SAP Business Technology Platform

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SAP Business Technology Platform (SAP BTP) | Cloud

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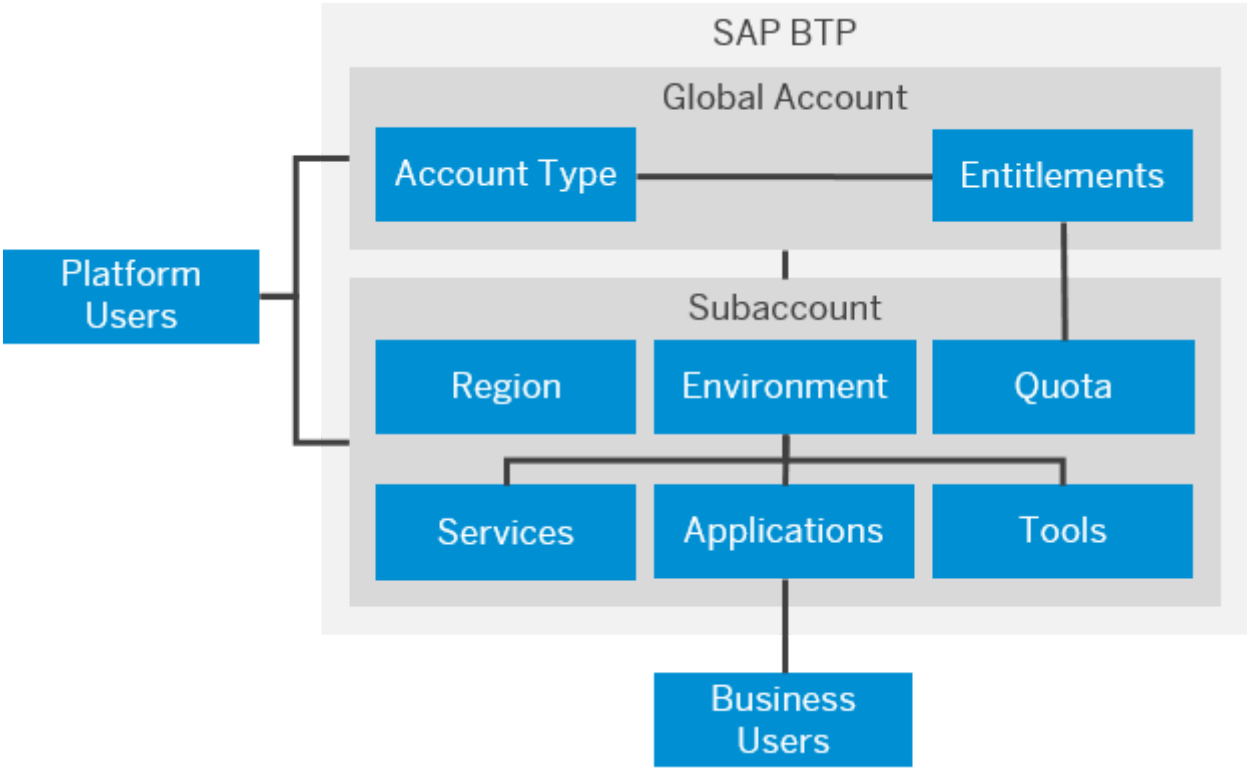
Warning

Basic Platform Concepts

SAP BTP offers users the ability to turn data into business value, compose end-to-end business processes, and build and extend SAP applications quickly.

SAP Business Technology Platform is built on a multi-cloud foundation, which lets you choose from different infrastructures and runtimes. The services and solutions of SAP BTP are available on multiple cloud infrastructure providers, and it supports different runtimes, such as Cloud Foundry, ABAP, and Kyma, as well as multiple different regions, and a broad choice of programming languages.

The central point of entry to the platform is the **SAP BTP cockpit**, where you can access your accounts and applications and manage all activities associated with them.



Relationship between SAP BTP Accounts and Associated Activities

Solutions and Services

SAP BTP offers fast in-memory processing, sustainable, agile **solutions** and **services** to integrate data and extend applications, and fully embedded analytics and intelligent technologies.

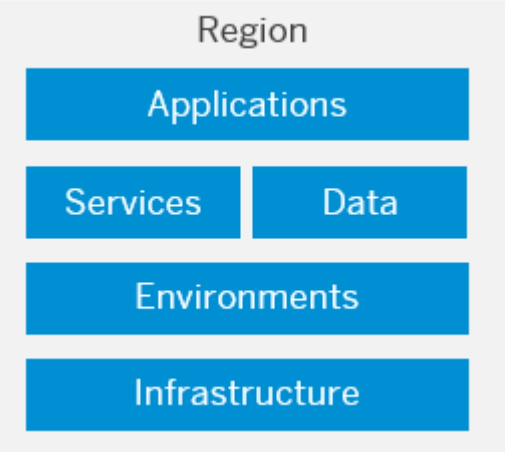
Services enable, facilitate, or accelerate the development of business applications and other platform services on SAP BTP.

For a complete list of services and capabilities, see SAP Discovery Center: Services.

For more information, see Solutions and Services.

Regions

You can deploy applications in different **regions**. Each region represents a geographical location (for example, Europe, US East) where applications, data, or services are hosted.



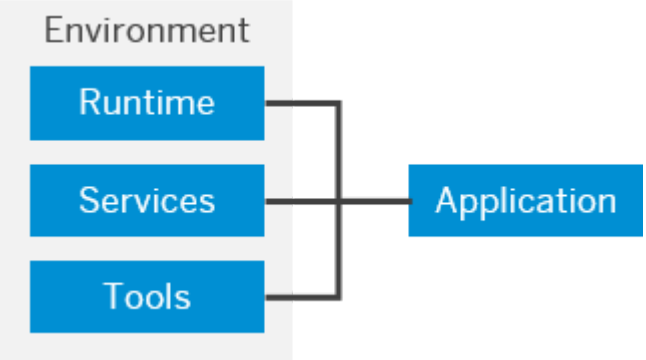
Regions are provided either by SAP or by our Infrastructure-as-a-Service (IaaS) partners Amazon Web Services (AWS), Microsoft Azure, Google Cloud, and Alibaba Cloud. The third-party region providers operate the infrastructure layer of the regions, whereas SAP operates the platform layer and Cloud Foundry.

A region is chosen at the subaccount level. For each subaccount, you select exactly one region (that is one data center).

For more information, see Regions.

Environments

Environments constitute the actual platform-as-a-service offering of SAP BTP that allows for the development and administration of business applications. Environments are anchored in SAP BTP on subaccount level.



SAP BTP provides the following environments:

- Cloud Foundry Environment

  The Cloud Foundry environment enables you to develop new business applications and business services, supporting multiple runtimes, programming languages, libraries, and services. You can leverage a multitude of buildpacks, including community innovations and self-developed buildpacks.

- ABAP Environment

  Within the Cloud Foundry environment, you can create a new space for ABAP development. This is what we refer to as the ABAP environment. It allows you to create extensions for ABAP-based products, such as SAP S/4HANA Cloud, and develop new cloud applications. You can transform existing ABAP-based custom code or extensions to the cloud.

- Kyma Environment

  The Kyma environment is a fully managed Kubernetes runtime based on the open-source project "Kyma" that allows developers to extend SAP solutions with serverless functions and combine them with containerized microservices.

- Neo Environment

The Neo environment lets you develop HTML5, Java, and SAP HANA extended application services (SAP HANA XS) applications. You can also use the UI Development Toolkit for HTML5 (SAPUI5) to develop rich user interfaces for modern web-based business applications.

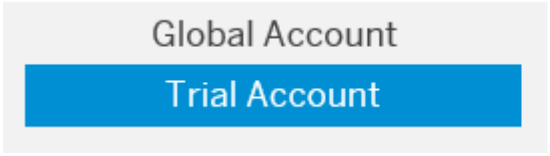
→ Remember

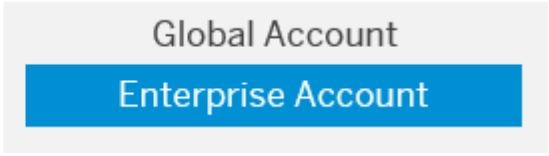
SAP Business Technology Platform, Neo environment will sunset on **December 31, 2028**, subject to terms of customer or partner contracts.

For more information, see SAP Note 3351844.

Enterprise and Trial Accounts

SAP BTP provides different types of global accounts, **enterprise** and **trial**. The type you choose determines pricing, conditions of use, resources, available services, and hosts.





- A **trial account** lets you try out the platform for free. Access is open to everyone. Trial accounts are intended for personal exploration, and not for production use or team development. They allow restricted use of the platform resources and services.

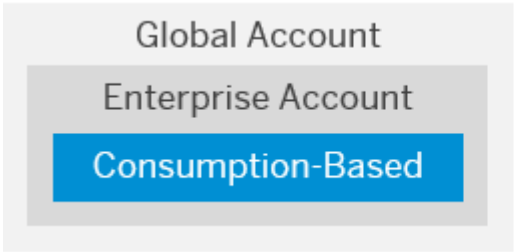
  For more information, see Trial Accounts and Free Tier.

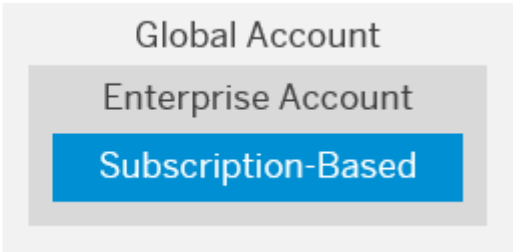
- An **enterprise account** is usually associated with one SAP customer or partner and contains their purchased entitlements to platform resources and services. It groups together different subaccounts that an administrator makes available to users for deploying applications.

  For more information, see Enterprise Accounts.

Commercial Models

SAP BTP offers two different commercial models:





- **Consumption-based commercial model:** Your organization receives access to all current and future services that are eligible for this model. You have complete flexibility to turn services on and off and to switch between services as your business requires throughout the duration of your contract. This commercial model is available in the following flavors: SAP BTP Enterprise Agreement (SAP BTPEA), Cloud Platform Enterprise Agreement (CPEA), and Pay-As-You-Go for SAP BTP.

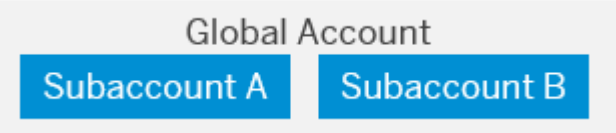
  For more information, see What Is the Consumption-Based Commercial Model?

- **Subscription-based commercial model:** Your organization subscribes only to the services that you plan to use. You can then use these services at a fixed cost, irrespective of consumption.

  For more information, see What Is the Subscription-Based Commercial Model?

Account Model Feature Set A

The SAP BTP cockpit is structured according to global accounts and subaccounts:



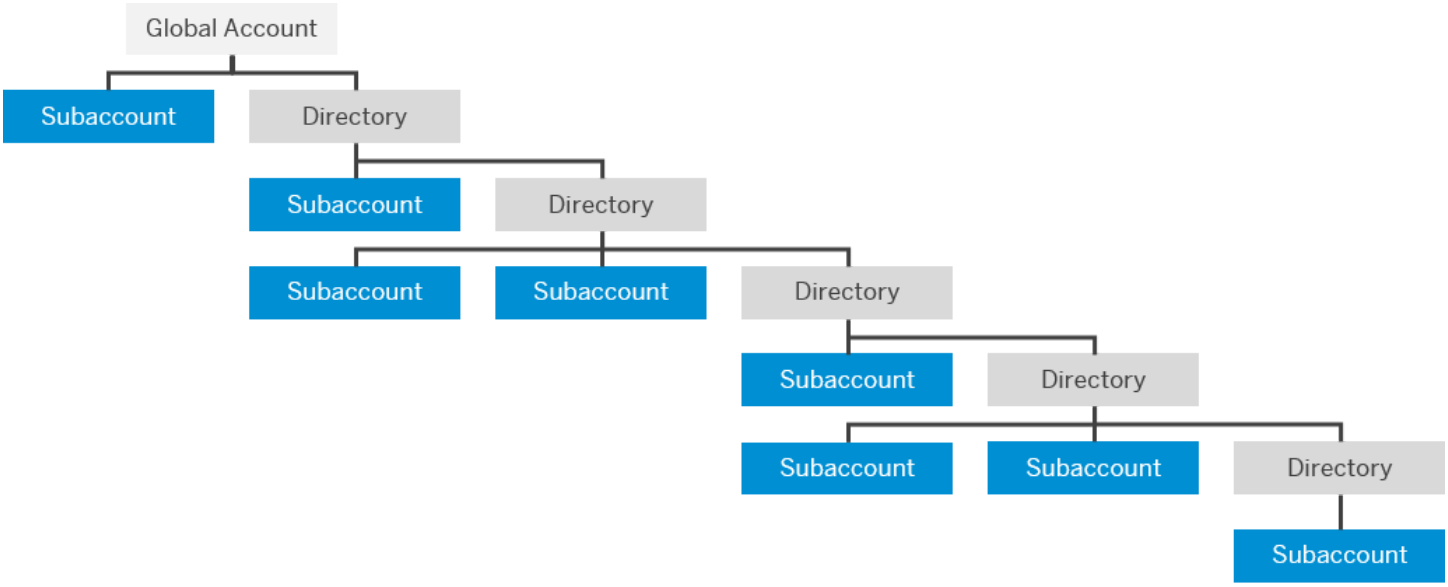
- A **global account** is the realization of a contract you or your company has made with SAP. A global account is used to manage subaccounts, members, entitlements and quotas. You receive entitlements and quotas to use platform resources per global account and then distribute the entitlements and quotas to the subaccount for actual consumption. There are two types of commercial models for global accounts: consumption-based model and subscription-based model. See Commercial Models
- **Subaccounts** let you structure a global account according to your organization's and project's requirements with regard to members, authorizations, and entitlements.

  In the SAP BTP, Cloud Foundry environment, the subaccount is divided into one or more spaces, which is where application development, deployment, and maintenance take place.

For more information, see Account Model.

Account Model Feature Set B

The SAP BTP cockpit is structured according to global accounts, directories, and subaccounts:



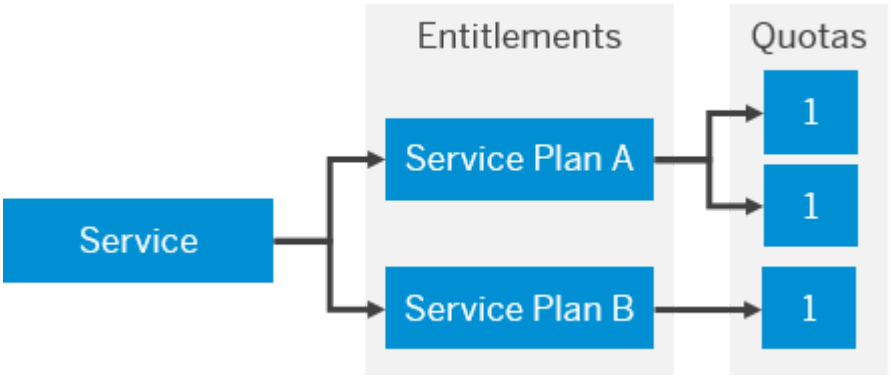
- A **global account** is the realization of a contract you or your company has made with SAP. A global account is used to manage subaccounts, members, entitlements and quotas. You receive entitlements and quotas to use platform resources per global account and then distribute the entitlements and quotas to the subaccount for actual consumption. There are two types of commercial models for global accounts: consumption-based model and subscription-based model. See Commercial Models
- With **directories**, you can organize and manage your subaccounts according to your technical and business needs.
- **Subaccounts** let you structure a global account according to your organization's and project's requirements with regard to members, authorizations, and entitlements.

  In the SAP BTP, Cloud Foundry environment, the subaccount is divided into one or more spaces, which is where application development, deployment, and maintenance take place.

For more information, see Account Model.

Entitlements and Quotas

When you purchase an enterprise account, you're entitled to use a specific set of resources, such as the amount of memory that can be allocated to your applications.



- On SAP BTP, all external dependencies such as databases, messaging systems, files systems, and so on, are **services**. In this context, multitenant applications and environments are considered services.

  Each service has one or more **service plans** available. A service plan is the representation of the costs and benefits for a given variant of a particular service. For instance, a database may be configured with various "T-shirt sizes", each of which is a different service plan.

- An **entitlement** is your right to provision and consume a resource. In other words, entitlements are **the service plans** that you're entitled to use.

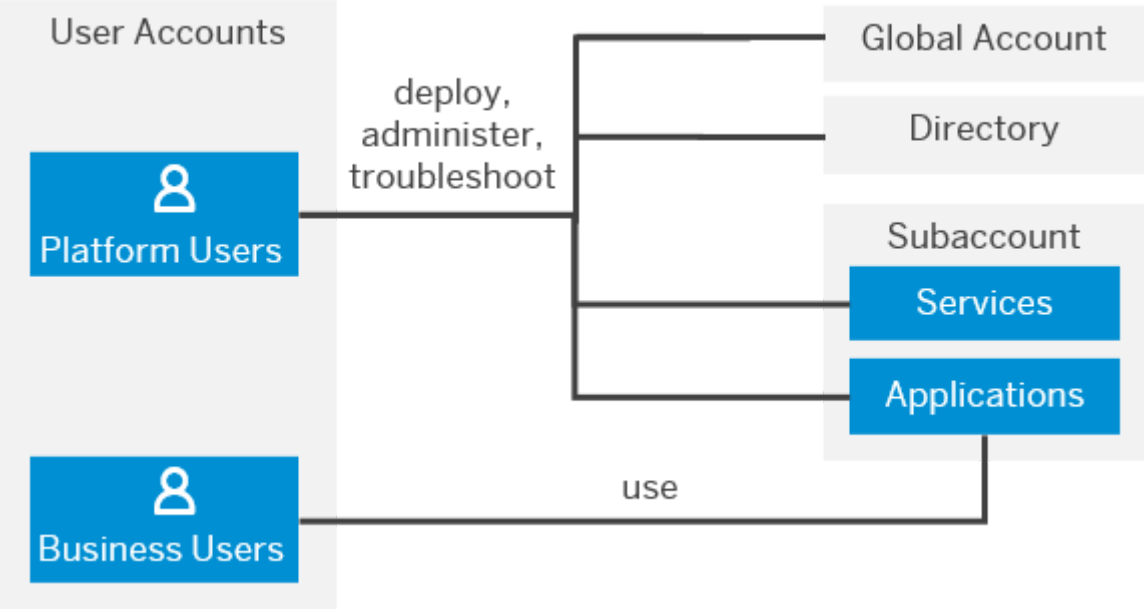
- A **quota** represents the numeric quantity of a service plan that you're entitled to consume in your global account and its subaccounts.

For more information, see Entitlements and Quotas.

User and Member Management

On SAP BTP, member management takes place at all levels from global account to environment, while user management is relevant for business applications.

User accounts enable users to log on to SAP BTP, access subaccounts, and to use services according to the permissions granted to them. We distinguish between two types of users:



- **Platform users** are usually developers, administrators or operators who deploy, administer, and troubleshoot applications and services on SAP BTP.
- **Business users** use the applications that are deployed to SAP BTP. For example, the end users of SaaS apps or services, such as SAP Workflow service or SAP Cloud Integration, or end users of your custom applications are business users.

Member management refers to managing permissions for platform users. A member is a user who is assigned to an SAP BTP global account or subaccount. Administrators can add users to global accounts and subaccounts and assign roles to them as needed. You can use predefined roles, for example the administrator role for managing subaccount members.

User management refers to managing authentication and authorization for your business users.

For more information, see User and Member Management.

Tools, Programming Models, Programming Languages, and APIs

SAP BTP provides various programming languages and tools for your development project:

- SAP BTP includes many tools to help you develop and manage applications, and connect them to your on-premise systems. For more information, see Tools.
- SAP BTP supports many different programming languages; the availability of each depends on the development environment you're using. For more information, see Programming Languages.
- The SAP Cloud Application Programming Model offers a consistent end-to-end programming model that includes languages, libraries, and APIs that are tailored for full-stack development on SAP BTP. For more information, see SAP Cloud Application Programming Model.
- Depending on your use case, you can choose between different offerings for continuous integration and delivery. For more information, see Continuous Integration and Delivery (CI/CD).
- Discover and consume APIs to manage, build, and extend the core capabilities of SAP BTP. For more information, see APIs.

Solutions and Services

Consume the solutions and services by SAP BTP according to your preferred development environment and use cases.

Solutions

SAP BTP offers fast in-memory processing, sustainable, agile **solutions** and **services** to integrate data and extend applications, and fully embedded analytics and intelligent technologies.

Services

Services enable, facilitate, or accelerate the development of business applications and other platform services on SAP BTP. Services are grouped into the following service types:

- **Business services**: Services that enable, facilitate, or accelerate the development of business process components or provide industry-specific functionalities or content within a business application.
- **Technical services**: Services that enable, facilitate, or accelerate the development of general or domain independent content within a business application, independent of the application's business process or task.

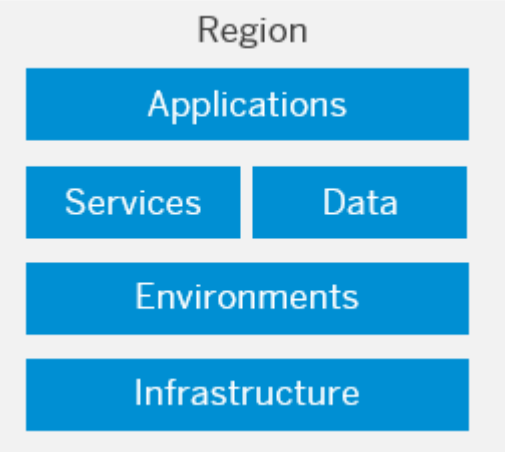
You find all available services, solutions, and use cases in the SAP Discovery Center.

Use the service catalog to access service-specific resources:

Regions

You can deploy applications in different **regions**. Each region represents a geographical location (for example, Europe, US East) where applications, data, or services are hosted.

About SAP BTP Regions



Regions are provided either by SAP or by our Infrastructure-as-a-Service (IaaS) partners Amazon Web Services (AWS), Microsoft Azure, Google Cloud, and Alibaba Cloud. The third-party region providers operate the infrastructure layer of the regions, whereas SAP operates the platform layer and Cloud Foundry.

For an overview of all available regions, see SAP Discovery Center:

Selecting a Region

A region is chosen at the subaccount level. For each subaccount, you select exactly one region. The selection of a region is dependent on many factors: For example, application performance (response time, latency) can be optimized by selecting a region close to the user. For more information, see Selecting a Region.

Deploying Applications in Regions

When deploying applications, consider that a subaccount is associated with a particular region and that this is independent of your own location. You may be located in the United States, for example, but operate your subaccount in a region in Europe. For more information on subaccounts, see Subaccounts.

To deploy an application in more than one region, execute the deployment separately for each host. For more information, see Deploy an Application.

Within a region, there can be multiple instances of the SAP BTP, Cloud Foundry environment. When creating a subaccount, SAP BTP automatically assigns the account to a specific instance of the environment. Several subaccounts of the same global account can be located in different datacenters in one region. This also affects the format of the API endpoint URL that is displayed in the cockpit after enabling Cloud Foundry in your subaccount. There are two possible formats for the API endpoint URL, either displayed with or without an index. Here's an example for **eu10**:

Example

- https://api.cf.eu10.hana.ondemand.com
- https://api.cf.eu10-<XXX>.hana.ondemand.com

In both cases, the subaccount is located in the region eu10. The differences in the URLs are only an indicator of technical details on the side of SAP BTP and do not affect the functionality of your applications. For information on enabling Cloud Foundry, see Create Orgs.

High Availability

SAP has a number of processes in place to support resilience in SAP BTP, and provides different offerings so that you can support the high availability of your applications. For more information, see Resilience, High Availability, and Disaster Recovery.

EU Access

Some customer contracts include EU Access, which restricts processing of personal data to EEA/Switzerland. If the global account is marked with EU Access, the actual EU Access compliance status of subaccounts will be displayed during creation of subaccounts.

Note

If you require a subaccount with EU Access, make sure to select a provider and region where EU Access is available. Regions that allow for EU Access are labeled as such in the map view filter in the SAP Discovery Center.

For some services, EU Access is generally not available, not even if the provider and region support EU Access.

Related Information

Regions and API Endpoints Available for the Cloud Foundry Environment
Regions and API Endpoints for the ABAP Environment
Regions for the Kyma Environment

Regions and API Endpoints Available for the Cloud Foundry Environment

Regions for Enterprise Accounts

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint
Microsoft	eu20	Europe	cf-eu20	West	**cf-eu20:**	**cf-eu20:**	**cf-eu20:**

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint
Azure		(Netherlands)		Europe	52.149.67.35, 20.82.96.175, 20.82.96.178, 20.82.96.211, 20.82.96.244, 20.82.96.220, 20.82.96.227, 20.82.97.50, 20.82.96.240, 20.82.96.234, 20.82.97.38, 20.82.96.222, 20.82.96.233, 20.82.96.248, 20.82.97.31, 20.82.97.45, 52.149.96.147, 20.56.169.152, 20.56.169.69, 20.56.169.0, 20.56.169.41, 20.56.169.58, 20.56.169.161, 20.56.169.116, 20.56.169.167, 20.56.169.50, 20.56.169.175, 20.56.169.131, 20.56.169.66, 20.56.169.71, 20.56.169.138, 20.56.169.91, 52.142.226.14, 20.86.1.84, 20.86.1.80, 20.86.0.233, 20.86.1.131, 20.86.1.54, 20.86.1.128, 20.86.1.134, 20.86.1.163, 20.86.1.15, 20.86.0.250, 20.86.1.107, 20.86.1.157, 20.86.0.253, 20.86.1.12, 20.86.1.97 **cf-eu20-001:** 20.54.248.90, 20.54.248.142, 20.54.250.88, 20.54.250.91, 20.56.17.109, 20.56.18.130,	40.119.153.88 **cf-eu20-001:** 20.82.83.59	api.cf.eu20.hana.ondemand.com **cf-eu20-001:** api.cf.eu20-001.hana.ondemand.com

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint
					20.56.18.132, 20.56.18.179, 20.86.17.114, 20.86.17.142, 20.86.17.153, 20.86.17.159		
Microsoft Azure	ap20	Australia (Sydney)	cf-ap20	Australia East	40.82.211.52, 40.82.206.131, 20.70.176.247, 20.40.81.59, 20.40.80.246, 20.40.81.36, 20.70.208.178, 20.70.208.228, 20.70.208.235, 20.70.201.155, 20.70.201.89, 20.70.201.66	20.53.99.41	api.cf.ap20.hana.ondemand.com
Microsoft Azure	ap21	Singapore	cf-ap21	Southeast Asia	40.90.179.153, 20.198.169.214, 20.198.168.45, 20.198.169.5, 40.90.170.226, 20.198.225.78, 20.198.225.102, 20.198.225.27, 40.90.162.117, 20.191.154.174, 20.191.154.191, 20.191.154.193	20.184.61.122	api.cf.ap21.hana.ondemand.com
Microsoft Azure	us20	US West (WA)	cf-us20	West US 2	40.90.195.191, 20.57.129.106, 20.57.128.95, 20.57.128.118, 40.90.209.71, 20.72.210.109, 20.72.209.240, 20.72.209.187, 40.90.200.224, 40.90.201.197, 40.90.201.85, 40.90.200.237	40.91.120.100	api.cf.us20.hana.ondemand.com

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint
Microsoft Azure	jp20	Japan (Tokyo)	cf-jp20	Japan East	52.185.186.130, 20.194.193.229, 20.194.193.167, 20.194.194.97, 40.81.200.207, 20.78.122.9, 20.78.121.237, 20.78.122.8, 20.40.96.175, 20.78.2.104, 20.78.2.106, 20.78.2.107	20.43.89.91	api.cf.jp20.hana.ondemand.com
Microsoft Azure	us21	US East (VA)	cf-us21	East US	40.90.251.147, 52.146.1.155, 20.51.255.236, 52.146.1.223, 40.90.232.167, 20.55.49.185, 20.55.49.92, 20.55.49.186, 40.90.231.101, 52.151.248.29, 52.146.15.82, 52.146.10.227	40.88.52.17	api.cf.us21.hana.ondemand.com
Microsoft Azure	ch20	Switzerland (Zurich)	cf-ch20	Switzerland North	20.208.128.83, 20.208.128.86, 20.208.128.87, 20.208.128.88, 51.103.208.79, 51.103.208.81, 51.103.208.85, 51.103.208.87, 51.107.2.38, 51.107.2.50, 51.107.2.52, 51.107.2.54	20.208.56.83	api.cf.ch20.hana.ondemand.com

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint
Amazon Web Services	br10	Brazil (São Paulo)	cf-br10	sa-east-1	52.67.245.111, 18.231.45.151, 54.207.173.126, 18.230.81.234, 18.229.169.29, 54.94.110.127, 18.231.101.158, 177.71.170.199, 54.232.227.140, 52.67.251.43, 54.232.20.181, 54.94.136.11, 52.67.221.224, 18.229.54.222, 54.232.250.83, 18.228.194.102, 18.228.198.142, 177.71.168.150	18.229.91.150, 52.67.135.4, 54.232.179.204, 18.228.53.198, 52.67.149.240, 54.94.179.209	api.cf.br10.hana.ondemand.com
Amazon Web Services	jp10	Japan (Tokyo)	cf-jp10	ap-northeast-1	54.238.10.97, 54.250.43.250, 52.192.218.156, 35.74.54.33, 18.177.86.79, 35.74.144.49, 3.114.115.232, 18.179.150.168, 54.249.134.63, 18.179.66.68, 54.250.33.48, 54.95.22.24, 52.198.77.221, 35.73.255.50, 54.178.62.192, 3.113.232.224, 52.198.66.114, 13.230.215.218	3.114.248.68, 3.113.252.15, 13.114.117.83, 18.178.155.134, 57.180.140.5, 57.180.145.179	api.cf.jp10.hana.ondemand.com
Amazon Web Services	ap10	Australia (Sydney)	cf-ap10	ap-southeast-2	52.62.223.36, 13.55.100.204, 13.54.168.75, 13.55.239.117, 13.210.173.131, 13.54.77.205, 13.237.182.31, 52.65.102.82, 54.79.72.145, 13.236.142.207, 54.79.43.227, 13.54.252.220, 54.79.26.135, 13.54.220.129, 13.236.59.235, 13.238.9.23, 54.153.242.51, 3.105.234.54	13.236.220.84, 13.211.73.244, 3.105.95.184, 13.55.188.95, 3.105.212.249, 3.106.45.106	api.cf.ap10.hana.ondemand.com

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint
Amazon Web Services	ap11	Asia Pacific (Singapore)	cf-ap11	ap-southeast-1	13.251.40.148, 13.228.68.14, 13.251.49.36, 52.76.185.92, 13.229.13.240, 54.251.74.134, 52.220.111.202, 54.179.77.154, 52.76.123.164, 54.179.253.138, 13.213.119.83, 3.1.38.48, 52.76.114.209, 13.213.105.43, 13.213.132.88, 13.250.92.77, 18.140.150.56, 18.140.255.164	18.139.147.53, 3.0.9.102, 18.140.39.70, 13.229.158.122, 18.140.228.217, 52.74.215.89	api.cf.ap11.hana.ondemand.com
Amazon Web Services	ap12	Asia Pacific (Seoul)	cf-ap12	ap-northeast-2	15.165.116.197, 54.180.53.68, 3.35.252.222, 52.78.49.16, 15.164.33.162, 3.34.19.116, 3.36.2.67, 3.35.57.231, 15.164.254.80, 3.36.165.189, 52.78.38.74, 15.165.249.251, 13.124.251.247, 13.124.16.17, 15.165.83.237	3.35.106.215, 3.35.255.45, 3.35.215.12, 13.209.236.215, 43.201.194.105, 43.202.204.5	api.cf.ap12.hana.ondemand.com
Amazon Web Services	ca10	Canada (Montreal)	cf-ca10	ca-central-1	35.182.118.205, 35.182.198.31, 3.98.159.3, 3.96.101.45, 15.222.120.34, 3.96.14.215, 3.97.48.154, 3.97.119.250, 35.182.95.49, 3.97.228.23, 35.182.185.156, 3.98.252.245, 15.223.62.0, 99.79.181.241, 3.98.167.60, 99.79.110.245, 52.60.239.204, 52.60.212.33	35.183.74.34, 35.182.75.101, 3.98.102.153, 15.157.88.166, 3.98.202.222, 52.60.210.33	api.cf.ca10.hana.ondemand.com
Amazon Web Services	eu10	Europe (Frankfurt)	cf-eu10	eu-central-1	**cf-eu10:**	**cf-eu10:**	**cf-eu10:** api.cf.eu10.hana.ondemand.com

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint
					52.59.128.222, 52.28.241.88, 18.184.81.94, 3.67.200.70, 3.68.51.135, 3.124.174.204, 3.68.31.37, 3.67.58.183, 3.67.0.172, 3.67.244.62, 3.126.117.58, 3.66.100.105, 3.68.13.226, 3.126.45.133, 3.67.249.135, 18.194.183.183, 3.67.246.74, 3.66.68.201, 3.68.0.70, 52.28.56.202, 3.126.95.250, 3.66.68.127, 18.195.244.40, 3.67.107.121, 3.67.24.253, 18.193.50.255, 3.121.35.143 **cf-eu10-002:** 18.198.196.89, 18.193.21.232, 3.65.9.91, 52.29.190.137, 18.197.134.65, 3.67.182.154, 3.67.255.232, 3.66.249.150, 3.68.44.236 **cf-eu10-003:** 3.64.131.199, 3.64.88.217, 3.64.142.243, 18.198.18.157, 3.68.40.83, 3.67.235.98, 3.68.17.221, 18.198.149.19, 3.68.38.23 **cf-eu10-004:** 3.69.195.103, 3.64.170.167, 3.68.176.248, 3.121.49.211,	3.124.208.223, 3.122.209.241, 3.124.222.77, 18.159.31.22, 3.69.186.98, 3.77.195.119 **cf-eu10-002:** 3.126.229.22, 18.193.180.19, 3.64.227.236, 18.153.123.11, 3.121.37.195, 3.73.215.90 **cf-eu10-003:** 3.127.77.3, 3.64.196.58, 18.156.151.247, 18.197.252.154, 3.79.137.29, 52.58.93.50 **cf-eu10-004:** 3.70.38.218, 18.196.206.8, 3.65.185.47, 3.73.109.100, 3.73.8.210, 52.59.18.183	**cf-eu10-002:** api.cf.eu10-002.hana.ondemand.com **cf-eu10-003:** api.cf.eu10-003.hana.ondemand.com **cf-eu10-004:** api.cf.eu10-004.hana.ondemand.com

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint
					18.197.219.60, 3.70.38.84		
Amazon Web Services	eu11	Europe (Frankfurt)	cf-eu11	eu-central-1	18.156.140.38, 3.121.55.100, 35.156.198.246, 52.59.77.121, 18.185.57.85, 3.121.79.209, 3.67.237.8, 35.156.31.32, 3.65.63.251, 3.122.176.63, 18.198.13.57, 18.157.114.142, 18.184.172.97, 18.159.180.188, 35.157.5.44	18.156.209.198, 18.157.105.117, 3.124.207.41, 3.66.26.249, 3.72.216.204, 3.74.99.245	api.cf.eu11.hana.ondemand.com

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint
Amazon Web Services	us10	US East (VA)	cf-us10	us-east-1	**cf-us10:** 52.200.16.71, 52.23.123.125, 52.202.170.155, 18.210.47.160, 18.211.235.11, 54.156.172.106, 34.234.191.59, 34.192.134.47, 18.204.173.15, 3.213.197.54, 184.73.43.82, 52.20.242.182, 3.216.16.207, 34.225.190.250, 52.2.110.230, 54.234.93.200, 35.153.88.132, 52.204.111.138, 3.88.250.160, 54.221.30.91, 52.71.83.110, 52.200.165.163, 54.208.119.130, 34.202.136.35, 34.192.100.96, 54.85.65.82, 54.205.71.200 **cf-us10-001:** 52.0.214.195, 18.213.153.162, 54.227.144.195, 3.225.73.158, 34.233.151.91, 23.23.172.117, 3.222.22.16, 34.238.1.234, 34.194.239.31, 3.225.44.56, 34.201.208.150, 75.101.157.228 **cf-us10-002:** 54.162.233.194, 34.206.160.141, 35.168.80.144, 18.232.28.65, 54.82.224.146, 3.221.4.74, 18.211.12.227, 54.159.45.198, 72.44.51.245	**cf-us10:** 52.4.101.240, 52.23.1.211, 52.23.189.23, 18.213.242.208, 3.214.110.153, 34.205.56.51 **cf-us10-001:** 3.227.182.44, 52.86.131.53, 3.220.114.17, 44.218.82.203, 44.219.57.163, 50.16.106.103 **cf-us10-002:** 107.20.66.86, 54.234.152.59, 34.202.68.0, 3.214.116.95, 54.144.230.36, 54.226.37.104	**cf-us10:** api.cf.us10.hana.ondemand.com **cf-us10-001:** api.cf.us10-001.hana.ondemand.com **cf-us10-002:** api.cf.us10-002.hana.ondemand.com

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint
Google Cloud	us30	US Central (IA)	cf-us30	us-central1	35.202.96.192, 35.193.171.152, 35.193.168.31, 35.202.69.204, 35.202.175.147, 35.193.69.164, 35.202.1.6, 23.236.63.113, 35.193.30.116, 35.202.66.196, 34.68.152.205, 35.222.158.222, 104.197.20.168, 35.232.105.70, 35.224.211.196, 35.222.192.158, 35.193.8.172, 34.171.4.220, 34.172.37.175, 34.170.206.220, 34.172.145.231, 35.222.38.254, 35.239.28.216, 34.134.91.47, 34.123.17.36, 35.202.205.85, 34.118.207.84, 35.193.6.192, 34.122.222.203, 104.197.157.121, 34.135.159.154, 35.223.208.27, 146.148.74.171, 34.132.192.46, 34.68.109.37, 104.198.49.58, 35.225.164.132	35.184.169.79	api.cf.us30.hana.ondemand.com

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint
Google Cloud	eu30	Europe (Frankfurt)	cf-eu30	europe-west3	34.107.28.38, 34.141.10.217, 34.141.116.52, 34.141.1.228, 34.141.123.52, 34.141.125.107, 34.141.46.51, 34.89.130.182, 34.89.146.167, 34.89.203.91, 34.89.232.158, 34.89.243.40, 35.198.83.71, 35.234.65.38, 35.242.208.222, 35.246.155.42, 35.246.171.35, 34.141.28.26, 34.159.160.86, 34.107.19.175, 34.159.165.29, 35.242.240.154, 34.141.73.130, 34.159.27.236, 34.89.152.211, 35.242.194.75, 35.246.235.253, 34.159.127.190, 34.141.82.126, 35.234.69.102, 34.89.231.53, 34.159.188.133, 35.246.203.194, 34.159.201.78, 34.141.112.232, 35.198.84.213, 34.89.165.33	35.198.143.110	api.cf.eu30.hana.ondemand.com

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint
Google Cloud	in30	India (Mumbai)	cf-in30	asia-south1	34.93.27.36, 34.93.89.145, 34.93.92.210, 34.93.137.163, 34.93.148.247, 34.93.155.252, 34.93.166.164, 34.93.180.0, 34.93.221.129, 35.200.131.125, 35.200.144.1, 35.200.175.62, 35.200.183.224, 35.200.194.175, 35.200.198.26, 35.200.209.142, 35.244.29.120, 35.200.137.225, 34.100.186.241, 35.200.169.254, 35.200.151.131, 35.200.252.103, 35.244.15.103, 35.244.16.76, 34.93.255.115, 35.244.53.153, 35.200.168.60, 35.200.222.30, 34.100.178.164, 35.244.2.193, 34.93.11.49, 34.100.211.195, 34.100.151.15, 34.93.95.83, 34.100.215.143, 34.93.205.174, 34.93.159.24	34.93.125.74	api.cf.in30.hana.ondemand.com

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint
Google Cloud	il30	Israel (Tel Aviv)	cf-il30	me-west1	34.165.0.14, 34.165.0.115, 34.165.5.181, 34.165.5.246, 34.165.7.73, 34.165.12.173, 34.165.16.177, 34.165.16.210, 34.165.17.27, 34.165.18.240, 34.165.21.242, 34.165.24.112, 34.165.26.162, 34.165.37.171, 34.165.38.114, 34.165.40.240, 34.165.41.254, 34.165.80.207, 34.165.81.54, 34.165.110.15, 34.165.136.9, 34.165.150.108, 34.165.168.74, 34.165.171.197, 34.165.172.4, 34.165.194.20, 34.165.222.104, 34.165.223.90, 34.165.228.95, 34.165.231.165	34.165.59.26	api.cf.il30.hana.ondemand.com
Alibaba Cloud	cn40	China (Shanghai)	cf-cn40	cn-shanghai	101.132.190.155, 106.14.165.33, 106.14.184.113	139.224.7.71	api.cf.cn40.platform.sapcloud.cn

Regions for Trial Accounts

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	Trial NAT IPs (egress, IPs for requests from a Cloud Foundry app)	LB IPs (ingress, for incoming requests)	API Endpoint	Domai
Amazon Web Services	us10	US East (VA)	cf-us10	us-east-1	3.218.99.154, 52.72.147.227, 3.218.112.63	52.23.189.23, 52.4.101.240, 52.23.1.211	api.cf.us10.hana.ondemand.com	us10.ha
Microsoft Azure	ap21	Singapore	cf-ap21	Southeast Asia	52.139.216.172, 20.195.24.178, 20.195.9.169	20.184.61.122	api.cf.ap21.hana.ondemand.com	ap21.h

ℹ Note

Trial accounts and subaccounts on trial can no longer be created on eu10, Europe (Frankfurt).

Existing trial accounts and subaccounts are not affected.

ℹ Note

In the Cloud Foundry environment, IPs are controlled by the respective IaaS provider (AWS, Azure, or Google Cloud). IPs may change due to network updates on the provider side. Any planned changes will be announced at least four weeks before they take effect.

ℹ Note

In the Cloud Foundry environment, the region in which a global account was created determines the API endpoint of all subaccounts associated with it. For example, subaccounts created in a global account in region **eu10** share the API endpoint URL `api.cf.eu10.hana.ondemand.com`.

Regions and API Endpoints for the ABAP Environment

Regions for Enterprise Accounts

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from an ABAP System)	API Endpoint	Do
Amazon Web Services	ap10	Australia (Sydney)	cf-ap10	ap-southeast-2	54.153.226.137, 54.153.194.85, 54.79.209.86, 13.238.93.75	api.cf.ap10.hana.ondemand.com	ap
Amazon Web Services	br10	Brazil (Sao Paulo)	cf-br10	sa-east-1	52.67.140.201, 54.207.133.145, 15.229.97.244, 18.228.92.201	api.cf.br10.hana.ondemand.com	br
Amazon Web Services	ca10	Canada (Montreal)	cf-ca10	ca-central-1	15.222.180.159, 15.222.175.12, 52.60.183.108, 3.97.94.144	api.cf.ca10.hana.ondemand.com	ca
Amazon Web Services	eu10	Europe (Frankfurt)	cf-eu10	eu-central-1	18.197.217.237, 18.198.153.44, 18.157.206.182, 52.57.94.154, 3.74.95.163, 18.156.20.40, 3.70.85.193, 3.76.177.92, 18.196.196.117,3.127.41.81, 3.69.221.68, 3.67.230.143, 3.74.106.119, 18.199.199.153, 3.78.46.180	cf-eu10: api.cf.eu10.hana.ondemand.com cf-eu10-002: api.cf.eu10-002.hana.ondemand.com cf-eu10-003: api.cf.eu10-003.hana.ondemand.com cf-eu10-004: api.cf.eu10-004.hana.ondemand.com	cf-eu cf-00 cf-00 cf-00
Amazon Web Services	eu11	Europe (Frankfurt) EU Access	cf-eu11	eu-central-1	18.157.200.44, 3.121.238.156, 3.67.47.252, 18.195.136.83, 3.120.9.225, 3.68.253.186	api.cf.eu11.hana.ondemand.com	eu

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from an ABAP System)	API Endpoint	Do
Amazon Web Services	jp10	Japan (Tokyo)	cf-jp10	ap-northeast-1	35.75.28.56, 35.74.196.78, 35.74.158.17, 54.250.128.197, 52.196.122.86	api.cf.jp10.hana.ondemand.com	jp1
Amazon Web Services	ap11	Singapore	cf-ap11	ap-southeast-1	54.179.221.168, 18.140.151.124, 54.254.21.208, 54.251.135.238	api.cf.ap11.hana.ondemand.com	ap1
Amazon Web Services	ap12	South Korea (Seoul)	cf-ap12	ap-northeast-2	3.39.57.235, 13.125.0.129, 13.124.63.148, 13.209.63.123	api.cf.ap12.hana.ondemand.com	ap1
Amazon Web Services	us10	US East (VA)	cf-us10	us-east-1	54.243.29.110, 18.215.92.120, 34.232.200.153, 18.232.247.104, 3.209.189.244, 18.204.158.200, 23.20.221.103, 54.86.32.250, 52.1.255.25	cf-us10: api.cf.us10.hana.ondemand.com cf-us10-001: api.cf.us10-001.hana.ondemand.com cf-us10-002: api.cf.us10-002.hana.ondemand.com	cf-us1 cf-00 cf-00
Microsoft Azure	eu20	Europe (Netherlands)	cf-eu20	westeurope	74.234.204.238, 98.71.236.50, 108.143.241.97	cf-eu20: api.cf.eu20.hana.ondemand.com cf-eu20-001: api.cf.eu20-001.hana.ondemand.com	cf-eu2 cf-00
Microsoft Azure	ch20	Switzerland (Zurich) Azure EU Access	cf-ch20	switzerlandnorth	172.162.240.234, 51.107.40.177, 51.103.221.23	api.cf.ch20.hana.ondemand.com	ch2
Microsoft Azure	us20	US West (WA)	cf-us20	westus2	20.9.136.184, 172.179.0.166, 20.9.147.50	api.cf.us20.hana.ondemand.com	us2
Microsoft Azure	us21	US East (VA)	cf-us21	eastus	172.190.88.27, 20.83.171.94, 74.235.125.210	api.cf.us21.hana.ondemand.com	us2
Microsoft Azure	ap20	Australia (Sydney)	cf-ap20	australiaeast	20.211.81.46, 20.70.213.77, 20.211.46.196	api.cf.ap20.hana.ondemand.com	ap2

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	NAT IPs (egress, IPs for requests from an ABAP System)	API Endpoint	Do
Microsoft Azure	ap21	Singapore	cf-ap21	southeastasia	20.6.9.203, 20.198.169.36, 20.195.25.14	api.cf.ap21.hana.ondemand.com	ap2
Microsoft Azure	jp20	Japan (Tokyo)	cf-jp20	japaneast	20.78.124.111, 20.63.141.36, 20.78.37.7	api.cf.jp20.hana.ondemand.com	jp2
Google Cloud	eu30	Europe (Frankfurt)	cf-eu30	europe-west3	34.141.88.79, 34.159.65.75, 34.141.107.207, 34.141.42.177, 34.141.126.80, 34.159.215.19	api.cf.eu30.hana.ondemand.com	eu3
Google Cloud	in30	India (Mumbai)	cf-in30	asia-south1	34.93.58.135, 35.200.177.49, 35.244.63.61, 34.93.41.126, 34.93.191.130, 35.200.168.232	api.cf.in30.hana.ondemand.com	in3
Google Cloud	us30	US Central (IA)	cf-us30	us-central1	34.121.78.84, 34.122.132.185, 104.154.245.19, 34.171.92.122, 35.224.140.73, 34.31.173.8	api.cf.us30.hana.ondemand.com	us3

Regions for Trial Accounts

IaaS Provider	Region	Region Name	Technical Key	Technical Key of IaaS Provider	Trial NAT IPs (egress, IPs for requests from a Cloud Foundry app)	API Endpoint	Domain
Amazon Web Services	us10	US East (VA)	cf-us10	us-east-1	3.218.99.154, 52.72.147.227, 3.218.112.63	api.cf.us10.hana.ondemand.com	us10.hana.ondemanc
Microsoft Azure	ap21	Singapore	cf-ap21	southeastasia	20.6.9.203, 20.198.169.36, 20.195.25.14	api.cf.ap21.hana.ondemand.com	ap21.hana.ondemanc

Regions for the Kyma Environment

To work with the Kyma environment, you need to specify the region for both your subaccount and the cluster.

i Note

In the Kyma environment, IP addresses for NAT Gateway that handles the egress traffic are configured dynamically. This means that you cannot identify the IP address of NAT Gateway in advance. However, once the IP address is assigned, it remains unchanged throughout the cluster's lifecycle.

Subaccount Regions

The table lists the regions you can choose from when creating a subaccount.

Subaccount Regions for Kyma

Global Account Type	Region	IaaS Provider	Technical Key	Region Name	Plan ID

Enterprise account
Partner Test, Demo, and Development account
Trial account
	ap21	Microsoft Azure	cf-ap21	Singapore	`azure`
					`azure_lite`
					`trial`

Enterprise account Partner Test, Demo, and Development account	us20	Microsoft Azure	cf-us20	US West (WA)	`azure` `azure_lite`
Enterprise account Partner Test, Demo, and Development account	jp20	Microsoft Azure	cf-jp20	Japan (Tokyo)	`azure` `azure_lite`
Enterprise account Partner Test, Demo, and Development account	us21	Microsoft Azure	cf-us21	US East (VA)	`azure` `azure_lite`
Enterprise account Partner Test, Demo, and Development account	eu20	Microsoft Azure	cf-eu20	Europe (Netherlands)	`azure` `azure_lite`
Enterprise account Partner Test, Demo, and Development account	ap20	Microsoft Azure	cf-ap20	Australia (Sydney)	`azure` `azure_lite`
Enterprise account	ch20	Microsoft Azure	cf-ch20	Switzerland (Zurich) EU Access	`azure`
Enterprise account Trial account	us10	Amazon Web Services	cf-us10	US East (VA)	`aws` `trial`
Enterprise account Trial account	eu10	Amazon Web Services	cf-eu10	Europe (Frankfurt)	`aws` `trial`
Enterprise account	eu11	Amazon Web Services	cf-eu11	Europe (Frankfurt) EU Access	`aws`

Global Account Type	Region	IaaS Provider	Technical Key	Region Name	Plan ID
Enterprise account	br10	Amazon Web Services	cf-br10	Brazil (São Paulo)	aws
Enterprise account	jp10	Amazon Web Services	cf-jp10	Japan (Tokyo)	aws
Enterprise account	ca10	Amazon Web Services	cf-ca10	Canada (Montreal)	aws
Enterprise account	ap12	Amazon Web Services	cf-ap12	South Korea (Seoul)	aws
Enterprise account	ap10	Amazon Web Services	cf-ap10	Australia (Sydney)	aws
Enterprise account	ap11	Amazon Web Services	cf-ap11	Singapore	aws
Enterprise account	us30	Google Cloud	cf-us30	US Central (IA)	gcp
Enterprise account	eu30	Google Cloud	cf-eu30	Europe (Frankfurt)	gcp
Enterprise account	in30	Google Cloud	cf-in30	India (Mumbai)	gcp
Enterprise account	jp30	Google Cloud	cf-jp30	Japan (Osaka)	gcp
Enterprise account	sa30	Google Cloud	cf-sa30	KSA (Dammam)	gcp
Enterprise account	il30	Google Cloud	cf-il30	Israel (Tel Aviv)	gcp

Cluster Regions

When you enable a Kyma environment for a given subaccount, you must select a plan and region where the cluster is going to be created. Note that there is a number of regions available within each plan. They are all listed in the table:

Cluster Regions

Hyperscaler	Plan ID	Region	Region Name
Microsoft Azure	azure azure_lite	centralus	US Central (IA)
		eastus	US East (VA)
		westus2	US West (WA)
		northeurope	North EU (Ireland)
		uksouth	UK South (London)
		japaneast	Japan (Tokyo)
		southeastasia	Singapore
		westeurope	Europe (Netherlands)
		australiaeast	Australia (Sydney)
		switzerlandnorth	Switzerland (Zurich)
	trial	southeastasia	Singapore
Amazon Web Services	aws	eu-central-1	Europe (Frankfurt)

Hyperscaler	Plan ID	Region	Region Name
		eu-west-2	Europe (London)
		ca-central-1	Canada (Montreal)
		sa-east-1	Brazil (São Paulo)
		us-east-1	US East (VA)
		us-west-1	US West (N. California)
		ap-northeast-1	Japan (Tokyo)
		ap-northeast-2	South Korea (Seoul)
		ap-south-1	India (Mumbai)
		ap-southeast-1	Singapore
		ap-southeast-2	Australia (Sydney)
	trial	eu-central-1	Europe (Frankfurt)
		us-east-1	US East (VA)
Google Cloud	gcp	europe-west3	Europe (Frankfurt)
		us-central1	US Central (IA)
		asia-south1	India (Mumbai)
		asia-northeast2	Japan (Osaka)
		me-central2	KSA (Dammam)
		me-west1	Israel (Tel Aviv)

Load Balancers

Depending on the IaaS Provider, the following Load Balancers are provisioned by default:

Default Load Balancers

IaaS Provider	Default Load Balancer
Microsoft Azure	Standard
Amazon Web Services	Classic Network Load Balancer
Google Cloud	External passthrough Network Load Balancer

For more details on the Load Balancers and their features, check out the official documention of the respective IaaS provider.

Related Information

Create the Kyma Instance
Available Plans in the Kyma Environment
Provisioning and Updating Parameters in the Kyma Environment

Resilience, High Availability, and Disaster Recovery

SAP has a number of processes in place to support resilience in SAP BTP, and provides different offerings so that you can support the high availability of your applications.

How SAP Provides Resilience

SAP applies resilience principles when developing, updating, and deploying our SAP BTP applications and services.

SAP BTP provides resilience through the following:

Processes and Offerings	Description	Regional Availability
Availability Zones	To achieve better fault-tolerance in the Cloud Foundry environment, we deploy our services across multiple AZs, which improves the availability of a service if there are issues with the infrastructure of one AZ. For more information, see Availability Zones in the Cloud Foundry Environment.	All regions that support the Cloud Foundry runtime. See Regions and API Endpoints Available for the Cloud Foundry Environment.
Backups in Kyma runtime	Kyma runtime relies on managed Kubernetes clusters for periodic backups of Kubernetes objects. For more information, see Kyma Environment Backup.	All regions that support the Kyma runtime. See Regions for the Kyma Environment.
Backup and Recovery for SAP HANA Cloud	If you use SAP HANA Cloud, your SAP HANA Cloud instances are continually backed up to safeguard your database and ensure that it can be recovered speedily. For more information, see Backup and Recovery.	All regions where SAP HANA Cloud is available. See Availability of SAP HANA Cloud.
Disaster Recovery	The SAP BTP Disaster Recovery (DR) Plan is part of the overall SAP BTP Business Continuity Plan, which includes crisis management and process continuity activities that are triggered by a declared disaster. For more information, see Disaster Recovery as Part of the Business Continuity Plan.	All regions.

Best Practices for Resilient Applications

In addition to the services offered by SAP BTP, you can follow our best practices for developing and deploying applications, which allow you to make your application running on SAP BTP stable and highly available.

- **Develop Resilient Applications**

  When developing your applications, apply the principles and patterns of resilient software design that fit your use case. For more information, see Developing Resilient Apps on SAP BTP. For situations where the load is highly available and where applications need to react by scaling, consider using Application Autoscaler. For more information, see What Is Application Autoscaler?

- **Working with Availability Zones**

  To benefit from the high availability mechanisms in Cloud Foundry, set up your applications with multiple instances. For more information, see Developing Resilient Applications in the Cloud Foundry Environment.

Disaster Recovery as Part of the Business Continuity Plan

The cloud platform disaster recovery (DR) plan is part of the overall cloud platform business continuity plan, which includes crisis management and process continuity activities that are triggered by a declared disaster.

Standard Disaster Recovery

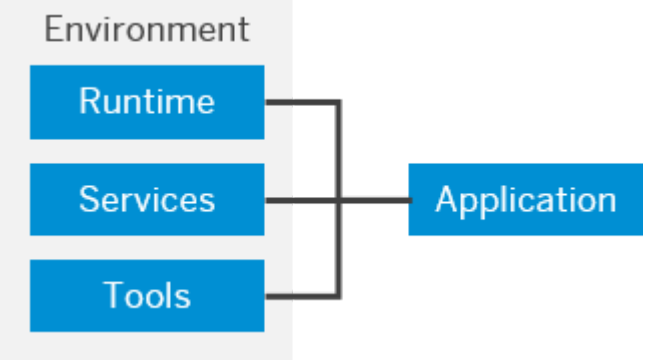
SAP can restore productive tenants from backups as soon as practicable in case of a disaster resulting in the loss of the primary production data center.

As the magnitude of a disaster is unpredictable, a region might not be restored in a reasonable time. In addition, a new infrastructure might need to be set up at a different location, which might require the purchase and setup of new hardware. Therefore, we can't guarantee any fixed recovery timelines.

Environments

Environments constitute the actual platform-as-a-service offering of SAP BTP that allows for the development and administration of business applications. Environments are anchored in SAP BTP on subaccount level.

Each environment comes equipped with specific tools, technologies, and runtimes that you need to build applications. So a multi-environment subaccount is your single address to host a variety of applications and offer diverse development options. One advantage of using different environments in one subaccount is that you only need to manage users, authorizations, and entitlements once per subaccount, and thus grant more flexibility to your developers.



Environment Instances

To actually use an environment in a subaccount, you must **enable** it, which creates an instance of that environment. There are several ways to create **environment instances**:

- In the SAP BTP cockpit, on the subaccount overview, choose **Enable**.
- In the SAP BTP cockpit, under **Service Marketplace**. Here, you get more information, such as the available plans and links to further information.
- Using the btp CLI command `btp create accounts/environment-instance`

Cloud Foundry Environment

The Cloud Foundry environment allows you to create polyglot cloud applications in Cloud Foundry. It contains the SAP BTP, Cloud Foundry runtime service, which is based on the open-source application platform managed by the Cloud Foundry Foundation.

ABAP Environment

Within the Cloud Foundry environment, you can create a new space for ABAP development. This is what we refer to as the ABAP environment. It allows you to create extensions for ABAP-based products, such as SAP S/4HANA Cloud, and develop new cloud applications. You can transform existing ABAP-based custom code or extensions to the cloud.

Kyma Environment

SAP BTP, Kyma runtime provides a fully managed cloud-native Kubernetes application runtime based on the open-source project "Kyma". Based on modular building blocks, Kyma runtime includes all the necessary capabilities to simplify the development and to run enterprise-grade cloud-native applications.

Neo Environment

The Neo environment lets you develop HTML5, Java, and SAP HANA extended application services (SAP HANA XS) applications. You can also use the UI Development Toolkit for HTML5 (SAPUI5) to develop rich user interfaces for modern web-based business applications.

Related Information

Account Administration

Cloud Foundry Environment

The Cloud Foundry environment allows you to create polyglot cloud applications in Cloud Foundry. It contains the SAP BTP, Cloud Foundry runtime service, which is based on the open-source application platform managed by the Cloud Foundry Foundation.

The Cloud Foundry environment enables you to develop new business applications and business services, supporting multiple runtimes, programming languages, libraries, and services. You can leverage a multitude of buildpacks, including community innovations and self-developed buildpacks. It also integrates with SAP HANA extended application services, advanced model.

For more information about Cloud Foundry, see the official Cloud Foundry documentation at https://docs.cloudfoundry.org/ .

Related Information

Getting Started in the Cloud Foundry Environment

Development in the Cloud Foundry Environment

Administration and Operations in the Cloud Foundry Environment

Supported and Unsupported Cloud Foundry Features

Find out which Cloud Foundry features the Cloud Foundry environment on SAP BTP supports and doesn't support.

Supported Features	Unsupported Features

Supported Features	Unsupported Features
• Diego runtime. See https://docs.cloudfoundry.org/concepts/diego/diego-architecture.html . • SSH. See https://docs.cloudfoundry.org/devguide/deploy-apps/app-ssh-overview.html . • Custom Domains. See https://docs.cloudfoundry.org/devguide/deploy-apps/routes-domains.html#domains . • Docker. See https://docs.cloudfoundry.org/adminguide/docker.html . • Running Tasks. See https://docs.cloudfoundry.org/devguide/using-tasks.html . • Request Tracing ◦ Zipkin Tracing. See https://docs.cloudfoundry.org/adminguide/zipkin_tracing.html . • Websockets. See https://docs.cloudfoundry.org/adminguide/supporting-websockets.html . • Space-Scoped Service Brokers. See https://docs.cloudfoundry.org/services/managing-service-brokers.html . • Route Services (only user-provided and fully-brokered services). See https://docs.cloudfoundry.org/services/route-services.html . • Sharing Service Instances (not all services support instance sharing). See https://docs.cloudfoundry.org/devguide/services/sharing-instances.html . • HTTP/2. See https://docs.cloudfoundry.org/adminguide/supporting-http2.html#application . • Streaming Logs to Log Management Services. See https://docs.cloudfoundry.org/devguide/services/log-management.html .	• Container-to-Container Networking. See https://docs.cloudfoundry.org/concepts/understar networking.html . • Isolation Segments. See https://docs.cloudfoundry.org/adminguide/isolatic . • TCP Routing. See https://docs.cloudfoundry.org/adminguide/enablir routing.html . • Secure Service Credential Delivery (with Credhub). https://docs.cloudfoundry.org/credhub/index.html https://github.com/cloudfoundry/credhub/blob/m service-credentials.md

SAP BTP-Specific Configurations

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

- SAP BTP supports the Cloud Foundry command line interface (CF CLI) version 8 or newer. Older versions of the CF CLI are not supported.
- 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 . 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 .

- SAP BTP supports the Cloud Foundry API version 3. The Cloud Foundry API v2 has been deprecated and is no longer supported. For more information, see https://v3-apidocs.cloudfoundry.org/ .
- 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 on average. Starting in April 2023, the rate limit for the deprecated Cloud Foundry API v2 will be decreased and eventually reach the range of a few hundred requests per hour per user.
- In addition to the general rate limit on the Cloud Foundry API, requests for certain API endpoints related to services face a separate limit on concurrent requests. The Cloud Foundry API responds with HTTP status code 429 if a rate limit is reached and provides a Retry-After Header suggesting when the client can attempt a retry. For more information, see https://docs.cloudfoundry.org/running/rate-limit-cloud-controller-api.html#Rate%20Limit%20Responses:%20Service%20Brokers .
- In the SAP BTP, Cloud Foundry environment, the total HTTP Request Header and HTTP Response Header size is limited to 64 KB to protect against misuse.
- In the SAP BTP, Cloud Foundry environment, for both HTTP Request Headers and HTTP Response Headers the total amount of Headers is limited to 101.
- In the SAP BTP, Cloud Foundry environment, the HTTP `keep-alive` timeout towards the client is set to 60s to protect against misuse. 60s is the maximum time span allowed to wait for a new HTTP request to appear if `keep-alive` is enabled.
- In the SAP BTP, Cloud Foundry environment, an internal HTTP `keep-alive` is set to 90s. A higher value must be set on application-side to avoid intermittent disruptions. For more information, see step 4 of 3406978 .
- 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.
- Applications requiring sent envelopes to be delivered to external Log Management Services should use the Cloud Foundry syslog drain capability. See https://docs.cloudfoundry.org/devguide/services/log-management.html .
- In the SAP BTP, Cloud Foundry environment, the time between signaling a container to shut down gracefully and forcefully stopping it is set to 60 seconds. The default in Cloud Foundry is 10 seconds, see https://docs.cloudfoundry.org/devguide/deploy-apps/app-lifecycle.html#shutdown . This time interval will not be taken into account if there are no explicit kernel signal handlers implemented in the application.
- In the SAP BTP, Cloud Foundry environment, applications get a guaranteed CPU share of ¼ core per GB instance memory. As the maximum instance memory per application is 16 GB, this allows for vertical scaling up to 4 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 10 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 the SAP BTP, Cloud Foundry environment, the hard limit for open file descriptors is 32,768 (32K) per container.
- 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.

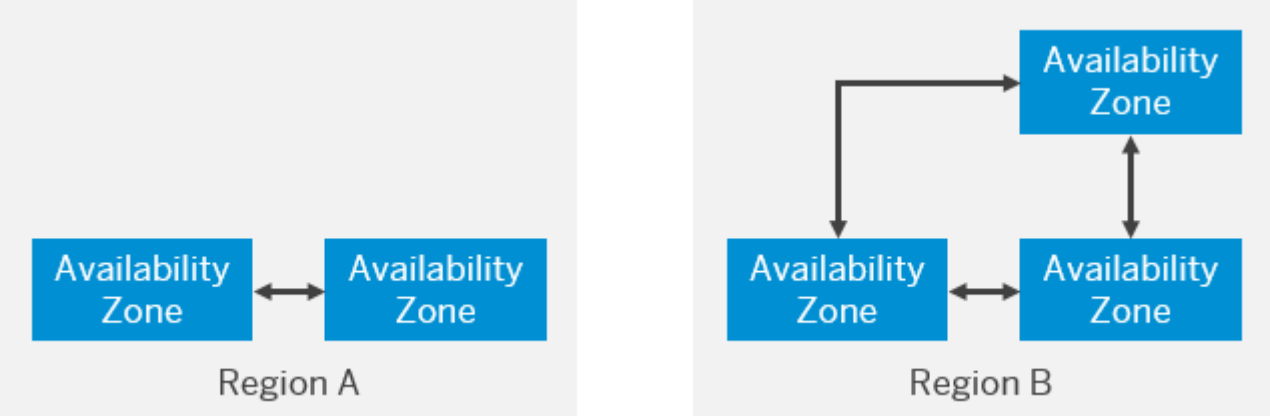
- In the SAP BTP, Cloud Foundry environment, the SAP HANA database supports up to 1000 simultaneous connections per database.
- In the SAP BTP, Cloud Foundry environment, each application can be mapped to approximately 1000 routes (128 KB). The total length of the routing information must not exceed this limit.
- 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 .

Availability Zones in the Cloud Foundry Environment

The Cloud Foundry environment follows the recommendations of our partner IaaS providers by leveraging the availability zones (AZ) concept.

About Availability Zones

Availability zones (AZ) are single failure domains within a single geographical region and are separate physical locations with independent power, network, and cooling. Multiple AZs exist in one region and are connected with each other through a low-latency network.



2-AZ and 3-AZ Deployments

To achieve better fault-tolerance, our partners recommend deploying services across multiple AZs, which improves the availability of a service if there are issues with the region infrastructure of one AZ.

High Availability at Platform and Application Level

The SAP BTP Cloud Foundry environment follows these recommendations to support high availability at the platform and application level:

- **High availability of the platform components:**
  - The building blocks of Cloud Foundry and the virtual machines on which the Cloud Foundry application instances are scheduled run in a high availability setup. Their instances are distributed across different AZs.
  - The technology that manages the deployment of the Cloud Foundry environment monitors the health of the platform. If there are infrastructure failures, it re-creates the faulty components.
- **High availability on the application level:**
  - We recommend running multiple application instances to increase availability. For more information, see Run Multiple Instances to Increase Availability . On SAP BTP, there are three ways to increase application instances:

- Scaling your application using the application manifest. The `manifest.yml` allows you to make and save configurations for your application. To scale, you can configure the instance count in the manifest and push the application again with the new configuration. See App Manifest Attribute Reference . To avoid downtimes when updating your application configuration, you can also consider using rolling application deployments. See Rolling App Deployments .
- Scaling your application using the `cf scale` command in the Cloud Foundry command line interface (CF CLI). See Scaling an App Using cf scale .
- Scaling your application using the SAP BTP cockpit. See Add or Remove Application Instances.

- The Cloud Foundry container scheduler takes care of distributing the different instances of one application on virtual machines in different AZs. For more information, see How Diego Balances App Processes .
- Cloud Foundry is constantly monitoring the health state of application instances and restarts instances that are considered unhealthy. See Using App Health Checks .
- When the number of desired instances doesn't match the number of actually running instances, Cloud Foundry reschedules the missing instances, for example, when the virtual machines that an application instance was initially scheduled on become unresponsive.

For more information on high availability configuration, see High Availability in Cloud Foundry .

For more information on application stability and resilience, see Develop Resilient Applications.

Additional Information About Cloud Foundry

Links to additional information about Cloud Foundry that is useful to know but not necessarily directly connected to the SAP BTP, Cloud Foundry environment.

Content	Location
BOSH	http://bosh.cloudfoundry.org
BOSH documentation	http://bosh.io/docs
Buildpacks	http://docs.cloudfoundry.org/buildpacks
Components of Cloud Foundry	http://docs.cloudfoundry.org/concepts/architecture/
Cloud Foundry Concepts	http://docs.cloudfoundry.org/concepts/
Deployment of Cloud Foundry	http://docs.cloudfoundry.org/deploying
Developer Guide for Cloud Foundry	http://docs.cloudfoundry.org/devguide
Diego Application Process Balancing	https://docs.cloudfoundry.org/concepts/diego/diego-auction.html
Glossary for Cloud Foundry	http://docs.cloudfoundry.org/concepts/glossary.html
Overview of Cloud Foundry	http://docs.cloudfoundry.org/concepts/overview.html
Sample applications for Cloud Foundry	https://github.com/cloudfoundry-samples
Security settings for Cloud Foundry	http://docs.cloudfoundry.org/concepts/security.html
Cloud Foundry Services	http://docs.cloudfoundry.org/services http://docs.cloudfoundry.org/devguide/services/user-provided.html

Content	Location
Considerations for designing and running an application in the cloud	http://docs.cloudfoundry.org/devguide/deploy-apps/prepare-to-deploy.html
Installing the Cloud Foundry command line interface	http://docs.cloudfoundry.org/devguide/installcf/install-go-cli.html
Blog about Cloud Foundry	http://blog.cloudfoundry.org/

ABAP Environment

Within the Cloud Foundry environment, you can create a new space for ABAP development. This is what we refer to as the ABAP environment. It allows you to create extensions for ABAP-based products, such as SAP S/4HANA Cloud, and develop new cloud applications. You can transform existing ABAP-based custom code or extensions to the cloud.

The ABAP environment is based on the latest ABAP platform cloud release that is also used for SAP S/4HANA Cloud. It leverages the innovations provided by SAP HANA. The software stack contains standard technology components that are familiar from the standalone Application Server ABAP. The ABAP environment supports the ABAP RESTful Application Programming Model including SAP Fiori and Core Data Services (CDS). SAP services and APIs are offered according to the new approach of released objects. The ABAP environment can be integrated with other SAP BTP services, such as SAP Destination service, SAP Build Work Zone, standard edition, SAP Workflow Management, and SAP Interactive Forms by Adobe.

Each ABAP system in the ABAP environment utilizes a dedicated SAP HANA database, which is provided by the SAP HANA Cloud service and managed by the ABAP environment. The database is linked 1:1 to the ABAP system.

For information about regional availability, see Regions and API Endpoints for the ABAP Environment.

Related Information

Getting Started in the ABAP Environment
Development in the ABAP Environment
Administration and Operations in the ABAP Environment
Using Free Service Plans
Discovery Center
SAP Community
SAP Road Map Explorer
Learning Journey
Tutorials

ABAP Development Tools for Eclipse

ABAP development tools for Eclipse is SAP's state-of-the-art integrated development environment (IDE) for ABAP development on the open Eclipse platform.

Features

ABAP development tools for Eclipse enables you to perform ABAP-based development tasks, when you want to build, to extend, and to run ABAP applications based on SAP products, such as SAP S/4HANA and SAP S/4HANA Cloud, private edition for classic ABAP development as well as SAP BTP, ABAP environment and SAP S/4HANA Cloud for Cloud development.

ABAP development tools for Eclipse supports ABAP developers with the following possibilities:

- Highly flexible, customizable Eclipse UI for ABAP development tools
- High-performance, failover-safe online development in multiple ABAP systems simultaneously
- Display and edit functionality for multiple ABAP objects in parallel
- Advanced and efficient source code editing including refactoring support
- Optimum support of task-oriented and test-driven development
- Robust and reliable quality assurance and supportability tools.
- Built-in extensibility of the IDE using the established Eclipse plug-in technology

In particular, ABAP development tools for Eclipse is a modern development toolset where ABAP developers can use, for example the following features:

- Syntax check
- Code completion
- Syntax highlighting
- Pretty printing
- Navigation
- Search
- Quick fixes
- and many more

Tools User Guides

The ABAP Development Tools: User Guide describes the functionality and usage of the possibilities. It focuses on use cases for creating, editing, testing, debugging, and profiling development objects.

The ABAP CDS Development Tools: User Guide describes the functionality and usage of tools for ABAP Core Data Services (CDS) in the ABAP environment. It focuses on use cases for creating, editing, testing, and analyzing ABAP CDS entities.

Release Notes

ABAP development tools for Eclipse is released to customers in combination with the SAP BTP ABAP environment shipments. Documentation in the context of ABAP Platform will be shipped in accordance with the relevant SAP product shipments.

The release notes are a general overview of the most significant changes relating to features of ABAP development tools for Eclipse in the context of ABAP development and the ABAP programming models.

For more information, see Release Notes of ABAP Development Tools for Eclipse

FAQs

If you are an SE80 expert and new to ABAP development tools for Eclipse, the frequently asked questions (FAQs) enable you to skim the features you want to perform in ADT.

For more information, see FAQs for SE80 Experts Using ADT

Installation

To install ABAP development tools for Eclipse, follow the Installation Guide. Alternatively, you may get ABAP development tools for Eclipse from the SAP Development Tools page under the terms of the SAP DEVELOPER LICENSE AGREEMENT.

Support

The use of ABAP development tools for Eclipse is subject to the terms and conditions of your license agreement with SAP which is directly related to the SAP shipment channel from whichABAP development tools for Eclipse was initially downloaded and installed.

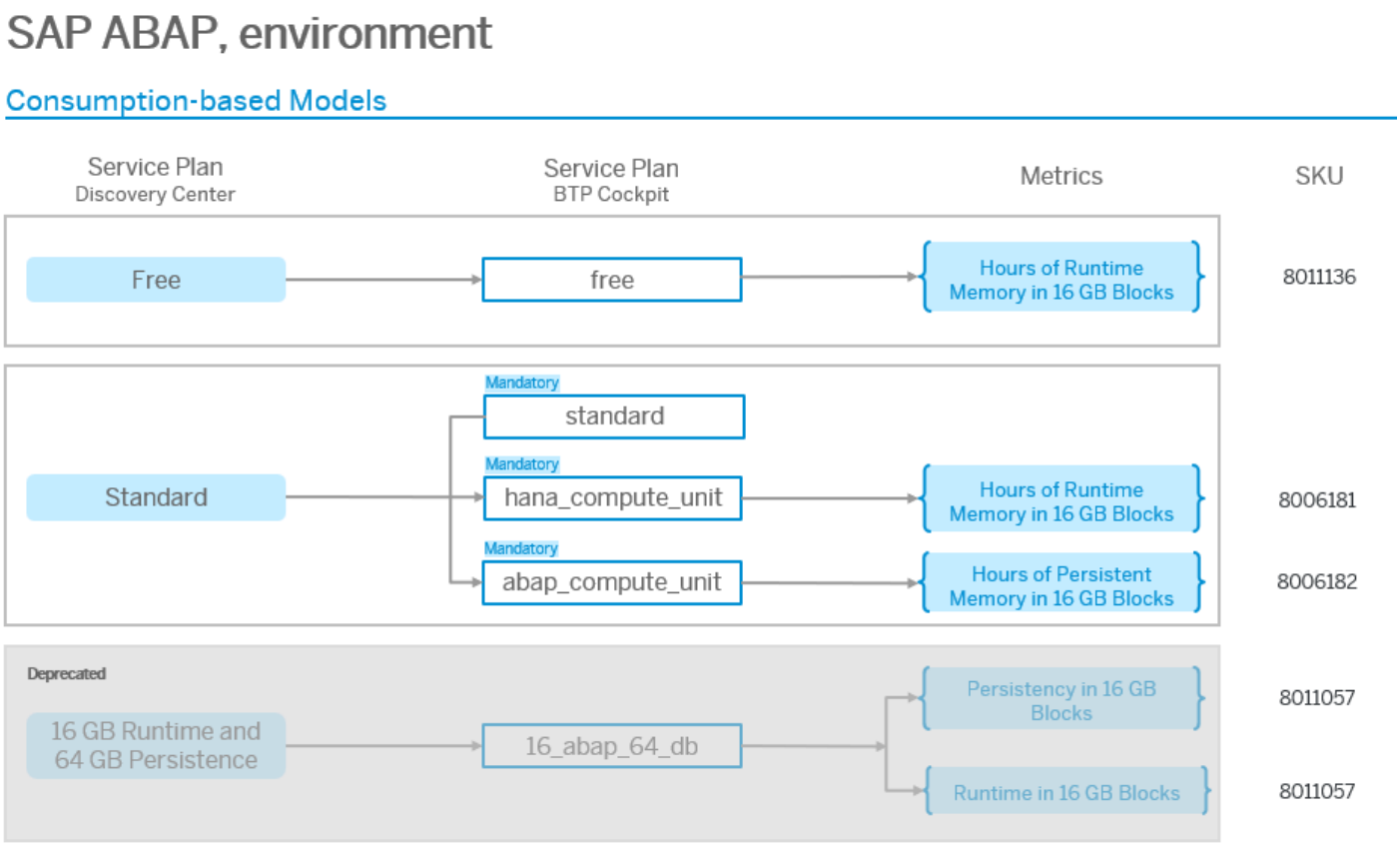
Commercial Information

Service

Description

SAP BTP ABAP environment is SAP's Platform-as-a-Service offering to create innovative ABAP applications and extensions in the cloud. It provides the modern ABAP RESTful Application Programming Model, leveraging SAP HANA Cloud, SAP Fiori, and a cloud-optimized ABAP language with a clear set of released standard APIs. Developers can utilize a development toolset that enables tight integration with Git-enabled lifecycle management.

Overview



SAP BTP Cockpit: Descriptions of the Service Plans

Name	Service Plan	Description

Name	Service Plan	Description
free	Free	For small proof-of-concept projects. Allows you to explore all development capabilities. Also includes the piloting of ABAP Test Cockpit scenarios remotely for on-premise systems via the Custom Code Migration app. The instance will be automatically stopped each night, requiring a manual restart via the Landscape Portal. Only community support available. Free tier instance is not subject to SLAs. Upgrading to paid plan seamless; non-upgraded instance and its content decommissioned after 90 days.
standard	Standard	You can size the ABAP runtime and the SAP HANA memory independently from each other. To be able to do your sizing, you must also select the quota plans abap_compute_unit and hana_compute_unit. When you create an ABAP system, you must decide on the system size in ABAP compute units. One ABAP compute unit represents 16 GB.
abap_compute_unit	Standard	Configure ABAP Runtime in blocks of 16 GB. Increase the quotas in the abap_compute_unit service plan at least by 1.
hana_compute_unit	Standard	Configure HANA Memory in blocks of 15 GB. Increase the quotas in the hana_compute_unit service plan at least by 2.
16_abap_64_db (Deprecated)	16 GB Runtime and 64 GB Persistence (Deprecated)	This ABAP runtime service plan provides a 16 GB ABAP runtime with a 64 GB database. No additional sizing is possible. This service plan is deprecated. Please change the service plan to “standard”.

Metrics

Metric	Definition
Memory	Temporary memory bank where computers store data that needs to be retrieve and processed quickly. The memory represents the size of the data that can be processed , and CPU represents the speed at which the data can be retrieved.

Supplemental Terms and Conditions

For more information, see the SAP Business Technology Platform Service Description Guide.

Kyma Environment

SAP BTP, Kyma runtime provides a fully managed cloud-native Kubernetes application runtime based on the open-source project "Kyma". Based on modular building blocks, Kyma runtime includes all the necessary capabilities to simplify the development and to run enterprise-grade cloud-native applications.

Kyma as a Managed Service

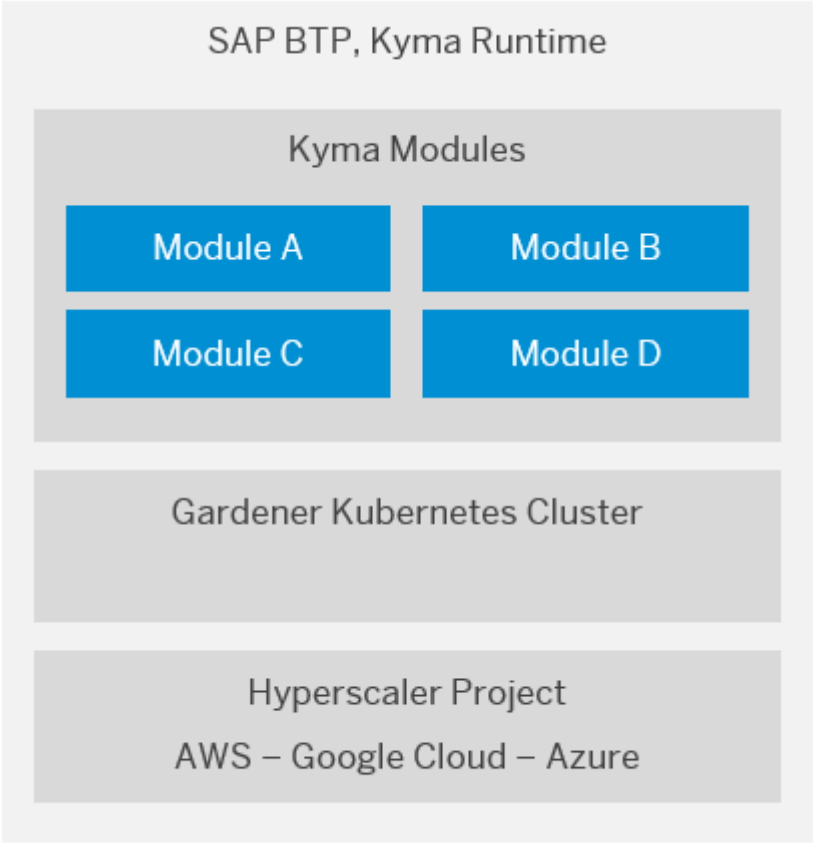
Kyma environment permits a native consumption of the Multi-Cloud Foundation Services (What Is the Multi-Cloud Foundation?) and smooth consumption of SAP and non-SAP applications. It also supports out-of-the-box CAP, SAP Cloud SDK, application router, and HTML5 deployer.

Kyma implements a dedicated application runtime to deploy highly scalable, robust, and secure containerized microservices.

> **Note**
>
> Kyma as a managed service automatically checks all Kyma-managed resources. Any unexpected modifications are discarded, and the resource is reverted to the original state.

Every Kyma environment consists of:

- A Kubernetes cluster based on project "Gardener" on a cloud provider and region (data center) of your choice. To find out the available regions and providers, see Regions for the Kyma Environment.
- A set of Kyma modules picked by a user in the release channel of their choice installed on the provisioned cluster.



Integration

Every Kyma environment runs on a single Kubernetes cluster created for a specific subaccount. The configuration of the Kyma environment enables you to connect it to a multitude of SAP systems. This way, you can build various formations that aggregate the SAP systems and environment according to your business use cases.

SAP systems connected to a Kyma environment expose APIs and events. To extend the existing logic of these SAP services, you can build serverless applications called “Functions”, and trigger them to react to particular events or calls to your application's API. You can also use the Kyma environment to deploy microservices or even build full-stack applications.

Related Information

Getting Started in the Kyma Environment
Development in the Kyma Environment
Administration and Operations in the Kyma Environment
Security in the Kyma Environment

Kyma's Modular Approach

With Kyma's modular approach, you can install only the modules you need, instead of a predefined set of components.

Kyma Module or Component?

Classic Kyma runtime offered a fixed set of mandatory interdependent components whose development rhythm was synchronized and determined by the release schedule. One by one, all Kyma components have been converted to modules that work independently from each other.

The modular approach boosts Kyma's extensibility and scalability and makes it more cost-effective. With fully modularized Kyma, you can choose from many of its modules to facilitate your business needs best. You can add or delete modules on demand and configure them, thus determining the costs generated by the infrastructure that your modules use.

You can decide which modules are needed for your workload, although some features may still require the presence of other modules or related capabilities. For example, the API Gateway module depends on Istio capabilities, but it doesn't require the Istio module from Kyma. Instead, the API Gateway module needs Istio custom resources, such as Gateway and VirtualService, to be present in the cluster. If you want to use your own Istio installation, the API Gateway module will use it as soon as the required resources are available.

Learn more about the available Kyma modules: Kyma Modules.

Learn how to add a module under Add and Delete a Kyma Module.

Kyma Release Channels

Sets of Kyma modules are deployed in two release channels:

- **Regular channel** is the default release channel.
- **Fast channel** provides more frequent releases. It offers early previews of all new features and changes before they are promoted to the regular channel. It also allows you to test and provide feedback on the new features sooner.

According to the Kyma modules` release cycle, we first release a new module's major or minor version in the fast channel. After approximately two weeks, we promote the release to the regular channel.

ⓘ Note

In case of important functionality fixes or critical vulnerabilities identified by our security organization, the timeline doesn't apply, as we provide hotfixes between regular releases.

You can use one or both release channels in your Kyma cluster, but you can define only one release channel per module. For example, you can mix different modules from the regular and fast channels in your development cluster, but you cannot deploy the same module in the regular and fast versions in one cluster.

ⓘ Note

You can upgrade module versions, but you cannot downgrade them. To test the upstream versions, you can switch a module or an entire cluster from the regular channel to the fast one. To return to the regular channel, you must wait until the version you are using in the fast channel is promoted to the regular channel. Once the versions in both the fast and regular channels are the same, you can switch back to regular. Alternatively, you can delete and add your module from the regular channel.

To find out which module version is running in your cluster, go to Kyma dashboard.

Release Notes

A release of a new module's version is announced with a release note in What's New for SAP Business Technology Platform for both, the fast and regular channels:

- On the day of the release in the fast channel, a release note is published with the **Preview** label.
- After approximately two weeks, the module version becomes available in the regular channel and the **Preview** label is removed.

Related Information

Kyma Functionalities

Kyma Modules

With Kyma's modular approach, you can install just the modules you need, instead of a predefined set of components.

You can choose to add any modules as required. To learn how, see Add and Delete a Kyma Module. To find out which module version is running in your cluster, go to Kyma dashboard.

→ Tip

A release of a new module's version is announced with a release note in What's New for SAP Business Technology Platform for both, the fast and regular channels:

- On the day of the release in the fast channel, a release note is published with the **Preview** label.
- When the module version becomes available in the regular channel (after approximately two weeks), the **Preview** label is removed.

Default Kyma Modules

When you create Kyma runtime in SAP BTP cockpit, it is provisioned with the default modules added. The default modules are not mandatory. If you don't need them, you can delete them in Kyma dashboard. See Add and Delete a Kyma Module.

Default Kyma Modules

Module Technical name	Purpose	Documentation
API Gateway `api-gateway`	API Gateway provides functionalities that allow you to expose and secure APIs.	kyma-project.io: API Gateway module
Istio `istio`	Istio is a service mesh with Kyma-specific configuration.	kyma-project.io: Istio module

Module Technical name	Purpose	Documentation
SAP BTP Operator `btp-operator`	Within the SAP BTP Operator module, BTP Manager installs the SAP BTP service operator that allows you to consume SAP BTP services from your Kubernetes cluster using Kubernetes-native tools.	Using SAP BTP Services in the Kyma Environment kyma-project.io: SAP BTP Operator module GitHub: BTP Manager releases GitHub: SAP BTP service operator releases

Optional Kyma Modules

When you create Kyma runtime in SAP BTP cockpit, the following modules are not added by default, but you can choose to add and delete them anytime in Kyma dashboard. See Add and Delete a Kyma Module.

Optional Kyma Modules

Module Technical name	Purpose	Documentation
Application Connector `application-connector`	Application Connector allows you to connect with external solutions. No matter if you want to integrate an on-premise or a cloud system, the integration process doesn't change, which allows you to avoid any configuration or network-related problems.	kyma-project.io: What is Application Connectivity in Kyma? GitHub repository: Application Connector Manager
Keda `keda`	The Keda module comes with Keda Manager, an extension to Kyma that allows you to install KEDA (Kubernetes Event Driven Autoscaler).	kyma-project.io: Keda module
Serverless `serverless`	With the Serverless module, you can define simple code snippets (Functions) with minimal implementation effort.	Deploy Workloads in the Kyma Environment to Extend SAP Systems kyma-project.io: What is Serverless in Kyma? kyma-project.io: Serverless Configuration GitHub repository: Serverless
Telemetry `telemetry`	The Telemetry module collects application logs and distributed traces for your application, and dispatches them to your preferred backends.	kyma-project.io: Telemetry module GitHub: Telemetry manager releases GitHub repository: Telemetry
NATS `nats`	NATS deploys a NATS cluster within the Kyma cluster. You can use it as a backend for Kyma Eventing.	kyma-project.io: NATS module GitHub repository: NATS
Eventing `eventing`	Eventing provides functionality to publish and subscribe to CloudEvents. At the moment, the SAP Event Mesh default plan and NATS are supported. If you choose NATS, add the NATS module.	Configure SAP Event Mesh for Kyma Eventing kyma-project.io: Eventing module GitHub repository: Eventing

Third-Party Modules

The third-party modules are developed and maintained by SAP teams outside of Kyma. To get help or request a feature, contact the module provider directly.

Third-Party Modules

Module Technical name	Purpose	Documentation
Transparent Proxy `transparent-proxy`	Use the transparent proxy for Kubernetes to connect workloads in a Kubernetes cluster to Internet and on-premise applications.	Transparent Proxy in the Kyma Environment
Connectivity Proxy `connectivity-proxy`	Use the connectivity proxy for Kubernetes to connect workloads in a Kubernetes cluster to on-premise systems, exposed via the Cloud Connector.	On-Premise Connectivity in the Kyma Environment

Kyma Functionalities

SAP BTP, Kyma runtime and open source project "Kyma" offer slightly different functionalities and install a different set of components.

For all functionalities that the Kyma environment offers, see the official project "Kyma" documentation .

Functionality Comparison

Functionality	open source project "Kyma"	SAP BTP, Kyma runtime
Service Level Agreements		
Managed Kubernetes		
Managed Kyma		
Kyma CLI		limited (SAP BTP, Kyma runtime supports commands for serverless Functions, not the commands related to installation.)
Centrally hosted Kyma dashboard		
System landscape management in SAP BTP cockpit		
In-cluster system landscape management (Application Connector)		

Kyma Runtime: Basic Concepts

This table explains basic concepts relating to the Kyma environment. It aims to give you an understanding of the Kyma environment before you actually start using it to build extensions for your SAP solutions.

ℹ Note

For an overview of the basic Kubernetes concepts that the Kyma environment heavily relies on, see the official Kubernetes documentation .

Concept	Description
Kyma cluster	A Kubernetes cluster provisioned with the latest version of the open-source project "Kyma". You can enable such a cluster on a given subaccount through the SAP BTP cockpit. After creating a Kyma environment instance on your subaccount, the cluster is provisioned automatically through Gardener on your chosen cloud service provider. To access the cluster, you must have appropriate roles assigned to your subaccount.
Kyma module	An extension to the Kyma environment that can be added, deleted, or re-configured at runtime.
Role	Access to every cluster is managed by the roles assigned. Roles give the assigned users a different level of permissions suitable for different purposes. For more information, read Assign Roles in the Kyma Environment.
Namespace	Namespaces are used to organize objects in a cluster and provide a way to divide cluster resources. This way, several users can share a cluster but have access only to resources within the namespace they have permissions for. This allows for increasing the security and organization of your cluster by dividing it into smaller units. Access to namespaces in the Kyma environment depends on your Kubernetes RBAC permissions.
Service operator	A service operator is a piece of software that provides a set of all necessary resources (such as CustomResourceDefinitions and controllers) needed to provision third-party services in your Kubernetes cluster.
Binding	The connection you create between a service instance and an SAP solution so that they can communicate with each other. You can also bind a service instance to any workload running in the Kyma environment, such as a Function or a microservice.
Credentials / Secrets	Sensitive data necessary for an SAP solution to call the service, connect to it, and authenticate it. Depending on whether you use Kyma dashboard or kubectl to create the binding between a service instance and an SAP solution, the Kubernetes Secret object that contains these credentials is either created automatically or you need to create it manually.
Function	A simple code snippet that you can run without provisioning or managing servers. It implements the exact business logic you define. A Function is based on the Function custom resource and can be written in either Node.js or Python. A Function can perform a business logic of its own. You can also bind it to an instance of a service and configure it to be triggered whenever it receives a particular event type from the service or a call is made to the service's API. Functions are executed only if they are triggered by an event or an API call.
Microservice	An architectural variant for extensions or applications, where you separate the tasks into smaller pieces that interact with each other as loosely coupled, independently deployable units of code. A failing microservice should not cause your whole application to fail. Microservices are packed in a container that is always running; it's idling if there is no load. The microservice should always be reachable even when the Pods move around. Microservices typically communicate through APIs.

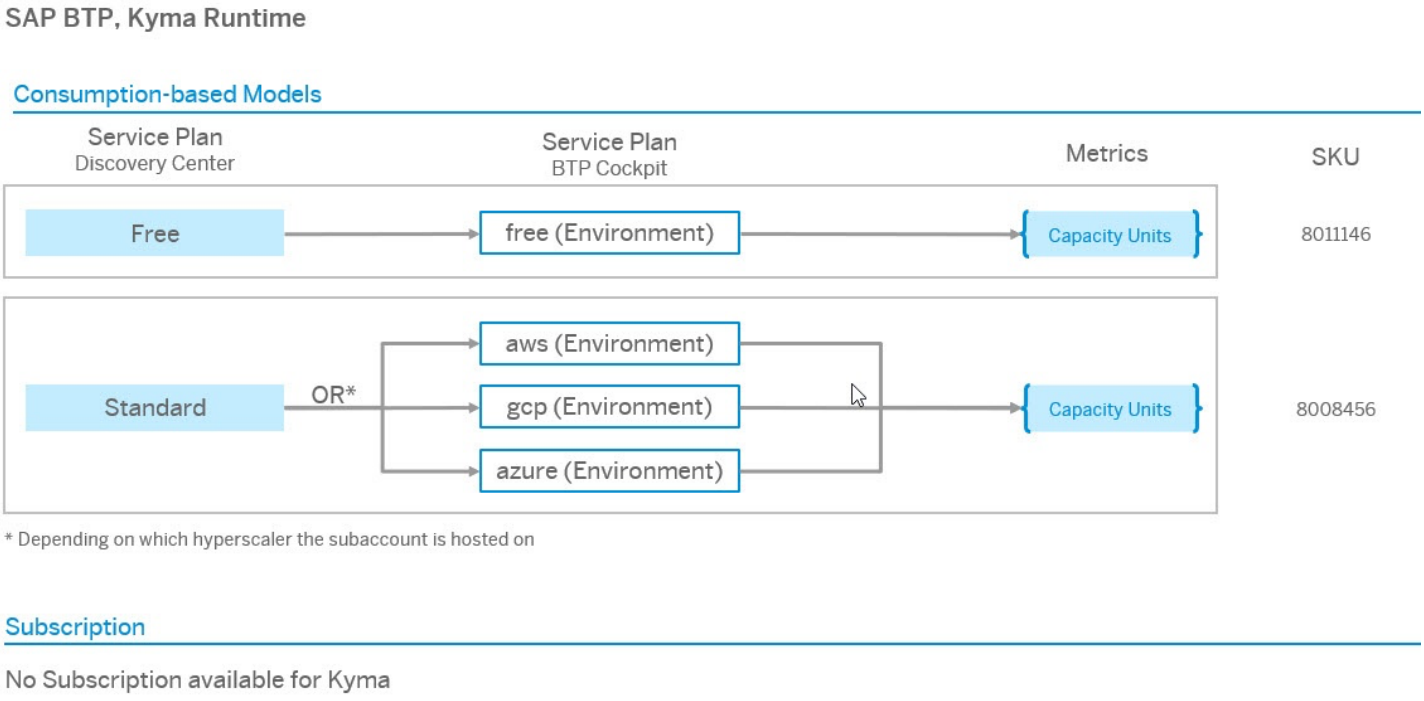
Commercial Information for Kyma Runtime

Service Description

SAP BTP, Kyma runtime is a fully managed Kubernetes runtime based on the open-source project "Kyma". This cloud-native solution allows the developers to extend SAP solutions with serverless Functions and combine them with containerized microservices. The offered functionality ensures smooth consumption of SAP and non-SAP applications, running workloads in a highly scalable environment, and building event- and API-based extensions.

Service Plans

Service Overview



SAP BTP Cockpit Service Plan Descriptions

SAP BTP Cockpit Service Plan Descriptions

Name	Service Plan (Discovery Center)	Description
free	Free	Subscribe to the 30-day free plan provided on Amazon Web Services. This plan uses Kyma on a limited size cluster (4 CPU - 16 GB RAM). The upgrade to the paid plan is not yet supported. Only best-effort support is available for free tier service plans and these are not subject to SLAs. The services you plan to use must be available in the same region as the subaccount for the Kyma runtime.
aws	Standard	Select Amazon Web Services as the cloud provider where your Kyma cluster is deployed.
gcp	Standard	Select Google Cloud as the cloud provider where your Kyma cluster is deployed.
azure	Standard	Select Microsoft Azure as the cloud provider where your Kyma cluster is deployed.

Metrics

The usage metric for the Cloud Service is a Capacity Unit (CU) per month.

Metric	Definition
Capacity Unit	Number of units consumed by the usage of the services as outlined in the solution-specific product supplement. For SAP BTP, Kyma runtime, there are two capacity units: one to measure the workload, the second to measure the storage.

Backward Calculation

Formula

The relationship between consumed workload/storage and the respective CU is straightforward.

However, cost per monthly bill may vary because it depends on the size of the nodes that were used. There is no fixed formula because of Kyma's flexible scaling.

Underlying Metrics

In the following tables, “CU” stands for “Capacity Unit”.

For CPU

Amount of CPU/CPU Nodes	Number of CU per Hour
2	0.48055555555555557 x 0.75
4	0.48055555555555557
8	0.48055555555555557 x 2
16	0.48055555555555557 x 4
32	0.48055555555555557 x 8
...	...

For Storage

Amount of Storage	Number of CU per Hour
1GB	0.00056423611
32GB	0.01805555552 (0.00056423611 x 32)

Examples

- Your bill for Nodes shows 1800 capacity units charged for 4vCPU Nodes in a month.

  This means that you were running roughly 1800 / 0.4806 = 3745.32 hours worth of 4vCPU nodes. Given that a month has 720 hours, this means you were running 3745.32/720 = 5.2 Nodes cluster for a full month.

  Due to Kyma’s automatic scaling, 5.2 does not mean actual size. It means that during some hours in the month, the cluster size was 4 nodes. At other times, there was more load, so the cluster autoscaled to 5 or 6 nodes, based on your configurations. So your average cluster size for the full month was 5.2 Nodes.

- Your bill for storage shows 200 capacity units charged for storage (32GB block) for the month.

  This means that you used 200 / 0.0181 = 11049.72 hours of 32GB storage blocks. Given that a month has 720 hours, this means that you have used 11049.72/720 = 15,34 blocks of 32GB over the month. So, you used 15.34 * 32 = 491GB of storage continuously during the month.

  This implies that as you started using Kyma, you deployed more applications that used storage of various sizes, such as 4GB or 8GB.

  Note that storage is provided in blocks of 32GB, so if you used 33 GB, you would be charged for 2 * 32GB, that is 64 GB.

Calculator

Find the Kyma price calculator on https://kyma-project.github.io/price-calculator/ and use it to estimate the costs for your SAP BTP, Kyma runtime.

1. Choose the **size of virtual machine** (VM).
2. Choose the **minimum of VMs** you need.
3. Estimate the **hours per month** you expect to run them.
4. Optionally, add more Nodes and more storage to the calculation.

Note that the result is an estimate, and the monthly bill may vary depending on the actual hours and size of the Kyma cluster (workload and storage) that was running in a month.

Supplemental Terms And Conditions

For additional information, please refer to the SAP Business Technology Platform Service Description Guide, section "SAP BUSINESS TECHNOLOGY PLATFORM, KYMA RUNTIME".

Glossary

Commercial Information Glossary

Service Specifics

As soon as you instantiate a Kyma cluster, the basic costs for the empty cluster incurs.

Cost may then vary depending on the actual workloads and storage you consume per month.

Neo Environment

The Neo environment lets you develop HTML5, Java, and SAP HANA extended application services (SAP HANA XS) applications. You can also use the UI Development Toolkit for HTML5 (SAPUI5) to develop rich user interfaces for modern web-based business applications.

See also:

- What Is SAP BTP, Neo Environment
- Development, Neo Environment
- Extensions, Neo Environment
- Administration and Operations, Neo Environment
- Security, Neo Environment
- Getting Support, Neo Environment

Migration from the Neo to the Multi-Cloud Foundation

To learn more about why and how to migrate your scenarios on SAP BTP, see Migrating from the SAP BTP Neo Environment to the Multi-Cloud Foundation.

Trial Accounts and Free Tier

Explore the different options for trying out SAP BTP.

Trial Account or Free Tier Offering: When to Use Which?

Before setting up your account, you need to decide which free offering for SAP BTP is suitable for your needs:

- **Pay-As-You-Go or CPEA accounts with free tier service plans** are open to customers, partners, and let you try out SAP BTP in a per service defined time span for free. These account types enable you to test your scenarios and generally offer the option to upgrade to paid service plans. These accounts also allow you to store data long-term and move projects to production. You also get access to our community, including free technical resources such as tutorials and blog posts. For more information, see Enterprise Accounts and Using Free Service Plans.

  You can self-register for an enterprise account with free tier service plans. For more information, see Get an Account on SAP BTP to Try Out Free Tier Service Plans.

  > **Note**
  >
  > Only community support is available for free tier service plans and these are not subject to SLAs.

  > **Note**
  >
  > The option to upgrade from free tier service plans to paid service plans is not yet available for all services and runtimes, such as Kyma. See Using Free Service Plans to read more about upgrading from free tier service plans to paid service plans.

- A **trial account** lets you try out SAP BTP for free for 90 days. The services provided for the trial account allow restricted use of the platform resources and services. Access is open to everyone. Trial accounts are intended for personal exploration, your own non-productive testing, and evaluation of the services in accordance with SAP BTP trial terms and conditions. A SAP BTP trial account must not be used for production use or team development. You are not permitted to use the trial account in any productive or commercial manner.

  You can self-register for a trial account. For more information on how to do that, see Get a Free Account on SAP BTP Trial

Free Tier and Always Free Tags in the SAP Discovery Center

In the SAP Discovery Center service catalog overview, some services display the tag **Free Tier**, which indicates the service is offering a free tier service plan. Some services display the tag **Always Free**, which indicates the service is offering a service plan that comes free of additional charges, as it is already included in your overall SAP BTP contract. You can use the filter function of the SAP Discovery Center to filter for services that offer **Free Tier** and **Always Free** plans. The **Always Free** service plans include the following note in their service plan description: "This service plan is included in the overall SAP Business Technology Platform contract".

> **Note**
>
> **Always Free** service plans might not be available in all regions or for all providers.

Trial Lifecycle

- **Use your SAP BTP trial account:**

  Familiarize yourself with the Trial Scope or try out one of our Starter Scenarios on the Tutorial Navigator.

- **Extend your SAP BTP trial account in intervals:**
    - Your 90-day trial period is divided in intervals. If you sign in to your trial account regularly, the intervals are extended automatically for you by up to 30 days or until your overall 90-day trial is finished.
    - If you don't sign in to your trial account for 30 days or more, your account will be suspended. All suspended accounts will be deleted and you won't be able to use applications or services.
    - **Delete your SAP BTP trial account:**

      After 90 days, your trial account is automatically deleted. But if you want to proactively delete your SAP BTP trial account, you can navigate to the global accounts scope and select the Account Explorer page, then click the **Delete Trial Account** button.

        - If you want to continue to use an SAP BTP trial account after deletion, you need to set up a new account.
        - If you want to explore SAP BTP without time limit, create an enterprise account with free tier service plans allowing you to test your scenarios. See: Get an Account on SAP BTP to Try Out Free Tier Service Plans.

⚠ Caution

Environments enabled on your trial account may not be valid for your whole trial period. To learn about the validity period for the Kyma environment, see About the Trial Account.

Trial Scope

- A trial account enables you to explore the basic functionality of SAP BTP.
- SAP BTP trial accounts use cloud management tools feature set B. For more information, see Cloud Management Tools — Feature Set Overview.
- SAP BTP trial accounts are available in several regions. For more information, see Regions.
- You can create directories in your trial account. For more information, see Managing Directories Using the Cockpit [Feature Set B]
- You can use productive and beta services. To consume beta services, you must enable the subaccount for beta features during the subaccount creation or when you edit the subaccount details.
- You can manage platform users by assigning them role collections. For more information, see Working with Role Collections.
- A trial account includes 4 GB of memory for applications.
- You can use 8 GB of instance memory.
- There are 10 total routes and 40 total services available.
- You can use 2 configured on-premise systems with the Cloud connector.
- There's no service level agreement with regards to the availability of the platform.
- You can use HDI containers in a shared SAP HANA database (only available on cf-us10).
- For cleanup purposes, applications stop automatically on a daily basis. You need to manually restart them when needed.

ℹ Note

Applications are stopped at midnight (or some time later depending on server load) relative to the region in which you created your trial account. If you're working in a time zone that is far from the region where your trial account was created, then your applications may stop during business hours.

- You can have a trial tenant of SAP Cloud identity Services, see Get Your Tenant.

Related Information

Getting Started with a Trial Account in the Cloud Foundry Environment

Getting Started with a Trial Account in the Kyma Environment

Tools, Programming Models, Programming Languages, and APIs

SAP BTP provides various programming languages and tools for your development project.

Tools

SAP BTP includes many tools to help you develop and manage applications, and connect them to your on-premise systems.

Programming Languages

SAP BTP supports many different programming languages; the availability of each depends on the development environment you're using.

SAP Cloud Application Programming Model

The SAP Cloud Application Programming Model offers a consistent end-to-end programming model that includes languages, libraries, and APIs that are tailored for full-stack development on SAP BTP.

Continuous Integration and Delivery (CI/CD)

Configure and run predefined continuous integration and delivery (CI/CD) pipelines that automatically build, test, and deploy your code changes to speed up your development and delivery cycles.

APIs

Discover and consume APIs to manage, build, and extend the core capabilities of SAP BTP.

Cloud Management Tools — Feature Set Overview

Cloud management tools represent the group of technologies designed for managing SAP BTP.

Prerequisites and Restrictions

Find a list of the product prerequisites and restrictions for SAP BTP.

Tools

SAP BTP includes many tools to help you develop and manage applications, and connect them to your on-premise systems.

The availability of tools can depend on the cloud management tools feature set that you are running on. For more information, see Cloud Management Tools — Feature Set Overview.

Tool	Description
Account Administration in the Cockpit	The SAP BTP cockpit is the web-based administration interface of SAP BTP and provides access to a number of functions for configuring and managing applications, services, and subaccounts. Use the cockpit to manage resources, services, security, monitor application metrics, and perform actions on cloud applications.
Cloud Connector	The Cloud Connector serves as the link between on-demand applications in SAP BTP. This is the browser-based and existing on-premise systems. You can control the resources available for the cloud applications in those systems.

Tool	Description
Command Line Interface for Cloud Foundry	The Cloud Foundry command line interface enables you to work with the Cloud Foundry environment to deploy and manage your applications.
SAP BTP Command Line Interface [Feature Set B]	The SAP BTP command line interface (btp CLI) is the command line tool for convenient account management, such as managing global accounts, directories, subaccounts, entitlements, environment instances, multitenant application subscriptions, and users and their authorizations.
kubectl	The Kubernetes command line tool to communicate with a Kubernetes cluster's control plane, using the Kubernetes API.
kubelogin	A `kubectl` plugin for Kubernetes OpenID Connect (OIDC) authentication.
Helm	The package manager for Kubernetes, used for installing and managing Kubernetes applications in form of Helm charts.
ABAP RESTful Application Programming Model	The programming model that defines the architecture for efficient end-to-end development of intrinsically SAP HANA-optimized OData services (such as SAP Fiori apps) in the ABAP environment.
SAP BTP SDK for iOS	The SAP BTP SDK for iOS is based on the Apple Swift programming language for developing apps in the Xcode IDE and includes well-defined layers (SDK frameworks, components, and platform services) that simplify development of enterprise-ready mobile native iOS apps. The SDK is tightly integrated with SAP Mobile Services for Development and Operations.
SAP BTP SDK for Android	The SAP BTP SDK for Android provides development tools for creating native Android mobile applications that use SAP Mobile Services. The SDK is based on the Java programming language and is built on top of Google's Android SDK.
SAP Cloud SDK	SAP Cloud SDK provides a layer of abstractions for features of SAP BTP such as logging, multitenancy, and connectivity. It also includes project templates for different execution environments and implementations.
Eclipse Tool for the Cloud Foundry Environment	The Eclipse plug-in for the Cloud Foundry environment is a Java-based toolkit for Eclipse IDE that enables you to develop and deploy Java and Spring applications in the Cloud Foundry environment from Eclipse or Spring Tool Suite, as well as perform operations such as logging, managing user roles, creating connectivity destinations, and so on.
SAP Web IDE	With SAP Web IDE Full-Stack, you can easily develop, test, build, deploy, and extend role-based, consumer-grade apps for business users. Create applications rapidly and deliver an outstanding user experience. You can extend or build SAP Fiori apps, create SaaS solutions, extend SAP S/4HANA cloud services, develop hybrid mobile apps, and build IoT apps for SAP Leonardo, using the UI development toolkit for HTML5, the SAP HANA toolset, and Java programming language and technologies.
SAP Business Application Studio	SAP Business Application Studio is the next generation of SAP Web IDE - Develop, debug, test, and deploy SAP business applications.

Tool	Description
SAP Build	SAP Build enables everyone, no matter the skill level, to create and augment enterprise applications, process automations, and business sites with drag-and-drop simplicity.
Service-Specific Tools	The services that run on SAP BTP can come with service-specific tools. For an overview of the services and their tools, see the SAP Discovery Center.

Programming Languages

SAP BTP supports many different programming languages; the availability of each depends on the development environment you're using.

The following programming languages are available in the environments:

Supported Environments and Programming Languages

Environment	Programming Language
Cloud Foundry environment	Java
	Node.js
	Python
ABAP environment	ABAP
Kyma environment	Serverless Functions: Node.js and Python
	Microservices: Any cross-platform programming language

SAP Cloud Application Programming Model

The SAP Cloud Application Programming Model offers a consistent end-to-end programming model that includes languages, libraries, and APIs that are tailored for full-stack development on SAP BTP.

It simplifies the development process by enabling you to create concise and comprehensive data and service models at a conceptual level, which are then used as input for the data, service, and UI layers. The SAP Cloud Application Programming Model is compatible with any development environment, but we recommend SAP Business Application Studio.

For more information, see Developing with the SAP Cloud Application Programming Model and SAP Business Application Studio.

Continuous Integration and Delivery (CI/CD)

Configure and run predefined continuous integration and delivery (CI/CD) pipelines that automatically build, test, and deploy your code changes to speed up your development and delivery cycles.

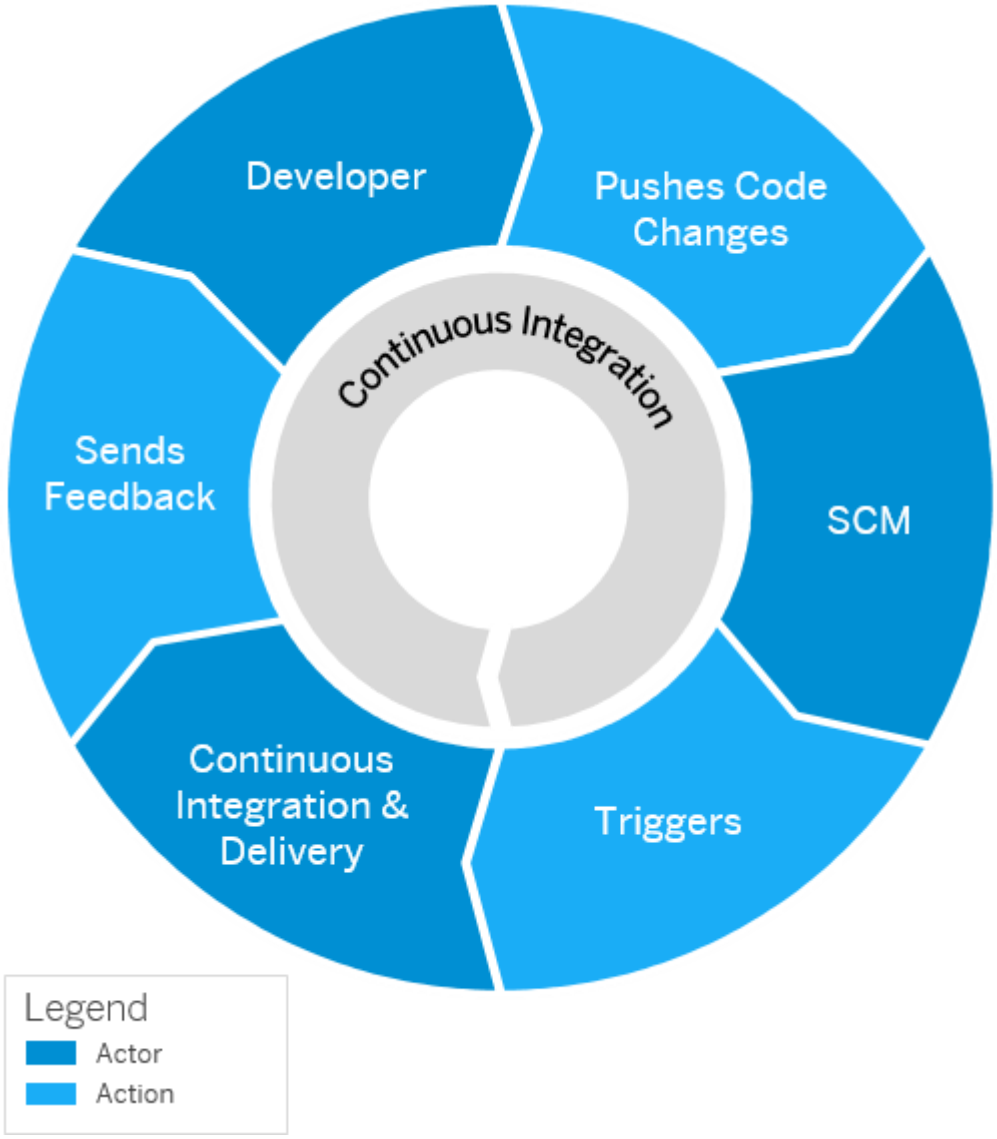
Note

For links to all SAP solutions for CI/CD, blog posts, presentations, and tutorials, have a look at our Continuous Integration and Delivery by SAP overview.

Continuous integration (CI) describes a software development process, in which various team members integrate their contributions frequently into a single main line. Before each integration, the changes are verified through builds and automated testing. Thereby, you can detect errors as quickly as possible and prevent integration problems before completing the development.

The **continuous delivery (CD)** concept expands on the one of continuous integration. It adds the aspect that any change that has successfully passed the tests is immediately ready to be deployed to production, both from a technical and a qualitative point of view.

The following graphic shows the basic flow for continuous integration and delivery:



Continuous Integration Basic Flow

For more information about the continuous integration and continuous delivery concepts, see What Are Continuous Integration and Continuous Delivery?.

Use

Depending on your use case, you can choose between different CI/CD pipelines to help you implement continuous integration and delivery in your software development.

SAP Continuous Integration and Delivery lets you configure and run predefined pipelines for the development of the following applications:

- SAP Cloud Application Programming Model

Configure a CI/CD pipeline for the development of applications that follow the SAP Cloud Application Programming Model in the Cloud Foundry runtime.

- Configure an SAP Fiori in the Cloud Foundry Environment

  Configure a CI/CD pipeline for the development of SAPUI5/SAP Fiori applications in the Cloud Foundry runtime.

- Configure an SAP Fiori in the Neo Environment

  Configure a CI/CD pipeline for the development of SAPUI5/SAP Fiori applications in the Neo environment.

- Configure an SAP Fiori for the ABAP Platform

  Configure a CI/CD pipeline for the development of SAPUI5/SAP Fiori applications for the ABAP platform.

- Configure an SAP Integration Suite ArtifactsSAP Integration Suite Artifacts

  Configure a CI/CD pipeline for the development of SAP Cloud Integration artifacts in the Cloud Foundry runtime.

- Configure a Container-Based Applications

  Configure a CI/CD pipeline for the development of container-based applications.

To learn more about the CI/CD pipelines supported by SAP Continuous Integration and Delivery and the stages each pipeline can comprise, see Supported Pipelines.

Get Started with CI/CD

SAP Continuous Integration and Delivery provides an easy, UI-guided way to set up the service and configure and run your pipelines, without hosting your own Jenkins instance.

To set up SAP Continuous Integration and Delivery:

1. Enable the service in the SAP BTP cockpit.
2. Assign either the **Administrator** or **Developer** role to your user.
3. Enable the API usage to connect SAP Continuous Integration and Delivery to other services, if necessary.

To configure SAP Continuous Integration and Delivery:

ℹ Note

Only administrators of SAP Continuous Integration and Delivery can configure the service.

1. Configure credentials for connecting SAP Continuous Integration and Delivery to other services (for example, GitHub, GitLab, Bitbucket Server, or Azure Repos to clone your sources, and SAP BTP to deploy your built application).
2. Add your repository.

Now you can create and modify your CI/CD jobs and monitor their outcome. If you want to automate your builds, you can configure a webhook between your repository and the service. You can create and modify timed triggers for your jobs, if necessary.

For more information, see Initial Setup and Configuration, or follow the tutorial Configure and Run a Predefined SAP Continuous Integration and Delivery (CI/CD) Pipeline.

Learn and Get Certified

Depending on your learning goals and level of expertise, you can choose from the following offerings:

- Efficient DevOps with SAP

  This openSAP course introduces general DevOps approaches and key principles. Learn about the basic CI/CD principles (week 1) and how to deliver cloud applications using CI/CD (week 3).

- Continuous Integration and Delivery Introduction Guide

  The CI/CD Introduction Guide provides you with basic knowledge for setting up and implementing continuous integration and delivery processes. It gives an overview of the concepts and principles of CI/CD, explains both procedures and their relation, and helps you plan your own CI/CD process.

APIs

Discover and consume APIs to manage, build, and extend the core capabilities of SAP BTP.

An Application Programming Interface or API is an **interface provided by an application for interacting with other applications**. APIs specify how software programs are able to exchange information with each other, even if designed and run by different organizations. They facilitate interaction by selectively exposing certain functionality, allowing different apps, websites, and devices to communicate effectively with each other. More importantly, APIs allow businesses to reach beyond regular business channels and share data, content, and services directly to both B2B (business to business) and B2C (business to consumer) clients, making UI development easy.

API Offerings on SAP BTP

SAP BTP enables you to consume APIs and publish your own ones through the following offerings:

Offering	Description
SAP BTP on SAP Business Accelerator Hub	The SAP Business Accelerator Hub provides you with one central repository for browsing and accessing APIs from SAP and selected partners. Test APIs and try out mock data in your systems. It is also the official place where REST and OData REST API references are published.
SAP BTP API Management	API Management allows you to build, manage, publish, and monetize your own APIs within one secure and scalable environment.
SDKs	The software development kits (SDKs) available for SAP BTP offer APIs to, for example, accelerate enterprise app development. For an overview on the available SDKs, see Tools.

Related Information

SAP API Style Guide

Cloud Management Tools — Feature Set Overview

Cloud management tools represent the group of technologies designed for managing SAP BTP.

We're currently renovating and adding core functionalities to SAP BTP. As part of this process, we're upgrading enterprise accounts from the existing cloud management tools feature set A to the renovated cloud management tools feature set B.

We're doing this upgrade as a phased rollout, so cloud management tools feature sets A and B will coexist for some time. For more information about the account upgrade process and frequently-asked questions, see 3027721.

How can I know which cloud management tools feature set I'm using?

There's an easy way to check if you're currently using cloud management tools feature set A or B. Access the SAP BTP cockpit and choose your username from the top right-hand corner of the screen. From the menu, select **About** to get information about the cloud management tools feature set you're using.

Access the SAP BTP cockpit

Feature sets A and B don't share the same cockpit. So in your feature set A cockpit, you'll only see feature set A global accounts, while in your feature set B cockpit, you'll only see your feature set B global accounts.

When using cloud management tools feature set A: Choose https://account.eu1.hana.ondemand.com to access the SAP BTP cockpit.

When using cloud management tools feature set B:

Choose `https://cockpit.btp.cloud.sap` to access the cockpit. Depending on your own geo location this URL will redirect you to the closest regional Cockpit URL.

For more information, see Access the Cockpit.

What are the differences between the two cloud management tools feature sets?

New/Changed Features and Behaviors	Feature Set A	Feature Set B

New/Changed Features and Behaviors	Feature Set A	Feature Set B
Directories — NEW	***Not applicable***	Summary: • Group and filter directories and subaccounts • Monitor usage and costs for contracts that use the consumption-based commercial model With **directories**, you can organize and manage your subaccounts according to your technical and business needs. A directory can contain directories and subaccounts to create a hierarchy. Using directories to group other directories and subaccounts is optional - you can still create subaccounts directly under your global account. See: Directories [Feature Set B] Create a Directory [Feature Set B] Manage the Account Explorer Hierarchy [Feature Set B]
Labels — NEW	***Not applicable***	Summary: • Set labels for categorization and identification purposes • Additional filtering options Labels allow you to categorize your directories, subaccounts, multitenant application subscriptions, service instances, and environment instances so that you identify them more easily within your global account. For example, the **Account Explorer** and **Instances and Subscriptions** pages in the cockpit allow you search by label name or value. Labels are user-defined so you can apply them as you wish according to your own business and technical needs. You can manage labels for the supported entities using the SAP BTP cockpit, command line interface (btp CLI), or REST APIs. See Labels [Feature Set B].

New/Changed Features and Behaviors	Feature Set A	Feature Set B
APIs for SAP BTP — NEW	*Not applicable*	Summary: Discover and consume REST APIs to manage, build, and extend the cloud operation capabilities of SAP BTP. For example: • Manage global accounts, directories, and subaccounts • Assign entitlements for services and applications to directories and subaccounts • Manage the provisioning of environment instances and get information relating to provisioned services • Manage subaccount subscriptions to multitenant applications • Generate reports based on the resource and cost consumption within your accounts. See Account Administration Using APIs of the SAP Cloud Management Service [Feature Set B] and Monitoring Usage Information Using APIs of the SAP Usage Data Management Service [Feature Set B].
SAP BTP command line interface (btp CLI) — NEW	*Not applicable*	Summary: Use the btp CLI for convenient account management tasks on the command line and to automate these procedures. For example: • Manage global accounts, directories, and subaccounts • Set entitlements • Work with environments • Work with multitenant applications • Manage users and their authorizations To log in to a global account, you need the CLI server URL `https://cpcli.cf.eu10.hana.ondemand.com` and the global account subdomain. Only global accounts on feature set B have global account subdomains (see cockpit). See: Account Administration Using the SAP BTP Command Line Interface (btp CLI) btp CLI Command Reference Setting Up a Global Account via the Command Line

New/Changed Features and Behaviors	Feature Set A	Feature Set B
Global account navigation — CHANGED	Summary: • "Home" scope outside the global account in the cockpit • **Global Accounts** page in the cockpit • Switching between global accounts via breadcrumbs (second element) • **Overview** page is the first in the global account scope With feature set A, your cockpit contains a number of general views **outside** of the global account scope. These include a **Global Accounts** page, where you can find all your global accounts listed as tiles, and from where you can navigate to your desired global account. Since it has several views outside of the global account scope, your cockpit contains an additional "home" scope, which is represented by the first element in the breadcrumbs. Your global account is therefore represented by the second element in the breadcrumbs. You can also use that second element to navigate from one global account to another. Once you're in a global account, the first page you see is the global account overview page. To navigate to a subaccount, you have to navigate to the **Subaccounts** page from the left hand-side navigation. See Navigate in the Cockpit	Summary: • Global accounts selection dialog displayed before entering the cockpit • Option to set a default global account • "Home" scope removed from the cockpit • Switching between global accounts via the selection dialog or breadcrumbs (first element) • **Subaccounts** page is the first in the global account scope With feature set B, there's no scope beyond the global account in the cockpit anymore. Therefore, after logging on to the cockpit and before actually entering it, if you have more than one global account, you're asked to choose which of the available cloud management tools feature set B global accounts you want to enter. Only feature set B global accounts are visible here. This is done via a global account selection dialog, where you also have the option to remember your selection. Doing that sets the global account you chose as default, so that next time you access the cockpit you're automatically taken to your default global account instead of seeing the selection dialog. As the cockpit doesn't have a "home" scope anymore, the global account becomes the outermost scope and is therefore represented by the first element in the breadcrumbs. You can still navigate from one global account to another either by using the breadcrumbs, or by choosing **Switch Global Accounts** to launch the global account selection dialog, where you can also modify or remove your default global account. Once you're in a global account, the first page you see is the **Subaccounts** page, from where you can directly navigate to your subaccount — one less click needed. Usage and cost information for your global account is displayed in the global account's **Usage Analytics** page. See Navigate in the Cockpit.

New/Changed Features and Behaviors	Feature Set A	Feature Set B
Entitlements — CHANGED	Summary: • Only manage entitlements for services • Assign entitlements to subaccounts individually • **Service Assignments** view With feature set A, entitlements only apply to services and you have two views for them: **Subaccount Assignments**, where you can assign or edit entitlements to individual subaccounts, and **Service Assignments**, which is a read-only view displaying the distribution of your available services across subaccounts. See: Entitlements and Quotas Managing Entitlements and Quotas Using the Cockpit Configure Entitlements and Quotas for Subaccounts	Summary: • Manage entitlements for both services and multitenant applications • Assign entitlements to subaccounts individually • Assign entitlements to directories • Auto-assign entitlements to all new subaccounts in a directory • One single view for your entitlements, no **Service Assignments** page With feature set B, you manage entitlements for both services and multitenant applications. Since you have directories as a way to group your subaccounts, you can also assign entitlements to a directory and choose the option to automatically assign a certain amount of quota to each subaccount added to that directory in the future (as long as it doesn't exceed the quota of that directory). This means that you can more efficiently assign quota to multiple subaccounts that should have the same entitlements. In addition, you no longer have the **Service Assignments** view with feature set B. See: Entitlements and Quotas Managing Entitlements and Quotas Using the Cockpit Configure Entitlements and Quotas for Directories [Feature Set B] Subscribe to Multitenant Applications Using the Cockpit

New/Changed Features and Behaviors	Feature Set A	Feature Set B
Global account security — CHANGED	Summary: • Global account membership determines if a user is global account administrator or not. • Members of subaccounts have view-only access to their global accounts. With feature set A, the **Members** tab determines which users are global administrators. These users can assign or remove global administrator membership to other users. See: User and Member Management Add Members to Your Global Account Impact of Upgrading from Feature Set A to Feature Set B on User and Account Management	Summary: • Global account membership is determined by the assignment of a role collection. • Predefined role collections for global accounts define full and read-only access. • You can define your own role collections with the authorizations delivered by SAP. With feature set B, you have a fine-grained authorization concept for the management of global accounts. We deliver a set of role collections for the management of global accounts. If these role collections don't match your needs, you can configure your own role collections using the authorizations we supply. For example, you have control over which global account users can create subaccounts and which can't. The Authorization and Trust Management (XSUAA) service is responsible for access management for global accounts. This service is the same service that performs access management at the subaccount level, although it's a different instance of the service. In the cockpit, a new **Security** tab provides access to management functions for role collections and user assignment. With feature set B, global account users are identified by their e-mail address and not their user ID. See: User and Member Management Role Collections and Roles in Global Accounts, Directories, and Subaccounts [Feature Set B] Default Role Collections of SAP BTP Cloud Foundry Environment [Feature Set B]

New/Changed Features and Behaviors	Feature Set A	Feature Set B
Subaccount security — CHANGED	Summary: • Subaccount administrators are determined by assignment under security administrators. • Subaccount members are determined by assignment of roles in the Cloud Foundry org under the **Members** tab. With feature set A, you define administrators in the cockpit under the **Security** tab with the **Administrators** menu item. See: User and Member Management Managing Security Administrators in Your Subaccount [Feature Set A] Impact of Upgrading from Feature Set A to Feature Set B on User and Account Management	Summary: • Subaccount administrators and members are determined by the assignment of role collections. • Predefined role collections for subaccounts define the level of access. • Provision subaccount members with SCIM APIs • Membership in subaccounts and any environments, such as the Cloud Foundry org, are controlled by separate authorizations. With feature set B, you have a fine-grained authorization concept for the management of subaccounts. We deliver a set of role collections for the management of subaccounts. If these role collections don't match your needs, you can configure your own role collections using the authorizations we supply. Access to environments, such as a Cloud Foundry org, is semi-independent from subaccount membership. A subaccount member isn't necessarily a member of an environment, but a member of an environment is a member of its subaccount. See: User and Member Management Role Collections and Roles in Global Accounts, Directories, and Subaccounts [Feature Set B] Add Members to Your Subaccount [Feature Set B] Default Role Collections of SAP BTP Cloud Foundry Environment [Feature Set B]
Custom Identity Provider for Platform Users — CHANGED	Summary: Custom identity providers enable you to integrate platform and business users from SAP Cloud Identity Services - Identity Authentication or your own corporate identity provider. See: Trust and Federation with Identity Providers Impact of Upgrading from Feature Set A to Feature Set B on User and Account Management	Summary: Custom identity providers enable you to integrate platform and business users from SAP Cloud Identity Services - Identity Authentication or your own corporate identity provider. See: Trust and Federation with Identity Providers Restrictions When Using Custom Identity Providers for Platform Users [Feature Set B]

New/Changed Features and Behaviors	Feature Set A	Feature Set B
(Trial Only) Automatic Setup of Trial Account — CHANGED	*Not applicable*	Summary: • Your trial account is automatically set up for you after you choose **Enter Your Trial Account** from the trial homepage in the cockpit for the first time. • You get a global account with a subaccount called **trial**, which in turn contains an org and a space called **dev**. • All entitlements are assigned to the subaccount that is provisioned automatically. With feature set B, you can access the trial homepage in the cockpit before your trial account is set up and ready to use. This means that you can launch a starter scenario or guided tour before you have the global account, subaccount, org, space and entitlements in place. You trigger the automatic creation when you first choose **Enter Your Trial Account** from the trial homepage.
(Trial Only) Trial Account Extension - CHANGED	*Not applicable*	Summary: • You cannot access a suspended trial global account. • You can still see the counter with the remaining number of days in the same place, but you cannot extend your trial from there. • You extend your trial account from a dialog similar to the global account selection dialog described previously in this table under global account navigation. With feature set B, it's not possible anymore to access suspended trial global accounts. Before your trial interval expires, you can still see the counter with the remaining number of days in the same place. However, once your trial interval expires and you try to access it, you will instead be prompted by a dialog asking you to extend your trial first. **ⓘ Note** The overall trial period is 90 days and is divided in intervals. If you don't log in to your account for 30 days or more, your account will be suspended. During suspension, your applications may be stopped and you won't be able to access them. However, your data will not be deleted yet. You can unsuspend your account as long as there are days left in your trial period. When your 90-day trial period is finished, your account will be deleted, and you will no longer be able to access your data. You can then set up a new trial account.

New/Changed Features and Behaviors	Feature Set A	Feature Set B
(Trial Only) Deletion of SAP BTP Trial - NEW	***Not applicable***	Summary: • Possible to easily delete only your SAP BTP trial account. With feature set B, you can delete your SAP BTP trial account. Simply navigate into your trial global account by choosing **Enter Your Trial Account** on the trial home page. Once you're on the **Subaccounts** page of your global account, you will see a new button giving you the option to delete your trial account.

ℹ Note

Cloud management tools feature set B applies also to the Neo environment. For more information about the scope offered with the enhanced capabilities, see Working with Cloud Management Tools Feature Set B in the Neo Environment.

Prerequisites and Restrictions

Find a list of the product prerequisites and restrictions for SAP BTP.

General Constraints

- For information on constraints and default settings to consider when you deploy an application in the Cloud Foundry environment, see http://docs.cloudfoundry.org/devguide/deploy-apps/large-app-deploy.html#limits_table .
- SAP BTP exposes applications only via HTTPS. For security reasons, applications can't be accessed via HTTP.

SAP BTP Tools

- SAP BTP Tools for Java and SDK have been tested with Java 7, and Java 8.
- SAP BTP Tools for Java and SDK run in many operating environments with Java 7, and Java 8 that are supported by Eclipse. However, SAP doesn't systematically test all platforms.
- SAP BTP Tools for Java must be installed on Eclipse IDE for Java EE developers.

For the platform development tools, SDK, Cloud connector, and SAP JVM, see https://tools.hana.ondemand.com/#cloud .

Browser Support

For a list of supported browsers for the SAP BTP cockpit, see Feature Scope Description.

For a list of supported browsers for developing SAPUI5 applications, see Browser and Platform Support.

To find out the browser support for a specific service, refer to the corresponding feature scope description.

For security reasons, SAP BTP doesn't support TLS1.1 and older, SSL 3.0 and older, and RC4-based cipher suites. Make sure that your browser supports at least TLS1.2 and modern ciphers (for example, AES).