CE443 - Computer Networks
TA Session
Today Topic

Programming Assignment 2

- Introduction to MPLS
- Introduction to MTP
- Assignment Details
- Introduction to Partov
Introduction to MPLS

- Multiprotocol Label Switching (MPLS) is a mechanism in high-performance telecommunications networks that directs data from one network node to the next based on short path labels rather than long network addresses.
Introduction to MTP

- Make Tunnel Protocol (MTP) sets tunnel between two Provider Routers.
Assignment Details

- One program for all Routers. Routing is based on Routing Tables.
- Each Router has 5 Tables:
  + Default Table: Responsible of internal routing,
  + Interface VPN: Maps interfaces of router to related VPN,
  + VRF-Tables: Has all necessary info of all VPNs,
  + Tunnel Table: Indicates Tunnel Label for reaching to PE,
  + LS Table: Provides label swapping/popping information.
- Each Table:
  + Can be empty
  + Could has N/A if value of a column is Not Available.
Assignment Details (Cont.)

- Router program:
  + Takes command from STDIN:
    - send [IP-Address][VPN Name][MSG]
    - setup-tunnel [IP-Address]
  + Forward packets which have been delivered to it.
Assignment Details (Cont.)

- MPLS header is 4 bytes and has 4 fields:
  - Label Value 20 bit,
  - Exp 3 bits and always set it zero,
  - S 1 bit, that equals to 1 if is the last label of the labels stack,
  - TTL 8 bits and always set it zero.

![MPLS Header Diagram]
Partov

Your Computer

The Map on The Partov Server

CE

PE

P

PE

CE

CE

CE

CE

CE