# Summary

The article in review is Music-Defined Networking, a research paper written by Mary Hogan (Princeton University) who is Ph.D. candidate at the time of writing and Dr. Flavio Esposito (Saint Louis University). In this paper, Hogan and Esposito

For several years researchers have used the term “network orchestration” as a metaphor. In this paper, we make the metaphor reality; we describe a novel approach to network orchestration that leverages sounds to augment or replace various network management operations. We test our Music- Defined Networking approach with both a real and a virtual network testbed, on several mechanisms and applications: from datacenter server fan failure detection to authentication, from load balancing to explicit congestion notification and detection of heavy hitter flows. Our approach can be used with and without a Software-Defined Network controller. Despite its limitations, we believe that sound-based network management has potential to be further explored as an effective and inexpensive out-of-band orchestration technique.

# Critical Analysis

Critically analyze the article, including both good and bad points.

Note: A suggestion is to include at least ten points in your critique. This is a rough guideline. Making fewer deeper and more well thought out points will suffice, as will making more narrow or more superficial points.

Note: This part of the paper is not simply about calling out pros and cons from the article itself, but about thoughtfully analyzing the article yourself.

What are the pros and cons of the technology (system, approach, policy, etc.)?

Why is it useful?

How might the technology make the world better?

What are the unintended consequences?

Why is the technology dangerous?

Why should we be skeptical?

# Future Work

First, we limit our evaluation to close-range applications, as we transmit sound signals between devices over a single hop. Practical systems are limited to devices that are placed close enough to each other to transmit sounds without significant signal degradation. Sound waves can, and have been, however, relayed, although with very low throughput and for data plane transfers [19].A more efficient multi-hop sound transmission would allow greater flexibility in device placement. We leave this as an open question.

Furthermore, as discussed in Section 5, with our equipment, we found that we could feasibly use approximately 1000 unique frequencies simultaneously. An interesting research direction is to coordinate an array of microphones listening to different groups of switches, as well as to allow cooperation of classical and ultrasound speakers and microphones. Including frequencies outside the spectrum of human hearing would allow for an increase in the number of discernible sounds and for more complex and scalable network management operations.