

Service Level Agreement related questions

1. XYZ Inc. is an IaaS cloud service provider, who is planning to construct a new generation data center in Hyderabad. They use shipping containers for consolidating the data center that is pre-packaged unit of management. You are given the following information for a viability study. Each shipping container has self-contained networking, servers, air conditioning units and UPS. A container has 27 server racks, each with 13 servers. Each server has 32 CPU cores. It costs INR 625L to purchase and deploy one container (1L = INR 1,00,000). For each server, the electricity load consumed by the computing-related activities is 100W per hour. This load is constant and does not change based on usage level of the servers. This load does not include non-computing related power usage, such as for AC, lighting, etc. Its costs INR 10L/month to rent a warehouse that can store up to 5 containers. Electricity board charges you INR 10 per KWh of power. A system administrator's salary is Rs. 1.2L per month and one system administrator can manage up to 5 containers. Assume that there are no additional charges for network bandwidth, taxes, security guard, etc. Say you plan to initially purchase 10 containers for the data center. Calculate the total cost spent in the first month, including infrastructure cost.
 - a. 6297.672L
 - b. 661.472L
 - c. 6296.472L
 - d. 31544.4L
2. Consider a scenario where a company **XYZ** wants to use a cloud service from a provider **P**. The service level agreement (SLA) negotiated between the two parties prior to initiating business is as follows.
 - i. Availability guarantee: 98.5% time over the service period
 - ii. Service period: 30 days
 - iii. Maximum service hours per day: 22 hours
 - iv. Cost: INR 12500 per day

Service credits are awarded to customers if availability guarantees are not satisfied. The monthly connectivity uptime service level is given as follows.

Monthly Uptime Percentage	Service Credit
<98.5%	5%
<98.0%	15%
<97.5%	25%
<97.0%	35%

It was found that over the service period, the cloud service suffered five outages of duration:

3 hours 35 minutes, 1 hour 15 minutes, 5 hours 20 minutes, 35 minutes, and 3 hours 45 minutes, each on different days,

due to which normal service guarantees were violated. If SLA negotiations are honoured (except Q. No. (c)) calculate the following things and mark the correct options.

- (a) Total outages in minutes,
- (b) Total availability in minutes,
- (c) Total cost if SLA negotiations are not honoured
- (d) SLA violation cost by taking the above table data and
- (e) Effective cost payable towards buying the cloud service.

3. XYZ Inc. has two options to satisfy the requirements, which are given as follows.

Expenditure	In-House Server (INR)	Cloud Servers (INR)
Purchase Cost	70000	---
Access cost (per hour)	---	7
Efficiency	40%	80%
Power and cooling cost (per hour)	3	---

Management cost (per hour)	2	1
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If the XYZ company has done the above setup over three-year span then calculate the total cost involved for in-house server and cloud server, individually.

- a. INR 201400 and INR 210240
 - b. INR 131400 and INR 70080
 - c. INR 70000 and INR 183960
 - d. INR 201400 and INR 183960
4. Consider a scenario where XYZ Inc. wants to use a cloud service from Amazon. The service level agreement guarantees negotiated between XYZ Inc. and Amazon prior to initiating business are as follows.
- i. Availability guarantee: 99.5% time over the service period
 - ii. Service period: 30 days
 - iii. Maximum service hours per day: 15 hours
 - iv. Cost: INR 2500 per day

Service credits are awarded to customers if availability guarantees are not satisfied. Monthly connectivity uptime service level are given as follows.

Monthly Uptime Percentage	Service Credit
<99.5%	15%
<99.0%	25%
<90%	35%
<88.0%	50%

However, it was found that over the service period, the cloud service suffered five outages of durations: 1 hour 30 mins, 30 mins, 5 mins, 20 mins and 10 mins, each on different days, due to which normal service guarantees were violated. If SLA negotiations are honoured, compute the effective cost payable towards buying the cloud service.

- a. INR 63750
- b. INR 56250
- c. INR 18750
- d. INR 11250