September 14, 2022

APPENDIX A

PRIOR ART INDEX

‘250 Patent

Prior Art That Anticipates Or Renders Obvious The Asserted Claims

- U.S. Patent Pub. No. 2004/0111632 (“Halperin”)
- U.S. Patent Pub. 2005/0055559 (“Bucher”)
- U.S. Patent No. 7,093,239 (“Made”)
- U.S. Patent 7,152,164 (“Loukas”)

Additional Relevant Prior Art References

- U.S. Patent Pub. 2006/0230289A1 to Fox
- U.S. Patent No. 7,509,680 to Sallam
- U.S. Patent 6,195,587B1 to Hruska
- U.S. Patent 6,044,155 to Thomlinson
- Combating computer viruses: IBM’s new computer immune system, Summer 1996 (https://ieeexplore.ieee.org/abstract/document/494599)

* Also incorporated by reference is all prior art cited during prosecution of the ‘250 patent and any patent sharing a common priority claim, directly or indirectly, with the ‘250 patent.

‘389 Patent

Prior Art That Anticipates Or Renders Obvious The Asserted Claims

- U.S. Patent Pub. No. 2004/0111632 (“Halperin”)

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- U.S. Patent No. 7,509,680 ("Sallam")
- U.S. Patent 7,152,164 ("Loukas")

Additional Relevant Prior Art References

- U.S. Patent No. 7,093,239 to Made
- U.S. Patent Pub. 2006/0230289A1 to Fox
- U.S. Patent 6,195,587B1 to Hruska
- U.S. Patent 6,044,155 to Thomlinson
- Combating computer viruses: IBM's new computer immune system, Summer 1996 (https://ieeexplore.ieee.org/abstract/document/494599)

* Also incorporated by reference is all prior art cited during prosecution of the '389 patent and any patent sharing a common priority claim, directly or indirectly, with the '389 patent.

'045 Patent

Prior Art That Anticipates Or Renders Obvious The Asserted Claims

- U.S. Publication No. US 2011/0321166 A1 to Capalik et al. ("Capalik")
- U.S. Publication No. US 2007/0016953 A1 to Morris et al ("Morris")
- Trend Micro Control Manger: Patch 2 Administrator's Guide, published February 2013 (hereinafter Trend Micro)
- U.S. Publication No. US 2011/0067101 A1 to Seshadri et al. ("Seshadri")

Additional Relevant Prior Art References

- U.S. Patent No. 8,935,792 to Spurlock et al.
- U.S. Patent No. 8,087,087 to Oorschot et al.
- Symantec Insight™ and SONAR:

  (https://vox.veritas.com/legacyfs/online/veritasdata/SEP%2012%20Insight%20and%20SONAR%20Factsheet.pdf)
- Symantec Endpoint Protection v12.1:

  (https://www.youtube.com/watch?v=vk36nLZmID0&t=114s)
- U.S. Publication No. US 2004/0143753A1 to Hernacki
- U.S. Publication No. US 2013/0074143A1 to Bu
- U.S. Publication No. US 2013/0247190A1 to Spurlock
- U.S. Publication No. US 2010/0077481 to Polyakov et al.
- PCT Publication No. WO 2012/027588 to Mahaffey

* Also incorporated by reference is all prior art cited during prosecution of the '045 patent and any patent sharing a common priority claim, directly or indirectly, with the '045 patent.

<u>'224 Patent</u>

Prior Art That Anticipates Or Renders Obvious The Asserted Claims

- U.S. Publication No. US 2011/0321166 A1 to Capalik et al. ("Capalik")
- U.S. Publication No. US 2007/0016953 A1 to Morris et al ("Morris")
- U.S. Publication No. US 2011/0067101 A1 to Seshadri et al. ("Seshadri")
- U.S. Patent No. 8,087,087 to Oorschot et al. ("Oorschot")

- Trend Micro Control Manger: Patch 2 Administrator's Guide, published February 2013 (hereinafter Trend Micro)

Additional Relevant Prior Art References

- U.S. Patent No. 8,935,792 to Spurlock et al.
- Symantec Insight™ and SONAR:

  (https://vox.veritas.com/legacyfs/online/veritasdata/SEP%2012%20Insight%20and%20SONAR%20Factsheet.pdf)
- Symantec Endpoint Protection v12.1:

  (https://www.youtube.com/watch?v=vk36nLZmID0&t=114s)
- U.S. Publication No. US 2004/0143753A1 to Hernacki
- U.S. Publication No. US 2013/0074143A1 to Bu
- U.S. Publication No. US 2013/0247190A1 to Spurlock
- U.S. Publication No. US 2010/0077481 to Polyakov et al.
- PCT Publication No. WO 2012/027588 to Mahaffey

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<u>'591 Patent</u>

Prior Art That Anticipates Or Renders Obvious The Asserted Claims

- U.S. Publication No. US 2013/00047255 A1 to Dalcher ("Dalcher")
- U.S. Patent No. 9,465,936 to Tosa ("Tosa")
- U.S. Publication No. US 2012/0255018 A1 to Sallam ("Sallam")

- U.S. Patent No. 7,287,281 to Szor et al. ("Szor")
- U.S. Patent No. 9,336,390 to Pavlyushchik ("Pavlyushchik")
- U.S. Patent No. 8,943,592 to Mirski et al. ("Mirski")
- Ivan Fratric, Runtime Prevention of Return-Oriented Programming Attacks, Aug. 26, 2012:

  (https://github.com/ivanfratric/ropguard) ("Fratric")

Additional Relevant Prior Art References

- PCT Publication No. WO 2012/084507 to Hentunen
- U.S. Patent No. 7,856,538 to Speirs, II et al.
- U.S. Patent No. 7,594,111 to Kiriansky et al.
- U.S. Patent No. 7,555,777 to Swimmer et al.
- U.S. Publication No. 2009/0288167 to Freericks et al.
- South Korean Publication No. KR 2011/0036426A to Yoon et al.
- U.S. Patent No. 8,042,102 to DeWitt, Jr. et al.
- Ivan Fratric, ROPGuard: Runtime Prevention of Return-Oriented Programming Attacks, September 24, 2012
- Pablo Bravo et al., Proactive detection of kernel-mode rootkits, Oct. 17, 2011:

(https://ieeexplore.ieee.org/document/6045970)

- Nanad Stojanovski et al., Bypassing Data Execution Prevention on Microsoft Windows XP SP2, April 23, 2007:

  (https://ieeexplore.ieee.org/document/4159930)

- Abhinav Srivastava et al., Efficient Protection of Kernel Data Structures via Object Partitioning, December 3, 2012: (https://dl.acm.org/doi/10.1145/2420950.2421012)

* Also incorporated by reference is all prior art cited during prosecution of the '591 patent and any patent sharing a common priority claim, directly or indirectly, with the '591 patent.

'844 Patent

Prior Art That Anticipates Or Renders Obvious The Asserted Claims

- U.S. Publication No. 2014/0090061 A1 to Avasarala et al. ("Avasarala")
- U.S. Publication No. 2015/0213376 A1 to Ideses et al. ("Ideses")
- U.S. Patent No. 8,793,798 to Fossen et al. ("Fossen")
- A Static Malware Detection System Using Dada Mining Methods by Baldangombo et al., published August 13, 2013: (https://arxiv.org/abs/1308.2831) ("Baldangombo")
- U.S. Publication No. 2015/0106931 A1 to Mankin et al. ("Mankin")
- U.S. Publication No. 2014/181973 A1 to Lee et al. ("Lee")
- U.S. Publication No. 2015/0128263 A1 to Raugas et al. ("Raugas")
- U.S. Publication No. 2015/0033341 A1 to Schmidtler et al. ("Schmidtler")
- U.S. Patent No. 10,268,820 to Okano et al. ("Okano")

Additional Relevant Prior Art References

- U.S. Patent No. 7,519,998 to Cai et al.
- U.S. Publication No. 2006/0037080 to Maloof
- U.S. Publication No. 2016/0277423 to Apostolescu et al.
- U.S. Patent No. 8,108,332 to Misra et al.
- U.S. Publication No. 2014/0283037 to Sikorski et al.
- PCT Publication No. WO 2014/122622 to Boutnaru et al.
- U.S. Patent No. 9,021,589 to Anderson et al.
- U.S. Patent No. 8,584,241 to Jenks
- U.S. Publication No. 2007/0240220 to Tuvell
- European Patent No. EP 2,182,458 to Moskovitch
- PCT Publication No. WO 2014/107439 to Fawaz
- Ivan Firdausi et al., Analysis of Machine learning Techniques Used in Behavior-Based Malware Detection, December 3, 2010: (https://ieeexplore.ieee.org/abstract/document/5675808)
- Zane Markel, Building A Machine Learning Classifier For Malware Detection, October 23, 2014: (https://ieeexplore.ieee.org/abstract/document/7015757)
- Yousra Aafer et al., DroidAPIMiner: Mining API-Level Features for Robust Malware Detection in Android, September 2013: (https://www.researchgate.net/publication/278705505)

* Also incorporated by reference is all prior art cited during prosecution of the '844 patent and any patent sharing a common priority claim, directly or indirectly, with the '844 patent.

September 14, 2022

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