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**NextCloud – Opensource Project**

CSC 482

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**Abstract**

The Purpose of the NextCloud opensource project is to become familiarize on how webservers are connected specifically within the cloud atmosphere. File storage and synchronization services, such as Google Drive and Dropbox, has been developed to incorporate capabilities that are able to synchronize across mobile internet connected devices. The opensource software server – NextCloud, has been designed to meet the needs of both Google Drive and Drop box. NextCloud is a self-hosting server-side software that will allow the users to have as much capacity as they like. The software provides live file-sync and web accessible storage that have options to chat, utilize web collaboration tools that is also office tools friendly, with Calendars, Contacts, Web-Dev with both home-use and enterprise specific packages.

Intro:

A pond signing up, users have immediate access to all functionality that are complete with flexibility. There are even beta programs that the NextCloud server can implement. Draw.io, usage survey, and a server monitoring tool is some of the software beta apps that the NextCloud client can execute with a few simple clicks within the settings environment. Group communication, to include group video chats, has gain major popularity as users are allowed to join without a camera or a microphone. Users may also join multiple chats in different browser tabs at the same time. Large number of users are supported giving the NextCloud server environment an edge over most file hosting services.

Scope:

The NextCloud environment that we have implemented and configured is mounted and operated through the webserver that have been set up for the opensource file-hosting project. We have secured a Fully Qualified Domain Name (FQDN) in order for web browsers and web applications to distinguish uniform resource locators (URL) to append to in regards to absoluteness of underlying protocols. This project was chosen to meet the demands of file storage capabilities, flexibility, integration features, and group manageability – features and services.

Roles:

* Steven implemented a fully qualified domain server, setup and configured the NextCloud environment, extended the environment with google drive and drop box API for storage synchronization adaptability.
* Syed tested the client-server software, Domain web-server, and mobile apps for functionality, crashes, and bugs relativity.

Literature Review:

Google Drive and Drop box, as mentioned, allows users to store files on their servers – across devices. The difference between Google Drive/Drop box and NextCloud is that NextCloud does not need a premium fee to store unlimited files as Google Drive/Drop box will allow only 10 - 15gb as a basic user for their client-software. Using NextCloud, users store their data on their own privately owned servers (or one that is privately set up by a company/personal power user), as the software is free and open-source readily available for the public. If google/dropbox, etc. wanted too, they are able to move privately owned files that is on their servers in order to cache your personal data or make image thumbnails. The features that most users go after that are all file-hosting services alike may be that it is flexible with apps that are available for Mac, android, windows, to include a website interface. Tinkering around with the hosting server, we were able to mount personal google drives and drop box API through the developers consoles for file synchronization to and from Nextcloud – Dropbox – and Google Drive with NextCloud being the software that links the three (possibly more) file hosting services.

Requirements:

* DNS: c-panel configurations, subdomain to mount and configure the NextCloud server-side software; (FQDNS – for URL simplicity)
* Internet: for web interfaces and browser file-hosting capabilities.
* Registration for app use and

Non-Functional Requirements:

* System capacity, data integrity, and availability
  + System can handle a large number of users as long as they are registered with the system to which system administrators can approve/disapprove.
  + If there are suspicious activity, system administrators have the option to ban/block the users from accessing the server.
  + System is highly portable, moving across multiple OS does not create problems

Use Case:

* Users maybe teachers, students, friends, family, and customers alike
* Users of all level may register for a nextcloud account within the server – add, upload, download, delete or video chat to fulfill all objectives as needed
* Gamers can video chat, students and teachers may share folders, friends and family can share photos at any time, day or night when the server is active

Physical system:

* The cloud system is currently hosted by a private web hosting entity – www.name.com
* The system can be created by anyone with connection to the web as long as you have a FQDNS or the ability to acquire a DNS that will host the cloud environment. Those who are configuring the server(s) should have a lot of patience, able to follow multiple you-tube directions as every situation is different and a lot of the instructions to configure the server itself (from their website) is highly vague.

User interface:

Once configured: www.nextcloud.domain-name.com

1pg – Login/register

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2pg – Main, upload, download, search, settings

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3pg – share, tag, external storage, system monitor

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Database:

* Database is managed through the web hosting service within c-panel
* MySQL database wizard within the c-panel creates the instance that will allow admin users to populate more new users to include more system administrators.
* NextCloud have multi table users interaction: users have personal unlimited storage unless directed by the system administrators (due to security, optimization, etc.)

Flowchart:

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MySQL database system interaction:

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Implementation:

NextCloud is highly versatile in terms of file storage, flexibility, and portability. In order to make it as portable and reachable through major platforms, the web, and the cloud – the FQDN was the only way we can get a URL based cloud infrastructure that can manage users input, output, update, search, and delete functions to cooperate between any and all devices. The deployment was successful as an open source client-software server is web-hosted friendly. We were able to deploy the server software within a FQDN that had a c-panel environment. Without C-panel, this open-source project would have had a high rate to get tossed into the scrapped pile as building a hosting server is highly time consuming (in regards to open source).

Method:

* Some method of trying to host a cloud environment consisted of using AWS web services to which had a lot of success but was not affordable to any mainstream non-business-like atmosphere. We looked into digital ocean and eventually decided to go to [www.name.com](http://www.name.com) to try the FQDN route which was manageable and simple once we found out that nextcloud – the open source client-server was in fact web-host friendly. It was only a matter of setting up subdomains for the nextcloud environment and implementing the required configurations through c-panel. A lot of tinkering, but eventually it was up and running which felt really good to test the functionality of the highly versatile file hosting server.

Process:

* Every week (typically Mondays) we would have a group meeting, discuss progress being made, and eventually test any result that yield a positive outcome. We’ve scrapped two major projects within the process of going though the cloud route. Xamarin and visual studio had many complications within the first few weeks. The virtual images had a high rate of failure when compiling so we took the cloud approach - researched and attempted to pull AWS videos. After maybe a good 2-3 weeks of research we stumbled a pond the NextCloud open source project. We had a lot of complication trying to set up and configure the server-side platform due to hosting dilemmas. Once the FQDN was up, setting up and configuring led to a more highly abundant appreciation for those working towards the open-source cloud projects.

Analysis:

* In order to test the configuration, pinging the DNS for reachability was one of the main methods to find out if the web servers were taking request. I would jump on a “CMD” command prompt, ping the servers IP address and if I got a response I know that the servers are up and running successfully. There were times that I tried to configure the Google drive and drop box API to the server and I believe it crashed the server entirely. I had to go to file management within c-panel and restore an image of the configured servers manually in order to get the NextCloud instance server-side back up and running.

Conclusion:

* The open source project was a success. The implemented servers work as they should although it crashed a handful of times. We are more aware of the web developers’ tools that we were not exposed too and the foundation of open source has made us want to dive into more projects as completing this particular aspects has gave our confidence a good boost regarding approaching projects that we know very little about.