WSO2 Con 2024 - Choreo Tutorial

Prerequisites

1. GitHub account
2. VSCode

Section 1: Deploying a Microservice in Choreo

Create the database

1. Login to Choreo (https://console.choreo.dev/)
2. Go to the Organization home page
3. From the left menu select Dependencies → Databases
4. Use the following data to create a database server

Field	Value
Select Storage	MySQL
Service Name	appointmentsdb
Select Cloud Provider	Digital Ocean
Select Region	United States
Select Service Plan	Hobbyist

5. Click on the “Create” Button

Create the service component

1. Fork https://github.com/wso2con2024/choreo-tutorial
2. Clone the forked repo to your workstation

```
Unset
git clone <REPO_URL>
```

3. Open a new browser tab and go to https://console.choreo.dev/ and Sign in

4. Go to the Organization home page
5. Create two projects with following names:
    a. Web Portal
    b. Appointment Management
6. Go to “Appointment Management” Project
7. Click on the **“Service”** card to create new service component

Field	Value
Component Name	Appointment Service
Connect Your Repository	<YOUR_FORKED_REPO>
Buildpack	NodeJS
NodeJS Project Directory	/appointment-management/appointment-service
Language Version	20.x.x

6. Click on “**Appointment Service**”
7. Select **Build** in left menu
8. Click **“Build Latest”** button
9. Go to “**Deploy**” and click on “**Configure & Deploy**” button
10. Use the environment configuration pane to configure following environment variables. These values need to be copied from the database we created earlier. (Please navigate to to Organization → Dependencies → Databases → appointmentdb to find corresponding values)
    a. DB_HOST
    b. DB_PORT
    c. DB_NAME
    d. DB_USER
    e. DB_PASSWORD
11. Complete the wizard and click on “**Deploy**” button
12. Go to Test → Console
13. Click on the “**Generate URL**” button.
14. Test the API by creating a new appointment. (I.e. You can send a POST request to /appointments)
15. Go to Deploy page and click on “**Promote**” button in the Development card
16. From the configuration type pane select “**Use Development configuration**”. Complete the wizard.

Section 2: Service to Service Communication

1. Go to “Web Portal” project
2. Create a service component by clicking on the Service card. Use following details

Field	Value
Component Name	Backend for frontend
Connect Your Repository	<YOUR_FORKED_REPO>
Buildpack	NodeJS
NodeJS Project Directory	/web-portal/backend
Language Version	20.x.x

3. Navigate to the newly created component (i.e. Backend for frontend)
4. Go to Dependencies → Connections and click on “**Create**” button
5. Select the “Appointment service” card and give this connection a name (“Appointment connection”) in the subsequent screen.
6. Click on the **Create** button
7. From the subsequent UI, copy the generated connection configuration to `YOUR_FORKED_REPO/web-portal/backend/.choreo/component-config.yaml`

Your changed component-config.yaml may look like this:

```yaml
    # The path should be relative to the Docker context.
    schemaFilePath: openapi.yaml
outbound:
  serviceReferences:
  - name: choreo:///choreotutorial2024/appointment-management/siffyq/8b1c3/v1.0/ORGANIZATION
    connectionConfig: 01ef0609-4a22-12a6-9dab-f799362d4a37
    env:
    - from: ServiceURL
      to: APPOINTMENT_SERVICE_URL
    - from: ConsumerKey
      to: APPOINTMENTS_OAUTH_CLIENT_ID
    - from: ConsumerSecret
      to: APPOINTMENTS_OAUTH_CLIENT_SECRET
    - from: TokenURL
      to: APPOINTMENTS_OAUTH_TOKEN_URL

```

8. Commit the change and push to GitHub repo

```
Unset
    git add .
    git commit -m "Add connection configurations"
    git push origin
```

9. Go to the **Build** page and use the "**Show commits**" option to select the latest commit and trigger a build.
10. Go to the **Deploy** page and click on "**Configure & Deploy**". Complete the wizard.
11. Go to **Test** → **Console** and expand the GET resource. Try out the API following data.

Field	Value
email	johndoe@example.com

12. Go to the **Deploy** page and promote the service to the "**Production**" environment. Complete the wizard with default settings.
13. Test the production environment to verify.

Section 3: Deploying a web application on Choreo

Create the web application component

1. Make sure you are on “Web Portal” project overview page
2. Click on the “**Create**” button and select the **Web Application** card. Use following details to create the component.

Field	Value
Component Name	Frontend
Connect Your Repository	<YOUR_FORKED_REPO>
Buildpack	React
Project Directory	/web-portal/frontend
Build Command	npm run build
Build Path	/build
Node Version	20

3. Go to **Dependencies** → **Connections** and click on the **Create** button
4. Select “Backend for frontend” card and give this connection a name (“backend connection)
5. Copy the connection configuration value for use in deployment. This is necessary because we're using Choreo-managed authentication to authenticate with the backend.
   For example:

```
Unset
    window.configs = {
        apiUrl: '<<value from your connection>>',
    };
```

6. Go to the “**Build**” page and click on the “**Build Latest**” button.
7. Navigate to the “**Deploy**” page and select the “**Configure & Deploy**” button. Enter the value you copied earlier into the “Configure & Deploy” pane. It should appear as shown in the screenshot below:

8. Complete the wizard with default settings

Configure the Choreo Identity Provider

1. Go to Organization overview page
2. Go to **Settings** → **Application Security**.
3. Click on the **Manage** link on "**Choreo Built-in Identity Provider**" card
4. Select the file `YOUR_FORKED_REPO/web-portal/frontend/userstore.csv` and click the "**Re-upload**" button to update the Choreo Identity Provider.
5. Navigate back to **"Web Portal"** → **Frontend** component. Then go to the **Deploy** page and click on the **Web App URL** in the development card.
6. Use following credentials to login and tryout the application

Field	Value
Username	john
Password	user@1234

Configure Asgardeo as Identity Provider in production

1. Make sure you are on **"Web Portal"** → **Frontend** in the browser.
2. Go to Component settings by clicking on the "**Settings**" → **Authentication Keys**. Select "**Production**" tab
3. Select "**Asgardeo**" as the identity provider.
4. Expand **OIDC App Configuration** pane. We need to copy the Redirect URLs to configure Asgardeo in later step

5. Go to https://console.asgardeo.io. Sign in to Asgardeo with the same credentials
6. Make sure you have selected the same organization you used in Choreo
7. Go to **"User Management"→Users** and click on the **"Add User→Single User"** button.
8. Use Following details to add a user

Field	Value
Username (Email)	<A VALID EMAIL ADDRESS>
Select the method to set the user password	Set a password for the user
Password	Demo@1234

9. Go to "**Applications**" in the left menu
10. Click the "**New Application**" button
11. Select Standard-Based Application card
12. Use the following details and click on the "**Create**" button

Field	Value
Name	CareConnect Web Portal
Protocol	OAuth2.0 OpenID Connect

13. Make sure you are on the protocol tab of the newly created application
14. Fill in the following details and press the "**Update**" button.

Field	Value
Allowed grant types	Code, Refresh Token
Authorised Redirect URLs	<Redirect URLs copied from Choreo console's OIDC App Configuration>
Allowed origins	<Domain URL extracted from the "Authorised Redirect URLs"> E.g. https://6b3d2f4e-77d4-4299-b386-3ffc86f11fa2.e1-us-east-azure.choreoapps.dev
Access Token	JWT

15. Go to the **User Attributes** tab. Mark following user attributes as mandatory and click on "Update"
    a. Email→ Email
    b. Profile→ Full Name

16. Go to the **Protocol** tab and Copy “Client ID” and “Client Secret” to Choreo console’s OIDC App Configuration. Click on the “**Add Keys**” button afterwards.
17. Go to the Deploy page and click the **Promote** button. Complete the wizard with “Use Development configurations”.
18. Navigate to “**Web App URL**” in the production card. Log into the web application using the user added in the asgardeo.

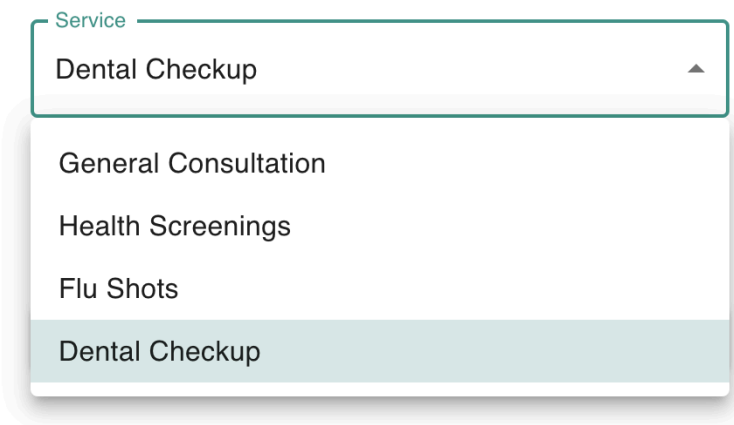
Section 4: Versioning and Deployment Tracks

We are going to develop a feature in Appointment Service to support Dental Checkups. Required code changes are already committed to the git branch "support_for_dental_checkups". In this session we will ship this feature to production.

1. Make sure you are on **Appointment Management** → **Appointment Service** in the browser.
2. Click on **Deployment Track** drop down. Click on "Create New" menu item.
3. Use following information to fill the create deployment track dialog box.

Field	Value
Branch Name	support_for_dental_checkups
API Version	v1.1

4. Go to build and then click on **Build Latest** button
5. Go to "**Deploy**" and click on "**Configure & Deploy**" button
6. Use the environment configuration pane to configure following environment variables. These values need to be copied from the database we created earlier. (Please navigate to to Organization → Dependencies → Databases → appointmentdb to find corresponding values)
    a. DB_HOST
    b. DB_PORT
    c. DB_NAME
    d. DB_USER
    e. DB_PASSWORD
7. Complete the wizard and click on the "**Deploy**" button.
8. Go to Test → Console
9. Click on the "**Generate URL**" button.
10. Test the API by retrieving appointment types. (I.e. You can send a GET request to /appointment-types)
11. Go to Deploy page and click on "**Promote**" button in the Development card
12. From the configuration type pane select "**Use Development configuration**". Complete the wizard.
13. Now that the feature is in production Web application should automatically show the "Dental Check up" in GUI.


Service
Dental Checkup
General Consultation
Health Screenings
Flu Shots
Dental Checkup

Section 5: Scheduling a Task

1. Make sure you are on **Appointment Management** project
2. Click on **Create** button and select **Scheduled Task** card
3. Use following details to create the component.

Field	Value
Component Name	Email Reminder Task
Connect Your Repository	<YOUR_FORKED_REPO>
Buildpack	Ballerina
Project Directory	/appointment-management/email-reminder-task

4. Go to the "**Build**" page and click on the "**Build Latest**" button.
5. Go to **Appointment Management** → **Appointment Service** overview page and copy the Project URL
6. Navigate to the **Appointment Management** → **Email Reminder Task** → **Deploy** page and select the "**Configure & Deploy**" button.
7. Put the copied value to **appointmentApiUrl** and click **Next**
8. Use following values in the **Schedule** pane and click **Deploy**

Field	Value
Select Time Zone	Default Value
Select Range	Day
Every	1
At	01:00 AM

9. Go to **Execution** page and click on **Run Now** button.