

- [2] M. Sahin, A. Francillon, P. Gupta and M. Ahamad, "SoK: Fraud in Telephony Networks" Proceedings - 2nd IEEE European Symposium on Security and Privacy, EuroS and P 2017, pp. 235-240, 2017.
- [3] Marketwired, "Argyle Data Recommendations From CFCA's 2015 Fraud Survey Analysis: Think Globally, Act Locally" March 2016. [Online]. Available: <https://finance.yahoo.com/news/argyle-data-recommendations-cfcas-2015-100000320.html>. (Access Date: 1 October 2018)
- [4] The Internet Telephony Services Providers' Association, "ITSPA Telephony Fraud – Reporting Guidance with ActionFraud" May 2015. [Online]. Available: <https://www.itspa.org.uk/itspa-telephony-fraud-reporting-guidance-with-actionfraud/>. (Access Date: 16 March 2019)
- [5] M. Gruber, D. Hoffstadt, A. Aziz, F. Fankhauser, C. Schanes, E. Rathgeb and T. Grechenig, "Global VoIP security threats - Large scale validation based on independent honeynets" Proceedings of 2015 14th IFIP Networking Conference, IFIP Networking 2015, 2015.
- [6] Ahmed, A. S. Shaon and R. Hasan, "Evaluation of popular VoIP services" ICAST 2009 - 2nd International Conference on Adaptive Science and Technology, pp. 53-63, 2009.
- [7] A. Humberto, A. Tigran, R. Michael and R. State, "Abusing SIP authentication" Proceedings - The 4th International Symposium on Information Assurance and Security, IAS 2008, pp. 237-242, 2008.
- [8] Internet Engineering Task Force, "SIP: Session Initiation Protocol" June 2002. [Online]. Available: <https://www.ietf.org/rfc/rfc3261.txt>. (Access Date: 1 October 2018)
- [9] P. Park, Voice over IP Security, IN, USA: Cisco Press, 2008.
- [10] T. Z. Jyh-Cheng Chen, IP-Based Next-Generation Wireless Networks: Systems, Architectures, and Protocols, New Jersey: John Wiley & Sons Inc, 2004.
- [11] J. Davidson, J. F. Peters and M. Bhatia, Voice Over IP Fundamentals, Indianapolis: Cisco Press, 2006.
- [12] Y. N. M. Rebahi, T. Magedanz and O. Festor, "A survey on fraud and service misuse in voice over IP (VoIP) networks" Information Security Technical Report, vol. 1, no. 1, pp. 12-19, 2011.
- [13] H. Sengar, "VoIP Fraud : Identifying a Wolf in Sheep ' s Clothing" Proceedings of the 2014 ACM SIGSAC Conference on Computer and Communications Security - CCS '14, pp. 334-345, 2014.
- [14] D. Hoffstadt, A. Marold and E. P. Rathgeb, "Analysis of SIP-based threats using a VoIP Honeynet System" Proc. of the 11th IEEE Int. Conference on Trust, Security and Privacy in Computing and Communications, TrustCom-2012 - 11th IEEE Int. Conference on Ubiquitous Computing and Communications, IUCC-2012, pp. 541-548, 2012.
- [15] M. Gruber, C. Schanes, F. Fankhauser and T. Grechenig, "Voice calls for free: How the black market establishes free phone calls-Trapped and uncovered by a VoIP honeynet" 2013 11th Annual Conference on Privacy, Security and Trust, PST 2013, pp. 205-212, 2013.
- [16] M. Ronniger, F. Fankhauser, C. Schanes and G. Thomas, "A robust and flexible test environment for voip security tests" 010 International Conference for Internet Technology and Secured Transactions (ICITST), 2010.
- [17] D. Hoffstadt, N. Wolff, S. Monhof and E. Rathgeb, "Improved detection and correlation of multi-stage VoIP attack patterns by using a Dynamic Honeynet System" IEEE International Conference on Communications, pp. 1968-1973, 2013.
- [18] A. Aziz, D. Hoffstadt, S. Ganz and E. Rathgeb, "Development and analysis of generic voip attack sequences based on analysis of real attack traffic" Proceedings - 12th IEEE International Conference on Trust, Security and Privacy in Computing and Communications, TrustCom 2013, pp. 675-682, 2013.
- [19] A. Aziz, D. Hoffstadt, E. Rathgeb and T. Dreibholz, "A distributed infrastructure to analyse SIP attacks in the Internet" 2014 IFIP Networking Conference, IFIP Networking 2014, 2014.

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