

Novgorodov Igor

Born 12 November 1985

Zurich, Switzerland

Nationality: Russian

Married, 1 child

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Main skills

I'm an experienced software and systems engineer.

15+ years in different areas of IT.

I have designed and developed a number of network services, among of which are: RADIUS, DHCP servers, communication service, netflow parsing core and lots of REST/HTTP and GRPC APIs. Created and/or deeply modified a number of low-level libraries, for example RADIUS/DHCP/SMPP protocol implementations in Go.

I like to contribute to the open source community and trying to return my work by doing pull requests to the libraries and other projects that I use:

- Minor Linux kernel patches (like [this](#)) and bug reports
- My own libraries ([go-aux](#), [go-amqp-wrapper](#))
- Significantly reworked forks of some libraries ([go-radius](#), [go-dhcp](#))
- Pull requests to a number of the software that I'm using (like [sniproxy](#), [go-smpp](#), [accel-ppp](#), [gosnmp](#), [govalidator](#))
- Bug reports and/or patches for many other open-source projects (Squid, Suricata etc)

Some of my code is available on [GitHub](#)

My technical publications (Russian): [Habrahabr](#)

Development tools:

- Golang (mainly), C, Perl, PHP, Lua, Python, Java and others
 - Experience in developing highly loaded systems
 - Experience in low-level network programming: have developed protocol parsing libraries (DHCP, RADIUS, SMPP, SNMP)
 - Profiling and optimizing software for performance
- Expertise in developing projects using DBMS and message brokers like:
 - PostgreSQL, MySQL, Aerospike, Cassandra, Redis, Couchbase, InfluxDB
 - RabbitMQ, Mosquitto, Kafka
- SQL: database architecting
- HTML, JS, CSS (some Vue.js experience)

OS:

- Linux (RHEL/CentOS, Debian, Gentoo, OpenWRT), FreeBSD
- Windows Server

Experience with a lot of software used in modern stacks:

- nginx/HAProxy/Apache
- MySQL/PostgreSQL/Aerospike/Cassandra/Redis/InfluxDB
- BIND/Unbound/NSD/PowerDNS

- Zabbix/Prometheus/Grafana
- Quagga/BIRD/IPSEC/OpenVPN
- Ansible/Salt/Chef
- VMWare/KVM

LAN/WAN/SAN:

- TCP/IP stack, dynamic routing
- Designing fault-tolerant SAN storages based on Linux (FC, iSCSI)
- Architected a number of WAN-connected networks (IPSEC/DMVPN/OSPF/EIGRP)
- Routers, switches, wireless controllers configuration (mainly Cisco)

Employment history

Senior software engineer

Zurich, Switzerland

Tamedia Espace AG www.tutti.ch

November 2017 – now

I'm a member of a team that is developing a backend for a major Swiss online marketplace. Main instruments are Golang and PostgreSQL.

Software stack: Golang, C, PostgreSQL, Redis

Head of development team, Systems architect

Moscow, Russia

CJSC "MaximaTelecom" www.maximatelecom.ru

December 2016 – November 2017

Me and my team has developed from the ground up and was supporting the following projects:

- RADIUS server: sophisticated request logic; highly performant; multi-level request caches; session storage in Aerospike DB; online configuration reload and many other features
- DHCP server: dynamic subnet definition generation based on templates in real time; pool loading from DB and/or TOML; persisting leases in Aerospike DB for hot restarts
- Communication Service (SMPP, Instant Messaging): Highly performant modular messaging system that handles sending/receiving messages through various protocols (SMPP, E-Mail, IM) and performs bulk message sending (millions of messages per single bulk). One of its main goals is to power Moscow subway emergency messaging broadcast. Storage - Aerospike and Cassandra.
- Network Monitoring System: client-server software to monitor continuously the wireless/wired link between vehicles (subway trams) and datacenter
- A lot of other microservices and modules

We were using the modern software stack: Golang, Aerospike, Cassandra, RabbitMQ, InfluxDB, Grafana, MySQL, ELK, ClickHouse and others.

Senior system engineer

Moscow, Russia

CJSC "MaximaTelecom" www.maximatelecom.ru

December 2015 – November 2016

The main goal of our team was to keep the IT infrastructure supporting huge Wi-Fi network in Moscow city & subway up and running. As a side project I've developed a scalable RADIUS and

DHCP servers with very specific requirements for our network to which we migrated from FreeRADIUS and decentralized DHCP - see next job position.

Some numbers:

- 800 trains (4500 train cars), 6500 buses
- 8 mil. unique clients a day, 500k wireless users simultaneously, 20+ Gbit/s of traffic
- RADIUS: 1k+ rps, DHCP: 4k+ rps, 5k+ subnets

Other projects include providing Wi-Fi access in buses/trams (Moscow City Transport network), stadiums, airports, trains (Moscow electric trains).

Our team was responsible for the following IT infrastructure:

- VMWare vSphere clusters (50+ hosts), Linux/FreeBSD/Windows servers (500+ mostly virtual)
- Highly loaded services including:
 - RADIUS, DHCP, DNS (Unbound, 20k+ reqs/sec)
 - HTTP servers (nginx) serving up to 10Gbit with TLS
 - Databases (MySQL/MariaDB, Cassandra, Aerospike)
 - SAN infrastructure (iSCSI, FC on HP MSA)
 - Hadoop cluster (10 hosts, HDFS, Spark, Hbase, Flume etc)
 - A lot of other minor systems that supported our infrastructure

Senior system engineer

Moscow, Russia

CJSC "KR Properties" www.kr-pro.ru

November 2008 – November 2015

I was responsible for the health and development of the company's IT infrastructure:

- IT department's infrastructure management
- OS: Linux, Windows Server 2003-2008R2, VMWare vSphere
- Network devices: Cisco (ASA firewalls, ISR routers, Catalyst switches, MDS FC switches)
- VoIP: Asterisk, Avaya
- Supporting geographically dispersed VPN network based on DMVPN, OpenVPN, IPSEC, OSPF/EIGRP
- Migration from physical servers to vSphere private cloud
- vSphere upgrade lifecycle from 4.0 to 6.0
- Implementation of VDI infrastructure (Horizon View, Zero-clients, nVidia GRID)
- Migration from iSCSI to FC SAN infrastructure
- Custom HA SAN storages (Linux, DRBD/LSI Syncro, SCST, Pacemaker, iSCSI/FC)
- Migration of VoIP from Avaya to Asterisk
- Mail system with Linux frontend (HAProxy, ClamAV, Postfix, OpenDMARC, OpenDKIM) and Exchange backend
- Proxy servers with transparent Kerberos AD authentication (Squid, SSL bumping)
- BIND DNS Server (DNSSEC)
- Backup software (Veeam, Bacula, custom scripts)
- Monitoring software (Zabbix with SMS alerts, Cacti, Monit)
- Software development
 - Intranet helpdesk system (PHP/Perl/MySQL/LDAP/Memcached)
 - User lifecycle management (PHP/Perl/MySQL/Powershell)
 - Mail archiving system for the need of security department (Perl, MySQL, Postfix)
 - AD/OpenLDAP synchronization scripts

System engineer

Moscow, Russia

LLC "NewCom Port" www.ncport.ru

February 2007 – October 2008

My responsibility:

- Supporting server infrastructure of the small (10 racks) datacenter
- Administration of Linux servers (billing, mail, www, monitoring etc)
- Writing applications on Perl/PHP/MySQL stack (monitoring, configuration backup)
- Implementation of highly-available cluster for the mail service (heartbeat, DRBD, Postfix, Dovecot, MySQL)
- Writing new Netflow billing core on C (multithreaded, using hash tables)
- Creating various web-based apps (mail system management, hosting, ups monitoring)
- Creating a simple universal backup system that suited company's needs (unix, windows, networking device's configuration)

Education

2001-2004 National Research Nuclear University 'MEPhI', Moscow (Incomplete)

1996-2001 Mathematical Lyceum