



# 22AIE305

## Introduction to Cloud computing

### 2-0-3-3

Amrita Vishwa Vidyapeetham  
Amritapuri Campus

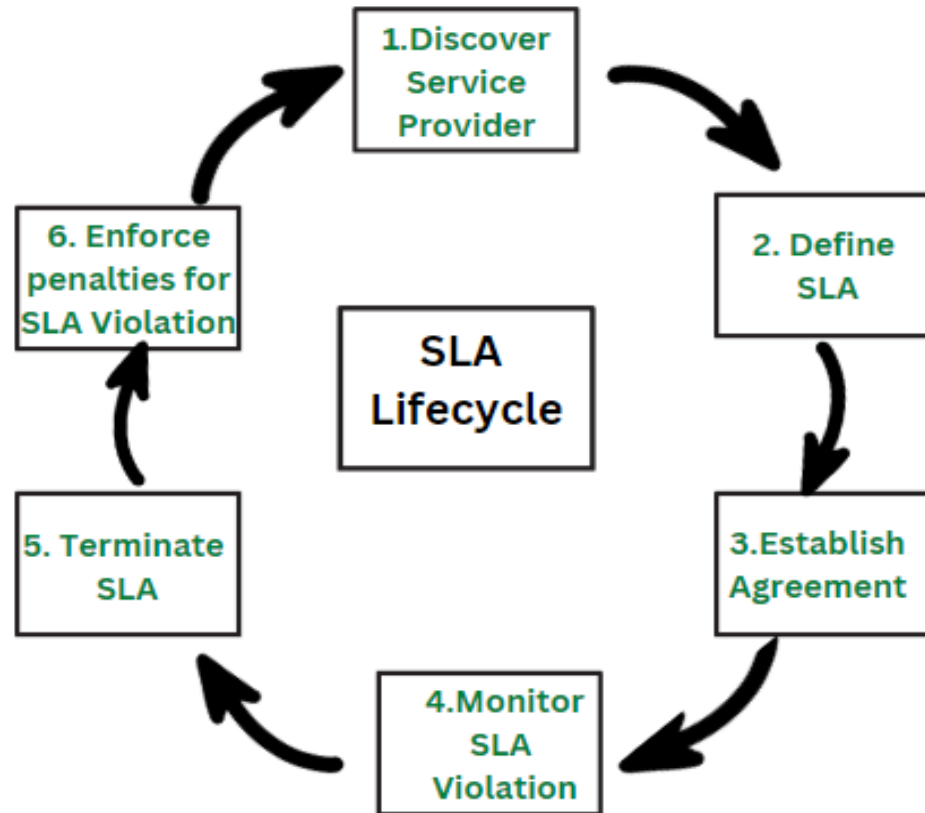


# **Service level agreement (SLA)**

# What is Service Level Agreement

- A formal contract between the Service provider (SP) and the Service consumer (SC).
- SLA – Foundation of consumer's trust in the provider.
- Purpose: to define a formal basis for performance and availability the SP guarantees to deliver.
- SLA contains Service level objectives (SLO)
  - Objectively measurable conditions for the service.
  - SLA & SLO – Basis of selection of cloud provider

# SLA Life Cycle



# SLA Life Cycle

- **Discover service provider** – identifying a service provider that can meet the needs of the organization and has the capability to provide the required service.  
Eg: research, requesting proposals, or reaching out to vendors.
- **Define SLA-** the service level requirements are defined and agreed upon between the service provider and the organization. Eg: service level objectives, metrics, and targets that will be used to measure the performance of the service provider.
- **Establish Agreement** - An agreement is established between the organization and the service provider outlining the terms and conditions of the service.  
Eg: SLA, any penalties for non-compliance, and the process for monitoring and reporting on the service level objectives.



# SLA Life Cycle

- **Monitor SLA violation** - This step involves regularly monitoring the service level objectives to ensure that the service provider is meeting their commitments. If any violations are identified, they should be reported and addressed in a timely manner.
- **Terminate SLA** - If the service provider is unable to meet the service level objectives, or if the organization is not satisfied with the service provided, the SLA can be terminated.
- **Enforce penalties for SLA Violation:** If the service provider is found to be in violation of the SLA, penalties can be imposed as outlined in the agreement. These penalties can include financial penalties, reduced service level objectives, or termination of the agreement.

# Advantages of SLA

- 1.Improved communication
- 2.Increased accountability
- 3.Better alignment with business goals
- 4.Reduced downtime
- 5.Better cost management

# Disadvantages of SLA

- 1.Complexity
- 2.Rigidity
- 3.Limited service options
- 4.Misaligned incentives
- 5.Limited liability



# Service availability calculations

- **Uptime** – it is the expected time the service will be in operation.  
uptime is defined as the percentage of time that your server or website is active and able to function during the course of a year.
- **Downtime** - Downtime is a period of time in which the service is unavailable or not working due to unexpected circumstances such as outages, maintenance activities, or updating periods.
- **Service Availability =  $1 - (\text{Downtime}/\text{Uptime})$**

# Service availability calculations

## ➤ Problem

In the cloud, service downtime is 30 minutes and availability of the service is 0.80.  
What is the service uptime?

# Service availability calculations

## ➤ Solution

In the cloud, service downtime is 30 minutes and availability of the service is 0.80.  
What is the service uptime?

$$\text{Service Availability} = 1 - (\text{Downtime}/\text{Uptime})$$

$$.80 = 1 - (30/\text{Uptime})$$

$$30 = 1\text{Uptime} - .80 \text{ Uptime}$$

$$30 = .20 \text{ Uptime}$$

$$\text{Uptime} = 150 \text{ minutes.}$$

# Service availability calculations

## ➤ Problem 2

Suppose a cloud guarantees service availability for 99% of the time. Let a third-party application run in the cloud for 12 hours per day. At the end of one month, it was found that the total outage is 10.75 hours.

Find out whether the provider has violated the initial availability guarantee.

# Namah Shivaya