



LYFT CASE STUDY

OMIS 460-Business Environment and Networks



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GROUP 2

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EXECUTIVE SUMMARY

The objective of this paper is to give a complete examination of Lyft's processes, technologies, challenges and so on will take place. The paper will begin with an introduction and a background of Lyft's history. Lyft is a ridesharing application that has become one of the market leaders in recent years.

INTRODUCTION AND BACKGROUND

Lyft is an on demand private transportation network company that is based in San Francisco, California. It develops, markets and operates the Lyft car transportation mobile app. This application was launched by the company in order for it to making it easy for the people who want a ride to connect with drivers with cars. Lyft was founded in 2012, this company operates in more than 65 countries in USA and aims to expand its horizons in the coming years

Lyft did not originally start off as being called Lyft as we all know it today, rather it started up as a company called Zimride back in 2007. This so-called startup company was launched by two college friends named John Zimmer and Logan Green. Zimride primarily focused on ridesharing for long distance rides. This venture was really paying off for the two but it was still lacking the same service for short distance rides which eventually became a drawback. In 2012, John Zimmer and Logan Green decided that they need to incorporate all types of rides into one platform, so they decided to re brand and re-create the company which transformed into Lyft.

Whereas Zimride primarily focused on college campuses, Lyft was launched as an on-demand ridesharing network for shorter trips within cities. Similar to Zimride, the app connects

drivers with cars to passengers that need rides. Drivers and passengers rate each other on a five-star scale after each ride, and the ratings establish the reputations of both drivers and passengers within the network. In order to take advantage of the Lyft system, clients must set up an account that links directly to a funding source such as a debit card or PayPal account. Once the ride is completed, funds are debited from the funding source. Lyft will then retain a 20% fee from the drivers who applied before January 2016 and 25% from those who applied starting January 2016 as a commission.

In April 2014, Lyft was launched in 24 new U.S. cities in 24 hours, bringing its total to 60 U.S. cities. In August 2014, the company introduced Lyft Line, allowing passengers to split fare on shared rides. As a brand, Lyft became known for the large pink furry mustaches drivers attached to the front of their cars. On January 2015, Lyft introduced a small, glowing plastic dashboard mustache it called a "glowstache" as an alternative to the large fuzzy mustaches on the front of cars. The transition was to help overcome the resistance of some riders to arrive at destinations, such as business meetings, in a car with a giant mustache. That was eventually removed from Lyft's policy as it appeared to be unprofessional.

TECHNOLOGY USED BY LYFT

Connecting Users

When a Lyft user requests a ride, the app connects the phone to a web server and shares the user's location. The server then checks for drivers around the user's location. If the immediate area contains no available drivers, the radius will increase until a driver is found. Next, the server shares the GPS (global positioning system) locations of the connected driver and rider. Once the rider has been dropped off at their destination, both the rider and driver are given

the opportunity to rate the interaction. If either party rates the interaction as a 3 (out of 5) or lower, the two will not be paired again (Lyft, Inc., 2018). Lyft takes their drivers' and riders' ratings into account by removing users whose average overall rating decreases below 2.

GPS

Lyft utilizes GPS technology to display the driver and rider's real-time locations in the app. This allows Lyft to provide accurate estimated times of arrival. Another benefit to GPS tracking is the ability to monitor a driver's speed and safety, e.g. whether a driver takes turns too fast or comes to sudden stops.

Lyft has an in-app navigation system, based on the familiar and reliable Google Maps software, which they call Lyft Navigation. This offers instantaneous traffic updates and best-possible routes to the requested destination. Lyft Navigation is the default routing system. However, some users experience issues with this software, in which case Lyft recommends an alternative called Wave. Wave is a separate app with Lyft compatibility. This may be inconvenient and dangerous for drivers since they must switch between the Lyft and Wave apps during the drive.

Data Storage

Amazon Web Services hosts Lyft's web servers, which connect to the Lyft app and databases. Lyft's servers are hosted by the Amazon Elastic Compute Cloud (Amazon EC2), which is a cost-effective way for companies to host servers without incurring start-up and maintenance costs (Amazon Web Services, Inc., 2018). Since the servers are cloud-based, Lyft

can turn servers on or off to accommodate traffic. Another benefit of using Amazon Web Services is that companies are charged based upon usage.

Lyft's function is further supported by its databases, which store user information like payment method, email, past destinations, and ratings. Lyft uses MongoDB, a free and open-source database program. Unlike most database programs, MongoDB does not use the traditional coding sublanguage, SQL. Instead, it uses NoSQL, which is often referred to as "not only SQL." For instance, MongoDB uses JavaScript as its primary language. Although MongoDB avoids SQL, it is subject to injection attacks; the database has had security issues which resulted a mass theft of data (Ron & Bronshtein, 2015). Consequently, Lyft must be prepared for such risks.

Security

Data security is a vital issue affecting all modern organizations. Lyft is no exception and has a duty to securely store user information. Because Lyft's internet transmissions are primarily wireless, the data is especially vulnerable to theft. Encryption, a method which scrambles data, is a necessary precaution which Lyft employs to ensure data may only be accessed by authorized devices.

Lyft may be susceptible to other security risks, like denial of service attacks and vulnerability abuse. Denial of service attacks (DoS) are executed by hackers who send multiple requests to a server to flood the system, rendering it unavailable for use. DoS attacks are nearly unpreventable, but Lyft can react quickly and stop the attack by distributing the requests between multiple servers or opening more servers when one gets overloaded. Amazon's cloud servers lend themselves to this strategy. Vulnerability abuse may also be solved rapidly if caught before damage is sustained through actions such as releasing an update to patch the bug.

Authentication

Users must authenticate their identity through username and password before using the Lyft app. This method is one of the weakest forms of authentication but is easy for users and cost-effective for Lyft. A lengthy or difficult process may encourage users to explore other applications with simpler login procedures so keeping the authentication process simple facilitates continued use of Lyft's services.

Lyft's developers use a similar authentication process for employee access into the databases and servers. Since the developers have access to the infrastructure, it is important that unauthorized individuals do not have access to the database. They use two-factor authentication, username and password as well as a randomly generated code sent to their phone each time they attempt to log in. Although two-factor authentications are moderately strong, Lyft uses a private key encryption to add another level of security (Steipp, 2017). Private key encryption gives access only to authorized individuals who have the "key" to unscramble the encrypted data. With both two-factor and private key encryption, Lyft protects their infrastructure from malicious attacks.

CHALLENGES

Connecting Drivers and Riders

When drivers aren't around, there could be a latency issue connecting drivers and riders. If there is no nearby driver, the radius increases and more drivers become available; however, this means that the wait time becomes longer for the customer. A poor signal or bad connection can also

cause a delay in connecting drivers to riders and can cause customer dissatisfaction. (Lyft Inc, 2018)

Product Differentiation

The ride sharing industry has many competitors. Uber would be Lyft's biggest competitor. Also, traditional taxis can be a competitor as well. It is important for Lyft to ensure that they are making their product stand out from all the similar products like this. Ensuring product differentiation is an important challenge Lyft has to face in order to be successful and become a market leader.

Proving Non- Flawed Technology

In an era where the ridesharing industry has faced many scandals, it is important for Lyft to prove its credibility and that they are a company of good faith. It is wide known that Uber, Lyft's biggest competitor has been involved in many scandals. One of the most recent ones, was Waymo accusing Uber of violating its IP address. Other Uber scandals had to do with the treatment of their employees. Lyft has to be cautious to make sure they are not mistakenly associated with such scandals. (Fortune.com Lyft Vs Uber)

Trouble Integrating Mapping Software

As GPS runs off satellite connections, and the satellites don't often communicate with the GPS correctly, a Lyft driver could be taken to a wrong pick up location. An example of this would be arriving at a location across the street or down the road from the actual pick up location. Often times a nearby location is picked up instead of the actual location.

Hacking

Lyft has to make sure their software does not get hacked. The app contains private information about its employees and customers. If it got hacked, this information could be leaked, and secure information could be in jeopardy. Also, there is a safety issue with the idea of Lyft getting hacked. If someone hacks the software and impersonates themselves as a driver, this could cause potential safety issues for riders, and the driver also has potential to scam for the money. Lyft can secure their network by using a VPN and/or by requiring credentials like username and password to access the app for both drivers and riders. (Steipp, 2017)

SUGGESTIONS AND RECOMMENDATIONS

Our group's recommendations are based off a current Lyft driver's experiences and suggestions. The first suggestion relates to one of their current problems we touched upon earlier in the report; Lyft's authentication. With many companies becoming victims of cyber-attacks and putting their customers' information at risk; Lyft should really double down on this problem. In a business that is getting more and more competitors, facing a cyber-attack could cause their users to jump to another platform that would cost them important market share.

The first suggestion I have is allowing users to authenticate their accounts using the fingerprint or face scan if their phone has that feature. More and more phones are coming with this technology, so I think it would be an easy thing to implement. The password and username authentication Lyft currently uses is the weakest form of protection. Allowing the user to sign in with a fingerprint or face scan would take their security to one of the highest levels. This feature could help prevent user's information being stolen, but it could also help prevent accidental ride requests. As a driver I've had more than a few people get charged for accidentally requesting rides via the "pocket dial". I've also experienced a child taking their mother's phone and then requesting a ride. This wouldn't be possible if the mother could use her finger print to secure her

account. This could also extend into the driver's side for when they are doing things such as canceling or accepting rides. I know I've accidentally canceled rides in the past, and having an extra layer to prevent that would just make sense.

The second suggestion we have for Lyft is a variety of things that could help with the lag issues the app faces daily. The first thing is only allowing one navigation app, and possibly creating a navigation app that would be solely for Lyft. As a driver I noticed that Lyft would have a basic navigation for you to use, but then you could also be transported to another app (Google Maps or Waze) and then take directions from that. I've noticed that if you choose to use the Google or Waze app that 2 navigation apps would be running at the same time. Which can be very taxing on your phone and eat up the memory which can cause the app and your phone to run slower. So, by limiting it to one, or even implementing their own app and requiring all the drivers to use solely that I believe this would help with the lag.

Also during peak times, I would suggest Lyft pre-load servers to better accommodate the influx of passengers that they know will be requesting rides soon. Every day around peak times the app feels slow and sluggish and I believe it's because they only boot up more servers as they fill up. But I believe with all the data analytics we have, they should be able to alleviate the lag they get 2-3 times per day. This would help both the drivers and rider's app, which would create a more positive experience on both ends. I've experienced missing a ride because the app lagged so much I missed the opportunity to accept the ride.

OVERVIEW OF RECOMMENDATIONS

After thorough examination of Lyft's processes, we would like to make the following recommendations:

- Try to find technology that will differentiate the product
- Use a better mapping system
- Integrate everything into one app so other applications such as Waze don't have to be open at the same time and slow things down
- Continue to require credentials to sign in for both riders and drivers.
- Require a VPN
- Require a possible private key for both riders and drivers.

CONCLUSION

In conclusion, Lyft is a growing company with a lot of potential. With Lyft's technology processes, they have potential to become the market leader in ride sharing services. Lyft needs to continue to use authentication credentials and a secure VPN. Lyft can improve on its technology by using better processes to differentiate their product and make sure the few flaws in their app are improved. Overall, Lyft has done a very good job in creating its application.

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| 14 | Finalizing Project | All |
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