

# Terminologies for network design

# Router networking components

Ports: Routers have multiple ports (e.g., Ethernet or fiber optic) for connecting devices

Routing Table: A database containing routes and metrics to determine the best path for forwarding packets.

Switching Fabric: The internal mechanism that connects the input ports to the output ports for packet forwarding.

# Type of networking in VM

Bridged: The VM connects directly to the host's physical network adapter. The VM behaves like another device on the physical network.

NAT: The VM shares the host's IP address to access external networks. Outbound traffic is translated through the host.

Host-Only: VMs can only communicate with the host and other VMs using the same host-only network. No internet or external network access.

# Types of docker networking

Bridge: Containers on the same bridge network can communicate with each other, but they are isolated from other networks by default.

Host: The container shares the host's network stack, meaning it uses the host's IP address and ports directly.

Overlay: Enables communication between containers across multiple Docker hosts.

# Networking components in VPC

Subnets: A subnet is a range of IP addresses within a VPC.

Public Subnet: Accessible from the internet. Typically used for resources like web servers.

Private Subnet: No direct internet access. Used for backend resources like databases.

# Networking components in VPC

Internet Gateway (IGW): A managed service that allows resources in the VPC to connect to the internet. Enables outbound traffic to the internet. Supports inbound traffic for public-facing resources (e.g., web servers).

# Networking components in VPC

NAT Gateway: Provides internet access to resources in a private subnet without exposing them to incoming internet traffic. Allows private subnet resources (e.g., databases) to fetch updates or communicate externally.

# Networking components in VPC

Virtual Private Gateway: A gateway that connects the VPC to an on-premises network using a VPN or Direct Connect. Establishes secure communication between the cloud and on-premises environments.

# Networking components in VPC

Transit Gateway: A highly scalable service that connects multiple VPCs, on-premises networks, and other AWS services.

# Networking components in VPC

Route Tables: A set of rules that determine where network traffic is directed within the VPC.

Main Route Table: Default route table for the VPC.

Custom Route Table: User-defined for specific subnets or use cases.