Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Spring Term 2016
Prof. Adrian Perrig

Operating Systems and Networks
Assignment 9

Assigned on: **May 19, 2016**
Updated on: **May 24, 2016**

1 Dijkstra's Algorithm

A network between A and B is depicted in Figure 1. The numbers on the links correspond to the probability (multiplied by 100) that the link may fail. Link failures are independent from each other. How could you find the most reliable path from A to B? Hint: Use Dijkstra's algorithm.

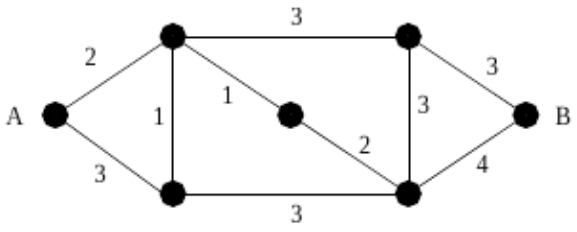

Figure 1: Network

2 Border Gateway Protocol

In BGP, ISPs announce "to interested parties" paths of networks which are reachable through those ISPs.

(1) Why don't residential ISPs (like Swisscom, UPC, Sunrise) send BGP announcements to their customers?

(2) Would it make sense for home routers to send (to their ISP) BGP announcements advertising the private network address space of the customer?

3 Hierarchical routing

IPv6 makes use of hierarchical routing to keep routing tables small. Use the data on `http://www.iana.org/assignments/ipv6-unicast-address-assignments/ipv6-unicast-address-assignments.xhtml` to find the region in which the following IPv6 addresses should exist:

(1) 2001:0200:0000:0000:beef:f00d:00c0:ffee

(2) 2001:1200:0000:0000:beef:f00d:00c0:ffee

(3) 2003:0000:0000:0000:beef:f00d:00c0:ffee

(4) 2001:4200:0000:0000:beef:f00d:00c0:ffee

(5) 2620:0000:0000:0000:beef:f00d:00c0:ffee