**Annotated Bibliography**

[1] C. Guo, S. Chen, Z. Ziao, E. Tan, X. Ding, X. Zhang. Measurement, Analysis and Modeling of BitTorrent-Like Systems. *ACM Internet Measurement Conference Proceedings*, 2005.

This paper puts numbers to the performance of BitTorrent and similar P2P systems, sometimes the numbers line up with the theory, sometimes they don’t. It explores some of the limitations and problems with these implementations of P2P topologies, how those are combatted by the implementations and goes on to suggest solutions that prior to this paper had not been implemented. While there are many advantages to using a P2P system, it is important for anyone who wants to leverage these advantages to be aware of the shortcomings and how to combat them. My paper will include these shortcomings and point out why and how the measurements don’t line up with the theory. It will also include the ways that these can be combatted.

[2] E. Lua, J. Crowcroft, M. Pias, R. Sharma, S. Lim. A Survey and Comparison of Peer-To-Peer Overlay Network Schemes. *IEEE Communications Surveys*, 2005.

This article looks at a variety of ways to overlay P2P networks on existing architectures and the advantages and performance of each. It concludes by comparing each against each other and making suggestions about which organization would be best for various applications. This direct comparison of different methods will be very useful for making recommendations about P2P topologies. By comparing them so directly, the conclusions of this paper will be a large focus of my own.

[3] F. Aasen, T. Johannessen. Hybrid Peer-to-Peer Solution for MMORPGs. *Norwegian University of Science and Technology*, 2009.

This thesis examines the theory and practice of developing a MMO game on a hybrid P2P network. It delves into the desired performance, scalability, and distribution theoretically offered by P2P networks and then looks at how this theory can be implemented on an independent game. I will use the findings of this paper to examine how P2P networks can be used to facilitate the development of independent MMO games, which would have been prohibitively expensive without a P2P implementation.

[4] I. Barri, F. Gine, C. Roig. A Scalable Hybrid P2P System for MMOFPS. *Parallel, Distributed and Network-Based Processing Euromicro International Conference*, February 2010.

This article looks at how a P2P and Client-Server architecture hybrid can be used to host a MMOFPS game with scalable quality of service and higher fault tolerance than pure Client-Server topologies. Online gaming is a large and growing industry. As it grows the computing load to host it becomes very difficult to manage. Many lessons can be learned by examining how these two architectures can be combined and used to host online games while managing cost, quality of service, and failures in the network.

[5] J. Kurose, K. Ross. *Computer Networking A Top-Down Approach*. Person Education, Inc., Upper Saddle River, 2013.

This book contains a nice overview of the theory behind P2P networks, as well as the challenges facing them. It includes an examination of their theoretical performance and technical difficulties compared to a traditional Client-Server design. The theoretical side of my paper is heavily based on their formulas while the practical side looks at how the theory holds up in implementation.

[6] S. Guha, N. Daswani, R. Jain. An Experimental Study of the Skype Peer-to-Peer VoIP System. *Proceedings Fifth International Workshop on P2P Systems*, 2006.

This paper explores some of the inner workings of Skype and hypothesizes about how Skype is different from traditional P2P networks since Skype is used for VoIP traffic instead of traditional file sharing. They also look at how Skype uses supernodes despite them having low bandwidth and how it maintains a population of supernodes that is relatively stable. Skype is one of the most successful P2P networks and by examining how it leveraged the advantages of P2P to the problem of real time communications is a large part of my paper.

[7] P. Norvig, S. Russell. *Artificial Intelligence A Modern Approach*. Prentice Hall, Upper Saddle River, 2010.