Oracle Cloud Infrastructure Architecture

Oracle Corporation

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Safe Harbor Statement

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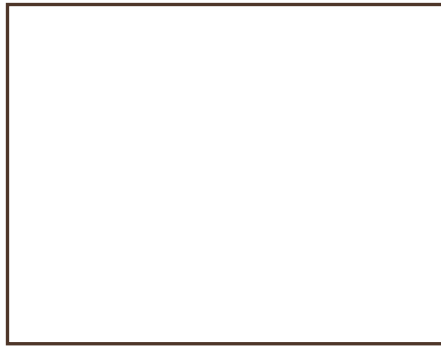
Agenda

Oracle Cloud Infrastructure Regions

Availability Domains

Fault Domains

High Availability Design

Compartments

Oracle Cloud Infrastructure Global Footprint

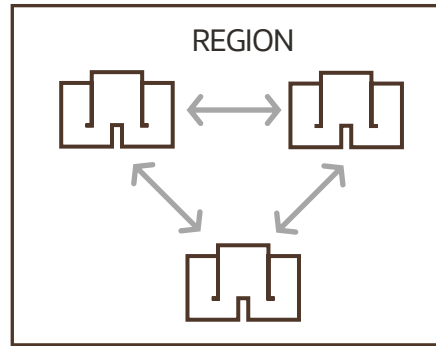## February 2020: 21 Regions Live, 15 Planned

Oracle Cloud Infrastructure Architecture

Regions

Localized geographic area, comprised of one or more Availability Domains (AD)

Availability Domains (AD)

One or more fault-tolerant, isolated data centers located within a region, but connected to each other by a low latency, high bandwidth network

Fault Domains (FD)

Grouping of hardware and infrastructure within an Availability Domain to provide anti-affinity (logical data center)

One AD Regions

- Oracle Cloud Infrastructure has chosen to launch regions in new geographies with one AD (to increase our global reach quickly)

- For any region with one AD, a second AD or region in the same country or geo-political area will be made available within a year to enable further options for DR and data residency

Regions (current)	# ADs
US West (Phoenix)	3
US East (Ashburn)	3
UK South (London)	3
Germany Central (Frankfurt)	3
Australia East (Sydney)	1
Australia Southeast (Melbourne)	1
Canada Southeast (Toronto)	1
India West (Mumbai)	1
Japan East (Tokyo)	1
Japan Central (Osaka)	1

Regions (current)	# ADs
Brazil East (Sao Paulo)	1
Netherlands Northwest (Amsterdam)	1
Saudi Arabia West (Jeddah)	1
South Korea Central (Seoul)	1
Switzerland North (Zurich)	1

Choosing a region

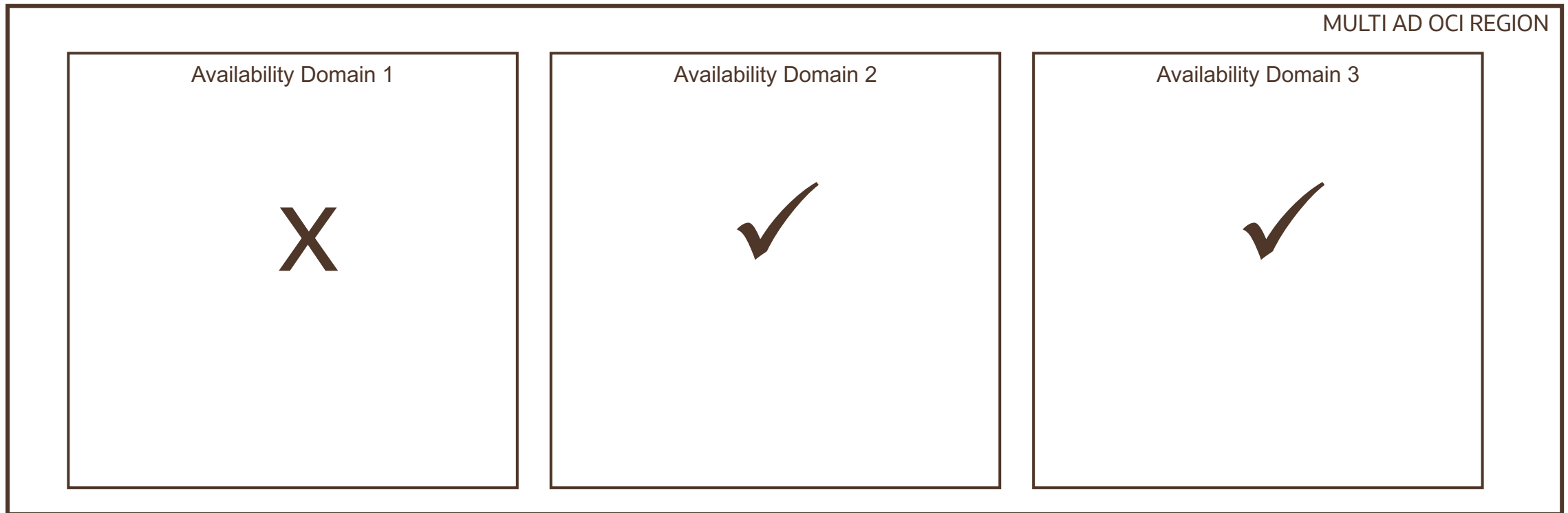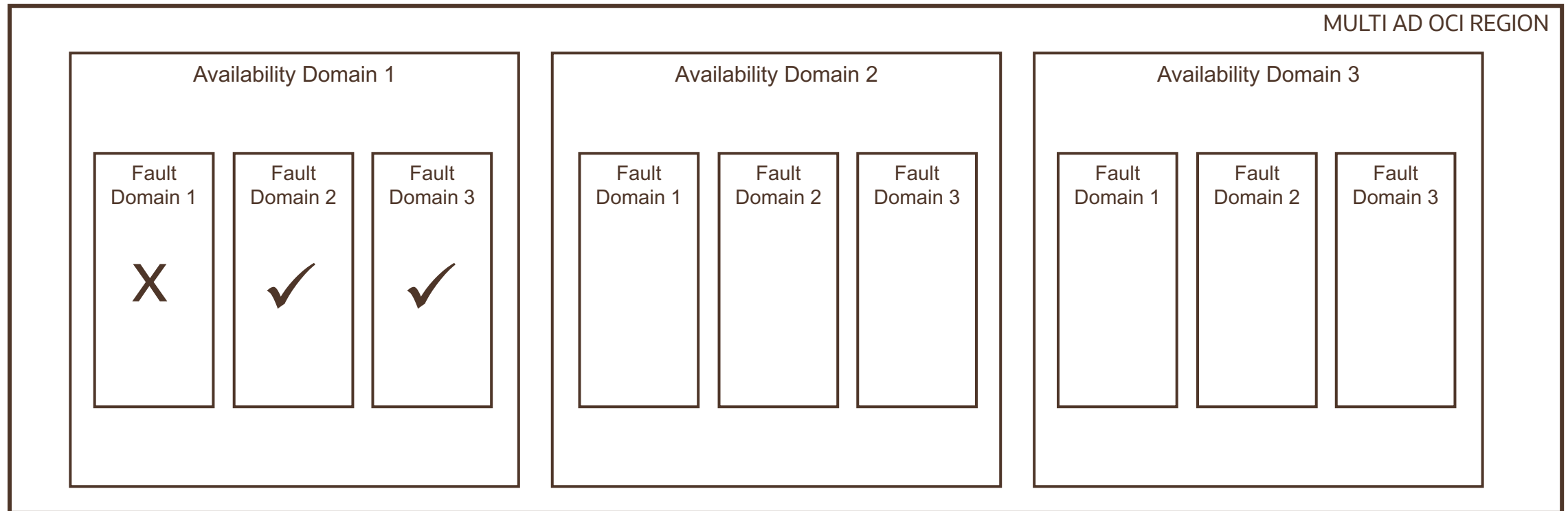| Location	Data Residency & Compliance	Service Availability
Choose a region closest to your users for lowest latency and highest performance!	Many countries have strict data residency requirements	New cloud services are made available based on regional demand, regulatory compliance, resource availability, and other factors

Availability Domains

- Availability domains are **isolated from each other**, fault tolerant, and very unlikely to fail simultaneously.

- Because availability domains **do not share physical infrastructure, such as power or cooling**, **or the internal availability domain network**, a failure that impacts one AD is unlikely to impact the availability of the others

MULTI AD OCI REGION

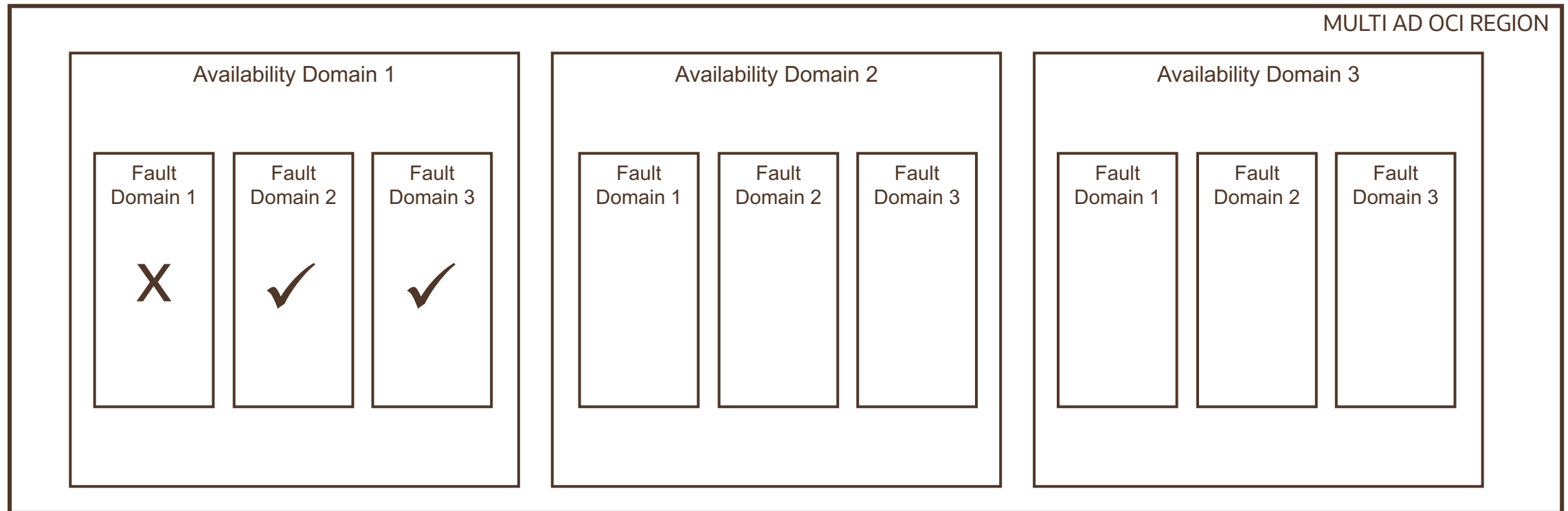| Availability Domain 1	Availability Domain 2	Availability Domain 3
X	✔	✔

Fault Domains

- Each Availability Domain has three Fault Domains (FD)

- FDs act as a **logical data center** within an AD. Usage of multiple FDs reduces correlation of failures within an AD

- Resources placed in different FDs will not share single points of hardware failure (same physical server, physical rack, top of rack switch or power distribution unit)

MULTI AD OCI REGION

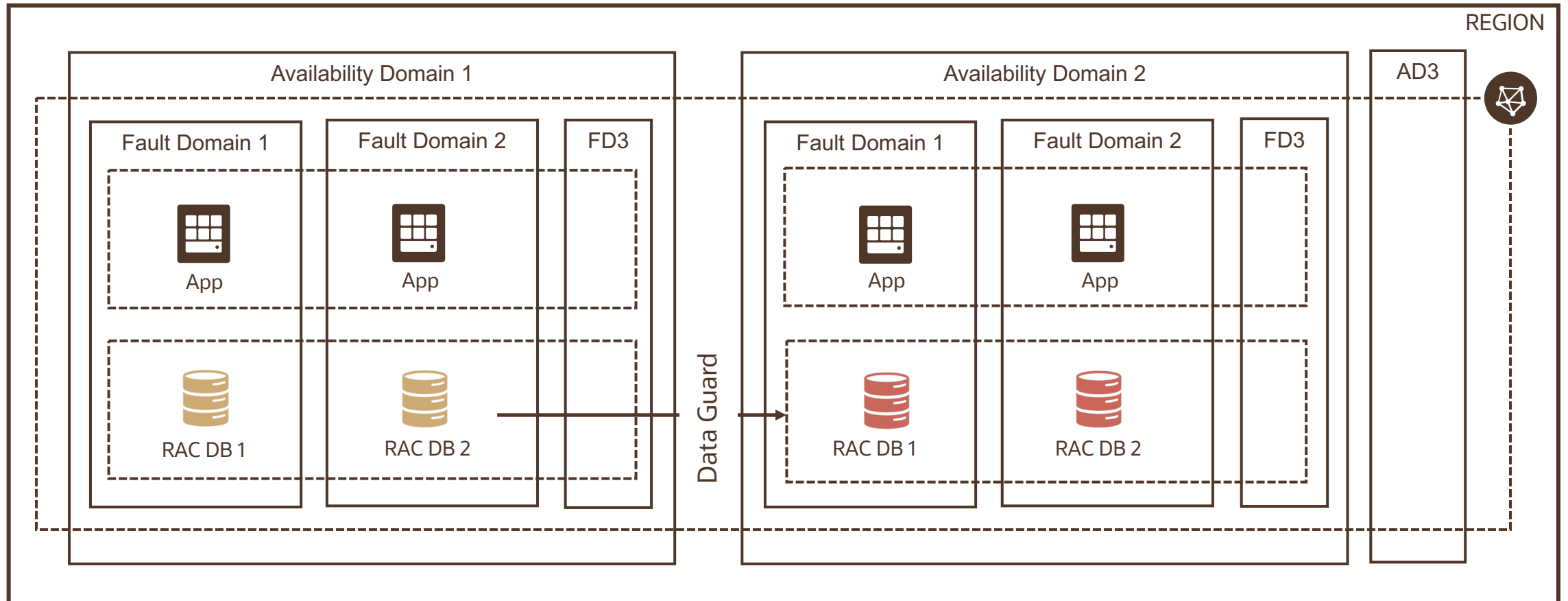| Availability Domain 1	Availability Domain 2	Availability Domain 3
Fault Domain 1 — X / Fault Domain 2 — ✓ / Fault Domain 3 — ✓	Fault Domain 1 / Fault Domain 2 / Fault Domain 3	Fault Domain 1 / Fault Domain 2 / Fault Domain 3

Fault Domains

- In any region, resources in at most ONE fault domain are being actively changed at any point in time. This means that availability problems caused by change procedures are isolated at the fault domain level

- You can control the placement of your compute or database instances to fault domains at instance 'launch' time

Avoid single points of failure

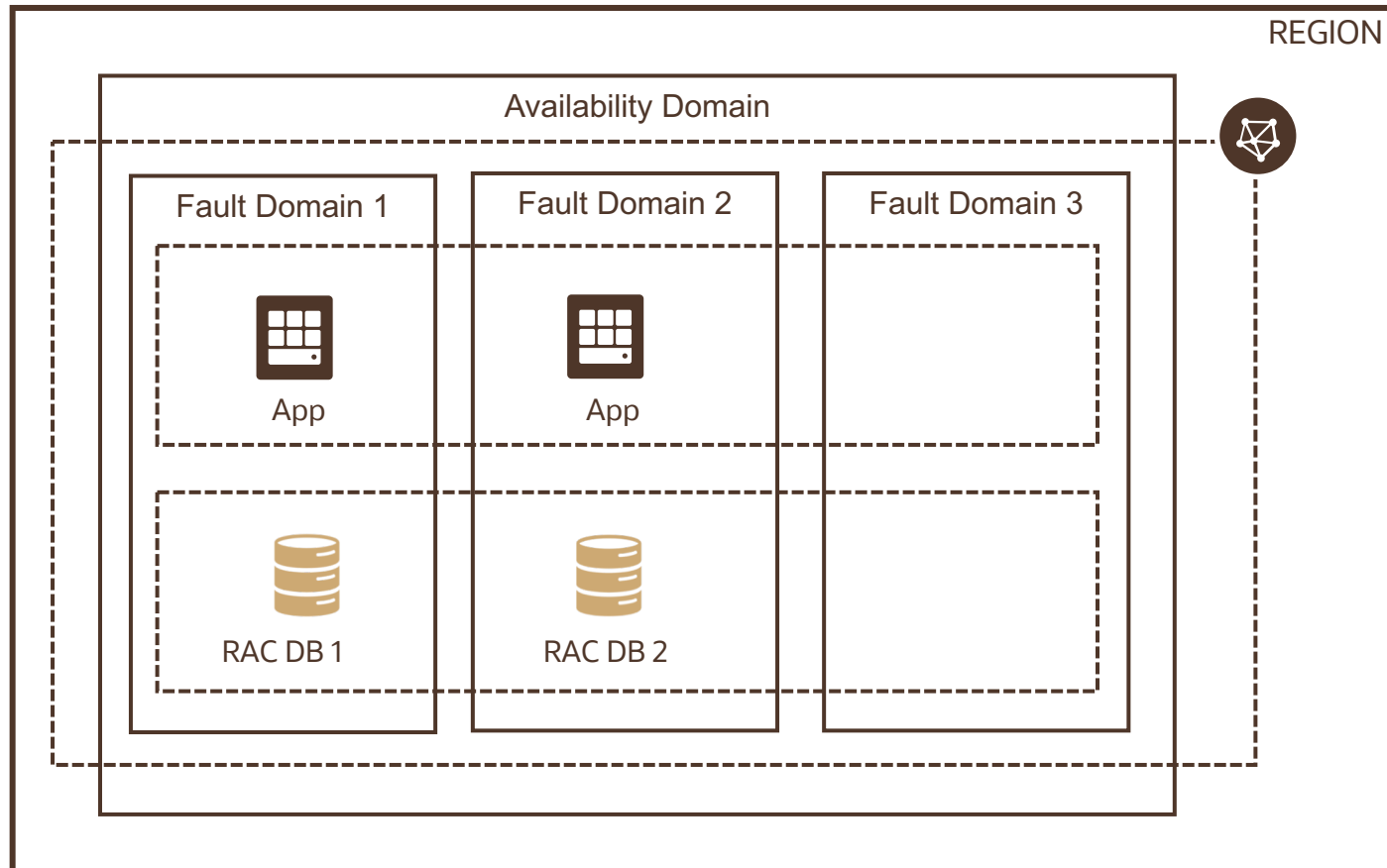Design your architecture to deploy instances that perform the same tasks
- In different Fault Domains (in one AD regions)
- In different Availability Domains for multiple AD regions

Avoid single points of failure

Design your architecture to deploy instances that perform the same tasks
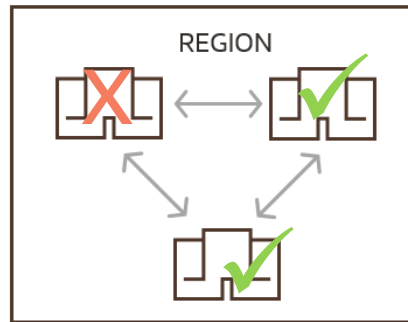*   In different Fault Domains in one AD regions
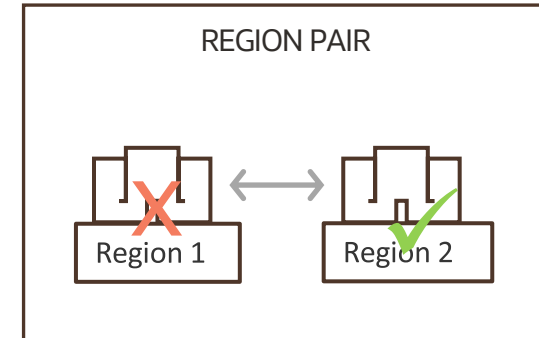
High Availability Design

Fault Domains

Protection against failures within an Availability Domain

Availability Domains

Protection from entire Availability Domain failures (multi-AD region)
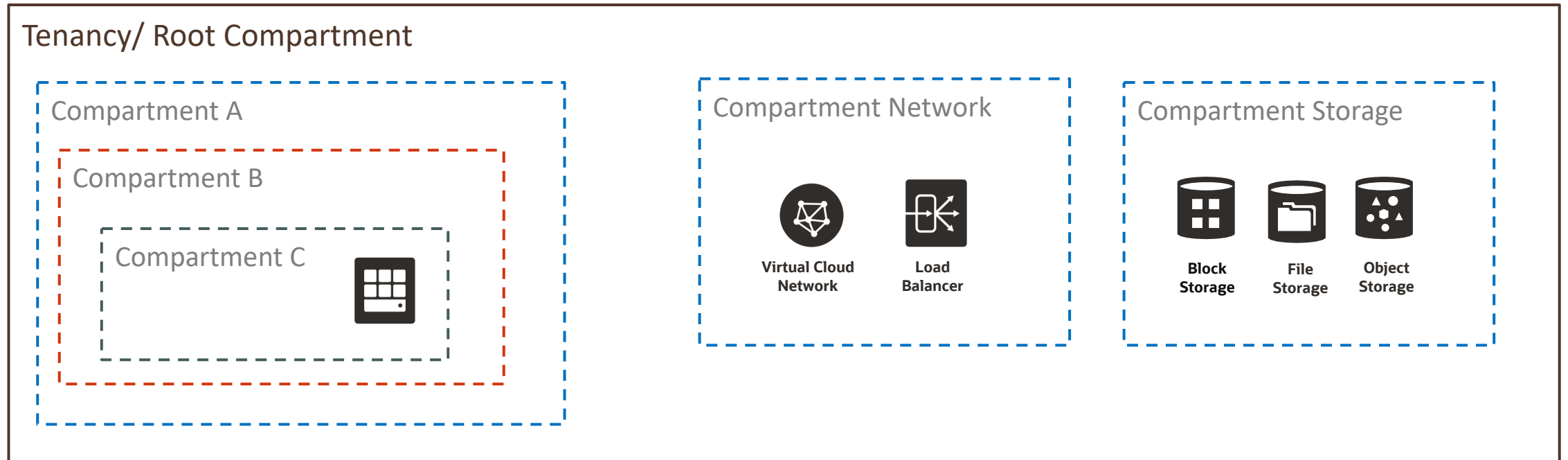
Region Pair

Protection from disaster with data residency & compliance

SLAs on Availability, Management and Performance

Compartment

A compartment is a collection of related resources. It helps you isolate and control access to your resources

Root Compartment can hold all the cloud resources. Best practice is to create dedicated compartments when you need to isolate resources

Compartment

Each resource belongs to a single compartment

Resources can interact with other resources in different compartments

Resources and compartments can be added and deleted anytime

Resources can be moved from one compartment to another

Resources from multiple regions can be in the same compartment

Compartments can be nested (six levels deep)

You can give group of users access to compartments by writing Policies

Analyze cost and assign budget for resources in compartments

Summary

Oracle Cloud Infrastructure Regions, Availability Domains, Fault Domains

Availability domains are isolated from each other, fault tolerant, and very unlikely to fail simultaneously

FDs act as a logical data center within an AD. Usage of multiple FDs reduces correlation of failures within an AD

Compartments, a collection of related resources helps you isolate and control access to your resources

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Thank you