**Azure Route Table (or Route Table)**

An **Azure Route Table** is a set of rules used to determine how traffic is routed within a **Virtual Network (VNet)**. It is essentially a collection of routes that tell the system how to forward network traffic, either within the VNet or to external destinations like the internet, other VNets, or on-premises networks.

**What Does a Route Table Do?**

* **Routing Traffic**: It ensures that packets of data take the correct path based on their destination IP address.
* **Directing Network Traffic**: Determines if the traffic goes to the internet, other VNets, or any specific network resources.
* **Custom Routes**: Allows you to define your own routes to override default ones provided by Azure.

**Components of a Route Table**

* **Destination**: The destination IP address or CIDR block. This is the range of IP addresses you want to send the traffic to.
* **Next Hop**: The next hop is where the traffic is directed. This can be a virtual network gateway, virtual machine, network virtual appliance (NVA), internet, or more.
  + **Next Hop Types**:
    - **Virtual Network Gateway**: Directs traffic to another VNet or on-premises network via a VPN or ExpressRoute.
    - **Internet**: Routes traffic to the public internet.
    - **Virtual Appliance**: Directs traffic to a custom network appliance (firewall, router, etc.).
    - **None**: Discards traffic, often used for blackhole routes.

**Why Use Route Tables in Azure?**

1. **Custom Routing**: You can define custom routes to control how traffic flows between subnets or external destinations.
2. **Network Isolation**: Control traffic flow to prevent unwanted access between subnets or VNets.
3. **Network Virtual Appliances**: Route traffic through security devices like firewalls, load balancers, or monitoring appliances.
4. **Routing for Hybrid Environments**: Use route tables to direct traffic between your on-premises network and Azure, especially when you are using a **VPN** or **ExpressRoute**.

**Example of Route Table Usage:**

1. **Default Route Table**: By default, Azure creates a route table for each VNet. This default table will route traffic within the VNet, and any internet-bound traffic goes through the default internet gateway.
2. **Custom Route Table**: If you have specific needs, such as routing traffic between multiple subnets or directing traffic through a Network Virtual Appliance (NVA) for inspection or logging, you can create a custom route table and apply it to a subnet.

**How to Create and Assign a Route Table:**

1. **Create Route Table**:
   * Go to **Azure Portal** > **Virtual Network** > **Route Tables** > **Create**.
2. **Add Routes**:
   * Define the destination CIDR block (e.g., 0.0.0.0/0 for internet traffic).
   * Define the next hop (e.g., **Virtual Network Gateway**, **Internet**, or **Virtual Appliance**).
3. **Associate Route Table with Subnet**:
   * After creating the route table, you associate it with the relevant subnet to apply those routing rules.

**Summary**

A **Route Table** in Azure allows you to control how traffic flows within your Azure network, between subnets, or to external destinations like the internet or on-premises networks. It's an essential tool for managing network traffic and ensuring optimal routing within a cloud environment.Bottom of Form