ANNEXURE - 4

Oracle Banking Virtual Account Management

Release 14.4.0.3.0

Part Number F39510-01

February 2021

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FINANCIAL SERVICES

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1. ANNEXURE - 4

1.1 Introduction

This guide is a supporting document for the installation of PLATO applications. You can find the reference in the respective installation guides.

1.2 How to do Multi Node setup (High Availability Architecture)

1.2.1 Configuration Server Related Changes:

The below changes are to be made in the PROPERTIES table pointed to by the Configuration Server:

- **For the Discovery Server:**

  PLATO Discovery Service should have an entry for its entire peer PLATO Discovery Services configured through **eureka.client.serviceUrl.defaultZone**. This will hold a comma-separated list of all the peer PLATO Discovery services.

  In addition, to enable the peer aware mode for the PLATO Discovery Service we should set the **eureka.client.register-with-eureka** to true.

ID	APPLICATION	PROFILE	LABEL	KEY	VALUE
1	plato-discovery-service	jdbc	jdbc	eureka.client.serviceUrl.defaultZone	http://<IP of the server where the first instance of PLATO Discovery Service is running>:<PORT where the first instance of PLATO Discovery Service is running>/plato-discovery-service/eureka,http://<IP of the server where the second instance of PLATO Discovery Service is running>:<PORT where the second instance of PLATO Discovery Service is running>/plato-discovery-service/eureka
2	plato-discovery-service	jdbc	jdbc	eureka.client.register-with-eureka	true
3	plato-discovery-service	jdbc	jdbc	server.port	<< PORT Number where the PLATO Discovery Service is running >>

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- **For the Individual Services:**

Each service should have an entry of all the PLATO Discovery Services configured through **eureka.client.serviceUrl.defaultZone**. This will hold a comma separated list of all the PLATO Discovery services.

ID	APPLICATION	PROFILE	LABEL	KEY	VALUE
1	<<service-name>>	jdbc	jdbc	eureka.client.serviceUrl.defaultZone	http://<IP of the server where the first instance of PLATO Discovery Service is running>:<PORT where the first instance of PLATO Discovery Service is running>/plato-discovery-service/eureka,http://<IP of the server where the second instance of PLATO Discovery Service is running>:<PORT where the second instance of PLATO Discovery Service is running>/plato-discovery-service/eureka

1.2.2 Plato UI Configuration Server Related Changes:

For each of the product registered in **PRODUCT_SERVICES_ENV_LEDGER**, we need to change the URL to point to the Load Balancer of the PLATO API Gateway Service.

ID	PRODUCT_NAME	URL
1	<<PRODUCT NAME>>	<< HTTP URL OF THE LOAD BALANCER >>

1.2.3 setDomainEnv.sh related changes:

- **For all the Micro Services:**

Individual MICRO services should now access the PLATO Config Service via the Load Balancer URI (i.e). configured in the server runtime through the property **plato.services.config.uri**.

The **plato.services.config.uri** must point to the URI of the load balancer. The format of the same would be as follows:

```
-Dplato.services.config.uri=http://<< IP OF THE LOAD BALANCER
>>:<< PORT OF THE LOAD BALANCER >>
```

- **For the UI APPSHELL:**

UI APPShell should now access the Gateway Service via the Load balancer URI (i.e.) configured in the server runtime. For example, **Dapigateway.url**.

The **apigateway.url** must point to the host and port of the load balancer. The format of the same would be as follows:

```
-Dapigateway.url=http://<< IP OF THE LOAD BALANCER >>:<< PORT OF
THE LOAD BALANCER >>
```

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1.2.4 <u>Requirement of Load Balancers:</u>

Load Balancers are required for PLATO API GATEWAY Service, PLATO Configuration Service, and PLATO UI APP SHELL.

1.2.4.1 <u>PLATO API Gateway Service:</u>

PLATO API Gateway Service acts as a single point of entry for UI and External Systems to access the underlying services. In a multi node deployment where multiple PLATO API Gateway Services are deployed, we would need a single URI for accessing the multi node deployments of the PLATO API Gateway Services. This Load Balancer would help us to achieve that functionality.

1.2.4.2 <u>PLATO Configuration Service:</u>

All the domain services access PLATO Configuration Service for retrieving their configurations. In a multi node deployment where multiple PLATO Configuration Services are deployed, we would need a single URI for accessing the multi node deployments of the PLATO Configuration Services. This Load Balancer would help us to achieve that functionality.

1.2.4.3 <u>PLATO UI APP SHELL:</u>

The PLATO UI App Shell acts as the single user interface for the users. In a multi node deployment where multiple instances of PLATO UI APP SHELL are deployed, we would need a single URI for accessing the multi node deployments of the PLATO UI APP SHELL. This Load Balancer would help us to achieve that functionality.

1.3 <u>PLATO LOAD BALANCER SERVICES</u>

This section contains the following sub-sections:

- Introduction
- Configuration and Deployment

1.3.1 <u>Introduction</u>

Plato Load Balancer Services can be used as an optional Load Balancer for a service when required. It is available as a WAR file and the configuration can be done directly inside the WAR file.

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1.3.2 Configuration and Deployment

1. Open the WAR file using extraction tools and open the **web.xml** file. The **web.xml** file is as shown below:

```xml
<?xml version="1.0" encoding="UTF-8"?>

<web-app xmlns:wls="http://xmlns.oracle.com/weblogic/weblogic-web-
app"

    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

    xsi:schemaLocation="http://xmlns.oracle.com/weblogic/weblogic-
web-app">

  <servlet>

  <servlet-name>HttpClusterServlet</servlet-name>

    <servlet-class>

      weblogic.servlet.proxy.HttpClusterServlet

    </servlet-class>

  <init-param>

    <param-name>WebLogicCluster</param-name>

    <param-value>HOST_1:PORT_1|HOST_2:PORT_2|HOST_3:PORT_3</param-
value>

  </init-param>

</servlet>

<servlet-mapping>

    <servlet-name>HttpClusterServlet</servlet-name>
```

2. Edit the **HOST:PORT** in the **web.xml** file. The host and port values must be added according to the requirement.

3. After editing the **web.xml** file, the WAR file can be deployed directly into the managed *server*. The **HOST:PORT** of the **plato-load-balancer-services** would act as the load balancer URL for the mentioned **HOST:PORT** values in the **web.xml** file.

1.4 NGINX LOAD BALANCER SERVICES

This section contains the following sub-sections:

- Installation and Setup
- Load Balancer Route Configurations

1.4.1 Installation and Setup

1.4.1.1 Download

1. Download the tar file from **nginx.org/download/** Index list.

2. Extract the tar file using **tar -xvf** command

1.4.1.2 Installation

1. You can choose installation location using **--prefix=path parameter**.

2. You can find **./configure** file in the extracted folder above. For installation follow the below procedure.

3. Inside the extarcted folder, run the following commands one after other

```
./configure --prefix=/scratch/nginx --with-http_ssl_module


make
```

4. You can find the **nginx** installed at **/scratch/nginx**.

1.4.1.3 Start and Stop Procedure

1. Inside the installed directory, we can find sbin folder. Run **./nginx** file inside **sbin** folder to start **nginx**.

2. Write **./nginx -s** stop command in order to stop **nginx**.

1.4.1.4 Configuration:

The configuration is done in the **nginx.conf** file inside the **conf** directory.

1. For Load Balancing, create and upstream and place the URLs to be routed.

```
upstream config{
        server 10.184.155.115:7004;
        server 10.184.148.116:7004;
        }


upstream gateway{
        server 10.184.155.115:7005;
```

Here there are two load balancers defined. Default load balancing technique: **Round Robin**

This block must be placed inside the http block.

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2. Configure the Server block. It is also placed inside the http block. The server block is used for routing purposes.

The block is as shown below.

```
server {
        listen        8090;
        server_name   _;

        location / {
                proxy_pass http://config;
        }
        location /api {
                rewrite /api/(.*) /$1  break;
                proxy_pass http://gateway;
        }

        error_page   500 502 503 504  /50x.html;
        location = /50x.html {
```

Here 8090 acts as the listen port for **nginx**.

The **server_name** property should be given if the requests are from a particular server. Here Server accepts requests from any server.

The **proxy_pass** is used to route the request and the format of the request is defined in the location tag.

The **rewrite** tag is used to manipulate the requests.

NOTE: Make sure the firewall is open for other IPs to pass the request.

1.4.2 Load Balancer Route Configurations

The below configurations gives the route configurations for the load balancer:

NOTE: The underlying syntax and semantics may vary from load balancer to load balancer.

```
        upstream config-service{

                server << IP Or Hostname of the PLATO Configuration
Service 1 >>:<< Port of the PLATO Configuration Service 1 >>;


                server << IP Or Hostname of the PLATO Configuration
Service 2 >>:<< Port of the PLATO Configuration Service 2 >>;


                server << IP Or Hostname of the PLATO Configuration
Service 3 >>:<< Port of the PLATO Configuration Service 3 >>;



                server << IP Or Hostname of the PLATO Configuration
Service N >>:<< Port of the PLATO Configuration Service N >>;



        }


        upstream api-gateway{



                server << IP Or Hostname of the PLATO API Gateway Service
1 >>:<<Port of the PLATO API Gateway Service 1 >>;


                server << IP Or Hostname of the PLATO API Gateway Service
2 >>:<<Port of the PLATO API Gateway Service 2 >>;


                server << IP Or Hostname of the PLATO API Gateway Service
3 >>:<<Port of the PLATO API Gateway Service 3 >>;


                           .
```

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```
upstream <<Context Root of the PLATO UI APP Shell>> {


    server << IP Or Hostname of the PLATO UI APP Shell 1 >>:<<
Port of the PLATO Configuration Service 1 >>;


    server << IP Or Hostname of the PLATO UI APP Shell 2 >>:<<
Port of the PLATO UI APP Shell 2 >>;


    server << IP Or Hostname of the PLATO UI APP Shell 3 >>:<<
Port of the PLATO UI APP Shell 3 >>;



                    .


                    .


    server << IP Or Hostname of the PLATO UI APP Shell N >>:<<
Port of the PLATO UI APP Shell N >>;



}



server {

  listen << PORT OF THE LOAD BALANCER >>;

  server_name  _;

  location /config-service {
    proxy_pass http://config-service;
  }

  location /api-gateway {
    proxy_pass http://api-gateway;
  }
```

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