

# R&D Document on Azure Global Infrastructure

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# 1 Introduction

Microsoft Azure is a cloud computing platform with a global infrastructure that enables customers to build, deploy, and manage services and applications through a network of Microsoft-managed data centers. Azure's global infrastructure is designed to provide high availability, fault tolerance, scalability, and data residency support.

## 2 Azure Geographies

Azure is divided into geographies, which are defined by geopolitical boundaries. Each geography ensures data residency and compliance requirements for specific regions.

### Key Characteristics

- Bound by geopolitical regions such as countries or the European Union.
- Each geography contains one or more Azure regions.
- Supports compliance and data sovereignty regulations.

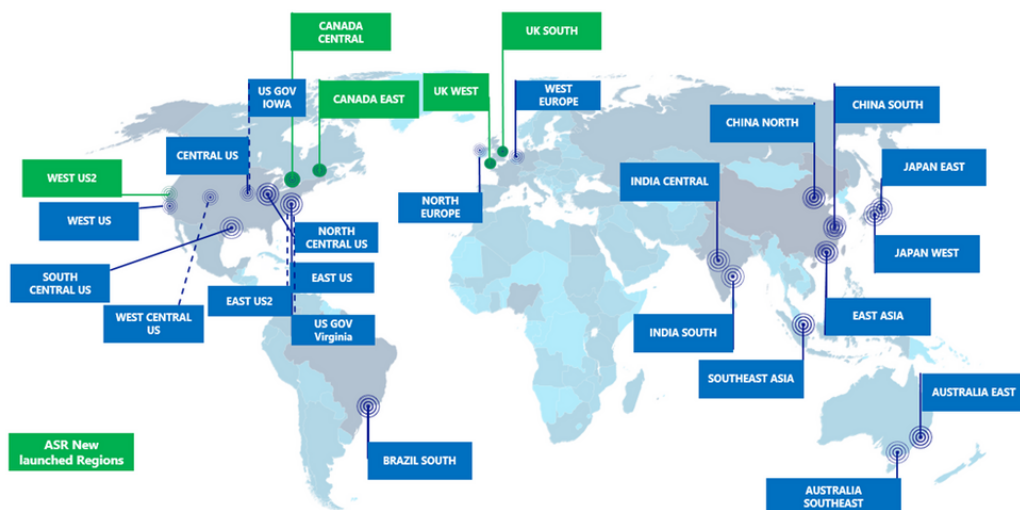


Figure 1: Azure Geographies

## 3 Azure Regions

An Azure region is a set of data centers deployed within a specific geographic area, connected through a low-latency network.

## Key Characteristics

- Each region is designed to provide high availability and fault tolerance.
- Multiple services are available in each region.
- Users can select regions based on latency, compliance, and redundancy requirements.

Geography	Regional Pair A	Regional Pair B
Canada	Canada Central	Canada East
China	China North	China East
India	Central India	South India
Japan	Japan East	Japan West
North America	East US	West US

Figure 2: Azure Regions Overview

## 4 Availability Zones

Availability Zones are physically separate locations within an Azure region. Each zone is made up of one or more data centers equipped with independent power, cooling, and networking.

## Key Characteristics

- Provide high availability and resiliency within a region.
- Support zone-redundant services like VMs and managed disks.
- Ensures application uptime even during data center failures.



Figure 3: Azure Availability Zones

## 5 Azure Data Centers

Azure data centers are the physical facilities that house servers and networking equipment. They are the backbone of Azure’s infrastructure.

### Key Characteristics

- Built with advanced physical and network security.
- Sustain multiple power and cooling paths for redundancy.
- Comply with global industry standards and certifications.

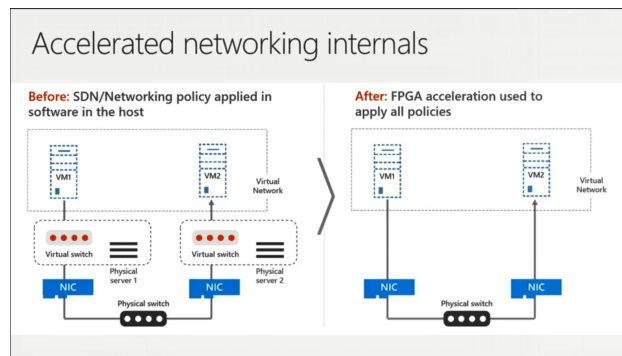


Figure 4: inside an azure data center

## 6 Conclusion

Microsoft Azure’s global infrastructure is strategically designed to deliver reliable, scalable, and compliant cloud services across the world. Through a network of geographies, regions, availability zones, and secure data centers, Azure ensures robust performance and data sovereignty for enterprises globally.

## References

- Microsoft Azure Official Documentation: <https://azure.microsoft.com/en-us/explore/global-infrastructure>
- Microsoft Learn - Azure Regions: <https://learn.microsoft.com/en-us/azure/availability-zones/az-overview>
- Azure Compliance Offerings: <https://learn.microsoft.com/en-us/compliance/regulatory/>