CASE 1 — Building Farms and Crushing Candy: The Infrastructure Behind Social Games

Since its initial launch in 2004, Facebook has become the world's largest social network, helping people to communicate with friends, family members, and coworkers. In addition to communication capabilities (such as features that allow posting "status updates," a chat system, or photo albums), users can access a variety of third-party applications developed using Facebook's own development platform. Interestingly, a category of applications that has become hugely popular is social network games, such as FarmVille, CastleVille, or Candy Crush Saga. Social network games are typically asynchronous, multiplayer games, where users play while interacting with their online social network.

San Francisco–based game developer Zynga was once one of the most important players in this market, having developed games such as Mafia Wars, FarmVille, and Bubble Safari; in fact, six out of the seven most popular social games were developed by Zynga. Though Zynga enjoyed early success and massive gains in stock price, the company has declined fairly steadily, consistently losing money and putting the company's business model in question. Though the company's market worth reached over US$10 billion shortly following its initial public offering (IPO) in 2012, it is currently worth just under US$3 billion.

Zynga's flagship game, FarmVille, grew from 1 million daily users after four days to 10 million daily users after just 60 days; nine months after launch, 75 million people logged in to FarmVille each month. On FarmVille, users can grow crops and trees, raise animals, build barns and fences, and so on. Fields need to be plowed and crops sowed and harvested before they wither, forcing the user to log in to the game frequently. A successor, FarmVille 2, was released near the end of 2012, at which point the FarmVille games were in the top 10 most popular social games on Facebook. As of January 2014, their popularity had declined somewhat, and the game only remains among the top 50.

In April 2012, a new game developer, King Digital Entertainment, released Candy Crush Saga, which quickly rose in popularity and, in March 2013, surpassed FarmVille in active users with 46 million monthly users. Shortly after the launch the game developer also released a version for the iOS and Android mobile platforms. The addition of these mobile apps has helped Candy Crush Saga become an international superstar. Across the three platforms (Facebook, iOS, and Android), Candy Crush Saga has been installed over 500 million times, and 97 million people play the game every day. It is the most popular game on Facebook, and ranks very high in both the Apple and Google app marketplaces.

A key advantage that Candy Crush Saga has had over FarmVille is its ability to monetize the gameplay. Though the game is free to download and play, players can purchase "boosts" that provide assistance during difficult levels. The ease with which these boosts can be purchased (and used) means that some players spend large amounts of money in small increments without really knowing it. This business model has been very effective for King, to the tune of US$850,000 per day from in-game purchases. In March 2014, King completed an IPO, which valued the company at over US$7 billion, the largest ever for a mobile/social gaming company in the United States, just slightly higher than Zynga's initial valuation.

Compared to other applications, response time is critical for these types of games, as time lags in the game's response can quickly kill a player's gaming experience. Further, the introduction of new features (such as new game tokens being offered) often cause spikes in user activity. Hence, supporting a successful social network game requires an IS infrastructure that is solid, responsive, and highly scalable. In addition, social games place further demands on an IS infrastructure; most Web sites primarily serve content to the user and are thus very "read intensive." In contrast, social network games are "write intensive"; that is, large amounts of data are written to the games' underlying databases. For example, whenever a player plants a new crop, builds a windmill, or moves a fence on Farmville, an object changes its state or a new object is created; all these actions have to be properly stored so as to avoid objects colliding or other "illegal" maneuvers. Overall, FarmVille's read-to-write ratio is 3 to 1, which is considered incredibly high.

To support this demand, Zynga early on started using a cloud computing architecture. Using Amazon EC2, Zynga deployed more than a thousand servers for FarmVille alone. To flexibly deal with changes in demand, Zynga uses a cloud management platform that automatically adds or removes servers based on predetermined parameters, such as when to start scaling or how fast to add or remove resources

Realizing that the company was paying huge amounts of money to rent Amazon's infrastructure, Zynga decided to launch its own private cloud. This move allowed Zynga to fine-tune its infrastructure for gaming purposes, which was not possible using Amazon's all-purpose servers. Yet, Zynga maintains a hybrid cloud model, using Amazon's public cloud infrastructure as a fallback for times of unexpected spikes in demand. Likewise, building an infrastructure that supports the growth of Candy Crush Saga is key for King Digital in the coming years. Clearly, mobility has fueled the popularity of social games, and companies have to find innovative ways to keep their infrastructure running and maximize user experience.

Questions

3-46. What infrastructure components are most critical for Zynga and King?

3-47. Compare and contrast the business models of Zynga and King Digital. Why has King been more successful so far?

3-48. Discuss the advantages and disadvantages for social game developers choosing to develop for multiple platforms.

Based on:
Candy Crush Saga. (2014, May 16). In *Wikipedia*, *The Free Encyclopedia*. Retrieved May 17, 2014, from http://en.wikipedia.org/w/index.php?title=Candy_Crush_Saga&oldid=608805336.

Zynga. (2014, May 6). In *Wikipedia, The Free Encyclopedia*. Retrieved May 17, 2014, from http://en.wikipedia.org/w/index.php?title=Zynga&oldid=607273191.

King (company). (2014, May 11). In *Wikipedia, The Free Encyclopedia*. Retrieved May 17, 2014, from http://en.wikipedia.org/w/index.php?title=King_(company)&oldid=608023171.

Day, E. (2014, May 10). Candy Crush Saga: Sweet success for global flavour of the moment. *The Guardian*. Retrieved May 17, 2014, from http://www.theguardian.com/technology/2014/may/11/candy-crush-saga-games.