

Saal: 21:15 01:00 Day: 4 Track: Hardware & Making nA
Simulacron-3

Title: **FPGAs for everyone**

Subtitle: Integrating FPGAs with standard personal computers

Speaker: **byterazor**

Short: *FPGAs are becoming more and more common in research and industrial projects. They are mostly used to accelerate problems of High Performance Computing. But standard personal computers can also benefit from them, e.g. with cryptographic accelerators, additional processor cores, hardware for special projects. This talk describes possible benefits for FPGAs in General Purpose Computing, and their requirements to the FPGA Host connection and the operating system support.*

Long: FPGAs are becoming more and more important in research and industrial projects. Many High Performance Computing systems rely on FPGAs to accelerate computations. Systems using FPGAs in this way are the Convey HC1, Copacobana from SciEngines and PCIe Accelerator Cards from Alpha Data. The main problem with these systems is, that normal Hackers can not afford these systems. But FPGAs allow the acceleration of task often needed by the hacker community, e.g. cryptography accelerators, cryptography/password crackers, bitcoin mining, and analog/digital converters. Therefore, it is very important to bring FPGAs into General Purpose Computing. The talk is organised in the following way: * a brief presentation of the available High Performance Computing Systems * a description of the benefits of the integration of FPGAs and standard computer systems * an analysis of the requirements to the FPGA Host connection and the operating system support * description of an example integration using Ethernet, a packet switched Network on Chip and a new linux kernel subsystem