Best Practices for Building Cloud-native Apps with BusinessWorks

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Success is not just about innovating, but the *speed* of that innovation ...
Businesses Are Moving To The Cloud For

**Flexibility**
The ability to seize an opportunity, depends on how flexible your technology options are.

**Adaptability**
Address today’s requirements and have the adaptability to the increasing requirements of tomorrow.

**Scalability**
Enables growth and provides the flexibility to accommodate dynamic demand.
To Fully Benefit from Cloud You Need Cloud-Native Applications

Cloud-native is about how applications are created and deployed, not where

It is about the ability to offer:

• On-demand
• Nearly limitless computing power
• Along with modern data and application services for developers
Organizations require a platform for building and operating cloud-native applications

- **DevOps**
- **Continuous Delivery**
- **Microservices**
- **Containers**
A DevOps culture changes how teams are organized

• Small independent teams

• Own the “product”

• Need new tools to support this new model

Address Microservice

Credit Check Microservice

Fulfilment Microservice

Biz  Dev  Ops

Biz  Dev  Ops

Biz  Dev  Ops
Leveraging Cloud-Native Requires Evolving Your Integration
I. You need native integration with your CI/CD pipeline

- Automated testing framework
- Support for tools like Maven, Jenkins, Gradle, etc.
II. Your integration strategy must be API-led

Contract First

Full Lifecycle API Platform
You need to consider the full API lifecycle

Create APIs

Technical Orientation
- Create an API from any data
- Compose API integration flows
- Support for REST or SOAP
- Choose on-prem, cloud, or hybrid

Productize APIs

Business Orientation
- Transform APIs into products
- Manage developers and partners
- Manage publishing and versioning
- Use your own branding
- Choose from several SLAs and service plans

Distribute APIs

Operations
- Rely on access control/security
- Route / Transform / Throttle
- Depend on SLA enforcement
- Monitor and improve with operational analytics

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### III. Containerized deployments, the new norm

What hosting platform will you use for your cloud-native applications?

<table>
<thead>
<tr>
<th>Cloud Service Provider Platforms</th>
<th>Self-Managed Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Amazon Web Services" /></td>
<td><img src="image" alt="Kubernetes" /></td>
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<td><img src="image" alt="Microsoft Azure" /></td>
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<td><img src="image" alt="IBM Bluemix" /></td>
<td><img src="image" alt="Pivotal Cloud Foundry" /></td>
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Adopt a multi-cloud approach to avoid vendor lock in

Build once, deploy anywhere

- Simplified deployments
- Unbounded horizontal scalability
- Higher resource utilization
- Dynamic reporting, application state adjustments
IV. Microservices requires more than just containers

- Microservices specific tooling:
  - Configuration management
  - Service registry & discovery
  - Circuit breakers

- Native tools on PaaS including monitoring, logging, and management

- Tools that allow customizations; optimized for memory footprint
V. Microservices require Event Driven IT

*Capitalizing on insights and context requires a shift in priority from data at rest to data in flight*

Applications needs to be designed:

- To respond to the occurrence of events, not simply responding to requests
- To have no direct dependency between sources and subscribers

This design approach is particularly well suitable for a microservices (web-scale) application design.

“By 2020, for the majority of global enterprise CIOs, achieving broad competence in event-driven IT will be a top-three priority.”

CTO Alert: Master Event-Driven IT to Master Digital Business
August 2016 ID: G00308964
Yefim V. Natis, W. Roy Schulte, Paul Vincent, Massimo Pezzini
VI. Portability & flexibility to meet your requirements

Write your cloud-native applications once, reuse anywhere and manage your APIs

On-premises enterprise integration
Traditional ESB style deployments for core integration requirements and centrally managed

Private cloud, PaaS & containers
Simplify the building and choreographing of microservices, for the deployment within the container or PaaS of your choice

Integration Platform as a Service (iPaaS)
Cloud-centric integration, with simplified user experience supporting a wider use base

Publish
API Management

Portability Without Migration

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TIBCO BusinessWorks™ Container Edition, interconnecting microservices

Build microservices with fastest time to results

Visually integrate APIs

Leverage PaaS or CaaS of your choice
BusinessWorks™ Container Edition Use Cases

Integration Apps & Services
Build consumable Web APIs out of backend web services like SOAP, SAP, Oracle, IBM MQ, etc.

Functional Microservices
Build focused business functionality-oriented apps without getting into code complexity

API Choreography
Visually choreograph APIs leveraging the drag-drop designer + data mapper + orchestration capabilities
Recap of the BusinessWorks Container Edition Journey

2015
- Customers looking at Cloud Foundry as PaaS & Private Cloud Platform
- Initiate collaboration between TIBCO & Pivotal Engineering

1H 2016
- Member of the Cloud Foundry Foundation
- Partnered with Pivotal
- Represented the CF Foundation at OpenStack Austin Summit
- Provided support for Docker® & Kubernetes on Google Cloud Platform™

Q3 2016
- Integration + microservices framework tooling (circuit breakers, svc discovery/registry) for a seamless developer experience
- Part of the Pivotal® Network/Marketplace
- Participation in the inaugural Docker Store at DockerCon (Seattle) 2016

Q4 16 + Q1 17
- Ran the Cloud Foundry Days for Asia
  - Sydney: Oct 18
  - Melbourne: Oct 20
  - Singapore: Nov 15
  - Hong Kong: Nov 17
- Certification & Support for AWS™ Elastic Container Service (ECS) and Microsoft Azure® Container Service (ACS)
- Support for Red Hat® OpenShift

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And now launching BWCE on AWS Marketplace
BusinessWorks Container Edition on AWS Marketplace

**First of its kind**
First to launch such offering. No Integration vendor has a similar offering.

**Truly Elastic Pricing**
Consumption based containers per hour pricing model. Software charges incurred hourly and billed monthly

**Cloud Formation Templates**
Cloud Formation templates to set up ECS cluster, customize BWCE Docker image, downloading installers from S3 etc.

**AWS Ecosystem**
Seamlessly works with AWS Services like ECS, ECR, CloudWatch, Load Balancer etc.

Available in 11 AWS Regions globally | Pay as you go, AFTER usage
What’s inside the offering?

TIBCO BusinessWorks™ Container Edition and Plug-ins for AWS Marketplace

• Delivery Method – AMI
  • CentOS 7, Docker CE 17.x
  • BWCE & Plug-ins Runtime zip
  • Scripts to build and extend Docker image
  • Business Studio and Plug-ins installers

• Deployment Options
  1. Single AMI Launch
  2. Cloud Formation template to set up ECS Cluster
  3. Cloud Formation template to extend BWCE Docker image

Support can be purchased separately
CloudFormation – ECS Cluster

- VPC, public & private subnets across 2 AZs, Internet Gateway, NAT Gateway
- Highly available ECS cluster in an auto-scaling group
- Create & push BWCE base Docker image in ECR
- Option to set up S3 bucket for uploading resources to customize base image.

**Summary:** We will do all the work to set up the AWS ECS cluster
CloudFormation – Extend BWCE Image

- Copy add-on resources like JARs, custom plug-ins, certs etc.
- Include user BW Plug-ins specified by user
- Build & push customized Docker image to ECR
- Option to push Business Studio and Plug-ins installers in S3 bucket.

Summary: Apps built are easily customizable and extensible
Single AMI Launch

- Launch EC2 instances from the Marketplace AMI through EC2 console
- Set up your own PaaS – Swarm, Kubernetes
- Update Docker CE version or install Docker EE

**Summary:** Can choose to use it in an existing (AWS) pvt cloud env
Demo
What’s Next for TIBCO BusinessWorks Container Edition?

Marketplace Consumption
Via the Azure® and GCP Marketplaces to provide a dynamic and flexible licensing option for TIBCO BusinessWorks Container Edition

Certifications & Partnerships
Expand ecosystem of TIBCO BusinessWorks Container Edition with vendors/platforms; e.g., Red Hat, IBM, Docker & others

DevOps Tooling
Distributed Tracing, Unit-testing Capabilities e.g. improved assertions, mocking support, CI/CD Integration etc.

Functional Improvements
Monitoring/Management - Download/Upload logback file, View Historical Process/Activity stats etc.
Palettes - File palette for CF, TCP

Google Cloud Platform
Microsoft Azure
Resources to check-out

- Trial: [https://tibco.com/bwce](https://tibco.com/bwce)
- Docker Image and Build-Pack scripts:
  - [https://github.com/TIBCOSoftware/bwce-buildpack](https://github.com/TIBCOSoftware/bwce-buildpack)
  - [https://github.com/TIBCOSoftware/bwce-docker](https://github.com/TIBCOSoftware/bwce-docker)
- AWS Marketplace
- Pivotal Network
  - [https://network.pivotal.io/products/tibco-businessworks](https://network.pivotal.io/products/tibco-businessworks)
- Solution Showcase - demo-booth for detailed deep-dive
- T-Mobile story on Migration:
  - Best Practices in Migrating from BusinessWorks 5 to a BusinessWorks 6 Hybrid Integration Platform
  - Sapphire D (same room) – 4.15-5 pm