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Network Report for Quality Sounds Music Store

Introduction:

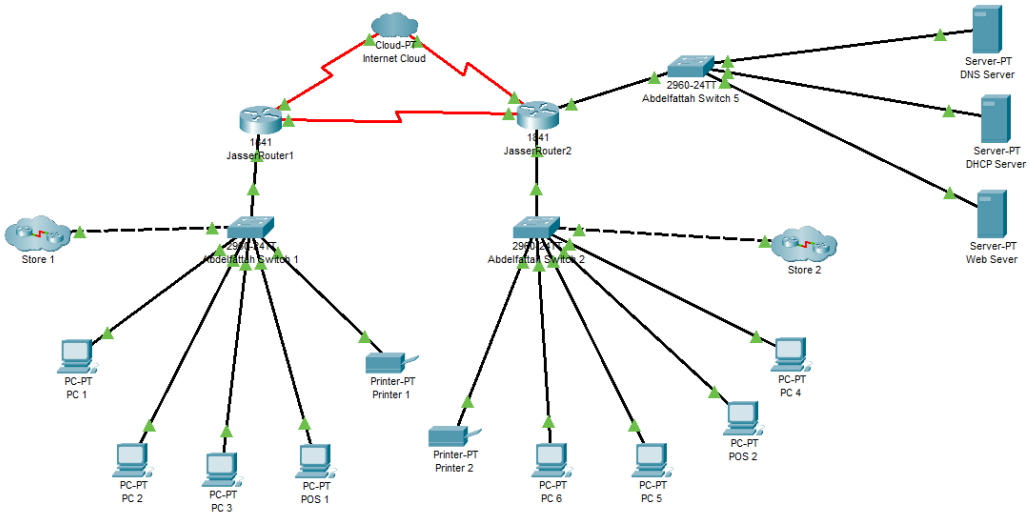
In the digital symphony of the 21st century, where data flows as rapidly as melodies, Quality Sounds Music Store emerges as a maestro of modern retail. This paper uncovers the sophisticated network design that orchestrates a seamless confluence of technology and commerce. Within these pages lies a design for a system that not only resonates with the current technology cadence but is also composed to adjust to the future's rhythm. As we embark on this study, we shall reveal how the network's harmonious structure supports a crescendo of business operations, customer engagement, and digital innovation, all while protecting the security and integrity of the enterprise's virtuoso performance.

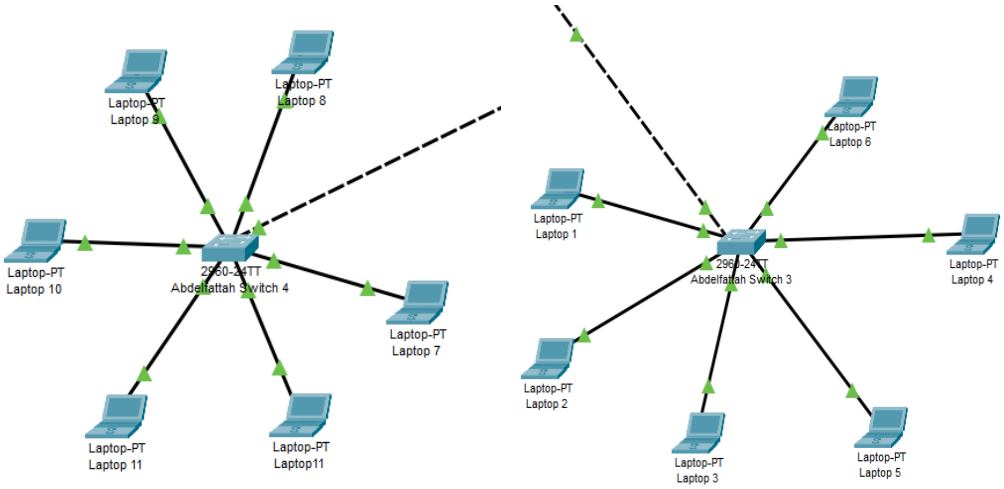
Executive Summary:

The network architecture for Quality Sounds music stores has been deliberately designed to be both expansive and flexible. It supports a wide range of devices, ensures uninterrupted internet access, and accommodates a complex mix of wired and wireless connections. This network is specifically intended to fulfil the changing needs of a thriving retail business, with a heavy emphasis on digital music commerce, customer contact, and educational opportunities.

Advantages of Star Topology:

The chosen star topology is commendable for its simple installation and minimum disruption when connecting or disconnecting network devices. However, it is crucial to note that it requires more cabling than bus topology and is dependent on a central connection point, which, if compromised, might disrupt the entire network.


Cloud-PT
Internet Cloud
1841
JasserRouter1
1841
JasserRouter2
2960-24TT
Abdelfattah Switch 5
Server-PT
DNS Server
Server-PT
DHCP Server
Server-PT
Web Sever
Store 1
Store 2
PC-PT
PC 1
PC-PT
PC 2
PC-PT
PC 3
PC-PT
POS 1
Printer-PT
Printer 1
Printer-PT
Printer 2
PC-PT
PC 6
PC-PT
PC 5
PC-PT
POS 2
PC-PT
PC 4


Laptop-PT
Laptop 8
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2960-24TT
Abdelfattah Switch 4
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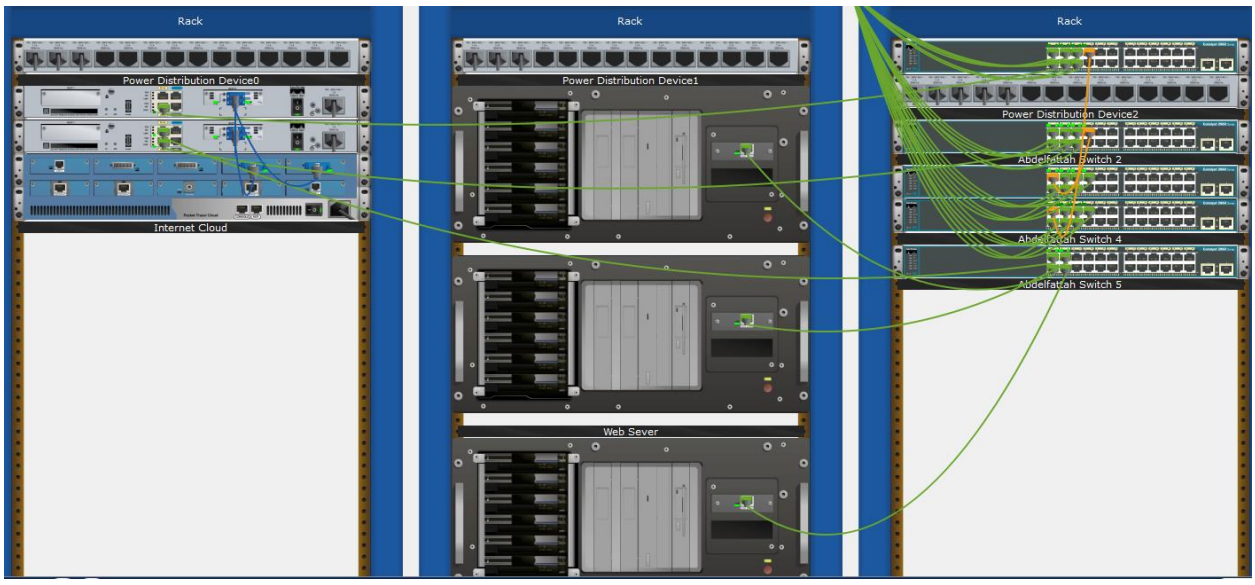
Rack
Power Distribution Device0
Internet Cloud
Rack
Power Distribution Device1
Web Sever
Rack
Power Distribution Device2
Abdelfattah Switch 2
Abdelfattah Switch 4
Abdelfattah Switch 5

Name of Device	Cable Type	Role of Device
Internet Cloud	Serial DTE	Provides internet access to the network.
Router 1	Serial DTE	Connects internal networks to the internet cloud.
Router 2	Serial DTE	Connects different segments of the network.
Switch 1-5	Copper Straight-Through	Connects multiple devices on a network, allowing them to communicate with each other.
Laptop 1-12	Copper Straight-Through	Portable computing devices that connect to the network wirelessly.
PC 1-6	Copper Straight-Through	Desktop computers that typically have a wired connection to the network.
POS 1, POS 2	Copper Straight-Through	Point of Sale systems for processing transactions.
Printer 1, Printer 2	Copper Straight-Through	Network printers that can receive print jobs over the network.
DNS Server	Copper Straight-Through	Provides name resolution services for the network.
DHCP Server	Copper Straight-Through	Provides automatic IP address assignment to devices on the network.
Web Server	Copper Straight-Through	Provides web content and services to authorized users over the network or the internet.

Name of Device	IP address(range)	Subnet mask	Default Gateway
Router 1	10.0.0.1 - 10.0.0.254	255.255.0.0	10.0.0.1
Router 2	10.1.0.1 - 10.1.0.254	255.255.0.0	10.1.0.1
DNS Server	12.1.0.2 - 12.1.0.254	255.255.0.0	12.1.0.1
DHCP Server	12.1.0.3 - 12.1.0.254	255.255.0.0	12.1.0.1
Web Server	12.1.0.4- 12.0.0.254	255.255.0.0	12.1.0.1
PC1	10.0.0.2 - 10.0.0.254	255.255.0.0	10.0.0.1
PC2	10.0.0.3 - 10.0.0.254	255.255.0.0	10.0.0.1
PC3	10.0.0.4 - 10.0.0.254	255.255.0.0	10.0.0.1
POS 1	10.0.0.5 - 10.0.0.254	255.255.0.0	10.0.0.1
Printer 1	10.0.0.6 - 10.0.0.254	255.255.0.0	10.0.0.1
PC4	10.1.0.2 - 10.1.0.254	255.255.0.0	10.1.0.1
PC5	10.1.0.8 - 10.1.0.254	255.255.0.0	10.1.0.1
PC6	10.1.0.9 - 10.1.0.254	255.255.0.0	10.1.0.1
POS 2	10.1.0.7 - 10.1.0.254	255.255.0.0	10.1.0.1
Printer 2	10.1.0.10 - 10.1.0.254	255.255.0.0	10.1.0.1
Laptop 1	10.1.0.11 - 10.1.0.254	255.255.0.0	10.0.0.1
Laptop 2	10.1.0.12 - 10.1.0.254	255.255.0.0	10.1.0.1
Laptop 3	10.1.0.13 - 10.1.0.254	255.255.0.0	10.1.0.1
Laptop 4	10.1.0.3 - 10.1.0.254	255.255.0.0	10.1.0.1
Laptop 5	10.1.0.14 - 10.1.0.254	255.255.0.0	10.1.0.1
Laptop 6	10.1.0.4 - 10.1.0.254	255.255.0.0	10.1.0.1
Laptop 7	10.0.0.7 - 10.0.0.254	255.255.0.0	10.0.0.1
Laptop 8	10.0.0.8 - 10.0.0.254	255.255.0.0	10.0.0.1
Laptop 9	10.0.0.9 - 10.0.0.254	255.255.0.0	10.0.0.1
Laptop 10	10.0.0.11 - 10.0.0.254	255.255.0.0	10.0.0.1
Laptop 11	10.0.0.12 - 10.0.0.254	255.255.0.0	10.0.0.1
Laptop 12	10.0.0.13 - 10.0.0.254	255.255.0.0	10.0.0.1
Internet Cloud	Null	Null	Null
5 Switchs	Null	Null	Null

```
R2>en
Password:
R2#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/16 is subnetted, 2 subnets
S       10.0.0.0 [1/0] via 11.1.1.1
C       10.1.0.0 is directly connected, FastEthernet0/0
     11.0.0.0/16 is subnetted, 1 subnets
C       11.1.0.0 is directly connected, Serial0/0/0
     12.0.0.0/16 is subnetted, 1 subnets
C       12.1.0.0 is directly connected, FastEthernet0/1
```

```
R1>en
Password:
R1# show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/16 is subnetted, 2 subnets
C       10.0.0.0 is directly connected, FastEthernet0/0
S       10.1.0.0 [1/0] via 11.1.1.2
     11.0.0.0/16 is subnetted, 1 subnets
C       11.1.0.0 is directly connected, Serial0/0/0
     88.0.0.0/16 is subnetted, 1 subnets
C       88.44.0.0 is directly connected, Serial0/0/1
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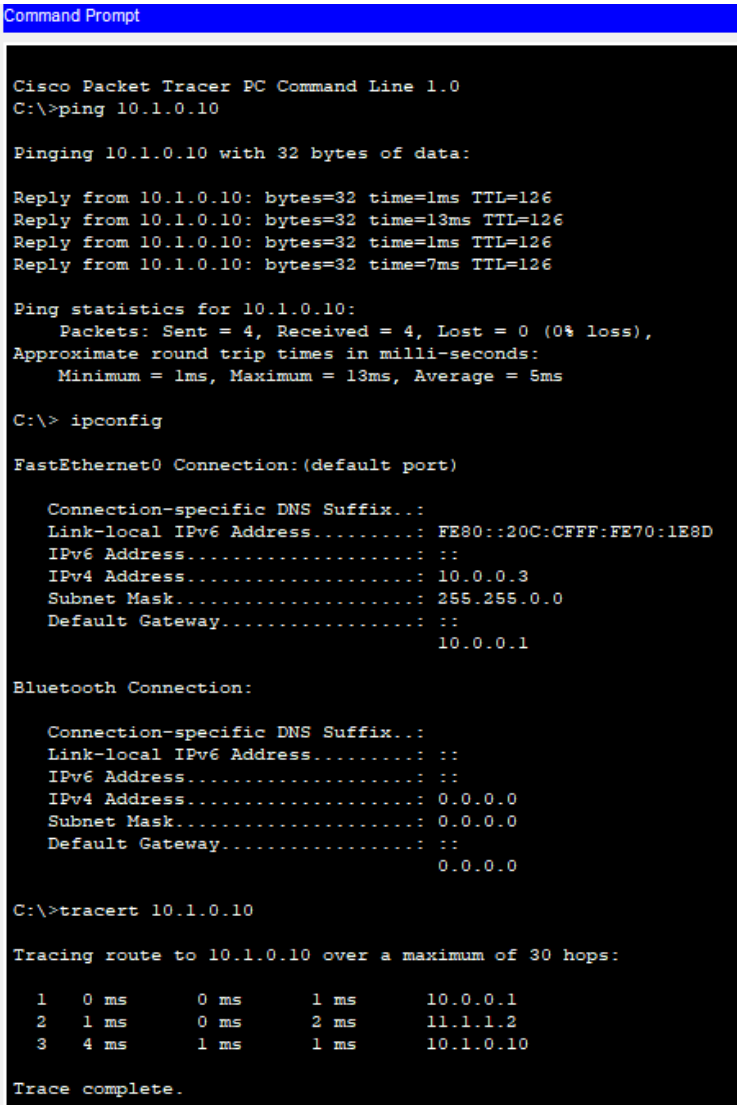

Network Addressing:

- Steer clear of using the 10.0.0.0/8 block for your network, as it's designated for private networks without direct internet access.
- Opt for either a public IP address range provided by your ISP or a private network range like 10.1.0.0/16 or 10.2.0.0/16, which allows internet routing.

DHCP (Dynamic Host Configuration Protocol):

- DHCP streamlines IP address assignment within your network.
- Upon joining the network, a device broadcasts a request for an IP address.
- The DHCP server then presents an available IP address along with configuration details such as subnet mask and default gateway.

- Once the device confirms acceptance, the DHCP server acknowledges, completing the IP configuration.

Advantages of DHCP:

- Automated IP assignment simplifies network management.
- Consistent network settings mitigate configuration issues.
- Efficient IP address allocation minimizes conflicts and optimizes resource utilization.

Network Troubleshooting Tools:

1. **Ping (Packet Inter Net Groper):**

- Assesses basic connectivity through data packet exchange.
- Displays round-trip time and packet success rate.
- Example: ping www.google.com

2. **Tracert (Trace Route):**

- Illustrates the path a data packet traverses to its destination.
- Reveals the sequence of routers involved in the connection.
- Example: tracert 8.8.8.8 (traces route to Google's public DNS server)

3. **ipconfig (Configuration Information Protocol):**

- Exhibits network adapter information like IP address, subnet mask, default gateway, and DNS servers.
- Furnishes details for comprehending network connection and addressing troubleshooting.
- Example: ipconfig (displays current adapter settings)

These tools facilitate diagnosing network issues by providing insights into:

- **Connectivity (ping)**
- **Network path (tracert)**
- **Network configuration (ipconfig)**

Static vs. RIP Routing:

Static Routing:

- Manually configured by the administrator.
- Specifies precise routes for the network to access destinations.
- Suitable for small networks but may be cumbersome and rigid for larger ones.

RIP (Routing Information Protocol):

- A dynamic routing protocol where routers exchange information to construct a network map.
- Adapts to the network changes automatically.
- Reduces configuration overhead compared to static routing.
- Suited for networks with frequent changes or growth, though scalability limitations exist for very large networks.

Choosing Between Static and RIP:

- Small, Stable Networks: Static routing might suffice.
- Dynamic Networks: RIP offers automatic adaptation.
- Large Networks: Consider alternative dynamic routing protocols for enhanced scalability.