Packet Tracer - Design and Implement a VLSM Addressing Scheme

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
East	G0/0	10.1.1.97	255.255.255.240	N/A
	G0/1	10.1.1.65	255.255.255.224	N/A
	S0/0/0	10.1.1.121	255.255.255.252	N/A
West	G0/0	10.1.1.113	255.255.255.248	N/A
	G0/1	10.1.1.1	255.255.255.192	N/A
	S0/0/0	10.1.1.122	255.255.255.252	N/A
ES-1	VLAN 1	10.1.1.98	255.255.255.240	10.1.1.97
ES-2	VLAN 1	10.1.1.66	255.255.255.224	10.1.1.65
WS-1	VLAN 1	10.1.1.114	255.255.255.248	10.1.1.113
WS-2	VLAN 1	10.1.1.2	255.255.255.192	10.1.1.1
E1-22	NIC	10.1.1.110	255.255.255.240	10.1.1.97
E2-47	NIC	10.1.1.94	255.255.255.224	10.1.1.65
W1-201	NIC	10.1.1.118	255.255.255.248	10.1.1.113
W2-87	NIC	10.1.1.62	255.255.255.192	10.1.1.1

Objectives

In this lab you will design a VLSM addressing scheme given a network address and host requirements. You will configure addressing on routers, switches, and network hosts.

- Design a VLSM IP addressing scheme given requirements.
- Configure addressing on network devices and hosts.
- Verify IP connectivity.
- Troubleshoot connectivity issues as required.

Background / Scenario

You have been asked to design, implement, and test an addressing scheme for a customer. The customer has given you the network address that is suitable for the network, the topology, and the host requirements. You will implement and test your design.

Instructions

You have been given the network address requirements are: 10.1.1.0/24 by your customer. The host address

Requirements

Host Requirements:

LAN	Number of Addresses Required
ES-2 LAN	28
WS-1 LAN	5
WS-2 LAN	47

Design Requirements

- Create the addressing design. Follow guidelines provided in the curriculum regarding the order of the subnets.

- The subnets should be contiguous. There should be no unused address space between subnets.

- Provide the most efficient subnet possible for the point-to-point link between the routers.

- Assign the subnets in the order of the number of hosts from the greatest to the least.

- Document your design in a table such as the one below.

Subnet Description	Number of Hosts Needed	Network Address/CIDR	First Usable Host Address	Broadcast Address
WS-2 LAN	47	10.1.1.0/26	10.1.1.1	10.1.1.63
ES-2 LAN	28	10.1.1.64/27	10.1.1.65	10.1.1.95
ES-1 LAN	11	10.1.1.96/28	10.1.1.97	10.1.1.111
WS-1 LAN	5	10.1.1.112/29	10.1.1.113	10.1.1.119
WLAN	2	10.1.1.120/30	10.1.1.121	10.1.1.123

Configuration Requirements

Note: You will configure addressing on **all** devices and hosts in the network.

- Assign the first usable IP addresses in the appropriate subnets to East for the two LAN links and the WAN link.

- Assign the first usable IP addresses in the appropriate subnets to West for the two LANs links. Assign the last usable IP address for the WAN link.

- Assign the second usable IP addresses in the appropriate subnets to the switches.

- The switch management interface should be reachable from hosts on all of the LANs.

- Assign the last usable IP addresses in the appropriate subnets to the hosts.

If the addressing design and implementation are correct, all hosts and devices should be reachable over the network.