Microsoft Windows Azure: All Roads Lead to the Cloud

CPET 575 Management of Technology
Final Project Presentation by Andrew Repp
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Presentation Outline

- Case Study Questions
- History of Microsoft and Windows
- Business Units
- Products and Services
- Key Facts and Figures
- Revenue Breakdown
- Core Technologies
- SWOT Analysis
- Competitors
- Windows Azure
- Cloud Computing
- Business Models
- Cloud Market
- Conclusions
Questions to Answer

- Can Satya Nadella continue to focus Microsoft on the mobile-first, cloud-first strategy?
- Can Windows Azure compete against Amazon’s Web Services?
- Will Microsoft develop phones for a better integration into the Windows ecosystem?
- Will customers keep embracing Windows Azure?
- Will Microsoft be forced to spin off their other divisions?

Mission

“Our mission is to enable people and businesses throughout the world to realize their full potential by creating technology that transforms the way people work, play, and communicate. We develop and market software, services, and hardware devices that deliver new opportunities, greater convenience, and enhanced value to people’s lives.”

- Microsoft 2013 Annual Report
History of Microsoft and Windows

- Microsoft was founded in 1975 by Bill Gates and Paul Allen.
- Early successes were different variants of BASIC, which started with the Altair 8800.
- MS-DOS was written for IBM’s Personal Computer in 1981.
- Microsoft Mouse debuted on May 2, 1983.
- The first Windows was announced in 1983 and released in 1985.
- Microsoft went public in 1986.
- Windows 2.0 was released in 1987.
- Microsoft becomes the world’s largest PC software company based on sales in 1988.
- Microsoft Office was released in 1989.
- Windows 3.0 was released in 1990 followed by Windows 3.1 in 1992.

http://logos.wikia.com/wiki/Windows

History Continued

- Windows NT released in 1993 using a 32-bit operating system.
- With the launch of Windows 95 in 1995, Internet Explorer 1.0 was debuted.
- Windows 98 was released in 1998 and the last operating system to use MS-DOS.
- Microsoft Xbox was first released in 2001.
- Windows XP also launches in 2001.
- Windows Vista launched in 2006.
- Bing search engine launches in 2009 followed by Windows 7.
- Windows 8 and Windows RT launched in 2012. Windows 8.1 was released in 2013.

http://logos.wikia.com/wiki/Windows
Five Divisions within Microsoft

- Windows Division
- Business Division
- Online Services Division
- Entertainment and Devices Division
- Server and Tools Division

Products and Services of Microsoft

**Software**

- Operating systems for computers, servers, phones, and other devices
- Desktop and server applications and management tools
- Productivity applications and business solution applications
- Software development tools
- Video Games
- Online advertising and search
Products and Services of Microsoft

Hardware

- Surface RT and Surface Pro
- Xbox 360 and Xbox One gaming and entertainment consoles
  - Kinect
  - Accessories
- Mobile devices from the recent Nokia acquisition

Cloud Focused

- Microsoft Office 365
- Dynamics CRM Online
- Windows Azure
- Bing
- Skype
- Xbox LIVE
- Yammer
**Key Facts at Microsoft**

- Satya Nadella is the new CEO with 99,000 Employees
- Revenues increasing primarily from Server and Tools and new products and services, which offsets the declining Windows division

<table>
<thead>
<tr>
<th>Year End June 30 (in millions)</th>
<th>2013</th>
<th>2012</th>
<th>2011</th>
<th>2010</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>77,849</td>
<td>73,723</td>
<td>69,943</td>
<td>62,484</td>
<td>58,437</td>
</tr>
<tr>
<td>Operating Income</td>
<td>26,764</td>
<td>21,763</td>
<td>27,161</td>
<td>24,098</td>
<td>20,363</td>
</tr>
<tr>
<td>Net Income</td>
<td>21,863</td>
<td>16,978</td>
<td>23,150</td>
<td>18,760</td>
<td>14,569</td>
</tr>
<tr>
<td>Research &amp; Development</td>
<td>10,411</td>
<td>9,811</td>
<td>9,043</td>
<td>8,714</td>
<td>9,010</td>
</tr>
</tbody>
</table>

Microsoft's Annual Report 2013 [1]

**Revenue Breakdown**

Fastest Growing is Server and Tools (9.4% increase) Windows Division declining

Revenue ($77,849 million in 2013)

- Windows 24%
- Business 32%
- Server and Tools 27%
- Online Services 4%
- Entertainment and Devices 13%

Microsoft's Annual Report 2013 [1]
Core Technologies

- Microsoft is the world's largest software developer
- Software Applications and Operating Systems
  - Desktops
  - Servers
- Possibly phone and other mobile devices
- Windows Azure demonstrates the capabilities-based organizational learning framework of technology strategy [4].

SWOT Analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Strong Research and Development</td>
<td>• Large fines from anti-competitive behavior</td>
</tr>
<tr>
<td>• Numerous software applications and solutions</td>
<td>• Brand awareness for Azure since being late to market</td>
</tr>
<tr>
<td>• Strong financially</td>
<td>• Lack of Red Hat</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Nokia acquisition to produce devices</td>
<td>• Declining PC market</td>
</tr>
<tr>
<td>• Growing IaaS and PaaS cloud markets, which subsequently means a growing server market</td>
<td>• Government litigation and anti-competitive fines</td>
</tr>
<tr>
<td></td>
<td>• Intense competition from Amazon, Google, Rackspace, and others (Possible Price Wars)</td>
</tr>
</tbody>
</table>
Competitors

- Amazon, Google, and Rackspace stand as the main competitors for Windows Azure.

- All the three provide us the same building blocks (Storage, Queues, etc.) but all with a different APIs.

- Windows Azure does not have a native Email-as-a-Service, but partners with SendGrid to have this feature.

- Azure has a very mature PaaS offering and robust hybrid cloud solutions, these features differentiate Windows Azure from Google and Amazon.

Competitors (Continued)

- Amazon may be the king of cloud-competing heap.

- Microsoft with expanded offerings and a price cut (21 to 33%) that matches Amazon services, hopes its revamped Azure platform could entice some business away from the market leader.

- Expanded offerings: Includes offering service level agreements for guaranteed 99.95% uptime and 24/7 support. Also servers were increased to 56 GB of memory.

- These offerings from Azure had taken away Amazon’s low price advantage on the cloud computing front.
Microsoft’s Goal

- Eliminate cost from the equation to focus on who has the better service.

- “We want customers to be able to take [the price] for granted so we can talk about which is the best cloud platform for a particular workload,” Michael Newberry, who leads the Azure service for Microsoft UK.

Windows Azure Pack (Azure Technologies)

- The Windows Azure Pack is a collection of Windows Azure technologies available to Microsoft customers at no additional cost.

- Once installed, the Windows Azure Pack integrates with System Center and Windows Server to help provide a self-service portal for managing services such as websites, Virtual Machines, and Service Bus.

- Management portal for tenants & Administrators/Service management API/Web Sites/Virtual Machines/Service Bus/Automation and extensibility.
Virtual Machines

Windows Azure Virtual Machines provides on-demand, scalable computing resources.

- "Each virtual machine resides in a cloud service, either by itself, or grouped with other virtual machines. You can place virtual machines in the same cloud service to enable the virtual machines to communicate with each other, to load-balance network traffic among virtual machines, and to maintain high availability of the machines."

Virtual hard disks (.vhd files) are used to create a virtual machine. You can use the following types of virtual hard disks to create a virtual machine:

- **Image** – "An image is a template that you use to create a new virtual machine. An image does not have specific settings like a running virtual machine, such as the computer name and user account settings. If you use an image to create a virtual machine, an operating system disk is automatically created for the new virtual machine."

- **Disk** – "A disk is a VHD that you can boot and mount as a running version of an operating system. After an image is provisioned, it becomes a disk. A disk is always created when you use an image to create a virtual machine. Any VHD that is attached to virtualized hardware and that is running as part of a service is a disk."

Operating System

- **Windows Azure** uses a specialized operating system, called Windows Azure, to run its "fabric layer."

- A cluster hosted at Microsoft’s datacenter manages computing and storage resources of the computers and provisions the resources (or a subset of them) to applications running on top of Windows Azure.

- **Windows Azure** has been described as a "cloud layer" on top of a number of Windows Server systems, including Windows Server and a customized version of Hyper-V, known as the Windows Azure Hypervisor to provide virtualization of services.

- Scaling and reliability are controlled by the Windows Azure Fabric Controller that ensures that the services and environment do not crash if one of the servers crash within the Microsoft datacenter.
Types of Cloud Computing

- **Private**: “Private clouds are designed for the specific needs of an organization, and hosted and maintained on a private network. Most companies who use the private cloud deal with more regulations, require additional security measures for sensitive data, and want a more flexible and scalable platform.”

- **Public**: “A Public Cloud is one that’s based on the standard cloud computing model where services, applications and storage are made available to users over the Internet ‘as a service’ – typically on a Pay Per Use model.”

Types of Cloud Computing (Continued)

- **Hybrid**: is a mix of both Private Cloud and Public cloud. “In this case organizations host some of the applications on Public Cloud and these applications further internally use Applications hosted on Private Cloud to retrieve the data. This proved to be an optimized way of using cloud computing.”
Private Vs Public Cloud Vs Hybrid

- “From a technical perspective, higher scalability can result in using a private cloud versus a public cloud. Scalability is advantageous for any business when considering its adaptability to changing needs brought on by growth factors such as increased productivity, changing enterprise needs, and overall IT demands and influx.”

- “Hybrid computing is considered the most complex of the three computing types, especially in its implementation. Data migration and integration can be complicated and multifaceted.”

- However hybrid computing allows “programming and developer flexibility, and can be used to streamline IT functions without complicating them further. Hybrid clouds offer mix-and-match capabilities, exceptional scalability, and can perform complex tasks across cloud platforms.”

Business Models

- Two basic models depending on whether it is Partner or Customer who purchases the Windows Azure subscription

**ISV Model:**

- Partners own the Azure subscription as they offer to customers their solution (Web based app) as a SaaS.

- Customer is not aware of where the software is hosted. He pays a subscription fee for the service.

- Partner is responsible to ensure that the Azure infrastructure costs required to run the software and the variable costs derived from the user activity can be recovered from the subscription revenue he receives.
**Business Models (Continued)**

**SI Model:**

- Customer owns the Windows Azure subscription.
- This model can typically be found with System Integrators (SI) that help customers move their infrastructure to the Cloud.
- Apart from the consultancy fees for the execution of the project, there is an opportunity for partners to provide value-added services such as: backup and recovery services, reporting, monitoring, capacity planning, disaster recovery, IT outsourcing, and management for a recurring revenue.
- For partners that commit to this model, Microsoft offers a sales incentive, that is a percentage of Azure consumption that its customers generate during a specific time period.

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**Business Models (Continued)**

**ISV Model**

**SI Model**
Business Models (Continued)

- **Pay As you Go Model:**
  - VM's are charged by minute. Prices are listed as hourly rates and will be billed on total number of minutes when VMs run for a partial hour.
  - The Pay as You Go plan offers flexibility with no upfront costs and no long term commitment. The six and twelve month plans offer up to 29.8% savings.
  - Pre-pay 6 or 12 months, this plan offers an additional 2.5% savings.

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Purchase Plans (Pay as you go)

<table>
<thead>
<tr>
<th>Monthly Committed Spend</th>
<th>6 Month Monthly Pay</th>
<th>12 Month Monthly Pay</th>
<th>6 Month Pre-Pay</th>
<th>12 Month Pre-Pay</th>
</tr>
</thead>
<tbody>
<tr>
<td>$500 to $14,999</td>
<td>20%</td>
<td>22.5%</td>
<td>22.5%</td>
<td>25%</td>
</tr>
<tr>
<td>$15,000 to $39,999</td>
<td>23%</td>
<td>25.5%</td>
<td>25.5%</td>
<td>28%</td>
</tr>
<tr>
<td>$40,000 and above</td>
<td>27%</td>
<td>29.5%</td>
<td>29.5%</td>
<td>32%</td>
</tr>
</tbody>
</table>
Some notes on Pricing

- The commitment discount rate is applied against the Pay-As-You-Go rates for the portion of the usage up to the monthly commitment. Any usage exceeding the commitment will be billed at the Pay-As-You-Go rates.

- If paid monthly, the commitment equals to the current month’s commitment plus any rollover credits from prior months in the respective term.

- If pre-paid, the commitment in any given month equals to the remaining balance on the subscription.

Microsoft’s Revenue & Global Cloud market

- “More than 50 percent of the Fortune 500 businesses now use the Windows Azure public cloud with the enterprise base growing 25 percent in Microsoft's most recent quarter. That’s potentially good news as Azure attempts to gain ground against Amazon Web Services (AMZN) while also striving to fend off Google App Engine (GOOG).”

- “Windows Azure now one of the Microsoft’s billion-dollar businesses.”

- “Microsoft faces additional challenges like including the rapidly growing cloud expenses. In fact, CapEx expenses were $700 million higher than Microsoft had estimated to Wall Street.”

- Microsoft’s response to this was it “added 80 new Windows Azure services in the past quarter. Also, expenses grew as the Office 365 business grew from a $1 billion run rate in Q3 to a $1.5 billion run rate in Q4.”
Global Cloud Computing Market Forecast 2015-2020

“The global cloud computing market is expected to grow at an 30% CAGR reaching $270 billion in 2020, concludes the latest research report covering the cloud computing products, technologies and services for the global market. The report provides detailed year-by-year (2015 – 2020) forecasts for the following cloud computing market segments:

- IaaS (Infrastructure as a Service), PaaS (Platform as a Service) and SaaS (Software as a Service).
- Cloud transition and management services: by four segments.
- By geographic region (Americas, EMEA, Asia/Pacific Rim) and by top 12 countries (country-by-country);
- Fast growing/high priority technology segments: mobile cloud, HPC in the cloud and in-memory cloud.”
Microsoft’s Vision

- The Cloud OS is the Microsoft’s hybrid cloud solution comprised of Windows Server, Windows Azure, System Center, Windows Intune and SQL Server.

- “With shared planning, development, engineering and support across these technologies, Microsoft is bringing a comprehensive solution to support any business across a number of fronts - from infrastructure, to data, to applications and devices.”

Microsoft’s Vision

- “When it comes to mobility and devices, [Microsoft] empower people centric IT. [Their] solutions enable you to deliver a consistent and great user experience from anywhere, no matter the device, with a way to manage and protect it all.”

- At the application level, Microsoft enables modern business applications so that one can “quickly extend applications with new capabilities and deploy on multiple devices.”

- “In regards to data – it’s about big data, small data, all data. The Cloud OS will help unlock insights on any data, making it easier for everyone to access and perform analytics, with the tools they already use - like SharePoint and Excel - on any data, any size, from anywhere.”
Microsoft’s Vision

- “at the core of the Cloud OS powering mobility applications and data is your infrastructure. Our goal is to help you transform your datacenter, to enable you to go from managing each server individually to enabling a single well-managed elastic and scaleable environment to power all your application compute, networking and storage needs.”

- “We call this concept a datacenter without boundaries, where you get a consistent experience that takes you from the data center to the cloud and back if you wish, so that you have access to resources on-demand and the ability to move workloads around with maximum flexibility. This provides you with easy on, easy off with no cloud lock in.”

The Hybrid design is powerful for a number of reasons:

- Microsoft offers a “flexible development environment so developers can code once and deploy anywhere across Ruby, Java, PHP, Python or .Net” and “get complete workload mobility to move these application across clouds.”

- With System Center, we get a single, unified management solution to manage all the physical and virtual infrastructure resources, across clouds, in a single pane of glass.
“Common identity is a third element of consistent platform. With a federated Active Directory and multi-factor authentication, we get a common identity across clouds so the employees can enjoy a seamless, single-sign on experience.”

Lastly, being able to have a complete data platform where the data can reside anywhere across these three clouds is a value proposition that is huge as well. We can tap into any and all of that data whenever needed.

Conclusion

Microsoft has broken its own rules to push Windows Azure to the mainstream. Despite the challenges, Windows Azure is evolving into a complete and mature cloud platform for enterprises. Enterprise customers with heavy investments in Microsoft stack prefer Windows Azure to run their workloads. With the breadth and depth of the platform, it's inching closer to AWS.

Three factors will define the future of Windows Azure:

- A focus on plugging the gaps that exist within the platform
- Rapid innovation to bring additional features demanded by the customers
- On-boarding enterprise software vendors like RedHat.
References


