

# IIBvNext and App Connect Enterprise 1: *Overview*



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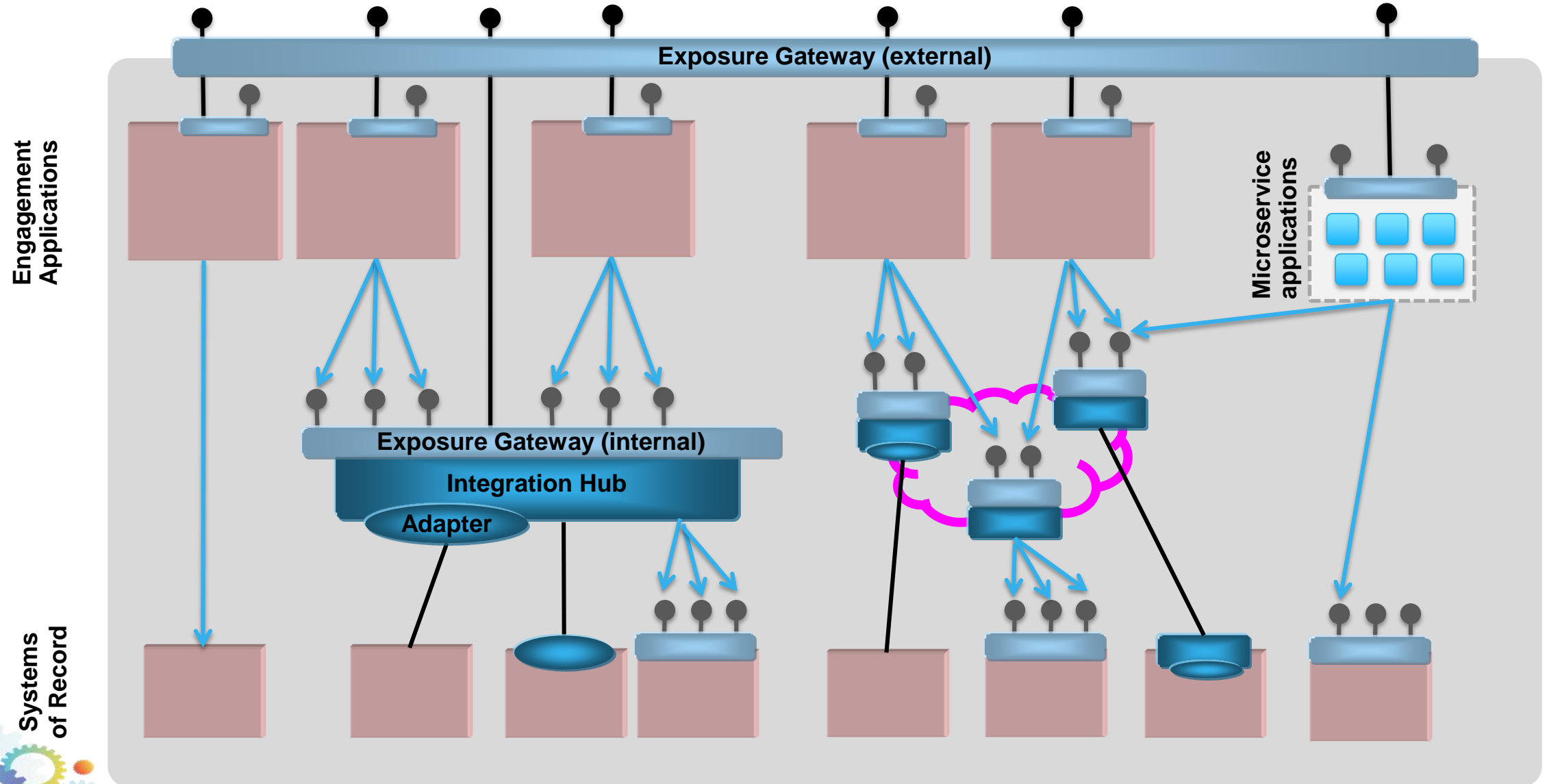


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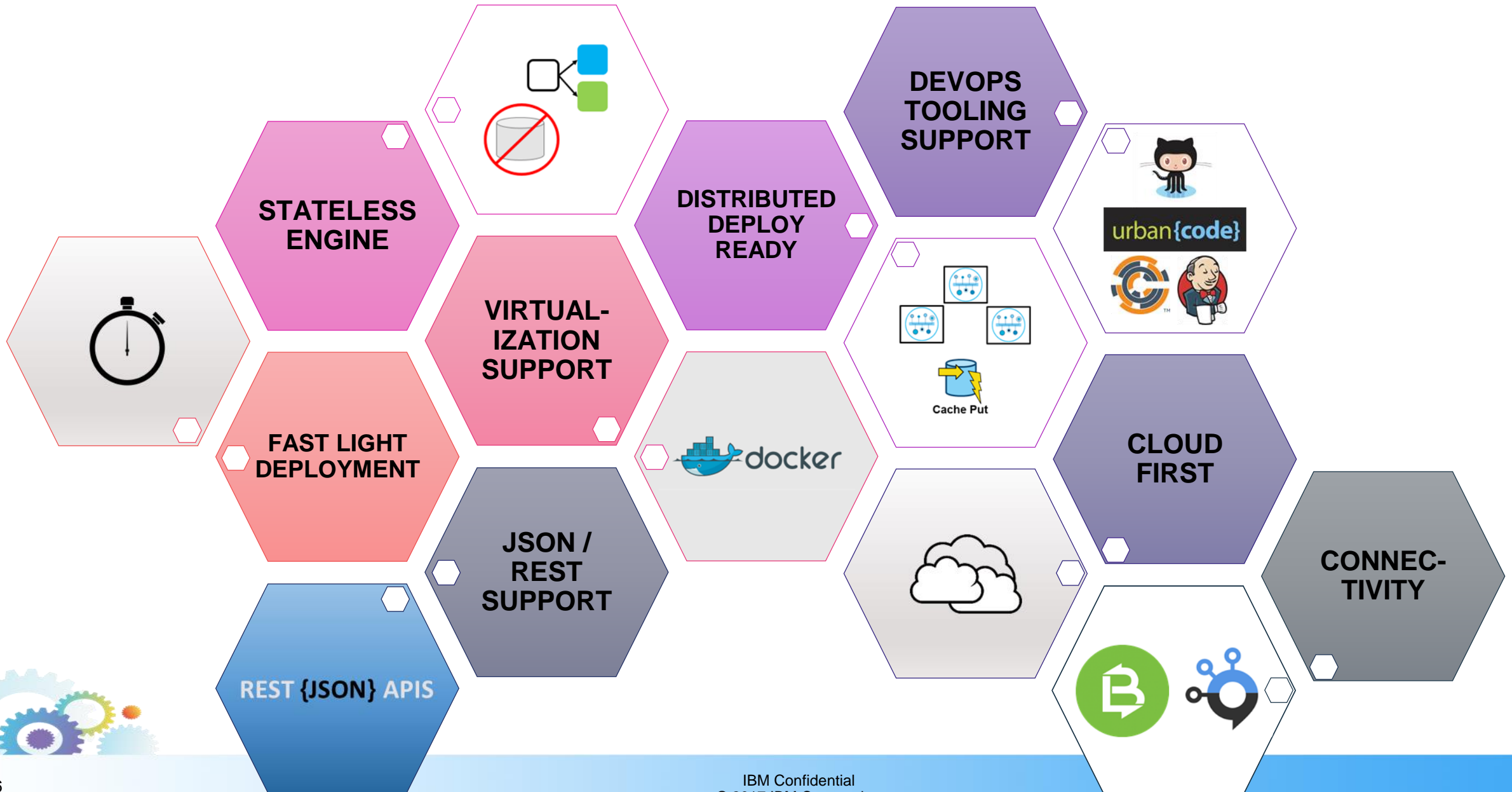
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# Evolving Integration architectures and the impact of Microservices


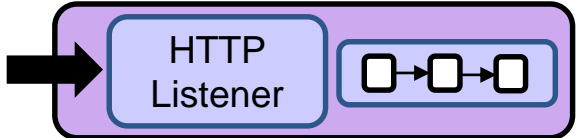
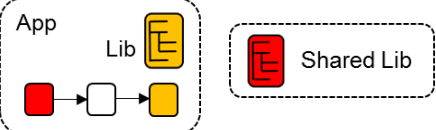
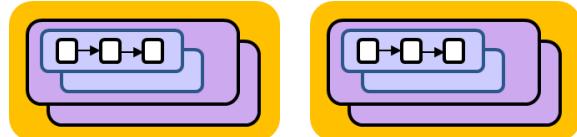
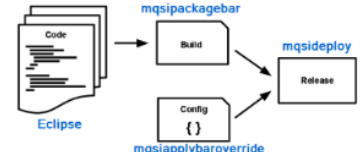


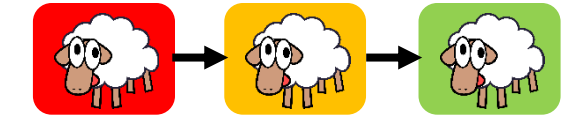


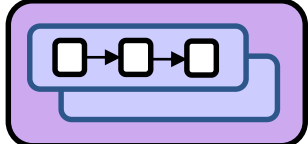


# IBM Integration Bus – A Lightweight Integration Runtime



# IIB is a 12-Factor App!



1. Codebase	 BARs	7. Port binding	
2. Dependencies		8. Concurrency	
3. Configuration		9. Disposability	
4. Backing Services		10. Dev / prod parity	
5. Build, Release, Run		11. Logs	
6. Stateless Processes		12. Admin Processes	<code>mqsicreatebar</code> Integration API <code>mqsiapplybaroverride</code> <code>mqsideploy</code>

<https://developer.ibm.com/integration/blog/2017/04/16/12-factor-integration/>

## IIB v10.0.0.2

Q3 2015

Global Cache upgrade to WXSv8.6  
GDM access to Global Cache  
REST API integration with APIm  
CICS 2 Phase Commit  
TCPIP report properties enhancements  
WESB conversion enhancements

## IIB v10.0.0.4

Q1 2016

Callable Flows for linking to IIBoC  
Create a REST API without Swagger  
JSON Schema support for GDM  
Salesforce Request node  
LDAP Authentication  
Web UI Activity Log  
SLESv12 (x86 and Z Systems)

## IIB v10.0.0.6

Q3 2016

REST Request node  
REST Async Request & Response nodes  
Loopback Request node  
MQ version 9 support  
Support for YAML format Swagger  
Support for REST APIs with node-wide listener  
HTTP Logging Enhancements  
HTTP Input Query Param split in LE

## IIB v10.0.0.7

Q4 2016

Kafka Producer and Kafka Consumer nodes  
Hybrid Connect – view IIB instances in Bluemix  
Send IIB logs to Kibana dashboard in Bluemix  
Pre-built Docker image on Bluemix Containers  
Wildcards to simplify LDAP user authentication  
Accounting & Stats CSV output  
Windows 10 support

## IIB v10.0.0.8

Q1 2017

IBM Cloud Product Insights in Bluemix  
Asynchronous Callable Flows  
JSON support for allof, anyOf, oneOf  
Storing context for REST Async Request  
Message Keys for Kafka nodes  
10 New Product Tutorials  
Node.js and FTE upgrades

## IIB v10.0.0.3

Q4 2015

Business Transaction Monitoring  
CICS 2 Phase Commit on zOS  
Oracle stored proc in GDM  
Linux Power 8 Little Endian  
(RHEL7.1, Ubuntu14.0.0.4, SLES12)

## IIB v10.0.0.5

Q2 2016

MQTT SSL and dynamic config  
Bulk Push to API Connect  
Callable Flows report properties

IIBvNext Closed Beta

## IIB on Cloud

Q3 2015

IBM Managed Service  
Built on Docker containers  
Runs on the Bluemix Container Service  
Reuse artifacts built for IIB on-premise

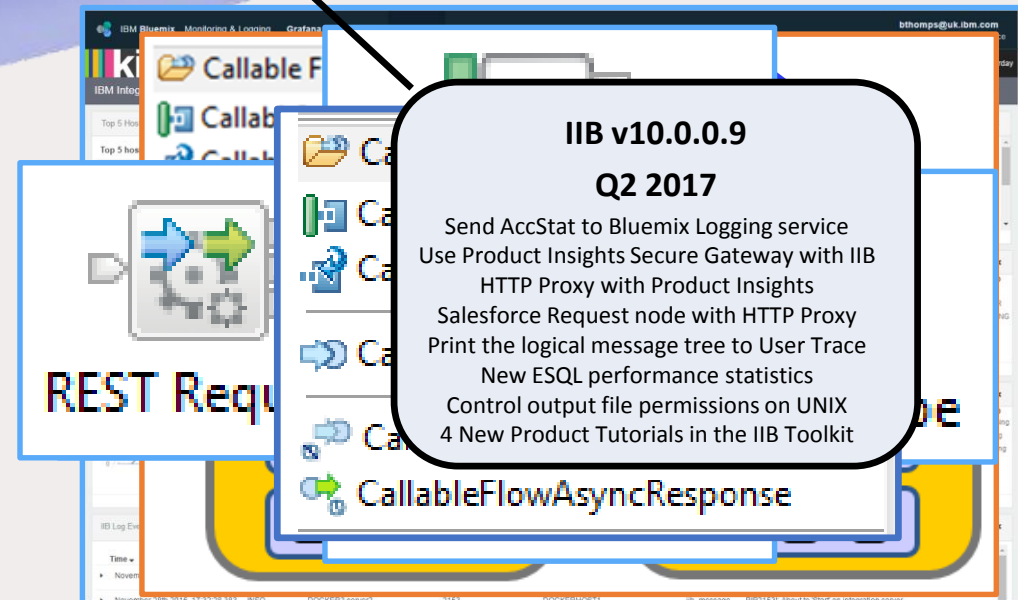
## IIB Manufacturing Pack v1.0.0.2 Q3 2016

IIBv10 Compatibility

## IIB v10.0.0.9

Q2 2017

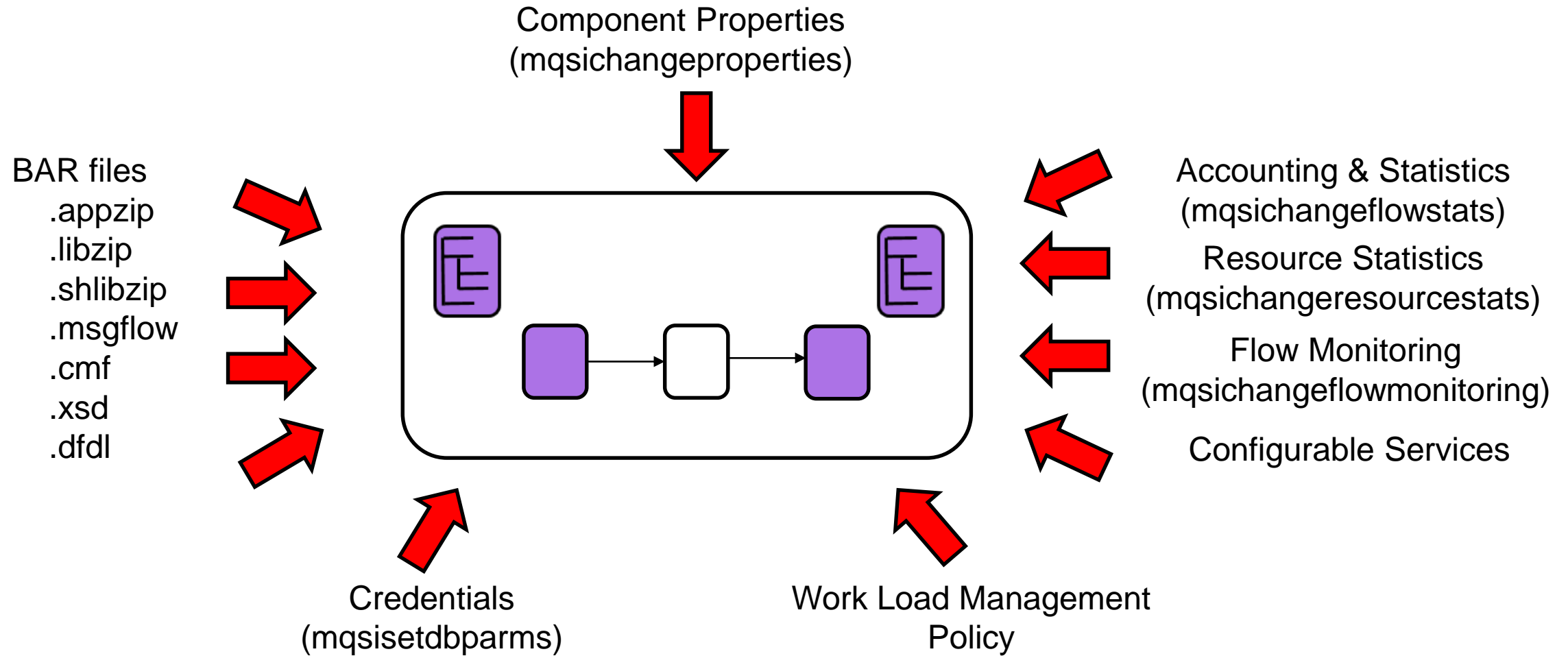
Send AccStat to Bluemix Logging service  
Use Product Insights Secure Gateway with IIB  
HTTP Proxy with Product Insights  
Salesforce Request node with HTTP Proxy  
Print the logical message tree to User Trace  
New ESQL performance statistics  
Control output file permissions on UNIX  
4 New Product Tutorials in the IIB Toolkit



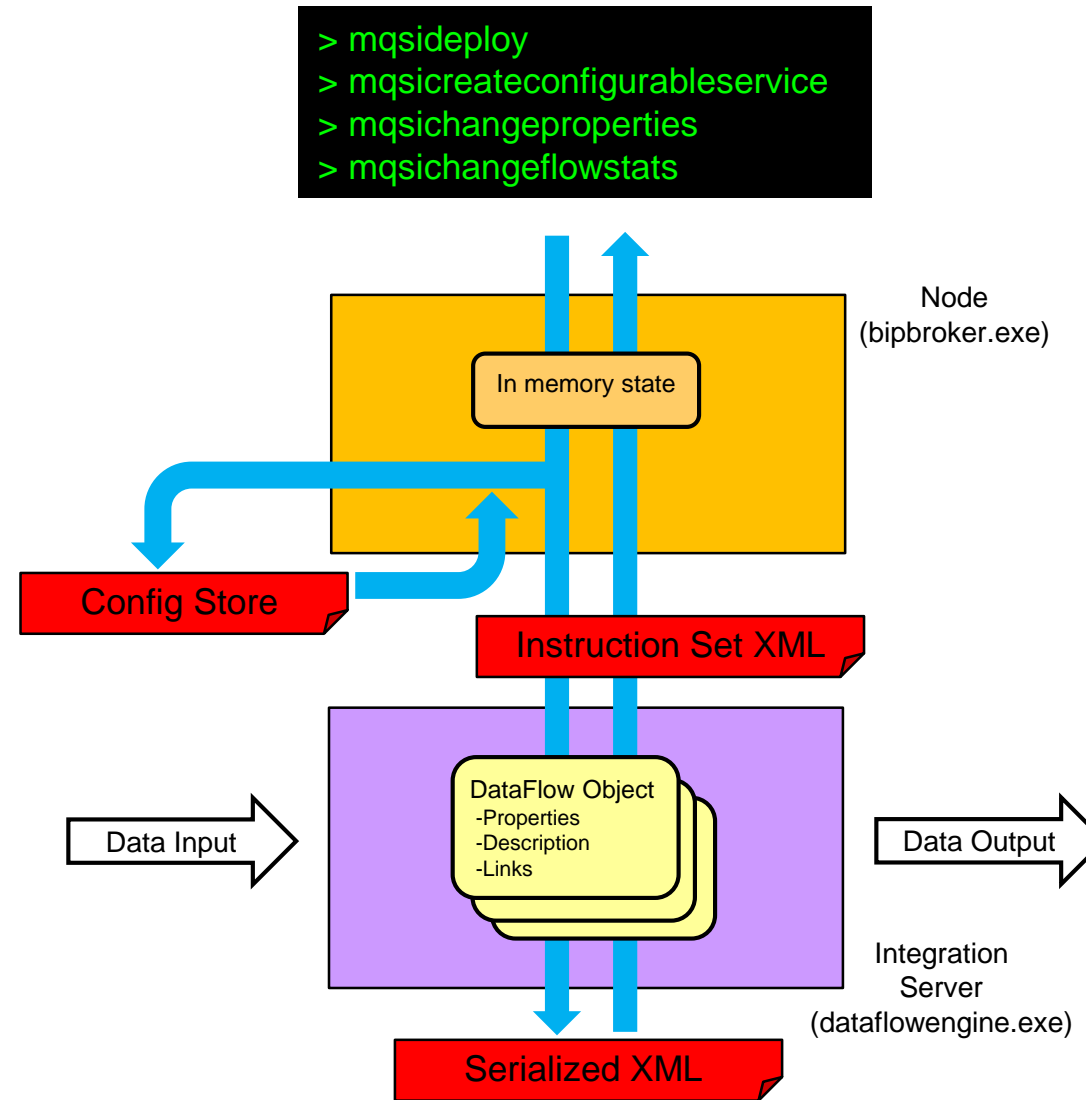


# IBM Integration Bus vNext

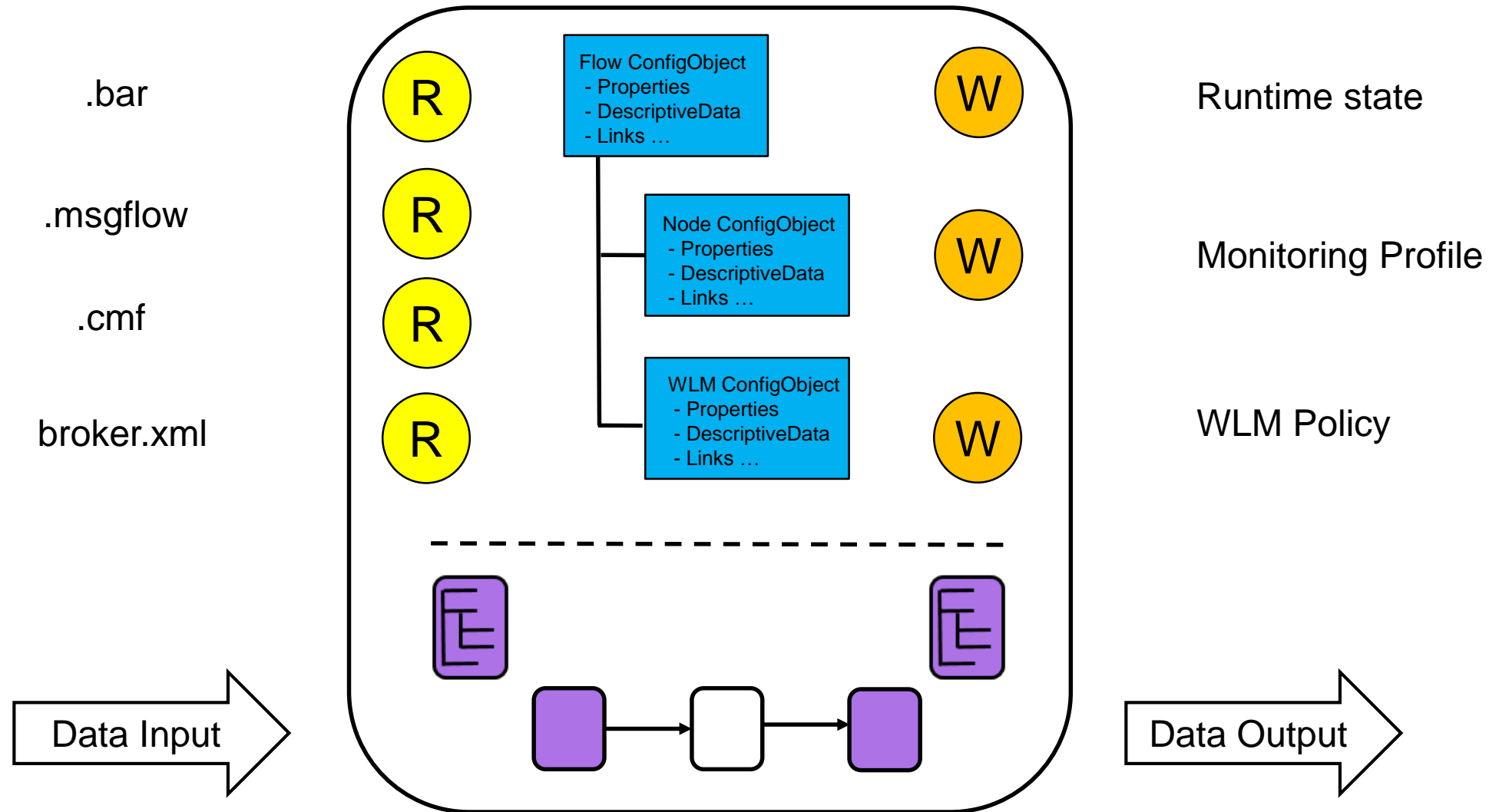
# Current Stateful Configuration of an Integration Server



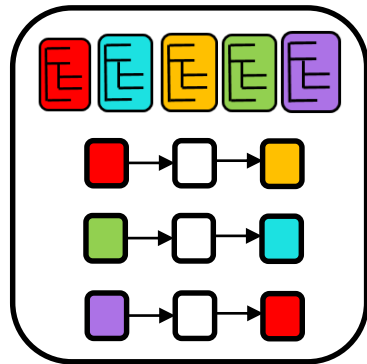
# A quick peek under the hood ... at the mechanics of deploy!



# Future Stateful configuration of an Integration Server

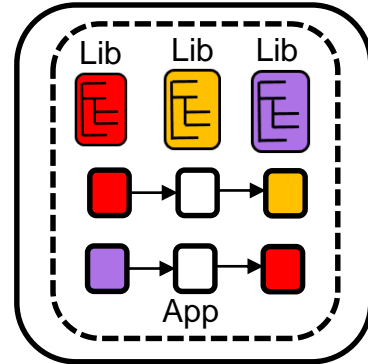


# IIB Deploy – The Past, The Present and The Future



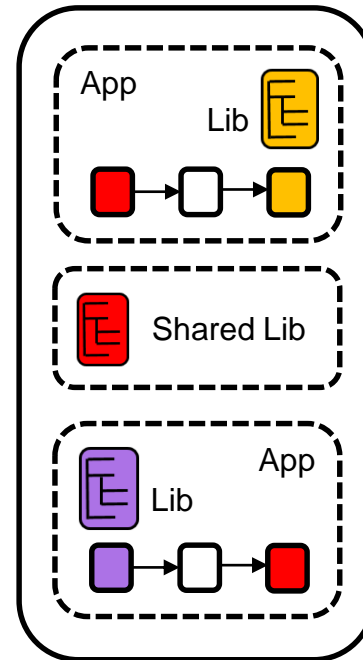
WMBv7  
"Broker Projects"

Everything together



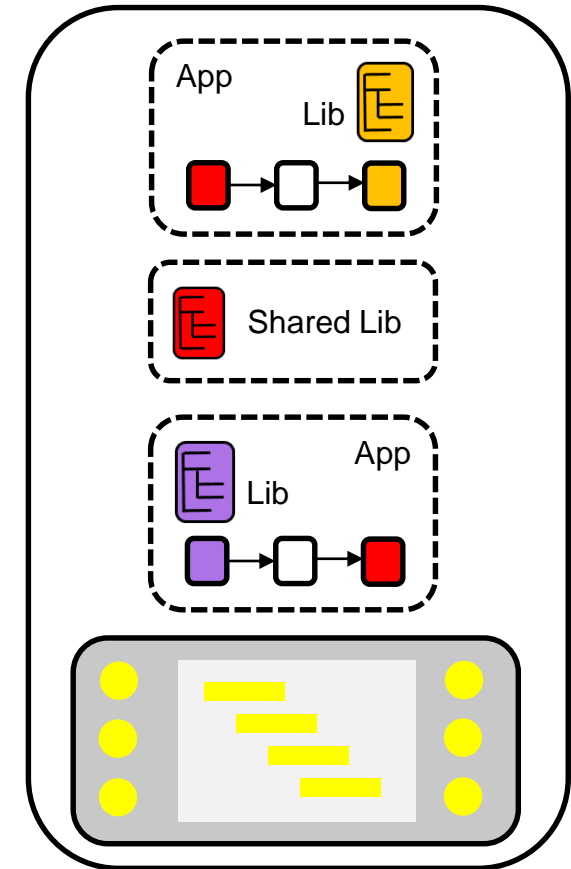
WMBv8, IIBv9  
"Applications and Libraries"

Isolation



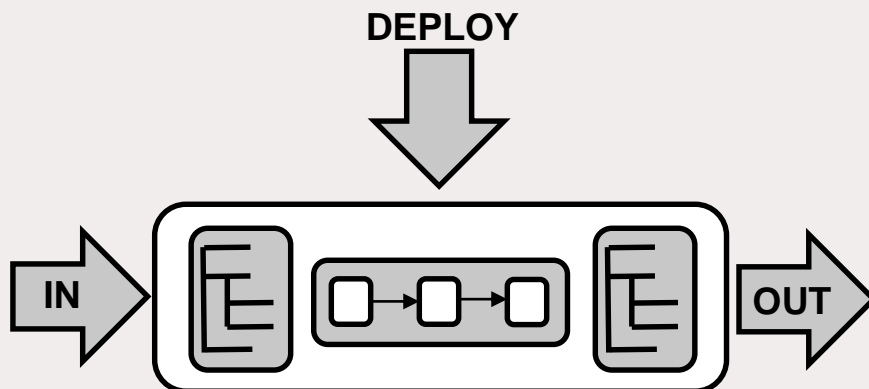
IIBv10  
"Shared Libraries"

Best of Both

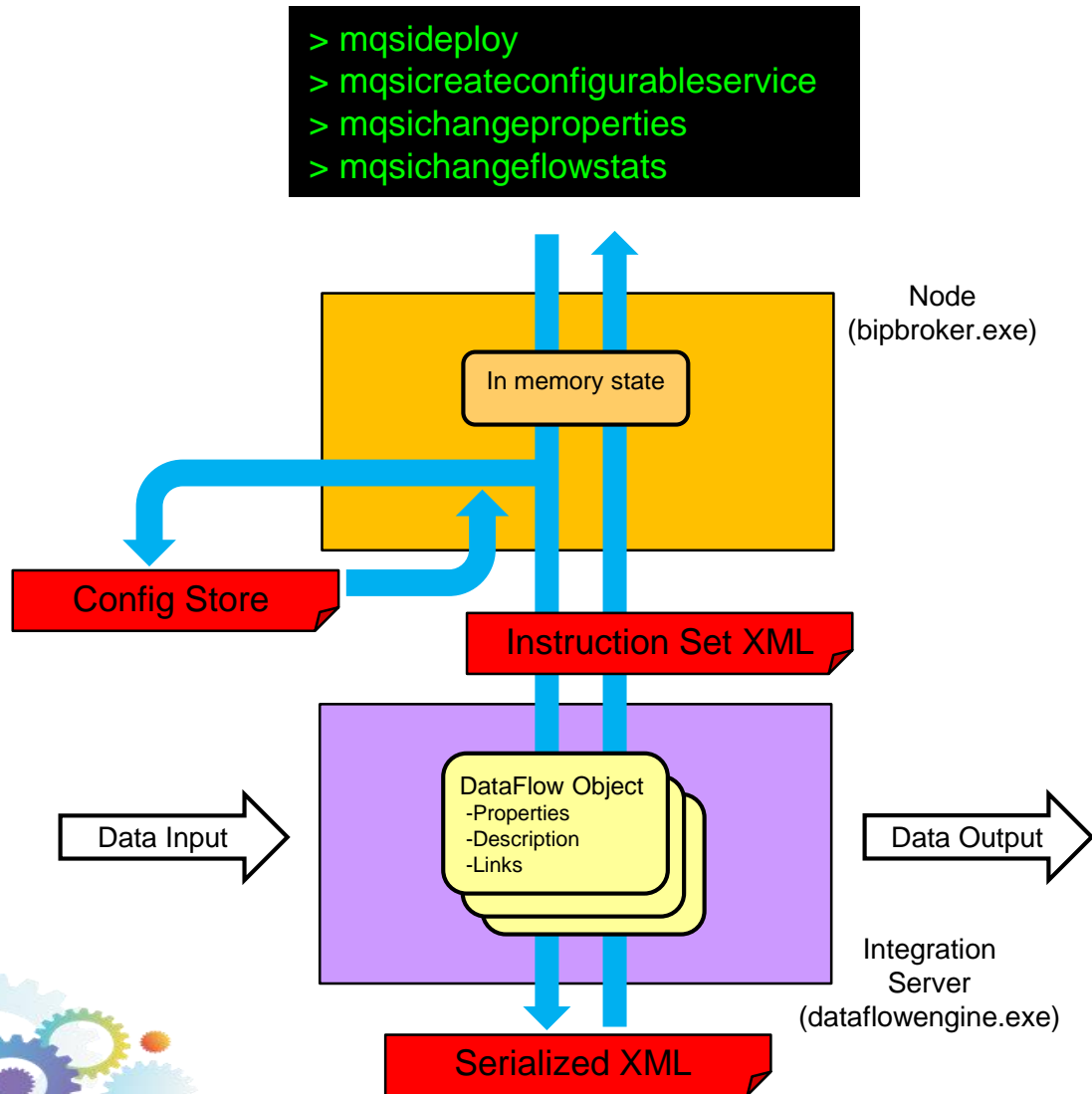


IIBvNext  
"Unzip and Go"

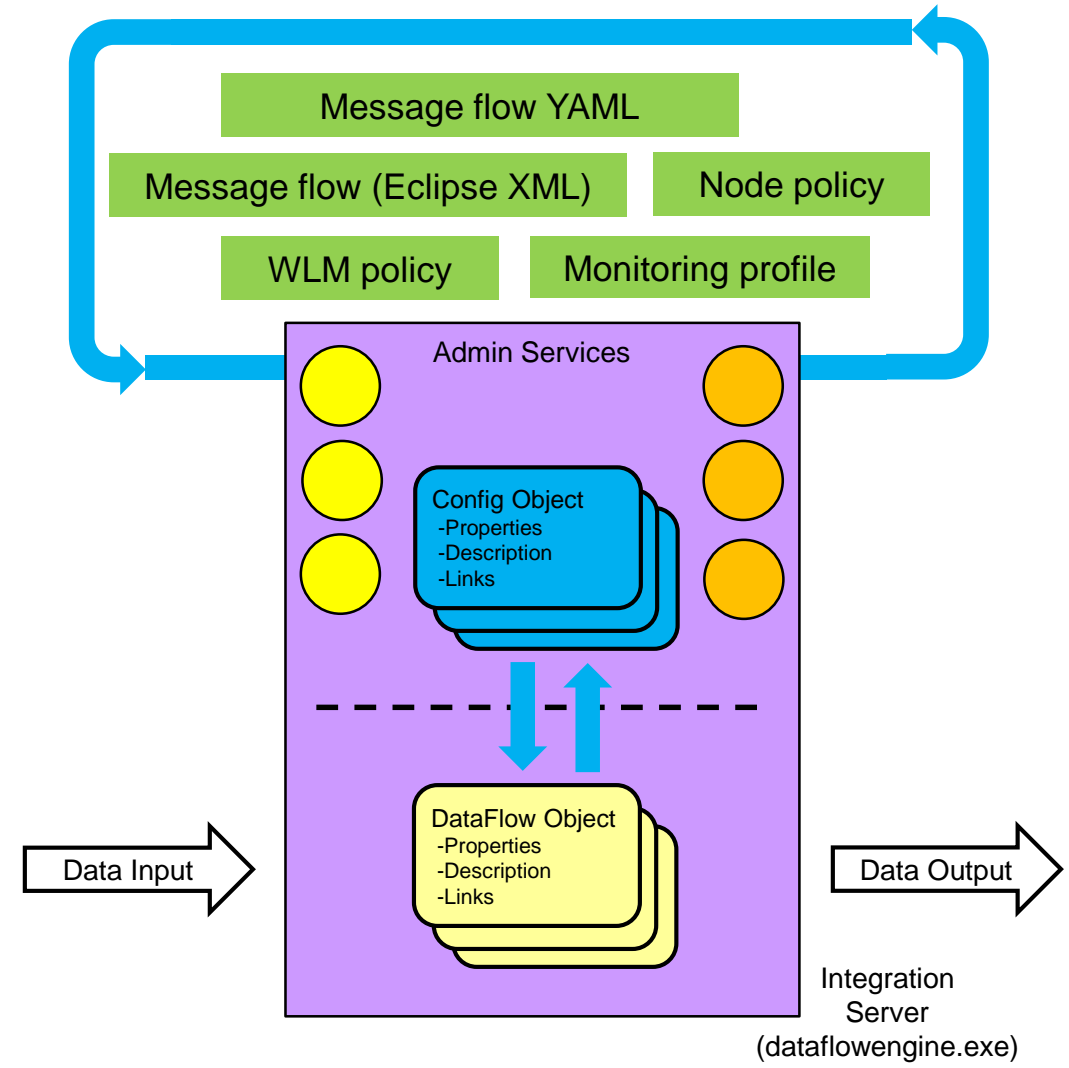
Best of Both,  
Faster update



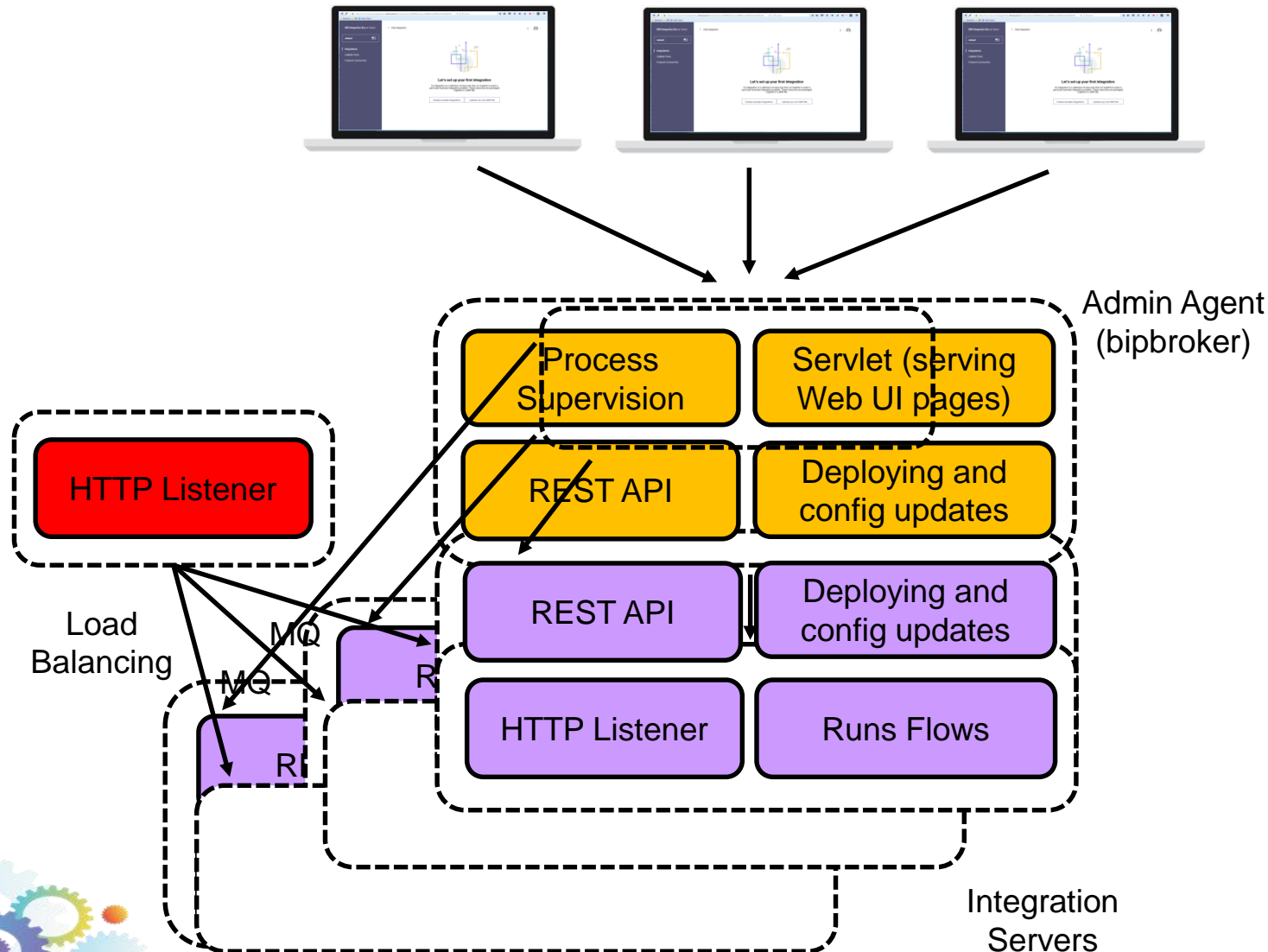
# BEFORE



# AFTER



# What is an IIB node for anyway?

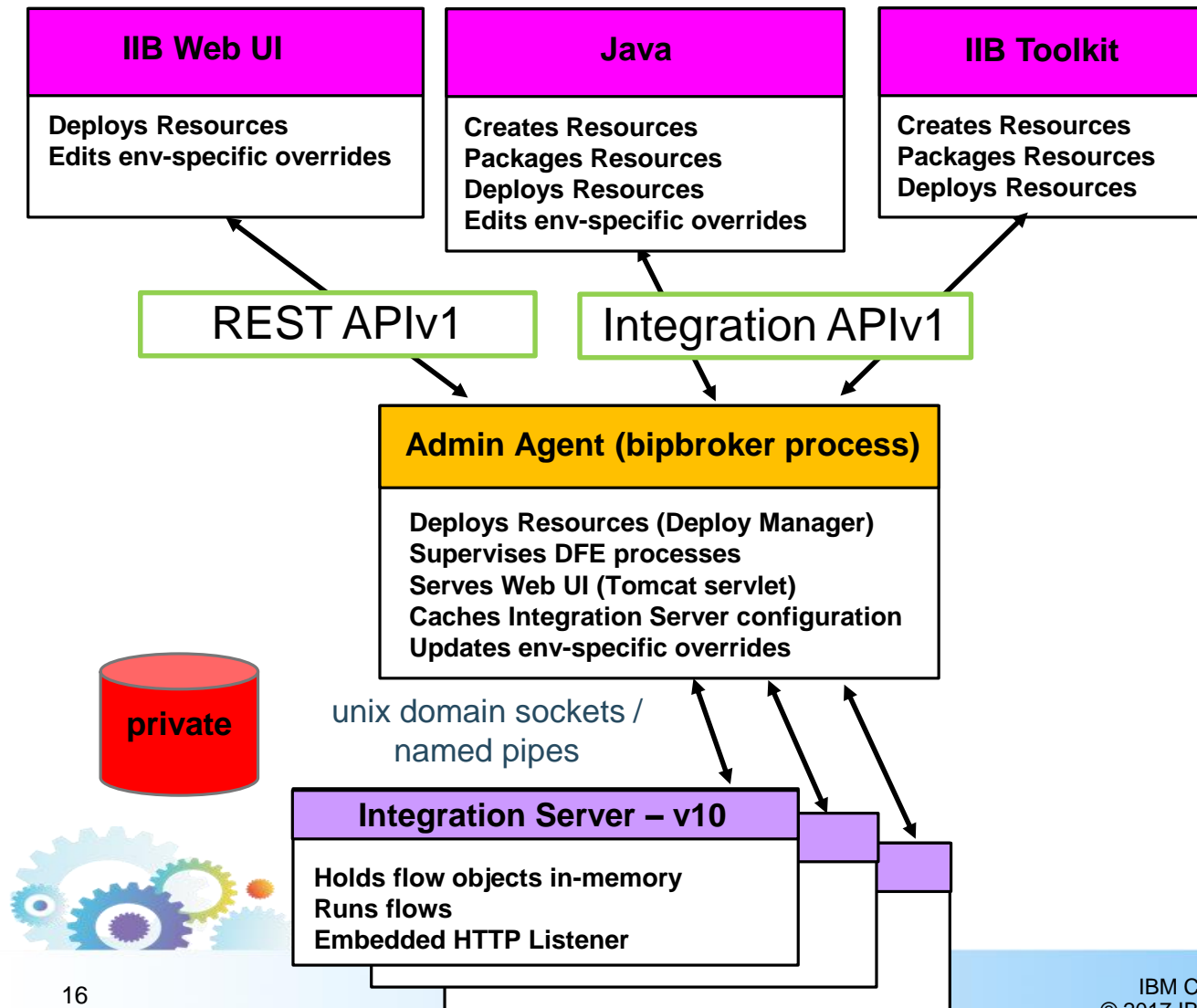


- A “herder” of Integration Servers
- Deploys updated artifacts to Integration Servers
- Serves the IBM Integration Bus Web User Interface
- The component which provides the IIB administration API interfaces (REST and Java)
- The holder for environment specific overrides e.g. Security credentials

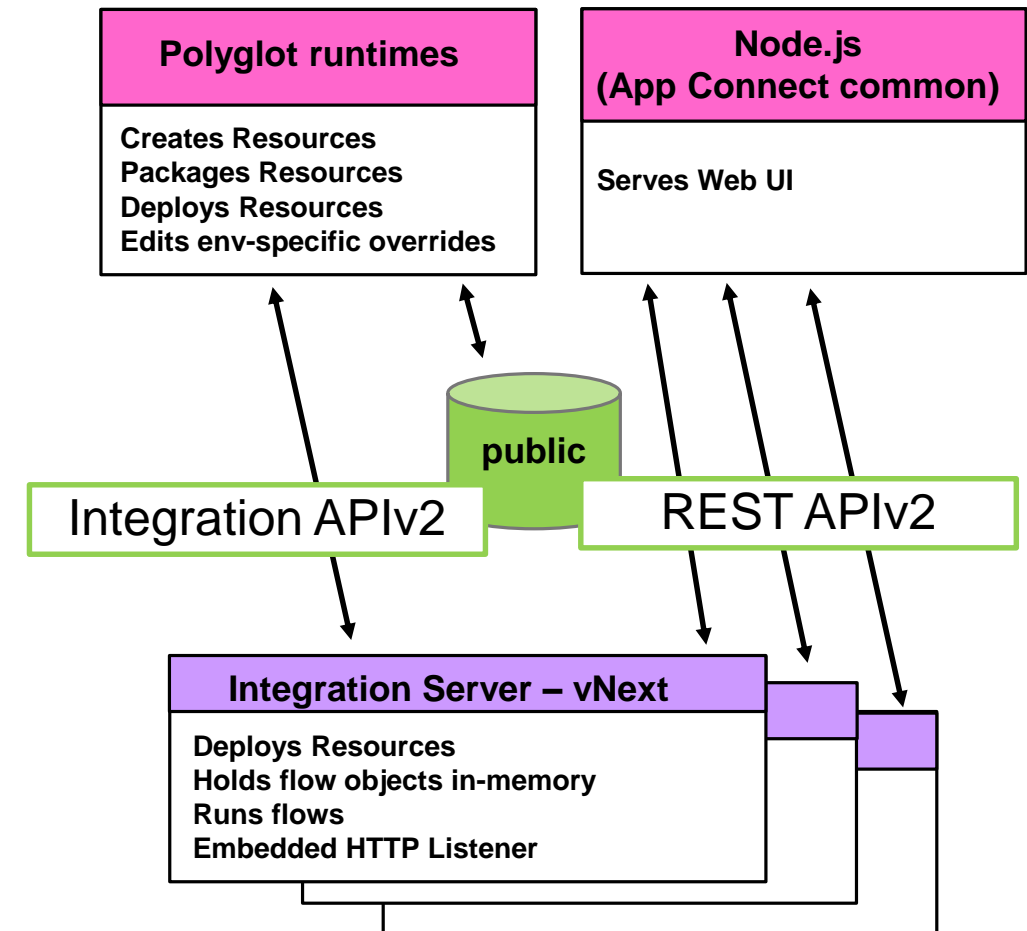
# How the IIB Architecture will evolve



## ... Past and Present ...



## ... Future ...

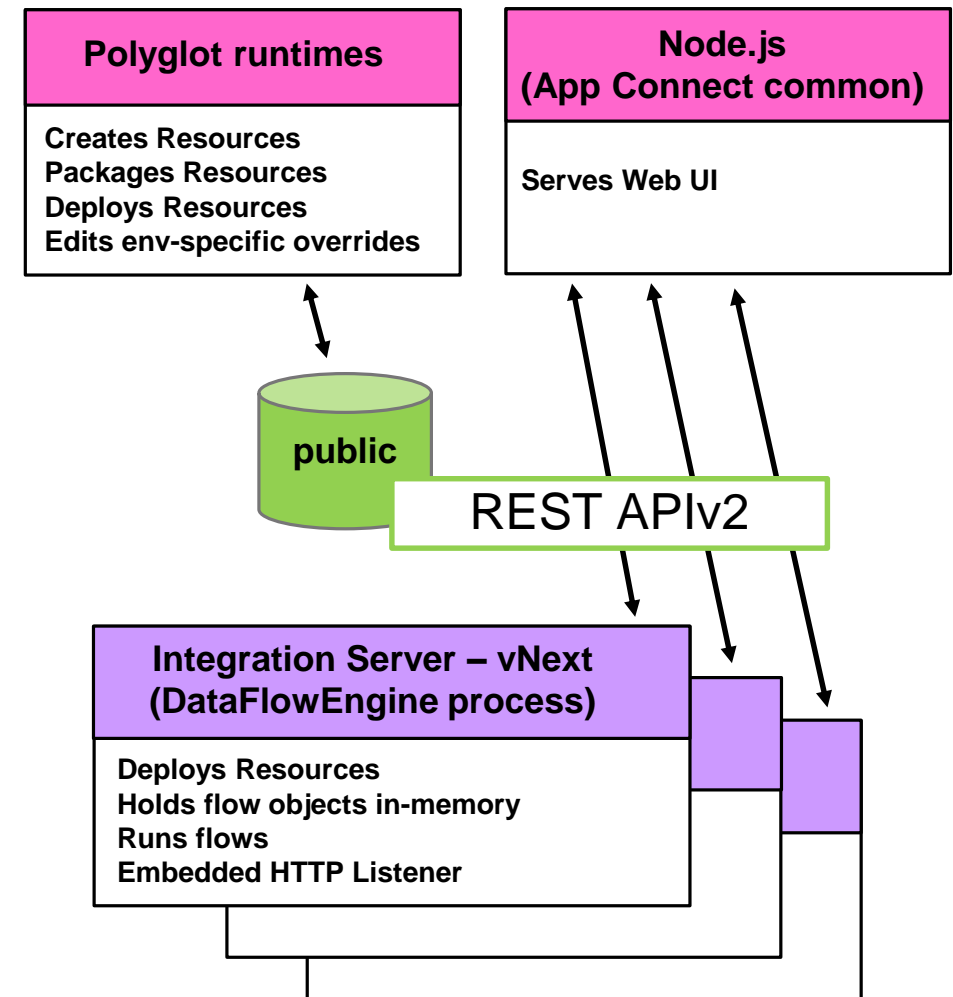




# What do these changes enable for vNext externals?



1. Simpler to run IIB in a cloud architecture due to deployment processing and flow runtime all coordinated using a single OS process.
2. Run IIB as a truly cloud native application (improved architecture for IIB in Docker and easier to run under Kubernetes framework)
3. Enables new (non-Eclipse and web-based) message flow file formats e.g. YAML form deployed from a new AppConnect web-ui based flow development experience
4. Deploy in stopped state / warm standby
5. Easy cloning of integration server settings between environments
6. Impact Analysis and dependency checking (eg shared library changes, interactions between message models and flows)
7. Retrieving source and configuration history
8. Pre-deploy validation (avoid having to execute a deploy to know if it's going to be successful)
9. Sticky settings for monitoring and statistics configuration
10. Non-functional improvements for deploying changed IIB configs
  - a) Less CPU required
  - b) Faster deploy time
  - c) Smaller memory footprint

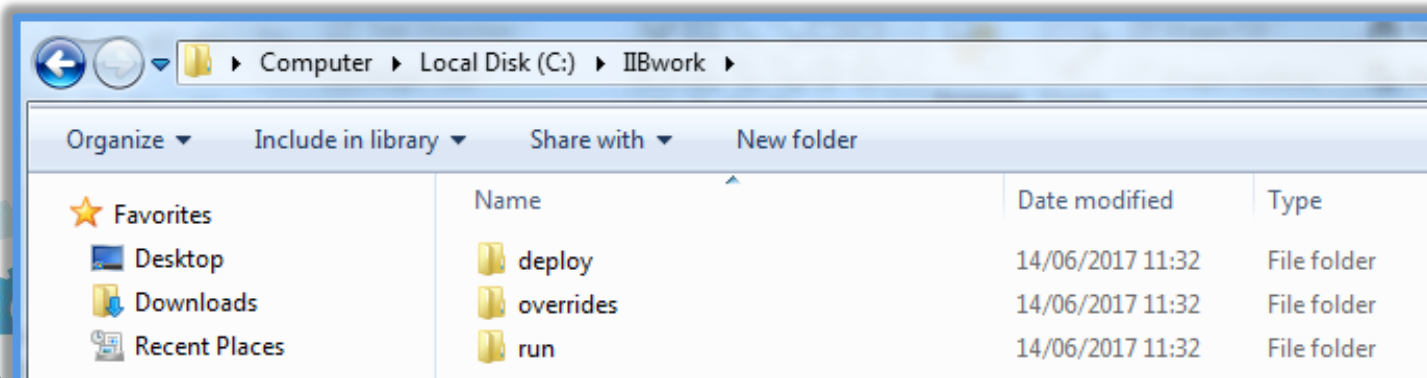


# An example ... Let's consider cloning a node!



1. Integration servers
2. Per-integration server profiles
3. Configurable services
4. Policies
5. IIB security (mqsisetdbparms)
6. Shared classes
7. Other state in the IIB workpath directory
8. File system directory structures required by IIB nodes
9. WTX dependencies
10. .NET assemblies
11. XSL Stylesheets
12. ODBC configuration ini file ...

- Standalone Integration Servers:
  - Run direct from the command line
  - Similar to StrongLoop, Mongo, etc
  - No create step.
  - No deploy step necessary
  - Process is not owned by any other process (or Integration Node)
  - Can be given a name under which it runs (should be unique)
  - Default MQ queue manager name
  - http port for HTTP nodes
  - Named event log file rather than logging to syslog/Event Viewer
  - JVM options so that min/max heap size can be specified etc



# IBM Integration Bus Beta = Play time!



The screenshot displays the IBM Integration Bus Beta interface. The top navigation bar shows the URL `localhost:14414/dev/`. Below it, the 'Source' tab is active, showing a JSON configuration for an assembly:

```
1 assembly:
2   execute:
3     - HTTPInput:
4       title: HTTPInput
5       URLSpecifier: /BenDemo5
6       messageDomainProperty: JSON
7     - Compute:
8       title: Compute
9       validateMaster: inherit
10    - RESTRequest:
11      title: RESTRequest
12    - HTTPReply:
13      title: HTTPReply
14      validateMaster: inherit
15  catch: []
16
```

The 'Flow Editor' tab is also visible, showing a visual flow diagram with the following components: `HTTPInput` → `Compute` → `RESTRequest` → `HTTPReply`. A search bar and a filter menu are present above the flow diagram. The filter menu includes categories like Construction, WebSphere MQ, HTTP, REST, Web Services, Routing, and Transformation. The 'Description' panel at the bottom right shows fields for Node Name, Identifier, and Short Description.

In the bottom left corner, a terminal window titled 'IBM Integration Console 11.0.1693.0 Beta' displays the following output:

```
C:\Program Files\IBM\IIB\11.0.1693.0\bin>start
2017-06-18 19:19:27.714668: I
2017-06-18 19:19:27.721042: I
2017-06-18 19:19:31.958888: I
2017-06-18 19:19:31.965408: M
```

# The next generation of Policy for IIB ...



TESTFLOW1.msgflow demoJDBCProvider.policyxml

Policy

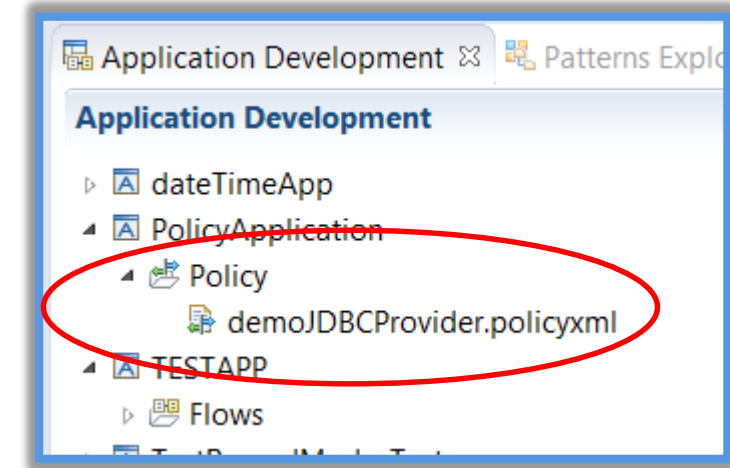
Set the attributes for a Policy

Name demoJDBCProvider

Type JDBCProviders

Template DB2

Key	Value
connectionUrlFormat	jdbc:db2://[serverName]:[portNumber]/[d...
databaseName	default_Database_Name
databaseType	DB2 Universal Database
databaseVersion	9.1
description	default_Description
environmentParms	default_none
jarsURL	/opt/ibm/db2/V9.5/
jdbcProviderXASupport	true
maxConnectionPoolSize	0



- Standalone servers start with an overrides directory
- Has the same hierarchy as the source directory
- Overrides take precedence over the source material
- Updated policy can be placed in the application directory



# Remote IIB monitoring and administration, ELK and Product Insights



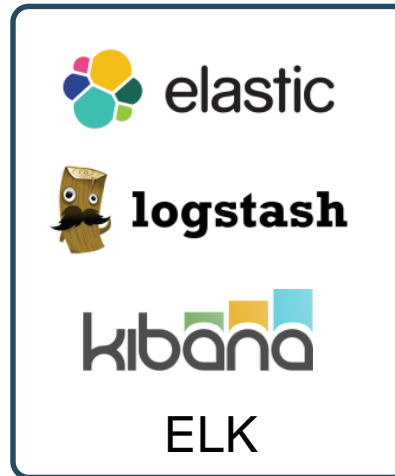
IIB System  
Log Data

IIB Accounting &  
Statistics Data

IIB Resource  
Statistics Data

IIB Monitoring  
Data

IIB BTM Data



# Hybrid Integration Platform Convergence



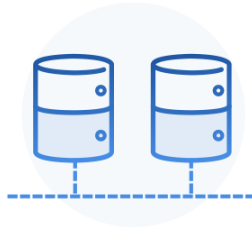
- **Converge** IIBoC and App Connect Cloud MarketPlace offerings into a single Bluemix tile
- **Converge** and reuse connector architectures (eg Salesforce and Loopback technologies are already delivering for us!)
- **Converge** integration flows ... so ...
  - IIB message flows can take advantage of App Connect connectors
  - App Connect flows can take advantage of complex integration capabilities in IIB
- **Converge** our Cloud Foundry service and Container service implementations on to Kubernetes clusters in Bluemix



# Our Purpose and Vision

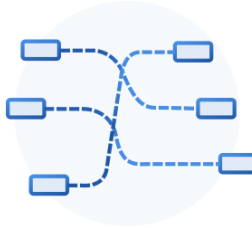
## Connect

Pre-built connectors for SaaS & on premise systems and other IBM integration and messaging solutions



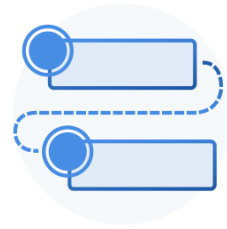
## Transform

Graphical mapper for rapid transformation between source and target data formats



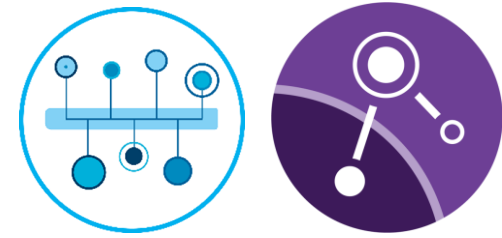
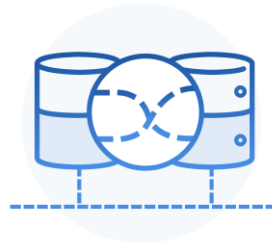
## Design

Configuration-based tooling to implement integration logic with and without code



## Manage

Web based management and monitoring of integrations



## Remain Best in breed

- IBM Integration Bus has been catering to the needs of Enterprise customers for 18 years
- Consistently a leader in the enterprise application integration space.

## Single Integrated Platform

- Connect seamlessly
- Bring together user experiences where appropriate
- Join up the power of IIB, IIBoC and App Connect

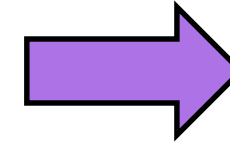
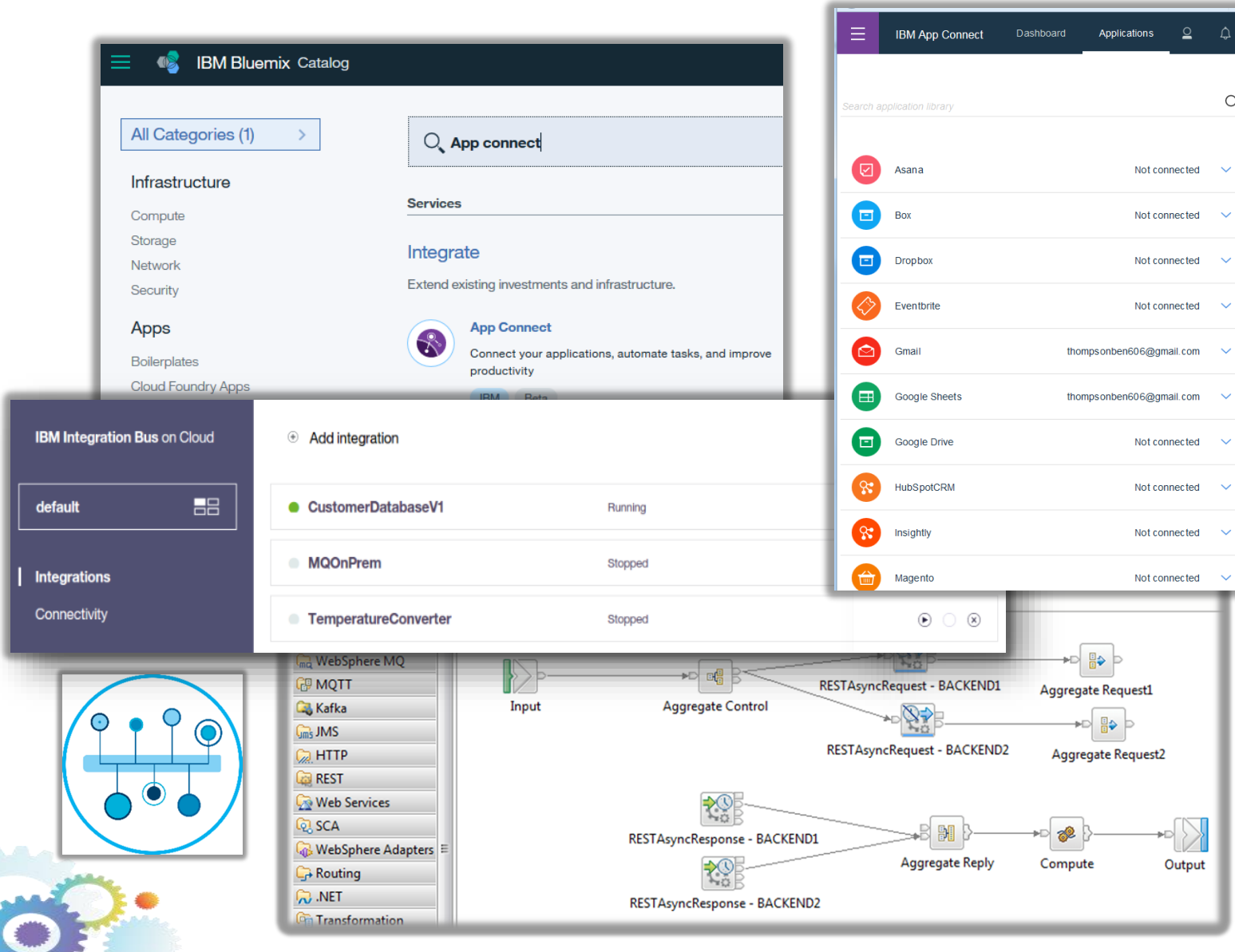
## Enable Hybrid Cloud

- Container based management and orchestration
- Flexibility to run integration technologies across on-premise and cloud
- Avoid investment in new skills

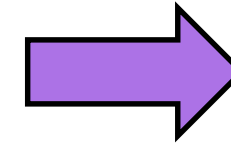




# Hybrid Integration Platform Convergence



*App Connect Enterprise  
(managed cloud service)*



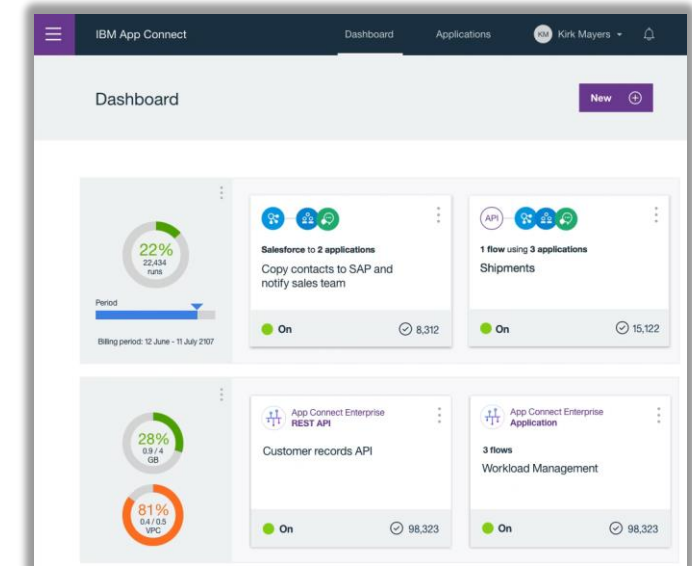
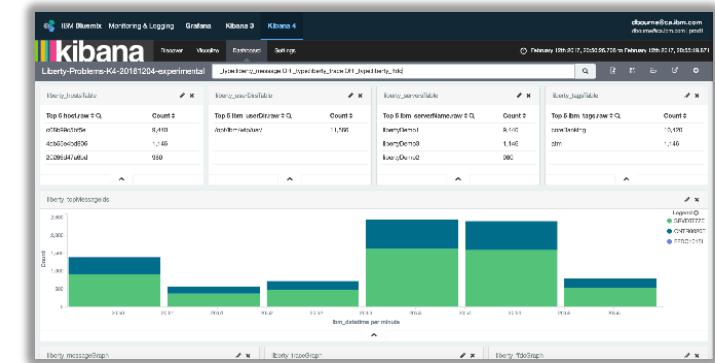
*App Connect Enterprise  
(software on-premise)*



# App Connect Enterprise (managed cloud service on Bluemix)



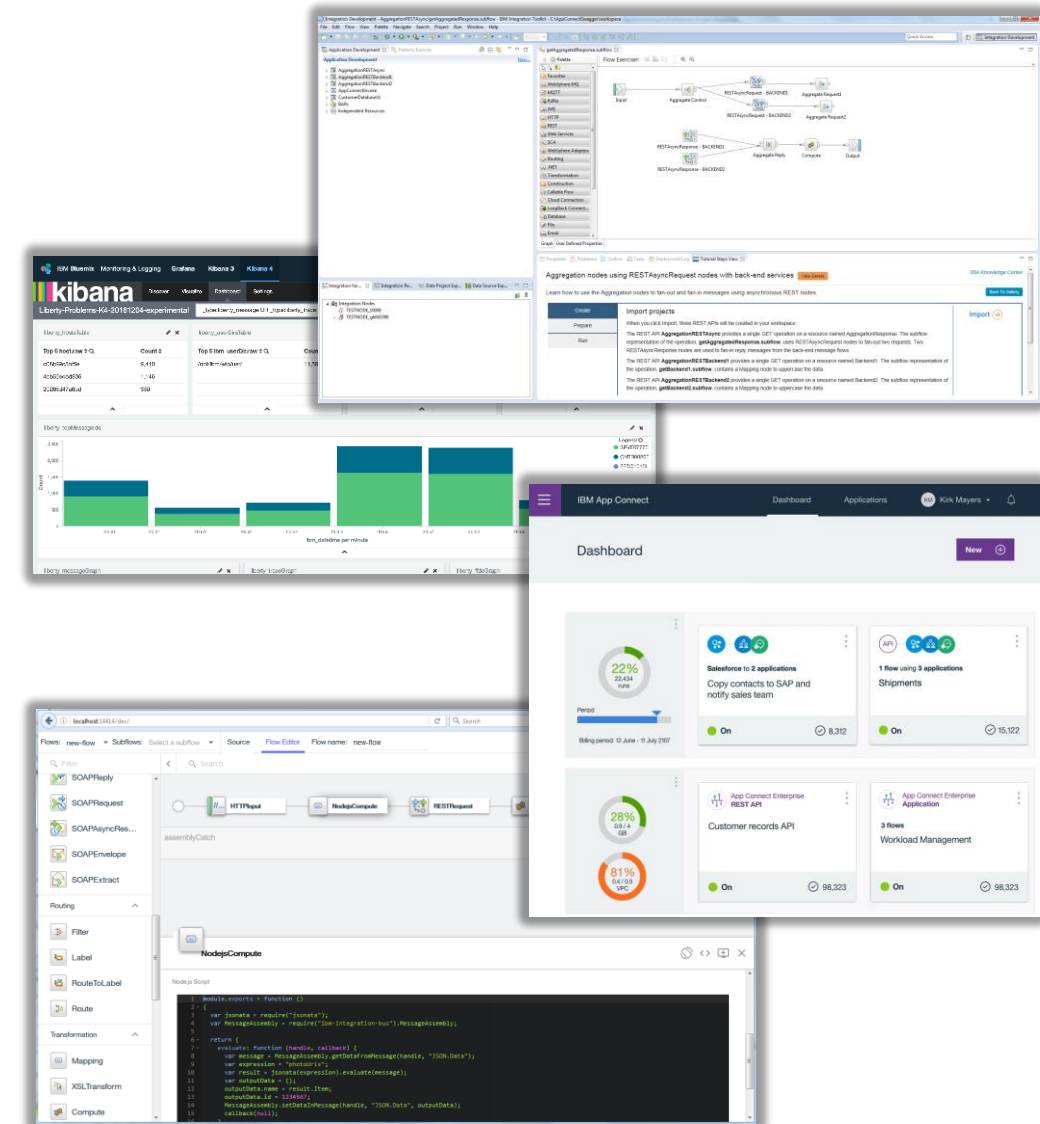
- IIB on Cloud Dashboard and App Connect Professional Designer will merge to become the App Connect Enterprise plan underneath the App Connect Bluemix tile
- From the Bluemix catalog you will create a Service instance for the App Connect Enterprise plan which will allow you to run (side by side):
  - IIB artifacts (deployed as IIB BAR files) containing Apps, Libs, REST APIs, Flows etc.
  - App Connect artifacts (Flows and REST APIs)
- A single monitoring dashboard (Bluemix logging and metrics)
- A single administration dashboard to start and stop
- A common management CLI and API
- At initial launch, development experience is likely to be a mixture of Eclipse based Toolkit and App Connect Designer (more on this in the next session!)
- Licensing and charging paths are still to be decided
  - Likely to include both PAYG and Subscription options
  - Likely to be a mixed charging model based on both number of invocations and container size



# IBM App Connect Enterprise (software)



- The next generation of IIB software will evolve to also allow the running of App Connect integration flows and REST APIs in addition to IIB artifacts
- This software product will be based upon the IIB runtime
  - The App Connect flow engine could be run using node.js embedded in the IIB integration server
  - Potentially, App Connect flows could be converted into something that IIB could run natively
- App Connect flows running in this software will make use of the cloud service connectors using the same architecture as IIB flows (more on this in later charts!)
- Monitoring and Administration tools likely to be provided as alternatives to be run in the cloud or on premise
- Licensing and charging paths are still to be decided:
  - Likely to remain capacity based (PVU/core)
  - Freedom entitlement to encourage Hybrid Cloud adoption

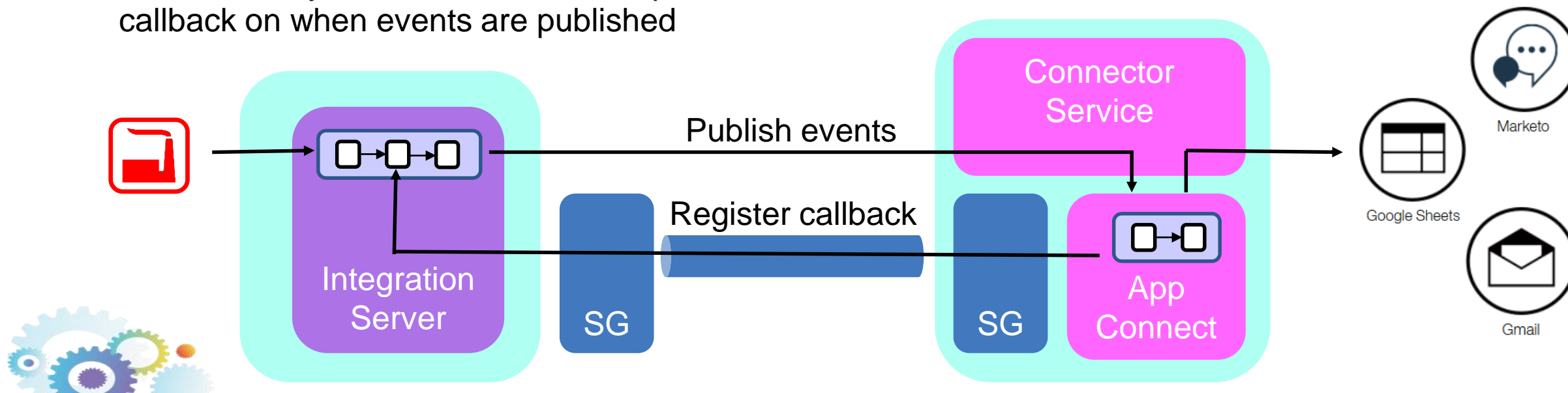


# IIB and App Connect via Web Hooks



- Webhooks is a simple HTTP notification pattern, allowing a user to define an HTTP callback (~"subscribe") for a given hook
  - E.g. /crm/cust/hook or /warehouse/stock/hook
- To create a webhook, POST to the URL {IIB root}/hookpath
- An id is returned to the post which uniquely identifies the subscription for further calls
- A callback object structure is used to provide a URL to callback on when events are published

REST operation	Webhook path	Description
POST	{IIB root}/{hookpath}/	Create a subscription
GET	{IIB root}/{hookpath}/	List subscriptions
GET	{IIB root}/{hookpath}/{id}/	Get a subscription
PUT	{IIB root}/{hookpath}/{id}/	Update a subscription
DELETE	{IIB root}/{hookpath}/{id}/	Delete a subscription



# IIB and App Connect via REST



IBM Integration Console 10.0.0.9

```
C:\Program Files\IBM\IIB\10.0.0.9>mqsisetdbparms TESTNODE_gb043390 -n rest::AppConnectBasicAuth  
-u appconuser01 -p 83655d6e-9e6f-451c-8318-2d853eb2648c
```

.NET  
Transformation  
Construction  
Callable Flow  
Cloud Connectors  
Graph  
User Defined Properties

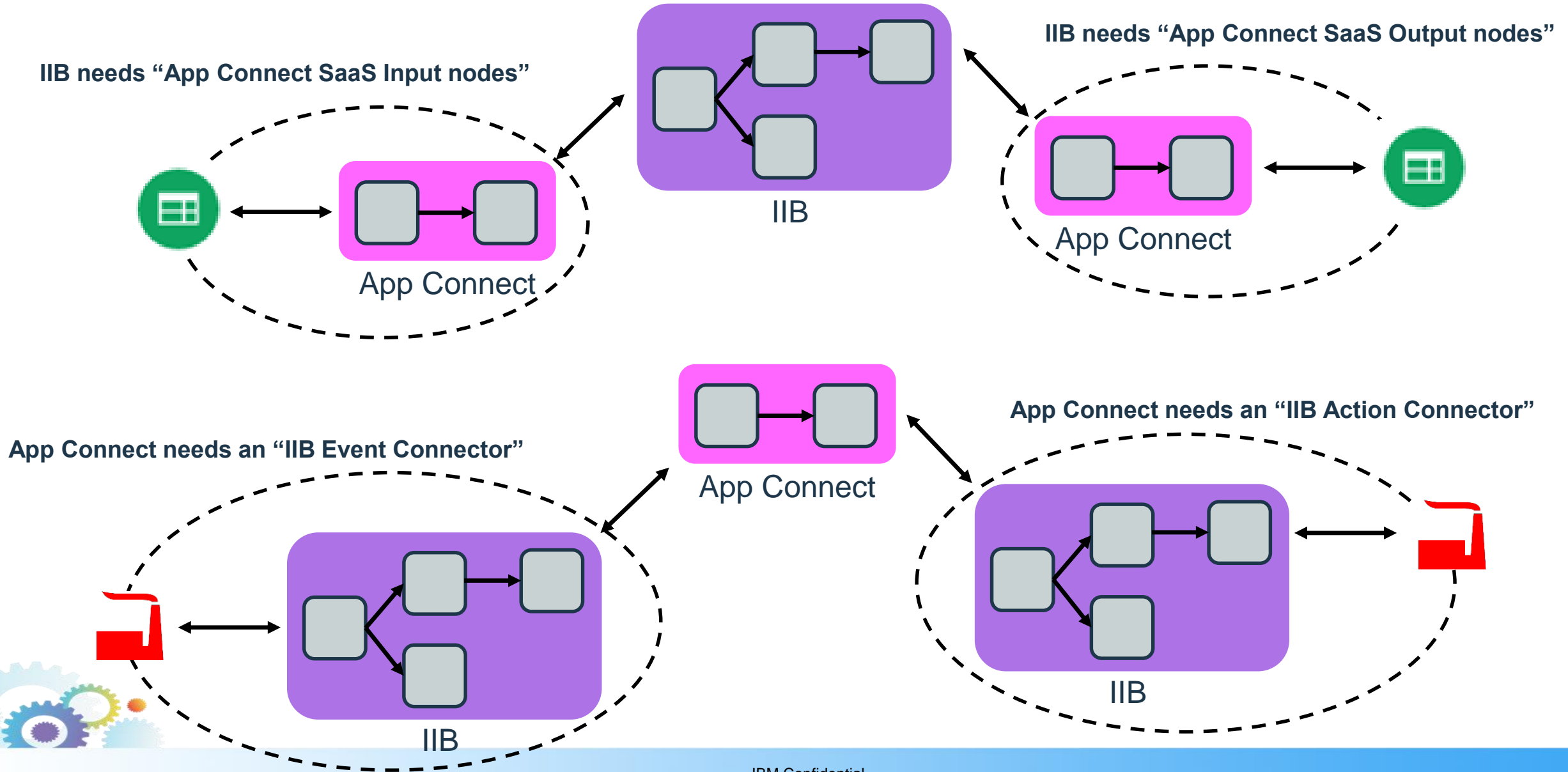
HTTP Input → REST Request → HTTP Reply

Properties Problems Outline Tasks Deployment Log Tutorial Steps View

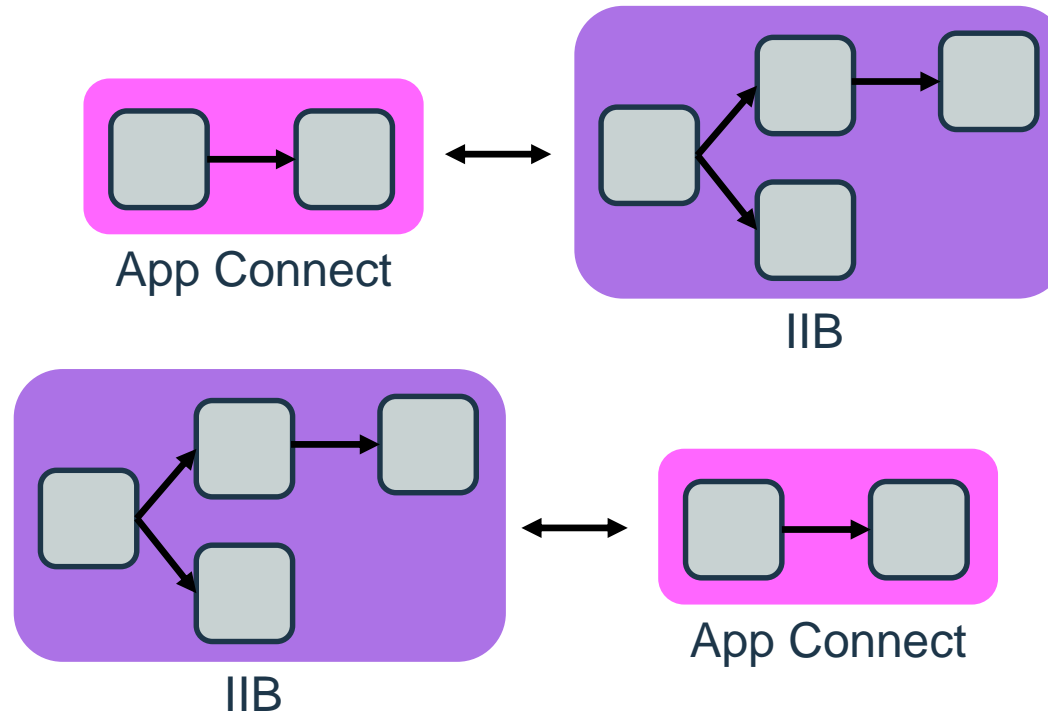
### REST Request Node Properties - REST Request

Description	
Basic	<b>Operation</b> Specify a Swagger 2.0 file containing the definitions for the REST API that you wish to invoke, and an operation within that REST API.
HTTP Settings	Definitions file* AppConnectSwagger.json <span>Browse...</span>
SSL	Operation* Customer.create - Create a new instance of the model and persist it into the data source.
Request	<b>POST</b> /Customer
Response	
Response Message Parsing	
Parser Options	Security identity AppConnectBasicAuth
Validation	Request timeout (sec)* 120
Monitoring	Base URL override <defaults to base URL specified in REST API definitions file>

# Why is convergence important?

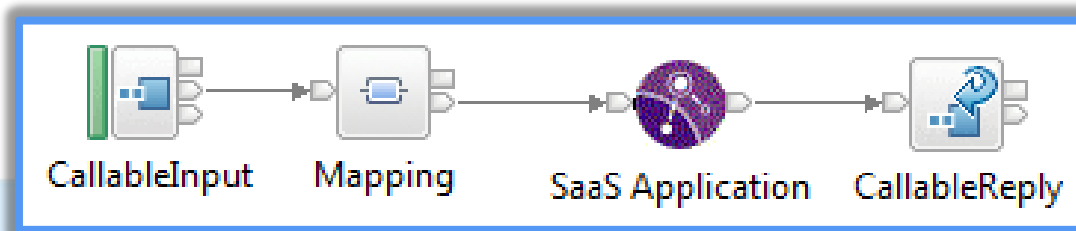
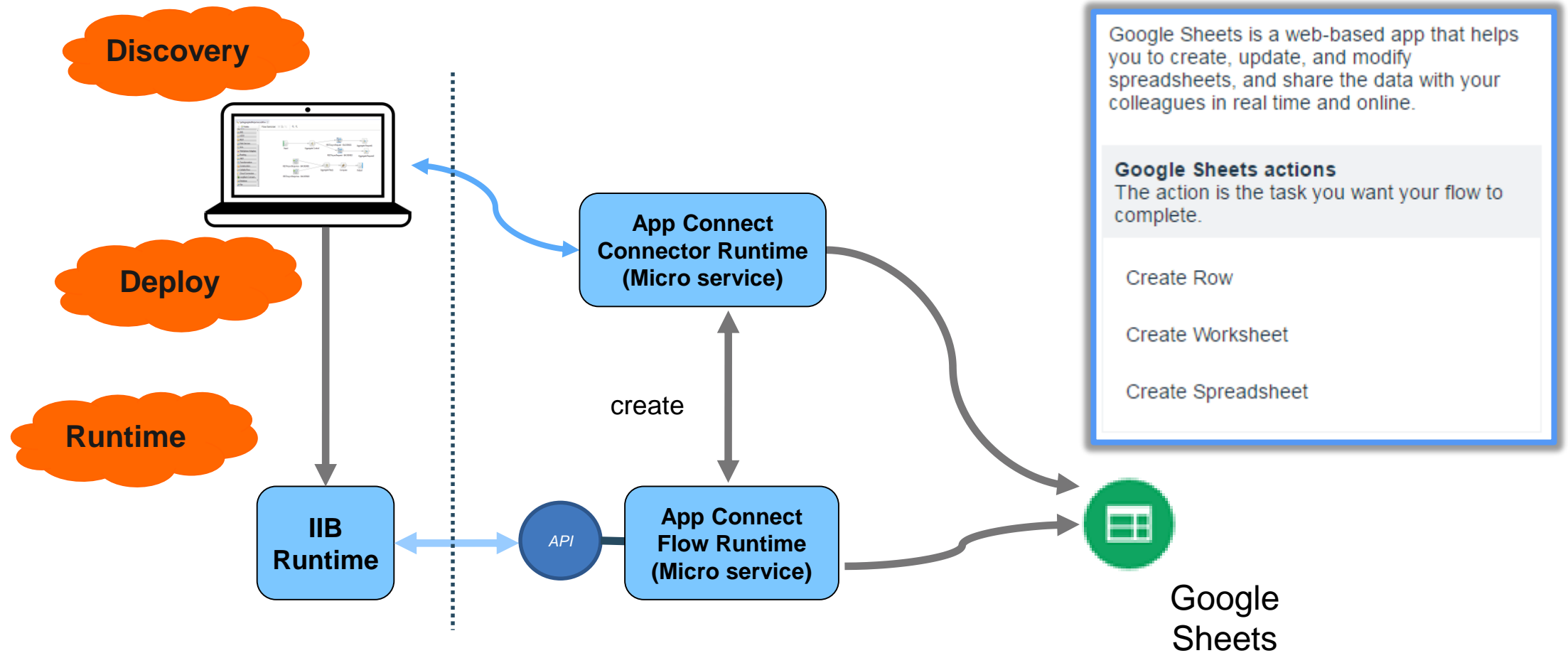


# Longer term, what about flow authoring convergence?



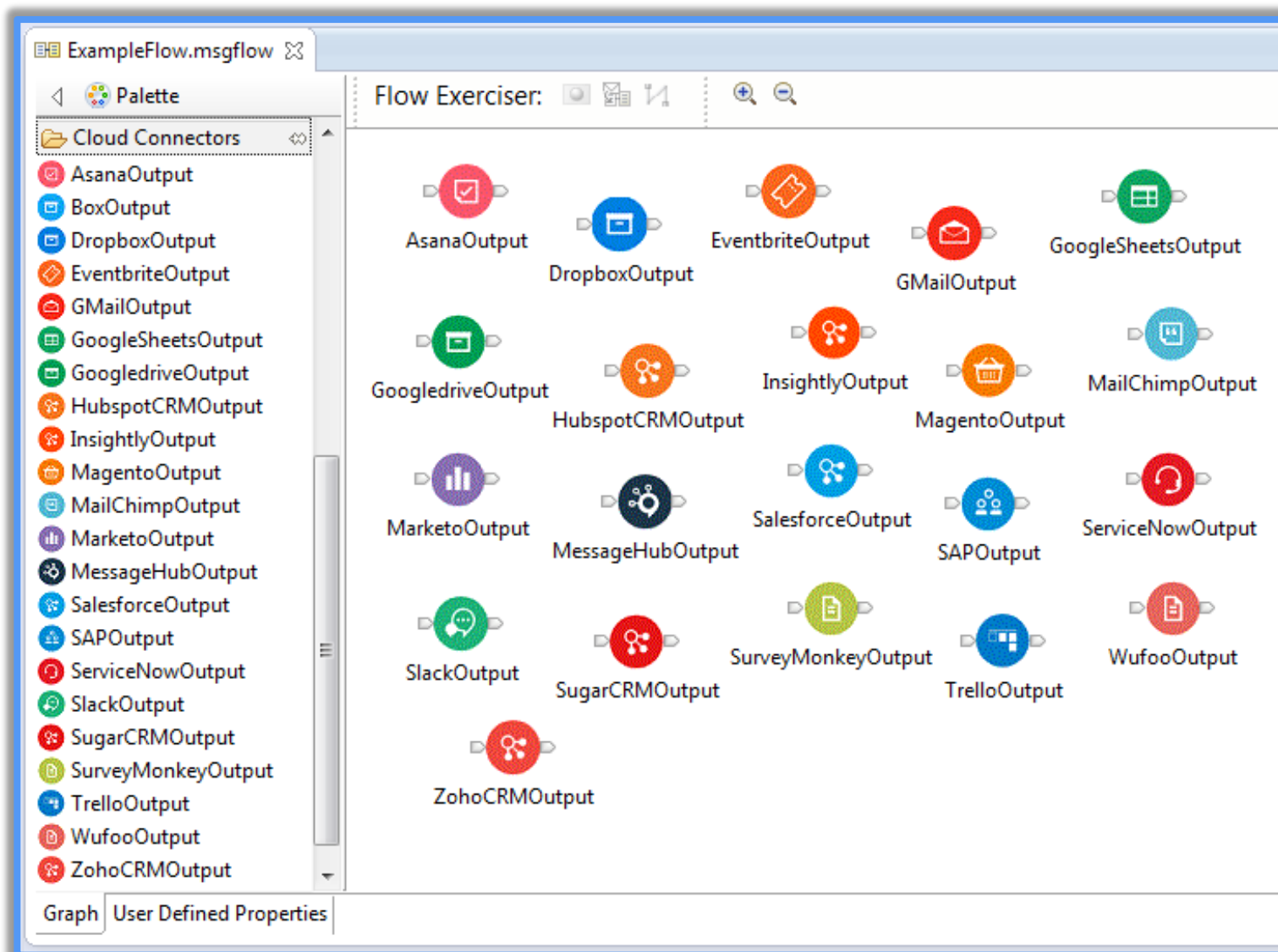
- Flow authoring convergence is about having an authoring experience that is capable of creating more than one type of integration asset
- The IIB Toolkit is very feature rich and we have no plans to replace it.
- However, a web based flow editor experience similar to that of App Connect could be extended to author simple IIB flows
- A basic prototype exists – to be discussed in the next session.

# First steps: IIB, App Connect and Cloud Connectors





# IIB, App Connect and SaaS Connectors







Thank you and  
Questions?