IBM Hybrid Integration Directions

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Executive I.T Specialist

InterConnect 2016
outthink limits

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Agenda

- Exploring the Trends driving the integration market
  - #1 Integration across the Hybrid Environment
  - #2 Integration outside of Central I.T.
  - #3 Digital Transformation and the API Economy
- An Architecture for the Digital Business
- Hybrid Integration Use Case Introduction
- Building out the Hybrid Integration Use Case
- IBM Integration Portfolio

Trends driving the integration market

#1 Increasing need to integrate across a hybrid environment

#2 Integration being adopted in the line of business

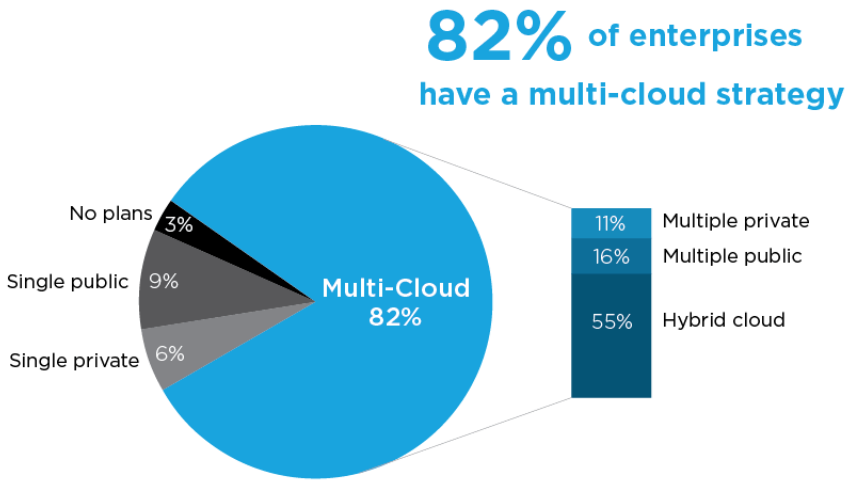
#3 Digital transformation, API Economy and the rise of Microservices

Trend #1—Hybrid

Increasing need to integrate across a hybrid environment

As organizations' data and applications become more decentralized, integration is gaining focus to the point of being a boardroom topic.

Respondents with 1000+ Employees



Source: RightScale 2016 State of the Cloud Report

IBM Connect to Cloud – Supporting Hybrid Use Cases

Create new apps

- Java, Node and Swift Runtimes
- Mobile and Web Application Services
- Blockchain DevOps Services

Connect existing apps and data

- API, App and Message Connect and DataWorks Services
- WebSphere Connect, WebSphere Blockchain Connect
- zOS Connect for IMS, CICS, WebSphere, MQ & DB2

Optimize any app

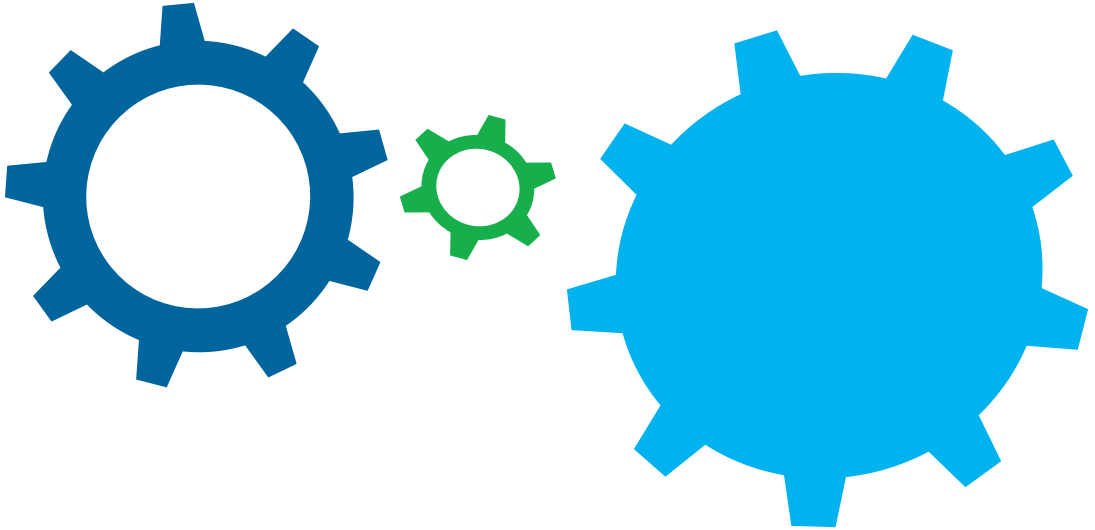
- "on Cloud" managed environments
- Docker Container and VM support
- Cloud Orchestration and Brokerage

Trend #2—Integration needs outside IT

Integration being adopted in the line of business

By 2017, in large organizations, at least 65% of new integration flows will be developed outside the control of IT departments.

-Gartner



Personas in support of Hybrid Integration

Citizen Integration

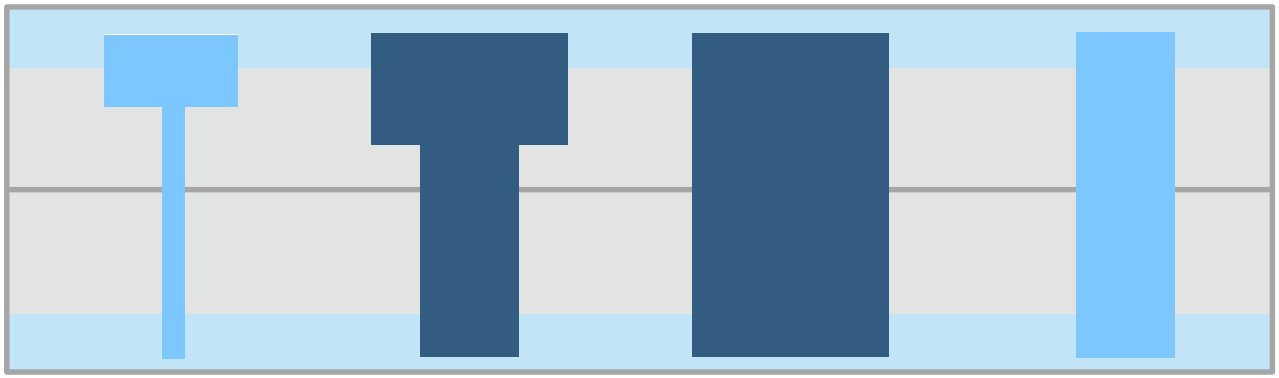
Shadow IT

Central IT

Developer

Cloud based

On Premises



Cloud Connectivity

Cloud Integration Experience

On-premise Integration Experience

On-premise Connectivity

- **Anyone can do it**
- Zero code
- Cloud native
- Many pre-configured connectors

- **Technical person in a business environment**
- Cloud native with on prem options
- Friendly modern style code
- Graphical options

- **Skilled integration practitioners**
- Graphical assist, but full code environment.
- Hybrid deployment
- Connect to anything

- **Skilled Frontend/ microservices Developers**
- Leverage APIs surfaced by Shadow/Central I.T
- API orchestration

Integration Personas high level product alignment

IBM AppConnect

IBM API Connect
- **API Discovery**

Full Developer Stack IBM API Connect
- API Creation

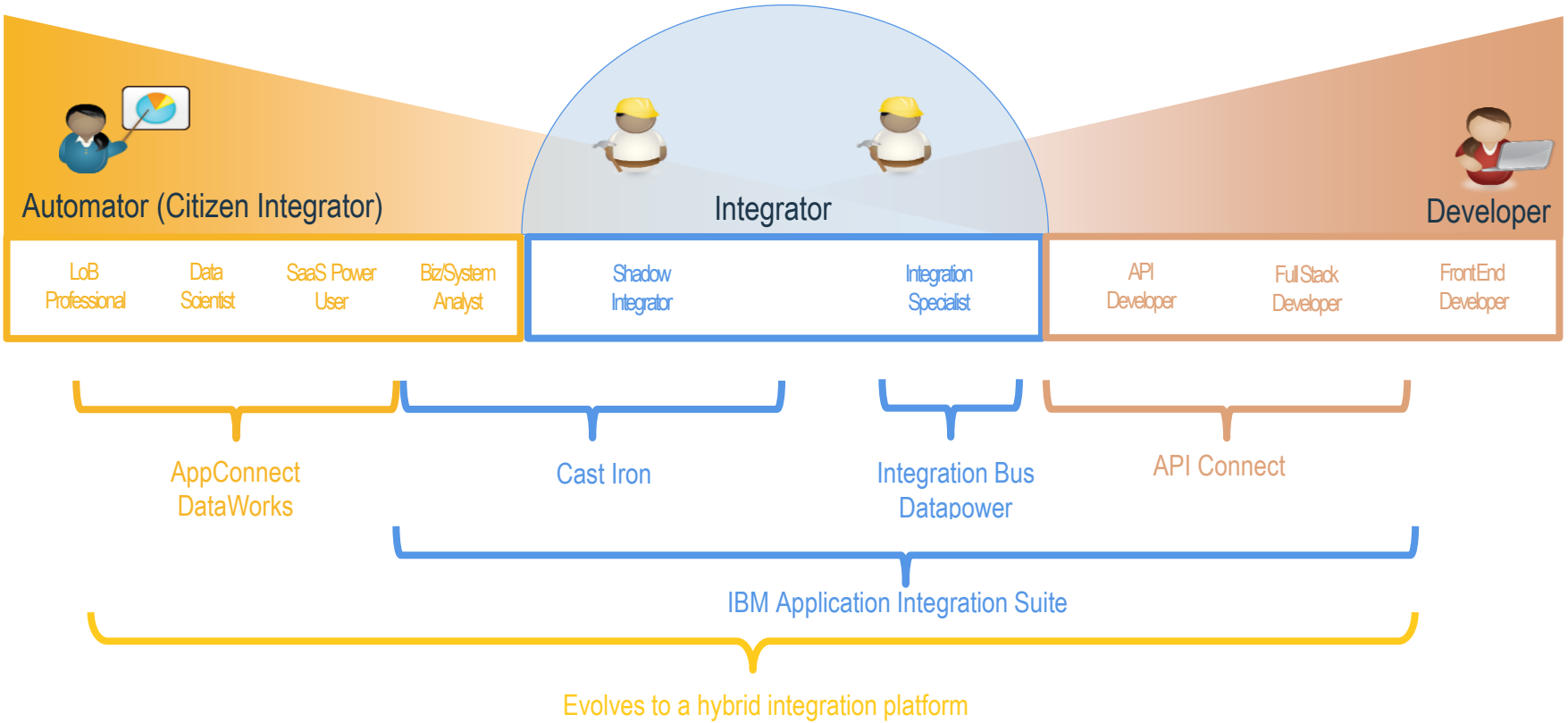
Cast Iron 7.5.1

IBM API Connect
- API Management/Creation

IBM Application Integration Suite
- IBM Integration Bus (ESB)
- Cloud Integration
- **IBM API Connect**
  - API Management/Creation

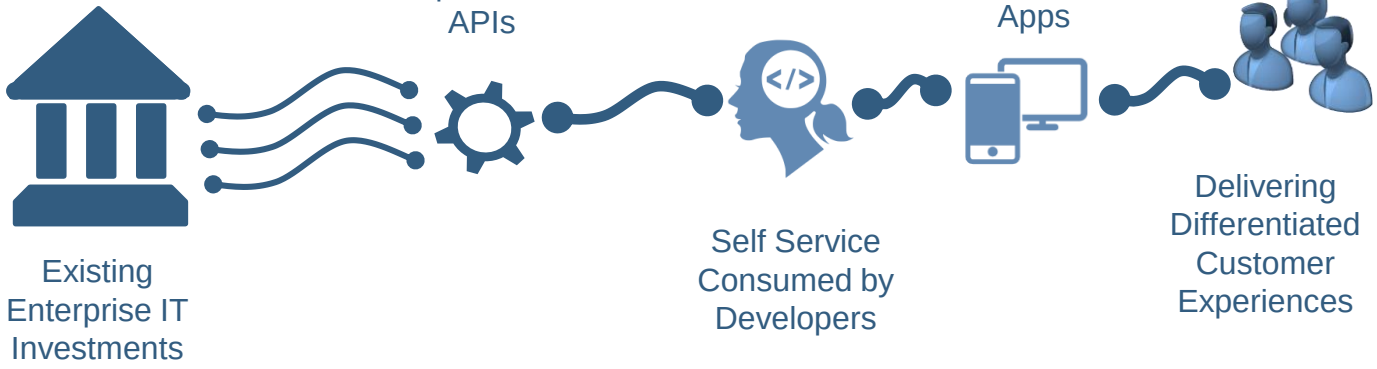
DataPower Gateways

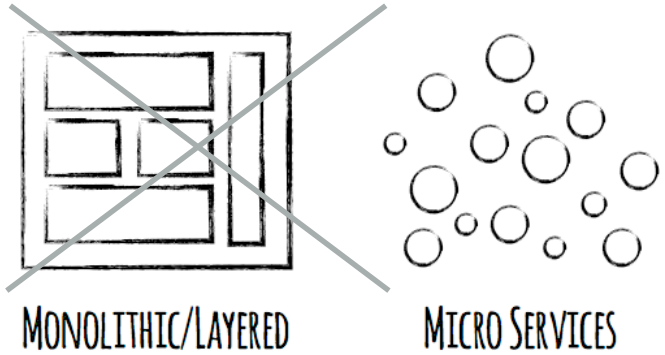
Summary - IBM Integration Capability by Persona



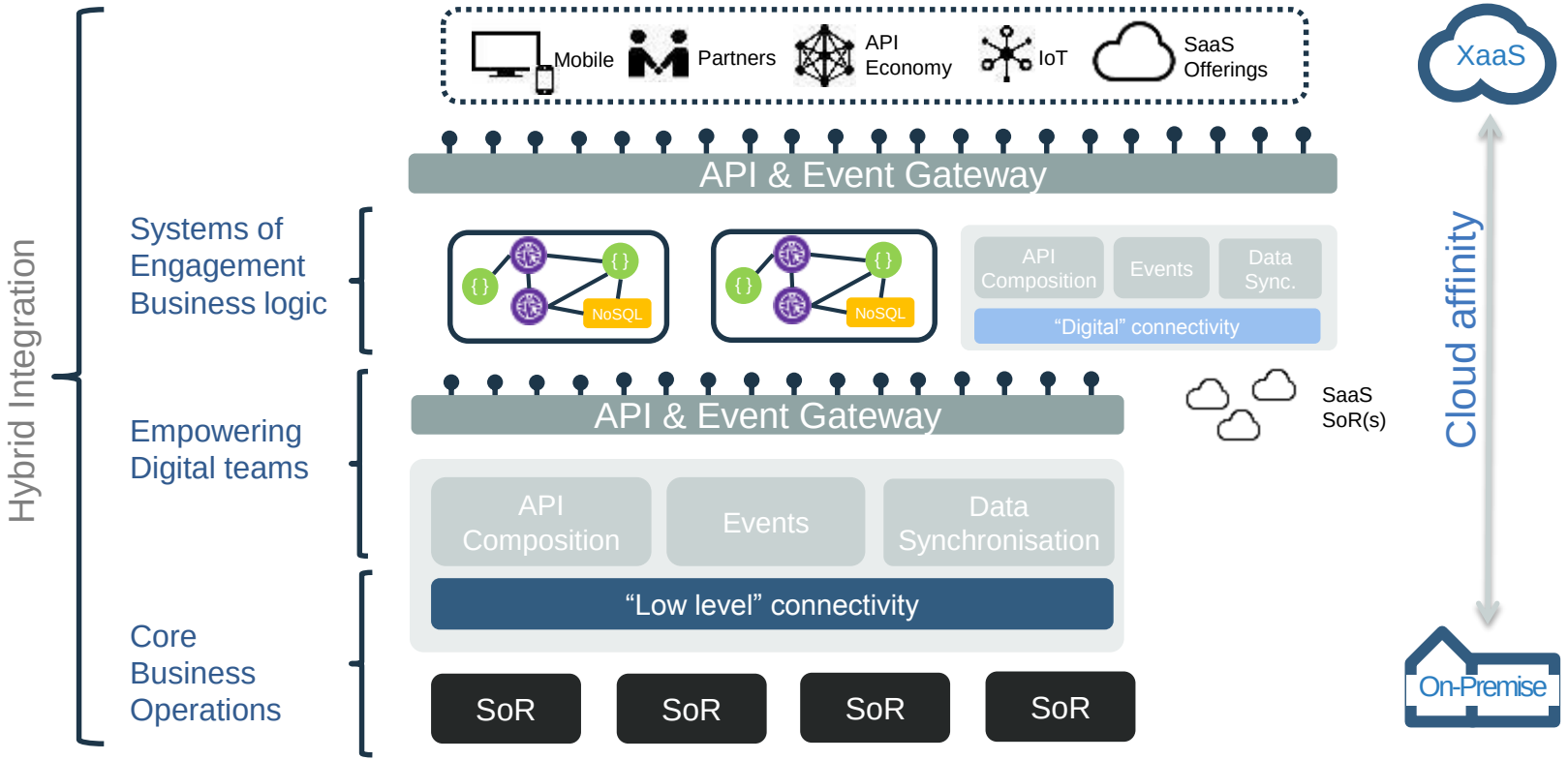
Trend #3—Digital Transformation

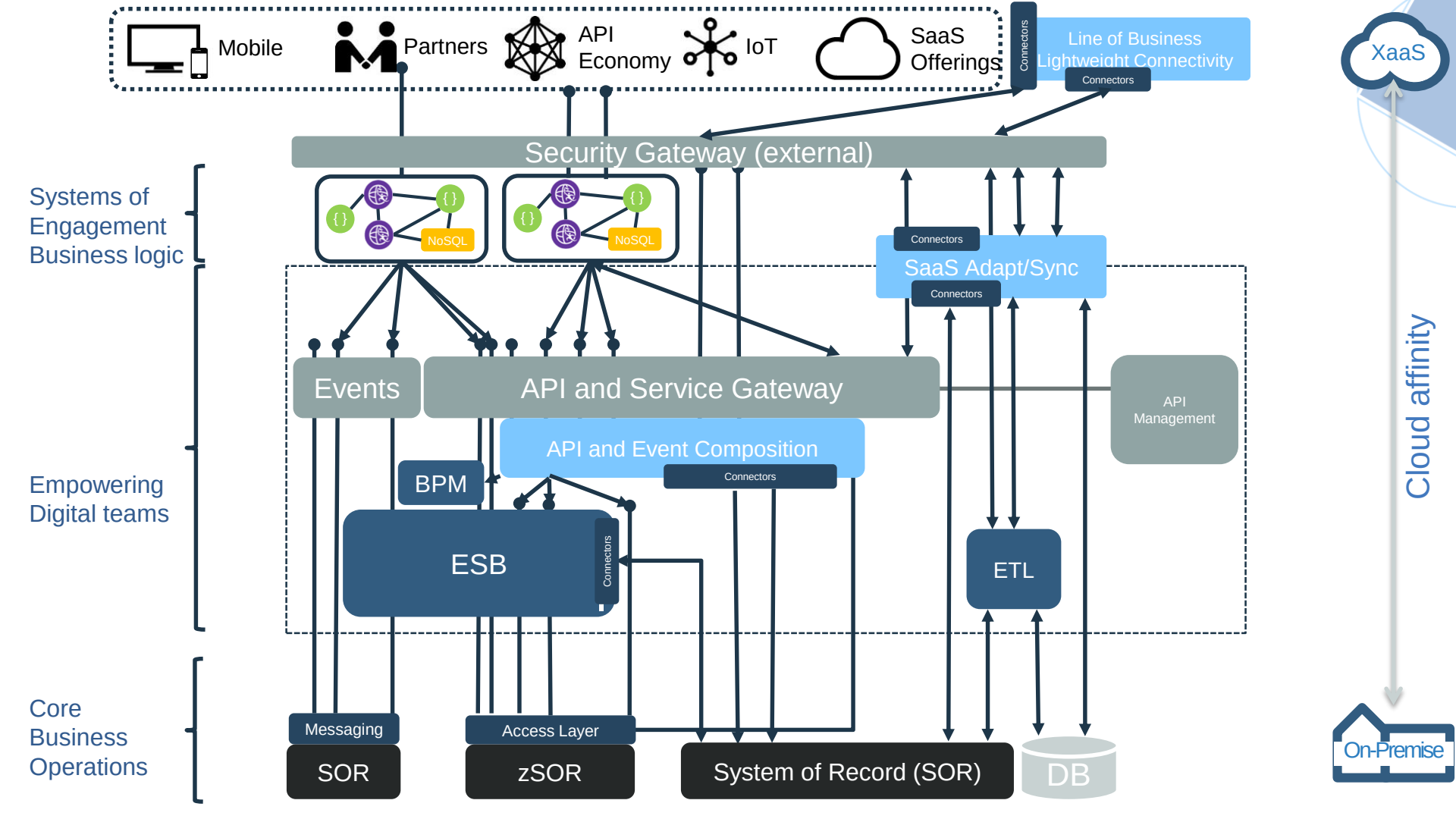
Digital Transformation, API Economy and Microservices

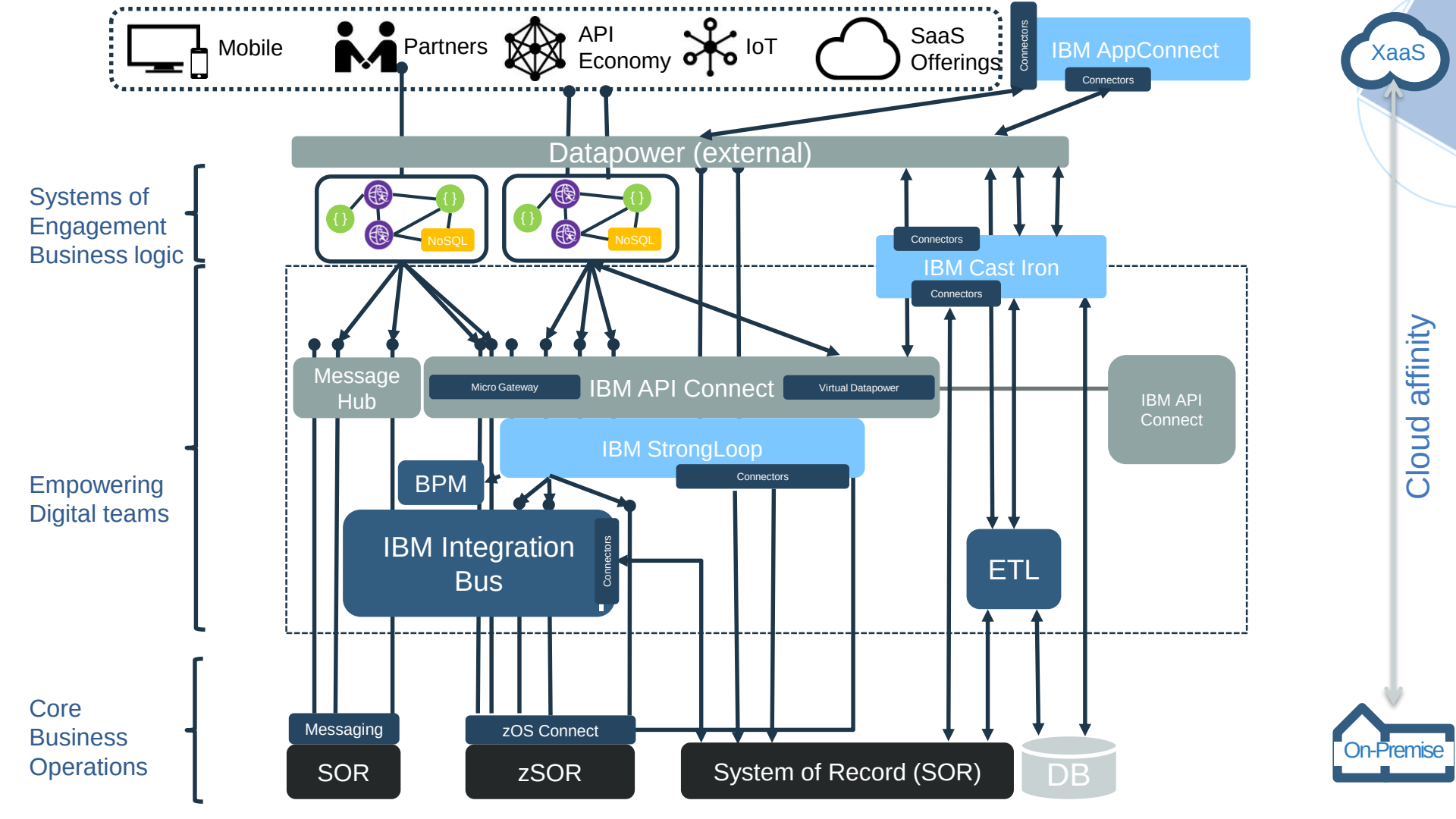




An Architecture for Digital Business




Mobile
Partners
API Economy
IoT
SaaS Offerings
Connectors
Line of Business Lightweight Connectivity
Connectors
Security Gateway (external)
Systems of Engagement Business logic
NoSQL
NoSQL
Connectors
SaaS Adapt/Sync
Connectors
Events
API and Service Gateway
API Management
API and Event Composition
Connectors
BPM
Empowering Digital teams
ESB
Connectors
ETL
Messaging
Access Layer
SOR
zSOR
System of Record (SOR)
DB
Core Business Operations
XaaS
Cloud affinity
On-Premise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IBM AppConnect
Connectors
XaaS
Datapower (external)
Systems of Engagement Business logic
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NoSQL
Connectors
IBM Cast Iron
Connectors
Message Hub
Micro Gateway
IBM API Connect
Virtual Datapower
IBM API Connect
IBM StrongLoop
Connectors
BPM
IBM Integration Bus
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ETL
Empowering Digital teams
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Core Business Operations
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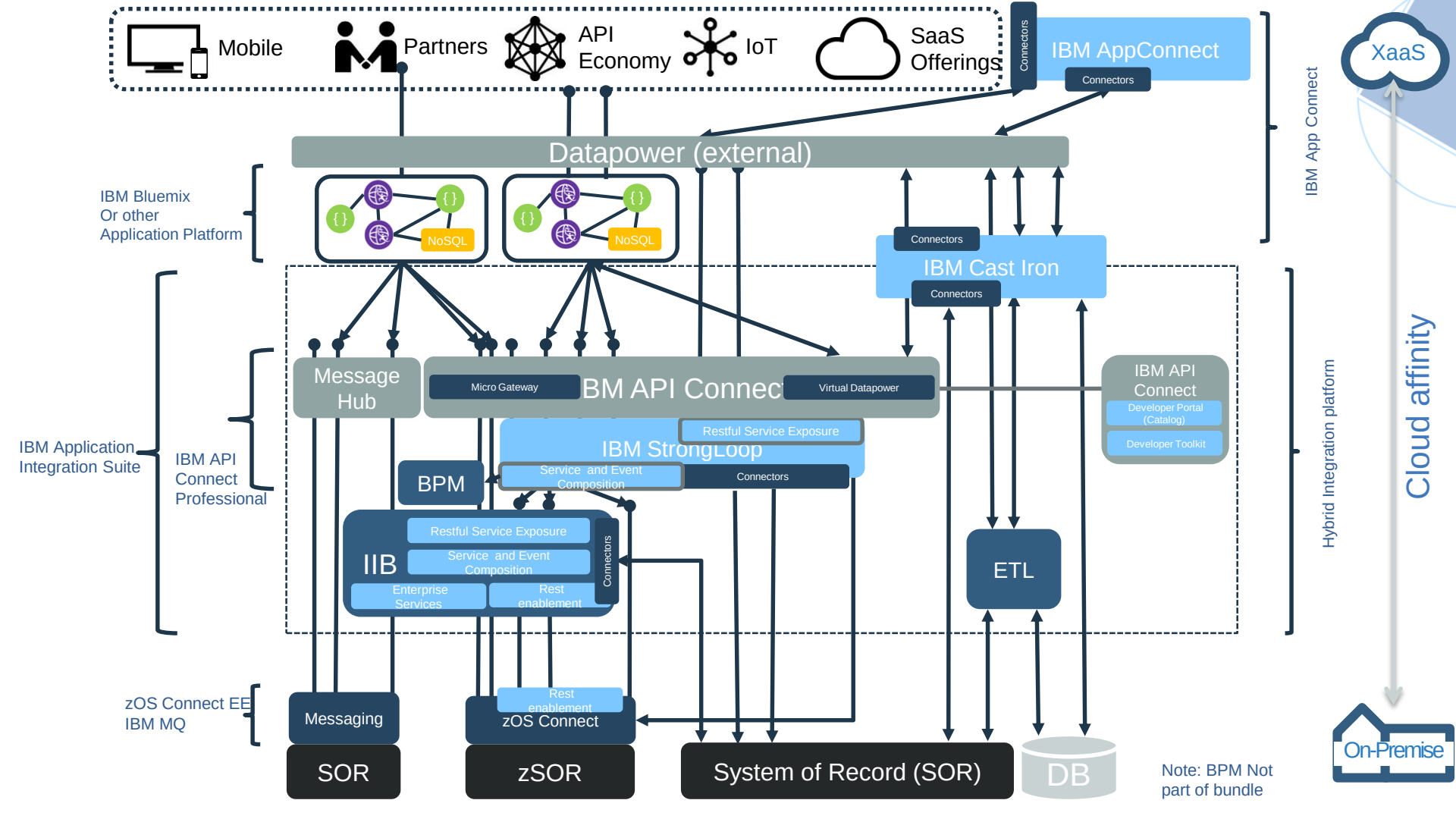
Mobile
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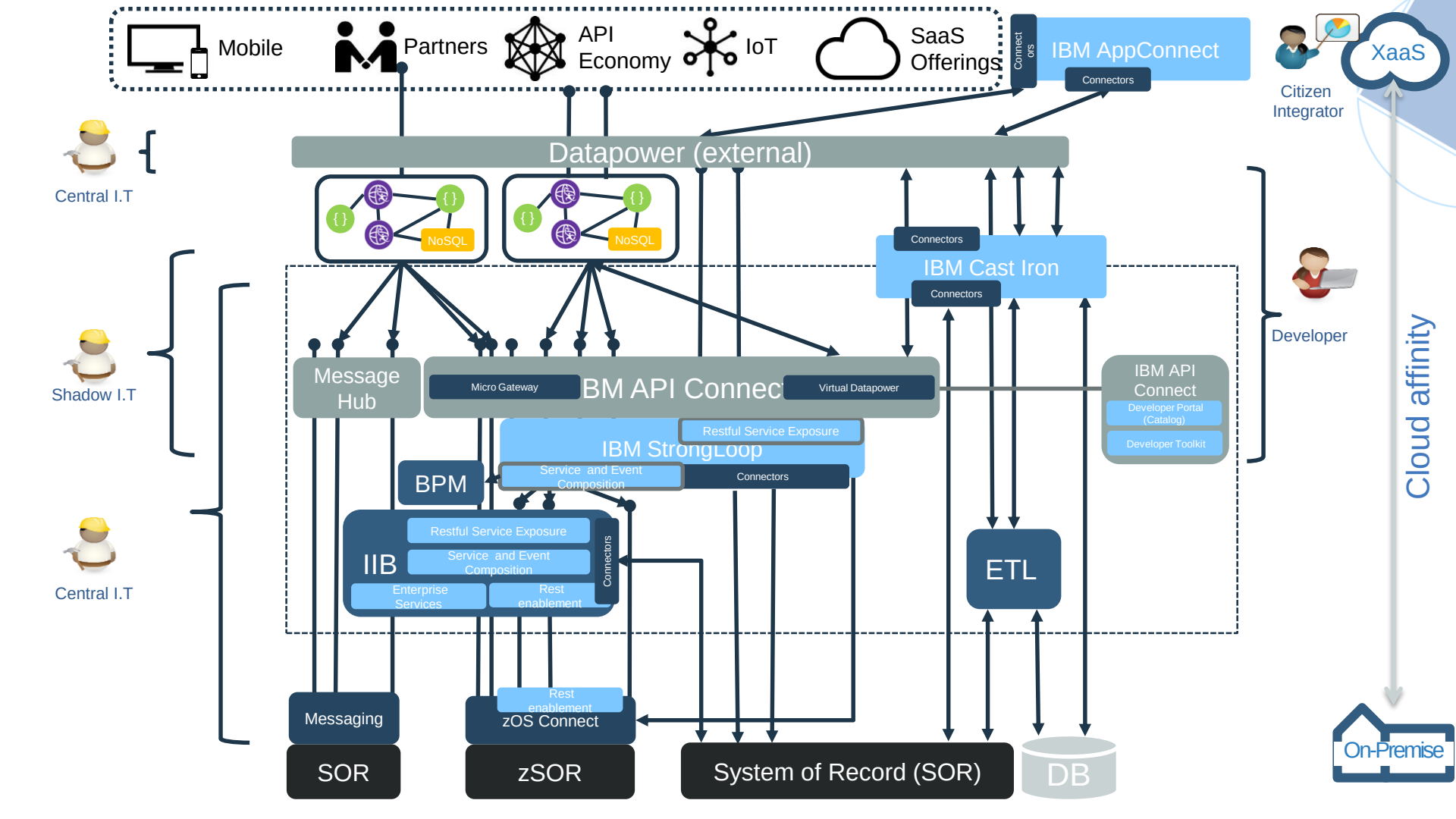
IBM App Connect
XaaS
Datapower (external)
IBM Bluemix
Or other
Application Platform
NoSQL
NoSQL
Connectors
IBM Cast Iron
Connectors
Message Hub
Micro Gateway
BM API Connec
Virtual Datapower
IBM API Connect
Developer Portal (Catalog)
Developer Toolkit
Restful Service Exposure
IBM StrongLoop
Service and Event Composition
Connectors
BPM
IBM Application Integration Suite
IBM API Connect Professional
Restful Service Exposure
IIB
Service and Event Composition
Enterprise Services
Rest enablement
Connectors
ETL
Hybrid Integration platform
Cloud affinity
zOS Connect EE
IBM MQ
Messaging
Rest enablement
zOS Connect
SOR
zSOR
System of Record (SOR)
DB
Note: BPM Not part of bundle
On-Premise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BM API Connec
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Developer Portal (Catalog)
Developer Toolkit
Restful Service Exposure
IBM StrongLoop
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Restful Service Exposure
Service and Event Composition
IIB
Enterprise Services
Rest enablement
Connectors
ETL
Central I.T
Cloud affinity
Messaging
Rest enablement
zOS Connect
SOR
zSOR
System of Record (SOR)
DB
On-Premise

Hybrid Integration Use Case Introduction

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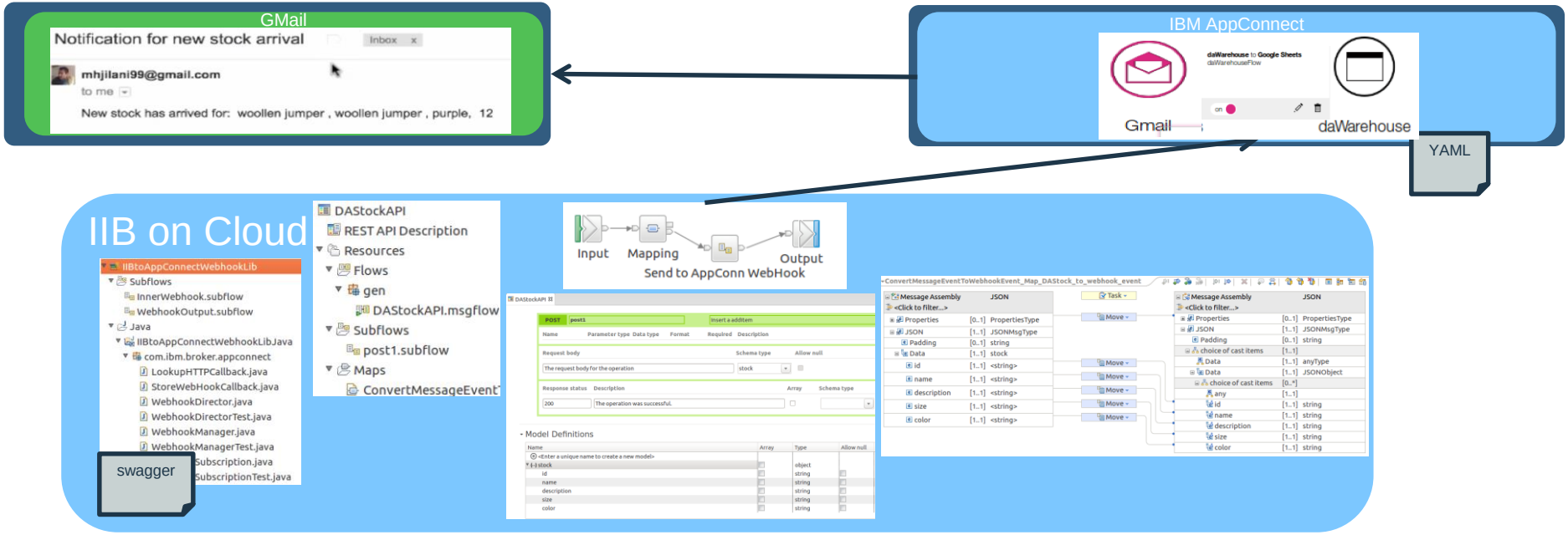
Typical Cloud to On-premise Integration *Demo*

A typical integration demo. The type you will see all over the web from our competitors and from IBM ourselves. Showcasing tooling and ignoring security, gateways, access to on-prem data, Socialization of interfaces to the developer community etc etc etc.



Rapid Demo Part 1: IIB artifact build

Rapid Demo Part 2: IBM AppConn configuration

Reality of Cloud to On-premise Integration Landscape

3rd Party Cloud 1

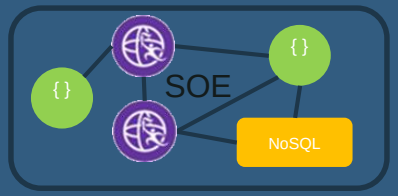
3rd Party Cloud 2

SaaS 1

SaaS 2

Citizen Integrator

Public Cloud Dedicated



IBM API Connect

Secure Gateway Service

Instance Runtimes

Platform as a Service

Developer

Shadow I.T

On-premise

Secure Gateway

Integration Bus

Systems of Record (SOR)

DB

Central I.T

IBM view of Cloud to On-premise Integration Landscape

3rd Party Cloud SaaS

Google SalesForce

IBM Cloud SaaS

IBM AppConnect

IBM Bluemix

Datapower

SOE

NoSQL

IBM API Connect

Datapower

Datapower

Secure Gateway Service

Platform as a Service

Datapower

On-premise

IBM Secure Gateway Client

IBM Integration Bus

Systems of Record (SOR)

DB

Citizen Integrator

Developer

Shadow I.T

Central I.T

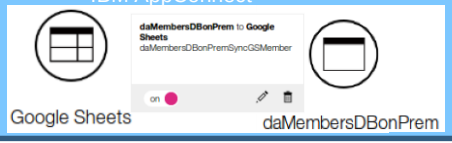
GoogleSheets

https://docs.google.com/spreadsheets/d/15r9pyrh3m3xtc2jLE_OF_CF-vOavy1Gm7rSFt2zK_h4/edi

daMemberList

POLICYNUM	POLICYTYPE	FIRSTNAME	LASTNAME	STREETNUM	STREETNAME	CITY
12345678	HOME	DAVID	ARNOLD	14	MUSTON	SYDNEY
32445678	HOME	Pete	Jessup	33	Park Avenue	Melbourne

IBM AppConnect



BYF
Bring your favorite
Tools

NodeRed (SoE)

API Gateway

API Proxy

API Connect Developer Portal

YAML

Swagger

Bluemix

Secure Gateway

Bluemix Service

VPN

On-premise Ubuntu VM Image

Secure Gateway

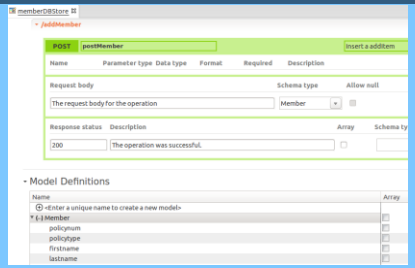
Docker Container

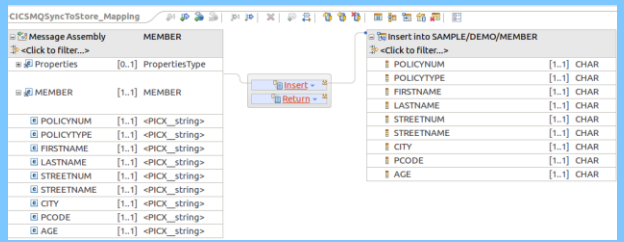
System of Record (SOR)

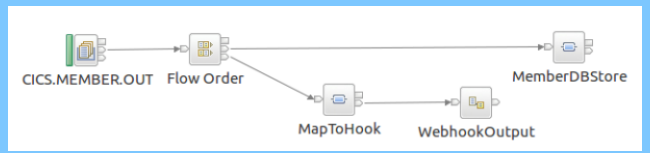
CICS

MQ

IIB

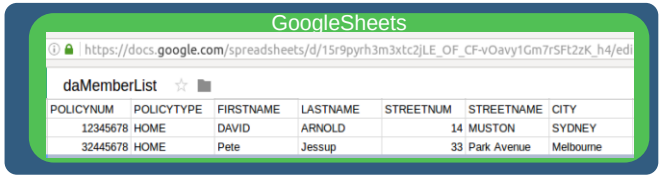


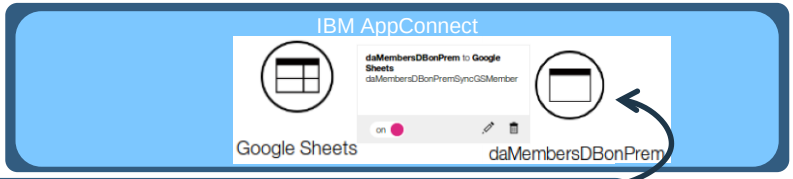




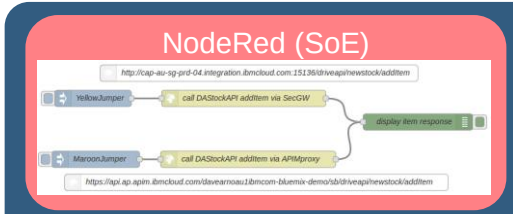
System of Record (SOR)

DB2





BYF
Bring your favorite
Tools



API Gateway

API Proxy

API Connect Developer Portal

YAML

Swagger

Standards based hand off between components

Bluemix

Secure Gateway

Bluemix Service

VPN

On-premise Ubuntu VM Image

Secure Gateway

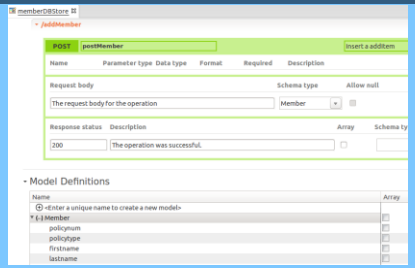
Docker Container

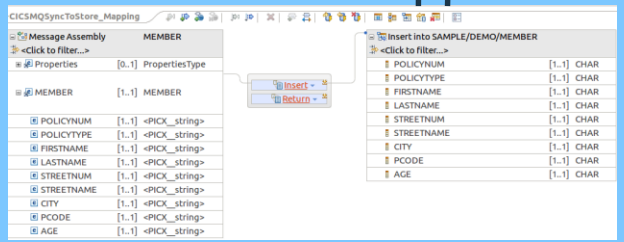
System of Record (SOR)

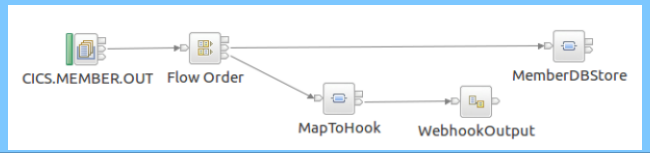
CICS

MQ

IIB

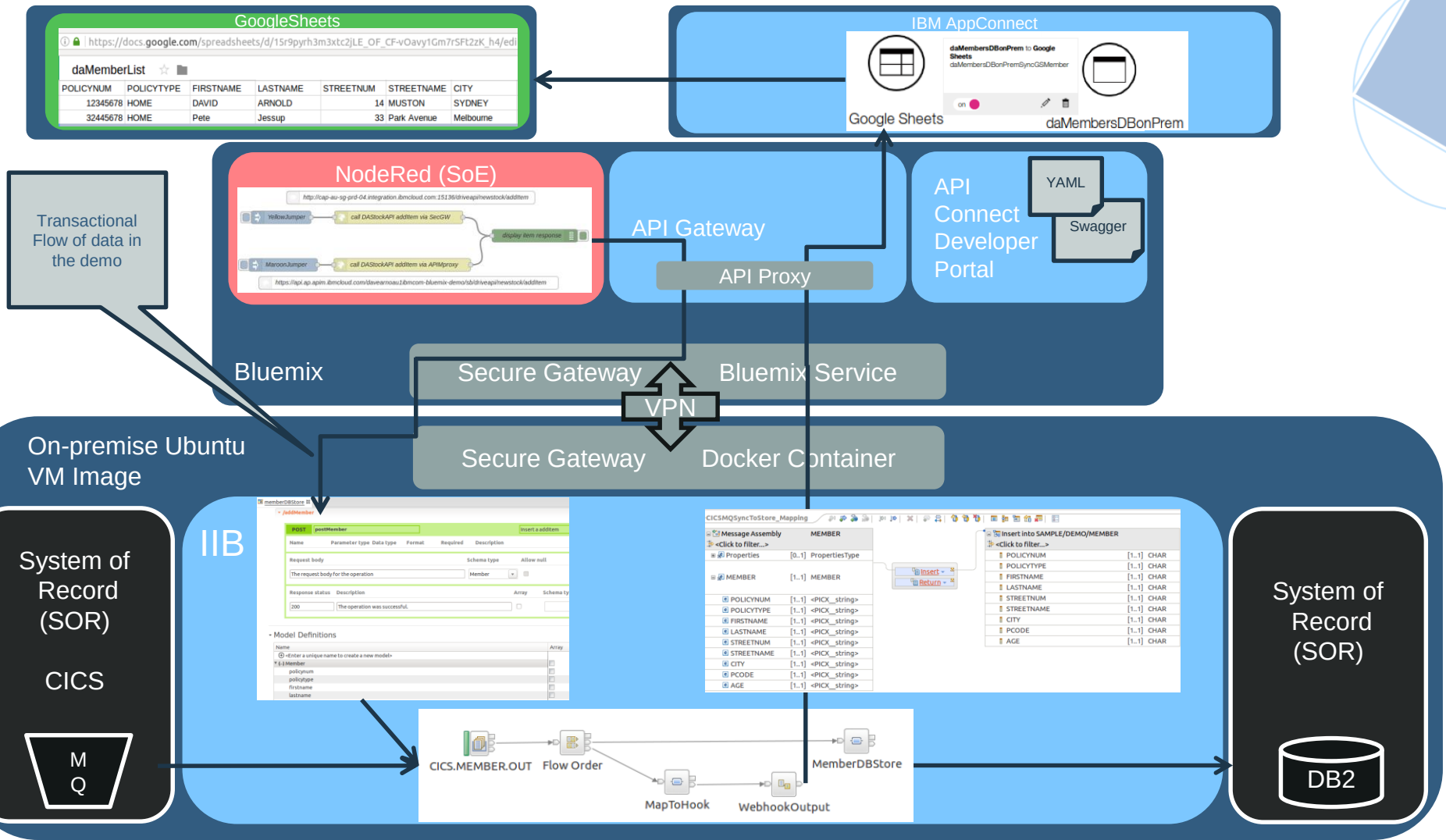






System of Record (SOR)

DB2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IBM AppConnect
daMembersDBonPrem to Google Sheets
daMembersDBonPremSyncGSMember
Google Sheets
daMembersDBonPrem
NodeRed (SoE)
http://cap-au-sg-prd-04.integration.ibmcloud.com:15136/driveapi/newstock/additem
YellowJumper
call DAStockAPI addItem via SecGW
display item response
MaroonJumper
call DAStockAPI addItem via APIMproxy
https://api.ap.apim.ibmcloud.com/davearnoau1ibmcom-bluemix-demo/sb/driveapi/newstock/additem
API Gateway
API Proxy
API Connect Developer Portal
YAML
Swagger
Transactional Flow of data in the demo
Bluemix
Secure Gateway
Bluemix Service
VPN
On-premise Ubuntu VM Image
Secure Gateway
Docker Container
System of Record (SOR)
CICS
M Q
IIB
memberDBStore
/addMember
POST postMember
Insert a additem
Request body
The request body for the operation
Response status
The operation was successful.
Model Definitions
CICSMQSyncToStore_Mapping
Message Assembly
MEMBER
Properties
PropertiesType
POLICYNUM
POLICYTYPE
FIRSTNAME
LASTNAME
STREETNUM
STREETNAME
CITY
PCODE
AGE
Insert
Return
Insert into SAMPLE/DEMO/MEMBER
CICS.MEMBER.OUT
Flow Order
MapToHook
WebhookOutput
MemberDBStore
System of Record (SOR)
DB2

Building out the end to end Hybrid Integration Use Case

InterConnect 2016

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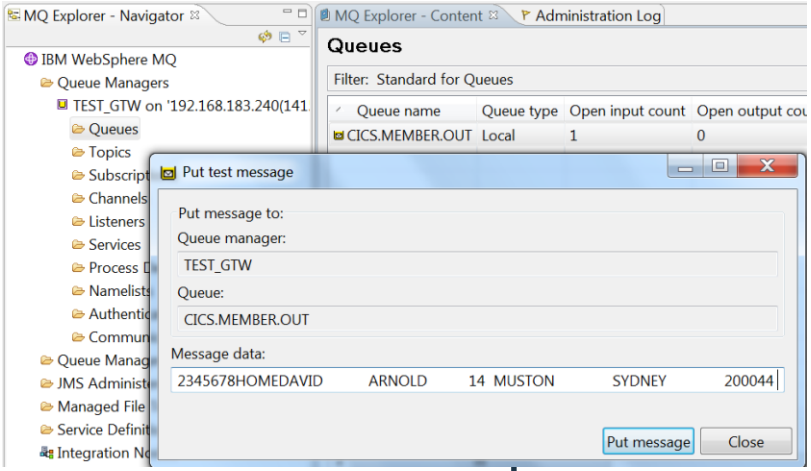
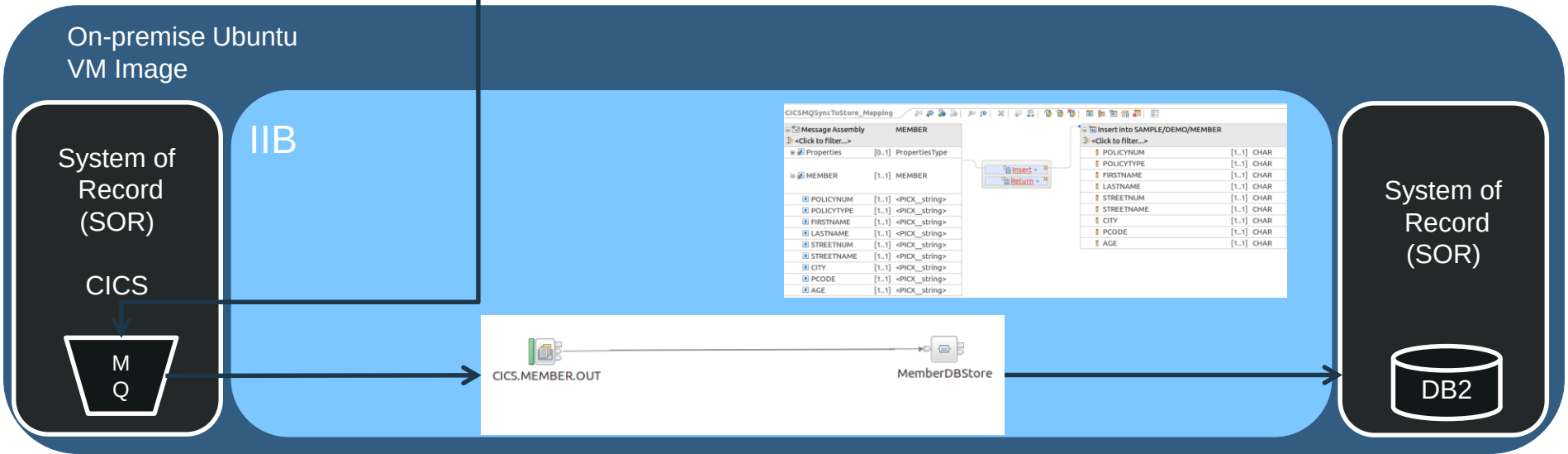
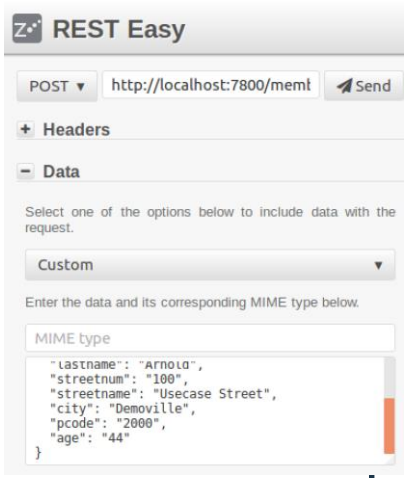
1.OnPremSetUp

2.ModellingCICSdata

3.BuildMQtoDB2BaseIntegration







4.Build Member API By Hand

5. Test Member API to MQ

6. Test Member API to DB2

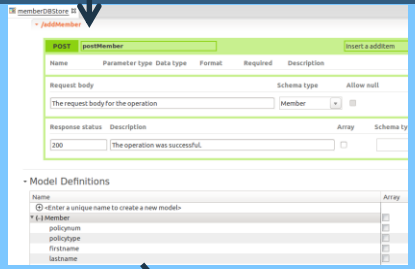
On-premise Ubuntu VM Image

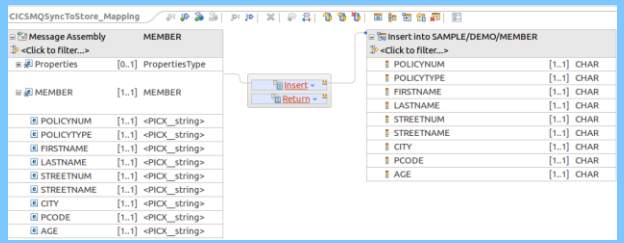
System of Record (SOR)

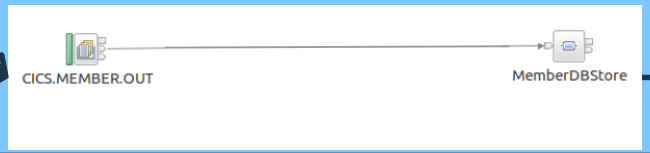
CICS

MQ

IIB



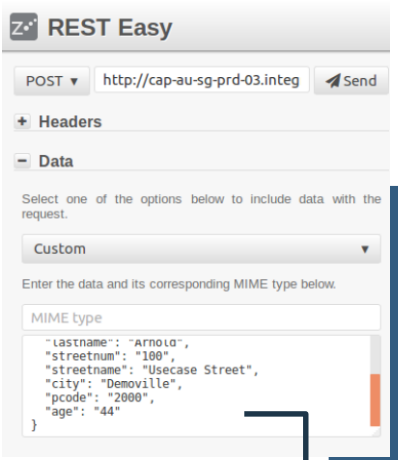




System of Record (SOR)

DB2

7. Create and Test Secure GW in Bluemix



Bluemix

Secure Gateway

Bluemix Service

VPN

Secure Gateway

Docker Container

On-premise Ubuntu VM Image

System of Record (SOR)

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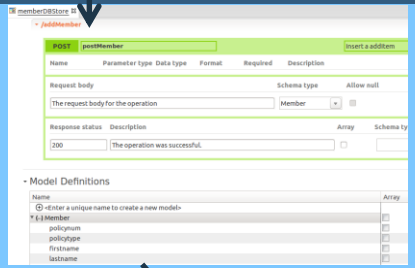
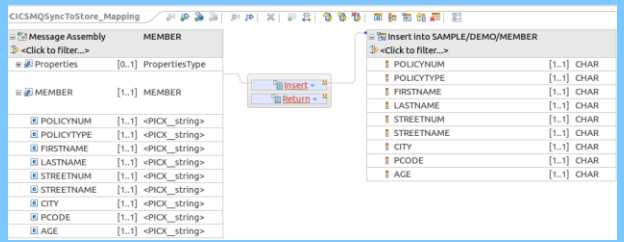
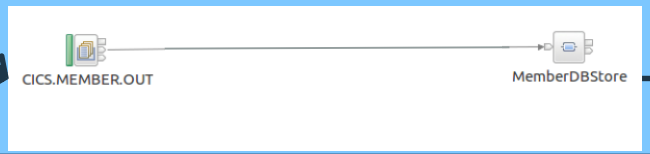


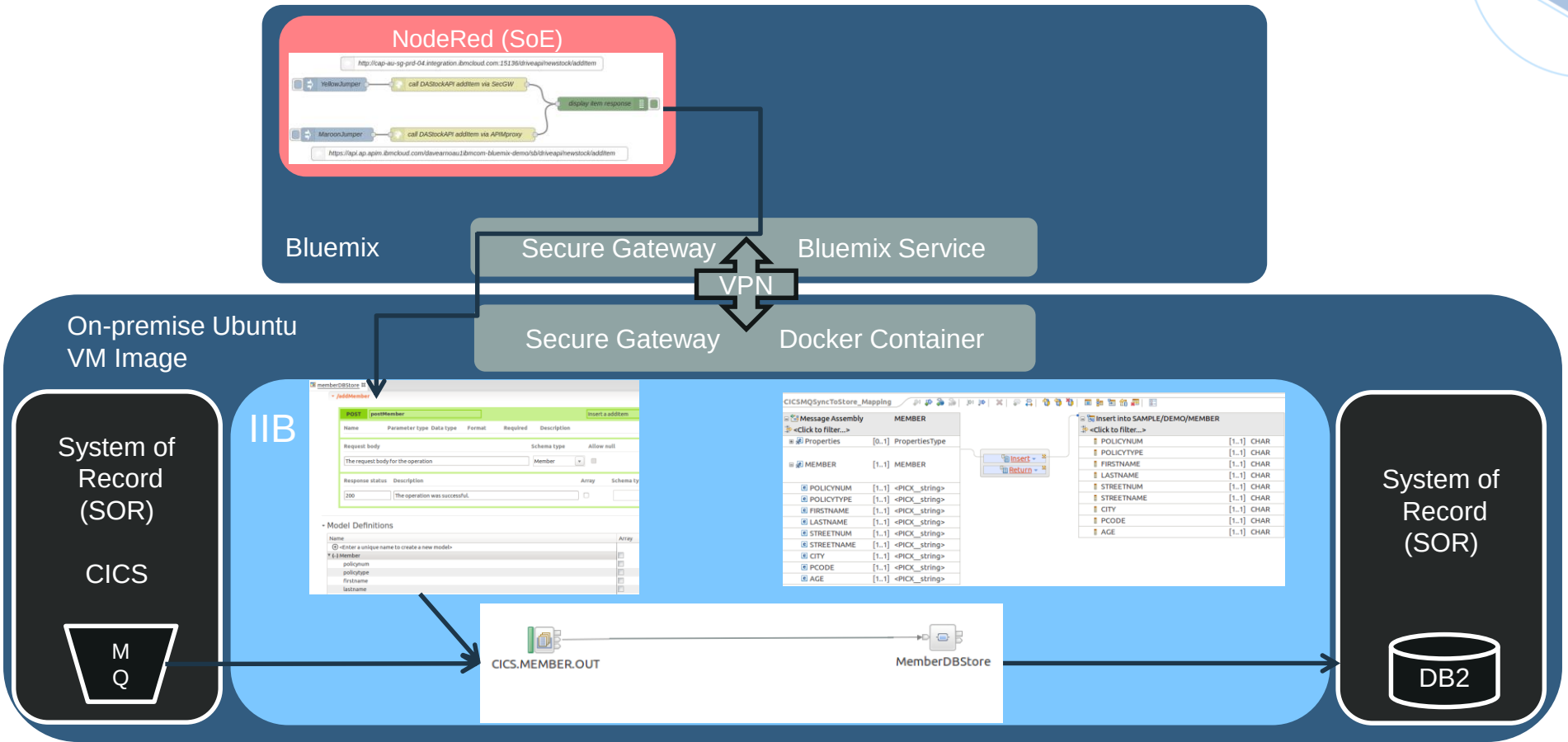


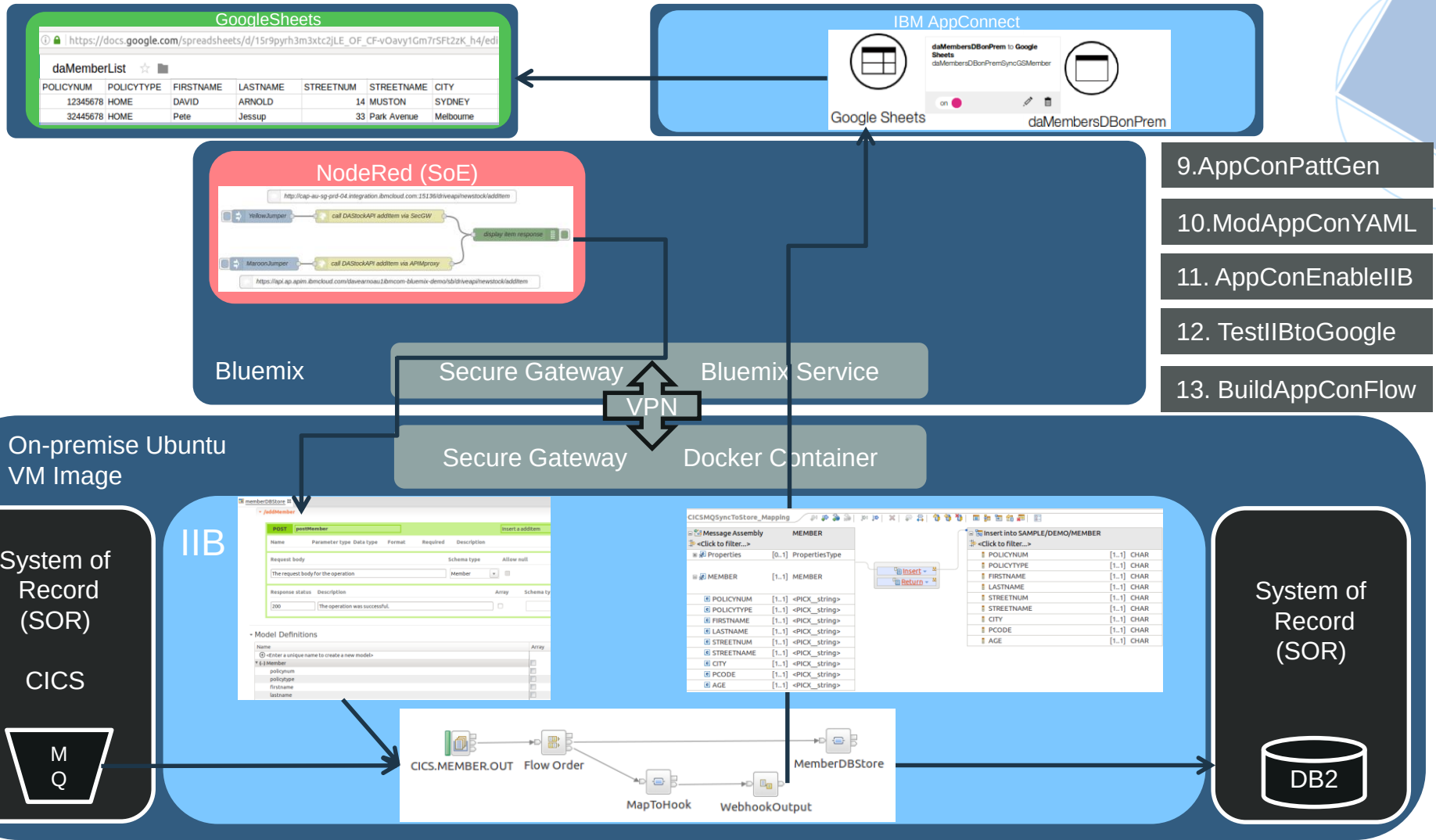


System of Record (SOR)

DB2

8. Build and Test NodeRed App

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32445678 HOME Pete Jessup 33 Park Avenue Melbourne
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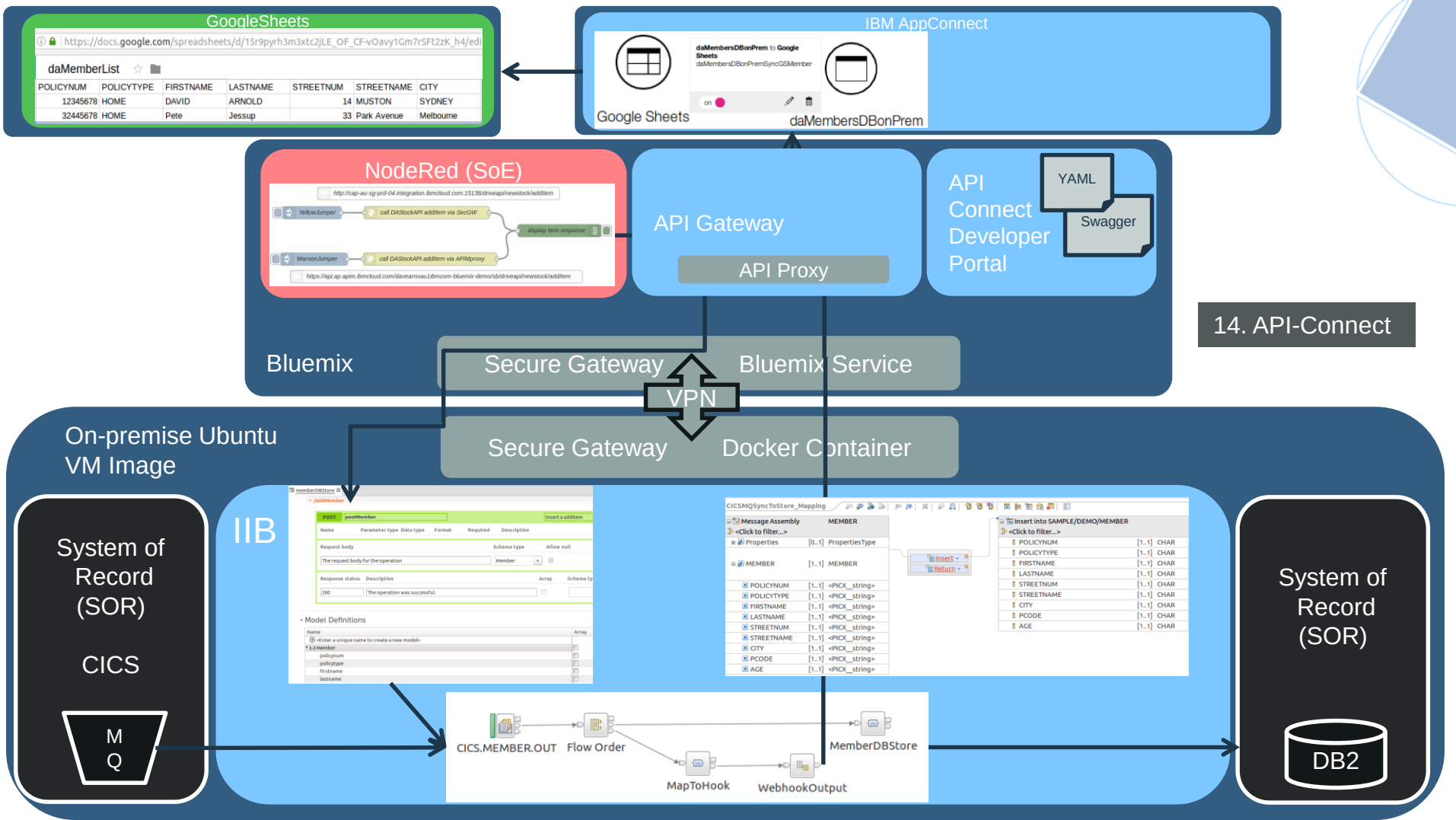
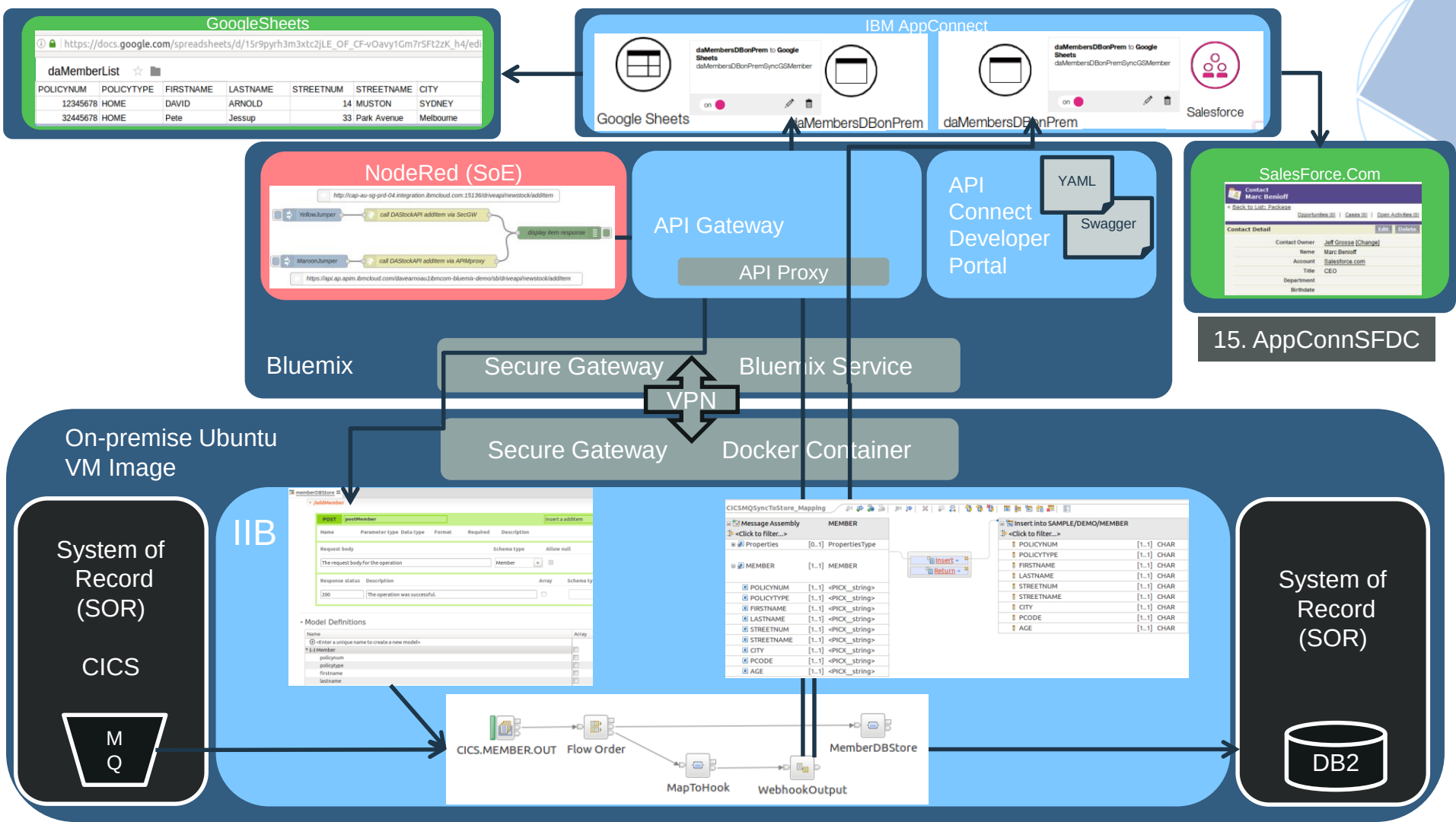
daMembersDBonPremSyncGSMember
Google Sheets
daMembersDBonPrem
NodeRed (SoE)
http://cap-au-sg-prd-04.integration.ibmcloud.com:15136/driveapi/newstock/additem
YellowJumper
call DAStockAPI addItem via SecGW
display item response
MaroonJumper
call DAStockAPI addItem via APIMproxy
https://api.ap.apim.ibmcloud.com/davearnoau1ibmcom-bluemix-demo/sb/driveapi/newstock/additem
Bluemix
Secure Gateway
Bluemix Service
VPN
Secure Gateway
Docker Container
9.AppConPattGen
10.ModAppConYAML
11. AppConEnableIIB
12. TestIIBtoGoogle
13. BuildAppConFlow
On-premise Ubuntu VM Image
System of Record (SOR)
CICS
M Q
IIB
memberDBStore
/addMember
POST postMember
Insert a additem
Request body
The request body for the operation
Response status Description
200
The operation was successful.
Model Definitions
CICSMQSyncToStore_Mapping
Message Assembly
MEMBER
Properties
PropertiesType
Insert into SAMPLE/DEMO/MEMBER
POLICYNUM
POLICYTYPE
FIRSTNAME
LASTNAME
STREETNUM
STREETNAME
CITY
PCODE
AGE
CICS.MEMBER.OUT
Flow Order
MapToHook
WebhookOutput
MemberDBStore
System of Record (SOR)
DB2


GoogleSheets
https://docs.google.com/spreadsheets/d/15r9pyrh3m3xtc2jLE_OF_CF-vOavy1Gm7rSFt2zK_h4/edi
daMemberList
POLICYNUM POLICYTYPE FIRSTNAME LASTNAME STREETNUM STREETNAME CITY
12345678 HOME DAVID ARNOLD 14 MUSTON SYDNEY
32445678 HOME Pete Jessup 33 Park Avenue Melbourne
IBM AppConnect
Google Sheets
daMembersDBonPrem
NodeRed (SoE)
API Gateway
API Proxy
API Connect Developer Portal
YAML
Swagger
Bluemix
Secure Gateway
Bluemix Service
VPN
Secure Gateway
Docker Container
On-premise Ubuntu VM Image
System of Record (SOR)
CICS
M Q
IIB
CICS.MEMBER.OUT
Flow Order
MapToHook
WebhookOutput
MemberDBStore
System of Record (SOR)
DB2
14. API-Connect


GoogleSheets
https://docs.google.com/spreadsheets/d/15r9pyrh3m3xtc2jLE_OF_CF-vOavy1Gm7rSFt2zK_h4/edi
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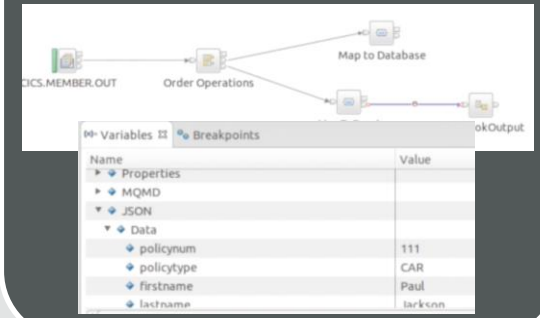
Salesforce
NodeRed (SoE)
API Gateway
API Proxy
API Connect Developer Portal
YAML
Swagger
SalesForce.Com
15. AppConnSFDC
Bluemix
Secure Gateway
Bluemix Service
VPN
On-premise Ubuntu VM Image
Secure Gateway
Docker Container
System of Record (SOR)
CICS
M Q
IIB
CICS.MEMBER.OUT
Flow Order
MapToHook
WebhookOutput
MemberDBStore
System of Record (SOR)
DB2

IBM Integration Bus Built in Test tools

Debugger



Flow Exerciser

16. IIB Debug

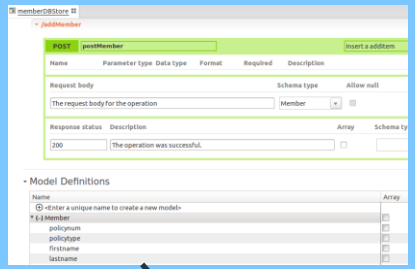
On-premise
Ubuntu
VM Image

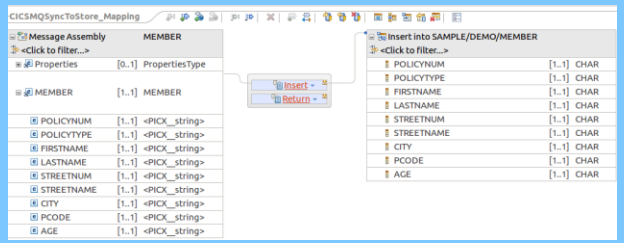
System of Record (SOR)

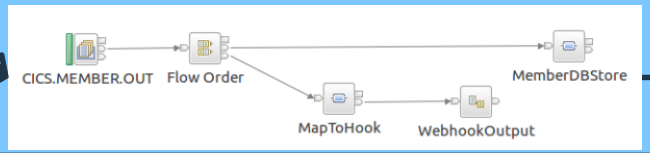
CICS

MQ

IIB







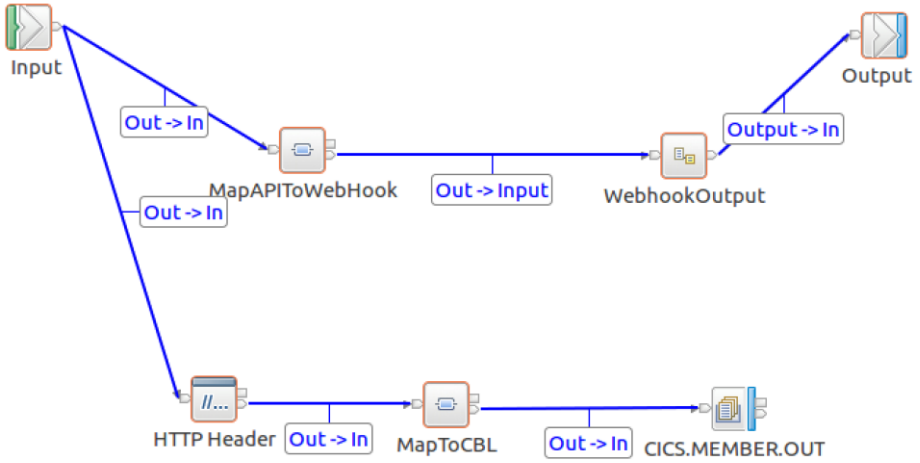
System of Record (SOR)

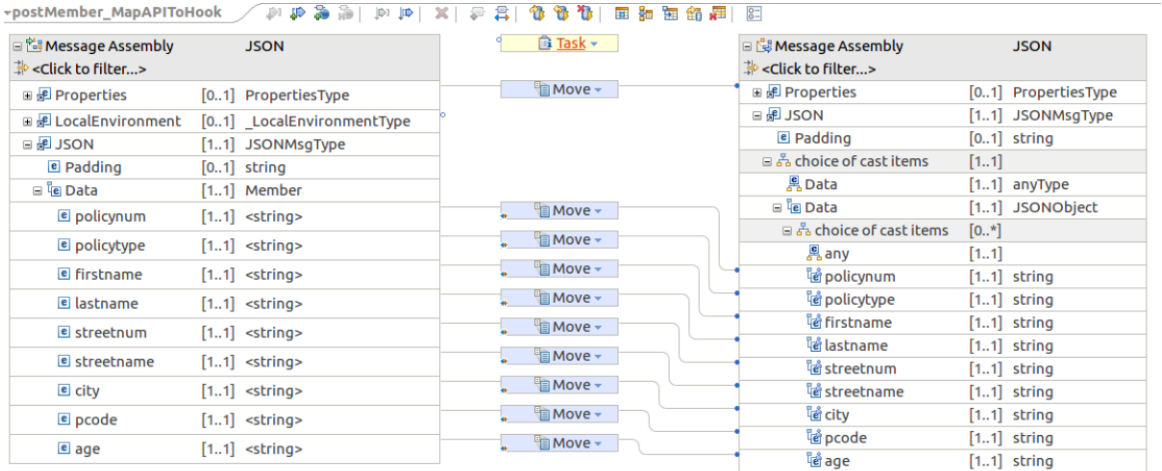
DB2

To test synchronization with SaaS apps via IBM AppConnect using the memberDBStore Restful API without the DB2 requirement and only placing messages on MQ as an option.

Make the following modifications to the memberDBStore, postMember subflow:

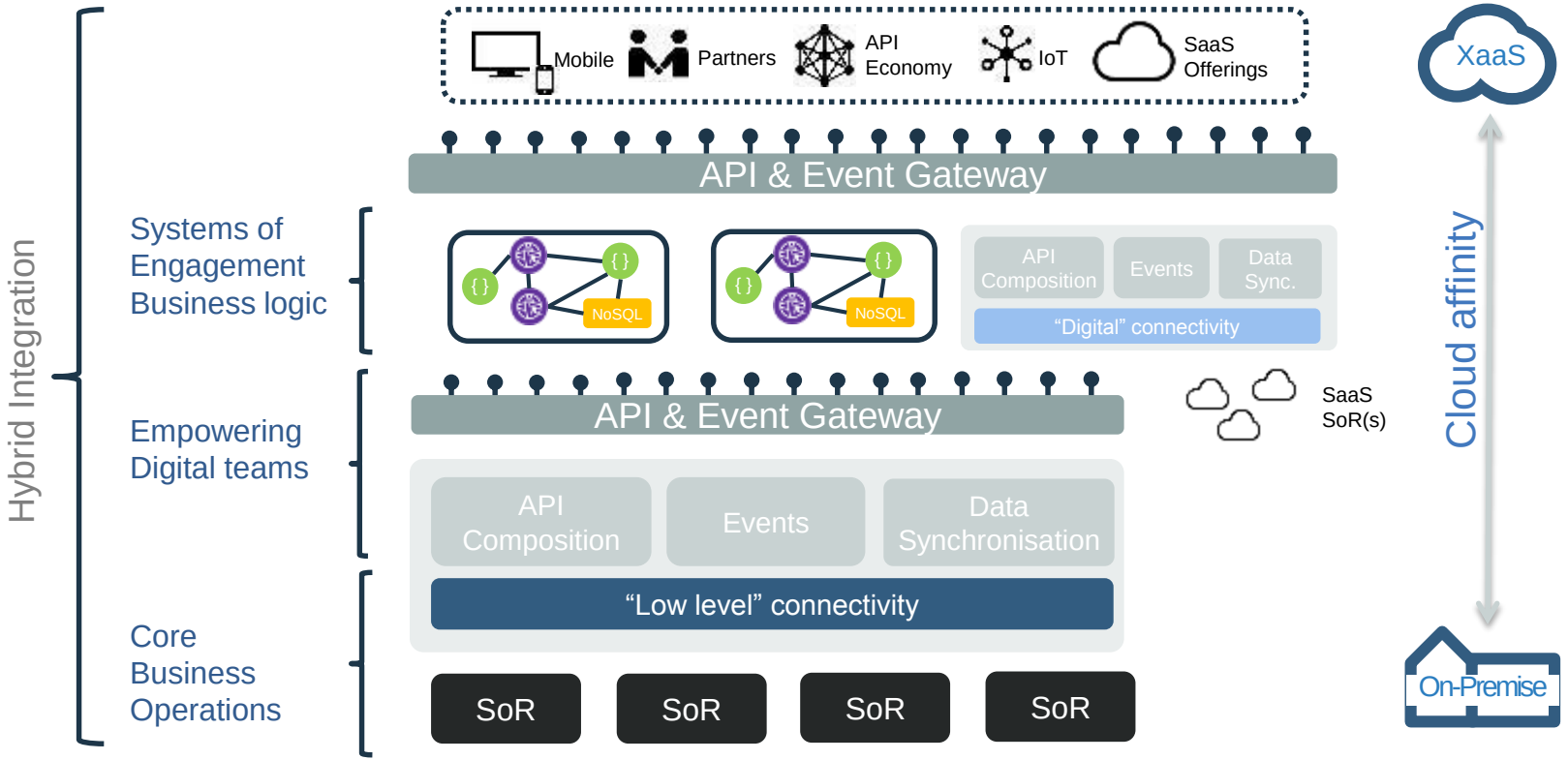
1) Delete the Pass Through node
2) replace the Pass Through node with a Mapping Node and WebHookOutput subflow (you will need to add a project reference)
3) configure the WebHookOutput and it's subflow identically to how it is configured in CICSMemberToDBStore Application
4) Wire the Mapping node and WebHookOut subflow between the Input and Output terminals
5) Optionally remove the CICS.MEMBER.OUT node and save your work
6) Stop/undeploy CICSMembertoDBStore application and original memberDBStore from the runtime
7) Redeploy the new version of the memberDBStore RestAPI

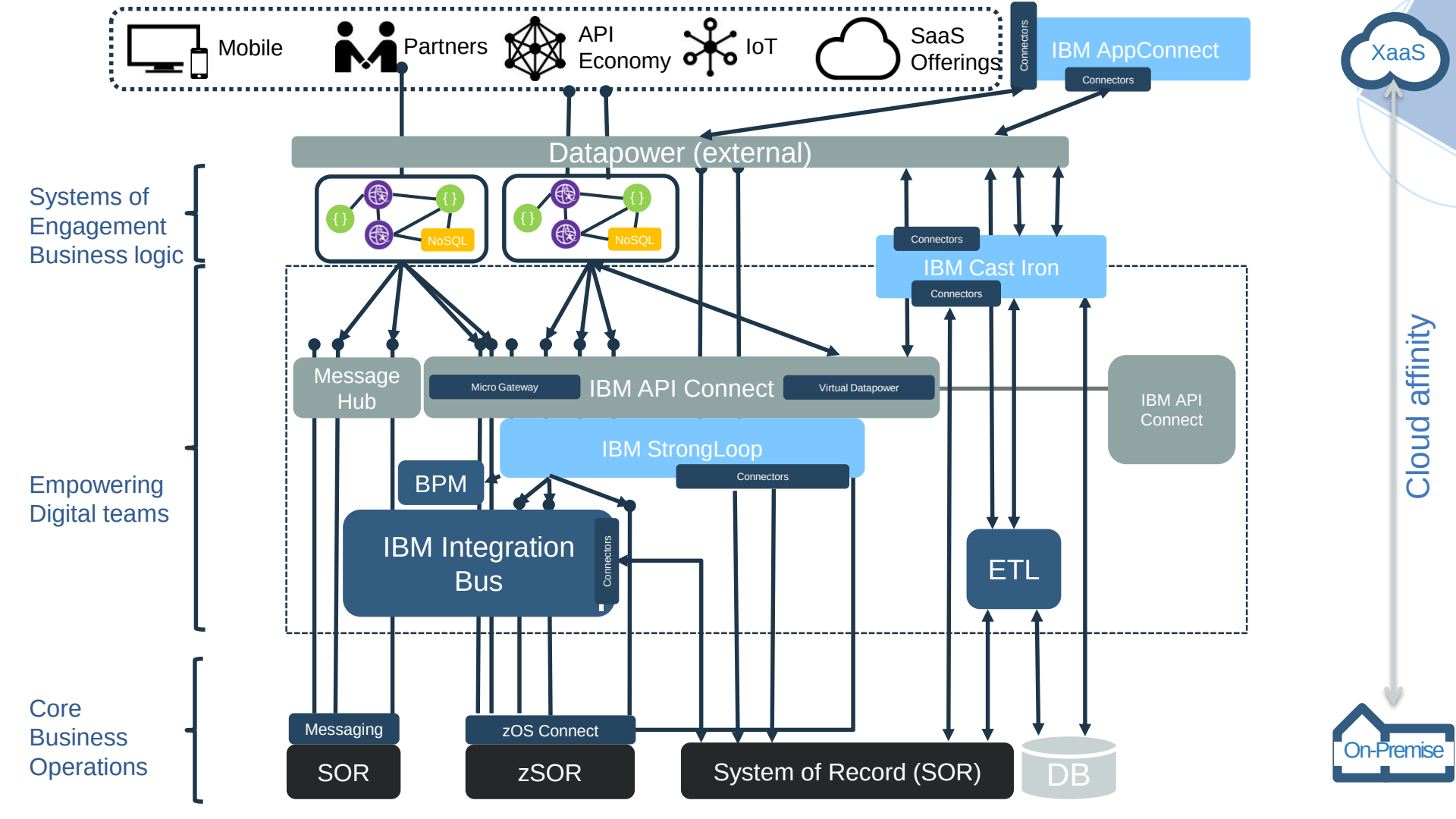




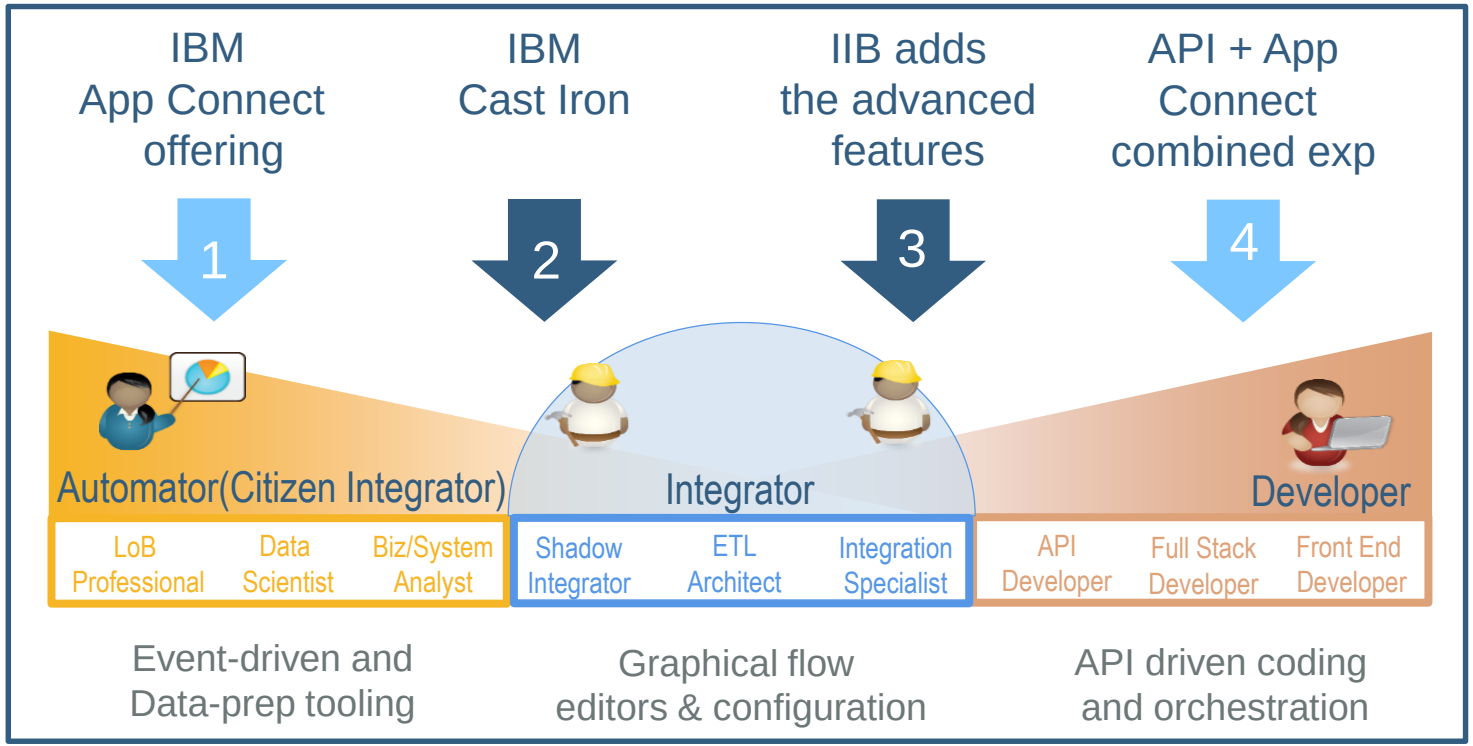
Product Portfolio Overview

An Architecture for Digital Business




Mobile
Partners
API Economy
IoT
SaaS Offerings
Connectors
IBM AppConnect
Connectors
XaaS
Datapower (external)
Systems of Engagement Business logic
NoSQL
NoSQL
Connectors
IBM Cast Iron
Connectors
Message Hub
Micro Gateway
IBM API Connect
Virtual Datapower
IBM API Connect
IBM StrongLoop
Connectors
BPM
IBM Integration Bus
Connectors
ETL
Empowering Digital teams
Cloud affinity
Messaging
zOS Connect
SOR
zSOR
System of Record (SOR)
DB
Core Business Operations
On-Premise

Integration persona alignment



Citizen Integrator: IBM App Connect

What is App Connect?

Integration tooling optimized to make Cloud Integration simple.
Business friendly ‘citizen integration’—but connected to IT tools
Delivered as SaaS

What does App Connect provide?

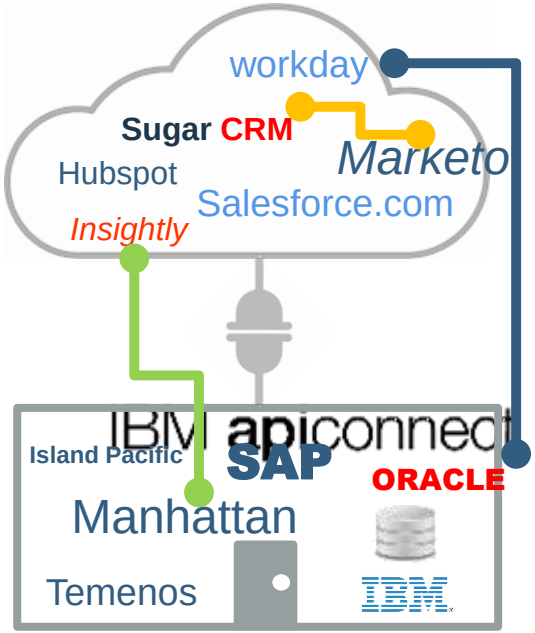
✓“App awareness” allows you to connect your apps in minutes

✓Automation of manual tasks – notifications, events & updates

✓Connect your applications wherever they are… cloud or local

✓Keep customer and other data in sync between multiple apps

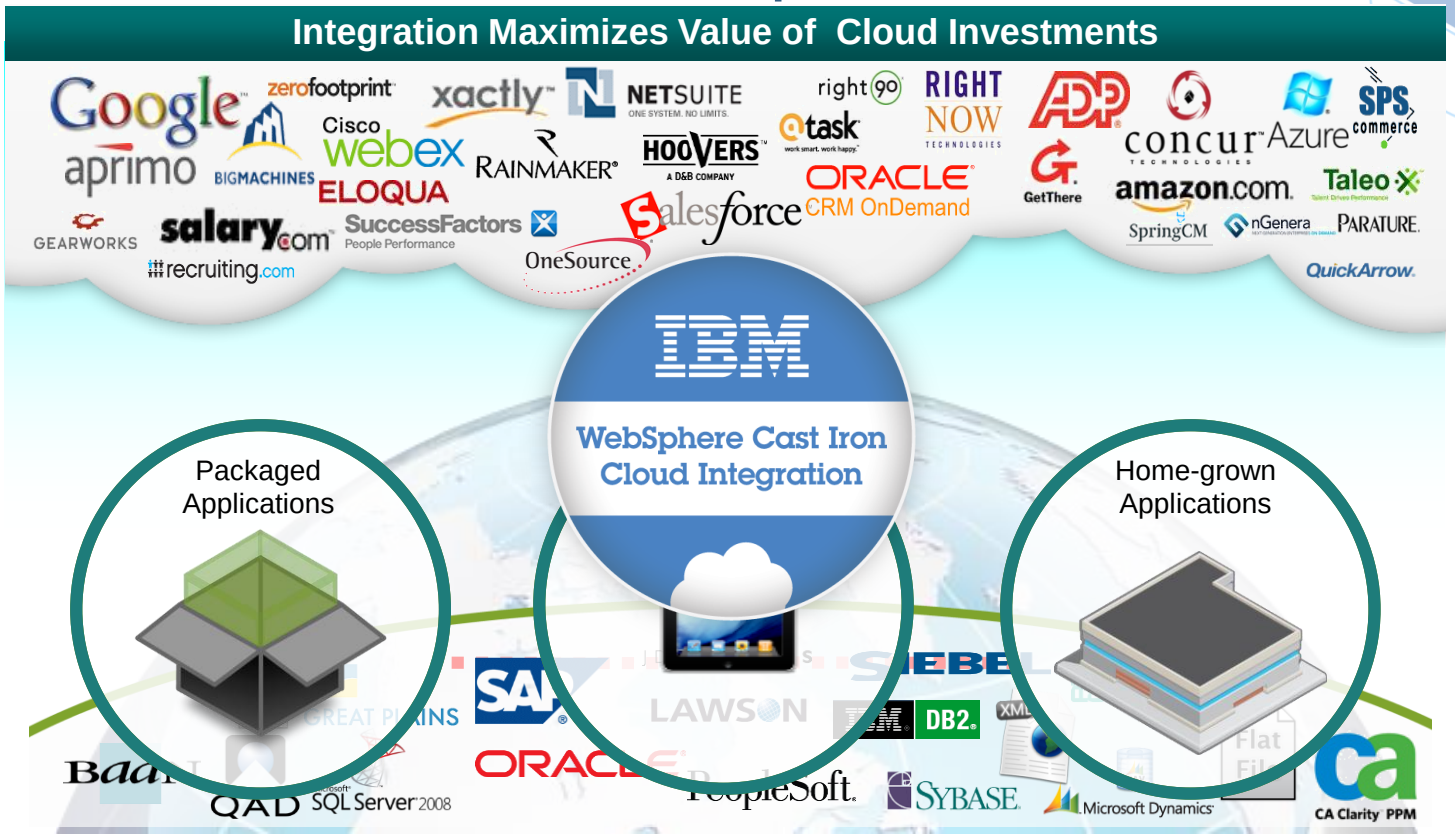
✓Build new connections quickly – your tech team can make connecting to legacy apps as easy as modern ones



IBM Cast Iron for Cloud/SaaS adaption

New Adapters:

- Salesforce Analytics
- MS Dynamics CRM on-premise
- Silverpop
- LDAP/MS Directory
- Box.com
- DocuSign
- Eloqua
- Office 365
- Coupa
- MS Dynamix AX
- MS Dynamics GP
- MS Dynamics NAV
- SAP Cloud for Customer
- InfoSphere MDM
- ServiceNow
- QuickBooks
- Dropbox
- Google Drive



https://www.youtube.com/watch?v=cSyB2KPcO68

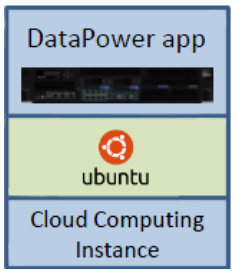
Cloud Ready / Enabled Integration - Datapower

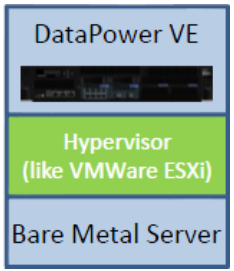
IaaS

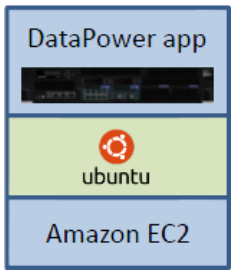
- DataPower Virtual Edition supports SoftLayer bare metal instances
  - Similar deployment and licensing model to on-premise virtual environments
- DataPower Patterns for IBM PureApplication Service on Softlayer
- DataPower Virtual Edition on
  - SoftLayer Cloud Layer Computing Instance (CCI)
  - Amazon Elastic Compute Cloud (EC2)
- Licensing
  - Perpetual BYOL model
  - Monthly licensing options available

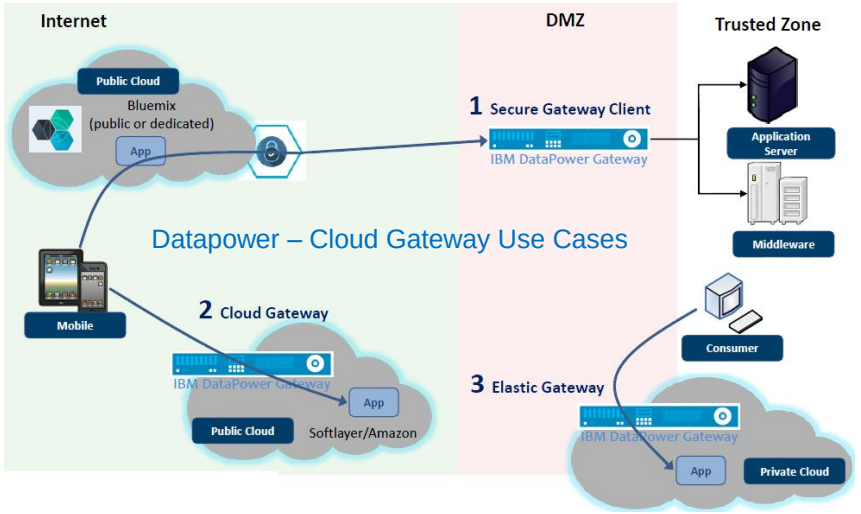
PaaS

- Baked into IBM Bluemix









Cloud Ready / Enabled Integration – IBM Integration Bus (IIB)

IaaS - IBM and 3rd Party Public cloud deployment ready

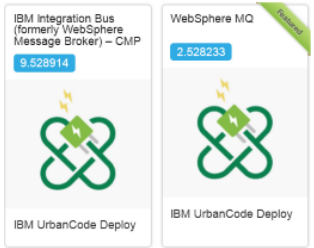
- BYOL, BYOSL and rental pricing available
- Azure for example will provision an IIB “image”
- Chef - Open source technology for Install/Config of IIB and MQ, creates qmgrs and integration nodes
- IBM PureApplication System - Automated provisioning of machines as well as deployment of middleware
- IBM UrbanCode Deploy - Orchestrates and automates the deployment of applications, middleware configurations, acr the DevOps pipeline.
- Docker Container for IIB from Docker Hub

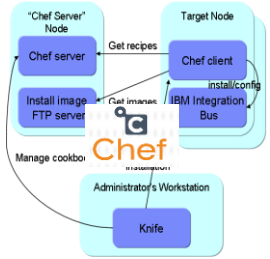
PaaS

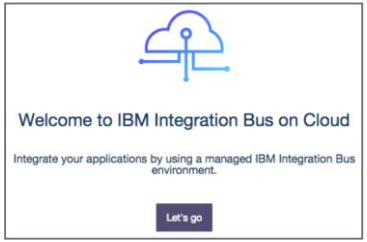
- Full function IIB Docker Container in the IBM Bluemix Container Service

MaaS (“Middleware as a Service”)

- Integration Platform as a Service – IIB in the Cloud pay as you go managed service.







Cloud Ready / Cloud Native – IBM API Connect

SaaS

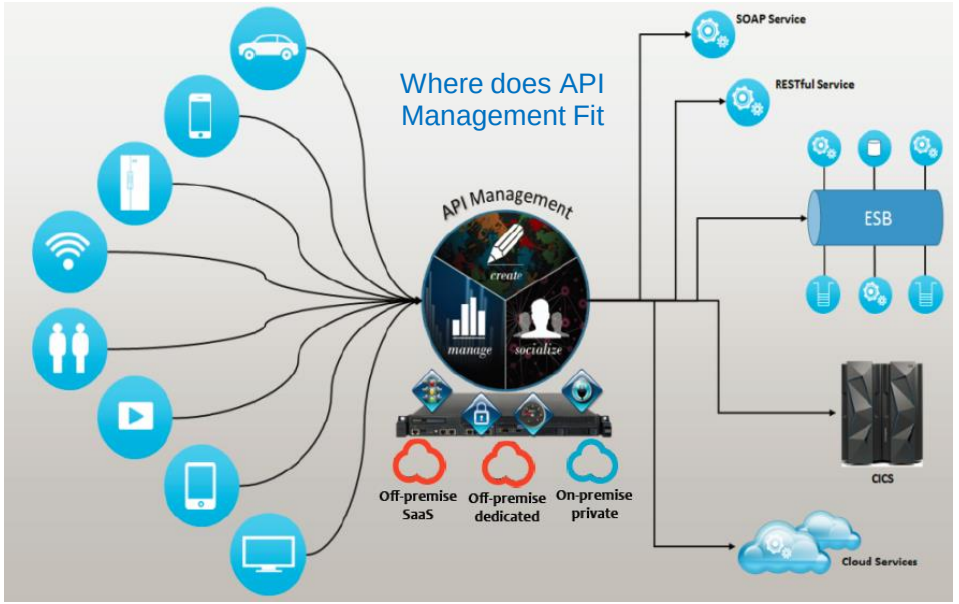
1 | On Cloud
Maximize on cloud economics and agility. Offered as SaaS on SoftLayer and also available through Bluemix

Dedicated Cloud

2 | Dedicated
With Bluemix Dedicated API Management, everything is dedicated and connected to you — agility of public cloud, yet feels like home

On premise

3 | On premise
Behind your firewall for most sensitive workloads & complete control



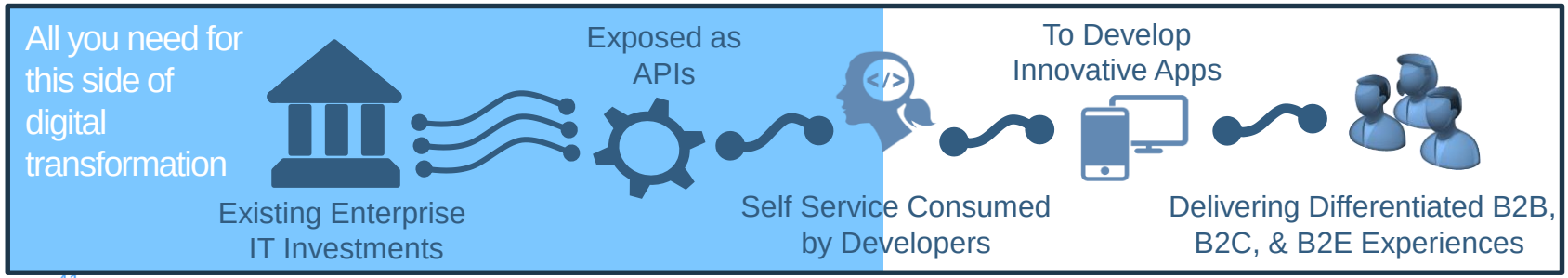
IBM Application Integration Suite

What is Application Integration Suite?

A new offering that combines Integration Bus, API Connect, Cast Iron, and a new IIB Salesforce Connector to accelerate a customer's Digital Transformation agenda

What does Application Integration Suite provide?

- ✓ Build business logic with the highest levels of productivity via application & cloud integration features
- ✓ Integrated tooling to easily publish new integration flows as APIs
- ✓ Secure connectivity to hundreds of cloud and on-premise applications and endpoints



41

Cloud Ready / Enabled Messaging IBM MQ v9

MQTT Telemetry Transport for IoT. Bridge MQ and MQTT pub/sub

MQ Light API for MQ

- AMQP listener allows MQLight to participate in participate in MQ pub/sub

IBM Pure Applications MQ Pattern

- In Support of Infrastructure as a Service Cloud deployments

IBM MQ V9 (V8, V7.5 and v7.1 still in support)

- Original “base” IBM MQ reliable messaging. Packaged to include MQ AMS + MQ MFT but base license entitlement only.
- IBM MQ AMS (Advanced Message Security) - Separate license
  - Adds encryption and decryption of messages as they are PUT and GET to queues to the base MQ Entitlement
- IBM MQ MFT (Managed File Transfer) Service - Separate license
- IBM MQ Advanced
  - Single Licensed part number for IBM MQ + IBM MQ AMS + IBM MQ MFT

IBM MQ Appliance

- MQ v8/v9 rendered as firmware in a Datapower form-factor

IBM MessageHub on Bluemix based on Kafka technology

Evolving products into a **Hybrid Integration Platform**

A modular platform for integrating Apps, Data, APIs

Connect Seamlessly

Hundreds of end points to apps and data in the cloud and on premise

Develop Rapidly

Intuitive & robust tooling to transform data to meet business needs

Scale Efficiently

Performance and scalability to meet the SLAs of your business apps