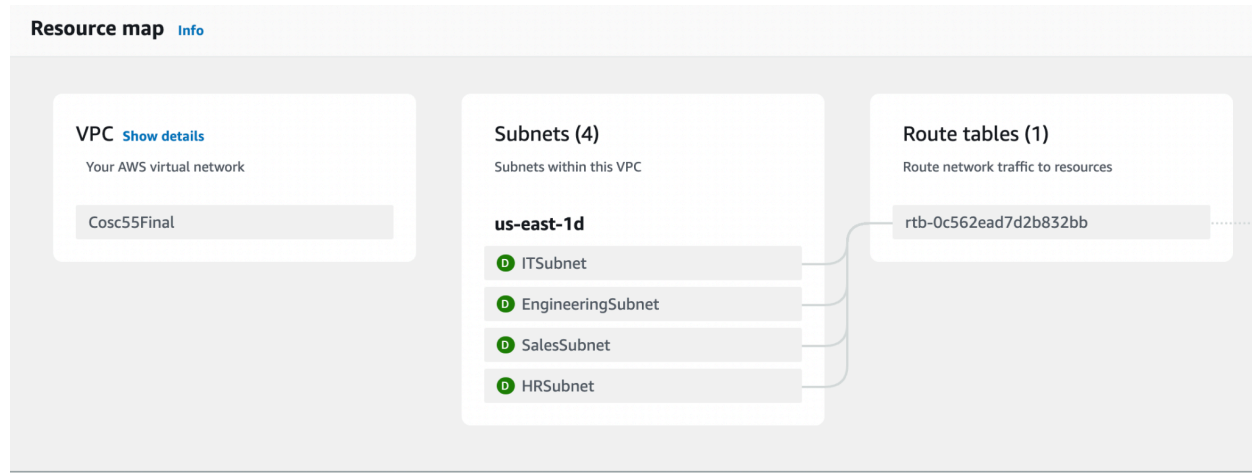


Task 1: Deploy a functional Cloud environment for your example organization

1. Create the VPC:

- **IPv4 CIDR Block:** 10.0.0.0/16
- **Tenancy:** Default
- **VPC:** Cosc55Final



1. Creating Subnets:

- **Engineering Subnet:**
 - **Subnet Name:** EngineeringSubnet
 - **Availability Zone:** Choose an available zone.
 - **CIDR Block:** 10.0.1.0/24
- **Same for other departments:**
 - **Sales Subnet:** 10.0.2.0/24
 - **IT Subnet:** 10.0.3.0/24
 - **HR Subnet:** 10.0.4.0/24

2. Attach Internet Gateway:

- **Go to "Internet Gateways"** in the VPC Dashboard.
- **Attach the Internet Gateway to VPC.**

Internet gateways (2) Info						Refresh	Actions	Create internet gateway
<input type="text" value="Search"/>						< 1 > Settings		
<input type="checkbox"/>	Name	Internet gateway ID	State	VPC ID	Owner			
<input type="checkbox"/>	Cosc55FinalGateway	igw-012b32106a55dea39	Attached	vpc-013672a7327f89de4 Cosc55Final	695402586984			

3. Update Route Tables:

- **Add a Route:**

- **Destination:** 0.0.0.0/0
- **Target:** Select Cosc55Final
- **Associate the Route Table** with all subnets.

Route tables (2) Info							Last updated 1 minute ago		Actions ▾	Create route table
<input type="text" value="Find resources by attribute or tag"/>							< 1 > ⚙			
<input type="checkbox"/>	Name	Route table ID	Explicit subnet associ...	Edge associations	Main	VPC				
<input type="checkbox"/>	-	rtb-0c562ead7d2b832bb	4 subnets	-	Yes	vpc-013672a7327f89de4 Cosc...				

1. Launch the Engineering Server (Ubuntu Web Server):

- **Name:** EngineeringWebServer
- **Type:** Ubuntu Server
- **Instance Type:** t2.medium
- **Configure Network:**
 - **VPC:** Cosc55Final
 - **Subnet:** EngineeringSubnet
- **Create and Configure Security Group:**
 - **Allow HTTP (port 80)**
 - **Allow HTTPS (port 443)**
 - **Allow SSH (port 22)**

2. Launch the Sales Server (Windows CRM Server):

- **Name:** SalesCRMServer
- **AMI:** Microsoft Windows Server
- **Instance Type:** t2.medium
- **Subnet:** SalesSubnet
- **Security Group:**
 - **Allow HTTPS (port 443)**
 - **Allow RDP (port 3389)**

3. Launch the IT Server (RedHat File Server):

- **Repeat the steps above, but:**
 - **Name:** ITFileServer
 - **Type:** Red Hat
 - **Instance Type:** t2.micro
 - **Subnet:** ITSubnet
 - **Security Group:**
 - **Allow SSH (port 22)**

4. Launch the HR Server (Ubuntu Intranet Server):

- **Repeat the steps above, but:**
 - **Name:** HRIntranetServer
 - **Type:** Ubuntu Server
 - **Instance Type:** t2.micro

- Subnet: HRSubnet
- Security Group:
 - Allow HTTP (port 80)
 - Allow HTTPS (port 443)
 - Allow SSH (port 22)

Security Groups (6) Info				
<input type="text" value="Find resources by attribute or tag"/>				
<input type="checkbox"/>	Name ▾	Security group ID ▾	Security group name ▾	VPC ID ▾
<input type="checkbox"/>	-	sg-0803d4120ff9c147e	HRIntranetSecurityGroup	vpc-013672a7327f89de4 ↗
<input type="checkbox"/>	-	sg-0bbaf0d3a7fa5913f	ITSecurityGroup	vpc-013672a7327f89de4 ↗
<input type="checkbox"/>	-	sg-0f2a0b10bb53a380c	Sales Security Group	vpc-013672a7327f89de4 ↗
<input type="checkbox"/>	-	sg-02f26ee4a37c2c987	default	vpc-0c1cc620b68f007e2 ↗
<input type="checkbox"/>	-	sg-01a1f61735f8fa573	EngineeringWebServer Security Group	vpc-013672a7327f89de4 ↗

Instances (4) Info								
<div> <div>Find Instance by attribute or tag (case-sensitive)</div> <div>All states ▾</div> </div> <div> <div>Instance state = running ✕</div> <div>Clear filters</div> </div> <div> <div>Last updated less than a minute ago</div> <div> <input type="button" value="Refresh"/> <input type="button" value="Connect"/> <input type="button" value="Instance state ▾"/> <input type="button" value="Actions ▾"/> <input type="button" value="Launch instances ▾"/> </div> </div>								
<input type="checkbox"/>	Name ↗ ▾	Instance ID	Instance state ▾	Instance type ▾	Status check	Alarm status	Availability Zone ▾	Public IPv4 DNS
<input type="checkbox"/>	ITFileServer	i-065e23e745765cb7e	Running 🔍 🔍	t2.micro	2/2 checks passed View alarms +		us-east-1d	-
<input type="checkbox"/>	EngineeringW...	i-0962db385119c314a	Running 🔍 🔍	t2.medium	2/2 checks passed View alarms +		us-east-1d	-
<input type="checkbox"/>	SalesServer	i-0507456657b1a2321	Running 🔍 🔍	t2.medium	2/2 checks passed View alarms +		us-east-1d	-
<input type="checkbox"/>	HRIntranetSer...	i-06ab72644446353ef	Running 🔍 🔍	t2.micro	2/2 checks passed View alarms +		us-east-1d	-

5. Set up AWS Certificate Manager for HTTPS

<input type="checkbox"/>	Certificate ID	Domain name ▾	Type ▾
<input type="checkbox"/>	0e2ff4ac-79bd-4f50-b852-981cf7489be8	warrenkleinowenakelcsc55.com	Amazon Issued

Task 2: Test the Functionality of your Test Environment

1. Validating Proper Authorization (connecting to servers within VPC)

```
Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Task?
The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-10-0-3-132:~$
```

Hostname: EC2AMAZ-7VU11C4
 Instance ID: i-0507456657b1a2321
 Private IPv4 address: 10.0.2.169
 Public IPv4 address:
 Instance size: t2.medium
 Availability Zone: us-east-1d
 Architecture: AMD64
 Total memory: 4096
 Network: Low to Moderate

```
Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
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applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-10-0-1-57:~$
```

```

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

[ec2-user@ip-10-0-4-129 ~]$
```

2. Validating Necessary Services are Running & Proper Network Access (ensure that networks can communicate)

```
ubuntu@ip-10-0-1-57:~$ ping 10.0.4.129
PING 10.0.4.129 (10.0.4.129) 56(84) bytes of data:
64 bytes from 10.0.4.129: icmp_seq=1 ttl=64 time=0.456 ms
64 bytes from 10.0.4.129: icmp_seq=2 ttl=64 time=0.396 ms
64 bytes from 10.0.4.129: icmp_seq=3 ttl=64 time=1.27 ms
64 bytes from 10.0.4.129: icmp_seq=4 ttl=64 time=0.924 ms
64 bytes from 10.0.4.129: icmp_seq=5 ttl=64 time=1.17 ms
64 bytes from 10.0.4.129: icmp_seq=6 ttl=64 time=0.470 ms
64 bytes from 10.0.4.129: icmp_seq=7 ttl=64 time=1.27 ms
64 bytes from 10.0.4.129: icmp_seq=8 ttl=64 time=1.14 ms
64 bytes from 10.0.4.129: icmp_seq=9 ttl=64 time=0.570 ms
64 bytes from 10.0.4.129: icmp_seq=10 ttl=64 time=0.484 ms
64 bytes from 10.0.4.129: icmp_seq=11 ttl=64 time=0.550 ms
64 bytes from 10.0.4.129: icmp_seq=12 ttl=64 time=1.37 ms
64 bytes from 10.0.4.129: icmp_seq=13 ttl=64 time=0.582 ms
64 bytes from 10.0.4.129: icmp_seq=14 ttl=64 time=1.64 ms
64 bytes from 10.0.4.129: icmp_seq=15 ttl=64 time=0.805 ms
^C
--- 10.0.4.129 ping statistics ---
15 packets transmitted, 15 received, 0% packet loss, time 14228ms
rtt min/avg/max/mdev = 0.396/0.873/1.642/0.392 ms
ubuntu@ip-10-0-1-57:~$
```