

## Step 1: Gather Information

From the exercise, we know:

1. Router DDD received link-state packets with the following information:
  - From AAA: Routes to BBB (cost 5) and EEE (cost 4)
  - From BBB: Routes to AAA (cost 4), CCC (cost 1), and FFF (cost 5)
  - From CCC: Routes to BBB (cost 3), DDD (cost 4), and EEE (cost 3)
  - From EEE: Routes to AAA (cost 2), CCC (cost 2), and FFF (cost 2)
  - From FFF: Routes to BBB (cost 1), DDD (cost 2), and EEE (cost 3)
2. The direct link costs from DDD to its neighbors:
  - DDD to CCC: cost 3
  - DDD to FFF: cost 4

## Step 2: Determine Optimal Routes from DDD to Other Routers

Using the information received in the link-state packets and the direct costs, we calculate the minimum cost paths from DDD to each other router.

1. **Route to AAA:**
  - $D \rightarrow C \rightarrow B \rightarrow A$ :  $3+1+4=8$
  - $D \rightarrow F \rightarrow E \rightarrow A$ :  $4+3+2=9$
  - **Optimal route:**  $D \rightarrow C \rightarrow B \rightarrow A$ , **Cost:** 8
2. **Route to BBB:**
  - $D \rightarrow C \rightarrow B$ :  $3+1=4$
  - $D \rightarrow F \rightarrow B$ :  $4+1=5$
  - **Optimal route:**  $D \rightarrow C \rightarrow B$ , **Cost:** 4
3. **Route to CCC:**
  - $D \rightarrow C$ : 3
  - **Optimal route:**  $D \rightarrow C$ , **Cost:** 3
4. **Route to EEE:**
  - $D \rightarrow C \rightarrow E$ :  $3+3=6$
  - $D \rightarrow F \rightarrow E$ :  $4+3=7$
  - **Optimal route:**  $D \rightarrow C \rightarrow E$ , **Cost:** 6
5. **Route to FFF:**
  - $D \rightarrow F$ : 4
  - **Optimal route:**  $D \rightarrow F$ , **Cost:** 4

### Step 3: Construct DDD's New Routing Table

Destination	Next Hop	Cost
A	C	8
B	C	4
C	C	3
E	C	6
F	F	4

### Answer

- **Router DDD's new routing table:**
  - To reach A: Use C with cost 8.
  - To reach B: Use C with cost 4.
  - To reach C: Use C with cost 3.
  - To reach E: Use C with cost 6.
  - To reach F: Use F with cost 4.