ITCMSY1 Case Study

Introduction

XYZ IT College has determined that there is a need for a private cloud system for student and faculty use. The private cloud system is to be used by classes for system administration, programming, and database manipulation. The private cloud system hosts virtual machines and containers used in class. As part of the college's IT team, you are tasked with creating a proposal for the private cloud system that should handle a population of 200 students and 20 instructors. Students will be logging in to the system to access their assigned virtual machine. The IT team of the college is to handle the daily operation of the private cloud. Operation of the cloud can be creation / deletion of virtual machines to user management. Access to the private cloud system can be inside or outside the campus network. The total budget for the project is PhP 10,000,000.

Requirements

- Compute server and server capacity
  - 50 virtual machines
  - 50 containers
  - CPU of server should support virtualization technology (Intel VT-x and AMD-V)
  - System should have at least two or more servers in the cluster
- Storage server and storage capacity
  - Capacity for maximum of 100 combined 50 virtual machine and container
  - Support for 1 Gbps or 2.5 Gbps Ethernet switch
  - Centralized storage for all servers
  - Storage can be NAS-based or SAN-based
- Network
  - 1 Gbps or 2.5 Gbps Ethernet switch
  - Media for network switch can be copper or fiber
  - Network switch should support virtual LANs
  - Router / network firewall for access to the server and storage infrastructure
- Virtual machine specification
  - Virtual machine usage types (to be created / loaded on the server)

VM Type	CPU Core	RAM	Disks
Tiny	2 CPU cores	4 GBytes	100GB
Medium	4 CPU cores	8 Gbytes	150GB
Large	8 CPU cores	16 Gbytes	200GB

- Cloud Software Requirements
  - Virtual machine and container management capabilities
  - User management capabilities
  - Virtual network management

Document Requirement

The document should contain the specification, budget/price, and rationale of the system specification. Documents should also contain references used. The document format can be found in Appendix A.

Grouping

Grouping for the project is to be composed of a maximum of 4 members.

Deadline

See deadline in Animospace published due date

Appendix A
Technical Documentation Format

ITCMSY1 Technical Case Study

Group Members:
Juan dela Cruz
Alex Santos

Section: S22

1. Introduction / Description of the Proposal
   - Give a description of the system proposed and how it can achieve the requirements

2. System Proposal
   2.1. Compute Server System
      - Include an introduction on the specification of the system.

      2.1.1. Specification
         - Shows the specification of the build like the CPU, memory size, video card, storage, etc. If packaged unit like servers, the specification of the server should be listed.

      2.1.2. Rationale
         - Must narrate the justification for the specification like trade-off, performance, or decisions due to budget constraints. Citations for benchmarks, white papers or specifications should be done.

   2.2. Storage Server Proposal
      - Include an introduction on the specification of the system.

      2.2.1. Specification
         - Shows the specification of the build like the CPU, memory size, number of hard disks, hard disk size, etc. If packaged unit like storage servers, NAS, or SAN, the specification of the storage system should be listed.

      2.2.2. Rationale
         - Must narrate the justification for the specification like trade-off, performance, or decisions due to budget constraints. Citations for benchmarks, white papers or specifications should be done.

   2.3. Network Infrastructure
      - Include an introduction on the specification of the system.

      2.3.1. Specification
         - Shows the components of the infrastructure like the switch, router, and network firewall.

      2.3.2. Rationale
         - Must narrate the justification for the specification like trade-off, performance, or decisions due to budget constraints. Citations for benchmarks, white papers or specifications should be done.

3. Logical Connection / Topology
      - Shows the interconnection between the server, network and storage components

4. Proposed Budget
      - Show the itemized cost of the whole system. Use a table format.
      - Pricing per component should be included with citation for prices. For packaged units, pricing can be for the entire system but still with citation.
      - For prices in foreign currency, indicate the actual price in foreign currency, exchange rate, and price in Philippine peso with multiplying factor of 1.5. (There is a multiplying factor of 1.5 because landed cost of items is different from listed price on the Internet.)

5. References
    - All references and citations must use the IEEE format.
      Ex: [1] NVIDIA, "GEFORCE," 25 March 2019. [Online]. Available: https://www.nvidia.com/en-us/geforce/products/10series/geforce-gtx-1070-ti/.