

# Final Summary – Developing with SAP Extension Suite

Certification: [C\\_CPE\\_13](#)

Final Summary

# SAP Extension Suite – C\_CPE\_13 Certification

Number of questions: 80

Time: 3 hours

- Go through the session recording (Summary Points) one more time
- Try out the exercises
- Read questions carefully
- Eliminate incorrect options
- Answer all questions
- Revisit doubtful questions

# Key Summary Points – Unit 3

## Advantages of using SAP Fiori Elements

- Drive UX consistency
- Speed up development

## Requirement:

- No unique functionality
- Fast development

Solution: SAP Fiori Elements

# Key Summary Points – Unit 3

## Standard floorplans of SAP Fiori Elements

- List Report
- Worklist
- Object Page
- Analytical List Page

# Key Summary Points – Unit 3

## List Report

- Users need to find and act on items within a large set by searching, filtering, sorting and grouping
- Users need to work with multiple views of same content
- Drilldown is rarely used

# Key Summary Points – Unit 3

## **Worklist**

- Users have numerous work items
- Users need to work with multiple views of same content
- Direct entry point for taking action on work items

# Key Summary Points – Unit 3

## **Analytical List Page**

- Users need to extract key information to understand current situation
- Users need to find and act on items within a large set by searching, filtering, sorting and grouping, **drilling down, slicing and dicing**

# Key Summary Points – Unit 3

## SAP Fiori Design Philosophy



### **ROLE-BASED**

Designed for you, your needs and how you work



### **ADAPTIVE**

Adapts to multiple use cases and devices



### **COHERENT**

Provides one fluid, intuitive experience



### **SIMPLE**

Includes only what is necessary



### **DELIGHTFUL**

Makes an emotional connection



# Key Summary Points – Unit 3

## **Recommended folders for various artifacts**

**app** – UI artifacts

**db** – database artifacts

**srv** – Service related artifacts

# Key Summary Points – Unit 3



Multiple event handlers can be registered for each event phase

- They are executed in the order in which they appear

Single event handler can also handle multiple events

All services are event emitters

- Events can be sent to them – READ, CREATE etc.
- Events can be emitted by them
- Register event handlers with services to react to any event

# Key Summary Points – Unit 3

*req.error, notify, info, warn* (code?, msg, target?, args?)

Use these methods to collect messages or error and return them in the request response to the caller. The method variants reflect different severity levels, use them as follows:

## Variants

Method	Collected in	Typical UI	Severity
<code>req.notify</code>	<code>req.messages</code>	Toasters	1
<code>req.info</code>	<code>req.messages</code>	Dialog	2
<code>req.warn</code>	<code>req.messages</code>	Dialog	3
<code>req.error</code>	<code>req.error</code>	Dialog	4

**Note:** messages with severity < 4 are collected and accessible in property `req.messages`, while error messages are collected in property `req.errors`. The latter allows to easily check, whether errors occurred with:

```
if (req.errors) //> get out somehow...
```



# Key Summary Points – Unit 3

Q10. What is the main idea behind SAP Fiori elements?

Choose the correct answer.

- ☐ A Provide a framework and development tool kit for HTML 5.
- ☐ B Define a role-based user experience (UX).
- ☒ C Generate SAP Fiori apps at runtime from an existing OData service.
- ☐ D Provide a showcase for the core principles of modern user interfaces (UI).

# Key Summary Points – Unit 3

```
this.after("READ", Risks, (data) => {  
    const risks = Array.isArray(data) ? data : [data];  
  
    risks.forEach((risk) => {  
        if (risk.impact >= 100000) {  
            risk.criticality = 1;  
        } else {  
            risk.criticality = 2;  
        }  
    });  
});
```

# Key Summary Points – Unit 3

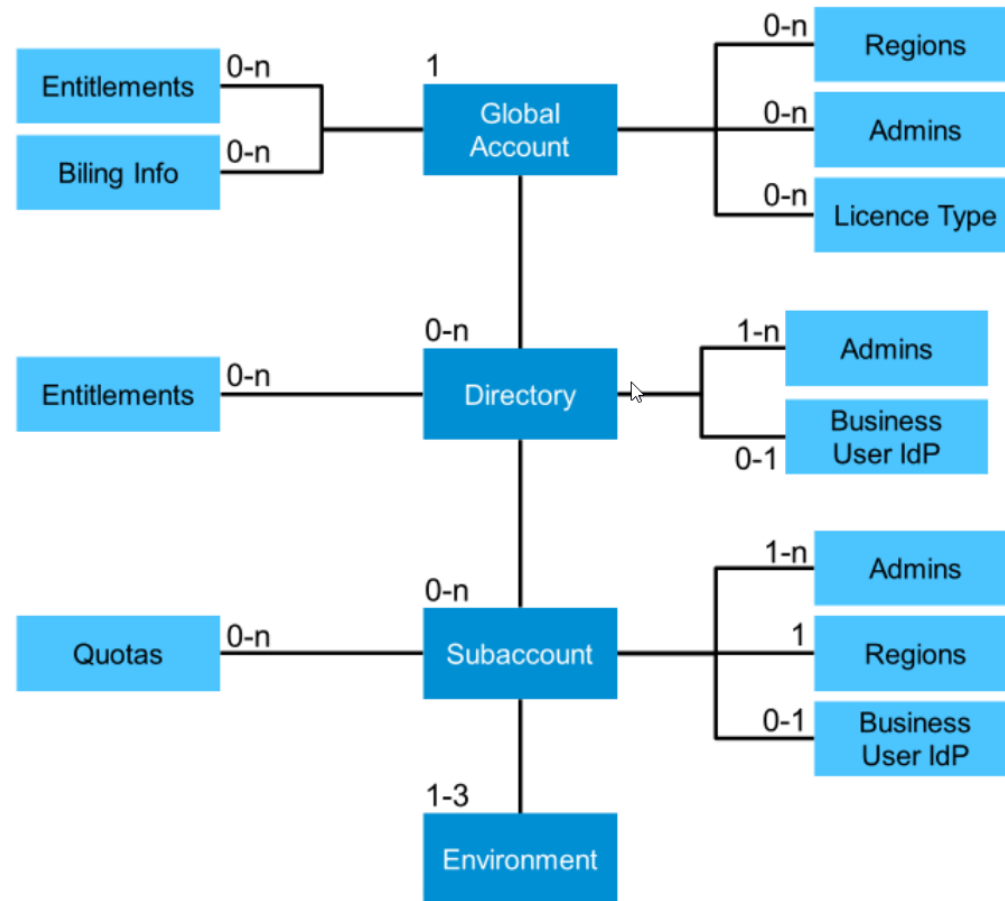
The key takeaways for programming errors are:

- **Fail loudly:** Do not hide errors and continue silently. Ensure to log unexpected errors correctly. Don't catch errors you can't handle.
- Don't develop in a defensive fashion. Focus on your business logic and only handle errors when you know they will occur. Use `try/catch` blocks only when necessary.

Never try to catch and handle unexpected errors, rejections of promises, and so on. If it is unexpected, you cannot handle it correctly. If you could, it would be expected (and should already be handled). Even if your apps should be stateless, you can never be 100% sure that a shared resource was not affected by the unexpected error. Therefore, you should never allow an app to continue running after such an event, especially for multi-tenant apps where there is a risk of information disclosure.

Following these guidelines will make your code shorter, clearer and simpler.

# Key Summary Points – Unit 1, 2



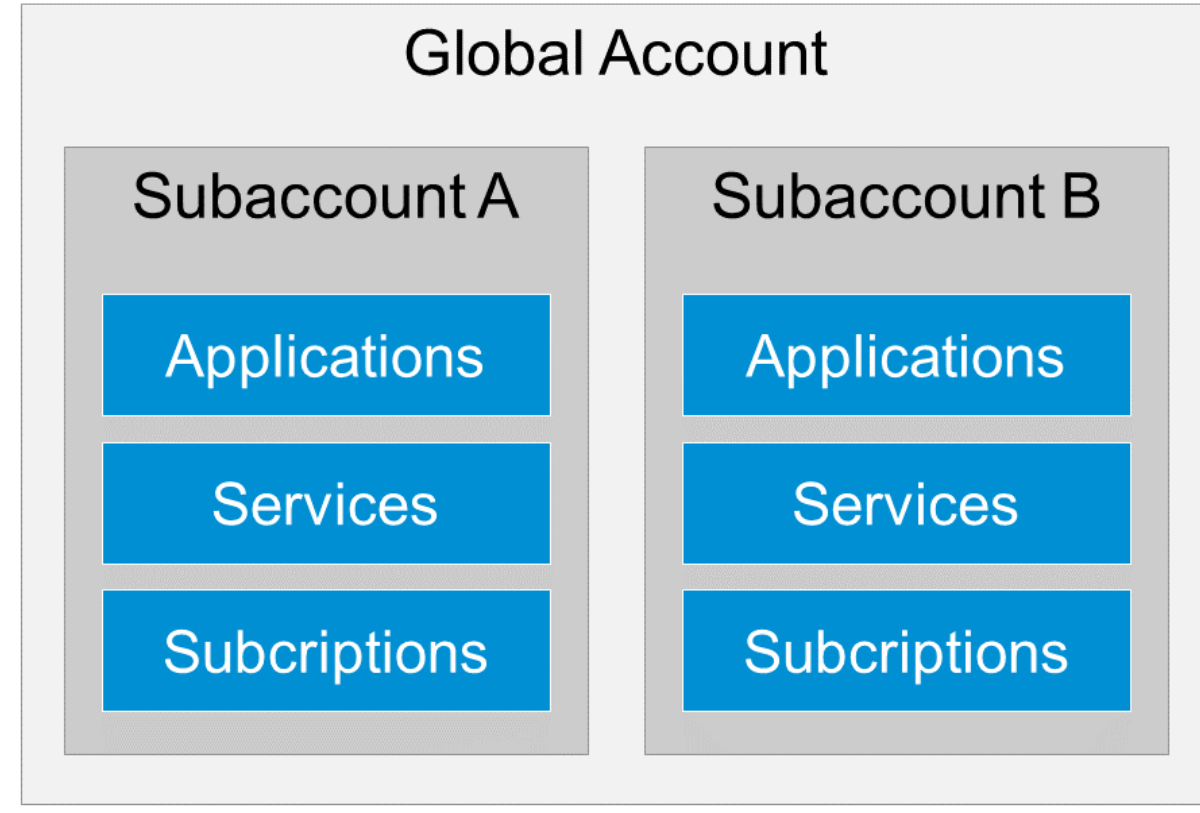
# Key Summary Points – Unit 1, 2

Environments available in SAP BTP for building applications

- Kyma Environment
- Cloud Foundry Environment
- ABAP Environment
  - Technically, the ABAP environment lives within the Cloud Foundry (CF) environment



# Key Summary Points – Unit 1, 2



## Subaccounts:

- Lets you structure your global account
- Subaccounts are independent of each other
- You can choose your own region
- Account model can be built on functional areas
  - Subaccount A – Sales and Marketing
  - Subaccount B - Development
- Easy scaling
- Reduced maintenance and governance efforts

# Key Summary Points – Unit 1, 2

```
cds init <Name of Project>
```



Folders created

- app
- db
- srv

Files created

- package.json

# Key Summary Points – Unit 1, 2


 SAP Business Application Studio 

### Create a New Dev Space


Dev Space name

What kind of application do you want to create?


☐

 SAP Fiori


☒

 Full Stack Cloud Application


☐

 SAP HANA Native Application

☐

 SAP Mobile Application

☐


 Basic


### Full Stack Cloud Application Dev Space


Build business services and business applications and extend SAP S/4HANA using SAP Cloud Application Programming Model (CAP) , SAP 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 Graphical Modeler**  
Allows you to design SAP core data services models in SAP cloud business...  
[more](#)

**CAP Tools**  
Allows you to develop CAP applications using the CDS command-line and tools....  
[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


☐

**SAP HANA Calculation View Editor**  
Allows you to edit and manage SAP HANA calculation views. The...  
[more](#)


☐

**SAP HANA Performance Tools**  
Allows you to analyze SAP HANA performance traces. The extension includes the SAP HANA SQL Analyzer.

☐

**SAP HANA Tools**  
Allows you to develop native SAP HANA applications. The extension...  
[more](#)

☐

**HTML5 Runner**  
Allows you to locally run HTML5 applications. Includes the HTML5 application runner and run configurations.

Cancel

Create Dev Space

# Key Summary Points – Unit 1, 2

## **Benefits of SAP Business Application Studio at a glance:**

- Provides a managed, pre-configured, hosted environment, optimized for SAP application development.
- Can be centrally administered with tools repositories, systems access, and company policies.
- Integrates with existing SAP solutions, systems, and services.
- Provides easy access to Visual Studio Code-compatible extensions from open source Open VSX Registry.

# Key Summary Points – Unit 1, 2

## OData

- Data access protocol built on core protocols like HTTP and commonly accepted methodologies like REST
- Uses URI to address and access data feed resources
- Service Document
- Service Metadata Document

# Key Summary Points – Unit 1, 2

## JSON

- Open standard file format and data interchange format
- Uses human-readable text to store and transmit data objects
- Consists of key-value pairs and arrays
- Based on JavaScript objects

## YAML

- Unicode based data serialization language
- YAML is a strict JSON superset – this means all valid JSON files are valid YAML files
- Support for serializing arbitrary native data structures

# Key Summary Points – Unit 4

## Enterprise features of SAP Cloud Connector

- High Availability Setup – Main and Shadow instance
- Secure trace data – Secure sensitive network trace data
- Monitoring – State and activities of Cloud Connector
- Alerting – Send email alerts
- Audit Logging – View and manage audit log

# Key Summary Points – Unit 4

- Cloud Foundry environment BTP Connectivity
  - Connectivity Service – [Connectivity proxy to access on-premise resource](#)
  - Destination Service – [Retrieve and store technical info about target resource](#)

I want to...	Services required
Connect to publicly available Services	Destination Service
Connect to On-Premise Services	Destination Service, Connectivity Service



# Key Summary Points – Unit 4

## Enterprise features of SAP Cloud Connector

- High Availability Setup – Main and Shadow instance
- Secure trace data – Secure sensitive network trace data
- Monitoring – State and activities of Cloud Connector
- Alerting – Send email alerts
- Audit Logging – View and manage audit log

SAP Cloud Connector component is **required** to **connect SAP BTP to On-Premise system**

You access the SAP Cloud Connector at the **Subaccount** level

# Key Summary Points – Unit 4

## Question 7

*Choose the correct answer(s).*

**What are some of the capabilities of the SAP Cloud Connector?**

- ✓ ☒ Serves as a link between SAP BTP applications and on-premise systems.
- ✓ ☒ Runs as on-premise agent in a secured network.
- ☐ Manages dev spaces.
- ☐ Provides access to the SAP Cloud Identity Services.
- ✓ ☒ Provides fine-grained control over the connectivity.

Submit

# Key Summary Points – Unit 4

In SAP Fiori, drafts are used as follows:

- To keep unsaved changes if an editing activity is interrupted, allowing users to resume editing later.
- To prevent data loss if an app terminates unexpectedly.
- As a locking mechanism to prevent multiple users from editing the same object concurrently, and to make users aware when there are unsaved changes by another user.

# Key Summary Points – Unit 4

## Question 2

*Choose the correct answer.*

What does the .env file provide?

- ☒ Values into the runtime environment of a CAP service
- ☐ Values for your version-management-system

Submit

🔍 .env

×




1

```
apikey=JI
```

Don't check this file into GitHub  
Contains sensitive info

# Key Summary Points – Unit 4


 API Business Hub

ExploreResourcesDiscover IntegrationsPartner with Us

New SAP API Business Hub

Login

/ SAP S/4HANA Cloud

 Business Partner (A2X)

Create, read, update or delete the master data for business partner, supplier or customer using this synchronous inbound service

API key must be sent along with request headers

Show API Key

OverviewAPI ReferenceSchema ViewSAP Cloud SDKTry Out

Introduction

This service enables you to create, display, update, and delete data related to Business Partner, Supplier, and Customer with the data provided in a payload, in an API call. This service also supports create deep entity operation and batch processing.

View the API ReferenceCheck Schema ViewTry Out

STATUS	TYPE
ACTIVE	ODATA
LAST MODIFIED	VERSION
30 Mar 2022	1

# Key Summary Points – Unit 4

## Question 6

*Choose the correct answer.*

What encryption type does the SAP Cloud Connector use?

- ☐ SSL
- ☐ SSH
- ☒ TLS
- ☐ XMPP

Submit

# Key Summary Points – Unit 5

`cds add hana`

Modified file:

- package.json



The screenshot shows a code editor with a dark theme. The file is named 'package.json'. The code is a JSON object with several properties. A red rectangle highlights the newly added 'hana' property at the bottom of the object. The code is as follows:

```
62  },
63  },
64  "[production]": {
65    "credentials": {
66      "destination": "API_BUSINESS_PARTNER"
67    }
68  },
69  },
70  "db": {
71    "kind": "sql"
72  },
73  "xsuaa": {
74    "kind": "xsuaa"
75  },
76  },
77  "hana": {
78    "deploy-format": "hdbtable"
79  }
80  }
81  }
82
```

# Key Summary Points – Unit 5

## Question 2

*Choose the correct answer(s).*



What are advantages of using an MTA file for deployment? (Choose 2)

- ☐ It supports red - green deployment.
- ☒ It supports blue-green deployment.
- ☐ It provides workflows.
- ☒ It provides a build tool.

## Feedback

Correct. The advantages of using an MTA file for deployment are: "it supports blue-green deployment", and "it provides a build tool".




# Key Summary Points – Unit 5

## Question 4

*Choose the correct answer(s).*

**Which statements about YAML files are correct? (Choose 2)**

- ☒ YAML uses whitespace indentation for structuring purposes. 
- ☐ YAML uses tab indentation for structuring purposes.
- ☐ YAML uses hyphens: - for comments.
- ☒ YAML uses hashes: # for comments.

## Feedback

Correct. The following statements are correct: "YAML uses whitespace indentation for structuring purposes", and "YAML uses hashes: # for comments".

# Key Summary Points – Unit 5

## Question 5

Choose the correct answer.

Which concept describes Cloud Foundry applications?

- ☐ Monoglot
- ☒ Polyglot
- ☐ Proglot
- ☐ Epiglot

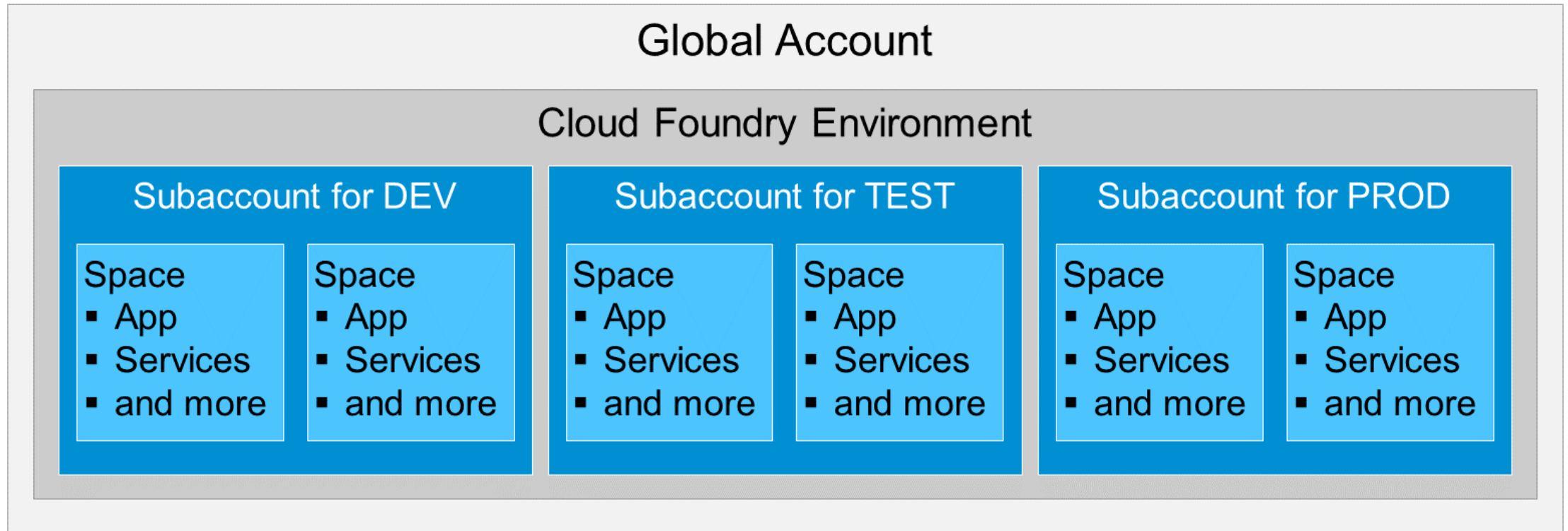
## Feedback

Correct. The concept "polyglot" describes Cloud Foundry applications.

Cloud Foundry includes a set of system buildpacks for common languages and frameworks. This table lists the system buildpacks.

Name	Supported Languages, Frameworks, and Technologies	GitHub Repository
<a href="#">Binary</a>	n/a	<a href="#">Binary source</a>
<a href="#">Go</a>	Go	<a href="#">Go source</a>
<a href="#">HWC</a>	HWC	<a href="#">HWC source</a>
<a href="#">Java</a>	Grails, Play, Spring, or any other JVM-based language or framework	<a href="#">Java source</a>
<a href="#">.NET Core</a>	.NET Core	<a href="#">.NET Core source</a>
<a href="#">NGINX</a>	NGINX	<a href="#">NGINX source</a>
<a href="#">Node.js</a>	Node or JavaScript	<a href="#">Node.js source</a>
<a href="#">PHP</a>	Cake, Symfony, Zend, NGINX, or HTTPD	<a href="#">PHP source</a>
<a href="#">Python</a>	Django or Flask	<a href="#">Python source</a>
<a href="#">R</a>	R	<a href="#">R source</a>
<a href="#">Ruby</a>	Ruby, JRuby, Rack, Rails, or Sinatra	<a href="#">Ruby source</a>
<a href="#">Staticfile</a>	HTML, CSS, JavaScript, or NGINX	<a href="#">Staticfile source</a>

# Key Summary Points – Unit 5



When you create a Subaccount and enable CF runtime – System automatically creates a Cloud Foundry org  
[Subaccount and org have a 1:1 relationship](#)

You can create [multiple spaces](#) within Cloud Foundry org

In Cloud Foundry environment, you deploy applications and consume services at the space level

# Key Summary Points – Unit 5

**SAP BTP Cockpit**

Subaccount: trial - Overview

General | Cloud Foundry Environment | Kyma Environment | Entitlements

79 Entitlements | 30 Instances and Subscriptions

Subdomain: d885dfc8trial | Provider: Amazon Web Services (AWS)  
Tenant ID: 2d557e89-9d54-4e15-8c47-302c0a23c46c | Region: US East (VA)  
Subaccount ID: 2d557e89-9d54-4e15-8c47-302c0a23c46c | Environment: Multi-Environment

**Cloud Foundry Environment**

Org Name: d885dfc8trial **Automatically created by System**  
API Endpoint: <https://api.cf.us10.hana.ondemand.com>  
Org ID: 22362934-63c1-4090-b25c-57742a72afd9  
[Manage environment instance](#)

**Disable Cloud Foundry** Disable Cloud Foundry environment at Subaccount

Trial Home / d885dfc8trial / mysubaccount

Subaccount: mysubaccount - Overview

General | Cloud Foundry Environment | Entitlements

23 Entitlements | 2 Instances and Subscriptions

Subdomain: mysubaccount-23y9yjjc | Provider: Amazon Web Services (AWS)  
Tenant ID: ccf09091-c94b-403d-b726-25b7eb0bc0e5 | Region: US East (VA)  
Subaccount ID: ccf09091-c94b-403d-b726-25b7eb0bc0e5 | Environment: Multi-Environment

**Cloud Foundry Environment**

You are not currently using Cloud Foundry capabilities.

**Enable Cloud Foundry** Enable Cloud Foundry environment at Subaccount level

CF Org is **automatically created by the system** – when you enable Cloud Foundry environment  
Subaccount and Org have a 1:1 relationship

# Key Summary Points – Unit 5

## Question 8

*Choose the correct answer(s).*

Which tools can you use to manage the SAP BTP, Cloud Foundry environment?

- ☐ SAP Business Application Studio
- ☐ Eclipse
- ☒ CF CLI
- ☒ SAP BTP cockpit

## Feedback

Correct. You can use the following tools to manage the SAP BTP, Cloud Foundry environment: CF CLI and SAP BTP cockpit.

# Key Summary Points – Unit 5

The screenshot displays the SAP HANA Cloud Central 'All Instances' page. The left sidebar shows 'SAP HANA Cloud Central' as the active section, with 'Instances' and 'Migrations' as sub-options. The main area features a search bar and filters for Organization, Space, Status, Notifications, and Type. A table lists instances, with one instance named 'myhanadb' in a 'STOPPED' state. A red box highlights the 'STOPPED' status. An action menu is open for this instance, showing options like 'Manage Configuration', 'Add Data Lake', 'Copy SQL Endpoint', 'Copy Instance ID', 'Copy Configuration', 'Start', 'Upgrade', and 'Delete'. The 'Start' option is highlighted with a red box. A red text overlay at the bottom states: 'In the Trial instance, the HANA Database instance stops every day... Go into SAP HANA Cloud Central to start it (and other actions)'.

**SAP HANA Cloud Central**

Instances

Migrations

All Instances ▾

Search on all spaces by ID 🔍 **Create**

Organization: \*   Space: \*   Status:   Notifications:   Type: Data Lake x 1 More ▾

cb2c527a-4abd-429...   d885dfc8trial   dev   Restore   Adapt Filters (1)

Instances (1)   Space Roles (2)   Group Instances ↑↓ ⚙️

Status	Name	Type	Notifications	Memory	Storage	Compute	Scale-Out	Replicas	Actions
<b>myhanadb</b>									
<b>STOPPED</b>	myhanadb	SAP HANA Database	1	30 GB	120 GB	2 vCPUs	1 node	0	...

**In the Trial instance, the HANA Database instance stops every day...  
Go into SAP HANA Cloud Central to start it (and other actions)**

- Manage Configuration
- Add Data Lake
- Copy SQL Endpoint
- Copy Instance ID
- Copy Configuration
- Start**
- Upgrade
- Delete

# Key Summary Points – Unit 5

## SAP BTP-Specific Configurations

The following technical configurations are specific to SAP BTP and differ from the default configuration:

- By default, a newly pushed (or started) Cloud Foundry application needs to respond to a health check within the first 60 seconds, otherwise the application is considered to have failed. For more information, see [https://docs.cloudfoundry.org/devguide/deploy-apps/healthchecks.html#health\\_check\\_timeout](https://docs.cloudfoundry.org/devguide/deploy-apps/healthchecks.html#health_check_timeout). On SAP BTP, however, you can override this timeout to up to 10 minutes. For instructions, see <https://docs.cloudfoundry.org/devguide/deploy-apps/large-app-deploy.html>.
- On SAP BTP, application SSH access is disabled by default. For more information on SSH, see <https://docs.cloudfoundry.org/devguide/deploy-apps/app-ssh-overview.html>.
- On SAP BTP, the Cloud Foundry API is protected by a rate limit against misuse. The limit is in the range of a few 10k requests per hour per user.
- In the Cloud Foundry environment, there's a logging rate limit to guard against malicious applications. The limit is in the range of up to a few thousand logs per second per application instance. If this limit is exceeded, additional logs from the application instance are dropped and a warning message is injected into the application instance's log stream every second. This message also contains the exact log rate limit.
- In the Cloud Foundry environment, applications get a guaranteed CPU share of  $\frac{1}{4}$  core per GB instance memory. As the maximum instance memory per application is 8 GB, this allows for vertical scaling up to 2 CPUs.

If applications running on the same virtual machine don't use their guaranteed CPU, other applications might get more CPU. This isn't guaranteed and might be subject to change in the future. If you encounter performance problems, scale up your application or increase the application start timeout.

The number of running threads per application instance is limited to 10 420. Reaching this limit can cause performance issues.

- When pushing or scaling your application, you can define a `disk_quota` that can be up to 4 GB. For more information, see <https://docs.cloudfoundry.org/devguide/deploy-apps/manifest-attributes.html#disk-quota>.
- When deploying applications on SAP BTP, the maximum application package size is 1.5 GB. If your application is larger than that, the deployment fails. For more information, see <https://docs.cloudfoundry.org/devguide/deploy-apps/large-app-deploy.html>.
- In global accounts that support the consumption-based commercial model you might see a quota limit for certain services. This is a technical limit only, not a business limit. If you need to increase this limit, report an incident to [SAP support](#) for component BC-NEO-CIS.
- In the Cloud Foundry environment, the SAP HANA database supports up to 1,000 simultaneous connections per database.
- Cloud Foundry Audit Events have a retention period of 14 days. For more information on Audit Events, see <https://docs.cloudfoundry.org/running/managing-cf/audit-events.html>.

# Step 12 – Restrictions and Roles

```
service RiskService { restrict - keyword for Risks entity
  entity Risks @(restrict : [
    {
      grant : ['READ'],
      to    : ['RiskViewer'] RiskViewer Role - Can only READ
    },
    {
      grant : ['*'],
      to    : ['RiskManager'] RiskManager Role - Can do everything
    }
  ])
  as projection on rm.Risks;

  annotate Risks with @odata.draft.enabled;
  restrict - keyword for Mitigations entity
  entity Mitigations @(restrict : [
    {
      grant : ['READ'],
      to    : ['RiskViewer'] RiskViewer Role - Can only READ
    },
    {
      grant : ['*'],
      to    : ['RiskManager'] RiskManager Role - Can do everything
    }
  ])
  as projection on rm.Mitigations;

  annotate Mitigations with @odata.draft.enabled;
```

[srv/risk-service.cds](#)



# Key Summary Points – Unit 6

## *JWT-based Authentication*

This is the strategy to be used in production. User identity, as well as assigned roles and user attributes, are provided at runtime, by a bound instance of the '[user account and authentication](#)' service (UAA). This is done in form of a JWT token in the *Authorization* header of incoming HTTP requests.

**Prerequisites:** You need to add `passport` to your project:

```
npm add passport
```



**Prerequisites:** You need to add `@sap/xssec` to your project:

```
npm add @sap/xssec
```



**Configuration:** Choose this strategy as follows:

```
"cds": { // in package.json
  "requires": {
    "auth": { "kind": "jwt-auth" }
  }
}
```



# Key Summary Points – Unit 6

## In `./package.json` Store Project Configurations

You can provide static settings in a `"cds"` section of your project's `package.json` as in the following example:

```
"cds": {  
  "requires": {  
    "db": { "kind": "sql" }  
  }  
}
```

## In `./cdsrc.json` Store Project Configurations

Alternatively, you can put static settings in `.cdsrc.json` file in your project root:

```
"requires": {  
  "db": { "kind": "sql" }  
}
```

# Key Summary Points – Unit 6

## Question 3


Choose the correct answer(s).

Which modules must you install to enable authentication support in CAP for BTP?


- ☐ xsjs
- ☐ xssecure
- ☒ xssec
- ☒ xsenv

## Feedback

Correct. You must install xssec and xsenv to enable authentication support in CAP for BTP.

@sap/xsenv 

3.2.2 • Public • Published 12 days ago

 Readme

 Explore 


 3 Dependencies



## @sap/xsenv

Utility for easily reading application configurations for bound services and certificates in the SAP Cloud Platform Cloud Foundry environment, SAP XS advanced model and Kubernetes (K8S).

@sap/xssec

3.2.13 • Public • Published 2 months ago

 Readme

 Explore 

 6 Dependencies

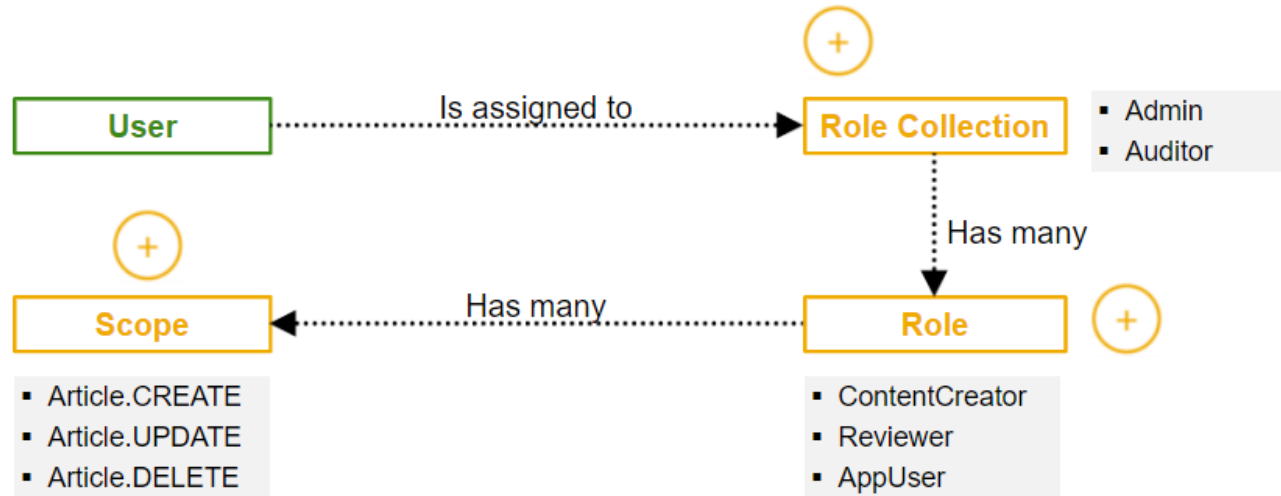
 34

## @sap/xssec: XS Advanced Container Security API for node.js

### XS Advanced Authentication Primer

Authentication for node applications in XS Advanced relies on a special usage of the OAuth 2.0 protocol, which is based on central authentication at the UAA server that then vouches for the authenticated user's identity via a so-called OAuth Access Token. The current implementation uses as access token a JSON web token (JWT), which is a signed text-based token following the JSON syntax.

# Key Summary Points – Unit 6

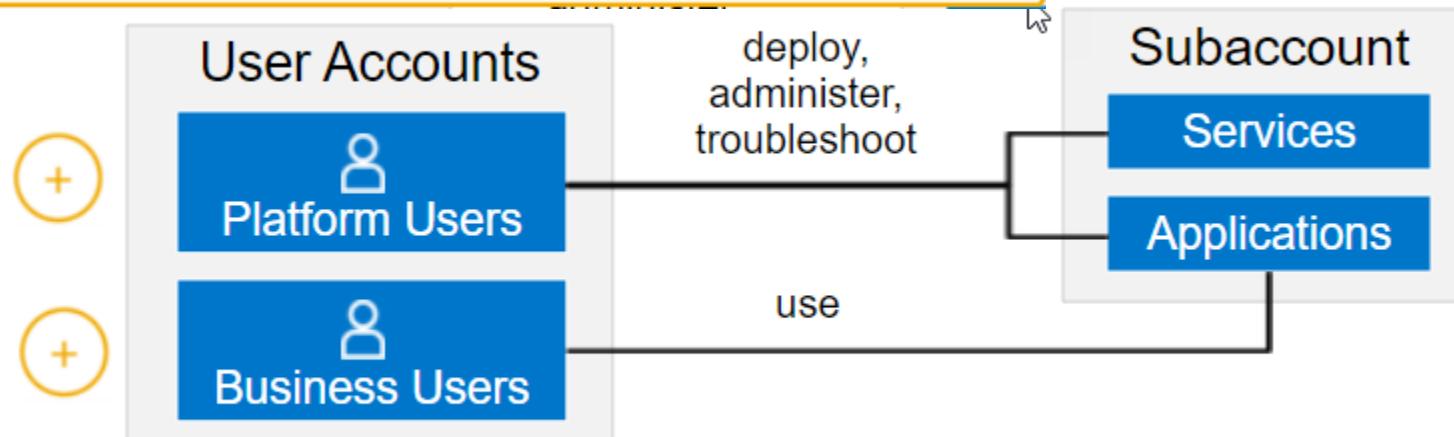


- In SAP BTP, CF environment, a single authorization is called **Scope**
- **Scopes** cannot be assigned to users directly – They are packaged into Roles
- **Scopes** are prefixed with xsappname to make them uniquely identifiable
- **Role** has many Scopes
- **Role-Collections** contain 1 or more Roles
- **Role-Collections** can be assigned to a User

# Key Summary Points – Unit 6

Platform users are usually developers, administrators or operators who deploy, administer, and troubleshoot applications and services on SAP BTP.

For platform users, the default identity provider is SAP ID Service.



Business users use the applications that are deployed to SAP BTP. For example, the end users of your deployed application or users of subscribed apps or services, such as SAP Business Application Studio or SAP Web IDE, are business users.

# Key Summary Points – Unit 6

## Question 8

*Choose the correct answer(s).*

What does the Extended Services - User Account and Authentication (XSUAA) service enable your app to do?

- ☐ Store "real" users.
- ☐ Identify users by address and social security ID.
- ☒ Identify users by e-mail, userId, first and last name.
- ☒ Check users' roles to allow or prohibit actions.

## Feedback

Correct. XSUAA enables your app to identify users by e-mail, userId, first and last name and check users' roles to allow or prohibit actions.

# Key Summary Points – Unit 6

## `xs-security.json` – Application Security Descriptor

File that defines the details of authentication method and authorization types to use for access to your application

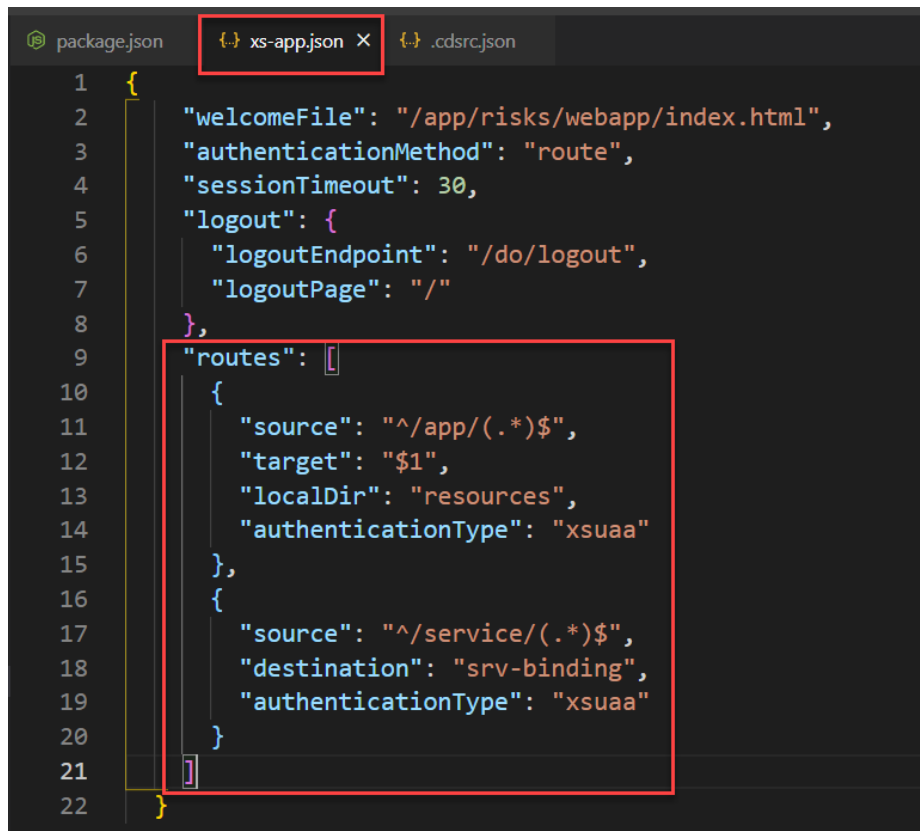
The contents of the `xs-security.json` are used to configure the OAuth 2.0 client; the configuration is shared by all components of an SAP multi-target application. The contents of the `xs-security.json` file cover the following areas:

- Authorization scopes  
A list of limitations regarding privileges and permissions and the areas to which they apply
- Attributes  
A list of as-yet undefined information or sources (for example, the name of a cost center)
- Role templates  
A description of one or more roles to apply to a user and any attributes that apply to the roles

# Key Summary Points – Unit 6

## xs-app.json – Application Router Configuration

File contains configuration information used by the application router

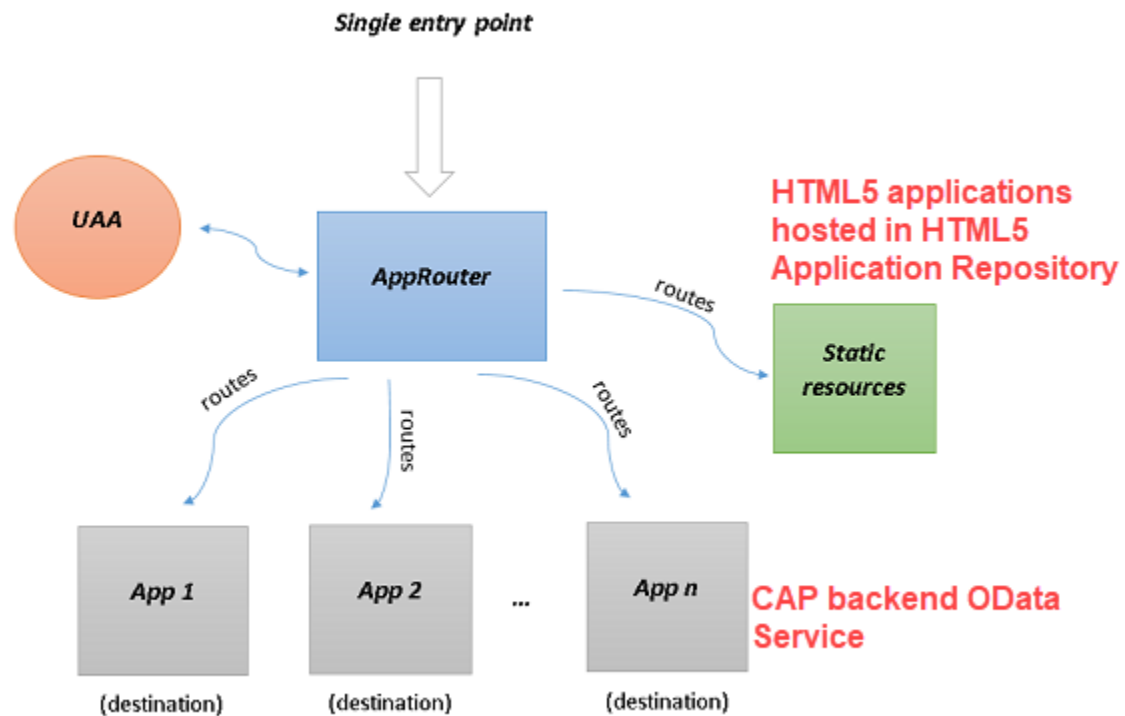


The screenshot shows a code editor with three tabs: `package.json`, `xs-app.json` (selected and highlighted with a red box), and `.cdsrc.json`. The `xs-app.json` file contains the following configuration:

```
1 {
2   "welcomeFile": "/app/risks/webapp/index.html",
3   "authenticationMethod": "route",
4   "sessionTimeout": 30,
5   "logout": {
6     "logoutEndpoint": "/do/logout",
7     "logoutPage": "/"
8   },
9   "routes": [
10    {
11      "source": "^/app/(.*)$",
12      "target": "$1",
13      "localDir": "resources",
14      "authenticationType": "xsuaa"
15    },
16    {
17      "source": "^/service/(.*)$",
18      "destination": "srv-binding",
19      "authenticationType": "xsuaa"
20    }
21  ]
22 }
```



# Key Summary Points – Unit 6



## AppRouter

- Routes request from browser to CAP Service
- Routes request from browser to provider of UI sources
- Ensures authenticated and authorized users get token from XSUAA Service and forwards it to CAP Service

# Key Summary Points – Unit 6

## Question 16

Choose the correct answer.

In the SAP BTP Cockpit, where can you assign role collections?

☐ Security → Roles

☒ Security → Trust Configuration

**SAP BTP Cockpit**

Subaccount: mysubaccount - Users Create

Search [ ] Last Updated: [All] Hasn't Logged On: [All]

User Name	Identity Provider	Last Name	First Name	E-Mail	Last Updated	Last Logon	Actions
milton.chandradas@sap.com	Default identity provider	Chandradas	Milton	milton.chandradas@sap.com	17 Jan 2022, 06:08:59 (GMT-05:00)	23 Apr 2022, 23:54:47 (GMT-04:00)	[ ] [ ]

**Security** **Users** **Role Collections** **Roles** **Trust Configuration** **Settings** **Entitlements** **Usage Analytics** **Help and Support**

**milton.chandradas@sap.com** Delete

Identity Provider: Default identity provider

Last Logon: 23 Apr 2022, 23:54:47 (GMT-04:00)

**Overview**

E-Mail: milton.chandradas@sap.com

Created: 17 Jan 2022, 06:05:09 (GMT-05:00)

ID: f61f1e65-bcfb-49fe-822a-4ca4bc3278b6

Last Updated: 17 Jan 2022, 06:08:59 (GMT-05:00)

**Role Collections**

Search [ ] Assign Role Collection ...

Name	Description	Action
Subaccount Administrator	Administrative access to the subaccount	[ ] [ ]

**This is how you would assign Role Collections now...**

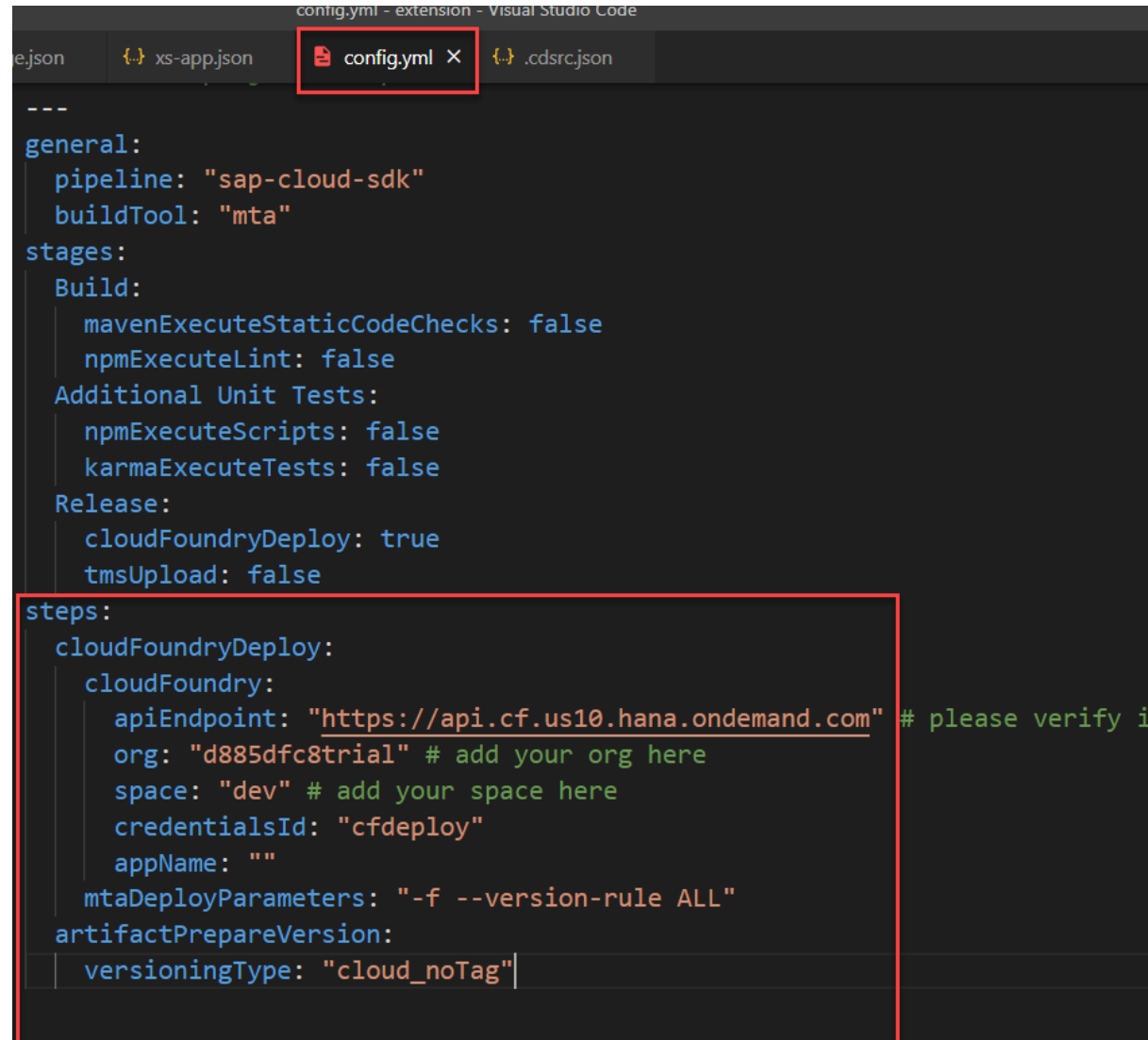
**Learning Content has Trust Configuration... Maybe the UI has changed since the Learning Content was created**

# Key Summary Points – Unit 7

cds add pipeline

New Files

- Jenkinsfile
- .pipeline/config.yml



```
---
general:
  pipeline: "sap-cloud-sdk"
  buildTool: "mta"
stages:
  Build:
    mavenExecuteStaticCodeChecks: false
    npmExecuteLint: false
  Additional Unit Tests:
    npmExecuteScripts: false
    karmaExecuteTests: false
  Release:
    cloudFoundryDeploy: true
    tmsUpload: false
steps:
  cloudFoundryDeploy:
    cloudFoundry:
      apiEndpoint: "https://api.cf.us10.hana.ondemand.com" # please verify i
      org: "d885dfc8trial" # add your org here
      space: "dev" # add your space here
      credentialsId: "cfdeploy"
      appName: ""
      mtaDeployParameters: "-f --version-rule ALL"
  artifactPrepareVersion:
    versioningType: "cloud_noTag"
```

# Key Summary Points – Unit 7

**SAP BTP Cockpit**

Trial Home / d885dfc8trial / trial

## Subaccount: trial - Instances and Subscriptions

All: 30

To manage the Cloud Foundry user-provided service instances, navigate to Cloud Foundry - Spaces, select your space, and then from Services select Service Instances.

Search [ ] All Services [v] All Plans [v] All Statuses [v]

### Subscriptions (9)

Instances (20) Environments (1)

Applications to which your subaccount is currently subscribed

Application	Plan	Created On	Changed On	Status	
Product List MTA	default	17 Jan 2022	10 Apr 2022	Unsubscription Failed	...
Continuous Integration & Delivery	trial	10 Apr 2022	10 Apr 2022	Subscribed	...
Document Information Extraction Trial UI	default	26 Jan 2022	26 Jan 2022	Subscribed	...
Integration Suite	trial	17 Feb 2022	17 Feb 2022	Subscribed	...
SAP Business Application Studio	trial	17 Nov 2021	17 Nov 2021	Subscribed	...
Launchpad Service	standard	6 Jan 2022	24 Feb 2022	Subscribed	...
Web Analytics	standard	17 Nov 2021	17 Nov 2021	Subscribed	...
Subscription Management Dashboard	application	17 Jan 2022	17 Jan 2022	Subscribed	...
Workflow Management	saas-application	6 Jan 2022	6 Jan 2022	Subscribed	...

# Key Summary Points – Unit 7

The screenshot displays the SAP BTP Cockpit interface. The left sidebar contains a navigation menu with the following items: Overview, Services, Service Marketplace, Instances and Subscriptions, Cloud Foundry, HTML5 Applications, Connectivity, Destinations, Cloud Connectors, Security, Users, Role Collections, Roles, Trust Configuration, Settings, Entitlements, Usage Analytics, Help and Support, and Useful Links. The 'Security' and 'Users' items are highlighted with red boxes. The main content area is titled 'Subaccount: trial - Users' (also highlighted with a red box) and features a 'Create' button. Below the title is a search bar and two dropdown menus for 'Last Updated' and 'Hasn't Logged On'. A table lists user details, with the 'Actions' column for the user 'milton.chandradas@sap.com' highlighted by a red box. The table data is as follows:

User Name	Identity Provider	Last Name	First Name	E-Mail	Last Updated	Last Logon	Actions
milton.chandradas@sap.com	Default identity provider	Chandras	Milton	milton.chandradas@sap.com	17 Nov 2021, 23:31:55 (GMT-05:00)	24 Apr 2022, 02:10:02 (GMT-04:00)	[Icons]

On the right, a panel for 'milton.chandradas@sap.com' shows a 'Delete' button and a section for 'Role Collections'. The 'Assign Role Collection' button is highlighted with a red box. A table lists the role collections, with the 'CICD Service Administrator' row highlighted by a red box. The role collections data is as follows:

Name	Description	Action
Business_Application_Studio_Developer	Allows developers to load and develop applications using SAP Business Application Studio.	[Icons]
CICD Service Administrator	Administrator Role Collection for the Continuous Integration & Delivery Service	[Icons]
Document_Information_Extraction_UI_Admin_User_trial	A role collection containing the Document_Information_Extraction_UI_Admin_User_trial Role Template.	[Icons]
Integration_Provisioner_Auto	For provisioning and basic configuration of the Integration capabilities	[Icons]
ProductListViewer	Product List Viewer	[Icons]
RiskManager-dev	Manage Risks	[Icons]
SAP Web Analytics Customer Admin	Customer Admin	[Icons]
Subaccount Administrator	Administrative access to the subaccount	[Icons]
Web Analytics	Contains roles	[Icons]

# Key Summary Points – Unit 7

## Question 1

*Choose the correct answer(s).*



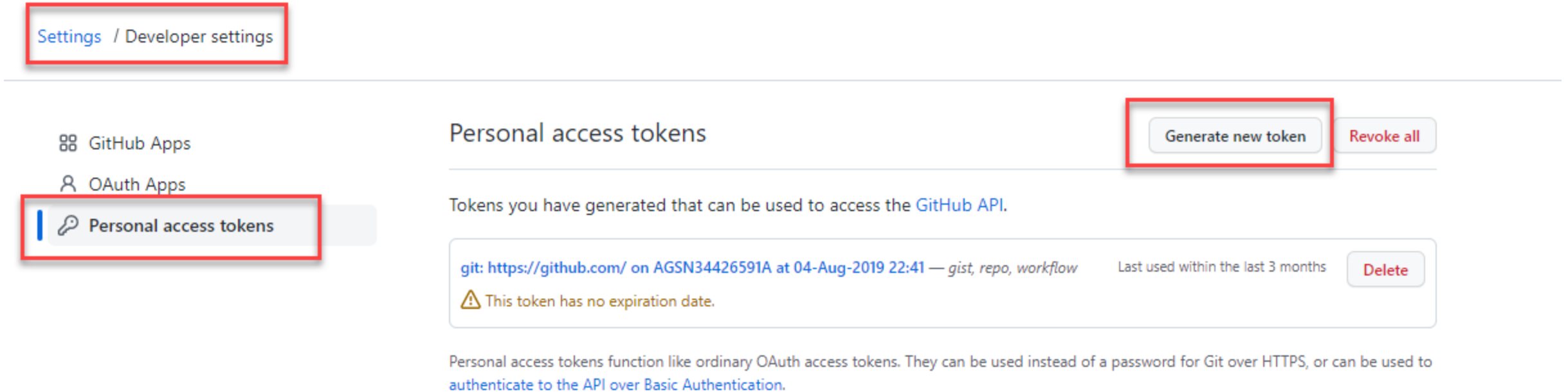
**Which of the following statements about a GitHub Repository are correct?**

- ☒ Anyone on the internet can see a public repository.
- ☐ Anyone on the internet can commit into a public repository.
- ☒ You choose who can see your private repository.
- ☒ You choose who can commit into your private repository.

## Feedback

Correct. Anyone on the internet can see a public repository. You choose who can see your private repository. You choose who can commit into your private repository.

# Key Summary Points – Unit 7



The screenshot shows the GitHub Developer Settings interface. On the left sidebar, the 'Settings / Developer settings' breadcrumb is at the top. Below it are three menu items: 'GitHub Apps', 'OAuth Apps', and 'Personal access tokens', which is highlighted with a red box. The main content area is titled 'Personal access tokens' and has a 'Generate new token' button (highlighted with a red box) and a 'Revoke all' button. Below the title, it says 'Tokens you have generated that can be used to access the GitHub API.' There is a table with one token entry: 'git: https://github.com/ on AGSN34426591A at 04-Aug-2019 22:41 — gist, repo, workflow'. To the right of this entry is 'Last used within the last 3 months' and a 'Delete' button. Below the table, a warning icon and text state 'This token has no expiration date.' At the bottom, a paragraph explains that Personal Access Tokens function like ordinary OAuth access tokens and can be used instead of a password for Git over HTTPS or to authenticate to the API over Basic Authentication.

Settings / Developer settings

GitHub Apps

OAuth Apps

Personal access tokens

Personal access tokens

Generate new token

Revoke all

Tokens you have generated that can be used to access the GitHub API.

git: <https://github.com/> on AGSN34426591A at 04-Aug-2019 22:41 — gist, repo, workflow

Last used within the last 3 months

Delete

⚠ This token has no expiration date.

Personal access tokens function like ordinary OAuth access tokens. They can be used instead of a password for Git over HTTPS, or can be used to authenticate to the API over Basic Authentication.

**Personal Access Tokens** are an **alternative to using passwords** for authentication to GitHub when using the GitHub API or command line

GitHub automatically removes Personal Access Tokens that haven't been used in a year

# Key Summary Points – Unit 7

## Question 4

*Choose the correct answer.*

What does the source code management system use to trigger the CI server?

- ☒ Webhooks
- ☐ Web services
- ☐ HTTP PUT requests

## Feedback

Correct. The source code management system uses Webhooks to trigger the CI server.



# Key Summary Points – Unit 7

## Continuous Integration:

- Developers push code to main code line at least once a day
- Automated central build and tests are triggered upon each push
- Team ensures stable build and test quality all the time

## Continuous Delivery:

- Software is ready for deployment to productive system all the time
- Deployment to productive system is **triggered manually**
- Feedback from productive system gets integrated to teams' backlog

## Continuous Deployment:

- Deployment to productive system is **triggered with each commit (automatic)**

# Key Summary Points – Unit 7

SAP Continuous Integration and Delivery

Jobs (1) Repositories (1) **Credentials (3)**

Search [ ] [ + ] [ ↻ ]

Name	Description	Type	Actions
cfdeploy		Basic Authentication	[ ✎ ] [ 🗑 ]
github		Basic Authentication	[ ✎ ] [ 🗑 ]
risk-management-repo	Webhook token for repository 'risk-management-repo'	Webhook Secret	[ ✎ ] [ 🗑 ]

# Key Summary Points – Unit 7

## Question 10

*Choose the correct answer.*

What is a "main line" in a source control management system used for?

- ☐ To automate deployment.
- ☐ To enable a reporting line for the project manager.
- ✓ ☒ To make developers' contribution transparent and avoid clashes.

Submit

## Question 11

*Determine whether this statement is true or false.*

A main line in a source control management system can contain feature branches.

- ✓ ☒ True
- ☐ False

Submit

# Key Summary Points – Unit 7

## Question 12

*Choose the correct answer(s).*

**What are the differences between continuous integration (CI) and continuous delivery (CD)?**

- ✓ ☒ CI allows team members to add their changes to a main line.
- ✓ ☒ CD adds an aspect that changes have been tested successfully.
- ☐ CI allows developers to integrate their contributions any time.
- ☐ CD adds an aspect that changes are immediately ready for deployment.

Submit

# Key Summary Points – Unit 7

## Question 13

*Choose the correct answer.*


What do you use to retrieve the information about a change on the repository?

- ☐ A change document
- ✓ ☒ A webhook
- ☐ A PUT request to GitHub

## Question 15

*Choose the correct answer.*

What kind of request does the webhook send?

-  ☐ GET
- ☐ PUT
- ✓ ☒ POST

# Key Summary Points – Unit 7

To get you started quickly, <sup>T</sup>project "Piper" offers you the following artifacts:

- A set of ready-made Continuous Delivery pipelines for direct use in your project
- [ABAP Environment Pipeline](#)
- [General Purpose Pipeline](#)
- [A shared library](#) that contains reusable step implementations, which enable you to customize our preconfigured pipelines, or to even build your own customized ones
- A standalone [command line utility](#) for Linux and a [GitHub Action](#)
- Note: This version is still in early development. Feel free to use it and [provide feedback](#), but don't expect all the features of the Jenkins library
- A set of [Docker images](#) to setup a CI/CD environment in minutes using sophisticated life-cycle management

# Key Summary Points – Unit 7

The screenshot displays the SAP Continuous Integration and Delivery (CI/CD) interface. The left pane shows the 'Jobs (1)' tab selected, with a table listing the 'risk-management-job'. The right pane shows the 'Builds' tab for the 'risk-management-job', displaying a list of builds with their status and timestamps.

**SAP Continuous Integration and Delivery**

**Jobs (1)** Repositories (1) Credentials (3)

Search

Name	State	Branch	Timed Triggers	Pipeline
<b>risk-management-repo</b>				
risk-management-job	ON	master	0	SAP Cloud Application Programming Model 1.0

**risk-management-job** Edit Copy Delete

Repository: risk-management-repo Server: https://github.com  
Pipeline: SAP Cloud Application Programming Model

**Builds** General Information Build Retention Stages Timed Triggers

**Manually trigger build**

#3  
Commit 5d5a0b3  
6 min 22 · Apr 22, 2022, 6:52:39 PM  
Retrigger Delete

#2  
Commit ab69e92  
10 min 06 · Apr 21, 2022, 10:47:52 PM  
Retrigger Delete

GENERAL INFORMATION

# Key Summary Points – Unit 8

The screenshot displays the SAP Communication Management dashboard. The top navigation bar includes the SAP logo, a 'Home' dropdown, and several menu items: 'se Event Enablement', 'Business Partner Master', 'Customer Master', 'Sales Orders', 'Mass Maintenance for Product Master', 'Product Master', 'Master Data Administration', and 'Outbound Deliver'. Below this, the 'Communication Management' section features seven tiles. The 'Maintain Extensions on SAP BTP' tile is highlighted with a red border. It contains an icon of a gear with a plus sign and the text 'Maintain Extensions on SAP BTP'.

Below the dashboard, the 'Maintain Extensions on SAP BTP' sub-page is shown. It features a search bar and several filter fields: 'Integration Token', 'Description', 'Tenant', 'Changed On' (with a date range 'MM/dd/yyyy - MM/dd/yyyy'), 'Changed By', and 'Status'. A 'Go' button and an 'Adapt Filters' link are also present. Below the filters, a table titled 'Extensions(44)' is displayed. The table has columns for 'Integration Token', 'Description', 'Tenant', 'System Name', 'Changed On', 'Changed By', and 'Status'. The first row of data shows 'SAP Extension Suite' as the description, 'my301481.s4hana.ondema...' as the tenant, and 'Enabled' as the status.

Integration Token	Description	Tenant	System Name	Changed On	Changed By	Status
	SAP Extension Suite	my301481.s4hana.ondema...		04/22/2022, 03:05:36 PM	CB9980002882	Enabled



# Key Summary Points – Unit 8

Update Instance

1 Basic Info 2 Parameters 3 Review

Enter basic info for your instance or subscription.

Service: \* ⓘ

SAP S/4HANA Cloud Extensibility

Plan: \*

api-access

Runtime Environment: \*

Cloud Foundry

Space: \*

dev

System Name: \*

my301481

Instance Name: \* ⓘ

s4hana-cloud-extensibility

# Key Summary Points – Unit 8

Update Instance

1

Basic Info

2

Parameters

3

Review

Configure instance parameters. ⓘ

Upload a JSON file:

Select JSON file

Browse...

Or specify the parameters in JSON format:

Clear

1 {

2 "systemName": "my301481",

3 "communicationArrangement": {

4 "communicationArrangementName": "CAP\_BUPA\_COMMUNICATION\_ARRANGEMENT",

5 "scenarioId": "SAP\_COM\_0008",

6 "inboundAuthentication": "BasicAuthentication",

7 "outboundAuthentication": "BasicAuthentication",

8 "outboundServices": [

9 {

10 "name": "Replicate Customers from S/4 System to Client",

11 "isServiceActive": false

12 },

13 {

14 "name": "Replicate Suppliers from S/4 System to Client",

15 "isServiceActive": false

16 },

17 {

18 "name": "Replicate Company Addresses from S/4 System to Client",

19 "isServiceActive": false

20 },

21 ]

< Back

Next >

Update Instance

Cancel

SAP S/4HANA Cloud System

Any name is fine here...

ScenarioId for BusinessPartners