Enterprise Landing Zone: Colombia Customer Stories

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fmorenod81/devopscustomerstories2023 (github.com)

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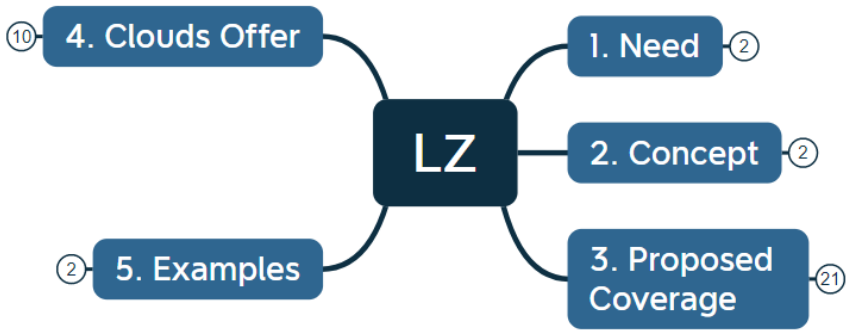
Agenda

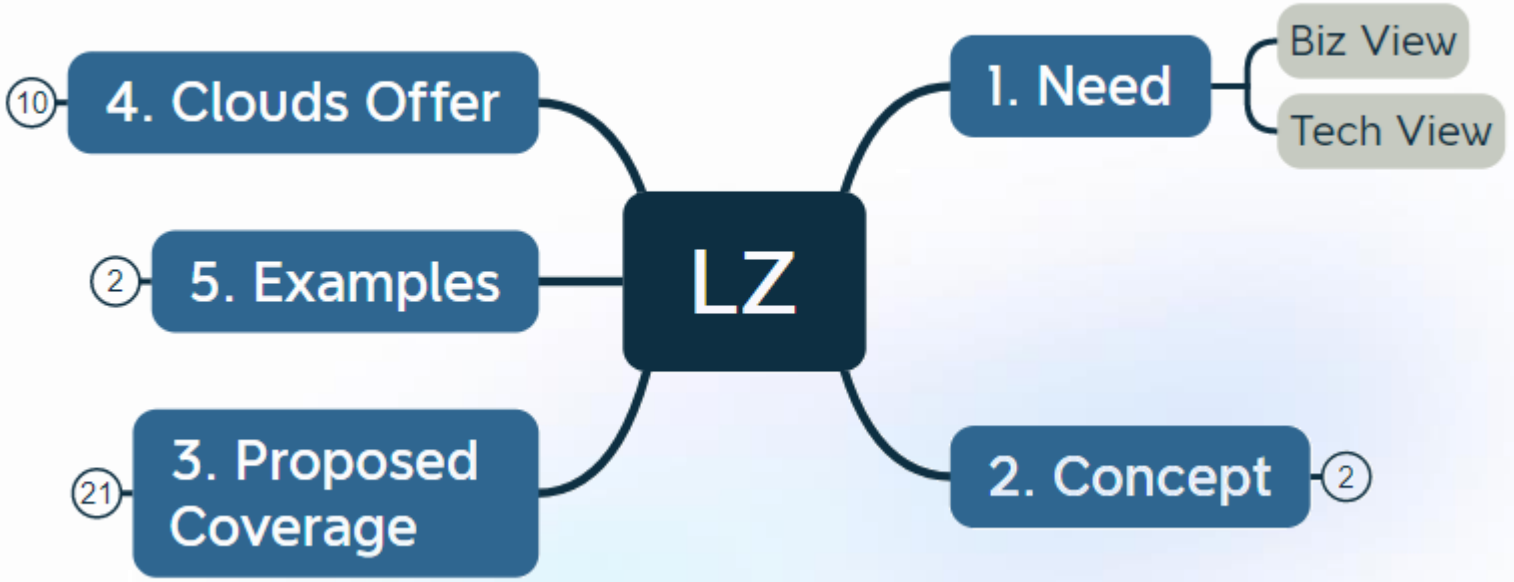


11:10 – 11:12	Need of a Landing Zone (LZ)
11:12 – 11:14	Concept
11:15 – 11:20	Proposed Coverage
11:25 – 11:35	Clouds Offer: AWS and Oracle Cloud
11:35 – 11:50	Colombia Cases: Telco and Banking Holding
11:50 – 11:55	Q&A

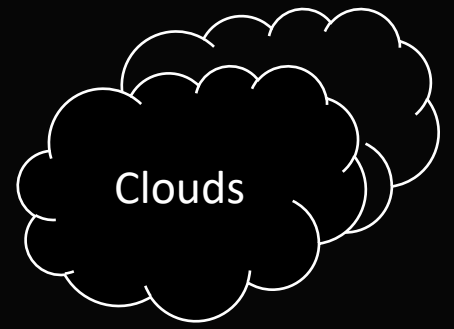
01

Need

Viewpoints involved

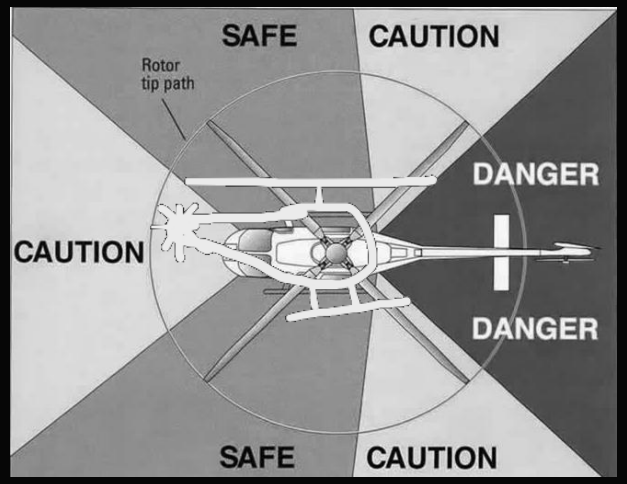


Viewpoints



Business View

Landing Zone (LZ)



Technology View

LZ: Template for migrating or creating cloud resources fulfilling company' requirements

SCOPE

Business View

Current status

Enabler:

Improvement?

Policies

Procedures

- The Landing Zone will show current organization structure: People, procedures, compliance standards, artifacts >> Company, Areas, Teams, Squads, Roles
- Business approved additional efforts to modify only if it add value or simplify operation.

Escalation Matrix

Networking Services

Issue: Customer can not export files to the desired format.

	Role	Time	Response	Escalation
Level 1	Customer Support Representative	10-15 min	• Live support to solve the problem	• Unable to resolve • Request to speak to manager
Level 2	Customer Support Manager	15-60 min	• Live support with support team working on resolution • Get customer details for ticket logging and follow-up	• Unable to resolve • Need skills beyond support team capabilities
Level 3	Account Manager	1-2 hours	• Review issue • Assign immediate task delegation • Attempt resolution • Document issue and attempted hot fixes in detail	• Unable to resolve • Customer threatens to leave • Customer threatens bad review
Level 4	Product Manager	Half a business day	• Review issue • Offer incentives to customer • Document conversation	• Unable to resolve • Customer requests to speak to higher level management • Customer initiates process of closing account
Level 5	Director of Product	1-2 business days	• Review issue • Apologize to customer and ensure their issue is not taken lightly • Request and document feedback • Determine if any immediate resolution is possible regarding customer account status	• Customer proceeds with closing account • Alternative to keep account is agreed upon
Level 6	Stakeholder	1-3 business days	• Review issue • Apologize to customer • Formulate improvements to product that directly prevents the issue from arising again • Finalize account cancellation • Create a timeline to keep customer in the loop about future product upgrades	• Formal approval from senior management needed
Level 7	Senior Management	Immediate resolution	• Review issue • Sign off on course of • Consider hiring solve issu	

Example of a Procedure:

- Roles
- Permissions
- Period to call

SCOPE

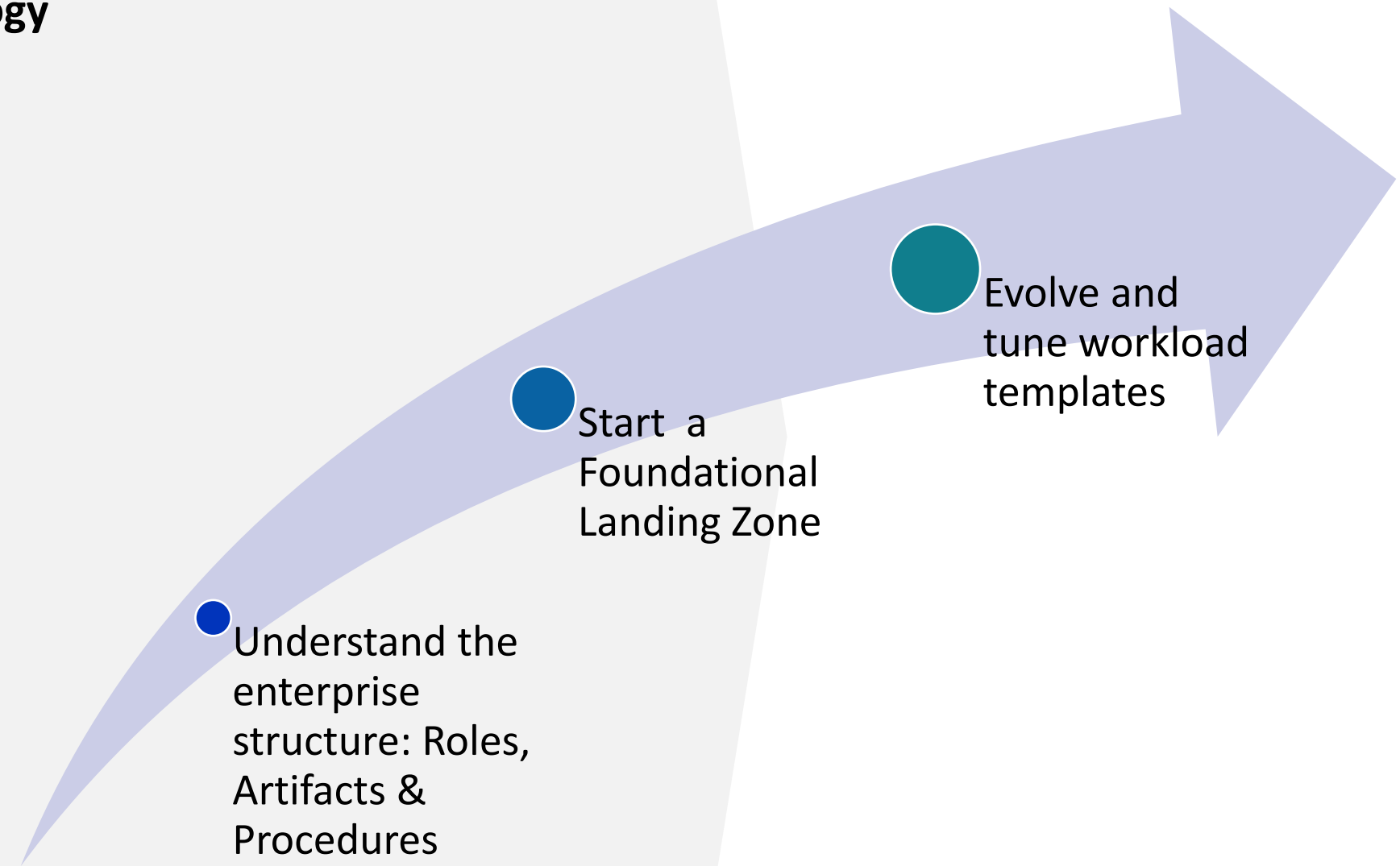
Technology View

Services Templates Best Practices

- CSP provides service and templates based on industry best practices.
- The Cloud Architect' mind has focus on experience on common projects, but he doesn't think in special cases (exceptions), therefore it is a difficult on the coverage.
- It points a simple operations on self-Service or automated toolset.

CONCEPT

Methodology



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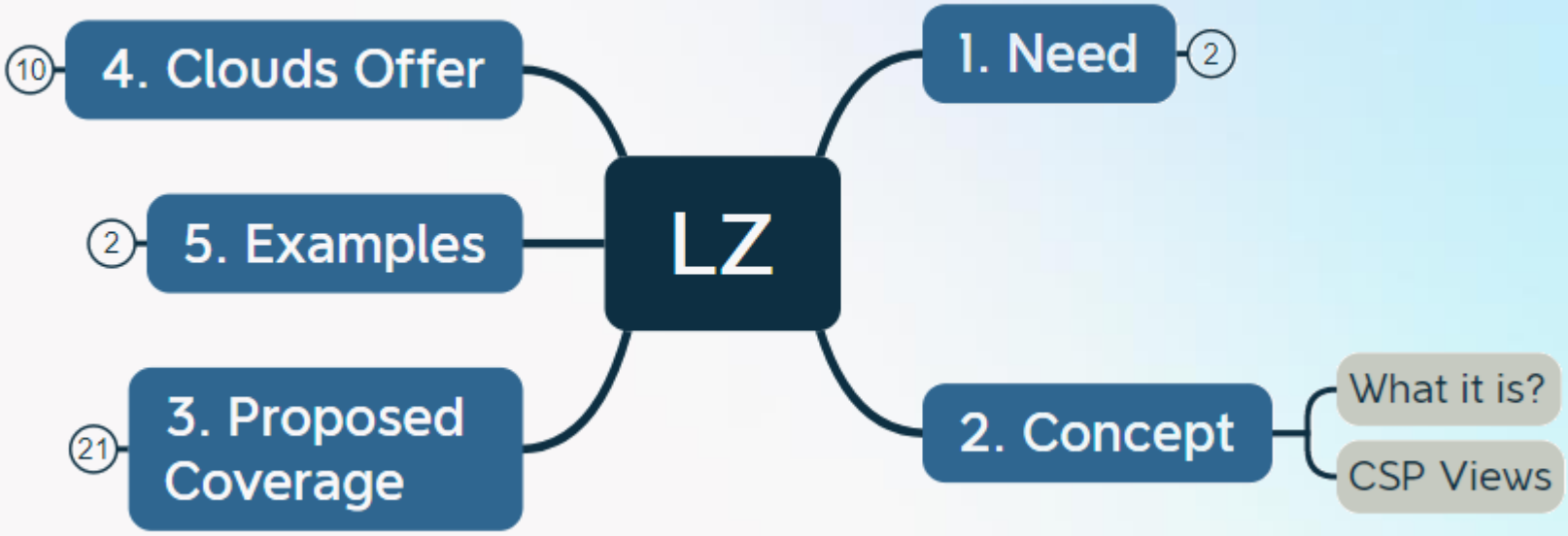
Concept

Define the scope



My own definition

Purpose-Built Cloud setup offering security, automation, controlled and scalable resources, and architectural framework at enterprise level.

a well-architected, multi-account AWS environment that is scalable and secure.

is a secured, deployment-ready cloud environment.

(…) provides baseline architecture and best practices for you to deploy new projects and workloads quickly and securely in OCI

is an environment that follows key design principles across eight design areas. These design principles accommodate all application portfolios and enable application migration, modernization, and innovation at scale.

(..) help your enterprise deploy, use, and scale Google Cloud services more securely. (…) are dynamic and grow as your enterprise adopts more cloud-based workloads over time.

Principles on a framework (CAF*)

Enterprise: Wide, Reliable

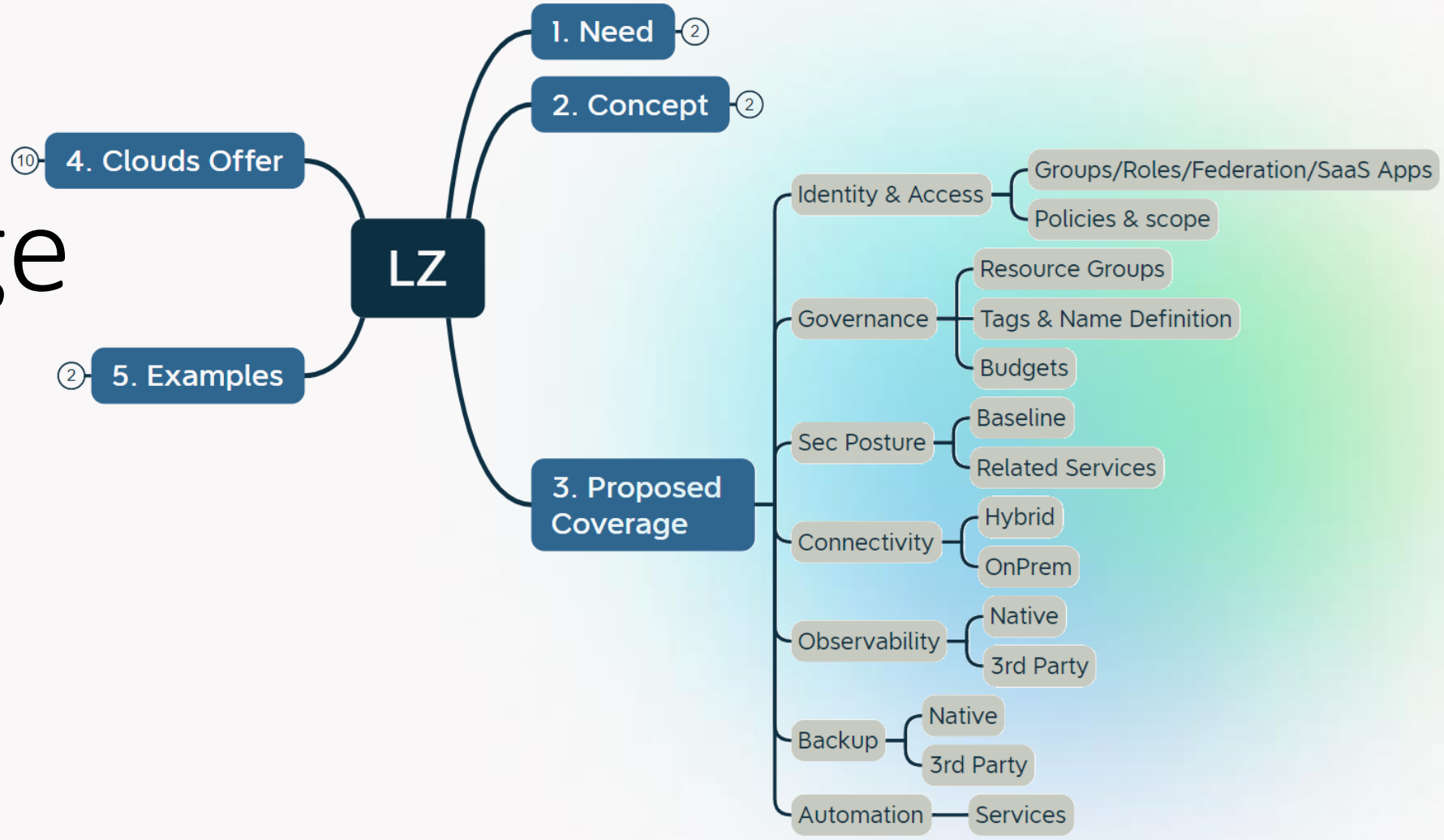
Quick/Scalable: Availability

Secure: Compliance & DR

03

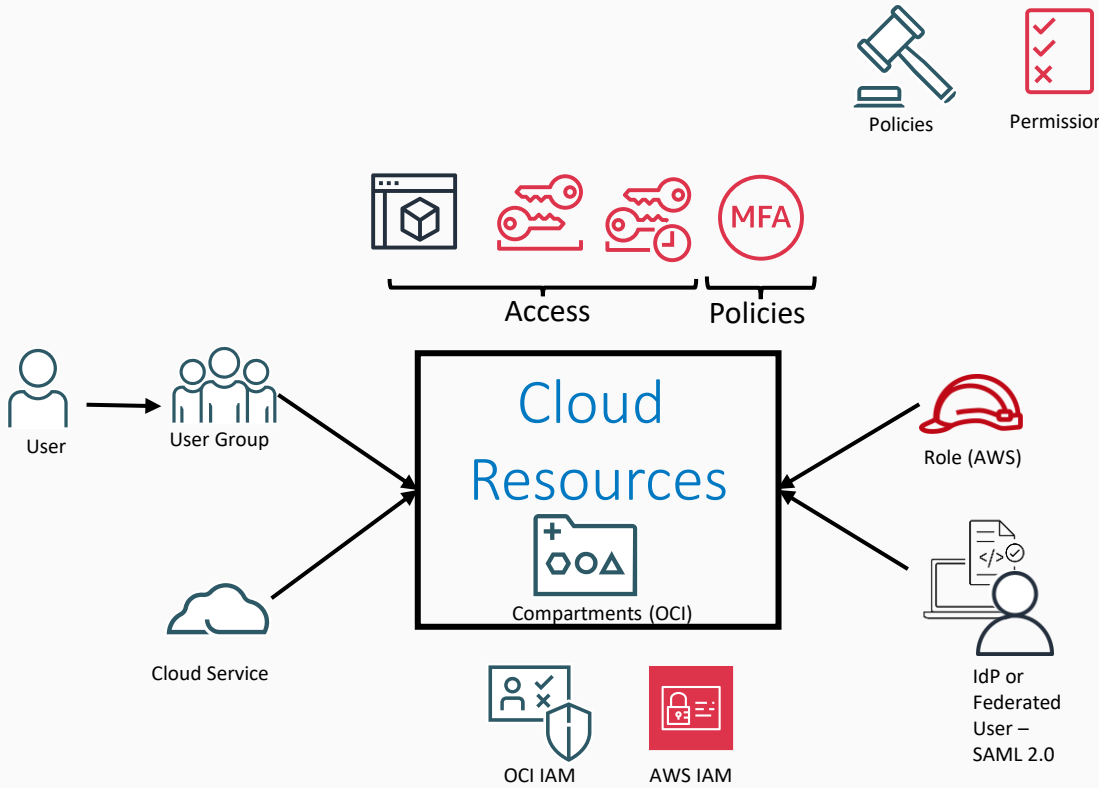
Coverage

Areas to cover



Identity & Access

IAM:
AutN & AutZ



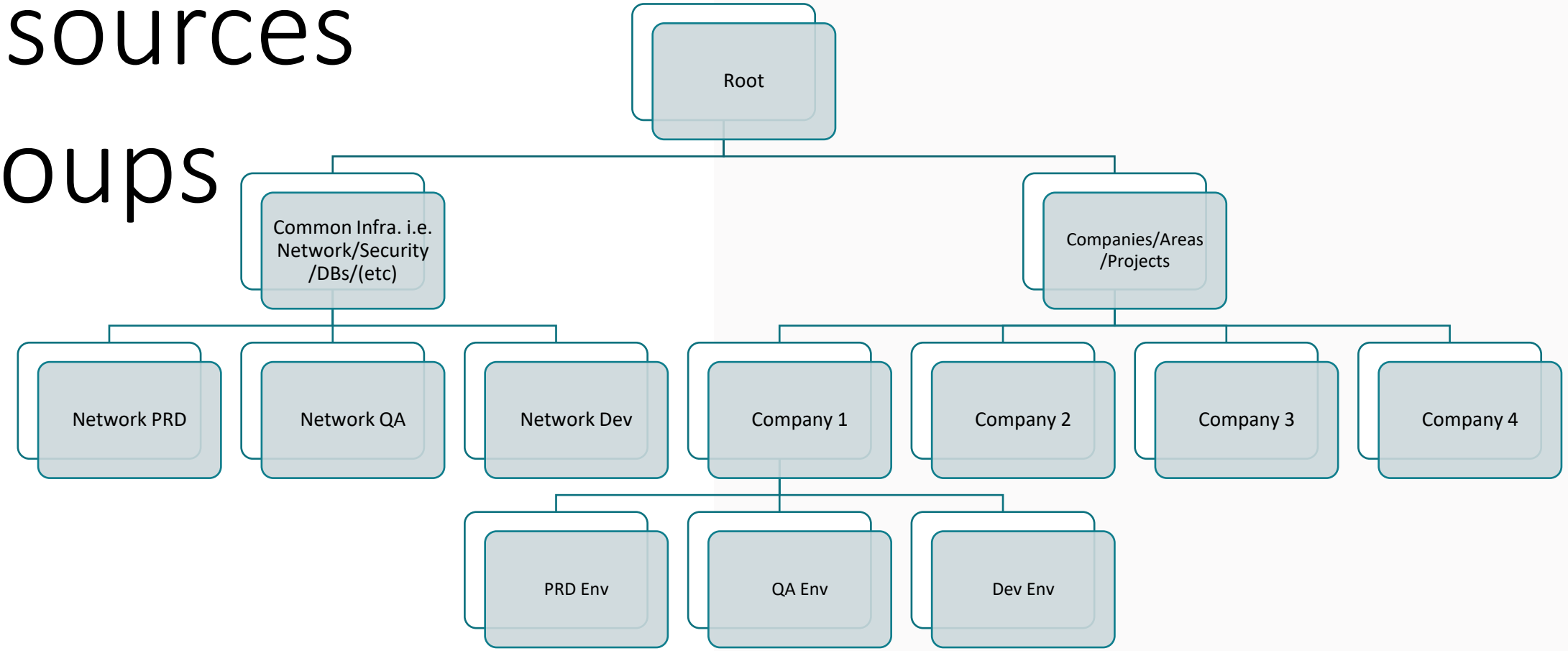
- Cloud Resources
- Principals/Entities: Identity Domains (OCI) and Federation.
- Policies and Access of Principals
- Relation between both: Permissions

Governance

Reflects org chart of the company based on companies, areas and they match on Role-based Policies.

Usually common/transversal services are separated: networking, databases, security, etc.

Resources Groups



Identity & Access

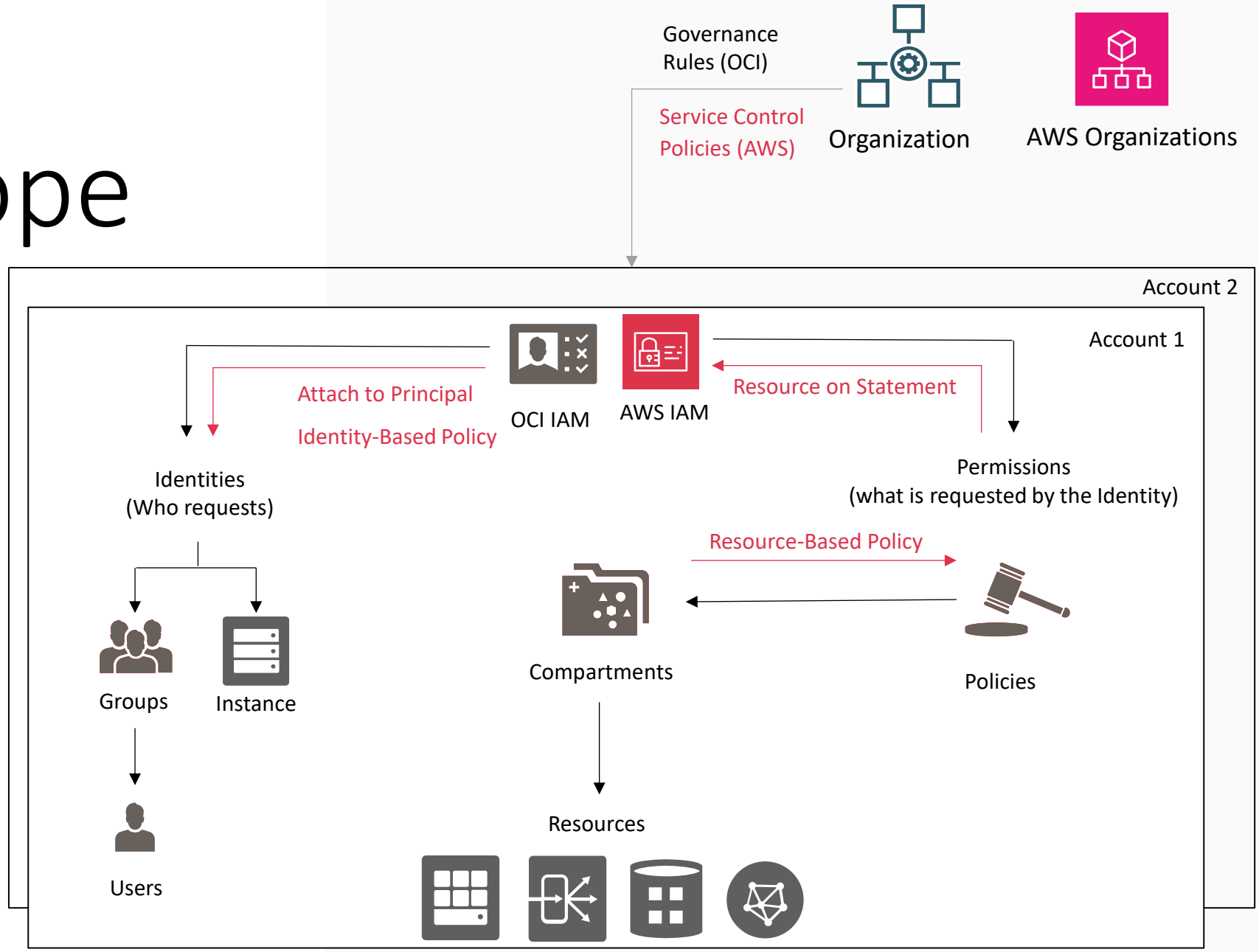
Policies Scope

Account Policies:

- Identity-Based Policies
- Resource-Based Policies (AWS)
- Permission Boundary (AWS)

Multiaccount Policies:

- Service Control Policies (AWS)
  Governance Rules (OCI)
- Resource-Based Policies (AWS)



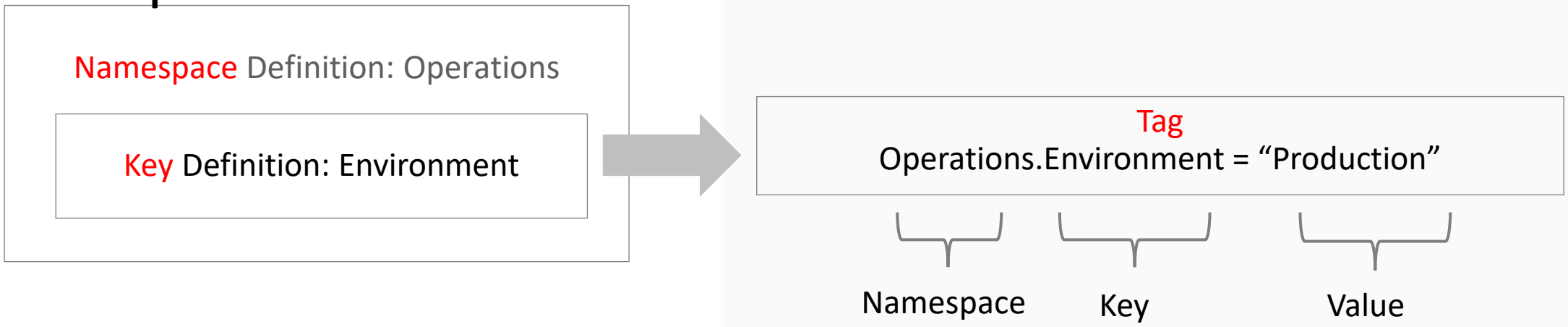
Governance

Tags

A Tag Namespace is a container for tag keys with tag key definitions

Tag key definition specifies its key (environment) and what types of values are allowed (string, number, text, date, enumerations, etc.)

Example:



Governance

Tags and Name Definition

Can extend to:

- Operations Control, i.e. In GCP, the tags are used for Firewall Rules.
- Country: CO, EC, US, AU → 2 letters, opt.
- Cloud Region: us-east-1 → 3 letters: ASH or E01
- Resource Group: SHS, NET, SEC, WKL → 3 letters
- Serial Number: By Project or Scaling Group
- Environment: 7 env → 3 letters: DEV, QAT, UAT, PRD
- Services: End → OBJ, ADB, LB, INS

- **Security**
  - Exposition
    - *Public – Private*
  - Impact
    - *Critical – Non-critical*
- **Usage**
  - Environment
    - *Dev –Test - Prd*
  - Application
    - *App1, App2*
- **Cost**
  - Cost Center
    - *40001, 40002*
  - Running
    - *7X24, 8X5, 5X12*

Server: ASHWKL###DEVINS001

Governance

Budgets

Its means Cost control or Cost Explorer.

A tag model can provide reports in near-real-time.

A Proof-of-Concept and Sandbox budget s can be useful on startups or Dev Areas.


AWS Budgets


AWS Cost & Usage Report


AWS Cost Explorer


Monitoring


Alarms


Tagging


Cloud Advisor

Security Posture

Audit

Auditing

AWS CloudTrail

CloudTrail Lake

Any API calls (any source) are logged and made available to customers.

API for listing audit events: Unique ID for principal, involved cloud resource, status change, timestamp and parameters (request/ response).

New events available in short time (i.e., 15 mins in OCI)

X days of history by default and configurable retention period (i.e., 90 days on OCI and up to 1 year)

Coverage for all regions using **centralized repository** (i.e., AWS)

Searchable via the Console or using another tools (AWS CloudTrail Lake)

COVERAGE

Security Posture

Baseline

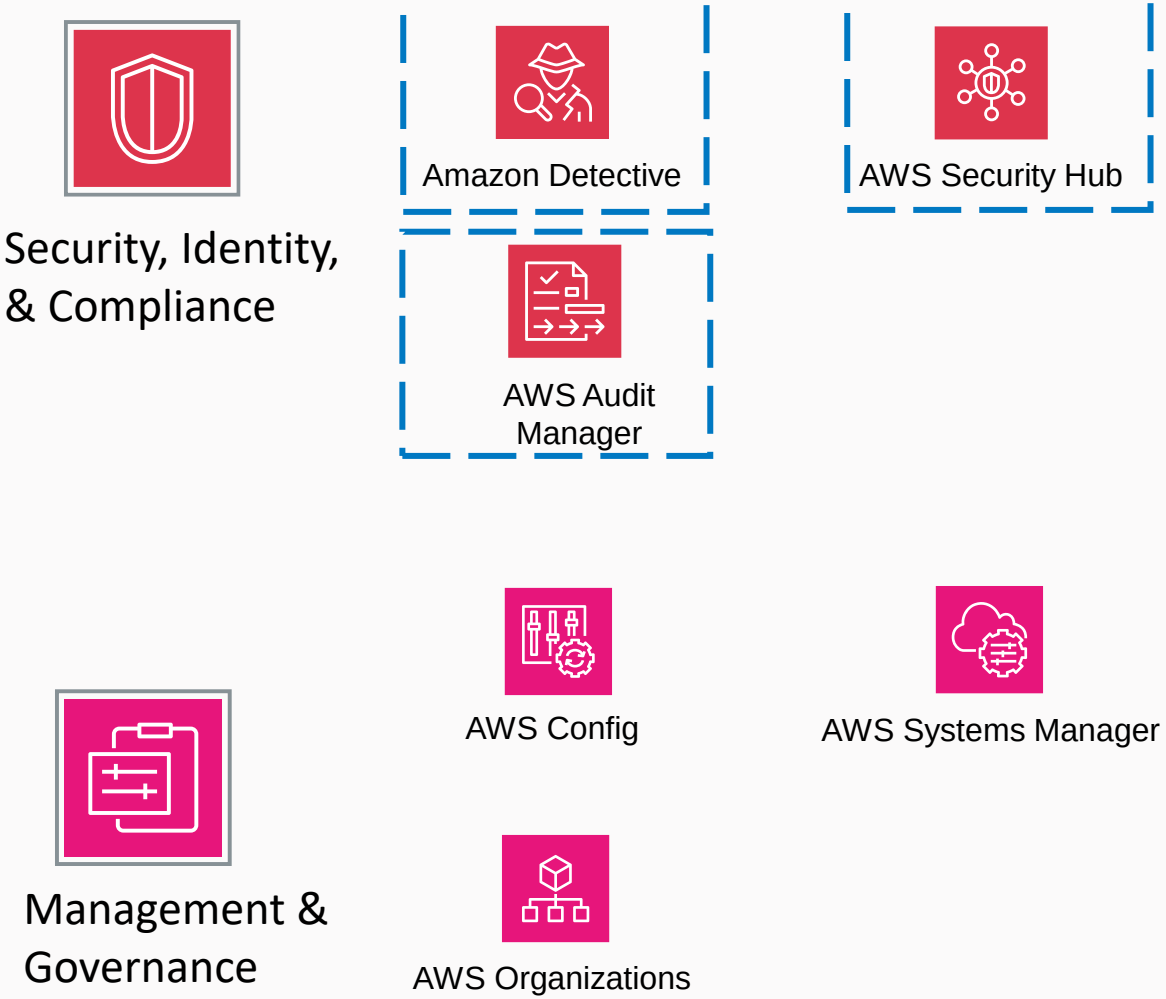
Identity & Security

CSP Focus on Security

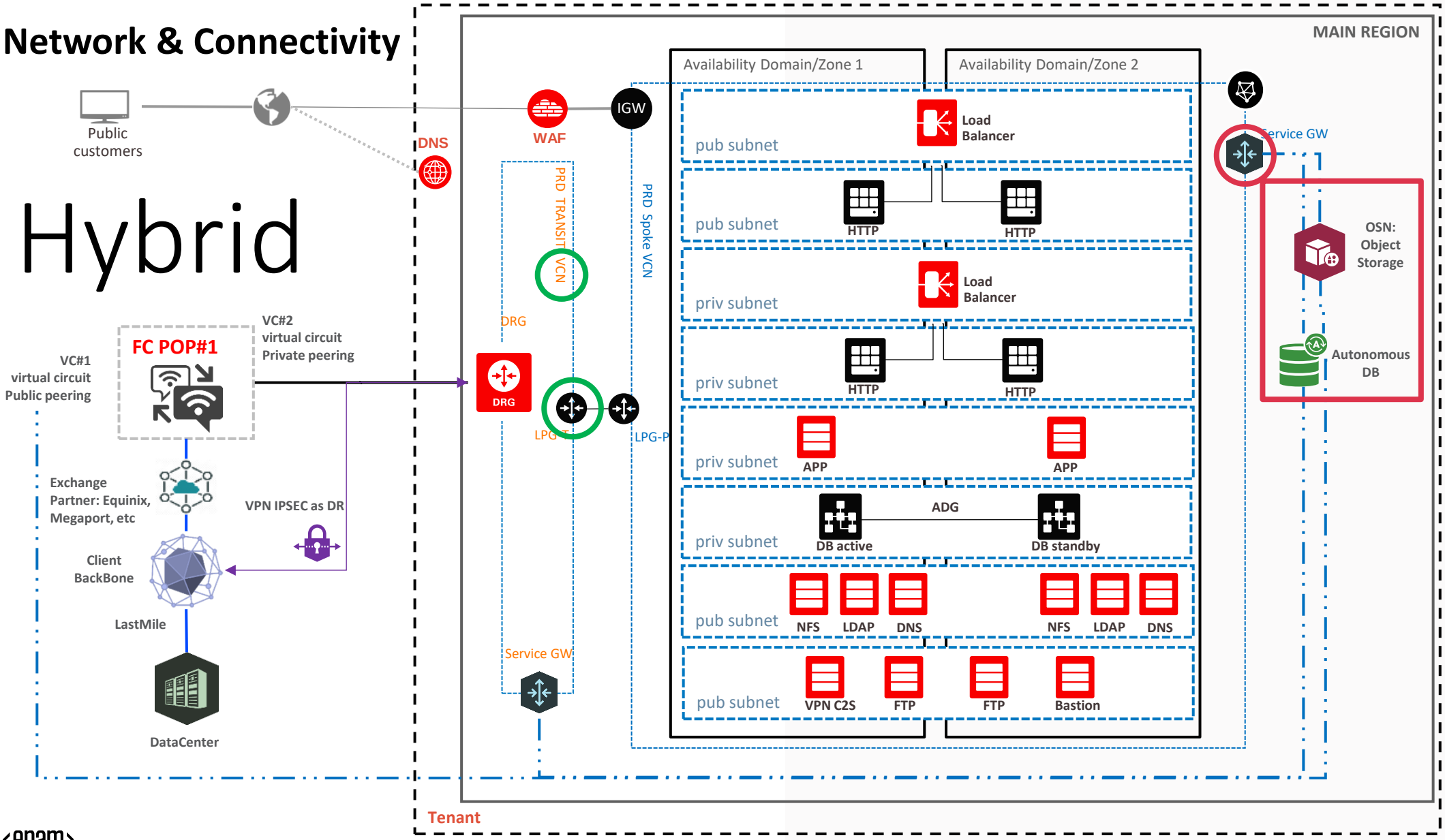
Several Layers for networking, development lifecycle, security posture, etc.

Centralized Repository on an account for logging

Category	Service	OCI	Info	AWS
Security	Risk and Compliance Management	- OCI **Cloud Guard** Free	Service to assess risk and compliance with regulations and industry standards based on resource usage.	- AWS Audit Manager
Security	Security Monitoring, Assessment, and Advice	- Access Governance - **Cloud Guard** Free - Security Advisor	Managed service to monitor, identify, achieve, and maintain a strong security posture. Service examines resources for security weaknesses and operators and users for risky activities. Service	- Amazon Security Lake - Amazon Detective - AWS Security Hub



Network & Connectivity



Summary of Hub&Spoke:

- Edge Svcs
- 2 OnPrem Dedicated circuits: Private & Public
- DR for OnPrem Connectivity.
- Net Peering, i.e. Prod Env Transit VCN, and cascade for more env; or common VCN and/or DR.
- HA on 2/3 Availability Domains

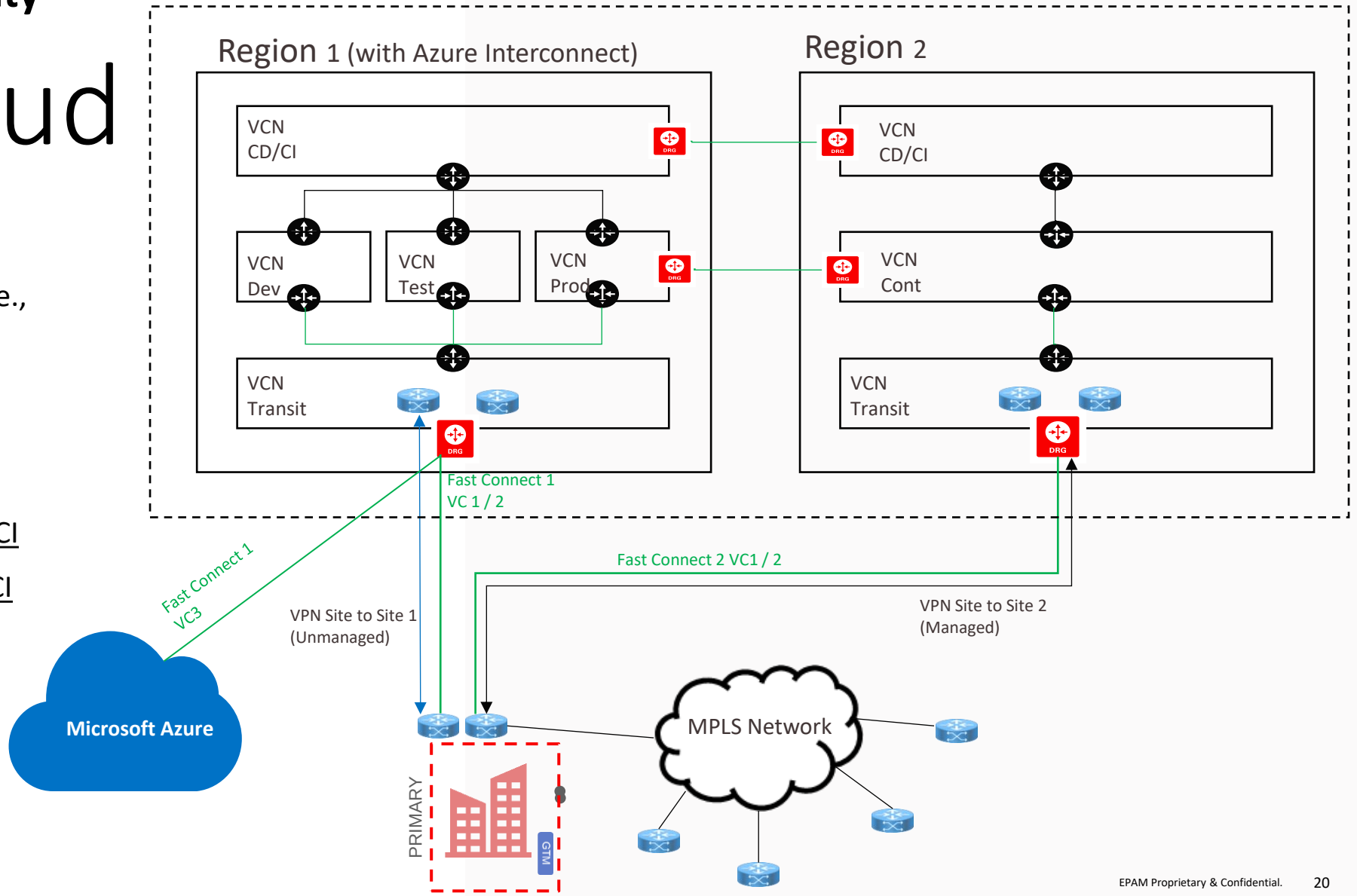
Network & Connectivity

Multicloud

Options:

- Native Services for Comms, i.e., Azure Interconnect
- IPSec VPN over Internet
- IPSec VPN over Dedicated Connections (No Native), i.e. Megaport between AWS & OCI

and Equinix between AWS & OCI



Observability

Native & 3rd Party

Amazon CloudWatch

AWS X-Ray

Amazon Managed Grafana

Amazon Managed Service for Prometheus

Native

Collection (fluentd or special agent/distro),

Aggregation (Prometheus and OpenSearch),

Visualization (Grafana and OpenSearch)

3rd Party

Standard Formats: i.e. JSON & OpenTelemetry

External Communications to 3rd Party (i.e. Splunk):

AWS

Cloudwatch Metrics Stream, Kinesis and/or Lambda.

OCI

OCI Service Connector Hub, OCI Streams

Application Performance Monitoring

Logging

Search

Monitoring

Logging Analytics

Backup

Native & 3rd Party

Native

Usually, CSP started with many tools specific to storage: snapshots for EBS/BV, rsync on EFS, replication and cloning for DB, etc.

There are another interesting actions: Cloning and Replication.

3rd Party:

Virtual Machine from the Marketplace and access to infrastructure: agent and agentless, i.e. Commvault.

Backup/
Restore

Block
Storage
Cloning

File
Storage
Snapshots

AWS Backup

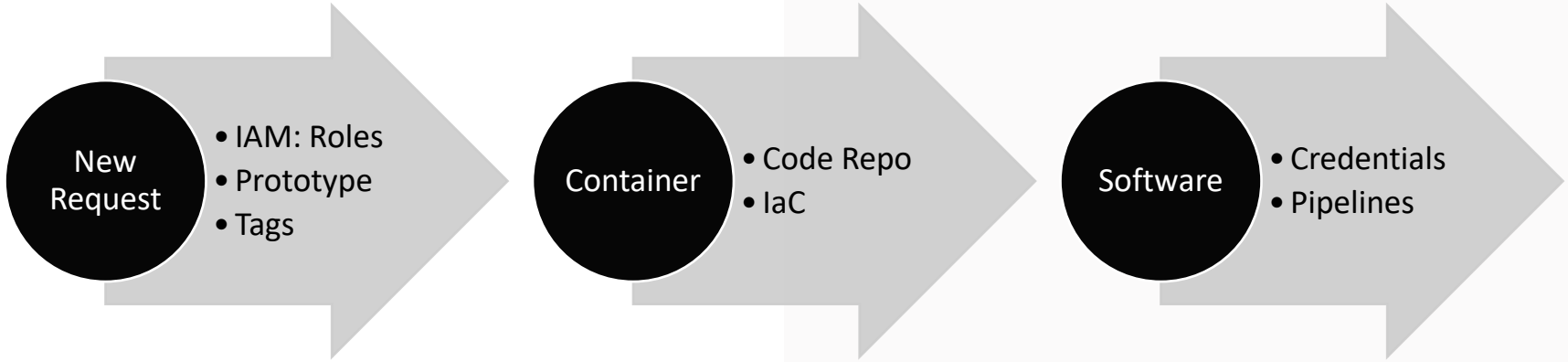
Automation

Pipelines

Self-Service Portal for New workloads.

Customized Modules for IaC (Terraform, CloudFormation, CDK, Pulumi).

Customized Pipelines using Native Services (AWS Code Suite, OCI DevOps Services), Open Source (Jenkins) and Commercial Solutions (i.e. Github Actions, CircleCI, etc).



04

Cloud Offers

CSP Approach

CLOUD OFFERS

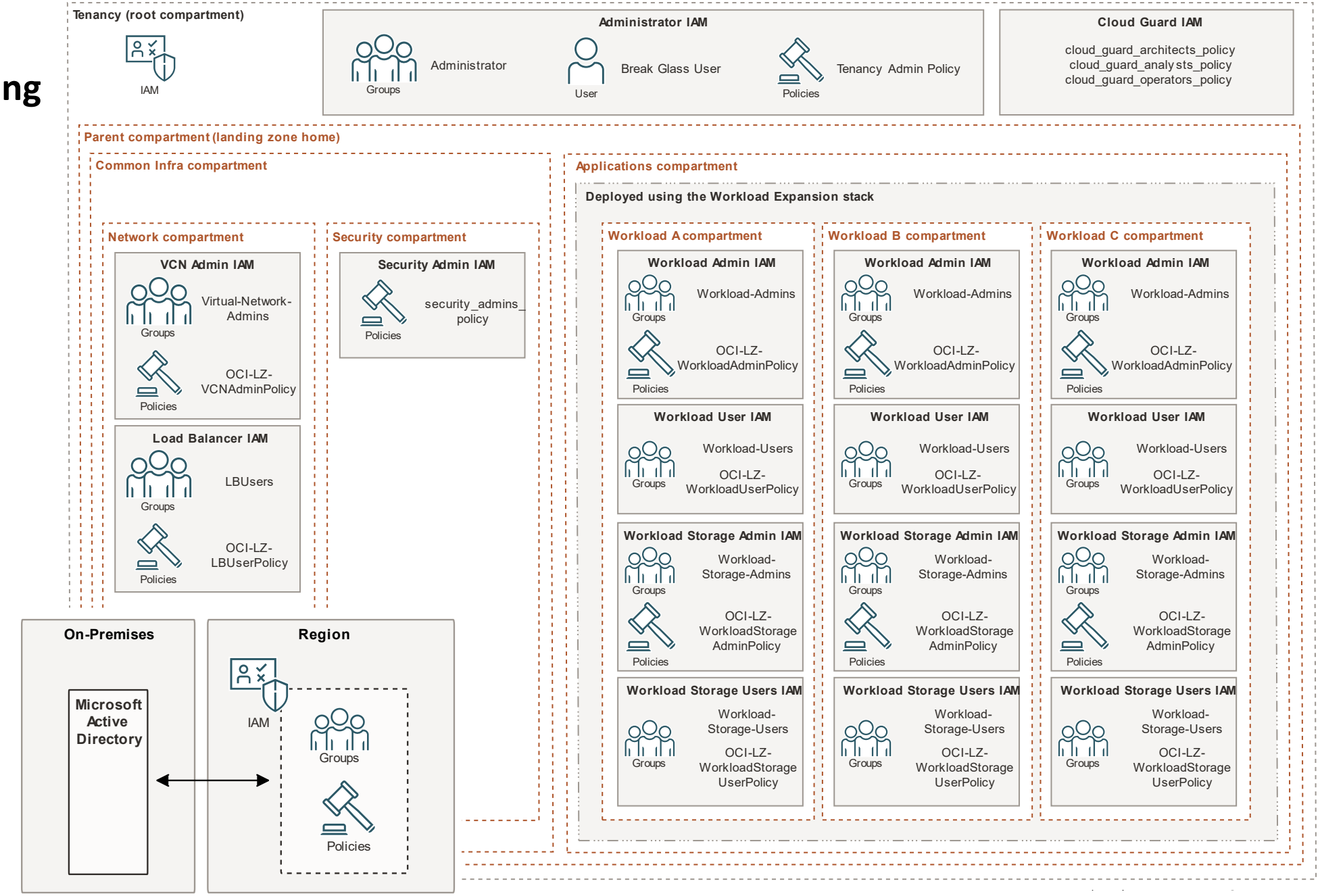
Oracle Enterprise Landing Zone v1 – IAM

2 Terraform Templates:

- Baseline LZ (Core Infrastructure Components)
- Workload Expansion

For Authentication:

- IAM Groups and Policies
- Federated with MS Active Directory (Optional)
- Break-Glass Users (Recommended)

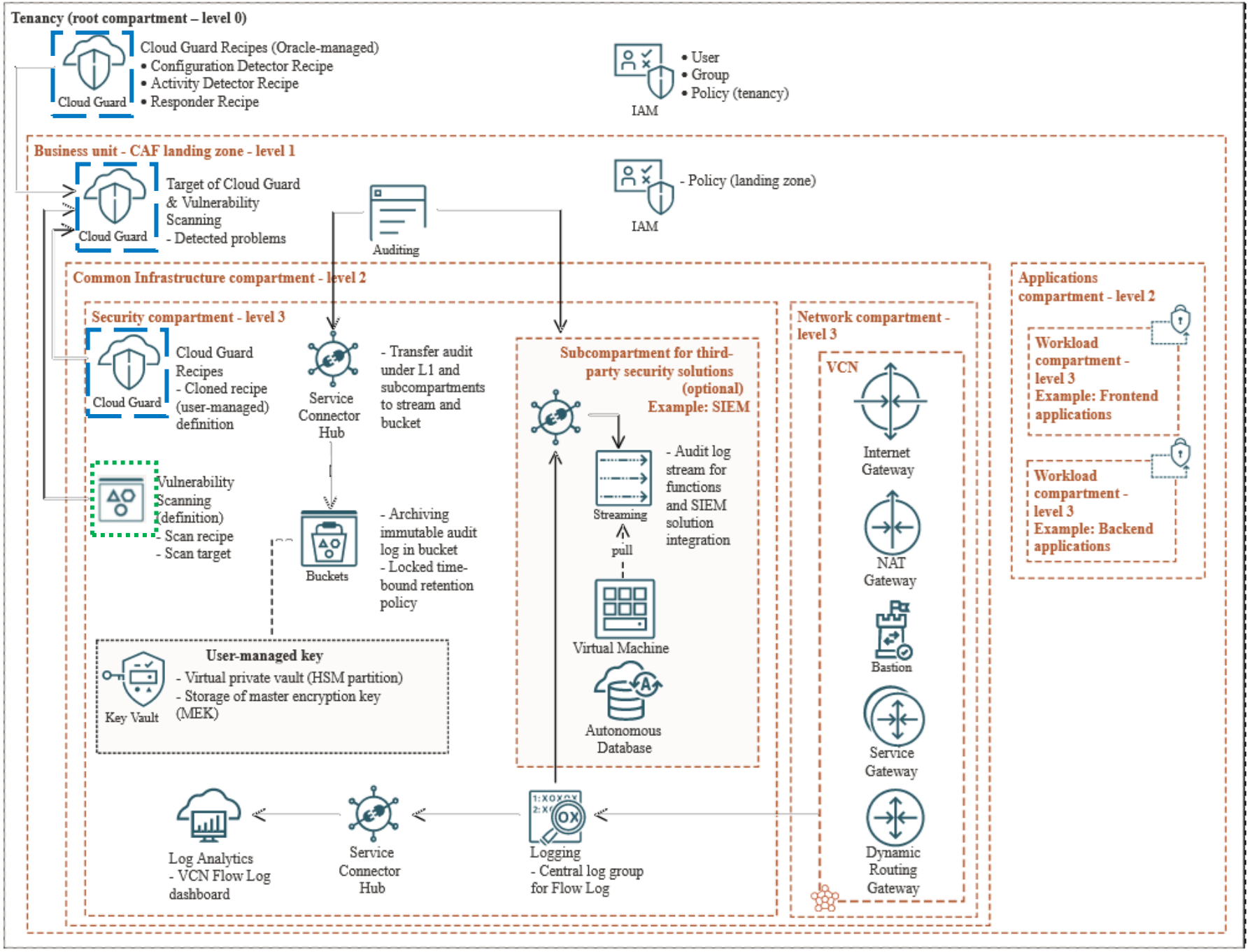


CLOUD OFFERS

Oracle Enterprise Landing Zone v1 – Security Posture

Take account of:

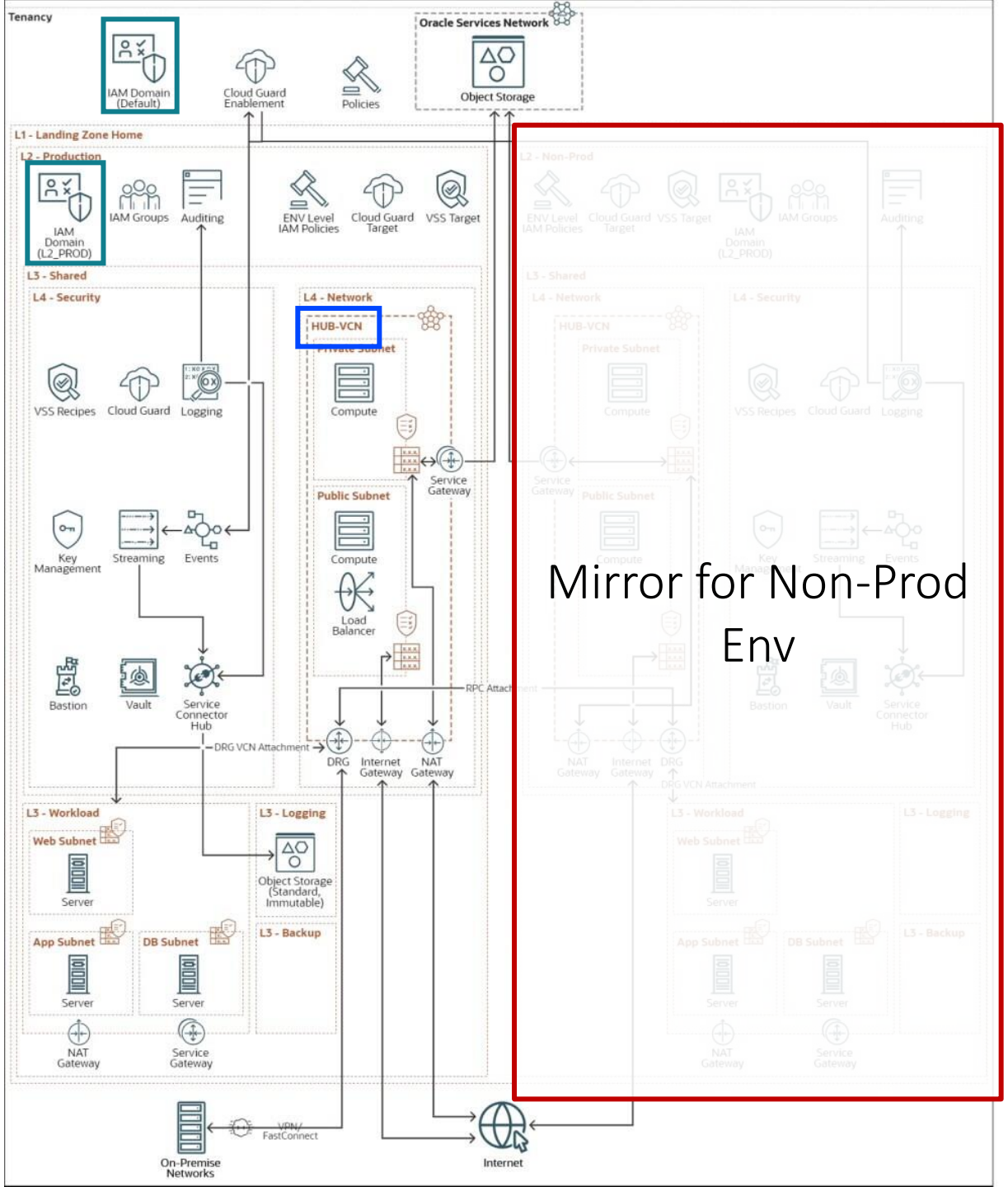
- Security Lists/Network Security Groups
- Routing Table for IGW, NAT GW and Service GW
- 2 subnets for Workloads: App & DB
- DRG: FastConnect or VPN
- Bastion Services to access to servers temporary.
- Centralized actions on Sec compartment: Cloud Guard, Audit, VCN Flow Logs, Archive with User-managed Key. Connector with Native and 3rd Party Services: Logs & SIEM.
- Cloud Guard.
- Vulnerability Scanning: Scan potentional vulnerabilities on agent & agent-less schemas: OVAL, NVD & CIS.



CLOUD OFFERS

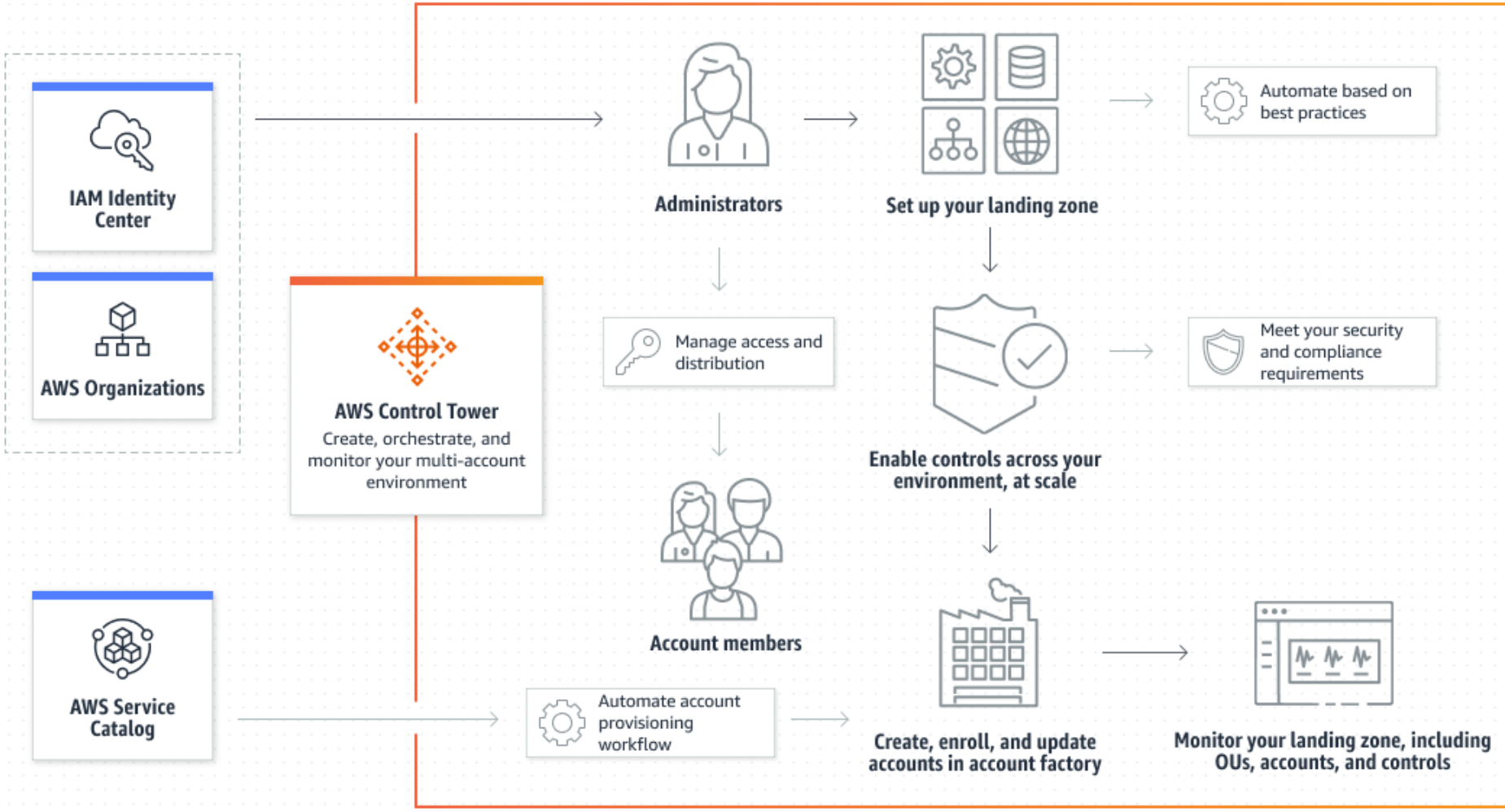
Oracle Enterprise Landing Zone v2

OELZ v2 Features and Services	Associated Service	Description
Multi-Environment	Compartments	Provides a new stack that offers compartment designs for Prod, Dev/Test/UAT. This allows customers to have isolated environments.
Hub & Spoke Networking	Networking	Allows users to segment their environment on a network layer by having one-to-many relationships between the hub and spoke networks.
Identity Domains	Identity, Compartments	Separates production and non-production environments on an Identity layer allowing customers to isolate different user personas.
CIS Benchmarks 1.2	Security	Is compliant with CIS Benchmark 1.2 Level 1.
Modular Design	All	Makes it easier to customize, deploy in modular chunks.



AWS Control Tower

- Extend options from AWS Organizations (for Multi-account environments). If there a previous accounts, you need to register on Control Tower.
- Integrate with AWS multiaccount services/procedures, i.e. Account Factory.
- Guardrails the deviation from security best practices.



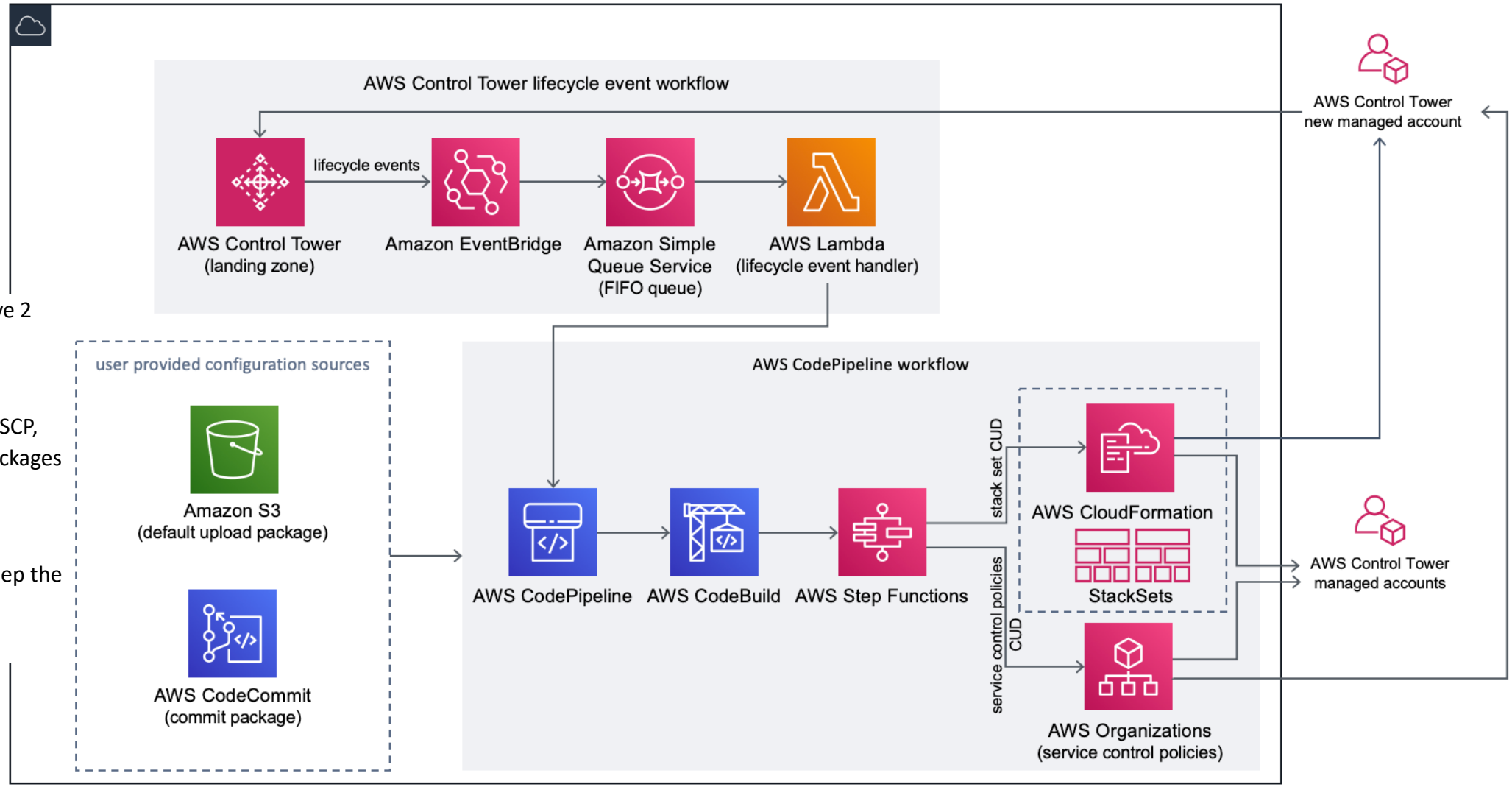
Customizations for AWS Control Tower

On AWS Solutions Library, you have 2 main customizations:

- Existing accounts to add it.
- Configuration sources: Update SCP, StackSets and Configuration Packages to the accounts on the LZ.

>>

AWS Codepipeline workflow to keep the policies running.

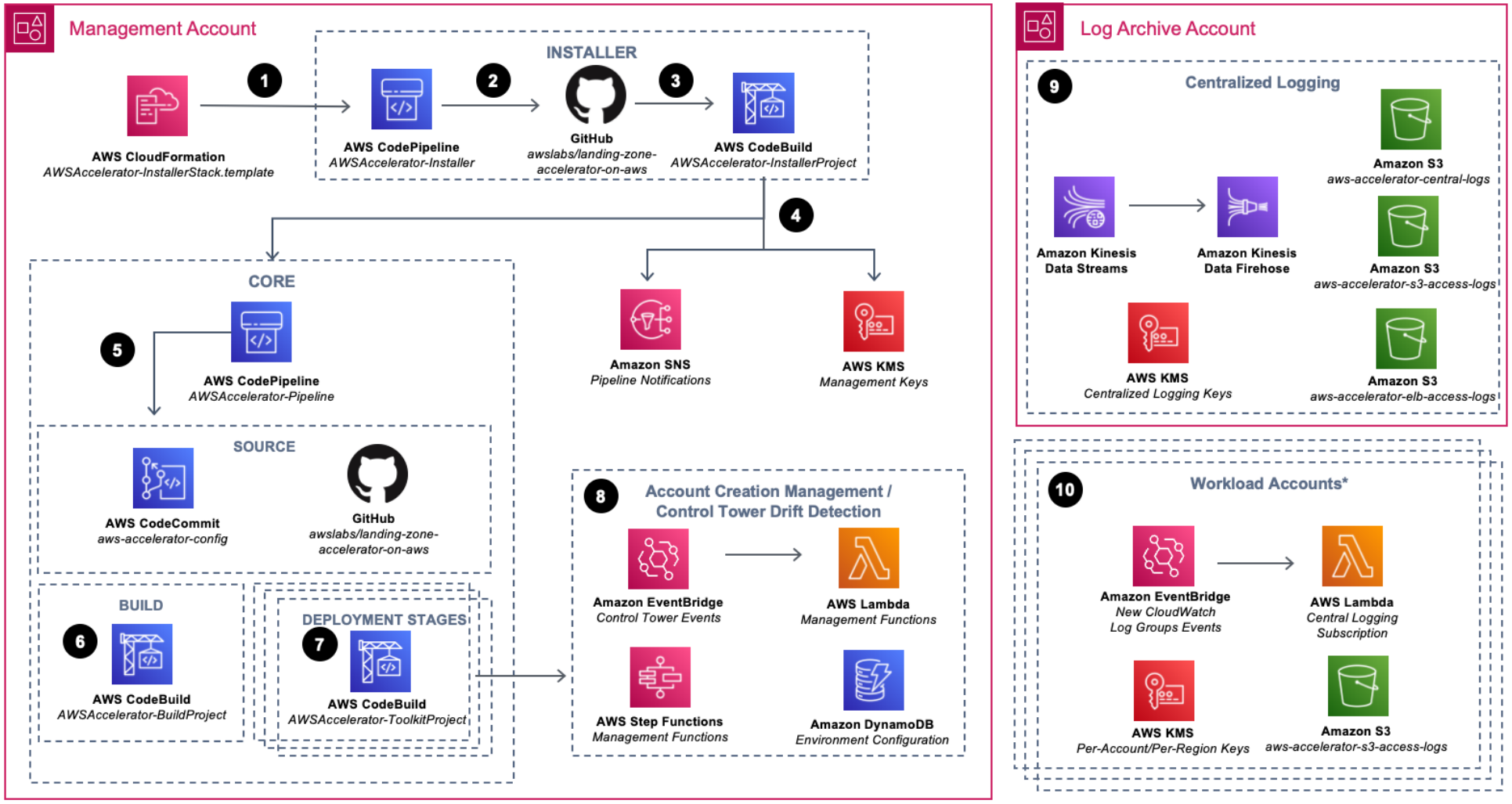


Landing Zone Accelerator

Cloud foundational (not strict compliant), with complements for industries: Aerospace, Education, Taxes, Healthcare, Elections and Other Gov. requirements.

Code created from CDK to CFmt

10 Steps so…..



* Additional resources not depicted are deployed based on configuration

Azure Interconnect Parternship

1. Technology integration

- Private interconnect with FastConnect and ExpressRoute
- Unified identity and access management

2. Application interoperability

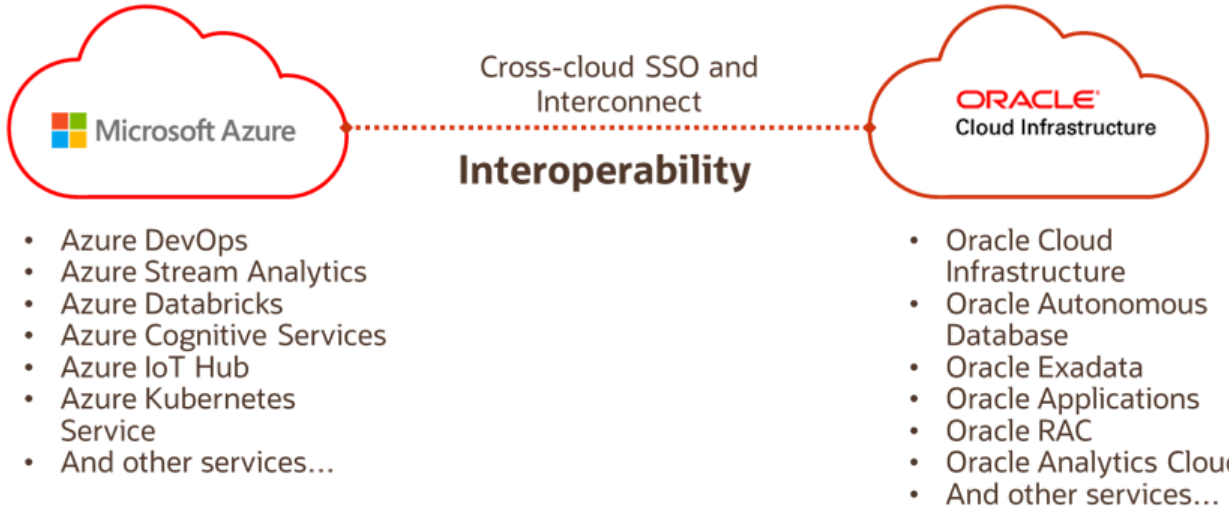
- Tested, validated, and supported application deployments
- Innovate across clouds
- Large choice of services
- Leverage existing investments: Maximize ROI for Licenses. No charge by traffic.

3. Collaborative support model

Joint, collaborative, standard support model

- Seamless issue resolution

Microsoft Azure + ORACLE



Azure Interconnect

FastConnect and ExpressRoute

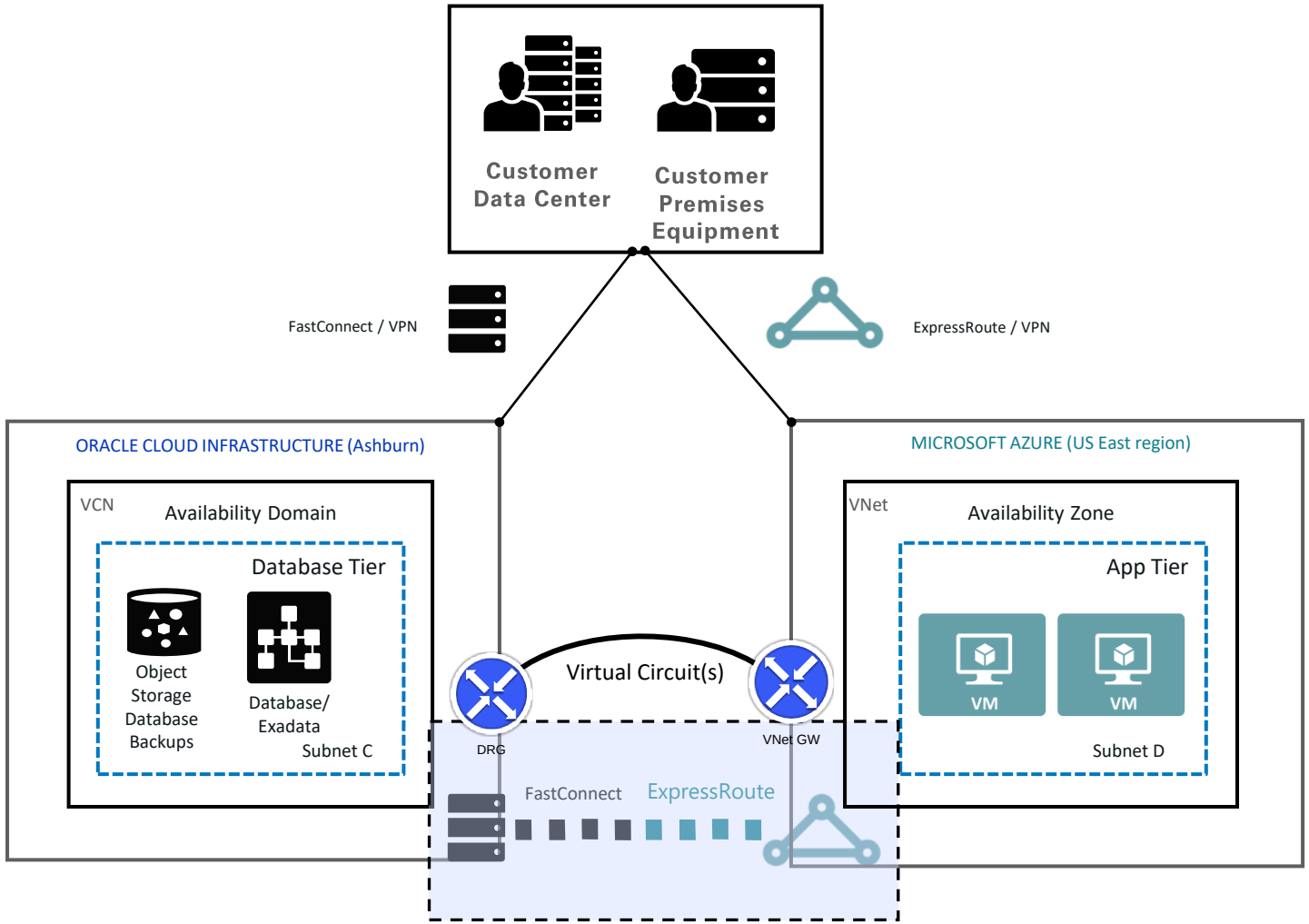
- No intermediate service provider required for setup
- No bandwidth charges in either direction

Performance and Security

- Lowest multi cloud latency
  - Average latency across interconnect: ~1.2ms to ~2.1ms*
- High bandwidth with a private connection

Simplified implementation

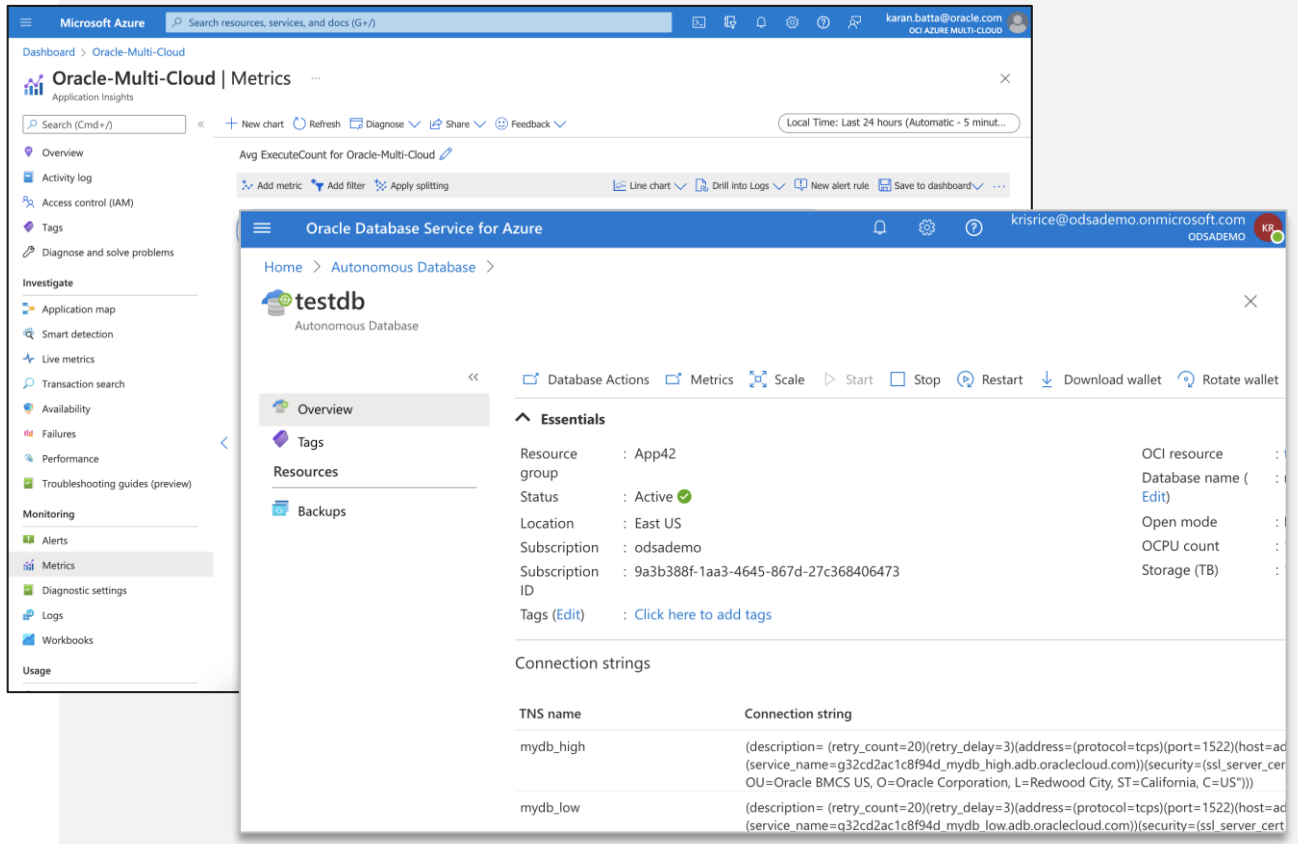
- Terraform scripts to automate provisioning and deployment



Note: Latency is a function of the service not a function of the interconnect

Introducing the Oracle Database Service for Azure (ODSA)

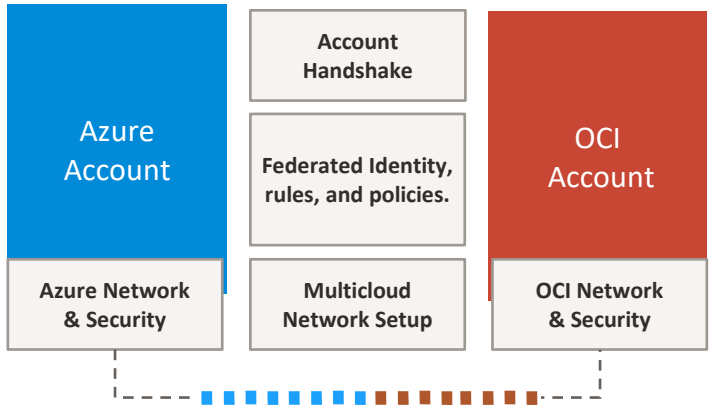
An Oracle managed service that enables customers to easily provision and manage Oracle databases running on OCI using an Azure-native API and console experience.



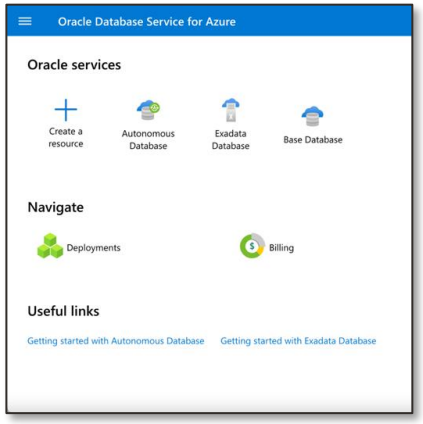
1. Connect Azure and OCI
2. Provision OCI databases
3. Use your OCI database like an Azure resource
4. OCI manages Azure-to-OCI networking

How does the ODSA work ?

1 Guided cloud to cloud setup and configuration

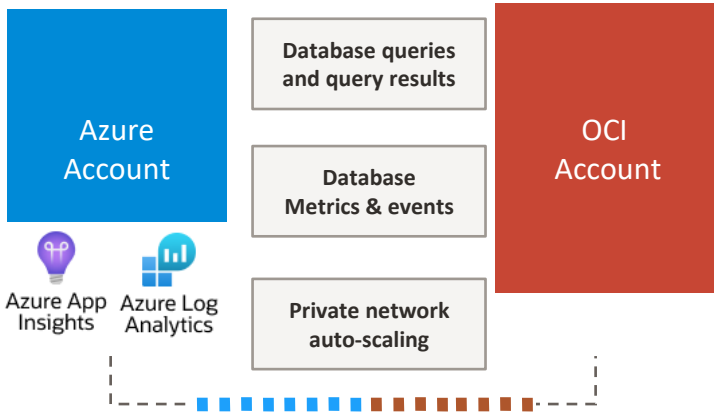


2 Provision and operate OCI Database services



- Configure
- Deploy
- Automated Backup
- Restore from backup
- Manual Backup
- License Management
- User roles and permissions
- Real Application Clusters (RAC)

3 Database access and managed connectivity



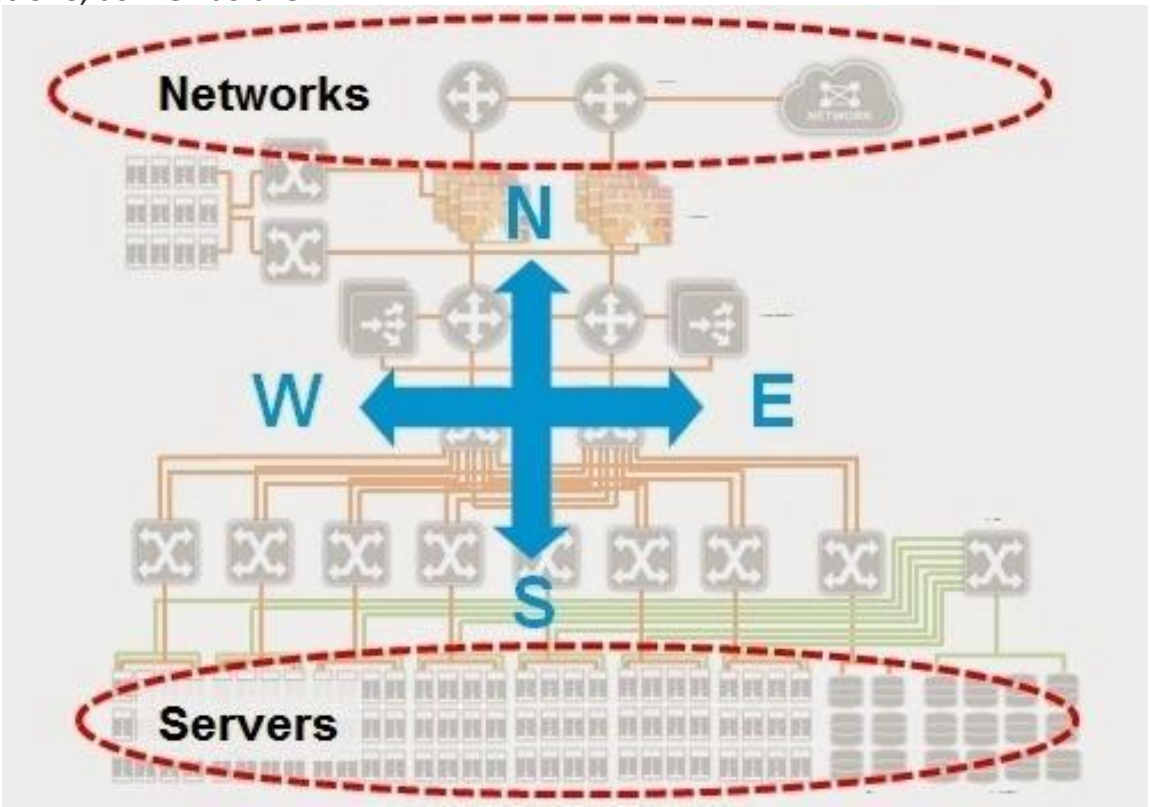
05

Examples

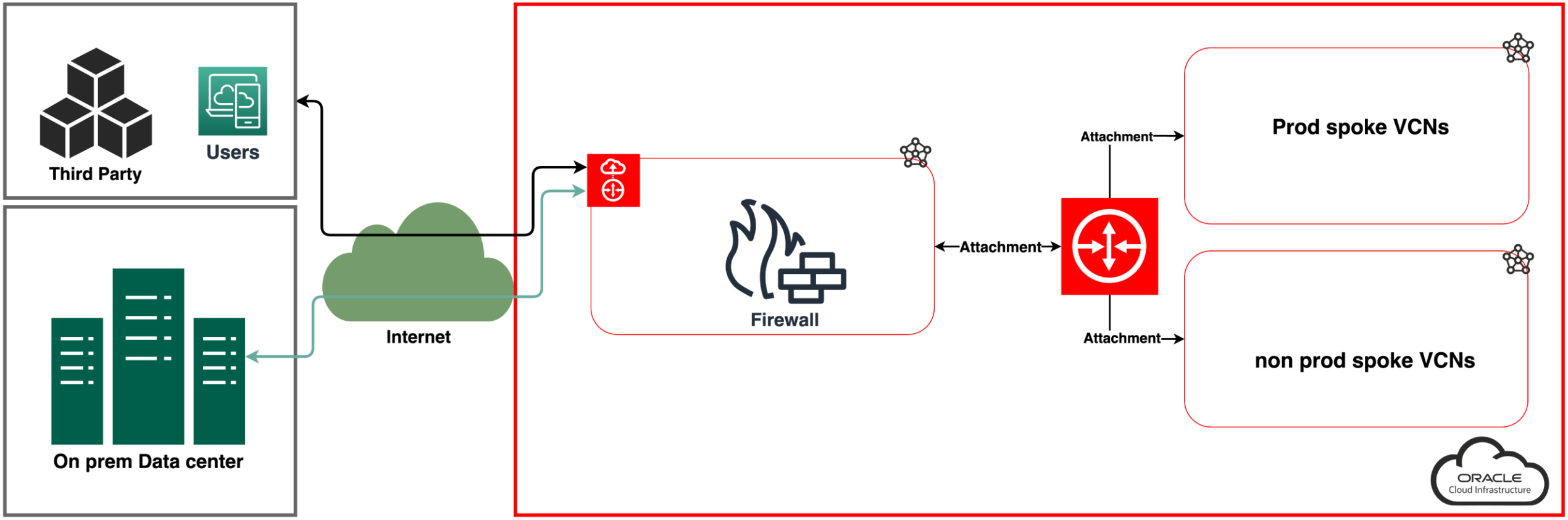
LZ Deployments in Colombia

Common functional and quality requirements.

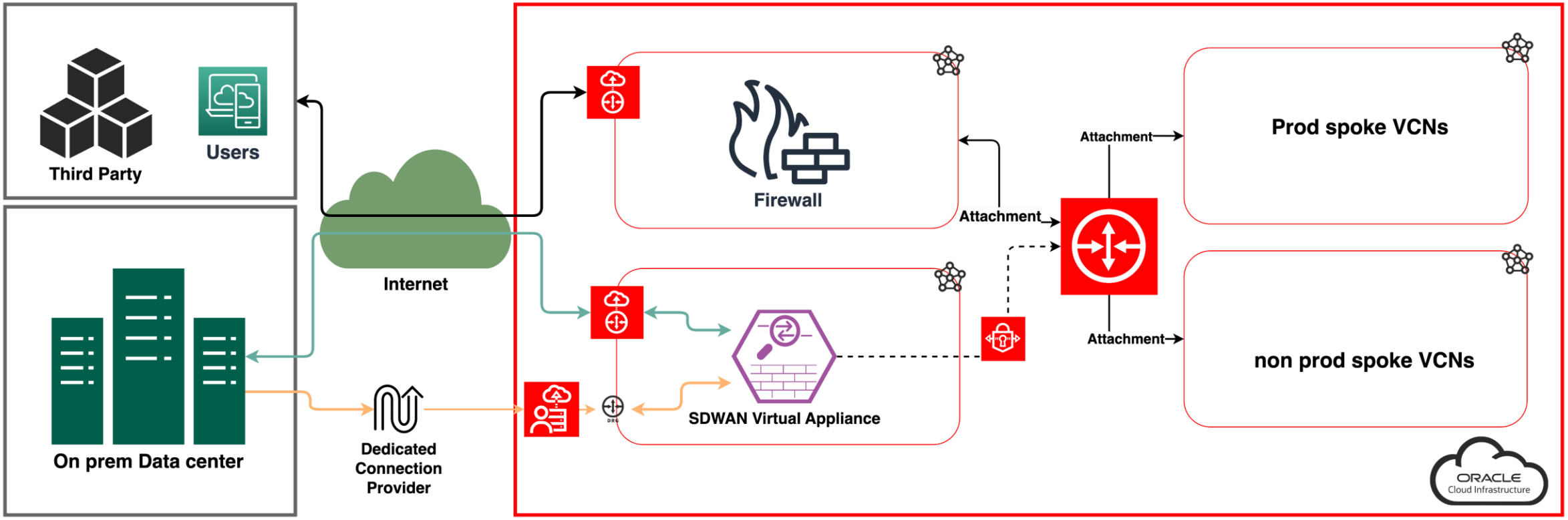
- A centralized firewall that inspects traffic in east-west and north-south directions.
- To separate the traffic of the production environments from the traffic of the non-productive environments.
- Enable high availability and/or redundancy schematics in the connections, as well as the implementation of traffic engineering policies.
- To centralize the management of users and groups.
- Centralize key and secret management
- Enable Monitoring, Vulnerability Scanners, Update management



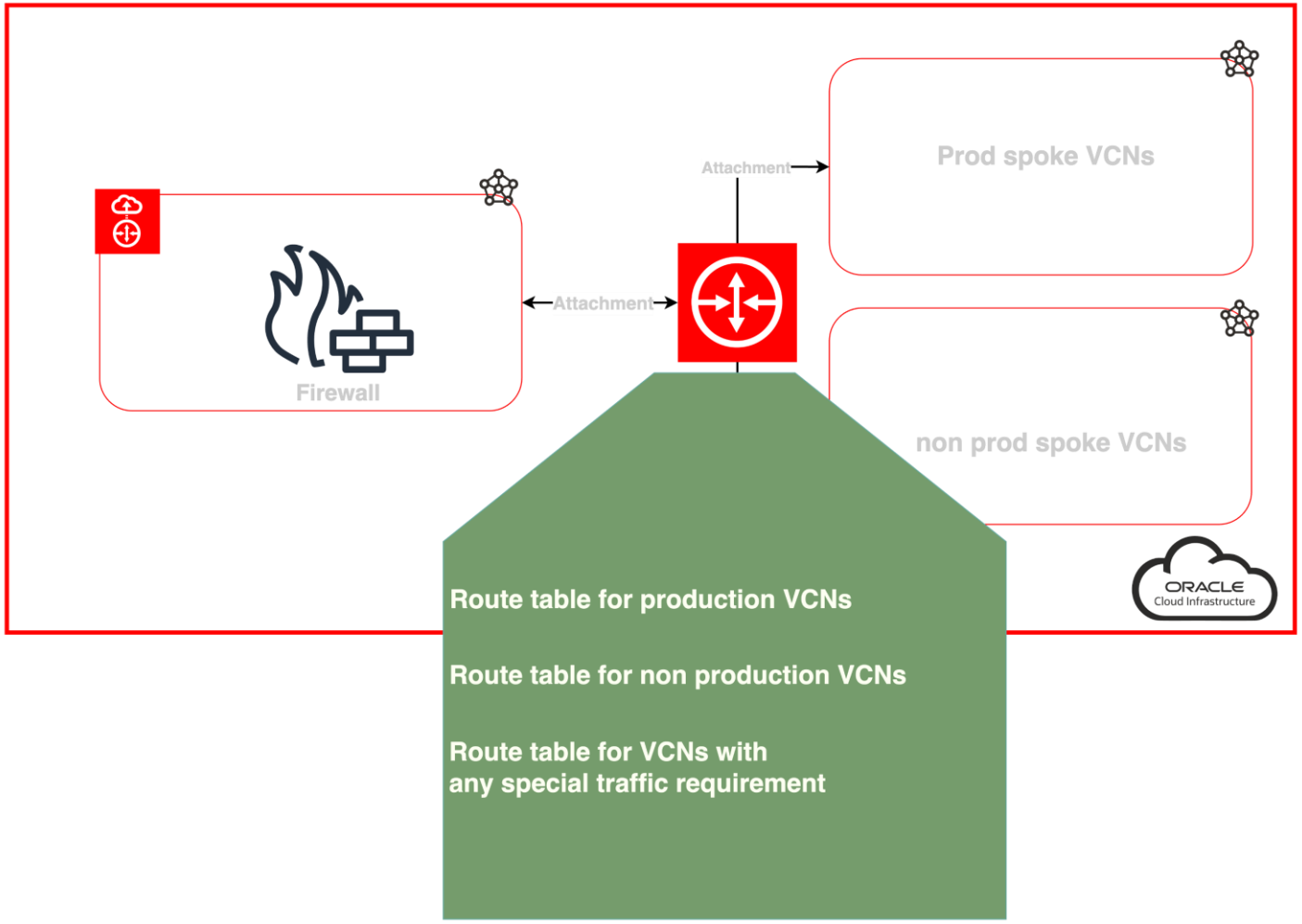
Telecommunications company: Solution using one unique HUB VCN



Financial company: Solution using two HUB VCNs

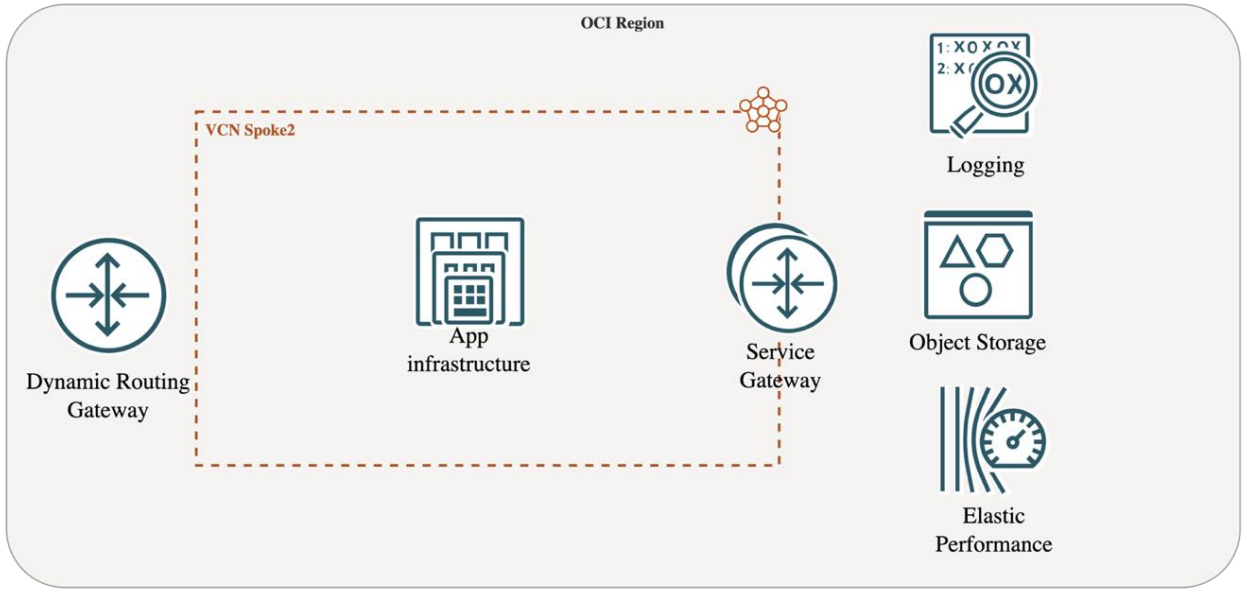


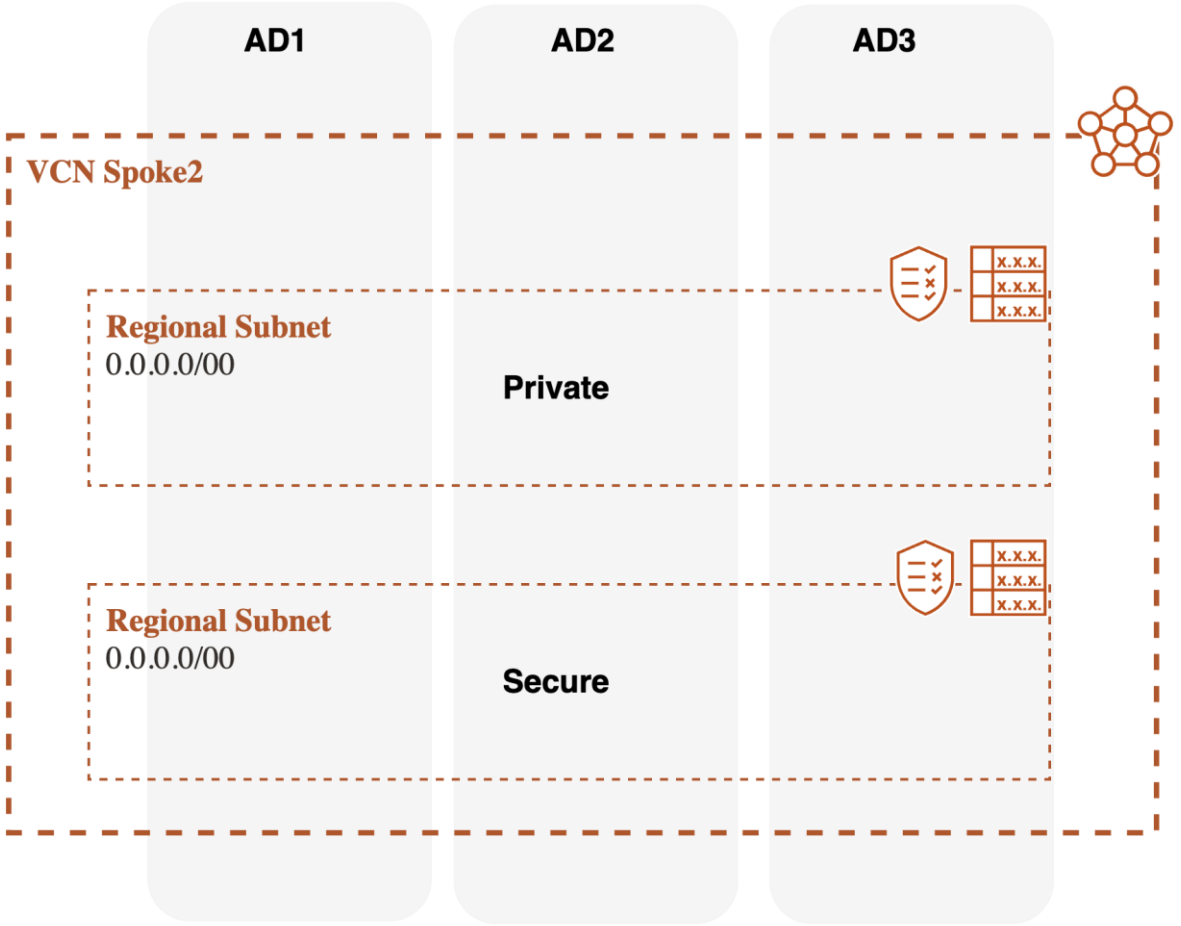
Environment separation and traffic engineering



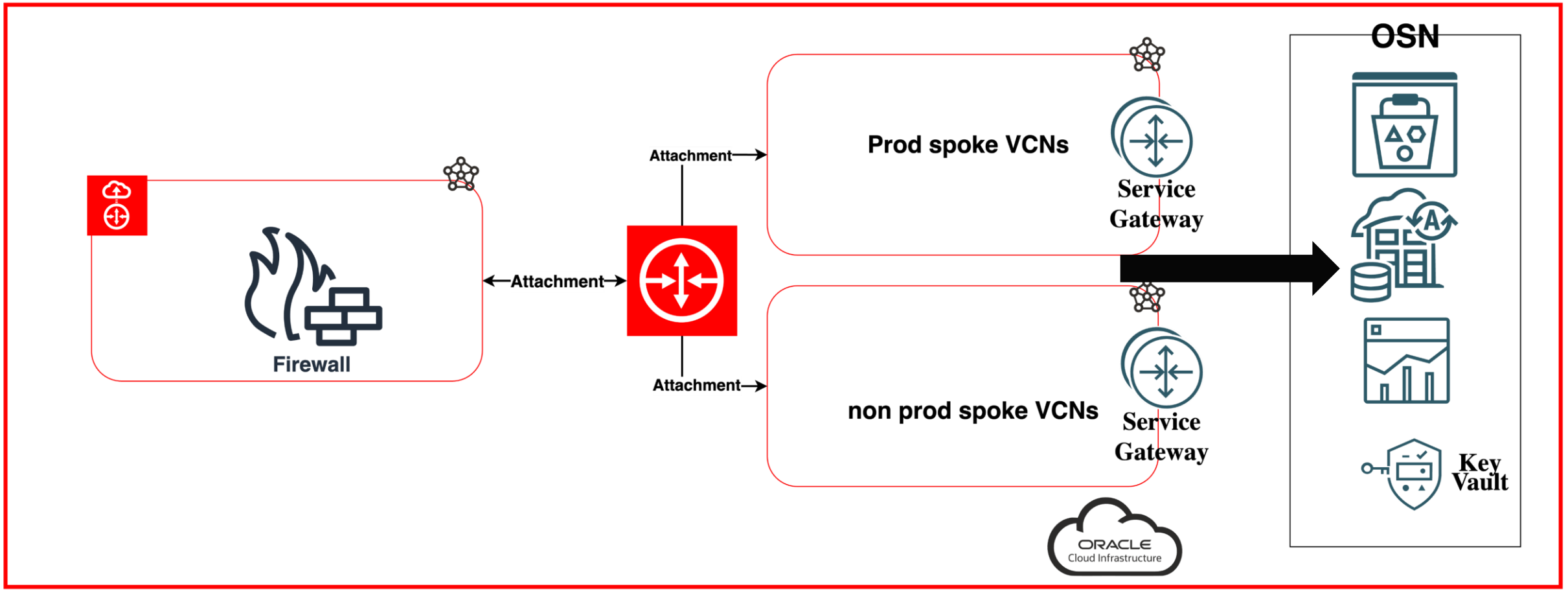
USES CASES

Applications deployment

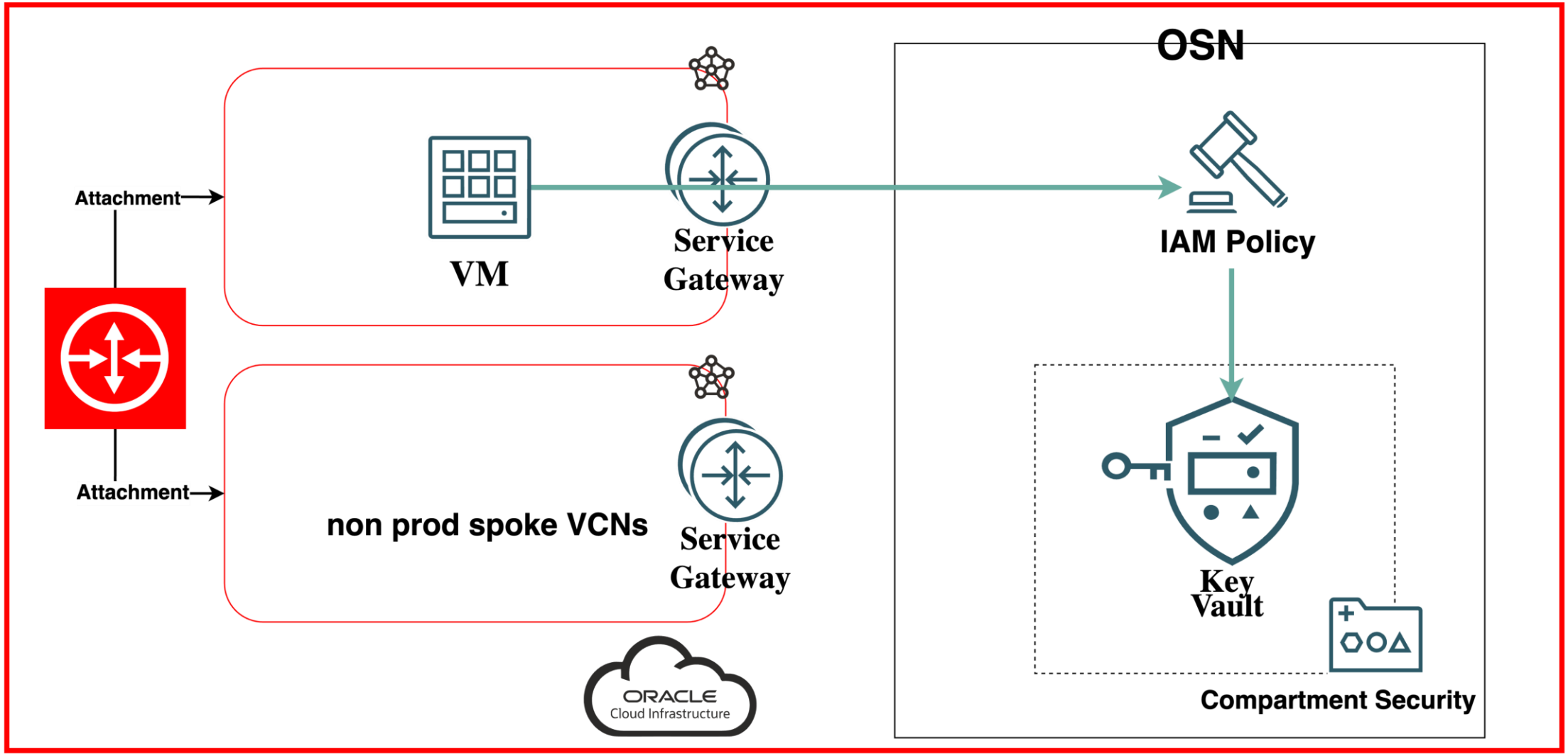




Communication with regional services



Keys and secrets management



Differences between organizations.

- Similar requirements to save PSI and PII
- Similar security layers to control access and avoid external attacks.

Less restrictive access control policies.
Some environments can be directly exposed to internet.
not all applications require to be deployed with high availability

Very restrictive access control policies.
Multiple instances of each deployment.
High performance and auto scalability on transversal infrastructures.
Stringent RTO and RPO.

Q&A Section

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