Postdoctoral project: IoT Traffic Generation Platform

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Objet : Postdoctoral project topic

Cadre : CEF VARIoT

Durée : 24 months

Motivation :

The VARIoT project (2018-EU-IA-0100) addresses a CEF Telecom call on open data platforms (Public Open Data). In particular, the involved partners aim at dealing with the collection and sharing of cybersecurity-related IoT data. The principal objective of VARIoT is to create a service enabling to provide actionable information, to be processed either manually or automatically, in order to ensure IoT cybersecurity. Collected and processed will be made publicly available on the European Data Portal. The results of the project include, among others: a database of IoT devices vulnerabilities and exploits, datasets of IoT devices traffic (both legitimate and malicious), a dataset of behavioural models to detect IoT devices network trafic, tools for supervising and collecting IoT devices network data, and data sharing interfaces.

Télécom SudParis efforts are focused on Activity 4 (leading partner). The main objective is to create IoT devices traffic datasets for smart objects in their normal state, as well as their compromised state. The datasets will be generated on top of a platform hosted at Télécom SudParis. This platform integrates many smart objects with which the Télécom SudParis staff will interact in a natural manner (smart home use case) to generate realistic traffic. The compromised devices data will be generated through the initial compromission of these devices and the elicitation of malicious behaviours within a virtualised and isolated environment. The collection of such data will enable their analysis in order to generate behavioural models of both legitimate and malicious traffic.

Proposed activities :

The activities will revolve around setting up and maintaining a traffic generation and collection environment for IoT devices, as well as formatting, storing, securing and visualising these data:
- deployment and development of an IoT platform
- setup of network traffic generation and collection framework
- deployment and development of collection and secured storage of traffic data, as well as analysis and learning of traffic behaviours
- deployment and development of a secure traffic generation platform for compromised IoT devices

Candidate profile :

Should hold a Ph.D in computer science with experience in one of the following domains: network security, IoT, network programmability (SDN, NFV, etc.), malware analysis. System and network administration skills are also important.