## How to Activate Active Matrix Business Works 6 Managed Fault Tolerance

The following tutorial describes all required steps to configure Fault Tolerance of a Tibco ActiveMatrix BusinessWorks 6.4 environment running on Windows machine.

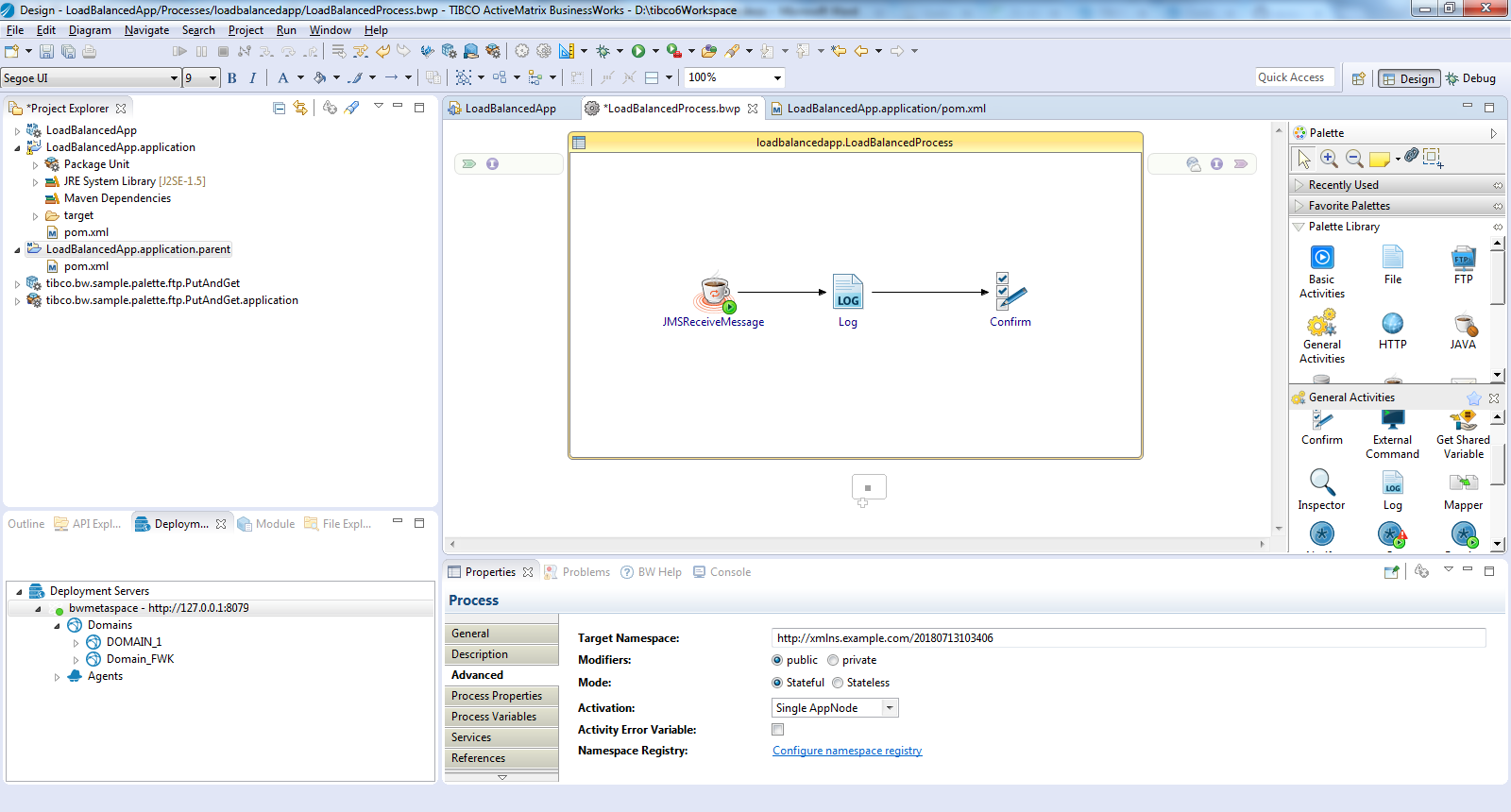
The managed fault tolerance requires:

* The engine persistence mode (bw.engine.persistenceMode) to be set to type group. The persistence mode of type group requires both database and group provider configurations. In the current tutorial, we use MySQL 5.7 as database and TIBCO EMS 8.4 as the group provider technology.
* A minimum of two AppNodes in an AppSpace.

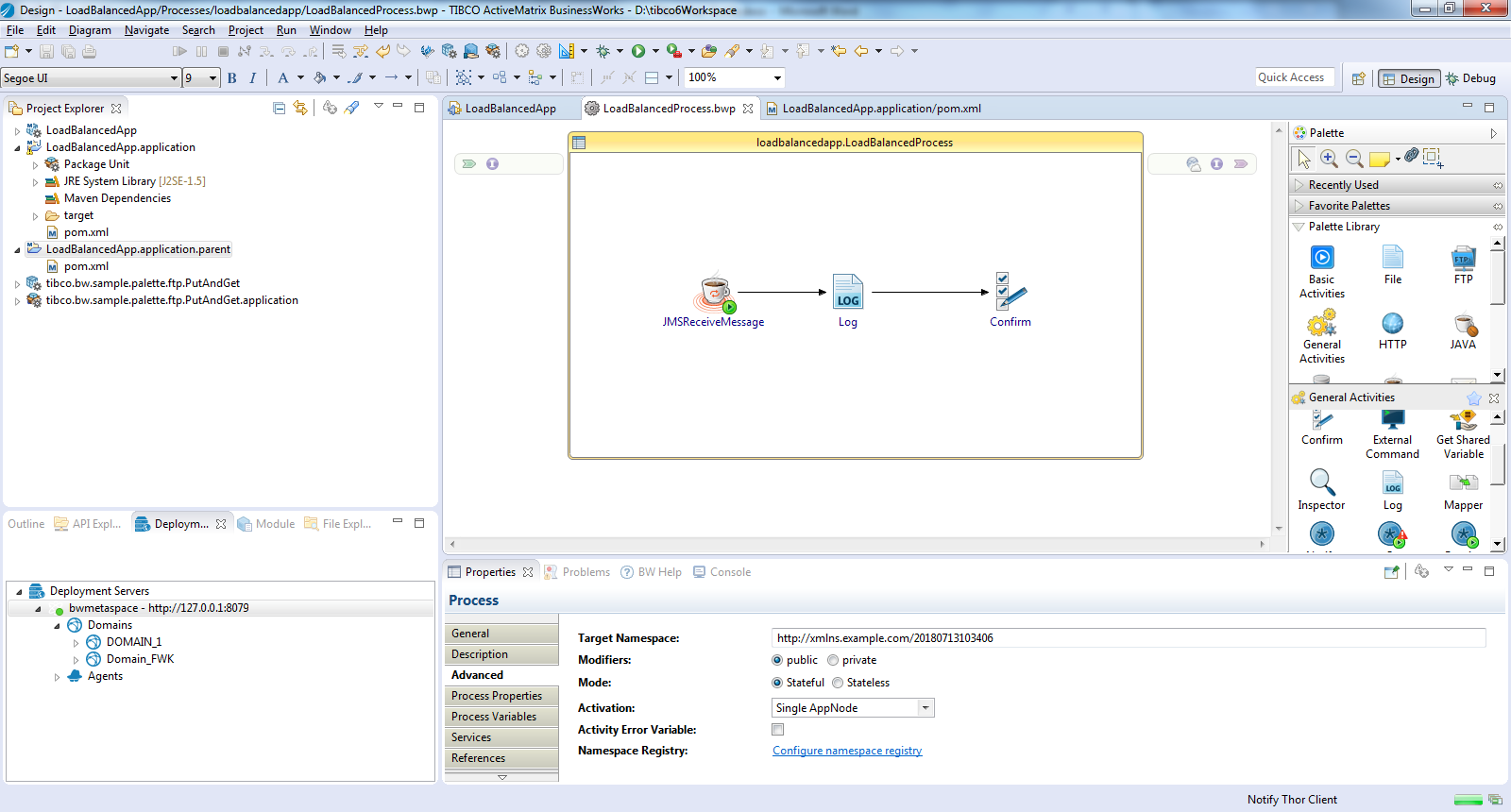
By default, when deploying an application on multiple nodes, instances of this application are all actives on each node. Our need is to configure the AppSpace in Active-Passive mode because we want only one instance to be active at a given time.

*Sample project*

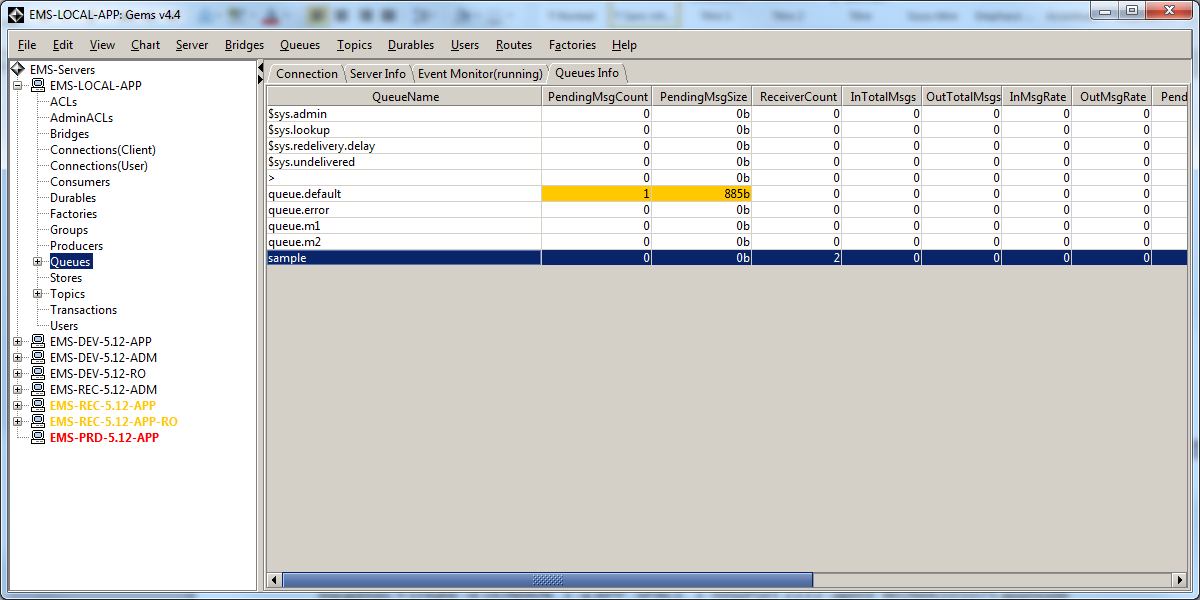
I have created a sample application containing a simple JMS receiver listening on queue named **“sample”** followed by a Logger Activity. The MaxSession is set to 1 for simplicity.



At Process Level, Application field is set to **“Single AppNode**” value



When deploying the application on an AppSpace containing two AppNodes, we can see that the application is Active on both nodes. In fact, two consumers are visible via Gems (or tibemsadmin) tools and both application instances consume messages on load balancing mode.



Our need is to configure the application in Active-Passive mode so only one instance will consume messages at a given time.

EMS Configuration

In the current tutorial, we use TIBCO EMS as the group provider technology.

We consider that a fresh EMS instance is running on default port 7222 and reachable with direct connection **tcp://localhost:7222**/

EMS user and password are both set to “**admin**” value for simplicity.

1. Create topic **“>**” on the EMS instance to enable Dynamic Topic creation.

**create topic >**

Without creation of this topic, you will find the following error in AppNode logs :

com.tibco.bw.frwk.engine.BWEngine - **TIBCO-BW-FRWK-500001**: BusinessWork Engine [Main] failed to deploy and start, TIBCO-BW-CORE-500010: Failed to initialize BW Engine due to exception [com.tibco.bx.core.faults.BxException]. com.tibco.bx.core.faults.BxException: BX-600026: Problem encountered during system initialization. com.tibco.pvm.system.util.exceptions.PmSystemException: PVM-SYS-100121: Error accessing GroupConnectionProvider. com.tibco.neo.gms2.GmsRuntimeException: com.tibco.tibems.qin.TibQinException: Connection to the server failed for member "f3f03901-317b-48bc-83d2-be351ff38243".. com.tibco.tibems.qin.TibQinException: Connection to the server failed for member "f3f03901-317b-48bc-83d2-be351ff38243".. javax.jms.InvalidDestinationException: Not allowed to create destination

Database Configuration

Tibco use relational database to persist and share information between app nodes. In the current tutorial, we use the MySQL relational database but the procedure is kindly the same for other relational database. We consider that MySQL is already installed on the machine and is listening on default port 3306

1. Create a MySQl schema called **tibco\_db** by running following commands in your SQL client:

SET GLOBAL storage\_engine = 'InnoDB';

CREATE DATABASE tibco\_db CHARACTER SET latin1 COLLATE latin1\_bin;

CREATE USER 'tibco\_user'@'localhost' IDENTIFIED BY 'password';

GRANT ALL PRIVILEGES ON tibco\_db.\* TO 'tibco\_user'@'localhost' IDENTIFIED BY 'password';

FLUSH PRIVILEGES;

QUIT;

Please notice that **latin1** charset is required to avoid facing the following MySQL issue:

*Specified key was too long; max key length is 3072 bytes*

1. Run mysql script available in %BW\_HOME%\config\dbscripts\engine\mysql\ folder to create database object needed by tibco:

%BW\_HOME%\config\dbscripts\engine\mysql\create.sql

%BW\_HOME%\config\dbscripts\engine\mysql\create-dcp.sql

%BW\_HOME%\config\dbscripts\engine\mysql\create-scp.sql

1. Start bwadmin console and activate enterprise mode:

# Start bwadmin console

%BW\_HOME%\bin\bwadmin.exe

#Enable enterprise mode

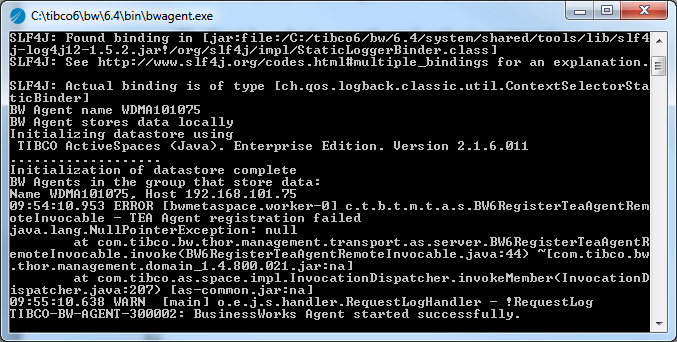
bwadmin[admin] > **mode enterprise**

bwadmin[admin] > **exit**

1. Start bwagent by running following command and wait that the agent is successfully started:

%BW\_HOME%**\bin\bwagent.exe**

Please notice that for this example, my machine name is **WDMA101075**



1. Create a Tibco Domain and an AppSpace with two AppNodes using bwadmin console

#Create a domain named DOMAIN\_1

bwadmin[admin] > **create domain DOMAIN\_1**

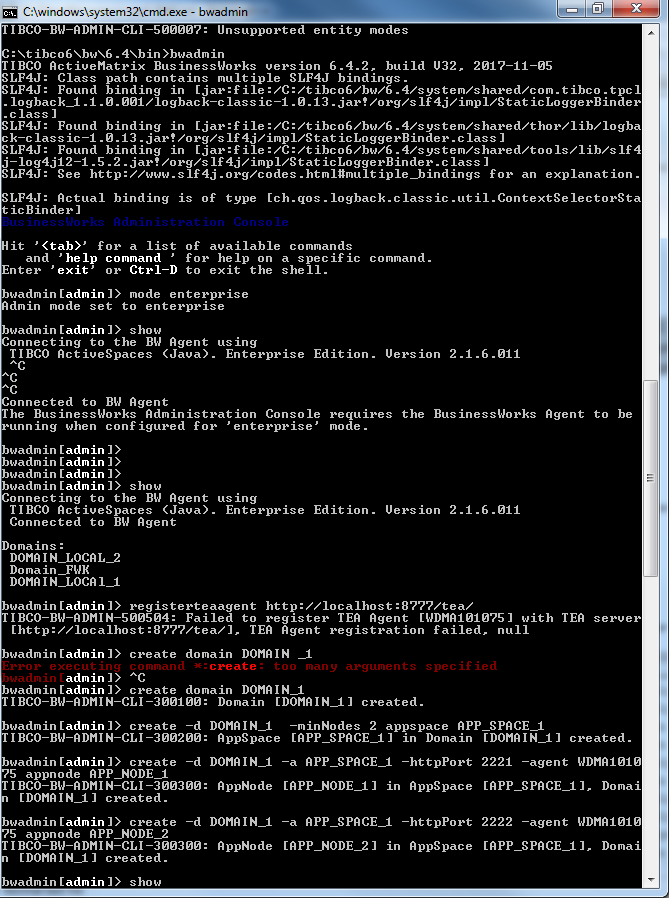
#Create an AppSpace named APP\_SPACE\_1 in the previously created domain

bwadmin[admin] > **create -d DOMAIN\_1 -minNodes 2 appspace APP\_SPACE\_1**

#Create two nodes on the previously created AppSpace listening respectively on port 2221 and 2222

bwadmin[admin] > **create -d DOMAIN\_1 -a APP\_SPACE\_1 -httpPort 2221 -agent WDMA101075 appnode APP\_NODE\_1**

bwadmin[admin] > **create -d DOMAIN\_1 -a APP\_SPACE\_1 -httpPort 2222 -agent WDMA101075 appnode APP\_NODE\_2**



1. Copy MySQL driver **mysql-connector-java-5.1.46.jar** to :

C:\tibco6\bw\6.4\config\drivers\shells\jdbc.mysql.runtime\runtime\plugins\com.tibco.bw.jdbc.datasourcefactory.mysql\lib\

1. Install driver by running the following command from %BW\_HOME%\bin\ directory :

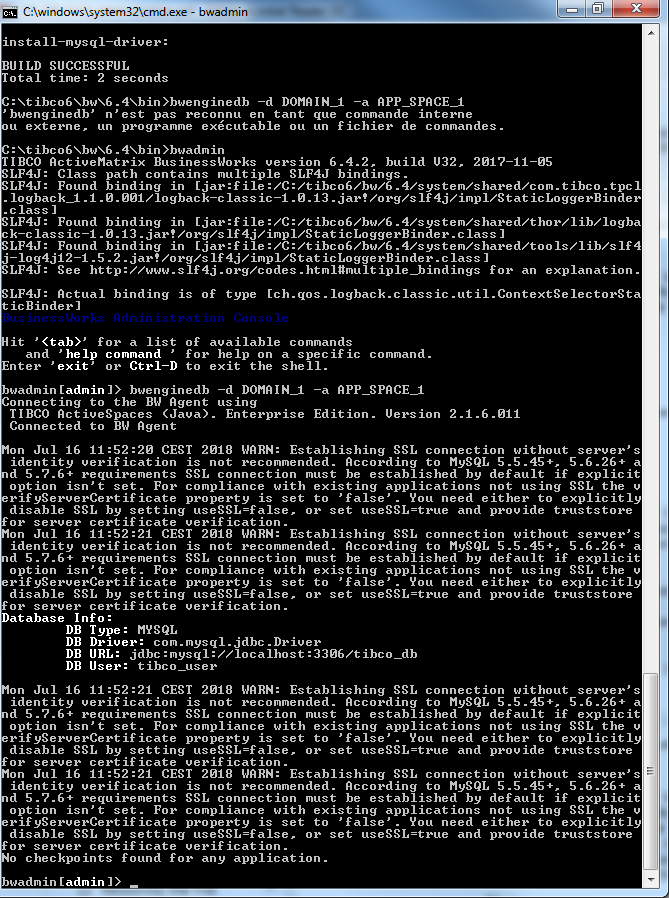
bwinstall mysql-driver

The result output should display a BUILD SUCCESSFUL message

1. Verify database installation by running the following command in bwadmin console :

bwadmin[admin] > **bwenginedb -d DOMAIN\_1 -a APP\_SPACE\_1**

The following output should be displayed



1. Copy file **C:\tibco6\bw\6.4\config\appspace\_config.ini\_template** in temporary directory **C:\tmp\**

Rename file as **C:\tmp\appspace1\_config.ini**

Edit file **C:\tmp\appspace1\_config.ini** and modify following values

**Database section for datastore :**

# "BW Engine group configuration" for additional configuration.

bw.engine.persistenceMode=**group**

# BW Engine Database Driver.

bw.engine.db.jdbcDriver=**com.mysql.jdbc.Driver**

# BW Engine Database URL.

bw.engine.db.url=**jdbc:mysql://localhost:3306/tibco\_db**

# BW Engine Database User Name.

bw.engine.db.userName=**tibco\_user**

# BW Engine Database User Password.

bw.engine.db.password=**password**

**Group section :**

#Define the engine group name

bw.engine.groupName=**domain1\_appspace1\_group**

#Define EMS as group provider

bw.engine.groupProvider.technology=**ems**

# BW Engine Group Connection Provider EMS URL. This property is required if

# the group provider technology is "ems".

bw.engine.groupProvider.qin.EMSServerUrl=**tcp://localhost:7222**

# BW Engine Group Connection Provider EMS User Name. This property is required

# if the group provider technology is "ems".

bw.engine.groupProvider.qin.EMSUserName=**admin**

# BW Engine Group Connection Provider EMS User Password. This property is

# required if the group provider technology is "ems".

bw.engine.groupProvider.qin.EMSPassword=**admin**

1. Stop the AppSpace APP\_SPACE\_1 using bwadmin console or Admin GUI

bwadmin[admin] > cd DOMAIN\_1

bwadmin[admin] > stop appspace APP\_SPACE\_1

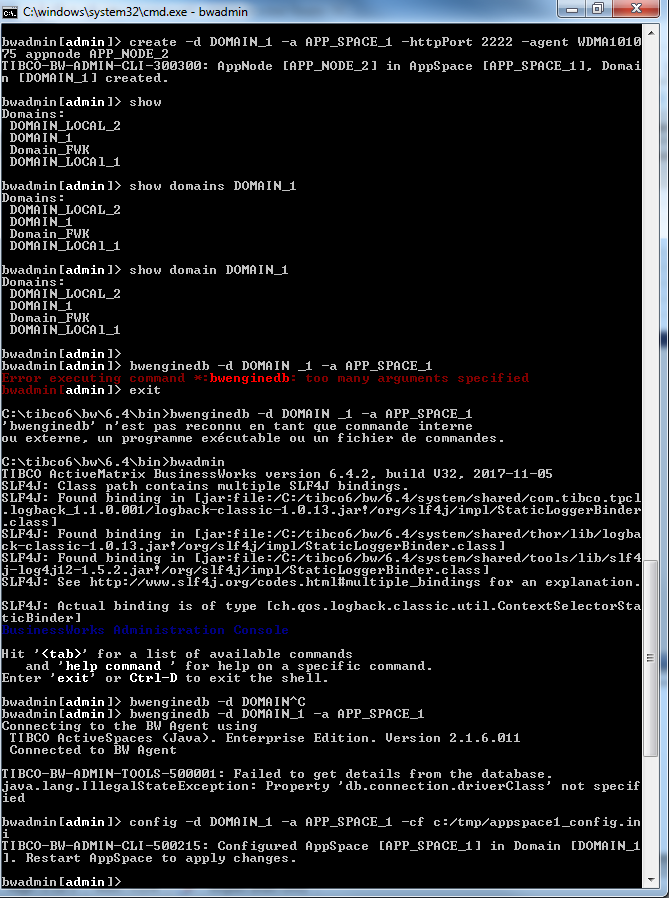
1. Use the config admin command to push the configuration to the AppSpace:

bwadmin[admin]> **config -d DOMAIN\_1 -a APP\_SPACE\_1 -cf c:/tmp/appspace1\_config.ini**

1. Start the AppSpace APP\_SPACE\_1 using bwadmin console or Admin GUI

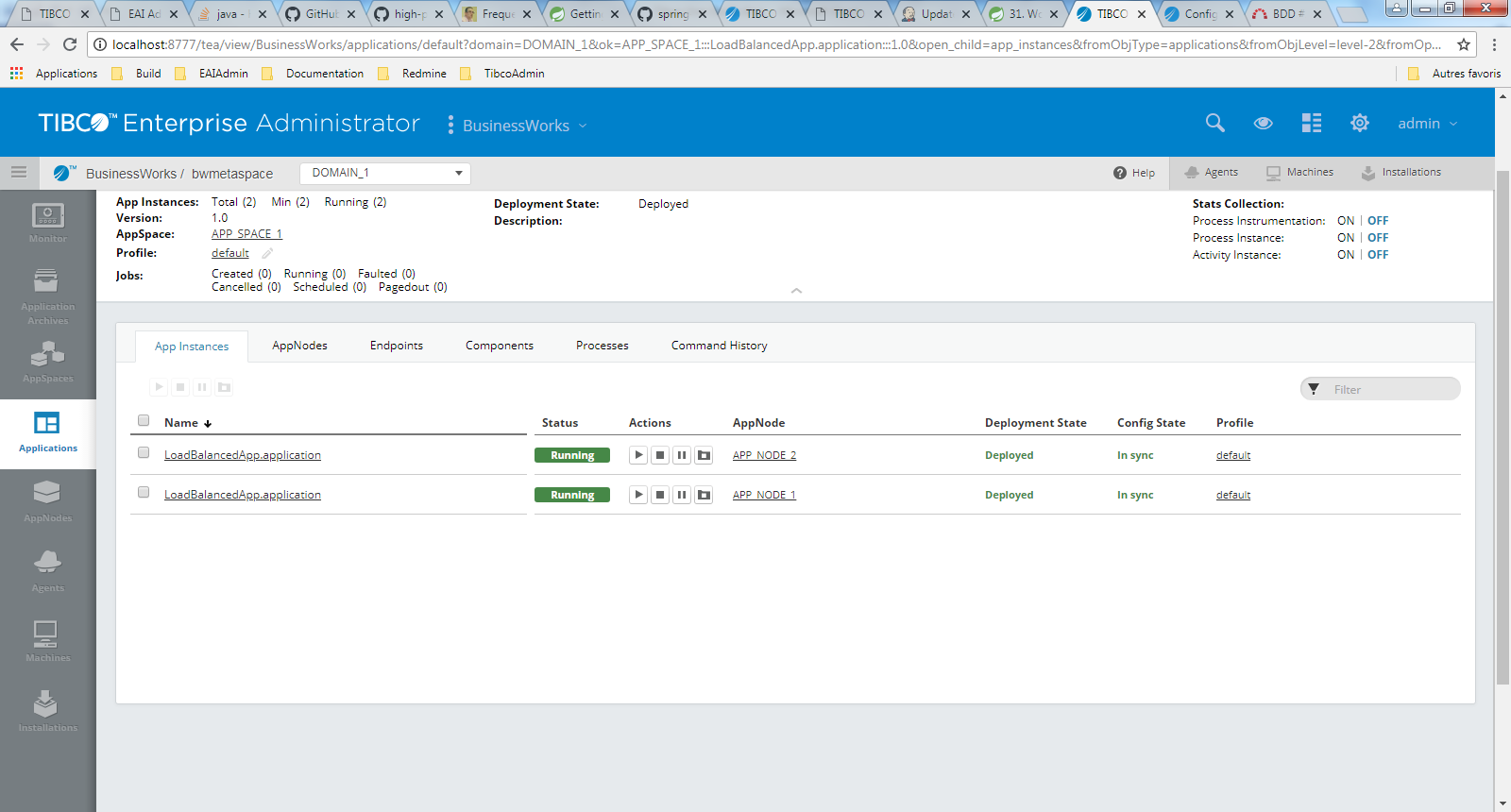
cd DOMAIN\_1

start appspace APP\_SPACE\_1

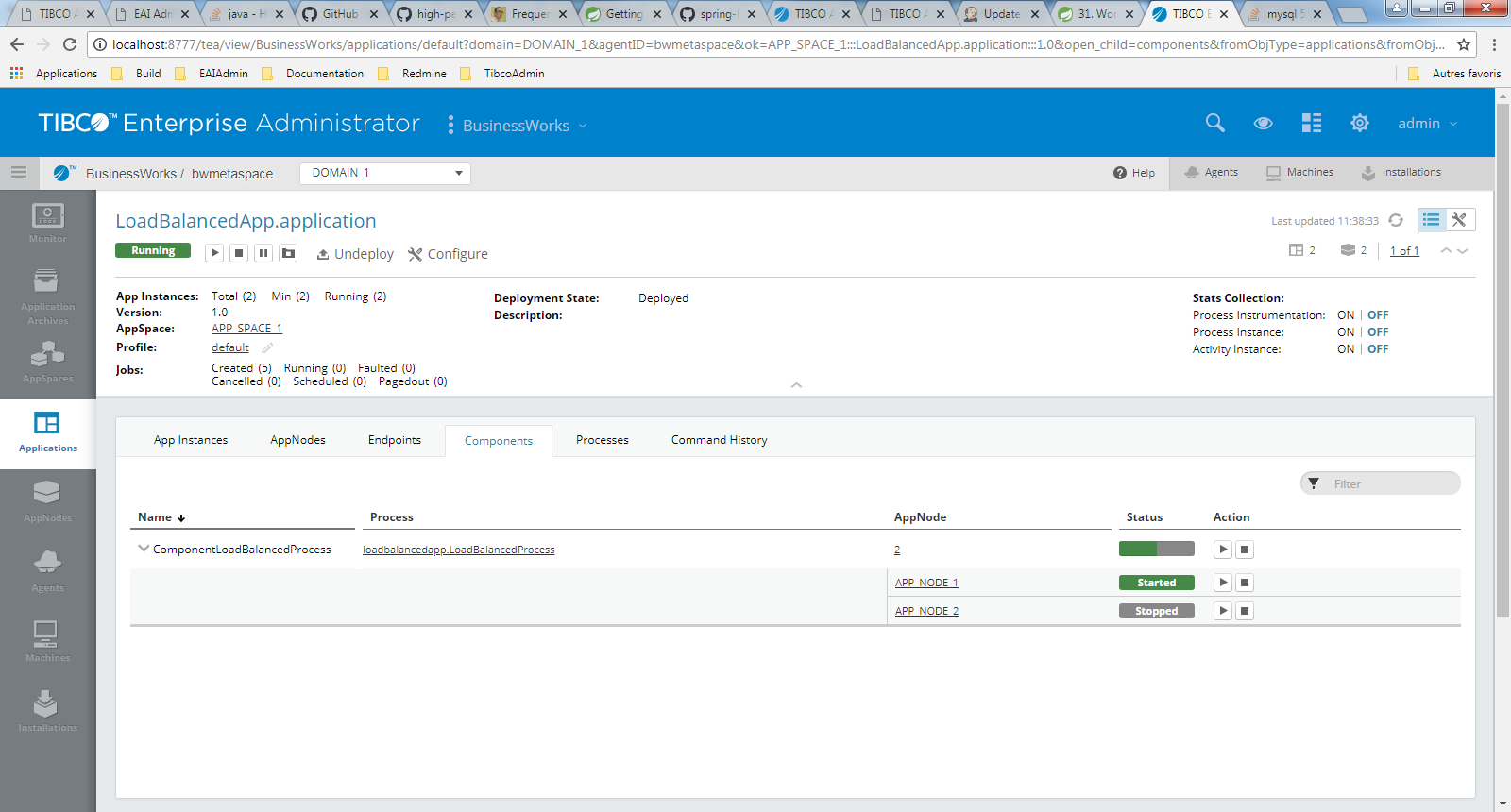


1. Checking final configuration

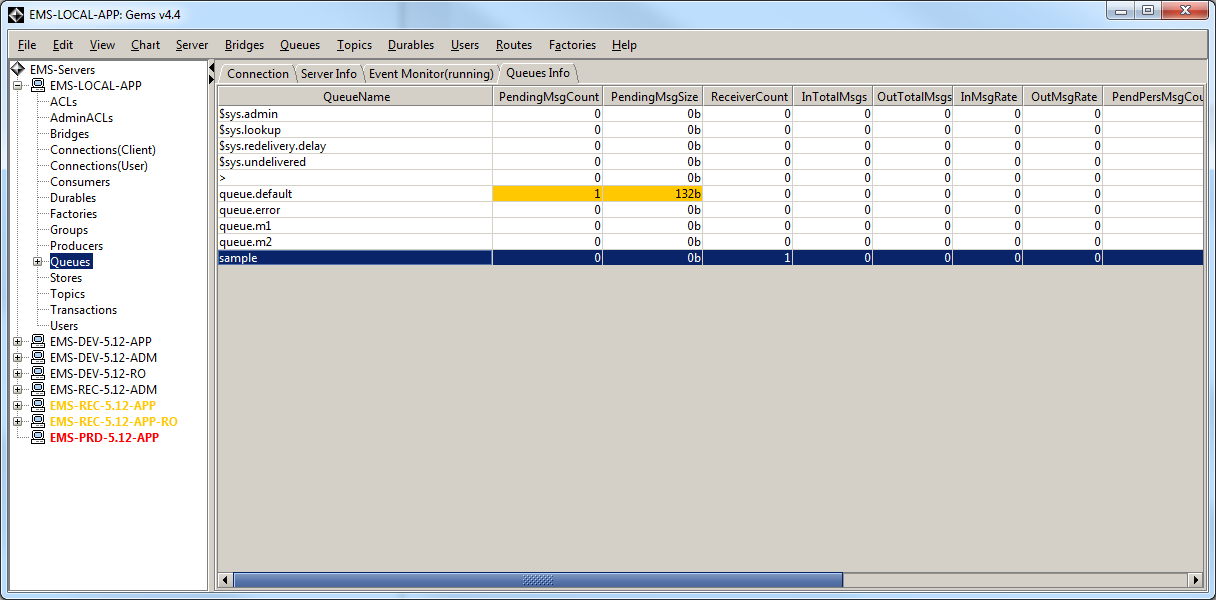
The fault tolerance configuration is now finished. After starting the application, we can see that both instances are running.



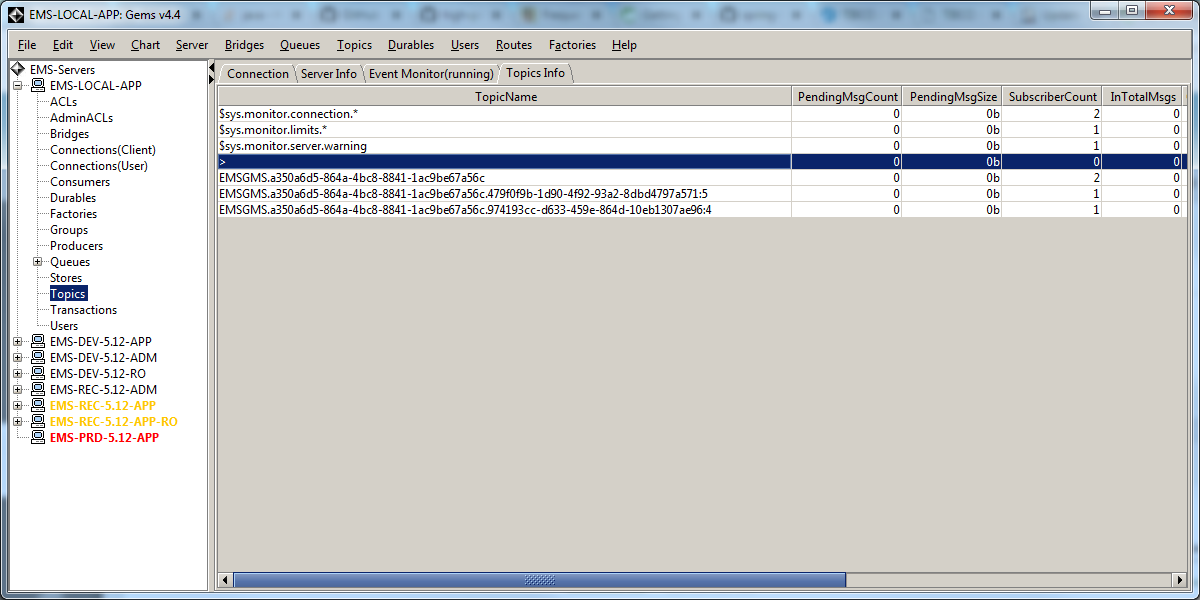
You need to go to the Component view to note that process is Started on App\_Node\_1 and Stopped on App\_Node\_2.



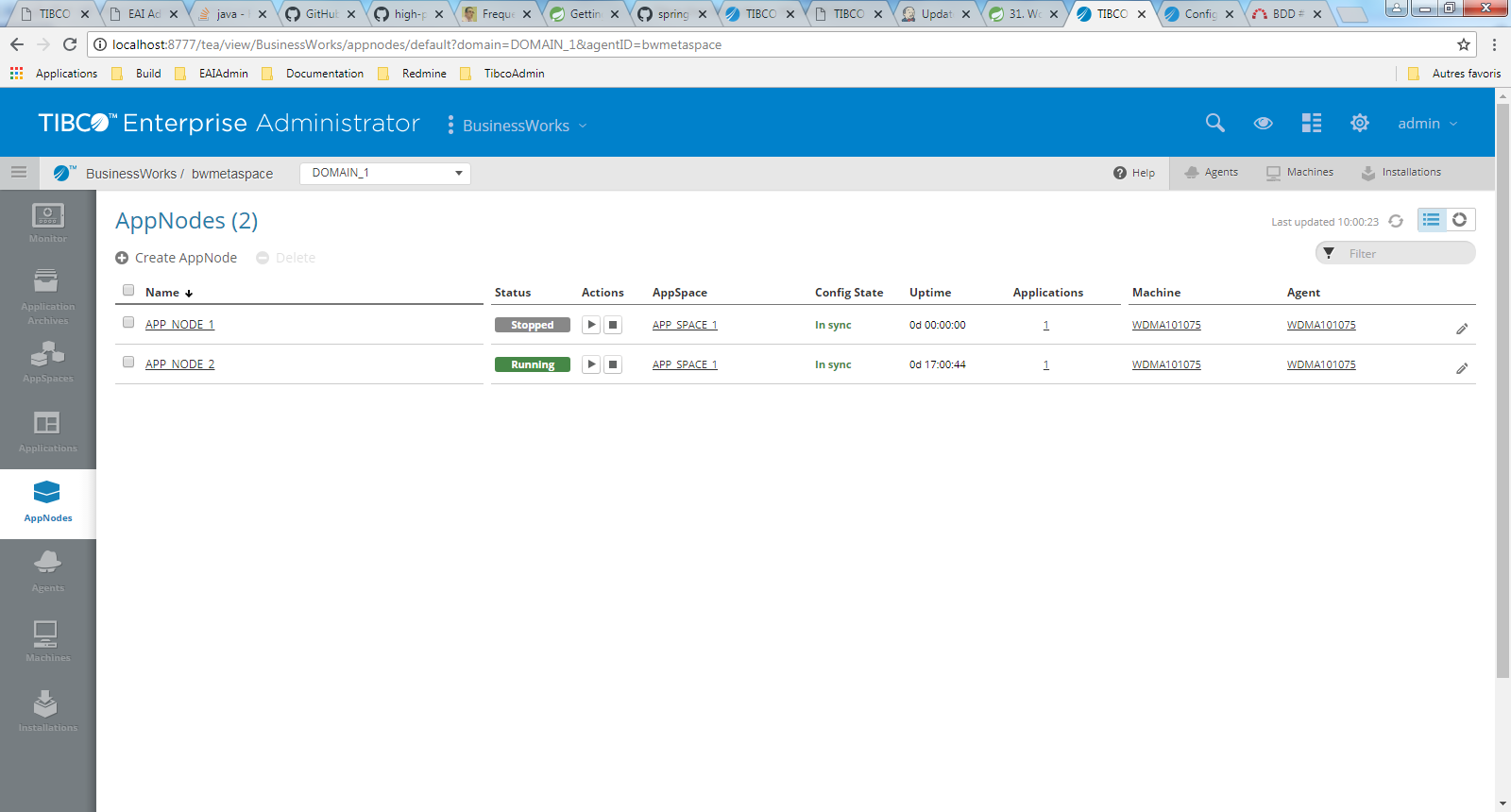
Gems (or tibemsadmin) tool confirms that only one receiver is active since ReceiverCount is equal to 1 for “**sample**” queue.



We can see that three topics have been created to enable communication between nodes.



To finish, let’s try to failover the application by killing App\_Node\_1



The instance of App\_Node\_2 has been automatically activated and ReceiverCount of queue “**sample”** is equal to 1.

