

Lab 10

- 256 subnet and each subnet can have 256 IP:

Subnet Calculator for IPV4

The IP Subnet Calculator performs subnet calculations for the given network address block, subnet mask, maximum required hosts per subnet and determines the resulting broadcast address, subnet, Cisco wildcard mask and host range.

Network Address Block	Subnet Mask	No. of Hosts/Subnet	Number of Subnets
10.0.0.0/16	255.255.255.0/24	256	256
Host Address Range	Broadcast Address	Wildcard Mask	CIDR Notation
10.0.0.1 - 10.0.0.254	10.0.0.255	0.0.0.255	10.0.0.0/24

- VPC:

VPCs

China (Hong Kong) Japan (Tokyo) Singapore Australia (Sydney) Malaysia (Kuala Lumpur) India (Mumbai) Indonesia (Jakarta) Asia Pacific NE 2 pop (Seoul) US (Virginia) US (Silicon Valley) UAE (Dubai) Germany (Frankfurt) Thailand (Bangkok) Philippines (Manila) **SAU (Riyadh)** UK (London) South Korea (Seoul)

Create VPC Fuzzy Match Enter a keyword to perform a fuzzy match. Filter by Tag

Instance ID/Name	Tags	IPv4 CIDR Block	Status	Default VPC	Route Table	VSwitch	Cloud Instance	Resource Group	Actions
vpc-l4vms5f3dazr60acxles Lab-VPC		168.0.0.0/16	✓ Available ⊗ Not Bound to CEN	No	1	4	2	rg-achnvpqo3xsjdbi default resource group	Add Cloud Service Delete
vpc-l4vminj0l4ooqlyn270xl test		192.0.0.0/21	✓ Available ⊗ Not Bound to CEN	No	1	2	0	rg-achnvpqo3xsjdbi default resource group	Add Cloud Service Delete
vpc-l4vxe3h2bweqmfhak0av			✓ Available					rg-achnvpqo3xsjdbi	Add Cloud Service

➤ vSwitch:

The screenshot shows the Alibaba Cloud console for the SAU (Riyadh) region. The left sidebar lists various services, and the main content area displays the 'vSwitch' page. A table lists several vSwitches, each associated with a VPC and having a specific IPv4 CIDR block.

Instance ID/Name	Tags	VPC	Status	IPv4 CIDR Block	Available	Actions
vsw-l4vkt175n6azdyxssj Private-Vswitch-B		vpc-l4vnm5f3dazr60acxles Lab-VPC	✓ Available	168.0.3.0/24	252	Add Cloud Service Delete
vsw-l4v8fgg1prf98rv1y5lud Public-Vswitch-B		vpc-l4vnm5f3dazr60acxles Lab-VPC	✓ Available	168.0.2.0/24	251	Add Cloud Service Delete
vsw-l4v0yasipz3ph0hdsu0mf Private-Vswitch-A		vpc-l4vnm5f3dazr60acxles Lab-VPC	✓ Available	168.0.1.0/24	250	Add Cloud Service Delete
vsw-l4vmiszaq657m0tng82hc Public-Vswitch-A		vpc-l4vnm5f3dazr60acxles Lab-VPC	✓ Available	168.0.0.0/24	252	Add Cloud Service Delete

➤ ECSs:

The screenshot shows the Alibaba Cloud console for the SAU (Riyadh) region. The left sidebar lists various services, and the main content area displays the 'Instances' page. A table lists several ECS instances, including their status, network type, and specifications.

Instance ID/Name	Tag	Monitoring	Zone	IP Address	Status	Network Type	Specifications	Billing Method	Actions
i-l4v9mcb8raymw18j3u Public-ECS			Riyadh Zone B	8.213.30.152 (Internet) 168.0.2.143 (Private)	Stopped	VPC	2 vCPU 8 GiB (I/O Optimized) ecs.g6.large 1Mbps (Peak Value)	Pay-As-You-Go September 5, 2023 at 14:22 (Time Zone: UTC + 3) Created	Manage Change Instance Type More
i-l4vbdz5kac10hnpqj33 Private-ECS			Riyadh Zone A	168.0.1.188 (Private)	Stopped	VPC	2 vCPU 8 GiB (I/O Optimized) ecs.g6.large 0Mbps (Peak Value)	Pay-As-You-Go September 5, 2023 at 14:18 (Time Zone: UTC + 3) Created	Manage Change Instance Type More

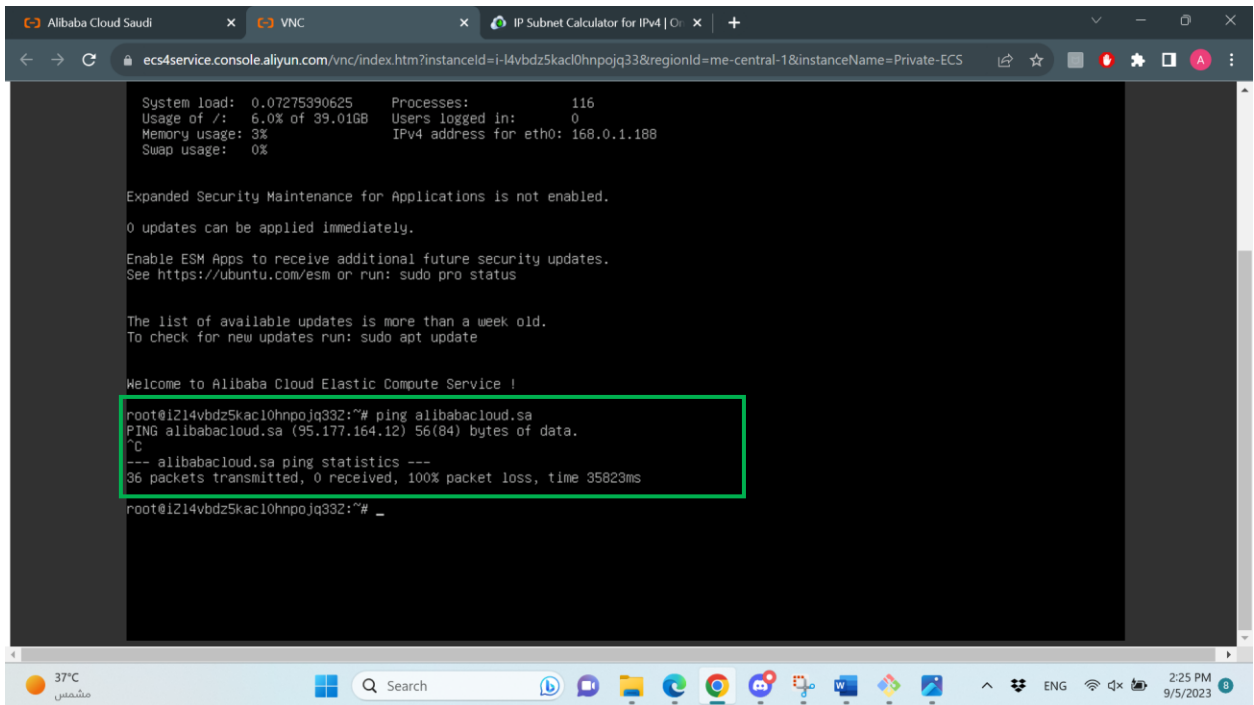
➤ Security Group

The screenshot shows the Alibaba Cloud console for the SAU (Riyadh) region. The left sidebar lists various services, and the main content area displays the 'Security Groups' page. A table lists several security groups, including their associated VPC and network type.

Security Group ID/Name	Tag	VPC	Related Instances	Available IP Addresses	Network Type	Security Group Type	Creation Time	Description	Actions
sg-l4v1hcyba7xt4cplk0b SecGro		vpc-l4vnm5f3dazr60acxles Lab-VPC	2	1998 <1%	VPC	Basic Security Group	September 5, 2023 at 14:06 (Time Zone: UTC + 3)		Modify Clone Restore Rules Manage Instances Add Rules Manage ENIs

1. After login to Private_ECS :

- Enter: (ping alibabacloud.sa) command and take screenshot of output.



The screenshot shows a VNC terminal window with the following content:

```
System load: 0.07275390625    Processes:    116
Usage of /: 6.0% of 39.01GB    Users logged in: 0
Memory usage: 3%              IPv4 address for eth0: 168.0.1.188
Swap usage: 0%

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

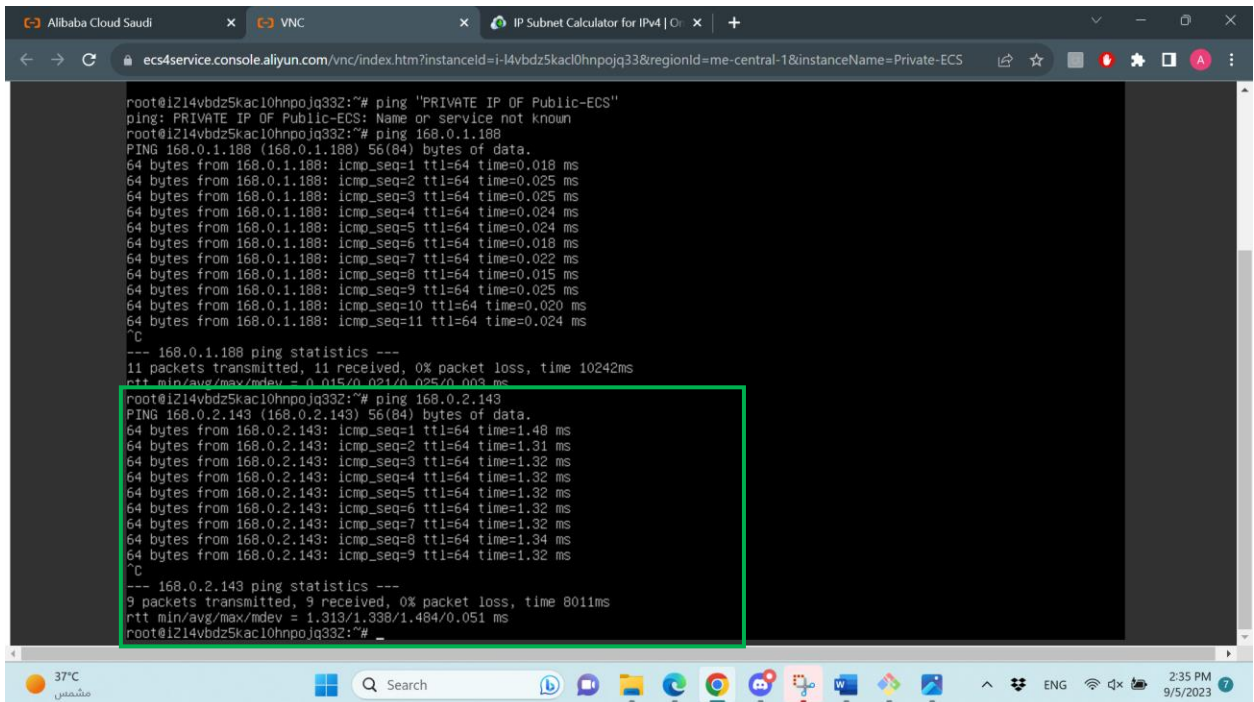
The list of available updates is more than a week old.
To check for new updates run: sudo apt update

Welcome to Alibaba Cloud Elastic Compute Service !

root@i214vbdz5kac10hnpojq332:~# ping alibabacloud.sa
PING alibabacloud.sa (95.177.164.12) 56(84) bytes of data.
^C
--- alibabacloud.sa ping statistics ---
36 packets transmitted, 0 received, 100% packet loss, time 35823ms

root@i214vbdz5kac10hnpojq332:~#
```

- Enter: (ping "PRIVATE IP OF Public-ECS") command and take screenshot of output.

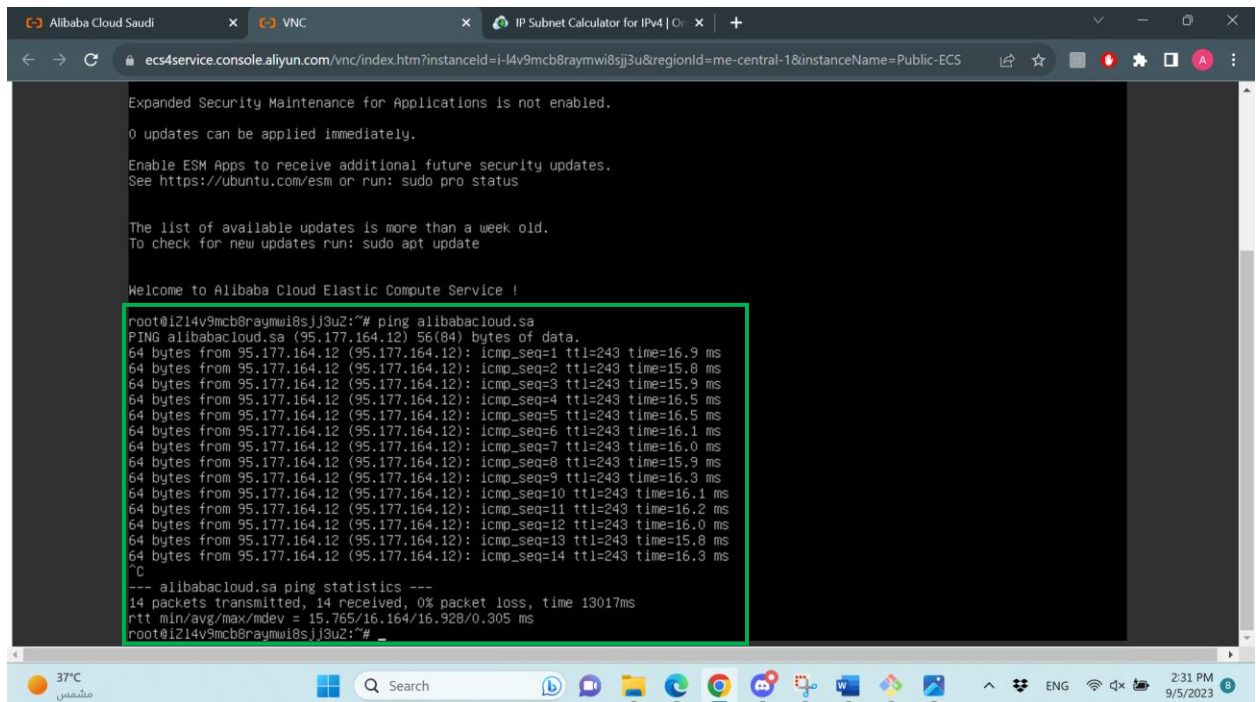


The screenshot shows a VNC terminal window with the following content:

```
root@i214vbdz5kac10hnpojq332:~# ping "PRIVATE IP OF Public-ECS"
ping: PRIVATE IP OF Public-ECS: Name or service not known
root@i214vbdz5kac10hnpojq332:~# ping 168.0.1.188
PING 168.0.1.188 (168.0.1.188) 56(84) bytes of data.
64 bytes from 168.0.1.188: icmp_seq=1 ttl=64 time=0.018 ms
64 bytes from 168.0.1.188: icmp_seq=2 ttl=64 time=0.025 ms
64 bytes from 168.0.1.188: icmp_seq=3 ttl=64 time=0.025 ms
64 bytes from 168.0.1.188: icmp_seq=4 ttl=64 time=0.024 ms
64 bytes from 168.0.1.188: icmp_seq=5 ttl=64 time=0.024 ms
64 bytes from 168.0.1.188: icmp_seq=6 ttl=64 time=0.018 ms
64 bytes from 168.0.1.188: icmp_seq=7 ttl=64 time=0.022 ms
64 bytes from 168.0.1.188: icmp_seq=8 ttl=64 time=0.015 ms
64 bytes from 168.0.1.188: icmp_seq=9 ttl=64 time=0.025 ms
64 bytes from 168.0.1.188: icmp_seq=10 ttl=64 time=0.020 ms
64 bytes from 168.0.1.188: icmp_seq=11 ttl=64 time=0.024 ms
^C
--- 168.0.1.188 ping statistics ---
11 packets transmitted, 11 received, 0% packet loss, time 10242ms
rtt min/avg/max/mdev = 0.015/0.021/0.025/0.003 ms
root@i214vbdz5kac10hnpojq332:~# ping 168.0.2.143
PING 168.0.2.143 (168.0.2.143) 56(84) bytes of data.
64 bytes from 168.0.2.143: icmp_seq=1 ttl=64 time=1.48 ms
64 bytes from 168.0.2.143: icmp_seq=2 ttl=64 time=1.31 ms
64 bytes from 168.0.2.143: icmp_seq=3 ttl=64 time=1.32 ms
64 bytes from 168.0.2.143: icmp_seq=4 ttl=64 time=1.32 ms
64 bytes from 168.0.2.143: icmp_seq=5 ttl=64 time=1.32 ms
64 bytes from 168.0.2.143: icmp_seq=6 ttl=64 time=1.32 ms
64 bytes from 168.0.2.143: icmp_seq=7 ttl=64 time=1.32 ms
64 bytes from 168.0.2.143: icmp_seq=8 ttl=64 time=1.34 ms
64 bytes from 168.0.2.143: icmp_seq=9 ttl=64 time=1.32 ms
^C
--- 168.0.2.143 ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 8011ms
rtt min/avg/max/mdev = 1.313/1.338/1.484/0.051 ms
root@i214vbdz5kac10hnpojq332:~#
```

2. Connect to Public-ECS through VNC:

- Enter: (ping alibabacloud.sa) command and take screenshot of output.



The screenshot shows a VNC terminal window with the following content:

```
Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.

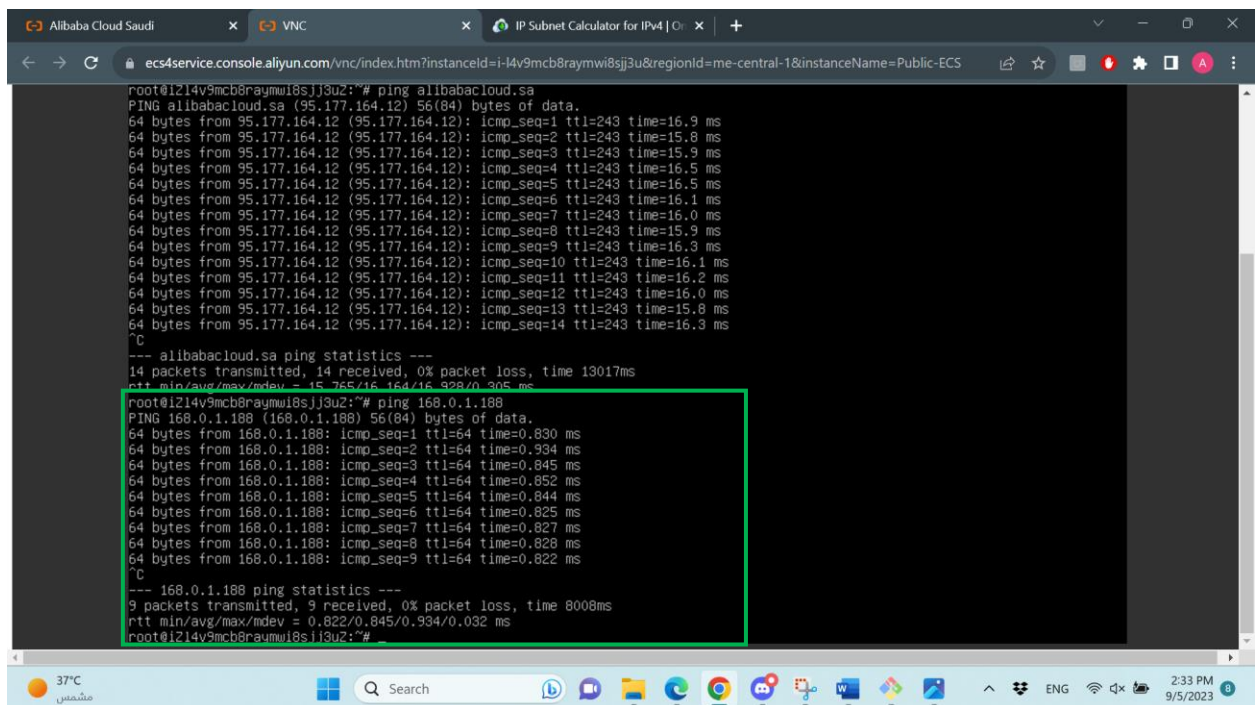
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

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

Welcome to Alibaba Cloud Elastic Compute Service !

root@i214v9mcb8raymwi8sjj3u2:~# ping alibabacloud.sa
PING alibabacloud.sa (95.177.164.12) 56(84) bytes of data:
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=1 ttl=243 time=16.9 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=2 ttl=243 time=15.8 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=3 ttl=243 time=15.9 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=4 ttl=243 time=16.5 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=5 ttl=243 time=16.5 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=6 ttl=243 time=16.1 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=7 ttl=243 time=16.0 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=8 ttl=243 time=15.9 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=9 ttl=243 time=16.3 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=10 ttl=243 time=16.1 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=11 ttl=243 time=16.2 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=12 ttl=243 time=16.0 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=13 ttl=243 time=15.8 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=14 ttl=243 time=16.3 ms
^C
--- alibabacloud.sa ping statistics ---
14 packets transmitted, 14 received, 0% packet loss, time 13017ms
rtt min/avg/max/mdev = 15.765/16.164/16.928/0.305 ms
root@i214v9mcb8raymwi8sjj3u2:~#
```

- Enter: (ping "PRIVATE IP OF Private-ECS") command and take screenshot of output.



The screenshot shows a VNC terminal window with the following content:

```
root@i214v9mcb8raymwi8sjj3u2:~# ping alibabacloud.sa
PING alibabacloud.sa (95.177.164.12) 56(84) bytes of data:
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=1 ttl=243 time=16.9 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=2 ttl=243 time=15.8 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=3 ttl=243 time=15.9 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=4 ttl=243 time=16.5 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=5 ttl=243 time=16.5 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=6 ttl=243 time=16.1 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=7 ttl=243 time=16.0 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=8 ttl=243 time=15.9 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=9 ttl=243 time=16.3 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=10 ttl=243 time=16.1 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=11 ttl=243 time=16.2 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=12 ttl=243 time=16.0 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=13 ttl=243 time=15.8 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=14 ttl=243 time=16.3 ms
^C
--- alibabacloud.sa ping statistics ---
14 packets transmitted, 14 received, 0% packet loss, time 13017ms
rtt min/avg/max/mdev = 15.765/16.164/16.928/0.305 ms

root@i214v9mcb8raymwi8sjj3u2:~# ping 168.0.1.188
PING 168.0.1.188 (168.0.1.188) 56(84) bytes of data:
64 bytes from 168.0.1.188: icmp_seq=1 ttl=64 time=0.830 ms
64 bytes from 168.0.1.188: icmp_seq=2 ttl=64 time=0.934 ms
64 bytes from 168.0.1.188: icmp_seq=3 ttl=64 time=0.845 ms
64 bytes from 168.0.1.188: icmp_seq=4 ttl=64 time=0.852 ms
64 bytes from 168.0.1.188: icmp_seq=5 ttl=64 time=0.844 ms
64 bytes from 168.0.1.188: icmp_seq=6 ttl=64 time=0.825 ms
64 bytes from 168.0.1.188: icmp_seq=7 ttl=64 time=0.827 ms
64 bytes from 168.0.1.188: icmp_seq=8 ttl=64 time=0.828 ms
64 bytes from 168.0.1.188: icmp_seq=9 ttl=64 time=0.822 ms
^C
--- 168.0.1.188 ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 8008ms
rtt min/avg/max/mdev = 0.822/0.845/0.934/0.032 ms
root@i214v9mcb8raymwi8sjj3u2:~#
```

3. Create internet Nat Gateway to allow private instances to access internet:

- Enter: (ping alibabacloud.sa) command and take screenshot of output.
 - Private ECS (After connecting the SNAT):

The screenshot shows the Alibaba Cloud console for the Saudi Region. The left sidebar lists various VPC resources, with 'Internet NAT Gateway' selected. The main panel displays the 'ngw-l4vvp7fo6qa3l0bybfla' gateway. The 'SNAT Management' tab is active, showing a table of SNAT entries. One entry is listed with ID 'snat-l4v03lrzsdrr6lw7g6x8', source CIDR '168.0.10/24', and target ECS instances. The status is 'Available'.

SNAT Entry ID/Name	Source CIDR Block	ECS Instance/ENI/vSwitch/VPC ID	Public IP	Status	Actions
snat-l4v03lrzsdrr6lw7g6x8	168.0.10/24	vsw-l4v0yasipz3ph0hdsu0mf Private-Vswitch-A	8.213.26.154	✓ Available	Edit Delete

The screenshot shows a VNC terminal window connected to a Private ECS instance. The terminal output displays the results of a ping command to 'alibabacloud.sa'. The first part shows a successful ping from the public IP 168.0.2.143. The second part shows a failed ping from the private IP 95.177.164.12, with 0 packets received and 100% packet loss. The third part shows a successful ping from the private IP 95.177.164.12, with 9 packets received and 0% packet loss.

```
PING 168.0.2.143 (168.0.2.143) 56(84) bytes of data:
64 bytes from 168.0.2.143: icmp_seq=1 ttl=64 time=1.48 ms
64 bytes from 168.0.2.143: icmp_seq=2 ttl=64 time=1.31 ms
64 bytes from 168.0.2.143: icmp_seq=3 ttl=64 time=1.32 ms
64 bytes from 168.0.2.143: icmp_seq=4 ttl=64 time=1.32 ms
64 bytes from 168.0.2.143: icmp_seq=5 ttl=64 time=1.32 ms
64 bytes from 168.0.2.143: icmp_seq=6 ttl=64 time=1.32 ms
64 bytes from 168.0.2.143: icmp_seq=7 ttl=64 time=1.32 ms
64 bytes from 168.0.2.143: icmp_seq=8 ttl=64 time=1.34 ms
64 bytes from 168.0.2.143: icmp_seq=9 ttl=64 time=1.32 ms
^C
--- 168.0.2.143 ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 801ms
rtt min/avg/max/mdev = 1.313/1.338/1.484/0.051 ms
root@i214vbd25kac10hnp0jq332:~# ping alibabacloud.sa
PING alibabacloud.sa (95.177.164.12) 56(84) bytes of data:
^C
--- alibabacloud.sa ping statistics ---
3 packets transmitted, 0 received, 100% packet loss, time 2055ms
^C
root@i214vbd25kac10hnp0jq332:~# ping alibabacloud.sa
PING alibabacloud.sa (95.177.164.12) 56(84) bytes of data:
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=1 ttl=243 time=18.5 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=2 ttl=243 time=17.6 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=3 ttl=243 time=17.4 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=4 ttl=243 time=17.1 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=5 ttl=243 time=16.9 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=6 ttl=243 time=17.8 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=7 ttl=243 time=17.4 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=8 ttl=243 time=17.2 ms
64 bytes from 95.177.164.12 (95.177.164.12): icmp_seq=9 ttl=243 time=17.5 ms
^C
--- alibabacloud.sa ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 801ms
rtt min/avg/max/mdev = 16.924/17.483/18.497/0.438 ms
root@i214vbd25kac10hnp0jq332:~#
```