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Multicloud is the new normal

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Exam Number: 1Z0-1115-23

Understand Multicloud Solutions

Understand Multicloud Connection Options

Oracle Interconnect Azure

Identity & Access Mgmt

https://mylearn.oracle.com/ou/learning-path/become-an-oci-multicloud-architect-associate-2023/120606

Multicloud strategies are the new normal

Gartner

81% **of organizations have adopted a multicloud** IT strategy to leverage advanced capabilities across clouds. –Gartner

S&P

76% **Of companies are adopting multicloud and hybrid cloud approaches.** – S&P Global/451

IDC

70% **of organizations have adopted multicloud or hybrid cloud strategies.** –IDC

ORACLE Cloud Infrastructure

Azure

aws

Google Cloud Platform

Alibaba Cloud

Private Cloud (On-premises)

6

The state of using multiple clouds

98%

Percentage of organizations **use** or **plan to use multiple clouds** within the next six months

Why?

"Data sovereignty and data locality" "Cost optimization"
"Business agility and innovation" "Mergers and acquisitions"

#1

Rank of "**Interoperability between different cloud vendors for multicloud**" as a challenge when implementing workloads in the cloud

1. *451 Research*
2. *451 Research*
3. *Forrester*

Top multicloud motivators and challenges

Motivators

- Data residency
- Cost optimization
- Business agility and innovation
- Best-of-breed cloud services and applications
- Cloud vendor lock-in concerns

Challenges

- Cloud management - operational visibility and management across clouds
- Network interconnectivity
- Data management and governance
- Workload and data mobility
- Ensuring security across clouds

Defining multicloud and its advantages

Multicloud *is the coordinated use of cloud computing services from two or more public cloud vendors.*

Companies use multicloud environments to distribute computing resources and minimize the risk of downtime and data loss.

Companies also adopt two or more public cloud providers for their unique capabilities.

Advantages

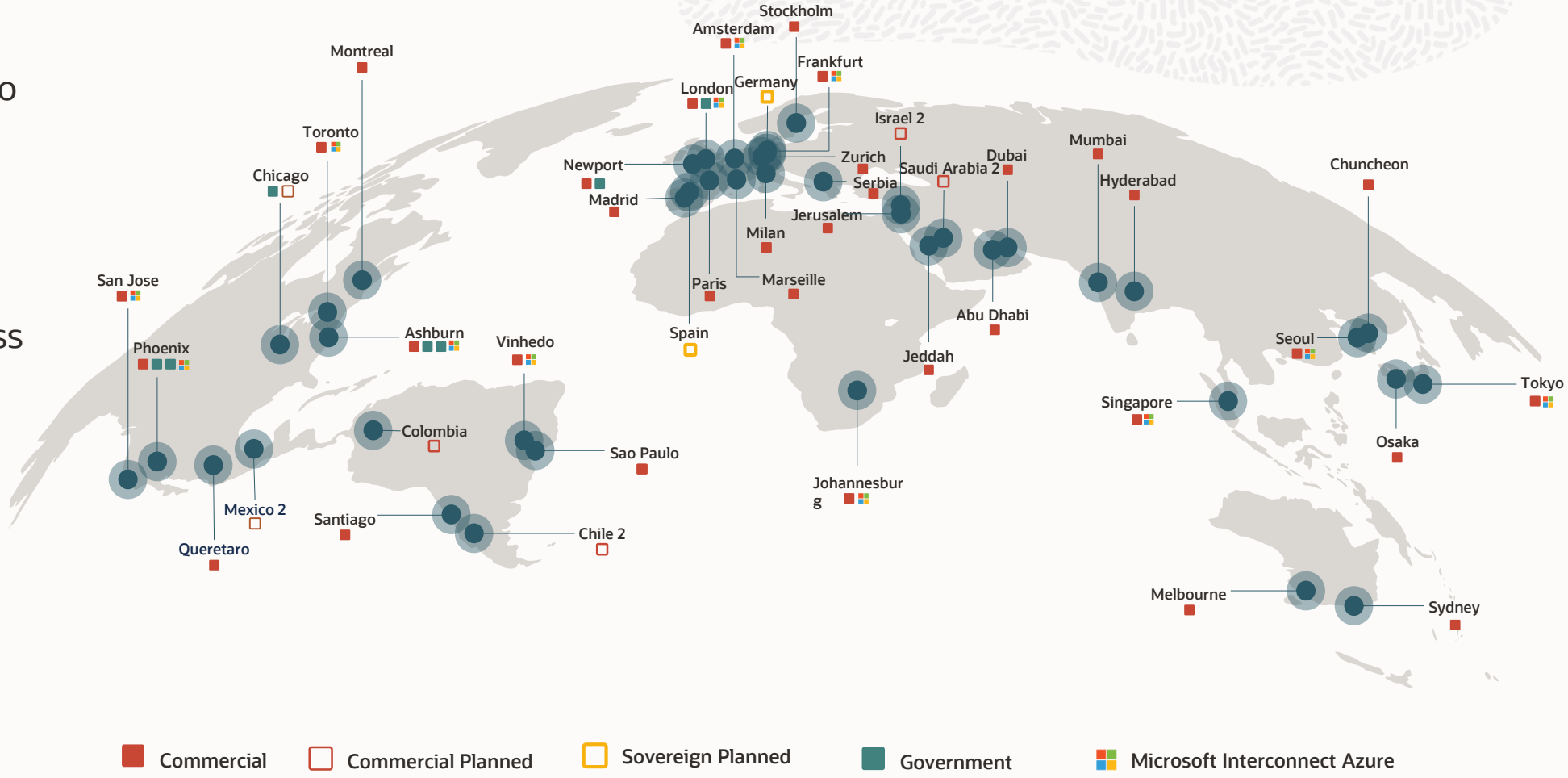
- Maximize Strengths of Each Provider
- De-Risk Single Provider Outages
- Multicloud Economics
- Reduces Vendor Lock-in
- Reduced Latency
- Regional Availability
- Audit/Compliance Pressure

6

Network Foundation

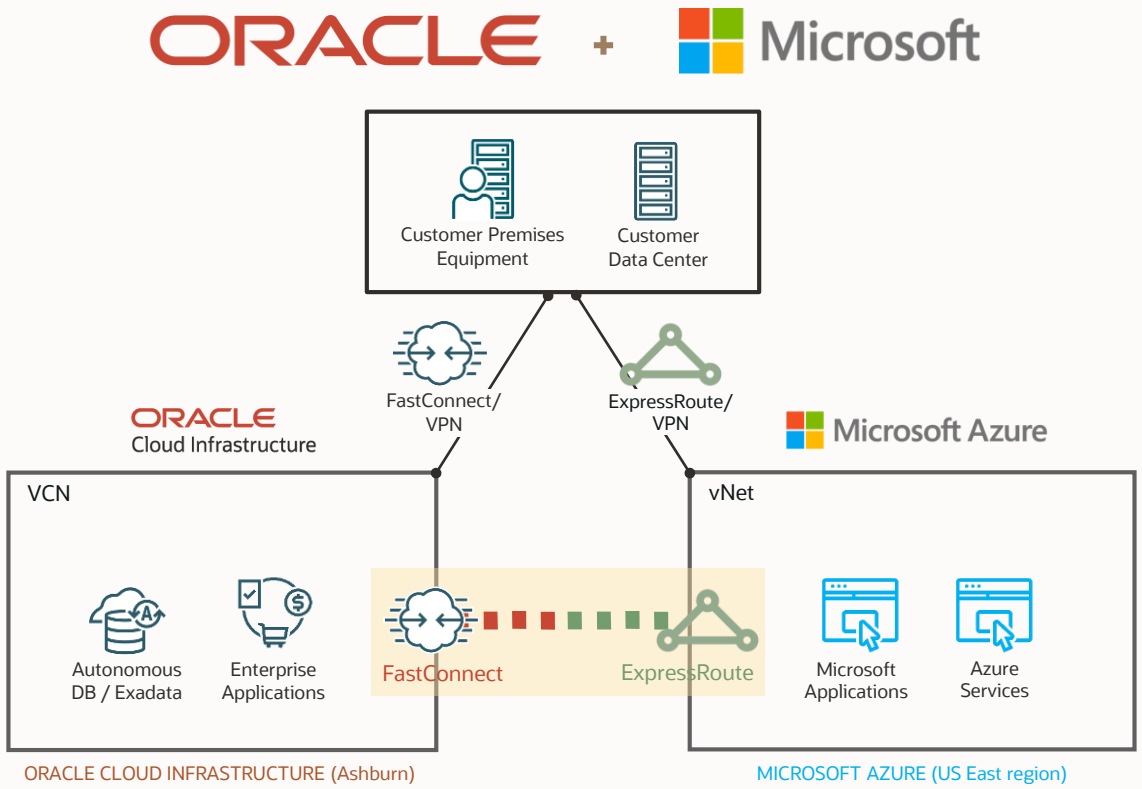
The OCI-Azure Interconnect created the network foundation

- 12 global regions to date
- < 2 millisecond latency private interconnection
- No egress or ingress charges for data
- End-to-end secure encrypted tunnel



Oracle Cloud and Microsoft Azure Interconnect

ORACLE Cloud Infrastructure

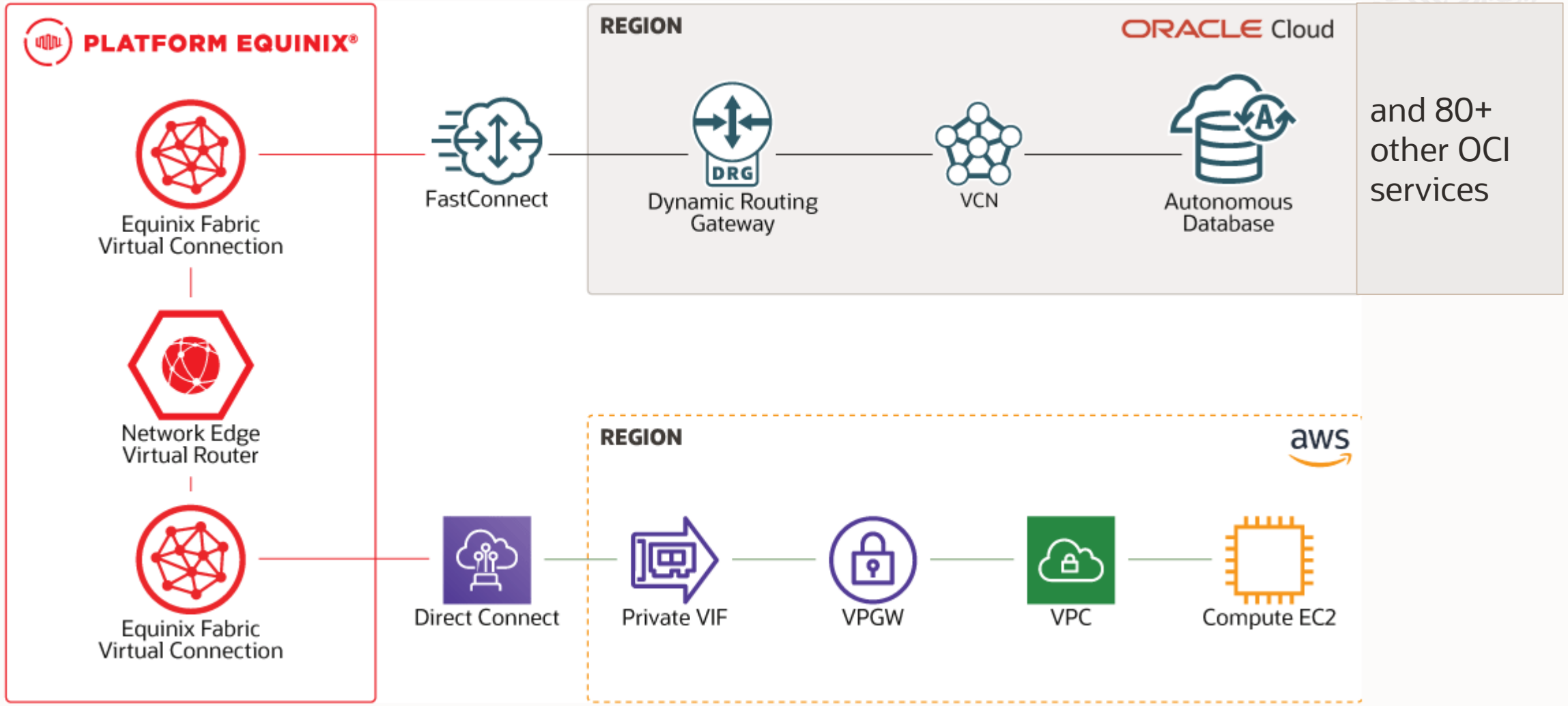


- ✓ Microsoft Azure and Oracle Cloud are **interconnected today**, so you can migrate and run mission-critical enterprise workloads across clouds
- ✓ **FastConnect and ExpressRoute** direct connection with 2 millisecond latency and no intermediate service provider required
- ✓ **Unified identity and access** management via single sign-on with automated user provisioning to easily manage resources across clouds
- ✓ **Collaborative support** of workloads across clouds, for example, custom and Oracle Applications on Azure with Oracle Database cloud services – connect best-in-class services across clouds
- ✓ No inbound or outbound egress charges *over Interconnect*
- ✓ **Available Now:** Ashburn, San Jose, Vinhedo, Toronto, London, Frankfurt, Amsterdam, Tokyo
- ✓ **Coming Soon:** Government, Asia, Europe regions

More Details: https://azure.microsoft.com/en-us/pricing/details/expressroute/

Multicloud Networking with AWS using Equinix

ORACLE Cloud Infrastructure



* OCI supports 50+ other connectivity providers

Landing Zones

Landing zones are prescriptive solutions that enable the rapid onboarding and deployment into OCI, building on all the Oracle best practices from security, governance, identity, and other areas.

Enterprise-Scale Baseline Landing Zone[1,2]

- A set of automated modules that help customers configure OCI deployments quickly
- Removes key blockers for businesses looking to make the transition to the cloud
- Reduces time required to learn how to architect, govern, and secure environments
- Quickstart: github.com/oracle-quickstart/oci-enterprise-scale-baseline-landing-zone

Self-Service Landing Zone[3]

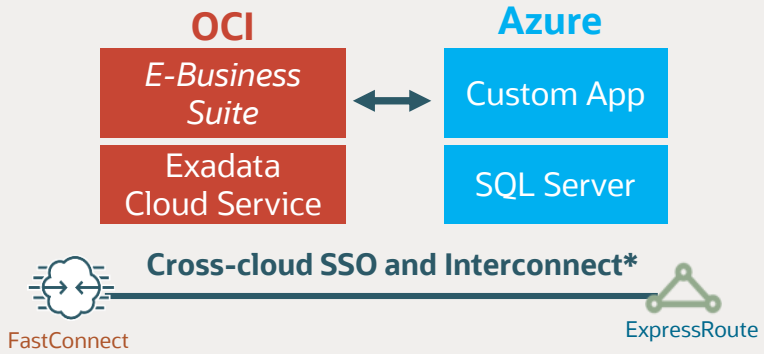
- Includes core technology components of the cloud (compute, storage, networking), security, identity, and encryption.

1 https://docs.oracle.com/en-us/iaas/Content/cloud-adoption-framework/landing-zone.htm
2 https://blogs.oracle.com/cloud-infrastructure/post/oracle-enhances-the-oci-cloud-adoption-framework-releases-the-enterprise-scale-baseline-landing-zone-and-offers-more-options-for-multicloud-strategies
3 https://docs.oracle.com/en/solutions/cis-oci-benchmark/index.html

Using Oracle Database in multicloud architectures

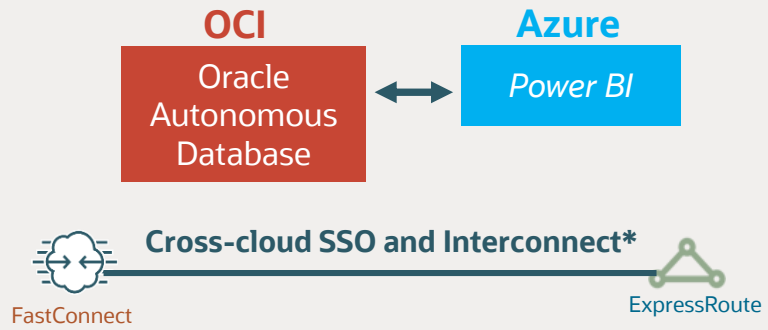
ORACLE Database

Run full stack applications



- Application stacks on OCI and Azure interoperate and share data
- Maintain high performance connectivity between dependent applications in the cloud with no re-architecture

Run split stack applications



- Application running on Azure with an Oracle Database running on OCI using a low latency, high speed connection
- Achieve high performance, innovation and economics by running application components in the most optimal environment

***Direct connection with <2ms RTT latency between clouds – No intermediate connectivity provider is required**

Multicloud with OCI is real and practical

More than just using two clouds separately

Use best of breed services across multiple providers for the same workload

Security can be integrated with federated identity and integrated logging

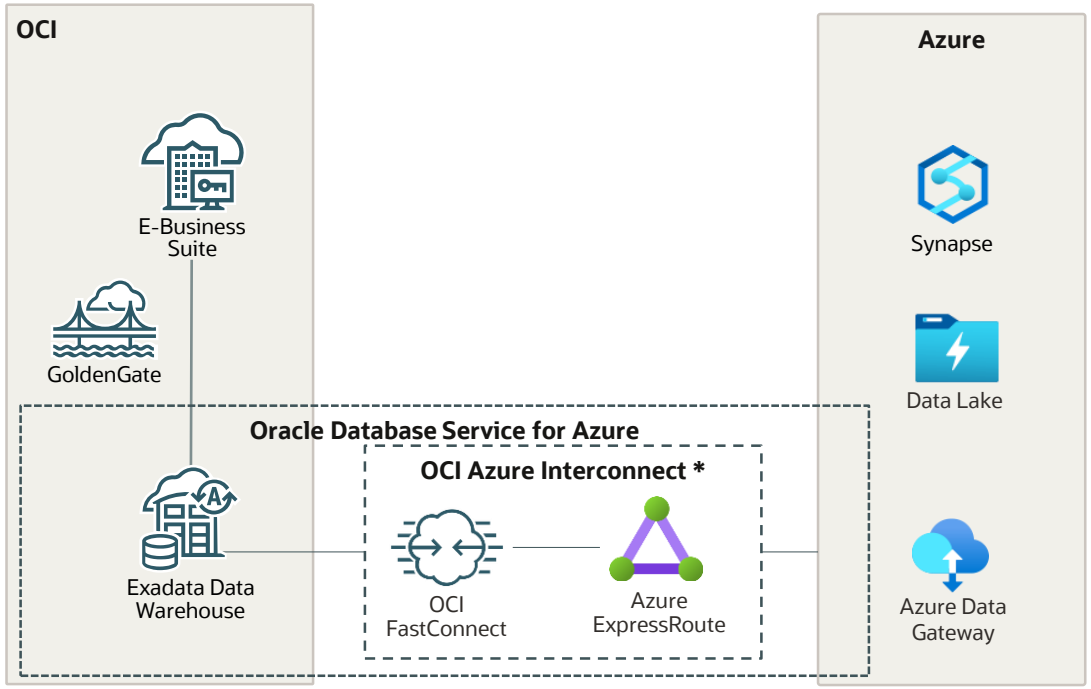
Performance and latency can be equivalent to that of a single cloud

Logging and metrics can be unified with a third party or integrated into a single pane of glass with one cloud UI (Azure)

"Oracle is building compelling multicloud offerings leveraging its heritage in mission-critical database and data warehousing technology. Multicloud architectures, where one workload spans multiple cloud providers, are central to OCI's vision and … are unique critical capabilities for providers in this market."

– **GARTNER**

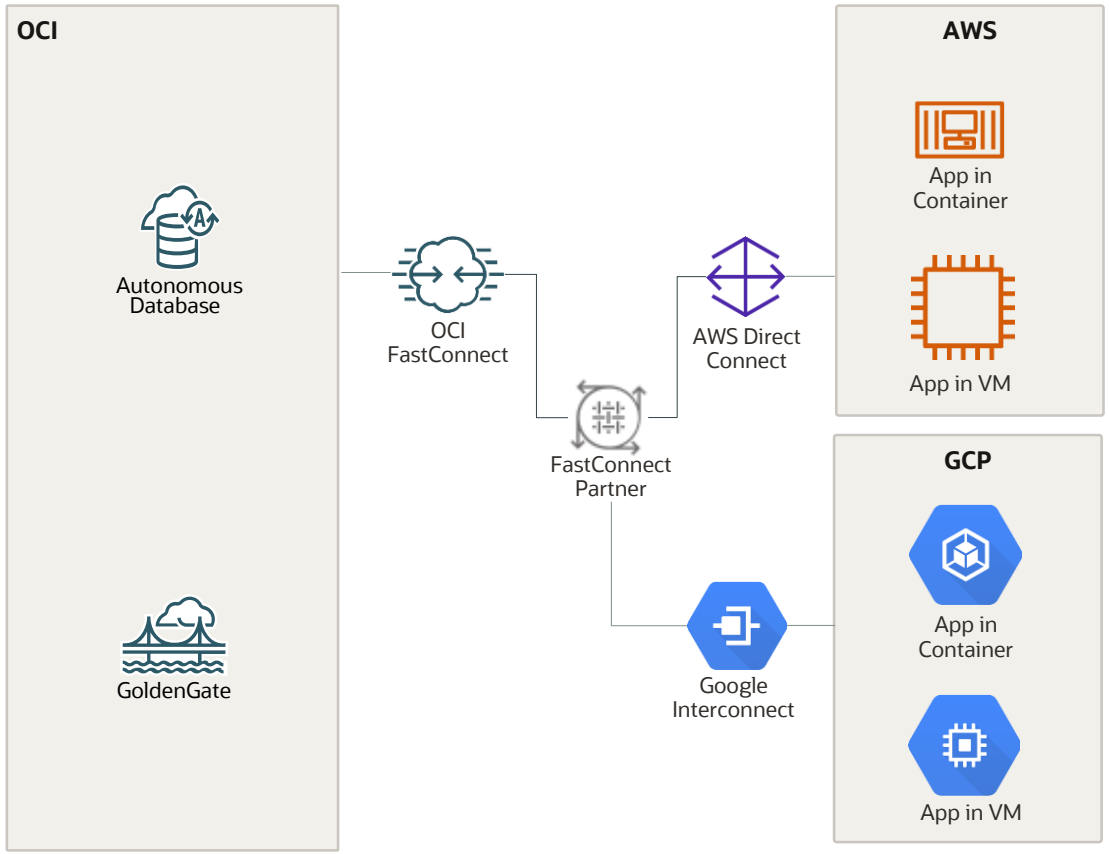
Use case: Data analytic pipeline



*Direct connection with <2ms RTT latency between clouds – No intermediate connectivity provider is required

- Modernize data transformation pipeline with real-time data analysis and faster delivery of data reports to help customers make more informed and timely business decisions
- **Example architecture**
  - Data analytics frontend on Azure with Oracle Autonomous Data Warehouse (ADW) on the backend in Oracle Database service for Azure (ODSA) on OCI for real-time data insight
  - Data feed from EBS to Oracle ADW using OCI GoldenGate
  - Data transfer to Azure Data lake via OCI Azure Interconnect and Azure Data Gateway for batch data upload

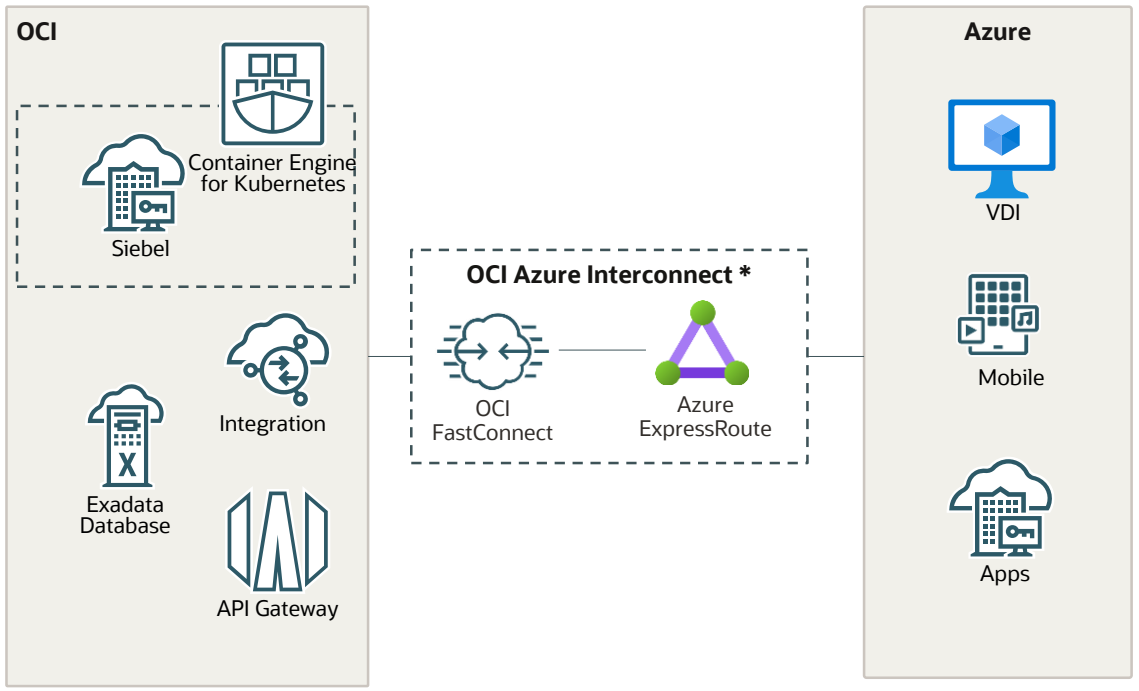
Use case: Split stack application



OCI FastConnect partner connects OCI FastConnect to AWS Direct Connect and GCP Interconnect with 2-4 ms RTT latency between clouds

- Support specific development environments and toolsets while using best-of-breed data management
- **Example architecture**
  - PowerBuilder, .NET and Go applications front-end on AWS and GCP with back-end Autonomous Database on OCI
  - OCI FastConnect partner connects OCI FastConnect to AWS Direct Connect

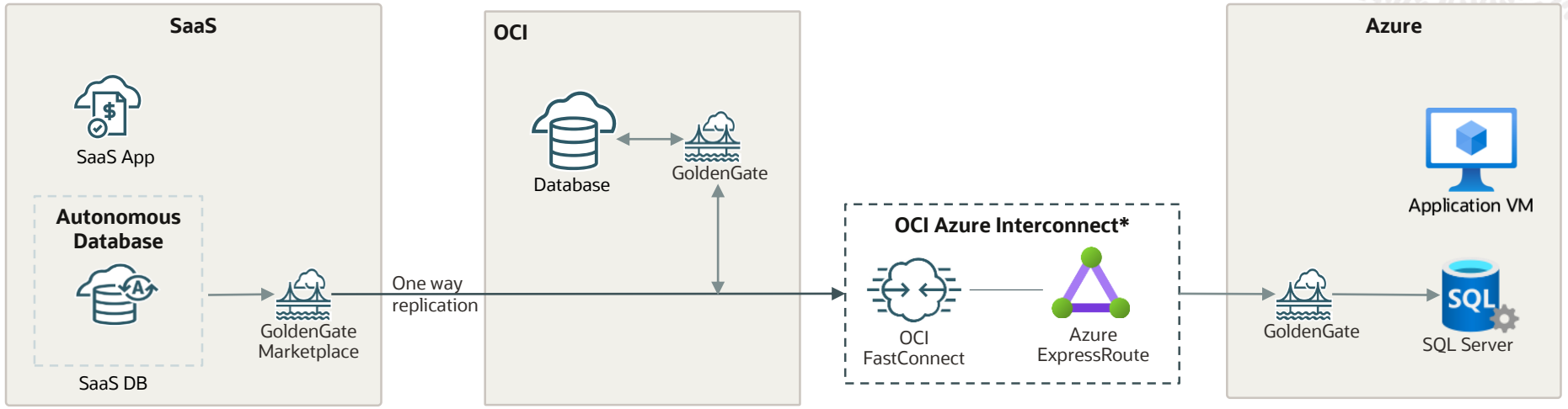
Use case: App to app integration



*Direct connection with <2ms RTT latency between clouds – No intermediate connectivity provider is required

- Application stacks on OCI and Azure interoperate and share data.
- Maintain high performance connectivity between dependent applications in the cloud with no re-architecture
- **Example architecture**
  - Siebel CRM 22.8 in Oracle OKE with Exadata database on OCI
  - Low latency, high speed integration with Azure-hosted apps using Interconnect

Use case: SaaS to platform integration

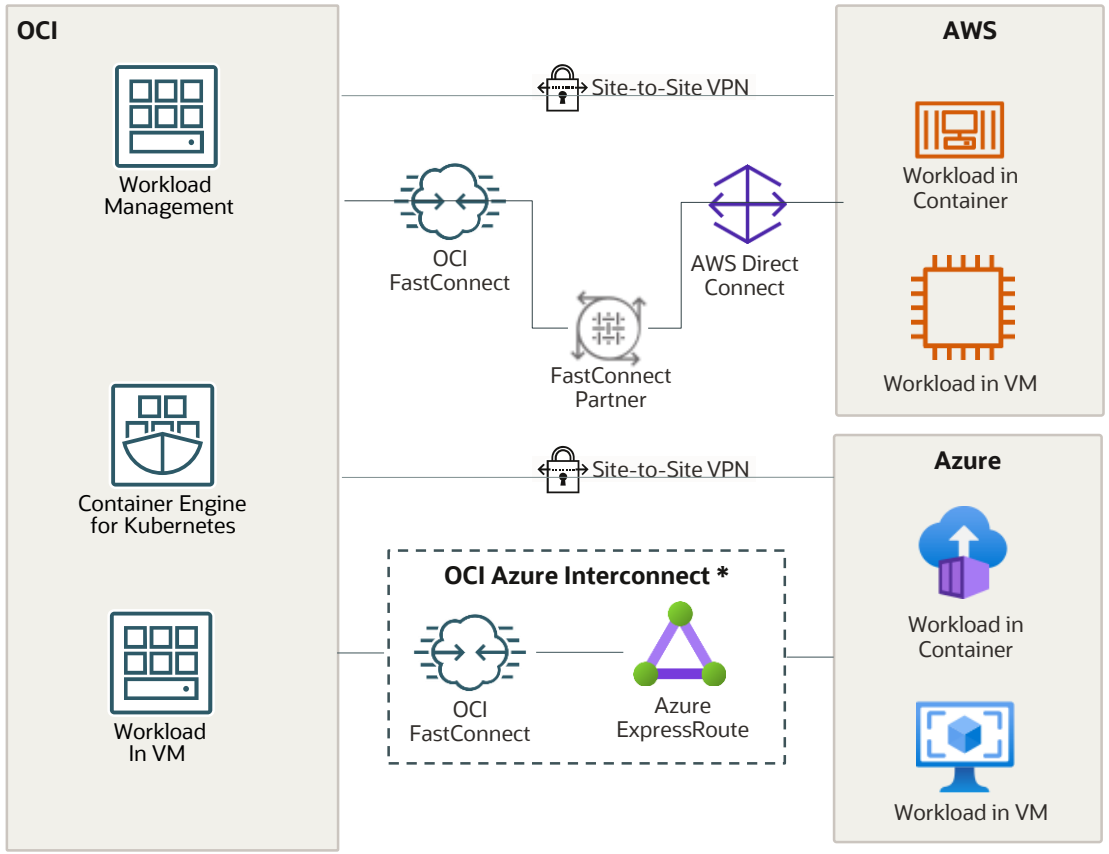


- Integrate SaaS applications with applications on different clouds to achieve business agility and innovation
- **Example architecture**
  - Replicate Oracle Retail Cloud database to database on OCI to run the custom application.

*Direct connection with <2ms RTT latency between clouds – No intermediate connectivity provider is required

- Near real-time Integration of customer apps with SaaS application
- The data is also replicated from OCI GoldenGate to GG for SQL Server running in Azure and subsequently loaded into an Azure SQL database

Use case: Workload mobility

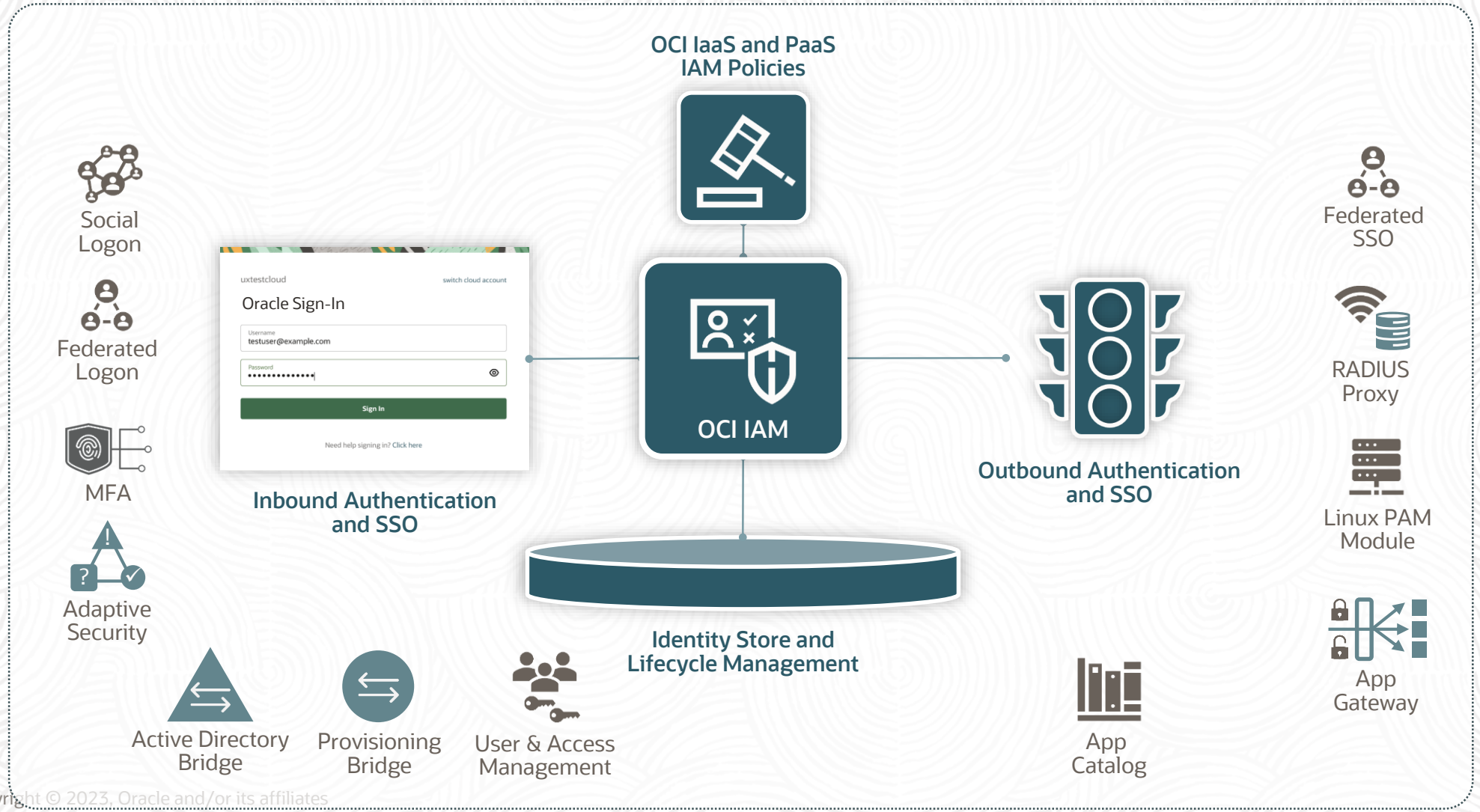


- Distribute workloads to run on different clouds to achieve the best price performance.
- **Example architecture**
  - Run workload orchestration on OCI and run distributed Kubernetes or VM workload on OCI and Azure
  - Achieve a high level of parallel computing and good price performance

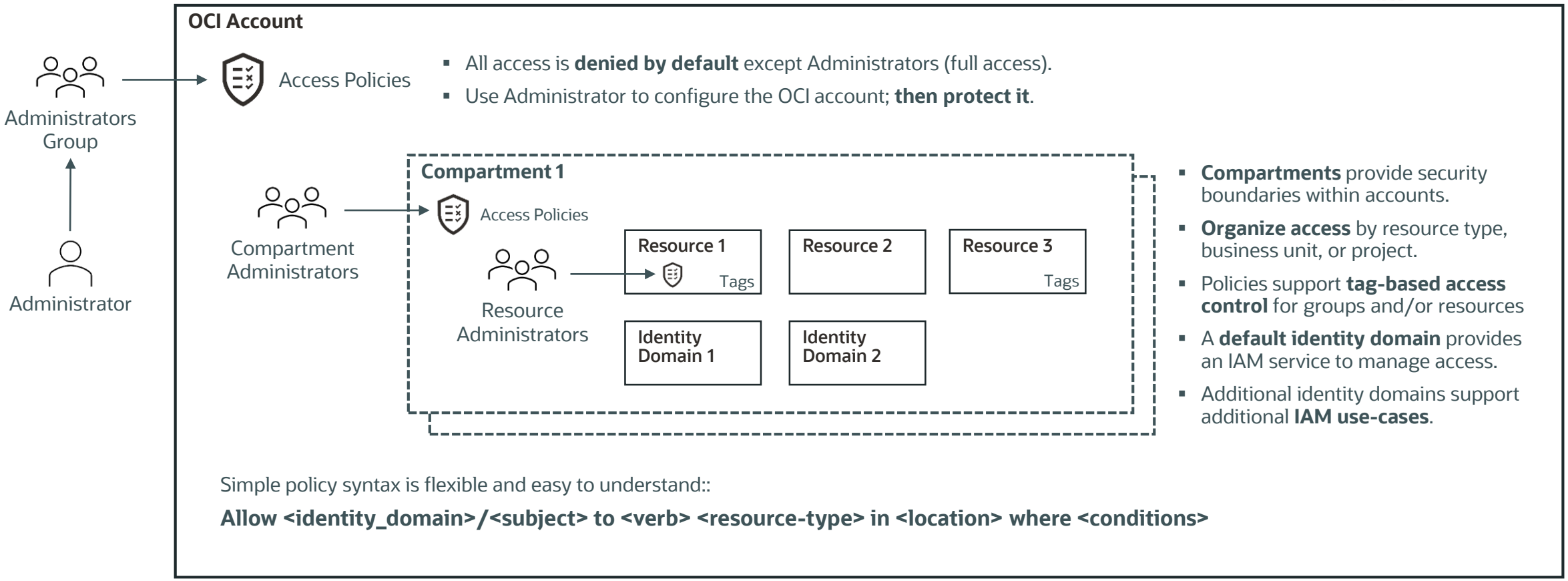
OCI IAM Functional Overview

OCI Identity & Access Management (OCI IAM)

Enterprise Identity & Access Management

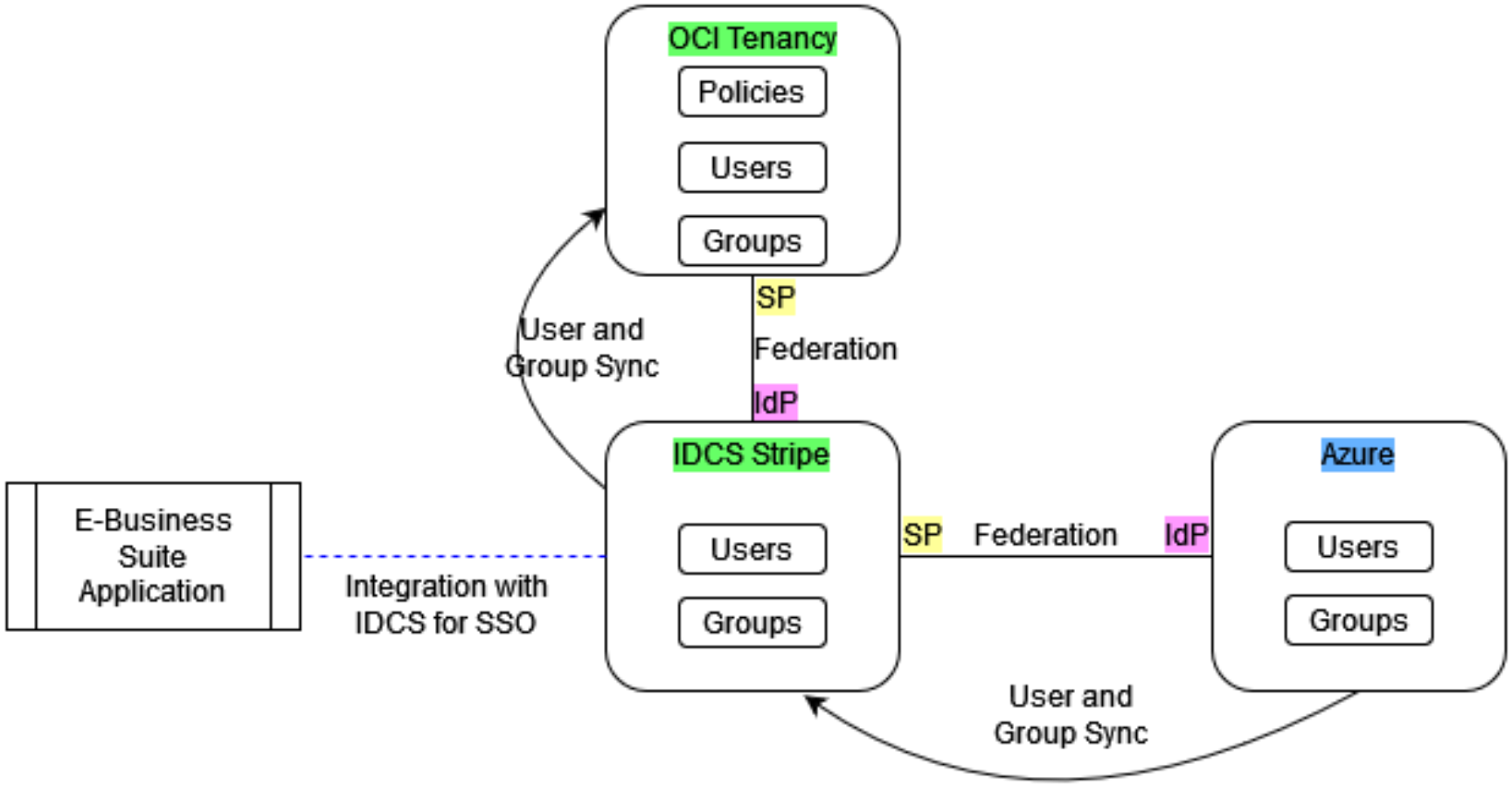


Getting Started with OCI IAM



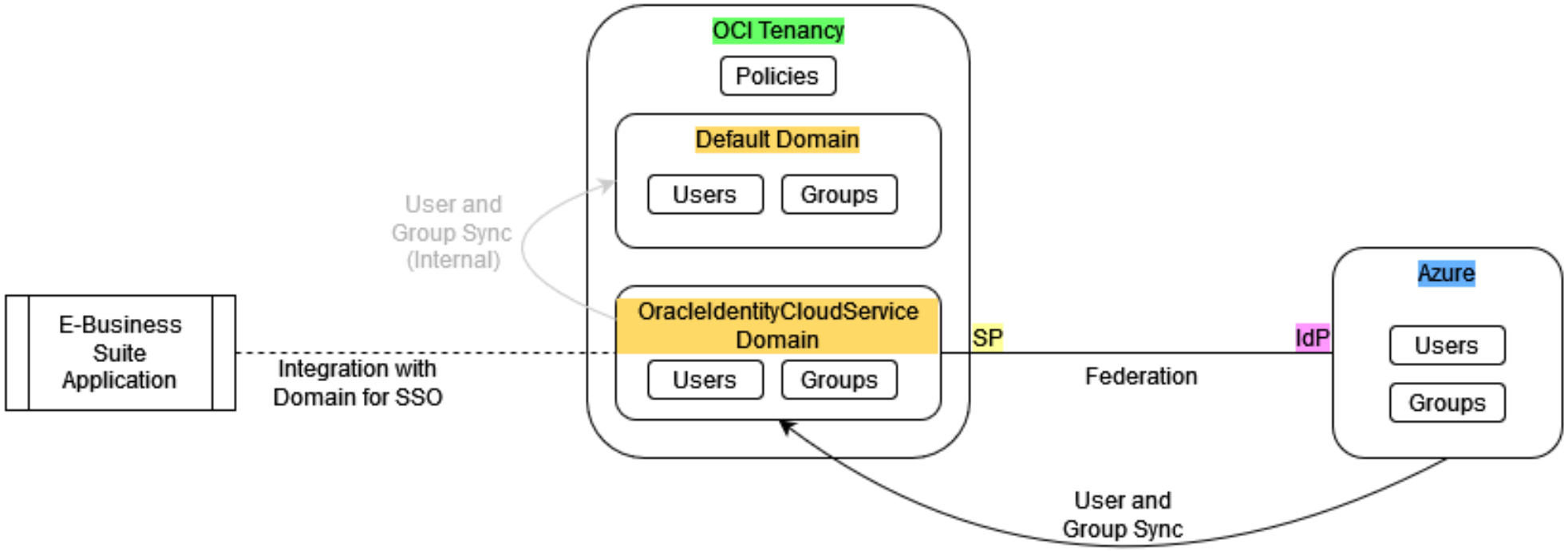
Federation from Azure AD

Azure AD Federation
via IDCS (Before)

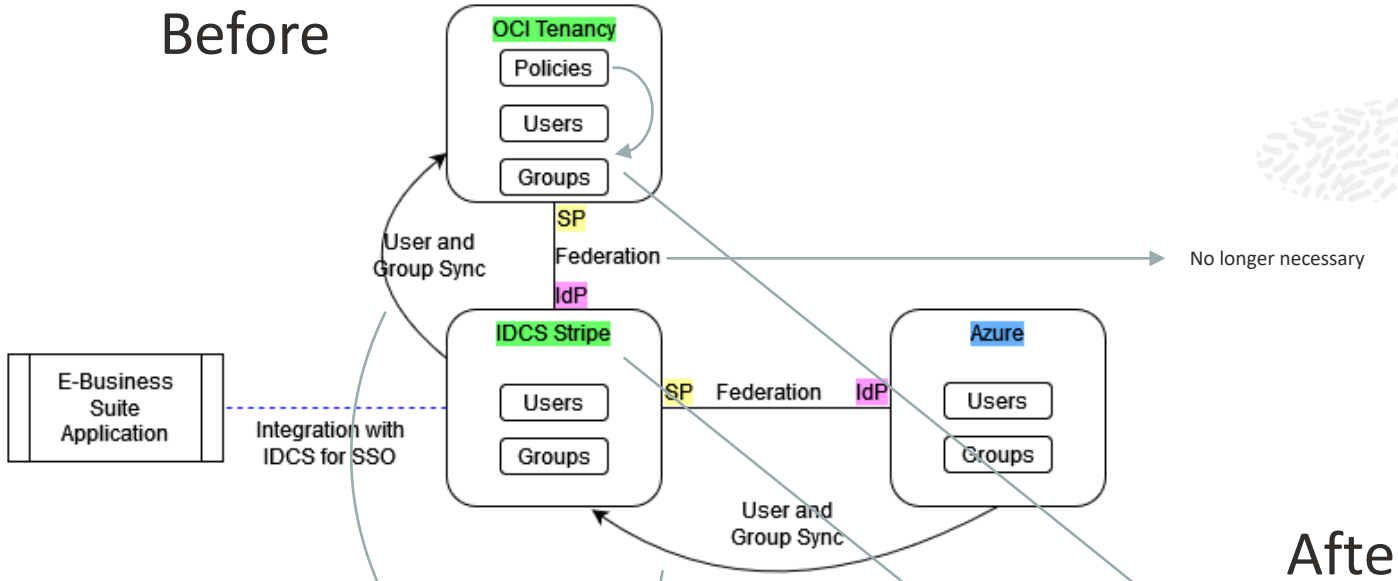


Azure AD Federation

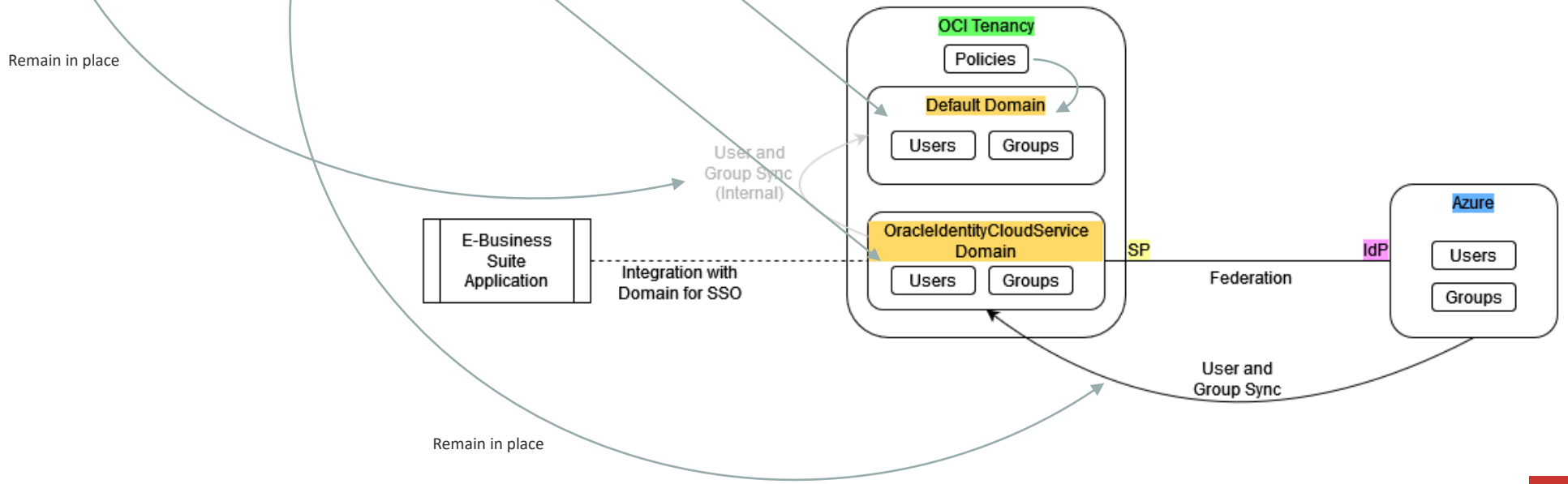
Via OCI IAM identity domains (After)



Before



After



OCI can enhance your multicloud strategy

Products

- Oracle Database Service for Azure
- Oracle MySQL Heatwave on AWS
- Oracle Interconnect for Azure

Related services

- OCI IAM
- OCI Application Integration
- OCI Golden Gate
- OCI Data Integration
- Oracle Cloud Manageability & Observability Platform
- OCI Database Management
- Oracle Data Safe

Architectures

30+ multicloud patterns and automation to get you started and into production

Related applications

- ERP (EBS, PeopleSoft, JD Edwards, Siebel, SAP, etc.)
- Industry apps (Banking, Retail, Telco, Healthcare, xx)
- SaaS (ERP cloud, HCM cloud, CX cloud, Retail cloud, Transportation cloud, xx)
- Cloud native, k8s
- In-house developed apps

Oracle Cloud Lift

Hundreds of experts at multicloud architectures – go from design to go-live as part of your OCI contract

Related services

- On-premises to OCI
- Cloud to OCI
- Private hosting to OCI
- Partner with Global System Integrators and Managed Services Partners
- Database, VM, JEE on WLS,
- Oracle app (EBS, PeopleSoft, JD Edwards, Siebel)

Get a free multicloud evaluation

Get multicloud architect certification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