Instructor Notes:

Add instructor notes here.

AWS Networking Services

Lesson 09: AWS Networking services

amazon
web services

Instructor Notes:

This lesson is to give an Introduction on Java Server Pages

Lesson Objectives

In this lesson, you will learn:

- Amazon VPC

- Amazon Route 53

- AWS Direct connect

- Amazon CloudFront

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Amazon VPC
Amazon Route 53
AWS Direct connect
Amazon CloudFront

Instructor Notes:

Instructor Notes:

AWS networking products enable you to isolate your cloud infrastructure, scale your request handling capacity, and connect your physical network to your private virtual network.

AWS networking products work together to meet the needs of your application. For example, Elastic Load Balancing works with Amazon Virtual Private Cloud (VPC) to provide robust networking and security features.

Instructor Notes:

Instructor Notes:

You have complete control over your virtual networking environment, including selection of your own IP address range, creation of subnets, and configuration of route tables and network gateways. You can use both IPv4 and IPv6 in your VPC for secure and easy access to resources and applications.

You can easily customize the network configuration for your Amazon VPC. For example, you can create a public-facing subnet for your web servers that has access to the Internet, and place your backend systems such as databases or application servers in a private-facing subnet with no Internet access. You can leverage multiple layers of security, including security groups and network access control lists, to help control access to Amazon EC2 instances in each subnet.

Additionally, you can create a Hardware Virtual Private Network (VPN) connection between your corporate data center and your VPC and leverage the AWS Cloud as an extension of your corporate data center.

Instructor Notes:

For example, one can create a public-facing subnet for your web servers that has access to the Internet, and place your backend systems such as databases or application servers in a private-facing subnet with no Internet access.

One can apply multiple layers of security, including security groups and network access control lists, to help control access to Amazon EC2 instances in each subnet.

One can store data in Amazon S3 and restrict access so that it's only accessible from instances in your VPC.
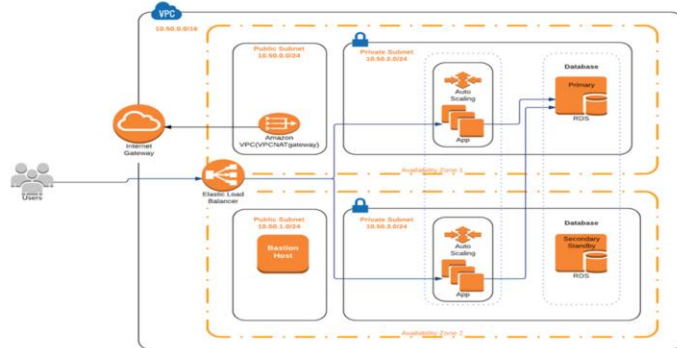
Instructor Notes:

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Instructor Notes:

1. one can launch instances into a publicly accessible subnet where he/she can send and receive traffic from the Internet.
2. Private subnets can be used for instances that you do not want to be directly addressable from the Internet. Instances in a private subnet can access the Internet without exposing their private IP address .
3. All traffic to and from instances in your VPC can be routed to your corporate datacenter over an industry standard, encrypted IPsec hardware VPN connection.

Instructor Notes:

9.1: Amazon VPC
Amazon VPC implementation

One can create a VPC quickly and easily using the AWS Management Console.

You can select one of the common network setups that best match your needs and press "Start VPC Wizard."

Subnets, IP ranges, route tables, and security groups are automatically created for you so you can concentrate on creating the applications to run in your VPC

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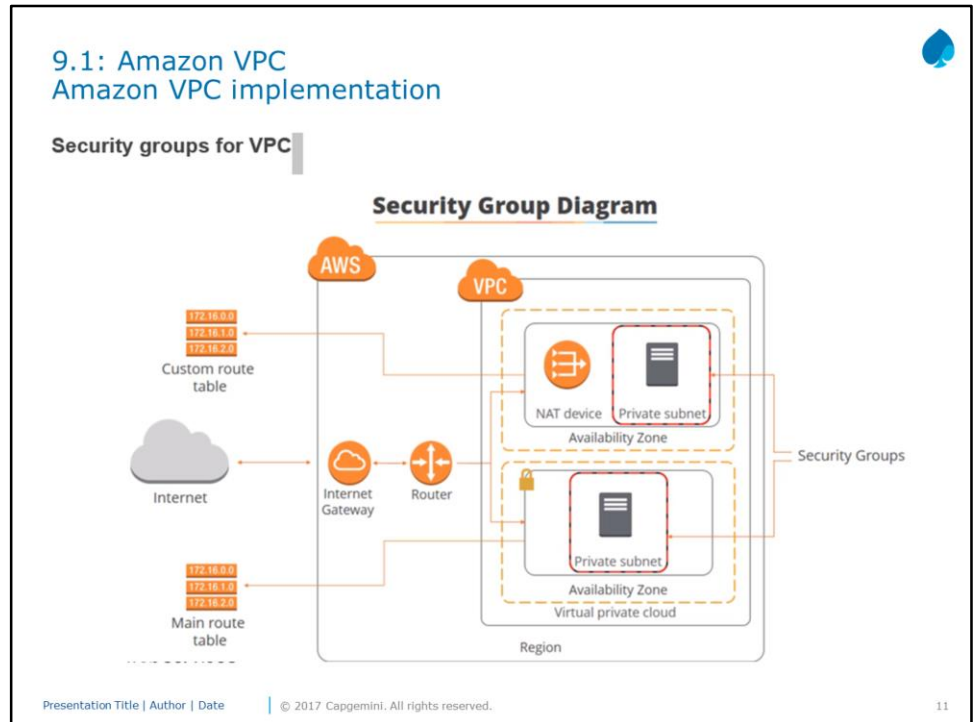
Instructor Notes:

Steps to create Custom VPC :

Follow the Steps to create Custom VPC

Step1 : After login in AWS choose the VPC under Networking Service.

        Step 2 : From Dashboard click on   VPC link and click on create VPC button

        Step 3 : Provide the details and Click on Create VPC button

           Name - <<VPC name>>
           IPV4 CIDR block - 10.0.0.0/16
      IPV6 – will be default
      Tenancy - Default

Step 4 : Click on Yes Create button and see your VPC . (you can see the default root table is associated with your VPC , which brings local traffic.

Step 5 : Go to Subnet section in VPC dashboard and check no Subnet is associated to your VPC

Follow the Steps to create Elastic IP address

Step 6 : Click on Elastic IP link in VPC dash board and click on allocate new address button.

Step 7 : Note the new IP address.

Instructor Notes:

9.1: Amazon VPC
Demo

Demo on:

- Creating Amazon VPC (Refer the Steps given in Notes section)

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Follow the Steps to create Subnetmask

Step 8 : Click on subnetmask link in VPC dashboard and click on Create subnet button.

Step 9 : provide the details to create a public subnet and click on create button

> **VPC – Your Custom VPC , you created**
> **Availability Zone – Select 1 from drop down list**
> **IPV4 CIDR block - 10.0.1.0/24**
> **Name tag – As per CIDR block give**

Step 10 : Repeated step 8 and 9 to create a private subnet in different AZ(ap-southeast-1c).

Step 11 : Repeat step 8 and 9 to create a public subnet in different AZ(ap-southeast-1c).

Step 11 : View all the subnets

Follow the Steps to create Internet gateway

Step 12 : Click on Internet gateway from VPC dashboard and "choose one" option

Step 13 : provide a tag name for Internet gateway

Step 14 : Go to Action and Attach to Custom VPC

Follow the Steps to create Route table

Step 15 : Go to route tables option on the left pane , click create route table, select your VPC and click create.

Step 16 : Select the route table and associate it with your subnet which has to be made public.

Step 17 : Route tables entry should have 0.0.0.0/0 as destination and internet gateway as target.

Step 18 : Now you will be able to connect the ec2 instances launched in the public subnet (10.0.1.0/24) using the public ip or an elastic ip

Instructor Notes:

9.2: Amazon Route 53
Amazon Route 53

- Product Type : --   Domain Name Service (DNS)

- It is a highly available and scalable cloud Domain Name System (DNS) web service.

A DNS service such as Amazon Route 53 is a globally distributed service that translates human readable names like www.example.com into the numeric IP addresses like 192.0.2.1 that computers use to connect to each other.

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Scalable Domain Name System
Amazon Route 53 is a highly available and scalable cloud Domain Name System (DNS) web service. It is designed to give developers and businesses an extremely reliable and cost effective way to route end users to Internet applications by translating names like www.example.com into the numeric IP addresses like 192.0.2.1 that computers use to connect to each other.

Instructor Notes:
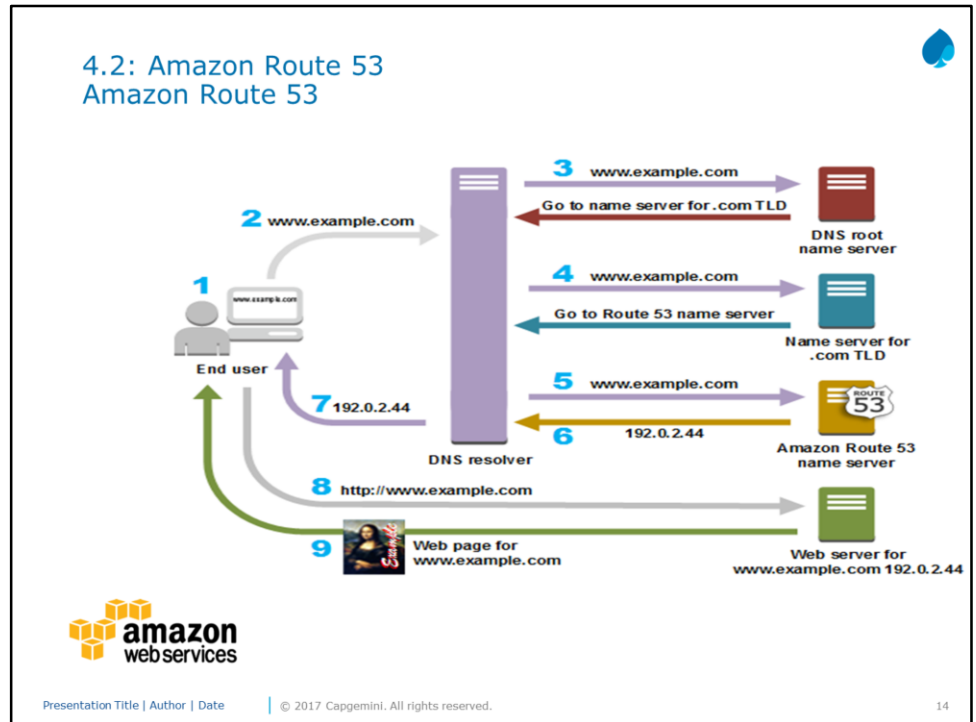
A user opens a web browser, enters www.example.com in the address bar, and presses Enter.

The request for www.example.com is routed to a DNS resolver, which is typically managed by the user's Internet service provider (ISP), such as a cable Internet provider, a DSL broadband provider, or a corporate network.

The DNS resolver for the ISP forwards the request for www.example.com to a DNS root name server.

The DNS resolver for the ISP forwards the request for www.example.com again, this time to one of the TLD name servers for .com domains. The name server for .com domains responds to the request with the names of the four Amazon Route 53 name servers that are associated with the example.com domain.

The DNS resolver for the ISP chooses an Amazon Route 53 name server and forwards the request for www.example.com to that name server.

The Amazon Route 53 name server looks in the example.com hosted zone for the www.example.com record, gets the associated value, such as the IP address for a web server, 192.0.2.44, and returns the IP address to the DNS resolver.

The DNS resolver for the ISP finally has the IP address that the user needs. The resolver returns that value to the web browser. The DNS resolver also caches (stores) the IP address for example.com for an amount of time that you specify so that it can respond more quickly the next time someone browses to example.com. For more information, see time to live (TTL).

The web browser sends a request for www.example.com to the IP address that it got from the DNS resolver. This is where your content is, for example, a web server running on an Amazon EC2 instance or an Amazon S3 bucket that's configured as a website endpoint.

The web server or other resource at 192.0.2.44 returns the web page for www.example.com to the web browser, and the web browser displays the page.

Instructor Notes:
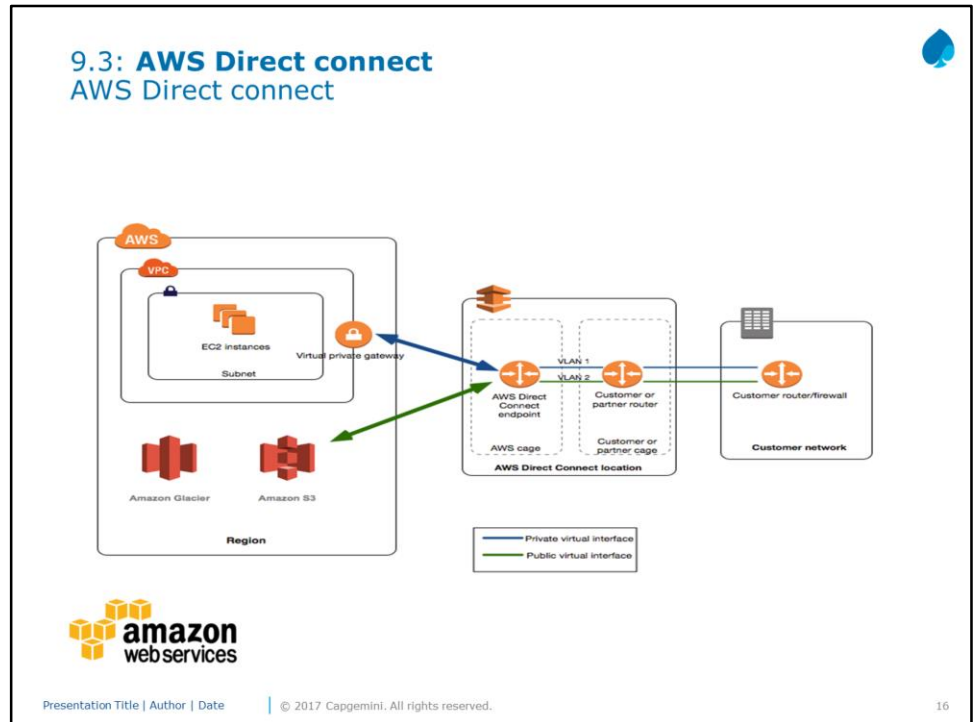
9.3: **AWS Direct connect**
AWS Direct connect

▪Product Type : -- Dedicated Network Connections to AWS

▪It is Dedicated network connection between your network and your Amazon VPC.

One can establish private connectivity between AWS and it's datacenter, office, or colocation environment, which in many cases can reduce your network costs, increase bandwidth throughput, and provide a more consistent network experience than Internet-based connections.

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Instructor Notes:

9.3: **AWS Direct connect**
AWS Direct connect

AWS Direct Connect lets you establish a dedicated network connection between your network and one of the AWS Direct Connect locations. Using industry standard 802.1q VLANs, this dedicated connection can be partitioned into multiple virtual interfaces. This allows you to use the same connection to access public resources such as objects stored in Amazon S3 using public IP address space, and private resources such as Amazon EC2 instances running within an Amazon Virtual Private Cloud (VPC) using private IP space, while maintaining network separation between the public and private environments. Virtual interfaces can be reconfigured at any time to meet your changing needs.

Instructor Notes:

Create a *connection* in an AWS Direct Connect location to establish a network connection from your premises to an AWS region.
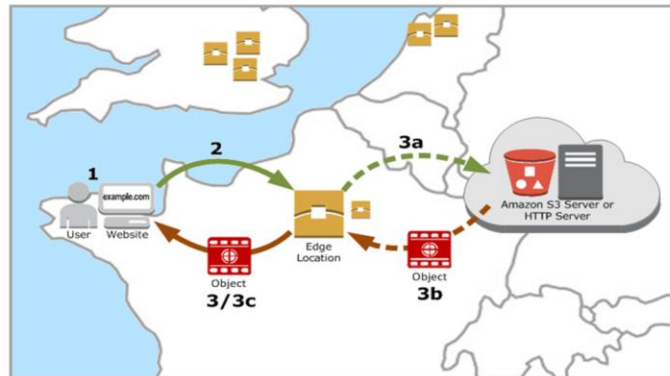
Virtual Interface :-- Create a *virtual interface* to enable access to AWS services. A public virtual interface enables access to public-facing services, such as Amazon S3. A private virtual interface enables access to your VPC

Instructor Notes:

It is a global content delivery network (CDN) service that securely delivers data, videos, applications, and APIs to your viewers with low latency and high transfer speeds..

Amazon CloudFront is a highly secure CDN that provides both network and application level protection. .

Instructor Notes:

9.4: Amazon cloudfront
Benefits of Cloudfront

All CloudFront customers benefit from the automatic protections of AWS Shield Standard, at no additional charge.

▪It is a global content delivery network (CDN) service that securely delivers data, videos, applications, and APIs to your viewers with low latency and high transfer speeds..

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Instructor Notes:

9.4: Amazon cloudfront
Benefits of Cloudfront

CloudFront is also seamlessly integrated with AWS WAF and AWS Shield Advanced to help protect your applications from more sophisticated threats and DDoS attacks.

Amazon CloudFront is also deeply integrated and optimized to work with popular AWS services including Amazon S3, Amazon EC2 and Elastic :Load balancing as back-end origin resources and Amazon Root 53 to help speed up DNS resolution of applications delivered by CloudFront.

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Instructor Notes:

Summary

In this lesson, you have learnt:

- What is Amazon VPC
- Features and benefits of VPC
- What is Amazon Route 53
- What is AWS Direct connect
- What is Amazon CloudFront

Instructor Notes:

Answers for the Review Questions:

Answer 1: Amazon Route 53

Answer 2: Amazon VPC

Review – Questions

Question 1: _____ is a highly available and scalable cloud Domain Name System (DNS) web service

Question 2 : _____ isolates cloud resources with your own private virtual network where you can launch AWS resources in a virtual network that you define

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Instructor Notes:

Answers for the Review Questions:

Answer 3 Amazon Cloudfront

Answer 4: Option 1

Review – Questions

- Question 3: _____ a global content delivery network (CDN) service that securely delivers data, videos, applications, and APIs to your viewers with low latency and high transfer speeds..

- Question 4: Which of the following is not an Amazon Networking service?

  Option 1 : Amazon EC2

  Option 2 : Amazon Route 53

  Option 3 : Amazon Direct connect

  Option 4 : Amazon Cloudfront

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