

The Evolution of Windows Systems from Windows 1 to Windows 11

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Introduction

The growth of technology has sharply risen thanks to professionals within a diverse range of technological roles, they have created history thanks to them. Scientists and technological professions have pushed the ability to comprehend the most challenging forms of technological science, computer technicians everyday face questions of building the most operable systems of computers and researching the most efficient ways to achieve this. Over thirty years of software engineering allowed Microsoft's OSs to conform to the always changing technologies of today to overcome hardships revolving around security vulnerabilities and performances. Their operating systems have been the pioneer of innovation within the industry and have created tenacious defense systems and have improved the quality of life for everyone who gets their hands on their product.

Overview

Operating systems software brings the ability to communicate through the computer's ones and zeros and watches over the system's processor and memory. OSs also consist of the abilities of file, security, process, and storage management. These traits of an operating system took a lot of work to create and develop and now have become common throughout many operating systems like Linux and Apple. However, Microsoft Windows has introduced many forms of these systems which have shaped current modern systems. These operating systems did not come into existence without prior failures and successes from past versions to benefit the creation of newer systems. Here are the Operating systems that Microsoft has created, and it includes Windows 1, 2, 3, Windows 95, 98, Windows XP, Windows Vista, Windows 7, Windows 8, Windows 10, and Windows 11. The changes of these windows OSs have gone through over twenty years of innovation, giving the world of technology with the latest version Windows 11.

Earlier systems tend to have more flaws than successes with both performance and security, this gives us an understanding in how earlier versions of windows operating systems influenced the past successful operation versions are important when understanding the development of windows systems and their security.

Windows 1.0

In 1985, history began with their first version of a windows operating system, Windows 1.0x. Windows 1.0x held a couple version updates like 1.01, 1.02, 1.03, and 1.04. The first release of MS-DOS is a 16-bit shell that the Windows 1.0x system would run on. It gave tools like paint, notepad, and calculator. Being the first release it wasn't expensive; it just didn't have anything to offer. Windows 1.0x consisted of compatibility issues that did not mix well with other software which imposed concern for its future adaptability. Microsoft would release updated versions of Windows 1.0x such as 1.02, 1.02, and 1.04 that consisted of minor updated changes that advanced performance and use until 1987 (Greene, Tim 2013). There is no updates after 2001 because its unsupported for newer operating systems to take over. With the operating system no longer supported by Microsoft, the risk of security vulnerabilities are significantly higher compared to earlier years.

Windows 2.0

Released in 1987, Microsoft released the successor to Windows 1.0 and introduced improvements to making it more functional and user-friendly. Key innovations were better memory management, ability to overlap applications, and better graphic design. Keyboard shortcuts and better integration of the MS-DOS. The Security issue is that this OS relied on MS-DOS too heavily, so it meant no built-in security features, lacking user authentication, meaning

you can access system files as any users, file protection wasn't really a thing for this operating system. This will be improved in the newer versions of the Operating systems, especially since this is not supported by Microsoft anymore.

Windows 3.0

This operating system released in 1990, this was a major leap in GUI computing, the whole graphical interface was redesigned, allowing better multitasking and better memory. Updates like 3.1 and 3.11 allowed networking capabilities, multimedia support and system stability. The security is considered weak in today's standards; however, it was considerable improvement from Version 2.0 (Brezinksi, 1998). Still running in MS-DOS, still carried over the security flaws like viruses and unauthorized access; 3.11 introduced some basic networking that barely had security controls.

Windows 95

Windows 95 was released in 1995 with a 32-bit system OS 95 and was a bit more user friendly compared to its predecessors. Lenovo talked about that Windows 95 allowed for simpler hardware device installation rather than the former manual way to install devices into the older operating systems, such as Windows 1.0x (Lenovo, 2021). The start menu was remembered from Windows 95, allowing for better access to inner settings and system components. Windows 95 also improved security with security vulnerability patching, bringing the Windows Update feature to update the systems. The updates fixed issues such as bugs and allowed the ability to update to strengthen the security of the systems (Lenovo, 2021). Performance improved, but security not a drastic improvement. The 32-bit system that Windows 95 ran on stored its passwords within inner files and was easily cracked. Microsoft responded to this issue and

released a 128-bit key that allowed for better password storing within the systems files (Mr. PC, 2023). Windows 95 also suffered from the DDOS attack also known as "Ping of Death" attack and dealt with trojans. The Ping Death attack was carried out even without supervision, because they launched it in a time when it was least activity within the cyber infrastructure. Microsoft patched the vulnerability that caused this attack and decided to take vulnerabilities more seriously. The "Back Orifice 2000" trojan happened in 1998 and it spread so quickly because the lack of needing human interaction (Gilmour, 2023). The trojan infiltrated computer files and was able to gain access to important data and completely dismantle systems. That Trojan was really advanced for the Windows 95 system, and it was able to bypass security features. To dismantle the trojan, Microsoft released updates that would patch the vulnerabilities that would allow the trojan to act and infect (Gilmour, 2023). Windows 95 was still a great step forward for Microsoft's operating systems since it introduced many factors that are still present in today's OS's.

Windows 98

Like the layout of Windows 95, Windows 98 was released having two different editions that showed off many new features for the field of Windows operating systems. Windows 98 also ran on a 32-bit key system, same as Windows 95 with 512 megabytes of RAM and 4 gigabytes of file size compatibility. Windows 98 allowed for the use of USB hardware devices, and the ability to play DVD media and things such as movies (Martin & Brown, 2021). During that time, it was a very innovative process, but nowadays we can watch high quality videos through streaming services

Windows XP

Windows XP came out in 2001 and came many releases including Windows XP Home, Windows XP Professional, and Windows Starter Edition. Windows XP came with 64 MGBS of ram, which is more compared to 95 and 98. Windows XP Professional was developed with a 64-bit system while the other versions were still developed in 32-bit. The 64-bit system requires 256MB of Ram (Martin & Brown, 2021). Windows XP includes new features that Windows 98 and 95 did not have much of such as an updated DVD player from Windows Explorer 6, prior OS's, Remote Assistant, and System Restore (Mavis, 2024). Windows System Restore is a security feature introduced with Windows XP that could bring a system back to an earlier version if a current version were to be flawed (Mavis, 2024). Security features were introduced such as guest mode if user authentication fails, file encryption, and the release of the firewall security feature (InformIT, 2020). These security features helped significantly with keeping the operating systems secure until updates were released. Security concerns were considered with Windows XP, as its built-in firewall would not automatically turn on when the system was developed. In 2014, Windows XP was discontinued due to its discontinuation of operating system security updates due to its outdated nature. Regardless, this Operating system was one of the most impactful for its functionality and possibilities within Microsoft's history in making improvements on their OS's.

Windows Vista

Windows Vista came out in 2007 and had multiple releases compared to Windows XP. Some of the editions included Enterprise, Business, and Ultimate. The editions ran on a 32 and a 64-bit system but was depending on the edition on which is used. Compared to Windows XP's 256MB of ram, Windows Vista's was at 512MB which was double from the previous operating

system. Windows Vista improved on their stronger graphics card compared to previous versions (GeeksforGeeks, 2022). Windows Vista had developed lots of issues regarding system performance and security, but majority of the issues have been patched by Microsoft in newer updates brought to the operating system. For it to be a newer Operating system at the time there was expectations for better security measures, not just strictly improving on the user interface. Windows Vista was known to be Microsoft's least efficient operating system based on public opinion (Martin & Brown, 2021). It was a mixed bag in general.

Windows 7

Windows 7 being regarded as one of the most successful OS releases made by Microsoft in 2009, their 64-bit processor was widespread and became a standard in computer operating systems. Windows 7 was equipped with the 64-bit processor, giving it a powerful system for its time compared to Windows Vista's operating system. Windows's system came with some improvements such as better USB detection and a greater taskbar interface (stevewhims, 2021). The display settings were also improved with better themes and features and developed more default applications for the computer, overall improvement made in the user interface. The operating system and features and developed more default applications for the computer. Windows 7 had also greatly improved in their security measures. Windows 7 unleashed a wide range of vulnerability and threat prevention methods. Windows 7 developed Data Execution prevention. DEP prohibits attackers from executing code within data pages and prevents memory attacks (GCS Network, 2024). Windows 7 also improved its cryptography private keys, using more algorithms that can hide certain code so authorized users can only understand. Windows 7 also developed a better firewall system, which improved the threat prevention and detection

strategies (GCS Network, 2024). It was a great operating system during its time, but grew old quick.

Windows 8

Windows 8 was designed with new security and performance updates that came out in 2012. Windows 8's design was also updated with better interface design and display features and looks. The cloud was introduced to Windows 8 also introduced the OneDrive where files could be stored and saved (Muchmore, 2022). Windows Defender was used in Windows 8 as well which acted as a firewall to protect a computer's important data (GCFGGlobal, 2024). The action center was also introduced for a user to view inner security characteristics for analyses and gave a diagnostic for the system to make sure that it efficiently performs (GeeksforGeeks, 2022).

Windows 10

Windows 10 released in 2015. Microsoft Edge was introduced as an assistant to brighten user experience (Kostadinov, 2020). Windows 10 had a 64-bit system with 2GB of ram and performed significantly better compared to older systems. Cortana was brought to Windows 10 which is a virtual assistant to help with information assistance and user experience (Kostadinov, 2020). Windows 10 introduced improved security measures considering the advancement of cyberattacks and technology (Kostadinov, 2020). Windows Defender, Windows application card, Windows Sandbox, improved access controls, and better system architecture to support better security features were introduced as better security features (Kostadinov, 2020). Windows 10 used to be in most computers as it was of the newest systems brought to Microsoft. That changed with windows 11 becoming the new default within computers around the globe.

Windows 11

The Most secure Windows to date released in 2021, a supposed successor to windows 10, introduced a new UI, a centered taskbar and rounded corners (Microsoft, 2023). It focuses on hybrid work and security by incorporating stronger hardware. Updates introduces AI into the Operating system which can be very useful to complete certain tasks. Windows 11 has TPM 2.0 which helps encrypt data and prevent hardware attacks, with secure booting ensuring only trusted software loads when system starts, preventing malware (Microsoft, 2023). Supports biometric authentication which is very consistent and secure. The only weaknesses of this Operating system are the learning curve, that can make users susceptible to social engineering attacks and the reduction of customization can be limiting. There have also been a few complaints about the UI being unnecessarily changed from how it was from Windows 10 which confused some users of the Operating System.

Conclusion

Microsoft has played a pivotal role in shaping the evolution of Operating systems within Windows and keeping the refinement going in their platform to enhance user experience and its functionality. Each iteration helps build upon the strengths and improve the weaknesses of past predecessors, integrating advanced security measures to protect sensitive information too. With all the time that has passed, Microsoft has revolutionized the OS landscape, having other OS's follow suit like apple and Linux because Microsoft themselves have set industry standards overall and keep improving performance, security and usability.

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