How Amazon Swooped in to Own Cloud Services

Though Amazon practically stumbled into the cloud services game, the company has left established hardware makers in its wake

by Jack Clark and Ashlee Vance
3:00 AM PDT April 22, 2015

In 2004, Sun Microsystems revealed a radical plan to shake up the computing industry. It would build a series of large data centers and sell access to the computers inside them for $1 per hour. Sun was taking a huge risk. It would begin a shift from selling high-profit hardware outright to becoming more of a grunt, renting computers. The company famous for wining and dining customers to close multimillion-dollar hardware orders would begin processing credit-card payments.

Sun’s plan proved too radical. The U.S. government, which regulated the sale of large computing systems at the time, balked at the idea of allowing any old terrorist with a Mastercard to gain unfettered access to a supercomputer. Building the data centers also proved harder than Sun expected, and its so-called “grid engine” stalled. While Sun licked its wounds, something altogether unfathomable happened. The online book and decorative pillow seller Amazon.com swooped in and, in 2006, launched its own computer rental system—the future Amazon Web Services. The once-fledgling service has since turned cloud computing into a mainstream phenomenon and left hardware makers such as Sun (now part of Oracle), Dell, IBM, and Hewlett-Packard looking like lost souls. “One of the biggest surprises around this business has been how long it took the old guard companies to try and pursue an offering,” says Andy Jassy, head of Web services at Amazon. “None of us thought we would get a seven-year head start.”

On April 23, Amazon plans to disclose the numbers for its cloud business for the first time, in its quarterly earnings report. Analyst Karl Keirstead at Deutsche Bank estimates annual revenue of about $6 billion, about 10 times the revenue of its closest competitor in the public cloud market. Amazon’s cloud business may be the fastest-growing corporate technology business of all time and executives contend that it can grow to be bigger than the company’s $83 billion-per-year retail operation. The only thing standing in Amazon’s way are giants like Microsoft, Google, and the rest of a computing industry that, at long last, has woken up to seek revenge.

There’s a degree to which Amazon stumbled into this mega-business. In the early 2000s, the company had a fledgling product called Merchant.com, which built online stores for retailers such as Marks & Spencer. While
promising, the idea was difficult to execute. Amazon’s infrastructure had grown so fast that the company found itself in a morass of interlocking software systems. "It turned out to be way harder and more time-consuming than any of us imagined," Jassy says. To fix the problem, Amazon had to undo the cats cradle of internal technology. Over time, its engineers figured out how to build much simpler, independent computing systems.

Amazon began using its improved system internally and saw that it could go after a much wider audience than a handful of retailers. "We wanted to enable any individual, in his or her dorm room, to have the access to the same price and cost structure and scalability and infrastructure as the largest companies in the world," Jassy says. Other companies ignored this market and instead pointed their products at top executives in large, traditional business organizations. Sun was one of them, recalls Adrian Cockcroft, who worked at the company in the run-up to the launch of the Sun Grid. "The [chief information officers] did not really want to buy what we were trying to sell them," says Cockcroft.

Since Amazon was aiming at developers, rather than CIOs, it felt free to roll out an imperfect service and add new features as it went along. “Large tech companies usually wait to launch until they’ve built all the bells and whistles their development team can imagine,” says Jassy. “We thought it was very important to be first to market.” By July 2006, just four months after launch, Amazon’s S3 storage service held more than 800 million files. The next year, startups such as Dropbox based businesses on cheap Amazon hosting. By 2013, giants like Netflix, which accounts for about one-third of the network traffic in North America on a given night, had committed to the Amazon cloud.

“None of us thought we would get a seven-year head start.”

Companies that include Microsoft and Google have since built data centers every bit Amazon’s equal. They’ve also ushered in a cloud computing price war. The cost to store a file or process some data is now a fraction of a fraction of a penny. The competitors, though, have struggled to keep up with Amazon’s pace when it comes to adding new cloud features and software options. Amazon, for example, was the first to roll out its own database service, as well as rentable computers that used faster and more efficient flash memory rather than conventional hard drives. In 2012, Amazon also opened its AWS Marketplace—a type of online store for business software and tools sold by other companies; last year it launched a new database designed to accommodate the kinds of corporate clients served by massive incumbents such as Oracle. “They are essentially pursuing world domination,” says Gartner cloud analyst Lydia Leong.

To retain the top spot, Amazon must lure larger and larger customers from a psychological attachment to their own on-premises data centers. For big customers, that can be difficult. "It's scary for everyone involved in the chain," says Rich Ridolfo, senior director of operations for HealthSuite, a recent Amazon convert that's a division of European conglomerate Philips. "It is a fundamental shift in thinking for everybody in the process." His division is now planning to load "petabytes" of data into AWS every year—equivalent to more than a
decade of HD-TV video.

Amazon must also fend off established IT firms that may be late to the cloud, but have longstanding relationships with businesses. "Amazon's main competitor is undoubtedly Microsoft," says Leong. "Are there any other serious competitors? I would say 'no.'" Revenue at Azure, Microsoft's cloud computing platform, is estimated to range from $500 million to $700 million, according to Deutsche Bank. A recent report by Synergy Research Group estimated that Amazon held 28 percent of the worldwide market for cloud infrastructure services, followed by Microsoft, with 10 percent.

Amazon must also continue to satisfy the needs of its bedrock loyal developers. Here, it faces competition from a young startup named Digital Ocean, based in New York. Since it was founded in 2011, the company has raised almost $100 million in funding and opened nine data centers around the world, says Ben Uretsky, its chief executive officer. It has built its business by renting developers absurdly cheap computers—the company's best-selling product is a $10 per month computer that can be rented for as little as $0.015 per hour. Digital Ocean has grown adept at serving a subset of the market that AWS inhabits, says Leong, but cautions that "it's not an enterprise product."

Digital Ocean has benefited in part from the rise of Amazon, as the giant's growth has created a global supply chain of companies that are very good at making extremely cheap servers for very large operators. "The days in which everybody built their own powerplants was a very different situation for suppliers and manufacturers," says Leong of Gartner. "There are enormous supplier dynamics that are changing."

As of April 2015, DigitalOcean was the third largest hosting company in the world backed by 154,000 Web-facing computers, according to Internet security and analysis company NetCraft. "We focused on the developer exclusively, and we said there has to be a better way for developers to manage their infrastructure and to deploy their applications," Uretsky says. If that doesn't sound like the first mumblings of an Amazon Web Services competitor, what does?