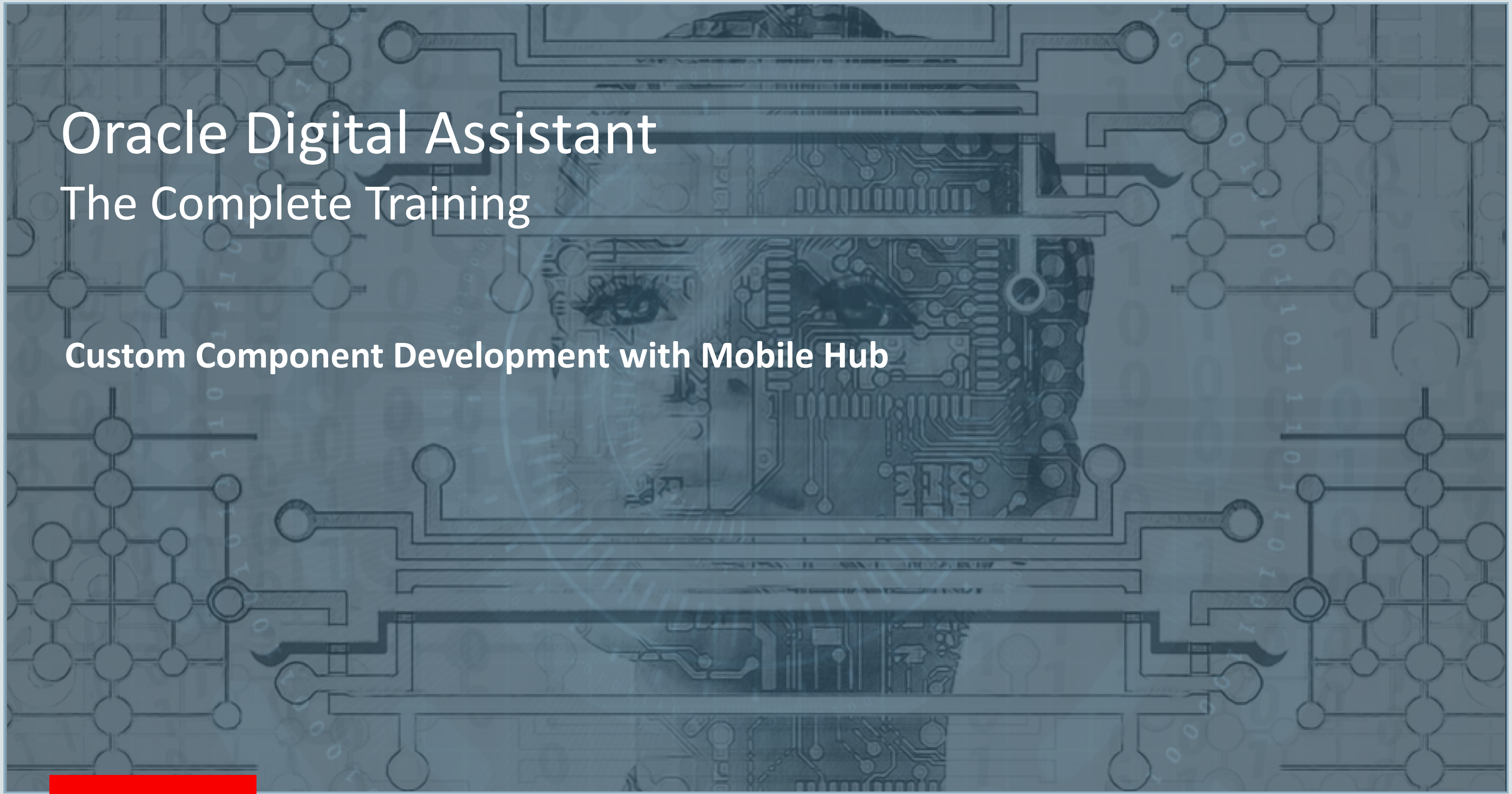


Oracle Digital Assistant

The Complete Training

Custom Component Development with Mobile Hub

ORACLE

Image courtesy of pixabay.com

Safe Harbor Statement

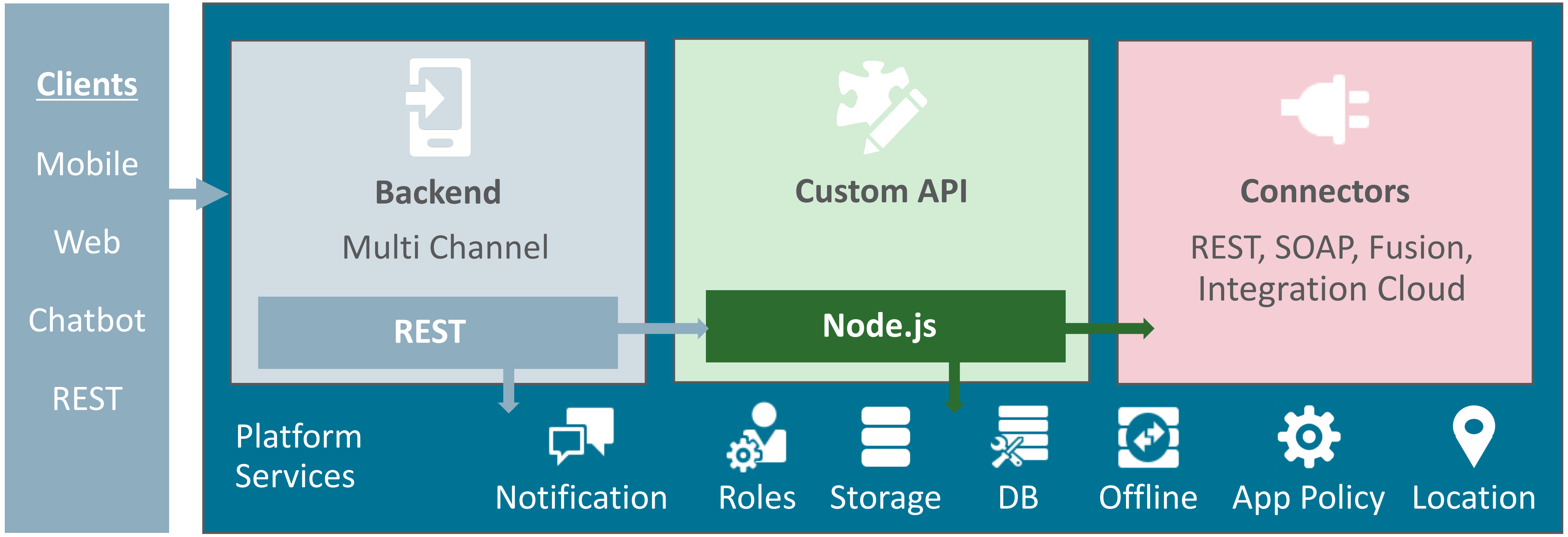
Topic agenda

1. Mobile Hub introduction
2. Custom component services in Mobile Hub
3. Building custom components in Mobile Hub
4. Backend integration
5. Local development and debugging

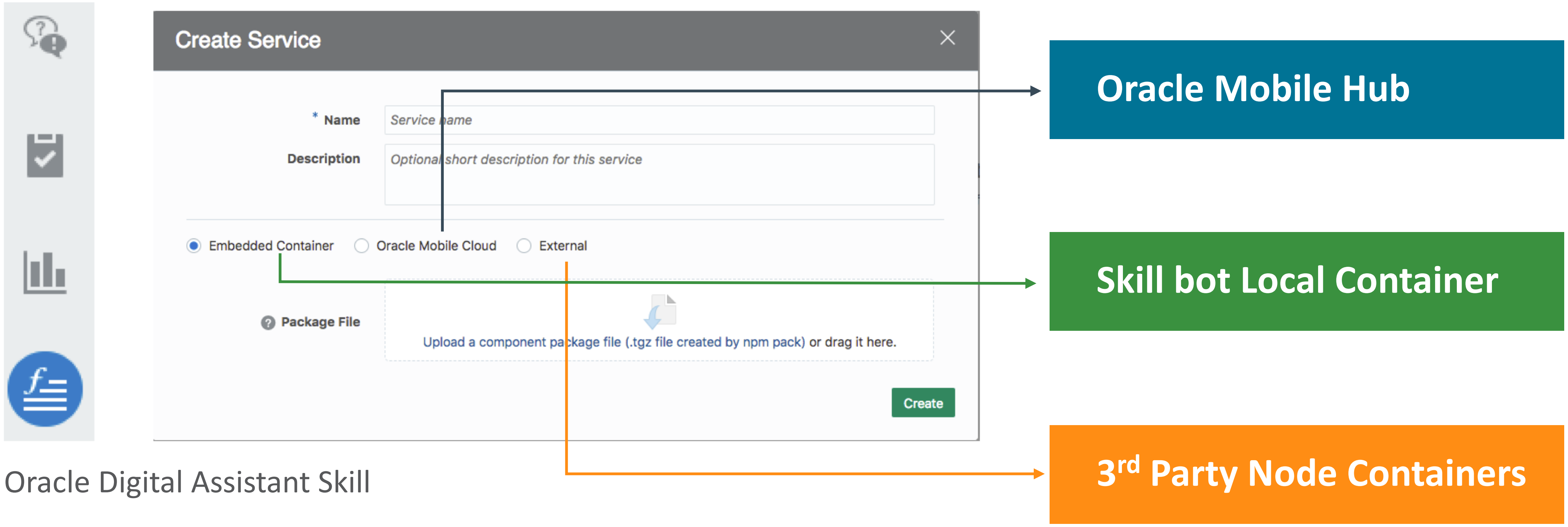
Topic agenda

Oracle Mobile Hub

Multi channel backend



Custom component service deployment options



Create Service

* Name: Service name

Description: Optional short description for this service

[✓ Embedded Container] Oracle Mobile Cloud External

Package File: Upload a component package file (.tgz file created by npm pack) or drag it here.

Create

Oracle Digital Assistant Skill

Mobile Hub benefits

- Multi channel backend service
  - API sharing between web, mobile and bot applications
  - Secure API access
  - Payload shaping
  - Platform services: storage, analytics, database, location, push etc.
- API and API Implementation versioning
- Declarative REST, SOAP and Fusion Apps connectors
- Single point of administration and maintenance
- Diagnostics

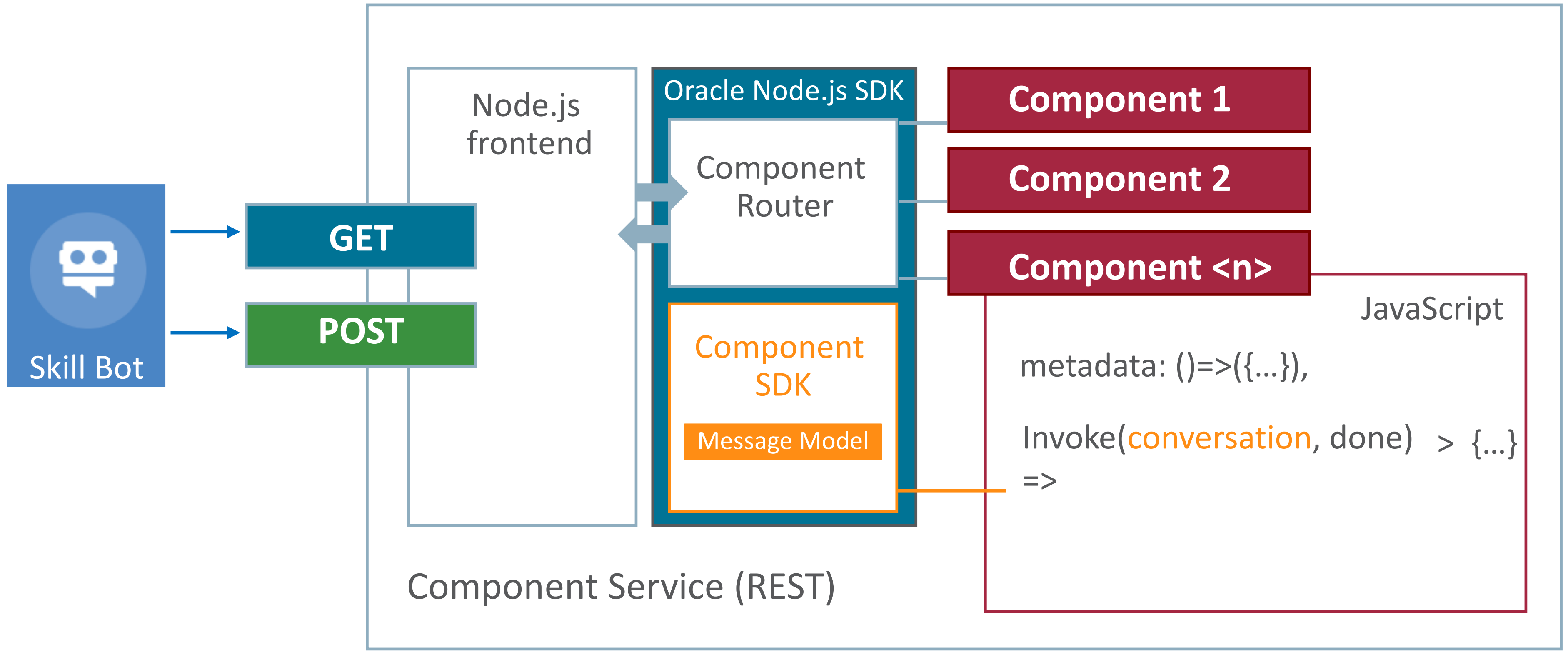
Topic agenda

Custom component service development in Mobile Hub

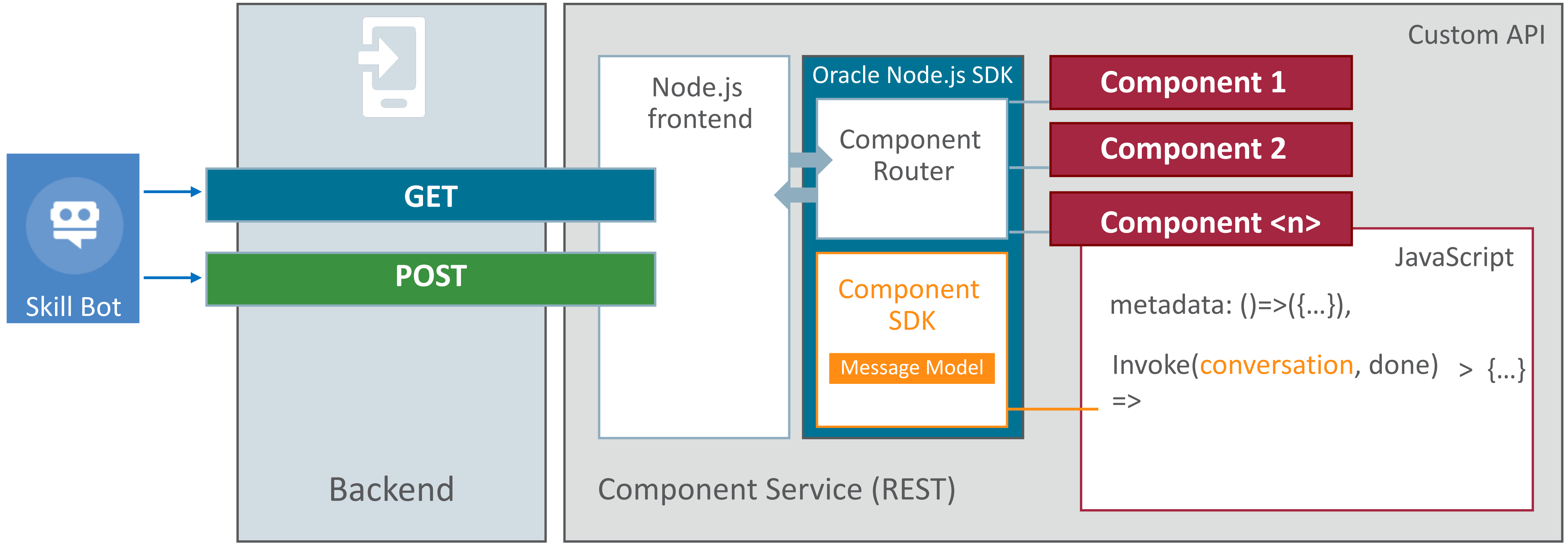
- Custom component service built as Custom API
  - Component Service exposed through a Backend
  - Access to Mobile Hub services and SDK
  - Leverages Mobile Hub connector framework (REST, SOAP, Fusion, ICS)
- Component service API and Implementation versioned in Mobile Hub
  - Node programming
- Logs and diagnostic information saved in backend analytics

ORACLE

Custom component service architecture



Custom component service architecture in Mobile Hub



Topic agenda

Installing Oracle Node.js SDK

- Global installation provides the command line to create custom components
- Requires Node and Node Package Manager (NPM) to be installed
- Open a terminal window and type

MAC / Linux

```
sudo npm install –g @oracle/bots-node-sdk
```

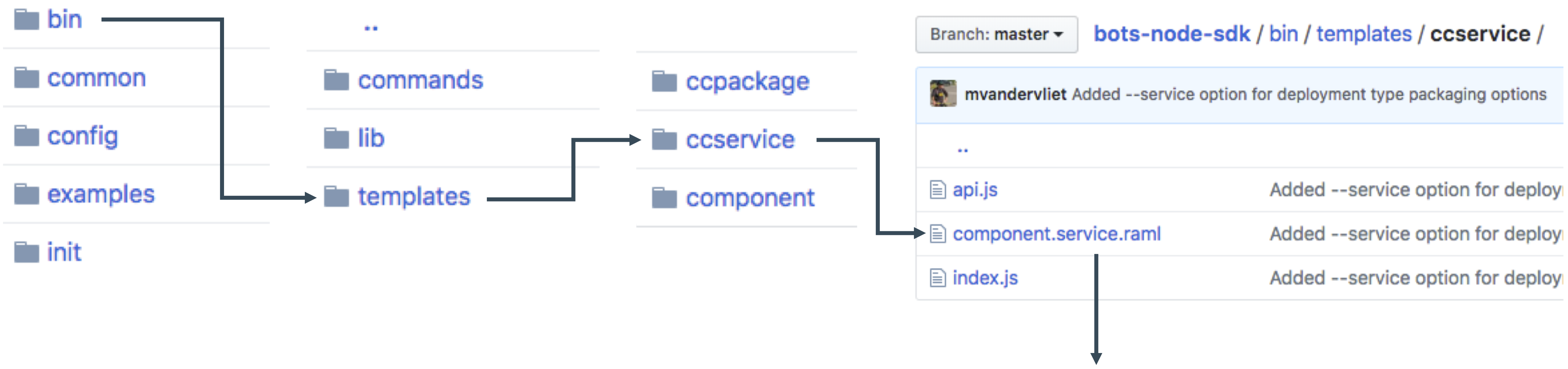
Windows

```
npm install –g @oracle/bots-node-sdk
```

ORACLE

Downloading the custom API template

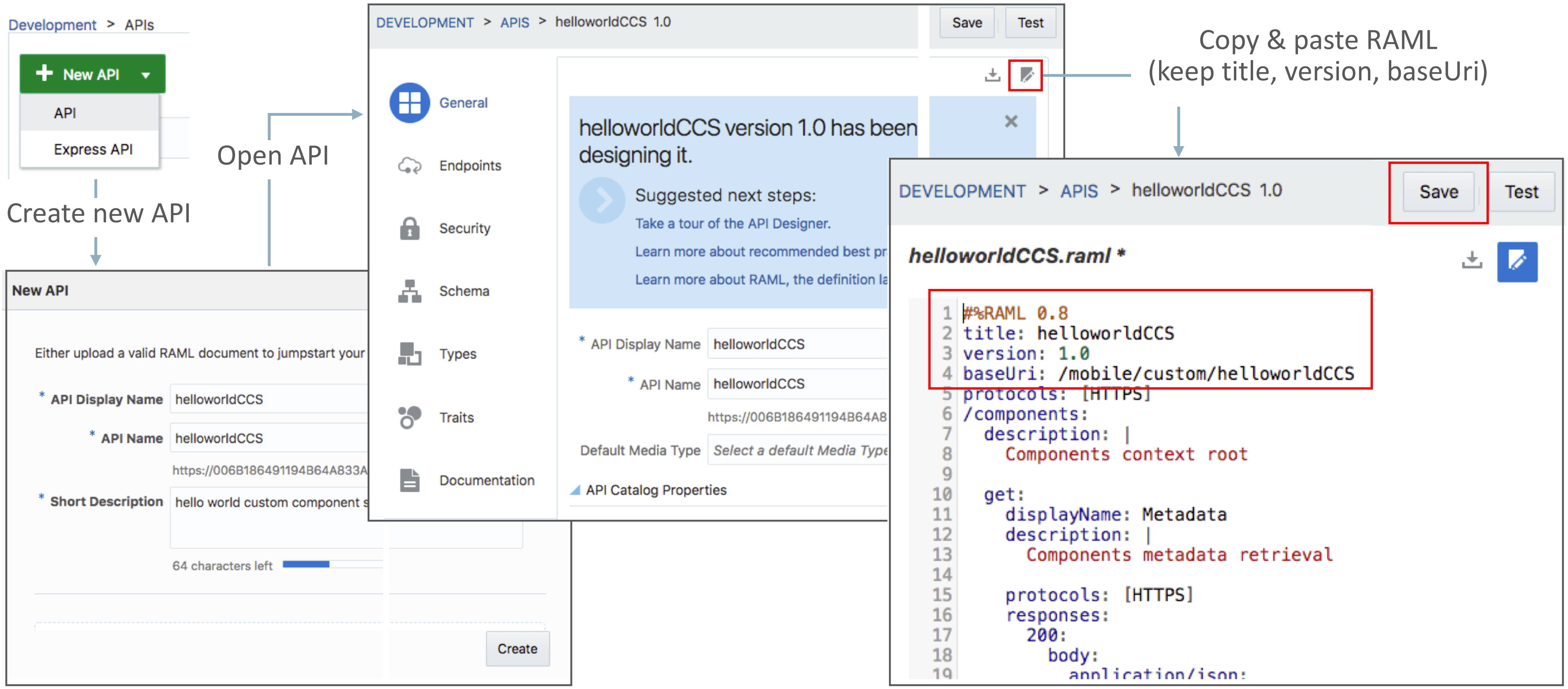
- Oracle Mobile Hub Custom API starter template is available in Oracle Bots Node.js SDK on GitHub
  - https://github.com/oracle/bots-node-sdk
  - Defines GET and POST methods required for Bot custom component services



bin
common
config
examples
init
..
commands
lib
templates
ccpackage
ccservice
component
Branch: master
bots-node-sdk / bin / templates / ccservice /
mvandervliet Added --service option for deployment type packaging options
..
api.js
component.service.raml
index.js
Added --service option for deploy
Added --service option for deploy
Added --service option for deploy

https://github.com/oracle/bots-node-sdk/blob/master/bin/templates/ccservice/component.service.raml

Creating a custom component service API



New API

Either upload a valid RAML document to jumpstart your

* API Display Name	helloworldCCS
* API Name	helloworldCCS
	https://006B186491194B64A833A
* Short Description	hello world custom component s
	64 characters left

DEVELOPMENT > APIS > helloworldCCS 1.0

helloworldCCS version 1.0 has been designing it.

Suggested next steps:

Take a tour of the API Designer.

Learn more about recommended best pr

Learn more about RAML, the definition la

* API Display Name	helloworldCCS
* API Name	helloworldCCS
	https://006B186491194B64A8
Default Media Type	*Select a default Media Type*

API Catalog Properties

DEVELOPMENT > APIS > helloworldCCS 1.0

helloworldCCS.raml *

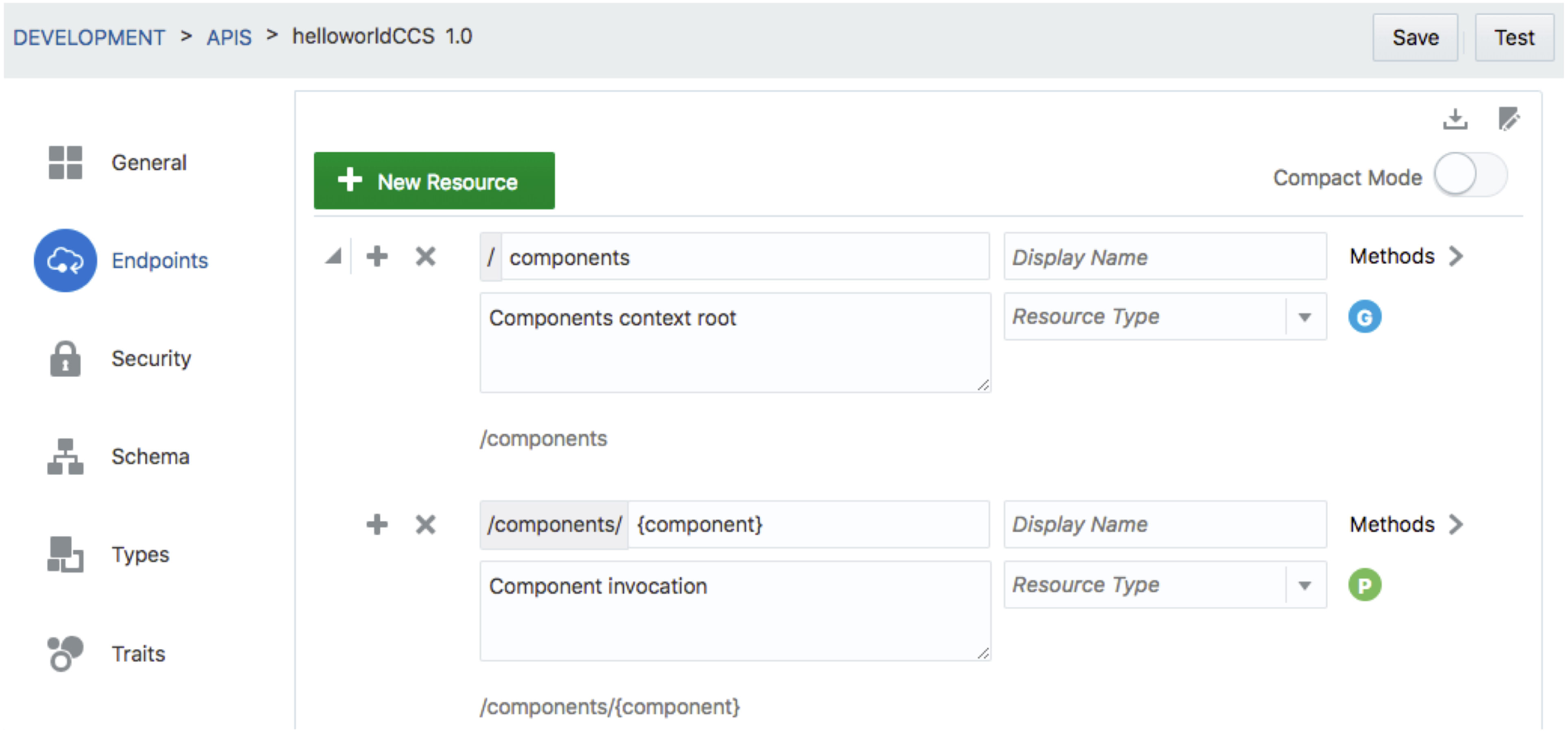
```
#%RAML 0.8
title: helloworldCCS
version: 1.0
baseUri: /mobile/custom/helloworldCCS
protocols: [HTTPS]
/components:
  description: |
    Components context root

  get:
    displayName: Metadata
    description: |
      Components metadata retrieval

    protocols: [HTTPS]
    responses:
      200:
        body:
          application/json:
```

ORACLE

Custom component service endpoints


DEVELOPMENT > APIS > helloworldCCS 1.0

Save Test

General
Endpoints
Security
Schema
Types
Traits

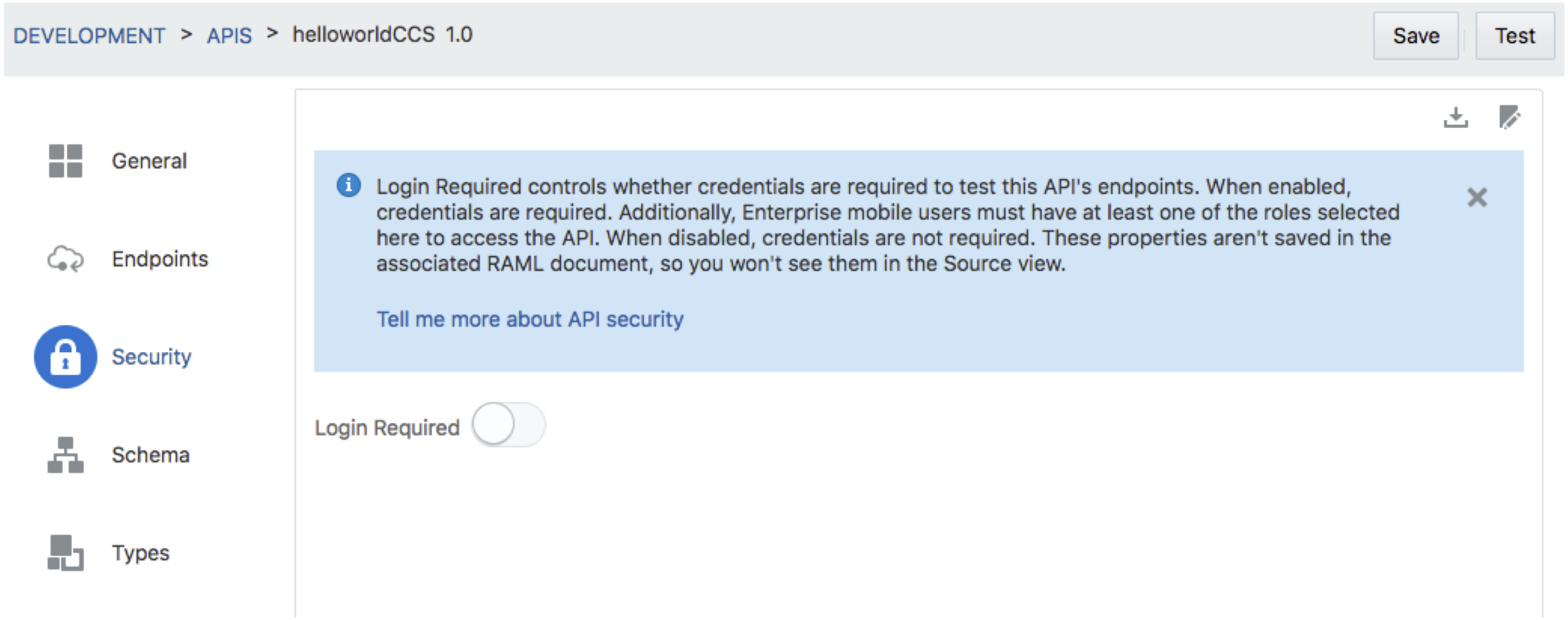
New Resource

Compact Mode

/ components
Display Name
Methods >
Components context root
Resource Type
G
/components

/components/ {component}
Display Name
Methods >
Component invocation
Resource Type
P
/components/{component}

Disable login requirement

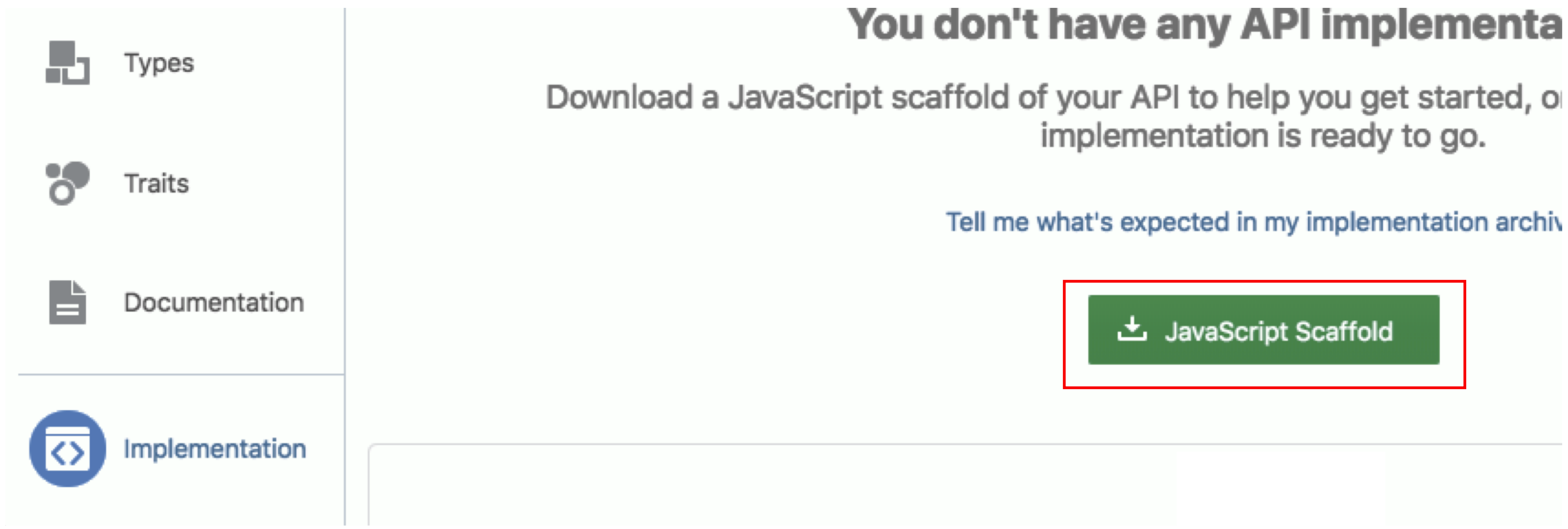


Login Required controls whether credentials are required to test this API's endpoints. When enabled, credentials are required. Additionally, Enterprise mobile users must have at least one of the roles selected here to access the API. When disabled, credentials are not required. These properties aren't saved in the associated RAML document, so you won't see them in the Source view.

Tell me more about API security

Login Required

Downloading the custom API scaffold



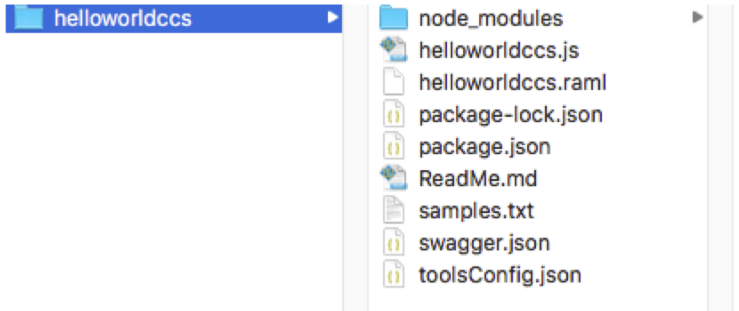
You don't have any API implementa

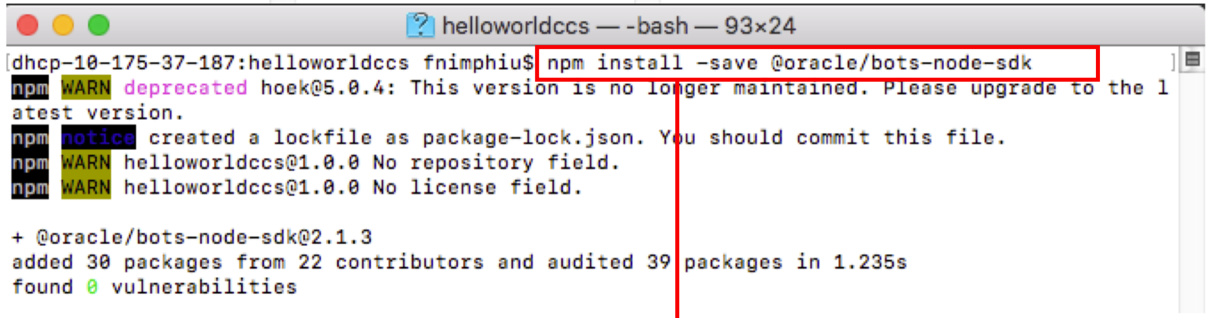
Download a JavaScript scaffold of your API to help you get started, o
implementation is ready to go.

Tell me what's expected in my implementation archiv

Setting up the local development environment

- Unzip the downloaded scaffold
- Open command line and navigate into custom API root folder
  - Folder that contains package.json
- Install Oracle Bots Node.js SDK locally
  - Provides custom component SDK
  - Handles component request routing





```
dhcp-10-175-37-187:helloworldccs fnimphiu$ npm install -save @oracle/bots-node-sdk
npm WARN deprecated hoek@5.0.4: This version is no longer maintained. Please upgrade to the l
atest version.
npm notice created a lockfile as package-lock.json. You should commit this file.
npm WARN helloworldccs@1.0.0 No repository field.
npm WARN helloworldccs@1.0.0 No license field.

+ @oracle/bots-node-sdk@2.1.3
added 30 packages from 22 contributors and audited 39 packages in 1.235s
found 0 vulnerabilities
```

```
npm install -save @oracle/bots-node-sdk
```

For better code organization, **create a "components" folder** and then a folder for each custom component you build therein

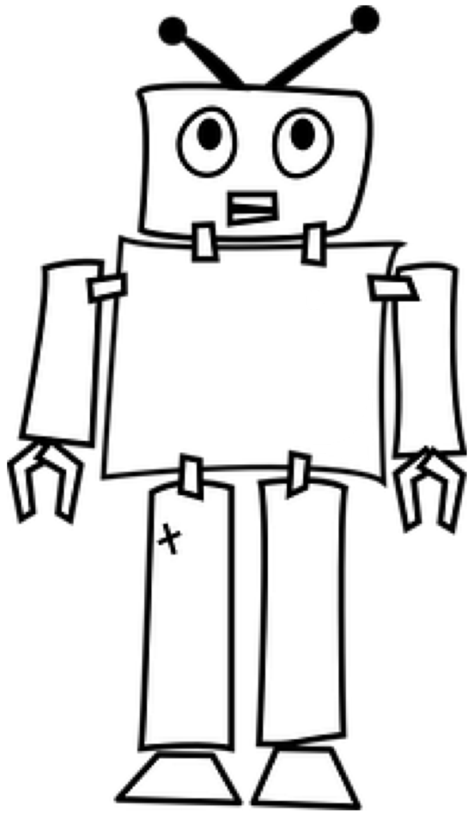
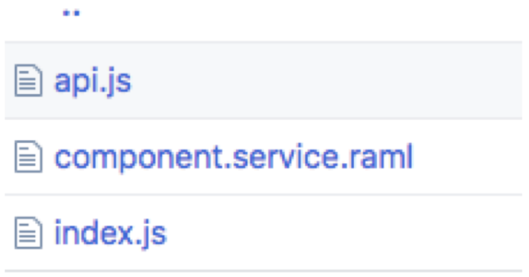


Image courtesy of pixabay.com

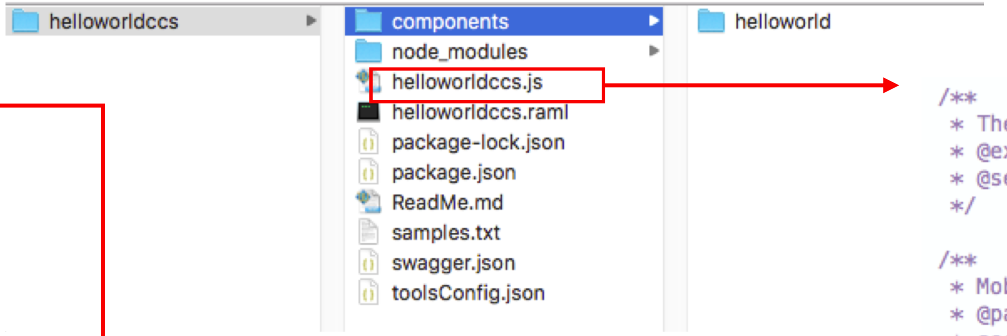
Editing the custom API

https://github.com/oracle/bots-node-sdk/blob/master/bin/templates/ccservice/api.js

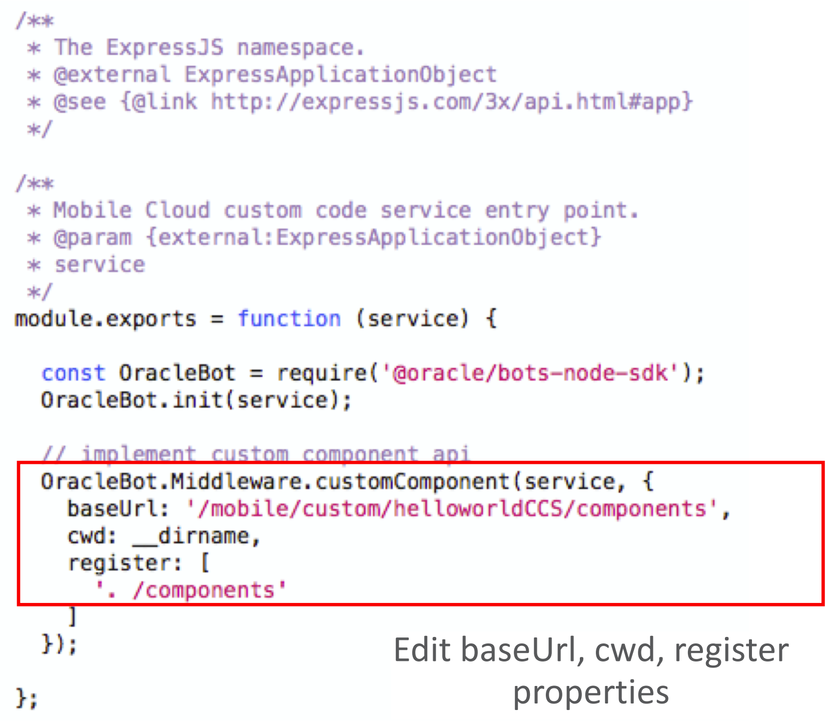
Copy Content from api.js



..
api.js
component.service.raml
index.js



Copy Content



```
/**
 * The ExpressJS namespace.
 * @external ExpressApplicationObject
 * @see {@link http://expressjs.com/3x/api.html#app}
 */

/**
 * Mobile Cloud custom code service entry point.
 * @param {external:ExpressApplicationObject}
 * service
 */
module.exports = function (service) {

  const OracleBot = require('@oracle/bots-node-sdk');
  OracleBot.init(service);

  // implement custom component api
  OracleBot.Middleware.customComponent(service, {
    baseUrl: '/mobile/custom/helloworldCCS/components',
    cwd: __dirname,
    register: [
      '. /components'
    ]
  });

};
```

Edit baseUrl, cwd, register properties

Custom component service code explained

```
module.exports = function (service) {

  const OracleBot = require('@oracle/bots-node-sdk');
  OracleBot.init(service);

  // implement custom component api
  OracleBot.Middleware.customComponent(service, {
    baseUrl: '/mobile/custom/helloworldCCS/components',
    cwd: __dirname,
    register: [
      '. /components'
    ]
  });

};
```

Node module definition

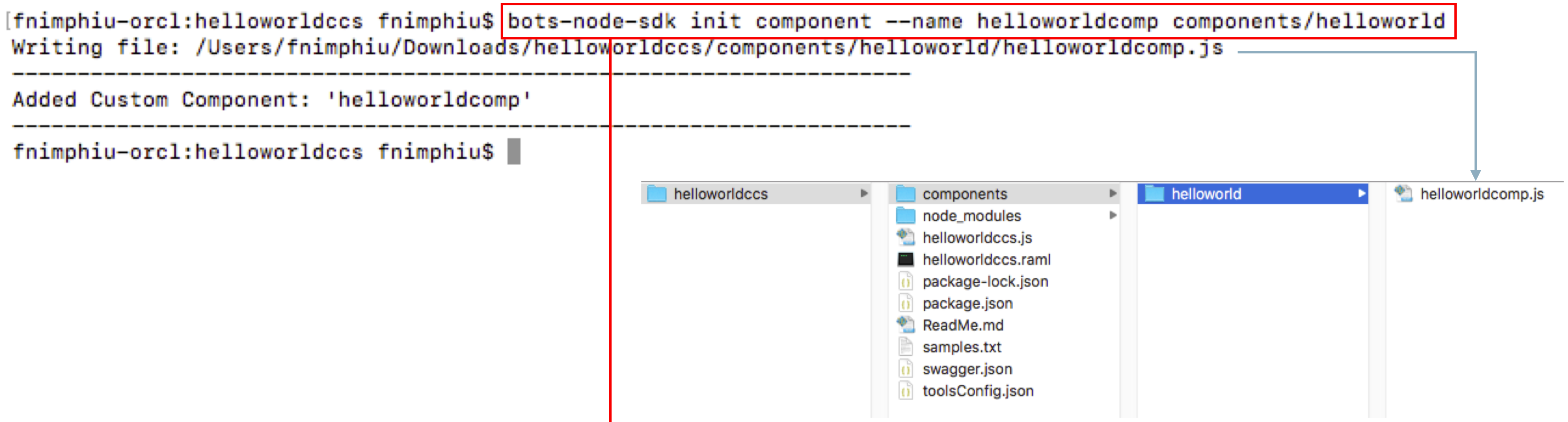
Load command for Bot Node.js SDK

Request to custom component router

REST URI to invoke custom component (should match your API URI)

Relative folder custom components are Searched in

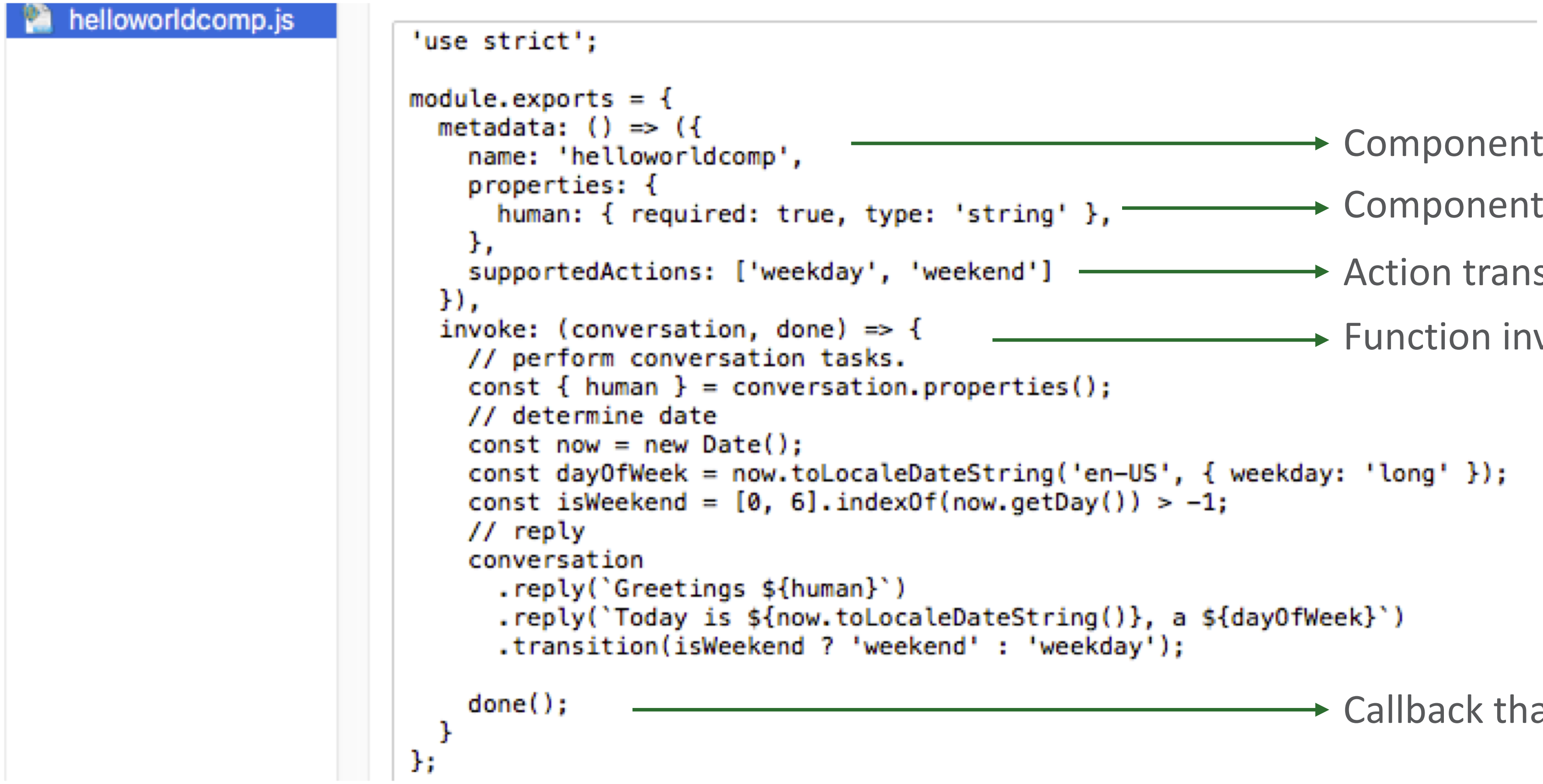
Creating a custom component



```
fnimphiu-orcl:helloworldccs fnimphiu$ bots-node-sdk init component --name helloworldcomp components/helloworld
Writing file: /Users/fnimphiu/Downloads/helloworldccs/components/helloworld/helloworldcomp.js
------------------------------------------------------------------
Added Custom Component: 'helloworldcomp'
------------------------------------------------------------------
fnimphiu-orcl:helloworldccs fnimphiu$
```

```
bots-node-sdk init component -name helloworldcomp components/helloworld
```

Generated custom component file & code


helloworldcomp.js

```
'use strict';

module.exports = {
  metadata: () => ({
    name: 'helloworldcomp',
    properties: {
      human: { required: true, type: 'string' },
    },
    supportedActions: ['weekday', 'weekend']
  }),
  invoke: (conversation, done) => {
    // perform conversation tasks.
    const { human } = conversation.properties();
    // determine date
    const now = new Date();
    const dayOfWeek = now.toLocaleDateString('en-US', { weekday: 'long' });
    const isWeekend = [0, 6].indexOf(now.getDay()) > -1;
    // reply
    conversation
      .reply(`Greetings ${human}`)
      .reply(`Today is ${now.toLocaleDateString()}, a ${dayOfWeek}`)
      .transition(isWeekend ? 'weekend' : 'weekday');

    done();
  }
};
```

Component invocation name

Component properties

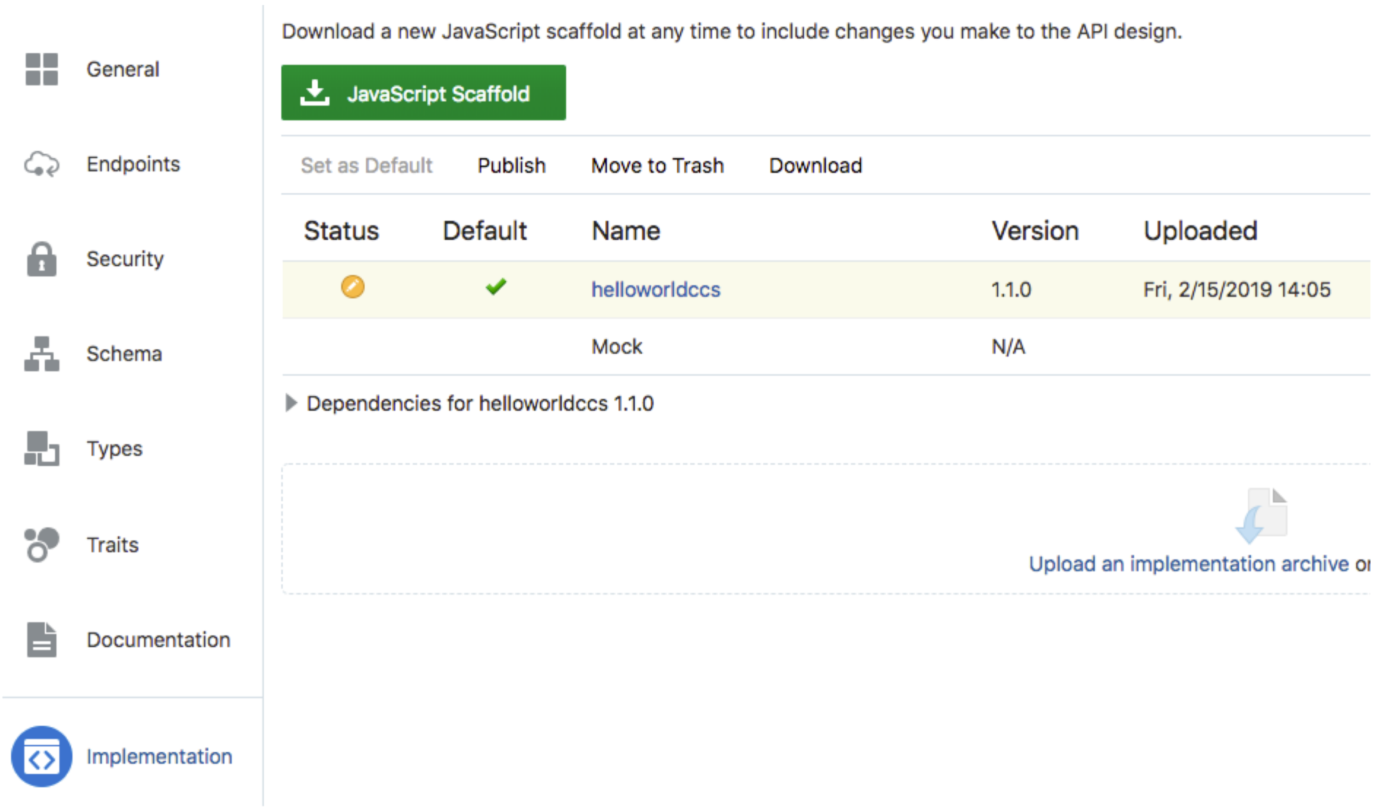
Action transitions

Function invoked at runtime

Callback that must be called at the end

Deploying the custom component service to Mobile Hub

- compress project root folder to a *zip*-file
- Upload *zip-file* as custom API implementation
- Use embedded tester in Oracle Mobile Hub to test GET method
- Expose custom API on Mobile Hub backend



Download a new JavaScript scaffold at any time to include changes you make to the API design.

Status	Default	Name	Version	Uploaded
●	✓	helloworldccs	1.1.0	Fri, 2/15/2019 14:05
		Mock	N/A	

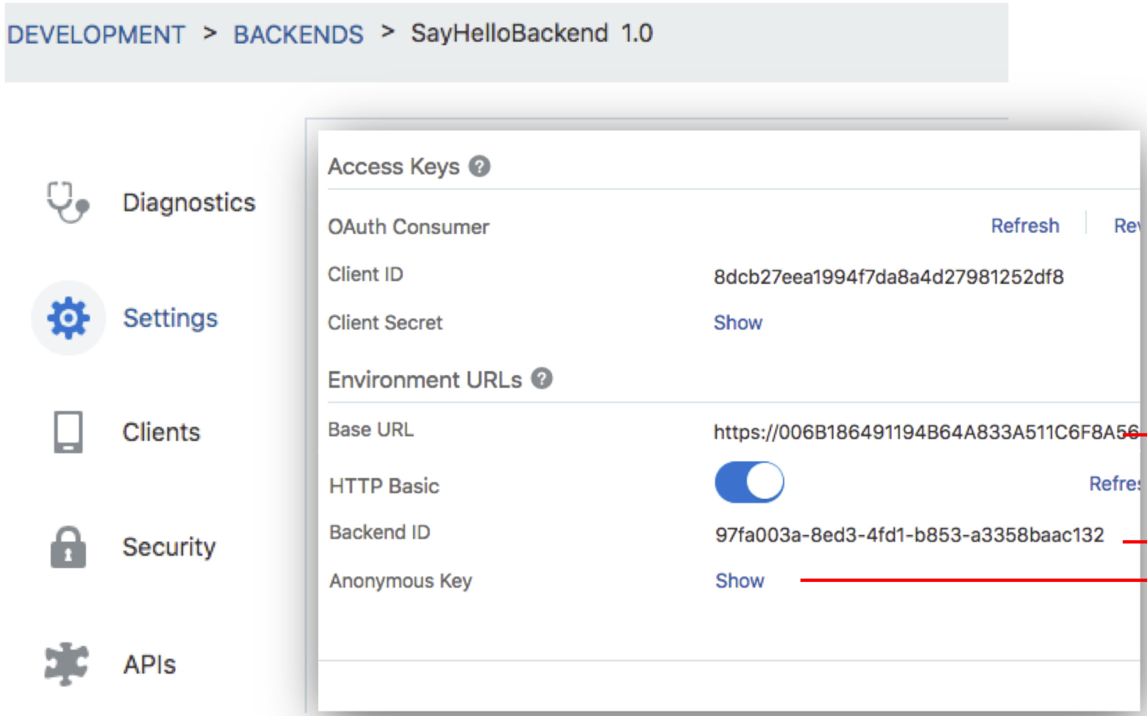
Dependencies for helloworldccs 1.1.0

Upload an implementation archive o

'Deployment' to Oracle Digital Assistant

Component registration in Oracle Digital Assistant skill

Oracle Mobile Hub


DEVELOPMENT > BACKENDS > SayHelloBackend 1.0

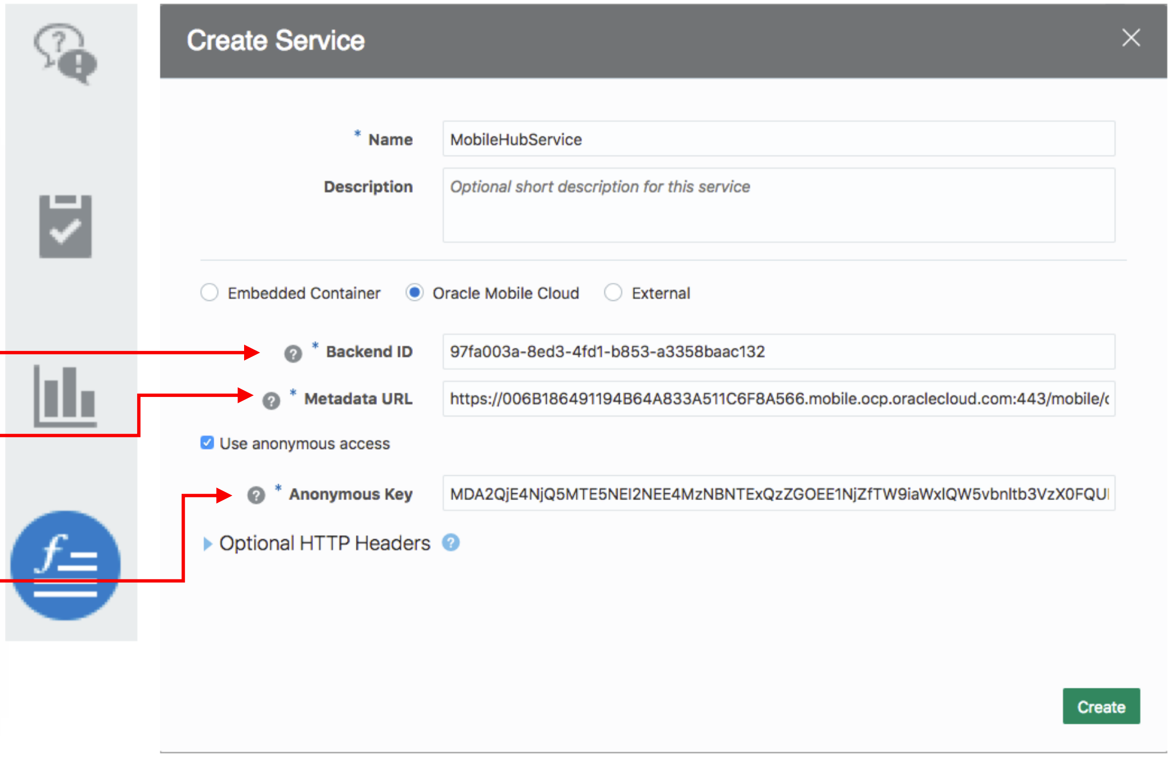
Access Keys

OAuth Consumer	Refresh | Re
Client ID	8dcb27eea1994f7da8a4d27981252df8
Client Secret	Show

Environment URLs

Base URL	https://006B186491194B64A833A511C6F8A56
HTTP Basic	Refres
Backend ID	97fa003a-8ed3-4fd1-b853-a3358baac132
Anonymous Key	Show

Skill


Create Service

* Name	MobileHubService
Description	*Optional short description for this service*

( ) Embedded Container [✓ Oracle Mobile Cloud] ( ) External

* Backend ID	97fa003a-8ed3-4fd1-b853-a3358baac132
* Metadata URL	https://006B186491194B64A833A511C6F8A566.mobile.ocp.oraclecloud.com:443/mobile/

[✓] Use anonymous access

* Anonymous Key	MDA2QjE4NjQ5MTE5NEI2NEE4MzNBNTExQzZGOEE1NjZfTW9iaWxlQW5vbnltb3VzX0FQU

Optional HTTP Headers

Topic Agenda

1 Mobile Hub introduction

2 Custom component services in Mobile Hub

3 Building custom components in Mobile Hub

4 Backend integration

5 Local development and debugging

In addition to multi-channel support, **backend integration is a good argument for using Oracle Mobile Hub** to create custom components in

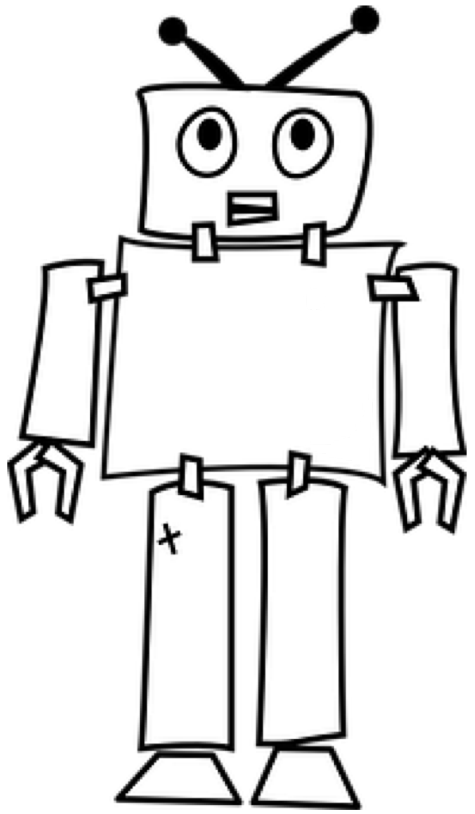
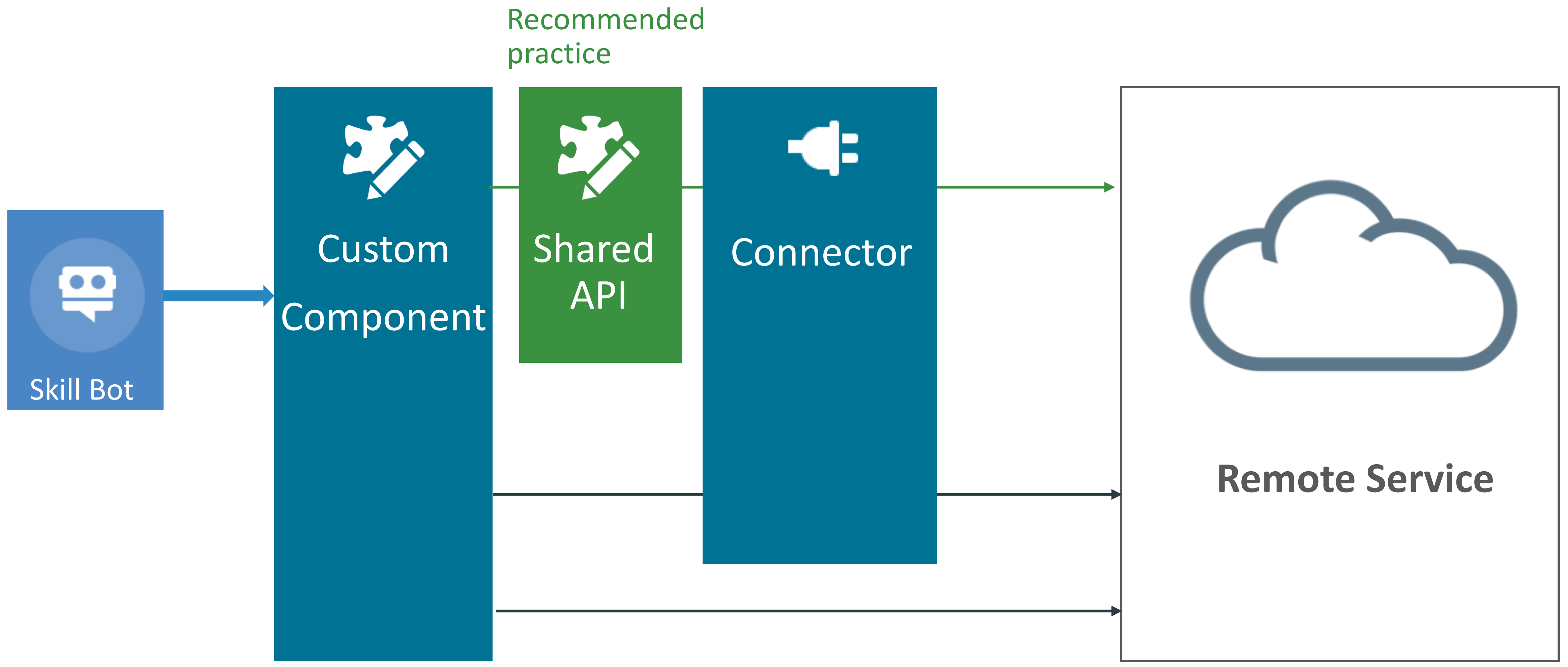


Image courtesy of Farbentek at FreeDigitalPhotos.net

Mobile Hub backend integration options



You can **access** the **Oracle Mobile Hub SDK through** the **Custom Component SDK** to access Mobile Hub custom APIs, platform APIs and Connectors

```
conversation.oracleMobile.<function>
```

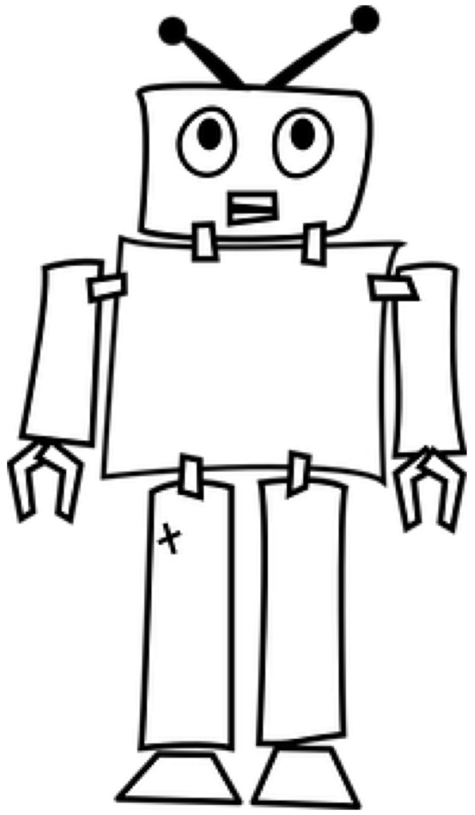


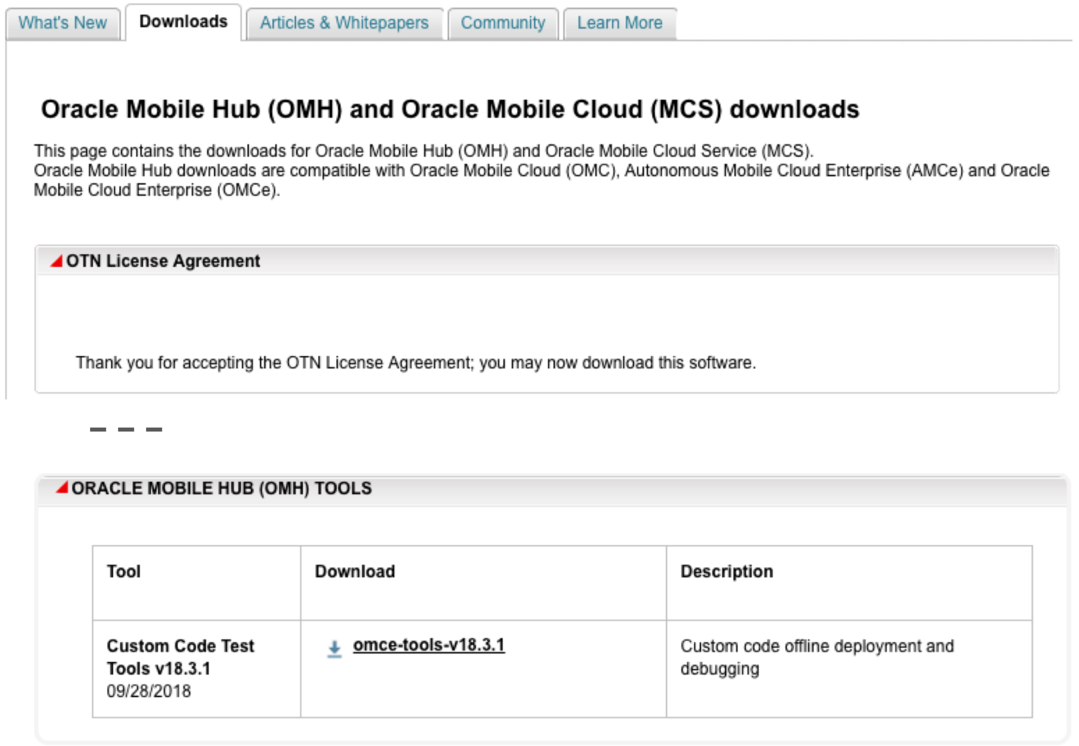
Image courtesy of Farbentek at FreeDigitalPhotos.net

Topic agenda

Custom component debugging with Oracle Mobile Hub

- Install Oracle Custom Code Test Tool
  - Download from OTN
  - Follow instructions in readme
- Configure backend with code test tool reference
  - Code test tool proxy installed as custom API
- Have local copy of component service custom API
  - Configure toolsConfig.json with backend access
- Start Local Debugging
  - Code test tool command

https://www.oracle.com/technetwork/topics/cloud/downloads/mobile-cloud-service-3636470.html



Oracle Mobile Hub (OMH) and Oracle Mobile Cloud (MCS) downloads

This page contains the downloads for Oracle Mobile Hub (OMH) and Oracle Mobile Cloud Service (MCS). Oracle Mobile Hub downloads are compatible with Oracle Mobile Cloud (OMC), Autonomous Mobile Cloud Enterprise (AMCe) and Oracle Mobile Cloud Enterprise (OMCe).

OTN License Agreement

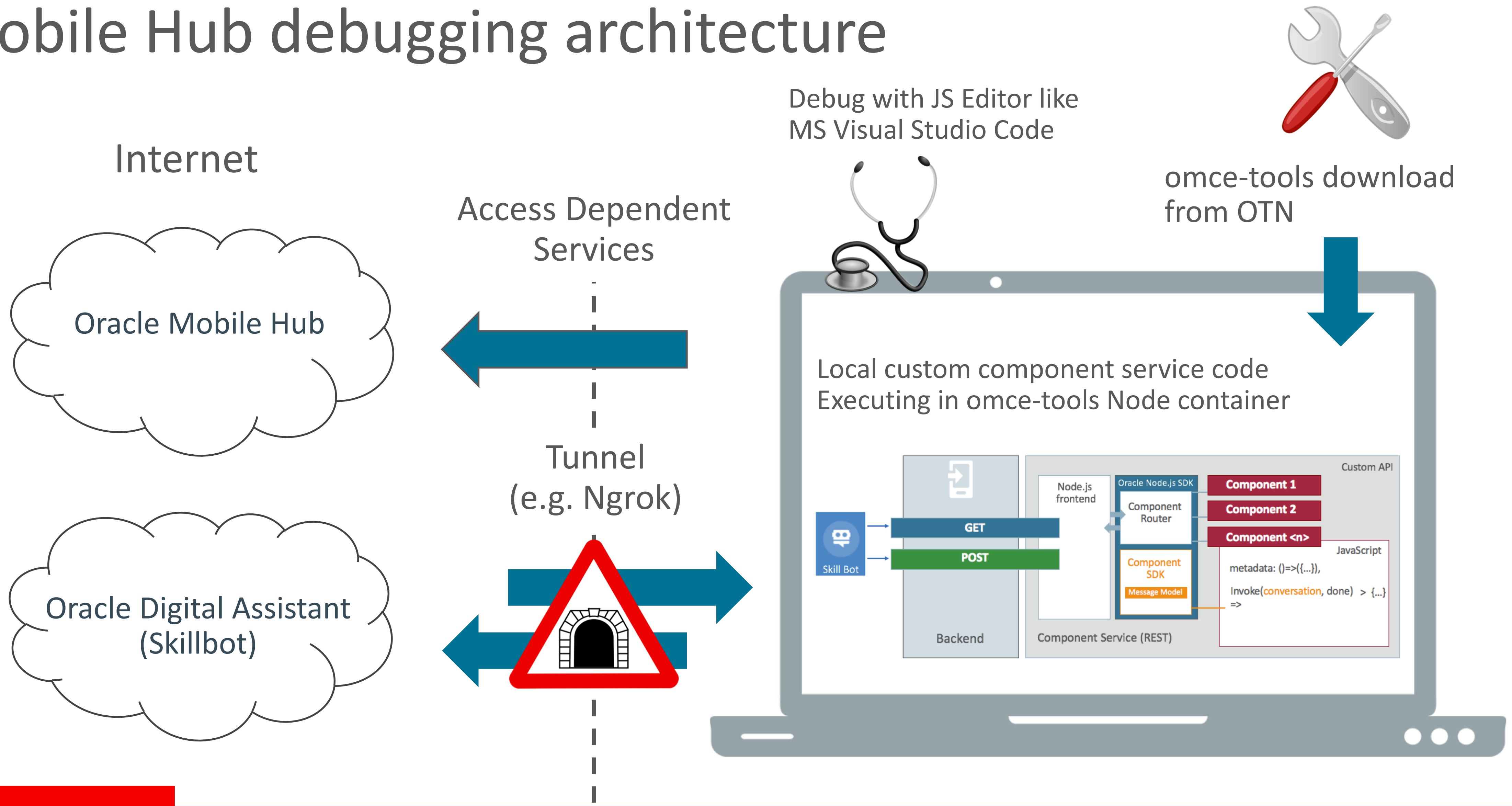
Thank you for accepting the OTN License Agreement; you may now download this software.

- - -

ORACLE MOBILE HUB (OMH) TOOLS

Tool	Download	Description
Custom Code Test Tools v18.3.1 09/28/2018	omce-tools-v18.3.1	Custom code offline deployment and debugging

Mobile Hub debugging architecture


Internet
Debug with JS Editor like MS Visual Studio Code
omce-tools download from OTN
Access Dependent Services
Oracle Mobile Hub
Local custom component service code Executing in omce-tools Node container
Tunnel (e.g. Ngrok)
Oracle Digital Assistant (Skillbot)
Custom API
Skill Bot
GET
POST
Backend
Node.js frontend
Oracle Node.js SDK
Component Router
Component SDK
Message Model
Component 1
Component 2
Component <n>
JavaScript
metadata: ()=>({...}),
Invoke(conversation, done) > {...} =>
Component Service (REST)

Integrated Cloud

Applications & Platform Services

ORACLE®

Oracle Digital Assistant Hands-On

TBD