✅ Azure Storage Redundancy

🔷 Slide 1: What Is Azure Storage Redundancy?

Content:

> Azure stores **multiple copies** of your data to ensure it's safe from hardware failures, natural disasters, and other issues. This is called **redundancy**.

Speaker Notes:

- Redundancy = safety net for your data.
- Think of it like backing up photos in multiple places: phone, hard drive, and cloud.

🔷 Slide 2: Why Is Redundancy Important?

Content (Icons or bullets):

- 💾 Prevents data loss
- 🌐 Ensures high availability
- 🛠️ Supports disaster recovery
- 📜 Meets compliance needs

Speaker Notes:

- Imagine if a server catches fire. Redundancy means your data still exists elsewhere.
- Some industries (e.g., healthcare, finance) require high redundancy.

🔷 Slide 3: Types of Azure Storage Redundancy

Introduce the 4 core types:

Type	Copies	Scope	Read Secondary?	Use Case
LRS	3	Single Data Center	❌	Dev/test, low cost
ZRS	3	Multiple Zones	❌	High availability
GRS	6	Two Regions (Primary + Secondary)	❌	Disaster recovery
RA-GRS	6	Two Regions	✅	Readable during outage

Speaker Notes:

- Let's break these down one by one.

🔷 Slide 4: LRS – Locally Redundant Storage

Visuals:

- 1 region
- 3 copies in same data center

Key Points:

- Lowest cost
- 3 copies in a single building
- Not safe if data center is destroyed

Use Case: Internal tools, dev environments

🔷 Slide 5: ZRS – Zone-Redundant Storage

Visuals:

- 1 region
- 3 availability zones

Key Points:

- Survives zone outages
- Higher availability than LRS

Use Case: Production apps that need uptime

🔷 Slide 6: GRS – Geo-Redundant Storage

Visuals:

- Primary + Secondary regions
- 3 copies in each

Key Points:

- 6 copies total (3+3)
- Survives entire region failure
- Manual failover required

Use Case: Business continuity, backup

🔷 Slide 7: RA-GRS – Read Access Geo-Redundant Storage

Visuals:

- Same as GRS + Secondary is readable

Key Points:

- Read from secondary during issues
- Great for global read apps

Use Case: Global apps needing redundancy + access

🔷 Slide 8: GZRS and RA-GZRS (Advanced)

Content:

✅ **GZRS** = ZRS in one region + GRS to another
✅ **RA-GZRS** = Adds read access to secondary region

Use Case: Maximum availability + durability for critical apps

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🔷 Slide 9: When to Use Which?

Use Case	Best Option
Low-cost storage	LRS
High uptime in one region	ZRS
Disaster recovery	GRS
Read access during outage	RA-GRS
Enterprise-grade + global	RA-GZRS

🔷 Slide 10: Summary: Think of Redundancy Like This

Analogy:

- **LRS** = USB drive in your desk
- **ZRS** = USB drives in 3 rooms in your house
- **GRS** = USB drives in your house and a friend's house
- **RA-GRS** = You can use your friend's copy if needed
