Lab 1

Features Tour of AWS, GCP, and Azure

Lab 2

Determining Cloud Requirements

Scenario

XYZ International, Inc. desires to implement a cloud solution for their international supply chain management. They wish to track incoming shipments and outgoing shipments using RFID IoT tags. Additionally, they want to track all suppliers and customers in a cloud-based management system and link to the suppliers' inventory systems to be forewarned if the supplier will be unable to fulfill upcoming needs. What kind of cloud services would you suggest as requirements for this scenario?

Possible Solution

- SaaS
- CSP IoT Services
- CSP Database Solutions
- CSP Serverless Solutions
- CSP Compute Instances
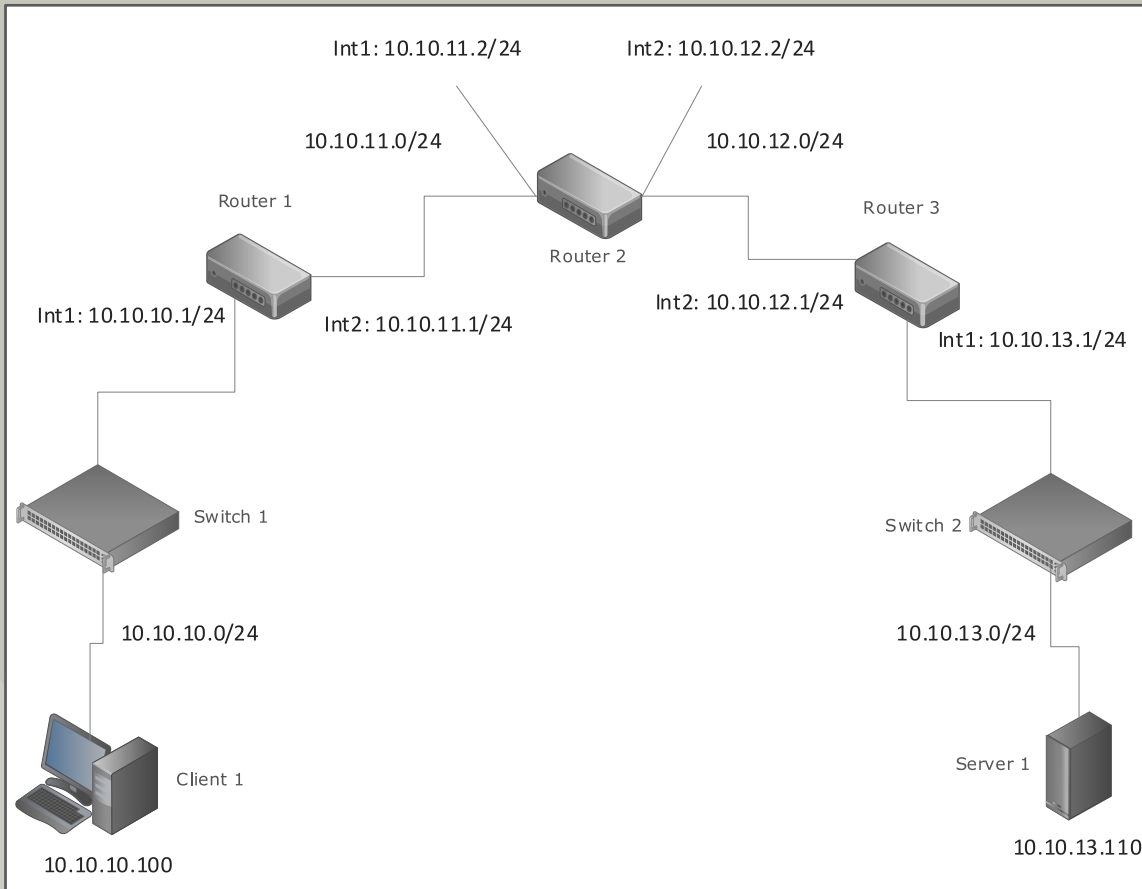- Integration features for links to suppliers

Lab 3

Creating S3 Buckets

Lab 4

Troubleshooting Network Problems

Scenario

Int1: 10.10.11.2/24   Int2: 10.10.12.2/24

10.10.11.0/24   10.10.12.0/24

Router 1   Router 3

Router 2

Int1: 10.10.10.1/24   Int2: 10.10.12.1/24

Int2: 10.10.11.1/24

Int1: 10.10.13.1/24

Switch 1   Switch 2

10.10.10.0/24   10.10.13.0/24

Server 1

Client 1

10.10.10.100   10.10.13.110

In the network configuration, Client 1 desires to access Server 1, which provides an interface into the organization's private cloud. However, when the client attempts to reach the server, it is unable to connect. The application used to access the server is a web browser and a DNS name is used to access the server with no numbers or digits in the URL. In addition to the information shown in the diagram, ACLs exist on Router 2 that disallow communications through the router on TCP ports 80 and 21. All other communications are allowed. ACLs exist on Router 3 that allow all communications on all ports. Finally, ACLs exist on router 1 that disallow TCP port 21 and allow all communications on all other ports. What is the cause of this communication problem?

Lab 5

Create an EC2 Instance in AWS

Lab 6

Creating User Accounts in AWS

Lab 7

Troubleshoot a Capacity Problem

Scenario

You have implemented a cloud solution for an Internet of Things (IoT) deployment. The deployment consists of hundreds of IoT devices sensing environmental conditions (humidity, temperature, air quality, light, etc.) and machine operations. The devices use an MQTT service in the cloud to publish sensor readings and other statistics about the devices. MQTT is a publish/subscribe protocol where publishers submit publications (messages) to the broker and subscribers receive them. After deployment, it has been determined that the MQTT broker, which is running on an AWS instance of Linux, is not keeping up with the workload. The instance currently has 4 GB of RAM and uses a moderate processor virtualization setting. What options are available in most cloud service providers to improve the capacity of this solution?

Possible Solution

- Increase the amount of RAM

- Increase the CPU capability

- Increase the Internet speed of the cloud connection

- Horizontally scale the MQTT server instance
  - Load balancing
  - Configuration-based distribution