

Digital Trolleys

Objective

Use CLI commands to verify operational status of a multiarea OSPF network.

Scenario

Your city has an aging digital trolley system based on a one-area design. All communications within this one area are taking longer to process as trolleys are being added to routes serving the population of your growing city. Trolley departures and arrivals are also taking a little longer, because each trolley must check large routing tables to determine where to pick up and deliver residents from their source and destination streets.

A concerned citizen has come up with the idea of dividing the city into different areas for a more efficient way to determine trolley routing information. It is thought that if the trolley maps are smaller, the system might be improved because of faster and smaller updates to the routing tables.

Your city board approves and implements the new area-based, digital trolley system. But to ensure the new area routes are more efficient, the city board needs data to show the results at the next open board meeting.

Complete the activity directions as stated below.

Save your work and explain the differences between the old, single area and new, multiarea system to another group or the entire class.

Required Resources

- Packet Tracer software
- Word processing software

Directions

Step 1: Map the single-area city trolley routing topology.

- Use Packet Tracer to map the old routing topology for the city. Cisco 1941 Integrated Services Routers (ISRs) are preferred.
- Create a core area and place one of the routers in the core area.
- Connect at least two routers to the core area router.
- Choose to connect two more routers to the routers from Step 1c or create loopback addresses for the LAN interfaces on the routers from Step 1c.
- Address the connected links or interfaces using IPv4 and VLSM.
- Configure OSPF on each router for area 0 only.
- Ping all routers to ensure full connectivity within the entire area.

Step 2: Map the multiarea city trolley routing topology.

- Use your cursor to highlight all devices from Step 1, and copy and paste them to another area of the Packet Tracer desktop.

- b. Assign at least three areas to your topology. One must be the backbone (or core area) and the other two areas will be joined to the backbone area using current routers, which will now become area border routers.
- c. Configure the appropriate routers to their new area assignments. Remove old area configuration commands and assign new area commands to the appropriate interfaces.
- d. Save each router's changes as you make changes.
- e. When complete, you should have three areas represented on the topology and all routers should be able to ping each other throughout the network.
- f. Use the drawing tool and identify your areas by drawing circles or rectangles around the three areas.
- g. Save your work.

Step 3: Verify the network for city council members.

- a. Use at least three commands learned (or used in this chapter) to help the city council prove that the new area, digital trolley routing topology works.
- b. Save a copy of topology graphics and verification commands comparisons in table format to a word processing file or in the space provided below.
- c. Share your work with another group or the class. You may also want to add this activity and its files to a portfolio for this course.