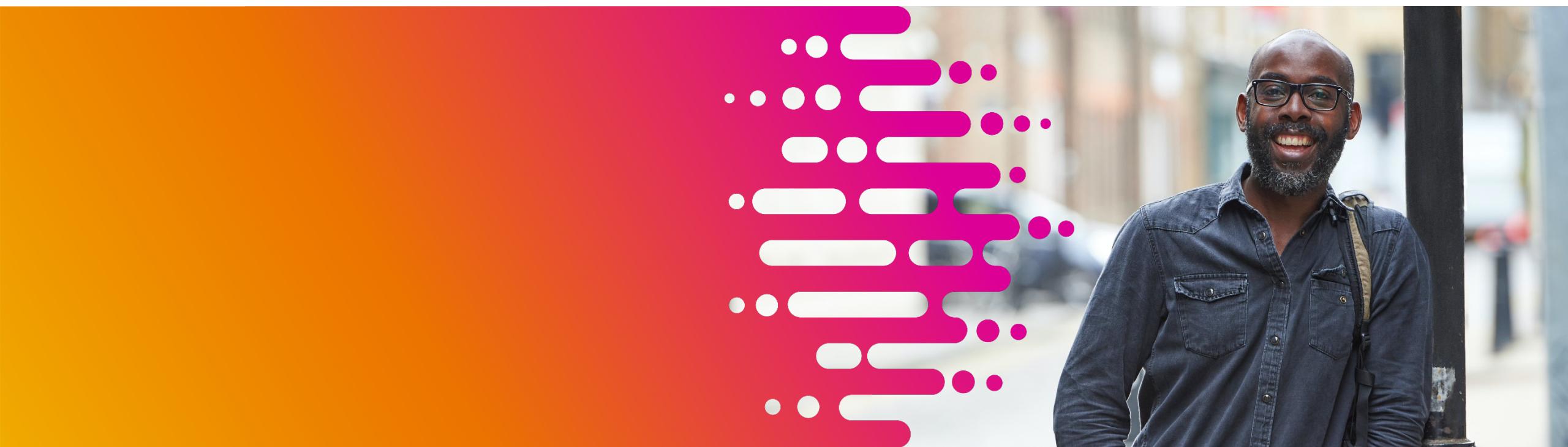


CAP External Service

한 정우, SAP

PUBLIC

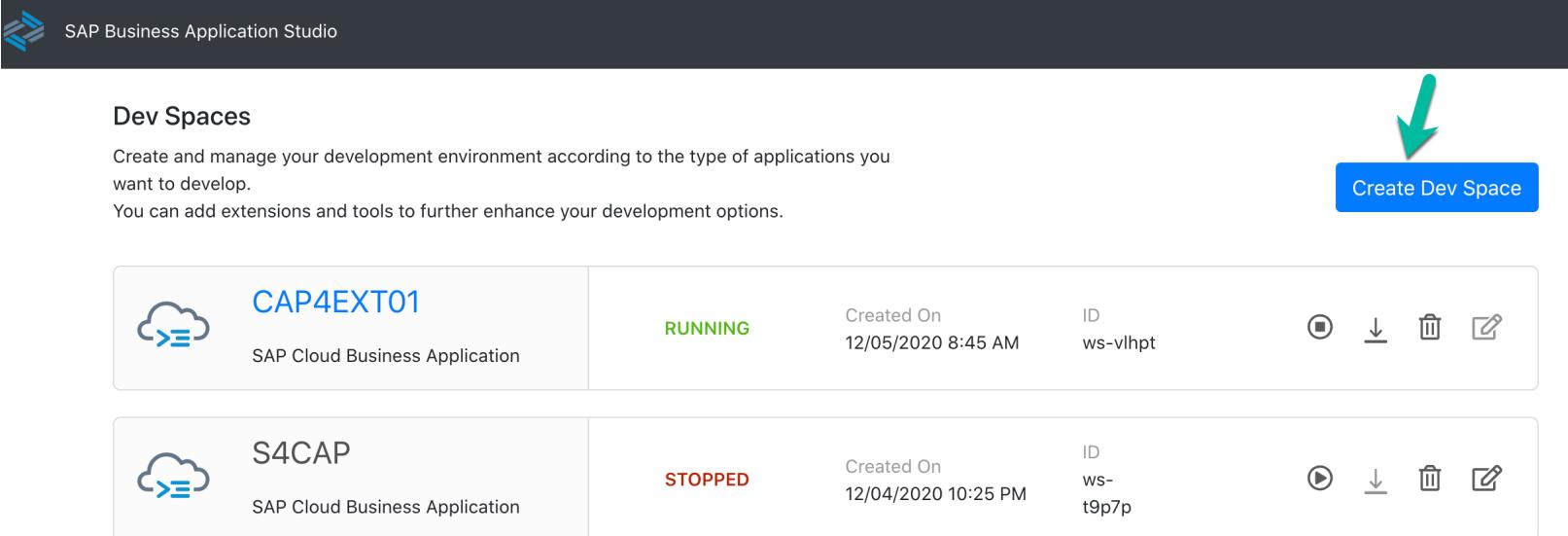
Part I – Consume external service(oData)



CAP External Service

Create Dev Space

Biz App Studio상에서 Dev Space를 생성



SAP Business Application Studio

Dev Spaces

Create and manage your development environment according to the type of applications you want to develop.
You can add extensions and tools to further enhance your development options.

Create Dev Space

 CAP4EXT01 SAP Cloud Business Application	RUNNING Created On 12/05/2020 8:45 AM	ID ws-vlhpt	
 S4CAP SAP Cloud Business Application	STOPPED Created On 12/04/2020 10:25 PM	ID ws-t9p7p	



Create a New Dev Space

CAPEXT02



What kind of application do you want to create?



SAP Cloud Business Application Dev Space

Build business services and business applications and extend S/4HANA using SAP Cloud Application Programming Model, Fiori and Java or Node.js.

SAP Predefined Extensions

The following extensions are enabled by default.



Basic Tools

Allows you to optimize your web development workflow. The extension...
[more](#)

CDS Tools

Allows you to develop applications based on CDS using the CDS...
[more](#)

Chromium Browser Tools

Allows you to use Chromium tools.



Fiori Application

Allows you to create a fiori application, using the Yeoman generator.

Additional SAP Extensions

Select additional extensions to enhance your space.



SAPUI5 Adaptation Project

Allows to extend SAPUI5 applications using Adaptation project and Visual Editor



CDS Graphical Modeler

Allows you to design SAP core data services models in SAP...
[more](#)

Launchpad Module

Allows you to add a launchpad to your multitarget application



Development Tools for SAP Work Zone

The development tools allows you to build UI5 applications

[Cancel](#)[Create Dev Space](#)

Dev Spaces

Create and manage your development environment according to the type of applications you want to develop.

You can add extensions and tools to further enhance your development options.

[Create Dev Space](#)

 CAPEXT02 SAP Cloud Business Application	 RUNNING	Created On 12/05/2020 10:30 PM	ID WS- 6z6gm	  
---	--	-----------------------------------	--------------------	---



EXPLORER



NO FOLDER OPENED



You have not yet opened a workspace.



Open Workspace



Problems

user@workspaces-ws-6z6am-deployment-7dbbc66864-s6264: ~/projects/candemo20 ×

```
user: user $ pwd
/home/user
user: user $ ls
javall node_modules projects tmp
user: user $ cd projects
user: projects $ mkdir capdemo20
user: projects $ cd capdemo20/
user: capdemo20 $ ls
user: capdemo20 $ cds init
[cds] - creating new project in current folder
[cds] > adding feature 'nodejs'...
[cds] - done.
```

Find samples on <https://github.com/SAP-samples/cloud-cap-samples>

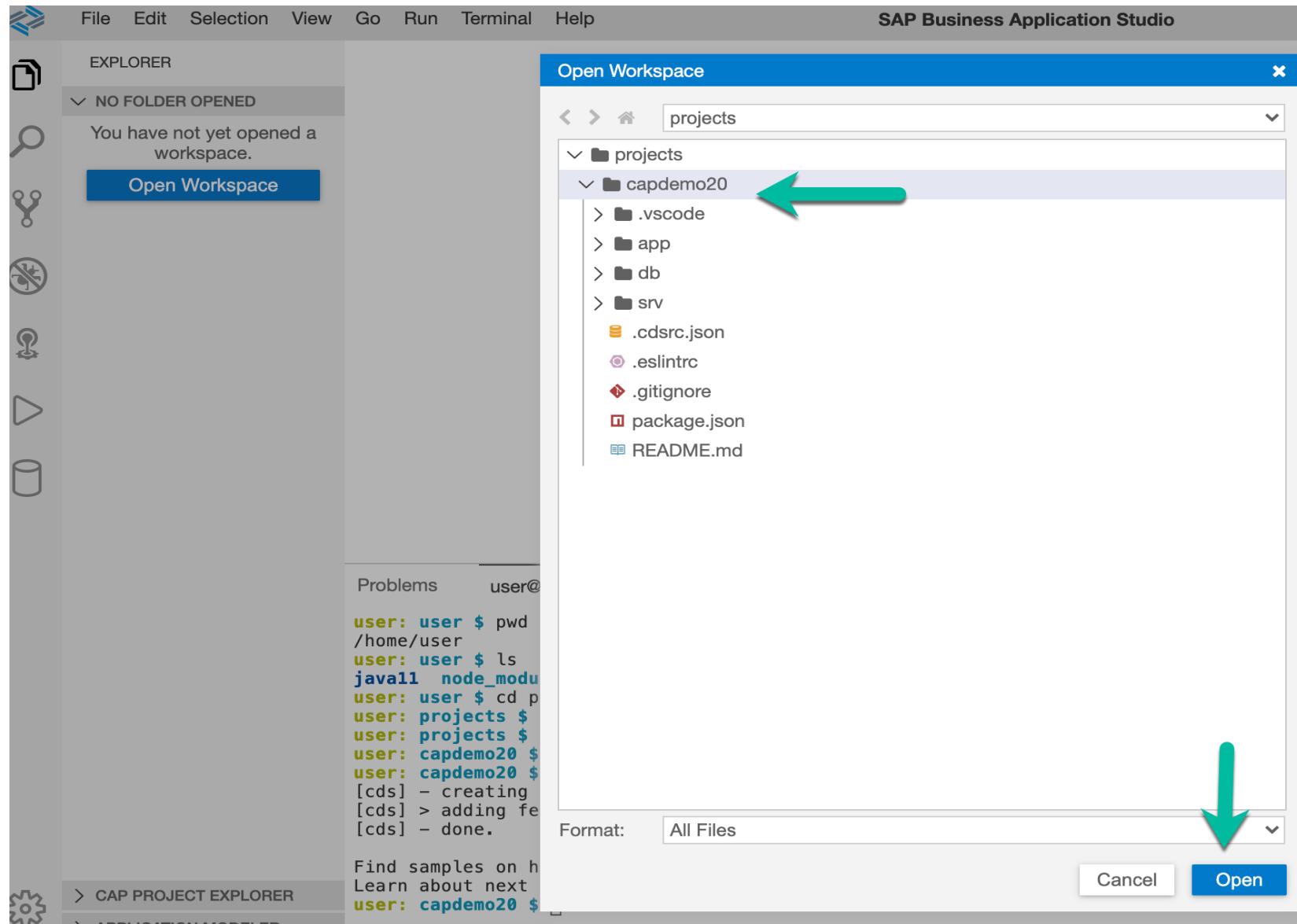
Learn about next steps at <https://cap.cloud.sap/docs/get-started>

```
user: candemo20 $
```



> CAP PROJECT EXPLORER

> APPLICATION MODELER



The screenshot shows the SAP Business Application Studio interface. The top menu bar includes File, Edit, Selection, View, Go, Run, Terminal, and Help. The title bar reads "SAP Business Application Studio".

The left sidebar is the "EXPLORER" view, which displays the project structure of "CAPDEMO20". A red box highlights the "app", "db", and "srv" folders under ".vscode". A green arrow points from the "package.json" file in the Explorer to its corresponding editor tab.

The main editor tab is titled "package.json" and contains the following JSON code:

```
1  {
2      "name": "capdemo20",
3      "version": "1.0.0",
4      "description": "A simple CAP project.",
5      "repository": "<Add your repository here>",
6      "license": "UNLICENSED",
7      "private": true,
8      "dependencies": {
9          "@sap/cds": "^4",
10         "express": "^4"
11     },
12     "devDependencies": {
13         "sqlite3": "^5"
14     },
15     "scripts": {
16         "start": "npx cds run"
17     }
18 }
```



EXPLORER



Welcome

package.json

NorthWind.edmx x



CAPDEMO20



.vscode



app



db

srv

.cdsrc.json

.eslintrc

.gitignore

NorthWind.edmx

package.json

README.md

```
1 <?xml version="1.0" encoding="utf-8"?><edmx:Edmx Version="4.0" xmlns:edmx="htt
```

SAP Business Application Studio

File Edit Selection View Go Run Terminal Help

EXPLORER

Welcome package.json

```
2 "name": "capdemo20",
3 "version": "1.0.0",
4 "description": "A simple CAP project.",
5 "repository": "<Add your repository here>",
6 "license": "UNLICENSED",
7 "private": true,
8 "dependencies": {
9   "@sap/cds": "^4",
10  "express": "^4"
11 },
12 "devDependencies": {
13   "sqlite3": "^5"
14 },
15 "scripts": {
16   "start": "npx cds run"
17 },
18 "cds": {
19   "requires": {
20     "NorthWind": {
21       "kind": "odata",
22       "model": "srv/external/NorthWind"
23     }
24   }
25 }
```

Problems 3 user@workspaces-ws-6z6gm-deployment-7dbbc66864-s6264: ~/projects/capdemo20 ×

```
user: capdemo20 $ cds import NorthWind.edmx
[cds] - updated ./package.json
[cds] - imported API to srv/external/NorthWind.csn
> use it in your CDS models through the like of:
```

```
using { NorthWind as external } from './external/NorthWind.csn';
```

NPM SCRIPTS

package.json

start

CAP PROJECT EXPLORER



EXPLORER



CAPDEMO20



.vscode



app



db



srv



external

NorthWind.csn

NorthWind.edmx

catalog-service.cds

.cdsrc.json

.eslintrc

.gitignore

package.json

README.md

Welcome

package.json

catalog-service.cds

```
1 using {NorthWind as external} from './external/NorthWind.csn';
2
3 service CatalogService {
4
5     @readonly
6     entity Products as projection on external.Products {
7         key ID, Name, Description, ReleaseDate, DiscontinuedDate, Rating, Price
8     };
9
10 }
```

SAP Business Application Studio

EXPLORER

Welcome package.json catalog-service.cds catalog-service.js ×

```
1 const cds = require('@sap/cds');
2
3 module.exports = cds.service.impl(async function() {
4     const { Products } = this.entities;
5     const service = await cds.connect.to('NorthWind');
6     this.on('READ', Products, request => {
7         return service.tx(request).run(request.query);
8     });
9});
```

SAP Business Application Studio

EXPLORER

>Welcome package.json catalog-service.cds catalog-service.js NorthWind-Products.csv

1 ID;Name;Description;ReleaseDate;DiscontinuedDate;Rating;Price
2 0;Bread;Whole grain bread;1992-01-01T00:00:00Z;;4;2.5
3 1;Milk;Low fat milk;1995-10-01T00:00:00Z;;3;3.5

CAPDEMO20

.vscode

app

db

srv

external

data

NorthWind-Products.csv

NorthWind.csn

NorthWind.edmx

catalog-service.cds

catalog-service.js

.cdsrc.json

.eslintrc

.gitignore

package.json

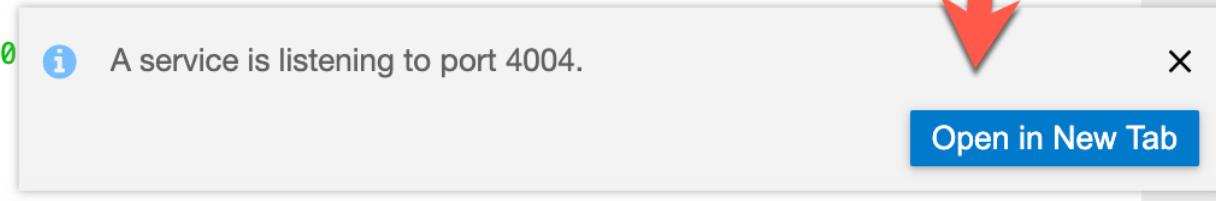
README.md

```
user: capdemo20 $  
user: capdemo20 $  
user: capdemo20 $  
user: capdemo20 $ cds watch  
  
cds serve all --with-mocks --in-memory?  
( watching: cds,csn,csv,ts,mjs,cjs,js,json,properties,edmx,xml,env... )  
  
[ERROR] srv/external/NorthWind.csn:162: Artifact "NorthWind.Person" has not been found (in entity:"NorthWind.Customer")  
[ERROR] srv/external/NorthWind.csn:174: Artifact "NorthWind.Person" has not been found (in entity:"NorthWind.Employee")  
[ERROR] srv/external/NorthWind.csn:60: Artifact "NorthWind.Product" has not been found (in entity:"NorthWind.FeaturedProduct")  
[ERROR] srv/external/NorthWind.csn:35: Artifact "ODataDemo.Category" has not been found (in entity:"NorthWind.Products"/element:"Categories")  
[ERROR] srv/external/NorthWind.csn:105: Artifact "ODataDemo.Product" has not been found (in entity:"NorthWind.Categories", element:"Products")  
[ERROR] srv/external/NorthWind.csn:131: Artifact "ODataDemo.Product" has not been found (in entity:"NorthWind.Suppliers"/element:"Products")  
[ERROR] srv/external/NorthWind.csn:241: Expected valid string for property 'kind'
```

restart

NorthWind.csn → 파일 수정(Copy & Paste)

```
user: capdemo20 $  
user: capdemo20 $ cds watch  
  
cds serve all --with-mocks --in-memory?  
( watching: cds,csn,csv,ts,mjs,cjs,js,json,properties,edmx,xml,env... )  
  
[cds] - model loaded from 2 file(s):  
  
    srv/catalog-service.cds  
    srv/external/NorthWind.csn  
  
[cds] - using bindings from: { registry: '~/.cds-services.json' }  
[cds] - connect to db > sqlite { database: ':memory:' }  
    > filling NorthWind.Products from srv/external/data/NorthWind-Products.csv  
/> successfully deployed to sqlite in-memory db  
  
[cds] - serving CatalogService { at: '/catalog', impl: 'srv/catalog-service.js' }  
[cds] - mocking NorthWind { at: '/north-wind' }  
  
[cds] - launched in: 1008.543ms  
[cds] - server listening on { url: 'http://localhost:4015' } A service is listening to port 4004.  
[ terminate with ^C ]
```



Welcome to cds.services

These are the paths currently served ...

[**/catalog / \\$metadata**](#)

- [Products ...in Fiori](#)

[**/north-wind / \\$metadata**](#)

- [Address ...in Fiori](#)
- [Advertisements ...in Fiori](#)
- [Categories ...in Fiori](#)
- [Customer ...in Fiori](#)
- [Employee ...in Fiori](#)
- [FeaturedProduct ...in Fiori](#)
- [PersonDetails ...in Fiori](#)
- [Persons ...in Fiori](#)
- [ProductDetails ...in Fiori](#)
- [Products ...in Fiori](#)
- [Suppliers ...in Fiori](#)



```
// 20201206121831
// https://scpcfnl-workspaces-ws-6z6gm-app1.eu20.ap

{
  "@odata.context": "$metadata#Products",
  "value": [
    {
      "ID": 0,
      "Name": "Bread",
      "Description": "Whole grain bread",
      "ReleaseDate": "1992-01-01T00:00:00.000Z",
      "DiscontinuedDate": null,
      "Rating": 4,
      "Price": 2.5
    },
    {
      "ID": 1,
      "Name": "Milk",
      "Description": "Low fat milk",
      "ReleaseDate": "1995-10-01T00:00:00.000Z",
      "DiscontinuedDate": null,
      "Rating": 3,
      "Price": 3.5
    }
  ]
}
```

The screenshot shows the SAP Business Application Studio interface. In the top navigation bar, the title "SAP Business Application Studio" is visible. The left sidebar contains various icons for file operations like Open, Save, Find, and Run. The main area is titled "EXPLORER" and shows a tree view of a project structure. The "package.json" file is selected and highlighted with a blue background. The code editor on the right displays the contents of the package.json file, which includes dependencies for SAP CDS and Express, and a script for starting the application. A red arrow points from the bottom left towards the "package.json" file in the Explorer view.

```
6  "license": "UNLICENSED",
7  "private": true,
8  "dependencies": {
9    "@sap/cds": "^4",
10   "express": "^4"
11 },
12 "devDependencies": {
13   "sqlite3": "^5"
14 },
15 "scripts": {
16   "start": "npx cds run"
17 },
18 "cds": {
19   "requires": {
20     "NorthWind": {
21       "kind": "odata",
22       "model": "srv/external/NorthWind",
23       "credentials": {
24         "url": "https://services.odata.org/Experimental/OData/OData.svc"
25       }
26     }
27   }
28 }
29 }
```

\$> Cds watch →

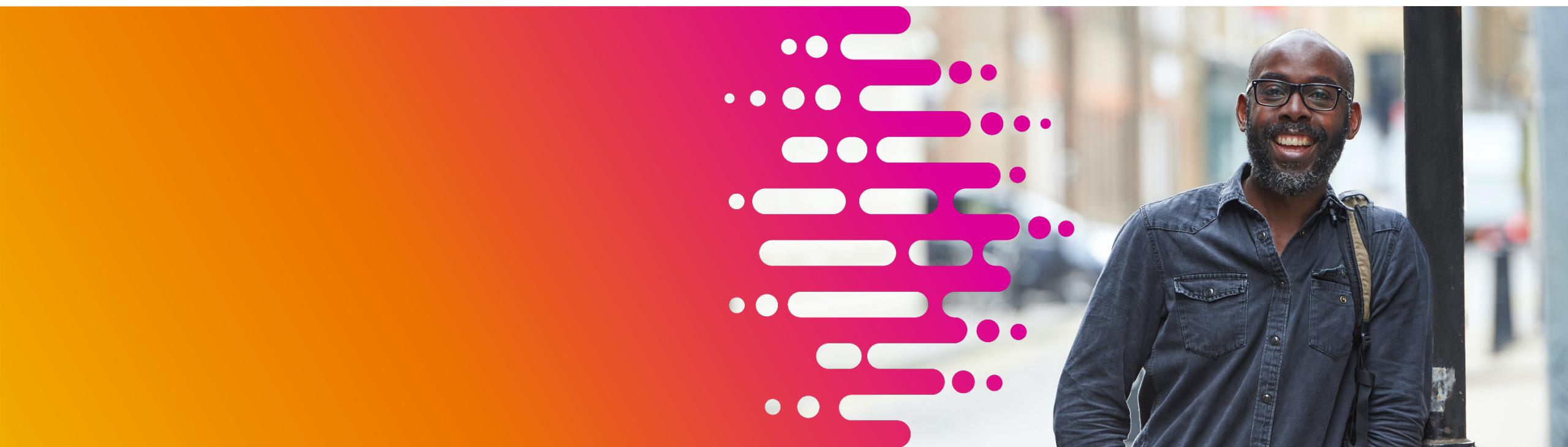
Welcome to cds.services

These are the paths currently served ...

/catalog / \$metadata

- [Products](#) ...in Fiori

Part II – Deploy to CF. Testing the app locally using destination in the SCP CF



[Overview](#)[Services](#)

Service Marketplace

Service Instances

[Subscriptions](#)[Cloud Foundry](#)

Spaces

Quota Plans

Org Members

[HTML5 Applications](#)[Connectivity](#)

Destinations

1

Cloud Connectors

[Security](#)

Administrators

Users

Role Collections

Roles

[Useful Links](#)[Legal Information](#)

Search

HTTP	MyS4System	ProxyType URL	OnPremise http://saphana2.demo21.co.kr:57000	
HTTP	NorthWind	Authentication ProxyType URL	NoAuthentication Internet https://services.odata.org/Experimental/OData/OD...	
HTTP	Northwind_OData	Authentication ProxyType URL	NoAuthentication Internet https://services.odata.org/V2/Northwind/Northwin...	
HTTP	partner_service_par...	Authentication ProxyType URL	OAuth2ClientCredentials Internet https://sap.com/DUMMY_URL	
HTTP	partner_service_ue...	Authentication ProxyType URL	OAuth2UserTokenExchange Internet https://api.authentication.eu20.hana.ondemand.c...	

Destination Configuration

Name: *	<input type="text" value="NorthWind"/>
Type:	<input type="text" value="HTTP"/>
Description:	<input type="text"/>
URL: *	<input type="text" value="https://services.odata.org/Experimental/OData/ODATA.svc"/>
Proxy Type:	<input type="text" value="Internet"/>
Authentication:	<input type="text" value="NoAuthentication"/>

Additional Properties

[New Property](#)

Applications

Services

Service Marketplace

Service Instances 1

SAP HANA Cloud

SAP HANA

Home [Europe (Rot)] / CP Korea / CFNL / demo

Space: demo - Service Instances

Create Instance

2

 Search All Services All Statuses

Instance	Service	Plan	Bindings	Status
----------	---------	------	----------	--------

New Instance

1

Basic Info

2

Parameters

3

Review

Enter basic info for your service instance

Service: *

Destination

Service Plan: *

lite

Instance Name: * i

NorthWind-dest

Instance name is already in use in your current space



SAP Business Application Studio

File Edit Selection View Go Run Terminal Help

EXPLORER package.json xs-security.json mta.yaml x

(2)

```
1 ## Generated mta.yaml based on template version 0.4.0
2 ## appName = capdemo20
3 ## language=nodejs; multiTenant=false
4 ## approuter=
5 _schema-version: '3.1'
6 ID: capdemo20
7 version: 1.0.0
8 description: "A simple CAP project."
9 parameters:
10   enable-parallel-deployments: true
11
12 build-parameters:
13   before-all:
14     - builder: custom
15       commands:
16         - npm install --production
17         - npx -p @sap/cds-dk cds build --production
18
19 modules:
20 # ----- SERVER MODULE -----
21 - name: capdemo20-srv
22 #
23   type: nodejs
24   path: gen/srv
25   provides:
26     - name: srv-api      # required by consumers of CAP services (e.g. approuter)
27       properties:
28         srv-url: ${default-url}
29
```

(3)

Problems 9 user@workspaces-ws-6z6gm-deployment-7dbbc66864-pnwwm: ~/projects/capdemo20 x

(1)

```
user: capdemo20 $ cds add mta
[cds] - adding feature(s) to project in current folder
[cds] > adding feature 'mta'...
No SAP HANA service binding defined in the requires section of the project's package.json. Database module
[cds] - done.
```

user: capdemo20 \$

The screenshot shows the SAP Business Application Studio interface. The left sidebar contains icons for File, Edit, Selection, View, Go, Run, Terminal, and Help. The Explorer view on the left lists project files and folders, including .vscode, app, db, node_modules, srv, external, data (with NorthWind-Products.csv), NorthWind.csn, NorthWind.edmx, catalog-service.cds, catalog-service.js, .cdsrc.json, .eslintrc, .gitignore, mta.yaml (highlighted with a red box and labeled (1)), package-lock.json, package.json, README.md, and xs-security.json.

The main editor area displays the content of the mta.yaml file. A red box highlights the resources section, which is labeled (2). The code is as follows:

```
15 commands:
16   - npm install --production
17   - npx -p @sap/cds-dk cds build --production
18
19 modules:
20 # ----- SERVER MODULE -----
21 - name: capdemo20-srv
22 #
23   type: nodejs
24   path: gen/srv
25   provides:
26     - name: srv-api      # required by consumers of CAP services (e.g. approuter)
27     properties:
28       EXIT: 1
29   requires:
30     - name: NorthWind-dest
31     - name: NorthWind-xsuaa
32
33
34 resources:
35 - name: NorthWind-dest
36   type: org.cloudfoundry.existing-service
37   parameters:
38     service-name: NorthWind-dest
39
40 - name: NorthWind-xsuaa
41   type: org.cloudfoundry.managed-service
42   parameters:
43     path: ./xs-security.json
44     service: xsuaa
45     service-plan: application
```



EXPLORER

CAPDEMO20

.vscode

app

db

node_modules

srv

external

data

NorthWind-Products.csv

NorthWind.csn

NorthWind.edmx

catalog-service.cds

catalog-service.js

.cdsrc.json

.eslintrc

.gitignore

mta.yaml

package-lock.json

package.json (1)

README.md

xs-security.json

```
6   "license": "UNLICENSED",
7   "private": true,
8   "dependencies": {
9     "@sap/cds": "^4",
10    "express": "^4"
11  },
12  "devDependencies": {
13    "sqlite3": "^5"
14  },
15  "scripts": {
16    "start": "npx cds run"
17  },
18  "cds": {
19    "requires": {
20      "NorthWind": {
21        "kind": "odata",
22        "model": "srv/external/NorthWind",
23        "credentials": {
24          "destination": "NorthWind"
25        }
26      }
27    }
28  }
29}
30}
```

(2)

SAP Business Application Studio

File Edit Selection View Go Run Terminal Help

EXPLORER package.json xs-security.json x

CAPDEMO20

- .vscode
- app
- db
- node_modules
- srv
 - external
 - data
 - NorthWind-Products.csv
 - NorthWind.csn
 - NorthWind.edmx
 - catalog-service.cds
 - catalog-service.js
 - .cdsrc.json
 - .eslintrc
 - .gitignore
 - package-lock.json
 - package.json
- README.md
- xs-security.json (2)

1 "xsappname": "capdemo20",
2 "tenant-mode": "dedicated",
3 "scopes": [],
4 "attributes": [],
5 "role-templates": []
6
7
8

(3)

Problems 9 user@workspaces-ws-6z6gm-deployment-7dbbc66864-pnwwm: ~/projects/capdemo20 x

[cds] - model loaded from 2 file(s):
 srv/catalog-service.cds
 srv/external/NorthWind.csn

[cds] - using bindings from: { registry: '~/.cds-services.json' } (1)
user: capdemo20 \$ cds compile srv/ --to xsuaa > xs-security.json
[WARNING] srv/external/NorthWind.csn:36: The association "Categories" has cardinality "to many" but no ON-condition
user: capdemo20 \$

SAP Business Application Studio

File Edit Selection View Go Run Terminal Help

EXPLORER package.json xs-security.json mta.yaml

CAPDEMO20 .vscode app db node_modules srv external data NorthWind-Products.csv NorthWind.csn NorthWind.edmx catalog-service.cds catalog-service.js .cdsrc.json .eslintrc .gitignore mta.yaml (2)

Generated mta.yaml based on template version 0.4.0
appName = capdemo20
language=nodejs; multiTenant=false
approuter=
_schema-version: '3.1'
ID: capdemo20
version: 1.0.0
description: "A simple CAP project."
parameters:
enable-parallel-deployments: true

build-parameters:
before-all:
- builder: custom
commands:
- npm install --production
- npx -p @sap/cds-dk cds build --production

modules:
----- SERVER MODULE -----
- name: capdemo20-srv

type: nodejs
path: gen/srv
provides:
- name: srv-api # required by consumers of CAP services (e.g. approuter)
properties:
srv-url: \${default-url}

Problems 9 user@workspaces-ws-6z6gm-deployment-7dbbc66864-pnwwm: ~/projects/capdemo20
user: capdemo20 \$ cds add mta
[cds] - adding feature(s) to project in current folder
[cds] > adding feature 'mta'...
No SAP HANA service binding defined in the requires section of the project's package.json. Database module
[cds] - done.

user: capdemo20 \$

SAP Business Application Studio

EXPLORER

1 CAPDEMO20

> .vscode

app

db

node_modules

srv

external

data

NorthWind-Products.csv

NorthWind.csn

NorthWind.edmx

catalog-service.cds

catalog-service.js

.cdsrc.json

.eslintrc

.gitignore

mta.yaml (1)

package-lock.json

package.json

README.md

xs-security.json

```
15 | commands:
16 |   - npm install --production
17 |   - npx -p @sap/cds-dk cds build --production
18 |
19 | modules:
20 | # ----- SERVER MODULE -----
21 | - name: capdemo20-srv
22 | #
23 | type: nodejs
24 | path: gen/srv
25 | provides:
26 |   - name: srv-api      # required by consumers of CAP services (e.g. approuter)
27 |     properties:
28 |       EXIT: 1
29 |     requires:
30 |       - name: NorthWind-dest
31 |       - name: NorthWind-xsuaa
32 |
33 |
34 | resources:
35 | - name: NorthWind-dest
36 |   type: org.cloudfoundry.existing-service
37 |   parameters:
38 |     service-name: NorthWind-dest
39 |
40 | - name: NorthWind-xsuaa
41 |   type: org.cloudfoundry.managed-service
42 |   parameters:
43 |     path: ./xs-security.json
44 |     service: xsuaa
45 |     service-plan: application | (2)
46 |
```



EXPLORER



CAPDEMO20



.vscode



app



db



node_modules



srv

external

data

NorthWind-Products.csv

NorthWind.csн

NorthWind.edmx

catalog-service.cds

catalog-service.js

.cdsrc.json

.eslintrc

.gitignore

.mta.yaml

package-lock.json

package.json **(1)**

README.md

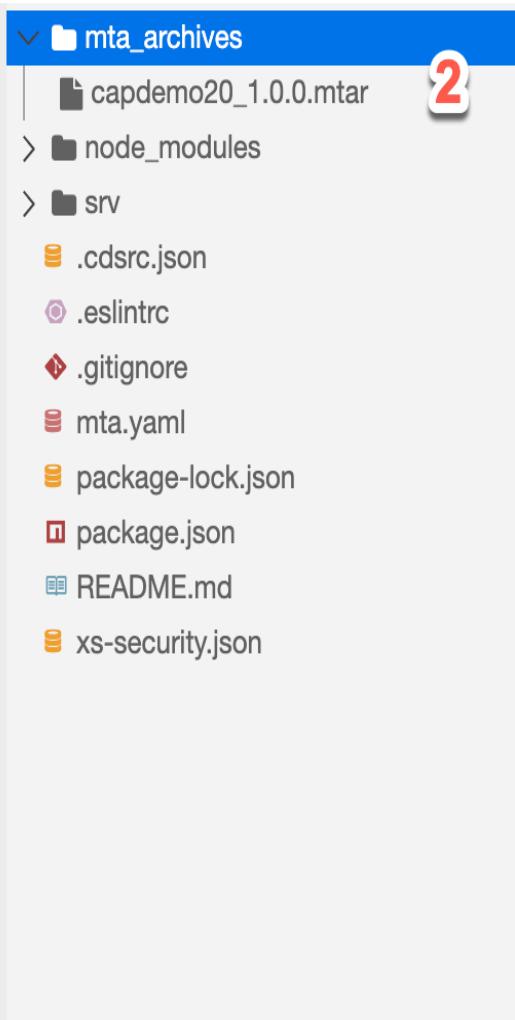
xs-security.json

package.json x xs-security.json

mta.yaml

```
6   "license": "UNLICENSED",
7   "private": true,
8   "dependencies": {
9     "@sap/cds": "^4",
10    "express": "^4"
11  },
12  "devDependencies": {
13    "sqlite3": "^5"
14  },
15  "scripts": {
16    "start": "npx cds run"
17  },
18  "cds": {
19    "requires": {
20      "NorthWind": {
21        "kind": "odata",
22        "model": "srv/external/NorthWind",
23        "credentials": {
24          "destination": "NorthWind"
25        }
26      }
27    }
28  }
29}
30}
```

(2)



Problems 9



user@workspaces-ws-6z6gm-deployment-7dbbc66864-pnwwm: ~/projects/capdemo20 x

1

user: capdemo20 \$ mbt build

```
[2020-12-06 03:59:36] INFO Cloud MTA Build Tool version 1.0.15
[2020-12-06 03:59:36] INFO generating the "Makefile_20201206035936.mta" file...
[2020-12-06 03:59:36] INFO done
[2020-12-06 03:59:36] INFO executing the "make -f Makefile_20201206035936.mta p=cf mtar= strict=true mode=" command
...
[2020-12-06 03:59:36] INFO validating the MTA project
[2020-12-06 03:59:36] INFO running the "before-all" build...
[2020-12-06 03:59:36] INFO executing the "npm install --production" command...
audited 261 packages in 1.455s
.
6 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities

[2020-12-06 03:59:39] INFO executing the "npx -p @sap/cds-dk cds build --production" command...
.....[cds] - determining build tasks for project [/home/user/projects/capdemo20].
[cds] - the following build tasks have been auto-created and will be executed.
{
  "build": {
    "target": "gen",
    "tasks": [
      {"for": "node-cf", "src": "srv", "options": {"model": ["db", "srv", "app"]}}
    ]
  }
}
```

Problems 9 user@workspaces-ws-6z6gm-deployment-7dbbc66864-pnwwm: ~/projects/capdemo20 x

user: capdemo20 \$ cf api https://api.cf.eu20.hana.ondemand.com
Setting api endpoint to **https://api.cf.eu20.hana.ondemand.com...**
OK

(1)

api endpoint: https://api.cf.eu20.hana.ondemand.com
api version: 2.156.0
Not logged in. Use 'cf login' or 'cf login --sso' to log in.

user: capdemo20 \$

user: capdemo20 \$ cf login

API endpoint: **https://api.cf.eu20.hana.ondemand.com**

(2)

Email: jungwoo.han@sap.com

Password:

Authenticating...

OK

Select an org:

1. CP_Korea_cfnlcm2
2. CPKorea_scpcfml

Org (enter to skip): 2

Targeted org **CPKorea_scpcfml**

Select a space:

1. demo
2. CAP
3. CAPJAVA

Space (enter to skip): 1

Targeted space **demo**

API endpoint: https://api.cf.eu20.hana.ondemand.com (API version: 2.156.0)

User: jungwoo.han@sap.com

Org: CPKorea_scpcfml

Space: demo

user: capdemo20 \$ cf deploy mta_archives/capdemo20_1.0.0.mtar ■

(3)

```
user: capdemo20 $ cf deploy mta_archives/capdemo20_1.0.0.mtar
Deploying multi-target app archive mta_archives/capdemo20_1.0.0.mtar in org CPKorea_scpcfnl / space demo as jungwoo.han@sap.com...
```

Uploading 1 files...

 /home/user/projects/capdemo20/mta_archives/capdemo20_1.0.0.mtar

OK

Operation ID: **fbad0ca3-3777-11eb-b8dc-eeee0a99877a**

Deploying in org "CPKorea_scpcfnl" and space "demo"

Detected MTA schema version: "3"

No deployed MTA detected - this is initial deployment

Detected new MTA version: "1.0.0"

Processing service "NorthWind-xsuaa"...

Setting service "NorthWind-xsuaa" parameters from "xs-security.json"

Creating service "NorthWind-xsuaa" from MTA resource "NorthWind-xsuaa"...

1 of 1 done

Creating application "capdemo20-srv" from MTA module "capdemo20-srv"...

Binding service instance "NorthWind-xsuaa" to application "capdemo20-srv"...

Binding service instance "NorthWind-dest" to application "capdemo20-srv"...

Uploading application "capdemo20-srv"...

Started async upload of application "capdemo20-srv"

Scaling application "capdemo20-srv" to "1" instances...

Staging application "capdemo20-srv"...

Application "capdemo20-srv" staged

Starting application "capdemo20-srv"...

Application "capdemo20-srv" started and available at "cpkorea-scpcfnl-demo-capdemo20-srv.cfapps.eu20.hana.ondemand.com"

Skipping deletion of services, because the command line option "--delete-services" is not specified.

Process finished.

Use "cf dmol -i fbad0ca3-3777-11eb-b8dc-eeee0a99877a" to download the logs of the process.

```
user: capdemo20 $ █
```

[Applications](#)[Services](#)

Service Marketplace

Service Instances

[SAP HANA Cloud](#)[SAP HANA](#)[Routes](#)[Home \[Europe \(Rot\)\]](#) / [CP Korea](#) / [CFNL](#) / [demo](#)

Space: demo - Applications

All: 3

[Deploy Application](#)

Search

Requested State	Name	Instances	Disk Quota	Memory	Actions
Started	capdemo20-srv	1/1	1024 MB	1024 MB	

 Overview[Home \[Europe \(Rot\)\]](#) / [CP Korea](#) ▾ / [CFNL](#) ▾ / [demo](#) ▾ / [capdemo20-srv](#) ▾ Service Bindings Security ▾

Roles

Scopes

Attributes

Role Templates

 User-Provided Variables Environment Variables Events Logs

Application: capdemo20-srv - Overview

Started

 Restart Start Stop + Instance - Instance Delete

Application Routes

[cpkorea-scpcfnl-demo-capdemo20-srv.cfapps.eu20.hana.ondemand.com](#)

Application Information

Instances: 1 of 1 running

Package Uploaded: 6 Dec 2020, 13:03:52 (GMT+09:00) (STAGED)

Buildpack: nodejs

Stack: Cloud Foundry Linux-based filesystem (Ubuntu 18.04) (cflinuxfs3)

SAP Cloud Platform Cockpit

Overview Service Bindings Security Roles Scopes Attributes Role Templates User-Provided Variables Environment Variables Events Logs

No staging environment variables

System-Provided

```
{
  "VCAP_SERVICES": {
    "destination": [
      {
        "label": "destination",
        "provider": null,
        "plan": "lite",
        "name": "NorthWind-dest",
        "tags": [
          "destination",
          "conn",
          "connsvc"
        ],
        "instance_name": "NorthWind-dest",
        "binding_name": null,
        "credentials": {
          "uaadomain": "authentication.eu20.hana.ondemand.com",
          "tenantmode": "dedicated",
          "clientid": "sb-clone570d867acd174416a1edeabafaf11169!b687|destination-xsappname!b2",
          "instanceid": "570d867a-cd17-4416-a1ed-eabafaf11169",
          "verificationkey": "----BEGIN PUBLIC KEY----\nMIICljANBgkqhkiG9w0BAQEFAAOCAg8AMIICCgKCAgEAwr81Yg/f5B897okFkqnjl7ITrHa11sn5HSoAMuvKJ1MUuKUyJCndJgIVHst7crvIvZPnj\n2Y7fnagnMLCrMGOipbn8U9c76qFyPjbyzosPNP0XxS44rhYPVFJoA1xAVA8aPcbYqH7qxDZEPfWBNdjp9lK45Qsw8UNe1FfZlh4byu/TRY0B8FcUQODAlhUuPaxRsI3OBBeWc6m2Nlmsm/yX0ov1gwSAuhRV5pP+wPq0qOrrrOFO9erOoPxBpaQ1l6RkveaQdECfJ0K241SdoJ2ZyNFyZi8QHQ74JFRuMJIAmk3GOx1odFhFizSdvIz5LoGxeJXR0Bb/HaT7F44MFKgSbkjAzK/ihrJuW1s0/TTmaoe9rtrpx6jLSX8miXqMQ1O5b2hcF6HwVFx05QPIW2DyFDe9JzgxjbWJoL5iKg3vXlkfHrL2M8cHmUyG3fqWPXUsJ5g/v0dXJU8JmYBiHMaJHWL1uUvhg5Y86sEgFsf1Q64VAOVHQEJYyANT+2rb0njq27J33Tl099T4jp/LOrbMi4d2bPHaJByNKMDKVAY3FtOyDidAhNeg2hLQtFe7GrqH/I8eYcSwG49XIKuvyZRL7DMgtfGNU95+uWEh6e/x8VYlOVnr0VxroWpPIBj9jOWfsfpX1PH+jn7CnA4XC0KA//fjQUK7ABW9El2z021cCAwEAAQ=====END PUBLIC KEY=====\n        "xsappname": "clone570d867acd174416a1edeabafaf11169!b687|destination-xsappname!b2",
        "identityzone": "scnccfn!"
      }
    ]
  }
}
```

SAP Business Application Studio

EXPLORER

- ✓ CAPDEMO20 cle
- > .vscode
- ✓ app
- ✓ db
- > gen
- ✓ mta_archives
 - capdemo20_1.0.0.mtar
- > node_modules
- > srv
 - .cdsrc.json
 - .eslintrc
 - .gitignore
 - .gitignore
 - default-env.json (1)
 - mta.yaml
 - package-lock.json
 - package.json
- README.md
- xs-security.json

package.json

```

1  {
2   "VCAP_SERVICES": {
3     "destination": [
4       {
5         "label": "destination",
6         "provider": null,
7         "plan": "lite",
8         "name": "NorthWind-dest",
9         "tags": [
10           "destination",
11           "conn",
12           "connsvc"
13         ],
14         "instance_name": "NorthWind-dest",
15         "binding_name": null,
16         "credentials": {
17           "uaadomain": "authentication.eu20.hana.ondemand.com",
18           "tenantmode": "dedicated",
19           "clientid": "sb-clone570d867acd174416a1edeabafaf11169!b687|destination-xsap"
20         }
21       }
22     ]
23   }
24 }
  
```

Welcome

default-env.json

xs-security.json

mta.yaml

Problems 18 user@workspaces-ws-6z6gm-deployment-7dbbc66864-pnwwm: ~/projects/capdemo20 x

```

user: capdemo20 $ 
user: capdemo20 $ 
user: capdemo20 $ 
user: capdemo20 $ cds watch (3)
cds serve all --with-mocks --in-memory?
( watching: cds,csn,csv,ts,mjs,cjs,js,json,properties,edmx,xml,env... )

[cds] - model loaded from 2 file(s):

srv/catalog-service.cds
srv/external/NorthWind.csn

[cds] - using bindings from: { registry: './cds-services.json' }
[cds] - connect to db > sqlite { database: ':memory:' }
> filling NorthWind.Products from srv/external/data/NorthWind-Products.csv
/> successfully deployed to sqlite in-memory db

[cds] - connect to NorthWind > odata { destination: 'NorthWind' }
[cds] - serving CatalogService { at: '/catalog', impl: 'srv/catalog-service.js' }

[cds] - launched in: 1170.659ms
[cds] - server listening on { url: 'http://localhost:4004' }
[ terminate with ^C ]

[cds] - GET /
[cds] - GET /catalog/Products
  
```

NPM SCRIPTS

- ✓ gen/srv/package.json
 - start - gen/srv
- ✓ package.json
- > CAP PROJECT EXPLORER

Reference

<https://blogs.sap.com/2020/05/26/cap-consume-external-service-part-1/>

<https://blogs.sap.com/2020/12/01/part-1-how-to-build-an-extension-application-for-sap-s-4-hana-cloud-using-cap-sap-cloud-sdk-and-sap-fiori-elements/>

<https://developers.sap.com/mission.cap-s4hana-cloud-extension.html>

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