Network Architecture: Design Principles

☐ **Segmentation:** Use *VNets* for workload separation. *Subnets* for different applications (web, database, API).

☐ **Security:** Apply *NSGs* for traffic filtering.

☐ **Regional Architecture:** Implement *Availability Zones* for high availability.

☐ **Scalability:** Design for automated scaling and modular structures.

Security Solutions and Standards

☐ **Azure Firewall:** Centralized access management. Integrates with *Azure Sentinel*.

☐ **Network Security Groups:** Control traffic via *IP*, *port*, and *protocol* for *subnets* and *VMs*.

☐ **Azure Private Link:** Secure access via *private endpoints*, isolated from the public internet.

☐ **Compliance Standards:** *ISO27001* and *NIS²* for documented security policies.

Network Connectivity: On-Premises Integration

VPN Gateway: Cost-effective secured connections with limited bandwidth.

ExpressRoute: Dedicated connection with high bandwidth and no internet dependency.

Scalability: Dynamic scaling with Azure Virtual WAN and modular extensions.

Key Metrics to Monitor

☐ **Performance:** Check bandwidth and latency for both *VPN* and *ExpressRoute*.

☐ **Usage:** Analyze traffic patterns with *Azure Monitor*.

Hybrid Network Infrastructure

☐ **Architecture Components:** On-Premises Datacenter linked via *VPN Gateway* or *ExpressRoute*.

☐ **Firewalls:** Local security segmentation and Azure integration.

☐ **Security Mechanisms:** Use Private Link for secure traffic; monitor via *Azure Monitor*.

Regional Network Infrastructure

☐ **Regions:** Select nearest *Azure region* to minimize latency; use multiple for redundancy.

☐ **Availability Zones:** Protect against datacenter-level failures.

☐ **Documentation:** Keep security and network topology updated.

Best Practices

☐ **Monitoring:** Utilize *Azure Monitor* and *Log Analytics* for insights.

☐ **Updates:** Regularly revise policies per *ISO27001* and *NIS²* standards.

Example Architecture

☐ **Connectivity:** On-Premises VPN Gateway ↔ *Azure VPN Gateway*.

☐ **Redundancy:** *Primary* and *Secondary Regions* configured.

☐ **Security:** *Azure Firewall* and *NSGs* filter traffic.

Connections Overview

☐ Use VPN for secure connections or *ExpressRoute* for dedicated bandwidth.

☐ Prioritize security through *AZs* and *NSGs*.