What's new in IBM Integration Bus V10

Dave Gorman : IBM Integration Bus Performance

Session 17042

#SHAREorg

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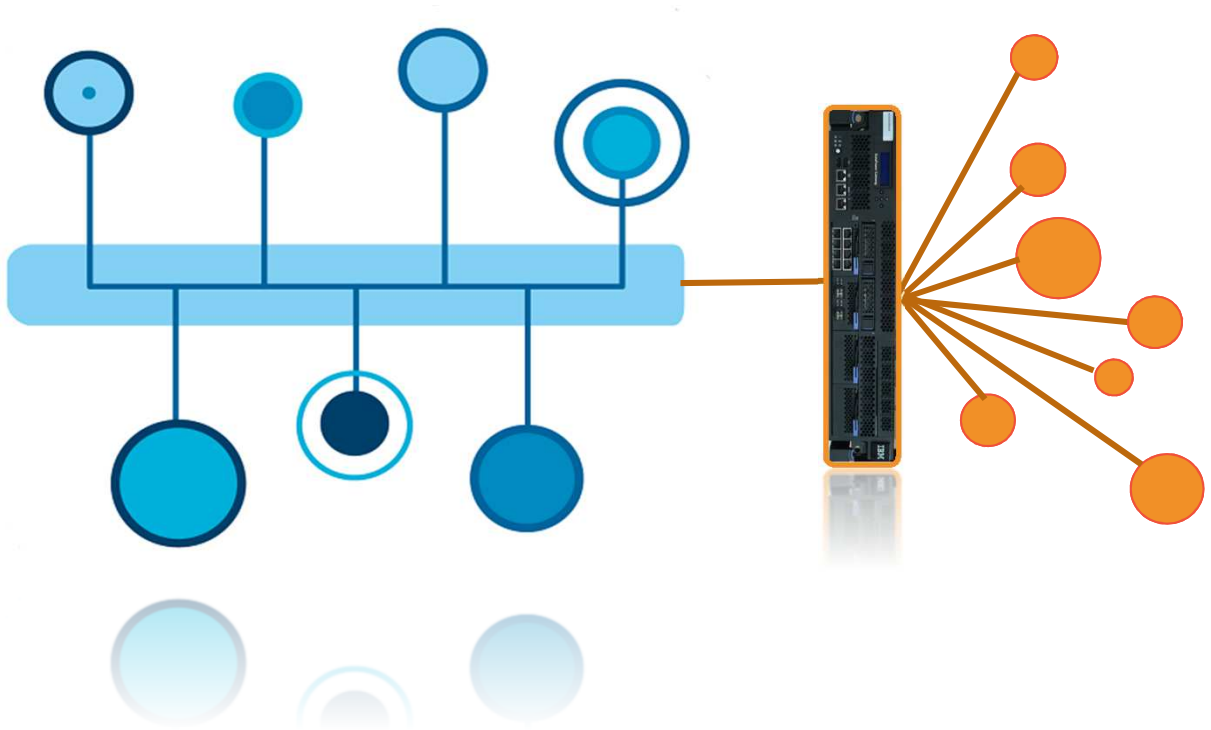
SHARE in Seattle 2015

IBM Integration Architecture

IBM Integration Bus

Provides heterogeneous connectivity across enterprise systems, applications and data



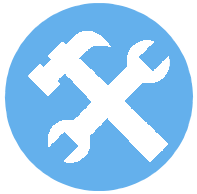
IBM DataPower Gateway

Protects business critical systems from harmful workloads and unauthorized users

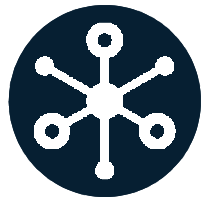
Why is IBM Integration Bus the market leader?

Scalability and Performance
High message volumes in complex IT environments

Ease of Use
Client choice of developer tools
Extensive open standards support

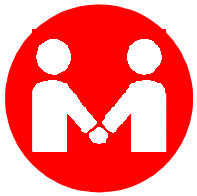


Connector Range
Large breadth of adapters, platforms and protocols

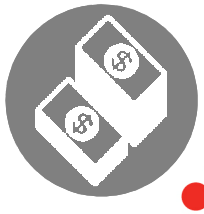


Multiple Editions
Different editions to suit different requirements and budgets

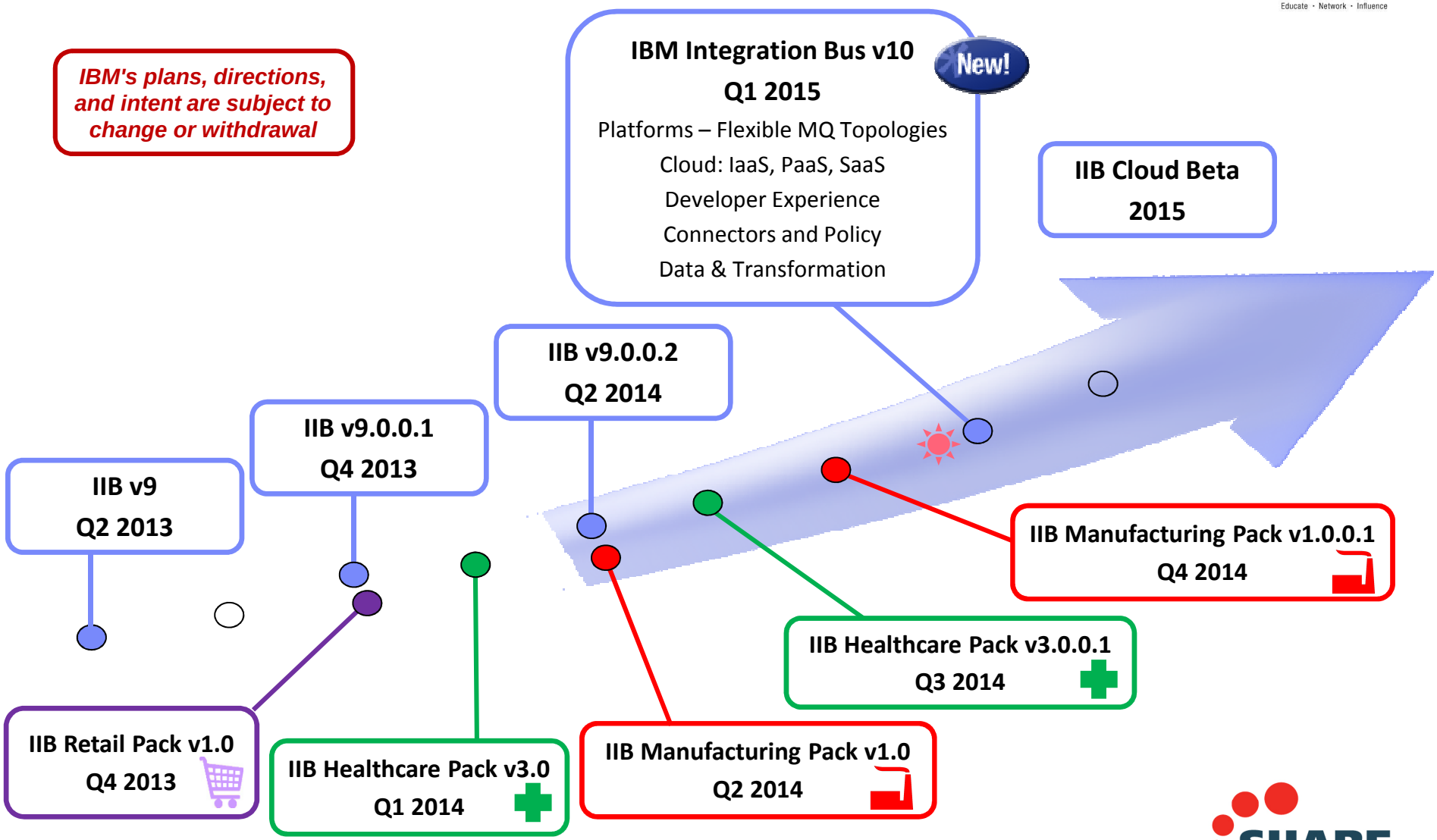
IBM Support
Over 4,000 certified specialists, extensive network of Business Partners and ISVs



Extended Value
:Built in features that simplify and extend value



IBM Integration Bus Roadmap



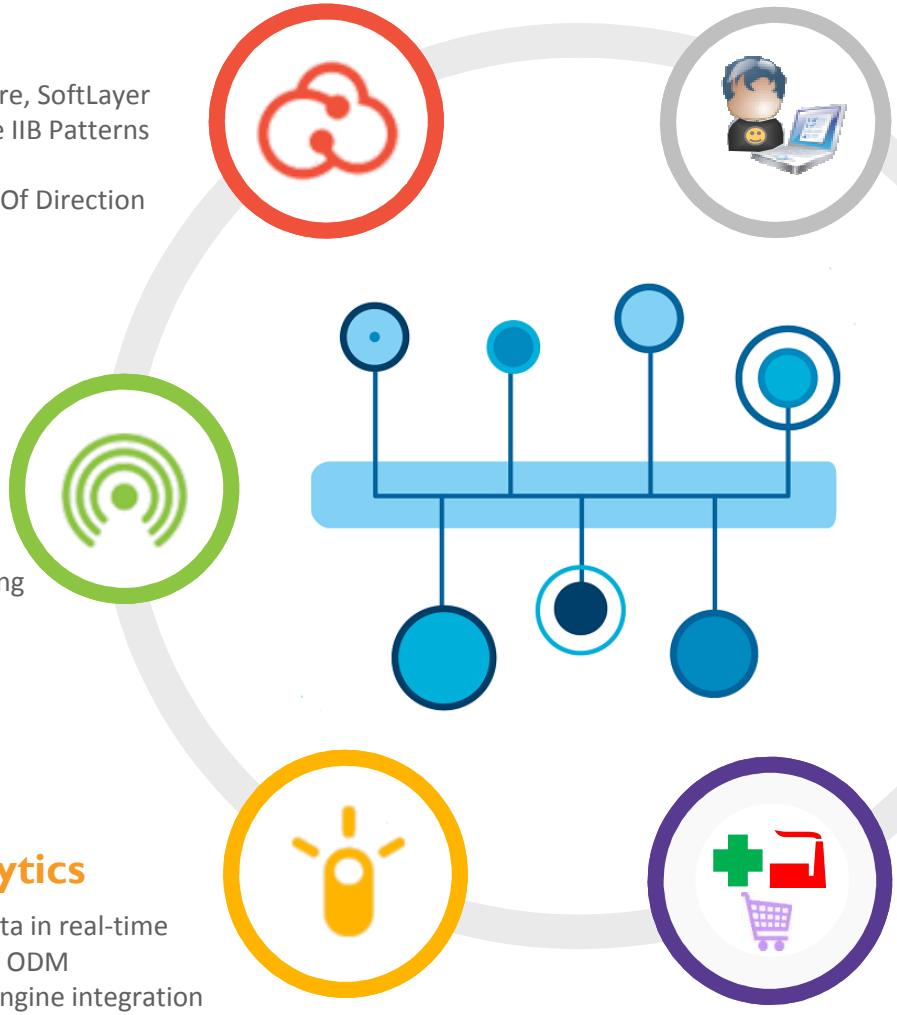
IBM Integration Bus v10 - At A Glance

Cloud

- Deploy on AWS, Azure, SoftLayer
- PureApp as a Service IIB Patterns
- CHEF scripts
- IIB Cloud Statement Of Direction

Open & Developer focussed

- Built in Unit Testing
- Integration Community
- Connector Framework
- GitHub Repos for Samples & Patterns



Mobile & APIs

- RESTful Services
- SaaS Java Acript APIs
- MQTT Connector
- GDM Schemaless Mapping

Platforms

- MQ Flexibility
- Single Package install
- Shared libraries
- Built-in unit testing

Analytics

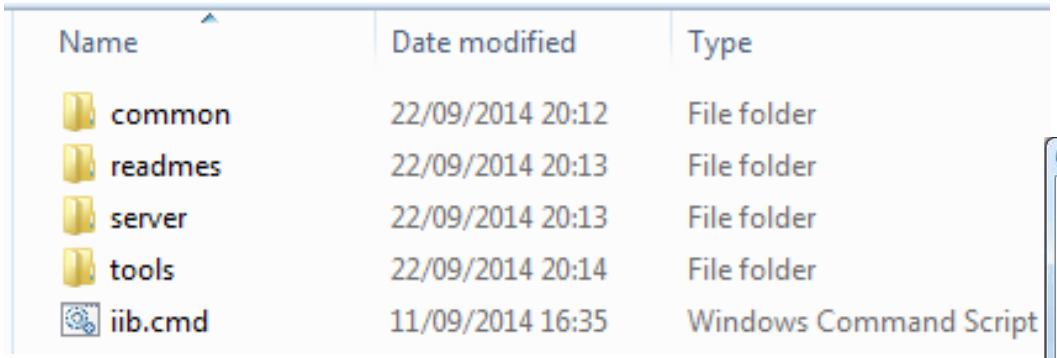
- Analyse data in real-time
- Embedded ODM
- Analytics engine integration

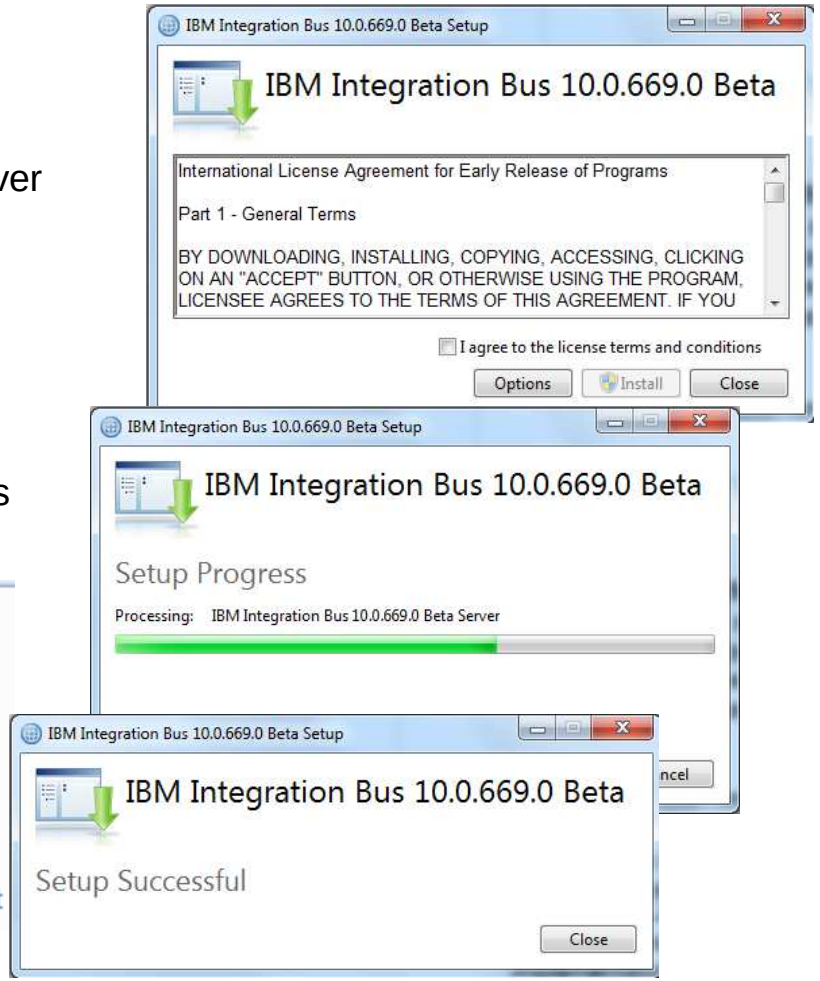
Industry

- Healthcare
- Retail
- Manufacturing

Simplified Provisioning and Install

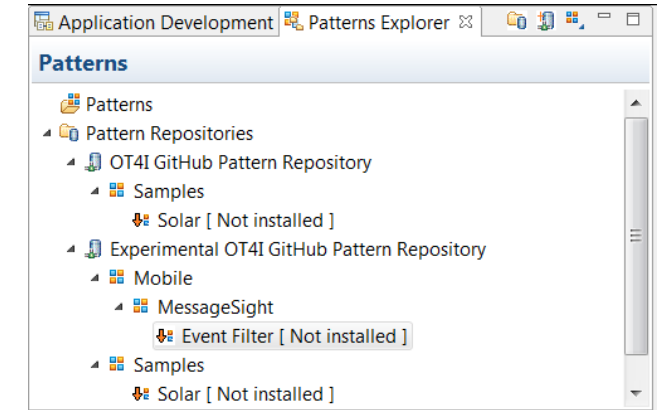
- **Radically Simplified Packaging and Installation**
  - Full function, simple, single package install
  - Developer Operating Systems contain Toolkit and Server
    - Total size approx. 1.3 GB
  - Server Operating Systems contain only server
- **Other changes**
  - Full entitlement to MQ remains
  - MQ no longer packaged
    - **Default** queue manager for IB node for backwards compatibility

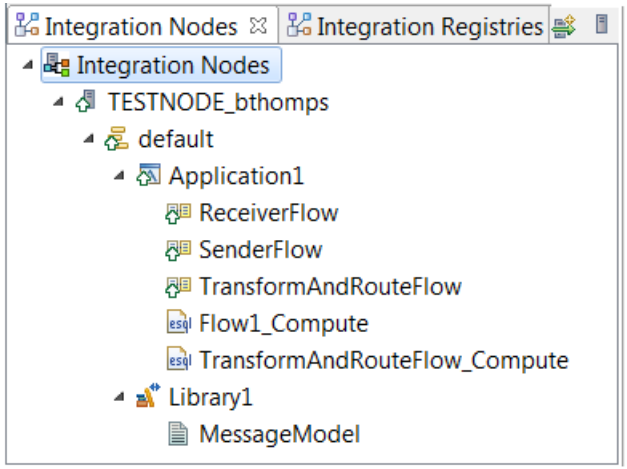


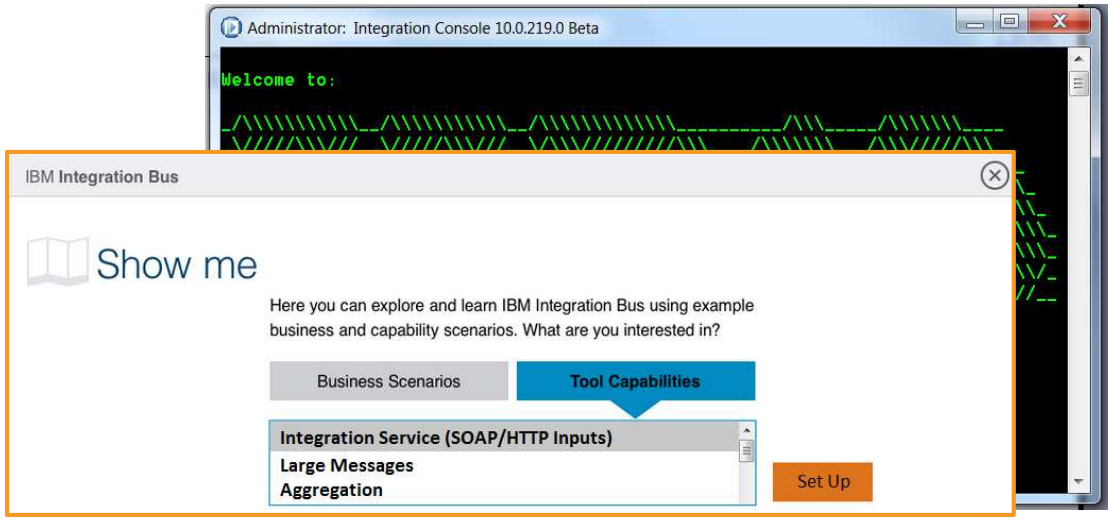


Radical Evolution of IIB Developer Experience

- **Patterns, Samples and Documentation**
  - These are now separately downloaded, as required
  - Allows in-version release of samples and patterns
  - Can be staged to local server
- **Built-in Unit Test Environment**
  - Developer tools have built-in unit test server
    - Fixed name of TESTNODE_<userid>
  - Started and stopped with tools
  - Can still test / deploy to manually created local and remote servers







A Broad range of supported Platforms & 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, developer OS and server OS
    - 32 bit Windows and 32 bit Linux no longer supported
  - Express, Standard and Advanced editions make IIB applicable for all solutions and budgets

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

- **Technology components and pre-requisites**
  - Java 7.1 SR2 on all platforms
  - MQ is no longer required (depending on use case – see later slide)
  - MQ is still fully supported
  - MQ 7.1, MQ 7.5, MQ v8

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WebSphere MQ

- **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

Flexible MQ Topologies

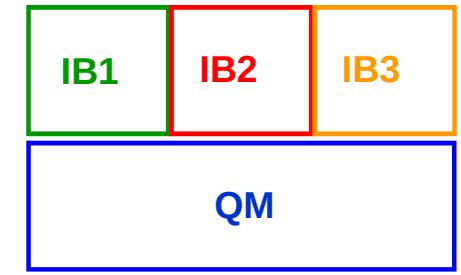
- **Provide more flexible topology options for MQ access**
  - Many benefits include simplicity, scalability, availability & migration
  - Relationship evolves to the same as other resource managers – i.e. optional
  - Multiple Buses connected to a single Queue Manager
  - Corresponding updates for commands, CMP & Admin tools

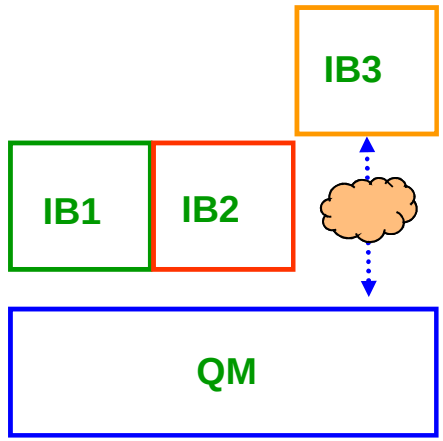
- **Automated installation simplified**
  - MQ resources will not be installed at the same time
  - Reduces dependency management
  - Simplifies cloud-based installs
  - If MQ is installed, then IIB will detect this and configure appropriately

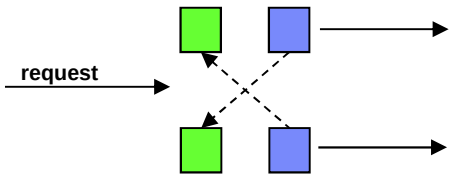
- **IB now supports Local and Remote queue managers**
  - Allows IB to be remote from its queue manager
  - Works with single MQ IB support to further simplify MQ topology
  - Many other internal features within IB can exploit this flexibility

- **Many MQ Node related Enhancements**
  - Input node to support both local & remote queue managers
    - Includes easy-change policy based control of sources
    - Also applies to MQGet and MQOutput/MQReply nodes

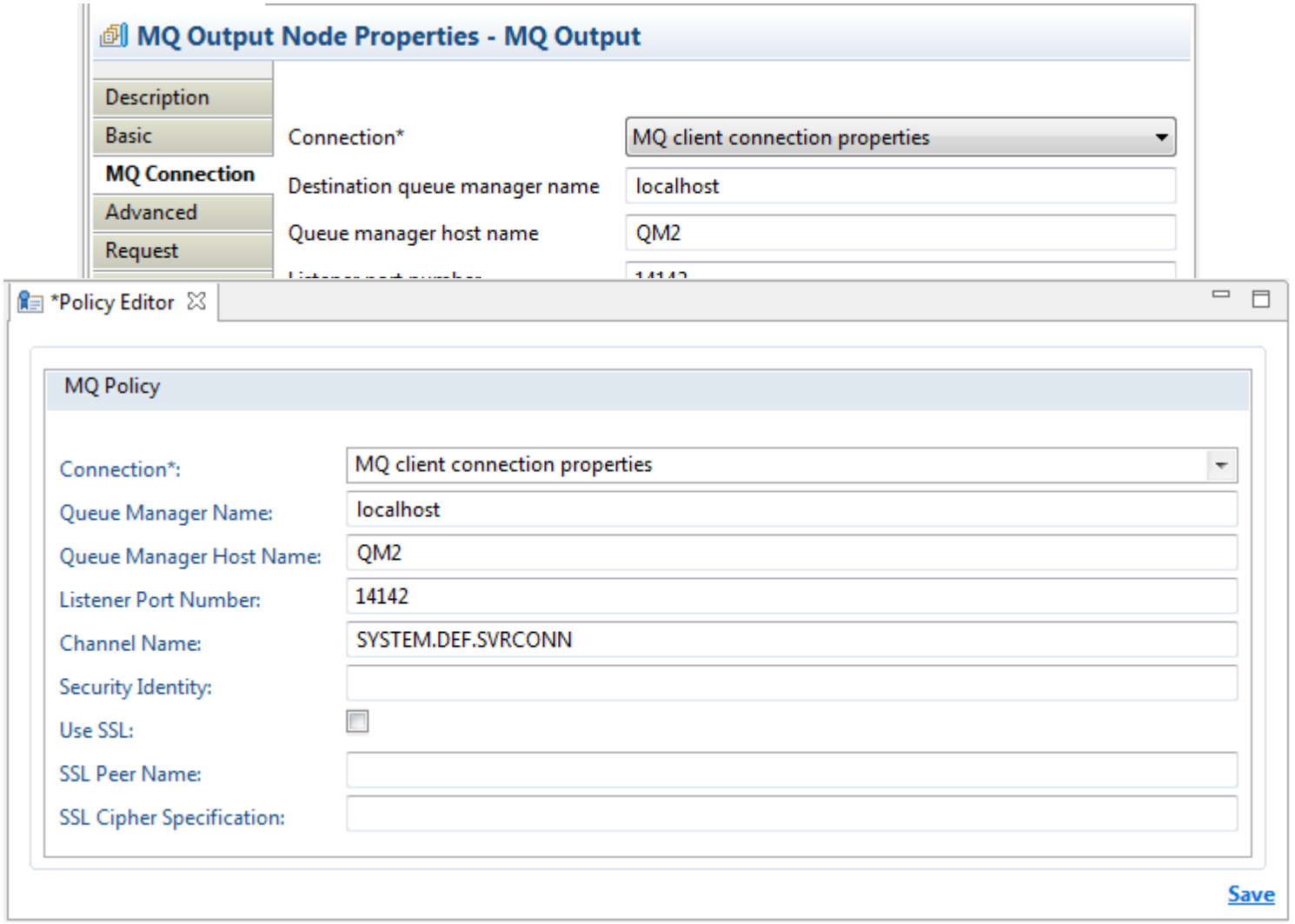
- **When a queue manager is not available…**
  - Connection management and retry



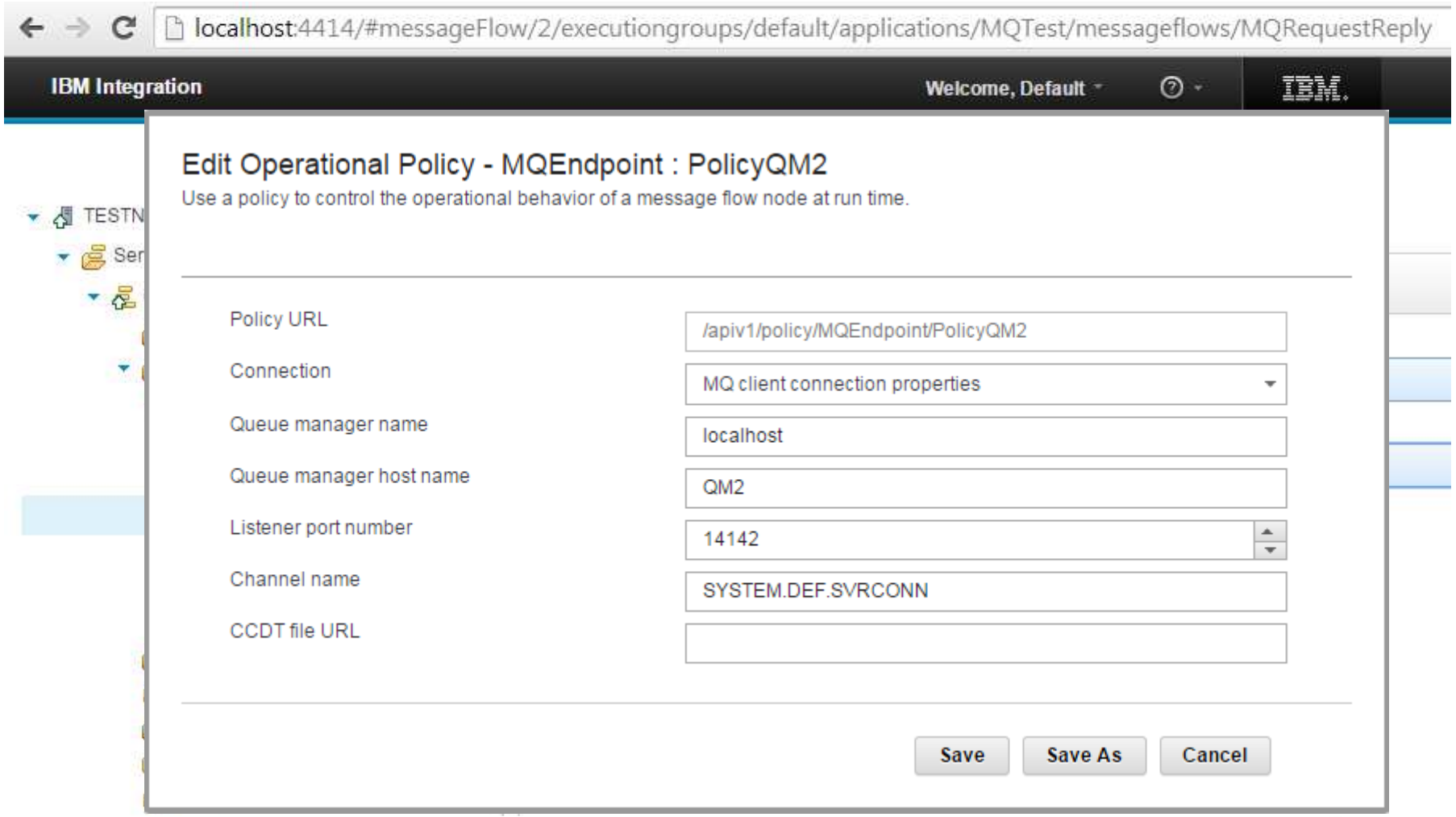




MQ Nodes, MQ Policy and MQ Changes!

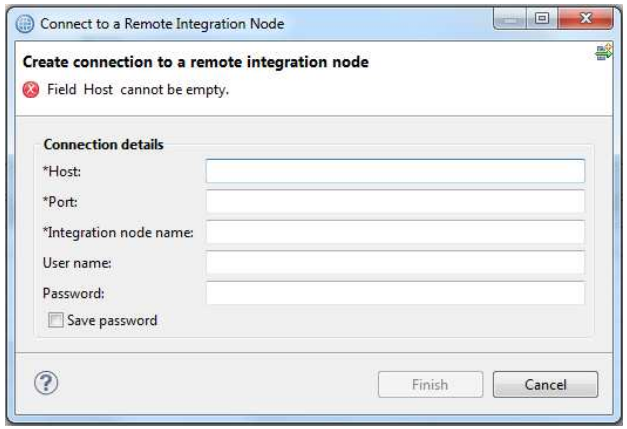


Policy in the IIB Web UI



MQ - Other Important Considerations

- **Administration and Security**
  - IIBv9 relies on access Control Lists held as permissions on MQ queue objects
  - IIBv10 will offer a file-based equivalent out of the box
  - `mqsichangeauthmode` command to select queue or file based



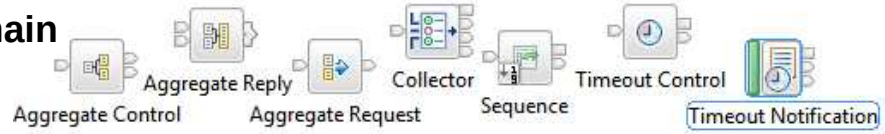
- **Publish Subscribe**
  - Alternative embedded MQTT based capability
  - Still publish to a default queue manager via MQ if provided
  - No extra install or moving parts required
  - Resource Statistics continue to work without MQ

- **IIB Integration API**
  - Admin interface changed to use Web Sockets, not MQ
  - New Java class for describing the connection
  - Web admin port provides single entry point, consolidated security model

- **High Availability**
  - An Integration Node can be controlled as an MQ Service
  - More Active/Active architectures now Node and Queue Manager link no longer required

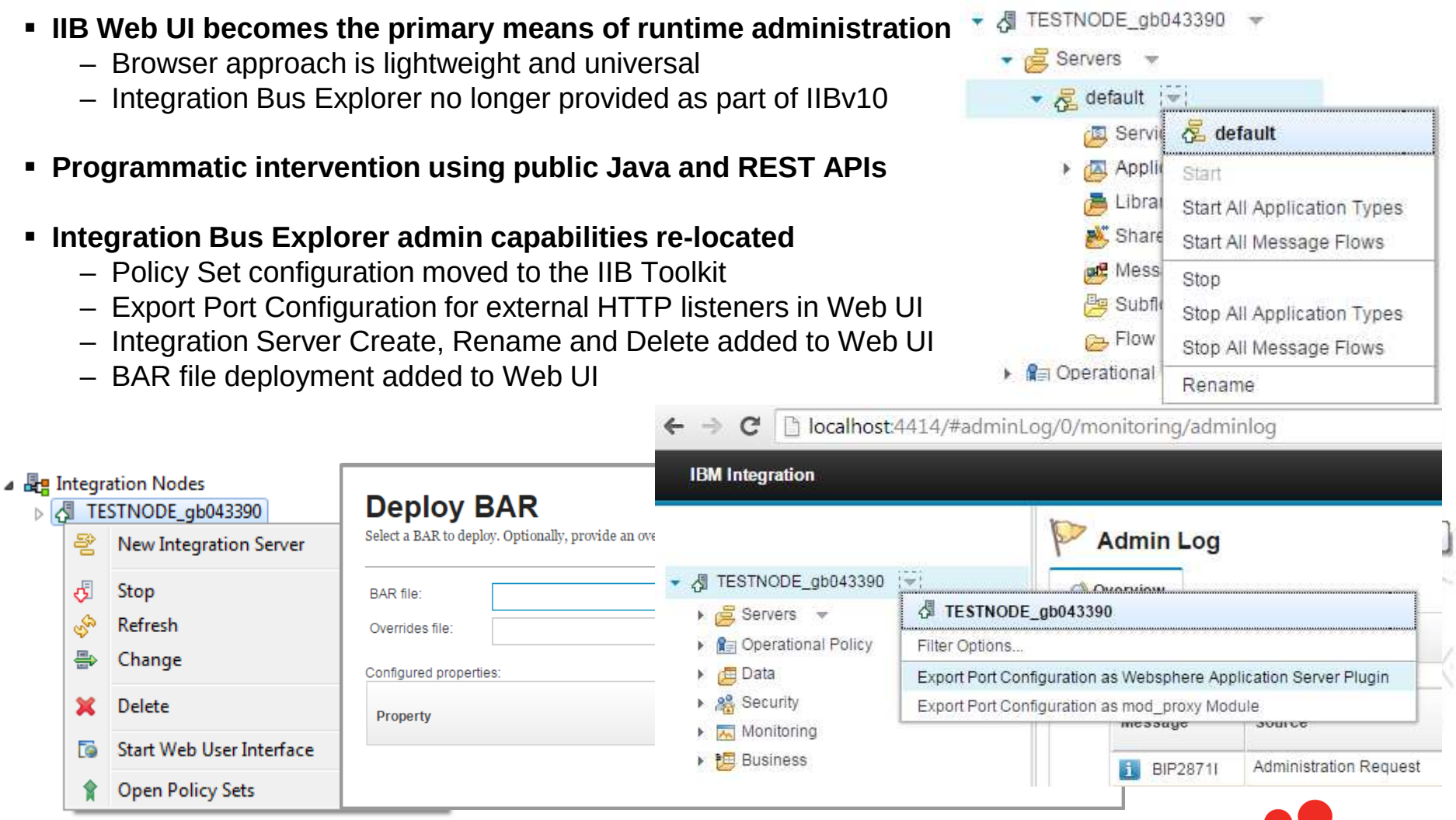
- **Transactionality**
  - IIB can manage transactions, or use MQ to provide two-phase (XA) coordination
  - IIB managed transactions will continue to support all resource managers
  - Global 2PC provided by MQ (distributed) will continue to be supported.
  - Coordinating Queue Manager must be local, and designated as the only MQ resource

- **Some WebSphere MQ uses still remain**
  - Record & Replay
  - EDA nodes
  - Script provided to optionally create required MQ objects



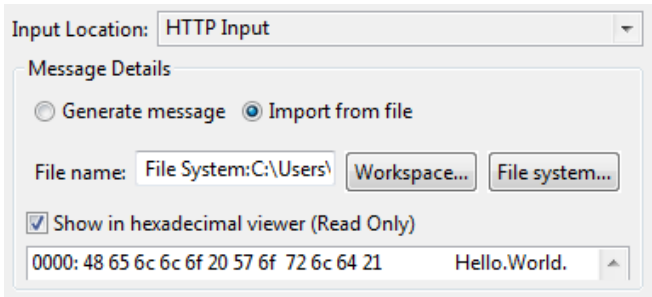
Web UI Administration Improvements

- **IIB Web UI becomes the primary means of runtime administration**
  - Browser approach is lightweight and universal
  - Integration Bus Explorer no longer provided as part of IIBv10
- **Programmatic intervention using public Java and REST APIs**
- **Integration Bus Explorer admin capabilities re-located**
  - Policy Set configuration moved to the IIB Toolkit
  - Export Port Configuration for external HTTP listeners in Web UI
  - Integration Server Create, Rename and Delete added to Web UI
  - BAR file deployment added to Web UI

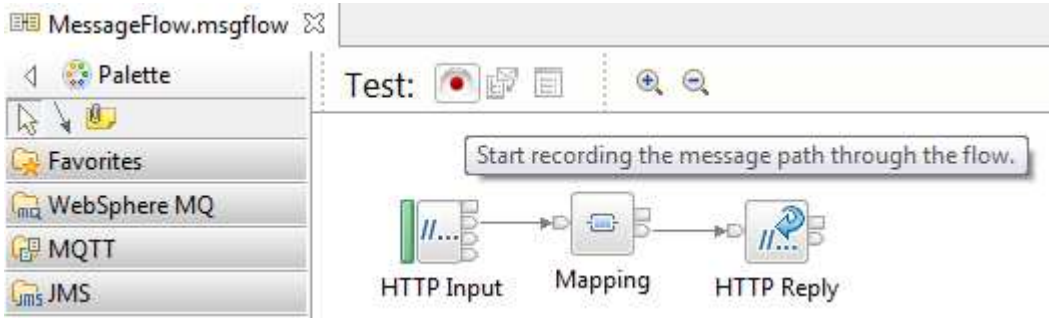


Unit Test and Regression Test

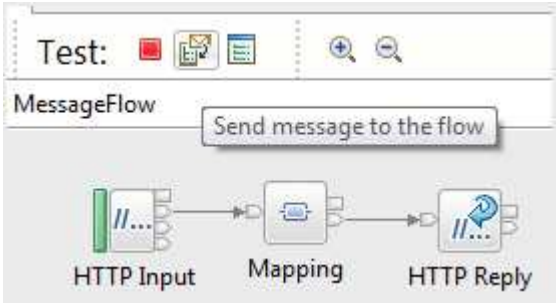
- **Improved Facilities for Unit Test and Regression Test**
  - Simple to understand
  - Fix and re-factor behaviour during development
  - Use to verify flow behaviours and migration
  - Continuous Integration with regression test
  - Invoke using Toolkit or via REST / JSON API



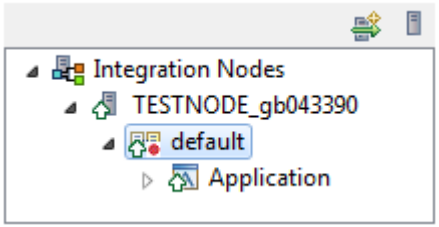
- **Client and direct injection options**
  - Import, view and edit test data
  - Inject messages over transports
  - Capture mock inputs for later replay
  - .ibtest client still supported but hidden
  - Build regression suites from test cases



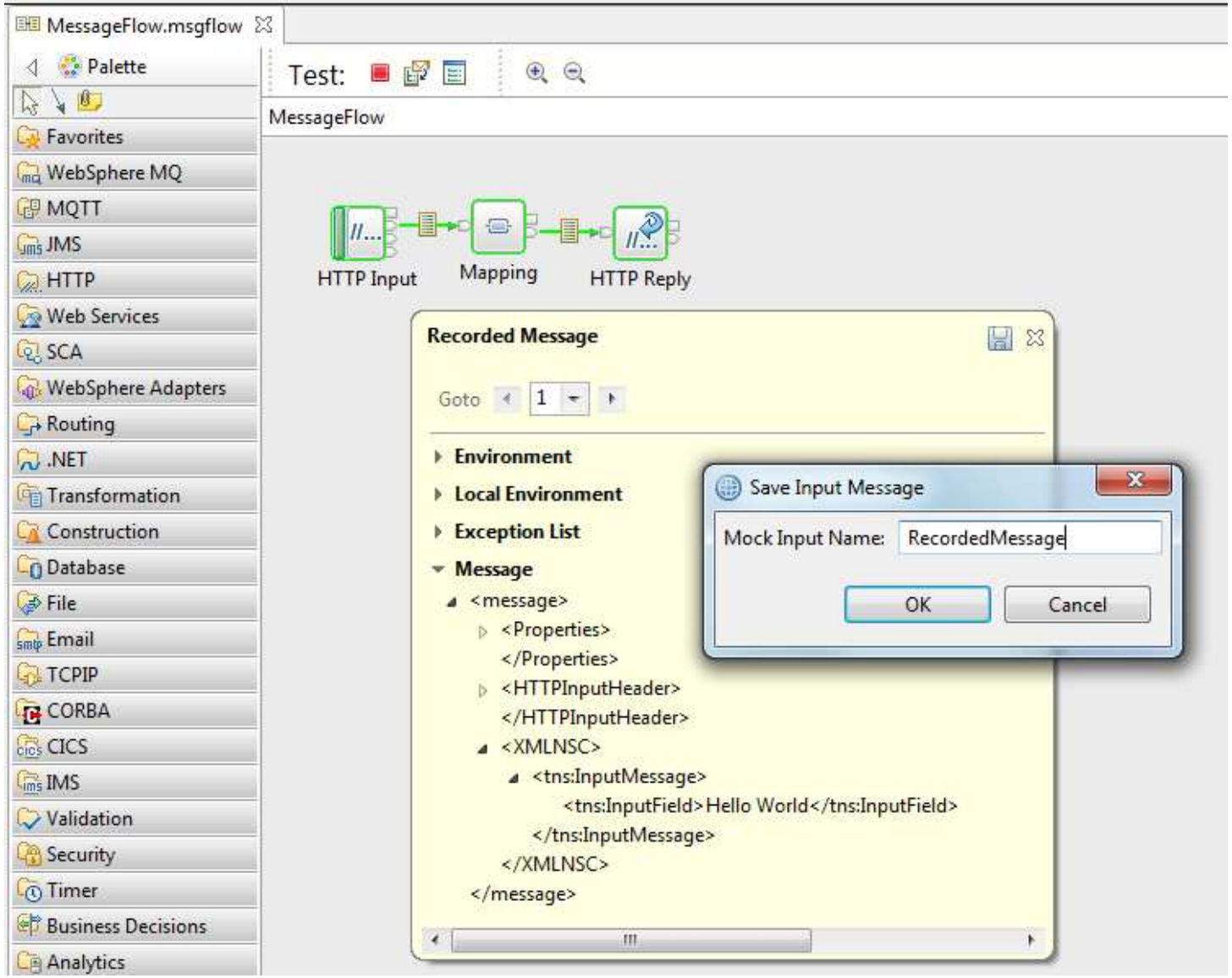
- **Observe captured data paths**
  - Move back and forth (unlike real-time visual debuggers)
  - View all parts of the Message Assembly
  - Select from multiple injected messages in single data capture session



- **Exploits REST/JSON API**
  - Initial experience is developer toolkit
  - APIs are foundational for bulk operations
  - Tools Integration with Jenkins, Maven, Ant etc
  - View, start and stop data recording using Integration Nodes view



Unit Test and Regression Test

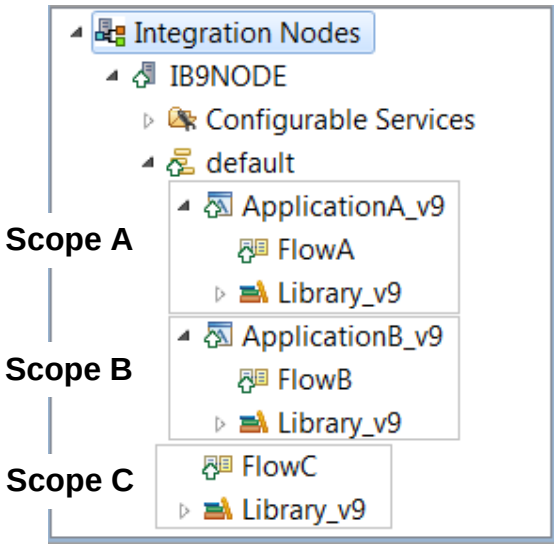


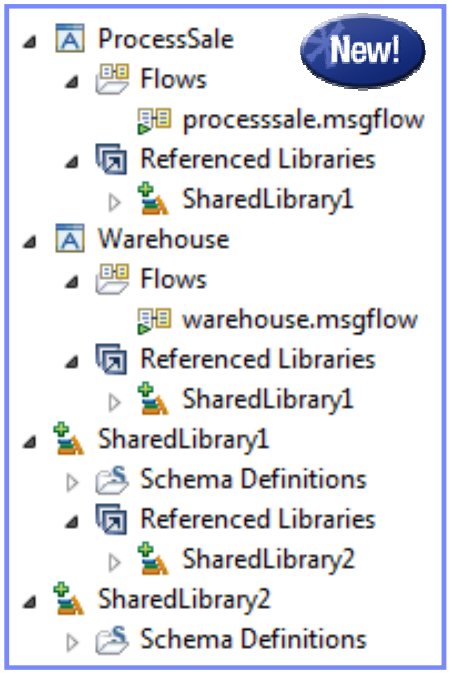
Shared Libraries

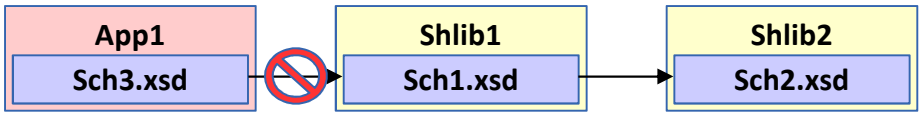
- **Apps / Libs were major features introduced in V8 and V9**
  - Enhanced to fulfil most popular user requests
  - Libraries can now be shared across multiple applications for a broad range of assets
  - Sub-flows are now independent artefacts, significant storage reduction, consistency

- **Shared Libraries**
  - Libraries can now be referenced by one or more applications
    - Libraries deployed independently of applications – "shared"!
    - Applications will not get "own copy"
    - Libraries can still reference other libraries
  - Shared Library is the default library type
  - Assets in multiple libraries within application are shared
    - Notably schemas, also Maps, ESQL, Java etc.

- **Shared Library Restrictions**
  - Subflows but not message flows are allowed in shared libraries, other minor subflow restrictions
  - Minor restrictions for ESQL (e.g. empty schema)
  - Application hosted schemas cannot import or include schemas from shared libraries.
  - Java classes in shared libraries are in separate classloaders (unless one shared library references another shared library)



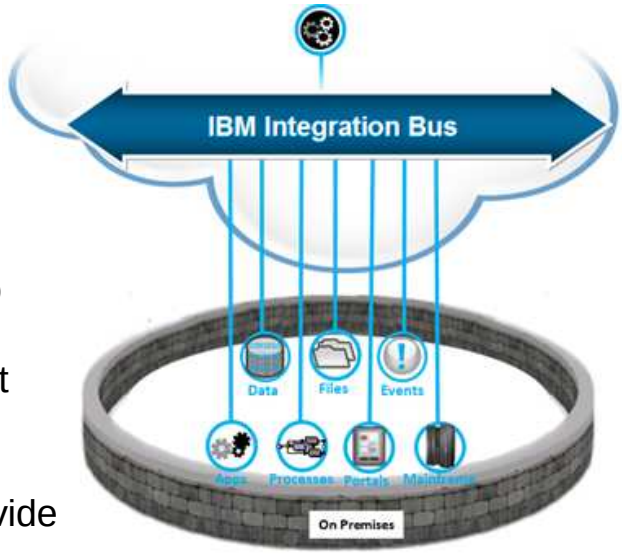




Integration Bus – Summary of our Cloud Initiatives

- **Infrastructure as a Service (IaaS)**
  - Most basic layer of cloud, equivalent to logical hardware layer.
  - For privately-managed clouds, WMBv8 and IIBv9 Hypervisor images (RHEL and AIX)
  - Chef is an open source Opscode project (http://docs.opscode.com/)
  - Cookbooks can compose VMs from multiple recipes. Wide variety of OS.
  - IIBv9 Chef recipe script published on Github defining install, config and setup
  - Urban Code Deploy plugin available for cloud IIB configuration

- **Platform as a Service (PaaS)**
- **Software as a Service (SaaS)**
- **Integration Platfom as a Servicee (IPaaS)**
  - Application Centric view
  - Equivalent to operating system for Cloud.
  - Applications are the unit of deployment and hosting
  - Simplifies application dependency & provisioning, e.g. databases, messaging
  - IIB images running in IBM PureSystems on SoftLayer also provide an PaaS possibility
  - Special BYOSL deal in place for running IIB on a Microsoft Azure or AWS cloud
  - IBM has made an IIB Cloud Statement of Direction
  - Launched from IBM Cloud Marketplace, IIB Cloud will provide IBM-managed nodes.
  - Single-tenant / Multi-tenant, IIB in a Docker container
  - Develop, deploy and administer using existing IIB Toolkit



IBM Integration Bus Cloud

IBM intends to deliver an Integration Bus offering in an IBM administered cloud environment. The Integration Bus in a cloud environment will help eliminate typical inhibitors to start Integration Bus projects, such as capital expenditures, hardware availability, and the skills for managing an Integration Bus environment. This will allow users to focus on developing solutions rather than installing, configuring, and managing software. The offering is intended to be compatible with the on-premise product. Within the constraints of a cloud environment, users can use the same development tooling for both cloud and on-premise software, and the assets that are generated can be deployed to either.

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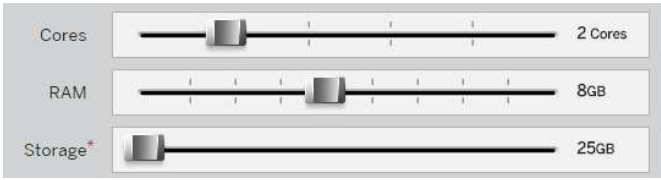
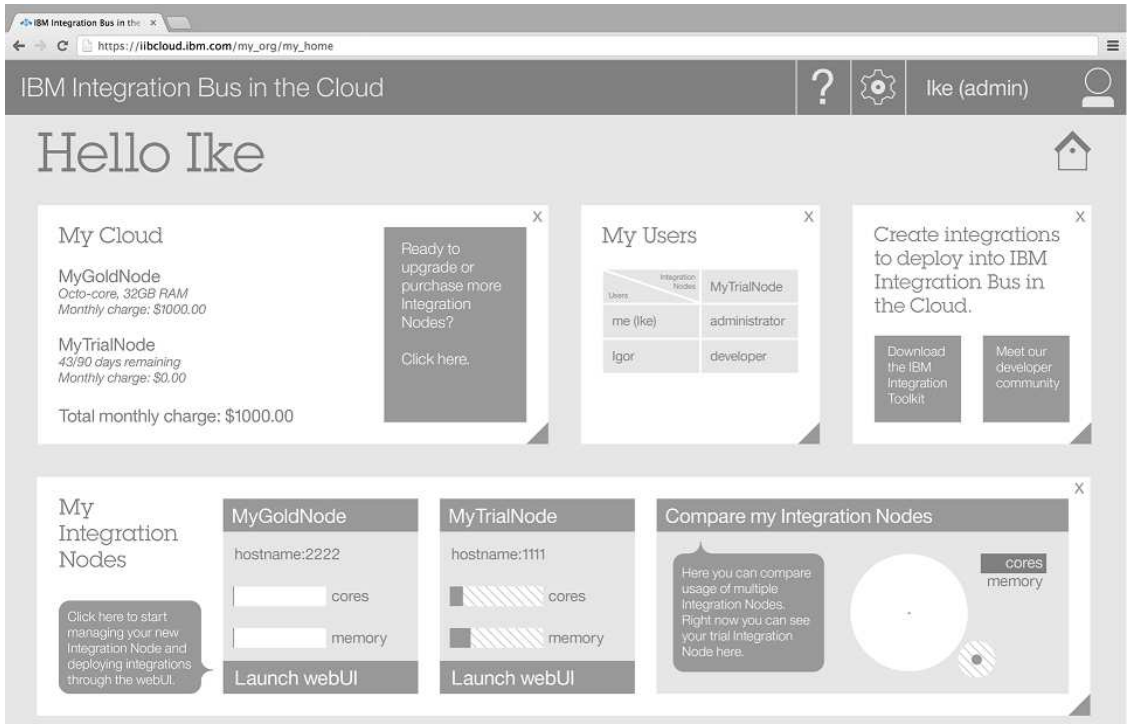




IBM Integration Bus Cloud Beta Program

Program Details

Client facing IBMers are invited to nominate customers and partners to take part in an early program for **IBM Integration Bus Cloud**

IBM Integration Bus Cloud extends the reach of IBM's successful integration product to cloud environments.

The primary objective of this beta program is to solicit client feedback in the design and early implementation stages of product development. Early feedback enables changes and adjustments to be made to the proposed designs, reflecting the consolidated feedback of program participants.

Enrollment Process

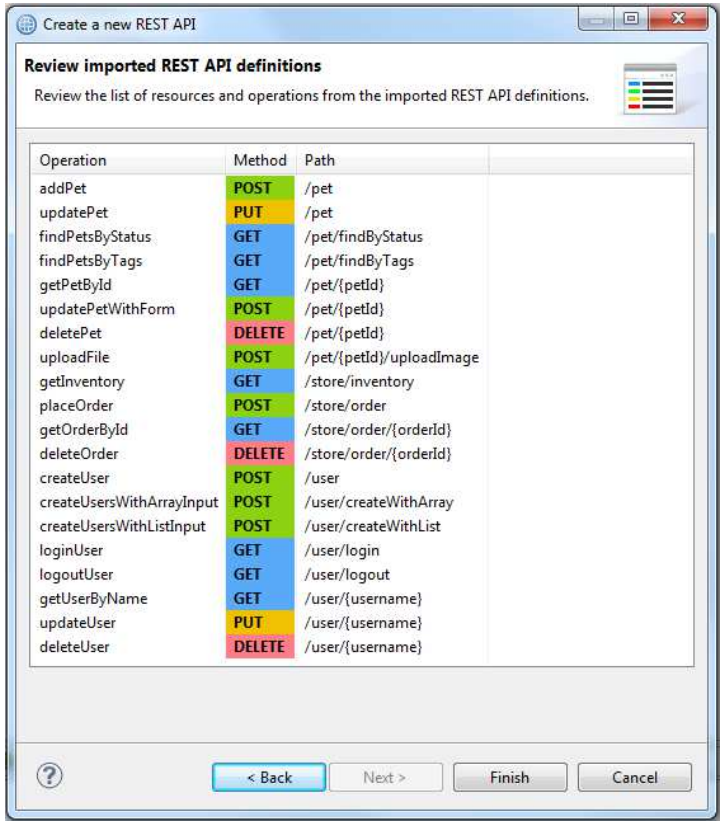
Participants will receive access to beta code systems, appropriate education, and support. In return, they will be expected to provide feedback, e.g. through a support forum, surveys and 1-1 calls. In addition, there will be the opportunity to directly influence the future direction of this offering through design review sessions.

All customer nominations will be considered and if successful will require acceptance of a legal agreement (presented on a program specific web site where the authenticated customer must “click to agree”).

BetaWorks Announcement
IBM Integration Bus Cloud Early Program

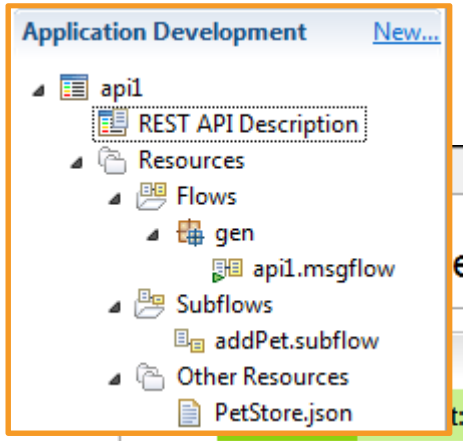
Using IIB to provide a REST API

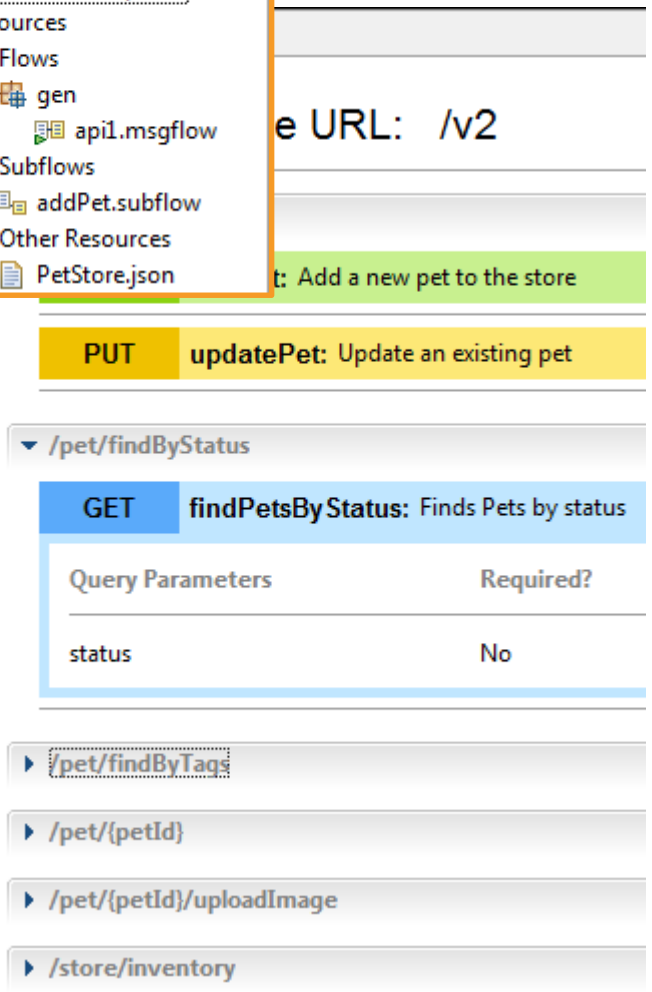
- **Introducing IIB's new REST API first class construct**
  - Provides a simple way to receive JSON / HTTP and expose a REST API
  - Create a new REST API in the IIB Toolkit
  - Drag and drop the REST API to deploy
  - Administer REST APIs as a first class IIB construct in the Web UI
- **REST API project**
  - Swagger spec provides a framework implementation for describing, producing, consuming, and visualizing RESTful APIs
  - It defines a metadata format based on JSON-schema to describe the REST APIs, their parameters and the messages which are exchanged.
  - Import Swagger (v2.0) to create the REST API project
  - Original .json files are included (unchanged) in the project
  - REST APIs can utilise Path, Header, and Query parameters
  - As a client of an IIB REST API, use existing Swagger tools and projects to retrieve Swagger definitions from IIB



IIB REST API Project

- REST API descriptor shows operations
- Generated top-level message flow contains HTTP Input node (uses Integration server listener)
- HTTP Input configured with routing table based on HTTP method and URL
- Clicking each operation nickname generates an associated IIB subflow
- Error handler links also created for HTTP Timeout, Failure and Catch
- After creation add references to shared libs (or static libs) to aid subflow implementation

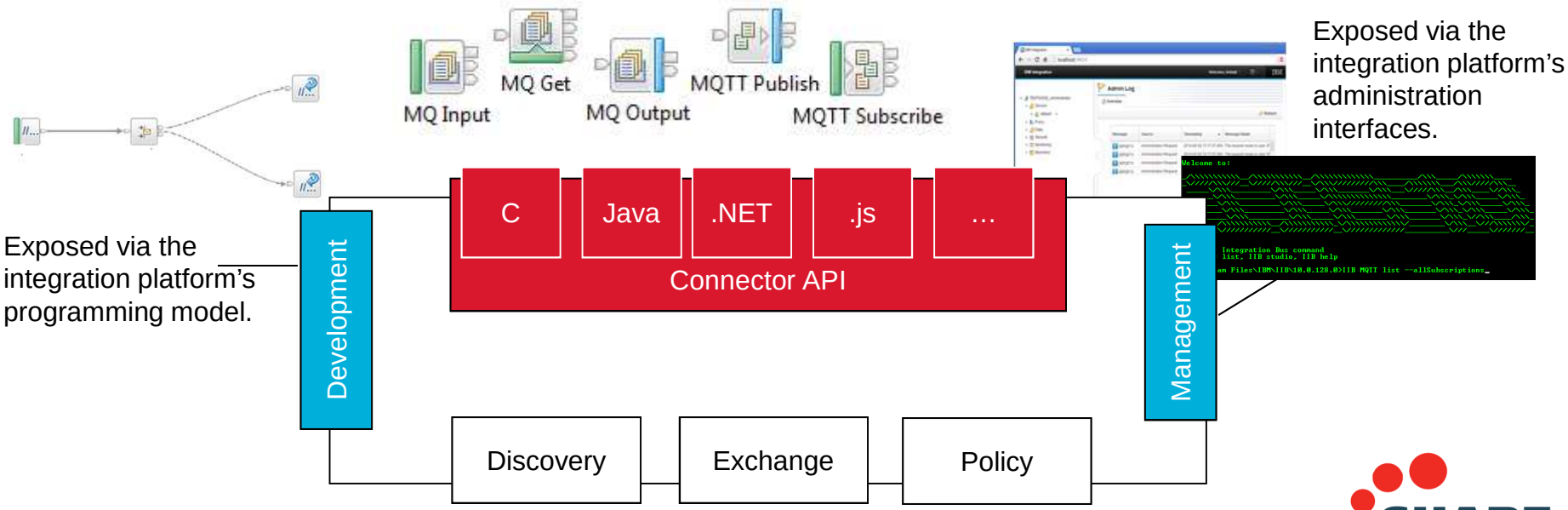




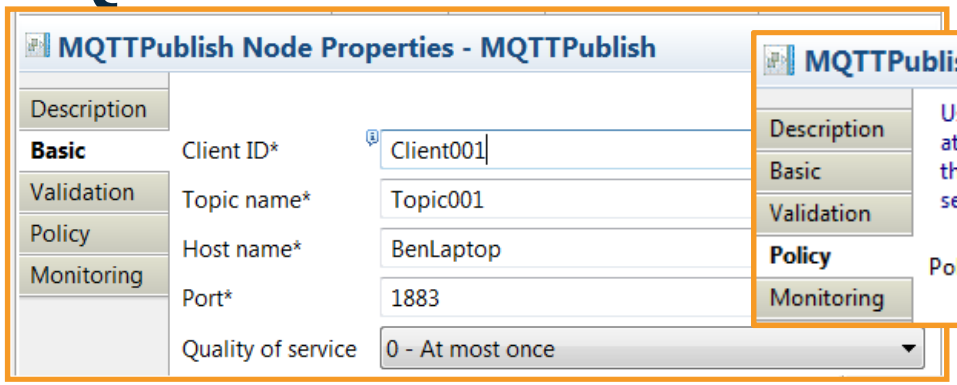

```
// Get the Swagger 1.2 API provider.
ApiProviderFactory apf = ApiProviderFactory.instance();
ApiProvider ap = apf.get("swagger_12");

// Use it to load the API definitions from the sample Petstore application.
Api api = ap.load(URI.create("http://petstore.swagger.wordnik.com/api/api-docs"))

// Create a new REST API.
RestApi restApi = new RestApi("myapi");

// Set the API definitions for the REST API.
restApi.setApi(api);

// Implement the addPet operation.
MessageFlow addPet = restApi.implementOperation("addPet");
PassthroughNode node = new PassthroughNode();
addPet.addNode(node);
addPet.connect(((InputNode) addPet.getNodeByName("Input")).OUTPUT_TERMINAL_OUT, node.INPUT_TERMINAL_IN);
addPet.connect(node.OUTPUT_TERMINAL_OUT, ((OutputNode) addPet.getNodeByName("Output")).INPUT_TERMINAL_IN);
```

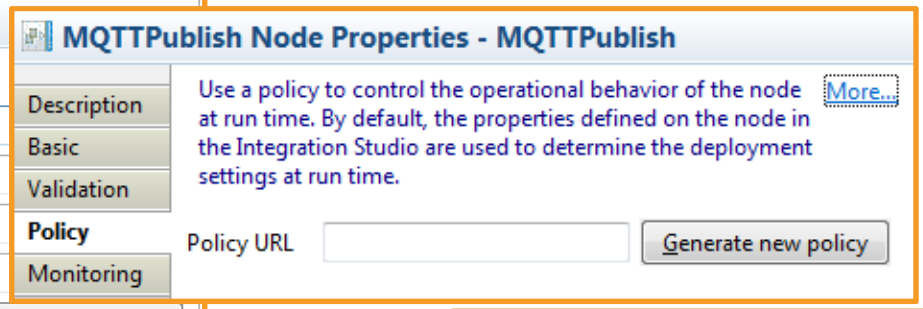
The Connector Framework

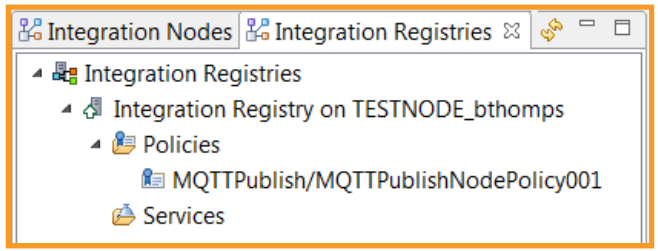
- **Services and events are everywhere!**
  - Allow different systems to have their input and outputs defined as services, events & documents
    - e.g. database, MQ, SAP, CICS, mobile, machine devices, sockets…
- **Integrating endpoint systems involves three key processes**
  - Discovery: Understand & capture the end system inputs and outputs
  - Exchange: Send data to and from these systems, using event, service, document metaphor
  - Policy: Control behaviour dynamically
- **Connector Framework**
  - Simplifies application connector development and restructures UDN development to be endpoint-centric rather than IIB-centric

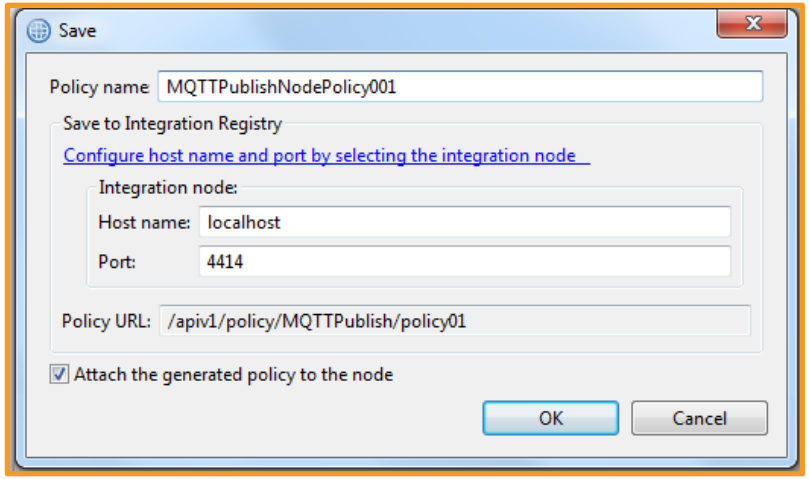


MQTT







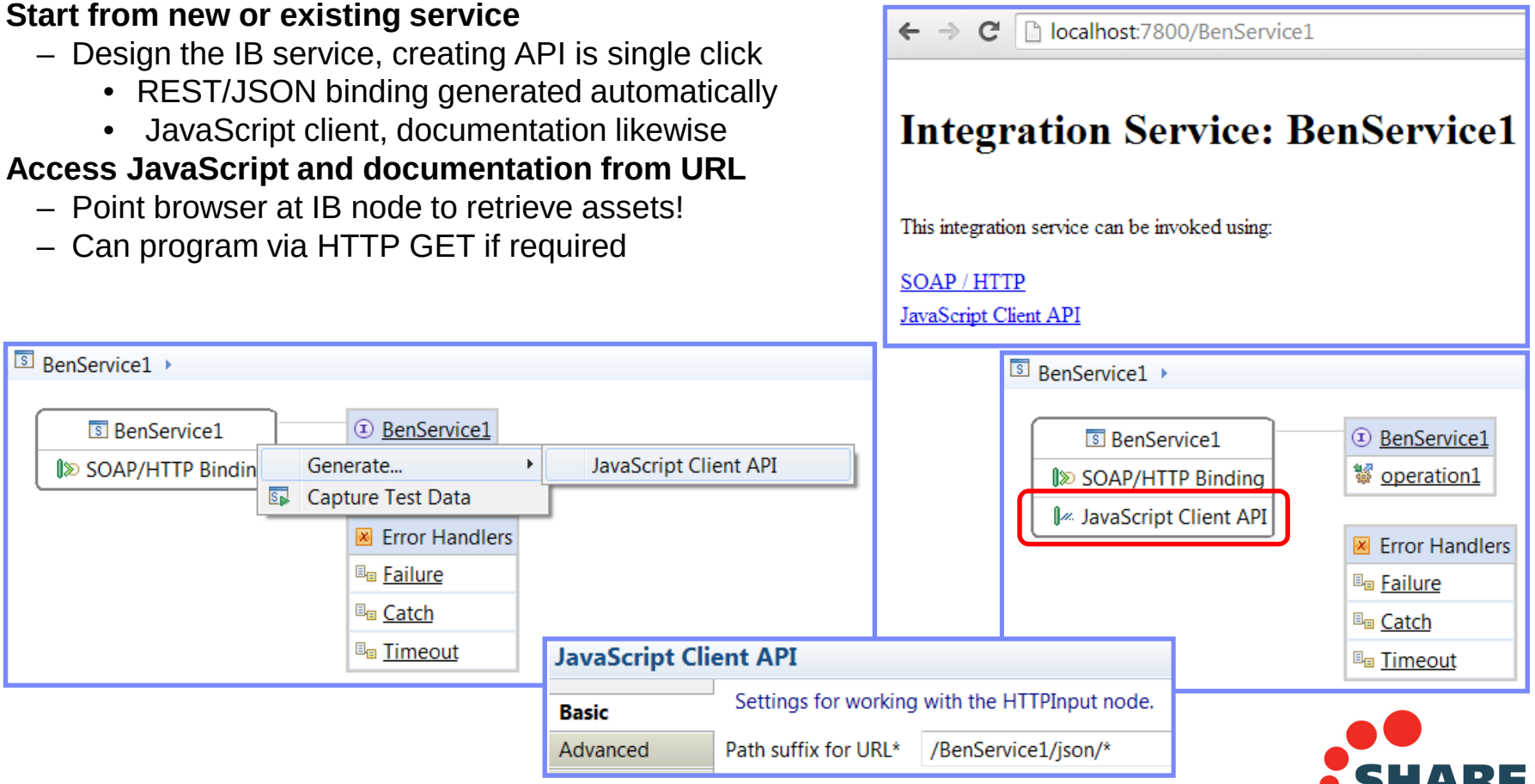


- **MQTT Connectors**
  - Easy to use input and output connectors to MQTT servers
  - Uses open framework for platform independent connectors
  - Source freely available on Github website under flexible Eclipse Public License
  - Delivered into and supported by IIB as appropriate

- **Design, Deploy and Operational Policy**
  - Certain node properties form policy
  - E.g. connection details, host, userid, topic etc.
  - Generate Policy from node properties
    - Store as document with URL
    - Save in Eclipse, IB registry
  - Operationalize via Web UI and Commands

SaaS JavaScript API

- **Web APIs are popular technology for simplified access to integration**
  - Particular applicability in mobile, browsers, and node.js program scenarios
  - New feature allows Integration Bus service to be invoked via Web API
  - Builds on existing IB mobile features and service definitions
- **Start from new or existing service**
  - Design the IB service, creating API is single click
    - REST/JSON binding generated automatically
    - JavaScript client, documentation likewise
- **Access JavaScript and documentation from URL**
  - Point browser at IB node to retrieve assets!
  - Can program via HTTP GET if required



localhost:7800/BenService1?resource=javascript.html

Integration Service: BenService1

Invoke using JavaScript Client API

Instructions

1. Set up the JavaScript client environment
2. Install the npm dojo package using 'npm install dojo' (only if you are developing in a Node.js environment)
3. Download the BenService1.js file
4. Write a JavaScript application which calls the integration service JavaScript methods

File

BenService1.js - JavaScript method(s) for this integration service

Method: IBMIntegration.BenService1.operation1()

Description

None.

Input

input1 : string

Output

output1 : string

Coding Example

```
/* Uncomment these lines if you are developing in a Node.js environment.

require("http");
require("./BenService1");

IBMIntegration.BenService1.IBMContext.hostname = "localhost";
IBMIntegration.BenService1.IBMContext.port     = 7800;

*/

/* Uncomment these lines and put them in the <head> element of your HTML if you are developing in a browser environment.

<script type="text/javascript" src="/BenService1?resource=dojo.js"></script>
```

DFDL and Data Enhancements

- **Continuing to keep up with standards DFDL 1.1 and beyond**
  - Wide IBM adoption strategy, and beyond
  - DFDL re-distributable library, including developer edition

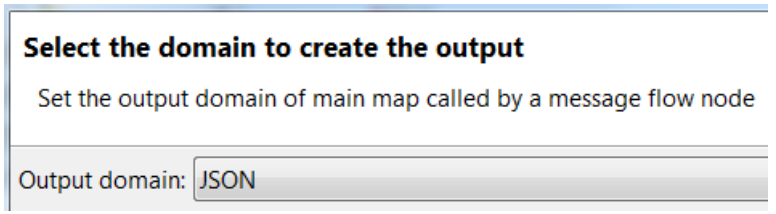
- **Seeding commercial and scientific Formats via GitHub**
  - Provided with public license for use on any DFDL implementation
    - Can be used within application with DFDL libraries
  - Included in Industry Packs as standard
  - Includes TLOG 4690, ISO8583 (1987), ISO8583 (1993), NACHA, HL7v2.x, more coming soon

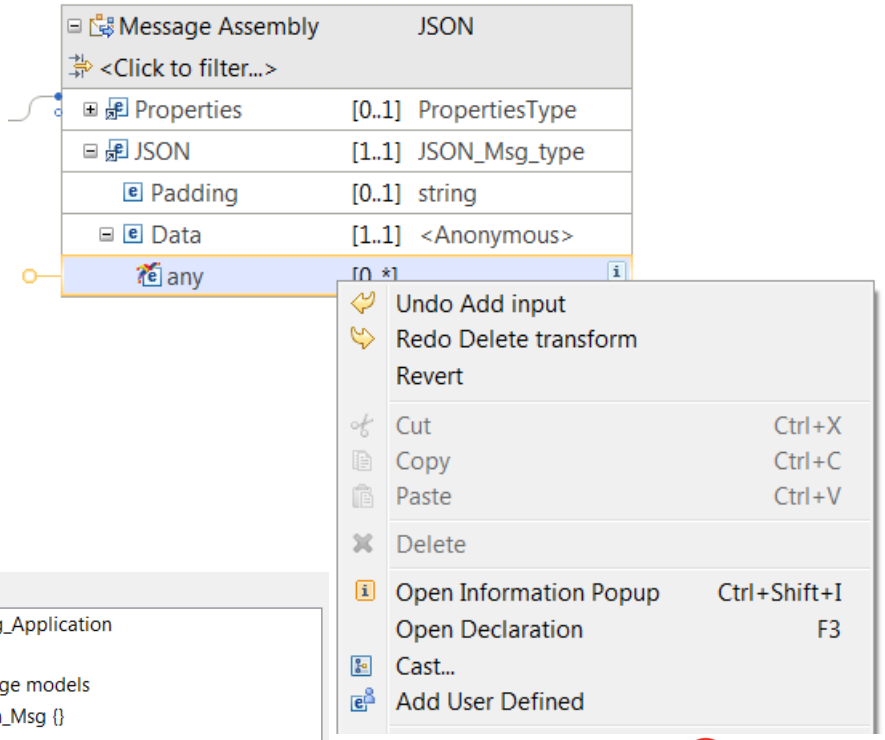
- **DFDL Functional Enhancements**
  - Unordered sequences
  - Direct dispatch choices (needed for SWIFT)
  - dfdl:occursCountKind 'parsed'
  - More XPath & DFDL functions
  - Asserts on recoverable exceptions
  - Improved refactoring support in the DFDL editor
  - DFDL Model Editor Copy / Paste support
  - Improved validation of DFDL schema
  - Incorporation of DFDL 1.0 revised spec into Infocenter

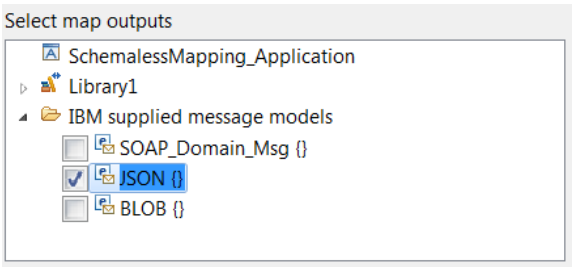
- **Extended Performance**
  - DFDL already 2x faster than MRM, objective to improve further

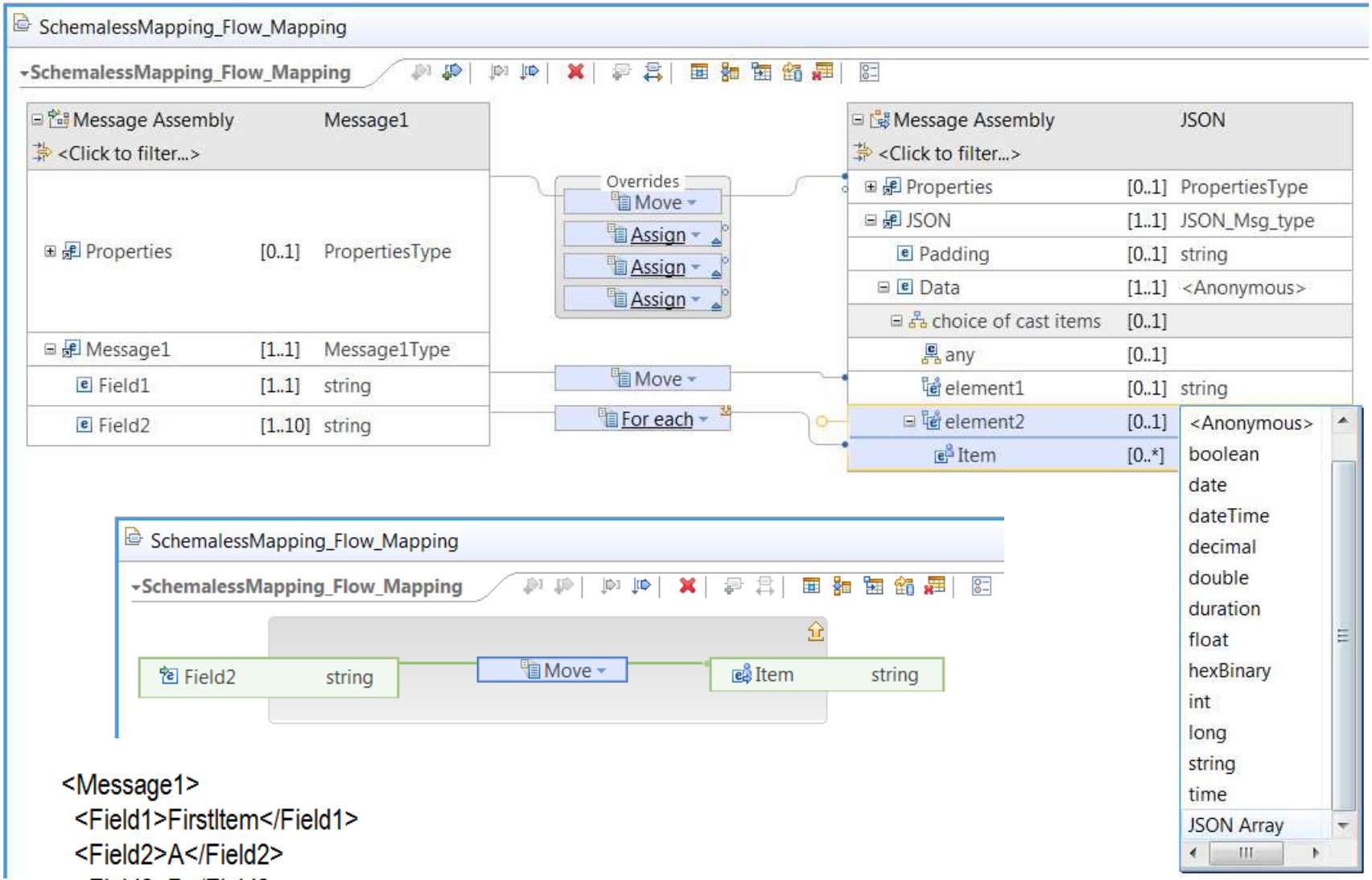
Schema-less Graphical Data Mapping

- **GDM is now embedded in a wide range of IBM tools**
  - InfoSphere MDM, RAD, RSA, IBM Integration Bus IBM Integration Designer, Rational Software Architect
  - Default transformation tool for IB; investment priority
  - Combination of power, performance, ease-of-use
- **"Schema-less" Mapping**
  - Allows Mapper to be used for arbitrary data structures
    - Intention to map SQL functionality wrt user structures
  - Philosophy is to allow user to create schemas dynamically, and easily, inline!
    - Benefits are easy schema creation and reuse
  - Initial focus includes
    - LocalEnvironment, xs:any
- **JSON mapping**
  - JSON is typically schema-less (will consider JSON schemas for future)

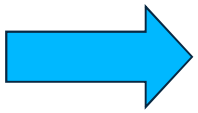









```
<Message1>
  <Field1>FirstItem</Field1>
  <Field2>A</Field2>
  <Field2>B</Field2>
  <Field2>C</Field2>
</Message1>
```



```
{"element1":"FirstItem","element2":["A","B","C"]}
```

Applying Analytics to in-flight data

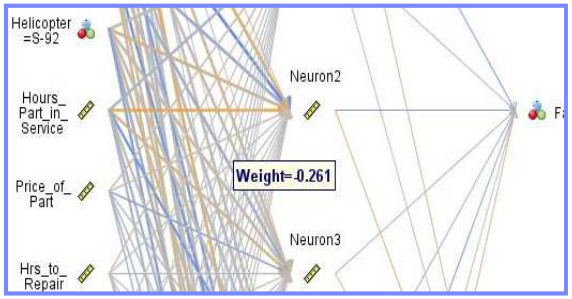
- **Analytics node for model based decision making**
  - Find & express patterns in data with analytics models
  - Analytics equivalent to Business Decision node
    - Pluggable engine for e.g. R, SPSS, SAS…
  - 2 key scenarios are “model score” and “model trend”
  - e.g. %buy additional item, SKU lower than expected

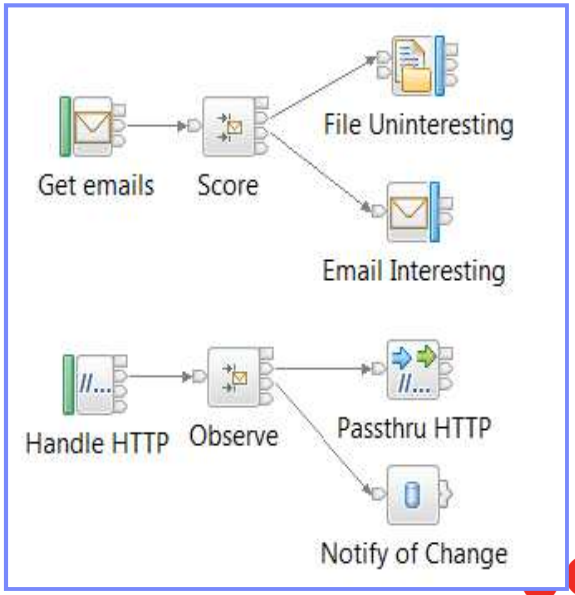
- **Define the model in tools**
  - This is a high value skill; understand & express behaviour
  - Use historic dataset; this is typically offline scenario
  - Both built-in tooling and external model import/reference

- **Deploy/Change the Model**
  - Model is encoded into integration flow logic
  - Deployed with integration solution
  - Analytics policy for dynamic change without redeploy
  - Optionally packaged as part of Shared Library Support

- **Using the model in real time**
  - Act on these models in integration flow
  - Scoring: Synchronous use of model score real-time data
  - Observing: Compare models in real-time for divergence

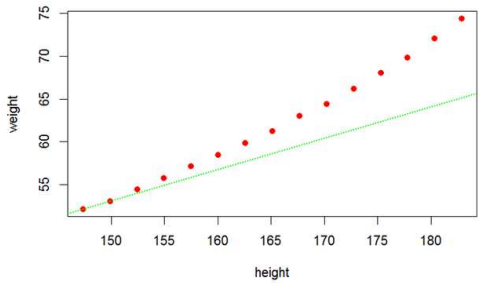
- **Key, related considerations**
  - Shared Libraries required with dynamic linkage
    - All Applications using library “see” re-deploy

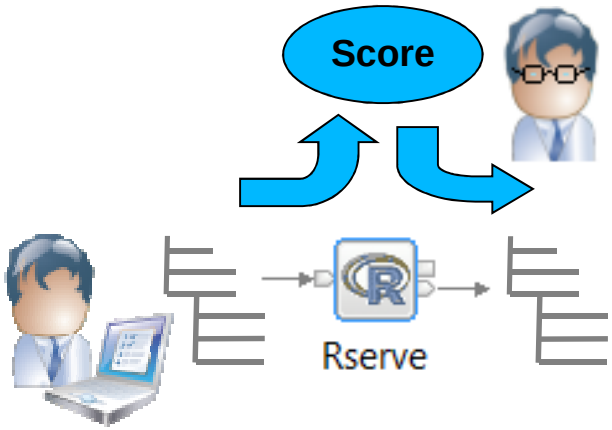


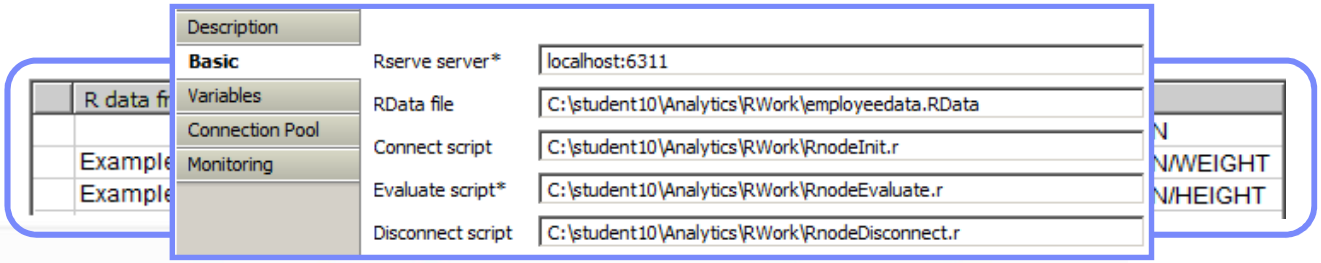


Analytics Node

- As data flows through the enterprise, IIB has visibility to score it against a predictive model
- **Data Scientist Role**
  - Prepares a model based on an analytics engine.
  - For example R, SPSS, SAS
- **Integration Developer Role**
  - Formats a data stream and applies it to a model
- **Analytics Node**
  - R Scalar variable types: double, integer, character (string), logical (Boolean)
  - Data frames can be considered like database tables, consisting of labelled and typed columns and unlimited rows
- **Configuration of input and output parameters**
  - XPath expressions point to locations in the input and output trees
  - Direction of Parameter allows a single properties table to control tree copying and return results from the scoring process

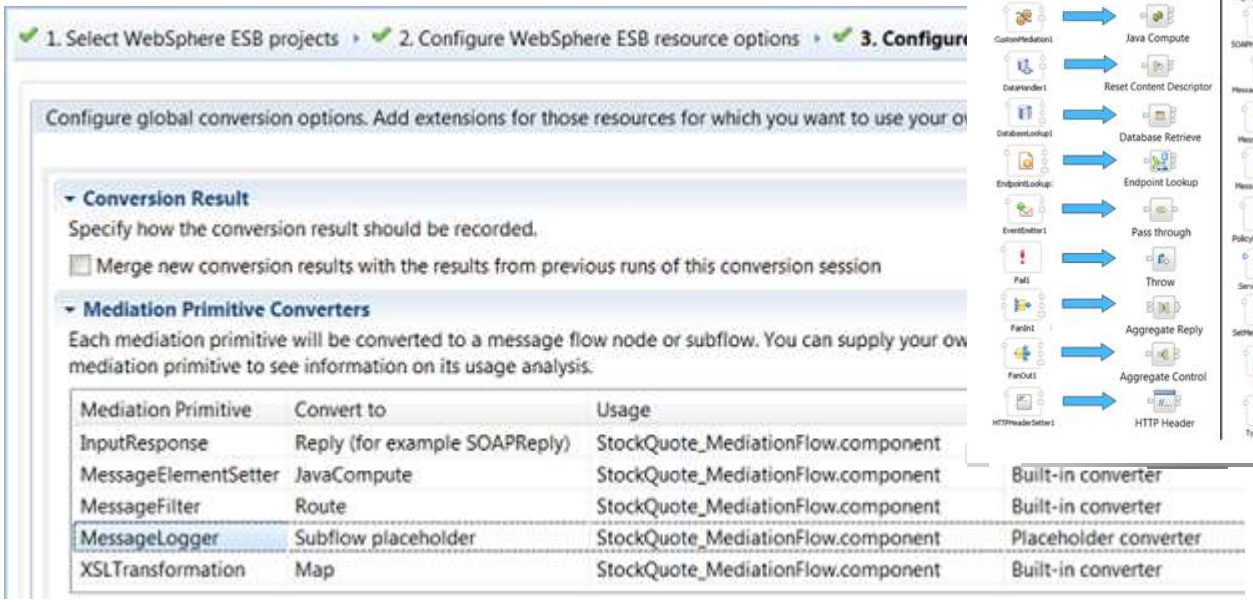


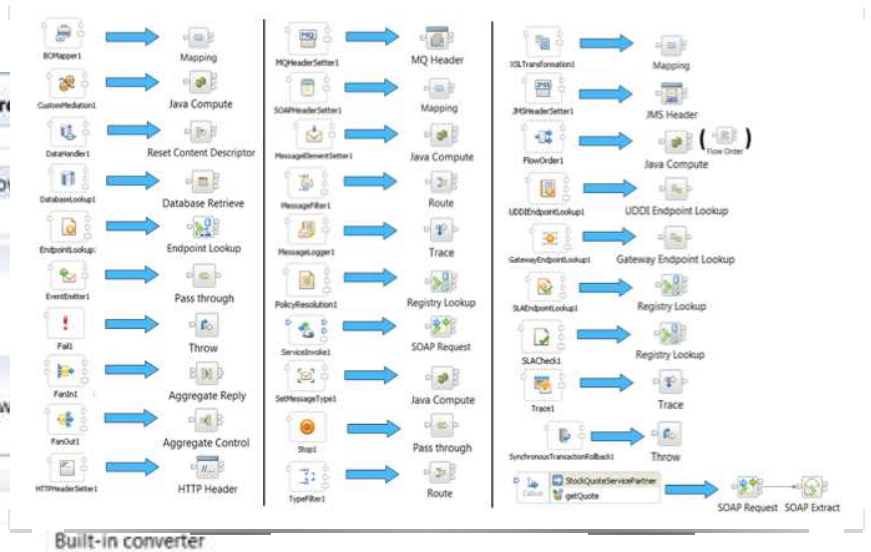




WESB to IIB Conversion

- **Preserves structural wiring between primitives of a mediation flow**
  - IIBv9 and IIBv10 landing points. No minimum version requirement for WESB source assets
- **Expanded functional coverage**
  - Subflow encapsulation for Import and Export binding logic
  - Convert multiple exports with any binding
  - Convert multiple synchronous imports with any binding
  - Convert multiple connected mediation components with multiple interfaces
  - Built-in converters for mid flow primitives (25/30) where natural equivalents exist
  - Subflow conversion
  - Data Handlers
  - Java code conversion





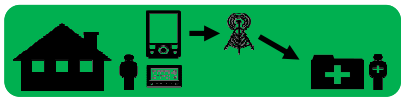
IIB Industry Packs

- **IIB Healthcare Pack**
  - Web User Interface for Clinical App monitoring and operational views
  - HL7 Transformation Pattern to generate data maps and ESQL
  - HL7 Error handling enhancements
  - Home Health Pattern to
  - Generates message flows to support a WAN interface with SOAP/HTTP interface using the IHE industry standard “CommunicatePCDData” WSDL
  - HIPAA DFDL model

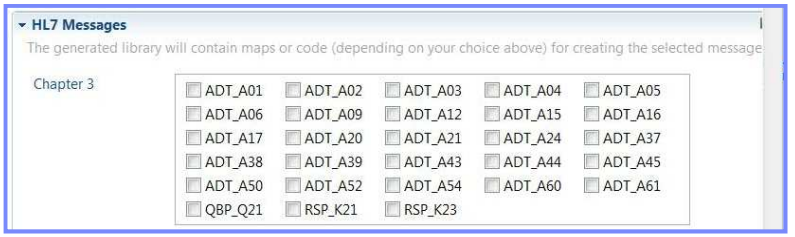
Q1 2014 v3.0
Q3 2014 v3.0.0.1

Q4 2013 v1.0

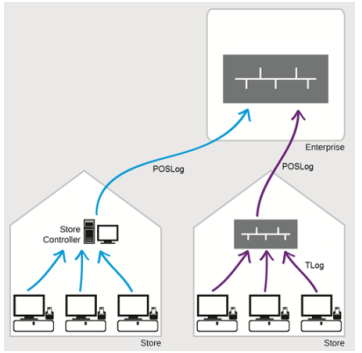
Q2 2013 v1.0
Q4 2014 v1.0.0.1



- **IIB Manufacturing Pack**
  - OSIsoft PI Server Input and Read nodes
  - OPC DA Read and Output nodes
  - OPC Unified Architecture Input and Read nodes
  - MQTT Publish and Subscribe nodes
  - Factory Publication pattern
  - Web-based interface to provide operational views of data published from plant and machinery

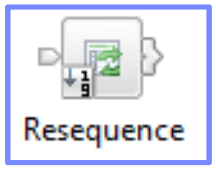


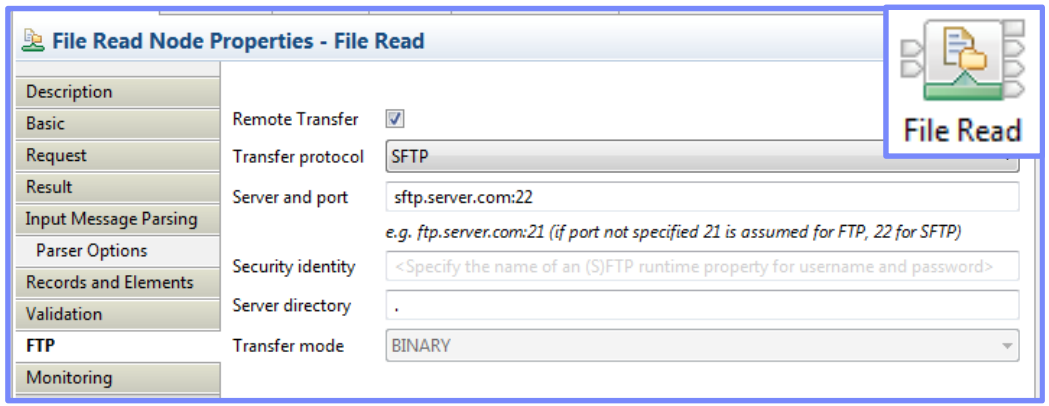
- **IIB Retail Pack**
  - Integration of WebSphere Commerce with Sterling Order Management
  - TLog to POSLog pattern for real-time data feeds from PoS to Enterprise
  - POSLog as canonical feed
  - ARTS Operational Data Model integration
  - Web User Interface for real-time revenue tracking (PoS and store location breakdowns) and operational views

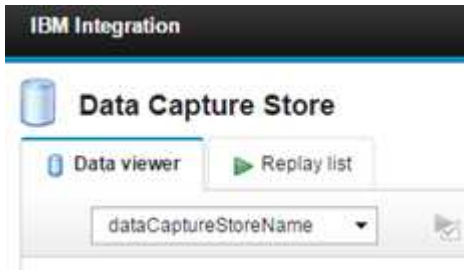


File, Database, Security and ESQL Enhancements

- Microsoft SQLServer support is added for Record & Replay databases
- ESQL memory usage has been significantly reduced for deployable ESQL which contains heavy usage of DECLARE and FieldReference.
- Compute node has been extended to a single Compute node to interact with multiple different databases *of different types*
- Resequence node Failure Retry mechanism added for Store & Forward use cases
- Integrated Windows Authentication
  - Configure HTTP and SOAP nodes to use the transport-level security protocols NT Lan Manager (NTLM), Kerberos, and Simple and Protected Negotiation (SPNEGO).
- SSL and Kerberos support for connections to SQLServer
- SQLServer 2014 support on Windows is added to the Statement of Environment
- (S)FTP support has been added to the FileRead node
  - FileRead extended to match FileInput and FileOutput and provide remote transfer of files into IIB via FTP and SFTP
- **`mqsireportdbparms`**







Integration Bus Summary

- **V10 Development**
  - Builds on the continued success of V7, V8, V9 major engineering releases
  - Key Initiatives
    - Develop To Deploy, Platforms (including MQ Flexible Topologies),
    - Connectors, Policy, Data, Transformation, and Industry
  - Content heavily influenced by user requirements, participation and feedback

- **Diverse Connectivity Requirements**
  - Simple & Productive to make connectivity easy and powerful
  - Universal & Independent to connect everything you need in the way you want to manage it
  - Industry Specific & Relevant to help solve business problems
  - Managed & Dynamic, Intelligent to create flexible solutions for changed, control and insight
  - High Performing & Scalable to maximize hardware and grow with you

- **IBM Integration Bus**
  - Unparalleled range of connectivity options and capabilities
    - Services, Events, Documents & Ad-hoc integration
  - Supports users' range of experience & needs
  - Industry leading performance in a broad range of scenarios

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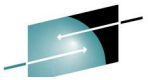

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This was Session 17042. The rest of the week ……

	Monday	Tuesday	Wednesday	Thursday	Friday
08:30			17060: Understanding MQ Deployment Choices and Use Cases	17051: Application Programming with MQ Verbs [z/OS & Distributed]	
10:00	17036: Introduction to MQ - Can MQ Really Make My Life Easier? [z/OS & Distributed]		17052: MQ Beyond the Basics - Advanced API and Internals Overview [z/OS & Distributed] 17035: MQ for z/OS, Using and Abusing New Hardware and the New V8 Features [z/OS]	17054: Nobody Uses Files Any More do They? New Technologies for Old Technology, File Processing in MQ MFT and IIB [z/OS & Distributed]	17057: Not Just Migrating, but Picking up New Enhancements as You Go - We've Given You the Shotgun, You Know Where Your Feet Are [z/OS & Distributed]
11:15	17041: First Steps with IBM Integration Bus: Application Integration in the New World [z/OS & Distributed]		16732: MQ V8 Hands- on Labs! MQ V8 with CICS and COBOL! MQ SMF Labs!	17046: Paging Dr. MQ - Health Check Your Queue Managers to Ensure They Won't Be Calling in Sick! [z/OS]	17053: MQ & DB2 – MQ Verbs in DB2 & InfoSphere Data Replication (Q Replication) Performance [z/OS]
01:45	17037: All About the New MQ V8 [z/OS & Distributed]	17034: MQ Security: New V8 Features Deep Dive [z/OS & Distributed]	17040: Using IBM WebSphere Application Server and IBM MQ Together [z/OS & Distributed]	17062: End to End Security of My Queue Manager on z/OS [z/OS]	All sessions in Seneca unless otherwise noted.
03:15	17042: What's New in IBM Integration Bus [z/OS & Distributed]	17065: Under the hood of IBM Integration Bus on z/OS - WLM, SMF, AT-TLS, and more [z/OS]	17043: The Do's and Don'ts of IBM Integration Bus Performance [z/OS & Distributed]	17039: Clustering Queue Managers - Making Life Easier by Automating Administration and Scaling for Performance [z/OS & Distributed]	
04:30	17059: IBM MQ: Are z/OS & Distributed Platforms like Oil & Water? [z/OS & Distributed]	17055: What's the Cloud Going to Do to My MQ Network?	17044: But Wait, There's More MQ SMF Data Now?!?! - Monitoring your Channels Using V8's New Chinit SMF Data [z/OS]	17068: Monitoring and Auditing MQ [z/OS & Distributed]	

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