Security Testing and Surveillance for Large-Scale Software

Background

This bachelor project is the part of a joint research project between the SAP Software Security team and the HPI Internet-Technologies and Systems group. The project, entitled "Towards Software System Surveillance with the Security Analytics Lab", aims at research and development of methods for automatic analysis in terms of security as well as optimization of the logging information and mechanisms of complex SAP software. The proposed bachelor project will focus on the general study of security testing and logging analysis of large-scale software and their typical deployment scenarios. Students are expected to get familiar with the technical and non-technical approaches in the domain of penetration testing, vulnerability assessment, threat model, as well as security auditing and review, etc.

Description

Within this bachelor project, it is expected that all participants can be actively involved in our collaborative effort with related SAP teams. The different aspects of the project include: deploying, testing, and analysis of the target SAP software, e.g., the SAP NetWeaver, the SAP HANA Database, etc., composing security reports as well as optimizing the logging mechanisms. The general methodology and its routing map for security auditing and surveillance of large-scale of software are expected to be summarized.

Concrete Tasks

- Testing and analysis of the selected SAP software stack
- Design and implementation of automated approaches to gather data on vulnerabilities and attack vectors
- Design and implementation of the central data store and data correlation modules using the SAP HANA database
- Design and implementation of a platform for integrating the results

Deliverables

- A feasible, efficient and complete methodology as well as a running platform for security testing of large-scale of software
- Security report and logging optimization proposals for selected SAP software

References

- Sebastian Roschke: Towards High Quality Security Event Correlation Using In-Memory and Multi-Core Processing, PhD thesis, University of Potsdam, 2011
- Hasso Plattner, Alexander Zeier: In-Memory Data Management - An Inflection Point for Enterprise Applications, Springer, 2011.

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