

Introduction to Routes

A route table is a collection of individual routes used to decide where to forward packets based on the destination IP address.

A route consists of

- **Address Prefix** – Destination CIDR block to which the route applies
- **Next hop type** – The type of Azure hop the packets should be sent to. It can be Virtual Network, Virtual Network Gateway, Virtual appliance and none.
- **Next hop address** – The next hop address contains the IP address packets should be forwarded to. Next hop values are only allowed in routes where the next hop type is Virtual Appliance. If IP address represents a VM, make sure you enable IP forwarding in Azure for VM.

System Routes

Every subnet created in virtual network is automatically associated with a route table that contains the following system route rules.

Default Routes

Source	Address prefixes	Next hop type
Default	Unique to the virtual network	Virtual network
Default	0.0.0.0/0	Internet
Default	10.0.0.0/8	None
Default	172.16.0.0/12	None
Default	192.168.0.0/16	None
Default	100.64.0.0/10	None

Optional Default Routes

Source	Address prefixes	Next hop type	Subnets
Default	Unique to the virtual network, for example: 10.1.0.0/16	VNet peering	All
Virtual network gateway	Prefixes advertised from on-premises via BGP, or configured in the local network gateway	Virtual network gateway	All
Default	Multiple	VirtualNetworkServiceEndpoint	Only the subnet a service endpoint is enabled for.

You create custom routes by either creating user-defined routes, or by exchanging border gateway protocol (BGP) routes between your on-premises network gateway and an Azure virtual network gateway.

User defined routes

- ✓ *You can create custom, or user-defined, routes in Azure to override Azure's default system routes, or to add additional routes to a subnet's route table*
- ✓ *Associate the route table at subnet level*
- ✓ *You can specify Virtual appliance, virtual network gateway, none, virtual network and internet as next hop types*

BGP routes

- ✓ *An on-premises network gateway can exchange routes with an Azure virtual network gateway using the border gateway protocol (BGP)*
- ✓ *When you exchange routes with Azure using BGP, a separate route is added to the route table of all subnets in a virtual network for each advertised prefix.*

Route selection

- When outbound traffic is sent from a subnet, Azure selects a route based on the destination IP address, using the longest prefix match algorithm.
- For example between 99.0.0.0/24 and 99.0.0.0/16, Azure routes traffic destined for 99.0.0.5, to the next hop type specified in the route with the 99.0.0.0/24 address prefix
- If multiple routes contain the same address prefix, Azure selects the route type, based on the following priority:
 - User-defined route
 - BGP route
 - System route