= Microsoft Security Essentials =

Microsoft Security Essentials (MSE) is an antivirus software (AV) product that provides protection against different types of malicious software such as computer viruses , spyware , rootkits and Trojan horses . Before version 4 @.@ 5 , MSE ran on Windows XP , Windows Vista and Windows 7 , but not on Windows 8 and later , which have built @-@ in AV components . MSE 4 @.@ 5 and later do not run on Windows XP . The license agreement allows home users and small businesses to install and use the product free of charge . It replaces Windows Live OneCare , a discontinued commercial subscription @-@ based AV service , and the free Windows Defender , which until Windows 8 protected users from only adware and spyware .

Built upon the same virus definitions and scanning engine as other Microsoft antivirus products , MSE provides real @-@ time protection , constantly monitoring activities on the computer and scanning new files as they are downloaded or created and disabling detected threats . It lacks the personal firewall of OneCare or the centralized management features of Forefront Endpoint Protection .

Microsoft 's announcement of its own AV software on 18 November 2008 was met with mixed reactions from the AV industry . Symantec , McAfee and Kaspersky Lab ? three competing independent software vendors ? dismissed it as an unworthy competitor , but AVG Technologies and Avast Software appreciated its potential to expand the consumers ' choice of AV software . AVG , McAfee , Sophos and Trend Micro claimed that the integration of the product into Microsoft Windows would be a violation of competition law .

The product received generally positive reviews praising its user interface , low resource usage and freeware license . It secured AV @-@ TEST certification on October 2009 , having demonstrated its ability to eliminate all widely encountered malware . However , it lost the certificate on October 2012 , having shown a constant decline in protection and repair scores . In June 2013 , MSE achieved the lowest possible protection score , zero . According to a March 2012 report by anti @-@ malware specialist OPSWAT , MSE was the most popular AV product in North America and the second most popular in the world , which has resulted in the appearance of several rogue antivirus programs that try to impersonate it .

= = Features = =

Microsoft Security Essentials is an antivirus software (AV) product that fights malicious software (malware) , including computer viruses , spyware , Trojan horses and rootkits . It replaces Windows Live OneCare , a discontinued commercial subscription @-@ based AV service , and the free Windows Defender , which until Windows 8 only protected users from adware and spyware . It automatically checks for and downloads the virus definitions it relies on from Microsoft Update , a web @-@ based software service updated three times a day . Users may alternatively download the updates manually from the Microsoft Security Portal website . On 30 September 2011 , a faulty definition update caused the product to incorrectly tag Google Chrome as malware . The issue was resolved within three hours . MSE originally ran on Windows XP , Windows Vista and Windows 7 , although versions 4 @.@ 5 and later do not run on Windows XP and Microsoft stopped producing definition updates for Windows XP on 14 July 2015 .

MSE is built upon the same foundation as other Microsoft security products ; all use the same virus definitions and anti @-@ malware engine , known as Microsoft Malware Protection Engine (MSMPENG) . It does not have the personal firewall of OneCare or the centralized management features of Forefront Endpoint Protection .

MSE provides real @-@ time protection , constantly monitoring activities on the computer and scanning new files as they are downloaded or created . It disables detected threats and prompts for user input on how to deal with them . If no response is received within ten minutes , suspected threats are handled according to the default actions defined in the application 's settings . Depending on those settings , it may also create System Restore checkpoints before removing the detected malware . As a part of real @-@ time protection , by default , MSE reports all suspicious

behaviors of monitored programs to Microsoft Active Protection Service (MAPS , originally Microsoft SpyNet) , a web @-@ based service . If the report matches a newly discovered malware threat with an unreleased virus definition , the new definition is downloaded to remove the threat .

Hardware requirements for the product depend on the operating system ; on a computer running Windows Vista or Windows 7 , it requires a 1 GHz processor , 1 GB of RAM , a computer monitor with a display resolution of at least 800 × 600 pixels , 200 MB of free hard disk space and an Internet connection .

= = Development = =

On 18 November 2008 , Microsoft announced plans for a free consumer security product , codenamed Morro . This development marked a change in Microsoft 's consumer AV marketing strategy : instead of offering a subscription @-@ based security product with a host of other tools , such as backup and a personal firewall , Morro would offer free AV protection with a smaller impact on system resources . Amy Barzdukas , senior director of product management for the Online Services and Windows Division at Microsoft , announced that Morro would not directly compete with other commercial AV software ; rather it was focused on the 50 to 60 percent of PC users who did not have or would not pay for AV protection . By 17 June 2009 , the official name of Morro was revealed : Microsoft Security Essentials .

On 23 June 2009 , Microsoft released a public beta to 75 @,@ 000 users in the United States , Israel , China and Brazil . Anticipated to be available in 20 markets and 10 languages , the product was scheduled for release before the end of 2009 ; the final build was released on 29 September 2009 .

= = = Version 2 @.@ 0 = = =

Almost a year after the initial release , Microsoft quietly released the second version . It entered the technical preview stage on 19 July 2010 , and the final build was released on 16 December 2010 . It includes Network Inspection System (NIS) , a network intrusion detection system that works on Windows Vista and Windows 7 , as well as a new anti @-@ malware engine that employs heuristics in malware detection . Version 2 @.@ 0 integrates with Internet Explorer to protect users against web @-@ based threats . NIS requires a separate set of definition updates .

= = = Version 4 @.@ 0 = = =

Sixteen months after the release of version 2 @.@ 0 , Microsoft skipped version 3 @.@ 0 and released Microsoft Security Essentials 4 @.@ 0 . A public beta program started on 18 November 2011 , when Microsoft sent out invitations to potential participants without announcing a version number . The first beta version was released on 29 November 2011 , and the final build on 24 April 2012 . Microsoft subsequently initiated a pre @-@ release program that provides volunteers with the latest beta version and accepts feedback .

= = = Version 4 @.@ 5 = = =

On 21 February 2014 , version 4 @.@ 5 entered beta stage . On the same day , Microsoft announced that starting with this version , Windows XP would not be supported . Older versions would continue to receive virus definition updates until 14 July 2015 .

= = = Future = = =

Microsoft Security Essentials does not run on Windows 8 and later , which has its own security subsystem . On 13 September 2011 , at Buildconference in Anaheim , California , Microsoft unveiled the developer preview of Windows 8 , which had a security component capable of preventing an

infected USB flash memory from compromising the system during the boot process . On 15 September , Windows 8 developer 's blog confirmed that Windows Defender in Windows 8 would take over the role of virus protection . In an included video , Jason Garms of Microsoft showed how Windows Defender is registered with Action Center as an AV and spyware protection tool , and how it blocks drive @-@ by malware . On 3 March 2012 , Softpedia reviewed the consumer preview of Windows 8 and noted the similarity in appearance of Windows Defender and Microsoft Security Essentials 4 @.@ 0 Beta . According to Softpedia , Windows 8 Setup requires Microsoft Security Essentials to be uninstalled before upgrading Windows 7 .

= = Licensing = =

The product 's license agreement allows home users to download , install and use it on an unlimited number of computers in their households free of charge , so long as each computer has a legitimately licensed copy of Microsoft Windows . Since October 2010 , small businesses have also been allowed to install the product on up to 10 devices , but use in academic institutions and governmental locations is forbidden , as is reverse @-@ engineering , decompiling or disassembling the product or working around its designed limitations .
MSE requires no registration or personal information to be submitted during installation ; however , the validity of the operating system 's license is verified during and after installation using the Windows Genuine Advantage system . If said license is found to be invalid , the software will notify the user and will cease to operate after a period of time .

= = Reception = =

= = = Industry response = = =

The announcement and debut of Microsoft Security Essentials was met with mixed responses from the AV industry . Symantec , McAfee and Kaspersky Lab , three competing vendors , claimed it to be inferior to their own software . Jens Meggers , Symantec 's vice president of engineering for Norton products , dismissed it as " very average ? nothing outstanding " . Tom Powledge of Symantec urged his customers to be mindful of what protection they chose , bearing in mind that OneCare offered " substandard protection " and an " inferior user experience " . Joris Evers , director of worldwide public relations for McAfee stated " with OneCare 's market share of less than 2 % , we understand Microsoft 's decision to shift attention to their core business . " Justin Priestley of Kaspersky stated that Microsoft " continued to hold a very low market share in the consumer market , and we don 't expect the exit of OneCare to change the playing field drastically . "
Avast Software said that it had an ambivalent view towards the product . Vincent Steckler , Avast Software CEO said " MSE is not the silver bullet but it is also not the bad sequel to One Care that some claim . " A representative of AVG Technologies stated , " We view this as a positive step for the AV landscape . AVG has believed in the right to free antivirus software for the past eight years . " However , AVG raised the issue of distributing the software product and said , " Microsoft will have to do more than simply make the product available , " adding that integration of Microsoft Security Essentials with Microsoft Windows would be a violation of competition law . McAfee , Sophos and later Trend Micro affirmed that an antitrust lawsuit would surely have followed if Microsoft had bundled the product with Windows .
The announcement of Microsoft Security Essentials affected the stocks of AV vendors . On 19 November 2008 , after Microsoft announced codename Morro , Symantec and McAfee shares fell 9 @.@ 44 and 6 @.@ 62 percent respectively . On 10 June 2009 , after announcing an upcoming beta version , Microsoft shares rose 2 @.@ 1 percent . Symantec and McAfee shares , however , fell 0 @.@ 5 and 1 @.@ 3 percent respectively . Daniel Ives , an analyst with FBR Capital Markets , said that Microsoft Security Essentials would be a " long @-@ term competitive threat " , although near @-@ term impact would be negligible .

= = = Reviews and awards = = =

The public beta version received several reviews , citing its low resource usage , straightforward user interface and price point . Brian Krebs of The Washington Post reported that a quick scan on a Windows 7 computer took about 10 minutes and a full scan about 45 minutes . Ars Technica reviewed it positively , citing its organized interface , low resource usage , and its status as freeware .

Nick Mediati of PCWorld noted MSE 's " clear @-@ cut " and " cleanly designed " tabbed user interface . He did , however , find some of the settings to be cryptic and confusing , defaulting to " recommended action " , with the only explanation of what that action is to be found in the help file . He was also initially confused because the user interface failed to mention that Microsoft Security Essentials automatically updates itself , rather than having to be manually updated via the Update tab ; an explanation of this feature was included in the final release .

Neil Rubenking of PC Magazine successfully installed the beta version on 12 malware @-@ infected systems and commented on its small installation package (about 7 MB , depending on the operating system) and speedy installation . But the initial virus definition update took between 5 and 15 minutes , and the full installation occupied about 110 MB of disk space . Rubenking noted that the beta version sets Windows Update into fully automatic mode , although it can be turned off again through Windows Control Panel . Some full scans took more than an hour on infected systems ; a scan on a clean system took 35 minutes . An on @-@ demand scan test Rubenking conducted in June 2009 with the beta version found 89 percent of all malware samples : 30 percent of the commercial keyloggers , 67 percent of rootkits , but only half of the scareware samples . The product 's real @-@ time protection found 83 percent of all malware and blocked the majority of it : 40 percent of the commercial keyloggers and 78 percent of the rootkits were found .

On 7 January 2010 , Microsoft Security Essentials won the Best Free Software award from PC Advisor . In December the same year , it secured the Bronze award from AV @-@ Comparatives for proactive detection of 55 percent of new or unknown malware , the Silver award for low false @-@ positives (six occurrences) and the Bronze award for overall performance .

In October 2009 , AV @-@ TEST conducted a series of trials on the final build of the product in which it detected and caught 98 @.@ 44 percent of 545 @,@ 034 computer viruses , computer worms and software Trojan horses as well as 90 @.@ 95 percent of 14 @,@ 222 spyware and adware samples . It also detected and eliminated all 25 tested rootkits , generating no false @-@ positives . Between June 2010 to January 2013 , AV @-@ TEST tested Microsoft Security Essentials 14 times ; in 11 out of 14 cases , MSE secured AV @-@ TEST certification of outperforming AV industry average ratings . Microsoft Security Essentials 2 @.@ 0 was tested and certified on March 2011 . The product achieved a protection score of 2 @.@ 5 out of 6 , a repair score of 3 @.@ 5 out of 6 and a usability score of 5 @.@ 5 out of 6 . Report details show that although version 2 @.@ 0 was able to find all malware samples of the WildList (widespread malware) , it was not able to stop all Internet @-@ based attacks because it lacks personal firewall and anti @-@ spam capabilities . In an April 2012 test , version 2 @.@ 1 achieved scores of 3 @.@ 0 , 5 @.@ 5 and 5 @.@ 0 for protection , repair and usability . Version 4 @.@ 0 for Windows 7 SP1 (x64) was tested in June 2012 and achieved scores of 2 @.@ 5 , 5 @.@ 5 and 5 @.@ 5 for protection , repair and usability . In October 2012 , the product lost its AV @-@ TEST certification when Microsoft Security Essentials 4 @.@ 1 achieved scores of 1 @.@ 5 , 3 @.@ 5 and 5 @.@ 5 for its protection , repair and usability .

In AV @-@ TEST 's 2011 annual review , Microsoft Security Essentials came last in protection , seventh in repair and fifth in usability . In the 2012 review , it came last in protection and best in usability ; however , having lost its certificate , it was not qualified for the usability award . In June 2013 , MSE achieved the lowest possible protection score , zero . In August 2015 for Windows 7 it was last , with 3 blobs out of 6 for protection . Performance ? in the sense of speed ? and usability were good . MSE found 99 @.@ 7 % of " widespread and prevalent malware discovered in the last 4 weeks " , slightly better than the industry average , but only 87 @.@ 2 % of " 0 @-@ day malware

attacks , inclusive of web and e @-@ mail threats " , against an industry average of 98 @.@ 2 % .

= = Market share = =

On 29 September 2010 , a year after its initial release , Microsoft announced that MSE had more than 30 million users . The Security Industry Market Share Analysis report of June 2011 , published by OPSWAT , describes it as one of the most popular AV products in the world , with 10 @.@ 66 percent of the global market and 15 @.@ 68 percent of the North American market . The same report shows Microsoft as the number one AV vendor in North America with 17 @.@ 07 percent market share , and the number four AV vendor worldwide .
John Dunn of PCWorld , who analyzed the report , noted that the tendency to use free AV software is something new : " After all , free antivirus suites have been around for years but have tended to be seen as the poor relations to paid software . " He named Microsoft Security Essentials as an influence on PC users to adopt free AV software .
A September 2011 OPSWAT report found that MSE had further increased its market share to become the second most popular AV product in the world , and remained the most popular in North America . OPSWAT reported in March 2012 that the product had maintained its position , and that Microsoft 's market share had improved by 2 percent worldwide and 3 percent in North America . Seth Rosenblatt of CNET News commented on how the product 's share rose from 7 @.@ 27 in 2010 to 10 @.@ 08 in 2012 , stating that " use of the lightweight security suite exploded last year " .

= = Impersonation by malware = =

The popularity of Microsoft Security Essentials has led to the appearance of malware abusing its name . In February 2010 , a rogue security package calling itself " Security Essentials 2010 " appeared on the Internet . Designated TrojanDownloader : Win32 / Fakeinit by Microsoft , it bears no visual resemblance to the Microsoft product . It reappeared in November 2010 , this time calling itself " Microsoft Security Essentials 2011 " . A more dangerous rogue appeared in August 2010 . Designated Rogue : Win32 / FakePAV or Unknown Win32 / Trojan , it closely resembles Microsoft Security Essentials and uses sophisticated social engineering to deceive users and infect their systems , under the guise of five different fictional anti @-@ malware products . It also terminates and prevents the launch of 156 different programs , including Registry Editor , Windows Command Prompt , Internet Explorer , Mozilla Firefox , Opera , Safari and Google Chrome .