

# Mihai Carabaș

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## Education

- 2013–2017 **PhD**, *University POLITEHNICA of Bucharest*.  
Research and implementation of various virtualization technologies as a base start for cloud computing presented in PhD thesis *Improving and Extending Virtualization In Modern Computing Environments*.
- 2011–2013 **Master in Computers and Information Technology**, *University POLITEHNICA of Bucharest*, 10 GPA of 10.  
I was enrolled in Security of Complex Networks program where I enhanced my knowledge to analyze and design secure infrastructures.
- 2007–2011 **Bachelor in Computer Science and Engineering**, *University POLITEHNICA of Bucharest*, 9.57 GPA of 10.  
During my diploma project, I designed and developed a modular testing infrastructure for UTM-based equipments by assessing their capabilities to certain traffic flows. The environment was based on virtualization techniques and was not hardware dependent. The results were collected through various important protocols (e.g. SNMP) and centralized using different open-source utilities.

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## Experience

My name is Mihai Carabas and I am a PhD student at University POLITEHNICA of Bucharest, extending research areas such virtualization and networking. Some of the most important I've accomplished during the years and the current areas I'm working on, are as follows:

- Design and implement a metropolitan area network using a fiber optic backbone and serving more de 1500 clients.
- Develop various operating system in-kernel features from virtualization layer to device drivers using multiple platforms (L4 microkernel, FreeBSD, Linux).
- Research and publications in operating system and network virtualization.
- Design and implement an integrated e-learning system for University POLITEHNICA of Bucharest. It serves more than 25000 students annually at 15 faculties from the university.
- Implement high speed networks (10G and 100G) used for research, education and communications for High Performance Computing (HPC).
- Providing expertise for designing and implementing communication support for cloud technologies (including IBM cloud) used in University POLITEHNICA of Bucharest.

July 2015–present **Network Engineer**, *Romanian National Research and Education Network (RoEduNet)*.

Designing and implementing high speed networks (10G and 100G) used for research and education.

- May 2015–August 2015 **Porting bhyve to ARM-based platforms** , *Google Summer of Code*, Bucharest.  
The goal of the project was to implement support for hardware assisted virtualization on ARM-based platforms using FreeBSD hypervisor bhyve.
- May 2014–present **Team coordination for e-Learning platform**, *University POLITEHNICA of Bucharest*.  
The e-learning team is formed of fifteen people, one for each faculty of the university. I am coordinating this team in order to setup all the courses (about 10000) and the accounts for the students, this steps being made every year.
- May 2014–August 2014 **Instruction caching for bhyve**, *Google Summer of Code*, Bucharest.  
The goal of the project was to implement caching policy for the emulated instructions in the bhyve hypervisor, thus reducing the emulation exception time.
- 2013–February 2016 **Software Engineer**, *Virtual Metrix Inc.*.  
Improve performance of the paravirtualized Linux on top of the VMXL4 microkernel.
- 2013–present **HPC Cluster Administrator**, *University POLITEHNICA of Bucharest*.  
System Administrator of the NCIT Cluster Datacenter, the 1000+ cores grid computing cluster of Politehnica University of Bucharest.
- 2013–present **HP ATA program coordinator**, *University POLITEHNICA of Bucharest*.  
HP opened a training center in our university for *Accredited Technical Associate (ATA)* program and I am coordinating the actions that needed to be done: training and certification exams.
- May 2013–September 2013 **Implement Hardware Nested Page Table Support on DragonflyBSD**, *Google Summer of Code*, Bucharest.  
The goal of the project was to implement a hypervisor in DragonFlyBSD in order to take advantage of hardware virtualization support, like extended page tables for improving page table walkings.
- October 2012–June 2013 **Dual Android on Top of the VMXL4 Microkernel**, *Master project, UPB*, Bucharest.  
The research project we worked on aimed to virtualize Android on top of a L4-base microkernel. Our final objective was represented by two Android instances running on the same device with power management and high availability features.
- May 2012–August 2012 **Add SMT/HT Awareness to DragonFlyBSD Scheduler**, *Google Summer of Code*, Bucharest.  
The goal of the project was to make the scheduler aware of the underlying hyperthreading CPUs and the cache topology, in order to make better scheduling decisions.
- October 2011–June 2012 **Programming the VMXL4 Microkernel**, *Master project, UPB*, Bucharest.  
The research project we worked on was about "High Availability in Distributed Systems". We wanted to make a microkernel to be able to maintain availability of the system when a component from it is going to fail. First, we had to define a failure and then be able to detect it. After detection, the actions involved were either restart that component or restore it to a previous working state.
- July 2010–present **Associated Teaching Assistant**, *University POLITEHNICA of Bucharest*.  
I have been teaching labs and developing lab material for Local Area Networks and Operating Systems classes. Also I have been coordinating the Local Area Networks team (15 people).
- October–December 2009 **Intern**, *SC GsLINK SRL*, Constanța.  
Configuration of Core Equipment (WS-C3550-24): Advanced routing (BGP), Monitoring (MRTG with SNMP).
- July–September 2009 **Intern**, *SC Unirea El Nino SRL*, Constanța.  
I designed the Core Network: advanced routing (BGP), QoS (tc, HTB, IMQ), monitoring (MRTG with SNMP), services (e-mail, DNS, WWW, file sharing).

2005–2008 **Tech Manager**, *SC MICOS TELECOM SRL*, Constanța.

Advanced routing (BGP, OSPF), QoS (tc and HTB), fiber optics network (design and maintenance), services (e-mail, DNS, WWW, file sharing).

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## Technical skills

- Programming: C (advanced), Java (good), Python (good), PHP (good), Perl (beginner).
- Basic system administration: advanced shell scripting (`bash`), `iptables`.
- Network administration: configuring layer 2 protocols (STP, VLAN), routing protocols (BGP, OSPF, EIGRP, RIP), QoS in linux kernel (using `tc` and `htb`), Cisco IOS, Juniper JunOS, IBM BladeOS.
- Security skills: configuring and deployment with Fortinet and Cisco ASA, penetration testing