

# Subnets, VPC Routers, and Route Tables Part 1

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**Brock Tubre**

TECHNICAL INSTRUCTOR

# Subnets

# Subnets

Separates a specified CIDR range within an AZ.

A segment of a VPC that lives entirely within a single Availability Zone. Subnets cannot span more than one AZ. Subnets can be public, private, or VPN only.

# VPC, Subnets, CIDR Blocks



VPC



## Choosing a Private Addressing Space

- 192.168.0.0 - 192.168.255.255 (offers 1 /16 range)
- 172.16.0.0 - 172.31.255.255 (offers 16 /16 ranges)
- 10.0.0.0 - 10.255.255.255 (offers 256 /16 ranges)



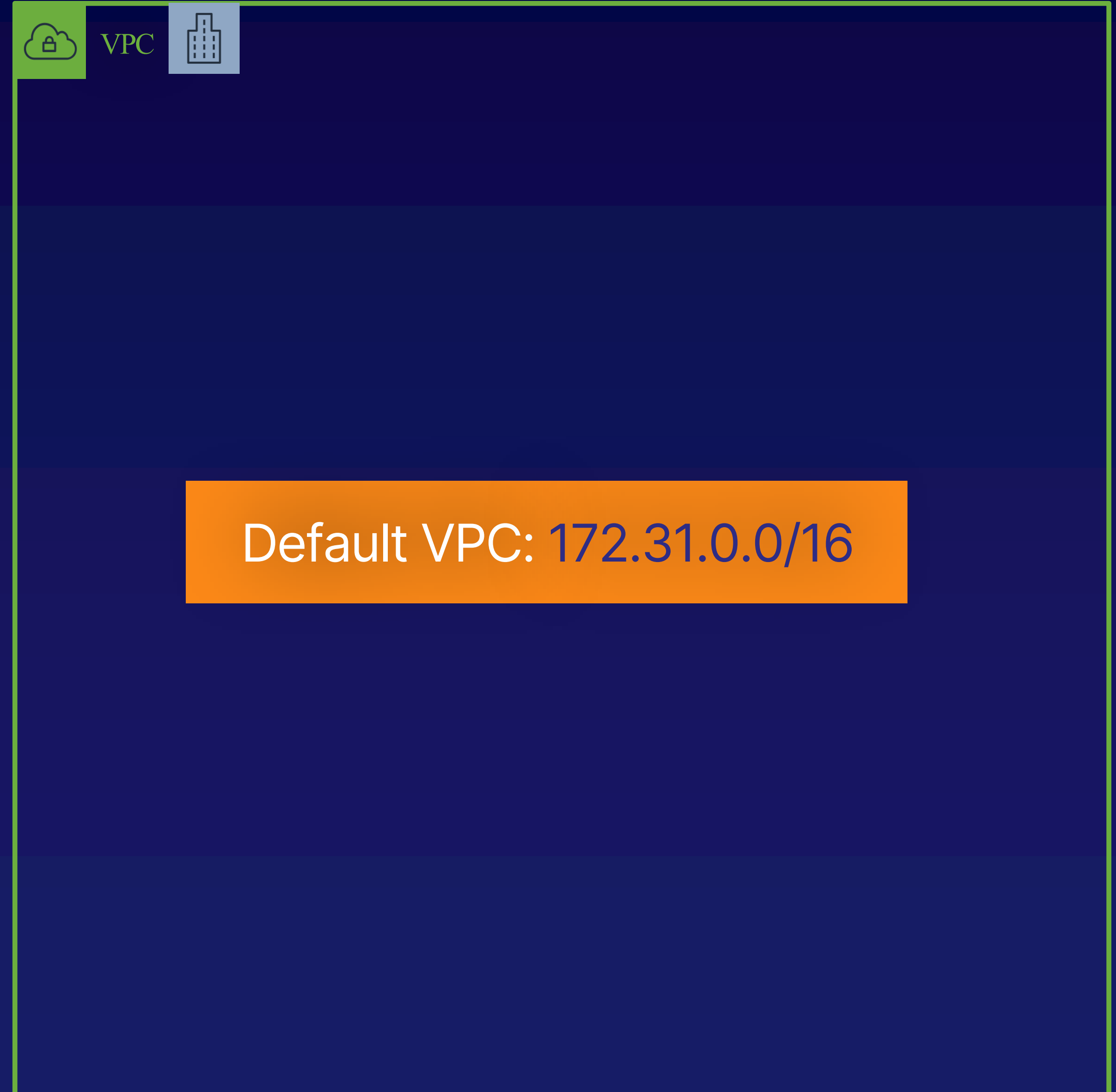
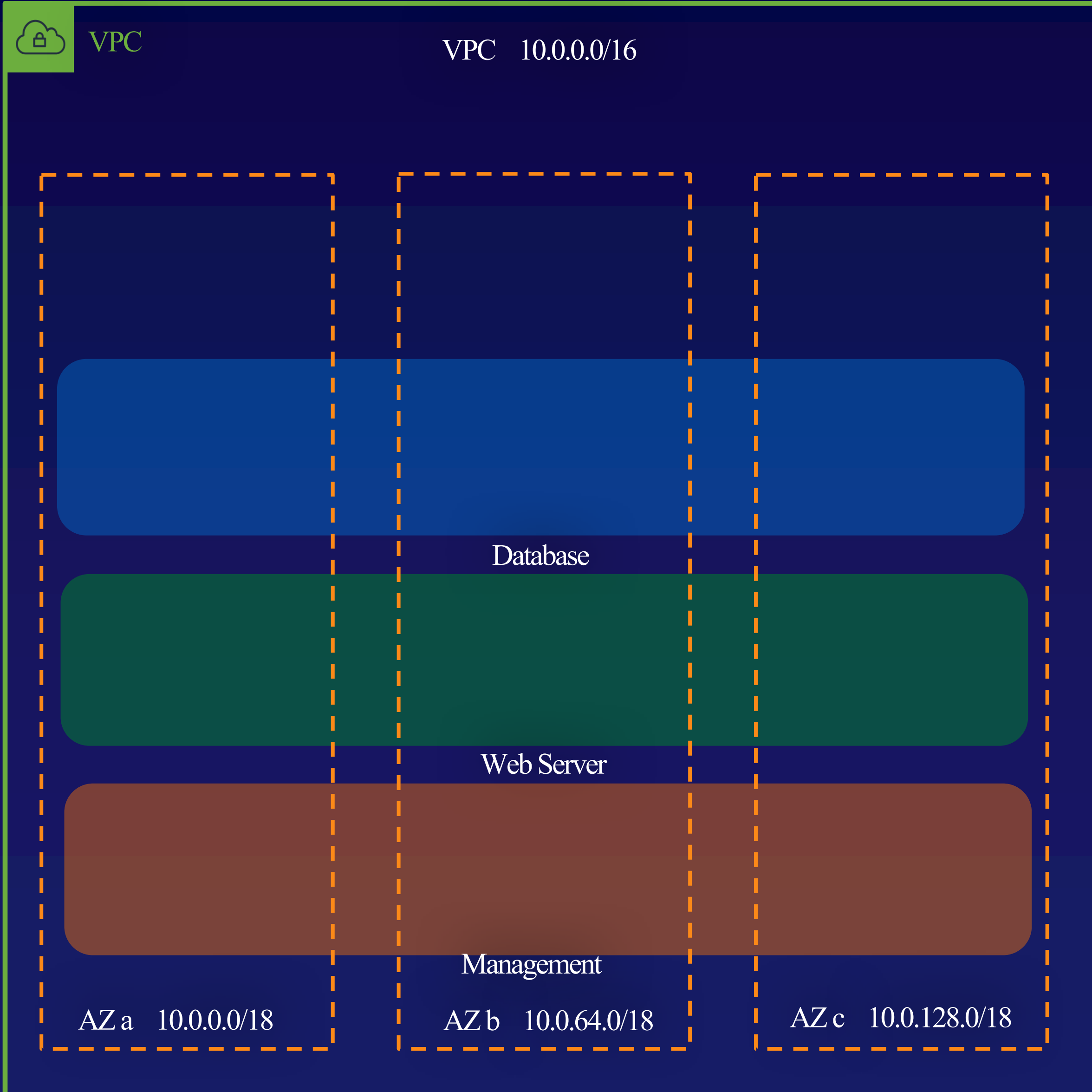
VPC



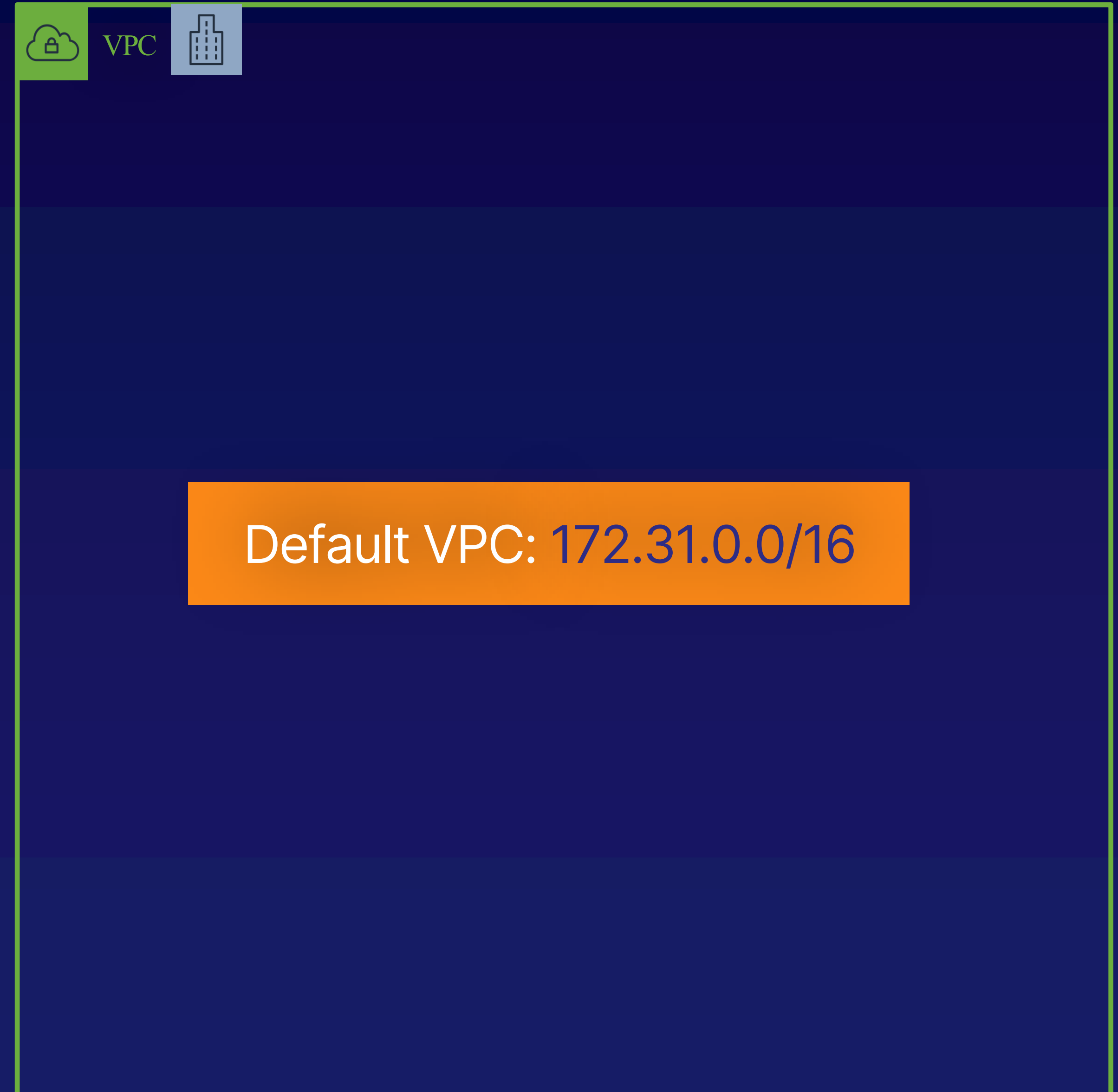
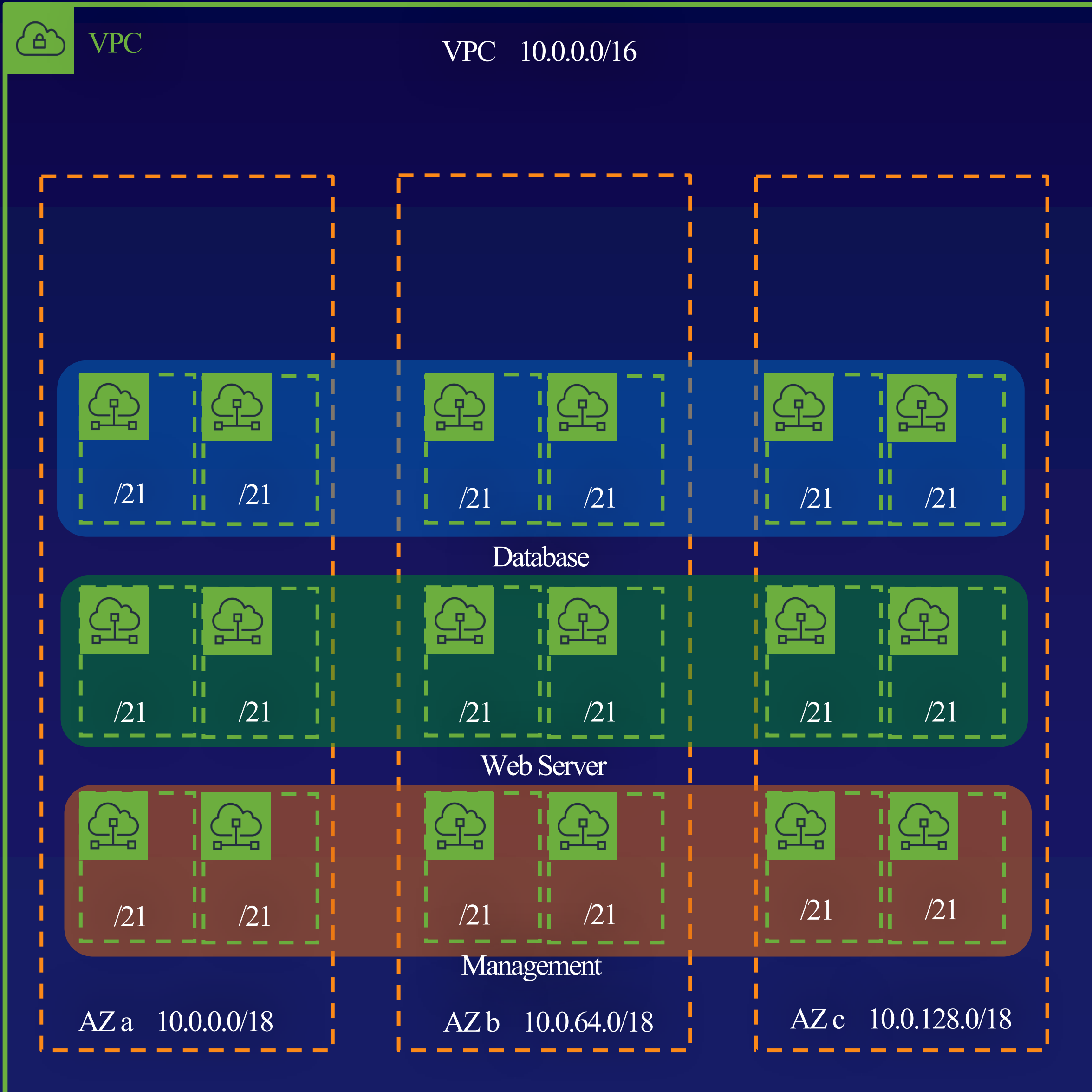
## Choosing VPC CIDR Block

- 1 Integration with other VPCs
- 2 Integration with on-premise networks
- 3 Plans for subnetting

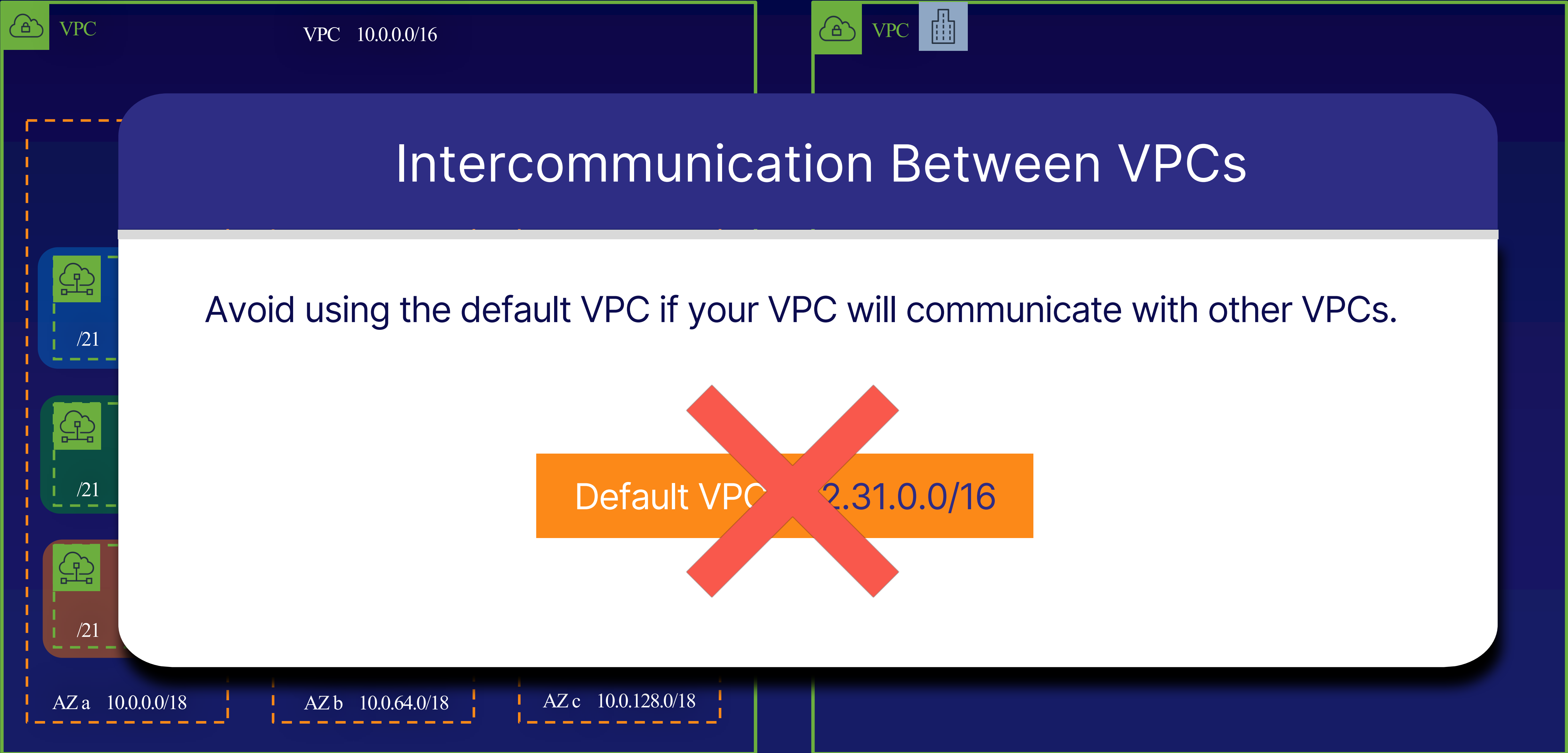
# VPC, Subnets, CIDR Blocks



# VPC, Subnets, CIDR Blocks



# VPC, Subnets, CIDR Blocks



## Intercommunication Between VPCs

Avoid using the default VPC if your VPC will communicate with other VPCs.

Default VPC 2.31.0.0/16

# AWS Subnet Addressing

1

## Specify Target AZ

You can create zero, one, or more subnets in an AZ. When creating a subnet you must specify the target AZ.

2

## Determine CIDR Range

When creating a subnet, the smallest CIDR range you can allocate is /28 netmask and the largest is /16 netmask. That's 16 IPv4 address and 65,536 IPv4 addresses respectively.

3

## AWS Reserved Addresses

AWS reserves the first four IPv4 addresses and the last IPv4 address of every subnet for internal networking purposes. So five addresses are always reserved by AWS.

# Default Subnets

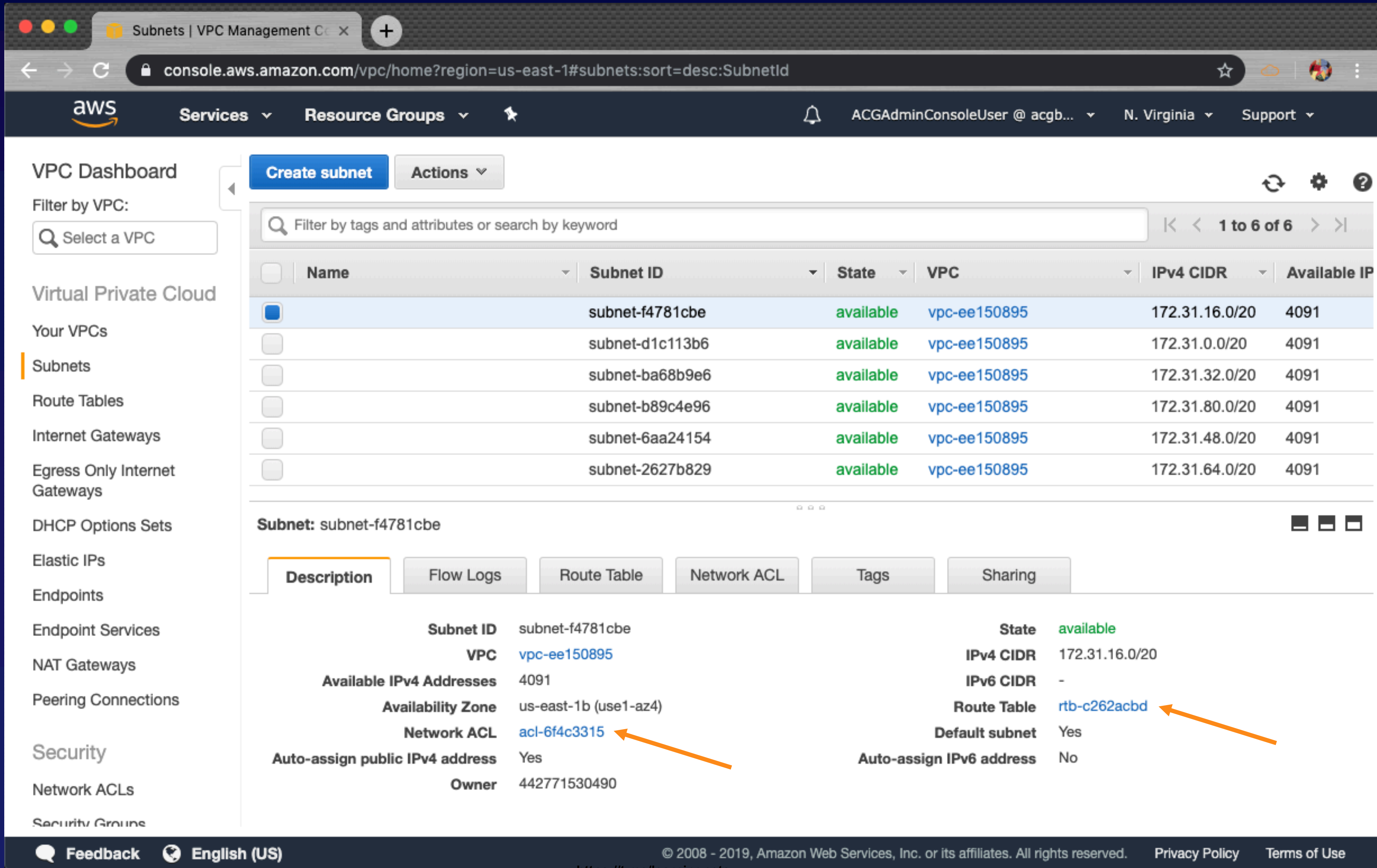
The screenshot shows the AWS Management Console interface for VPC subnets. The region is set to N. Virginia. A table lists six default subnets, all in an 'available' state, associated with VPC 'vpc-ee150895'. The first subnet, 'subnet-f4781cbe', is selected, and its details are shown below. Orange boxes and arrows highlight the region, the selected subnet in the table, and the corresponding fields in the details view.

Name	Subnet ID	State	VPC	IPv4 CIDR	Available IP
<input checked="" type="checkbox"/>	subnet-f4781cbe	available	vpc-ee150895	172.31.16.0/20	4091
<input type="checkbox"/>	subnet-d1c113b6	available	vpc-ee150895	172.31.0.0/20	4091
<input type="checkbox"/>	subnet-ba68b9e6	available	vpc-ee150895	172.31.32.0/20	4091
<input type="checkbox"/>	subnet-b89c4e96	available	vpc-ee150895	172.31.80.0/20	4091
<input type="checkbox"/>	subnet-6aa24154	available	vpc-ee150895	172.31.48.0/20	4091
<input type="checkbox"/>	subnet-2627b829	available	vpc-ee150895	172.31.64.0/20	4091

<b>Subnet ID</b>	subnet-f4781cbe	<b>State</b>	available
<b>VPC</b>	vpc-ee150895	<b>IPv4 CIDR</b>	172.31.16.0/20
<b>Available IPv4 Addresses</b>	4091	<b>IPv6 CIDR</b>	-
<b>Availability Zone</b>	us-east-1b (use1-az4)	<b>Route Table</b>	rtb-c262acbd
<b>Network ACL</b>	acl-6f4c3315	<b>Default subnet</b>	Yes
<b>Auto-assign public IPv4 address</b>	Yes	<b>Auto-assign IPv6 address</b>	No
<b>Owner</b>	442771530490		

# Default Subnets



The screenshot shows the AWS Management Console interface for VPC subnets. The top navigation bar includes the AWS logo, 'Services', 'Resource Groups', and user information. The left sidebar lists various VPC resources, with 'Subnets' selected. The main content area displays a table of subnets and a detailed view for the selected subnet, 'subnet-f4781cbe'.

**Subnet List:**

Name	Subnet ID	State	VPC	IPv4 CIDR	Available IP
<input checked="" type="checkbox"/>	subnet-f4781cbe	available	vpc-ee150895	172.31.16.0/20	4091
<input type="checkbox"/>	subnet-d1c113b6	available	vpc-ee150895	172.31.0.0/20	4091
<input type="checkbox"/>	subnet-ba68b9e6	available	vpc-ee150895	172.31.32.0/20	4091
<input type="checkbox"/>	subnet-b89c4e96	available	vpc-ee150895	172.31.80.0/20	4091
<input type="checkbox"/>	subnet-6aa24154	available	vpc-ee150895	172.31.48.0/20	4091
<input type="checkbox"/>	subnet-2627b829	available	vpc-ee150895	172.31.64.0/20	4091

**Subnet Details: subnet-f4781cbe**

Subnet ID: subnet-f4781cbe  
 VPC: vpc-ee150895  
 State: available  
 IPv4 CIDR: 172.31.16.0/20  
 IPv6 CIDR: -  
 Availability Zone: us-east-1b (use1-az4)  
 Route Table: [rtb-c262acbd](#)  
 Network ACL: [acl-6f4c3315](#)  
 Default subnet: Yes  
 Auto-assign public IPv4 address: Yes  
 Auto-assign IPv6 address: No  
 Owner: 442771530490

Two orange arrows point to the 'Network ACL' and 'Route Table' fields in the details view.