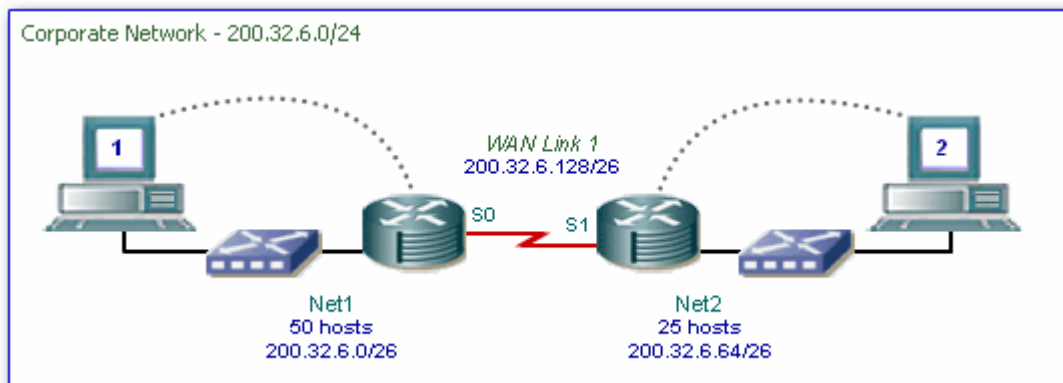**Portfolio Exercise 2a: Configure and Verify RIPv2 on a Router**

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**Objectives**

- Configure and verify RIPv2 on a router
- *Collect portfolio evidence for part of Grading Criteria P2*

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**Scenario**



Corporate Network - 200.32.6.0/24

A corporate network has two networks linked together via a single WAN link. The network address of 200.32.6.0/24 has been divided into four equally sized subnets. The subnets design is as follows:-

- **Subnet 0** → 200.32.6.0/26    → Net1
- **Subnet 1** → 200.32.6.64/26   → Net2
- **Subnet 2** → 200.32.6.128/26  → WAN Link
- **Subnet 3** → 200.32.6.196/26  → Unused at present

You are required to initially configure each router with RIP v1. You will then redesign the network addressing scheme, using VLSM to provide more efficient addressing. You will then convert the routing protocol to RIP v2 and note the changes this makes to the routing table.

_____

**Task1: Document the Configuration**

a.  Specify the configuration of the routers and the hosts

Using the diagram above for reference, fill in the table below. Some of the detail such as the name of the routers you may decide for yourself.

|          | **Name** | **Eth Port No** | **Eth Port IP address + CIDR subnet mask** | **Serial Port No.** | **Serial Port IP address + CIDR subnet mask** |
|----------|----------|-----------------|-------------------------------------------|---------------------|----------------------------------------------|
| **Router 1** |          |                 |                                           |                     |                                              |
| **Router 2** |          |                 |                                           |                     |                                              |

Which router will be the DCE?  _____

**Portfolio Exercise 2a: Configure and Verify RIPv2 on a Router**

Decide on IP addresses for the hosts and fill the table below:-

|        | IP Address | Subnet Mask | Default Gateway |
|--------|-----------|-------------|-----------------|
| Host 1 |           |             |                 |
| Host 2 |           |             |                 |

**Task 2: Configure RIP v1 Routing**

You will need to configure the router as follows:-

- o Set the router name
- o Set the enable, console and VTY passwords
- o Configure the Ethernet port with an IP address and subnet mask.
- o Configure the Serial port with an IP address and subnet mask.
- o Set the DCE serial port's clock rate
- o Enable RIP routing on each router

a. Configure the routers

*As a reminder, the various configuration commands are specified below. You will need remember which mode to be in for yourself, e.g. global configuration mode etc.*

Set the router's name using the **hostname** command

Set the enable password using the **enable secret** command

Set the line console and vty passwords using the **password** and **login** command

Set the IP address and subnet mask on the Ethernet port using the **ip address** command and activate the port using the **no shutdown** command

Set the IP address and subnet mask on the Serial port using the **ip address** and command activate the port using the **no shutdown** command.

Set the clock rate on the **DCE** serial port using the **clock rate** command

b. Configure the hosts

Configure each host with the IP address, subnet mask and default gateway as specified in your documentation.

c. Configure RIP routing on the routers

Go to the proper command mode and configure RIP routing on the each router according to your documentation. The commands you need are the **router rip** and **network** commands.

*Don't forget to save your configuration using the **copy run start** command*

**Portfolio Exercise 2a: Configure and Verify RIPv2 on a Router**

d.   Verify RIP routing on the routers

*Now you have finished configuring the routers, you can check your configuration using the **sh run** and **sh ip route** commands.*

How many routing entries should you see in the routing table? _____

What are the entries in the **Router 1's** routing table?

_____

_____

_____

What are the entries in the **Router 2's** routing table?

_____

_____

_____

*If your routing table does not show the correct entries then you will need to troubleshoot and fix your configuration appropriately.*

*Now check your router configuration using the ping command on each host*

Ping **Host1** from **Host2**.  Was the ping successful? _____

Ping **Host2** from **Host1**.  Was the ping successful? _____

*If the answer is no for either question, troubleshoot the router configurations to find the error. Then do the pings again until the answer to both questions is yes.*

_____

**Evidence**

Please supply the following evidence to support your implementation of this task

**~~Screenshots and configuration files required~~**

- Printout of one of the router's configuration file.  Annotate the printout, pointing out and explaining the RIP routing configuration
- Printout showing the routing table entries. Annotate the printout, pointing out and explaining the routing table entries, e.g. which networks are directly connected and which have been discovered though RIP.
- Printout showing RIP**v1** is running using the **sh ip protocol** command.
- Screenshots showing the **ipconfig/all** and **ping** results for each host

*Please annotate, sign, date, put the portfolio exercise number and task number on all evidence pages*

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**Portfolio Exercise 2a: Configure and Verify RIPv2 on a Router**

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**Task2: Change the Network Addressing Scheme**

It has been decided that allocating **Subnet 2** to the WAN link is wasteful of IP addresses. Therefore **Subnet 1** has been divided into smaller subnets using VLSM as shown in the diagram below.
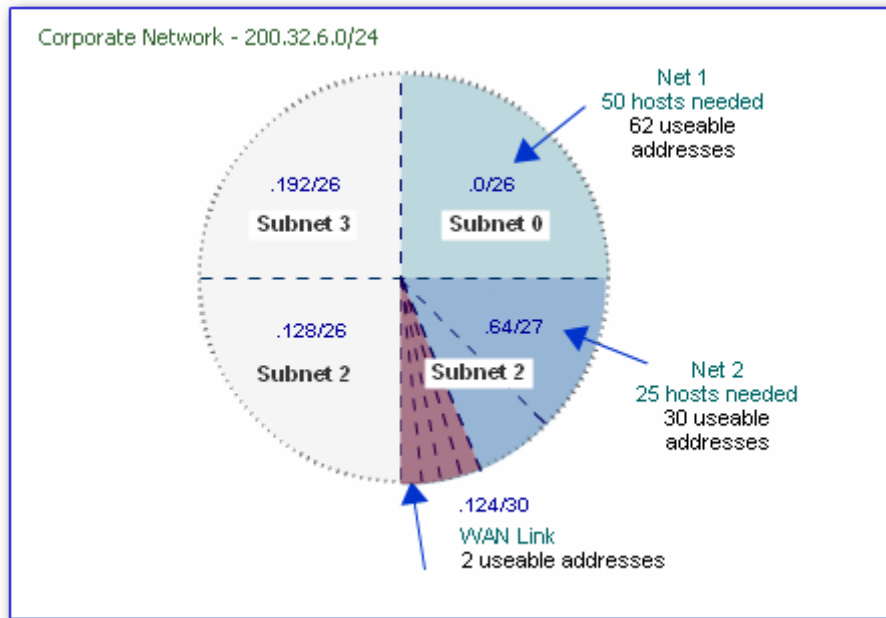


b.   Document the new addressing scheme

*The redesign of the subnets means that the IP addresses and subnet masks of some of the router ports and the hosts need to be changed.  Also, since RIPv1 is a classful routing protocol it cannot cope with VLSM, and so RIPv2 needs to be running on the routers.*

First you should document the new IP addresses and subnet masks for the active ports on the routers. Using the diagram above as a reference, fill in the table below - being particularly careful to specify the correct subnet masks:-

| | Name | Eth Port No | Eth Port IP address + CIDR subnet mask | Serial Port No. | Serial Port IP address + CIDR subnet mask |
|---|---|---|---|---|---|
| **Router 1** | | | | | |
| **Router 2** | | | | | |

Now decide on the new TCP/IP configuration of the hosts and fill in the table below:-

| | IP Address | Subnet Mask | Default Gateway |
|---|---|---|---|
| **Host 1** | | | |
| **Host 2** | | | |

**Portfolio Exercise 2a: Configure and Verify RIPv2 on a Router**

c. Reconfigure the routers and hosts

Configure the routers and hosts with their new IP addresses and subnet masks.  Then check the configuration by seeing if Host1 and Host2 can ping each other.

Ping **Host1** from **Host2**.  Was the ping successful? _____

Ping **Host2** from **Host1**.  Was the ping successful? _____

Examine the routing tables on each router. Do they look correct? _____

_____

_____

d. Configure RIPv2

Enable version 2 of the RIP routing protocol on both routers as follows.

```
Router(config)#router rip
Router(config-router)#version 2
Router(config-router)#exit
```

Examine the routing tables on both routers again. How have they changed now that RIPv2 is being used instead of RIPv1?

_____

_____

What is the difference between RIPv2 and RIPv1? _____

_____

Can Host1 and Host2 can ping each other now? _____

_____

**Evidence**

Please supply the following evidence to support your implementation of this task

**~~Screenshots and configuration files required~~**

- Printout of one of the router's configuration file.  Annotate the printout, pointing out any changes
- Printout showing the routing table entries. Annotate the printout.
- Printout showing RIP**v2** is running using the **sh ip protocol** command.
- Screenshots showing the **ipconfig/all** and **ping** results for each host

*Please annotate, sign, date, put the portfolio exercise number and task number on all evidence pages*