

Student Commentary on Trading in the Clouds

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Have you ever lost something to the “cloud?” Given the number of times this has happened to me over the past couple of weeks, I feel confident that your answer is almost certainly, “yes.” Still, despite our general impatience when it comes to retrieving lost information from the cloud, it seems that we are nevertheless quick to trust the cloud with the information we keep on our phones—to name one example. Although annoying, the stakes are low when it comes to searching the cloud for a lost contact or image from our phone. The stakes are significantly higher, however, when it comes to integrating capital markets with cloud technology. Ultimately, this begs the question of whether we are willing to accept cloud integration in other areas of our lives and in other industries more broadly.

As discussed by Professor Baker, the cloud is essentially a host or mechanism that allows for serverless data storage because certain functions and data retention are outsourced to third party providers.¹ One example of this infrastructure is Software as a Service (“SaaS”) which hosts

¹ See Colleen Baker et al., *Banking on the Cloud*, 21 TENN. J. BUS. L. 381, 385 (2020).

data via the cloud that users access via the third party's internet software.² Undoubtedly, one of the main concerns when it comes to negotiating SaaS Agreements is the security and retention of predominantly confidential information. Namely, the fear that certain client information will be compromised or lost in the process of being managed the third-party vendor.

It follows that the negotiation of SaaS Agreements raises a number of questions including, "what happens if the host goes down, or our access to the service is interrupted?" While some of these questions are addressed contractually in system interruption or data breach clauses, the concern with turning over control and trusting the cloud nevertheless continues to be at the crux of why cloud services and their inherent risks perhaps terrify us. Yet, as Professor Baker points out, this transition of certain markets to the cloud is not only increasing, but also inevitable.³

In November of 2021, financial derivative exchange CME Group entered a 10-year partnership with Google that will move CME's IT infrastructure and markets to the cloud.⁴ CME says this will enable it to

² See generally Bassam Kaado, *What is Cloud Hosting?*, BUSINESS NEWS DAILY (last updated Feb. 21, 20223), <https://www.businessnewsdaily.com/5030-what-is-cloud-hosting.html>.

³ See Colleen Baker, *Trading in the Clouds*, TENN. J. BUS. L. (forthcoming 2023).

⁴ CME Group, *CME Group Signs 10-year Partnership with Google Cloud to Transform Global Derivatives Markets Through Cloud Adoption*, CME GROUP (Nov. 4, 2021), <https://www.cmegroup.com/media-room/press->

launch new products and services quickly.⁵ Similarly, NASDAQ entered a partnership with Amazon Web Services to transition certain markets to the cloud.⁶ In fact, almost all exchanges and trading systems provide customers with at least some cloud based data and services, and at least almost all of them plan to integrate additional cloud based offers soon.⁷

And I can't help but wonder, why do we care?

One of the reasons traditional institutions such as financial exchanges are drawn to cloud infrastructure is because they want to increase market access and streamline operations.⁸ As explored by Professor Baker, institutions can achieve these goals because of the flexible and scalable nature of cloud technology, which enables these organizations to scale capacity up or down anytime.⁹ While this sounds good on the surface, I'm left wondering what this really means.

Let's use GameStop as an example. Most of us remember what happened with GameStop in 2020 and 2021. As a brief reminder, it began

[releases/2021/11/04/cme_group_signs_10-yearpartnershipwithgooglecloudtoformglob.html](https://www.cme.com/news/releases/2021/11/04/cme_group_signs_10-yearpartnershipwithgooglecloudtoformglob.html).

⁵ *Id.*

⁶ John McCormick & Angus Loten, *Nasdaq to Move Markets to Amazon's Cloud*, THE WALL STREET JOURNAL (last updated Nov. 30, 2021), <https://www.wsj.com/articles/nasdaq-to-move-markets-to-amazons-cloud-11638291103>.

⁷ Nicholas Fearn, *Cloud Computing Powers the World's Financial Exchanges*, FINANCIAL TIMES (May 9, 2022), <https://www.ft.com/content/40e51620-3da6-4bc6-9d43-05236c7daa93>; see also Baker, *supra* note 1.

⁸ *Id.*

⁹ See Baker *supra* note 3.

when certain hedge funds deemed GameStop to be overvalued and started shorting its stock.¹⁰ When a group on Reddit noticed the shorting activity, they hatched a plan to buy and hold the stock to drive the stock price higher and trigger a short squeeze. This meant the hedge funds had no choice but to buy back the borrowed stock at much higher prices, suffering enormous losses.

In effect, the action by the Reddit group created “a frenzy for shares of GameStop . . . [which] flooded popular online brokerages, causing a spike in market volatility and forcing many operators [like Robin Hood] to restrict access to trading.”¹¹ This led platforms like Robin Hood to be criticized for market manipulation; however, NASDAQ—that already stored billions of transactions records like daily orders and quotes transmitted by traders in a cloud warehouse operated by AWS—credited the cloud and its scalability for keeping NASDAQ from suspending trading.¹² In this context we can certainly see why the cloud's ability to

¹⁰ See Alexander Jones, *Gamestop: What Happened, and What it Means*, INTERNATIONAL BANKER (Mar. 29, 2021), <https://internationalbanker.com/brokerage/gamestop-what-happened-and-what-it-means/>.

¹¹ McCormick, *supra* note 6; see also Yun Li & Jesse Pound, *GameStop's Stock Closes Down More than 40% after Brokers Place Restrictions on Trades*, CNBC (Jan. 28, 2021) <https://www.cnbc.com/2021/01/28/gamestop-reverses-losses-and-surges-another-30percent-in-the-premarket-to-450-as-mania-continues.html> (“The dramatic slide came as some retail brokerages limited trading in several of the heavily shorted names to closing positions only, meaning that traders could not buy up shares as the prices fell”).

¹² McCormick, *supra* note 6.

handle market volatility through better scalability and computing resources is a top priority for large financial players.¹³

Put simply, capital market companies rely on their customers being able to stay online 24/7 and need a system that is elastic in handling market volatility and “the hundreds of billions of trading events that happen every day.”¹⁴ Consider this: Robin Hood, a boutique trading firm, had limited scalability during the market volatility created by the GameStop frenzy perhaps because they were relying primarily on physical infrastructure and not fully utilizing the cloud. Conversely, the cloud holds the potential to avoid these types of frenzies because it is more resilient during times of market volatility.¹⁵

So why do we care? Well, just as computers and hard drives reduce the inefficiencies of pen and paper, the cloud holds the potential for even greater efficiencies at lower costs of issuance. Although it is perhaps scary to trust in something as abstract and vast as the cloud, we must remember that while breach, interruptions, or “losing” something to the cloud are certainly risks, there are risks at every level of infrastructure. In fact,

¹³ Fearn, *supra* note 7.

¹⁴ McCormick, *supra* note 6.

¹⁵ See generally Huw Jones, *Amazon Pilot Lifts Stock Exchanges Into the Cloud*, REUTERS (Nov. 20, 2020), <https://www.reuters.com/article/exchange-cloud-amazon-com-int/amazon-pilot-lifts-stock-exchanges-into-the-cloud-idUSKBN2801RQ>.

perhaps the cloud's increased capacity allows for fewer interruptions because of its ability to compute transactions at lightning speed.

Although we have not yet seen the full extent of what the cloud can do, I know one thing is for sure: the cloud is the next evolution in trading, and we will surely see financial powerhouses becoming 100% cloud enabled soon.

With that in mind, I think the only questions yet to be determined is the proper regulatory framework, and the remedies for when issues do arise. Further, who will be held responsible when important data is "lost" to the cloud? Will it be the trading firms, or the cloud providers themselves? We will just have to wait and see.