

CS 725/825 & IT 725

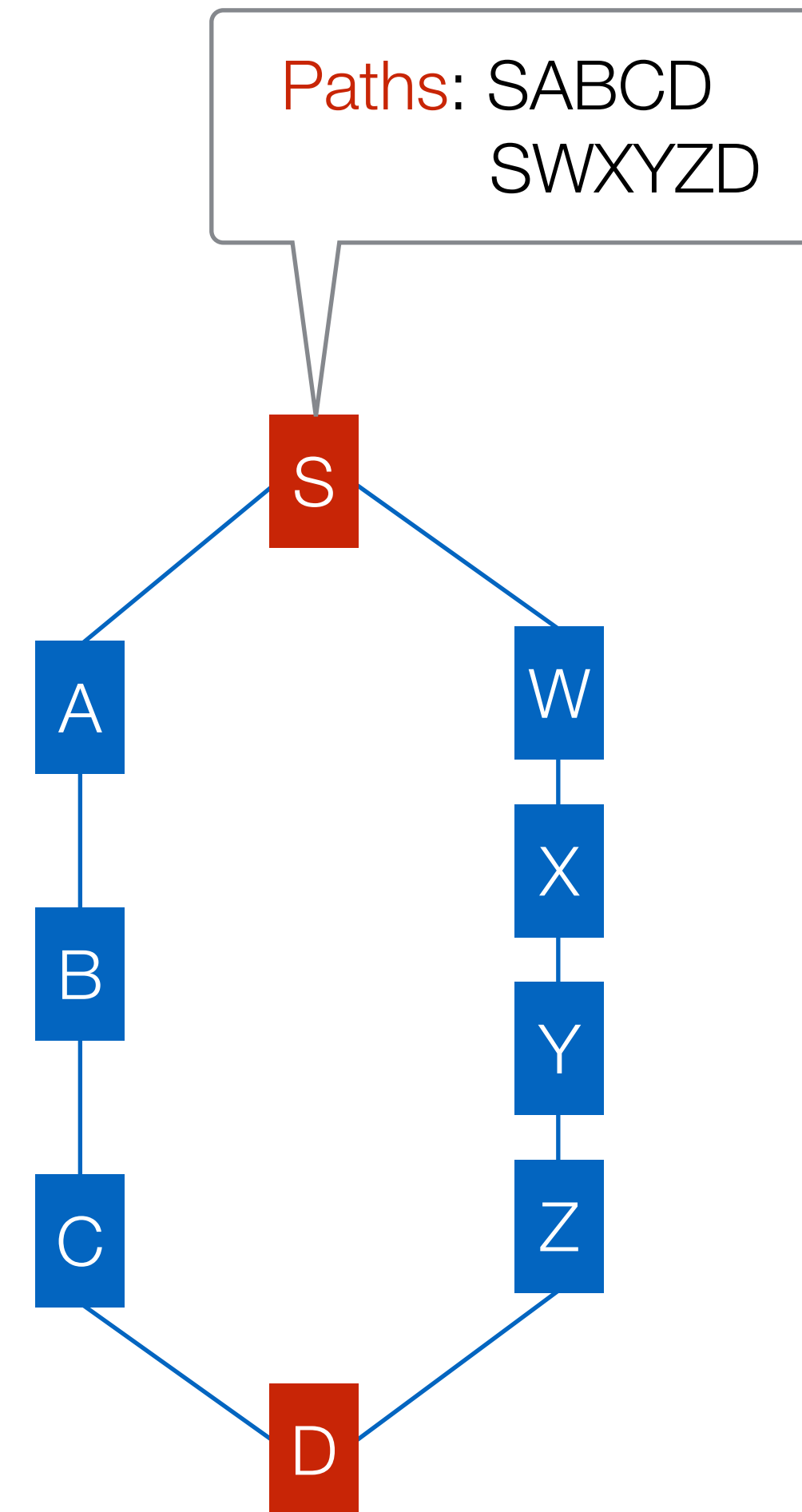
Lecture 20

Network Layer

November 13, 2024

BGP-4

- ▶ **Border Gateway Protocol**
 - exterior gateway routing protocol
 - *path* vector routing
 - allows policy based routing
 - AS as a routing hop
- ▶ Version history
 - Version 4 (1995)
 - Latest “version” of version 4 (2006)



QoS Measures

- ▶ **Throughput**
 - bits, bytes, packets per second
- ▶ **Latency**
 - one way or round trip
- ▶ **Latency variation (jitter)**
 - average, max, etc.
- ▶ **Probability of successful delivery**
 - packet loss rate
 - bit error rate

Quality of Service in IP

- ▶ **Type of Service (TOS)** field in IPv4, **Traffic Class** in IPv6
 - 8 bits
 - priority (3 bits)
 - bits to request high **throughput**, low **latency**, low **loss**, and low **monetary cost**
 - set by traffic generating applications
- ▶ For most parts, this attempt has **failed**:
 - no **cost** for requesting higher category of service
 - no broad **agreement** on how to handle the different categories

Differentiated Services

- ▶ **Domain**-based solution
- ▶ **Relative** guarantees
- ▶ **Few classes** of service
- ▶ **Framework** rather than a complete and prescriptive solution
- ▶ Reuses TOS field (called DSCP - Differentiated Services Code Point)

Differentiated Services

