Abstract

Authentication forms the gateway to any secure system. Together with integrity, confidentiality and authorization it helps in preventing any sort of intrusions into the system. Up until a few years back password based authentication was the most common form of authentication to any secure network. But with the advent of more sophisticated technologies this form of authentication although still widely used has become insecure. Furthermore, with the rise of ‘Internet of Things’ where the number of devices would grow manifold it would be infeasible for user to remember innumerable passwords.

Therefore, it’s important to address this concern by devising ways in which multiple forms of authentication would be required to gain access to any smart devices and at the same time its usability would be high. In this paper, a methodology is discussed as to what kind of authentication mechanisms could be deployed in internet of things (IOT).

References
1. Manoj Rameshchandra Thakur, Sugata Sanyal, “A Multi-Dimensional approach towards Intrusion Detection System”, International Journal of Computer Applications, Vol. 48, No. 5, pp. 34-41, June 2012

2. Manoj Rameshchandra Thakur, Divye Raj Khilnani, Kushagra Gupta, Sandeep Jain, Vineet Agarwal, Suneeta Sane, Sugata Sanyal, Prabhakar S. Dhekne; “Detection and Prevention of Botnets and malware in an enterprise network”; International Journal of Wireless and Mobile Computing; Editor-in-Chief: Zhihua Cui; Vol.5, Nos. 2, 2012, pp. 144-153

3. Zoltan Gyongi, Hector Garcia-Molina, Jan Pedersen, “Combating web spam with trustbank”, VLDB ’04 Proceedings of the Thirtieth international conference on Very large data bases - Volume 30, Pages 576-587, 2004

4. Ayu Tiwari, Sudip Sanyal, Ajith Abraham, Svein Johan Knapskog, Sugata Sanyal, “A Multifactor Security Protocol For Wireless Payment-Secure Web Authentication using Mobile Devices arXiv preprint arXiv:1111.3010, 2011/11/13

5. Sugata Sanyal, Ayu Tiwari and Sudip Sanyal, A Multifactor Secure Authentication System for Wireless Payment , Emergent Web Intelligence: Advanced Information Retrieval Book Series: Advanced Information and Knowledge Processing, Ed: Chbeir Richard et al, First Edition, 2010, Chapter 13, pp. 341-369, XVI, Springer Verlag London Limited, 2010 M. Burrows, M. Abadi and R. M. Needham, “A logic of authentication”, University of Cambridge Computer Laboratory, http://www.hpl.hp.com/techreports/Compaq-DEC/SRC-RR-39.pdf

6. Leslie Lamport, “Password authentication with insecure communication”, Communications of the ACM, Volume 24 Issue 11, Pages 770-772, Nov 1981

7. Min-Shiang Hwang, Li-Hua Li, “A new remote user authentication scheme using smart cards”, IEEE Transactions on Consumer Electronics, Volume 46, Issue 1, Pages 28-30, Feb 2000

8. BC Neuman, T Ts’ O, “Kerberos: An authentication service for computer networks”, Communications Magazine, IEEE, 1994, http://gost.isi.edu/publications/kerberos-neuman-tso.html

9. S. P. Miller , B. C. Neuman , J. I. Schiller , J. H. Saltzer, “Kerberos authentication and authorization system (1987)”, In Project Athena Technical Plan, 1987, http://web.mit.edu/saltzer/www/publications/athenaplan/e.2.1. pdf

10. Feng Xia, Laurence T. Yang, Lizhe Wang and Alexey Vinel, “Internet of Things”, INTERNATIONAL JOURNAL OF COMMUNICATION SYSTEMS, Volume 25, Issue 9, pages 1101-1102, September 2012

11. Kevin Ashton, ‘That ‘Internet of Things’ Thing”, RFID journal, June 2009, http://www.rfidjournal.com/password/article/view?49986

12. Kortuem G, Kawasar F Fitton D, Sundramoorthy V, “Smart objects as building blocks for internet of things”, Internet Computing IEEE, Volume 14, Issue 1, Pages 44-51, Feb 2010.

13. ST Dispensa, “Multi factor authentication”, US Patent, Publication number US8365258 B2, Jan 29 2013, http://www.google.co.in/patents/US8365258

14. Abhilasha Bhargav-Spantzcel, Anna Squicciarini, Elisa Bertino, “Privacy preserving multi-factor authentication with biometrics”, Proceedings of the second ACM workshop on Digital identity management, Pages 63-72, 2006, http://docs.lib.purdue.edu/ccpubs/313/.

Index Terms

Computer Science  Security
Keywords

Data integrity, authentication, multi factor authentication, internet of things (IOT), authorization, confidentiality, usability, speed, efficiency, memorability, learnability, voice based authentication, facial recognition, fingerprint recognition, location based authentication