

# IBM Cloud Pak for Integration (CP4I)

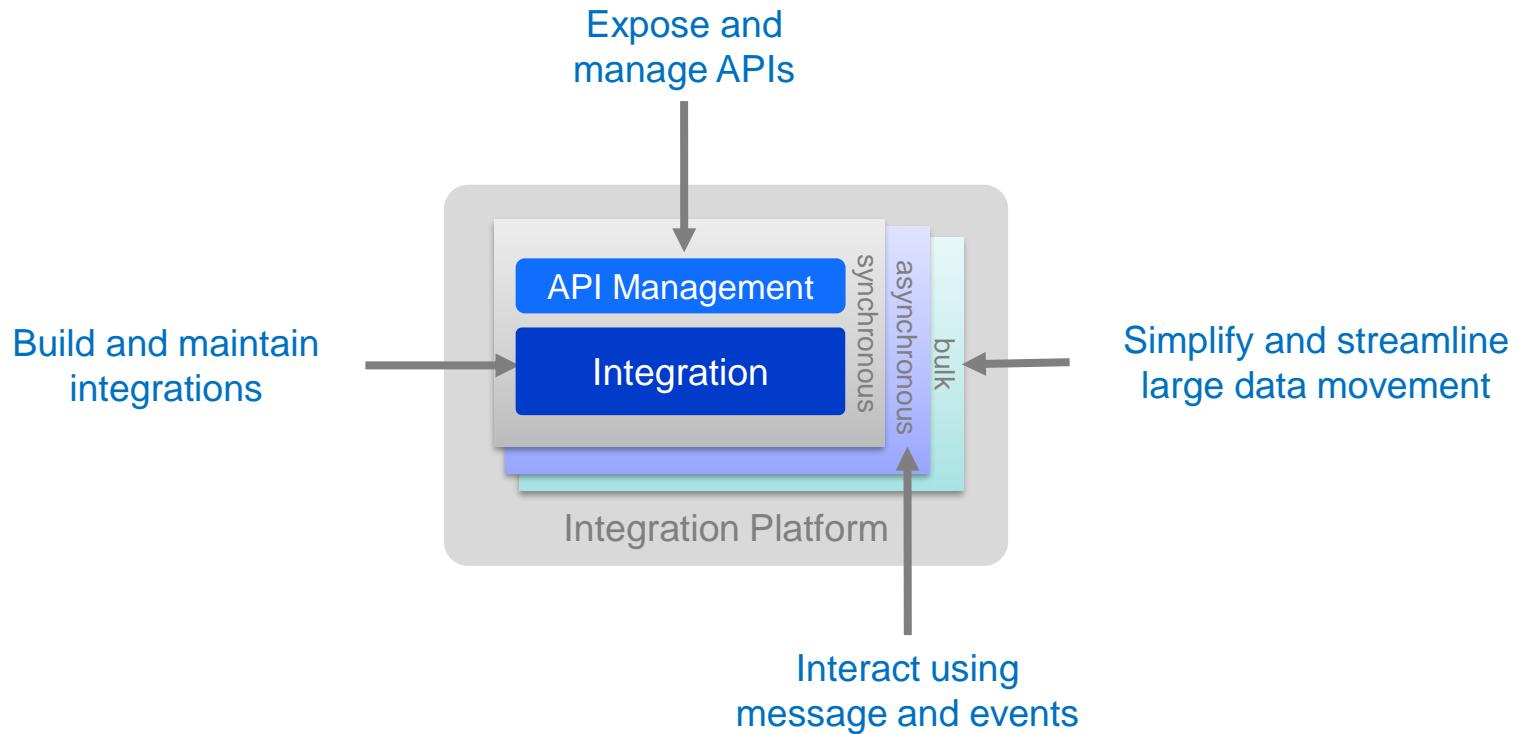
## App Connect (ACE), API Management (APIC)



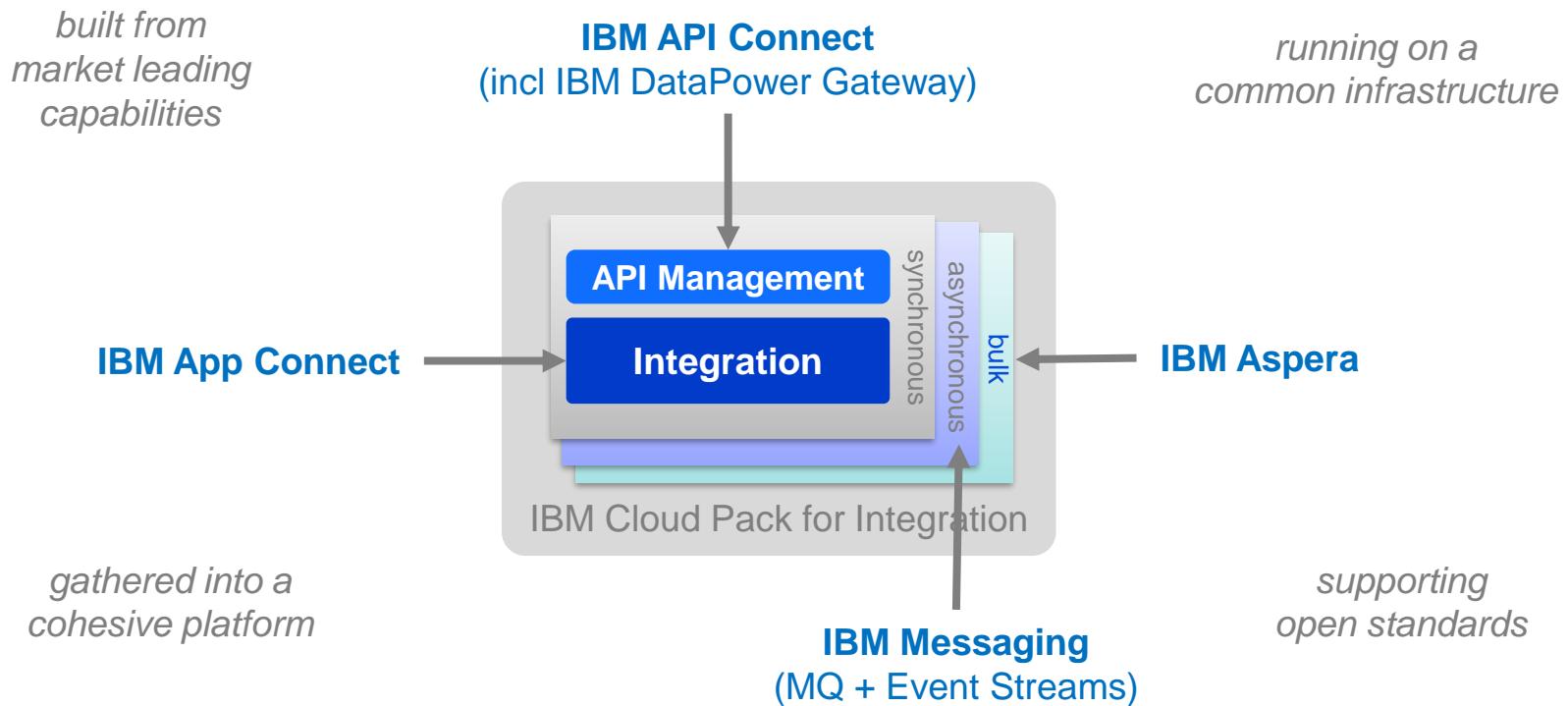
# Agenda

- Integration Platform & CP4I
- App Connect – Product Overview, Components, Features
- Implementing an application on App Connect
- API Connect – Product Architecture, Components, Features
- Implementing an API on API Connect

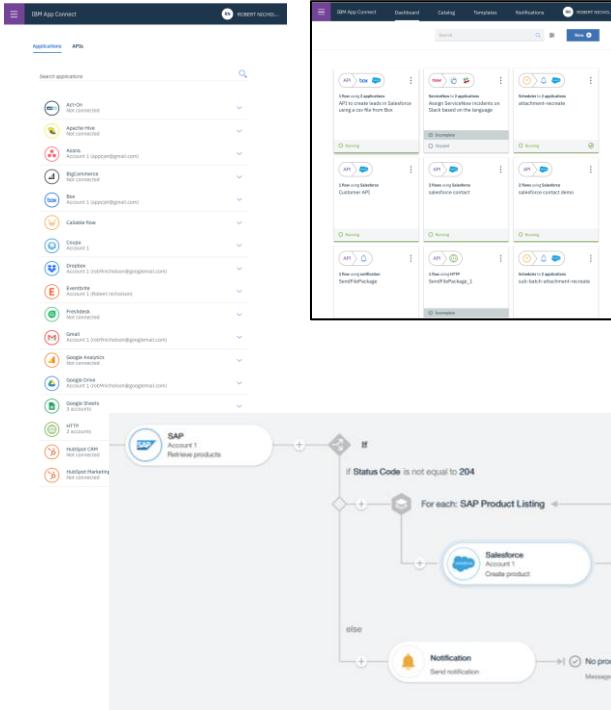
# Integration Platform – Core Capabilities



# Integration Platform – IBM CP4I



# App Connect – Product Overview, Components, Features



**Web Console:**  
Integrators to get started  
with zero training

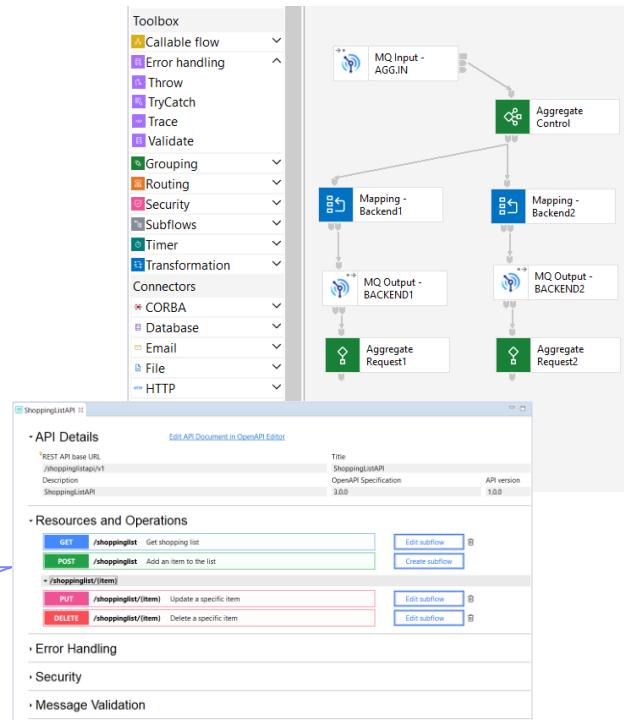


**Eclipse IDE:** Integration  
Specialists to build out  
the hard stuff

## App Connect Designer

- Browser-based usability experience
- Configuration based, model-driven tooling for rapid outcomes
- Strong application connectors
- Supports a broad range of use cases

1. Call shared assets
2. Intermingle functions
3. Fully blended capabilities



## App Connect Toolkit

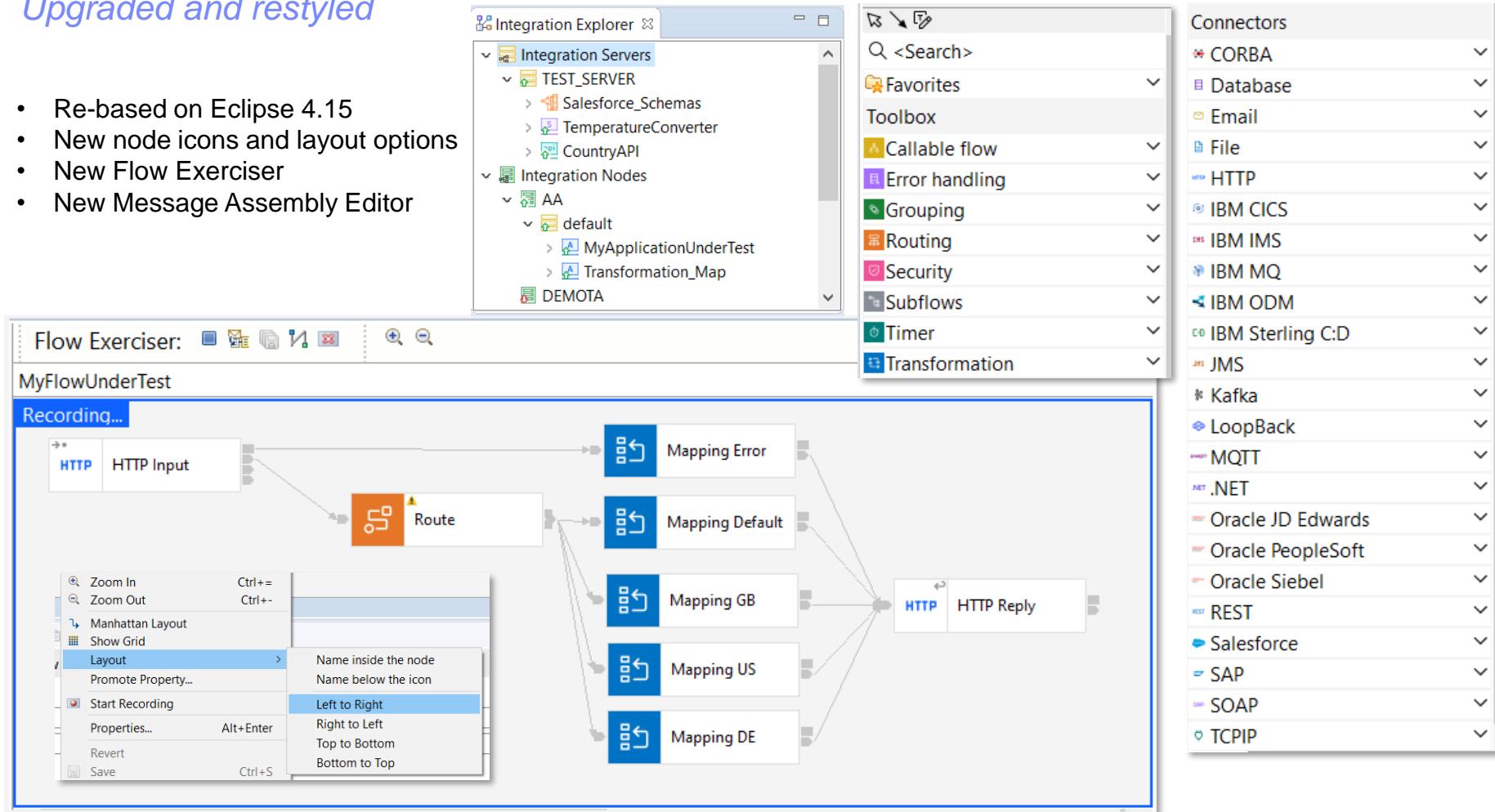
- Powerful integration tooling
- Build and manage integrations for any requirement
- Strong technology connectors
- Utilize with Designer to enable greater collaboration

# App Connect – Product Overview, Components, Features

## ACE 12 Toolkit

*Upgraded and restyled*

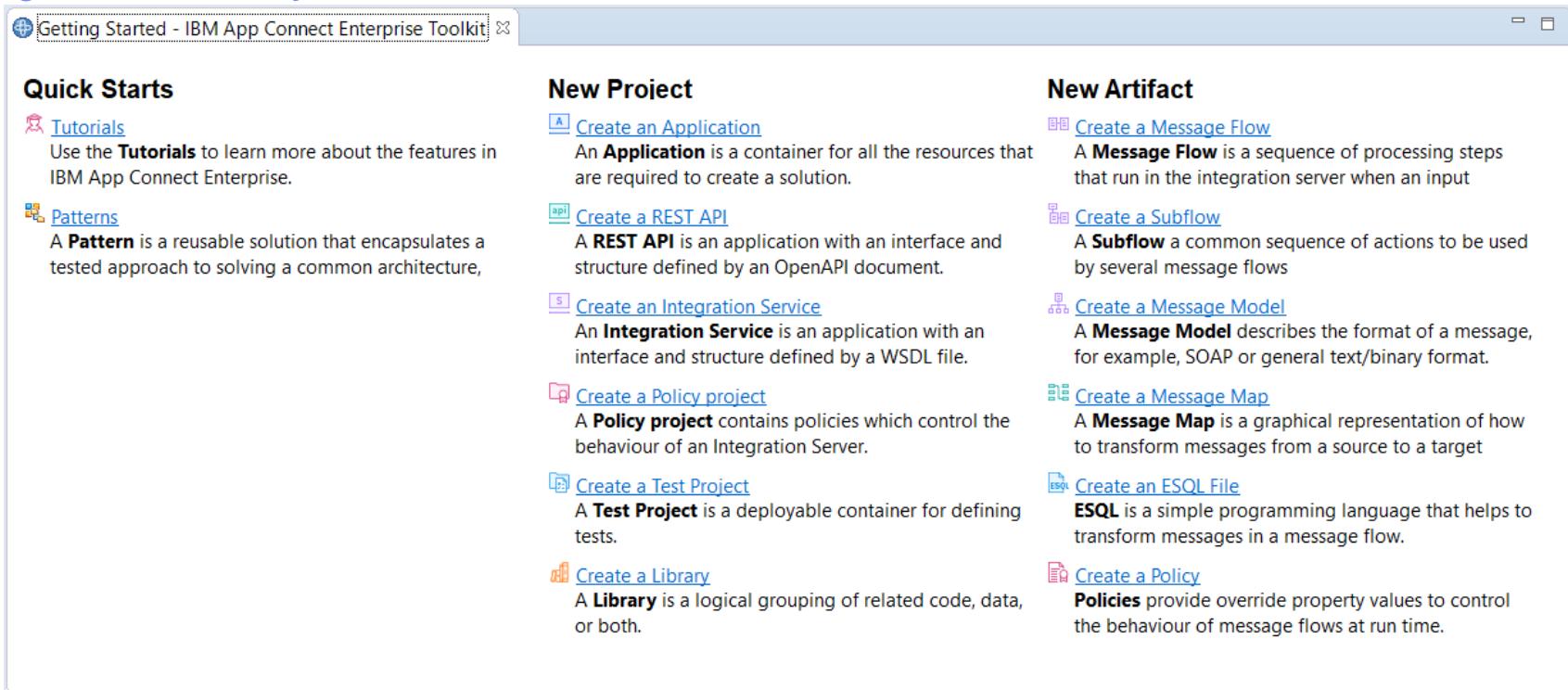
- Re-based on Eclipse 4.15
- New node icons and layout options
- New Flow Exerciser
- New Message Assembly Editor



# App Connect – Product Overview, Components, Features

## ACE 12 Toolkit

*Upgraded and restyled*

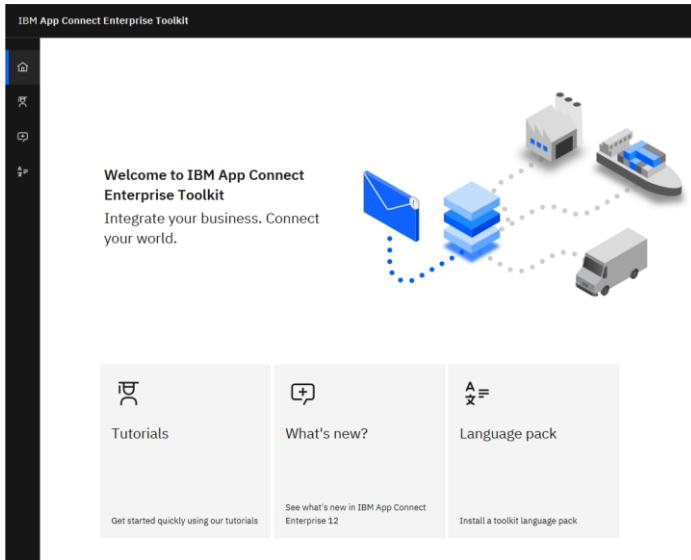


The screenshot shows the 'Getting Started - IBM App Connect Enterprise Toolkit' window. It has three main sections:

- Quick Starts**:
  - Tutorials**: Use the **Tutorials** to learn more about the features in IBM App Connect Enterprise.
  - Patterns**: A **Pattern** is a reusable solution that encapsulates a tested approach to solving a common architecture.
- New Project**:
  - Create an Application**: An **Application** is a container for all the resources that are required to create a solution.
  - Create a REST API**: A **REST API** is an application with an interface and structure defined by an OpenAPI document.
  - Create an Integration Service**: An **Integration Service** is an application with an interface and structure defined by a WSDL file.
  - Create a Policy project**: A **Policy project** contains policies which control the behaviour of an Integration Server.
  - Create a Test Project**: A **Test Project** is a deployable container for defining tests.
  - Create a Library**: A **Library** is a logical grouping of related code, data, or both.
- New Artifact**:
  - Create a Message Flow**: A **Message Flow** is a sequence of processing steps that run in the integration server when an input
  - Create a Subflow**: A **Subflow** a common sequence of actions to be used by several message flows
  - Create a Message Model**: A **Message Model** describes the format of a message, for example, SOAP or general text/binary format.
  - Create a Message Map**: A **Message Map** is a graphical representation of how to transform messages from a source to a target
  - Create an ESQL File**: **ESQL** is a simple programming language that helps to transform messages in a message flow.
  - Create a Policy**: **Policies** provide override property values to control the behaviour of message flows at run time.

- New styling for key concepts such as integration servers and integration nodes, applications, libraries, REST APIs, integration services, BAR files etc.

# App Connect – Product Overview, Components, Features



## App Connect Enterprise Tutorial Gallery

Get Productive quickly, with over 100 Product Tutorials!

**Tutorials**

What are you looking for today?

Getting started - Creating a very simple message flow (5 minutes)

Getting started - Creating an Integration Server (5 minutes)

Getting started - Creating a Simple Unit Test (10 minutes)

**Tutorials**

Tag: OpenAPI X Tag: Getting started X Tag: test X

**Getting started - Creating a very simple message flow**  
Learn how to quickly create a very simple message flow  
Getting started REST Start →

**Getting started - Creating an Integration Server**  
Learn some basics about integration servers and how to use them  
Getting started REST Start →

**Getting started - Creating a Simple Unit Test**  
Learn how IBM App Connect Enterprise unit tests help you with rapid Test Driven Development by creating and executing a simple Java Unit Test.  
10 minutes 48  
**Tutorial topics**  
– Java Unit Testing  
– Test Projects  
**Learning outcomes**  
– Use IBM App Connect Enterprise to create a test case for a Mapping node in a message flow.  
**Overview**  
This tutorial uses a simple message flow in an application that receives an XML input message over HTTP and converts the data into JSON using a Mapping node. The output JSON data is returned to the requesting client using an HTTPReply node. An example input message is provided.  
The tutorial provides the user with the message flow already constructed and describes the step-by-step instructions for writing and executing a unit test for the flow. The new test is created in a

# App Connect – Product Overview, Components, Features

## ACE 12 Web User Interface *Standardized look and feel*

IBM App Connect

Server: TEST\_SERVER

TEST\_SERVER

Contents Properties Policy projects Flow statistics Resource statistics Data Credentials Admin log

Search Deploy +

CountryAPI API Started

Salesforce\_Schemas Shared library

TemperatureConverter Service Started

IBM App Connect

Node: AA / Server: default

default

Contents Properties Policy projects Flow statistics Resource statistics Data Credentials Admin log

Last updated: 10 minutes ago

Timestamp local Message Message text User Authorized role Tags

2021-06-02 23:32:47,442 BIP200211 Completed REST Request with method 'POST' and path '/api/v2/servers/default/applications /MyApplicationUnderTest/Test/messageflows /MyFlowUnderTest/start-recording', the HTTP response status is '200'. GMX(043390866) <no-auth-role>

2021-06-02 23:32:47,441 BIP200201 Received REST Request with method 'POST' and path '/api/v2/servers/default/applications /MyApplicationUnderTest/Test/messageflows /MyFlowUnderTest/start-recording'. GMX(043390866) <no-auth-role>

HTTP\_METHOD:POST  
HTTP\_STATUS:200  
PATH:/api/v2/servers/default/applications /MyApplicationUnderTest/Test/messageflows /MyFlowUnderTest/start-recording  
REQUEST\_ID:ID-20210602233247432870-toolkit-0  
ROLES:<no-auth-role>

2021-06-02 23:45:00,0 BIP200201 REQUEST\_ID:ID-20210602233247432870-toolkit-0  
ROLES:<no-auth-role>

Latest 0 Average 0 Highest 0 Lowest 0

Latest 0 Average 0

Update message flow thread pool

Properties Flow statistics

Thread pool size 1

Start all threads immediately on flow start

After applying these updates

Delete and recreate the thread pool

Thread pool updates are not persistent.  
If the message flow is redeployed or torn down or the integration server is restarted, these updates will be reverted.

Cancel Apply

HTTP Input Route Mapping Error Mapping Default Mapping GB Mapping US Mapping DE Mapping DE HTTP Reply

IBM App Connect

Node: AA / Server: default / Application

MyFlowUnderTest

Properties Flow statistics

Thread pool size 1

Start all threads immediately on flow start

After applying these updates

Delete and recreate the thread pool

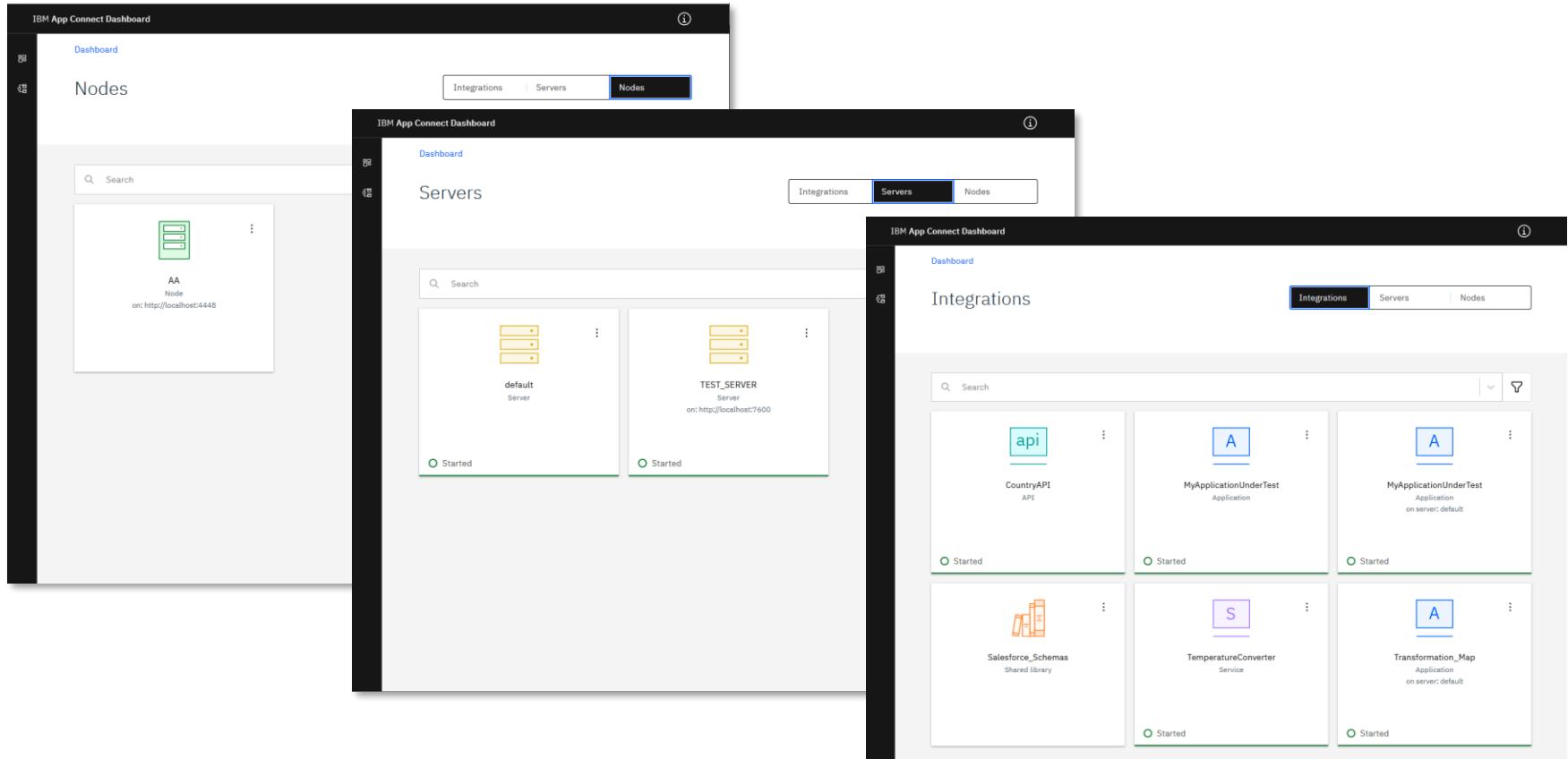
Thread pool updates are not persistent.  
If the message flow is redeployed or torn down or the integration server is restarted, these updates will be reverted.

Cancel Apply

# App Connect – Product Overview, Components, Features

## IBM App Connect Dashboard

*View integrations across any hybrid cloud deployment*



# App Connect – Product Overview, Components, Features

## IBM App Connect Enterprise Web UI Admin Log

*An audit log for recording WHO was AUTHORIZED to do WHAT and WHEN*

Timestamp local	Message	Message text	User	Authorized role	Tags
2021-06-02 23:32:47.442	BIP20021I	Completed REST Request with method 'POST' and path '/api/v2/servers/default/applications/MyApplicationUnderTest/messageflows/MyFlowUnderTest/start-recording', the HTTP response status is '200'.	GMX\043390866	<no-auth-role>	HTTP_METHOD:POST HTTP_STATUS:200 PATH:/api/v2/servers/default/applications/MyApplicationUnderTest/messageflows/MyFlowUnderTest/start-recording REQUEST_ID:20210602223247432870-toolkit-0
2021-06-02 23:32:47.441	BIP20020I	Received REST Request with method 'POST' and path '/api/v2/servers/default/applications/MyApplicationUnderTest/messageflows/MyFlowUnderTest/start-recording'.	GMX\043390866	<no-auth-role>	HTTP_METHOD:POST PATH:/api/v2/servers/default/applications/MyApplicationUnderTest/messageflows/MyFlowUnderTest/start-recording REQUEST_ID:20210602223247432870-toolkit-0 ROLES:<no-auth-role>

# App Connect – Product Overview, Components, Features

## IBM App Connect Enterprise Web UI Admin Log

An audit log for recording WHO was AUTHORIZED to do WHAT and WHEN

- Record administrative actions executed against the ACE runtime including the Timestamp, BIP Message number, message text, user name, authorized role
- Tagging and Filtering
- Browse log entries from an in-memory store in the product runtime
- Persist to the file system for audit purposes



### AdminLog:

```
enabled: true          # Control logging admin log messages. Set to true or false, default is true.  
# When enabled the maximum amount of disk space required for admin log files is  
# fileLogRetentionPeriod * fileLogCountDaily * fileLogSize  
fileLog: false         # Control writing admin log messages to file. Set to true or false, default is false.  
fileLogRetentionPeriod: 30 # Sets the number of days to record admin log.  
                          # After this, old files are deleted as new ones are created. Default is 30 days.  
fileLogCountDaily: 10   # Maximum number of admin log files to write per day, default is 10 per day.  
fileLogSize: 100        # Maximum size in MB for each admin log file. Maximum size is 2000MB, default size is 100MB.  
consoleLog: false       # Control writing admin log messages to standard out. Set to true or false, default is false.  
consoleLogFormat: 'text' # Control the format of admin log messages written to standard out, default is text.
```

# App Connect – Product Overview, Components, Features

## OpenAPIv3 Validating JSON Parser

*Start from scratch or import from JSON or YAML*

The screenshot shows the API Designer interface for the ShoppingListAPI. It includes sections for API Details, Resources and Operations, Error Handling, Security, and Message Validation.

- API Details:** REST API base URL: /shoppinglistapi/v1, Title: ShoppingListAPI, OpenAPI Specification: 3.0.0.
- Resources and Operations:**
  - GET /shoppinglist:** Get shopping list.
  - POST /shoppinglist:** Add an item to the list.
  - PUT /shoppinglist/{item}:** Update a specific item.
  - DELETE /shoppinglist/{item}:** Delete a specific item.
- Error Handling:**
  - Catch handler:** The subflow to which the message is routed if an exception is not handled in an operation subflow.
  - Failure handler:** The subflow to which the message is routed if an error occurs.
  - Timeout handler:** The subflow to which a timeout message is routed if an operation subflow does not respond to the client within the expected time limit.
- Security:** Enable HTTPS (unchecked).
- Message Validation:**
  - Enable for request messages (unchecked).
  - Allow unexpected request body (unchecked).

The screenshot shows the OpenAPI Editor interface for the ShoppingListAPI. It displays the API structure and the generated OpenAPI specification code.

- API Structure:** Shows paths like /shoppinglist and /shoppinglist/{item}, operations (GET, POST, PUT, DELETE), and parameters.
- Code Editor:** Displays the generated OpenAPI specification code in YAML format.

```

openapi: 3.0.0
info:
  title: ShoppingListAPI
  version: 1.0.0
  description: ShoppingListAPI
servers:
  - url: /shoppinglistapi/v1
paths:
  /shoppinglist:
    get:
      summary: Get shopping list
      operationId: getShoppingList
      parameters:
        - name: Limit
          in: query
          schema:
            $ref: '#/components/schemas/Limit'
      responses:
        '200':
          description: A paged array of shopping list entries
          content:

```

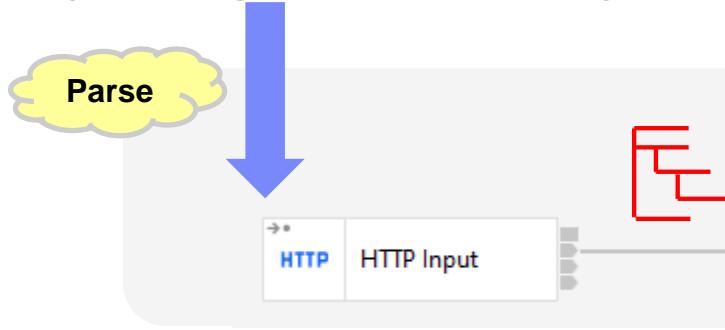
**Create and deploy one single API artifact** that can be managed through your pipeline stages  
**API v3 support** for the latest API standard, Swagger v2 support too, and support for JSON schema message models inline or as external files.  
**Subflow authoring** for each operation, Catch, Failure and Timeout handlers  
**OpenAPI Editor** provides unified CP4I experience across Toolkit, Designer and APIC  
**Form and Source Layout** easily switchable

# App Connect – Product Overview, Components, Features

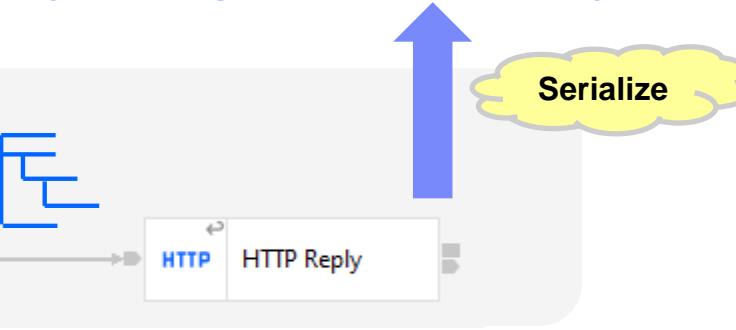
## Validating JSON Parser

*JSON Schema or OpenAPI metadata as JSON or YAML*

{"Message": "Hello World"}



{"Message": "GUTEN TAG"}



Message domain	JSON : For JavaScript Object Notation messages
Message model	ShoppingListAPI.json
Message	#/components/schemas/Item
Physical format	<If the JSON schema is part of an OpenAPI definition but doe
Validation settings for the HTTPInput node	
Validate*	Content and Value
Failure action*	Exception
	User Trace
	Local Error Log
	Exception
	Exception List

- Support for JSON Schema Draft 4 or OASv3
- Validate when converting data to or from a bitstream ... input, output or mid-flow
- All the standard failure actions are available
- Based upon the open source RapidJSON technology

POST	/shoppinglist	Add an item
✓	/shoppinglist/{item}	
PUT	/shoppinglist/{item}	
DELETE	/shoppinglist/{item}	
‣ Error Handling		
‣ Security		
‣ Message Validation		
<input type="checkbox"/> Enable for request messages		
<input type="checkbox"/> Allow unexpected request body		

# App Connect – Product Overview, Components, Features

## Test Driven Development

*A new unit testing framework*

### WHY:

- Easier and cheaper to adopt new product versions and make architectural changes such as modernizing and moving to containers
- Do my message flows behave as expected after a development change, an upgrade or an APAR ?
- Do 3<sup>rd</sup> party / external services behave in a reliable consistent manner?

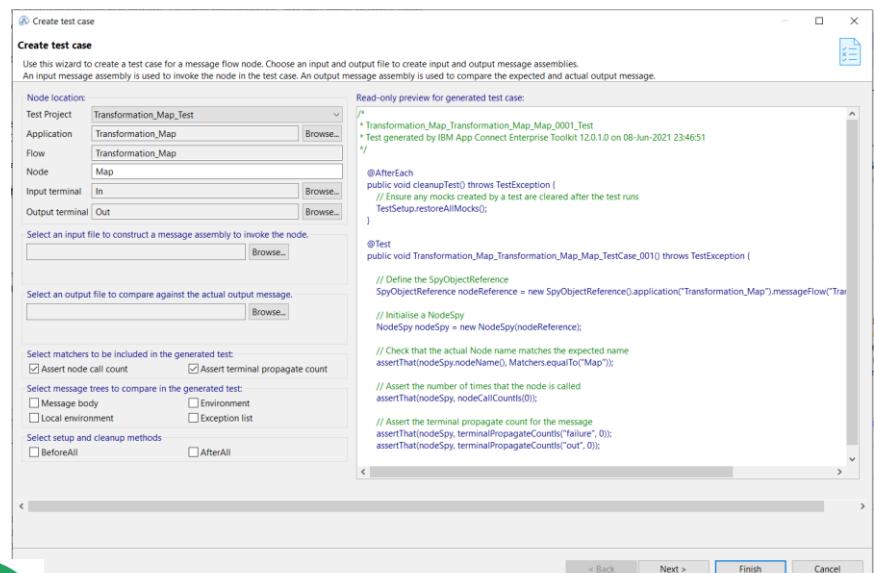
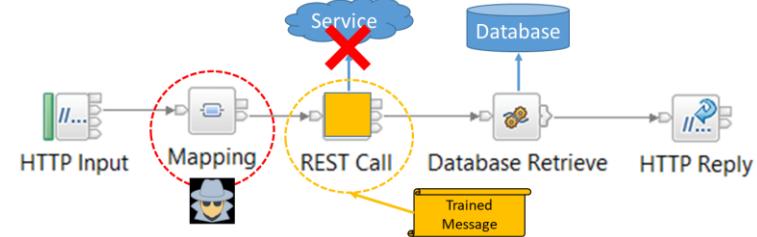
### WHAT:

- New test framework for running unit tests in an Integration Server
- Easy to use Spies, Mocks and Stubs
- Support JUnit assertions, 3<sup>rd</sup> party matcher libraries (e.g. Hamcrest, JSONAssert and XMLUnit), and product specific matchers for the ACE Message Assembly
- Runtime capabilities for bulk message recording and automated test generation

### HOW:

Create and run tests during development time or as part of a deployment pipeline:

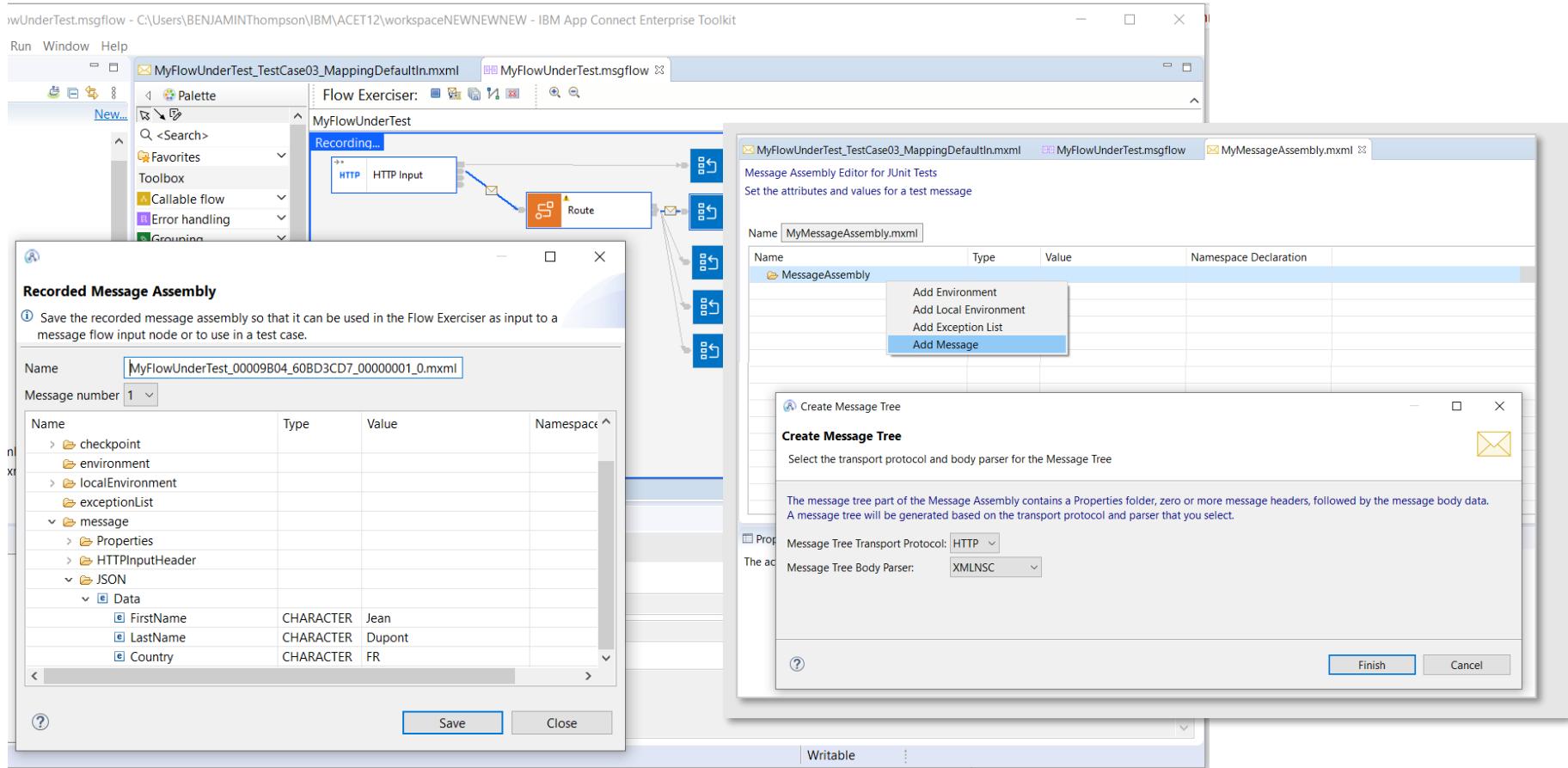
- Test a single message flow node
- Test a subflow or sequence of several message flow nodes
- Test an entire message flow
- Test an entire integration server



# App Connect – Product Overview, Components, Features

## Flow Exerciser and Unit Test Framework

*The Message Assembly Editor unified the new unit testing framework with the Flow Exerciser*

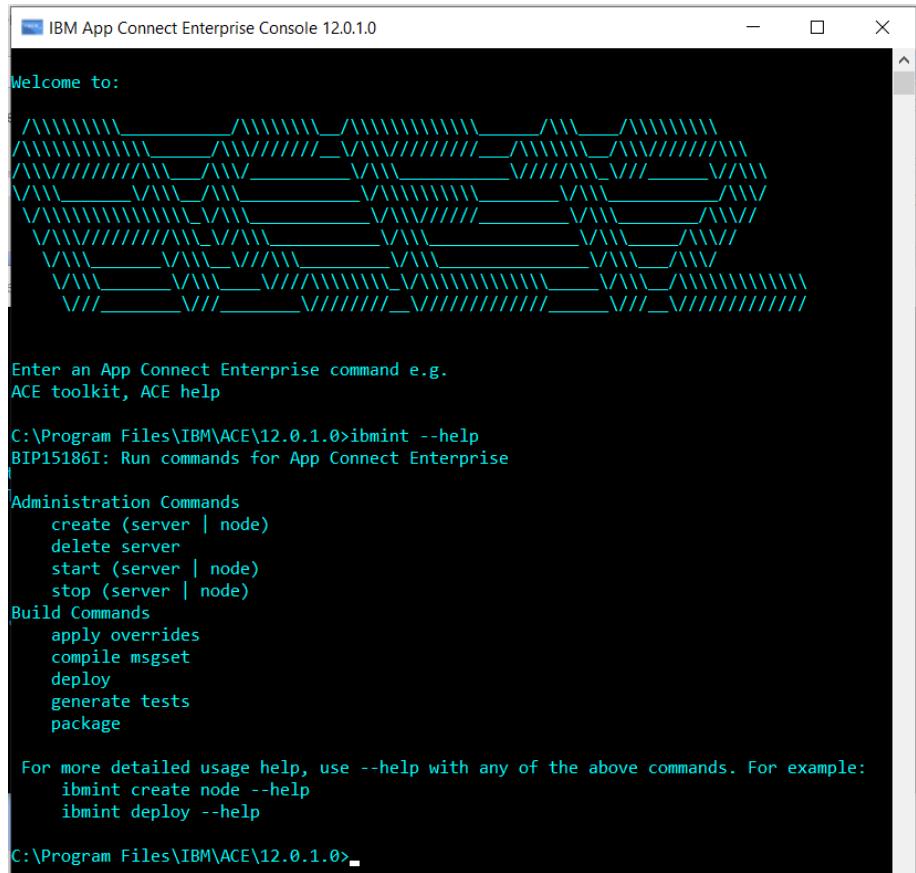


# App Connect – Product Overview, Components, Features

## New **ibmint** command family

*New administration command for helping build automated pipelines from Source to Server*

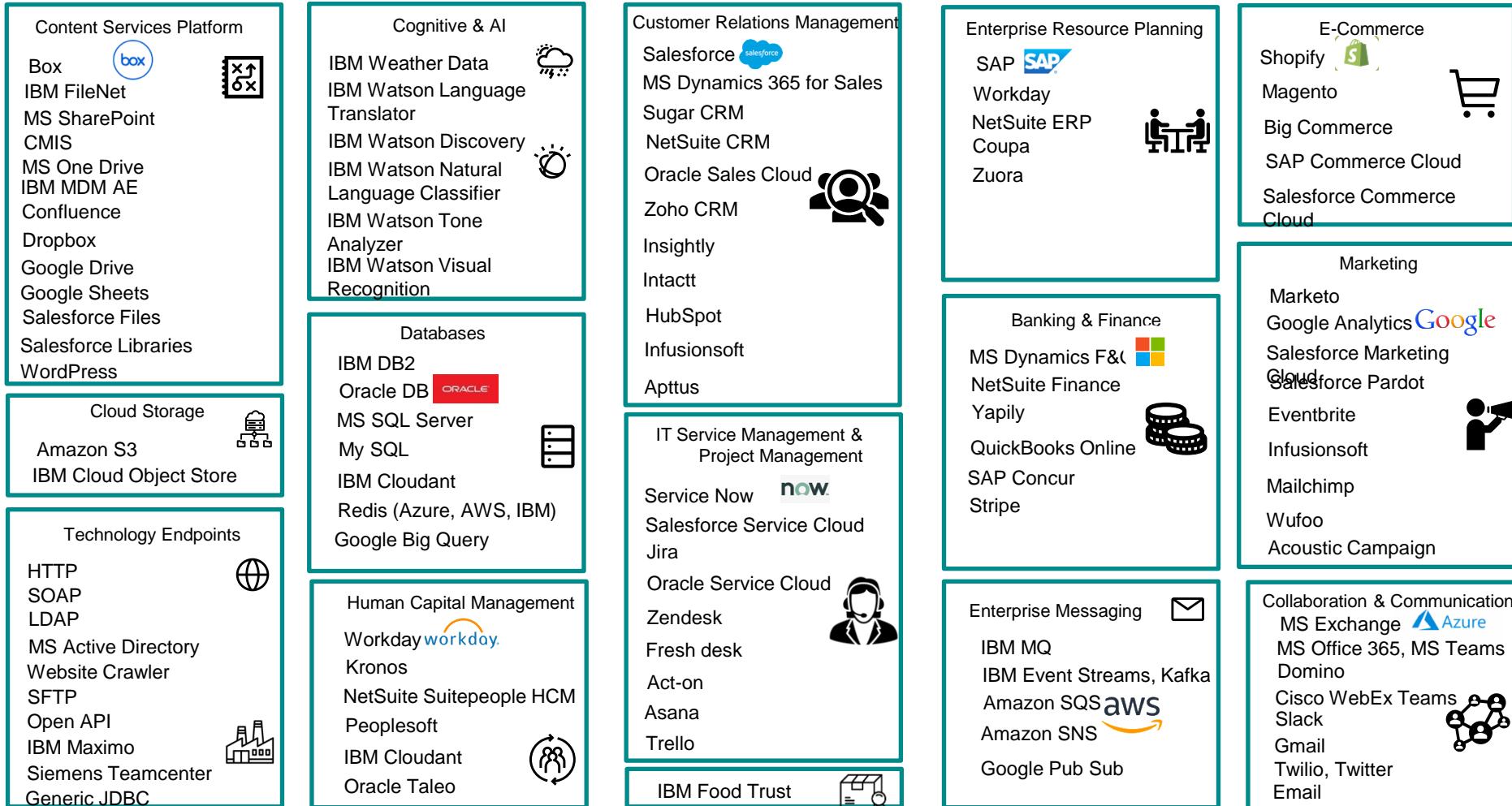
- The **ibmint** command (short for IBM integration!) provides a new family of administrative command actions which can be executed against the ACE 12 runtime.
- **Easily go from source to server** - take authored source integration artifacts such as message flows and message models from version control through to deployment in a server's working directory on the runtime filesystem
- **ibmint** helps new users with a modern, intuitive verb-first command style ... very similar to other container and integration technologies such as OpenShift, Docker etc.
- **Full back compatibility** with prior versions - all the existing ACEv11 mqsi\* commands are still available and remain fully supported



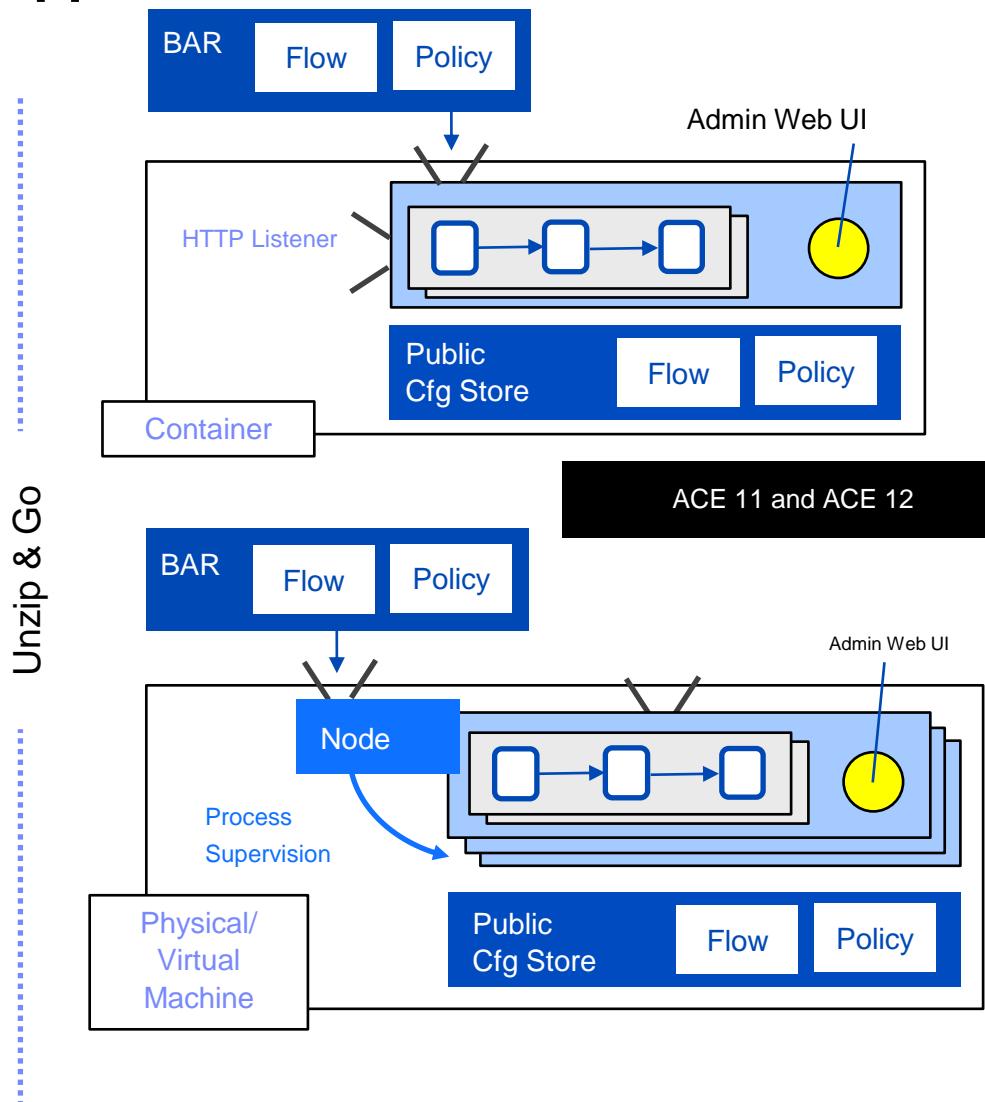
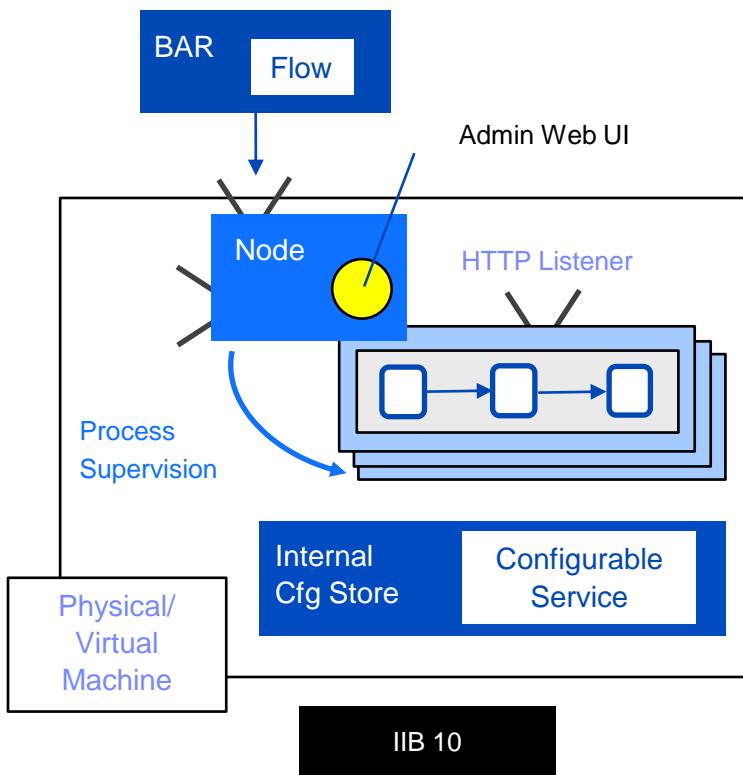
The screenshot shows a terminal window titled "IBM App Connect Enterprise Console 12.0.1.0". It displays a welcome message with a decorative graphic of green and white diagonal lines forming a grid pattern. Below the graphic, it says "Enter an App Connect Enterprise command e.g. ACE toolkit, ACE help". The command line shows "C:\Program Files\IBM\ACE\12.0.1.0>ibmint --help" followed by the output of the command. The output includes sections for "Administration Commands" (create, delete, start, stop) and "Build Commands" (apply overrides, compile msgset, deploy, generate tests, package). It also provides a note about detailed usage help and examples for the "create node" and "deploy" commands. The prompt at the bottom is "C:\Program Files\IBM\ACE\12.0.1.0>".

# App Connect – Product Overview, Components, Features

## Universal Connectivity & Transformations Powering the Innovations



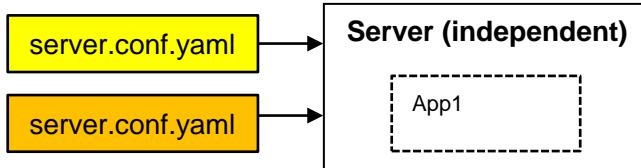
# Implementing an application on App Connect



# Implementing an application on App Connect

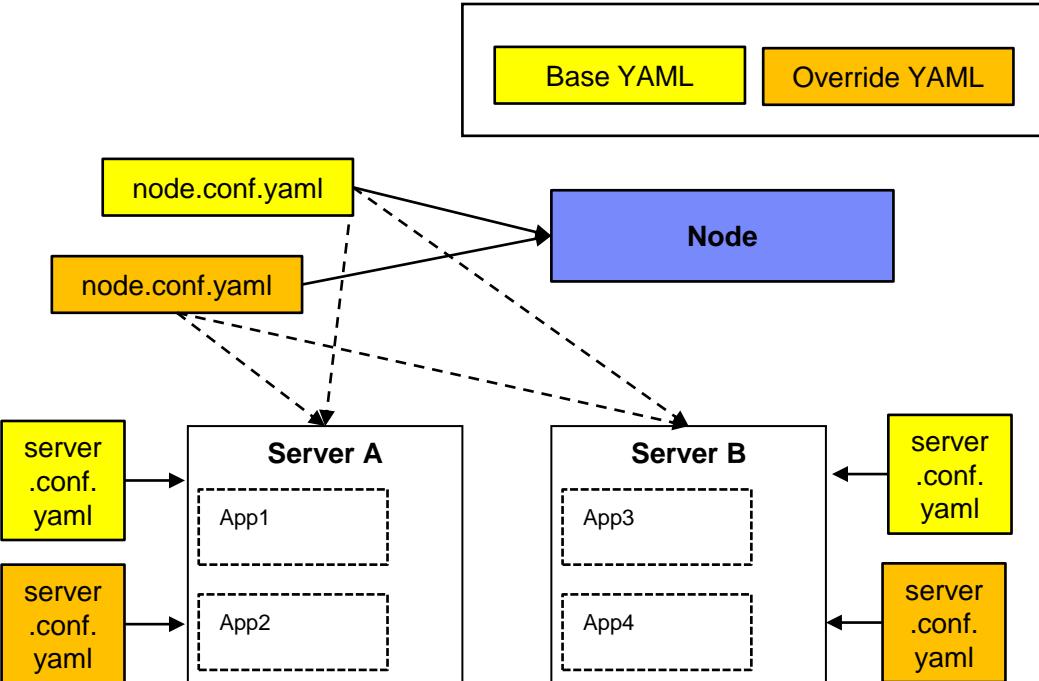
## Configuration of Servers through YAML files

Use node.conf.yaml and server.conf.yaml to define the personality of the node and server!



- overrides / server.conf.yaml are provided so that you can maintain a “template” for behavior which can also be overridden
- node.conf.yaml provides a limited set of node wide options
- Node-owned servers inherit settings from the node.conf.yaml
- When you create an integration node, the node.conf.yaml file is located at:

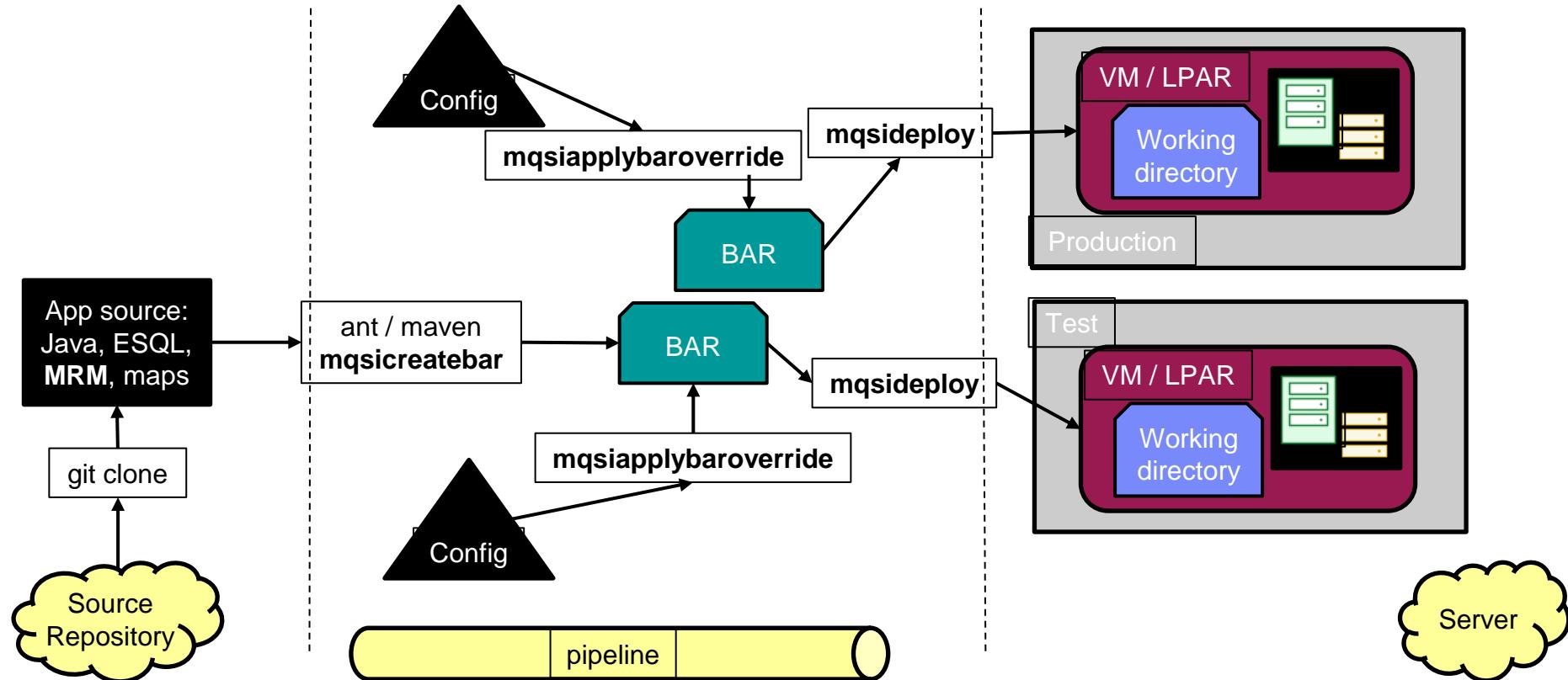
**\$MQSI\_WORKPATH/components/  
<Node name>/node.conf.yaml**



# Implementing an application on App Connect

## App Connect – Source to Server - Current

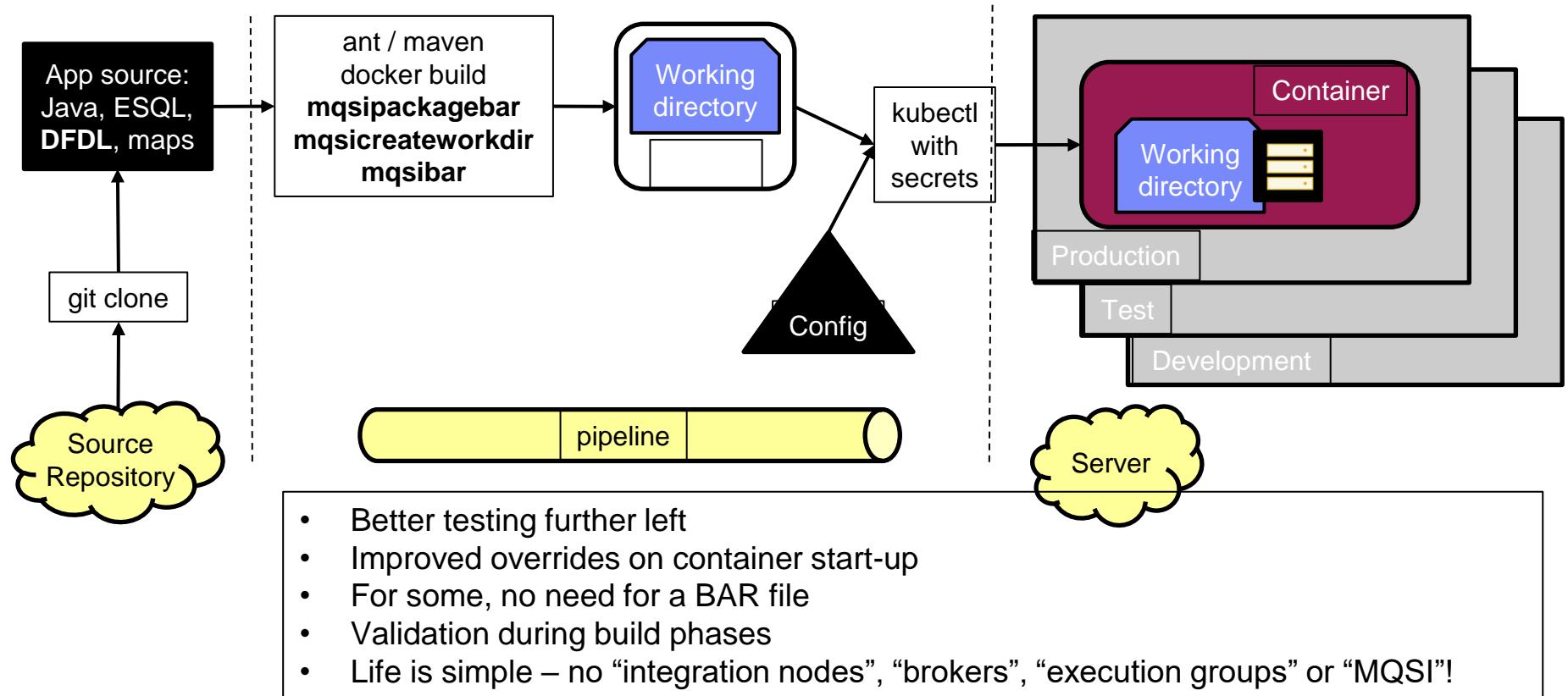
ACE 12 helps you build automated pipelines from Source to Server



# Implementing an application on App Connect

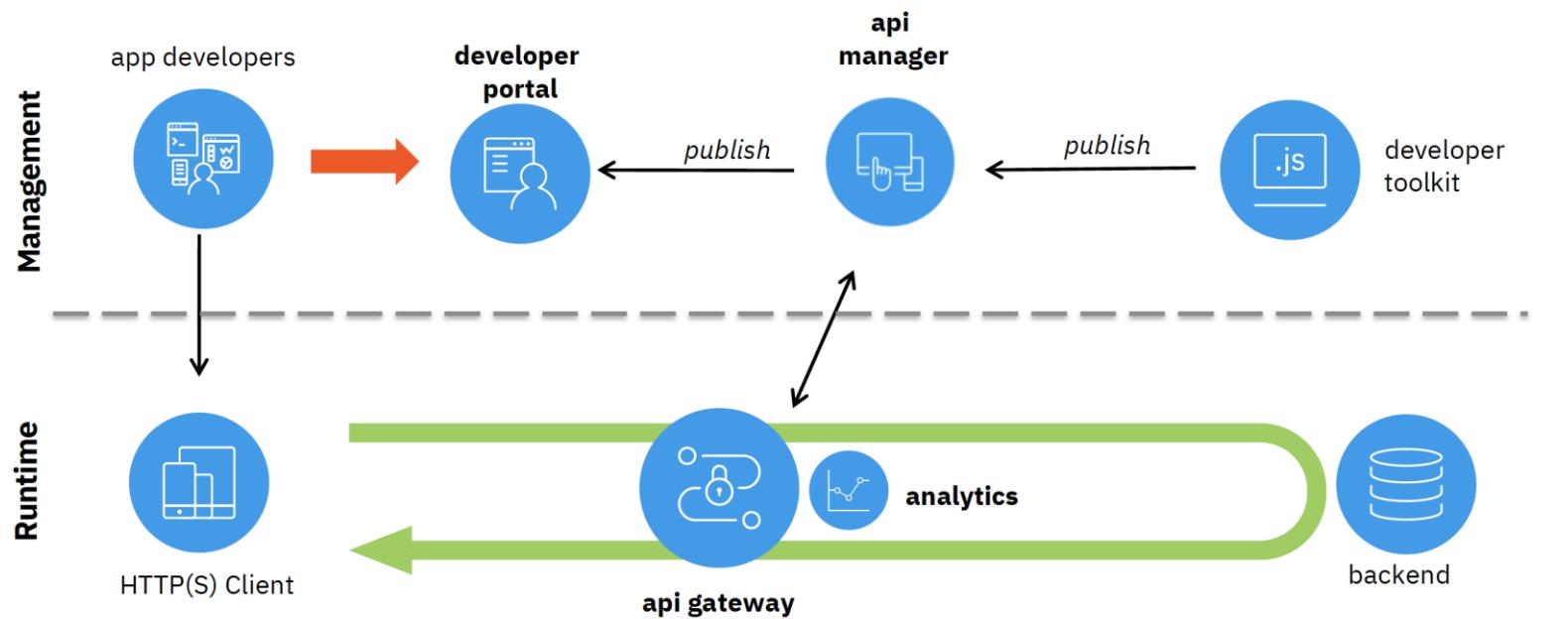
## App Connect – Source to Server - Modernizer

*ACE 12 helps you build automated pipelines from Source to Server*



# API Connect – Product Overview, Components, Features

## API Connect – Components



# API Connect – Product Overview, Components, Features

## Components functionality



### Gateway Instance

- API Policy Enforcement
- Security & Control
- Traffic control & mediation
- Workload optimization
- Monitoring/Analytics data Collection



### Management Instance

- API Discovery
- API Policy Creation
- Product Version & Lifecycle Management



### Portal Instance

- Self-service App Developer Portal based on Drupal 8
- User Management
- Social Collaboration
- Subscription & Community Management

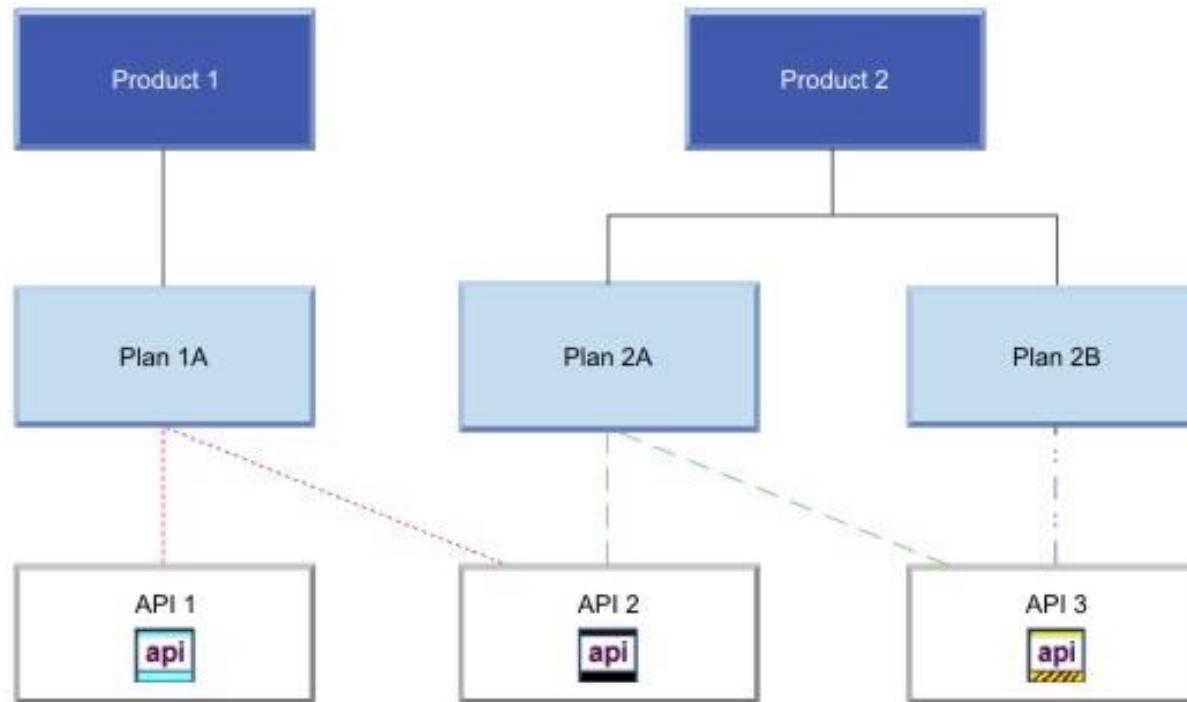


### Analytics Instance

- API Monitoring Analytics

# API Connect – Product Overview, Components, Features

## Products, Plans, and APIs - Levels of Segregation



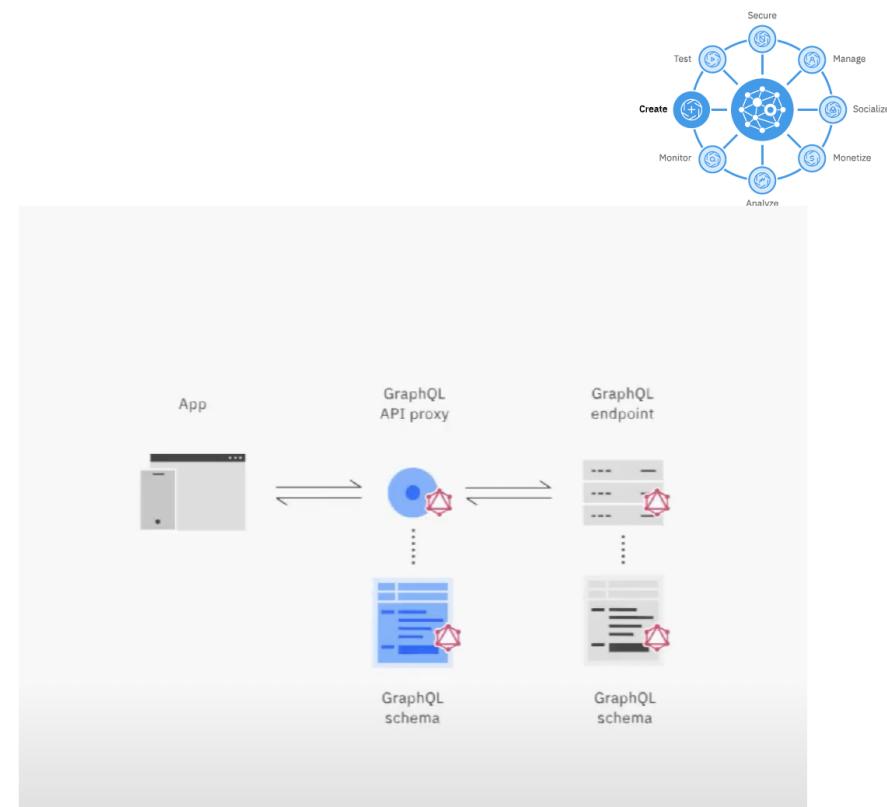
# Implementing an API on API Connect

## Creating APIs

Select API Type

Create

- From target service**  
Create a REST proxy that routes all traffic to a target API or service endpoint
- From existing OpenAPI service**  
Create a REST proxy based upon an OpenAPI described target service
- From existing WSDL service (SOAP proxy)**  
Create a SOAP proxy based upon a WSDL described target service
- From existing WSDL service (REST proxy)**  
Create a REST proxy based upon a WSDL described target service
- From existing GraphQL service (GraphQL proxy)**   
Create a GraphQL proxy based on a GraphQL service
- New OpenAPI**  
Compose a new REST proxy by defining paths and operations



# Implementing an API on API Connect

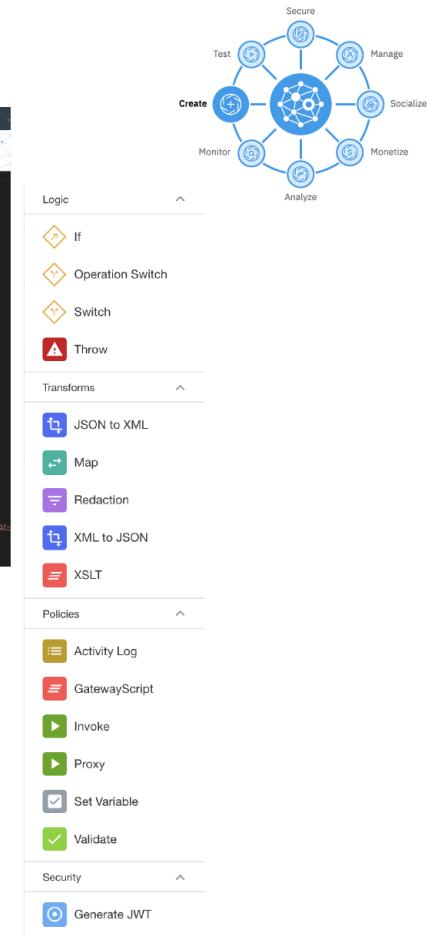
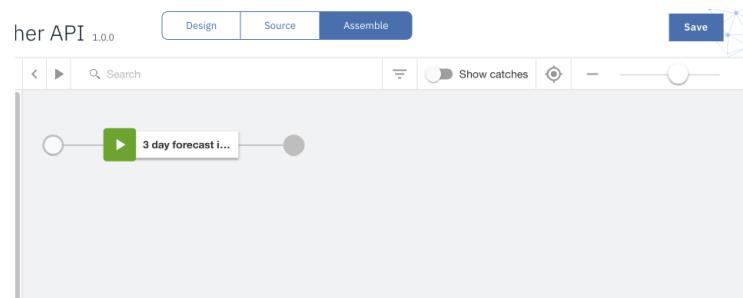
## Three views – same source

The screenshot shows the 'Design' tab of the API Manager interface. On the left, a sidebar lists various API management features like API Setup, Security Definitions, Paths, Definitions, Properties, Target Services, Categories, and Activity Log. The main area displays the API details for 'Climbing Weather API 1.0.0'. It includes fields for Title ('Climbing Weather API'), Name ('climbing-weather-api'), Version ('1.0.0'), and a Description field. Below these, there's a 'Schemes' section where 'HTTPS' is selected. The right side of the screen shows the API definition in JSON format:

```

1 swagger: "2.0"
2 info:
3   title: Climbing Weather API
4   x-ibm-name: Climbing-weather-api
5   version: 1.0.0
6   x-ibm-schemalocation: https://ibm.com/api/swagger
7   schemes:
8     - https
9   basicAuth:
10    produces:
11      - application/json
12    consumes:
13      - application/json
14    security:
15      - client-secrets []
16      - client-id []
17    securityDefinitions:
18      client-secret:
19        type: apiKey
20        name: 'X-IBM-Client-Secret'
21        in: header
22        description: ''
23      client-id:
24        type: apiKey
25        name: 'X-IBM-Client-Id'
26        in: header
27        description: ''
28    x-ibm-client-secret:
29    phases:
30      realized:
31        variables:
32          - envvars:
33            provider: true
34            variables:
35              - envvar:
36                name: 'application-authentication'
37                certificate: false
38                assembly:
39                  - invoke:
40                    + invoke:
41                      url: https://api.us.ibmconnect.cloud.com/developmentoperations-wsconnect/bst/request,search?client_id=52e725c-9d8-4ea-931...
42                      title: 3 day Forecast invocation
43                      target: search
44                      cache-key: $request-search
45        gateway: default-gateway

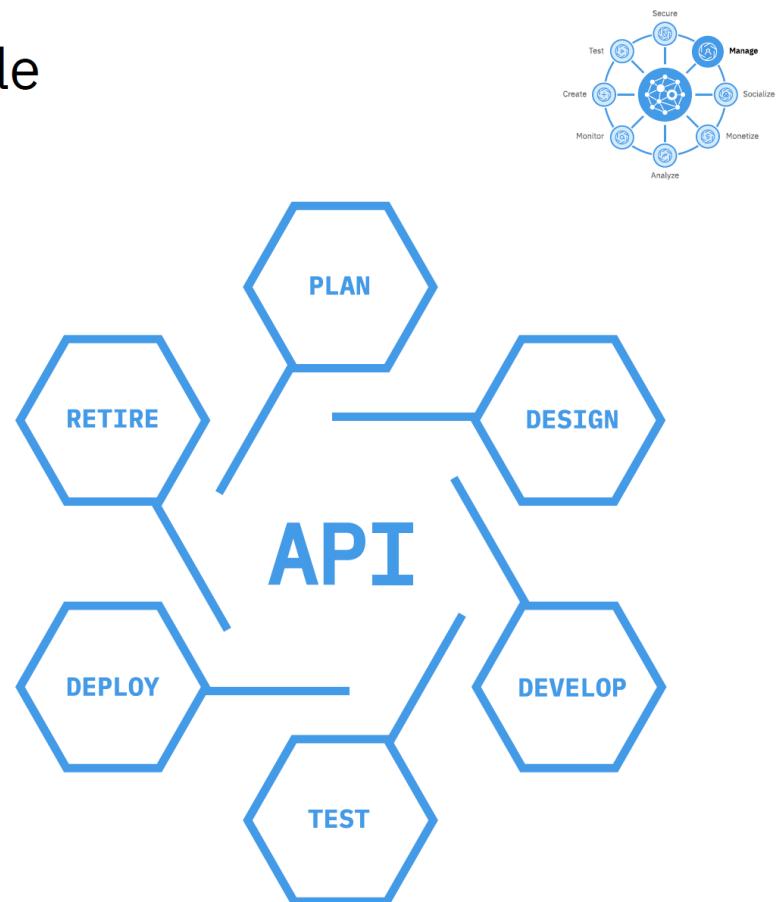
```



# API Connect – Product Overview, Components, Features

## Manage APIs through the API Lifecycle

- **Define & Import REST or SOAP APIs** to enable clients to evolve their SOA tier
- **Package APIs into Products** and tailor them to target specific consumer markets
- **Publish and Promote** across different environments to align with DevOps practices
- **Manage and Control API Lifecycle and versioning** from staging to deprecation to meet corporate governance needs
- **Subscription and Community management** to grow go-to-market channels



# API Connect – Product Overview, Components, Features

## Enhanced API Publishing Control

- **Blue/Green deployment support** out of the box for new API versions with ease
- **Granular control to selectively publish APIs to specific gateways** providing flexibility for multiple line of business operation

The screenshot shows the 'Publish from Marketing' interface. At the top, there are buttons for 'Select product' and 'Select publish targets'. Below that, a 'Publish To' section has a placeholder 'Description goes here'. A 'Catalog' dropdown is set to 'Sandbox'. The main area is titled 'Select the spaces and gateway services to publish this product to'. It shows a tree structure under 'SPACE': 'Space 01' is checked, revealing its 'GATEWAY SERVICE' children: 'Gateway Service US Main', 'Gateway Service US West', 'Gateway Service US Central', and 'Gateway Service US East', all of which are also checked. Other spaces like 'Space 02' through 'Space 06' are shown without checked boxes. To the right, there's a 'Lorem Ipsum' placeholder text block with a long, repetitive sentence about spicy jalapeno bacon.

# API Connect – Product Overview, Components, Features

## Developer Portal

- **Modern UI/UX design** based on customer and market feedback
- **Simple, powerful and extensible** customizations built on open-source Drupal 8
- **Fast track app creation** with a simple subscription wizard designed to reduce friction
- **Delight and increase app developer productivity** with a first class Portal Analytics experience
- **Effectively engage your developer community** with custom email support

The screenshot shows the IBM API Connect Developer Portal interface. At the top, there's a navigation bar with links for API Products, Apps, Blogs, Forums, and Support. A search bar and user profile information are also present. Below the navigation, the main content area is titled "API Products". On the left, there's a sidebar titled "Filter by categories:" with various options like Comments, API Management, IOT, Finance, DevOps, Integrate, and Mobile. The main area displays a grid of nine API product cards. Each card includes a circular icon, the product name (e.g., "Product 1.0.0", "Pet Adoptions 1.0.0"), a brief description, and a list of API versions (e.g., API 1.0, API 1.0 ...). One card, "Pet Adoptions 1.0.0", has a blue button labeled "View pricing plans". To the right of the grid, there's a circular diagram with nodes labeled "Test", "Create", "Monitor", "Analyze", "Manage", and "Socialize", connected by arrows.

# API Connect – Product Overview, Components, Features

## Examples



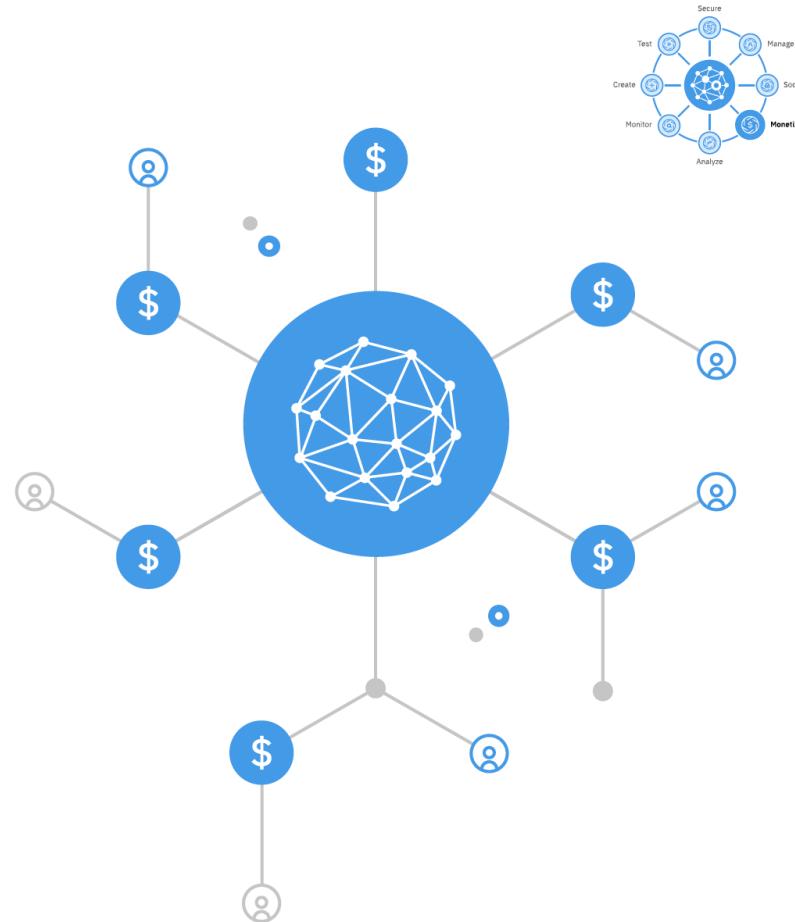

<https://developer.royalmail.net/api>

<https://developer.federalbank.co.in/>

# API Connect – Product Overview, Components, Features

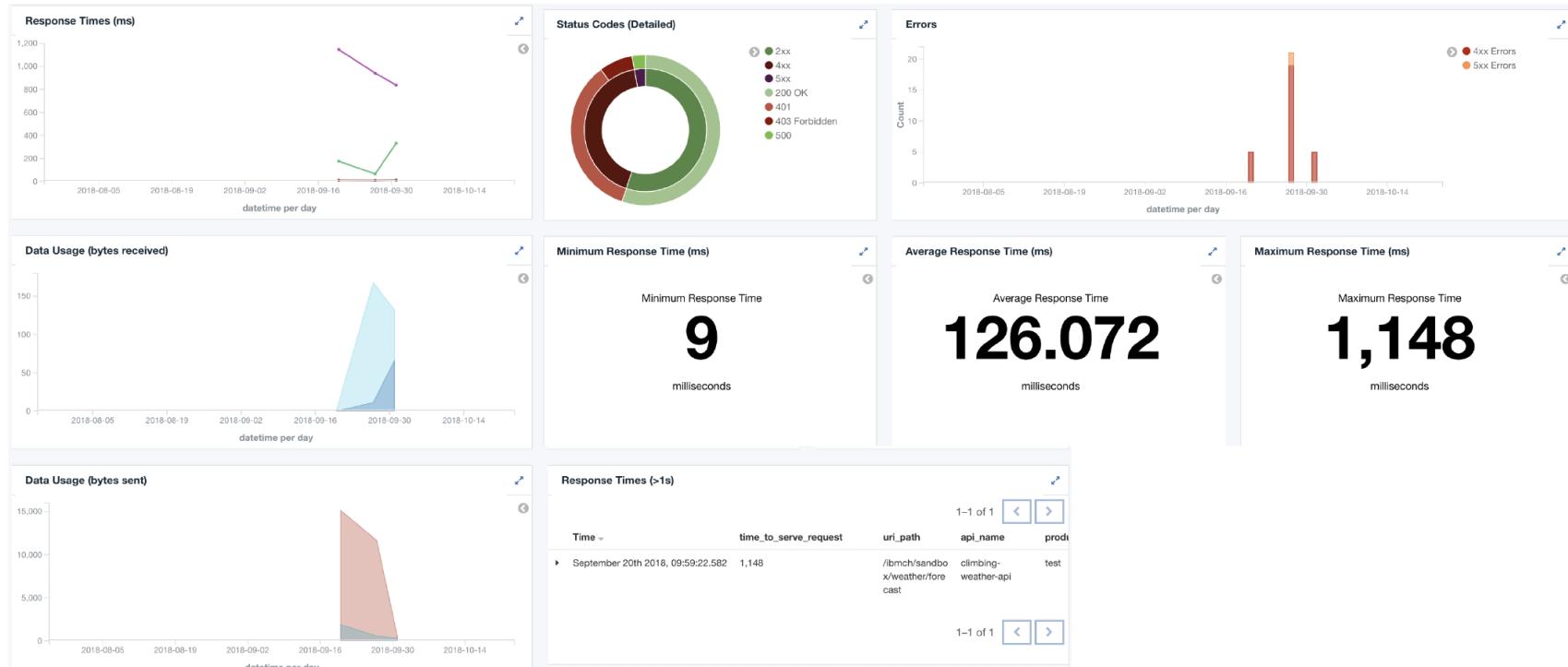
## Monetize your API Calls

- **Modern approach & intuitive user experience** providing flexibility to define pricing details
- **Subscription pricing support** to enable recurring payments, popular in SaaS go-to-market strategies
- **Stripe integration OOTB** for smooth user-onboarding and payment collection
- **Analytics, customizable reports** for detailed insights into revenue, usage of monetized APIs
- **Offload API usage data** to existing enterprise tools to handle customized invoicing processes



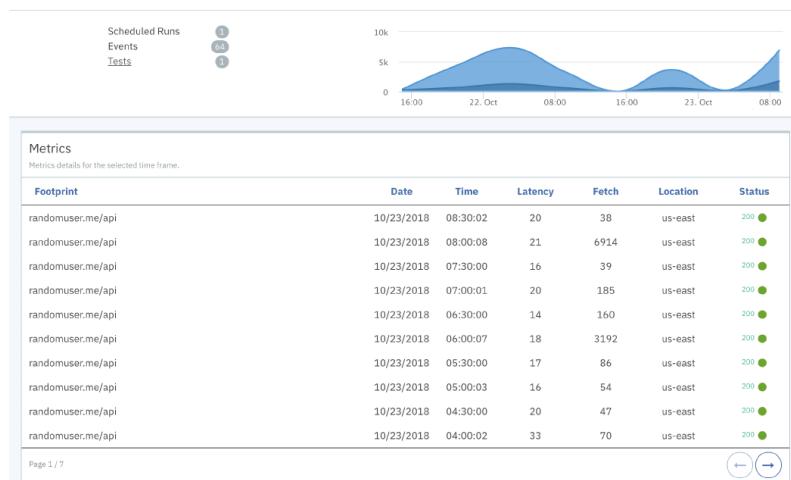
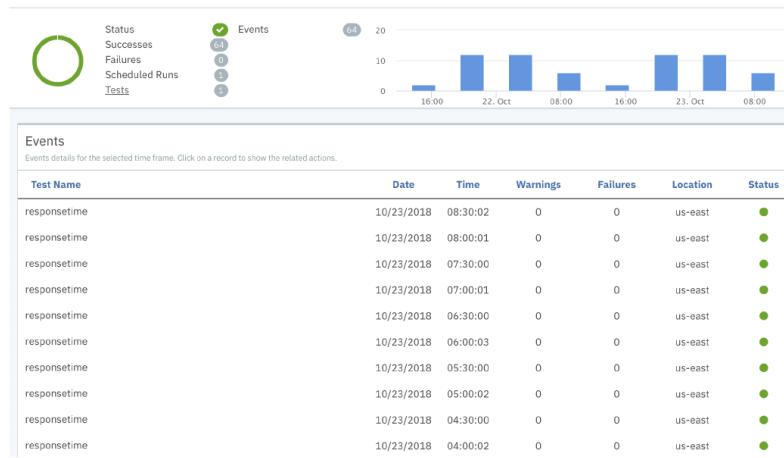
# API Connect – Product Overview, Components, Features

## Dashboards – out of the box and custom



# API Connect – Product Overview, Components, Features

## API Test and Monitor



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Thank you !

## YouTube playlist for IBM App Connect Enterprise 12:

[https://www.youtube.com/playlist?list=PL\\_4RxtD-BL5tKxx9GiR2BH146ZUC21cOp](https://www.youtube.com/playlist?list=PL_4RxtD-BL5tKxx9GiR2BH146ZUC21cOp)

The left window displays the IBM App Connect Enterprise 12.0 documentation page, with the URL <https://www.ibm.com/docs/en/app-connect/12.0?topic=overview-frequently-asked-questions>. The right window shows a YouTube playlist with the following video titles and descriptions:

1. **IBM App Connect Enterprise 12: Creating and running a JUnit test for a message flow node** - IBM Support and Training
2. **IBM App Connect Enterprise 12: An in depth look, how to create a test case for a message node** - IBM Support and Training
3. **IBM App Connect Enterprise 12: Understanding a Message Assembly** - IBM Support and Training
4. **IBM App Connect Enterprise 12: Generating a test case using recorded messages in the Flow Exerciser** - IBM Support and Training
5. **IBM App Connect Enterprise 12: Generating a test case for a REST API operation** - IBM Support and Training
6. **IBM App Connect Enterprise 12: Create a test case for a message flow which uses external resource** - IBM Support and Training

## FAQ page IBM App Connect Enterprise 12:

<https://www.ibm.com/docs/en/app-connect/12.0?topic=overview-frequently-asked-questions>

# App Connect – Product Overview, Components, Features

## Universal Connectivity & Transformations Powering the Innovations

AggregateControl node  
AggregateReply node  
AggregateRequest node  
AppConnectRESTRequest node  
CallableFlowAsyncInvoke node  
CallableFlowAsyncResponse node  
CallableFlowInvoke node  
CallableInput node  
CallableReply node  
CDInput node  
CDOOutput node  
Check node  
CICSRequest node  
Collector node  
Compute node  
CORBAResponse node  
Database node  
DatabaseInput node  
DatabaseRetrieve node  
DatabaseRoute node

EmailInput node  
EmailOutput node  
EndpointLookup node  
FileInput node  
FileOutput node  
FileRead node  
Filter node  
FlowOrder node  
FTEInput node  
FTEOOutput node  
GroupScatter node  
GroupGather node  
HTTPAsyncRequest node  
HTTPAsyncResponse node  
HTTPHeader node  
HTTPInput node  
HTTPReply node  
HTTPRequest node  
IMSRequest node

Input node  
JavaCompute node  
JDEdwardsInput node  
JDEdwardsRequest node  
JMSHeader node  
JMSInput node  
JMSMQTransform node  
JMSOutput node  
JMSReceive node  
JMSReply node  
KafkaConsumer node  
KafkaProducer node  
KafkaRead node  
Label node  
LoopBackRequest node  
Mapping node  
MQGet node  
MQHeader node  
MQInput node  
MQJMSTransform node

MQOptimizedFlow node  
MQOutput node  
MQReply node  
MQTTPublish node  
MQTTSubscribe node  
.NETCompute node  
.NETInput node  
ODMRules node  
Output node  
Passthrough node  
PeopleSoftInput node  
PeopleSoftRequest node  
Publication node  
Real-timeInput node  
Real-timeOptimizedFlow node  
RegistryLookup node  
Resequence node  
ResetContentDescriptor node  
RESTAsyncRequest node  
RESTAsyncResponse node  
RESTRequest node

Route node  
RouteToLabel node  
SalesforceRequest node  
SAPInput node  
SAPReply node  
SAPRequest node  
SecurityPEP node  
Sequence node  
SiebelInput node  
SiebelRequest node  
SOAPAsyncRequest node  
SOAPAsyncResponse node  
SOAPEnvelope node  
SOAPExtract node  
SOAPInput node  
SOAPReply node  
SOAPRequest node  
TCPIPClientInput node  
TCPIPClientOutput node  
TCPIPClientReceive node  
TCPIPServerInput node