



Customer Success Story

Daffodil helps FS Security to develop a customized VPN framework and reduce 23% of application development cost



FS

Customer: FS Security

Country: Brazil

Industry: Software & Technology

Our Role: Product Engineering



About the Client

FS Security is a Brazil-based leading digital security solutions provider, serving clients across Brazil and Latin America. The company primarily serves wireless mobile telecommunications carriers by developing security, entertainment, insurance, assistance, and learning solutions. It has renowned mobile carriers such as Vivo, TIM, Oi and many more market leaders as part of its clientele. The objective of the company is to provide an application to its users which ensures the utmost security of their devices with features such as their Optimizer, Cloud, Secure WiFi and GPS tracking.

13%

reduction in application
development costs

7

full-stack developers in the
development team

30%

reduction in
development time



“From the beginning to the last deliveries, we have received commendable support from team Daffodil. We had some technical problems that the team involved in this project helped us promptly, even with the time difference.”

Carlos Carvalho,

Development Manager, FS Security

The Situation

Internet VPNs are a relatively cost-effective solution compared to dedicated private networks such as MPLS, Frame Relay or VSAT networks. Mobile telecommunication companies use VPNs to ensure the security of their user's data. FS Security provided technology and security solutions to numerous such companies and was a renowned name in the industry. Initially, FS was using a third-party VPN SDK to build security solutions for its clients. The major challenge of using a third-party VPN was recurring costs and the fact that adding new features to the VPN would be difficult when a need arises.

FS decided to build its own VPN framework for integration with their in-house security solutions. They wanted to develop a VPN framework that was resilient, scalable and could help them reduce the fixed cost of development for their solutions. They did not want to compromise on the performance of the framework in comparison to third-party products that they were originally using and hence, was on a lookout for a technology partner that exhibits expertise in such solutions.

They also required expert consulting for their project development wherein they wanted the technology partner to exhaustively analyze the business situation and understand the development feasibility, budget, and technology stack required to build such a solution.

FS Security got in touch with Daffodil Software for the project as they were convinced about our expert development capabilities by looking at our past experience with data security, server encryption, and secure architecture development projects. The key challenges that were presented to Daffodil were:

- To provide expert consulting and develop a Proof of Concept (PoC) of a VPN framework after a thorough analysis of OpenVPN files and incorporating them to test the feasibility of the project.
- To build a custom VPN framework enabling further development of both Android and iOS applications.
- To develop VPN libraries on an encrypted server that FS Security can integrate with the security solutions they develop for various mobile service carriers.
- To set up multiple servers that enable remote access of information from various geographic locations according to user requirements.

Solution

The engagement commenced with the development of a PoC for the VPN framework. The development team from Daffodil utilized the OpenVPN library files to set up a server and develop an API. We were successful in executing the PoC, proving the project to be considered feasible and moved towards further development. In the POC stage itself, Daffodil achieved the same performance benchmark that its previous third-party VPN provided.

Once the PoC was successful, Daffodil built a VPN framework that could be used to implement VPN access in mobile applications for Android and iOS platforms. The SDK was built to help team FS in developing solutions that protect users from unsafe networks such as public Wi-Fi and secure their data against malicious websites or hackers. The SDK allows FS to integrate applications with the ability to connect to the internet through secure VPN channels.



The API for the VPN framework was developed using PHP as it was easy and could maintain the code automatically. MySQL was used to maintain user records as it is globally renowned for being the most secure and reliable database management system. Daffodil also used reusable code blocks to build the front end of the application, which led to a 30% reduction in the development time. In addition to this, data compression techniques were used to ensure minimum data usage while uploading or downloading using the FS Security VPN.

Few additional features that were integrated into the SDK were:

Display statistics: The VPN enabled users to view data uploads and usage by displaying statistics such as session traffic, past traffic, and total traffic in the mobile app it's integrated with. The VPN also has ad blocker and data compression facilities integrated with the application.



An encrypted server was set up to ensure maximum security. The VPN library for Android was built using Java and for iOS using the Swift technology. OpenVPN was used to support the Android and iOS libraries as it creates secure point-to-point connections in routed and bridged configurations with remote access facilities. The iOS library had dual VPN support and also utilized IPsec to achieve that.

The FS Security VPN was developed on the AWS cloud server with multi-region support to enable its users with access to information irrespective of the geographical location. It provides features such as customizable bandwidth plans with usage caps, Adblockers, fault tolerance, high availability, etc. Along with this, the VPN was tested to be used by 10 million concurrent users for which team Daffodil developed a simulator to test if the expected load can be managed by the VPN.

Admin panel: This was developed for VPN role management, multi-region management, and active connection management. The admin panel also allows user management which enables actions such as, disabling accounts, blacklisting/removing devices, disconnecting VPN sessions, etc.

Traffic management: The VPN server was built to limit user data traffic speed and log management for users, VPN, and API. The framework could auto-scale the API and VPN servers for handling heavy traffic with ease.

The customized VPN framework that was built for FS Security has been integrated into their solutions and is enabling users to surf anonymously. Considering the success of the VPN solution, Daffodil is now developing FS DataSaver which helps optimize data usage in mobile devices for Android and iOS platforms.

Impact

FS Security has been successful in reducing its annual fixed cost that they were incurring previously due to the use of third-party VPN. By developing their own VPN framework they are now capable of developing better security solutions for their clients at 23% lesser cost. Using reusable components, Daffodil was able to build the framework 30% faster. FS Security has been able to increase its client base as the VPN features can now be customized or scaled according to different client requirements. They have been able to take data security a notch higher with the use of technologies such as MySQL, PHP, etc. Their backlog of support tickets has drastically reduced as they do not rely upon a third-party support system to address their client queries.



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Technology Stack













- Swift
- Java
- Amazon AWS
- PHP
- MySQL

About Daffodil

Daffodil Software is a software engineering partner to 100+ organizations across the globe and has been helping them in making their software products more robust, teams more productive and processes more efficient. Our ability to look beyond technologies to deliver innovative solutions with scale and speed has been lauded by our clients as well as the tech community worldwide.

Since our inception, we have invested in organic growth; building on our engineering capabilities, organizational processes, and culture required to deliver a truly collaborative ecosystem for solving technology challenges. At the core of Daffodil lies a culture rooted in innovation, learning and a result-oriented mindset.

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