

2010 Paper 9 Question 2

Advanced Systems Topics

- (a) The Border Gateway Protocol (BGP) uses two mechanisms to reduce the number of update messages: route-flap damping and *rate-limiting*.
- (i) Describe the rate-limiting mechanism. [3 marks]
 - (ii) Discuss what might happen if every BGP speaking router in the Internet turned off rate-limiting. [3 marks]
- (b) Professor Bell claims that BGP could be replaced by a simple *shortest paths* routing protocol. Is Professor Bell correct? Explain. [4 marks]
- (c) Content Delivery (or Distribution) Networks (CDNs) are becoming an important component of the Internet.
- (i) What is a CDN? [2 marks]
 - (ii) What impact could the growth of CDNs have on inter-domain routing? [3 marks]
- (d) The growth of routing tables has led to proposals to make an explicit separation between *identifiers* and *locators*.
- (i) Explain how this could reduce routing table size. [2 marks]
 - (ii) Explain how *tunnelling* is required by this scheme. [3 marks]