

Honeypot-based Self Defense

Opportunity for a 6-month internship

Security Research @ SAP Labs France
Sophia-Antipolis – France

SAP's security vision is built on 5 ideals to secure business: Defendable Application, Zero-Knowledge, Zero-Vulnerability, Security by Default, and Transparency.

SAP's security research group lays the foundation for realising the vision: The 30+ researchers of the Security Research unit focus on security engineering (e.g., the automation of the secure software development lifecycle), secure business execution (e.g., business process security and security in cloud based business applications) and secure operations (e.g., secure maintenance and support of complex and heterogeneous cloud IT landscapes).

[Security Research](#) proposes a 6-month internship in its Sophia-Antipolis offices (Mougins, France).

INTERNSHIP TOPIC

There are two kinds of companies: the ones which *have* been hacked, and the ones which *will* be hacked. Intrusion deception is a defense mechanism based on this assumption. Its core idea is to think ahead of assets of value to hackers, and to lay out enticing lures which will catch malicious sessions and redirect them to a honeypot environment.

We have developed a basic proof-of-concept named "SunDEw" (Self-Defense Environment) working for cloud applications running on node.js. There are many areas where it can be enhanced to bring it to the next level.

In this context, the goals of the internship will be to address a maximum of the following enhancement tracks:

- Understand the current prototype, its features and limitations
- Re-design it as a Software-as-a-Service architecture for enabling developers to 'tokenize' their app with low effort
- Fingerprint attackers in order to rethink / fine-tune the trapping mechanism
- Develop the 'response' part of the solution, consisting in: automatic application cloning, database replication and fake data generation
- Develop a just-in-time tokenization process, for auto-capturing backdoors created on the fly by attackers
- Test the solution on productive applications, gather developer feedback and tune the solution accordingly

Technologies/techniques involved are: Node.js, Mongo DB (honeypot database), MySQL / MSSQL / Postgre / HANA (target database for replication) and GIT for code development / maintenance.

We expect that 40% of time will be dedicated to research activities, and 60% to development

CANDIDATE PROFILE

- University Level: Last year of MSc or less if the student has a good profile
- Good knowledge of programming languages, especially node.js and mongoddb
- Good knowledge of versioning control systems like GIT or SVN
- Good knowledge of HTML5 technologies (JS, CSS, AJAX)
- Interest in offensive security
- Interest in research work
- Fluency in English (working language)
- Good oral and written communication skills

INTERNSHIP CONTEXT

SAP

Over the past 45 years, SAP has grown to become the world's leading provider of business software solutions. With 12 million users, 96,400 installations, and more than 1,500 partners, SAP is the world's largest inter-enterprise software company and the world's third-largest independent software supplier, overall. SAP solutions help enterprises of all sizes around the world to improve customer relationships, enhance partner collaboration and create efficiencies across their supply chains and business operations. SAP group includes subsidiaries in over 180 countries and employs more than 84 000 people.

Security Research at SAP Labs France, Sophia Antipolis

Based at SAP Labs France Mougins, Security Research Sophia-Antipolis addresses the upcoming security needs, focusing on increased automation of the security life cycle and on providing innovative solutions for the security challenges in networked businesses, including cloud, services and mobile.

STANDARD INTERNSHIP PACKAGE

- *Salary*: depending on the length of the internship and your diploma.
- *Lunch*: SAP Labs France has a local cafeteria; interns contribute 2,40 €uro/lunch, like other SAP employees.
- *Holidays*: French Bank Holidays
 - o January 1st; April 2nd, May 1st, May 8th, May 10th, May 21st, July 14th; August 15th, Nov 1st and 11th; December 25th
- *Travel*: no trip will be paid by SAP.
- *Accommodation*: SAP can propose an accommodation for the duration of your internship. The accommodation is subsidized by SAP: the intern pays half of the rental cost: 342€ for a 1-room apartment or 442€ for a 2-room apartment (Choice depending on the availability).

CONTACTS AND PROCEDURE

Please send **in English** your CV, a cover letter and any relevant documents to the following persons stating the title of the Internship in the subject: **[Internship Application] Honeypot-based Self Defense**.

Supervisor
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