

App Connect Enterprise

Wayne Swales,
Application Integration Offering Management



What is ACE

Integration engine

Connects any application & system

Out of the box protocol connectors provided as well as BYO

Connect & route

Out of the box parsers provided as well as BYO

Format, encode, transform

Scale across processes and threads

Configuration to scale up to 1000's sec

Multiple processes, multiple threads

Highly optimised C based engine

Deploy where needed

On-prem and/or Clouds

Flexible deployment options with a single management WebUI (**coming**)

Industry Packs

Other IBM solutions built on top

Entitlements & Free Developer Edition

MQ Advanced

All SaaS Connectors – Not charged separately



- **There are many integration solutions**

- Open Source
- Coding
- Out of the box experiences

- **When choosing a solution**

- Best not to choose on a single project
- Ensure the solution has all the capabilities needed out of the box for future projects
 - If not can be customised
- Choose a vendor with a long term strategy
- Integration is infrastructure
 - 24X7
- 3rd Party requirements
- Hidden costs – Connectors, support, updates

Powering Enterprises for past 20 years

Continuous innovation and investment

Undisputed market leader in integration space for past 20 years in a row!

Given the size and relevancy in the market, we continue to invest aggressively to build on our strong heritage as a consistent leader.

Evolving rapidly over 2018, delivering new features every quarter in each successive release.



MQSeries
Integrator

WebSphere
MQ Systems Integrator

WebSphere
Business Integration
Message Broker

WebSphere
Message Broker

IBM
Integration Bus

IBM
App Connect

IBM App Connect (IBM Integration)

a trusted partner in enterprise integration around the world and across all industries

~2000

customers in production

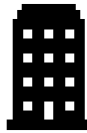
600+



Healthcare & Life Sciences companies

21

of the top 25
insurance companies



50

of the top
50 global banks



23

of the top
25 US Retailers



20

of top 20 global
comm service providers



90%

of global credit
card transactions

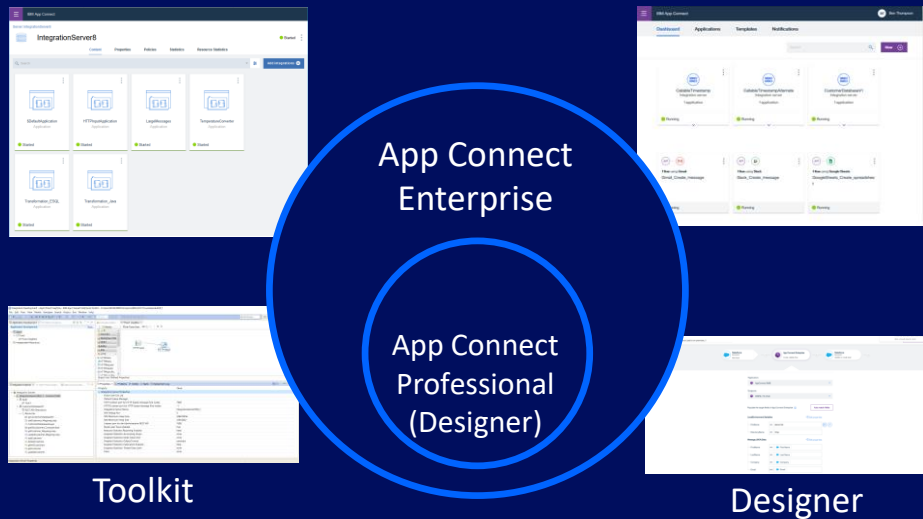


80%

of all worldwide
airline reservations



IBM Integration Bus v10 becomes App Connect Enterprise v11



- **Next generation** IBM Integration Bus becomes IBM ACE v11
- Extended connectivity App Connect (**Cloud Native iPaaS**) connectors on IBM Cloud (adds over **100 smart connectors**)
 - Leverage extensive pre-built connectors to popular SaaS apps for Marketing, CRM, Finance, HR, Analytics, Project management, ERP. New connectors added each month
- ACE re-engineered for container native deployments
 - Node level process now optional
 - **Node + Integration Server = ESB**

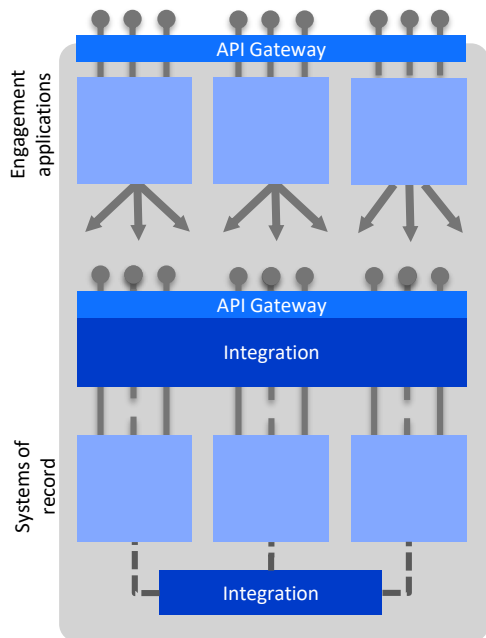


Evolution to Agile Integration Architecture

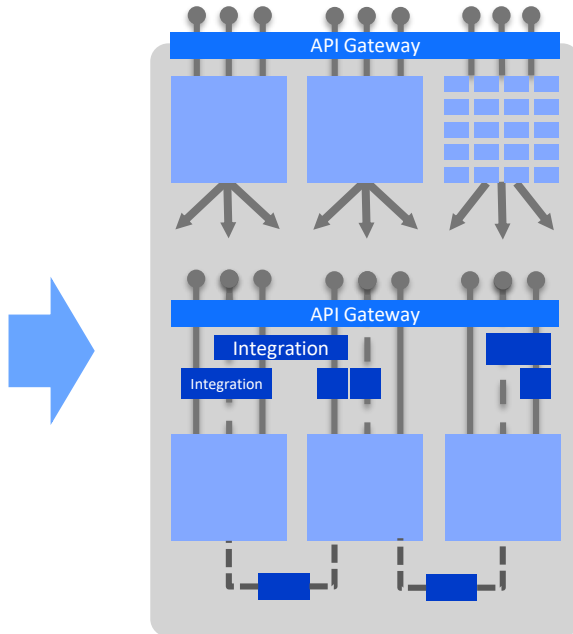
Architecture and Design

Integration

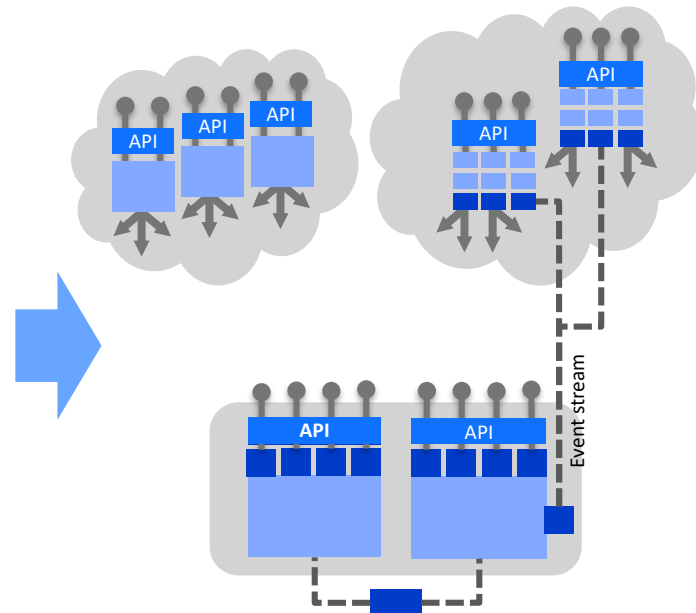
Centralized ESB



Fine-grained Integration deployment



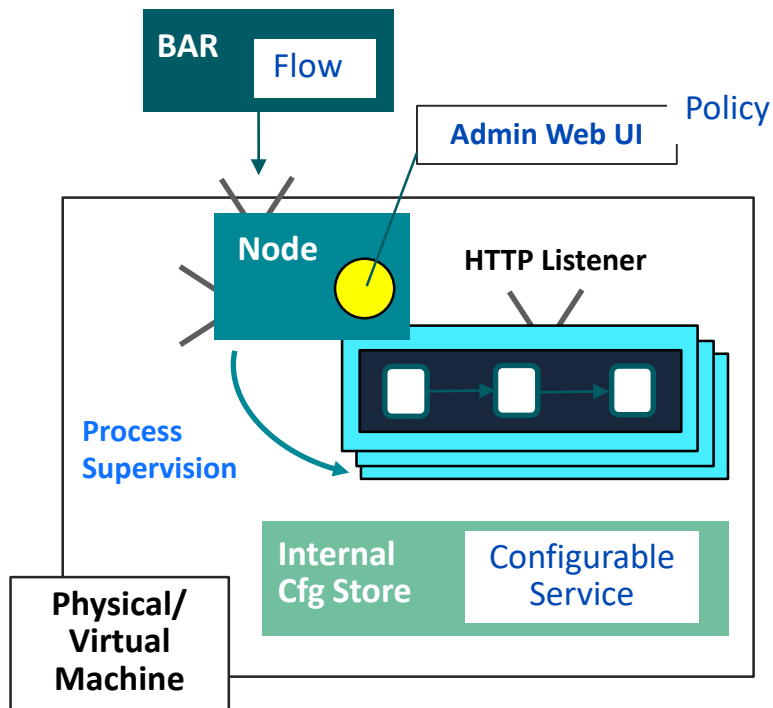
Decentralized integration ownership



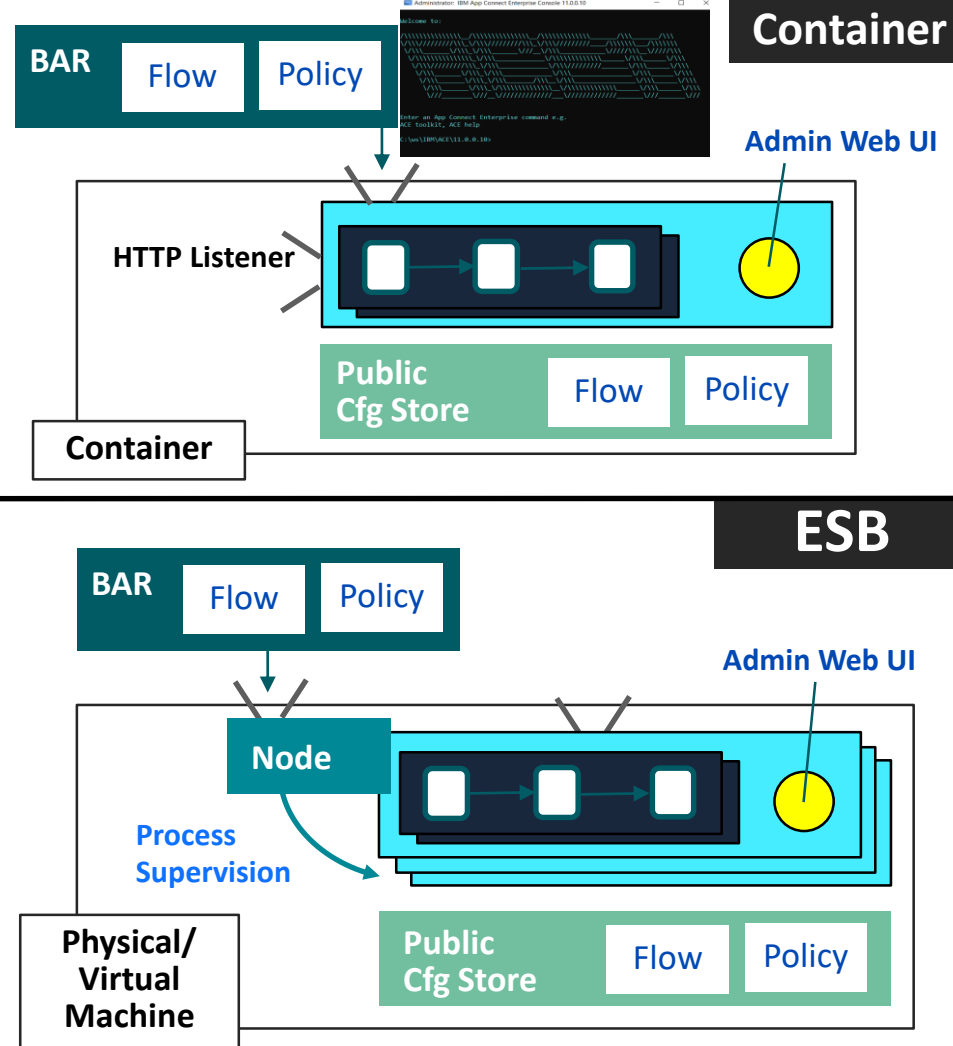
Containerization

Application autonomy

Before



UNZIP and GO !



IIB and ACE capabilities compared

Capability	IBM Integration Bus v9/v10	App Connect Enterprise (v11)
Artefact creation	Create mediation flows	Same as before but focus on externalization of parameters
Build	Create bar file	Create Docker image including bar file
Deployment	Deploy bar to running server	Deploy Docker image
High availability	HTTP proxy servlet, high availability manager	Embedded server listener
Scaling	Add integration servers/integration nodes	Set container scaling policy
Product upgrade	In place upgrade	Tear down and stand up with newly built image
Monitoring	MQ, MQTT	Configurable Centralized logging to analytics stack such as ELK
Administration	Connect to running servers/nodes	Deploy new Docker image
Edge security	Firewall	Container orchestrator ingress controller



Simplicity and productivity



Flexible administrative control over integration servers and resources



Simplified process for deploying message flows and resources to integration servers



Simplified web user interface



Enhanced security and performance

Dynamicity with intelligence



This information that are related to external services with which the product can communicate is now defined in a policy document. (replacing configurable services)



Policy documents that can be deployed to IBM App Connect Enterprise as part of a BAR file.



Policies that can be placed on the file system in a particular runtime environment to provide environment-specific overrides



A Policy to create and configure policies.

Recent releases

■ Toolkit feature
■ Designer feature

Operations

2Q 2020

- Switch from Helm to Operators
- Activity Logs enabled in WebUI
- Tracing command enhancements
- Basic auth enforcement for server
- Operators added to IBM Entitled Registry
- New configuration resources for container release
- Support the default “restricted” SCC configuration on OCP
- Support air-gapped installation

3Q 2020

- Added support for admin logs for audit purposes
- Enhanced protection against excessive authentication requests
- Support for using IBM MQ RDQM for ACE High Availability
- Enhancements to Operator to offer delightful Ops experience
- zLinux support for CP4i
- Support for Portworx storage
- Performance improvement
- ACE zCX

Productivity

- Complete ODM Rules support within the tooling
- Enhancements to Transformation Advisor
- Improved policy support
- Support for additional FHIR profiles
- Introduce Mapping Assist
- Test and validate action nodes with sample data
- Add support for Switch technology on Designer in CP4i

- A new welcome UX
- Improved access to Getting Started material and Tutorials
- Enhancements to ODM node to support dynamic responses to rule changes

- Auto-generation of OpenAPI doc for API flow
- Ability to perform black and white box test of API flow
- Enhancement to conditional logic node
- Improved connector catalog with new connector auth UX

Connectivity

- New smart connectors - MS Dynamics CRM, Google Analytics, Yapily, Coupa, Microsoft Active Directory, Gmail, Wufoo, Kronos, Amazon SNS, Google Drive, Microsoft Office 365, Sap Hybris, IBM COSS3, Microsoft Dynamics F&O, Open LDAP, IBM FileNet, Siemens Team Centre, Amazon SQS
- Protocol connectors - Callable Flows

- IBM MQ Uniform Cluster support
- Kafka node enhancement - wait for message offset commit on KafkaConsumer

- 15 new smart connectors including key endpoints from IBM, AWS and Google apps
- Oracle Taleo, SAP OData, etc
- Protocol connectors – OpenAPI and new JDBC connector

ACE v11.0.0.2

Lifts Tech Preview for Integration Node capabilities and Node-wide HTTP Listener
Eclipse Toolkit upgrade to 4.4.2
Standard out system logging
MQ based Auth model for nodes and servers

ACE v11.0.0.3

Multi-instance HA for integration nodes
Support for Global message flow coordination across ODBC, JDBC, JMS, CICS
User-defined Message Flow Nodes in Java and C
Dynamic Monitoring and Statistics via commands
Policy info accessible from Java outside a JCN
Updated language translation

ACE v11.0.0.5

Support for AIX Keywords
Push REST APIs to API Connect
Java Integration API
Performance Report – HTTP and SOAP
Command Enhancements
Policy Redeploy Enhancements
User Exit Interface for Transaction Tracking

ACE v11.0.0.0

Unzip and Go
Stand-alone Integration Servers
Policies
New Web User Interface

ACE v11.0.0.1

Integration Node capabilities (Tech Preview)
Node-wide HTTP Listener (Tech Preview)
Web User Interface enhancements for support of Nodes
Migration from IIBv9 and IIBv10
Monitoring profiles
Additional admin commands and extended REST APIv2
Web User Interface enhancements for support of Nodes
New Group nodes for non-persistent in-memory aggregation

ACE v11.0.0.4

LDAP Authentication
Global Cache
Record & Replay
Policy Redeploy
Sticky settings for Monitoring & Statistics
Support for zLinux RHEL & Ubuntu

ACE v11.0.0.6

LDAP Group Authorization
User Defined Policy Redeploy
Publication node using MQ Client
Integration / REST API Update Flow UDPs
Policies for JDEdwards, PeopleSoft, Siebel
Custom keywords for JAR, ESQ, XSLT
Credentials Encryption

ACE v11.0.0.8

New ODM Rules node (Tech Preview)
Update and Override UDPs in Web UI
Flow and Resource Stats on by default
Change Flow Stats in Web UI
Extra Transformation Advisor Rules
CP4I Transaction Tracking for Kafka
Send Log Events to ELK
Command Enhancements

ACE v11.0.0.9

Lifts Tech Preview for ODM Rules
Activity Log in Web UI
Command improvements for Tracing
Basic Auth enforcement in server
Dynamic reload of certificates for HTTPS
Listener

ACE v11.0.0.7

WSRR EndpointLookup & RegistryLookup nodes
KafkaRead node, Kafka Policy & security identity
Remote MQ for EDA Nodes
Transformation Advisor IIB Plugin
Credentials Encryption for node-owned servers
Proxy Servlet
Command Improvements

ACE v11.0.0.10

Support for IBM App Connect Enterprise on IBM
z/OS® Container Extensions (zCX)
Dynamic update of ODM rulesets
ODM resource statistics
Enhanced authentication in the web user
interface
Support for using an integration node with a
replicated data queue manager (RDQM)
KafkaConsumer node enhancements
Support for automatic reconnection to an IBM
MQ queue manager
Support for using queues on an IBM MQ uniform
cluster
Admin Log
Transformation Advisor enhancements

Achieve unparalleled performance on System Z & LinuxONE

Full range to suit every business size

ACE fully supported on z/Linux and LinuxONE offers unparallel Vertical Scaling, Workload consolidation, removes server farms and adds high levels of security

zCX Supported at ACE 11.0.0.8

Containers on z/OS

ACE enhancements Sept 18th 2020

JCL to manage

SMP/E install option

ACE bip messages sent to the MVS console

/p stop, /s start /f modify

New redbook coming

Value

Integration close to z/OS sub-systems

Security, consolidation, scale up

In-Memory networking using high-speed

TCP communications between partitions

(Hiper-sockets, iQDIO)

z/OS Workload manager policies

Customers rely on z/OS and directions ahead

IIB z/OS 10.x (SoD)

- Let's make it easy for customers on Systems Z
- Deliver IIB 10.x on z/OS
- Update binaries and pre-req levels
- Extend support to 2030 and beyond
- Simple migration, less disruption

Small/Medium/Large
LinuxONE II/bIII



Small/Medium/Large
z15



The z15 single frame system requires 75 percent less floor space than x86 servers

1 trillion secure web transactions per day
2M+ containers tested

190 configurable cores and up to 40 TB memory

Scale with up to 2.4M containers on a single system

Secure container / Kubernetes based solutions on IBM Z or LinuxONE private and hybrid clouds

ACE additional entitlements

For every VPC of ACE purchased, get 500K iPaaS flows per month to connect SaaS systems to your mainframes. Up to a maximum of 10M flow runs per month for free.

Run anywhere, exactly as you need it

Customer managed

Licenses from IBM can be installed in any environment of the customers' choosing

Public Service

Multi-tenant, fully managed service (including hybrid license)

Reserved Instance ... COMING

Single tenant, fully managed service

Red Hat OpenShift K8s Services (ROKS) ... NEW

provided as a managed platform on all cloud vendors with simple container-based deploy

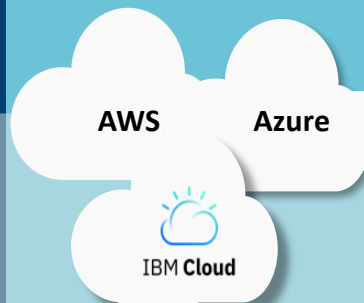
IBM Satellite ... COMING

extends IBM Cloud services to other hybrid and multi-cloud locations delivered as a service from a single pane of glass controlled through the public cloud

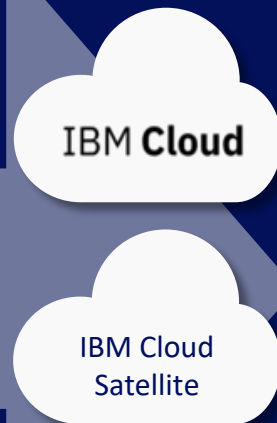
On-premise,
software

Linux	AIX
Windows	zLinux
LinuxOne	zCX


Run yourself in
public or private
clouds




Let IBM host for
you



Deployment Options for App Connect Enterprise

 Customer Managed

 Platform Managed

On-Premises



BYO H/W

Code
Data
Runtime
Middleware
OS
Virtualization
Servers
Storage
Networking



IBM Cloud Packs

Code
Data
Runtime
Middleware
OS
Virtualization
Servers
Storage
Networking

Infrastructure as a Service



IaaS

Code
Data
Runtime
Middleware
OS
Virtualization
Servers
Storage
Networking



Packs on 3rd Party IaaS

Code
Data
Runtime
Middleware
OS
Virtualization
Servers
Storage
Networking

Software as a Service



App Connect Enterprise



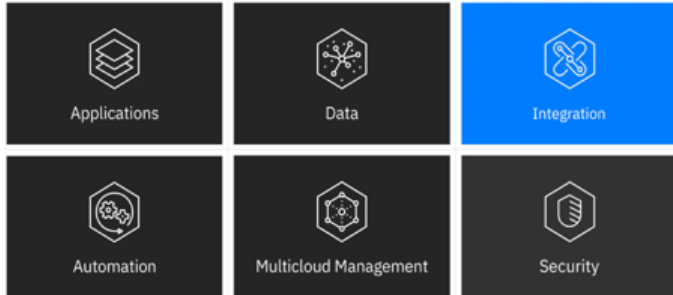
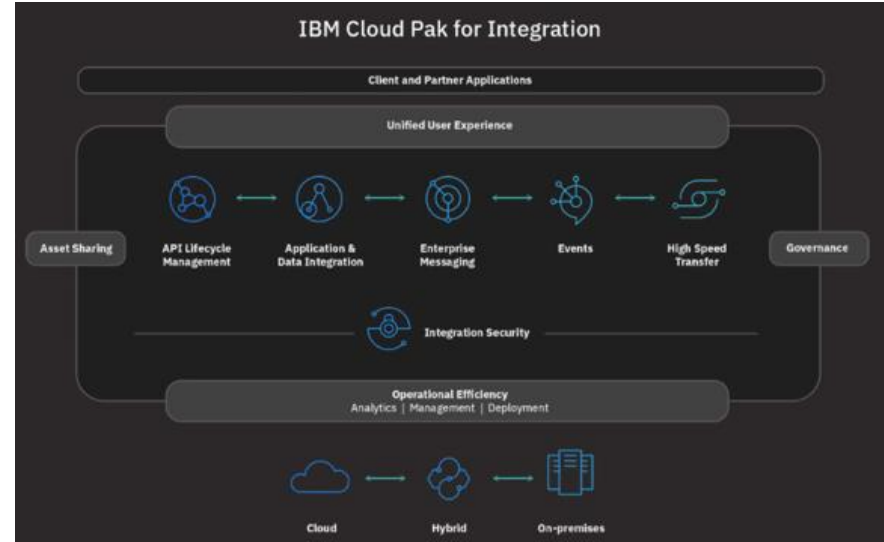
Code
Data
Runtime
Middleware
OS
Virtualization
Servers
Storage
Networking

App Connect Enterprise v11 Software

Managed Service

App Connect at the core of Cloud Pak for Integration CP4i

- Cloud agnostic to run virtually anywhere on Red Hat OpenShift.
- Unmatched scalability and resiliency through container and microservices based design
- Development and operations Agility through consistent deployment onto Red Hat OpenShift Kubernetes



App Connect Operators – Deployment and configuration

Simplified, consistent Kubernetes native configuration

- App Connect configured using Kubernetes Custom Resources
- Intelligent form-based UI builds simple YAML objects that can be used in CI/CD pipelines

IS Integration Server Configuration

IBM App Connect Operator provides the ability to create configurations for use with integration servers Documentation For additional details regarding install parameters check: <http://ibm.biz/AppConnect-Configurations-readme>.

Create Instance

DA App Connect Dashboard

IBM App Connect Operator provides the ability to create App Connect Enterprise dashboards to administering integration servers Documentation For additional details regarding install parameters check: <http://ibm.biz/AppConnect-Dashboard-readme>.

Create Instance

DA App Connect Designer Authoring

IBM App Connect Operator provides the ability to create App Connect Designer Authoring for developing and testing integration flows Documentation For additional details regarding install parameters check: <http://ibm.biz/AppConnect-DesignerAuthoring-readme>.

Create Instance

IS App Connect Integration Server

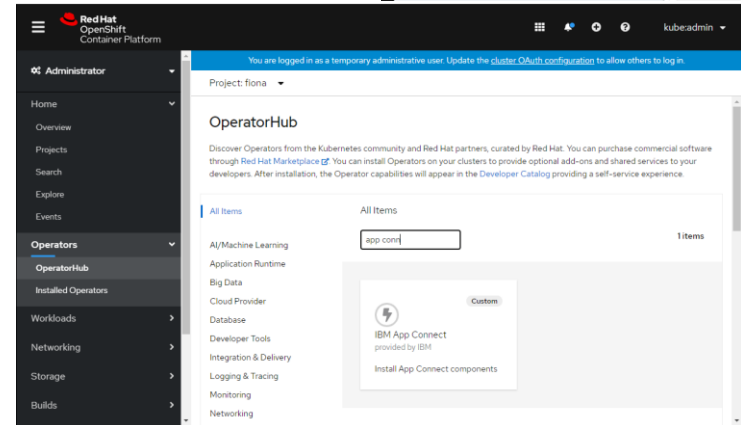
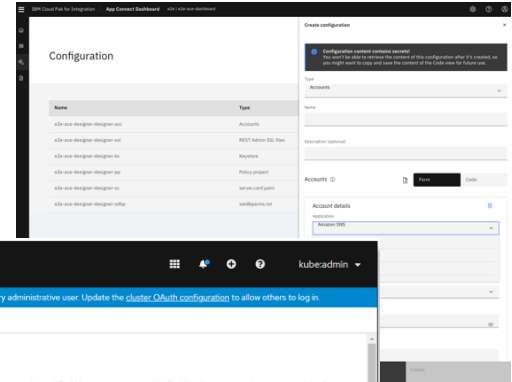
IBM App Connect Operator provides the ability to create App Connect Enterprise Integration Servers Documentation For additional details regarding install parameters check: <http://ibm.biz/AppConnect-IntegrationServer-readme>.

Create Instance

SS App Connect Switch Server

IBM App Connect Operator provides the ability to create App Connect Enterprise switches to enable hybrid integration. Documentation For additional details regarding install parameters check: <http://ibm.biz/AppConnect-SwitchServer-readme>.

Create Instance



Command line:
oc get packagemanifests -n openshift-marketplace

Operators – key benefits and our competitive advantage



Easy to manage - App Connect resources acting just like the built-in, native Kubernetes objects. This enables customers to use their standard Kubernetes tools to interface with the components, via the Kube API.



Easy to install - Install directly from Openshift Operator Hub Catalog.
Supports Air-gap install.



Easy to access - all the images are available without any IBM subscription or paid for license, giving you the opportunity to try it out with minimum effort.



Easy to install - When installing the operator, it will install all the required dependencies – IBM Common Services (for logging, metrics and IAM) and also CouchDB (used by our Designer authoring experience).




Secure (yet easy to install) - Supports the default “restricted” SCC, meaning no custom SCC configuration is required.



Easy to update - Updates, fixpaks and patches delivered automatically
No need for fix-central & Passport Advantage

Certified containers for Kubernetes

- IBM is certifying middleware running on Kubernetes (CNCF) across five categories and 30+ dimensions
- Certifications following same guidelines as Red Hat to be OpenShift compliant in every way
- Roadmap includes further investments toward **“zero touch operations”**

Production Grade	Security	Quality Assurance	Lifecycle Management
<ul style="list-style-type: none">• Multi-cloud• Storage• Networking• Resiliency• Scalability• Self Healing• Recoverable	<ul style="list-style-type: none">• Vulnerability Mgmt• Limited Security Privilege• Secure Access, Keys, Certs• Network/Data Protection• Secrets and SPI• Security & Privacy by Design• Secure Contexts	<ul style="list-style-type: none">• Comprehensive Testing• Architectures• OCP Versions• Currency• Airgap• Upgrades	<ul style="list-style-type: none">• Patch• Upgradeability• Rollback/Restore• Backup/Recovery• OCP Version Alignment• Kubernetes Currency
Consistency and Standards			
	<ul style="list-style-type: none">• Consistent Packaging / Publishing• Supporting Operators and Helm• Consistent Entitlement mgmt• Common mgmt. of OSS elements	<ul style="list-style-type: none">• UBI and Red Hat Certified• Consistent use of OCP and IBM Services• ~200 Code Standards enforced• Governed Best Practice / Anti Practices	

More details on Certification <http://ibm.biz/cp-certify>

Hybrid Dashboard

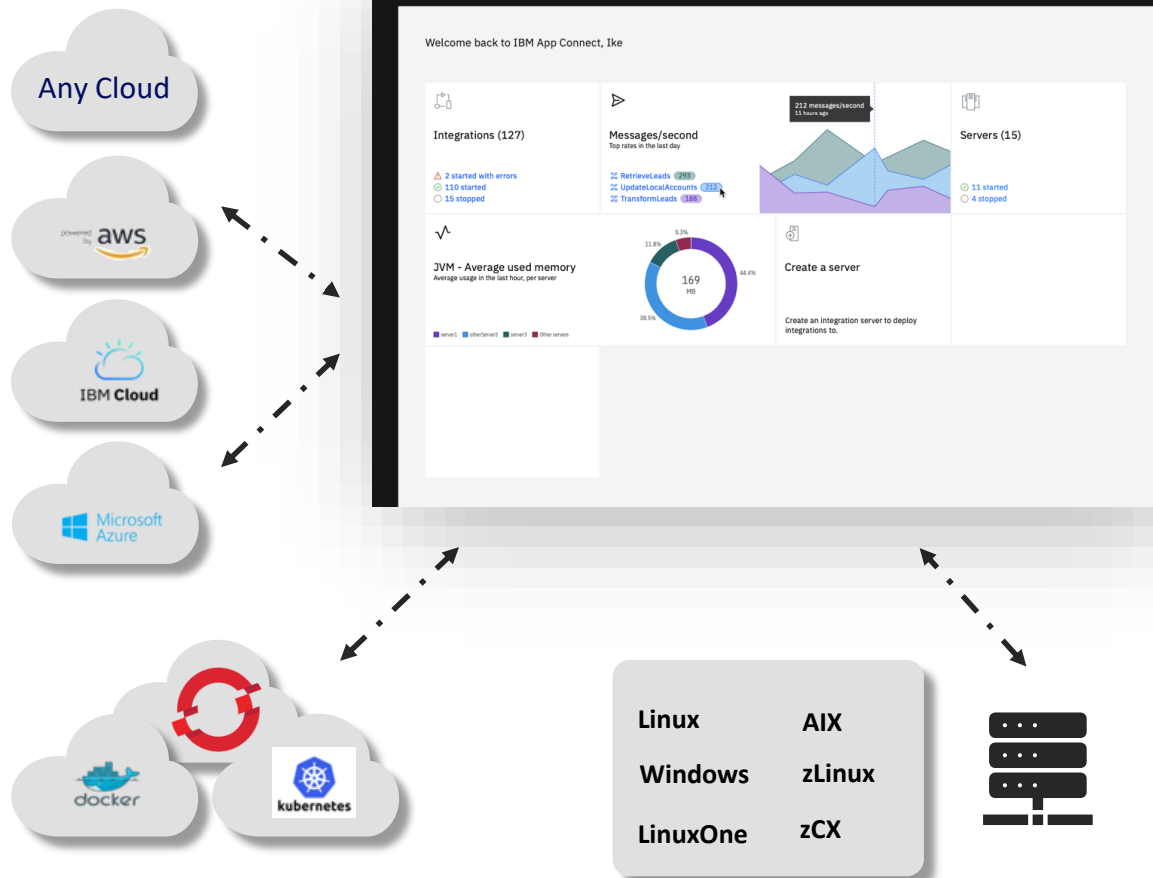
View and manage integrations across any hybrid cloud deployment

Manage on-premise, cloud, hybrid cloud or multi-cloud

Single unified dashboard to monitor, manage and control cross all deployment targets

Manage all types of integrations and assets

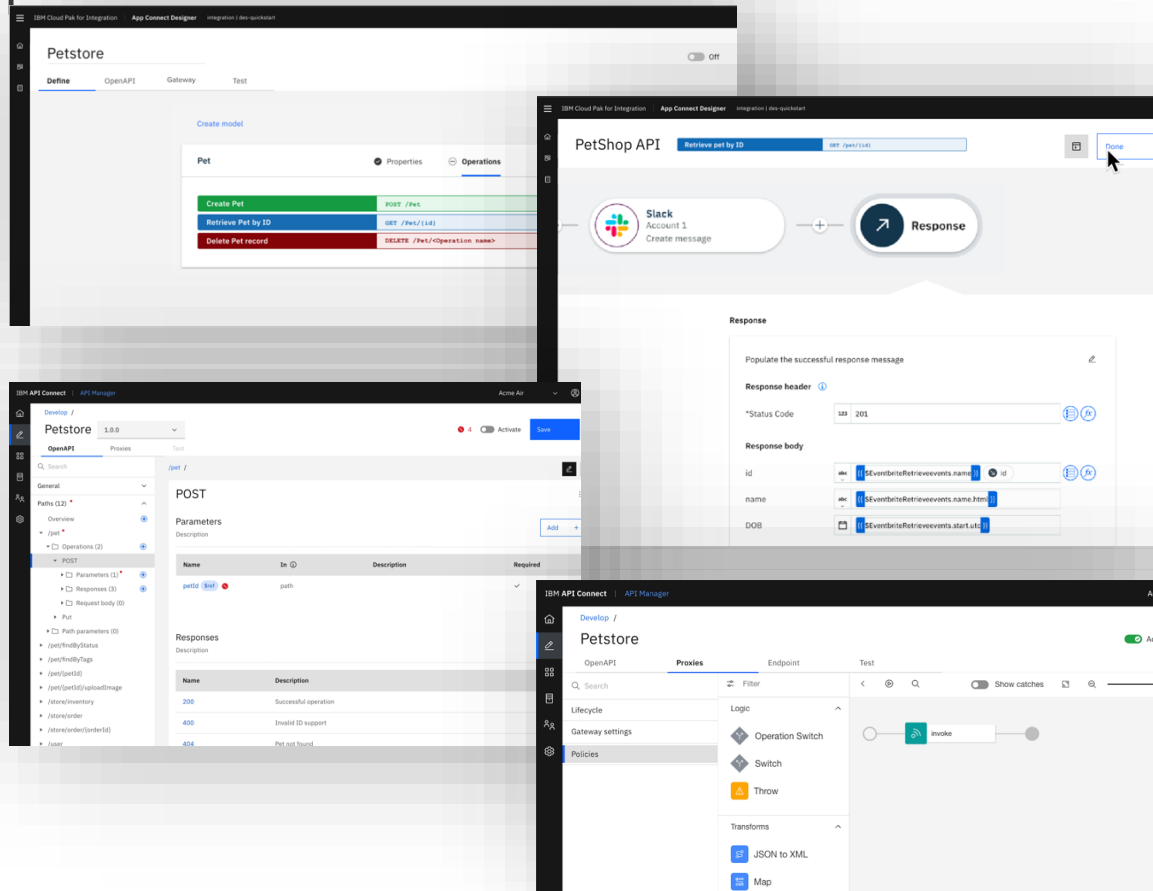
Single control plane to deploy, manage, monitor, logs, alerts, health check, status, etc.



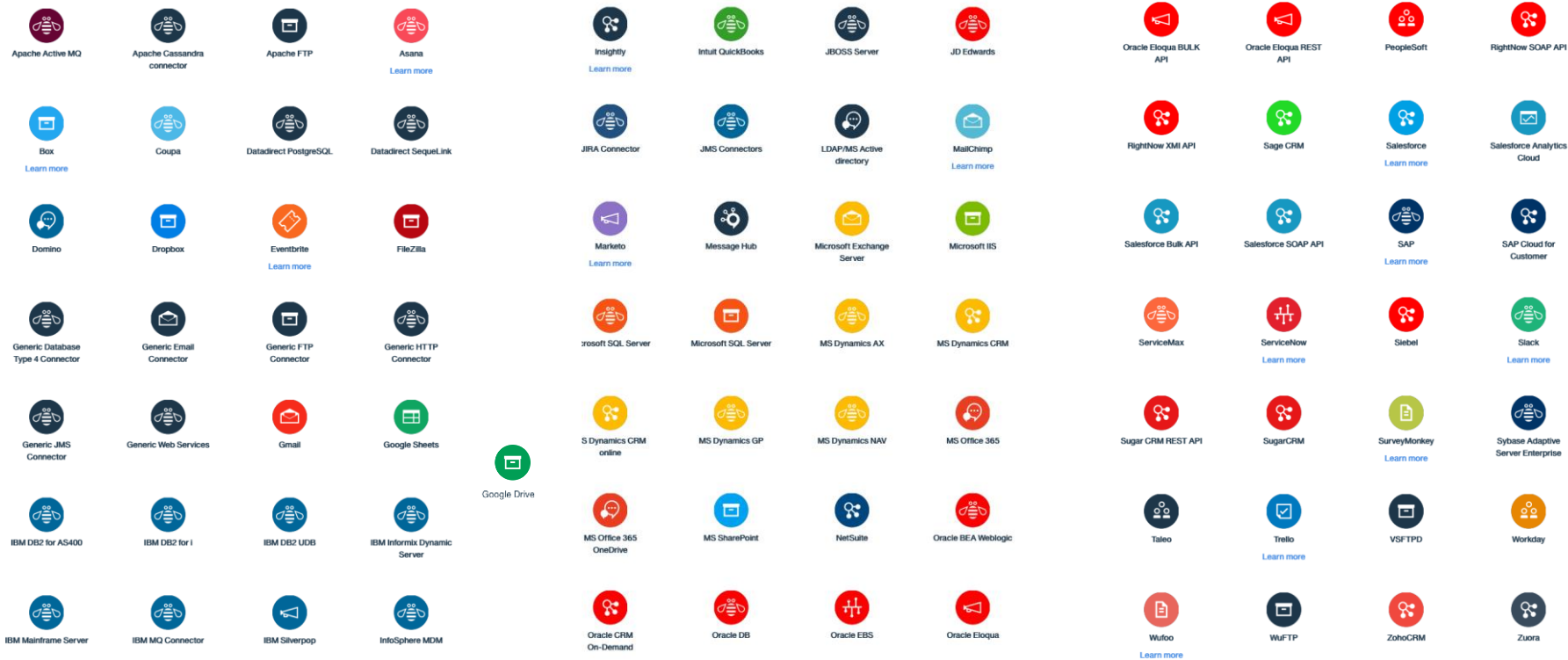
Simplified API led Integration

Create your integration services and then seamlessly secure and manage them

- **Single unified experience** that allows users to define OpenAPI, models, API flows and Gateway policies
- **Build, test, debug, repeat** each step of your API creation including integration flow components and gateway policies
- **Create and deploy one single API artifact** that can be managed through your pipeline stages



IBM App Connect - Connectors



ACE additional entitlements

For every VPC of ACE purchased, get 500K iPaaS flows per month to connect SaaS systems to your systems. Up to a maximum of 10M flow runs per month for free.

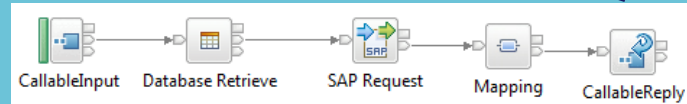
IBM Cloud Integration | 2020 | © IBM

<https://www.ibm.com/cloud/app-connect>

Callable Flows

Callable Flow

- CallableInput
- CallableReply
- CallableFlowInvoke
- CallableFlowAsyncInvoke
- CallableFlowAsyncResponse

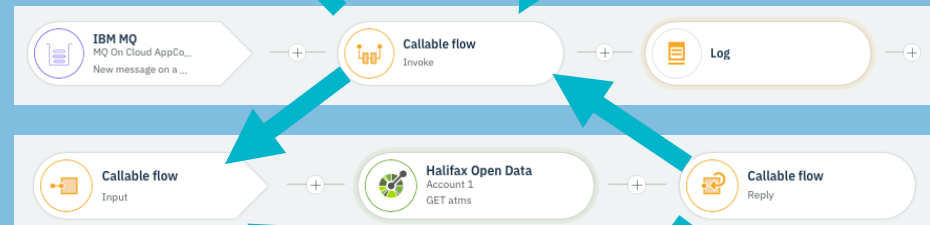


- SaaS Connectors Can be used to call and be called by App Connect Toolkit flows.
- This gives easy Cloud to Cloud and Cloud to On-Prem integration
- IIB and ACE can invoke each other.
- Secured via provided “switch server”

Toolkit



Designer

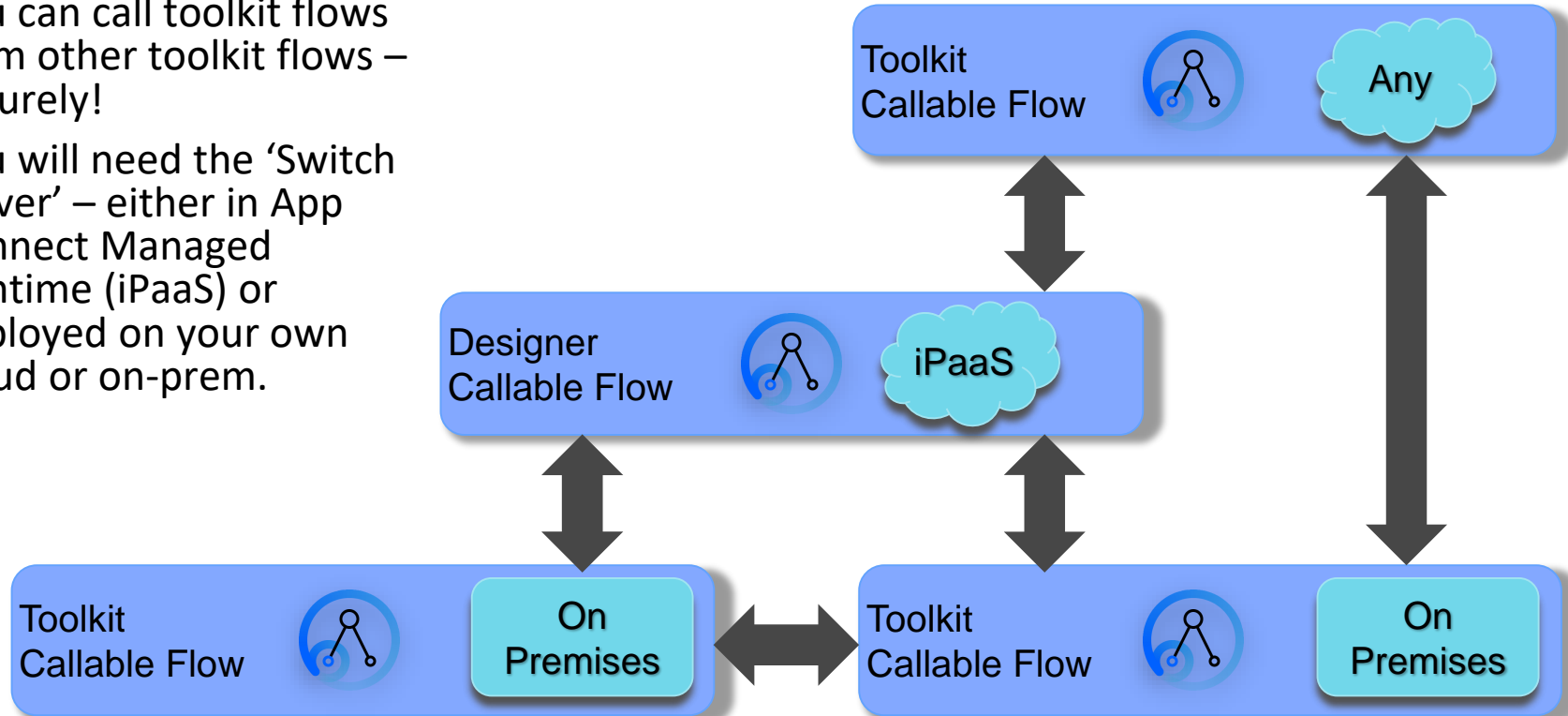


Toolkit



Callable flows are flexible across multiple-clouds

- You can call toolkit flows from other toolkit flows – securely!
- You will need the ‘Switch server’ – either in App Connect Managed Runtime (iPaaS) or deployed on your own cloud or on-prem.



Manufacturing Pack

- New Open Platform Communications Unified Architecture (OPC UA) nodes that include write capabilities
- Capability to access historical data from OPC UA servers
- Shop floor reference data management user interface
- High availability function that can tolerate failures, such as:
 - Device failures
 - Dropped connections
 - OPC UA server failures
- Traceability and monitoring capabilities to assist manufacturing companies to audit the current state of their system



Healthcare Pack

- Message model libraries for HL7v2.7, HL7v2.6, HL7v2.5.1 and FHIRv4.0.1
- Ready-to-use connectivity and patterns based on HL7 v2.x
- Capabilities to quickly generate, validate and transform FHIR resources
- Enhanced integration patterns to simplify the creation and mapping of custom HL7 models
- Resources to help speed the building of integrations that conform to profiles for IHE, PIX, PDQ, XDS
- Connectivity and integration patterns that support PACS via DICOM
- Analyze and filter clinical documents including Clinical Document Architecture (CDA) and Continuity of Care Documents (CCD)



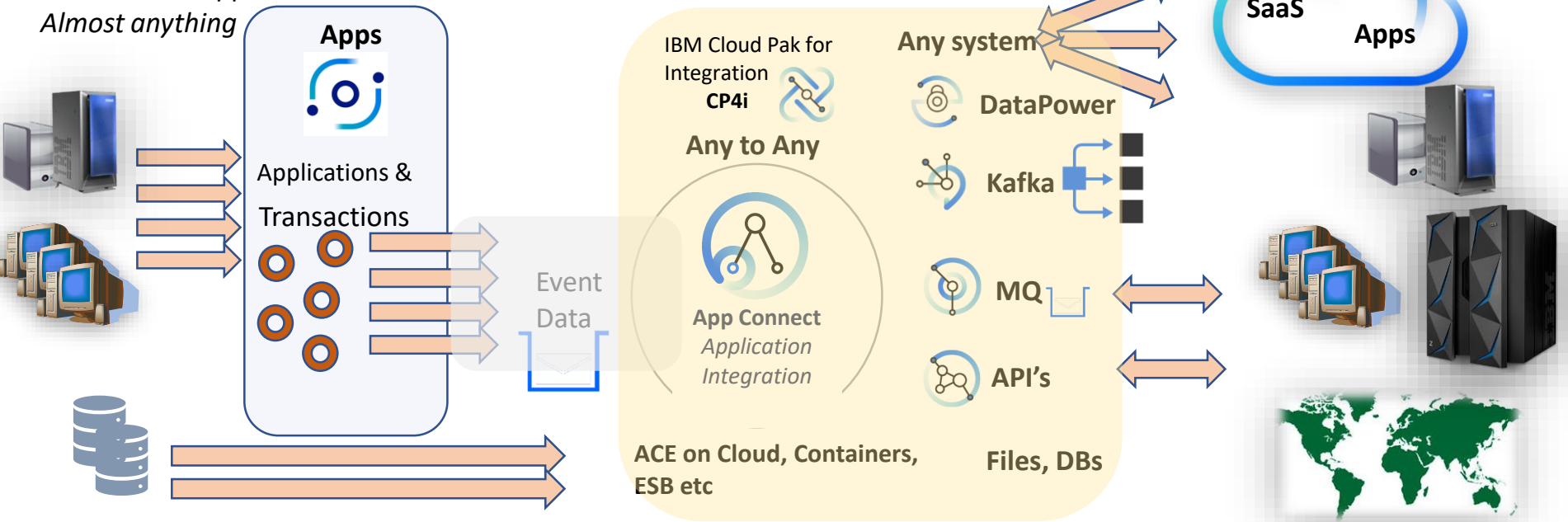
App Connect Enterprise Event Scenario



What are Events, business events and tech events

- A call to a help desk
- A sale is made
- A Stock item changed
- A pin number is changed
- A delivery is made
- An inquiry is made on a product
- A customer's address is changed
- An ATM event happens
- Almost anything

Events emitted from source applications.
IBM App Connect receives the event data, formats it to a destination format and protocol used by a target system.
The target can be any destination, in containers, Outside of containers, Clouds, Systems, Applications
Databases, Files, Analytics, Audit logs etc.
Request/Reply, Fire Forget all patterns supported
Security, Scale, Reliability, Agility, Transactions



IBM App Connect

Connect. Create. Change.

Top industry-specific customer use cases implemented using IBM technology

IBM App Connect supports today's integration platforms while paving the way for innovation.



Banking and Finance

- Accelerating PSD2 initiatives
- Integrate core banking apps to process financial transactions and payment
- Creating new digital channels and experiences for customers
- Risk Management Analysis and Fraud detection services
- Streamline segmentation process and value added services



Manufacturing

- Automate business processes at factory, plant or shops
- Optimize asset and device support and maintenance
- Connect and synchronize any system, device or cloud
- Create single unified views across industrial workplaces



Government

- Creating payment processing solutions
- Reduce paper documentation and provide real time insights for accounting and taxation
- Unified views for police id checks, pension funds, etc.
- Create businesses processes like Housing management and Traffic management platforms



Power, Transport & Utilities

- IoT and Device integration
- Creating new digital channels and processes
- Reduce paperwork and optimize business processes
- AI-powered chatbots to improve customer support and services
- Creating partnering network by integrating providers, operators, metering services, etc.
- AI, Analytics and Weather data

IBM App Connect

Connect. Create. Change.

Top industry-specific customer use cases implemented using IBM technology

IBM App Connect supports today's integration platforms while paving the way for innovation.



Healthcare

- Creating single integrated view of patient health records
- Creating segmentation and targeted services
- Digitise, automate and optimize clinical processes
- Predictive supply chain management
- AI and analytics infused business processes



Retail & Supply Chain

- Creating 360 customer views
- Enabling market segmentation to come up with targeted offers
- Developing newer digital channels
- Improve logistic and supply chain management
- Automate and optimize business processes like Order to Cash, Loyalty programs, etc.



Insurance

- Creating single payment processing platform solutions
- Real time insights for accounting and taxation
- Unified views for police id checks, pension funds
- Supporting key projects like Housing management and Traffic management platforms



Telecom & IT services

- Creating new content and media based services and experiences
- Creating online services that integrate social media, messaging, searching and shopping
- Optimize business processes like analytics, billing, accounting and coupons
- Value-added services like geo-based, quick payments, etc.

- What's Next



Reimagined toolkit
Improved modernised look & feel



Simplify & enhance development experience



Simplified & enhanced web user interface



Enhanced capabilities

- DTE Assets

- <http://ibm.biz/eXpACE-WhatsNewOnDTE2>

- Recent updates

- 11.0.0.7: <https://developer.ibm.com/integration/blog/2019/12/17/explore-the-new-features-in-app-connect-enterprise-version-11-0-0-7/>
 - 11.0.0.8: <https://developer.ibm.com/integration/blog/2020/04/30/explore-the-new-features-in-app-connect-enterprise-version-11-0-0-8/>
 - 11.0.0.9: <https://developer.ibm.com/integration/blog/2020/06/20/explore-the-new-features-in-app-connect-enterprise-version-11-0-0-9/>
 - 11.0.0.10: <https://community.ibm.com/community/user/imwuc/blogs/ben-thompson1/2020/08/26/exploreace11fixpack10>
- IBM's nominate customers for the App Connect Early eXperience program
 - <https://ibm.biz/AppConneXpNominations>
 - Get details on what's coming
 - Help shape futures and directions