IBM Software Group

Migrating to IBM Integration Bus V10

David Brickell dmbricke@us.ibm.com
Vivek Grover vgrover@us.ibm.com

IBM Integration Bus Level 2 Support
May 13, 2015

WebSphere® Support Technical Exchange

Agenda

- So what's new?
- Supported Migration Paths
- Co-existence
- IIB and MQ
- Migration Options
- Migrating Toolkit Resources
- Web UI
- Pre-migration Steps
- Runtime Migration
- Post-migration Steps
- Behavioral Changes in IIB V10
- WESB -> IIB
- Samples

So what's new?

- Simple and fast installation process
  - Toolkit and runtime part of same package
  - Components created and started when Toolkit is started first
- MQ dependency removed but users are still allowed to use it as before
- Enhanced WebUI for administration, viewing and managing components
- Connecting to applications and devices using MQTT protocol
  - MQTTPublish and MQTTSubscribe nodes
- Flexible Administration security
  - File-based and MQ-based
- Shared libraries deployed independently of the referencing resources
- Tutorials gallery and GitHub for downloading sample solutions

Supported Migration Paths

- You can migrate to IBM Integration Bus Version 10.0 from the following previous versions:
  - WebSphere® Message Broker Version 7.0.0.5
  - WebSphere Message Broker Version 8.0
  - IBM Integration Bus Version 9.0
- You must first ensure your MQ installation is at a supported version
  - WMB V7.0.0.5 supports WMQ V7.0.1, V7.1.0.1, V7.5
  - WMB V8.0 supports WMQ V7.0.1.6, V7.1.0.3 (requires V8.0.0.1), V7.5.0.1 (requires V8.0.0.1), V8.0 (requires V8.0.0.4)
  - IIB V9 supports WMQ V7.1.0.3 (requires V9.0.0.1), V7.5.0.1, V8.0 (requires V9.0.0.2)

Co-existence

- IIB V10 can coexist with IIB V9, WMB V8 and V7.

Windows®:

  - Multiple instances of each of the versions (but different fixpacks) can be installed on the same system.

UNIX®es and z/OS®:

  - Multiple instances of each of the versions and fixpacks can be installed on the same system.

- Ensure correct mqsiprofile is sourced before starting the Integration nodes to pick up the correct fixpack levels and versions.
- Multiple versions of IIB Toolkit can be installed on the same machine
  - You can not use IIB V10 Toolkit to connect to a V9 broker or vice versa

Working with WebSphere MQ

- IIB V10 still integrates with MQ and provides seamless migration
- On z/OS, MQ is required as before
- On distributed, MQ is not a pre-requisite for IIB, but can be used
  - Supported with MQ 7.1.0.4 (`IV69571, IV70713`); MQ 7.5.0.2 (`IV69571, IV70713`); MQ 8.0
- IIB V10 gives ability to configure local or client connection to qmgrs
  - configure the connection properties on MQInput/Output/Get/Reply

  OR

  - -q flag on `mqsicreatebroker / mqsichangebroker`
- You must configure MQ env for the integration node associated with MQ eg. `. /opt/mqm/setmqenv -s -x 64`
- IBX superseded completely by WebAdmin UI

Working with WebSphere MQ

Nodes and capabilities that require the MQ Server to be installed on the same machine as Integration Node and the qmgr to be associated with it.

SYSTEM.BROKER.* queues are used for these features

JMS™

Nodes	Capabilities
TimeoutControl node TimeoutNotification node SCAAsyncRequest node SCAAsyncResponse node SCAInput node SCAReply node SCARequest node AggregateControl node AggregateReply node AggregateRequest node Collector node Resequence node Sequence node SAPInput node SAPReply node SAPRequest node CDInput node CDOutput node FTEInput node FTEOutput node MQOptimizedFlow node Publication node	Record and Replay High availability (for multi-instance and HTTP proxy servlet). Load balancing (Not applicable to embedded listeners) Accounting and statistics (Not applicable if used with MQTT) Global Transactionality (requires all MQ nodes in a message flow to use the same qmgr) Administration security (Not applicable to file-based security)

Working with WebSphere MQ

Nodes and capabilities that do not require MQ qmgr to be associated with Integration Node.

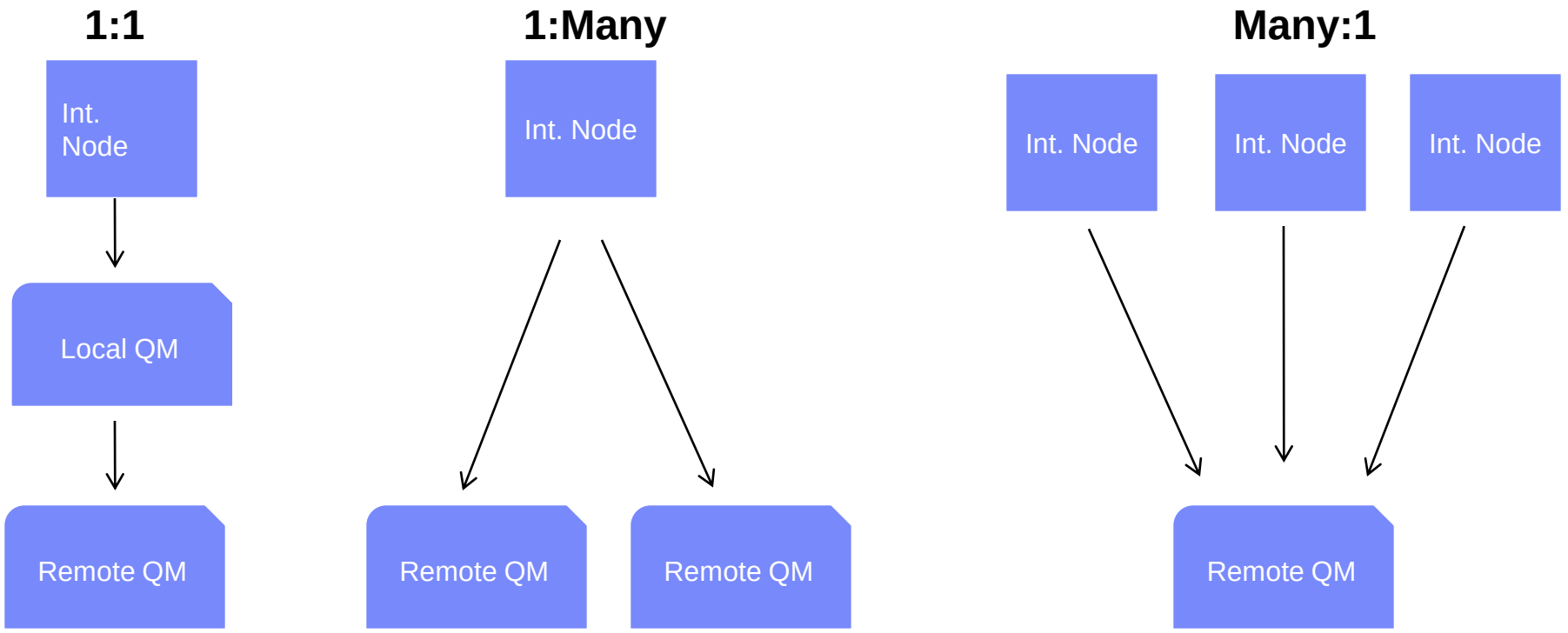
Nodes	Capabilities
JMSMQTransform node JMSMQTransform node MQHeader node MQGet node MQInput node MQOutput node MQReply node	Publish and subscribe **(only applicable to monitoring, operational, or administration events over WebSphere MQ as well as over MQTT)**

If SSL is required, MQ nodes may be configured using broker-wide keystore

Working with WebSphere MQ

- MQ nodes from same/different message flows in same/different Integration Nodes can access same/different qmgrs
- Qmgr links are defined by policy/configurable services

Different MQ topologies available:



Migration Options

In-place migration:

Migrates existing broker and its components immediately to V10

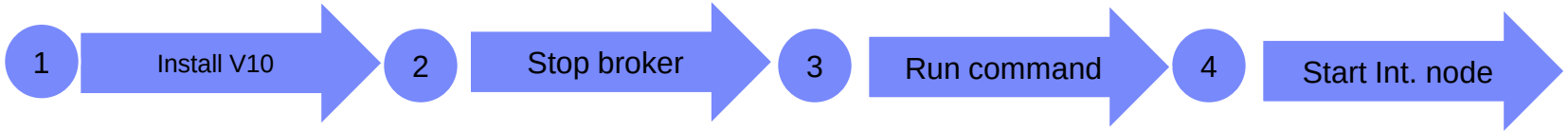
Should be performed on the same system where broker exists

Requires stopping the broker / integration node

Requires running the command: `mqsimigratecomponents`

Provides `-t` option to roll back to previous state

No support for 32-bit OS (Windows x86 and Linux® x86)



Migration Options

Parallel migration:

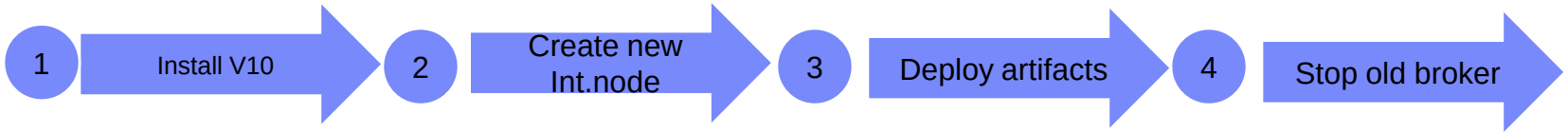
Provides ability to migrate on same or a different system

Does not overlap with the existing broker, so no need to stop the broker

Create new Integration node and deploy artifacts to it

If migrating from x86, use parallel migration and re-create the integration nodes from scratch

Requires the Integration node / server properties and Administration security to be reconfigured on the newly created components



Migrating Toolkit resources

- Message flow/set and Java™ projects can be exported from the earlier Toolkit version and imported into IIB V10 Toolkit before deployment
- Export and Import the resources as Project Interchange to convert them to Integration projects
- Convert the projects to applications or libraries by right-clicking the project:
  - Convert Single Project to convert a project with no references
  - Analyze and convert multiple projects to convert one or more projects and any referenced resources

Migrating Toolkit resources

- If your message flow project contains old mapping nodes, schema, adapter components, WSDL files, IDL files, or SCA definitions
  - Convert .msgmap to .map
  - Some manual organization of migrated resources may be needed

- The resources from IIB V10 Toolkit can not be used in the previous versions of Toolkit

- Incase of any errors, check `Window > Show View > Problems` and right-click the message to apply `Quick Fix`

Migrating Toolkit resources

- When migrating message flows that use SSLv3 protocol > change the protocol to TLS where appropriate (eg. SOAPRequest node property)
- When migrating message flows that use JMS nodes > change the Transaction mode from Local, Global, None to Yes (with or without message flow Coordinated Transaction property or No
- If WSDL and XML Schema information is to be made available to existing SOAPInput-SOAPReply flows > enable support for `?wsdl` on SOAPInput

Migrating Toolkit resources

- For custom integration applications that use ConfigManagerProxy.jar file > Existing custom integration applications must be rebuilt to use the new IntegrationAPI.jar file, and the IntegrationAPI.jar file must be included in the class path for the applications

- When migrating a message flow with SAP nodes > replace 32-bit Jco libraries with 64-bit and update Java build path

Web UI Administration

- IBX is no longer provided as part of IIB V10

- IIB Web UI is the primary means of runtime administration
  - Policy set configuration moved to IIB Toolkit
  - Export port configuration for external HTTP listeners in Web UI
  - Web UI allows Create / Rename / Delete of components
  - Web UI allows defining configurable services
  - Integration Server properties (JVM, Cache, Debug, FTE etc.) may be changed in Web UI
  - Web UI provides the ability to define operational ‘workload management policies that may be stored in Integration Registry

Pre-Migration steps

Back up existing Resources:

- Back up the ODBC files (odbc.ini, odbcinst.ini) and store them safely in a different location
- Record the properties of all configurable services
- Back up IIB/WMB Toolkit workspace and resources
- Export all your projects from your current IIB / WMB Toolkit
- Archive workspace resources:
  - If using a shared repository (eg. CVS) then follow standard backup procedures such as creating a version for storing V10 resources
  - When maintaining workspace resources on a local or shared disk then copy your workspace directory to a different location

Pre-Migration steps

- Create ODBC definitions for DSNs and specify shipped database drivers
  - ODBC definiitions
    - Windows: ODBC Data Source Administrator window to change
    - Linux: odbcinst.ini and odbc.ini files. ODBC andODBCSYSINI environment variables
  - XA Resource Manager definitions
    - Windows: queue manager properties window using the WebSphere MQ Services snap-in
    - Linux: qm.ini file of the qmgr associated with the integration node
- To validate the ODBC configuration is set up correctly, run the command:

```
mqsicvp –n <DSN> -u <user> -p <password>
```

In Place Migration - distributed

- Install IBM Integration Bus Version 10.0 on the same system as the current version in a new location
- Stop all channels that are connected to the integration node
- If any web browsers are connected to the Integration node, close the web UI and clear the browser cache
- Stop the integration node by using the command `mqsistop <integration node>`
- Set up the correct Version 10.0 command environment:
  - On UNIXes, open a new shell and run the environment profile `mqsiprofile` for V10 installation:
    `. <iib install dir>/ server/bin/mqsiprofile`
  - On Windows, open the IIB V10 Command Console with elevated privileges using: `mqsicommandconsole` command

In Place Migration – distributed (cont)

- Run the `mqsimigratecomponents` command to migrate the integration node. For example, `mqsimigratecomponents IBNODE`
- If -u and -p options were specified with `mqsicreatebroker` command of old broker, these values are migrated with the integration node but may be changed using the command: `mqsisetdbparms`
- Copy all additional custom environment settings from the original environment into V10 environment. For example, `MQSI_FILENODES_ROOT_DIRECTORY`
- Run the command `mqsichangebroker` if qmgr association with the integration node needs removal after migration to V10. For example, `mqsichangebroker IBNODE -q`
- Start the V10 integration node by using the command `mqsistart`

In Place Migration - z/OS

- Stop all channels that are connected to the integration node
- If any web browsers are connected to the web UI for the integration node, close the web UI window and clear the browser cache
- Stop the integration node
- Create a new PDSE with customized Version 10.0 JCL scripts, but stop before you deploy IBM Integration Bus
- Customize and submit the `BIPMGCMP` (`mqsimigratecomponents`) job. This job migrates the registry and queue
- Replace the Started Task JCL that is in the procedures library with the V10 Started Task JCL.
- Start the V10 integration node. The verification program checks the configuration of the integration node

In Place Migration – Multi Instance

- Install V10 onto each node in a new installation directory
- Stop all channels that are connected to the integration node
- If connected using web UI, close the web UI and clear the browser cache
- Stop the integration node on first standby node and then active node
- In an IIB V10 command console run the following command:
  `mqsimigratecomponents <integrationNode>`
- Copy any additional custom environment settings from previous environment into IIB V10 environment. For example:
  `MQSI_FILENODES_ROOT_DIRECTORY`
- On the active node first and then standby nodes, in an IIB V10 command console run the command:

```
mqsistart <integrationNode>
```

Parallel Migration - distributed

- Install IIB V10 on the same system as your existing version but in a different location, or on a different system
- Migrate your development resources to the v10 Toolkit
- Set up the correct V10 command environment:
  - On UNIXes, open a new shell and run the environment profile `mqsiprofile` for V10 installation
  - On Windows, open the Command Console for V10 installation
- Create a V10 integration node using a name different from the existing integration node with or without a Qmgr
- Start the V10 integration node using `mqsistart <integration node>`

Parallel Migration – distributed (cont)

- Make a list of all existing integration servers and create these same servers on the v10 integration node
- Deploy the existing resources to the Version 10.0 integration node from V10 Toolkit
- Configure all other relevant properties of the existing integration node on the V10 integration node.

Optional - Delete your existing integration node:

- Stop the original integration node
- Remove the original integration node from the Toolkit
- Delete the original integration node

Post Migration

- Review technical changes in IIB V10
- Set up a command environment using `mqsiprofile`
- Reconfigure any Integration node/server/ httplistener properties, configurable services etc.
- Reconfigure Administration security after migration (queue-based or file-based)
- Migrate deployable resources

Post Migration – Technical changes

- V9 > V10
  - Improvements in DFDL schema validation
- V8 > V10
  - XMLNSC timezone handling
- V7 > V10
  - XMLNSC timezone handling
  - Resource statistics and message flow accounting and statistics XML publication messages
- Refer to the following KC topic for details regarding technical changes in IIB V10

Post Migration – Command Environment Setup

- Verify that you are running the correct profile before using v10
- Log off and log on again before you run the specific profile that you require
- Update environment variables to point to the correct locations of files like `odbc.ini`
- Run the `mqsicvp` command to validate the connection to all data sources

Post Migration – Admin Security

- No longer forced to use queue-based permissions on WebSphere MQ.

```
C:\Program Files\IBM\IIB\10.0.0.0>mqsichangeauthmode v10test -s active -m file
BIP8071I: Successful command completion.
```

- Web UI should be used instead of IBX to view security profile information. Changes must be made using the command line or MQ Explorer if using mq authorizations.

Post Migration – Deployable Resources

- You can continue to use legacy resources in IIB however you will need to migrate these resources prior to continuing to develop them
- Import message flow projects or integration projects into the V10 IIB Toolkit to migrate your resources from earlier versions
- Message flow projects were replaced by Message Broker projects in WMB V8. Message Broker projects were renamed as integration projects in IIB V9
- Resources that require additional steps
  - Message sets, Maps , ESQL files, Subflows, Message flows using SSLv3, Message flows that contain JMS nodes, File nodes, or wsdl queries, Custom integration applications, SAP adapter projects

Behavioral Changes

- Web UI extended to support administration tasks (v9, v8, v7)
  - Web UI is extended to support integration node administration tasks
- Additional options for administration security (v9, v8, v7)
  - IIB V10 provides the option of using file based permissions
- Administration scripts may need to be updated (v9, v8, v7)
  - Some parameters for administration commands that connect to integration nodes have changed

For example, `mqsichangebroker` with –q

Behavioral Changes

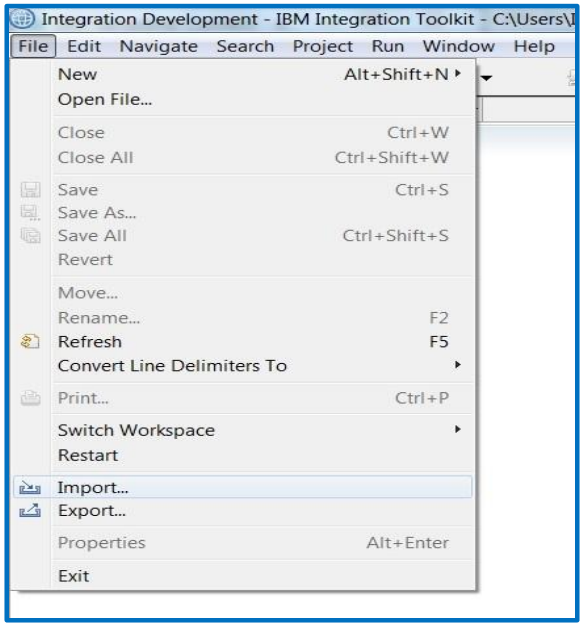
- WebSphere MQ and migration to IIB V10 (v9, v8, v7)
  - MQ is no longer required for IIB to run, however there is still functionality that requires MQ to work as stated in the Knowledge Center
- Message maps: change in behavior (v9, v8, v7)
  - The behavior of the Assign transform in the Graphical Data Mapping editor has been corrected when assigning an empty string to an element
- Message flow statistics on z/OS (v9, v8, v7)
  - Additional fields have been added so that time intervals can be calculated correctly with web user interface.

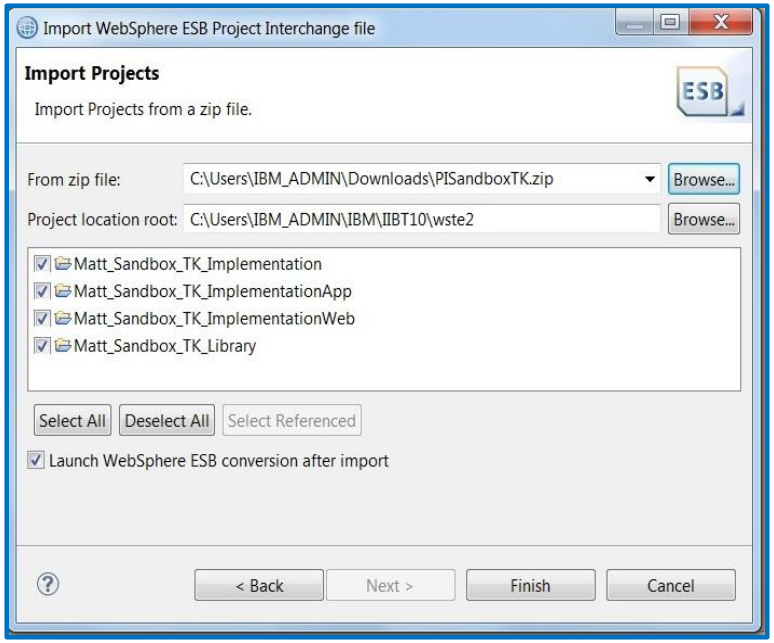
Behavioral Changes

- Web UI not enabled on migrated nodes (v8, v7)
  - The Web UI is not enabled on migrated integration nodes by default. New integration nodes have this enabled by default
- Subflows and BAR files (v7)
  - BAR files are now built by packaging everything as source instead of compiling them into files like .cmf
- Applications and Libraries (v7)
  - Existing projects can continue to be used however any newly created resources will fit the new Application and Libraries format

WESB -> IIB V10

- Start the IBM Integration Toolkit.
- Open the WebSphere ESB Import wizard
  - Click `File > Import > Expand IBM Integration > Select WebSphere ESB Project Interchange > Click Next`

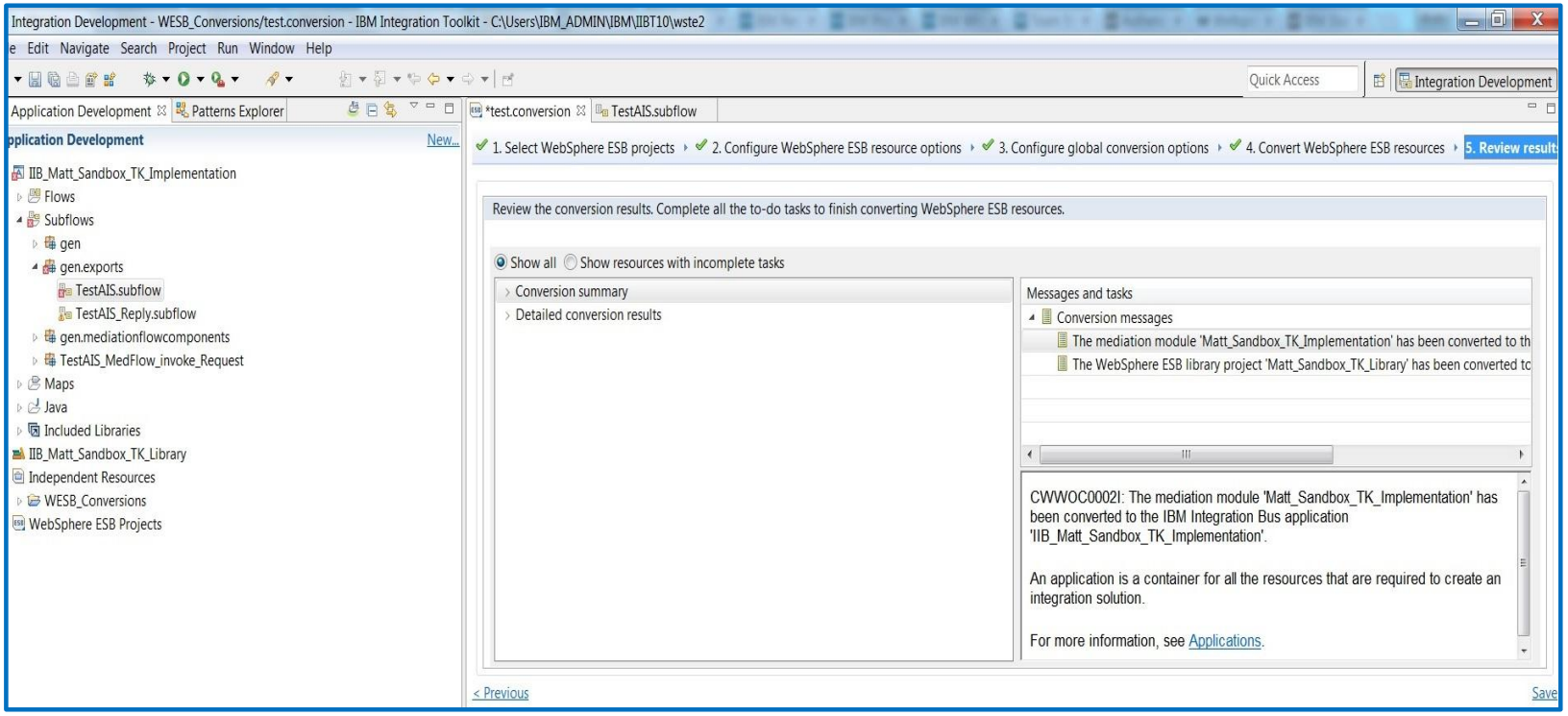




- Select a WebSphere Enterprise Service Bus PI file to import.
- Optional: Select Launch WebSphere ESB conversion tool after import
- Click Finish.

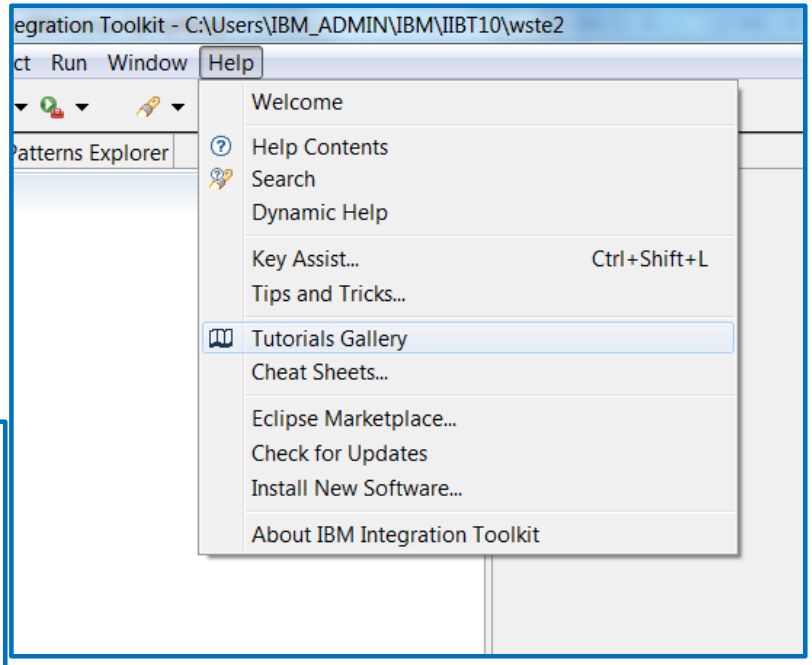
WESB → IIB V10 conversion tool

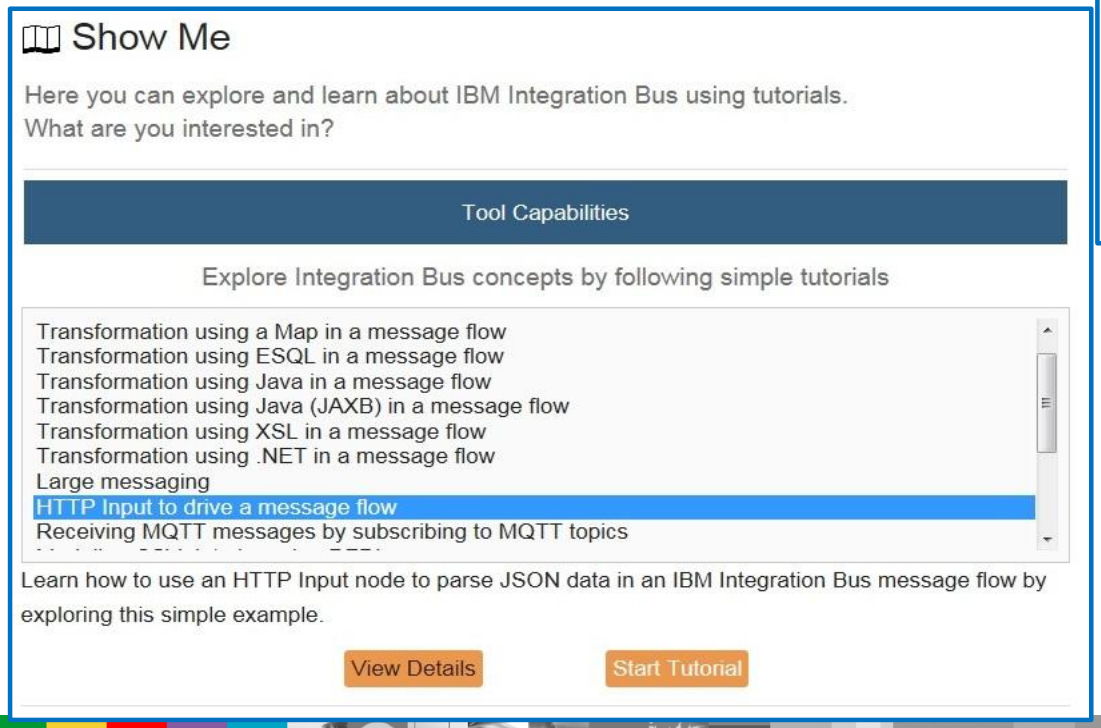
Use WESB to IIB conversion tool to configure WebSphere ESB resource and global conversion options



Samples

- Samples gallery replaced by the Tutorial gallery in the Help menu option in the Toolkit

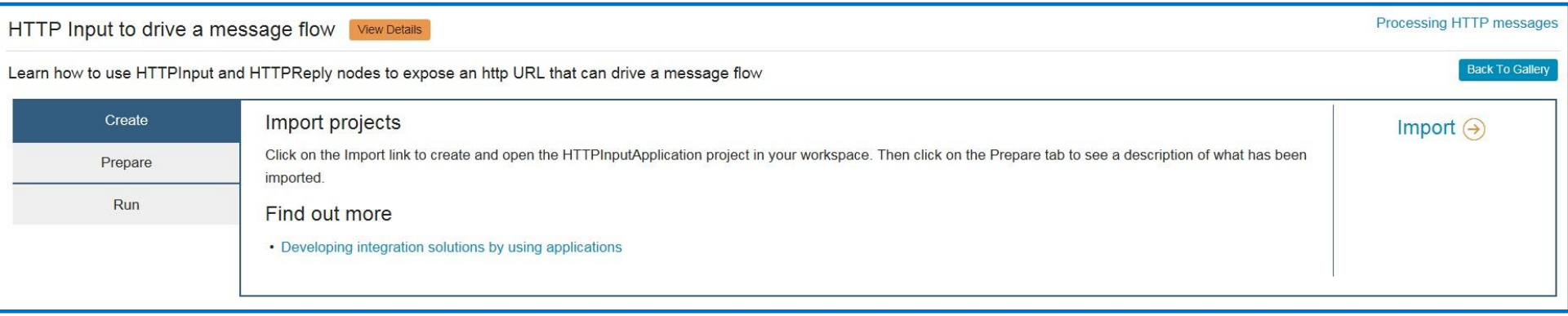




Opening the gallery provides a list of all the available tutorials stored in Github

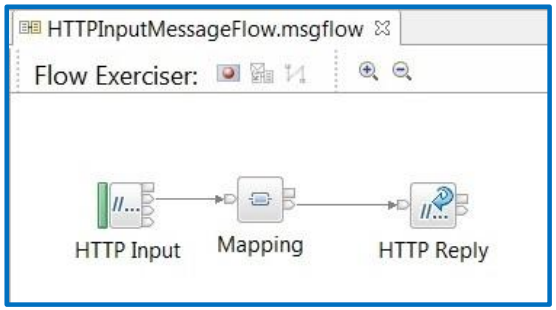
Note: This list will be updated regularly as more Tutorials are created by our developers

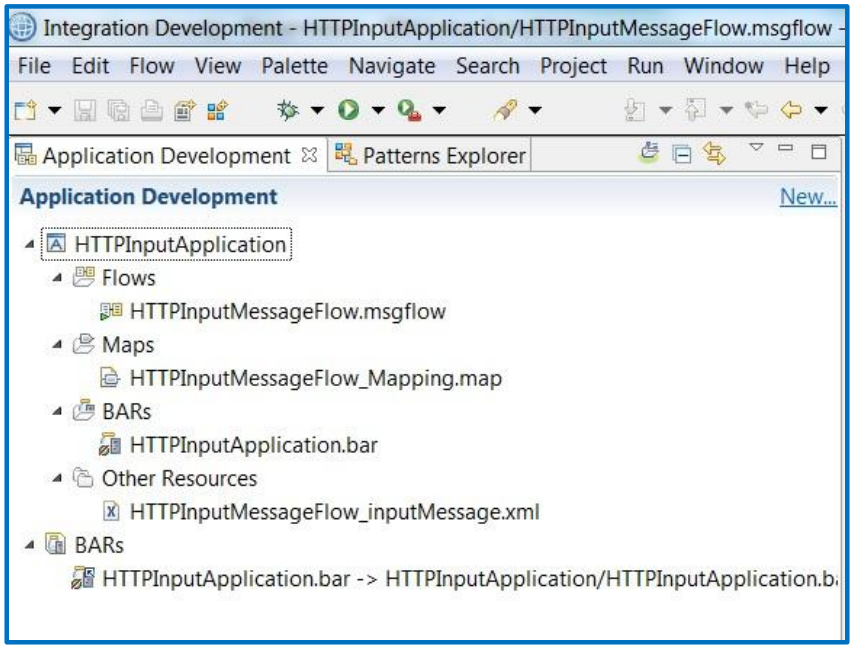
Samples



Initial tab of the tutorial:

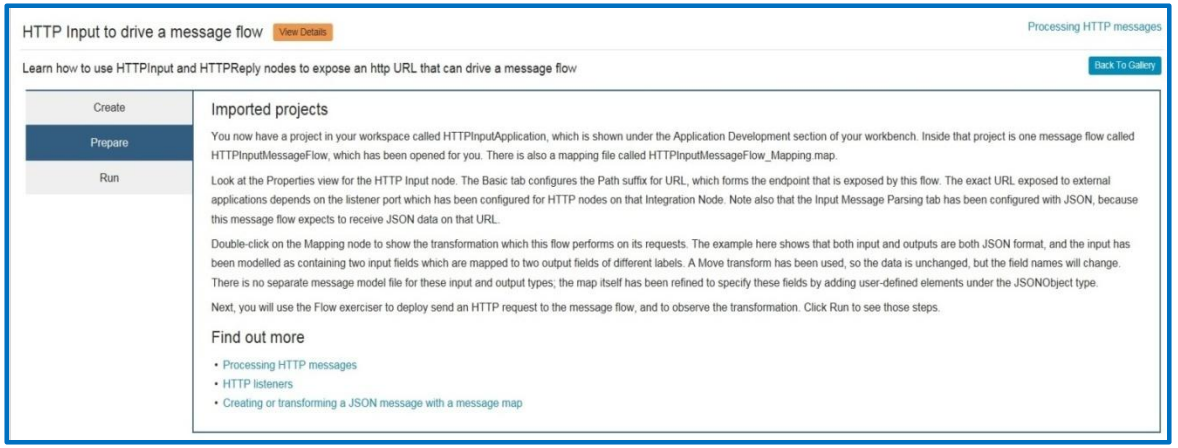
- Allows you to import the relevant working material, For example, message flows, maps, bar files, and other needed resources





Samples

- Second tab provides details about the different components within the flow and describes how they will work



- Final tab details how to run the sample to completion and review data to determine the success or failure of the test and helps with cleanup

Resources

- Migrating to IIB V10
- What's new in IBM Integration Bus V10
- Effective Administration in IIB V10
- IBM Integration Bus in Cloud
- IBM Integration Bus Community
- IIB dwAnswers

Connect with us!

1. **Get notified on upcoming webcasts**
   Send an e-mail to wsehelp@us.ibm.com with subject line “wste subscribe” to get a list of mailing lists and to subscribe
2. **Tell us what you want to learn**
   Send us suggestions for future topics or improvements about our webcasts to wsehelp@us.ibm.com

Questions and Answers

Additional WebSphere Product Resources

- Learn about upcoming WebSphere Support Technical Exchange webcasts, and access previously recorded presentations at:
  http://www.ibm.com/software/websphere/webcast
- Discover the latest trends in WebSphere Technology and implementation, participate in technically-focused briefings, webcasts and podcasts at:
  http://www.ibm.com/developerworks/websphere/community/
- Join the Global WebSphere Community:
  http://www.websphereusergroup.org
- Access key product show-me demos and tutorials by visiting IBM Education Assistant:
  http://www.ibm.com/software/info/education/assistant
- View a webcast replay with step-by-step instructions for using the Service Request (SR) tool for submitting problems electronically:
  http://www.ibm.com/software/websphere/support/d2w.html
- Sign up to receive weekly technical My Notifications emails:
  http://www.ibm.com/software/support/einfo.html