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1.0	See GeodIS	Initial Version
1.1	See GeodIS	<ul style="list-style-type: none"> - Migration EMS instances for SHIFT on UAT - ITS-CHG0213755 and ITS-CHG0214416
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1. INTRODUCTION

The purpose of the Architecture Specification is to provide the description of the GIS EAI Platform, to identify the software and hardware components, and to describe their implementation for the different environments.

The aim of the GIS EAI Platform and AWS EMS platform are to provide an IT system that will allow the deployment and the execution of TIBCO Integration applications.

The scope of use of this platform is for all Sanofi IS Units.

1.1. Related Documents

Doc ID	Title
IS_1497771	Architecture Specifications - Tibco EAI Platform BW6
IS_1498236	Architecture Specifications - Integration Log Analytics
IS_1616933	Qualification Report – SCALe

1.2. Glossary

Term or Acronym	Definition
SHIFT Glossary Terms & Acronyms	Centralized Repository for Project Terms & Acronyms
EAI	Enterprise Integration Application
JDK	Java Development Toolkit
EMS	Enterprise Message Service
JMS	Java Message Service
EAR	Enterprise Application aRchive
AWS	Amazon Web Services

2. SOFTWARE ARCHITECTURE

2.1. TIBCO Related Components

2.1.1. TIBCO Business Works Runtime

TIBCO BusinessWorks runtime is a docker image with installed and configured TIBCO BusinessWorks Container Edition and TIBCO plugins (see list of plugins below).

Using this image, the TIBCO BWCE environment can start the previously developed TIBCO

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BusinessWorks Container Edition component.

TIBCO runtime build process is based on the TIBCO instructions located below:

<https://docs.tibco.com/pub/bwce/2.4.5/doc/html/GUID-91EA80AA-08EF-4CB3-A6A7-E8551A441AC1.html> and changes made to this process were consulted with Tibco

During the build process, TIBCO BWCE runtime, libraries and plugins are downloaded from Sanofi's Nexus.

Each of those components are aligned with BWD (Business Works Developer) environment, i.e. TIBCO components built on one version of BWD and will run on corresponding versions of Tibco runtime.

Detailed information about those plugins/libraries can be obtained in the below table and relevant link::

<https://gitlab-its.sanofi.com/docker/itsregistry/blob/master/sanofi-images/sanofi-bwd/VERSIONS.md>

TIBCO

BWD	BW	EMS	AWS SQS/SNS	AWS S3	BigData	Files	Kafka	Large XML	Maven Plugin	MDM	SalesForce	SAP	SFTP
BWD 1.01	6.5.0 HF004	8.4.1	6.3.0	6.2.0	6.5.0		6.1.1	6.1.1	2.1.0		6.5.0	8.2.2	6.1.1
BWD 1.02	6.5.0 HF004	8.4.1	6.4.0	6.3.0	6.5.0		6.1.1	6.1.2	2.1.1		6.5.2	8.2.2	6.1.1
BWD 1.3.0	6.5.1	8.4.1 HF006	6.4.0	6.3.0	6.5.0		6.1.1 HF001	6.1.2	2.1.1		6.5.2	8.2.2 HF001	6.1.2
BWD 1.4.0	6.5.1	8.4.1 HF006	6.4.0	6.3.0	6.5.0		6.1.1 HF001	6.1.2	2.1.1		6.5.2	8.2.2 HF001	6.1.2
BWD 1.5.0	6.5.1 HF001	8.4.1 HF006	6.4.0	6.3.1	6.5.0		6.1.1 HF001	6.1.2	2.2.0		6.6.0	8.2.2 HF001	6.1.3
BWD 1.5.1	6.5.1 HF001	8.4.1 HF006	6.4.0	6.3.1	6.5.0		6.1.1 HF001	6.1.2	2.2.0		6.6.0	8.2.2 HF001	6.1.3
BWD 1.6.0	6.5.1 HF001	8.4.1 HF006	6.4.0	6.3.1	6.5.0		6.1.1 HF001	6.1.2	2.2.0		6.6.0	8.2.2 HF001	6.1.3
BWD 1.7.0	6.5.1 HF002	8.4.1 HF006	6.4.0	6.3.1	6.5.0		6.1.1 HF001	6.1.3	2.3.0		6.6.0 HF002	8.2.2 HF001	6.1.3
BWD 1.8.0	6.5.1 HF002	8.4.1 HF006	6.4.0	6.3.1	6.5.0		6.1.1 HF001	6.1.3	2.3.0		6.6.0 HF002	8.2.2 HF001	6.1.3 HF001
BWD 1.8.1	6.5.1 HF002	8.4.1 HF006	6.4.0	6.3.1	6.5.0		6.1.1 HF001	6.1.3	2.3.0		6.6.0 HF002	8.2.2 HF001	6.1.3 HF001
BWD 1.9.0	6.5.1 HF002	8.4.1 HF006	6.4.0	6.3.1	6.5.0		6.2.0	6.1.3	2.3.0		6.6.0 HF002	8.2.2 HF001	6.1.3 HF001

2.1.2. TIBCO EMS

Tibco Enterprise Message Service (EMS) is the TIBCO implementation of the Java Message Service (JMS) API defined by the Java platform. This message-oriented middleware allows different clients to exchange messages in a synchronous or asynchronous way.

2.1.3. Monitoring components

ElasticSearch Beats and MetircBeats are used as monitoring components that gather logs and metrics and forward them to ElasticSearch. ElasticSearch is a centralized data store which provides search and analytics engine capabilities. Beats and MetricBeats components are deployed as containers on the OpenShift cluster.

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Components version:

- **Filebeat** : 7.3.0
- **Metricbeat** : 7.3.0

2.2. Platform components

As Part of the TIBCO EAI Shared platform there are few common components (see list below) that are used by business components.

2.2.1. Functional components

Component	Role
Core Router	Route messages to interfaces

2.2.2. Operational components

Component	Role
File Beat	Collects data from files
Metric beat	Collects metrics

2.3. Integration Log Analytics

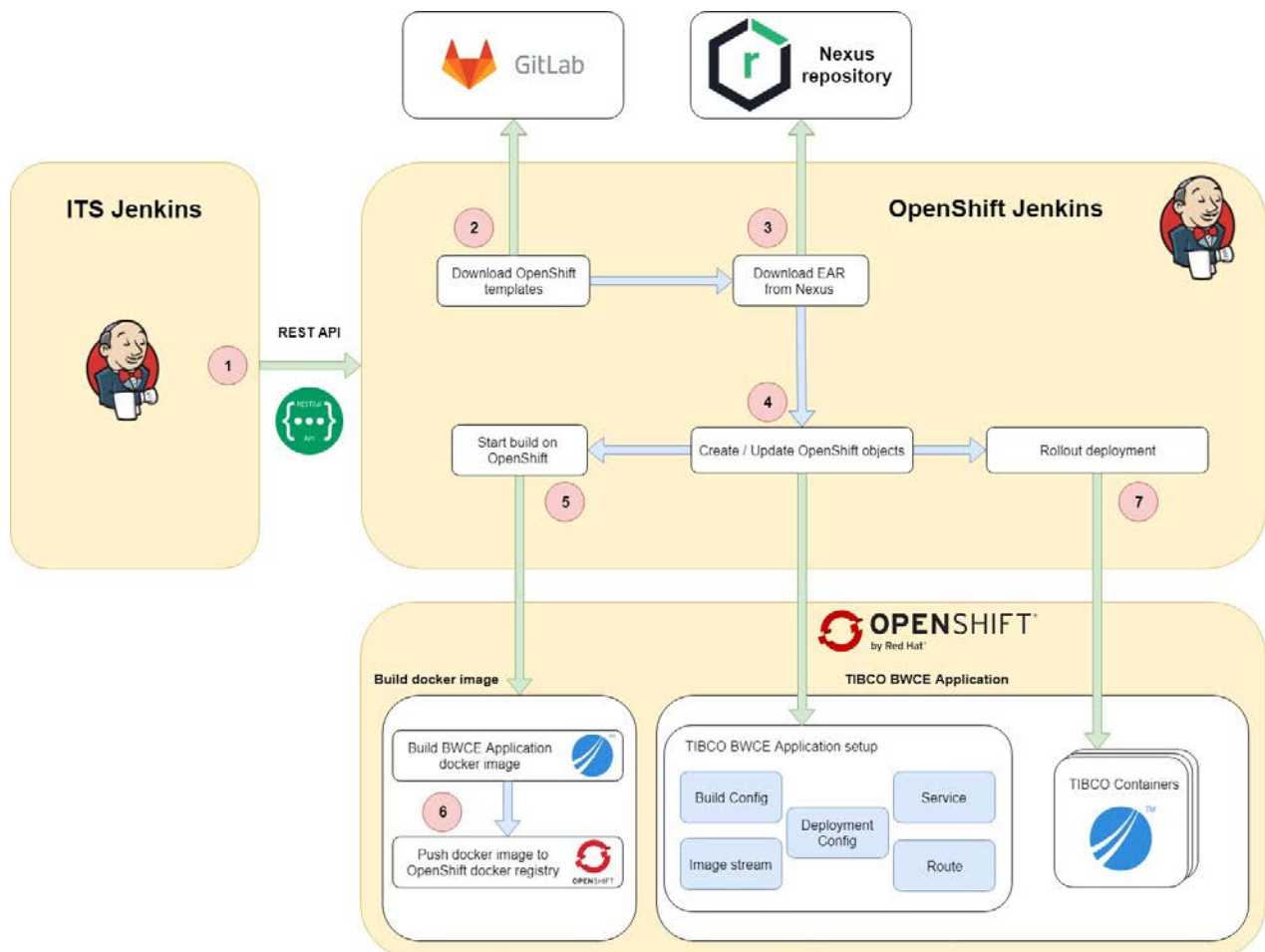
Tibco EAI Shared Platform uses Integration Log Analytics Platform. See document IS_1498236, - "AS - Architecture Specifications - Integration Log Analytics".

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3. LOGICAL ARCHITECTURE

3.1. Tibco Ci/Cd Architecture with open shift

The schema below details different server types used by the Tibco Open Shift Platform.

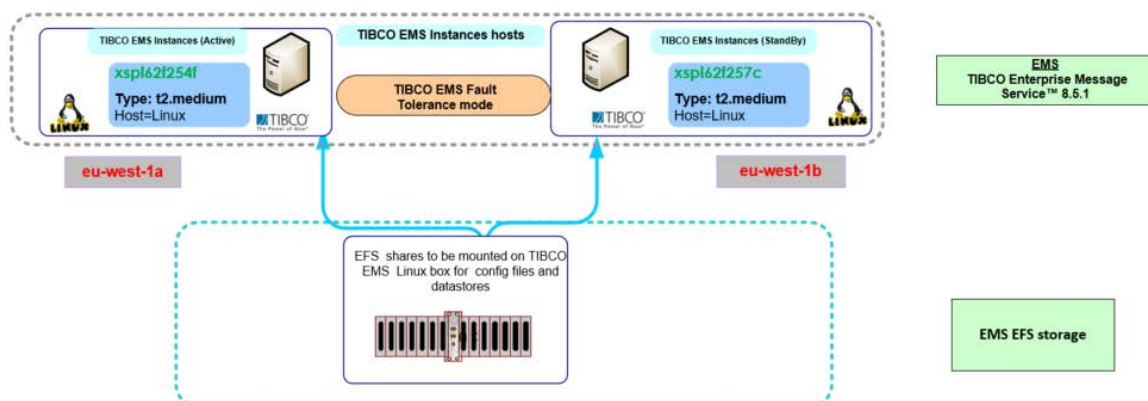


1. OpenShift deployment pipeline is started based on REST API request received from ITS Jenkins.
2. OpenShift templates files are downloaded from GitLab repository which are then used to setup all necessary object on OpenShift platform to run TIBCO application containers
3. Download from TIBCO application build archive (EAR) is done which is created on Jenkins ITS and stored in Nexus (artifactory repository)

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4. Based on templates downloaded from git repository (point #) Jenkins pipeline will create / update all necessary OpenShift objects :
 - a. Build config – with previously downloaded EAR file build docker image
 - b. Image stream - named place in OpenShift docker registry where docker container will be stored
 - c. Deployment Config – object which define containers configuration like:
 - i. CPU and Memory settings
 - ii. Number of pods to be rollout
 - iii. Storages setup
 - iv. Deployment strategy option
 - v. Port configuration
 - vi. Triggers which are executing deployment rollout
 - d. Services and routes to expose TIBCO application services as well for other applications on OpenShift as outside platform.
5. After all objects are successfully created / updated on OpenShift platform the build docker container is executed based on “Build Config” setup.
6. The successfully created docker image is stored in OpenShift docker registry in a dedicated space defined by “Image stream”.
7. The final step is to rollout the deployment based on “Deployment Configuration” setup.
8. As a result of deployment pipeline execution, instantiate requested in deployment configuration number of containers which host TIBCO BWCE applications.

3.2. Tibco EMS on AWS production



- The Tibco EMS platform consists of:
 - 2 nodes with Fault Tolerance mode located in 2 different zones
 - EFS share configured in 3 zones

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4. NGDC EMEA TECHNICAL ARCHITECTURE

4.1. Platform Infrastructure

WorkerTBCO BusinessWorks components are running on OpenShift Scale platform as containers, only the BUS (TIBCO EMS) server is running on Virtual Server as Tibco 6.4 Architecture.

4.1.1. Production

CPU () and Memory (*) : Recommended values (but can be increased if needed)*

Component	Room	Type	CPU (*) Memory (*)	Information	Roles
xspl62f254f	eu-west-1a	Server	t2.medium	Red Hat Enterprise Linux Server release 7.9	Messaging Server
xspl62f257c	eu-west-1b	Server	t2.medium	Red Hat Enterprise Linux Server release 7.9	Messaging Server

4.1.2. Validation

CPU () and Memory (*) : Recommended values (but can be increased if needed)*

Component	Room	Type	CPU (*) Memory (*)	Information	Roles
xsnl62f287p	eu-west-1a	Server	t2.medium	Red Hat Enterprise Linux Server release 7.9	Messaging Server
xsnl62f288w	eu-west-1b	Server	t2.medium	Red Hat Enterprise Linux Server release 7.9	Messaging Server

4.2. Server software components

4.2.1. Production

Server	Component	Version
xspl62f254f	Enterprise Message Service	8.5.1
xspl62f257c	Enterprise Message Service	8.5.1

4.2.2. Validation

Server	Component	Version
xsnl62f287p	Enterprise Message Service	8.5.1
xsnl62f288w	Enterprise Message Service	8.5.1

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4.3. Server processes

4.3.1. Production

Server	Processes / Services	Owner
xspl62f254f	tibemsd_9334	Tibems85
xspl62f257c	tibemsd_9334	Tibems85

4.3.2. Validation

Server	Processes / Services	Owner
xsnl62f287p	tibemsd_8334	tibems85
xsnl62f288w	tibemsd_8334	tibems85
xsnl62f288w	tibemsd_8338	tibems85
xsnl62f287p	tibemsd_8338	tibems85
xsnl62f288w	tibemsd_8335	tibems85
xsnl62f287p	tibemsd_8335	tibems85

4.4. EMS Servers

4.4.1. Production

Hostname	Name	Version	Port	Mem	FT Url
xspl62f254f	GBOP-EMS-SERVER	8.5.1	9334	2GB	tcp://emsgbop1.pharma.aventis.com:9334
xspl62f257c	GBOP-EMS-SERVER	8.5.1	9334	2GB	tcp://emsgbop2.pharma.aventis.com:9334

4.4.2. Validation

Hostname	Name	Version	Port	Mem	FT Url
xsnl62f288w	GBOU-EMS-SERVER	8.5.1	8334	2GB	tcp://emsgbou2.pharma.aventis.com:8334
xsnl62f287p	GBOU-EMS-SERVER	8.5.1	8334	2GB	tcp://emsgbou1.pharma.aventis.com:8334
xsnl62f288w	GBOU4-EMS-SERVER	8.5.1	8338	2GB	tcp://emsgbot2.pharma.aventis.com:8338

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Hostname	Name	Version	Port	Mem	FT Url
xsnl62f287p	GBOU4-EMS-SERVER	8.5.1	8338	2GB	tcp://msgbot1.pharma.aventis.com:8338
xsnl62f288w	ISHIFTU-EMS-SERVER	8.5.1	8338	2GB	tcp://emsishiftu2.pharma.aventis.com:8335
xsnl62f287p	ISHIFTU-EMS-SERVER	8.5.1	8338	2GB	tcp://emsishiftu1.pharma.aventis.com:8335

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