- **Task-2: virtual routing**

  (Application-layer routing)

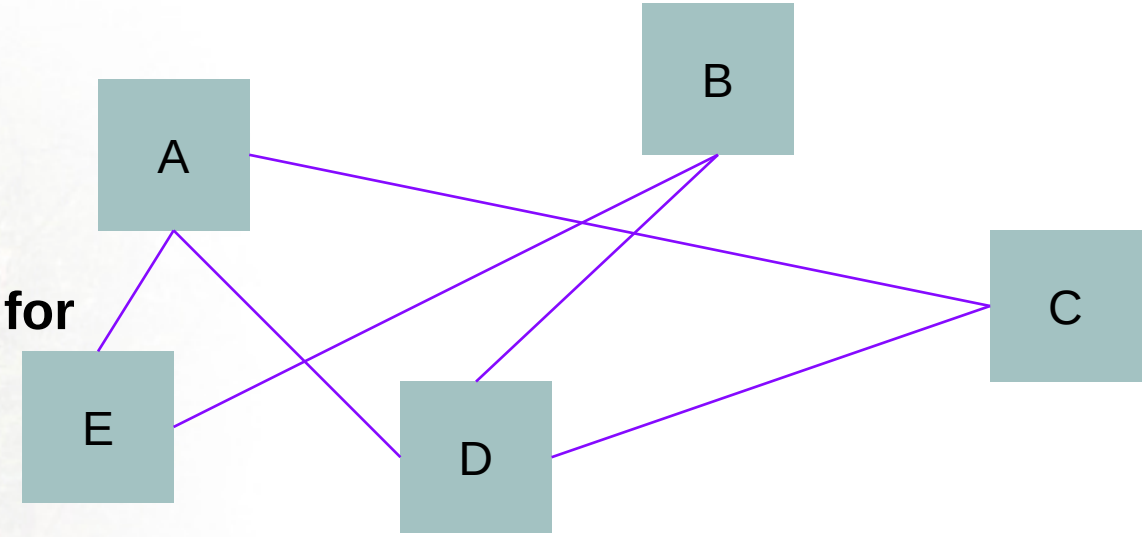
  - **self-organized routing**
    - **Select a virtual topo for members' computers**
    - **Build virtual connection between computers according to the virtual topo, define the cost of links;**
    - **Each computer acts as both client and router.**
    - **Each computer exchanges and updates routing table periodically.**
    - **A computer can send message to other computers,**

Hint:

- **IP-in-IP (IP-layer virtual routing) or**
- **use sock directly (Application-layer routing)**
- **Use TCP or UDP**

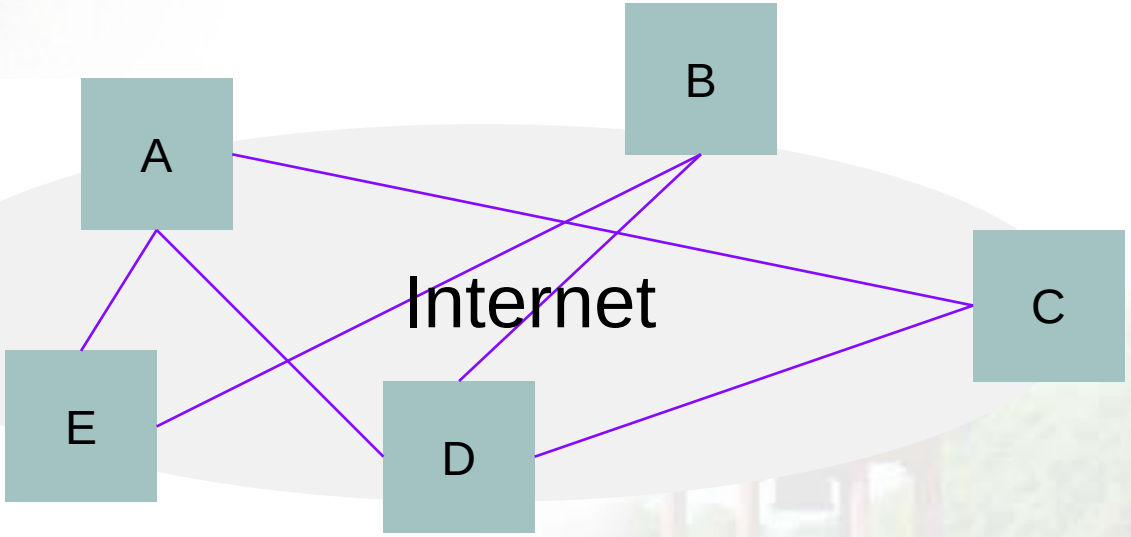
Step 1:

- **Design the virtual topo (link cost)**
- **Each node has two ports for receiving and sending: Prt_I, Prt_O.**



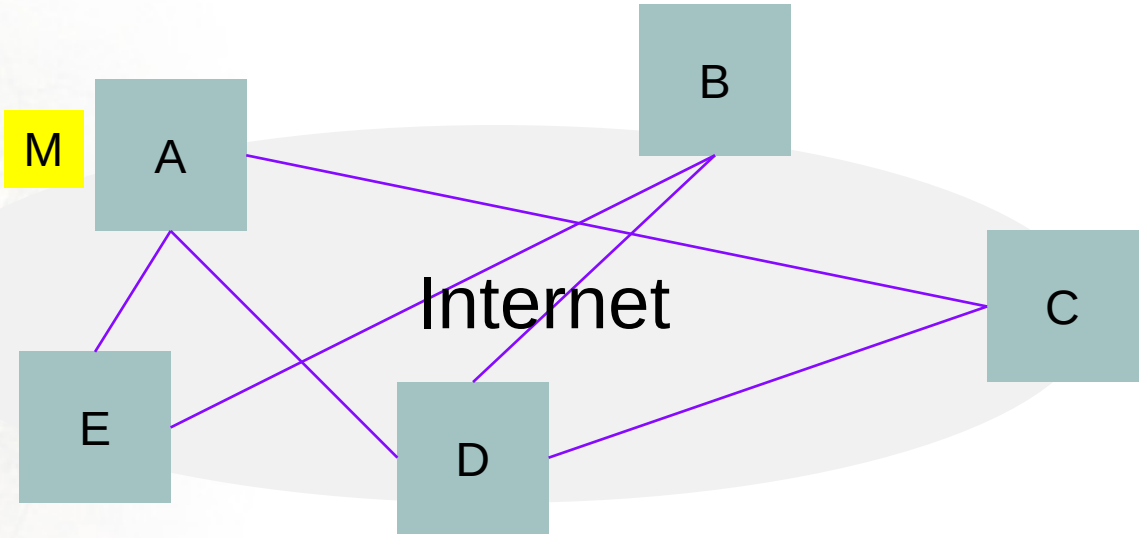
Step 2:

Build the virtual Topo over Internet, define the cost of links; exchange the routing information periodically



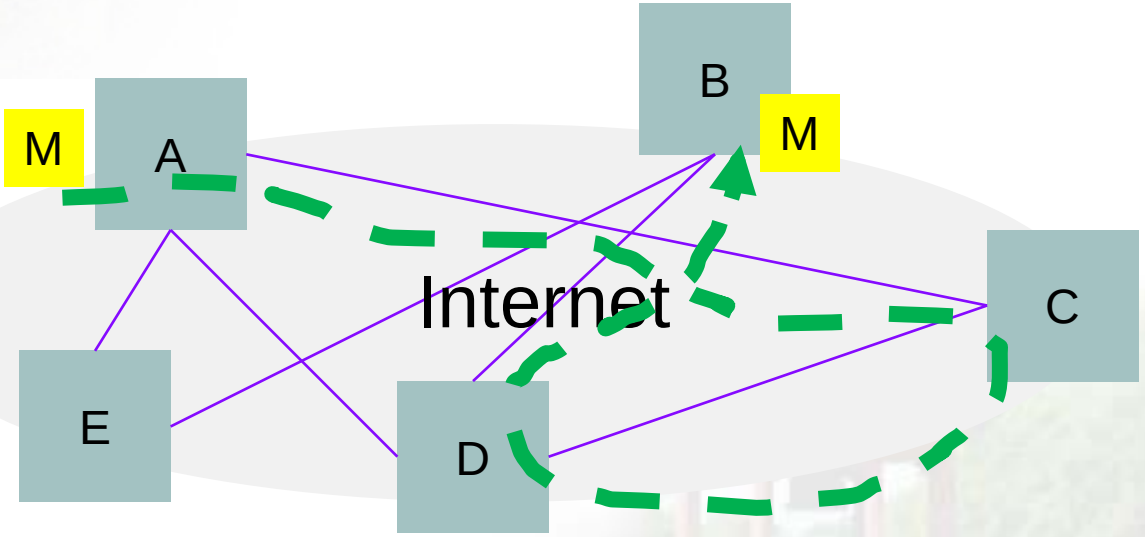
Step 3:

Simulate the routing and forwarding. For example, A sends M to B. Which path is better?
A →E → B? or
A →D → B?
A → C → D → B?



Step 4:

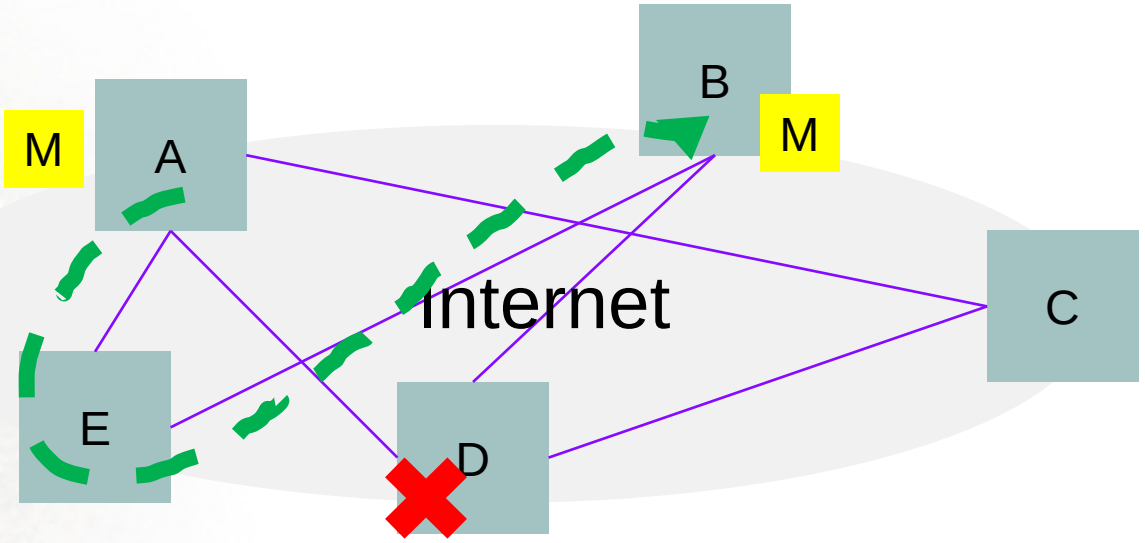
Transmit data M via the best path, e.g.,
A → C → D → B



Please try different topo and different routing algorithms (LS & DV).

Step 5:

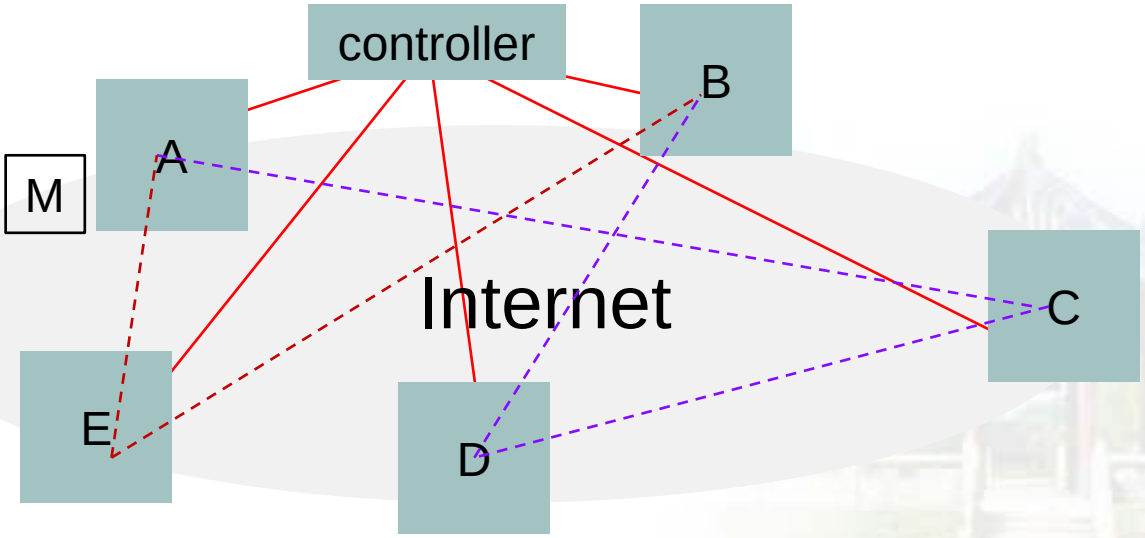
A node is down.
e.g., D



Please try different topo and different routing algorithms (LS & DV).

- **Task-2: virtual routing**
  - **centralized routing**
    - **Like the above self-organized routing**
    - **Controller determines and distributes routing policy (routing table) to each member**

Example: A sends M to B. Which path is better? A →E → B? or A → C → D → B?



- **Submit**
  - **PPTs + demo video**
  - **Source code (and the compiled executable files)**
  - **The project report documents (including introduction, design, setup and deploy, and result, project management records)**
  - **The individual report of each team members (your contributions, and anything else you want to talk about)**
  - **votes of the top 5 teams (based on their presentations and your observations, give comments of 2-3 sentences)**
  - **A list that shows each member's contribution and grade.**

- **Put all file into a package and name it as:**

  A_B_C.rar,

  A: the student ID of group leader;

  B: the name of group leader;

  C: task1 or task2

  example: 1500001_张三_task1.rar

- **Group leader submit it to the given FTP server.**

- **Basic points**
  - **Protocol design. (10 points)**
  - **Finish basic function correctly (w/o error). (60 points)**
  - **On time (WEEK 15). (10 points)**
  - **Documents, codes, presentation. (20 points)**
  - **votes**
  - **in-group assessment**