

EXAMENSARBETE The Evaluation of Using Backend-For-Frontend (BFF) in a Microservices Environment**STUDENT** Samer Alkhodary**HANDLEDARE** Alfred Åkesson (LTH), Paul Ericsson (Qlik), Johan Enell (Qlik)**EXAMINATOR** Niklas Fors (LTH)

Everyone Needs a BFF, Even our Mobile Applications

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Mobile and web applications have become significant parts of people's lives nowadays, especially with the boom of smartphones and tablets. With the competitive market of mobile applications, software and service providers need to build more reliable and faster applications to compete for users' attention. This thesis shows that the Backend-for-Frontend design pattern (BFF) improves the communication between the clients and backend services and reduces the coding complexity of the clients' codebase.

The majority of us use smartphones for almost everything, for example, to get the latest news and discounts and stay connected to friends and loved ones. However, we hate seeing the never-ending loading screens that feel like an eternity. Also, we get irritated when we see that a specific mobile application uses tons of mobile data, which costs us more money every month. In this thesis, we tested a new way for mobile apps to communicate with the cloud and get us the information we want to see. The experiments showed that the new approach, which is called Backend-For-Frontend, a.k.a BFF decreased the time an application needs to get information up to 4 times. It also reduced the data usage of that application by a whopping 17 times. This means that applications using the new solution are much faster. As a result, they save us, the users, more mobile data, reducing our mobile bills. The BFF solution helps the programmers spend less time fixing bugs which gives them

more time to develop new exciting features that can improve the user experience. Moreover, we specified some essential cyber security recommendations to help programmers keep the new approach safe. This way, we can use our favorite apps safely, knowing that our data and private information are secure and tucked away from prying eyes. We conducted the experiments with the new cloud approach using Qlik's mobile application. We tested the impact of the BFF on the time the application needs to get the information it needs from the cloud and the amount of mobile data it uses while doing so. Moreover, we tested the effect of the BFF design on the coding process of the application. We also tried implementing the BFF design with different communication technologies. We found that the different technologies had various advantages that programmers can utilize to tweak their applications to give the users the best possible performance.