A technical introduction to IBM App Connect Enterprise

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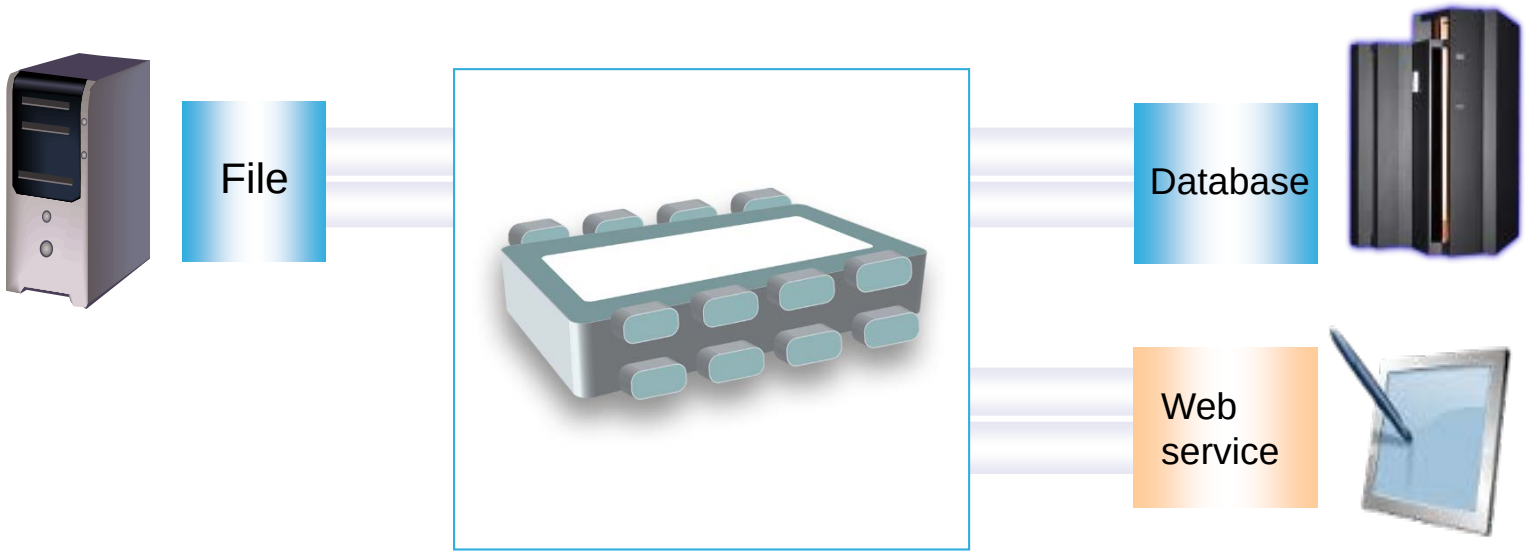
Agenda

- What is App Connect Enterprise
- Key concepts
- Product overview
- Getting Started

What do we mean by Integration?

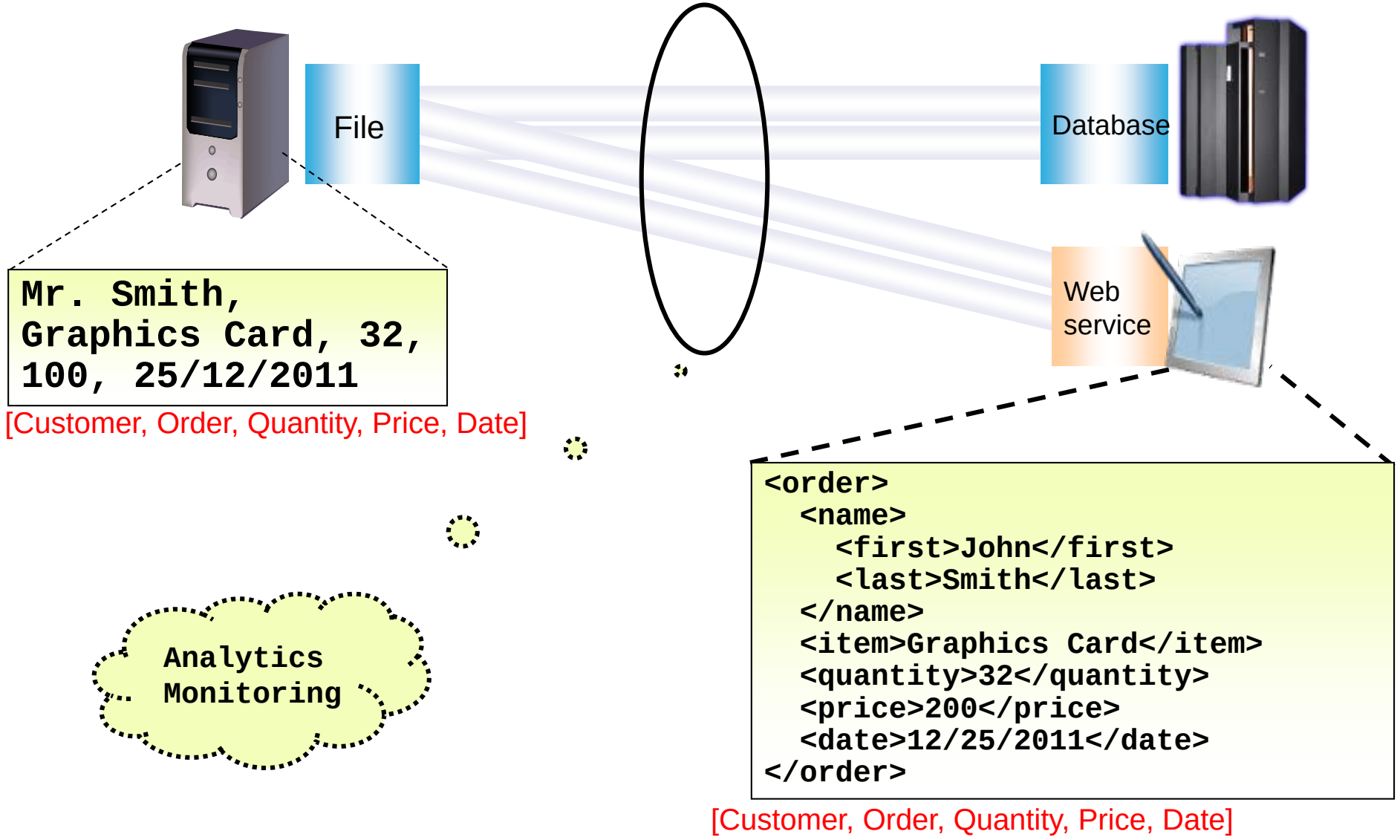
- IT systems consist of many logical ***endpoints***
  - Off-the-shelf applications, services, web apps, devices, appliances, custom built software… + now cloud services
- These systems can reside in many different environments whether on-premise or in a cloud data centre
- Endpoints expose a set of inputs and outputs, which comprise
  - Protocols - e.g. MQ, TCP/IP, HTTP, File system, FTP, SMTP, POP3, Kafka 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

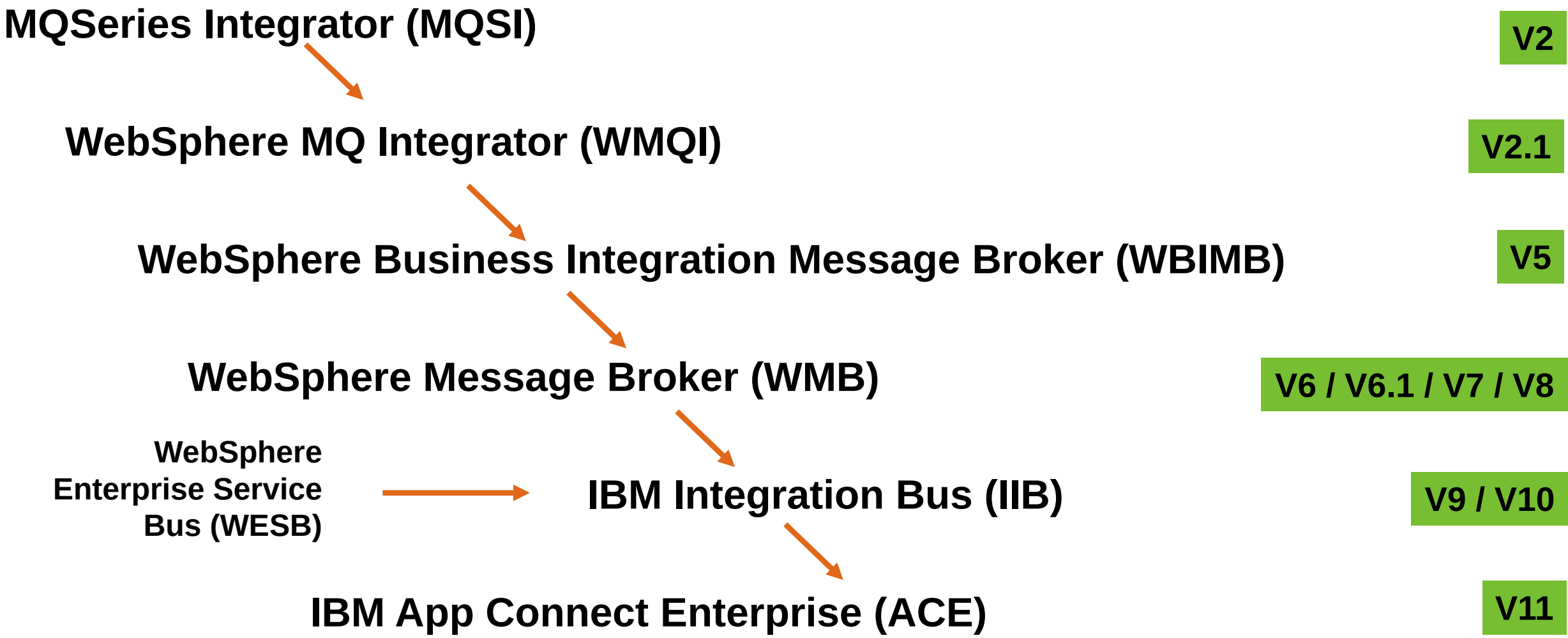
Example integration



IBM App Connect Enterprise

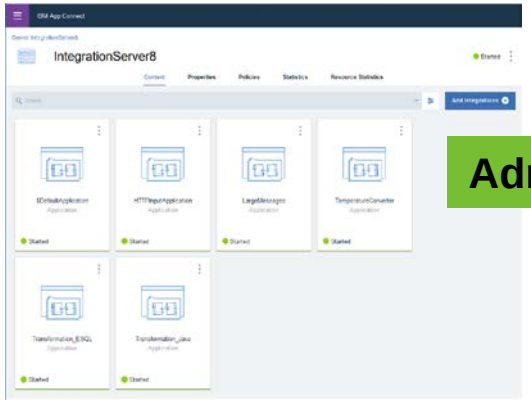
- Provides endpoints and the ability to connect to other endpoints
  - Off-the-shelf applications, services, web apps, devices, appliances, custom built software… + now cloud services
- Provides connectivity to systems residing in many different environments whether on-premise or in a cloud data centre
- Protocols and Message Formats
  - Protocols - e.g. MQ, TCP/IP, HTTP, File system, FTP, SMTP, POP3, Kafka etc.
  - Message Formats - e.g. Binary (C/COBOL), XML, Industry (SWIFT, EDI, HL7), User-defined
- Build, host + consume APIs
- Mediation Patterns
  - Route, Transform, Enrich, Filter, Monitor, Distribute, Decompose, Correlate, Fire and Forget, Request/Reply, Publish/Subscribe, Aggregation, Fan-in, Complex Event Processing…

A brief history of IBM Integration

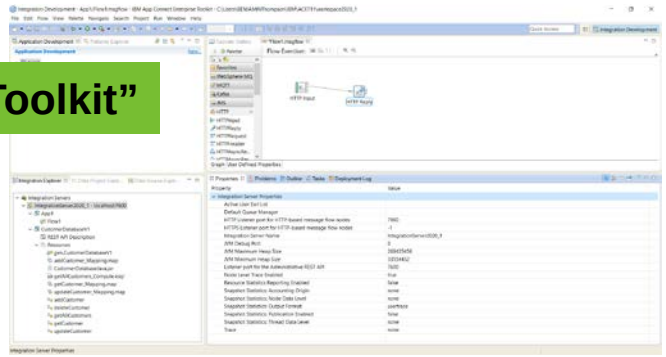


IBM App Connect Enterprise (ACE)

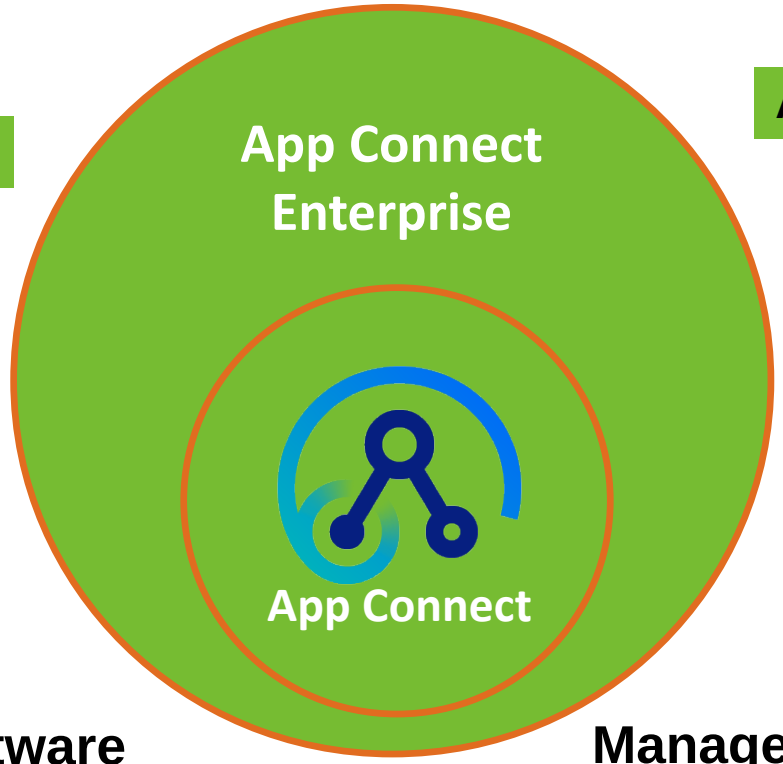
- Integrations are developed using the ACE Toolkit
- Integrations deployed in a dedicated runtime or as part of our App Connect service on IBM Cloud
  - Entitlement included to IBM App Connect iPaaS (Integration Platform as a Service) for cloud application connectivity

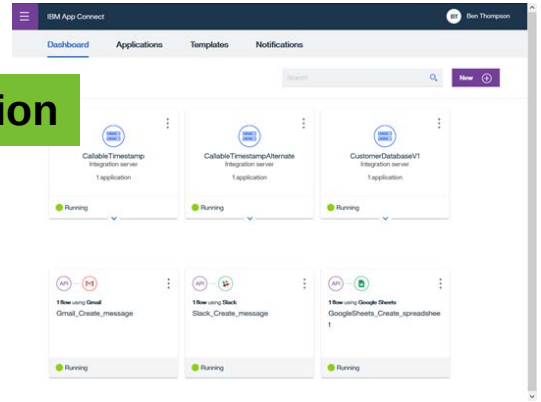


Administration

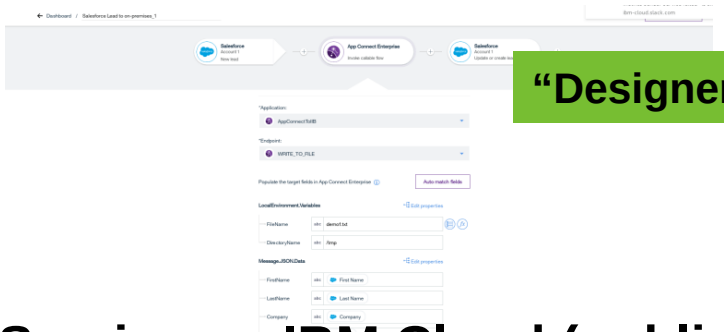


"Toolkit"





Administration



"Designer"

Software ← → **Managed Service on IBM Cloud (public)**

- Run and manage **IBM App Connect Enterprise** in any location or cloud exactly as you need it

IBM App Connect Enterprise

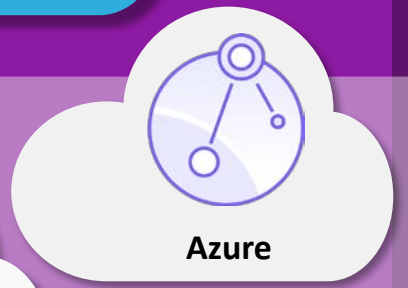
Celebrating

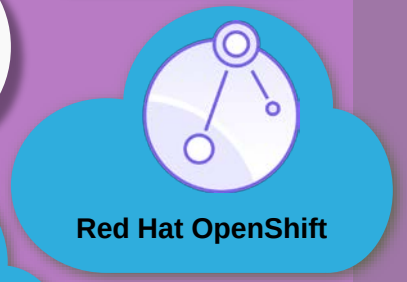
20 years

- On-premise software

- Run it yourself in any cloud, public or private

- Let IBM host it for you with its managed SaaS App Connect service in public cloud

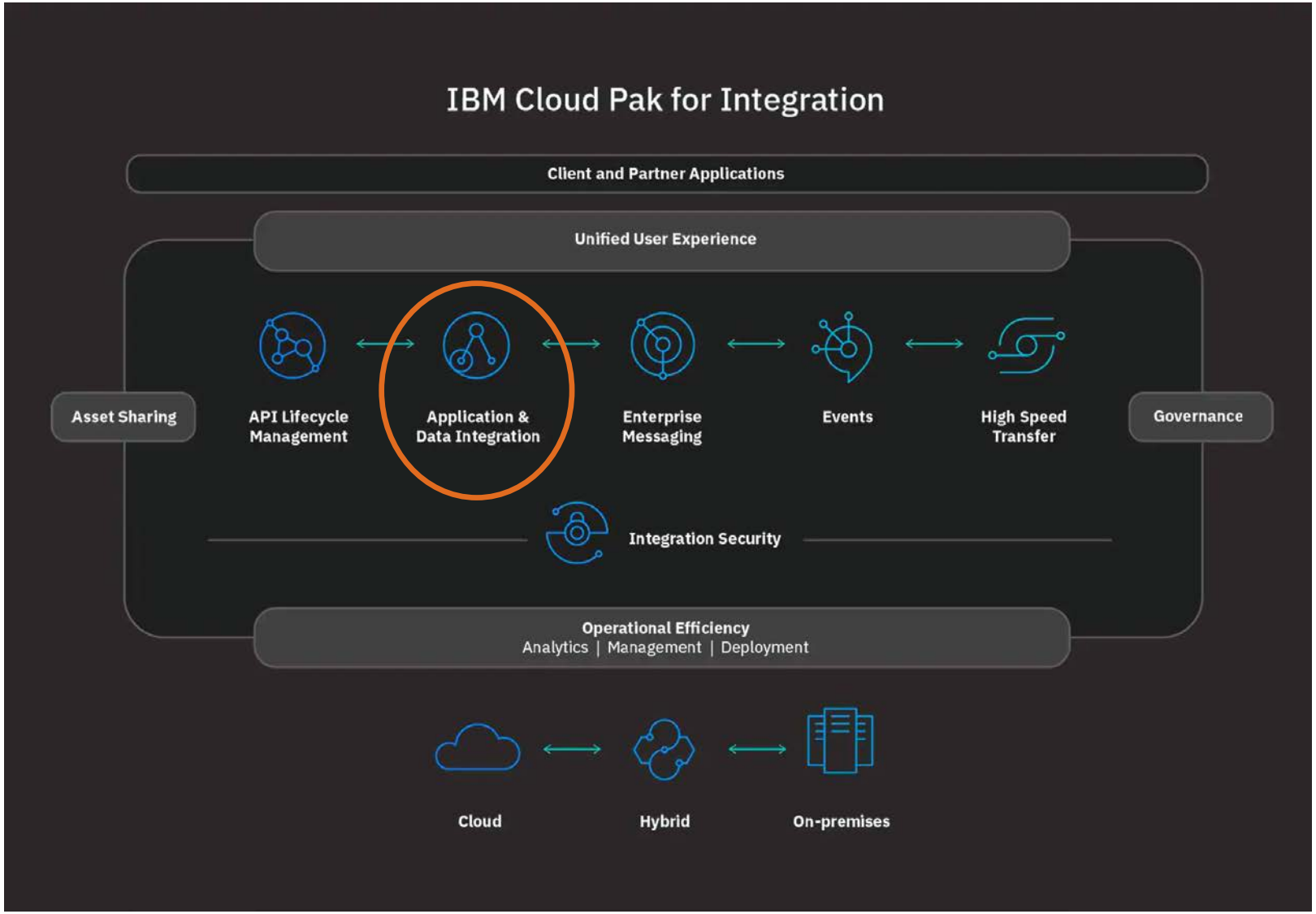




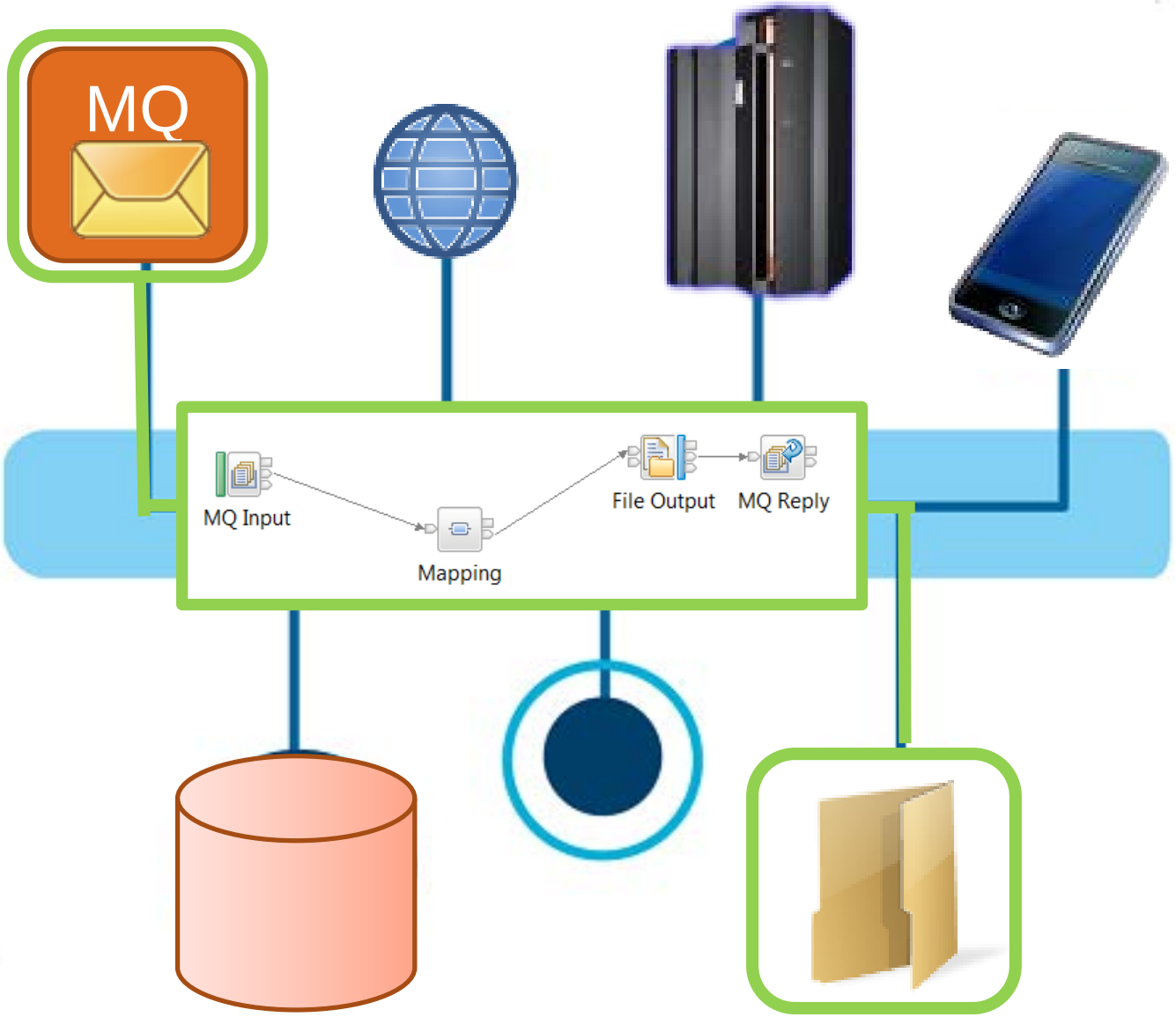
IIB on z/OS ?

- **Statement of Direction: IBM Integration Bus on IBM Z platform**
- **Jan 21, 2020**
- **http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep_ca/3/897/ENUS220-083/index.html&lang=en&request_locale=en**

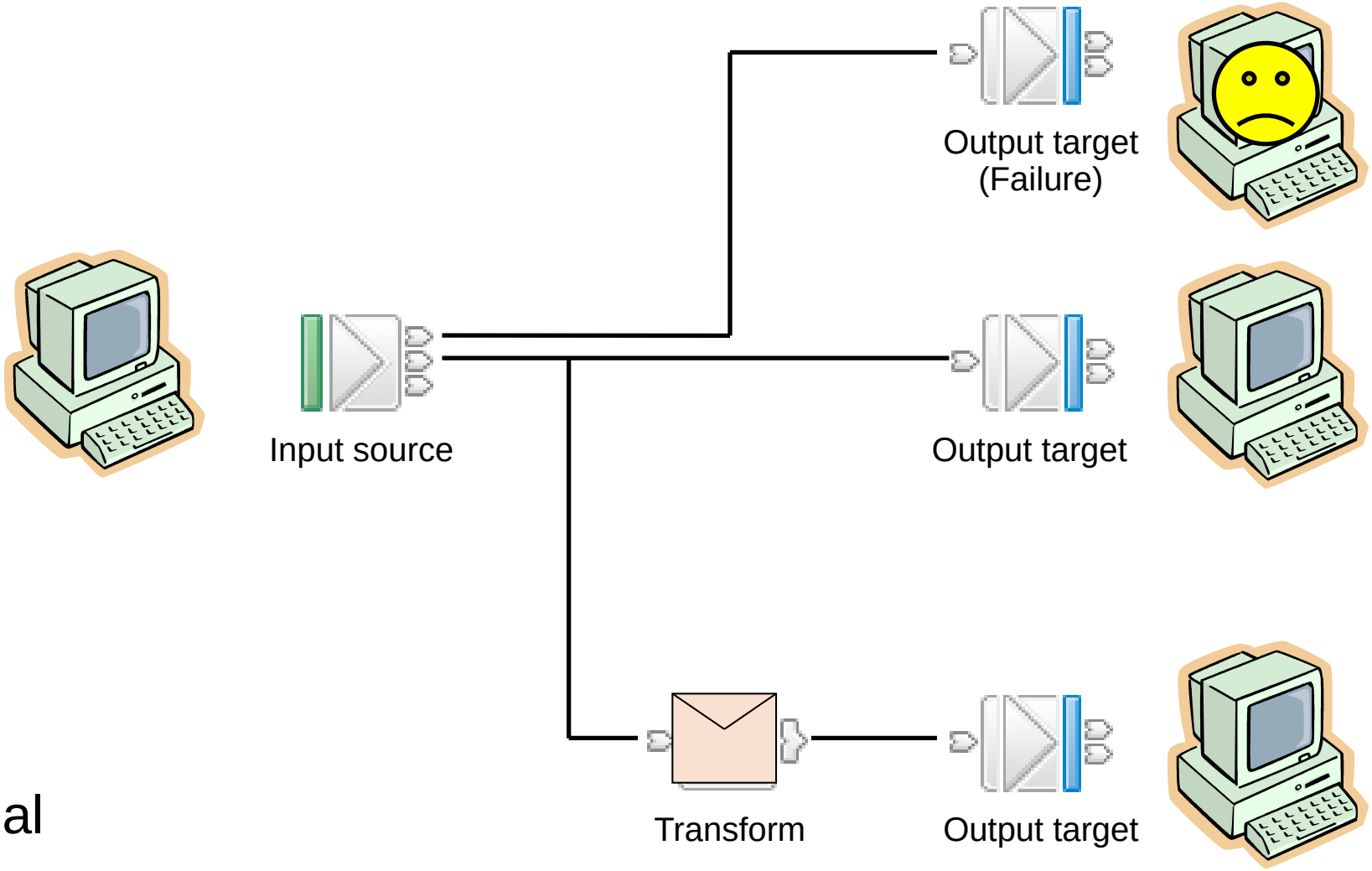
Also available as part of Cloud Pak for Integration



Key Concepts

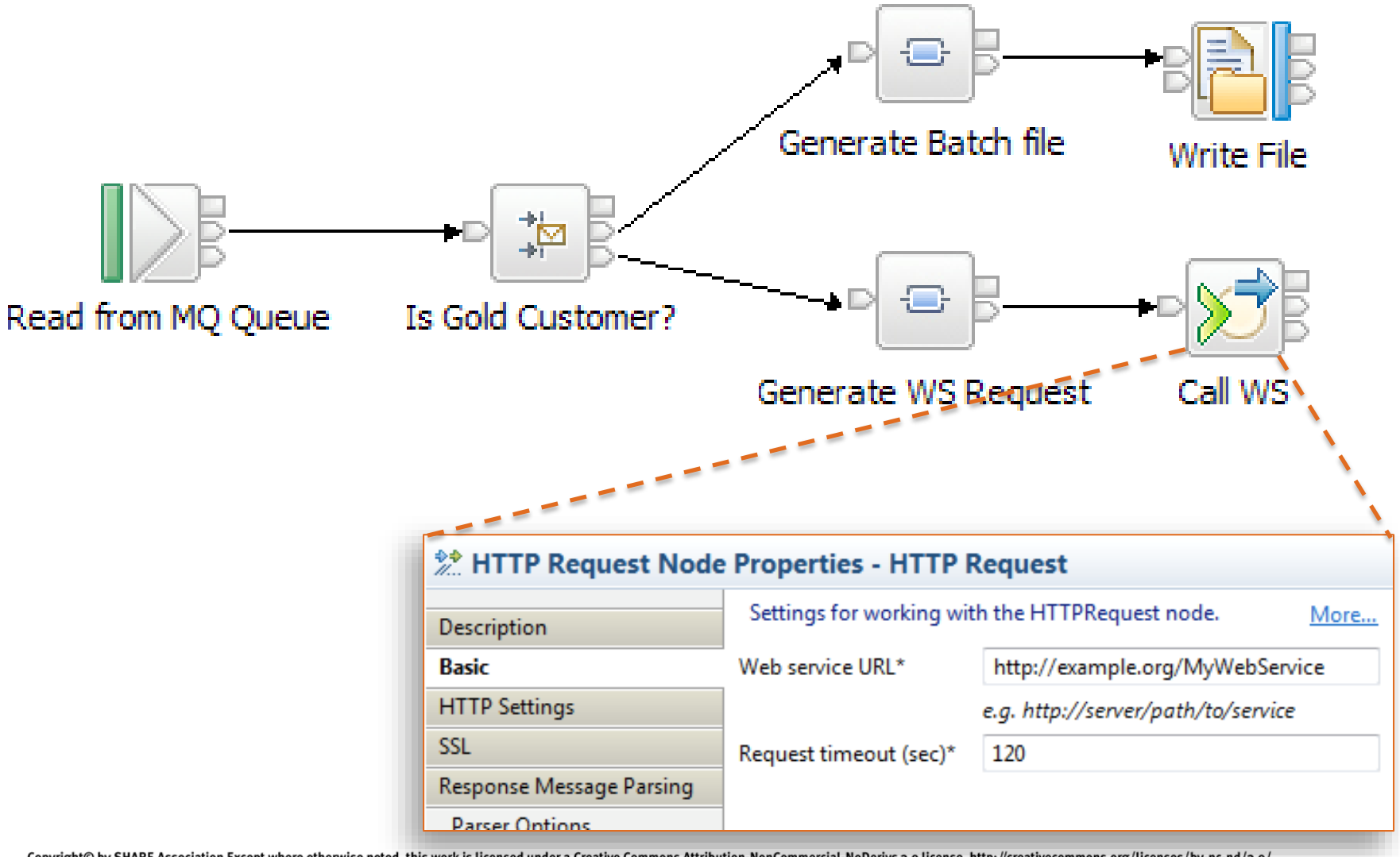


Message flows



- Reusable
- Scalable
- Transactional

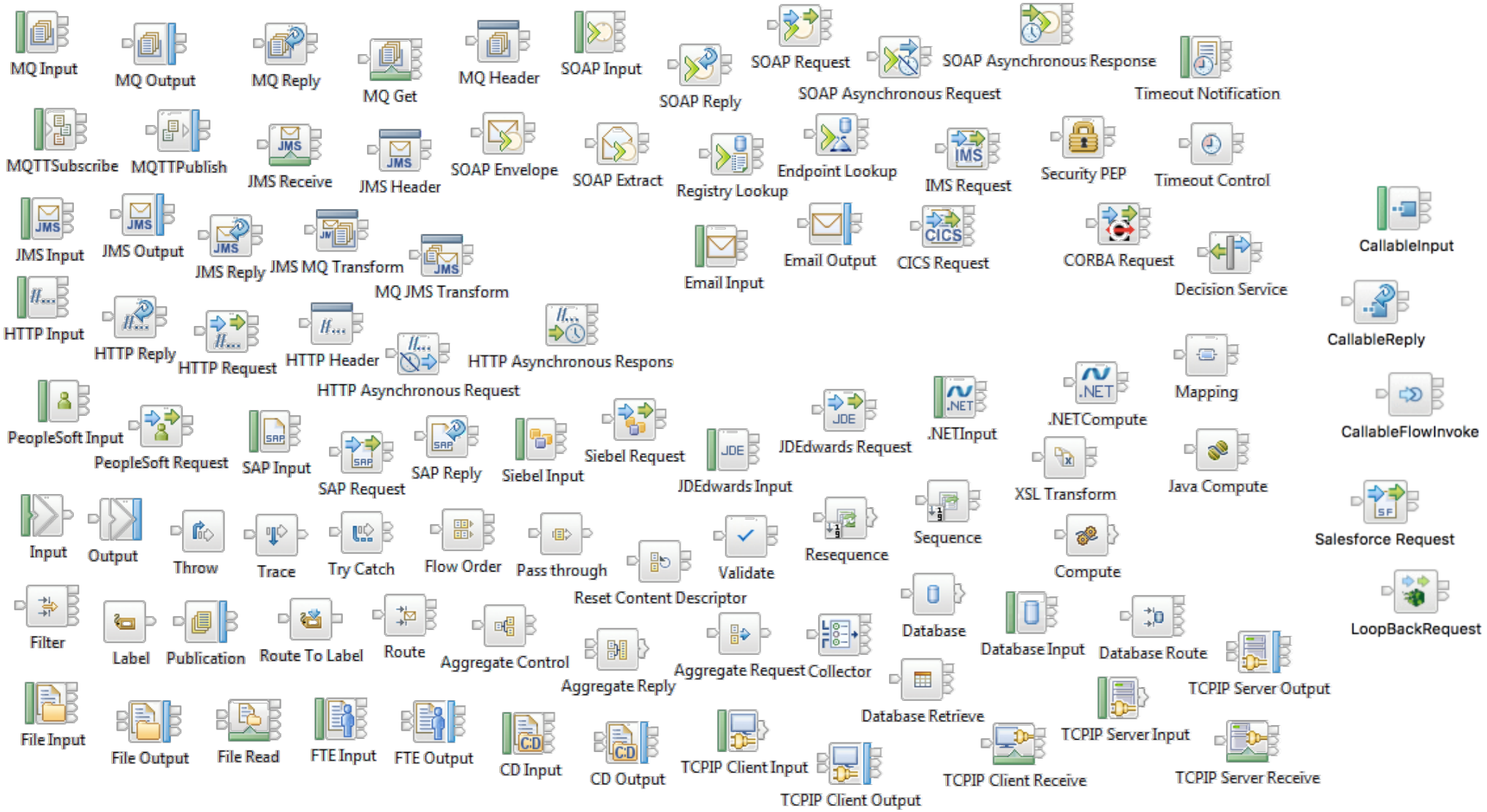
Message flow example



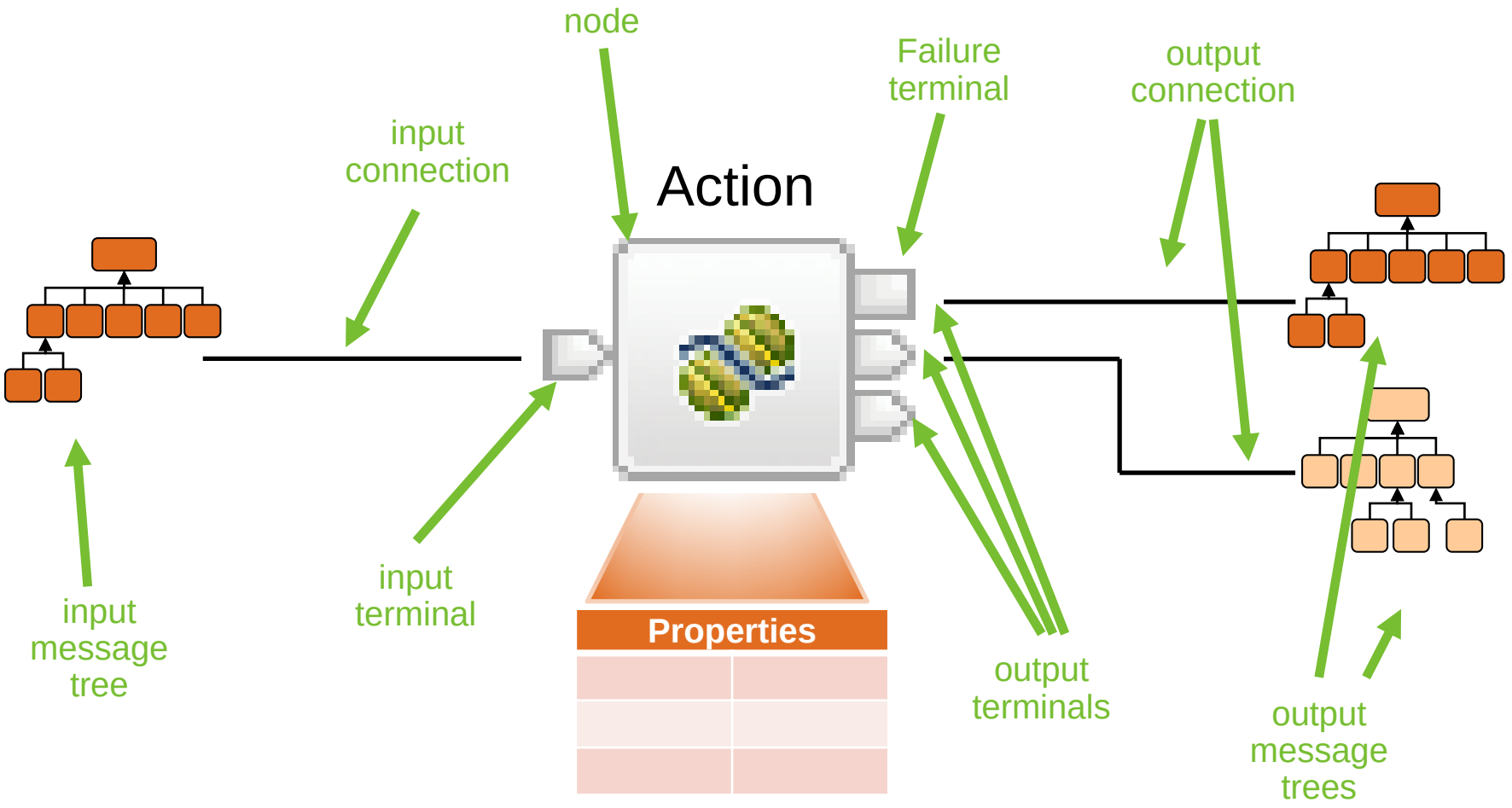
Nodes

- The building blocks of message flows
- Each node type performs a different (input, output or processing) action
- Many different node types
  - Grouped into logical categories in the editor

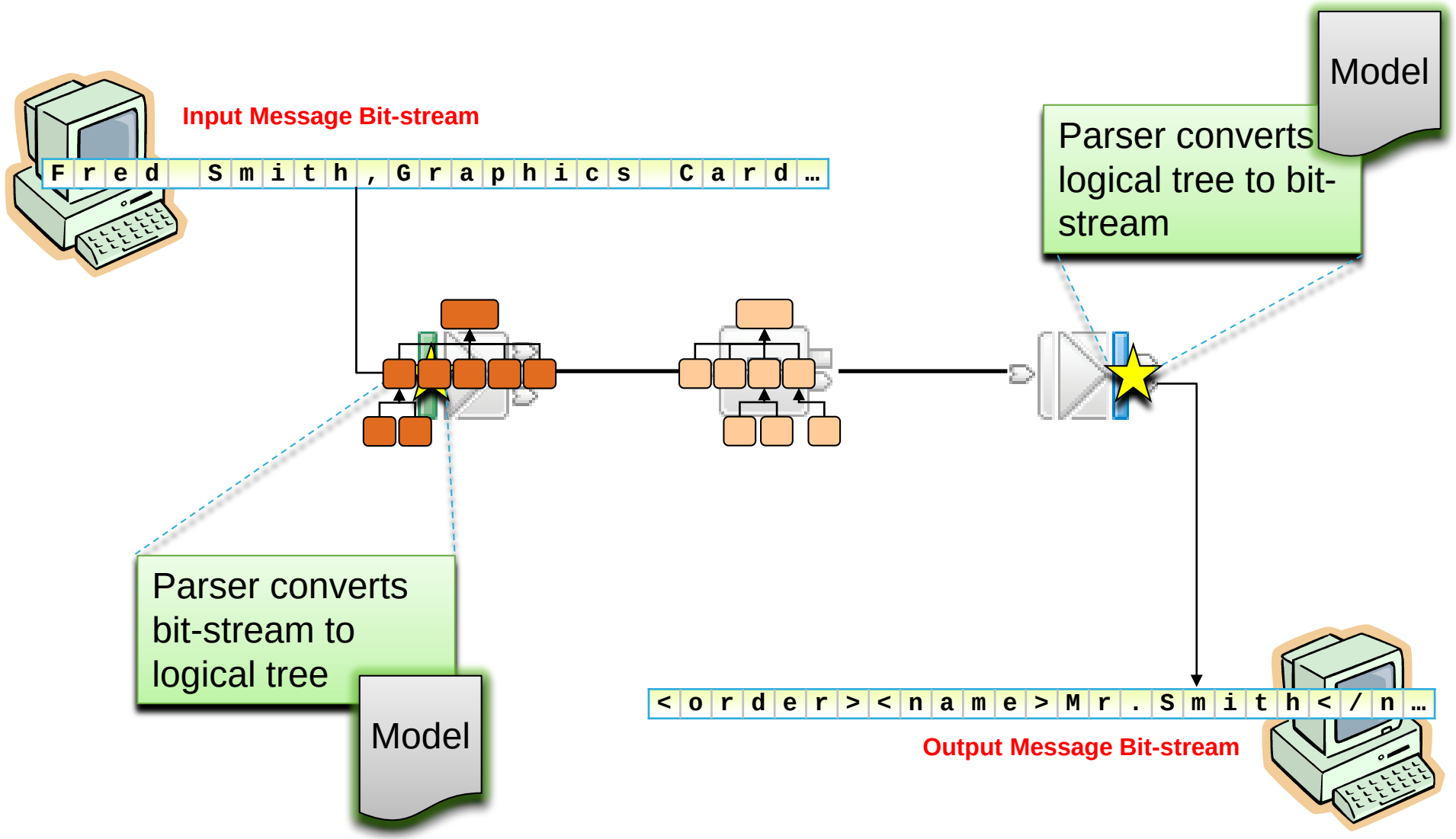
Lots of nodes are built in



Node Anatomy



The Parser and Message Tree



Message Model

Physical ⟷ Logical

```
<order>
  <name>
    <first>John</first>
    <last>Smith</last>
  </name>
  <item>Graphics Card</item>
  <quantity>32</quantity>
  <price>200</price>
  <date>2007-11-14</date>
</order>
```

XML

```
John,Smith,Graphics Card,
32,200,07/11/14
```

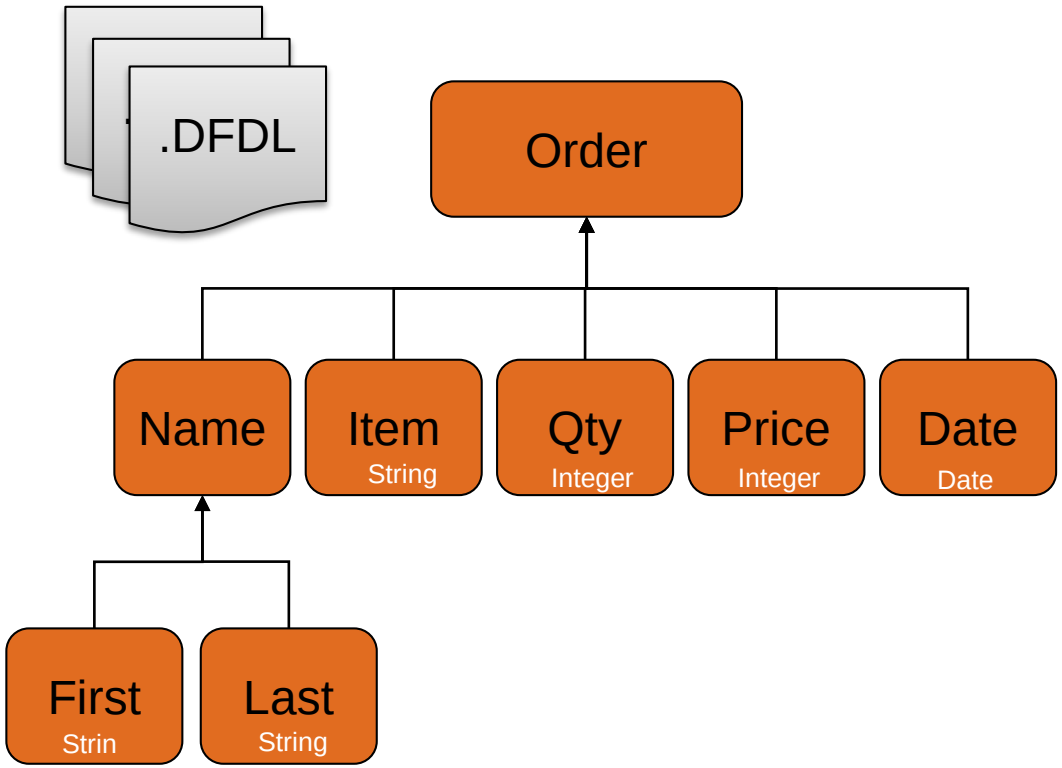
CSV

```
John Smith.............
Graphics Card.........
3220020071114.........
```

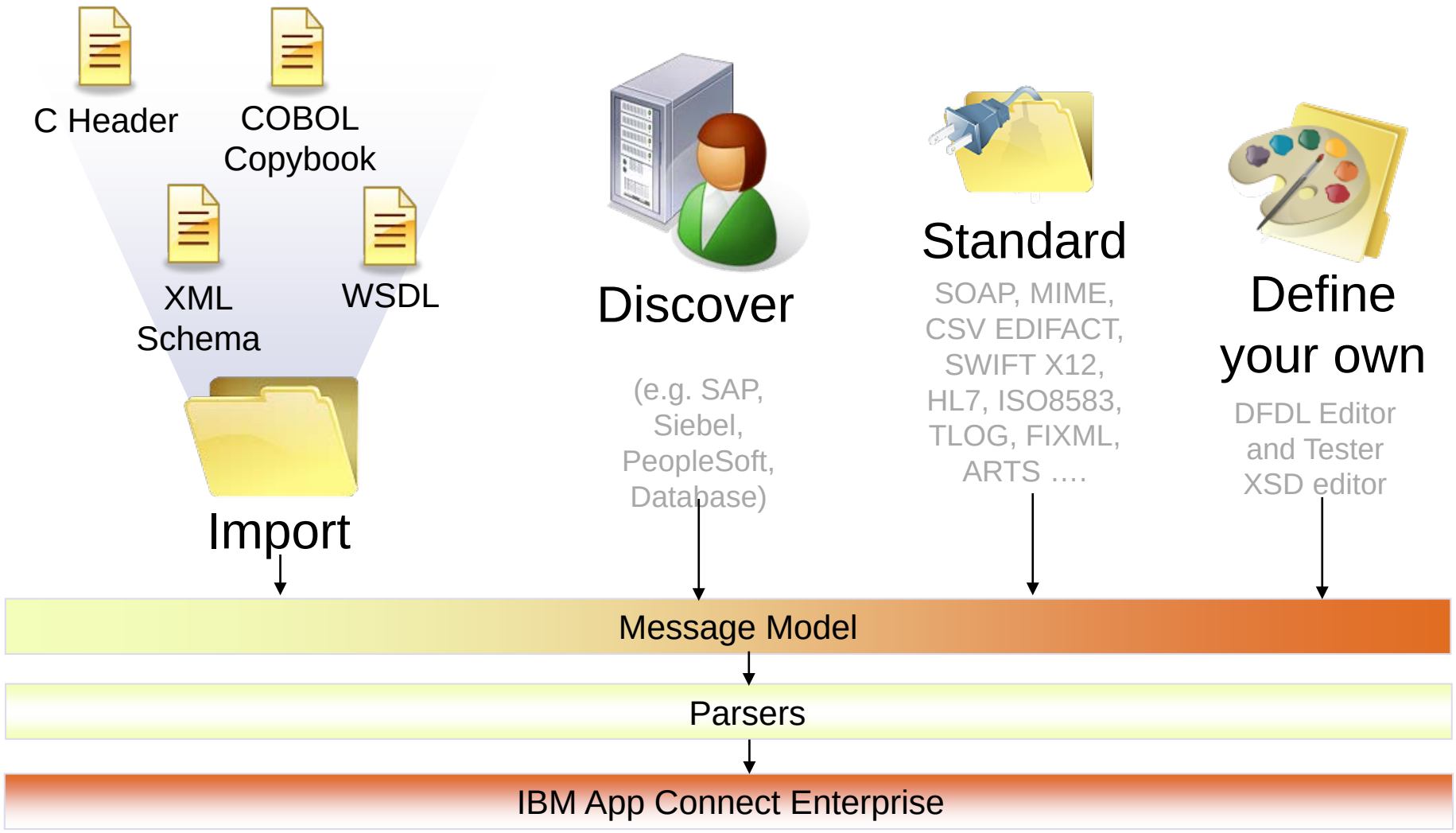
CBL

```
{“order”:
  {“name”:
    {“first”:”John”,
     “last”:”Smith”},
   “item”:”Graphics Card”,
   “quantity”:32,
   “price”:200,
   “date”:”2007-11-14”}}
```

JSON



Creating Message Models



Powerful transformation and programming options

Compute

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

JavaCompute

- Uses Java programming language
- Ability to use XPath, JAXB

.NETCompute

- Invoke general purpose logic in any .NET supported language
- Windows only

Mapping

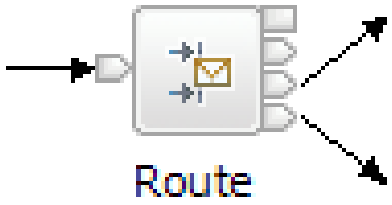
- Graphical, easy to use
- Drag and Drop fields, apply functions

XSL Transform

- XML to XML Transformation
- Uses standard XSL Stylesheets

Easily address message elements


```
public class jcn extends MbJavaComputeNode {
  public void evaluate(MbMessageAssembly assembly) throws MbException {
   ...
   String lastName =
      (String)assembly.getMessage().evaluateXPath("/Body/Order/Name/Last");
   ...
  }
}
```



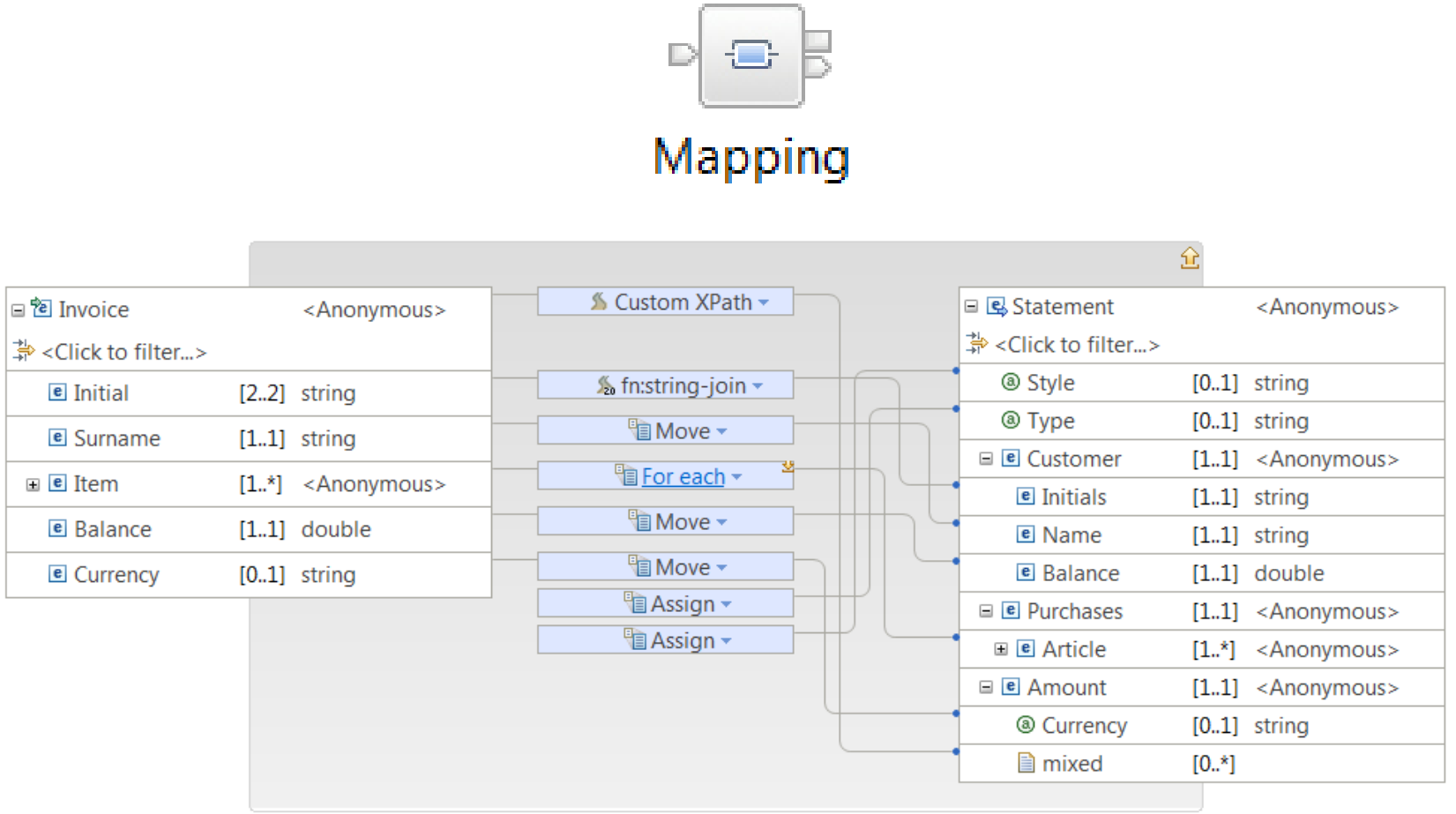
Route Node Properties - Route

Filter table*

Filter pattern	Routing output terminal
$Body/Order/Price > 1000	BigSpenders
$Body/Order/Price < 200	Cheapskates

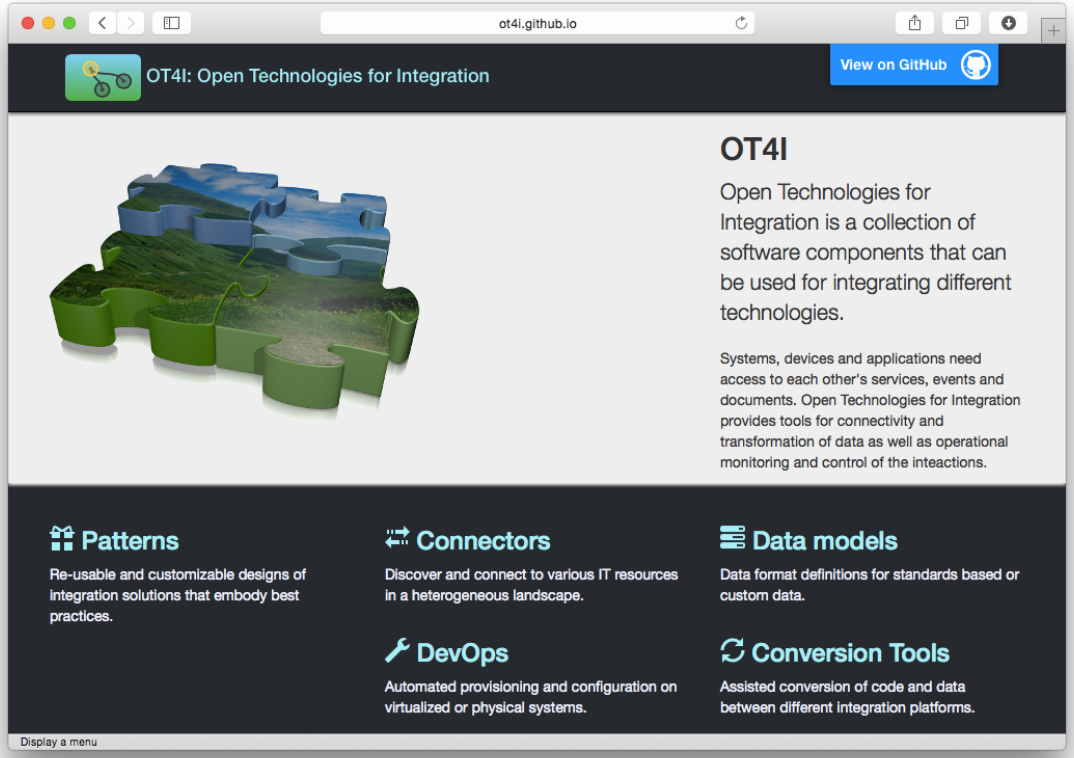

```
IF Body.Order.Date < '2008/01/01' THEN
   INSERT INTO Database.OldOrders (LastName,Item,Quantity)
   VALUES (Body.Order.Name.Last,
           Body.Order.Item,
           Body.Order.Quantity);
ENDIF;
```

Easily address message elements



The **Mapping** node allows the message tree to be referenced by creating visual mappings from one field to another..

IBM and third-party extensions



V4.0.0.0 V2.0.0.2 V1.0.0.1

Many other nodes and features available through product extensions

Write your own User-Defined Nodes or Connectors

- Native node framework available in C and Java
- OT4i connector framework provides means to implement full lifecycle, including endpoint discovery

Applications and Libraries
Integration Services and REST APIs

- Specialized containers to develop, deploy and manage your integration solutions.

- Application
  - Group resources for a specific integration solution

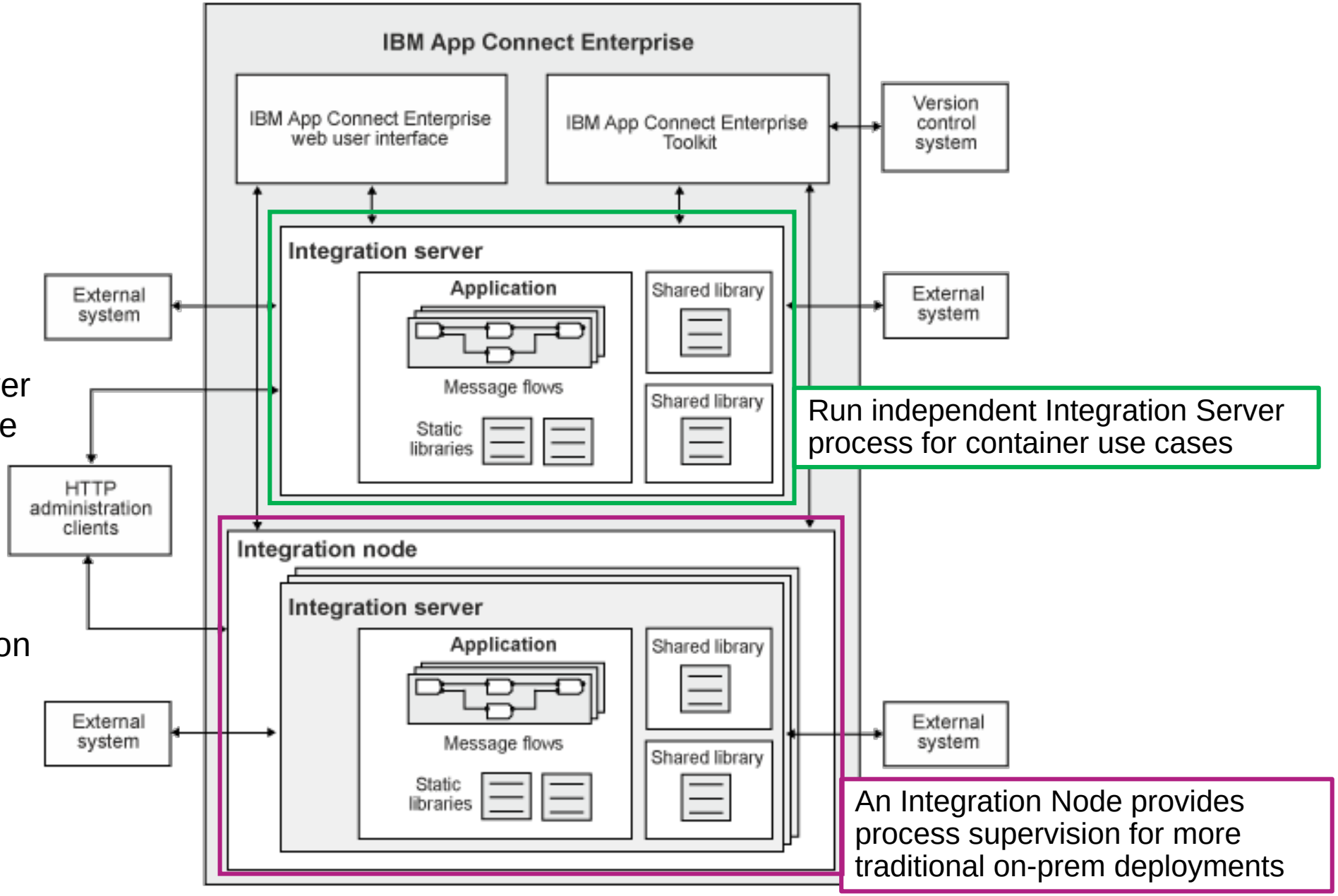
- Library
  - Group common resources for reuse
  - Can be deployed once (shared) or build into an application (static)

- REST API
  - Specialized application - Implement a REST API described by a swagger document.

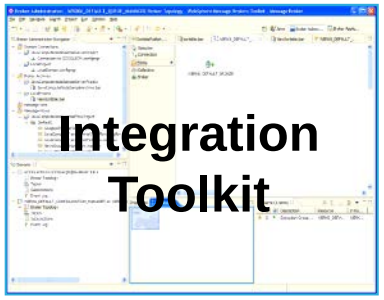
- Integration Service
  - Specialized application – Implement a Web Service described by a WSDL

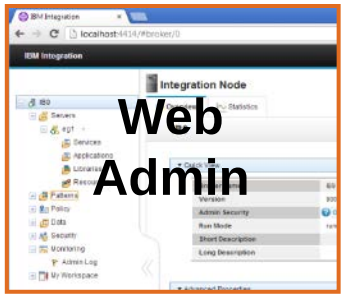
Runtime Components

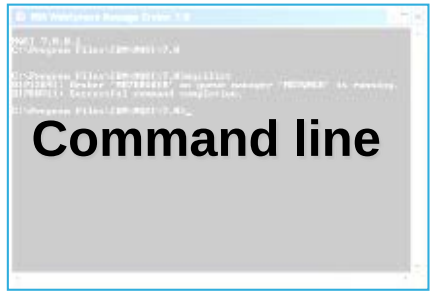
- Architected for
  - Performance
  - Scalability
  - Resiliency
- An Integration Server provides the runtime environment for message flows
- 2 main operating modes for Integration Servers
  - Independent
  - Node-owned

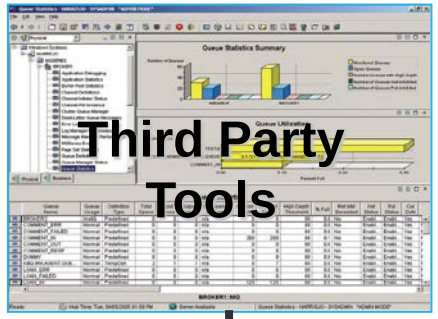


Overview of administration options

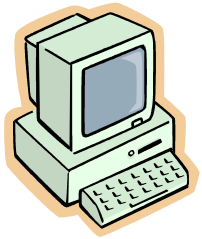




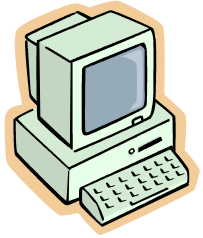




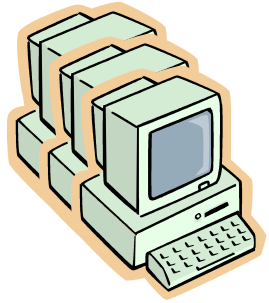
REST API



Independent
Integration
Server

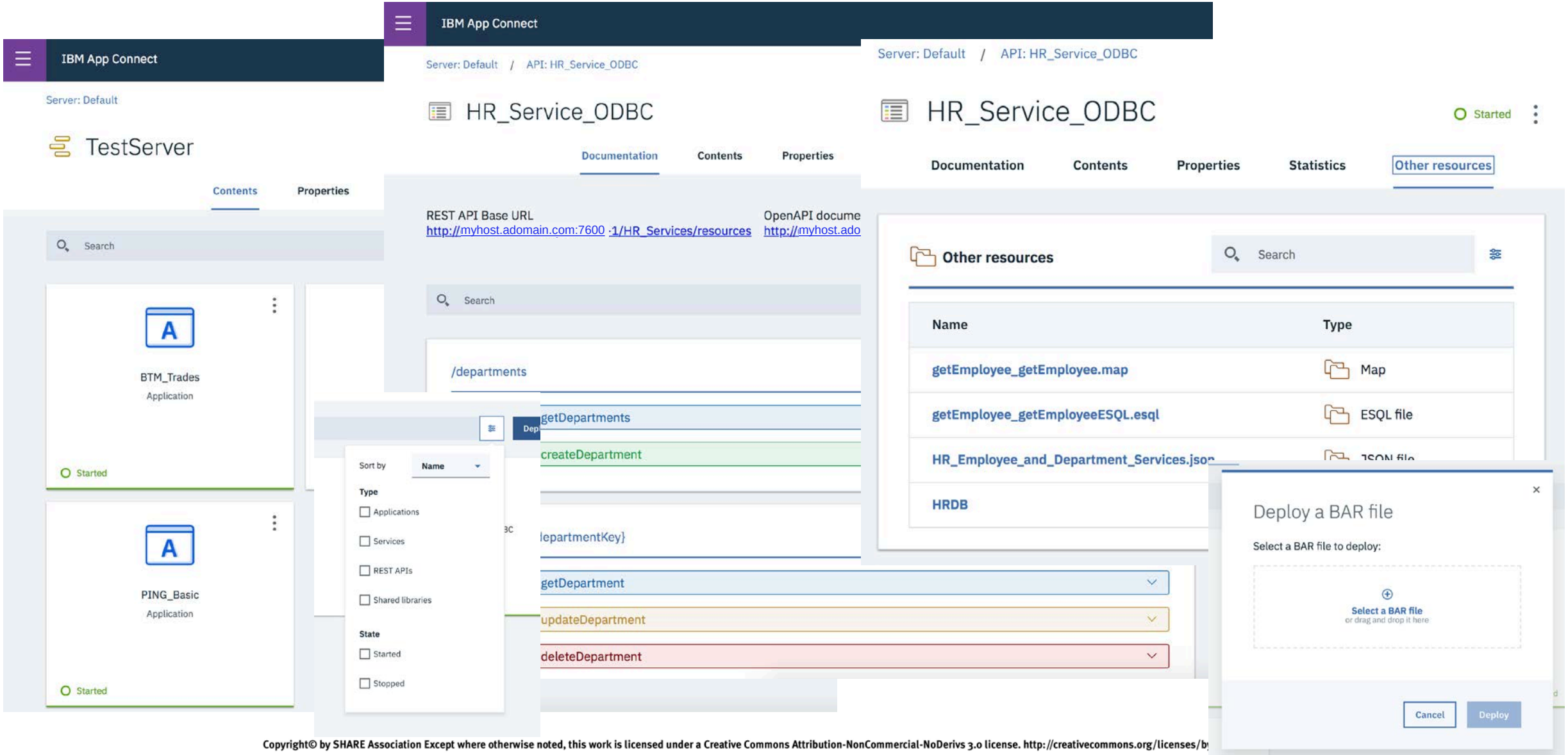


Integration
Node

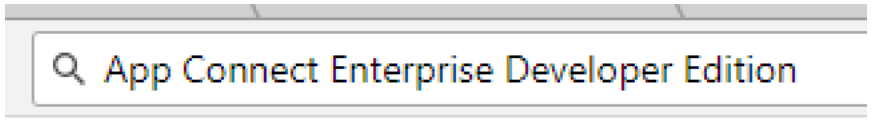


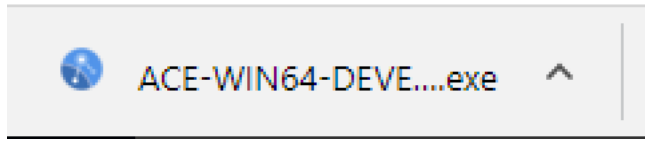
Integration
Servers

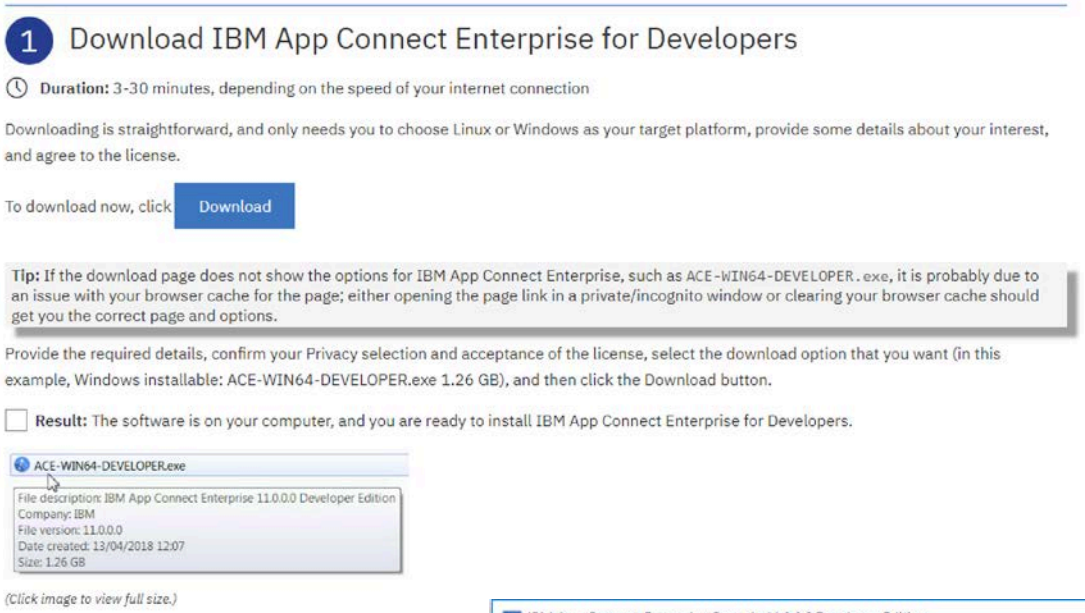
Administration using the Web User Interface

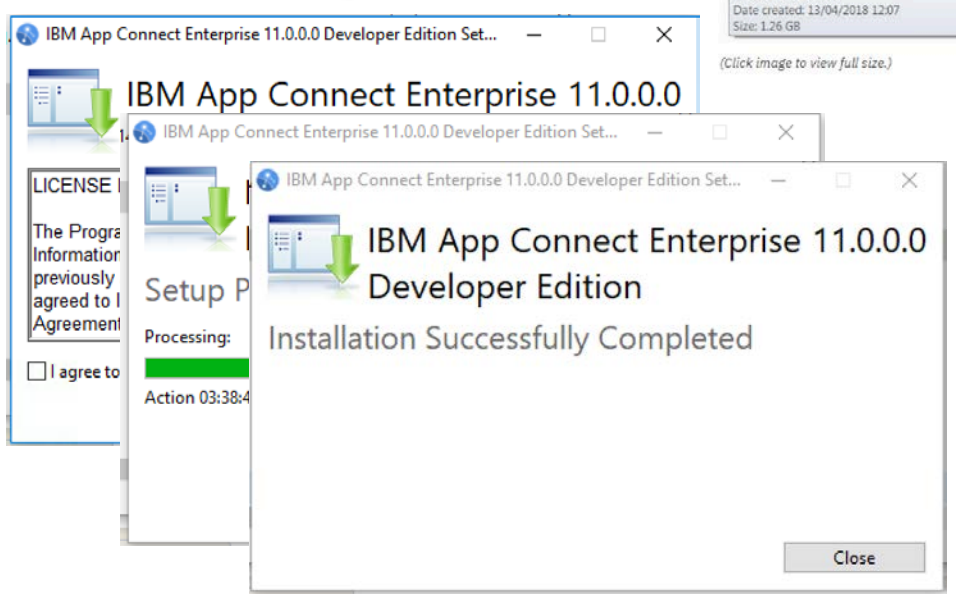


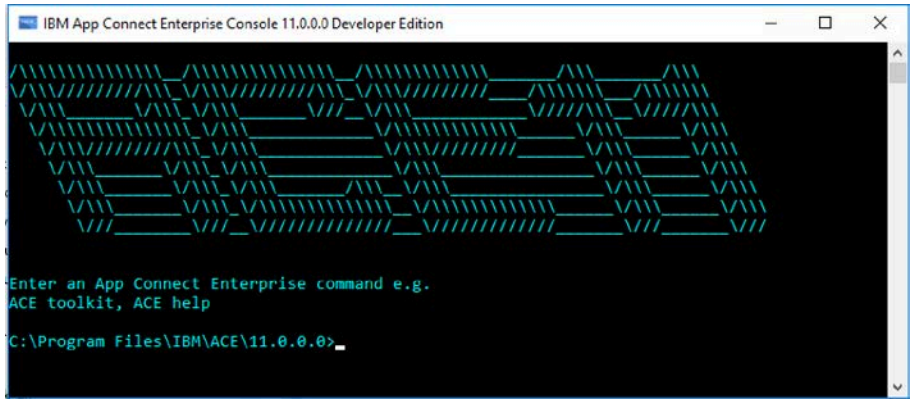
Getting started



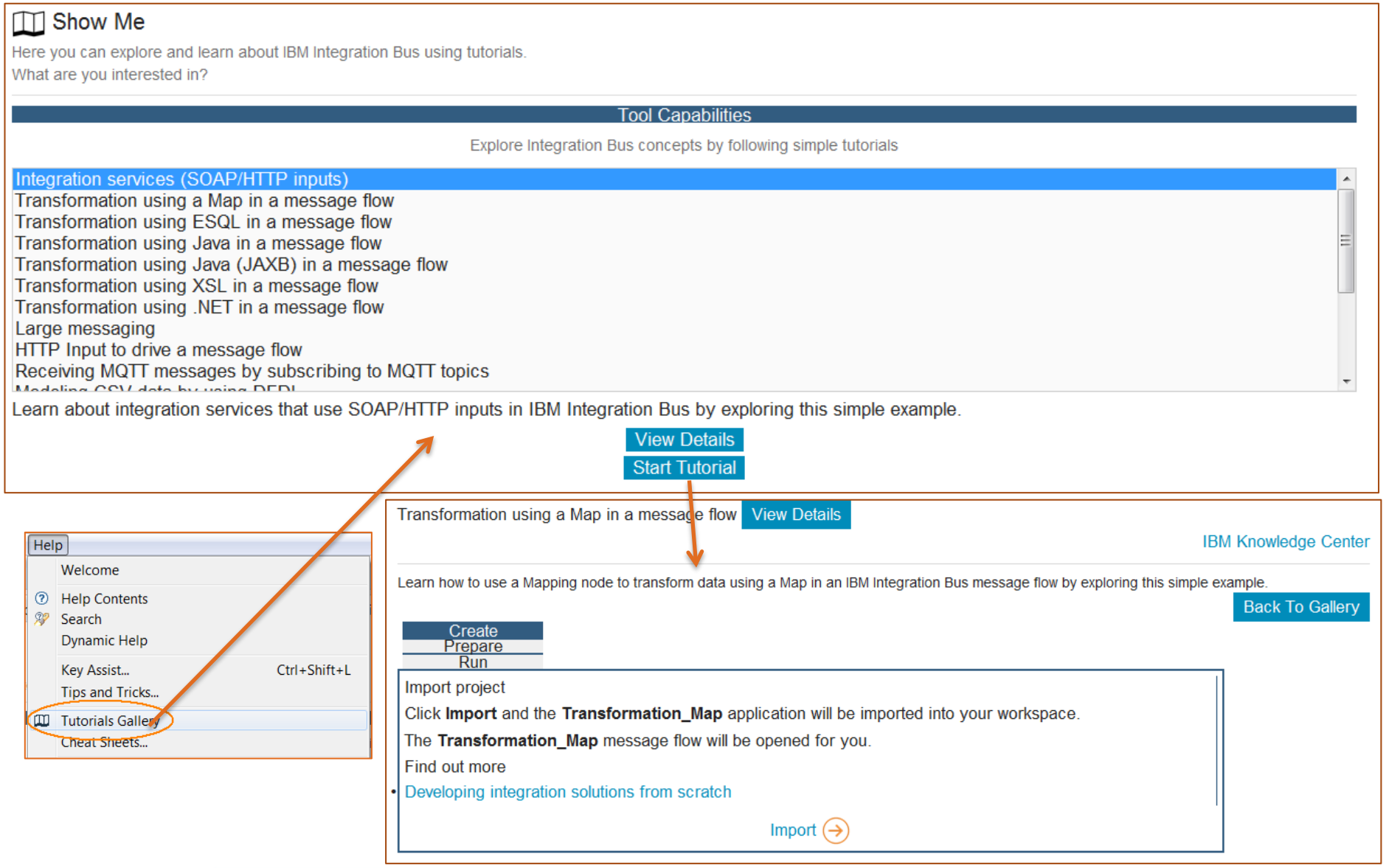








Tutorials Gallery



Summary

- Universal connectivity from anywhere, to anywhere
- Comprehensive protocols, transports, data formats and processing
  - Connect to applications, services, systems and devices
  - Understands the broadest range of data formats
- Simple programming with patterns and graphical data flows
  - Patterns for top-down, parameterized connectivity of common use cases
  - Graphical data flows represent application and service connectivity
- Extensive management, performance and scalability
- IBM App Connect Enterprise fully managed service
  - Sign up for a free trial
- Download and use Developer Edition
  - Fully functional and free (for dev / test)