



Embracing a Multi-Cloud Strategy with SAP BTP

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In This Session

- We'll review how the SAP Business Technology Platform (BTP) has evolved in recent years
- We'll examine how SAP BTP services are hosted on cloud hyperscalers such as Azure, GCP, and AWS
- We'll explore options for building hybrid extension apps
- We'll consider the ramifications of adopting a multi-cloud strategy

What We'll Cover

- SAP BTP Overview
- SAP BTP Running on Cloud Hyperscalers
- Developing a Multi-Cloud Strategy
- Practical Approaches for Building SAP Extension Apps
- Wrap Up



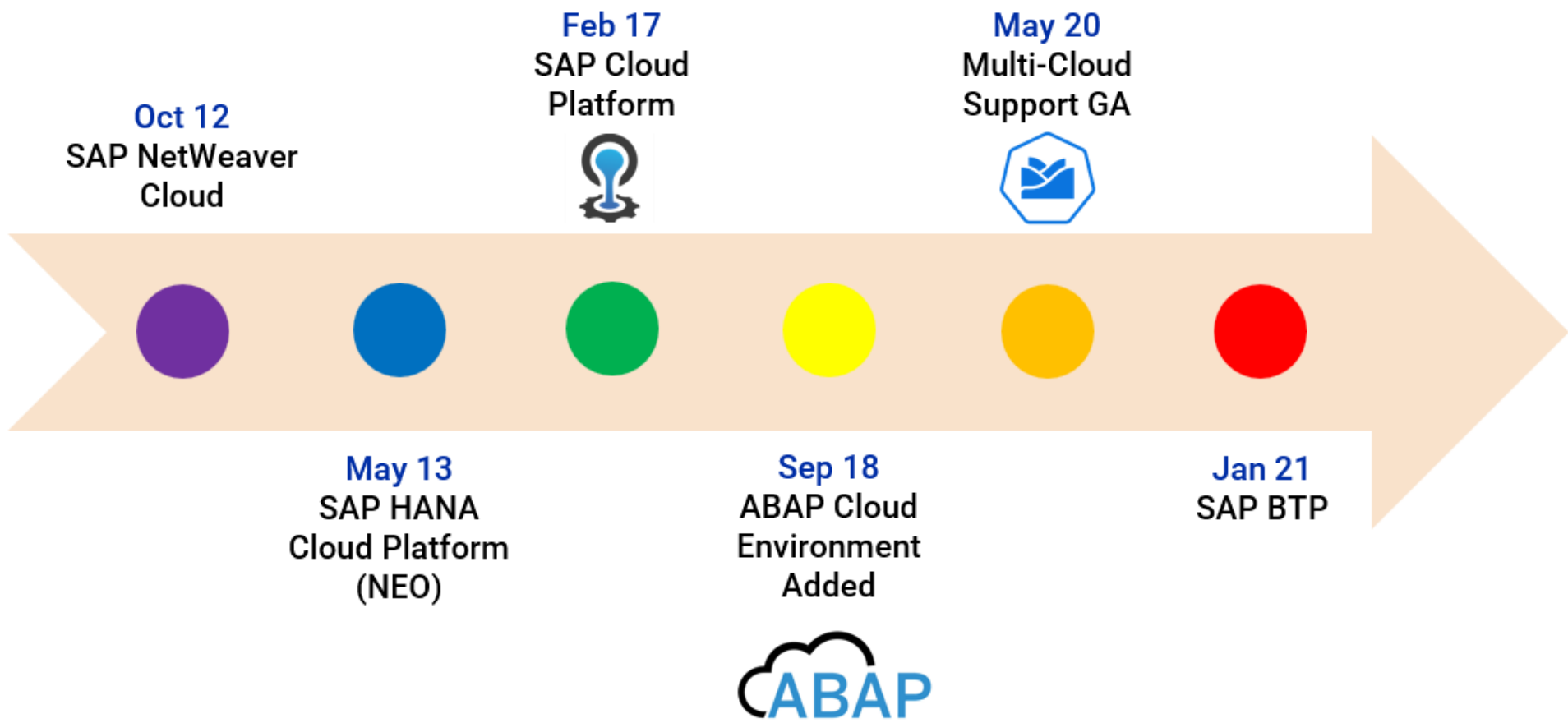
SAP BTP Overview



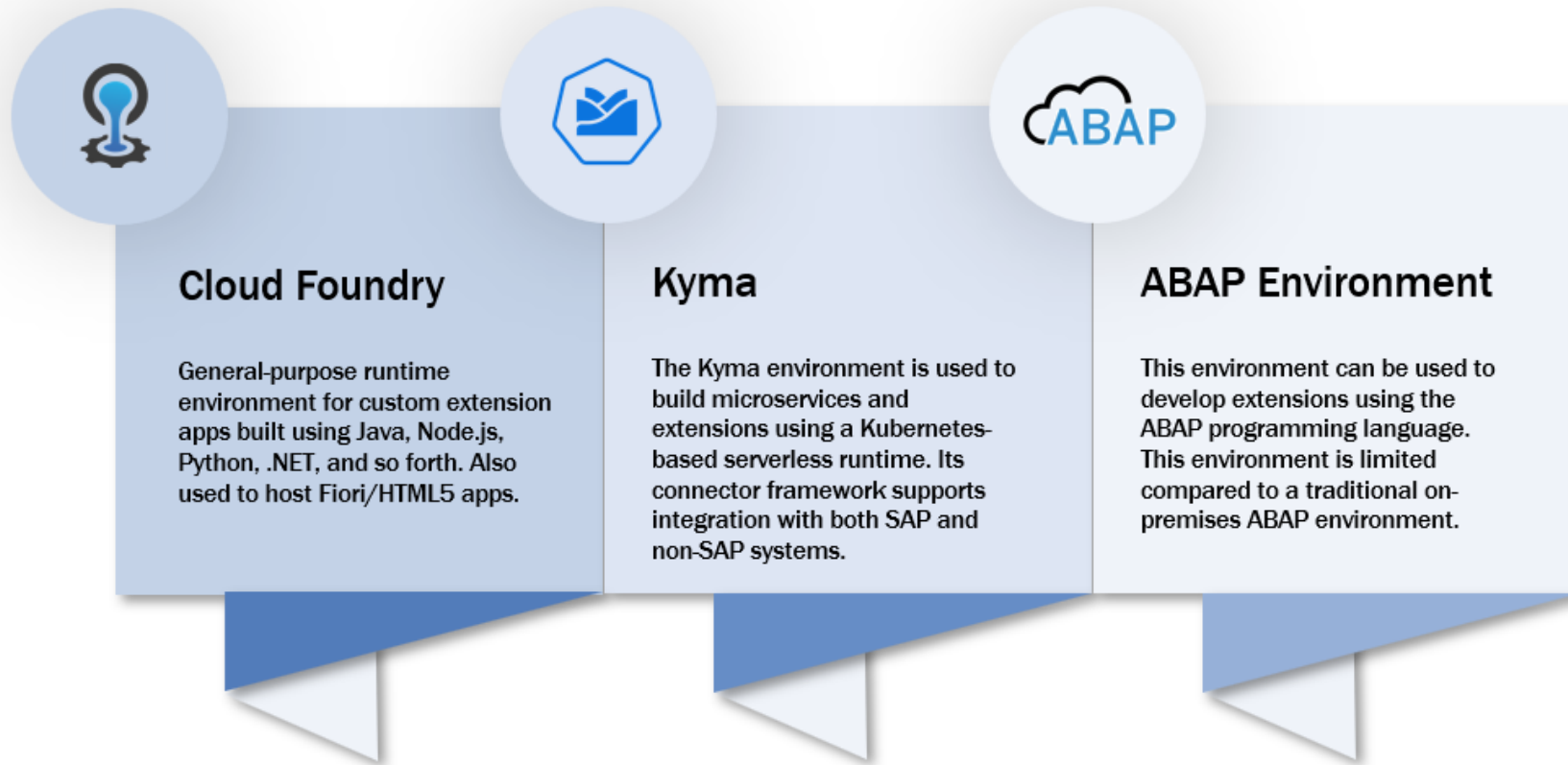
SAP BTP: A Brief History

- SAP BTP has changed quite a bit over the past 10 years
- As the cloud market evolved, SAP (re)shaped its cloud platform to match customer demand in terms of:
 - Openness and support for “Bring Your Own Language” (BYOL) programming models
 - Consumption-based pricing models
 - Multi-cloud support
 - Scalability and availability
- Throughout this evolution, the trend has been towards moving up the cloud stack to focus more on providing business-centric service

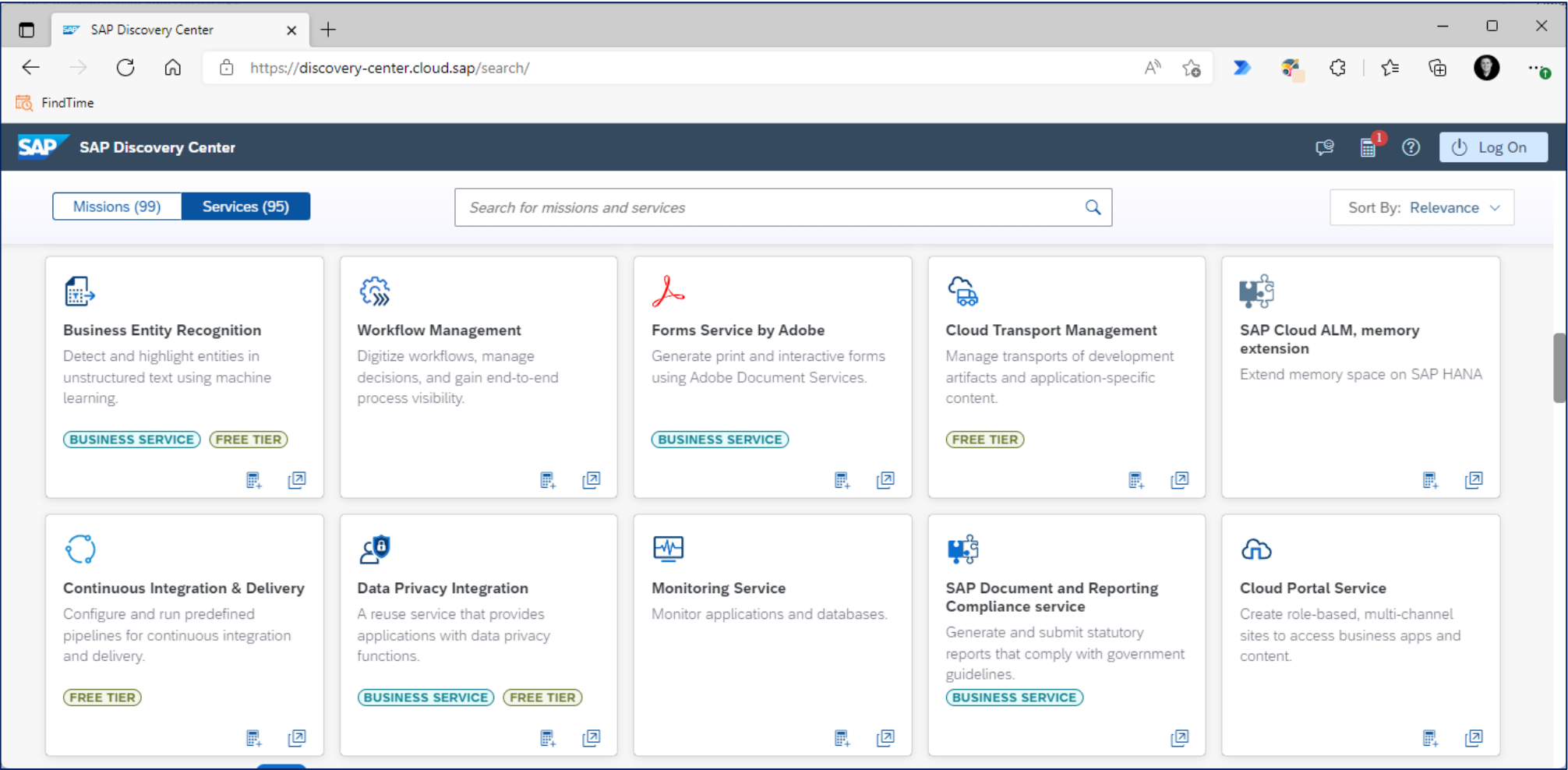
SAP BTP Evolution Timeline



SAP BTP Runtime Environments



SAP BTP Services Portfolio



Getting Started with SAP BTP

- Many of the services offered with SAP BTP are available in a free tier using trial accounts
- Setting up a trial account only takes a few minutes and can be used to test connections to local SAP sandbox or test environments
- To set up a new trial account, go to:
<https://developers.sap.com/tutorials/hcp-create-trial-account.html>

SAP BTP Running on Cloud Hyperscalers



Understanding BTP Deployment Options

- Whenever a new SAP BTP subaccount is created, customers can choose the target region for the new environment
- Regardless of the hosting provider/region selected, the environment is set up under SAP's subscription account with the host hyperscaler
- This is to say that the environment is fully managed behind the scenes by SAP

The screenshot shows the 'Create Subaccount' form with the following details:

- Display Name ***: CF Development
- Subdomain ***: cf-development-ku73vdm8
- Region ***: US East (VA) (selected from a dropdown menu)
- Description**: CF Development Environment
- Parent ***: Bowdark Consulting

The Region dropdown menu is open, showing the following options:

Google Cloud Platform	
Europe (Frankfurt) GCP	cf-eu30
US Central (IA)	cf-us30
Microsoft Azure	
Australia (Sydney)	cf-ap20
Europe (Netherlands)	cf-eu20
Japan (Tokyo)	cf-jp20
Singapore	cf-ap21
US East (VA)	cf-us21
US West (WA)	cf-us20

At the bottom right of the form, there are 'Create' and 'Cancel' buttons.

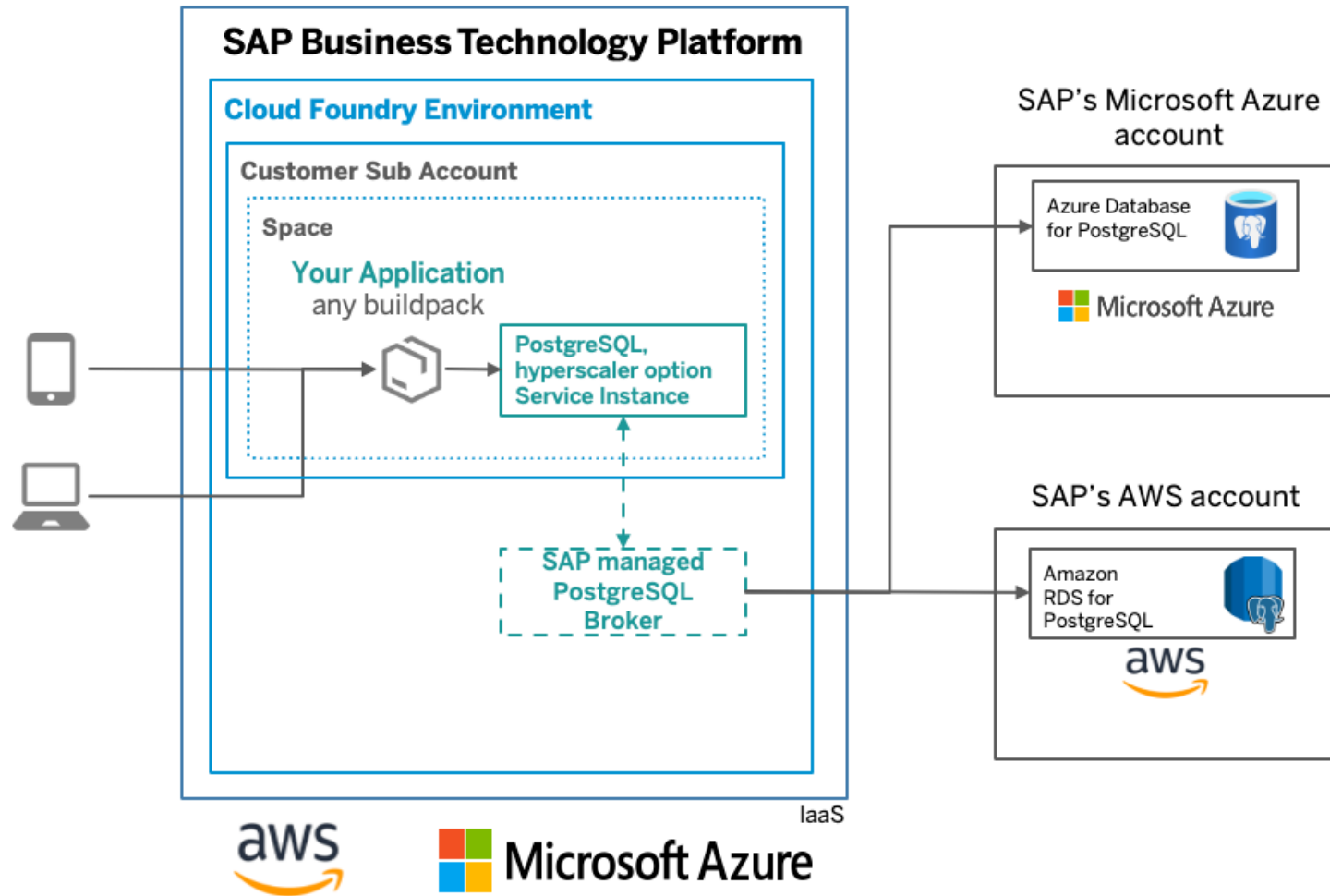
Understanding BTP Deployment Options (Cont.)

- Once a BTP environment is provisioned on a hyperscaler (e.g., Azure or GCP), you have a couple of options for leveraging managed services:
 1. SAP provides “hyperscaler option” services that proxy access to hyperscaler managed services (e.g., a managed PostgreSQL database)
 2. Alternatively, you can employ the [12-factor app](#) methodology to (in)directly access hyperscaler managed services (e.g., “Azure Cache for Redis”)

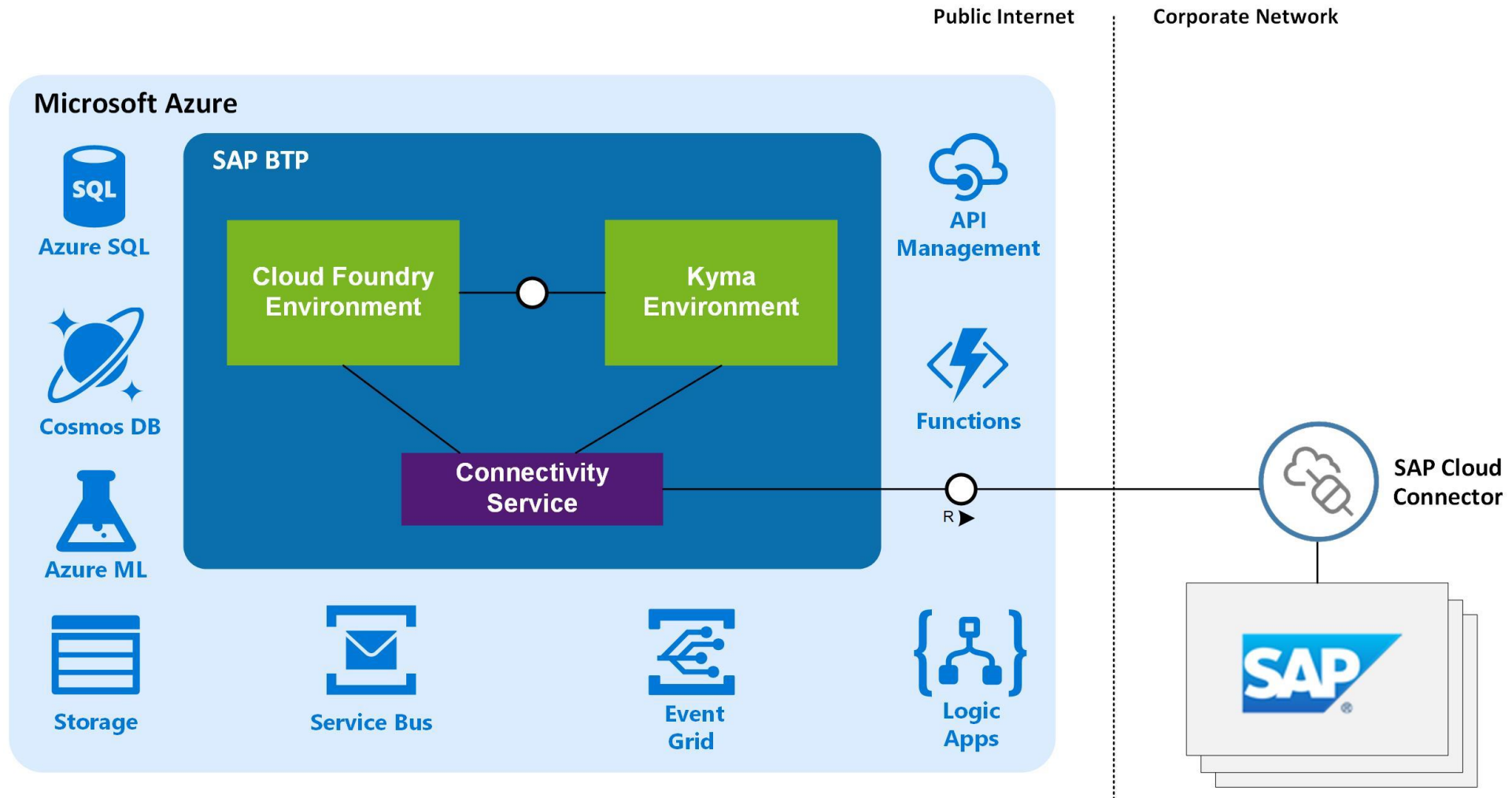


As long as the managed services are running in the same data center as your BTP environment, which option you choose here is mostly a matter of preference

Example: Managed Hyperscaler Option



Example: Cloud-Native / 12-Factor App Option



Developing a Multi-Cloud Strategy



Why Multi-Cloud?

- With so many choices between cloud platforms in general and SAP BTP in particular, you might be wondering “why BTP?” and “why multi-cloud?”
- In both cases, the point is to empower developers with a modern development platform that unlocks:
 - Faster innovation cycles
 - Secure mechanisms for extending the reach of your SAP systems
 - Best-in-class modern tooling and DevOps support
 - Access to services that aren’t available in an SAP NetWeaver system (e.g., low-code development tools, machine learning services, etc.)
 - Access to a larger pool of lower-cost developer resources (e.g., .NET developers, Node.js developers, Python developers, etc.)

Why Multi-Cloud? (Cont.)

- For customers that have already standardized around Azure, GCP, or AWS, the multi-cloud strategy is desirable since it allows both platforms to play to their respective strengths:
 - SAP BTP remains focused on simplifying SAP access and providing business-centric services
 - For everything else, developers can continue to build on pre-existing investments / standards for developing cloud-native apps on the preferred hyperscaler platform

Hybrid Cloud Application Scenarios

- Extension Apps & One-App Experiences (i.e., Mashups)
- Low-Code Solutions
- Mobile Apps
- Cross-Platform Workflows & RPA
- AI & Machine Learning Solutions (e.g., Generative AI solutions)
- Self-Service Portals
- Industry 4.0 & the Internet of Things (IoT)

Building Multidisciplinary Teams

- A key part of building a multi-cloud strategy is figuring out how to assemble multi-disciplinary teams
- Although ABAP developers play a key role in any multi-cloud strategy, more collaboration is required to work with non-SAP developer types (e.g., React developers, C# or Java developers, and so forth)
 - Ex: ABAP developers need to understand that certain design decisions can have huge impacts on non-SAP developer types
- Embracing the [fusion team](#) concept is key as the various technical teams will have to come together and work side-by-side with the business to create new solutions

Practical Tips

- Make sure that all parties understand RESTful API design concepts and basic entity modeling techniques
- Embrace a microservices architecture to maintain loose coupling within solutions
- Avoid vendor lock-in / proprietary code wherever possible
- Let each platform play to its respective strengths
- Leverage API management solutions to build an API control plane and abstract complex dependencies/security protocols away for consumers

Practical Approaches

- Techniques for building SAP Extension Apps on BTP



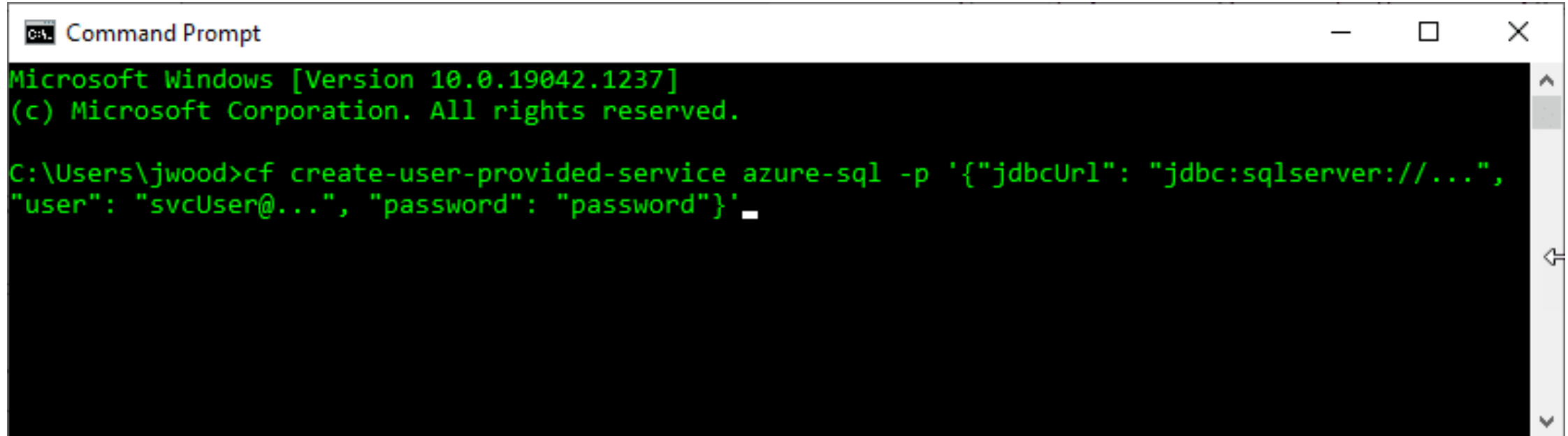
Working with the CF Marketplace

- Cloud Foundry (CF) is an open-source PaaS which provides developers with an “on rails” experience for developing cloud native apps
- With Cloud Foundry, developers can focus on the business problem at hand and let the underlying CF environment handle complex technical details
- A notable example of this is the CF service marketplace which:
 - Abstracts access to “backing services” hosted on SAP BTP or hyperscalers
 - Enables a separation of concerns between developers consuming services and system administrators responsible for managing the services

Working with the CF Marketplace (Cont.)

- In this scenario, system administrators can provision access to key services (e.g., managed databases, file storage accounts, and so forth) one time and put the managed resource out in the CF marketplace
- Then, developers can *bind* their apps to these services in an abstract way
- This approach eliminates the need for any CF app to manage service credentials or any other sensitive piece of connection data

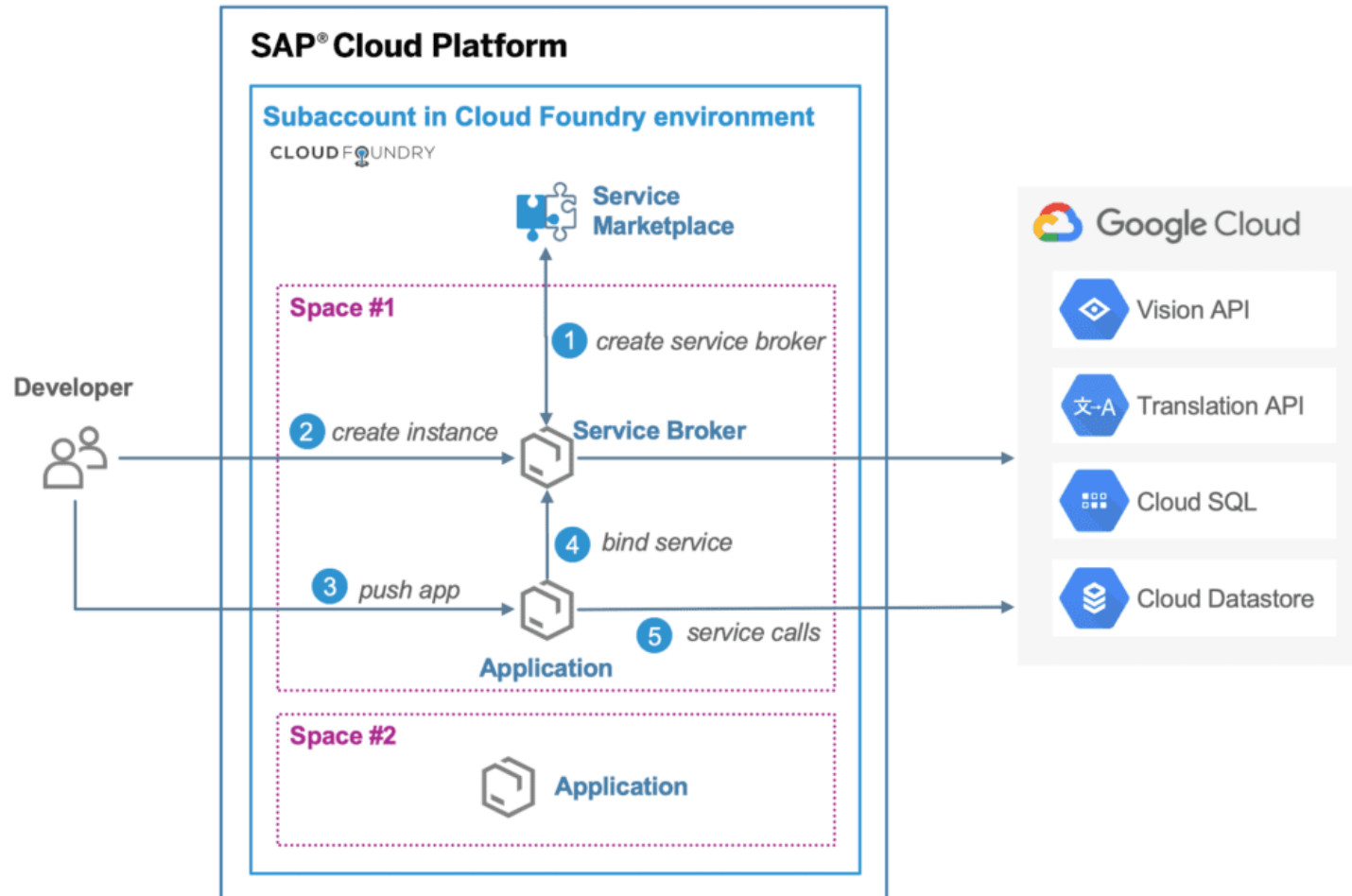
Working with the CF Marketplace (Cont.)



```
Command Prompt
Microsoft Windows [Version 10.0.19042.1237]
(c) Microsoft Corporation. All rights reserved.

C:\Users\jwood>cf create-user-provided-service azure-sql -p '{"jdbcUrl": "jdbc:sqlserver://...",
"user": "svcUser@...", "password": "password"}'
```

Example: Leveraging Cloud Services on GCP



Working with the Kyma Service Catalog


- Like the CF marketplace, the Kyma runtime provides access to a service catalog that makes it easy for developers to consume hyperscaler services
- Access to these services is brokered through *service brokers* which provision the services and facilitate app bindings
- The BTP Kyma environment provides service brokers for Azure, AWS, and GCP
- Such service brokers unlock access to a wide array of services including managed databases, message-oriented middleware services, file storage services, and much more

Example: Leveraging Azure Services with Kyma

Service Catalog

Enrich your experience with additional services

Filter



Azure Service Broker
Microsoft

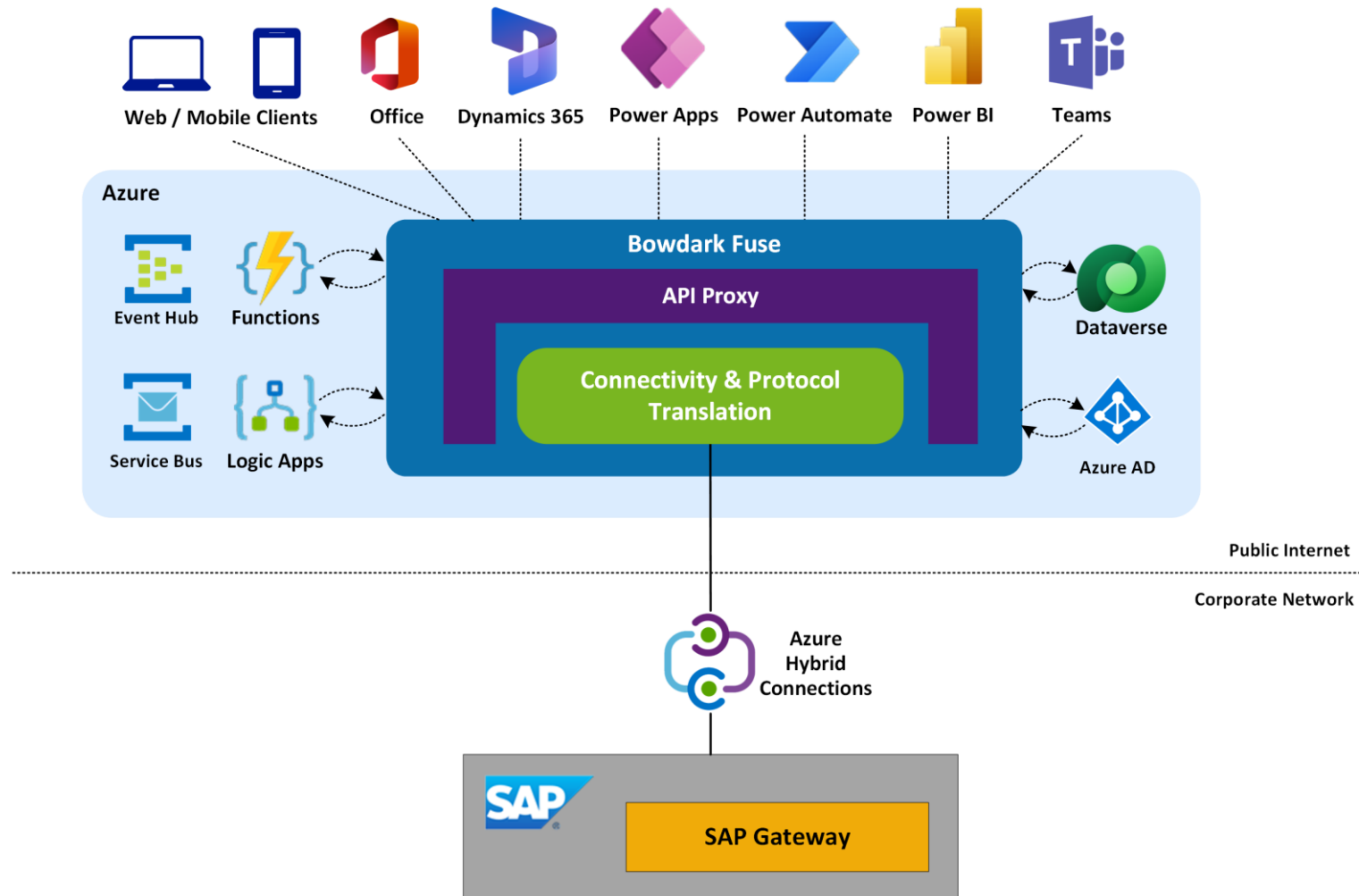
Extends the Service Catalog with
Azure services

local

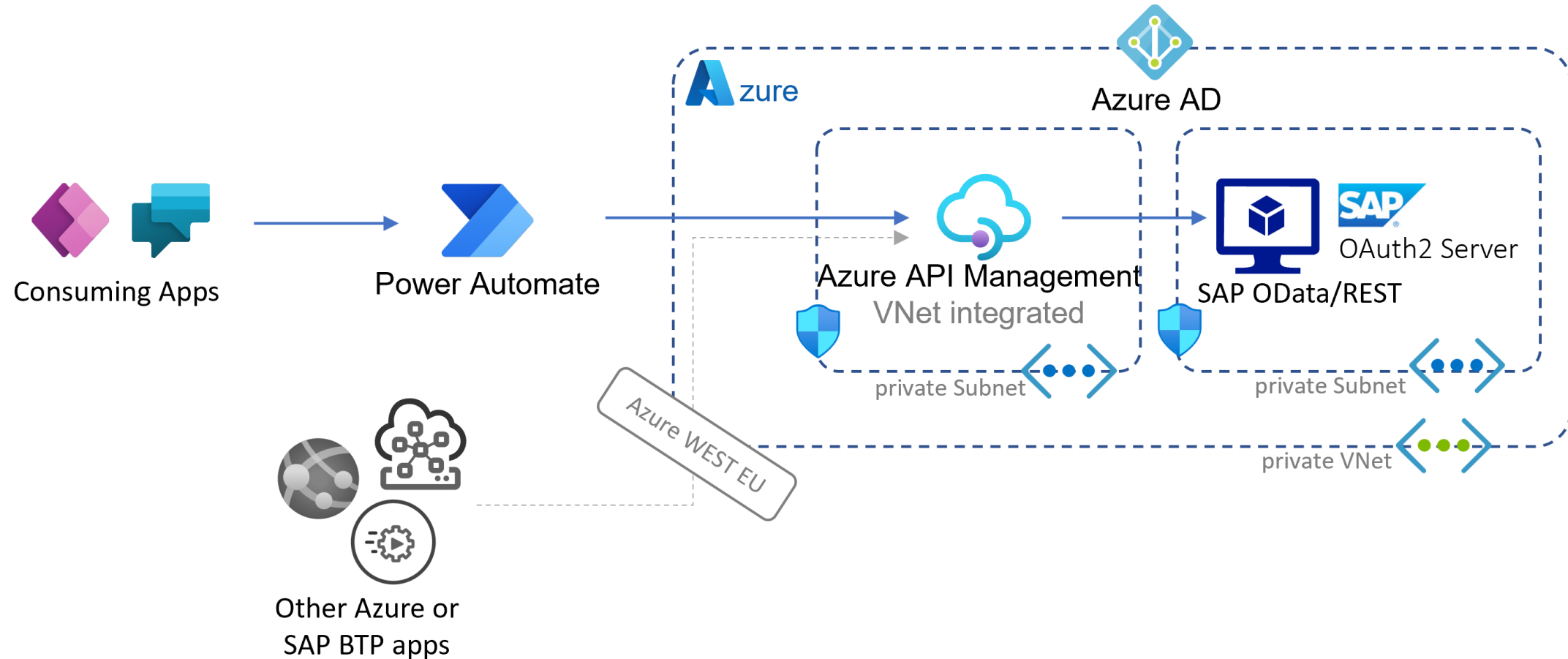
Working with API Management

- A more general approach to building multi-cloud extension apps is to leverage an API management service to build a secure API control plane around your SAP APIs
- Customers have the option to leverage SAP API Management or API management services offered by the host hyperscaler environment
- With API management, we can securely expose access to SAP RESTful APIs (typically in the form of OData services) using modern security protocols such as OAuth 2.0
- This makes it easy for both SAP and non-SAP-based clients to consume SAP APIs

Example: Building an API Control Plane with Azure



Example: Low-Code Apps with MS Power Platform



Wrap up

Where to Find More Information

- <https://discovery-center.cloud.sap/search>
 - SAP Discovery Center where users can search and estimate the cost of SAP BTP services
- <https://developers.sap.com/tutorials/hcp-create-trial-account.html>
 - Tutorial that walks users through the creation of an SAP BTP trial account
- <https://www.cloudfoundry.org>
 - Cloud foundry community project page
- <https://kyma-project.io>
 - Kyma community project page
- <https://discovery-center.cloud.sap/serviceCatalog/integration-suite?region=all>
 - Overview of SAP Integration Suite and SAP API Management
- <https://12factor.net>
 - 12 Factor app methodology

Key Points to Take Home

- SAP BTP provides an open architecture that makes it easy to develop a multi-cloud strategy that works for your business
- Multi-cloud strategies unlock access to a much broader ecosystem of tools and developers to build SAP extensions
- Cloud-based extensions can significantly reduce innovation cycles
- Team building is extremely important in these scenarios as much more collaboration is required to be successful
- Side-by-side extension apps are the way of the future, so it's important to begin thinking about a strategy - even if SAP S/4 HANA isn't on your roadmap yet

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your session evaluation.

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