

Cloud



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Post Graduate Program in Cloud

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AWS Solution Architect: Associate Level

Amazon Route 53

Learning Objectives

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

- 🕒 Explain Domain Name System (DNS)
- 🕒 Describe Amazon Route 53
- 🕒 Discuss the concepts of Amazon Route 53
- 🕒 List the AWS recommended best practices for Amazon Route 53



Domain Name System (DNS)

Domain Name System (DNS)

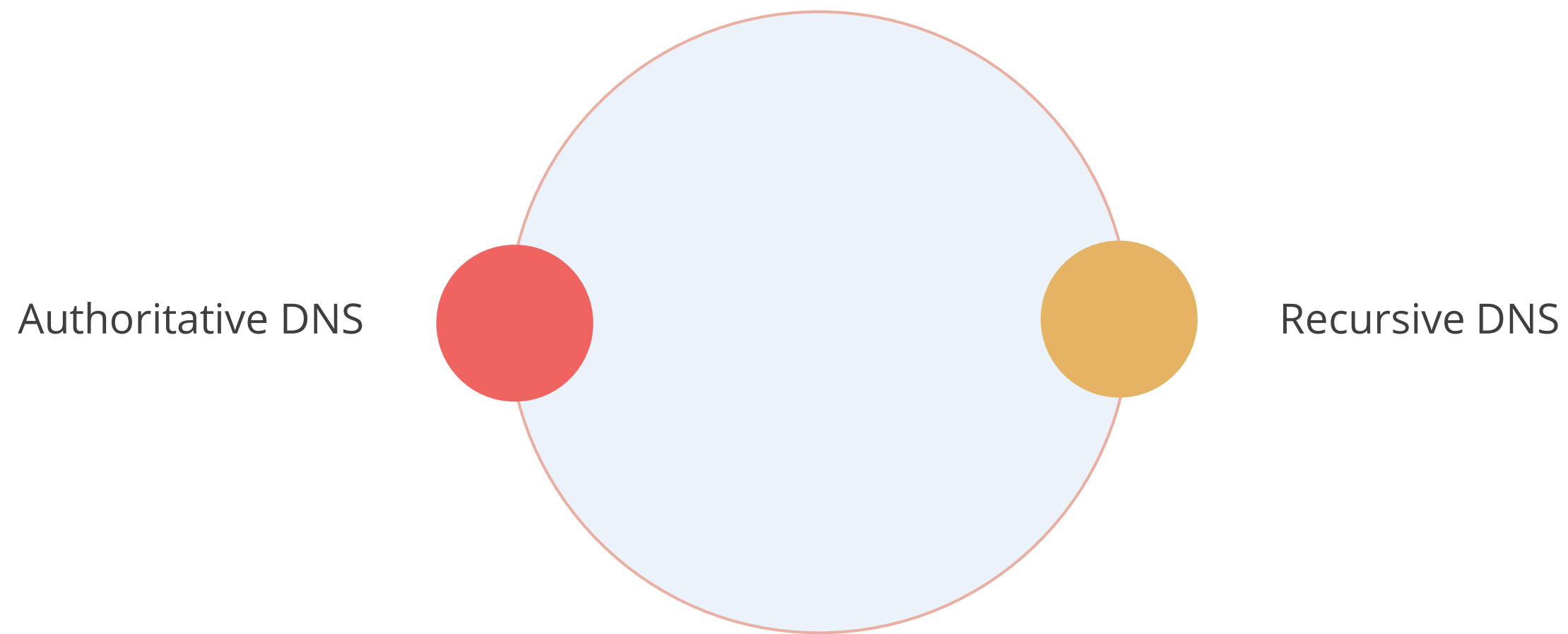
Domain Name System (DNS) translates human readable domain names (www.example.com) to machine readable IP addresses (192.0.2.44).



Domain Name System

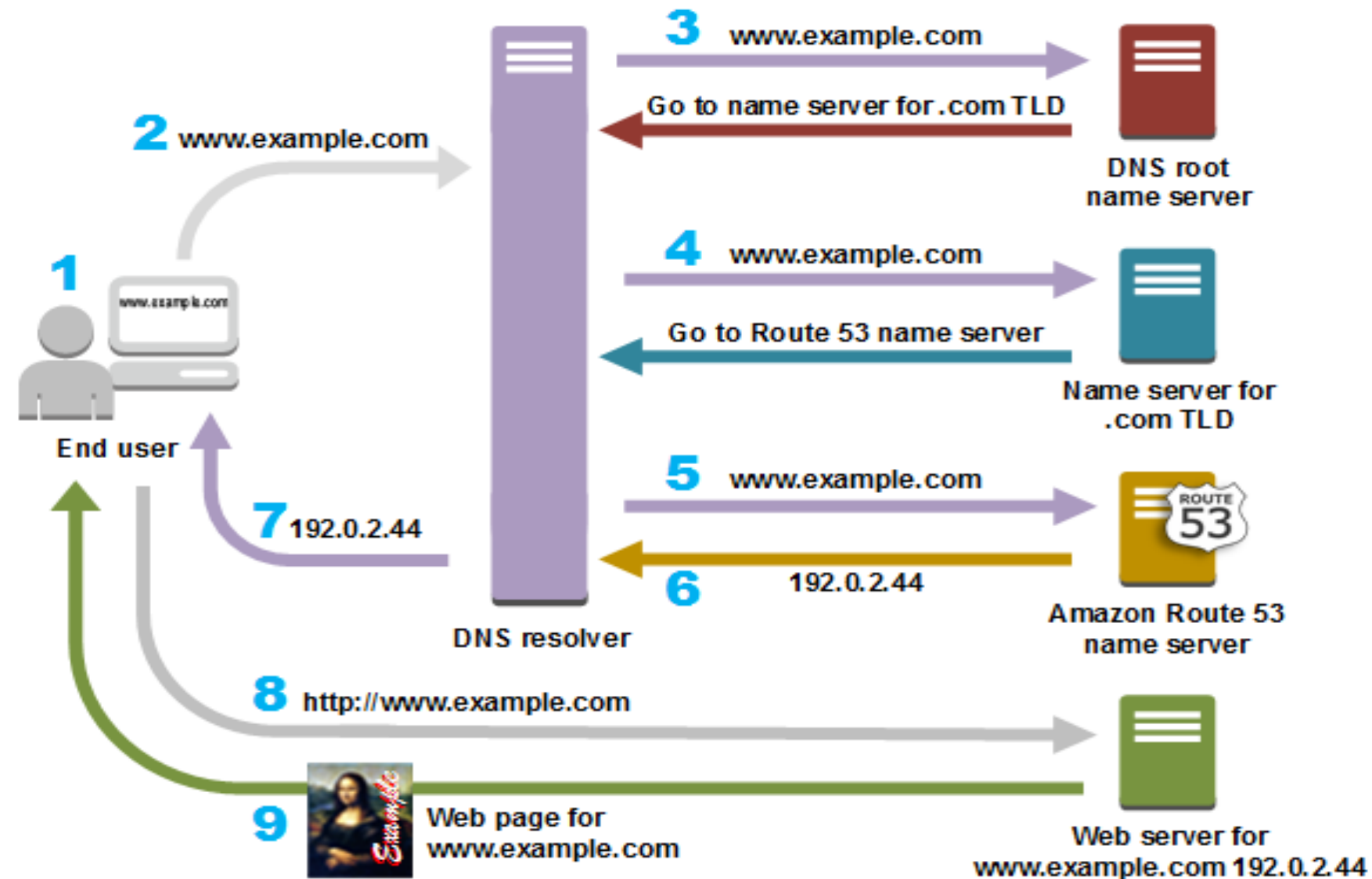
Domain Name System Services

These are the two types of DNS services:



Domain Name System Workflow

The following diagram gives an overview of how recursive and authoritative DNS services work together to route an end user to the website or application:



Introduction to Amazon Route 53

Amazon Route 53

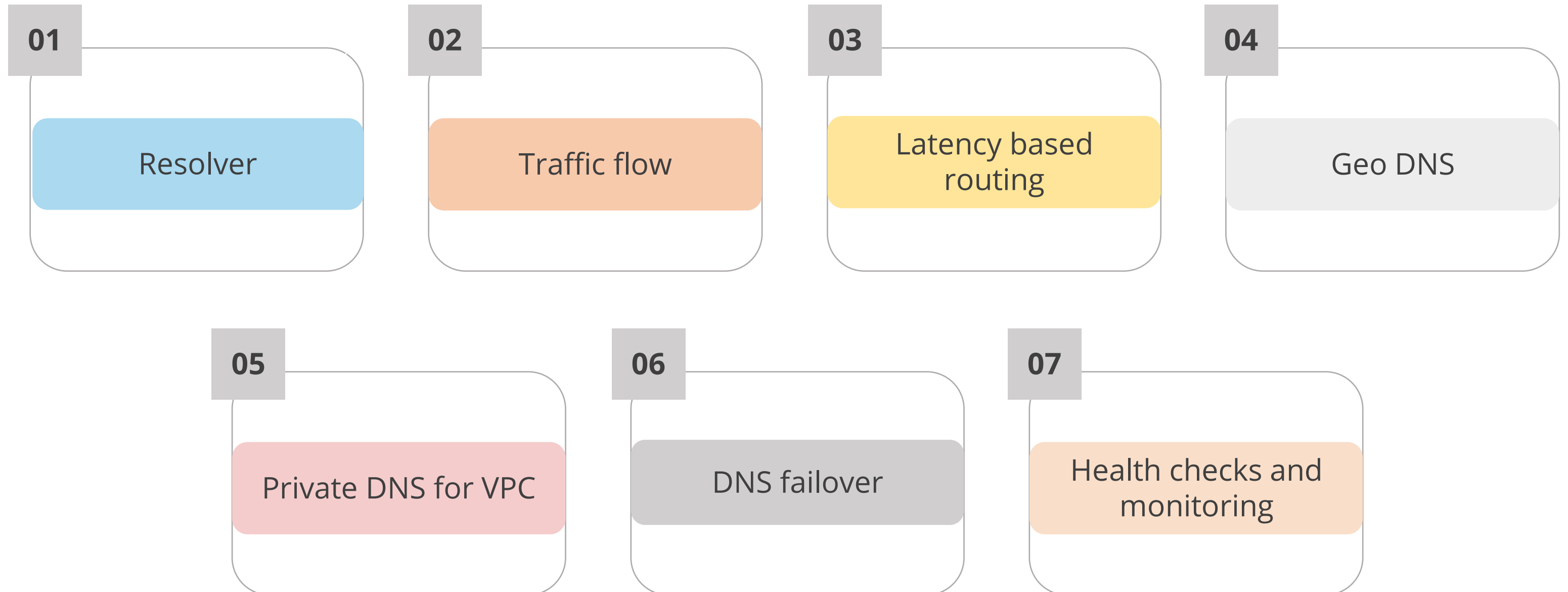
Amazon Route 53 is a highly available and scalable cloud Domain Name System (DNS) web service.



Amazon Route 53

Features of Amazon Route 53

The following are the features of Amazon Route 53:



Features of Amazon Route 53

The following are the features of Amazon Route 53:

08

Domain registration

09

CloudFront zone apex support

10

S3 zone apex support

11

Amazon ELB integration

12

Management console

13

Weighted round robin

Benefits of Amazon Route 53

The following are some of the benefits of Amazon Route 53:

01	Highly available and reliable
02	Flexible
03	Well designed
04	Easy-to-use
05	Fast performance

Benefits of Amazon Route 53

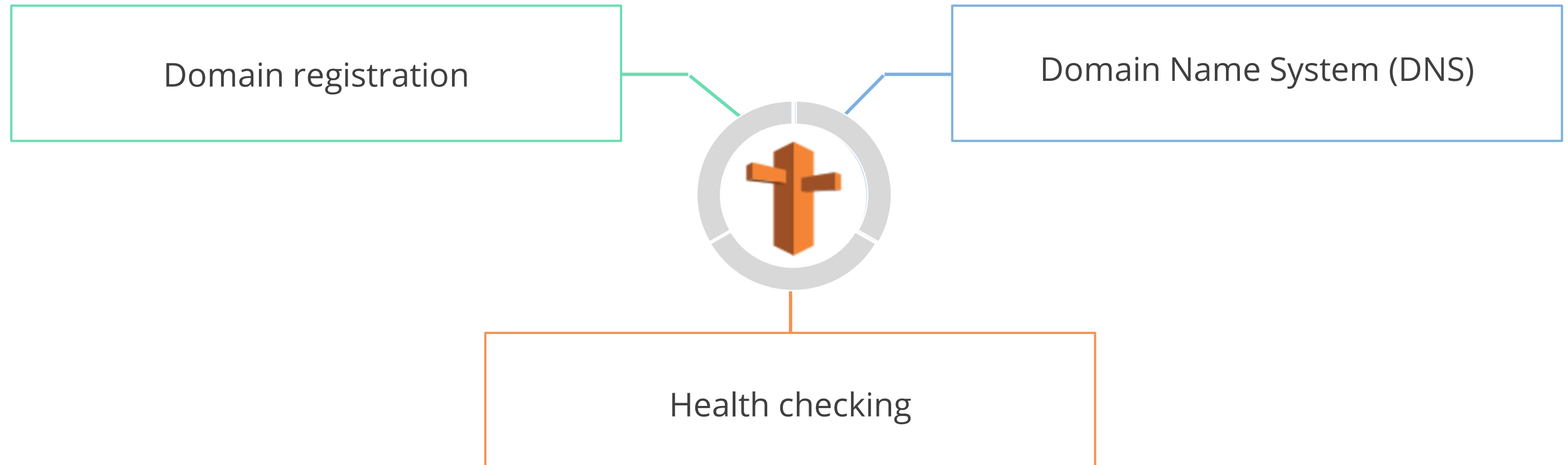
The following are some of the benefits of Amazon Route 53:

06	Cost-effective
07	Secure
08	Scalable
09	Simplifies the hybrid cloud

Amazon Route 53 Concepts and Terminologies

Amazon Route 53 Concepts

The following are the concepts of Amazon Route 53:



Amazon Route 53 Concepts

The following concepts are related to domain registration:

01	Domain name
02	Domain registrar
03	Domain registry
04	Domain reseller
05	Top-level domain (TLD)

Amazon Route 53 Concepts

The following concepts are related to Domain Name System (DNS):

01	Authoritative name server
02	DNS query
03	DNS resolver
04	IP address
05	Private DNS

Amazon Route 53 Concepts

The following concepts are related to Domain Name System (DNS):

06	Recursive name servers
07	Reusable delegation set
08	Routing policy
09	Subdomain
10	Time to live (TTL)

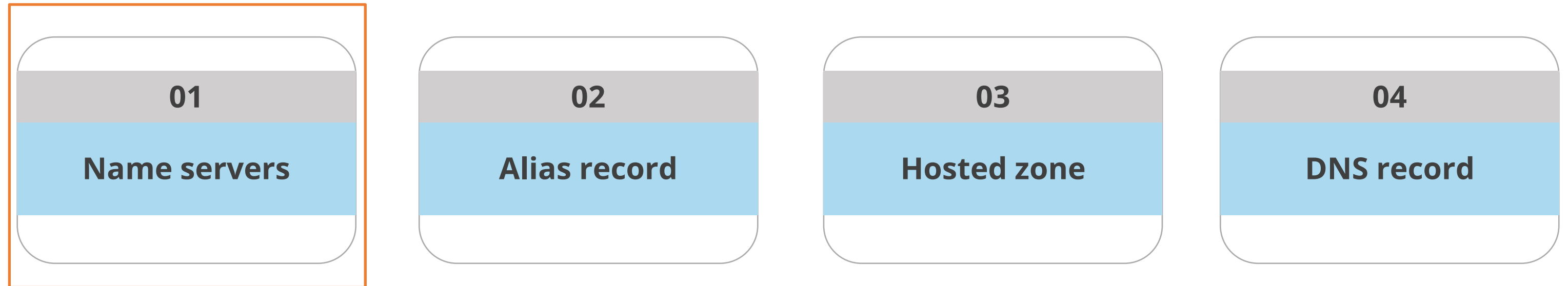
Amazon Route 53 Concepts

The following concepts are related to health checking:

01	DNS failover
02	Endpoint
03	Health check

Amazon Route 53 Terminologies

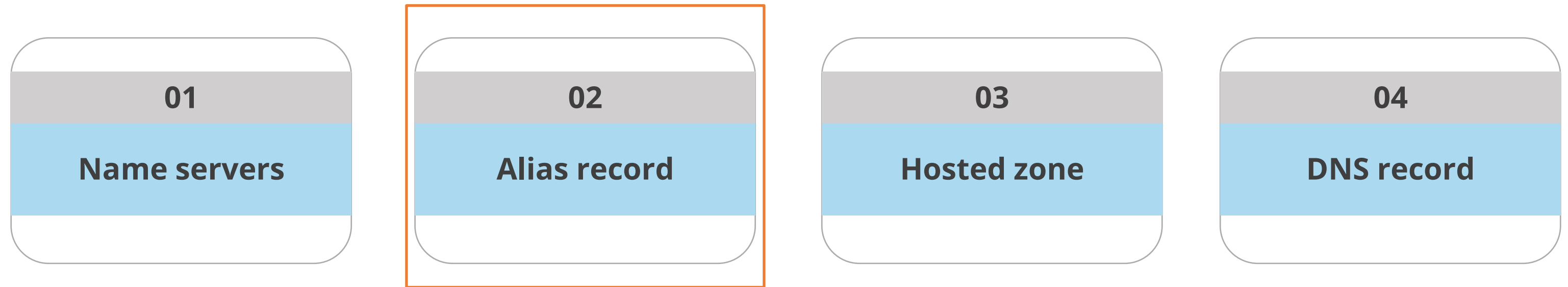
The following terminologies are used in Amazon Route 53:



It helps to translate domain names into the IP addresses that computers use to communicate with one another.

Amazon Route 53 Terminologies

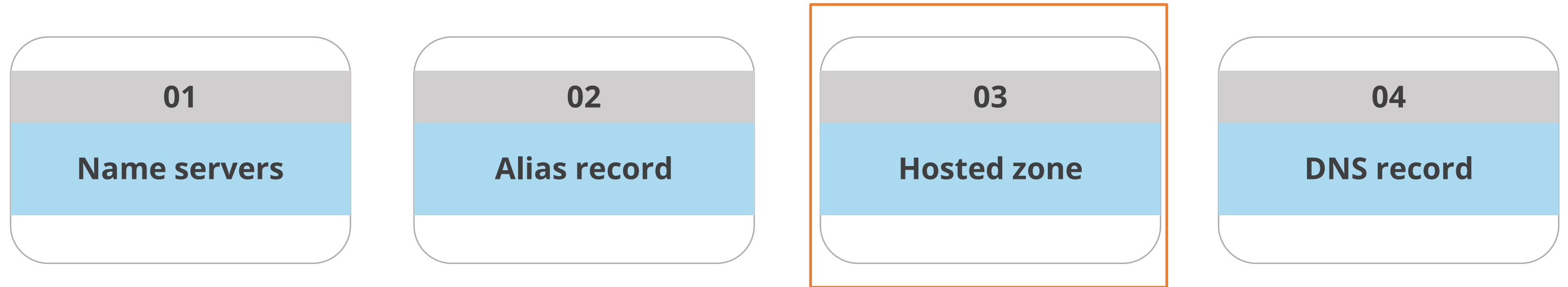
The following terminologies are used in Amazon Route 53:



It is a type of record that users can create with Amazon Route 53 to route traffic to AWS resources such as Amazon CloudFront distributions and Amazon S3 buckets.

Amazon Route 53 Terminologies

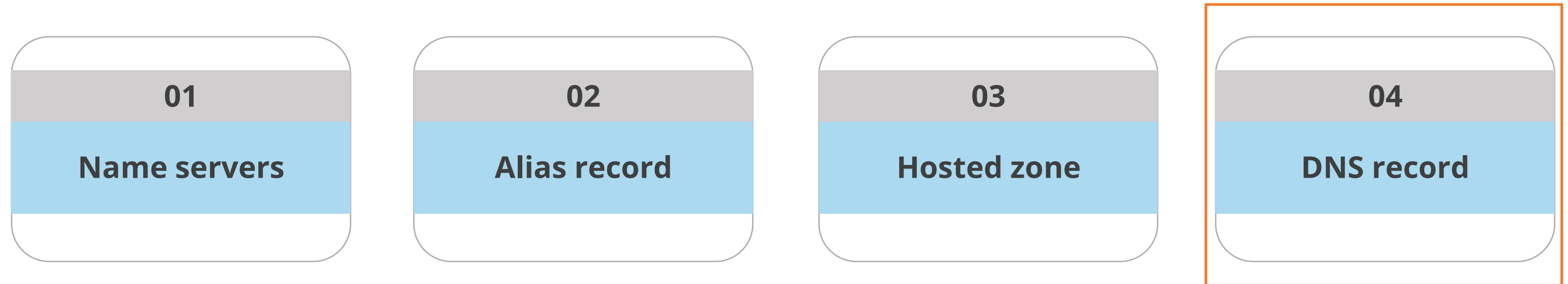
The following terminologies are used in Amazon Route 53:



It is a container for records, which includes information about how the users want to route traffic for a domain and all of its subdomains.

Amazon Route 53 Terminologies

The following terminologies are used in Amazon Route 53:

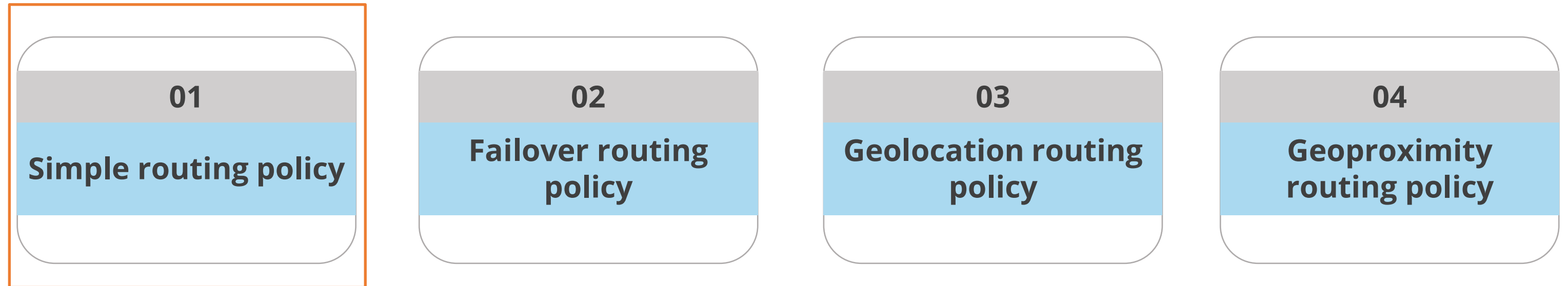


It is an object in a hosted zone that the users use to define how they want to route traffic for the domain or a subdomain.

Amazon Route 53 Policies

Amazon Route 53 Policies

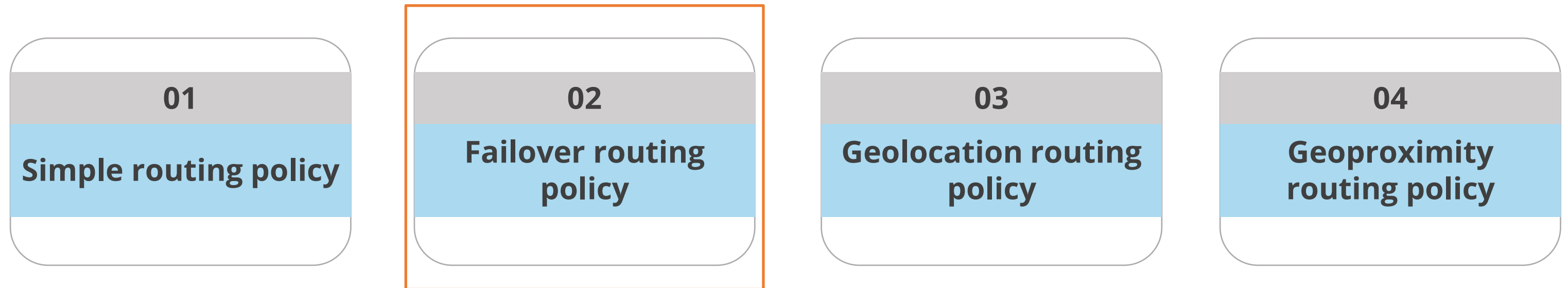
Amazon Route 53 supports the following routing policies:



It is used to route internet traffic to a single resource that performs a given function for the domain, for example, a web server that serves content for the example.com website.

Amazon Route 53 Policies

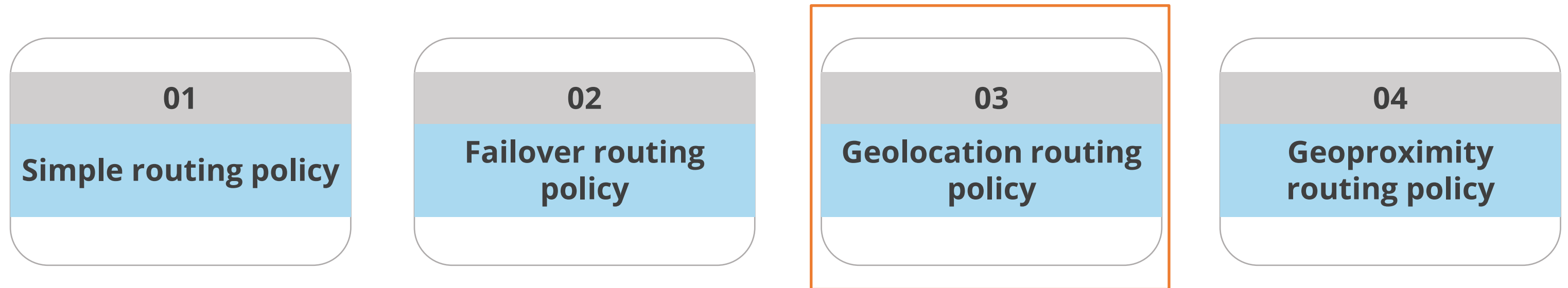
Amazon Route 53 supports the following routing policies:



It is used when the users want to configure active-passive failover.

Amazon Route 53 Policies

Amazon Route 53 supports the following routing policies:



It is used when the users want to route internet traffic to the resources based on the location of the users.

Amazon Route 53 Policies

Amazon Route 53 supports the following routing policies:

01

Simple routing policy

02

Failover routing policy

03

Geolocation routing policy

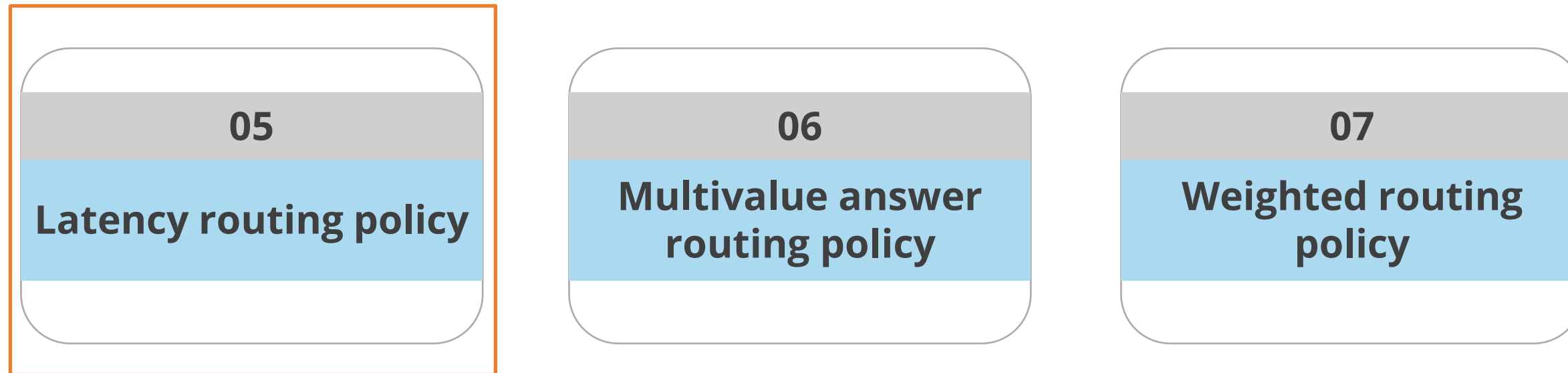
04

Geoproximity routing policy

It is used when the users want to route traffic based on the location of the resources and, optionally, shift traffic from resources in one location to resources in another.

Amazon Route 53 Policies

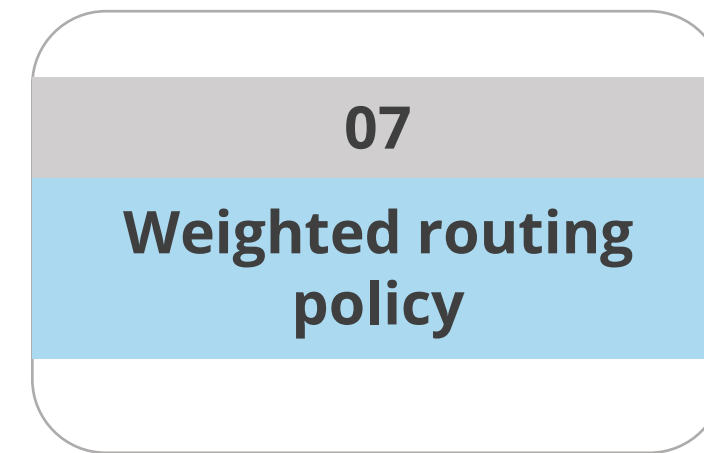
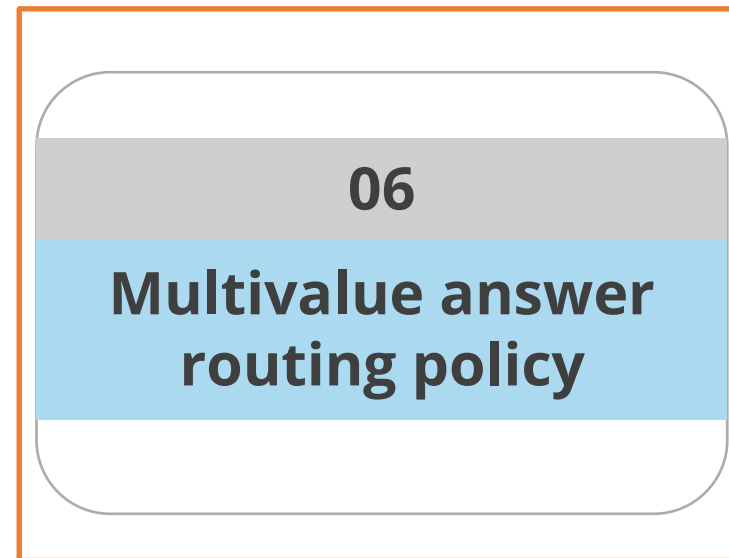
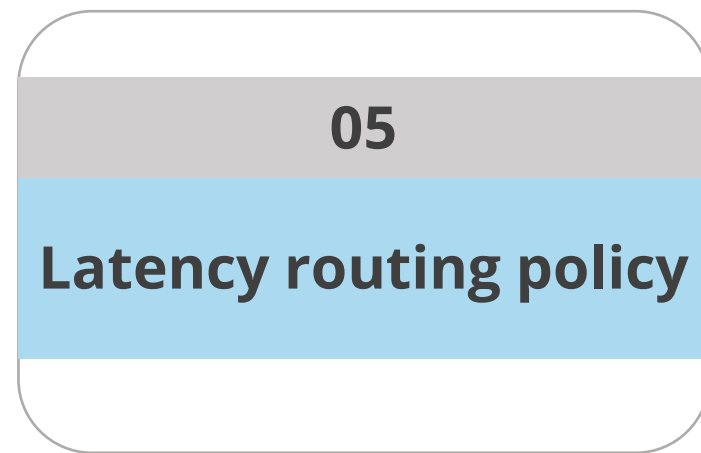
Amazon Route 53 supports the following routing policies:



It is used when the users have resources in multiple locations, and they want to route traffic to the resource that provides the best latency.

Amazon Route 53 Policies

Amazon Route 53 supports the following routing policies:



It helps the users to check the health of each resource, so Amazon Route 53 returns only values for healthy resources.

Amazon Route 53 Policies

Amazon Route 53 supports the following routing policies:

05

Latency routing policy

06

Multivalue answer routing policy

07

Weighted routing policy

It is used to route traffic to multiple resources in proportions that the users specify.

Assisted Practice

Register a New Domain Name

Duration: 10 min.

Problem Statement:

You are given a project to register a new domain name.

Assisted Practice: Guidelines to Register a New Domain Name

Steps to perform:

1. Open the Amazon Route 53 console
2. Register a new domain name

Assisted Practice

Create a Public Hosted Zone

Duration: 10 min.

Problem Statement:

You are given a project to create a public hosted zone.

Assisted Practice: Guidelines to Create a Public Hosted Zone

Steps to perform:

1. Open the Amazon Route 53 console
2. Create a public hosted zone

Amazon Route 53 Best Practices

Amazon Route 53 Best Practices

The following are the best practices for Amazon Route 53:

Name server delegation

TTL resource record sets

Alias record

Minimize latency

- It helps to translate domain names into IP addresses.
- It updates the registrar's name server configuration with the name servers to provide maximum availability.

Amazon Route 53 Best Practices

The following are the best practices for Amazon Route 53:

Name server delegation

TTL resource record sets

- Resource records can benefit from a lower TTL value.
- For long TTLs, DNS resolvers take longer to request updated DNS records.

Alias record

Minimize latency

Amazon Route 53 Best Practices

The following are the best practices for Amazon Route 53:

Name server delegation

TTL resource record sets

Alias record

Minimize latency

- Alias record sets are used while configuring resource record sets that route DNS queries to AWS resources.
- These are available at no cost.

Amazon Route 53 Best Practices

The following are the best practices for Amazon Route 53:

Name server delegation

TTL resource record sets

Alias record

Minimize latency

- Latency or Geolocation routing policies are used to provide users with the best response times.
- Health check ensures that the users are rerouted to healthy instances during an outage.

Amazon Route 53 Costs

Amazon Route 53 Costs

The following are the costs associated with Amazon Route 53:

01	Pay-per-use
02	Hosted zones and records
03	Queries
04	Alias queries
05	Traffic flow

Amazon Route 53 Costs

The following are the costs associated with Amazon Route 53:

06	Health checks
07	Route 53 resolver
08	Domain names
09	DNS query logs
10	Taxes and promotional credits
11	API calls

Limitations of Amazon Route 53

Limitations of Amazon Route 53

The following are the limitations of Amazon Route 53:

1

Amazon Route 53 private endpoints are not available in VPN or Direct Connect.

2

It provides no forwarding or conditional forwarding options for domains used on an on-premise network.

3

It does not support private zone transfers.

Key Takeaways

- DNS translates human readable domain names to machine readable IP addresses.
- Amazon Route 53 is a highly available and scalable Domain Name System (DNS) web service.
- A routing policy determines how Amazon Route 53 responds to DNS queries.
- Amazon Route 53 allows the users to pay only for the resources that they use.



Register a New Domain and Create a Hosted Zone and a Record Set

Problem Statement:

As a developer, your team has asked you to register a new domain and create a public hosted zone and a record set.

Perform the following:

- Open the Amazon Route 53 console
- Register a new domain name
- Create a public hosted zone
- Create a record set

