Hard Software Marketing Choices at ownCloud

On May 23, 2015, Matt Richards, product manager of ownCloud, Inc., held a meeting with Markus Rex, the chief executive officer and co-founder of the company. ownCloud is a Nuremberg-based enterprise file synchronization and sharing software startup. Richards and Rex needed to discuss the strategy for ownCloud's SharePoint integration. The company had recently started offering a feature that allows customers to connect with SharePoint, Microsoft's enterprise collaboration software. But this feature was failing to meet its expectations.

> Rex said: "As we started with its development, we were sure that this new integration strategy will extend our market with enterprise customers using SharePoint. But apparently, no one is buying it."

Richards was keenly aware of the situation. He needed to prepare strategy suggestions for an upcoming board of directors meeting. Should ownCloud leave the SharePoint market, should the company try to attract customers by improving the SharePoint integration, or should it do something else entirely?

1. Enterprise File Synchronization and Sharing

1.1 Market

Starting in the late 2000s, File Synchronization and Sharing (FSS) became popular via cloud-based consumer products such as DropBox, Google Drive, OneDrive and iCloud. The initial version of Dropbox was released in September 2008. In April 2011, Dropbox announced that the number of registered users had rocketed to 25 million (Carr, 2011).

As of June 2015, with more than 1,200 employees, Dropbox had more than 400 million registered users (Lynley, 2015). With similar exponential growth, as of October 2014 and after two years since its launch, Google Drive had more than 240 million monthly active users (Protalinski, 2014). Microsoft and Apple Inc. introduced cloud storage services in their products in 2007 and late 2011, respectively. As of November 2014, Microsoft OneDrive (previously Skydrive) had more than 250 million users (Griffith, 2014). Thanks to its broad user base, in less than two years since its launch, Apple Inc.'s iCloud had acquired more than 300 million users in April 2013 (Ha, 2013).

One reason why FSS became so popular was the tremendous growth in data. According to International Data Corporation (IDC), from 2013 to 2020, annually created and copied data will grow from 4.4 trillion gigabytes to 44 trillion, essentially doubling every two years in size. In addition, while less than 20 per cent of these data were stored using cloud computing in 2013, this percentage will double by 2020 (Turner, Gantz, Reinsel, & Minton, 2014).

Another important cause of the market boom was the flood of mobile devices. From the enterprise perspective, according to Forrester Research, 97 per cent of information workers regularly communicate or collaborate with others in their company as a part of their day-to-day job. Among them, two-thirds are using some kind of mobile device, and half of them are using three or more devices (Shey, 2014). As the number of devices increased, the demand for a seamless experience across all devices – a fundamental feature of FSS – became more apparent.

All of these factors led to a significant increase in revenues that FSS vendors generated over time and will continue to generate. IDC (2014) reported that the FSS market will grow with a five-year compound annual growth rate (CAGR) of 23.1 per cent. In terms of FSS market size, in 2014, with annualized revenue of over US$400 million, Dropbox held a market share of 24 per cent. At that time, business spendings accounted for 70 per cent of the total market.

With so many consumer-oriented free file sharing and collaboration solutions easily accessible, employees often use them for their work without their employer's permission. Osterman Research, Inc. (2015) reported that 43.1 per cent of employees in large organizations are storing their corporate content in Dropbox without their information technology (IT) department's authorization. Similarly, a study by Ovum indicated that 89 per cent of employees using FSS technology for work rely on consumer-oriented offerings like Dropbox, Google Drive and Apple iCloud with figures of 45 per cent, 48 per cent, and 25 per cent respectively. Nevertheless, the same study points out that 44 per cent of employees are not using FSS products at all, while 29 per cent of them employ three or more FSS products (Edwards, 2014).

In general, organizations of all sizes are potential FSS users. However, these organizations need to be concerned with security and operational issues, because most of the consumer-oriented FSS solutions lack enterprise-grade features, such as sufficient encryption, access control, data residency, enterprise-level customer support, and advanced malware protection. For example, without advanced security and administrative functionality, enterprises are unable to protect sensitive data stored in third party consumer FSS data storage against unauthorized access, where login credentials are the only form of client side security. This leaves user accounts vulnerable to being hacked by keylogger software and other malware applications.

Moreover, consumer FSS services often lack malware scanning mechanisms and using consumer FSS bypasses corporate content filtering systems. As a result, accessing the content stored in a consumer-oriented FSS may introduce malware into the corporate network (Osterman Research, Inc., 2013; Keegan, 2014).

1.2 Competitors

After their initial success, popular consumer FSS providers launched enterprise versions of their products with the goal of converting their non-paying freemium[1] business users to paying customers. The FSS vendors started providing capabilities such as administration of folder access rights, management of employee accounts, collaboration on shared documents, mobile support, security, traceability and compliance features, and back-end server integration.

To answer business needs, Dropbox launched Dropbox for Teams in 2011, which was rebranded as Dropbox for Business in 2013 (Williams, 2013). With around 300,000 integrated apps, as of 2015, cloud-based Dropbox for Business had more than 100,000 paying customers and a price tag of US$15 per user per month with unlimited storage capacity (Arce, 2015; Hansen, 2015).

Google, another major player, announced the release of cloud-based Google Drive for Work, a service integrated with its Google Apps suite, in 2014. Around one year after its release, Google Drive for Work hit the one million mark in numbers of paying customers with a price tag of US$10 per user per month with unlimited storage (Johnston, 2014; Covic, 2015).

The Enterprise File Synchronization and Sharing (EFSS) market was born.

Given the apparent opportunity, other companies launched EFSS products as well. In contrast to cloud-based consumer FSS providers, some of the enterprise-focused companies support on-premises and hybrid cloud architectures, which allow customers to store their sensitive data on their local servers.

An example is Syncplicity, Inc., a company that was acquired by EMC Corporation in 2012. Syncplicity offers unlimited hybrid cloud storage for US$150 per user per year (Team, 2015). With thousands of enterprise customers today, Syncplicity had used EMC's broad customer base to grow over the last three years (Konrad, 2015b). Syncplicity provides connectors to SharePoint and Documentum and leverages easy-to-use mobile apps and desktop clients. As of 2014, Syncplicity's SharePoint connector had been a main purchase reason for enterprise customers that had been deployed prior to general availability (Syncplicity, 2014).

Citrix Systems, Inc., a key player in virtualization, networking, collaboration and cloud solutions, acquired ShareFile in 2011 (Savitz, 2011). ShareFile offers unlimited hybrid cloud storage for negotiable rates around US$12 per user per month. Besides being a stand-alone EFSS product, ShareFile is delivered as a part of Citrix Workspace Suite, including a set of integrated collaboration and virtual workspace tools, such XenDesktop, XenApp, XenMobile, and NetScaler (Dignan, 2014). Beyond that, it provides connectors to SharePoint, Documentum, Box, Dropbox, and GoogleDrive. As of September 2014, ShareFile had more than 500 employees and 50,000 paying corporate customers (Lipson, 2014). According to Citrix, 99 per cent of Fortune 500 companies are using ShareFile (Murphy, 2015).

Another well known enterprise-focused player, Box, leveraging cloud-only solutions, had a price tag of US$15 per user per month with unlimited storage space. As of 2015, Box had 1,250 employees and more than 45,000 paying customers, including half of Fortune 500 companies (Kapko, 2015; Chandran, 2015). Its total revenue for 2014 was about 60 per cent of Dropbox's. With a user interface similar to those of Dropbox and Google Drive, and with more than 1,000 integrated apps, Box has numerous partners. These partners include IBM and

[1] Freemium users get basic features at no cost and can access richer functionality for a subscription fee.

Microsoft, which deliver Box integrated solutions through their own sales channels (Konrad, 2015a).

Accellion, Inc., a cloud solutions company focusing on data protection and compliance, launched kiteworks, a mobile-first file sharing platform, in 2014 (Gage, 2014). As a latecomer to the EFSS market, kiteworks supports a hybrid cloud model through its three-tier architecture with separate web, application and data layers. In terms of back-end integration, kiteworks offers connectors to SharePoint, Documentum, Google Drive for Work, Box, and Dropbox (Accellion, 2014). As of 2015, kiteworks prices start at US$15 per user per month with one terabyte cloud-based storage option.

As an omnipresent vendor, Microsoft launched OneDrive for Business (previously SkyDrive Pro) as a file synchronization feature for its SharePoint 2013 and Office 365 packages. While the SharePoint integrated version allowed on-premises file storage, the Office 365 integrated version came with one terabyte of cloud-based storage space (Sharwood, 2013). Starting from April 2014, OneDrive for Business was also offered as a standalone solution priced at US$5 per user per month with a one terabyte cloud storage option (White, 2014). Beyond that, as of November 2014, Microsoft announced a strategic partnership with Dropbox to enable access to Dropbox files directly from Office apps and to enable editing of Office files directly from Dropbox (Fushman, 2014). Similarly, as of February 2015, Box and Citrix partnered with Microsoft for integrating their solutions with Microsoft Office Online (Koenigsbauer, 2015).

As of July 2014, market research firm Gartner named Citrix, EMC, Box and Accellion leaders in the Magic Quadrant for EFSS based on their ability to execute and completeness of vision.

In terms of the location where a user’s data are stored, cloud providers continue to extend their network of data centers. As of 2015, Amazon, Microsoft and Google operated data centers in North America, Europe, and Asia (Miller, 2015). Although bigger players tend to build their own cloud infrastructure, some EFSS companies rely on major cloud providers for their off-premises storage solutions. For example, Dropbox employs Amazon Web Services (AWS), along with its own servers, whereas Citrix ShareFile and Accellion kiteworks solely utilize AWS and Microsoft Azure for their cloud-based storage options (Miller, 2013; Darrow, 2014; Citrix, 2015; Accellion, n.d.). Splitting data centers around the world raised concerns about the data residency compliance, especially for organizations uploading sensitive data to the Cloud. In practice, the uploaded data are typically copied and placed in globally distributed data centers to ensure availability and disaster recovery. However, the data residency laws of some countries require that data such as personal information must not be stored on servers outside the country.

2. Security and Privacy Concerns

Over the last years, with increasing costs and volume of data breaches, uploading data to public clouds raised a set of security, data protection, and privacy concerns, such as concerns about the potential damage to reputation, class action lawsuits, costly downtime, and losing business. Many incidents were reported about security flaws and stolen personal and corporate data such as user names, emails, phone numbers, passwords and photos (Agarwal, 2012; Business Wire 2015; Kirk, 2015, Vinton, 2015). Especially in 2014, several data breaches dominated headlines. For example, Sony Pictures Entertainment, Inc., JPMorgan Chase & Co., Target Co., and The Home Depot, Inc. suffered major attacks affecting millions of customers (IBM Global, 2015; Rigby, 2015). Kaspersky Lab (2015) reported that 90 per cent of businesses admitted a security incident and 46 per cent of businesses lost sensitive data due to an internal or external security threat. According to IBM Global (2015), hackers and criminal insiders (employees, contractors or other third parties) cause the most data breaches.

2.1 Snowden Effect

In June 2013, Edward Snowden, a former contractor to the U.S, government's National Security Agency (NSA), leaked documents to the media exposing details about U.S. court-approved infiltration programs tapping directly into the servers of nine internet firms including Facebook, Google, Microsoft, and Yahoo (Gellman, Tate, & Soltani, 2014). The scandal widened as Snowden revealed details about Britain's intelligence and security organization Government Communications Headquarters (GCHQ) intercepting communication from over 200 transatlantic fiber-optic cables carrying phone and Internet traffic (MacAskill, Borger, Hopkins, Davies, & Ball, 2013).

The leaks sparked more security and privacy concerns and raised questions about data sovereignty[2]. As an example, the U.S.A.'s Patriotic Act may overrule Safe Harbour Privacy Principles[3] and may allow governmental agencies to access customer data stored by U.S.-based cloud companies or their wholly owned subsidiary, without customers' permission or notification, no matter where data is geographically located. As Microsoft U.K.'s managing director Gordon Frazer admitted, cloud data, regardless of where it is in the world, is not protected against the U.S. Patriot Act (Whittaker, 2011). This is highly problematic for European Union companies, which are facing strict data compliance and data sovereignty requirements.

Consequently, security and privacy concerns keep enterprise organizations from being comfortable with moving core applications to the Cloud. Concerns about data breaches are the key blocker for any such cloud-based implementation (Langit, 2014).

2.2 Race to Zero

While storage hardware prices were getting cheaper, cloud providers were cutting their prices and offering services with more storage space. For instance, by the end of 2014, Amazon had reduced prices for its AWS offering 47 times in six years (see Figure 1). Similarly, Google released a free service, Google Photos, which offers unlimited image and video storage (Bort, 2015). Parallel to that, cloud-based FSS providers – who own either their own cloud infrastructure or employ third parties – were offering freemium models with better free storage options. However, storage costs are not zero. In such offerings, large-scale cloud providers' FSS products have the upper hand over those of smaller FSS providers, because bigger providers are buying storage devices in larger quantities and thus at lower prices.

[2] Data sovereignty is the concept that digital data is subject to the laws of the country in which it is stored.

[3] Safe Harbour Privacy Principles are adequacy standards for personal data transfers from the European Union to non-EU countries, requiring that such transfers take place only to countries that provide an adequate level of privacy protection by reason of its domestic law or its international commitments. Organizations that voluntarily decide to adhere to the principles must qualify for safe harbor and ensure an adequate level of protection of the personal data transferred (European Commission, 2013).

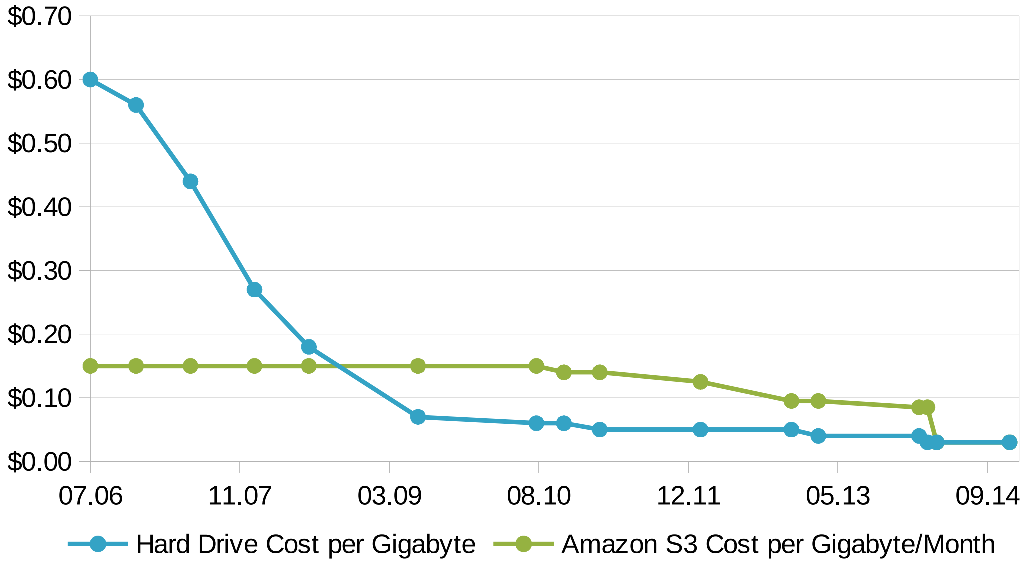


Figure 1: Hard drive cost and pricing of Amazon's Simple Storage Service (S3) (from 2006 to 2015, sources: mkomo.com and aws.amazon.com/blogs/aws/)

As companies were adopting EFSS technology quickly, providers were adding more integration, collaboration, security and mobility features to their products. The aim of these updates was to create a unique value proposition under the assumption cloud storage would become a commodity at near-zero costs. Thus, in the recent years, skeptics questioned the ability of cloud-only EFSS providers to survive as an independent service, as well as the whole idea of defining EFSS services as a stand-alone product (Bott, 2014; Kim, 2015). Similarly, according to Gartner, Inc., by 2017, less than 10 per cent of today's EFSS vendors will offer stand-alone products, and the rest of the vendors will have been absorbed into adjacent markets, such as collaboration, enterprise content management (ECM), mobility and storage.

3. ownCloud, a High-tech Startup

3.1 Vision, Strategy and Business Model

ownCloud was started in January 2010 by Frank Karlitschek, a German software developer, as an open source project. The first version of ownCloud was released in June 2010. In December 2011, based on the open source project of the same name, Markus Rex, a former CTO of the Linux Foundation, founded ownCloud, Inc. along with Frank Karlitschek and Holger Dyroff, as a Nuremberg, Germany, and Boston, MA, U.S.-based company.

ownCloud is a single-vendor commercial open source firm (Riehle, 2012). In this business model, a company builds its business around an open source software project, which is fully controlled and commercially exploited by the company. Typically, by having developed the software and never having shared control with third parties, the emergence of competitors from the same community is being prevented. They way Karlitschek had handled intellectual property around ownCloud, the company ownCloud, Inc., was free to open source none, some, or all of its development.

In practice, ownCloud develops and uses open source software for its core product, the FSS service, and adds its own proprietary software on top to provide a monetizable enterprise-grade product. In this manner, ownCloud is available as a free-of-charge community edition as well as paid-subscription-based enterprise editions. ownCloud's leadership, which shared familial bonds to SUSE[4], had significant experience with exploiting open source software commercially. As Karlitschek sees it, the idea of ownCloud is to enable everybody to host, control, sync and share their personal data without giving away control to the big data storage providers like Dropbox, Google Drive, and iCloud.

As ownCloud entered the EFSS market, it faced fierce competition. For ownCloud, because of its community open source base, the barrier to entering this market was low. The development of stable EFSS functionality was already being carried out by the open source project community. What was left for ownCloud to do was to add enterprise features to the community version and launch the enterprise edition.

ownCloud attracted individual users and organizations with security and privacy concerns about their uploaded data. It quickly acquired a reputation for high security in private clouds. As of May 2015, ownCloud had more than two million community users. Moreover, with roughly six million downloads in 2014 and a place in the top 25 open source projects globally, ownCloud was the most downloaded open source project for FSS (Huger, 2014; ownCloud, 2015a, 2015b) (see Figure 2 for a history overview).

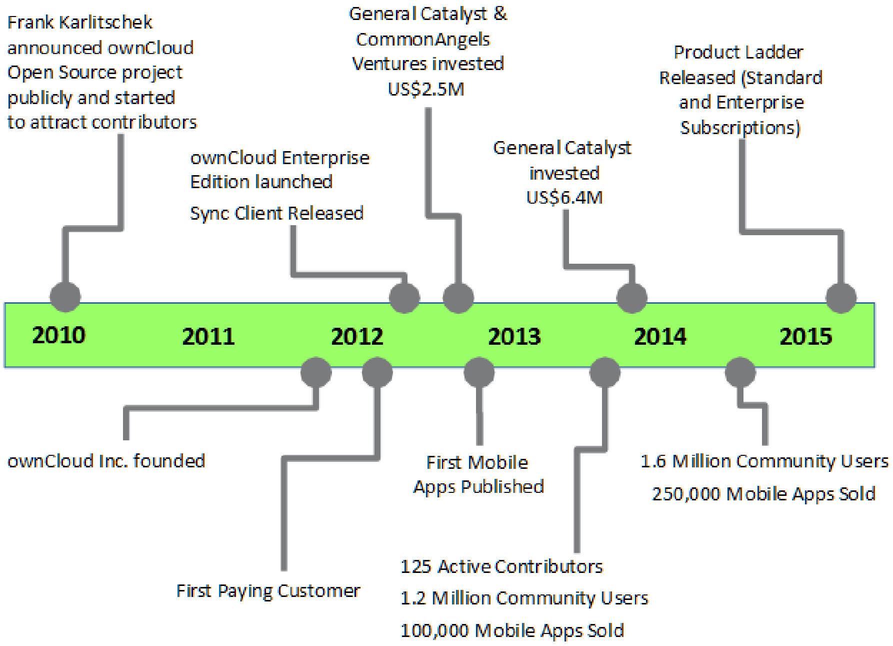

Frank Karlitschek announced ownCloud Open Source project publicly and started to attract contributors
General Catalyst & CommonAngels Ventures invested US$2.5M
Product Ladder Released (Standard and Enterprise Subscriptions)
ownCloud Enterprise Edition launched
Sync Client Released
General Catalyst invested US$6.4M
2010
2011
2012
2013
2014
2015
ownCloud Inc. founded
First Mobile Apps Published
1.6 Million Community Users
250,000 Mobile Apps Sold
First Paying Customer
125 Active Contributors
1.2 Million Community Users
100,000 Mobile Apps Sold

Figure 2: Company history[5]

[4] A Nuremberg, Germany, based open source company that provides Linux based enterprise distributions.

[5] General Catalyst Partners is a venture capital firm that makes early-stage and growth equity investments.

ownCloud supports public, private, and hybrid cloud architectures. A public cloud is a cloud computing and data solution that is entirely managed by a third-party vendor. A private cloud may be hosted on a cloud provider's hardware, but is typically managed by the owning company and is also kept separate from other customers of the cloud provider. A hybrid cloud combines both a public cloud, typically, for non-sensitive data, with a private cloud, where mission critical data is stored.

In its vision, ownCloud aims to provide a compelling and seamless cloud solution that allows enterprise customers to keep their sensitive data on premises, putting a company's IT department back in control of corporate data. It comes with an additional but optional file encryption module, which safeguards data stored in external storage services and makes it unreadable for third-party providers.

ownCloud's base functionality is enhanced by a large number of community-developed eye-catching applications such as live document editing, photo galleries, music players, calendars, and contacts. Its open Application Programming Interface (API) allows developers to extend ownCloud's functionality and to add features such as music streaming. By using ownCloud plug-ins, users can access files from external storage services such as Google Drive and Dropbox (ownCloud, 2014a).

As of beginning of 2015, ownCloud, Inc. had 50 employees and more than 100 paying commercial and educational organizations. In terms of company size, ownCloud is smaller than the established market leaders. The diversity of enterprise-focused applications offered by bigger providers is also a challenge for ownCloud. On the other hand, ownCloud's unique business model leverages the cost and quality advantages of open source projects. As explained by Riehle (2007, 2010, 2012), building on open source components reduces the overall cost of a product provided to a customer. A lower cost of providing the product allows the vendor to earn more money on any given sale. Lower costs also allows the vendor to reach more price-sensitive customers, because they now have a higher pricing flexibility, increasing the overall sales volume.

An important aspect of most open source based business models is to seed and grow an active community that support itself. Users use wikis, forums and mailing lists to discuss their questions and read up using archives accordingly. After reaching a critical mass, a self supporting community substantially reduces the overall support costs since users can solve their problems themselves without having to resort to asking the firm (Riehle, 2012).

In general, this business model allows software firms to benefit from superior engineering, because the product is developed faster with lower support costs, and to sell more easily, because more believable and cheaper marketing through an engaged community and user base.

Of significant help to ownCloud were community members who worked alongside ownCloud developers on the community version of ownCloud. As shown in Figure 3, for four consecutive years (from 2010 to 2014) ownCloud had steadily growing community participation in its open source project.

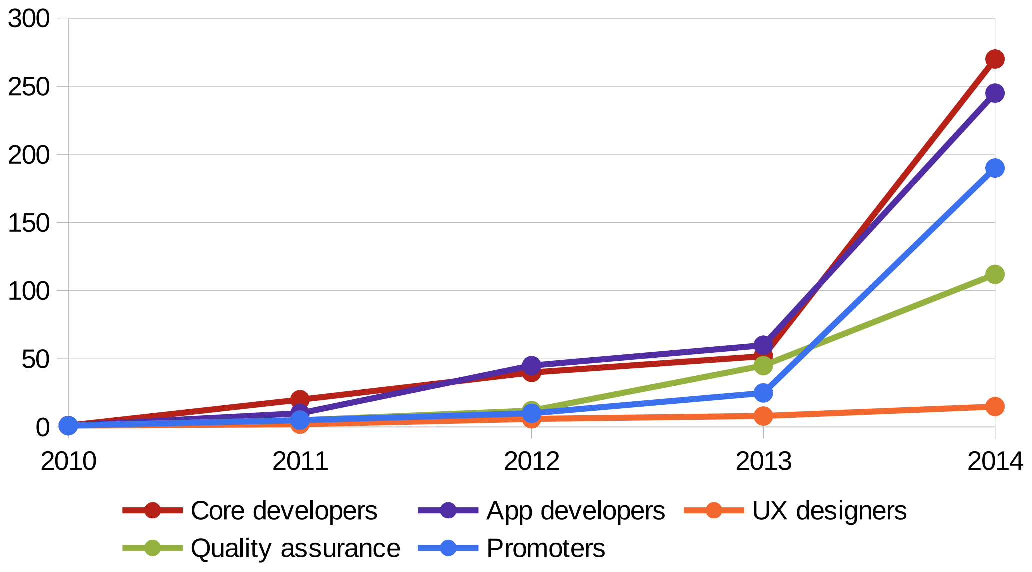


Figure 3: Community participation (project launch to present)[6]

Indeed, its popular open source base helped ownCloud to create greater awareness in the marketplace and also contributed to the expansion of its product and service offerings to a large majority of users without requiring to invest in expensive marketing campaigns (see Figure 4). In order to present its community and technology, besides organizing regular contributor conferences and events, ownCloud leverages community members' participation at trade shows, fairs, workshops, and social media.

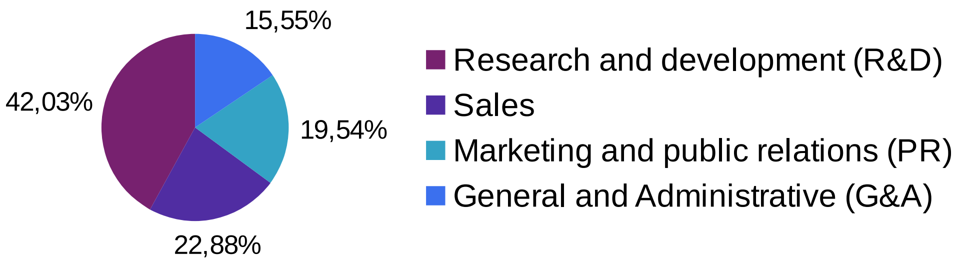


Figure 4: Operating expenses of 2015 (source: ownCloud)

3.2 Product Manager and Product

Matt Richards joined ownCloud, Inc., in late 2011. Richards is a product manager with more than 18 years of working experience. He was made responsible for ownCloud marketing and product management, including product vision, strategy, road-map, features, and functions. Richards has degrees in Mechanical Engineering from Dartmouth College and an MBA in New Product and Venture Development from Massachusetts Institute of Technology.

[6] Source: ownCloud. According to OpenHub results of March 13, 2015, in the last 30 days, ownCloud has had 351 contributors. For comparison: OpenStack 556; Firefox: 327; phpbb:15; Mediawiki and extensions: 144; Joomla: 32.

As a product manager, Richards actively has to communicate with the community using different platforms, such as mailing lists and forums, where he discusses existing and future features of ownCloud with them. In practice, such close interaction with the community – comprised of a wide diversity of both users and developers, and thus a breadth of perspectives – provides Richards with feedback and a rich set of ideas that greatly helps him to define the product road-map and to find a balance between features needed by the community and by enterprise customers. Unlike traditional software vendors, ownCloud provides the source code of its product, which allows customers to inspect, modify and extend the code according to their specific needs and thus to have influence on the product road-map.

As a single-vendor commercial open source firm, ownCloud's sales funnel differs from the traditional one[7]. In contrast to the traditional setting, in commercial open source, a potential customer can download and use the product without ever getting in touch with the commercial firm behind the product. Downloading and community forum activities are nevertheless tracked and analyzed by the firm in order to determine who might be future customers[8]. In parallel, the firm can still follow conventional sales methods to convert non-using prospects into paying customers.

In recent years, after revelations of several security breaches and governmental surveillance activities, EFSS customers became more concerned about public cloud security. McClure's (2014) research reported that two-third of surveyed North American organizations using public cloud-based file sharing solutions are "extremely interested" in on-premises file sharing services. With a hybrid cloud model, ownCloud focuses on regulated industries – mainly in Europe and North America – including non-profit educational institutions (ownCloud, 2014c).

ownCloud is sold via annual subscription models named Standard, Enterprise, and Custom Subscriptions. All paid versions are based on the free-of-charge community edition, which is developed and maintained by the community members.

- Compared to the community edition, the entry level subscription package, the Standard Subscription, covers a richer set of applications and email support.
- Enterprise Subscription provides access to enterprise apps, phone support, back-end storage integrations, additional anti-virus and security features, and a commercial license – which enables customers to retain ownership of any code customizations.
- As the most advanced level subscription model, the Custom Subscription additionally provides 24x7 support, custom development, and deployment consulting options.

The Standard Subscription is the preferred model for small businesses satisfied with plain EFSS, whereas the Enterprise Subscription is favored by large businesses requiring more comprehensive features, and the Custom Subscription is for larger enterprises in need of broadest possible support (see Figure 5). With the motto 'Take control back over your data', ownCloud itself does not provide off-premises storage. Instead, for ownCloud deployments, customers use either their own servers or other off-premises services. As of 2015, annual pricing for 50 users of Standard Subscription and Enterprise Subscription begins at US$3,600 and US$9,000, respectively. ownCloud offers volume discounts as the number of users increases.

[7] For detailed information about these differences, please refer to (Riehle, 2012).

[8] In freemium models, conversion rates are usually between 0.5 and 5 per cent (Riehle, 2012; Kumar, 2014).

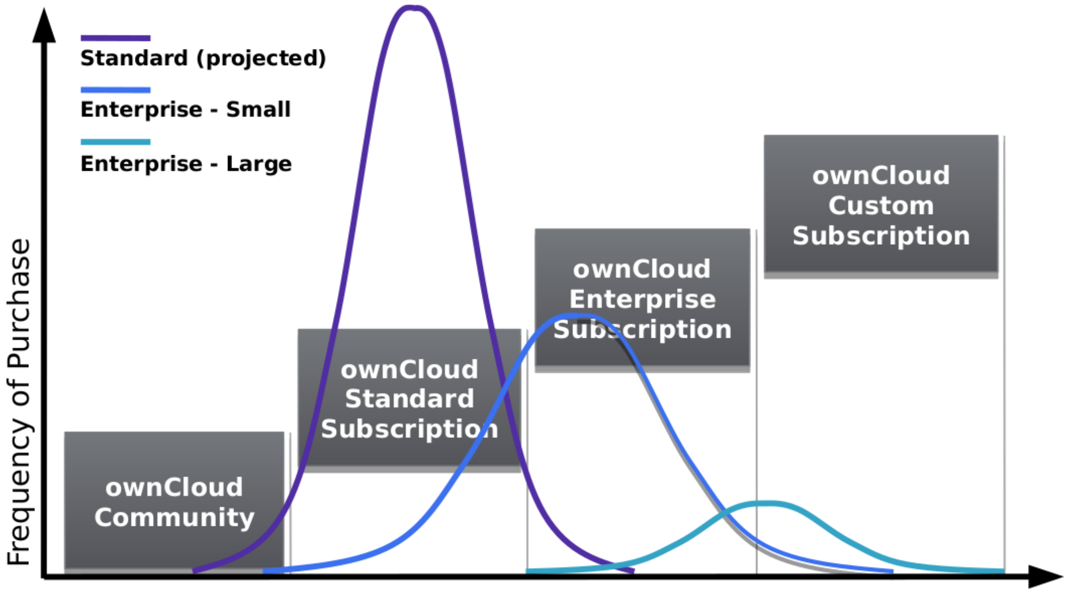


Figure 5: Frequency of purchase of solutions (source: ownCloud)

Synchronizing files between user devices and ownCloud server is done via desktop client app and mobile client apps for Android and iOS. Although the desktop client app is for free, mobile client apps are priced at US$1 each, which serves as a way of monetizing community version. ownCloud, Inc. also provides training, consulting and deployment assistance, which accounts for around 10 per cent of its revenue.

4. Universal File Access and SharePoint Connector

4.1 Decision and Motivation

With the market for FSS getting more crowded, ownCloud had to come up with new differentiating capabilities to gain market share. New players were entering the market continuously. To Richards, it felt like a new Dropbox copycat was showing up every few weeks. Large vendors were acquiring customers with low prices, and some were even giving away free storage in the hope of converting users into paying customers later – something Richards at the time called a ‘race to zero’. This competitive landscape forced ownCloud to find ways to differentiate itself.

Richards was aware that the demand for on-premises and hybrid cloud services was rising despite cloud-only providers’ devoted efforts to make their services more secure. Also, Markus Rex, the chief executive officer, noted at a conference that ownCloud had a significant spike in web server accesses as well as in number of downloads of the software’s community edition after Snowden’s first revelations (gigaom, 2013). Richards believed that this indicated a change away from a cloud-only market. However, despite all those security issues and revealed scandals, many enterprise customers were still using cloud-only FSS services.

For Richards, it was clear that ownCloud needed to support enterprise-grade file synchronization and sharing across all possible data storage back-ends, including on and off-premises. However, as a small company, ownCloud had to spend its limited funds, people, and time wisely. Trying to play the same game as large vendors with deep pockets was not an option. An alternative approach was required to win in this market.

After several strategy meetings, Richards, arrived at the conclusion that ownCloud needed to provide seamless integration with all possible back-end data sources. Richards declared: “Let ownCloud be a single pane of glass into back-end storage.”

This led to the idea of Universal File Access (UFA), an intermediate layer between the users and back-end storage solutions. With this perspective, ownCloud moved away from a focus on storing data itself and towards integrating other software packages and their storage mechanisms. Richards was convinced that this was a clearly differentiating vision (see Figure 6).

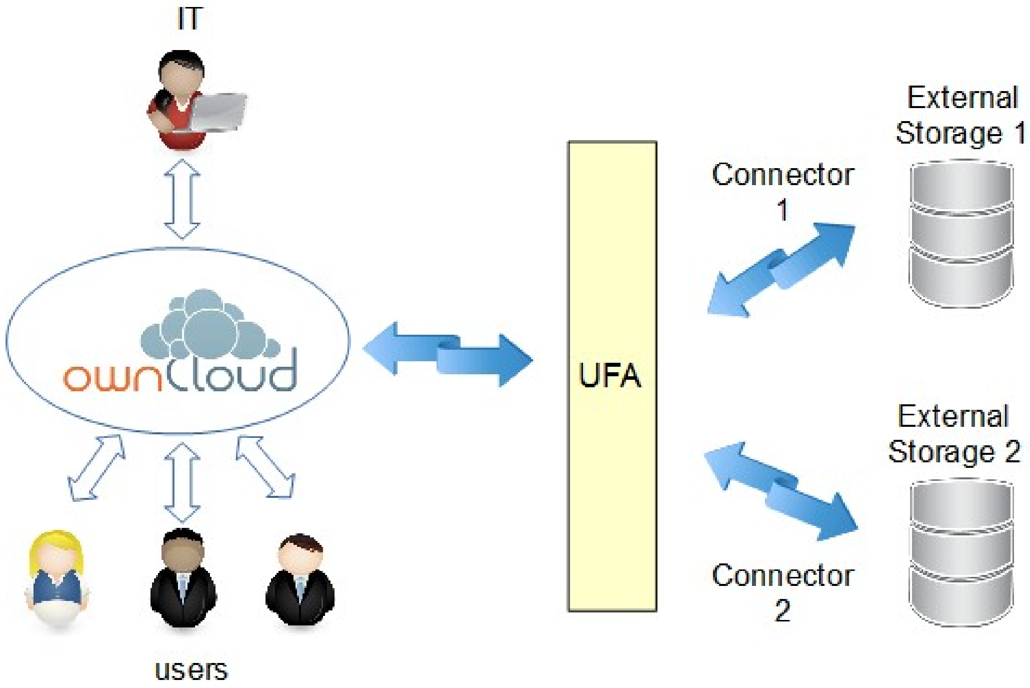


Figure 6: Connecting the UFA with back-end storages

The novelty of the UFA was a centrally managed approach to file access, regardless of whether the data were stored in a data or object store, and regardless of where the data were physically or geographically located. ownCloud would absorb any connected storage system using an intermediate connector component while creating a modern look and feel on its surface, like any ordinary FSS. Richards believed that this was a suitable way to attract customers who had already deployed their own ECM platforms as well as were using cloud storage services, Windows Network Drives, FTP servers and more. This new access layer would be shipped with a set of connectors ready-to-use. All that remained for Richards to do was to decide which storage systems would be supported by ownCloud UFA.

4.2 Addressable Market and Projections

Richards was aware of the risks the company was taking. First of all, implementing the UFA strategy and their connectors meant substantially increased research and development (R&D) expenses for the startup. Then, the potential added complexity and technical debt were adding an additional burden to the engineering team. Finally, the ultimate risk was that they might be building something few customers would buy. Nevertheless, as an experienced product manager, Richards was adamant that taking these risks would pay off down the road.

As a first step, Richards defined the requirements for the UFA and its connectors. Implementing such an integration layer is a complex task and requires deep technical expertise due to two EFSS systems' key requirements: high reliability and availability. Therefore, for the initial release, Richards worked with a consulting company. In a joint effort with this company, Richards selected the best architecture for the UFA and defined a minimum feature set for a minimum viable product (MVP).

For Richards, UFA was a vision for ownCloud, never meant to be fully completed. Instead, the vision was a guiding light that the company worked towards, with various checkpoints and short term strategic milestones along the way. At the beginning of 2014, Richards estimated that the first milestone of the UFA implementation for 2014 would take US$200,000 and could be completed in time for the ownCloud 7 launch. The most critical aspect to be addressed was specifying which connectors to implement.

Due to limited resources, Richards estimated that he would be able to schedule only two connectors to be implemented. At that time, ownCloud had only a few customers and prospects who were asking for a seamless integration with Windows Network Drive (WND). Despite the low demand, Richards planned the first connector for WND. With modest expectations and with a convenient cost estimation of around US$100,000, Richards assumed that the MVP of the WND connector would impact five per cent of the deals, or in other words, the WND connector would play a decisive role for five per cent of the total bookings[9].

Having decided for the first connector, Richards wanted to go next for a widely used ECM platform to connect ownCloud to. At the time, Microsoft's ubiquitous ECM solution, SharePoint, seemed to be the obvious candidate. Among ownCloud's customers, most enterprises had already deployed SharePoint. Also, other studies emphasized the large market presence of SharePoint (Pelz-Sharpe, 2010; Roe, 2013). Gartner positioned Microsoft as a Leader for Enterprise Content Management based on its ability to execute and completeness of vision.

Research revealed that Microsoft's competitive EFSS service, OneDrive for Business, only worked with SharePoint 2013. In addition, SharePoint had problems being accessed from mobile devices, even though the majority of information workers used mobile devices for their daily work. Consequently, implementing a connector compatible with not only SharePoint 2013, but also the wider deployed SharePoint 2010 and 2007 products would fill an evident gap for SharePoint users at that time, especially for the ones who felt the need for a seamless and secure mobile experience.

With these market opportunities in mind, Richards conducted several meetings, workshops, and phone calls with prospects and customers where he shared the UFA vision, particularly integrating ownCloud with SharePoint. During the workshops and phone calls, the customers seemed highly excited about SharePoint integration.

[9] For the sake of simplicity, it is considered that the customers sign up for 12 months plan.

Incorporating SharePoint's market share and customer responses, Richard performed an analysis and concluded that connecting UFA with SharePoint would be a compelling solution that help ownCloud to differentiate itself in the marketplace.

> During a board of directors meeting, Richards stated: "My analysis indicates that there is a huge addressable market, and if we add a SharePoint connector to our product, it should impact 15 per cent of our deals with at least 50 per cent uptake."

All of the Board's members, including the venture capitalists, considered Richards' findings and promising sales projections impressive. However, because an external SharePoint consultant needed to be hired, the estimated implementation cost for the connector would be US$200,000 and thereby twice as expensive as the WND connector.

Furthermore, during the meeting, one of the investors pointed out a risk in the selling process of the SharePoint connector. In general, the EFSS software purchasing process is strongly influenced by the opinions of the IT departments of enterprises (Hollar, 2013). A typical IT department has two opposing types of system administrators, namely, administrators with either Windows or Linux backgrounds. Naturally, Windows administrators are responsible for the deployment and management of Microsoft SharePoint solutions. On the other side, the WND deployments are managed by Linux administrators, because to run WND, they needed to use a software called Samba, which is open source and operated on Linux servers.

The investor speculated that Windows administrators might perceive an ownCloud deployment with a SharePoint connector as a potential threat to their importance, because ownCloud stems from an open source project and supports rivaling Linux servers as its native platform best. On the other hand, Linux administrators may already have downloaded and used ownCloud's free server edition. Such inside champions might make selling substantially easier.

Consequently, on the one hand, the WND connector was expected to gain its primary support from Linux administrators, not the least for its modern and sleek user interface. On the other hand, the SharePoint connector would probably face strong objections from Windows administrators who preferred Microsoft products.

> After hearing the investor's concerns, Richards answered: "Using SharePoint is not as easy as using popular FSS solutions. Besides that, in a typical enterprise, almost half of the employees use Dropbox for their daily work. With UFA, we will provide a remedy for this so-called 'Dropbox problem' by integrating existing solutions, such as SharePoint, Google Drive, and Dropbox, via ownCloud, which delivers a more compelling user experience. Indeed, this helps us in overcoming the platform mismatch with SharePoint and eventually convinces Windows administrators to support our ownCloud solution."

Despite the cost pressure and addressed risks, Richards received the board's full support. In the following days, he defined the MVP requirements of the SharePoint connector (see Exhibit 1), and following that, based on the requirements; he defined user stories for the development team (see Exhibit 2).

5. SharePoint Integration as Minimum Viable Product

5.1 Development and Market Launch

In the months leading up to the UFA and SharePoint connector release, Richards worked closely with the development team. At that time, ownCloud already offered plug-ins for accessing DropBox, Google Drive, and Amazon Simple Storage Services, which were originally built and maintained by the ownCloud community. Parallel to the UFA implementation, the community members adapted these plug-ins into UFA compatible ones.

Eventually, all user stories were completely implemented shortly before ownCloud 7 was launched (login screens of the WND and SharePoint connectors can be found in Exhibit 3 and Exhibit 4). The launch, though, was delayed by two months for unrelated reasons. The total implementation cost of US$550,000 – which corresponded to 15 per cent of ownCloud's total 2014 R&D expenses – was US$50,000 higher than what was originally anticipated.

On November 11, 2014, along with SharePoint and WND connectors, Universal File Access was launched via ownCloud 7 (ownCloud, 2014b).

> Rex proudly announced the new release: "We're now really an abstraction layer. You get access to all your on-premises and off-premises files through an easy-to-use interface, and it's all under IT's control."

5.2 Initial Customer Responses

A couple of months after the launch, the first results came in. To his surprise, Richard noticed that the WND connector had impacted 15 per cent of ownCloud's deals, far more than expected, whereas the UFA's most promising connector, the SharePoint connector, had impacted none. Indeed, while it was too early to judge the connectors' market traction, early results indicated plans might not work out as expected. Most notably, it turned out that the prospects who had supported the idea of SharePoint integration were not among its early adopters.

In the following months, ownCloud's management team anxiously awaited the first quarter results of 2015. As numbers came in, it became obvious that although ownCloud had a successful first quarter and hit revenue targets (see Figure 7), none of the revenues were tied to the SharePoint connector. Most interestingly, in contrast to the SharePoint connector, the WND connector – which was launched with lowest expectations at the same time – had an increasing impact on deals.

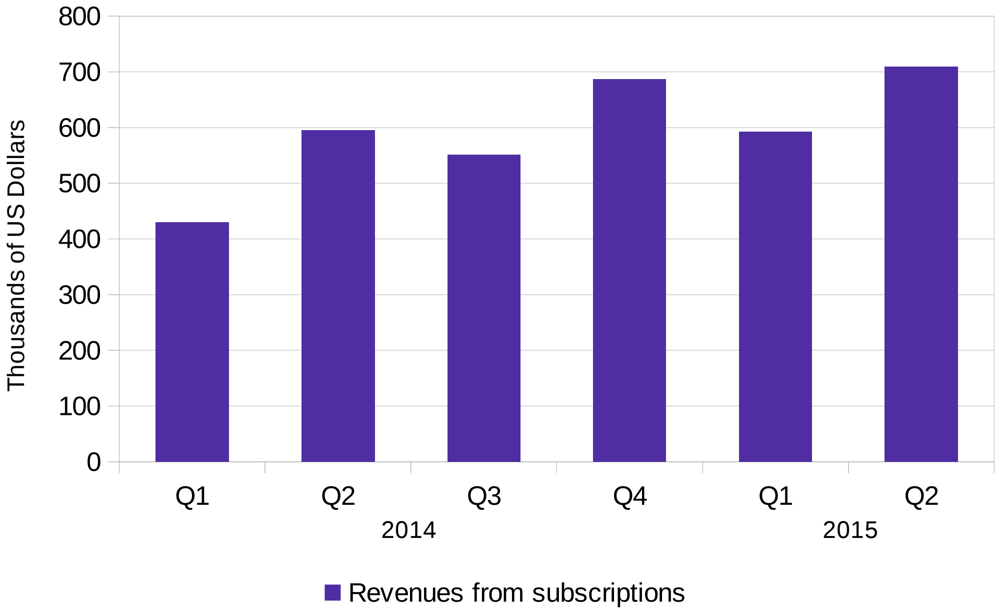


Figure 7: Revenues from the first quarter of 2014 to the second quarter of 2015

As the second quarter results came in, although a few prospects had shown interest, the SharePoint connector still had attracted almost no paying customer (see Figure 8). Despite its implementation complexity, the business value of the SharePoint connector appeared to be low.

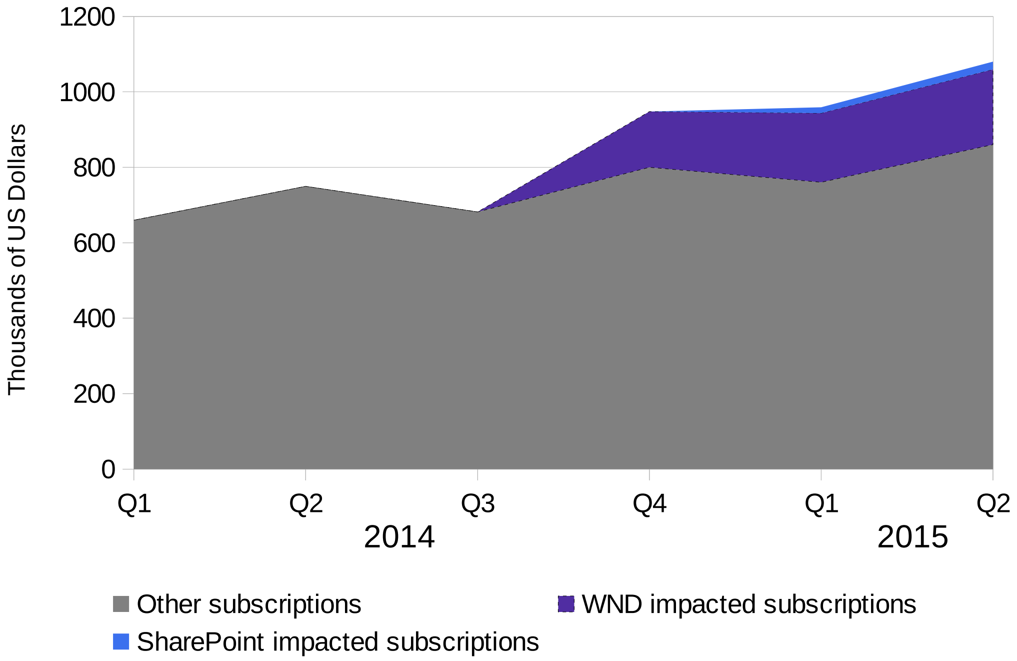


Figure 8: Bookings from the first quarter of 2014 to the second quarter of 2015[10, 11]

[10] Booking for a specific quarter is the sum of all closed deals in this quarter. In this graph, the booking contracts are considered to be signed for one year subscription plans.

[11] According to ownCloud, for each quarter, their customer retention rate stands at 90 per cent. Thus, in each quarter, the proportion of customer who renewed their expired yearly subscription contract is 90 per cent.

> Rex called Richards and said: “We are making strong progress in implementing the UFA strategy. The WND connector’s traction is beyond our expectations. But still, there is something wrong.”

5.3 Board of Birectors Meeting

On May 27, 2015, ownCloud’s board of directors held a meeting in Nuremberg. The main subject of the meeting was SharePoint integration and the wider UFA strategy.

The last months had proven that it was difficult to have all synchronization features, including the connectors, work properly. A key reason was that the recently introduced connectors led to extra code that needed to be maintained and updated. The SharePoint connector alone had a maintenance cost of US$60,000 per year. Despite the fact that the initial expectations had not materialized, Richards still hoped the SharePoint connector would become more compelling over time. For him, discarding the SharePoint support and moving completely away from the SharePoint market would jeopardize the UFA strategy as a whole; it was the same as ‘killing the goose that would one day lay golden eggs.’

In fact, Richards assumed that the UFA’s functionality and user experience would make it easier to gain support from system administrators in customer organizations. Although this assumption proved to be true for the WND connector, more efforts were needed to overcome the objections of Windows administrators against the SharePoint support.

> Richards began to speak: “All of our customers have SharePoint, which has limited mobile support. And all of them are using mobile devices. As we all know, it takes several months, even years, until customers get aware of our solution, which incorporates SharePoint integration and very powerful mobile features. What we need is a couple of lead customers. Therefore, despite our limited marketing resources, we should increase our marketing efforts in this area. Indeed, it means more marketing expenses. But once we get the word out, we will attract enough lead customers eager for proof of concept deployments. And once we have reference customers using SharePoint integration, we will rock the market!”

During the meeting, Rex focused on alternative strategies and their consequences. Terminating the SharePoint support would lead to loss in customer trust, incur costs, and significantly diminish the UFA’s capabilities, which were wired into ownCloud’s core.

> Rex said: “We don’t know if the SharePoint connector will lead us to better sales. What we know is that nobody is even looking at it. Although there are some negative consequences, we should consider either completely abandoning this strategy or, alternatively, give complete SharePoint connector’s source to our community and make it open source. I agree that we need more marketing efforts. Since we don’t have sufficient resources for that, we can let the community have the ownership of this feature and do the marketing for us. Since free users are a potent marketing tool, they will quickly and effectively get the word out.”

For Richards, the SharePoint support was a strategy for converting free-loading users into paying customers. He did not like the idea of strengthening the community edition of the software in its competition with the paid-for versions.

> Richards answered Rex: “SharePoint integration is an enterprise-only feature. Once we start offering enterprise features for free, it might lead to more users, but there will be fewer reasons for them to subscribe to our paid editions.”

The debate intensified, when one of the investors claimed that the differentiating effect of the UFA and its connectors was not sufficient to have a major impact. The investor argued that this could be seen by the non-trivial mobile app sales volume, which were basically generated by free-of-charge community edition users (see Figure 9 and Figure 10).

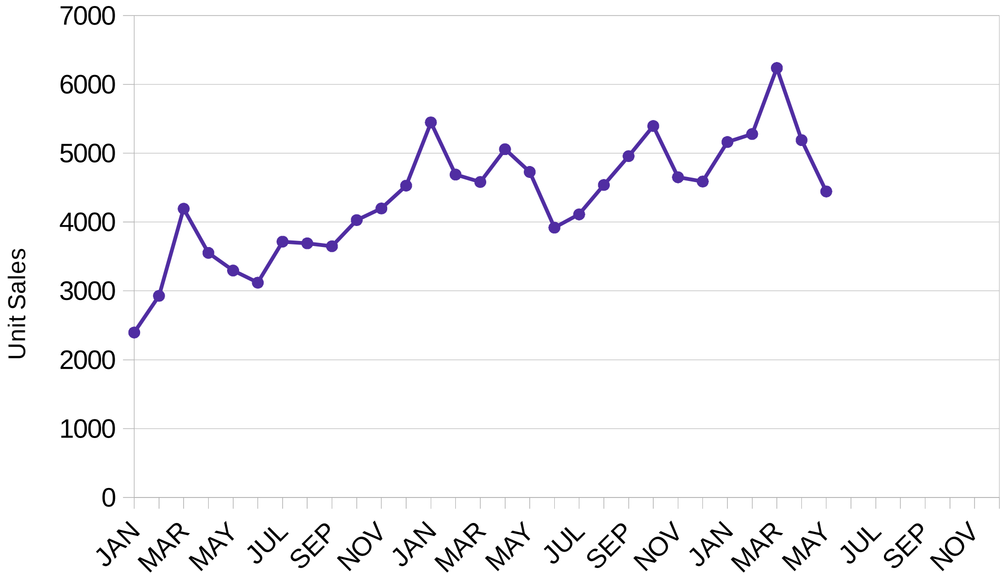


Figure 9: Monthly sales volumes of Android app (from January 2013 to May 2015)

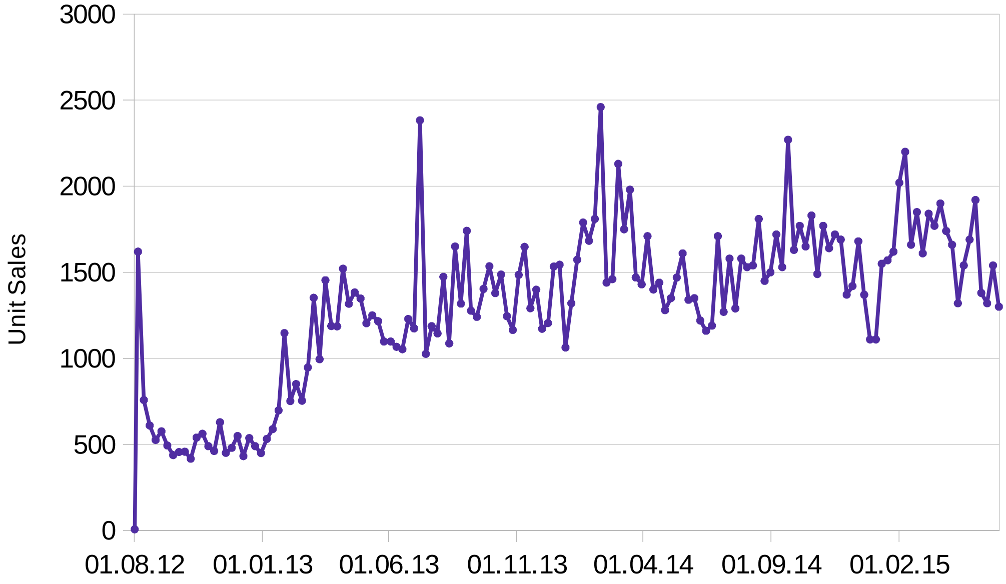


Figure 10: Weekly sales volumes of iOS app (from August 2012 to May 2015)

> The investor argued: “Unique product-differentiating features are of great importance, especially when competing with big players. Our customers regularly provide a long list of requirements, and we need to steer our resources into R&D for answering those needs. The SharePoint connector investment constitutes sunk cost that we cannot recover. We must immediately stop investing into this connector and assign resources for developing other differentiating features.”

Richards was not happy to hear this. After the investor had spoken, Richards felt the unrest of those in the room. The venture capitalists trusted his vision, but it was unclear what to do. Nobody knew whether keeping the SharePoint support with fixed maintenance costs or making it more attractive through more marketing efforts and thus through additional costs would be enough to increase revenues. And discarding the SharePoint support or giving its source to the community might also have a negative impact on the prospects of the company.

Exhibits

Exhibit 1: Requirements for SharePoint Connector[12]

1) Overview

ownCloud is an enterprise file synchronization and sharing solution. It provides end users a file sync and share experience, while allowing IT to control the file sync and share solution. Enterprises buy ownCloud for three reasons: it is installed on site, it can be integrated with existing IT infrastructure, and it is highly extensible. We will take advantage of this last point – extensibility – to build an ownCloud application plug-in that mounts SharePoint as a form of secondary storage in ownCloud. Users will then be able to browse through their SharePoint file tree inside the ownCloud web and mobile interfaces, and sync these files to their desktop with the ownCloud sync clients.

ownCloud is building a SharePoint plug-in application for the ownCloud server. This plug-in will be used to provide users access to their SharePoint files from within ownCloud. The plug-in is a standalone Enterprise Edition application, with a configuration menu in the ownCloud admin page. The plug-in can connect to one or more SharePoint instances, using the SharePoint web services interface. ownCloud treats SharePoint as a secondary storage location, translating ownCloud commands into SharePoint commands, and enabling mobile, web and sync client access. ownCloud also respects access control lists, so that, for example, users with read only access can only read a file from SharePoint – but not update it in SharePoint.

2) Requirements

- Plug-in will be a standalone Enterprise Edition app that the admin can enable and disable
- Plug-in will support SharePoint 2010 and 2013.
  - Phase 1 will focus on 2010
  - Phase 2 will expand this to include 2013
- Plug-in will leverage Microsoft SharePoint web services as much as possible for interactions
- ownCloud will not keep SharePoint metadata intact in this iteration of the plug-in
- All files will remain stored in SharePoint, ownCloud acts as a proxy to SharePoint
- SharePoint plug-in will need to operate in the same instance as the Jive integration, and potentially others
- Plug-in will need to work with ownCloud 6 and beyond (currently not planning ownCloud 5 version)
- Plug-in will need to work in an environment with at least 40 thousand SharePoint and ownCloud users, spread across multiple ownCloud instances

[12] Source: ownCloud’s requirement database; reformatted for ease of reading.

Exhibit 2: User Stories for SharePoint Connector[13]

The specific user stories are listed here. When the term "my SharePoint files" is used, it means the files and folders that I have access to in ownCloud as either read only, as well as read / write.

1) View Files

As an ownCloud user, I want to be able to browse my SharePoint files through ownCloud so that I can see what files and folders I have inside SharePoint.

Acceptance Criteria:

- If a configured SharePoint server is down, the folder should show with a red circle with a slash through it and say "error connecting to SharePoint" in a warning at the top of the web page
- Admin should be able to configure the name of the SharePoint root folder(s) that show up in the user's ownCloud root folder
- User's file and folder permissions should be respected – i.e., they should not be able to see files to which they do not have access within SharePoint; they should not be able to upload files to folders they do not have access rights to
- User should be able to browse the file tree in the web browser for thousands of files and folders, and it remains highly responsive
- User should be able to sync files and folders to and from the desktop from inside the SharePoint folder (default ownCloud sync behavior)
- User should be able to navigate through the files and folder structure on the mobile device in a timely manner
- User should not be able to rename the SharePoint root folder(s) in their SharePoint instances

2) Upload and Download Files From all ownCloud Clients

As an ownCloud user, I want to be able to download and upload files from my SharePoint instance through ownCloud so that I can get at the files and folders regardless of where they reside.

Acceptance Criteria:

- Application should leverage streaming to reduce the total time it takes to upload a file from the mobile or desktop devices to SharePoint
- App should leverage a big file chunking capability (if available in SharePoint) to resume uploads if lost – otherwise, deactivate big file chunking for the SharePoint file system and use streaming
- Admin should be able to set file size limitations for what can be uploaded into SharePoint (in megabytes)
- Admin should be able to set file's media type restrictions (e.g., no .exe files)

[13] Source: ownCloud's requirement database; reformatted for ease of reading.

3) Upload and Download Files Through SharePoint

As an ownCloud user, I want to be able to download and upload files using SharePoint directly, and have those changes appear in ownCloud, and sync to all my devices so that I have the latest files.

Acceptance Criteria:

- User can upload files to SharePoint, and they are also added immediately to the ownCloud installation (likely need a containing folder mtime check)
- User can modify files via SharePoint, and the modified file metadata and file changes makes it through to ownCloud
- User can add new folders inside SharePoint, and they are added to ownCloud automatically
- The ownCloud versions app is not used, if a customer needs versioning for the SharePoint files, SharePoint back-end storage tracks the versions; ownCloud provides access to only the latest version

4) Delete Files from SharePoint and ownCloud

As an ownCloud user, I want to be able to delete a file from SharePoint, and have ownCloud updated to reflect that this file was deleted. Conversely I want to be able to delete a file through ownCloud and have it removed from SharePoint.

Acceptance Criteria:

- A file deleted from SharePoint is communicated to ownCloud, and the ownCloud cache is updated to reflect the deletion (might require a webhook?)
- Files deleted from SharePoint do not end up in the deleted files app on ownCloud
- Files deleted from ownCloud are also deleted from SharePoint

5) Rename and Change Folders in ownCloud

As an ownCloud user, I want to be able to make changes to my documents and folder structures stored on my desktop, mobile or ownCloud web interfaces, and have the changes synced through to SharePoint.

Acceptance Criteria:

- When a new folder is created, it will be synced as New Folder; then the folder will be renamed by the user, it must be successfully synced as the new folder
- User makes changes on the desktop, mobile or web client and the files are updated in SharePoint
- User makes changes to the folder structure in any of the synced locations, and they are updated in SharePoint
- App should calculate some type of eTag for each file so that the sync client can determine when a file is new and sync it with the ownCloud server and SharePoint (default sync client behavior)

- User can change the name of a file or folder on SharePoint, and it is recognized as a move – not a new file / folder – and handled appropriately in the desktop, mobile and web interfaces

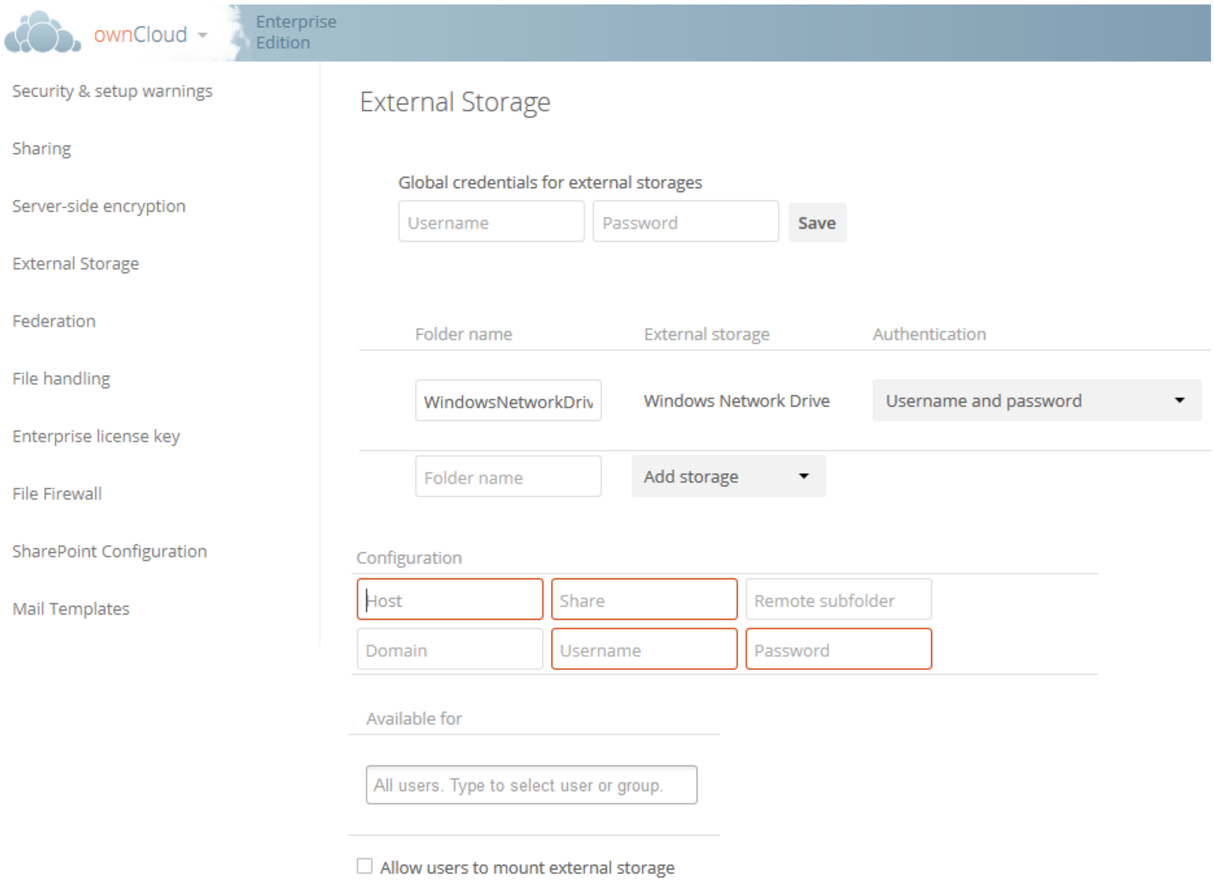
6) Administrative Panel

As an ownCloud admin, I want to be able to change the settings in the ownCloud SharePoint application so that I can control how my users interact with the plug-in.

Acceptance Criteria:

- Admin panel shows up in the admin page
- Admin can set a filter on file size and type that is allowed to sync with each SharePoint instance (e.g., no .exe, no files over 25MB, etc)
- Admin can select authentication mechanism from a drop down menu for each instance
- Admin can set a hyper transfer protocol (HTTP) or secure HTTP(S) connection with a check box
- Admin can set URL of the SharePoint instance connection
- Admin may also need to set a password for admin purposes
- Admin should be able to turn sharing on and off for the SharePoint mounted storage – by individual SharePoint instance – so that users can't share files within this instance
- Admin can enter and update settings, and settings are saved when the admin clicks the save button
- Admin should be able to mount multiple SharePoint instances in ownCloud using this app
- Configuration of additional SharePoint servers can be completed in the same interface with a drop down identifying a second, third or more SharePoint server

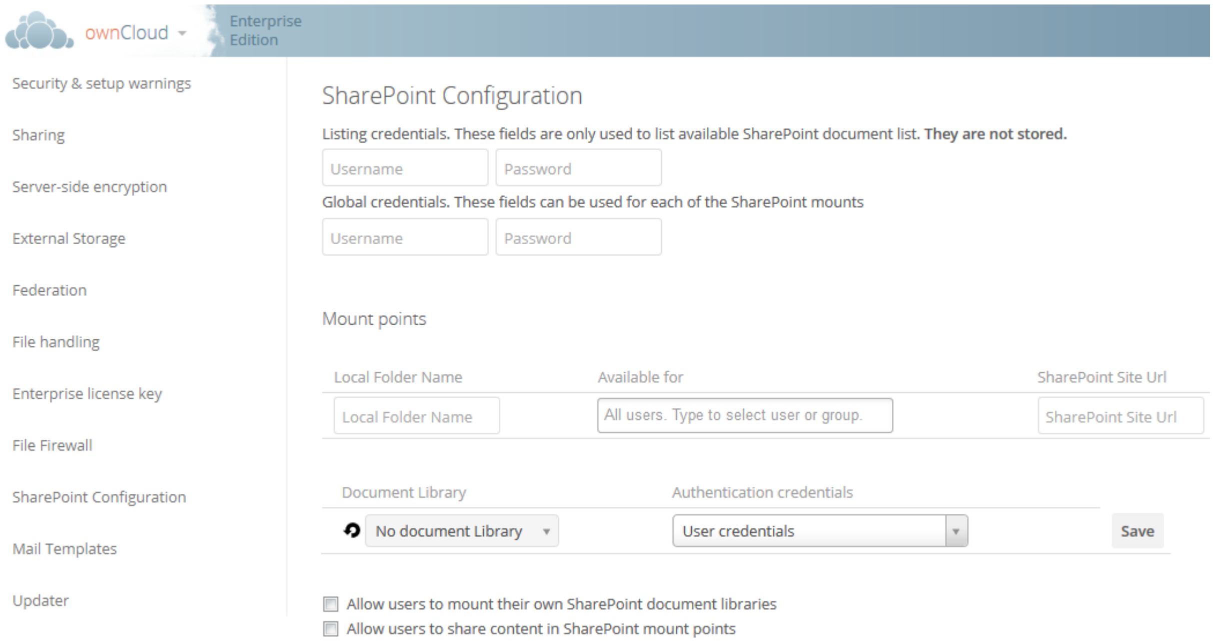
Exhibit 3



Folder name	External storage	Authentication
WindowsNetworkDriv	Windows Network Drive	Username and password

Web interface of the WND connector's login page

Exhibit 4



SharePoint Configuration

Listing credentials. These fields are only used to list available SharePoint document list. **They are not stored.**

Username | Password

Global credentials. These fields can be used for each of the SharePoint mounts

Username | Password

Mount points

Local Folder Name	Available for	SharePoint Site Url
Local Folder Name	All users. Type to select user or group.	SharePoint Site Url

Document Library	Authentication credentials
No document Library	User credentials

□ Allow users to mount their own SharePoint document libraries

□ Allow users to share content in SharePoint mount points

Web interface of the SharePoint connector's login page

About This Case

This teaching case was taken from the Product Management by Case collection, a collection of free cases for teaching product management, available at http://pmbycase.com.

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