

investment was still believed to be negative. One bright spot for Microsoft was the growth of its online game subscription service, Xbox Live. Introduced in 2002, by mid-2013, Xbox Live had around 45 million paying subscribers who used it for everything from playing multi-player games online to streaming movies from Netflix and browsing Facebook. At the time, Microsoft was thought to be generating annual revenues in excess of \$3 billion from Xbox Live.¹⁹ Microsoft also garnered strong reviews and sales for its Kinect motion sensor controller. Introduced in late 2010 for the Xbox 360, Kinect was developed as a response to Nintendo's Wii controller.

In late 2013, Microsoft launched its third-generation game console, Xbox One. Sony matched with the launch of its PS4 system. At launch, Microsoft positioned Xbox One as an all-purpose entertainment system for the living room, controlling TV, music, and film streaming services through the Kinect motion and voice sensor, in addition to being a game console. Sony focused its marketing for the PS4 on the core gaming market. By mid-2014, Sony was believed to have sold 7 million PS4 consoles, versus 5 million Xbox One consoles. With Satya Nadella now in charge, Microsoft changed the marketing strategy for Xbox One, emphasizing its capabilities as a gaming machine and co-promoting it with new iterations of its popular Halo and Call of Duty franchises.

Product Diversification: Internet Search

Another hallmark of the Ballmer era was Microsoft's expansion into Internet search. Microsoft had long had primitive Internet search functionality on its MSN service, but it had never seen search as a central feature. This changed with the rise of Google, a company that didn't even exist until 1998. At the core of Google's rise was a search algorithm that cleverly ranked the relevance of a page for a search query according to the number of pages that linked into that page. Google went to great lengths to make sure that its search results were "pure." It did not mix organic and paid search results, thereby improving relevance to the user (paid search results were originally placed on the right hand side of a search page, separate from organic search results).

What made Google a valuable company was its combination of highly relevant search results with a business model that made money out of search activity—lots of money. This was the 'pay-for-click'

model, where advertisers paid Google every time someone clicked on an advertiser's link. From a standing start in 2001, by 2014 Google had grown into a colossus with \$68 billion in revenues, almost \$21 billion in net profits, 67% of the market for Internet search in the United States, and an estimated 70% of worldwide search marketing spend.

Along the way, Google had moved aggressively into Microsoft's turf. Reasoning that with the growth of smartphones, ever more search would come through mobile devices, Google had pushed into the smartphone business with its Android operating system, which it licensed to hardware manufacturers for free. The economic logic was that Google would be the default search engine on Android phones, so every time someone search for something on an Android phone, and clicked on an advertising link, Google would make money. Google also developed its own Web browser, Chrome, which it distributed for free. The economic reasoning was similar. Since search is conducted within a Web-browser environment, and Google was the default search engine on Chrome, Google would capture more search based advertising collars if its own browser were widely used. Both of these products were phenomenally successful. By mid 2014, Android was found on 85% of the world's smartphones, and Chrome was the browser of choice on 46% of all desktops and tablets (relegating Microsoft's Internet Explorer, the long time market leader, to second place with 20%).²⁰

Microsoft tried to counter Google's rise in the Internet search business, but its success was limited,—and very expensive. Microsoft adopted Google's pay for click search model, and developed a similar search algorithm, but was unable to gain much market traction and its market share remained stuck under 10%. Part of the problem was brand confusion. Microsoft's search feature was initially known as MSN Search, sounded dull and uninspiring next to Google. In 2006, MSN search was rebranded as Windows Live Search, and given some new features. A year later, the name was changed again to Live Search. Ultimately, Microsoft came to the realization that the "Live" brand was not resonating with consumers, who found it confusing. In June 2009, Microsoft's search engine was rebranded Bing. Microsoft supported the Bing launch with a \$100-million ad campaign.

In 2008, in an attempt to grow its share of the U.S. paid-search market, Microsoft launched an unsolicited takeover bid for Yahoo. Yahoo was number 2 in

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the US search market. Microsoft was number 3. Yahoo rejected the bid. A year later, however, following management changes at Yahoo, Microsoft and Yahoo entered into a 10-year partnership under which Bing would be the exclusive search platform on Yahoo. Although the precise terms of the deal were not made public, it is known that Microsoft pays Yahoo for search traffic. In 2013, 31% of Yahoo's revenue apparently came from Microsoft payments.²¹

Product Diversification: Smartphones and Tablets

Microsoft was an early leader in the smartphone business. It first offered an operating system for smartphones, Windows Mobile, in 2002. By 2007, 42% of all smartphones used the Windows Mobile operating system. Smartphone manufacturers such as Motorola and HTC paid a licensing fee to Microsoft to use Windows Mobile. As was normal at the time, Windows Mobile powered smartphones had a physical keyboard and a small screen. The devices were primarily sold to enterprise customers, who used the phones for email, appointments, text messaging, and Web browsing.

In 2007, Apple introduced the first iPhone, which revolutionized the smartphone market and significantly expanded demand (see Table 1). The combination of a touch screen, virtual keyboard, larger

screen size, elegant design, and ease of use made the iPhone a huge hit in the consumer marketplace. Business people too, bought iPhones in droves, leading many companies to adopt a policy of "bring your own device" with regard to smartphones. Growth of the iPhone got a further boost from the development of third-party applications and the opening of the Apple App store in 2008, which made it easy for users to find and download apps onto their phones. The supply of Apps was facilitated by efforts on Apple's part to make it easy for third-party developers to write Apps for the iPhone. In 2010, Apple introduced its tablet offering, the iPad. The iPad used the same iOS operating system as the iPhone and had most of the same attributes, including elegant design, a touch screen, and access to the App store through wireless connectivity. All of this helped drive rapid growth in consumer demand.

When Apple released the iPhone, Google already had its own operating systems for a touch screen phone in development. Google had acquired the original developer, Android Inc., in 2005. The first smartphones running on Android appeared in 2008. Google's business model was to offer Android for free and make money from advertising linked to mobile search. By 2013, Android was the dominant smartphone OS, followed by Apple's iOS (see Table 1). Tablets that ran on Android started to appear soon after the launch of the iPad in 2010, and by 2014 Android was also dominating the tablet OS market (see Table 2).

Table 1 Global Smartphone Sales (millions) 2007–2013

Year	Android	iOS (Apple)	Microsoft	BlackBerry	Nokia
2007		3	15	12	78
2008		11	17	23	73
2009	7	25	15	34	81
2010	67	47	12	47	112
2011	220	89	9	52	93
2012	451	130	17	34	0
2013	759	151	31	19	0

Source: Gartner.com, various press releases.

**Table 2 Global Tablet Sales (millions)
2010–2014**

Year	Android	iOS (Apple)	Microsoft
2011	17	40	0
2012	53	61	1
2013	121	70	4
2014	160	65	11

Source: Gartner.com, various press releases.

The introduction of the iPhone, and then Android phones, decimated Microsoft's market share (see Table 1). By 2011, Microsoft's OS was found on just 9 million smartphones shipped that year. Android was on 220 million phones, and Apple sold 89 million iOS phones. The situation in the tablet market was no better, where Microsoft was caught completely flat-footed by the introduction of the iPad. Google, on the other hand, adapted very quickly and soon gained market leadership.

In response to the rapid emergence of Apple and Android, Microsoft developed a new operating system for touch screen smartphones, Windows Phone. Windows Phone had an active-tile, "Metro" interface, rather than the on-screen icons used by Apple and Android. The first Windows Phones started to appear in late 2010. Microsoft also established its own App store, the Windows Phone Store.

In early 2011, Microsoft entered into an alliance with Nokia to jointly develop Windows Phones. Like Microsoft, Nokia had been caught off guard by the emergence of the iPhone and had seen its market share slide. Nokia had used its own Symbian operating system in its smartphones. Like Windows Mobile, Symbian was a primitive, first-generation smartphone OS that lacked the full features and functions of Android and iOS, including touch screen capability, a virtual keyboard, and a supply of third-party apps that could be downloaded onto the device. Under the alliance, Nokia agreed to phase out Symbian and switch to Microsoft's Windows Phone OS. The first products of this alliance, Nokia's Lumina phones, were introduced in late 2011.

Despite some favorable reviews, the Lumina phones grew more slowly than the market, and

Microsoft's market share remained in the low single digits in most nations. Reasons given to explain this included the lack of appeal of the Metro interface and relative paucity of third-party apps for Windows Phone.

In September 2013, Microsoft announced its intention to acquire Nokia's mobile phone business for \$7 billion. In justifying the acquisition, Ballmer argued that merging the two companies would streamline product development processes, lower costs, and result in better phones and higher gross profit margins.²² It was also noted that Nokia was the only company still willing to make Windows phones, and if Nokia pulled out, what would happen to Microsoft's phone business? Critics wondered whether an acquisition that made Microsoft a phone maker might not alienate other phone makers, such as HTC, who would now see Microsoft as a direct competitor.

In addition to the phone business, Microsoft entered the tablet business with its Surface offering. The Surface was positioned as a cross over between a conventional laptop and a tablet. Introduced in late 2012, it used a Windows 8.1 operating system, which by that time was also being used for Windows Phone. Like the Windows Phone, the Surface garnered some favorable reviews, but sales were slow to pick up and the product initially failed to make a dent in the dominance of Android and iOS in the tablet market. However, following the introduction of the Surface Pro 3 in mid 2014, sales appeared to be accelerating. In the last 6 months of 2014, Microsoft sold \$2 billion worth of Surface tablets.

Windows Offerings Under Ballmer

Windows Vista was the first version of Windows completely developed under Ballmer's leadership (although Bill Gates oversaw the project). Vista started out as a more ambitious project with the code name of Longhorn, but when that ran into difficulties, it was recast as Vista. A primary goal for Vista was to increase security. Released in January 2007, more than 5 years after its predecessor, Windows XP, it was not well received by the marketplace. Vista took 2 years longer than expected to develop and it was several billion dollars over budget. It was a huge program—with 50 million plus lines of code—and utilized a lot of computer memory to run, resulting in unacceptably slow performance for many users. It quickly drained battery life on laptop

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computers. Moreover, it irritated users with constant popup authorization prompts for user account control. Many potential adopters simply stuck with Windows XP rather than switch to the much-maligned Vista. By October 2009, Windows Vista had 19% of the PC operating system marketplace, while Windows XP, an 8-year-old OS, still enjoyed a 63% share.

Many insiders blamed the poor performance of Vista on a development process that got out of hand. One problem was "too many VPs in reporting structures too narrow." There were 12 layers of management between Bill Gates and a developer at the base of the Windows organization. As one former Windows development lead noted:

"I once sat in a scheduled review meeting with at least six VPs and ten general managers. When that many people have a say, things get confusing. Not to mention, since so many bosses are in the room, there are often negotiations between project managers prior to such meetings to make sure no one looks bad . . . In general, Windows suffers from a proclivity for action control, not results control. Instead of clearly stating desired outcomes, there is a penchant for telling people exactly what steps they must take."²³

Other insiders complained about a lack of accountability, constant churning of features and specifications, with new features often being added without adequate testing, leading to system crashes and further development delays. Several people also noted that with Gates heading Vista, CEO Steve Ballmer was unwilling to step in and resolve problems that were resulting in delays and cost overruns.

Once Vista shipped, many of the top engineers on the project retired. Steve Sinofsky, who had been running Office, was brought in to run Windows. At Office, Sinofsky had run a very tight ship, releasing new versions on schedule like clockwork. The Office organization was also much flatter than the Windows division, with only four levels of management.

Sinofsky flattened the Windows organization, reducing the number of levels of management from 12 to 5. He pushed developers to get Vista's successor, Windows 7, to market quickly. Originally conceived as an incremental update to Vista, Windows 7 was a more streamlined program that fixed many of the performance problems and irritations with Vista. Introduced

in 2009, reviewers saw Windows 7 as a big improvement over Vista, and the operating system sold well.

Once Windows 7 shipped, Sinofsky and his team turned their attention to Windows 8. Released in 2012, Windows 8 was positioned as an operating system for the new era of digital devices. Windows 8 used the same Metro-style, tile-based interface that had first been used on Windows Phone. Despite the lukewarm reception of the Metro interface on the phone, Microsoft saw the interface as an important differentiator. Sinofsky was a major advocate of the Metro interface, going so far as to push Microsoft to kill a competing interface for tablets being developed within the company because it was inconsistent with the Metro theme that he wanted on all devices.²⁴ Known as the Courier, the tablet was the brainchild of a group within Microsoft's Entertainment and Devices Division, headed by Jay Allard. The Courier was on track to hit the market in 2010, just months behind the iPad. Widely admired within Microsoft, Allard was the force behind the creation of the Xbox business and was instrumental in pushing Microsoft to embrace the Web back in 1995.

The Courier was a two-screen tablet that folded like a book and had a touch screens. Early prototypes had elicited rave reviews from outsiders who had seen it, some preferring what they saw to prototypes of the iPad, which was then under development. But the Courier used a modified version of Windows as its operating system, and the interface departed substantially from the Windows norm.

When the Courier dispute surfaced, Ballmer found himself in the position of having to choose between two of his best managers. Unable to make up his mind, he brought Gates into the decision. Gates, who by now had given up all day-to-day operating responsibility, met with Allard and his team. His criticism was that Courier didn't align with Microsoft's key Windows and Office franchises. Not only did it use a customized version of Windows, and a nonstandard interface, but it also did not include an Outlook email client (Allard pointed out that users could get email through an onboard Web browser). For Gates, this was a fatal flaw, and the Courier was cancelled. Within months, Allard had left Microsoft along with his boss, Robbie Bach. It would be another 2 years before Microsoft had a tablet offering, the Surface.

In addition to the Metro interface, Windows 8 also supported touch screen technology and could be used

on a tablet in addition to desktop and laptop PCs. Released in 2012, Windows 8 received decidedly mixed reviews. Although reaction toward its performance improvements, security enhancements, and improved support for touchscreen devices was positive, the new user interface of the operating system was widely criticized for being potentially confusing and difficult to learn. Many users particularly disliked the fact that Microsoft had removed the start menu.

Market take-up of Windows 8 was slower than Microsoft had hoped. Sinofsky abruptly left Microsoft in December 2012. Recognizing that the Metro interface was not resonating with many users, Microsoft announced that it would release an update, Windows 8.1, in October 2013. Windows 8.1 tried to address some of the criticisms, and gave users the ability to dispense with the Metro interface and revert to the traditional start button and menu. Despite this, adoption continued to be slow. By mid-2014, only 12.5% of PCs were using Windows 8 or 8.1. Most consumers and corporations stuck with Windows 7.

The Cloud Computing Initiative

By the mid-2000s, serious conversations about cloud computing were taking place within Microsoft. The “cloud” referred to the idea that data, operating systems, and applications could be hosted on server farms comprising of thousands of machines, rather than on servers and PCs within an enterprise. These conversations were based on a realization that in a world where computing device users were always connected to the Internet through wired or wireless links, there were compelling economic reasons for moving computing power and programs off servers located within enterprises and onto server farms. Specifically, the cloud could deliver more value to users at a lower cost than traditional client-server networks.

On the value side, there was clearly great utility associated with storing files on the cloud and being able to access those files anywhere anytime through any connected device. The files could be in the form of documents, music, video, or databases. Moreover, by reaching out and accessing programs and data stored on the cloud, users with simple devices such as smartphones and tablets could theoretically access vast amounts of computing power when they needed it.

On the cost side, it was apparent that moving computing resources onto the cloud could save businesses

a lot of money. Corporate IT departments traditionally shouldered the costs of buying and maintaining computer hardware and software, activities that accounted for almost 90% of all IT costs. Servers, however, often only ran at 5 to 10% capacity, while much of the software installed on corporate servers and PCs was only rarely used. By moving data and applications onto a server farm, demand for computing resources could be aggregated and servers could be run at closer to 90% capacity. This implied significant economies of scale in the costs of computation. Microsoft's estimates suggested that, under optimal conditions, shifting to a cloud-based model could reduce IT costs by as much as 80%.²⁵ Moreover, instead of paying for software that was rarely used, corporations might be able to pay for software only when they used it.

Microsoft proposed to build a cloud-computing business that would host data and applications for corporations, taking the burden of infrastructure and maintenance costs off their hands. In return, corporations would pay a fee for storing data, and either a subscription or runtime fee for executing applications. As early as 2006, Steve Ballmer had stated that Microsoft had no choice but to go “all in” on the cloud.²⁶ By 2010, this commitment had developed into Microsoft's Azure cloud-computing initiative, which was located within the company's Server & Tools Division.

Cloud computing was seen as comprising of three segments; infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS). IaaS refers to basic hosting of data, websites, and the like. Amazon's AWS is primarily an IaaS offering. PaaS refers to the idea of building a software platform upon which software applications can be built and run. Microsoft's Azure platform is essentially a PaaS offering that uses Windows Server technology. Think of Azure as Windows for a server farm of 10,000 machines. SaaS is the idea that software applications can be hosted and run on the cloud. Salesforce.com was an early leader in SaaS with its customer relationship management (CRM) software.

By 2011, Microsoft was committed to competing in all three segments. The company would host data for enterprises and consumers (IaaS), it would continue to develop Azure so that enterprises could write applications that would run well on the cloud (PaaS), and it would reposition many of its products such as Office, SQL Server, and Dynamics, as software as a

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service (SaaS) offerings. In June 2011, Microsoft introduced Office 365 to enterprise users. Office 365 was a cloud version of its bestselling Office suite. In 2013, Office 365 was offered to consumers. Enterprises paid a licensing fee and consumers an annual subscription fee for Office 365. Users could download the program to multiple devices (for consumers the limit was five). They could also store Office documents on Microsoft's Cloud using its One Drive storage offering. Microsoft shifted to a rolling—release model for developing Office 365, updating the program on a quarterly basis—a marked departure from the historic 3- to 5-year development schedule at Microsoft.

One problem Microsoft had to grapple with in shifting toward a cloud-computing model was that it represented a change in the underlying economics of its business. In the traditional model, most of Microsoft's costs were associated with the fixed costs of developing programs such as Windows and Office. The marginal costs of producing more versions of a program were very low, so that at high volumes Microsoft earned gross margins in the 90% range on Windows and Office. In the cloud-computing model, however, Microsoft had to build and maintain server farms, which could cost anywhere from \$500 million to \$2 billion each in fixed costs, and which consumed large amounts of electricity. There was a general belief that even at high volumes, the gross margins associated with a cloud-computing business would be significantly lower than what Microsoft was accustomed to. As people within the company were fond of saying, "in the cloud business we actually have costs of goods sold."

On the other hand, while cloud computing was still a small business in 2013, generating perhaps less than \$10 billion in revenues industrywide, rapid growth was predicted going forward. Industry revenues were projected to balloon to \$150 billion by 2020. Clearly Microsoft had to embrace this business.

SATYA NADELLA TAKES CHARGE

By early 2013, Ballmer was coming under increasing pressure from Microsoft's board of directors. Despite robust revenue and earnings growth under his

leadership, Microsoft's stock price had stagnated. Microsoft had lost its technological leadership in the industry to Apple and Google. The company's problems with Vista and Windows 8, and its failures in the smartphone, tablet, and Internet search businesses, had led directors to question the direction of the company. Ballmer agreed that it was time for someone else to take the helm, and the board started to look for his successor.

Satya Nadella was picked to succeed Ballmer and took charge on February 4, 2014. Nadella was a native of Hyderabad, India. In 1988, he received an engineering degree from the Manipal Institute of Technology. He then travelled to the United States and earned a Masters in computer science from the University of Wisconsin. Later, while working full time at Microsoft, he earned an Executive MBA from the University of Chicago. Nadella had worked at Microsoft since 1992. He was senior VP of R&D for the Online Service Division from March 2007 until February 2011, when he was appointed president of the Server and Tools Division. This division grew at a healthy pace under his leadership. Moreover, the Azure cloud-computing initiative was based within this division. Nadella was credited for his adept leadership of the nascent cloud-computing business.

Nadella moved quickly to put his stamp on Microsoft. Emphasizing a break with the past, Microsoft, he said, was competing in a "mobile-first, cloud-first" world. In this world, said Nadella, Microsoft must empower people to get things done. By June 2014, he was talking about Microsoft being the premier "productivity and platform company for the mobile-first, cloud-first world."

In March 2014, Nadella announced that Microsoft would offer a version of Office 365 for the iPad. A version had been in the works for some time, but release had been delayed because of fears that it would boost demand for the iPad and hurt Microsoft's Surface tablet. Nadella asserted that in a world where Android and iOS are widely used, Microsoft had to make its applications run on those platforms too. By Fall 2014, Office for the iPad had over 30 million downloads. Also in March 2014, Nadella announced that Windows would be free for devices smaller than 9 inches, meaning smartphones and tablets. Clearly this was an attempt to jump-start adoption of Windows on digital devices, and to match Google's strategy of giving away Android for free.

In June 2014, Nadella sent a long letter to employees stating that the company would be taking “important steps to visibly change our culture.” He talked about the need to obsess over customers, to streamline engineering processes and reduce the time and energy it takes to get things done, to limit the number of people involved in making decisions, to drive greater accountability, and to flatten the organization. In making these statements, Nadella was implicitly acknowledging that Microsoft’s culture had been too bureaucratic and political, and that there had not been sufficient accountability. He also announced that, as part of its efforts to streamline the organization, Microsoft would lay off 18,000 employees, 12,500 of them in the newly acquired Nokia unit. These were the most significant layoffs in Microsoft’s history. Coming at a time when the company was still making very healthy profits, they sent a clear signal that Nadella believed company needed to become more efficient to compete effectively going forward.

In January 2015, Microsoft unveiled Windows 10, which would be available in late 2015 (Microsoft decided to skip the Windows 9 designation). Windows 10 represents a move away from the tile-based, Metro interface. The traditional start menu that was in Windows 7 is back. Windows 10 will run on all devices, from desktops and laptops to tablets and smartphones. Applications written to run on Windows 10 should run on any device, which promises to remove a major headache for app developers. Moreover, the ability to tap into the wider Windows ecosystem might create an incentive for developers to write more apps for Windows devices. In a bold departure from its prior strategy, Microsoft announced that Windows 10 would be free to any Windows 7 or 8 users that downloaded it for the first year after its release. Estimates suggest that this would result in \$500 million in lost revenue for the first year Windows 10 is on the market.

Also in January, Microsoft announced its earnings for the last quarter of 2014. Among the highlights on the consumer side of Microsoft’s business, sales of the Surface tablet were accelerating and hit \$1.1 billion during the quarter. Search and advertising revenues jumped 23% over the same quarter a year ago. Bing’s U.S. market share increased and was up 150 basis points to 19.7%. Office 365 consumer subscribers also jumped 30% over the prior quarter, to 9.2 million. On the enterprise side of the business, cloud revenue

grew by 114%, driven by strong enterprise adoption of Office 365, Azure, and Dynamics CRM online. Microsoft’s cloud business was now generating annualized revenues of \$5.5 billion and growing rapidly. On the other hand, sales of traditional Windows and Office products to consumers and businesses were either flat or down. Clearly, the shift to the cloud was rapidly gaining momentum, and Microsoft was starting to cannibalize its own businesses.

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