

TP5 - Distribution Networks

Michaelmas 2002

Class Assignment

Answer one question from section A and the question from section B.

Both questions will carry equal marks and the parts of question 5 carry equal weight.

Your total word count excluding bibliography must not exceed 4000 words.

SECTION A

Answer **one** of the following questions:

Write 2000 words on one of the following:

1. 'Recent experience with de-regulation suggests that network industries are potentially much more competitive than was thought to be the case 20 years ago.' Discuss with reference to one and only one industry.
2. 'Electricity has particular commodity characteristics that mean that spot markets are inherently unstable and liable to produce prices that are too low or too high for prolonged periods. This implies that electricity markets need to be very carefully designed.' Discuss with reference to one recent example.
3. Prepare a memorandum for the incoming head of an industry specific regulatory agency on how the agency should conduct an RPI-X style price review process. In your memorandum include the principles behind RPI-X price control and a timetable for the process.
4. With reference to three examples discuss how incumbents in network industries have successfully responded to the de-regulation of their markets.

SECTION B

Several authors from Microsoft presented a paper at the 2002 ACM Workshop on Digital rights Management entitled, “The Darknet and the Future of Content Distribution’ by Peter Biddle, Paul England, Marcus Peinado, and Bryan Willman (available online as a Word file at <http://crypto.stanford.edu/DRM2002/darknet5.doc> or as a PDF file at <http://msl1.mit.edu/ESD10/sslinks/links.php?go=3188>).

While there are obvious implications of their naming of file sharing without the benefit of control by content providers as a “dark net,” in many respects this is no worse than the notion of a gray (or black) market. Moreover, as a vendor of a key element of a DRM infrastructure (currently known as Palladium), the sympathies of the authors are easy to understand as well.

However, their closing analysis of the implications of a “dark net” for commerce in the digital age merits a more careful examination. Shamelessly quoting below, the authors state:

5.2 Business in the Face of the Darknet

There is evidence that the darknet will continue to exist and provide low cost, high-quality service to a large group of consumers. This means that in many markets, the darknet will be a competitor to legal commerce. From the point of view of economic theory, this has profound implications for business strategy: for example, increased security (e.g. stronger DRM systems) may act as a disincentive to legal commerce. Consider an MP3 file sold on a web site: this costs money, but the purchased object is as useful as a version acquired from the darknet. However, a securely DRM-wrapped song is strictly less attractive: although the industry is striving for flexible licensing rules, customers will be restricted in their actions if the system is to provide meaningful security. This means that a vendor will probably make more money by selling unprotected objects than protected objects. In short, if you are competing with the darknet, you must compete on the darknet's own terms: that is convenience and low cost rather than additional security.

Certain industries have faced this (to a greater or lesser extent) in the past. Dongle-protected computer programs lost sales to unprotected programs, or hacked versions of the program. Users

have also refused to upgrade to newer software versions that are copy protected.

There are many factors that influence the threat of the darknet to an industry. We see the darknet having most direct bearing on mass-market consumer IP-goods. Goods sold to corporations are less threatened because corporations mostly try to stay legal, and will police their own intranets for illicit activities. Additionally, the cost-per-bit, and the total size of the objects have a huge bearing on the competitiveness of today's darknets compared with legal trade. For example, today's peer-to-peer technologies provide excellent service quality for audio files, but users must be very determined or price-sensitive to download movies from a darknet, when the legal competition is a rental for a few dollars.

- a) The key thought of the first paragraph is: “In short, if you are competing with the darknet, you must compete on the darknet's own terms: that is convenience and low cost rather than additional security.” Is the argument presented here compelling? Are there additional important constructs that would tend to amplify upon or to contradict this conclusion? Why or why not?
- b) The last paragraph asserts that “[t]here are many factors that influence the threat of the darknet to an industry.” What might these factors be? Which ones increase the threat? Mitigate it?
- c) The last paragraph of the excerpt argues that the “cost-per-bit” and object size are strong factors in the model of economic behavior that underlies their thinking. In particular, the article asserts that an MP3 music file is implicitly more compatible with darknet distribution, while a digitized movie release is not. Consider the information presented at <http://www.digital-digest.com/dvd/articles/dvdtodivx.html> and http://www.dxl.netfirms.com/DVD_DivX_guide.htm When considering bandwidth availability to various classes of users (modem, DSL/cable, LAN, etc.), can you construct an implied value of time and/or bits?