

# Laboratory Exercise

## Static Routing

### Objectives:

At the end of the exercise, the students should be able to:

- Assign IP addresses to PCs and routers.
- Check the connectivity of all interfaces using PING command.

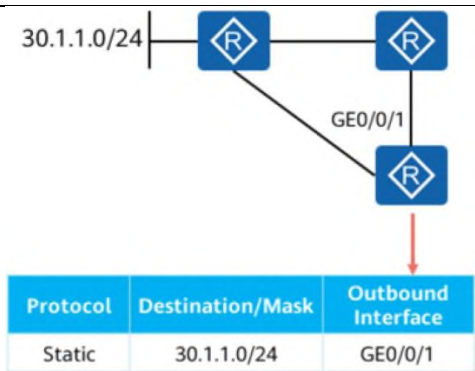
### Requirement:

- Huawei eNSP Simulator (V100R002C00B510)

### Principle:

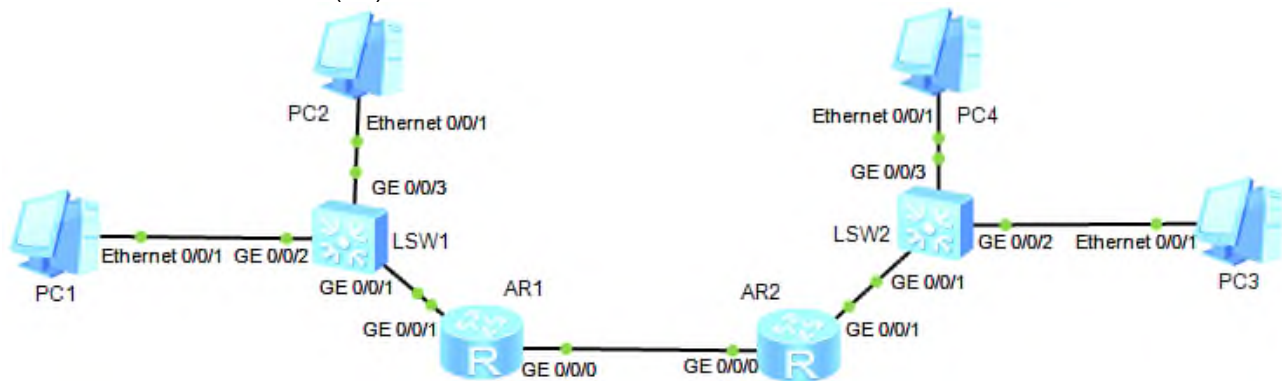
**Routing** is the basic element of data communication networks in which it is the process of selecting paths on a network along which packets are sent from a source to a destination. **Routes** are the path information used to guide packet forwarding. Network devices need to forward IP packets from different subnets to their destination IP subnets.

**Static routes** are manually configured by network administrators. This can be an effective method for networks with small and simple structures and reduce the effect of bandwidth and CPU resource consumption that occurs when other protocols are implemented.



### Procedure:

- Start the eNSP client. On the guide page, click **New Topo** (📄).
- Add **two routers**, **two switches**, and **four PCs** to the workspace. Select **AR1220 Routers** (🔌) and **S5700 Switches** (🔌).
- Follow the network and add connection based on the topology below. Highlight all of the devices and click **Start Devices** (▶).



- Rename the router and switches using **sysname** in their respective CLIs:
  - Router 1 – “**AR1**”; Router 2 – “**AR2**”; Switch 1 – “**LSW1**”; Switch 2 – “**LSW2**”.

5. While in **system-view**, access the following interfaces, set IP addresses and make sure that all node interfaces are in **UP State**.

Device	Interface	IP Address	Subnet Mask
AR1	GE 0/0/0	200.200.200.10	255.255.255.0
	GE 0/0/1	200.1.2.10	255.255.255.0
AR2	GE 0/0/0	200.200.200.20	255.255.255.0
	GE 0/0/1	200.1.3.20	255.255.255.0

6. Configure **IP addresses**, **subnet masks**, and **default gateways** for all PCs.
- Set **PC1** to **200.1.2.11**, subnet mask to **255.255.255.0** and default gateway to **200.1.2.10**.
  - Set **PC2** to **200.1.2.12**, subnet mask to **255.255.255.0** and default gateway to **200.1.2.10**.
  - Set **PC3** to **200.1.3.21**, subnet mask to **255.255.255.0** and default gateway to **200.1.3.20**.
  - Set **PC4** to **200.1.3.22**, subnet mask to **255.255.255.0** and default gateway to **200.1.3.20**.

7. Configure the static route for all routers using the **ip route-static** command.

- a. Under **AR1 system-view**:

```
[Huawei] ip route-static 200.1.3.0 255.255.255.0 200.200.200.20
```

- a. Under **AR2 system-view**:

```
[Huawei] ip route-static 200.1.1.0 255.255.255.0 200.200.200.10
```

8. To confirm the route configuration use the **display ip routing-table** command under **system-view**.

```
[Huawei] display ip routing-table
```

*This command will display all destination IP addresses, protocols-used, hop-costs, next-hop and its interface.*

9. Make sure that **all PCs** and **all routers** in the network are "**PING**"-able.
10. Save the file as "**SURNAME, FIRSTNAME - 05LAB1.topo**". Show/submit your output to your instructor.

### Grading Rubric

Criteria	Indicator	Score
AR1 Network	All devices in AR1 network are "Ping"-able in the whole network.	40
AR2 Network	All devices in AR2 network are "Ping"-able in the whole network.	40
Static Routing	All routers are interconnected based on the displayed routing tables.	20
<b>Total</b>		<b>100</b>