

**DEPARTMENT OF BUSINESS, ADVANCED MANUFACTURING AND LOGISTICS**

ICT50220 Diploma of Information Technology

Assessment

**Learner**

**ICTNWK543 Install, operate and troubleshoot medium enterprise switches**

Assessment Book

Assessment Task 1: Develop and Document an Installation Plan

|  |  |
| --- | --- |
| Course code and name | **ICT50220 Diploma of Information Technology** |
| Unit code and name | **ICTNWK543 Install, operate and troubleshoot medium enterprise switches** |
| Due date | ….. / ….. / …… (See on Moodle) |
| Resources required | * Learner resource ICTNWK543 * Cisco Netacad.com curriculum * Access to computer and Internet * Access to Moodle * Access to Cisco Packet Tracer simulator * Access to routers and switches * Microsoft Word Application * MP Tech Solutions Profile.docx * MP Tech Solutions ICT Policies.docx |
| Decision making rules | To achieve an overall satisfactory result for this assessment task:   * All questions must be answered satisfactorily |
| Learner Instructions | You will determine organisational network performance, data flow requirements and develop the topology/installation plan.  For this task you will:   * Complete it individually. * Write answers to all questions. * Complete it in your own time and submit it by the due date. * Have time to read and review the assessment task in class. * You must submit your assessment electronically via Moodle and use the following naming convention: “Student ID\_Student Name\_ Assessment Task 1: Case Study - Develop and document and installation plan”   **Example**:  “s123456\_Sathish\_ Assessment Task 1: Case Study – Develop and document and installation plan**.pkt**”  “s123456\_Sathish\_ Assessment Task 1: Case Study – Develop and document and installation plan**.docx**”  If you have any questions about the task or concerns about your ability to complete the task, please discuss this with your Assessor |

## Task Details/Scenario

MP Tech Solution has been approached by a client to review an existing networking infrastructure. Currently, the client is receiving complaints about a slow network in some parts of the building. It is not effecting the whole building.

The existing network was designed in early 2000. The technology at that time was based on wire speed of 10/100 Mbps switching technology using CAT5 cable.

As the company grew up, they added additional switches to expand the network by simply adding new switches on to the existing old switches. Their network today is composed of both 10/100 Mbps and 1000 Mbps switches. This is the reason some sections of their network are fast and majority of other sections of the network are slow.

The company requires a new network design with the speed of 1Gbps. The design must include new cabling, routers and switches and allow for the connection of twenty personal computing devices.

The company also requires scalable network for easy and fast expansion in case the business expands rapidly.

Due to these existing issues, the client has contacted MP Tech Solutions to fix their current problematic network.

They want the solution installed within the next 4 weeks. Your client representative is James Smith, the CEO (Chief Executive Officer).

Review the:

* existing network topology
* MP Tech Solutions ICT Policies.

Then answer the questions that follow.

|  |
| --- |
|  |

Existing Topology of Client

*By* *Surendra Shakya, Melbourne Polytechnic 2021*

*(www.netacad.com, Packet Tracer Simulator was used to make above output)*

## Part 1 – Research

Prior to proceeding with your work at the client’s location, you must read “ICT Policies” of MP Tech Solutions and follow the policies accordingly.

Answer the following questions to identify the best option for your client.

| **Q1** | Complete the below table with the details of performance of existing devices. . (Answer in 20 – 50 words) | | | | |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | Satisfactory |  | NOT satisfactory | |
|  | **Performance of existing devices:**  **You should include technical specifications e.g. make/model, speed etc.** | | | | | |
| Router R1 | Two Ethernet interfaces, supporting bandwidths of 10/100/1000Mbps. | | | | | |
| Switch S1 | 24 Ethernet interfaces, supporting bandwidths of 10/100Mbps, and 2 Gigabit Ethernet ports, supporting bandwidths of 10/100/1000Mbps. | | | | | |
| Switch S2 | 24 Ethernet interfaces, supporting bandwidths of 10/100Mbps, and 2 Gigabit Ethernet ports, supporting bandwidths of 10/100/1000Mbps. | | | | | |
| Switch S3 | 24 Ethernet interfaces, supporting bandwidths of 10/100Mbps, and 2 Gigabit Ethernet ports, supporting bandwidths of 10/100/1000Mbps. | | | | | |
| Switch S4 | 24 Ethernet interfaces, supporting bandwidths of 10/100Mbps, and 2 Gigabit Ethernet ports, supporting bandwidths of 10/100/1000Mbps. | | | | | |
| Switch S5 | 24 Ethernet interfaces, supporting bandwidths of 10/100Mbps, and 2 Gigabit Ethernet ports, supporting bandwidths of 10/100/1000Mbps. | | | | | |
| Switch S6 | 24 Ethernet interfaces, supporting bandwidths of 10/100Mbps, and 2 Gigabit Ethernet ports, supporting bandwidths of 10/100/1000Mbps. | | | | | |
| Switch S7 | 24 Ethernet interfaces, supporting bandwidths of 10/100Mbps, and 2 Gigabit Ethernet ports, supporting bandwidths of 10/100/1000Mbps. | | | | | |
| Switch S8 | 24 Ethernet interfaces, supporting bandwidths of 10/100Mbps, and 2 Gigabit Ethernet ports, supporting bandwidths of 10/100/1000Mbps. | | | | | |
| Cable | Existing equipment uses Cat 5 cables, supporting bandwidths of 10/100Mbps. | | | | | |

| **Q2** | Determine network element additions and upgrades according to the organisational requirements. Complete the table providing details of the new components you are recommending.  NOTE:  After reviewing the weakness of existing network design, you need to start with new types of routers, switches and cabling so that you can meet the latest demands of the organisation.  (Answer in 20 – 40 words) | | | | |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | Satisfactory |  | NOT satisfactory | |
|  | **Suggestions for upgrading the existing devices/topology:**  **You should include technical specifications e.g. make/model, speed etc.** | | | | | |
| Router R1 | Cisco Router ISR 4331, integrated GE/SFP WAN ports, performance over 2 Gbps, 500 Mbps encrypted throughput, full IOS XE SD-WAN support, network threat protection provided by the "Trusted System" framework. | | | | | |
| Switch S1 | Cisco Catalyst 2960-XR series, supports up to 48 Gigabit Ethernet ports, line-rate forwarding performance, four fixed 1 Gigabit SFP (Small Form-Factor Pluggable) uplinks or two fixed 10 Gigabit SFP+ uplinks, supports PoE+ with a power budget up to 740W, supports perpetual PoE. | | | | | |
| Switch S2 | Cisco Catalyst 2960-XR series, supports up to 48 Gigabit Ethernet ports, line-rate forwarding performance, four fixed 1 Gigabit SFP (Small Form-Factor Pluggable) uplinks or two fixed 10 Gigabit SFP+ uplinks, supports PoE+ with a power budget up to 740W, supports perpetual PoE. | | | | | |
| Switch S3 | Cisco Catalyst 2960-XR series, supports up to 48 Gigabit Ethernet ports, line-rate forwarding performance, four fixed 1 Gigabit SFP (Small Form-Factor Pluggable) uplinks or two fixed 10 Gigabit SFP+ uplinks, supports PoE+ with a power budget up to 740W, supports perpetual PoE. | | | | | |
| Switch S4 | Cisco Catalyst 2960-XR series, supports up to 48 Gigabit Ethernet ports, line-rate forwarding performance, four fixed 1 Gigabit SFP (Small Form-Factor Pluggable) uplinks or two fixed 10 Gigabit SFP+ uplinks, supports PoE+ with a power budget up to 740W, supports perpetual PoE. | | | | | |
| Switch S5 | Cisco Catalyst 2960-XR series, supports up to 48 Gigabit Ethernet ports, line-rate forwarding performance, four fixed 1 Gigabit SFP (Small Form-Factor Pluggable) uplinks or two fixed 10 Gigabit SFP+ uplinks, supports PoE+ with a power budget up to 740W, supports perpetual PoE. | | | | | |
| Switch S6 | Cisco Catalyst 2960-XR series, supports up to 48 Gigabit Ethernet ports, line-rate forwarding performance, four fixed 1 Gigabit SFP (Small Form-Factor Pluggable) uplinks or two fixed 10 Gigabit SFP+ uplinks, supports PoE+ with a power budget up to 740W, supports perpetual PoE. | | | | | |
| Switch S7 | Cisco Catalyst 2960-XR series, supports up to 48 Gigabit Ethernet ports, line-rate forwarding performance, four fixed 1 Gigabit SFP (Small Form-Factor Pluggable) uplinks or two fixed 10 Gigabit SFP+ uplinks, supports PoE+ with a power budget up to 740W, supports perpetual PoE. | | | | | |
| Switch S8 | Cisco Catalyst 2960-XR series, supports up to 48 Gigabit Ethernet ports, line-rate forwarding performance, four fixed 1 Gigabit SFP (Small Form-Factor Pluggable) uplinks or two fixed 10 Gigabit SFP+ uplinks, supports PoE+ with a power budget up to 740W, supports perpetual PoE. | | | | | |
| Cable | Use Cat 6A cables, supporting bandwidths up to 10000Mbps in future network construction. | | | | | |

| **Q3** | Provide the proposed topology diagram. | | | | |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | Satisfactory |  | NOT satisfactory | |
|  |  | | | | | |

## Part 2 – Installation Plan

Complete the following installation plan for your network design. Your remarks must include

* the benefit to the client and how this will address their organisational requirement.
* the cost to the client, and the per user cost to the client. Note you are only required to provide the cost of the components, not your labour time.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **INSTALLATION PLAN FORM** | | | | | | |
| **Project Name** | | | MP Tech Solutions | | | |
| **Project Deliverable** | | | Good Network Scalability | | | |
| **Start Date** | | | 2024-07-02 | | | |
| **End Date** | | | 2024-07-27 | | | |
| **Name of Project Manager** | | | WangYiZhuo | | | |
| **Name of Client Representative** | | | James Smith | | | |
|  | | | | | | |
| **Topology Diagram:** | | | | | | |
|  | | | | | | |
| **SN** | **Task Name** | **Resources** | **Start Date** | **End Date** | **Duration in days** | **Status** |
| 1. | Purchase Equipment and Cables | New Router, New Switch, New Cables | 2024-07-02 | 2024-07-08 | 7 days | Pending |
| 2. | Install and Test Equipment | New Router, New Switch, New Cables | 2024-07-09 | 2024-07-09 | 1 day | Pending |
| 3. | Update Terminal Network Configurations | Employee Terminal Devices | 2024-07-10 | 2024-07-16 | 7 days | Pending |
| 4 | Test Network | New Router, New Switch, New Cables, Employee Terminal Devices | 2024-07-17 | 2024-07-27 | 10 days | Pending |
| ***Remarks***  In this design, we used Cisco Router ISR 4331 series routers and Cisco Catalyst 2960-XR series switches. The installation and use of these devices can improve the company's daily network quality and enhance work efficiency. | | | | | | |

## Part 3 – Approval

You must now provide your installation plan to James Smith (your Assessor) seeking installation plan sign off. Provide this to James Smith (your assessor) via email. The email must:

* explain what you require in regards to installation plan sign off
* include a copy of you installation plan.

Attach a copy of your response from James Smith (your assessor).

## Part 4 – Feedback

James Smith (your Assessor) responded to your email providing installation plan sign off. However they also provided some feedback. Answer the following questions based on the feedback you have received.

|  |  |
| --- | --- |
| What feedback did you receive from your client? |  |
| What changes will you implement because of this feedback? |  |

1. Assessment Checklist- Task 1: Develop and Document an Installation Plan

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Learner name** | | WangYiZhuo | **Student ID** | | S1554654 | |
| **Assessor name** | |  | **Date** | |  | |
| Assessment checklist  assessor to complete the following | | | | | | |
| Observation and demonstration | | | | | | |
| **The LEARNER:** | | | | **SATISFACTORY** | | **NOT SATISFACTORY** |
|  | In part 1:   * answered questions correctly * identified the current network components * identified the organisational requirements * suggested appropriate replacements/upgrades, and * provided an appropriate network topology. | | |  | |  |
|  | In part 2:   * created an installation plan * used numeracy to provide the cost and per user cost, and * explained the benefits of the new network. | | |  | |  |
|  | In part 3:   * sought approval for the installation plan. * attached a copy of the approval email. | | |  | |  |
|  | In part 4:   * obtained feedback from the client, and * documented the changes they would make in response to the feedback. | | |  | |  |
| **Feedback -** Assessor must include feedback and learner responses | | | | | | |
|  | | | | | | |

# Assessment Task Summary - Task 1: Develop and Document an Installation Plan

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Trainer/Assessor to complete the following:  **THE LEARNER:** | | | | | | Yes | No |
| 1. | Satisfactorily completed all items in Assessment Checklist | | | | |  |  |
| feedback **-** Assessor must include feedback | | | | | | | |
|  | | | | | | | |
| OVERALL TASK result | | | | | | | |
| Satisfactory  Not Satisfactory (resubmission required) – Due date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | |
| Date Assessment Returned | | |  | | | | |
| Trainer/assessor Name | | |  | | | | |
| Trainer/Assessor signature | | | X | | | | |
| **LEARNER DECLARATION**: Please read and sign below | | | | | | | |
| I, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ have been advised of the outcome of this assessment task.  PRINT NAME | | | | | | | |
| LEARNER Signature | | WangYiZhuo+S1554654 | | Date |  | | |