

Appendix 1.

5G Cyber Security Hackathon Winners and Challenges set by Ericsson, Nokia and Oulu University

Ericsson Black Box Challenge:

The world's connectivity needs are changing. Global mobile data traffic is expected to multiply by 5 before the end of 2024 and in the same time horizon we expect to have 22 billion IoT devices connected. Previous generations of mobile networks were focused on consumer and personal communications but now 5G will serve consumers, enterprises and take the internet of things to the next level, where superior connectivity is a prerequisite.

For several years, Ericsson has been breaking new ground testing and trialing 5G. We are true believers of lifelong learning and continuous improvements. Despite the fact that security is built into our products by design, we are always seeking improvements.

By bringing this challenge to the 5G Hackathon we are offering you a unique opportunity to test state-of-the-art next generation telecom equipment that enable use cases like smart manufacturing, remote health care, and so much more. If you want to secure the future, then this challenge is for you!

Technical details:

This challenge offers a unique opportunity to get your hands on Ericsson's state of the art 5G radio infrastructure to see if you can hack it? Can you find any vulnerabilities? The objective is to test the provided infrastructure by getting creative and utilizing different techniques including physical access to the nodes, as it will be within attackers' reach much more than ever before. The challenges will start with a blackbox approach, testing your skills and will gradually widen towards whitebox testing scenarios. Ericsson will have experts present at the challenge. Want to see how far you can go?

Ericsson Challenge Winners:

1.TDC SECURITY

2.NCC GROUP

3. SIG KILL

Nokia Home Network Challenge:

Nokia's new FastMile gateways are self-contained residential devices that connect wirelessly to your 4G or 5G network while creating a better and faster Wi-Fi experience within the home. Nokia will bring in latest next generation prototype to be tested before release. Nokia's Fastmile has several interfaces that are available for attack. Nokia is providing access to wifi, cloud, admin and 5G interfaces during the competition.

Read more about the FastMile Gateway here: <https://www.nokia.com/networks/solutions/fastmile/>

Nokia Challenge Winners:

1.ABC OF SECURITY

2.TELIA CYGATE

3.SIG KILL

University of Oulu iHealth Challenge:

In hospital environment, new technologies are applied rapidly to let the doctors and nurses do their work even more safely and effectively. To secure a reliable connectivity, low latency and safe use, 5G networks are expected to be utilized in critical functions as hospitals.

Losing connectivity on the operation table? Losing control of a device while in surgery? New technologies present new, uncharted threats to network security. Oulu University wants to find cyber security experts to safeguard the digital future of hospitals. If soft spots are found by hacking into 5G devices, base stations, servers or applications in a safe setting, the security aspects of the system can be improved.

Your task is to hack our future hospital simulation at the university campus. The hospital environment is built with real end-to-end 5G network integrated with 4G, i.e. operating in a so called 'non-standalone' architecture offered by 5G Test Network. A real network with 5G access and real terminals offering hotspot access, allowing data transmission through existing technology with sensoring, VR and AR, are offered for hacking. Use case and peripheral devices are simulated in a hospital medical operation setting

You may choose to hack any of the critical functionalities of our future hospital. This could be done for example by sneaking into:

1. the 5G network via untrusted peripheral devices
2. taking over 5G terminal
3. interfering 5G radio i/f or crabbing the network from base station
4. service delivery in the edge computing environment
5. something we could not even think of

Oulu University Challenge Winners:

1. DEEP CUTS

2. TCY

3rd prize was announced as honorary mentions only