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Data Trust scenario

You are working as a Data Network Engineer in a cloud network consulting company called DataTrust.

You have been asked to build a network for the Perth branch of DataTrust. This network will operate as a small enterprise branch network. It will require access to DataTrust's customer service web server through the internet.

Project related documentation

You have been provided with the following documentation related to the network design and implementation project.

- Network Topology diagram (Figure 1)

- DataTrust Perth Branch Network Topology diagram (Figure 2)

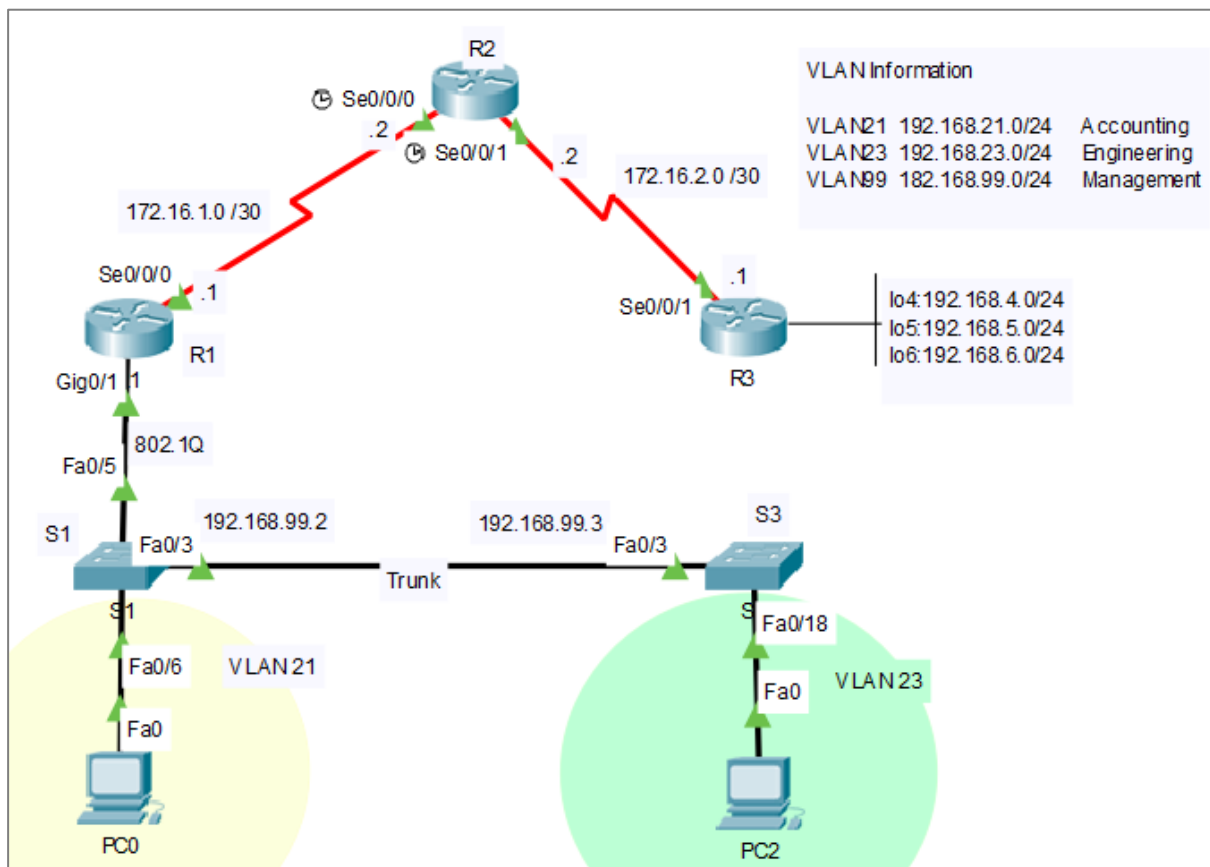- IP Addressing Table (Table 2)

Network topology diagram

Figure 1 - Network Topology Diagram

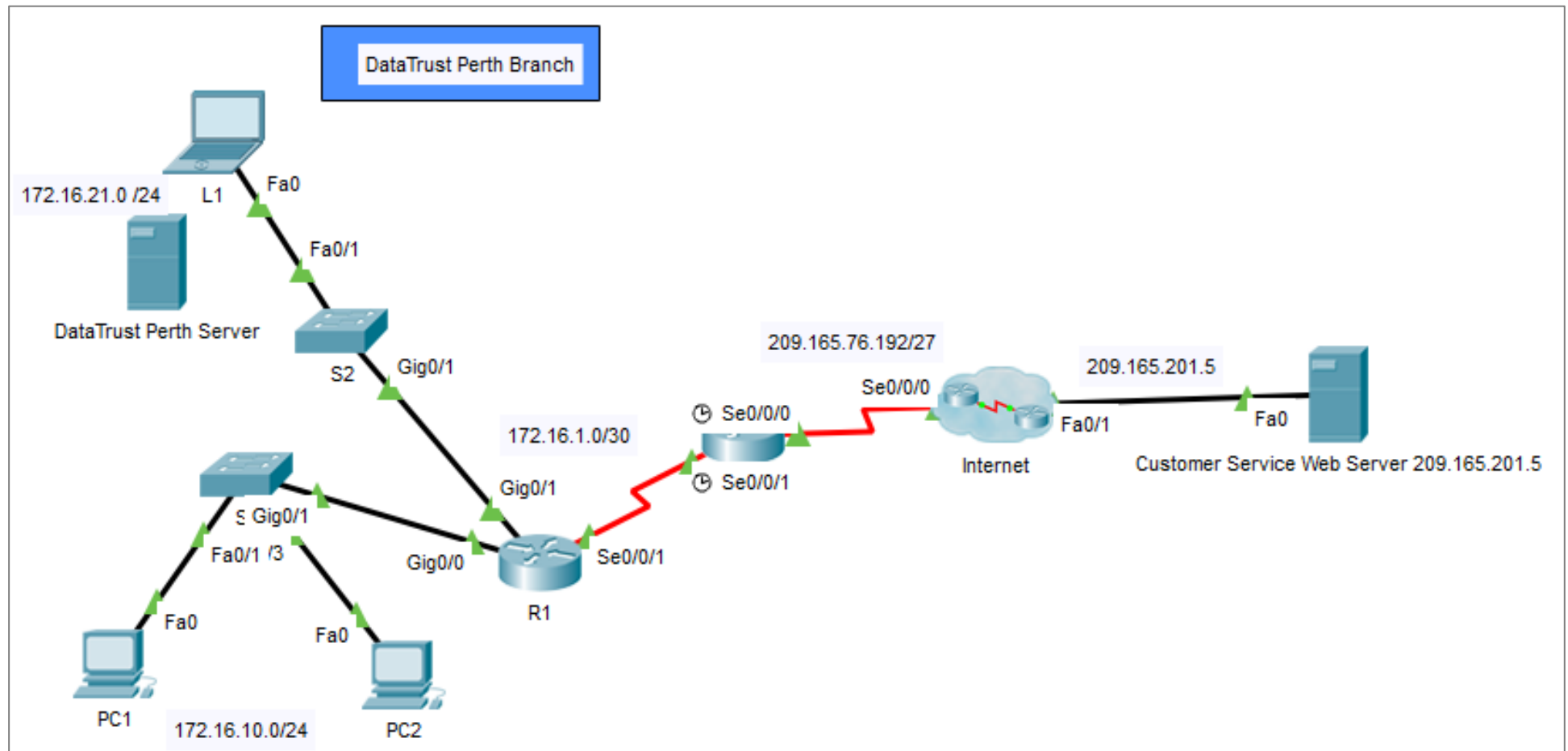# DataTrust

DataTrust (Perth Branch) Network topology diagram

Figure 2 - DataTrust (Perth Branch) Network Topology Diagram

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IP Addressing Table

Table 1 - IP addressing table

Device	Interface	IP Address	Subnet Mask	Default Gateway	Switch Port
R1	G0/1.21	192.168.21.1	255.255.255.0	N/A	N/A
	G0/1.23	192.168.23.1	255.255.255.0	N/A	N/A
	G0/1.99	192.168.99.1	255.255.255.0	N/A	N/A
	S0/0/0	172.16.1.1	255.255.255.252	N/A	N/A
R2	S0/0/0	172.16.1.2	255.255.255.252	N/A	N/A
	S0/0/1	172.16.2.2	255.255.255.252	N/A	N/A
R3	S0/0/1	172.16.2.1	255.255.255.252	N/A	N/A
	Loopback lo4	192.168.4.1	255.255.255.0	N/A	N/A
	Loopback lo5	192.168.5.1	255.255.255.0	N/A	N/A
	Loopback lo6	192.168.6.1	255.255.255.0	N/A	N/A
S1	VLAN 99	192.168.99.2	255.255.255.0	192.168.99.1	N/A
	VLAN 21	N/A	255.255.255.0	192.168.21.1	Fa0/6
S3	VLAN 99	192.168.99.3	255.255.255.0	192.168.99.1	N/A
	VLAN 23	N/A	255.255.255.0	192.168.23.1	Fa0/18
PC-A	Fa0	DHCP client			S1 Fa0/6
PC-B	Fa0	DHCP client			S3 Fa0/18

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Specifications for initial device settings and basic security

Router Specifications

Router R1 specifications

Table 2 - Router R1 specifications

Router configuration criteria	Specification
DNS lookup	disabled
Router name	R1
Encrypted privileged exec password	class
Console access password	cisco
Telnet access password	cisco
Clear text passwords	encrypted
MOTD banner	Unauthorized Access is Prohibited!
Interface S0/0/0	Set the description Set the IPv4 address. *Refer to the IP addressing table.* Set the clocking rate to 128000 Activate Interface
Default routes	Configure a default IPv4 route out S0/0/0.

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Router R2 specifications

Table 3 - Router R2 specification

Router configuration criteria	Specification
DNS lookup	Disabled
Router name	R2
Encrypted privileged exec password	class
Console access password	cisco
Telnet access password	cisco
Clear text passwords	Encrypted
MOTD banner	Unauthorized Access is Prohibited!
Interface S0/0/0	Description: **Connection to R1** ip address / subnet mask and activate status
Interface S0/0/1	Set the description Set the IPv4 address. *Use the first available address in the subnet.* Set clocking rate to 128000 Activate Interface

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Router R3 specifications

Table 4 - Router R3 specifications

Requirement	Specification
DNS lookup	Disabled
Router name	R3
Encrypted privileged exec password	class
Console access password	cisco
Telnet access password	cisco
Clear text passwords	Encrypted
MOTD banner	Unauthorized Access is Prohibited!
Interface S0/0/1	Set the description Set the IPv4 address. Use the next available address in the subnet. Activate Interface
Interface Loopback 4	Set the IPv4 address. *Use the first available address in the subnet.*
Interface Loopback 5	Set the IPv4 address. *Use the first available address in the subnet.*
Interface Loopback 6	Set the IPv4 address. *Use the first available address in the subnet.*
Default routes	Configure a default IPv4 route out S0/0/1.

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Switch Specifications

Switch S1 specifications

Table 5 - Switch S1 specifications

Switch configuration criteria	Specification
DNS lookup	Disabled
Switch name	S1
Encrypted privileged exec password	class
Console access password	cisco
Telnet access password	cisco
Clear text passwords	Encrypted
MOTD banner	Unauthorized Access is Prohibited!

Switch Specifications

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Switch S2 specifications

Table 6 - Switch S2 specification

Switch configuration criteria	Specification
DNS lookup	Disabled
Switch name	S3
Encrypted privileged exec password	class
Console access password	cisco
Telnet access password	cisco
Clear text passwords	Encrypted
MOTD banner	Unauthorized Access is Prohibited!

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Specifications for setting up VLANs

Switch S1 VLAN specifications

Table 7 - Switch S1 security specifications

Requirement	Specification
Create the VLAN database	Use Topology VLAN Key table to create and name each of the listed VLANS.
Assign the management IP address.	Assign the IPv4 address to the Management VLAN. Use the IP address assigned to S1 in the Topology diagram.
Assign the default-gateway	Assign the first IPv4 address in the subnet as the default-gateway.
Force trunking on Interface F0/3	Use VLAN 1 as the native VLAN.
Force trunking on Interface F0/5	Use VLAN 1 as the native VLAN.
Configure all other ports as access ports	Use the interface range command.
VLAN assignment	Assign F0/6 to VLAN 21
Unused ports	Shutdown all unused ports

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Switch S3 VLAN specifications

Table 8 - Switch S3 security specifications

Requirement	Specification
Create the VLAN database	Use Topology VLAN Key Table to create each of the listed VLANS. Name each VLAN.
Assign the management IP address	Assign the IPv4 address to the Management VLAN. Use the IP address assigned to S3 in the Topology diagram.
Assign the default-gateway	Assign the first IP address in the subnet as the default-gateway.
Force trunking on Interface F0/3	Use VLAN 1 as the native VLAN.
Configure all other ports as access ports	Use the interface range command.
VLAN assignment	Assign F0/18 to VLAN 21
Unused ports	Shutdown all unused ports

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Router R1 VLAN specifications for inter-VLAN connectivity

Table 9 - R1 VLAN specifications

Requirement	Specification
Configure 802.1Q subinterface .21 on G0/1	Description Accounting LAN Assign VLAN 21. Assign the first available address to this interface.
Configure 802.1Q subinterface .23 on G0/1	Description Engineering LAN Assign VLAN 23. Assign the first available address to this interface.
Configure 802.1Q subinterface .99 on G0/1	Description Management LAN Assign VLAN 99. Assign the first available address to this interface.
Interface G0/1 status	Activated

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Specifications for setting up a classless routing protocol (RIPv2)

Router R1 specification for RIPv2

Table 10 - RIPv2 settings for R1

Requirement	Specification
Classless routing protocol to be implemented:	RIP Version 2
Advertise directly connected Networks	Assign all directly connected networks.
LAN interface configuration set as:	Passive
Automatic summarization	Disabled

Router R2 specification for RIPv2

Table 11 - RIPv2 settings for R2

Requirement	Specification
Classless routing protocol to be implemented:	RIP Version 2
Advertise directly connected Networks	**Note:** Omit the G0/0 network.
LAN (Loopback) interface set as:	Passive
Automatic summarization	Disabled

Router R3 specification for RIPv2

Table 12 - RIPv2 settings for R3

Requirement	Specification

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Classless routing protocol to be implemented:	RIP Version 2
Advertise directly connected IPv4 Networks	
Set all IPv4 LAN (Loopback) interfaces as:	Passive
Automatic summarization	Disabled

Specifications for DHCP configuration

Router R1 DHCP specifications

Table 13 - R1 specifications for DHCP

Requirement	Specification
IP address reservation settings:	Reserve the first 20 IP addresses in VLAN 21 for static configurations
	Reserve the first 20 IP addresses in VLAN 23 for static configurations
Create a DHCP pool for VLAN 21	Name: ACCT DNS-Server: 10.10.10.10 Domain-Name: ccna-sa.com Set the default gateway.
Create a DHCP pool for VLAN 23	Name: ENGNR DNS-Server: 10.10.10.10 Domain-Name: ccna-sa.com Set the default gateway.