

Valentin V. Bartenev

Software engineer with management abilities and focus on solving problems efficiently

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Location: **Moscow, Russia**

Date of Birth: **December 31, 1986**

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Summary

High-performance Software Engineer and Head of Development with over 20 years of experience specializing in web server architecture, asynchronous programming, and system-level optimization. Proven track record of leading international teams to deliver industry-standard open-source and commercial products, including **nginx**, **NGINX Unit**, and **Angie**. Expert in C, *nix internals, and high-load networking, with five co-invented patents in shared memory and multi-threaded server architecture. Committed to solving complex technical challenges while maintaining a focus on developer productivity and project roadmap efficiency.

Skills Overview

My core competency is in C, but I am also experienced with C++, JavaScript, Python, Pascal, Assembly, Fortran, PHP, and Perl. Besides, I have a basic knowledge of how computers work, deep down to OS kernel and CPU level.

Programming expertise: asynchronous programming, event-driven programming, multithreading, queues, shared memory, synchronization primitives, lockless programming

OS: Linux, FreeBSD, and other Unix-like platforms

Languages: Russian (native speaker), English (working proficiency)

Professional Experience

Web Server LLC

Moscow, Russia

Head of Development Department

August 2022 — Present

Responsible for the design, development, and project management of Angie, a high-performance web server, which was originally forked from nginx. As well as its commercial counterpart Angie PRO, and load-balancing component of Angie ADC.

Key tech areas: C, *nix, asynchronous, multiprocess, shared memory, network programming, TLS, HTTP, load balancing.

Scope of work:

- setting goals and roadmap for the projects
- managing the development team
- architecting key features and mechanisms
- writing and reviewing code, documentation, and tests
- interviewing job candidates
- technical negotiations with partners and clients
- communicating with the open-source community

Main accomplishments:

- built a team of highly skilled developers
- organized a regular release cycle with a new public releases every quarter
- developed or took part in development of many exciting features
- attracted and organized a fruitful technical cooperation with an international partner

to be continued...

NGINX LLC / F5 Networks

Moscow, Russia

Development Team Leader @NGINX / Sr. Manager of Product Development @F5

September 2018 — March 2022

Responsible for the design, development, and project management of NGINX Unit, a high-performance web and application server with dynamic configuration capabilities.

Key tech areas: C, *nix, asynchronous, multithreaded, network programming, TLS, HTTP, integration with multiple programming languages (Python, PHP, Perl, Ruby, JavaScript, Go, and Java).

Scope of work:

- setting goals and roadmap for the project
- managing the development team
- architecting key features and mechanisms
- designing the JSON configuration API
- writing and reviewing code, documentation, and tests
- developing project documentation web site
- interviewing job candidates
- communicating with the open-source community

Main accomplishments:

- successfully nurtured the project from an idea to a production-ready release
- built an international distributed team of highly skilled developers
- organized a regular release cycle with a new public release every 1-2 months
- achieved integration with 7 different programming languages
- wrote the fastest HTTP parser
- designed low-latency high-performance shared memory IPC
- created the project web site (HTML5/CSS, Sphinx)

Senior Developer

November 2011 — September 2018

Worked on nginx, one of the most popular open-source web servers in the world, and its commercial version. Played a role in the development of njs, a JavaScript engine. Initiated a new project, NGINX Unit.

Key tech areas: C, *nix, asynchronous, multithreaded, network programming, TLS, HTTP, Perl, JavaScript, register-based VM, state machines, AST.

Scope of work:

- writing and reviewing code and tests
- interviewing job candidates
- communicating with the open-source community
- providing training and giving conference talks

Main accomplishments:

- built one of the most widely used SPDY and HTTP2 implementations
- added thread pool mechanism for asynchronous execution of potentially blocking operations, which in some cases provides a 10x+ performance boost
- added various optimizations for event processing on modern OS kernels
- designed and developed the initial version of the monitoring interface, including a real-time status page (in JavaScript), one of the selling features of nginx's commercial version
- developed active asynchronous health checks, which is another selling feature of the commercial version
- fixed bugs and made improvements in almost all subsystems and modules, including proxy, SSI, routing, compression, TLS encryption, load-balancing, file handling, request limiting, and others
- helped to develop two training courses on module development
- formulated the idea and made the first PoC of a new promising server (NGINX Unit)

Freelancer (self-employed)

Full-Stack Web Developer / System Administrator / Project Manager

2003 — November 2011

Developed and maintained web sites for various clients. Took part in an e-commerce SaaS startup. Also, created an open-source third-party module for nginx that integrates CTPP template engine into the web server.

Key tech areas: C, C++, CoachDB, CSS, Django, DNS, Dovecot, eJabberd, Exim, FreeBSD, HTML5, HTTP, IMAP, JavaScript, MongoDB, nginx, nsd, POP3, PostgreSQL, Python, Redmine, SMTP, uWSGI, XMPP.

Scope of work:

- creating a database model and a CMS for customer web sites
- writing HTML, CSS, and JavaScript code for web pages
- collecting information necessary to propose requirements for web sites
- finding a designer and managing visual content workflow for customer web sites
- hosting and managing customer web sites
- providing hosting for corporate domains and emails
- SEO

Main accomplishments:

- created from scratch a number of various corporate web sites with different functionality, including e-commerce
- developed an nginx module that can be used in high-load projects for fast processing of HTML templates

Afrikana LLC

Moscow, Russia

Webmaster / System Administrator

February 2006 — August 2008

Responsible for all aspects of IT operations, including the office network and company web resources for a travel agency.

Key tech areas: Apache, Windows, ActionScript, Flash, FreeBSD, HTML, CSS, JavaScript, PHP, ZendFramework, DNS, Dovecot, Exim, HTTP, IMAP, JavaScript, nginx, nsd, POP3, MySQL, SMTP, php-fpm.

Scope of work:

- managing and improving company web resources
- system administration of company network, servers, and computers
- SEO and running advertising campaigns on the web

Main accomplishments:

- made various improvements to the web site, including a tour finder, photo gallery, and discussion board, which improved the conversion rate of visitors to clients
- increased site traffic due to enhanced visibility in search engines and the use of Yandex.Direct context ads
- improved page loading speed
- secured the email system and computers from spam and viruses
- developed and maintained a new version of the web site with a modern CMS, refreshed design, and user-friendly structure

Conference Talks

- PHP-FPM, (g)unicorn, Puma, and uWSGI will no longer be needed (HighLoad++ 2024, Russia)
- The Angie web server one year later: new features and future plans (HighLoad++ 2023, Russia)
- Honey, I forked nginx (HighLoad++ 2022, Russia)
- NGINX Unit - a dynamic web server with unique architecture (BIF 2018, Russia; Stachka 2018, Russia; CodeFest 2018, Russia)
- NGINX Architecture Overview (nginx.conf 2017, USA; nginx.conf 2018, USA)
- Limitations of Linux API as seen by the dev of a high-perf server (BIF 2017, Russia; DevConf 2017, Russia; BackendConf 2017, Russia; Stachka 2017, Russia)
- HTTP/2: The Dark Side of the Moon (nginx.conf 2016, USA)
- HTTP/2: Myths and Facts (DevConf 2016, Russia; Stachka 2016, Russia)
- nginx.CHANGES.2015 (HighLoad++ 2015, Russia)
- The HTTP/2 Module in NGINX (nginx.conf 2015, USA)
- SPDY and HTTP several times with a thread (RIF:Technologies 2015, Russia)
- SPDY and HTTP 2.0: The Present and The Future (nginx.conf 2014, USA)
- SPDY: 146% faster (HighLoad++ 2012, Russia)

Patents (co-inventor)

- [US-10506072-B2](#) - Passing listener sockets between web server processes
- [US-10985981-B2](#) - Multi-threaded server architecture supporting dynamic reconfiguration
- [US-11042424-B1](#) - Pipelined request processing using shared memory
- [US-11134137-B1](#) - Filter-based request processing in a web server
- [US-11249923-B1](#) - Using shared memory to transport data between server processes