

Project Update: An Analysis and Comparison of Two Decentralized Peer-to-Peer Networks: Freenet vs. ZeroNet

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1 Recap of Project Goal

For my CSC466 project, I am working on an analysis and comparison of two decentralized, peer-to-peer networks, Freenet and ZeroNet. The original problem and significance described in the original proposal have not changed at all. For more information, please refer to the original project proposal accessible on both the discussion forum as well as my project website.

The rest of the update paper will follow this structure. In section 2, I compare the work that I have done so far against my original project plan. In section 3, I consider updates and changes to the plan as a result of the work I have done from section 2. This includes a review of the expected deliverables and the work schedule. Lastly, in section 4, I have a quick discussion and give my thoughts, ideas and concerns on the project so far.

2 Project Plan and Current Progress

In the original project proposal I stated the following as a first goal.

First, extensive research on the two networks will be done to give an idea of what the purpose, abilities and benefits of each network are.

However, in reality I have focused mainly on research in only one of the networks: ZeroNet. I feel reasonably convinced that I have a good understanding of the network and feel prepared to begin writing a background information section on ZeroNet in the final report currently. I have included a number of resources that I used and will use in the final report in the references section.[1],[2],[3],[4]

I next said that I would compare the two networks in my proposal.

Next, I would compare the networks by their features and present my discoveries.

Currently, I have not done any comparisons between the two networks.

Lastly, I said that I would hope to create some sort of website on the two networks so as to gain an understanding of the networks.

Lastly, if possible, I hope to create and host two identical websites on each of the networks so that I can gain a greater understanding of the two networks. This would allow a greater qualitative understanding of the process of joining the network as well as open up the future possibility of a qualitative comparison between the networks.

Currently, I have set up a ZeroNet website. Though basic and functionally a copy of the blog template provided by ZeroNet it does exist. The URL to this website is: <http://127.0.0.1:43110/187LkGY5ZUADp6M4J4Yk1roWJaRohnAxes>. You will need to be connected to the ZeroNet network in order to be able to view it. Additionally, it most likely will not have any seeders so it will be inaccessible as I do not want to have my machine connected to the network at all times.

3 Updates and Changes to Plan

In the previous section I mention that I had only done most of my research on ZeroNet. This was intentional as I believe this change in research priorities is beneficial and lines up more with my other coursework. For Reading Summary 4 (RS4), due March 15, my chosen paper was on the original Freenet paper. By focusing my efforts before the midterm update on ZeroNet, I can spend the time after solely on Freenet which will help in completing RS4 and my project at the same time.

As such I have changed my schedule a little to reflect this new priority. My expected deliverables continue to be the same though.

3.1 Expected Deliverables

Expected project deliverables continue to include:

- a public website hosting work done and logged
- two websites created for each network
- a final report covering the topics discussed in the proposal

3.2 Updated Schedule

Fortnight	Deliverable
1 (Jan 25 - Feb 8)	Project Proposal and Work Log Website
2 (Feb 8 - Feb 22)	Initial Research and Website Creation ZeroNet Research and Website Creation
3 (Feb 22 - Mar 8)	Midterm Presentation
4 (Mar 8 - Mar 22)	Research Finished; Report Underway Freenet Research and Website Creation
5 (Mar 22 - Apr 5)	Final Presentation
6 (Apr 5 - Apr 19)	Final Report

3.3 Website URLs

A website for the work done is hosted at:

<https://csc446decentralized.wordpress.com/>

My ZeroNet website can be found at the following address:

<http://127.0.0.1:43110/187LkGY5ZUADp6M4J4Yk1roWJaRohnAxes>

4 Concluding Thoughts

In conclusion, I think that my project is going decently well so far. I am pleased with the progress I have completed so far especially with being able to get a website up and running so quickly.

I am a bit disappointed in the slow progress and being held up by other work. One of the more frustrating things about researching ZeroNet was the lack of first-party documentation on the inner workings of the network and setup. Most of the information I needed was gathered from external sources.

Outside of the technology aspect of the network, I am quite disappointed at the state of the network. One thing that I have noticed is the lack of official support as most communication channels from the lead developer stopped communications in 2018 as well as most documentation being from that year as well. The git commit history of the main developer account has mainly only been merges with community translations, signalling a stop in development. Another concern I had, which comes with the nature of such decentralized and censorship resistant networks, is the overwhelming amount of conspiratorial and outright illegal postings on the main network and is definitely something that will detract from any sort of adoption.

5 References

- [1] S. Wang, Y. Gao, J. Shi, X. Wang, C. Zhao, and Z. Yin, “Look deep into the new deep network: A measurement study on the zeronet,” in *Com-*

putational Science – ICCS 2020, V. V. Krzhizhanovskaya, G. Závodszy, M. H. Lees, J. J. Dongarra, P. M. A. Sloot, S. Brissos, and J. Teixeira, Eds., Cham: Springer International Publishing, 2020, pp. 595–608, ISBN: 978-3-030-50371-0.

- [2] ZeroNet. “Zeronet documentation.” (2020), [Online]. Available: <https://zeronet.io/docs/>.
- [3] blurhy. “Criticism of zeronet.” (2020), [Online]. Available: <https://0net-preview.com/138R53t3ZW7KDfSfxVpWUsMXgwUnsDNXLP/?Page:criticism>.
- [4] ZeroNet. “Zeronet: Decentralized web platform using bitcoin cryptography and bittorrent network.” (2019), [Online]. Available: https://zeronet.io/files/ZeroNet_Presentation.pdf.