

## Chapter 6

### Conclusion and recommendations

#### 6.1 Summary

As was stated in the first chapter, studying the utilisation patterns of students using P2P file-sharing applications will help system administrators better to manage, control and plan the Information Technology (IT) infrastructure of academic environments.

#### 6.2 Conclusions

Based on the discussions in the foregoing chapters, the study is concluded with a few key observations:

- The majority (96.4%) of the respondents indicated that they own cellular phones. In contrast with this, only 69.5% of the respondents indicated that they own a personal computer (the infrastructure utilised the most when connecting to any Peer-to-Peer file-sharing applications on the Internet), and that 65.3% of the respondents rated themselves as intermediate computer users. It would be safe to conclude, therefore, that the majority of the sample would be able to work and interact on Peer-to-Peer file-sharing applications.
- The Internet can be seen as the “glue” connecting the ICT hardware owned and/or accessed by the respondents. The respondents connect to the Internet, either via a dial-up connection (41.6%), a direct network connection (52.3%) or a combination of dial-up and direct network connection (6.1%). Once connected to the Internet, the respondents perform various functions, for example, SMS/MMS, e-mail, World Wide Web (WWW), Online chat, Peer-to-Peer file-sharing, online banking or online purchasing.
- A significant observation of the study is the fact that 51% of the respondents have used a P2P application during the six-month period prior to the survey. This figure, however, drops to 18.4% when measuring the percentage of respondents who used a P2P application at least once a month during the same six-month period. Even though a mere 2.2% of the respondents utilised a P2P application on a daily basis, this may still have a significant effect on the available bandwidth.

- When downloading files via a P2P application, 48% of the respondents indicated that they download 2 to 5 files per session. This peak, however, sharply declines as the number (in terms of bytes) of files increases; for example, 9.6% of the respondents indicated that they download 6 to 10 files, whilst a mere 1% of the respondents indicated that they download 11 to 15 files. This may be attributed to slow network response times as the volume and size of the files increase.
- As was to be expected, the majority (52.3%) of the respondents downloaded music files in MP3 format. In contrast with this, only 36.1% of the respondents indicated that they upload 2 to 5 files in a single session and that 32.8% of these uploads are pictures in varied formats.
- It can be concluded that, 51.0% of the respondents in this study can be labelled as “freeloaders”, in other words, as not sharing any files on the P2P application and thereby threatening the collaboration aspect identified as a core aspect in P2P file-sharing. It should also be noted, however, that, for the remainder of the respondents, in other words, for those that do share files online
  - 25.4% upload 1 file
  - 36.1% upload 2 to 5 files
  - 4.1% upload 6 to 10 files
  - 0.8% upload 16 or more files in a single session.
- The number of files shared on a P2P application decreases as the number of files increases. A large portion (18%) of the respondents indicated that they share only 1 file at any given point in time. It is interesting to note, however, that 1.6% of the respondents indicated that they share more than 1 000 files at any given point in time.
- Another interesting observation is that 69.9% of the respondents indicated that, in their opinion, P2P file-sharing infringes on the original creator’s copyright. This corresponds with 74.4% of the respondents, who feel that it would be unethical to download copyrighted material.
- In addition, 78.7% of the respondents agreed that sharing/downloading material could very well threaten the very existence of an entire industry, such as the music industry.

- The respondents (87.4%) agreed that it is important carefully to read the entire installation agreement before downloading the Peer-to-Peer file-sharing application/program, but only 73.2% of the respondents indicated that they are aware of the fact that some installation agreements make provision/allow for their computer's processing power to be used by other users on the Internet.
- In addition, 61.7% of the respondents agreed that Peer-to-Peer file-sharing applications might present a threat to their PC and/or to computer networks.
- The results of the study indicated that Peer-to-Peer file-sharing by the Information Science Students of the Rand Afrikaans University (soon to be called the "University of Johannesburg") is not as common an activity as was expected.

Following, a number of recommendations based on the conclusions reached.

### **6.3 Recommendations**

After having deliberated the findings and conclusions, the author would like hereby to recommend as follows:

- The study uncovered a lack of social responsibility towards and understanding of copyright issues in the academic environment. It is recommended, therefore, that ethical and legal aspects associated with the digital domain be included in the general curriculum.
- Awareness campaigns should be launched in a bid to alert system administrators to students' usage patterns and frequencies with regard to utilising P2P file-sharing on the institutional IT infrastructure.

It should be noted that further research would be required to confirm and elaborate on the results of this study.

### **6.4 Future research**

The following are suggested as possible areas for future research:

- The impact of the integration and incorporation of a Peer-to-Peer file-sharing application principle with the most common ICT hardware (the cellular phone). This integration will build on the content-consumption

idea, in terms of which the modern-day user constantly browses for new and relevant information.

- Taking the integration of Peer-to-Peer file-sharing applications and the cellular phone further would envision a voice-enabled P2P Web service.
- Further research must, ideally, focus on the implementation of an academic P2P file-sharing application in the South African tertiary-education environment in a bid to create and foster collaboration and sharing between academics.
- The above academic P2P application should be supported by a digital library. Future studies should also focus on and include the replication of digital and related work (in a library format) in a P2P application.
- P2P collaborations via a P2P inter-lending scheme, in regional and global environments, should also be investigated. Future studies should also include input and collaboration amongst local (Sabinet-Online) and international vendors, such as the Online Computer Library Center (“OCLC”, for short).
- As a last suggestion, it would be very interesting to repeat this survey in two or three years’ time in a bid to establish how the students’ utilisation patterns of P2P applications have changed.

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