Thesis title: *Simulative evaluation of security monitoring systems based on SDN*

**Thesis description**

Software Defined Networking (SDN) has been increasingly adopted to improve reconfiguration and maintenance of computer networks. A number of security monitoring systems based on SDN are available, but it is difficult to evaluate how they perform, especially in large scale networks. The goal of the project is to evaluate accuracy and efficiency of an SDN-based security monitoring system, in the presence of different security attacks performed against the network. To this end, a network attack simulator based on the OMNeT++ framework and developed at SICS will be extended during the project, and considered as the main evaluation tool.

SICS will provide background information, necessary guidance during the course of the thesis, and the attack simulator tool (including source code and documentation). The tasks of the Masters student for this thesis are:

- Study the SDN architecture and related approaches to security network monitoring.
- Learn to use the attack simulator developed at SICS, and extend it to support SDN scenarios.
- Use the attack simulator to evaluate accuracy and efficiency of an SDN-based monitoring system, in the presence of different security attacks. Possible attacks to be considered include Denial of Service and message replay.
- Document the activities and results as a thesis report.

**Competence**

We are looking for a bright MSc student who has fulfilled the course requirements. Good C++ programming skills are required, as is good spoken and written English. Experience with network security and OMNeT++ is a plus.

Applications should include a brief *personal statement*, *CV*, and a *list of grades*. In the application, make sure to mention previous activities or other projects that you consider relevant for the position. Candidates are encouraged to send in their application as soon as possible. Suitable applicants will be interviewed as applications are received.

**Start time:** As soon as possible  
**Location:** SICS Swedish ICT AB, Kista, Stockholm

**About SICS**

SICS Swedish ICT is a leading research institute for applied information and communication technology in Sweden. SICS is a part of Swedish ICT Research AB, a non-profit research organization owned by the Swedish government and industry. SICS’ mission is to contribute to the competitive strength of Swedish industry by conducting advanced and focused research in strategic areas of computer science, and actively promote the uptake of new research ideas and results in industry and society at large. SICS is an active participant in collaborative national, European, and other international R&D programs.

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