Microsoft®

An Analysis of the Applications Server
And
Web Services Markets

Microsoft®

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TABLE OF CONTENTS

Introduction

As the world's number one software provider, Microsoft Corporation is considered the key player in enterprise software. Traditionally focused on large corporations, they have further expanded through their recent acquisition of Great Plains Software and Navision in order to serve a broader spectrum. Microsoft continues to target small and mid-sized business market with accounting, customer management, database, e-commerce, and application server software products.

Currently, Microsoft faces their greatest competition within the enterprise server market in the areas of application servers and web services.[1] Web servers comprise the largest portion of the application servers market, which is presently dominated by the Linux powered Apache server. Web services are a relatively new and rapidly expanding market. The market has now begun to place a greater emphasis on open source protocols and web based applications[2]; this is well evidenced by Google Corporation's new online based office productivity suite.[3]

To maintain its competitive edge in enterprise software, Microsoft must evaluate their position in these markets and recognize potential competitors. It is crucial that they follow a strategy that embraces their existing strengths in the rapidly evolving application server and web services market. When formulating these strategies, Microsoft must not only evaluate their weaknesses but identify key areas where they have the opportunity to develop a competitive advantage. It is also essential that any strategy exploits synergies between the wide ranges of Microsoft products – a major strength over their competitors.

The Server Market

Background –
The server market is divided into different segments including email servers, application servers, data servers and web servers. Although Microsoft is a major player in every segment, this analysis will focus only on the web and data server markets. By performing a SWOT analysis, this study aims to formulate a strategy to promote Microsoft's market growth.

Although there are several vendors, Microsoft's greatest threat is posed by servers utilizing open source software. Hence, the various aspects of the threat posed by open source software will be considered, as well as possible routes by which Microsoft can respond to this new dynamic.

Product –
A web server acts to load web pages from a central location onto a host computer, using the client/server model (see below). Microsoft's web server, Microsoft Internet Information Server (IIS), runs on Windows server platforms such as Windows Server 2003. Their next generation server operating system, codenamed "Longhorn" will include several new features to improve on the security, reliability, and flexibility of IIS. Data servers operate on a similar principle, feeding client applications with data. Microsoft offers a database server called "MS SQL Server."

Your browser connects to a server and requests a page.

The server sends back the requested page.

Your machine running a Web browser

Server machine running a Web server

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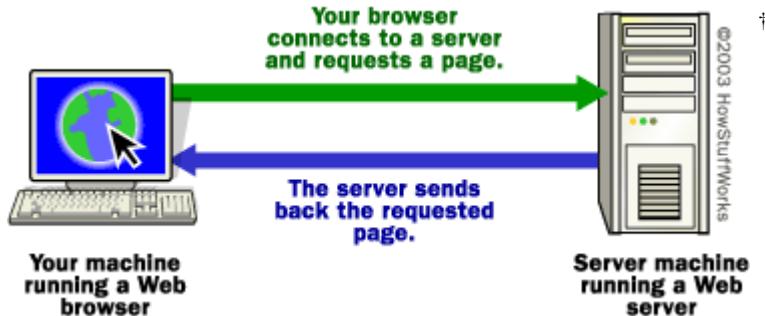
There is considerable product differentiation in the server market. The key elements of differentiation are performance, reliability, security and compatibility. Compatibility has assumed an even greater role due several new government regulations which have recently come into effect.

Although the cost of the server is crucial, corporations take several other factors into consideration when choosing a server. Thus, due to product differentiation price competition is less than that of a homogeneous market. Companies consider the cost to productivity ratio which takes into account down time as well as efficiency. Down time is a function of server reliability, in addition to the availability of technicians knowledgeable on the given operating system and any loaded software. Training costs for the new system are also a consideration. Thus, a corporation considers the total cost of ownership, and not the price tag alone.

Competitors –
Microsoft has several competitors in the web server market. They include the Apache HTTP Server, open source software from the Apache Software Foundation, Sun Java Systems web server from Sun Microsystems, and Zeus web server from Zeus Technology. [4]

However, in the data server markets Microsoft's greatest competition comes from open source powered servers. Many major software companies including IBM, Dell, Oracle and Intel have begun working with Linux vendors. Recently, mySQL, the world's most popular open source database has announced that they will offer enterprise grade software packages and support. IBM has partnerships with both Novell and Red Hat, two prominent Linux vendors. Hardware manufacturer alliances allow companies to collaborate on design specifications, thus improving product performance. This also allows for greater flexibility. IBM and Novell have already developed software which brings Linux's flexibility to a Windows based environment.[5] These alliances have given the Linux vendors ample resources for research and development, eroding Microsoft's competitive advantage in this area.

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† http://www.howstuffworks.com/web-server1.htm

Position –
Market Share for Web Servers across All Domains August 1995 - February 2007[†]
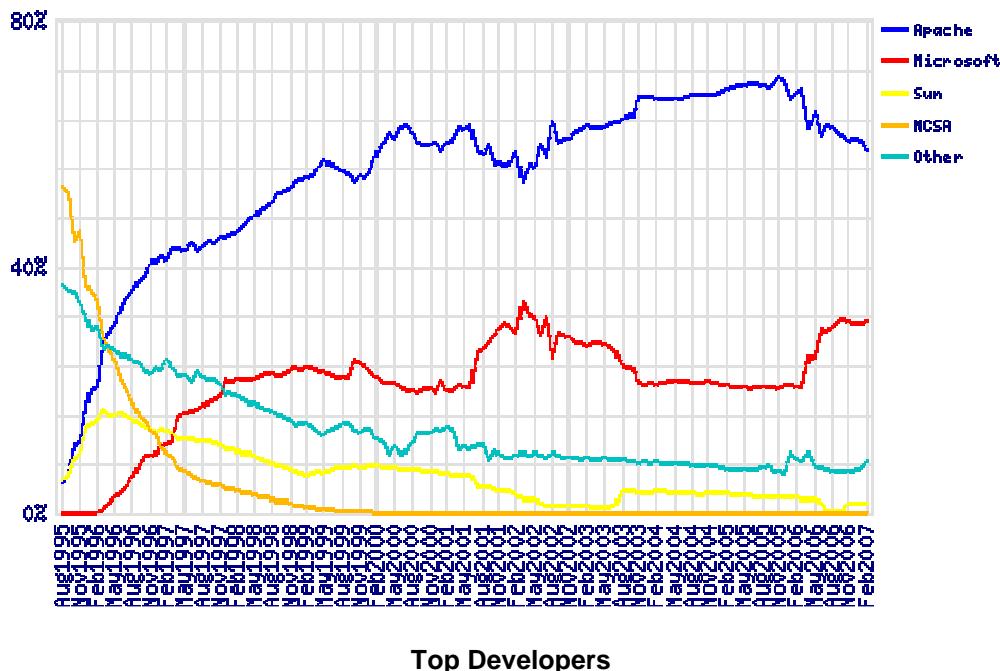
Top Developers

Developer	January 2007	Percent	February 2007	Percent	Change
Apache	64312083	60.17	63869543	58.70	-1.47
Microsoft	32898421	30.78	33833566	31.09	0.31
Sun	1749026	1.64	1845584	1.70	0.06
Zeus	551767	0.52	530596	0.49	-0.03

Apache currently controls the largest market share, followed by Microsoft and Sun. Microsoft's market share has increased; in 2006, the number of hostnames on Windows servers grew by 4.5 million, giving Microsoft 29.7% market share. Apache has lost market share, declining by 429,000 hosts, a 3.5% decrease. Sun has steadily lost market share since 2001 However in 2006, they experienced a reversal of fortunes as their revenue increased 15.4 percent to $5.4 billion.[6]

[†] "February 2007 Web Server Survey"
http://news.netcraft.com/archives/2007/02/02/february_2007_web_server_survey.html

SWOT Analysis –

	Strengths	Weaknesses
SWOT Strengths-Weaknesses-Opportunities-Threats	• Standardization • Integration with other Windows products • Extensive resources for continual research and development • Huge Cash Reserves • Large customer base • Excellent Customer support • Low training costs due to ease of use • Ready availability of skilled technicians to deal with server problems	• Higher total cost of ownership compared to rivals such as Linux • Lower performance in the higher-end server market • Finite human development resources compared to the open source community • Hackers target Windows to a greater extent than any other OS • Slow to respond to changes in marketplace
	Opportunities	**Threats**
	• Customers want greater interoperability between Linux and Windows environments • Possible synergy between Windows and Linux software as a result of agreement with Novell; could also result in a reduction of IP infringements by open source software • Future growth in industry is expected in terminal services/virtualization	• There are multiple software vendors using Linux software. Hence Microsoft is unable to use its usual strategy of buying/bankrupting competitors • Changing needs of business users have resulted in a large number conversions to Linux – especially in the health care market • Linux based virtualization technologies/terminal services • Companies providing full services using open source software (i.e. Redhat)

Strengths –

Microsoft's main advantage lies in the standardization of their platform.[7] This promotes compliance and uniformity enabling Microsoft to target large firms and governmental agencies that enforce strict network standardization policies. Linux software varies widely from vendor to vendor. There is no standard governing each distribution of a Linux OS. Furthermore, different hardware vendors frequently customize their system to meet the requirements of a given version of Linux. This makes standardization across a corporation very difficult – a major deterrent to the Linux OS.

Platform standardization also allows for integration between different Microsoft products such as Microsoft Business Solutions and Microsoft Enterprise Storage Products. This enables Microsoft to tie-in consumers by creating product synergies. Microsoft gains a competitive edge as other vendors with less extensive product lines and poor standardization cannot create such complements. This is especially key for small businesses who cannot afford customized enterprise solutions. Their relative ease of use is attractive to corporations too small to justify on-site IT.

Due to the tremendous amount of profit Microsoft has made over the years, they have significant cash reserves that allow Microsoft to continually improve their products. They focus mainly on the development of commercial-oriented technology.[8] As such, their small businesses servers perform especially well. Windows has historically held the edge over Linux in the lower-end server market, and their continual investment in research and development will insure that they maintain this edge.

As Windows servers are far easier to operate than Linux alternatives, they considerably reduce IT staffing costs. The relative ubiquity of technicians trained in the maintenance and repair of Windows serves helps to reduce down time, enhancing productivity. For small-scale business servers, staff training costs comprise a large proportion of the total costs of ownership. Hence, these cost savings are more significant at the small business level.

Though there is extensive debate on the relative security of Windows versus Linux systems, Windows newest offering Longhorn offers the highest level of security. Prior to the release of the Windows Vista operating system, Microsoft worked with the NSA to ensure that both the OS and the server met Department of Defense requirements. This is the first time that the NSA has worked on either an operating system or a server prior to its release. The security of a server is a major consideration when making investment decisions. Thus, the seal of approval from the NSA would enhance Microsoft's competitive position.[9]

Weaknesses –

Overall TCO by Environment †

Although Windows offers considerable savings in terms of staff training costs, many analysts feel that the total cost of ownership of a Linux server is up to 40% lower.[10] This is a significant deterrent to any company large enough to maintain on-site IT trained in the operation of Linux servers.

Furthermore, Windows Server 2003 has several security flaws commonly exploited by hackers. System administrators must patch Windows Server 2003 extensively before use. This adds to

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† Source: TCO for Application Servers: Comparing Linux with Windows and Solaris - Robert Frances Group

significantly to startup costs. This, in conjunction with other security concerns prompts many administrators to use the outdated Windows Server 2000 instead. Consequently, the interim period between the present and the release of Longhorn represents a low point for the Microsoft server market.

Open source software allows manufactures to customize the OS to their hardware design. This enables manufacturers to create a competitive advantage by offering hardware optimized preloaded operating systems. Proprietary software such as Windows does not offer this level of customization. Such customization is especially crucial to large scale enterprise servers or other application specific configurations. Thus, Linux dominates the high end server market. This leads to customer lock-in, as enterprise customers forced to use Linux servers have less incentive to incorporate Windows machines into their network.

Opportunities –
In 2006, Microsoft and Novell, one of the largest Linux vendors, joined hands to develop software solutions integrating Windows and Linux.[11] An initial survey also found that there was strong market approval of this move, signifying that increased interoperability between Microsoft and Novell products would help Microsoft maximize sales and growth in the application server market.[12]

Microsoft's new virtualization technology represents a major advance towards interoperability. Virtualization enables users to run software programs on remote machines. It also enables one computer to run multiple operating systems and applications simultaneously.[13] Virtualization is seen by many industry analysts as the most important technological advancement in the coming years. It will provide numerous advantages such as increased agility, reduced complexity and lower costs to the users. Window's new server Longhorn will take virtualization to the next level by allowing Linux guests to run on it. By embracing virtualization, Microsoft will enhance interoperability between Windows and Linux, reducing customer lock-in on the Linux side.

Threats –
The threat posed to Microsoft by Linux is especially severe as no single manufacturer produces the software. Open source software is utilized both by Linux vendors such as Red Hat and software giants such as IBM, Oracle, and Sun - each of whom use their own variation of the Linux package. Open source software is written independently by software engineers and is available to all. Hence, Microsoft is unable to pursue their usual strategy of either bankrupting or taking over their rivals.

Of the Linux vendors, Microsoft's greatest competition comes from Red Hat. Their product line includes: Red Hat Enterprise Linux OS, database, content, and collaboration management applications, in addition to software development tools, server, and embedded operating systems. They also provide consulting, custom software development, support, and training services. Through the acquisition of JBoss in 2006, Red Hat has made it very clear that their main focus is the Enterprise market.[14] Red Hat strives to bring professionalism to the Linux market. They will subsequently go head-to-head with Microsoft in this arena.

The software giant IBM also poses a significant threat to Microsoft. IBM has developed a middleware strategy similar to Microsoft's which embraces the rise of "service-oriented"

architecture. The servers they plan to produce will cater to smaller businesses and enterprises alike, offering flexible, adaptable server architectures. Microsoft has historically dominated the middleware arena, and IBM's entrance threatens their position. Of greater concern to Microsoft, IBM now offers open source versions of many of their middleware applications. Like Red Hat, IBM could offer the professionalism and technical support lacking in the open source community. Thus, Microsoft's main competitive edge over Linux software will slowly be eroded.[15]

Changes in the needs of business enterprises have also threatened Microsoft's position. Business management is now gravitating towards web services and web based applications for which Linux offers superior performance. This is evidenced by FedEx Freight and Union Pacific Railroad migrating their customer interface and traffic management systems to Linux servers.[16] Microsoft is also facing a threat from Linux in the health care market, one which it has traditionally dominated. Red Hat has recently teamed up with McKesson, a leader in the health care sector to provide a solution allowing McKesson's core applications to run on Linux systems. These developments reflect a changing landscape in the enterprise sever market and indicate that Microsoft has lost its competitive advantage. This is particularly worrisome, as the inertia against changing operating systems is high, and thus these losses are long term.

Web and Terminal Services

Background –
Terminal services refer to the set of protocols allowing a user to access applications or data stored on a remote computer. After being used extensively in the 1980's, its use waned significantly after the introduction of Windows 3.1 in 1992. However, terminal services are still widely used on Linux machines to access cluster accounts and server side software. Recently, there has been a resurgence of terminal service technology. Inexpensive licensing and cost savings associated with hardware make terminal services appealing to large and small companies alike. Wal-Mart has announced plans to convert its entire enterprise network to Novell's SuSE Linux Enterprise Servers.[17] They will then use terminal services for all other network computers in an effort to cut cost. Market analysts have hailed terminal services as the next step in computing.[18]

Largely similar to terminal services, web based services offer anytime/anywhere access to applications and data. Several companies, most notably Google, Oracle, Red Hat, and IBM have shown interest in this architecture. Some analysts believe that Web Services represent an evolution beyond terminal services. Microsoft has made preliminary moves in anticipation of this trend.[19]

Product –
Terminal services rely on a host of virtualization and remote access technologies. Microsoft presently offers Windows Terminal Service for various flavors of Windows Server 2000 and Windows Server 2003.[20] Windows Longhorn is slated to offer advanced virtualization and terminal access features. Virtualization allows the server to run multiple instances of a program, or even an operating system.

Web based services are broadly defined, and include office productivity software, database, VoIP, instant messaging, and e-mail. Currently, Microsoft has not entered the web based services market, though it is actively seeking a partner.[19] However, their host based applications compete with online equivalents.

Competitors –
Windows Terminal Services compete with various distributions of Linux in the terminal services market. Linux offers native support for terminal services across all distributions. Some vendors such as Red Hat offer software which further enhances performance and usability.

On February 21, 2006, Google announced their newest product "Google Apps Premium" – a service clearly designed to compete with Microsoft Office.[21] Google Apps premium offers features similar to Microsoft Office, in addition to remote document hosting and online collaboration without the need for uninterrupted access to the host computer. Oracle recently announced their plans to support Linux[22] in preparation for their web based single sign-on suite.[23] Such software would compete with Microsoft's line of enterprise, accounting and database management applications. Red Hat has signaled interest in the web services arena by joining the Interop Vendor Alliance.[24] They have already challenged Microsoft in the terminal services arena, and will likely aim to expand their terminal remote access capabilities.

Position –
Microsoft Terminal Services are currently outperformed by Linux alternatives. Various distributions of Linux control the majority of terminal services market share, and have demonstrated a recent increase.[25] Microsoft's virtualization technology, scheduled for release with Longhorn, is currently unanswered by Linux vendors.[26]

The growing popularity of open source and online alternatives to Microsoft's office productivity suite presents a major problem. Microsoft can no longer be certain of its continued monopoly over office productivity software.

SWOT Analysis –

SWOT Strengths-Weaknesses-Opportunities-Threats	Strengths	Weaknesses
	• Integration and product synergies • Business class tech support infrastructure • Standardization • Advanced virtual office capabilities • Developer purchasing power • Virtualization • Can leverage existing userbase and convince them to port to new versions of Microsoft Software • High brand recognition and customer loyalty	• Lack of clustering support • Substantial hardware requirements • Lack of strong web services ally • Difficult to customize terminal services for client's needs
	Opportunities	**Threats**
	• Web Services is a new field and Microsoft has not "missed the boat" and still has enough time to become a dominant player in the industry • Emulation and virtualization will prevent people from switching to Linux • Increase support for Linux terminals • Standardized server communication protocols	• Microsoft Office alternatives • Emulation technologies • Increasing cohesiveness of open source software • Other vendors offering consulting and tech support • Success of open source service based model

Strengths-

Microsoft continues to offer superior platform standardization and product synergies. For the same reasons discussed in the analysis of the web server market, product synergies represent a crucial aspect of Microsoft's competitive edge. Longhorn virtualization technologies pair with Windows Vista to offer enhanced terminal access functionality. Similarly, Microsoft Office products tie together under one coherent framework. Furthermore, as the Word format is an industry standard, Microsoft can set the pace for future feature set enhancements. Additionally, Microsoft's massive purchasing power enables them buy developers suitable for ventures into web services and other such markets.

Moreover, Microsoft has worked to greatly extend the online functionality of Office 2007. Using its online collaboration tools, Office 2007 creates a virtual office experience which many analysts consider superior to Google Apps.[27] This coupled with Microsoft's ability to provide quality enterprise support gives them a customer service and technological advantage over the freeware Google Apps and other products such as OpenOffice.

Weaknesses –

The power of Linux terminal services lies mainly in Linux's ability to form computer clusters. Such clusters decrease the demand on servers while increasing performance. Windows Terminal Services lack this functionality, and Windows servers are unable to support the network protocols. As such, large scale terminal access schemes are only feasible with Linux. This eliminates the large scale enterprise market. Furthermore, the proprietary nature of Windows

software makes it unsuitable for custom terminal schemes. This is a strong deterrent to enterprise customers who require custom functionality.

Presently, Microsoft lacks a strong web service ally. This significantly hampers their ability to respond to threats posed by Google, Red Hat, and IBM.

Opportunities –
As web services are in their infancy, Microsoft still has time to establish itself as a dominant player. Microsoft must work to realize this opportunity before its lack of web services begins to impact the sales of their client based goods. As an early entrant, Microsoft also has the power to help set standards and protocols for web services.

Microsoft's continued development of emulation software for use with Linux is crucial. Their current product, offered as a joint venture with Novell, allows users to run software intended for SuSE Linux on Windows Longhorn.[28] This greatly reduces inertia against changing server platforms, as existing software can transfer seamlessly. Thus, Microsoft makes the Windows Server line an even more attractive substitute for Linux. The same is true of Microsoft's attempts to enhance interoperability between windows and Linux.

Threats –
Microsoft stands to loose a non-negligible market share to online office productivity suites such as Google Apps Premium. Open source alternatives including OpenOffice are also troublesome, as they promote a migration away from Microsoft products all together. A few major firms are already investigating Microsoft Office substitutes.[29]

In the same manner that Microsoft's emulation technology poses a threat to Linux vendors, the converse is also true. Third party vendors have created emulators capable of running Windows software on Linux machines. If these emulators were improved upon and packaged with a major vendor such as Red Hat, Microsoft could loose substantial market share.

Furthermore, as IBM and Red Hat transition to a service based market, Microsoft looses its competitive edge as a leader in enterprise quality support. Both vendors use highly adaptable and easily customized open source distributions of Linux. Microsoft stands to loose portions of the enterprise market seeking greater flexibility and customization from their software vendor.

Strategy

1. **Focus on the small business server market**
   Linux servers have better performance at the higher end when supervised by an administrator. Only large organizations are able to afford this expense. Thus Microsoft should focus on small and medium sized businesses where they have a larger market share. These businesses cannot financially justify an in house systems administrator and hence would invest in a turnkey server solution.

   Microsoft must aim to enhance their reputation for turnkey server solutions through an aggressive marketing and advertising campaign. They should carry out training programs for small businesses to make server technology accessible to non-technical professionals.

Microsoft should also collaborate with hardware vendors to offer affordable low to mid range servers optimized for Windows platforms.

2. **Increase support for terminal and web based services**
By extending their terminal service protocol, Microsoft can position itself as a front runner in the standards race for Web 2.0. This second generation internet relies heavily on technologies such as AJAX and server side script execution – a natural extension of terminal services.

Furthermore, terminal services offers a means of attracting historically Linux dominated networks, such as the Point of Sales market. Terminal services also represent a natural evolution of computing due to the decreased hardware demand on work stations. As such, Microsoft can pursue a value strategy; thus, smaller businesses previously unable to justify the expenditure on workstation licenses for Microsoft products would have a viable alternative.

3. **Increase integration with Linux platforms**
The inclusion of protocols in Windows Longhorn allowing Linux clients to access windows servers is a first step towards creating interoperability. However, Microsoft needs to further these efforts by continuing to form alliances with Linux vendors such as their November 2006 partnership with Novell.

Microsoft's competitive advantage over Linux is largely attributed to their ability to provide technical support to their customers in addition to its greater usability. Open source solutions have historically required great technical expertise to implement and lacked this support once installed. However, with the growth of competitors such as Red Hat who offer premium Linux bundles, this is no longer the case. Such distributions are closing the gap between Windows and Linux in terms of ease of installation and initial setup. As more products aimed to simplify the administration of Linux networks enter the market, Microsoft is poised to lose their edge in this arena. Thus, they should increase support for existing Linux networks while incorporating portions of Linux's feature set. This would prevent a blindsiding, as well as neutralizing Linux's competitive advantage in any other area.

4. **Increase access to source code**
The rapid updatability of Linux platforms offers a major competitive advantage over Microsoft. The open source community can often correct bugs and security exploits faster than Microsoft. Furthermore, on the high end, customized Linux application servers outperform Microsoft servers due to the ability to modify source code. Administrators can tune their server to meet their individual needs, making Linux servers more cost effective for specialized networks. By increasing access to source code, and by strengthening ties with the developer community, Microsoft can achieve similar benefits. Microsoft's current drive to increase support for API's represents a positive step. Furthermore, Microsoft can cut cost by utilizing the developers' community for the debugging portion of the development cycle.

5. **Develop terminal and web based licensing for Microsoft productivity products**
Office productivity software represents the largest share of the software market. However, many small businesses cannot justify the expense of loading Microsoft productivity software on all of their employee's systems. Others resort to substitutes, such as Word Pad, Open

Office, and Google Office. As such, several employees may be limited to accessing a program such as Microsoft Word from one computer. Terminal access provides a cost effective alternative. Several employees can access the server at once, and licensing can be handled based on the maximum number of simultaneous clients allowed. Terminal access is already used extensively in the high end software market. This also decreases cost by reducing the hardware requirements on individual workstations.

Microsoft must also address the threat posed by web based office productivity software such as Google Office. Such software offers inexpensive licensing, access anywhere, and online collaboration. Office 2007's collaboration tools require the host computer to have constant access to the internet, whereas Google stores documents remotely for access anytime. By enhancing Vista with the ability to host Office 2007 collaboration, Microsoft could create a valuable product synergy.

Furthermore, Microsoft should invest in datacenters to pave the way for web services. These datacenters could also provide subscription based hosting for Office 2007 documents as an answer to Google Office.

6. **Prepare for transition to a services based market**
   With the trend towards open source software, Microsoft must reposition itself in the market to remain competitive. Two of its major competitors, IBM and Red Hat, have already adopted service based business models. This is the best option for Microsoft as well. By selling support, consulting and the like as opposed to proprietary software, Microsoft can remain profitable in a market that values services over physical code. Furthermore, such a stance decreases Microsoft's need to pursue costly anti-piracy measures and patent infringement suits.

Concluding Remarks

Within the enterprise market, application servers, terminal services, and web based services are of great strategic importance. The enterprise market comprises Microsoft's greatest price sector, and as such they must pay special attention to these three factors.

The increasing viability of Linux and other open source solutions mandates a response from Microsoft. Presently, Microsoft application servers are competitive in the small to medium business market. To maintain their competitive advantage in this niche, Microsoft must increase interoperability with Linux while standardizing the market. Increasing developer access to source code is the first major step they must take.

As the terminal services and web service market evolves, Microsoft must use their competitive advantages to maintain their edge on the market. It is key that they further develop Microsoft Terminal Services while forming partnerships with knowledgeable web application developers. Once again, integration with Linux and the increased utilization of the developer's community is crucial.

The threat posed to Microsoft productivity products by Google Office will not dissipate. Developers will continue to offer web based alternatives to Microsoft products – frequently at a lower price point with superior feature sets. To remain competitive, Microsoft should emphasize the services side of their business. By developing a reputation for world class enterprise tech support, Microsoft can prepare itself for the onslaught of low cost web based and open source applications.

Appendix A:

Summary –
- The paper focuses on the areas of applications servers and web service in the Enterprise Market.
- Microsoft should target the small and mid-sized businesses where they have a competitive advantage.
- In the applications server market Linux-based servers represent their largest threat whereas in the web services market, Google Corporation has emerged as their strongest competitor.

Goal –
- To assess Microsoft's relative market positions in the applications server and web services markets and recognize their main sources of competition.
- To identify where their competitive advantages lie.
- To be aware of areas in which their rivals outperform them and thus recognize potential threats to their market position.
- To identify emerging market trends and consider Microsoft's different options as the market grows.
- To formulate a strategy that exploits synergies between the wide ranges of Microsoft products and maximizes their existing strengths.

The Server Market –
- Product –
  Application servers such as web servers and database servers.
- Price Competition –
  Organizations consider total cost of ownership and reliability rather than just the price tag alone. Price competition is also limited due to extensive product differentiation.
- Competitors –
  In web server market their strongest competitor is the Apache web server powered by Linux.
  Other competitors include Sun Java Systems web server and Zeus web server,
  In data server market Oracle and mySQL are their main rivals.
- Strengths –
  - Standardization
  - Integration with other Windows products
  - Extensive resources for continual research and development
  - Huge cash reserves
  - Large customer base
  - Excellent customer support
  - Low training costs due to ease of use
  - Ready availability of skilled technicians to deal with server problems
- Weaknesses –
  - Higher total cost of ownership compared to rivals such as Linux.
  - Lower performance in the higher-end server market
  - Finite human development resources compared to the open source community
  - Hackers target Windows to a greater extent than any other OS
  - Slower to respond to changes in the marketplace
- Opportunities –

- o Customers want greater interoperability between Linux and Windows environments
- o Possible synergy between Windows and Linux software as a result of agreement with Novell; could also result in a reduction of IP infringements by open source software
- o Future growth in industry is expected in terminal services/virtualization
- Terminal services/virtualization Threats –
    - o There are multiple software vendors using Linux software. Hence Microsoft is unable to use its usual strategy of buying/bankrupting competitors.
    - o Changing needs of business users have resulted in a large number conversions to Linux – especially in the health care market.
    - o Linux based virtualization technologies/terminal services
    - o Companies providing full services using open source software (i.e. Redhat)

The Web Services Market –
- Product – Terminal service hosts and web based applications
- Competitors – For terminal services, Windows Terminal Service and Linux terminal services. For web services, Google, Red Hat, Oracle
- Strengths –
    - o Integration and product synergies
    - o Business class tech support infrastructure
    - o Standardization
    - o Advanced virtual office capabilities
    - o Developer purchasing power
    - o Virtualization
    - o Can leaverage existing userbase and convince them to port to new versions of Microsoft Software
    - o High brand recognition and customer loyalty
- Weaknesses –
    - o Lack of clustering support
    - o Substantial hardware requirements
    - o Lack of strong web services ally
    - o Difficult to customize terminal services for client's needs
- Opportunities -
    - o Web Services is a new field and Microsoft has not "missed the boat" and still has enough time to become a dominant player in the industry
    - o Emulation and virtualization will prevent people from switching to Linux
    - o Increase support for Linux terminals
    - o Standardized server communication protocols
- Threats –
    - o Microsoft Office alternatives
    - o Emulation technologies
    - o Increasing cohesiveness of open source software
    - o Other vendors offering consulting and tech support
    - o Success of open source service based model

Strategies –
- Focus on the small business server market
- Increase support for terminal and web based services
- Increase integration with Linux platforms
- Develop terminal and web based licensing for Microsoft productivity products
- Increase access to source code
- Prepare for transition to service based market

Appendix B:

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