Amazon VPC-4

CLARUSWAY
WAY TO REINVENT YOURSELF

Table of Content

WORDPRESS WITH LAMP STACK ON VPC

Dynamic Website

Dynamic Website

- Operating System
- Web Server
- Database
- Prg. Language

Setup Wordpress with Database

Operating System

Web Server

Database

Progr. language

LAMP:

EC2 Amazon Linux 2

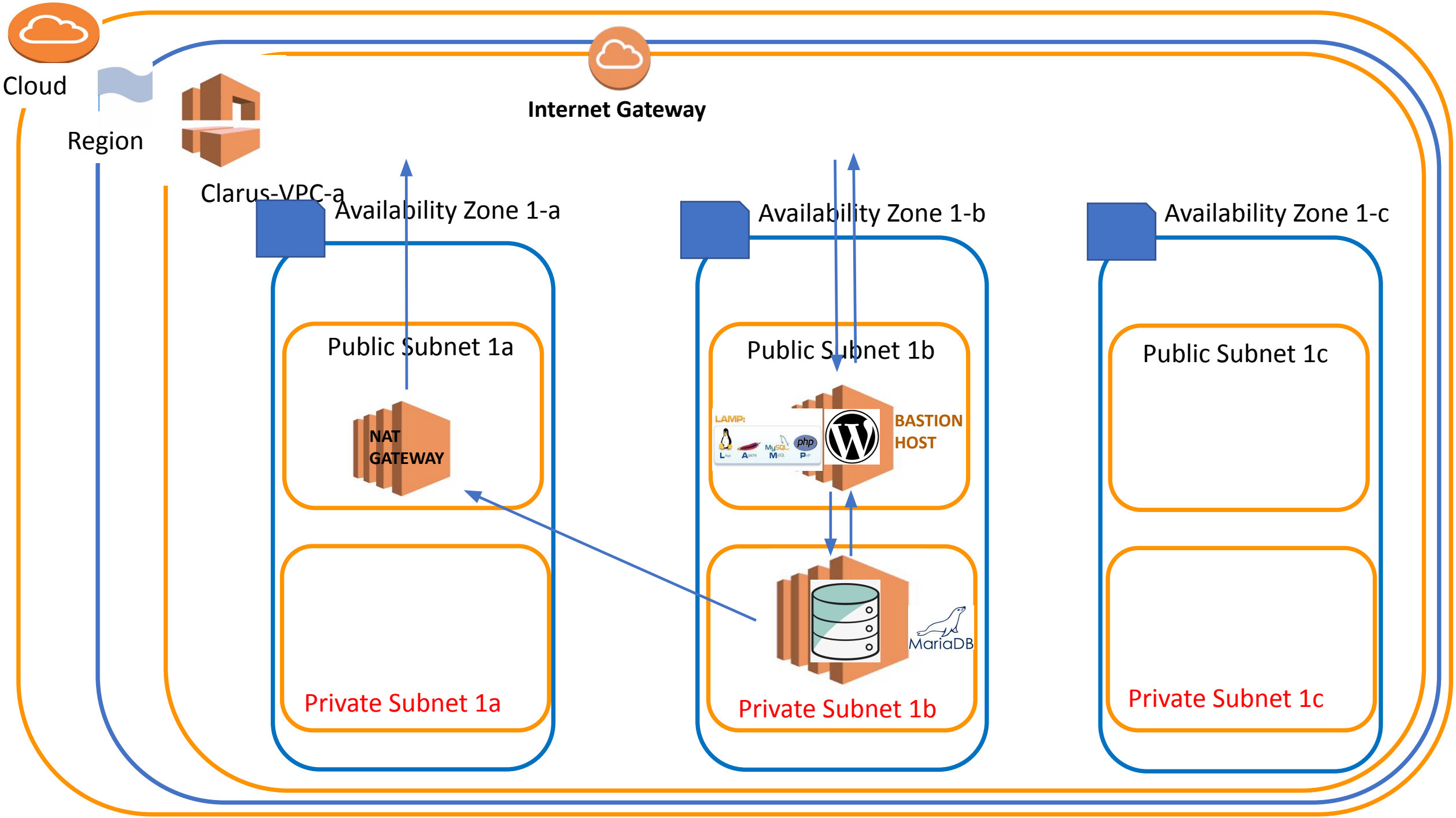
User Data

Another EC2 Instance

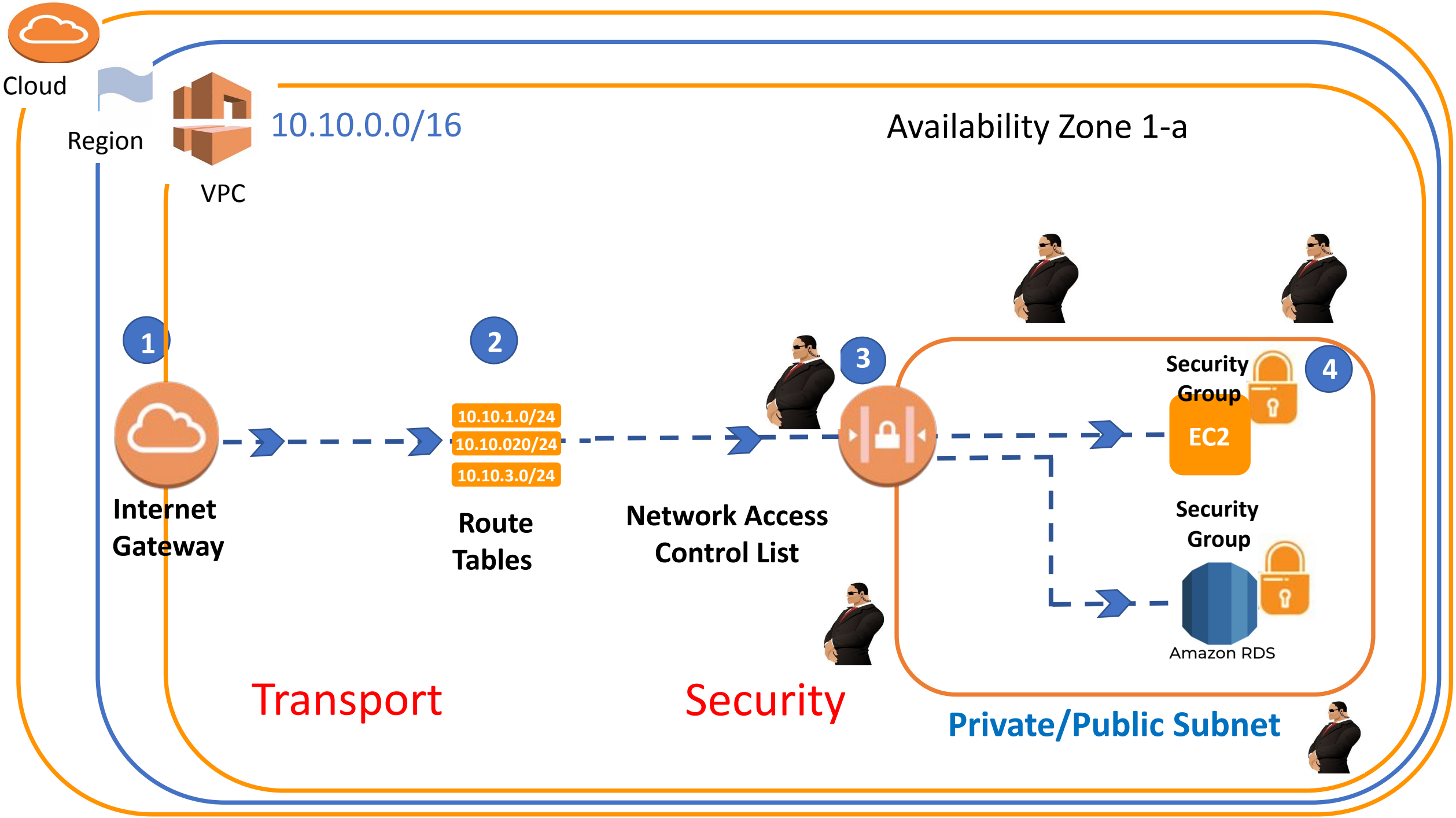
User Data

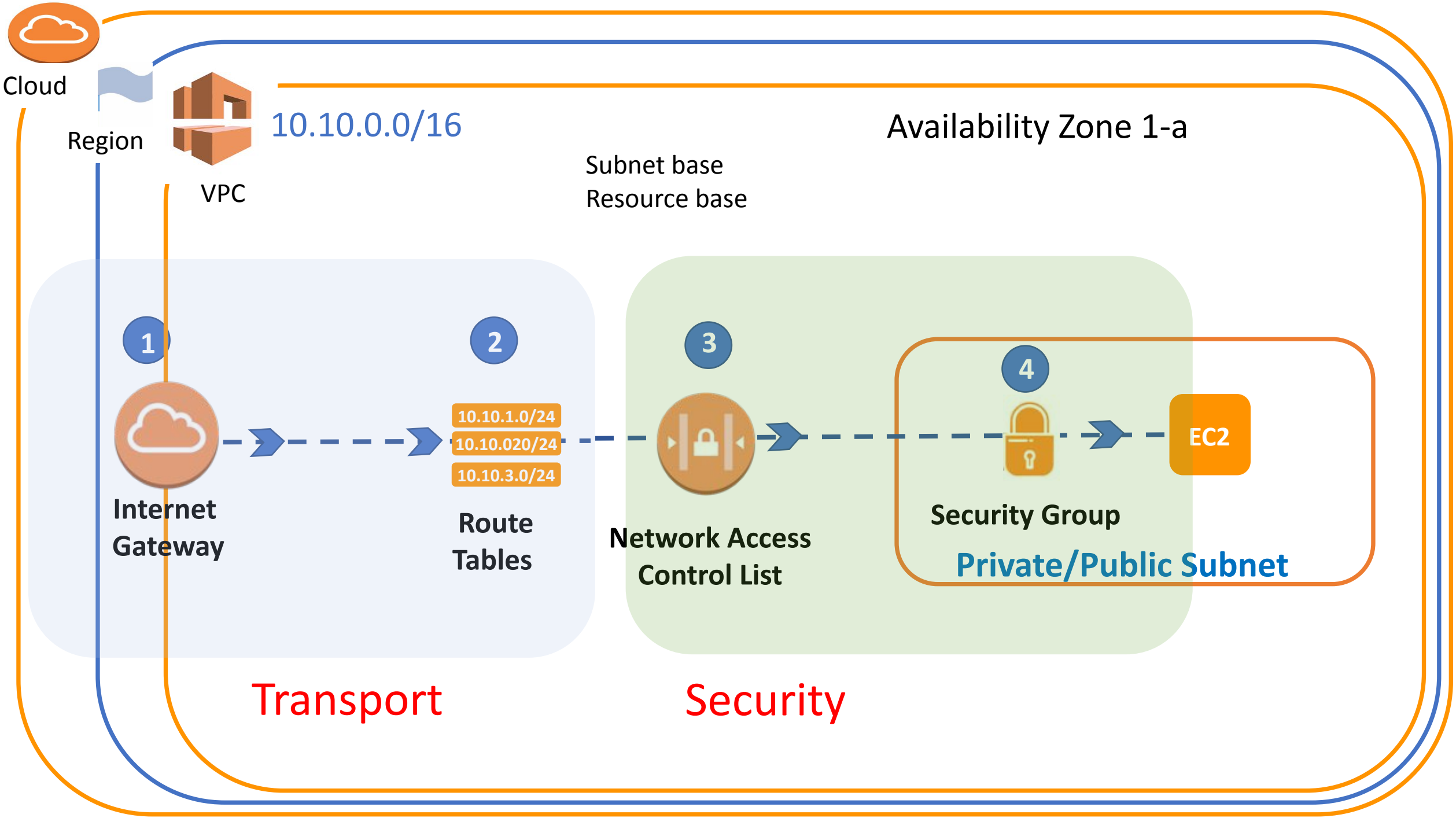
User Data

User Data


Cloud
Region
Clarus-VPC-a
Internet Gateway
Availability Zone 1-a
Availability Zone 1-b
Availability Zone 1-c
Public Subnet 1a
Public Subnet 1b
Public Subnet 1c
NAT GATEWAY
LAMP:
BASTION HOST
MariaDB
Private Subnet 1a
Private Subnet 1b
Private Subnet 1c

NACL (NETWORK ACCESS CONTROL LIST)

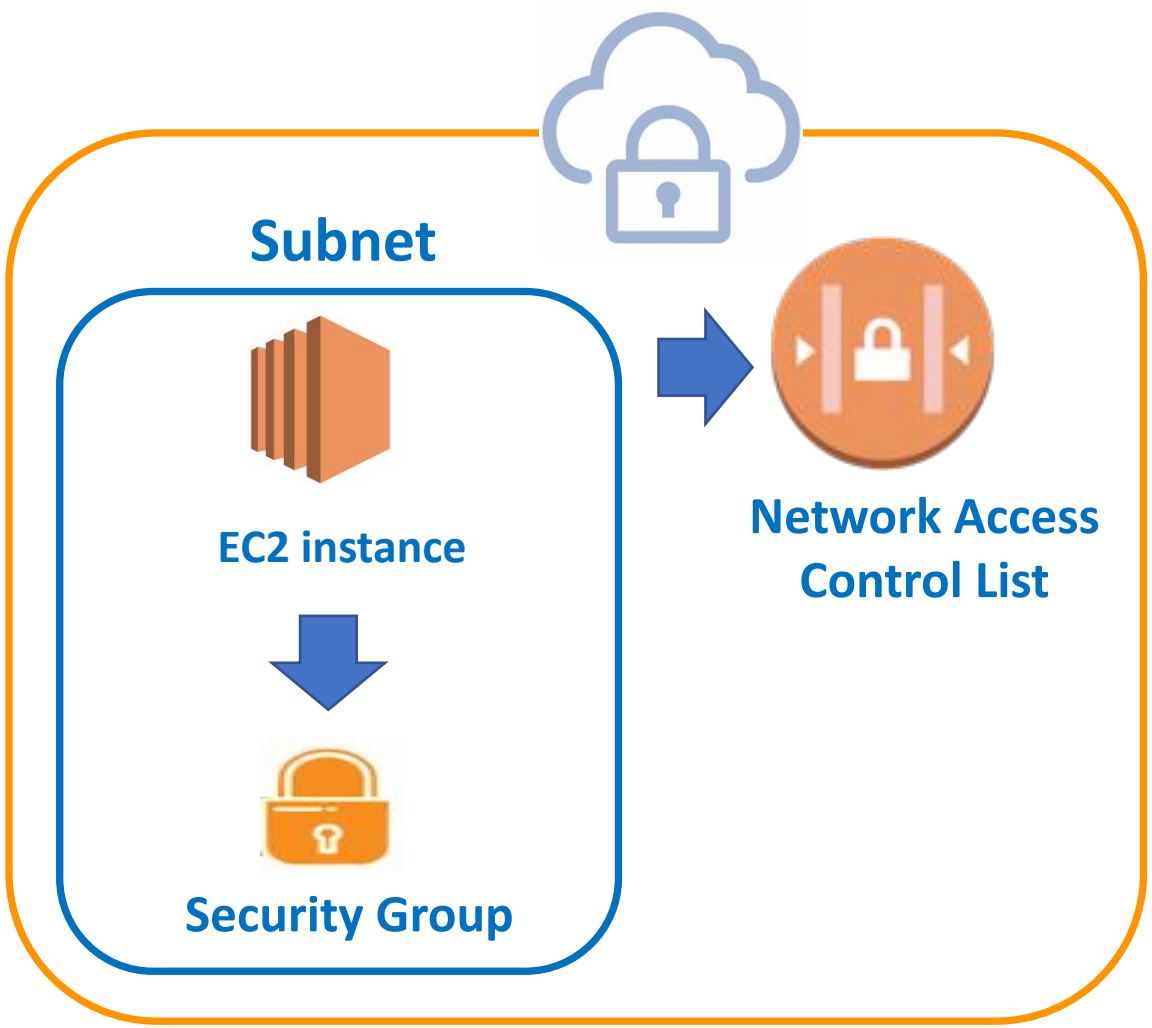

Cloud
Region
VPC
10.10.0.0/16
Availability Zone 1-a
1
2
3
4
Internet Gateway
10.10.1.0/24
10.10.020/24
10.10.3.0/24
Route Tables
Network Access Control List
Security Group
EC2
Security Group
Amazon RDS
Transport
Security
Private/Public Subnet


Cloud
Region
VPC
10.10.0.0/16
Availability Zone 1-a
Subnet base
Resource base
1
2
3
4
10.10.1.0/24
10.10.020/24
10.10.3.0/24
EC2
Internet Gateway
Route Tables
Network Access Control List
Security Group
Private/Public Subnet
Transport
Security

NACL (NETWORK ACCESS LISTS)

Subnet obeys the NACL rules

Resources obeys NACL and Sec. Group

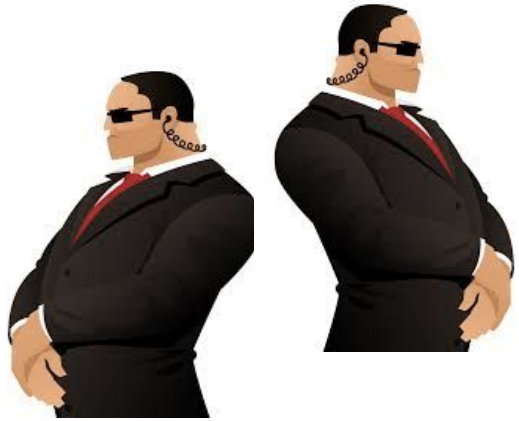


User IP: 7.8.9.10/32

Connection Request	
No	Type-Port
1	SSH-22
2	HTTP-80
3	All ICMP-IPv4 -All
4	HTTPS-443
5	Mysql/Auro. 3306

Security Group inbound

Type	Protocol	Port Range	Source
HTTP	TCP(6)	80	1.2.3.4/32
SSH-22	TCP(6)	22	0.0.0.0/0
All ICMP-IPv4	ICMP(1)	ALL	0.0.0.0/0
HTTPS	TCP(6)	443	7.8.9.10/32



Subnet

Network ACL inbound

Rule	Type	Protocol	Port Range	Source/ Destination	Allow/ Deny
100	HTTP	TCP(6)	80	7.8.9.10/32	ALLOW
200	SSH-22	TCP(6)	22	0.0.0.0/0	ALLOW
300	All ICMP-IPv4	ICMP(1)	ALL	0.0.0.0/0	ALLOW
400	HTTPS	TCP(6)	443	7.8.9.10/32	DENY
*	ALL Traffic	ALL	ALL	0.0.0.0/0	DENY

Outbound rules also apply, not shown here.

User IP: 7.8.9.10/32

Connection Request	
No	Type-Port
1	SSH-22
2	HTTP-80
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HTTP	TCP(6)	80	1.2.3.4/32
SSH-22	TCP(6)	22	0.0.0.0/0
All ICMP-IPv4	ICMP(1)	ALL	0.0.0.0/0
HTTPS	TCP(6)	443	7.8.9.10/32

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Rule	Type	Protocol	Port Range	Source/ Destination	Allow/ Deny
100	HTTP	TCP(6)	80	7.8.9.10/32	ALLOW
200	SSH-22	TCP(6)	22	0.0.0.0/0	ALLOW
300	All ICMP-IPv4	ICMP(1)	ALL	0.0.0.0/0	ALLOW
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SSH-22	TCP(6)	22	0.0.0.0/0
All ICMP-IPv4	ICMP(1)	ALL	0.0.0.0/0
HTTPS	TCP(6)	443	7.8.9.10/32

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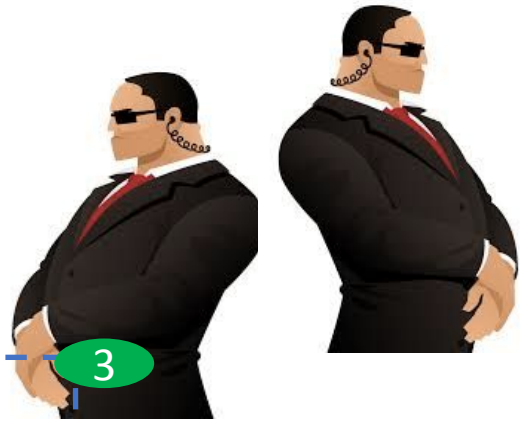

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Network ACL inbound

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100	HTTP	TCP(6)	80	7.8.9.10/32	ALLOW
200	SSH-22	TCP(6)	22	0.0.0.0/0	ALLOW
300	All ICMP-IPv4	ICMP(1)	ALL	0.0.0.0/0	ALLOW
400	HTTPS	TCP(6)	443	7.8.9.10/32	DENY
*	ALL Traffic	ALL	ALL	0.0.0.0/0	DENY

3

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Outbound rules also apply, not shown here.

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Security Group inbound

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SSH-22	TCP(6)	22	0.0.0.0/0
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Network ACL inbound

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200	SSH-22	TCP(6)	22	0.0.0.0/0	ALLOW
300	All ICMP-IPv4	ICMP(1)	ALL	0.0.0.0/0	ALLOW
400	HTTPS	TCP(6)	443	7.8.9.10/32	DENY
*	ALL Traffic	ALL	ALL	0.0.0.0/0	DENY

4 4 4 4 4

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User IP: 7.8.9.10/32

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SSH-22	TCP(6)	22	0.0.0.0/0
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Network ACL inbound

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100	HTTP	TCP(6)	80	7.8.9.10/32	ALLOW
200	SSH-22	TCP(6)	22	0.0.0.0/0	ALLOW
300	All ICMP-IPv4	ICMP(1)	ALL	0.0.0.0/0	ALLOW
400	HTTPS	TCP(6)	443	7.8.9.10/32	DENY
*	ALL Traffic	ALL	ALL	0.0.0.0/0	DENY

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Outbound rules also apply, not shown here.

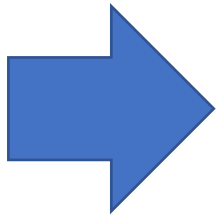
(Stateful) **Security Group inbound**

Type	Protocol	Port Range	Source
HTTP	TCP(6)	80	1.2.3.4/32
SSH-22	TCP(6)	22	0.0.0.0/0
All ICMP-IPv4	ICMP(1)	ALL	0.0.0.0/0
HTTPS	TCP(6)	443	7.8.9.10/32

ALLOW Only

Network ACL inbound (Stateless)

Rule	Type	Protocol	Port Range	Source	Allow/ Deny
100	HTTP	TCP(6)	80	7.8.9.10/32	ALLOW
200	SSH-22	TCP(6)	22	0.0.0.0/0	ALLOW
300	All ICMP-IPv4	ICMP(1)	ALL	0.0.0.0/0	ALLOW
400	HTTPS	TCP(6)	443	7.8.9.10/32	DENY
*	ALL Traffic	ALL	ALL	0.0.0.0/0	DENY



(Stateless) **Network ACL outbound**

Rule	Type	Protocol	Port Range	Destination	Allow/ Deny
100	HTTP	TCP(6)	80	7.8.9.10/32	ALLOW
200	Custom TCP	TCP(6)	32768 - 65535	0.0.0.0/0	ALLOW
300	All ICMP-IPv4	ICMP(1)	ALL	0.0.0.0/0	ALLOW
400	HTTPS	TCP(6)	443	7.8.9.10/32	DENY
*	ALL Traffic	ALL	ALL	0.0.0.0/0	DENY

EPHEMERAL PORT

NACLs are stateless. This means that you are required to have a rule for inbound AND outbound traffic. So, if you want to allow your EC2 instance to serve HTTP traffic, you will need to allow port 80 inbound and ports 1024 – 65535 outbound. But where 1024 – 65535 came from.

The ports 1024 – 65535 are called the “ephemeral ports”.

These ports are randomly selected to allow return traffic for a request. So, if a request comes to the server on port 80, the request also specifies a random port between 1024 – 65535 for the return traffic.

NACL TABLES

Let's get our hands dirty!

- NACL Tables