A literature review on evaluations performed on Windows Vista

Richard Awusi

Department of Computer Science,
Rhodes University

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Supervisor: John Ebden
Consultants: Billy Morgan and Jill Japp

Abstract

Windows Vista was officially released to the world on the 30th of January 2007, to some anticipation by the computing world. There was a lot of talk of the innovative features that were present in the new operating system, improved file systems, user interface, etc. My project aims to investigate what Windows Vista has to offer, whether it features all the elements proposed by Microsoft. My project concludes that Vista is more stable than its predecessor, XP, and that it makes for a better operating system as a whole.

Introduction

Many were expecting Vista's launch in January to cause a great stare in the demand for the new operating, but according to one author, that was not the case [Frik Els, 2007]. According to the author, although there have been 62.7 million shipments of PCs around the world, which is an increase of 8.9% over last year; this has nothing to do with the release of the new operating system. Likewise, a survey conducted in April had a third of the people saying they do not plan on migrating to the new operating system. According to Els, Dell has now reverted to deploying new PCs with Windows XP preloaded instead of Vista. Upon visiting the Dell website, it turns out Dell now deploys their new PCs, giving the customer the option of whether they wish to purchase the machine with XP or Vista.

Microsoft Vista Versions

Windows Vista comes in a range of versions. Each version of Vista is supposed to be suited for a particular kind of user, with one main version, Vista Ultimate, having the combined power of the other versions, and then some. Microsoft has a webpage solely dedicated to the new operating system, [Microsoft 1], in which it lists the major differences between the different versions as well as who each version is meant to target.

Home Basic

This version contains the least number of features and is aimed at users who have basic computing needs, such as emailing, browsing the internet and photo viewing. Home Basic has merely the base enhancements, such as improved security, stability and performance. However, this edition lacks, what an article describes as; "Tools that make using a computer fun and entertaining…" [My Digital Life, 2007] tools such as Windows Media Centre and Windows Aero.

Home Premium

Home premium is a step up from Home Basic. This version of Vista features some more advanced features, such as the new aero interface and Parental Access Control (PAC), making it ideal for the home user as well as for the mobile computer. Being a step up from Home Basic, and being cheaper than the other "higher order" versions, Home Premium has apparently proven to be the most popular [Gregg Keizer, 2007].

Business Edition

The Business Edition of Vista is aimed primarily at small businesses that want to make their computing needs easier. Business comes with built in features that make it easier to connect to the business network and share files. Business does not include the entertainment features, such as Windows Media Center, as contained in some of the other editions.

Ultimate

As the name states, this is the ultimate version of Vista that has the combined features of all other versions. Together with these features, Ultimate comes with Windows Ultimate Extras, which are a set of add-ons, language packs, etc, that the user can add to the operating system to make it more ravishing.

Vista Enterprise

This version of Vista builds on the Business edition, with improved networking capabilities, advanced hardware-based encryption technology and allowing for the deployment from a single disk image. This version is only available to volume license customers.

In Summary, here is a table from Microsoft detailing the differences in the various versions:

Features	Home Basic	Home Premium	Business	Ultimate
Most secure Windows ever: Windows Defender and Windows Firewall	check	check	check	check
Quickly find what you need: Instant Search and IE7	check	check	check	check
Elegant Windows Aero desktop experience		check	check	check
Best choice for laptops: Windows Mobility and Tablet PC		check	check	check
Collaborate and share documents: Windows Meeting Space		check	check	check

Experience photos and entertainment: Windows Media Center		check		check
Enjoy Windows Media Center		check		check
Protect against hardware failure: Windows Complete PC backup and restore			check	check
Windows Fax and Scan			check	check
Use Scheduled Backup		check	check	check
Easier remote access for your business: Remote Desktop			check	check
Easier networking connectivity: Network and Sharing Center	check	check	check	check
Better protect your data: Windows BitLocker Drive Encryption				check
Easily make DVDs: Windows DVD Maker		check		check
Have more fun on your PC: Games		check		check
Create high definition movies: Windows Movie Maker in High Definition		check		check

Figure 1 Vista version differences [Microsoft 2]

CNet presents a table of their own listing new features that they found in the various versions of Vista [CNet, 2007]. The features mentioned in their table lists those in the above table and then some.

An author mentions what he believes to be the five best features of Vista, ReadyBoost (memory on external devices), Integrated Search, Media Center, Windows Photo Gallery and Setup, though not a feature, according to the author, it is nice and fast enough to be considered as one [Paul Thurott, 2006].

In a separate article on Channel Web Network, the top five features of Vista are its security, hardware support, usability, performance and bundled applications such as Windows Sidebar and Photo Gallery [Frank J. Ohlhorst, 2006].

It appears the various features of Vista appeal differently to different users. Thus, what might be the top five features of Vista is completely subjective.

Installation

Microsoft decided against shipping each version of Vista on its own DVD, as a result, they settled on shipping all versions of Vista on a single DVD (Eric Bangeman, 2006). By shipping all versions on a single DVD, This was Microsoft's way of ensuring that customers are easily able to upgrade from one version, e.g. Home Basic, to a higher grade version, e.g. Home Premium or Ultimate.

The actual installation of Vista has changed from its predecessor, Windows XP. Each Vista DVD contains a single image, known as the Windows Imaging file, or WIM file [Danielle and Nelson Ruest, May 2007]. This WIM file is in a format that allows for the WIM file to be copied to a computer on which installation is to take place, the file then expands and performs the installation. On a blogs site of PC Magazine, one user describes the WIM file as, "…what users' DVDs will contain is the install Windows Imaging (.WIM) file, which is basically our operating system folders wrapped up into one image file." [PC Magazine, 2007]. Upon expansion, WIM detects the system hardware and configuration then takes place. This is different from XP where individual files are copied on the fly during installation. This new single file system allows for multiple versions of Vista to be in a single image, and then have the product key determine which version to install [Danielle and Nelson Reust, 2007].

CNet claims a clean install of Vista took between 20 minutes to an hour, depending on the hardware which a particular machine was running [CNet, 2007]. CNet also points out the automation of the Vista install process. Most of the installation is automatic. The user is asked for the product key, a few other details, and then Vista takes over. After copying the WIM file to the hard disk, Vista reboots about half-way into the installation, and then continues with the installation. Also, the entire installation is now graphic, which is much more appealing.

During installation, according to CNet, Vista will load drivers that are built into the install image but it will also download additional drivers from Microsoft, given that there is an always-connected internet connection.

The Vista Interface

Microsoft has codenamed its new user interface Aero, which is a glass-like appearance of the windows. However, Aero does not come without a price as pointed out by Microsoft [Microsoft 3].

First of all, Aero only comes with the Home Premium, Enterprise, Business and Ultimate editions, which are more expensive than Home Basic. However, since all editions of Vista are shipped on a single DVD, it is possible to upgrade after having purchased a Home Basic edition.

Secondly, Microsoft recommends the use of a graphics card that is capable of supporting the aero interface effects. Their recommendation is a DirectX 9 compatible graphics card with at least 128 MB of onboard RAM, [Microsoft 4].

In an article the author describes the aero interface as "unobtrusive" [Thom Helweda, 2007]. Aero is not always active, even when it is enabled. When the system is under strain, or a tasking program is running, Vista automatically disables aero so that system performance is improved. I noticed this when running programs that had video output of some sort, e.g. VLC media player. One author says, "The new Windows Aero theme is strikingly attractive and adds significantly to Vista's overall user experience." [Jem Matzan, 2007].

Coupled with aero is Windows Flip, Windows Flip 3D and taskbar thumbnail. Windows Flip is the usual Alt-Tab that is available in Windows XP, but with a bit more information. As opposed to XP that only shows an icon and the program name, Windows Flip displays a full thumbnail of the running program [Microsoft 3]. This shows all the contents of the window, together with the program name. Taskbar thumbnails are similar to Windows Flip, except this time, resting the mouse on an open program on the taskbar shows the contents of the running programs window. Finally, there's Windows Flip 3D which is, as described by Microsoft [Microsoft 3], "a three-dimensional stack on your desktop". The windows are arranged, stacked behind one another, and are scrolled forward as they are tabbed through. The beauty of these new display features is that they are displayed in real-time [Microsoft 3]. That is, as the contents of the window changes, so do the images on the thumbnails, Windows Flip or Windows Flip 3D.

Thom Helweda however, does not agree with the new explorer interface, which should not be confused with aero. As far as he is concerned, there are a plethora of buttons everywhere on the new explorer which take time to figure out. His given example is the new sidebar on each folder window, which changes constantly between being a tree-view and a favourites menu. His argument, "…give a drop-down menu or tabs…so that you (the user) can select which of the two you want…"

Vista performance

One of the first things that Vista does after installation is rate the system it has just been installed on based on the hardware configuration of the system. Microsoft calls this the Windows Experience Index (WEI) [Microsoft 5]. According to Microsoft, WEI assigns a computer a "*base score* that is achieved by measuring the capability of your computer's hardware configuration" [Microsoft 5]. This base score is a value that ranges from 1.0 to 5.9. The higher the base score, the better a computer will (should) perform.

An article by Abazovic of The Inquirer [Faud Abazovic, 2007] does not think WEI is a good tool for assessing the capability of a machine. According to Abazovic, his computers base score, the score determined by WEI, dropped after upgrading his system memory, an upgrade which had led to an improvement in the performance of Vista. As far as Abazovic is concerned, WEI is not a good tool for assessing computers' capabilities and urges users to avoid it.

Another author also complains about the Vista assessment tool. In an article, he goes on to say, "To be honest, I can't see the score that the Windows Experience Index generates being good for anything…" [Adrian Kingsley-Hughes, 2007].

Vista comes with a couple of new features that are supposed to improve the overall performance of the operating system. Some of the new features introduced to Vista are SuperFetch, ReadyBoost and ShadowCopy.

SuperFetch, according to Microsoft is a new feature which lets Vista preload frequently used programs into system memory, making it faster for the operating system to open those programs [Microsoft 5]. An article by Paul Thurott describes SuperFetch as an intelligent memory caching system in Vista that will improve user experience on Windows Vista [Paul Thurott, 2007 (2)].

ReadyBoost is allows users to use external devices, such as a USB flash drive, for memory. According to Microsoft [Microsoft 6], Vista relies on the memory management of SuperFetch which allows a user to assign portions of their flash drives for use as memory.

ShadowCopy is a feature that basically backs up files as a user works on them [Microsoft 7]. When a file is modified, ShadowCopy backs up the file and makes the backup available for the purposes of rolling-back to a previous version. A simple right-click on a file or folder gives the option to "Restore previous version", which brings up a window of previously backed-up copy of the file.

Jem Matzan of says Vista is considerably slower when running programs that run fast on Vista's predecessor XP [Jem Matzan, 2007]. According to Matzan, Vista is "sluggish". What was

pointed out was a host of applications and games that would perform fine on Windows XP. Games such as Unreal Tournament 2004 and World of Warcraft had to have their playing resolutions turned down when running on Vista before a decent game play could he had. Microsoft's new Office suite, Office 2007, comes with its own "bloated slowness" according Matzan. Programs such as Outlook would take 10-15 seconds to open if one had other applications running, such as any of the above mentioned games.

Another performance tweak to Vista is the new system defragmenter. According to Paul Thurott, there are two major improvements to the defragmenter that he likes; these are the new user interface and the automatic scheduling. According to Thurott, automatic defragmentation is "…an absolutely essential feature in a modern operating system" [Paul Thurott, 2007].

Vista Compatibility Issues

There has been fear that many applications will not be compatible with Vista. As a result, Microsoft released an applications compatibility update which addresses compatibility issues in Vista [Microsoft Help and Support 1, 2007]. In the article about the compatibility update, Vista lists numerous programs, games and firmware that are now supported by Vista. In the same article, Microsoft mentions issues that may arise after the installation of the compatibility update, issues such as CD or DVD devices not working. A link is provided in the article to a possible solution to the problem. According to the article, this problem arises due to a legacy application installing drivers that are incompatible with Vista.

Another compatibility update was released by Microsoft in April listing programs that are still incompatible with Vista [Microsoft Help and Support 2, 2007].

Security

Microsoft ships Vista with the slogan "The most secure version of Windows ever", this is according to an article on The Register [Thomas C Greene, 2007]. Microsoft has made quite a big buzz about the security implemented into Vista; in fact, it forms the selling point of the new operating system together with the new user interface, aero. According to Greene, one of the major disasters that Microsoft made with regard to their web browser internet explorer was integrating it so deeply with their operating systems. This has been changed with the release of internet explorer 7 (IE7) which ships with all versions of Vista. IE7 is not as tightly integrated with Vista as it is in Windows XP. IE7 now runs as a

"low-integrity" process which means it can only write to other low-integrity locations, locations that cannot do damage to the system as a whole. This limits exploiting IE in terms of malware, etc. Greene however goes on to point out that IE still writes registry keys to locations that Microsoft had apparently claimed it shouldn't.

Another new feature to Windows Vista is the User Account (Access) Control (UAC) which, according to Microsoft [Microsoft TechNet, 2007], is supposed to "…reduce the exposure and attack surface of the operating system by requiring that all users run in standard user mode." UAC is a way of ensuring that users aren't always running in administrator mode, which should help in limiting attacks on the operating system. Greene speaks well of the idea behind UAC but finds it an irritation when a user, who is already running in administrator mode, being constantly prompted for credentials.

As great a change UAC introduces to the Windows operating systems, it is still not perfect according Neil McAlister of PC Advisor [Neil McAlister, 2007]. According to McAlister, UAC still allows installers to run with full privilege, which is potentially dangerous. He also mentions that certain executables that ship with Vista can be used to exploit UAC.

Paul Thurott [Paul Thurott, 2007] urges users to tolerate the UAC constant prompts for credentials. Although it might be an irritation to most people at first, he says once the system has been configured and all programs installed, it becomes less of a nuisance. He believes UAC is an essential part of Vista's "secure by design".

The idea behind UAC is good, and both Greene and McAlister agree that it is a step in the right direction, but they also believe it could have been handled better by Microsoft. Thurott on the other hand seems to think UAC is a good idea and that users should not even think about disabling it.

Vista and the Office suites

A review on PC Magazine [PC Magazine, 2007] says the new user interface of office gives beginners the same advantage as experts using office. They also go on to talk about its new improved graphics, security and smoother collaboration.

On visiting numerous forums, it appears many users were worried about whether or not Vista could run Office 2003. According to one author, Vista runs Office 2003 just fine [David Overton, 2007].

Vista and Windows Longhorn Server

"…the only way to take full advantage of all of Vista's new features is to use Vista in conjunction with Longhorn Server" according to one article [Brien M. Posey, 2007]. Posey argues that Vista and Longhorn will function really well together, giving various reasons to support his case. He mentions the similarities in the architectures of Vista and Longhorn. As far as Posey is concerned, Vista and Longhorn are essentially the same operating system, attributing this to similarities between previous Servers and operating systems released by Microsoft at round about the same times. He gives examples such as Windows 2000 Professional and Windows Server 2000.

A second author agrees with Posey regarding similarities between Vista and Longhorn [Jonathan Hassell, 2006]. Hassell mentions that Vista and Longhorn shares 70 percent of their base code and describes the two operating systems as "brother and sister". Hassell mentions that when Vista is paired with Longhorn, caching of files locally on a client machine running Vista is done automatically in the background. Through delta transmissions, Hassell mentions that only changed data is transmitted between the client and the server and thus limiting network traffic.

Vista and Windows Server 2003

An article on Softpedia has the author complaining about problems when Windows Server 2003 tools are deployed on a Vista based system [Marius Oiaga, 2007]. According the author, most of these problems are related to the User Account Control (UAC) of Vista. However, according to Oiaga, Microsoft has addressed the issue with the release of an Admin pack, coupled with it, a knowledge base article which details solutions to the problem.

Vista Networking

According one author, Vista makes use of IPv6 by default for its networking activities [Brien M. Posey, 2007]. According to Posey, there are some operating system features that do function if IPv6 is not being used. As a result, Vista uses IPv6 as its protocol of choice. Posey goes on to mention some performance tweaks regarding Vista and server connections, particularly Longhorn. According to Posey, Vista caches files from servers as they are being worked on. This means, if the server was to go down whilst work was being done; the files would still be available locally to the user. Changes made to the cached data are then automatically applied to the data on the server.

A second author also speaks of the caching of files on Vista during file server activities [Jonathan Hassell, 2006]. Hassell mentions that file caching is nothing new, in fact, it is present in Windows XP, Server 2000 and Server 2003. What is different in Vista, according to Hassell, is the fact that caching of files is now automatic, something that was not present in previous operating systems.

Conclusion

Windows Vista hosts numerous new features that seem to appeal to most users. Although Windows XP has been around for a while and many users have become accustomed to it, there appears to be no great difficulty making the transition to Vista. Vista seems more stable, more reliable and has much better networking capability than its predecessor, XP [Jonathan Hassell, 2006].

Difficulties Encountered

Vista and Office	Difficulties were encountered in finding articles in which users had actually loaded any of the office suites onto Vista and evaluated them. Articles were found regarding differences between Office 2003 and Office 2007, but non that was specifically to an evaluation of the suite on Vista.
Vista and Longhorn / Server 2003	Articles were found regarding how Vista and Longhorn will operate together as a client/server system. But I was unable to find articles in which a user had actually tested Vista and Longhorn (any of the Beta release). Some small information was found regarding Vista and Server 2003 but once again, difficulty was experienced finding more articles.

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