AWS SysOps Administrator – Associate Level

simplilearn

TECHNOLOGY

Networking and Route 53

simplilearn

Learning Objectives

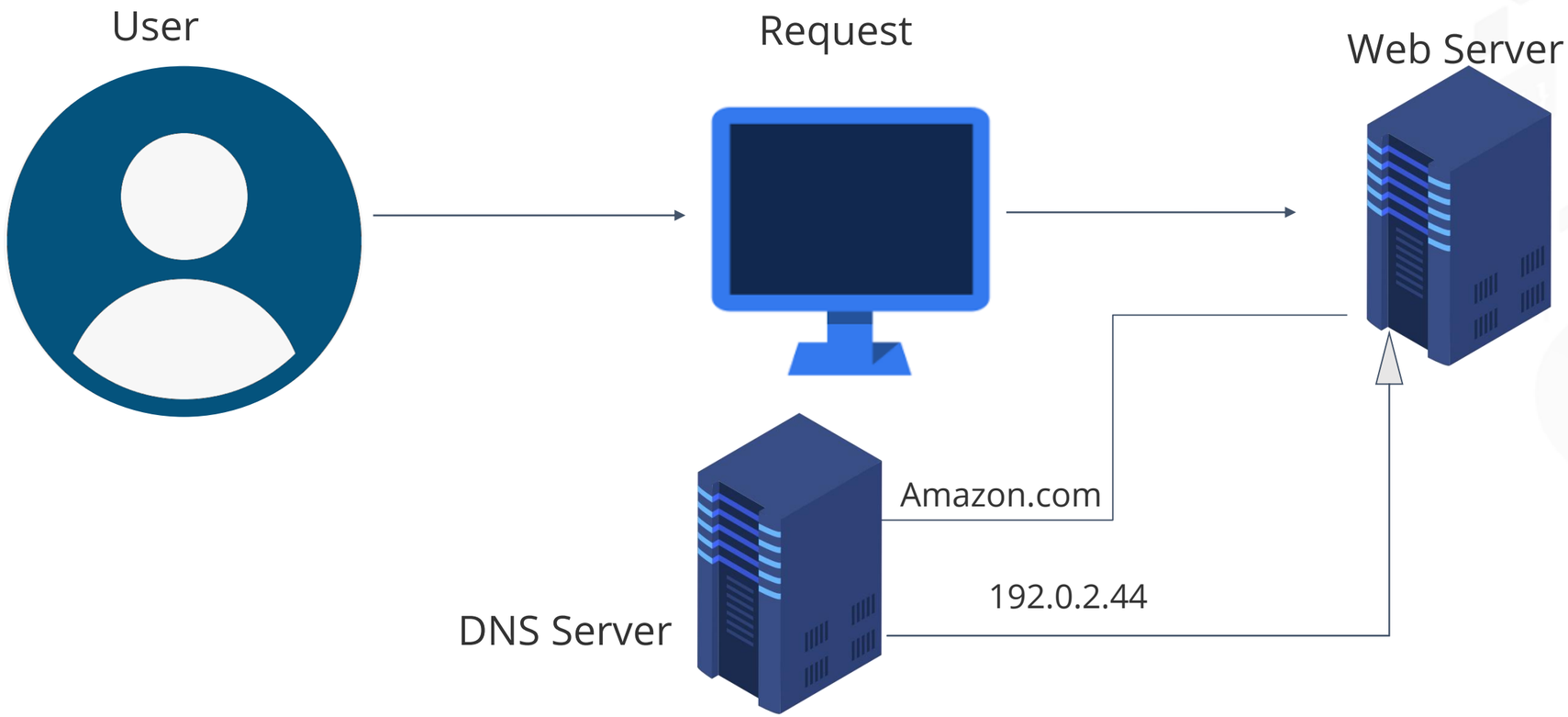
By the end of this lesson, you will be able to:

- Implement how to register a domain name
- Describe DNS routing
- Implement different types of routing
- Explain Route 53 and its fundamentals

Domain Name System

Domain Name System

Domain Name System translates human-readable domain names (for example, www.amazon.com) to machine-readable IP addresses (for example, 192.0.2.44).



Types of DNS Services

Authoritative DNS

It provides an update mechanism that developers use to manage their public DNS names.

Recursive DNS

It acts like a hotel concierge; while it doesn't own any DNS records, it acts as an intermediary who can get the DNS information on your behalf.

Register a Domain Name

Register a Domain Name

Duration: 10 Min.

Problem Statement:

Register a domain name with Route 53.

ASSISTED PRACTICE

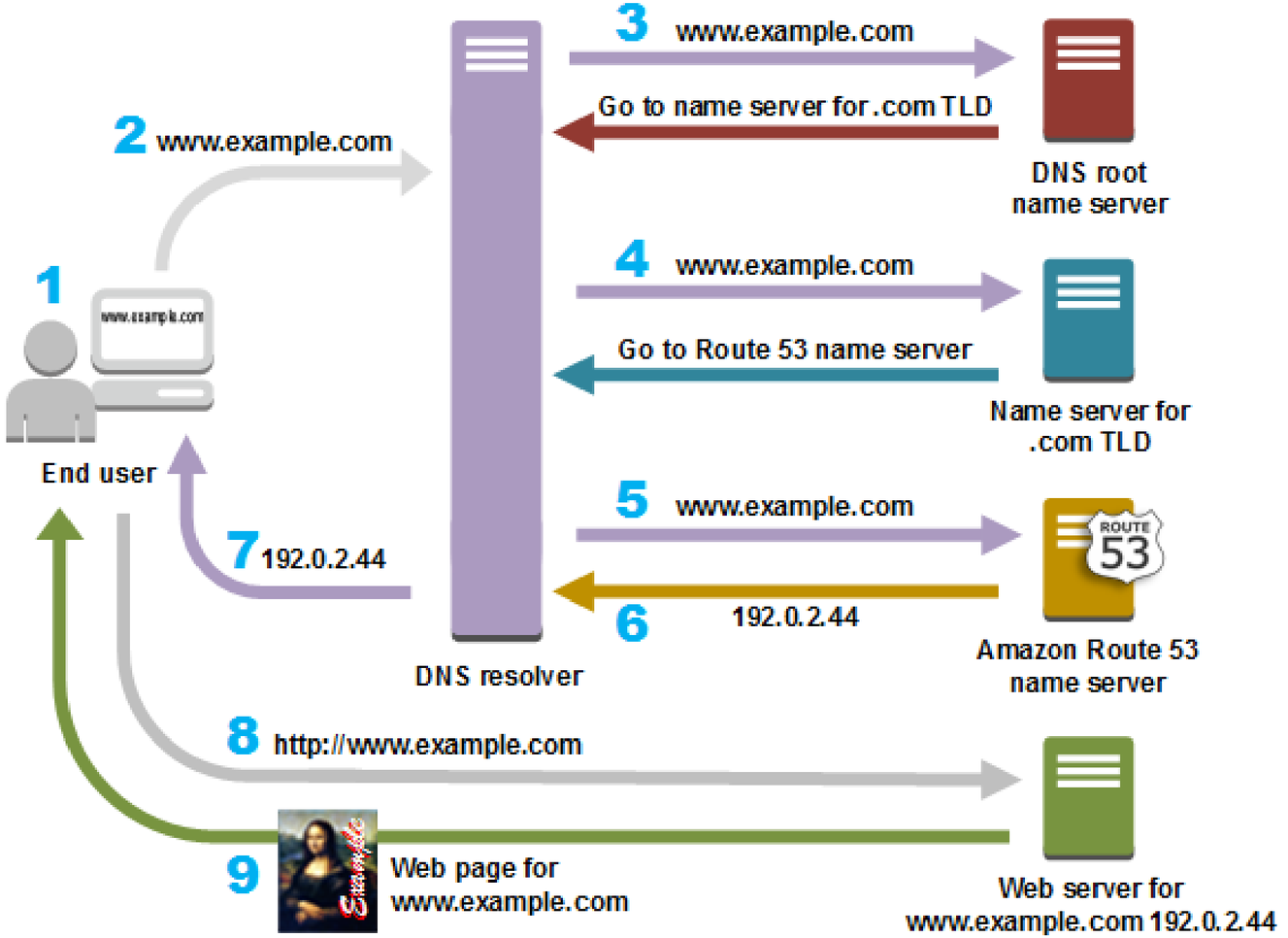
Assisted Practice: Guidelines

Steps to register a domain name using Route 53:

1. Obtain a static URL
2. Select an IP address, and choose an instance name
3. Choose a domain and register a domain name
4. Configure DNS with a static IP address
5. Verify the website URL

Routing Traffic to Web Applications

The figure below depicts traffic routing to web applications.



src: www.aws.amazon.com

Routing Traffic to Web Applications

User request is routed to a DNS resolver which is managed by an internet service provider or a corporate network.

DNS resolver forwards the request to a DNS root name server.

The name servers for domains respond to the requests associated with the Route 53 servers.

Route 53 name server will get the associated values like an IP address and return it to the DNS resolver.

Web browser sends the request to the server, and the server returns the requested web page.

Create and Configure an S3 Bucket to Host a Website

Duration: 20 Min.

Problem Statement:

Create an S3 bucket and configure it to host a website on a server.

ASSISTED PRACTICE

Assisted Practice: Guidelines

Steps to create and configure an S3 bucket to host a website:

1. Log in to AWS console a choose S3 service
2. Create the S3 bucket by specifying the necessary information
3. Choose a bucket policy and edit the policies accordingly
4. Replace the domain name in the bucket policy with your choice

Create a Website and Upload It to an S3 Bucket

Duration: 20 Min.

Problem Statement:

Create a website and upload it to your Amazon S3 bucket.

ASSISTED PRACTICE

Assisted Practice: Guidelines

Steps to create a website and upload it to an S3 bucket:

1. Create a sample HTML page and save it

2. Configure the S3 bucket

3. Upload the file to the bucket

1. Follow on-screen instructions to complete the process

Route DNS Traffic from Your Domain

Duration: 20 Min.

Problem Statement:

Route DNS traffic from your domain to your website bucket.

ASSISTED PRACTICE

Assisted Practice: Guidelines

Steps to route DNS traffic from your domain:

1. Open the Route 53 console

1. In the navigation pane, choose **Hosted zones**

1. In the list of hosted zones, choose the name of your domain

1. Choose **Create Record Set**

1. Specify the values and hit **Create**

TECHNOLOGY

Amazon Route 53

Amazon Route 53 Fundamentals

Resource Record Sets:

Instructions to DNS on how to route traffic for a domain

Hosted Zone:

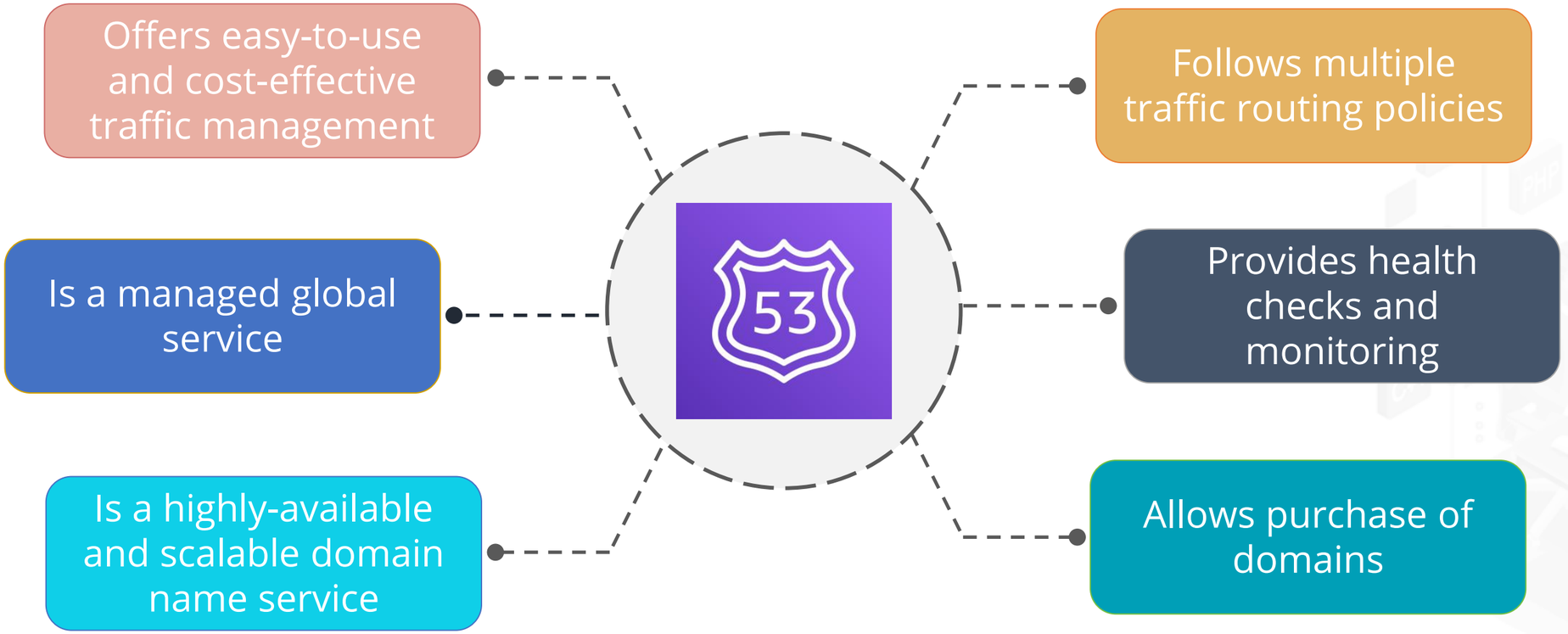
A collection of resource record sets for a specified domain

- Route 53 defines the resource record sets to create subdomains underneath your zone apex, which is the point of service or groups of services providing different types of services such as web hosting, mail, and FTP.

- A hosted zone typically corresponds to a zone apex (Example: Amazon.com or example.com).

- A hosted zone can be assigned to any host name (Example: While creating a hosted zone for Amazon.com, you can create a hosted zone for example.com).

Features of Amazon Route 53



Benefits of Route 53

The various benefits of Amazon Route 53 are listed below:

1. Highly available and reliable
2. Flexible
3. Compatible with AWS services
4. Fast
5. Secure
6. Cost-effective and scalable

Top-Level Domains

Top-Level Domains

- They are controlled by the Internet Assigned Numbers Authority (IANA) in a root zone database.
- There are two types of top level domains:

  Generic top-level domains

  Geographic top-level domains

- Both the domains can be registered and transferred with Route 53.

NS and SOA Records

NS Records

- Amazon Route 53 automatically creates a name server (NS) record that has the same name as your hosted zone.

- It lists the four name servers that are the authoritative name servers for your hosted zone.

- Example format for NS records are as follows:
  - *ns-2048.awsdns-64.com*
  - *ns-2049.awsdns-65.net*
  - *ns-2050.awsdns-66.org*
  - *ns-2051.awsdns-67.co.uk*

Getting the List of Name Servers

Steps to get the list of name servers are as follows:

1. Sign in to the AWS Management Console and open the **Route 53 console**
2. In the navigation pane, click on **Hosted Zones**
3. On the **Hosted Zones** page, choose the radio button (not the name) for the hosted zone
4. In the right pane, make note of the four servers listed for **Name Servers**

SOA Records

A Start of Authority (SOA) record identifies the base DNS information about a domain.

Example:

```
ns-2048.awsdns-64.net. hostmaster.example.com. 1 7200 900 1209600
86400
```

An SOA record includes the following elements:

1. Route 53 name sever created
2. Email address of the administrator
3. Current version of data file
4. Secondary name server checks
5. Refresh and retry interval checks
6. Minimum time to live

A and Alias Records

A and Alias Records

A Records

A Record is a type of DNS record in which A stands for Address. It is used to translate a domain name to an IP address.

Alias Records

An Alias Record is used to map resource record sets in a hosted zone to Elastic Load Balancers, CloudFront distributions, or S3 buckets that are configured.

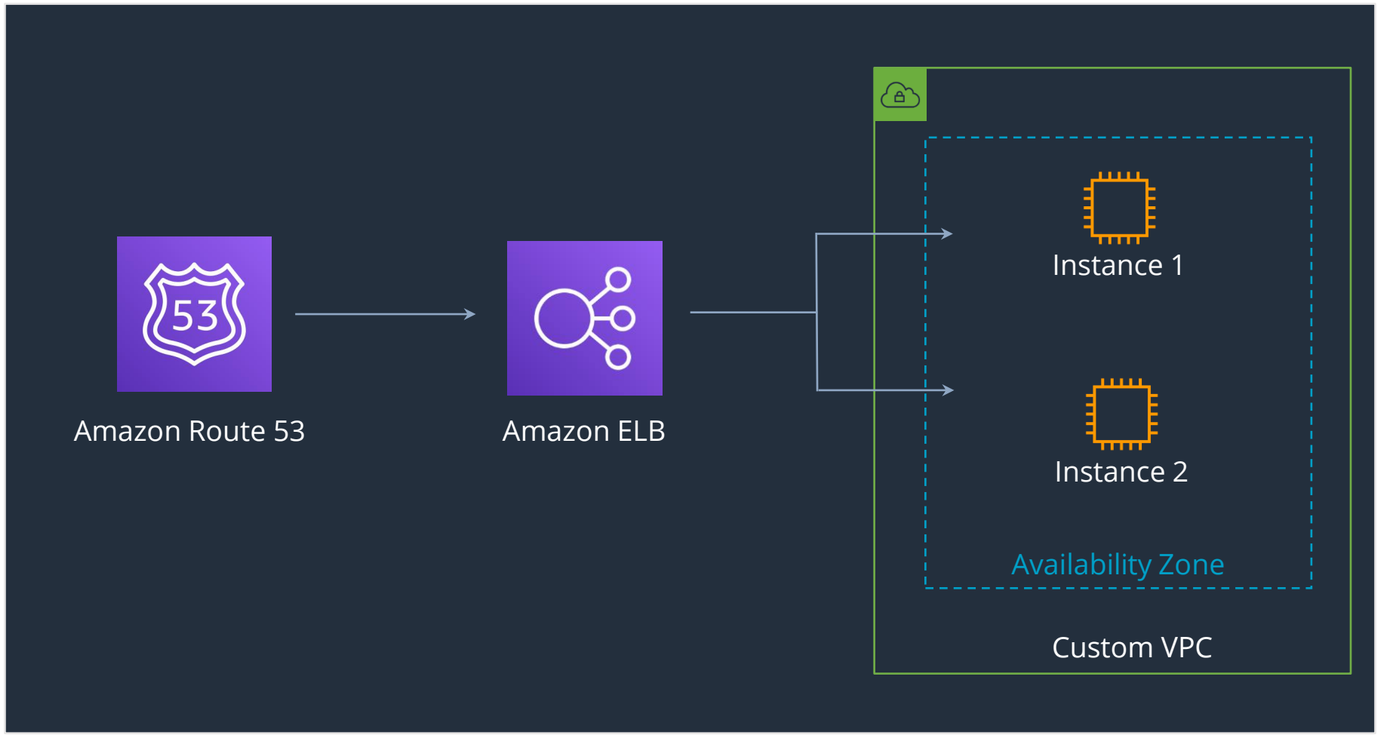
DNS Routing

DNS Routing Policies

When you create a record, you choose a routing policy, which determines how Amazon Route 53 responds to queries. Following are the routing policies supported by DNS:

1. Simple Routing
2. Weighted Routing
3. Latency Routing
4. Failover Routing
5. Geolocation Routing

Simple Routing



All requests for your domain that come to Route 53 will be forwarded to one region.

This is the default routing policy when you create a new record set.

It is commonly used when you have a single resource (for example, one web server) that performs a given function for your domain.

Simple Routing Policy

Duration: 20 Min.

Problem Statement:

Create a record set for a simple routing policy.

ASSISTED PRACTICE

Assisted Practice: Guidelines

Steps to create a record set for a simple routing policy:

1. Open the Route 53 console

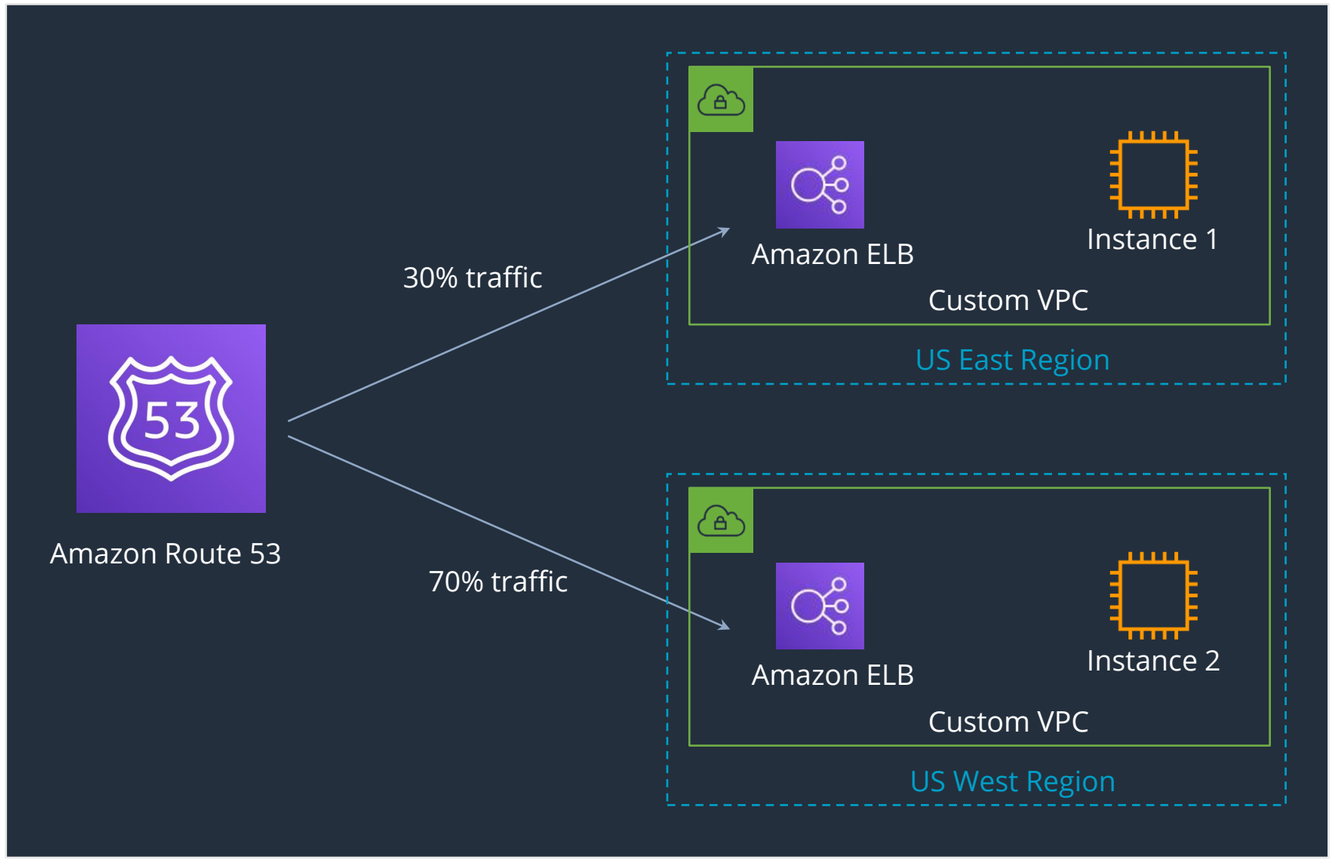
1. In the navigation pane, choose **Hosted zones**

1. Specify all the necessary details for the hosted zones

1. Select the routing policies and **Define simple record**

1. Specify the values and hit Create

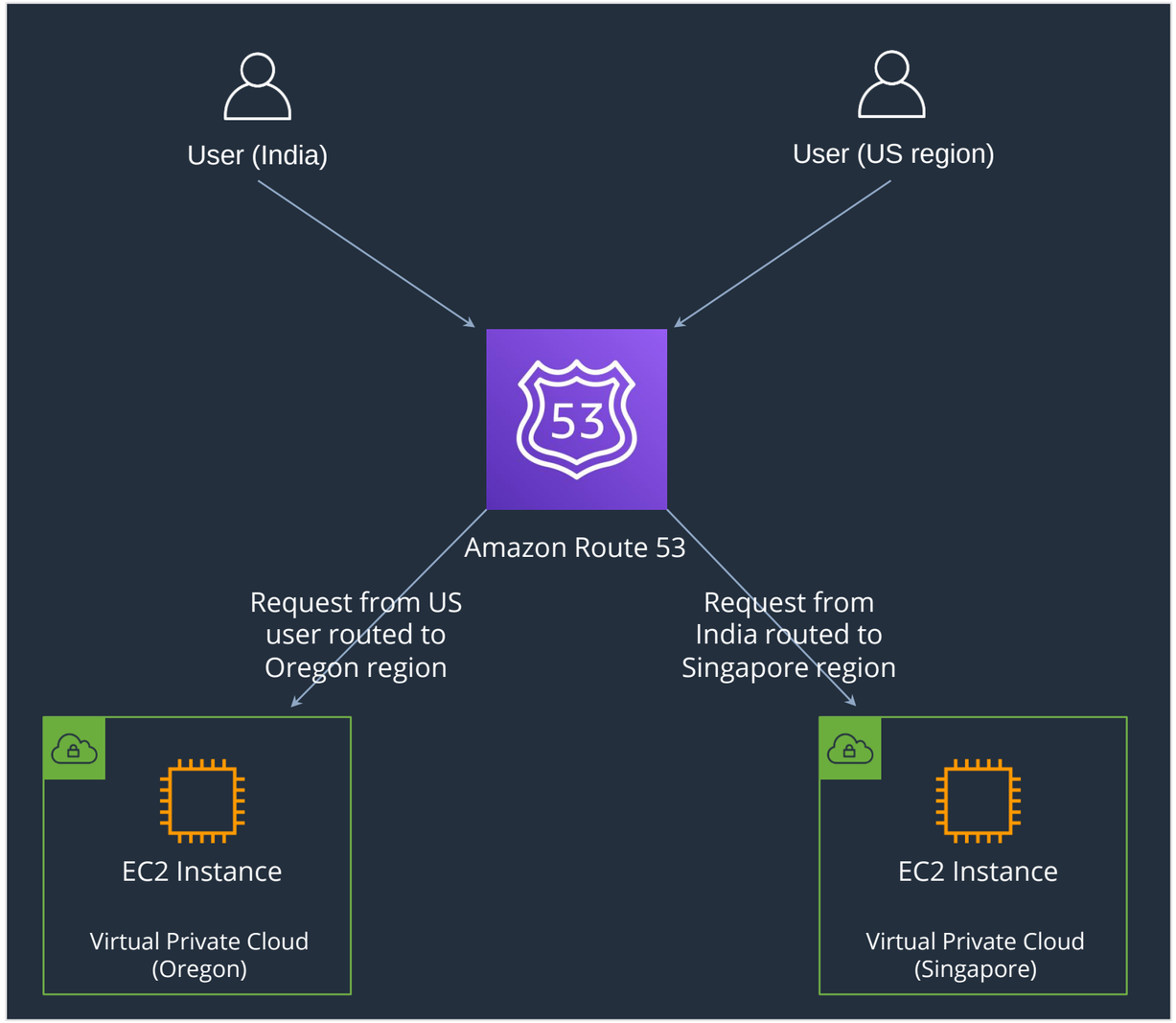
Weighted Routing



Requests for your domain that come to Route 53 will be forwarded to different regions or even different ELBs based on the weight specified.

Example: 20% to one region and 80% to another or 20% to one ELB and 80% to another

Latency Routing



This allows you to route based on the lowest latency for an end user.
Example: The region that gives the fastest response time

You need to create a latency record set for the EC2 or ELB resource in each region that hosts your website.

AWS will select a record for each request based on the least latency and use it to respond.

Latency Routing Policy

Duration: 20 Min.

Problem Statement:

Create a record set for a latency routing policy.

ASSISTED PRACTICE

Assisted Practice: Guidelines

Steps to create a record set for a latency routing policy:

1. Open the Route 53 console

1. In the navigation pane, choose **Hosted zones**

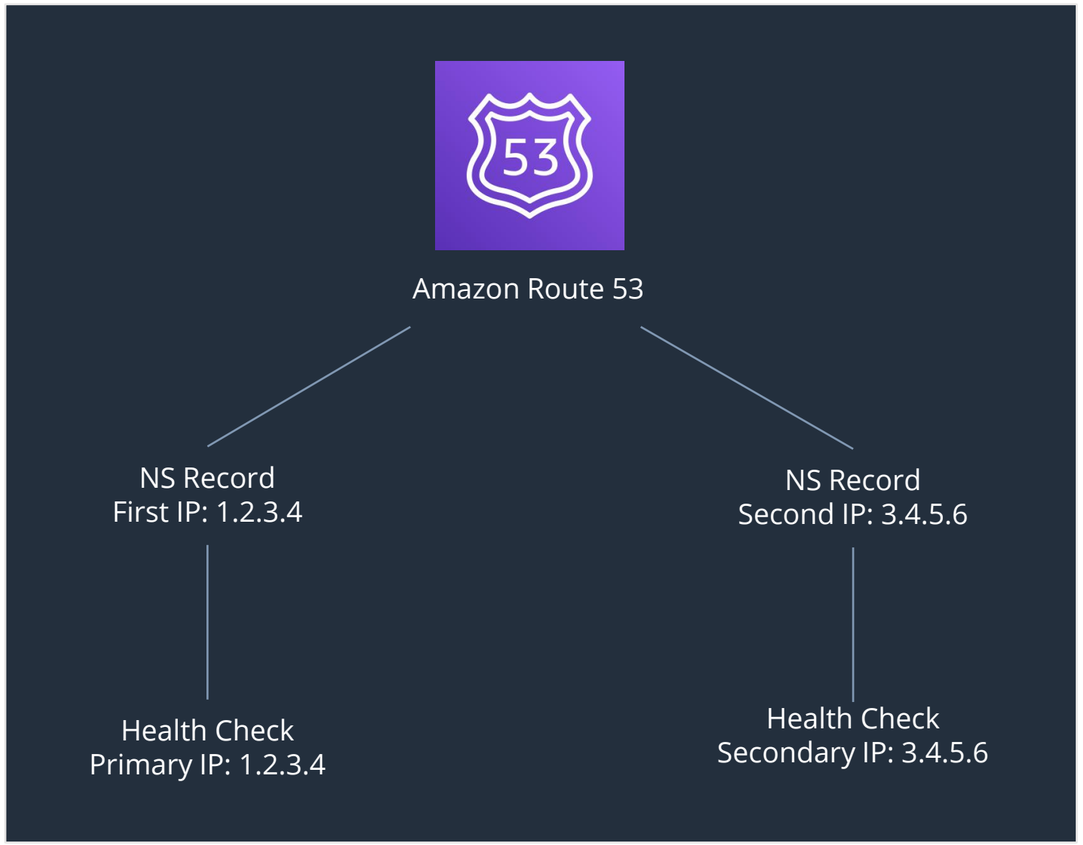
1. Specify all the necessary details for hosted zones

1. Select the routing policies and **Define Latency record**

1. Specify the values and create the records

1. View the **Hosted zone details** in the dashboard

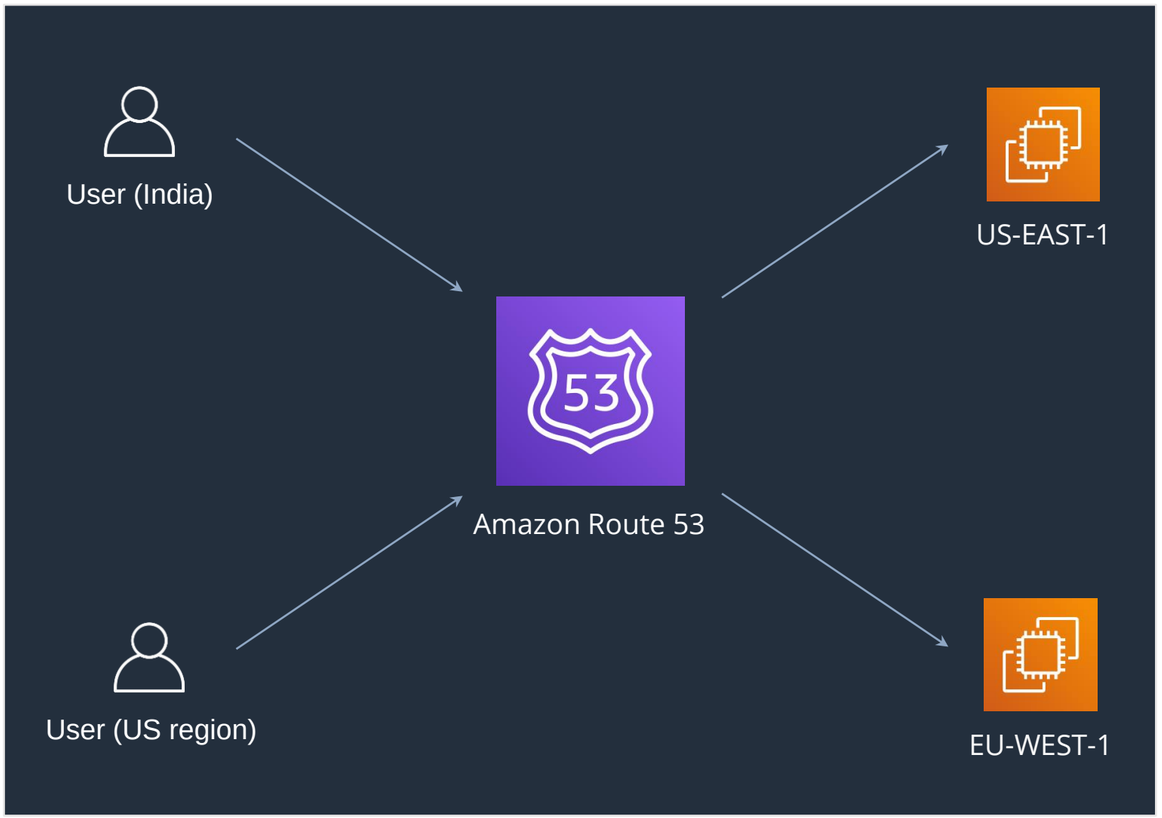
Failover Routing



This is suitable when you want an active or a passive setup.

Route 53 will monitor the health of your endpoints; when primary endpoint is down, it connects to the secondary one.

Geolocation Routing



This lets you choose where traffic will be sent based on the geographical location of a user.

Example: European customers can be sent to European servers and US customers to US servers.

Key Takeaways

- Route 53 defines the resource record sets to create subdomains underneath your zone apex, which is the point of service.
- Amazon Route 53 automatically creates a name server (NS) record that has the same name as your hosted zone.
- Requests for your domain that come to Route 53 will be forwarded to different regions on the weight specified in case of weighted routing.
- A Record is a type of DNS record in which A stands for Address. It is used to translate a domain name to an IP address.

Create a Custom VPC

Problem Statement:

Create a custom VPC to host the required resources by keeping the internet connection enabled.

Background of the problem statement:

As a SysOps administrator, create a VPC to host the required resources.

LESSON-END PROJECT