In Azure, a subnet is a range of IP addresses within a virtual network (VNet) that are used to isolate and segment different parts of the network. Subnets allow you to divide a VNet into smaller, more manageable networks, which can improve security and simplify network management.

To create a subnet in Azure, you need to first create a VNet. Within the VNet, you can create one or more subnets. Each subnet has a unique IP address range and is associated with a specific network security group (NSG) that can be used to control traffic flow to and from the subnet.

Here are the steps to create a subnet in Azure:

Log in to the Azure portal and navigate to the virtual network that you want to add a subnet to.

Click on "Subnets" in the left-hand menu.

Click the "+Subnet" button and provide a name and IP address range for the new subnet.

Choose the network security group that you want to associate with the subnet, or create a new NSG.

Click "OK" to create the subnet.

Once you have created a subnet, you can deploy Azure resources to it, such as virtual machines or Azure App Services. These resources can communicate with other resources within the same subnet, but may be restricted from communicating with resources in other subnets or VNets based on the network security group rules.

In Azure, the subnet range is the range of IP addresses that are assigned to a specific subnet within a virtual network. The subnet range is a subset of the IP address space of the virtual network, and it defines the range of IP addresses that can be used by resources within the subnet.

The subnet range is specified as a CIDR notation (Classless Inter-Domain Routing) which consists of an IP address and a subnet mask. The IP address identifies the network address, while the subnet mask defines the number of bits that are used to identify the subnet. For example, a subnet range of "10.0.0.0/24" would mean that the subnet includes IP addresses from 10.0.0.1 to 10.0.0.254, with 10.0.0.0 being the network address and 10.0.0.255 being the broadcast address.

When creating a subnet in Azure, you can specify the subnet range by providing the CIDR notation for the IP address range. It is important to choose an appropriate subnet range for your subnet, based on the number of resources that will be deployed in the subnet and the expected traffic volume. You should also ensure that the subnet ranges of different subnets within the same virtual network do not overlap, as this can cause routing issues.
A subnet range of "10.3.2.0/24" in Azure would include IP addresses from 10.3.2.1 to 10.3.2.254, with 10.3.2.0 being the network address and 10.3.2.255 being the broadcast address.

The CIDR notation "10.3.2.0/24" indicates that the first 24 bits of the IP address are used to identify the network, while the remaining 8 bits are used to identify the hosts within the network. This means that there are 256 IP addresses available for use within the subnet.

When creating a subnet in Azure with this subnet range, you should ensure that the subnet does not overlap with any other subnets within the same virtual network, and that it is large enough to accommodate the expected number of resources and traffic volume for the subnet.

If you want to create a new subnet in the same virtual network as the subnet with the range "10.3.2.0/24" and want to use a subnet range of "10.3.5.0/24", you should ensure that the two subnet ranges do not overlap.

The subnet with the range "10.3.5.0/24" would include IP addresses from 10.3.5.1 to 10.3.5.254, with 10.3.5.0 being the network address and 10.3.5.255 being the broadcast address.

To ensure that there is no overlap between the two subnets, you should ensure that the third octet of the IP addresses (the number after the second dot) is different between the two subnet ranges. In this case, the third octet of the IP addresses is "2" for the first subnet and "5" for the second subnet, so there is no overlap.

When creating the new subnet in Azure, you can follow the same steps as before, but specify the subnet range as "10.3.5.0/24" and ensure that the subnet is associated with the same virtual network as the first subnet. This will allow resources in both subnets to communicate with each other within the same virtual network.

The error message "your subnet is not contained within the address space for this VNet 10.3.2.0/24" indicates that the subnet range you are trying to create is outside of the address space that has been defined for the virtual network. This means that the subnet range you are trying to create overlaps with the address space of the virtual network or another subnet within the virtual network.

To resolve this error, you should either adjust the address space of the virtual network to include the subnet range you want to create or choose a different subnet range that is within the existing address space of the virtual network.

To adjust the address space of the virtual network, you can go to the virtual network settings in the Azure portal and modify the address space to include the subnet range you want to create. You may need to adjust the subnet mask and prefix length to ensure that the address space is large enough to accommodate the additional subnet.

Alternatively, you can choose a different subnet range that does not overlap with the existing address space or subnets in the virtual network. You can use any valid CIDR notation for the subnet range, as long as it does not overlap with the address space or other subnets in the virtual network.

A virtual network with an address space of "10.3.0.0/16" in Azure would include all IP addresses from 10.3.0.0 to 10.3.255.255. This means that any subnet range within this address space can be used for subnets within the virtual network.

When creating subnets within this virtual network, you can use any valid CIDR notation for the subnet range, as long as it falls within the address space of the virtual network. For example, you could create a subnet with a range of "10.3.2.0/24" or "10.3.5.0/24", as long as these subnet ranges do not overlap with each other or with the address space of the virtual network.

It is important to choose an appropriate subnet range for each subnet based on the expected number of resources and traffic volume within the subnet. Additionally, you should ensure that the subnet ranges of different subnets within the same virtual network do not overlap to avoid routing issues.
