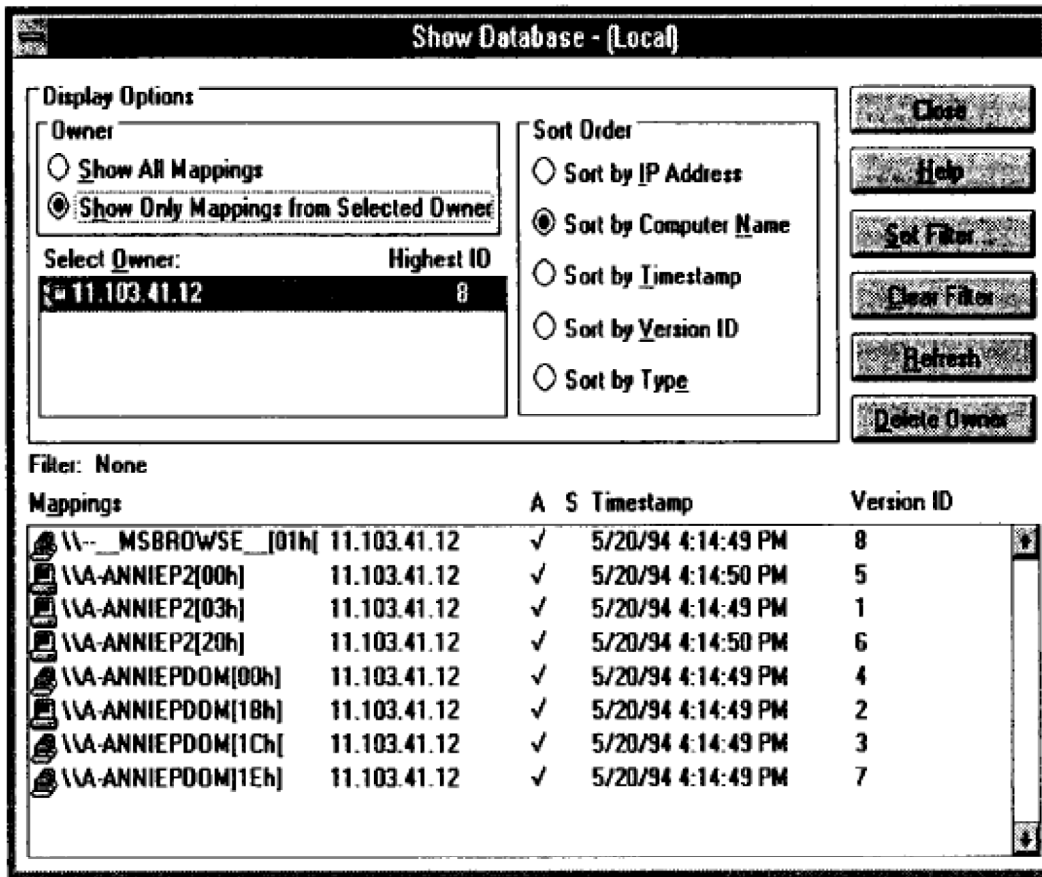


(such as when the Workstation service or Server service is stopped), it no longer challenges other registration requests for the name. This is referred to as releasing a name.”

75. The Patent Owner’s Expert claims: “Lastly, WINS repeatedly states that "computers register themselves with the WINS Server." (WINS at 51). A process in the context of the '704 Patent is a process or program running on a computer, not the computer itself. WINS only tracks registration of a computer, and does not store information in its database relating to processes running on that computer.” (Mayer-Patel Declaration, Exhibit 2018, p.45) and “Lastly, claim 32 requires an identification of a "process" currently connected to the network. This "process," as discussed above, is a process or program running on a computer, not merely the associated computer itself. WINS only discloses the registration of a computer, and so does not anticipate this requirement of claim 32.” (Mayer-Patel Declaration, Exhibit 2018, p.55). Firstly, the Expert has confirmed that Workstation (and other) Services are processes that register their names (which may consist of a computer name plus a 1-byte Service-specific suffix), the WINS Manual description of this event as “computer registering itself” is a simplification characteristic for these types of documents. Secondly, a computer utilizing WINS as a NetBIOS Name Server can run many other processes, and they can register with

WINS, too. While the Microsoft TCP/IP manual does not talk about 3rd party NetBIOS applications and their name registrations (another understandable simplification), an illustration of the WINS registration database shows that there are many registered processes, using different names, all running on the same computer and registered with the same IP address mapping. In the example illustration, a computer with the IP address 11.103.41.12 and the “A-ANNEP2” computer name has its following processes registered with WINS: __MSBROWSE_[01h] (Master Browser), A-ANNERP2[00h] and A-ANNERPDOM[00h] (Workstation Service), ANNERP2[03h] (Messenger Service), ANNERP2[20h] (File Server Service), etc.



(Exhibit 1004, p.150)

76. The Patent Owner’s Expert uses the same “on-line vs. registered” argument for WINS: “First, as described by the above disclosure, a name in the WINS system may remain registered when it is disconnected from the network, as long as the Workstation service is ongoing. Processes that are, for example, off-line while the computer system is still running will remain registered in the database. Second, like NetBIOS, WINS will still recognize a name as registered until it is challenged by a new node. A name that is not

connected to the network will remain in its default, "registered" state unless and until a new node contacts WINS requesting the same name for a different address than the first node.” (Mayer-Patel Declaration, Exhibit 2018, p.45) This statement is incorrect: these names remain registered in the database for a limited time only. When their registrations time out, they will be marked as ‘expired’, keeping the process on-line status information “relatively current” (the expression used in the ‘704 Patent at 5:39-44). This was already discussed in Sections 25-27 of this Declaration.


77. The Patent Owner’s Expert makes a statement about the way the WINS server maintains its internal registration database: “Third, the above disclosure specifies that registered names will remain registered in the database even after it is challenged, and WINS will simply "mark" registered names as "released" until "a certain period of time" has elapsed. The names are then merely “marked” as “extinct,” and even these "extinct" names will "remain in the database for a designated period of time." (WINS at 59).” (Mayer-Patel Declaration, Exhibit 2018, pp.45-46). Firstly, the quoted section talks about names being explicitly “released to the WINS server,” and does not talk about “challenges” taking place when a name conflict is detected. Secondly, it is true that the de-registered records are not removed from the WINS database immediately. This is

done to optimize future re-registrations and to support multi-server WINS ‘database replication’. The presence of a ‘released’ record in the database does not mean that the name is considered ‘active’ or ‘on-line’. In his Deposition, the Patent Owner’s Expert agreed that the same is true for the ‘704 Patent, too: “A. [...] I also see, on Column 6 around Line 5, that it describes either removing the user's information or simply flagging the information as being off-line. Q. So it describes removing the user's information? A. It describes that as one possibility for how it maintains its internal data structures.” (Expert Deposition, p.32:30-p.33:5)

XIII. SIGNATURE

78. I hereby declare, under penalty of perjury under the laws of the United States of America, that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true.

Executed on: 4/29/2014

 _____ Vadim Antonov

Vadim Antonov

e-mail: avg@kotovnik.com

SUMMARY

I'm a software manager and developer, with technical leadership and hands-on implementation experience in a number of ground-breaking projects in diverse fields of computer industry, including development of operating systems (both research and production), compilers and interpreters, Internet backbone networks worldwide, supercomputer software, terabit data routing, Web-based applications, IP telephony, hosted business applications, application and network security, network monitoring, etc. My managerial experience includes founding several companies and 10 years of software development management (executive level) in both small and large (up to 60000 employees) companies; my expertise is in building and running small highly efficient "Skunkworks style" teams.

WORK EXPERIENCE

Snowflake Computing, San Mateo, CA; 3/2013 - present

Founding Engineer

- Designed and implemented compressed columnar file storage subsystem;
- Designed and implemented internal binary representation for semi-structured data;
- Implemented high-performance JSON parser and generator;
- Implemented AVRO parser;
- Implemented local file caching logic;
- Implemented various SQL functions for to-string and from-string conversions;
- Implemented SQL functions for handling semistructured data (extraction, flattening, casts, etc);
- Implemented various generic and low-level classes and functions (fast hashing, numeric conversions, data structures, etc).
- Participated in architectural and design work.

Avistar Communications, San Mateo, CA; 6/2012 - 2/2013

Sr. Software Engineer

- Reverse-engineering Microsoft implementation of firewall/NAT traversal protocols in Lync server and clients;
- Created firewall/NAT traversal testbed for interconnectivity testing between Avistar Media Engine and Lync;
- Implemented Lync-compatible STUN (Session Traversal Utilities for NAT) protocol engine;
- Implemented Lync-compatible TURN (Traversal Using Relay NAT) protocol client;

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- Participated in design and implementation of ICE protocol engine (Interactive Connectivity Establishment) for Avistar Media Engine;
- Refactoring and improvements of Media Engine platform classes;
- Participated in porting Media Engine to Android (improved UI, added screen orientation change handling, worked on interface to OpenMAX hardware video codecs).

Pure Storage, Mountain View, CA; 9/2011 - 6/2012

Member of Technical Staff

- Developed SSD operations trace analyzer;
- Developed SSD performance test bench to test SSD access strategies and aid in discovery of SSD firmware timing behavior;
- Refactored low-level SSD I/O routines;
- Refactored volume label writing and reading;
- Added use of TRIM to improve SSD performance;
- Implemented advanced strategies for SSD scheduling;
- Added back-pressure handling and refactored from push to pull interface of in-memory and persistent change log recorders;
- Contributed to bug triage and fixing.

Avistar Communications, San Mateo, CA; 8/2011 - 9/2011

Contractor, Software Engineering

- See description of full-time Avistar position above

Symantec Corp., Mountain View, CA; 7/2007 - 6/2011

Sr. Principal Software Engineer

- Designed and implemented very high speed web server and in-memory database for website reputation service with 50 million end-users (providing XML access to site reputation database and static content delivery from RAM); including non-stop reconfiguration, fault tolerance, and low-overhead synchronization with Oracle RAC database.
- designed and implemented clickstream aggregation and statistical processing server;
- created patent-pending architecture for real-time site rating service using Bayesian information integration from massively distributed sensor network;
- implemented very high performance server for on-line executable file trustworthiness validation, a core component for the 2009 and subsequent releases of Norton Anti-Virus;
- designed and implemented Intelligent Analysis Scheduler;
- designed and implemented high-performance platform for Symantec's on-line services (a critical component in 2011 NIS/NAV);
- designed and implemented SafeWeb plugin for the new-generating on-line services platform;
- designed and implemented SRDB Reader, a component for conversion of website reputation data from Oracle relational DB to object-oriented representation
- designed and implemented Android client for Norton Remote Rescue anti-theft service;
- invented a novel method of signature proximity-based malware detection (patent pending);
- invented fast cryptographic method of client authentication (patent pending), and implemented Symantec Client Authentication servers and client libraries;

- invented architecture for immune-system like web site reputation system (patent pending);
- invented method for malware signature distribution which reduces false positive matches without reducing coverage of known malware (patent pending).
- co-invented the method for telephone phishing protection (patent pending);
- invented the method for protecting data on lost/stolen mobile devices (patent pending);
- received Mercury award for innovation;
- received A++ award for outstanding performance;
- received a number of Applause awards (2009,2010,2011);
- received 2011 Standing Ovation award.

NebuAd Inc., Redwood City, CA; 6/2006 - 5/2007

Chief Architect

- participated in development of company's product definition and service architecture (ultra-transparent HTTP proxy-based advertisement insertion, deployable at ISPs).
- designed and developed the first-generation proxy appliance (Intel P4-based), personally implemented the following subsystems:
 - network flow processor (user-space prototype and in-kernel module);
 - fault tolerance protocols and supporting code for parallelized processing;
 - modified Linux TCP stack to support ultra-transparent proxy operation;
 - high-performance asynchronous I/O library capable of servicing up to 30k simultaneous flows per CPU;
 - fast URL matching library (using novel hashed tree algorithm and custom NFA-based regexp matching);
 - UI for the appliance's LCD.

Trustworthy Software Inc., Hayward, CA; 10/2002 - 12/2008

CTO, majority shareholder.

- Principal Investigator on a contract with US Army TACOM, developing secure Web-centric solutions for engineering document management, SBIR Phase I and II:
 - designed architecture for the secure Web-centric application platform;
 - created winning proposals for the SBIR Phase I and II solicitations;
 - managed the development team;
 - designed and implemented C++ foundation classes library, including multithreading support, error reporting, tracing and logging, various data structures (including novel hash trees), a novel C++ incremental garbage-collector and a fast small structure memory allocator;
 - designed and implemented portable C++ asynchronous I/O library (Linux x86, Windows NT and XP, Sun Solaris 9, 10) including event model, thread pooling, file and network I/O (including support for scatter/gather ops), asynchronous DNS resolver, directory access, process management, network configuration access;
 - designed and implemented Distributed JavaScript (DJS) bytecode compiler & asynchronous event-driven interpreter, implementing JavaScript extended with support for strong typing (elementary types, fixed-point arithmetic, classes and enumerations) and direct access to object request broker and other remote data access methods;
 - designed secure transport layer architecture;
 - implemented Public-Key Infrastructure support library for the secure transport layer;

CV-3

- designed and implemented secure object request broker library;
- designed secure distributed object naming service;
- designed secure logging service;
- designed universal federated user identity management subsystem (distributed authentication, flexible authentication dialogue scripting, public-key based user credentials, user and authentication information source integration);
- designed secure distributed role-based access control and session management service.
- Contractor with Veritas Inc. (acq. by Symantec) - designed and implemented Network Communication Manager quick network diagnostic tool (performance measurements, fault analysis, detects most kinds of LAN and WAN access links and gateways malfunction, misconfiguration and overload conditions in 20-40 seconds).
- Principal Investigator on a contract with US National Geospatial Intelligence Agency (NGA):
 - created winning proposal for the SBIR Phase I solicitation;
 - created architecture for secure distributed satellite and air recon imagery search and notification;
 - created architecture for secure P2P network, including novel approach to regional P2P node clustering and the first P2P network design resistant to flooding and poisoning attacks;
 - created architecture for LAN-wide P2P cache management and LAN-WAN access link bandwidth management;
 - created hybrid P2P/streaming architecture for highly scalable real-time and delayed video streaming.
- Contractor, misc. contracts:
 - designed and implemented basic IP routing daemon software on PPC/Linux platform, including user-space part of PPP protocol and support for NAT/firewalls and L2 switching;
 - designed and implemented HDLC-over-Ethernet protocol, including Linux kernel module;
 - designed and implemented Broadcomm Gigabit Ethernet switch controller driver for PPC/Linux.

Zultis Technology, Inc., Sunnyvale, CA; 02/2003-12/2003

Contractor

- Designed and implemented soft IP router component of the integrated VOIP PBX/network gateway platform (PowerPC 440 and PowerPC 405 CPUs), including:
 - Linux kernel driver and user-space configuration support for Broadcomm Gigabit and 100Mbps Ethernet switch;
 - PHY control and monitoring for Ethernet interfaces, including powered Ethernet feature;
 - user-space routing daemon with company's proprietary configuration and UI access, supporting dynamic routing tables and L2 switching;
 - implemented user-space support for PPP (LCP, IPCP, PAP), integrated with the router component, and interfacing with Linux kernel-based PPP stack;
 - implemented distributed routing table synchronization across multiple modules within the system;
 - designed and implemented HDLC-over-Ethernet tunneling protocol for interfacing T-1 WAN lines (through DSP) to the router module (supporting clearchannel and channelized T-1s with various mixes of data/voice timeslot assignments), including Linux kernel module;

- o designed and implemented firewall and NAT configuration module (interface between the company's proprietary UI, proprietary configuration database, and Linux iptables kernel modules).

Exigen Group, San Francisco, CA; 7/2000 - 10/2002

Chief Architect - responsible for the architecture of the company's computing utility software suite.

- Supervised the company's Architecture Group.
- Created middleware concept for large-scale computing utilities, including novel security architecture.
- Invented (patents pending), supervised implementation, and partially coded the industry-first secure object broker (EOL), including foundation library, platform-independent asynchronous I/O library, secure transport layer, inter-object protocol engine, object definition language compiler, regression test suites (over 300 thousand lines of source code).
- Designed or participated in design of a number of services for the utility middleware platform based on EOL, including: distributed secure name service, authentication service, activation management, distributed file service, logging service, common component configuration framework.
- Supervised EOL development, QA, and documentation teams in US and Russia.

MongoNet Inc., San Francisco, CA; 6/2000 - 2/2013

Member of the company's Board of Advisors

- created company's engineering plan and initial product definition based on the company founder's idea;
- designed software and service architecture for the fax to any e-mail gateway based on OCR technology;
- helped to hire and manage the engineering team during early stages.

Genesys Telecom Labs, Inc. / Alcatel, San Francisco CA; 4/1999 - 6/2000

Chief Network Architect - responsible for creating and advancing company's strategy in Internet telephony and Internet-based multimedia applications.

- Co-authored Simple Media Control Protocol for providing Class 5-like features to VOIP and conventional telephone switches, and for controlling multimedia communications.
- Participated in design of the Genesys VOIP software switch product (DMX).
- Authored comprehensive technology and trends analysis on core networking technology for integrated carrier networks.

Syntax Inc., Seattle, WA; 1/1999 - present

Director, major investor

- provided business and technological advice for the developers of the most advanced XML editor on the market.

Civilized Discourse, Belmont CA; 8/1998 - 4/1999

Founder.

- Created business model for cooperative self-rating discussion forums.
- Designed and implemented very high performance object-oriented distributed database (Linux, C).
- Designed and implemented Web-based interface to the database simulating operation of a local newsreader software (Apache, Linux).
- Designed and implemented e-mail gateway to mailing lists and the anonymizing remailer based on the CIVD database.
- Designed and implemented a message archive search engine.
- Invented a new route flap damping algorithm allowing to increase stability of Internet backbone routing (RFC publication pending).

Pluris, Palo Alto CA; 7/1996 - 8/1998

Founder and CTO - Responsible for all design and engineering in the company.

- Invented and patented core massively parallel routing technology. The technology allows to increase capacity of Internet routers 1000-10000 times over conventional routers, allowing to route data at several terabits per second.
- Invented and patented new interconnect technology for massively parallel computers (the permuted multihypercube).
- Invented and patented scalable LAN architecture.
- Created business plan and presentation and successfully raised \$3M first round of venture capital.
- Hired and managed software and hardware teams.
- Designed hardware architecture and detailed specifications for the prototype.
- Selected and initially installed company IT infrastructure, including workstations, file servers, LAN, telephone and voice mail systems.
- Participated in board debugging of hardware prototype.
- Designed architecture and directly supervised MPR software design, including: packet routing engine, device drivers, bootstrapping, diagnostic logging, configuration manager, configuration compiler, configuration database, user interface, network monitoring, hardware diagnostic, routing protocols and configuration microcode.
- Implemented significant portions or all of: configuration compiler, packet forwarding engine, configuration manager, device drivers.
- Performed component selection for hardware design.
- Created hardware architecture for the product line.
- Invented new type of linearly scalable communication network (permuted multihypercubes) providing significant speed and redundancy advantages.
- Evangelized company technology at conferences and technical committees' meetings.
- Participated in fundraising for the second round (successfully raised \$20M).

nCUBE, Foster City CA; 7/1995 - 7/1996

Sr. Software Engineer - Responsibilities included kernel and application development for nCUBE massively parallel computers.

- Participated in design of CUBE 2 ISDN communication facility for video-on-demand applications.
- Installed and supported Plan 9-based corporate network.
- Performed troubleshooting and bug fixes in Plan 9 systems.
- Developed 100Mbps Ethernet drivers for PC and nCUBE 3.
- Worked on improving performance of Plan 9 TCP/IP stack and user-space file system (KFS).

CV-6

- Reimplemented Plan 9 Address Resolution Protocol streams modules and generic Ethernet driver routines.
- Designed and participated in implementation of distributed file system for nCUBE 3 operating system (Pluto), including distributed cache and software emulation of RAID-5 disk arrays.

Sprint, Herndon VA; 7/1993 - 7/1995

Sr. Network Engineer (Acting Manager, departments of SprintLink Engineering and Software Development, 1/94 - 10/94) - Responsibilities included SprintLink DS-3 backbone and dial-up engineering, design and development of operational, customer support, build-out of infrastructure and development of tools.

- Designed and built the world first commercial and telco-owned T-3/OC-3 Internet backbone.
- Designed SprintLink backbone and support infrastructure architecture.
- Performed full range of backbone equipment installation and configuration tasks, including on-site installation.
- Designed and implemented SNMPSTATD v1 - a SNMP network monitoring and statistics collection tool including report generators.
- Implemented the first link-state based (I-ISIS) IGP routing in a tier-one backbone network.
- Re-engineered SprintLink backbone to support CIDR and BGP-4.
- Designed and introduced SprintLink backbone numbering plan and routing policies.
- Implemented BGP confederations in SprintLink backbone.
- Designed SprintLink routing architecture and coordinated deployment of the first DS-3 circuits and backbone routers.
- Invented automatic reverse-path source address verification (implemented by Cisco as part of CEF in 1998).
- Designed and implemented customer information, hardware configuration and topology database for SprintLink, International Connectivity Management and Sprint Managed Router Networks.
- Designed Pennsauken NAP architecture.
- Participated in the design of NYSERNET III architecture.
- Designed and coordinated implementation of tools for automated DNS zone generation from the database information.
- Designed and coordinated implementation of SNMPSTATD v2 (the new monitoring system integrated with the topology database).
- Designed and implemented Sprint's SWIP and CIDR registry software.
- Worked with cisco and other vendors on debugging and alpha-testing new software (including cisco 9.2+BGP4 and 10.x IOS).
- Participated in IETF activities in BGPD/ALE, Routing and IPNG working groups.
- Performed third-level troubleshooting and on-going backbone configuration modifications for SprintLink and ICM customers.
- Coordinated development and operations of SprintLink services (DNS, USENET News, X.400<->RFC-822 e-mail gateway, IP dial-up, MBONE, NTP) and engineering LANs.

Berkeley Software Design, Inc., Falls Church VA; 12/1991 - 6/1993

Sr. Systems Engineer - Responsibilities included developing utilities and hardware drivers for a 386 PC operating system.

- Debugged interrupt handling code.
- Reimplemented bad sector forwarding for AT hard disk driver.

CV-7

- Wrote POSIX-compliant **more** utility.
- Found and fixed number of bugs in cache buffering, kernel memory allocation and machine dependent code, reimplemented mbuf clusters allocation.
- Wrote the Wangtek/Archive QIC-150 tape driver.
- Wrote the 3C507 Ethernet driver.
- Implemented the **pr** utility.
- Reimplemented the floppy-disk driver and added support for QIC-80 floppy-tapes.
- Wrote RISCom/8 asynchronous multiplexer driver.
- Wrote RISCom/N1 high-speed HDLC synchronous port driver.
- Wrote the 3C501 Ethernet driver.
- Wrote the 3C505 Ethernet driver.
- Implemented the NE1000 Ethernet code.
- Reimplemented the 3C503 and WE8013 Ethernet driver.
- Wrote the 3C509 Ethernet driver.
- Ported the EtherExpress driver.
- Converted the BSD/386 drivers for the use with the new autoconfiguration interface.
- Debugged the serial port driver.
- Implemented virtual screens in console driver.
- Wrote the driver for RISCom/H2 dual high-speed synchronous port.
- Implemented Point-to-Point Protocol for dedicated synchronous and asynchronous circuits and for dial-up asynchronous lines.
- Reverse-engineered and implemented cisco serial line IP protocol and SLARP.
- Implemented the font loading program.
- Performed troubleshooting and customer support.

Demos co-operative, Moscow, USSR; 9/1990 - 12/1991

Founder, Lead Software Engineer, Postmaster - Responsibilities included developing networks and systems software, administrate RELCOM network.

- Took part in the development of RELCOM - now the largest UUCP and TCP/IP-based transnational network participating in EUnet. Supervised the development of the national e-mail backbone.
- Developed the number of software tools for supporting adaptive message routing and highly effective message relaying (including UUCP line discipline, UUMAIL message routing software, e-mail compressor BATCHMAIL, redesigned BSD Unix modem interfaces, "intelligent" USENET<->e-mail gateway, generic RFC822 parser library).
- Carried duties of the postmaster of ussr.eu.net.

Demos co-operative, Moscow, USSR; 7/1989 - 9/1990

Founder, Head of Software Department - Responsibilities included coordination of software design and marketing, consulting and developing system software in field of Unix and Unix-compatible operating systems working on IBM PC/386, VAX-11 and PDP-11.

- Was the head of design of commercial releases of DEMOS operating systems for PDP-11 clones, DEC Professional, IBM PC/XT and revising the DEMOS documentation. (DEMOS is a family of Soviet most popular Unix-like operating systems compatible both with Unix System V and BSD Unix).
- Designed the Ethernet TCP/IP network drivers for NE-1000 clones under SCO XENIX 2.3 and Lachman/Convergent Tech. STREAMS TCP/IP.

- Made the localization for USSR of SCO XENIX including reimplementing several utilities.
- Designed the PC graphic library and font design kit for HP Laser Jet II and Canon LBP-8 (LIPS-III) series. Designed device-independent version of Unix **troff** typesetting package supporting extended 8-bit coding.
- Designed the message-routing software for DEMOS phone-based public network.
- Developed the model of D3 operating system kernel.
- Consulted DEMOS, Unix and XENIX users.

Computing Center of Ministry of Automobile Industry, Moscow, USSR; 7/1987 - 7/1989

Head of Department of Systems Software - Coordination and development of DEMOS and Unix system software and documentation, teaching of system programmers and system administrators for Unix-compatible systems.

- Ported the Unix BSD 2.9-based system (DEMOS 2) to Elektronika-85 (DEC Professional compatible), a low-level graphic package was designed for E-85.
- Designed a fast termcap-driven window & menu library under Unix.
- Reimplemented numerous components and partially the kernel of DEMOS 2 in order to reduce memory and processor speed requirements.
- Written manuals for DEMOS 2 operating system.
- Delivered lectures on Unix Kernel, C and C-shell programming, Unix Software Development Tools and others; appr. 240 hours/year.
- Consulted DEMOS and Unix users.

Personnel Retraining Institute of Automobile Industry, Moscow, USSR; 1/1983 - 7/1987

Department of Applied Mathematics and Computers.

Systems Programmer - Responsibilities included design and supporting MNOS and (later) DEMOS operating systems, technical coordination and documenting. Continued education in Moscow State University.

- Designed the MNOS 1.0 operating system (Unix v6-like) for PDP-11.
- Designed the 1st Soviet hardware-independent screen editor EDA.
- Invented the russian lexicographic 8-bit character set (now referred to as "basic" coding for PCs or U-code).
- Reimplemented and developed device drivers, terminal i/o routines and designed 8-bit revisions of a number of Unix utilities.
- Designed a popular form editor for Unix.
- Designed the multiple line printers spooling subsystem.
- Re-implemented Unix v6 up to Unix v7 interfaces (MNOS 1.2 operating system).
- Designed a new assembler and linker kit for PDP-11.
- Ported the INGRES r.7 relational DBMS to PDP-11/40 and revised it in order to support 8-bit character encoding.
- Designed parts of DEMOS operating system for VAX-11 clones.
- Designed parts of DEMOS operating system for IBM/370.
- Designed the ISO Pascal compiler for PDP-11.
- Designed the Release 2 (joint release of MNOS 1.2, DEMOS 1 and Unix BSD 2.9) of DEMOS operating system for PDP-11 (intended to be compatible both with Berkeley BSD and ATT System V Unices).
- Designed parts of the first Russian Unix Training Course.

- Conducted research in object-oriented programming.
- Consulted MNOS, DEMOS and Unix users.

Moscow State University, Moscow, USSR; 8/1980 - 6/1987

Student & free-lance programmer.

- Designed the lexical and syntax analyzers for Algol-68 cross-compiler for Elbrus-2 (cross-development on HP-3000).
- Designed the IBM-compatible magnetic tape driver for DISPAK (BESM-6).
- Designed the program for searching topological combinators of Rubik's cube (FORTRAN IBM/360).
- Created software for calculating plasma density in scatrones (relativistic electronic devices) (FORTRAN BESM-6).
- Designed a simulator and an interactive cross-debugger for Intel 8080 (FORTRAN and Assembler RT-11).
- Designed the APL interpreter for PDP-11/34 under RT-11.

Specialized Construction Bureau for Telemechanics and Automated Control., Nalchik, USSR; 12/1979 - 5/1980

Technician - assisting engineering staff in building hardware prototypes and development of analog and digital circuitry.

- Designed parts of circuitry of TA-100 fault-tolerant industrial control computer's ALU.
- Invented the "weight center" method of digital phase correction and demodulation for 2400 baud industrial telegraph-line modem.

PATENTS

US Pat. 8,667,587: Real-time website safety reputation system.

US Pat. 8,621,625: Methods and systems for detecting infected files.

US Pat. 8,463,235: Protection from telephone phishing.

US Pat. 8,412,952: Systems and methods for authenticating requests from a client running trialware through a proof of work protocol.

US Pat. 8,185,956: Real-time website safety reputation system.

US Pat. 7,143,164: Dynamic object library software architecture.

US Pat. 7,002,958: Method for load-balancing with FIFO guarantees in multipath networks.

US Pat. 6,044,080: Scalable parallel packet router.

US Pat. 5,940,367: Fault-tolerant butterfly switch.

US Pat. 5,884,046: Apparatus and method for sharing data and routing messages between a plurality of workstations in a local area network.

AWARDS

- 2008: Symantec A++ Award for Outstanding Performance.
- 2008: Symantec Mercury Award for Innovation.
- 1994: Sprint Ambassador Club Award for Outstanding Performance.
- 1993: Sprint Quest Club Award for Outstanding Performance.
- 1988: USSR Council of Ministers' Prize for Achievements in Science and Technology (similar to US Congress Awards).
- 1986: All-Union Exhibition of People's Economy Gold Medal.

EDUCATION

- 1982-87: Moscow State University, Department of Applied Mathematics and Cybernetics (MS degree in Mathematics and Computer Science).
- 1980-82: Moscow Specialized Physics & Mathematics School N18 (affiliated with Moscow State University)

HARDWARE Experience

- IBM PC/XT/AT/386/486/Pentium & clones, MC680x0 workstations, DEC VAX-11, DEC microVAX, DEC PDP-11, DEC Professional, nCUBE 2, nCUBE 3, IBM 360/370, HP-3000, HP-9000, DG Eclipse MV-8000, Sun 3, Sun 4, Sun SPARCstations and UltraSPARC, SGI Indigo;
- BESM-6, SM-1210, Minsk-32, Elbrus-2, MIR-1/2, TA-100
- *Network Equipment*: Cisco CGS, MGS, AGS, AGS/+, 2000, 2500, 4000, 4500, 4700, 7000, 7200, 7500, 12000, Juniper T-160, M-10, M-40, Livingston PortMaster, Bay Networks BCN, DEC GigaSwitch, Intel T-510 and T-550, Cabletron FDDI switches, misc 10/100 Ethernet L-2 switches and hubs, misc. T-1 and T-3 CSUs, channel banks, Nortel sync muxes, etc.

SOFTWARE Experience

- *Programming Languages*: C, C++, C++11, Java (5,6,7), JavaScript/ECMAScript, Perl, Alef, Objective C, Pascal (ISO & ANSI), Smaltalk-80, Occam-1, LISP, SCHEME, APL, Simula, CLU, different BASICs, Modula-2, Ada, Prolog, Algol-60, Algol-68, FORTRAN (numerous dialects), FORTRAN-77, Snobol IV, PL/I (G and F), SPL-3000, ALMIR (Algol-like language of MIR-1), REFAL, PL/M;
- *Hardware Design Languages*: Verilog, VHDL;
- *Assemblers of the following CPUs*: Intel 80x86, 8080, 8048, 8051, Motorola 68k family, IBM PowerPC 750, 405, 440, Microchip PIC16 MCUs, MIPS 2000/R3000, MIPS 4000/5000/10000, Sun UltraSPARC I/II, DEC Alpha, nCUBE 3, DEC VAX-11, DEC PDP-11, IBM 360/370, BESM-6, TA-100, Minsk-32, Elbrus-2.
- *DBMS query/scripting languages*: QUEL (Ingres), SQL, Oracle PL/SQL
Other languages: Bourne Shell, C-shell, AWK, YACC, LEX, OS/370 JCL, etc.

- Operating systems:
 - **Smartphones:** Android 2.x;
 - **Sun:** SunOS 4.1, Solaris 2, Solaris 9, Solaris 10, NetBSD;
 - **IBM PC AT/386/486/Pentium/x86-64:** BSD/OS 1-3, FreeBSD 2, Linux (RH 5-9, SuSE 7-10, Ubuntu 10,11), SCO XENIX, SCO Unix System V, Interactive ix/386, Plan 9, Windows 3.1, MS-DOS 3.x, Microsoft Windows XP/ME/NT4/98/95;
 - **IBM PowerPC:** Linux;
 - **MC680x0 Series:** Unix System V;
 - **DEC VAX-11, MicroVAX:** BSD 4.3, DEC Ultrix-32, VAX VMS, DEMOS/V;
 - **DEC PDP-11:** Unix v6, v7, BSD 2.9, Ultrix-11, RT-11, RSTS/E, RSX-11M, DEMOS/P;
 - **nCUBE 2:** Vertex,
 - **nCUBE 3:** Pluto (Plan 9),
 - **DEC Professional:** RT-11, DEMOS/P;
 - **SGI Indeo:** Irix;
 - **IBM PC/XT:** Venix-86, MS-DOS, DEMOS/X;
 - **IBM/360:** DOS, OS MFT;
 - **IBM/370:** OS/370 (MVT), VM, Amdahl UTS, DEMOS/I;
 - **HP-9000:** Unix v7, HP-UX;
 - **HP-3000:** MPE-3000;
 - **Eclipse MV8000:** AOS;
 - **BESM-6:** DISPAK, DUBNA monitor system.
- *Network Protocols:*
 - **TCP/IP:** IP, TCP, ICMP, SNMP, PPP, SLIP, ARP, cisco SLARP, NTP, NNTP, SMTP, FTP, NTP, TELNET, HTTP, RPC, NFS 3, DNS, RIP, RIP-2, I-ISIS, OSPF, BGP-4, EGP, cisco IGRP, cisco EIGRP, RTP, SIP, Megaco;
 - **X.25:** X.3, X.25, X.28, X.121;
 - **UUCP:** g, G, t and i protocols, batchmail, rnews, RFC-822, RFC-1036.
 - **OSI:** CLNP, TP, X.400, VT, FTAM, IS-IS, ES-IS
 - **Others:** Frame Relay, IPX, HDLC, SDLC, Kermit, Zmodem, H.264, H.323, Q.931.