**Task 182: Essentials of IT and Networking**

# Introduction

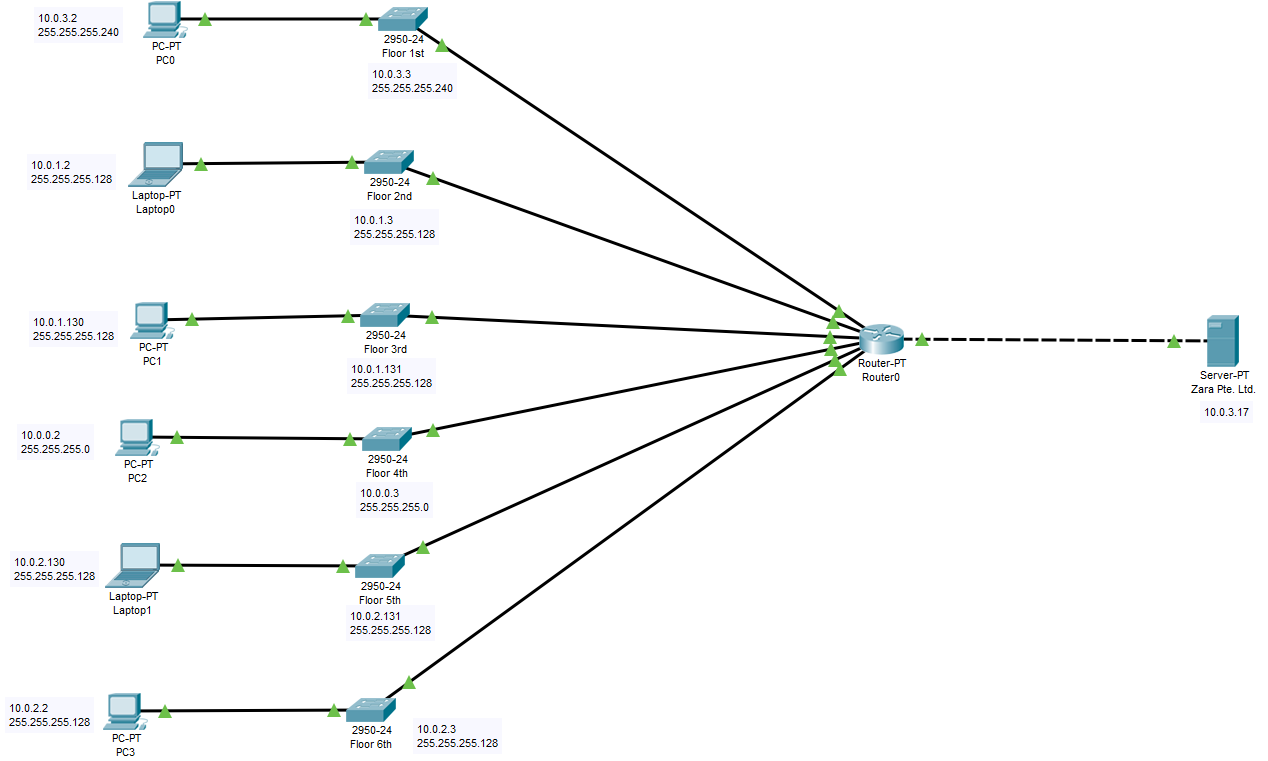
Zara Pte Ltd is a well-known retail clothing company in Singapore. After 10 years of successful operation, the business suddenly hit a dead-end because their competitors, with their converged IP networks and IT savvy staff, were making more profits and operating at less cost. Having no choice but to jump into IT, they approach you, a Network consultant, to help them design a network that could support their business needs.

The company bought 400 Desktop computers and 100 notebooks/Laptops.

So, we’re here to implement the best possible network solution.

* Workflow of our solution is as follows:
* Setting up IP addresses as per floor depending upon hosts.
* Setting up switches, connecting them to routers and then to a server.
* Assigning IP addresses accordingly (in the table)
* Subnetting via **VLSM** (Variable length subnet mask)
* Routing using Routing Information Protocol (RIP)
* Routing VIA RIP (Routing information protocol)
* Enabling SSH on switches and Routers
* Enabling passwords on routers
* Enabling the DNS.
* Creating webpage for Zara Pte. Ltd. ([www.zara.sg](http://www.zara.sg))

Cisco packet tracer Version: 7.2.0.0226  
  
  
  
  
Network Diagram for Zara Pte. Ltd.



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Floor** | **LAN or WAN name** | **Subnet mask**  **(in dotted decimal format)** | **Assigned subnet address & CIDR prefix** | **First valid IP address for the subnet** | **Last valid IP address for the subnet** | **Broadcast IP address for the subnet** |
| 1st Floor | Reception & meeting room LAN | 255.255.255.240 | 10.0.3.0 | 10.0.3.1 | 10.0.3.14 | 10.0.3.15 |
| 2nd Floor | Product Research and Development Asia LAN | 255.255.255.128 | 10.0.1.0 | 10.0.1.1 | 10.0.1.126 | 10.0.1.127 |
| 3rd Floor | Product Management 1 Asia LAN | 255.255.255.128 | 10.0.1.128 | 10.0.1.129 | 10.0.1.254 | 10.0.1.255 |
| 4th Floor | Marketing & Sales Asia LAN | 255.255.255.0 | 10.0.0.0 | 10.0.0.1 | 10.0.0.254 | 10.0.0.255 |
| 5th Floor | Finance Asia LAN | 255.255.255.128 | 10.0.2.128 | 10.0.2.129 | 10.0.2.254 | 10.0.2.255 |
| 6th Floor | HR Asia LAN | 255.255.255.128 | 10.0.2.0 | 10.0.2.1 | 10.0.2.126 | 10.0.2.127 |

Network Addressing Table for Zara Pte. Ltd.

# Reasons to choose this topology

Reasons for choosing this topology are as follows:

* As the company Zara Pte. Ltd. competitors are growing fast So company is on a budget. We’re providing them with the best budget solution.
* This topology uses one Server 6 switches, 1 Switch per floor and one router to ensure minimum expenses.
* The number of hosts/Users are variable per floor that’s why we are Implementing the Variable Length Subnet Mask (VLSM) in order to deploy a network properly.
* This is basic level network which can fulfill company needs as well as housing their company’s website too.
* Router used here is CISCO Router NT, which can support up to 9 Fast-Ethernet ports. We are required to utilize 7 only, 6 switches (1 per floor) and one Server.
* Switches used in the topology has 24 Fast-ethernet connections so we can extend the switches according to number of employees/hosts.as we have to show one switch here but in real-time topology it would be according to company needs.

# Future Possible Enhancements

Future possible enhancements are as follows:

* As the company grows, there’s a chance that departments are increasing, So the employees are increasing too So we can introduce VLAN’s so there isn’t much broadcast generated and the communication inside a department don’t run over the whole network.
* One more addition to Company network is having at least one backup server. So, in any case one server gets out of order/gets down due to some reason, the communication continues to process on backup server(s).
* In order to improve security of the network, Firewalls (both hardware and software) must be implemented.
* There must be appropriate zones in establishing firewalls, DMZ(Demilitarized Zone), Private(inside), Public (Outside). There’s no need to interrupt the outside traffic with LAN of company.
* Port security can be enabled on ports not being used by switches so a Hacker/Intruder can’t have the access to our network.
* In order to provide wireless communication for Notebook/Laptop users/employees there must be Wi-Fi routers with proper security enabled.
* Servers can be provided more security via CloudFlare which provides DDoS mitigation, Internet Security and distributed domain name services

# Conclusion

We have provided Zara Pte. Ltd. with the best possible solution as it’ll help the company to compete other brands in market and fulfill its communication needs. In future enhancements to current topology can be easily made.

ZARA Pte. Ltd.  
Webpage

([www.zara.sg](http://www.zara.sg) or 10.0.3.17)

**Appendix**

Routers:

* Router SSH username/password: zara/12345  
  Router0 privileged mode password: router0

Switches:

* Switch1/Floor SSH 1st – 6th username/password: zara/12345

Privileged mode passwords 1/2/3/4/5/6 floor: switch1/switch2/switch3/switch4/switch5/switch6  
  
  
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