a hypervisor is prone to in cloud architectures and introduces some new threats. All of this is likely to hinder its use in a real world scenario.

Our future work is to investigate how these threats might be mitigated by establishing Data Flow Diagrams in deeper levels for the NoHype architecture, keeping in mind that improvement must be at least as secure as that one proposed in NoHype system.

6. References

[1] A. Silberschatz, P. Galvin, and G. Gagne, Operating System Concepts, 9th ed. Hoboken, NJ: Wiley, 2013.

[2] M. Christodorescu, R. Sailer, D.L. Schales, D. Sgandurra, and D. Zamboni, D, "Cloud security is not (just) virtualization security: a short paper," Proceedings of the 2009 ACM workshop on Cloud computing security, ACM, 2009, 97-102.

[3] A.S. Ibrahim, J.H. Harris, and J. Grundy, "Emerging Security Challenges of Cloud Virtual Infrastructure," in Proceedings of APSEC 2010, Cloud Workshop, Sidney, Australia, 20 nov2010.

[4] D. Shackleford, Virtualization Security: Protecting Virtualized Environments. Indianapolis, IN: Sybex, 2013.

[5] K. Kortchinsky, "Hacking 3D (and Breaking out of VMWare)," BlackHat USA, 2009.

[6] R. Wojtczuk, "Subverting the Xen hypervisor," BlackHat USA, 2008.

[7] A.M, Azab, P. Ning, E.C. Sezer, and X. Zhang, "HIMA: A Hypervisor-Based Integrity Measurement Agent," Proceedings of the 2009 Annual Computer Security Applications Conference, IEEE Computer Society, 2009, 461-470.

[8] A. M. Azab, P. Ning, Z. Wang, X. Jiang, X. Zhang, and N. C. Skalsky, "HyperSentry: Enabling stealthy in-context measurement of hypervisor integrity," in ACM Conference on Computer and Communications Security (CCS), pages 38–49, October 2010.

[9] A. Seshadri, M. Luk, N. Qu, and A. Perrig, "SecVisor: A tiny hypervisor to provide lifetime kernel code integrity for commodity OSes," SIGOPS Oper. Syst. Rev., 41(6):335–350, December 2007.

[10] J. M. McCune, Y. Li, N. Qu, Z. Zhou, A. Datta, V. Gligor, and A. Perrig, "TrustVisor: Efficient TCB reduction and attestation," in IEEE Symposium on Security and Privacy, pages 143–158, May 2010.

[11] C. Li, A. Raghunathan, and N. K. Jha, "Secure virtual machine execution under an untrusted management OS," in Proceedings of the Conference on Cloud Computing (CLOUD), July 2010.

[12] R. Sailer, E. Valdez, T. Jaeger, R. Perez, L. V. Doorn, J. L. Griffin and G. S. Berger, "sHype: Secure hypervisor approach to trusted virtualized systems," Technical Report RC23511, IBM Research, 2005.

[13] U. Steinberg and B. Kauer, "NOVA: A microhypervisor-based secure virtualization architecture," in European Conference on Computer Systems, April 2010.

[14] E. Keller, J. Szefer, J. Rexford, and R. B. Lee, "NoHype: Virtualized cloud infrastructure without the virtualization," in International Symposium on Computer Architecture (ISCA), June 2010.

[15] J. Szefer, E. Keller, R.B. Lee, and J. Rexford, "Eliminating the hypervisor attack surface for a more secure cloud," in Proceedings of the 18th ACM conference on Computer and communications security, ACM, 2011, 401-412.

[16] F. Swiderski and W. Snyder, Threat Modeling. Redmond, WA: Microsoft Press, 2004.

[17] T. Ristenpart, E. Tromer, H. Shacham, and S. Savage, "Hey, you, get off of my cloud: Exploring information leakage in third-party compute clouds," in ACM Conference on Computer and Communications Security (CCS), November 2009.

[18] W. de Souza & A. Tomlinson. Virtualisation without a hypervisor in cloud infrastructures: an initial analysis. in PGNet 2013, The 14th Annual Postgraduate Symposium on the Convergence of Telecommunications, Networking & Broadcasting, Jun 2013.

[19] A. Shostack. Experiences Threat Modeling at Microsoft. Microsoft, Security Development Lifecycle Blog, 2008. http://blogs.msdn.com/b/sdl/archive/2008/10/08/experiences-threat-modeling-at-microsoft.aspx. Accessed in 22/04/2013.

[20] J.D. Meier, A. Mackman, M. Dunner, S. Vasireddy, R. Escamilla and A. Murukan. (2003) 'Improving Web Application Security: Threats and Countermeasures', Microsoft Corporation; http://msdn.microsoft.com/en-us/library/ff648644.aspx (16 January 2014).

