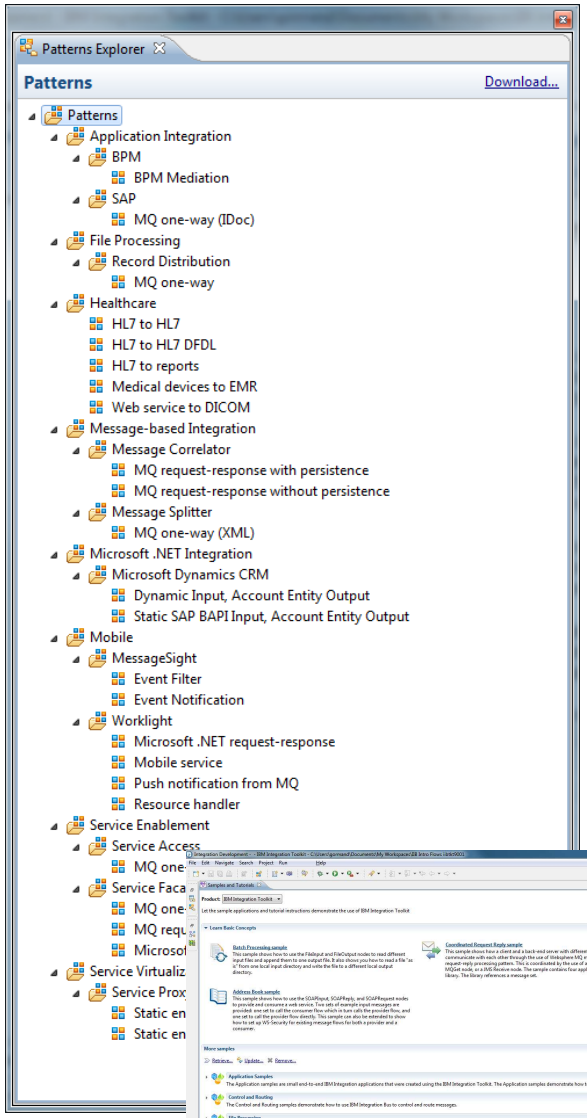
A **Service** allows you to invoke the remote system using discovered resources.

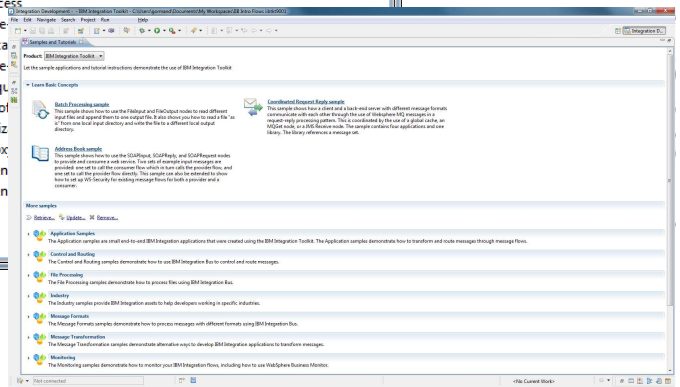
Start from patterns

A **Pattern** is a reusable solution that encapsulates a tested approach to solving a common architecture, design, or deployment task. More...

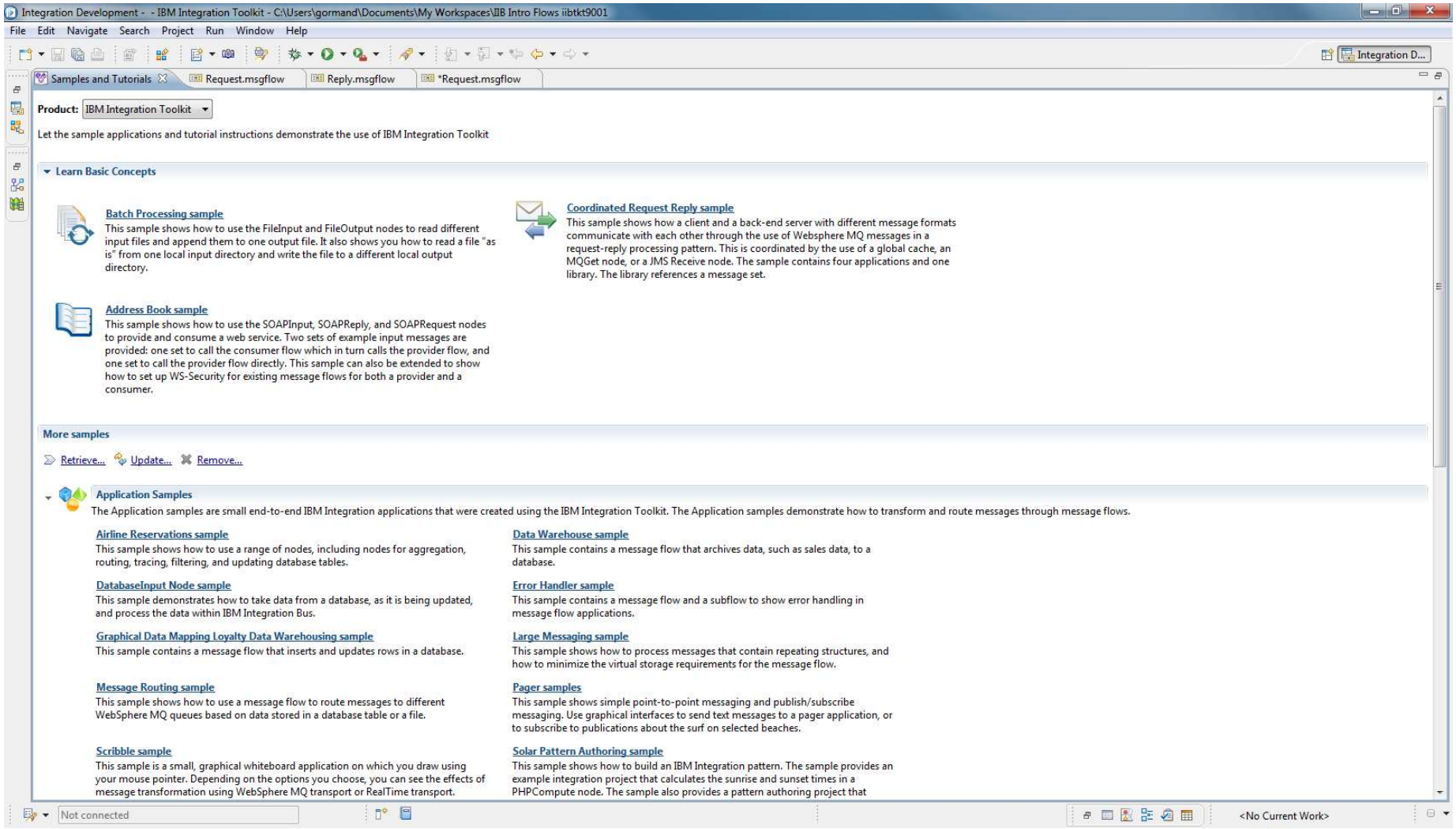
Start from samples

Use the **Samples** to learn more about the features in IBM Integration Bus. More...

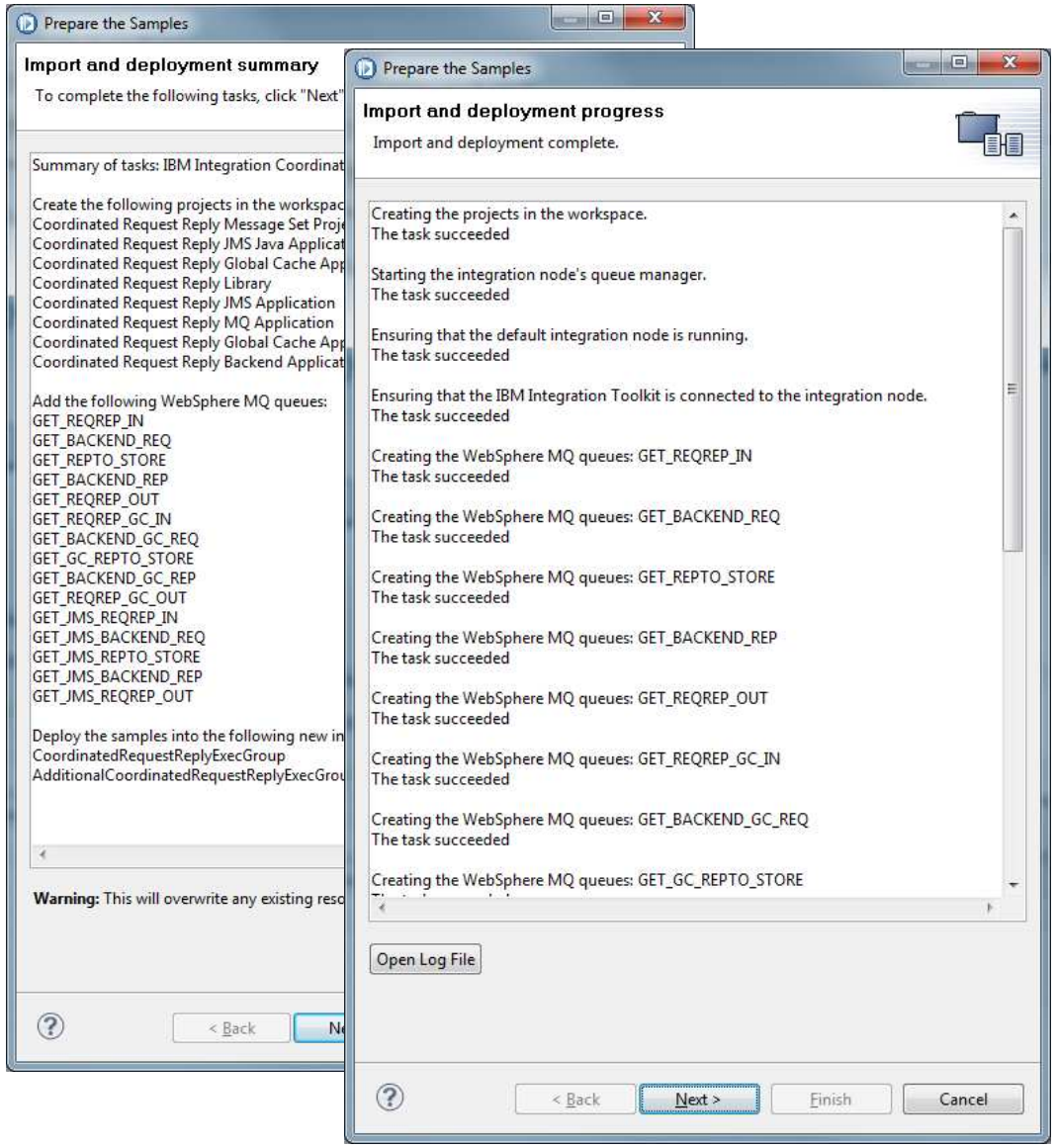




IIB Samples


Integration Development - - IBM Integration Toolkit - C:\Users\gormand\Documents\My Workspaces\IIB Intro Flows iibtkt9001
File Edit Navigate Search Project Run Window Help
Integration D...
Samples and Tutorials
Request.msgflow
Reply.msgflow
*Request.msgflow
Product: IBM Integration Toolkit
Let the sample applications and tutorial instructions demonstrate the use of IBM Integration Toolkit
Learn Basic Concepts
Batch Processing sample
This sample shows how to use the FileInput and FileOutput nodes to read different input files and append them to one output file. It also shows you how to read a file "as is" from one local input directory and write the file to a different local output directory.
Coordinated Request Reply sample
This sample shows how a client and a back-end server with different message formats communicate with each other through the use of Websphere MQ messages in a request-reply processing pattern. This is coordinated by the use of a global cache, an MQGet node, or a JMS Receive node. The sample contains four applications and one library. The library references a message set.
Address Book sample
This sample shows how to use the SOAPInput, SOAPReply, and SOAPRequest nodes to provide and consume a web service. Two sets of example input messages are provided: one set to call the consumer flow which in turn calls the provider flow, and one set to call the provider flow directly. This sample can also be extended to show how to set up WS-Security for existing message flows for both a provider and a consumer.
More samples
Retrieve... Update... Remove...
Application Samples
The Application samples are small end-to-end IBM Integration applications that were created using the IBM Integration Toolkit. The Application samples demonstrate how to transform and route messages through message flows.
Airline Reservations sample
This sample shows how to use a range of nodes, including nodes for aggregation, routing, tracing, filtering, and updating database tables.
Data Warehouse sample
This sample contains a message flow that archives data, such as sales data, to a database.
DatabaseInput Node sample
This sample demonstrates how to take data from a database, as it is being updated, and process the data within IBM Integration Bus.
Error Handler sample
This sample contains a message flow and a subflow to show error handling in message flow applications.
Graphical Data Mapping Loyalty Data Warehousing sample
This sample contains a message flow that inserts and updates rows in a database.
Large Messaging sample
This sample shows how to process messages that contain repeating structures, and how to minimize the virtual storage requirements for the message flow.
Message Routing sample
This sample shows how to use a message flow to route messages to different WebSphere MQ queues based on data stored in a database table or a file.
Pager samples
This sample shows simple point-to-point messaging and publish/subscribe messaging. Use graphical interfaces to send text messages to a pager application, or to subscribe to publications about the surf on selected beaches.
Scribble sample
This sample is a small, graphical whiteboard application on which you draw using your mouse pointer. Depending on the options you choose, you can see the effects of message transformation using WebSphere MQ transport or RealTime transport.
Solar Pattern Authoring sample
This sample shows how to build an IBM Integration pattern. The sample provides an example integration project that calculates the sunrise and sunset times in a PHPCompute node. The sample also provides a pattern authoring project that
Not connected
<No Current Work>

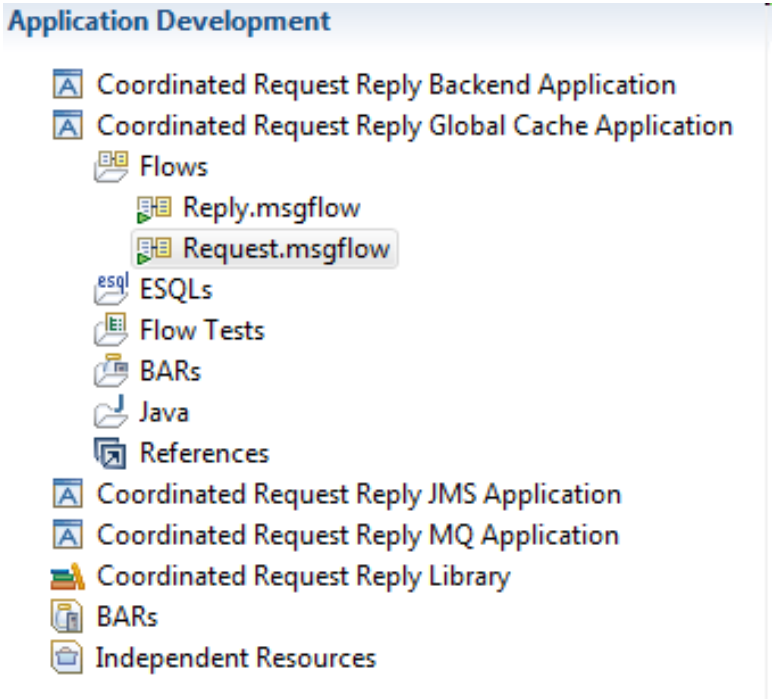
Import and Deploy a product sample



There are many product samples that show how to use IIB.

These are easily imported into the development toolkit workspace, and deployed to the integration server runtime.

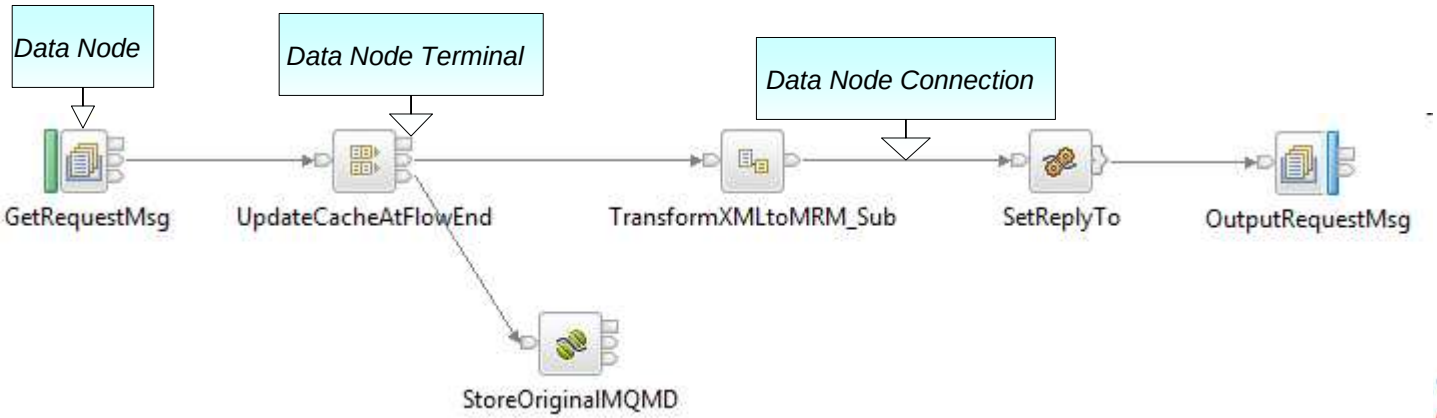
Sample artefacts



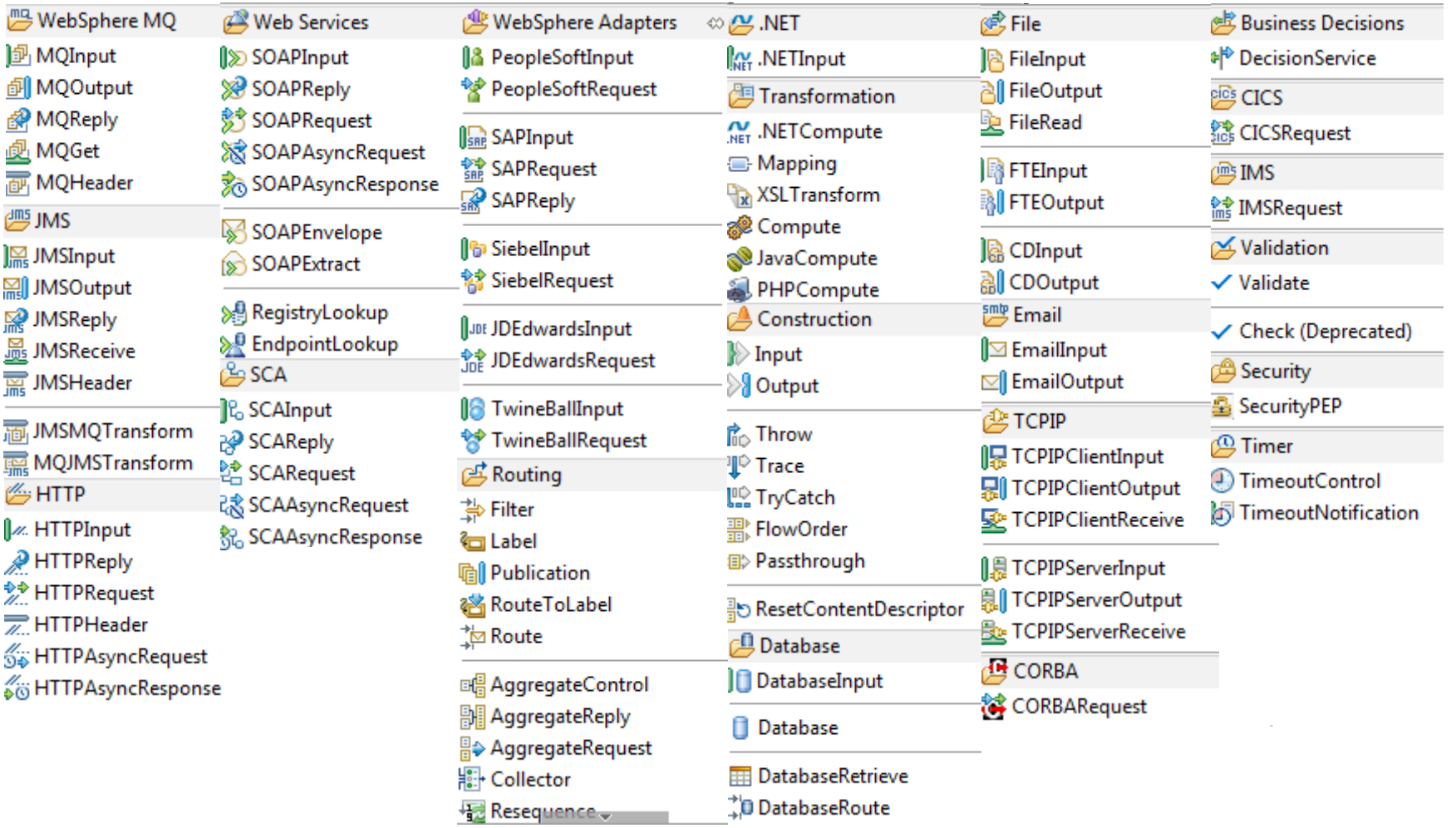
This sample has imported several integration data flows to demonstrate a coordinated request/reply scenario.

The integration data flows are grouped in **applications** and **library** as can be seen to the left.

Below is one of the **integration data flows** for this sample. It is a complete transaction.



Integration Flow Data Nodes



- **Many other nodes available as product extensions**
  - WebSphere TX, Tibco RV, VSAM, QSAM
- **Write your own User-Defined Nodes in C or Java…**
  - New https://github.com/ot4i GitHub repository; MQTT nodes

Powerful Message Transformation Options

Mapping

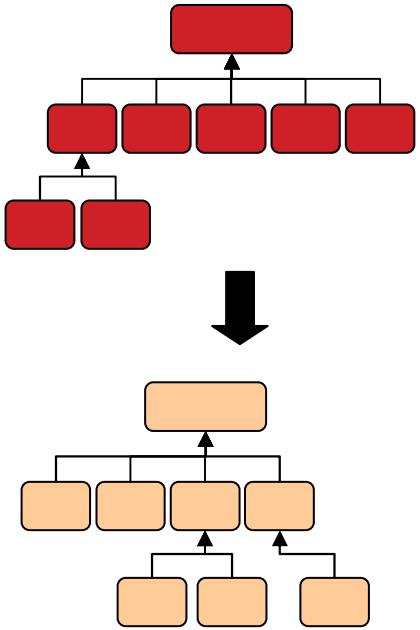
- Graphical, easy to use
- Drag and Drop fields, apply functions

Java Compute

- Embed Java programs
- Ability to use XPath for tree access

Compute

- Describe powerful transformations quickly
- Uses SQL-based language (ESQL)



XSL Transform

- Convert XML to anything
- Uses standard XSL Style sheets

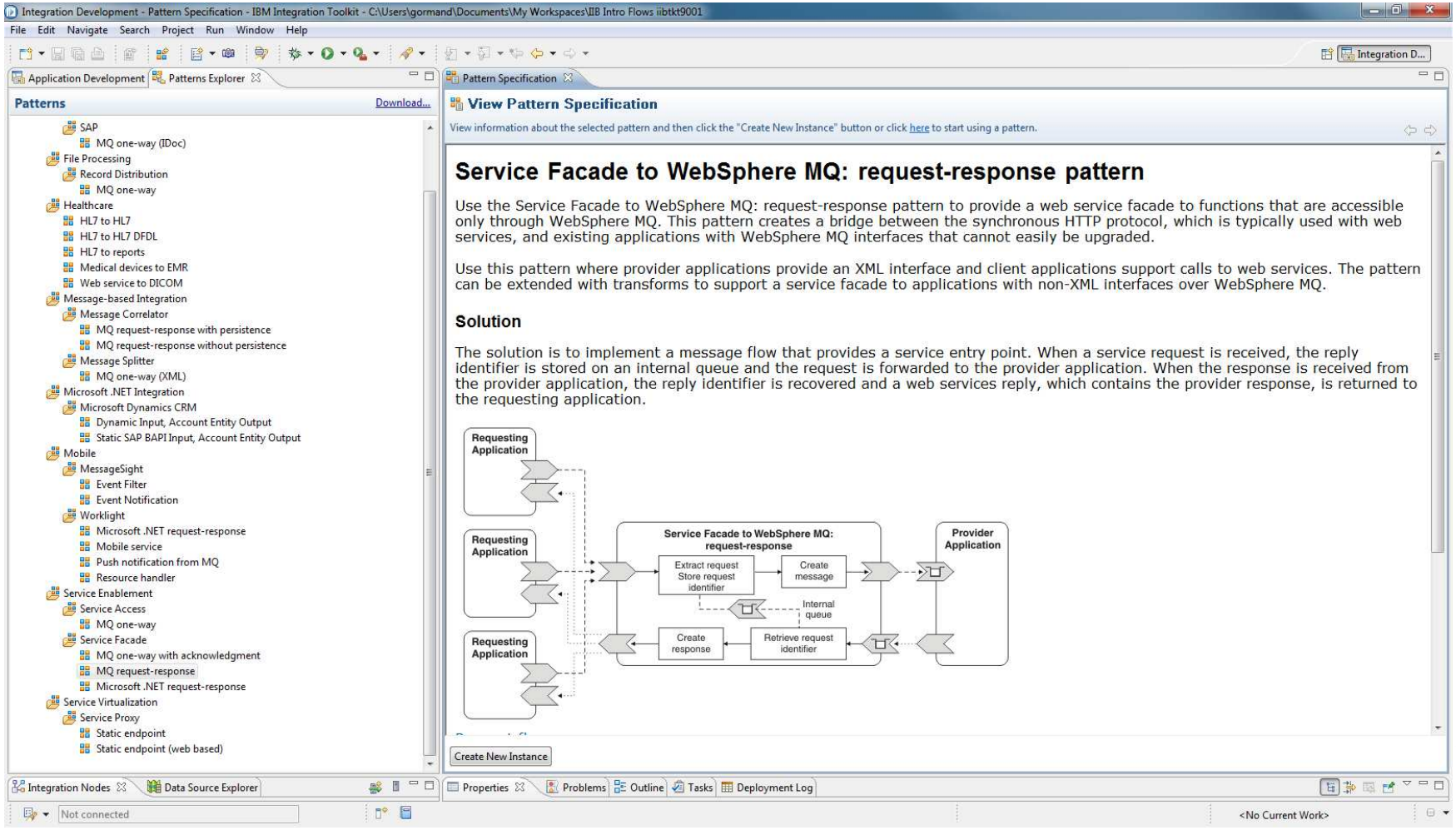
PHP Compute

- Transform using PHP scripts
- PHP 5.2 compliant

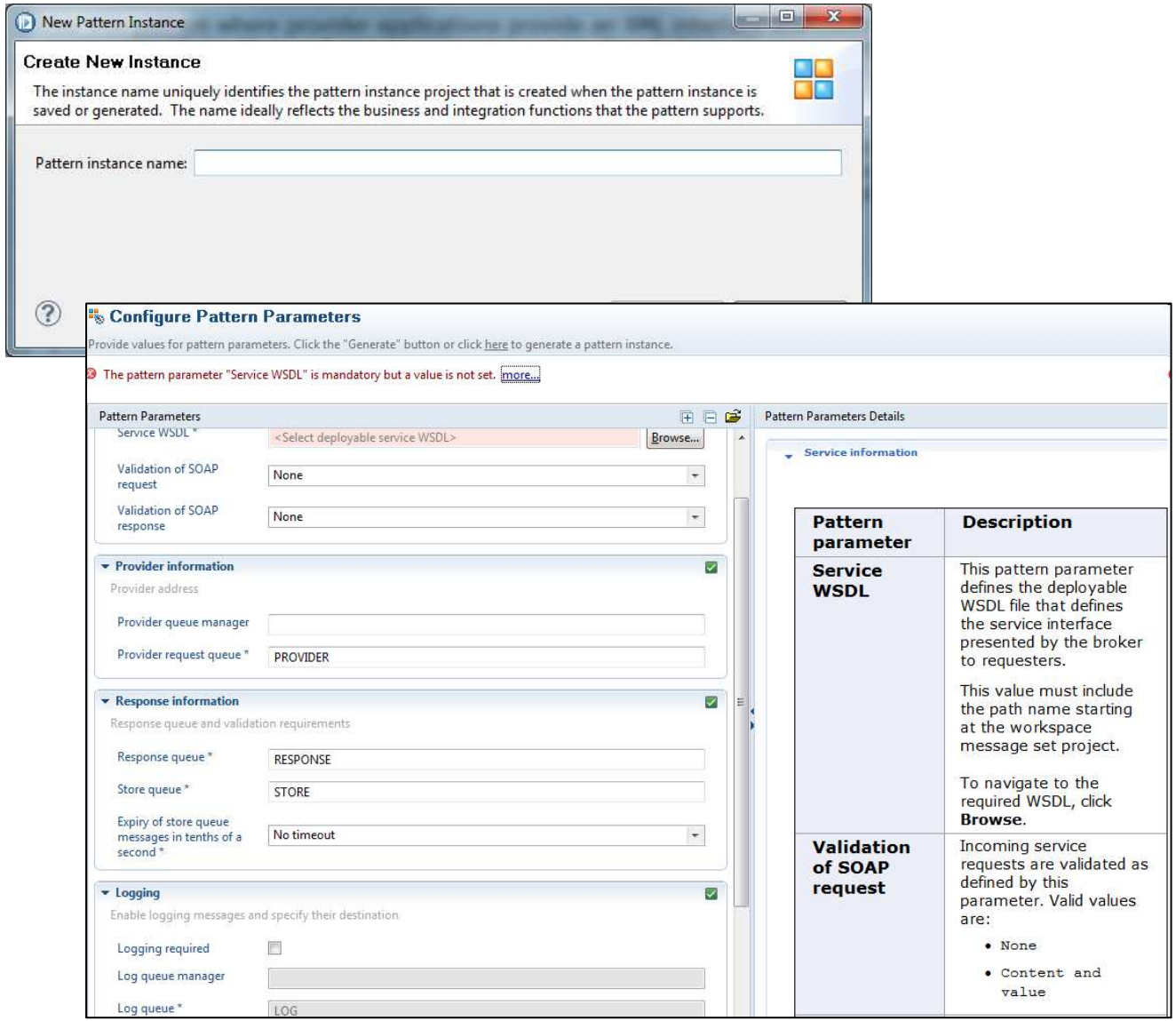
.NETCompute

- Use any of the 40+ .NET languages (e.g. C#, VB.NET)
- Access COM objects

Integration Patterns



Generate Pattern Instances

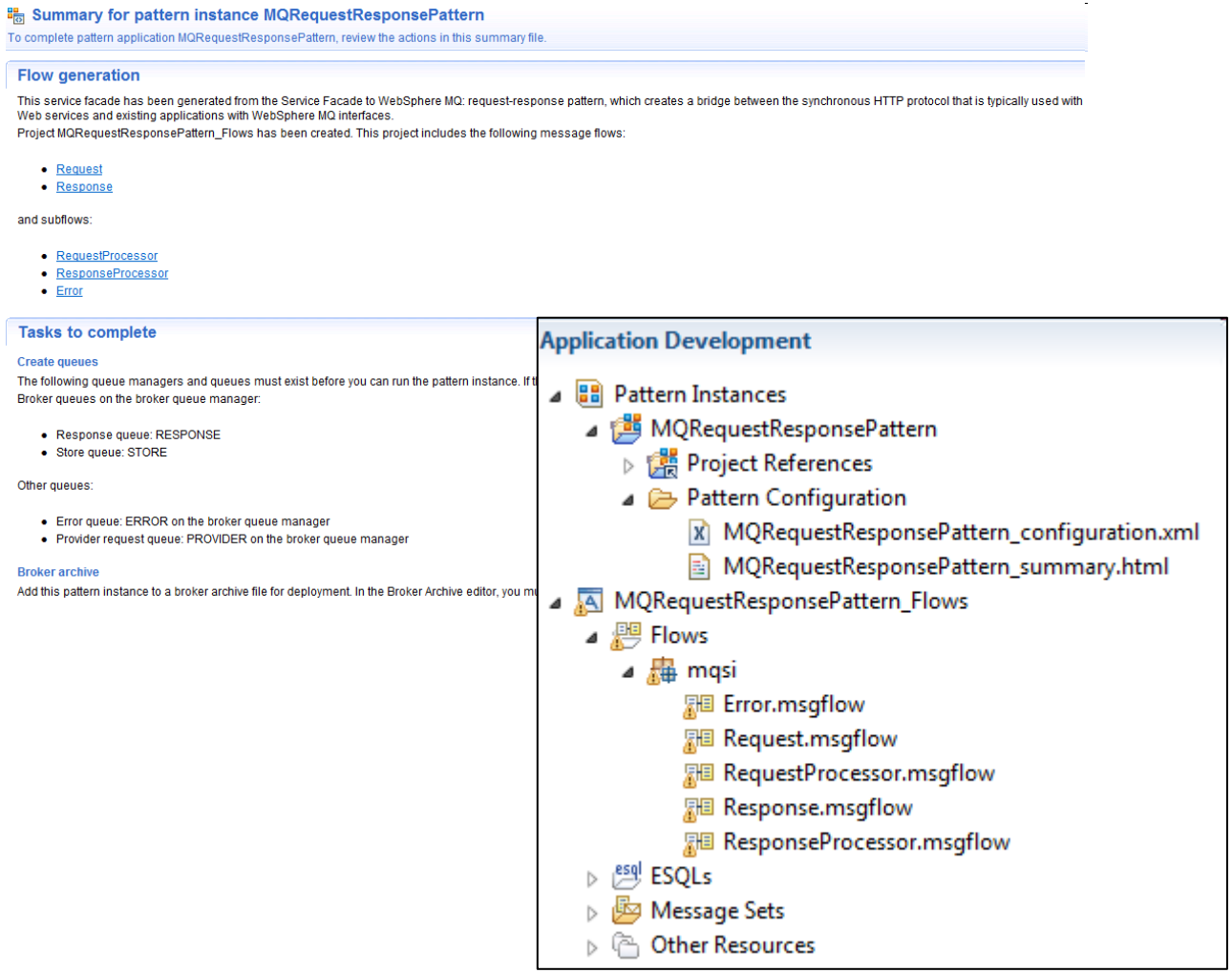


Generate data flows based on patterns which define best practice.

Properties allow the pattern instance to be customised.

User-Defined patterns can be authored and distributed to other developers to enforce best practices.

Pattern Artefacts



Integration Data Flows are generated in the pattern instance.

They are ready to be deployed to the integration server runtime.

Any tasks required to run the data flows are listed, such as creating MQ Queues.

Services

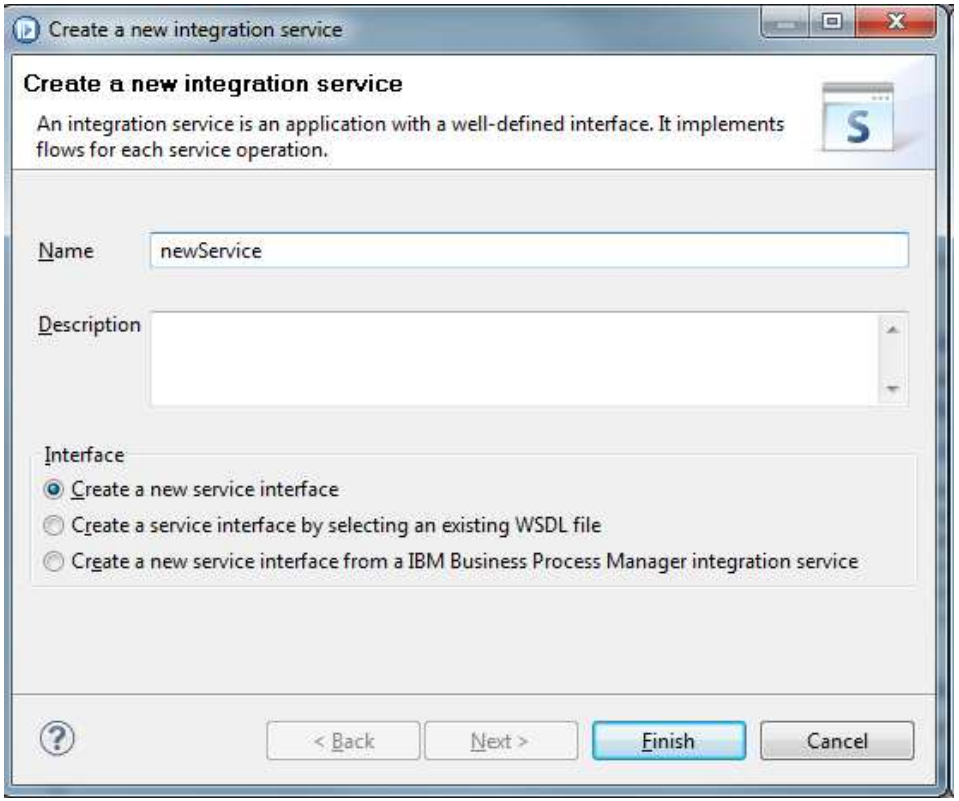
- Within IIB, easily create new services that have a well defined interface and structure:
  - A whole new service from scratch including the associated WSDL and integration data flow.
  - A service including the integration data flows, from an existing WSDL file.
  - A service, including the integration data flows, from an existing IBM BPM service.
  - A service based on an existing database.
  - A service based on an existing MQ queue manager and queue definition.

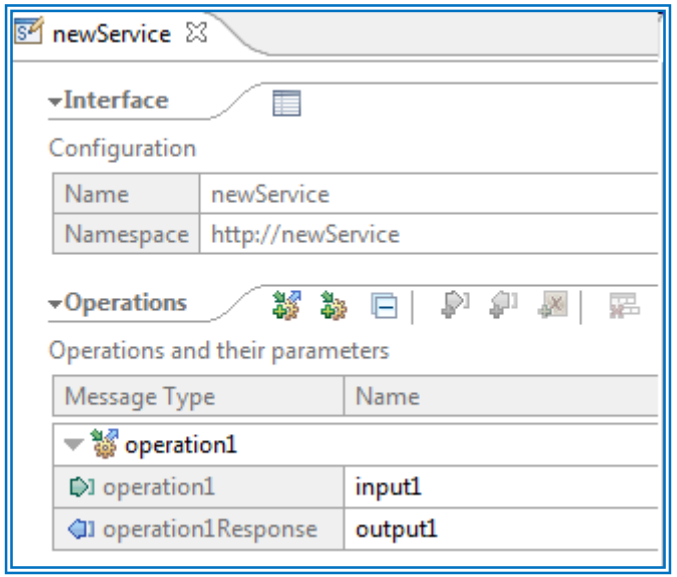
Creating a new Service

Start by creating an integration service

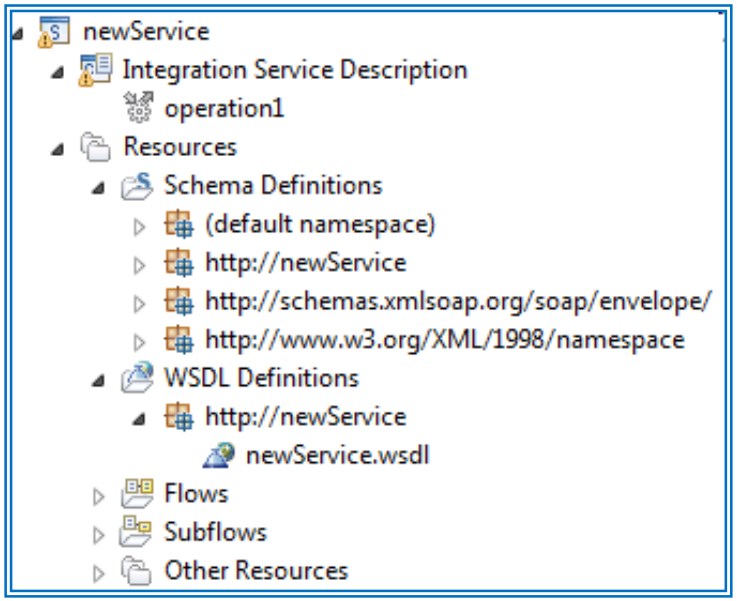
An **Integration Service** is an application with a well-defined interface and structure. Like an application, it is a container for resources required to create a Web Services solution. These resources provide the implementation of the interface with specified operations that you implement as separate message subflows. You can deploy a service. A web service consumer can interrogate the deployed service to return its interface. Collapse

Use the wizard to create a brand new service.



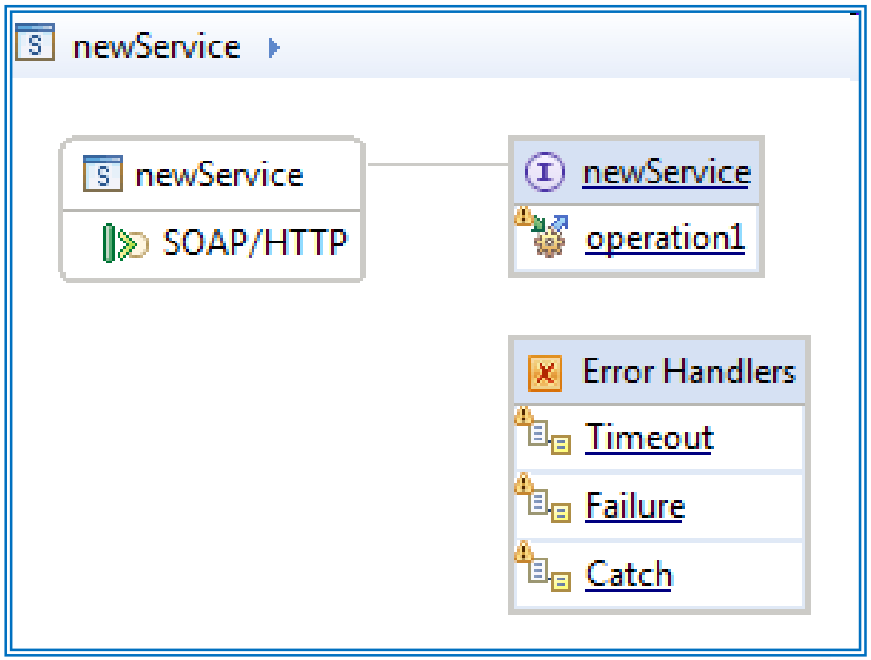


Service Artefacts



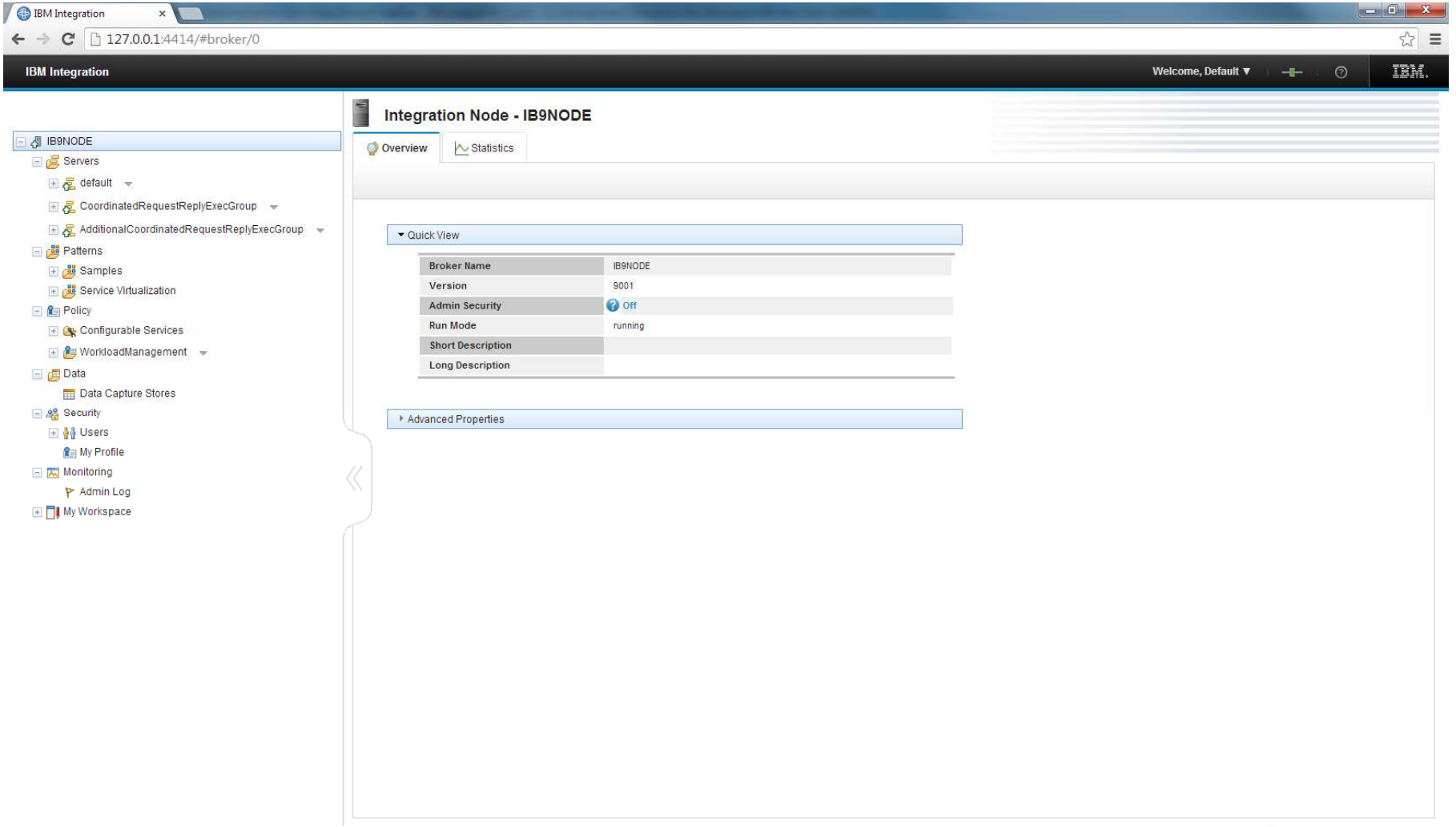
All artefacts are created for the new service, including the WSDL and a SOAP based flow.

A subflow is included for the operation and error handlers which the developer can then update.



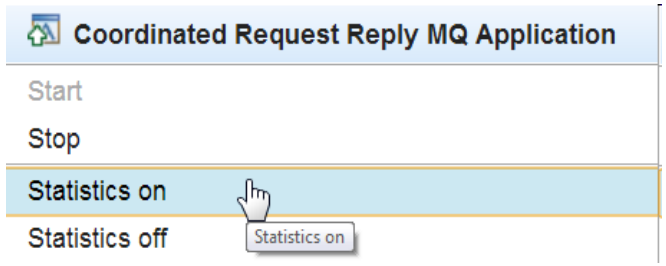
Administration

Administration using the WebUI



View runtime statistics using the WebUI

- Using the WebUI in Integration Bus v9:
  - Control statistics at all levels
  - Easily view and compare flows, helping to understand which are processing the most messages or have the highest elapsed time
  - Easily view and compare nodes, helping to understand which have the highest CPU or elapsed times.
  - View all statistics metrics available for each flow
  - View historical flow data

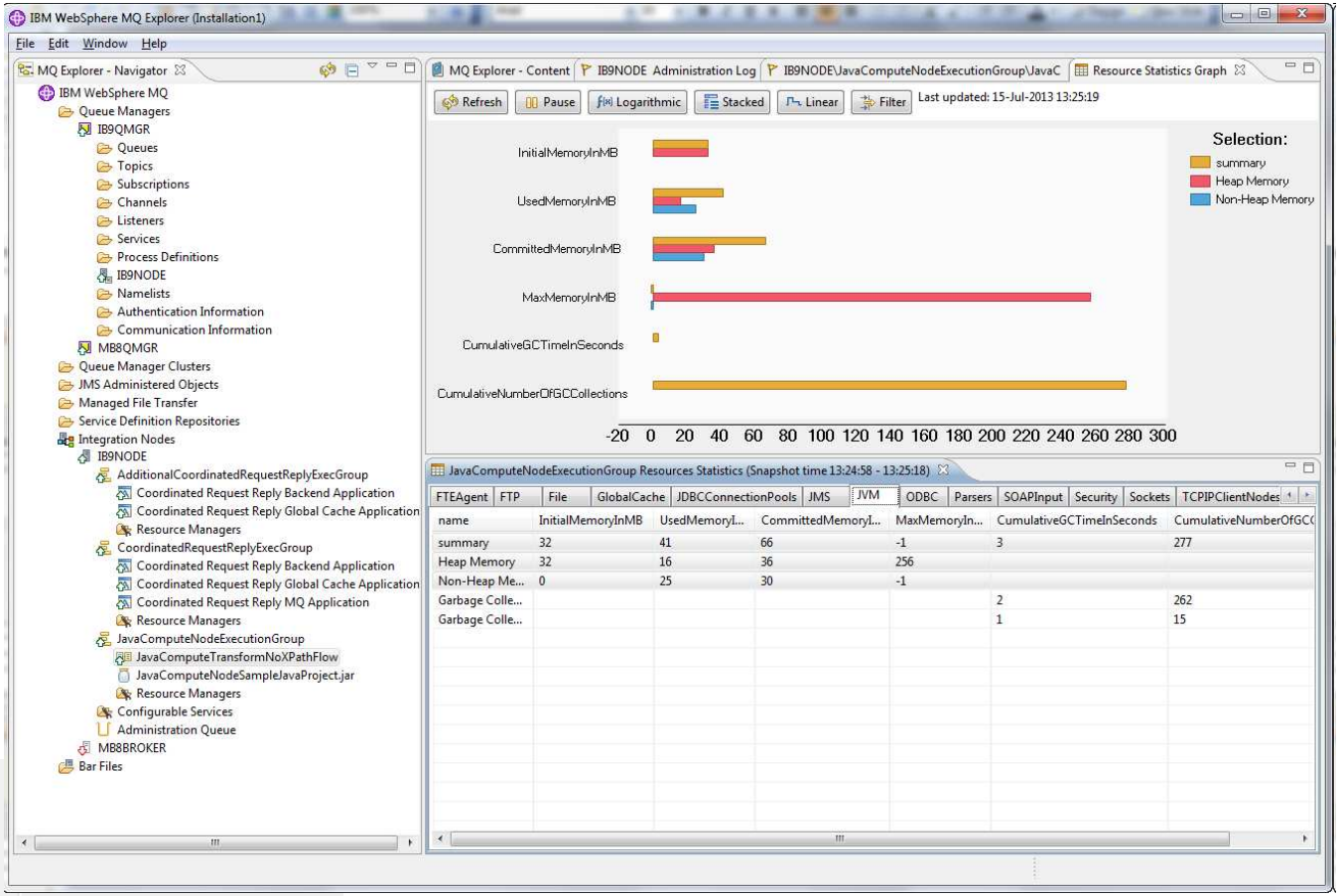


Throughput per message flow for last 15 seconds. Last updated at 09:50:29 GMT Daylight Time.

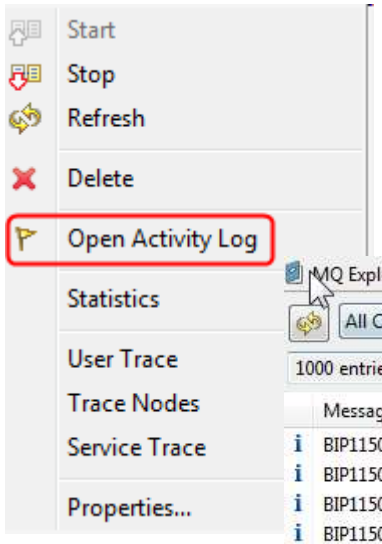
Flow name	Message Rate (messages/s)	Average Elapsed Time/ Invocation (ms)	Average CPU Time/ Invocation (ms)
Request	1.00	4.4	0.8
Reply	1.00	3.9	0.5
BackendReplyApp	1.00	1,001.7	1.1

IB Explorer & Resource Statistics

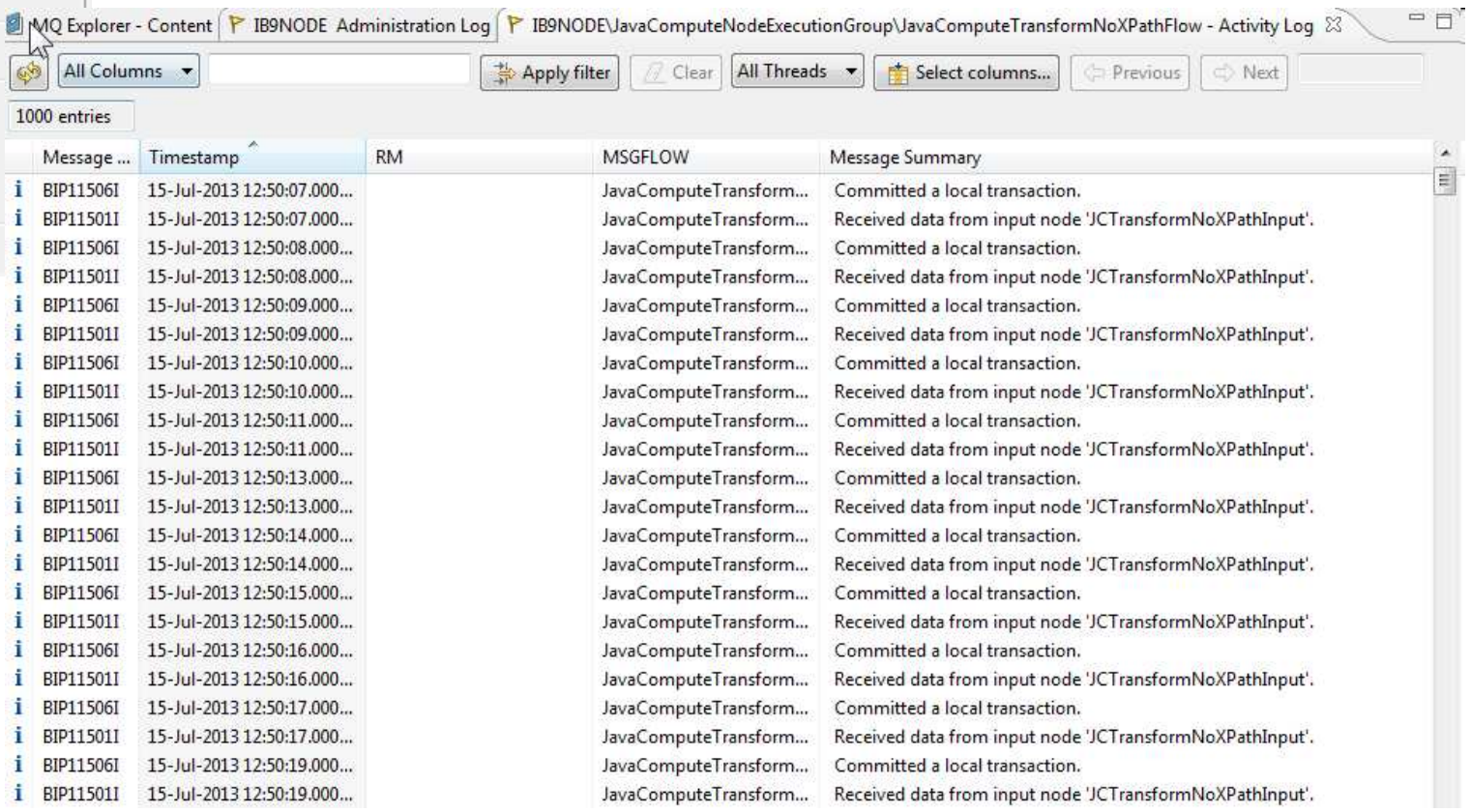
- View resource statistics for resource managers in IIB such as JVM, ODBC, JDBC etc



Integration Bus Explorer & Activity Log

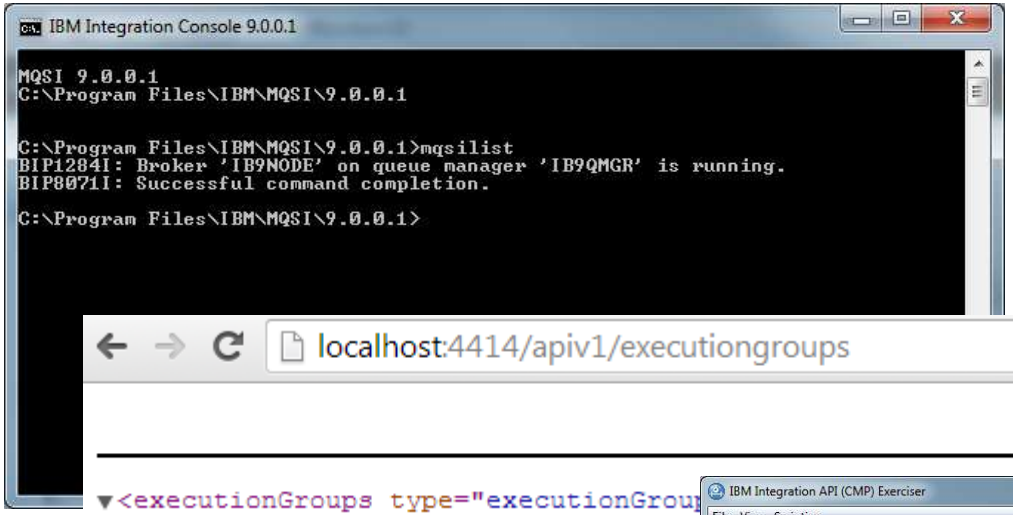


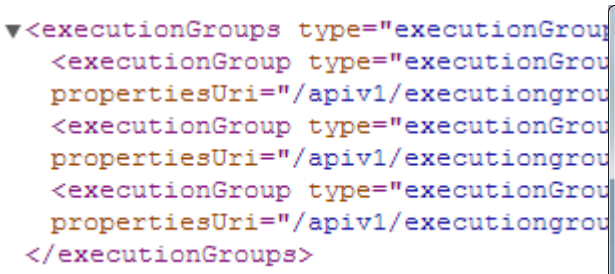
- View activity as it happens using explorer
- Filter by resource managers

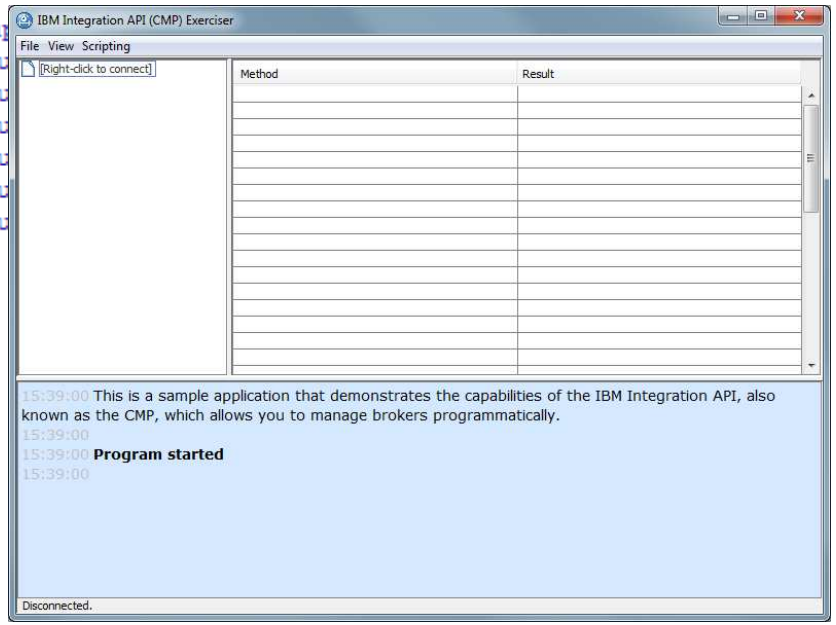


Message ...	Timestamp	RM	MSGFLOW	Message Summary
BIP11506I	15-Jul-2013 12:50:07.000...		JavaComputeTransform...	Committed a local transaction.
BIP11501I	15-Jul-2013 12:50:07.000...		JavaComputeTransform...	Received data from input node 'JCTransformNoXPathInput'.
BIP11506I	15-Jul-2013 12:50:08.000...		JavaComputeTransform...	Committed a local transaction.
BIP11501I	15-Jul-2013 12:50:08.000...		JavaComputeTransform...	Received data from input node 'JCTransformNoXPathInput'.
BIP11506I	15-Jul-2013 12:50:09.000...		JavaComputeTransform...	Committed a local transaction.
BIP11501I	15-Jul-2013 12:50:09.000...		JavaComputeTransform...	Received data from input node 'JCTransformNoXPathInput'.
BIP11506I	15-Jul-2013 12:50:10.000...		JavaComputeTransform...	Committed a local transaction.
BIP11501I	15-Jul-2013 12:50:10.000...		JavaComputeTransform...	Received data from input node 'JCTransformNoXPathInput'.
BIP11506I	15-Jul-2013 12:50:11.000...		JavaComputeTransform...	Committed a local transaction.
BIP11501I	15-Jul-2013 12:50:11.000...		JavaComputeTransform...	Received data from input node 'JCTransformNoXPathInput'.
BIP11506I	15-Jul-2013 12:50:13.000...		JavaComputeTransform...	Committed a local transaction.
BIP11501I	15-Jul-2013 12:50:13.000...		JavaComputeTransform...	Received data from input node 'JCTransformNoXPathInput'.
BIP11506I	15-Jul-2013 12:50:14.000...		JavaComputeTransform...	Committed a local transaction.
BIP11501I	15-Jul-2013 12:50:14.000...		JavaComputeTransform...	Received data from input node 'JCTransformNoXPathInput'.
BIP11506I	15-Jul-2013 12:50:15.000...		JavaComputeTransform...	Committed a local transaction.
BIP11501I	15-Jul-2013 12:50:15.000...		JavaComputeTransform...	Received data from input node 'JCTransformNoXPathInput'.
BIP11506I	15-Jul-2013 12:50:16.000...		JavaComputeTransform...	Committed a local transaction.
BIP11501I	15-Jul-2013 12:50:16.000...		JavaComputeTransform...	Received data from input node 'JCTransformNoXPathInput'.
BIP11506I	15-Jul-2013 12:50:17.000...		JavaComputeTransform...	Committed a local transaction.
BIP11501I	15-Jul-2013 12:50:17.000...		JavaComputeTransform...	Received data from input node 'JCTransformNoXPathInput'.
BIP11506I	15-Jul-2013 12:50:19.000...		JavaComputeTransform...	Committed a local transaction.
BIP11501I	15-Jul-2013 12:50:19.000...		JavaComputeTransform...	Received data from input node 'JCTransformNoXPathInput'.

Other forms of administration







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2. REST interface
3. CMP Java API.

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This was session 15020 - The rest of the week ……

	Monday	Tuesday	Wednesday	Thursday	Friday
08:00			What's Available in MQ and Broker for High Availability and Disaster Recovery?	Best Practices in Enhancing our Security with WebSphere MQ	MQ & CICS Workload Balancing in a 'Plexed' World
09:30				What's Wrong with MQ?	
11:00	The Dark Side of Monitoring MQ - SMF 115 and 116 Record Reading and Interpretation			IIIB - Internals of IBM Integration Bus	
12:15				Hands-on Labs for MQ - Take Your Pick!	
01:30		What's New in the MQ Family	MQ on z/OS – Vivisection	MQ Clustering - The Basics, Advances and What's New	
03:00	Introduction to MQ		WebSphere MQ CHINIT Internals	Using IBM WebSphere Application Server and IBM WebSphere MQ Together	
04:30	First Steps with IBM Integration Bus: Application Integration in the new world	What's New in IBM Integration Bus & WebSphere Message Broker	MQ & DB2 – MQ Verbs in DB2 & InfoSphere Data Replication (Q Replication) Performance	MQ Parallel Sysplex Exploitation, Getting the Best Availability From MQ on z/OS by Using Shared Queues	

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